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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

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October 7, 1986

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

Note that the amount of the international search fee for the European Patent Office and the amounts of the International PCT fees will change effective June 1, 1986. For information on these fee changes see the notice appearing in the *Official Gazette* at 1065 O.G. 41 on Apr. 29, 1986.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before June 1, 1986	830.00
if paid on or after June 1, 1986	930.00
International fees	
Basic fee (first 30 pages):	
if paid before June 1, 1986	325.00
if paid on or after June 1, 1986	375.00
Basic Supplemental fee (for each page over 30):	
if paid before June 1, 1986	6.00
if paid on or after June 1, 1986	7.00
Designation fee for the first 10 national or regional offices:	
if paid before June 1, 1986	80.00
if paid on or after June 1, 1986	90.00
Designation fee for 11th and subsequent designations	No charge

Mar. 31, 1986.

DONALD J. QUIGG,
Assistant Secretary and
Commissioner of Patents
and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Oct. 4, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,407,021 through 4,408,354
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . $ 225.00
By other than a small entity . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . $ 110.00".

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . $ 55.00
By other than a small entity. . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JULY 20, 1986, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,339,836	06/266,885	7/20/82
4,339,862	06/258,565	7/20/82
4,339,926	06/289,534	7/20/82
4,339,969	06/258,897	7/20/82
4,339,994	06/242,170	7/20/82
4,340,036	06/245,024	7/20/82
4,340,050	06/220,831	7/20/82
4,340,070	06/281,057	7/20/82
4,340,075	06/232,508	7/20/82
4,340,132	06/224,490	7/20/82
4,340,139	06/236,049	7/20/82
4,340,209	06/253,572	7/20/82
4,340,220	06/217,691	7/20/82
4,340,223	06/229,921	7/20/82
4,340,228	06/260,833	7/20/82
4,340,340	06/217,573	7/20/82
4,340,343	06/291,388	7/20/82
4,340,367	06/261,147	7/20/82
4,340,371	06/244,842	7/20/82
4,340,373	06/253,892	7/20/82
4,340,383	06/236,606	7/20/82
4,340,389	06/254,365	7/20/82
4,340,399	06/218,991	7/20/82
4,340,416	06/250,525	7/20/82
4,340,417	06/276,619	7/20/82
4,340,423	06/238,440	7/20/82
4,340,438	06/266,208	7/20/82
4,340,463	06/243,307	7/20/82
4,340,472	06/262,310	7/20/82
4,340,505	06/258,300	7/20/82
4,340,614	06/267,870	7/20/82
4,340,629	06/273,241	7/20/82
4,340,687	06/229,390	7/20/82
4,340,688	06/250,589	7/20/82
4,340,723	06/218,452	7/20/82
4,340,788	06/234,805	7/20/82
4,340,809	06/218,733	7/20/82
4,340,819	06/258,763	7/20/82
4,340,879	06/216,448	7/20/82
4,340,944	06/241,111	7/20/82
4,340,947	06/231,147	7/20/82
4,340,974	06/236,984	7/20/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,454,807, Re. S.N. 871,650, Filed June 6, 1986, Cl. 99/646, STORAGE SYSTEM FOR GRANULAR MATERIALS, Paul P. Wolstenholme, Owner of Record: *Inventor,* Attorney or Agent: Nathaniel R. French, et al., Ex. Gp.: 242

4,461,199, Re. S.N. 884,764, Filed July 11, 1986, Cl. 84/1.19, ELECTRONIC MUSICAL INSTRUMENTS, Teruo Hiyoshi, et al., Owner of Record: *Nippon Gakki Seizo Kabushiki, Kaisha, Japan,* Attorney or Agent: W. Robert Spensely, et al., Ex. Gp.: 217

4,461,211, Re. S.N. 890,544, Filed July 24, 1986, Cl. 101/366, FLUSH INKING MECHANISM FOR A ROTARY PRINTING PRESS, Heinz Wesselmann, et al., Owner of Record: *Windmoller & Holscher, Lengerich, Germany,* Attorney or Agent: Martin Fleit, et al., Ex. Gp.: 337

4,463,643, Re. S.N. 893,578, Filed Aug. 5, 1986, Cl. 83/703, PRODUCT PUSHER FOR CUTTING APPARATUS, Louis A. Bettcher, Owner of Record: *Bettcher Industries, Inc.; Birmingham, Ohio,* Attorney or Agent: James T. Hoffmann, et al., Ex. Gp.: 324

4,465,368, Re. S.N. 895,132, Filed Aug. 11, 1986, Cl. 356/218, EXPOSURE APPARATUS FOR PRODUCTION OF INTEGRATED CIRCUIT, Toshio Matsuura, et al., Owner of Record: *Nippon Kogaku K.K., Tokyo, Japan,* Attorney or Agent: Nelson H. Shapiro, et al., Ex. Gp.: 255

4,477,928, Re. S.N. 891,365, Filed July 29, 1986, Cl. 2/221, ELASTIC WITH EMBEDDED PULL CORD, Paul Graff, Owner of Record: *N.F.A. Corp., Chelsea, Mass.,* Attorney or Agent: David Wolf, et al., Ex. Gp.: 247

4,481,758, Re. S.N. 889,555, Filed July 25, 1986, Cl. 56/400, HAY RAKE, Byron L. Fishbaugh, Owner of Record: *Goodyear Tire & Rubber Co., Akron, Ohio,* Attorney or Agent: Raymond D. Thompson, et al., Ex. Gp.: 333

4,488,042, Re. S.N. 886,518, Filed July 15, 1986, Cl. 250/235, LINE SCAN READER/WRITER BY HOLOGRAPHIC COLLECTION, Burton R. Clay, et al., Owner of Record: *Holographix, Inc., Boston, Mass.,* Attorney or Agent: W. Hugo Liepmann, et al., Ex. Gp.: 255

4,491,628, Re. S.N. 895,622, Filed Aug. 11, 1986, Cl. 430/176, POSITIVE-AND NEGATIVE-WORKING RESIST COMPOSITIONS WITH ACID GENERATING PHOTOINITIATOR AND POLYMER WITH ACID LABILE GROUPS PENDANT FROM POLYMER BACKBONE, Hiroshi Ito, et al., Owner of Record: *International Business Machines Corp., Armonk, N.Y.,* Attorney or Agent: Henry E. Otto, Jr., et al., Ex. Gp.: 156

4,510,696, Re. S.N. 892,502, Filed Aug. 1, 1986, Cl. 33/304, SURVEYING OF BOREHOLES USING SHORTENED NON-MAGNETIC COLLARS, Richard F. Roesler, Owner of Record: *N. L. Industries, Inc., New York, N.Y.,* Attorney or Agent: E. Richard Zamecki, et al., Ex. Gp.: 246

4,523,617, Re. S.N. 886,431, Filed July 17, 1986, Cl. 144/286A, THREE-IN-ONE WORK STATION, George V. Tredemann, Owner of Record: *Inventor,* Attorney or Agent: George B. Newitt, et al., Ex. Gp.: 321

4,559,442, Re. S.N. 892,305, Filed Aug. 4, 1986, Cl. 219/385, TOWEL WARMER AND HOLDER, Joe Granham, Owner of Record: *Inventor,* Attorney or Agent: G. Brian Pingel, et al., Ex. Gp.: 216

4,566,727, Re. S.N. 892,921, Filed Aug. 4, 1986, Cl. 294/88, ROBOTIC GRIPPER, Lawrence F. Yuda, Owner of Record: *Inventor,* Attorney or Agent: Ralph Bailey, et al., Ex. Gp.: 313

4,577,153, Re. S.N. 889,896, Filed July 28, 1986, Cl. 324/334, CONTINUOUS WAVE MEDIUM FREQUENCY SIGNAL TRANSMISSION SURVEY

PROCEDURE FOR IMAGING STRUCTURE IN COAL SEAMS, Larry G. Stolarczyk, Owner of Record: *Stolar, Inc., Raton, N. Mex.*, Attorney or Agent: Thomas E. Schatzel, et al., Ex. Gp.: 267

4,582.411, Re. S.N. 893,685, Filed Aug. 6, 1986, Cl. 354/403, AUTOMATIC FOCUSING APPARATUS, Hiroshi Ohmura, et al., Owner of Record: *Fuji Photo Film Co., Minami—Ashigara, Japan,* Attorney or Agent: Robert J. Patch, Ex. Gp.: 211

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Errata

"All reference to Patent No. 4,607,807 to Richard D. Reysen of Ill., for 'CARRYING DEVICE FOR COILED WIRE', appearing in the Official Gazette of Aug. 26, 1986, should be deleted since no patent was granted."

"All reference to Patent No. D-285,605 to John A. Davison of San Jose, Calif., for 'SURGICAL RASP INSERT', appearing in the Official Gazette of Sept. 9, 1986, should be deleted since no patent was granted."

"All reference to Patent No. 4,610,329 to Hideharu Tanaka of Hyogo, Japan, for 'MUFFLER FOR EXHAUST GAS FROM INTERNAL COMBUSTION ENGINE', appearing in the Official Gazette of Sept. 9, 1986, should be deleted since no patent was granted."

Expedited Service for Certified Copies of Trademark Registrations

On Oct. 4, 1986, expedited service for obtaining certified copies of trademark registration will be available to the public. The cost of obtaining a certified copy showing title and/or status will be $10.00 plus $25.00 for the expedited service for a total of $35.00 per copy; a certified copy of the registered mark, not showing title or status, will be $5.00 plus $25.00 for expedited service for a total of $30.00. Requests received in the Post-Registration Section of the Trademark Services Division, Crystal Plz. 2–4C24, before 12:00 noon on U.S. Patent and Trademark Office scheduled work days will be filled within three work days.

Requests for expedited service which are hand carried to the Post-Registration Section located in Crystal Plz. 2–4C24 will be available for pickup at the same location after 12:00 noon three work days later. Requests for expedited service which are mailed to the Patent and Trademark Office will be processed and mailed back to the requester three work days after they are received in the Post-Registration Section from the U.S. Patent and Trademark Office mail room. All requests for expedited service will be machine stampled when received in the Post-Registration Section and machine stamped upon completion by the Post-Registration Section.

Anyone requesting expedited service will be limited to five registration numbers per day. Limits on the number of registrations being certified are needed in order to ensure that service is not disrupted for routine requests for certified copies. The guarantee of service in three work days is based on the ability of the Post-Registration Section to process up to 1,000 expedited copies out of an average of 16,000 copies processed each year.

Inquiries about the service should be addressed to:

Patricia M. Davis,
Administrator for Trademark Operations
Trademark Examining Operation
Crystal Pz. 2–3C06
(703) 557-3268

Aug. 19, 1986.

MARGARET M. LAURENCE,
Assistant Commissioner,
for Trademarks.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Laher Spring & Electric Car Corp., assignee of Laher Springer Tire Corp., Oakland, Calif., Registration Nos. 588,812 and 597,908, for the marks "MUSTANG" and "MUSTANG" and Design, Canc. No. 15,356.

F. Malatesta Co., dba F. Malatesta, Boston, Mass., Registration No. 818,764, for the mark "ANGEL" and Design, Canc. No. 15,372.

Benson Rand Bracelet Corp., assignee of Baldwin Bracelet Corp., New York, Registration Nos. 833,651 and 833,651, for the mark "BALDWIN", Canc. No. 15,393.

Sue Ann, Inc., Dallas, Tex., Registration No. 1,209,785, for the mark "SPECIAL EFFECTS" and Design, Canc. No. 15,799.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

Adverse Decisions in Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 4,215,844, Stanley Bowen, VALVE ACTUATOR SYSTEM, Interference No. 101,221, decided May 1, 1986, claims 1–5.

Patent No. 4,251,444, Meier E. Freed and James L. Diebold, THIAZEPINO-(4,3-B)-ISOQUINOLINE-1,5-DIONE DERIVATIVES AND PRECURSORS, Interference No. 100,949, decided Apr. 22, 1986, claims 1–3.

Patent No. 4,255,539, Paul Branlard and Jean-Pierre Merle, METHOD OF PREPARING SULFUR-MODIFIED POLYCHLOROPRENE, Interference No. 100,996, decided Apr. 21, 1986, claims 1, 4, 5 & 7–9.

Patent No. 4,259,420, Vladimir Feiman and Eugene Luksha, LITHIUM CHLORINE BATTERY CONTAINING THIONYL HALIDE, Interference No. 101,091, decided Mar. 10, 1986, claims 1 & 2.

Patent No. 4,296,164, Richard S. Bemis and Daniel A. McCartan, FIBROUS GLASS BLOWING INSULATION AND PROCESS, Interference No. 101,191, decided July 14, 1986, claims 7, 8 & 17.

Patent No. 4,363,454, Louis Mohar, TISSUE ROLL STORAGE AND DISPENSER APPARATUS, Interference No. 101,287, decided Apr. 22, 1986, claim 1.

Patent No. 4,384,210, Norman L. Stauffer, SPATIAL LOW PASS FILTER FOR RANGE FINDING SYSTEMS, Interference No. 101,269, decided July 9, 1986, claims 7, 8, 9, 10, 14 & 15.

Patent No. 4,384,210, Norman L. Stauffer, SPATIAL LOW PASS FILTER FOR RANGE FINDING SYSTEMS, Interference No. 101,270, decided July 9, 1986, claims 1, 2, 4 & 5.

Patent No. 4,384,220, Makoto Segawa and Shoji Ariizumi, MOS TRANSISTOR CIRCUIT WITH A POWER-DOWN FUNCTION, Interference No. 101,124, decided Apr. 17, 1986, claims 1, 2, 4–7, 9 & 10.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Appeals
and Interferences.

Revision of the Scope of the Secrecy Order (35 U.S.C. 181) for Defense Agency Use

The Patent and Trademark Office (PTO) is revising the scope and format of the Secrecy Orders issued under the Invention Secrecy Act of 1951, 35 U.S.C. 181 et seq.; 37 CFR Part 5. The present forms of Secrecy Orders are very restrictively worded to control disclosure or use of an invention under Secrecy Order. The PTO previously would only authorize disclosure or use of a Secrecy Order invention by the grant of a special permit. Permits authorize limited disclosure and permissible use of the invention depending upon the nature of the technical data and national security controls. To receive a permit, a patent applicant had to petition the Commissioner, or the defense agency sponsoring the Secrecy Order would issue or could have sua sponte issued a permit with the Order.

The revised Secrecy Orders will permit disclosure and use consistent with the national security controls needed on the technical data in a patent application. The features of existing permits are incorporated into the Orders which will eliminate the need, in many cases, for the applicant to separately petition for a permit to authorize various degrees of disclosures or use.

These revisions to the scope and format of a Secrecy Order are intended to place essentially the same national security controls on the technical data in patent applications as those on other types of technical data. With respect to publication or disclosure of information which would, in the opinion of the sponsoring Agency, be detrimental to the national security, the revised Secrecy Orders will be consistent with existing national security and export control procedures. The revised Secrecy Orders will also clarify the procedures for handling and custody of applications subject to a Secrecy Order.

The three new Secrecy Order formats to be used by the defense agencies of the Department of Defense are as follows:

1) *Secrecy Order and Permit for Foreign Filing in Certain Countries*

This Secrecy Order will be used for those patent applications that contain technical data whose export is controlled by the guidelines contained in DOD Directive 5230.25, dated Nov. 6, 1984, (codified as 32 CFR Part 250) which relates to export control under 10 U.S.C. 140(c) and the Militarily Critical Technologies List (MCTL). See 50 U.S.C. App. 2404(d).

This Secrecy Order is intended to permit widest utilization of the technical data while still controlling any publication or disclosure which would result in an unlawful exportation. This type of Secrecy Order sets forth the applicable export controls for technical data in either the Commodity Control List (CCL) 15 CFR Parts 379, 399.1 or the Munitions List of the International Traffic in Arms Regulation (ITAR), 22 CFR Part 121.

The countries where corresponding patent applications may be filed will be identified in the Order. The Order specially authorizes use of the invention for legitimate business purposes. The definition of this term in the Order is identical to that found in DOD Directive 5230.25, 32 CFR Part 250. The level of security contol requires that the subject matter must be safeguarded under conditions that provide adequate protection and prevent access by unauthorized persons. Additional modifications or permits to the Secrecy Order under 37 CFR 5.1 et seq. will only be needed where the level of disclosure is beyond that specified in the Order.

Following is a sample copy of this type of Secrecy Order.

Serial No.: Filed:
Applicant:
Title:
Sponsoring Agency & Address:

ECCN[1] REFERENCE		ITAR[2] REFERENCE
Goods Accompanied by Sophisticated Know-How	Keystone Equipment or Materials	Goods Accompanied by Sophisticated Know-How

SECRECY ORDER AND PERMIT FOR FOREIGN FILING IN CERTAIN COUNTRIES
(Title 35, United States Code, sections 181–188 (1952))

NOTICE: To the applicant(s) above named, his, her, or their heirs; and any and all of the assignee, licensees, attorneys and agents, hereinafter designated principals:

You are hereby notified that the above-identified patent application has been found to contain subject matter which discloses critical technology with military or space application. The unauthorized disclosure of such subject matter would be detrimental to the national security, and you are ordered to keep the subject matter secret (as required by 35 U.S.C. 181) and you are further ordered NOT TO PUBLISH OR DISCLOSE the subject matter to any person except as specifically authorized herein.

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[1] Export Control Commodity Number (ECCN) on the Commodity Control List (Supplement No. 1 to 15 CFR 399.1).

[2] International Traffic in Arms Regulation (ITAR), 22 CFR §§120–130.

Enclosure (1)

Any other patent application already filed or hereafter filed in the U.S. or any foreign country which contains any significant part of the subject matter of the above-identified application falls within the scope of this Order. If such other patent application is not under a Secrecy Order imposed by the U.S. Patent and Trademark Office, it and the common subject matter need to be brought to the attention of the Director, Group 220, Attn: Licensing and Review, U.S. Patent and Trademark Office, Washington, D.C. 20231 as soon as possible.

Publication or disclosure of the subject matter of the above-identified patent application, except as authorized herein or subsequently by the Commissioner of Patents and Trademarks, may subject the person publishing or disclosing the subject matter to the penalties of 35 U.S.C. 182, 185 and 186 (1952).

The principals may disclose, for legitimate business purposes,[3] the subject matter of the above-identified application to a U.S. citizen or to a person who is both admitted lawfully into the United States for permanent residence and is located in the United States provided the U.S. citizen or person is furnished with a copy of this Secrecy Order and is informed that this Secrecy Order is applicable to the subject matter disclosed.

Legitimate business purposes include both selling or producing products for the commercial domestic marketplace or for the commercial foreign marketplace, providing that any required export license is obtained. Legitimate business purposes also include selling or otherwise disclosing technical data to foreign contractors or governments overseas after receiving the required export license or approval by the U.S. Government.

The principals shall notify the Commissioner of Patents and Trademarks if a validated license is obtained from the Office of Export Administration or a license is obtained from the Director, Office of Munitions Control under regulations governing the export of technical data (15 CFR 379 of the Export Administration Regulations or 22 CFR 125 of the International Traffic in Arms Regulations).

The subject matter of the above-identified application has been determined not to be encompassed by E.O. 10865, entitled "Safeguarding of Classified Information Within Industry" or E.O. 12356, entitled "National Security Information" and thus is not subject to the "Industrial Security Manual for Safeguarding Classified Information." However, since the disclosure of the subject matter would be detrimental to the national security, the subject matter must be safeguarded under conditions that will provide adequate protection and prevent access by unauthorized persons. When copies of the subject matter are no longer needed, they should be destroyed by any method that will prevent disclosure of the contents or reconstruction of the document.

The principals are permitted, subject to the conditions stated hereinafter, to file and prosecute a corresponding application for patent in each of the following countries: Australia, Belgium, Canada, Denmark, France, Federal Republic of Germany, Greece, Italy, Luxembourg, Netherlands, Norway, Portugal, Sweden, Turkey and the United Kingdom. The papers for each foreign application and its prosecution shall be transmitted to the sponsoring agency, identified herein, for forwarding through diplomatic channels for filing in the foreign country either directly by the principals or through the principals' foreign patent attorney or agent if authorized by the foreign government. Correspondence exclusively relating to payments of taxes and fees need not be sent through the sponsoring agency and diplomatic channels provided that such correspondence contains no information pertaining to the subject matter of the above-identified application.

International reciprocal agreements providing for the filing of patent applications under a Secrecy Order in the above-identified countries require the principals to furnish to the sponsoring agency identified herein (in addition to the papers to be filed in the foreign patent office) a copy of the specification (including any drawings annexed thereto, any resume and the claims included in the patent application) filed in the patent office of the foreign country. This copy will be furnished to the appropriate defense agency of the foreign government *for information only* and without prejudice to any rights of the principals. The filing date and serial number of the patent application should also be furnished to the sponsoring agency.

The principals shall request the foreign patent office to place in secrecy the foreign patent applications corresponding to the above-identified application and shall furnish a copy of this Secrecy Order and permit with the first papers to be filed in the foreign patent office.

The foreign government may require a waiver in writing of any claim to compensation for loss or damage due solely to the imposition of secrecy on the invention. Belgium, France, the Federal Republic of Germany, the Netherlands, Turkey and the United Kingdom normally require such a waiver in writing.

This Order should not be construed in any way to mean that the Government has adopted or contemplates adoption of the invention disclosed in this application and it is not any indication of the value of such invention.

Director, Special Laws Administration

2) *Secrecy Order and Permit for Disclosing Classified Information*

This Secrecy Order will be used for those patent applications which contain technical data that is either classified under Executive Order 12356, National Security Information, 47 FR 14874, Aug. 6, 1982, or properly classifiable under a security guideline where the patent application owner has a current DOD Security Agreement, DOD Form 441. This Agreement requires the protection of classified technical data as prescribed in the Industrial Security Manual (ISM), DOD 5220.22-M.

The intent of this Secrecy Order is to treat classified technical data in a patent application in the same manner as any other classified material under the Industrial Security Manual (ISM). Accordingly, this Secrecy Order will include a notification of the classification level of the technical data in the application, and provide a level of protection at that classification level. The Order will apply to owners of patent applications who have a current DOD Security agreement (DD Form 441) under the ISM. Additional modifications or permits to the Secrecy Order under 37 CFR 5.1 et seq. will only be needed where the level of disclosure is beyond that specified in the order.

The following is a copy of this second type of Secrecy Order:

Serial No.: Filed:
Applicant:
Title:
To be protected at Classification Level of:
Top Secret,
Secret
Confidential
Special
Instructions
Sponsoring Agency & Address:

SECRECY ORDER AND PERMIT FOR DISCLOSING CLASSIFIED INFORMATION

(Title 35, United States Code, sections 181-188 (1952))

NOTICE: To the applicant(s) above named; his, her, or their heirs; and any and all of the assignees, licensees, attorneys and agents, hereinafter designated principals:

You are hereby notified that the above-identified patent application has been found to contain subject matter which discloses classifiable information. The unauthorized disclosure of such subject matter would be detrimental to the national security, and you are ordered to keep the subject matter secret (as required by 35 U.S.C. 181) and you are further ordered NOT TO PUBLISH OR DISCLOSE the subject matter to any person except as spcifically authorized herein.

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[3] The term legitimate business purposes is to be interpreted consistent with DOD Directive 5230.25 entitled "Withholding of Unclassified Technical Data From Public Disclosure," issued by the Secretary of Defense on Nov. 6, 1984. 32 CFR Part 250, 49 FR 484040 (Dec. 10, 1984).

Any other patent application already filed or hereafter filed in the U.S. or any foreign country which contains any significant part of the subject matter of the above-identified patent application falls within the scope of this Order. If such other patent application is not under a Secrecy Order imposed by the U.S. Patent and Trademark Office, it and the common subject matter need to be brought to the attention of the Director, Group 220, Attn: Licensing and Review, U.S. Patent and Trademark Office, Washington, D.C. 20231 as soon as possible.

Publication or disclosure of the subject matter of the above-identified patent application, except as authorized herein or subsequently by the Commissioner of Patents and Trademarks, may subject the person publishing or disclosing the subject matter to the penalties of 35 U.S.C. 182, 185 and 186 (1951).

The subject matter of the above-identified application has been determined to be encompassed by E.O. 10865, entitled "Safeguarding of Classified Information Within Industry" or E.O. 12356, entitled "National Security Information" and thus is subject to the "Industrial Security Manual for Safeguarding Classified Information."

The principals shall protect the subject matter as required by the Industrial Security Manual for Safeguarding Classified Information and may disclose the subject matter of the above-identified application to other persons having the requisite clearance on a "need-to-know basis" *provided* the person to whom the subject matter is disclosed is furnished with a copy of this Secrecy Order and is informed that this Secrecy Order is applicable to the subject matter disclosed. The declassification, in whole or in part, of the subject matter of the above-identified application does not modify this Secrecy Order. The requirements of this Secrecy Order remain in effect until the Secrecy Order is rescinded or modified by the Commissioner of Patents and Trademarks. The fact that the subject matter as a whole is declassified should be brought to the attention of the sponsoring agency.

This permission to disclose does not authorize the disclosure of the subject matter of the above-identified application through (1) the filing of any foreign application without specific permission of the Patent and Trademark Office, or (2) the export of any item or data without any export license may be required.

This order should not be construed in any way to mean that the Government has adopted or contemplates adoption of the invention disclosed in this application and it is not any indication of the value of such invention.

Director, Special Laws Administration

3) *Secrecy Order*

This Secrecy Order will be used for those patent applications that contain properly classifiable technical data under a security guideline where the patent application owner does not have a DOD Security Agreement under the ISM.

This Secrecy Order is substantially the same as the Secrecy Order in use up to now, and will be used where the other types of Orders do not apply. This Order may be issued by direction of agencies other than the Department of Defense. Unless issued with the initial Order, modifications to the Secrecy Order and/or permits under 37 CFR 5.1 et seq. will be needed for additional disclosure.

The following is a copy of this third type of Secrecy Order:

Serial No.: Filed:
Application:
Title:
Sponsoring Agency & Address:

SECRECY ORDER

(Title 35, United States Code, sections 181-188 (1952))

NOTICE: To the applicant(s) above named; his, her or their heirs; and any and all of the assignees, licensees, attorneys and agents, hereinafter designated principals:

You are hereby notified that the above-identified patent application has been found to contain subject matter the unauthorized disclosure of which would be detrimental to the national security, and you are ordered to keep the subject matter secret (as required by 35 U.S.C. 181) and you are further ordered NOT TO PUBLISH OR DISCLOSE the subject matter to any person except as specifically authorized by the Commissioner of Patents and Trademarks.

Any other patent application already filed or hereafter filed in the U.S. or any foreign country which contains any significant part of the subject matter of the above-identified patent application falls within the scope of this Order. If such other patent application is not under a Secrecy Order imposed by the U.S. Patent and Trademark Office, it and the common subject matter need to be brought to the attention of the Director, Group 220, Attn: Licensing and Review, U.S. Patent and Trademark Office, Washington, D.C. 20231 as soon as possible.

Publication or disclosure of the subject matter of the above-identified patent application, except as authorized herein or subsequently by the Commissioner of Patents and Trademarks, may subject the person publishing or disclosing the subject matter to the penalties of 35 U.S.C. 182, 185 and 186 (1952).

Since the disclosure of the subject matter of the above-identified application would be detrimental to the national security, the subject matter must be safeguarded under conditions that will provide adequate protection and prevent access by unauthorized persons. When copies of the subject matter are no longer needed, they should be destroyed by any method that will prevent disclosure of the contents or reconstruction of the document.

This order should not be construed in any way to mean that the Government has adopted or contemplates adoption of the invention disclosed in this application and it is not any indication of the value of such invention.

Director, Special Laws Administration

Each Secrecy Order forbids the publication or disclosure of the invention except as specially authorized. By revising these Secrecy Orders to conform with existing export and classification authority, the burden on patent applicants to seek additional permits for disclosure and/or foreign filing under 37 CFR Part 5 will be reduced. The new Secrecy Orders reflect the level of secrecy required by law and regulation for various technologies and will place National Security and export controls on the patent applicant in harmony with other applicable export and classification controls. Also, this change will reduce the risk of disclosure of the subject matter of the invention by providing greater guidance on the safeguarding of the subject matter invention.

Information regarding the new Secrecy Orders may be obtained by calling Mr. Kenneth L. Cage, Director, Special Laws Administration Group, at (703) 557-2877 or by mail directed to Mr. Kenneth L. Cage, Director, Special Laws Administration, Group 220, Washington, D.C. 20231.

Sept. 9, 1986.

DONALD W. PETERSON,
Deputy Commissioner, for
DONALD J. QUIGG,
Assistant Secretay and
Commissioner of Patents
and Trademarks.

PATENT NOTICES

Certificates of Correction for the Week of Oct. 7, 1986

B1. 4,200,459
Re. 31,953
Re. 32,093
Re. 32,094
Re. 32,129
D. 280,807
D. 281,378
4,158,472
4,237,352
4,452,211
4,485,947
4,488,865
4,493,248
4,501,978
4,510,145
4,519,096
4,527,401
4,527,954
4,531,374
4,535,098
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4,601,717
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4,601,772
4,602,019
4,602,048
4,602,165
4,602,229
4,602,399
4,602,533
4,602,736
4,602,744

Disclaimers

Re. 32,173.—*Ronald B. Lloyd,* Gilson, and *Gerald H. Wick,* Galesburg, Ill. LAWN MOWER BRAKE AND CLUTCH DEVICE. Patent dated June 10, 1986. Disclaimer filed July 23, 1986, by the assignee, *Outboard Marine Corp.*

Hereby enters this disclaimer to claims 1 through 6 of said patent.

4,127,145.—*Udo Erlenmayer,* Eutingen, *Reinhard Gropp,* Arnbach and *Hans Zenn,* Pforzheim, Germany. MOVABLE PIPELINE ELEMENT. Patent dated Nov. 28, 1978. Disclaimer filed June 30, 1986, by the assignee, *Witzenmann GmbH Metallschlauch-Fabrik Pforzheim.*

The term of this patent subsequent to June 13, 1986 has been disclaimed.

4,326,265.—*Gary W. Boone,* Houston, Tex. VARIABLE FUNCTION PROGRAMMED SYSTEM. Patent dated Apr. 20, 1982. Disclaimer filed Apr. 19, 1982, by the assignee, *Texas Instruments Inc.*

The term of this patent subsequent to Feb. 14, 1995 has been disclaimed.

4,347,090.—*Edward P. Anderson,* Mickleton, N.J., and *Donald G. Curran,* Norwood, Pa. PROCESS FOR FORMING LAMINATED PIPE. Patent dated Aug. 31, 1982. Disclaimer filed July 18, 1986, by the assignee, *Bunnell Plastics, Inc.*

Hereby enters this disclaimer to the remaining term of said patent.

4,524,249.—*Charles F. Farrell,* Attleboro, Mass. KEYBOARD SWITCH ASSEMBLY. Patent dated June 18, 1985. Disclaimer filed Jan. 31, 1986, by the assignee, *Texas Instruments Inc.*

Hereby enters this disclaimer to claim 9 of said patent.

4,543,500.—*Joseph C. McAlexander III,* Sugar Land and *Lionel S. White, Jr.,* and *G. R. Mohan Rao,* Houston, Tex. HIGH PERFORMANCE DYNAMIC SENSE AMPLIFIER VOLTAGE BOOST FOR ROW ADDRESS LINES. Patent dated Sept. 24, 1985. Disclaimer filed Aug. 7, 1986, by the assignee, *Texas Instruments Inc.*

The term of this patent subsequent to Aug. 6, 2002 has been disclaimed.

4,554,495.—*Richard K. Davis,* Charlottesville, Va. DATUM REFERENCE FOR TOOL TOUCH PROBE SYSTEM. Patent dated Nov. 19, 1985. Disclaimer filed Feb. 5, 1986, by the assignee, *General Electric Co.*

Hereby enters this disclaimer to claims 13, 15, 16 and 17 of said patent.

Dedication

4,308,213.—*David M. Spatz,* Trenton and *Barrington Cross,* Rocky Hill, N.J. META-(PHENYLALKOXY)PHENYL-N-METHOXY-N-METHYLUREA COMPOUNDS. Patent dated Dec. 29, 1981. Dedication filed June 26, 1986, by the assignee, *American Cyanamid Co.*

Hereby dedicates to the Public the entire remaining term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7609
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Irvine: University of California, Irvine Library	(714) 856-7234
	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Connecticut	New Haven: Science Park Library	(203) 786-5000
Delaware	Newark: University of Delaware Library	(302) 451-2965
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1741
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4284
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-7040
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1227
	The Free Library	(215) 686-5330
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2371
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF August 30, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	5-21-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-24-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-01-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-08-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	10-09-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	4-11-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	4-25-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	11-09-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	7-17-84
DESIGN, GROUP 290—K. L. CAGE, Director	2-29-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	2-19-85
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	12-24-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	5-21-84
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	2-25-85
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-02-86

Expiration of patents: The patents within the range of numbers indicated below expire during August 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,458,863 to 3,464,062, inclusive
Plant Patents	Numbers 2,914 to 2,917 inclusive

REEXAMINATIONS

OCTOBER 7, 1986

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,405,156 (577th)

REINFORCED HINGE FOR BOOK COVER

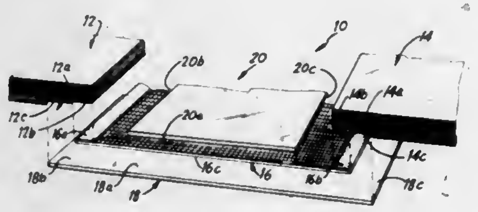
Leewood C. Carter, Warren, and Robin P. Neary, Basking Ridge, both of N.J., assignors to Book Covers, Inc., Newark, N.J.

Reexamination Request No. 90/000,748, Apr. 1, 1985.

Reexamination Certificate for Patent No. 4,405,156, issued Sep. 20, 1983, Ser. No. 249,089, Mar. 30, 1981.

Int. Cl.^{4} B42C *7/00;* **B42D** *3/06*

U.S. Cl. 281—29



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **2** and **4** are determined to be patentable as amended.

Claims **3** and **5–13**, dependent on an amended claim, are determined to be patentable.

1. A method of forming a book cover having a reinforced hinge, comprising the steps of:

arranging first and second leafboards in spaced-apart relationship so that their respective first and second longitudinal edge portions are parallel to and spaced from each other;

overlapping said first and second edge portions with a reinforcing *scrim* member and adhering the overlapping edges of said reinforcing member to the respective first and second edge portions of said leafboards;

overlapping the outer surface of said reinforcing member with a *paperboard* hinge member and adhering said hinge member to said reinforcing member and to the first and second edge portions of said leafboards;

overlapping the inner surface of said reinforcing member with lining material and adhering said lining material thereto, such that the longitudinal edges of said lining material are spaced apart from the respective first and second edge portions of said leafboards; and

said last two steps being performed in any order.

B1 4,412,002 (578th)

PROCESS FOR PREPARING HEPATITIS A VIRUS

William J. McAleer, Ambler; Fred J. Bailey, Hatfield, and Henry Z. Markus, Wincote, all of Pa., assignors to Calgon Corp., Pittsburgh, Pa.

Reexamination Request No. 90/000,645, Oct. 9, 1984.

Reexamination Certificate for Patent No. 4,412,002, issued Oct. 25, 1983, Ser. No. 352,667, Feb. 26, 1982.

Int. Cl.^{4} C12N *7/02*

U.S. Cl. 435—235

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–4** are cancelled.

[**1**. A method of growing hepatitis A virus in vitro in a cell culture susceptible to infection by hepatitis A virus comprising trypsinizing a culture of susceptible cells persistently infected with hepatitis A virus, replanting at least part of the trypsinized cells at least one additional time, and harvesting hepatitis A from at least some of the replanted cells.]

B1 4,454,692 (579th)

METAL DECK RACEWAY CONSTRUCTION

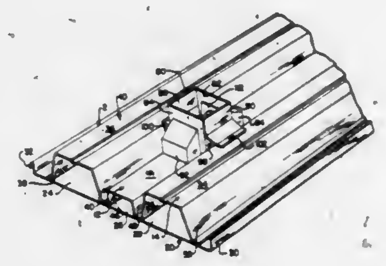
Robert L. Ault, Saltsburg, Pa., assignor to Epic Metals Corporation, Rankin, Pa.

Reexamination Request No. 90/000,911, Nov. 22, 1985.

Reexamination Certificate for Patent No. 4,454,692, issued Jun. 19, 1984, Ser. No. 316,682, Oct. 30, 1981.

Int. Cl.^{4} E04B *5/48*

U.S. Cl. 52—221



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–17** is confirmed.

Claims **18–23** are cancelled.

[**18**. A utility access housing for securement to metal deck comprising

a pair of spaced end walls,

a pair of spaced sidewalls,

said sidewalls having openings for passage of wires therethrough, and

at least one said end wall having an outwardly projecting inwardly open extension for receiving an electrical receptacle, and

an electrical receptacle disposed within said extension, whereby said housing will permit access to adjacent cells without substantial obstruction by said receptacle.]

STATUTORY INVENTION REGISTRATIONS

PUBLISHED OCTOBER 7, 1986

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H136

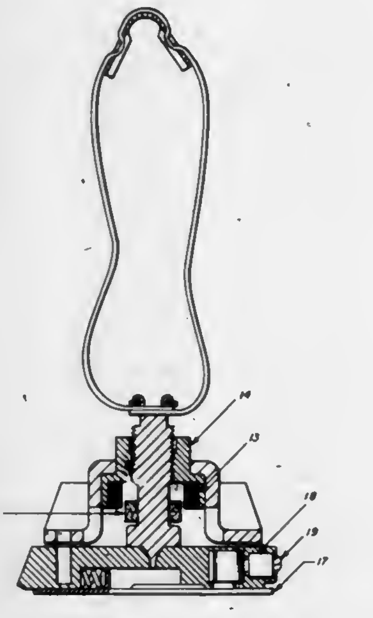
ELECTRICALLY DETONATED GRENADE

Werner Field, Rockaway, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 23, 1985, Ser. No. 790,579

Int. Cl.^{4} F42B *27/00*

U.S. Cl. 102—487 **6 Claims**



MODIFIED FUZE

1. An electrical fuze for use in detonating a grenade which includes a main charge and a rotating ribbon for arming the grenade, said fuze comprising:

means for generating an electromotive force signal by the turning action of said rotating ribbon;

means for electrically rectifying said electromotive force signal into a rectified signal;

means for electrically storing said rectified signal to form a direct-current voltage source;

electrical means for setting off said main charge in response to a detonation voltage;

means for conveying voltage from said direct-current voltage source to said electrical means to initiate detonating, said means for conveying comprising a circuit closing means in series therewith which closing means only permits conveyance of said voltage when in its closed position, said closing means operative to enter its closed position upon an impact of said grenade with a ground area.

H137

PROCESS FOR REDUCING BETA ACTIVITY IN URANIUM

Gifford G. Briggs; Takeo R. Kato, both of Cincinnatti, and Edward Schonegg, Cleves, all of Ohio, assignors to The United States of America as represented by The United States Department of Energy, Washington, D.C.

Filed Apr. 11, 1985, Ser. No. 722,023

Int. Cl.^{4} C22B *60/02*

U.S. Cl. 75—84.1 A **4 Claims**

1. A process for reducing beta activity in uranium comprising:

placing uranium containing beta emitters and a salt selected from the group CaF_2, MgF_2 and mixtures of CaF_2 and MgF_2 in a container suitable for holding said uranium and said salt in a molten state in a vacuum;

in a vacuum, heating said uranium and said salt to a temperature sufficient to melt said uranium and said salt;

in a vacuum, maintaining said temperature for a time sufficient for a uranium phase and a salt phase containing said beta emitters to separate; and

separating said salt phase containing said beta emitters from said uranium phase yielding uranium having reduced beta activity.

H138

SOLID POLY(AZIDOMETHYL)BENZENE EXPLOSIVE COMPOSITION

Everett E. Gilbert, Morristown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 28, 1984, Ser. No. 655,609

Int. Cl.^{4} C07C *107/04*

U.S. Cl. 260—349 **4 Claims**

1. A solid explosive selected from the group consisting of:

a. Hexakis (azidomethyl) benzene,

b. 1,3,5-Tris (azidomethyl) benzene,

c. 1,2,4,5-Tetrakis (azidomethyl) benzene.

H139

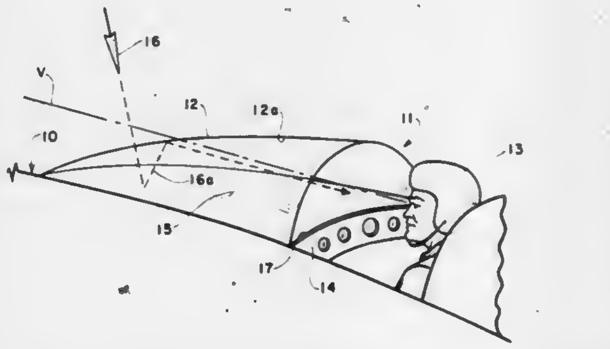
REMOVABLE CLEANABLE ANTIREFLECTION SHIELD

Harry L. Task, Watertown, Mass., assignor to The United States of America as reperesented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 10, 1985, Ser. No. 690,212

Int. Cl.^{4} B64D *45/00;* **B60J** *3/00*

U.S. Cl. 244—121 **5 Claims**



1. A removable anti-reflective shield for covering the glare surface beneath the windscreen forward of the instrument panel of an aircraft to substantially eliminate light reflection from said glare surface, comprising:

a. a flexible panel of light absorbing material of size and configuration corresponding to that of said glare surface for placement on and conformance to the contour of said glare surface beneath said windscreen forward of said instrument panel; and

b. attaching means on substantially the entire periphery of said flexible panel for detachably securing the peripheral edges of said flexible panel to said glare surface.

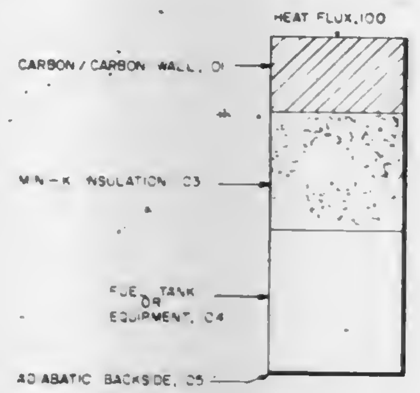
H140

CARBON/CARBON COMBUSTOR EXTERNAL INSULATION

Alfred E. Bruns, Elsah, Ill.; Jerry K. Lehman, St. Louis, Mo.; Dallas G. Wetzler, Florissant, Mo., and Harry A. Holman, Jr., Ladue, Mo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 18, 1985, Ser. No. 724,719
Int. Cl.^{4} B32B *7/02*

U.S. Cl. 428—213 **8 Claims**



1. An external insulation system for thermally insulating a combustion chamber of a missile, said external insulation system consisting essentially of:

a hot wall being fabricated as said combustion chamber, said hot wall being composed of a carbon/carbon composite, and

an intermediate-temperature insulation layer being deposited on the surface of said hot wall to act as thermal insulation between said hot wall and payloads of said missile, said intermediate-temperature insulation layer being composed of an insulation material which begins to thermally degrade at temperatures exceeding about 2,000° F.

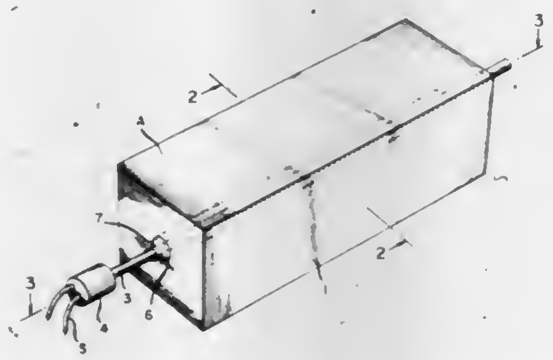
H141

FAST DISPENSING FIRE EXTINGUISHER

Anthony E. Finnerty, Forest Hill; Lowell K. Bryant, Joppa, and Charles R. Stumpfel, Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 11, 1985, Ser. No. 722,034
Int. Cl.^{4} A62C *35/02*

U.S. Cl. 169—28 **10 Claims**



1. A non-pressurized, lightweight, rapidly dispensing fire extinguisher consisting essentially of:

a hollow shaped container having an orifice,

a fire extinguishing agent in said container,

an explosive device operatively fitted in said container through said orifice,

said container made of a burstable lightweight thin wall metal or plastic, and

means for detonating said explosive device to burst said container and instantaneously disperse all fire extinguishing agent in said container.

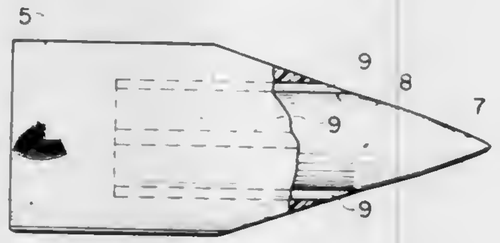
H142

CHANNELLED SABOT

Paul M. Wyluda, South River, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 18, 1985, Ser. No. 713,131
Int. Cl.^{4} F42B *13/16*

U.S. Cl. 102—522 **4 Claims**



1. A sabot having a body provided with a bore adapted to receive a projectile, said body having a plurality of equally spaced channels therein, said channels running longitudinally within the interior of the said body, parallel to the axis of said bore, said channels being designed to permit rapid disengagement of said sabot and said projectile immediately after the firing thereof.

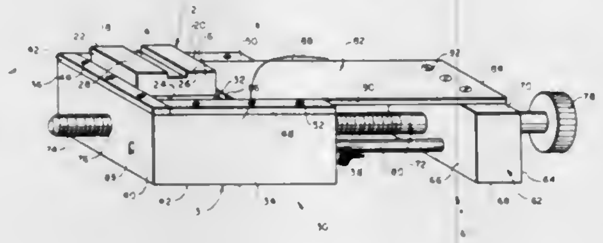
H143

VISE AND METHOD FOR LOADING EXPLOSIVE IN TRAILS OF AN EXPLOSIVE LOGIC ELEMENT

H. John Blische, Forest Hill, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 8, 1986, Ser. No. 817,200
Int. Cl.^{4} B25B *1/10*

U.S. Cl. 269—252 **11 Claims**



1. A vise for securely supporting a workpiece comprising:

a base having a planar work supporting surface;

an end plate means fixed to said base to extend outwardly from said work supporting surface for supporting a workpiece against movement in a first direction;

a first side plate means fixed to said base to extend outwardly from said work supporting surface and transversely of said end plate means for supporting a workpiece against movement in a second direction which is transverse of said first direction;

clamping jaw means movably attached to said base to extend along said work supporting surface and move toward and away from said end plate means and along said first side plate means for forcing a workpiece against said end plate means; and

means for moving said clamping jaw means.

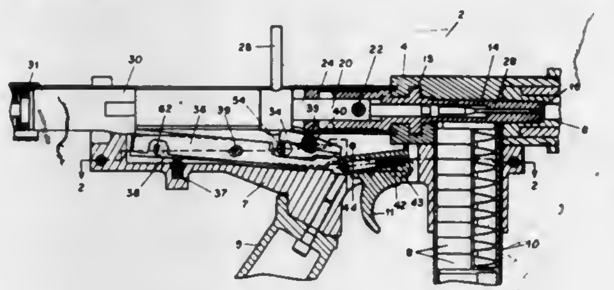
H144

WEAPON TRIGGER AND SEAR MECHANISM

Giulio V. Savioli, Andover, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 18, 1985, Ser. No. 713,133
Int. Cl.^{4} F41D *11/02*

U.S. Cl. 89—142 **12 Claims**



1. A firing mechanism for a weapon having a receiver with a chamber for a cartridge, comprising:

a bolt movably mounted to the receiver toward and away from the chamber for holding a cartridge in the chamber, and movable between a locked and an unlocked position near the chamber;

a piston movably mounted to the receiver toward and away from the chamber, said piston having a firing pin movable into engagement with a cartridge in the chamber for igniting the cartridge, said piston having a first position spaced away from the chamber for open bolt operation, a second position adjacent the chamber with the pin spaced away from the chamber for closed bolt operation and a third position with the pin moved toward the chamber for igniting a cartridge in the chamber, said piston engaged with said bolt for moving said bolt toward and away from the chamber and for moving said bolt between its locked and unlocked position;

a buffer movably mounted to the receiver toward and away from the piston for moving the piston from its second position to its third position to ignite a cartridge, said buffer having a first position spaced away from said chamber and a second position adjacent said chamber for engaging said piston in said second position of said piston;

a trigger movably mounted to the receiver;

a first sear rotatably mounted to the receiver and having a first position in a path of movement of said piston and a second position out of the path of movement of said piston, said first sear positioned to engage said piston in said second position of said piston;

a second sear rotatably mounted to the receiver and engageable with said trigger for movement of said second sear with movement of said trigger, said second sear having a portion engaged with said first sear for movement of said first sear with movement of said trigger, said second sear being pivotable between a first position for engagement with said buffer in said first position of said buffer and a second position for movement out of a path of movement of said buffer;

a third sear pivotally mounted to the receiver having a first position for engaging said piston in said first position of said piston and a second position for moving out of the path of movement of said piston;

a buffer spring engaged with said buffer for biasing said buffer towards the chamber;

a piston spring engaged with said piston for biasing said piston toward the chamber;

a bolt position selector movably mounted to the receiver and engaged with said third sear for moving said third sear into its first position and into its second position for selecting open or closed bolt operation; and

a fire selector movably mounted to the receiver into an automatic fire position and a semi-automatic fire position, said automatic fire position disposed to engage said first sear in its second position while said trigger maintains engagement with said second sear for holding said first and second sears out of a path of movement of said buffer and piston, said semi-automatic fire position engaging said first sear when it rotates beyond said second position thereof for permitting said trigger to move past said second sear for permitting said first and second sears to return to their respective first positions in the path of movement of said buffer and piston respectively.

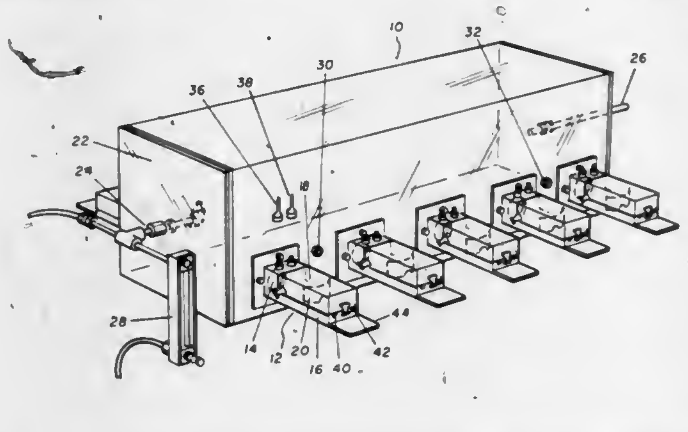
H145

RESEARCH APPARATUS

John T. James, Severn, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 23, 1984, Ser. No. 633,569
Int. Cl.^{4} A61B *5/08*

U.S. Cl. 128—716 **1 Claim**



1. A gas chamber having a rectangular body provided with a top, bottom, two longitudinal sides and a first and second end,

said first end having a gas inlet and said second end having a gas outlet for the longitudinal passage of said gas through said chamber and between said sides,

a plurality of cells provided in longitudinal spaced relationship along each of said sides of said chamber,

said cells each having a port communicating with said chamber, a base provided with a removable cover, and a manually longitudinally adjustable plate, and

all said cells provided with a mammal having a head and body, said head protruding through said port and said body secured in position in said cell by said adjustable plate,

each of said cells having individual means for pressure sensing, temperature sensing, and blood sampling of said mammals.

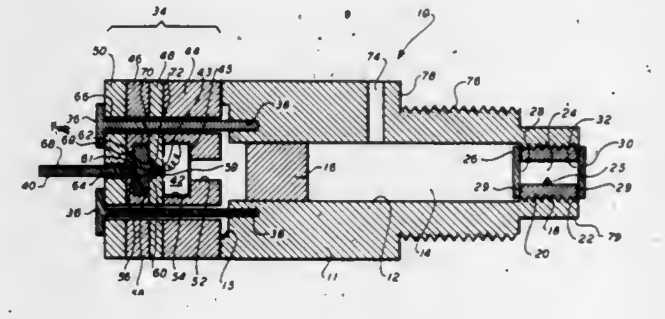
H146

POWDER DISPERSAL UNIT

Leon J. Decker, Aberdeen; Arthur Cohen, Bel Air, and Emmet Donnelly, Churchville, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 15, 1985, Ser. No. 754,552
Int. Cl.^{4} B05B *9/04*

U.S. Cl. 239—323 **15 Claims**



1. A powder dispersal apparatus, comprising:

chamber means for storing powder, having an output opening through which the powder can exit the chamber means; and

dispersal means for dispersing said powder from said chamber through said exit opening.

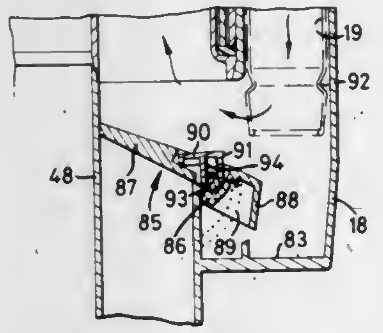
REISSUES

OCTOBER 7, 1986

Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,257
VACUUM CLEANING APPLIANCES

James Dyson, Bath, England, assignor to Prototypes, Ltd., Bath, England
Original No. 4,377,882, dated Mar. 29, 1983, Ser. No. 247,871, Mar. 26, 1981. Application for reissue Dec. 3, 1984, Ser. No. 677,365
Claims priority, application United Kingdom, Mar. 26, 1980, 8010098
Int. Cl.⁴ A47L *5/32*
U.S. Cl. 15—335 **18 Claims**

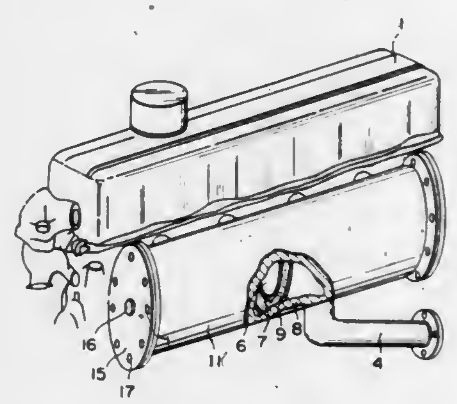


15. A vacuum cleaning appliance comprising:
- *(a) a main casing having an air passageway therein containing a motor-driven suction fan unit;*
- *(b) a socket communicating with said passageway and providing an inlet for dirt laden air;*
- *(c) a flexible hose section having a first end fixedly secured to said socket and a second end;*
- *(d) a hollow pipe member connected to slide telescopically within said flexible hose section, said hollow pipe member having a lower end which is engageable with said socket when said pipe member is fully retracted into said flexible hose section and with said second end of said flexible hose section when said pipe member is fully extended; and*
- *(e) said pipe having a portion extending beyond said flexible hose when said lower end is engaged with said socket and serving as a handle for maneuvering said vacuum cleaning appliance.*

Re. 32,258
METHOD OF FILLING A CASING WITH HEAT INSULATING FIBERS

Katsumi Kondo; Fumiyoski Noda; Mikio Murachi; Yuji Watanabe, and Masaru Usui, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Original No. 3,921,273, dated Nov. 25, 1975, Ser. No. 512,872, Oct. 7, 1974. Application for reissue Jun. 22, 1984, Ser. No. 623,398
Claims priority, application Japan, Oct. 9, 1973, 48-113457
Int. Cl.⁴ B21D *53/00;* **B21K** *29/00;* **B23P** *15/26*
U.S. Cl. 29—157 R **14 Claims**

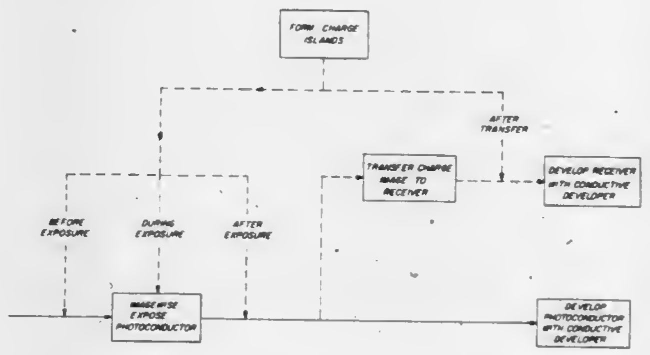
12. Method of manufacturing a heat insulator which comprises the steps of wrapping a hermetically sealed bag about an inner casing to form an insert, said sealed bag containing a mass of fibrous material which has been compressed by vacuum-packing said fibrous material in the sealed bag; and



then introducing said insert into an outer casing; and then unsealing said bag to permit said fibrous material to expand between the inner casing and the outer casing.

Re. 32,259
METHOD AND MEANS FOR IMPROVING MAXIMUM DENSITY AND TONAL RANGE OF ELECTROGRAPHIC IMAGES

George P. Kasper; Arthur S. Kroll, and Michael Mosehauer, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Original No. 4,385,823, dated May 31, 1983, Ser. No. 133,077, Mar. 24, 1980. Continuation-in-part of Ser. No. 30,668, Apr. 16, 1979, abandoned. Application for reissue Jan. 28, 1985, Ser. No. 695,497
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—3 R **15 Claims**


FORM CHARGE ISLANDS
AFTER TRANSFER
TRANSFER CHARGE IMAGE TO RECEIVER
DEVELOP RECEIVER WITH CONDUCTIVE DEVELOPER
BEFORE EXPOSURE
DURING EXPOSURE
AFTER EXPOSURE
IMAGEWISE EXPOSE PHOTOCONDUCTOR
DEVELOP PHOTOCONDUCTOR WITH CONDUCTIVE DEVELOPER

13. In an electrographic apparatus which includes an imaging member having an image recording area and means for forming an electrostatic image on said area, the improvement which comprises means for forming on said area, before, during or after forming said image on said area, a plurality of charge islands in addition to any such islands already present, and development means including a supply of a developer *comprising a toner and a carrier, said developer* having a maximum resistance of about 10^9 ohms for applying such developer to the resulting electrostatic image.

Re. 32,260
TANTALUM POWDER AND METHOD OF MAKING THE SAME

Stanley S. Fry, North Chicago, Ill., assignor to Fansteel Inc., North Chicago, Ill.

Original No. 4,009,007, dated Feb. 22, 1977, Ser. No. 595,569, Jul. 14, 1975. Application for reissue Jul. 24, 1984, Ser. No. 634,036

Int. Cl.^{4} C22C *1/04;* **H01G** *9/05*

U.S. Cl. 75—230 **36 Claims**

22. A tantalum powder containing an added phosphorus-containing material in an amount equivalent to from about 37.5 to about 400 parts per million of elemental phosphorus.

26. A method of improving the specific capacity of tantalum powder for use in making tantalum anodes comprising adding to tantalum powder an amount of an ammonium hydrogen phosphate, within the range equivalent to from about 20 to about 400 parts per million of elemental phosphorus, sufficient to improve the specific capacity (CV/g) of the untreated tantalum by at least about 8.9% when pressed in the forms of anodes and sintered at 1800° C.

27. A method of improving the specific capacity of tantalum powder for use in making tantalum anodes comprising adding to tantalum powder, which is in the form of tantalum hydride prior to reduction to metallic tantalum, an amount of phosphorus-containing material, within the range equivalent to from about 37.5 to about 400 parts per million of elemental phosphorus, sufficient to improve the specific capacity (CV/g) of the untreated tantalum by at least 5.2% when pressed in the form of anodes and sintered at 1800° C.

Re. 32,261
PROCESS FOR PRODUCING THERMOSETTING FINISHING POWDERS

Kuniomi Hirota, Iwase Kamakura; Akio Masumoto, Yokohama; Hiroshi Ozawa, Yokohama; Nobuki Kobayashi, Yokohama, and Teruo Honda, Ryujyogaoka Hiratsuka, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Original No. 4,042,645, dated Aug. 16, 1977, Ser. No. 426,954, Dec. 13, 1973. Continuation-in-part of Ser. No. 91,197, Nov. 19, 1970, abandoned. Application for reissue Mar. 19, 1979, Ser. No. 21,982

Claims priority, application Japan, Dec. 29, 1969, 45-988

Int. Cl. C08F *220/32*

U.S. Cl. 525—285 **53 Claims**

7. A powder coating composition which, exclusive of pigments and other non-reactive components, comprises a coreactable mixture of:

- *(A) a copolymer of about 3 to about 40 weight percent of a glycidyl ester of acrylic or methacrylic acid and about 60 to about 97 weight percent of other monoethylenically unsaturated monomers including at least 30 weight percent of alkyl acrylate or alkyl methacrylate in which the alkyl group contains from 1 to 14 carbon atoms and from 0 to 67 weight percent of an ethylenically unsaturated monomer copolymerizable with said glycidyl ester and with said alkyl acrylate or alkyl methacrylate, said weight percentages being based upon the weight of total monomers, said copolymer having a glass transition temperature in the range of 50° C. to 60° C. and a number average molecular weight in the range of 1500 to 30,000; and*
- *(B) a carboxyl terminated crosslinking agent in an amount ranging from about 0.61 to about 1.44 carboxyl groups for each epoxy group in the copolymer.*

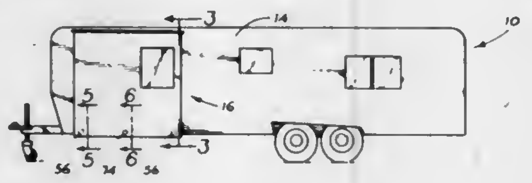
Re. 32,262
TELESCOPING ROOM FOR TRAVEL TRAILERS

Bonner B. Stewart, Salem, Oreg., assignor to John C. May, Concordia, Mo.

Original No. 4,128,269, dated Dec. 5, 1978, Ser. No. 761,295, Jan. 21, 1977. Application for reissue Nov. 5, 1984, Ser. No. 668,641

Int. Cl.^{4} B60P *3/32*

U.S. Cl. 296—171 **67 Claims**



1. In combinations with a travel trailer or the like having a floor, upstanding side and end walls and a ceiling and an opening in one of said upstanding walls,

- (a) a room section having a ceiling, a floor, side walls, an outer end wall and an open inner end, the room section extending freely through said opening in the trailer wall,
- (b) first support means secured to the trailer under the floor thereof and including a tubular member rigidly attached to the travel trailer under the floor thereof and an elongated beam extending slidably through the tubular member and rigidly attached at its outer end to the end wall of the room section below the floor thereof for supporting the room section for reciprocation therewith between a position extending outwardly from the trailer wall and a position retracted into the trailer, and rollers rotatably mounted on the tubular member and engaging the upper and lower surfaces of said beam, and
- (c) second support means between the trailer floor and overlying room extension floor for supporting the latter above the trailer floor during reciprocation of the room section.

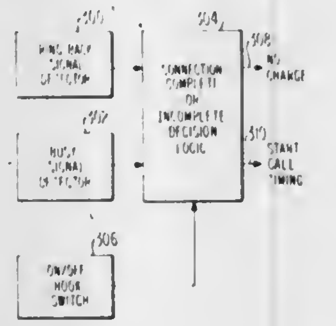
Re. 32,263
CHARGE TIME START CONTROL FOR INTERCONNECT PABX

Murray F. Kaminsky, Philadelphia, Pa., assignor to RCA Corporation, Princeton, N.J.

Original No. 4,472,600, dated Sep. 18, 1984, Ser. No. 470,573, Feb. 28, 1983. Application for reissue Mar. 21, 1985, Ser. No. 714,457

Int. Cl. H04M *15/18*

U.S. Cl. 179—7.1 R **3 Claims**



1. In an interconnect PABX which includes means capable of (A) extending a telephone connection from respective calling telephone stations of said interconnect PABX through a telephone utility network to respective called telephone stations, (B) receiving a returned audible busy signal in response to either said network or a called station being busy, and (C) receiving a returned audible ring-back signal when a called station is ringing; an answer signal returned by a called station to said network in response to that called station going off-hook being unavailable to said interconnect PABX, said answer signal being indicative of the extended telephone connection to that called station being completed; improved apparatus

forming part of said interconnect PABX for deciding whether or not an extended connection through said telephone network to a called station has been completed, said apparatus comprising:

- a busy signal detector for deriving a first output in response to a return of said audible busy signal;
- a ring-back signal detector for deriving a second output in response to a return of said audible ring-back signal;
- switch means for deriving a third output indicative of whether a calling station of said interconnect PABX is in an off-hook condition or is in an on-hook condition; and
- connection complete or incomplete decision logic means having said first, second and third outputs applied as respective inputs thereto for (1) deriving a first signal indicative of an incomplete extended connection in response to either (a) the indication by said first output of the existence of an audible busy signal or (b) the indication by said second and third outputs of the occurrence of a calling-station on-hook condition that occurs at the end of a calling-station off-hook condition interval during which an audible ring-back signal occurs and thereafter, continues to occur until said end of said interval, and for (2) deriving a second control signal indicative of a complete extended connection in response to an audible ring-back signal that occurs during said interval, but which terminates prior to said end of said interval, so that the calling station remains in an off-hook condition for a period of time after the audible ring-back signal has terminated.

PATENTS

GRANTED OCT. 7, 1986

ERRATA

For CLASS	See PATENT NO.
187–209	4,616,733
384–007	4,616,881
384–015	4,616,885
384–045	4,616,886
420–117	4,617,052
530–324	4,617,149
540–364	4,617,150
540–001	4,617,151
540–200	4,617,152
558–450	4,617,154

PATENTS

GRANTED OCTOBER 7, 1986

GENERAL AND MECHANICAL

4,615,046

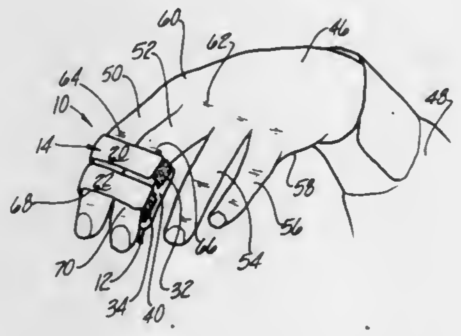
SHOCK ABSORBER ELEMENT FOR FINGERS

John H. Martin, 4558 Barcroft Way, Sterling Heights, Mich. 48077

Filed Oct. 25, 1984, Ser. No. 664,552

Int. Cl.⁴ A41D *19/00, 13/00*

U.S. Cl. 2—21 **15 Claims**



1. A shock absorber element for protecting at least one finger of a hand of an operator of a tool from a shock load when said at least one finger engages said tool experiencing an impact load, said shock absorber element comprising:

at least one thin resilient shock absorbing pad, said at least one thin resilient shock absorbing pad having a first flat surface and a second flat surface opposite thereto;

at least two thin elongated strips, each of said at least two thin elongated strips having a first end interconnected with said at least one thin resilient shock absorbing pad and a second end disposed remote from said first end;

burr fastening means depending from said second end of one of said at least two thin elongated strips;

hook fastening means depending from said second end of the other of said at least two thin elongated strips, said hook and burr fastening means removably fastening said second end of one of said at least two thin elongated strips to said second end of the other of said at least two thin elongated strips when said at least two thin elongated strips are selectively wound about said at least one finger;

a flexible outer wrap casing means disposed about said at least one thin resilient shock absorbing pad and each of said first end of said at least two thin elongated strips, such as to surround the interconnection of said first ends of each of said at least two thin elongated strips and said at least one thin resilient shock absorbing pad; and

means for attaching said flexible outer wrap casing means to said at least one thin resilient shock absorbing pad and said first end of each of said at least two thin elongated strips whereby when said at least two thin elongated strips are wound about said at least one finger and fastened thereto, said at least one thin resilient shock absorbing pad fases in the same direction as the palm of the hand such that the shock of a hand held tool experiencing an impact load may be absorbed by the at least one thin resilient shock absorbing pad.

4,615,047

SHAMPOO CAPE

Kyusuke Matsuoka, Aichi, Japan, assignor to Redken Laboratories, Inc., Canoga Park, Calif.

Filed Oct. 31, 1985, Ser. No. 793,278

Int. Cl.⁴ A41B *13/10*

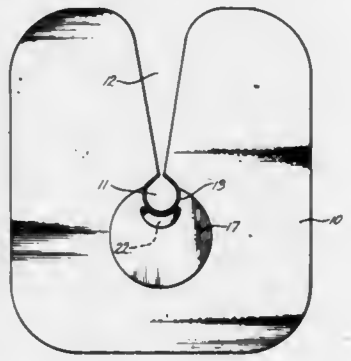
U.S. Cl. 2—50 **10 Claims**

1. A shampoo cape comprising:

a relatively larger sheet of waterproof flexible plastic having a generally C-shaped opening connected to one edge of the sheet by a slit for forming a body covering cape;

a relatively smaller sheet of waterproof flexible plastic having a generally U-shaped opening at one edge, the perimeter of the U-shaped opening being secured to the larger sheet along a portion of the perimeter of the C-shaped opening;

a generally crescent shaped neck cushion; and



a generally crescent shaped sealed pocket on the smaller sheet containing the cushion with its concave edge adjacent to the U-shaped opening.

4,615,048

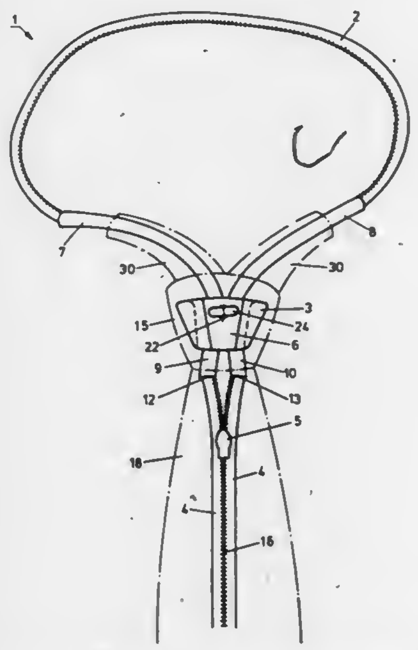
HOLDER FOR PRE-KNOTTED NECKTIES

Arthur Gasser, Bungertweg 23, Dübendorf 8600, Switzerland

Filed Apr. 17, 1985, Ser. No. 724,003

Int. Cl.⁴ A41D *25/08*

U.S. Cl. 2—153 **17 Claims**



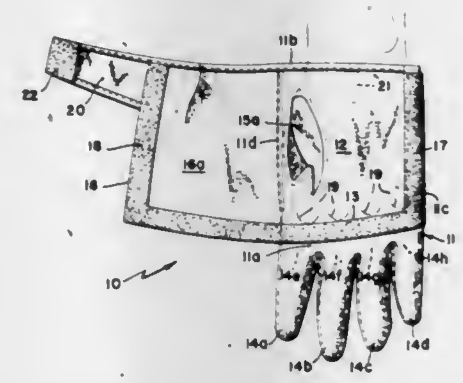
1. A holder for pre-tied neckties comprising a slide fastener having a slide; two slide-fastener tapes for being joined together by movement of the slide-fastener slide along the tapes; a supporting and shaping member for the necktie knot placed where the knot is to be formed;

two plastic tubes, one for each of the tapes, and one of the two slide-fastener tapes extends respectively through each of the tubes, the plastic tubes meeting at approximately a V shape toward the supporting and shaping member and being connected to the supporting and shaping member; the slide being freely movable with respect to the supporting and shaping member.

4,615,049

EASY ACCESS HAND COVERING

John K. Samelian, 751 Keokuk, Mendota Heights, Minn. 55120
Filed Jan. 10, 1986, Ser. No. 818,093
Int. Cl.⁴ A41D *19/00*
U.S. Cl. 2—163 **10 Claims**



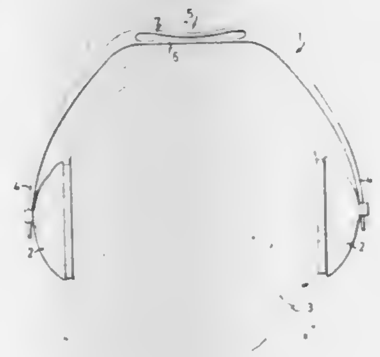
1. A hand covering for protecting a hand, including fingers, knuckles and a thumb, comprising:

(a) a hollow flexible body member having front portion and back portions, top and bottom ends, and a first and second sides, said bottom end defining a main opening through which the hand is inserted and removed;
(b) a finger portion cooperatively connected to said top end of said body member said finger portion defining an access opening, said access opening for receiving the fingers as they are inserted through said hollow member;
(c) a thumb portion cooperatively connected to said body member, said thumb portion defining an access opening, said access opening of said thumb portion for receiving the thumb as it is inserted through said hollow member; and
(d) means for releasably removing a substantial portion of said back portion, wherein a closeable auxiliary opening is defined, which, when said removing means is in an open position, said auxiliary opening extending from said main opening and extends proximate to the knuckles and also exposing said thumb access opening.

4,615,050

HEADBAND STRUCTURE FOR EAR COVERINGS

Bo G. Lönnstedt, Kvarnbergsvägen 23, S-14145 Huddinge, Sweden
Filed Jul. 2, 1985, Ser. No. 751,225
Claims priority, application Sweden, Jul. 4, 1984, 8403547
Int. Cl.⁴ A42B *1/06;* **H04R** *1/10;* **H04M** *1/05*
U.S. Cl. 2—209 **7 Claims**

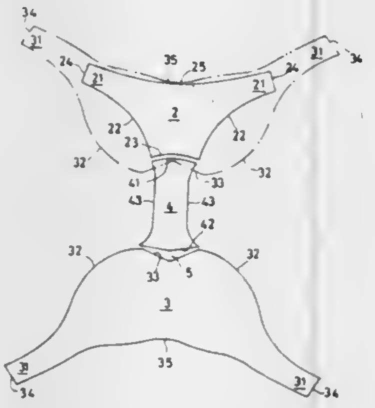


1. A stirrup-shaped support for ear protectors, having two end parts which are joined through a central intermediate part, the intermediate part having in at least one location thereon an inner elongated section which is intended to lie close to the head of the wearer, and an outer elongated section lying externally of and spaced from the inner section; the inner and outer sections being so configured that when moving the two end parts of the support away from each other in the in-use position, the inner section is subjected to a tensile force at the same time as the outer section buckles in toward the inner section whereby the vertical distance between the opposing surfaces of the said inner and outer sections is decreased; the buckling resistance of the outer section being such that the force required to move the support end parts away from one another is substantially constant within a predetermined range of distances between the end parts.

4,615,051

UNDERGARMENTS AND METHOD OF MAKING SAME

Kenji Hashimoto, Nishinomiya, Japan, assignor to Kenji Yabumoto, Hyogo, Japan, a part interest
PCT No. PCT/JP80/00278, § 371 Date Jul. 9, 1981, § 102(e) Date Jul. 9, 1981, PCT Pub. No. WO81/01357, PCT Pub. Date May 28, 1981
Continuation of Ser. No. 608,528, May 8, 1984, abandoned, which is a continuation of Ser. No. 285,085, Jul. 9, 1981, abandoned. This PCT application Nov. 11, 1980, Ser. No. 774,179
Claims priority, application Japan, Nov. 15, 1979, 54-159104[U]
Int. Cl.⁴ A41B *9/04*
U.S. Cl. 2—406 **10 Claims**



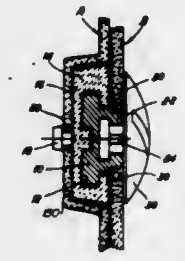
1. An undergarment comprising a front piece for covering the lower abdomen, a rear piece chiefly for covering the buttocks, and a connector piece interconnecting the front piece and the rear piece for covering the crotch, the front piece having a projection extending outwardly from each of its upper opposite side portions, the rear piece having a projection extending outwardly and obliquely upwardly from each of its upper opposite side portions, the rear piece having an upper edge curved inwardly toward a lower end thereof to the greatest extent on the center line of the rear piece, the projections of the front piece being stitched to the projections of the rear piece at their opposed ends, whereby the upper edge of the rear piece takes a position along a straight line horizontally when the undergarment is worn, the ends of the projections of each of the front piece and the rear piece are inclined upwardly toward the center line of the piece, and the length of each of the front piece and the rear piece between the ends of the projections thereof and the angle of inclination of the ends are so determined that when the undergarment is worn, the seams of the opposed ends incline upwardly forward as seen from the side.

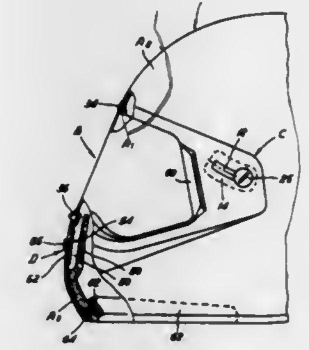
7. A method of making an undergarment by stitching together suitable portions a front piece for covering the lower abdomen, a rear piece chiefly for covering the buttocks and a connector piece for covering the crotch, the method comprising forming on the front piece a projection extending outwardly from each of its upper opposite side portions, forming on the rear piece a projection extending outwardly and obliquely upwardly from each of its upper opposite side portions, forming on the rear piece an upper edge curved inward to the greatest extent on the center line of the rear piece, stitching the projections of the front piece to the projections of the rear piece at their opposed ends, and stitching the rear piece and the connector piece together at adjoining portions thereof while stretching the rear piece toward the connector piece to the greatest extent along the center line of the rear piece and to a progressively lesser extent from the center line toward the opposite sides thereof to form an elongated depression on the center line of the rear piece and a bulged portion on each side of the depression.

4,615,052

HELMET WITH TILTING VISOR ESPECIALLY SUITED FOR SPORTS USE

Pier L. Nava, via Carnovali 100/c, Bergamo, Italy
Filed Jan. 23, 1984, Ser. No. 572,768
Claims priority, application Italy, Feb. 14, 1983, 19570/83
Int. Cl.⁴ A42B *1/08*
U.S. Cl. 2—424 **5 Claims**





1. A helmet arrangement comprising an outside shell, said shell having an opening in a front portion thereof, said opening engaging with a visor, said visor being movably attached by at least one sliding means to said outside shell for movement from an open to a closed position of the visor and vice versa, said sliding means comprising guiding means having an outside surface thereof attached to an outside surface of said shell and having an inside surface slidably receiving a sliding member, said visor being attached to said sliding member by attaching means, said guiding means having a substantially hollow central region receiving said sliding member to prevent movements of said sliding member within the guiding means in a direction substantially perpendicular to an axis of sliding of the sliding member; said visor being attached to said sliding member by attaching means, said sliding member having at least one engaging tooth, said guiding means having a plurality of receiving means on an inside surface thereof for close engagement with said tooth of the sliding member, and wherein said visor can be fixed in a predetermined position by locating said tooth within said receiving means.

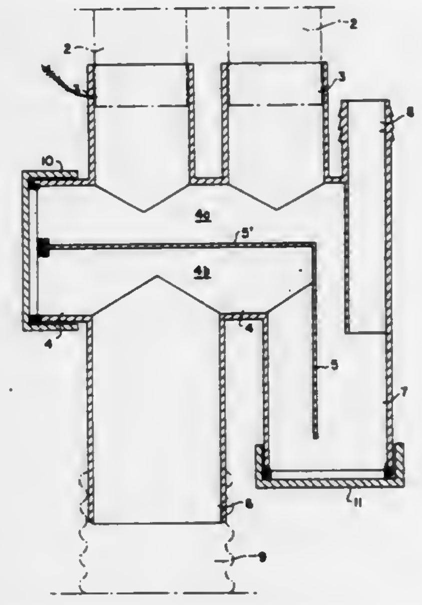
4,615,053

PIPE COUPLING WITH WATER SEAL BETWEEN THE SINKS OF A DRAIN BOARD AND THE DRAIN PIPE

Heikki Masalin, Espoo; Kalervo Männistö, Vantaa, and Eero Saarinen, Lahti, all of Finland, assignors to Oy All-Plast Ab, Helsinki, Finland
Filed Dec. 26, 1984, Ser. No. 686,159
Claims priority, application Finland, Dec. 28, 1983, 834815
Int. Cl.⁴ E03C *1/04, 1/22*
U.S. Cl. 4—191 **15 Claims**

1. A pipe coupling with a water seal between at least one sink of a drain board and a drain pipe said sink having a connecting tube, comprising

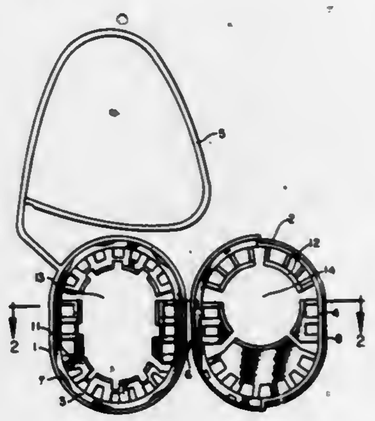
a single integral one piece tubular unit having
a collecting pipe portion divided in two by a partition having connected thereto at least one upper jointing pipe on one side of said partition for connection to said sink connecting tube,
a pipe element portion divided in two by a partition that is continuous with said collecting pipe partition, and forming a water seal, and
a lower jointing pipe portion adapted for connection to said drain pipe and lying on the opposite side of said partition from said upper jointing pipe portion.



4,615,054

BASKET FOR TOILET BOWL CLEANING BLOCKS

Herbert Buecheler, Erkrath, and Erich Tuerk, Langenfeld, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany
Filed Jun. 25, 1985, Ser. No. 748,527
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1984, 3423758
Int. Cl.⁴ E03D *9/02*
U.S. Cl. 4—231 **18 Claims**



1. A basket for at least one toilet bowl cleaning block consisting of a container designed to be arranged in a toilet bowl beneath its rim and through which water flows on flushing, said container having a clip for fastening to the rim of the toilet bowl, said container comprising two substantially identical baskets attached by a hinge and capable of being foldably, lockably attached together, each of said baskets comprising a ring having locking means capable of reciprocating with the ring having locking means of the other of said baskets whereby when folded about said hinge, said baskets are locked together with one of said rings attached to said clip, and resilent holding ribs extending substantially axially away from said ring, the free ends of said holding ribs terminating in a multiplicity of segments forming a resiliently-open block insertion funnel capable of receiving a toilet bowl cleaning block.

17. A basket for at least one toilet bowl cleaning block

consisting of a container designed to be arranged in a toilet bowl beneath its rim and through which water flows on flushing, said container having a clip for fastening to the rim of the toilet bowl, said container comprising two substantially identical baskets capable of being lockably attached together, each of said baskets comprising a ring having locking means capable of reciprocating with the ring having locking means of the other of said baskets whereby when mated together, said baskets are locked together with one of said rings attached to said clip, and resilent holding ribs extending substantially axially away from said ring, the free ends of said holding ribs in at least one of said baskets terminating in a multiplicity of segments forming a resiliently-open block insertion funnel capable of receiving a toilet bowl cleaning block.

4,615,055
ACCESSORY FOR A TOILET RECEPTACLE

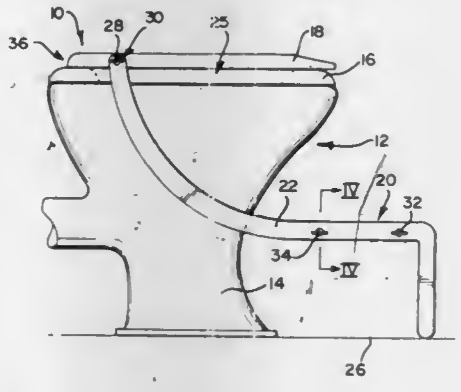
Hendrik P. Botes, P.O. Box 9330, Brentwood Park, 1505, South Africa

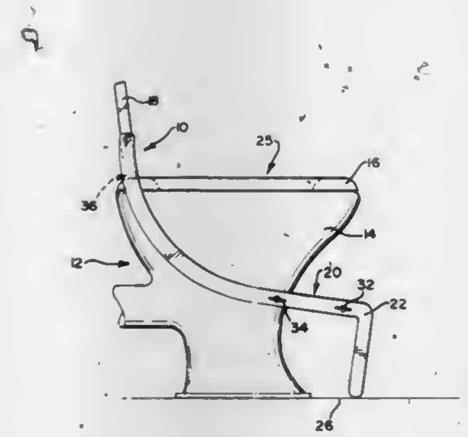
Filed Jun. 14, 1985, Ser. No. 745,328

Claims priority, application South Africa, Jun. 19, 1984, 84/4637

Int. Cl.⁴ A47K ***13/00***

U.S. Cl. 4—235 **9 Claims**





1. An accessory for a toilet receptacle, which includes
- an auxiliary seat, adapted to be positionable on the existing ring seat of a toilet receptacle and having an aperture therein which is smaller than the aperture through the ring seat;
- a platform for standing on, operatively positionable in front of the toilet receptacle spaced above the floor on which the receptacle is located; and
- a platform support means to which the platform is fixedly secured and which is pivotally secured to the auxiliary seat so that, when positioned on a ring seat of a toilet accessory, the auxiliary seat is pivotally displaceable between its operative position on the ring seat of the toilet receptacle and an inoperative position in which it is angularly displaced from the ring seat rendering the ring seat accessible for normal use.

4,615,056
FLUSHING CISTERN

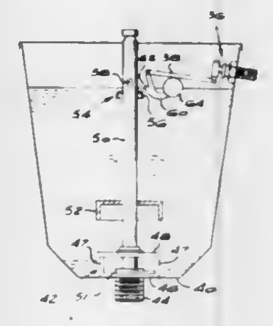
Rixwell S. Grant, Johannesburg, South Africa, assignor to Max Rudman, Johannesburg, South Africa

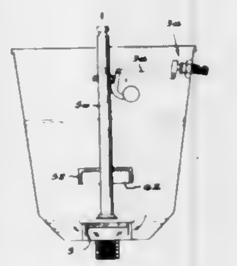
Filed Nov. 12, 1985, Ser. No. 797,169

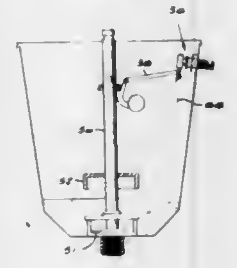
Claims priority, application South Africa, Nov. 20, 1984, 84/9029

Int. Cl.⁴ E03D ***1/36***

U.S. Cl. 4—366 **10 Claims**







1. A cistern flushing system which includes a flushing device locatable in a cistern having an inlet and an outlet, characterised in that the flushing device comprises a hollow tube, a closure member carried by the tube, the tube being movable in the cistern between open and closed positions in which the closure member is clear of, and seals the outlet respectively, means operable to move the tube to its open position so that flushing takes place from the cistern, buoyant means on the tube which act buoyantly to hold the tube in its open position until a predetermined volume of flushing liquid has excited the tank via said outlet and which thereafter loses buoyancy to permit the tube to return to its closed position, an inlet valve for controlling the inlet to the cistern and being of a type which has a control arm biased to a position of closure of the inlet valve, a float carried by a float arm pivoted to the control arm, a latch on the float arm, and a detent on the tube, the detent being arranged to engage the latch and move the float arm when the tube returns to its closed position, so moving the control arm to a position in which the inlet valve is open to admit replenishing liquid to the cistern, and the float being arranged to pivot to free the latch from the detent when the replenishing liquid has filled the cistern to a predetermined level with the result that the control arm is free to move to its biased position of closure of the inlet valve.

4,615,057
PROCESS FOR MOULDING HOLLOW ARTICLES OF SYNTHETIC PLASTIC MATERIAL HAVING AN EXTERNAL FINISHING LAYER APPLIED TO DURING THE MOULDING

Jean Favreau, Paris, France, assignor to Groupe Axinove, France

Filed Feb. 8, 1984, Ser. No. 578,196

Claims priority, application France, Feb. 10, 1983, 83 02151

Int. Cl.⁴ E03D ***11/00;*** **B29C** ***39/12***

U.S. Cl. 4—420 **18 Claims**

1. A process for molding a hollow synthetic plastic article which comprises coating the interior wall of a mold with a dry resin powder by spraying onto said wall which has been heated to a temperature of 130 to 180 degrees C. a dry powder aminoplast or phenolplast polycondensation resin whose particles gel in contact with said wall without running, introducing into the molding composition consisting essentially of a polyester resin, mineral filler and catalyst, positioning a counter-mold on the mold thus filled, hardening and polymerizng the contents of the mold by the application of heat and pressure, and recovering the resulting moulded article from the mold, whereby the aminoplast or phenoplast coating is solidly anchored to the molding composition substrate.

17. A sanitary wear article consisting essentially of a thermosetting resin based substrate having an aminoplast or phenoplast-based coating thereon prepared by the process of claim 1.

4,615,058
DELIVERY BED

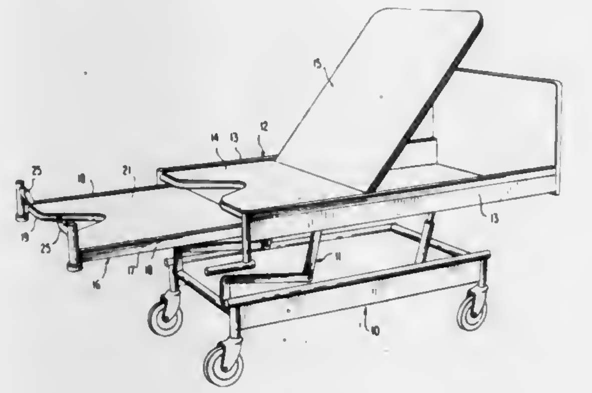
Mats Feldt, Liatorp, Sweden, assignor to Landstingens Inkopscentral Lic, Ekonomisk Forening, Solna, Sweden

Filed Oct. 10, 1985, Ser. No. 786,284

Claims priority, application Sweden, Jan. 28, 1985, 8500388

Int. Cl.⁴ A61G ***7/00***

U.S. Cl. 5—60 **3 Claims**



1. A delivery bed incorporating an undercarriage which supports a raisable and lowerable overlying bed structure through the agency of adjustable means, said overlying bed structure including a frame having side-pieces for supporting a seat part and a raisable back-rest, and further including a frame structure which can be slidably moved beneath the seat part and which incorporates an elongated plate-like element with side tubes intended to form a leg-support capable of being extended from its inwardly inserted position to a plurality of extended positions, characterized in that the side-pieces have mounted thereon a pair of rearwardly located support rollers and a pair of forwardly located support rollers, on which the side tubes of the leg-support are mounted for axial movement; in that the support rollers have guide flanges which guide the side tubes laterally; in that the rearward support rollers also have circular latching flanges which lie on opposite sides of the side tube in relation to respective guide flanges and roll against a guide bar firmly mounted on one side of the side tube; in that respective guide bars are provided on their bottom edge surfaces with a plurality of circle-segmental latching recesses capable of passing into latching engagement with respective latching flanges on the rearwardly located support rollers, the side tubes resting on cylindrical parts of the support rollers and the upper surfaces of the side tubes lying against support shoulders firmly connected to the side-pieces and located forwardly of the forward support rollers, such that load on the leg-support is taken-up on the rearwardly located support rollers and the support shoulders, wherewith adjustment to the position of the leg-support is effected by lifting the rearwardly located end part of the leg-support until the latching recesses release their engagement with the latching flanges and the leg-support can be displaced to a selected position, in which the latching flanges move into engagement with a further pair of latching recesses.

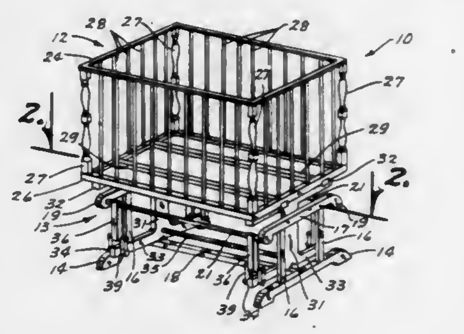
4,615,059
CRIB OR CRADLE FOR CHILDREN

Waldemar S. Darowski, 4613 Boulevard Pl., Des Moines, Iowa 50311

Filed Feb. 28, 1985, Ser. No. 706,822

Int. Cl.⁴ A61G ***7/10***

U.S. Cl. 5—108 **4 Claims**



1. A children's bed comprising:
(a) bed means for supporting a child;
(b) support means placeable between said bed means and a floor surface, and including a pair of transversely spaced, elongated rods extended longitudinally of and below said bed means; and
(c) means connected to both said bed means and said support means and movably mounting said bed means, and wherein said mounting means includes an endless first strap trained about each outer end of each elongated rod adjacent a corner of said support means, and a unit movably connected between each said first strap and said bed means.

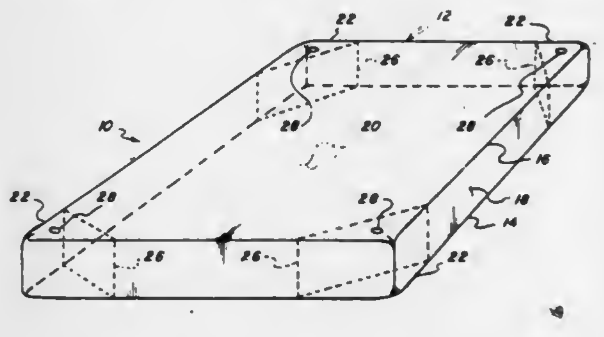
4,615,060
CORNER CHAMBERS FOR A FLOATATION SLEEP SYSTEM

Phillip J. Santo, 12 Mountain Rd., Rochester, N.Y. 14625

Filed May 3, 1985, Ser. No. 730,273

Int. Cl.⁴ A47C ***27/10***

U.S. Cl. 5—451 **7 Claims**



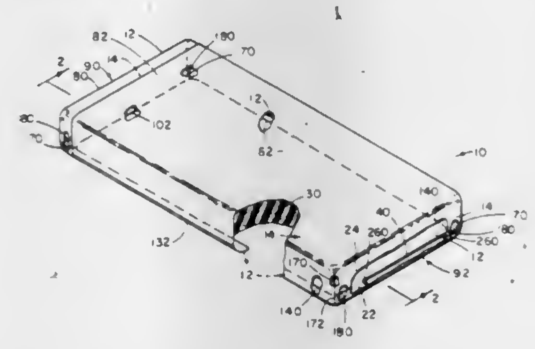
1. Floatation sleep system of a construction which facilitates applying of bedclothes thereto, said floatation sleep system comprising:
- a flexible bladder having opposed substantially planar rectangular surfaces and marginal perimeter surfaces intercon-

necting said opposed surfaces to form a chamber adapted to contain a fluid; and

a plurality of chambers located in the corners of said bladder chamber, said plurality of chambers respectively including a flexible, fluid impervious member connected to and extending between said opposed rectangular surfaces and connected to and extending between adjacent marginal perimeter surfaces, whereby said corner chambers are adapted to contain a relatively non-compressible medium for preventing fluid from entering the corners of said bladder chamber..

4,615,061
POCKETED AND INTERCONNECTED UPPER AND LOWER SHEETS

Diane M. Scott, 2003 S. 138th Ave. Cir., Omaha, Nebr. 68144
Continuation-in-part of Ser. No. 366,055, Apr. 6, 1982, abandoned. This application Apr. 20, 1984, Ser. No. 602,388
Int. Cl.^{4} A47G *9/04*
U.S. Cl. 5—497 **9 Claims**



1. A bed sheet assembly for reception on a box-shaped mattress having a horizontal top and a head end and a foot end which latter has a substantially vertical foot-end surface, comprising: an under sheet, an upper sheet positionable at least partially above and covering said under sheet, said under and upper sheets each having a foot-end section positionable in use on such a mattress vertically across said vertical foot-end surface of said mattress with the foot-end portion of said under sheet being between the mattress and said upper sheet, said under sheet and said upper sheet each having a top portion respectively attached to the tops of their vertically positionable foot-end sections for lying above a mattress, said under and upper sheets each having pockets adjacent lower corners of their foot-end portions capable of snugly receiving the lower corners of said foot-end of such a mattress, and a zipper attachment assembly attaching said respective ones of said vertically positionable foot-end sections together, said zipper attachment assembly comprising a horizontally positionable zipper attached at its sides respectively to first edges of zipper side sections of flexible material, said side sections each having second edges, said side sections being respectively attached adjacent their second edges respectively to said vertically positionable foot-end sections of said sheets, said zipper assembly being disposed along only said foot-end sections of said sheets, said sheets having sides the majority of the lengths of which are free of zipper means so as to make possible rapid disconnection of said upper and under sheets, said sheets each having elastic resilient means attached thereto and extending substantially along the terminal edge of the footend of the sheet whereby when said sheet is released said elastic tends to draw the terminal edge of the foot of each sheet into smaller pockets for fitting more tightly around respective corners of a mattress and whereby when said sheets are put on a mattress said elastic can be expanded for making the respective pockets temporarily large so as to be much more easily put on the mattress, the positions of attachment of said second edges of said side sections being such that at times when said upper sheet pockets are in engagement with said mattress foot-end lower corners said side sections will have slack in them and will not be taut whereby a tugging on said upper sheet toward the head end of said mattress will put stress on said pockets of said upper sheet rather than putting stress on said zipper and its connections to said sheets.

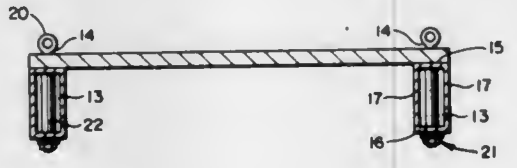
4,615,062
PROCESS OF FORMING A KNITTED CURING MATERIAL

Pietro Lovatto, and Maria de los Angeles Tello, both of Ignacio Arteaga No. 31, Circuito Navegantes, Ciudad Satélite, 53100, Naucalpan de Juárez, Estado de México, Mexico
Filed Jun. 14, 1985, Ser. No. 744,922
Int. Cl.^{4} D06B *3/02*
U.S. Cl. 8—149.3 **3 Claims**

1. A method for obtaining a hydrofiltering mesh suitable for use for covering a portion of the body, comprising forming thread of oleofinic, polyamide and polyester textile fibers, making the thread in a mesh knitting, and subjecting the knitting to a thermic finishing by placing the knitting within an autoclave and injecting the autoclave by aspersion with a water steam having a pH from 5 to 6, and at a pressure of 1.5 kilograms per square centimeter and at a temperature of 130° C. for 30 minutes.

4,615,063
BOX GIRDER AND SUSPENSION ASSEMBLY

Carl R. Rolen, Box A54, Pataskala, Ohio 43062
Filed Nov. 13, 1984, Ser. No. 670,934
Int. Cl.^{4} E01D *11/00*
U.S. Cl. 14—18 **2 Claims**



2. A box girder and suspension assembly comprising, in combination:

(a) a hollow, elongated box girder having at least one pair of generally transversely aligned openings formed in relatively opposing, spaced apart wall portions thereof, one of said openings being larger than the other;

(b) a suspension member extending through and between the openings in the opposing wall portions of the girder and outwardly therefrom;

(c) a load-distributing sleeve carried on the suspension member generally within the girder, said sleeve being sized to pass through the larger opening and to span the smaller opening in the girder; and

(d) stop means carried on the suspension member outwardly of and in spanning relation to the larger opening of the girder.

4,615,064
LATERAL STREET CLEANING BRUSH

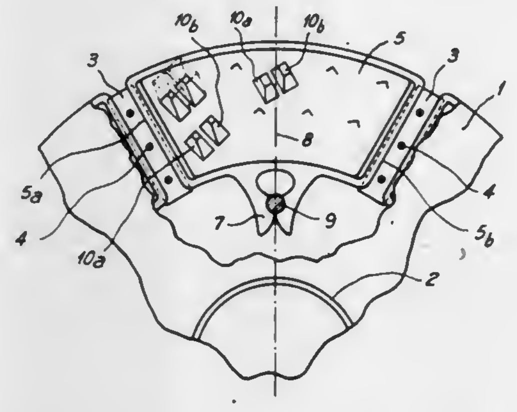
Pierre L. M. Alvin, 2, avenue du Mont-Saint-Jean, F 066000 Antibes, France, assignor to Pierre L. M. Alvin, Antibes, France
Filed Aug. 7, 1984, Ser. No. 638,646
Claims priority, application France, Aug. 8, 1983, 83 13030
Int. Cl.^{4} A46B *13/02*
U.S. Cl. 15—180 **5 Claims**

1. A street-cleansing brush for lateral sweeping, comprising:

a circular support plate adapted to be mounted to rotate about a substantially vertical axis;

a plurality of fiber-carrying supports in the form of ring sectors each having opposite radially extending edges; and

means for removably coupling and retaining each of said sectors to and under said plate, said coupling and retaining means for each sector comprising two circumferentially spaced radially extending slides fixed to the underside of said plate and underlying and overlapping said opposite radially extending edges of the corresponding sector and clipping elements fixed respectively on said plate and the corresponding sector and interengageable on forceful radial inward movement of said sector relative to said plate to retain said sector against radial outward movement relative to said plate due to centrifugal force.



4,615,065
NATURAL FIBER MOP

Peter G. Demetriades, 601 Wakefield Ave., Henderson, N.C. 27536
Filed Sep. 7, 1984, Ser. No. 648,248
Int. Cl.^{4} A47L *3/20*
U.S. Cl. 15—229 A **8 Claims**

1. A natural fiber mop that possesses improved liquid retention properties without conventional breaking-in or rinsing comprising:

a plurality of natural fibers secured together to form said mop,

said fibers retaining substantially all the natural oils inherent in said fibers,

said fibers having a coating of up to 4.0 percent by weight of a surfactant per weight of said fibers, whereby,

said mop while retaining substantially all the natural oils in said fibers being easily wettable with aqueous fluids.

4,615,066
BACKSCRUBBER AND/OR BACKSCRATCHER WITH REMOVABLE SPONGE ELEMENT

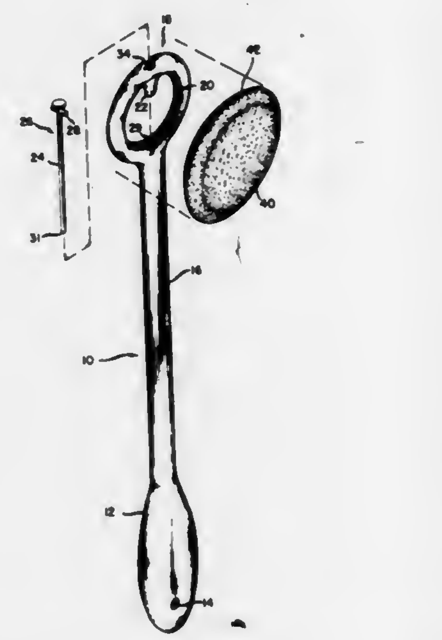
Aldo Colognori, 69 Lawton Ave., Cliffside Park, N.J. 07010
Filed May 20, 1985, Ser. No. 735,617
Int. Cl.^{4} A47L *1/06*
U.S. Cl. 15—244 R **10 Claims**

1. A backscratcher and backscrubber apparatus having a removable and replaceable sponge member, this apparatus for use with water and the like, said backscratcher and backscrubber apparatus including:

(a) a molded handle member of plastic having a stem portion substantially impervious to water and/or soap used therewith, this handle having an enlarged head portion in which there is provided and formed a through aperture providing a retaining ring-like or rim portion which is integral with a handle portion extending from this rim portion, this aperture adapted to receive and retain a sponge configurated and sized to be manipulated into a retaining position and condition within the aperture;

(b) a first guideway formed in said rim portion, this guideway being a substantially circular bore whose axis passes substantially through the axis of the aperture;

(c) a chamfer and retaining bore diametrically opposite the first guideway and in alignment therewith and providing a second guideway at the opposite side of the aperture;

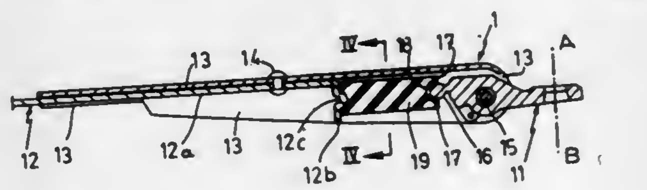


(d) a sponge-retaining pin of a length greater than the diameter of the through aperture in the head, this pin having a shank portion that is sized to be slideable in the first guideway and in the retaining bore providing the second guideway, and

(e) means for retaining said pin in an inserted position when and as the shank of the pin is passed through the inserted sponge and for releasing the pin when it is desired to remove the sponge for repair or replacement.

4,615,067
WIPER ARM

Christian Beneteau, Gorcy, France, assignor to Champion Spark Plug Europe S.A., Virton, Belgium
Filed Nov. 13, 1984, Ser. No. 670,631
Claims priority, application France, Nov. 17, 1983, 83 18288
Int. Cl.^{4} B60S *1/32*
U.S. Cl. 15—250.2 **8 Claims**



1. In a wiper arm for a wiper blade, said arm having a mounting head, means for attaching the mounting head to a drive member, an arm extension carried by the mounting head, said arm extension having a top wall and a portion depending substantially perpendicular to the top wall, and means for mounting the wiper blade to the arm extension, the improvement comprising:

an elastomer member; and

means mounting the elastomer member between the mounting head and the substantially perpendicular portion of the arm extension, the elastomer member being under compression and biasing the arm extension towards a surface to be treated by the wiper blade.

4,615,068

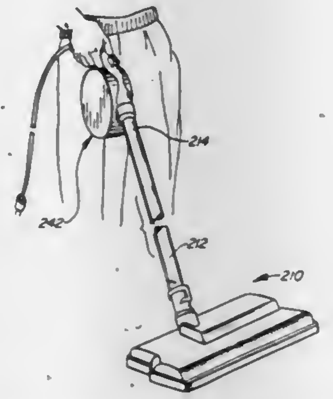
CONVERTIBLE VACUUM AND POWDER CARPET CLEANER

William J. Martin, Watervliet; Keith E. Carr, Lincoln Township, Berrien County, and Edward C. Peterson, St. Joseph Township, Berrien County, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Division of Ser. No. 513,332, Jul. 13, 1983, Pat. No. 4,549,328. This application Sep. 12, 1985, Ser. No. 775,379

Int. Cl.^{4} A47L *5/36*

U.S. Cl. 15—323 14 Claims



1. In a vacuum cleaner apparatus including a nozzle, a wand opening at one end to within said nozzle for moving the nozzle over a floor surface to be cleaned, said wand being adapted to conduct to a canister having suction creating means and first power supply means dirt picked up by the nozzle as a result of suction applied to said nozzle through said wand by the canister suction means, a powered brush rotatably carried by the nozzle, end power transmitting means carried by the wand and adapted to be removably connected to the canister first power supply means for causing selective operation of the powered brush and adapted to be connected through said first power supply means to a power source when suction is applied to the nozzle, improved means for selectively preventing transfer of dirt to said wand from said nozzle while concurrently permitting energization of said powered brush by said power transmitting means to effect a working of powder cleaner lying on said floor against the floor surface by said brush, said improved means comprising:

a shroud;

means for mounting said shroud movably within said nozzle to extend partially about said brush and block said wand one end; and

second power supply means removably mounted to said wand adjacent the end of the wand opposite said one end in electrically connected association with said power transmitting means for operating said powered brush from a power source when said wand is disconnected from the canister.

4,615,069

APPARATUS FOR COLLECTING DEBRIS

Brian Henning, Tetbury, England, assignor to Black & Decker Inc., Newark, Del.

Filed Oct. 19, 1984, Ser. No. 663,059

Int. Cl.^{4} A47L *5/14, 5/24, 9/08, 9/14*

U.S. Cl. 15—326 14 Claims

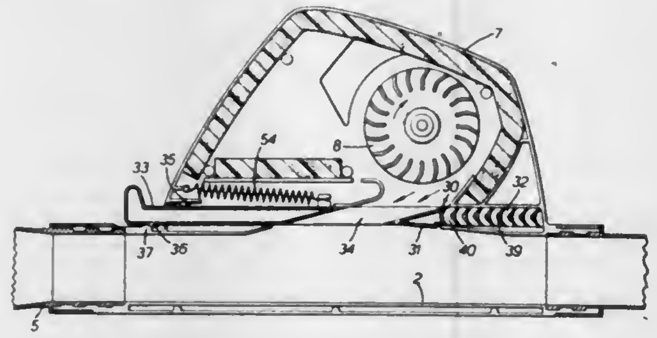
1. A debris collecting apparatus, including:

a debris conduit one end of which is an operating end and the other end of which is a collecting end;

an impeller arranged to discharge air into the conduit through an opening therein in a region where the conduit is devoid of any sudden and substantial change in direction;

a switch arrangement to switch the air flow between a first "vacuum" flow in which the air discharged from the impeller induces an air flow in the debris conduit from the operating end to the collecting end and a second "blowing" flow in which air is discharged from the impeller through the operating end;

the switch arrangement comprising an air flow guide movable between a first position corresponding to "vacuum" flow in which the air discharged from the impeller induces an air flow in the debris conduit from the operating end to the collecting end and a second position corresponding to "blowing" flow in which air is discharged from the impeller through the air flow guide into the conduit and is diverted by the guide to flow towards the operating end of the conduit;



the air flow guide comprising one or more vanes carried on a member slidably mounted in a wall of the conduit, said one or more vanes defining at least one passage through said member, said passage communicating with said opening in said second position with said one or more vanes diverting the air discharged from said impeller towards and to said operating end; and

said member having an aperture therethrough at a location adjacent said passage, said aperture communicating with said opening in said first position and allowing the air discharged from said impeller to flow towards and to said collecting end.

4,615,070

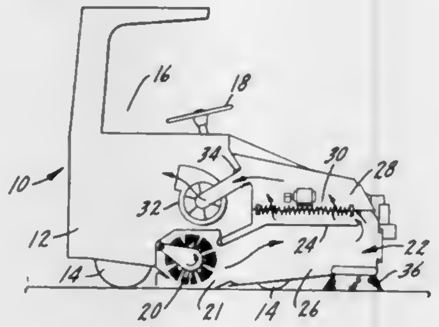
SWEEPER WITH SPEED CONTROL FOR BRUSH AND VACUUM FAN

Sherman B. Frederick, Minneapolis; Charles E. Grimes, Bloomington, and Paul W. Kimzey, St. Louis Park, all of Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed Aug. 27, 1984, Ser. No. 644,857

Int. Cl.^{4} E01H *1/04*

U.S. Cl. 15—339 27 Claims



1. A power-driven sweeper having two elements for moving material, such as dirt, paper, etc. from a surface to be cleaned into an opening of a generally enclosed trash receiving hopper, one element being a main horizontal rotary brush adapted to be rotated opposite the hopper opening and the other being a vacuum fan constructed and arranged to exhaust air from the enclosed hopper so that dust created by the main brush will tend to be drawn into the trash hopper, means for rotating the brush and operating the vacuum fan the majority of the time that the sweeper is in use at what may be considered a normal operating speed, and means for increasing the speed of operation of at least one of the elements from time to time so as to cuase difficult-to-sweep material to be moved farther into the trash hopper.

4,615,071

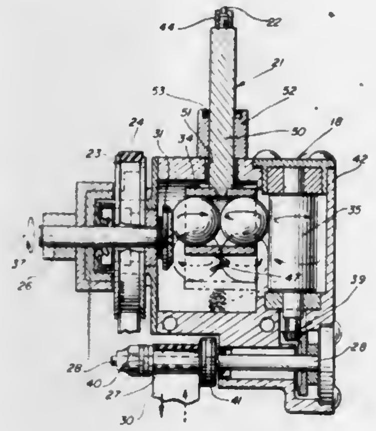
VACUUM CLEANER POWER DRIVE

Edwin H. Frohbieter, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton, Mich.

Filed Oct. 22, 1984, Ser. No. 663,738

Int. Cl.^{4} A47L *9/00*

U.S. Cl. 15—340 19 Claims



1. In a vacuum cleaner having a nozzle, wheels rotatably mounted to the nozzle for movement of the nozzle over a surface to be vacuum cleaned, and a handle upstanding from the nozzle, the improvement comprising:

driver means;

a variable transmission comprising a variable speed ball disc drive connected between said driver means and said wheels for adjustably driving said wheels, said transmission being selectively arranged in a first position to prevent movement of said wheels, in a second position permitting free movement of said wheels independent of said driver means, and in intermediate positions intermediate said first and second positions providing a variable speed drive of said wheels; and

manually operable control means carried by said handle for selectively adjusting said transmission.

4,615,072

CABINET HINGE

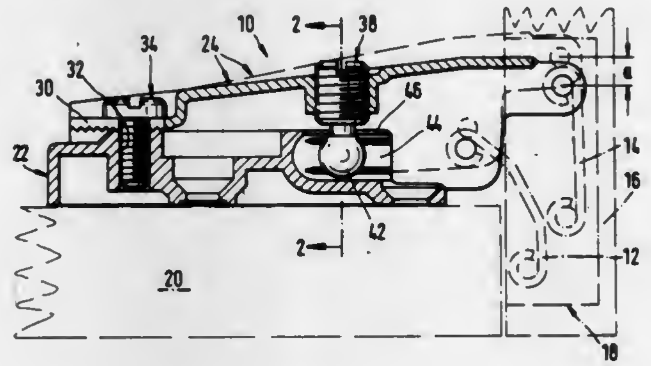
Karl Laütenschläger, Jr., Reinheim, Fed. Rep. of Germany, assignor to Karl Lautenschlager KG Mobelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed Jan. 10, 1984, Ser. No. 569,737

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1983, 3302312

Int. Cl.^{4} E05D *7/04*

U.S. Cl. 16—238 6 Claims



1. In a hinge: an elongated mounting plate to be fastened to a supporting wall of a piece of furniture and having an upper face facing away from the supporting wall when the plate is mounted thereto, and also having a threaded bore in said upper face adjacent one end of the mounting plate and perpendicular to said upper face, an elongated supporting arm mounted for longitudinal adjustment on said mounting plate, said supporting arm having an upper face to face away from the supporting wall and a first longitudinal end area with an open-ended first longitudinal slot, a mounting screw screwed into said threaded bore of said mounting plate and having a shaft passing through said first slot, said supporting arm having a second end area with a tap therethrough extending perpendicular to the upper face of said mounting arm, said mounting plate having an open-ended second longitudinal slot at an end area adjacent said tap, a screw screwed into said tap and having connected thereto a holding block in the form of a ball received in said second slot, said second slot having a narrow longitudinal mouth in said upper face, and underneath said mouth, a portion of circular cross section for matingly accommodating said ball and for securing said ball from being lifted out of said second slot towards said supporting arm, the diameter of said circular cross sectional portion being slightly larger than the diameter of the ball, and a plurality of longitudinal ribs running in the longitudinal direction of said portion and projecting from the wall of said portion, said ribs having a height approximately equal to the radius of said portion minus the radius of said ball to engage and center the ball in said second slot.

4,615,073

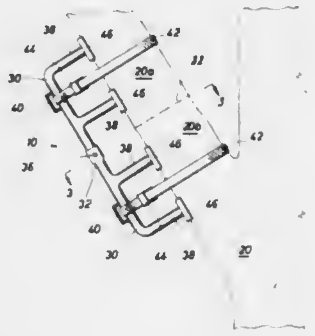
TREE TOPPING DEVICE HAVING HINGED, ADJUSTABLE CLAMPING MEMBERS

Raymond L. Haak, Rte. 3, Box 293, Alta Loma, Tex. 77510

Filed Aug. 8, 1984, Ser. No. 638,710

Int. Cl.^{4} E05D *5/02*

U.S. Cl. 16—253 9 Claims



3. An apparatus useful in cutting a large branch from a tree by preventing the uncontrolled separation and fall of the severed portion of said branch from the line of severance with the standing portion of said tree, comprising:

a first, elongated, structurally rigid member;

first means for gripping said branch extending from said first rigid member, said first gripping means capable of gripping said branch at a location on a first side of said line of severance in a rigid position relative to said first rigid member;

a plurality of first means for displacing said first rigid member from said branch at a location on said first side of said line of severance, said first displacing means extending from said first member and being longitudinally disposed along said first member for cooperation with said gripping means for rigidly engaging said branch at a plurality of contact points;

a second, elongated, structurally rigid member;

second means for gripping said branch extending from said second rigid member, said second gripping means capable of gripping said branch at a location on a second side of said line of severance in a rigid position relative to said second rigid member;

a plurality of second means for displacing said second member from said branch at a location on said second side of said line of severance, said second displacing means extending from said second member and being longitudinally disposed along said second member for cooperation with said second gripping means for rigidly engaging said branch at a plurality of contact points; and

hinge means comprising a hinge pin for permanently joining together said rigid members at one end thereof, said rigid members joined in a position so that said hinge means permits relative movement of said first and second rigid members only in a single plane and wherein said first and second displacing means always remain in said single plane.

4,615,074
FOUR-JOINT CABINET HINGE HAVING AN ENLARGED OPENING ANGLE

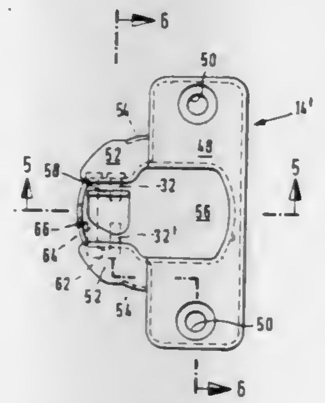
Karl Laütenschläger, Jr., Reinheim, and Gerhard Lautenschläger, Brensbach, both of Fed. Rep. of Germany, assignors to Karl Lautenschlager KG, Mobelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed Jan. 11, 1985, Ser. No. 690,648

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1984, 3405343

Int. Cl.⁴ E05D *15/32*

U.S. Cl. 16—370 **3 Claims**



1. A hinge for use in a cabinet and capable of opening angles of more than about 105° between an open position and a closed position, comprising:

a carcass-related part forming a supporting arm, for fastening on a mounting plate on a wall of a cabinet,

a door-related part forming a cup of thin sheet metal, to be sunk in a recess in a door leaf of a cabinet, and having two opposite cup walls,

a first hinge link having one end adjacent said supporting arm, and a second end in said cup, said first hinge link being provided at least at said second end thereof, with two opposite side walls,

a second hinge link having one end adjacent said supporting arm, and a second end in said cup between said side walls,

first pivot means pivotally connecting said one ends of said two links to said supporting arm,

and second pivot means pivotally connecting said other ends of said two links to said cup, and including two relatively short pivot pins extending through aligned bores in said cup walls and in said side walls from outside said cup into the interior of the cup, at least one of said pins having a relatively long leg extending across said cup through aligned bores in said two cup walls and in said two side walls, and an intermediate leg connecting said long leg to said at least one pin and extending outside one of said cup walls, said cup having a bottom, at least one tab punched from the material of said bottom and extending at right angles into the interior of the cup, said at least one tab having a bore in alignment with bores in said cup walls and in said side walls, one of said pivot pins projecting into the interior of the cup being engaged in said bore in said tab.

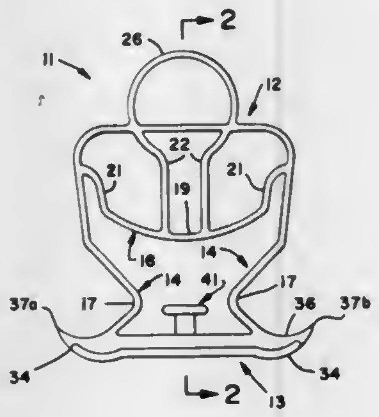
4,615,075
POULTRY LEG RETAINER

Anthony J. Volk, P.O. Box 943, Turlock, Calif. 95380

Filed May 8, 1985, Ser. No. 731,881

Int. Cl.⁴ A22C *21/00*

U.S. Cl. 17—1 S **7 Claims**



1. An improved poultry retainer comprising

a limitedly flexible bridle having a plurality of integral strips adapted to fit over and about the hocks of poultry, and

a substantially rigid beam having upturned ends and dimensioned to fit into kidney holes of poultry with integral means interconnecting said bridle and beam,

whereby said retainer is adapted to be anchored in an eviscerated poultry carcass and to engage the legs of such poultry to retain same tightly against the poultry body.

4,615,076
KNEADED FOOD MOLDING APPARATUS OF THE ROTARY TYPE

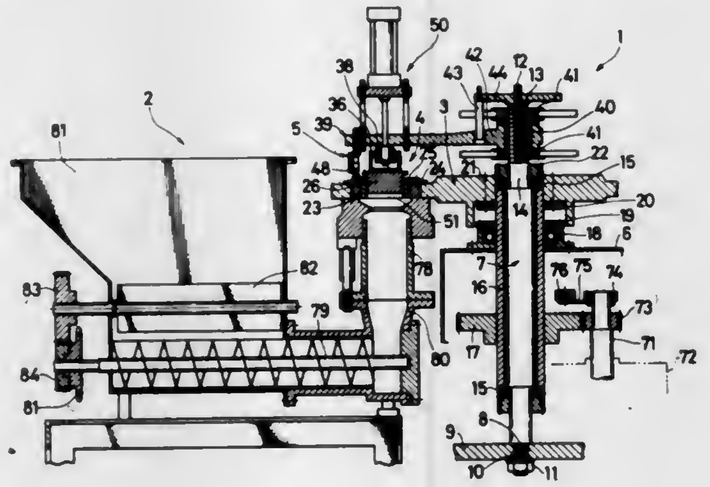
Katsusuke Shimokawa, Moriguchi, Japan, assignor to Sun Plant Industry Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 482,717, Apr. 7, 1983, abandoned. This application Jan. 9, 1985, Ser. No. 689,961

Claims priority, application Japan, Jun. 18, 1982, 57-105851

Int. Cl.⁴ A22C *7/00*

U.S. Cl. 17—32 **2 Claims**



1. A kneaded food molding apparatus of the rotary type comprising:

at least one molding means each of which includes a cylindrical hollow mold member with an inner surface, a hollow intermediate cylindrical member with an outer and inner surface slidably fitted into the hollow portion of said hollow mold member such that said outer surface of said intermediate member is in contact with said inner surface of said hollow mold member, said intermediate member having in said inner surface thereof at least one longitudinal groove, and a round actuating shaft member slidably fitted into the hollow portion of said intermediate cylindrical member, having attached thereon a first actuating mechanism;

a rotary plate having in the peripheral portion thereof a plurality of holes for mounting said at least one molding means;

a stationary shaft having a cylindrical rotary shaft supported by bearing means fitted on said stationary shaft for supporting said rotary plate in a manner such that said plate is rotatable around a center of said rotary plate; and

a support member having a second actuating mechanism for actuating said intermediate cylindrical member and said actuating shaft member of said molding means by rotation of said rotary plate, said support member being located above said rotary plate and secured to said stationary shaft.

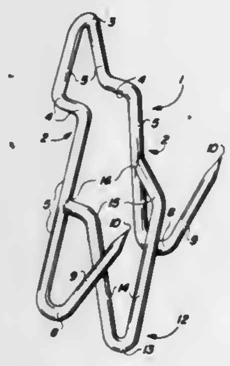
4,615,077
GAME SKINNING AID

Jay W. Beebe, Rte. 3, Box 190M, West Monroe, La. 71291

Filed Jan. 3, 1986, Ser. No. 816,153

Int. Cl.⁴ A22B *1/00*

U.S. Cl. 17—44.2 **31 Claims**



1. A game skinning aid for supporting game comprising a leg support shaped to define an apex bend, said leg support defining a pair of legs extending from said apex bend; a support bend provided in each of said legs, said support bend spaced from said apex bend and defining a pair of contact segments projecting in spaced, angular relationship from said support bend, respectively; a head support shaped to define a head support bend spaced from said apex bend, and a pair of arms extending from said head support bend toward said apex bend, said arms secured to said legs at points of attachment between said apex bend and said support bend, respectively.

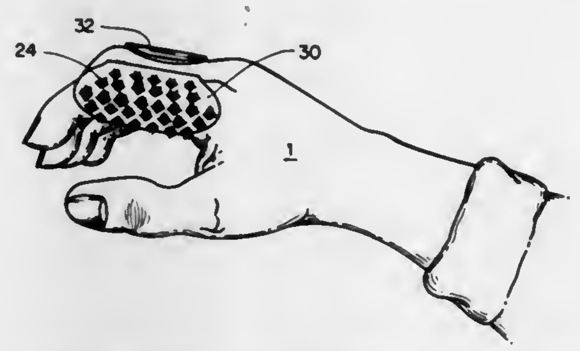
4,615,078
GRIPPING TOOL

Kurt P. Teich, 5816 N. Sheridan Rd., Chicago, Ill. 60660

Filed May 13, 1985, Ser. No. 733,064

Int. Cl.⁴ A22C *25/06;* **A47G** *35/00*

U.S. Cl. 17—66 **10 Claims**



1. A gripping tool for gripping fish to assist in the filleting process, said tool adapted for inter digital placement over the forefinger and a second finger of a user's hand comprising:

a generally S-shaped body having an upper hooked portion adapted to overlie said forefinger and a lower hooked portion adapted to overlie said second finger and a first side surface and an opposite side surface; and

gripping means provided on said first side surface of said upper hooked portion for retaining an object which is pressed against said gripping means.

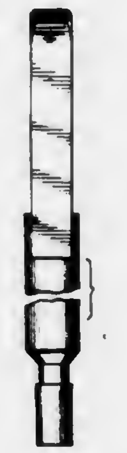
4,615,079
FISH CLEANER AND SCRAPER

Henry H. Chartrand, Star Route 1302-28, SM/C Rd., Sitka, Ak. 99835

Filed Aug. 20, 1985, Ser. No. 767,470

Int. Cl.⁴ A22C *25/02*

U.S. Cl. 17—66 **3 Claims**



1. A hand held implement comprising a fish cleaning and scraping apparatus in combination with a hose connected to a source of pressurized water; wherein the apparatus consists of:

a handle portion comprising an elongated hollow cylindrical member; having one end dimensioned to frictionally engage the outlet of said hose; and

a scraper blade portion comprising an elongated thin and relatively narrow blade element connected to the other end of the said hollow cylindrical member, so as to form an elongated closed blade loop, wherein the blade loop openings form elongated opposed ports for the pressurized water.

4,615,080
METHOD AND APPARATUS FOR MAKING A WEB FROM STAPLE FIBERS

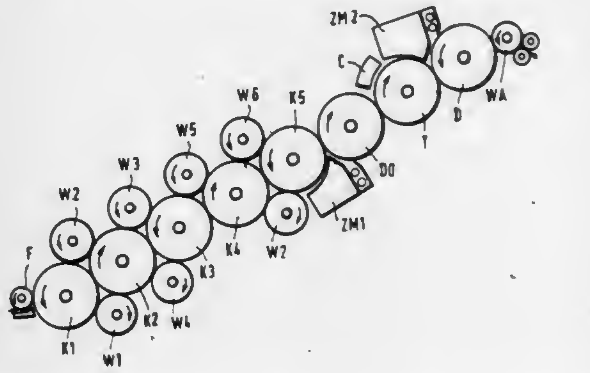
Walter Wirth, Duelmen, Fed. Rep. of Germany, assignor to Hergeth Hollingsworth GmbH, Duelmen, Fed. Rep. of Germany

Filed Dec. 19, 1984, Ser. No. 683,534

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1983, 3346327

Int. Cl.⁴ D01G *15/50*

U.S. Cl. 19—106 R **8 Claims**

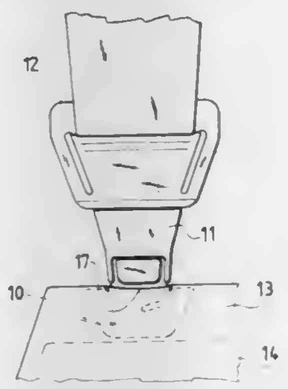


1. In a method for forming a random fibrous web from staple fibers, including disentanglement of the constituent fibers of fibrous flow and forming a web thereof wherein said fibers are aligned substantially axially parallel to one another through a

carding action produced by carding means, and then randomizing the axial orientation of the fibers to provide a more isotropic web structure, the improvement comprising both carding and effecting jamming and randomizing of the fibers on the same carding means.

4,615,081
ATTACHMENT DEVICE

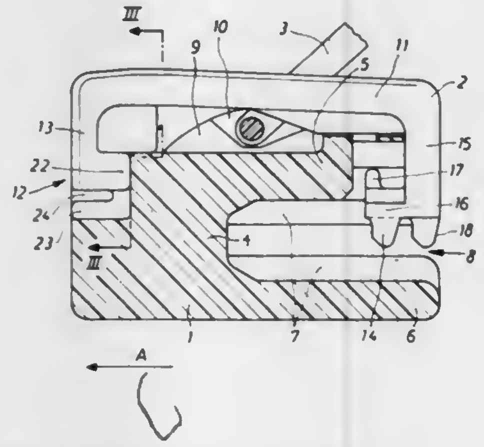
Per-Olof Lindahl, Västra Frölunda, Sweden, assignor to AB Fixfabriken, Gothenborg, Sweden
Filed Jun. 1, 1984, Ser. No. 616,136
Claims priority, application Sweden, Jun. 2, 1983, 8303123
Int. Cl.⁴ A44B *1/00*
U.S. Cl. 24—90 R **2 Claims**



1. A fastener having a mounting device receptive into a slot-shaped opening of predetermined length in a piece of garment, said device comprising:
- (a) an attachment portion secured to the fastener and having a neck portion of plate-shaped configuration and of a dimension such that it is tightly surrounded by the margins of the slot-shaped opening when the attachment portion is in an operative position with said neck-portion disposed in said slot-shaped opening;
- (b) a fixing member integral with said attachment portion and of plate-shaped configuration generally coplanar with the neck portion and of a length in a direction cross-wise of said neck longer than the length of the slot-shaped opening and defining wings for projecting beyond both ends thereof; and
- (c) a slot in one of said wings extending from the edge of the wing adjacent to said neck portion into said one wing, and angled toward the other of said wings, whereby both wings and the open end of said slot, in the operative position of said attachment portion, would extend beyond the slot-shaped opening in the garment, the inner end of said slot being a contact portion on an edge of said fixing member and being a guide for engaging an end of the slot-shaped opening, said contact portion being engageable with the end of the slot-shaped opening during insertion of said fixing member into the slot-shaped opening, said fixing member having such an extent that at least at one point along said contact portion there is a distance between said one point and an extreme end point of said other wing which, at a maximum, is equal to the length of the slot-shaped opening, whereby said fixing member is placeable through the margins of the slot-shaped opening by a rotational movement of said fixing member in its one single plane.

4,615,082
SLIDER FOR A SLIDE FASTENER

Hans Horlacher, Weinbergstrasse 41, 8134 Adliswil, Switzerland
Filed Jun. 17, 1985, Ser. No. 745,207
Claims priority, application Switzerland, Jun. 21, 1984, 3011/84
Int. Cl.⁴ A44B *19/30*
U.S. Cl. 24—418 **7 Claims**

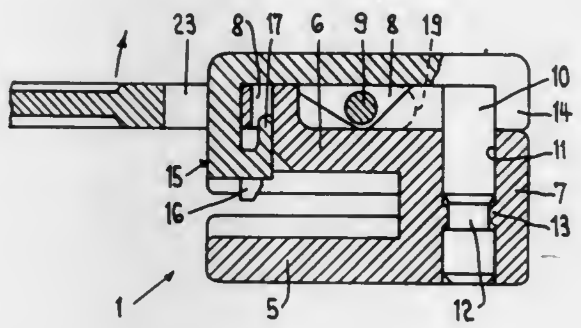


1. A slider for a slide fastener, comprising
- (a) a slider body member, including
  - (1) upper and lower portions integrally interconnected by a web section extending therebetween; and
  - (2) flange portions formed at either side of said body upper portion to define a Y-shaped passage channel adapted to receive the slide fastener, said body member further containing at least one recess arranged above said passage channel in the front portion of said body member relative to the closing direction of sliding movement thereof, said recess having a T-shaped configuration and including a first recess section extending parallel to said passage channel and a second recess section extending perpendicular to said passage channel;
- (b) a locking member including at one end at least one tooth portion and at the other end a locking portion, said tooth and locking portions being integrally connected by a web section therebetween, said tooth portion being adapted for engagement between adjacent locking members of a slide fastener when in a rest position, said locking portion including a first section arranged within said first recess section and a second section arranged within said second recess section for connecting said locking member with said body member, said locking portion second section containing a slot beneath said locking portion first section and parallel to said body member passage channel to define a joint affording pivotal movement of said locking member about an axis extending parallel to said passage channel; and
- (c) a drawing flap connected with said body member and projected under a central portion of said locking member web section for lifting said locking member tooth portion out of engagement between adjacent locking members.

4,615,083
LOCKING SLIDER FOR SLIDE FASTENER AND METHOD OF PRODUCTION THEREOF

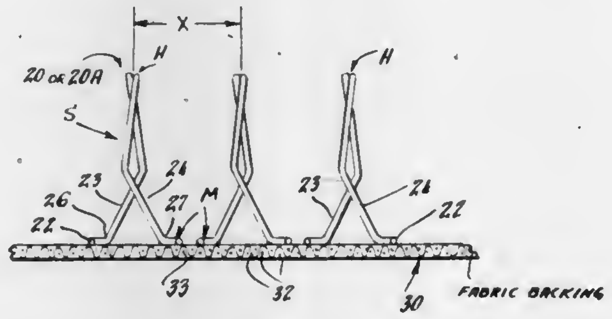
Friedrich Mayerhofer, Lengnau, Switzerland, assignor to Speedomatic AG, Lengnau, Switzerland
Filed Jun. 13, 1985, Ser. No. 744,231
Claims priority, application European Pat. Off., Jun. 29, 1984, 84810324
Int. Cl.⁴ A44B *19/30*
U.S. Cl. 24—418 **9 Claims**

1. A locking slider for slide fastener formed of a plastic material and comprising:
- a single piece slider body, a springable bow including a locking means, and a pull tab fastened by said bow to the slider body, said slider body comprising a lower and an upper slider plate connected by a connecting separator having a hole, said upper slider plate including a bearing for receiving an end of said pull tab, wherein said bow extends over said bearing, is integrally formed with said locking means and includes a fastening pin, said fastening pin being snap retained in the hole in said connecting separator.



4,615,084
MULTIPLE HOOK FASTENER MEDIA AND METHOD AND SYSTEM FOR MAKING

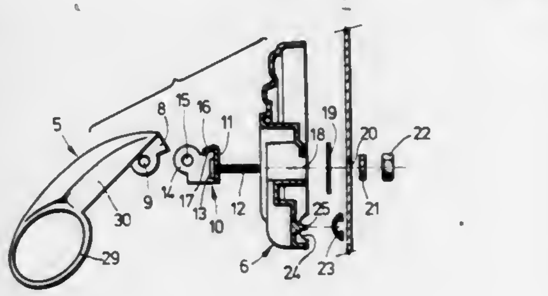
George H. Erb, Cuttingsville, Vt., assignor to Erblok Associates, Charlottesville, Va.
Filed Aug. 21, 1984, Ser. No. 643,001
Int. Cl.⁴ A44B *18/00*
U.S. Cl. 24—442 **42 Claims**



29. A multiple-hook, fastener medium for providing hook-like gripping engagement with an opposed area containing multiple accessible apertures into which the hooks can become engaged by bringing said fastener medium into contact with said opposed area comprising:
- an area of backing,
- a plurality of spaced parallel rows of multiple hooks mounted on said backing with said rows extending longitudinally along said backing,
- each row including a first plurality of identical spaced, aligned left hooks at spaced positions along the left lateral side of the row,
- each row including a second plurality of identical, spaced, aligned right hooks at spaced positions along the right lateral side of the row,
- all of the left and right hooks of said first and second pluralities of hooks in each row being formed from a respective continuous strand of bendable and settable polymeric plastic material,
- the respective strand extending back and forth in zig-zag manner between and interconnecting the respective successive left and right hooks of the row, and
- said zig-zag extending portions of the strand in each row being bonded to said area of backing for mounting the row of multiple hooks on said backing.

4,615,085
BURIAL CASKET HARDWARE ALIGNMENT DEVICE

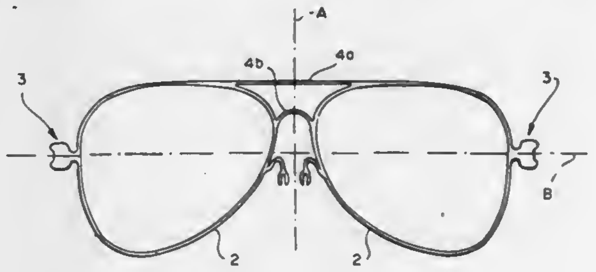
Robert J. Hartman, Batesville, Ind., assignor to Batesville Casket Company, Inc., Batesville, Ind.
Filed Oct. 15, 1984, Ser. No. 660,583
Int. Cl.⁴ A61G *17/00*
U.S. Cl. 27—1 **4 Claims**

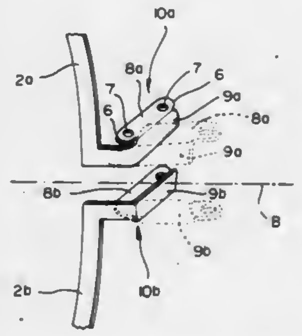


1. A device for aligning prior to assembly to a burial casket decorative plates used to conceal the attachment of carrying handles and handle arms to the burial casket comprising:
- (a) at least two spaced apart plates each having a front decorative surface and a rear casket-wall abutting surface for positioning adjacent a wall of said burial casket, the rear surface of each of said plates being configured to receive a portion of an aligning means;
- (b) at least one fastening means comprising at least one protrusion extending from the rear surface of each of said decorative plates;
- (c) and an aligning means comprising a generally linear strip cooperating with said at least one fastening means to secure said aligning means in abutting relation to the configured portion of said decorative plates and to position said decorative plates horizontally and vertically with respect to each other and to said generally linear strip for subsequent assembly to said burial casket wall without additional alignment.

4,615,086
METHOD OF MANUFACTURING FRONT PIECES FOR EYEGLASS FRAMES

Vittorio Tabacchi, and Vincenzo Viel, both of VII Strada, n.20, Padova, Italy
Filed Dec. 10, 1984, Ser. No. 679,933
Int. Cl.⁴ B21D *33/00, 53/40*
U.S. Cl. 29—20 **4 Claims**





1. A method of manufacturing front pieces for eyegalss frames, characterized by the fact that it comprises the following steps:

a. cutting from a strip of semi-finished product comprising a front piece with lens-bearing rims which are provided on the outermost part of each of them with an appendage integral with the corresponding rim and extending outward therefrom, said rims and corresponding appendages being symmetrical with respect to a central transverse axis of the front piece and the appendages being aligned opposite each other on a longitudinal axis of the front piece,

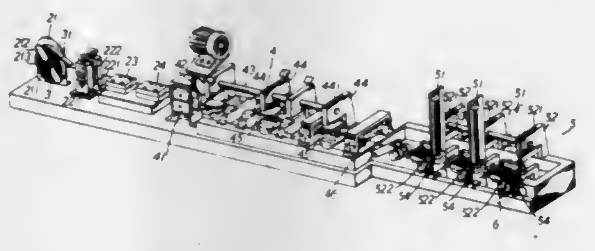
b. bending each appendage along lines parallel to the longitudinal axis of the front piece to form a pair of spaced cheeks which are substantially parallel and extend in the same direction at right angles from the plane of the front piece, and

c. bending each appendage along a line substantially parallel to the transverse axis of the front piece so as to form a box-shaped body constituting a nose of the eyeglasses.

4,615,087

CONTINUOUS MECHANISM FOR RE-MOULDING, LENGTH-SETTING AND ASSEMBLING BLIND'S PLASTIC STRIPS

A-Shen Chang, 15, Lane 494, Fu Chien Rd., Fu Hsing Ts'un, Fu Hsing Hsiang, Changhua Hsien, Taiwan
Filed Sep. 12, 1985, Ser. No. 775,262
Int. Cl.⁴ B23P *19/04*
U.S. Cl. 29—24.5 **2 Claims**

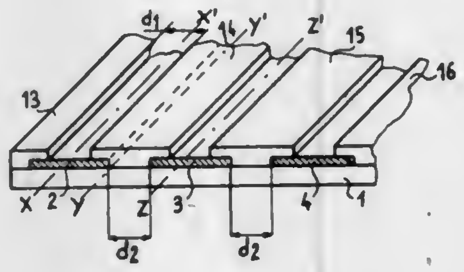


1. A continuous mechanism for re-moulding, length-setting and assembling blind's plastic strips comprising a strip feeding and re-moulding department in a fore section, a length-setting and shearing department in a mid section and an assembling department in an end section, wherein the fore section includes a vertical disc formed on one side thereof, a bolt which is sleeved thereon, a reel reeling thereon a continuous strip, which is confined between a positioning plate mounted on said bolt and said vertical disc, passing through a pressure-type roller conveyor into a thermoplastic re-moulding means and a cooling means; the mid section includes a dynamic disc, activated by a sensing device mounted on a particular position, for driving a driven shaft; said driven shaft rotatably passes through a plurality of fixed frames the middle portion of each of which slidably receives therein a positioning plate in said respective fixed frame in one of a raised position and a lower position so that when said positioning plate in said respective frame is in said lower position, an upper shearing mold connected to said positioning plate in said respective fixed frame will cut the strip thereunder with a set length; the end section includes a dynamic shaft rotatably passing through a plurality of fixed frames, having positioning plates driven to move vertically by eccentric cams attached to said dynamic shaft similar to those in said mix section and a pushing rod connected to each positioning plate, and driven by said respective positioning plate to which it is attached in this section for passing a strip, which has passed into the respective stair holes of stair-like ropes for blind's strip, through pairs of restractable brackets mounted above the bottoms of strip receiving spaces for overlapping pushed strips in said receiving spaces on said retractable brackets to have a continuous assembly for blind's strips.

4,615,088

METALIZED FILM FOR CONSTRUCTING CAPACITORS AND A PROCESS FOR MANUFACTURING SAID CAPACITORS

Daniel Bernard, Seurre, and Jean C. Dubois, Magny Les Hamaux, both of France, assignors to LCC-CICE Compagnie Europeenne De Composants Electroniques, Bagnolet, France
Filed Jun. 25, 1984, Ser. No. 624,030
Claims priority, application France, Jun. 28, 1983, 83 10681
Int. Cl.⁴ H01G *7/00*
U.S. Cl. 29—25.42 **7 Claims**



1. A process for manufacturing capacitors, in which a lacquered metalized film is first of all formed by depositing on at least one of the faces of a dielectric film a plurality of parallel metalized strips which are then partially covered by strips of lacquer deposited parallel to the metalized strips but laterally offset with respect to the metalized strips so as to create non-lacquered strips on the metalized strips and non-metalized strips under the lacquer strips, the lacquering step consisting in coating with a solution of a dielectric inner solvent, followed by a drying step, in which the temperature and duration parameters are determined, depending on the lacquer used, so that the said lacquer layer comprises, at the end of this drying step a proportion of a residual solvents between 10 and 500 ppm with respect to the weight of the dielectric, said lacquered metalized film being then cut up into individual films comprising on at least one of the faces of the dielectric film a metalized layer comprising a non-metalized margin on its first edge, coated with a lacquer layer comprising a non-lacquered margin on its second edge, the metalized layers disposed on the two faces of the dielectric film comprising a margin placed on the first edge for one and on the second edge for the other and vice versa for the margins of the lacquer layers, each individual film then being wound, the capacitor thus formed being then subjected to a heat treatment so as to eliminate the air imprisoned in the capacitor during winding, on the one hand, and so as to bond the lacquer layers to each other or to the dielectric film, on the other, so as to obtain individual capacitors whose insulation resistance, measured at 100 DC volts, after a regeneration step at a DC voltage of the order of 100 volt/micron of thickness of dielectric, is greater than or equal to 50 Giga Ohms per microfarad.

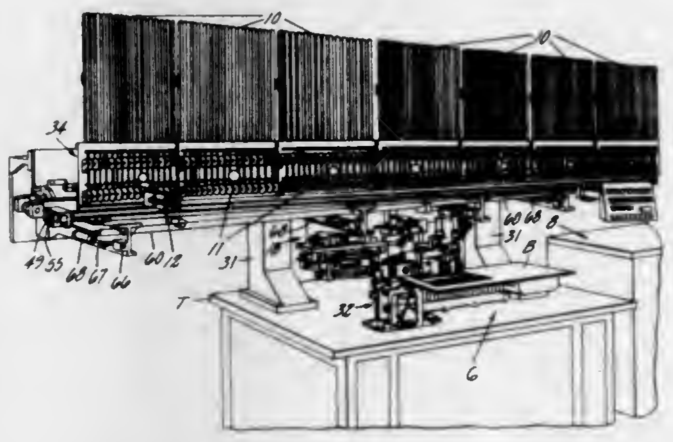
4,615,089

MACHINE FOR INSERTING MULTI-LEAD COMPONENTS

Henry L. Wright, Ipswich; Vitaly Bandura, Lynn, and Daniel W. Woodman, Jr., Beverly, all of Mass., assignors to USM Corporation, Farmington, Conn.
Continuation of Ser. No. 549,297, Jan. 26, 1984, abandoned, which is a division of Ser. No. 271,835, Jun. 9, 1981, Pat. No. 4,450,619. This application Sep. 16, 1985, Ser. No. 776,098
Int. Cl.⁴ H05K *3/30*
U.S. Cl. 29—33 K **4 Claims**

1. In a machine for applying to circuit boards a succession of components having variable lead center spacing and having means for locating the leads of the components for conditioning and insertion in apertures of the circuit boards and a mandrel along which each component is fed, the improvement comprising conditioning and insertion means including opposed fingers with notches therebetween adapted to engage

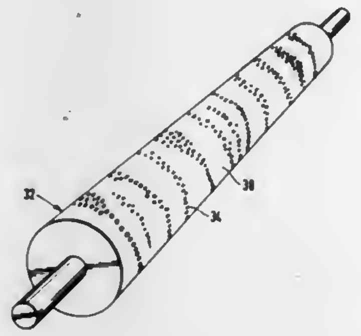
the leads of the component; a pair of stop members, means for adjustably positioning said stop members permitting said stop members to engage and locate the leads of each component relative to the conditioning and inserting means, said adjustable means including brackets supporting each of said stop members, one of said brackets being slidably supported on a shaft so that said brackets move toward and away from one another permitting said stop members to be automatically adjustably spaced from one another to accommodate the lead center spacing of the component being conditioned and inserted so that the component leads will be in accurate registration with the notches of the fingers, and energy absorbing plungers adapted to be engaged by the body of the component to slow down the component before the leads engage the stop members.



4,615,090

FORMING TOOL FOR PRODUCING AN ENGRAVED MOTIF ON A SHEET

Heinz G. Baus, 35, Wartbodenstrasse, CH-3626 Hünibach-Thun, Switzerland
Filed Mar. 4, 1985, Ser. No. 707,686
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1984, 3408419; Mar. 8, 1984, 3408420
Int. Cl.⁴ B21B *27/02, 13/02;* **B28B** *11/08*
U.S. Cl. 29—121.8 **23 Claims**

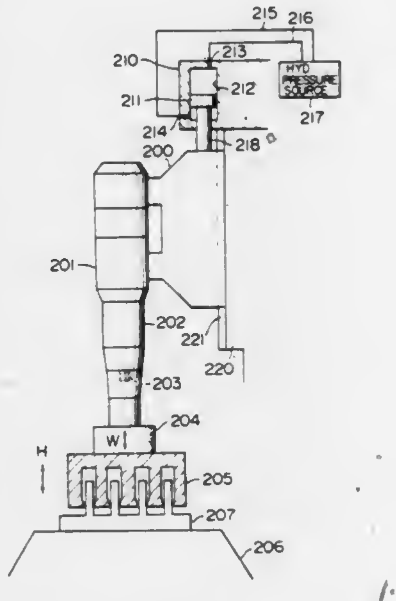


1. A forming tool for producing an engraved motif on a sheet of material, said forming tool comprising a body having an outer surface and a plurality of engraving elements of predetermined height projecting outwardly of said outer surface and distributed on said outer surface according to a predetermined spacial arrangement, each said engraving element having an outer face on which is formed an inwardly curved depression of predetermined depth, the depth of each depression being less than the height of the engraving element on which the depression is formed.

4,615,091

METHOD OF AND APPARATUS FOR PROCESSING A SCROLL MEMBER FOR A SCROLL TYPE COMPRESSOR

Toshikazu Niwa; Mineo Takahashi, and Kazumi Aiba, all of Shimizu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 13, 1983, Ser. No. 503,562
Claims priority, application Japan, Jun. 16, 1982, 57-102028
Int. Cl.⁴ B23P *15/00, 15/42;* **B23B** *27/22*
U.S. Cl. 29—156.4 R **8 Claims**



1. A method of processing a spiral wrap of a scroll member, the method comprising the steps of precisely forming a blank into a shape approximating a final form of the spiral wrap by providing a small tolerance to leave a minimal margin for finishing, said blank having inner and outer side surfaces, cutting at least one side surface of the blank with a forming tool having at least one cutting edge of the same shape as the spiral wrap by effecting a shaving on the at least one side surface of said spiral wrap to finish the blank with one step of shaving while applying a small axial force to cause a relative axial movement of the tool and blank toward one another and simultaneously applying an ultrasonic oscillation of about 17.7 KHz to one of the forming tool and the blank.

8. An apparatus for processing a scroll member having a spiral wrap and an end plate integral with each other, characterized by comprising:
- a shaving tool having a spiral groove of the same configuration as said spiral wrap, and a cutting edge portion formed on at least one side edge of said groove over the entire length of said side edge;
- a tool supporting means for supporting said shaving tool;
- a blank supporting means for supporting a scroll blank such that said scroll blank opposes to said shaving tool;
- a means connected to said tool supporting means and adapted for imparting to said tool a pressing force necessary for the shaving; and
- an ultrasonic oscillation generating means adapted to impart an ultrasonic oscillation to said tool.

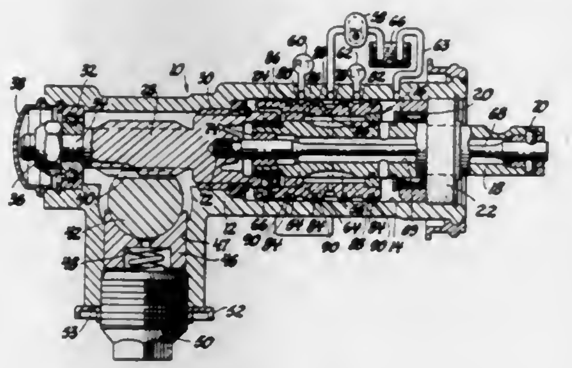
4,615,092

METHOD OF SEALING A HYDRAULIC POWER STEERING GEAR AND ROTARY VALVE THEREFOR

Dennis J. Richard, Linwood, Mich., assignor to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 601,499, Apr. 18, 1984, Pat. No. 4,573,496. This application May 20, 1985, Ser. No. 735,549
Int. Cl.⁴ B23P *15/14*
U.S. Cl. 29—159.2 **3 Claims**

2. A method of sealing a hydraulic power steering gear for a vehicle comprising the steps of forming a cylindrical bore in a housing of a relatively soft metal for a rotary hydraulic valve of said gear, said valve including an annular body of a metal

relatively harder than the metal of said housing, said body having a plurality of annular fluid seals rotatably mounted on the outer diameter thereof, inserting an electrical discharge machine within said bore having spaced electrodes closely adjacent to the inner surface of said bore, effecting discharge of said electrodes while rotating said electrodes relative to the



inner surface of said bore to thereby texturize separate bands within said bore for gripping the seals of the valve body, inserting said body within said bore so that said seals are directly engaged and held by said texturized surface that said seals rotate relative to said valve body when said valve body is rotated relative to said housing.

4,615,093

METHOD AND AN APPARATUS FOR THE POSITIONING OF COMPONENTS WITH REFERENCE TO A WORKPIECE

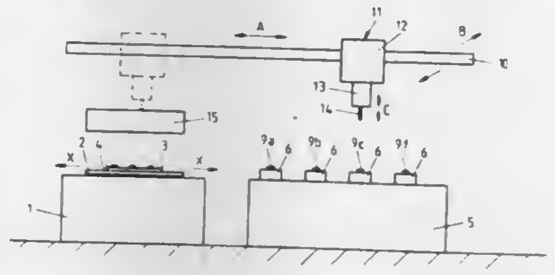
Uwe Tews, Pinneberg, Fed. Rep. of Germany, and Maximilian R. Rottmann, Wetzikon, Switzerland, assignors to Zevatech AG, Bellach, Switzerland

Filed Nov. 2, 1984, Ser. No. 667,951

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1983, 3340084; Nov. 5, 1983, 3340074

Int. Cl.⁴ B23Q *17/00;* B23P *21/00*

U.S. Cl. 29—407 **23 Claims**



1. A method of positioning a component in a preset position on a workpiece, said method comprising the steps of:
removing the component from a storage;
transporting the component from the storage into the region of the workpiece by component transporting means, said component transporting means having a positioning axis, and the component having a predetermined nominal position relative to the positioning axis;
moving the component transporting means to position said positioning axis in a predetermined position relative to the workpiece;
detecting the actual position of the component relative to the positioning axis of said component transporting means and measuring the deviation of said actual position of the component from the predetermined nominal position thereof relative to the positioning axis while the component is spaced from the workpiece;
generating a control signal in response to a deviation of the actual position of the component from the predetermined nominal position thereof relative to the positioning axis;
changing the position of the positioning axis of the component transporting means with respect to the workpiece in response to the control signal to thereby change the actual position of the component so that it coincides with the preset position thereof on the workpiece, and
thereafter positioning the component on the workpiece.

4,615,094

METHOD AND APPARATUS FOR AUTOMATICALLY ATTACHING CLIPS TO WEATHER STRIPS

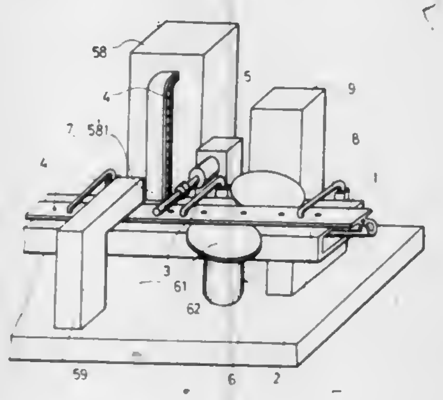
Toru Kai, Inazawa, and Norihisa Kubo, Ichinomiya, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Apr. 22, 1985, Ser. No. 725,628

Claims priority, application Japan, Apr. 30, 1984, 59-086956

Int. Cl.⁴ B23Q *17/00;* B23P *21/00*

U.S. Cl. 29—407 **12 Claims**



1. A method of attaching clips having a head portion to an elastic weather strip having a base portion connected to a seal portion by a neck portion, the base portion being provided with a longitudinal opening therein and a plurality of equally longitudinally spaced clip-receiving holes extending into the opening and of lesser size than the largest transverse dimension of the head portion of the clips, the steps comprising:
guiding the neck portion of the strip for longitudinal movement thereof between spaced guide rails with the base portion spanning and slidably resting on the rails;
moving the strip along the rails;
detecting a hole in the moving strip base portion;
automatically moving the strip a predetermined distance in response to the detecting step and then stopping the movement; and
automatically inserting a clip head first in the detected hole while the strip is stopped.

4,615,095

INCLINED DRAWER SLIDE INCORPORATING SCALE

Walter L. Bessinger, Grand Haven, and Keith A. Hoffman, Hudsonville, both of Mich., assignors to Knape & Vogt Manufacturing Company, Grand Rapids, Mich.

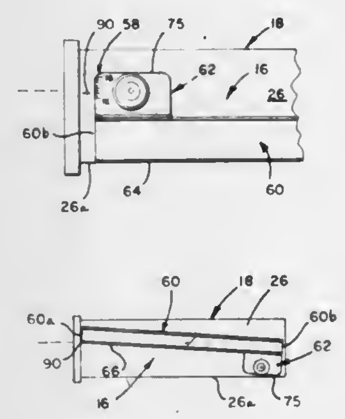
Continuation of Ser. No. 576,569, Feb. 3, 1984, abandoned. This application Oct. 17, 1985, Ser. No. 788,384

Int. Cl.⁴ B23Q *17/00;* A47B *88/00*

U.S. Cl. 29—407 **12 Claims**

1. A method of installing a self-closing drawer slide comprising:
creating a first scale on a cabinet channel assembly with the first scale being generally perpendicular to the rail of the cabinet channel assembly, the first scale including a plurality of marks each corresponding to a different cabinet rail length;
creating a second scale on a drawer channel assembly with the second scale being generally perpendicular to the rail of the drawer channel assembly, the second scale including a plurality of marks each corresponding to a different rail length;
orienting the cabinet rail generally horizontally with respect to a cabinet on which the cabinet channel assembly is to be mounted;
marking the cabinet at the scale mark corresponding to the length of the cabinet rail;

reorienting the cabinet channel assembly based upon the mark on the cabinet;
securing the cabinet channel assembly to the cabinet;
orienting the drawer rail generally horizontally with respect to a drawer box on which the drawer channel assembly is to be mounted;



marking the drawer box at the scale mark corresponding to the length of the drawer rail;
reorienting the drawer channel assembly based upon the mark on the drawer box; and
securing the drawer channel assembly to the drawer box.

4,615,096

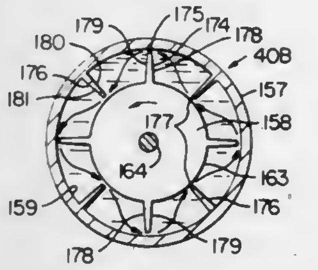
METHOD OF MAKING A BELT TENSIONER WITH A ROTARY FLUID DAMPENER

Randy C. Foster, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Continuation of Ser. No. 513,491, Jul. 13, 1983, abandoned, which is a division of Ser. No. 301,351, Sep. 11, 1981, Pat. No. 4,413,982. This application Mar. 11, 1985, Ser. No. 710,744

Int. Cl.⁴ B23P *11/00*

U.S. Cl. 29—434 **3 Claims**



1. In a method of making a tensioner for a power transmission belt that is adapted to be operated in an endless path, said method comprising the steps of providing a support means for being fixed relative to said belt, providing a belt engaging means to be carried by said support means and be movable relative thereto, operatively associating mechanical spring means with said support means and said belt engaging means for urging said belt engaging means relative to said support means and against said belt with a force to tension said belt, and operatively associating fluid dampening means with said support means and said belt engaging means to dampen the movement of said belt engaging means relative to said support means with a restrictive dampening force in at least one direction of movement thereof, the improvement comprising the steps of forming said fluid dampening means to comprise a rotary dampening means having an outer ring member and an inner ring member disposed in said outer ring member, arranging said members for relative rotational movement therebetween, operatively interconnecting one of said members to said support means, operatively interconnecting the other of said members to said belt engaging means, forming said inner ring member with a plurality of circumferentially spaced apart radially outwardly disposed vane means each having opposed sides, forming said outer ring member with a plurality of circumferentially spaced apart radially inwardly disposed vane means each having opposed sides for cooperating with said vane means of said inner ring member to restrict relative rotational movement between said members, and changing the angle of attack of one of said sides of at least one vane means of said members relative to the other of said sides thereof so that the opposed sides thereof cause said dampening means to provide a greater said restrictive dampening force when one of said members rotates relative to the other of said members in one rotational direction than the restrictive dampening force when that one rotates in the other rotational direction relative to the other member.

4,615,097

APPARATUS FOR PRECISE POSITIONING OF OPTICAL COMPONENTS

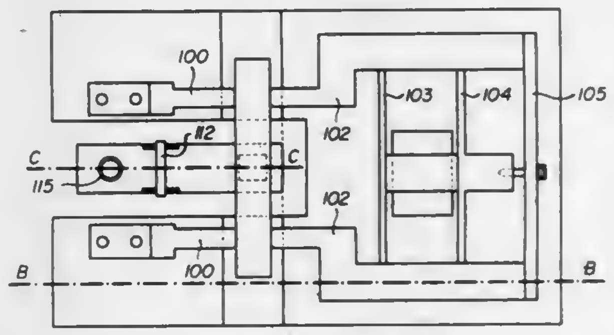
Pierre Genequand, Geneva, Switzerland, assignor to Cabloptic S.A. & Fondation Suisse pour la Recherche en Microtechnique, Switzerland

Filed Oct. 5, 1984, Ser. No. 658,298

Claims priority, application France, Oct. 5, 1983, 83 15955

Int. Cl.⁴ B23Q *3/00, 1/04, 1/22;* G02B *6/36*

U.S. Cl. 29—466 **19 Claims**



1. Apparatus for the precise positioning of first and second components with respect to each other comprising a frame, first support means for mounting said first component, and second support means for mounting said second component, wherein said first support means is coupled to said frame by an elastic joint member comprising a pair of elastically bendable members, whereby said first support means can be moved in relation to said second support means by bending said pair of elastically bendable members in a first direction.

4,615,098

PROCESS FOR FORMING AN HYDRAULIC CONNECTION

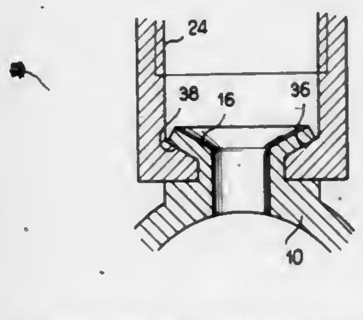
Philippe Côme, Dammartin-en-Goëlle, and Joël Vasselet, Rosny-sous-Bois, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed May 2, 1984, Ser. No. 606,003

Claims priority, application France, Apr. 13, 1983, 83 06007

Int. Cl.⁴ B23P *11/00;* B21D *53/00*

U.S. Cl. 29—512 **4 Claims**



1. Method of manufacturing a master cylinder comprising the steps of forming an elongated hollow body by extrusion, said body defining a bore therewithin, forming a protuberance extending radially outwardly from the hollow body, forming a

passage in said protuberance communicatings with said bore, providing an annular interconnecting piece having an inner wall, forming a conical surface extending radially inwardly from said inner wall of the interconnecting piece, providing an opening in said conical surface coaxial with said inner wall of the annular interconnecting member, forming a bearing surface on the exterior of said body circumscribing said protuberance, fitting the opening over the protuberance, engaging a corresponding surface on said interconnecting member with said bearing surface when the interconnecting member is fitted over the protuberance, flanging the wall of said protuberance radially outwardly into engagement with the conical surface, and forming cooperating surfaces on the protuberance and the interconnecting piece to immobilize the interconnecting piece against rotation relative to the body.

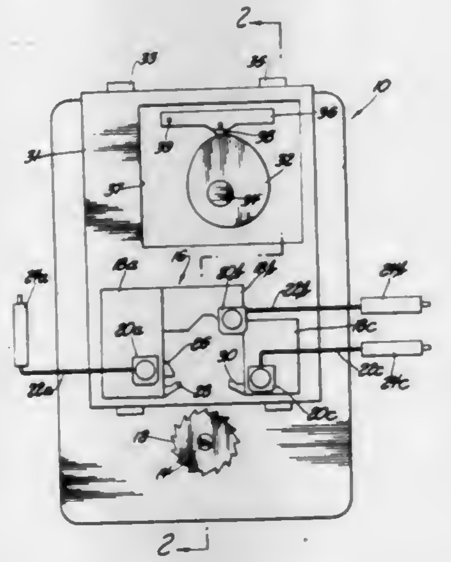
4,615,099
MACHINE TOOL

William H. Bibbens, 16500 N. Park Dr., North Park Towers, Apartment 820, Southfield, Mich. 48075

Continuation of Ser. No. 582,165, Feb. 27, 1984, abandoned, which is a continuation of Ser. No. 317,738, Nov. 3, 1981, abandoned, which is a continuation of Ser. No. 167,962, Jul. 14, 1980, abandoned, which is a continuation of Ser. No. 1,791, Jan. 8, 1979, abandoned. This application Nov. 1, 1985, Ser. No. 794,266

Int. Cl.⁴ B23C *1/00;* **B23D** *37/00*

U.S. Cl. 29—560 **2 Claims**



1. A machine tool for selectively machining a workpiece by a selected one of a plurality of cutting tools comprising: a tool shaft for cutting tool; an input shaft drivingly connected to the tool shaft; clamp means having a clamping position for clamping a workpiece in position to be engaged by the cutting tool, and an unclamped position to release the workpiece; a slide supporting said clamp means, said slide having controlled reciprocal movement for feeding the workpiece to the cutting tool; cam means for controlling movement of the slide; and a gear train including a plurality of gears supported on gear support shafts drivingly connecting the tool shaft and cam means, the gear train including adjustable mounting means including one of said gear support shafts for mounting at least one gear in the gear train and adjustably spacing said gear support shafts.

4,615,100
CRIMPING PROCESS AND CRIMPING APPARATUS FOR CARRYING OUT THE PROCESS

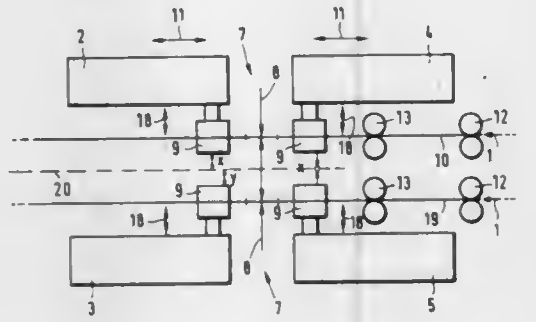
Rudolf Reinertz, Wuppertal, Fed. Rep. of Germany, assignor to Grote & Hartmann GmbH & Co., Wuppertal, Fed. Rep. of Germany

Filed Apr. 26, 1984, Ser. No. 603,934

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1983, 3315227

Int. Cl.⁴ B23P *23/00*

U.S. Cl. 29—564.8 **12 Claims**



1. A crimping apparatus for carrying out a crimping process wherein linear sections of a specified length are cut off from a roll of insulated wire and the opposite ends are insulation-stripped and crimped, wherein the insulated wire is periodically advanced along a path of travel by a distance corresponding to the length of the wire sections and wherein the stripped ends of the insulated wire and the wire section are moved aside from the path of travel and inserted in a crimping means for crimping thereof and thereafter, the ends, after crimping, are moved back into the path of travel, the crimped wire section being removed from the path and the crimped insulated wire being conveyed further along the path, parallel to the first insulated wire or to the first wire section, a second insulated wire or a second wire section is provided which is processed in the same way as the first wire or wire section for crimping and which is moved from the path of travel thereof for crimping and back thereto after crimping; whereby crimping of both wires or wire sections is effected using the same crimping means; and whereby the following sequential relationships exist between the two operations: the first wire is cut to length while the second wire is moved from the path of travel thereof; the first wire is insulation-stripped while the second wire is crimped; the first wire is moved from the path of travel thereof while the second wire is moved back to the path of travel thereof; the first wire is crimped while the second wire is cut to length; and the first wire is moved back to the path of travel thereof while the second wire is insulation-stripped, said apparatus comprising first and second robot arms spaced apart one after the other along the said path of travel of the first wire and mounted so as to rotate about a vertical axis, a cutting-and-stripping means disposed in the space between the robot arms, gripper means, associated with each of said robot arms, extending therebeneath and arranged opposite each other near the space between the robot arms, and measuring rollers and feed rollers, disposed upstream of the gripper means of the first robot arm, for moving the first insulated wire through the gripper means of the robot arms and for measuring off a desired length, said crimping means comprising a pair of impact means positioned on opposite sides of said path of travel of the first wire adjacent to each of the robot arms, and said crimping apparatus further comprising third and fourth robot arms for the second insulated wire or wire section disposed in vertically spaced relationship to said first and second robot arms and spaced one after the other along the path of travel of the second wire, and said impact means being disposed laterally of said first and second robot arms on opposite sides of the path of travel of the second wire.

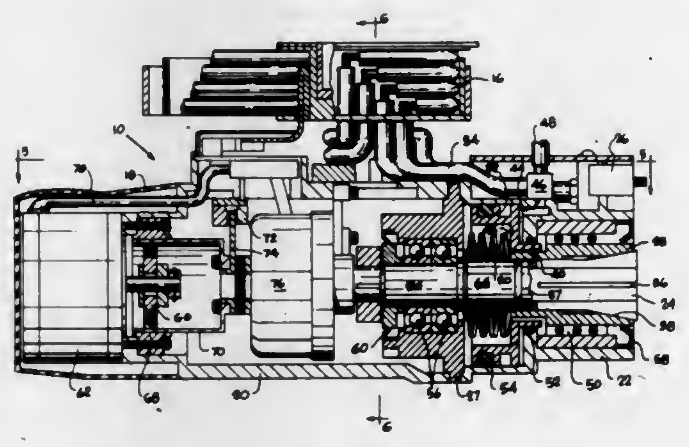
4,615,101
TOOL INTERFACE FOR ROBOT END EFFECTORS

Jeffrey A. Edwards, and Thomas W. Peterson, both of Corvallis, Oreg., assignors to Intelledex Incorporated, Corvallis, Oreg.

Filed Mar. 8, 1985, Ser. No. 709,596

Int. Cl.⁴ B23Q *3/155;* **B23B** *31/30*

U.S. Cl. 29—568 **5 Claims**



1. A tool interface for a robot end effector comprising

a tool changer rotatable about a longitudinal axis and having a socket on the longitudinal axis with means for clamping a tool in said socket,

sleeve means for engaging said means for clamping,

means axially positioned behind said sleeve means for pushing said sleeve means into engagement with said clamping means,

a piston having an annular portion radially spaced from said sleeve, and a radial portion integrally connected to said annular portion and spaced apart from walls of said socket to form a chamber, said radial portion being in contact with said pushing means in a position capable of pushing longitudinally back against said pushing means, and a fluid supply line for supplying pressurized fluid to said chamber, said piston and said fluid supply line forming a fluid pressure means for forcing said pushing means away from said sleeve means and releasing a tool from said clamping means, and

means disposed on said longitudinal axis for rotating said tool changer about said longitudinal axis.

4,615,102
METHOD OF PRODUCING ENHANCEMENT MODE AND DEPLETION MODE FETS

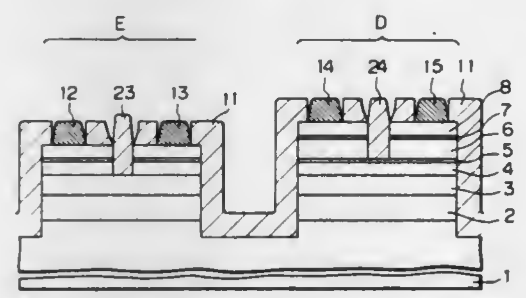
Masahisa Suzuki, Sagamihara, and Takashi Mimura, Machida, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Apr. 29, 1985, Ser. No. 728,080

Claims priority, application Japan, May 1, 1984, 59-86243; Jul. 13, 1984, 59-144367

Int. Cl.⁴ H01L *21/205*

U.S. Cl. 29—571 **26 Claims**



1. A method of producing a semiconductor device which comprises an enhancement-mode transistor and a depletion-mode transistor and utilizes a two-dimensional electron gas, comprising the steps of:

(a) forming a first semiconductor layer of a channel layer, in which the two-dimensional electron gas is generatable, on a semi-insulating semiconductor substrate;

(b) forming a second semiconductor layer of an electron-supply layer on the first semiconductor layer;

(c) forming a third semiconductor layer of an adjusting layer for the threshold voltage of the depletion-mode transistor on the second semiconductor layer;

(d) forming a fourth semiconductor layer of a first contact layer on the third semiconductor layer;

(e) forming a fifth semiconductor layer of a contact layer on the fourth semiconductor layer;

(f) forming a sixth layer of a second etching-stoppable layer on the fifth semiconductor layer;

(g) forming a masking layer having openings corresponding to gates of the enhancement-mode and depletion-mode transistors;

(h) exposing a portion of the fourth semiconductor layer in the enhancement-mode transistor region and a portion of the sixth layer in the depletion-mode transistor region through the openings in said masking layer;

(i) performing a first etching treatment through the openings in said masking layer to expose a portion of the third semiconductor layer in the enhancement-mode transistor region and a portion of the fifth semiconductor layer in the depletion-mode transistor region; and

(j) performing a second etching treatment different from the first etching treatment to expose a portion of the second semiconductor layer in the enhancement-mode transistor region and a portion of the fourth semiconductor layer in the depletion-mode transistor region to form grooves for gate electrodes of the FETs.

4,615,103
METHOD OF FORMING ISOLATION REGIONS CONTAINING CONDUCTIVE PATTERNS THEREIN

Shuichi Kameyama; Satoshi Shinozaki, both of Yokohama; and Hiroshi Iwai, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 410,083, Aug. 19, 1982, Pat. No. 4,532,701. This application May 28, 1985, Ser. No. 737,922

Claims priority, application Japan, Aug. 21, 1981, 56-131018; Dec. 25, 1981, 56-212459

Int. Cl.⁴ H01L *21/76, 21/88*

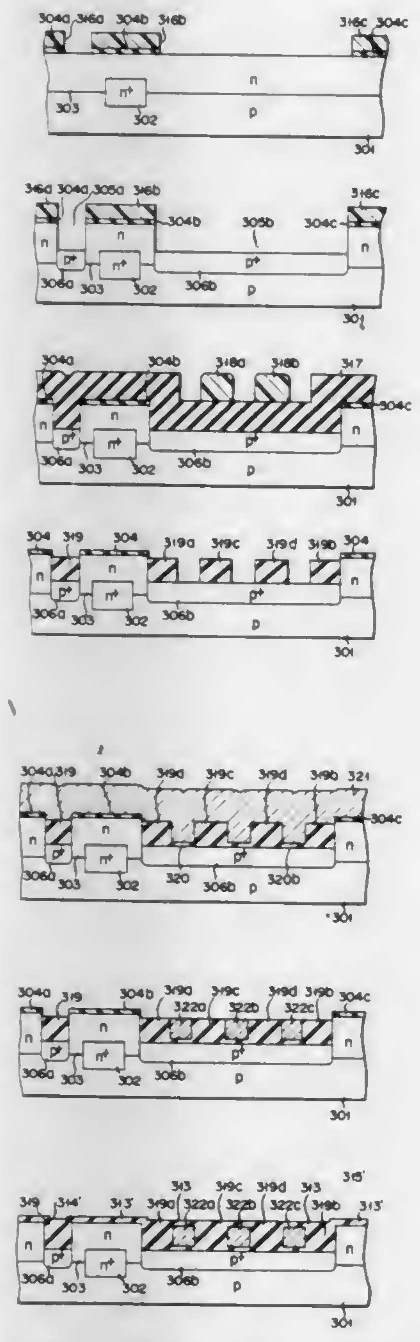
U.S. Cl. 29—576 W **5 Claims**

1. A method of manufacturing a semiconductor device comprising the steps of:

forming a first groove having a large width in a semiconductor layer;

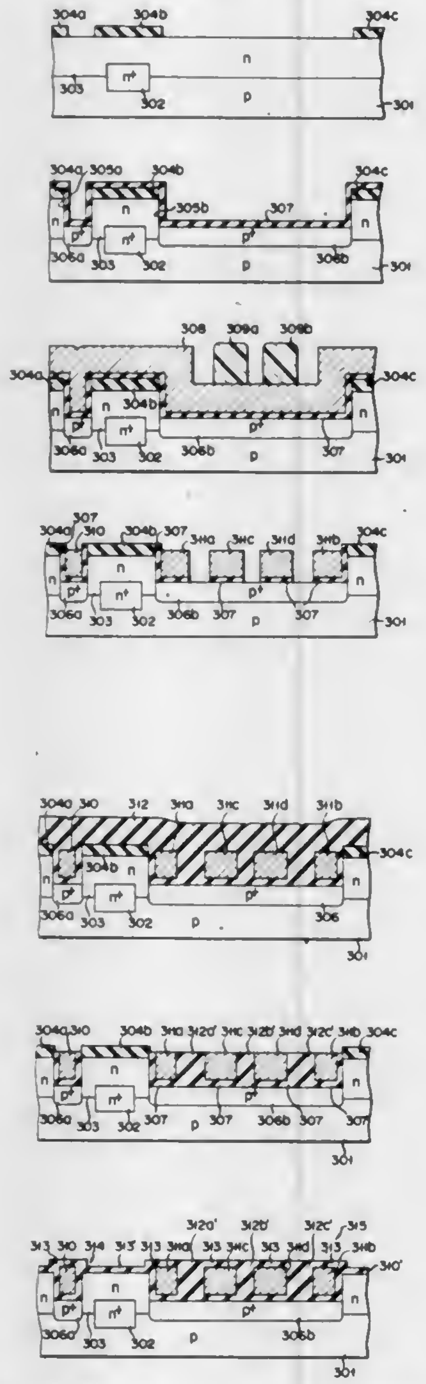
filling said first groove with a first insulating film;

forming at least one second groove in said first insulating film in said first groove, said second groove being defined by an insulating material; and



filling said second groove with a conductive film to form an isolating layer having a large width including said conductive film surrounded by said insulating material.

filling said second groove with a second insulating film to form an isolating layer having a large width including said



conductive film pattern surrounded by said first and second insulating films.

4,615,104
METHOD OF FORMING ISOLATION REGIONS CONTAINING CONDUCTIVE PATTERNS THEREIN

Shuichi Kameyama; Satoshi Shinozaki, both of Yokohama, and Hiroshi Iwai, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Division of Ser. No. 410,083, Aug. 19, 1982, Pat. No. 4,532,701. This application May 28, 1985, Ser. No. 738,404
Claims priority, application Japan, Aug. 21, 1981, 56-131018; Dec. 25, 1981, 56-212459
Int. Cl.⁴ H01L *21/76, 21/88*
U.S. Cl. 29—576 W 3 Claims

1. A method of manufacturing a semiconductor device comprising the steps of:

forming a first groove having a large width in a semiconductor layer;

forming in said first groove a first insulating film having a thickness smaller than the depth of said first groove;

filling said first groove other than said first insulating film with a conductive film;

selectively etching said conductive film in said first groove to form at least one second groove having a small width; and

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4,615,105
ELECTROACOUSTIC TRANSDUCER AND A METHOD FOR MANUFACTURING THEREOF

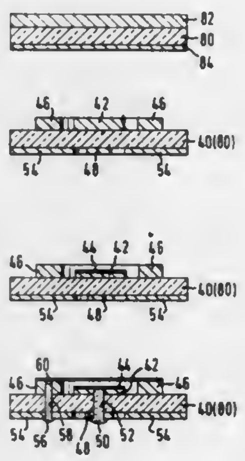
Hiroto Wada, and Minoru Nishizono, both of Kanagawa, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Division of Ser. No. 499,555, May 31, 1983. This application Aug. 1, 1984, Ser. No. 636,740
Claims priority, application Japan, May 29, 1982, 57-92017; May 29, 1982, 57-92018; May 29, 1983, 57-92023
Int. Cl.⁴ H04R *31/00*
U.S. Cl. 29—594 5 Claims

1. A method for manufacturing an electroacoustic transducer comprising the steps of:

applying a foil of electrically conductive material to at least one side of an insulating base plate;

forming a stationary electrode and an annular support surrounding the stationary electrode on said at least one side of the insulating base plate, the step comprising selectively removing said electrically conductive foil within areas on said insulating base plate and leaving the stationary electrode and the annular support;

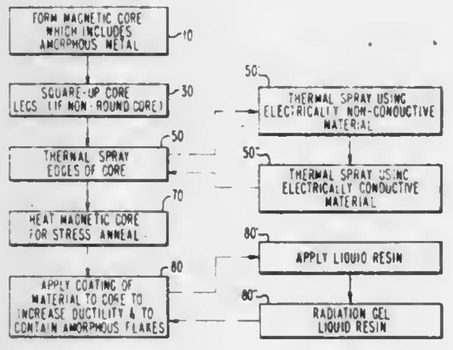
thinning the stationary electrode so that it is less thick than the annular support; and



thereafter applying an electrically conductive diaphragm on said annular support facing the stationary electrode.

4,615,106
METHODS OF CONSOLIDATING A MAGNETIC CORE

Frank H. Grimes, Athens, Ga., and Robert F. Krause, Murrysville Boro, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Mar. 26, 1985, Ser. No. 716,264
Int. Cl.⁴ H01F *7/06*
U.S. Cl. 29—605 12 Claims


FORM MAGNETIC CORE WHICH INCLUDES AMORPHOUS METAL
10
SQUARE-UP CORE LEGS (IF NON-ROUND CORE)
30
THERMAL SPRAY EDGES OF CORE
50
HEAT MAGNETIC CORE FOR STRESS ANNEAL
70
APPLY COATING OF MATERIAL TO CORE TO INCREASE DUCTILITY & TO CONTAIN AMORPHOUS FLAKES
80
50'
THERMAL SPRAY USING ELECTRICALLY NON-CONDUCTIVE MATERIAL
50''
THERMAL SPRAY USING ELECTRICALLY CONDUCTIVE MATERIAL
80'
APPLY LIQUID RESIN
80''
RADIATION GEL LIQUID RESIN

1. A method of consolidating a magnetic core containing amorphous metal having a predetermined stress relief anneal temperature comprising the steps of:

forming a magnetic core having a plurality of lamination layers which define closely adjacent edges on opposite sides of the magnetic core,

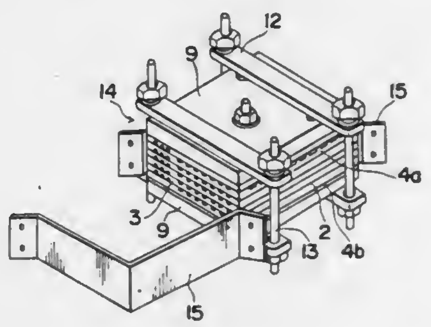
selecting an electrically non-conductive material suitable for thermal spraying which will solidify and form a coating having bonding and coating strengths which are not deleteriously affected at said predetermined stress relief anneal temperature of said amorphous metal,

and thermal spraying said electrically nonconductive material in a molten state such that it solidifies on the edges of the lamination layers, on at least one side of the magnetic core,

said thermal-spraying step applying said molten material in a plurality of passes to build up an electrically insulative coating of interlocked solidified particles which bond to the lamination edges and to one another to provide a coating strength sufficient to hold the magnetic core in its sprayed configuration, and with the build rate building up the coating in thin overlays selected to maintain the amorphous metal below its crystallization temperature, and heating the magnetic core after the thermal-spraying step to said predetermined temperature below the crystallization temperature of the amorphous metal to relieve stresses in the magnetic core.

4,615,107
METHOD AND DEVICE FOR ASSEMBLING A FUEL CELL STACK

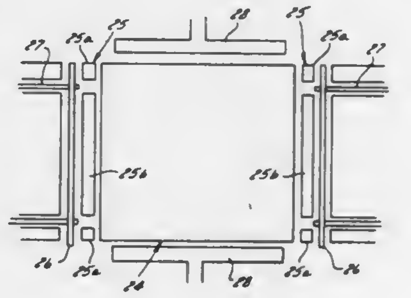
Masao Kumeta, Neyagawa; Masahiro Ide, Hirakata; Nobuyoshi Nishizawa, Neyagawa; Nobuya Inoue, Moriguchi, and Hideki Goto, Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan
Filed Nov. 15, 1985, Ser. No. 798,275
Claims priority, application Japan, Nov. 16, 1984, 59-242714
Int. Cl.⁴ H01M *8/00*
U.S. Cl. 29—623.1 5 Claims



1. A method for assembling a fuel cell stack comprising the steps of alternately stacking the prescribed number of fuel cells and bipolar plates to form a plurality of substacks, arranging the laid substacks on a supporting base so that the central axes of the substacks parallel to the stacking direction of the fuel cell stack are on a horizontal straight line to form a complete fuel cell stack, tying up the fuel cell stack to apply a predetermined compressive load to the fuel cell components, making the fuel cell stack vertical, and then removing said supporting base from the fuel cell stack.

4,615,108
PROCESS FOR THE MANUFACTURE OF BIPOLAR ELECTRODES AND SEPARATORS

Gerd Tomazic, Mürzzuschlag, Austria, assignor to Johnson Service Company, Milwaukee, Wis.
Continuation-in-part of Ser. No. 683,635, Dec. 19, 1984, abandoned. This application Sep. 19, 1985, Ser. No. 777,702
Claims priority, application Austria, Dec. 19, 1983, 4426/83; European Pat. Off., Dec. 18, 1984, 848902490
Int. Cl.⁴ H01M *6/00*
U.S. Cl. 29—623.2 4 Claims



1. A process for the manufacture of an assemblage of bipolar electrodes and separators each having thermoplastic marginal portions into electrochemical cells utilizing circulating aqueous electrolyte comprising the stages of:

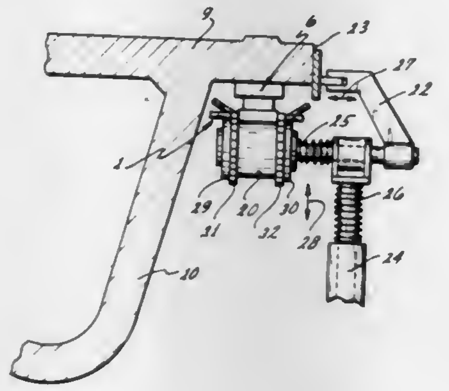
squeezing the assemblage of electrodes and separators against one another with said thermoplastic marginal portions in an overlapping relationship;

heating at least a portion of said marginal portions whereby said portion is softened to substantially its melting point to cause said marginal portions to form an enveloping shell; and,

permitting the melted portions to cool and solidify while continuing to maintain the squeezing pressure.

4,615,109
APPARATUS FOR INSTALLING A PREFABRICATED WINDING OF A LINEAR MOTOR

Manfred Wcislo, Ottobrunn; Otto Breitenbach, Nuremberg; Friedrich Schatz, and Ulrich Riepling, both of Wedemark, all of Fed. Rep. of Germany, assignors to Thyssen Industrie Kabelmetal Electro GmbH, Hanover, Fed. Rep. of Germany
Division of Ser. No. 625,446, Jun. 27, 1984, Pat. No. 4,557,038.
This application Aug. 22, 1985, Ser. No. 768,134
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1983, 3323696
Int. Cl.⁴ H02K *15/085*
U.S. Cl. 29—732 6 Claims



1. An apparatus for applying a ladder-type winding to the grooves of a linear inductor arranged underneath a rail system comprising a vehicle provided for running on top of that rail system;

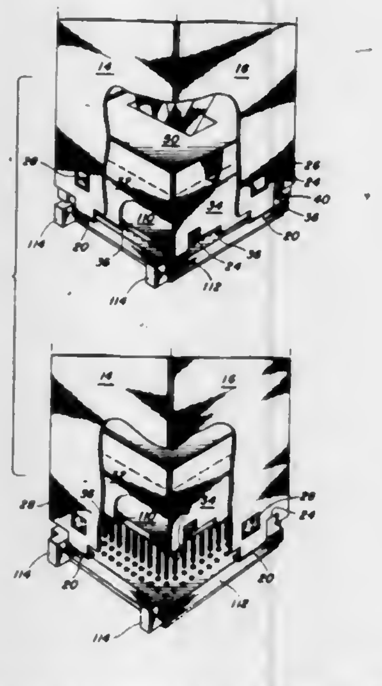
a storage drum on said vehicle for storing a certain length of said cable winding;
a deflection and guiding system for taking up the cable winding from said drum, and guiding it down into a direction to run near-tangentially towards the underside of said rail; and
an outrigger extending laterally from the vehicle and resiliently mounting a tool by means of which the cable winding is rung for rung forced into said groove as the vehicle moves on said rail.

4,615,110
HAND TOOL FOR INSERTING AND WITHDRAWING A PIN GRID INTO AND FROM A SOCKET

Kenneth E. Crone, Dover, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 15, 1985, Ser. No. 702,369
Int. Cl.⁴ B23P *19/02*
U.S. Cl. 29—741 9 Claims

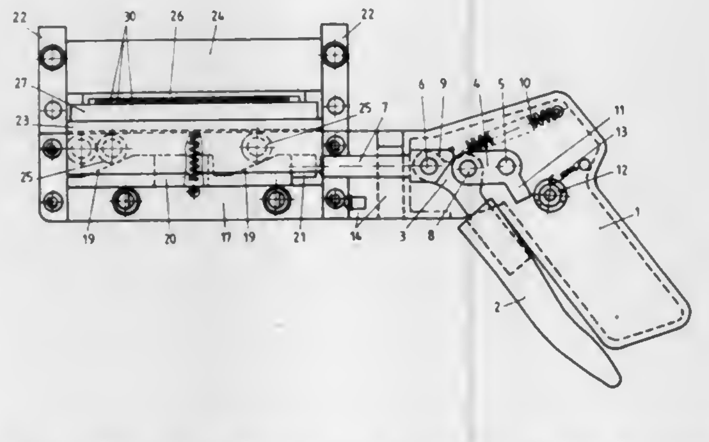
1. A hand tool for selectively inserting the pins of electronic elements into engagement with and withdrawing the pins from pin engaging sockets secured to a substrate comprising:

a top mounting block having opposite sides,
a pair of outer side plates secured at their upper end to the opposite sides of the mounting block and extending downwardly therefrom to define jaws for selectively engaging the elements and sockets,
a pair of inner side plates slidably positioned at the lower end of the respective outer side plates and defining jaws at their lower end for selectively engaging the elements and sockets,
means for actuating the jaws to engage the elements and sockets, and
means for raising the inner side plates and their jaws relative to the outer side plates and their jaws, thereby withdrawing the element pins from pin engaging sockets, said raising means including a link mounting block slidably positioned between the side plates, a first pair of articulated link sets pivotably linking the top mounting block with the link mounting block and a plunger slidably positioned in the top mounting block to slidingly engage and and spread the link sets in a first plane, thereby pulling the link and top mounting blocks toward each other to raise the inner side plates.



4,615,111
WIRING TOOL FOR WIRING ELECTRIC, MULTIPIN PLUG CONNECTORS, CONNECTOR STRIPS OR THE LIKE, USING CLAMPING CUTTER TECHNIQUES

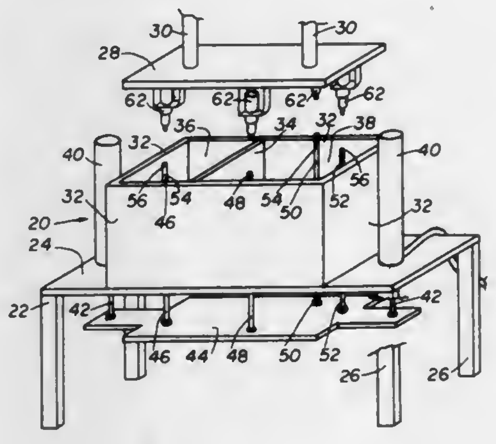
Reiner Rommel, Moldaustr. 6, 3570 Stadtallendorf, Fed. Rep. of Germany
Filed Oct. 16, 1984, Ser. No. 661,422
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1983, 3338816
Int. Cl.⁴ B23P *19/0;* **B25B** *7/12*
U.S. Cl. 29—749 3 Claims



1. A wiring tool adapted to be mounted to an actuating device of the type having a linearly reciprocally movable pushrod for wiring multi-pin ribbon connectors, and with the wiring tool comprising a wall and an opposed support rigidly mounted together in spaced relation, a push wedge mounted for reciprocal sliding movement upon an upper surface of said wall in response to movements of the actuating device pushrod, said push wedge having two wedging faces located distally and at inclines with respect to said wall upper surface, a movable support positioned between said push wedge and said opposed support, a pair of rollers rotatably supported upon said movable support with each of said rollers being rotatably located upon a different one of said two wedging faces of said push wedge, and spring means for biasing said movable support and said rollers towards said wall, whereby a ribbon cable and multi-pin connector may be mounted between the movable and opposed supports and wired by actuation of the pushrod which moves the inclined wedge faces causing the rollers rotatably located thereon to move away from the wall and urge the movable support towards the opposed support thereby compressively wiring the ribbon cable to the multi-pin connector.

4,615,112
APPARATUS AND METHOD FOR PRESENTING FASTENERS

John K. Shannon, 200 S. Vincennes Cir., Racine, Wis. 53402
Filed May 9, 1985, Ser. No. 732,073
Int. Cl.⁴ B23D *19/00*
U.S. Cl. 29—822 20 Claims

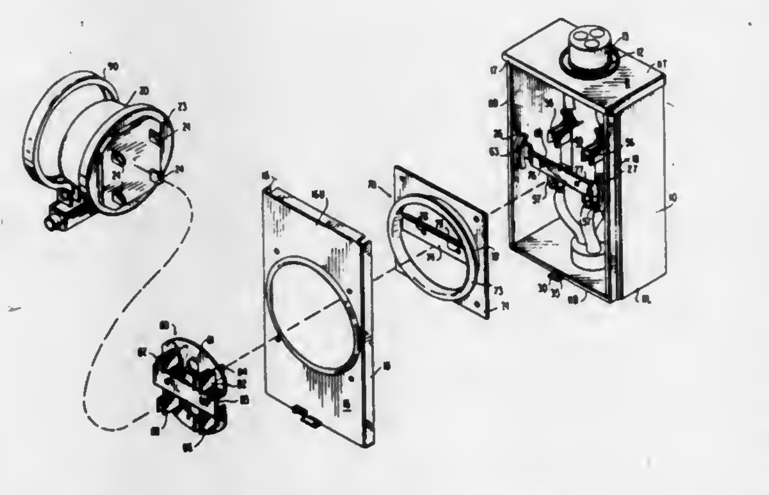


16. A method for presenting fasteners seriatim at a predetermined position in a predetermined orientation comprising:

passing the end of a rod in an upward direction endwise through a jumbled collection of similar fasteners to the predetermined position above the collection, said rod having a pickup element on its end which is configured to receive one of said fasteners which it encounters during its upward movement through the jumbled collection and cradle it in the predetermined orientation as such movement continues;
removing the fastener from the pickup element;
withdrawing the rod and pickup element downwardly through the jumbled collection; and
repeating the above steps.

4,615,113
PILFER PROOFING SYSTEM AND METHOD FOR ELECTRIC UTILITY METER BOX

Robert B. Fennel, 241 Deerfield Rd., Bloomingdale, Ga. 31302
Division of Ser. No. 526,236, Aug. 25, 1983, Pat. No. 4,505,530.
This application Jan. 24, 1985, Ser. No. 694,368
Int. Cl.⁴ H01R *43/00, 13/44*
U.S. Cl. 29—874 2 Claims



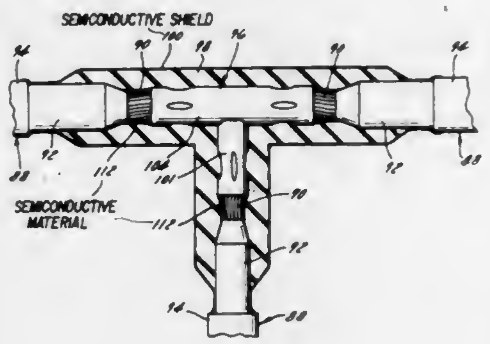
1. A method of pilfer proofing a ringless plug-in type electric utility meter box having a contact terminal block set, and cover while it is still electrically connected to service entrance conductors from the electrical power line, comprising,

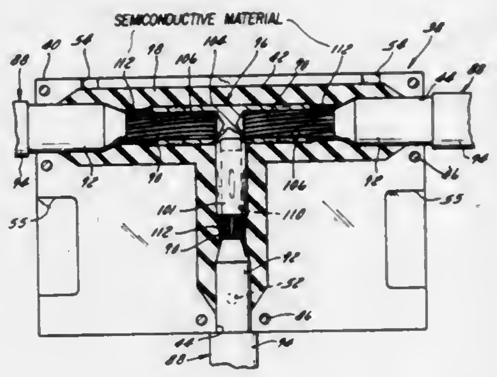
removing the meter and cover,
plugging insulating members into the energized contacts of said contact terminal block set,
converting the cover of said meter box to a cover having flange and a meter locking collar,
adapting said meter box for securement thereto of said meter locking collar and flange thereon,
securing said meter locking collar to said meter box such that access to the interior of said meter box can only be had through said meter locking collar,
removing said insulating members from the energized contacts of said contact terminal block,
plugging the electric meter in said contact terminal block set in said meter box with the base of the meter engaging a surface of said meter locking collar flange,
and securing a locking ring on the base of said meter and said meter locking collar flange.

2. The method of pilfer proofing a ringless plug-in type utility meter box while it is still electrically connected to service entrance conductors from the power line as defined in claim 1, further comprising extending the contacts in said contact terminal block set towards the outer cover of said electric utility meter box.

4,615,114
METHOD OF MANUFACTURING MOLDED BUSWORK FOR POWER DISTRIBUTION SYSTEMS

Howard T. Jones, and Thomas M. Golner, both of Waukesha, Wis., assignors to ASEA Electric, Incorporated, Waukesha, Wis.
Filed Mar. 12, 1984, Ser. No. 588,553
Int. Cl.⁴ H02G *1/14, 15/08;* **H01R** *4/20*
U.S. Cl. 29—858 6 Claims





1. A process for manufacturing an insulated high voltage T-connector which comprises the steps of forming an electrically conductive member having a T-shape with openings at the three ends thereof for connection to insulated cables, stripping insulation from ends of insulated cables to expose the conductors of the cables, inserting into each of the openings in the conductive member an individual exposed conductor end, crimping the conductive member to the exposed ends of the conductors, aligning the conductive member and cables in a T-shaped cavity of an open split mold, the cavity extending beyond the exposed conductors to the adjacent insulation on

each of the cables, the mold having reduced diameter sections at the outer ends of the T-shaped cavity to engage the insulation on each of the cables, closing the split mold so that the reduced diameter sections sealingly engage the insulation on each of the cables to support the conductive member in a spaced relation to the walls of the cavity in the mold, pouring a room temperature curable silicone rubber into the lower portion of the cavity so that the rubber rises slowly to the top of the cavity to encapsulate the conductuve member, the exposed conductors and the adjacent insulation on each cable, and allowing sufficient time for the silicone rubber to cure within the cavity, whereby the conductive member, the exposed conductors and the adjacent insulation on each cable are completely encapsulated in a solid silicone rubber insulation.

4,615,115
METHOD FOR CONNECTING A PLUG CONNECTOR TO A CABLE

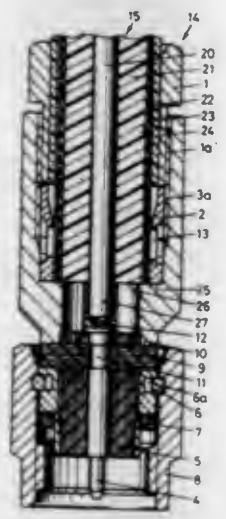
Andreas Bosshard, and Bernhard Lämmler, both of Herisau, Switzerland, assignors to Huber & Suhner AG, Herisau, Switzerland

Division of Ser. No. 554,764, Nov. 23, 1983, Pat. No. 4,545,637. This application Aug. 21, 1985, Ser. No. 767,338

Claims priority, application Switzerland, Nov. 24, 1982, 6857/82

Int. Cl.⁴ H01R *43/02*

U.S. Cl. 29—860 **4 Claims**



1. A method for making of a plug connector for a coaxial cable having an inner conductor (20), a dielectric layer (21), a first covering (22) made of an overlapping coiled metal foil band, a second covering (23) made of woven wire, an exterior cover (24), a nipple (1) surrounding the exterior cover, a clamping contact ring (2) surrounding the second covering, a plug pin (4) connected to the inner conductor (20), a plug housing (3) electrically connected with at least one of the two coverings (22, 23), the plug housing having a bore (10), and a connecting sleeve (8) mounted on the plug housing (3), characterized by the cutting of the exterior cover (24) at three locations (31, 32, 33) in the connection area of the cable (15) and removing the center cover section (35) for the purpose of exposing the second covering (23) and tinning this exposed portion of the second covering (23), by removing the end-most cover section (36) and sliding on first the nipple (1) until it is over the exterior cover (24) and then sliding on the contact ring (2), by removing the remaining cover section (34) and pressing the contact ring (2) against the exterior cover (24) and soldering the contact ring (2) to the coverings (22, 23), then cutting the cable (15) shortly in front of the contact ring (2) and face-turning the cut surface down to the inner conductor (20) with a simultaneous shortening of the contact ring (2), then characterized by attaching the plug pin (4) to the inner conductor (20) and soldering same, and further by attaching the plug housing (3) to the cable (15) and threading same with the nipple (1) and then casting the bore (10) in the plug housing (3) with epoxy resin and finally by mounting the connecting sleeve (8) with a circlip (6) and a sealing ring (7).

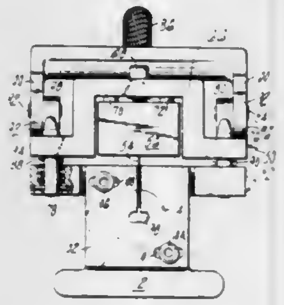
4,615,116
SLITTING APPARATUS

Thomas E. Hanson, South Deerfield, Mass., and Roger J. Sevigny, Hartford, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 7, 1985, Ser. No. 689,252

Int. Cl.⁴ H02G *1/12*

U.S. Cl. 30—90.4 **2 Claims**



1. Apparatus for slitting the outer jacket of a cable having a pair of insulated wires twisted in the form of a helix within the outer jacket, comprising:

housing means, having a passage therein for longitudinally pulling the cable therethrough;

slitting means, mounted on said housing means for slitting the outer jacket of the cable at a controlled depth; and

transparent sheet guide means, mounted on said housing means having a peanut shaped aperture for causing the cable to twist with respect to the slitting means as the cable is slit during said pulling through said apparatus.

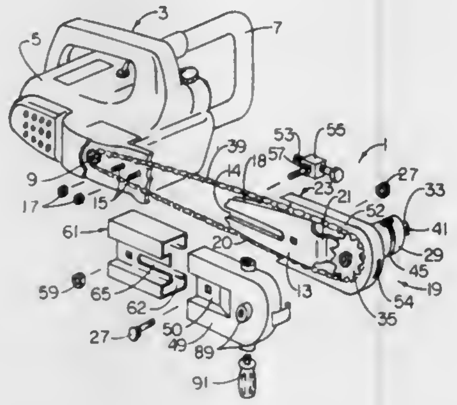
4,615,117
FITS-ALL POWER BAR

Roland Flath, Rte. 5, Box 242, Fond du Lac, Wis. 54935

Continuation-in-part of Ser. No. 484,855, Apr. 14, 1983, abandoned. This application Nov. 5, 1984, Ser. No. 667,973

Int. Cl.⁴ B25F *3/00;* **B26B** *11/00*

U.S. Cl. 30—122 **4 Claims**



1. An attachment for mounting one of a variety of tools thereon for being driven by a source of power comprising:

a. generally flat bar means for mounting to the power source and extending longitudinally therefrom toward a distal end;

b. housing plate means joined to the bar means for stiffening the bar means;

c. cover means for removably joining to and cooperating with the housing plate means to define a generally ovular passageway through the housing plate means and cover means;

d. spindle means mounted to the housing plate means for rotating a selected tool;

e. drive means for transmitting power from the power source to the spindle means, the drive means being at least partially enclosed by the ovular passageway in the housing plate means and cover means;

f. a sliding guard having a pair of spaced channels adapted to nest and slide within the passageway formed by the housing plate means and cover means to enclose a portion of the drive means, the sliding guard being selectively loosened from or tightened to the housing plate means and bar means; and

g. positive adjustment means comprising an adjustment block attached to the sliding guard and an adjustment screw threaded through the adjustment block and adapted to bear against the power source, so that the sliding guard may be positioned along the attachment to permit the adjustment screw to bear against the power source and tightened to the housing plate means and bar means to permit tensioning of the drive means through the adjustment screw bearing against the power source.

4,615,118
MAGAZINE TYPE KNIFE

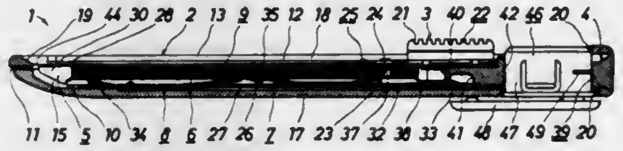
Sachiko Ihata, Osaka, Japan, assignor to Nippon Tenshashi Kabushiki Kaisha, Japan

Filed Feb. 5, 1985, Ser. No. 698,505

Claims priority, application Japan, Jul. 16, 1984, 59-107962[U]

Int. Cl.⁴ B26B *29/00*

U.S. Cl. 30—151 **5 Claims**



1. A magzine type knife provided with an elongated main body which defines a magazine storage cavity running from a forward end to a rearward end thereof, an exit opening for blade bodies at the forward end thereof which is in communication with the magazine storage cavity, and a slider guide groove which is provided on a left side of the main body and is also in communication with the magazine storage cavity;

a slider which is so mounted on the guide groove that it slides freely along the groove of the main body; and,

an elongated magazine which is inserted into the magazine storage cavity from the rear end of the main body, characterized by structure comprising:

a magazine case shaped roughly like a C in section and equipped with a window hole at a forward end portion of a right side wall;

a base plate placed inside the magazine case and being elastically flexible toward the right and left directions with its forward end portion being curved toward the right side wall;

a first elastic body installed between the base plate and the right side wall of the magazine case at their rear end portions respectively for exerting an expanding force to press the base plate toward a left side wall of the magazine case;

a second elastic body installed between the curved forward end portion of said base plate and the right side wall of said main body and protruding through the window hole on the right side wall of said magazine case for exerting an expanding force to flex said curved forward end portion and thereby straighten the curved forward end portion of the base plate and press it toward the left side wall; and,

a plurality of blade bodies which are moved between the left side wall of the magazine case and the base plate through the forward end opening of the magazine case by movement of said slider in said groove.

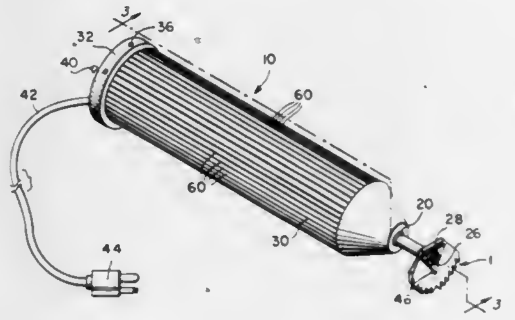
4,615,119
BLADE FOR A VIBRATORY CUTTER

David S. Johnson, and Everett L. Haas, both of Bristol, Tenn., assignors to JHJ Enterprises, Gainesville, Ga.

Filed Apr. 26, 1984, Ser. No. 603,935

Int. Cl.⁴ B26B *7/00*

U.S. Cl. 30—276 **8 Claims**



1. A blade for a vibratory or oscillatory cutter, said blade comprising:

an arcuate cutting surface provided with a center line bisecting said arcuate cutting surface, said arcuate cutting surface subtending an angle less than 180°, and said blade provided with a mounting hole bisected by said center line;

a plurality of first teeth provided on a first side of said center line, each of said first teeth provided with a rake angle and a relief angle, said rake angle and said relief angle for each of said first teeth being unequal to each other, and the relief angle for each of said first teeth angled only in a first direction with respect to said center line; and

a plurality of second teeth provided on the second side of said center line, each of said second teeth provided with a rake angle and a relief angle, said rake angle and said relief angle for each of said second teeth being unequal to each other, and the relief angle of each of said second teeth angled only in a second direction with respect to said center line, the relief angle of each of said second teeth being equal but opposite to the relief angle of each of said first teeth;

whereby a cutting action takes place on both the forward motions of said blade over a working surface.

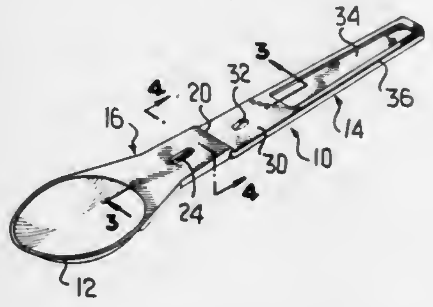
4,615,120
COLLAPSIBLE SPOON

Brett E. Newman, Weston, Conn., assignor to Continental Can Company, Inc., Stamford, Conn.

Filed Dec. 21, 1984, Ser. No. 685,103

Int. Cl.⁴ A47J *43/28*

U.S. Cl. 30—324 **13 Claims**



1. A utensil comprising a product handling part and a one-piece handle, said handle having an intermediate transverse bendable hinge dividing said handle into two parts and forming means for facilitating folding of said handle back upon itself to a stored position, and cooperating interlocking means on said handle parts adjacent said hinge for releasably retaining said handle parts as rigid extensions of one another, said cooperating interlocking means being disposed entirely to one side of said hinge.

4,615,121
DEVICE FOR A CHAIN SAW FOR THE SLITTING OF BARK LAYERS OF A LOG

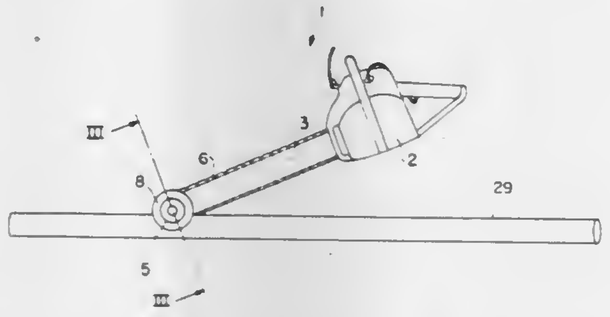
Sigurd Hakansson, Mellansel, Gotlne 5337, S-89042, Sweden, assignor to Sigurd Hakansson, Mellansel; Ergonomen HB, Domsjö, and Arne Lindahl, Domsjö, all of Sweden, a part interest to each

Filed Dec. 10, 1984, Ser. No. 679,953

Claims priority, application Sweden, Jun. 10, 1983, 8303300

Int. Cl.^{4} B27B *17/02*

U.S. Cl. 30—371 **20 Claims**



1. A kit for making slits in logs, said kit for installation on a chain saw, a blade of said chain saw having a chain for movement along said blade at least at a first end of said blade opposite a motor of said chain saw, said kit, when assembled on said chain saw, for being disposed, in operation of said chain saw, at said first end, and guiding said chain at said first end, whereby in operation, said saw with said kit installed thereon is for slitting at least a bark layer of a round log, said kit comprising:
- two separate mountable means each consisting of a sole member, each sole member having a substantially circular portion and each sole member being directly mountable, one on each side of and abutting said saw blade;
- said two sole members for being mounted substantially opposite one another on opposite sides of and in proximity of said first end of said saw blade, whereby said two sole members each make contact with a round log when said two sole members are mounted on said saw blade and when said chain saw is in operation, at least when said saw is being moved therealong for making a lengthwise cut therein.

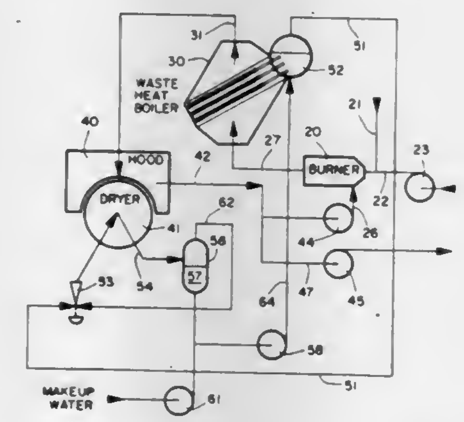
4,615,122
METHOD FOR PROVIDING STEAM AND HOT AIR FOR HOODED DRYING CYLINDERS

Earle H. Sherrod, Outagamie County; Clarence J. Lamers, Brown County, and Kenneth C. Smits, Winnegabo County, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 9, 1984, Ser. No. 597,954

Int. Cl.^{4} F26B *3/00, 3/02, 3/24*

U.S. Cl. 34—18 **6 Claims**



1. In a web drying process wherein the web is applied to the surface of a steam-heated drying cylinder which is partially enclosed by a drying hood continuously supplied with hot air, the improvement comprising:
- (a) continuously heating air in a burner and passing the heated air through a waste heat boiler;
- (b) generating steam in the waste heat boiler using the heated air from the burner as a heat source;
- (c) directing the heated air passing from the waste heat boiler into the drying hood, wherein the moisture content of the heated air is increased;
- (d) exhausting the moistened air from the drying hood; and
- (e) heating a major portion of the moistened air in the burner as set forth in step (a).

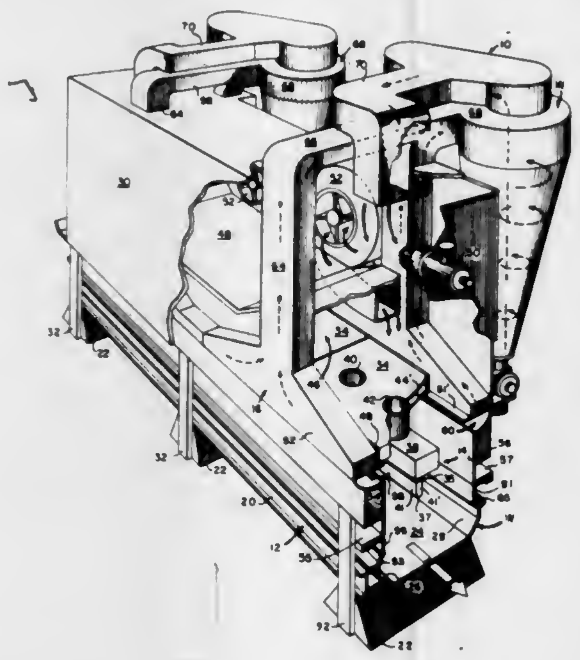
4,615,123
APPARATUS FOR THE CONTINUOUS TREATMENT OF SOLID PARTICLES IN A FLUIDIZED STATE

Ernest C. Brown, 19 Ledgewood Dr., Danvers, Mass. 01923

Filed Nov. 23, 1984, Ser. No. 674,276

Int. Cl.^{4} F26B *17/10*

U.S. Cl. 34—57 A **29 Claims**



1. Apparatus for treating particulate material as the particles are advanced continuously through a treatment zone comprising:
- (a) structure defining an elongated treatment zone having a feed end and a discharge end including a conveyor for transport of particulate material through said treatment zone, said conveyor defined by an imperforate, horizontally disposed base member for containment of said particles;
- (b) a plurality of nozzle assemblies each comprising an elongated nozzle terminating in a rectangular-shaped slot located adjacent to and above said imperforate base member, said plurality of nozzle assemblies providing at least one row of nozzle assemblies located in serial fashion along said treatment zone from said feed end to said discharge end, said elongated nozzle in each said assembly extending in its lengthwise direction in the lengthwise direction of the treatment zone, the rectangular-shaped slots in each said elongated nozzle terminating in the same horizontal plane above the said imperforate base member;
- (c) a distribution plenum being located above said at least one row of nozzle assemblies for providing a flow of conditioned gas to each said nozzle assembly in said at least one row; and
- (d) means to cause conditioned gas to flow to said distribution plenum and to each said elongated nozzle and out said elongated rectangular-shaped slots for fluidizing the particles being transported while simultaneously conditioning those fluidized particles, and to cause said gas to be exhausted from the treatment zone.

4,615,124
FLUFF FILTERING DEVICE OF A CONVECTION DRYING AND/OR SETTING MACHINE

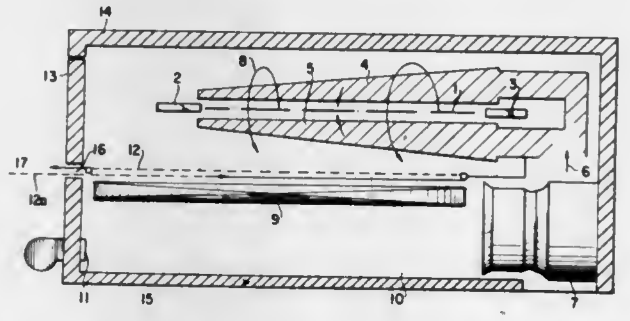
Franz-Josef Gierse, Siegen; Heinrich Hermanns, Korschenbroich; Werner Hermes, Tönisvorst; Gerhard Lüpnitz, Monchen-Gladbach; Manfred Pabst, Cologne, and Heribert Schlicht, Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to A. Monforts GmbH & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed May 9, 1985, Ser. No. 732,442

Claims priority, application Fed. Rep. of Germany, May 9, 1984, 3417101

Int. Cl.^{4} F26B *21/00*

U.S. Cl. 34—82 **4 Claims**



1. Fluff filtering device within a convection drying and/or setting machine for treating a textile material web, comprising means for circulating an air stream through the textile material web, means for heating said air stream, an active filter screen with a frame of a given thickness disposed substantially horizontally in an operating position upstream of said heating means in said air stream for preventing fluff and other deposits from reaching said heating means, said active filter screen being substantially horizontally removable from the machine for cleaning, said active filter screen being upwardly movable into another position by a distance at least equal to said given thickness during which movement said active filter screen is in effective operation, and another screen slideable under said active filter screen into said operating position when said active filter screen is in said other position so as to allow replacement of the active filter screen without interruption of the filtering operation.

4,615,125
CLOTHES DRYER

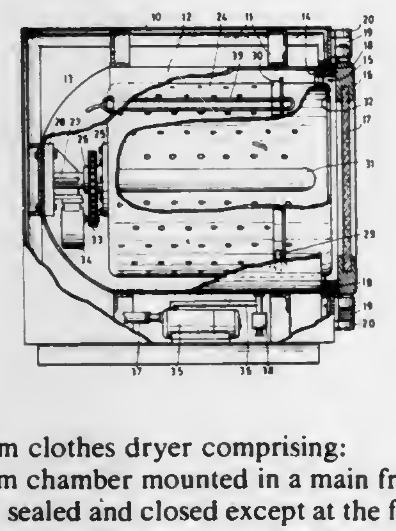
Kenneth G. Wyborn, South Grafton, Australia

Filed Sep. 28, 1984, Ser. No. 655,421

Claims priority, application Australia, Sep. 30, 1983, PG1644

Int. Cl.^{4} F26B *11/04*

U.S. Cl. 34—92 **3 Claims**



1. A vacuum clothes dryer comprising:
- (a) a vacuum chamber mounted in a main frame, said chamber being sealed and closed except at the front thereof and dome shaped at the rear end thereof;
- (b) a perforated drum spaced from and rotatably mounted within said vacuum chamber, said drum having a loading opening at the front thereof, and means for supporting said drum relatively adjacent its forward and rear ends for uniformly supporting clothes or other contents admitted to the drum to be heated;
- (c) a door hingedly mounted at the front of the dryer over said loading opening, said door cooperating with sealing means mounted at the front of said chamber for effecting, when closed, an air-tight seal for sealing said chamber and said drum;
- (d) drive means for rotating said drum, said drive means including means for supporting said drum adjacent the rear end thereof, said drive means further including a drive motor and gear box, a driven shaft rigidly mounted on the rear end of said drum and positioned at its forward end in a mounting plate fixed to said frame, and a chain drivably interconnecting said drive motor and said driven shaft;
- (e) heating means mounted in the space between said chamber and said drum for heating the contents of said drum,
- (f) a motor driven vacuum pump mounted on said frame exteriorly of said chamber and connected by a vacuum line to said chamber, and wherein
- (g) said drive motor, mounting plate, driven shaft, and chain are mounted within said dome shaped chamber, whereby said vacuum pump creates a partial vacuum within said chamber, and thus said drum, thereby vaporizing moisture in the contents in the drum and withdrawing air and water vapor from the chamber and drum.

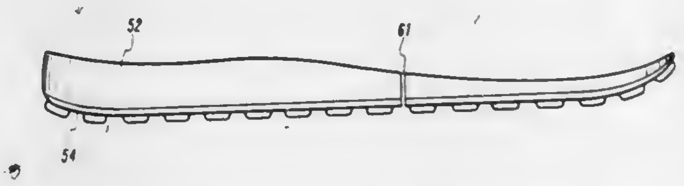
4,615,126
FOOTWEAR FOR PHYSICAL EXERCISE

Dennis P. Mathews, 3909 Swiss Ave., Box 380, Dallas, Tex. 75204

Filed Jul. 16, 1984, Ser. No. 632,416

Int. Cl.^{4} A43B *13/12, 13/16, 13/18*

U.S. Cl. 36—102 **19 Claims**



10. A solepiece for an athletic shoe or the like, comprising:
- a ground-engaging bottom surface;
- a midsole portion for providing foot support; and
- a discontinuity disposed therein extending horizontally from the lateral side of the solepiece inwardly to a predetermined position and vertically through substantially the entire midsole portion and bottom surface for being disposed substantially beneath the selected ones of the metatarsal bones of the wearer's foot, to enhance flexure of said solepiece along with the wearer's foot during physical exercise.

4,615,127
SKI BOOT

Marc Delery, Caluire, France, assignor to Compagnie Francaise d'Articles de Sport, Du Pont, France

Filed Mar. 29, 1985, Ser. No. 717,866

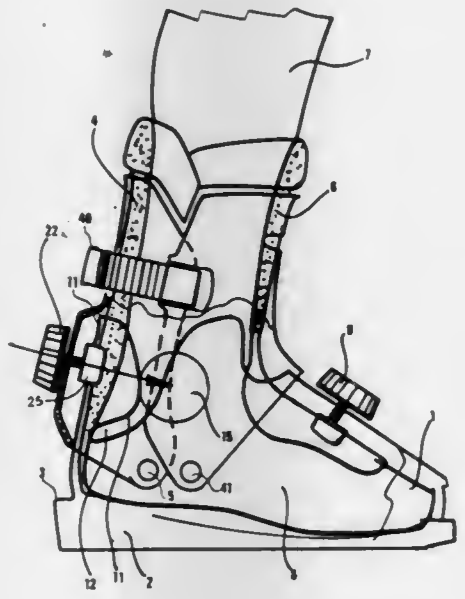
Claims priority, application France, Apr. 6, 1984, 84 05690

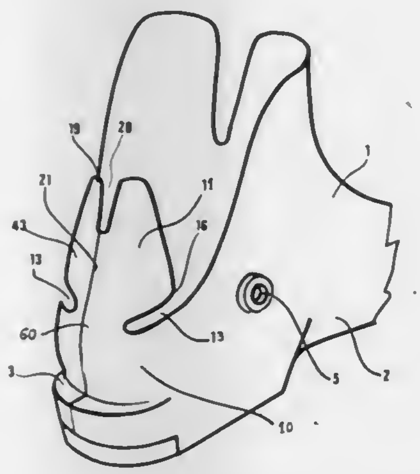
Int. Cl.^{4} A43B *5/04*

U.S. Cl. 36—117 **4 Claims**

1. An improved rear-entry ski boot comprising:
- a shell adapted to receive a wearer's foot;
- rear and front spoilers articulated to said shell; and
- tightening means;
- wherein said shell has an integral rigid flexible portion flexibly articulated to a rear portion of said shell at the level of the wearer's calcaneum, said rigid flexible portion comprising a V-shaped notch disposed at the top of said rigid flexible portion along a plane of join, and two symmetrical clearances in the plane passing through the top of the

wearer's calcaneum and the zone of swell of the wearer's malleoli and stopping at the rear of such swell; and





further wherein the rear spoiler comprises means for pushing said rigid flexible portion towards the front of the shell.

4,615,128
SKI BOOT INCORPORATING A FLEX CONTROL DEVICE

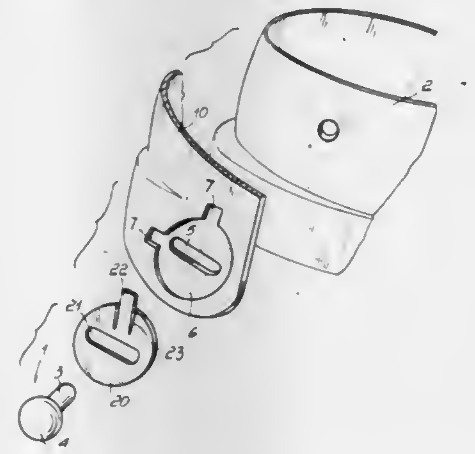
Bruno Borsoi, Conegliano Veneto, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

Filed Jan. 22, 1985, Ser. No. 693,632

Claims priority, application Italy, Jan. 25, 1984, 19316 A/84

Int. Cl.⁴ A43B *5/04*

U.S. Cl. 36—120 **12 Claims**



1. A ski boot incorporating a flex control device, said ski boot including at least two mutually movable juxtaposed surface portions lying substantially parallel to a common plane, said flex control device comprising a pin element associated with one of said mutually movable surface portions, an impression defined on another of said mutually movable surface portion, an elongate aperture formed in said impression, a shaped plate, a slot formed in said shaped plate, and locking means, said shaped plate being removably receivable in said impression with said slot overlying said elongate aperture, said pin element extending substantially orthogonally to said common plane through said elongate aperture and said slot, said locking means being adapted for releasably locking said small shaped plate in at least a first position and a second position in said impression for selectively controlling relative movement between said mutually movable surface portions in directions substantially parallel to said common plane.

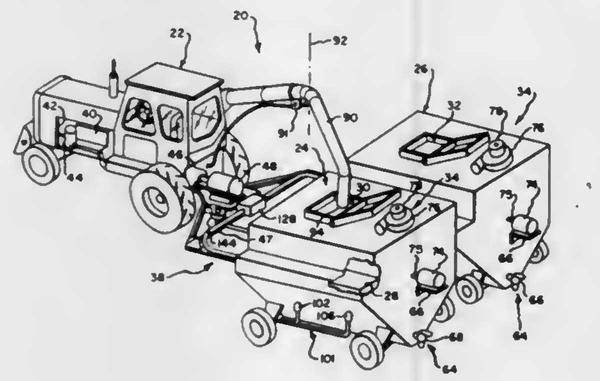
4,615,129
SNOW-DISPOSAL UNIT AND METHOD

Patrick H. Jackson, 240 Ayer Rd., Williamsville, N.Y. 14221

Filed Dec. 12, 1985, Ser. No. 808,069

Int. Cl.⁴ E01H *4/00*

U.S. Cl. 37—197 **20 Claims**



1. A method for melting snow for disposal comprising the steps of:

providing a vehicle including a sealable snow-collection receptacle having a water-holding internal compartment and an engine for propelling the vehicle;

collecting snow in said receptacle;

sealing said receptacle;

lowering the internal pressure of said receptacle to thereby lower the boiling point of the water held by said internal compartment;

routing waste heat from the engine to said internal compartment for boiling the water held therein and thereby readily melting the collected snow.

4,615,130
SNOWPLOW MOUNTED ON LONGITUDINAL FRAME ATTACHABLE TO CHASSIS

Gerald Racicot, 5521 rue St-Joseph, Valcourt, Quebec, Canada JOE 2LO

Filed May 28, 1985, Ser. No. 738,367

Int. Cl.⁴ E01H *5/04*

U.S. Cl. 37—231 **18 Claims**

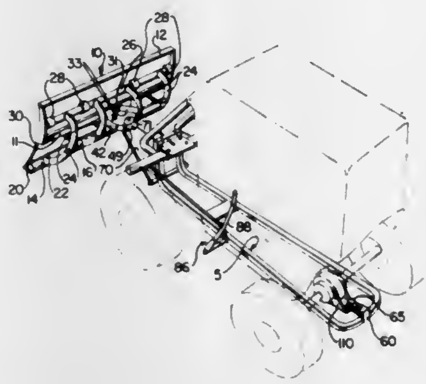
1. A shock-absorbing snowplow blade for a relatively small vehicle comprising:

a transversely extending rigid snow deflecting body positioned generally vertically and having an upper edge projecting forwardly, said snow deflecting body being adapted to receive and deflect the snow in a generally frontal direction;

a ground-engaging bar extending parallel to and located below said snow deflecting body leaving an open space therebetween, said ground engaging bar having approximately the length of said snow deflecting body and having a substantially vertical flat frontal surface;

rearwardly swinging arm means having an end pivoted to said body in a region thereof which is remote from the lower front edge thereof, said rearwardly swinging arm

means having an opposite end attached to said ground-engaging bar, said rearwardly swinging arm means being biased forwardly against stop means by return spring means to cause said ground-engaging bar to yield rearwardly when the snowplow blade encounters an obstacle during the operation thereof, said rearwardly swinging arm means and said ground-engaging bar forming a support holding said snow deflecting body a predetermined height above the ground;



a flexible deflector in the form of a thick strip of rubber or the like material attached to said snow deflecting body along the lower front edge thereof, said flexible deflector having approximately the length of said snow deflecting body and extending downwardly to the ground in front of the ground-engaging bar, the botton edge of said flexible deflector resting against and being urged forwardly by said flat frontal surface during operation of said snowplow blade; and

means mounted to said snow deflecting body for attaching said snowplow blade to a vehicle.

4,615,131
ROTATING DISPLAY ELEMENT AND DISPLAY UNIT USING THE SAME

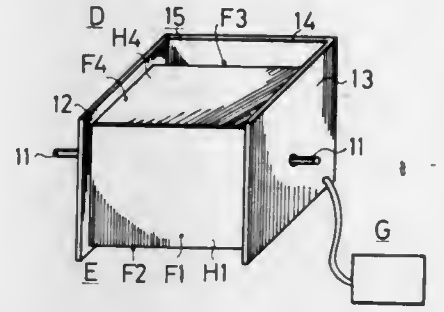
Yoshimasa Wakatake, No. 405, 9-5 Tamagawa 1-chome, Setagaya-ku, Tokyo, Japan

Filed Apr. 13, 1984, Ser. No. 600,287

Claims priority, application Japan, Apr. 15, 1983, 58-66681

Int. Cl.⁴ G09F *11/02*

U.S. Cl. 40—473 **1 Claim**



1. A display unit comprising:

a rotating display element; and

a drive unit for driving the rotating display element;

wherein the rotating display element is provided with a display surface member having four display surfaces, and a permanent magnet type motor mechanism;

wherein the display surface member is mounted on the rotor of the permanent magnet type motor mechanism so that it incorporates therein the permanent magnet type motor mechanism;

wherein the four display surfaces of the display surface member are arranged side by side around the axis of the rotor;

wherein either one of the rotor or the stator of the permanet magnet type motor mechanism has first and second double-pole permanent magnet members respectively having north and south magnetic poles and disposed side by side in the direction of extension of the axis of the rotor;

wherein the north and south magnetic poles of the first double-pole permanent magnet member are disposed around the axis of the rotor at an angular distance of 180° from each other;

wherein the north and south magnetic poles of the second double-pole permanent magnet member are disposed around the axis of the rotor at an angular distance of $\pm\alpha°$ (where $\alpha°$ includes 0°) from the north and south magnetic poles of the first double-pole permanent magnet member and at an angular distance of 180° from each other;

wherein the other of the rotor and the stator of the permanent magnet type motor mechanism has a first magnetic member provided with first and second magnetic poles acting on the north and south magnetic poles of the first double-pole permanent magnet member, a second magnetic member provided with third and fourth magnetic poles acting on the north and south magnetic poles of the second double-pole permanent magnet member, a first exciting winding wound on the first magnetic member in manner to excite the first and second magnetic poles in reverse polarities, and a second exciting winding wound on the second magnetic member in a manner to excite the third and fourth magnetic poles in reverse polarities;

wherein the first and second magnetic poles of the first magnetic member are disposed around the axis of the rotor at an angular distance of 180°;

wherein the third and fourth magnetic poles of the second magnetic member are disposed around the axis of the rotor at an angular distance of $\pm 90° \pm\alpha°$ from the first and second magnetic poles of the first magnetic member and at an angular distance of 180° from each other;

wherein the north and south magnetic poles of the first and second double-pole permanent magnet members each extend over an effective angular range of about 90° around the axis of the rotor; and

wherein the drive unit has first power supply means for supplying power to the first winding so that the first and second magnetic poles of the first magnetic member are magnetized with the north and south magnetic poles, respectively; second power supply means for supplying power to the first exciting winding so that the first and second magnetic poles of the first magnetic member are magnetized with the south and north magnetic poles, respectively; third power supply means for supplying power to the second exciting winding so that the third and fourth magnetic poles of the second magnetic member are magnetized with the north and south magnetic poles, respectively; and fourth power supply means for supplying power to the second exciting winding so that the third and fourth magnetic poles of the second magnetic member are magnetized with the south and north magnetic poles, respectively.

4,615,132
SELF LOADING PISTOL HAVING A REAR SIGHT WHICH SECURES A DETACHABLE BREECH BLOCK INSERT

David E. Smith, 5 Park Ave., Telscombe Cliffs, Sussex, England

Filed Mar. 26, 1984, Ser. No. 593,390

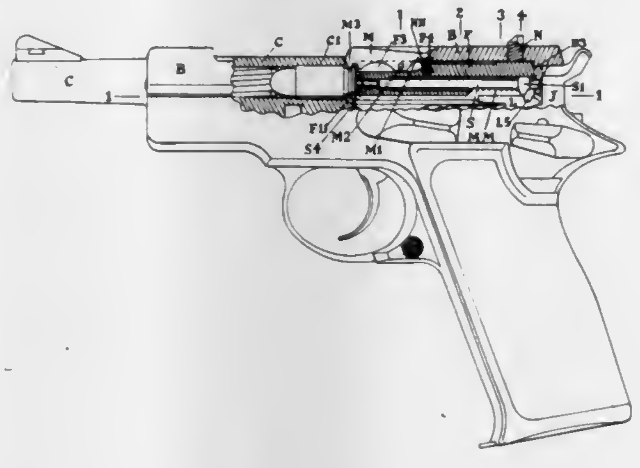
Claims priority, application United Kingdom, Mar. 28, 1983, 8308422

Int. Cl.⁴ F41C *15/06, 11/00*

U.S. Cl. 42—25 **7 Claims**

1. A fire arm of the self loading pistol type, comprising a barrel, a reciprocating breeck block slide having a detachable breach block insert, said insert holding a cartridge extractor and a firing pin, a chamber to hold a cartridge having a rim, a firing lock and a rear sight, wherein the breach block insert is held in position in the slide by means of the rear sight, wherein the rear sight has a lower point which is of bifurcated construction to provide two limbs that are located in respective vertical

slots that are provided in opposite sides of the insert, and an upper part that is located in a transverse slot in the slide, and wherein one limb of the bifurcation has provided at its lower end a blind, vertical, internally-threaded bore, into which an adjusting screw for the rear sight is is threadedly inserted, the screw having a lower portion which projects into a hole in the slide and can be rotated through said hole to adjust the position of the rear sight, means being provided to prevent relative axial movement of said screw with respect to said slide.



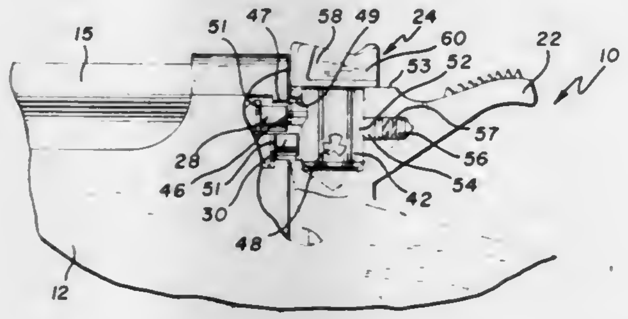
4,615,133
FIRING PIN SELECTOR FOR GUN

Warren A. Center, Alton Bay, N.H., assignor to K. W. Thompson Tool Company, Inc., Rochester, N.H.

Filed Sep. 21, 1984, Ser. No. 653,686

Int. Cl.⁴ F41C *11/02*

U.S. Cl. 42—69.01 **8 Claims**



1. Gun for selectively firing rim-fire and center-fire cartridges comprising:
- (a) a receiver,
- (b) a center-fire pin mounted in the receiver for axial sliding movement relative to the receiver,
- (c) a rim-fire pin mounted in the receiver for axial sliding movement relative to the receiver,
- (d) a trigger mechanism,
- (e) a hammer pivotally mounted on the receiver and operatively-connected to the trigger mechanism for movement between a firing position and a cocked position,
- (f) a pin selector housing mounted on the hammer for selective movement between a rim-fire position and a center-fire position,
- (g) a center-fire hammer pin mounted on said housing so that said center-fire hammer pin is in firing alignment with said center-fire pin when said housing is in said center-fire, and
- (h) a rim-fire hammer pin mounted on said housing so that said rim-fire hammer pin is in firing alignment with said rim-fire pin when sid housing is in said rim-fire position.

4,615,134
RETAINING MECHANISM FOR RIFLE MAGAZINES

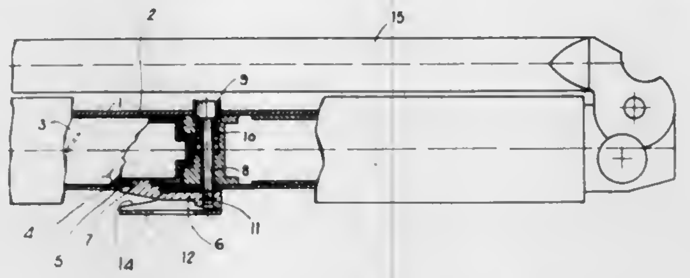
Pier G. Beretta, Gardone V.T., Italy, assignor to Fabrica d'Armi P. Beretta S.p.A., Italy

Filed Nov. 9, 1984, Ser. No. 670,342

Claims priority, application Italy, Nov. 15, 1983, 5220 A/83

Int. Cl.⁴ F41C *27/00*

U.S. Cl. 42—6 **4 Claims**



1. An ambidextrous release and retaining mechanism for magazines of automatic or semi-automatic rifles, the magazines each having a lateral securing slot therein and the rifles having a body for receiving the magazines, comprising a rod guided for transverse sliding movement through the body of the rifle, said rod having opposite first and second ends extending outside the body, a spring engaged with said rod and against the body for biasing said rod in a direction toward its first end, a pushbutton connected to said first end of said rod for manually pushing said rod against the bias of said spring, a hook member having a tooth engagable in the lateral slot of a magazine in the body, said hook member being fixed to said second end of said rod, and an auxiliary lever pivotally mounted to said second end of said rod, said auxiliary lever having a cam portion engagable against a side of the body opposite from said first end of said rod, said cam portion being spaced away from said second end of said rod and said auxiliary lever having a pressable portion extending further from said second end of said rod than said cam portion so that said pressable portion can be pressed toward the body for moving said rod against the bias of said spring, movement of said rod against the bias of said spring detaching said tooth of said hook member from the lateral slot of a magazine in the body.

4,615,135
KNOTLESS WEIGHT BOOM

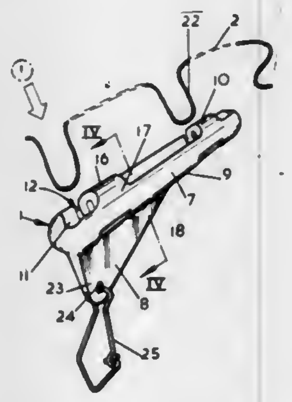
Duncan J. Swinbanks, and Brian J. Swinbanks, both of Isle of Mull, Scotland, assignors to Knotless Fishing Tackle Ltd., Isle of Mull, Scotland

Filed Mar. 21, 1985, Ser. No. 714,368

Claims priority, application United Kingdom, Mar. 22, 1984, 8407444

Int. Cl.⁴ A01K *95/00*

U.S. Cl. 43—43.13 **10 Claims**



1. A knotless weight boom for a fishing line which boom comprises an elongate body having a laterally extending boom member for use in weighting the boom, said body having an elongate groove means extending longitudinally and within the body, said elongate groove means having open portions and at least two covered portions along its length, said covered portions defined by at least two respective tongue-like retainer means extending from a root portion at the side of said elongate groove means in a substantially arcuate or bent manner about said elongate groove means, each retainer means further extending into and at least partially through at least two respective transverse axially parallel slots or channels, said slots or channels extending from a bottom portion of said elongate groove means through said elongate body, said slots or channels being sized to allow respective loops taken in the fishing line to be fed into said slots and hooked over said retainer means whereby the line may then be pulled back to seat it in said elongate groove means, said elongate groove means sized to receive the fishing line with a loose sliding fit whereby the boom can freely slide along the line while being substantially securely retained thereon.

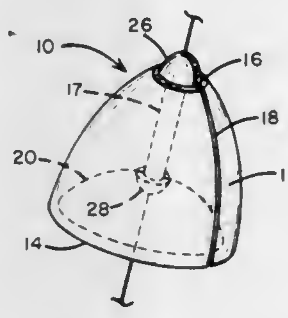
4,615,136
FISHING SINKER

Morton A. Bank, 334 Glenwood Dr., Bismarck, N. Dak. 58501

Filed Mar. 14, 1985, Ser. No. 711,530

Int. Cl.⁴ A01K *95/00*

U.S. Cl. 43—44.91 **4 Claims**



1. A fishing sinker comprising:

a mass of a high density material shaped generally as a right circular conic frustum having major and minor bases, said mass including a bore extending axially between said major base and said minor base and a slit extending radially outward from said bore to a side surface of said mass; and

an insert member having a central cylindrical portion of an outside diameter less than the diameter of said bore in said mass and an unstressed length at least that of said bore, and first and second opposite head portions of a diameter greater than the diameter of said bore when said head portions are uncompressed, said insert member having a longitudinal slot extended radially inwardly along its length, said insert member being insertable into said bore upon compression of said first head portion, said first head portion expanding to its uncompressed configuration once it exits said bore, said insert member then being retained in said bore solely by said head portions positioned beyond the opposite ends of said bore, with said insert being rotatable therein.

4,615,137
ENERGY EFFICIENT AERATED BAIT CONTAINER

Theodore J. Radmanovich, Rte. 2, Box 109A, Cohasset, Minn. 55721

Filed Jan. 18, 1985, Ser. No. 692,627

Int. Cl.⁴ A01K *97/04*

U.S. Cl. 43—57 **6 Claims**

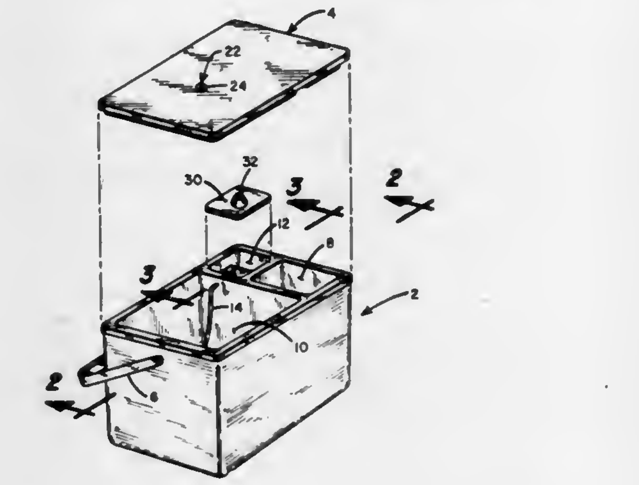
1. A live bait container comprising in combination:

a unitary housing formed of thermally insulative material entirely covered with a water impermeable skin, said housing including a plurality of compartments formed therein, each compartment open only to the top thereof, the tops of said compartments together comprising an open top of the housing;

a cover member for mounting over the open top of said housing;

battery operated pump means mounted in a first one of said compartments and coupled in air flow communication with a second one of said compartments for supplying air to water contained in said second compartment and thereby aerating the water;

a flexible pad and a plurality of projections extended into said second compartment for supporting a storage battery and the pump means in centered non-vibrating relation to said second compartment;



means coupled to said pump means for periodically operating said pump means for predetermined amounts of time selected to provide an adequate supply of oxygen to sustain a selected amount of live bait contained in the second compartment; and

air vent means mounted relative to said second compartment and open to the atmosphere.

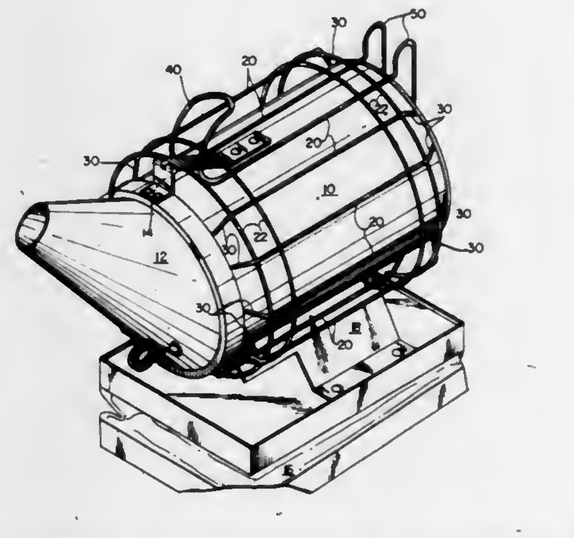
4,615,138
BEE SMOKER

David Cale, and Rodney Little, both of Hamilton, Ill., assignors to Dadant & Sons, Inc., Hamilton, Ill.

Filed Nov. 16, 1984, Ser. No. 672,358

Int. Cl.⁴ A01K *55/00*

U.S. Cl. 43—128 **4 Claims**



1. A bee smoker device comprising in combination
- (a) a generally cylindrical metal housing which is adapted to contain smoke generating materials,
- (b) a funnel-like outlet opening at the top end of said housing for the dispensing of smoke,
- (c) bellows means which is adapted to force air into said housing and facilitate the generation of smoke,
- (d) attachment means for operatively connecting said bellows means adjacent to said cylindricl housing,
- (e) a wire network surrounding at least 50% of the exterior

surface of said cylindrical housing, said wire network including

(1) a plurality of laterally spaced apart elongated wires that are disposed outwardly from said cylindrical housing and parallel to the longitudinal axis of said cylindrical housing, and

(2) a plurality of spaced apart arcuate wires interconnecting said spaced apart elongated wires at substantial right angles thereto,

(f) hook means connected to said wire network so that the combination of the hook means and wire network will permit hanging of the bee smoker on a support so that said hot cylindrical housing will always be maintained at a spaced distance away from said support, with the longitudinal axis of the said cylindrical housing being disposed in an essentially vertical direction, and

(g) a bent loop member located outwardly from said wire network adjacent the bottom end of said cylindrical housing which is opposite to said outlet end that is adapted to dispense smoke, said bent loop member extending laterally outwardly from the outer circumference of said wire network, whereby when said smoker is supported on the side of a hive by said hook means, said bent loop member will space the cylindrical housing far enough away from a hive to insure against burning of the hive by said cylindrical housing.

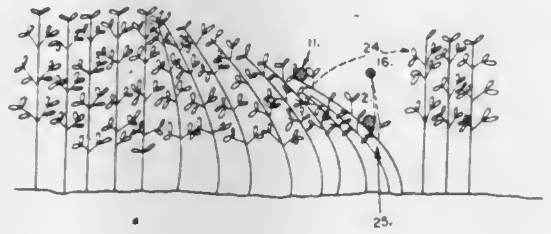
4,615,139
PROCESS FOR APPLYING LIQUID CHEMICAL DRYING AGENTS TO HAY USING A 3-BAR ASSEMBLY

Jeffrey S. Roberts, Hudson, Wis., assignor to Harvest Tec, Inc., Hudson, Wis.

Filed Mar. 8, 1985, Ser. No. 709,700

Int. Cl.⁴ A01M *21/00*

U.S. Cl. 47—1.7 **3 Claims**



1. A process for applying liquid chemical drying agents to alfalfa or clover plants using a 3-bar assembly that moves thru the plants in such a manner that the first bar pushes the plants forward between 40 degrees and 60 degrees from vertical, the second bar pushes the plants forward between 65 degrees and 80 degrees from vertical, and the third bar holds spraying devices that deliver the liquid to the plants just after such plants pass under the second bar.

4,615,140
VINE TIE

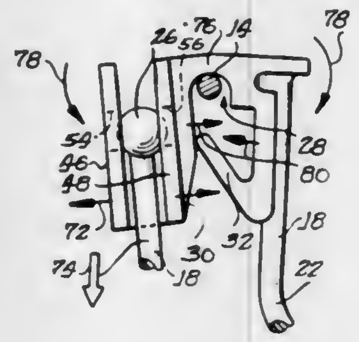
Francis G. Frano, Hoffman Estates, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 477,112, Mar. 21, 1983. This application May 10, 1984, Ser. No. 609,073

Int. Cl.⁴ A01G *17/06*

U.S. Cl. 47—44 **7 Claims**

1. A one-piece, integrally formed tie apparatus for releasably suspending a view or the like from a line, comprising: line engaging means for releasably engaging said line; and vine holding means for loosely surroundingly holding said vine or the like; said vine holding means further comprising elongate flexible arm means integrally extending from said line engaging means and elastically deformable to form a loop for loosely surrounding said vine or the like; first coupling means connected to said flexible arm means and defining a first cam surface; second coupling means for engaging said first coupling means to close off said loop defined by said flexible arm means to thereby completely surround said vine or the like; said means defining a second cam surface for normally opposing release of said first coupling means from said second coupling means in at least one direction and responsible to application of a predetermined amount of force to said flexible arm means substantially in said at least one direction for releasing said first coupling means from said second coupling means to thereby open said closed lopp for permitting removal of said vine or the like therefrom said line engaging means comprises peripheral wall means defining a line receiving passage having an entrance and flexible closure means elastically deformable in a given direction for permitting entry and removal of said line with respect to said entrance and resiliently returnable for opposing removal of said line from said entrance, said peripheral wall means defining said line receiving passage further includes an elastically deformable portion also responsive to said force applied to said flexible arm in said at least one direction for urging said flexible closure means in a direction for fully closing off said entrance to said passage, said locking recesses being generally semicircular and defining diameters less than said predetermined diameter of said spherical coupling means which are aligned directly opposite one another along said sidewall extensions.



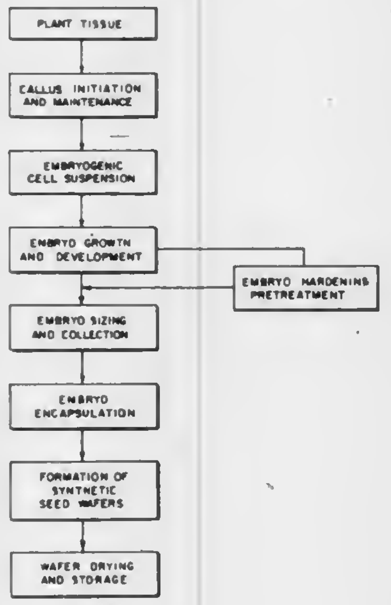
4,615,141
PROCESS FOR ENCAPSULATING ASEXUAL PLANT EMBRYOS

Jules Janick, and Sherry L. Kitto, both of West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Aug. 14, 1984, Ser. No. 640,923

Int. Cl.⁴ A01C *1/06*

U.S. Cl. 47—57.6 **21 Claims**


PLANT TISSUE
CALLUS INITIATION AND MAINTENANCE
EMBRYOGENIC CELL SUSPENSION
EMBRYO GROWTH AND DEVELOPMENT
EMBRYO HARDENING PRETREATMENT
EMBRYO SIZING AND COLLECTION
EMBRYO ENCAPSULATION
FORMATION OF SYNTHETIC SEED WAFERS
WAFER DRYING AND STORAGE

1. A method for the production of synthetic seeds comprising:

a. developing asexual plant embryos from somatic plant tissue,

b. hardening such asexual embryos during their developement to induce resistance to environmental stress,

c. coating such hardened asexual embryos with a solution of a non-toxic biocompatible, water-soluble synthetic coating material, and

d. drying the resulting solution-coated embryos to provide viable embryos encapsulated in the coating material.

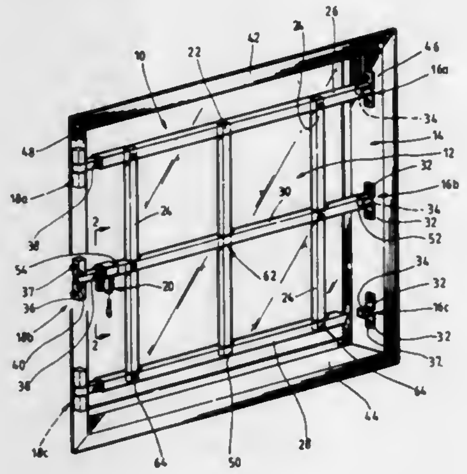
4,615,142
BURGLAR BARS

Irvin H. Reeves, 6158 Willers Way, Houston, Tex. 77057

Continuation-in-part of Ser. No. 428,535, Sep. 30, 1982. This application Aug. 16, 1984, Ser. No. 641,279

Int. Cl.⁴ E06B *3/68*

U.S. Cl. 49—55 **6 Claims**



1. A burglar bar apparatus mountable in the frame of a building aperture comprising:

a. a plurality of vertically spaced, laterally disposed lateral rods having corresponding first ends and opposite second ends;

b. a pair of mounting brackets for each lateral rod adapted to be mounted on laterally opposite jambs of the building aperture at the level of the respective lateral rod, a first bracket of each pair engaging the first end of its respective lateral rod, and a second bracket of each pair engaging the second end of its respective lateral rod, each first mounting bracket comprising a first flange portion attached to the aperture jamb and a laterally disposed first post portion extending from the first flange portion and sized to be received in the first end of its respective lateral rod, each second mounting bracket comprising a second flange portion attached to the opposite aperture jamb and a laterally disposed second post portion extending from the second flange portion and sized to be received in the second end of its respective lateral rod; and

c. a plurality of vertically disposed cross rods laterally spaced along the lateral rods to interconnect the lateral rods, each cross rod engaged without welding at its upper end to the uppermost lateral rod and at its lower end to the lowermost lateral rod to form a grid of the lateral rods and cross rods, the lateral rods being larger in cross section than the cross rods, each cross rod extending through a respective open-ended recess in each lateral rod intermediate the uppermost and lowermost lateral rods, the upper and lower ends of each cross rod being rigidly recessed within closed-ended recesses in the uppermost and lowermost lateral rods, respectively.

4,615,143
DOOR GLASS GUIDE MECHANISM FOR MOTOR VEHICLE

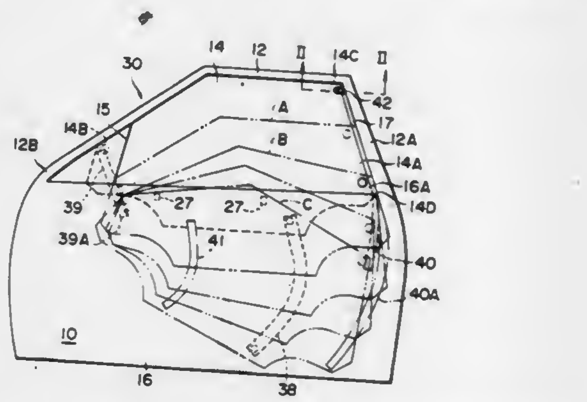
Hideki Isetani, Nagoya, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jul. 26, 1984, Ser. No. 634,549

Claims priority, application Japan, Jul. 27, 1983, 58-116825[U]

Int. Cl.⁴ E05F *11/38*

U.S. Cl. 49—374 **28 Claims**



1. A mechanism for guiding movement of a door glass in a motor vehicle door having a door panel, a front side door frame, and a rear side door frame, said rear side door frame leaning forwardly above the beltline of said door, said door glass guide mechanism comprising:

front door glass guide means, including a front guide, for restraining the forward end portion of said door glass from moving in the direction of the thickness of said door glass and for guiding said forward end portion of said door glass as said door glass moves vertically between a fully closed position, in which said forward end portion of said door glass is located at said front side door frame, and a predetermined partially opened position, in which said forward end portion of said door glass is located below said beltline at a bottom end position of said front guide; and

rear door glass guide means, including a door frame glass guide formed along the front portion of said rear side door frame, for restraining the rear end edge of said door glass from moving in the direction of the thickness of said door glass and for guiding said rear end edge of said door glass as said door glass moves vertically between said fully closed position and a fully opened position, said rear door glass guide means cooperating with said front door glass guide means to guide said door glass to move parallel to said rear side door frame between said fully closed position and said predetermined partially opened position, and to pivot between said predetermined partially opened position and said fully opened position about said forward end portion of said door glass located at said bottom end position of said front guide.

4,615,144
PORTABLE SKATE SHARPENER

Wally E. Peacock, 726-10th Avenue, and Martin T. Carew, 3209-5th Avenue, both of Castlegar, British Columbia, Canada

Filed Dec. 5, 1984, Ser. No. 678,533

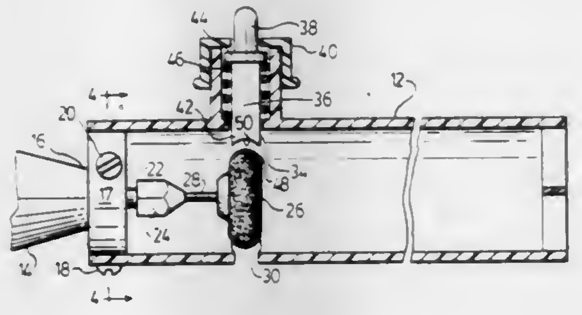
Claims priority, application Canada, Aug. 9, 1984, 460648

Int. Cl.⁴ B24B *9/04*

U.S. Cl. 51—5 D **4 Claims**

1. A portable skate sharpener comprising an elongated hollow main body, an electric motor, said electric motor having a manually grippable housing secured to one end of the main body and an output shaft projecting from the housing and extending in a longitudinal direction in the main body, and a grinding wheel mounted on said shaft for rotation in a plane perpendicular to the longitudinal axis to the main body, said main body extending beyond the grinding wheel in a direction away from the electric motor to provide a manually grippable

main body portion on the opposite side of the grinding wheel to the manually grippable motor housing, said main body having an aperture extending in a direction perpendicular to said longitudinal direction below the grinding wheel for receiving an upper edge of an upturned skate blade to enable a skate to be sharpened when held in an inverted position by holding the motor housing with one hand and holding the main body portion with another hand and, while the motor is operating to rotate the grinding wheel, manually moving the sharpener in a direction transverse to its length with the skate blade



edge in the aperture in the main body and in engagement with the grinding wheel, the main body carrying means for dressing the grinding wheel at a position above the grinding wheel, said dressing means comprising a plunger projecting into the main body above the grinding wheel and carrying a dresser member at its lower end, said plunger normally being resiliently urged upwardly to an inoperative position and having an upwardly projecting end manually engageable to move the plunger downwardly to cause the dresser member to engage and dress the grinding wheel while the grinding wheel is being rotated by the electric wheel.

4,615,145
APPARATUS FOR MECHANICALLY FINISHING WORKPIECES

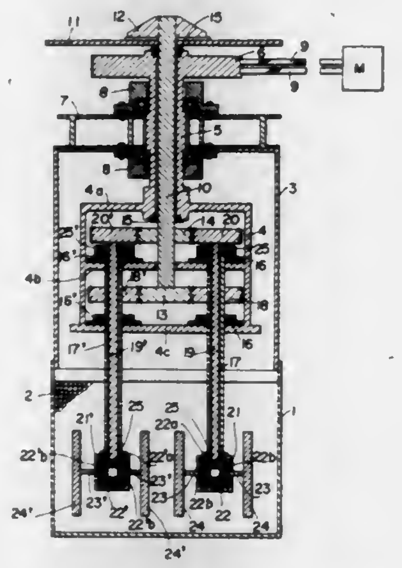
Hiroshi Matsumoto, Hirakata, and Man Fujiki, Niigata, both of Japan, assignors to C. Uyemura & Co., Ltd., Osaka, Japan

Filed Nov. 14, 1984, Ser. No. 671,216

Claims priority, application Japan, Nov. 30, 1983, 58-226411

Int. Cl.⁴ B24B *31/00*

U.S. Cl. 51—19 **10 Claims**



1. An apparatus for mechanically finishing workpieces in highly fluidized granular or powdery media coated with an abrasive agent which fills a polishing bath comprising:
- a fixed gear;
- a planet gear meshed with said fixed gear for rotating along the fixed gear;
- a cylindrical spindle fixed to said planet gear for rotating together with the planet gear;
- a rotary shaft provided rotatably in said cylindrical spindle for holding a workpiece;
- a rotating mechanism for rotating said planet gear along said fixed gear in an orbital path, said planet gear meshed with said fixed gear being rotated on its own axis; and
- a rotating mechanism for rotating said rotary shaft on its own axis;

whereby said workpiece held by said rotary shaft is rotated around the axis of the fixed gear and the axis of the planet gear through said rotary shaft which is rotated together with the orbital and on-the-axis rotations of said planet gear, and said spindle, and rotated together with the rotation of said roatry shaft on its own axis independently from the rotations of said spindle to vary the relative positions of the workpiece in reference to the spindle along with the lapse of time, thereby the workpiece being uniformly contacted with said media highly fluidized by the rotations of said spindle and workpiece.

4,615,146
SMOOTHING MACHINE FOR WOOD PANELS

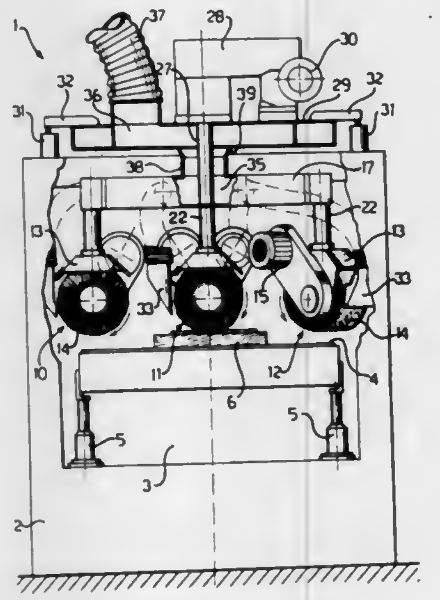
Vittorio Tassoni, Imola, Italy, assignor to D.M.C. Divisione Meccanica Castelli S.p.A., Bologna, Italy

Fileo Sep. 25, 1984, Ser. No. 654,262

Claims priority, application Italy, Oct. 27, 1983, 23485 A/83

Int. Cl.⁴ B24B *7/06*

U.S. Cl. 51—90 **6 Claims**



1. A smoothing machine for wood panels, particularly but not exclusively wood panels having contoured surfaces with parts in relief, said smoothing machine comprising:
- a substantially horizontal conveyor belt;
- a support structure overlying said belt;
- a plurality of smoothing units carried by said structure, each smoothing unit comprising a support frame, an abrasive roller rotatably supported by said frame, and a roller drive motor mounted on said frame, the rollers facing the belt and having coplanar horizontal axes of rotation;
- a rotor supported by said support structure about a vertical axis of rotation;
- means for releasably fixing said frames of said smoothing units to said rotor, wherein each of said frames are pivoted on said rotor about a vertical axis such that each of said rollers can act along a different, independently adjustable direction from one another; and
- a motor for driving said rotor, said rotor rotating along sai vertical axis while each of said rollers of said smoothing units rotate along said coplanar horizontal axis.

4,615,147
MACHINE FOR TUMBLING, DEBURRING AND/OR POLISHING BULK PRODUCTS

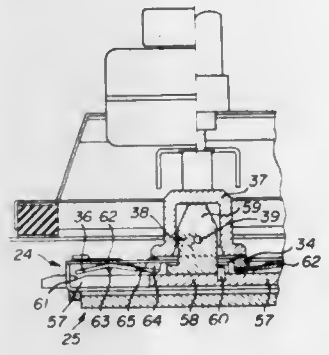
Michel Thonney, Grenade 36, 1510 Moudon, Switzerland

Filed Dec. 18, 1984, Ser. No. 694,390

Claims priority, application Switzerland, May 4, 1983, 2417/83

Int. Cl.⁴ B24B *31/04*

U.S. Cl. 51—164.1 **6 Claims**



1. A machine for tumbling, deburring and/or polishing bulk products particularly rough molded or manufactured metal pieces, said machine comprising:
- a frame supporting a rotatable horizontal drum and a drive mechanism connected to rotate said drum on actuation by automatic controls mean, means for loading product into said drum and means for recovering said product after treatment;
- said drum having a lateral opening allowing access by way of a removable door and being provided with means for locking and unlocking said door, said locking and unlocking means comprising a rotatable mandrel connected to a cam which is disposed to control axial displacement of at least two slidable bolts;
- said machine further comprising a locking-unlocking device adapted to cooperate with said mandrel for driving the door locking means and to raise the door from the drum for loading product, and for resetting and locking the door on the drum prior to rotation thereof.

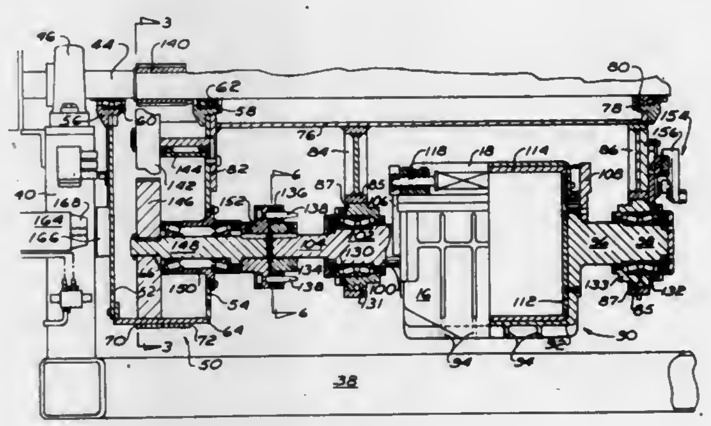
4,615,148
ORBITAL BARREL FINISHING MACHINE AND AUTOMATED SYSTEM THEREFOR

John F. Harper, Jr., 1334 Neipsic Rd., Glastonbury, Conn. 06033

Filed Jul. 26, 1985, Ser. No. 759,278

Int. Cl.⁴ B24B *31/04*

U.S. Cl. 51—164.2 **13 Claims**



1. An orbital barrel finishing machine comprising:
- a plurality of drum units each comprising a drum having a removable cover and forming an enclosure for receiving abrasion media and material to be finished and having a pair of oppositely projecting shaft segments, each said shaft segment being mounted in fixed relationship to said drum and mounting a bearing assembly;
- frame means comprising axially spaced receiving assemblies for receiving said bearing assemblies so that said drum are axially displaceable between first and second axial positions to removably mount said drums in an angularly spaced relationship relative to a central axis;
- turret means to rotate said drums in a first direction about said central axis;
- orbital rotation means to rotate each said drum about an orbital rotational axis through each said drum in a direction opposite said first direction; and
- coupling means selectively engagable in the first axial drum position to rotatably couple a said drum shaft segment to said orbital rotation means, said drum being selectively axially displaceable to the second axial position to release the said drum shaft from rotatable coupling with said orbital rotation means so that said drum unit may be generally transversely withdrawn from said frame means.

4,615,149
FEED CONTROL APPARATUS FOR GRINDING MACHINE

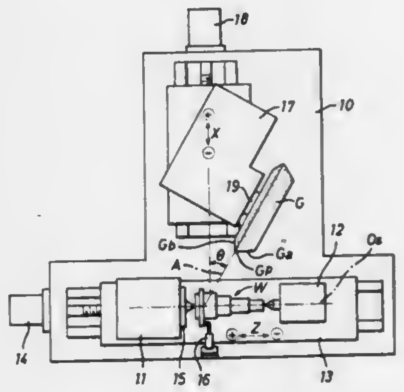
Takao Yoneda, Toyoake, and Yasuji Sakakibara, Hekinan, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed May 22, 1985, Ser. No. 736,841

Claims priority, application Japan, May 23, 1984, 59-105386

Int. Cl.⁴ B24B *49/02*

U.S. Cl. 51—165.71 **5 Claims**



1. A numerically controlled grinding machine including a bed, a work table slidably mounted on said bed in a first axis direction for supporting thereon a workpiece and rotating it about the first axis, a wheel head slidably mounted on said bed in a second axis direction perpendicular to the first axis, a grinding wheel rotatably mounted on said wheel head and having a first grinding surface arranged in parallel with the first axis for grinding a cylindrical portion of said workpiece and a second grinding surface arranged in parallel with the second axis for grinding a shoulder portion of said workpiece adjacent to the cylindrical portion, first and second feed mechanisms for moving said work table and said wheel head respectively in the first and second axis directions, and a numerical control apparatus for activating both said feed mechanisms on a basis of numerical control data and for effecting simultaneous movements of said work table and said wheel head to move said grinding wheel along a path extending across the first axis at an acute angle,

wherein said numerical control apparatus comprises:
- memory means for storing said numerical control data, an instruction for effecting the simultaneous movements of said work table and said wheel head, and command data indicative of a movement amount of said wheel head in the second axis direction;
- means for reading out the stored instruction and command data;
- computation means responsive to the read out instruction for calculating a movement amount of said work table in the

first axis direction on a basis of the read out command data so as to enable said grinding wheel to move along said path and for producing first and second output signals respectively indicative of the movement amount of said wheel head and the calculated movement amount of said work table; and

means responsive to the output signals of said computation means for activating said feed mechanisms to effect the simultaneous movements of said work table and said wheel head.

4,615,150
DEVICE FOR THE IN SITU REPROFILING OF THE HEAD OF AT LEAST ONE RAIL OF A RAILROAD TRACK

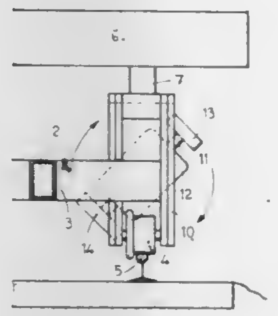
Romolo Panetti, Geneva, Switzerland, assignor to Speno International S.A., Geneva, Switzerland

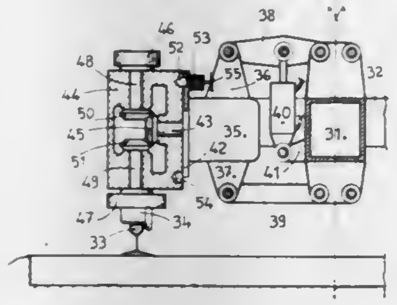
Filed Jan. 29, 1985, Ser. No. 696,249

Claims priority, application Switzerland, Feb. 1, 1984, 547/84

Int. Cl.^{4} B24B *23/00, 27/08*

U.S. Cl. 51—178 **14 Claims**





1. In a reprofiling device of the surface of the head of at least one rail of a railroad track comprising at least one reprofiling unit driven along the track by means of a railroad vehicle; means to displace in height the reprofiling unit with respect to the said railroad vehicle and means to apply at least one tool of the reprofiling unit against the rail; the improvement in which the reprofiling unit comprises at least one angularly displaceable support carried by said unit; there being a plurality of said reprofiling tools forming one group of tools mounted on this support in such a way that their faces or working edges are located in different planes; and means to position the support and to lock the support in any of a plurality of positions relative to said unit in each of which a different one of the said reprofiling tools of the group of tools is located in the same working position, cooperating with the rail, the other tools of the same group of tools being therefore in waiting position, out of contact with the rail, at least one of said tools being a rotary tool, a motor for rotating said at least one rotary tool, a drive shaft extending from said motor, the support being pivotally mounted on said drive shaft for rotation between said plurality of positions, and means drivingly interconnecting said drive shaft and said at least one tool.

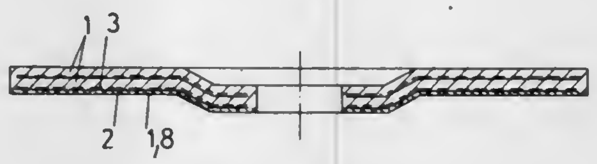
4,615,151
METHOD FOR MANUFACTURING OF GRINDING WHEEL

Johann Huber, Kramsach, and Otto Thanner, Schwaz, both of Austria, assignors to Tyrolit Schleifmittelwerke Swarovski K.G., Austria

Filed Dec. 6, 1984, Ser. No. 678,983

Int. Cl.^{4} B24D *3/00*

U.S. Cl. 51—293 **6 Claims**



1. A method of manufacturing a grinding wheel with at least two grinding layers and using a mold, comprising directing into the mold a granular pourable grinding material forming grinding layers and composed of a grinding mixture of abrasive grains, a binder of resin and a filler, also directing alternately with the grinding layers layers of reinforcing damping foils, compressing the layers to be desired dimension for the grinding wheel so as to form a grinding wheel blank, and then curing the blank in a furnace at a temperature of between 150° C. to 200° C.

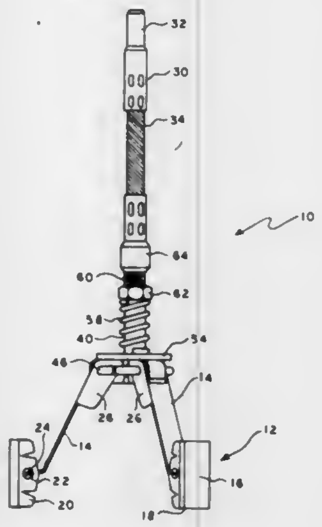
4,615,152
CYLINDER HONE

Leo C. Bogaerts, Antioch, Ill., assignor to Ammco Tools, Inc., North Chicago, Ill.

Filed Nov. 8, 1985, Ser. No. 796,197

Int. Cl.^{4} B24B *9/02*

U.S. Cl. 51—332 **5 Claims**



1. A cylinder hone comprising in combination

an elongate drive shank;

a plurality of arms, each arm having a first free end;

an abrasive unit carried on said first free end of each arm;

a second end of each arm terminating with a pair of flanges, said flanges being generally parallel one to another and each being formed with a curvilinear edge defining a cam surface projecting away from said second end;

a carrier arm holder disposed centrally of said arms and having a central stem extending therefrom connected to said drive shank, said carrier arm holder having a plurality of projections extending radially outwardly from said stem;

said projections each being received within a pair of flanges provided on a respective arm assembly;

a collar member having a central aperture through which said stem extends and biased into abutment with said cam surfaces of said flanges;

an aperture formed in each of said flanges;

a generally circular retaining ring received within the apertures of said flanges;

whereby said arms are supported by said retaining ring for pivotable movement in a plane extending generally radially of the centerline of said drive shank.

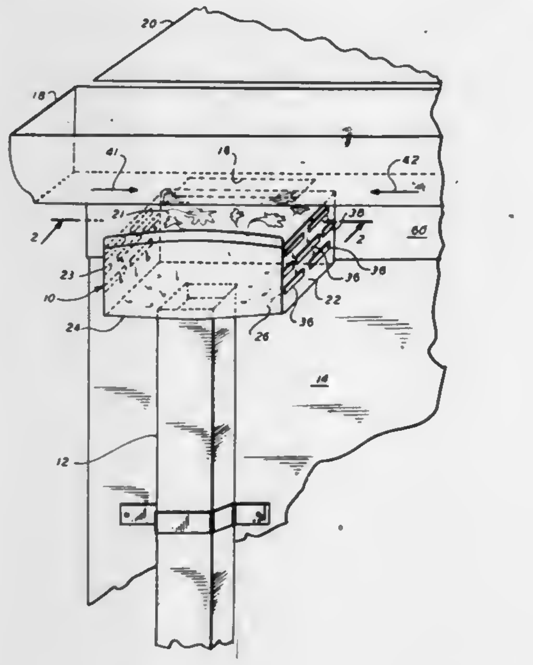
4,615,153
LEADER FILTER

Robert J. Carey, P.O. Box 158, Sea Bright, N.J. 07760

Filed Oct. 11, 1985, Ser. No. 786,760

Int. Cl.^{4} E04D *13/06, 13/08*

U.S. Cl. 52—12 **19 Claims**



1. Leader filter for being mounted at the top of a leader extending down the side of a building and below the discharge opening formed in the bottom of a rain gutter attached to the building adjacent the edge of a roof upon which rain falls, said leader filter for preventing entrance thereinto of leaves and other debris which cause leader clogging and the stoppage of rain flow through the leader, comprising:

generally closed hollow leader filter means including a top, two sides and a bottom;

said sides provided with a plurality of longitudinally extending, generally horizontally disposed rows of slots such that there is no generally vertical path of rain flow down said sides which is not interrupted by at least one of said slots, said slots of a predetermined size sufficiently small to generally prevent the entrance thereinto and into said generally closed hollow leader filter means of said leaves and other debris;

said top for receiving rain from said rain gutter discharge opening and for diverting said rain down said sides and said slots for receiving rain flowing across said sides and for diverting said rain into said hollow leader filter means; and

said bottom provided with a discharge opening for communicating with said leader and through which discharge opening rain flows from said leader filter into said leader.

4,615,154
UTILITY LINE TRANSMISSION TOWER APPARATUS

Arthur L. Troutner, Boise, Id., assignor to Trus Joist Corporation, Boise, Id.

Filed Jun. 28, 1985, Ser. No. 750,098

Int. Cl.^{4} E04H *12/00*

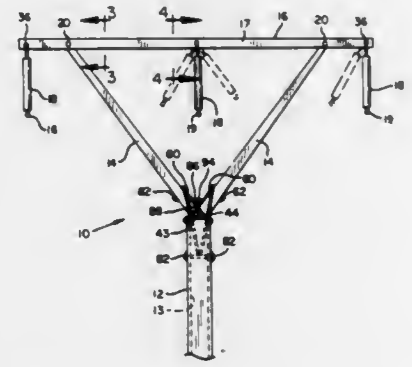
U.S. Cl. 52—40 **20 Claims**

1. Electrical utility line support tower, comprising:

a tower base member having at least one opening at its upper end;

a pair of tower arms;

connection means for connecting one end of each of said arms to the upper end of said base member, said connection means including an anchor portion having diverging anchor members mounted within said base member, extending upward through said opening and attached to the tower arms, and a pair of arm support portions which attach the tower arms to the base member at a position spaced from the anchor portion;



fastening means for fastening the pair of tower arms to said pair of arm support portions of said connection means so that said arms diverge from each other and extend outwardly from said base member; and

crossarm means for supporting electrical utility lines, said crossarm means being mounted between the pair of tower arms.

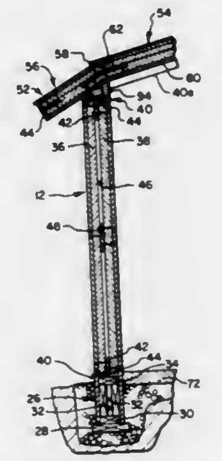
4,615,155
MODULAR BUILDING CONSTRUCTION

Sam R. Chamberlain, P.O. Box 238, Blanding, Utah 84511

Filed Jul. 8, 1985, Ser. No. 752,637

Int. Cl.^{4} E04B *7/02*

U.S. Cl. 52—90 **20 Claims**



1. A modular building construction comprising wall and roof modules, each wall module comprising at least two sheets of rigid, foamed plastic having aligned top and bottom edges and at least some of said wall modules defining corner wall modules having outer side edges, and a T-plate on each edge of each module which has aligned edges, said T-plate comprising a head piece and a single stem piece fastened to said head piece, the stem piece of said T-plate being secured between the sheets at said aligned edges said sheets and stem forming the thickness of the module and the head piece having a width equal to the thickness of the module being secured to the aligned edges of the two sheets.

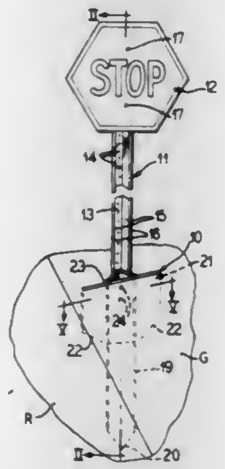
4,615,156
POST ANCHOR

Robert F. Deike, Cheyenne, Wyo., assignor to Construction Robotics, Inc., Chicago, Ill.

Filed Jan. 22, 1985, Ser. No. 693,373

Int. Cl.^{4} E04B *1/00*

U.S. Cl. 52—98 **12 Claims**



1. A ground anchor for channel type sign posts having a web and side legs which comprises an angle iron leg adapted to be driven upright into the ground, said angle iron leg having side legs diverging from an apex and having leading and trailing ends, an upright fin plate secured to the trailing end of the angle iron leg and driven therewith into the ground to hold the angle iron leg in upright position in the ground below ground level, said angle iron leg projecting into the channel of the channel post with the side legs of the post embracing and bottomed on the sides of the angle iron leg and the web of the post spaced from the apex of the angle iron leg, adjustable means spaced apart and stressing those portions of the side legs of the channel post embracing and bottomed on the trailing end of the angle iron leg into clamped relation with the sides of the angle iron leg leaving portions of the side legs of the post above said trailing end relatively unstressed and creating a fracture zone at ground level at the transistion area between the stressed and unstressed side legs, and means holding the post on the angle iron leg in said stressed spread leg clamped position.

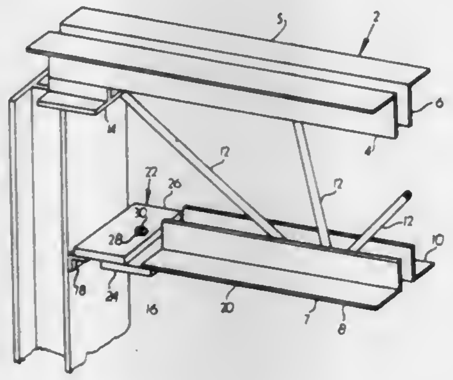
4,615,157
FLOOR JOIST DAMPER

Thomas M. Murray, Norman, Okla., assignor to Nucor Corporation, Charlotte, N.C.

Filed Nov. 21, 1984, Ser. No. 673,614

Int. Cl.^{4} E04B *1/98*

U.S. Cl. 52—167 **13 Claims**



1. A damping building structure including in combination a flexible girder, means for supporting said girder adjacent its ends, a first plate secured to a portion of said girder, a second plate secured to said supporting means in overlapping relation with said first plate, and spring means for frictionally clamping said plates together.

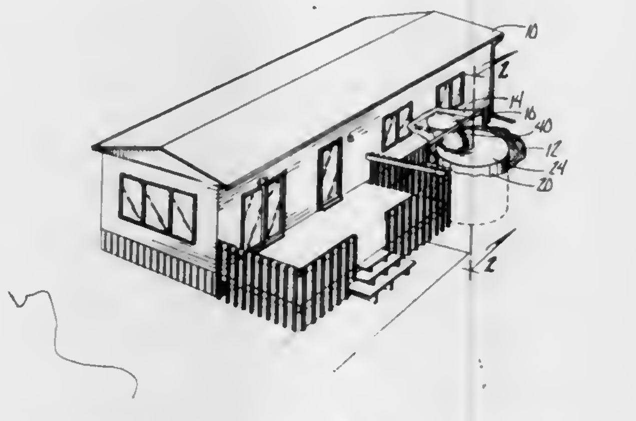
4,615,158
MOBILE HOME TORNADO SHELTER

Sandra K. Thornton, 215 E. Grimes St., Polk City, Iowa 50226

Filed Dec. 27, 1985, Ser. No. 813,856

Int. Cl.^{4} E02D *29/00*

U.S. Cl. 52—169.6 **8 Claims**



1. A mobile home tornado shelter, comprising:

an underground enclosure defined by sidewalls, a top and bottom;

said top of said enclosure having an entrance and egress passageway in communication with said enclosure and the interior of a mobile home;

said passageway having a flexible sidewall which is removably attached to said underground enclosure and said mobile home; and

step means associated with said enclosure and said mobile home to allow easy user access from said trailer to said underground enclosure.

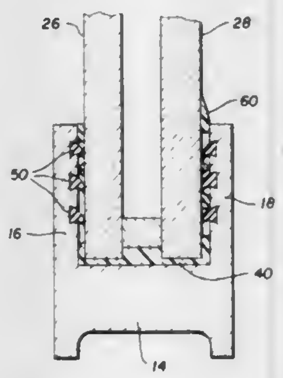
4,615,159
THERMAL WINDOW FRAME

Gerald Kessler, Youngstown, Ohio

Filed Feb. 24, 1984, Ser. No. 583,261

Int. Cl.^{4} E06B *7/12*

U.S. Cl. 52—171 **10 Claims**



1. A window frame assembly including rigid channel members secured to the edges of a thermally insulated glass panel having at least two glass panes separated by a spacer element, the channel members having upstanding side arms having a height substantially greater than the height of said spacer element, each said unstanding side arm being spaced from the glass ane adjacent thereto to define a gap therebetween, and flexible ribs supported by each facing interior surface of said side arm extending into the gap and contacting the adjacent glass pane, and the thermally insulated panel being fixedly secured within said channel member and having a dark-colored sealant material applied to the glass panel edges to seal the spacer element therebetween, and

means for camouflaging dark sealant material which has been smudged into the gaps between the channel member side arms and the exterior surfaces of said glass panel, said camouflaging means being located within each gap, said camouflaging means comprising said ribs and interior surfaces of said side arms extending the full height of said arms above the height of said spacer which have been darkened to correspond in color to said sealant material.

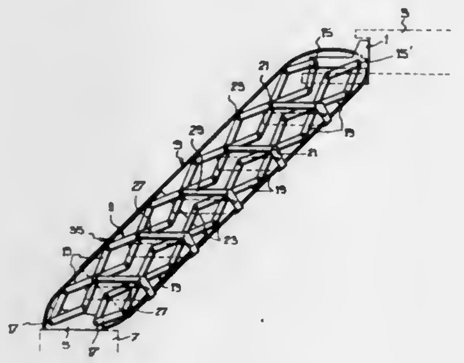
4,615,160
ADJUSTABLE STAIRCASE

Marc LeBlond, 7268 des Martres, Orsainville (Quebec), Canada G1G 1A7

Filed Sep. 30, 1985, Ser. No. 781,693

Int. Cl.^{4} E02D *5/74*

U.S. Cl. 52—183 **6 Claims**



1. An adjustable staircase comprising:

an upper connector and a lower conector;

a pair of stair stringer structures, each structure comprising:

two pantographs of equal length extending lengthwise between said connectors and one above the other, in the same plane of operation, each pantograph having opposed ends and being formed of successive pairs of diagonal levers of equal length pivoted at center points and at end points thereof;

means mounting said opposed ends of said pantographs, respectively on said connectors, for pivotal movement about parallel axes lying in an upper and in a lower horizontal plane, whereby corresponding pivot points on said two pantographs move together in parallel horizontal pivot points planes as said connectors are moved with respect to one another;

a plurality of treads between said stair stringer structures;

a plurality of like tread supports equal in number to that of said treads, each tread support comprising:

a pantograph portion pivotally connected to two of said corresponding pivot points lying in one of said pivot points horizontal planes;

a tread portion, and

means fixing said tread portions of said tread supports to the end edges of said treads so as to hold said treads parallel to said pivot points horizontal planes,

wherein each of said tread supports further comprises a generally U-shaped portion rapidly joining said pantograph portion and said tread portion.

4,615,161
EXPANSION JOINT

Glen B. Mileham, New Germany, South Africa, assignor to AEPLC, England

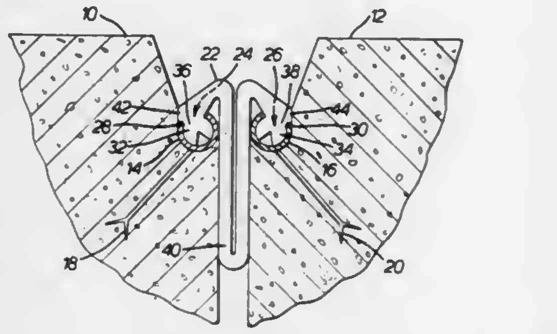
Filed Nov. 27, 1984, Ser. No. 675,202

Claims priority, application South Africa, Nov. 28, 1983, 83/8851

Int. Cl.^{4} E04B *1/62*

U.S. Cl. 52—396 **5 Claims**

1. Means for forming a recessed expansion joint to be seated in a narrow slot between two portions of a structure formed about said joint each portion having a surface in the same horizontal plane, said means comprising a pair of spaced elongated channel members one located on each side of the joint and recessed below the surface of said structure and anchored to said structure, each of said channel members having an upwardly opening slot extending the length thereof, and a strip of resilient material spanning the space between said channel members, said strip having a pair of legs forming a U-shaped body portion, the upper ends of said legs being reversely bent and having outwardly extending header portions, the legs of said body being generally parallel and positioned immediately adjacent each other to form a closure member the cross-sectional thickness of the legs of which is substantially equal to the width of said slot, said legs extending downwardly into and normally parallel to the sides of said slot, said strip having a pair of coupler elements one on the end of each of said header portions and of a size and shape to be detachably inserted through said slots into said channels, anchor means on each of said channels for securing the channels to the structure to be formed, said channel members and said strip both being recessed below said surfaces of said two portions of said structure.



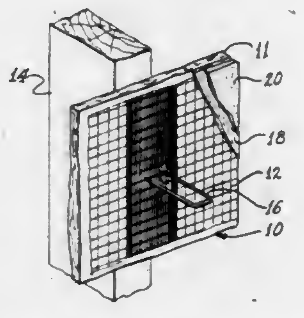
4,615,162
INSULATED WALL CONSTRUCTION

Michael E. Evans, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 15, 1985, Ser. No. 787,553

Int. Cl.^{4} E04B *5/52*

U.S. Cl. 52—409 **22 Claims**



1. An insulated outer wall construction for a building, said wall construction comprising a plurality of predeterminedly generally equally horizontally spaced vertically extending studs, a generally rectangular fibrous insulation board mounted in covering relationship to said studs on a side thereof facing outwardly of the building, said board having a first vertical edge portion generally aligned with a first of said studs and a second vertical edge portion generally aligned with a second of said studs spaced from said first stud by at least one other stud therebetween, said board having a non-uniform scrim adhesively secured thereto on an outer side thereof and extending substantially from said first vertical edge portion to said second vertical edge portion, fastening means mechanically securing said board and scrim to said studs, and a coat of cementitious material covering said board, scrim, and fastening means, said scrim having a predetermined first number of vertically extending strands per inch of width in areas thereof between adjacent studs and having a predetermined second number of vertically extending strands per inch of width in the area thereof generally aligned with said at least one other stud, said second number being greater than said first number.

4,615,163

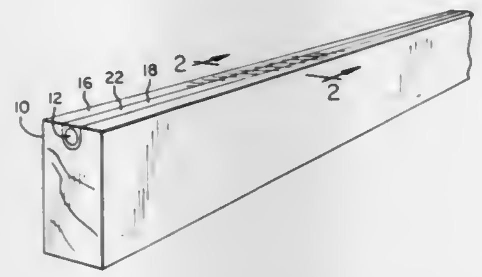
REINFORCED LUMBER

Albert B. Curtis, 2375 Dellwood Ave., Lake Oswego, Oreg. 97034, and J. Kenneth Brody, 2763 SW. Summit Dr., Portland, Oreg. 97201

Filed Oct. 4, 1984, Ser. No. 657,742

Int. Cl.^{4} E04C *3/30*

U.S. Cl. 52—730 **13 Claims**



1. A composite integral structural support member adapted to be cut to the desired length, if necessary, and incorporated into a load bearing structure for the purpose of accepting at least a portion of the load imposed upon such structure, said member comprising a wooden beam, a groove of predetermined depth longitudinally disposed within a surface of said wooden beam, and an unstressed nonwood, nonmetallic reinforcing rod adhesively fixed within said groove whereby said support member has an ultimate strength greater than that of said wooden beam.

4,615,164

PACKAGING MACHINE FOR FLAT-SHAPED ARTICLES SUCH AS CHOCOLATE BARS, BOLTS, BLOCKS OR THE LIKE

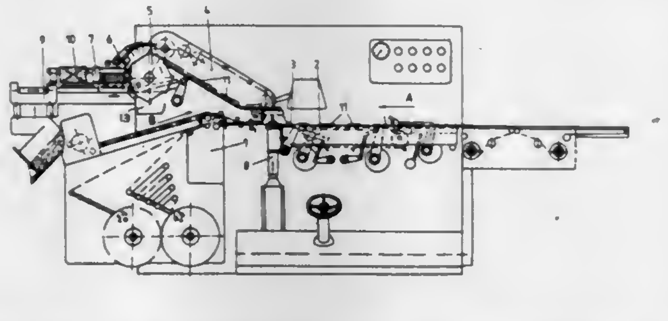
Wilhelm Hogenkamp, Hanover, and Manfred Schumann, Garbsen, both of Fed. Rep. of Germany, assignors to Otto Hänsel GmbH, Hanover, Fed. Rep. of Germany

Filed Feb. 5, 1985, Ser. No. 699,207

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1984, 3404694

Int. Cl.^{4} B65B *65/08, 35/00, 41/02*

U.S. Cl. 53—53 **10 Claims**



1. Machine for packaging chocolate bars and similar products, comprising means for supplying candy bars one after another; means for supplying wrapping material; folding means to wrap and seal said wrapping material around each candy bar; said means for supplying said candy bars and said means for supplying said wrapping material operating in opposite directions; removal and exit means for removing finished wrapped candy bars; turnstile means connected operatively to said removal means for receiving wrapped candy bars in sequence one-after-another to test and sort wrapped candy bars and reject defectively-packaged candy bars; and horizontal stacking means positioned downstream of said turnstile means.

4,615,165

PRODUCT CAPSULING PLANT, PARTICULARLY FOR PHARMACEUTICAL PRODUCTS

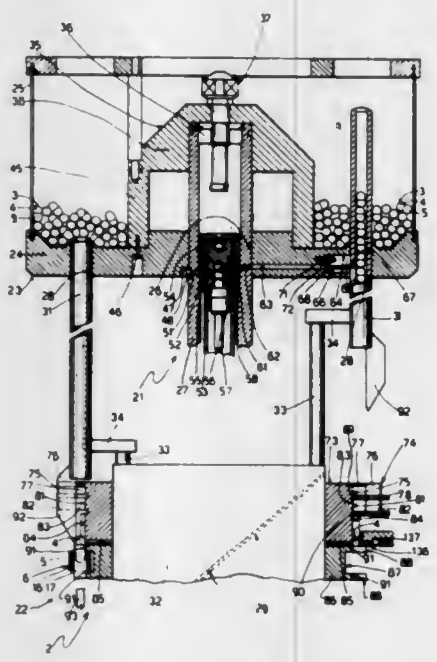
Ernesto Gamberini, Pianoro, Italy, assignor to MG 2 S.p.A., Pianoro, Italy

Filed Sep. 28, 1984, Ser. No. 656,179

Claims priority, application Italy, Sep. 30, 1983, 3573 A/83

Int. Cl.^{4} B65B *1/04*

U.S. Cl. 53—282 **7 Claims**



1. Plant for capsuling products, particularly pharmaceutical products, using capsules, each comprising a bottom, containing the product itself, and a removable top for closing the said bottom, characterized by the fact that it comprises, in due combination, means for separating each bottom from the respective top, operating stations comprising at least a station for feeding or metering the product to the inside of the said bottom and a station for closing the said bottom; first conveying means for feeding each said bottom along a given first route extending through the said operating stations; second conveying means for feeding each said top between the said separating means and the said closing station, along a given second route extending outside each side feeding or metering station, and fastening means at the said closing station for joining each said bottom to the respective said top and wherein the said first and second routes are of the same length, the said fastening means joining each said bottom to the respective said top; said second route comprises a closed loop; the said first conveying means comprise a closed-loop conveying member provided with an evenly-distributed succession of cavities, each designed to receive a respective said bottom, each said operating station comprising a rotary portion engaging, at least over part of its circumference, with the said conveying member; and the said second conveying means comprise a rotary input member having a number of first peripheral recesses for the said tops, a rotary parking member tangent with the said rotary input member at an input point and having a number of second peripheral recesses for the said tops, and a rotary output member tangent with the said rotary parking member at an output point and having a number of third peripheral recesses for the said tops; and pneumatic holding means for the said tops communicating with each of the said first, second and third recesses.

4,615,166

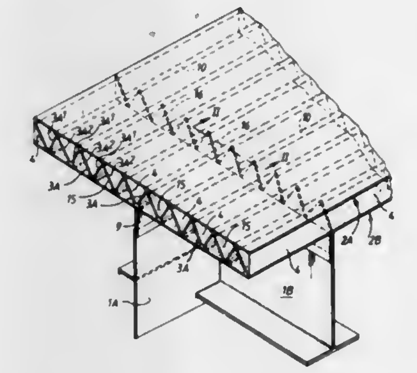
STRUCTURAL PANEL

Peter R. Head, Beckenham, England, assignor to G. Maunsell & Partners, London, England

Continuation of Ser. No. 413,504, Aug. 31, 1982, abandoned. This application Mar. 25, 1985, Ser. No. 715,287

Int. Cl.^{4} E04C *2/40*

U.S. Cl. 52—309.11 **21 Claims**



1. A structural panel for use as a unit, for example, in bridge decking or in the floor of a building, and capable of withstanding loading applied transversely to the panel and also comprising spaced sheet members and a plurality of elongate stiffening members rigidly fixed to and between the spaced sheet members, characterized in that

the stiffening members comprise at least one web, the web having ends, and an integral flange extending from each end of the web;

the flanges each comprising at least one flange portion disposed at an angle to the web, the at least one flange portion having inner and outer flange surfaces, the outer flange surface being glued, bonded, or otherwise adhered to a respective sheet member;

the stiffening members consisting essentially of plastics material reinforced with fibrous reinforcement material, the fibrous reinforcement being provided within the at least one flange portion in a plane inclined to the plane of the outer flange surface; and

the flanges comprising two flange portions being sized and positioned on each sheet member such that the said flanges of adjacent webs are spaced from each other by a distance greater than the width dimension of each adjacent flange.

4,615,167

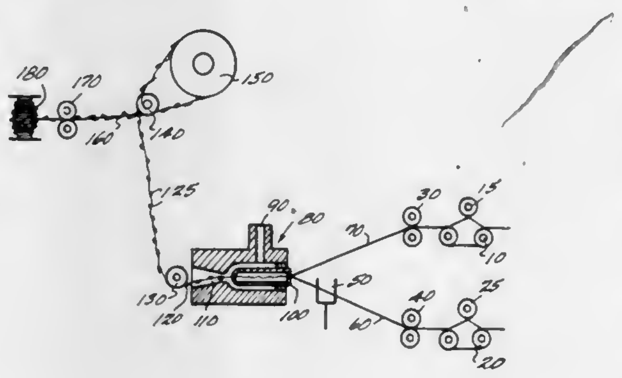
HIGHLY ENTANGLED THREAD DEVELOPMENT

Neville G. Greenberg, 2995 Courtland Dr., Gastonia, N.C. 28054

Continuation-in-part of Ser. No. 688,739, Jan. 4, 1985, abandoned, which is a continuation-in-part of Ser. No. 664,780, Oct. 25, 1984, abandoned. This application Jun. 25, 1985, Ser. No. 747,789

Int. Cl.^{4} D02G *1/16, 1/18, 3/34, 3/36*

U.S. Cl. 57—6 **36 Claims**



1. A method of forming a yarn from a core yarn and an effect yarn, comprising the steps of:

drawing said effect yarn, comprising at least one multifilament yarn, at substantially no higher than a normal drawing ratio for material from which the effect yarn is made and heating said effect yarn sufficiently in order to soften the effect yarn, to prevent rupturing the effect yarn during drawing and to reduce the possibility of inconsistent dyeing in a subsequent process;

transporting any one of said core and effect yarns, through a wetting device;

overfeeding said effect yarn to a fluid jet the amount of overfeeding being dependent on the denier of the core yarn;

feeding said core yarn to said fluid jet;

forming a highly entangled looped yarn from said core and effect yarns in said fluid jet, wherein said effect yarn has surface loops;

passing said highly entangled looped yarn around a heated roller to form a set yarn, while preventing said highly entangled loop yarn from contracting and preserving said surface loops in said effect yarn; and

winding said set yarn onto a holder while preventing the set yarn from contracting.

4,615,168

APPARATUS COMPRISING TWO CONCENTRICALLY DISPOSED TUBE STORES

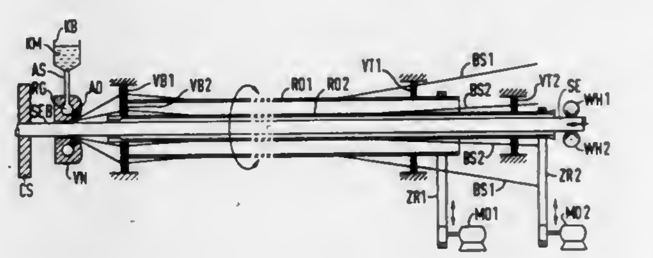
Ulrich Oestreich, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 16, 1985, Ser. No. 723,813

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1984, 3414974

Int. Cl.^{4} H01B *13/02, 13/04, 13/24, 13/26*

U.S. Cl. 57—7 **20 Claims**



1. In an apparatus for stranding web threads on a cable, said apparatus comprising two tube stores disposed concentric relative to one another, a common stranding nipple positioned at an output side of the concentrically arranged tube stores, and means for rotating each of the tube stores on their axes with a changing direction of rotation to change the direction of lay of the web threads being applied as web plies during stranding, the improvements comprising means for supplying the web threads for absorbing the longitudinal force to each of the two tube stores, feed means for applying an adhesive material to the web threads, said feed means being disposed adjacent the stranding nipple and the output side of the tube stores, and means for moving a cable core through the inner tube store of the concentrically arranged tube stores so that the cable core is provided with an adhesive-moistened spun covering formed by said web threads at an output of the stranding nipple.

4,615,169

APPARATUS FOR REMOVING INDIVIDUAL TEXTILE BOBBIN TUBES FROM A RESERVOIR INCLUDING BOBBIN TUBE JAM BREAK-UP MECHANISM

Arthur Würmli, Winterthur, Switzerland, assignor to Rieter Machine Works Limited, Winterthur, Switzerland

Filed Jan. 27, 1986, Ser. No. 823,107

Claims priority, application Switzerland, Jan. 29, 1985, 380/85

Int. Cl.^{4} D01H *9/18, 9/10;* **B65B** *35/10;* **B65H** *3/60*

U.S. Cl. 57—270 **16 Claims**

1. An apparatus for removing individual textile bobbin tubes having a predetermined thickness and a predetermined tube

diameter from a reservoir which contains such bobbin tubes in a mutually contacting relationship, and operatively associated with a textile machine, especially a spinning or twisting machine, said apparatus comprising:

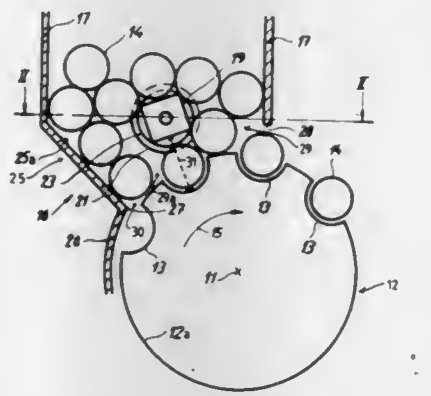
a container constituting said reservoir and equipped with a discharge opening;

said container possessing at least two broad sides, two opposite longitudinal sides connected to said at least two broad sides, and a bottom portion;

said bottom portion of said container containing at least one bottom surface which extends intermediate said two opposite longitudinal sides of said container;

said at least one bottom surface extending at an inclination towards said discharge opening of said container;

said at least one bottom surface narrowing said container towards said discharge opening of said container;



a break-up bar;

said break-up bar extending through the interior of said container;

means for mounting said break-up bar in said two opposite longitudinal sides of said container, with play on all sides and in a freely rotatable manner;

said break-up bar being arranged in a predetermined region above said discharge opening of said container;

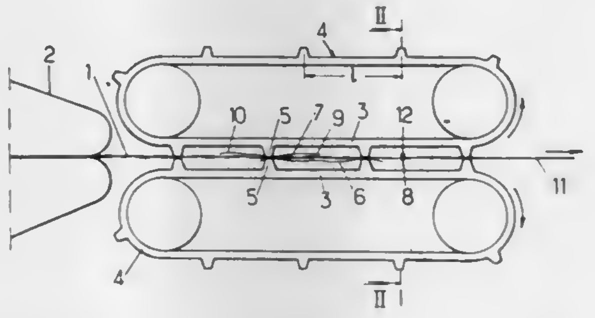
said break-up bar having a predetermined thickness which is approximately of the same order of magnitude as said predetermined thickness of said bobbin tubes;

removal means operatively associated with said discharge opening of said container; and

said removal means receiving and transporting away individual ones of said bobbin tubes which have passed through said discharge opening of said container.

4,615,170
DEVICES FOR PRODUCING A CONTINUOUS THREAD FROM A ROVING COMPOSED OF PARALLEL SHORT FIBERS

Jean-Jacques Walter, Boulogne sur Seine, France, assignor to Interaction, Paris, France
Filed Aug. 15, 1985, Ser. No. 766,866
Claims priority, application France, Aug. 29, 1984, 84 13394
Int. Cl.⁴ D01H *5/28, 5/26*
U.S. Cl. 57—328 **10 Claims**



1. Apparatus for producing a continuous thread from a roving supplied at a preselected delivery speed, said apparatus comprising:

two endless toothed belts arranged with facing run sections and the teeth on one aligned with those on the other hand along said facing run sections, the teeth on each said belt spaced apart by a distance approximately equal to the average length of the fibers of said roving;

means for passing an air current transverse to said roving at a fixed point between said facing run sections; and

means for reversing the direction of said air current when said fixed point is passed by a pair of aligned teeth.

2. Apparatus for producing a continuous thread from a roving supplied at a preselected delivery speed, said apparatus comprising:

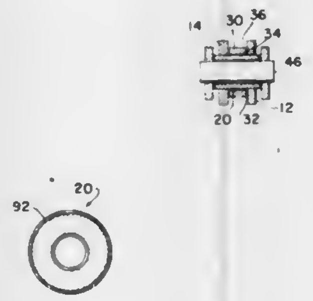
two endless toothed belts arranged with facing run sections and the teeth on one aligned with those on the other along said facing run sections, the teeth on each said belt spaced apart by a distance approximately equal to the average length of the fibers of said roving;

means for passing an air current transverse to said roving at a fixed point between said facing run sections; and

means for reversing the direction of said air current when said fixed point is passed by a point between successive pairs of aligned teeth and equidistant therefrom.

4,615,171
BICYCLE CHAIN LUBRICATION

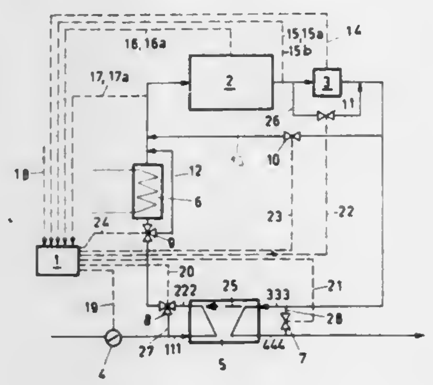
Robert G. Burk, S. Hadley, Mass., assignor to Incom International Inc., Pittsburgh, Pa.
Continuation of Ser. No. 560,443, Dec. 12, 1983, abandoned. This application Nov. 25, 1985, Ser. No. 802,275
Int. Cl.⁴ F16G *13/06*
U.S. Cl. 59—78 **13 Claims**



7. Bicycle chain apparatus comprising plural bushing links, each bushing link having first and second parallel bushing plates, each bushing plate having first and second bushing receiving openings near opposite ends thereof, first and second bushings fixed respectively in the first and second openings of the first and second bushing plates, opposite ends of the bushings extending substantially beyond the first and second bushing plates and forming thereby spacers, and plural pin links alternately connected to the plural bushing links, each pin link having first and second parallel pin plates, each pin plate having first and second pin receiving openings near opposite ends thereof, first and second pins inserted through first and second pin receiving openings in the first pin plate and respectively through a second bushing of a first bushing link and through a second bushing link and then respectively through first and second pin receiving openings in the second pin plate, opposite ends of the first and second pins being fixed into respctive first and second pin receiving openings in the pin plates, said pin plates maintained in spaced position from said bushing plates by said spacers on said bushings, the pins having solid lubricating plated coatings on surfaces thereof for respectively providing lubrication to plated interior surfaces of the bushings, wherein the plated coating on the pins comprises porous plating having pores filled with polymeric lubricating material.

4,615,172
PROCESS FOR REGENERATING THE EXHAUST-GAS PARTICLE FILTER OF INTERNAL-COMBUSTION ENGINES

Andreas Mayer, Niederrohrdorf, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland
Filed Feb. 19, 1985, Ser. No. 702,745
Claims priority, application Switzerland, Feb. 21, 1984, 823/84
Int. Cl.⁴ F01N *3/02;* **F02B** *37/00, 33/42*
U.S. Cl. 60—274 **1 Claim**



1. A process for regenerating an exhaust-gas particle filter of an internal-combustion engine of the type including a supercharging unit with a preceding throttle valve, an exhaust-gas particle filter located on a high-pressure side of the supercharging unit, a starting valve, a waste gate, and an exhaust-gas return valve, comprising the steps of:

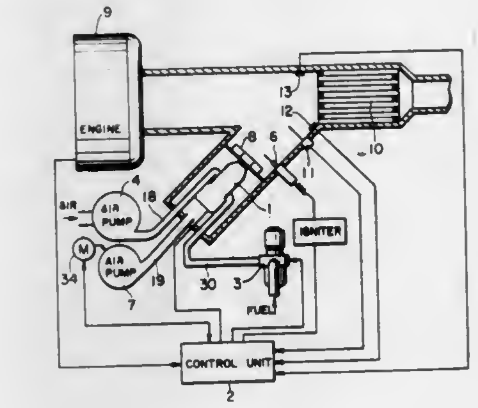
comparing the parameters of engine speed, engine torque, supercharging pressure, supercharging temperature, exhaust-gas pressure in front of the exhaust-gas particle filter, oxygen concentration, and pressure drop across the exhaust-gas particle filter to pre-set values of said parameters;

adjusting the throttle valve to a pre-set position to cause a rapid temperature rise in said supercharger unit; and

adjusting said throttle valve as a function of said comparing of said parameters to maintain a burn-off temperature on said exhaust-gas particle filter so that regeneration of said exhaust-gas particle filter is continous.

4,615,173
EXHAUST EMISSION CONTROL APPARATUS FOR DIESEL ENGINE

Toshifumi Usui, Katsuta, and Shozo Yanagisawa, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 2, 1984, Ser. No. 667,756
Claims priority, application Japan, Nov. 9, 1983, 58-210055
Int. Cl.⁴ F01N *3/02*
U.S. Cl. 60—286 **13 Claims**



1. For use in an exhaust emission control apparatus for a Diesel engine having a filter collecting particulates contained in exhaust gases of the diesel engine, a fuel supply device for supplying fuel for causing combustion of particulates collected by said filter during a filter regeneration cycle comprising:

fuel jet means for emitting fuel repeatedly and intermittently from a nozzle toward said filter during a combustion interval prescribed for said filter regeneration cycle;

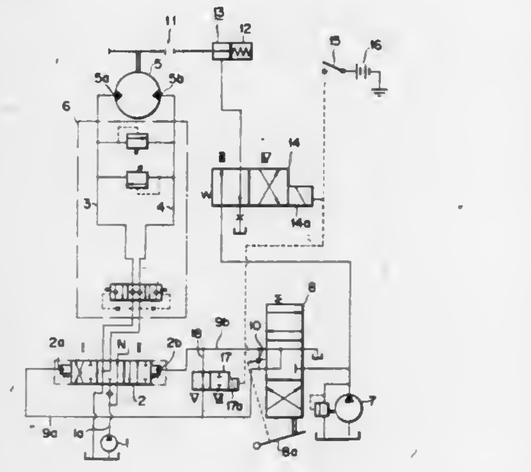
air jet port means, disposed adjacent to said nozzle, for atomizing fuel emitted by said fuel jet means;

air supply means for causing pulsating air to be supplied from said air jet port means during said combustion interval prescribed for said filter regeneration cycle; and

control means, coupled to siad fuel jet means, for controlling the repeated and intermittent emission of fuel by said fuel jet means so as to maintain the temperature of said filter at a prescribed level, thereby effecting combustion of particulates collected by said filter during said filter regeneration cycle.

4,615,174
FLUID CIRCUIT SYSTEM FOR OPERATING BIDIRECTIONAL HYDRAULIC MOTOR

Yoshikazu Nagahara, Yokohama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Feb. 5, 1985, Ser. No. 698,481
Claims priority, application Japan, Feb. 10, 1984, 59-016642[U]
Int. Cl.⁴ F15B *15/00*
U.S. Cl. 60—442 **2 Claims**

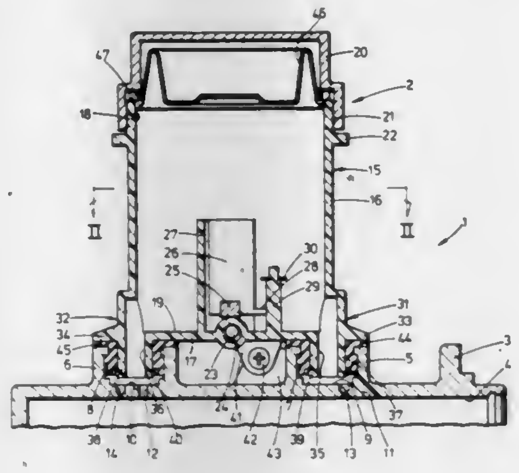


1. A fluid pressure control circuit system comprising a main hydraulic pump; first and second main conduits arranged in parallel relationship with each other and arranged to be connected selectively through a pilot fluid pressure operated three-position directional control valve to the delivery path of said main hydraulic pump; a bidirectional hydraulic motor having first and second ports formed therein and which are adapted to be connected selectively through a brake valve means with said first and second main conduits; a gyratory brake means adapted to be actuated to apply a braking force to said main hydraulic motor by the resilient force of its spring and released by a predetermined fluid pressure introduced therein; a conduit for selectively connecting a pressure receiving chamber of said gyratory brake means to either one of drain and an auxiliary hydraulicly pump through a solenoid operated control valve, said solenoid operated control valve being adapted to be held normally at a draining position and also changed over to a communicating position when its solenoid is energized; left and right pilot fluid supply conduits located in parallel relationship with each other, said pilot fluid supply conduits being connected through a three-position directional control valve with said auxiliary hydraulic pump and also connected with the left and right pressure receiving portions of said pilot fluid pressure operated three-position directional control valve; a conduit for short-circuiting said pilot fluid supply conduits through a solenoid operated neutral valve, said solenoid operated neutral valve being adapted to be held normally at a communicating position and also changed

over to a cut-off position when its solenoid is energized; and a switch for connecting the solenoid of said solenoid control valve and the solenoid of said solenoid operated neutral valve with a power supply.

4,615,175
HYDRAULIC RESERVOIR IN TANDEM MASTER CYLINDER

Ichiro Ishiwata, Kanagawa, and Toshifumi Nishimura, Hyogo, both of Japan, assignors to Nippon Air Brake Co., Ltd., Kobe, Japan
Continuation of Ser. No. 272,329, Jun. 10, 1981, abandoned.
This application Feb. 16, 1984, Ser. No. 580,276
Claims priority, application Japan, Jun. 14, 1980, 55-83438[U]
Int. Cl.⁴ F15B *7/00*
U.S. Cl. 60—535 **20 Claims**

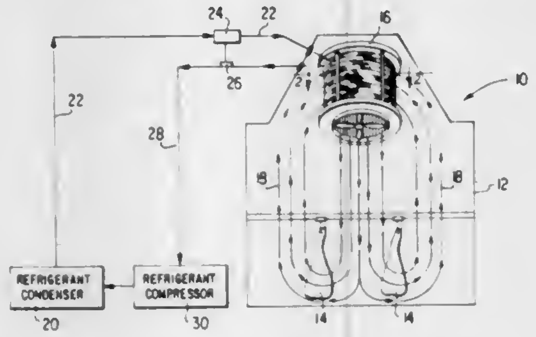


1. An integral seamless molded hydraulic reservoir for a tandem master cylinder including a main portion defining a fluid reservoir chamber along a central axis for reserving brake fluid, the main portion being open at its upper end and defining a bottom at its lower end, means for covering the open upper end of the main portion to preclude loss of fluid from the main portion chamber, the interior cross-section of the upper end of the chamber being equal to or greater than the interior cross-section of the lower end of the chamber whereby the chamber is adapted for the outward axial passage of an inside forming mold; two integral fluid supply portions defining fluid paths communicating with said fluid reservoir chamber and including a section extend downwardly generally below a plane defined by the bottom of the main portion, the fluid supply portions being open at their lower ends, the fluid paths defining axes therealong, the interior cross-section of the lower end of the fluid supply portions being equal to or greater than the interior cross-section of the upper end of the fluid supply portions whereby the supply portions are adapted for the outward axial passage of an inside forming mold, the fluid supply portions spaced for connections to two fluid portions of a tandem master cylinder body and extending radially outwardly from the reservoir axis beyond an outer surface of the reservoir chamber thereby defining a lateral section of the fluid supply portion interconnection the main resevoir above its bottom with the section of the fluid portion extending below the plane of the reservoir bottom thereby providing a seamless molded reservoir of reduces cross-section.

4,615,176
COOLING METHOD, SYSTEM AND APPARATUS FOR MINIMIZING DEHYDRATION OF FRESH MEAT PRODUCTS AND THE LIKE

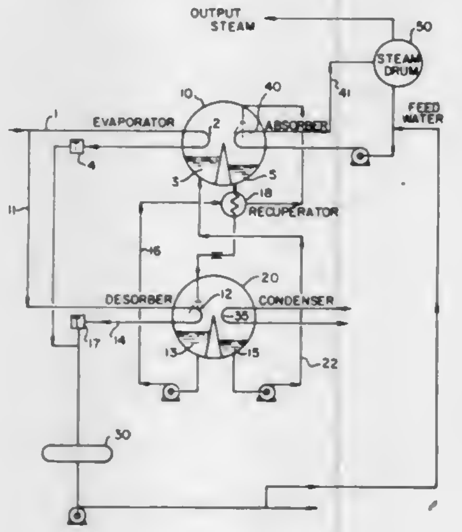
Robert T. Tippmann, 9837 St. Joe Rd., Fort Wayne, Ind. 46815
Filed Apr. 26, 1985, Ser. No. 727,681
Int. Cl.⁴ F25D *25/00*
U.S. Cl. 62—62 **25 Claims**

1. A method of cooling freshly slaughtered meat carcasses such as beef, pork, sheep and the like to retard bacterial growth thereon while minimizing moisture removal from said meat, said method comprising the steps of:
(a) placing said meat carcasses in a precooled, controlled environment chamber, and
(b) circulating air cooler than said meat and at a relative humidity of at least 90 percent through said chamber, through a cooling unit and back through said chamber until said meat is cooled to the point that bacterial growth thereon is retarded, wherein the temperature of the air entering said cooling unit from said chamber is no more than about 2 degrees F. above the temperature of the air leaving said cooling unit and entering said chamber and said air entering said chamber has the free moisture content thereof reduced to below the visible range.



4,615,177
SOLUTION HEAT PUMP APPARATUS AND METHOD

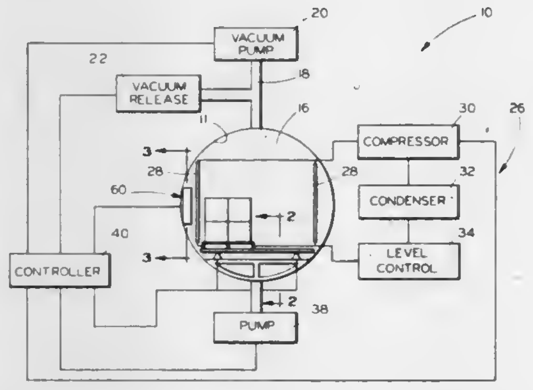
Michael L. Lane, and Lowell T. Whitney, both of Arvada, Colo., assignors to Adolph Coors Company, Golden, Colo.
Filed Nov. 2, 1984, Ser. No. 667,747
Int. Cl.⁴ F25B *7/00*
U.S. Cl. 62—79 **4 Claims**



1. A method of upgrading waste heat with a modified solution heat pump system to produce steam having a temperature of from 230° F. (110° C.) to about 400° F. (205° C.) at a pressure of from about 20 psia (138 kPa) to about 250 psia (1.72 MPa) comprising the steps of:
a. establishing heat exchanging contact between a source of waste heat with the water condensate from a binary working fluid comprising LiBr and water, at a temperature of at least 180° F. (82° C.) and a preselected pressure in an evaporator whereby the water condensate is at least partly vaporized to form water vapor;
b. contacting said water vapor with said binary working fluid of LiBr and water in an absorber wherein the concentration of LiBr by weight is from 40% to 70% by weight and is diluted from 1% to 10% by weight by absorption of said water vapor;
c. separately concentrating said binary working fluid in a desorber at a preselected lower pressure by heat exchanging contact with a source of waste heat to desorb the water by evaporation from said binary working fluid to produce a more concentrated solution by vaporizing from 1% to 10% by weight of the water;
d. returning said concentrated binary to said absorber for re-dilution preferably after being heated in a recuperative heat exchange where heat is exchanged with the dilute binary from said absorber;
e. condensing by heat exchanging contact with a lower temperature condenser, the water vapor so removed to form said condensate;
f. returning said condensate to heat exchanging contact with the waste heat in said evaporator;
g. providing heat exchanging contact between the binary working fluid in the absorber, and a source of feed water in said absorber heat exchanger whereby the feed water is converted to low to medium pressure steam at a higher temperature than the source of waste heat.

4,615,178
APPARATUS AND METHOD FOR CONTROLLING A VACUUM COOLER

Stanley Badenhop, 129 Bradford Ave., Napoleon, Ohio 43525
Filed Dec. 10, 1984, Ser. No. 679,684
Int. Cl.⁴ F25B *19/00*
U.S. Cl. 62—100 **22 Claims**

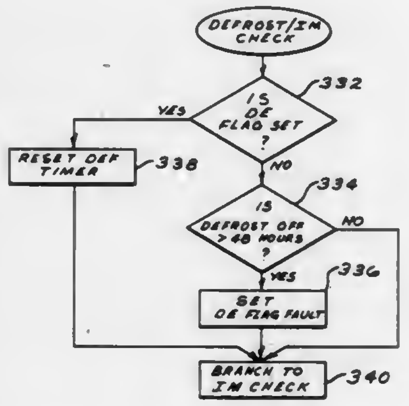


1. A method for controlling a vacuum cooling chamber to reduce the temperature of a quantity of produce to a preselected final temperature comprising the steps of:
determining the weight of such produce;
determining the initial temperature of said produce by monitoring the rate of change of vacuum in such chamber;
determining the weight of water to be removed from such produce to reduce the temperature of such produce from such initial temperature to such preselected temperature; and
vaporizing water from such produce by drawing a vacuum on such produce until such weight reduction is achieved.

4,615,179
DEFROST DIAGNOSTIC ARRANGEMENT FOR SELF-DEFROSTING REFRIGERATOR APPLIANCE

Norman H. Chiu, and David A. Schneider, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Filed Jan. 17, 1985, Ser. No. 692,099
Int. Cl.⁴ F25D *21/06*
U.S. Cl. 62—129 **4 Claims**

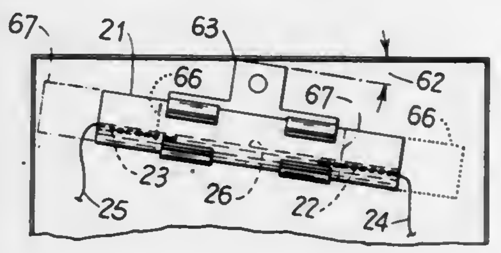
1. A defrost fault detection arrangement for an appliance having a freezer compartment including a defrost heater circuit which during normal operation is energized by an external source of current during periodic defrost cycles, said fault detection arrangement comprising:
current sensing means operative to generate an "on" signal whenever current is sensed in the defrost heater circuit;
means for measuring the time between successive "on" signals;
means for comparing the duration of time between said "on" signals to a predetermined reference time greater than the normal time between defrost cycles; and



means responsive to said comparing means operative to provide a user discernible signal when the time between "on" signals exceeds said reference time.

4,615,180
APPARATUS FOR CONTROL OF A VEHICLE AIR CONDITIONER

Louis Rudman, 4 Dogwood Ter., Newtown, Conn. 06470
Filed Jul. 12, 1985, Ser. No. 754,278
Int. Cl.⁴ B60H *1/32;* **H01H** *35/02*
U.S. Cl. 62—133 **10 Claims**

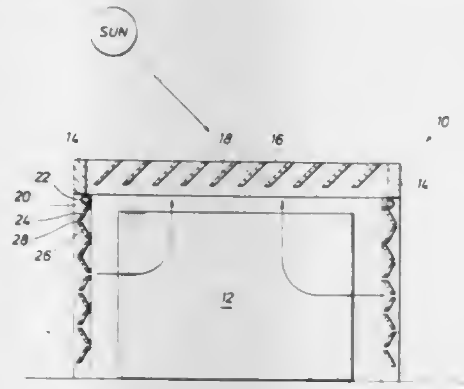


1. Apparatus having particular utility for automatically controlling a vehicle air conditioning system in which deactivation and activation is signalled upon certain inertial and slope orientation conditions of an over the road vehicle, comprising:
housing means for being affixed to a portion of the vehicle, and having an interior cavity;
pivot means mounted to said housing means, and having a pivot rod member projecting within said cavity;
an elongate mercury type switch means having a pair of spaced apart terminal elements and a quantity of mercury for electrically connecting said terminal elements at a first orientation of said mercury switch means and for electrically disconnecting said terminal elements at a second orientation of said mercury switch means;
bracket means pivotally mounted to said pivot rod member for receiving said mercury switch means and to enable said bracket means and said mercury switch means to be rotated about a portion of said pivot member, said bracket means comprises a rear pivot mounting arm, a front pivot mounting arm, an intermediate connecting beam, a front switch mounting plate and a mercury switch cradle bracket means for manually slidably receiving said mercury switch under spring bias in a substantially horizontal orientation relative to said front pivot mounting arm, said front and rear pivot mounting arms each having a pivot hole for receiving said pivot member, said intermediate connecting beam being dimensioned and configured to abut a portion of said housing means with rotation of said bracket means about said pivot rod member to define a stop rotation position of said bracket means relative to said housing means; and
a pair of electrical terminal means each being electrically connected to a respective one of said terminal elements,

and each being electrically connectable to the vehicle air conditioning system; whereby with said mercury switch means being positioned at said first orientation said vehicle air conditioning system being energized, and with said mercury switch means being positioned at said second orientation said vehicle air conditioning system being deenergized.

4,615,181
COOLING APPARATUS FOR AIR CONDITIONING COMPRESSOR EQUIPMENT

Robert Greenwood, 5326 Pinewilde Dr., Houston, Tex. 77066
Filed Aug. 16, 1985, Ser. No. 766,300
Int. Cl.⁴ F28D ***5/00***
U.S. Cl. 62—279 **11 Claims**

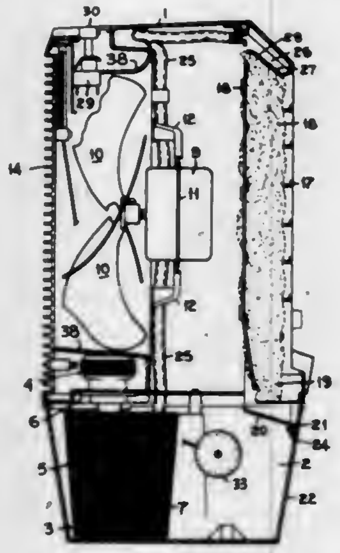


1. Apparatus for improving the efficiency of compressor equipment potentially exposed to a sun load comprising:
(a) a framework surrounding a compressor equipment;
(b) a plurality of horizontal louvers arranged to define gaps therebetween wherein said louvers are formed of and have a fibrous exposed external surface, and wherein said louvers are substantially parallel and alternate in angular position, and have edges spaced adjacent to one another so that water falling on the topmost louver can run to the next louver and then to the next;
(c) water distribution means including header hose means extending above said louvers and having a plurality of hole means therein for dripping water on said louvers to wet the surfaces of said louvers so that air passing said louvers is cooled by water thereon; and
(d) means above said compressor equipment including sun-oriented slats located to intercept the summer zenith sun burden on the compressor equipment absent the present structure.

4,615,182
EVAPORATIVE AIR CONDITIONER

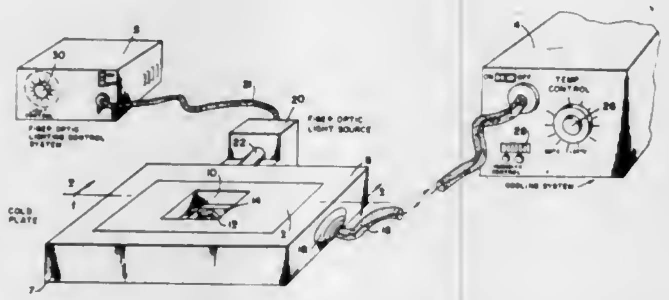
William Worthington, Glenalta, Australia, assignor to Dalgety Australia Operations Limited, Sydney, Australia
Filed Jun. 4, 1984, Ser. No. 616,962
Int. Cl.⁴ F28D ***5/00***
U.S. Cl. 62—310 **11 Claims**

1. An evaporative air conditioner comprising
(a) a housing having a water tank at a base portion and having support means and mounting means for a radial fan assembly and for a water pump assembly,
(b) a radial fan assembly disposed in said housing between an air inlet at a first face of the said housing and an air outlet at a second opposite face of said housing, said assembly including a driving motor,
(c) a permeable pad extending across the said air inlet in the said housing and supported by grill means and having a water distributor channel longitudinally extensive over the said permeable pad and water collector means below the said pad, said water collector means comprising a wall adjacent the lower end of the said permeable pad, which collector means extends along the rear wall of said tank and slopes downward to a channel formed between said sloping wall and tank whereby to guide the water from the said permeable pad against the said wall of the tank,
(d) a water pump assembly extending into the said tank arranged to pump water from said tank into said water distributor channel, said pump assembly including a separate driving motor,
(e) switch and electrical circuit means on the said housing to allow energization of both the motor of the said fan assembly and the motor of the said pump assembly, and
(f) control means between the said switch means and the motor of the said fan assembly, whereby to allow the speed of rotation of the said fan to be selected independently of the speed of the said pump assembly whereby to maintain a constant water flow rate over the said permeable pad irrespective of fan speed.



4,615,183
COLD PLATE FOR LABORATORY USE

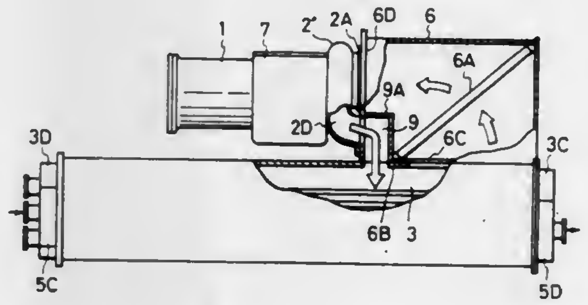
Jorge L. Juncos, Silver Springs, Md.; Edward Wellner, Fairfax, Va., and Paul Smith, Annapolis, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.
Filed Jun. 24, 1985, Ser. No. 748,207
Int. Cl.⁴ B01F ***3/04***
U.S. Cl. 62—306 **10 Claims**



1. A dissection cold plate for maintaining laboratory specimens at desired cooled temperatures, and dissecting said specimens thereon, comprising:
a metal cooling plate having a generally planar upper surface with an aperture therethrough, said plate including an integrally embedded hollow matrix of tubing therein, said tubing adapted to generally surround said aperture;
semi-transparent or translucent means removably positioned in said aperture, said semi-transparent means having a generally planar upper surface lying in the plane of the upper surface of said cooling plate;
remotely-operated cooling means for circulating a cooling medium through said tubing for cooling said metal plate to a desired temperature;
remotely-operated lighting means for illuminating said semi-transparent means from below its upper surface; and
protective covering and insulating covering means for surrounding and insulating said metal plate.

4,615,184
COMPRESSION REFRIGERATING MACHINE WITH VAPOR-LIQUID SEPARATOR

Satoru Kobayashi; Shigeo Sugimoto, and Masatosi Terasaki, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 20, 1985, Ser. No. 799,975
Claims priority, application Japan, Nov. 22, 1984, 59-245956; Feb. 13, 1985, 60-24321
Int. Cl.⁴ F25B ***43/00***
U.S. Cl. 62—512 **15 Claims**

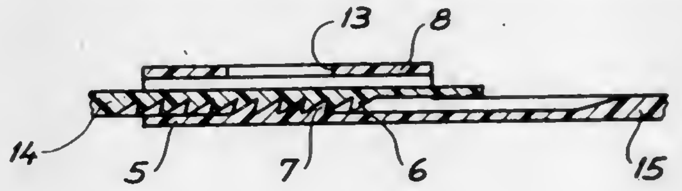


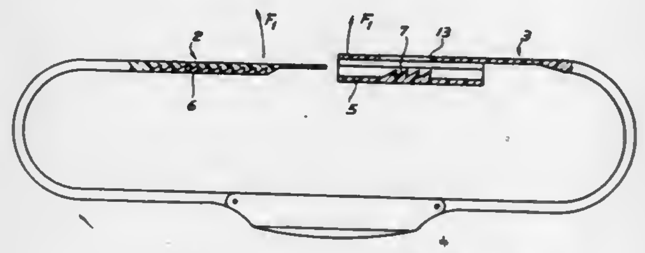
1. A compressor refrigerating machine with a vapor-liquid separator which has an evaporator having a shell and heat exchanger tubes, a condenser having a shell and heat exchanger tubes, a pressure reducing means, a compressor having a suction passage and a discharge passage and being installed on the shells of said evaporator and said condenser, and a motor for driving said compressor, said compressor refrigerating machine comprising:
a vapor-liquid separator connected to the upper portion of said shell of said evaporator, having a first opening on the bottom wall surface thereof, and at least a second opening on at least one side wall surface thereof;
said first opening connecting the interior of said vapor-liquid separator and the interior of the evaporator shell;
said second opening connecting the interior of said vapor-liquid separator and said suction passage of said compressor;
said vapor-liquid separator being provided therewithin with an element member for separating vapor from liquid; and
said element member being disposed across the flow of the refrigerant vapor which flows from said first opening toward said second opening in said vapor-liquid separator.

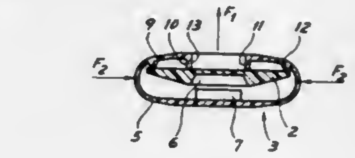
4,615,185
TIMEPIECE BRACELET

Hans Bollinger, Mörigen, Switzerland, assignor to Eta Sa Fabriques d'Ebauchès, Granges, Switzerland
Filed Jan. 17, 1985, Ser. No. 692,253
Claims priority, application Switzerland, Jan. 20, 1984, 265/84
Int. Cl.⁴ A44C ***5/00***
U.S. Cl. 63—5 R **7 Claims**

1. A timepiece bracelet including two tongues with means thereon for clasping said bracelet comprising sleeve means defining a passage extending longitudinally relative to the bracelet tongue with which said sleeve is associated and in which the other tongue of the bracelet may be inserted, one of the surfaces of said other tongue being provided with transversally extending teeth arranged and adapted to mesh with complementary teeth provided within said sleeve means whereby said other tongue is retained by a ratchet effect of the teeth thereon with the teeth within said sleeve means, said sleeve means being transversally deformable by manual pressure whereby to increase the dimension of the sleeve means passage radially of the bracelet sufficiently to enable release of the teeth from each other when the bracelet is opened and wherein the teeth within said sleeve means are arranged on that portion of the wall thereof which is contiguous to the wrist of the wearer when the bracelet is in place, the teeth of said other tongue being situated on the surface thereof facing the wrist.

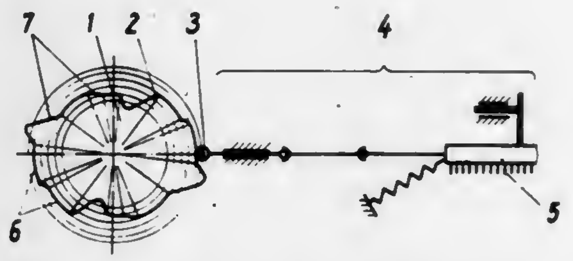






4,615,186
CAM GEAR FOR TEXTILE MACHINES, ESPECIALLY FOR PATTERN CONTROLLING OF CHAIN STITCHING MACHINES

Jürgen Rössler; Hans Dresig, both of Karl Marx Stadt; Manfred Hertzsch, Limbach-Oberfrohna; Günther Förster, Karl Marx Stadt, and Franz-Christian Eckelmann, Limbach-Oberfrohna, all of German Democratic Rep., assignors to VEB Kombinat Textima, Karl Marx Stadt, German Democratic Rep.
Filed Jun. 26, 1984, Ser. No. 624,659
Claims priority, application German Democratic Rep., Aug. 31, 1983, 254362
Int. Cl.⁴ D04B ***9/00***
U.S. Cl. 66—57 **5 Claims**



1. A cam gear for pattern controlling of a textile machine, said textile machine comprising a warp-knitting machine having directly scannable cams with alternating rest and transition areas, which comprises a cam having a cam profile, a cam follower, and subsequent transmission elements, so that, respective two rest areas are connected with each other by transition area in the movement direction of a previous transition, or by a transition area without displacement, the rest areas of the cam profile of said cam are, curved rest areas, each individual one of said curved rest areas having a variable rest height, said variable rest height corresponding to only one single point with the required rest height, and in which a corresponding portion of the control curve of said cam profile, said control curve portion exceeding the respective individual rest height, is assigned to each one of said curved rest areas, both in reference to reversal of the direction of movement of

the transition and in reference to a transition area without displacement.

4,615,187

NEEDLE SELECTION DEVICE ON A KNITTING MACHINE, PARTICULARLY A FLAT KNITTING MACHINE

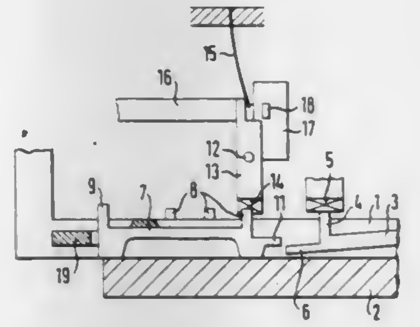
Reinhold Schimko, Aalen-Wasseralfingen, Fed. Rep. of Germany, assignor to Universal Maschinenfabrik Dr Rudolf Schieber, Fed. Rep. of Germany

Filed Jun. 18, 1984, Ser. No. 621,772

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1983, 3322673

Int. Cl.⁴ D04B *15/66*

U.S. Cl. 66—75.2 **9 Claims**



1. A needle selection device on a knitting machine, especially a flat knitting machine, comprising knitting needles and jacks arranged displaceably in needle channels, and spring-biassed selection shanks, with cantilever ends and with operating butts, connected with the knitting needles or jacks, said selection shanks being lowerable in the needle channels by pressure cam means moved relative to the needle channels, and with selection jacks, each having at least one selection butt, displaceably mounted in the needle channels behind the knitting needles, said selection jacks being displaceable in the needle channels in a controlled manner selectively at selection positions by selection magnet means and being arranged to hold the operating butts of the selection shanks selectively in the lowered position in which:

(a) the selection shanks are inherently flexible and are engaged by the horizontally displaceable selection jacks,

(b) selection members are provided at the selection positions and are controlled selectively by the selection magnet means,

(c) the selection members comprise double-armed selection flaps pivotably mounted perpendicular to the needle channels and provided each with an inclined actuation surface for engaging the selection butts and thereby displacing the selection jacks, and

(d) the selection magnet means comprise flap-anchoring magnets or solenoids having armatures which in the attracted state hold the selection flaps in the vertical position for forward displacement of the selection jacks.

4,615,188

TWO-PLY ATHLETIC SOCK

David F. Hursh, Lahaska, Pa.; Frank Ko; James B. Johnston, both of Philadelphia, Pa., and Jeffrey W. Bruner, Guilderland, N.Y., assignors to Foster-Boyd, Inc., Lahaska, Pa.

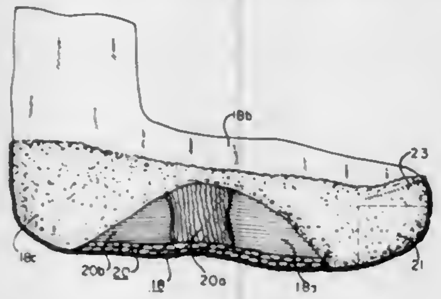
Continuation of Ser. No. 234,171, Feb. 13, 1981. This application Oct. 3, 1984, Ser. No. 657,461

Int. Cl.⁴ D04B *7/04*

U.S. Cl. 66—196 **11 Claims**

1. A sock comprising:

(a) a first inner ply of knit construction inserted within a second, outer ply of knit construction, said inner ply having a first surface made of material that is sufficiently hydrophobic to comprise means for carrying moisture away from the skin of a wearer, which is capable of relatively high friction with the skin of the wearer and a second surface having relatively low frictional characteristics, said second ply having a first surface positioned adjacent the second surface of said first ply and having relatively low frictional characteristics and also having a second surface having relatively high friction characteristics and being formed of a material which is sufficiently hydrophilic to comprise means for holding normal amounts of perspiration from the skin of the wearer.



4,615,189

WARP KNITTING MACHINE, PARTICULARLY GALLOON CROCHETING MACHINE

Gerard Durville, Gipf-Oberfrick, Switzerland, assignor to Textilma AG, Switzerland

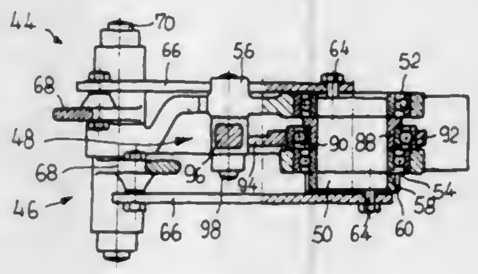
PCT No. PCT/CH84/00156, § 371 Date Jun. 5, 1985, § 102(e) Date Jun. 5, 1985, PCT Pub. No. WO85/01526, PCT Pub. Date Apr. 11, 1985

PCT Filed Sep. 27, 1984, Ser. No. 743,709

Claims priority, application Switzerland, Oct. 6, 1983, 5433/83

Int. Cl.⁴ D04B *23/00*

U.S. Cl. 66—204 **4 Claims**



1. A warp knitting machine having a series of movable hook needles, a series of thread guides movable relative to the needles, longitudinal weft guides secured to guide bars that move back and forth in a direction parallel to the series of hook needles, and other weft and thread guides, a common drive device for the bars to which longitudinal weft guides are secured including a drive shaft with eccentrics to which oscillating levers are joined by means of connecting rods, the levers being in turn joined by connecting links with the longitudinal weft guide bars, wherein the improvement comprises: a further eccentric (**88**) mounted on the drive shaft between the eccentrics for the connecting rods (**66**) connected to the oscillating levers (**68**) for the longitudinal weft guides (**18,20**), a rocker arm (**96**) disposed in a plane between the oscillating levers (**68**) for the longitudinal weft guides, the rocker arm being connected to at least one of the guide bars (**32**) for the other weft guides and thread guides (**30**) for driving the guides and a connecting rod (**94**) extending between the eccentric (**88**) and the rocker arm (**96**) for driving said at least one of the guide bars (**32**) from the common drive shaft (**50**).

4,615,190

WET LAUNDRY DEWATERING APPARATUS

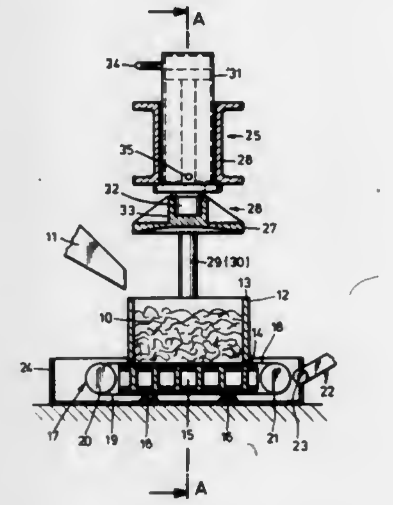
Günter Hell, Herford, and Gerhard Bökamp, Löhne, both of Fed. Rep. of Germany, assignors to Herbert Kannegiesser GmbH & Co., Vlotho, Fed. Rep. of Germany

Filed Oct. 26, 1984, Ser. No. 665,243

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1983, 3341058; Apr. 26, 1984, 3415537

Int. Cl.⁴ D06F *29/02*

U.S. Cl. 68—241 **23 Claims**



1. An appliance for dewatering washed laundry articles, comprising: a cylindrical vessel (**12**) for receiving the laundry articles to be dewatered, a lower counterpressure plate (**27**) permeable to water, a pressure plunger (**26**) which is located at a distance above the vessel and which can be pressed onto a top edge (**13**) of the vessel or moved into it, a device for monitoring the top edge of the vessel to check for laundry articles left lying on said edge when the laundry articles are introduced into the vessel, and an electrical control device operatively connected to the edge-monitoring device for controlling a hydraulic drive of the pressure plunger, wherein the edge-monitoring device comprises an electrical conductivity-measuring device (**42**) disposed at the top vessel edge (**13**) and extending in a same direction thereas, and a conductivity evaluation unit (**46**), and wherein said conductivity-measuring device and said evaluation unit (**42, 46**) are operatively connected to one another and to an electrical control line of a hydraulic control valve (**57**) located in a hydraulic fluid inflow to and flow-off from a pressure cylinder (**31**) of the pressure plunger (**26**) such that when a current flow is detected by the conductivity-measuring device (**42**) in response to the presence of a wet laundry article it is not possible for the pressure plunger (**26**) to execute a descending movement.

4,615,191

BARREL COMBINATION LOCK

Kenneth N. Grandy, So. Milwaukee, Wis., assignor to Master Lock Company, Milwaukee, Wis.

Filed Feb. 11, 1985, Ser. No. 700,244

Int. Cl.⁴ E05B *37/02*

U.S. Cl. 70—26 **3 Claims**

1. A barrel type combination lock having an open position and a lock position including a cable and a cable shackle comprising

a hollow shaft body for carrying clutches rotatable about such body;

a plurality of grooves in the cable shackle;

a plurality of well holes in the shaft body;

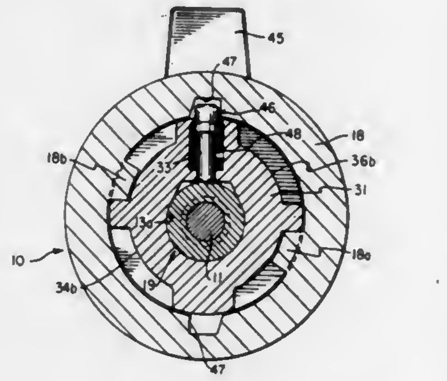
a plurality of steel balls positionable in the well holes and the shackle grooves to hold the cable shackle locked to the shaft body;

a recess in each clutch to accept a steel ball passing through a well hole to unlock the shackle and place the lock in its open position;

combination wheels positionable on the clutches;

cap means removably positioned on the shaft body to hold the combination wheels in place or to permit their removal for combination changes; and

spring-loaded detent means holding the cap means on the shaft body, which detent means has a lower portion engaged by the cable shackle in the lock position to prevent cap removal.



4,615,192

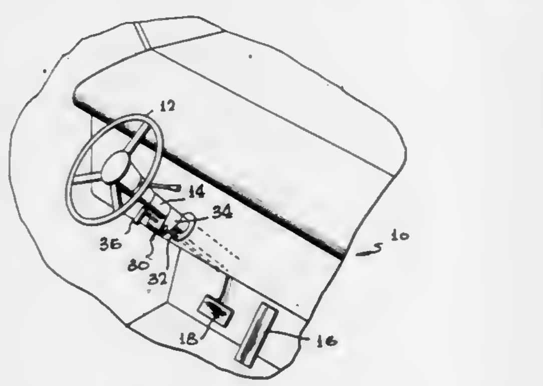
BRAKE LOCKING SYSTEM

William B. Brown, 18700 Covello St., Reseda, Calif. 91335

Filed Jul. 23, 1984, Ser. No. 633,623

Int. Cl.⁴ G05G *5/00*

U.S. Cl. 70—181 **19 Claims**



1. A brake locking system for an automotive vehicle having a steering column, parking brakes operated by a cable, and brake pedal-operated service brakes, comprising:

operating means for operating the brake locking system, said operating means being for connection to the cable of the parking brakes so that, when said operating means is moved from a first to a second position, the cable is tensioned to apply the parking brakes;

a lock associated with said operating means to lock said operating means in its second position; and

cooperative means connected to said operating means, said cooperative means being for interacting with the service brakes of the automotive vehicle to also lock the service brakes when said operating means is locked in its second position.

4,615,193

COMBINATION LOCK

Adalbert Lüling, Meinerzhagen, Fed. Rep. of Germany, assignor to Burg-Wächter KG Alfred Lüling, Meinerzhagen, Fed. Rep. of Germany

Filed Feb. 23, 1984, Ser. No. 582,772

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1983, 3308054; Mar. 8, 1983, 3308055; Mar. 8, 1983, 3308056

Int. Cl.⁴ E05B *37/16*

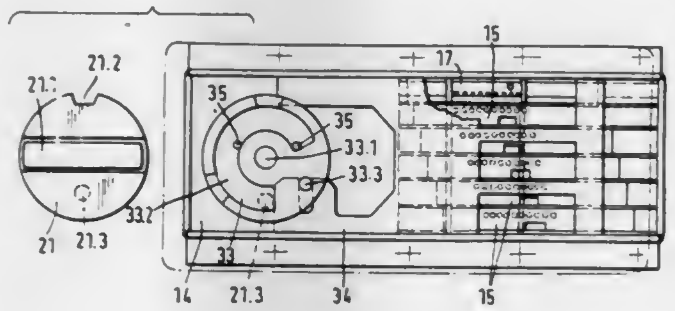
U.S. Cl. 70—297 **18 Claims**

1. A combination lock mounted on a door comprising:

(a) a lock housing;

(b) a locking bolt having a fully-open and a fully-closed

position and being supported in said housing for executing displacements in bolt-opening and bolt-closing directions;
(c) a manually operable bolt-operating knob;
(d) drive means for connecting said bolt-operating knob with said locking bolt for displacing said locking bolt in response to operation of said bolt-operating knob;
(e) a plurality of side-by-side arranged displaceable locking bars each having a predetermined position dependent upon a set combination;
(f) means for preventing said locking bolt from movement from said fully-closed position unless each said locking bar is in its predetermined position;
(g) a plurality of displaceable code bars connected to said locking bars; each said locking bar being associated with a separate said code bar;
(h) a plurality of displaceable digit slides each having an externally accessible, manually engageable portion, a plurality of digit markings and a lug passing through said door and operatively engaging into the associated code bar, whereby manual displacement of any of said digit slides effects displacement of the associated locking bar with the intermediary of the associated code bar;



(i) a movable carrier plate situated in said housing between said door and said code bars and being traversed by said lugs, whereby said locking bars, said code bars and said digit slides are displaced by said carrier plate during a motion thereof in a direction opposite said bolt-opening direction; and
(j) coupling means for connecting said bolt-operating knob with said carrier plate for moving said carrier plate in a direction opposite said bolt-opening direction during displacement of said locking bolt in said bolt-opening direction.

4,615,194
PERMUTATION LOCK

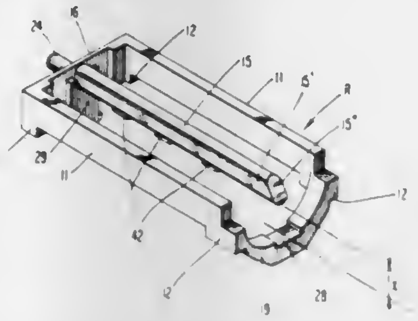
Rudi Düringer, Wuppertal, Fed. Rep. of Germany, assignor to S. Franzen Söhne (GmbH & Co.), Solingen, Fed. Rep. of Germany

Filed Jun. 3, 1985, Ser. No. 751,490

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1984, 3431649

Int. Cl.⁴ E05B *37/02*

U.S. Cl. 70—312 **18 Claims**



1. A permutation lock of the type comprising a housing in which a plurality of dials and associated locking sleeves are mounted for rotation upon a longitudinally extending axle, said locking sleeves and axle forming cooperating recesses and locking projections which, when longitudinally aligned with one another, permit said axle to be moved longitudinally relative to said housing and dials in an unlocking stroke against a spring bias, the improvement wherein:
a frame is mounted in said housing so as to be movable longitudinally relative to said housing,
said axle having one end joined to said frame and extending longitudinally therefrom in cantilever fashion such that an opposite end of said axle is free of said frame.

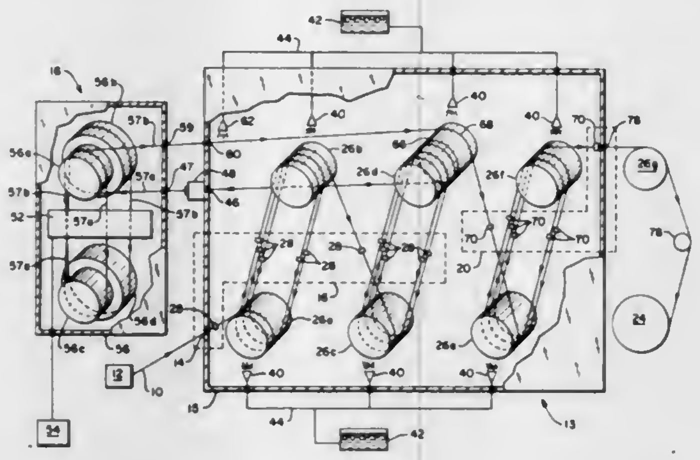
4,615,195
PROCESS AND APPARATUS FOR HIGH SPEED FABRICATION OF COPPER WIRE

Ralph A. Vogel, Three Rivers, Mich., and Keith E. Caudill, Fort Wayne, Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.

Division of Ser. No. 671,275, Nov. 13, 1984, Pat. No. 4,574,604. This application Dec. 10, 1985, Ser. No. 807,422

Int. Cl.⁴ B21B *9/00*

U.S. Cl. 72—38 **5 Claims**



1. An apparatus for high speed fabrication of wire moving in a downstream direction comprising:
(a) a wire drawer comprising a first die set for reducing the cross section of wire to an intermediate wire diameter and a second die set downstream thereof for reducing the diameter of the wire to a final diameter;
(b) an annealer disposed between said first and second die sets;
(c) first means for pulling the wire through said first die set and then through said annealer, said pulling means including means for controlling the tensile forces on the wire passing through said annealer;
(d) means for lubricating the intermediate diameter wire so that it has a thin coating of lubricant thereon as it is pulled through said annealer;
(e) quenching means for applying lubricant to the annealed intermediate diameter wire, said means located downstream of said annealer and upstream of said second die set; and
(f) second means for pulling the wire through said second die set.

4,615,196
TWO ROLLER, TILTING BRIDGE TYPE MACHINE FOR THE PRODUCTION OF TANK BOTTOM

Endre Vilcsek, Budapest, Hungary, assignor to Mezögép Nyiregyháza, Nyiregyháza, Hungary

Continuation of Ser. No. 469,064, Feb. 23, 1983, abandoned. This application Jul. 10, 1985, Ser. No. 753,343

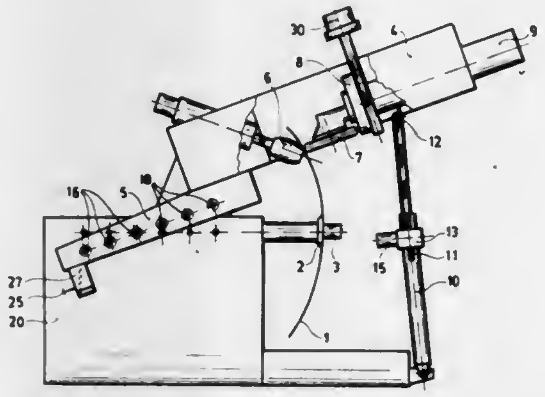
Claims priority, application Hungary, Feb. 24, 1982, 556/82

Int. Cl.⁴ B21D *22/18*

U.S. Cl. 72—85 **3 Claims**

1. A machine comprising a pair of rollers (6,7) comprising an inner and an outer roller and a bridge for the production of bodies of rotation including a flange, said bridge undergoing a tilting during said production, and an adequately rigid, closed

tilting frame (**4**) for mounting said rollers opposite to each other, means for rotatably mounting a workpiece on which a larger and a smaller flange-like body of rotation is to be formed having predetermined different radii, a mechanism (**20**) for limiting the tilting, a shank (**5**) coupling said frame and said mechanism, means for longitudinally adjusting said shank while retaining said shank in a predetermined radial center (**18**) of the workpiece being operated on by the inner one of said pair of rollers (**6, 7**) for shaping said workpiece (**1**) by said pair of rollers (**6, 7**), one of said pair of rollers is a shaped driven roller (**6**) and the other of said rollers is an outer free-running pressure roller (**7**), sledge means for mounting the pressure roller, a press head (**9**) for mounting said sledge means opposite to said shaped driven roller for providing between said rollers



a pointedly directed pressure on said body by rotation, said sledge (**8**) moving said pressure roller (**7**) for forming said flange of the workpiece (**1**), further comprising a clamping device (**13**) for fixing the closed tilting frame (**4**) after the tilting, said clamping device (**13**) including a brake shoe (**14**), a hydraulic cylinder (**15**) for actuating said brake shoe and holding a lap-jointed stay-rod (**11**) mounted on said tilting frame and on a common suspension pin (**12**) of the press head (**9**), a tilting cylinder (**10**) for actuating said tilting frame (**4**) said stay-rod coupling said tilting cylinder to said suspension pin, further comprising limit contacts (**16, 17**) for stopping the tilting frame upon completion of the large flange-like body, said sledge means moving said outer roller further for forming the smaller flange-like body by rolling the edge of said body of rotation over said inner shaped roller.

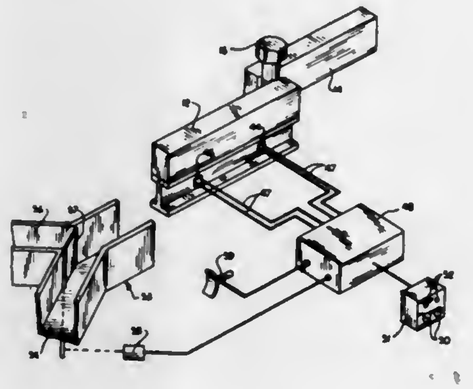
4,615,197
THREAD ROLLING MONITORING SYSTEM

Gene E. Allebach, Tiffin, Ohio, assignor to The National Machinery Company, Tiffin, Ohio

Filed Oct. 5, 1984, Ser. No. 657,950

Int. Cl.⁴ B21H *3/06*

U.S. Cl. 72—88 **15 Claims**



1. A thread rolling machine comprising a frame, first and second die holders mounted on said frame for movement relative to each other in a predetermined direction to effect a thread rolling operation, first and second dies respectively mounted on said first and second die holders for relative movement therewith, said dies providing opposed die faces defining a gap therebetween along which blanks roll during the operation of said machine, and force measuring means mounted on said first die holder for producing a signal which is a function of the size of selected reaction forces applied to said first die during a rolling operation, said selected forces being substantially aligned with said gap and contained in a plane substantially normal to said predetermined direction of relative movement between said die holders.

12. A method of monitoring the operation of thread rolling machines comprising providing signal generating load cell means in the die mounting structure of one of a pair of thread rolling dies so that said load cell means are exposed to reaction forces in a direction substantially parallel to the axis of a blank being threaded and are substantially free of direct and indirect stresses resulting from separating forces, and controlling the operation of said machine in response to signals produced by said load cell means.

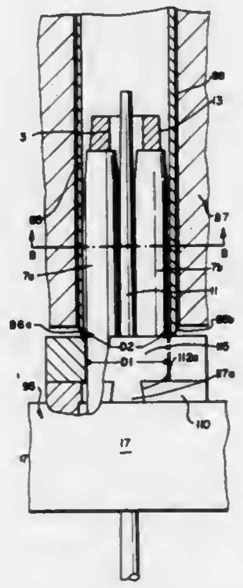
4,615,198
APPARATUS AND METHOD FOR REFORMING AND ROLLING TUBE ENDS

Phillip J. Hawkins, Penn Hills Township, Allegheny County, and David G. Francisco, West Hempfield, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 26, 1985, Ser. No. 748,877

Int. Cl.⁴ B21D *39/06*

U.S. Cl. 72—122 **26 Claims**



1. A rolling tool for both expanding and reforming an off-round end of a tube, comprising a rotatable roller cage having a diameter which is approximately the same distance as the minimum diameter across the off-round tube end, a roller rotatably mounted within a slot in said roller cage, a tapered mandrel slidably movable within an opening in the cage for rotating, orbiting and radially extending the roller, and a ring which circumscribes at least a substantial portion of the cage and which is mounted stationarily with respect thereto for providing a surface around and against which the roller will rotate without stalling when said cage is inserted into said off-round tube end and said mandrel is rotated.

4,615,199
STRIP BENDING

Colin J. MacLeod, Bearsden, Scotland, assignor to Caledonian Mining Co. Ltd., Great Britain

Filed Nov. 12, 1985, Ser. No. 796,882

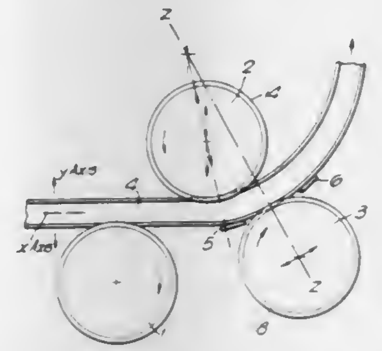
Claims priority, application United Kingdom, Nov. 16, 1984, 8428996

Int. Cl.⁴ B21D *5/14*

U.S. Cl. 72—170 **8 Claims**

1. A strip metal bending machine for bending formed strip material having for example an "I" section or a "U" section,

said machine comprising a plurality of rolls arranged to act on the strip along a roll path so as to bend the strip, at least a first one of the rolls being provided with a pair of restraining means, each restraining means located either side of the roll path so that the strip is enclosed at a bending point between the restraining means and a contact surface of said first roll, said restraining means acting on the strip in a direction substantially at right angles to the direction of action of said contact surface of said first roll, means enabling continuous restraining adjustment of one restraining means relative the other of the pair during rolling action and control means for controlling said adjustment means.



4,615,200

FORMING PROCESS FOR METAL RAIL BLANK

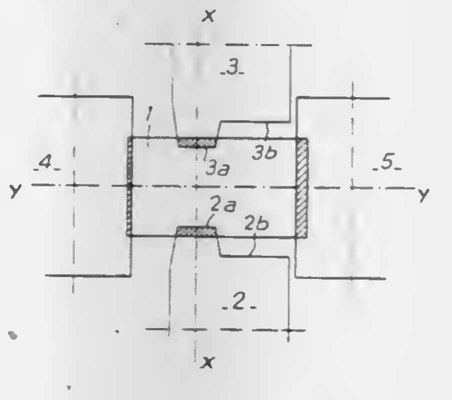
Jacques M. Michaux, Joeuf, France, assignor to Sacilor, Hayange, France

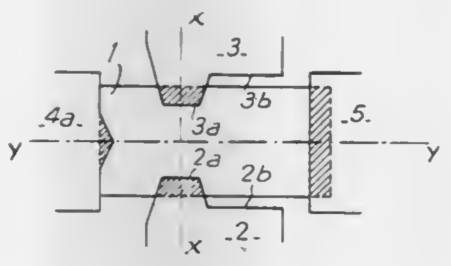
Filed Mar. 21, 1984, Ser. No. 591,864

Claims priority, application France, Mar. 21, 1983, 83 04590

Int. Cl.⁴ B21B *13/10*

U.S. Cl. 72—225 **11 Claims**





1. A process for transforming a rectangular bar into a rail blank on a universal stand having two horizontal rolls and two vertical rolls, the initial steps of said process consisting of: a first step (a) comprising a first series of passes for cutting into the web forming portion by means of the horizontal rolls accompanied by a reduction of the head by means of a first vertical roll to prevent uneven deformation; and a second step (b) comprising a second series of passes for simultaneously reducing the head flank forming portions by the horizontal rolls and the base forming portions by the other vertical roll of the universal stand, the first vertical roll performing no reduction of the head during said second step (b), but being used merely to engage the head for guiding the blank.

4,615,201

SYSTEM FOR REPLACING SECTION ROLLING MILL STANDS, MULTI-FUNCTION STAND-BEARING TROLLEY FOR POSITIONING ON THE ROLLING SITES AND TRANSPORT TOWARDS THE PRE-ASSEMBLY SITES

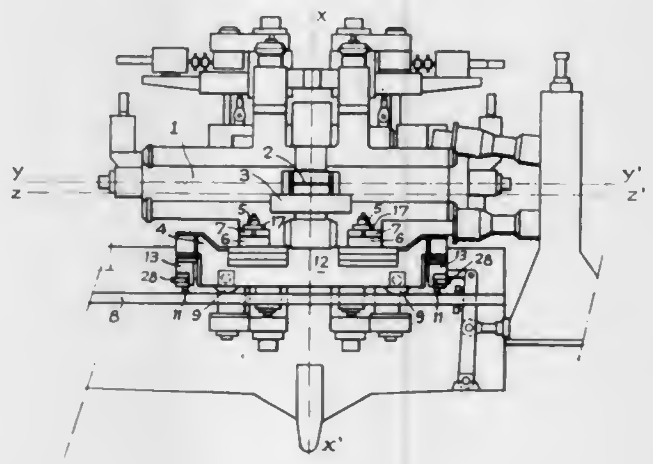
Jacques Michaux, Joeuf, France, assignor to Sacilor, Hayange, France

Filed Jun. 14, 1984, Ser. No. 620,469

Claims priority, application France, Jun. 17, 1983, 83 10091

Int. Cl.⁴ B21B *31/08*

U.S. Cl. 72—239 **12 Claims**



1. A system for transferring section rolling mill stands from preassembly to rolling positions, adjusting the rolling plane of said stands, and displacing said stands perpendicularly to the rolling axis, said system comprising:

- (a) longitudinal track sections and transverse track sections connecting said preassembly positions to said rolling positions, said track sections having parts forming intersections, said parts being retractable beneath the level of said track sections:
- (b) counter-rails positioned alongside and extending above said track sections, said counter-rails having portions in said intersections retractable beneath the level of said tracks sections;
- (c) at least one stand-bearing trolley on which a rolling mill stand may be mounted, each trolley comprising,
  two longitudinal members engaged with two transverse members to define four corners of said trolley, each of said longitudinal members having an outer lateral surface, an upper surface and supports beneath said upper surface, at least one of said transverse members having an outer surface with a coupling bar mounted therein,
  axle-less wheels rotatably mounted in said longitudinal and transverse members, each wheel in said longitudinal member rolling in the longitudinal direction when placed on one of said longitudinal track sections and each wheel in said transverse members rolling in the transverse direction when placed on one of said transverse track sections,
  on board motors mounted in said longitudinal and transverse members for driving said wheels,
  vertically rotating guide rollers rotatably mounted at each of said four corners, each guide roller having a surface of rotation extending beyond the periphery of said longitudinal and transverse members, said guide rollers rolling along said counter-rails when said trolley is rolling along said tracks for guiding said trolley along said tracks;
- (d) mounting lugs attached to said rolling mill stand for supporting said stand on said trolley;
- (e) shims insertable between the stand and trolley
- (f) first hydraulic jacks attached to said lugs for securing said stand to said trolley and for lifting said stand from said trolley when adjusting the rolling plane of the stand, each of said first hydraulic jacks comprising a piston extending into a longitudinal member through the upper surface thereof, said piston heads abutting on the undersides of the upper surfaces of said longitudinal members during retraction of said pistons, whereby said stand is drawn towards the trolley and secured thereto, said heads abutting said supports within said longitudinal members during extension of said pistons whereby said stand is lifted from said trolley and said shims may be placed between said stand and said trolley to adjust the rolling plane of said stand;
- (g) bed plates upstream and downstream of said rolling positions, each bed plate having one or more second hydraulic jacks for lifting said trolley after said trolley has been properly positioned, each bed plate being shaped to engage one of said longitudinal member upper surfaces to restrain its vertical displacement, whereby said trolley may be lifted to a fixed height in each rolling position; and
- (h) means for precisely positioning said stand in each rolling position and for displacement of said stand perpendicularly to said rolling axis, said means comprising a third hydraulic jack and a coupling hook shaped to hook onto said coupling bar in said trolley.

4,615,202

SIX-HIGH ROLLING STAND

Erich Stoy, Ratingen, and Hans Römmen, Dormagen, both of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag AG

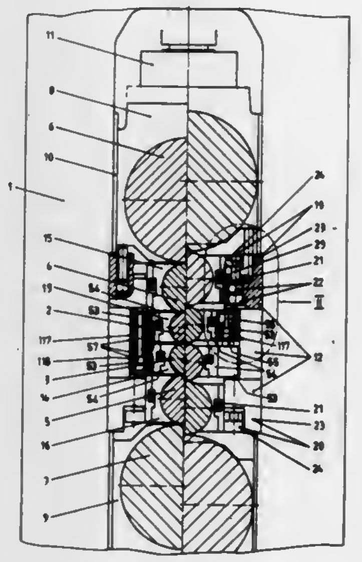
Continuation of Ser. No. 678,371, Dec. 5, 1984, Pat. No. 4,543,810, which is a continuation of Ser. No. 352,520, Feb. 26, 1982, abandoned. This application Aug. 13, 1985, Ser. No. 765,366

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1981, 3107693; Jun. 4, 1981, 3122128

The portion of the term of this patent subsequent to Oct. 1, 2002, has been disclaimed.

Int. Cl.⁴ B21B *31/20*

U.S. Cl. 72—245 **18 Claims**



1. In a six-high roll stand of the kind having a frame, two working rolls (**2, 3**), two intermediate rolls (**4, 5**) and two outer back-up rolls (**6, 7**), wherein at least the outer back-up rolls (**6, 7**) and the intermediate rolls (**4, 5**) are located one above the other essentially in the same vertical plane, wherein the intermediate rolls (**4, 5**) are arranged so as to be axially displaceable between the outer back-up rolls (**6, 7**) and the working rolls (**2, 3**) and wherein blocks (**12**), secured to said frame, have vertical guide surfaces for journal chocks (**13, 14**) of the working rolls (**2, 3**) and vertical guide surfaces for journal chocks (**15, 16**) of the intermediate rolls (**4, 5**), and wherein, moreover, adjusting means (**22**) are provided for the balancing and bending of the intermediate rolls (**4, 5**), which adjusting means (**22**) are adapted to act on said journal chocks (**15, 16**) of the intermediate rolls (**4, 5**) with their operating force being directed against the outer back-up rolls (**6, 7**) and wherein said adjusting means (**22**) for effecting bending of the intermediate rolls (**4, 5**) are displaced in a horizontal direction parallel to the roll axes,

the improvement which comprises that

- (a) said adjusting means (**22**) for bending the intermediate rolls (**4, 5**) are seated in said blocks (**12**) secured to said frame;
- (b) at each of said blocks (**12**) is arranged a lower (**20**) and an upper (**19**) guide piece displaceable in vertical direction, each of said guide pieces (**19, 20**) being provided with guide surfaces for guiding the respective journal chocks (**15** and **16**) of the intermediate rolls (**4** and **5**);
- (c) said journal chocks (**15, 16**) are capable of displacement in a horizontal direction relative to the operational position of the adjusting means (**22**) and/or the operational position of the adjusting means (**22**) is varied in its horizontal direction (**20′, 22′**) within the guide pieces (**19, 20**);
- (d) each guide piece (**19, 20**) has a part (**23**) on the frame and a part (**24**) associated with the respective journal chock (**15, 16**) of the intermediate rolls (**4, 5**);
- (e) the two said parts (**23, 24**) of the guide pieces (**19, 20**) are displaceable relative to each other exclusively in vertical direction;
- (f) between said parts (**23, 24**) two adjusting means (**22, 22′, 22″**), spaced one behind the other, engage as a bending device in axial direction of the intermediate rolls (**4, 5**);
- (g) said journal chocks (**15, 16**) of the intermediate rolls (**4, 5**) are arranged so as to be exclusively displaceable horizontally (**21**; FIGS. **1** to **3**) relative to the associated parts (**24**) of the guide pieces (**19, 20**);
- (h) the two adjusting means (**22, 22′, 22″**) which are spaced one behind each other are variable with respect to their displacement forces in dependence on the respective axial position of the journal chocks (**15, 16**) of the intermediate rolls;
- (i) said journal chocks (**13, 14**) of said two working rolls (**2, 3**) moreover being provided with adjusting means (**55; 60**) arranged in said blocks (**12**) and acting as bending means, said adjusting means (**55; 60**) engaging guide elements (**117** and **118**, respectively), said guide elements on the one hand being held in said blocks (**12**) by means of vertical guides (**53, 54** and **58, 59**, respectively) and on the other hand said guide elements having horizontal guides (**54** and **59**, respectively) for said journal chocks (**13, 14**; FIGS. **8–11**).

4,615,203

COINING PRESS

Kurt Finsterwalder, Goeppingen, and Rainer Güthle, Ebersbach, both of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Fed. Rep. of Germany

Filed Jan. 31, 1985, Ser. No. 696,712

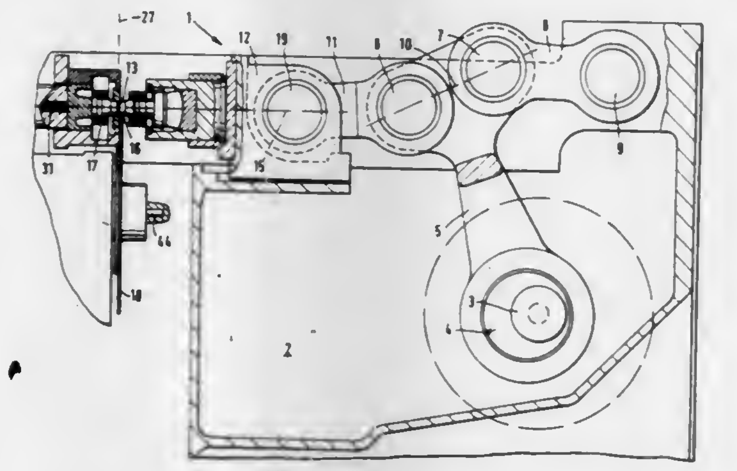
Claims priority, application European Pat. Off., Feb. 9, 1984, 84101317.0

Int. Cl.⁴ B21J *13/14*

U.S. Cl. 72—345 **14 Claims**

1. A coining press comprising a coining ram means, drive means for the coining ram means including a triangular lever means driven from a crankshaft by way of a center bearing, the triangular lever means being operatively connected with a guide member by way of a rear pivot bearing and the guide member being pivotally connected at a relatively fixed press part, the triangular lever being operatively connected by way of a forward pivot bearing and a connecting rod with the coining ram means, an ejection coining die means, drive means for the ejection coining die means derived from the ram drive means by way of a connecting means to produce an ejection movement which takes place essentially simultaneously with the movement of the ram means from the forward dead-center point to the rear dead-center point, the connecting means

including a connecting rod pivotally connected at the ram means and a one-armed ejection lever, said ejection lever being pivotally connected at one end with the end of the last-mentioned connecting rod opposite the pivotal connection thereof at the ram means, a piston-cylinder unit connected to a relatively fixed press part and having a movable member, the other end of the ejection lever being pivotally connected to the movable member, means operatively connecting the ejection lever within the area of its length to the ejection coining die means, and the piston-cylinder unit being pressure prestressed in the sense of a pressure abutment of the ejection lever at the ejection coining die means.



4,615,204

DRAWING APPARATUS OF THE DOUBLE ACTION AND LOWER PUNCH SLIDE TYPE

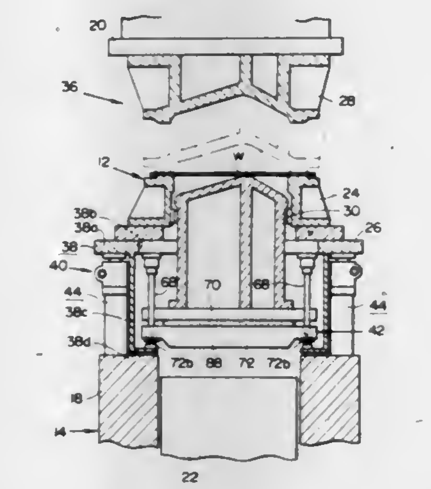
Takeshi Yamamoto, Yukuhashi; Tadashi Furubayashi, Kitakyushu; Masanobu Igami, Fukuoka, and Tsutomu Hashino, Kitakyushu, all of Japan, assignors to Nissan Motor Company, Ltd., Japan

Filed Dec. 5, 1984, Ser. No. 678,488

Claims priority, application Japan, Dec. 28, 1983, 58-246722

Int. Cl.⁴ B21D *22/00*

U.S. Cl. 72—347 **10 Claims**



1. In a drawing apparatus having a drawing die assembly and a lower punch slide type double action press, the drawing die assembly having an upper die, a blank holder and a punch, the double action press having an upper die slide mounting thereon the die, a bolster mounting thereon the blank holder and a lower punch slide mounting thereon the punch, said punch being movable upwardly from a bottom dead position through said blank holder to form a blank in cooperation with the upper die, the improvement comprising a power operated punch supporting device adjustably supporting said punch on said bolster when said punch is in its bottom dead position, said device comprising an adjusting ram on which is supported said punch in its bottom dead position and a drive unit through which said adjusting ram is power operated to move upward and downward for changing the bottom dead position of said punch, wherein said adjusting ram is a frame-like member and has an opening allowing said lower punch slide to pass therethrough upon upward movement of same, movement of said adjusting ram to vary the bottom dead position of said punch enabling an upper end of said punch to be substantially flush with an upper end surface of said blank holder, wherein said punch supporting device further comprises a plurality of threaded vertical posts rotatably supported on said bolster, said adjusting ram being formed with a plurality of threaded holes screwed onto said threaded posts and wherein said punch supporting device further comprises a floating ram removably attached to the lower end of said punch and engageable with said lower punch slide upon upward movement of same and also with said adjusting ram when said punch is in its bottom dead position.

4,615,205

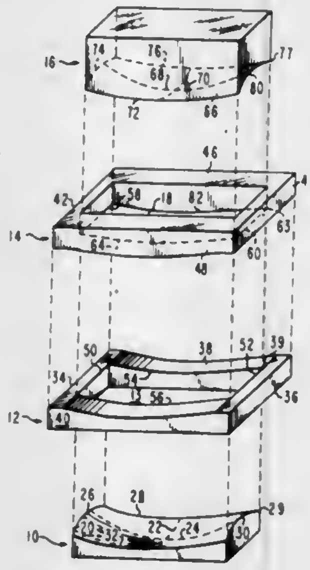
FORMING A SHADOW MASK FROM A FLAT BLANK

Frank R. Ragland, Jr., Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Jun. 18, 1984, Ser. No. 621,382

Int. Cl.⁴ B21D *22/00*

U.S. Cl. 72—347 **6 Claims**



1. Apparatus for forming a shadow mask having short and long sides, said apparatus comprising:

a punch having a peripheral contour;
a pad having said contour and disposed opposing said punch;
a pair of dies for respectively receiving said punch and pad, each die having an inner edge peripheral contour along at least a short side thereof different from the peripheral contour of said punch and pad.

4,615,206

OFFSET TOOL AND CARTRIDGE NOSE ASSEMBLY

Hendrik E. Rosier, Kingston, N.Y., assignor to Huck Manufacturing Company, Irvine, Calif.

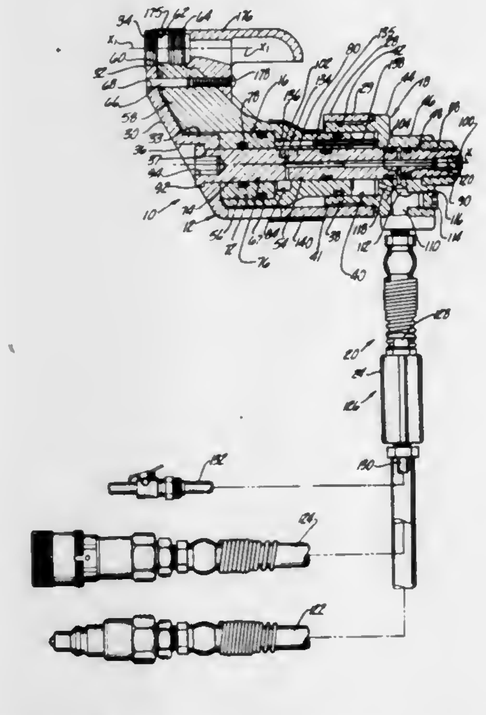
Filed Apr. 1, 1985, Ser. No. 718,404

Int. Cl.⁴ B21D *31/00*

U.S. Cl. 72—391 **7 Claims**

7. An installation tool selectively operable from a source of fluid pressure for setting multipieced fasteners by the application of a relative axial force between interacting fastener components, said installation tool comprising:

a housing member having a forward and a rearward end,
said housing member having an elongated base portion terminating at its rearward end in a ring portion,
said ring portion defining a bore having a generally circular inner surface having a first axis,
said housing member terminating at its opposite end in a forward portion extending generally transversely relative to said first axis,
said housing forward portion terminating at its upper end in a portion having an anvil bore having a second axis which is radially offset from but parallel to said first axis,
a rear adaptor member having a cylindrical portion rotatably located in said ring portion bore and having a bore defining a return cylinder cavity, the axis of said cylindrical portion including said return cylinder cavity being coaxial with said first axis, means on said adaptor member and said bore ring portion to axially locate said cylindrical portion at a preselected position within said base ring portion,
a piston comprising an annular piston head and a piston rod, said piston rod extending coaxially with said first axis,
support means on said housing and said rear adapter member for securing said piston rod from reciprocation relative to said housing and said rear adapter member,
a collet member having a rearwardly extending piston portion slidably, rotatably located within said return cavity, said collet member being slidably supported upon said piston, said collet member having a pull cylinder cavity operative with said piston head, said collet member having a forward portion extending transversely upwardly from said first axis, said collet member forward portion terminating at its upper end with a jaw support bore located coaxially with said anvil bore along said second axis, said collet member adapted to reciprocate along said first and second axes rearwardly in response to fluid pressure applied to said pull cylinder cavity and forwardly in response to fluid pressure applied to said return cylinder cavity,
first fluid path means for communicating with said pull cylinder cavity, second fluid path means for communicating with said return cylinder cavity,
fluid connecting means for connecting said first and second fluid path means to the source of fluid pressure,
a nose assembly for installing the fastener in response to reciprocable movement of said collet member, said nose assembly including an anvil member located in said housing member anvil bore, said nose assembly including a jaw assembly located within said collet jaw bore,
said housing member, said collet and said nose assembly being selectively rotatable relative to said piston and to said cylindrical portion of said rear adaptor member and about said first axis for positioning said nose assembly relative to said first axis to accommodate fasteners to be set at different angular positions.



4,615,207

PROGRESSIVE METAL MOLD APPARATUS FOR PRODUCTION OF LAMINATED IRON CORES

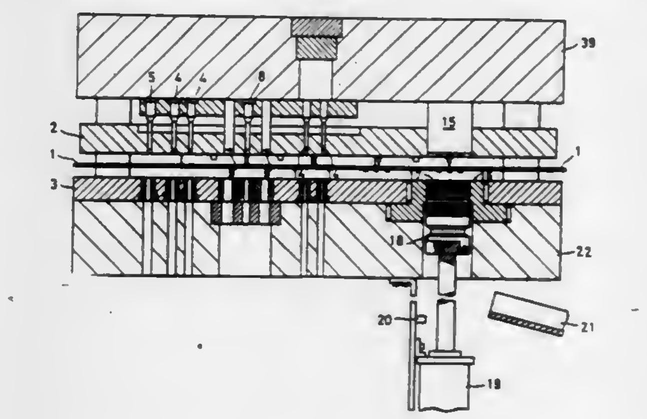
Takamitsu Oboshi, Fukuoka; Tomoaki Koga, and Eiji Imoto, both of Kitakyushu, all of Japan, assignors to Mitsui High-Tec, Inc., Kitakyushu, Japan

Filed Sep. 28, 1984, Ser. No. 655,898

Claims priority, application Japan, Sep. 30, 1983, 58-183734

Int. Cl.⁴ B21J *11/00*

U.S. Cl. 72—404 **11 Claims**



1. A progressive metal mold apparatus for production of laminated iron cores having a die rotatably provided at a predetermined station in a die plate, said apparatus comprising:

a differential gear device;
an electric motor used as a skewing power source;
a control circuit for rotating said motor by a predetermined number of turns in synchronism with press operation;
index means for producing a rotational power for indexing operation in association with the press operation; and
means for transmitting to said die a rotational power of a second rotary shaft in said differential gear device, wherein an output of said motor is provided to either a differential box or a first rotary shaft, of the differential gear device, and an output of said index means is provided to the other.

4,615,208

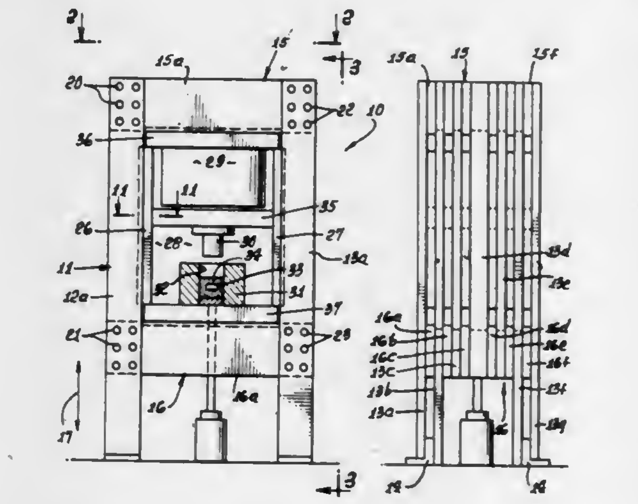
HYDRAULIC PRESS FRAME

Robert W. Hailey, 2030-229 Beverly Plz., Long Beach, Calif. 90815

Filed Mar. 2, 1984, Ser. No. 585,915

Int. Cl.⁴ *37/12*

U.S. Cl. 72—455 **10 Claims**



1. In a press, the combination comprising:

(a) dimensionally longitudinally extending frame means,
(b) longitudinally spaced platen structures connected with said frame means, at least one of said platen structures including multiple metallic plates with surfaces defining

generally parallel planes which are parallel to said longitudinal dimension,

(c) there being another of said platen structures which is longitudinally spaced from said one platen structure, and which also includes multiple metallic plates with surfaces defining generally parallel planes which are parallel to said longitudinally dimension,

(d) said frame means comprising left and right groups of multiple longitudinal frame members, the plates of each of said longitudinally spaced platen structures having left and right portions extending between said frame members of said left and right groups, respectively, and in alternating relation with said frame members,

(e) and multiple connectors extending through the frame members and through said platen plate portions and surfaces at each of at least four locations, two of which are longitudinally spaced left locations, and two of which are longitudinally spaced right locations, said multiple connectors forcibly clamping said frame members to said platen plate portions,

(f) said platen plate portions and said frame members having tongue and groove interfits,

(g) and pressure distribution plates each having interfits with said platen structure plates and which face one another longitudinally, and press load transmitting means located longitudinally between said pressure distribution plates,

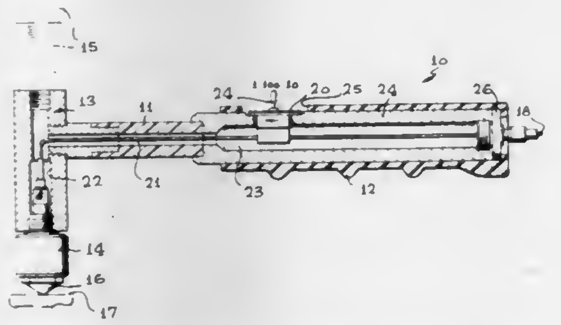
(h) said load transmitting means comprising plunger and cylinder means,

(i) and including left and right side plates interfitting said frame member plates and facing one another, and said press load transmitting means located between said said plates and having sliding tongue and groove interfit therewith.

4,615,209
MULTI RANGE IMPULSE HAMMER

Nicholas D. Change, Jr., 7514 Hatillo Ave., Canoga Park, Calif. 91306

Filed Jan. 3, 1985, Ser. No. 688,518
Int. Cl.⁴ G01N ***3/30;*** **G01M** ***7/00;*** **G01P** ***15/09***
U.S. Cl. 73—12 **4 Claims**



1. A multi-range impulse hammer comprising the combination of:

an elongated handle having a grip at one end and an elongated head secured to its other end in a position normal to the longitudinal axis of said handle;

a selected end of said head carrying a load cell transducer for initiating a signal in response to impact upon a structure undergoing test;

electrical circuit means internally cabled from said transducer through said head and said handle to terminate in a coaxial connector at said one end of said handle;

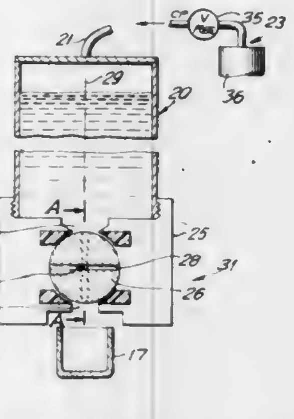
said electrical circuit means includes a manually operated selector for obtaining a variety of different impact sensitivities; and

said selector includes at least two values of chip capacitors coupled in parallel with a standard capacitor.

4,615,210
VISCOMETER SYSTEM

Donald G. Wright, Rockville Centre, N.Y., assignor to Adelphi Center For Energy Studies, Garden City, N.Y.

Filed May 2, 1985, Ser. No. 729,866
Int. Cl.⁴ G01N ***11/04***
U.S. Cl. 73—55 **5 Claims**



1. A viscometer system to measure the viscosity of thick liquids such as coal slurries, the viscometer system including:

a gas-tight vessel to contain the liquid;

gas pressure means connected to the vessel to selectively apply gas pressure to the liquid in order to force the liquid from the vessel,

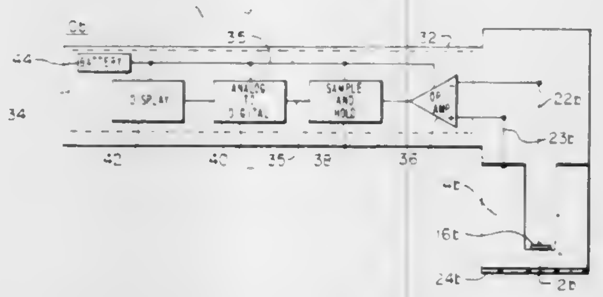
an orifice means connected to the vessel to permit the liquid to flow from the vessel,

a valve means connected to said orifice means to control the flow of the liquid, the valve means including a valve block having inlet and outlet orifices, a ball mounted on a shaft with the shaft rotatably mounted in said valve block, said ball having a bore therethrough, pivot means to rotatably mount the shaft in said valve block, automatic remote control means to selectively turn the shaft in order to operate the valve means by aligning its bore with the inlet and outlet orifices of the valve block, and means to measure the weight of the said liquid which flows through said valve means in a predetermined time period.

4,615,211
PRESSURE GAUGE FOR TIRES AND OTHER ELASTIC VESSELS

Henry H. Kolm, Wayland, and Robert E. Carter, Auburndale, both of Mass., assignors to Piezo Electric Products, Inc., Cambridge, Mass.

Filed Dec. 21, 1984, Ser. No. 684,509
Int. Cl.⁴ B60C ***23/02;*** **G01L** ***9/08***
U.S. Cl. 73—146.2 **33 Claims**

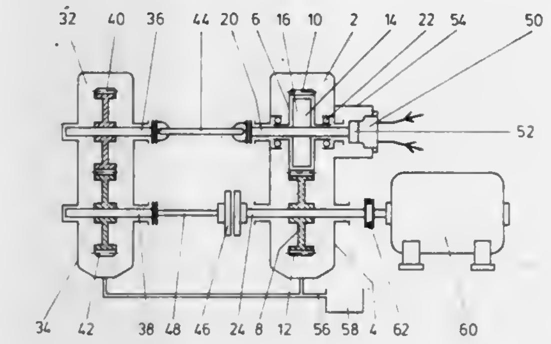


19. A pressure gauge comprising: a deformable element; a rigid guard element surrounding said deformable element to form an engagement face; means for sensing the deformation of said deformable element as an indication of pressure; processing means, responsive to the sensing means, for indicating the pressure sensed by said sensing means; and a handle rigidly attached to the guard element and housing said processing means.

4,615,212
TORQUE TEST APPARATUS

Artur Kugler, and Anton Roth, both of Augsburg, Fed. Rep. of Germany, assignors to Zahnraderfabrik Renk, A.G., Augsburg, Fed. Rep. of Germany

Filed Jul. 1, 1985, Ser. No. 750,917
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1984, 3424923
Int. Cl.⁴ G01M ***13/02***
U.S. Cl. 73—162 **18 Claims**

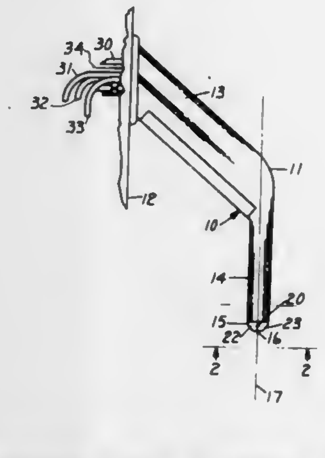


1. A low mass torque test apparatus for applying torque stress loads to a test specimen component in simulation of loads encountered in actual operation of the component, the apparatus comprising a pair of transmissions, a pair of connecting means interconnecting the inputs and outputs of the transmissions to provide a closed mechanical energy circuit, at least one of the connecting means including means for carrying the test specimen, one transmission including at least one gear, twist coupling means, the twist coupling means being positioned within the one gear, the twist coupling means including a first torsion element and a second torsion element, means nonrotatively coupling the first torsion element to the means for carrying the specimen, means nonrotatively coupling the second torsion element to the one gear, means for twisting the torsion elements relative to one another, the means for twisting the torsion elements including means forming receptacles for receiving hydraulic fluid, the apparatus further including means for selectively applying hydraulic fluid to the receptacles.

4,615,213
PRESSURE SENSING INSTRUMENT FOR AIRCRAFT

Floyd W. Hagen, Eden Prairie, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Dec. 22, 1983, Ser. No. 564,520
Int. Cl.⁴ G01C ***21/00***
U.S. Cl. 73—180 **7 Claims**



3. An air data sensing probe comprising a cylindrical tube having a central longitudinal axis, and an outer surface generated about said axis;

an end portion formed on said tube, said end portion having a part spherical outer surface generated about a center point lying on the axis and having a radius larger than the radius of the cylindrical tube, the part spherical outer surface comprising a part spherical surface less than a hemispherical surface;

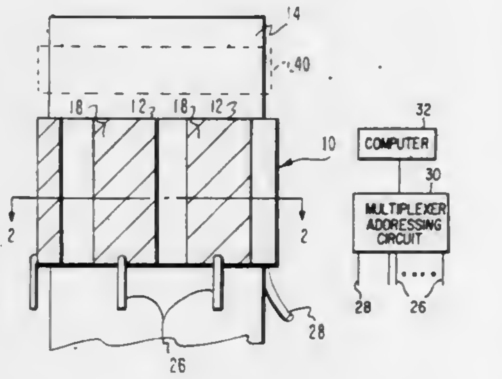
the cylindrical outer surface of the tube and the part spherical surface of the closed end member intersecting on a plane having a diameter less than the diameter of the hemispherical surface of which the part spherical surface comprises a portion to thereby form an abrupt transition from the part spherical surface to the cylindrical surface; and

port means defined through said part spherical surface and adapted to sense desired fluid pressures at said spherical surface.

4,615,214
PIEZOELECTRIC WIND SENSOR

Joseph R. Burns, 33 Merion Pl., Lawrenceville, N.J. 08648

Filed May 6, 1985, Ser. No. 730,561
Int. Cl.⁴ G01W ***1/04***
U.S. Cl. 73—189 **5 Claims**



1. A wind sensor comprising an array of pressure sensors, each of said sensors comprising a layer of piezoelectric material disposed between a pair of electrodes on opposite surfaces of said layer, support means for facing each of said sensors in a different direction, and means, operable within a preselected time period, for individually electrically addressing each of said sensors for detecting the voltage generated by each of said sensors in response to a wind blowing thereagainst and for comparing the voltages so detected to determine the one of said sensors generating the greatest voltage for determining the prevailing wind direction.

4,615,215
METHOD AND APPARATUS FOR TESTING READY-MIXED CONCRETE

Yasuhiko Sugimoto, Kyoto; Sadao Wada, Nagaokakyo; Naoyosi Tanide, Chihayaakasaka; Osamu Kawabata, Amagasaki; Tadashi Yamaguchi, Suita; Shozo Yano, Uji; Kobun Suda, Kameyama; Kazuo Nishibayashi, Yamashina, and Shohei Ishida, Moriyama, all of Japan, assignors to Takenaka Komuten Co., Ltd., Osaka and Shimadzu Corporation, Kyoto, both of, Japan

Filed Mar. 30, 1984, Ser. No. 595,249
Claims priority, application Japan, Apr. 20, 1983, 58-70798
Int. Cl.⁴ G01N ***33/38, 5/04***
U.S. Cl. 73—866 **9 Claims**

1. An apparatus for testing the quality of ready-mixed concrete, said apparatus comprising:

an electronic balance having a weighing tray hanging down therefrom;

a water bath for immersing said weighing tray in water;

water supply means for supplying water to said water bath;

a sample vessel in which a mortar sample is to be placed, said mortar sample being sampled from ready-mixed concrete whose quality is to be tested;

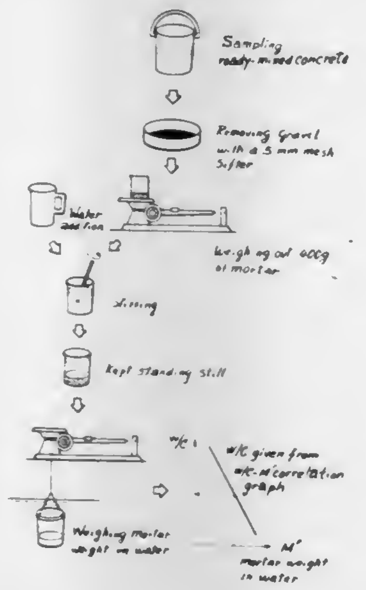
water pouring means for pouring water into said sample vessel;

stirring means for stirring the contents of said sample vessel with water poured therein;

driving means for displacing said sample vessel between said weighing tray and the position of said stirring means through a starting position where said sample vessel is made to be engaged with and detached from said driving means, said starting position being located midway between said weighing tray and said stirring means;

control means for controlling said electronic balance, said water supply means, said water pouring means, and said driving means so that said sample vessel may be firstly placed on said weighing tray to have the area weight of the contents measured, secondly brought to the position of the stirring means to have the contents stirred with water poured therein, thirdly kept standing still at said starting position for a predetermined period of time, and fourthly placed on said weighing tray to have the underwater weight of the contents measured with water supplied into said bath; and

computing means for computing the water-to-cement ratio in said ready-mixed concrete according a correlation between the aerial weight and the underwater weight of said mortar sample.


Sampling ready-mixed concrete
Removing gravel with a 5 mm mesh sifter
Water addition
Weighing out 400g of mortar
Stirring
Kept standing still
W/C
W/C given from W/C-M' correlation graph
Weighing mortar weight in water
M' mortar weight in water

4,615,216

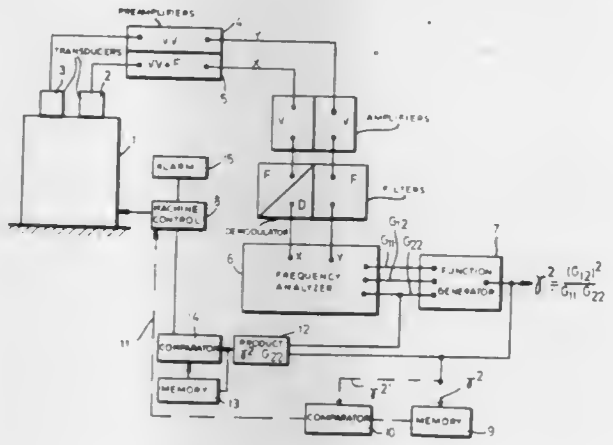
METHOD OF ANTICIPATING MACHINE FAILURE

Peter Vykoupil, Moers-Schwasheim, Fed. Rep. of Germany, assignor to Rheinisch-Westfalischer Technischer Uberwachungsverein E.V., Essen, Fed. Rep. of Germany

Filed Jun. 11, 1985, Ser. No. 743,584

Int. Cl.⁴ G01N *29/04*

U.S. Cl. 73—593 **7 Claims**



1. In a method of operating a machine producing body waves in a machine part and in which a measurement is made of a first body-wave parameter at a relatively high-frequency range of a frequency spectrum of said body waves and a second body-wave parameter is measured in a low-frequency range of said frequency spectrum, the improvement which comprises:

generating an auto-spectral density value G_{11} corresponding to the measurement of said first parameter;

generating a second auto-spectral density value G_{22} from said measurement of said second body-wave parameter;

generating a cross spectral density value G_{12} from both of the measurements;

automatically forming the coherence function $\gamma^2 = G_{12}^2/G_{11}\cdot G_{22}$; and

detecting an increase in the value of γ^2 as an anticipation of impending failure of said machine.

4,615,217

TWO-PROBE ULTRASONIC FLAW DETECTION APPARATUS

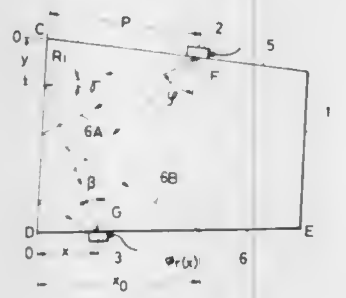
Masahiro Koike, Hitachi; Fuminobu Takahashi, Katsuta; Satoshi Ogura, and Kazunori Koga, both of Hitachi, all of Japan; assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 8, 1985, Ser. No. 709,704

Claims priority, application Japan, Mar. 12, 1984, 59-45637

Int. Cl.⁴ G01N *29/04*

U.S. Cl. 73—624 **9 Claims**



1. In a two-probe ultrasonic flaw detection apparatus in which an ultrasonic wave is transmitted from a transmission probe into an object being inspected, and ultrasonic waves reflected from a reflection surface in said object are received by a reception probe provided separately from said transmission probe; a two-probe ultrasonic flaw detection apparatus comprising:

maximum reception intensity position determination means which determines the position at which the combined intensity of ultrasonic waves reflected from each part of said reflection surface form a maximum, using as input parameters the ultrasonic characteristics of said object being inspected and of said transmission and said reception probes, and a position of said transmission probe and an angle of incidence onto said object, and

reception probe position-controlling means which drives said reception probe to said position of said maximum reception intensity determined by said determination means.

4,615,218

ULTRASONIC WHEEL PROBE WITH ACOUSTIC BARRIER

Dominick A. Pagano, 10 Sasqua Trail, Weston, Conn. 06883

Filed Sep. 12, 1984, Ser. No. 649,827

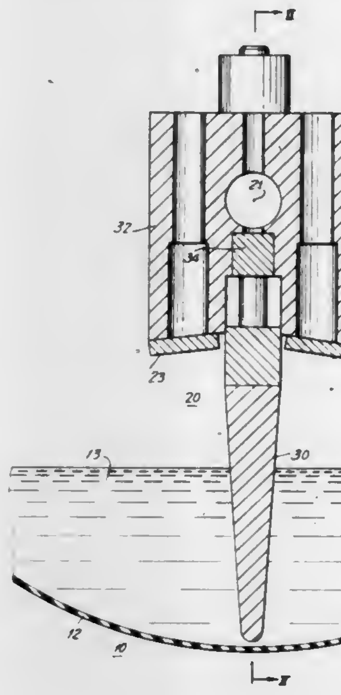
Int. Cl.⁴ G01N *29/04*

U.S. Cl. 73—639 **23 Claims**

1. An ultrasonic inspection apparatus of the type having a container having a substantially annular outer surface for rotating about an axis of rotation and rolling on a specimen to be tested, the container having a yoke arranged at least partly on the axis of rotation and being filled with a coupling fluid for propagating ultrasonic acoustic energy, the ultrasonic inspection apparatus comprising:

first and second transducer means for transmitting ultrasonic acoustic energy through the coupling fluid, the substantially annular outer surface of the container, and into the specimen to be tested, and for receiving echoes of said transmitted ultrasonic acoustic energy, respectively; and

acoustic barrier means interposed between said first and second transducer means and immersed in the coupling fluid for acoustically isolating said first transducer means from said second transducer means, wherein there is further provided mounting means for securing said acoustic barrier means to the yoke, said acoustic barrier means extending substantially to an annular inner surface of the container, said annular inner surface being in communication with the coupling fluid.



4,615,219

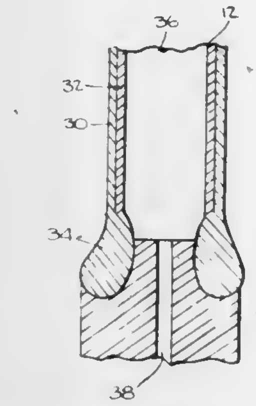
PRESSURE GAUGE FOR USE WITH A CORROSIVE FLUID MEDIUM

Lani G. Ache, Allentown, Pa., assignor to Ametek, Inc., Sellersville, Pa.

Filed Aug. 12, 1985, Ser. No. 765,058

Int. Cl.⁴ G01L *7/04*

U.S. Cl. 73—741 **3 Claims**



1. A stress-corrosion, cracking resistant pressure gauge for sensing the pressure of a fluid, including sulfide as a component thereof, comprising:

a Bourdon tube having a first and second end and a passageway for receiving fluid including a first layer formed from hardened stainless steel type 316;

a second layer interior to said first layer and formed of stainless steel type 316 having a hardness equal to or less than Rc22, said second layer forming said fluid passageway in said Bourdon tube;

a socket formed of stainless steel type 316 and having a fluid passageway formed therein, the first end of said Bourdon tube being joined to said socket by a weld formed from stainless steel type 316 which bonds the ends of first and second layers;

closure means formed of stainless steel type 316 for closing the second end of said Bourdon tube and joined to said second end by a weld formed from stainless steel type 316 which bonds the ends of the first and second layers;

said welds sealing the interface between said first and second layers to prevent contact of fluid with the first layer of the Bourdon tube; and

means coupled to said Bourdon tube for providing a visual indication of the pressure of said fluid.

4,615,220

METHOD AND DEVICE FOR MEASURING SMALL FORCES AND SMALL MOVEMENTS IN A MATERIALS TESTING MACHINE OR OTHER LOADING DEVICE

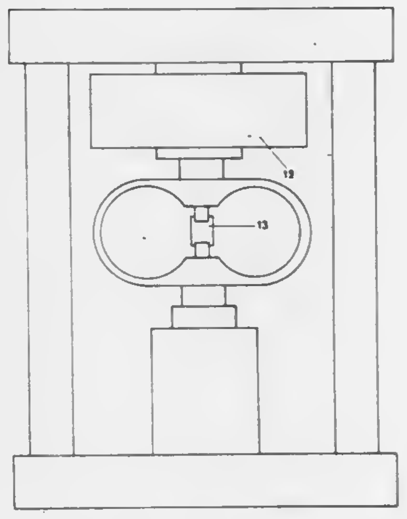
Anders I. Johansson, Farsta, Sweden, assignor to AB Sandvik Hard Materials, Stockholm, Sweden

Filed Jun. 27, 1985, Ser. No. 749,396

Claims priority, application Sweden, Jul. 12, 1984, 8403684

Int. Cl.⁴ G01N *3/00*

U.S. Cl. 73—789 **20 Claims**



1. Apparatus for measuring small forces and small movements in a testing machine intended for considerably greater forces and movements, comprising a yoke dimensioned to carry the loading capacity of the testing machine and mountable within the testing machine, said yoke including a test fixture positioned within the yoke for transmitting a load from the yoke at its deformation to a test piece positioned within the test fixture and a force transducer placed in the force path within the yoke for measuring said force applied to the test piece.

4,615,221

TRIAXIAL COMPRESSION TEST APPARATUS

Malcolm Mellor, Hanover, N.H., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 3, 1985, Ser. No. 751,395

Int. Cl.⁴ G01N *3/00*

U.S. Cl. 73—798 **18 Claims**

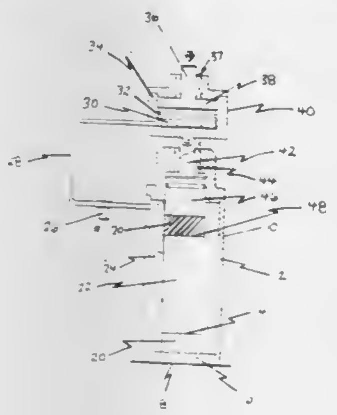
1. An apparatus comprising:

a sample;

an enclosure, containing said sample

a means for generating a force;

a means for simultaneously coupling said force to a first and second portion of said sample, said means comprising a mechanical means for coupling said force to said first portion of said sample, and a hydraulic means communicating with said mechanical means, for coupling said force to said second portion of said sample, wherein said mechanical means comprise a first piston communicating with said sample and means for coupling said force to said



first piston whereby said coupling means comprise a second enclosure, with a second piston, having a rod, forming a chamber within said second enclosure containing a hydraulic fluid, whereby said force being applied to said second piston rod is transmitted to said hydraulic fluid and thereby coupled to said second enclosure and a means for communicating said force form said second enclosure to said first piston.

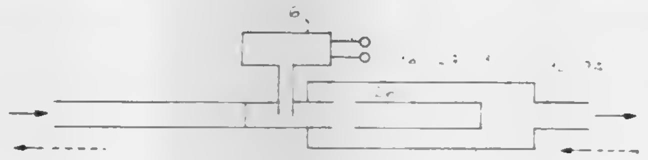
4,615,222
GAS FLOW MONITOR USING A VORTEX GENERATOR

Daniel R. von Reckinghausen, Hudson, N.H., assignor to American Electromedics Corp., Hudson, N.H.

Filed Aug. 8, 1984, Ser. No. 638,753

Int. Cl.^{4} G01F *1/20*

U.S. Cl. 73—861.21 **11 Claims**



1. An apparatus for monitoring a gas flow comprising:

a pipe with sidewalls for conducting gas between a first and a second end, said second end having a circumferential gap for allowing radial gas flow; and an acoustic resonator disposed around said circumferential gap and comprising an axial extension directed away from said first end;

a straight rod extending between said sidewalls and disposed transversely within said tube for generating turbulence within said gas flow for generating acoustic waves indicative of said gas flow;

transducer means for generating electric signals corresponding to said acoustic wave; and

a tube having an open end disposed within said pipe, said tube being provided to transmit said acoustic waves to said transducer means.

4,615,223
INCREASING FRICTIONAL RESISTANCE MEASURING APPARATUS

Gregory L. Nause, 18 W. Main St., Newtonsville, Ohio 45148

PCT No. PCT/US84/00376, § 371 Date Feb. 11, 1985, § 102(e) Date Feb. 11, 1985, PCT Pub. No. WO85/04011, PCT Pub. Date Sep. 12, 1985

PCT Filed Mar. 6, 1984, Ser. No. 713,725

Int. Cl.^{4} G01L *5/13*

U.S. Cl. 73—862.03 **4 Claims**

1. A model apparatus for indicating the relative pulling resistance applicable to dead weight and distance comprising:

(a) a generally rectangular frame including a pair of structural longitudinal frame members parallel to each other, said frame having a front portion and a rear portion,

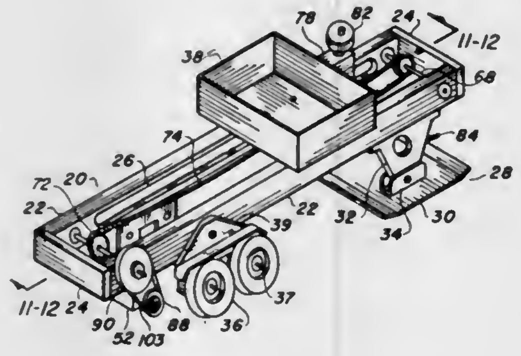
(b) platform resistance means attached to the underside of the front portion of said frame and providing a surface engageable with the ground against which relative pulling resistance may be measured,

(c) a plurality of wheels mounted upon front and rear tandem wheel axles, said wheel axles being fastened to the underside of the rear portion of said frame,

(d) gear reduction drive means connected to said wheel axles and drivingly connected to a rear drive shaft mounted upon said frame rear portion for transferring the rotation from said wheels to said rear drive shaft at a reduced speed,

(e) a movable weight box slideably connected to the upper portion of said frame and movable in a linear direction contiguous thereto, said weight box being adapted to receive a dead weight mass therein, and

(f) linear drive means mounted between said pair of longitudinal frame members and extending from the front to the rear portion thereof, said linear drive means being drivingly connected to said rear drive shaft and operable to position said movable weight box along the upper portion of said frame in response to rotating movement of said wheels, thereby causing said box to be moved from the rear portion to the front portion of said frame when said model apparatus is pulled by an external power source so as to transfer the weight of the weight box from over said wheels to over said platform resistance means,



said gear reduction drive means comprising,

first and second wheel sheaves drivingly interconnected by a round drive wheel belt, said first wheel sheave being drivingly attached to the front tandem wheel axle and the said second wheel sheave being drivingly attached to the rear tandem axle,

first and second intermediate sheaves drivingly interconnected by an intermediate round drive belt, said first intermediate sheave being attached to said rear tandem axle and said second intermediate sheave being attached to a transmission shaft, and

first and second multi-grooved sheaves drivingly interconnected by a transmission round drive belt, said first multi-grooved sheave being attached to said transmission shaft and said second multi-grooved sheave being attached to said rear drive shaft whereby the drive ratio between said wheels and said weight box may be varied by changing the position of said transmission drive belt on said multi-grooved sheaves.

4,615,224
AIR SAMPLING SYSTEM FOR SMOKE DETECTION

Grant M. Smith, Bryn Athyn; Samuel R. Romania, Phoenixville, and Vladimir M. Tamarkin, Philadelphia, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 9, 1985, Ser. No. 764,230

Int. Cl.^{4} G01N *1/26*

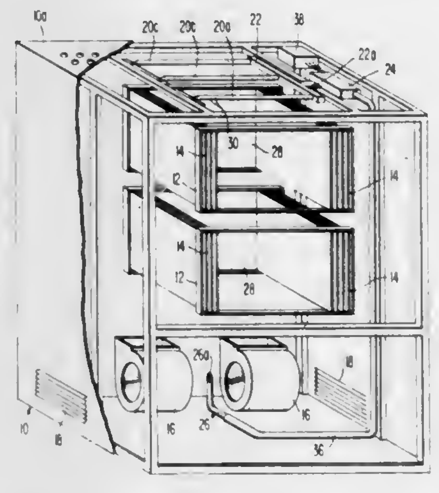
U.S. Cl. 73—863.33 **9 Claims**

1. An air sampling system for diposition in a cabinet having a source of cooling air, for detecting the presence of smoke in cooling air directed over the planar surfaces of a plurality of printed circuit cards interconnected in a backplane, comprising:

at least a first air sampling tube oriented normal to the direction of flow of said cooling air, said first air sampling tube being positioned in proximal, transverse relation to the edges of said cards, said last mentioned edges being those farthest removed from said source of cooling air, said first air sampling tube being closed at one extremity thereof and open at its opposite extremity, said first air sampling tube having a plurality of spaced-apart holes of predetermined orientation formed therein along its length,

at least a second air sampling tube arranged in coplanar, spaced-apart relationship with said first air sampling tube and being positioned outside the flow of said cooling air and in a proximal, parallel relationship to said backplane, said second air sampling tube being closed at one extremity thereof and open at its opposite extremity, said second air sampling tube having a plurality of spaced-apart holes formed therein along its length,

a detector box comprising first and second chambers, a smoke detection unit interposed between said chambers,



a manifold having a plurality of input ports and an output port, the open extremities of at least said first and second air sampling tubes being connected respectively to a pair of said input ports, said output port being connected to said first chamber of said detector box,

said predetermined orientation of said holes formed in said first sampling tube effecting a pressure on the surface of said last mentioned tube which is substantially the same as that on the surface of said second air sampling tube, whereby the respective pressures on said first and second tubes are balanced,

a draft tube located in a low pressure area of said cabinet as effected by said source of cooling air, means coupling said draft tube to the second chamber of said detector box, whereby the pressure differential present between said first and second air sampling tubes and said second chamber of said detector box causes a Plurality of air samples to be drawn into said last mentioned air sampling tubes and through said smoke detection unit.

4,615,225
IN-SITU ANALYSIS OF A LIQUID CONDUCTIVE MATERIAL

Mario A. Sainz, Londonderry, N.H., assignor to Allied Corporation, Morristown, N.J.

Filed Mar. 13, 1985, Ser. No. 711,350

Int. Cl.^{4} G01N *1/10, 1/14*

U.S. Cl. 73—864.33 **13 Claims**

1. A method for sampling a liquid, electrically conductive material, comprising the steps of:

(a) positioning an inner housing at a selected longitudinal location within a probe housing;

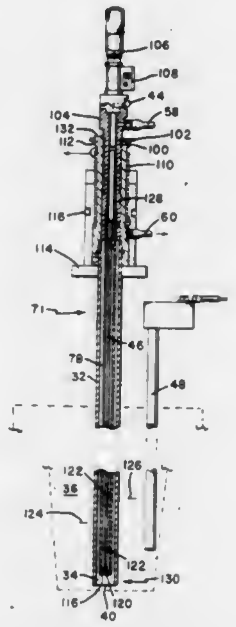
(b) positioning a spark electrode at a retracted position within said inner housing, thereby spacing an electrical discharge portion of said spark electrode inward from a sampling lower end portion of said inner housing by a first selected distance;

(c) introducing an aliquot sample of said liquid material into a sampling chamber which is delimited by said probe housing and which is in fluid communication with said inner housing sampling lower end portion and said spark electrode;

(d) providing an atmosphere of non-reactive gas at a selected pressure in said sampling chamber;

(e) detecting a reference liquid level at which the location of the gas contact surface of said aliquot is substantially the same as the location of the sampling lower end portion of said inner housing;

(f) changing a relative distance between said gas contact surface and said inner housing sampling lower end portion to establish a separation position at which said inner housing sampling lower end portion is removed and spaced from said gas contact surface by a selected separation gap distance;



(g) positioning said spark electrode within said inner housing at a work position spaced inward from the sampling lower end portion of said inner housing by a selected working distance;

(h) sparking an electrical arc between said spark electrode and said gas contact surface of said liquid aliquot, thereby producing an aerosol sample composed of particles of said material in said gas;

(i) providing a flow of said non-reactive gas through said sampling chamber and through the region of said electrical arc; and

(j) directing a flow of said non-reactive gas and said aerosol sample out from said sampling chamber.

4,615,226
APPARATUS AND METHOD FOR INTRODUCING SOLUTES INTO A STREAM OF CARRIER GAS OF A CHROMATOGRAPH

Francis M. DiNuzzo, Landenberg, Pa., and James S. Fullemann, Half Moon Bay, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 4, 1985, Ser. No. 697,659

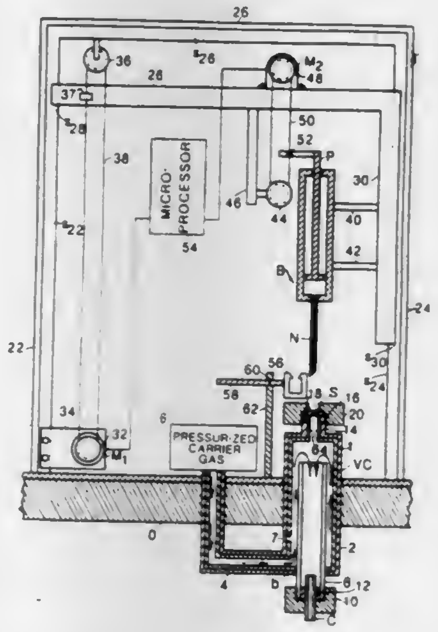
Int. Cl.^{4} G01N *1/00, 1/14, 1/28*

U.S. Cl. 73—864.87 **5 Claims**

1. A method of injecting sample liquid into a vaporization chamber, comprising the steps of

drawing sample liquid into a syringe,

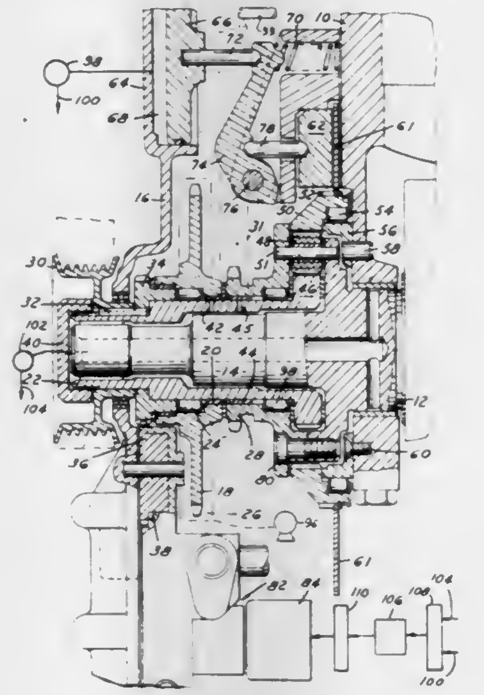
inserting a needle of the syringe into a heated vaporizing chamber for a period that is less than 500 miliseconds, and



operating the syringe so as to inject a sample volume of liquid into the vaporizing chamber while the needle is inserted therein.

4,615,227
ENGINE STARTER AND ACCESSORY DRIVE SYSTEM

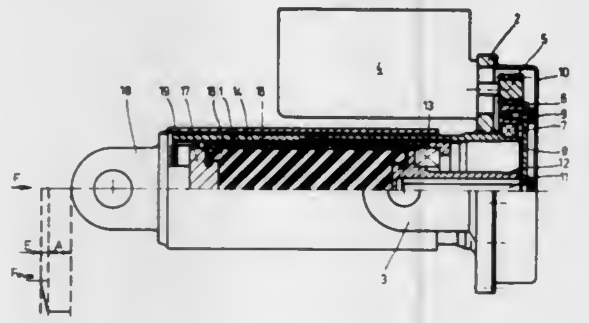
Thomas R. Stockton, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Oct. 22, 1984, Ser. No. 663,536
Int. Cl.⁴ F02N *15/02*
U.S. Cl. 74—7 E **11 Claims**



1. An engine starter and accessory drive system comprising:
an accessory drive means;
a planetary gearset having a sun gear driveably connected to the accessory drive means, a ring gear, a carrier and planet pinions rotatably mounted on the carrier, fixed to the engine crankshaft, meshing with the sun gear and with the ring gear;
means for holding the ring gear against rotation; and
a starter motor and first clutch means for providing a one-way driving connection between the motor and the accessory drive means.

4,615,228
DEVICE FOR MECHANICALLY TRANSFORMING A TORQUE INTO AN AXIAL FORCE

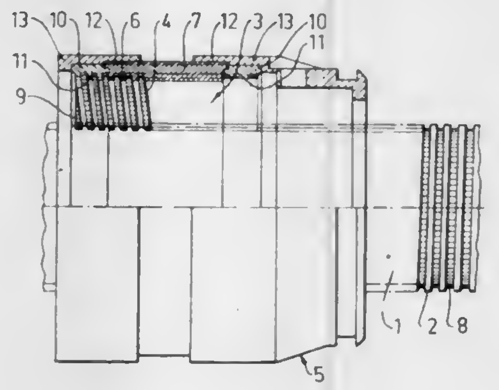
Lars M. Severinsson, S-310 21 Hishult, Sweden
Filed May 14, 1985, Ser. No. 733,929
Claims priority, application Sweden, May 22, 1984, 8402746
Int. Cl.⁴ F16H *21/44, 21/54*
U.S. Cl. 74—89 **4 Claims**



1. A device for mechanically transforming a torque into an axial force, characterized by a long body (**16**) having short sides and made of a material which exhibits hydraulic characteristics enclosed within a tightly wound coil spring (**15**), one end of which is attached to an axially fixed, torque-receiving end wall (**12**) in contact with one of the short sides of the body and the other end of which is attached to an axially movable, force-transmitting cover (**17**) in contact with the other short side of the body, the device being so constructed that the diameter of the coil spring and thus of the body is reduced as the end wall rotates under the effect of the torque and the length of the body is correspondingly increased.

4,615,229
DEVICE FOR TRANSLATING A ROTARY MOTION TO A LINEAR ONE

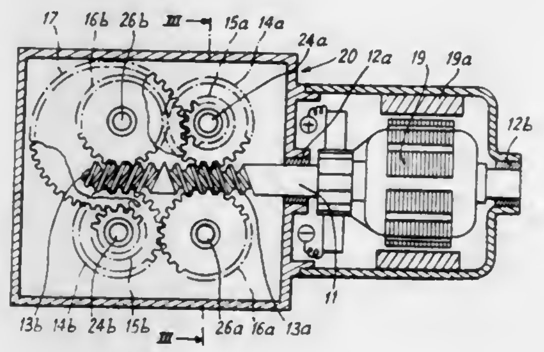
Bo Granbom, 13 Lostigen, S-731 42 Köping, Sweden
Filed Mar. 15, 1985, Ser. No. 712,255
Claims priority, application Sweden, Mar. 16, 1984, 8401481
Int. Cl.⁴ F16H *25/22*
U.S. Cl. 74—424.8 C **5 Claims**



1. A device for translating a rotary motion to a linear one comprising a first elongate body provided with screw threads extending along the body and a second body rotatable coaxially with the first body, a plurality of rollers arranged between the first and the second body with the axes of the rollers parallel to the axes of the bodies and provided with threads engaging the screw threads of the first body, the first body being provided with teeth extending substantially along the entire body, and that the rollers have teeth cooperating with the teeth of the first body, one body being displaced relative to the other upon turning of the bodies relative to each other, characterized in that the second body has threads cooperating with the threads of the rollers, that the second body has teeth cooperating with the teeth of the rollers, that the threads of the first body, the rollers and the second body are trapezoidal threads, that the threads of the rollers and the threads of the second body have the same turning direction and the threads of the first body have a turning direction opposite to the turning direction of the rollers and the second body and that the pitch circle of the teeth of the first body is located at a radial distance from the nominal diameter of the threads of the first body and the pitch circle of the teeth of the roller is located at a radial distance from the nominal diameter of the threads of the roller.

4,615,230
GEAR TRANSMISSION COMPRISING TWO WORMS

Roland Guichard, 10210 Chaource, France
PCT No. PCT/FR84/00131, § 371 Date Jan. 15, 1985, § 102(e) Date Jan. 15, 1985, PCT Pub. No. WO84/04570, PCT Pub. Date Nov. 22, 1984
PCT Filed May 15, 1984, Ser. No. 700,700
Claims priority, application France, May 16, 1983, 83 08056
Int. Cl.⁴ F16H *1/16, 1/20, 37/06, 57/00*
U.S. Cl. 74—427 **12 Claims**

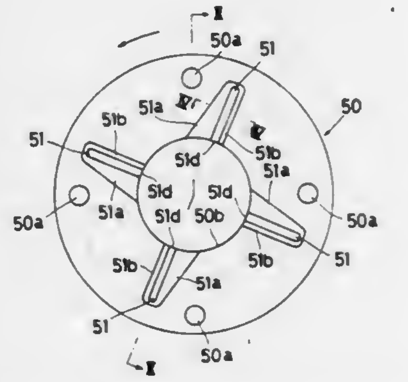


1. Gear transmission with two kinematic channels comprising a driving shaft (**1, 11, 211, 301, 401, 501**) carrying two worms (**3***a*, **3***b*; **13***a*, **13***b*; **213***a*, **213***b*; **303***a*, **303***b*; **403***a*, **403***b*; **503***a*, **503***b*) with threads inclined in opposite directions, each of the two kinematic channels comprising two helical teeth intermediate worm-wheels (**4***a*, **4***b*; **6***a*, **6***b*; **14***a*, **14***b*; **16***a*, **16***b*; **214***a*, **214***b*; **216***a*, **216***b*; **314***a*, **314***b*; **316***a*, **316***b*; **414***a*, **414***b*; **416***a*, **416***b*; **514***a*, **514***b*; **516***a*, **516***b*) each meshing with a respective one of the two worms on opposite sides, two of these intermediate worm-wheels of the respective kinematic channels being fast with a respective straight toothed intermediate gear-wheel (**5***a*, **5***b*; **15***a*, **15***b*; **115***a*, **115***b*; **215***a*, **215***b*; **315***a*, **315***b*; **415***a*, **415***b*; **515***a*, **515***b*) coaxial with it, these two intermediate gear-wheels meshing with a common gear-wheel (**7, 17, 217**) keyed to a driven shaft, characterized in that the auxiliary worm-wheels of a given kinematic channel (**4***a*, **6***b*–**14***a*, **16***b*–**214***a*, **216***b*–**314***a*, **316***b*–**414***a*, **416***b*–**514***a*, **516***b* and **4***b*, **6***a*–**14***b*, **16***a*–**214***b*, **216***a*–**314***b*, **316***a*–**414***b*, **416***a*–**514***b*, **516***a*) mesh together and are carried by common displacement means enabling them to move parallel to their axes in operation, whereas the shaft (**1, 11, 211, 301, 401, 501**) carrying the two worms is mounted so as to be free to move in the longitudinal direction.

4,615,231
PLANETARY GEAR UNIT

Shigeo Takahashi, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Mar. 6, 1985, Ser. No. 708,854
Claims priority, application Japan, Mar. 30, 1984, 59-061002
Int. Cl.⁴ F16H *57/04*
U.S. Cl. 74—467 **6 Claims**

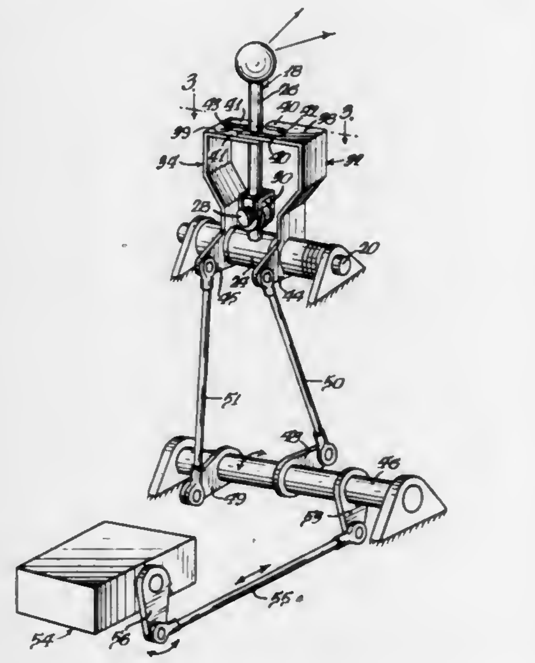
1. A planetary gear unit for the transmission of a motor vehicle, comprising:
a first planetary gear unit which includes a pinion shaft, a planet pinion rotatably mounted on said pinion shaft, a sun gear engaging said planet pinion, and an arm member supporting said pinion shaft and having an extending portion extending to a point adjacent said sun gear;
a thrust washer contacting said arm member, said thrust washer having a plurality of radiating conduit means formed on a contacting surface thereof so as to communicate an inner circumference of said extending portion of said arm member with said pinion shaft,



said pinion shaft having a conduit formed therein so as to communicate with said plurality of radiating conduit means with an inner surface of said planet pinion wherein said plurality of radiating conduit means further comprises a plurality of uniform spaced bevel surfaces and a plurality of grooves in communication with said bevel surfaces.

4,615,232
CONTROL LINKAGE

Janaki R. Puppala, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.
Filed Dec. 30, 1982, Ser. No. 454,694
Int. Cl.⁴ B60K *20/00, 20/02*
U.S. Cl. 74—473 R **6 Claims**



1. An operating linkage for operating a control element of a hydraulic control member in first and second opposite directions, comprising:
a pivotally mounted operating lever moveable through a generally V-shaped path from a neutral position in first and second operating directions through pivotal movement of said lever about first and second pivotal axes; and
first and second pivotally mounted lever means comprising forked portions adapted to cooperate with said operating lever, whereby movement of said operating lever from the neutral position in said first operating direction operatively engages said first lever means for movement of said control element in said first direction, and movement of said operating lever from the neutral position in said second operating direction operatively engages said second

lever means for movement of said control element in said second direction.

4,615,233
TRANSMISSION RATIO SELECTOR MECHANISM

Jean J. Lasoen, Villepreaux, France, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

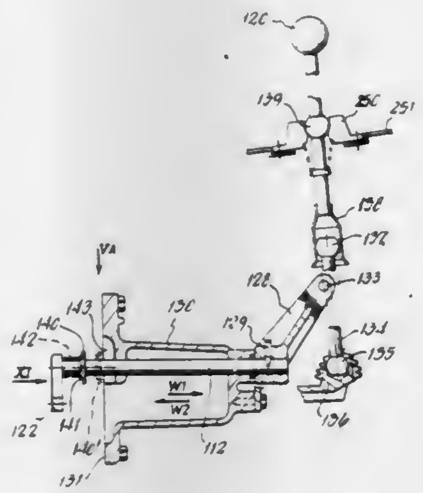
PCT No. PCT/EP84/00066, § 371 Date Nov. 2, 1984, § 102(e) Date Nov. 2, 1984, PCT Pub. No. WO84/03782, PCT Pub. Date Sep. 27, 1984

PCT Filed Mar. 8, 1984, Ser. No. 672,329

Claims priority, application United Kingdom, Mar. 15, 1983, 8307097

Int. Cl.^{4} G05G *9/12, 5/10*

U.S. Cl. 74—473 R **15 Claims**



1. A transmission ratio selector mechanism characterised by comprising an upper manually operable gear lever (**120**) which is mounted (**139**, **250**) intermediate its ends for pivotting about two perpendicular axes, a lower lever member (**134**) located generally vertically below the gear lever and which is pivotted in a fixed mount (**136**) at its lower end (**135**) and directly connected at its upper end (**137**) with the lower end (**138**) of the gear lever (**120**), the lower lever (**134**) being interconnected (**133**) intermediate its ends with a ratio selector shaft (**112**) whose longitudinal axis passes through the fixed mount, the arrangement being such that pivotting of the gear lever (**120**) about one of the perpendicular axes causes axial displacement (**W1**, **W2**) of the selector shaft in a direction parallel to its longitudinal axis and pivotting of the gear lever (**120**) about the other perpendicular axis causes turning of the selector shaft about its longitudinal axis.

4,615,234
DEVICE FOR WINDING A TRACTION AND THRUST CABLE AND A WINDOW-RAISER PROVIDED WITH SUCH A DEVICE

Claude P. Chevance, Savigny, and Jean-Claude Meyer, La Membrolle, both of France, assignors to Compagnie Industrielle de Mechanismes en abrege C.I.M., France

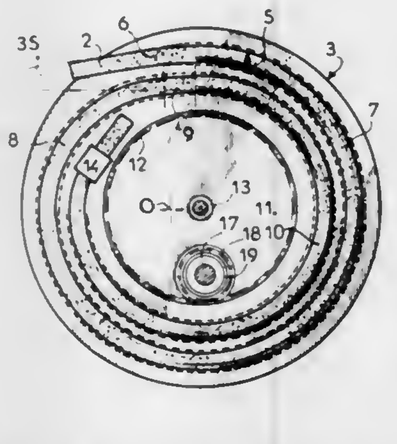
Continuation of Ser. No. 310,179, Oct. 9, 1981, abandoned. This application Jan. 22, 1985, Ser. No. 693,555

Int. Cl.^{4} F16C *1/10;* **G05G** *1/08;* **E05F** *11/48*

U.S. Cl. 74—501 R **9 Claims**

1. A device for winding a traction and thrust cable, comprising a rotary drum having a generally planar configuration and a central axis of rotation, a groove having a generally spiral configuration provided on one side of the drum and including an outer end disposed in the vicinity of the periphery of the drum for receiving the cable, the groove extending from the outer end through a first segment defined by three-quarters of a circle having a center disposed coaxially with the axis of the drum, a second segment defined by a quarter of a circle whose center is offset relative to the axis of the drum, a third segment defined by a rectilinear section, and thereafter a fourth segment defined by three-quarters of a circle whose center is disposed coaxially with the axis of the drum, wherein all segments of the groove are tangentially interconnected, and a cap including a fixed plate bearing against the one side of the drum for retaining the cable in the groove.

6. A window-raiser comprising a traction and thrust cable having one end portion connected to a slide and the other end portion connected to a winding device, the device including a rotary drum having a generally planar configuration and a central axis of rotation, a groove having a generally spiral configuration provided on one side of the drum and including an outer end disposed in the vicinity of the periphery of the drum for receiving the cable, the groove extending from the outer end through a first segment defined by three-quarters of a circle having a center disposed coaxially with the axis of the drum, a second segment defined by a quarter of a circle whose center is offset relative to the axis of the drum, a third segment defined by a rectilinear section, and thereafter a fourth segment defined by three-quarters of a circle whose center is disposed coaxially with the axis of the drum, wherein all segments of the groove are tangentially interconnected, and a cap including a fixed plate bearing against one side of the drum for retaining the cable in the groove.



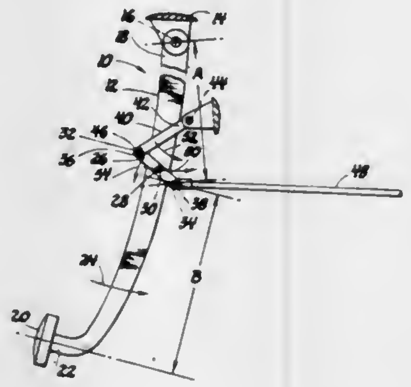
4,615,235
VARIABLE RATIO BRAKE PEDAL MECHANISM

Robert A. Horvath, Novi, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 14, 1985, Ser. No. 690,969

Int. Cl.^{4} G05G *1/04*

U.S. Cl. 74—516 **2 Claims**



1. A variable ratio brake pedal mechanism acting through a full brake actuating stroke to increase the ratio of input movement to output movement from an initial ratio to an intermediate ratio and then a final ratio which is substantially greater than the initial ratio by an order of about two times the initial ratio, said mechanism comprising:

a brake pedal arm pivoted on a first fixed point at one arm end and having a brake pedal thereon at the other arm end actuatable arcuately about said first fixed point in the brake applying direction through a defined arc of movement of said pedal arm;

a first lever having a center area pivot point pivotally attached to said brake pedal arm at a pivot point thereon intermediate the pedal arm ends, said first lever having first and second pivots thereon which are spaced from said center area pivot point;

a pivot control member having thereon a fixed pivot spaced from said first fixed point and pivotally engaging said first lever first pivot;

and an output member pivotally attached to said first lever second pivot and extending in a generally tangential direction relative to the arc of movement of said intermediate pedal arm pivot point as said pedal arm is moved through said defined pedal arm arc of movement to transmit a brake actuating force generally axially of said output member with said pivot control member cooperating with and controlling pivoted movement of said first lever so that said first lever moves in a defined arc about said pedal arm intermediate pivot point and simultaneously moves in translation with arcuate movement of said pedal arm intermediate pivot point so that the effective distance traversed by said pedal arm intermediate pivot point relative to the effective distance traversed by said first lever second pivot changes to vary the effective ratio of the generally axial movement of said output member to arcuate movement of said brake pedal from said initial ratio to said intermediate and final ratios as said brake pedal arm is moved throughout said defined pedal arm arc of movement in the brake applying direction.

4,615,236
CRANK DEVICE FOR AN OPEN ROOF CONSTRUCTION FOR A VEHICLE

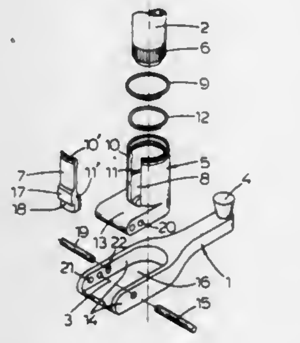
Robert T. Boots, Haarlem, Netherlands, assignor to Vermeulen-Hollandia Octrooien II B.V., EA Haarlem, Netherlands

Filed Jan. 9, 1985, Ser. No. 689,869

Claims priority, application Netherlands, Jan. 11, 1984, 8400094

Int. Cl.^{4} G05G *1/04*

U.S. Cl. 74—545 **8 Claims**



1. Crank device for actuating a displaceable panel of an open roof construction for a vehicle, said device comprising:

a crank for rotating an at least approximately vertical driving shaft, said crank being pivotable about an at least substantially horizontal axis through approximately 180° between an operating position, in which an operating knob of said crank projects downwardly, and a rest position, in which said operating knob is directed upwardly, said crank being able to rest in both said rest and operating positions, said crank being uncoupled from said driving shaft during the pivotal movement of said crank from the operating position to the rest position and said crank being coupled to said driving shaft during the pivotal movement of said crank from the rest position to the operating position;

a housing, to which said crank is connected, mounted around said driving shaft, said housing being rotatable about the central axis of said driving shaft when said crank is uncoupled;

a coupling member connected to said housing so that said coupling member follows the rotating movement of said housing about the central axis of said driving shaft, said coupling member being displaceable with respect to said housing between a coupled position, in which the crank in the operating position keeps the coupling member in engagement with a tooth ring through an opening in the housing, and an uncoupled position, in which the crank is pivoted about the at least substantially horizontal axis out of the operating position and has released the coupling member;

spring means for pressing the lower portion of said coupling member against the inner side of an exterior portion of the housing, said exterior portion being adjacent the opening that receives the coupling member.

4,615,237
TORSIONAL VIBRATION DAMPER

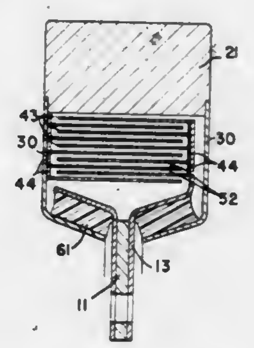
Dirk Forkel, Eichenweg 18, 852 Erlangen, Fed. Rep. of Germany 09131

Continuation of Ser. No. 135,340, Mar. 31, 1980, abandoned, which is a continuation of Ser. No. 831,623, Sep. 8, 1977, abandoned. This application Mar. 23, 1982, Ser. No. 361,043

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1976, 2640751

Int. Cl.^{4} F16F *15/12*

U.S. Cl. 74—574 **19 Claims**



1. Torsional vibrational damper comprising a flange body for mounting on a rotatable shaft, an external inertial body which is radially outwardly disposed with respect to said flange body, means performing an insignificant inertial mass function and defining a plurality of interstitial spaces provided between the flange body and the inertial body comprising a plurality of intermeshing axially extending thin laminae having opposed curved surfaces in the area of action, said plurality of intermeshing thin laminae overlapping in the radial direction wherein said plurality of intermeshing laminae are provided by a first thin laminae set formed from axially extending and radially spaced apart concentric curved surfaces disposed on said inertial body radially inward from said inertial body interleaved by second thin laminae set formed from axially extending and radially spaced apart concentric curved surfaces disposed on said flange, a highly viscous liquid filling the interstitial spaces, means for joining said inertial body to said flange body and for sealing the spaces comprising resilient material and wherein said laminae are of spiral-form configuration.

4,615,238
PLANETARY GEAR DRIVE FOR BALERS

Leo G. Cheatum, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

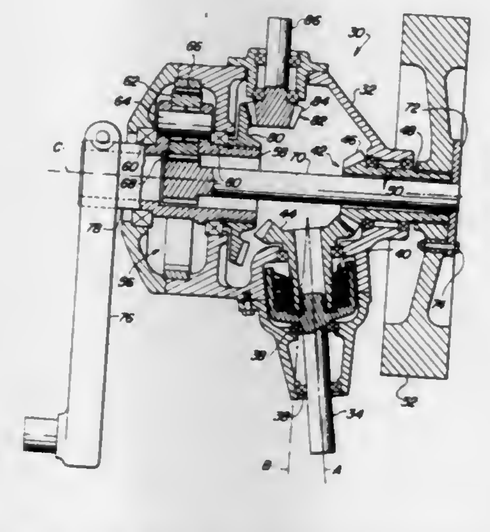
Filed Jul. 22, 1985, Ser. No. 757,239

Int. Cl.^{4} F16H *37/06*

U.S. Cl. 74—674 **8 Claims**

1. In a main drive transmission section, for a baler for making rectangular bales, including gearing located within a housing and coupled for being driven by a forwardly extending input shaft and coupled for driving a plunger crank and a feeder and knotter drive shaft, the improvement comprising: said gearing including a planetary gear set having a planet gear carrier, bearings supporting the carrier in the housing for rotation

about a horizontal transverse axis; planet gear means mounted to the carrier, a ring gear fixed to the housing and meshed with the planet gear means and a sun gear meshed with said planet gear means; said carrier having an end projecting from one side of the housing; said plunger crank being fixed to said end of the carrier; said gearing located within said housing including an output bevel gear set comprising a drive gear fixed to the carrier for rotation about said transverse axis and a driven bevel gear fixed to said knotter and feeder drive shaft.



4,615,239
SHIP GEAR TRAIN ARRANGEMENT

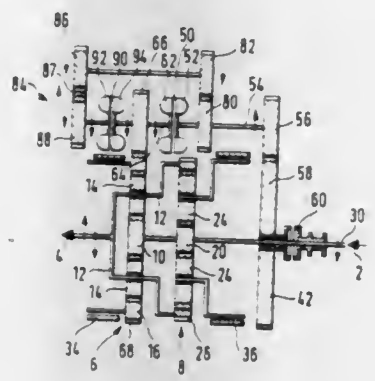
Manfred Hirt, and Eric John, both of Augsburg, Fed. Rep. of Germany, assignors to Zahnraderfabrik Renk AG, Fed. Rep. of Germany

Filed Oct. 23, 1984, Ser. No. 663,898

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1983, 3338950

Int. Cl.⁴ F16H *47/00, 47/08*

U.S. Cl. 74—720 **4 Claims**



1. A ship gear train arrangment for smoothly adjusting a propeller speed down to zero comprising:

a main input shaft and a main output shaft;

a differential gearing, including a reaction element, which drivably connects said input shaft to said output shaft;

a hydrodynamic coupling means, located in parallel with said differential gearing and having a variable fill level, for coupling a point on said input shaft on the drive side of said differential gearing with said reaction element of said differential gearing such that the speed of said hydrodynamic coupling means influence the speed of said output shaft;

and further including a second hydrodynamic coupling means, located in parallel with said first-mentioned hydrodynamic coupling means and having a variable fill level and a rotary direction reversal gear, for coupling a point on said input shaft on the drive side of said differential gearing with said reaction element of said differential gearing such that the speed of said first-mentioned hydrodynamic coupling means influences the speed of said output shaft rotating in one direction when said second hydrodynamic coupling means is empty and said second hydrodynamic coupling means influences the speed of said output shaft rotating in a reverse direction when said first-mentioned hydrodynamic coupling means is empty.

4,615,240
GEAR ARRANGEMENT FOR A MOTOR VEHICLE

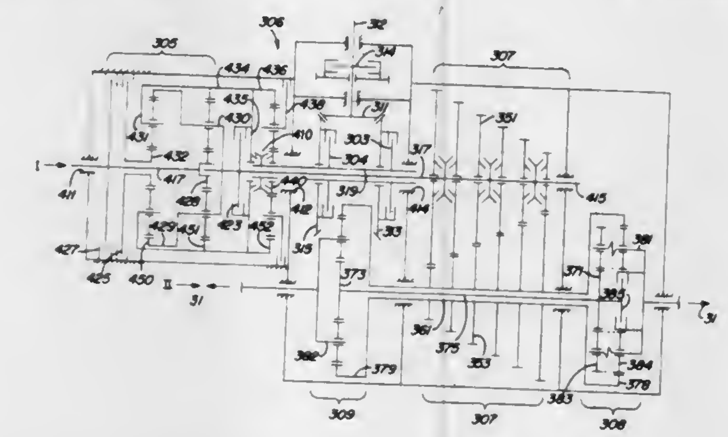
Heinz Weiss, Bensheim, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Continuation of Ser. No. 487,391, Apr. 21, 1983, abandoned. This application Sep. 24, 1985, Ser. No. 780,228

Claims priority, application Fed. Rep. of Germany, May 13, 1982, 3217993

Int. Cl.⁴ F16H *37/00, 37/08, 57/10;* **B60K** *17/28*

U.S. Cl. 74—740 **6 Claims**



6. A gear arrangement for a motor vehicle, comprising a driving shaft, a multiple gear ratio range gear in cascade with a creep gear, a range gear output shaft received within the driving shaft, the range gear input member being fixed for rotation with input elements of two range gear epicyclic stages, the two range gear epicyclic stages having output elements connected to a range gear output shaft, a further element connected to respective brakes and a direct drive clutch between the range gear input member and the range gear output shaft, the two epicyclic stages of the range gear and the creep gear having sun gears of equal size, annuli of equal size, and planet wheels of equal size and means for selectively coupling the driving shaft to either of a range gear input member and a creep gear input member.

4,615,241
POWER DRIVEN BOTTLE OPENER

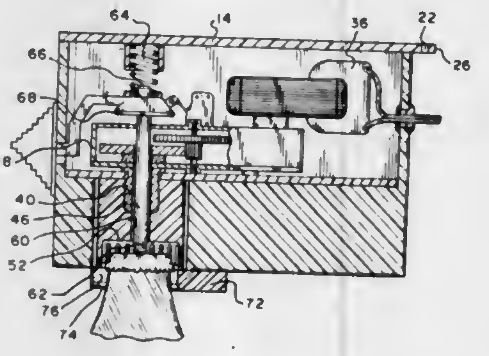
David L. Grabarski, and Harvey A. Williams, both of 247 Walnut Ave., Bellmawr, N.J. 08031

Continuation-in-part of Ser. No. 563,777, Dec. 21, 1983, Pat. No. 4,519,276. This application May 24, 1985, Ser. No. 738,169

The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.

Int. Cl.⁴ B67B *7/18*

U.S. Cl. 81—3.2 **8 Claims**



1. A power driven bottle opener comprising:

a housing and means for supporting said housing on a support surface;

electric motor means within said housing and including switch means for starting and stopping said motor means;

an inverted cup-shaped bottle cap removing head including a top wall and a substantially cylindrical side wall, said side wall including a plurality of axially extending ribs thereon for engaging the screw top cap of a bottle;

means for mounting said head and for interconnecting the same with said motor means so that said head can be rotated by said motor means, said mounting means preventing axial movement of said head;

a cap ejection pin, at least a portion of which extends vertically within said housing, said pin being substantially coaxial with said head and being mounted for limited axial movement between a lower position wherein the lower end of said pin is within said head and below the top wall thereof and an upper position wherein the lower end of said pin is closer to said top wall and means accessible from outside of said housing for manually pushing said pin downwardly when necessary to eject a removed bottle cap which may become lodged within said head.

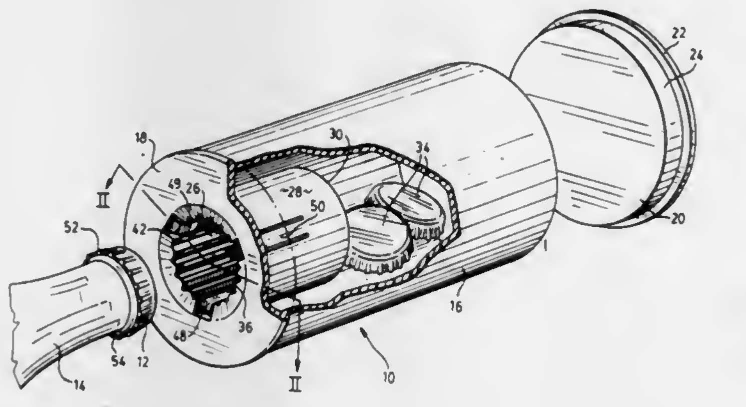
4,615,242
CAP COLLECTING OPENER

Ivan Milin, Scarborough, Canada, assignor to I. M. Engineering Ltd., Mississauga, Canada

Filed Aug. 16, 1985, Ser. No. 766,240

Int. Cl.⁴ B67B *7/00*

U.S. Cl. 81—3.08 **19 Claims**



1. A bottle opener for bottles having twist-off caps comprising:

a container having an end wall with an opening therein adapted for insertion of a bottle-mounted cap therein;

a cylindrical member connected to and extending into said container from said opening, said cylindrical member being open at the end thereof opposite said opening in said end wall and having a passageway adapted for passage of bottle caps through said cylindrical member and into said container; and,

means on the interior of said cylindrical member for holding an inserted bottle-mounted cap so that turning of said container about a longitudinal axis thereof extending perpendicular to said end wall causes the removal of said cap from its bottle.

4,615,243
PIPE REAMING DEVICE

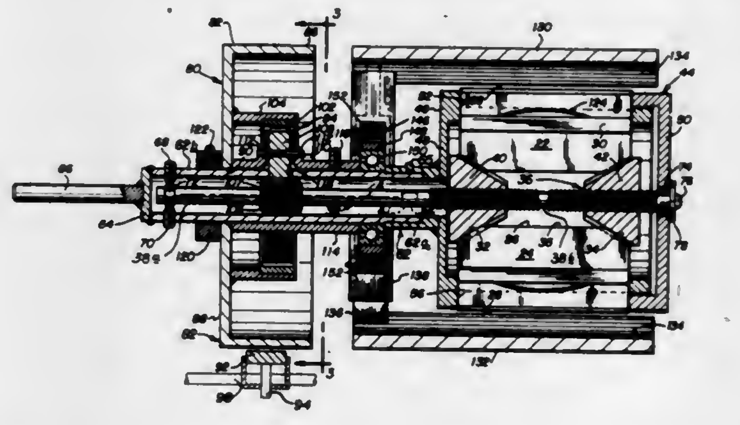
Dalton W. Davis, 214 W. Spinner, DeSoto, Tex. 75115

Division of Ser. No. 297,495, Aug. 28, 1981, Pat. No. 4,483,222. This application Sep. 5, 1984, Ser. No. 647,704

Int. Cl.⁴ B23B *51/00*

U.S. Cl. 82—1.2 **4 Claims**

1. A pipe reaming device, comprising: a plurality of blades for cutting the pipe, each blade including a cutting edge and a tapered edge; a tubular shaft disposed concentrically around an axis of rotation for driving said blades around the axis of rotation; a drive shaft; an annulus gear supported concentrically around the axis of rotation; a sun gear disposed concentrically around the axis of rotation and connected to the drive shaft; a planetary gear operably disposed between said annulus and sun gears and rotatably connected at its axis for rotation with said tubular shaft; an urging member threadedly connected to the drive shaft for movememt in first and second directions, the urging member having a surface coacting with the tapered edge of said blade to move the cutting edge radially of the axis of rotation into engagement with the pipe after the blades have been disposed within the pipe; and braking means for stopping rotation of said annulus gear to thereby turn the sun gear and shaft which moves the urging member in a direction such that the cutting edge of the blade engages the pipe.



4,615,244
TOOL ASSEMBLY HAVING A REPLACEABLE TOOL HEAD

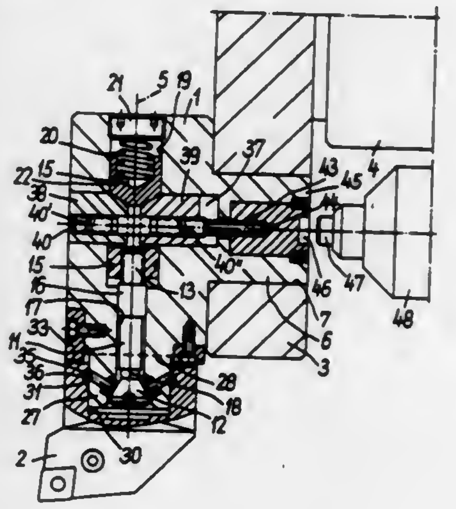
Norbert Reiter, Mettmann, and Hans Tack, Velbert, both of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Feb. 27, 1985, Ser. No. 706,303

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1984, 3410154

Int. Cl.⁴ B23B *29/00*

U.S. Cl. 82—36 B **8 Claims**



1. In a tool assembly including a tool holder, a tool head and clamping means accommodated in said tool holder for rapidly releasably tightening the tool head to the tool holder; said clamping means including a clamping bar having a longitudinal axis and being received in said tool holder for sliding motion parallel to said axis; said clamping bar having a clamping position and a releasing position spaced from said clamping position parallel to said axis; the improvement wherein said clamping means comprises

(a) a clamping position connected to said clamping bar for displacement therewith; said clamping piston having a throughgoing central passage extending perpendicularly to said axis; said clamping piston further having, within said passage, first and second wedge faces arranged symmetrically to said axis and each defining with said axis a first acute angle of at least 45°;

(b) first and second cams movable in a direction of motion perpendicular to said axis into and out of said passage; each cam having a camming face constituted at least in part by a surface defining, with said direction of motion of the cams, a second acute angle equalling the difference between 90° and said first acute angle; said cams being arranged to effect contact between the camming face of the first cam and the first wedge face and between the camming face of the second cam and the second wedge face; and

(c) moving means for displacing said cams towards or away from one another for effecting, by camming action between the wedge faces and the camming face, a longitudinal displacement of the clamping piston and the clamping bar.

4,615,245

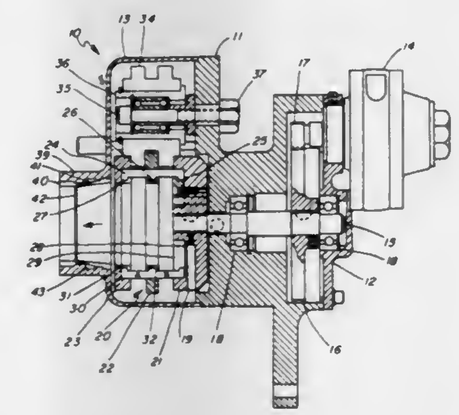
METHOD OF CUTTING ELONGATED MATERIAL USING A CUTTER REEL WITH SPACED BLADES

Beryl A. Boggs, Richmond, and Rob R. Gordon, Jr., Chesterfield, both of Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jan. 17, 1984, Ser. No. 571,395

Int. Cl.⁴ D01G *1/04;* B26D *1/12*

U.S. Cl. 83—37 **11 Claims**



1. A method of simultaneously cutting a plurality of different elongated materials into shorter lengths, comprising the steps of:

a. continuously winding a coil of each of said materials about a common axis, each of said coils being separate from one another;

b. continuously forcing a layer of each of said materials against a specific portion of a cutting blade to cut each of said materials into said shorter lengths; while

c. confining that specific portion of the cutting blade which cuts one of said materials to contact only said one material; and

d. continuously transporting the shorter lengths away.

4,615,246

METHOD OF CUTTING A SLIDE FASTENER CHAIN

Keiichi Yoshieda, Kurobe; Toshiaki Sodeno, Toyama, and Syuichi Honmoto, Uozu, all of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Aug. 8, 1985, Ser. No. 763,626

Claims priority, application Japan, Aug. 14, 1984, 59-169657

Int. Cl.⁴ B65H *17/36*

U.S. Cl. 83—42 **2 Claims**

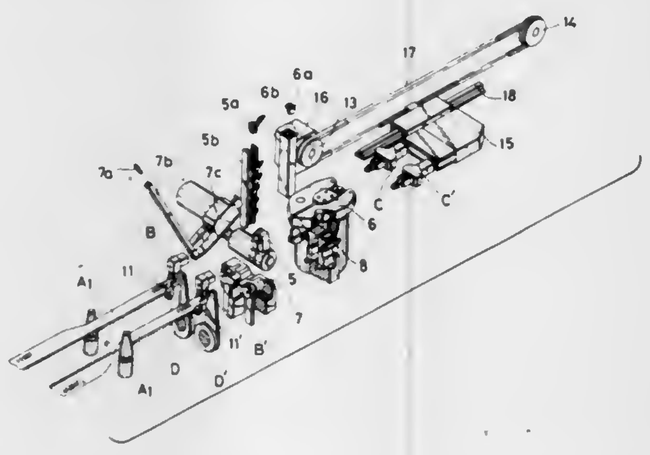
1. A method of cutting a continous slide fastener chain into individual slide fastener lengths, the fastener chain having longitudinally spaced successive element-free portions, said method comprising the steps of:

(a) gripping a leading end of the fastener chain at a cutting station by a first gripper movable between the cutting station and a transit station along a substantially horizontal straight path;

(b) pulling the fastener chain forwardly along the path by the first gripper until the leading end of the fastener chain arrives at the transit station;

(c) at the transit station, transferring the gripping of the leading end of the fastener chain from the first gripper to a second gripper movable along the path between the transit station and a specified point and spaced downstream therefrom by a varying distance corresponding to the length of a prospective individual slide fastener;

(d) pulling the fastener chain forwardly along the path by the second gripper until a succeeding one of the element-free portions arrives at the cutting station, by which time the first gripper has returned to the cutting station to grip the succeeding element-free portion;



(e) with the succeeding element-free portion gripped by the first gripper and kept stationary at the cutting station, pulling the fastener chain on the leading end thereof by the second gripper until the leading end of the fastener chain arrives at said specified point, at which time such individual slide fastener length of the fastener chain is in a state of tension;

(f) then relaxing the tension of the slide fastener length of the fastener chain by slightly moving the second gripper backwardly from said specified point toward the first gripper kept stationary at the cutting station; and

(g) finally, cutting the fastener chain transversely across the succeeding element-free portion to thereby provide an individual slide fastener length of the fastener chain.

4,615,247

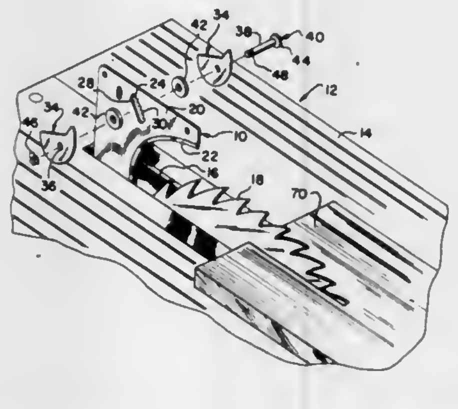
ANTI-KICKBACK SYSTEM

James E. Berkeley, Englewood, Ohio, assignor to Shopsmith, Inc., Dayton, Ohio

Filed Sep. 13, 1985, Ser. No. 776,060

Int. Cl.⁴ B27G *19/02*

U.S. Cl. 83—102.1 **15 Claims**



1. For use with a table saw of the type having a table top for supporting a workpiece and a motor-driven circular saw blade, an anti-kickback system comprising:

splitter means adapted to be mounted on a table saw and including slot means therethrough inclined relative to an associated table top;

cam means having a peripheral, work-engaging surface including a spiral segment;

pin means attached to said cam means and extending through said slot means to form a pivot axis for said cam means at approximately a center of said spiral segment; and

said slot means being sized to slidably receive said pin means and including an upper, elongate edge having detent means shaped to receive said pin means; whereby upward and rearward movement of a workpiece in a kickback condition beneath said cam means causes said cam means to be pivoted and be displaced to a locked configuration such that said pin means engages said detent means and a portion of said spiral segment contacts an upper surface of a workpiece thereunder in a wedging engagement with an associated table top.

4,615,248

MACHINE FOR SAWING THE CONTOURS OF PLATE MATERIAL

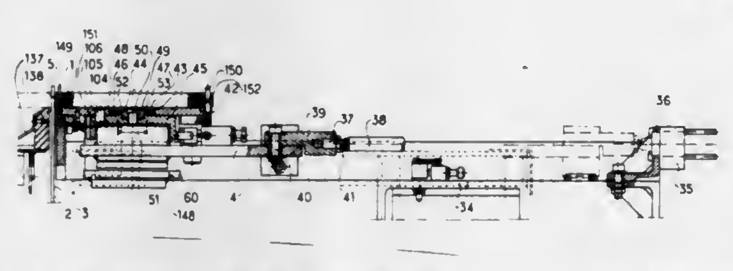
Raymond Erhard, Willer-sur-Thur, France, assignor to Smid, S.A., Lutterbach, France

Filed Feb. 11, 1985, Ser. No. 700,507

Claims priority, application France, Feb. 17, 1984, 84 02636

Int. Cl.⁴ B23D *47/04*

U.S. Cl. 83—165 **10 Claims**



1. A machine for sawing commercial products in the form of plates of metal, wood, chipboard or other similar materials to accurate sizes comprising a frame structure, a saw mounted on said frame structure for cutting said products from underneath along a predetermined saw line, rails on said frame structure extending perpendicular to said saw line, a feed table having a set of lower rollers and a set of upper rollers rotatable about horizontal pivot pins and rolling on said rails for movement of said feed table toward and away from said saw line, said rails being disposed between upper and lower rollers, means for moving said feed table toward and away from said saw line at right angles thereto, said moving means comprising a hydraulic cylinder secured to said frame structure and a piston reciprocable in said cylinder and having a piston rod coupled to one end of a connecting link, the other end of which is connected with said feed table, said link comprising means for changing the position of said feed table to said piston rod, a turn-table rotatable mounted on said feed table and adapted to hold the products to be sawed, means on said turn-table for accurately positioning said products relative to said turn-table, means for automatically rotating said turn-table one-fourth of a revolution during backward movement of said feed table away from said saw line and means for precisely positioning said turn-table in selected angular position during forward movement of said feed table.

4,615,249

APPARATUS FOR TRIMMING STACKS OF PAPER SHEETS OR THE LIKE

Peter Geiser, Winterthur, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

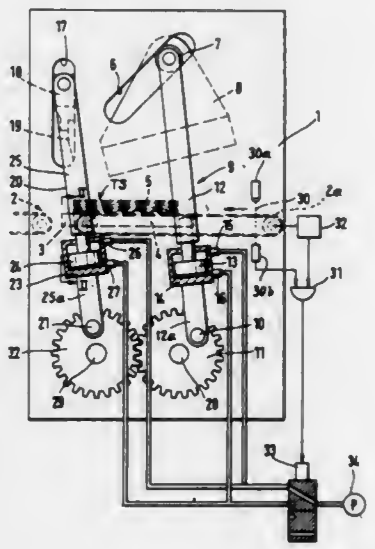
Continuation of Ser. No. 489,231, Apr. 27, 1983, abandoned.

This application Sep. 16, 1985, Ser. No. 778,154

Claims priority, application Switzerland, May 6, 1982, 2787/82

Int. Cl.⁴ B26D *7/22, 5/14*

U.S. Cl. 83—221 **10 Claims**



1. Apparatus for trimming the edges of stacks of paper sheets or analogous commodities delivered to at least one trimming station, comprising conveyor means for delivering successive commodities to the trimming station; at least one knife arranged to perform recurrent working strokes during each of which the knife moves from a first to a spaced-apart second position to thereby trim an edge of a commodity at said station; drive means for moving the knife between said positions in substantial synchronism with the anticipated arrival of commodities at said station, said drive means including a linkage connecting said knife with a motor; an anvil block located in the path of movement of and being normally engaged by the knife when the latter completes a working stroke; and control means actuatable to prevent engagement between the knife and the block without interrupting operation of said drive means when the knife completes a working stroke in the absence of a commodity at said station, said control means including means for shifting the knife, and said shifting means being disposed in said linkage.

4,615,250

HOUSEHOLD APPLIANCE AND AN ADJUSTABLE GUARD FOR ITS TOOL

Norbert Flammann, and Edgar Rixen, both of Solingen, Fed. Rep. of Germany, assignors to Robert Krups Stiftung & Co. KG, Solingen, Fed. Rep. of Germany

Filed Oct. 26, 1984, Ser. No. 665,017

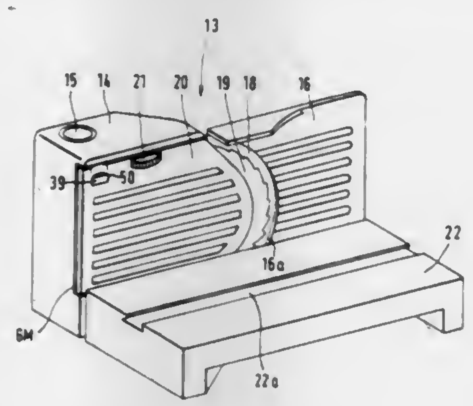
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1984, 3429724

Int. Cl.⁴ B26D *7/22*

U.S. Cl. 83—399 **14 Claims**

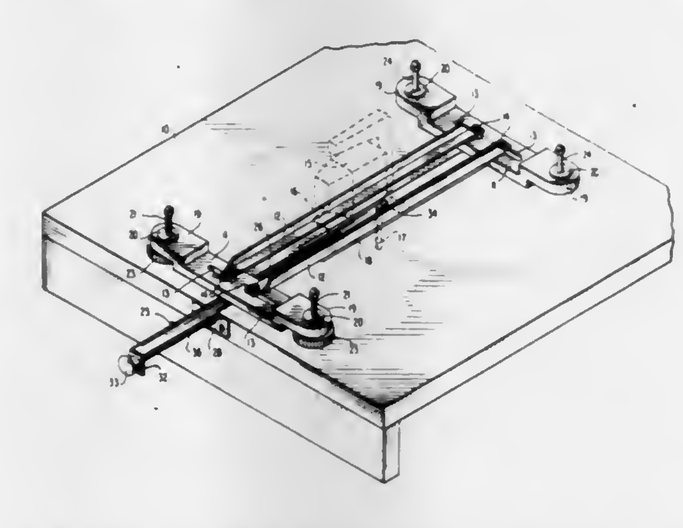
1. An appliance, such as a household slicing machine, comprising a support; a tool movably mounted in said support; a protective guard mounted in said support and, while mounted on said support, being movable between a plurality of positions with reference to said tool; and means for positively but releasably locking said guard to said support in at least one of said positions, said locking means including a hollow locking element having an open end facing away from said guard and being movable between operative and inoperative positions in which said guard is respectively prevented from moving and is free to move relative to said tool, said locking means further

comprising resilient means reacting against said support and bearing against said element to urge the latter to said operative position, said resilient means extending through said open end and into the interior of said element.



4,615,251
SABRE SAW BLADE FOLLOWER GUIDE

Michael J. Volk, 216 McKeon Rd., Severna Park, Md. 21146
Continuation-in-part of Ser. No. 680,912, Dec. 11, 1984. This application Aug. 19, 1985, Ser. No. 767,091
Int. Cl.^{4} B27B *11/02*
U.S. Cl. 83—574 **11 Claims**

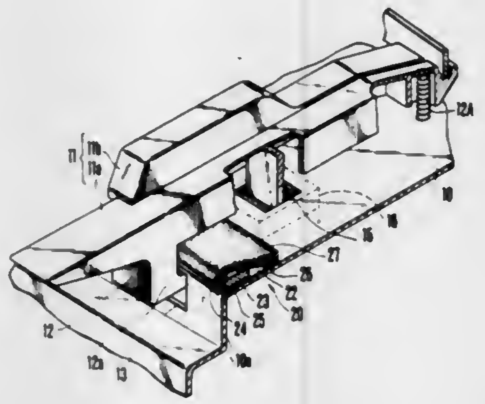


1. A sabre saw blade follower guide adapted for mounting on a workpiece support table having a sabre saw guideway arranged above a workpiece undergoing cutting by a portable sabre saw, the follower guide comprising a member movably and guidably attached to said table and having a leading end notch adapted to receive a sabre saw blade near the unsupported end thereof, said notch engaging the rear toothless edge of the blade to guide and stabilize the blade during its reciprocation, and means connected with said member and yieldingly biasing the member into engagement with the sabre saw blade, whereby the member follows the movement of such blade along a linear path established by a sabre saw guideway.

4,615,252
TOUCH CONTROL APPARATUS FOR ELECTRONIC KEYBOARD INSTRUMENT

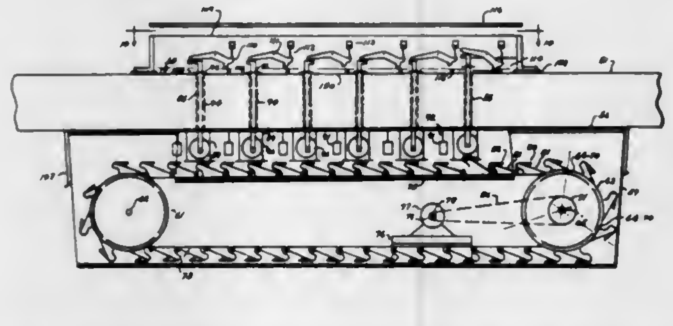
Takao Yamauchi, and Yasuhiko Asahi, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
Filed Jan. 25, 1985, Ser. No. 695,098
Claims priority, application Japan, Feb. 1, 1984, 59-11642[U]
Int. Cl.^{4} G10H *1/34;* **H01L** *41/08;* **H01C** *10/10*
U.S. Cl. 84—1.1 **22 Claims**

1. A touch control apparatus for an electronic keyboard instrument, comprising a sensor having: an elongated insulating sheet having at least one set of first and second conductive pattern films on a surface thereof, said elongated insulating sheet being folded and said set of first and second conductive pattern films being formed to be spaced apart from each other; a pressure-sensitive element sandwiched in a space defined by said folded elongated insulating sheet so as to be in contact with said conductive pattern films, said pressure-sensitive element being operated such that electrical characteristics thereof change according to a pressure applied thereto to generate an output, the output being extracted by said set of conductive pattern films; and means for regulating a position of said pressure-sensitive element sandwiched by said elongated insulating sheet with respect to said elongated insulating sheet, wherein said sensor is arranged at a position that the sensor is applied with a pressure in accordance with a depression of a key of the instrument.



4,615,253
MOTOR DRIVEN FRETTING BELT DEVICE

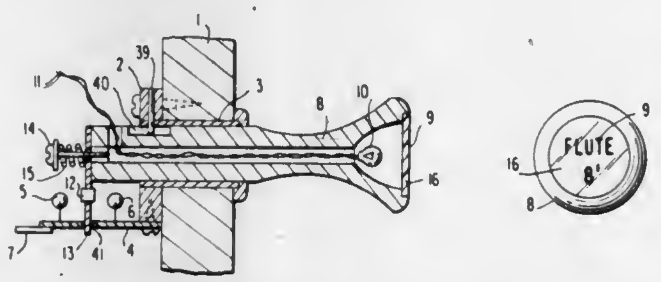
James R. McGovern, 205 E. 239th St., Bronx, N.Y. 10470
Continuation-in-part of Ser. No. 58,675, Oct. 23, 1979, abandoned. This application Nov. 4, 1982, Ser. No. 417,416
Int. Cl.^{4} G10D *3/00*
U.S. Cl. 84—317 **6 Claims**



1. A stringed musical instrument fretting device comprising:
a body means consisting of: a structural frame to fasten the below the neck parts of the invention to, said frame being attached to a mounting plate that is fastened to the underside of the neck of the instrument,
a ribbed structure to fasten the above the neck parts of the invention to, said structure being attached to mounting plates that are fastened to the upper side of the neck of the instrument,
a fingerboard frame to hold thirteen keys and a zero fret key, said frame being attached to the left side of the neck of the instrument,
a fretting mechanism means consisting of:
a plurality of cam bridges each constituting a horizontal surface suspended from the underside of the guitar neck so that a wedge bar can be lifted and caused to ride along said surface, a plurality of cam wheel-push rod-rocker arm fretting mechanism assemblies that are disposed above said bridges and where said wedge bar can be made to slide between said bridge and the wheel of said assembly causing it and the push rod attached to it to move up so that it contacts one end of said rocker arm and rotates it and causes it to push a string down on a fret,
an electromagnetic/fret mechanism actuating means consisting of:
a fret belt with a plurality of cams fastened to the surface of said belt where each cam has a wedge bar fastened across the width of it,
a plurality of electromagnets for selectively lifting said cam wedge bar assemblies as said belt is driven and they pass under said electromagnets causing said cam bar to be lifted and ride said bridges and be slid between said bridges and said cam wheels to thereby cause string fretting,
an electrical circuit means consisting of:
a primary motor/electromagnet circuit which is made up of a DC motor connected to an on/off switch which is connected to thirteen chord keys and one zero fret key, each said key containing circuit means to actuate one or a combination of said electromagnets and circuit means to actuate said belt drive motor when said key is depressed down and released, said motor actuation being charachterized a "belt nudge" because the motor remains on just long enough to nudge or move the belt a short distance,
and a secondary motor circuit which has two fixed parallel but separated contact probes mounted projecting over the edge of said belt and elongated metal strips fastened to and along the edge of said belt so that while said belt is being "nudged" by said primary circuit, said contact probes are bridged by said strips to thus cause said motor to remain on until said probe contact bridging is stopped when one probe rides off said strip to thus stop the motor.

4,615,254
ORGAN DRAWKNOB

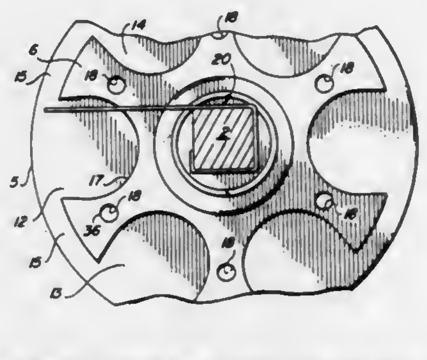
Paul A. Klann, P.O. Box 2398, Waynesboro, Va. 22980
Filed Aug. 22, 1985, Ser. No. 768,527
Int. Cl.^{4} G10B *3/10*
U.S. Cl. 84—343 **4 Claims**



1. A drawknob for an organ comprising support means adapted to be secured to an organ panel for slidably mounting a drawknob extending through an aperture in said panel, illumination means disposed in one end of said drawknob, plate means moveably mounted on the other end of said drawknob, a pair of magnetically operable switch means mounted on said support means on opposite sides of said plate means, magnet means mounted on said plate means intermediate said switch means, interengageable means on said plate means and support means for pivoting said plate means relative to said drawknob as said drawknob is pushed or pulled relative to said panel to bring said magnet means into close proximity with one of said switch means for operating said one of said switch means and spring means operably associated with said plate means for returning said plate means to a non-switch operating position intermediate said pair of switch means.

4,615,255
SHOTGUN SHELL RELOADER APPARATUS

Jack O. Carter, Des Moines, Iowa, assignor to J. L. Rice and H. D. Warner, both of Litchfield Park, Ariz., a part interest to each
Filed Jan. 24, 1986, Ser. No. 822,202
Int. Cl.^{4} F42B *33/02, 33/10*
U.S. Cl. 86—27 **4 Claims**



1. A shotgun shell hand reloader assembly which includes:
(A) a plurality of stations at which successive reloading operations are performed on vertically upstanding, primer end down shells, said plurality of stations including a single entrance/exit station and an adjacent final station at which a last reloading operation is performed before a completed shell is moved to said entrance/exit station for removal;
(B) a horizontally disposed rotatable shell carrier fabricated of a non-magentic material, said shell carrier having a plurality of equally angularly spaced, peripherally disposed, radially directed recesses into which shells are entered and removed at said entrance/exit station, said shell carrier serving to move shells between successive stations and to accurately position and hold each shell at the proper station for performing a reloading operation;
(C) confining means peripherally encompassing said shell carrier at all stations except at said entrance/exit station such that removal of shells from any station except said entrance/exit station is inhibited;
(D) a vertical column which supports mechanism for performing depriming, repriming, powder charging, wad column charging, shot charging and crimping operations as a shell is advanced from station to station, at least one reloading operation being performed at each station, said vertical column being generally coaxial with the axis of rotation of said shell carrier;
(E) means supporting said shell carrier for rotation of said shell carrier about said vertical column; and
(F) a generally horizontally disposed spring affixed to said column at a position immediately above said shell carrier, said spring having a straight portion horizontally extending, when unflexed, tangentially from said column and terminating at a free end proximate the outer edge of said shell carrier, said straight portion of said spring, when unflexed, being disposed proximate the edge of said entrance/exit station closest to said final station and extending generally parallel to a radius extending from the center of said column through the center of said entrance/exit station;
whereby, as a completed shell is translated by said shell carrier from said final station to said entrance/exit station, the completed shell engages and horizontally deflects said straight portion of said spring until the completed shell has been moved sufficiently into said entrance/exit station as to clear said confining means whereupon said spring ejects the completed shell from said entrance/exit station and returns to its unflexed state.

3. A shotgun shell hand reloader assembly which includes:
(A) a plurality of stations at which successive reloading operations are performed on vertically upstanding, primer end down shells, said plurality of stations including:
1. a first station at which empty shells are introduced and completed shells are removed; and
2. a second station at which a repriming operation is per-

formed, said second station being adjacent said first station;

(B) a horizontally disposed rotatable shell carrier fabricated of a non-magnetic material, said shell carrier having a plurality of equally angularly spaced, peripherally disposed, radially directed recesses into which shells are entered at said first station, said shell carrier serving to move shells between successive stations and to accurately position and hold each shell at the proper station for performing a reloading operation, said shell carrier further having a plurality of primer receptacles, each said primer receptacle being situated intermediate adjacent recesses;

(C) confining means peripherally encompassing said shell carrier at all stations except at said first station such that removal of shells from any station except said first station is inhibited;

(D) a work table supporting said shell carrier for rotation of said shell carrier about said vertical column;

(E) a spring pad-receiving aperture in said work table at said first station, the diameter of said spring pad-receiving aperture being slightly larger than the diameter of the primer end of a shell being reloaded;

(F) a vertically disposed spring pad assembly situated at said first station and disposed below said work table and vertically aligned with said spring pad-receiving aperture, said spring pad assembly comprising:

1. a spring pad made of non-magnetic material and having top and bottom surfaces and first, upper and second, lower outer diameters along the length thereof, said first outer diameter closely fitting said spring pad-receiving aperture, said second diameter being larger than said spring pad-receiving aperture whereby a shoulder is defined between said first and second diameters, said spring pad also having an axial aperture dimensioned to closely receive a primer;
2. a guide post assembly situated beneath said spring pad, said guide post assembly including:
   a. a lower section; and
   b. an upper section comprising a cylindrical magnet disposed with its axis vertical, the diameter of said magnet being such as to closely fit within said axial aperture of said spring pad; and
3. a compression spring bearing between said guide post assembly lower section and said bottom of said spring pad; and

(G) means supporting said guide post assembly beneath said work table such that said spring pad is urged upwardly by said compression spring into said spring pad-receiving aperture with said shoulder normally seating against a bottom surface of said work table and said magnet extending into said axial aperture with its upper surface disposed beneath said upper surface of said spring pad;

whereby, during incrementation of said shell carrier by a distance of one station, a primer previously emplaced into the one of said primer receptacles previously situated intermediate said first station and said second station is carried to said second station at which it is magnetically pulled downwardly into said axial aperture of said spring pad to engage the upper surface of said magnet, thereby being held in the correct position for a repriming operation on a shell subsequently indexed to said second station.

4,615,256

METHOD FOR FORMATION OF THREE-DIMENSIONAL WOVEN FABRIC AND APPARATUS THEREFOR

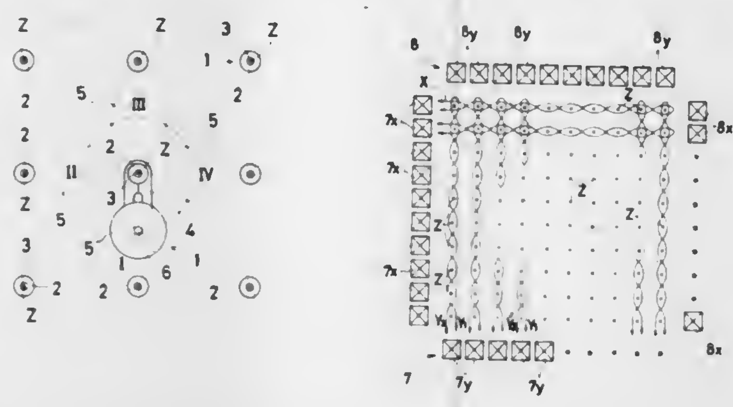
Kenji Fukuta, Ibaraki; Eiji Aoki, Hachioji; Yoshihiro Nagatsuka, and Takeshi Kitano, both of Ibaraki, Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Mar. 25, 1985, Ser. No. 715,402

Claims priority, application Japan, Mar. 23, 1984, 59-56547

Int. Cl.^{4} D04C *1/00*

U.S. Cl. 87—33 **10 Claims**



1. A method for the formation of a three-dimensional woven fabric, said method comprising the steps of:

(a) causing arms of carriers disposed around one component yarn out of three mutually perpendicular component yarns to be rotated in the state of separately holding in place in said carrier arms of said carriers the shafts of each of bobbins on which the other two component yarns are wound in prescribed lengths;

(b) effecting transfer of said bobbins between opposing carrier arms of adjacent carrier; and

(c) successively effecting transfer of bobbins to carrier arms of the subsequent carriers, thereby allowing said two component yarns to be displaced and zigzagged at least partially relative to the remaining one component yarn.

4,615,257

SWASHPLATE TYPE AXIAL-PISTON PUMP

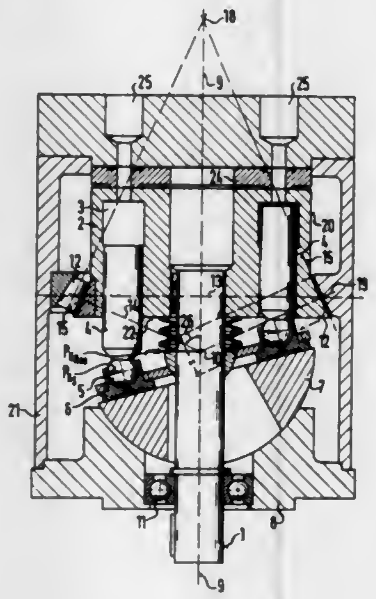
Ingo Valentin, 15000 W. Cleveland Ave., New Berlin, Wis. 53151

Filed Jun. 18, 1985, Ser. No. 746,240

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1984, 3423467

Int. Cl.^{4} F01B *13/04*

U.S. Cl. 91—499 **20 Claims**



1. An axial-piston pump comprising:

a cylinder barrel assembly having a cylinder barrel and a piston received in a cylinder bore in said cylinder barrel;

a swashplate having an inclined surface engaging said cylinder barrel assembly for exerting an equivalent force on an equivalent force point located between said inclined surface and said cylinder barrel in response to rotation if said cylinder barrel assembly relative to said swashplate, said equivalent force including an axial component for reciprocating said piston in said cylinder bore and a radial component oriented substantially perpendicularly to said axial component, and

means spaced from said equivalent force point in a direction toward said cylinder barrel for supporting said cylinder barrel assembly for rotation relative to said swashplate and for developing on said equivalent force point a bearing force having a radial bearing force component substantially equal in magnitude and opposite in direction to said radial equivalent force component such that the net resultant sum of said radial equivalent and radial bearing force components is substantially zero.

4,615,258

DRIVE DEVICE OPERATED BY A PRESSURE FLUID

Georg Hirmänn, Griesernweg 14, 8037 Zürich, Switzerland

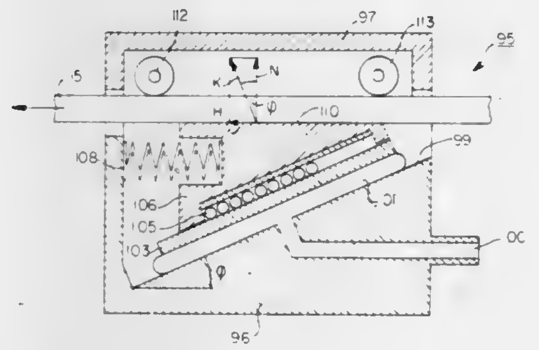
PCT No. PCT/CH83/00101, § 371 Date May 15, 1984, § 102(e) Date May 15, 1984, PCT Pub. No. WO84/01199, PCT Pub. Date Mar. 29, 1984

PCT Filed Sep. 5, 1983, Ser. No. 616,228

Claims priority, application Switzerland, Sep. 17, 1982, 5500/82

Int. Cl.^{4} F16H *25/18*

U.S. Cl. 92—40 **13 Claims**



1. A step motion drive device operating by fluid pressure which provides relative unidirectional stepping movement between the device and a driven element, comprising at least one fluid-actuated expansible member, a force transmitting member which is displaced by said expansible member, a linearly displaceable direction-translating member in the form of a wedge through which said force transmitting member operates, and means for biasing the wedge in the opposite direction of said stepping movement, whereby said wedge is non-positively connected to said driven member and expansion and contraction by said expansible member due to fluctuations in said fluid pressure causes reciprocal linear displacement of the force transmitting member and a corresponding reciprocal movement of the wedge, the latter causing a step-wise unidirectional displacement of the driven member by means of a frictional non-positive connection therewith.

4,615,259

RECIPROCATING GAS COMPRESSOR

Yoshinori Anbe, Amagasaki, Japan, assignor to Showa Precision Machinery Co., Ltd., Amagasaki, Japan

Filed Mar. 8, 1985, Ser. No. 709,759

Claims priority, application Japan, Apr. 21, 1984, 59-80808

Int. Cl.^{4} F01B *31/00;* F04B *5/00;* F16J *15/50*

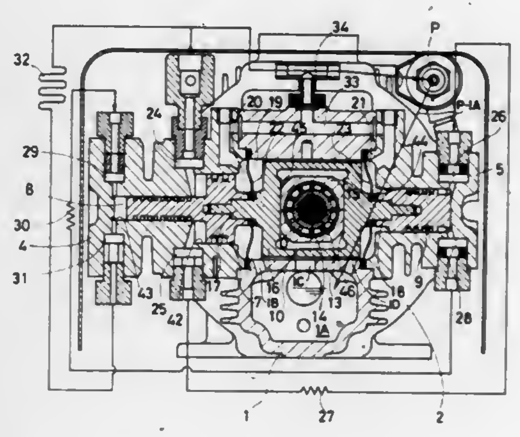
U.S. Cl. 92—86 **1 Claim**

1. A reciprocating gas compressor comprising a pair of oppositely disposed compression heads, the first of which compression heads defines a single compression chamber in a first lateral space for receiving a single piston having a complementary configuration and the second of said compression heads defining a pair of coaxially extending cylindrical compression chambers in a second lateral space, each chamber receiving a complementary piston and each chamber being of a different diameter;

means for reciprocating said pistons, said reciprocating means including a crank pin extending from the end of a main drive shaft, the axis of said crank shaft being eccentric relative to said main drive shaft;

a slider rotatably surrounding said crank shaft;

a yoke disposed in a central space defining a pair of opposed lateral sliding surfaces for confining the motion of said slider only to sliding motion along said pair of sliding surfaces, said yoke further defining a pair of outwardly extending rods for connecting said plurality of pistons to either side of the yoke, wherein the orbital motion of said crank pin about the axis of said main drive shaft causes said slider to reciprocate said yoke and thus said pistons connected thereto toward and away from said pair of compression heads;



a pair of diaphragms interposed between said pair of compression heads and said yoke on either side of said yoke for sealingly separating said lateral spaces of said pair of compression heads from the central space within which said yoke is reciprocated to prevent migration of lubricating oil from said central space into the lateral space containing said pair of compression heads, and

means for equalizing fluid pressures across said pair of diaphragms when said yoke is reciprocated within said central space, said equalizing means including a passageway means in communication with the lateral spaces by connections thereto and in communication with a central space within which said yoke is reciprocated by a connection thereto, said equalizing means further including a purifier disposed in said passageway means at a location between the connection to the central space and connections to the lateral spaces, whereby oil mist is prevented from migrating from the central space to the lateral spaces by said purifier while pressure on both sides of each of the diaphragms is equalized.

4,615,260

PNEUMATIC ACTUATOR FOR MANIPULATOR

Takeo Takagi, Yokohama, and Yuji Sakaguchi, Kawasaki, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Apr. 25, 1984, Ser. No. 603,819

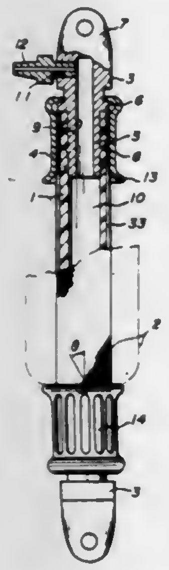
Claims priority, application Japan, Apr. 25, 1983, 58-71404; May 13, 1983, 58-82473; Sep. 2, 1983, 58-160543; Sep. 2, 1983, 58-160544; Sep. 29, 1983, 58-179206

Int. Cl.^{4} F16J *3/00*

U.S. Cl. 92—92 **11 Claims**

1. A pneumatic actuator comprising; a tubular body made of rubber-like elastic material, closure members sealingly closing ends of said tubular body and braided structure reinforcing an

outside of said tubular body and made of braided cords of high tensile fibers, said braided structure being expanded in its radial direction and being simultaneously contracted in its axial direction together with said tubular body when pressurized fluid is supplied in a cavity of said tubular body through one of said closure members, wherein diameters of both ends of said braided structure and braided angles at both ends are made larger than those at a substantially mid portion of said braided structure.



4,615,261

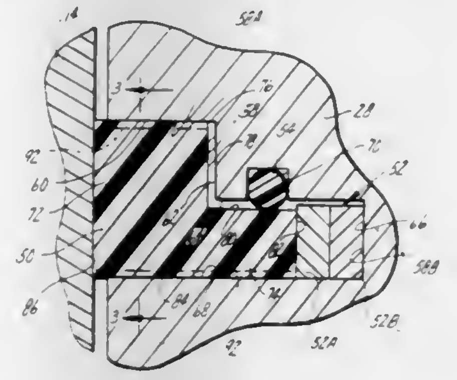
STIRLING ENGINE WITH IMPROVED PISTON RING ASSEMBLY

Roelf J. Meijer, Ann Arbor, Mich., assignor to Stirling Thermal Motors, Inc., Ann Arbor, Mich.

Filed Oct. 29, 1984, Ser. No. 665,700

Int. Cl.⁴ F16J *9/02*

U.S. Cl. 92—200 **8 Claims**



1. In an engine having a reciprocating piston axially stroking within a walled cylinder by a pressure differential acting on opposite axial sides of the piston and an annular piston ring disposed in an annular piston ring groove around the piston for sealing between the piston and the wall of the cylinder to resist leakage past the piston, the improvement characterized in that the piston ring is endowed with a flat radially outwardly facing annular axial surface confronting the cylinder wall, temperature responsive means arranged within the groove for coaction with the piston ring to forcefully urge the piston ring radially outwardly when the engine is cold such that said flat radially outwardly facing annular axial surface of the piston ring is urged flat against the cylinder wall but to relax from urging the piston ring outwardly when the engine becomes warm, said piston ring groove having two contiguous axial portions one of which extends radially deeper into the piston than the other, said piston ring being of generally L-shape in cross section so that it has two leg portions consisting of a radially extending leg portion and an axially extending leg portion, said radially extending leg portion being disposed in cooperative association with the one axial portion of the groove and the axially extending leg portion being disposed in cooperative association with the other axial portion of the groove, said temperature responsive means being disposed within said one axial portion of the piston ring groove to be coactive on said radially extending leg portion of the piston ring, and annular sealing means disposed within said groove for sealing between said piston ring and piston to resist leakage between said piston ring and piston.

4,615,262

HEATER UNIT OF AUTOMOTIVE AIR CONDITIONING SYSTEM

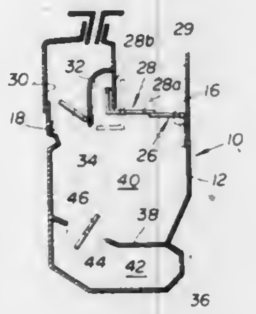
Fumio Taniguchi, Ebina, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Jun. 28, 1985, Ser. No. 749,868

Claims priority, application Japan, Jul. 4, 1984, 59-100060[U]

Int. Cl.⁴ B60H *1/03*

U.S. Cl. 98—2.08 **3 Claims**



1. A heater unit of an automotive air conditioning system, comprising:
a casing (**12**) having an inlet opening (**14**) and first, second and third outlet openings (**16**, **18**, **44**);
a first duct (**29**) extending from said first opening (**16**);
second and third ducts (**32**, **30**) extending independently from said opening (**18**) to different portions of said system;
a first flap valve (**26**) associated with said first duct (**29**) to control air flow directed toward first duct (**16**);
a second flat valve (**28**) including first and second flp portions (**28***a*, **28***b*) which are respectively associated With said first and second ducts (**29**, **32**) to control air flows directed toward said first and second ducts (**29**, **32**), said first and second flap portions (**28***a*. **28***b*) being arranged and constructed so that when said first flap portion (**28***a*) assumes its open position, said second flap portion (**28***b*) assumes its closed position and vice versa;
third flap valve (**34**) associated with said third duct (**30**) to control air flow directed toward said third duct (**30**); and
a fourth flap valve (**46**) associated with said third opening (**44**) to control air flow passing therethrough.

4,615,263

DRY VENT FOR MOTOR HOMES

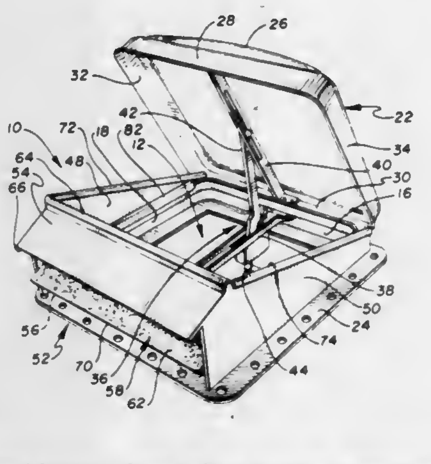
Curtiss W. Titterud, 6921 NW. 162nd La., Anoka, Minn. 55303

Filed Jan. 3, 1985, Ser. No. 688,573

Int. Cl.⁴ B60H *1/26*

U.S. Cl. 98—2.14 **1 Claim**

1. A removable vent for a port in the ceiling of a motor home, said port being defined by upstanding, front, rear and opposed, side port margins, said port including a port cover hingeably coupled to said ceiling along a pivot axis, said port cover including front, rear, and opposed side, cover margins selectively engageable with said front, rear, and opposed, side, port margins respectively, said cover being pivotally shiftable between a raised port clearing and a lowered port covering position through an arcuate path of travel, comprising:
opposed, upright, rain blocking sidewalls, each sidewall including an outer face and an internal face, each of said sidewalls including a respective downwardly facing, U-shaped in-cross-section channel coupled to respective ones of said internal faces for removably engaging said sidewalls with respective ones of said port side margins in rain-tight relationship, and each of said sidewalls further including respective upper edges oriented transversely to respective ones of said channels whereby said cover may be lowered through said arcuate path of travel into engagement with said vent for removable, rain-tight engagement of said opposed side cover margins with respective ones of said sidewall upper edges;
a generally rectangular, upper louvre plate extending between and formed integrally with said sidewalls, said upper louvre plate including an upstanding top wall including a top edge extending generally between said respective sidewall upper edges, said upper louvre top wall top edge removably engageable with said front cover margin in rain-tight relationship when said cover is lowered through said arcuate path of travel into engagement with said vent, said upper louvre plate further including an outwardly extending bottom edge oriented generally parallel to and lower than said top edge, said upper louvre plate presenting an inclined, downwardly facing lower surface extending generally between said louvre bottom edge and said louvre top wall;



a generally rectangular, lower louvre plate extending between said respective sidewalls, said lower louvre plate oriented generally parallel to said upper louvre plate, said lower louvre plate presenting an inclined, downwardly facing lower surface engageable with said port front margin, and an inclined, upwardly facing surface, said upper louvre lower surface and said lower louvre upper surface defining an upwardly inwardly directed air channel;
means for diffusing liquid operably covering said lower louvre plate upper surface whereby rain hitting said lower louvre plate upper surface is inhibited from splashing through said channel; and
a screen extending between said upper and lower louvre plates, across said air channel.

4,615,264

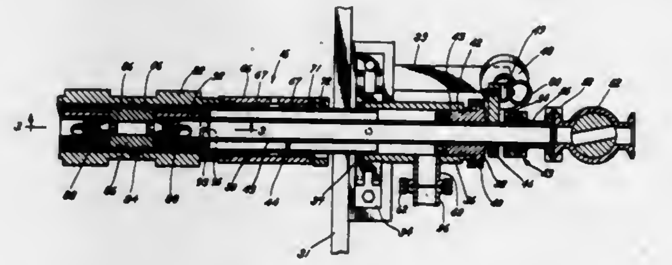
FILLER DIVERTING VALVE MECHANISM

Edward Rose, Skokie, Ill., assignor to Peters Machinery Company, Chicago, Ill.

Filed Apr. 15, 1985, Ser. No. 723,159

Int. Cl.⁴ A21C *9/04;* **B29F** *3/01*

U.S. Cl. 99—450.4 **11 Claims**



1. In a sandwiching machine for use in applying a semi-frozen comestible to a row of cookies traveling along said sandwiching machine, said sandwiching machine including stencil means for applying the semi-frozen comestible to the cookie in a uniform manner, said stencil means comprising supply means for supplying semi-frozen comestible from a source of frozen comestible, said supply means comprising a rotatable tubular member, and return means for returning the semi-frozen comestible to said source of semi-frozen comestible, said return means comprising a stencil sleeve that is hollow and is disposed about said rotatable tubular member and shut-off and by-pass valve means controlling the flow of semi-frozen comestible to a cookie when the valve means is open and for diverting semi-frozen comestible from the supply means to the return means for return to said source when the valve means is closed.

4,615,265

TRANSFER DRUM FOR CONVEYING SHEETS

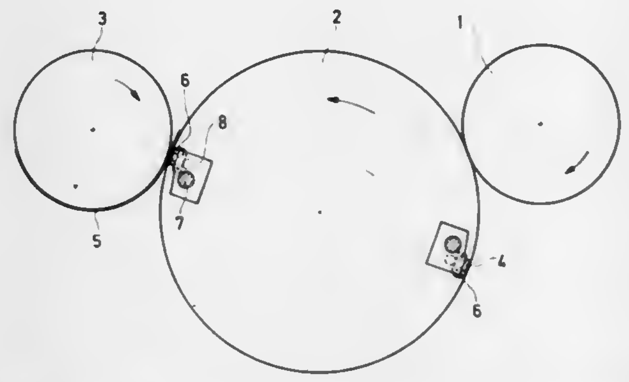
Rudi Haupenthal, Epfenbach, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed May 17, 1985, Ser. No. 735,571

Claims priority, application Fed. Rep. of Germany, May 17, 1984, 3418303

Int. Cl.⁴ B41F *9/00*

U.S. Cl. 101—142 **6 Claims**



1. Transfer cylinder for conveying a sheet from one printing unit to another, comprising a cylindrical drum, a row of rubber suction pads formed with suction lips for temporarily holding a conveyed sheet, said row of suction pads being disposed at an end of a sheet format length on sheet guiding surfaces formed on said drum, said row of rubber suction pads extending in axial direction of said drum, and paper supports disposed in vicinity of said rubber suction pads for respectively supporting the conveyed sheet at least while it is being pulled off the suction lips, said paper supports having respective supporting edges, a part of which is disposed in a common plane with said suction lips of said rubber suction pads when suction is applied to the sheet by said suction pads, another part of said supporting edges having an arcuate shape and extending out of said common plane with said suction lips in a radial direction into said cylindrical drum, the conveyed sheet having an underside which is disposed in said common plane when suction is applied to the sheet.

4,615,266

PRINTING APPARATUS EMPLOYING DEFORMABLE TRANSFER PAD

William M. DeRoche; David A. Kearney, both of Keene, and Franklin L. Sibley, Swanzey Center, all of N.H., assignors to Markem Corporation, Keene, N.H.

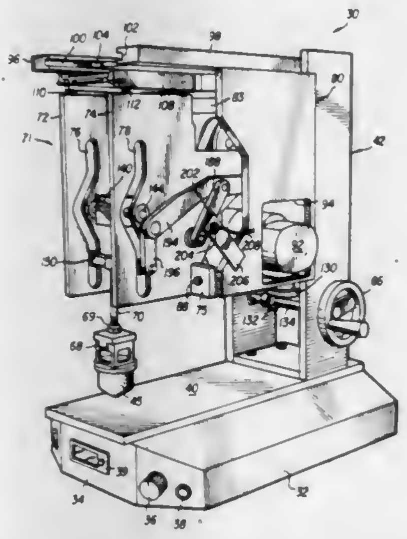
Filed Oct. 16, 1984, Ser. No. 661,437

Int. Cl.⁴ B41F *17/00*

U.S. Cl. 101—163 **10 Claims**

1. A pad transfer printing machine comprising:
an engraved printing plate suspended at an elevated position above a surface to be printed and having its engraved surface facing downwardly;
means for inking the printing plate and for removing excess ink therefrom;

- a deformable transfer pad for transferring inked images from the printing plate to the surface to be printed; and
- a drive mechanism for moving the transfer pad in a cycle of movement comprising an upward stroke to bring the transfer pad into contact with the printing plate, a downward stroke to bring the transfer pad into contact with the surface to be printed, and a rotary movement following each upward and downward stroke to invert the transfer pad, said drive mechanism comprising:
  - a rod-like plunger carrying the transfer pad at one end thereof;



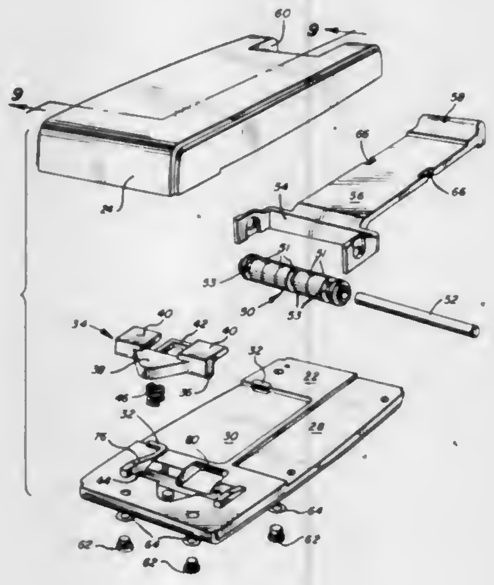
  - a pivoting member through which the plunger is axially reciprocable, said member being pivotable about a fixed horizontal axis which is perpendicular to the axis of the plunger;
  - a movable horizontal cross-member disposed parallel to and spaced from the axis of the pivoting member, said cross-member having its central portion affixed to the plunger;
  - a pair of aligned cam tracks for receiving the ends of the cross-member; and
  - means including a rotary crank mechanism for causing the cross-member to move in the path defined by the cam tracks.

4,615,267
PORTABLE DATA RECORDER

Anthony J. Caporaso, Jr., Barrington, and Dana W. Mox, Glenview, both of Ill., assignors to Venture VII, Ltd., Chicago, Ill.
Continuation of Ser. No. 604,058, Apr. 26, 1984, abandoned, which is a continuation of Ser. No. 440,089, Nov. 8, 1982, abandoned. This application May 10, 1985, Ser. No. 733,330
Int. Cl.⁴ B41F *3/04*
U.S. Cl. 101—269 **9 Claims**

1. A portable imprinter for pressure-transfer imprinting on a form set the information contained on an embossed printing surface, comprising:

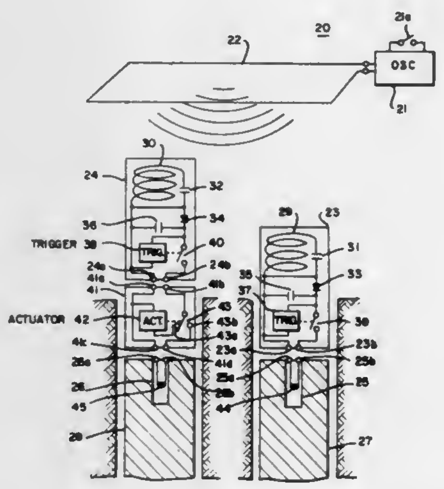
- a two-peice, light-weight apparatus including an upper housing having an elongated internal cavity, and a lower base plate defining the base of said cavity for supporting at least one printing element having an embossed printing surface and a form set to be imprinted;
- a platen assembly within said cavity, including an elongated pull bar extending in the direction of said elongated cavity, a cylindrical platen roller rotatably mounted at one end of the pull bar within the cavity, and a handle at the other end of the pull bar and disposed outside said housing for manually moving the platen roller between first and second positions across the form set and printing element within the cavity, said platen roller including a shaft, first roller portions on the shaft having greater diameters defining out land means for engaging the form set and effecting imprinting, and second roller portions on the shaft having lesser diameters defining inner land means at opposite ends of the platen roller and alignment groove means intermediate the ends of the platen roller;
- cam means in the form of at least three raised rails formed integrally with the underside of said upper housing extending in the direction of said elongated cavity and spaced such that first and second end rails are positioned on either side of said elongated cavity having at least one intermediate rail therebetween, said rails in combination applying a self adjusted and uniformly distributed printing pressure to said platen roller as said platen roller is moved within said internal cavity, at least said first and second end rails camming the platen roller into contact with the form set or the printing element, said intermediate rail positioned within said alignment groove means for positioning said platen roller with respect to at least one of said form set and said printing element and for developing said self adjusted and uniformly distributed printing pressure therebetween, said rails including inclined ends for reducing the pressure applied to the platen roller as it approaches the limits of its movement;
- resiliently biased holding means mounted on said base plate within said cavity for holding the form set in place during imprinting, and including means accessible from the outside of the imprinter through the base plate for releasing the resiliently biased holding means for loading and unloading the form set in the imprinter;
- recess means on said base plate within said cavity for receiving the printing element, and slotted retainer means on the base plate around the perimeter of the recess means for securely holding the printing element in the recess means; and
- means for securing said upper housing and lower base plate in assembled relation with said platen assembly within said cavity.



4,615,268
REMOTE BLASTING SYSTEM FOR EFFECTING MULTIPLE-STEP EXPLOSION AND SWITCHING UNIT FOR USE IN THIS SYSTEM

Masashi Nakano, and Takeo Ueda, both of Aichi, Japan, assignors to Nippon Oil and Fats Company Limited, Tokyo, Japan
Filed Nov. 14, 1984, Ser. No. 671,212
Claims priority, application Japan, Nov. 22, 1983, 58-220135
Int. Cl.⁴ F42C *11/00*
U.S. Cl. 102—217 **11 Claims**

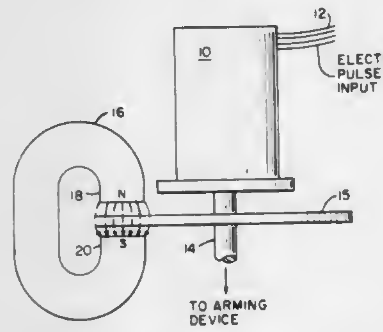
1. In a system for blasting a plurality of detonators in a multiple-step manner from a remote station comprising an oscillating unit for radiating an electromagnetic wave having a given frequency toward an area where the detonators are arranged, and a plurality of receiving units each of which is connected to a respective detonator and includes a resonance circuit tuned to said frequency of the electromagnetic wave, an ignition capacitor charged by an A.C. current induced in said resonance circuit, a trigger circuit for producing a trigger pulse when the radiation of the electromagnetic wave is stopped after the ignition capacitor has been charged sufficiently, and a switch being made conductive by said trigger pulse so as to discharge the ignition capacitor through a detonator connected to a relevant receiving unit, the improvement comprising



- at least one switching unit which is connected between a receiving unit and a detonator and comprises a switch arranged in a path connecting the receiving unit to the detonator and an actuator section consuming almost all energy stored in the ignition capacitor when the switch of the receiving unit is closed and driving said switch of the switching unit.

4,615,269
CONSTRAINED STEPPING MOTOR UNIQUE CODE DEVICE

James D. Holder, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Dec. 24, 1984, Ser. No. 685,890
Int. Cl.⁴ F42C *15/40*
U.S. Cl. 102—221 **2 Claims**

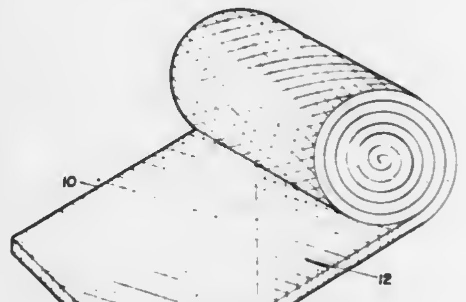


1. Apparatus for implementation of safety in the use of explosive devices comprising:

- a. a stepping motor having a shaft extending therefrom;
- b. an arming device connected to said stepping motor;
- c. an electrically conductive disc secured to said shaft for rotation therewith; and,
- d. magnetic means positioned adjacent said disc for impressing a magnetic field through said disc in a sense to oppose rotation of said shaft to achieve magnetic braking of said shaft said magnetic means being a permanent magnet having its respective ends adjacent opposite sides of said disc.

4,615,270
PRINTED SHEET URETHANE PROPELLANT

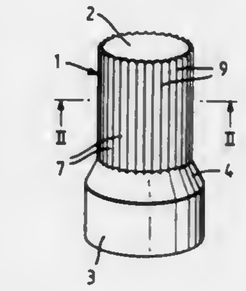
Frank H. Bell, Logan, Utah, assignor to Morton Thiokol, Inc., Chicago, Ill.
Filed Mar. 18, 1985, Ser. No. 724,433
Int. Cl.⁴ C06D *5/06*
U.S. Cl. 102—289 **12 Claims**



1. A propellant charge comprises a coiled sheet of solid propellant and means including a quantity of interconnecting score lines in at least one surface thereof for providing a uniform and repeating pattern of contiguous geometrically shaped propellant portions in said sheet.

4,615,271
SHOCK-AUGMENTING CHARGE WITH AXIALLY-GROOVED BOOSTER HOUSING

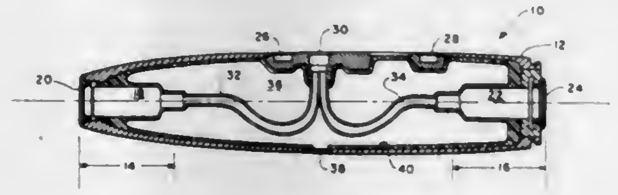
Christopher D. Hutchinson, Tonbridge, England, assignor to Royal Ordnance plc, London, England
Filed Jul. 22, 1985, Ser. No. 757,473
Claims priority, application United Kingdom, Jul. 31, 1984, 8419461
Int. Cl.⁴ F42B *3/00*
U.S. Cl. 102—318 **4 Claims**



1. A shock-augmenting charge for use in initiating detonation of a cylindrical charge of a first explosive material having one end provided with a coaxial cylindrical recess; said charge comprising a cylindrical booster housing coaxially locatable in said recess in spaced relationship from said charge, have a closed first end and an open second end respectively locatable so as to face inwardly and outwardly of said recess, and containing a cylindrical booster charge of a second explosive material having a higher shock-sensitivity than said first explosive material, exposable in use to a detonation means via the second end of the housing; wherein said booster housing has a cylindrical outer surface provided with a multiplicity of axially extending grooves disposed around its circumference so as to define a multiplicity of radially projecting impact ridges; thereby to enhance radial shock stimulation of the first explosive material circumjacent the booster housing.

4,615,272
BOMB AND BOMB LINER

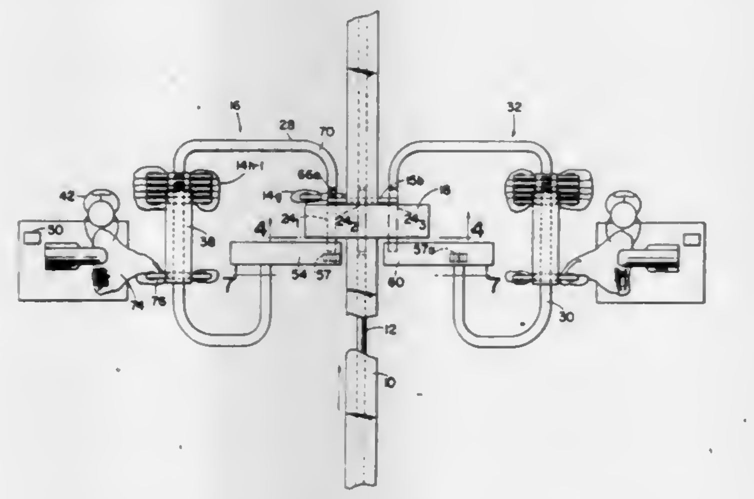
Stephen A. Aubert, Eglin AFB, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Sep. 12, 1984, Ser. No. 649,565
Int. Cl.⁴ F42B *5/30*
U.S. Cl. 102—466 **8 Claims**



1. A polymeric bomb liner consisting essentially of about 80 to 60 weight percent of amorphous polypropylene and about 20 to 40 weight percent of polybutene.

4,615,273
CONVEYORIZED TRANSPORT SYSTEM

Harold Osthus, Seattle, Wash., and Roald Nymark, Simsbury, Conn., assignors to Gerber Garment Technology, Inc., Tolland, Conn.
Filed Dec. 19, 1984, Ser. No. 683,379
Int. Cl.⁴ E01B *25/26*
U.S. Cl. 104—102 **19 Claims**



1. A switching apparatus used in a conveyorized transport system for tranferring a trolley between a first rail and an adjacent subsidiary loop, said apparatus comprising:

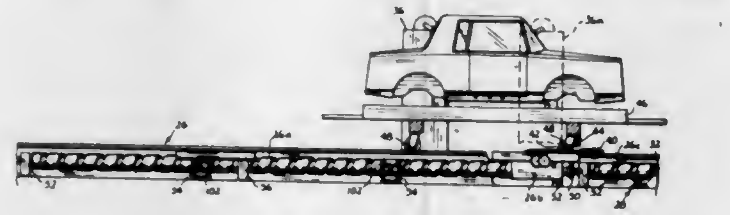
a rail section used for transferring said trolley between said first rail and said subsidiary loop, said first rail and said subsidiary loop each haivng a gap for receiving the transfer rail section,

means for moving said transfer rail section from a first position bridging said gap in said first rail to a second position bridging said gap in said subsidiary loop, said means for moving including means for unobstructively supporting said transfer rail section such that said trolley and workpieces it carries are able to travel the entire length of said transfer rail section, and

propulsion means for exerting a positive driving force on said trolley to move said trolley in one direction along the entire length of said transfer rail section during an interval in which said transfer rail section is initially located at said first position and receives said trolley from said first rail, moves from said first position to said second position carrying said trolley, and then remains at said second position while said trolley is discharged onto said subsidiary loop.

4,615,274
INDEXING CONVEYOR FOR ROBOTIC PRODUCTION OPERATIONS

Robert A. Hoehn, 9230 E. 47th St., Kansas City, Mo. 64133
Filed Jun. 29, 1982, Ser. No. 393,428
Int. Cl.⁴ B61B *13/12;* **B65G** *37/00*
U.S. Cl. 104—167 **19 Claims**



1. Apparatus for indexing product-bearing carriers successively delivered to a pickup zone for stationary positioning of each product at an operating station, said apparatus comprising:

a shuttle carriage for propelling each product-bearing carrier along a path of travel extending from said pickup zone to said station, and having an initial position at said pickup zone and an advanced position at said station,

said shuttle carriage being provided with an extensible portion movable in opposed directions along said path of travel and having means thereon engageable with a carrier at said pickup zone to couple the carriage and carriage together for movement in unison along said path,

drive means for advancing said shuttle carriage from said initial position to said advanced position to deliver the transported carrier to said station, and subsequently moving said carriage in a reverse direction along said path to return it to said initial positon to pick up the next carrier,

means coupled with said portion for extending the same in said reverse direction as the carriage approaches said initial position and for extending said portion in the opposite direction as the carriage approaches said advanced position, whereby to increase the reach of the shuttle carriage and the effective length of travel of the carrier-engaging coupling means as the carriage moves between said initial and advanced positions, and

transfer means operable subsequent to arrival of said shuttle carriage at its advanced position for removing the transported carrier from said station, whereby said successively delivered carriers are consecutively indexed from said pickup zone to said station and transferred therefrom.

4,615,275
EMERGENCY EXIT APPARATUS

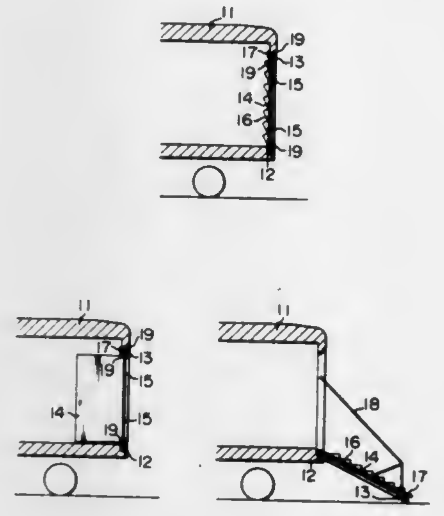
Masashi Ishizuka, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan
Filed Nov. 19, 1984, Ser. No. 672,920
Claims priority, application Japan, Nov. 22, 1983, 58-220182
Int. Cl.⁴ B61D *19/00, 23/00;* **B60R** *3/02*
U.S. Cl. 105—438 **1 Claim**

1. An emergency exit apparatus for a train car comprising:

a hinged door portal frame pivotally supported on a wall of the car on a horizontal hinge axis on a lower edge of said portal frame for pivoting open outwardly of the car,

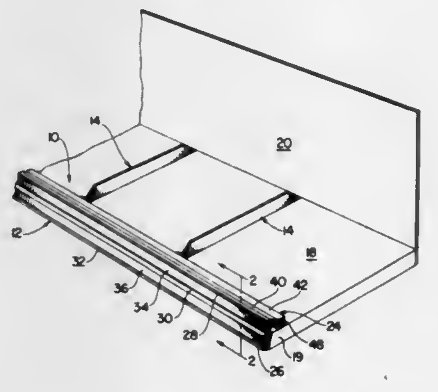
a hinged door pivotally supported on said portal frame on a vertical hinge axis on a side edge of said door for pivotal movement from a closed to an open position, and

stepping means carried on a surface of said hinged door facing inwardly of the car to provide a ramp for emergency exit from the car upon said portal frame pivoting to an open position outwardly of the car.



4,615,276
SHELF DIVIDER ASSEMBLY

Aram G. Garabedian, 173 Belvedere Dr., Cranston, R.I. 02920
Filed Sep. 16, 1985, Ser. No. 776,492
Int. Cl.⁴ A47B *57/00;* **A47F** *5/00*
U.S. Cl. 108—61 **4 Claims**



1. A shelf divider assembly comprising:

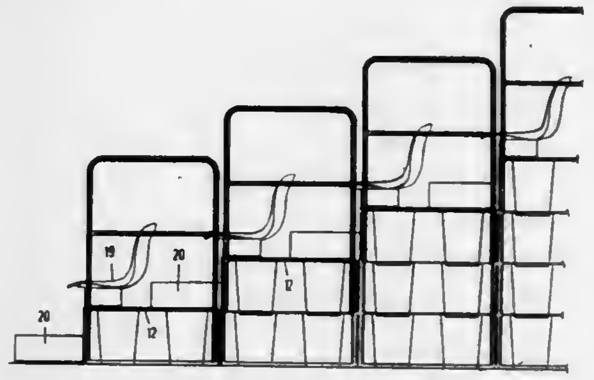
a. an elongated bracket having a longitudinally extending channel formed therein, said bracket having elongated longitudinally extending upper and lower jaws thereon defining a reduced mouth of said channel, said bracket being securable to the forward edge portion of a shelf so that it extends longitudinally therealong and so that said channel faces rearwardly across the upper surface of said shelf;

b. a shelf divider element receivable on the upper surface of said shelf; and

c. a foot element attached to said shelf divider element and detachably receivable in engagement in said channel for securing said shelf divider element to said bracket so that when said bracket is secured to said shelf forward edge portion, said shelf divider element extends a distance substantially rearwardly across the upper surface of said shelf, said foot element comprising a body portion extending diagonally forwardly and upwardly from said shelf divider element and a stop element on the upper side of said foot element adjacent said shelf divider element, said body portion having a slot formed therein on the lower side thereof adjacent said shelf divider element and substantially opposite from said stop element, said slot extending across said body portion in a direction substantially perpendicular to said shelf divider element, said foot element being receivable in a locked position in said channel wherein said lower jaw is received in said slot and said body portion extends diagonally forwardly and upwardly in said channel and engages the upper wall thereof, said foot element being receivable in said locked position by passing said body portion forwardly between said jaws until said stop element engages said bracket adjacent said upper jaw and then pivoting said shelf divider element downwardly while maintaining said stop element in engagement with said bracket until said lower jaw is received in said slot.

4,615,277
STACKING ELEMENT AND A GALLERY, PLATFORM OR THE LIKE, PROVIDED WITH SUCH A STACKING ELEMENT

Cornelis F. de la Haye, Starrenboschstraat 11, 1097 MB Amsterdam, Netherlands
Filed Dec. 22, 1983, Ser. No. 564,592
Claims priority, application Netherlands, Dec. 29, 1982, 8205033
Int. Cl.⁴ E04C *1/30*
U.S. Cl. 108—101 **4 Claims**



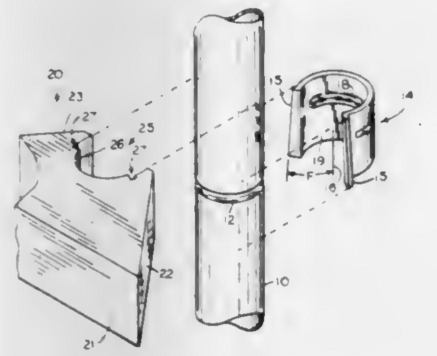
1. A stacking panel for forming gallery seating (or the like) in combination with a plurality of other such panels for supporting platforms in spaced relation to a flooring, comprising a pair of closed rod-like members each being of substantially the same size as the other and each having generally horizontally disposed top and bottom portions joining with left and right upstanding ends, said members positioned in side-by-side spaced apart relation, each said panel further having at least one substantially U-shaped rod-like element having legs positioned in the space between said members and in the plane of said panel, the tops of the legs of said element positioned between said top portions and defining the spacing between said top portions, said element having a connecting bottom extending between said legs and received between said bottom portions of said members and defining the spacing between said panel bottom portions, said connecting bottom extending below said panel bottom portions so as to be received between the spaced top portions of another one of said panels when one said panel is stacked on top of another such panel.

4,615,278
SHELVING APPARATUS AND METHOD OF ASSEMBLING SAME

Peter A. Cabrelli, 1284 Ragley Hall Rd., Atlanta, Ga. 30319
Filed Dec. 24, 1984, Ser. No. 686,100
Int. Cl.⁴ A47B *93/00*
U.S. Cl. 108—111 **7 Claims**

1. Shelving apparatus comprising, in combination, a cylindrical post having an indentation formed in an exterior surface thereof; a collar of generally semicylindrical shape having flanges formed along radially opposed side edges thereof and a protrusion formed on the interior surface thereof for detenting engagement with said post indentation with the collar placed flushly to one side said post; and a support having a generally semicylindrical recess formed in a side thereof and a pair of slots formed along radially opposed portions of an interior

surface of said recess configured to receive and wedge into gripping engagement said pair of collar flanges as said support



recess is slid along the opposite side of said post and into engagement with said collar.

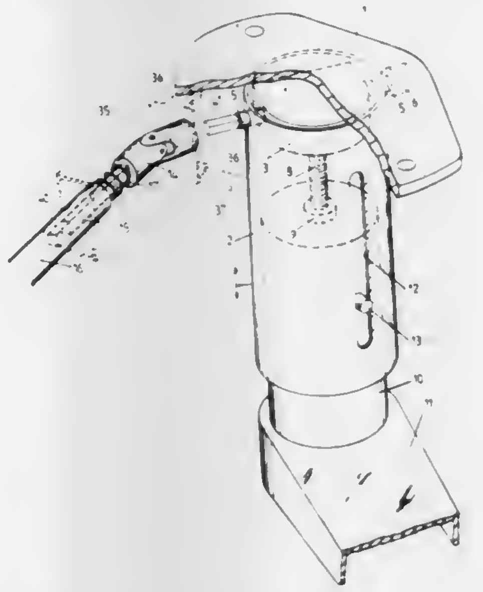
4,615,279
VERTICALLY ADJUSTABLE TABLE

Cornelis F. de la Haye, Starrenboschstraat 11, 1097 MB Amsterdam, Netherlands

Continuation-in-part of Ser. No. 684,614, Dec. 21, 1984, abandoned. This application Dec. 6, 1985, Ser. No. 806,027

Int. Cl.⁴ A47B *9/00*

U.S. Cl. 108—144 **6 Claims**



1. A table comprising a central portion, at least one wing portion, means attaching each said wing portion to said central portion, first and second legs connected to a respective one of said portions and a third leg connected to one of said portions at a position intermediate said first and second legs, and leg adjustment means provided at each said leg for changing the height of said portions, said leg adjustment means comprising a worm wheel transmission at each said leg and a connecting rod means detachably connected between said worm wheel transmission of said third leg and the worm wheel transmissions of said first and second legs, said connecting rod means having a rod member and universal joint members resiliently connected at each end thereof for telescopic movement relative to said rod member, said universal joint members being detachably connected to a said worm wheel transmission, whereby said connecting rod means can be connected to and detached from said worm wheel transmissions as wing portions are attached to said central portion and to each other, said leg adjustment means being operably connected together through said connecting rod means to raise or lower said legs in unison.

4,615,280
HIGH SECURITY SUPPORT AND ENCLOSURE STRUCTURE FOR ELECTRONIC EQUIPMENT

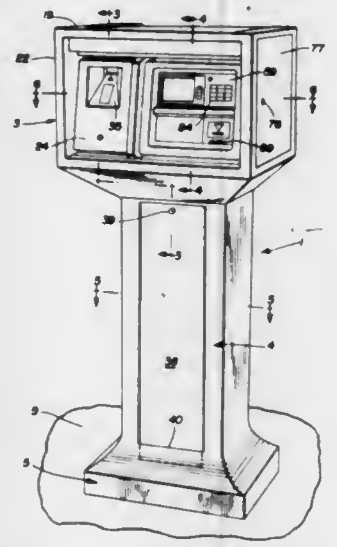
James D. Shoop, Canton; Harry T. Graef, Massillon; Kevin H. Newton, North Canton, and Spencer M. Grucza, Maple Heights, all of Ohio, assignors to Diebold Incorporated, Canton, Ohio

Filed Nov. 2, 1983, Ser. No. 547,954

The portion of the term of this patent subsequent to Dec. 24, 2002, has been disclaimed.

Int. Cl.⁴ G07G *5/00;* **E05G** *1/00*

U.S. Cl. 109—24.1 **21 Claims**



1. An attack resistant castable concrete housing for electronic components, comprising:

a body;

an enclosure section within said body enclosing said electronic components;

said body being comprised of a castable concrete composition which can be fully consolidated when cast with water to cement ratios less than 0.30 and steel fiber content of 7.21% to 7.73% by weight, consisting essentially of:

Constituents	Weight %
Portland Cement wherein said cement is selected from the group consisting of Type I and Type III Portland Cement;	18.88 to 19.81
Fly Ash wherein said fly ash is selected from the group consisting of Class F and Class C fly ash;	1.37 to 1.45
Fine Aggregate (SSD);	39.12 to 40.86
Gravel wherein said gravel is selected from the group consisting of No. 8 gravel and crushed stone, (SSD);	25.12 to 26.53
Water;	4.81 to 5.15
Melamine Superplasticizing Water Reducing Admixture; and,	0.96 to 1.04
Steel fibers;	7.21 to 7.73.

4,615,281
KEY SAFE

Robert E. Gaston, 21675 Bentler, Southfield, Mich.

Filed Aug. 26, 1985, Ser. No. 769,111

Int. Cl.⁴ E05G *1/00;* **E06B** *7/28*

U.S. Cl. 109—50 **13 Claims**

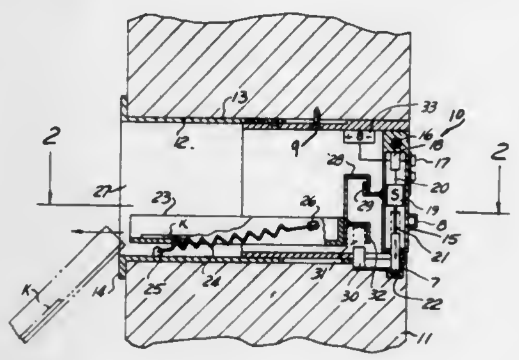
1. In combination with a building door having inner and outer sides and a transverse aperture therethrough;

a key safe comprising an open ended housing nested and retained in said aperture and having one open end in registry with said outer side;

a safe door hinged within and normally closing said one open end of said housing flush with said building door;

a normally closed latch bar slidably and reciprocally mounted upon and within said safe door interlocked with a strike plate upon said building door;

a combination lock on said safe door including a normally open printed circuit connected to a power source;



a solenoid within said safe door connected to said circuit and having a spring biased plunger connected to said latch bar;

energization of said solenoid retracting said latch bar permitting opening of the safe door and access to a key for said building door stored within said housing.

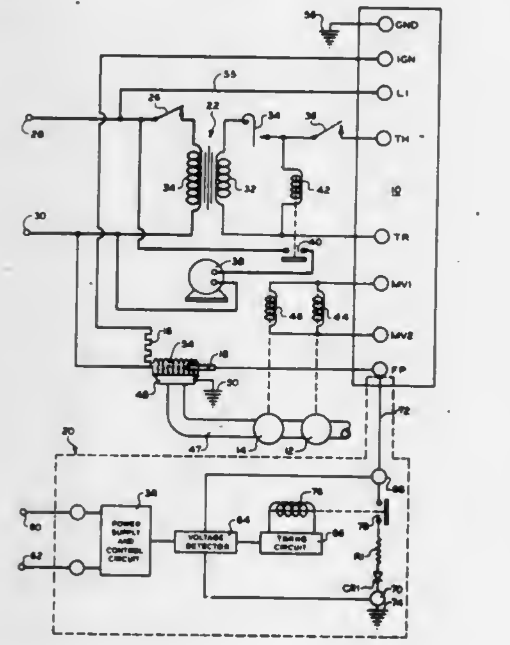
4,615,282
HOT SURFACE IGNITION SYSTEM CONTROL MODULE WITH ACCELERATED IGNITER WARM-UP TEST PROGRAM

Bernard T. Brown, St. Louis Conty, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 4, 1985, Ser. No. 804,482

Int. Cl.⁴ F23N *5/18*

U.S. Cl. 110—186 **3 Claims**



1. In a gas burner control system,

a burner;

an electrical resistance igniter for igniting said burner;

valve means for controlling flow of gas to said burner; and

a control module, including a microcomputer, for controlling operation of said igniter and said valve means,

said microcomputer being programmed to provide a preselected igniter warm-up time period for enabling said igniter to attain a temperature sufficient to ignite gas,

said microcomputer being further programmed to provide a test routine including a program for providing an accelerated igniter warm-up time period which is shorter than said pre-selected igniter warm-up time period but sufficiently long for enabling said igniter to attain at least the minimum temperature required to ignite gas,

said program in said test routine being executed in response to a unique signal effected by said control module and a test device which is external from and detachably connected to said control module.

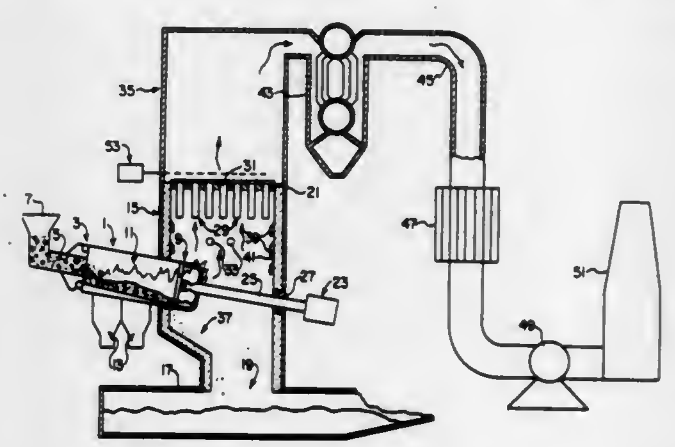
4,615,283
APPARATUS AND METHOD FOR DISPOSAL OF HAZARDOUS WASTE MATERIAL

David F. Ciliberti, Murrysville Boro; Thomas E. Lippert, Murrysville, and David H. Archer, Ross Township, Allegheny County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 26, 1984, Ser. No. 654,695

Int. Cl.⁴ F23J *3/00*

U.S. Cl. 110—216 **10 Claims**



1. In a waste disposal system for the combustion of waste material, having a rotary combustion unit with a charging end and a discharge end, with waste material charged to the combustion unit and subjected to combustion during passage therethrough, and with ash and hot combustion gases, containing residual solid waste constituents and uncombusted residual vaporous waste constituents, discharged from the combustion unit, with ash deposited in a collection tank, the improvement wherein:

a refractory lined filter housing encloses the discharge end of said combustion unit, said housing having a gas outlet wall at the upper end thereof and baffles on the interior surface thereof having downwardly sloping upper surfaces disposed between the discharge end of said combustion unit and a plurality of tubular ceramic elements;

said plurality of tubular ceramic filter elements are disposed within the gas outlet wall of said housing and extend into said refractory lined filter housing having a catalytic material incorporated therein effective to decompose vaporous waste constituents present in said combustion gases such that hot combustion gases containing said residual solid waste constituents and said uncombusted residual vaporous waste constituents are maintained at an elevated temperature within the filter housing for a period of time sufficient to affect combustion of the major portion of said residual vaporous waste constituents, and the hot combustion gases pass from said housing through the ceramic filters to affect removal of the remainder of said residual vaporous waste constituents and said residual solid waste constituents therefrom and to produce substantially uniformly high temperature resultant hot, waste-free gases;

a jet pulse cleaning system to periodically discharge residual solid waste constituents from said ceramic filters; and

a heat exchanger adjacent said filter housing into which said hot, waste-free gases are directed to recover heat values therefrom.

2. A method for the disposal of waste material by combustion wherein the waste material is subjected to combustion in a rotary combustion unit, with ash and hot combustion gases, containing residual solid waste constituents and uncombusted residual vaporous waste constituents, produced comprising;

discharging said hot combustion gases directly from the combustion unit into a refractory lined filter housing having a plurality of tubular ceramic filter elements disposed therein extending into said refractory lined filter housing having a catalytic material incorporated therein effective to decompose vaporous waste consituents present in said combustion gases;

maintaining said hot combustion gases in said refractory lined filter housing, while directing said hot combustion gases along a tortuous path by baffles on the interior surfaces of said refractory lined filter housing between said discharge from the combustion unit and passage through said ceramic filters, for a period of time sufficient to affect combustion of the major portion of said uncombusted residual vaporous waste constituents;

passing said hot combustion gases, after combustion of the major portion of said vaporous waste constituents through said ceramic filters to remove the remainder of said residual vaporous waste constituents and said residual solid waste constituents therefrom and produce a substantially uniformly high temperature waste-free gas;

periodically cleaning said ceramic filters using jet pulse cleaning to dislodge solids collected thereon into said filter housing; and

recovering heat from said hot waste-free gas.

4,615,284

METHOD OF BINDING VANADIUM COMPOUNDS

Siegfried Pollmann, and Klaus Grethe, both of Gummersbach, Fed. Rep. of Germany, assignors to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Jun. 28, 1984, Ser. No. 625,597

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1983, 3323754

Int. Cl.⁴ F23B *7/00*

U.S. Cl. 110—343 **2 Claims**

1. A method of binding vanadium compounds which are formed as reaction products during the combustion of solid or fluid petroleum residues in vapor generators undertaken without any separately produced additional additive; said method comprising the step of effecting said combustion with coal having an adequate alkaline earth content; with solid petroleum residues, said coal being mixed with said residues prior to entry into a combustion zone, and with fluid petroleum residues, said coal being introduced into a combustion zone, via a burner, along with, yet separate from, said residues.

4,615,285

METHOD OF DESTROYING HAZARDOUS WASTES

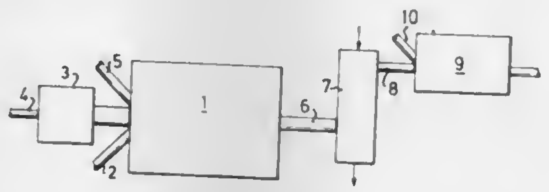
Lars Bentell, Falun, and Jarl Martensson, Sandviken, both of Sweden, assignors to SKF Steel Engineering, AB, Hofors, Sweden

Filed Apr. 5, 1985, Ser. No. 720,552

Claims priority, application Sweden, Sep. 21, 1984, 8404764; Dec. 3, 1984, 8406090

Int. Cl.⁴ F23G *7/00*

U.S. Cl. 110—346 **9 Claims**



1. A method of destroying hazardous waste material which contains chlorinated hydrocarbons comprising incinerating said waste material at a temperature of at least 1200° C. using under-stoichiometric conditions with the addition of thermal energy supplied by a gas which has been heated in at least one plasma generator, the ratio between waste material and oxidant being regulated to give a product gas in which the quotient $CO_2/(CO+CO_2)$ is less than 0.1 and which contains chlorine and/or hydrogen chloride.

4,615,286

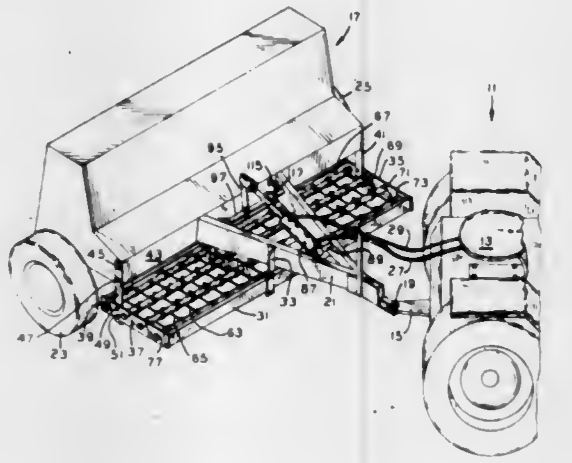
GRAIN DRILL MOUNTED HARROW DEVICE

Kenneth D. Linton, Rte. 1, Box 155, Van Wert, Ohio 45891

Continuation of Ser. No. 460,929, Jan. 25, 1983, abandoned. This application May 8, 1985, Ser. No. 732,165

Int. Cl.⁴ A01C *5/00*

U.S. Cl. 111—52 **1 Claim**



1. In a tracter drawn wheeled seed planting implement of the conventional type which forms seed receiving openings in the earth, deposite seeds in such openings, and covers the deposited seeds with loose earth, the improvement comprising a removable harrow device suspended beneath a leading portion of the planting implement near a leading edge of the harrow device from a tongue portion of the implement and near a trailing edge of the harrow device from a forward portion of the main body of the implement so as to be positioned intermediate and suspended entirely by the tractor and planting implement to refill and smooth dirt compacted by passage of the tractor preparatory to the planting operation, seed planting by the implement being selectively actuated by rotation of its wheels and the planting implement including a mechanical linkage arrangement for selectively placing the implement in a planting mode and a disabled mode, the harrow device including:

a generally horizontally disposed array of harrow tines arranged generally in a plurality of transverse rows;

a plurality of tine control rods, one associated with each transverse row, the control rods rotatably supported in a mutually parallel horizontal pattern, each tine having a coiled portion for snuggly helically encircling a control rod with one tine end fixed to a control rod and the other tine end extending away from the control rod a distance exceeding the elevation of the control rod above the earth;

at least one lever arm fixed to and extending from each control rod;

control link means pivotably coupled to one lever arm of each of the control rods whereby control link movement induces rotation of each of the lever arms and correlative rotation of each of the control rods for pivoting the entirety of tines supported on the control rods simultaneously between earth engaging and generally horizontal stowed positions;

hydraulic means remotely controllable by a tractor operator for moving the control link means to raise and lower the tines, the hydraulic means including an elongated hydraulic cylinder pivotably fastened to the implement at one end and having a piston rod protruding from the other end which is selectively extendable and retractable in response to the supplying of hydraulic fluid thereto;

an actuating rod journaled on the implement for rotation about an axis generally parallel to the tine control rods and having a first arm extending away from the axis to pivotably engage the piston rod;

a second arm fastened to the actuating rod and extending away from the axis thereof to be pivotably linked to the control link means;

a third arm fastened to the actuating rod and extending away from the axis thereof to be coupled to the mechanical linkage arrangement of the planting implement to place the implement in its disabled and planting modes respectively in unison with the raising and lowering of the tines whereby the only interconnections between the tractor and implement are a hitch for towing the implement and a pair of hydraulic lines from a hydraulic source on the tractor to the hydraulic means;

the first arm being positioned midway along the actuating rod with the second arm displaced therefrom along the actuating rod axis a predetermined distance; and

a fourth arm displaced from the first arm along the actuating rod axis said predetermined distance and in a direction opposite the displacement of said second arm from said first arm to be similarly linked for pivoting the tines.

4,615,287

DEVICE FOR FINISHING AT LEAST ONE LENGTHWISE EDGE OF A SHEET OF MATERIAL

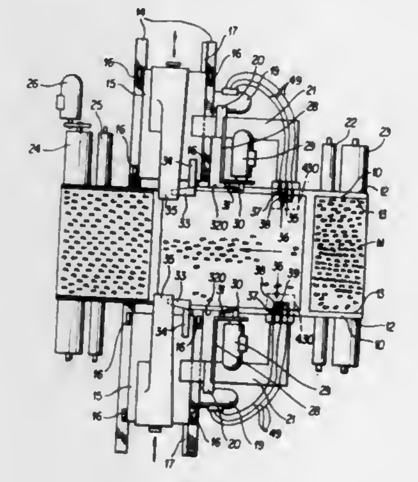
Siegfried Henze, Hohenroth; Karl Müssig, Bad Königshofen, and Hans Ziegler, Grossbardorf, all of Fed. Rep. of Germany, assignors to TEXPA Arbter Maschinenbaugesellschaft mbH, Saal, Fed. Rep. of Germany

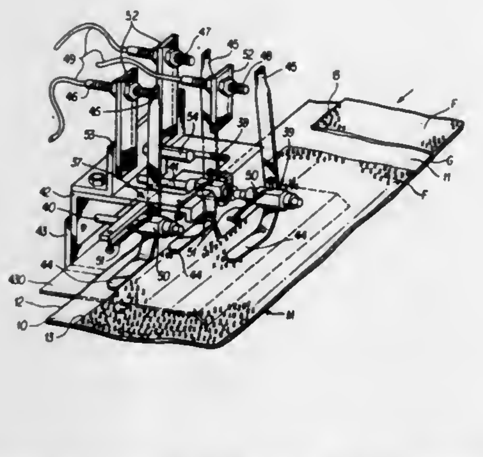
Filed Mar. 29, 1985, Ser. No. 717,951

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1984, 3412385

Int. Cl.⁴ D05B *3/00, 35/10*

U.S. Cl. 112—121.14 **16 Claims**





1. A device for the finishing of at least one lengthwise edge of a sheet of material, especially a sheet of a textile material, which at least on the one lengthwise edge has a lengthwise strip which is thinner than the remainder of the sheet of material, wherein the device includes a plurality of finishing units arranged one after the other in the direction of movement of the sheet of material, a common support for the finishing units which can be adjustable by a drive motor in a direction transverse to the movement of the sheet of material, and a scanning system connected with the support for controlling its movement by monitoring the sides of the sheet of material before the finishing units so that the finishing units follow deviations of the sheet of material to the side, characterized in that:

(a) the scanning system has at least two scanning devices (**37**, **38**) responsive to variations of thickness of the sheet (M) of material, one scanning device (**37**) being arranged to scan the lengthwise strip (**10**) of sheet (M) which is of less thickness, and the other scanning device (**38**) being arranged to scan sheet (M) in its area (F) of greater thickness, and.

(b) the two scanning devices (**37**, **38**) are positioned transverse to the direction of movement of sheet (M), and are spaced so that they normally scan the sheet close to the lengthwise edge (**13**) of sheet (M) lying to the side of and bordering the different material thicknesses of the sheet.

4,615,288

MECHANISM FOR DRAWING AN ELONGATED SEWN PRODUCT FROM A SEWING MACHINE

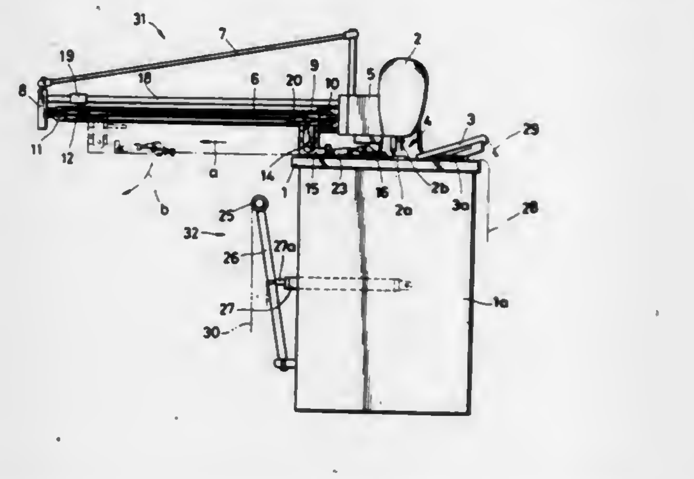
Yasuhiko Matsuda, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Mar. 8, 1985, Ser. No. 709,653

Claims priority, application Japan, Mar. 9, 1984, 59-34393[U]

Int. Cl.⁴ D05B *33/00;* **B65H** *29/10*

U.S. Cl. 112—121.29 **4 Claims**



1. A mechanism for drawing an elongated sewn product from a sewing station defined by a sewing machine, said mechanism comprising:

(a) a fixed horizontal guide rail;

(b) a slide supported on said guide rail and movable therealong;

(c) at least one gripper pivotally mounted on said slide for gripping a leading end of the sewn product;

(d) means for moving said slide, with said gripper assuming a horizontal position, along said guide rail between a retracted position in which said gripper is disposed adjacent to the sewing station and an advanced position in which said gripper is disposed remotely from the sewing station;

(e) means, responsive to arrival of said slide at said advanced position, for angularly moving said gripper downwardly through a predetermined angle from said horizontal position to a lowered position;

(f) means for closing said gripper to grip the leading end of the sewn product while said slide is in said retracted position, and also for opening said gripper, upon arrival of the latter at said lowered position, to release the leading end of the sewn product;

(g) said angularly-moving means including (1) a shaft rotatably supported by said slide, (2) an arm mounted on said shaft and supporting said gripper, and (3) a drive operatively connected to said shaft for turning the latter through said predetermined angle;

(h) said gripper including (1) a lower grip member fixed to a free end of said arm, and (2) an upper grip member pivotally connected to said arm; and

(i) said closing-and-opening means including at least one air cylinder pivotally supported by said arm and having a piston rod pivotally connected to said upper grip member.

4,615,289

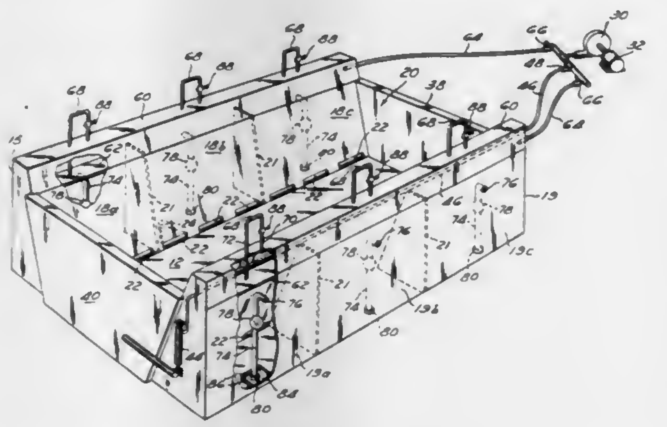
FLOATING DRY DOCK

Roger W. Bloxham, P.O. Box 304, Trabuco Canyon, Calif. 92678

Continuation of Ser. No. 933,591, Aug. 14, 1978, Pat. No. 4,510,877, which is a continuation-in-part of Ser. No. 889,454, Mar. 23, 1978, abandoned, which is a continuation-in-part of Ser. No. 847,341, Oct. 31, 1977, abandoned. This application Apr. 11, 1985, Ser. No. 722,722

Int. Cl.⁴ B63C *1/02*

U.S. Cl. 114—45 **8 Claims**



1. A floating, submergible vessel, comprising:
- a hold having a deck on which a load is carried, said deck having a top surface and a bottom surface;
- at least one floodable flotation chamber attached to said deck and extending upwardly therefrom, and having a bottom substantially flush with said bottom surface of said deck;
- means for drawing water from said hold into said chamber in response to the evacuation of air from said chamber to submerge said vessel; and
- means for evacuating said water from said chamber to the exterior of said vessel in response to the introduction of air at a specified pressure into said chamber to raise said vessel, said water evacuating means comprising:
  - a riser extending substantially vertically in said chamber and having a water inlet near the bottom thereof and a water outlet to the exterior of said vessel above the loaded water line of said vessel, wherein said specified pressure is less than the pressure needed to raise the water in said chamber from said water inlet to said water outlet, thereby maintaining the level of water in said chamber above said water inlet so as to prevent the evacuation of air through said riser when said air is introduced into said chamber.

4,615,290

MARINE PROPULSION STEERING ASSIST DEVICE

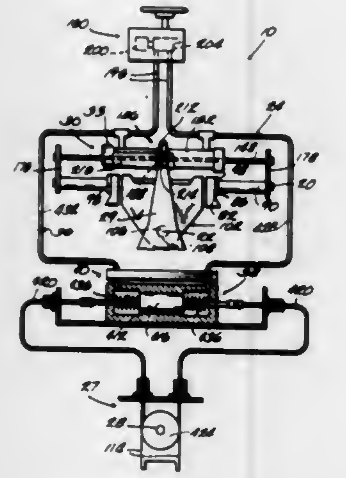
Charles B. Hall, Ingleside, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation-in-part of Ser. No. 451,438, Dec. 20, 1982, Pat. No. 4,509,924. This application Apr. 14, 1983, Ser. No. 484,900

Int. Cl.⁴ B63H *25/22*

U.S. Cl. 114—150 **21 Claims**

1. A marine propulsion device for use with a marine vehicle, said device comprising a propulsion unit pivotable about a first steering axis to steer the vehicle, fin means mounted on said propulsion unit and pivotable about a second steering axis for assisting in steering the vehicle, and means for hydraulically sensing operator applied torque on said propulsion unit relative to said first steering axis and for pivoting said fin means in response to torque sensing of said operator applied torque and for hydraulically sensing hydro-dynamically applied torque on said propulsion unit relative to said first steering axis and for pivoting said fin means in response to torque sensing of said hydrodynamically applied torque immediately upon initial steering movement of said propulsion unit.



4,615,291

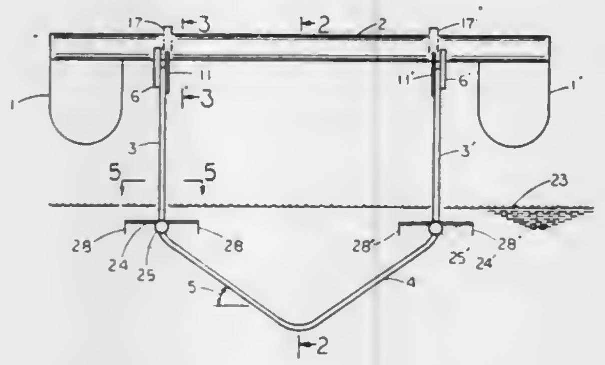
HYDROFOIL BOAT

Clyde B. Jones, 3531 Alginet Dr., Encino, Calif. 91436

Division of Ser. No. 408,710, Aug. 16, 1982, Pat. No. 4,517,912. This application Feb. 4, 1985, Ser. No. 698,341

Int. Cl.⁴ B63B *1/28*

U.S. Cl. 114—280 **16 Claims**



1. In combination, a boat comprising:
- (a) two hulls in catamaran configuration,
- (b) a rudder means for directional control of said boat,
- (c) a propulsive means for propelling said boat,
- (d) two stern hydrofoils, spaced apart beamwise, located aft of said boat's center of gravity and below the draft of said hulls,
- (e) two first attachment means for mounting each of said stern hydrofoils on said boat,
- (f) a main hydrofoil located forward of said boat's center of gravity at a distance less than the distance said stern hydrofoils are displaced aft of said boat's center of gravity whereby said main hydrofoil supports at least one-half of said boat's weight, said main hydrofoil generally centered between said hulls and located below the draft of said hulls, all portions of said main hydrofoil being inboard of the vertical projections of the inboard side of said hulls in level position,
- (g) a second attachment means for mounting said main hydrofoil on said boat,
- (h) whereby, when said propulsive means is activated, said boat may be operated while supported by flotation or while entirely supported above a body of water by the cooperative effort of said main hydrofoil and said stern hydrofoils.

4,615,292

SUBMERSIBLE TWIN-HULL WATERCRAFT

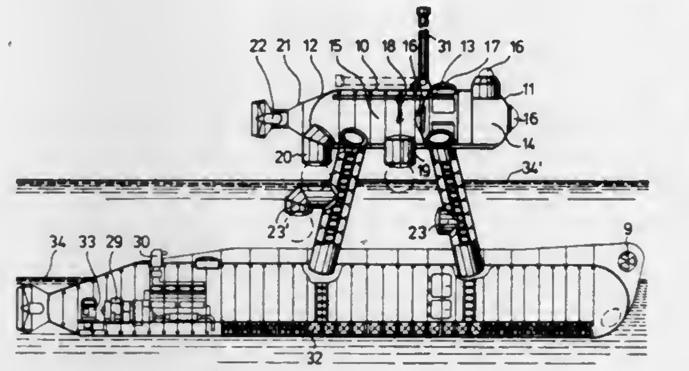
Gunther R. Laukien, 7512 Rheinstetten-Forchheim, Silberstreifen, Fed. Rep. of Germany

Continuation of Ser. No. 264,413, May 18, 1981, abandoned, which is a continuation of Ser. No. 022,630, Mar. 21, 1979, abandoned. This application May 14, 1984, Ser. No. 610,274

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1978, 2812758

Int. Cl.⁴ B63H *8/00*

U.S. Cl. 114—312 **25 Claims**



1. A submersible watercraft, comprising:
- (a) a first hull and a second hull, the two hulls being disposed generally parallel to and spaced apart from each other, the hulls being constructed as submarines and including a propulsion unit and a direction control mechanism for maneuvering the watercraft, each hull having:
  - (a.1) watertight walls defining a submersible pressure hull, and
  - (a.2) ballast tanks adapted to be flooded and blown for varying the bouyancy of the watercraft;
- (b) a submersible pilot's cab spaced apart from the two hulls and disposed generally above the two hulls approximately in a longitudinal symmetry plane defined between the first and the second hulls, the pilot's cab having:
  - (b.1) a pilot's cab pressure vessel having pressure-resistant viewports and a hatch for admitting a pilot to the interior of the pressure vessel, and
  - (b.2) piloting control means for piloting the watercraft, the pilot's cab weighing less than the volume of water it displaces when submerged, thereby serving as a buoyancy body; and
- (c) a plurality of tubular members for rigidly interconnecting the pilot's cab and the first and the second hull, each of the tubular members extending between the pilot's cab and a hull so that a catamaran-hull-separation region defined between the two hulls for the length of the watercraft and below the mean water surface when the watercraft is substantially fully surfaced on a substantially even keel is not obstructed by structural members connecting the two hulls, the catamaran-hull-separation region including a below-waterline-hull silhouette area defined in the longitudinal symmetry plane between the first and second hulls, the below-waterline-hull-silhouette area being defined by an upper waterlevel line defined by the intersection of the mean water surface and the longitudinal symmetry plane and by a hull-outline curve defined by the intersection of the longitudinal symmetry plane and lines perpendicular to the longitudinal symmetry plane which are tangent to the first and second hulls at points below the mean water surface when the watercraft is substantially fully surfaced on a substantially even keel, the catamaran-hull-separation region thereby extending from the mean water surface to a depth equal to the depth of a bottom of the hulls when the watercraft is substantially fully surfaced on a substantially even keel, each of the tubular members having at least a section which is pressure resistant and weighs less than the volume of water displaced by the section when it is submerged, so that the watercraft has the stability of a catamaran when substantially fully surfaced and is weight stable when completely submerged and when partially submerged with the two hulls substantially completely below the mean water surface and the pilot's cab above the mean water surface.

4,615,293

MEDIUM-APPLYING DEVICE IN A PRINTING MACHINE

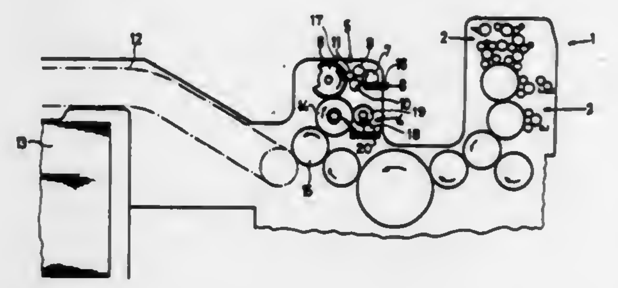
Hans-Georg Jahn, Wiesenbach, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Aug. 2, 1984, Ser. No. 636,916

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1983, 3327993

Int. Cl.⁴ B05C *1/02, 11/10*

U.S. Cl. 118—46 **3 Claims**



1. In a printing machine, a medium applicator disposed downstream of printing units of the machine, in the travel direction through the machine of a sheet being printed, the medium applicator having an assembly formed of a first roller for taking up medium from a supply container, a second roller for metering a quantity of the medium to be applied, and a third roller for transferring the medium, the third roller having a continuous cylindrical surface with a rubber lining disposed thereon for directly applying the medium onto the sheet, the three rollers being in constant meshing engagement with a sheet-transfer cylinder during application of the medium, the medium applicator further comprising a plate cylinder having a cylindrical surface and carrying a flexible relief plate having raised surfaces thereon, and another assembly of rollers for supplying medium from another supply container to said raised surfaces of said flexible relief plate, said plate cylinder being in operative engagement with the third roller.

4,615,294

BARREL REACTOR AND METHOD FOR PHOTOCHEMICAL VAPOR DEPOSITION

Robert Y. Scapple, Los Angeles; John W. Peters, Malibu; Jacques F. Linder, Palos Verdes, and Edward M. Yee, Canyon Country, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 31, 1984, Ser. No. 636,446

Int. Cl.⁴ C23C *14/00*

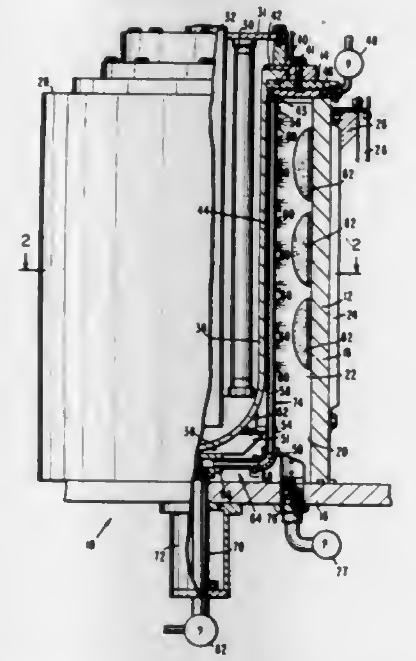
U.S. Cl. 118—50.1 **13 Claims**

1. An apparatus for forming a layer of a selected material on the surface of a chosen substrate, said selected material being the product of a photochemical vapor reaction of one or more selected vapor phase reactants, said reaction being induced by radiation of a predetermined wavelength or combination of wavelengths, comprising:
- (a) an outer reactor shell having an inner wall defining the outer limit of a photochemical reaction zone;
- (b) an inner shell concentric with said outer reactor shell, having an outer wall defining the inner limit of said photochemical reaction zone, having an inner wall defining a central space in said apparatus, said outer and inner walls being transparent to said radiation of predetermined wavelength or combination of wavelengths, and the outer surface of said outer wall being coated with a protective

film to prevent deposition of said selected material on said outer surface;

(c) radiation means for producing radiation of said predetermined wavelength or combination of wavelengths, located centrally within said central space defined by said inner wall of said inner shell and isolated from said photochemical reaction zone by said inner shell;

(d) gas manifold means for introducing said vapor phase reactants into said reaction zone, said gas manifold means comprising: (1) one or more gas distribution tubes having a plurality of gas outlets located at spaced locations along said tubes, and located between said inner shell and said outer reactor shell and directed towards said inner wall of said outer reactor shell, said vapor phase reactants being introduced into said reaction zone through said gas outlets; (2) means for mounting said gas distribution tubes at spaced locations in said reaction zone so that said tubes extend parallel to said outer wall of said inner shell and said inner wall of said outer reactor shell; and (3) means for introducing said vapor phase reactants into said gas distribution tubes, comprising a central gas manifold hug having a gas inlet and one or more conduits extending radially outward therefrom for supplying gas to said gas distribution tubes, said central gas manifold hub being rotatable whereby said gas distribution tubes circumscribe a cylinder when said hub is rotated;



(e) means for mounting one or more of said substrates at spaced locations on or adjacent to said inner wall of said outer reactor shell;

(f) means for providing relative motion between said gas manifold means and said substrates to provide uniform dispersion of said vapor phase reactants from said gas outlets outwardly toward said substrates;

(g) gas exhuast ports for removing undesired materials from said reaction zone; and

(h) vacuum means connected to said gas exhaust ports for producing reduced pressure in said reaction zone.

4,615,295
DOCTOR BLADE APPARATUS FOR COATING APPARATUS

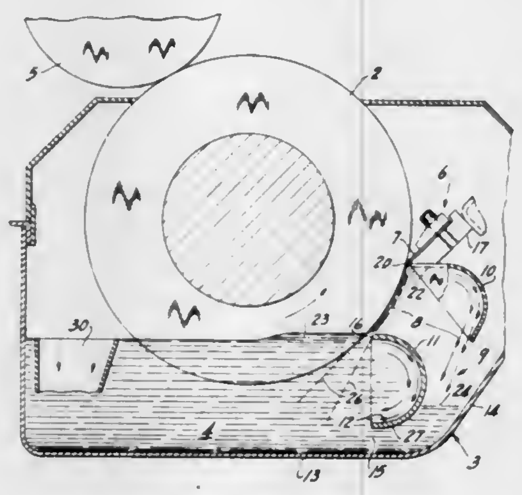
Eugene W. Wittkopf, Suamico, Wis., assignor to Magna-Graphics Corporation, Oconto Falls, Wis.

Filed Apr. 10, 1985, Ser. No. 721,782

Int. Cl.^{4} B05C *1/08*

U.S. Cl. 118—261 **12 Claims**

4. A coating apparatus comprising an open top container fountain for containing a liquid coating material, a rotating roll rotatably mounted with a lower portion of the roll in said bath of coating material, said roll tending to cause said material to flow within said fountain in the direction of the roll rotation, a doctor blade unit mounted adjacent said fountain and including a doctor blade adapted to operatively engage the surface of the roll above the level of the bath to remove excess coating material carried by the roll as the roll rotates from the bath and to return said material to said bath, a predoctor deflector located between the lower end of the roll and the doctor blade unit, said predoctor deflector having an upper terminal end spaced from said doctor blade and generating a flow of material directly from the predoctor deflector back within the bath and in a reverse direction from that created by said roll for circulation of coating material to minimize said movement of the material by said roll and maintain an essentially constant level in the said bath and minimize turbulence within the bath.



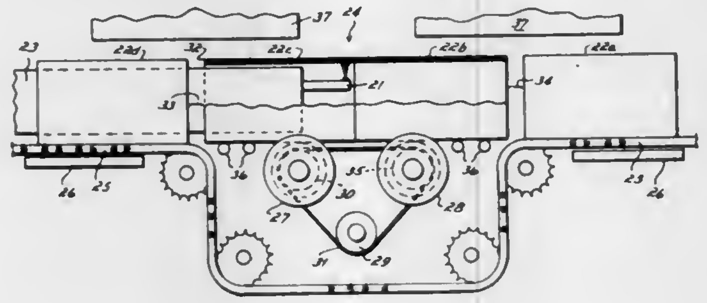
4,615,296
CONTINUOUS COATING SYSTEM FOR DISCRETE ARTICLES

James A. Kolibas, Broadview Heights, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Aug. 15, 1984, Ser. No. 640,944

Int. Cl.^{4} B05B *7/06*

U.S. Cl. 118—314 **5 Claims**



1. Apparatus for coating articles in a series of conveyed articles at a coating station, comprising:

first conveying means for conveying at a first speed, a series of articles, spaced apart from one another in end-to-end relationship to a coating station, and diverging from said articles at said coating station;

coating means for coating at least a portion of each article as it is moved past the coating means;

means at the coating station for receiving each article from the first conveying means, for abutting adjacent articles together, and for moving the received articles in abutting relationship past the coating means at a reduced speed; and

said first conveying means converging with said articles downstream of said coating station, separating said articles and conveying said separated articles away from said coating station at a speed equal to said first speed.

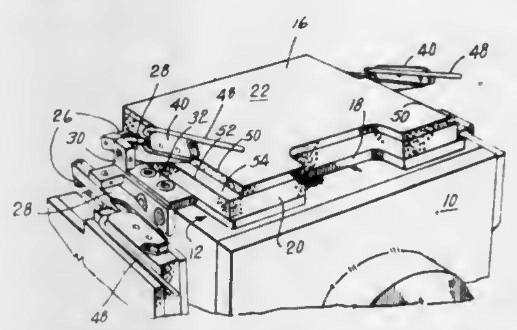
4,615,297
POWDER REINFORCING MACHINE

Albert I. Morse, Beverly, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Aug. 23, 1985, Ser. No. 768,635

Int. Cl.^{4} B05C *13/00*

U.S. Cl. 118—503 **3 Claims**



1. A powder reinforcing machine comprising substrate supporting means for supporting a substrate which is to be reinforced with a selectively configured fused powder laminate which is pressed thereagainst including,

base means,

mounting plate means on which the substrate is to be releasably clamped,

said mounting plate means being adapted to be displaced from a lower position to an upper position relative to said base means,

a pair of clamping lever arms,

means for mounting one of said pair of clamping lever arms on either side of said mounting plate means for displacement from a release position to a clamp position,

said mounting plate means including

- means for displacing each of said clamping lever arms from said release position to said clamp position as said mounting plate means is displaced from said lower position to said upper position, and
- a recess defining a clamping surface extending along each side thereof,

a pair of clamping rods each including a clamping portion,

means for securing one of said clamping rods to each of said clamping lever arms so that said clamping portion is spaced therefrom and will forcefully engage its associated clamping surface when said clamping lever arm is displaced to said clamp position.

4,615,298
METHOD OF MAKING NON-CRYSTALLINE SEMICONDUCTOR LAYER

Shunpei Yamazaki, 21-21 Kitakarasuyama 7-chome, Setagaya-ku, Tokyo, Japan

Continuation of Ser. No. 309,709, Oct. 8, 1981, which is a division of Ser. No. 177,889, Aug. 14, 1980, abandoned. This application Jun. 12, 1984, Ser. No. 619,834

Claims priority, application Japan, Aug. 16, 1979, 54-104452

Int. Cl.^{4} C23C *11/00*

U.S. Cl. 118—723 **4 Claims**

1. Apparatus for manufacturing a multi-layer, non-single-crystalline semiconductor comprising:

a first reaction chamber for positioning a substrate to fabricate thereon a first non-single-crystalline semiconductor layer having a P conductivity type;

a second reaction chamber disposed adjacent said first reaction chamber and separated therefrom by a first shutter means, for positioning the substrate with the first non-single-crystalline semiconductor layer to fabricate a second non-single-crystalline semiconductor layer having an I conductivity type on the first non-single-crystalline semiconductive layer;

a third reaction chamber disposed adjacent said second reaction chamber and separated therefrom by a second shutter means, for positioning the substrate with the first and second non-single-crystalline semiconductor layers to fabricate a third non-single-crystalline semiconductor layer having an N conductivity type on the second non-single-crystalline semiconductor layer;

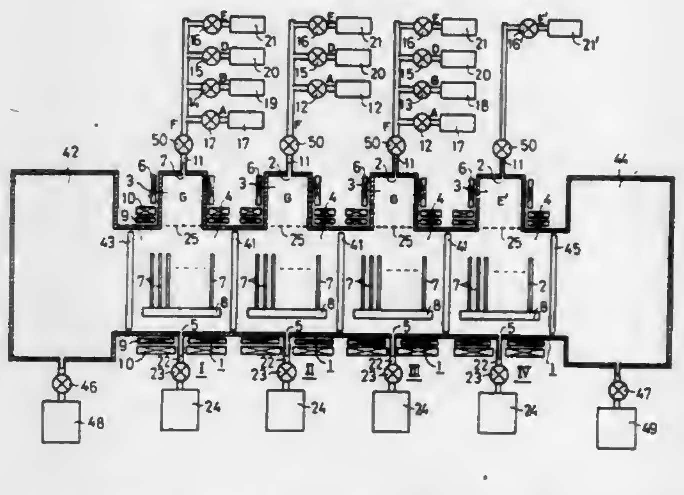
a further reaction chamber disposed adjacent said second reaction chamber and separated therefrom by a further shutter means, for positioning the multi-layer semiconductor fabricated in the third reaction chamber, said further reaction chamber including a gas ionizing region and an annealing region;

a first gas source connected to said first reaction chamber through a first gas supply control means, for introducing into said first reaction chamber a first gas containing at least a first semiconductor material gas and a first impurity gas imparting said P conductivity type to the first non-single-crystalline semiconductor layer;

a second gas source connected to said second reaction chamber through a second gas supply control means, for introducing into said second reaction chamber a second gas containing at least a second semiconductor material gas but with no impurity gas;

a third gas source connected to said third reaction chamber through a third gas supply control means, for introducing into said third reaction chamber a third gas containing at least a third semiconductor material gas and a second impurity gas imparting said N conductivity type to the third non-single-crystalline semiconductor layer;

a further gas source connected to said further reaction chamber for introducing a carrier gas into the gas ionizing region of the further reaction chamber;



a first gas ionizing means associated with said first reaction chamber, for ionizing said first gas introduced into said first reaction chamber to produce a first gas plasma;

a second gas ionizing means associated with said second reaction chamber, for ionizing said second gas introduced into said second reaction chamber to produce a second gas plasma;

a third gas ionizing means associated with said third reaction chamber, for ionizing said third gas introduced into third reaction chamber to produce a third gas plasma;

a further gas ionizing means associated with the further reaction chamber for ionizing the carrier gas introduced into the gas ionizing region of the further reaction chamber;

a first gas exhaust means connected to said first reaction chamber through a first gas exhaust control means, for flowing the first gas plasma through the first reaction chamber to effect a deposition of the first semiconductor material to fabricate the first non-single-crystalline semiconductor layer onto the substrate and maintaining the pressure in the first reaction chamber below one atmosphere;

a second gas exhaust means connected to said second reaction chamber through a second gas exhaust control means for flowing the second gas plasma through the second reaction chamber to effect a deposition of the second semiconductor material to fabricate the second non-single-crystalline semiconductor layer onto the first non-single-crystalline semiconductor layer and maintaining the pressure in the second reaction chamber below one atmosphere;

a third gas exhaust means connected to said third reaction chamber through a third gas exhaust control means, for flowing the third gas plasma through the third reaction chamber to effect a deposition of the third semiconductor material to fabricate the third non-single-crystalline semiconductor material onto the second non-single-crystalline semiconductor layer and maintaining the pressure in the third reaction chamber below one atmosphere;

a further gas exhaust means connected to the further reaction chamber for (a) flowing the ionized carrier gas from the gas ionizing region to the annealing region to anneal the substrate support thereat and (b) maintaining the pressure in the further reaction chamber below one atmosphere;

means for maintaining the temperature of the substrate in each reaction chamber at a temperature lower than that at which single-crystallization of the deposited semiconductor materials occurs;

an insert chamber disposed adjacent said first reaction chamber and separated therefrom by a second further shutter means for inserting the substrate into the first reaction chamber;

a take-out chamber disposed adjacent said further reaction chamber and separated therefrom by another shutter means, for taking out the substrate with the multi-layer, non-single-crystalline semiconductor from said further reaction chamber;

means for displacing the shutter means between the first reaction chamber and the second reaction chamber to permit movement of the substrate from the first reaction chamber to the semiconductor depositing region of the second reaction chamber while the first and second reaction chambers are entirely evacuated or only carrier gases are passed therethrough so that said second semiconductor layer may then be deposited on said first semiconductor layer;

means for displacing the shutter means between the second and third reaction chambers to permit movement of the substrate having deposited thereon the first and second semiconductor layers from the second reaction chamber to the third reaction chamber while the second and third reaction chambers are entirely evacuated or while only carrier gases are passed therethrough so that said third semiconductor layer may be deposited on said second semiconductor layer to fabricate the said multi-layer, non-single-crystalline semiconductor; and

means for displacing the shutter means between the third and further reaction chambers to permit movement of the multi-layer, non-crystalline semiconductor from the third reaction chamber to the annealing region of the further reaction chamber while the third and further reaction chambers are entirely evacuated or only carrier gases are passed therethrough so that the multi-layered, non-single-crystalline semiconductor may then be annealed.

4,615,299
PLASMA CVD APPARATUS FOR MAKING PHOTORECEPTOR DRUM

Toshiro Matsuyama; Takashi Hayakawa, both of Tenri; Yoshimi Kojima, Nara; Shiro Narikawa, Kashihara, and Shaw Ehara, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 7, 1985, Ser. No. 709,185

Claims priority, application Japan, Mar. 13, 1984, 59-48368

Int. Cl.^{4} C23C *13/08*

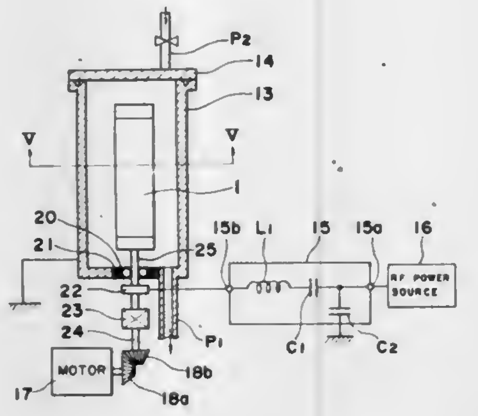
U.S. Cl. 118—723 **4 Claims**

1. A plasma CVD (chemical vapor deposition) apparatus of the capacitance coupling type defining a plasma discharge circuit for effecting the chemical vapor deposition on a drum surface for making a photoreceptor for use in an electrophotographic copying machine, said plasma CVD apparatus comprising:

an air tight chamber made of electrically conductive material and connected to ground;

a support provided in said chamber for supporting a drum inside said chamber insulated from said chamber;

a shaft made of an electrically conductive material projecting from a wall of said chamber with a first end portion thereof located inside said chamber and a second end portion located outside said chamber, said drum being electrically connected to and fixedly supported by said first end portion;



means for electrically insulating said shaft from said chamber;

a source of RF power;

a matching unit connecting said source of RF power to said shaft comprising a series connection of a capacitor and a first inductance element such that impedance of said RF power source matches on impedance of said plasma discharge circuit between said drum and said chamber; and

a second inductance element connected between said shaft and ground thereby moderating a gradient of electric potential near said drum surface preventing positive ions from bombarding said drum surface, providing a smooth drum surface.

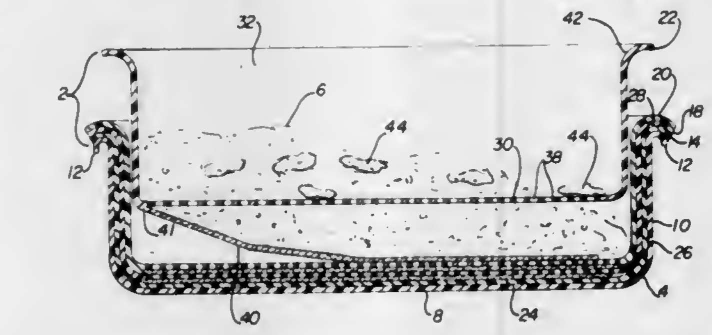
4,615,300
LITTER BOX LINER

John P. McDonough, 627 Brookline Blvd., Pittsburgh, Pa. 15226

Filed May 13, 1985, Ser. No. 733,089

Int. Cl.^{4} A01K *29/00*

U.S. Cl. 119—1 **13 Claims**



1. A litter box liner adapted to be positioned between a litter box and the litter contained therein comprising: (a) a removable imperforate bottom layer which is conformable to the shape of the interior surface of the litter box and has a bottom wall and a peripheral wall extending upwardly from the bottom wall and integral therewith, and (b) a plurality of removable screening layers stacked one inside of the other and positioned above the imperforate bottom layer, each of said screening layers being conformable to the shape of the interior surface of the litter box and having a bottom wall and a peripheral wall extending upwardly from the bottom wall and integral therewith, with the bottom wall of each of said screening layers having a plurality of openings therethrough, said openings being large enough to pass granular litter therethrough but being small enough to block any solid animal waste in the litter, each of said screening layers including an imperforate flap attached thereto beneath its bottom wall by a flexible edge connector, said flap being large enough to cover all of said openings and keep the litter from contacting any underlying layer, and the solid animal waste may be removed from the litter by lifting up on the uppermost screening layer and allowing the litter to pass through said openings as said flap drops down.

4,615,301
FISH BREEDING APPARATUS

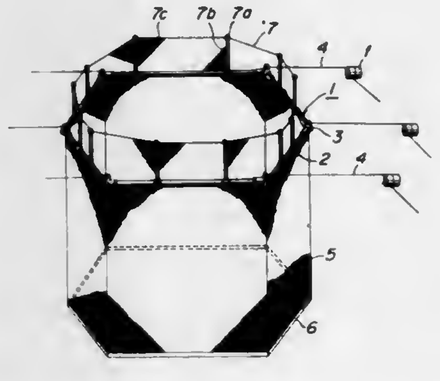
Takashi Maekawa, Tokyo; Hiroshi Sasaki, Yokohama, and Shinji Morimura, Kanagawa, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1981, Ser. No. 290,536

Claims priority, application Japan, Aug. 8, 1980, 55-111642[U]

Int. Cl.^{4} A01K *63/00*

U.S. Cl. 119—3 **3 Claims**



1. A fish breeding apparatus comprising; a frame body for fish breeding, said frame body framed by connecting hollow reinforcing hoses as an elastic reinforcement into a polygon having 4 to 30 sides through bent couplings, and a mooring cable connected at one end to each of said bent couplings under tension.

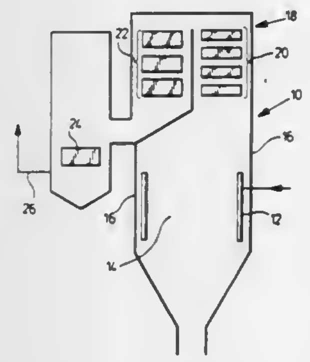
4,615,302
CONVECTION SECTION ASH MONITORING

John R. Wynnyckyj, Kitchener; Edward Rhodes, Waterloo, and Robert Marr, Kitchener, all of Canada, assignors to University of Waterloo, Waterloo, Canada

Continuation of Ser. No. 734,175, May 15, 1985, Pat. No. 4,552,098, which is a continuation of Ser. No. 583,573, Feb. 24, 1984, Pat. No. 4,556,019. This application Jul. 22, 1985, Ser. No. 757,497

Int. Cl.^{4} F28G *1/00*

U.S. Cl. 122—379 **1 Claim**



1. A method of controlling the build-up of ash on heat exchange surfaces of a convection section of a steam generator having a furnace section wherein fuel is combusted to form a flowing hot gas stream which flows out of said furnace section into and through the convection section of said steam generator wherein said heat exchange surfaces comprise a plurality of banks of heat exchange tubes located transverse to the direction of gas flow through the convection section so as to contact the hot gas stream and having steam of temperature lower than that of the hot combustion products gas stream passing therethrough to be heated by heat exchange between the hot gas stream and the heat exchange tubes, which comprises:

determining a fouling factor (R_F) for each bank of heat exchange tubes as a measure of the degree of fouling of each of the banks of heat exchange tubes from the difference in temperature of the hot gas stream flowing over and in contact with each bank between the upstream and downstream side of each bank, said difference in temperature being determined by directly measuring the temperature of the gas stream at each upstream and downstream location and calculating the temperature difference therefrom, and

selectively actuating cleaning of a bank of said heat exchange tubes in said convection section in response to predetermined values of the fouling factor for the selected bank.

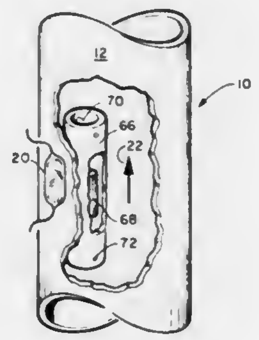
4,615,303
FLUID FLOW FAILURE DETECTION MEANS

Robert L. Sackett, 2282 #43 Caminito Pescadio, San Diego, Calif. 92107

Division of Ser. No. 572,907, Jan. 23, 1984, Pat. No. 4,524,736. This application Apr. 12, 1985, Ser. No. 722,849

Int. Cl.^{4} F02B *77/08;* G01D *5/12;* G01F *23/10*

U.S. Cl. 123—41.15 **13 Claims**



1. Apparatus for detecting the failure of the flow of fluid comprising:

a first tubular conduit through which said fluid normally flows;

a second tubular conduit positioned intermediate the ends of said first tubular conduit and communicating with the flow through said first tubular conduit;

a translating member freely translatable within at least said second tubular conduit, the position of said translating member is influenced by the elevation of fluid in said second tubular conduit resulting from the force of fluid flow in said first tubular conduit;

a permanent magnet positioned on said translating member;

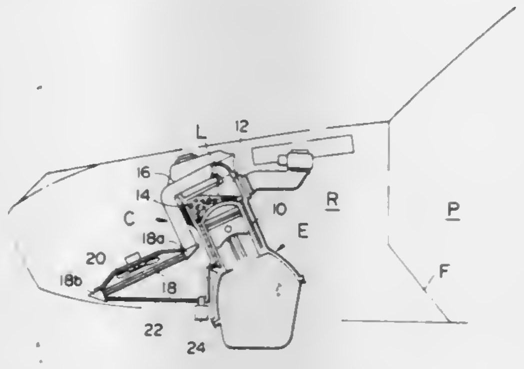
a switch having an open and closed state positioned externally of said second tubular conduit whereby the position of said permanent magnet relative to said switch influences the state of said switch; and

an external indicator means interconnected to said switch, a reduction of the elevation of fluid in said second tubular conduit due to a reduction of fluid flow through said first tubular conduit changes the state of said switch causing said indicator means to be activated.

4,615,304

ARRANGEMENT OF BOILING LIQUID COOLING SYSTEM OF INTERNAL COMBUSTION ENGINE

Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Apr. 13, 1984, Ser. No. 599,804
Claims priority, application Japan, Apr. 21, 1983, 58-69231
Int. Cl.⁴ F01P *3/22*
U.S. Cl. 123—41.21 **8 Claims**



1. In a motor vehicle having an internal combustion engine mounted in an engine room of a vehicle body,

a boiling liquid cooling system associated with said engine for cooling the same by using a latent heat of coolant, which comprises:

means for defining in the engine proper a coolant jacket which contains therein a liquid coolant leaving an unoccupied space at the upper portion thereof thereby to form a liquid coolant level therein;

a first conduit extending from the unoccupied space of the coolant jacket;

a condenser having an inlet connected to the leading end of said first conduit and an outlet positioned lower than said inlet, said inlet being positioned lower than the coolant level in the coolant jacket;

a second conduit extending from the outlet of the condenser to said coolant jacket of the engine proper; and

a cooling fan located in the vicinity of said condenser to produce, when energized, a flow of air which passes through said condenser;

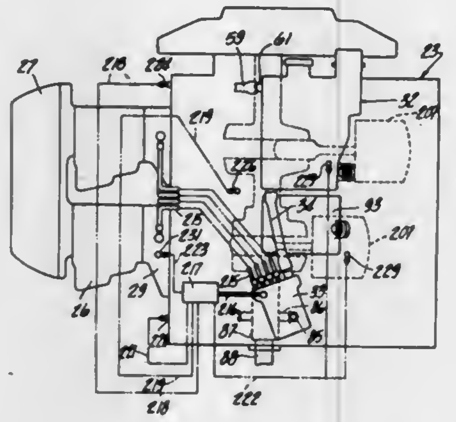
wherein said condenser and said fan are inclined with respect to a horizontally arranged member of the vehicle so that the flow of air which has passed through said condenser fails to directly collide with the engine proper.

4,615,305

SEPARATE LUBRICATING SYSTEM FOR MARINE PROPULSION DEVICE

Kuniyoshi Matsumoto, Iwata, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Division of Ser. No. 610,847, May 16, 1984, Pat. No. 4,572,120. This application Nov. 14, 1985, Ser. No. 797,977
Int. Cl.⁴ F02B *33/04*
U.S. Cl. 123—73 AD **12 Claims**

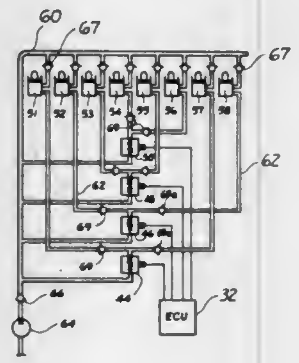
1. In a lubricating system for a two-cycle internal combustion engine comprising a lubricant delivery tank positioned in proximity to the engine for delivering lubricant to its lubricating system, the improvement comprising first lubricating means for delivering lubricant from said delivery tank to the induction system of the engine to lubricate at least some of the engine components and second lubricating means for delivering lubricant from said delivery tank to the other components of said engine independently of said induction system.



4,615,306

ENGINE VALVE TIMING CONTROL SYSTEM

Russell J. Wakeman, Newport News, Va., assignor to Allied Corporation, Morris Township, Morris County, N.J.
Continuation of Ser. No. 575,355, Jan. 30, 1984, abandoned. This application Dec. 17, 1985, Ser. No. 810,535
Int. Cl.⁴ F01L *1/34*
U.S. Cl. 123—90.16 **2 Claims**



1. A closed loop electrohydraulic engine valve timing control system for individually controlling the operate times of at least two of the cylinder valves in an internal combustion engine; the system having a camshaft means with at least one cam for each valve, each cam having a cam base circle; a cam follower coupled between each of the cams and the cylinder valves; a hydraulic valve lifter having a zero lash height holding the cam follower against the cam base circle with the cylinder valve closed and a controlled height providing a pivot for the cam follower for opening the cylinder valve; fluid lines connecting the lifters with a source of fluid; the closed loop electrohydraulic system characterized by:

a solenoid control valve connected to each of the lifters, the control valve normally closed preventing the flow of fluid through the lifters;

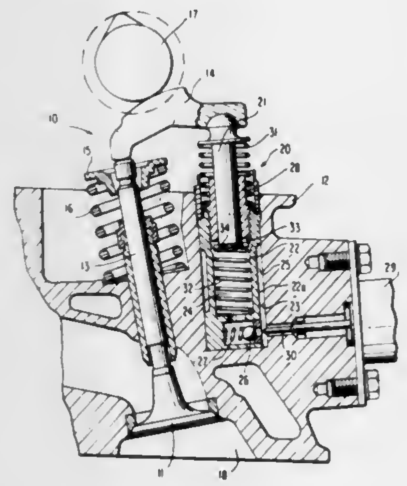
electronic control unit means for opening each of said solenoid control valves controlling the flow of fluid from the lifters establishing the controlled height of the lifter and for closing the solenoid control valves forming a hydraulic link in the lifters at said controlled height for pivoting the cam follower to open the cylinder valve; and

check valves located in each of the fluid lines controlling the flow of fluid in one direction through the lifters, said check valves directing fluid and fluid pressure pulses from one of the lifters having its respective solenoid control valve opened to the other lifters having their respective control valve closed, thereby returning said other lifters to their zero lash height.

4,615,307

HYDRAULIC VALVE LIFTER FOR VARIABLE DISPLACEMENT ENGINE

Hisashi Kodama, Nagoya, and Yukimori Kobayashi, Gamagori, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Mar. 29, 1985, Ser. No. 717,920
Claims priority, application Japan, Mar. 29, 1984, 59-063022
Int. Cl.⁴ F02D *13/06*
U.S. Cl. 123—90.16 **4 Claims**



1. A hydraulic valve lifter for a variable displacement engine, said lifter comprising:

a body member mounted in a bore in a cylinder head;

a pressure formed in said body member;

a reservoir chamber defined by an outer circumferential surface of said body member and said bore;

a check valve disposed within said body member for controlling fluid communication between said pressure chamber and said reservoir chamber, said check valve being moveable at right angles relative to the axial direction of said body member;

a sleeve member secured to an open end of said body member and having an axial bore therein;

a plunger member slidably disposed in said axial bore of said sleeve member, one end of said plunger member being disposed in said pressure chamber and the other end thereof adapted to be in cooperative contact with a valve rocker arm; and

a solenoid valve having a valve rod for actuating said check valve, said valve rod being moveable in the same direction as said check valve.

4,615,308

AUXILIARY MECHANISM DRIVING DEVICE IN A V-TYPE ENGINE

Koji Asanomi, and Haruyoshi Ishimi, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Mar. 6, 1984, Ser. No. 586,562
Claims priority, application Japan, Mar. 11, 1983, 58-41165; Apr. 18, 1983, 58-68790
Int. Cl.⁴ F01L *1/02;* **F02F** *7/00*
U.S. Cl. 123—90.27 **11 Claims**

1. An engine auxiliary mechanism driving device in a V-type engine comprising:

an engine crankshaft;

a pair of first and second cylinder banks arranged in V-shape and having a first cylinder head and a second cylinder head, respectively, the cylinders of the first bank being displaced from the cylinders of the second bank in the axial direction of the camshaft, said banks having oppositely disposed a first end and a second end, said displacement of said cylinder banks forming a substantial first space only between the first end of said first bank and said cylinders of said first cylinder bank and a substantial second space only between the second end of said second bank and said cylinders of said second cylinder bank;

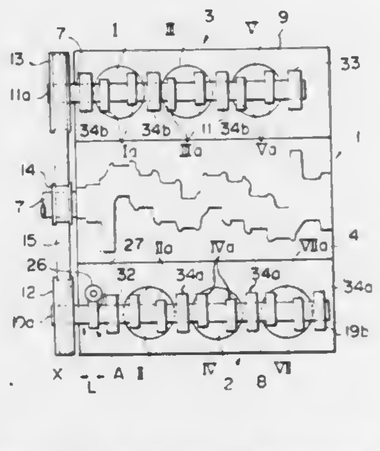
a first camshaft provided on said first cylinder head and having a plurality of first valve-operating cams for said first cylinders;

a second camshaft provided on said second cylinder head and having a plurality of second valve-operating cams for said second cylinders;

said first and second camshafts being operatively connected at their one end with the associated end of said crankshaft for synchronized rotation therewith through a transmission means;

said first cams on said first camshaft being displaced axially from said second cams on said second camshaft in a manner such that the former are disposed axially more apart from said transmission means than the latter;

a crank case at the lower side of said cylinder banks; and



an oil pump in said crank case adapted to be driven by means of said first camshaft and having a rotation shaft operatively connected with said first camshaft by a driving means;

said driving means comprising a worm gear fixedly mounted on said first camshaft at a location between said transmission means and the one of said first cams on said first camshaft nearest to said transmission means, a worm wheel in meshing engagement with said worm gear, and a drive shaft coupled at its one end with said worm wheel and at its other end with said rotation shaft of said oil pump, said drive shaft being disposed in and extending through and bounded by the first space of said first bank formed at the one end thereof adjacent to said transmission means so as to avoid any further increase of overall length of said cylinder banks to accommodate said drive shaft.

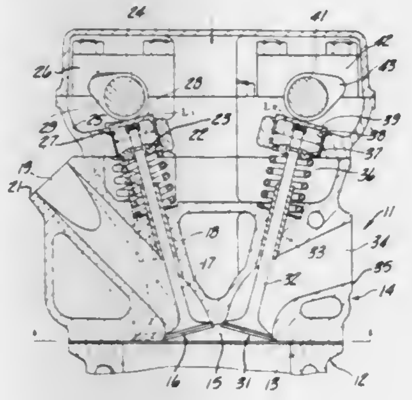
4,615,309

VALVE ACTUATING MECHANISM FOR INTERNAL COMBUSTION ENGINE

Masaaki Yoshikawa, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Itawa, Japan
Filed Apr. 10, 1985, Ser. No. 721,576
Claims priority, application Japan, Apr. 11, 1984, 59-70951
Int. Cl.⁴ F01L *1/26*
U.S. Cl. 123—90.27 **6 Claims**

1. In an internal combustion engine having a combustion chamber defined in part by a cylinder head assembly, poppet type intake valve means reciprocally supported by said cylinder head assembly for controlling the flow of an intake charge to said combustion chamber, poppet type exhaust valve means reciprocally supported by said cylinder head assembly for controlling the flow of exhaust gases from said chamber, said poppet type intake valve means comprising a number of poppet type valves that differs from the number of poppet type valves of the poppet type exhaust valves means, thimble tappet lifter means having a cylindrical portion slidably supported by said cylinder head assembly and encircling the stems of each of said valve means and having a base portion cooperating with the respective valve stem for urging said valve means toward

their opened positions, the outer periphery of the cylindrical portion of the lifter means associated with the poppet type valve means of the greater number having a smaller dimension than the lifter means associated with the other poppet type valves.



4,615,310
CAMSHAFT WITH LUBRICATING OIL SUPPLYING FUNCTION

Genkichi Umeha, Tokyo, and Osamu Hirakawa, Yono, both of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

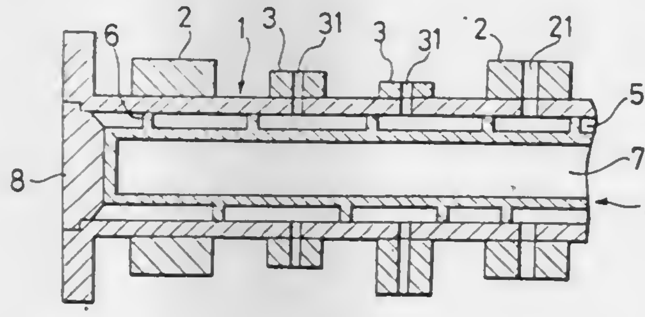
PCT No. PCT/JP84/00129, § 371 Date May 17, 1985, § 102(e) Date May 17, 1985, PCT Pub. No. WO85/01557, PCT Pub. Date Apr. 11, 1985

PCT Filed Mar. 23, 1984, Ser. No. 740,847

Claims priority, application Japan, Sep. 28, 1983, 58-178249

Int. Cl.⁴ F01H *9/10*

U.S. Cl. 123—90.34 **8 Claims**



1. A camshaft with a lubricating-oil supplying function comprising a tubular shaft and a filler element disposed in said tubular shaft to control the amount or rate of oil distribution, said filler element containing a plurality of projections extending along its length from the outer surface thereof and resiliently contacting the inner surface of the tubular shaft, said projections together with the inner surface of said tubular shaft defining a plurality of oil passages.

4,615,311
COMBINED MANUAL AND POWER STARTING DEVICE FOR GASOLINE ENGINES

William D. Scheckel, 19716 Millhaven St., Independence, Mo. 64056

Filed Apr. 30, 1985, Ser. No. 729,036

Int. Cl.⁴ F02N *3/02, 11/12*

U.S. Cl. 123—179 P **3 Claims**

1. A combined manual and power starting device for a gasoline engine of a type which may be started by rotating the crankshaft thereof, said starting device comprising:

a. a first sleeve mounted rotatably on an extended portion of said crankshaft;

b. a first overrunning clutch including a driving member formed by a portion of said first sleeve and a driven member fixed to said crankshaft, and operable to be automatically disengaged whenever said crankshaft rotates faster than said sleeve, and to be engaged to turn said crankshaft to start said engine when said sleeve is turned, said first sleeve being formed to present an outward extension coaxial with said crankshaft;

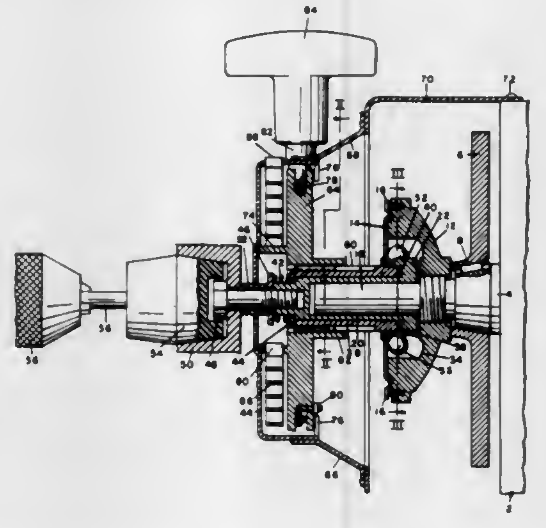
c. a second sleeve mounted rotatably and slidably on said first sleeve, said second sleeve having ratchet teeth at one end thereof operable by axial sliding thereof to engage matching ratchet teeth formed in the driving member of said first clutch to drive it in an engine-starting direction when rotated in one direction, and to ratchet freely over said driving member teeth when turned in the opposite direction, said second sleeve and the driving member of said first clutch thus forming respectively the driving and driven members of a second overrunning clutch, the clutches being connected in series,

d. means biasing said second clutch yieldably to an engaged position,

e. a rope pulley rotatably mounted in the engine housing coaxially with the crankshaft, and having axially slidable but non-rotatable connection with said second sleeve,

f. a rope wound on said pulley and operable by outward manual tension thereon to turn said crankshaft in an engine-starting direction through both of said first and second clutches, said pulley having a hollow hub through which said crankshaft extension projects outwardly from the engine housing, and

g. a drive member affixed to the outwardly extended end of said crankshaft extension and operable to be turned by power means.



4,615,312
MOTORCYCLE ENGINE HAVING AUTOMATIC DECOMPRESSION DEVICE

Yoshinori Tsumiyama, Akashi, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Aug. 2, 1984, Ser. No. 637,123

Claims priority, application Japan, Aug. 10, 1983, 58-147249

Int. Cl.⁴ F01L *13/08*

U.S. Cl. 123—182 **2 Claims**

1. A motorcycle engine comprising:

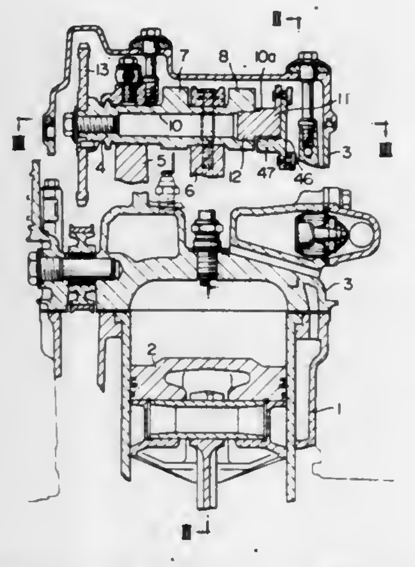
a camshaft journalled by bearing means and having an overhang portion adjacent said bearing means, said overhang portion of the camshaft including an end face;

a cam mounted on said overhang portion of said camshaft;

a valve for a combustion chamber of said engine;

valve operating means positioned against said cam and operable thereby for controlling the opening and closing of said valves; and

an automatic decompression means mounted on the end face of said overhang portion of said camshaft and comprising an auxiliary cam having a decompression position locating said valve operating means to open said valve when the engine is in a low speed range at engine startup and movable radially of the camshaft by centrifugal forces produced by the rotation of the camshaft to locate said valve operating means to close said valve and allow the normal compression pressure in said combustion chamber in an operating speed range.



4,615,313
AUTOMATIC DECOMPRESSION DEVICE FOR INTERNAL COMBUSTION ENGINE

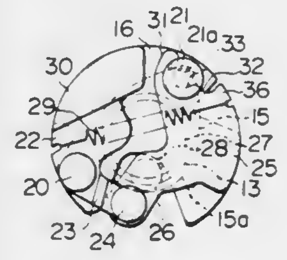
Yoshinori Tsumiyama, Akashi, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Aug. 3, 1984, Ser. No. 637,566

Claims priority, application Japan, Aug. 10, 1983, 58-124978[U]

Int. Cl.⁴ F01L *13/08*

U.S. Cl. 123—182 **4 Claims**



1. A decompression device for an internal combustion engine comprising:

a holder secured to a camshaft supporting cams for controlling suction and exhaust valves of the engine, said cams having a contour and said holder having secured thereto a first cylindrical pin and a stopper pin;

engine speed-responsive means including a first centrifugal weight supported by said holder for pivotal movement about said first pin and a second centrifugal weight supported on said first centrifugal weight for pivotal movement about a second pin having an axis parallel to said camshaft, said second centrifugal weight having a first recess and a second recess disposed in positions substantially symmetrical with the second pin with respect to the center axis of the camshaft for engagement with said stopper pin;

cam means including a cylindrical pillar disposed on said second weight radially inwardly of said second pin and extending axially of the camshaft toward the cams for engagement with a valve operating member associated with one of the cams; and

tension spring means mounted between said first centrifugal weight and said second centrifugal for moving said weights between a first position wherein at high engine speeds when said first and second centrifugal weights are displaced by centrifugal forces said second recess of the second centrifugal weight engages the stopper pin and the cylindrical pillar of said cam means is disposed radially within the contour of one of said cams to disengage from said associated valve operating member and permit normal engine operation and a second position wherein at low engine speeds or when the engine is stopped said first recess of said second cylindrical weight engages the stopper pin and the cylindrical pillar of said cam means is disposed radially outside of the contour of said one of the cams to engage and lift said associated valve operating member to a decompression position.

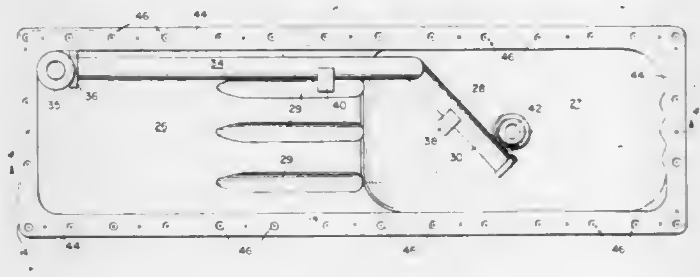
4,615,314
REVERSIBLE OIL PAN ASSEMBLY

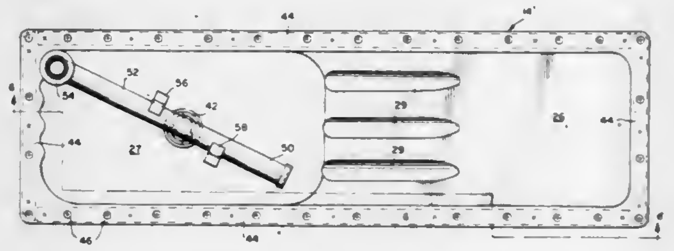
James D. Baugh, Greensburg, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Continuation of Ser. No. 90,478, Nov. 1, 1979, abandoned. This application Jan. 6, 1982, Ser. No. 337,406

Int. Cl.⁴ F02M *1/04*

U.S. Cl. 123—195 C **8 Claims**





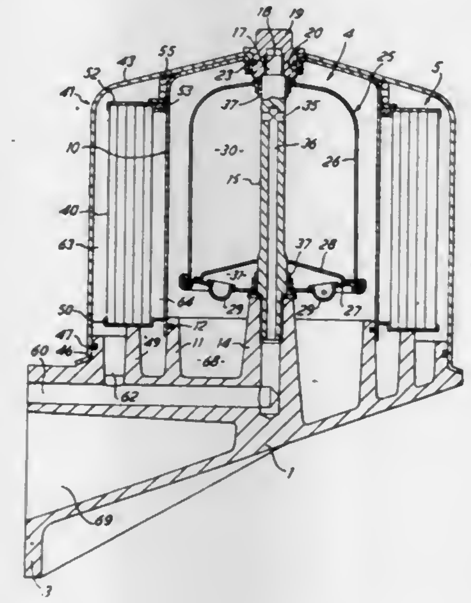
1. An oil pan assembly for mounting on an internal combustion engine equipped with a lubrication system designed to obtain oil from the oil pan assembly through an inlet port on the engine positioned asymmetrically within the perimeter of the oil pan assembly when the assembly is mounted on the engine, said oil pan assembly comprising:

a. oil pan means having first and second operative states for storing a supply of oil, said oil pan means including a relatively deep oil reservoir section connected to at least one relatively shallow oil trough section, said oil pan means also including a mounting means for mounting said oil pan means to the engine such that said oil reservoir section is positioned forwardly of the engine while said oil trough section is positioned rearwardly of the engine when said oil pan means is operating in said first state and said oil reservoir section is positioned rearwardly of the engine while said oil trough section is positioned forwardly of the engine when said oil pan means is operating in said second state, said mounting means including flange means containing a plurality of holes spaced to permit bolts to be inserted through all of said holes to mount said assembly to the engine when said oil reservoir section is positioned forwardly of the engine and when said assembly is reversed so that said oil reservoir section is positioned rearwardly of the engine; and

b. means contained entirely within the interior of said oil pan means for conveying oil from the lower inside portion of said oil reservoir section to the engine inlet port when said oil pan means is operating in one of said states and for rendering said oil pan means inoperative in the remaining state, said means for conveying oil including a pipe structure, said means for conveying oil also including attaching means for integrally attaching said pipe structure to said oil pan means such that one end of said pipe structure is automatically aligned with the engine inlet port only when said oil pan means is operating in said one of said states.

4,615,315
OIL CLEANING ASSEMBLIES FOR ENGINES

Neil A. Graham, Chard, England, assignor to AE PLC, Warwickshire, England
Filed May 6, 1985, Ser. No. 731,131
Claims priority, application United Kingdom, May 4, 1984, 8411503
Int. Cl.⁴ F01M *1/00*
U.S. Cl. 123—196 A **6 Claims**



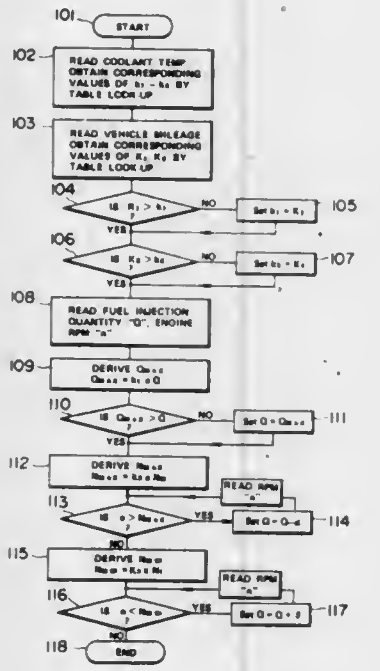
1. An oil cleaning assembly for an internal combustion engine comprising a mounting member, a by-pass flow centrifugal separator having a rotor mounted on said mounting member for rotation about a substantially vertical axis, an inner casing enclosing said rotor, an annular disposable filter element disposed around said inner casing, an outer casing enclosing said filter element and said inner casing, means releasably securing said inner and outer casing in sealing engagement with said mounting member, an inlet passage to supply high pressure oil from the engine to said centrifugal separator and to said filter element, and drain passage means to return oil from said assembly to the engine.

4,615,316
CONTROL METHOD AND APPARATUS FOR PROTECTING ENGINE FROM EXCESSIVE WEAR AND THE LIKE

Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama City, Japan
Continuation-in-part of Ser. No. 569,494, Jan. 9, 1984, abandoned. This application Jul. 10, 1984, Ser. No. 629,417
Claims priority, application Japan, Jan. 10, 1983, 58-1418[U]
Int. Cl.⁴ F02B *77/08*
U.S. Cl. 123—333 **12 Claims**

1. A method of operating an internal combustion engine of a vehicle comprising the steps of:
(a) sensing the temperature of the engine coolant;
(b) automatically sensing the distance traversed by the vehicle; and
(c) limiting the maximum amount of fuel which may be supplied to the engine in accordance with a schedule which varies the amount of fuel injection in accordance with the temperature of the engine coolant and the distance traversed by the vehicle.

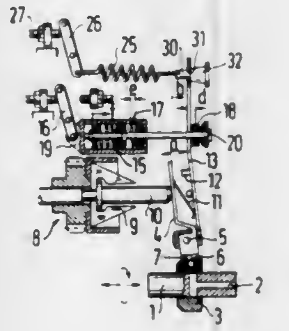
5. An internal combustion engine for a vehicle comprising:
an air-fuel mixture forming device;
a fuel supply arrangement for supplying fuel to said air-fuel mixture forming device;
a manually operable member operatively connected with said fuel supply arrangment for providing a signal indicative of the amount of fuel to be supplied to said air-fuel mixture forming device;
means for producing a signal indicative of the distance traversed by said vehicle;


101
START
102
READ COOLANT TEMP OBTAIN CORRESPONDING VALUES OF k₁ – k₂ BY TABLE LOOK UP
103
READ VEHICLE MILEAGE OBTAIN CORRESPONDING VALUES OF K₁ K₂ BY TABLE LOOK UP
104
NO
YES
105
106
NO
YES
107
108
READ FUEL INJECTION QUANTITY "Q", ENGINE RPM "n"
109
DERIVE
110
NO
YES
111
112
DERIVE
READ RPM "n"
113
YES
NO
114
115
DERIVE
READ RPM "n"
116
YES
NO
117
118
END

an engine coolant temperature sensor;
an engine speed sensor; and
a control unit for controlling the amount of fuel supplied to the engine in response to said manually operative member, said producing means, said engine coolant temperature sensor and said engine speed sensor.

4,615,317
RPM GOVERNOR FOR FUEL INJECTION PUMPS

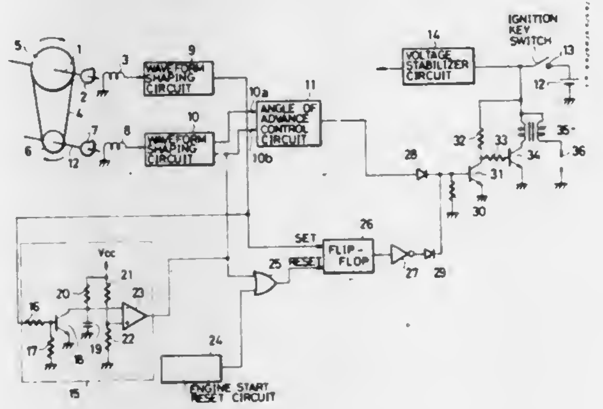
Günter Bofinger, Vaihingen, and Claus Maier, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Apr. 30, 1985, Ser. No. 729,024
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1984, 8421006[U]; Jan. 8, 1985, 3500341
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—373 **4 Claims**



1. An rpm governor for fuel injection pumps, having a first pivotable lever, said first lever being engaged by an adjustable governor spring counter to a restoring force, said force being generated by an rpm signal transducer and transmitted via a pivotable second lever, whereby to adjust the injection quantity adjusting member of said fuel injection pump, to said first lever after said second lever has made contact with a stop of said first lever, an idling spring embodied as a tensile spring arranged to engage said first lever parallel to said governor spring and at least one starting spring disposed between said levers, said starting spring adapted to be stressed until said second lever rests on said first lever, a correcting spring disposed in series with said idling spring, said idling spring, further being articulated between two points, one of said points adapted to engage at least one of the said two levers and the other of said points being in a stationary but adjustable manner arranged to engage an adjusting element during operation of said fuel injection pump.

4,615,318
IGNITION APPARATUS FOR INTERNAL COMBUSTION ENGINE

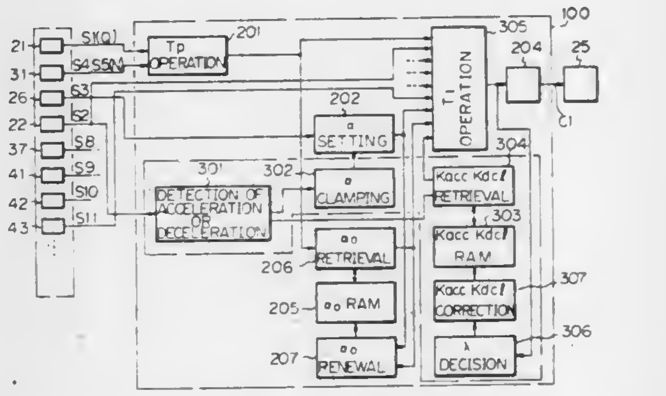
Kosuke Imoto, Shiki, and Hiroshi Katada, Katsuta, both of Japan, assignors to Hitachi, Ltd and Honda Giken Kogyo Kabushiki Kaisha, both of Tokyo, Japan
Filed Sep. 30, 1985, Ser. No. 781,556
Claims priority, application Japan, Oct. 6, 1984, 59-210289
Int. Cl.⁴ F02P *5/04*
U.S. Cl. 123—414 **4 Claims**



1. An ignition apparatus for an internal combustion engine having a crankshaft and a camshaft coupled to said crankshaft to be rotated thereby, comprising:
crankshaft position signal generating means for detecting that said crankshaft has rotated to a predetermined angular position and for generating crankshaft position signals in response to said detection;
camshaft position signal generating means for detecting that said camshaft has rotated to a predetermined angular position and for generating camshaft position signals in response to said detection;
command signal generating means coupled to receive said crankshaft position signals, for generating ignition command signals in response to said crankshaft position signals;
ignition circuit means for generating a high ignition voltage in response to said ignition command signals;
enabling signal generating circuit means coupled to control said ignition circuit means, and coupled to receive said crankshaft position signals and said camshaft position signals, and adapted to be set to a first operating condition in response to said camshaft position signals whereby generation of said high ignition voltage by said ignition circuit means is enabled, and to be reset to a second operating condition in response to said crankshaft position signals whereby said generation of said high ignition voltage by said ignition circuit means is inhibited, and;
timer control circuit means adapted to control the transfer of said crankshaft position signals to said enabling signal generating circuit means, said timer control circuit means being responsive to said crankshaft position signals for enabling resetting of said enabling signal generating circuit means to said second operating state by said crankshaft position signals only during a time interval of fixed duration following each of said crankshaft position signals.

4,615,319
APPARATUS FOR LEARNING CONTROL OF AIR-FUEL RATIO OF AIRFUEL MIXTURE IN ELECTRONICALLY CONTROLLED FUEL INJECTION TYPE INTERNAL COMBUSTION ENGINE

Naoki Tomisawa, Takasaki, Japan, assignor to Japan Electronic Control Systems Co., Ltd., Japan
Filed Apr. 26, 1984, Ser. No. 604,025
Claims priority, application Japan, May 2, 1983, 58-076221; May 2, 1983, 58-076222
Int. Cl.⁴ F02B *3/00*
U.S. Cl. 123—440 **18 Claims**



1. An apparatus for learning control of an air-fuel ratio of an air-fuel mixture in an electronically controlled fuel injection type internal combustion engine, which comprises means for detecting a driving state of the engine, which includes at least first detecting means for detecting a flow quantity Q of air sucked in the engine, second detecting means for detecting a rotation speed N of the engine and third detecting means for detecting a concentration of the exhaust component so as to detect the actual air-fuel ratio λ of the air-fuel mixture sucked in the engine based on the detected concentration of the exhaust component, fuel injection means for injecting and supplying a fuel to the engine in an on-off manner in response to a driving pulse signal, basic fuel injection quantity operating means for operating a basic fuel injection quantity Tp of the fuel to be supplied to the engine based on the flow quantity Q of air sucked in the engine, which is put out by said first detecting means, and the engine rotation speed N put out by said second detecting means, random access memory means in which the learning correction coefficient αo for correcting said basic fuel injection quantity Tp is pre-stored in advance according to the driving state of the engine, learning correction coefficient retrieval means for retrieving the learning correction coefficient αo from said memory means according to the actually detected driving state of the engine, feedback correction coefficient setting means for increasing or decreasing by at least a predetermind integration component unit a feedback correction coefficient α so that the actual air-fuel ratio λ put out by said third detecting means is brought close to the present aimed air-fuel ratio λt, learning correction coefficient renewal means for setting a new learning correction coefficient, which is operating based on the feedback correction coefficient α set by said feedback correction coefficient setting means and the learning correction coefficient αo retrieved by said learning correction coefficient retrieval means according to the detected driving state of the engine, as the corresponding learning correction coefficient αo of said memory means, fuel injection quantity operating means for operating a fuel injection quantity Ti by correcting the basic fuel injection quantity Tp based on the retrieved or retrieved and renewed learning correction coefficient αo and also based on the feedback correction coefficient α set by said feedback correction coefficient setting means, and driving pulse signal output means for putting out the driving pulse signal corresponding to the fuel injection quantity Ti to said fuel injection means,
wherein said means for detecting the driving state of the engine comprises fourth detecting means for detecting a

stationary state of the engine and said learning correction coefficient renewal means is actuated when the engine is in the stationary state,

said fourth detecting means including car speed detecting means, engine speed detecting means and means for detecting an opening degree of a throttle valve arranged in an intake passage of the engine, and when it is detected that the state in which the car speed and the engine speed are constant and the opening degree of the throttle valve is constant for a predetermined time, it is determined that the engine is in the stationary state.

4,615,320
DAMPER ELEMENT

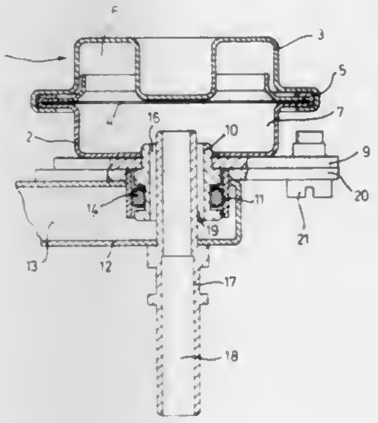
Siegfried Fehrenbach, Markgröningen; Kurt Herbst, Burgstetten; Wolfgang Schulz, Bietigheim, and Eberhard Utz, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 15, 1984, Ser. No. 610,380

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1983, 3326995

Int. Cl.⁴ F02M *39/00*

U.S. Cl. 123—467 6 Claims



1. A damper element for damping a pulsating fluid flow, in particular for smoothing out and reducing pressure fluctuations arising in fuel supply systems for internal combustion engines in motor vehicles, having at least one damper diaphragm, which is fastened in a damper housing and on one side defines a fluid chamber in the damper housing into or out of which chamber fluid can flow via two separate fluid lines, characterized in that said damper housing includes a connection fitting which is sealingly insertable at its circumference into a plug connection secured to one wall of a fluid flow cross section, sealing means surrounding said connection fitting which sealingly seals said connection fitting, said connection fitting further having a cylindrical flow opening open toward said fluid chamber and said fluid flow cross section, and a flow tube secured to one wall of said fluid flow cross section and arranged to protrude through said fluid flow cross section and through said flow opening of said connection fitting into said fluid chamber thereby forming a cylindrical passage, whereby a first fluid flow line is formed by said flow tube and a second fluid flow line is formed by said flow tube and said flow opening of said connection fitting.

4,615,321
METHOD AND APPARATUS FOR CHECKING SENSORS

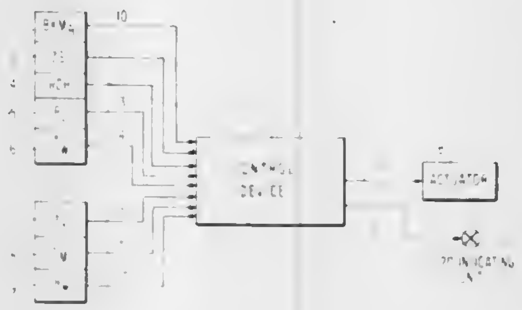
Günther Haefner; Bernhard Bauer; Ulrich Letsche, all of Stuttgart, and Karl-Ernst Noreikat, Esslingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 6, 1984, Ser. No. 637,795

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1983, 3328450

Int. Cl.⁴ F02B *3/00*

U.S. Cl. 123—479 13 Claims



1. A method for checking the operability of sensor means in an internal combustion engine and detecting operating conditions of the internal combustion engine, and in which the measurement signals thereof are statically monitored in a checking unit, comprising the steps of cyclically detecting the measurement signals of the sensor means detecting internal combustion engine operating parameters and checking the same with respect to a change in their measured values from one sampling cycle to a successive one, and accepting the measurement signals only if the change in measured value is within permissible limits, gating stochastic disturbances out of the measurement signal and registering the same, and in case of a recurrence of measured signal disturbances, producing an auxiliary signal representing the actual measured value above a predetermined number of faulty measurement signals and wherein the internal combustion engine is operatively connected with an air charge device, and wherein, in case of a faulty measurement signal of an air-pressure sensor means, the operation is changed from supercharged internal combustion engine operation to a suction-type internal combustion engine operation.

4,615,322
METHOD AND APPARATUS FOR CONTROLLING FUEL INJECTION

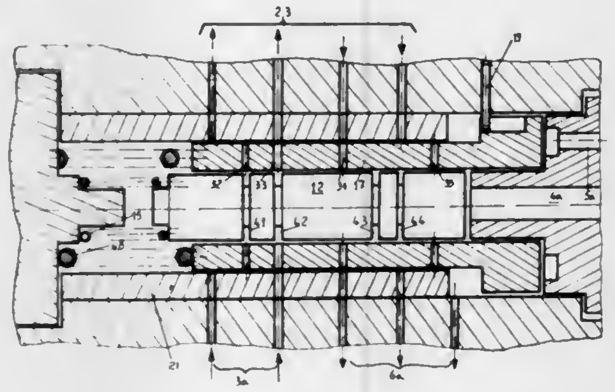
Jean-Louis Dazzi, Saint Genis Laval, France, assignor to Renault Vehicules Industriels, Lyons, France

Filed Mar. 16, 1983, Ser. No. 475,808

Claims priority, application France, Mar. 16, 1982, 82 04789

Int. Cl.⁴ F02M *39/00*

U.S. Cl. 123—506 20 Claims



1. A device for controlling the start and end of a fuel injection cycle for a fuel injector responsive to pressure in a chamber on one side of said fuel injector, said device comprising:

a housing;
a bore in said housing;
a first valve member comprising a sleeve valve member movably disposed in said bore, said sleeve valve member being movable between a first and a second extreme position;
first biasing means biasing said sleeve valve member into said first extreme position;
first drive means selectively operable to drive said sleeve valve member into said second extreme position against the force of said first biasing means;
a second valve member comprising a cylindrical valve member movably disposed in said sleeve valve member, said second valve member being movable independently of said first valve member between a first and a second extreme position;
second biasing means biasing said cylindrical valve member into said first extreme position;
second drive means selectively operable to drive said cylindrical valve member into said second extreme position against the force of said second biasing means;
a first passageway in said housing extending from said chamber to said bore;
a second passageway in said housing extending from said bore to an external portion of said housing for interconnection with a source of pressurized fuel;
a third passageway in said housing extending from said bore to an external portion of said housing for interconnection with a fuel return means;
a fourth passageway through both said first valve member and said second valve member selectively interconnecting said first passageway with said third passageway when said first valve member and said second valve member are in respective preselected ones of said extreme positions; and
a fifth passageway through both of said first valve member and said second valve member selectively interconnecting said first passageway with said second passageway when a preselected one of said valve members is in its respective preselected extreme position and the other of said valve members is in the extreme position opposite its respective preselected position.

4,615,323
PUMP/NOZZLE UNIT FOR FUEL INJECTION IN INTERNAL COMBUSTION ENGINES

Jean LeBlanc, Lyons, and Francois Rossignol, Mornant, both of France, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

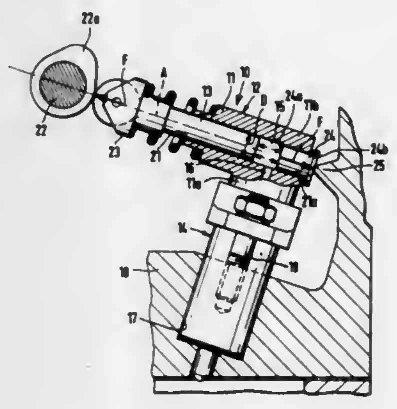
PCT No. PCT/DE84/00147, § 371 Date Mar. 29, 1985, § 102(e) Date Mar. 29, 1985, PCT Pub. No. WO85/00638, PCT Pub. Date Feb. 14, 1985

PCT Filed Jul. 17, 1984, Ser. No. 721,113

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1983, 3327399

Int. Cl.⁴ F02M *39/00*

U.S. Cl. 123—509 8 Claims



1. A pump/nozzle unit for fuel injection in internal combustion engines, which comprises a pump housing, a pump cylinder in said pump housing, a pump piston operatively received in said pump cylinder and actuatable via a tappet by an engine camshaft, a support face located beyond said cylinder adjacent an end section of said pump housing remote from the engine camshaft, and supported therein, said support face is embodied by an outwardly pointing end face of a counterpart piston, which is inserted into one end of said pump cylinder in an extension of the longitudinal axis (A) of the pump piston and said counterpart piston includes an inner end face within said cylinder which seals off a pump work chamber in a pressure-tight manner in said cylinder between said pump piston and said support face, said pump work chamber being capable of being acted upon by the pump piston, a housing extension extending laterally approximately at right angles to the longitudinal axis of said pump piston, a passage in said housing extension that extends from said work chamber, at approximately a right angle thereto, and an injection nozzle secured to said housing extension in alignment with said passage in said housing extension.

4,615,324
EXHAUST GAS RECIRCULATION SYSTEM FOR A V-TYPE ENGINE

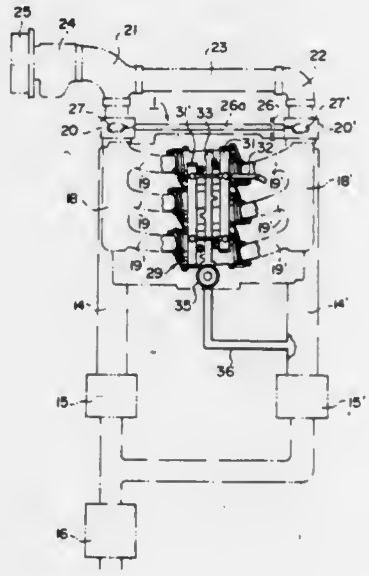
Masahiro Choushi, and Haruyoshi Ishimi, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Japan

Filed Sep. 5, 1984, Ser. No. 647,478

Claims priority, application Japan, Sep. 13, 1983, 58-169980

Int. Cl.⁴ F02M *25/06*

U.S. Cl. 123—568 19 Claims



1. In an exhaust gas recirculation system for a V-type engine having a pair of cylinder banks arranged at an angle to each other on opposite sides of a crankshaft, each cylinder bank having a plurality of cylinders therein and an intake passage being separately provided for each cylinder,

the improvement which comprises that the intake passages have respective proximate portions at which the intake passages to the cylinders in one cylinder bank and the intake passages to the cylinders in the other cylinder bank are aligned with each other as viewed in the direction of the crankshaft, said proximate portions being in the middle of the engine between the cylinder banks,

an exhaust recirculation passage for recirculating exhaust gas from an exhaust passage to the cylinders extending along the proximate portions in the direction of the crankshaft and communicating with each intake passage by way of a communicating aperture, said exhaust recirculation passage extending in the middle of the engine between the cylinder banks in the direction of the crankshaft and having an open end in proximity to the most remote intake passage as viewed in the direction of the crankshaft,

an exhaust recirculation valve, for controlling the amount of

exhaust gas, in the open end of said exhaust recirculation passage,
and a branch exhaust passage, one end of which communicates with the exhaust recirculation passage by way of the exhaust recirculation valve and the other end of which communicates with an exhaust passage of the engine.

4,615,325
BALL THROWING DEVICE

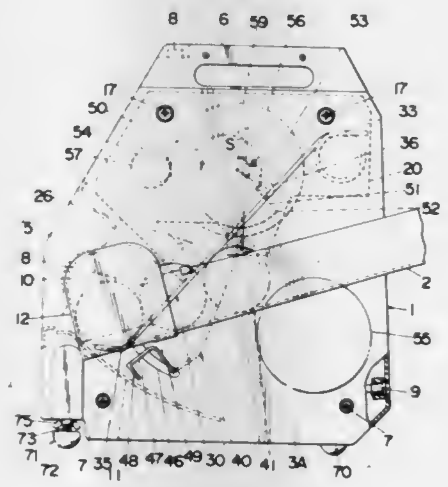
Yukio Yamamura; Shinpei Otsuka; Takahiro Imai, and Kenji Kakiyama, all of Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Apr. 26, 1985, Ser. No. 727,531

Claims priority, application Japan, May 15, 1984, 59-98115

Int. Cl.^{4} A63B *69/40*

U.S. Cl. 124—7 **2 Claims**



1. A ball throwing device which comprises:
a throwing arm having one end pivotally mounted and defining at the other end a ball receiving portion, said arm being driven to swing within a limited angular range between a cocked position and a releasing position so as to throw a ball fed to said receiving portion when moved toward the releasing position, said throwing arm comprising a pair of parallel wire segments connected at its ends, which end portion being angled in the direction of throwing the ball so as to define thereat said ball receiving portion;
an annular guide extending approximately along the path of said ball receiving portion so as to guide the ball fed at one end thereof onto said ball receiving portion of the throwing arm at the cocked position; and
a guiding surface of the annular guide on which the ball guided is increasingly displaced outwardly from the path of the ball receiving portion in a direction of throwing the ball.

4,615,326
ARCHERY BOW ATTACHMENT

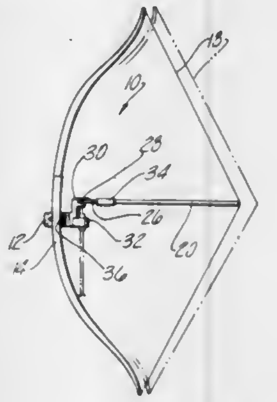
Clifford D. Rathbun, 113 Greenshield, Lake Orion, Mich. 48035

Filed Mar. 19, 1984, Ser. No. 590,904

Int. Cl.^{4} F41B *5/00*

U.S. Cl. 124—88 **8 Claims**

1. A pre-cocking attachment for an elongated archery bow having a bow string on one side, said attachment comprising:
a plate,
means for removably securing said plate to a midpoint of one side of the bow whereby said attachment may be removably secured to a conventional archery bow,
an elongated rod having one end adapted to engage the bow string,
means for pivotally mounting the other end of said rod to said plate so that said rod is pivotal between a first position in which said rod extends outwardly from the bow towards the bow string and engages the bow string to move the bow string to a partially drawn pre-cocked position and a second position in which said rod depends downwardly from said plate adjacent the bow, and disengages from the bow string,
wherein said rod has a length greater than the distance between said bow midpoint and a midpoint of the bow string when the bow is uncocked,
wherein with said rod in said first position and with said rod engaging said bow string, said rod maintains the bow string in a partially drawn pre-cocked position, and
wherein said rod pivots by gravity to said second disengaged position when the bow string is drawn rearwardly from said partially drawn pre-cocked position to a fully cocked position.



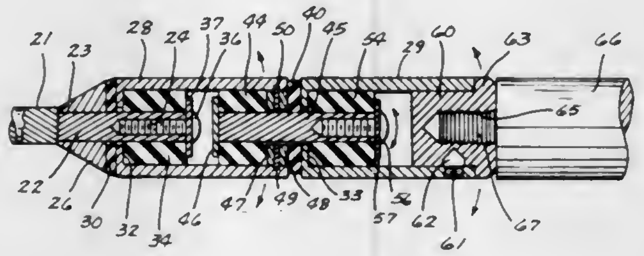
4,615,327
RESILIENTLY MOUNTED STABILIZER

Charles A. Saunders, 8380-36th Ave., Columbus, Nebr. 68601

Filed Sep. 30, 1985, Ser. No. 781,489

Int. Cl.^{4} F41B *5/00*

U.S. Cl. 124—89 **4 Claims**



1. A stabilizer adapted to be attached to an archery bow, said stabilizer comprising:
a pedestal having one end externally threaded for threadable engagement with an archery bow, and the other end of said pedestal being internally threaded, said pedestal having a first external diameter on a major portion of said one end and a second external diameter on said other end thereof, said first diameter being larger than said second diameter, and a shoulder being disposed on an intermediate portion of said pedestal;
a pedestal crown having a central opening of a diameter at least as large as said second diameter, said pedestal crown encircling said pedestal, one end of said pedestal crown being in abutment with the shoulder on said pedestal;
a resilient washer having a central opening approximately the diameter of said second diameter, said resilient washer encircling said pedestal and being in abutment with the other end of said pedestal crown;
a first housing, said first housing being tubular in shape and having an outer diameter and an inner diameter, said first housing having an annular inwardly extending portion integrally attached to one end of said first housing, said annular inwardly extending portion being disposed onto

said pedestal in abutment with said resilient washer and spaced radially outwardly from said pedestal;
a first resilient tube disposed within said first housing encircling said pedestal and having one end thereof in abutment with said inwardly extending portion on said first housing;
means threadably engaged into the internally threaded other end of said pedestal for contacting the other end of said first resilient tube and thereby pushing said one end of said resilient tube against the inwardly extending portion of said first housing and further causing said one end of the first housing to be tightly pushed against the resilient washer;
a second resilient tube disposed within said first housing, having one end closer to said one end of the first housing than the other end thereof;
means attached to the other end of said first housing in contact with the other end of said second resilient tube to prevent said second tubular member from sliding out of said first housing;
a second housing, said second housing being tubular in shape and having an outer diameter and an inner diameter, said second housing having an annular inwardly extending portion integrally attached to one end of the second housing;
a second resilient washer in abutment on one end with the other end of said first housing and on the other end with said one end of the second housing;
a third resilient tubular member disposed in said one end of the second housing, one end of said third resilient tubular member being in abutment with the annular inwardly extending portion on said second housing; and
coupler means having one end for engagement with said one end of said second resilient tube and the other end in engagement with the other end of said third resilient tube, said coupler means including a shaft extending through said second and third resilient tubes and through said second resilient washer.

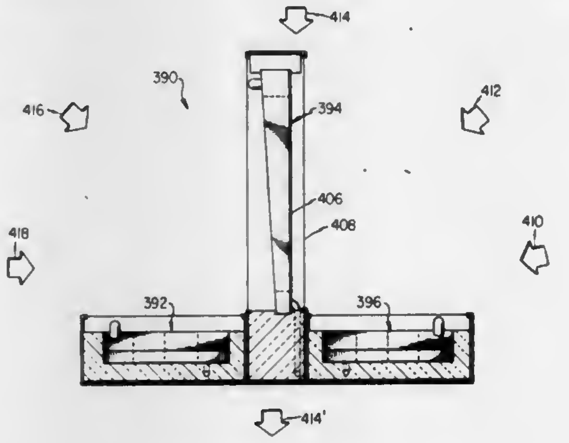
4,615,328
SOLAR POWERED FLUID HEATING SYSTEM HAVING AN IMPROVED THERMAL COLLECTOR ASSEMBLY

Otto K. Wetzel, Jr., Dallas, Tex., assignor to Wetzel Enterprises, Inc., Dallas, Tex.

Division of Ser. No. 466,359, Feb. 14, 1983, abandoned. This application Jan. 14, 1985, Ser. No. 691,180

Int. Cl.^{4} F24J *2/04*

U.S. Cl. 126—433 **23 Claims**



1. A solar powered fluid heating system comprising:
a predetermined quantity of refrigerant;
a thermal collector assembly for heating the refrigerant and comprising;
(a) first thermal collector means for heating refrigerant in response to solar radiation;
(b) first supporting means extending in a substantially horizontal direction for supporting the first thermal collector means for maximum exposure to solar radiation during a first predetermined portion of the day;
(c) second thermal collector means for heating refrigerant in response to solar radiation;
(d) second supporting means extending in a substantially vertical direction for supporting the second thermal collector means for maximum exposure to solar radiation during second and third predetermined portions of the day;
(e) third thermal collector means for heating refrigeration in response to solar radiation;
(f) third supporting means extending in the substantially horizontal direction for supporting the third thermal collector means for maximum exposure to solar radiation during said first predetermined portion of the dry;
(g) said first and second supporting means further supporting the first and second thermal collector means for combined maximum exposure to solar radiation during a fourth predetermined portion of the day occurring between the first and second predetermined portions of the day;
(h) said second and third supporting means supporting the third and fourth thermal collector means for maximum exposure to solar radiation during a fifth predetermined portion of the day occurring between the first and third predetermined portions; and
(i) means for selectively adding the outputs of heated refrigerant from the first, second and third thermal collector means during the predetermined portions of the day to thereby optimize the output of heated refrigerant during the entire day;
separator means for receiving heated refrigerant from the thermal collector assembly and for separating the vapor component of the heated refrigerant from any liquid component thereof;
a condenser for receiving the vapor component of the heated refrigerant from the separator means;
a supply of fluid to be heated;
means for transferring heat from the refrigerant in the condenser to the fluid and thereby returning the refrigerant vapor to the liquid phase;
vapor conduit means extending from the separator means to the condenser;
liquid conduit means extending from the condenser to the thermal collector assembly;
said thermal collector assembly, separator means, condenser, vapor conduit means and liquid conduit means comprising a closed refrigerant circuit which contains the predetermined quantity of refrigerant; and
refrigerant pressurizing means for causing the refrigerant to flow through the refrigerant circuit.

4,615,329
SOLAR HEAT COLLECTOR ARRANGEMENT

Hirosato Takeuchi; Katsunobu Kishi, and Toshio Mikiya, all of Tokyo, Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 472,837

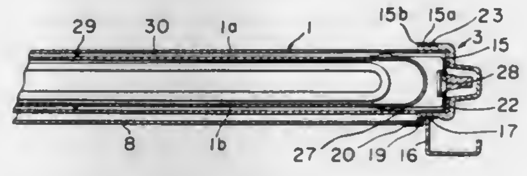
Claims priority, application Japan, Mar. 7, 1982, 57-31802[U]

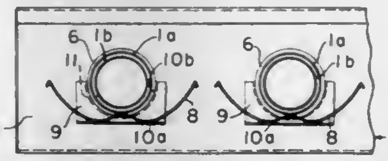
Int. Cl.^{4} F24J *2/10*

U.S. Cl. 126—438 **5 Claims**

1. A solar heat collector arrangement comprising:
at least one straight-tubing type solar heat collector having a first end and a second end;
a substantially resilient annulus fitted over the first end of the heat collector for protecting the heat collector;
a substantially resilient cap fitted over the second end of the heat collector for protecting the heat collector;
a first frame having a round mount opening for receiving the first end of the heat collector with the substantially resilient annulus fitted thereover;
a second frame having a generally semi-circular groove for receiving the second end of the heat collector with the substantially resilient cap fitted thereover;
a reflector mirror for directing sunrays onto said heat collec-

tor, said mirror having a first end and a second end fixed to a first stay and a second stay, respectively, said first and second stays each having an arcuate insert extending therefrom, the arcuate inserts of the first and second stays being rotatably received between said round mount opening of the first frame and said substantially resilient annulus and between said semi-circular groove of said second frame and said substantially resilient cap, respectively, to support the first and second stays and said reflector mirror angularly adjustably relative to said first and second frames; and





a strap-like retainer selectively unfastened and fastened to said second frame for initially permitting manual adjustment of said solar heat collector and said reflector mirror relative to the frames and subsequently holding said substantially resilient cap from above to releasably clamp the arcuate insert to said second stay between the substantially resilient cap of the heat collector and the semi-circular groove of the second frame for preventing rotation of the reflector mirror relative to the frames.

4,615,330
NOISE SUPPRESSOR FOR ELECTRONIC ENDOSCOPE

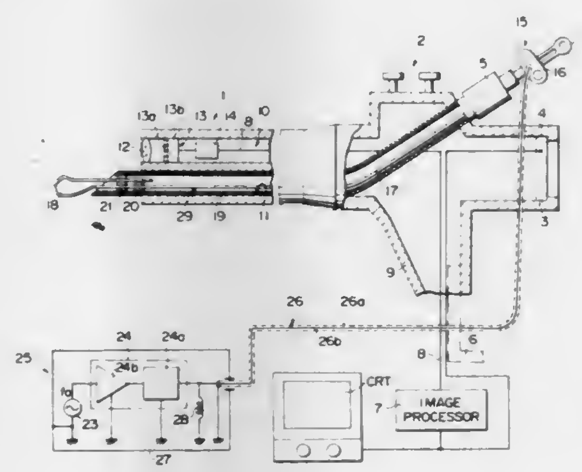
Tatsuo Nagasaki, Musashino, and Hiroyoshi Fujimori, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Aug. 29, 1984, Ser. No. 645,308

Claims priority, application Japan, Sep. 5, 1983, 58-163594; Sep. 5, 1983, 58-138207[U]

Int. Cl.^{4} A61B *1/00*

U.S. Cl. 128—4 **16 Claims**



10. A combination, comprising:

(A) an endoscope having an insertable portion adapted to be insertable into a coeloma, said endoscope including:
  (1) a solid-state camera disposed within the insertable portion for converting an image of an object being examined into a video signal; and
  (2) a video signal lead extending through the insertable portion for conveying the video signal output from the solid-state camera to an image processor;

(B) a diathermic cutter which is removably insertable into a treatment tool channel of the endoscope and including:
  (1) a distal end Messer which effects excision of an object being examined through the endoscope in response to the application of a high frequency current thereto;
  (2) a transmission line extending through the insertable portion to transmit a high frequency current from a power supply for diathermy to the distal end Messer;
  (3) a conductor member which electrically shields the transmission line from the video signal leads; and
  (4) impedance regulating means which establishes a high impedance between the conductor member and the transmission line with respect to a frequency band of the high frequency current, the impedance regulating means comprising a coil connected to form a parallel resonant circuit together with a distributed capacitance between the transmission lines and the conductor member at a frequency of the high frequency current.

4,615,331
MEDICAL INSTRUMENTS WITH AID TO INTRODUCTION

Bernhard Kramann, Munich, Fed. Rep. of Germany, assignor to Sterimed Gesellschaft für medizinischen Bedarf mbH, Saarbrücken, Fed. Rep. of Germany

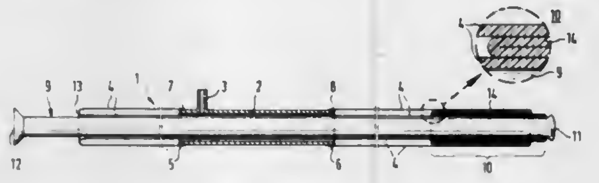
PCT No. PCT/EP84/00194, § 371 Date Feb. 26, 1985, § 102(e) Date Feb. 26, 1985, PCT Pub. No. WO85/00097, PCT Pub. Date Jan. 17, 1985

PCT Filed Jun. 27, 1984, Ser. No. 709,024

Claims priority, application Switzerland, Jun. 28, 1983, 3526/83; Fed. Rep. of Germany, Aug. 12, 1983, 3329176

Int. Cl.^{4} A61B *1/00*

U.S. Cl. 128—4 **1 Claim**



1. An elongated medical instrument for the examination or treatment of body cavities, in particular endoscopes, with a device to assist introduction by the principle of the tubular structure which becomes everted, comprises the device to assist introduction (**1**) being composed of a pipe (**2**) which is open at both ends and has pressure connectors (**3**) on the sides, and is composed of a flexible, eversible tubular structure (**4**) running through the pipe (**2**), the two ends (**5**, **6**) of the tubular structure each being connected to one end (**7**, **8**) of the pipe (**2**), the medical instrument (**9**) running through the pipe (**2**) inside the tubular structure (**4**), and the tubular structure (**4**) being folded in several double-layers in the region (**10**) of the distal end (**11**) of the medical instrument (**9**).

4,615,332
FLEXIBLE MULTICHANNEL ENDOSCOPE HAVING AXIAL SHAFT PORTIONS OF DIFFERENT FLEXIBILITY

Gerd Buess, Pulheim; Siegfried Hiltebrandt, Knittlingen, and Manfred Boebel, Oetisheim, all of Fed. Rep. of Germany, assignors to Richard Wolf GmbH, Fed. Rep. of Germany

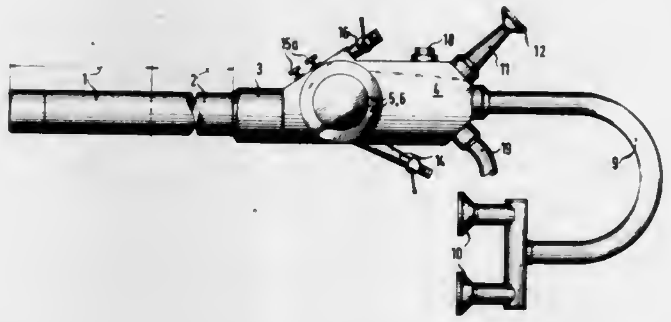
Filed Mar. 14, 1985, Ser. No. 711,754

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1984, 3411767

Int. Cl.^{4} A61B *1/06*

U.S. Cl. 128—6 **5 Claims**

1. In an endoscope having a flexible shaft with a plurality of channels and image conductors extending the length of the shaft, the improvement comprising the shaft having an omnilaterally steerable flexible distal end portion and a proximal end portion of a higher rigidity than the flexible distal end portion, a control housing, a coupling element connecting the proximal end portion of the shaft to the control housing, said shaft having at least three image conductors extending therethrough from the distal end and into the control housing, a binocular eye piece, a flexible element containing image conductors extending from the control housing to the binocular eye piece and being connected to two of the image conductors extending into the control housing and the remaining image conductor being connected to an auxiliary eye piece.



4,615,333
RIGID ENDOSCOPE OF OBLIQUE WINDOW TYPE

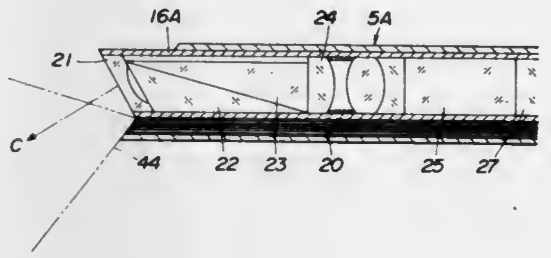
Akihiro Taguchi, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 30, 1985, Ser. No. 696,293

Claims priority, application Japan, Feb. 3, 1984, 59-13649[U]

Int. Cl.^{4} A61B *1/06*

U.S. Cl. 128—6 **5 Claims**



1. A rigid endoscope of oblique window type having an outer tubular sheath tube, a lens tube having an optical observation system therein and extending through said tubular sheath tube, said optical observation system having an observation window at the leading, tip end of said lens tube and an optical illuminating system extending through said tubular sheath tube, said optical illuminating system terminating in an illuminating light end at the leading, tip end of said outer tubular sheath tube and adjacent said leading, tip end of said lens tube and said observation window therein, said observation window of said optical observation system being inclined in a first direction from the outer periphery of said lens tube toward the axis of said outer tubular sheath tube, said illuminating light end of said optical illuminating system being inclined in a second direction from the outer periphery of said outer tubular sheath tube and toward said observation window.

4,615,334
SURGICAL PAD FOR GYNECOLOGICAL PROCEDURES

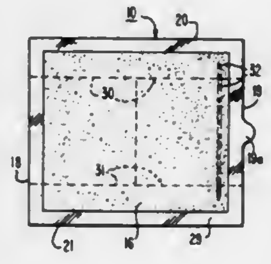
John C. Jaeger, 3584 Batavia-Elba TLR, Oakfield, N.Y. 14125

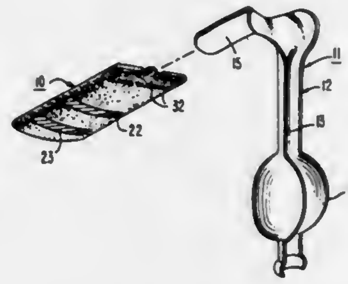
Filed Jul. 16, 1985, Ser. No. 755,345

Int. Cl.^{4} A61B *1/32*

U.S. Cl. 128—17 **13 Claims**

1. A surgical pad usable with a speculum blade insertable into the vaginal cavity of a patient in performing dilation and curettage procedures, comprising a pad disposable on said speculum blade for collecting curetted tissue, said pad having an adhesive section on the underside thereof for securing said pad to said speculum blade when said pad is disposed on said blade.





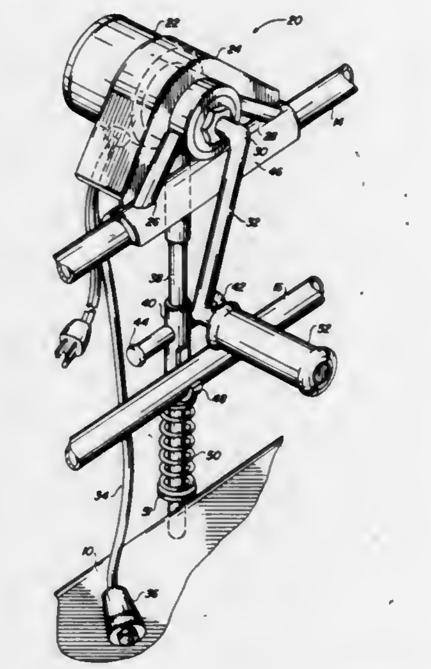
4,615,335
MOTORIZED EXERCISE APPARATUS FOR MOUNTING ON HOSPITAL BEDRAIL

Charles C. Searcy, P.O. Box 23, Wauchula, Fla. 33873

Filed Nov. 16, 1984, Ser. No. 672,136

Int. Cl.^{4} A61H *1/02*

U.S. Cl. 128—25 R **12 Claims**



9. Portable patent exercising apparatus adapted for interconnection to guard rails extending generally horizontally along one side of a patient bed, said portable apparatus comprising:

(a) bracket means, said bracket means including
  (1) a motor mount;
  (2) a first clamp fixed with said motor mount and adapted to engage one of said rails;
  (3) a second clamp adapted to engage a second one of said guard rails; and
  (4) a tube extending generally normal to the longitudinal direction of the rails of said bed, said tube carrying said second clamp and a load spring axially about said tube

and said load spring for urging said second clamp toward said first clamp;

(b) a motor carried by said bracket means, said motor having a drive shaft adapted to extend generally normal to said rails and toward said bed when said bracket is mounted to said horizontal bed rails;

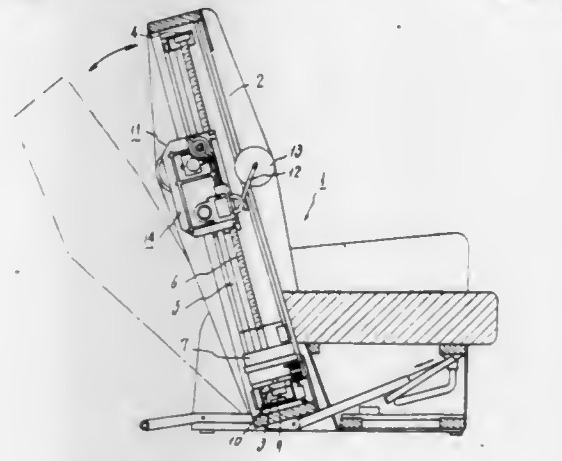
(c) a crank arm fixed at one end to said drive shaft, said crank arm dimensioned substantially shorter than the distance between said drive shaft and the surface of a hospital bed to which said apparatus is adapted for use; and

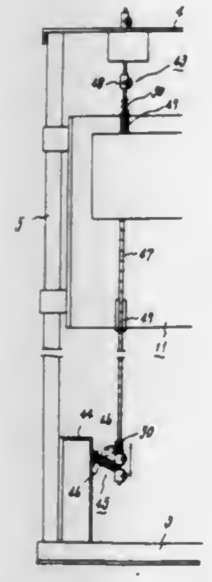
(d) means at the other end of said crank arm for permitting the foot or hand of the patient to be coupled thereto for permitting exercise of the patient by rotaton of the crank arm and the drive shaft.

4,615,336
AUTOMATIC MASSAGING MACHINE

Shinichiro Fijimoto, Osaka, Japan, assignor to Fuji Medical Instruments Mfg. Co., Ltd., Osaka, Japan
Filed Nov. 30, 1983, Ser. No. 556,648
Int. Cl.⁴ A61H *7/00*

U.S. Cl. 128—52 **4 Claims**



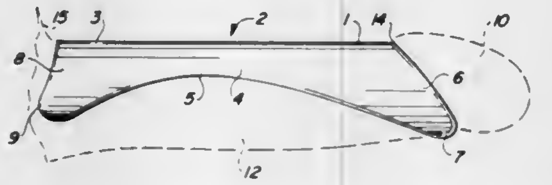


1. An automatic massaging machine comprising:
a first motor;
a screw shaft to be rotated in a positive or negative direction driven by said first motor;
an elevating plate which can make ascending and descending motion, in a screw contact with said screw shaft;
a second motor;
a driving device coupled to said second motor, said driving device comprising:
two output shafts;
a power transfer shaft which is driven by said second motor, said power transfer shaft being shiftable;
a first gear means rotatably provided on said power transfer shaft for driving one of said two output shafts;
a central groove provided in said first gear means;
a second gear means rotatably provided on said power transfer shaft for driving an other of the two output shafts;
a central groove provided in said second gear means; and
a pin provided in said power transfer shaft which engages said central groove in said first gear when said power transfer shaft is shifted to one position and which engages with said central groove in said second gear means when said power transfer shaft is shifted to another position;
a pair of massaging balls;
a connecting means rotatably supporting said massaging balls and arranged on said elevating plate and driven by said two output shafts such that said balls perform one type of massage motion in response to a one of said two output shafts being driven and another type of massage motion in response to the other of the two output shafts being driven;
a means for shifting said power transfer shaft in response to positive or negative rotation of said second motor; and
an automatic switching device for reversing a direction of motion at the start and finish of the motion of the elevating plate by causing the first motor to drive said screw shaft in a positive or negative direction of rotation.

4,615,337
PENILE SUPPORT

Francis W. Allinson, 53 W. Lewis Ave., Phoenix, Ariz. 85003
Continuation-in-part of Ser. No. 542,883, Oct. 10, 1983, abandoned. This application Mar. 28, 1984, Ser. No. 594,200
Int. Cl.⁴ A61F *5/00*

U.S. Cl. 128—79 **8 Claims**



1. A clip-on, resiliant, self-sustaining, penile support comprising:
a transversely curved resiliant distal portion for extending around and gripping a forward portion of the penis proximal to the corona of the glans penis;
a transversely curved resiliant proximal portion for extending around and gripping a rear portion of the said penis; and
a longitudinal transversely curved support portion contiguous with and intermediate with proximal and distal portions and having longitudinally curved sides for exposing an under surface and adjacent lateral surface of said penis.

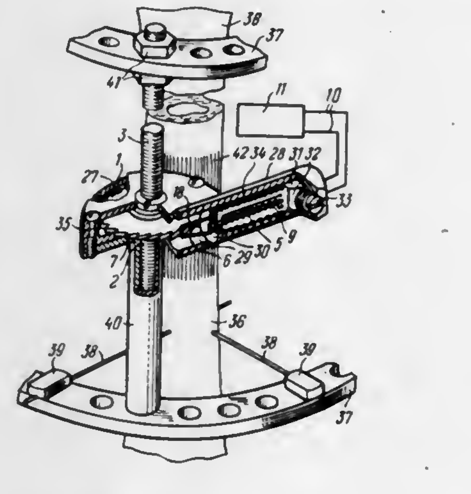
4,615,338
AUTOMATIC COMPRESSION-DISTRACTION APPARATUS

Gavriil A. Ilizarov; Alexandr P. Predein, and Vyacheslav M. Bykov, all of Kurgan, U.S.S.R., assignors to Kurgansky Nauchno-Issledovatelsky Institut Experimentalnoi I Klinicheskoi Ortopedii I Travmatologii, Kurgan, U.S.S.R.
Filed Sep. 18, 1985, Ser. No. 777,425
Int. Cl.⁴ A61F *5/04*

U.S. Cl. 128—92 A **10 Claims**

1. A surgical orthopedic apparatus, comprising:
support members;
pillars serving to connect the support members;
pins passing through bone and attached to said support members;
a drive designed to adjust the relative position of said support members, said drive including:
a housing secured on said pillars;

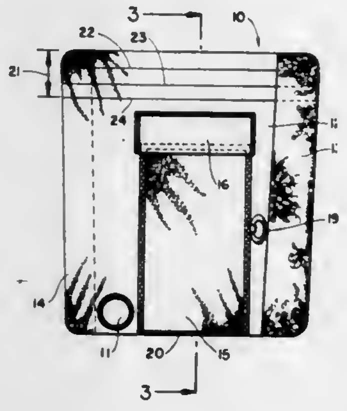
a lead screw mounted in a pillar and connected by its one end to said support member;
a ratchet wheel mounted in said housing and interacting with said lead screw;
a pawl connected with teeth of said ratchet wheel;
a load-bearing element coupled by its one end to said pawl while its other end is rigidly attached to said housing; said load-bearing element being essentially a tie-rod manufactured from an alloy possessing plastic memory;
a resilient member fashioned as a spring with its one end attached to said housing and the other end interacting with said load-bearing element;
an adjusting member arranged in said housing, connected by its one end to said tie-rod and designed for setting the force of tensioning said tie-rod.



4,615,339
PEDIATRIC ARM RESTRAINING DEVICE

Melinda L. Siwek, 11857 Averill Ct., Riverside, Calif. 92503
Filed Jun. 25, 1984, Ser. No. 624,133
Int. Cl.⁴ A61F *13/00*

U.S. Cl. 128—133 **4 Claims**

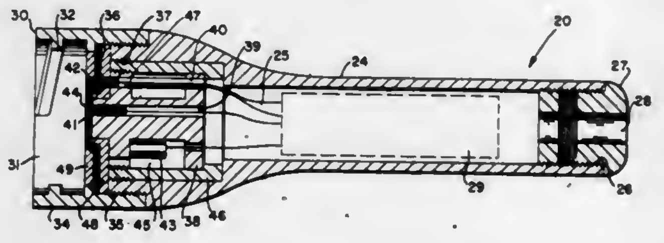


1. A pediatric arm restraining device comprising:
a generally flat, generally rectangular body of padded fabric material having a longitudinal dimension corresponding to the length dimension of the portion of an arm overlapping the elbow onto which it is to be fitted, said rectangular body having a width dimension allowing a predetermined amount of overlap when said flat body is rolled over said arm forming a sleeve having an elongated dimension corresponding to the length dimension of said arm and overlapping the elbow;
an elongated hook fastener strip affixed along a first edge of a first surface of said rectangular body, said fastener strip having a first predetermined width within said body width dimension overlap;
an elongated pile fastener strip affixed along a second edge of said surface of said rectangular body opposite said first edge, said pile fastener strip extending generally parallel to said hook fastener strip and having a second predetermined width within said body width dimension overlap such that said hook and pile fastener strips are in position to be mated as said sleeve is formed, said sleeve having an elongated dimension corresponding to said arm lenght dimension;
a pocket formed along one of said first and second surfaces of said rectangular body, said pocket being elongated in a dimension corresponding to said sleeve elongated dimension, said pocket is formed by an additional fabric piece affixed to one of said body surfaces along the two elongated edges of said piece and one of the other edges thereof;
at least one elongated stiffener element inserted within said pocket enhanced rigidity of said sleeve against elbow bending, said pocket has an open end in the direction of said sleeve elongated dimension and a flap is affixed with predetermined overlap at said pocket open end, said flap and said pocket open end being deformable to emplace and remove said stiffener element;
a portion of said rectangular body extends in said longitudinal at the end of said body corresponding to the upper arm end of said sleeve in order to provide a trimmable portion, said trimmable portion having at a least one pair of sewn lines for cutting between said lines for adapting said device for a shorter arm length, and thereby leaving said end of said body with a sewn edge;
and a thumb hole through said rectangular body adjacent one of said fastener strips and closely adjacent the longitudinal end of said rectangular body, said thumb hole thereby accommodating the right or left thumb when said sleeve is emplaced with one of said first and second surfaces of said body outward, and thereby permitting protrusion of fingers from said sleeve.

4,615,340
SENSOR ASSEMBLY SUITABLE FOR BLOOD GAS ANALYSIS AND THE LIKE AND THE METHOD OF USE

Richard A. Cronenberg, Mahwah, N.J., and Stephen I. Shapiro, Scarsdale, N.Y., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Continuation of Ser. No. 706,051, Feb. 27, 1985, which is a continuation-in-part of Ser. No. 455,092, Jan. 3, 1983, abandoned. This application Jan. 28, 1986, Ser. No. 822,963
Int. Cl.⁴ A61B *5/05*

U.S. Cl. 128—635 **27 Claims**



13. A hand-holdable sensor for use in a device for blood gas analysis and the like at the bedside of a patient comprising:
a portable housing sized to be held by the hand of a user having an open end;
electrode means, includng electrodes, for sensing oxygen, carbon dioxide and hydrogen ions located inside said housing and spaced from said open end by a recess;
a gas-permeable, ion-permeable membrane positioned within said recess and covering only said oxygen and carbon dioxide electrodes; and
means for connecting said electrodes into an electrical circuit to measure values of pO_2, pCO_2 and pH sensed by the respective electrodes.

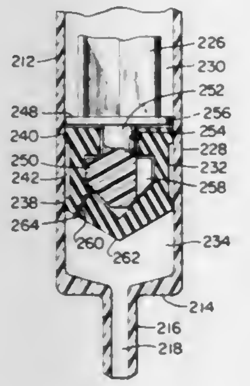
4,615,341
SYRINGE DEVICE FOR PHYSIOLOGICAL FLUID SAMPLING

Willis L. Marzolf, Stockton, Calif., and Michael H. Snyder, Reno, Nev., assignors to Syringe Industries, Inc., Greenwhich, Conn.

Filed Jun. 18, 1981, Ser. No. 274,811

Int. Cl.⁴ A61B *5/00*

U.S. Cl. 128—765 **21 Claims**



1. An arterial blood sampling device adapted for use with a hypodermic needle comprising:

a housing member including a surrounding sidewall, a stationary end wall, and an open end opposite said stationary end wall, said stationary end wall having a bore therethrough and having mounting means connected thereto for mounting a hypodermic needle to said housing member in fluid communication with said bore;

a movable piston member including a movable end wall formed of a resilient material and facing said stationary end wall, said piston member being axially movable in said housing member whereby said sidewall, said stationary end wall and the movable end wall of said piston member define a fluid chamber of variable volume of operative to receive a blood sample, said sidewall and said piston member defining an open chamber on a side of said piston member opposite said fluid chamber, said movable end wall including passageways formed therethrough at generally equiangularly spaced intervals about the longitudinal axis of the piston member, each said passageway formed at an acute angle to said longitudinal axis and having an opening into said fluid chamber located adjacent the edge of said movable endwall;

sealing means associated with said movable end wall for maintaining an hermetic seal between said end wall and said side wall; and

gas permeable liquid reactive means in each of said passageways for substantially sealing its respective passageway on contact with liquid.

4,615,342
DEVICE FOR DETERMINING CONTINUOUSLY THE HARDNESS OF A SMOKABLE ARTICLE

Hartmut Federle, Ahrensburg, and Friedrich Walther, Bargteheide, both of Fed. Rep. of Germany, assignors to B.A.T. Cigaretten-Fabriken GmbH, Hamburg, Fed. Rep. of Germany

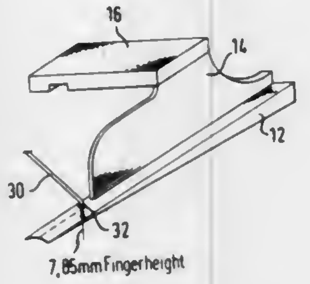
Filed Feb. 8, 1985, Ser. No. 699,629

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1984, 3404635

Int. Cl.⁴ A24C *5/14*

U.S. Cl. 131—84.1 **10 Claims**

1. In a device for the continuous determination of the hardness of a smokable article, during the manufacture of the smokable article with a former finger for compacting a rod of tobacco fibers to a given diameter, the improvement being that a temperature sensing device is positioned at a point on the former finger so as to ascertain the temperature of the former finger, by providing a measurement signal for monitoring the temperature of the former finger, said hardness determination being based upon correlation to the heat produced by frictional forces between the rod of tobacco fibers and the underside of the former finger.



4,615,343
DEVICE FOR COMPRESSING TOBACCO IN TOBACCO COMMINUTING MACHINES

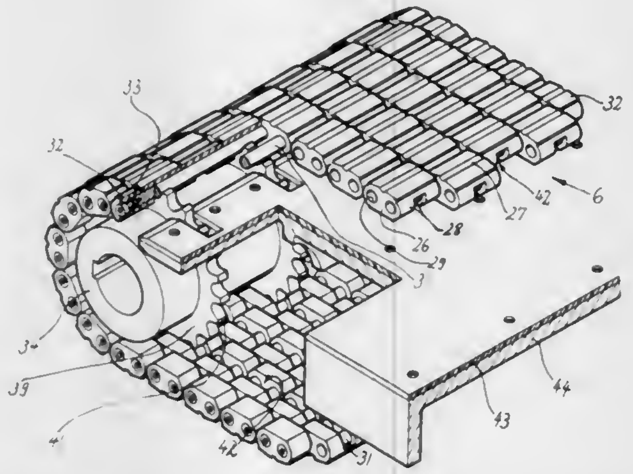
Werner Komossa, Börnsen, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Aug. 29, 1984, Ser. No. 645,438

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1983, 3331917

Int. Cl.⁴ A24B *7/04*

U.S. Cl. 131—111 **11 Claims**



1. The combination of at least one driven toothed sprocket wheel with an endless chain for compacting tobacco in a tobacco comminuting machine, said chain comprising a plurality of plastic links and metallic pins connecting said links to each other and being directly engageable by the teeth of said sprocket wheel, said links having inner sides facing said sprocket wheel during travel therearound and said inner sides having recesses affording access to the teeth of said sprocket wheel into direct engagement with the respective pins.

4,615,344
CIGARETTE WITH AUTOMATIC VENTILATION VALVE

Anthony Ringrose, Chenes-Bougeries, Switzerland, assignor to Battelle Memorial Institute, Carouge, Switzerland

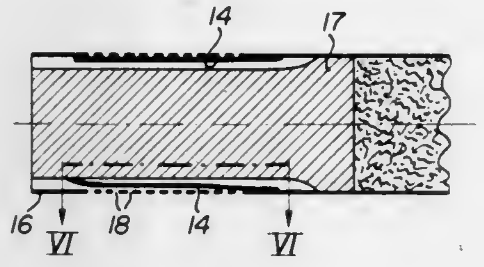
Filed Feb. 14, 1984, Ser. No. 580,077

Claims priority, application Switzerland, Feb. 15, 1983, 823/83

Int. Cl.⁴ A24D *3/04*

U.S. Cl. 131—198.2 **14 Claims**

1. A cigarette comprising a tobacco containing portion subjected to progressive combustion with flow of smoke through an aspirating end and provided at said aspirating end with a valve controlling the degree of mixing of air with the smoke, said valve comprising at least one bilamellar strip having opposite faces of different hydrophilic character and deformable in response to the water vapor content of the smoke to regulate air admission thereto.



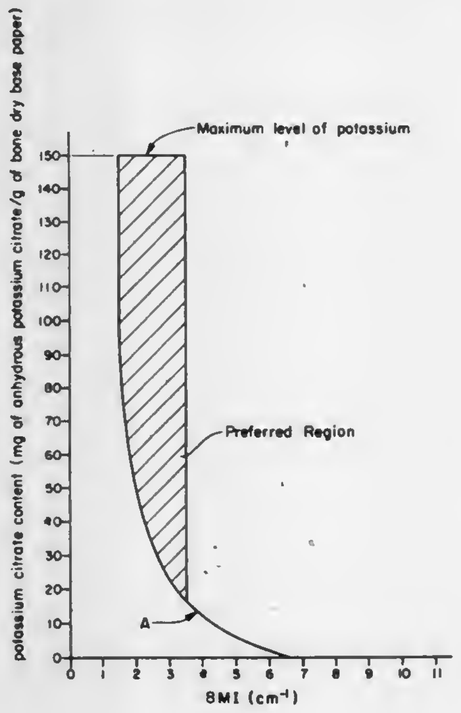
4,615,345
WRAPPER CONSTRUCTIONS FOR SELF-EXTINGUISHING SMOKING ARTICLES

Donald F. Durocher, Roswell, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 521,306, Aug. 8, 1983, abandoned. This application Jul. 11, 1984, Ser. No. 627,711

Int. Cl.⁴ A24D *1/02*

U.S. Cl. 131—365 **20 Claims**



1. A single wrapper construction for a smoking article, said wrapper construction comprising a base web containing cellulose fibers, said base web being nonburning under normal smoking conditions, said base web containing a plurality of zones treated with a burn promoter in sufficient amount to cause said wrapper construction in use to maintain burn of said smoking article within said zones but said wrapper construction causing said smoking article to self-extinguish outside of said zones if not puffed.

4,615,346
PERMANENT WAVE TREATMENT TO HAIR AND MATERIAL USED THEREIN

Louis Messina, 8 Buckthorn La., Collegeville, Pa. 19426, and Terry P. Hoffman, 3255 Sunset Ave., Eaglesville, Pa. 19403

Filed Dec. 17, 1984, Ser. No. 682,438

Int. Cl.⁴ A45D *7/00*

U.S. Cl. 132—7 **10 Claims**

1. An improved acid solution for use in permanent wave treatments of hair, wherein hair is sectioned and each section of hair is rolled between end wraps, a permanent wave solution is applied to said hair sections, and a neutralization step is later performed, the improvement which comprises providing an acid solution and an acid-base indicator combined in a single fluid for use in said neutralization step, said acid-base indicator producing a color change in said end wraps wherever applied to said hair sections and thereby confirming the completeness of said neutralization step when all of said end wraps show said color change.

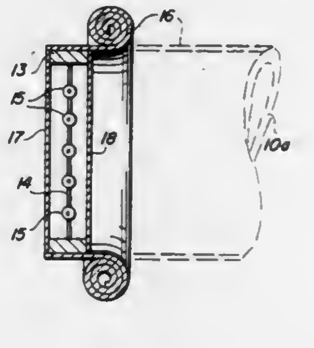
4,615,347
SCENT DISK FOR HAIR DRYER

Teresa D. Schooley, 2815 Bayview Dr., Naples, Fla. 33962

Filed Jun. 18, 1984, Ser. No. 621,703

Int. Cl.⁴ A45D *1/00*

U.S. Cl. 132—9 **6 Claims**



1. An attachment for an electrically powered hair dryer designed to impart a desired scent to the hair being dried comprising

an annular ring,

an open screen made of intersecting horizontal and vertical strands attached to and surrounded by said annular ring,

a plurality of beads of scented material attached to and supported at the intersections of the strands of said screen,

said scented material being solid at room temperature and volatizable by exposure to a stream of moving air having a temperature of at least 40° C.,

a pair of circular foils removably attached to the opposite sides of the ring and covering the screen and its attached beads without touching said beads, and

a cylindrical sheath of thin flexible material having one end of said sheath bonded to the outer edge of said ring.

4,615,348
METHOD FOR ADHERING ARTIFICIAL NAIL

Chiaki Nakata, and Toshio Takenaka, both of Osaka, Japan, assignors to Taoka Chemical Company Limited and Sumitomo Chemical Co. Limited, both of Osaka, Japan

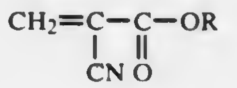
Filed Dec. 13, 1982, Ser. No. 449,191

Claims priority, application Japan, Dec. 11, 1981, 56-199844; Dec. 14, 1981, 56-201091

Int. Cl.⁴ A61K *7/00, 7/104;* **A45D** *31/00*

U.S. Cl. 132—73 **7 Claims**

1. A method for adhering an artificial nail to a natural nail and later removing the artifical nail which comprises the steps of applying an adhesive, comprising at least one α-cyanoacrylate of the formula:



$$CH_2{=}\underset{\displaystyle CN}{\underset{|}{C}}{-}\underset{\displaystyle O}{\underset{\|}{C}}{-}OR$$

wherein R is n-propyl, isopropyl, n-butyl, isobutyl, methoxyethyl, ethoxyethyl or tetrahydrofurfuryl, to at least one of the artificial nail and the natural nail, contacting the artificial nail with the natural nail, and separating the artifical nail from the natural nail with an adhesive remover, substantially without damage to the natural nail, such that said separation can be easily accomplished in five minutes or less.

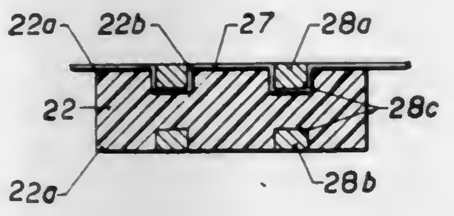
4,615,349
DISPOSABLE DENTAL FLOSSER

Raymond Kukuruzinski, 2800 Quebec St., N.W., Washington, D.C. 20004

Continuation of Ser. No. 432,249, Oct. 1, 1982, abandoned. This application May 6, 1985, Ser. No. 730,813

Int. Cl.⁴ A61C *15/00*

U.S. Cl. 132—91 **10 Claims**



1. A disposable dental flosser for the removal of plaque from teeth, comprising;

a body portion including a pair of tuning-fork-like prongs having generally flat planar extremities and which flat extremities each has a generally rectangular cross-section, said flat extremities being in laterally spaced and parallel relationship one another, and being formed of a first relatively soft plastic;

a dental floss element of a length of at least corresponding substantially to the lateral width of the extremities of the spaced prongs and tightly stretched therebetween in permanent tensioned relationship, each respective end of said floss element being in contact with an outside face of the flat planar surface of said extremities of the prongs, said dental floss element being formed of a second plastic which is relatively hard compared to said first relatively soft plastic;

and permanent fastening means for permanently and fixedly attaching each end of the dental floss element onto and into the outside face of said flat planar surface of said extremity of each said prong, each said fastening means being formed of a material harder than said relatively soft body portion plastic, and having a flat portion with a rectangular cross-section and which directly engages said floss element forcing said floss element into said flat planar surface of said extremity to resiliently deform said relatively soft plastic and to provide said ends of said floss element with an angulated configuration whereby said floss element ends make a plurality of approximately right angle turns.

4,615,350
COIN DISPENSING DEVICES

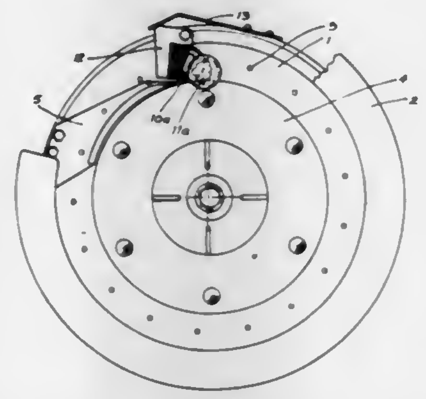
Glenn H. Boudville, Casula, Australia, assignor to Ainsworth Nominees Pty. Ltd., New South Wales, Australia

Filed May 15, 1984, Ser. No. 610,506

Claims priority, application Australia, May 24, 1983, PF9504

Int. Cl.⁴ G07D *1/00*

U.S. Cl. 133—1 R **1 Claim**



1. A coin dispensing device of the disc type having a disc rotated by an electric motor, the disc being disposed in a first plane and arranged to rotate in said first plane in a housing constituting part of a coin storage bowl, a plurality of circumferentially spaced pegs or functionally equivalent structures on the face of the disc arranged to entrain coins in said bowl lying against the face of the disc between adjacent pegs as the disc rotates, a central concentric spigot on the face of the disc of a thickness equal to or slightly less than the thickness of a coin with which the dispensing device is intended to operate arranged to support coins carried between said pegs and a coin runner arranged tangentially to the periphery of the spigot onto which coins carried between said pegs on the spigot are delivered characterized in that a coin ejecting device is arranged in close proximity to the coin runner, the device consisting of a member disposed in a second plane which is spaced apart from and parallel to said first plane, said member being pivotally attached to the casing of the hopper for pivotal movement relative to the casing in said second plane, the member having a flat surface arranged parallel to the surface of the disc and spaced therefrom at a distance such that a single layer of coins may pass freely between it and the disc, to the coin runner, the member having on a face opposite said surface an inclined surface such that the member presents a knife edge towards oncoming coins, the arrangement being such that a second layer of coins carried by the disc to the member is caused either to fall back into the hopper by said inclined surface or, if propelled by a peg and in contact with said knife edge to act to pivot said member in said second plane in such a manner that the coin while being allowed to pass onto the coin runner is influenced by the member to fall off the coin runner back into the hopper.

4,615,351
METHOD OF AND APPARATUS FOR MONITORING THE SURFACE LEVEL OF MATERIAL IN A VESSEL

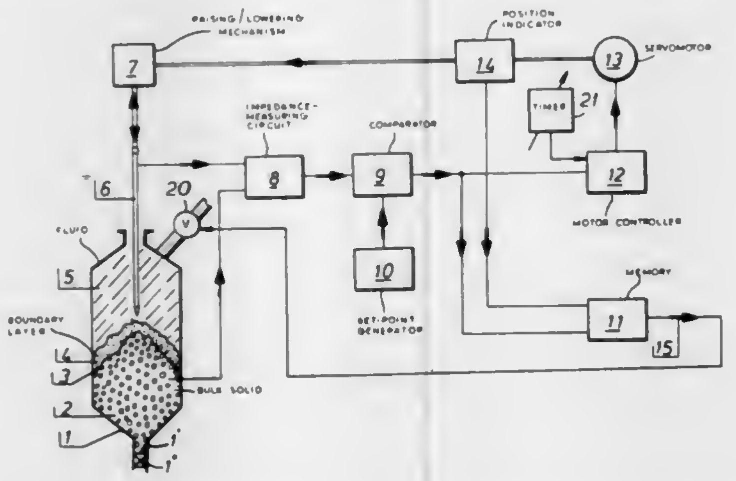
Heinrich Schliefer, Maschen; Rüdiger Naaf, Marxen, and Rolf Christ, Worpswede, all of Fed. Rep. of Germany, assignors to Norddeutsche Affinerie AG, Hamburg, Fed. Rep. of Germany

Filed Jul. 2, 1984, Ser. No. 626,655

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1983, 3323748

Int. Cl.⁴ F17D *3/00;* **B22D** *11/16*

U.S. Cl. 137—2 **7 Claims**



1. A method of monitoring changes in surface level of a nonmetallic flowable material in a container wherein a boundary layer without abrupt impedance change is provided between said material and an overlying gaseous medium, said method comprising the steps of:

periodically positively advancing a probe through said boundary layer toward said material which is selected from the group consisting of bulk solids, aqueous solutions, aqueous dispersions and organic liquids and retracting said probe away from said material so that at least during each advance and retraction cycle the probe is withdrawn from any contact with said material and out of said boundary layer and into the gaseous medium;

during the periodic advance and retraction of said probe measuring the electrical impedance between said material and said probe to provide a control signal representing the location of said boundary level; and

controlling the level of said material in said container in response to a comparison of said control signal with a signal obtained from a previous advance and retractin cycle of said probe.

4,615,352
PROCESS AND APPARATUS FOR SUPPLYING A MIXTURE OF CO_2 AND SO_2 OR A LIKE MIXTURE UNDER PRESSURE

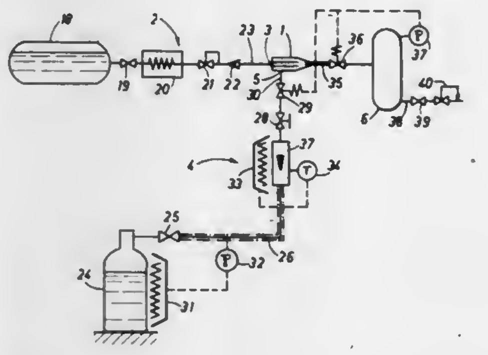
Claude Gibot, Malakoff, France, assignor to Carboxyque Francaise, Paris, France

Filed May 14, 1985, Ser. No. 733,780

Claims priority, application France, May 17, 1984, 84 07630

Int. Cl.⁴ G05D *11/00*

U.S. Cl. 137—7 **17 Claims**



1. A process for supplying at a given pressure of utilization a mixture of a first gas and a second gas which is unsaturated at ambient temperature, comprising filling a buffer tank with the gaseous mixture under a regulated pressure higher than said pressure of utilization, and drawing said mixture from said buffer tank, said process further comprising heating a vessel containing the second gas in a liquid form to a temperature which corresponds to a saturated vapour pressure slightly higher than the pressure in the buffer tank, and conveying the vapour thus formed into a secondary inlet of an aspiration device through a primary inlet of which a current of the first gas is made to flow t a pressure distinctly higher than said pressure in the buffer tank, said aspiration device being connected on a downstream side thereof to the buffer tank.

7. An apparatus for carrying out a process for supplying at a given pressure of utilization a mixture of a first gas and a second gas which is unsaturated at ambient temperature, said apparatus comprising a buffer tank, means for mixing the two gases, means for introducing said mixture into the buffer tank, means for maintaining the interior of the buffer tank at a regulated pressure higher than said pressure of utilization, and means for drawing off the mixture from said buffer tank, said mixing means comprising: an aspiration device having a primary inlet and a secondary inlet, a source of the first gas under a pressure distinctly higher than the pressure in the buffer tank; a pipe connecting said source to the primary inlet of the aspiration device, the aspiration device being connected on a downstream side thereof to the buffer tank; a vessel containing the second gas in the form of a liquid; a line connecting an upper portion of said vessel to the secondary inlet of the aspiration device; and means for heating said vessel whereby vapor produced by said heating flows through said line to said secondary inlet.

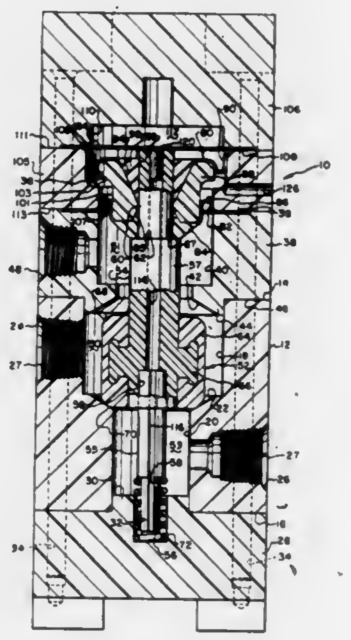
4,615,353
PNEUMATIC CONTROL VALVES WITH DIAPHRAGM ACTUATORS AND MODULAR BODY STRUCTURE

James E. McKee, P.O. Box 470544, 7207 Envoy Ct., Dallas, Tex. 75247

Filed Jan. 26, 1984, Ser. No. 574,278

Int. Cl.⁴ F16K *11/04*

U.S. Cl. 137—102 **22 Claims**



1. A pressure fluid control valve having a modular body structure and an axially movable closure member reciprocably disposed in said body structure, comprising:

a first body part having first and second coaxial bores, and a first seat surface formed at the intersection of said first and second bores;

a second body part having a third bore and means forming a second seat surface opposite said first seat surface;

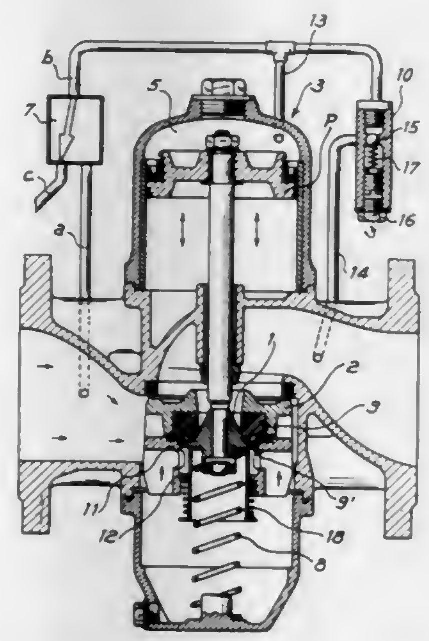
spaced apart fluid conducting ports opening into said first second and third bores, respectively;

said closure member comprising an elongated shaft and means forming a generally cylindrical closure plug on said shaft and disposed in said first bore and movable to engage said first and second seat surfaces to alternately place said second port in communication with said first and third ports while blocking communication of said second port with the other of said first and third ports; and

a flexible rolling diaphragm actuator secured to one end of said shaft and to said body structure for supporting said shaft for movement between positions wherein said closure plug is engaged with one of said seat surfaces, said diaphragm actuator comprising a first and second flexible rolling diaphragms each having a hub portion for supporting said diaphragm actuator on said shaft, each of said hub portions having a conically tapered outer surface, a hub member having a pair of opposed outwardly flaring conically tapered surfaces sealingly engaging said conically tapered surfaces of said hub portions of said diaphragms disposed on said shaft in supportive relationship to said first and second diaphragms, and vent means for venting a chamber formed in said body structure between said diaphragms.

4,615,354
VALVE SYSTEM TIMING DEVICE FOR PIPES CARRYING LIQUID UNDER PRESSURE

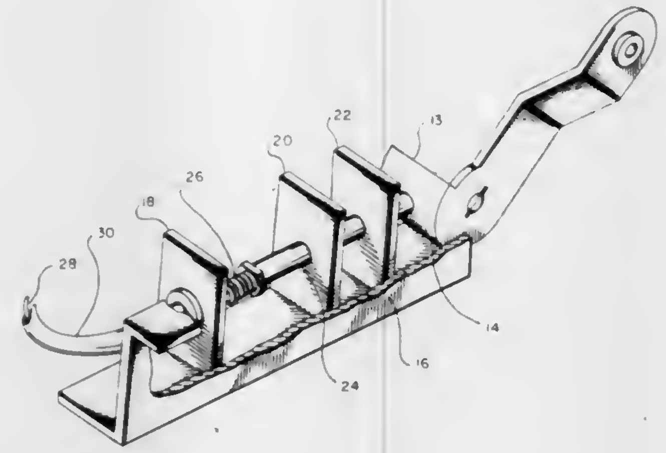
Costanzo Bianchi, Milan, Italy, assignor to S.I.G.M.A. - Societa Idraulica Generale Macchine Accessori, Milan, Italy
Continuation-in-part of Ser. No. 262,257, May 8, 1981, abandoned. This application May 17, 1984, Ser. No. 611,272
Claims priority, application Italy, May 8, 1980, 21899 A/80
Int. Cl.^{4} F16K *1/00*
U.S. Cl. 137—110 **5 Claims**



1. A hydraulic valve operable to control a fluid flow so as to define an upstream portion and a downstream portion, at least an initial differential pressure prevailing between said portions, said downstream portion having predetermined geometrical and hydraulic characteristics, comprising in combination:
(a) an operating shutter;
(b) a by-pass shutter including a flow-rate limiting means for controlling the flow-rate through said by-pass shutter independent of the pressure difference between said upstream and downstream portions, said flow-rate limiting means forming the valve seat for said by-pass shutter and having a flexible orifice that varies in area inversely with the pressure difference between said upstream and downstream portions, said flow-rate limiting means being integral with said operating shutter;
(c) engagement means associated with said by-pass shutter for engaging with a complementary means associated with said operating shutter to cause said operating shutter to open upon a defined opening of said by-pass shutter;
(d) a fluid-pressure operated actuator for controlling the opening and closing of said operating and by-pass shutters, said actuator being operatively connected to said by-pass shutter to cause the same to open gradually due to the initial pressure in said upstream portion and to open fully upon a predetermined pressure in said downstream portion;
(e) a three way valve having an inlet connected upstream of said hydraulic valve, an outlet connected to said fluid-pressure operated actuator and an exhaust, so as to operate said actuator when said inlet and said outlet are in communication with one another;
(f) a chamber for housing said actuator; and
(g) a connecting pipe connecting said actuator chamber to said downstream portion, said connecting pipe including an adjustable check valve blocking any return flow from said downstream portion to said actuator chamber, whereby the pressure in said actuator chamber is adjustable even during the existence of any positive or negative pressure differential between said actuator chamber and said downstream portion.

4,615,355
AUTOMOBILE ANTI-THEFT DEVICE

Gervasio B. García; Eduardo E. Valdesuso, and Nicolas G. B. Quintero, all of GPO Box 1201, San Juan, P.R. 00936
Filed Sep. 26, 1983, Ser. No. 535,822
Int. Cl.^{4} F16K *35/00*
U.S. Cl. 137—383 **4 Claims**

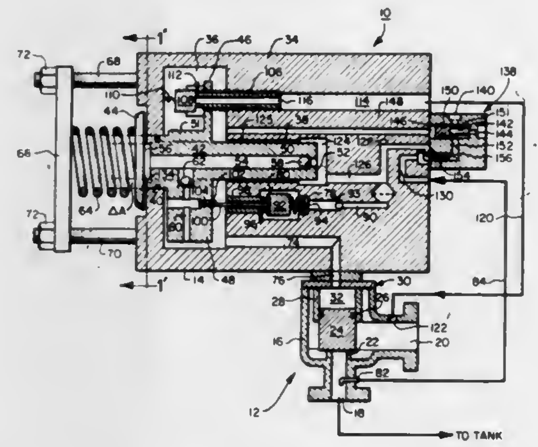


1. An apparatus for latching an automatic transmission comprising:
a latching subsystem including
an outer manual lever, a portion of which is located in the automatic transmission, that portion having a first metal plate having a first smooth surface which is provided with a first blocking open end;
a detent lever located within the automatic transmission having a second metal plate having a second smooth surface which is provided with a second blocking end; and
a manual valve located within the automatic transmission having a third metal plate having a third smooth surface which is provided with a third blocking end;
first, second and third bolts each bolt being associated with one of the metal plates of the outer manual lever, the detent lever and the manual valve, each of the bolts extends past the blocking open end of the associated metal plate when the automatic transmission is in a parking gear position;
a spring urging the bolts into sliding contact with the smooth surfaces of the metal plates and past the blocking open ends thereby restricting movement of the manual lever, the detent lever, and the manual valve; locking means for locking each of the three spring biased bolts in a first locked position, and releasing the bolts in a second unlocked position, the locking means, in the second unlocked position, allowing the bolts to move against the spring bias, and armouring means over the locking means and the latching subsystem to prevent tampering.

4,615,356
MODULATING PRESSURE OPERATED PILOT RELIEF VALVE

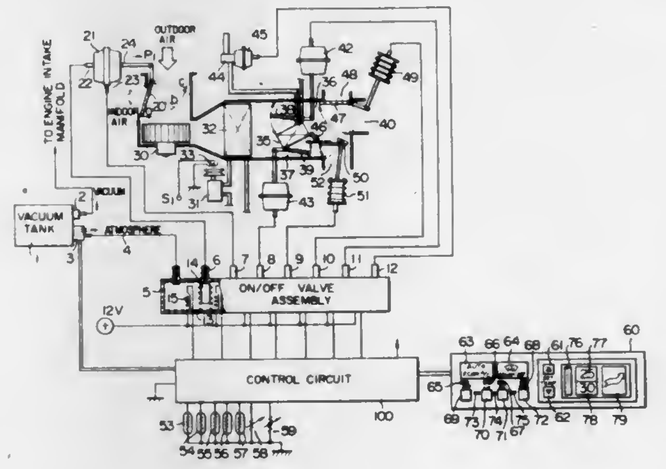
Raymond G. Reip, Indian Head Park, Ill., assignor to Vapor Corporation, Chicago, Ill.
Filed Sep. 22, 1983, Ser. No. 534,594
Int. Cl.^{4} G05D *16/00;* **F16K** *17/02*
U.S. Cl. 137—488 **4 Claims**

1. A pressure actuated pilot valve for a balanced main valve wherein said main valve includes an inlet, an outlet, a movable closure member and a pressurized head volume above said movable closure member, said pilot valve comprising:
a valve body including first and second chambers, and a pilot piston with first and second ends reciprocally mounted in said first and second chambers, respectively, first means communicating said first chamber with said pressurized head volume, second means for communicating said inlet of said main valve with said first chamber, first valve means actuable by said pilot piston for controlling fluid flow through said second communicating means, third means for communicating said outlet of said main valve with said first chamber, second valve means actuable by said pilot piston for controlling fluid flow through said third communicating means, and a test valve including an inlet connectable with a source of test pressure, an outlet in fluid communicating with said test valve inlet through a poppet chamber in said test valve, a poppet valve reciprocally mounted between said test valve inlet and said first outlet in said poppet chamber, said poppet valve having a piston responsive to fluid pressure in said first pilot chamber, and a poppet extension on said poppet for controlling fluid flow between said poppet chamber and outlet, and a shuttle valve reciprocally mounted between said pilot second chamber, said main valve inlet, and said test valve poppet chamber for controlling fluid flow therebetween.



4,615,357
APPARATUS FOR CONTROLLING ACTUATORS OPERATIVE UNDER NEGATIVE PRESSURE

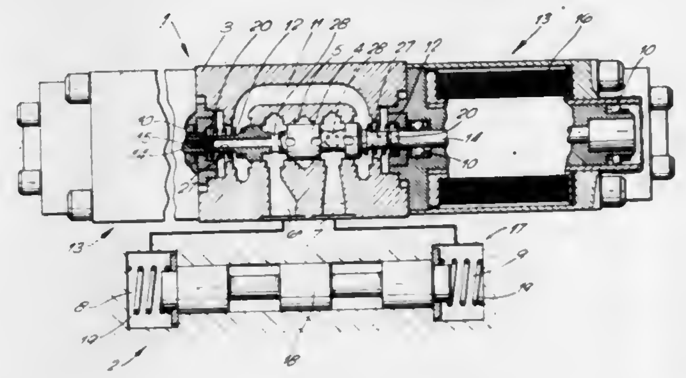
Tosikazu Ito, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 26, 1985, Ser. No. 769,323
Claims priority, application Japan, Sep. 7, 1984, 59-186367
Int. Cl.^{4} F15B *13/06*
U.S. Cl. 137—596.17 **5 Claims**



1. Apparatus for controlling supply of a negative pressure and the atmospheric pressure to actuators operative under the negative pressure, said actuators in turn controlling associated devices to be controlled, comprising:
a pressure source capable of producing selectively and alternately said negative pressure and said atmospheric pressure, wherein said pressure source includes a negative pressure tank, a negative pressure inlet port connected to said negative pressure tank, an atmospheric pressure inlet port opened to the atmosphere, a fluid pressure medium outlet port, and an electromagnetic change-over valve mechanism for connecting alternately said negative pressure inlet port and said atmospheric pressure inlet port to said fluid pressure medium outlet port periodically at a predetermined time interval;
decision means for deciding whether the negative pressure or the atmospheric pressure is to be applied to said actuators; and
control means responding to the output of said decision means for connecting the actuator to be supplied with the negative pressure to said pressure source during a period in which the said pressure source produces the negative pressure and connecting the actuatory to be supplied with the atmospheric pressure to said pressure source during a period in which said pressure source produces the atmospheric pressure.

4,615,358
PILOT VALVES FOR TWO-STAGE HYDRAULIC DEVICES

John A. G. Hammond, Frinton-on-Sea, and Andrew C. Morley, Emsworth, both of England, assignors to Vickers, Incorporated, Troy, Mich.
Filed May 30, 1984, Ser. No. 615,143
Claims priority, application United Kingdom, Jun. 1, 1983, 8315079
Int. Cl.^{4} F15B *13/043*
U.S. Cl. 137—625.63 **12 Claims**



1. A solenoid-operated, proportional control pilot valve for a two-stage hydraulic device comprises a housing, a bore formed in the housing, an inlet port, at least one service outlet port and two tank outlet ports also formed in the housing and communicating with said bore, a spool slidably mounted in said bore for movement in opposite directions from a normal null position in order to control fluid flow from the inlet port to a selected outlet port so as to deliver fluid under pressure to the second stage of the device to actuate the latter in one direction or an opposite direction from a normal null position, the spool being formed with two passageways each extending interanlly of the spool between one end face of the latter and different points on the periphery of the spool, and the pilot valve further comprising two spool control devices, at least one of which is a solenoid, associated with respective ends of the spool, said solenoid being operated form a source of electrical control signals, the magnitude of which is proportional to the movement of the pilot valve spool and hence to the flow of fluid from the pilot valve, said control devices in normal operation seating against the end faces of the spool, when electric input is applied to the solenoid, to close the passageways against fluid flow therethrough, and becoming unseated when electrical input is interrupted to the solenoid whereby both ends of the second stage are at a common pressure so as quickly to relieve the pressure in the second stage of the device, thereby permitting fast return of the latter to the null position.

4,615,359

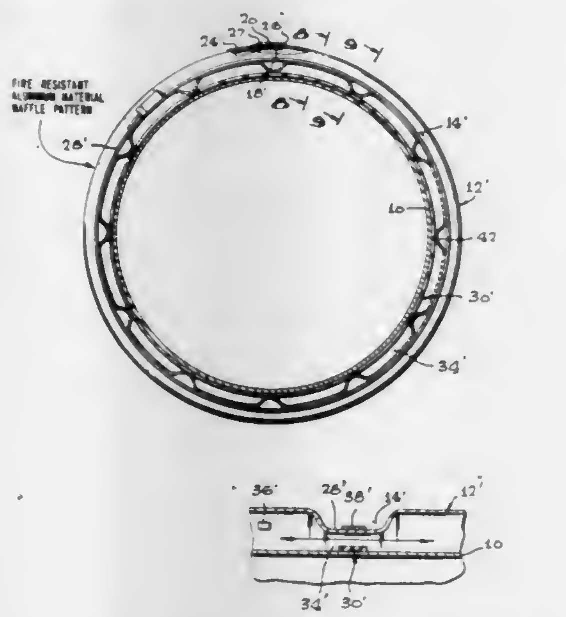
SHROUD FOR AIRCRAFT DUCT

Stephen N. Affa, Pocatello Koa, Pocatello Creek Rd., Pocatello, Id. 83201; Robert S. Allison, 8878 Callita St., San Gabriel, Calif. 91775, and Ira R. Newman, 6312 Variel St., Woodland Hills, Calif. 91367

Continuation-in-part of Ser. No. 412,515, Aug. 30, 1982, abandoned. This application Jun. 1, 1983, Ser. No. 500,073

Int. Cl.⁴ F16L *9/18*

U.S. Cl. 138—104 **7 Claims**



1. An apparatus comprising a duct for use in aircraft, a shroud mounted on said duct, said shroud comprising an axially extending tube, the surface of said tube having at least one clamping band receiving groove formed therein, said groove having a radially inwardly spaced base, said base having a plurality of radially inwardly projecting angularly spaced arcuate projections defining spacers, a band formed from a heat resistant rubber-like material secured to the outer surface of the duct beneath said clamping band receiving groove, said spacers engaging the outer surface of said band for holding said shroud in a radially outwardly spaced relationship to said duct, defining thereby an insulating air gap between the duct and the shroud and isolating said shroud from aircraft vibration and heat in the duct, the portions of the base of the groove between said arcuate projections defining channels beneath said clamping band receiving groove for the passage of gases in the air gap between the outer surface of the duct and the inner surface of the shroud.

4,615,360

MEANS PROVIDING SEPARATION OF EXTERIOR SHEATH OF LIQUID ON DISPENSING TIP

Merrit N. Jacobs, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

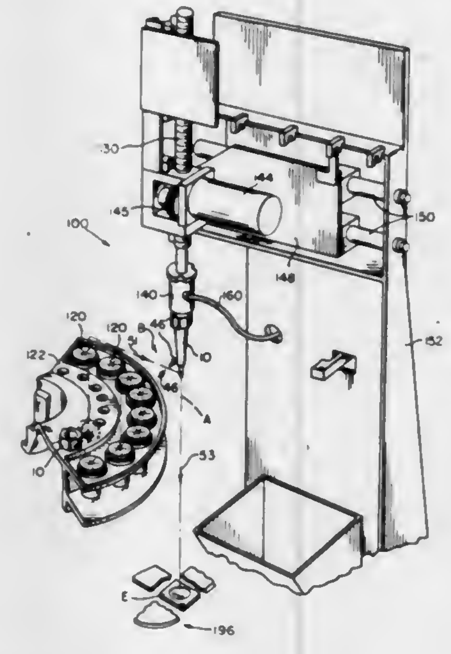
Filed Sep. 5, 1985, Ser. No. 772,783

Int. Cl.⁴ B67C *1/06;* B65B *3/04*

U.S. Cl. 141—18 **5 Claims**

3. In apparatus for aspirating liquid into a dispensing container having a dispensing tip and aperture, and means for moving said container and dispensing tip first into the liquid to permit aspiration, and then away from the liquid to permit dispensing, said dispensing tip comprising an end surface through which said dispensing aperture extends, said end surface terminating at an edge, said dispensing tip further including an exterior surface extending from said end surface edge, said exterior surface being subjected to residual liquid left as a sheath thereon when said tip is immersed in the liquid during aspiration and then removed from the liquid;

the improvement wherein said apparatus further includes at least one air jet spaced from and aimed at said tip, and means for delivering air to said jet at a flow rate sufficient to divide said sheath into two parts separated along the axis of said tip a distance of at least 0.1 cm, without physically detaching said liquid, the part of the liquid which is located adjacent said aperture extending away from said aperture a distance no greater than 900 μm.



4,615,361

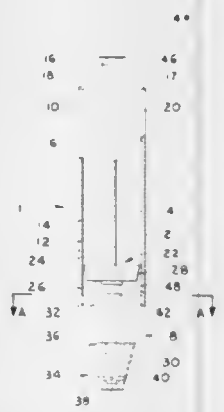
EVACUATING PUMP

David C. Bartle, Sr., 421 S. Walnut St., Muncie, Ind. 47306

Filed Jan. 11, 1985, Ser. No. 690,698

Int. Cl.⁴ B65B *31/04*

U.S. Cl. 141—65 **15 Claims**



3. An evacuating pump for extracting air from food bags comprising, a hollow cylindrical body, a cap attached to one end of the cylindrical body, and having a central bore therethrough, a frusto-conically shaped nozzle for projecting into one of said bags, said nozzle being, attached to the opposite end of the cylindrical body, a plunger slideably disposed within the cylindrical body, the plunger having a reciprocating rod with an outward end extending outwardly through the central bore, and a resilient piston fixedly attached to an inward end of the reciprocating rod, the piston being conically shaped, valve means, connected to the nozzle, for shutting the nozzle in response to compression generated on an inward stroke of the plunger, and for opening the nozzle in response to vacuum generated on the outward stroke of the plunger, wherein the valve means comprises a hinged flap.

4,615,362

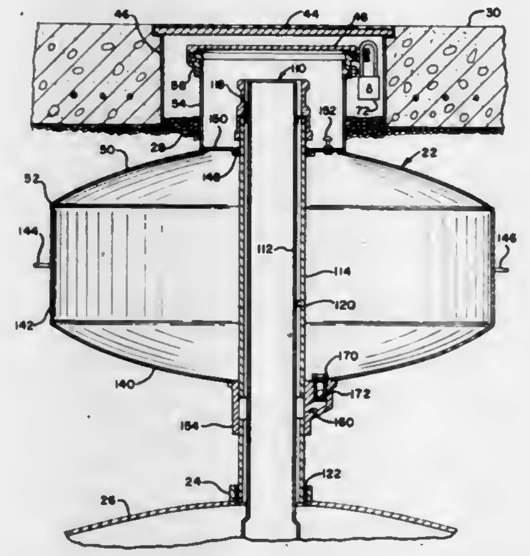
OVERFILL AND SPILLAGE PROTECTION DEVICE

Harry B. Hartman, Sugar Grove, Ill.; Gerard V. LaLonde, Durham, N.C., and Michael S. Butkovich, Aurora, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 25, 1985, Ser. No. 727,275

Int. Cl.⁴ B65B *3/06*

U.S. Cl. 141—86 **15 Claims**



9. An overfill and spillage protection assembly, comprising:

an underground storage tank for storing a motor fuel selected from the group consisting of gasoline and diesel fuel, said underground storage tank having an outlet and a generally upwardly facing inlet;

an interior upright fill tube connected to and extending generally upwardly from said inlet of said underground storage tank for filling said motor fuel from a fill hose of a tank truck into said underground storage tank, said fill tube having a bottom extending into said storage tank and a top defining an inlet mouth;

an exterior vapor return tube mounted concentrically about and positioned outwardly from said interior fill tube to define an annular chamber therebetween for upward flow of vapors and overfill of motor fuel from said underground storage tank, said exterior vapor return tube having a bottom portion secured to said storage tank and a top for receiving an adapter for releasable connection to a vapor return hose;

an annular reservoir providing a collection basin concentrically mounted about said exterior vapor return tube at a location spaced above said underground storage tank and below the tops of said tubes for containing spillage from said fill hose and overfill from said interior vapor return tube, said reservoir defining a lower section and an upper section with an exterior surface and having a volumetric capacity greater than the volumetric capacity of said vapor return hose;

a drain connected to the bottom portion of said exterior vapor return tube below said reservoir;

a one-way valve operatively connected to and communicating with the lower section of said reservoir and said drain for permitting passage of motor fuel in said reservoir into said drain for passage through the annular chamber about the bottom portion of said exterior vapor return tube into said underground storage tank when a substantial portion of the motor fuel in said tank is withdrawn through said outlet and for substantially blocking upward flow of overfill in said annular chamber from said underground storage tank through said valve;

a removable annular screen concentrically positioned about said exterior vapor return tube and upon the upper section of said reservoir for substantially preventing debris from falling into said reservoir, said debris comprising at least one member selected from the group consisting of dirt, leaves, cigarettes, bugs, snow, ice, and fragments thereof;

a collar extending generally upwardly from the upper section of said reservoir, said collar being concentrically positioned about the top of said exterior vapor return tube to define an annular passageway therebetween for passage of overfill from the top of said exterior vapor return tube into said reservoir and having an upper portion spaced above the top of said exterior vapor return tube;

a cap for engaging the upper portion of said collar to provide secondary protective covering for said tubes and said reservoir;

a manhole cover spaced above said cap to provide primary protective covering for said tubes and said reservoir; and

a manhole skirt extending downwardly from said manhole cover to a location above said reservoir and being spaced about said collar to define a drainage passageway therebetween for passage of water and debris over the exterior, surface of said reservoir.

4,615,363

FILLING AND WEIGHING MACHINE

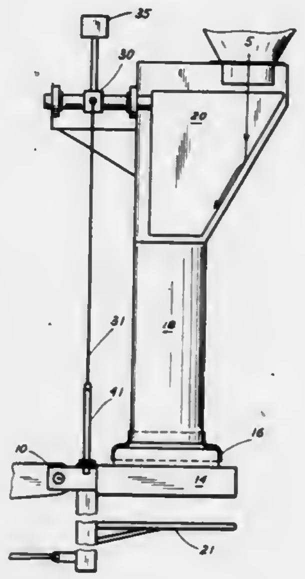
William G. Baker, Palm Beach, Australia, assignor to Design Engineering Pty. Limited, Brookvale, Australia

Continuation-in-part of Ser. No. 410,163, Aug. 20, 1982, abandoned. This application Nov. 29, 1984, Ser. No. 676,057

Claims priority, application Australia, Aug. 31, 1981, PF0497

Int. Cl.⁴ B65B *1/06*

U.S. Cl. 141—193 **7 Claims**



7. Apparatus for dispensing predetermined weights of material into containers, said apparatus comprising:

a pair of pivotable support members, one end of each support member providing a support for a respective container to be filled, the other end of each support member providing a predetermined counterweight to determine the weight of material to be dispensed into said respective container, each said support member being pivotable about an axis between its ends;

a material feeding chute pivotable about an axis and adapted to dispense material alternately into each said container in such a manner that a material flow entering said feeding chute impinges on a face of said chute so as to produce no substantial turning moment about the pivot axis of said chute; and

means for directing said feeding chute from one container to the other when said one container is filled to the predetermined weight;

whereby said means for directing said feeding chute comprises a counterweighted directing member pivotable about an axis between its ends, two flexible lines, each connected between a respective one of said support members and a respective end of said directing member, said directing member being connected to said feeding chute, whereby each said flexible line causes said directing member to pivot in response to movement of the corresponding support member in only one direction when the respective container is filled to thereby direct said feeding chute to the other container.

4,615,364
DEVELOPER INCOMING DEVICE IN ELECTROSTATIC REPRODUCING APPARATUS

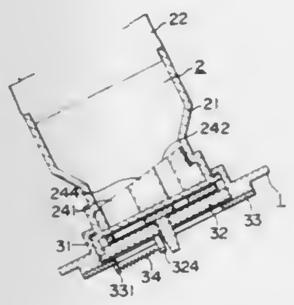
Shun Kawata, Tokyo, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 13, 1983, Ser. No. 503,891

Claims priority, application Japan, Jun. 23, 1982, 57-94874[U]; Jun. 28, 1982, 57-98733[U]; Jun. 28, 1982, 57-98734[U]; Jun. 28, 1982, 57-98735[U]; Jun. 28, 1982, 57-98736[U]; Jun. 29, 1982, 57-98656[U]; Jun. 29, 1982, 57-98657[U]; Jun. 29, 1982, 57-98658[U]; Jul. 1, 1982, 57-114971; Jul. 1, 1982, 57-114972

Int. Cl.⁴ B65B *1/04*

U.S. Cl. 141—364 16 Claims



1. In combination:
a developer supplying device for electrostatic reproducing apparatus comprising:
an opening for receiving developer;
a rotatable device cover on said device movable to open and closed positions relative to said opening;
spring means for biasing said device cover to closed position;
and an operating member on said device cover actuatable to move said device cover to open position;
and a dry developer receptacle for attachment to said device and comprising:
means to releasably connect said receptacle to said device;
means to actuate said operating member to move said device cover to open position when said receptacle is attached to said device;
an inner cover and an outer cover on said receptacle, said covers being rotatable relative to each other;
said inner cover comprising an inner face including a sloped portion and an outer face;
said inner face of said inner cover defining a bottom wall of said receptacle when said receptacle is inverted and attached to said device;
said inner cover being provided with a developer discharge hole from which developer is able to flow from said container through said opening in said device and an air inlet hole through which air is able to flow into said container through said opening in said device when said container is inverted and connected to said device, each of said holes extending between said outer face and said inner face, said developer discharge hole terminating at said sloped portion of said inner face of said inner cover near the lower end of said sloped portion;
said outer cover comprising an inner face and an outer face;
said inner face of said outer cover confronting said outer face of said inner cover;
said outer cover being provided with a pair of holes, moving means, engaging said operating member on said device cover, to move at least one of said inner and outer covers relative to the other cover between an open position wherein each hole in said outer cover registers with one hole in said inner cover and a closed position wherein neither hole in said outer cover registers with any hole in said inner cover;
and biasing means for biasing said inner and outer covers toward said closed position.

4,615,365
TOOL SUPPORT FOR A WOOD TURNING LATHE

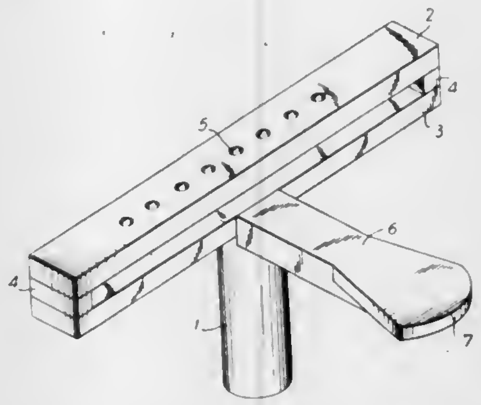
Harry L. Arnall, Lot 3, Enterprise Drive, Berkeley Vale, New South Wales, 2259, Australia

Filed Nov. 18, 1985, Ser. No. 799,156

Claims priority, application Australia, Nov. 19, 1984, 35674/84

Int. Cl.⁴ B27C *7/06*

U.S. Cl. 142—49 **5 Claims**



1. A tool support comprising; an elongated body portion with a parallel sided slot therethrough extending along a major part of the body and adapted to pass the working head and at least part of the shank of a woodturning chisel or like tool but to restrain rotational movement of such chisel or tool about its longitudinal axis; a post adapted to engage a tool support mount on a woodturning machine and to maintain the elongated body in a relationship to the piece being worked such that the parallel sided slot faces the work area; a support surface in front of the parallel sided slot and coplanar with one elongated side thereof adapted to provide additional support to a chisel or like woodturning tool extending through the slot.

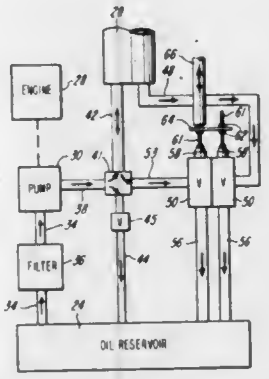
4,615,366
LOG SPLITTER WITH RAPID RETURN HYDRAULIC CYLINDER

John D. Scarbrough, Jr., 234-52 First Street, Piqua, Ohio 45356

Filed Jul. 8, 1985, Ser. No. 752,554

Int. Cl.⁴ B27L *7/00*

U.S. Cl. 144—193 A 8 Claims



1. In a log splitter including a frame having opposite end portions, a first log splitting member secured to one said end portion of said frame, a hydraulic cylinder secured to the other said end portion of said frame and having an extendable piston rod, a second log splitting member connected to said piston rod, said piston rod and said second log splitting member being movable between a retracted position and an extended position relative to said first log splitting member in response to the flow of hydraulic fluid within said hydraulic cylinder for splitting a log positioned between said first and second log splitting members, a power driven hydraulic pump and a hydraulic reservoir supported by said frame, and a control system for supplying hydraulic fluid from said reservoir to said hydraulic cylinder through said pump and for returning the fluid from said hydraulic cylinder and said pump to said reservoir, the improvement wherein said control system comprises a pair of hydraulic control valves each having a movable valve control member, a plurality of fluid lines connecting said hydraulic cylinder to said control valves, fluid conduit means connecting said control valves to said reservoir, and actuating means connected to said control members for moving both of said valve control members generally simultaneously to provide for a rapid return of hydraulic fluid from said hydraulic cylinder to said reservoir and corresponding rapid movement of said piston rod and said second log splitting member to said retracted position and thereby provide for quickly and efficiently splitting a supply of logs.

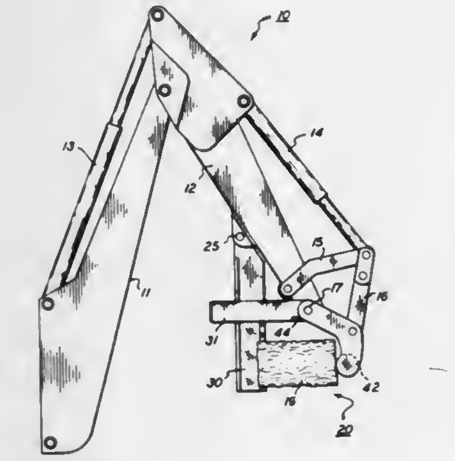
4,615,367
BACKHOE LOG SPLITTER

John C. Crowley, Jr., 2828 Keech Rd., R.D. #1, Branchport, N.Y. 14418

Filed Jul. 9, 1985, Ser. No. 753,238

Int. Cl.⁴ B27L *7/00*

U.S. Cl. 144—366 **38 Claims**



1. A log splitter for a backhoe having a boom and a dipperstick with a hydraulic curl actuator, said log splitter comprising:
- a. a pair of splitting pincers mounted on a free end of said dipperstick to extend below said dipperstick; and
- b. said pincers being driven closed and open by said hydraulic curl actuator.

23. A method of splitting logs with a backhoe having a boom and a dipperstick with a hydraulic curl actuator operable at a free end of said dipperstick, said method comprising:
- a. arranging a pair of splitting pincers on said dipperstick to extend below said free end of said dipperstick; and
- b. opening and closing said splitting pincers with said curl actuator for splitting logs.

4,615,368
APPARATUS FOR DETACHABLY FASTENING LATERAL CABLE IN TIRE CHAIN

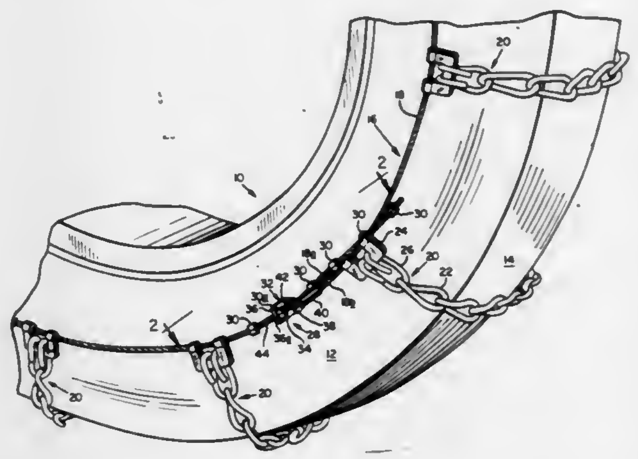
David J. Nestlen, Portland, Oreg., assignor to LaGrand Chain Corporation, Portland, Oreg.

Filed Oct. 30, 1984, Ser. No. 666,353

Int. Cl.⁴ B60C *27/06*

U.S. Cl. 152—213 A 4 Claims

1. Detachable fastener means for detachably securing together the opposed ends of a lateral cable in a tire chain comprising:
at least one anchor member disposed adjacent and mounted on one of the ends of the lateral cable, and
a generally U-shaped clasp which includes a bottom portion, a first expanse forming the free end of the clasp joined to the bottom portion at one extremity of the bottom portion and extending out at an angle therefrom, and a second expanse forming at least part of the other end of the clasp joined to the bottom portion at the latter's opposite extremity and extending out at an angle therefrom and to the same side of the bottom portion as the first expanse, said second expanse being joined to the other end of said lateral cable,
said clasp further having an elongate slot extending longitudinally of the clasp from one end of the slot, which is located in and extends along said first expanse, to an opposite end which is located in and extends along said second expanse, the slot between said ends dividing the base portion of the clasp, said slot at its said opposite end having an enlarged portion by reason of a width enlarged from that of the remainder of the slot, said second expanse joining with the other end of said lateral cable at a location disposed outwardly of said enlarged portion of the slot from said bottom portion of the clasp,
said enlarged portion of the slot accommodating passage therethrough of said anchor member with the lateral cable in the tire chain oriented with the cable moved through the slot where the slot divides the base whereby the cable extends through one and the other ends of the slot in a position subtending said base.



4,615,369
ADHESION OF BRASS PLATED STEEL TO RUBBER

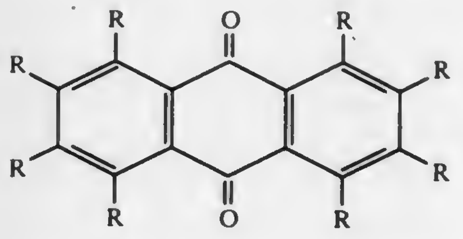
Satish C. Sharma, Mogadore, Ohio, assignor to GenCorp, Akron, Ohio

Filed Feb. 18, 1986, Ser. No. 830,161

Int. Cl.⁴ B60C *9/02*

U.S. Cl. 152—565 9 Claims

5. A vulcanized pneumatic tire reinforced with brass plated steel cords or fabric and adhered to said cords or fabric a ply or skim rubber composition, the rubber of said composition containing from about 0.2 to 1.5 parts by weight per 100 parts by weight of said rubber of at least one compound having the formula:



where two of the R's are hydroxyl radicals and the remaining R's are selected from the group consisting of —H, —OH, $—CH_3$, $—NO_2$, $—CH_2OH$ and —COOH, at least four of the remaining R's being —H.

4,615,370

DEVICE FOR SELECTING THE TOOLS OF THE TOOL CARRYING HEAD OF TIRE REMOVAL MACHINES IN GENERAL

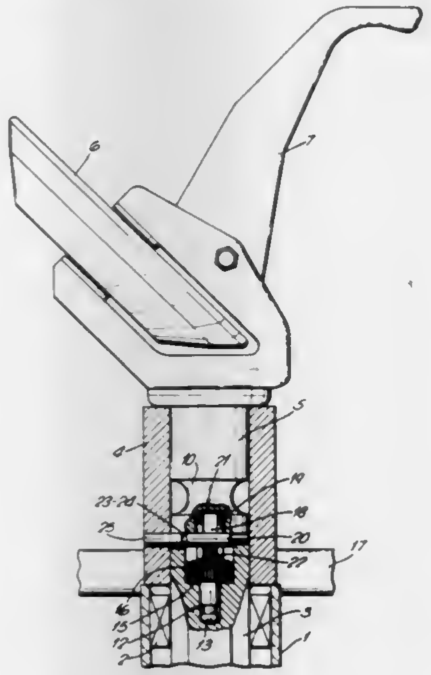
Maria Cuccolini, Correggio Emilia, Italy, assignor to Corghi Elettromeccanica S.p.A., Correggio Emilia, Italy

Filed Nov. 5, 1984, Ser. No. 668,146

Claims priority, application Italy, Nov. 4, 1983, 46874 A/83

Int. Cl.⁴ B60C *25/08*

U.S. Cl. 157—1.24 **5 Claims**



1. In a tire changing machine of the type in which a tool carrying head is mounted on a bar which can swivel under the action of a first double-acting hydraulic cylinder-piston unit between a working position close to the tire and a rest position remote from the tire, and in which the tool carrying head is mounted to pivot so that different tools on the head can be pivoted to an operating position, the improvement comprising, a pinion gear rotatable supported by the bar, a rack engaging said pinion, a second double-acting cylinder-piston connected to said rack for reciprocating the rack to alternately rotate the pinion in a forward direction and a reverse direction, a freewheeling one way drive between said pinion and the tool carrying head for rotating said head only when the pinion is rotated in said first direction, cooperating means between said head and said bar for retaining the head at each one-half revolution thereof, and wherein, said second double-acting hydraulic cylinder-piston unit is connected to the hydraulic line which supplies pressurized fluid to the first double-acting hydraulic cylinder-piston unit to swivel the head to the rest position, by a hydraulic sequence valve to direct fluid to the second cylinder and rotate said head, after the head is moved to the rest position by the first cylinder.

4,615,371

AWNING WITH RESILIENT MOTOR COUPLING

Ulrich Clauss, Bissingen, Fed. Rep. of Germany, assignor to Clauss Markisen, Bissingen-Ochsenwang, Fed. Rep. of Germany

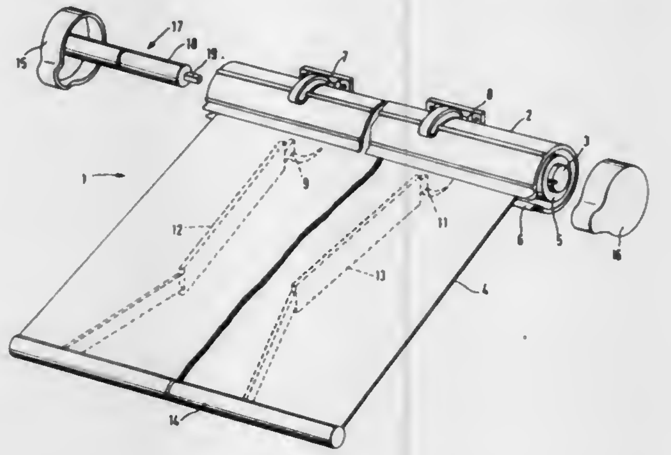
Filed Sep. 17, 1984, Ser. No. 651,303

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1983, 3334416

Int. Cl.⁴ E04F *10/06*

U.S. Cl. 160—22 **38 Claims**

1. A motorized awning having a rotatably supported winding shaft housed in an awning box for an awning cloth capable of being wound on said winding shaft, said cloth being secured along one edge on the winding shaft and along the opposite edge on an extendable rod, an immovably supported drive motor, its output shaft coupled with the winding shaft for the automatic retraction of the awning, a first limit switch for controlling the motor current when the cloth of the awning is retracted operating in dependence upon the rotary position of the output shaft of the drive motor and being connected directly in the motor power circuit, and a second limit switch for controlling the motor current when the cloth is extended, so that after the actuation of said limit switches the drive motor can be started only with the opposite sense of rotation, the improvement comprising; a resilient coupling member including a spring elastic element positively coupling the output shaft of said motor with the winding shaft at least in the sense of direction of winding of the cloth of the awning, the input side of said coupling member being connected with said output shaft and its output side being connected with said winding shaft, said resilient coupling member permitting at least a limited relative rotary motion between said winding shaft and said output shaft of said drive motor.



4,615,372

FOUNDRY BINDER WITH IMPROVED BREAKDOWN AND IMPROVED THERMAL RECLAMATION PROPERTIES

Jordan J. Kopac, Franksville, Wis., and Arek Khachaturian, Birmingham, Mich., assignors to Delta Resins & Refractories, Milwaukee, Wis.

Division of Ser. No. 630,925, Jul. 17, 1984, Pat. No. 4,568,728. This application Jun. 24, 1985, Ser. No. 736,336

Int. Cl.⁴ B22C *9/00*

U.S. Cl. 164—16 **7 Claims**

1. The process of preparing shaped foundry products having improved breakdown which comprises:

(a) forming a foundry mix by uniformly distributing on a foundry aggregate containing sand as a major constituent a binding amount of up to 10% based on the weight of the aggregate of a binder comprising a mixture of a low molecular weight condensation product of phenol and formaldehyde, and a metal drier wherein the metal portion of said drier comprises from 0.5% to about 5.5% by weight based on weight of said phenol formaldehyde condensation product;

(b) mixing therewith a polyisocyanate in a concentration of 10 to 500% by weight based on the weight of said phenol formaldehyde condensation product;

(c) shaping the foundry mix in a mold; and

(d) permiting said binder composition to react with said polyisocyanate to bind the shaped foundry mix.

4,615,373

METHOD AND AN APPARATUS FOR MANUFACTURING A HOLLOW STEEL INGOT

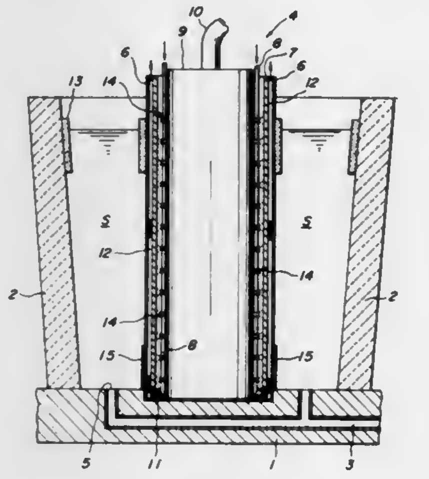
Kenji Saito; Kyoji Nakanishi, both of Chiba; Akihiko Nanba; Masayuki Onishi, both of Kurashiki; Minoru Yao; Toshio Kato, both of Kurashiki, and Shinji Kojima, Kurashiki, all of Japan, assignors to Kawaski Steel Corporation, Kobe, Japan

Filed Aug. 30, 1985, Ser. No. 771,213

Claims priority, application Japan, Sep. 3, 1984, 59-182753

Int. Cl.⁴ B22D *27/04*

U.S. Cl. 164—125 **5 Claims**



1. In a method for manufacturing a hollow steel ingot by coaxially arranging a cylindrical metallic core in a center of a mold and pouring molten steel into an annular casting space defined between the core and the mold to cool and solidify it, the improvement wherein said core is constructed with a concentric double tube consisting of inner tube and outer tube, and cooled by flowing an inert gas through an annular gap defined between the inner tube and the outer tube and blowing a cooling air toward the inner peripheral surface of the inner tube, and under such cooling conditions for the core, molten steel is poured so that the product of the rise rate of molten steel and the overheating temperature of molten steel in the pouring is equal to or larger than 7,000 (mm·°C./min).

4. In an apparatus for manufacturing a hollow steel ingot by coaxially arranging a cylindrical metallic core in a center of a mold and pouring molten steel into an annular casting space defined between the core and the mold to cool and solidify it, the improvement wherein said core is constructed with a concentric double tube consisting of inner tube and outer tube and receives in its central portion a cooling gas tank provided with plural cooling gas outlets opened toward the inner peripheral surface of the inner tube, and plural inert gas outlets each connected to an inert gas supply pipe are arranged in the lower portion of the inner tube so as to open toward an annular gap defined between the inner tube and the outer tube.

4,615,374

FOUNDRY PLANT AND A MANOEUVERING APPARATUS FOR USE IN IT

Viggo Persson, Nivaa, Denmark, assignor to Dansk Industri Syndikat A/S, Denmark

PCT No. PCT/DK84/00032, § 371 Date Nov. 20, 1984, § 102(e) Date Nov. 20, 1984, PCT Pub. No. WO84/04061, PCT Pub. Date Oct. 25, 1984

PCT Filed Apr. 17, 1984, Ser. No. 677,547

Claims priority, application Denmark, Apr. 18, 1983, 1683/83

Int. Cl.⁴ B22C *25/00*

U.S. Cl. 164—442 **6 Claims**

1. In a foundry plant, a manoeuvring system for automatic manoeuvring of loads in the form of heavy, movable or exchangeable implements such as core masks, pattern plates and core box parts, the manoeuvring system comprising:

two carrier pins for each implement, said two carrier pins for each implement being disposed on the same side of the implement;

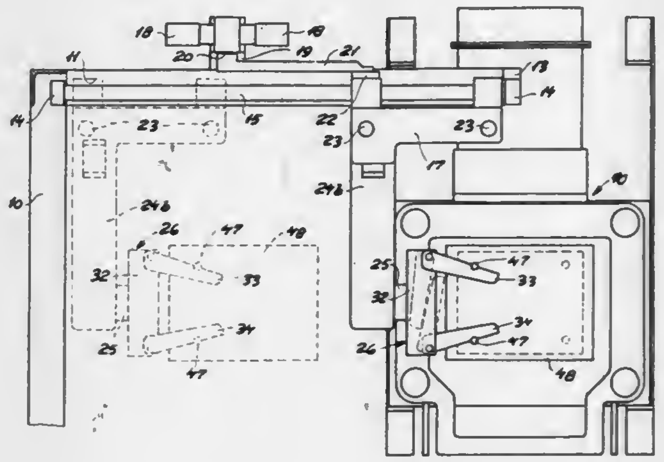
a frame;

a movable carriage movably mounted on said frame;

a moving means for moving said carriage relative to said frame,

a gripper for the implements, said gripper including two jaws, a positioning means for moving said jaws from a converged collapsed position to a diverged operative position, and a cutout provided on each jaw such that in the operative position said cutouts are on opposite sides of said jaws whereby said cutouts engage respective pins of the implement; and

a gripper rotating means for rotatably mounting said gripper to said carriage such that after said gripper engages the implement, the implement is manoeuvrable by said rotating means and by said moving means.



4,615,375

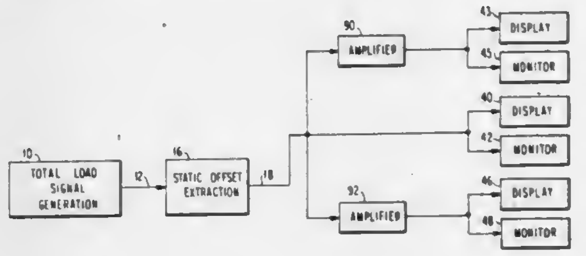
CONTINUOUS CASTING MOLD FRICTION MONITOR

John E. Bower; Ronald S. Vranka, both of Monroeville, and Mark H. Mahler, Pittsburgh, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 483,401, Apr. 18, 1983, abandoned. This application Apr. 12, 1985, Ser. No. 722,589

Int. Cl.⁴ B22D *11/16*

U.S. Cl. 164—451 **52 Claims**



36. A method of monitoring fraction between a mold and a casting metal, in a continuous casting apparatus of the type having a mold for receiving said casting metal, oscillating means for oscillating said mold, and mean load signal generating means for generating a mean load signal representing the mean load between said mold and said oscillating means, said method comprising the steps of:

monitoring said mean load signal; and

processing said mean load signal to obtain a signal representing at least a portion of said friction.

4,615,376
METHOD AND DEVICE FOR ELECTROMAGNETICALLY REGULATING POURING RATE IN CONTINUOUS CASTING

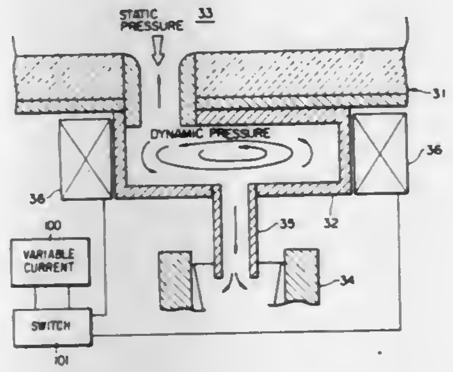
Takasuke Mori; Kenzo Ayata, and Takahiko Fujimoto, all of Hyogo, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Mar. 25, 1985, Ser. No. 715,830

Claims priority, application Japan, Mar. 26, 1984, 59-43818[U]

Int. Cl.⁴ B22D *27/02*

U.S. Cl. 164—466 **5 Claims**



1. A device for electromagnetically regulating a pouring rate of molten steel supplied from a tundish in continuous casting, comprising:

a cylindrical molten steel container having a molten steel inlet formed in a peripheral section of an upper surface thereof to receive molten steel supplied from the tundish therethrough and a molten steel outlet formed in a central section of a lower surface thereof to pour the molten steel therethrough into a mold, and

electromagnetic coils disposed around the side wall of the molten steel container so as to generate a rotating magnetic field extending perpendicularly to the side wall.

4. A method for electromagnetically regulating the pouring rate in continuous casting, employing a cylindrical molten steel container having a molten steel inlet formed in a peripheral section of an upper surface thereof to receive a molten steel supplied from a tundish through the inlet therethrough and a molten steel outlet formed in a central section of a lower surface of the container to pour the molten steel through the outlet into a mold, and electromagnetic coils disposed around the side wall of the molten steel container so as to generate a rotating magnetic field extending perpendicularly to the side wall, comprising:

joining the molten steel inlet tightly to the outlet of the tundish disposed above the molten steel container,

mounting the molten steel container with a pouring nozzle of a size meeting predetermined casting conditions,

deciding the magnitude of an electric current to be supplied to the electrogmagnetic coils according to the size of a pouring nozzle provided on said outlet,

regulating the magnitude of the electric current according to the variation of the head of the molten steel in the tundish, and

connecting the electrogmagnetic coils to a current source so that a rotating magnetic field is generated.

4,615,377
METHOD OF STRIPING HOT STEEL SLABS

Eugene Whitaker, Granite City, Ill., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Dec. 5, 1984, Ser. No. 678,595

Int. Cl.⁴ B23K *7/06*

U.S. Cl. 164—477 **3 Claims**

1. A method of striping a steel slab cast in a continuous caster comprising,

stopping the slab at a striping station on the runout table of the continuous caster,

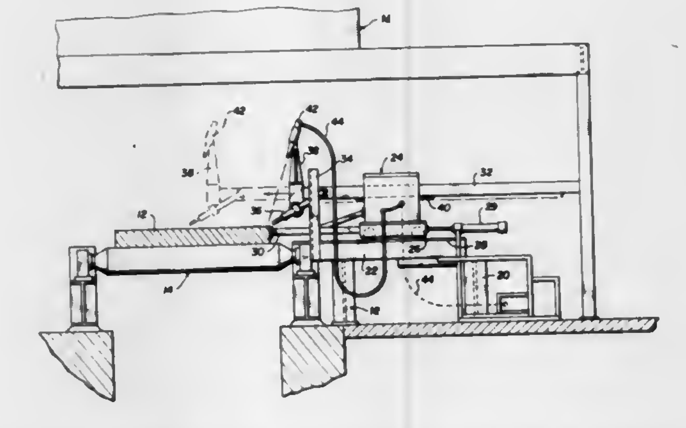
supporting a scarfing torch for movement along a predetermined path across the slab surface to be striped,

providing a supply of preheating gas and scarfing oxygen to the torch,

initially positioning and retaining said scarfing torch adjacent one side edge of the slab to be striped while supplying preheating gas only to the torch for a time sufficient to preheat an area of the slab surface adjacent the torch prior to supplying scarfing oxygen to the torch and thereafter moving the scarfing torch in a first striping pass along said predetermined path while supplying both preheating gas and scarfing oxygen to the torch to scarf a first layer from the slab surface,

providing an optical pyrometer and moving the optical pyrometer with the scarfing torch to continuously monitor the removal of the first layer to detect flash temperature increases produced by rapid reduction of alumina inclusions in said first layer being removed,

retracting said scarfing torch along said predetermined path while supplying preheating gas only to the torch,



moving the scarfing torch and optical pyrometer in a second striping pass along said predetermined path while supplying preheating gas and scarfing oxygen to the torch to scarf a second layer of metal from the slab and to continuously monitor the removal of said second layer by said optical pyrometer to detect flash temperature increases produced by the rapid reduction of alumina inclusions in said second layer being removed,

producing an electrical signal by said optical pyrometer in response to each such flash temperature increase detected,

operatively connecting said optical pyrometer to a microprocessor,

utilizing the microprocessor to count the electrical signals and provide a record of the flash temperature increases detected by the radiation thermometer during each pass of the scarfing torch along said predetermined path and compare the number of flash temperature increases detected on the first and second pass, and

utilizing said microprocessor to control movement and operation of said scarfing torch during said first and second striping passes along said predetermined path.

4,615,378
REGENERATOR

Tomokimi Mizuno, Chiryu, and Kazuaki Yamaguchi, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 23, 1985, Ser. No. 778,683

Claims priority, application Japan, Sep. 28, 1984, 59-201435

Int. Cl.⁴ F28D *17/02*

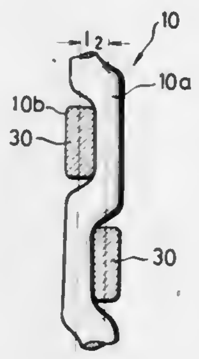
U.S. Cl. 165—10 **2 Claims**

1. A regenerator comprising:

a cylindrical body; and

a plurality of wire mesh screens stacked inside said cylindrical body;

each wire mesh screen including a number of interwoven wires which overlap one another at cross points of the wire mesh screen, the overlapping wires being compressed at said cross points in a direction in which said wire mesh screens are stacked, whereby a distance between central axes of respective ones of the overlapping wires at said cross points is shortened in said direction.



4,615,379
STORAGE BODY FOR A REGENERATOR

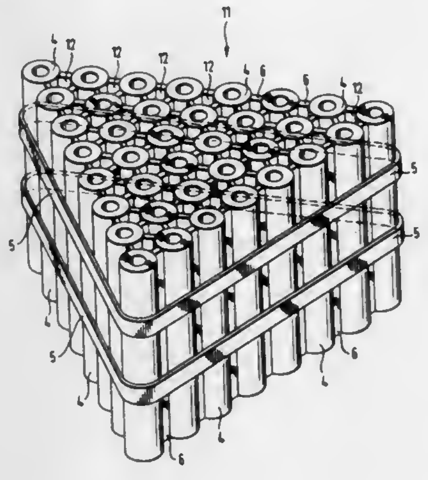
Jürgen Künzel, Thierhaupten, Fed. Rep. of Germany, assignor to Sigri GmbH, Meitingen bei Augsburg, Fed. Rep. of Germany

Filed Jun. 5, 1985, Ser. No. 741,370

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1984, 8417094[U]

Int. Cl.⁴ F28D *17/02, 19/04*

U.S. Cl. 165—10 **1 Claim**



1. Corrosion-resistant storage body for a regenerator, comprising a multiplicity of extruded carbon tubes and spacers, said tubes being stacked together and said spacers being disposed between said tubes defining channels passing through the storage body, and a frame holding said stacked tubes and spacers together.

4,615,380
ADAPTIVE CLOCK THERMOSTAT MEANS FOR CONTROLLING OVER AND UNDERSHOOT

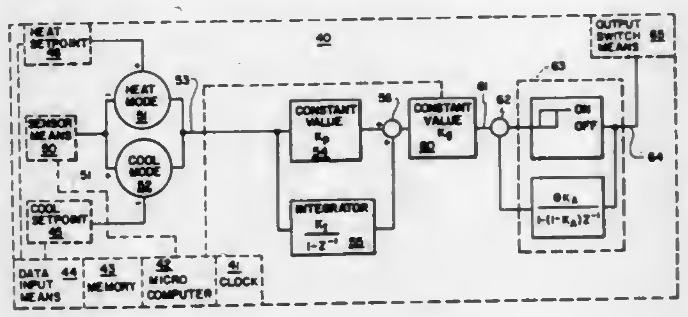
Thomas J. Beckey, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 17, 1985, Ser. No. 745,462

Int. Cl.⁴ G05D *23/00;* G05B *13/02*

U.S. Cl. 165—12 **7 Claims**

1. Clock thermostat means adaptively controlling the amount of overshoot or undershoot of space temperature due to changes in the setpoint of said thermostat means, including: microcomputer means including real time clock means and memory means; data input means connected to said microcomputer means to input a sequence of desired heat and cool control temperature setpoints and times for a desired temperature control by said thermostat means; temperature sensor means including connection means to monitor temperature at said thermostat means; said connection means connected to said microcomputer means to communicate a temperature at said sensor means to said microcomputer means; said thermostat means further including output switch means adapted to control heating and cooling equipment by said thermostat means; said microcomputer means and said memory means including overshoot-undershoot correction program means which is operable to adjust a gain of said thermostat means; said overshoot-undershoot correction program means and said memory means providing a gain constant that is a function of a setpoint change with said gain constant affecting said gain of said thermostat means; and said overshoot-undershoot correction program means and said memory means creating a new gain constant after each setpoint recovery to progressively adjust said gain of said thermostat to limit the amount of overshoot or undershoot of said space temperature to an acceptable level.



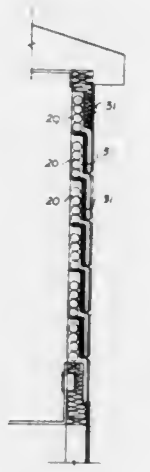
4,615,381
SOLAR HEATING AND COOLING DIODE MODULE

Timothy J. Maloney, Winchester, Va., assignor to One Design, Inc., Winchester, Va.

Continuation of Ser. No. 403,915, Jul. 30, 1982, abandoned. This application Feb. 7, 1984, Ser. No. 576,809

Int. Cl.⁴ F24C *5/04*

U.S. Cl. 165—48.2 **44 Claims**



1. A high efficiency solar heating system comprising:

a plurality of hollow modular units each for receiving a liquid thermal storage mass, said units being arranged in stacked relation in an exterior frame of a building, each of said units including port means for filling said unit with said mass, a collector region and a storage region, each said region having inner and outer walls, the outer wall of said collector region being oriented for exposure to sunlight for heating said thermal storage mass;

means for establishing a bi-laminar flow pattern of said liquid thermal storage mass between said storage and collector regions by thermosiphoning for simultaneous liquid flow of said thermal storage mass between said collector and storage regions;

said collector region being disposed substantially below and in parallel relation to said storage region in said modular unit;

the inner wall of the collector region of each successive modular unit in said stacked relation extending over the outer wall of the storage region of the next lower modular unit in said stacked relation for reducing heat loss from said system.

4,615,382

APPARATUS FOR CARRYING OUT PHYSICAL AND/OR CHEMICAL PROCESSES, MORE SPECIFICALLY A HEAT EXCHANGER OF THE CONTINUOUS TYPE

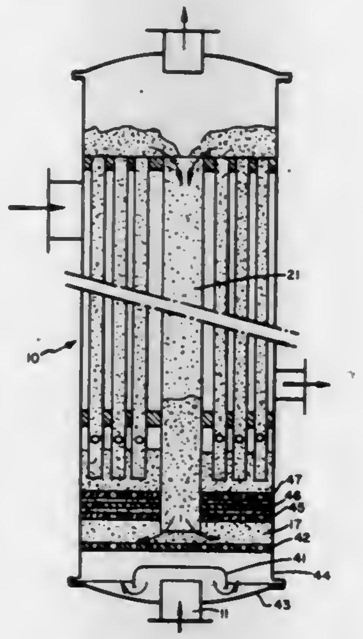
Dick G. Klaren, Hillegom, Netherlands, assignor to Esmil B.V., Amsterdam, Netherlands

Division of Ser. No. 629,810, Jul. 11, 1984, Pat. No. 4,567,940. This application Oct. 4, 1985, Ser. No. 783,956

Claims priority, application Netherlands, Jul. 22, 1983, 8302622

Int. Cl.^{4} F28C *3/16;* F28D *13/00*

U.S. Cl. 165—104.16 **2 Claims**



1. Apparatus for carrying out physical and/or chemical processes, in particular a heat exchanger of the continuous type, comprising a bundle of parallel vertical riser tubes, an upper chamber, a lower chamber, an upper pipe plate and a lower pipe plate for open connection of the pipe bundle to the upper and lower chambers respectively, a granular mass which can be kept in a fluidised condition at least in the riser tubes by a fluid medium that flows during operation upwardly through the lower chamber, the riser tubes and the upper chamber, a distribution plate for the granular mass in the lower chamber, and at least one return tube with an outlet below the distribution plate for return of an overflow of granules above the upper pipe plate from the upper chamber to the lower chamber, wherein each riser tube is provided with an inflow pipe element extending into the lower chamber from the lower pipe plate to a level above the distribution plate through which the return tube or return tubes projects or project and the lower chamber is provided with a device that prevents the granules from reaching the lower chamber inlet for the fluid medium at standstill characterised in that a second distribution plate (**42**) is arranged in the lower chamber (**17**) at a level below the outlet into the chamber of the return tube (**21**).

4,615,383

SERPENTINE HEAT EXCHANGING APPARATUS HAVING CORRUGATED FIN UNITS

Aoki Hisao, Tamamura, Japan, assignor to Sanden Corporation, Gunma, Japan

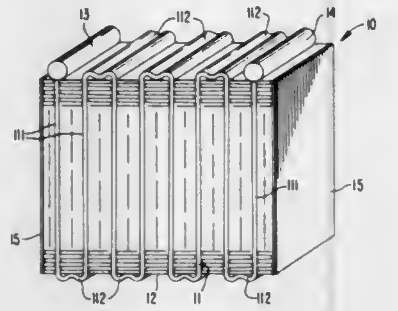
Filed Apr. 30, 1985, Ser. No. 728,866

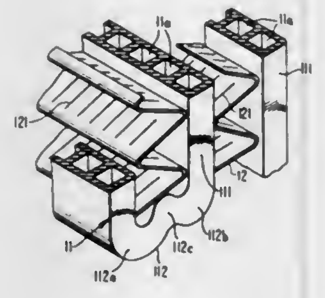
Claims priority, application Japan, May 1, 1984, 59-63002[U]

Int. Cl.^{4} F28D *1/02;* F28F *1/10*

U.S. Cl. 165—150 **2 Claims**

1. In a serpentine type heat exchanging apparatus comprising a tube device provided with a plurality of refrigerant passages therein, said tube device being bent to define a serpentine tortuous cross section having a plurality of parallel portions spaced apart from each other to form horizontal passages for air to be heat exchanged and connecting portions connecting adjacent ends of said parallel portions, and corrugated fin units folded into wavy form are interposed within each of said horizontal passages, respectively, to provide outermost end fins on each fin unit in each horizontal passage the improvement comprising each said connecting portion having a plurality of arc shaped segments alternatively connected between opposed parallel portions of said tube device at adjacent upper and lower ends of said portions including at least one outwardly facing arc segment at the center portion of said connecting portion with an inner surface of said outwardly facing arc segment being engaged with the outermost end fin of the fin unit in each said horizontal passage.





4,615,384

HEAT EXCHANGER FIN WITH LOUVERS

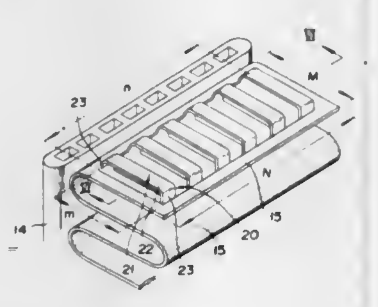
Yukio Shimada, Ebina, and Noriaki Sonoda, Sagamihara, both of Japan, assignors to Nihon Radiator Co., Ltd., Tokyo, Japan

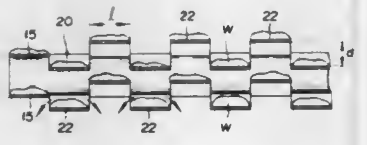
Filed Jun. 25, 1984, Ser. No. 624,117

Claims priority, application Japan, Jun. 30, 1983, 58-101372[U]

Int. Cl.^{4} F28D *1/02*

U.S. Cl. 165—152 **6 Claims**





1. A heat exchanger comprising a tube for guiding heatexchange fluid and fin means comprising a web affixed to the outer side of said tube and adapted to guide air for exchanging heat with said heat-exchange fluid, said fin means having a longitudinal opening formed in said web and a multiplicity of transverse louvers formed astraddle said opening substantially perpendicularly to the direction of the flow of said air and staggered across said opening alternately above and below the plane of said web, said louvers each comprising a louver body separated a fixed distance from said web by two legs connecting the opposite ends of said louver body to said web and the fixed distance of any one louver being the same as that of any other louver, and wherein the width l of the louvers relative to the direction of air current is in the range of 0.6 to 3.0 mm, the size d of an empty space for water discharge formed between adjacent louvers is in the range of 0.6 to 3.0 mm, and the fin pitch L is in the range of 1.2 to 3.0 mm.

4,615,385

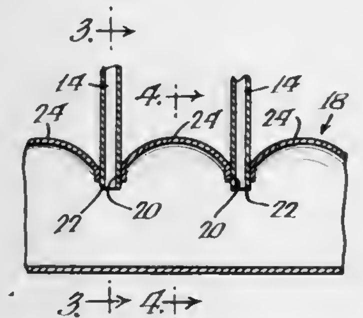
HEAT EXCHANGER

Zalman P. Saperstein, Gurnee, Ill.; Russell C. Awe, New Berlin, Wis.; Norman F. Costello, and Scott R. Larrabee, both of Racine, Wis., assignors to Modine Manufacturing Inc., Racine, Wis.

Filed Apr. 12, 1985, Ser. No. 722,653

Int. Cl.^{4} F28F *9/02*

U.S. Cl. 165—175 **2 Claims**



1. A heat exchanger comprising:

spaced generally parallel header and tank constructions;

each of said header and tank constructions having elongated, spaced, tube receiving holes in a header surface thereof;

the holes in one header surface being aligned with and facing corresponding holes in the other header surface; and

elongated open ended, flattened tubes extending between and into said header and tank constructions through aligned ones of said holes;

the portions of each header surface between said holes including exteriorly convex domes defined by compound curves to thereby provide increased resistance to deformation as a result of force exerted by a pressurized fluid within said header and tank construction.

4,615,386

LINEAR FORCE CENTRALIZER

William E. Briscoe, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

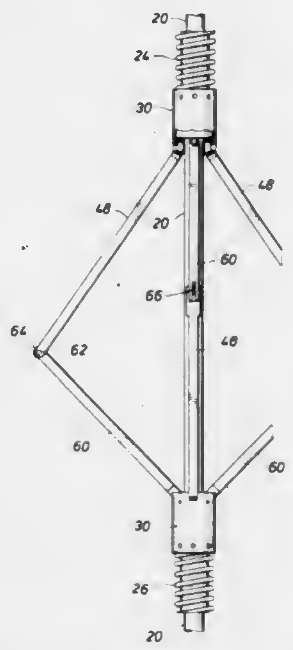
Filed Feb. 22, 1985, Ser. No. 704,690

Int. Cl.^{4} E21B *17/10*

U.S. Cl. 166—241 **9 Claims**

1. For use with a downhole tool having a mandrel enabling connection, centralizing apparatus which comprises:

- (a) at least four sets of radially outwardly extending arms, each set comprising:
  - (1) a radially outwardly extending first arm segment having an outer end;
  - (2) a second arm segment connected to the outer end of said first segment;
  - (3) said two arm segments supporting well borehole contact means for contacting the wall thereof and wherein said contact means deflects said arm segments dependent on the location of the downhole tool relative to the well borehole;
  - (4) said first and third arms being spaced 180° apart about the circumference of said mandrel and said second and fourth arms being spaced apart 180° about the circumference of said mandrel said four arms being spaced 90° from each other;
  - (5) said first and third arms having long first arm segments and said second and fourth arms having short first arm segments and each of said four arms supporting said contact means at the end of said first arm segments thereby positioning two of said contact means at one centralizer elevation and the remaining two of said contact means at a different centralizer elevation;
- (b) collar means connected to said first arm segments and enabled to move at urging of said arms;
- (c) an elongate mandrel slidably mounting said collar means for movement thereon, said collar means moving to alter the radial angle of said first segments;



- (d) second collar means connected to said second arm segments and mounted on said mandrel, said second collar means enabling said second arm segments to alter the radial angle of said second arm segments;
- (e) resilient means acting cooperatively on both of said first and second collar means, said resilient means creating a biasing force on said arms causing said arms to extend outwardly and wherein said arms are contacted at said contact means against the well borehole;
- (f) said arms collectively moving against said resilient means to urge said mandrel toward the centerline of the well borehole; and
- (g) wherein said mandrel includes end located means adapted to be connected to a downhole tool for centralization.

4,615,387

ANNULAR GAS TRAP

Dale V. Johnson, Metairie, and John M. Bednar, Harvey, both of La., assignors to Exxon Production Research Co., Houston, Tex.

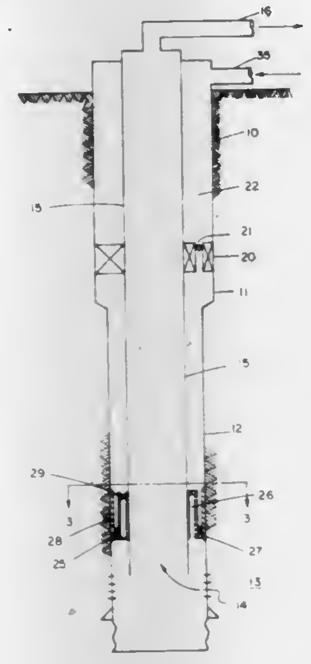
Filed Mar. 25, 1985, Ser. No. 715,854

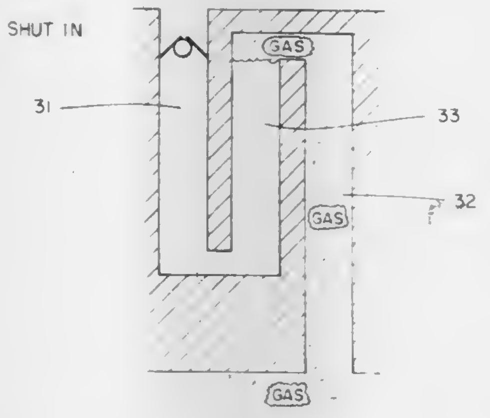
Int. Cl.^{4} E21B *41/02*

U.S. Cl. 166—242 **7 Claims**

2. In well apparatus for inhibiting corrosion in wells in which an injection/packer assembly is positioned in the annulus between smaller and large diameter well pipes and corrosion inhibitor is injected down the annulus between said well pipes into the annulus below said injection/packer assembly, the improvement comprising a gas trap arranged in the annulus between said well pipes below said injection/packer assembly said gas trap comprising at least one S-shaped conduit having three substantially vertical passageways, one of said passageways having an upper end open to said annulus above said gas trap, another of said passageways having a lower end open to

said annulus below said gas trap and the third of said passageways having a lower end open only to the lower end of said one passageway and an upper end open only to the upper end of said other pasageway.





4,615,388

METHOD OF PRODUCING SUPERCRITICAL CARBON DIOXIDE FROM WELLS

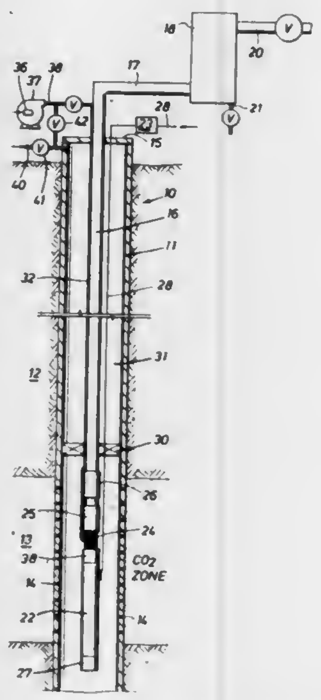
Warren W. Walhaug, Houston; Aaron B. Neely, Tomball, and Boyd B. Moore, Houston, all of Tex., assignors to Shell Western E&P Inc., Houston, Tex.

Filed Oct. 25, 1984, Ser. No. 664,713

Int. Cl.^{4} E21B *41/02, 43/34, 47/00, 47/06*

U.S. Cl. 166—250 **5 Claims**

1. A method of producing supercritical carbon dioxide through a cased well from a subterranean formation having water-soluble salts therein, said method comprising
   - killing the well with a volume of water-base kill fluid to contain the supercritical carbon dioxide within its producing formation whereby some of the salts in said formation become dissolved in the water of the kill fluid,
   - installing an annular packer on a production tubing string having pump means operatively connected to the lower end thereof, said pump means operatively connected to the lower end thereof, said pump means having suction and discharge means,
   - lowering said tubing string, packer and pump means through the kill fluid in the well until said pump means is located at a pre-selected depth,
   - setting the annular packer in a fluidtight manner between said tubing string and said casing,
   - providing water-injection conduit means outside said tubing string between the surface at the top of the well to a discharge point in the vicinity of the suction means of the pump means while by-passing said annular packer,
   - adding to the well fluid below said packer through said water injection conduit means an amount of substantially salt-free water sufficient to maintain in solution any dissolved formation salts in the kill fluid, which come from the formation back into the well with the kill fluid, as the carbon dioxide component of the well fluid is compressed by the pump means, and
   - pumping from the well the combined fluids comprising carbon dioxide together with kill fluid and added water and the dissolved salts carried thereby to prevent salts from solidifying in said pump means,
   - said pumping being carried out under conditions to produce carbon dioxide at the surface at a pressure greater than the critical pressure of produced carbon dioxide.



4,615,389

METHOD OF PRODUCING SUPERCRITICAL CARBON DIOXIDE FROM WELLS

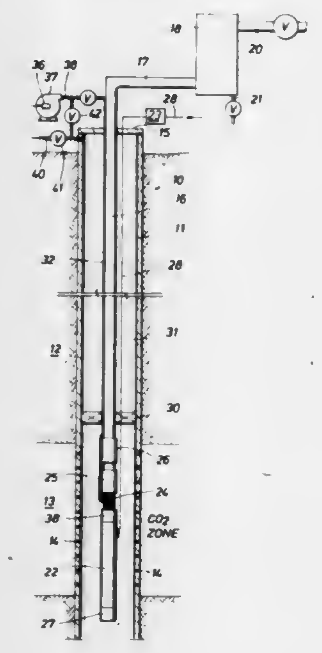
Aaron B. Neely, Tomball; Warren W. Walhaug, and Boyd B. Moore, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 25, 1984, Ser. No. 664,714

Int. Cl.^{4} E21B *41/02, 43/34, 47/00, 47/06*

U.S. Cl. 166—250 **11 Claims**

1. In a well containing single phase well fluid comprising a predominant amount of supercritical carbon dioxide and a minor amount of water having formation salts dissolved therein in an amount such that some of the salts settle out of the well fluid when the carbon dioxide and water are compressed in the well by pump means to a value sufficient to cause the carbon dioxide to absorb sufficient water vapor from the well fluid, the improvement comprising
   - adding to the well fluid in the vicinity of the pump means in the well an amount of substantially salt-free water sufficient to maintain any salts of the well fluid in solution as the well fluid is discharged from the pump means with water-saturated supercritical carbon dioxide and is produced from the well via delivery to the surface.



4,615,390

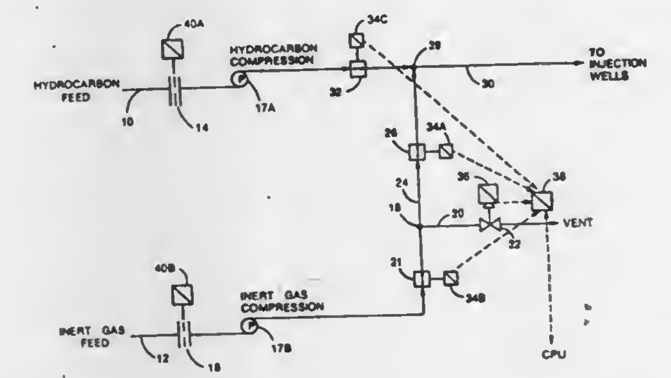
SYSTEM TO CONTROL THE COMBINING OF TWO FLUIDS

Philip J. Lucas, Golden, Colo.; Charles P. Reese, Katy, Tex., and Cham Ocondi, Aurora, Colo., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 28, 1983, Ser. No. 546,614

Int. Cl.^{4} E21B *47/00*

U.S. Cl. 166—250 **7 Claims**



1. A method of controlling the injection of at least two fluids into a wellbore, comprising:
   - (a) measuring the flow rate of a first fluid comprising an insert gas flowing through a first conduit;
   - (b) providing this measurement via a radio transmitter to a remote processing device;
   - (c) measuring the flow rate of a second fluid comprising a hydrocarbon gas flowing through a second conduit;
   - (d) providing this measurement via a radio transmitter to the remote processing device;
   - (e) within the processing device, calculating the relative volume proportions of the first fluid to the second fluid from the measurements taken in steps (a) and (c);
   - (f) calculating within the processing device corrective action, if any, to continuously adjust the flow rate of the first fluid to achieve and maintain a predetermined proportion of the first fluid to the second fluid;
   - (g) adjusting the flow rate of the first fluid as required to maintain a desired ratio between the first and second fluids by controlling the position of a vent valve on the first conduit;
   - (h) combining the first fluid and the second fluid; and
   - (i) injecting the combined fluids into a wellbore.

4,615,391

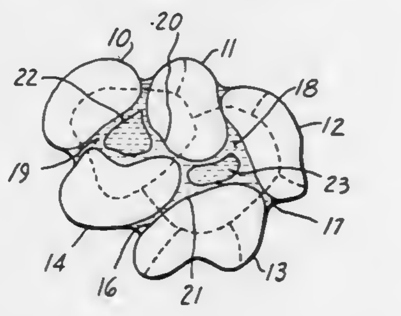
IN-SITU COMBUSTION IN HYDROCARBON-BEARING FORMATIONS

Egon H. Garthoffner, Bakersfield, Calif., assignor to Tenneco Oil Company, Bakersfield, Calif.

Filed Aug. 13, 1984, Ser. No. 640,384

Int. Cl.^{4} E21B *43/24, 43/243*

U.S. Cl. 166—257 **8 Claims**



1. The method of stimulating production in a formation bearing heavy oil or tar, comprising injecting into said formation colloidal particles of metallic magnesium and causing said magnesium to be ignited, thereafter to be exothermally reacted with water in-situ, whereby exothermally to produce magnesium hydroxide and hydrogen gas in said formation.

4,615,392

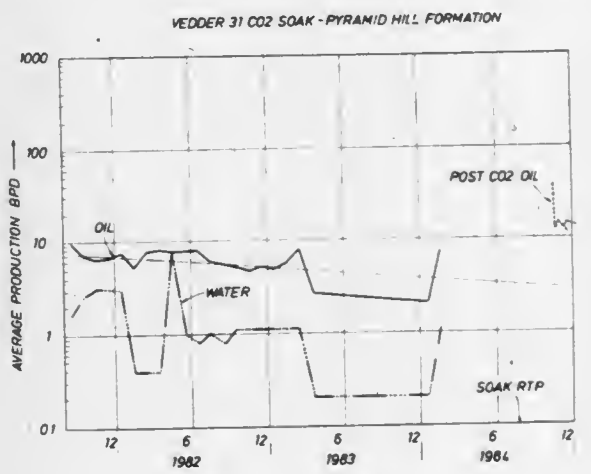
RECOVERING OIL BY INJECTING HOT CO_2 INTO A RESERVOIR CONTAINING SWELLING CLAY

Robert L. Harrigal, Bakersfield, Calif., assignor to Shell California Production Inc., Houston, Tex.

Filed Feb. 11, 1985, Ser. No. 700,786

Int. Cl.^{4} E21B *43/22*

U.S. Cl. 166—272 **4 Claims**



1. In a process for recovering oil by injecting fluid into an oil containing reservoir for increasing the mobility of the oil and displacing it toward a product location, where the reservoir is one in which a combination of reservoir properties inclusive of a permeability of about 50 to 150 md and swelling clay concentrations of about 25 to 35 percent interact to significantly impede injections of unheated or heated aqueous fluid or unheated CO_2, an improvement for injecting fluid capable of providing greater rates of flow into the reservoir and greater rates of oil displacement within the reservoir comprising:
   - injecting as said fluid a fluid consisting essentially of gaseous CO_2 at a temperature of about 130° to 160° F. which is high enough to heat the rocks near the well to an extent significantly reducing said flow impeding interaction of permeability and high swelling clay content of the rocks and thus increasing the mobility of the gaseous CO_2 within

the reservoir at pressure and temperature conditions below those productive of the critical state for the injected gaseous fluid and below the fracturing pressure for the reservoir.

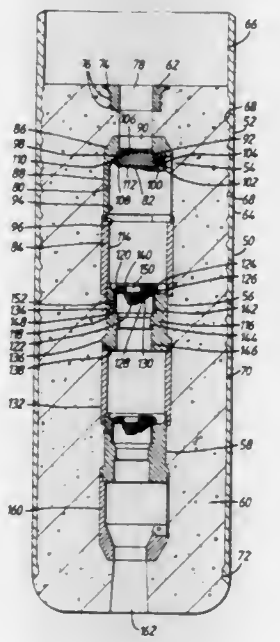
4,615,393
HYDROCARBON SOLUBLE POLYMER COMPLEXES USEFUL AS VISCOSIFIERS IN FRACTURING OPERATIONS

Lawrence P. Sedillo, Houston; John C. Newlove, Kingwood, both of Tex.; Dennis G. Peiffer, East Brunswick, and Robert D. Lundberg, Bridgewater, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.
Filed Nov. 19, 1984, Ser. No. 673,004
Int. Cl.⁴ E21B *43/26, 43/267*
U.S. Cl. 166—308 **26 Claims**

1. A process for fracturing a subterranean formation surrounding a gas or oil well which comprises injecting into said subterranean formation under hydraulic pressure a fluid comprising about 0.01 to about 25 weight percent of a water insoluble polymer complex dissolved in a solvent system comprising a nonpolar organic liquid, said polymer complex comprising the interaction product of a metal neutralized sulfonated polymer and an amine containing polymer, wherein the sulfonate content of the sulfonated polymer is about 4 meq. per 100 grams of polymer to about 100 meq. per 100 gram of polymer and the basic nitrogen content of the amine containing polymer is about 4 meq. per 100 gram of polymer to about 500 meq. per 100 gram of polymer, wherein said organic liquid is selected from the group consisting of paraffinic hydrocarbons, naphthenic hydrocarbons, aromatic hydrocarbons, ketones, chlorinated aliphatic hydrocarbons, cyclic aliphatic ethers, aliphatic ethers and organic aliphatic esters and mixtures thereof, wherein the amine containing polymer is a copolymer of vinylpyridine with other vinyl monomers which are selected from the group consisting of acrylates, methacrylates, alkyl acrylates, alkyl methacrylates, N-alkylacrylamide and N-alkylmethacrylamides and mixtures thereof, said acrylates or methacrylates, etc. having from about 6 to about 26 carbon atoms.

4,615,394
INVERSE DIFFERENTIAL CASING CEMENTING FLOAT VALVE

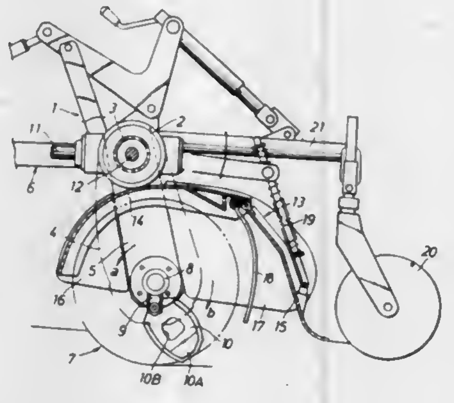
Robert D. Kuhlman, Jr., Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Filed May 2, 1985, Ser. No. 729,592
Int. Cl.⁴ E21B *34/06*
U.S. Cl. 166—327 **6 Claims**



1. An inverse differential fill-up casing cementing float valve having an inlet thereto and outlet therefrom characterized in that said float valve permits fluid flow therethrough in a first direction upon a predetermined fluid pressure level thereacross and continuously prevents fluid flow therethrough in a second direction, said float valve includes:
an annular float valve housing;
a back pressure valve assembly contained within the annular float valve housing, the back pressure valve assembly being constructed to permit fluid flow therethrough in said first direction upon a predetermined fluid pressure level thereacross and continuously prevent fluid flow therethrough in said second direction;
a first differential pressure check valve assembly connected to the back pressure valve assembly and contained within the annular float valve housing, the first differential pressure check valve assembly being constructed to permit fluid flow therethrough in said first direction upon a predetermined fluid pressure level thereacross and permit fluid flow therethrough in said second direction;
a second differential pressure check valve assembly connected to the first differential pressure check valve assembly and contained within the annular float valve housing, the second differential pressure check valve assembly being constructed to permit fluid flow therethrough in said first direction upon a predetermined fluid pressure level thereacross and permit fluid flow therethrough in said second direction; and
cementitious filler material retaining and securing the back pressure valve assembly, the first differential pressure check valve assembly and the second differential pressure check valve assembly within the annular float valve housing, the cementitious filler material providing a fluid flow passage to the inlet of the back pressure valve assembly from the inlet of said float valve and providing a fluid flow passage from the outlet of the second differential pressure check valve assembly to said outlet of said float valve.

4,615,395
REVERSIBLE ROTARY CULTIVATING APPARATUS

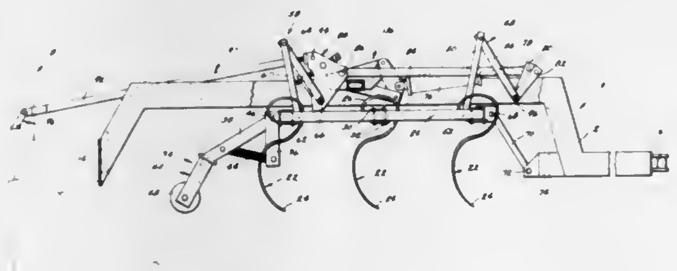
Yoshifumi Nagamine, Habikino, Japan, assignor to Kubota, Ltd., Osaka, Japan
Filed Aug. 9, 1984, Ser. No. 639,014
Claims priority, application Japan, Aug. 11, 1983, 58-147342
Int. Cl.⁴ A01B *33/02, 33/10*
U.S. Cl. 172—91 **6 Claims**



1. A reversible rotary cultivating apparatus wherein tines for cultivation by reversible rotation are attached, each at its base portion, to a tine shaft reversibly rotatable about a lateral axis, each of the tines including a blade portion and a forward edge portion and a reverse edge portion formed at opposite sides of the blade portion, the apparatus being characterized in that each of the tines is pivoted to a mount bracket on the tine shaft and is shiftable to a forward inclined position wherein the outer end of the tine is positioned rearward from its base portion with respect to the direction of forward rotation or to a reverse inclined position wherein the outer end of the tine is positioned rearward from its base portion with respect to the direction of reverse rotation, the mount bracket having a stopper engageable with the base portion of the tine for positioning the tine in the forward position or in the reverse position, the forward and reverse edge portions each having a curved edge line, the curved edge lines being asymmetric and bulging toward the direction of rotation, a radial line through the center of the tine shaft making a smaller angle with a line tangent to the curved edge line of the reverse edge portion than with a line tangent to the curved edge line of the forward edge portion when the radial line intersects the tangent lines, at positions on the edge lines which are at the same distance from the center of the tine shaft.

4,615,396
MULTIPLE FARM IMPLEMENT ACTUATING SYSTEM

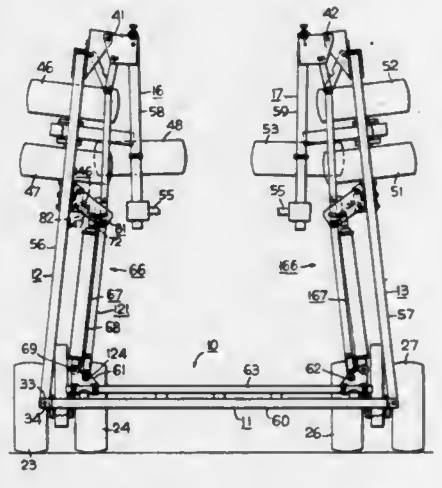
Loren G. Arnold, Ottawa, Ohio, assignor to Unverferth Manufacturing Company, Inc., Kalida, Ohio
Filed Jan. 3, 1985, Ser. No. 688,590
Int. Cl.⁴ A01B *49/06*
U.S. Cl. 172—138 **8 Claims**



1. An apparatus for actuating a plurality of farm implements comprising:
a frame having means for connection to a vehicle for drawing farm implements and for connection to a first farm implement;
a tool frame having means for attaching to a second farm implement;
a support linkage means pivotally connected between said frame and said tool frame for suspending said tool frame beneath said frame;
means for actuating connected to said support linkage means for moving said tool frame between a transport position and a working position;
spring tension means connected between said means for actuating and said frame for assisting said means for actuating during the lowering of a first farm implement and said tool frame to a working position, and for relieving loads on said means for actuating when a first farm implement and a second farm implement are being used in the working position including a lever arm pivotally attached at one end to said frame, spring means having one end attached to said frame and another end pivotally connected to another end of said lever arm, and said means for actuating pivotally connected to said lever arm intermediate said ends of said lever arm;
linkage means for connection to a first farm implement and connected to and actuated by said means for actuating for moving a first farm implement between a transport position and a working position; and
height adjustment means connected to said linkage means for adjusting the transport height of a first farm implement connected to said linkage means and said frame with respect to the transport height of a second farm implement attached to said tool frame.

4,615,397
AGRICULTURAL IMPLEMENT WITH DOUBLE WING FOLDING MECHANISM USING TOGGLE LINKAGE AND HYDRAULIC ACTUATOR

Dawson W. Hastings, Selma, Ala., assignor to Deutz-Allis Corporation, Milwaukee, Wis.
Filed Oct. 30, 1985, Ser. No. 793,087
Int. Cl.⁴ A01B *73/04*
U.S. Cl. 172—776 **9 Claims**

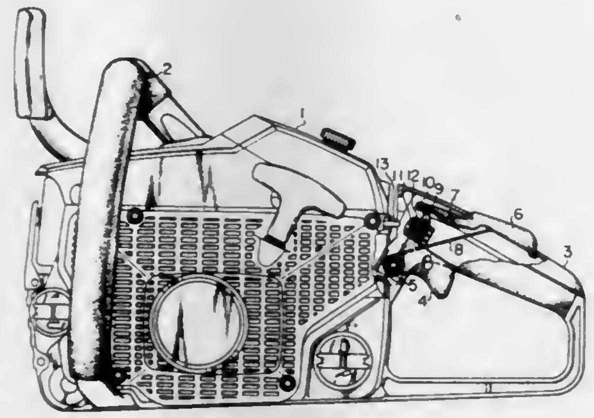


1. An agricultural implement comprising:
a horizontally disposed main section with a draft component at its front end adapted for connection in towed relation to a towing tractor,
a pair of primary wing sections on laterally opposite sides of said main section and having inboard sides pivotally connected to the laterally opposite sides of said main section for pivotal movement about a pair of first longitudinal horizontal axes for swinging movement from unfolded horizontal working positions to upright transport positions,
a pair of secondary wing sections disposed outboard of and adjacent to said primary wing sections, respectively, with inboard sides pivotally connected to the outboard sides of said primary wing sections for folding movement about a pair of second longitudinal horizontal axes between unfolded horizontal working positions and inverted folded transport positions on said primary wing sections, respectively, and
a pair of folding mechanisms for folding said wing sections from working positions to transport positions, each of said folding mechanisms including
a toggle linkage having
a first toggle link having one end pivotally connected to one secondary wing section outboard of the axis on which the latter is connected to an adjacent one of said primary wing sections,
a second toggle link having one end pivotally connected to said one primary section inboard of said axis on which the latter is connected to said one secondary wing section, and
means pivotally connecting the other ends of said toggle links to one another,
a lever having one end pivotally connected to said one primary wing section intermediate the laterally opposite sides of the latter,
a transversely extending motion transmitting link having one end pivotally connected to said lever and its other end pivotally connected to said toggle linkage,
an extendable and contractable double acting hydraulic actuator having cylinder and piston components,
means pivotally connecting one of said components to said main section near the side thereof pivotally connected to said one primary wing section, and
a lost motion connection between said other component of said actuator and said lever affording a floating condi-

tion of said one secondary section and one primary section when the latter are in their working positions.

4,615,398
THROTTLE CUSHION

Akira Nagashima, Kawasaki, Japan, assignor to Kioritz Corporation, Tokyo, Japan
Filed Sep. 4, 1984, Ser. No. 646,929
Claims priority, application Japan, Sep. 9, 1983, 58-139808[U]
Int. Cl.⁴ E21B *3/00*
U.S. Cl. 173—162 H **1 Claim**



1. In a portable power-driven machine having a main body, an internal combustion engine mounted in said main body, a throttle actuating rod adapted to operate to open and close a throttle valve in said engine, and a trigger mounted on a handle bar and adapted to engage and drive said throttle valve actuating rod, a vibration damping means to dampen the vibrations between the throttle actuating rod and a means to operate the internal combustion engine through the throttle actuating rod comprising

a throttle cushion formed as a sleeve-like elastic cushioning member having an opening therethrough to receive a portion of the trigger;

said throttle cushion having a cavity formed in a portion thereof between the opening receiving the portion of the trigger and a portion of said cushion engageable and disengageable with the throttle actuating rod;

the means to operate the internal combustion engine including

said trigger,

said portion of said trigger recieved in said opening in said throttle cushion extending from said trigger,

a latch member positioned to be contacted by a hand held with a finger of the hand on said trigger,

a lever portion extending from said latch member and positioned to contact said portion of said trigger,

said latch member and said trigger both pivotally mounted,

spring means connected to both said latch member and said trigger to cause rotation of said latch member and said trigger in opposing directions

whereby said throttle cushion dampens vibration between the throttle actuating rod and both trigger and said latch member of said means to operate the internal combustion engine.

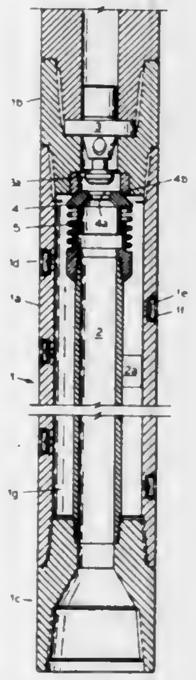
4,615,399
VALVED JET DEVICE FOR WELL DRILLS

William N. Schoeffler, Lafayette, La., assignor to Pioneer Fishing and Rental Tools, Inc., Youngsville, La.
Filed Nov. 19, 1985, Ser. No. 799,611
Int. Cl.⁴ E21B *21/10, 21/12*
U.S. Cl. 175—38 **19 Claims**

1. In a well drilling system having a string of drill pipe suspended in a well bore and means, at the earth surface, to force and control the flow of drilling fluid downwardly through the drill string bore, apparatus comprising:

(a) A body to perform as a drill string interval, with an upper and a lower end, comprising; an outer tube with end terminals, each having means to attach with fluid tight engagement to the continuing drill string, an inner tube generally coaxial, for some length, with said outer tube, and an annular space between said coaxial tube walls;

(b) means, situated in said body, responsive to fluid flow controlled signals, generated at the earth surface, to produce a first output signal in response to said signals of a first characteristic and responsive to said signals of a second characteristic to produce a second output signal;



(c) fluid flow channel selector means, situated in said body, responsive to said first output signal to provide a fluid flow channel from the upwardly continuing drill string to the downwardly continuing drill string and responsive to said second output signal to provide a fluid flow channel for at least part of said fluid flow from the upwardly continuing drill string to said annular space;

(d) surfaces describing at least one hole through the wall of said outer tube.

4,615,400
SONIC DRILLING SYSTEM EMPLOYING SPHERICAL DRILL BIT

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406
Continuation-in-part of Ser. No. 505,954, Jun. 20, 1983, Pat. No. 4,527,637, which is a continuation-in-part of Ser. No. 262,650, May 11, 1981, Pat. No. 4,403,665. This application Apr. 22, 1985, Ser. No. 725,648
The portion of the term of this patent subsequent to Jul. 9, 2002, has been disclaimed.
Int. Cl.⁴ E21B *7/24*
U.S. Cl. 175—55 **20 Claims**

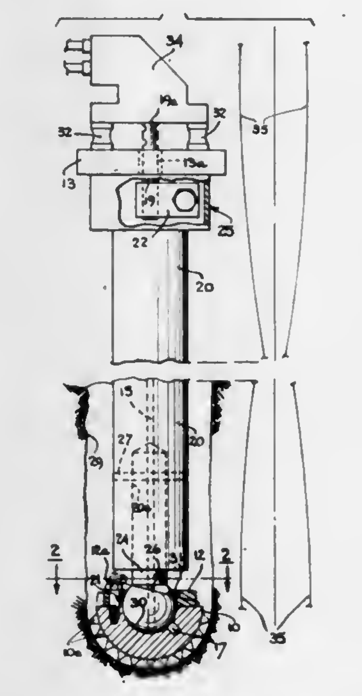
1. In a sonic well drilling system for drilling a bore hole, said system including means for generating sonic energy in a lateral quadrature vibration pattern and a main vibratory drill assembly driven by said sonic energy in a sonic cycloidal mode of vibration, the improvement being a drill bit assembly coupled to said main vibratory drill assembly to receive sonic energy from the main vibratory drill assembly comprising,

a shank portion joined on one end thereof to the lower end of the main vibratory drill assembly,

a ball portion joined to the other end of the shank portion, and

a bit element having a spherical socket formed therein, said spherical socket mating with said ball portion to form a ball-socket bearing, and

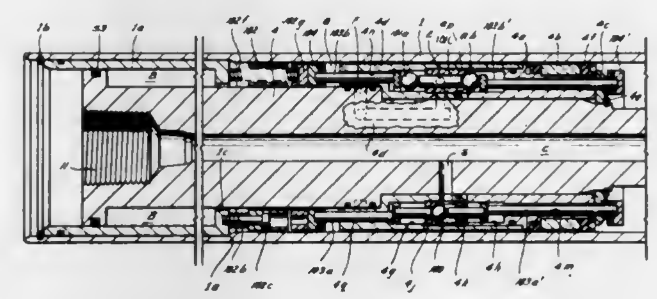
means for retaining the bit element in said bearing for limited universal freedom of rotation,

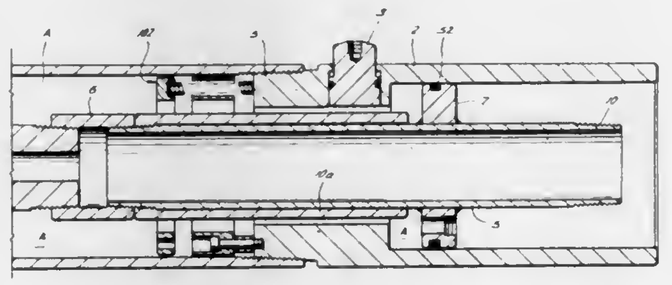


the ball portion orbiting in a closed path in response to the sonic energy and effecting precession of the bit around the bore hole.

4,615,401
AUTOMATIC HYDRAULIC THRUSTER

William R. Garrett, Houston, Tex., assignor to Smith International, Newport Beach, Calif.
Continuation of Ser. No. 624,794, Jun. 26, 1984, abandoned, which is a continuation-in-part of Ser. No. 436,187, Oct. 22, 1982, abandoned. This application May 24, 1985, Ser. No. 737,577
Int. Cl.⁴ E21B *34/00, 4/18*
U.S. Cl. 175—230 **24 Claims**





1. Automatic hydraulic thruster comprising a tubular mandrel having hither and farther ends adapted respectively for connection to hither and farther drill string components, the hither component to extend in from a hole bore entrance and the farther component to be connected to a drill bit;

a sleeve concentrically disposed about the mandrel for rotation and axial motion of the mandrel within the sleeve and axial motion of the sleeve relative to the mandrel;

annular piston means carried by the mandrel sealingly engaging the interior of the sleeve and dividing the annulus between the mandrel and sleeve into first and second chambers adjacent the hither and farther ends of the sleeve;

means sealing between the mandrel and sleeve at diameters smaller than that of said piston closing the ends of said chambers farthest from said piston;

wall anchor means carried by the sleeve responsive to pressure differential between the first chamber and the ambient outside the thruster to move outwardly to engage a hole bore when the first chamber pressure is hgher than said ambient and to relax from such engagement upon equalization of the pressure in the first chamber and said ambient;

first three way valve means having an inlet and two outlets, its inlet connected to the mandrel and its two outlets connected respectively to said first and second chambers, said first three-way valve means including first actuator means responsive to the relative axial positions of said mandrel and sleeve for opening said inlet to one or the other of said outlets and closing it to said other or said one as said mandrel and sleeve reach extremes of their relative axial motions;

second three way valve means having an outlet and two inlets with its outlet connected to the ambient outside the thruster and its two inlets connected respectively to said first and second chambers, said second three way valve means including second actuator means responsive to the relative axial positions of said mandrel and sleeve for opening said outlet to one or the other of said inlets and closing it to said other or said one of said inlets as said mandrel and sleeve reach extremes of their relative axial motions;

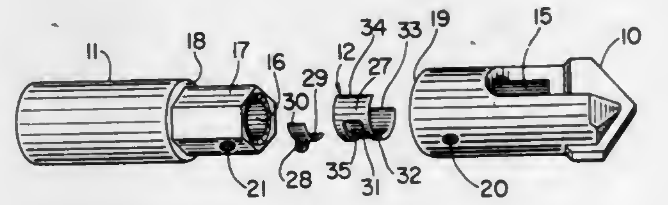
said first and second actuator means cooperating to pressurize the first chamber and depressurize the second chamber at one of said extremes and to depressurize the first chamber and pressurize the second chamber at the other of said extremes;

said wall anchor means serving to anchor said sleeve to a hole wall when the first chamber is pressurized and at the same time said piston means exerting a thrust on said mandrel directed from the hither to the farther end of the thruster;

said wall anchor means releasing said sleeve for relative axial motion along the hole wall when the first chamber is depressurized and at the same time pressurization of the second chamber exerting a force to move said sleeve axially away from the hither end of the thruster toward the farther end thereof.

4,615,402
DRILL BIT AND EXTENSION ADAPTER

Adolf Eisenloeffel, 6298 Adair Dr., Brookpark, Ohio 44142
Filed Jun. 10, 1985, Ser. No. 742,769
Int. Cl.⁴ E21B *10/00*
U.S. Cl. 175—320 **16 Claims**



1. An adapter which is used to detachably mount a drill bit on an extension, comprising:

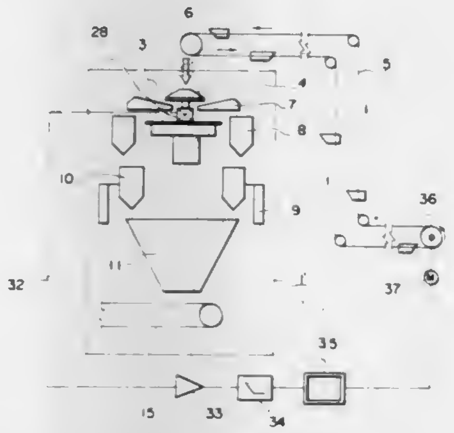
(a) a button-type catch which includes a button with a pair of outwardly extending flanges;

(b) a C-shaped split cylindrical ring, separate from the flanged button catch, for spring loading the flanged button catch; and

(c) means intermediate opposing marginal edges of the split ring for retaining the flanged button catch, in position, in unattached relation on the split ring, when the adapter, drill bit and extension are joined together in an assembly, the means including (i) a recess in the split ring for removably receiving the flanged button catch, and (ii) means for restraining the flanged button catch in the recess.

4,615,403
WEIGHING DEVICE

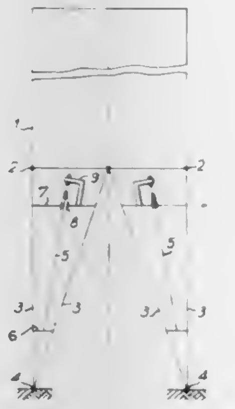
Toru Nakamura, Kyoto, Japan, assignor to Kabuchiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan
Filed Feb. 15, 1985, Ser. No. 702,141
Int. Cl.^{4} G01G ***19/22, 19/52, 13/04***
U.S. Cl. 177—25 **5 Claims**



1. A combinatorial weighing device comprising:
a feeder located below a discharging end of a conveyor;
the feeder connected to pool hoppers;
the pool hoppers facing measure hoppers supported on load cells mounted on the framework of the device;
a feed measurement device for the objects to be weighed and electric vibrator are provided at the feeder;
the feed measurement device being a weight measurement device of a load cell connected to a control unit via a low-pass filter inserted between the feeder and the framework of the device;
the feed measurement device electrically connected to the drive unit for the conveyor through a control unit.

4,615,404
SYSTEM FOR MEASURING CONTAINER WEIGHT IN THE FIELD INDEPENDENT OF WIND LOAD

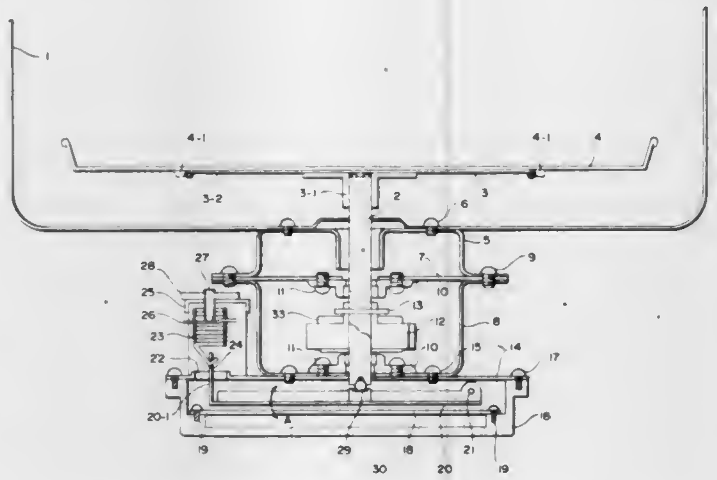
Ivan A. S. Z. Peschl, 8, Kennedylaan, Sterksel, Netherlands
Filed Feb. 17, 1984, Ser. No. 581,253
Int. Cl.^{4} G01G ***19/52, 21/24***
U.S. Cl. 177—132 **7 Claims**



1. A latticework support structure and measuring system for measuring the weight of a container in the field independent of horizontal load, said system comprsing at least three pairs of support bars arranged in isosceles triangles, the nodal points of said triangles comprising support points arranged, respectively, in upper and lower concentric circles one above the other, with the upper circle being disposed adjacent said container and with the lower circle being disposed adjacent on a supporting foundation, the upper and lower support points of each pair of support bars forming one of said isosceles triangles arranged in a vertical plane, said latticework structure support bars being capable of taking horizontal loading and moments and yielding no resultant vertical loading therefrom for providing a vertical load independent of horizontal load on said container; and means for measuring the vertical displacement of said latticework structure for providing a measurement corresponding to the weight of said container.

4,615,405
FOOD WEIGHT MEASURING DEVICE FOR A COOKING APPLIANCE

Taisuke Morino, Osaka; Sakio Hanatani, and Mituo Ohuchi, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Apr. 16, 1985, Ser. No. 724,072
Int. Cl.^{4} G01G ***3/14, 19/00, 19/52***
U.S. Cl. 177—210 C **8 Claims**

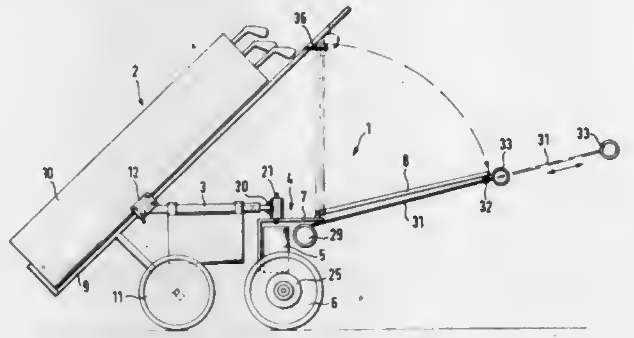


1. A weight measuring device useful, for example, in a turntable type microwave oven for measuring the weight of food to be cooked thereby determining the necessary cooking information comprising in combination:
a turntable to be rotatably disposed, for example, in a heating chamber of a microwave oven, said turntable including a turntable shaft; and
a condenser formed by a pivotal electrode means spaced by a predetermined space from and above a fixed electrode means for producing an electrical signal representative of the weight of said food disposed on said turntable and transmitted to said pivotal electrode means via said shaft causing said pivotal electrode means to be depressed toward said fixed electrode means;
said turntable shaft being indirectly connected to said pivotal electrode means through a bearing means such that rotation of said turntable and turntable shaft is not transmitted to said pivotal electrode means.

4,615,406
GOLFCART WITH BATTERY DRIVEN DRIVE ASSIST

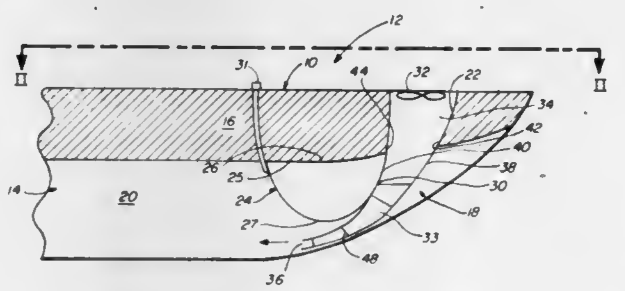
Karl Bottenschein, Marchenweg 16, D-7900 Ulm, and Rolf Bierwirth, Brechtener Strasse 16, D-4670 Lunen-Brambauer, both of Fed. Rep. of Germany
Filed Mar. 30, 1984, Ser. No. 595,261
Int. Cl.^{4} B62D ***51/04***
U.S. Cl. 180—191 **8 Claims**

1. In combination a two wheel normally manually operable golf cart having a frame and a motorized drive unit having a frame element including a ground engaging support and drive means, latch means for attaching said motorized drive to the golf cart, said latch means including an arm secured to said drive unit against all but minor ground surface irregularity compensating vertical movement, said arm having a free end, a latching plate secured to said free end having a face positioned at an angle to the horizontal which corresponds generally to the angle at which the cart's frame is maintained when it is being moved manually, an anchor plate mounted on said cart frame having a face positioned to be parallel to and seat against said face of said latching plate; said latching plate having a hook portion at its lower end, said anchor plate having sides forming a channel therebetween of a width to receive said latching plate therebetween and hold said latching plate against lateral and twisting movement, said anchor plate having a keeper member at its lower end spaced outwardly from the face of the anchor plate sufficiently to permit said hook portion to be seated between said face and keeper to detachably latch said cart to said motorized drive with the engagement between the faces of said plates maintaining said cart frame inclined at the same angle as the face of said latching plate.



4,615,407
FLEXIBLE ANNULAR JET SEAL FOR SURFACE EFFECT VEHICLES

Freddie W. Wilson, Mt. Airy, Md.; Harvey J. Howe, Reston, Va., and James H. Nichols, Jr., Hyattsville, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 25, 1985, Ser. No. 715,782
Int. Cl.^{4} B60V ***1/04, 1/10***
U.S. Cl. 180—128 **19 Claims**

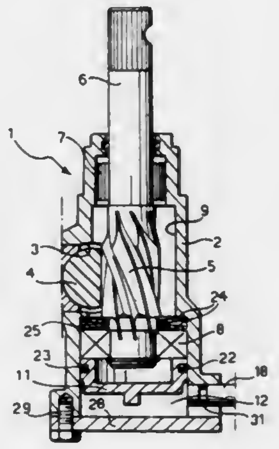


1. In a surface effect vehicle having a pair of spaced apart side hulls joined by a wet deck and a seal extending between the side hulls so that an air cushion can be formed, an improved seal comprising:
a forward portion of the deck having an opening for providing an air inlet to the air cushion;
an elongated pneumatic bag mounted along its length to the bottom of the wet deck and positioned to receive air from the deck opening along its forward side;
passageway means mounted between the side hulls for directing air around the forward side of the bag, and
fan means mounted between the side hulls and located between the top of the deck opening and the forward side of the bag for forcing air from the deck opening into said passageway means.

6. In a surface effect vehicle having a pair of spaced apart side hulls joined by a wet deck and a seal extending between the side hulls so that an air cushion can be formed, an improved seal comprising:
a forward portion of the deck having an opening for providing an air inlet to the air cushion;
an elongated pneumatic bag mounted along its length to the bottom of the wet deck and positioned to receive air from the deck opening along its forward side;
passageway means mounted between the side hulls for directing air around the forward side of the bag, said passageway including:
the wet deck having a partial annular passageway located about a top portion of the bag, said passageway having forward and aft downwardly directed openings into the air cushion so that air can be directed completely about the bag.

4,615,408
RACK POWER-STEERING SYSTEMS

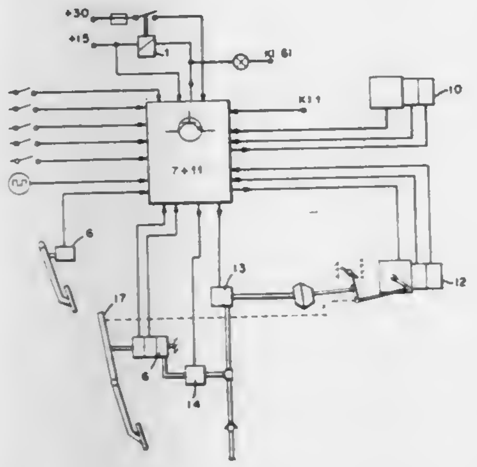
Ettore Cordiano, Turin, Italy, assignor to CORINT S.r.l., Italy
Filed Jan. 2, 1985, Ser. No. 688,130
Claims priority, application Italy, Apr. 11, 1984, 67362 A/84
Int. Cl.^{4} B62D ***3/12***
U.S. Cl. 180—148 **10 Claims**



1. A rack power-steering system comprising:
a box,
a helical pinion meshing with a rack,
a shaft carrying the pinion,
a bearing which rotatably supports the shaft within a cylindrical chamber in the box, the bearing being slidable within the cylindrical chamber so as to permit axial movement of the pinion,
a control valve having a movable member which is slidable in an auxiliary chamber in the box,
means for converting an axial movement of the pinion into a movement of the movable member of the control valve, these means comprising:
a piston movable axially with the said bearing within the cylindrical chamber in the box,
a variable-volume compartment defined within the cylindrical chamber by the piston, the compartment being filled with a substantially-incompressible deformable material,
a rod operatively connected to the movable member of the control valve and having one end face located so as to detect the pressure existing in the variable-volume compartment,
resilient means biassing the piston and the rod towards the variable-volume compartment,
wherein the variable-volume compartment is located at one end of the cylindrical chamber, and the piston is located in a position axially-intermediate the variable-volume compartment and one end of the shaft carrying the pinion.

4,615,409
DEVICE FOR SPEED CONTROL OF A MOTOR VEHICLE

Rolf Küpper, Soest, and Karl-Albert Eckstein, Lippstadt, both of Fed. Rep. of Germany, assignors to Westfälische Metall Industrie KG, Hueck & Co., Lippstadt, Fed. Rep. of Germany
Filed Dec. 24, 1984, Ser. No. 685,337
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1983, 3347070
Int. Cl.^{4} B60K *31/00*
U.S. Cl. 180—176 **20 Claims**

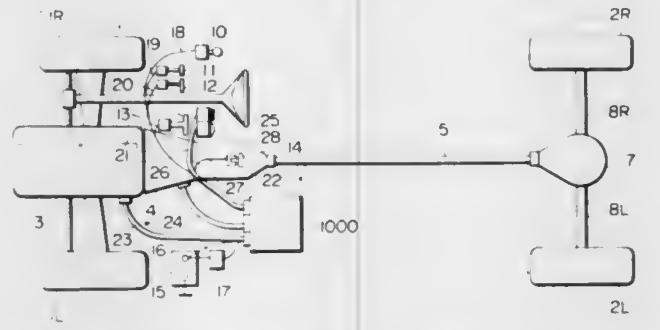


1. A device for speed control of a motor vehicle with an internal combustion engine comprising
- a gas pedal;
- a first setting means having an output and providing a signal corresponding to a desired acceleration of the vehicle when the pedal is within an acceleration region;
- a second setting means having an output and providing a signal corresponding to a desired deceleration of the vehicle when the pedal is in a deceleration region;
- a set point "0" at a certain pedal position such that the first and second setting means become effective successively during a motion of said gas pedal over a continuous sequential path covering said regions;
- a snap-in lock position corresponding to the "0" set point for the gas pedal covering said sequential path;
- an actual value sensor providing a signal corresponding to the first derivative of the velocity of the vehicle with respect to time;
- a controller comparing the signals from the outputs of the actual value sensor and from the respective setting means and for producing a controller output signal; and
- a final control element actuated in accordance with the controller output signal for producing the desired acceleration or deceleration of the vehicle.

4,615,410
METHOD OF DETECTING SLIP OF DRIVING WHEEL OF AUTOMOTIVE VEHICLE

Akio Hosaka, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Dec. 12, 1984, Ser. No. 680,786
Claims priority, application Japan, Dec. 14, 1983, 58-234145
Int. Cl.^{4} B60K *31/00*
U.S. Cl. 180—197 **14 Claims**

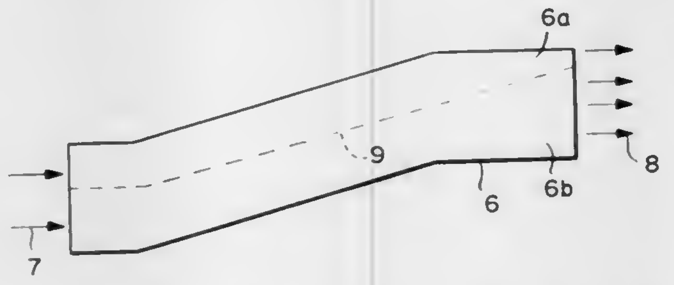
8. In an automotive vehicle having an accelerator pedal, an internal combustion engine including a throttle valve and a driving wheel and a power train operatively disposed between the internal combustion engine and the driving wheel to transmit power produced by the internal combustion engine to the driving wheel, a method of operating the automotive vehicle, comprising the steps of:
- detecting an operation parameter which has a predetermined relationship with a driving output of the automotive vehicle and generating an operation parameter indicative signal;
- determining said driving output of the automotive vehicle using said predetermined relationship in response to said operation parameter indicative signal and generating a driving output indicative signal;
- determining an acceleration of the automotive vehicle in response to said driving output indicative signal and generating an acceleration indicative signal;
- determining a target vehicle speed in response to said acceleration indicative signal and generating a target vehicle speed indicative signal;
- detecting a peripheral speed of the driving wheel and generating a peripheral speed indicative signal;



- determining the presence of a slip in response to a difference between said target vehicle speed indicative signal and said peripheral speed indicative signal;
- generating a slip indicative signal after a predetermined condition has been satisfied after said step of determining the presence of said slip; and
- controlling the internal combustion engine in response to said slip indicative signal so as to cause a drop in output torque produced by the internal combustion engine.

4,615,411
SOUND-INSULATED FLOW DUCT AND PROCESS FOR THE MANUFACTURE THEREOF

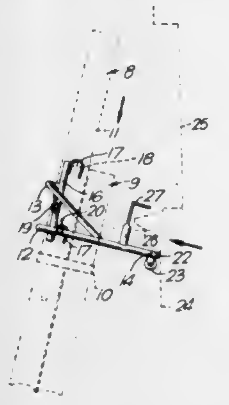
Hans-Ulrich Breitscheidel, Siegburg; Cosmas Lorry, Niederkassel; Helmut Rehlen, Härte 6, 7951 Ingoldingen, and Jürgen Roellinghoff, Fohrenweg 9, 7950 Mettenburg, all of Fed. Rep. of Germany, assignors to Dynamit Nobel AG; Helmut Rehlen and Jürgen Roellinghoff, all of Troisdorf, Fed. Rep. of Germany
Filed May 24, 1983, Ser. No. 497,576
Claims priority, application Fed. Rep. of Germany, May 27, 1982, 3220023
Int. Cl.^{4} E04F *17/04;* **F01N** *1/24*
U.S. Cl. 181—224 **19 Claims**



1. A sound-insulated flow duct for conveying gas therethrough which comprises a shape-retaining member having walls to define a gas passage and that are formed from a composite comprising an outer molded layer of an elastic thermoplastic, closed-cell foam material and an inner non-molded layer of an open-cell, elastic soft foam material; said inner layer having an inner surface exposed to the gas passing through said passage and an outer surface bonded to said outer layer; the inner surface of the inner layer being sealed partially with an air permeable-skin so that the inner layer is air-permeable in a controlled manner.

4,615,412
LADDER REST DEVICE

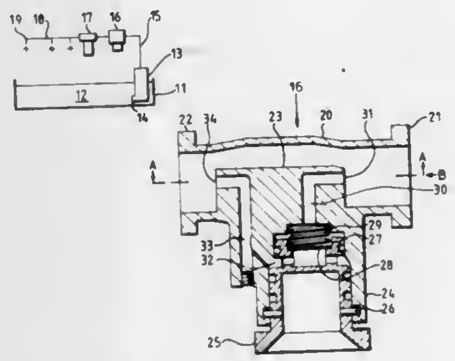
James B. Clarke, 120 Shepherds Hill, Harold Wood, Essex, England
PCT No. PCT/GB84/00171, § 371 Date Nov. 19, 1984, § 102(e) Date Nov. 19, 1984, PCT Pub. No. WO84/04776, PCT Pub. Date Dec. 6, 1984
PCT Filed May 18, 1984, Ser. No. 678,510
Claims priority, application United Kingdom, May 20, 1983, 8313950; Aug. 22, 1983, 8322497; Mar. 14, 1984, 8406584
Int. Cl.^{4} E06C *7/48*
U.S. Cl. 182—214 **15 Claims**



1. A device for use in resting an upper part of a ladder against a wall, the device comprising a frame which is provided with means for mounting the frame on at least one rung of the ladder at a position on the rung located between the ladder stiles, the frame having first parts extending away from one another, in use, transversely across respective ones of the ladder stiles on the front climbing side of the ladder and second parts extending rearwardly from the first parts, in use, at the sides of the ladder and carrying means for abutment with a wall; characterised in that the second parts of the frame are interconnected by a further part whereby, in use, the frame completely surrounds the ladder to which it is fitted, and the mounting means and first frame parts are so arranged that, in use, when the device is mounted a few rungs down from the top of an upper section of an extendible ladder at a position below guide furniture on a lower ladder section when the ladder is retracted, the frame can ride past the lower section and guide furniture upon extension and retraction of the ladder.

4,615,413
RECIRCULATING LUBRICATING SYSTEM WITH MONITOR FILTER UNIT

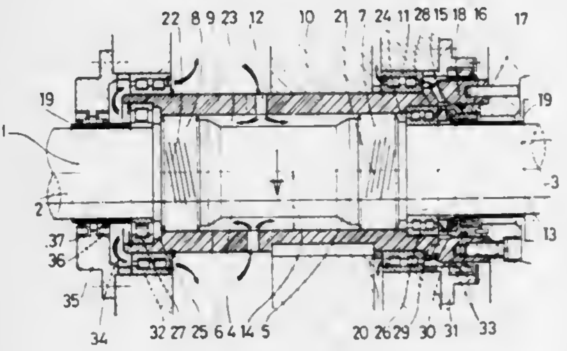
Basil C. J. Stevenson, Corton Denham, England, assignor to Westland plc, Yeovil, England
Filed Apr. 24, 1984, Ser. No. 603,412
Claims priority, application United Kingdom, May 16, 1983, 8313418
Int. Cl.^{4} F01B *11/10*
U.S. Cl. 184—6.4 **2 Claims**



1. A recirculating lubricating system comprising a sump for lubricating oil, a pump adapted to pump oil from the sump, a main filter element, a monitor filter unit disposed between the pump and said main filter element, passageway means interconnecting said pump, monitor filter unit and main filter element whereby oil is pumped from the sump through the monitor filter unit and the main filter element to a plurality of lubricating points from where the oil drains back to the sump, said monitor filter unit including a generally tubular body portion having end portions adapted for connection into said oil flow passageway, a removable monitor filter element located in a hollow boss formed integral with said body portion and between an inlet chamber and an outlet chamber, and diverting means comprising a longitudinal protrusion extending into said body portion and having an inlet opening facing in a direction opposite the normal direction of flow of the lubricating oil whereby a proportion of the oil flowing between the pump and the main filter element is diverted to flow through the inlet chamber, the monitor filter element and said outlet chamber to be returned to the flow of oil upstream of the main filter element.

4,615,414
AUTOMATIC LUBRICATING DEVICE FOR MACHINE SHAFTS

José L. Flores Agell, Gran Via de les Corts Catalanes, 855, Barcelona, Spain
Filed Apr. 30, 1985, Ser. No. 728,889
Claims priority, application Spain, May 4, 1984, 279.441[U]
Int. Cl.^{4} F01M *9/06*
U.S. Cl. 184—13.1 **5 Claims**

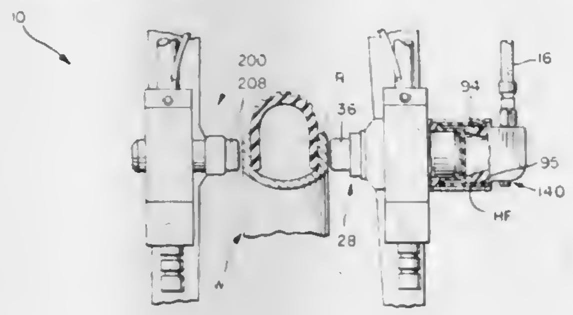


1. An automatic lubricating device for machine shafts comprising:
- a solid shaft with a central portion of smaller diameter, flanked by two zones of progressively increasing diameter;
- a hollow shaft having an internal diameter, said hollow shaft being externally and coaxially disposed with respect to said solid shaft;
- said two zones of progressively increasing diameter of said solid shaft flanked by separate cylindrical zones having separate threaded lengths with threads directed precisely in opposite directions;
- said cylindrical zones are of a diameter equivalent to the internal diameter of said hollow shaft,
- said hollow shaft having a plurality of radial holes, which connect the outside of said hollow shaft with a space defined between said hollow shaft and said solid shaft, said radial holes located adjacent to the central portion of smaller diameter of said solid shaft for circulation of a lubricating oil flow.

4,615,415

HAND OPERATED HYDRAULIC BICYCLE BRAKE

William R. Mathauser, 3000 "B" Ave., Anacortes, Wash. 98221
Continuation of Ser. No. 478,079, Mar. 23, 1983, abandoned.
This application May 23, 1985, Ser. No. 737,207
Int. Cl.⁴ B62L *1/10*
U.S. Cl. 188—24.22 **14 Claims**



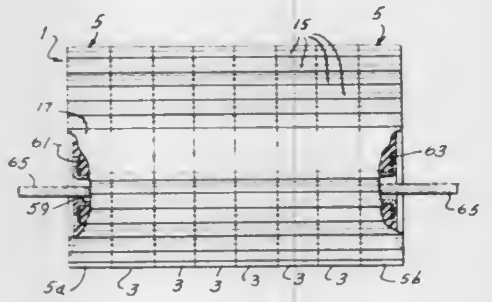
1. A hand actuated hydraulic brake for a bicycle comprising:
a brake pad holder unit mounted on the bicycle, said brake pad holder unit including first and second bicycle brake housings mounted on a bracket arm to be on opposite sides of a bicycle wheel, said housing each being of a size commonly found on a bicycle, a lug mounted on said first housing, said lug having a lug groove defined therein, a fluid actuated bracket arm moving means connected to said first housing and a first brake pad connected to said second housing, said bracket arm moving means including a rolling diaphragm fluidly connected to a master cylinder by a flexible fluid line via said lug to exchange hydraulic fluid therewith, a movable brake pad holder connected to a piston rod, said piston rod including a piston head having a circumferential groove defined therein and being slidably mounted in said first housing and engaged with said rolling diaphragm for movement therewith, said rolling diaphragm including a base contacting said piston head, a side portion adjacent to said first housing and a reverse bend connecting portion connecting said diaphragm base and side portion so that said rolling diaphragm can fold upon itself within said first bicycle brake housing, said rolling diaphragm having sufficient flexibility to operate efficiently in a bicycle hydraulic brake unit, a piston rod return means engaged against said piston head to bias said diaphragm against action of hydraulic fluid forced thereinto by said master cylinder, and a second brake pad mounted on said movable brake pad holder, and said diaphragm including a first bead on the inner surface thereof which engages said lug groove to attach said diaphragm to said lug and a second bead on the outer surface thereof adjacent to said base which engages said piston head circumferential groove to attach said diaphragm to said head.

4,615,416

HEAVY DUTY CHOCKS

Michael F. Wilson, Alton, England, assignor to R.E. Tyre & Rubber Co., Ltd., Hampshire, England
Continuation-in-part of Ser. No. 497,101, May 20, 1983, abandoned. This application May 1, 1985, Ser. No. 729,881
Claims priority, application United Kingdom, Jan. 28, 1983, 8302453
Int. Cl.⁴ B60T *3/00*
U.S. Cl. 188—32 **16 Claims**

1. A heavy duty chock, for use in preventing the movement of wheeled vehicles,
the chock being equilateral triangular in cross-section, having a longitudinal axis and three longitudinal edges, and divided transverse to its longitudinal axis into a number of equilateral triangular sections each having two triangular faces with adjacent sections having mutually facing triangular faces;
there being an end section at each end of the chock and a number of central sections located between the end sections;
each central section defining at least one space extending longitudinally therethrough;
the end and central sections being formed from an elastomeric material;
the chock having all three of its longitudinal edges truncated;

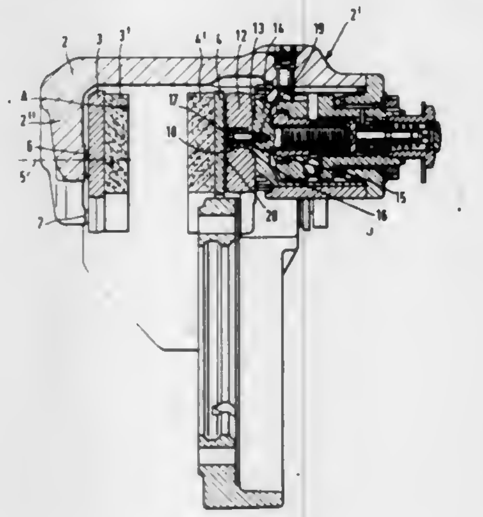


the chock further comprising clamping means, for holding the sections with adjacent triangular faces in tight abutment; and
the chock further comprising male/female interlock means in adjacent abutting triangular faces of said sections and cooperating with said clamping means, for preventing relative rotational movement between adjacent sections about the longitudinal axis.

4,615,417

MECHANICALLY OPERATED SLIDING SADDLE DISC BRAKE

Wilhelm Schneider; Norbert Jobke, both of Mannheim, and Bernd Rupprecht, Edingen-Neckarhausen, all of Fed. Rep. of Germany, assignors to Deutsche Perrot-Bremse GmbH, Mannheim, Fed. Rep. of Germany
Filed Aug. 16, 1985, Ser. No. 766,398
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1984, 3431773
Int. Cl.⁴ F16D *65/02*
U.S. Cl. 188—72.8 **9 Claims**

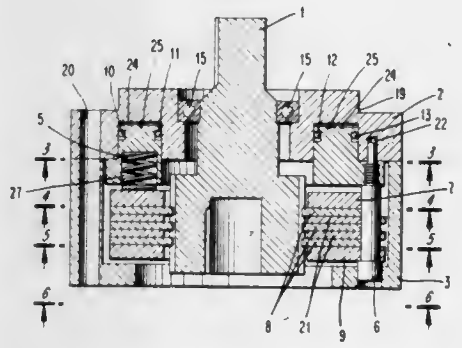


1. In a mechanically operated sliding disc brake including a fixedly positioned brake carrier, a brake saddle mounted in the brake carrier and slidably displaceable parallel to the rotational axis of the wheel to be braked and having two shanks which straddle a brake disc which is rotationally fast with the wheel, a piston mounted in the first brake saddle shank slidably displaceable parallel to the rotational axis of the wheel, a pressure plate, a first brake lining carrier positioned on the pressure plate, a first brake lining on the first brake lining carrier engageable with one side of the brake disc, a mechanically operated expansion mechanism supported on the piston and on the first brake saddle shank, a second brake lining carrier positioned on the second brake saddle shank and having a second brake lining engageable with the other side of the brake disc, said second brake saddle shank having a free end, and guides positioned on the brake carrier for guiding and supporting the two brake lining carriers, the improvement comprising:
a compression spring screw bolt combination for clamping said pressure plate to said piston;
a boss on said piston engaging said pressure plate for allowing rocking movements of said pressure plate;
at least one cylindrical projection for supporting said second brake lining carrier on said second brake saddle shank, said at least one cylindrical projection having a crest line running tangentially to said brake disc and through the center of the area of said second brake lining engageable with said other side of said brake disc;
an abutment for supporting said second brake lining carrier near the free end of said second brake saddle shank; and
helical springs operatively mounted for clamping said second brake lining carrier to said second brake saddle shank.

4,615,418

HYDRAULIC SAFETY BRAKE

William L. Atwell, 5328 Scottdale Rd., St. Joseph, Mich. 49085
Continuation of Ser. No. 648,353, Sep. 7, 1984, abandoned, which is a continuation of Ser. No. 391,512, Jun. 24, 1982, abandoned. This application Jul. 3, 1985, Ser. No. 751,466
Int. Cl.⁴ F16D *65/24*
U.S. Cl. 188—170 **4 Claims**

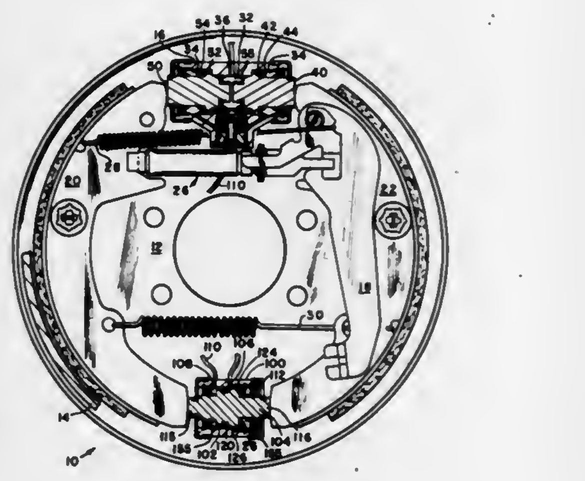


1. A disc brake comprising a stationary case, a shaft rotatably supported in said case, a disc stack in said case surrounding said shaft and including a plurality of interleaved rotatable and fixed discs, means connecting said rotatable discs for rotation with said shaft and allowing movement longitudinally of said shaft, a plurality of spaced actuation pins extending through said fixed discs and axially slidably supported at opposite ends by said case, said pins fixing said fixed discs against rotation relative to said case and allowing movement of said fixed discs longitudinally of said shaft, piston means in said case and fixed to said actuation pins, a spring plate between said piston means and said disc stack and operable to engage a disc at one end of said stack, spring means caged between said piston means and said spring plate, means connecting said spring plate to said case allowing movement of said spring plate in one direction relative to the case away from said disc stack and toward said piston, and limiting movement of said spring plate in the other direction away from said piston means, said actuation pins being operatively engagable with a disc at the other end of said stack and operable to limit movement of said stack away from said piston means, said piston means being movable in one direction causing movement of said actuation pins and pressing said interleaved discs together, movement of said piston means and said actuation pins in the other direction releasing said interleaved discs.

4,615,419

TORQUE SENSING BRAKING CONTROLLER FOR BRAKES

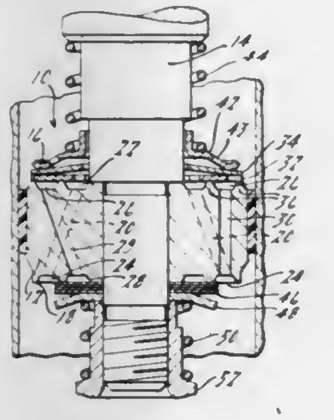
Robert F. Gaiser, Stevensville, Mich., assignor to Allied Corporation, Morristown, N.J.
Filed Mar. 26, 1985, Ser. No. 716,053
Int. Cl.⁴ B60T *8/12*
U.S. Cl. 188—181 T **36 Claims**



1. A torque sensing braking controller for permitting a wheel to recommence rotation when vehicle wheel rotation has ceased, the braking controller comprising a pair of friction elements for frictionally engaging and retarding rotation of a rotating element operatively connected to the vehicle wheel, at least one differential area piston means disposed in a bore of a piston housing and operable responsively to pressurized fluid which causes said piston means to move at least one of said friction elements into engagement with said rotating element, the differential area piston means, piston housing and bore defining first and second chambers sealingly separated from one another, first valve means having a valve operatively coupled to at least one of said friction elements and including an inlet chamber receiving said pressurized fluid and a separate outlet chamber for communicating fluid pressure to said first chamber, and second valve means communicating with said first and second chambers, said second valve means permitting fluid displacement between said first and second chambers when the fluid pressure from said first valve means is below a predetermined level, the pressurized fluid effecting displacement of said piston means and one friction element to retard rotation of said rotating element and effect fluid displacement between said first and second chambers, the pressurized fluid effecting displacement of said piston to effect engagement of said friction element with the rotating element independently of any fluid pressure from said first valve means, and pressurized fluid and braking torque from said friction element causing said valve of the first valve means to be displaced in an initial direction such that said outlet chamber is enlarged, and a sudden decrease in braking torque caused by the cessation of wheel rotation permitting said valve to be displaced in an opposite direction to reduce the size of said outlet chamber and cause a fluid pressure output which is communicated to said second valve means to effect closure of said second valve means such that the fluid pressure output is communicated only to said first chamber to oppose the displacement of said piston means by said pressurized fluid and thereby effect rotational release of said rotating element.

4,615,420
PISTON ASSEMBLY FOR SHOCK ABSORBER

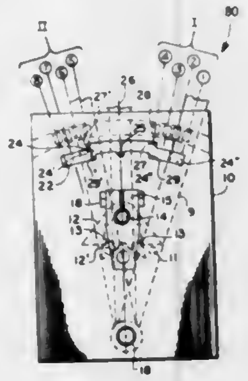
Jack W. Mourray, West Bloomfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Continuation of Ser. No. 573,273, Jan. 23, 1984, abandoned. This application Nov. 12, 1985, Ser. No. 797,192
Int. Cl.⁴ F16F *9/34*
U.S. Cl. 188—322.15 **3 Claims**



1. A piston assembly for a shock absorber comprising:
(A) a generally cylindrical body attached to a piston rod and having
  (i) upper and lower faces,
  (ii) outboard and inboard annular grooves on each of said upper and lower faces,
  (iii) first means comprising first ports connecting said upper inboard annular groove with said lower outboard annular groove for conducting hydraulic fluid through said generally cylindrical body during all compression and rebound strokes,
  (iv) second means comprising ports connecting said upper outboard annular groove with said lower inboard annular groove for conducting only rebound flow through said generally cylindrical body;
(B) first and second annular discs mounted abuttingly to the upper face of said cylindrical body wherein:
  (i) said first annular disc is more proximate the upper face of said cylindrical body and has a notch in its outer periphery whereby fluid may pass through said ports of said second means,
  (ii) said first annular disc has a central opening larger than the diameter of said piston rod whereby fluid may pass between said piston rod and said disc,
  (iii) said second annular disc is of dished shape and superimposed upon said first annular disc such that the outer periphery of each annular disc is in contact with the other, and
  (iv) said second annular disc is of flexible material such that said disc will progressively flatten in response to fluid pressure acting above said piston assembly whereby rebound flow through said first means becomes constricted and rebound flow is caused to change its course from said first means to said first and second means;
(C) a retainer clampingly engaged with the outer periphery of said second annular disc, said retainer being axially loaded in the direction of said second annular disc by means of a compression spring; and
(D) a rebound disc stack comprised of at least one resilient disc clampingly and abuttingly engaged with said lower face of said cylindrical body whereby flow through said ports of said second means is resiliently resisted.

4,615,421
ELECTRO-MECHANICAL SHIFTER FOR HYDRAULIC TRANSMISSION

E. James Lane, Highland, Mich., and Paul L. Speelman, Fredericksburg, Ohio, assignors to Eaton Corporation, Cleveland, Ohio
Filed Mar. 21, 1985, Ser. No. 714,321
Int. Cl.⁴ B60K *41/22*
U.S. Cl. 192—3.54 **14 Claims**

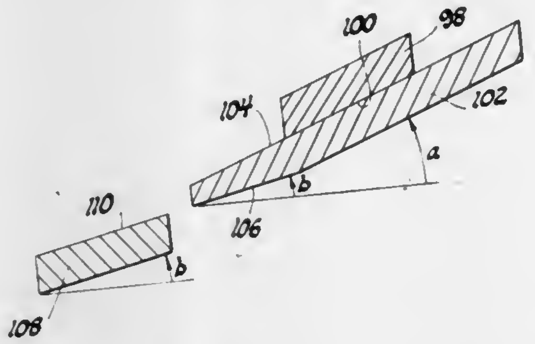


1. An electro-mechanical shifter for a hydraulic transmission of the type having first and second control valve means that in the same and opposite open and closed conditions enable the transmission to provide a range of gear ratios for driving an output member and including clutch means that, upon disengagement, disengages the transmission therefrom, said shifter comprising:
a control arm carrying a second pin member positionable by an operator along a frame into a plurality of gear positions respectively included within separate first and second gear ratio range groups having a lowest and a highest gear ratio position within each of said groups;
electrical signal generation means connectable to an electrical power source and operable to provide an electrical triggering signal upon positioning said control arm at each of said gear positions within said first and second groups;
first actuator means operably connected to said first valve means and second actuator means operably connected to said second valve means, said first and second actuator means operable to open and close said valve means respectively connected thereto according to whether an electrical actuating signal is received thereby;
electrical circuit means operable to receive said triggering signal and to provide said actuating signal to either or both said first and second valve means according to the particular gear position at which said control arm is positioned; and
clutch interlocking means comprising a cam opening in said frame that is substantially parallel to the plane of movement of said control arm with said second pin member extending through said opening that is moveable by an actuator carried by the control arm, said opening having spaced-apart upper and lower edges profiled to provide said interlocking means and said actuator operable upon receipt of an electrical signal provided upon disengagement of said clutch means to correspondingly move said second pin member upwardly and downwardly against said spaced-apart edges to provide said clutch interlocking means.

4,615,422
COUPLING WITH SPLINE CLUTCH HAVING DIFFERENT HELIX ANGLES

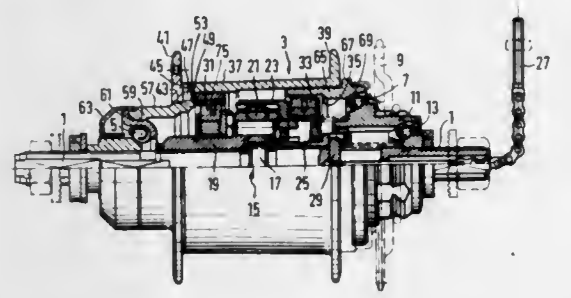
Glenn W. Thebert, Carmel, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 14, 1985, Ser. No. 690,994
Int. Cl.⁴ F16D *11/04*
U.S. Cl. 192—53 B **3 Claims**

1. In a coupling between an input shaft continuously rotatable about an axis of said coupling and an output shaft selectively rotatable about said axis, said coupling including a transition clutch selectively operable to accelerate said output shaft from rest to a synchronous speed corresponding to the speed of said input shaft and to permit controlled deceleration of said output shaft from said synchronous speed to rest, a direct clutch comprising, an input member drive connected to said input shaft and continuously rotatable therewith about said axis, an output member drive connected with said output shaft and rotatable therewith about said axis, an input helical spline on said input member having a pressure face at a first helix angle relative to said axis, an output helical spline on said output member having a pressure face at a second helix angle relative to said axis different from said first helix angle, an intermediate member, and helical spline means on said intermediate member having a first pressure face oriented at said first helix angle and a second pressure face oriented at said second helix angle, said intermediate member being disposed on said input member with said first pressure face drive engaged on said input spline pressure face so that said intermediate member is rotatable with said input member and longitudinally shiftable relative thereto along said axis at said synchronous speed between an extended position wherein said second pressure face overlaps and is drive engaged on said output spline pressure face and a retracted position wherein said second pressure face is longitudinally separated from said output spline pressure face, the difference between said first and said second helix angles effecting circumferential separation between said second pressure face and said output spline pressure face before longitudinal separation therebetween.



4,615,423
HUB FOR A TWO-WHEELED VEHICLE

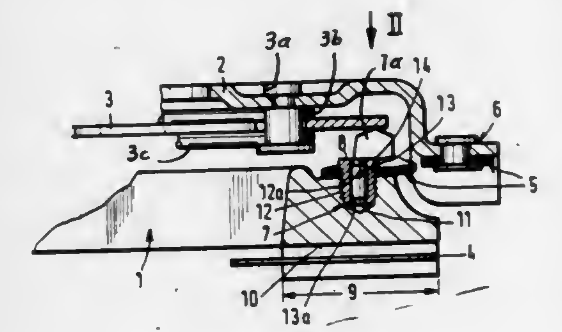
Dieter Klauke, Bergrheinfeld, and Werner Steuer, Schweinfurt, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany
Filed Aug. 16, 1983, Ser. No. 523,740
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1982, 3230509
Int. Cl.⁴ F16D *41/30;* **B60B** *27/04*
U.S. Cl. 192—64 **8 Claims**



1. A hub for a two-wheeled vehicle comprising -
(a) a hub spindle defining a rotation axis;
(b) a hub sleeve enclosing the hub spindle and mounted rotatably thereon;
(c) two spoke flanges arranged with axial spacing from one another, firmly connected with the hub sleeve and concentric with the hub spindle; wherein
(d) the hub sleeve is a metal die-casting configured to be formed in a pusherless casting mold which can be opened by axial movement, one of the two spoke flanges being cast integrally with the metal die-casting;
(e) on the external circumferential surface of the metal die-casting a seating surface is formed for the other of the two spoke flanges, to which surface this other spoke flange is rigidly secured;
(f) in the entire external circumferential surface of the metal die-casting the radial distance of the outer circumferential surface from the rotation axis, starting from an outer circumference with maximum diameter, exclusively decreases or at least remains constant with increasing axial distance from the maximum external circumference; and
(g) in the entire internal circumferential surface of the metal die-casting the radial distance of the inner circumferential surface from the rotation axis, starting from an internal circumference with minimum diameter, exclusively increases or at least remains constant with increasing axial distance from the minimum internal circumference.

4,615,424
FRICTION CLUTCH

Helmut Kohler, Bühlertal, Fed. Rep. of Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany
Filed Jun. 29, 1983, Ser. No. 509,190
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1982, 3224404
Int. Cl.⁴ F16D *13/58*
U.S. Cl. 192—70.18 **33 Claims**



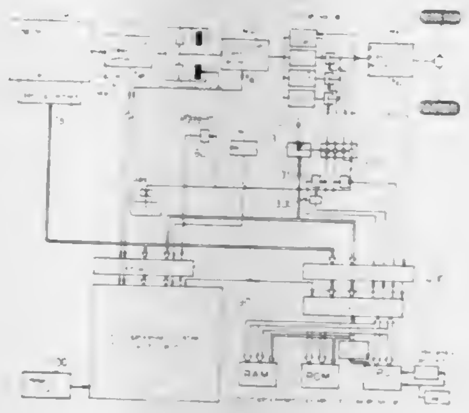
1. In a friction clutch, particularly for motor vehicles, the combination of a first and a second rotary component, said components being substantially coaxial with one another and said first component being movable axially of said second component; a coupling member including a first portion secured to one of said components and a second portion overlying the other of said components and having an opening, said other component having a surface adjacent to said second portion and provided with a blind bore in register with said opening, said second portion having a side facing away from said surface; and means for fastening said second portion to said other component, including a metallic connecting element extending through said opening and having an at least partly radially expanded first portion received in said bore and being anchored in said other component, said connecting element further having an end portion overlying said side in the region of said opening to thereby hold said second portion against movement away from said surface.

4,615,425
AUTOMATIC CLUTCH CONTROL SYSTEM

Hideyuki Kobayashi, Toyota, and Tsutomu Mitsui, Chiryu, both of Japan, assignors to Aisin Seiki Kabushikikaisha, Aichi, Japan
Filed Mar. 28, 1983, Ser. No. 479,542
Claims priority, application Japan, Mar. 31, 1982, 57-52897
Int. Cl.⁴ F16D *43/284;* **B60K** *41/02*
U.S. Cl. 192—0.076 **6 Claims**

1. An automatic clutch control system for a vehicle of the

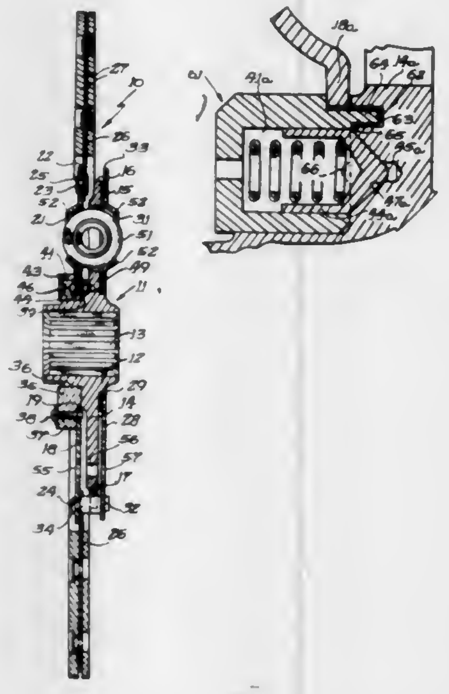
type having an engine for driving a drive shaft, said engine having a throttle, and said vehicle further comprising a clutch for coupling said drive shaft to a driven shaft, said system comprising:
- first speed detecting means for detecting a rotational speed of said drive shaft;
- second speed detecting means for detecting the rotational speed of said driven shaft;
- throttle detecting means for detecting the throttle opening of said engine;
- clutch engagement control means for controlling the degree of engagement of said clutch in accordance with a clutch engagement control signal; and
- electronic control means coupled to said first and second speed detecting means, said throttle detecting means and said clutch control means, and including rate change detection means for determining the rate of change of said rotational speed of said drive shaft, for generating a first clutch engagement control signal representing a degree of engagement dependent upon the rotational speed of said drive shaft and the throttle opening until the rotational speeds of said drive shaft and said driven shaft exceed predetermined values whereupon the vehicle will start moving without the engine stopping and a reduction of the rotational speed corresponding to the vehicle load will appear, and applying said signal to said clutch engagement control means, and for generating, after application of said first clutch engagement control signal, a subsequent clutch engagement control signal representing a degree of engagement dependent upon (i) the rate of change of said drive shaft rotational speed, (ii) the throttle opening and (iii) elapsed time and applying said subsequent signal to said clutch engagement control means.



4,615,426
CLUTCH DRIVEN PLATE ASSEMBLY

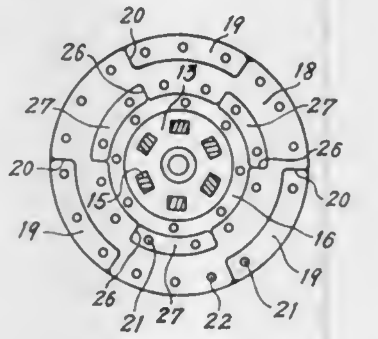
Thaddeus Lech, Jr., Farmington Hills, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Nov. 30, 1983, Ser. No. 556,518
Int. Cl.^{4} F16D *3/14, 13/68*
U.S. Cl. 192—106.2 **13 Claims**

1. In a clutch driven plate assembly for an automotive vehicle clutch driving a transmission input shaft, including a hub having a barrel splined onto the input shaft and a radial flange, a clutch plate carrying friction facings at the outer periphery thereof, a spring retainer plate secured to the clutch plate to sandwich said hub flange therebetween, said plates and hub flange having axially aligned sets of circumferentially spaced windows therein, and damper springs received in each set of windows, the improvement comprising a retainer operatively connected to said clutch plate to rotate therewith and having a plurality of recesses facing said hub flange, a plurality of axially biased plungers received in said recesses, and a series of camming recesses in said hub flange axially aligned with said recesses to receive said plungers, said hub flange windows extending circumferentially beyond said plate spring windows to allow limited rotation of said plates relative to said hub without compression of said damper springs so that rotation of said plates and retainer relative to said hub causes said plungers to cam out of said hub flange recesses.



4,615,427
CLUTCH DISK HAVING COMBINED ORGANIC AND CERAMIC-METALLIC FACINGS

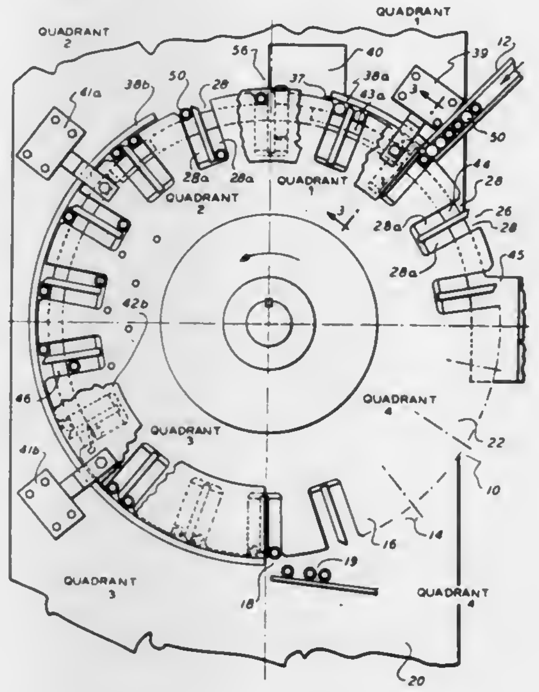
Hidekazu Majima, Neyagawa, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan
Filed Sep. 19, 1985, Ser. No. 778,171
Claims priority, application Japan, Jul. 7, 1981, 56-101525[U]
Int. Cl.^{4} F16D *69/02*
U.S. Cl. 192—107 M **8 Claims**



1. A clutch disk having a driven plate, said driven plate having on each of its opposite faces an organic friction facing extending circumferentially and continuously around the driven plate, each organic facing having a plurality of equally spaced notches extending radially inward from, and circumferentially along, the periphery of said driven plate, the peripheral edge of each of said notches being open for the circumferential length of said notches, a ceramic-metallic friction facing filling each of said notches; said organic facing, said spaced notches and said ceramic-metallic friction facing filling each of said notches at the opposite faces of said driven plate being aligned and fastening means extending through said aligned organic facings, said aligned ceramic-metallic facings and said driven plate and mounting said facings on said driven plate.

4,615,428
HIGH SPEED ARTICLE ORIENTING AND FEEDING APPARATUS

Walter McDonald, Landing, and Norbert F. Seitel, Gillette, both of N.J., assignors to Norwalt Design, Inc., Whippany, N.J.
Filed Aug. 16, 1984, Ser. No. 641,510
Int. Cl.^{4} B65G *47/24*
U.S. Cl. 198—399 **13 Claims**

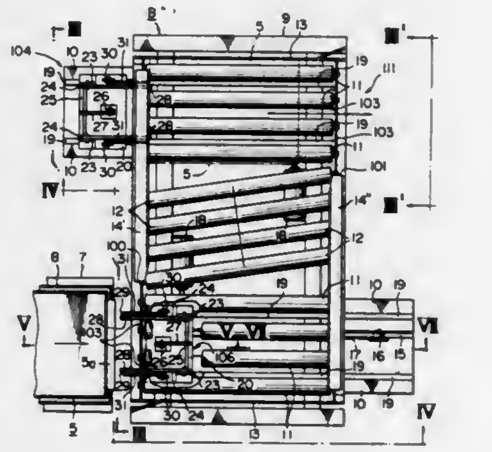


1. Apparatus for accepting an initially presented population of articles of the type having one axis generally longer than the other and one end different than the other with random orientation of the ends, and providing a high-speed output stream, wherein the ends of all said articles are commonly oriented, said apparatus comprising:
- (a) a rotatable wheel means oriented for rotation about a horizontally disposed axis having means in the periphery thereof for accepting articles with the principal axis thereof oriented parallel, in a substantially horizontal plane and transverse to the direction of rotation of said wheel and with the ends thereof randomly oriented;
- (b) means arranged along the track of rotation of said wheel for constraining articles within the periphery thereof and permitting the advance of articles with their principal axis parallel in a desired andwise orientation and in a substantially horizontal plane from an article accepting zone to an output zone in the track of rotation for said wheel; and
- (c) means for turning end for end articles being in an undesired endwise orientation within the periphery of said wheel along the track of rotation of said wheel intermediate said article accepting station and said article output station.

4,615,429
DEVICE FOR ACCURATELY FORWARDING AND RETRIEVING ARTICLES

Akira Arase, Yokohama, Japan, assignor to Okamura Corporation, Yokohama, Japan
Filed Mar. 7, 1983, Ser. No. 473,145
Claims priority, application Japan, Aug. 6, 1982, 57-119488[U]
Int. Cl.^{4} B65G *47/26*
U.S. Cl. 198—456 **6 Claims**

1. A device for accurately forwarding and retrieving articles, comprising:
- (a) a plurality of rollers collectively disposed to define a path of travel for articles being handled, said path of travel extending from an article entrance at one end of said path of travel to an article exit at an opposite end of said path of travel.
- (b) said plurality of rollers comprising a first set of parallel rollers disposed at said one end of said path of travel and in receiving relation to said article entrance,
- (c) said plurality of rollers further comprising a second set of parallel rollers spaced from said first set of rollers and disposed at an opposite end of said path of travel relative to said one end and adjacent to said article exit,
- (d) a third set of rollers disposed between said first and said second sets of rollers and obliquely oriented relative to said first and second sets at an angle sufficient to direct an article traveling along said path of travel onto said second set of rollers from said third set of rollers and substantially away from said article exit,
- (e) a first and a second elongated guide plate each disposed in spaced substantially parallel relation to one another on opposite sides of said path of travel,
- (f) said first guide plate extending along one end of said first set of rollers from said one end of said path of travel towards said opposite end of said path of travel and spaced from said opposite end by said article exit,
- (g) said second guide plate extending along one end of said second set of rollers from said opposite end of said path of travel towards said one end of said path of travel and spaced from said one end by said article entrance,
- (h) a pulling and pushing means for moving the article on and off said plurality of rollers and including a pulling mechanism mounted adjacent said article entrance and a pushing mechanism mounted adjacent said articles exit, said pulling mechanism and said pushing mechanism respectively disposed and structured to pull an article onto said first set of rollers through said article entrance and push an article off said second set of rollers through said article exit,
- (i) said pulling mechanism and said pushing mechanism each including an engagement hook and a retaining hook structured for respectively grasping an under and an upper portion of a projecting lip on each of the articles for partially lifing the article and positioning the article on and off said plurality of rollers respectively, and
- (j) an endless belt associated with each of said pulling mechanisms and pushing mechanism, each of said belts moving said respective engagement hook and retaininer hook to and fro between grasping and non-grasping positions relative to articles being moved thereby, each of said endless belts mounted generally parallel to the longitudinal axis of the rollers of said first and second sets of rollers and generally underneath a respective one of said sets.



4,615,430

PRECISION PALLET STACKING TYPE STORAGE SYSTEM FOR USE IN CLEAN ENVIRONMENT OR THE LIKE

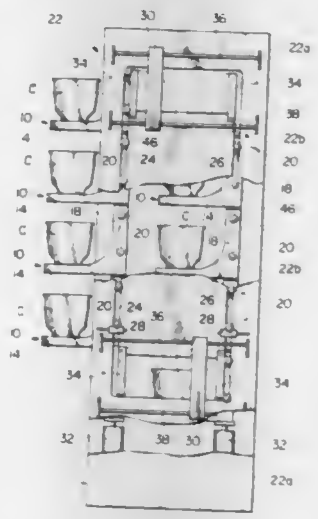
Ryozo Satoh, Tokyo, Japan, assignor to Tokyo Electron Limited, Japan

Filed Sep. 17, 1984, Ser. No. 650,886

Claims priority, application Japan, Oct. 6, 1983, 58-187352; Apr. 17, 1984, 59-77320

Int. Cl.^{4} B65G *47/57*

U.S. Cl. 198—465.1 **5 Claims**



1. A storage system comprising:
- a plurality of pallets, said pallets being stacked in first and second stacks;
- a frame arrangement comprising first and second guide slots for vertically guiding said first and second stacks;
- a first vertical transportation device for moving said first stack of pallets vertically;
- a second vertical transportation device for moving said second stack of pallets vertically;
- a first horizontal transportation device disposed at the top of said frame arrangement for moving the top pallet of one of said first and second stacks to the top of the other stack;
- a second horizontal transportation device disposed at the bottom of said frame arrangement for moving the bottommost pallet of one of said first and second stacks to the bottom of the other stack;
- a first stopper arrangement for supporting said first and second stacks of pallets in position such that said second horizontal transportation device is capable of moving the bottommost pallet of one of said first and second stacks to the bottom of the other stack; and
- first, second, third and fourth pivotal levers disposed at the tops and bottoms of said first and second guide slots respectively, said first, second, third and fourth pivotal levers being pivotal between positions wherein they respectively define part of said first and second guide slots to positions wherein they open a path for a pallet to be moved horizontally.

4,615,431

APPARATUS FOR CONVEYING PLATE- OR FRAME-SHAPED ELEMENTS

Peter Lisec, Bahnhofstrasse 34, 3363 Amstetten-Hausmening, Austria

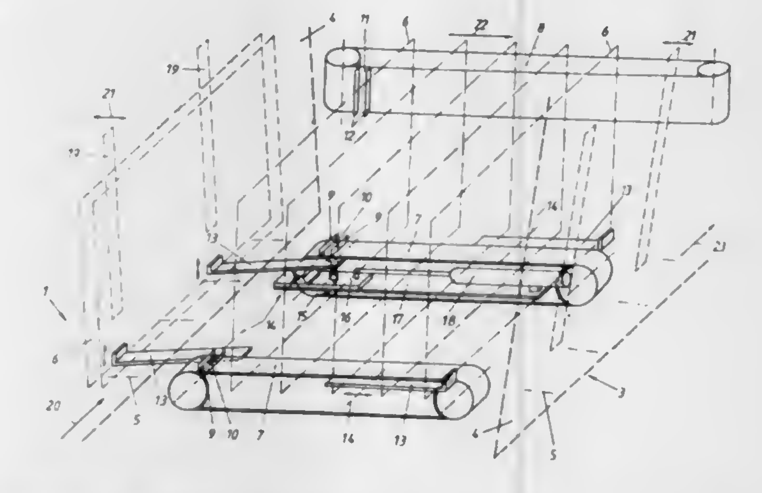
Filed Jul. 26, 1984, Ser. No. 635,431

Claims priority, application Austria, Sep. 5, 1983, 3164/83

Int. Cl.^{4} B65G *37/00*

U.S. Cl. 198—468.6 **8 Claims**

1. Apparatus for conveying substantially vertically disposed plate- or frame-shaped elements such as unfinished insulating glass parts, comprising two conveying devices (1, 3) that are offset with respect to each other, which convey the elements (6) in parallel to the substantially vertical plane defined by said elements; a transverse conveyor (2) between said two conveying devices (1, 3) transporting said elements (6) substantially transversely to their substantially vertical plane, and means (13, 19) transferring the elements (6) from one said conveying device (1) to the transverse conveyor (2) and from the transverse conveyor (2) to the second said conveying device (3) while maintaining the elements (6) substantially vertical, the transverse conveyor (2) comprising at least two conveyor members (7) engaging the bottom edges of the substantially vertically disposed elements (6) and at least one conveyor (8) engaging one of the substantially vertically oriented edges of the elements (6) to stabilize the elements in the direction of conveyance, the conveyor (8) engaging the vertical lateral edge of the elements (6) being an endless conveyor parallel to said at least one conveyor and carrying holders (11, 12) that contact the lateral faces of the elements (6) with the elements (6) perpendicular to said endless conveyor.



4,615,432

COILED FLEXIBLE WORKPIECE TRANSPORTING DEVICE

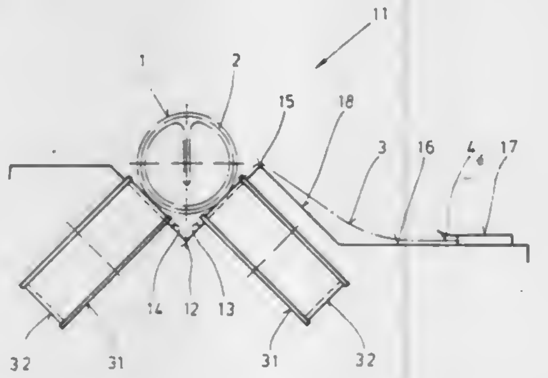
Conrad Arbter, Saal an der Saale, Fed. Rep. of Germany, assignor to Kolb & Schüle, Fed. Rep. of Germany

Filed Nov. 16, 1984, Ser. No. 672,348

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1983, 3341892

Int. Cl.^{4} B65G *35/02*

U.S. Cl. 198—725 **11 Claims**



1. A device for transporting a flexible workpiece in a feed direction, the flexible workpiece having a coiled portion with a coil axis extending in the feed direction and a projecting portion extending laterally away from the axis, the projecting portion having a longitudinal edge extending about parallel to the axis, the device comprising a transport member having a trough portion extending in the feed direction for receiving the coiled portion of the workpiece therein, said transport member having at least one side portion alongside said trough portion for receiving said projecting portion of said workpiece thereon, said side portion having an upper deflecting edge extending parallel to the feed direction and at a lateral side of said trough portion so that the projecting portion of the workpiece is bent on said deflecting edge, said side portion including a support surface spaced laterally away from said deflecting edge on a side of said deflecting edge away from said trough portion, said support surface being positioned below said deflecting edge for receiving at least a part of the projecting portion of a workpiece so that the projecting part forms an arc between said deflecting edge and the part of said support surface engaging the projecting portion, and aligning means mounted on said support surface and extending parallel to the feed direction for engaging and aligning the longitudinal edge of the projecting portion of the workpiece as it is moved in the feed direction with its coiled portion in said trough portion.

4,615,433

METHOD OF CONVEYING PARTICULATE SOLIDS

Manfred Ottow, Berlin, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

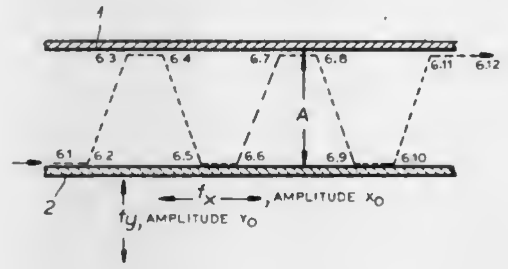
Division of Ser. No. 501,299, Jun. 6, 1983, Pat. No. 4,569,436. This application Jun. 7, 1985, Ser. No. 742,718

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1982, 3221308

The portion of the term of this patent subsequent to Sep. 4, 2001, has been disclaimed.

Int. Cl.^{4} B65G *27/16*

U.S. Cl. 198—766 **11 Claims**



1. A method of transporting a particulate solid which comprises the steps of:
- (a) introducing between a pair of plates defining a conveyor path between them extending in a conveyance direction, a quantity of particles of a solid such that such particles occupy only part of the space between said plates in a state of rest;
- (b) imparting an oscillatory motion to said plates with a component in said conveyance direction and a component normal to said plates whereby said particles are cast from one plate against the other back and forth between said plates substantially exclusively by virtue of said oscillatory motion and upon impingement against each plate receive an impetus in the conveyance direction by imparting vibratory motions at respective frequencies which are normal and parallel respectively to said conveyance direction to said plates, the ratio of the parallel frequency to the normal frequencies is about 2:3; and
- (c) discharging said particles from said path at a downstream end thereof.

4,615,434

CONVEYING EQUIPMENT

Hans P. Lachmann, 29 Drosselweg, 5 Köln (Cologne) 60, Fed. Rep. of Germany

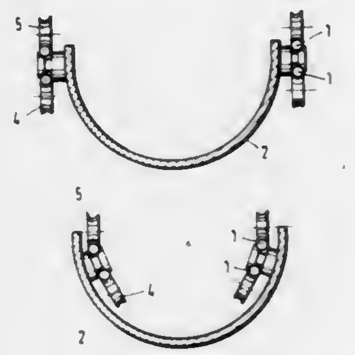
PCT No. PCT/EP82/00258, § 371 Date Aug. 1, 1984, § 102(e) Date Aug. 1, 1984, PCT Pub. No. WO84/02324, PCT Pub. Date Jun. 21, 1984

PCT Filed Dec. 8, 1982, Ser. No. 638,399

Int. Cl.^{4} B65G *15/60*

U.S. Cl. 198—823 **9 Claims**

4. In a conveyor installation with an endless conveyor belt which is transversely and longitudinally flexible and is supported by means of support elements spaced along longitudinal edges of and fixed to the belt and supported upon cables at these edges which, in turn, are guided over support pulleys and in which these cables are not securely connected to the support elements, the improvement wherein above and below the support elements on each edge, a respective endless cable is guided and is received in each support element, the active run of upper one of these cables at each edge of said belt being guided from above by respective guide pulleys in addition to the guide pulleys over which the lower cable at each edge is guided.



4,615,435

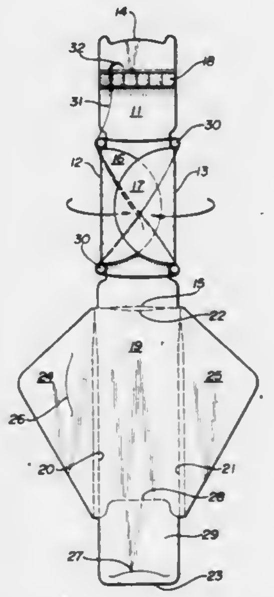
RETAINER FOR SURGICAL SUTURES

Marvin Alpern, Glen Ridge; Robert J. Cerwin, Pittstown, and Constance E. Roshdy, No. Brunswick, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Dec. 19, 1985, Ser. No. 810,959

Int. Cl.^{4} A61L *15/00*

U.S. Cl. 206—63.3 **11 Claims**



1. An inproved retainer for surgical sutures comprising:
- a. A suture winding panel having a pair of longitudinal edges and a pair of transverse edges,
- b. a pair of suture holding panels, an edge of one of said suture holding panels being foldably connected to a longitudinal edge of said suture winding panel and an edge of the other of said suture holding panels being foldable connected to the opposite longitudinal edge of said suture winding panel, said foldably connected edges of said suture holding panels extending along only a portion of the longitudinal edges of said suture winding panels whereby portions of a suture wound on said suture winding panel extend beyond the foldably connected edges of said suture holding panels,
- c. a suture enclosing panel having a pair of longitudinal edges and a pair of transverse edges, a transverse edge of said suture enclosing panel being foldably connected to a transverse edge of said suture winding panel,
- d. a pair of retainer interlocking panels, an edge of one of said retainer interlocking panels being foldably conn-

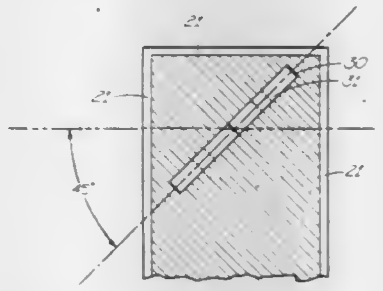
tected to a longitudinal edge of said suture enclosing panel and an edge of the other said retainer interlocking panel being foldably connected to the opposite longitudinal edge of said suture enclosing panel,

whereby a suture may be wound on said suture winding panel, held in place by folding said suture holding panels on top of said wound suture, enclosed by folding said suture enclosing panel on top of said suture holding panels and the folded panels locked in their folded condition by folding said retainer interlocking panels behind said suture winding panel and interlocking said retainer interlocking panels.

4,615,436

MAGNETIC RAZOR BLADE CONDITIONING DEVICE

John L. Hastie, 1455 A Raintree Way, Roswell, Ga. 30076
Continuation of Ser. No. 691,425, Jan. 14, 1985, abandoned, which is a continuation of Ser. No. 430,431, Sep. 30, 1982, abandoned. This application Jan. 30, 1986, Ser. No. 823,979
Int. Cl.^{4} B65D *81/24*
U.S. Cl. 206—208 **1 Claim**



1. A magnetic conditioning device for a razor blade comprising:

a supporting body;

a channel disposed within said supporting body comprising means for locating a razor blade in a predetermined location; and

means for creating a magnetic field having lines of magnetic flux intersecting said channel at an angle of substantially 45°,

whereby a magnetic influence acts upon a razor blade retained within said channel locating means at an angle of substantially 45° incident thereto so as to maintain the sharpness of said razor blade.

4,615,437

BOTTLE CLOSURE WITH SEPARABLE CAPSULE

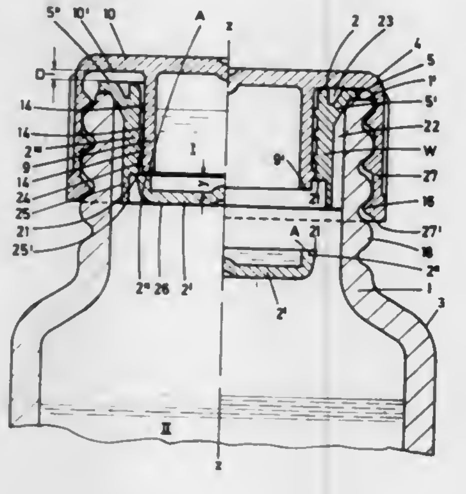
Robert-Günter Finke, Finnentrop; Clemens Schumacher, Sundern; Albert Kolb, Darmstadt-Eberstadt; Horst Lautenschläger, Modautal, and Jürgen Konetzka, Darmstadt-Eberstadt, all of Fed. Rep. of Germany, assignors to Robert Finke Kommanditgesellschaft, Finnentrop, Fed. Rep. of Germany
Filed Jul. 19, 1985, Ser. No. 757,547
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1984, 3426739
Int. Cl.^{4} B65D *25/08*
U.S. Cl. 206—222 **8 Claims**

1. A container for holding contents as two separate components which can be mixed together later, comprising:

a cup positioned in a neck of the container for receiving a first of said components;

a screwcap coordinated with the neck of the container and having a collar extending into the cup, a front edge of said collar forming a strike edge for separating the cup in the region of a line of intended breakage upon a further screwing on of the screwcap beyond a basic position for storage; and wherein

a wall of the cup has an annular step, and the strike edge of the collar comes flush on said annular step on the wall of the cup, said step—forming the place of intended breakage—being located at a distance above the bottom of the cup, there being a bead extending towards an outer surface of the collar and projecting inwardly from the inner surface of the wall of the cup, said step lying below said bead; and wherein

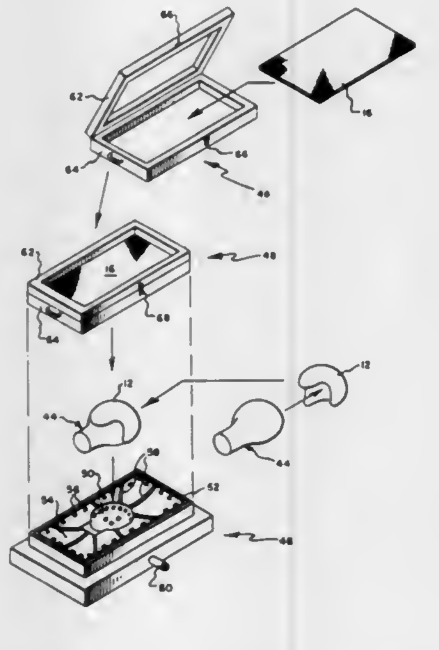


a clip shoulder is disposed on the collar and engages behind the bead of the cup wall.

4,615,438

HELMET SHELL ASSEMBLY AND METHOD AND APPARATUS FOR MAKING

Isadore Rosenberg, Downey; Patrick R. Terisse, Covina, and Valentin Castro, Pasadena, all of Calif., assignors to Figgie International Inc., Willoughby, Ohio
Filed Aug. 20, 1985, Ser. No. 767,419
Int. Cl.^{4} B65D *69/00;* **A42B** *3/02*
U.S. Cl. 206—223 **1 Claim**



1. A kit for applying sheets of thermoplastic material to side portions of the exterior surfaces of a helmet shell of the type having in its normal position of use an upper crown portion and a lower peripheral marginal edge, said helmet shells being substantially symmetrical about a fore and aft vertical plane passing through the center of said crown portion; said kit comprising:

a support member adapted to be inserted within a helmet shell and having a surface closely adjacent the lower peripheral marginal edge of said helmet shell when fully inserted;

a forming fixture provided with

a centrally located recessed surface which conforms to one side of said helmet shell and said support member,

a generally rectangular planar raised peripheral edge surface,

an intermediate surface extending between the centrally located recessed surface and the peripheral edge surface, said intermediate surface being provided with ducting air dams and a plurality of orifices, and

a plenum chamber disposed beneath said intermediate surface and adapted to be connected to a vacuum line; and

a frame assembly adapted to receive said thermoplastic material and to support the thermoplastic material when heated above its softening point and also to be disposed in mating contact with the raised peripheral edge surface of said forming fixture so that when the plenum chamber is connected to a vacuum line the thermoplastic material will be vacuum formed about a side of the helmet shell, said frame assembly including

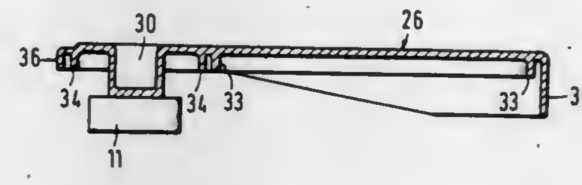
upper and lower generally rectangular frames, each frame being of a size which generally corresponds to the size of the generally rectangular peripheral edge surface of the forming fixture, and

means to hold said frames together when a sheet of thermoplastic material is sandwiched between said frames.

4,615,439

CONTAINER HAVING A REMOVABLE SEALING COVER

Dieter Weissenfels, Mainz-Kastel, Fed. Rep. of Germany, assignor to Werner & Mertz GmbH, Mainz, Fed. Rep. of Germany
Filed Aug. 16, 1985, Ser. No. 766,299
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1984, 8424461[U]
Int. Cl.^{4} B65D *69/00*
U.S. Cl. 206—229 **16 Claims**



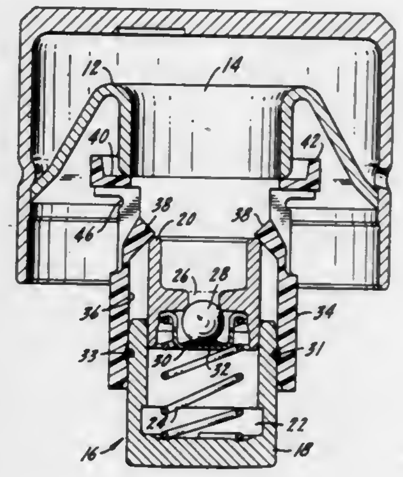
1. A container comprising a bottom section, a removable sealing cover and an application device attached to the removable sealing cover for applying contents of the container, the cover of the container having an elongate cross-section so as to define a handle for the application device, the application device including an applicator which extends into a chamber of the bottom section, said chamber adjacent to a shoe polish compartment of the bottom portion, said bottom portion including sealing lips formed around the chamber and the compartment, the sealing lips engaging with corresponding sealing lips on the cover, a sealing lip formed along a periphery of the bottom section engaging a corresponding sealing lip on the cover.

4,615,440

TAPPET CARTRIDGE ASSEMBLY CONTAINER AND APPLICATOR

Todd R. Downing, Glen Ellyn, Ill., assignor to Stanadyne, Inc., Windsor, Conn.
Filed May 1, 1985, Ser. No. 729,270
Int. Cl.^{4} B65D *65/24*
U.S. Cl. 206—229 **5 Claims**

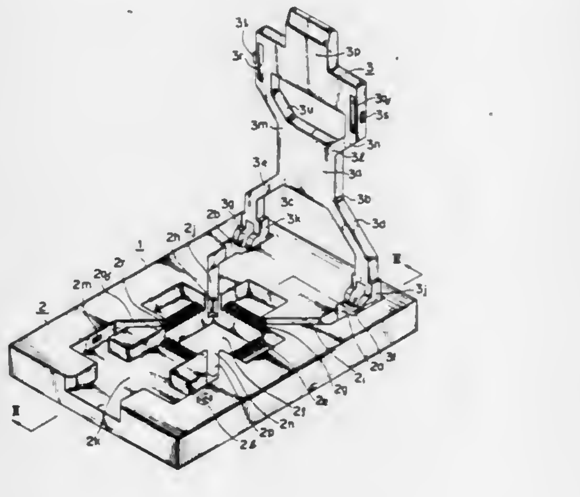
1. A disposable plastic member for use in retaining, shipping and assembling a tappet cartridge assembly into a tappet follower including a cylindrical sleeve of a size and shape to closely fit about the cartridge assembly body, in-turned portions integral with said sleeve for retaining the cartridge assembly plunger within the assembly body, said sleeve having an end portion formed and adapted to abut the tappet follower during assembly to permit the cartridge assembly to be driven through the sleeve into the follower.



4,615,441

IC PACKAGE CARRIER

Ryuichi Nakamura, Kawasaki, Japan, assignor to Yamaichi Electric Mfg. Co., Ltd., Tokyo, Japan
Filed Dec. 27, 1985, Ser. No. 813,765
Claims priority, application Japan, Dec. 30, 1984, 59-200238[U]
Int. Cl.^{4} B65D *73/02, 85/42*
U.S. Cl. 206—329 **4 Claims**



1. An IC package carrier comprising:

an IC package support plate having a square IC package accommodation section at the center thereof;

an IC package press plate having at one end thereof a handle section for causing the IC package press plate to rise from and lie down on the upper surface of said IC package support plate, at the center thereof a square press section for pressing a square IC package, at the other end thereof a hinge mechanism constituted by couplings for coupling said IC package press plate to said IC package support plate and serving as hinges about which said IC package press plate is rotated, and two pairs of arms, one pair for connecting said handle section to said square press section and being superposed on one pair of adjacent corners of the IC package accommodated within said square IC package accommodation section of said IC package support plate and the other pair for connecting said square press section to said hinge mechanism and being superposed on the other pair of adjacent corners of the IC package; and

closure retaining means provided on said handle section of said IC package press plate and a portion of said IC package support plate corresponding to the position of said handle section for detachably retaining said IC package press plate in a state of having lain down on the upper surface of said IC package support plate.

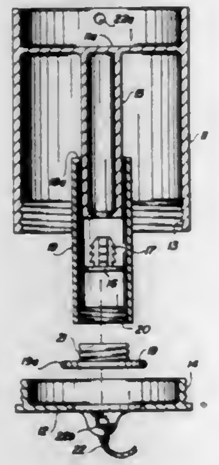
4,615,442
RECEPTACLE FOR ROLL OF SHEET MATERIAL

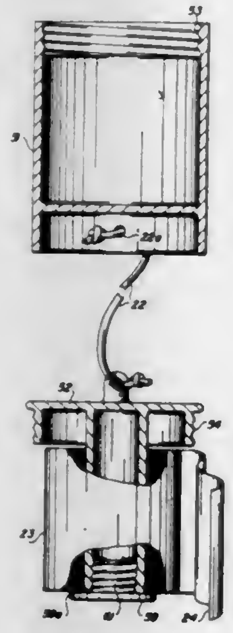
Leslie E. Beeken, Cheyenne, Wyo., assignor to Loosey Goosey Waterfowl Products, Inc., Cheyenne, Wyo.

Filed Feb. 25, 1985, Ser. No. 705,022

Int. Cl.⁴ B65D *85/67*

U.S. Cl. 206—397 **7 Claims**





1. A receptacle for holding a winding of sheet material having a hollow core comprising a cylindrical receptacle and a cap adapted and arranged to engage said cylindrical receptacle to form a watertight enclosure, said cylindrical receptacle having an open end, a closed end, and a centrally positioned fixed longitudinal guide member having a cavity at a free end and having an opposite end attached to said closed end, a sliding guide member adapted and arranged to slide longitudinally upon said fixed longitudinal guide member and adapted to fit inside the core of a roll of sheet material having a hollow core, lip means extended inwardly of said sliding guide member, retainer means adapted and arranged to prevent said sliding guide member from disengaging from said longitudinal guide member by means of said lip means, said retainer means being removably attached with said cavity, second retainer means adapted and arranged to prevent a roll of material from disengaging from said sliding guide member, said second retainer means removably engaged with said sliding guide member to allow the insertion over and removal from said sliding guide member of a roll of material with a hollow core, said cap removably attached to said open end of said cylindrical receptacle.

5. A receptacle for holding a winding of sheet material having a hollow core comprising a cylindrical receptacle and a cap adapted and arranged to engage said cylindrical receptacle to form a watertight enclosure, said cylindrical receptacle having an open end and a closed end, said cap removably attached to said open end of said cylindrical receptacle, said cap having a centrally positioned fixed longitudinal guide member attached to the inside of said cap, said longitudinal guide member adapted to fit inside the core of a roll of sheet material having a hollow core, and retainer means to prevent a roll of sheet material from disengaging from said fixed longitudinal guide member when said cap is removed from said cylindrical receptacle, said retainer means removably attached to the end of said fixed longitudinal guide member most distant from said cap to allow the insertion over and removal from said fixed longitudinal guide member of a roll of material with a hollow core.

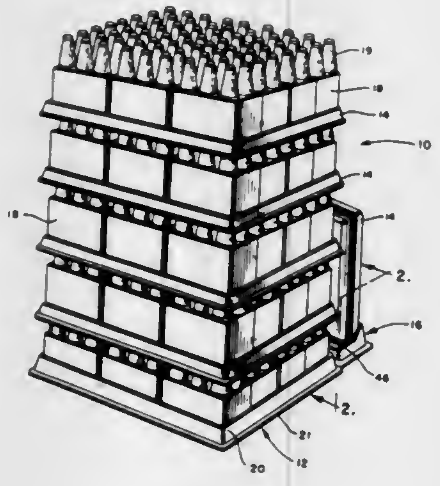
4,615,443
BEVERAGE BOTTLE PACKAGE DISPLAY SYSTEM

John F. Deffner, Lisle; Raymond R. Young, Glenview, and Russell M. Barnes, Bloomingdale, all of Ill., assignors to Visual Marketing Inc., Chicago, Ill.

Filed Jan. 2, 1985, Ser. No. 688,291

Int. Cl.⁴ B65D *85/20, 21/02*

U.S. Cl. 206—427 **12 Claims**



1. A display system for beverage bottle packages comprising:

a base unit having a skirt along its perimeter that forms a base channel on the underside of the unit, a horizontally extending rib on the top side of the unit, and at least one vertically extending rib on the top side of the unit that cooperates with the horizontal base rib to form a plurality of compartments, each compartment defined to accept one 12-bottle package or two 6-bottle packages;

at least one shelf, each shelf having a skirt along its perimeter and the skirt having a lip along its lower edge, a horizontally extending rib on the top side of the shelf, and at least one vertically extending rib on the top side of the shelf that cooperates with the horizontal shelf rib to form a plurality of compartments, each compartment defined to accept one 12-bottle package or two 6-bottle packages; and

a shelf holder having a rib that fits into the base channel and a compartment for storing shelves, the floor of the storing compartment having a plurality of corrugation grooves for accepting the lips on the shelves.

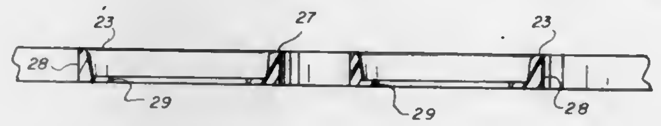
4,615,444
TRAY FOR SUPPORTING ARTICLES IN A PACKAGE

Pierre J. de Larosiere, 30 Duque de Palmela, 4C, 1200 Lisbon, Portugal

Continuation of Ser. No. 455,585, Jan. 4, 1983, abandoned. This application Jul. 25, 1985, Ser. No. 758,830

Int. Cl.⁴ B65D *1/36*

U.S. Cl. 206—427 **7 Claims**



1. An article support tray for supporting a plurality of articles such as beverage cans in predetermined spaced position in a package containing a plurality of said articles, comprising:

a thin, flat sheet of lightweight plastic material having a smooth planar bottom surface, a top surface and side and end edges, said smooth bottom surface being free of pockets and protuberances and enabling one tray to slide freely over another tray;

a plurality of upstanding ribs formed on the top surface of the sheet, reinforcing the sheet and being coextensive in height, said ribs being spaced relative to one another and to the span of one of said articles so as to define an essentially coplanar and continuous support surface over which said articles are enabled to slide without interruption until the article reaches said predetermined position; and

said ribs including a shaped rib at each said position adapted to peripherally engage in close-fitting conformity a peripherally complementally shaped end portion of one of said articles, and a plurality of guide ribs disposed in spaced relationship around each said shaped rib along axes extending radially to the shaped rib for engaging the periphery of an article at said position and wedging it securely in said position between the guide ribs and the shaped rib, preventing rubbing or chiming together of adjacent articles in a package of said articles, said plurality of guide ribs having sloping ends inclined toward the shaped rib and defining guide surfaces for guiding the articles into their final, at-rest position during their final movement into their predetermined position on the tray, and for wedging radially inwardly against the periphery of the article to wedge it in its final at-rest position.

4,615,445
BOX MADE OF PLASTIC MATERIAL PARTICULARLY SUITED TO CONTAIN FLOPPY DISCS FOR ELECTRONIC PROCESSORS

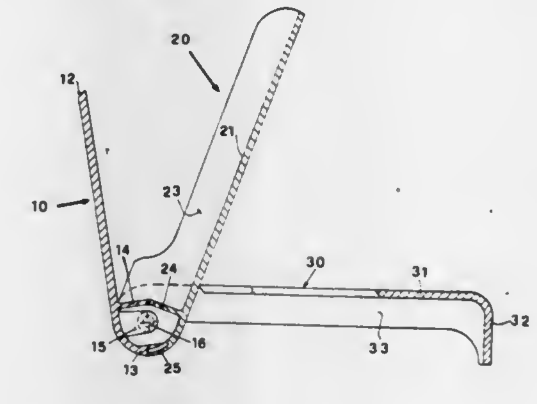
Olimpio Stocchiero, 5 Via Kennedy, 36050 Montorso Vicentino (VI), Italy

Filed Dec. 16, 1985, Ser. No. 809,398

Claims priority, application Italy, Dec. 17, 1984, 64456/84[U]

Int. Cl.⁴ B65D *85/30, 85/57*

U.S. Cl. 206—444 **6 Claims**



1. A box particularly suited to hold floppy discs for electronic processors comprising: a first, second and third element; two coaxial hinges connecting said first, second and third elements to each other, said first element functions as a lid and as a support for the box depending on whether the box is closed or open, said second and third elements forming a useful space within the box are hinged together and can be opened to a certain predetermined angle, each of said second and third elements are provided with a bottom plate shaped as a comb having rectangular, parallel and alternate teeth that constitute a supporting surface for the floppy discs contained in the box.

4,615,446
SORTING MACHINE

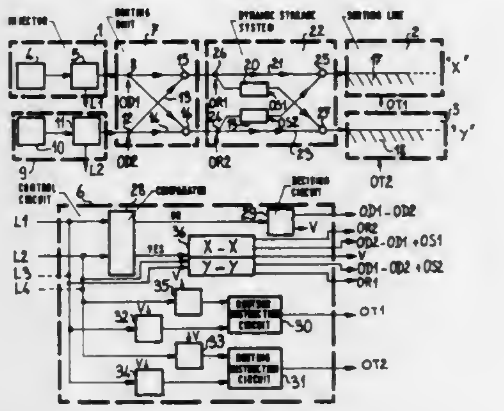
Claude Pavie, Houilles, France, assignor to HBS, Bourg Les Valence, France

Filed Nov. 28, 1984, Ser. No. 675,592

Claims priority, application France, Dec. 2, 1983, 83 19 319

Int. Cl.⁴ B07C *1/04*

U.S. Cl. 209—583 **5 Claims**



1. Sorting machine comprising at least two injectors through which objects to be sorted enter the machine, a set of parallel sorting lines, routing stages adapted to link the outlet from each injector to the inlet of each sorting line, respective control means disposed between each injector and said routing stages adapted to sense a destination marker on each object from the respective injector, to designate the sorting line for each object and to command the routing of each object to the appropriate routing stage, and dynamic storage means associated with at least one routing stage of all sorting lines to temporarily store an object from a corresponding injector when the sorting line designated for that object is the same as that designated for another object output by another injector at substantially the same time.

4,615,447
SECURITY GARMENT DISPLAY STAND

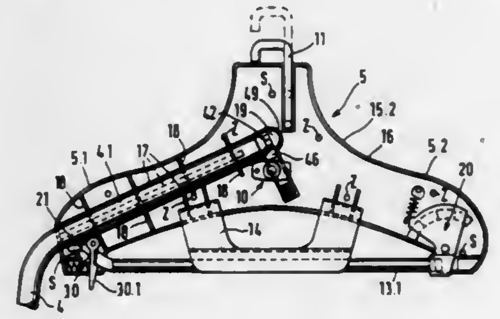
Herbert Walter, Müllheim, Fed. Rep. of Germany, assignor to Protoned B.V., Amsterdam, Netherlands

Filed Sep. 13, 1985, Ser. No. 775,730

Claims priority, application Switzerland, May 8, 1985, 1955/85

Int. Cl.⁴ E05B *73/00*

U.S. Cl. 211—4 **18 Claims**



1. Security garment display stand with a supporting device (1 to 3) and a number of holding rods (4) in swinging connec-

tion to the supporting device, each for lockable reception of a coat hanger (**5**) with two carrier arms (**5.1**, **5.2**) projecting sideways and a central middle portion (**5.3**), characterised in that the holding rods (**4**) have an end portion (**4.1**) which can engage in one (**5.1**) of the two carrier arms, and is inclined upwards at an angle (α) of 10° to 30° to the horizontal, that one carrier arm (**5.1**) of the coat hanger (**5**) has an opening (**9**) penetrating this arm in its longitudinal direction, for reception of the end portion (**4.1**) of the holding rod, that this end portion has a latching groove (**42**) for engagement of a bolt (**46**) releasable by a locking device (**10**), that the receiving opening (**9**) is provided with an abutment part (**49**) for determining the depth of penetration of the end portion of the holding rod into the carrier arm (**5.1**) of the coat hanger (**5**), and that, in relation to the end portion (**4.1**) of the holding rod, the coat hanger (**5**) is arranged to swing on it.

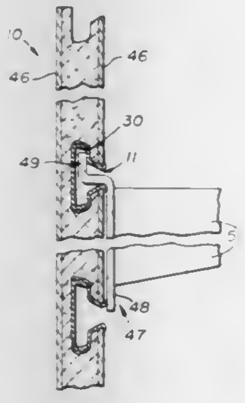
4,615,448
DISPLAY PANEL

George S. Johnstonbaugh, New Philadelphia, Ohio, assignor to Masonite Corporation, Chicago, Ill.

Filed Sep. 27, 1985, Ser. No. 781,291

Int. Cl.⁴ A47F *5/08*

U.S. Cl. 211—94 **11 Claims**



1. A display panel having a plurality of grooves in horizontal parallel relationship and being vertically spaced-apart, each of said grooves being generally T-shaped and symmetrical about one axis in cross-section, each groove having a substantially flat base and generally converging sidewalls terminating in lips defining a slot of substantially narrower width than that of said base,

an insert mounted in each of said grooves, each insert comprising a base web, flanges extending from the sides of said web generally converging toward each other and terminating in lips defining a slot having a width narrower than that of said base web, the outer walls of said insert being in substantial contact engagement with the entire surfaces of said grooves, and wherein the lips of said insert are provided with outwardly hook-like protuberances extending over the lips of said grooves and beyond the outer surface of said panel, whereby portions of hangers may be inserted and retained in said insert for supporting objects to be displayed on said wall.

4,615,449
APPARATUS FOR PREVENTING A MOVABLE RACK FROM FALLING DOWN

Hanichiro Naito, and Masamichi Miura, both of Tokyo, Japan, assignors to Elecompack Company Ltd., Tokyo, Japan

Filed May 2, 1984, Ser. No. 606,147

Claims priority, application Japan, May 4, 1983, 58-67339[U]; May 10, 1983, 58-69594[U]

Int. Cl.⁴ A47F *5/00*

U.S. Cl. 211—162 **7 Claims**

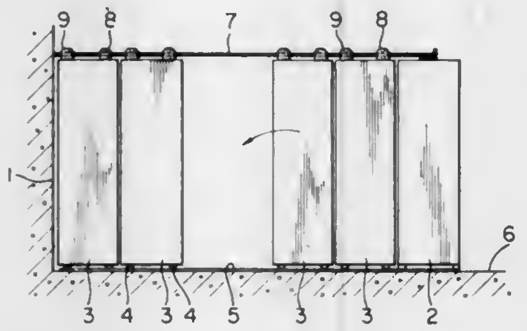
1. An apparatus for preventing a movable rack from falling down comprising in combination:

a rack movably mounted on a lower track;

a rail extending horizontally above said movable rack and along a direction parallel to one of movement of said movable rack;

an aligned pair of bracket means provided on an upper portion of said movable rack apart from each other in said direction, and

a pair of transverse means including upper and lower means provided on each of said bracket means, with said rail disposed therebetween the means of each such pair including at least one roller rotatable about an axis normal to said direction and being so disposed with respect to themselves, the other pair and said rail such that said rail extends with vertical clearance between the rail and the upper means of each pair of transverse means,



said movable rack being supported entirely from below independently of said rail for horizontal movement.

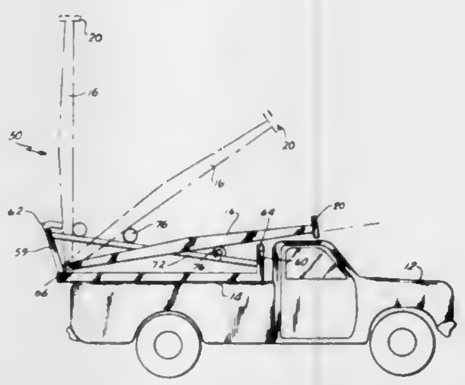
4,615,450
PORTABLE AND COLLAPSIBLE DERRICK STRUCTURE

Dwight C. Kennard, Jr., 3830 Incochee Trail, Traverse City, Mich. 49684, and James C. Kennard, P.O. Box 76, Maple City, Mich. 49664

Filed Jun. 15, 1984, Ser. No. 621,154

Int. Cl.⁴ B66C *23/42*

U.S. Cl. 212—187 **35 Claims**



1. A collapsible derrick assembly, comprising:

a base frame;

a derrick frame supported on said base frame for movement from a collapsed position to an erected position, said derrick frame including a base and pivot means connected to said base frame for pivotally connecting said base to said base frame at a fixed point; and

derrick frame erection means for moving said derrick frame from the collapsed position to the erected position, said erection means comprising:

a track fixed on said base frame;

carriage means movable along said track and adapted to engage said derrick frame for rotating said derrick frame about said fixed pivot; and

drive means connected to said carriage means for moving said carriage means along said track from a position out of contact with said derrick frame to a position in engagement with said derrick frame so that further movement along said track causes said carriage means to rotate said derrick frame about said fixed point to the erected position.

4,615,451
SUSPENSION DEVICE FOR A CONTAINER HAVING A CAP

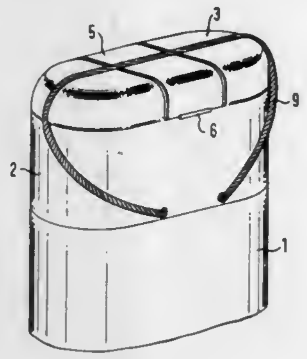
Horst Rebhan, Stockheim-Wolfersdorf, Fed. Rep. of Germany, assignor to Frankenwald-Presserei Horst Rebhan, Stockheim, Fed. Rep. of Germany

Filed May 8, 1985, Ser. No. 731,840

Claims priority, application Fed. Rep. of Germany, May 10, 1984, 8414322[U]

Int. Cl.⁴ B65D *51/24*

U.S. Cl. 215—100 A **2 Claims**



1. Suspension device for containers provided with a cap, comprising: a suspension loop and a groove in said cap, said suspension loop being adaptable to being releasably sunk at least partially into said groove and being secured at its ends onto said cap, said cap being provided with a closure flap, and said suspension loop passing across said closure flap when in the position sunk into said groove.

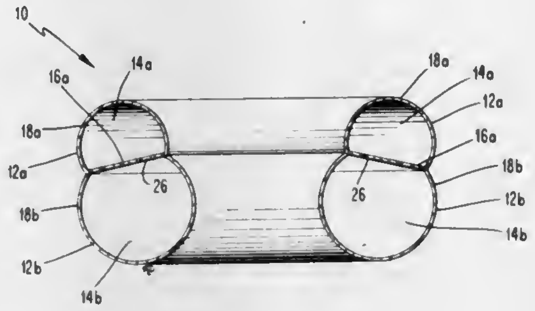
4,615,452
COMPOUND TOROIDAL TANKS

Richard W. Lederer, Bellevue; Max D. Musgrove, Mercer Island, and Robert E. Jones, Issaquah, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jul. 3, 1984, Ser. No. 627,633

Int. Cl.⁴ B65D *8/04, 25/04*

U.S. Cl. 220—1 B **6 Claims**



1. A tank for fluids, said tank comprising:

at least two connected toroid cells one on top the other sharing a common central axis, each of the toroid cells enclosing a hollow interior for holding the fluids, at least one of the connected toroid cells being symmetrically offset with respect to the center of its hollow interior from a ring of axes parallel to said central axis and intersecting the center of the hollow interior of the adjacent cell, the offset cell and the adjacent cell being truncated along their common boundary and separated thereat by a frustoconical bulkhead having apertures therethrough for allowing the fluids to flow and pressure to equalize between the cells.

4,615,453
TANK HAVING REINFORCING SUPPORT MEANS

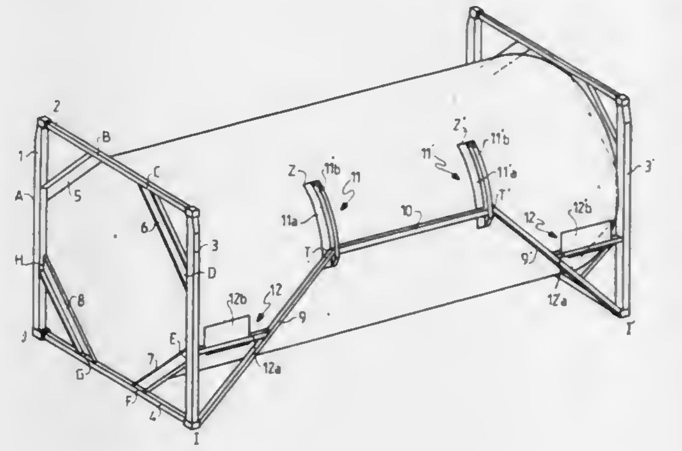
Jean-Pierre Taquoi, Noisy le Grand, France, assignor to B.S.L. (Bignier Schmidt-Laurent), Ivry sur Seine, France

Filed Aug. 1, 1985, Ser. No. 761,404

Claims priority, application France, Aug. 1, 1984, 84 12204

Int. Cl.⁴ B65D *7/14, 7/44*

U.S. Cl. 220—71 **18 Claims**



1. A container comprising:

an elongate tank;

two end frames between which said tank is arranged and with which it is solid, the side wall of said tank being in abutment against the sides of said frames and welded to these sides;

a device provided respectively at the right side and the left side of the container for resisting longitudinal forces; and said device comprising:

two hoop portions welded on to the side wall of said tank,

at least one brace bracing said hoop portions and applied against the wall of said tank and fixed to this wall in a manner to be longitudinally solid with it, and

a respective oblique section connecting each hoop to the nearest lower corner of said nearest frame.

4,615,454
BOX FOR STORING COMBUSTIBLE SUBSTANCES

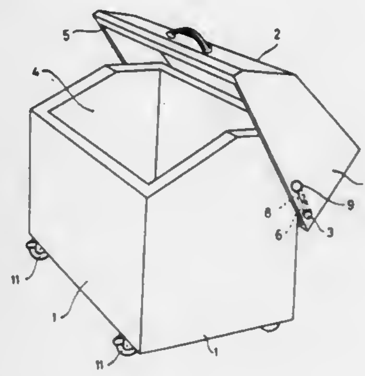
Cornelis Verhoog, Jr., Oostzaan, Netherlands, assignor to Verhoog's Handelsonderneming B.V., Zaandam, Netherlands

Filed May 14, 1985, Ser. No. 734,350

Claims priority, application Netherlands, May 21, 1984, 8401626

Int. Cl.⁴ B65D *25/00*

U.S. Cl. 220—88 R **3 Claims**



1. A box for protecting combustible substances from fires originating outside the box, said box comprising:

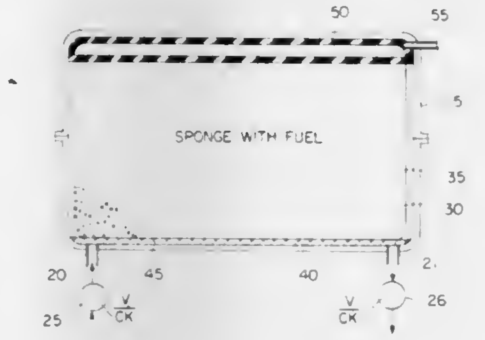
walls;

a cover pivotally mounted to at least one of said walls, and having a closed position and an open position;

insulative material disposed within said walls and said cover to protect the combustible substances from the heat and flames of fires outside the box;

a skirt attached to said cover, extending downward from said cover when said cover is in its closed position and partially covering but spaced from a first wall of said walls when said cover is in its open position;
equilibrating means connected to said first wall for counterbalancing the weight of said cover in the open position so that when the cover has been pivoted to the open position it will remain in that position;
a bimetallic latch interconnecting said cover and said equilibrating means to hold said cover in the open position at room temperatures, and operative at an elevated temperature associated with a fire to disconnect said cover from said equilibrating means, wherey when said elevated temperature has been reached said cover falls to the closed position under the action of gravity;
said equilibrating means and said bimetallic latch located outside of the box in the space between said skirt and said first wall, whereby said bimetallic latch, by being outside rather than inside the box, responds more quickly to fires outside the box.

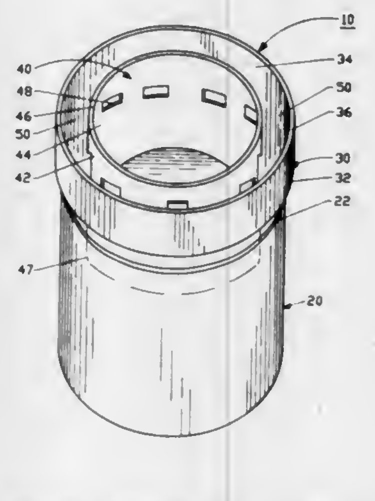
4,615,455
EXPLOSION-RESISTANT FUEL TANK DEVICE
Horace A. Tansill, P.O. BOX 480, Santa Barbara, Calif. 93102
Filed Nov. 4, 1985, Ser. No. 795,027
Int. Cl.^{4} B65D *25/14*
U.S. Cl. 220—88 R **31 Claims**



1. An explosion-resistant fuel tank suitable for use in a vehicle, the fuel tank comprising:
(a) a container suitable for holding a liquid fuel therein;
(b) an explosion resistant insert comprising at least one compressible, resilient structure comprising a plurality of cells for containing liquid fuel, the compressible structure decreasing in volume from a first volume to a reduced second volume when subjected to a compressive force, the reduced second volume being no more than about 75% of the first volume, compression of the structure forcing liquid fuel out of the structure, the structure being sufficiently resilient that when the compressive force is released the structure returns to its first volume for soaking up additional liquid fuel, the insert being inside the container; and
(c) means for compressing the compressible structure to the reduced second volume such that liquid fuel passes out of the compressible structure.

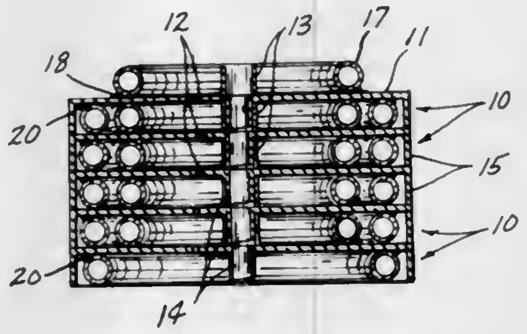
4,615,456
COMBINATION BRUSH HOLDER AND TRAY
Robert Cousar, 1224 N. Orange Dr., Apt. #13, Hollywood, Calif. 90038
Filed Oct. 4, 1985, Ser. No. 784,184
Int. Cl.^{4} B65D *25/00*
U.S. Cl. 220—90 **8 Claims**

1. An apparatus for supporting an implement, which is customarily used in an operation to apply liquid to a surface, in close proximity to a cannister for retention of said liquid, said apparatus comprising:
a first cylindrical outer section;
a second cylindrical inner section disposed substantially concentrically within the outer section and having a diameter less than or equal to that of said cannister; and



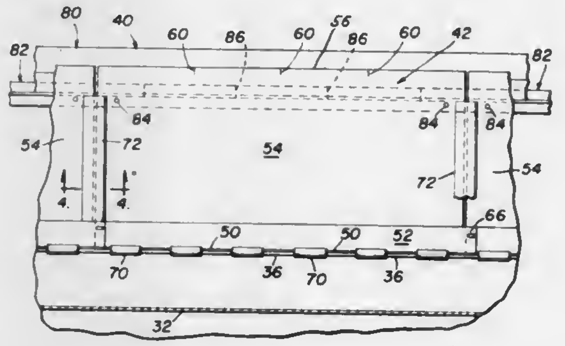
a third section disposed between said first and second sections and adapted to provide a trough between said first, second and third sections for the retention of said implement in an upright position.

4,615,457
DISPOSABLE COMBINATION LID AND STRAW FOR CONTAINERS
Richard D. Harding, P.O. Box 2134, Merrifield, Va. 22116
Filed Sep. 16, 1985, Ser. No. 776,521
Int. Cl.^{4} A47G *19/22;* **B65D** *57/00*
U.S. Cl. 220—90.2 **5 Claims**



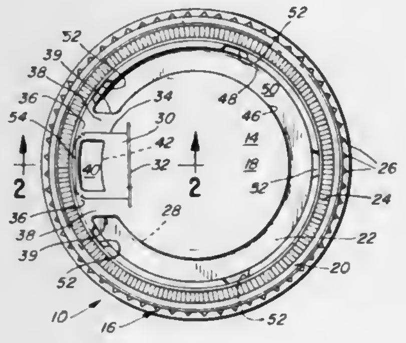
1. A flexible plastic removable lid apparatus for a glass or cup comprising:
a horizontally disposed circular member constructed of a semi-rigid flexible plastic material;
an annular downardly depending member attached to the outer periphery of said circular member;
a vent hole disposed in said circular member;
a lower tubular straw attached to a lower portion of said circular member;
an upper tubular connector member integrally attached to central portion of said circular member, said upper tubular member being in fluid communication with the top of said lower tubular straw;
and upper tubular straw in telescoping relationship with said upper tubular connector member for permitting said upper tubular straw to be detachable, said upper tubular straw being of a diameter to frictionally engage said upper tubular connector member to hold and seal the upper tubular straw to the upper tubular connector member; and
means for detachably connecting said lower tubular straw to said circular member, said connecting means comprising a lower short tubular connector member integrally attached to the upper short tubular connector member, said lower short tubular connector member being of a diameter to frictinally and sealably engage said lower tubular straw in a telescoping relationship, said lower short tubular connector member being of a different size than the upper short tubular connector whereby one lid appartus will stock onto another lid apparatus wherein upper tubular connector on one lid apparatus will be in a compact telescoping relationship with the lower tubular connector on said another lid appparatus.

4,615,458
FLOATING ROOF TANK WITH RIM SPACE SEAL
Robert B. Grove, Plainfield; Steven W. Peters, Naperville, and Martin L. Tellalian, Forest Park, all of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.
Filed Aug. 5, 1985, Ser. No. 762,505
Int. Cl.^{4} B65D *88/46, 88/50*
U.S. Cl. 220—222 **12 Claims**



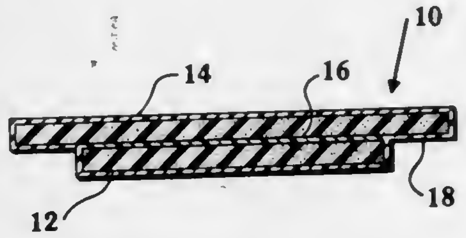
1. A vertical cylindrical liquid storage tank having a circular floating roof of smaller diameter than the tank thereby defining a clearance space between the roof edge and the tank wall;
a seal joined to the roof and extending upwardly therefrom into slidable contact with the tank wall;
the seal completely covering the clearance space;
the seal comprising a plurality of individual flexible sections of sheet material in substantially side-by-side arrangement but with adjacent section side edge portions overlapping each other;
a gasket between the overlapping side edge portions;
a clip attached to each section adjacent its edge portion which is overlapped by the edge portion of an adjacent section;
the clip having a wing spaced upward from the section to which it is attached and extending over the edge portion of the adjacent section to press the edge portions together but permit the edge portions to slide laterally with respect to each other; and
a flexible elastomeric tip joined to the outer end of the sections and in slidable contact with the tank wall.

4,615,459
LID WITH DRINKING OPENING
Jack D. Clements, Ada, Okla., assignor to Solo Cup Company, Highland Park, Ill.
Filed Jan. 11, 1985, Ser. No. 690,669
Int. Cl.^{4} B65D *41/26*
U.S. Cl. 220—254 **1 Claim**



1. A drinking cup lid comprising:
a top wall having a generally circular periphery, said top wall including a substantially horizontal, substantially planar central portion, a C-shaped downwardly-projecting channel partially surrounding said central portion, a downwardly projecting boss disposed between the ends of the generally C-shaped channel, and a pair of generally planar extensions extending outward from said central portion, each of said extensions being between the boss and a respective one of the ends of said C-shaped channel; and
a skirt portion extending radially outwardly and downwardly from said top wall about its periphery for gripping a drinking cup lid;
said C-shaped channel being defined by a substantially vertical, C-shaped inner wall, a substantially vertical C-shaped outer wall, a substantially horizontal, C-shaped bottom wall extending between said inner wall and said outer wall, and a pair of substantially vertical end walls defining the ends of the channel;
said inner wall having a substantially vertical inner surface disposed at a predetermined radius from the central vertical axis of the lid;
said downwardly-projecting boss having a substantially vertical inner surface disposed at said predetermined radius from said vertical axis;
said top wall having a movable tab defined therein by a generally U-shaped slit and a transverse fold line, the slit including first and second substantially parallel portions extending from the central portion of the top wall through the generally planar extensions, and a transverse portion connecting the outer ends of said substantially parallel portions, said fold line connecting the inner ends of said substantially parallel portions so that said tab can be folded downward to provide an opening in said lid while remaining attached thereto along said fold line, said tab including said downwardly projecting boss, said top wall further including an annular, substantially frustoconical corrugated strip extending radially inward and upward from the outer periphery of the top wall, said transverse portion of said generally U-shaped slit being directly adjacent said corrugated strip between said corrugated strip and said boss.

4,615,460
ANTI-CONTAMINATION COVERS FOR STRUCTURE OPENINGS
Ronald I. Buccellato; Wayne T. Card; Duane M. Foote, all of San Diego; Cinda B. Lewis, Chula Vista; Peter A. Soland, San Diego; Brian J. Stevens, San Diego, and Philip C. Widmann, San Diego, all of Calif., assignors to General Dynamics Corporation/Convair Div., San Diego, Calif.
Filed Aug. 28, 1985, Ser. No. 770,040
Int. Cl.^{4} B65D *39/00*
U.S. Cl. 220—307 **5 Claims**



1. A cover for access holes in structures for prevention of contamination during further machining and assembly operations which comprises:
a closed cell flexible foam plug member adapted to snugly fit a selected access hole, the plug having a cross-section area slightly greater than the hole area whereby the foam is compressed slightly when the plug is inserted into the hole so that the plug is elastically held in place;
an outwardly extending flange adjacent to one end of said plug, whereby when the other end of said plug is inserted

into said hole said flange covers any fastener holes adjacent to said hole;

each of said plug member and said flange being a flat disk cut from a foam sheet which are bonded together with an elastomeric adhesive to form a unitary cover; and

said plug and flange unitary cover being substantially uniformly coated with an elastomeric coating to prevent flaking of said foam during insertion and removal of said plug.

4,615,461

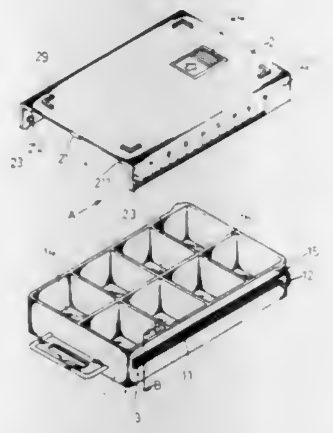
ACCESSORY CONTAINER STRUCTURE

Jackie Liu, 2nd Fl., No. 442, Chang Chuen Road, Taipei, Taiwan

Filed Jul. 31, 1985, Ser. No. 760,821

Int. Cl.⁴ B65D *83/04*

U.S. Cl. 220—331 **1 Claim**



1. An improved accessory container structure comprising:

(a) a base container of generally rectangular configuration defined by a pair of transverse endwalls and a pair of longitudinal sidewalls;

(b) the interior of the container being partitioned into a plurality of compartments for receiving accessories therein;

(c) each longitudinal sidewall being provided with a groove means extending for substantially the entire length of the side wall;

(d) dimple means disposed at a front end of each groove means;

(e) a U-shaped cover including a pair of lateral edges and a top surface, with L-shaped support means provided on the top surface for permitting the cover to support itself and the container; and

(f) pimple means carried by each lateral edge of the cover for disposition within a corresponding groove means and engageable within the dimple means for permitting the cover to slide along the grooves and be angularly movable about an angle of 180°.

4,615,462

SNAP HINGE MADE OF PLASTIC AND CONTAINER FOR LONGITUDINALLY EXTENDING DIAGNOSTIC TEST SUPPORTS

Klaus D. Sacherer, Kirchheim; Erich Weiss, Manheim; Jochen Koehn, and Ulrich Brach, both of Zell, all of Fed. Rep. of Germany, assignors to Zeller Plastik, Koehn Grabner & Co., Fed. Rep. of Germany

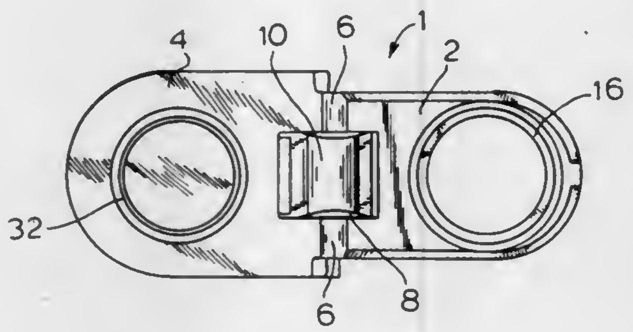
Filed Jun. 12, 1985, Ser. No. 744,116

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1984, 3423851; Dec. 22, 1984, 3447223; Feb. 16, 1985, 3505454

Int. Cl.⁴ B65D *43/14, 51/04*

U.S. Cl. 220—339 **11 Claims**

1. A unitary snap hinge made of plastic for closing a container adapted for simple molding and providing freedom of design of a locking member and container comprising:



a snap hinge means for closing a container wherein the snap hinge means is separate from an associated container having a locking means.

4,615,463

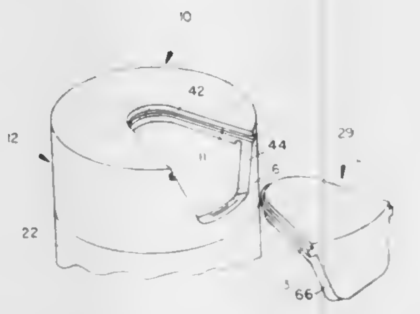
INSULATED CONTAINER FOR A FLUID RECEPTACLE

Humphrey W. Price, Pasadena, Calif., and Robert P. Wood, San Antonio, Tex., assignors to Stephen A. Katz, San Antonio, Tex.

Filed Jul. 26, 1985, Ser. No. 759,232

Int. Cl.⁴ B65D *25/34*

U.S. Cl. 220—412 **12 Claims**



1. A reusable insulated container capable of accepting and holding a removable fluid receptacle with protruding edges containing a fluid and capable of controlling the fluid temperature, comprising:

an upper member comprised of a top connected to an upper side and a bottom member comprised of a bottom connected to a bottom side, said upper member and said bottom member being detachably securable to each other, said top, upper side, bottom, and bottom side being sized and shaped to be capable of accepting and holding said receptacle within said container and to retard heat exchange between said receptacle and outside of said container;

an access port located in said upper member which is capable of being aligned with an opening in said receptacle and is sufficiently large and sufficiently shaped to permit useful direct access to said fluid from outside of said receptacle and said container when aligned with said receptacle opening;

a seal located on the lower face of said top, said seal having a first side, a second side, a first end and a second end, said first side conforming to said access port, said first end being closely adjacent to said upper side and one side of said access port to form a first notch between said upper side and said first end, said second end being closely adjacent to said upper side and the other side of said access port to form a second notch between said upper side and said second end, said first and second notches being shaped and sized to closely receive said protruding edge of said receptacle, said second side being sized and shaped to not obstruct said protruding edge and to permit said seal to closely abut the top of said receptacle and said protruding edge to fit within said first and second notches.

4,615,464

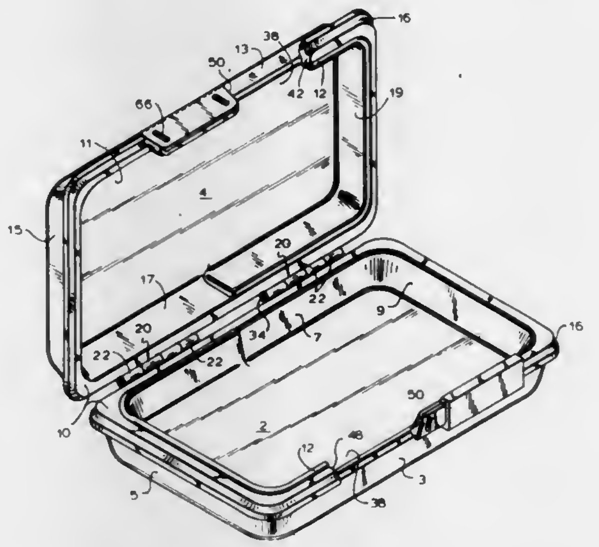
MOLDED CONTAINER CASE WITH HINGE AND METHOD FOR MAKING SAME

James E. Byrns, Clinton, Iowa, assignor to Custom-Pak, Incorporated, Clinton, Iowa

Continuation of Ser. No. 563,963, Dec. 21, 1983, abandoned. This application Jun. 5, 1985, Ser. No. 741,712

Int. Cl.⁴ B65D *6/02;* B23P *11/00;* B29C *49/00*

U.S. Cl. 220—469 **9 Claims**



1. A method for making a container case including a cover and a base, the cover having a substantially planar top wall and peripheral side walls extending from the top wall, the base having a substantially planar bottom wall and peripheral side walls extending from the bottom wall, each of the top wall, bottom wall, and peripheral side walls having an inner wall and an outer wall, each of the cover and the base having a plurality of separated hinge portions connected between the inner and the outer walls of a peripheral side wall, the inner and outer walls of the cover defining a first hollow space, the inner and outer walls of the base defining a second hollow space, comprising the steps of:

blow molding the cover from a thermoplastic material to form the top and side walls and hollow hinge portions with end surfaces so that the interiors of the hollow hinge portions communicate with the first hollow space;

blowing molding the base from the thermoplastic material to form the bottom and side walls and hollow hinge portions with end surfaces so that the interiors of the hollow hinge portions communicate with the second hollow space;

fitting the hinge portions of the cover and the hinge portions of the base together in an end-to-end arrangement along a common axis;

drilling opening in the end surfaces of the hinge portions to define a central bore; and

inserting a hinge pin into the central bore.

9. A container case including a cover and a base, the cover having a substantially planar top wall and peripheral side walls extending from the top wall, the base having a substantially planar bottom wall and peripheral side walls extending from the bottom wall, each of the top wall, bottom wall, and peripheral side walls having an inner wall and an outer wall, each of the cover and the base having a plurality of separated hinge portions connected between the inner and the outer walls of a peripheral side wall, the inner and outer walls of the cover defining a first hollow space, the inner and outer walls of the base defining a second hollow space, made by a process comprising the steps of:

blow molding the cover from a thermoplastic material to form the top and side walls and hollow hinge portions with end surfaces so that the interiors of the hollow hinge portions communicate with the first hollow space;

blow molding the base from the thermoplastic material to form the bottom and side walls and hollow hinge portions with end surfaces so that the interiors of the hollow hinge portions communicate with the second hollow space;

fitting the hinge portions of the cover and the hinge portions of the base together in an end-to-end arrangement along a common axis;

drilling openings in the end surfaces of the hinge portions to define a central bore; and

inserting a hinge pin into the central bore.

4,615,465

ATOMIZING PUMP FOR WATER SOLUTIONS

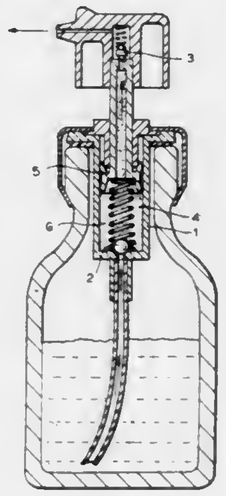
Hans Grothoff, Pulverstrasse 35, 4600 Dortmund 50, Fed. Rep. of Germany

Filed Jan. 31, 1983, Ser. No. 462,934

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1982, 3204257

Int. Cl.⁴ B05B *11/02*

U.S. Cl. 222—1 **25 Claims**



1. An atomizing pump for dosed atomization and application of water solutions, comprising a cylinder; inlet and outlet valves; an inner chamber enclosed by said cylinder and extending between said inlet valve and said outlet valve; and a boundary-surface-active composition from the class of surfactants, provided in said inner chamber at least during operation of the pump with a surfactant in the composition being in more concentrated form than in the water solutions.

4,615,466

BEVERAGE DISPENSER SYSTEM CONVERTABLE BETWEEN GRAVITY AND PRESSURE

William S. Credle, Jr., Stone Mountain, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Feb. 24, 1984, Ser. No. 583,537

Int. Cl.⁴ B67D *5/56*

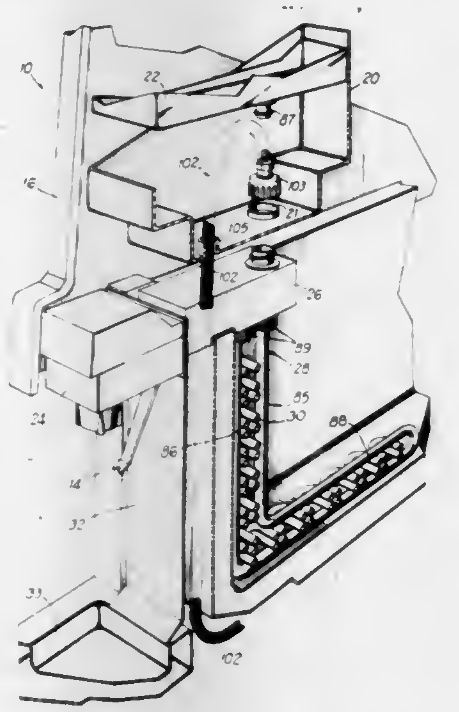
U.S. Cl. 222—129.1 **38 Claims**

1. A beverage dispenser comprising:

(a) a syrup cooling tube having an inlet opening and an outlet opening;

(b) a manifold having a first syrup passageway therethrough having a syrup inlet port and a syrup outlet port, and having a second syrup passageway therethrough having a syrup inlet port and a syrup outlet port;

(c) said syrup cooling tube being connected to said manifold with said syrup cooling tube inlet opening being connected to said syrup outlet port of said first syrup passageway and with said syrup cooling tube outlet opening being connected to said syrup inlet port of said second syrup passageway; and

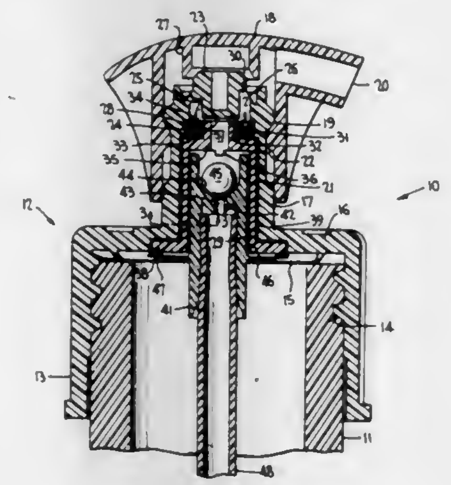


(d) said syrup inlet port of said first group passageway having means for connecting thereto one of a syrup gravity tank or a syrup line.

4,615,467
LIQUID FOAM DISPENSER

Richard P. Grogan, Downey, and Douglas F. Corsette, Los Angeles, both of Calif., assignors to Calmar, Inc., Watchung, N.J.

Filed Jul. 24, 1985, Ser. No. 758,428
Int. Cl.⁴ B67D *5/58*
U.S. Cl. 222—189 **11 Claims**

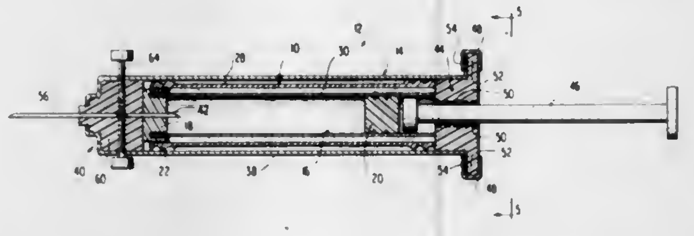


1. A liquid foam dispenser comprising a closure member having a discharge port and mounted on a-deformable container of foamable liquid, a foam homogenizing element on said member adjacent said port, means supported on said closure for defining a liquid passage, an air passage and a valve-controlled vent passage, said element having an opening extending between outer and inner side surfaces thereof, said liquid passage extending from the interior of the container and communicating only with said outer surface of said element which lies adjacent said discharge port, said air passage extending from said container interior and leading to said inner surface of said element, and a liquid distributor for distributing the foamable liquid on to said outer surface of said element upon pressurization of the container so as to interface with air penetrating said element upon said pressurization to thereby effect foaming of the liquid before discharging through said port.

4,615,468
GAS AMPOULE-SYRINGE

Don D. Gay, Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 22, 1985, Ser. No. 704,455
Int. Cl.⁴ F17B *1/14, 1/10*
U.S. Cl. 222—327 **16 Claims**



1. A disposable gas ampoule holding or containing a gas such as a radioactive gas, comprising:

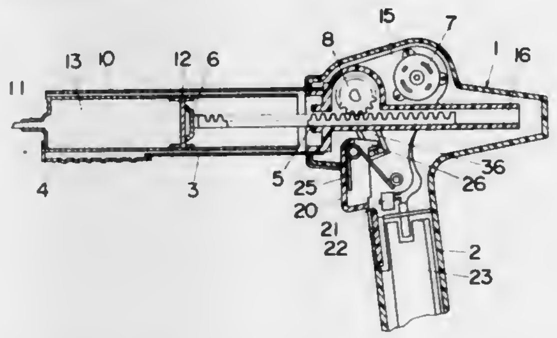
(a) a cylindrical glass tube which is adapted to hold said gas;
(b) a layer of absorbent material, which circumscribes and which contacts cylindrical glass tube (a) and which adsorbs said gas;
(c) a plastic tube, which circumscribes and contacts absorbent material layer (b) and which is externally threaded on each of its end portions;
(d) a cap, which is threaded onto a first end of plastic tube (c);
(e) a cylindrical block, which is positioned in the first end of cylindrical glass tube (a) adjacent to cap (d), which contacts cylindrical glass tube (a), which is composed of a foamed material and which is impregnated with a gas adsorbent material;
(f) a cylindrical plunger tip, which is located in the first end of cylindrical glass tube (a) in a gas-tight manner adjacent to cylindrical block (e);
(g) an end stopper, which has a central cylindrical shaft that is positioned in the second end of cylindrical glass tube (a), the central cylindrical shaft contacting cylindrical glass tube (a), which has an outer rim that extends outward beyond the second end of cylindrical glass tube (a), and which has an outer lip that is affixed to the outer rim thereof, that contacts the outside of the second end of cylindrical glass tube (a) and that is positioned within plastic tube (c); and
(h) a cap, which is threaded onto the second end of plastic tube (e).

10. A combination of the disposable gas ampoule as claimed in claim **1** and a syringe adapted to operably interface with said gas ampoule, said syringe having a cylindrical barrel, said disposable gas ampoule being positioned within said cylindrical barrel of said syringe, said caps (d) and (h) being removed from the ends of said gas ampoule, said cylindrical block (e) being removed from within said cylindrical glass tube (a), said syringe also having a bottom plate on one end of said barrel, a hollow syringe needle being positioned through the central axis of said bottom plate and being perpendicular to said bottom plate, one end of said needle thereby being external to said syringe barrel, the other end of said needle located within said syringe barrel having been forced through said end stopper (g) at its central axis, a mechanism for opening and closing said needle being positioned between said bottom plate of said syringe and said end stopper (g), said opening-and-closing mechanism being manually operable by at least one arm thereof which extends outward beyond said syringe barrel, said syringe further having a plastic bushing positioned in the other end of said cylindrical bushing, said plastic barrel having a longitudinal central bore, a plunger being positioned with its shaft slidably mounted in said longitudinal central bore of said plastic bushing and with its plunger end mounted in said cylindrical glass tube (a) in a slidable manner between gas-tight cylindrical plunger tip (f) and the first end of glass tube (a), said syringe barrel having a rim at the end located near said plastic bushing, said plastic bushing having a rim on its outer end which overlaps and contacts said rim of said syringe barrel, and a removable locking cap fitting over said rim of said syringe barrel and said rim of said plastic bushing.

4,615,469
ELECTRICALLY POWERED SQUEEZER FOR DISPENSING A VISCOUS SUBSTANCE

Ichiro Kishi; Makoto Miyata, and Shunichi Hata, all of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Japan

Filed May 31, 1984, Ser. No. 615,597
Claims priority, application Japan, May 31, 1983, 58-95995
Int. Cl.⁴ B05B *11/02;* **F16H** *3/44*
U.S. Cl. 222—327 **6 Claims**



1. An electrically powered caulking gun for dispensing a viscous substance comprising:

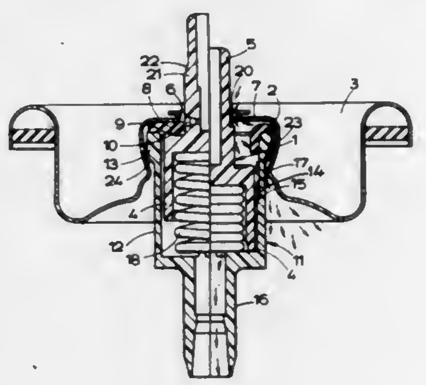
an elongated housing with a holder for receiving therein an elongated cartridge having a discharge nozzle at one end and for carrying a supply of a viscous substance;
a pressing element mounted for movement within the housing to exert a compressing action on a viscous substance to discharge it from the nozzle means of a cartridge received in said housing;
an electric motor carried by the housing and operatively connected to a multistage geared speed reduction means which is in turn connected to the pressing element for driving it into a compressing position;
switching means on the housing for energizing and deenergizing said electric motor;
a driving connection between the motor and the pressing element comprising clutch release means connected to said switching means to release the driving connection between the motor means and the pressing element immediately when the motor is deenergized, thus permitting the pressing element to be freely retracted from a compressing position by the residual back pressure in the viscous substance, said clutch release means being a radially moveable latch mounted for movement toward and away from one gear of said multistage geared speed reduction means.

4,615,470
VALVE ASSEMBLY FOR CONTAINER OF PRESSURIZED FLUID

John G. Hyland, Rowlands Castle, and Ronald P. Clement, Portsmouth, both of England, assignors to Aerosol Inventions & Development S.A. AIDSA, Fribourg, Switzerland

Filed Jul. 13, 1984, Ser. No. 630,767
Claims priority, application United Kingdom, Jul. 16, 1983, 8319353
Int. Cl.⁴ B65D *83/14*
U.S. Cl. 222—402.16 **4 Claims**

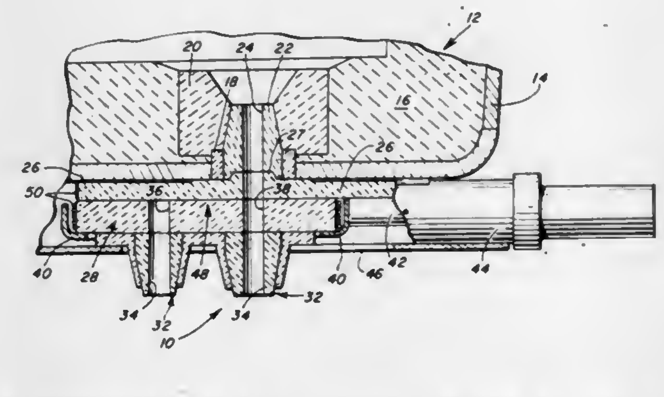
1. In a valve assembly for a pressurised dispenser comprising a mounting cup center boss of sheet metal having a substantially cylindrical side wall and a top wall, an upwardly open valve housing terminating at its upper end in an annular thickened head portion, said housing being received within said boss, an annular gasket having its outer periphery trapped between said head portion and the underside of said top wall, a valve member resiliently urged against the underside of said gasket, and a hollow actuating and dispensing stem projecting upwards from said valve member through said gasket and said top wall, said cylindrical wall of said mounting cup center boss being crimped inwards at a plurality of circumferentially spaced points at a level below said thickened head portion of said valve housing to retain said housing in said center boss, and said head portion having in the periphery thereof a plurality of vertically extending slots forming part of a gassing path from a region above said gasket to a region below said head portion, the improvement wherein the inward crimping of said side wall is sufficiently high relative to said housing, but below said head portion, and is sufficiently tight, to cause a lower part of said side wall to engage a lower region of said head portion, and the upper part of said side wall above said engaged region to bow outwardly away from said head portion, said vertically extending slots lying in the lower part of the outside of said head portion but stopping short at their upper ends of that part of the head portion which engages said gasket whereby the outer periphery of said gasket is at all times fully supported by said gasket-engaging part of said head portion throughout its circumferential extent without interruption by said slots.



4,615,471
REFRACTORY PLATE AND METHOD FOR REINFORCING

Gustave B. Schurmeier, Houston, Tex., assignor to M. H. Detrich, Itasca, Ill.

Filed Jun. 19, 1985, Ser. No. 746,446
Int. Cl.⁴ B22D *41/08*
U.S. Cl. 222—598 **17 Claims**



1. A reinforced refractory member adapted for use in a casting vessel valve, comprising:

a refractory plate having at least one hole therethrough;
an elongated member helically wound about the periphery of said plate; and
means rigidly interconnecting the helical windings to one another.

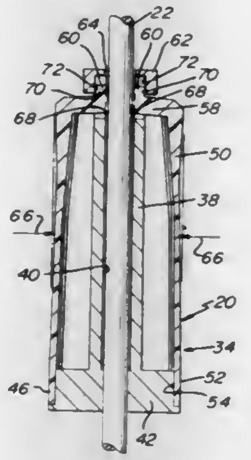
4,615,472
CATHETER PLACEMENT DEVICE

John Nash, Downingtown, Pa., assignor to Intravascular Surgical Instruments, Inc., Downingtown, Pa.

Filed Jun. 19, 1985, Ser. No. 746,414

Int. Cl.^{4} B65H *20/00*

U.S. Cl. 226—127 **18 Claims**



11. An apparatus for gripping an elongated cylindrical member having a longitudinal axis, said apparatus comprising:
- sleeve means having a longitudinal passageway therethrough, said passageway being open at each end, for receiving and passing said cylindrical member longitudinally therethrough, said sleeve means having a plurality of slots around the circumference thereof; and
- actuating means including portions fixedly positioned longitudinally on said sleeve means and extending along the length of said sleeve means, said actuating means further including plural gripping elements aligned with and adapted to pass through said slots in said sleeve means for gripping said cylindrical member passing through said passageway when said actuating means is compressed.

4,615,473
APPARATUS FOR ASSEMBLING A PAIR OF FASTENER ELEMENTS

Yukio Taga, Uozu, Japan, assignor to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan

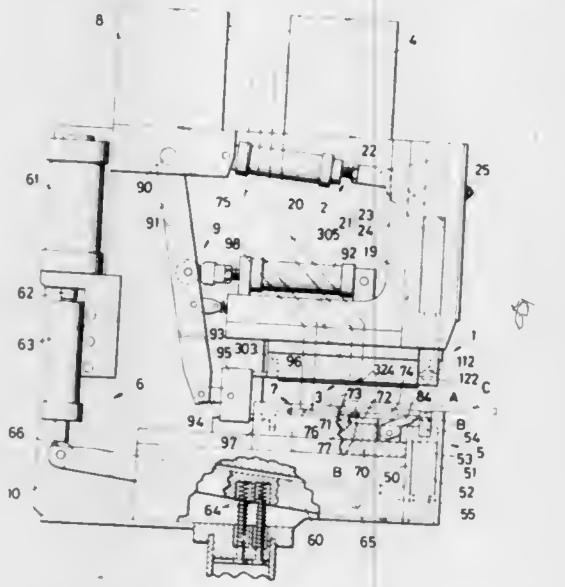
Filed Dec. 28, 1984, Ser. No. 687,013

Claims priority, application Japan, Dec. 29, 1983, 58-200489[U]; Dec. 29, 1983, 58-200491[U]; Dec. 29, 1983, 58-200490[U]

Int. Cl.^{4} A41H *37/04*

U.S. Cl. 227—15 **7 Claims**

1. An apparatus for assembling a pair of fastener elements of a garment fastener, comprising:
- (a) a frame;
- (b) a pair of vertically aligned upper and lower units supported by said frame for receiving the respective fastener elements, said lower unit including a lower plunger reciprocably supported by said frame and having a die, said upper unit including an upper plunger reciprocably supported by said frame and having a punch movable, in response to reciprocating movement of said upper plunger, toward and away from said die to join the two fastener elements together;
- (c) a first pusher mechanism including first means supported by said frame and defining a first guide channel receptive of one fastener element, said first pusher mechanism also including a first pusher reciprocable within said first guide channel to push the one fastener element therethrough to said upper unit; and
- (d) a second pusher mechanism including second means supported by said frame and defining a second horizontal guide channel receptive of the other fastener element, said second pusher mechanism also including a second pusher reciprocable within said second guide channel to push the other fastener element therethrough to said lower unit; and
- (e) said lower unit further including a retainer disposed between said die and said second pusher mechanism immediately upstream of said die and said lower plunger, said retainer being normally urged upwardly and being vertically movable in response to reciprocating movement of said second pusher, between a retracted position in which an upper end portion of said retainer is retracted below a top of said die for allowing the other fastener element to be supplied onto the top of said die, and a projected position in which said upper end portion of said retainer projects from the top of said die for engaging a peripheral edge of a head of the other fastener element to thereby prevent the latter from being displaced on the top of said die.



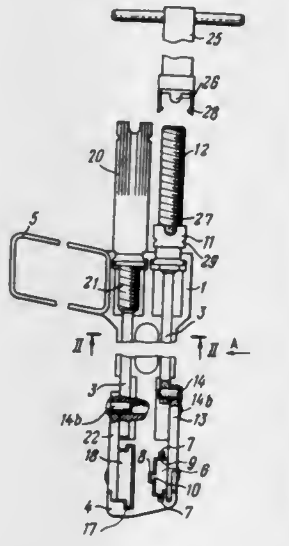
4,615,474
INSTRUMENT FOR LIGATING BONE TISSUES OF RIBS AND CLAVICLES WITH METAL STAPLES

Alexei A. Strekopytov; Vladimir A. Sokolov; Alexandr P. Kuzmichev, and Vladimir A. Strekopytov, all of Moscow, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky I Ispytatelny Institut Meditsinskoi Tekhniki, Moscow, U.S.S.R.

Filed Jun. 19, 1984, Ser. No. 622,146

Int. Cl.^{4} A61B *17/04*

U.S. Cl. 227—19 **3 Claims**



1. An instrument for ligating bone tisues of ribs and clavicles with metal staples, comprising an anvil body; a staple driving body rigidly connected to said anvil body; a staple pusher mounted in said staple driving body for reciprocation transversely to said anvil body; a means for driving said staple pusher, comprising a first relatively movable assembly mounted on said anvil body and including a nut and a screw, a cam coupled to said staple pusher and to the screw of said first relatively movable assembly and pivotable about a fixed axle carried by said anvil body to translate the longitudinal motion of the screw relative to said anvil body into transverse motion of said pusher relative to said anvil body; a hook with an anvil for bending the legs of staples, mounted on said staple driving body so that it can move in relation to said staple driving body in order to produce a gap between said hook and an end face of said staple driving body, which gap is intended to accommodate bone tissues to be ligated; a means for driving said hook with said anvil, comprising a second relatively movable assembly mounted on said anvil body and including a nut and a screw, a cam coupled to said hook and to the screw of said second relatively movable assembly and pivotable about a fixed axle carried by said anvil body to translate the longitudinal motion of said screw in relation to said anvil body into transverse motion of said hook with said anvil in relation to said anvil body; and a handle secured to said anvil body.

4,615,475
FEEDERS FOR HEADED FASTENERS

Ralph Fuhrmeister, Coopers Plains, Australia, assignor to Neitek Pty. Ltd., Coopers Plains, Australia

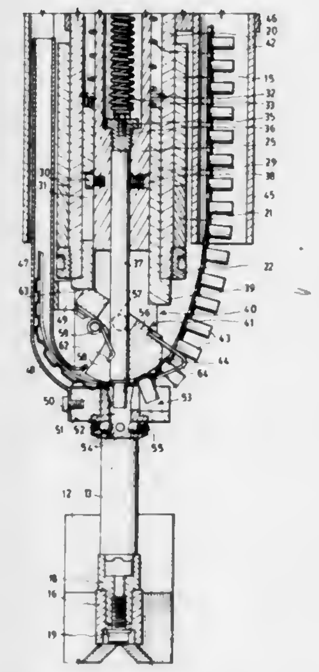
PCT No. PCT/AU84/00093, § 371 Date Jan. 25, 1985, § 102(e) Date Jan. 25, 1985, PCT Pub. No. WO84/04710, PCT Pub. Date Dec. 6, 1984

PCT Filed May 24, 1984, Ser. No. 698,179

Claims priority, application Australia, May 27, 1983, PF9567; Dec. 16, 1983, PG2864

Int. Cl.^{4} B25C *5/02;* **B23P** *19/00*

U.S. Cl. 227—136 **11 Claims**



1. A feeder for sequentially feeding, from a flexible carrier tape, charged with headed fasteners driven therethrough in equally spaced intervals, including:
- a guide bush,
- a plunger mounted for limited coaxial advance and retraction through the guide bush,
- a punch on the leading end of the plunger,
- a delivery passage in the guide bush to receive the punch on the advance of the plunger,
- a guide passage in the guide bush for guiding the carrier tape to bring fasteners thereof in sequence to the delivery passage,
- means for feeding a carrier tape in a curved feed path adjacent said guide bush and to said guide passage,
- means for advancing the plunger to drive the punch through the tape, expelling a fastener therefrom into the delivery passage,
- means for retracting the plunger to withdraw the punch from the carrier tape,
- an actuator oscillatably mounted in the guide bush for movement by the advancing plunger from an advanced position to a retracted position, a surface of said actuator being curved to cooperate with the carrier tape,
- actuator return means for moving the actuator from its retracted position to its advanced position upon the retraction of the plunger, and
- fastener engaging means on the actuator adapted, with successive oscillations of the actuator, to engage and advance sequentially towards the delivery passage, the fasteners of the carrier tape.

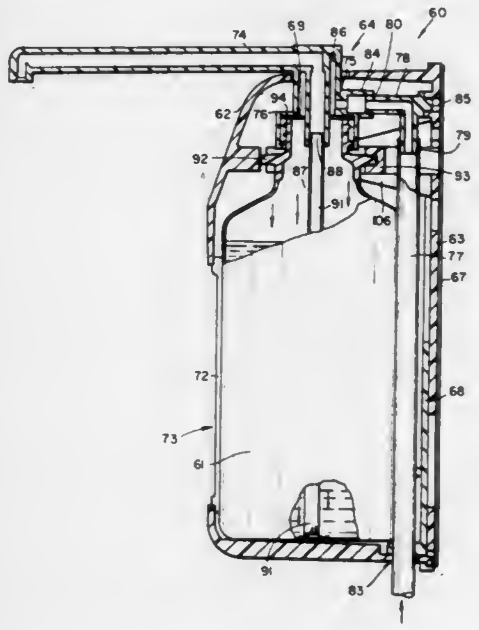
4,615,476
FLUID-DISPENSING APPARATUS

Richard E. Hobbs, Huntington, Ind., and John H. Hanning, West Chester, Ohio, assignors to Huntington Laboratories, Inc., Huntington, Ind.

Continuation-in-part of Ser. No. 402,166, Jul. 26, 1982, abandoned. This application Jun. 4, 1984, Ser. No. 616,946

Int. Cl.^{4} B67B *5/00*

U.S. Cl. 222—153 **2 Claims**



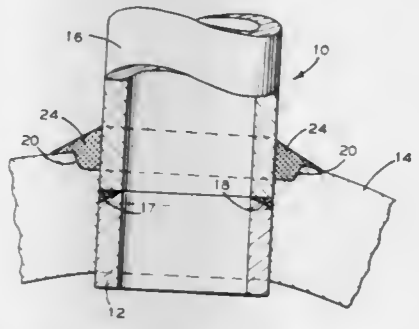
2. A fluid-dispensing apparatus for pumping from a container a portion of the container contents, said fluid-dispensing apparatus comprising:
- a two-part, snap-together housing including a flange sleeve;
- a container having an open mouth and a contoured flange slidably received by said flange sleeve;
- a pump mechanism sealed onto said open mouth and operable in response to air pressure to deliver a portion of said container contents;
- a foot pump operably coupled to said pump mechanism for delivering pulses of air to said pump mechanism by foot activation of said foot pump; and
- a locking plate having abutment arms and being movable relative to said housing between a locked orientation and an unlocked orientation, in said locked orientation said arms being operable to preclude manual unsnapping of said two housing parts.

4,615,477

METHOD FOR REPLACING TUBES IN A HEADER OR DRUM

Ralph E. Spada, Canal Fulton, and Thomas Shilot, Bidwell, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Apr. 27, 1984, Ser. No. 604,281
Int. Cl.⁴ B23K *31/00*
U.S. Cl. 228—119 8 Claims



1. A method of repairing an old tube that penetrates beyond the wall thickness of a wall of a header-member comprising:
(a) severing the old tube to form a cut end proximate the header-member;
(b) machining the cut end of the old tube to form a recess and recessed tube end within the wall thickness of the header-member;
(c) welding the recessed old tube end within the wall thickness to the header-member;
(d) inserting an end of a new tube into the recess within the header-member proximate the recessed old tube end; and
(e) welding the new tube to the header-member.

4,615,478

METHOD FOR THE SOLDERING OF SEMICONDUCTOR CHIPS ON SUPPORTS OF NOT-NOBLE METAL

Luciano Gandolfi, Corsico; Antonio Grasso, Catania, and Antonio Perniciaro, Palermo, all of Italy, assignors to SGS-ATES Componenti Elettronici S.p.A., Catania, Italy

Filed Jun. 10, 1983, Ser. No. 503,256
Claims priority, application Italy, Nov. 19, 1982, 24328 A/82
Int. Cl.⁴ B23K *1/20, 35/28*
U.S. Cl. 228—123 5 Claims

1. A method for soldering a semiconductor component onto a non-noble metal support comprising the consecutive steps of preheating the support to the melting point of a solder material, directing a reducing gas flame onto said support, applying a solder material to the support while maintaining the reducing gas flame on the support, applying a semiconductor component to the solder thereby bonding the semiconductor component to the support.

4,615,479

METHOD FOR SOLDERING AN ELECTRICAL PRODUCT

Sachio Ohotoshi, and Fumio Hase, both of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo and Seimi Chemical Company Ltd., Chigasaki, both of, Japan

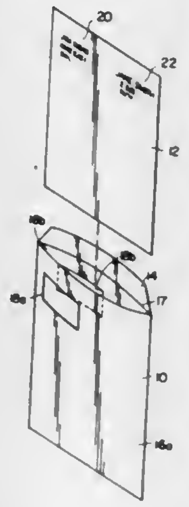
Filed Feb. 21, 1985, Ser. No. 703,613
Int. Cl.⁴ B23K *31/02*
U.S. Cl. 228—180.1 5 Claims

1. A method for soldering an electrical product with a soldering flux, wherein an aqueous dispersion or an organic solvent solution of an active compound consisting essentially of a polyfluoroalkyl or polyfluoroether group having from 4 to 21 carbon atoms is applied to a peripheral portion around the soldering portion and dried to form a coating of said compound so as to prevent the soldering flux from penetrating to or depositing on said peripheral portion.

4,615,480

DOCUMENT SENDING SYSTEM

Joseph L. Powell, 3544 Grant Ave., Philadelphia, Pa. 19114
Continuation of Ser. No. 579,979, Feb. 14, 1984. This application Jun. 19, 1985, Ser. No. 746,014
Int. Cl.⁴ B65D *27/04, 27/06*
U.S. Cl. 229—71 23 Claims



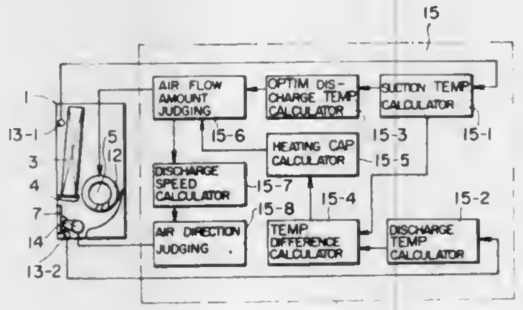
1. A document sending device comprising:
a message bearing document bearing first and second spaced addresses,
a document container having front and back sides for receiving said message bearing document therein,
said document container having first and second windows formed, respectively, in said front and back sides,
said first and second windows being in registration with one another,
said first and second addresses being positioned on said message bearing document for said first address to register with said first window and be readable therethrough upon insertion of said message bearing document in said document container in a first orientation relative thereto and for said second address to register with said second window and be readable therethrough upon insertion of said message bearing document in said document container in a second orientation relative thereto different from said first orientation, and
said second address being in non-registration with said second window when said document is in said first orientation.

4,615,481

AIR CONDITIONER

Taichi Tanaami; Hiroshi Kogure, both of Sano, and Masakatsu Hayashi, Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 24, 1984, Ser. No. 664,338
Claims priority, application Japan, Oct. 26, 1983, 58-199013
Int. Cl.⁴ F24F *11/04*
U.S. Cl. 236—38 4 Claims



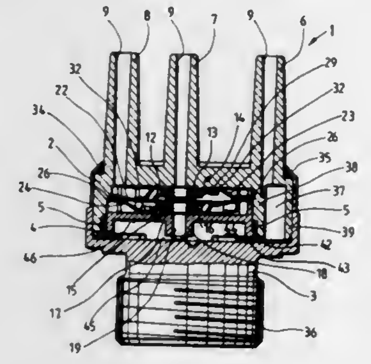
1. An air conditioner comprising:
a first and second temperature detecting means respectively provided at an air suction side and an air discharging side;
a first electric motor for angularly adjusting a wind directing plate;
a second electric motor for controlling a rotational speed of a blower fan;
a control section provided between said first and second temperature detecting means and said first and second motors for simultaneously controlling the outputs of said first and second motors, in which said control section controls the output of the first motor on the basis of the respective outputs of said first and second temperature detecting means to thereby angularly adjust said wind directing plate and control the rotational speed of said second motor.

4,615,482

MULTI-WAY FLUID FLOW CONTROL VALVE

Wojciech Marusiak, Düsseldorf, and Wolfgang Sommer, Hilden, both of Fed. Rep. of Germany, assignors to Pierburg GmbH & Co. KG, Neuss, Fed. Rep. of Germany

Filed Mar. 4, 1985, Ser. No. 707,731
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1984, 3407990
Int. Cl.⁴ G05D *23/10*
U.S. Cl. 236—48 R 13 Claims



1. In a temperature-dependently actuated multi-way fluid flow control valve comprising first and second housing parts forming a housing, valve seats in said housing and a bimetallic disc between said seats, said bimetallic disc have a pair of opposite sides and each said side having an edge region, said disc being deflectable between first and second positions, said disc closing one of said seats when in said first position and another of said seats when in said second position to alter the fluid flow path through said valve, the improvement comprising mounting means floatingly mounting said bimetallic disc in said housing, said mounting means comprising spring means for selectively supporting said disc on each of said sides at the edge regions thereof, said disc being spring supported on one said side when said disc is in said first position to hold said one of said seats closed with said disc being spring loaded only on said one side and being spring supported on the other side when in said second position to hold said seat closed with said disc being spring loaded only on said other side.

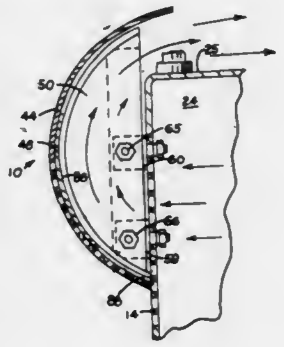
4,615,483

WARM AIR DIVERTER FOR VEHICLES

Kerney T. Sheets, P.O. Box 771, Duplessis, La. 70728

Filed May 8, 1985, Ser. No. 731,986
Int. Cl.⁴ B60H *1/02*
U.S. Cl. 237—12.3 A 16 Claims

1. A warm air deflector connectable to the outside of the radiator grill of a vehicle in which air is blown in a forward direction over the radiator and out the front of the radiator, consisting essentially of:
a. curved front plate means connectable to the outside of the radiator and extending over the top of the radiator, said curved plate means being generally concave, the concave side of said curved plate means facing toward the driver,
b. two generally parallel sidewalls connected to the sides of said curved plate means at approximate right angles with said curved plate means, the outer edges of said parallel side walls terminating along the edges of said curved plate,
c. a series of holes located on the lower portion of said curved plate, and



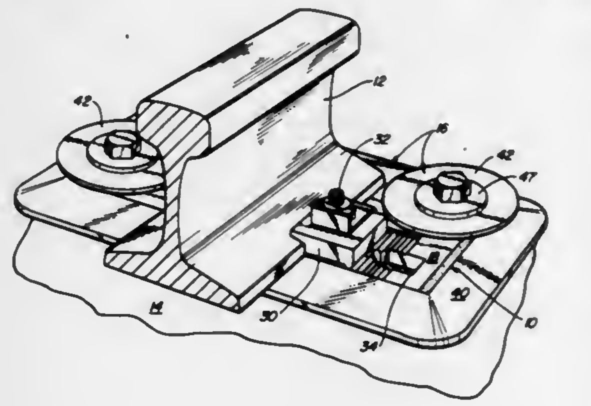
d. slidable baffle means slidably connected to said curved plate means for selectively covering all of a portion of said holes said baffle comprising a curved cover for said series of holes.

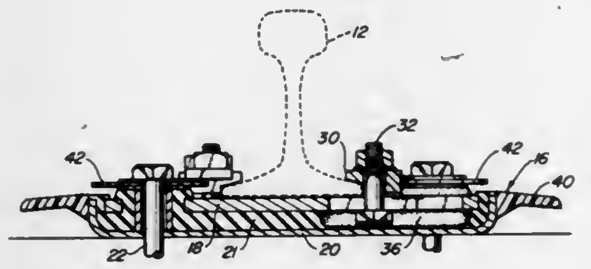
4,615,484

INSULATIVE PROTECTIVE DEVICE FOR RAIL FASTENER

Alexander Kusko, Weston, Mass., assignor to San Francisco Bay Area Rapid Transit District, Oakland, Calif.

Filed May 20, 1985, Ser. No. 735,539
Int. Cl.⁴ E01B *9/38, 11/54*
U.S. Cl. 238—264 8 Claims





1. In a rail fastener for fastening a rail means to a supporting structure and having rigid plate means with a generally rectangular shape, means for securing said fastener to said supporting structure including a pair of spaced apart holes through said plate means and mounting bolts extending through said holes with head portions at their upper ends, and an insulation means within said rail fastener to prevent the flow of electricity through said rail fastener, the improvement consisting of an insulation protective device to further prevent the flow of leakage current from said rail means, said device comprising:
a continuous, semi-rigid skirt member of electrically nonconductive material attached to and extending outwardly away from the sides of said fastener said skirt member having an upper surface, said upper and lower surfaces

having a lower underside surface and being free from contact with any surrounding supporting structure, thereby increasing the length of possible current leakage paths from said rail means to said surrounding supporting structure having ground potential; and

a pair of planar disc members of electrically non-conductive material extending around and outwardly from each of said mounting bolts adjacent to their head ends.

4,615,485

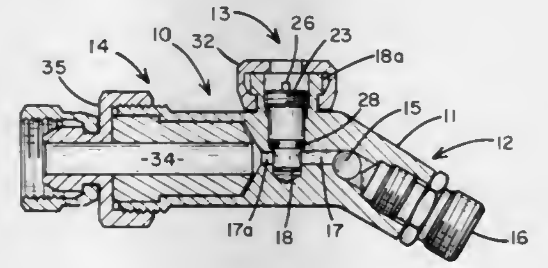
PAINT CIRCULATION ADAPTER AND COUPLER

James H. Larson, Coon Rapids, and Sheila S. McKee, St. Paul, both of Minn., assignors to Graco Inc., Minneapolis, Minn.

Filed Jun. 10, 1985, Ser. No. 742,748

Int. Cl.⁴ B05B *9/04;* F16K *31/50*

U.S. Cl. 239—124 **6 Claims**



1. In a continuous flow pressure feed paint supply system having a pressure feed recirculating paint system and a paint spray apparatus, a flow dividing paint flow controller comprising

(a) an inlet section having a flow through passage coupled between two ports, each port being adapted for connection to a paint system;

(b) a valving section including a longitudinal axial port communicating with the flow through passage and an outwardly extending neck having a cylindrical valve recess extending perpendicular to the axial port from the outer surface through the neck and intersecting and extending past the axial port, the valve recess further having a first diameter through said neck and a smaller valving diameter intersecting the axial port the smaller valving diameter being at least as great as the largest cross section dimension of the axial port, a shoulder is located at the juncture of the first diameter and the valving diameter;

(c) a cylindrical rotary valve adapted to threadedly fit in the valve recess, including a head having external threads and an outwardly extending projection on said head and an inwardly extending cylindrical body, the cylindrical body having a body segment adjacent the threaded head having a diameter to fit the first diameter of said valve recess, the cylindrical body further having a cylindrical valve segment having a tapered end and a seal affixed on the cylindrical body at the junction of the body segment and the valve segment, the seal cooperating with the shoulder at the juncture of the first diameter and the valving diameter when the valve segment is moved to a close position in the valve recess, and the cylindrical valve segment sealingly fitted into the valve recess valving diameter and having a length dimension greater than the largest cross section dimension of the axial port, whereby the tapered end of the valve segment cooperates with the valving diameter of the valve recess forming a variable sized annular flow control passage therethrough in response to movement of the rotary valve; and

(d) an outlet section having means for communicating the paint from the axial port to a paint spray apparatus and means for detachably attaching the paint spray apparatus.

4,615,486

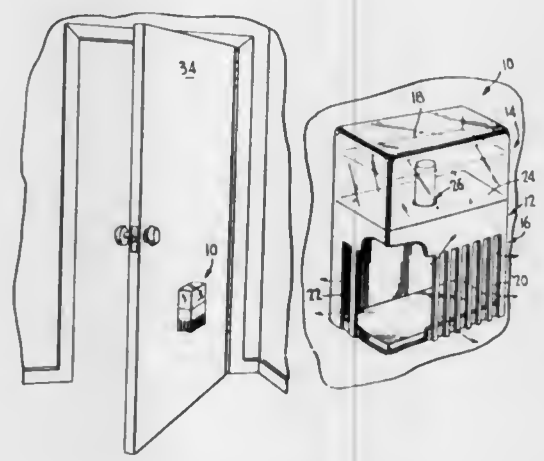
AUTOMATIC DOOR-ACTIVATED AIR FRESHENER

Tim R. Konicek, Racine County, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Division of Ser. No. 655,173, Sep. 27, 1984. This application Nov. 5, 1985, Ser. No. 795,153

Int. Cl.⁴ A61L *9/04*

U.S. Cl. 239—274 **3 Claims**



1. A door-actuated efficacious vapor system comprising a door mounted for swinging movement,. a motion actuated air freshener mounted on said door for swinging movement with said door, said air freshener including an upper liquid reservior and a lower distributor, a liquid passage between said reservoir and said distributor for gravity supplying liquid from said reservoir to said distributor, and a motion-actuated, normally closed valve in said liquid passage for permitting momentary liquid flow from said reservoir through said liquid passage in response to movement of said air freshener, said door forming means for both actuating said valve and causing air currents flowing across said distributor, wherein said valve includes said liquid passage defining a valve passage of greater length than width, a valve member positioned in said valve passage and pivotally mounted on a pivot having an axis in the direction of said width, said valve member having a major portion of the weight thereof positioned above said pivot whereby said valve member normally assumes a tilted position, said valve member and said valve passages being of related cross-sections such that when said valve member is in a tilted position said valve member fills and closes said valve passage and when said valve member is upright there is clearance in said valve passage around said valve member for limitd liquid flow through said valve passage.

4,615,487

HYDROCANNON SYSTEM FOR CLEANING POWER PLANTS

Errol C. O'Brien, Palos Park; Martin Placko, Chicago, and Wayne Breneman, Cole City, all of Ill., assignors to J-B Industrial Corp., Worth, Ill.

Filed Apr. 16, 1984, Ser. No. 600,439

Int. Cl.⁴ B05B *15/08*

U.S. Cl. 239—281 **12 Claims**

1. A liquid cannon system for applying a high pressure stream against a surface to be cleaned comprising

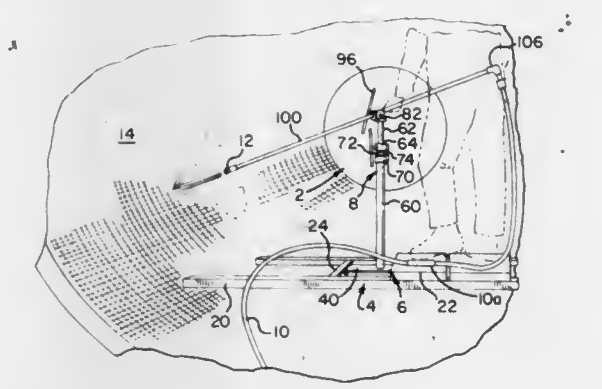
support means having a base and an upright member extending along a generally vertical axis and adhering to the upper surface of said base;

mounting means operatively connected to an upper portion of said upright member;

conduit means selectively affixed to said mounting means and having an inlet arranged to be connected to a hose delivering liquid under pressure and having an outlet arranged to be connected to a nozzle for discharging the liquid, said conduit means being affixed to said mounting means at a fixed position between said inlet and said outlet;

means for selectively moving said mounting means for a predetermined distance along said axis for adjusting the vertical position of said outlet;

means for locking said mounting means at a selected one of a plurality of fixed vertical positions at points extending along the extent of said distance along said axis said means for locking precluding any vertical movement of said mounting means; and



said mounting means being mounted for free pivotal movement relative to said upright member for 360° about said axis and about a second axis perpendicular to said axis of said mounting means to alter the direction of the discharge of liquid from the nozzle.

4,615,488

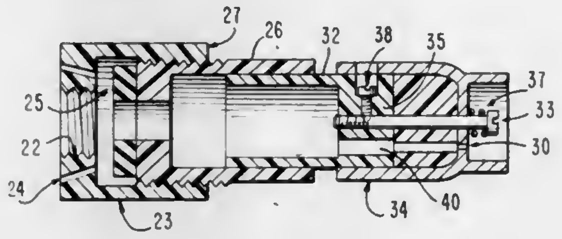
TOY WATER GUN HAVING THREE DIRECTIONAL NOZZLES

Ned R. Sands, 2230 Holly Ave., Escondido, Calif. 92027

Continuation-in-part of Ser. No. 553,037, Nov. 18, 1983. This application Jul. 9, 1984, Ser. No. 628,799

Int. Cl.⁴ B05B *1/14*

U.S. Cl. 239—391 **1 Claim**



1. A toy water gun for selectively directing a stream of water in one of a plurality of directions comprising a manually operable cylindrical plunger-diaphragm piston water pump, a nozzle assembly connected to the discharge of said water pump axially downstream of said pump comprising in combination, means coupling said axially disposed cylindrical nozzle assembly to said pump having openings therein directed rearwardly so that water may be selectively delivered under pressure by manual control of said pump in the direction of said pump, relatively rotatably cylindrical members positioned axially in said nozzle assembly for manually opening and closing a plurality of axially disposed water discharge orifices to selectively direct streams of water in different directions at different relative angular positions of said axially disposed relatively rotatable cylindrical members in said axially disposed cyklindrical nozzle assembly, wherein one of the rotatable members comprises a cap member journalled to rotate about an axially positioned shaft held non-rotatably in said axially disposed nozzle assembly, means for holding the cap member in a fixed axial position along the axis of the nozzle assembly, and gasket means carried by said nozzle assembly positioned to direct water axially along the nozzle to said axially disposed plurality of water discharge orifices to selectively direct streams of water in directions at different relative angular positions of said relatively rotatable cylindrical members in said axially disposed nozzle assembly other than rearwardly when rotated in one direction and upon rotation of said nozzle in a reverse direction water is directed through the rearwardly openings in said nozzle toward the pump.

4,615,489

PROCESS AND APPARATUS FOR THE PREPARATION OF A MIX COMPOSED OF MINERAL FIBERS AND INORGANIC HYDRAULIC BINDERS

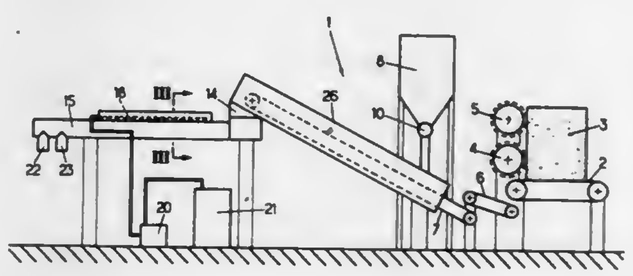
Ange Lafata, Grenoble, France, assignor to Projiso, Eybens, France

Filed Dec. 17, 1984, Ser. No. 682,318

Claims priority, application France, Dec. 22, 1983, 83 20609

Int. Cl.⁴ B02C *19/12*

U.S. Cl. 241—4 **11 Claims**



1. A process for the preparation of a mix composed of mineral fibers and inorganic hydraulic binders in particles, comprising: continuously defibrating in metered amounts a bale of fibers by displacing substantially horizontally the bale in the direction of at least one rotating toothed roll which continuously defibrates the bale, conveying at a determined speed the fibers coming continuously from the bale of fibers to the inlet of a screw. type conveyor-mixer, continuously adding in metered amounts the binders to the fibers continuously traveling towards the inlet end of the screw type conveyor-mixer, so as to supply the screw type conveyor-mixer with all the mineral fibers and inorganic binders in particles of the desired mixture, and rotating at a determined speed the screw of the screw type conveyor-mixer in such a manner as to displace and mix continuously the fibers and the binders and to discharge continuously at the outlet end of the screw type conveyor-mixer a substantially homogeneous mixture of fibers and binders.

4,615,490

SHREDDER OR MICROFILM DESTRUCTION APPARATUS

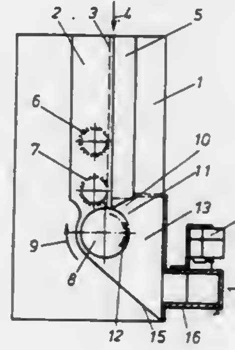
Albert Goldhammer, Überlingen, Fed. Rep. of Germany, assignor to Firma Feinwerktechnik Schleicher & Co., Markdoff, Fed. Rep. of Germany

Continuation of Ser. No. 362,677, Mar. 29, 1982, abandoned. This application Nov. 23, 1984, Ser. No. 674,273

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112667

Int. Cl.⁴ B02C *18/18*

U.S. Cl. 241—36 **5 Claims**

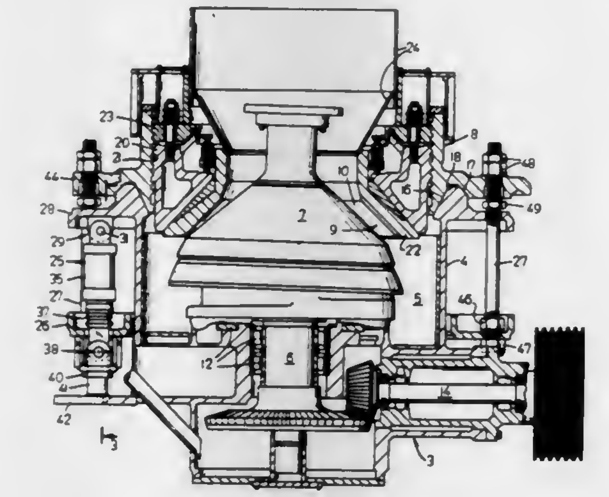


1. A shredder apparatus for cutting materials such as microfilm comprising:

a housing;
- rotary cutting means having an inlet and an outlet for cutting said material into small particles;
- feeding means comprising a plurality of spiked feed rollers for feeding said material to the inlet of the cutting means along a path parallel to a cutting plate separating said inlet from said outlet of said cutting means;
- drive means for said cutting means and for said spiked feeding means;
- a suction channel means in a form of a hose having a mouth which is disposed near said outlet of said cutting means;
- a suction fan connected to said suction channel means to pull in said particles which are generated by said cutting means shredding said material;
- flow sensing means provided in said hose of said suction channel means responsive to the air stream therein; and
- switching means automatically stopping and shutting down said drive means in response to said suction power;
- said switching means being operated by said sensing means to stop said drive means if the suction power decreases to a predetermined value; whereby the shredding of said microfilm is stopped not only should said outlet be full, but also should other inherently obvious defects occur in said apparatus, such as an inoperative suction fan or a leak in said suction hose;
- said cutting means being a rotatable milling-like cutter which runs in the work direction through an air gap at a tip of said cutter plate disposed against said cutter such that the distance between the tip of said cutter teeth to the tip of said cutter plate approaches a substantially zero value.

4,615,491
GYRATORY CRUSHER WITH AUTOMATIC TRAMP IRON RELEASE

Joseph Batch, Milwaukee, and Robert G. Stafford, Mequon, both of Wis., assignors to Telsmith Division Barber-Greene Company, Milwaukee, Wis.
Continuation-in-part of Ser. No. 84,834, Oct. 15, 1979, abandoned. This application Apr. 14, 1981, Ser. No. 254,147
Int. Cl.⁴ B02C *2/04*
U.S. Cl. 241—37 **9 Claims**



1. In a crusher having a cone that gyrates in an annular relatively stationary lower frame member and having an annular upper frame member which is normally supportingly engaged against said lower frame member to occupy a defined operating position and which comprises a bowl that cooperates with said cone to define a crushing gap, bowl control means for normally imposing upon said upper frame member a predetermined downward force that tends to maintain said upper frame member in its operating position, said bowl control means being characterized by:

A. a plurality of double-acting hydraulic jacks disposed at circumferentially spaced intervals around said frame members, each comprising a piston slideable in a cylinder and having a pair of pressure chambers in its cylinder at opposite sides of its piston;

B. means so connecting each of said jacks between the upper and the lower frame members that pressure of fluid in one of said chambers of the jack cylinder is translated into a downward force upon the upper frame member;

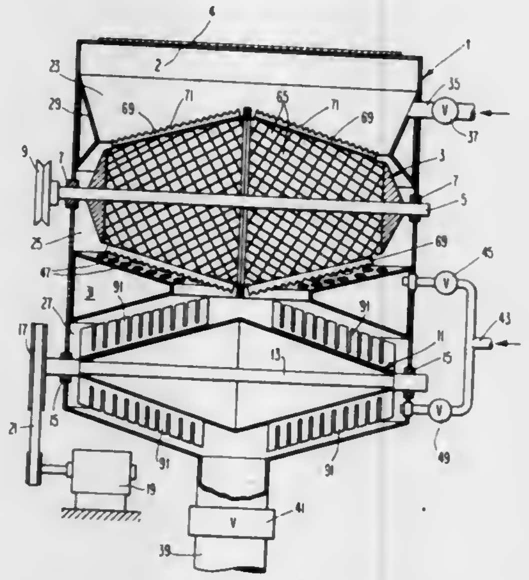
C. hydraulic pressure means normally communicated with said one chamber of every jack, said hydraulic pressure means providing a source of fluid at substantially a predetermined pressure, comprising:
(1) an accumulator,
(2) a pump for charging said accumulator with fluid, and
(3) pressure responsive control means operatively associated with said pump and said accumulator for directing fluid from said pump to said accumulator when fluid at the accumulator has less than said predetermined pressure and for preventing charging of the accumulator when fluid thereat has substantially said predetermined pressure;

D. normally closed relief valve means connected between said one chamber of every jack cylinder and the other chamber thereof, said relief valve means being arranged to open for transferring fluid from said one chamber to said other chamber when fluid in said one chamber has a pressure which exceeds said predetermined pressure by a predetermined amount; and

E. means venting the other chamber of every jack cylinder to a source of unpressurized fluid at all times that the crusher is in crushing operation.

4,615,492
PULPING APPARATUS

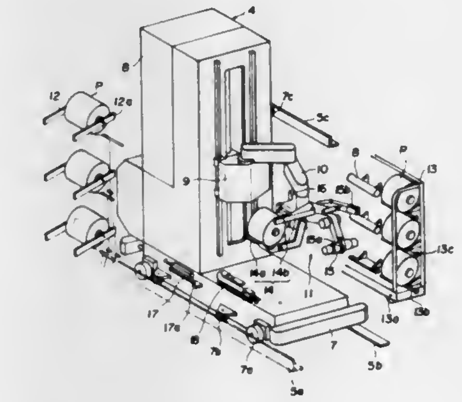
William J. Downie, Box 47, Media, Pa. 19063
Filed Jul. 2, 1984, Ser. No. 627,062
Int. Cl.⁴ B02C *18/40*
U.S. Cl. 241—46 R **9 Claims**



1. Waste paper pulping apparatus comprising: a tank open at its upper end and closed at its bottom end; a pair of spaced baffles within the tank that divide the tank into an upper compartment, a lower compartment, and an intermediate compartment between the upper and lower compartments; means for supplying water into the upper compartment; a rotatable disintegrating and mulching drum disposed within the intermediate compartment and extending partially into the upper compartment, the disintegrating and mulching drum comprising sheet metal having apertures therein, ribs secured to the sheet metal and extending outwardly from the sheet metal, and outwardly projecting spurs on the ribs; a rotatable dispersing drum disposed within the lower compartment, the dispersing drum comprising a pair of frusto-conical members joined to each other at their bases, a hub secured to each end opposite each base of each frusto-conical member and supporting its respective frusto-conical member on a rotatable shaft a plurality of ribs having slots therein and being secured, in spaced radial relationship with respect to each other, to and projecting radially outwardly from surfaces of the frusto-conical members, said ribs extending longitudinally along the frusto-conical members, and means for discharging a fibrous slurry from the bottom end of the tank.

4,615,493
METHOD FOR DOFFING PACKAGES FROM A WINDING MACHINE AND AN APPARATUS FOR EFFECTING THE SAME

Akio Teranishi, and Tsuneo Murakami, both of Iwakuni, Japan, assignors to Teijin Seiki Co. Ltd., Osaka, Japan
Continuation-in-part of Ser. No. 552,979, Nov. 17, 1983, abandoned. This application May 21, 1984, Ser. No. 612,616
Claims priority, application Japan, Nov. 20, 1982, 57-202878
Int. Cl.⁴ B65H *54/26, 67/04*
U.S. Cl. 242—35.5 A **12 Claims**

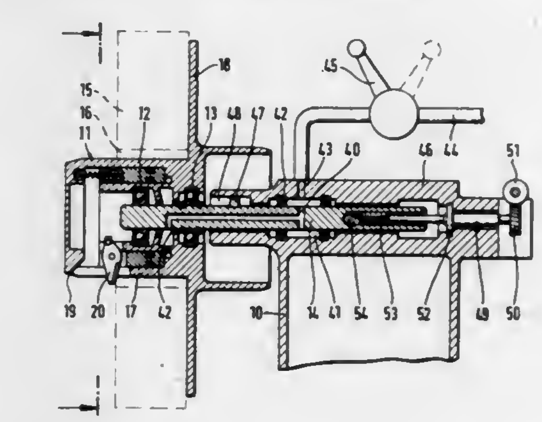


1. A doffing apparatus for doffing packages from a winding machine having a plurality of work stations disposed along the lengthwise direction of a machine frame, which comprises:
- first memory means for storing at least one reference point corresponding to doffing operations to be carried out for each respective work station;
- doffing truck means movable along the winding machine for stopping at locations corresponding to the work stations;
- doffing mechanism means mounted on the doffing truck for performing said doffing operations based on a series of predetermined operating steps; and
- means for moving the doffing mechanism to a predetermined stored reference point of a work station in response to said first memory means;
- second memory means for storing a basic operation for a generalized doffing apparatus of said doffing apparatus; and
- third memory means for storing an actual operation for a specific doffing apparatus after modifying said basic operation based on said at least one stored reference point.

4,615,494
DEVICE FOR RECEIVING REELS

Heinz Focke, Verden, and Bernhard Focke, Bremen, both of Fed. Rep. of Germany, assignors to Focke & Co. (GmH & Co.), Verden, Fed. Rep. of Germany
Filed Nov. 14, 1984, Ser. No. 671,380
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1983, 3342080
Int. Cl.⁴ B65H *16/04*
U.S. Cl. 242—68.3 **12 Claims**

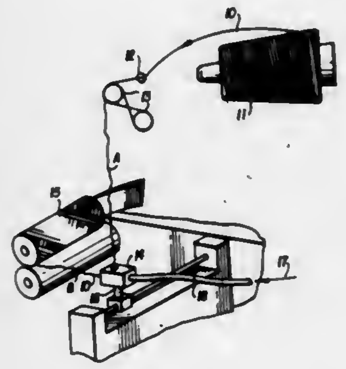
11. A device for receiving and retaining a rotatable reel **(15)** capable of carrying sheet material, said reel having a core **(16)**, said reel receiving and retaining device comprising:
- a rotatable hub **(11)** having a supporting part **(17)** with an outer cylindrical portion **(29)** for receiving said reel core **(16)**;
- at least one clamping claw **(20)** for retaining said reel on said hub, said clamping claw being mounted for radial movement to said supporting part of said hub, said clamping claw also being pivotably movable from a retracted position to an extended position where by reason of its extended position it prevents axial movement of said reel;
- means for causing said clamping claw to assume a normally extended position;
- a sliding sleeve **(27)** mounted interior to said hub for causing said clamping claw **(20)** to move from its normally extended position to its retracted position;



- said rotatable hub including an inner cylindrical portion **(24)** of said supporting part **(17)**, said sliding sleeve being positioned in an annular space between said outer and inner cylindrical portions **(29, 24)** and being axially movable therein; and
- means pivotably mounting said clamping jaw on said sliding sleeve so that said clamping jaw is pivoted into said extended and retracted positions by the axial movement of said sliding sleeve.

4,615,495
CYLINDRICAL PACKAGE OF LOW MODULUS, HIGHLY ELASTIC YARN

James F. Correll, Jr., Chattanooga, Tenn., assignor to Dixie Yarns, Inc., Chattanooga, Tenn.
Filed Jun. 28, 1985, Ser. No. 749,641
Int. Cl.⁴ B65H *55/00, 54/02, 54/28*
U.S. Cl. 242—159 **6 Claims**



1. A low-density, package of substantially tensionless, continuous filamentary elastic material, comprising a substantially cylindrical tube having substantially tensionless, continuous filamentary elastic material wound into a cylindrical package thereon, wherein said material is substantially uniformly traversed throughout the axial length of said cylindrical package, said package having a uniform density throughout the package of not greater than 0.300 g./cc.

4,615,496

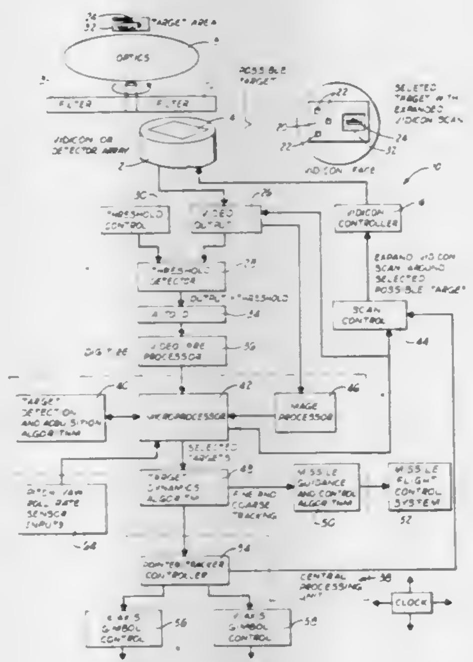
HYBRID SEMI-STRAPDOWN INFRARED SEEKER

George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed Jan. 3, 1985, Ser. No. 688,532

Int. Cl.⁴ F41G *7/22*

U.S. Cl. 244—3.16 9 Claims



1. An infrared seeker adapted for gimballed or non-gimballed mounting in a missile and the like, the seeker comprising:

a vidicon adapted for mounting on the missile and directed toward a target area, the vidicon having a vidicon controller connected thereto;

- a threshold detector connected to the vidicon for receiving vidicon output therefrom, the threshold detector having a threshold control for providing a threshold setting to the detector, the vidicon output when in a non-imaging mode compared with the threshold setting and when the output exceeds the setting that area on the vidicon is considered a possible target;
- an analog to digital converter connected to the detector for receiving the possible target data;
- a video preprocessor connected to the converter for conditioning the target data;
- a computer central processing unit having a microprocessor connected to the preprocessor, the unit having a target detector and acquisition algorithm for determining whether or not the potential target data meets a predetermined criteria, the microprocessor having an image processor; and
- a scan control connected to the microprocessor and the vidicon controller, the scan control expanding the scan around the area of the potential target and if the potential target data meets the predetermined criteria the vidicon output from the expanded area is sent to the image processor for determination of the validity of the target.

4,615,497

METHOD AND FLUTTER BRAKE FOR AN AIRCRAFT

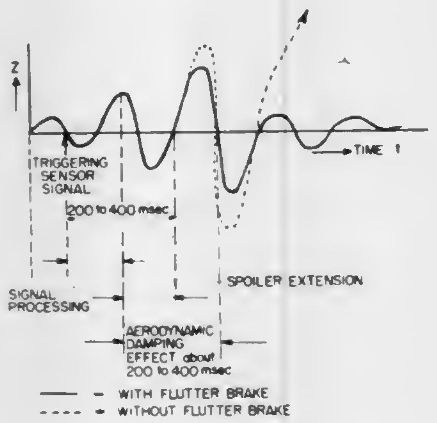
Hartwig Seeler, Hamburg, and Helmut Zimmermann, Syke, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 591,125, Mar. 19, 1984, abandoned. This application Jan. 21, 1986, Ser. No. 821,217

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1983, 3310510

Int. Cl.⁴ B64C *13/16*

U.S. Cl. 244—75 A 16 Claims



11. An apparatus for increasing the flutter velocity or speed of an aircraft, comprising sensing means for sensing a threshold signal anticipating an onset of an instability causable by flutter, signal processing means operatively connected to said sensing means for producing of the sensed threshold signal a control signal representing an anticipated onset of a flutter instability, aerodynamic damping means (**13, 14**), operating means operatively connected to said signal processing means and to said damping means (**13, 14**) for automatically placing said damping means (**13, 14**) in response to said control signal into a stationary operative position and for holding said damping means (**13, 14**) in said stationary operative position for a length of time sufficient to reduce said flutter instability to a desired level, and for returning said aerodynamic damping means into an inoperative position when said sufficient time has elapsed and said flutter instability has been reduced to said desired level, whereby said aerodynamic damping means are not moved repeatedly for the same flutter situation.

4,615,498

WHEEL AND TIRE FOR AIRCRAFT

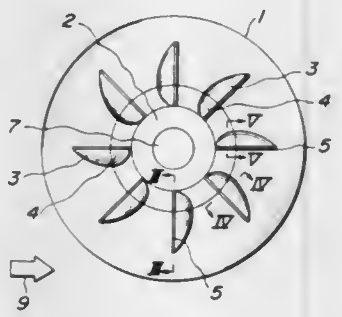
Tsurunosuke Ochiai, 3169-6, Kumanohara-Machi, Karatsu City, Saga Pref., Japan

Filed Dec. 4, 1984, Ser. No. 678,572

Claims priority, application Japan, Dec. 15, 1983, 58-235097

Int. Cl.⁴ B64C *25/40*

U.S. Cl. 244—103 S 3 Claims



1. A wheel and tire for an aircraft, said wheel and tire comprising a number of wind receiving ledges causing said wheel and tire to rotate by receiving thereon wind pressure and radially arranged on side surfaces of the wheel and tire except its tread surface contacting a runway, each ledge being formed on its edge with a bead, each said wind receiving ledge comprising a wind receiving tire ledge formed integrally with the tire and a wind receiving wheel ledge provided on the wheel, and means detachably securing the latter wheel ledge on the wheel.

4,615,499

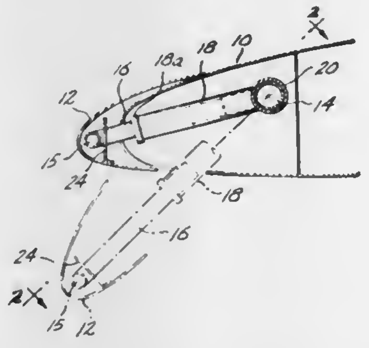
WING SLAT ANTI-ICE AIR DUCT SYSTEM

John C. Knowler, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 12, 1983, Ser. No. 522,495

Int. Cl.⁴ B64D *15/04*

U.S. Cl. 244—134 B 3 Claims



1. Anti-icing duct means for aircraft retractable/deployable wing slats wherein the leading edge of a wing houses a longitudinal main supply duct carrying pressurized anti-icing air and the leading edge of a wing slat houses a longitudinal spray duct for distributing anti-icing air against the slat, the duct means comprising:

(a) transfer ducts extending between the supply duct and the spray duct to continuously interconnect the supply duct to the spray duct throughout deployment and retraction of the wing slats, the transfer ducts including:

  (i) a thin wall inner duct having one end connected to the spray duct for rotation of the inner duct about the spray duct, the other end of said inner duct forming a mating end that extends toward the supply duct;

  (ii) a thin wall outer duct having one end connected to the supply duct for rotation of the outer duct about the supply duct, the other end of said outer duct forming a mating end that extends toward the spray duct, the mating end of the inner duct being telescopically engaged within the mating end of the outer duct, one portion of the mating end of the inner duct telescoping out of the outer duct during the deployment of said wing slat, another portion of the mating end of the inner duct remaining within the outer duct throughout deployment and retraction of the wing slat;

  (iii) slide bearing means fixedly mounted on the exterior of the thin wall inner duct along the portion thereof that remains within the outer duct throughout the retraction and deployment of said wing slat, said slide bearing means slidably engaging the interior wall of the thin wall outer duct and providing support between the inner and outer ducts along a substantial part of the portion of the mating end of the inner duct that remains within the outer duct throughout depolyment and retraction of the wing slat; and,

  (iv) seal means fixedly mounted on the exterior of the thin wall inner duct along the portion thereof that remains within the outer duct throughout the retraction and deployment of said wing slat, said seal means slidably engaging the interior wall of the thin wall outer duct and providing a seal between the inner and outer ducts throughout deployment and retraction of the wing slat.

4,615,500

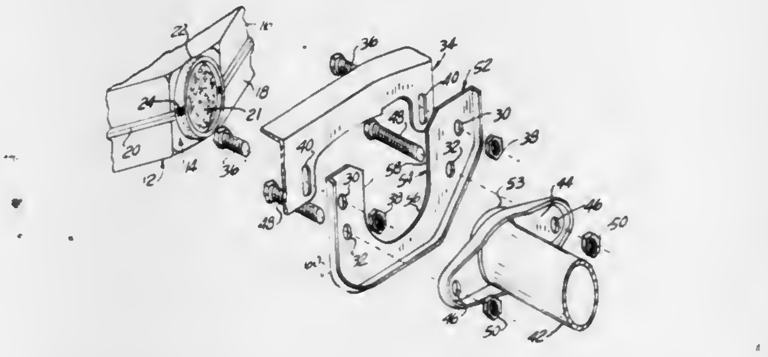
CATALYTIC CONVERTER SUPPORT HANGER

Jeffrey D. Layson, 19828 Great Oakes Cir., North, Mt. Clemens, Mich. 48043

Filed Aug. 17, 1984, Ser. No. 642,130

Int. Cl.⁴ F16L *3/08*

U.S. Cl. 248—65 5 Claims



1. A replacement hanger bracket for a catalytic converter housing and the like having an exhaust gas flow opening, said bracket comprising a single plate, a substantially U-shaped cut-out portion open to one side of said plate, said substantially U-shaped cut-out portion having a pair of substantially parallel straight edge portions joined by a semi-circular edge portion, said semi-circular edge portion being adapted to engage a portion of the periphery of an annular flared collar surrounding said exhaust gas flow opening behind said annular flared collar, said substantially parallel straight edge portions being separated by a distance less than the largest diameter portions of said annular flared collar, said plate having mounting holes for fastening to a support member forming part of a motor vehicle frame and a pair of additional holes disposed symmetrically relative to said cut-out portion, each of additional holes being aligned with a corresponding hole in a clamping flange fastened to an end of an exhaust gas evacuating pipe, the end of said pipe having a flared rim and a pair of threaded clamping fasteners passed through said aligned holes for drawing said clamping flange towards said plate, whereby said pipe is coupled at its flared rim end to said annular flared collar and said plate is clamped about the edges of said cut-out portion behind and against said enlarged diameter flared collar.

4,615,501

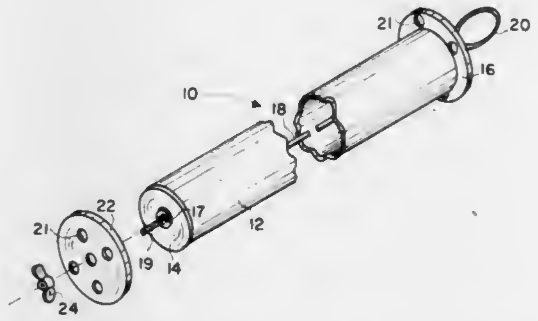
ACCORDION TYPE HOSE HOLDER

Ralph W. Pezold, 712 W. 20th St., Sanford, Fla. 32771

Filed Apr. 29, 1985, Ser. No. 728,389

Int. Cl.⁴ B05B *13/02*

U.S. Cl. 248—75 11 Claims



8. A device for holding and storing an accordion type cylindrical hose when not in use, said hose having a connector on one end thereof, comprising:

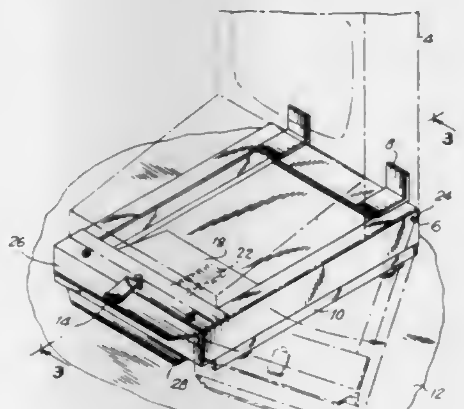
an elongate cylindrical core portion, said core portion having a diameter less than the interior diameter of said hose;

a fixed end cap disk concentrically attached to a proximal

end of said core portion, said fixed end cap disk having a diameter to fit within one of said connectors;
a rod having a proximal end attached to a handle and having a threaded distal end, said rod disposed axially through said core portion such that said handle is adjacent said fixed end cap disk;
a removable end cap disk concentrically installed on said threaded distal end of said rod, said removable end cap disk having a diameter greater than the outside diameter of said hose; and
a removable nut threaded on said distal end of said rod for holding said removable disk in place whereby said accordion type hose in its retracted condition is disposed over said core portion and between said fixed end cap disk and said removable end cap disk.

4,615,502
CARRIER FOR COMPUTER DISPLAYS

Thomas F. McLaughlin, 49 Stonowaye, Chappaqua, N.Y. 10514
Filed Oct. 19, 1984, Ser. No. 663,035
Int. Cl.⁴ F16M *11/00*
U.S. Cl. 248—176 12 Claims

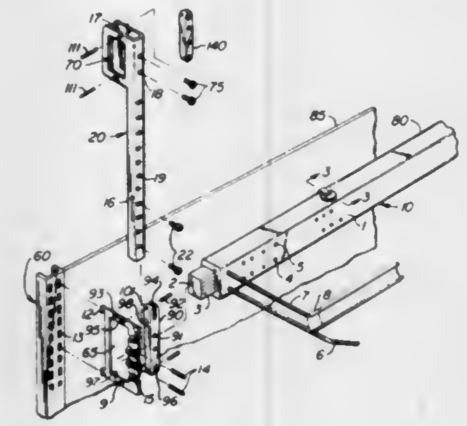


1. Apparatus for raising and supporting a computer display to selected heights and angles, said apparatus comprising an upper carrying frame pivotally attached at its rear portion to a rear portion of a lower base member, said upper carring frame comprising a cantilever carrying surface carrying a plurality of progressively sized cantilevered plates hingedly suspended from said cantilever carrying surface, said lower base member comprising a cantilever plate engaging member for engaging selected ones of said cantilevered plates according to the height to which said upper carrying frame is raised to support said upper carrying frame at a selected height and angle whereby when said upper carrying member is lifted, said cantilevered plates through gravity swing downwardly and selected ones thereof engage said cantilever plate engaging member to support said upper carrying frame at a desired angle with respect to said lower base member, and release means incorporated within said upper carrying frame to release the cantilevered plates to change the viewing height and angle of the display.

4,615,503
DELI PEGBAR APPARATUS

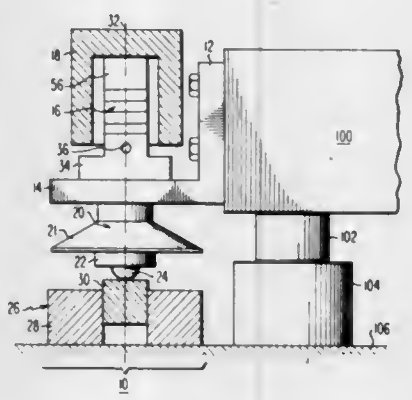
Benjamin L. Garfinkle, Alameda, Calif., assignor to Clamp Swing Pricing Co., Alameda, Calif.
Filed May 2, 1985, Ser. No. 730,662
Int. Cl.⁴ F16L *3/08*
U.S. Cl. 248—224.4 11 Claims

1. An article support and display device for use with gondola shelf fixtures comprising:
A. an elongated pegbar having a longitudinal dimension approximately equal to the spacing between the gondola shelf fixtures being used to support said pegbar and being further characterized as comprising a central section having holes configured therein for accepting support pegs and having two support regions at the extremities of the elongated pegbar for insertion within support brackets used for supporting and retaining said elongated pegbar, said support regions being further characterized in that the face of each support region is provided with a pattern of regularly spaced indents;
B. two support brackets for supporting said elongated pegbar, each support bracket characterized as possessing one or more hook means for engaging corresponding slots in said gondola shelf fixtures, an orifice for accepting a support end of said elongated pegbar and one or more screws with threaded holes in the support brackets for securing the elongated pegbar in place in engagement with the support brackets by causing said hook means to be firmly pulled against a back surface of the gondola shelf fixtures; and
C. support pegs removably insertable within the central section of said elongated pegbar.



4,615,504
ANTI-VIBRATION DEVICE

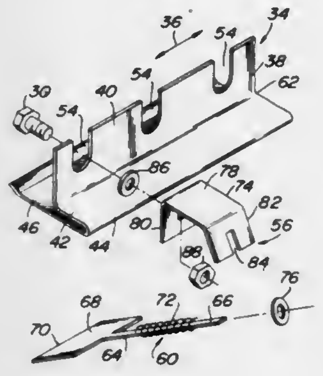
John R. Sandercock, Affoltern a/A, Switzerland, assignor to RCA Corporation, Princeton, N.J.
Filed Nov. 15, 1984, Ser. No. 671,900
Int. Cl.⁴ F16F *15/00*
U.S. Cl. 248—550 13 Claims



11. A dynamic antivibration device for reducing the vibration of an object with respect to a reference surface, said device comprising:
a bracket attached to the object;
a first piece of thermal insulating material supported by the bracket;
an electrically conductive thrust block having one surface in contact with and supported by the first insulating material;
a piezoelectric transducer in contact with another surface of said thrust block;
a second piece of thermal insulating material supported by said transducer;
a mass supported by said second piece of material; and
means for generating forces to counter the acceleration forces of the mass, said means coupled between the bracket and the reference surface and responsive to an electrical signal from said piezoelectric transducer representing the acceleration of the mass along a given axis.

4,615,505
FLUID VALVE SYSTEM

Larry D. Anson, Columbia, and Donald W. Miller, Baltimore, both of Md., assignors to Environmental Elements Corp., Baltimore, Md.
Filed Mar. 8, 1985, Ser. No. 709,922
Int. Cl.⁴ F16K *25/00*
U.S. Cl. 251—174 13 Claims

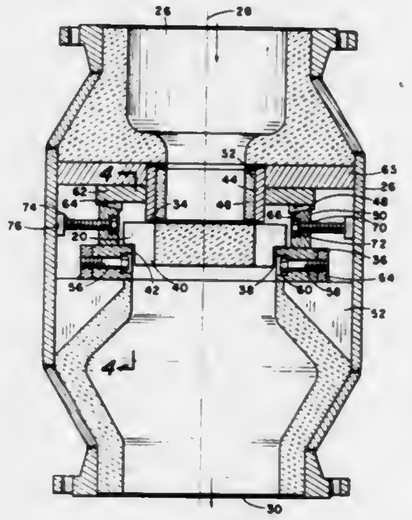


1. A fluid valve system for controlling fluid flow through a conduit passage, comprising:
(a) movable closure means defining a substantially flat plate member having opposing surfaces being reversibly displaceably internal said conduit passage for blocking fluid passing therethrough;
(b) resilient sealing means coupled to at least one wall of said conduit for contiguously interfacing with said moveable closure means throughout an extended surface area of said moveable closure means said resilient sealing means including a substantially L-shaped upper section defining a sealing wall member and a first sealing base member, and a lower section defining a second sealing base member coupled to said first sealing base member extending beneath said first sealing base member in a direction substantially normal said sealing wall member and through an opening formed in said wall of said conduit, said second sealing base member being substantially planar in contour for contiguous interfacing with a planar surface of said flat plate member of said movable closure means: and,
(c) means coupled to said conduit and said resilient sealing means for biasing said resilient sealing means into fluid sealing contact with said moveable closure means; said means for biasing including resilient force loading means for applying a force load to said resilient sealing means, said resilient force loading means including a substantially T-contoured force loading member defining a stem member and a base member, said base member for contacting said resilient sealing means and a coil spring member insertable on said stem member, and means for capturing said resilient force loading means in substantially fixed positional location with respect to said resilient sealing means, said coil spring member compressively secured between said force loading base member and said means for capturing said resilient force loading means.

4,615,506
SLIDE VALVE

James L. Houston, 4422 S. Mingo Rd., Tulsa, Okla. 74146
Filed Jun. 3, 1985, Ser. No. 740,382
Int. Cl.⁴ F16K *3/314*
U.S. Cl. 251—326 6 Claims

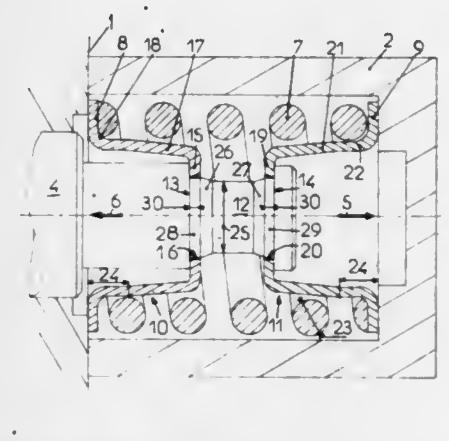
1. A slide valve comprising:
a housing having an inlet and an outlet and a longitudinal axis extending therebetween;
a gate;
a guide member supported by said housing and having a first surface supporting said gate and along which said gate may slide;
a fixed wedge fixed with respect to said housing, said fixed wedge having a first inclined surface, said fixed wedge being thicker at the end closest to said longitudinal axis;



a movable wedge having an inclined surface mating with said first inclined surface, said movable wedge having a surface opposite its inclined surface for contacting said guide member.

4,615,507
SPRING RETURN SYSTEM FOR A COMPONENT ABLE TO MOVE RECIPROCALLY

André Rousset, 8 Rue du 19 Mars 1962, Saint Priest En Jarzez, Loire, and Maurice Tardy, 20 Rue Eugene Joly, Saint Etienne, Loire, both of France
Filed Apr. 18, 1985, Ser. No. 724,657
Int. Cl.⁴ F22B *5/00*
U.S. Cl. 251—337 8 Claims



1. A spring return device comprising:
a casing having a first shoulder and a second shoulder;
a reciprocable slide at least a part of which is positioned in said casing and is reciprocable therein, said reciprocable slide comprising:
first and second shoulders, said first and second shoulders being spaced apart from one another;
a first portion extending from said first shoulder toward said second shoulder;
a second portion extending from said second shoulder toward said first shoulder; and
an intermediate portion extending between said first portion and said second portion, the radial extent of said intermediate portion being smaller than the radial extent of each of said first portion and said second portion;
first and second cup-shaped rings positioned in said casing surrounding said reciprocable slide, each of said first and second cup-shaped rings comprising:
a transverse bottom with an opening therein, each said

opening surrounding one of said first portion and said second portion of said reciprocable slide, said transverse bottom of said first cup-shaped ring being adapted to contact said first shoulder of said reciprocable slide, said transverse bottom of said second cup-shaped ring being adapted to contact said second shoulder of said reciprocable slide;

a flange extending radially outwardly from each said cup-shaped ring, said flange of said first cup-shaped ring being adapted to contact said first shoulder of said casing, said flange of said second cup-shaped ring being adapted to contact said second shoulder of said casing;

a truncated cone extending from said transverse bottom toward said flange, with the smaller end of said truncated cone being adjacent to said transverse bottom; and

a cylindrical section extending between said flange and the larger end of said truncated cone; and

a helical spring formed from a metal wire extending between said flange of said first cup-shaped ring and said flange of said second cup-shaped ring and surrounding said transverse bottom of said first cup-shaped ring, said transverse bottom of said second cup-shaped ring, and said first and second portions of said reciprocable slide.

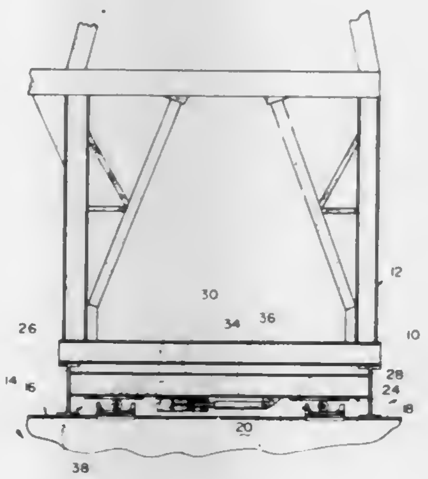
4,615,508
APPARATUS FOR SKIDDING A LOAD ON A SUPPORT

Cecil Jenkins; Leroy K. Peaster, both of Tulsa, and John C. Brittain, Sperry, all of Okla., assignors to Lee C. Moore Corporation, Tulsa, Okla.

Filed Nov. 5, 1984, Ser. No. 668,633

Int. Cl.⁴ B66F *1/00*

U.S. Cl. 254—106 **12 Claims**



1. In skidding apparatus of the type having a roller mechanism which includes at least one lifting roller for nonrotatingly supporting at least some of a load on a support and at least one skidding roller for rotatingly supporting at least some of the load while it is skidded:

a support beam having a vertical web mounted on said support below each lifting roller, said web being in substantially vertical alignment with the vertical axis of its associated lifting roller; and

a load beam having a vertical web below said load above each skidding roller, said load beam web being in substantial vertical alignment with the vertical axis of its associated skidding roller.

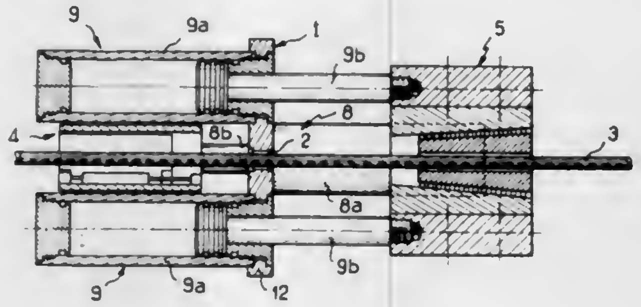
4,615,509
CONTINUOUS OPERATION LINEAR HYDRAULIC WINCH

David Biass, Geneva, Switzerland, assignor to Cibeles International Inc., Panama, Panama

Filed Oct. 23, 1985, Ser. No. 790,608

Int. Cl.⁴ B66F *3/26;* B65H *51/18*

U.S. Cl. 254—264 **14 Claims**



1. A continuous operation linear hydraulic winch, comprising a fixed frame, a first gripping assembly, a first pair of parallely disposed hydraulic jacks mounted between the frame and the first gripping assembly, a second gripping assembly, and a second pair of parallely disposed hydraulic jacks extending in a same direction as said first pair of jacks and mounted between the frame and the second gripping assembly, wherein said frame comprises a single bearing plate perpendicular to said jacks, said first gripping assembly is disposed on one side of said bearing plate and the second gripping assembly on the other side of said bearing plate, said first and second pairs of hydraulic jacks having one of their cylinders and piston rods connected to said bearing plate and the other of their cylinders and piston rods connected to a respective one of said first and second gripping assemblies.

4,615,510
DEVICE FOR TRANSPORTING PROFILES

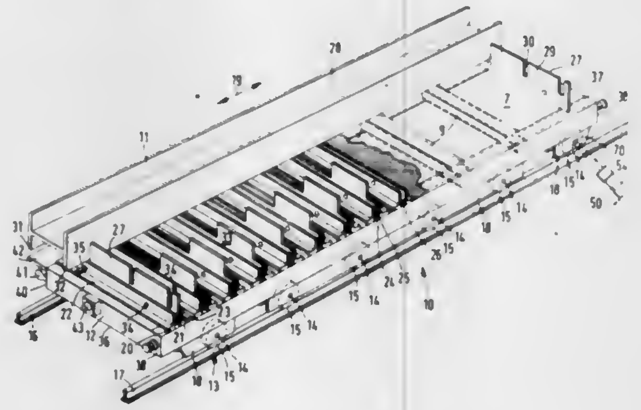
Hansfriedrich Lehmler, Bad Homburg, and Gunter Wilkens, Kelkheim, both of Fed. Rep. of Germany, assignors to Oxytechnik, Fed. Rep. of Germany

Filed Jun. 3, 1985, Ser. No. 740,637

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1985, 3428139

Int. Cl.⁴ B23K *7/00*

U.S. Cl. 266—48 **20 Claims**



1. A device for the transport of profiles such as T, U, I, angle, flat and Holland profiles in a profile processing line, particularly processing lines with marking and torch cutting equipment installed in the transport chain, as well as loading, unloading and transloading devices, the improvement being said transport device being in the form of a car which has at least one profile carrier.

4,615,511
CONTINUOUS STEELMAKING AND CASTING

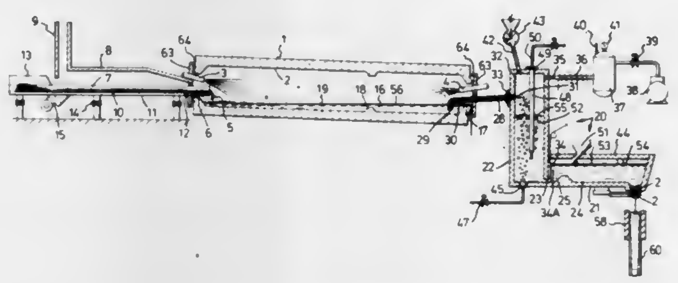
William L. Sherwood, 553 Granville Street, 5th Floor, Vancouver, B.C., Canada (V6C 1Y6)

Division of Ser. No. 351,669, Feb. 24, 1982, Pat. No. 4,456,476.

This application May 16, 1984, Ser. No. 610,885

Int. Cl.⁴ C22B *7/00*

U.S. Cl. 266—208 **14 Claims**



1. An apparatus for continuous melting, refining, degassing and casting of steel and other metals comprising, in combination:

(a) an elongated heated rotary furnace adapted for containing a bath of molten metal with axial charge and discharge end openings;

(b) charging means adapted for introducing metallic charge materials into the furnace through said charge end opening;

(c) heating means adapted for continual heating and melting of the charge whereby it fuses into said bath of molten metal;

(d) an enclosed vacuum chamber proximate the furnace discharge end adapted for enclosing a column of molten metal therein;

(e) a controlled pressure vacuum line connecting into said enclosed chamber adapted for maintaining a controlled vacuum pressure within said chamber and also withdrawing any gases evolved from molten metals within or introduced by way of any air leakage or other introduction from an external source during withdrawal;

(f) a metal withdrawal siphon tube of refractory material with the inlet end adapted for insertion through said discharge end opening down into said molten metal and the outlet end adapted for connection into said vacuum chamber, said siphon tube having an internal duct adapted for transferring molten metal from the furnace into said chamber under the influence of said controlled vacuum pressure;

(g) a continuous casting tundish having at least one submerged nozzle opening adapted for holding a casting pool of molten metal and for pouring it into a casting mold by gravity from said tundish;

(h) a submerged communication channel connecting between said withdrawal chamber and said tundish adapted for allowing flow of molten metal from said columnar pool of molten metal within said chamber into said casting pool contained in said tundish.

4,615,512
INTERNAL PRESSURIZED VEHICLE SUSPENSION STRUT ASSEMBLY

Roger E. Hoke, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

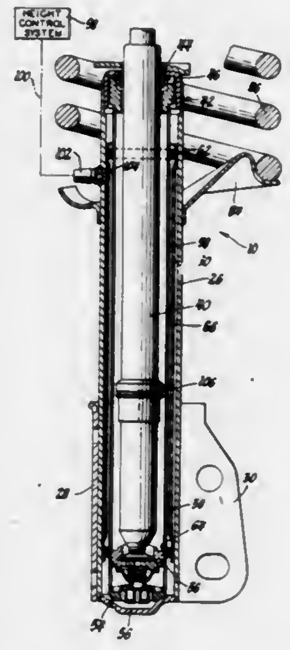
Continuation of Ser. No. 565,334, Dec. 27, 1983, abandoned.

This application Jul. 15, 1985, Ser. No. 755,889

Int. Cl.⁴ B60G *13/08;* F16F *9/18, 9/36*

U.S. Cl. 267—8 R **4 Claims**

1. A pneumatically adjustable suspension strut for controlling the height of a sprung body of a vehicle comprising an outer support tube, a suspension seat on said support tube, a helical suspension spring having a lower end mounted on said seat and having an upper end operatively connected to the body of said vehicle, a hydraulic damper with a cylinder tube having a hydraulic fluid therein operatively mounted in said support tube, a piston mounted for reciprocating movement in said cylinder tube, a piston rod attached to said piston and extending axially in said cylinder tube and through one end thereof, said support tube being disposed around said cylinder tube and cooperating therewith to form a reservoir having a hydraulic fluid therein, a sleeve of elastomeric material having opposite ends operatively connected to the internal wall of said support tube to form a pneumatically adjustable lift spring in parallel to said helical suspension spring, selectively manually lockable and releasable retainer means with a constant radius when locked for sealingly securing the upper and lower ends of said sleeve to the inner wall of said support tube to seal the ends of said sleeve so that a separate pneumatic chamber is formed between said sleeve and said support tube, and gas pressure supply and exhaust means to control the pressure in said pneumatic chamber so that said oil in said reservoir and cylinder tube is pressurized to exert a hydraulic lifting force on said piston rod and the body of the vehicle.



4,615,513
FLEXIBLE, FORCE-TRANSMITTING ELEMENT

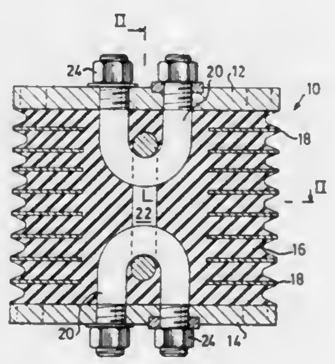
Kurt I. Thaung, and Curt I. Carlsson, both of Växjö , Sweden, assignors to Volvo BM AB, Eskilstuna, Sweden

Filed May 3, 1984, Ser. No. 606,517

Claims priority, application Sweden, May 5, 1983, 8302573

Int. Cl.⁴ F16F *1/36*

U.S. Cl. 267—63 R **6 Claims**



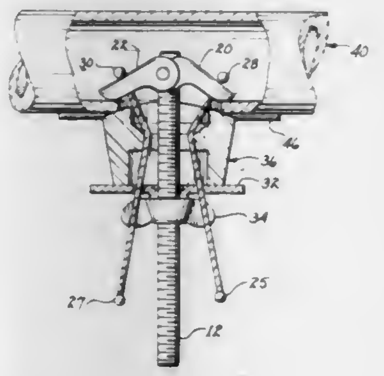
1. Flexible, force-transmitting element, especially a resilient element for transmitting compression and tensile forces between two relatively movable components, especially between an axle and the end of a bogie pivot beam pivotally supported in a vehicle frame, said element comprising two end plates which are essentially parallel when the element is unloaded, a cylindrical rubber body disposed between the end plates, and a mechanical connecting means arranged to limit the relative

separation of the end plates, characterized in that the connecting means comprises a rigid link element which consists of a single annular chain link disposed in the rubber body, said rigid link element being mounted at both ends in holder elements fixed in the respective end plates so as to be pivotable in two mutually perpendicular planes and be axially displacement in at least one of said holder elements.

4,615,514

HOLDING APPARATUS AND METHOD FOR SECURELY POSITIONING MEMBERS TO BE JOINED BY WELDING OR THE LIKE

Jerry J. Hamlin, 2356 N. 64th St., Mesa, Ariz. 85205
Filed Jan. 29, 1985, Ser. No. 696,069
Int. Cl.⁴ B25B *5/14*
U.S. Cl. 269—41 **11 Claims**



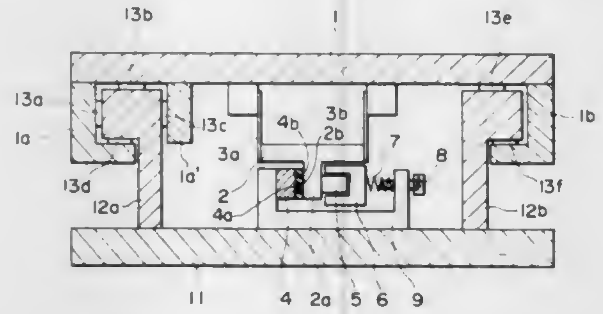
1. Holding apparatus, comprising:
a threaded shaft member;
toggle assembly means attached at one end of said threaded shaft member including first and second arm members pivotally attached to one another about a pivotal axis, said first and second arm members are jointed end to end;
collapsing means coupled to said toggle assembly means and being movably disposed about said threaded shaft member for causing said first and second arm members to be inwardly collapsed about said pivotal axis into a closed position, said collapsing means includes:
a washer means having a central aperture through which said threaded shaft member is disposed and a pair of apertures oppositely positioned through said washer member; and
collapse means connected to said first and second arm members connected to said first and second arm members of said toggle assembly means and mounted through said pair of apertures of said washer member for causing said first and second arm members to be collapsed.

4,615,515

PRECISE MOVEMENT DEVICE

Mikio Suzuta, Tokyo; Hironori Yamamoto, Chigasaki, and Kazuo Nakazawa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 14, 1984, Ser. No. 681,590
Claims priority, application Japan, Dec. 27, 1983, 58-250550
Int. Cl.⁴ B25B *1/22*
U.S. Cl. 269—73 **7 Claims**

1. A device for use in a semiconductor circuit manufacturing apparatus that includes a stationary portion and a table mounted for movement relative to the stationary portion, said device selectively resisting movement of the movable table, and comprising:
means for applying a resistance to movement of the movable table, said resistance applying means including a first member having a surface and a second member having a surface opposed to the surface of said first member, one of said first and second members being coupled to the movable table and the other of said first and second members being coupled to the stationary portion of said apparatus, said surfaces of said first and second members being contactable with each other so as to apply resistance against movement of the movable table, and said second member having a port formed in said surface thereof for discharging fluid toward said surface of said first member; and

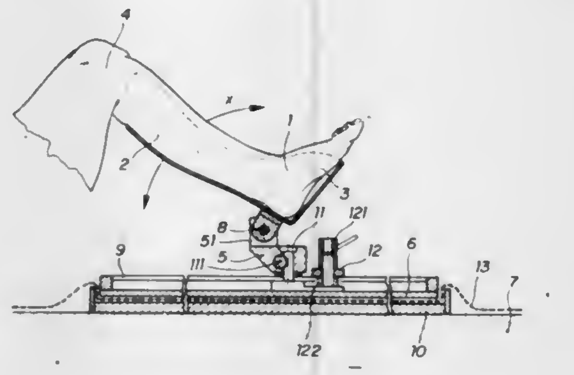


means for controlling the pressure of the fluid discharged from said port of said second member to control the resistance applied against the movement of the movable table so as to increase the resistance applied when the movable table is to be stopped from moving.

4,615,516

SPLINT FOR SURGICAL OPERATIONS ON THE KNEE

S. David Stulberg, Chicago, Ill., and Bernard Legrand, Geneva, Switzerland, assignors to Sodem Diffusion S.A., Geneva, Switzerland
Filed Sep. 16, 1985, Ser. No. 776,667
Int. Cl.⁴ A61F *5/84*
U.S. Cl. 269—328 **6 Claims**

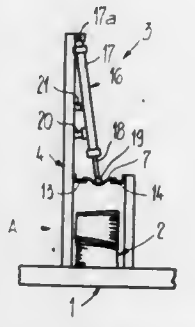


1. A splint for surgical operations on the knee of the type comprising a member for holding the ankle and the foot, immobilising the leg in a folded position in a substantially vertical plane, and a fastening means connecting the holding member to a stand enabling the splint to be rested on the operating table, the fastening means being articulated about a substantially horizontal pin enabling the holding member to rock in the vertical plane, on the one hand, and being fixed on the stand by means of a longitudinal slide groove formed on the stand along the axis of projection of the leg and allowing travel and positioning of the fastening means, on the other hand, wherein the stand fits in a support integral with the operating table and wherein the fastening means comprises a substantially vertical pivot allowing lateral deflection of the holding member.

4,615,517

APPARATUS FOR PLACING FLAT COVER ELEMENTS, PREFERABLY COVER SHEETS, ON STACKS OF FLAT ARTICLES, PREFERABLY PRINTED PRODUCTS

Hans-Ulrich Stauber, Grüt, Switzerland, assignor to Ferag AG, Hinwil, Switzerland
Filed Sep. 23, 1985, Ser. No. 778,810
Claims priority, application Switzerland, Sep. 24, 1984, 4560/84
Int. Cl.⁴ B65H *39/02, 7/02*
U.S. Cl. 270—58 **21 Claims**



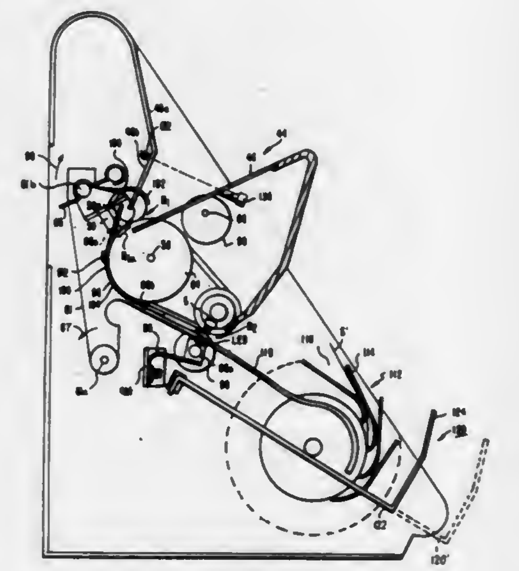
1. An apparatus for placing at least a flat cover element, preferably a cover sheet, onto a stack of flat articles, preferably printed products, comprising:
a placing element displacable between a standby position and an operative position;
conveying means for conveying the stack of flat articles along a predetermined conveying path past said placing element;
control means for controlling the displacement of said placing element between said standby position and said operative position;
said control means initiating, on arrival of one of said stacks of flat articles, said displacement of said placing element towards said operative position in order to thereby place at least said flat cover element from a predetermined waiting position onto said one stack of flat articles and which one stack is conveyed past said placing element along said predetermined conveying path by said conveying means;
said control means, after placement of at least said cover element onto said one stack, initiating a return movement of said placing element toward said standby position;
said placing element assuming a predetermined rest position;
said placing element, in said operative position, being transiently deflectable from said predetermined rest position by means of said one stack of flat articles;
said control means containing detecting means responsive to said deflection of said placing element from its rest position; and
said detecting means of said control means, on response to said deflection of said placing element from its rest position, initiating said return movement of said placing element toward said standby position.

4,615,518

DOCUMENT HANDLING AND COUNTING APPARATUS

John Di Blasio, Medford, N.J., assignor to Brandt, Incorporated, Bensalem, Pa.
Filed Dec. 14, 1982, Ser. No. 449,665
Int. Cl.⁴ B65H *3/06*
U.S. Cl. 271—10 **14 Claims**

1. Apparatus including feed means for separating sheets delivered to said feed means and advancing sheets one at a time at spaced intervals to facilitate accurate counting of said sheets comprising:
an infeed path along which sheets are advanced toward said feed means, said feed means comprising:
at least one feed roller for rotation about first axis;
at least one upper acceleration roller free-wheelingly mounted to rotate about said common axis and being spaced from said feed roller;
a stripper member arranged to form a first nip with said feed roller and cooperating with said feed roller to advance sheets one at a time in a forward feed direction along said infeed path;
at least one lower acceleration roller mounted to rotate about a second axis parallel to and spaced from said first axis;
at least one O-ring entrained about said upper and lower acceleration rollers;

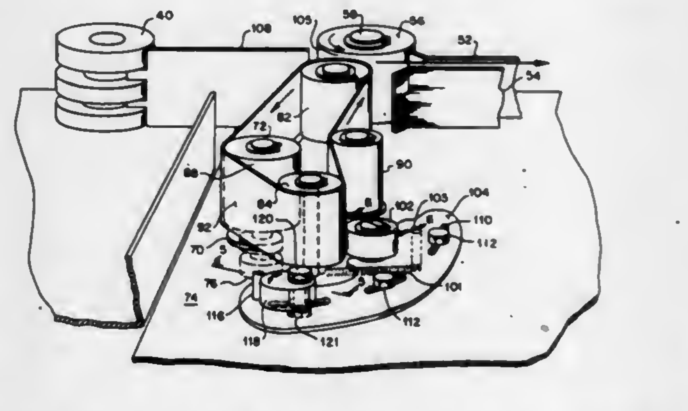


at least one rotatable cooperating roller mounted adjacent to said lower acceleration roller and rollingly engaging said O-ring to form a second nip for accelerating a sheet as it passes through the secondnip and beyond said feed nip for advancing sheets toward an outfeed location; and
curved guide means having a smooth continuous surface extending between said first nip and said second nip and cooperating with said O-ring for defining a guideway for movement of said sheets therealong so that said sheets are not urged into a curved shape transverse to the direction of movement of the sheets but remain substantially flat as they pass through said first nip towards the second nip.

4,615,519

MAIL SEPARATING DEVICE

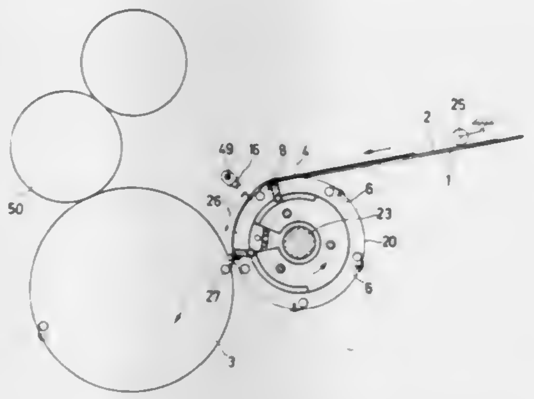
Richard S. Holodnak, Stratford, and Clinton E. Hooper, Brookfield, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Jan. 22, 1985, Ser. No. 692,953
Int. Cl.⁴ B65H *3/52*
U.S. Cl. 271—122 **8 Claims**



1. A device for separating and feeding a vertically oriented mail piece from a plurality of vertically oriented mail pieces moving along a path of travel through a mail processing machine, said device comprising:
A. guide means defining a path of travel for vertically oriented mail pieces,

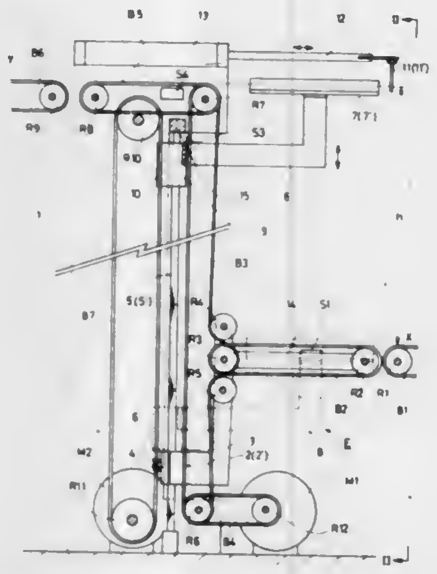
B. feeding means disposed adjacent said guide means for feeding mail pieces seriatim along said path of travel,
C. separating means disposed adjacent said guide means but on the opposite side of said path of travel from said feeding means for separating multiple mail pieces so that only a single mail piece is fed by said feeding means, said separating means comprising
  (1) a support member pivotally mounted adjacent said feeding means, said support member having a first portion disposed closely adjacent to said feeding means and having a second portion disposed remote from said feeding means,
  (2) a roller rotatably mounted on each portion of said support member,
  (3) a drive roller mounted on the pivot axis of said support member,
  (4) an endless belt extending around said first mentioned rollers and said drive roller,
  (5) means for driving said drive roller in a direction such that the outer surface of said belt moves in a direction opposite to that of the adjacent driving surface of said feeding means, and
D. means for adjusting a predetermined limit position of said pivotal movement of said support member for maintaining a predetermined minimum gap between said outer surface of said belt and said adjacent driving surface of said feeding means regardless of the extent of wear on said belt or said feeding means.

4,615,520
APPARATUS AND METHOD FOR ALIGNING SHEETS
Willi Jeschke, and Gerhard Pollich, both of Heidelberg, Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany
Filed Mar. 26, 1984, Ser. No. 593,648
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1983, 3311198
Int. Cl.⁴ B65H *9/10, 9/04, 9/20*
U.S. Cl. 271—227 **3 Claims**



1. Device for aligning sheets fed by a sheet feeder to a sheet processing machine, comprising an aligning cylinder disposed downstream of the sheet feeder in sheet travel direction through the sheet feeder, suction pull bars mounted in said aligning cylinder, drive means for displacing said suction pull bars transversely to the sheet travel direction, and positioning means for controlling said drive means, said aligning cylinder being disposed between a feed table and a pregripping cylinder, and said suction pull bars being disposed in said aligning cylinder symmetrically distributed over the circumference thereof, and including a plurality of front lays located on said aligning cylinder, each of said front lays being operatively associated with a respective one of said suction pull bars, said positioning means having parts thereof disposed above said aligning cylinder and directly upstream of said pregripper cylinder in sheet direction of the sheet feeder, said positioning means comprising two sensors axially displaceably mounted on a cross member above said aligning cylinder, said cross member being supported by said side walls of the machine.

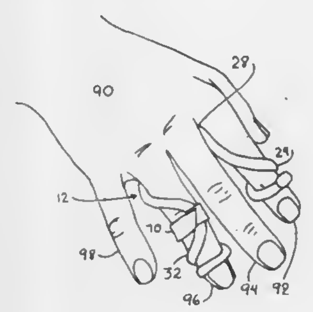
4,615,521
ELEVATOR BETWEEN TRANSFER PASSAGES
Noriaki Mori, Hikone, Japan, assignor to Dainippon Screen Manufacturing Co., Ltd., Kyoto, Japan
Filed Mar. 2, 1984, Ser. No. 585,470
Claims priority, application Japan, Apr. 30, 1983, 58-65891[U]
Int. Cl.⁴ B65H *5/00*
U.S. Cl. 271—264 **3 Claims**



1. An apparatus for transferring one at a time sheet-like articles, such as wafers for electronics circuits, from a first processing station at first vertical level to a second processing station at a second vertical level, the apparatus comprising:
first horizontally disposed conveyor belt means at the first vertical level;
second horizontally disposed conveyor belt means at the second vertical level;
means for driving the first and second horizontally disposed conveyor belt means in synchronism with one another;
an elevator platform disposed in alignment with the first horizontally disposed conveyor belt means, the elevator platform having a pair of spaced portions disposed on opposite sides of the first horizontally disposed conveyor belt means and being coextensive with the first conveyor belt means, wherein the spaced portions support the sheet-like articles only adjacent the edges thereof;
means for moving the elevator platform from the first vertical level to the second vertical level to carry sheet-like articles from the first vertical level to the second vertical level;
pusher means for pushing the sheet-like articles from the elevator platform onto the second horizontally disposed conveyor belt, the pusher means being aligned between the spaced platform portions of the elevator platform and having a width less than the space between the platform portions;
an additional second level, horizontally disposed conveyor belt aligned with the second horizontally disposed conveyor belt means at the second vertical level for receiving the sheet-like articles from the second horizontally disposed conveyor belt means for processing at the second processing station for treating the sheet-like article;
an additional first-level horizontally disposed conveyor belt aligned with the first horizontally disposed conveyor belt means for moving the sheet-like articles from processing at the first processing station for treating the sheet-like article onto the first horizontally disposed conveyor belt, and
sensor means for detecting the presence of a sheet-like article at the first and second levels, and for detecting the position of the platform relative to the levels whereby signals are provided for operating the drive means for the first and second horizontally disposed conveyor belt means

and for operating the drive means for the elevator platform.

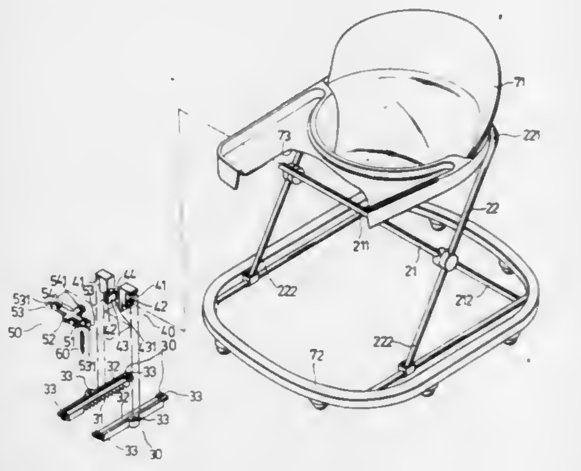
4,615,522
THERAPEUTIC FINGER EXERCISE DEVICES
Harold G. Plough, 803 E. New York St., Aurora, Ill. 60505
Filed Jul. 13, 1984, Ser. No. 630,534
Int. Cl.⁴ A63B *5/00*
U.S. Cl. 272—67 **11 Claims**



1. A finger exercise device wherein said device includes:
a. a generally single-piece, stiff, wire frame having finger holding means at each end of said wire frame for holding two non-adjacent fingers in a substantially fixed position while permitting other fingers to exercise and providing good exercise means for fingers of a person desiring to develop manual dexterity said finger holding means including a rod ring and an arc ring;
b. said wire frame has a parallel bar capable of being held parallel to an exercise surface at a first end of said wire frame;
c. said parallel bar has, as a continuation of said wire frame, said rod ring adjacent to said parallel bar;
d. said rod ring has, as a continuation beyond said parallel bar, a rod adjacent to said rod ring, said rod having sufficient length to extend along a finger, wherein a rod plane containing said rod and tangential to said ring is substantially perpendicular to a ring plane containing said ring;
e. said rod has, as a continuation beyond said rod ring, a loop, said loop having sufficient length to extend said rod along a second finger and under said second finger, wherein said loop occupies a loop plane substantially parallel to said ring plane;
f. said loop has, as a continuation beyond said rod, an arc, wherein said arc occupies substantially the same plane as said rod plane;
g. said arc has, as a continuation beyond said loop, said arc ring, wherein said arc ring occupies arc plane and said arc plane is between said ring plane and said loop plane;
h. said rod ring, said loop, and said arc ring are on the same side of said rod plane
i. said said arc is capable of being positioned on a back side of a hand; and
j. said loop is oppositely disposed from said arc and on a palm side of a hand.

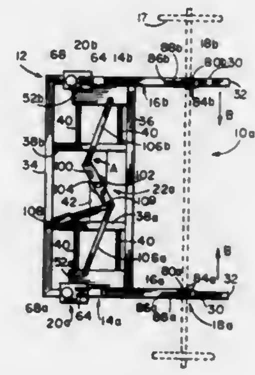
4,615,523
CHILD'S WALKER WITH HEIGHT ADJUSTMENT APPARATUS
Ming-Yaw Chen, 64 Tai Ping Rd., Tai Chung, Taiwan
Filed Jun. 19, 1985, Ser. No. 746,557
Int. Cl.⁴ A61H *3/00;* **A47D** *13/04*
U.S. Cl. 272—70.3 **3 Claims**

1. A walker with height adjustment apparatus comprising:
a seat;
a slidable base;
two U-shaped tubes pivotally connected to each other in a crosswise arrangement and disposed between said seat and said slidable base, said U-shaped tubes each having a central portion and ends opposite said central portion, said ends being pivotally connected to said slidable base, said central portion of one of said U-shaped tubes being pivotally connected to one side of said seat, said central portion of the other of said U-shaped tubes being movably engaged to the underside of and opposite side of said seat;
two plates secured on said underside of the opposite side of said seat in a parallel arrangement, with each plate having an indented portion formed at its underside;
two sliding members provided on said movable central portion, and slidably engaged with said plates respectively;
a controlling member pivotally connected with said movable central portion and having an engaging portion with



an operating portion opposite to said engaging portion, and two protuberances extended upwards; and
a spring member arranged between said sliding members and said engaging portion of said controlling member for biasing said controlling member to rotate in a direction that causes said protuberances to move upwards to engage with said indented portions respectively, and wherein when said operating portion of said controlling member is manually pressed, said controlling member will rotate in the opposite direction so that said protuberances disengage with said indented portions against the bias of said spring member.

4,615,524
ADJUSTABLE BARBELL EXERCISE RACK
James W. Sutherland, Hastings, Mich., assignor to P. Wilcox; D. Soden and T. Barnes, all of Marion, Iowa
Filed Aug. 22, 1983, Ser. No. 525,128
Int. Cl.⁴ A63B *13/00*
U.S. Cl. 272—123 **16 Claims**



1. A barbell exercise rack, comprising:
a support base;
a support stand secured to said support base, and upstanding therefrom in a generally vertical orientation;
first and second support arms, having inner and outer ends, and being spaced apart laterally a distance sufficient to accommodate a weight lifter bodily positioned therebetween; said support arms having the inner ends thereof connected with said support stand, extending outwardly therefrom along a generally horizontal orientation, and

being wholly supported in a cantilevered fashion by said support stand; the outer ends of said support arms having racks connected therewith adapted for selectively holding and supporting a barbell thereon a spaced apart distance from said support stand, while allowing the barbell to be lifted freely therefrom;

said arms are pivotally mounted to said support stand at associated pivot points, said arms pivoting about respective ones of said pivot points in a generally horizontal plane;

means for mechanically converging and diverging the outer ends of said support arms, and thereby adjusting the lateral position of said racks with respect to the barbell to accommodate various weight lifters; and

said converging and diverging means including means for selectively pivoting said arms about said pivot points to converge and diverge said outer ends.

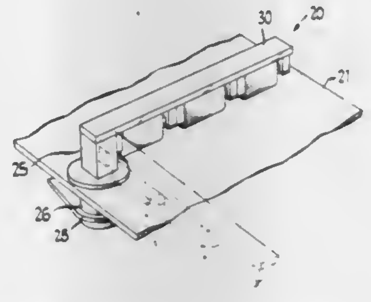
4,615,525
SPINNING TARGET ASSEMBLY

Max Wiczer, Skokie, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Apr. 27, 1984, Ser. No. 604,511

Int. Cl.⁴ A63B *67/14*

U.S. Cl. 273—127 D **8 Claims**



1. A spinning target assembly for a pinball game having a playfield board in which a pinball moves and strikes said target, comprising an upstanding post on the playfield board, a bridge supported solely by said post and positioned above said playfield board, and at least one spinning target unit hanging downwardly from said bridge, said spinning target unit including support means depending from said bridge, and a target member mounted on said support means for complete rotation about an axis disposed generally parallel to the playfield board.

4,615,526
COMPUTING GOLF TRAINER WITH MAGNETIC SENSOR

Yoshinori Yasuda; Akio Takase; Koji Ogawa; Takao Tsutsumi, and Hiroaki Taguchi, all of Gunma, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 427,379, Sep. 29, 1982, abandoned. This application Oct. 25, 1985, Ser. No. 792,625

Claims priority, application Japan, Sep. 30, 1981, 56-155963; Feb. 19, 1982, 57-25286; Feb. 22, 1982, 57-23719; Feb. 22, 1982, 57-23723; Mar. 1, 1982, 57-31898; Mar. 1, 1982, 57-31899

Int. Cl.⁴ A63B *69/36*

U.S. Cl. 273—183 A **5 Claims**

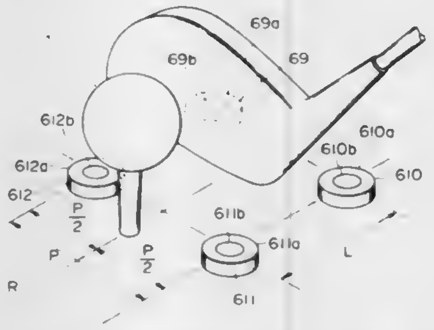
1. A gold trainer comprising:

sensor means including a plurality of sensors each producing a voltage output signal indicative of swing condition when the head of a golf club passes thereover, said plurality of sensors being symmetrically disposed on opposite sides of an ideal swing line of said golf club and being spaced by the same distance with respect to said ideal swing line on said opposite sides thereof;

level processing means comprising peak holding circuits each holding a peak value of the voltage output signal produced by the corresponding sensor, a multiplexer circuit for subjecting outputs from said peak holding circuits to parallel-to-serial conversion, an analog-to-digital converter for subjecting outputs from said multiplexer circuit to analog-to-digital conversion, and a first control circuit for controlling said peak holding circuit, multiplexer and analog-to-digital converter;

zero-crossing discrimination means comprising a plurality of zero-crossing discrimination circuits each detecting a point crossing a zero level in the output signal from each of said sensors to produce a zero-crossing output signal, and detecting means for detecting the time difference between the zero-crossing outputs; and a second control circuit for controlling said zero-crossing discrimination circuits and said detecting means;

calculation means for calculating at least one of (1) the swing club head orbit and (2) an impact position of a ball relative to a club face, based on the output signal from said analog-to-digital converter, and for calculating at least one of (1) the swing velocity, (2) the carry of the ball, (3) the face angle of the club head, (4) the flying direction of the hit ball, (5) the distance from a desired target, (6) a hitting condition and (7) the judgment of whether the hit ball goes out of bounds or not, based on the output from said zero-crossing discrimination means, to produce an output signal; and



display means for displaying the calculation result from said calculation means,

wherein said sensor means includes four sensors, and wherein the calculation of the swing club head orbit is calculated based on each of the differences between the outputs of the respective paired sensors disposed on said opposite sides, the impact position is calculated based on the difference between the outputs of one of the two paired sensors which are located near the ball to be hit, wherein the club head velocity, the carry of the ball and the hitting condition are calculated based on the outputs of the other of the two paired sensors which are located toward the flying direction of the golf ball, and wherein the face angle, the flying direction, the distance from the desird target and the judgment of the ball position are calculated based on the outputs of said four sensors.

4,615,527
OIL GAME OF SKILL AND CHANCE

Robert J. Moss, Rte. #1, Box 8-G, Hoxie, Kans. 67740

Filed Jul. 23, 1984, Ser. No. 633,486

Int. Cl.⁴ A63F *3/00*

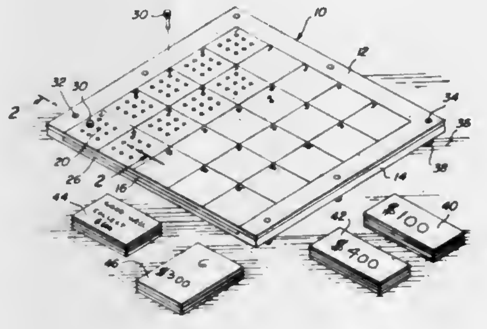
U.S. Cl. 273—278 **5 Claims**

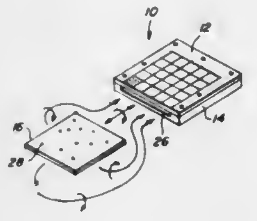
1. A game of skill and chance, comprising in combination:

(a) a square upper deck with a multiplicity of apertures;

(b) a square lower deck with a multiplicity of apertures which exactly match the configuration of said apertures in said upper deck and which is permanently fixed in position relative to said upper deck;

(c) a square sliding deck with a multiplicity of apertues less than the number of apertures in the upper and lower decks, wherein said sliding deck is sandwiched between said upper deck and lower deck; wherein said apertures that are present in said sliding deck are in perfectly aligned relationship with apertures in said upper deck and said lower deck; said apertures in all of said decks being subdivided into identical clusters of apertures wherein each of said clusters of apertures are rotationally symmetrical with respect to the center of each of said clusters and each of said clusters are spaced apart from the next cluster a greater distance than the spacing of the apertures within a cluster, said clusters of apertures being arranged such that all of said clusters are rotationally symmetrical with respect to a centrally located cluster, whereby said sliding deck can be rotated in any multiple of 90 degrees and inverted any number of times and upon reinsertion is still in alignment with the apertures in said upper and lower decks;





(d) a sliding deck track which permits said sliding deck to be inserted, removed, rotated, inverted, and reinserted; and

(e) at least one cylindrically shaped playing piece which is inserted into any of said apertures in said upper deck; wherein said playing piece will pass through said sliding deck into said lower deck if an aperture has been provided in said sliding deck; whereby an insertion of said playing piece may be scored by virtue of whether or not it may be completely inserted.

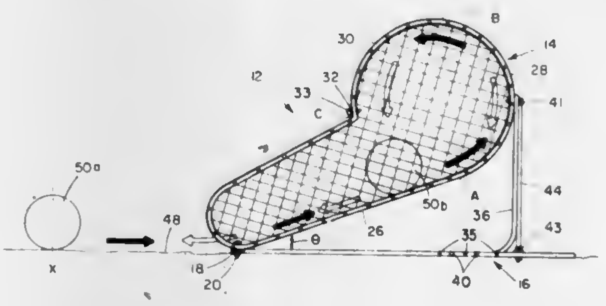
4,615,528
SOCCER TRAINING DEVICE

Henry A. York, 610 Range Rd., Palestine, Tex. 75801

Filed Feb. 8, 1985, Ser. No. 699,646

Int. Cl.⁴ A63B *69/00*

U.S. Cl. 273—396 **22 Claims**



1. A soccer training device, comprising:

a frame;

means for supporting said frame. said frame support means including a horizontal base; and

means connected to said frame for deflecting a kicked or thrown ball, said frame and ball deflection means defining a partially enclosed pocket comprising a pair of opposed side walls, a bottom intermediate said side walls, a rear wall, and an eave, said eave terminating in a cross member, a top of said frame having a height relative to said horizontal base greater than a height of said cross member relative to said horizontal base, said pocket shaped so as to permit said ball to return to said bottom after contacting an inside of said eave.

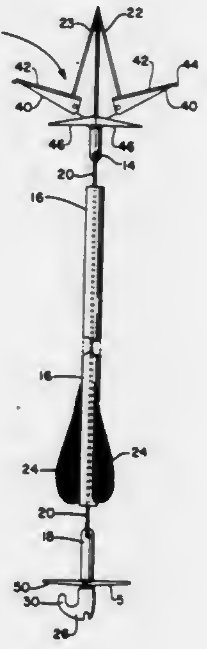
4,615,529
HUNTER'S ARROW

Rodolfo S. Vocal, P.O. Box 637, Mansfield, Ohio 44901-0637

Filed Jan. 21, 1986, Ser. No. 820,127

Int. Cl.⁴ F41B *5/02*

U.S. Cl. 273—421 **5 Claims**



1. A hunter's arrow comprising

(a) a sectional shaft having separable forward and rear sections, and means for linking said sections after separation;

(b) an arrowhead comprising a plurality of blades,

(c) a tail piece having means for receiving a bowstring and having at least one projection capable of snagging an object after the arrowhead has entered the body of an animal;

(d) a plurality of pivoted sheaths which in their closed position overlie the blades on the arrowhead and in their open position expose said blades; and

(e) at least one flap pivotally mounted in the forward section of said shaft, said flap in its open position resisting removal of the arrowhead from an animal once the arrowhead has entered an animal.

4,615,530
METHOD OF SEALING BETWEEN RELATIVELY MOVABLE COMPONENTS

John G. Powell, Northridge, Calif., assignor to Southern California Edison Company, Inc., Rosemead, Calif.

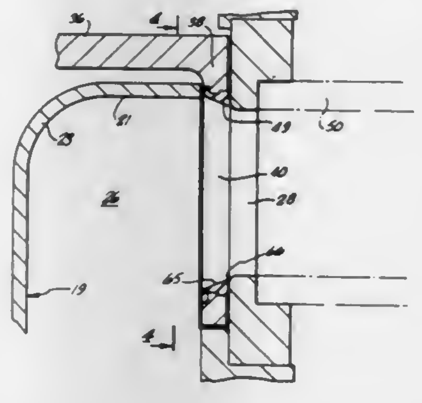
Division of Ser. No. 480,851, Mar. 31, 1985, Pat. No. 4,558,656. This application Aug. 16, 1985, Ser. No. 766,278

Int. Cl.⁴ F16J *15/32;* **G01K** *7/04*

U.S. Cl. 277—1 **5 Claims**

1. A method of establishing a seal between spaced relatively high-speed moving components, comprising locating between the components a sealing material having a low friction coefficient, ability to cold flow, and hardness less than that of a component against which it moves, the seal material being slightly larger than the space between the components, moving the components relative to each other towards a speed approaching normal operational speed between the components, heating the components and seal to a temperature higher than normal operating temperature to form an effective sealing

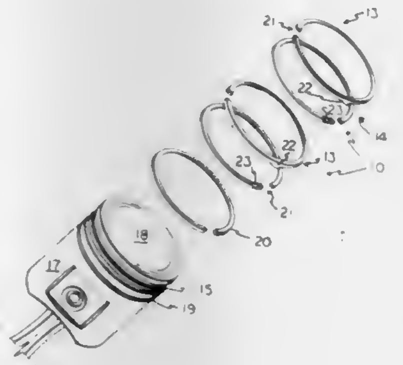
action under temperature conditions higher than at a normal operational speed and thereafter removing the heat whereby a requisite sealing action is attainable for normal operating temperature and operational speed.



4,615,531

DOUBLE RING PISTON SEALING ARRANGEMENT

George D. Green, 0603 County Rd. 221, Rifle, Colo. 86150
Filed Feb. 19, 1985, Ser. No. 702,780
Int. Cl.⁴ F16J *9/16*
U.S. Cl. 277—216 **3 Claims**



1. An improved dual ring sealing arrangement for a piston having at least one circumferential groove formed therein, wherein the sealing arrangement consists of:

a first sealing ring having a gap and generally flat top and bottom surfaces, wherein one of said surfaces is provided with a single recess proximate said gap; and,

a second sealing ring having a gap, and generally flat top and bottom surfaces, wherein one of said surfaces is provided with a single protrusion spaced a substantial distance form said ring gap and dimensioned to matingly engage said single recess in said first sealing ring.

4,615,532

LOCKING BALLS FOR LOGGING CARRIAGE

Cleveland J. Biller, and David D. Johnson, both of Morgantown, W. Va., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Sep. 14, 1984, Ser. No. 650,587
Int. Cl.⁴ F16G *11/00*
U.S. Cl. 279—32 **1 Claim**

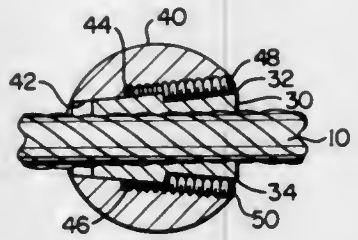
1. In the combination of a ball and a braided cable, means for locking the ball in position with respect to said cable, the exterior surface of said cable including spirally extending grooves formed by the braids,

said cable being elongated and projecting through a cone shaped aperture in said ball, said aperture extending completely through the ball with its axis extending substantially coextensively with that of the cable, screw threads being formed in the surface of the cone shaped aperture,

said locking means comprising a wedge, said wedge including an internal surface configured to partially circumscribe the cable,

means including the threads of the aperture and the external surface of said wedge for (1) compressing the wedge on the cable while in the aperture while (2) at the same time exerting outward pressure on the cone shaped surface of the aperture,

serrations on the surface of the wedge in engagement with the cable, said serrations being configured to mate with the grooves in the surface of said cable,



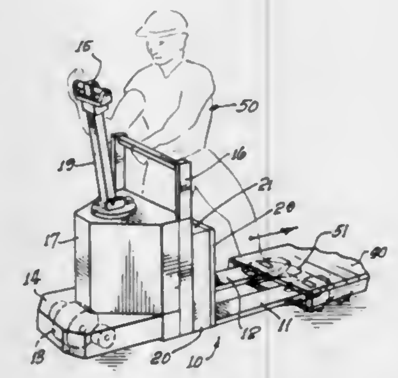
the wedge extending almost completely around the cable except for a single, longitudinally extending split allowing the wedge to expand and contract radially,

a pair of machine threaded screws, each of said screws being threaded into a generally circular opening formed by a threaded depression in the surface of the cone shaped aperture and an oppositely extending depression in the surface of the wedge, each said circular opening having an axis converging toward said cone axis in a direction toward the smaller end of the cone, said depressions being disposed on opposite sides of said cone.

4,615,533

METHOD AND APPARATUS FOR IMPROVED OPERATION OF PALLET TRUCKS

Daniel W. Sewell, P.O. Box 2592, Sparks, Nev. 89432
Filed Mar. 4, 1985, Ser. No. 707,652
Int. Cl.⁴ B62D *33/08*
U.S. Cl. 280—43.12 **3 Claims**

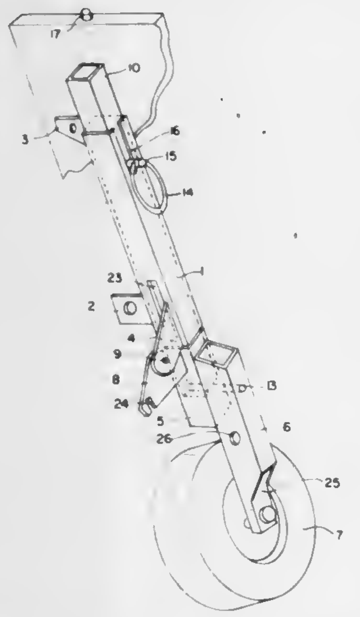


1. In the operation of a pallet truck having power supply means; a driving wheel bearing upon an operating surface associated with said power supply means; two forks, each comprising an elongated member associated with said power supply means at a first end and carrying a wheel normally in contact with said operating surface adjacent a second end at a spaced distance from each other, and suitable to be inserted into a cargo pallet having a top cargo carrying platform and a bottom platform to rest upon the operating surface when not being transported, and with an opening on one side suitable to receive said forks between said top and bottom platforms: the method of lifting the ends of the forks having wheels adjacent said ends for insertion of said forks into, or withdrawal of said forks from, an opening between said top and bottom platforms comprising applying a pressure device intermediate said drive wheel and the wheels adjacent the second end of said forks, wherein the pressure device is a slidable wheel which, when forced downwardly causes the weight of the pallet truck to be carried by the drive wheel and the slidably mounted wheel during insertion into or withdrawal from said pallet of said forks and wherein the slidably mounted wheel is activated by hydraulic fluid means normally used in cooperation with said power supply means to raise or lower said forks in relation to the operating surface in such manner as to raise or lower said pallet and wherein during the activation of the slidable mounted wheel the power to elevate the forks (except by the slight elevation caused by the lifting of the truck itself by the slidably mounted wheel) is made inoperative, and wherein the pallet truck is caused to be inoperable at high speeds during such time as the slidably mounted wheel is exerting lifting pressure by being forced downward against the operating surface.

4,615,534

MOVABLE AND FOLDABLE WHEEL SUPPORT PARTICULARLY FOR RUBBER BOATS

René H. Blain, Les Glycines B3 24-30, rue du 11 novembre, Neuilly sur Marne, France
PCT No. PCT/FR84/00068, § 371 Date Nov. 20, 1984, § 102(e) Date Nov. 20, 1984, PCT Pub. No. WO84/03678, PCT Pub. Date Sep. 27, 1984
PCT Filed Mar. 19, 1984, Ser. No. 673,369
Claims priority, application France, Mar. 22, 1983, 83 04669
Int. Cl.⁴ B62B *1/04*
U.S. Cl. 280—47.13 B **6 Claims**



1. A retractable wheel support adapted to be mounted on a chassis, comprising:

a first tube adapted to be fixed along said chassis, the first tube having a proximal end and a distal end, the first tube having an aperture at the distal end;

a second tube movably mounted with respect to the first tube such that the first and second tubes are alignable at the distal end, the first and second tubes having corresponding internal cross-sections;

an assembly of two fins, one of the fins extending from a wall of the first tube at said distal end adjacent a cut-out in said wall of the first tube, a second of the fins extending from a wall of the second tube, the two fins being pivotally connected and the second fin having a notched end that extends into the cut-out when the first and second tubes are pivoted toward one another, out of alignment;

a further tube dimensioned to slide inside the first and second tubes through said aperture, a proximal end of said further tube having a manually-engagable member for raising the further tube from the second tube to allow pivoting of the first and second tubes, and a distal end of said further tube being adapted for cooperating with the notched end of the second fin when the first and second tubes are folded, the further tube being thereby adapted for locking the first and second tubes in aligned position and in folded position;

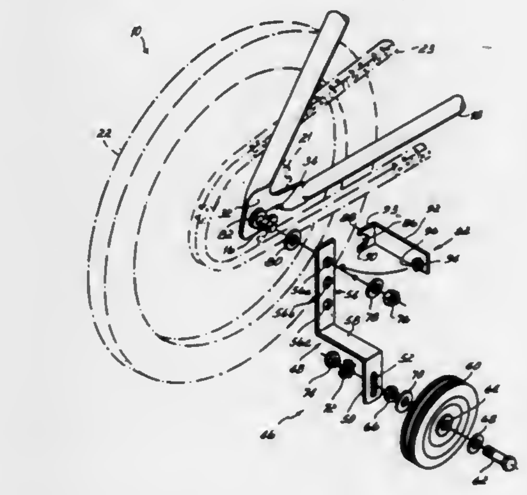
at least one pulling member for controlling pivoting of the first and second tubes; and

a wheel mounted with respect to said second tube.

4,615,535

BICYCLE TRAINING WHEEL ASSEMBLY

David K. McMurtrey, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Oct. 11, 1984, Ser. No. 659,579
Int. Cl.⁴ B62H *1/10*
U.S. Cl. 280—293 **5 Claims**



1. A training wheel assembly adapted to mount a training wheel to bicycles having a rear wheel axle and differing configurations of rear frame members, said assembly comprising:

an elongated bracket having a lower end portion mounted to said training wheel, and an apertured upper end portion adapted to be mounted over a rear wheel axle of a bicycle;

a brace arm having an aperture in one end adapted to be mounted over said rear wheel axle, said brace arm having an opposite end formed with a slot defined between a pair of spaced fingers, said fingers being adapted to embracingly engage a rear frame member of a bicycle;

mounting means for non-rotatably securing said brace arm to said elongated bracket, said mounting means being adjustable to vary the angular position of said brace arm relative to said bracket so as to align said spaced fingers of said brace arm with varying angular position rear frame members; and

said mounting means comprising at least one regular polygon-shaped aperture formed in one of said upper end portion of said bracket and said brace arm, and a regular polygon-shaped projection extending outwardly from the other of said upper end portion of said bracket and said brace arm, said projection being adapted to be inserted within said aperture to prevent rotation of said brace arm relative to said bracket, the angular position of said brace arm relative to said bracket being adjustable for mounting said spaced fingers to a frame of a bicycle by removing said projection from said aperture, rotating said brace arm to align said spaced fingers thereof with the frame member and then reinserting said projection within said aperture.

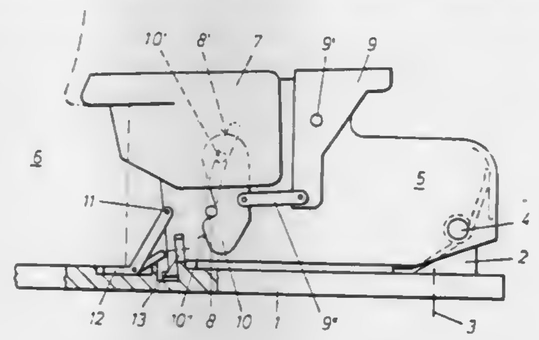
4,615,536

HEEL HOLDER

Karl Stritzl; Henry Freisinger, both of Vienna, and Franz Luschnig, Traiskirchen, all of Austria, assignors to TMC Corporation, Baar, Switzerland
Filed Jan. 17, 1985, Ser. No. 692,280
Claims priority, application Austria, Jan. 20, 1984, 186/84
Int. Cl.⁴ A63C *9/08*
U.S. Cl. 280—631 **14 Claims**

10. A heel holder, comprising: a base plate; a binding hous-

ing and means supporting said binding housing for generally vertical movement relative to said base plate between a downhill skiing position adjacent said base plate and a release position spaced above said base plate, said binding housing having thereon a down-holding member engageable with an upper side of a sole of a ski boot; releasable locking means for yieldably resisting upward movement of said binding housing away from said downhill skiing position; a stepping spur supported on said binding housing at a location spaced below said down-holding member for movement between a stepping-in position and a released position, said stepping spur having a portion which can engage an underside of a sole of a ski boot and movement of said stepping spur from its stepping-in position to its released position effecting approximately downward movement of said portion thereof away from said down-holding member; and holding means for releasably holding said stepping spur in its stepping-in position when said binding housing is in said release position and during movement of said binding housing away from said release position toward said downhill skiing position, including a locking member supported on said stepping spur for movement between a locking position in which said locking member obstructs movement of said stepping spur away from its stepping-in position and a release position in which said stepping spur is free to move away from its stepping-in position toward its released position, said holding means further including means for moving said locking member away from its locking position toward its release position as said binding housing moves from its release position to its downhill skiing position.



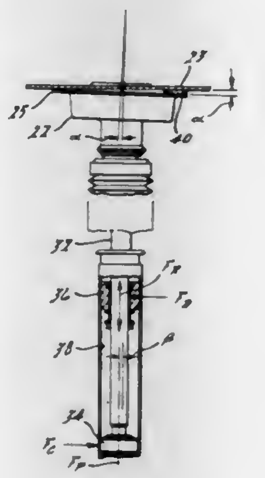
4,615,537
REDUCED FRICTION AUTOMOTIVE SUSPENSION STRUT MOUNTING

James J. Damon, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 21, 1984, Ser. No. 684,898

Int. Cl.⁴ B60G *11/42*

U.S. Cl. 280—668 **5 Claims**



1. An automotive vehicle suspension comprising:
a wheel carrier;
a strut comprising:
(1) a working cylinder rigidly attached to said wheel carrier;
(2) a piston slidably carried within said working cylinder; and
(3) a piston rod comprising a lower end attached to said piston and an upper end attached to the chassis of said automotive vehicle; and
means for mounting said strut so as to urge the locus of intersection of the longitudinal axes of said piston rod and said working cylinder in a direction outboard of said vehicle, whereby operating friction within said strut will be reduced, said means for mounting said strut comprising a plate for mounting the upper end of said pistion rod to said chassis, said plate having a base which is canted so as to urge the piston rod outboard of said vehicle at a predetermined angle of rotation about an axis which is generally parallel to the longitudinal centerline of the vehicle.

4,615,538
ELASTICALLY FLEXIBLE PIVOT BEARING FOR MUTUAL PIVOTABLE CONNECTION OF PARTS OF A MOTOR VEHICLE

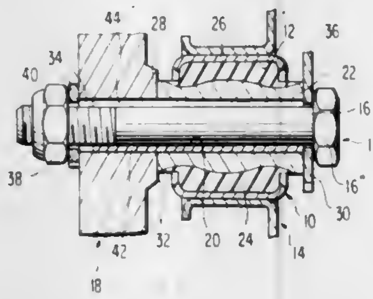
Otto Solleder, Leutenbach, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 17, 1983, Ser. No. 467,338

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1982, 3205716

Int. Cl.⁴ B60G *3/00*

U.S. Cl. 280—690 **5 Claims**



1. An elastically flexible bearing comprising;
a supporting part means with at least one aperture and a bearing face,
a pivotable part means,
a screw bolt means having an axis and a shank end for penetrating the pivotable part means and the aperture and extending away from the supporting part means in a cantilever beam fashion, and being retained in the supporting part means by tension along said axis,
a bearing body comprising
an inner sleeve encompassing the screw bolt means for receiving the pivotable part means, and clamped between the screw bolt means and the supporting part means when the screw bolt means is under tension, the inner sleeve having an end face clamped against the bearing face,
a metal sleeve means slotted over substantially its entire length surrounding the screw bolt means with radial play therebetween, and being retained with radial prestressing in the inner sleeve and supporting part means.

4,615,539
SUSPENSION FOR AUTOMOTIVE VEHICLES

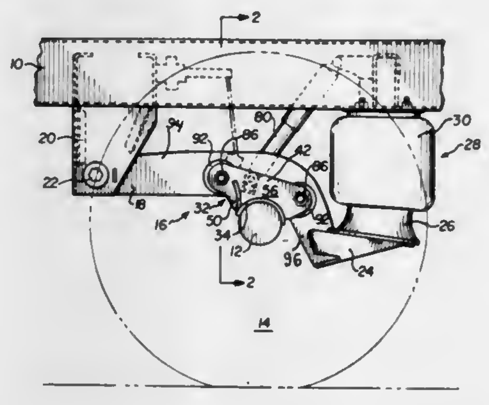
William C. Pierce, Muskegon, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Feb. 6, 1985, Ser. No. 698,607

Int. Cl.⁴ B60G *3/14, 11/26*

U.S. Cl. 280—690 **24 Claims**

1. A vehicle suspension system for mounting ground-engaging wheels to a vehicle frame, the suspension system comprising at least two substantially rigid arms secured to opposite sides of the frame through substantially aligned pivot mounts; at least one wheel-carrying axle between said arms; and a bracket means securing said at least one axle to each of said arms; the improvement in each of said bracket means comprising:
an axle plate means rigidly secured to said axle and having an elongated planar complementary surface at least partially wrapping around said axle;
two spaced connecting plates secured transversely to said axle plate means and to one of said arms; and
a bracing means comprising at least one curved gusset plate rigidly and angularly secured to and between said axle plate means and one of said connecting plates and structured to enhance torsional and shear resistance of said axle plate means and said connecting plates and to resiliently yield in response to torsional forces between said axle plate means and the one of said connecting plates to which it is attached.



4,615,540
SAFETY BELT SYSTEM

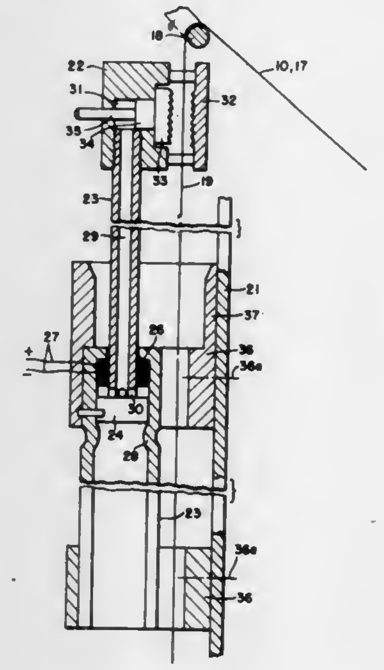
Gerhard Sedlmayr, Hamburg, and Herbert Just, Hohnstorf, both of Fed. Rep. of Germany, assignors to Autoflug GmbH, Rellingen, Fed. Rep. of Germany

Filed Jan. 4, 1985, Ser. No. 688,843

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1984, 3400115

Int. Cl.⁴ B60R *21/10*

U.S. Cl. 280—806 **19 Claims**



1. A safety belt system for a vehicle, said system including a three-point safety belt, a self-locking belt winding mechanism which is mounted on a structural part of said vehicle, and a clamping mechanism for said belt, said clamping mechanism being disposed on or in said structural part, and having clamping jaws, at least one of which is movable;
the improvement therewith wherein said clamping mechanism is movably guided relative to said structural part; and including a control mechanism for effecting movement of said clamping mechanism, and which includes, as said control mechanism for effecting movement of said clamping mechanism, a piston unit which is acted upon by a pressure medium, said piston unit including a piston rod which has an upper and lower end, and is movable along said structural part of said vehicle, with said clamping mechanism being connected to said upper end of said piston rod; said unit further including a guide tube, as well as a piston which is connected to said lower end of said piston rod and is accommodated in said guide tube; and fitting means provided for mounting said guide tube to said structural part of said vehicle.

4,615,541
BOOK COVER BLANK

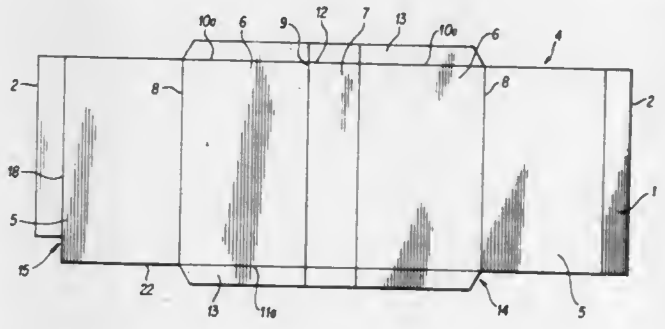
Gerd-Georg Kwauka, Gütersloh, Fed. Rep. of Germany, assignor to Mohndruck Graphische Betriebe GmbH, Fed. Rep. of Germany

Filed Mar. 2, 1983, Ser. No. 471,356

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1983, 3303196

Int. Cl.⁴ B42D *3/00;* **B42C** *7/00*

U.S. Cl. 281—29 **19 Claims**



1. A book comprising:
a book cover blank;
an inner book having a back;
said book cover blank being formed in one piece and including two inner cover portions, two outer cover portions, two spine members, and a spine portion, said book cover blank further being formed so that one end of each spine member is integrally connected with one end of one of the inner cover portions and the other end of each spine member is a free longitudinal edge;
said inner cover portions being glued to the outer cover portions;
said spine members being arranged on the inside over the spine portion of the book cover blank with no bond thereto; and
said spine members are arranged so that the free longitudinal edges are adjacent one another and the spine members are attached to the back of the inner book.

4,615,542
TELESCOPIC RISER JOINT

Eiichiro Ideno; Masaru Tamiya, both of Kobe; Katsumi Ogawa, Hyogo, and Tadashi Kumakiri, Nara, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Mar. 29, 1984, Ser. No. 594,915

Claims priority, application Japan, Mar. 29, 1983, 58-51632

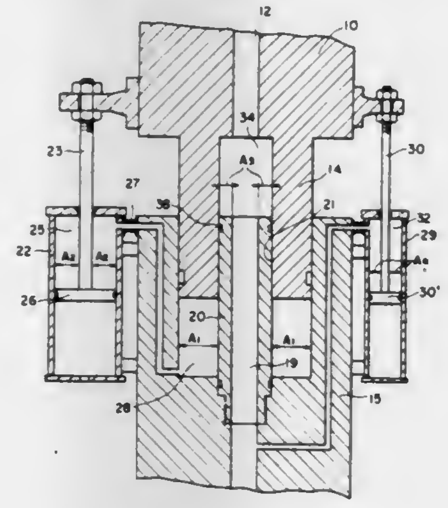
Int. Cl.⁴ F16L *27/00*

U.S. Cl. 285—11 **2 Claims**

1. A telescopic riser joint adapted to axially slidably connect a riser pipe, which is fixed with a sea floor portal and is internally equipped with a plurality of tubing pipes, with a riser pipe secured fixedly to a ship, comprising:
an upper connector and a lower connector, which are axially slidably fit together with the latter fit over the former

a nose portion fit slidably within a nose portion insertion hole communicating with said tubing pipes in said upper connector and fitted in said lower connector, said nose portion defining a communication passage which communicates with tubing pipes fixedly provided in said lower connector at radially inner parts thereof; and

air cylinders mounted fixedly on the outer wall of one of the connectors in such a way that the air cylinders are parallel to the central axis of the one of the connectors and are



symmetrical relative to the central axis of the one of the connectors, the total effective cross-sectional area of said air cylinders being equal to the effective cross-sectional area of a volume variable space between the facing surfaces of the upper connector and an element fixed to the lower connector, the air compartments of said air cylinders being in communication with said volume-variable space, and the distal ends of piston rods of said air cylinders being secured fixedly to the other said connector.

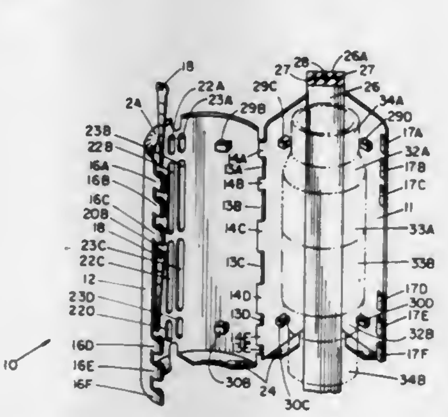
4,615,543
LATCH-TYPE TUBING PROTECTOR

James H. Cannon, 1903 Adams St., Missouri City, Tex. 77489

Filed Oct. 15, 1984, Ser. No. 660,801

Int. Cl.⁴ F16L *55/00*

U.S. Cl. 285—12 **11 Claims**



1. For use in protecting couplings of a production string and tubing adapted to transmit fluid media from the surface to a subsurface location, a latch-type protector having a longitudinal axis therethrough and comprising:

a first half-section member having
- a half-cylindrical shape and including
- a first edge parallel to said axis defining a plurality of first hinge sections;
- a second edge parallel to said axis defining a plurality of first pin guide sections and a first window portion between said first pin guide sections;
- a plurality of indents extending radially inward toward and parallel to said axis;
- a first pair of lugs disposed at one end of said first member and extending radially inward;
- a second pair of lugs disposed at the other end of said first member and extending radially inward;

a second half-section member having
- a half-cylindrical shape and including
- a first edge parallel to said axis defining a plurality of second hinge sections;
- a second edge parallel to said axis defining a plurality of second pin guide sections and a second window portion between said second pin guide sections;
- a first pair of lugs disposed at one end of said second member and extending radially inward;
- a second pair of lugs disposed at the other end of said second member and extending radially inward;
- a recess extending in the direction of said axis for receiving said tubing;

said pluralities of first and second hinge sections being in matingly engageable alignment to define a hinge pin slot parallel to said axis;

a hinge pin disposable within said hinge pin slot, said first and second members thereby being in hinged relation and defining a cylindrical shape when disposed about said coupling;

said pluralities of first and second pin guide sections being in matingly engageable alignment to define first and second pin slots parallel to said axis on either side of said first and second window portions;

first and second tapered pin means disposable in respective ones of said first and second pin slots for compensating for variance in outside diameter of said couplings; and

said first and second hipge sections, said first and second pin guide sections, and said indents, having radially inwardmost portions extending in the direction of said axis and in an interference fit with the outer surface of said coupling when said tapered pins and said hinge pin are disposed, respectively, in said first and second pin slots and said hinge pin slot.

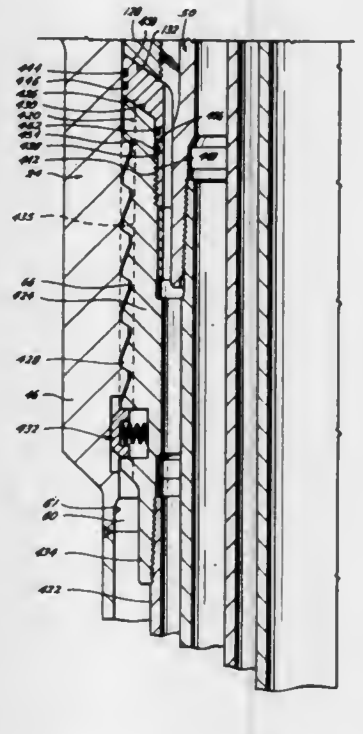
4,615,544
SUBSEA WELLHEAD SYSTEM

Benton F. Baugh, Houston, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Feb. 16, 1982, Ser. No. 348,735

Int. Cl.⁴ F16L *35/00*

U.S. Cl. 285—18 **124 Claims**



1. A support member for supporting at least one pipe hanger within a wellhead of a well, the pipe hanger having a string of pipe attached thereto for suspending the pipe within the well and the wellhead having a plurality of tooth segments projecting into the wellhead bore for engagement with the support member, comprising:
- a tubular body received within the wellhead;
- a plurality of tooth segments disposed on the periphery of said body and adapted for releasably engaging the tooth segments of the wellhead; and
- shoulder means on said tubular body adapted for engagingly supporting the pipe hanger.

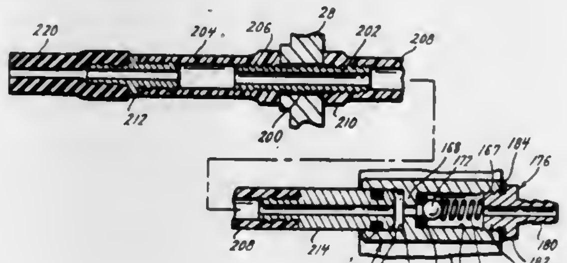
4,615,545
CONNECT-DISCONNECT COUPLING FOR A PLURAL-PASSAGE FLUID LINE

Lee H. Cruse, Ozark, Mo., assignor to Foster Manufacturing Company, Springfield, Mo.

Filed Jul. 22, 1985, Ser. No. 757,428

Int. Cl.⁴ F16L *41/08*

U.S. Cl. 285—24 **22 Claims**



1. A connect-disconnect coupling for a plural-passage fluid line which comprises an outer socket and an outer plug which can be connected together to define an enclosure and to provide an outer passageway for a fluid and which can have outer fluid lines connected thereto, an inner socket and an inner plug which can be connected together to provide an inner passageway for a second fluid and which can have inner fluid lines connected thereto, and means mounting said inner socket and said inner plug at least partially within said enclosure defined by said outer socket and said outer plug so said inner socket and said inner plug will be connected together to complete said inner passageway whenever said outer socket and said outer plug are connected together to complete said outer passageway, said inner socket and said inner plug keeping fluid passing through said inner passageway from mixing with fluid passing through said outer passageway whenever said inner socket and said inner plug are connected together, said outer socket and said outer plug and said outer fluid lines enclosing and protecting said inner socket and said inner plug and said inner fluid lines whenever said outer socket and said outer plug are connected together, said means including a partition which extends tranversely of said outer passageway and which has a hole through it, and a flexible tube that has an inner end and an outer end and that has said inner end thereof in communication with said hole in said partition and that has said outer end thereof free to serve as a radially-displaceable part of said inner plug, said tube flexing intermediate said inner and outer ends thereof to automatically enable said outer end thereof to move radially and thereby dispose said inner plug in engagement with a complementary surface in said inner socket as said outer plug and said outer socket are connected together if said outer end of said tube and said inner socket are not aligned as said outer socket and said outer plug are connected together, said inner end of said tube being rigidly held against movement or shifting, and also being held in fluid-tight relation, relative to said hole in said partition.

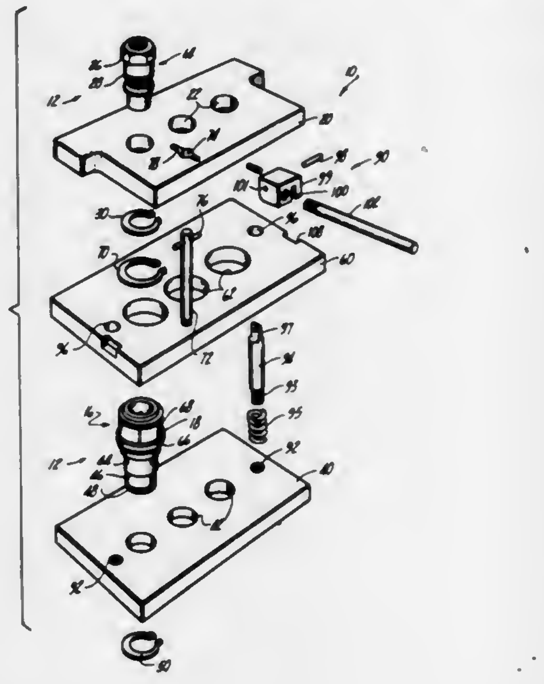
4,615,546
MULTIPLE CONNECTOR FLUID COUPLING

Robert W. Nash, Birmingham; Paul R. Andre, Farmington Hills, and Dennis F. Knoblock, Rochester, all of Mich., assignors to William H. Nash Co., Inc., Farmington Hills, Mich.

Filed Jan. 28, 1985, Ser. No. 695,374

Int. Cl.⁴ F16L *35/00*

U.S. Cl. 285—26 **14 Claims**



1. A fluid coupling comprising:

a plurality of fluid connectors, each connector comprising a male part and a female part and means for selectively coupling said male part to said female part, said means for selectively coupling comprising a sleeve mounted for axial displacement along each of said female members; and

means for simultaneously displacing said sleeves comprising a first plate and means for securing said male parts to said first plate, a second plate and means for securing said female parts to said second plate for registration with said male parts in said first plate, a third plate and means for securing said sleeves to said third plate, and a guide pin fixedly secured with respect to one of said first and third plates, to extend toward the other of said first and third plates, said other of said first and second plates having an aperture adapted to slidably receive said guide pin therethrough;

wherein said pin includes means for limiting the separation between said one and said other plates when said male parts are closely aligned for insertion within said female parts; and

wherein said other plate includes a slot intersecting said aperture and wherein said pin includes a transverse bar adapted to be received through said slot, and means for mounting said bar to said pin at an angle to said slot when said male parts are aligned for insertion within said female parts.

4,615,547
MULTI-PLANE SWIVEL CONNECTOR

Grenville G. Sutcliffe, Villa Ridge, and Arthur C. Fink, Jr., Lonedell, both of Mo., assignors to Husky Corporation, Pacific, Mo.

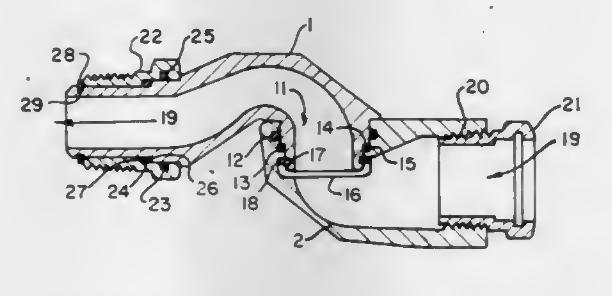
Filed Nov. 24, 1982, Ser. No. 444,500

Int. Cl.⁴ F16L *39/00*

U.S. Cl. 285—136 **14 Claims**

1. A multi-plane and light of weight swivel connector for use in attaching a pair of fluid conveying members together and providing a fluid seal thereat, said connector including a pair of swivel portions that connect together at approximate ends, the end of one swivel portion being a male portion, while the end

of the other swivel portion comprsing a female portion, said male portion extending within the femal portion to form a unitary joint, a double sealed connection provided at the unitary junction of the connection of the swivel ends together, said double sealed connection formed of a pair of seals provided between the male and female portions of the formed unitary swivel joint, an O-ring provided at each seal to form the fluid seal thereat, a retaining means provided within the connector for axial fixing of the swivel portions together but allowing them their swivel motion with respect to each other, said swivel connector useful for attaching in a fuel line, one end of the connector securing with a fuel hose, and the other end of the connector useful for securing with a dispenser nozzle or the like, said double sealed connection forming an inner and outer sealed bearing for the swivel connector, said inner and outer sealed bearings being stepped, with one 0-ring of the sealed connection having a lesser diameter than the other O-ring of the other sealed connection, the inner said O-ring being of a lesser diameter than the outer O-ring, said lesser diametered O-ring being formed to provide low temperature flexibility to assure a continuing fluid seal, there being opposing shoulder formed upon each of the male and female portions, and said inner O-ring being located intermediate the said shoulders, said male portion forming a surface outwardly of its formed shoulder, and said outer O-ring cooperating with the female portion and seating upon the formed surface, said outer O-ring being formed to provide increased resistance to abrasive wear, and the retaining means disposed proximate the inwardmost part of the male portion for attaching the male and female portions together, there being a ring seat formed upon and near the proximate end of the male portion, and another shoulder formed on the inwardmost part of the female portion, with said retaining ring engaging with said another shoulder and seating within the seat for securing the two swivel portions together at their unitary junction, said swivel portions being formed of die cast injection molding from a zinc-aluminum alloy that is rapidly chilled under pressure to retard dendritic growth, and said O-rings being formed of fluoro composition comprising one of a fluoro carbon and fluoro silicone.



4,615,548
DOOR LOCK SYSTEM

Michael H. McGee, 4620 Alla Rd., Los Angeles, Calif. 90066
Continuation-in-part of Ser. No. 587,358, Mar. 8, 1984. This application Dec. 17, 1985, Ser. No. 810,658
Int. Cl.^{4} E05C *1/06*
U.S. Cl. 292—144 **8 Claims**

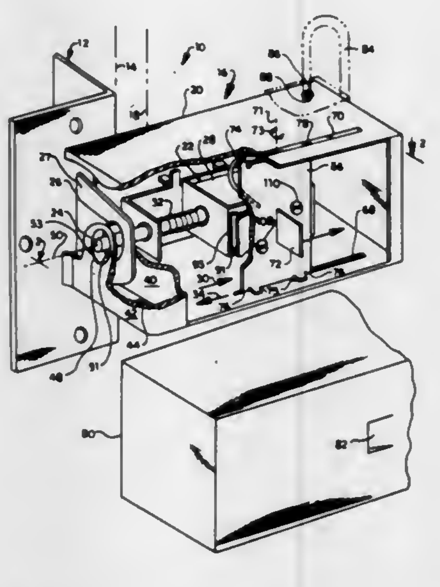
1. A door lock system for locking a door to a door frame, comprising:

a latch device which is mountable on a door and which has a plate-like latch with a latch hole;

a lock box which can be fastened to said door frame, said box having at least one plate with walls forming a plunger-receiving hole that can lie adjacent to the latch hole when the door is closed, said plunger-receiving hole being wider than said plunger so that when the latch lies beside the plate, a plunger can pass through the plunger-receiving hole and the hole in the latch;

a solenoid which includes an energizeable coil device, and which also includes a plunger extending along a plunger axis in a predetermined outward direction from said coil device and through said latch hole and plunger-receiving hole when the coil is unenergized; and

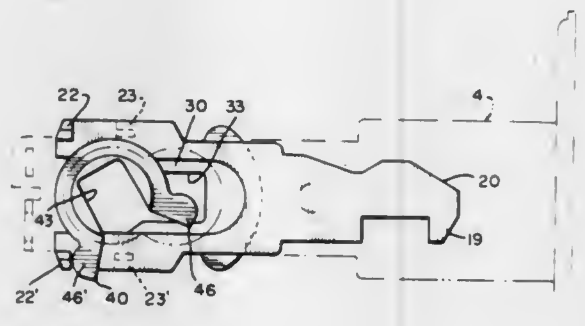
means mounting said coil device to bias it toward an orientation at which said plunger is away from contact with the walls of said plunger-receiving hole, but permitting said plunger to be moved against the plunger-receiving hole, said mounting means also supporting said coil device in movement substantially parallel to said plunger axis so the coil device can be moved in a predetermined inward direction to withdraw the plunger from the latch hole without energized the coil device;



said mounting means comprising a bracket which is slideably mounted on said lock box to resist pivoting about a second axis perpendicular to said plunger axis while permitting the bracket to move in said outward and inward directions, and spring means for resiliently mounting the coil device on said bracket to hold said coil device in a substantially constant location with respect to the bracket while permitting the coil device to tilt by a limited angle with respect to the bracket to permit the plunger to press against the walls of the plunger receiving hole.

4,615,549
DUAL BACKSET LATCH

Jeffrey B. Couture, Coronado, Calif., assignor to Schlage Lock Company, San Francisco, Calif.
Filed Aug. 13, 1984, Ser. No. 639,715
Int. Cl.^{4} E05C *1/16*
U.S. Cl. 292—169.21 **11 Claims**



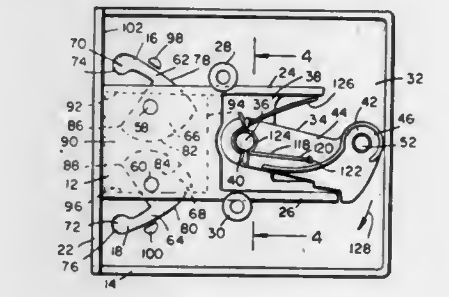
1. In a latch construction for mounting in doors and the like of the general type having a bolt longitudinally reciprocating in a door mounted housing between a forward extended position projecting from a door edge and a rearward retracted position substantially fully within the door edge, latch operating means in said housing having a longitudinally forward end operably connected to said bolt and longitudinally rearward end operably connected to an actuation means, said actuating means being rotatable about a transverse axis to displace said

operating means to reciprocate said bolt, the longitudinal distance between the door edge and said transverse axis of said actuating means constituting backset, the improvement comprising:

plural mutually intersecting cam means within said housing interposed between said actuation means and said latch operating means and operable in rotation within said housing about parallel but offset transverse axes for alternatively connecting said actuating means with different backset to said operating means and for converting the rotary action of said actuating means to the reciprocating action of said operating means and thereby reciprocate said bolt.

4,615,550
LOCK MECHANISM

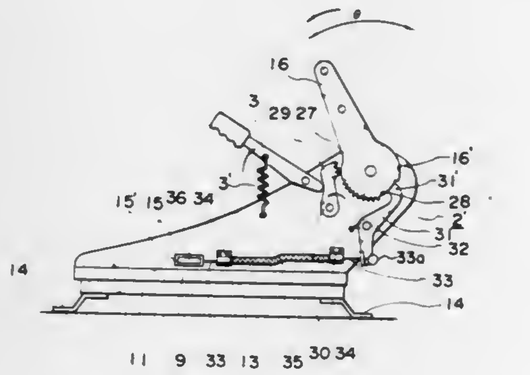
Gennaro Abate, 19 Ridgewood Ave., Yonkers, N.Y. 10704
Filed Dec. 14, 1984, Ser. No. 681,673
Int. Cl.^{4} E05C *5/04*
U.S. Cl. 292—192 **3 Claims**



1. A lock mechanism for use with a lock having an operator member comprising a lock case, a bolt member, having a hollow portion, with said bolt member slideably mounted in said lock case, with said bolt member capable of a first position, disposed in said lock case, and a second position, disposed extending from said lock case, dead latch means pivotally mounted on said bolt member, with said dead latch means having a first position disposed projecting into said hollow portion of said bolt member, and a second position, projecting outwardly of said bolt member when said bolt member is in said extended position, said dead latch means including an arm portion disposed to engage said lock case and pivot said dead latch means outwardly of said bolt member when said bolt member is in said extended position, said dead latch means being eccentrically pivoted and disposed to swing inwardly when said bolt member is retracted to said first position of said bolt member, link means disposed in said lock case and pivotally connected to said bolt member for extending and retracting said bolt member, said link means comprising a first link member and a second link member with said first link member having a first end pivotally connected to said bolt member and a second end pivotally connected to a first end of said second link member, and with said second link member having a second end pivotally connected to said lock case, with said first and second link members capable of a first position in which said bolt member is disposed in said lock case and said link members are angularly disposed relative to each other, and a second position in which said pivotal connections are in substantial alignment and said bolt member is disposed extending from said case, spring means mounted in said lock case and connected to said first link member with said spring means disposed to urge said first link member toward said second position thereby extending said bolt member, with said first link having a step portion disposed to engage said bolt member when said bolt member is in said second position, guide pin means mounted in said lock case and disposed to guide said bolt member, and connecting means disposed in said lock case and adapted to connect to said operator member of said lock and said link means thereby enabling a user to rotate said link means and extend and retract said bolt member, said connecting means comprising an arm member pivotally mounted in said lock case, with said arm member having a tab portion, and a rim portion projecting from said link means and engaging said tab portion.

4,615,551
APPARATUS FOR POSITIONING THE BACKREST OF A VEHICLE SEAT

Eiichi Kinaga, Toyota; Masanori Sakai, Fujisawa, and Masaaki Tanno, Hino, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Shiroki Kinzoku Kogyo Kabushiki Kaisha, both of, Japan
Filed Jun. 27, 1984, Ser. No. 625,124
Claims priority, application Japan, Jun. 28, 1983, 58-98828[U]
Int. Cl.^{4} A47C *1/02*
U.S. Cl. 297—341 **8 Claims**



1. An apparatus for positioning the backrest of a vehicle seat to facilitate an occupant's entry and exit from a vehicle, which comprises:

a seat frame mounted on a vehicle floor;

a backrest frame pivotally connected to said seat frame;

engagement means for releasably engaging said seat frame and said backrest frame;

lever means for controlling said engagement means to adjust the pivotal position of said backrest;

support means for slidably positioning said seat frame along said vehicle floor, said support means including a pair of spaced lower rails, a pair of complimentary upper rails, and means for slidably engaging said upper and lower rails, at least one of said lower rails having a cam surface;

locking means attached to said support means for normally preventing sliding movement between said upper and lower rails;

first cable means extending between said backrest and said locking means for releasing said locking means to enable sliding movement between said upper and lower rails, wherein pivoting of said backrest frame beyond a predetermined angle in a first direction allows said first cable means to release said locking means by movement of said lever means;

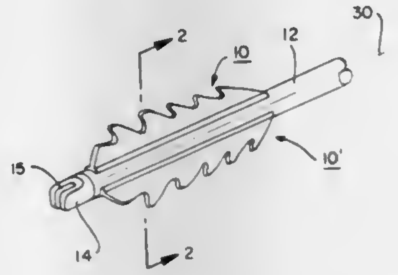
biasing means for biasing said seat frame toward the front of the vehicle;

restricting means pivotally attached to said seat frame for engaging said backrest to restrict substantial movement of said backrest frame after pivoting of said backrest frame beyond said predetermined angle; and

control means for disengaging said restricting means to pivot said backrest frame opposite said first direction after sliding said seat frame a predetermined distance against the force exerted by said biasing means, said control means including a positioning lever having a pair of arms and pivotally mounted on at least one of said upper rails, one of said arms having roller means for slidably engaging said cam surface, said control means also including second cable means extending between the remaining one of said arms and said restricting means, wherein said roller means engages said cam surface in response to rearward movement of the seat said predetermined distance against the force exerted by said biasing means, to pivot the remaining one of said arms enabling said second cable means to disengage said restricting means from said backrest frame.

4,615,552
FLETCHING FOR STABILIZING ARROW FLIGHT

Bjorn R. Bengtson, Box 71, S-124 21 Bandhagen 1, Sweden
Filed Jan. 29, 1985, Ser. No. 696,213
Int. Cl.⁴ F41B *5/02*
U.S. Cl. 273—423 **19 Claims**



1. A fletching for guiding and stabilizing the flight of an arrow projected through the air by a bow having a string which engages a nock at one end of the arrow shaft, said fletching having an elongated, relatively thin and substantially planar body comprising:

an inner edge portion of sufficient transverse width to provide a base for mounting the fletching on said arrow shaft so that said elongated body extends longitudinally in the axial direction of the shaft;

an outer vane portion extending radially in the plane of said elongated fletching body to an outer edge and having a plurality of turbulence means extending along said outer vane portion for providing a turbulent flow of air oriented substantially over said outer vane portion at flight velocity, the radial extent of said outer vane portion defining a width that is substantially uniform for a major proportion of the length of said elongated fletching body and is at least ¼ the height of said fletching body as measured from said base; and,

an inner vane portion extending radially between said outer vane portion and said base for a predetermined height in the plane of said elongated fletching body, said predetermined height being at least ⅓ the height of said fletching body as measured from said base;

said inner vane portion having substantially flat side surfaces and said base and said inner vane portion having continuous and substantially smooth side surfaces for providing a laminar flow of air oriented substantially over said inner vane portion at flight velocity;

the radial extent of said inner vane portion defining a width that is substantially uniform for a major proportion of the length of said elongated fletching body;

said width of said smooth inner vane portion providing a moment arm for transmitting the effects of said turbulence to said arrow shaft;

and the amount of said turbulence and the length of said moment arm being sufficient to quickly stabilize the flight of said arrow after it leaves the bow when at least three of said fletchings are mounted on said shaft adjacent its nock end.

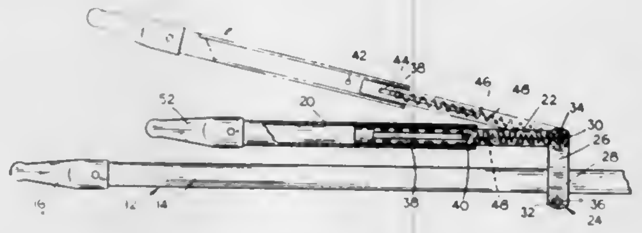
4,615,553
AUXILIARY SHOVEL HANDLE

Donald W. Hultine, R.R. 3, Box 79, Harvard, Nebr. 68944
Filed Jan. 13, 1986, Ser. No. 818,192
Int. Cl.⁴ A01B *1/22;* **B25G** *1/04*
U.S. Cl. 294—58 **10 Claims**

1. An auxiliary handle for a shovel having an elongated primary handle with upper and lower ends and a shovel blade at the lower end thereof, said auxiliary handle comprising

elongated upper and lower handle portions, each having respective upper and lower ends,

a pivotal mounting bracket on the lower end of said lower handle portion and adapted for securement to a primary handle at a selected position along the length of the primary handle for pivotally connecting the lower handle portion to the primary handle,



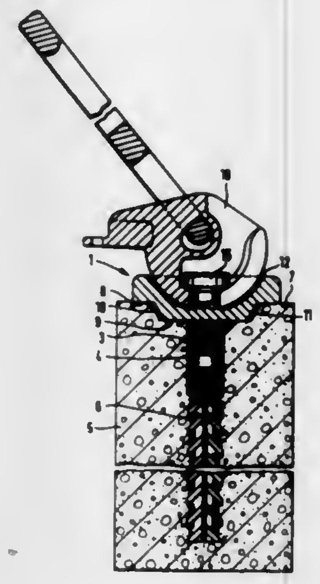
means for connecting said handle portions together for length adjustable sliding movement relative to one another,

coacting stop means on said upper and lower handle portions for limiting sliding movement of the upper handle portion relative to the lower handle portion to extended and retracted positions thereof, and

means for biasing said upper handle portion to the retracted position thereof.

4,615,554
SCREW-IN FASTENER FOR A TUBULAR ANCHOR EMBEDDED IN A CONCRETE ELEMENT

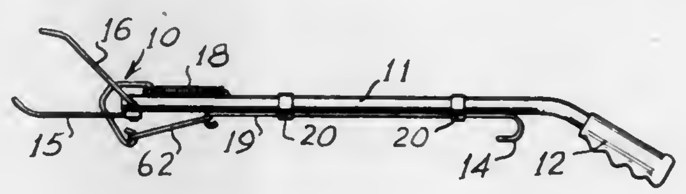
Henning Schilla, Essen-Frintrop; Ernst Hatz, Darmstadt, and Eckart Zipf, Schlüchtern, all of Fed. Rep. of Germany, assignors to Deha Baubedarf GmbH & Co. KG, Gross-Gerau, Fed. Rep. of Germany
Filed Jul. 2, 1984, Ser. No. 626,624
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1983, 8321596[U]
Int. Cl.⁴ B66C *1/00;* **F16B** *23/00*
U.S. Cl. 294—89 **10 Claims**



1. A screw-in fastener for a tubular anchor embedded in a precast concrete element having a first and a second supporting surface, comprising a threaded pin screwable into said tubular anchor; a supporting plate having an underside, from which said threaded pin extends outwardly, said supporting plate having a first supporting face extended normally to said pin and concentrically surrounding the latter, said supporting face being supported on said first supporting surface of said concrete element when said pin is screwed in said anchor, said supporting plate having an upper side and being formed at said upper side with a recess; and a coupling member for coupling the fastener with a transport anchor, said coupling member being positioned in said recess and connected to said supporting plate, said supporting plate having an additional supporting face, said additional supporting face being parallel to and concentrical with said first supporting face, said additional supporting face being offset relative to said first supporting face along an axis of said supporting plate and in the direction away from said pin, said additional supporting face abutting against said second supporting surface when said pin is screwed in said anchor.

4,615,555
PICK UP TOOL AND JAW APPARATUS THEREFOR

Joseph E. Bateham, Rte. 1, Box 159A3, Sylvester, Ga. 31791
Filed May 3, 1985, Ser. No. 730,337
Int. Cl.⁴ B25J *1/00*
U.S. Cl. 294—19.1 **12 Claims**



1. In a pick up device of the type comprising a shank, a jaw assembly carried at one end of said shank, a handle at the opposite end of said shank, and operating means for selectively opening and closing said jaw assembly, the improvement wherein said jaw assembly includes a stationary jaw member fixed to said shank and extending beyond said one end of said shank, said stationary jaw comprising a wire frame defining an open plane, a movable jaw member pivotally carried at said one end of said shank, an axle passing through said one end of said shank generally parallel to said plane of said stationary jaw, said axle carrying said movable jaw, said movable jaw member comprising a wire frame defining an open plane and being pivotal on said axle to move towards and away from said stationary jaw member, a first jaw operating member extending from one side of said movable jaw member opposite from said stationary jaw member and disposed on one side of said shank, a second jaw operating member extending from the opposite side of said movable jaw member, said second jaw operating member passing through said open plane of said stationary jaw member and being disposed on the opposite side of said shank, a first force applying means on said one side of said shank for urging said first jaw operating member in a direction to open said jaw assembly, and a second force applying means on said opposite side of said shank for urging said second jaw operating member in a direction to close said jaw assembly said first force applying means including spring means extending between said first jaw operating means and said shank, said second force applying means including controllable rod means, said operating means being adjacent to said handle for controlling said controllable rod means.

4,615,556
WINDSHIELD VENT WING AND HINGE

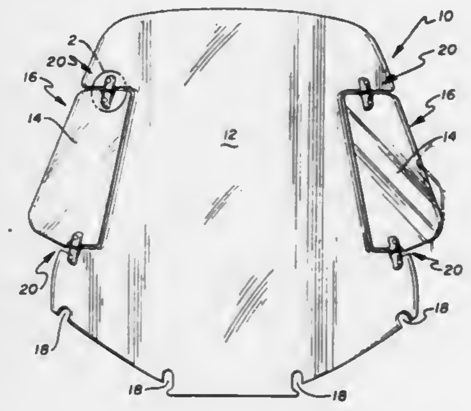
Alwin J. Stahel, St. Paul, Minn., assignor to Drag Specialties, Inc., Minnetonka, Minn.
Filed Feb. 14, 1985, Ser. No. 701,785
Int. Cl.⁴ B62J *17/04*
U.S. Cl. 296—78.1 **2 Claims**

1. A windshield for providing adjustable ventilation for a motorcycle rider comprising, in combination:

(a) a windscreen having a base portion thereof adapted for mounting on a motorcycle, the windscreen constructed and arranged for screening a rider positioned behind it from air flow due to motion of the motorcycle, the windscreen having at least one vent portion cut into its perimeter, the vent portion having top and bottom edges and a side edge;

(b) at least one vent wing having top and bottom edges and an inside edge, the vent wing constructed and arranged for mounting in the vent portion of the windscreen to block the flow of air through the vent portion; and

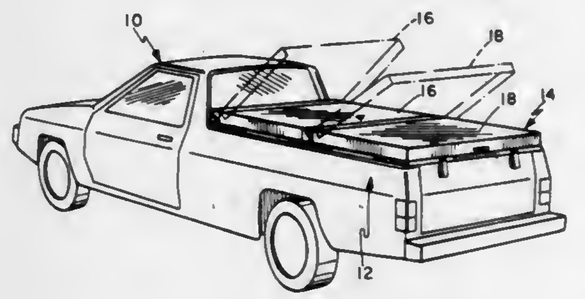
(c) hinge means mounted on the top and bottom edges of the vent wing and displaced from the inside edge of the vent wing and connected to the respective top and bottom edges of the windscreen vent portion above and below the



vent portion, the rotary hinge means constructed and arranged for permitting rotation of the vent wing about an axis parallel to the surface of the windscreen, thereby altering the air flow over the windscreen and adjusting the amount of ventilation provided to a rider positioned behind the windscreen.

4,615,557
SECURITY COVER FOR TRUCK BEDS

Arnie Robinson, 5930 Albermarle St., San Diego, Calif. 92139
Filed Feb. 27, 1985, Ser. No. 706,038
Int. Cl.⁴ B60P *7/02*
U.S. Cl. 296—100 **4 Claims**



1. A removable security cover for placement upon a truck bed having stake sockets comprising:

a mounting frame having front and rear frame members interconnected by a pair of side frame members, said rear frame member being removably coupled on the interior of the security cover to said pair of side frame member and includes retaining arms extending downwardly from said rear frame member outside of said truck bed, and means for securing said mounting frame upon the bed of a truck, said means for securing said mounting frame upon the bed of a truck including at least one stake attached to said mounting frame, each stake positioned along said mounting frame so as to be received within the truck bed stake sockets for removable coupling thereto;

a retaining channel attached to said mounting frame;

a plurality of arch member each removably coupled to said mounting frame with each arch member having an arch member top panel and a pair of arch member side panels extending in a downward direction from opposite ends of the arch member top panel, each arch member having one arch member side panel secured within the retaining channel located on one side frame member and the other arch member side panels secured within the retaining channel located on the other side frame member, said plurality of arch members including a front arch member and a central arch member, said front arch member having a front panel extending in a downward direction from a forward end of said front arch member and integrally connected to said front arch member side panels, said front panel secured within the retaining channel located on said front frame member, said central arch member located along said side frame members between said front arch member and said rear frame member;

a plurality of covers each hinge-mounted to a respective one of said plurality of arch members, said plurality of covers including a front cover and a rear cover, said front cover hinge-mounted to said front arch member and overlying said central arch member, said rear cover hinge-mounted to said central arch member, each cover having a cover top panel and a pair of cover side panels extending in a downward direction from opposite ends of said cover top panel, each cover having one cover side panel resting in the retaining channel located on one side frame member and the other cover side panel resting in the retaining channel located on the other side frame member when said cover is in a closed position, said rear cover having a back panel extending in a downward direction from a rear end of said rear cover and integrally connected to the rear cover side panels, said rear cover back panel resting in the retaining channel located on said rear frame member when in a closed position; and

lock means associated with each one of said covers for locking each cover in a closed position so as to prohibit entry into the truck bed.

4,615,558
INSTALLATION STRUCTURE FOR STRIKER OF DOOR LOCK MECHANISM IN CENTER-PILLARLESS VEHICLE

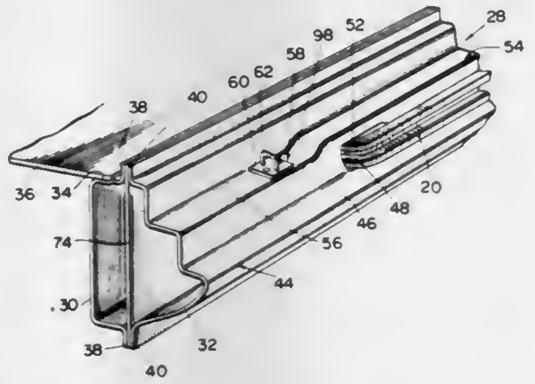
Yoshiharu Nakamura, Atsugi, and Ryuji Nishimiya, Hiratsuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama and Nissan Shatai Company, Limited, Hiratsuka, both of, Japan

Continuation of Ser. No. 513,686, Jul. 14, 1983, abandoned. This application Dec. 9, 1985, Ser. No. 805,419

Claims priority, application Japan, Jul. 16, 1982, 57-124194

Int. Cl.^{4} B62D *25/00;* B60J *5/04*

U.S. Cl. 296—203 **12 Claims**



9. A side sill structure for a center-pillarless automotive vehicle including a vehicle body having a door opening for a swing door and a sliding door, said swing door having a door lock and hinged at an edge of said door opening, the structure comprising:

a reinforcement member disposed within said sill and extending along an internal space defined by inner and outer sill members of said side sill, said reinforcement member having a transversely and horizontally extending extension for reinforcement of said side sill;

a door lock striker secured onto said side sill in opposing relationship to said door lock of said swing door;

a guide rail mounted on said side sill and guidingly supporting said sliding door for movement of the latter between a door closing position and a door opening position; and

a guide rail retainer disposed within the internal space of said side sill for retaining one end of said guide rail, said guide rail retainer including a flanged guide rail rest passing through an opening in said reinforcement member and a means for attaching said guide rail rest to said inner sill.

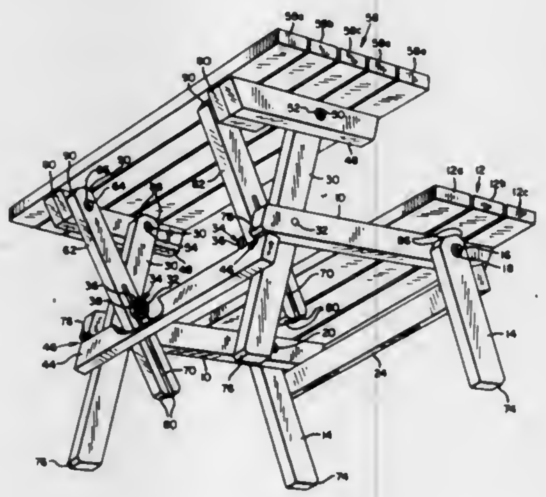
4,615,559
FOLDING TABLE/BENCH COMBINATION

Roland A. Blondeau, 6611 SW. 36th Ave., Portland, Oreg. 97221

Filed Mar. 25, 1985, Ser. No. 715,274

Int. Cl.^{4} A47B *85/04*

U.S. Cl. 297—124 **3 Claims**



1. A folding bench/table combination comprising:

(a) two leg assemblies spaced apart in similar and square orientation, and each including:

(1) a seat support member at a suitable height for supporting a seat, and extending substantially horizontally, forwardly therefrom,

(2) a seat leg pivoted to one side of the seat support member proximate the rear end thereof beneath the seat, and being operable to pivot between a first position wherein it is parallel with the seat support member, to a second position wherein it extends downwardly and rearwardly beneath the seat for supporting the seat and weight thereon,

(3) a table leg pivoted to the opposite side of the seat support member from the seat leg, proximate the front end of the seat support member, and being operable to pivot between a first position wherein it is parallel with the seat support member, to a second position wherein the lower part of the leg extends downwardly and forwardly, and the upper part of the leg extends upwardly from the pivot point to a height suitable for a table surface, and

(4) a table support member pivoted to the table leg proximate the top end thereof, and operable to pivot between a first position wherein it is parallel with the table leg, and a second position wherein it is horizontal for supporting a table;

(5) said leg assemblies each further comprising an adjuster pivoted to the table support member at a point spaced from the pivot of the table leg with the table support member, the adjuster extending to the pivot point of the seat support member and the table leg and having means at said pivot point for securing the adjuster at any of a plurality of positions along its length to said table leg and said seat support member, thus securing the table in any of a plurality of positions,

(b) a seat spanning between the two seat support members; and

(c) a table spanning between the two table support members,

(d) said bench/table combination further comprising a seat leg cross brace secured between the seat legs on the rear sides thereof, and having an abutment surface which abuts the underside of the seat support member and acts as a stop to prevent the seat legs from pivoting further rearwardly, and a table leg cross brace secured between the table legs on the front sides thereof and below the pivot point, and having an abutment surface which abuts the underside of the seat support member and acts as a stop to prevent the table legs from pivoting further forwardly, one of said cross braces having an abutment surface extending outwardly beyond the legs.

4,615,560
ADJUSTABLE CHILDREN'S CHAIR

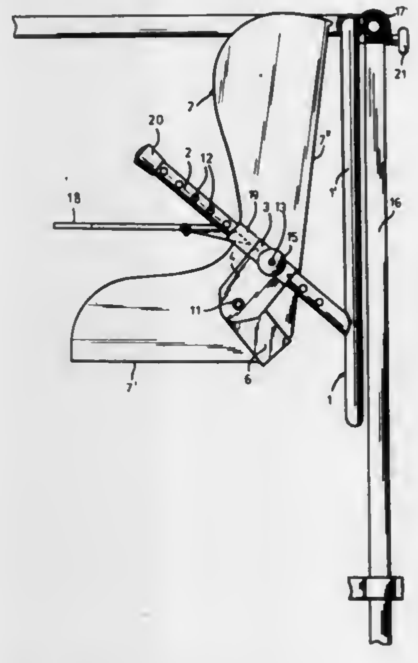
Herta Schaller, Gusshauserstr. 6, A 1040 Wien, Austria

Filed Nov. 10, 1983, Ser. No. 550,865

Claims priority, application Austria, Nov. 12, 1982, 4126/82

Int. Cl.^{4} A47C *13/00*

U.S. Cl. 297—130 **11 Claims**



1. A children's chair comprising:

a base frame with a pair of sidebars;

a pair of parallel struts rising from said sidebars at an acute angle thereto;

a pair of sliders respectively mounted on said struts and provided with indexing means for immobilizing same at a selected level;

seat-supporting means pivotally mounted on said sliders and rotatable thereon about a horizontal axis;

a seat having a seating portion rigid with a backrest mounted on said seat supporting means; and

clamping means connected with said seat-supporting means for fastening same in a selected angular position relative to said sliders.

4,615,561
VEHICLE SEAT

Kaoru Nomura, Asaka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

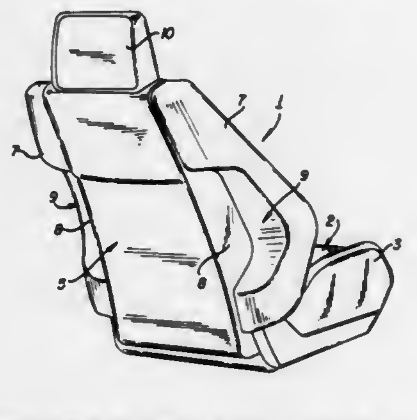
Filed May 14, 1984, Ser. No. 609,952

Claims priority, application Japan, May 12, 1983, 58-70982[U]; May 13, 1983, 58-71182[U]

Int. Cl.^{4} A47C *15/00*

U.S. Cl. 297—243 **5 Claims**

1. A vehicle seat comprising a seat cushion, a seat back, and separate side support means fixed to each side of said seat back, each of said side support means having a leg receiving recess formed in the rear thereof, said recess extending in the rear to front direction.



4,615,562
REVERSIBLE CHILD RESTRAINT FOR AUTOMOBILES

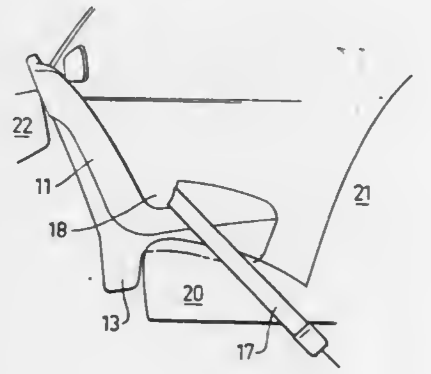
Robert Bell, Solna; Stefan Westius, Spånga, and Björn-Ake Sköld, Norrköping, all of Sweden, assignors to AB Akta Barnsakerhet, Sweden

Filed Dec. 28, 1984, Ser. No. 687,436

Claims priority, application European Pat. Off., Feb. 13, 1984, 84850051.8

Int. Cl.^{4} A47D *1/10*

U.S. Cl. 297—250 **8 Claims**



1. A child restraint to be supported on the seat of an automobile in either a forwardly facing or a rearwardly facing direction, comprising:

a back support, and

a seat joined to said back support, said seat having an undersurface including means engaging a vertical anterior edge and an upper support surface of an automobile seat in a rearwardly facing position and engaging the automobile seat and seat back in a forwardly facing position, said means including a projecting heel portion and a toe portion, said heel portion being joined to said toe portion by a concave, curved portion; said heel portion having a surface that joins said concave, curved portion so that an offset is formed engaging said anterior edge of the automobile seat when the restraint is oriented in a rearwardly facing direction.

4,615,563
VEHICLE SEAT

Hideo Kobayashi, Akishimashi, Japan, assignor to Tachikawa Spring Co., Ltd., Akishimashi, Japan

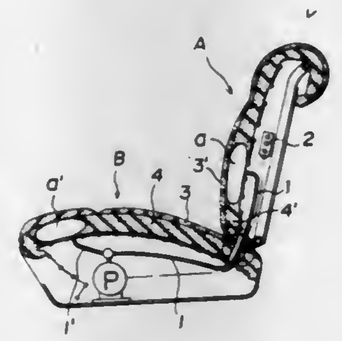
Filed Nov. 9, 1984, Ser. No. 670,368

Int. Cl.^{4} A47C *3/00*

U.S. Cl. 297—284 **3 Claims**

1. In a vehicle seat comprising a seat cushion, a seat back, both of said seat cushion and seat back being separately formed from each other, said seat back being inclinably mounted to said seat cushion, harness means inserted from said seat cushion into said seat back through bores holes formed in each of said

seat cushion and said seat back at a common point along the junction of said seat cushion and said seat back whereby through bores provide continuous communication between said seat cushion and said seat back for insertion of said harness means therethrough, the improvement comprising:



a guide pipe mounted within said through bores of said seat cushion and said seat back
whereby said harness means is circumferentially enclosed at said common point along said junction.

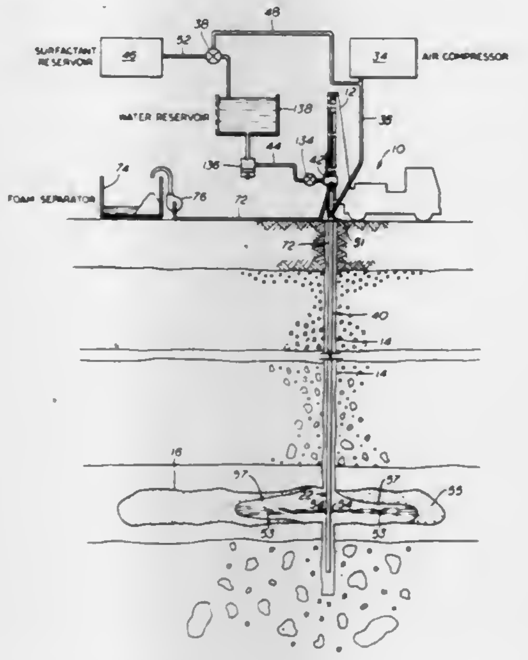
4,615,564
FOAM PROCESS FOR RECOVERING UNDERGROUND ROCK FRAGMENTS

Emmitt G. Garrett, Houston, Tex., assignor to Hydrofoam Mining, Inc., Houston, Tex.

Filed Feb. 11, 1985, Ser. No. 700,038

Int. Cl.⁴ E21C *37/12*

U.S. Cl. 299—7 22 Claims



1. Hydraulic mining apparatus for operating through a well bore drilled into a subterranean body to be mined, comprising an elongate support structure, means for suspending said support structure in said well bore, a mining capsule carried on the lower end of said support structure, said mining capsule comprising means for hydraulically mining said ore body including jet means for providing a laterally directed liquid jet stream to impact material in said body, foaming means for foaming the liquid after impaction, hydraulic power means for driving said jets, piping means for connecting said hydraulic power means to the ground level inlet end of said apparatus, high volume gas inlet means, independent of said hydraulic power means and said jet means, for driving said foam, and a foam discharge line, said discharge line extending upwardly to the ground level end of said apparatus and through said support structure and means for recovery of impacted material from said foam.

14. An improvement in the method of hydraulic subterranean mining in a borehole comprising impacting a liquid jet stream on to an underground structure to dislodge particles thereof and removing the particles to the surface for recovery wherein the improvement comprises adding a foaming agent to said liquid in an amount sufficient to produce foam upon impact with said underground structure and to entrain said dislodged particles and injecting pressured air into said borehole independently of said liquid jet stream at a pressure sufficient to maintain the flow of said foam to the surface, said pressued air being the only means to bring said foam to the surface.

4,615,565
TUNNEL OR ROAD HEADER

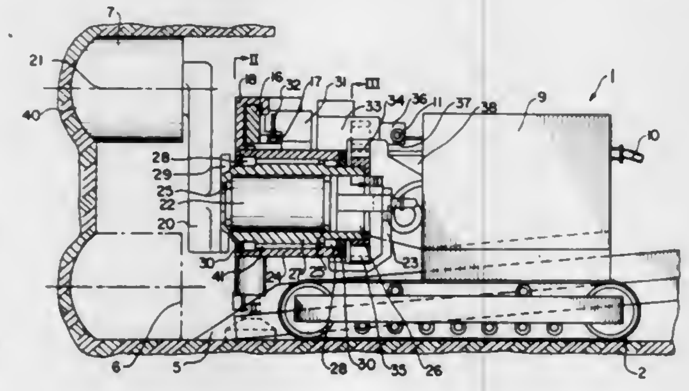
Herbert Schupphaus, Bochum, Fed. Rep. of Germany, assignor to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH, Hunscheidtstrasse, Fed. Rep. of Germany

Filed Jul. 30, 1984, Ser. No. 635,404

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1983, 3329703

Int. Cl.⁴ E21C *27/60*

U.S. Cl. 299—75 12 Claims



1. A tunnel driving apparatus comprising:

a running gear chassis including ground-engaging means for traverse of said tunnel driving apparatus along the ground,

a carrier frame assembly connected to said running gear chassis adjacent a forward end thereof and adapted to be positioned adjacent a tunnel face, said carrier frame assembly including extensible supports and a horizontal track supported thereby for vertical adjustment of the track position upon extension and retraction of said supports in contact with the ground,

a shearing machine including a frame having a housing guided for traversing movement longitudinally along said track, said shearing machine further including a carrier arm pivotally supported by said housing,

drive means carried by said frame for pivoting said carrier arm about an axis of rotation extending transversely of said track to permit rotation thereof generally parallel to the tunnel face,

a rotary shearing drum supported by said carrier arm adjacent a free end thereof for removing material from the tunnel face, said track extending generally laterally of said tunnel driving apparatus to permit said shearing machine to be traversed laterally across the tunnel face, and

a shearing drum drive motor carried by said housing for rotating said rotary shearing drum about an axis spaced laterally from said axis of rotation of said carrier arm.

4,615,566
BRAKING CORRECTOR

Alain Perrin, Bobigny, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Feb. 15, 1985, Ser. No. 701,896

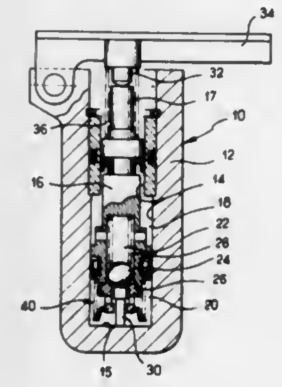
Claims priority, application France, Feb. 22, 1984, 84 02653

Int. Cl.⁴ B60T *8/22*

U.S. Cl. 303—6 C 5 Claims

1. A braking corrector capable of being interposed between a source of hydraulic pressure and a braking circuit of a motor vehicle, comprising a casing provided with a bore, a differential piston sliding in the bore and defining therein first and

second pressure chambers capable of being joined to the pressure source and to the braking circuit, respectively, the pressure chambers communicating with one another by means of a passage in the piston, a valve mounted in the passage and elastically pushed by spring means into sealing abutment with a seat formed in the piston, and a return spring interposed between a movable component whose position varies as a function of vehicle load and the piston so as to push the piston toward a bottom portion of the second pressure chamber and a rest position in which the valve is separated from the seat by an abutment fixed firmly to the casing, characterized in that the corrector further comprises resilient means for limiting travel of the piston toward the rest position, the resilient means disposed between the piston and bottom portion and becoming operative after the valve has separated from the seat to subsequently modulate the separation as a function of thrust exerted on the piston by the movable component which represents vehicle load and by the return spring interposed between the component and piston.



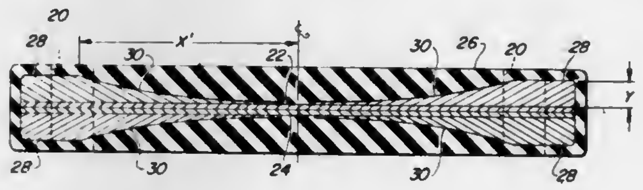
4,615,567
FLEXOR FOR SECTIONS OF ENDLESS TRACK

William P. Wohlford, Bettendorf, and Nicolae V. Orlandea, Davenport, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Sep. 9, 1985, Ser. No. 773,754

Int. Cl.⁴ B62D *55/24, 55/28*

U.S. Cl. 305—40 2 Claims



1. In a flexor for forming part of a track link section and having a tensile load carrying core including at least one rectangular, relatively thin plate encapsulated in an elastomeric casing, said plate having opposite ends reinforced by thickened end sections, mounting holes located in the opposite ends of the flexor and passing through the thickened end sections whereby the flexor, when installed in an endless track, is adapted for having its opposite ends sandwiched between respective link and grouser members of adjacent link sections, the improvement, comprising: said thickened end sections extending substantially to a location midway between the ends of the flexor; and each end section diminishing in thickness in a direction toward said location with the rate of diminishing thickness being such that when the flexor is bent the bend is a smooth circular curve.

4,615,568
GUIDE DEVICE

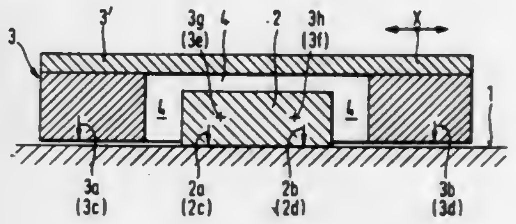
Hans-Rudolf Kober, Kirchweldach, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Sep. 7, 1984, Ser. No. 648,787

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1983, 3336002

Int. Cl.⁴ F16C *32/06;* G01B *21/04;* G01D *11/02*

U.S. Cl. 384—12 9 Claims



1. A guide device for use on a base, said guide device comprising:

a guided element located on said base;

at least one guide element located on said base;

at least one fluid bearing disposed between the guided element and the guide element to facilitate relative movement therebetween in a first direction; and

means for selectively and fixedly securing selected ones of the guided element and the guide element to the base, the other ones of the guided element and the guide element relatively movable in the first direction with respect to the selected one, said guided element and guide element freely movable as a unit on the base when the securing means is deactivated.

4,615,569
LINEAR GUIDE APPARATUS

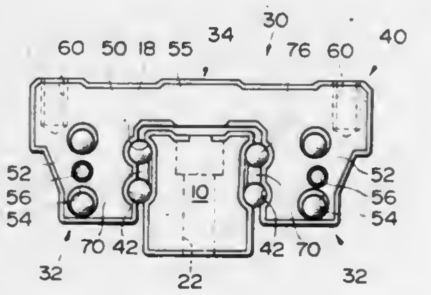
Jiro Hirata, Maebashi, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1985, Ser. No. 737,265

Claims priority, application Japan, Jun. 12, 1984, 59-119135

Int. Cl.⁴ F16C *29/06, 29/00*

U.S. Cl. 384—45 5 Claims



1. A linear guide assembly including:

an elongated rail having opposite side surfaces, each having at least one ball rolling groove extending axially;

a slide member slidably mounted on the rail, the slide member comprising a hollow metal shell having a recess with inner side surfaces corresponding to the side surfaces of the rail, respectively, and plastic or elastomeric solid material filling a hollow space of the shell, each side surface of the hollow shell having at least one ball rolling groove extending axially and opposed to one of the ball rolling grooves of the rail, the solid material having a bore extending axially therethrough behind each ball rolling groove of the hollow shell;

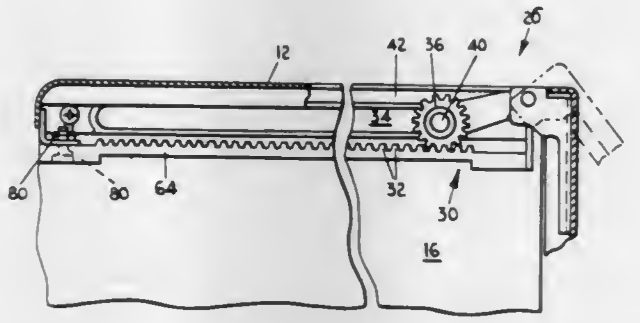
a plurality of balls disposed between the ball rolling grooves of the rail and of the slide member for enabling the slide member to slide along the rail;

a pair of end caps each being attached to a respective end surface of the slide member and each having a pair of holes connecting ball rolling grooves of the rail and the slide member and a corresponding bore of the slide member, thereby forming ball circulation paths at each end of the slide member.

4,615,570
FLIPPER DOOR MOUNTING ASSEMBLY FOR CABINET

Steven F. Goodman, Wyoming, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.

Filed Apr. 29, 1985, Ser. No. 728,180
Int. Cl.⁴ A47F *3/00*
U.S. Cl. 312—110 **9 Claims**



1. In a cabinet, the combination of a top wall, a bottom wall, two side walls, with each side wall having a front edge, and a back wall, the walls defining an opening and an enclosed region and the top and side walls being positioned in spaced-apart relationship; an antiracking means secured within the enclosed region; a flipper door pivotally mounted to the antiracking means, movable with respect thereto and adapted to pivot to open and closed positions; and a mounting means for pivotally mounting the flipper door to the antiracking means so that the door in the open position lies above and in close proximity to the top wall and in the closed position covers the opening and the front edges of the side walls; wherein the improvement in the mounting means comprises, on each side of the cabinet:

a link pivotally mounted at one end to the antiracking means and positioned between the top and side walls; a flipper door bracket pivotally mounted to the other end of the link, and rigidly secured to the flipper door; a guide means for guiding the flipper door between the open and closed positions; and a connecting means mounting the flipper door bracket to the guide means.

4,615,571
STORAGE APPARATUS AND SORTING TRAY

Robert P. Swank, Mansfield, Ohio, assignor to Leiter Industries, Inc., Lexington, Ohio

Continuation-in-part of Ser. No. 607,507, May 7, 1984. This application Jun. 3, 1985, Ser. No. 740,874
Int. Cl.⁴ B65B *67/02;* B65D *91/00*
U.S. Cl. 312—211 **7 Claims**

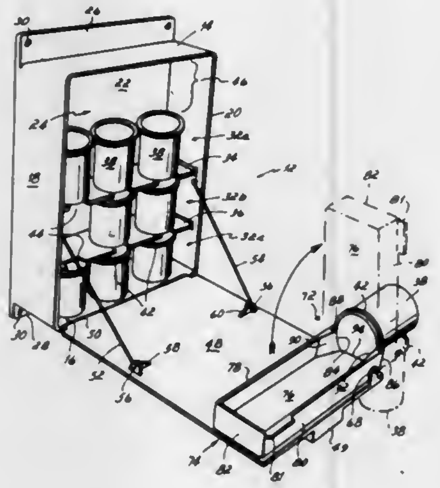
1. In combination, a storage apparatus and sorting tray comprising:

a frame having a bin for storing containers;

a tray having first and second ends, said first end being pivotally mounted to said frame, said tray being adapted to receive articles for sorting;

mounting means for mounting a container to said first end of said tray;

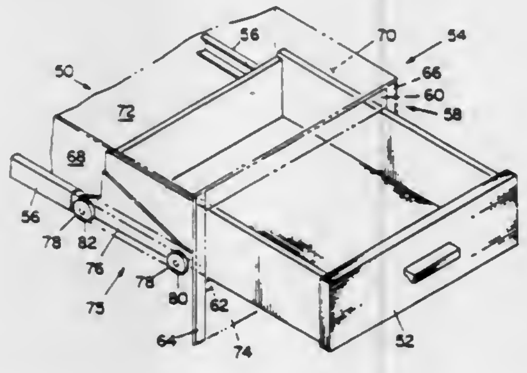
said tray and the container mounted thereto being movable with respect to said frame between a generally horizontal, sorting position and an angled discharge position, said second end of said tray being disposed vertically above said first end of said tray and the container in said angled, discharge position, the articles within said tray being discharged into the container mounted to said tray upon pivoting said tray and the container to said angled position, the container thereafter being removed from said tray and returned to said bin for storage.



4,615,572
CANTILEVERED DRAWER SLIDE ARRANGEMENT

Gary W. Nelson, 22933 Hatteras St., Woodland Hills, Calif. 91367

Filed Sep. 20, 1983, Ser. No. 533,996
Int. Cl.⁴ A47B *88/04*
U.S. Cl. 312—341 R **2 Claims**



2. A simplified drawer guide system in combination with a drawer and a cabinet comprising

a pair of metal tracks, respectively mounted rigidly to the cabinet at opposite sides of the drawer and extending forwardly and rearwardly, the drawer having upright front, rear and left and right side walls defining a storage space,

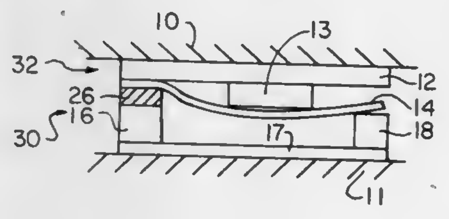
left and right metal brackets attached to the outermost surfaces of the left and right side walls of the drawer, each bracket having a plate carrying two rollers independently of said drawer side walls, with the rollers horizontally forwardly and rearwardly spaced and in cantilevered and sidewardly offset relation to the plate and to the drawer, the plates flatly engaging the drawer left and right side wall surfaces, each bracket including a first and vertically upright flange integral with an upwardly projecting portion of the plate and extending at right angles thereto and engaging the rear end of the drawer and attached thereto, said first flange extending above the levels of both rollers, said upwardly projecting portion of the plate having an upper edge extending forwardly and downwardly from a rearward locus near the uppermost extent of said first flange to a forward locus near the forward roller, and each bracket including a second and horizontal flange integral with the plate and extending at right angles thereto and normal to the plane of the bracket and engaging a corresponding drawer corner surface and attached thereto, the rollers carried by each plate freely and openly projecting sidewardly from and at the same side of said plate, and opposite to the direction of flange projection relative to that plate, said first flange located fowardly of one of said two rollers carried on a rearward portion of the bracket projecting rearwardly of the drawer rear end and everywhere below the level of said first flange,

two rollers mounted onto each track and confined between upper and lower flanges thereof for supporting the drawer rearward extent for forward and rearward drawer travel relative to the cabinet.

4,615,573
SPRING FINGER INTERCONNECT FOR IC CHIP CARRIER

William J. White, Chelmsford, and James M. Ortolf, Acton, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 546,257, Oct. 28, 1983, abandoned. This application Nov. 1, 1985, Ser. No. 794,179
Int. Cl.⁴ H01R *9/09*
U.S. Cl. 339—17 M **8 Claims**



1. An electrical interconnect apparatus for connecting electrical circuits on first and second circuit boards, said apparatus comprising:

A. a miniaturized area array of spring finger contact assemblies, each of said assemblies comprising
  (i) a first electrically conductive contact pad positioned on said first circuit board;
  (ii) a first electrically conductive bump pad attached to said first contact pad such that said first bump pad is located substantially at one end of said first contact pad; and
  (iii) an electrically conductive flexible contact finger having first and second ends, said first end attached to said first bump pad, said second and being free to move;

B. a miniaturized area array of electrical contact pad assemblies, each of said assemblies comprising a raised electrical second contact pad coupled to said second circuit board in order to provide an electrical conducting path from said electrical circuit on said first circuit board through said spring finger assembly and through said electrical contact pad assembly to said electrical circuit on said second circuit board;

C. a second electrically conductive bump pad coupled to said first contact pad such that said second bump pad is located substantially in a spaced relationship with said first bump pad on said first contact pad, and wherein said second bump pad is positioned between said contact finger and said first contact pad in order to increase the electrical contact area of said interconnect apparatus and to provide spring force on said conductive flexible contact finger; and

D. wherein said second end of said contact finger is separably engagable with said second bump pad.

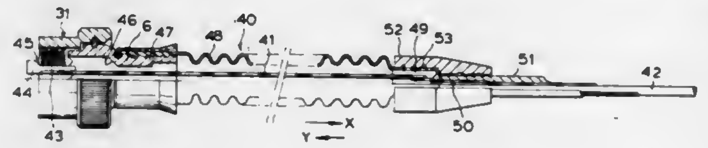
4,615,574
DEVICE FOR TERMINATING AN ELECTRICAL CABLE

Kenneth W. J. Dearman, Slough, United Kingdom, assignor to Icore International Limited, Slough, United Kingdom

PCT No. PCT/GB84/00257, § 371 Date Mar. 18, 1985, § 102(e) Date Mar. 18, 1985, PCT Pub. No. WO85/00701, PCT Pub. Date Feb. 14, 1985

PCT Filed Jul. 19, 1984, Ser. No. 713,902

Claims priority, application United Kingdom, Jul. 20, 1983, 8319630
Int. Cl.⁴ H01R *11/00*
U.S. Cl. 339—61 C **10 Claims**

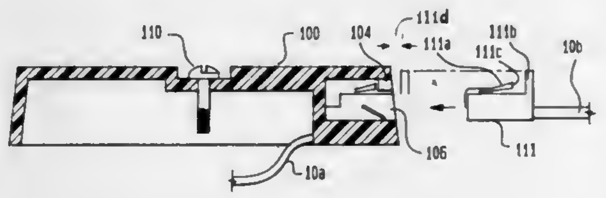


1. A device for terminating an electrical cable, comprising a flexible and resilient sleeve for securing to an outer surface of the cable, and an end termination engageable with and disengageable from an electrical component to which the cable is to be connected, the arrangement being such that when the end termination is disengaged from the component the device can be retracted effectively by shortening the sleeve and withdrawing the end termination whereby to expose the cable connection, and tooth means of a hollow body which forms the end termination for effecting a mechanical bond with a metallic screen which screens the cable.

4,615,575
MODULAR CONNECTOR FOR SECURING TELEPHONE LINE

Michael G. Kossor, 317 W. First Ave., Roselle, N.J. 07203

Filed Apr. 29, 1985, Ser. No. 728,088
Int. Cl.⁴ H01R *13/633*
U.S. Cl. 339—82 **7 Claims**



1. A modular connector for preventing unauthorized access to a standard jack or receptacle connected to a first telephone or computer line, wherein said jack or receptacle has a flat outer face with a substantially rectangular opening constructed to accommodate said modular connector in snug electrically-engaged relation, and said substantially rectangular opening has an internal stop projecting from an inner wall thereof and bare contacting wires on its internal lower surface;

said modular connector having a solid body portion which is constructed to expose on its lower surface the bare contacting portion of a terminal of a second line in said telephone or computer system,

a spring-biased tab disposed in cantilever fashion on the upper surface of said solid body portion, said tab having a shoulder constructed, when said modular connector is in snug electrically-engaged relation with the opening of said jack or receptacle, so that the bar contacting wires on the inner lower surface of said jack or receptacle engage the terminal contacting portion of said second line, to bear against said internal stop, said tab having no portion which protrudes beyond the face of said opening when said modular connector is in said snug electrically-engaged relation with said jack or receptacle, thereby preventing manual removal of said modular connector from said jack or receptacle, wherein the outer end of said modular connector comprises a flange extended in a plane substantially normal to the principal axis of said modular connector, constructed to form a clearance with the inner surface of said flange in substantially parallel to close proximity to the flat outer face of said jack or receptacle surrounding said opening, when said modular connector is in snug electrically-engaged relation with said jack or receptacle.

4,615,576
TERMINAL STRIP HAVING U-SHAPED LSA-PLUS TERMINALS

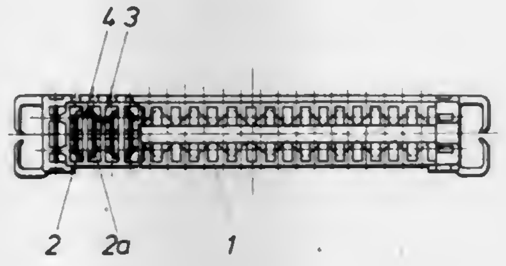
Dieter Gerke, and Manfred Müller, both of Berlin, Fed. Rep. of Germany, assignors to Krone GmbH, Berlin, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,131

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1983, 3312754

Int. Cl.⁴ H01R *4/24*

U.S. Cl. 339—97 P **1 Claim**



1. Electrical terminal apparatus adapted to connect a plurality of insulated wires, said terminal apparatus comprising:
an elongated electrically insulative terminal strip;
a plurality of solderless, non-screwed and stripping-free terminal elements, each having a polytropic air gap;
a plurality of U-shaped terminal members, each said terminal member comprising two said terminal elements in spaced relationship;
said terminal strip being shaped and configured to receive and positively retain said terminal members in tandem in the longitudinal direction, each said terminal member being oriented at 180° relative to each adjacent similar member in said terminal strip so that each terminal member, as mounted in said terminal strip, is effectively a mirror image of each adjacent terminal member throughout the length of said terminal strip;
each said terminal element being formed of resilient, leaf-shaped contact material including a slot, the main portion of said slot adjoining an enlarged insertion opening and being defined by sharp edges, said slot being oriented at an angle of about 45° with respect to the longitudinal axis of said terminal strip and with respect to the axis of the wire being terminated and having a width that is smaller than the thickness of the metallic core of the wire so that when the wire is urged into the slot, the wire insulation is severed and a torquing contact is made between the wire and said terminal element;
whereby each two longitudinally adjacent terminal elements, when connecting a respective wire, exert a torque on said terminal strip of substantially equal magnitude and opposite direction so that the net external torque on said terminal strip due to connections to the wires is maintained at substantially zero.

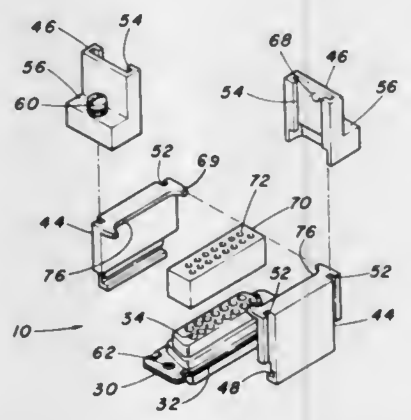
4,615,577
ELECTRICAL CONNECTOR

Mark M. Anderson, Palos Verdes Peninsula, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Continuation of Ser. No. 599,873, Apr. 13, 1984, abandoned. This application Jul. 2, 1985, Ser. No. 750,981

Int. Cl.⁴ H01R *13/58*

U.S. Cl. 339—103 M **5 Claims**



1. A multiple lead, electrical connector assembly comprising
a connector of the plug or receptacle type adapted for coupling the same to contacts of a complementary connector to which the connector assembly may be attached, said connector including a shell having a laterally extending rim,
an insulator block captured by said shell, said insulator block having passages for accepting a plurality of conductor leads having a plurality of contacts affixed to their respective ends, said insulator block serving to capture said contacts and support the same in a predetermined spatial arrangement,
a lead separator block made of flexible insulating material having a plurality of individual lead passageways formed therethrough and arranged in the same spatial relation as the contact arrangement of the insulator block for yieldably supporting each conductor lead from the electrical contact through said separator block to a remote face thereof, said plurality of leads extending from said connector to the remote face in substantially the same spatial arrangement as the contacts to which they are attached,
backshell means for gripping said connector and for capturing said separator block around said leads and forming a unitary structure thereof, said backshell means having a lead opening at said remote face of said separator block large enough to allow free passage of all the leads from the remote face of the separator block, said leads being yieldably supported solely by the separator block against externally imposed stresses, said backshell means including
a pair of side pieces, each of said side pieces having an interior wall extending above and below the rim and a recess for accepting the rim,
a pair of end caps,
means on said end caps and said side pieces for interconnecting the caps and pieces together securely and slightly compress the separator block whereby the shell, end caps, side pieces, and separator block form said unitary structure.

4,615,578
MASS TERMINATION DEVICE AND CONNECTION ASSEMBLY

Edwin B. Stadler, Livermore, and Lajos J. Vidakovits, Mountain View, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

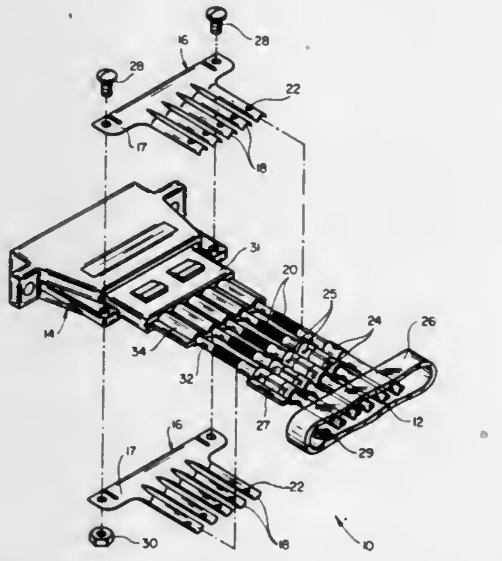
Filed Dec. 5, 1984, Ser. No. 678,924

Int. Cl.⁴ H01R *4/66*

U.S. Cl. 339—143 R **16 Claims**

9. A connection assembly comprising:

a connector wafer having a plurality of center conductor contacts;
a conductive connector shell surrounding a portion of the connector wafer;
a plurality of shielded cables each having at least one center conductor and a shielding braid, the center conductors connected to the respective center conductor contacts;
a mass termination device comprising a pair of complementary busbar-type grounding members, each member having a connector shell contact portion connected to said connector shell, each member having a plurality of laterally extending complementary mating semicircular elements, each of which directly contacts an opposed one of said elements, said elements defining a plurality of openings therebetween, the shielding braid of the respective shielded cables positioned within said openings, the elements being clamped onto the shielding braids to ensure continuity of electromagnetic shielding.



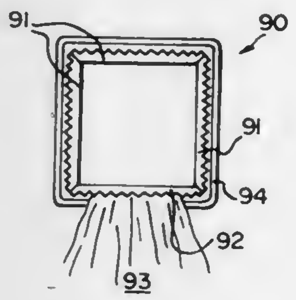
4,615,579
PRISM LIGHT GUIDE LUMINAIRE

Lorne A. Whitehead, Vancouver, Canada, assignor to Canadian Patents & Development Ltd., Ottawa, Canada

Filed Aug. 29, 1983, Ser. No. 527,501

Int. Cl.⁴ G02B *6/00*

U.S. Cl. 350—96.1 **10 Claims**



1. A luminaire for a prism light guide system comprising a longitudinal hollow structure made of transparent dielectric material for receiving along its length a beam of light having a predetermined spatial distribution and divergence angle from the light guide system, said structure having inner and outer surfaces which are in octature for containing said beam of light and wherein at least a portion of one outer surface has a light release mechanism therein such that light having angular distribution of less than an angle θ_{max} is released from the luminaire surface in a controlled manner.

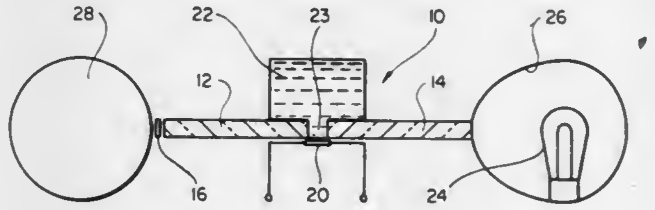
4,615,580
FIBER OPTIC HIGH SPEED PULSE SCANNER

Edward F. Mayer, San Jose, Calif., assignor to Ricoh Company, Ltd., Tokyo, Japan and Ricoh Systems, Inc., San Jose, Calif.

Filed Mar. 5, 1984, Ser. No. 586,027

Int. Cl.⁴ G02B *6/36, 7/26*

U.S. Cl. 350—96.20 **14 Claims**



1. A light switch comprising at least two optical fibers, linearly aligned, and defining a gap between the fibers,
an opaque heat responsive fluid for normally blocking passage of light through said gap,
means for creating a bubble in said fluid in response to heating the fluid,
means for holding said fluid so that a portion thereof rests in said gap,
said heat responsive fluid means including heater element means aligned with said gap for causing said bubble to form in said fluid, said bubble optically connecting said fibers, whereby light is allowed to pass through said aligned fibers of said switch in response to actuation of said heater element.

4,615,581
OPTICAL FIBER CONNECTOR

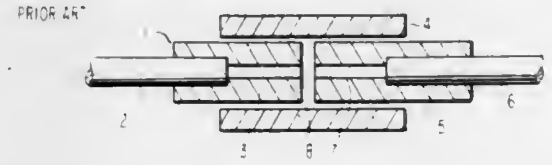
Yoshitaka Morimoto, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1983, Ser. No. 472,306

Claims priority, application Japan, Mar. 5, 1982, 57-34705

Int. Cl.⁴ G02B *6/36, 6/38*

U.S. Cl. 350—96.21 **8 Claims**



1. An optical fiber connector assembly for assembling a pair of optical fibers in an aligned position, comprising:
first and second ferrules, each adapted to be fixed to the end of an optical fiber, each of said first and second ferrules being formed with (1) a first aperture extending a certain distance from a front flat end of said ferrule toward a rear end of said ferrule along a bevel axis inclined at a predetermined angle to a ferrule central axis and (2) a second aperture extending from said rear end of said ferrule; said first aperture being shaped and dimensioned so as to permit a stripped end of a single optical fiber to be positioned within said first aperture, the fiber being so positioned that the fiber end and said front flat end of said ferrule form coplanar surfaces whereby the planar surface of said fiber end forms an angle of less than 90° with respect to an axis of said fiber, which angle is equal to 90° minus said predetermined angle; and
a receptacle body guiding said first and second ferrules, said first and second ferrules being positioned within said receptacle body so that said front flat ends of said first and second ferrules contact each other and axes of said stripped ends of said single optical fibers of said first and second ferrules are on a common axis.

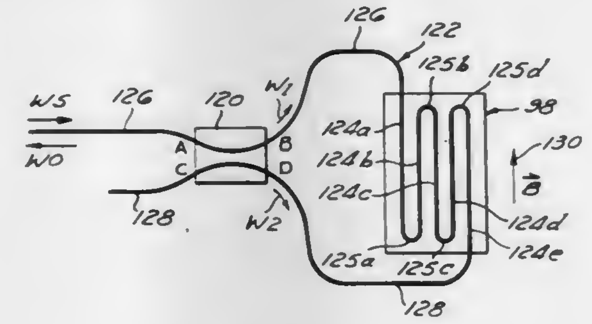
4,615,582
MAGNETO-OPTIC ROTATOR FOR PROVIDING ADDITIVE FARADAY ROTATIONS IN A LOOP OF OPTICAL FIBER

Herve C. Lefevre, and Ralph A. Bergh, both of Palo Alto, Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Nov. 9, 1981, Ser. No. 319,421

Int. Cl.⁴ G02B *6/16*

U.S. Cl. 350—96.29 **67 Claims**



1. A magneto-optic rotator, comprising:

an optical fiber, having two orthogonal polarization modes, said fiber wrapped to form a loop having a first curved portion interposed between first and second straight portions;

means for coupling a lightwave to said fiber; and

means for applying a magnetic field to said fiber, said magnetic field causing the polarization of said lightwave, as it propagates through each of said straight portions, to rotate in accordance with the Faraday effect, this Faraday rotation, as viewed from the perspective of said lightwave as it propagates through said fiber, being in one direction, with respect to a reference axis, for said first straight portion, and in the opposite direction, with respect to said axis, for said second straight portion, said first curved portion having sufficient linear birefringence to cause light in one of said two orthogonal polarization modes to undergo a phase reversal relative to light in the other of said two orthogonal polarization modes to transform the direction of polarization of said lightwave from a first polarization direction to a second polarization direction, as viewed from the perspective of said lightwave, said first and second polarization directions symmetrical about said reference axis so that the Faraday rotation in said first straight portion adds to the Faraday rotation in said second straight portion.

4,615,583
IMAGE FIBERS

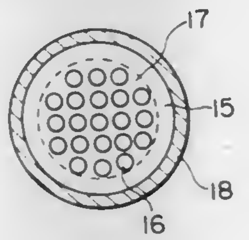
Koichi Tsuno, Osaka, and Kunio Fujiwara, Kanagawa, both of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 22, 1984, Ser. No. 582,518

Claims priority, application Japan, Feb. 22, 1983, 58-26915

Int. Cl.⁴ G02B *6/22*

U.S. Cl. 350—96.33 **4 Claims**



1. An image fiber comprising:

a plurality of optical fiber cores;

a cladding layer provided around said cores and filled into spaces between said cores;

a primary coating covering said cores and said cladding layer, said primary coating containing a light-absorbing substance; and

a quartz sleeve provided between said primary coating and said plurality of optical fiber cores.

4,615,584
OPTICAL MATERIAL

Akira Ohmori, Ibaraki; Nobuyuki Tomihashi, Takatsuki, and Takahiro Kitahara, Settsu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Japan

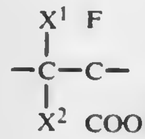
Continuation of Ser. No. 617,480, Jun. 5, 1984, abandoned. This application Nov. 20, 1985, Ser. No. 799,296

Claims priority, application Japan, Jun. 10, 1983, 58-104501; Feb. 13, 1984, 59-25852

Int. Cl.⁴ C08F *210/02;* **G02B** *5/14*

U.S. Cl. 350—96.34 **2 Claims**

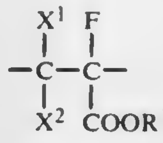
1. In an optical fiber comprising a cladding and a core, the improvement wherein said core consists essentially of a homopolymer which has a structural unit represented by the formula



$$-\overset{X^1}{\underset{X^2}{C}}-\overset{F}{\underset{COOR^1}{C}}- \qquad (a)$$

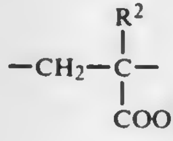
wherein X^1 and X^2 are the same or different and each represent hydrogen or deuterium, and R^1 is a chain hydrocarbon group having 1 to 5 carbon atoms, a cyclic hydrocarbon group having 3 to 6 carbon atoms with or without a lower alkyl group or a deuterium-substituted chain hydrocarbon group having 1 to 5 carbon atoms, said polymer having a refractive index of 1.45 to 1.60 and a softening temperature of 100° to 200° C.

2. In an optical fiber comprising a cladding and a core, the improvement wherein said core consists essentially of a polymer which has at least 5% by weight of a structural unit represented by the formula



$$-\overset{X^1}{\underset{X^2}{C}}-\overset{F}{\underset{COOR^1}{C}}- \qquad (a)$$

wherein X^1 and X^2 are the same or different and each represent hydrogen or deuterium, and R^1 is a chain hydrocarbon group having 1 to 5 carbon atoms, a cyclic hydrocarbon group having 3 to 6 carbon atoms with or without a lower alkyl group or a deuterium-substituted chain hydrocarbon group having 1 to 5 carbon atoms, and not more than 95% by weight of a structural unit represented by the formula



$$-CH_2-\overset{R^2}{\underset{COOR^3}{C}}- \qquad (b)$$

wherein R^2 is hydrogen, deuterium, a chain hydrocarbon group having 1 to 5 carbon atoms or a deuterium-substituted chain hydrocarbon group having 1 to 5 carbon atoms and R^3 is hydrogen, deuterium, a chain hydrocarbon group having 1 to 5 carbon atoms, a cyclic hydrocarbon group having 3 to 6 carbon atoms with or without a lower alkyl group, deuterium-substituted chain hydrocarbon group having 1 to 5 carbon atoms, or a deuterium-substituted cyclic hydrocarbon group having 3 to 6 carbon atoms with or without a lower alkyl group, said copolymer having a refractive index of 1.45 to 1.60 and a softening temperature of 100° to 200° C.

4,615,585
OPTICAL FOCUSING DEVICE

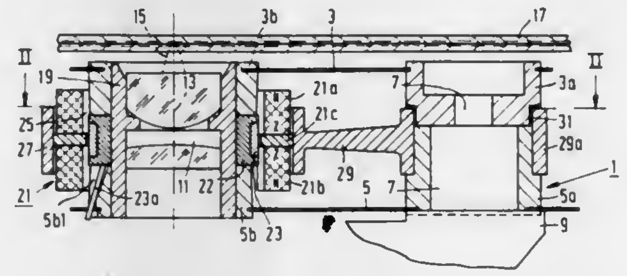
Robert N. J. Van Sluys, and Johannes J. M. Schoenmakers, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 9, 1985, Ser. No. 690,081

Claims priority, application Netherlands, Oct. 8, 1984, 8403052

Int. Cl.⁴ G02B *7/04*

U.S. Cl. 350—255 **5 Claims**



1. An optical device comprising

an axially movable objective with an optical axis,

a frame carrying guide means for the axial movements of the objective, and

an electromagnetic actuating device for the objective, which actuating device comprises first actuating means which are supported resiliently on the frame and which are arranged concentrically around the objective, and second actuating means which are connected to the objective and which are spaced from the first actuating means by an annular gap characterized in that

the first actuating means are in an annular mount which is secured to the frame by a leaf-spring-shaped damping element.

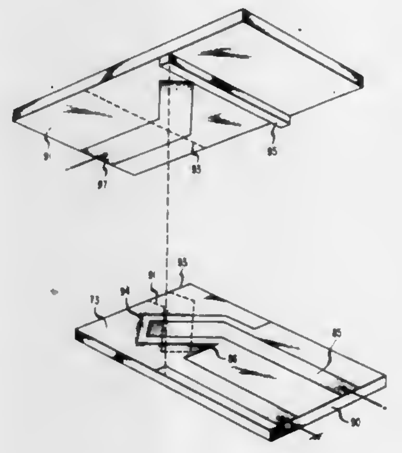
4,615,586
LIQUID CRYSTAL DEVICES

John M. Geary, Scotch Plains; John W. Goodby, Berkeley Heights, and Thomas M. Leslie, Clinton Township, Hunterdon County, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 26, 1985, Ser. No. 727,572

Int. Cl.⁴ G02F *1/13*

U.S. Cl. 350—350 S **7 Claims**



1. A device for affecting incident electromagnetic radiation comprising a ferroelectric liquid crystal material, means for constraining said ferroelectric liquid crystal material to establish a device thickness and means for producing an electric field **CHARACTERIZED IN THAT** said ferroelectric liquid crystal material is stable and comprises at least two components wherein at least one of said components has the opposite twist sense from a second of said components, whereby the pitch of said ferroelectric liquid crystal material is greater than 50 percent of said device thickness and wherein components are chosen so that the spontaneous polarization of said ferroelectric liquid crystal material is greater than 0.2×10^{-8} coul/cm².

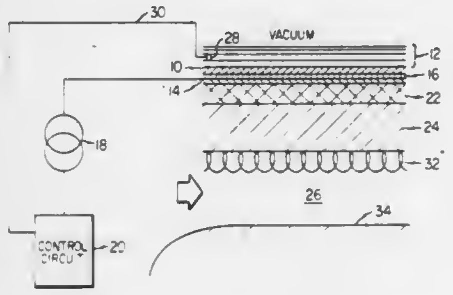
4,615,587
HIGH SPEED ERASING AND REBIASING OF THERMOPTIC THIN FILMS

Nicholas J. Krasutsky, Carrollton, and Mark E. Koch, Dallas, both of Tex., assignors to LTV Aerospace and Defense Company, Dallas, Tex.

Filed Jan. 6, 1983, Ser. No. 455,968

Int. Cl.⁴ G02F *1/01*

U.S. Cl. 350—353 **27 Claims**



1. A method for erasing images written on a thermoptic thin film comprising the steps of:

(a) continuously extracting heat from said thermoptic thin film across a thermal gradient layer by flowing a refrigerated fluid adjacent said thermal gradient layer diametrically opposite said thermoptic thin film to establish a temperature gradient across said thermal gradient layer;

(b) inducing an external heat flow into both said thermoptic thin film and said thermal gradient layer at a rate sufficient to furnish said heat being extracted and to maintain the internal temperature of said thin film at its bias temperature by flowing an electric current through a layer of resistive material disposed between said thermoptic thin film and said thermal gradient layer; and

(c) interrupting said external heat flow into said thin film, thereby causing the temperature of said thermoptic thin film to drop from said bias temperature to a temperature below the hysteresis loop of said thermoptic film such that said thermoptic film is completely erased.

4,615,588
TRANSPARENT ELECTRODE FOR OPTICAL SWITCH

Julius Goldhar, San Ramon, and Mark A. Henesian, Livermore, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 19, 1984, Ser. No. 662,641

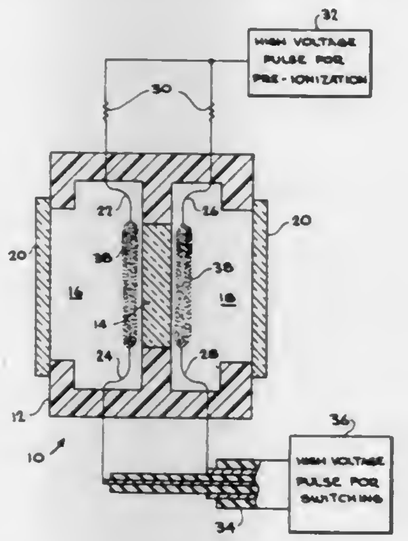
Int. Cl.⁴ G02F *1/03;* **H01J** *15/00*

U.S. Cl. 350—392 **21 Claims**

1. A transparent electrode assembly for applying an electric field through an electro-optic crystal comprising:

a pair of regions of low pressure gas adjacent the crystal at opposing faces through which an optical beam is propagated through the crystal;

means operatively connected to the regions of low pressure gas to ionize the gas to produce an optically transparent conducting plasma adjacent to the faces of the crystal;


32
HIGH VOLTAGE PULSE FOR PRE-IONIZATION
30
27
26
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16
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14
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28
12
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36
HIGH VOLTAGE PULSE FOR SWITCHING
34

means operatively connected to the regions to apply an electrical potential across the pair of plasma regions.

4,615,589
PROJECTION LENS SYSTEM FOR PROJECTION TELEVISION APPARATUS

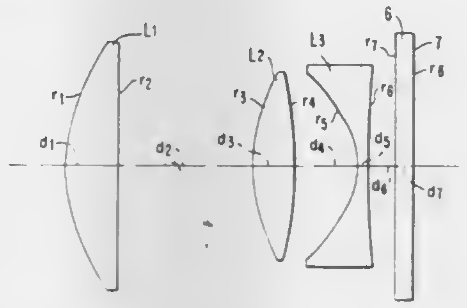
Yoshito Miyatake, Hirakata, and Yoshiharu Yamamoto, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 18, 1984, Ser. No. 662,975

Claims priority, application Japan, Oct. 19, 1983, 58-195637

Int. Cl.⁴ G02B *3/04, 9/12*

U.S. Cl. 350—477 **1 Claim**



1. A projection lens system for a projection television apparatus for projecting on a screen an enlargement of an image displayed on a cathode ray tube, comprising:

a first bi-aspherical lense of positive power, the surface of which is toward the end of the lens system which is to face the screen being a convex surface having a larger curvature than the other surface thereof;

a second double convex lens of glass; and

a third bi-aspherical lens of negative power, the surface of which is toward the screen end being a concave surface having a larger curvature than the other surface thereof;

said first, second and third lens being disposed in the order from the screen end,

said lens system satisfying the following conditions:

(1) $1.3f<f_1<1.9f$

(2) $0.9f<f_2<1.2f$

(3) $0.25f<d_4<0.35f$

(4) $r_1<|r_2|$

(5) $0.4<r_3/|r_4|<0.75$

where f is the total focal length, f_1 and f_2 are the focal lengths of said first and second lenses respectively, d_4 is the distance between said second lens and said third lens, and r_1, r_2, r_3 and r_4 are the radii of vertex curvatures of the first, second, third and fourth lens surfaces from the screen end respectively.

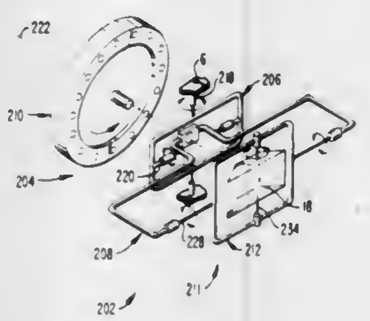
4,615,590
OPTICALLY STABILIZED CAMERA LENS SYSTEM

Luis W. Alvarez, Berkeley, and Arnold J. Schwemin, Danville, both of Calif., assignors to Schwem Instruments, Pleasant Hill, Calif.

Filed Jul. 17, 1984, Ser. No. 631,670

Int. Cl.⁴ G02B *27/64, 7/18*

U.S. Cl. 350—500 **11 Claims**



1. A lens system for use with a camera having an image plane comprising:

a case;

an objective lens forming a first optical element mounted to the case for receipt of light along an optical axis; and

an optical train defining an optical path within the case between the first optical element and the image plane, said optical train comprising:

a second reflecting and displacing optical element positioned along the optical path following the first optical element, said second optical element arranged and adapted to redirect the light entering the second optical element from a first path segment of the optical path to a second, laterally spaced apart path segment of the optical path to form a first image along said second path segment;

means for inertially mounting said second optical element to said case to compensate for small accidental motions of the case so the first image is a stabilized image;

a third cube corner reflecting optical element mounted within said case following the second optical element, said corner cube optical element arranged and adapted to relay light from said second optical element to a third, laterally spaced apart path segment of said optical path;

said optical train arranged and adapted to relay light along said optical path from said third optical element to form a second image at the image plane; and

a zoom relay lens assembly mounted within the case and following the third optical element.

4,615,591
MECHANICAL POSITIONING DEVICE FOR SCIENTIFIC INSTRUMENTS

Ian R. Smith, London, and Robert A. Harvey, East Grinstead, both of England, assignors to VG Instruments Group Limited, United Kingdom

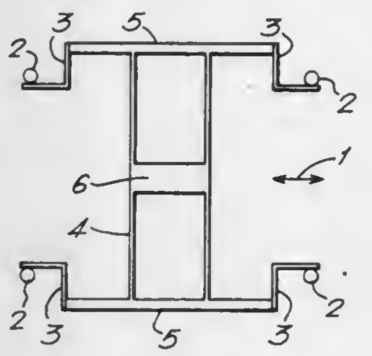
Filed Apr. 13, 1984, Ser. No. 600,146

Claims priority, application United Kingdom, Apr. 13, 1983, 8310011

Int. Cl.⁴ G02B *21/00*

U.S. Cl. 350—507 **20 Claims**

1. A substantially frictionless positioner for guiding the motion of an object along an axis when a displacing force is applied, said positioner comprising a movable object member connected to a supporting means fixed relative to said axis by two matched parallel motion solid hinges disposed on opposite sides of said axis in a common plane, each said parallel motion solid hinge comprising two or more flexible tie members and at least one stretchable spring means which maintains said tie members in tension, said stretchable spring means and said tie members operating to permit motion of said movable object member from a rest position fixed relative to said supporting means along said axis without displacement therefrom and to return said movable object member to said rest position when said displacing force is removed.



4,615,592
COUPLING FOR THE DRIVE OF A MECHANICAL STAGE

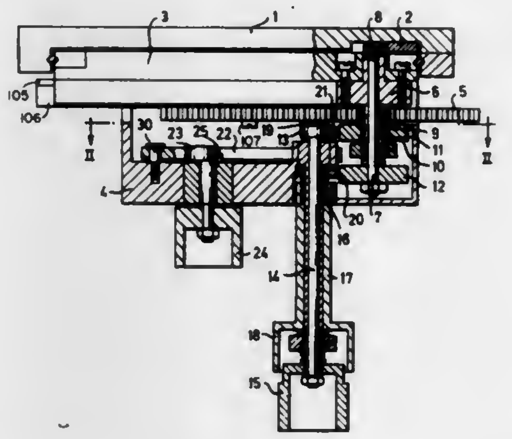
Wolfgang Schob, Oberkochen, and Horst Fischer, Aalen, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Dec. 10, 1984, Ser. No. 680,166

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1983, 3345570

Int. Cl.⁴ G02B *21/26*

U.S. Cl. 350—531 **3 Claims**



1. A mechanical stage comprising a fixed base, a carriage and guide means coacting between said base and carriage for establishing a first rectilineal component of displaceability, a stage table and guide means coating between said carriage and stage table on an alignment orthogonal to said first component for establishing a second component of displaceability, first drive means including (1) a manually operable drive-side friction wheel and (2) a driven-side friction wheel and first pinion, said friction wheels being in spaced relation to each other and mounted on fixed axes of rotation on said carriage, said first drive means further including a rack carried by said base in the direction of said first component and in mesh with said first pinion, second drive means including a manually operable drive-side friction wheel and a driven-side friction wheel and second pinion in spaced relation to each other and mounted on fixed axes of rotation on said carriage, said second drive means further including a rack carried by said table in the direction of said second component and in mesh with said second pinion, and engagement/disengagement means including a pressure roller associated with each of said drive means, both pressure rollers being independently rotatable at spaced locations on a common shaft, and manually operable means engaged to said shaft between said rollers and with at least some tilting freedom for said shaft for engaging/disengaging displacement of both rollers into and out of concurrent contact with the two friction wheels of the respective drive means.

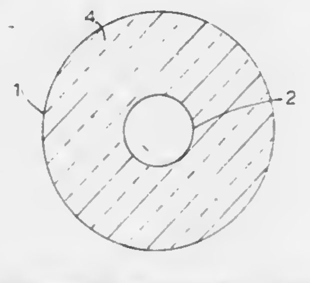
4,615,593
FLUORESCENT NON-OPTICAL CORNEAL COLOR CHANGE DEVICE

Charles W. Neefe, 811 Scurry St., P.O. Box 429, Big Spring, Tex. 79720

Continuation-in-part of Ser. No. 751,484, Jul. 3, 1985. This application Aug. 19, 1985, Ser. No. 766,984

Int. Cl.⁴ G02C *7/04;* **D06P** *5/00*

U.S. Cl. 351—162 **12 Claims**



1. A non-optical cosmetic device for changing the apparent color of the eye substantially the size of the cornea having an open central visual aperture substantially the size of the pupil of the eye the convex surface being tapered to form a thin inner edge surrounding the central pupil aperture and a colored fluorescent pigment within the device emits light of a preselected color when illuminated by daylight.

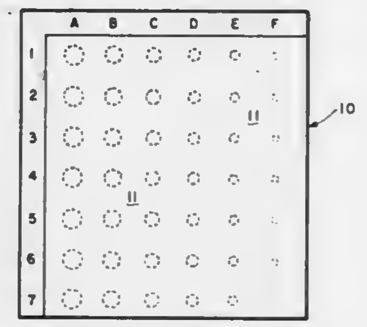
4,615,594
VISION TEST CHART AND METHOD USING GAUSSIANS

Harry L. Task, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 23, 1985, Ser. No. 693,927

Int. Cl.⁴ A61B *3/02*

U.S. Cl. 351—239 **10 Claims**



1. A vision test device for measuring the ability of a subject to perceive contrasts, comprising:

a. a chart for viewing by said subject, said chart having a plurality of visual test shapes systematically organized thereover in a predetermined array on a background having a preselected background luminance level; and

b. each said test shape having a preselected contrast luminance level providing a maximum contrast relative to said background at the center thereof, and providing substantially zero contrast relative to said background at the edges thereof, the luminance level of each said test shape varying radially from its center outwardly to its edges according to a Gaussian distribution of preselected characteristic distribution factor.

4,615,595
FRAME ADDRESSED SPATIAL LIGHT MODULATOR

Larry J. Hornbeck, Van Alstyne, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

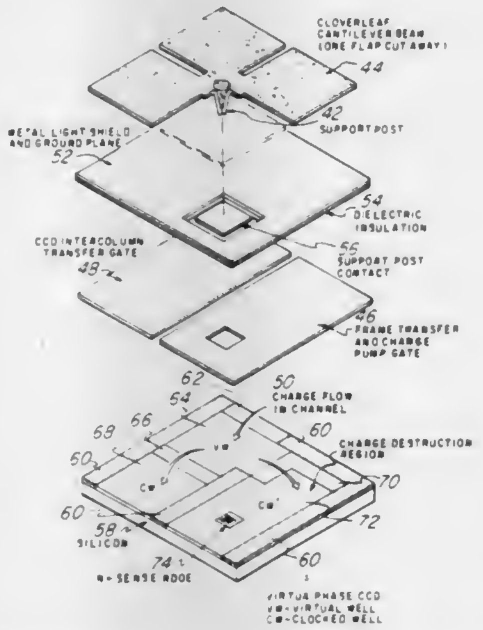
Filed Oct. 10, 1984, Ser. No. 659,387

Int. Cl.⁴ G02F *1/29*

U.S. Cl. 353—122 **18 Claims**

1. A frame addressed spatial light modulator, comprising:

(a) a two dimensional array of pixels on a substrate and arranged into columns, each of said pixels including (i) a column transfer portion, (ii) a sense portion adjacent said column transfer portion, (iii) a conducting layer over at least a part of said portion, and (iv) at least one deflectable reflecting flap connected to said sense portion and over but insulated from said layer;



(b) a column transfer gate for transferring signals from the column transfer portion of a pixel to the column transfer portion of an adjacent pixel in the same column; and

(c) a sense transfer gate for transferring signals from the column transfer portion of a pixel to the sense portion of the same pixel.

4,615,596
APPARATUS FOR PRODUCING PHOTOGRAPHIC PICTURES OF PROJECTION SCREEN IMAGES

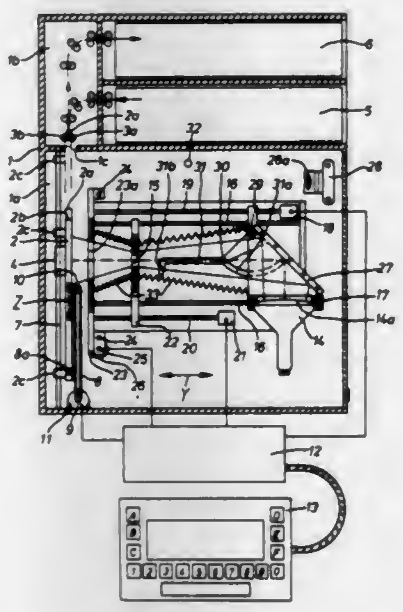
Jürgen Müller, Munich; Heinz Kröbel, Taufkirchen; Michael Reichart, and Günther Schindlbeck, both of Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 7, 1985, Ser. No. 731,479

Claims priority, application Fed. Rep. of Germany, May 22, 1984, 3418960

Int. Cl.⁴ G03B *29/00, 27/46*

U.S. Cl. 354—76 **16 Claims**



1. Apparatus for producing photographs of an image of a monitor, comprising: a housing; a sheet film platform slidably supported in said housing; means for slidably moving sheet film platform in a Z coordinate direction; means for moving the image screen so that it moves perpendicular to the Z coordinate direction, in both an X and a Y coordinate direction; and a movable lens oriented between the image screen and said sheet film platform to provide a focused picture of an image on the image screen on a sheet film on said sheet film platform, said lens being coupled to the image screen in such a way that said lens and the image screen are independently adjustable in the Y direction perpendicular to the Z coordinate plane for adjusting picture size and focusing, and so that said lens and the image screen are slidable together in the X coordinate direction perpendicular to the Y coordinate plane.

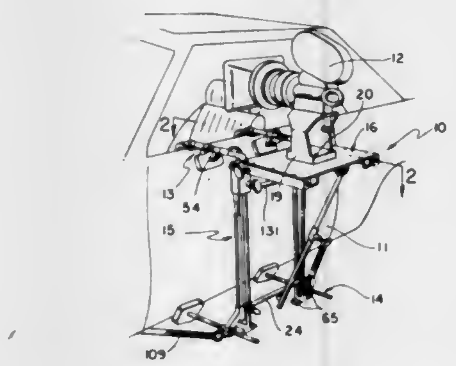
4,615,597
CAMERA MOUNT FOR VEHICLES

John T. Burriss, Woodland Hills, Calif., assignor to Stephen Brooks, III, Tarzana, Calif., a part interest

Filed Jan. 7, 1985, Ser. No. 689,289

Int. Cl.⁴ G03B *17/00*

U.S. Cl. 354—293 **28 Claims**



1. A camera mount comprising:

two tubular guides secured together in parallel spaced relation;

means for mounting said guides at a side of a vehicle in essentially vertically extending positions and spaced horizontally apart;

said mounting means including upper vehicle contacting means connected to upper portions of said vertically extending guides and adapted to engage and be located by a first portion of the vehicle;

two slides mounted on said two guides respectively and guided thereby for upward and downward adjusting movement relative thereto;

a camera support carried by and movable upwardly and downwardly with said two slides and adapted to be attached to and carry a camera;

two elongated members connected at their upper ends to said guides and projecting downwardly generally parallel thereto;

two lower structures adjustable upwardly and downwardly relative to said guides and members;

said lower structures including two elements projecting upwardly into and telescopically and slidably interfitting with said two tubular guides respectively for upward and downward sliding adjustment relative thereto, and two tubular members connected at lower ends to said two elements respectively and projecting upwardly about said two elongated members respectively and slidably and telescopically adjustable upwardly and downwardly relative thereto with said two elements; and

two additional slides mounted on said two tubular members respectively of said lower structures and guided thereby for upward and downward sliding adjustment relative thereto;

said mounting means including lower vehicle contacting means connected to said two additional slides and adjustable upwardly and downwardly therewith and adapted to engage and be located by the vehicle at a location spaced beneath said upper vehicle contacting means.

4,615,598
METHOD OF EXTRACTING AUTOMATIC-FOCUSING INFORMATION

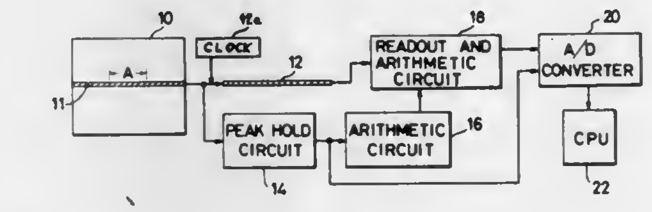
Shinichirou Koshiishi, 7-8-547 Higashihirayama 1-chome, Hinoshi, Tokyo, Japan

Filed Jun. 14, 1985, Ser. No. 745,298

Claims priority, application Japan, Jun. 20, 1984, 59-126817

Int. Cl.⁴ G03B *3/00;* H04N *5/38*

U.S. Cl. 354—402 **8 Claims**



1. A method of extracting automatic-focusing information, comprising:

(a) storing in a delay line at least a portion of one line of an output signal from image pickup means to thereby form a stored signal readable out of said delay line;

(b) detecting maximum and minimum values of said output signal;

(c) computing a coefficient for shifting said minimum value to a least significant bit in an A/D converter and said maximum value to a most significant bit in the A/D converter;

(d) reading the stored signal out of said delay line to thereby provide a read signal;

(e) amplifying the read signal by said coefficient to thereby provide an amplified signal; and

(f) converting the amplified signal to a digital signal representative of automatic-focusing information.

4,615,599
FLASH PHOTOGRAPHING SYSTEM

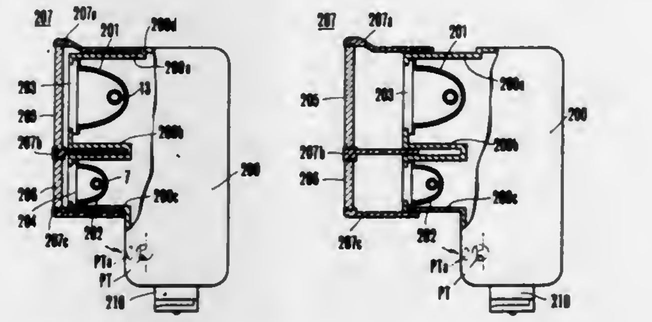
Hiroyuki Kataoka, Saitama; Masanori Yamada, and Nobuyuki Suzuki, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 636,851, Aug. 1, 1984, abandoned, which is a division of Ser. No. 444,214, Nov. 24, 1982, Pat. No. 4,501,481. This application Apr. 15, 1985, Ser. No. 723,331

Claims priority, application Japan, Dec. 4, 1981, 56-196031; Dec. 21, 1981, 56-207685; Jan. 9, 1982, 57-1904

Int. Cl.⁴ G03B *15/03*

U.S. Cl. 354—415 **8 Claims**



1. A flash device, comprising:

(a) a combination of pre-flashing means and main flashing means disposed in front of a flash device body;

(b) a light sensitive element arranged to receive a reflection light which results from flashing by said flashing means and comes from an object to be photographed; and

(c) a panel arranged in front of the flash device body to define the projection light characteristics of flash lights projected from said pre- and main flashing means to the object, said panel being slidable relative to the front of the flash device body and said projection light characteristics of said pre-flashing means and said main flashing means being arranged to be variable with the slided position of said panel simultaneously and in the same manner.

4,615,600
CAMERA OF THE AUTOMATIC APERTURE CONTROL TYPE

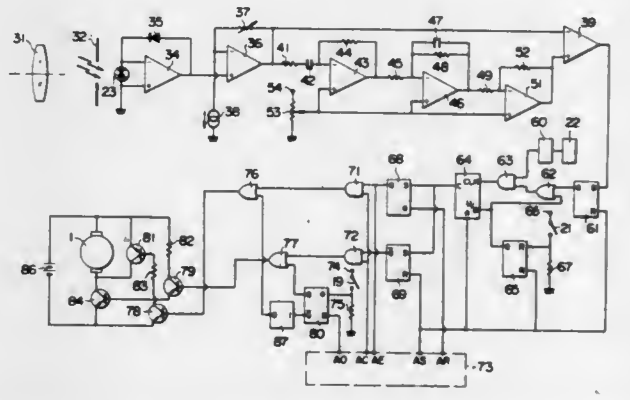
Yukio Nakajima, Kanagawa; Tatsuji Higuchi, Akikawa, and Yasuo Asakura, Hachioji, all of Japan, assignors to Olympus Optical, Co. Ltd., Tokyo, Japan

Filed Nov. 5, 1984, Ser. No. 668,416

Claims priority, application Japan, Jan. 13, 1984, 59-4573

Int. Cl.⁴ G03B *7/085*

U.S. Cl. 354—451 **13 Claims**



1. A camera of the automatic aperture control type comprising:

stop-down means which permits a diaphragm provided on an interchangable taking lens barrel which is initially stopped-down from its open aperture to its minimum aperture in cooperation with a shutter release operation and thereafter opened from said minimum aperture towards said open aperture;

electronic means for generating a first signal representative of the changing diaphragm aperture responsive to the stop-down operation of said stop-down means and a second signal representative of the changing diaphragm aperture responsive to the opening operation of said stop-down means;

a photometric circuit which measures the light of object to be photographed passing through said diaphragm and produces information on the measured light quantity;

means responsive to the photometric circuit for generating a variation signal representing a variation in the diaphragm aperture;

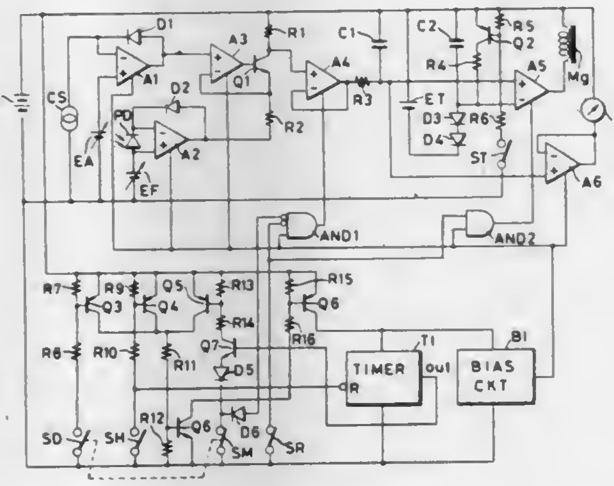
an aperture decision circuit responsive to the variation signal and the measured light quantity information for generating an aperture selection signal when the light quantity being measured and the diaphragm aperture variation signal reach a predetermined relationship;

storage means responsive to the aperture selection signal for storing said first signal which represents the position occupied by said stop-down means when said diaphragm assumes said diaphragm aperture to be set during the stop-down operation; and

stop means responsive to said stored first signal and said secod signal reaching a predetermined relationship for stopping said stop-down means at a position occupied by said stop-down means when said diaphragm resumes the position represented by the first signal stored in said storage means, said stop means operating during said opening operation of said stop-down means towards said open aperture.

4,615,601
EXPOSURE CONTROL APPARATUS OF A CAMERA

Yuji Okubo, Omiya, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan
Filed Dec. 24, 1984, Ser. No. 685,301
Claims priority, application Japan, Dec. 27, 1983, 58-248348
Int. Cl.^{4} G03B *7/089*
U.S. Cl. 354—460 **4 Claims**

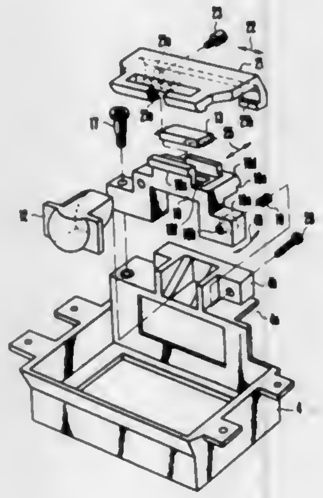


1. A camera having a photographing operation member movable between first, second and third positions, photometric means for generating a photometric output by measuring brightness of an object when said photographing operation member is located in the second position, and control means for controlling an exposure when said photographing operation member is located in the third position, wherein said photometric means and said control means are disabled when said photographing operation member is located in the first position, said camera comprising:
- (a) a memory operation member having a first position and a second position;
- (b) memory means;
- (c) storing means for storing the photometric output in said memory means in response to placement of said memory operation member in its second position;
- (d) said exposure controlling means, when said memory operation member is located in its second position, controlling the exposure in accordance with the content of said memory means in response to placement of said photographing operation member in its third position;
- (e) said memory means holding the stored photometric output when said photographing operation member is located in its first position or its third position; and
- (f) said storing means replacing the content of said memory means when said memory operation member is in its first position and said photographing operation member is placed in its second position.

4,615,602
APPARATUS FOR ADJUSTING THE POSITION OF A LIGHT SENSING ELEMENT IN A CAMERA

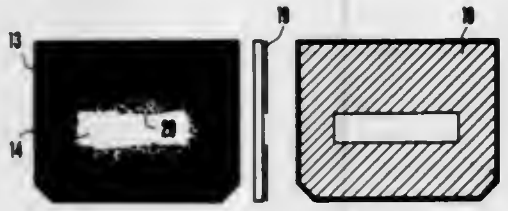
Masaharu Eguchi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 13, 1985, Ser. No. 701,093
Claims priority, application Japan, Feb. 13, 1984, 59-18899[U]
Int. Cl.^{4} G03B *7/099*
U.S. Cl. 354—478 **10 Claims**

1. An apparatus for adjusting the position of a light sensing element in a single lens reflex camera having a pentagonal prism into which a light beam is conducted through a phototaking optical system and a light sensing element for receiving the output light beam being emitted from the pentagonal prism, comprising:
- (a) a light sensing plane defined by the light sensing element, said light sensing plane extending in a direction perpendicular to the optical axis of the light beam emitted from the pentagonal prism;
- (b) a first holding member for holdng the light sensing element in a holding plane of the light sensing element;
- (c) a second holding member for holding said first holding member, said second holding member holding said first holding member so as to be movable in a linear direction in its holding plane;
- (d) said second holder member having first and second ends, said first end supported on a shaft connected to holding means for holding the pentagonal prism, and first adjusting means for effecting an adjusting movement of said second holding nember, said first adjusting means provided at said second end on a side facing a rear plane of the pentagonal prism; and
- (e) second adjusting means provided at a side of the first holding member facing a rear plane of the pentagonal prism, said second adjusting means effecting the movement of said first holding member over said second holding member.



4,615,603
SINGLE LENS REFLEX CAMERA

Nozomu Kitagishi, Kanagawa; Susumu Itoh, Tokyo, and Sayoko Amano, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 28, 1984, Ser. No. 656,170
Claims priority, application Japan, Oct. 5, 1983, 58-186254
Int. Cl.^{4} G03B *7/099, 19/12*
U.S. Cl. 354—479 **12 Claims**

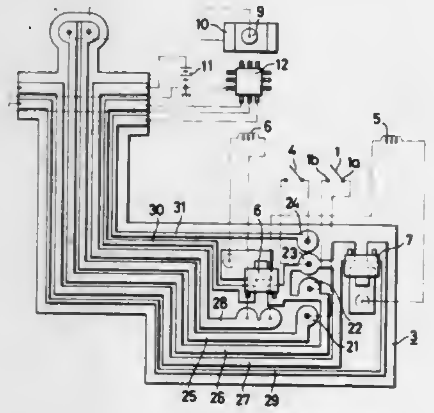


1. A light receiving device for a single lens reflex camera comprising:
- (a) a photographic lens;
- (b) a movable mirror for reflecting the passed light of said photographic lens, said movable mirror having its central portion made half-mirrored, and its environment portion made totally reflective with a boundary portion between the central and environment portion being provided with a fine pattern of which the area ratio of the total reflection parts to the half-mirrored parts gradually varies;
- (c) a mask provided behind the back surface of said movable mirror, said mask shutting off the permeating light from the fine pattern and allowing the permeating light from the half-mirrored portion to pass therethrough; and

- (d) a light receiver positioned to receive the passed light through said movable mirror and said mask.

4,615,604
CIRCUIT BOARD FOR ELECTRICAL INSTRUMENT CONTROL

Akira Yamada, Tokyo, Japan, assignor to Canon Kabushiki Kaisha
Filed Apr. 16, 1985, Ser. No. 723,651
Claims priority, application Japan, Apr. 16, 1984, 59-56461[U]
Int. Cl.^{4} G03B *7/00, 15/05;* **H05K** *1/00*
U.S. Cl. 354—485 **4 Claims**

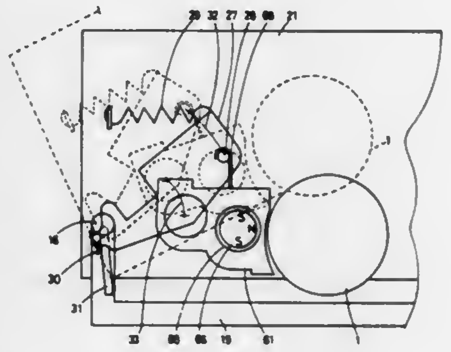


1. An electrical instrument comprising:
high voltage forming means;
conductive means connectable to an electrical power source;
an electrical circuit controlled by a fine signal; and
a circuit board including;
- (a) a first pattern for receiving a high voltage from said high voltage forming means;
- (b) a pattern for connection to ground and arranged along one side of said first pattern on said board;
- (c) an electrical power source pattern connected to said conductive means for receiving electric power and arranged along the other side of said first pattern so that said pattern for connection to ground and said electric power source pattern substantially surround said first pattern; and
- (d) a second pattern on said circuit board connected to said electrical circuit for transmission of the fine signal, said second pattern being arranged outside of said pattern for connection to ground and said electrical power source pattern.

4,615,605
SEPARATION MECHANISM OF DEVELOPING DEVICE FROM PHOTORECEPTOR IN DIVIDING ELECTROPHOTOGRAPHIC COPYING MACHINE INTO TWO SECTIONS

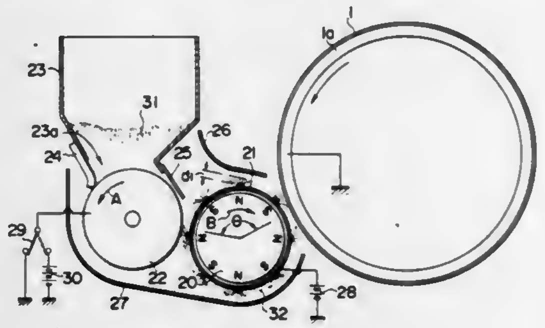
Hiroshi Kida; Tutomu Kato, both of Yamatokoriyama, and Masaru Nishijima, Hirakata, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Feb. 12, 1985, Ser. No. 700,966
Claims priority, application Japan, Feb. 14, 1984, 59-27872
Int. Cl.^{4} G03G *15/00*
U.S. Cl. 355—3 R **2 Claims**

1. An electrophotographic copying machine which is separable into upper and lower portions comprising:
photoreceptor means for forming an electrostatic latent image thereon;
developing means for developing the latent image into a toner image, said developing means being provided with a follower;
said photoreceptor means and said developing means being positioned in the upper portion of said copying machine;
supporting means for rotatably supporting said developing means;
a moving angle bar rotatably supported by the supporting means, said moving angle bar being provided with a moving member;
a guide angle bar mounted on the lower portion of the copying machine; and
a guide means provided at the end of the moving angle bar for engaging with the guide angle bar whereby when the upper portion is closed on the lower portion, the developing means faces the photoreceptor and the developing means is prevented from rotating and when the upper portion rotates to an open position, the developing means rotates and separates from the photoreceptor means using the weight of said developing means, said moving member of the moving angle bar rotating in a path corresponding to the follower of the developing means.



4,615,606
APPARATUS FOR DEVELOPING ELECTROSTATIC LATENT IMAGE

Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Nov. 2, 1983, Ser. No. 547,942
Claims priority, application Japan, Dec. 17, 1982, 57-220144; Dec. 17, 1982, 57-220145; Dec. 20, 1982, 57-221798; Dec. 20, 1982, 57-221799
Int. Cl.^{4} G03G *15/00*
U.S. Cl. 355—3 DD **12 Claims**



1. An apparatus for developing an electrostatic latent image formed on a charge retaining member and including magnetic conveying means having a magnet roller and a non-magnetic sleeve, the magnetic conveying means applying a magnetic two-component developer including a toner and a magnetic carrier to the latent image to form a toner image by conveying the developer to the latent image;
characterized in that developer is adapted to be retained on the non-magnetic sleeve against removal under a magnetic influence of the magnet roller and is conveyed by a rotation of either the magnet roller or the non-magnetic sleeve or both while maintaining a turt thereof;
further comprising a toner hopper for containing the toner and having a bottom opening;
a toner supply roller rotatably disposed and located opposite to the bottom opening of the hopper and the non-magnetic sleeve;

means for creating an electrical field between said supply roller and said sleeve; and

means for forming a thin uniform layer of toner on the surface of the toner supply roller while electrically charging the toner, the tuft of the conveyed developer being brought into contact with the thin uniform toner layer on the toner supply roller to transfer only the electrically charged toner into the developer, whereupon the developer and the toner are mixed and agitated together on the non-magnetic sleeve.

4,615,607
DUAL-COLOR COPIER

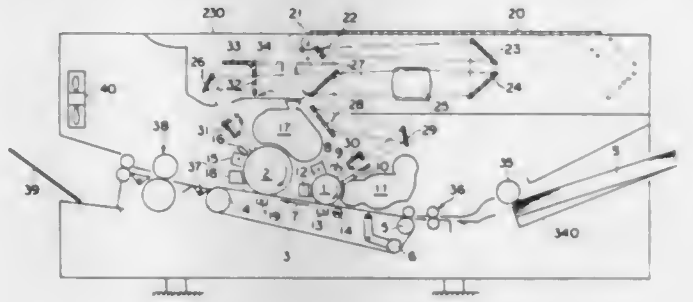
Nobuyuki Yanagawa, Chigasaki; Tadao Koike, Tokyo; Toyoji Ishikawa, Kawasaki; Katsuo Sakai, and Hideya Furuta, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed May 21, 1984, Ser. No. 612,461

Claims priority, application Japan, May 20, 1983, 58-87511

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—3 R **8 Claims**



1. An imaging apparatus comprising:

an original holder for holding thereon an original;

first image forming means including a first photoconductive layer having sensitivity to light of a first selected color and second photoconductive layer having sensitivity to light of a second selected color which is different from said first selected color, said first imaging forming means including a first drum having a first peripheral surface on which said first and second photoconductive layers are formed overlying one on top of the other;

second image forming means including a third photoconductive layer having sensitivity at least to light of a first selected color, said second image forming means including a second drum having a second peripheral surface on which said third photoconductive layer is formed;

a first optical system for leading a light image from said original to said first imaging forming means thereby forming a first electrostatic latent image on said first image forming means;

a second optical system for leading said light image from said original to said second image forming means thereby forming a second electrostatic latent image on said second image forming means;

first developing means for developing said first latent image by applying toner of said first selected color;

second developing means for developing said first latent image by applying toner of said second selected color;

transporting means for transporting a transfer medium along a predetermined path along which said first and second image forming means are disposed;

first transferring means for transferring a toner image formed by said first developing means to said transfer medium; and

second transferring means for transferring a toner image formed by said second developing means to said transfer medium; and

such that said transporting means includes a transfer belt which is in rolling contact with said first drum but not in rolling contact with said second drum.

4,615,608
DEVELOPING APPARATUS

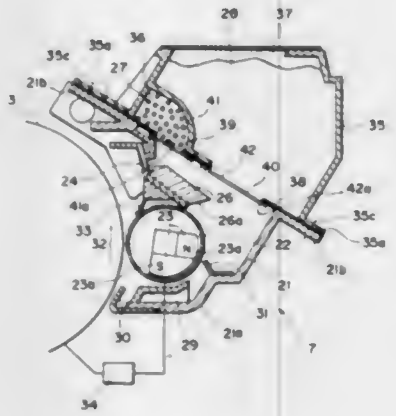
Morikazu Mizutani, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1984, Ser. No. 663,484

Claims priority, application Japan, Oct. 31, 1983, 58-204332; Feb. 8, 1984, 59-21086; Oct. 12, 1984, 59-213365; Oct. 12, 1984, 59-213366

Int. Cl.⁴ G03G *15/06*

U.S. Cl. 355—3 DD **19 Claims**



1. A developing apparatus for developing a latent image formed on a latent image bearing member, comprising:

a developer carrying member, provided at an opening of a developer container, for carrying thereon a developer to a developing position;

a developer storing container, provided at an upper portion of the developer container, and having a first developer storing portion and a second developer storing portion, said first and second storing portions being provided with first and second openings, respectively, said developer storing container having a bottom plate and said first and second openings being formed in said bottom plate in such a manner that they are juxtaposed; and

first and second sealing members for sealing said first and said second openings of said first storing portion and the second storing portion, respectively, wherein said first and second sealing members are capable of being pulled substantially in the same direction so as to open first said first opening and then said second opening.

4,615,609
IMAGE FORMING APPARATUS INCLUDING TURN-ON AND TURN-OFF SETTING MEANS

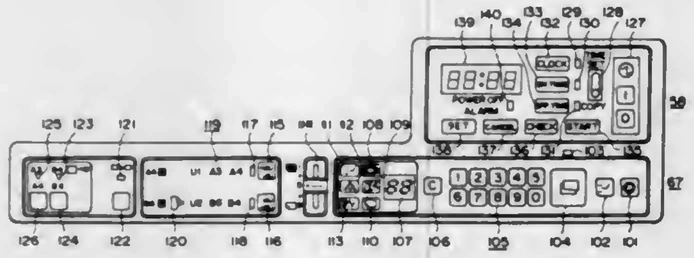
Toshio Honma, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1983, Ser. No. 495,680

Claims priority, application Japan, May 24, 1982, 57-87528; May 24, 1982, 57-87529; May 24, 1982, 57-87530; May 24, 1982, 57-87531; May 24, 1982, 57-87532

Int. Cl.⁴ G03G *21/00*

U.S. Cl. 355—14 R **29 Claims**



1. An image forming apparatus comprising:

image forming means for forming an image;

setting means for setting a turn-on or turn-off time of a power supply or the like of said image forming means; and

control means for turning on or off said power supply or the like in accordance with the time set by said setting means;

said control means inhibiting the setting by said setting means when a turn-on or turn-off period of said power supply or the like is shorter than a predetermined time period.

4,615,610
COPYING APPARATUS HAVING ONE SET-TWO COPY MODE

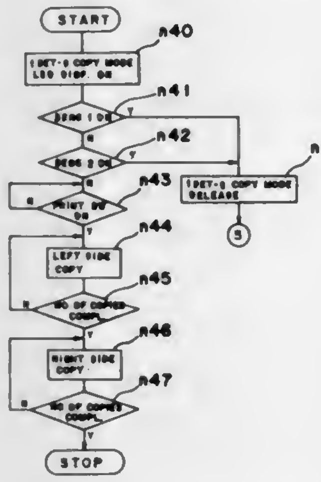
Shoichiro Yoshiura, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 14, 1985, Ser. No. 733,799

Claims priority, application Japan, May 14, 1984, 59-98135; May 14, 1984, 59-98140

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—14 R **3 Claims**



1. A copying apparatus provided with one set-two copy mode for copying original documents placed on respective two original document setting areas of an original document platform, according to each of the original documents, in addition to ordinary one set-one copy mode, said copying apparatus comprising:

a sensor means for detecting the original documents placed on said original document platform;

an original document set state judging means for judging whether or not the original documents are set on both of said original document setting areas based on an output of said detecting sensor means during setting of the one set-two copy mode; and

an ordinary mode restoring means for restoring the ordinary one set-one copy mode by releasing the one set-two copy mode upon determination that the original documents are not set on both of the original document setting areas by said original document set state judging means.

4,615,611
VARIABLE MAGNIFICATION COPYING MACHINE

Shoichiro Yoshiura, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 1, 1985, Ser. No. 761,522

Claims priority, application Japan, Aug. 6, 1984, 59-166854

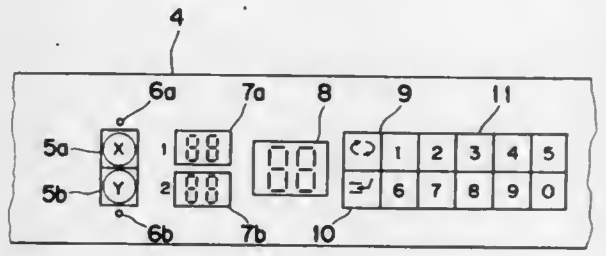
Int. Cl.⁴ G03G *15/00*; G03B *27/52*

U.S. Cl. 355—14 R **1 Claim**

1. A variable magnification copying machine including means for detecting or inputting original sheet size, means for detecting or inputting transfer paper sheet size, and calculating means for calculating a conversion magnification from the sizes of the original sheet and the transfer paper sheet detected or inputted, wherein the improvement comprises:

input means for inputting margin defining ranges to be formed in the transfer paper sheet; and

calculating means for calculating a transfer available range to the transfer paper sheet from numerical values inputted by said margin input means, whereby a conversion magnification is calculated by inputting said calculation result into said conversion magnification calculating means as a transfer paper sheet size, and whereby a starting timing for supplying the transfer paper sheets is controlled in compliance with margin defining values in a lateral direction.



4,615,612
COLOR IMAGE FORMING APPARATUS

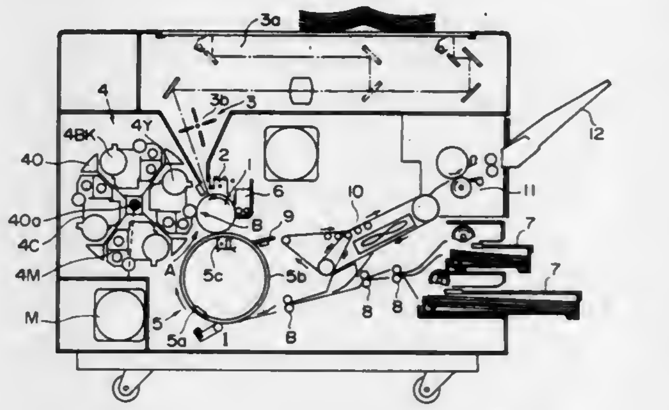
Akio Ohno; Yasushi Murayama; Kazuhiko Hirooka, and Kimiyoshi Hayashi, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1985, Ser. No. 739,838

Claims priority, application Japan, Jun. 6, 1984, 59-116159

Int. Cl.⁴ G03G *15/06*

U.S. Cl. 355—14 D **5 Claims**



1. A color image forming apparatus wherein a plurality of developing units each containing a selected color of developer are supported on a supporting member, and a desired one of the plurality of the developing units is revolved to a predetermined developing station to develop a latent image corresponding to the desired one to provide a color image, said apparatus comprising:

driving means for revolving the developing unit;

detecting means for detecting at least one of a speed of revolution of the developing unit and a position of the developing unit; and

control means for controlling an output of said driving means, said control means comparing a datum provided by said detecting means with a datum of a predetermined target movement scheme and controlling the output of said driving means to correct the difference therebetween.

4,615,613
CHARGE PARTICLE REMOVAL DEVICE

Paul A. Garsin, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 5, 1985, Ser. No. 720,443

Int. Cl.⁴ G03G *21/00*

U.S. Cl. 355—15 **7 Claims**

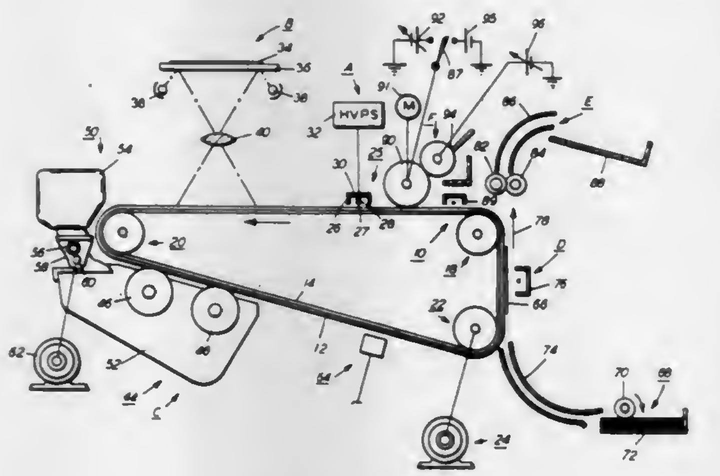
1. Method of removing toner from a charge retentive surface with areas having different charge levels, said method comprising the steps of:

moving a charge retentive surface having successive document areas and interdocument areas thereon in an endless path;

contacting said charge retentive surface with a cleaning structure;

electrically biasing said cleaning structure at a first predetermined bias level while said cleaning structure is in contact with a document area of said charge retentive surface; and

electrically biasing said cleaning structure to a second predetermined bias level while said cleaning structure is in contact with an interdocument area of said charge retentive surface.



4,615,614
OPTICAL EXPOSURE APPARATUS

Shuji Sugiyama, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

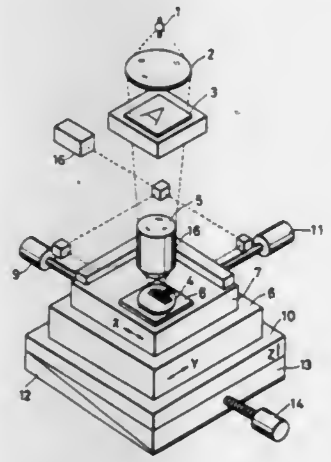
PCT No. PCT/JP84/00107, § 371 Date Nov. 14, 1984, § 102(e) Date Nov. 14, 1984

PCT Filed Mar. 16, 1984, Ser. No. 671,218

Claims priority, application Japan, Mar. 16, 1983, 58-42254

Int. Cl.⁴ G03B *27/42*

U.S. Cl. 355—53 **8 Claims**



1. An optical exposure apparatus comprising:

means for arranging an exposure surface on a plane, the exposure surface being provided with a plurality of regions to be exposed,

means for displacing the exposure surface so as to selectively arrange one of a plurality of regions to be exposed at a predetermined position on the plane,

means for irradiating a pattern with light,

means for projecting light obtained from the pattern onto the predetermined position so as to form an image of the pattern on one of the plurality of regions to be exposed which has been arranged at the predetermined position,

a plurality of gas delivering holes arranged around the optical axis of the light projected onto the predetermined position so as to deliver a gas toward different positions on the exposure surface through the plurality of gas delivering holes,

a plurality of detectors corresponding to the plurality of gas delivering holes, with each of the detectors detecting a change in flow rate of the gas delivered through the corresponding gas delivering hole based on a change in position of the exposure surface in a direction of the optical axis of the light projected onto the predetermined position,

means for selecting one of the plurality of gas delivering holes according to the position of one of the plurality of regions to be exposed which is to be arranged next at the predetermined position, whereby the detected change in flow rate corresponding to the selected gas delivering hole is selectively determined,

means for driving the exposure surface displacing means so as to subject the region to be exposed which is to be arranged next at the predetermined position to the gas delivered through the selected gas delivering hole, and

means for displacing the exposure surface in the direction of the optical axis on the basis of the selectively determined detected change in flow rate so as to compensate for the change in position of the exposure surface.

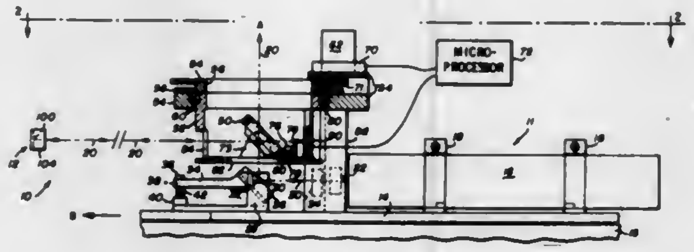
4,615,615
LASER POSITIONING SYSTEM

Michael Krolak, Los Gatos, and Michael R. Biche, Newark, both of Calif., assignors to Flexible Manufacturing Systems, Inc., Los Gatos, Calif.

Filed Sep. 27, 1984, Ser. No. 655,341

Int. Cl.⁴ G01C *3/10*

U.S. Cl. 356—1 **10 Claims**



1. An optical positional sensing apparatus comprising:

a mobile assembly for mounting about a mobile unit adapted for shuttling between two locations;

a fixed assembly for mounting about a workstation to which said mobile unit will shuttle;

light source means for providing to the mobile assembly at least three discrete, spaced apart, light beams;

photodetection means mounted on the mobile assembly for detecting the angular position of each of said light beams relative to a central axis of said mobile assembly;

rotary means, mechanically coupled to the photodetection means for sweeping the photodetection means about an arc relative to the central axis of the mobile assembly, the rotary means including an encoder coupled thereto for sensing the angular position of the photodetection means relative to the central axis of the mobile assembly; and

electronic circuit means, electrically coupled to the photodetection means and to said encoder for receiving data therefrom, the electronic circuit means adapted for interpreting said data.

4,615,616
MEASURING DISTANCE APPARATUS

Yasuhiko Shiomi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1984, Ser. No. 658,789

Claims priority, application Japan, Oct. 14, 1983, 58-192083

Int. Cl.⁴ G03C *3/10;* **G03B** *3/00*

U.S. Cl. 356—1 **10 Claims**

1. A measuring distance apparatus for measuring a distance to an object in accordance with an incident position of a reflected light of a signal light projected to the object, comprising:

(A) projection means for projecting the signal light;

(B) photosensor means for sensing the reflected light of said signal light, including

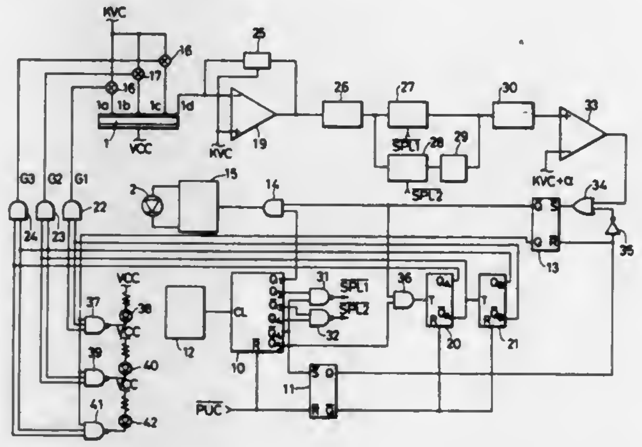
(a) a plurality of photoelectric converters having first electrodes thereof connected to a first range of potential, and

(b) a resistive wire for interconnecting second electrodes of said photoelectric converters;

(C) a conductive wire for connecting at least one portion of said resistive wire to a second range of potential different from said first range of potential; said conductive wire having a lower resistance than that of said resistive wire,

(D) switching means for connecting and disconnecting said conductive wire; and

(E) detection means connected to said resistive wire at a farther or nearer point than an incident position of a signal light varying with the distance to said object, from the point of said resistive wire to which said conductive wire is connected, for detecting an output status at said point, said detection means detecting the incident position of said signal light from a change of the output status due to the switching of said switching means.



4,615,617
PULSE DELAY MEASUREMENT APPARATUS

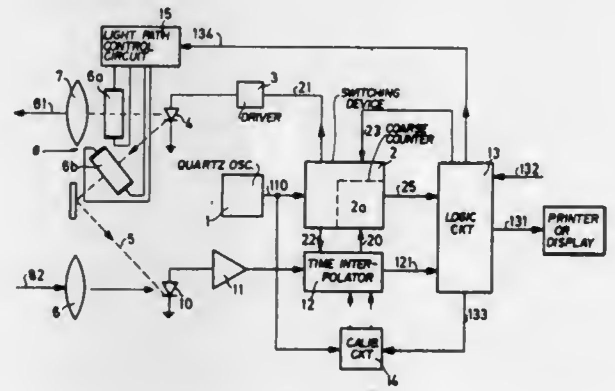
Peter Frank, Berneck, and Kurt Giger, Heerbrugg, both of Switzerland, assignors to Wild Heerbrugg Aktiengesellschaft, Switzerland

Filed Apr. 26, 1983, Ser. No. 488,767

Claims priority, application Switzerland, May 6, 1982, 2814/82

Int. Cl.⁴ G01C *3/08*

U.S. Cl. 356—5 **15 Claims**



1. An apparatus to measure distance by measuring the time of propagation of light pulses, comprising a source of clock pulses of known period, a light pulse transmitter, a measurement path and a calibration path for the light pulses from said pulse transmitter, an optical receiver to receive light pulses traversing both said measurement path and said calibration path, means to direct said light pulses from said light pulse transmitter to either said measurement path or said calibration path; logic means interconnecting and controlling the operation of said measurement path, said calibration path, said light pulse transmitter, said light pulse direction means, and output means; and means to precisely synchronize a predetermined portion of a clock pulse with a signal from said logic means to said light pulse transmitter commanding said light pulse transmitter to emit a pulse of light, wherein said logic means includes a switching device and a calibrating circuit connected to the source of clock pulses, means to connect one of the outputs of the switching circuit to said light pulse transmitter, a counter for the total period of the clock pulses received from said source by said optical receiver, an interpolator having one input connected to the optical receiver and further inputs thereof connected to said calibration circuit, and means to connect the outputs of the interpolator to said counter.

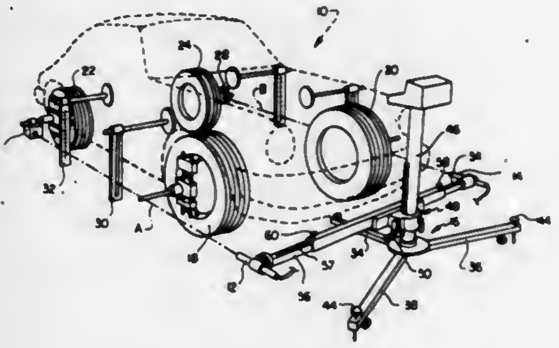
4,615,618
APPARATUS FOR DETERMINING THE RELATIONSHIP OF VEHICLE THRUST LINE, AND BODY CENTER LINE FOR USE IN WHEEL ALIGNMENT

Michael P. Bailey; Raymond G. Brooks; James R. Frank, Jr., all of Ravenna; Justin J. J. Johnson, North Ridgeville, and Mark B. Maholm, Uniontown, all of Ohio, assignors to JVI Laser Systems Inc., Ravenna, Ohio

Filed Jun. 21, 1984, Ser. No. 622,840

Int. Cl.⁴ G01B *11/26, 5/24, 5/25*

U.S. Cl. 356—152 **30 Claims**



1. Apparatus for use in determining the relationship between a vehicle's thrust line and its body center line wherein said vehicle has at least one steerable wheel spaced longitudinally from a pair of laterally spaced nonsteerable wheels and comprising:

movable light source means located independently of and remote from said vehicle for establishing a pair of parallel reference light beams extending from a position located forwardly of said steerable wheel and directed rearwardly alongside and spaced outwardly from said nonsteerable wheels and wherein said light beams are spaced apart in parallel planes sufficient to permit said vehicle to be positioned substantially midway therebetween;

means for determining the thrust line of a said vehicle including a pair of sensor means each adapted to be mounted to one of said nonsteerable wheels and being positioned outwardly therefrom to intercept one of said reference beams, each said sensor means including detector means responsive to a said light beam for providing an output indication indicative of the location at which the beam impinges upon the detector means, and measurement means associated with both of said detector means for providing a measured output representative of the vehicle's thrust line location, and

means for determining the vehicle's body center line, including a pair of forward body side targets each having an aperture therein and adapted to be removably mounted to like body side locations on opposite sides of the vehicle, the body targets being positioned outwardly from the vehicle's body sides by like amounts to permit the reference light beams to pass therethrough and a pair of rear targets adapted to be removably mounted to like body side locations on opposite sides of the vehicle but longitudinally spaced along and rearwardly from said front targets and being spaced outwardly from the vehicle's body sides by like amounts sufficient to intercept the light beams whereby to the extent that said movable light source must be displaced in a transverse direction from its thrust line determining position in order for the light beams to impinge at like locations on the rear body side targets is representative of the variance between body center line and the thrust line.

4,615,619

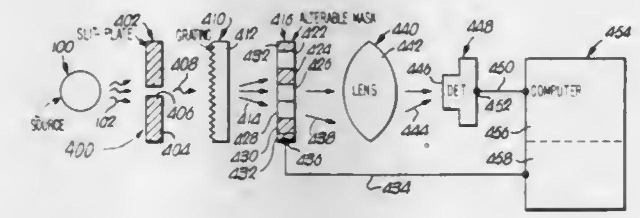
STATIONARY, ELECTRICALLY ALTERABLE, OPTICAL MASKING DEVICE AND SPECTROSCOPIC APPARATUS EMPLOYING SAME

William G. Fateley, Manhattan, Kans., assignor to D.O.M. Associates, Inc., Manhattan, Kans.

Continuation-in-part of Ser. No. 590,999, Mar. 19, 1984, abandoned. This application May 24, 1984, Ser. No. 613,711

Int. Cl.^{4} G02F *1/01;* G01J *3/28*

U.S. Cl. 356—310 16 Claims



1. An electrically alterable masking device, comprising:

substrate means adapted to remain fixedly positioned during use of said device, said substrate means presenting a pair of opposed faces and being relatively transmissive to radiations of selected wavelengths;

a plurality of solid, electrically conductive masking structures supported in fixed positions upon one face of said substrate means and being electrically insulated from each other; and

connector means electrically coupled with each of said masking structures respectively for connection of said respective structures with a source of electrical current for passage of electrical current through said masking structures as desired,

each of said masking structures being formed of a crystalline dichromatic material which can be selectively altered between a condition where it is relatively transmissive for said radiations, and a condition where it is substantially opaque and relatively reflective for said radiations, by changing the magnitude of electrical current passing through the structure.

3. In spectroscopic apparatus for optical-type radiations:

means for receiving said radiations along a first path from a souce thereof, separating the same into component radiations according to wavelength, and directing said component radiations along respectively corresponding, mutually displaced second paths;

an electrically alterable masking device for said component radiations including

substrate means fixedly supported in intersecting relationship with said second paths when said apparatus is operated, having opposite major faces, and being relatively transmissive for said component radiations,

a plurality of solid, electrically conductive masking structures electrically insulated from each other and supported in fixed positions upon one of said faces of said substrate means, and

connector means electrically coupled with each of said masking structures respectively for connection of said respective structures with a source of electrical current for passage of electrical current through said masking structures as desired,

each of said masking structures being formed of a crystalline diachromatic material which can be selectively altered between a condition where it is relatively transmissive for said radiations, and a condition where it is substantially opaque and relatively reflective for said radiations, by changing the magnitude of electrical current passing through the structure,

said device being operable for directing selected ones of said component radiations along third paths depending upon the magnitude of electrical current passing through said masking structures;

means for detecting the aggregate intensity of those of said component radiations which are directed along said third paths and for providing an electrical parameter of magnitude correlated with said aggregate intensity;

means for utilizing said electrical parameter in connection with performing a spectroscopic analysis procedure; and

means including a source of electrical current operably connected with said connector means for selectively altering the magnitude of the electrical current passing through said respective masking structures.

4,615,620

APPARATUS FOR MEASURING THE DEPTH OF FINE ENGRAVED PATTERNS

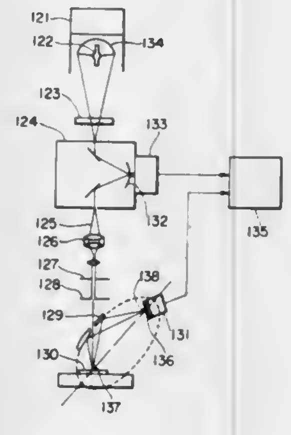
Minori Noguchi, Yokohama; Toru Otsubo, Fujisawa, and Susumu Aiuchi, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 24, 1984, Ser. No. 685,550

Claims priority, application Japan, Dec. 26, 1983, 58-243867; Oct. 31, 1984, 59-227719

Int. Cl.^{4} G01B *11/22*

U.S. Cl. 356—378 13 Claims



1. An apparatus for measuring the depth of a fine engraved pattern comprising:

means for irradiating a light beam with a variable wavelength to a sample under measurement;

means for detecting a diffraction ray excluding that of the 0th order created on said sample in response to the irradiation by the first mentioned means; and

means for calculating the dimension of a pattern engraved in said sample basing on signals produced by the first and second mentioned means.

4,615,621

AUTO-FOCUS ALIGNMENT AND MEASUREMENT SYSTEM AND METHOD

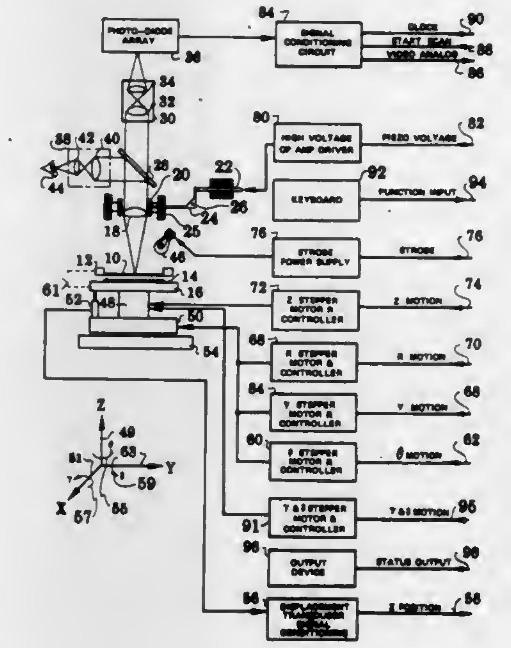
David L. Allen, Cupertino, and Tor G. Larsen, Saratoga, both of Calif., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 2, 1982, Ser. No. 364,681

The portion of the term of this patent subsequent to Apr. 8, 2003, has been disclaimed.

Int. Cl.^{4} G01B *11/00*

U.S. Cl. 356—399 29 Claims



1. Apparatus for focusing on first and second spaced-apart object planes, said apparatus comprising:

first imaging means, movably disposed along an optical axis, for providing a first focal plane disposed toward the first and second object planes;

second imaging means, disposed along the optical axis on the opposite side of the first imaging means from the first and second object planes, for providing a second focal plane disposed away from the first and second object planes;

illumination means for illuminating the first and second object planes;

an array of photodiodes disposed along the optical axis at the second focal plane, each photodiode being operable for producing an electrical signal proportional to the intensity of light incident thereon;

processing means, coupled to the array of photodiodes, for analyzing the signals therefrom to indicate the focus of images of the first and second object planes at the second focal plane; and

control means, coupled to the precessing means, for oscillating the first imaging means along the optical axis to repetitively alternately position the first focal plane in coincidence with the first and second object planes and permit viewing of images of the first and second object planes in focus simultaneously.

4,615,622

PROCESS FOR DETECTING RESIDENT AIR IN A LIQUID CHARGED RECEPTACLE AND APPARATUS THEREFOR

Ryosaku Tagaya, Isesaki; Osamu Kojima, Fujioka, and Yasuo Sonobe, Misato, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Jun. 15, 1984, Ser. No. 621,262

Claims priority, application Japan, Jun. 24, 1983, 58-113823

Int. Cl.^{4} G01N *21/90*

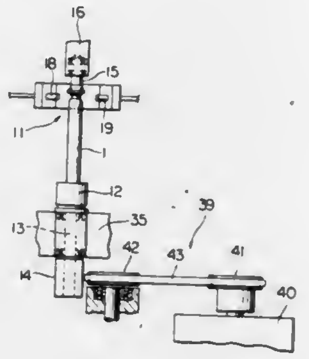
U.S. Cl. 356—427 6 Claims

1. A process for detecting resident air with a liquid-containing receptacle, said receptacle comprising:

a transparent liquid container having a first axis, a first end and a second end, said first and second ends spaced apart along said first axis, said first end being open, and

an opaque sealing member disposed over said first end and extending a first predetermined axial distance from said first end over said liquid container adjacent said first end, said opaque sealing member fluid-tightly sealing said first end, said extension of said sealing member over said liquid container defining a first volume in said liquid container, said first volume being sufficient to contain a second volume of air, said second volume being less than said first volume, when said first axis is vertically aligned and said first end is uppermost, such that upon rotation of said receptacle about said first axis at a predetermined speed a light-reflective air-liquid interface will form between said second volume of air and said liquid which will extend a second predetermined axial distance from said first end further than said first predetermined axial distance,

said process comrpising:



supporting said receptacle with said first axis vertically aligned and said first end uppermost;

providing a light beam projector having an optical axis;

providing a light detector having an optical axis;

disposing said light beam projector and said light detector so that their optical axes lie in a common plane, said common plane being substantially transverse to said first axis and intersecting said liquid container at said second predetermined axial distance from said first end, said optical axes forming an angle in said common plane such that light projecting from said light beam projector is reflectable from an air-liquid interface in said liquid container to said light detector;

rotating said receptacle about said first axis at said predetermined speed;

projecting a light beam from said light beam projector to said receptacle; and

determining whether reflected light is detected by said light detector.

4,615,623

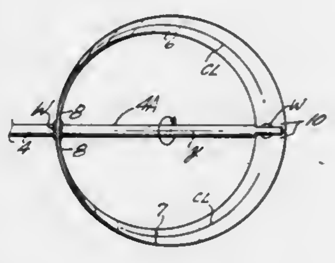
IMPELLER FOR MIXING TANKS

Richard J. Wethern, 7795 SW. Hillcrest Pl., Beaverton, Oreg. 97005

Filed Sep. 24, 1984, Ser. No. 653,555

Int. Cl.^{4} B01F *7/16*

U.S. Cl. 366—279 5 Claims



1. Propeller construction comprising,

an elongate central support member adapted for driven rotation about its major axis, and

blade means including elongate curved blade members polygonal in cross section with each blade member secured at its opposite ends directly to said support member at axially spaced locations along said support member, each of said curved blade members having a curved centerline in a plane containing said major axis and additionally being twisted about said centerline.

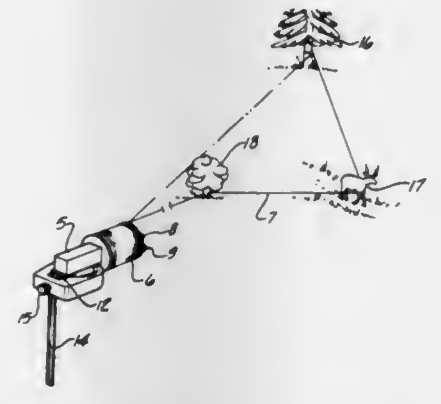
4,615,624
TRAIL MONITOR

George W. Goodrich, 5123 N. Kellen Ct., Bloomfield Hills, Mich. 48013

Filed Jul. 31, 1985, Ser. No. 761,002

Int. Cl.⁴ G04F *8/00;* **G04B** *47/00*

U.S. Cl. 368—1 **6 Claims**



1. A suspended-line-and-clock trail monitor wherein the improvement comprises:

a clock having actuatable control means;

a support member for holding said clock thereon;

a holding spool attached to said support member;

a continuous line wound on said holding spool, said continuous line having a free portion thereof unwound from said holding spool and a remainder portion remaining wound on said holding spool, said free portion being attachable at its end nearest said holding spool to said actuatable control means; and

line dispensing means for controlling dispensation of line from said remainder portion to said free portion of said continuous line upon demand of any tension in said free portion of said continuous line in excess of a predetermined threshold.

4,615,625
ANALOG ELECTRONIC TIMEPIECE

Tatsuo Moriya, Suwa, Japan, assignor to Seiko Epson Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 24, 1984, Ser. No. 603,372

Claims priority, application Japan, Apr. 28, 1983, 58-75888

Int. Cl.⁴ G04F *5/00;* **G04B** *1/00*

U.S. Cl. 368—156 **20 Claims**

1. An analog display timepiece comprising:

oscillator means for providing a high frequency time standard signal;

divider circuit means for providing at least one low frequency time signal in response to said high frequency time standard signal from said oscillator means;

analog time display means;

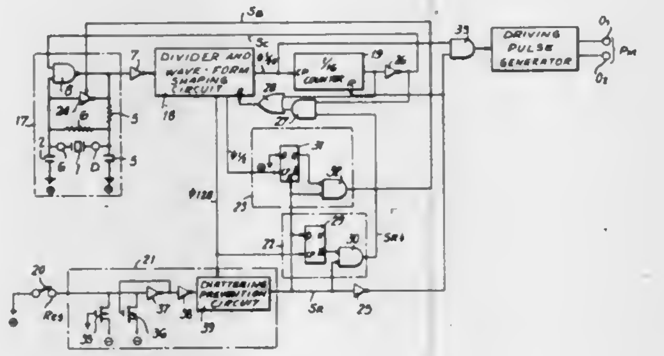
analog time display driving means coupled to said analog time display means for advancing said time display means;

driving pulse generator means for generating a driving signal for driving said analog time display driving means in response to said low frequency time signal from said divider circuit means;

system reset control means for generating a system reset control signal indicating that said analog display timepiece is disposed in one of an operational mode and a reset mode;

oscillator stopping means for stopping the operation of said oscillator means at least in part in response to said system reset control signal indicating that said timepiece has been disposed into a reset mode;

booster means coupled to the oscillator means for temporarily providing an increased pulse of current to restart the oscillator means when going to the operational mode from the reset mode, said system reset control means including switch means actuatable between one of an on position and an off position by an externally operable member, delay counter means disposed between the divider circuit means and the oscillator stopping means for counting signal from the divider circuit means when the switch means is turned on and then transmitting an oscillation stopping signal to said oscillator stopping means after a fixed period has passed;


DIVIDER AND WAVE-FORM SHAPING CIRCUIT
DRIVING PULSE GENERATOR
CHATTERING PREVENTION CIRCUIT

differentiation circuit means for outputting a reset differentiation signal to said divider circuit when said switch means is disposed in an off position before said delay counter means counts the passage of the fixed period; and

timer circuit means for outputting an operational signal for a fixed period to the booster means synchronized with the time when the switch is disposed in an off position and the operational signal delivered from said timer circuit ceases before a first driving pulse is outputted from the driving pulse generator means when the timepiece is switched from the reset mode to the operational mode.

4,615,626
ROLLING BEARING DEVICE

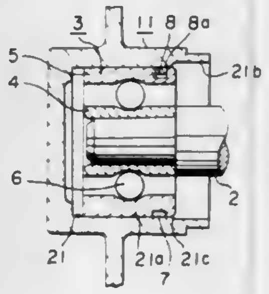
Yoshiyuki Iwaki, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 29, 1984, Ser. No. 584,795

Claims priority, application Japan, Apr. 18, 1983, 58-58221[U]

Int. Cl.⁴ F16C *43/04, 35/077*

U.S. Cl. 384—539 **2 Claims**



1. A rolling bearing device comprising:

(a) a shaft rotatable about an axis;

(b) an inner ring fitted to said shaft;

(c) an outer ring circumferentially surrounding said inner ring, said outer ring having a cylindrical outer periphery which has an eccentric annular groove therein;

(d) a plurality of balls rotatably mounted between said inner ring and said outer ring to permit rotary movement therebetween;

(e) a snap ring disposed in said eccentric annular groove, said snap ring having a substantially semicircular U-shape and a 4-cornered shape in cross-section; and

(f) a bearing box circumferentially surrounding said outer ring, said bearing box having a stepped cylindrical bore which receives said outer ring, said stepped cylindrical bore comprising:

(i) a small diameter cylindrical part which has a smooth inner surface which snugly engages the outer surface of said outer ring and which bears against said snap ring and forces it resiliently inwardly when said rolling bearing device is assembled;

(ii) a large diameter cylindrical part sized to permit entry of a subassembly comprising said shaft, said inner ring, said outer ring, said plurality of balls, and said snap ring into said bearing box during assembly of said rolling bearing device without contact between said snap ring and the inner periphery of said large diameter cylindrical part, the diameter of said large diameter cylindrical part of said stepped cylindrical bore being greater than the diameter of said small diameter cylindrical part of said stepped cylindrical bore by an amount which is at least approximately twice the amount by which said snap ring projects radially from said outer ring when in its uncompressed state; and

(iii) a sloping portion connecting said large and small diameter cylindrical parts of said stepped cylindrical bore, said sloping portion of said stepped cylindrical bore in said bearing box having an at least approximately constant sloping angle of between 15° and 60°,

whereby said snap ring does not form scars on the inner surface of said large diameter cylindrical part of said bearing box during assembly of said rolling bearing device..

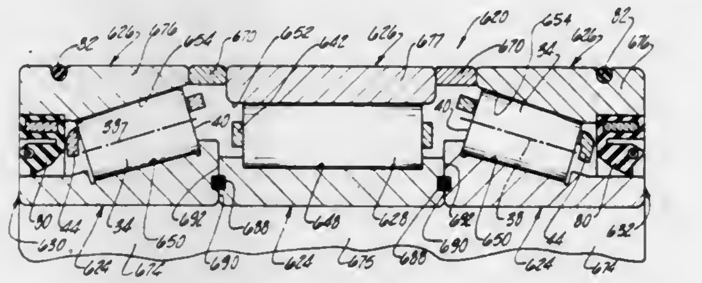
4,615,627
ROLLER BEARING ASSEMBLY

Leonhard G. Schilling, Canton, and John K. Winters, Northville, both of Mich., assignors to NTN-Bower, Bingham Farms, Mich.

Continuation of Ser. No. 678,513, Dec. 5, 1984, abandoned. This application Jun. 7, 1985, Ser. No. 742,362

Int. Cl.⁴ F16C *19/28*

U.S. Cl. 384—551 **13 Claims**



1. A roller bearing assembly comprising radially inner and outer bearing race members coaxially disposed for rotation relative to one another, at least one circumferential row of cylindrical rollers and a pair of circumferential rows of tapered rollers disposed radially between said radially inner and outer bearing race members, each said row of rollers being rotatably engaged with a respective pair of radially opposed raceway surfaces formed in said bearing race members,

said rows of tapered rollers being inclined relative to one another so as to accept thrust loads in opposite directions, said raceway surfaces receiving said tapered rollers being conical raceway surfaces,

said outer bearing race member including at least a pair of separate conical race member portions axially separated from one another, each conical race member portion including one said conical raceway surface for receiving a respective one of said rows of tapered rollers,

one raceway surface of each of said pair of raceway surfaces being non-recessed so as to provide no restraint to said rollers in engagement therewith, the other of said raceway surfaces of each of said pair of raceway surfaces being recessed so as to axially restrain said rollers in engagement therewith,

said conical race member portions being interchangeable with one another,

said radially outer bearing race member further including a separate cylindrical outer bearing race member portion for said cylindrical rollers,

said cylindrical outer race member portion and said cylindrical rollers being axially interposed between said conical race member portions having said conical raceway surfaces,

said radially inner and outer bearing members having a predetermined, fixed radial bearing clearance between said at least one row of cylindrical rollers,

the radial bearing clearance between said pair of rows of tapered rollers being determined solely by the distance said conical race member portions are axially separated from one another,

an uninterrupted, circumferential, ring shaped, axial spacer member having a predetermined fixed axial length disposed between and abutting against the axially inward end of at least one of said conical race member portions such that the axial length of said spacer member determines the radial bearing clearance between said pair of rows of tapered rollers,

whereby said conical race member portions may be interchanged with one another and/or said axial spacer member may be reversed, all without altering the radial bearing clearance between any of said rows of rollers.

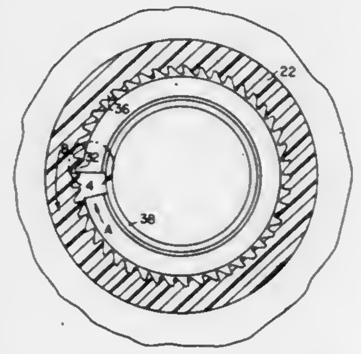
4,615,628
RIBBON CARTRIDGE WITH SELF-CONTAINED RATCHET AND DRIVE GEAR ASSEMBLY

Stephen G. Swinburne, Scarborough, Me., assignor to Shape Inc., Biddeford, Me.

Filed Apr. 2, 1985, Ser. No. 719,152

Int. Cl.⁴ B65H *75/00;* **B41J** *35/28*

U.S. Cl. 400—242 **7 Claims**



1. A ribbon cartridge for housing and transporting ribbon past an external apparatus, such as the print head of a printer having a drive motor, comprising:

(a) a base;

(b) a cover positioned on the base;

(c) a supply reel rotatably mounted between the base and the cover for supplying the ribbon;

(d) a take-up spool rotatably mounted between the base and cover for taking up the ribbon after it has been transported past the external apparatus;

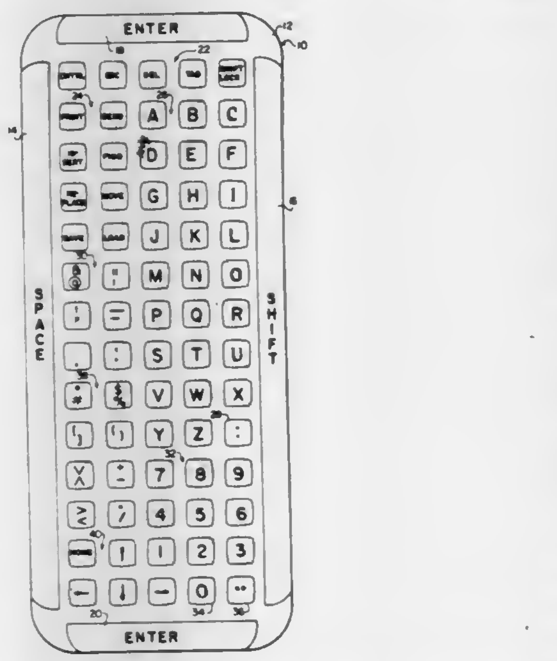
(e) drive means rotatably mounted substantially between the base and cover for operative connection to the drive motor of the external apparatus and for transporting the ribbon from the supply reel to the take-up spool, the drive means including a projection having a circular flange and a drive gear formed on the flange, the projection extending perpendicularly through the cover.

wherein the take-up spool is rotatably mounted on a ratchet gear spool having a ring gear formed on the periphery thereof for meshing with the drive gear; and

(f) means located between the base and cover for rotating the take-up spool at a rate different than the drive means.

4,615,629
INPUT KEYBOARD

Daniel J. Power, 4313 Knox #217, College Park, Md. 20740
Filed Apr. 24, 1984, Ser. No. 603,315
Int. Cl.⁴ B41J *5/10*
U.S. Cl. 400—486 **15 Claims**



1. A keyboard particularly for use by non-typists, said keyboard comprising: twenty-six letter keys individually designating the twenty-six letters of the alphabet of the English language arranged in alphabetical order in eight rows of three letter keys and one row of two letter keys, and said twenty-six letter keys being arranged in three vertical columns, said keyboard further including a "shift" key which extneds vertically along one side of the keyboard and which is of a length at least as great as the height of the vertical columns of letter keys, and a "space" key which extends vertically along the other edge of the keyboard and which is of a length at least as great of the height of the vertical columns of letter keys, said keyboard further comprising first and second elongate "enter" keys located at the top and bottom of the keyboard and of a width greater than the width of the rows of keys.

4,615,630
PAPER FEEDING CONTROL APPARATUS

Mikio Maeshima, Kasugai, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 17, 1984, Ser. No. 682,083
Claims priority, application Japan, Dec. 21, 1983, 58-239711
Int. Cl.⁴ B41J *11/51*
U.S. Cl. 400—608.3 **37 Claims**

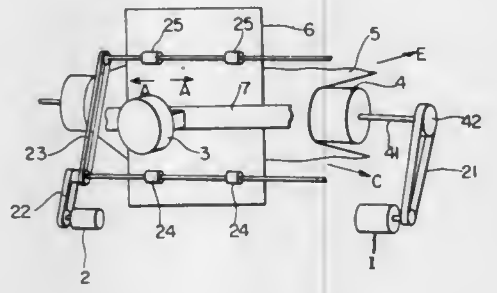
1. A paper feeding control apparatus in a printer, comprising:

(a) a platen on which first paper is set;

(b) a printing means facing said platen for printing information;

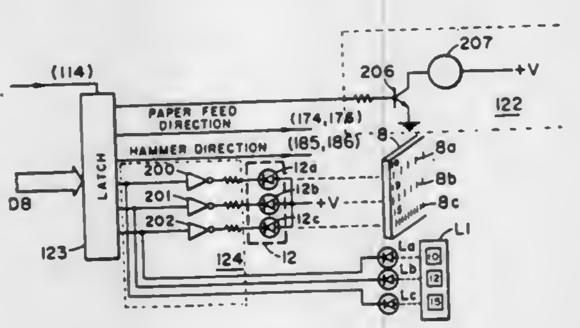
(c) first means for feeding the first paper toward a predetermined direction when information is printed by the printing means on the first paper, and for feeding the first paper toward a reverse direction; and

(d) second means separate from said first feeding means for independently feeding second paper partially contacting the first paper on said platen toward a predetermined direction, wherein said second feeding means feeds the second paper and said first feeding means feeds the first paper by a predetermined amount synchronously with the feeding of the second paper toward same direction when information is printed on the second paper by the printing means and said first means feeds the first paper in the reverse direction when information is not being printed.



4,615,631
PRINTING APPARATUS WITH MEANS FOR INDICATING THE SELECTED PRINTING PITCH AND PAPER ADVANCING PITCH

Hiroyuki Ueda, Kawasaki; Yasuaki Yamada, Matsudo; Toshiaki Ozawa, Higashi; Hiroharu Nakajima, Kodaira, and Hiroatsu Kondo, Zushi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 523,174, Aug. 15, 1983, abandoned, which is a division of Ser. No. 314,441, Oct. 23, 1981. This application Aug. 20, 1984, Ser. No. 642,737
Claims priority, application Japan, Oct. 31, 1980, 55-152103; Oct. 31, 1980, 55-152104; Oct. 31, 1980, 55-152105; Oct. 31, 1980, 55-152106; Nov. 17, 1980, 55-160692; Nov. 17, 1980, 55-160693; Nov. 17, 1980, 55-160694; Nov. 25, 1980, 55-164527; Nov. 25, 1980, 55-164530; Nov. 28, 1980, 55-166635
Int. Cl.⁴ B41J *29/42*
U.S. Cl. 400—705.1 **2 Claims**



1. A printing apparatus comprising:

power supply means for supplying power to said apparatus;

battery power supply means for supplying back-up battery power;

means for effecting printing on a printing paper in accordance with one of a plurality of printing pitches;

processor means for controlling said printing effecting means and for producing data signals;

an address bus connected to said processor means;

latchless key means for selecting one of said plurality of printing pitches and for transiently applying a pitch signal indicating the selected printing pitch to said processor means;

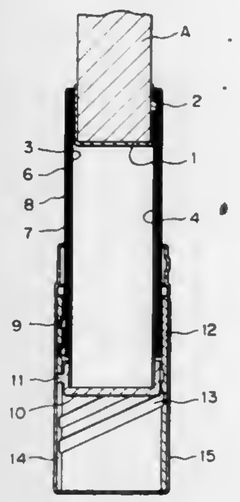
a plurality of indicating means each for indicating a respective one of said plurality of printing pitches, one of said indicating means being energized by a data signal produced by said processor means; and

memory means supplied with back-up battery power by said battery power supply means and, in response to said pitch signal, for storing the selected one of said plurality of printing pitches, said memory means being accessed by said processor means through said address bus;

said processor means being responsive to the pitch signal applied by said key means and indicative of said selected printing pitch to provide the energization data signal to said one of said indicating means corresponding to the selected printing pitch and also being responsive to initiation of supply of power from said power supply means to read out the selected printing pitch from said memory means to provide the energization data signal to said one of said indicating means corresponding to the selected printing pitch read from said memory means.

4,615,632
SLIDE TYPE COSMETIC CONTAINER WITH COMPOUND SCREW

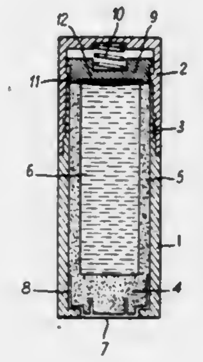
Hisao Iwamoto, Odawara; Keiji Jinbo, Kanagawa, and Yoichi Iwamoto, Funabashi, all of Japan, assignors to Kanebo Limited, Tokyo, Japan
Filed Aug. 24, 1984, Ser. No. 643,988
Claims priority, application Japan, Aug. 25, 1983, 58-131851[U]
Int. Cl.⁴ A45D *40/06, 40/04*
U.S. Cl. 401—69 **7 Claims**



1. A slide type cosmetic stick vessel comprising a middle saucer for holding a cosmetic stick, which has an engaging projection formed on the outer wall thereof, a body cylinder having a longitudinal guide groove through which the engaging projection slides, a threaded cylinder fitted on the periphery of the body cylinder, said threaded cylinder having a right-hand flight groove with which the engaging projection is engaged, a cover cylinder in which the threaded cylinder is inserted and secured, said cover cylinder having a second engaging projection formed on the outer wall of the lower portion thereof, a middle cylinder having a left-hand flight groove with which the second engaging projection is engaged, said left-hand flight groove being formed on the inner circumferential wall of the lower portion of the middle cylinder, and a longitudinal engaging groove formed on the wall of the middle cylinder, a slide cylinder secured to the outer wall of the lower end of the body cylinder and having a rotation-stopping piece formed on the outer wall thereof, and a bottomed outer cylinder in which the middle cylinder is inserted and secured, wherein the middle saucer and the slide cylinder are slidable in the longitudinal direction.

4,615,633
PHARMACEUTICAL OR COSMETIC COMPOSITION IN THE FORM OF A ROD OR STICK CONSTITUTED FROM TWO CONCENTRIC FATTY PHASES AND A CASTING PERMITTING ITS PRESERVATION AND DISTRIBUTION

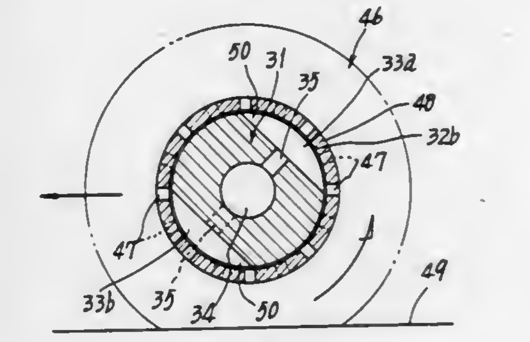
Jean-Claude Ser, Chevilly Larue, and Jean-Pierre Laugier, Antony, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France
Filed Nov. 7, 1984, Ser. No. 668,958
Claims priority, application Luxembourg, Nov. 9, 1983, 85083
Int. Cl.⁴ B05C *21/00*
U.S. Cl. 401—196 **11 Claims**



1. A rod or stick for pharmaceutical or cosmetic use in the topical application to the skin of an easily oxidizable active substance comprises a first internal fatty phase or core phase containing in an anhydrous medium said oxidizable active substance, the said core phase being protected from oxidation by a second external fatty phase or sheath phase containing at least one surface active agent, the said sheath phase entirely enveloping the circumferential surface and at least one end section of said core phase.

4,615,634
COATING ROLLER DEVICE WITH SCRAPER MEANS

Keiichiro Matsuda, Minoo, Japan, assignor to Kimura-Shin Co., Ltd., Osaka, Japan
Filed Dec. 21, 1984, Ser. No. 685,144
Claims priority, application Japan, Dec. 28, 1983, 58-249937
Int. Cl.⁴ B05C *17/02*
U.S. Cl. 401—197 **3 Claims**



1. A coating roller device comprising a support arm serving also as a supply pipe for a coating material; and elongate scraper having one end connected to one end of said support arm; a tubular coating roller body means rotatably fitted on said scraper, said roller body means having a cylindrical inner surface; and passage means provided in said scraper for guiding into the interior of said roller body means the coating material supplied through said support arm; wherein:

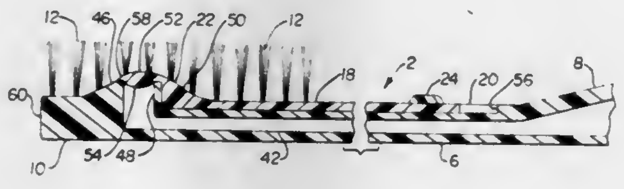
said scraper comprises a tubular member having cylindrical end portions, depressed portions formed in the sides of said scraper member between said end portions thereof, said depressed portions providing coating material receiving receptacles each having an arcuate radially outer side surface extending for the whole length thereof and positioned closely adjacent to the inner cylindrical surface of said roller body means;

said passage means includes a central axial supply passage in said scraper member and a plurality of distributing passages extending between said supply passage and each of said receptacles; and

said cylindrical end portions of said scraper member each have an outer circumferential surface approximately the diameter of the inner cylindrical surface of said roller body means and adapted to restrict the flow of coating material from said receptacles axially toward the ends of said scraper member.

4,615,635
TOOTHBRUSH WITH FLOW CONTROL VALVE

Kun H. Kim, 69 Woodside Dr., Washington, Pa. 15301
Filed Jun. 10, 1985, Ser. No. 742,952
Int. Cl.⁴ A46B *11/00*
U.S. Cl. 401—270 **16 Claims**



1. A toothbrush adapted to be mounted onto a toothpaste container comprising:

an elongated shank having means for mounting a toothpaste container to a first end thereof and having a brush head at a second end;

a plurality of bristles carried by said brush head and extending outwardly from an upper surface thereof;

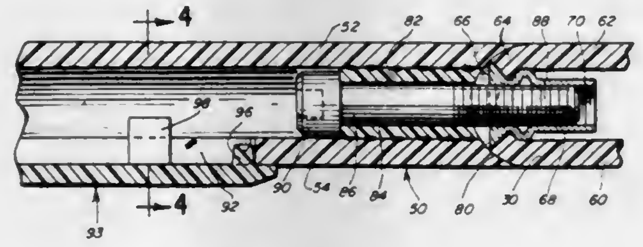
a raised portion in the upper surface of said brush head, said raised portion having an arcuate outer surface;

a longitudinal passageway extending from said first end of said shank, through said shank, through said raised portion and exiting in an opening in the top of said raised portion within said bristles in said brush head; and

a slide mechanism at an upper surface of said shank which extends along said shank and into said brush head and means mounting said slide mechanism to said shank for slidable movement therewith, said slide mechanism having a first end disposed within said bristles and formed in a plug complementary with said opening, with said slide mechanism movable from a first position in which said plug completely covers said opening to a second position in which said opening is uncovered, with said plug having an arcuate outer surface which is complementary with said raised portion, whereby an unbroken arcuate outer surface is formed when the slide mechanism is moved to said first position with said plug covering said opening.

4,615,636
CONNECTOR CONSTRUCTION

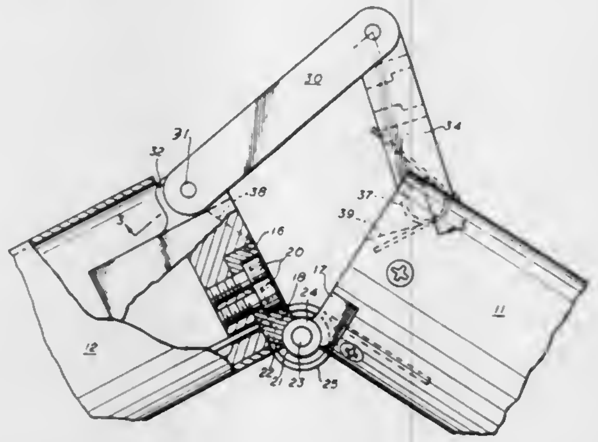
Cosmo N. Tisbo; Thomas A. Tisbo, both of Barrington; Richard D. Recker, Palatine, and Bruce Heggeland, Rolling Meadows, all of Ill., assignors to Suncast Corporation, Batavia, Ill.
Filed Apr. 11, 1983, Ser. No. 483,825
Int. Cl.⁴ B25G *3/00;* **F16D** *1/00*
U.S. Cl. 403—8 **4 Claims**



1. A construction for connecting one tubular member to another tubular member comprising, in combination, a first tubular member having an aperture contained therein, a screw fastener member mounted in the aperture of the first tubular member, said screw fastener member having an enlarged portion on the exterior portion of the tubular member preventing the enlarged portion of the screw fastener member from passing through the aperture into the interior of the tubular member, said screw fastener member having a second enlarged portion within the tubular member preventing the second enlarged portion of the screw fastener member from passing through the aperture out of the tubular member, a portion of the tubular member surrounding the aperture exterior held between the first and second enlarged portions of the screw fastener member to prevent rotation of the screw fastener member relative to the first tubular member, a second tubular member having a portion positioned adjacent to the aperture in the first tubular member, and a second screw fastener member rotatably mounted in the second tubular member, said second screw fastener member threadedly engaging the first mentioned screw fastener member connecting the second tubular member to the first tubular member, the first tubular member has a cross section having a pair of parallel opposed faces joined by a semicircular face connector on each of the parallel edges, a fastener retainer positioned in one end of the second tubular member, said end of the second tubular member and the adjacent end of the retainer conforming to the exterior shape of the first tubular member at the portion where the second tubular member abuts the first tubular member, said second screw fastener member rotatably mounted in the fastener retainer.

4,615,637
FOLDABLE SELF-ERECTING JOINT

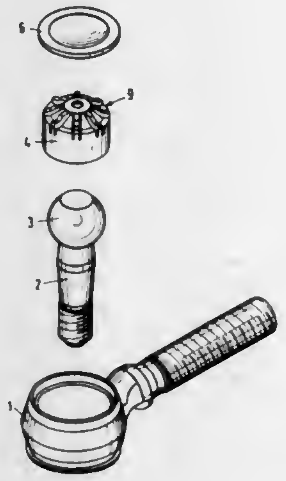
Timothy E. Pelischek, Houston, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Mar. 9, 1984, Ser. No. 588,039
Int. Cl.⁴ F16C *11/04*
U.S. Cl. 403—85 **11 Claims**



1. A self-erecting, hinged joint comprising a pair of members hinged together at one edge for folding action, said hinge including a hinge pin extending entirely across the hinge, a pair of pivoted externally operating toggle links connecting diametrically opposite portions of said members, means to arrest the rotation of the toggle links, and means surrounding said hinge pin biasing said joint to coaxially align said members with the ends in intimate contact and align said links in overlapping relationship against one another in the unfolded position of said joint, thereby securely locking said joint.

4,615,638
BALL JOINT

Eiichi Ito, Meerbusch, Fed. Rep. of Germany, assignor to TRW Ehrenreich GmbH & Co., KG, Dusseldorf, Fed. Rep. of Germany
Filed Nov. 13, 1984, Ser. No. 670,972
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1983, 8332784[U]
Int. Cl.⁴ F16B *3/00;* **F16C** *11/00;* **F16D** *1/12*
U.S. Cl. 403—135 **3 Claims**



1. A ball joint comprising:

a housing having a cavity,

a ball stud having a ball head disposed in said cavity in said housing and a shank portion projecting from said cavity,

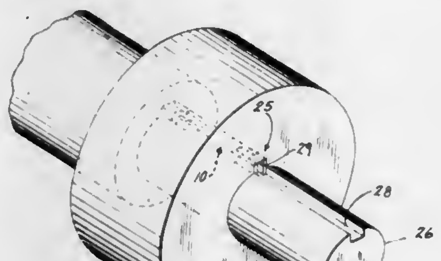
an elastically deformable bearing shell interposed between said ball head and said housing; and

a cap for closing one end of said cavity and for exerting a preload pressure on said ball joint;

said bearing shell having a stop surface thereon, a plurality of radial ribs projecting at least partially outwardly from said stop surface, and a pair of grooves each extending axially inwardly from said stop surface adjacent a respective one of opposite sides of each of said radial ribs, the volume of a portion of each rib projecting above said stop surface being approximately equal to the combined volume of said pair of grooves, whereby the elastically deformable material of said ribs flows into said grooves and resiliently abuts side walls thereof upon radial compression of said ribs by said cap, and said housing, having a portion to retain said bearing shell in said cavity.

4,615,639
KEY AND KEY JOINT

Ali Seireg, Madison, Wis., assignor to The Falk Corporation, Milwaukee, Wis.
Filed Nov. 23, 1984, Ser. No. 674,425
Int. Cl.⁴ F16D *1/08*
U.S. Cl. 403—356 **8 Claims**



1. A key for a coupling to transmit a torque between a shaft and a hub, comprising:

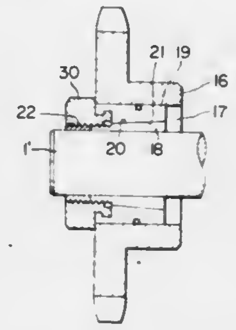
a central portion; and

a pair of end portions, each end portion being at an end of the central portion and being coterminus therewith and having a pair of spaced-apart longitudinal prongs, the inside surface of each prong being substantially parallel to the inside surface of the other prong and both inside surfaces being substantially planar; and

wherein said key is suitable to be disposed in said coupling with the inside surfaces of the prongs extending through the key from the shaft to the hub in a generally radial direction.

4,615,640
DEVICE FOR CONNECTING A WHEEL-LIKE BODY TO A SHAFT

Toshihiro Hosokawa, Osaka, Japan, assignor to Tsubakimoto Chain Co., Japan
Filed Mar. 5, 1985, Ser. No. 708,294
Claims priority, application Japan, May 31, 1983, 58-81235
Int. Cl.⁴ F16B *2/14*
U.S. Cl. 403—369 **12 Claims**



1. A device for connecting a body to a shaft, the body having a bore defining an axis for the shaft, the device comprising:

an inner ring having a plurality of axial slits for allowing expansion and contraction of said ring, adapted to be placed along the shaft and including a tapered portion having a tapered outer peripheral surface tapering to cylindrical portion extending from a minimum outside diameter end of said tapered portion, the cylindrical portion having a threaded outer peripheral surface;

an axially-split outer ring defined by a plurality of part-cylindrical segments for allowing expansion and contraction of said ring, the outer ring being adapted for insertion between said inner ring and a peripheral wall of the axial bore in the body and having a tapered inner peripheral surface which is complementary to said tapered outer peripheral surface of said inner ring, said outer ring having a first annular groove formed in said inner peripheral surface adjacent to a minimum inside diameter end thereof and a second annular groove formed in its outer peripheral surface, said segments being held together by a retaining ring fitted in said second annular groove; and

a nut adapted for threaded engagement about said threaded surface of said inner ring and having an annular projection which is engageable in said first annular groove, the nut being relatively rotatable but axially captive on the outer ring whereby engagement of the outer ring from the inside by said nut allows expansion of said outer ring.

4,615,641
BARGE REPAIR DEVICE

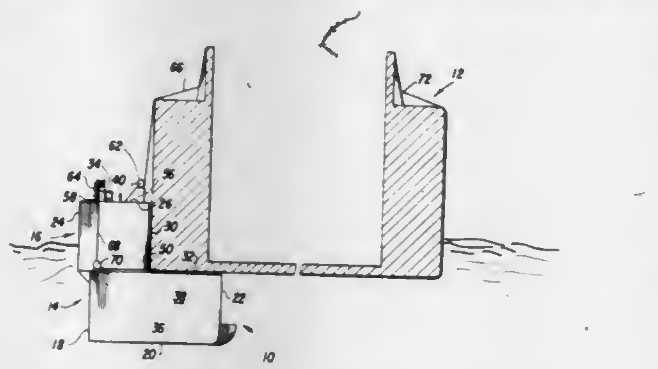
Paul L. Novay, Rte. 3, Box 235, Wilmer, Ala. 36587
Filed Aug. 3, 1984, Ser. No. 637,367
Int. Cl.⁴ E02D *23/02;* **B63C** *11/00*
U.S. Cl. 405—12 **7 Claims**

1. A rigid, portable, floatable barge repair device comprising:

a water tight box having front, back and side walls and a bottom, and a top opening;

a superstructure extending generally upwardly from the back wall of said box, said superstructure having an upper back wall generally adjacent to said back wall of said box and opposing side walls adjacent said upper back wall, said superstructure having an upper open top opening

directly to the atmosphere during operation and a side opening opposite said upper back wall;
a seal surface formed by the periphery of said top opening and said side opening for engaging a portion of a barge to be repaired;
gasket means disposed on said seal surface for providing a water tight seal between the barge and the repair device;



ballast means disposed on said front wall of said box opposite said back wall;
ballast tanks surrounding said box for receiving water therein; and
means for securing the repair device to a barge to be repaired.

4,615,642

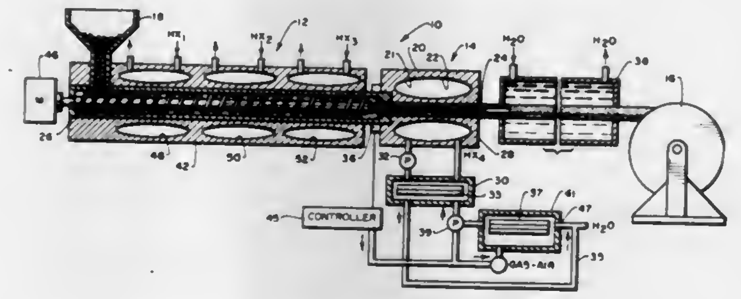
VARIABLE POROSITY IRRIGATION PIPE

James W. Mason, Huntington Beach, Calif., assignor to Dasurat Enterprises PTE Ltd., Singapore, Singapore

Filed Oct. 1, 1984, Ser. No. 655,753

Int. Cl.⁴ E02B *13/00;* **A01G** *25/06*

U.S. Cl. 405—45 **17 Claims**



1. An irrigation pipe comprising:
a length of porous, flexible pipe having an inlet and an outlet end; said pipe having a wall formed of a major portion of vulcanized elastomer particles dispersed in a minor portion of thermoplastic resin binder, said wall containing a continuous pattern of pores extending from the inside surface to the outside surface; the porosity of the length of pipe gradually and controllably increases from a first inlet end to a second outlet end of the length of pipe such that the leak rate is substantially constant throughout the length of the pipe as the pressure drops from the inlet end to the outlet end.

4,615,643

METHOD OF SEALING OFF A MASS OF WASTE STOCK CONTAINING METAL CATIONS

Daniel Gouvenot, Clichy, France, assignor to Soletanche, Nanterre, France

Filed Jul. 24, 1985, Ser. No. 758,197

Claims priority, application France, Jul. 26, 1984, 84 11863

Int. Cl.⁴ E02D *3/12, 3/14*

U.S. Cl. 405—128 **8 Claims**

1. Method of sealing off a mass of waste stored in the soil that consists of insulating the mass by establishing at least one grouting barrier or grouting curtain that retains heavy metallic cations and that is obtained by filling up hollows in the soil or fissured rock within the soil surrounding the mass with, or injecting into them, a grout containing
60 to 500 parts by weight of cement,
25 to 500 parts by weight of clay, and
0 to 800 parts by weight of a natural or artificial siliceous product,
per 1000 parts by weight of water, characterized in that the grout that is injected also contains a mixture of
2 to 6 parts by weight of sodium carbonate and
0.5 to 20 parts by weight of an alkali-metal pyrophosphate and/or alkali-metal tartrate
to retain the heavy metallic cations.

4,615,644

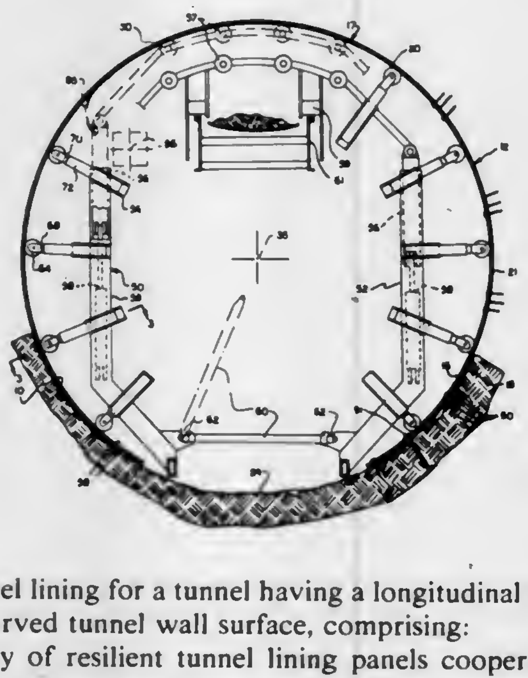
PRESTRESSED TUNNEL LINING

Renon M. Hoge, Gates Mills, Ohio, and Albert A. Mathews, Federal Way, Wash., assignors to Mole Constuction Company, Solon, Ohio

Filed Jan. 22, 1986, Ser. No. 821,284

Int. Cl.⁴ E21D *11/02*

U.S. Cl. 405—151 **12 Claims**



1. A tunnel lining for a tunnel having a longitudinal axis and having a curved tunnel wall surface, comprising:
a plurality of resilient tunnel lining panels cooperating to form a ring, each of the tunnel lining panels having a longitudinal axis, longitudinal and lateral edges, and exterior and interior surfaces;
the longitudinal axis of the panel being parallel to the longitudinal axis of the tunnel;
at least a first longitudinal edge of each panel corresponding to and imposing thrust against a longitudinal edge of an adjacent panel, the thrust causing elastic bending of the panel to form an arc; and
means to restrain the panels from radial movement, the exterior surfaces of the tunnel lining panels forming a continuous exterior surface of the layer which bears tightly against the tunnel wall surface, the thrust causing internal stresses within the layer to counteract load applied at the exterior surface by the tunnel wall surface.

4,615,645

PIPELINE TRENCHING

Carl G. Langner, Spring, Tex., assignor to Shell Oil Company, Houston, Tex.

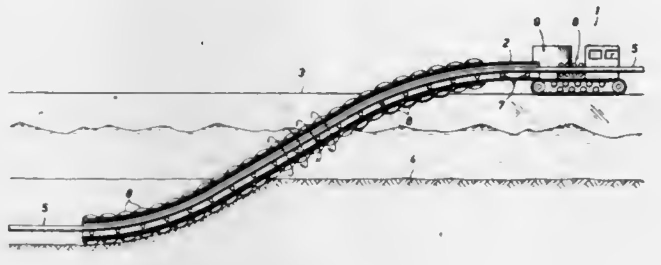
Filed May 6, 1985, Ser. No. 730,535

Int. Cl.⁴ F16L *1/04*

U.S. Cl. 405—159 **12 Claims**

1. A method for laying a pipeline simultaneously through ice above a seabed and into the seabed, comprising:
towing a tubular pipe guide from above the ice;
rotating circular cutters about the pipe guide and simultaneously cutting the ice and the seabed from beneath the pipe guide;

continously burying one end of the pipe guide through the ice and into the seabed; and



passing the pipeline through the pipe guide and into the seabed.

4,615,646

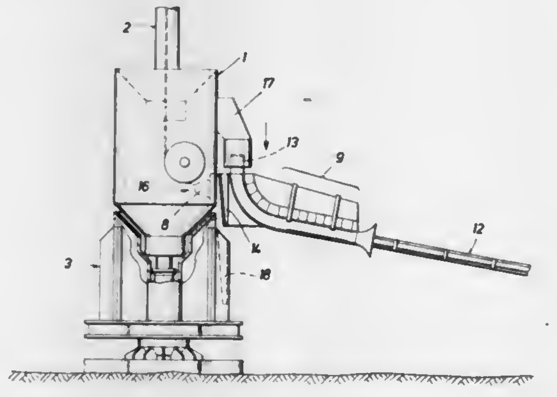
FLOWLINE CONNECTION MEANS

Carl G. Langner, Spring, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 25, 1984, Ser. No. 614,424

Int. Cl.⁴ F16L *1/04;* **E21B** *43/01*

U.S. Cl. 405—169 **8 Claims**



1. A method for connecting a flowline to a subsea structure comprising:
deploying a riser and flowline connection tool downwardly to the subsea structure;
landing and securing the connection tool onto the subsea structure;
pulling a flowline terminal head on sea-bottom toward the flowline connection tool, the terminal head being connected to the flowline and to the flowline connection tool and having an upwardly extending leg terminating in a connector hub;
maintaining the flowline terminal head in an upright position during pulling by attaching buoyancy means to an upper side of the flowline terminal head;
connecting the flowline terminal head to the flowline connection tool;
engaging the connector hub of the flowline terminal head with a hub receptacle of the flowline connection tool and moving the flowline connection tool and flowline terminal head downwardly and forming an interlocking joint between the flowline connection tool and the subsea structure;
disconnecting the flowline terminal head from the flowline connection tool; and
recovering the flowline connection tool to the surface.

4,615,647

PNEUMATIC CONVEYING DEVICE AND FLAP VALVE

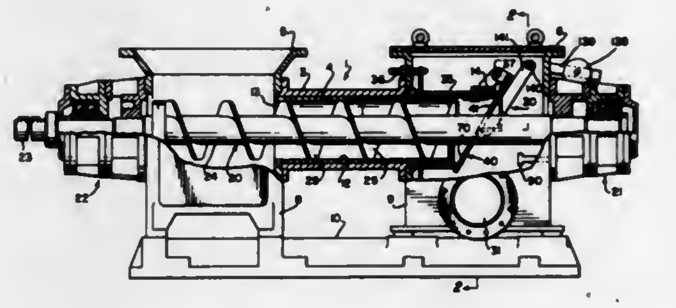
Stephen A. Lukacz, Nazareth, Pa., assignor to Fuller Company, Bethlehem, Pa.

Filed Feb. 21, 1985, Ser. No. 703,960

Int. Cl.⁴ B65G *33/22, 53/04*

U.S. Cl. 406—60 **20 Claims**

7. In an apparatus for conveying solid particulate material including a casing having a bore therethrough, an inlet for solid particulate material to be conveyed and an outlet coaxial with one end of the bore for discharging solid particulate material; a screw impeller having a shaft mounted in said bore in the casing for advancing solid particulate material from said inlet to said outlet; a pair of bearing means, each operatively connected to a respective end of the casing for rotatably mounting said screw impeller in said casing; a discharge chamber flow connected with the outlet of the casing for receiving solid particulate material from the casing having an inlet for gaseous fluid under pressure and an outlet adapted to be connected to a conduit for conveying solid particulate material away from the discharge chamber whereby solid particulate material advanced from said inlet for solid particulate material is discharged from said casing through said casing outlet into said discharge chamber and gaseous fluid under pressure supplied to said discharge chamber entrains the solid particulate material and conveys it through the material conduit to which it is connected, an improved means for selectively closing the outlet of the casing comprising a valve element surrounding the shaft of the screw impeller and pivotably mounted for swinging movement about an axis perpendicular to the screw impeller; said valve element being shaped and having an opening positioned therein so that the edges of said opening immediately adjacent the shaft of the screw impeller initially swing away from the shaft at least until the valve element is open sufficient to permit material to be discharged from the casing through the casing outlet.



4,615,648

CONVEYANCE SYSTEM FOR TRANSPORTING POWDERY OR GRANULAR MATERIAL

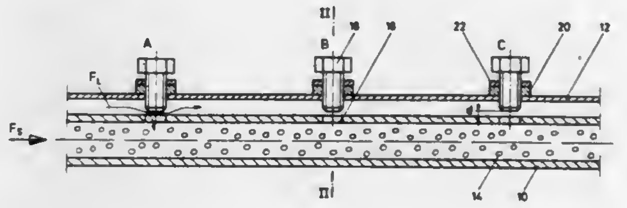
Walter Merz, Küsnacht, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Aug. 13, 1980, Ser. No. 177,730

Claims priority, application Switzerland, Aug. 28, 1979, 7853/79

Int. Cl.⁴ B65G *53/58*

U.S. Cl. 406—95 **11 Claims**

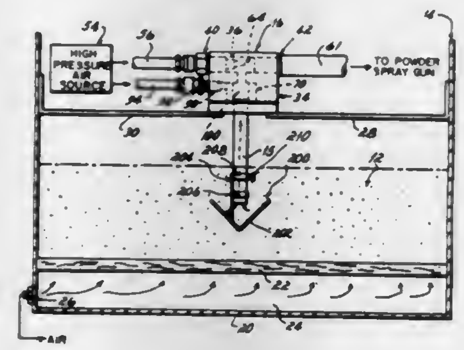


1. A feed system for transporting granular material by means of compressed air comprising:
an elongated granular material feed pipe;
an elongated compressed air feed pipe adjacent to said granular material feed pipe;
a first air flow passage means between said elongated compressed air feed pipe and said elongated granular material feed pipe for communicating compressed air from said elongated compressed air feed pipe to said elongated granular material feed pipe;
a first air flow restriction means associated with said first air flow passage means so as to define a passage d_1 for the passage of compressed air;

a second air flow passage means spaced from and downstream of said first air flow passage means between said elongated compressed air feed pipe and said elongated granular material feed pipe for communicating compressed air from said elongated compressed air feed pipe to said elongated granular material feed pipe;
a second air flow restriction means associated with said second air flow passage means so as to define a passage d_2 for the passage of compressed air wherein d_2 is greater than d_1;
a third air flow passage means between said elongated compressed air feed pipe and said elongated granular material feed pipe for communicating compressed air from said elongated compressed air feed pipe to said elongated granular material feed pipe; and
a third air flow restriction means associated with said third air flow passage means so as to define a passage d_3 for the passage of compressed air wherein d_3 is greater than d_2.

4,615,649
POWDER PUMP HAVING SUCTION TUBE DEFLECTOR

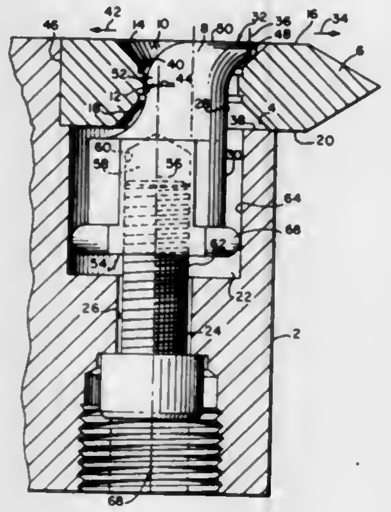
John Sharpless, Oberlin, Ohio, assignor to Nordson Corporation, Amherst, Ohio
Continuation-in-part of Ser. No. 660,388, Oct. 12, 1984, abandoned. This application Nov. 5, 1984, Ser. No. 668,022
Int. Cl.⁴ B65G *53/40*
U.S. Cl. 406—138 **15 Claims**



1. Powder dispensing apparatus comprising:
a vessel,
means contained within said vessel for creating a fluidized bed of powder within said vessel,
means for pumping an even flow of powder to a powder spray gun from said fluidized bed of powder, which pumping means comprises,
a pneumatic conveyor line having an inlet end and a discharge end, said line also having a low pressure venturi pumping chamber contained therein,
said discharge end of said conveyor line being adapted to be placed in fluid communication with a powder spray gun,
said inlet end of said pneumatic conveyor line being adapted to be placed in fluid communication with a source of high pressure air,
a powder flow passage intersecting said venturi pumping chamber, said powder flow passage having an inlet,
a siphon tube connected to said inlet of said powder flow passage, said siphon tube having an inlet located within said vessel and in fluid communication with said fluidized bed of powder contained within said vessel, and
deflector means adjacent but spaced from said siphon tube inlet for reducing the inflow of air bubble created powder voids from said fluidized bed of powder into said siphon tube.

4,615,650
LOCKING PIN FOR A TOOL HOLDER

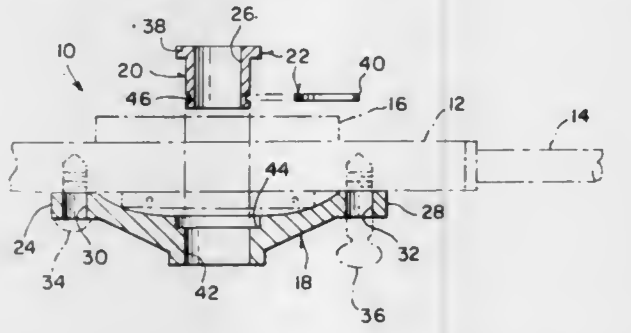
Carl E. Hunt, Milford, Mich., assignor to GTE Valeron Corporation, Troy, Mich.
Filed Oct. 15, 1985, Ser. No. 787,135
Int. Cl.⁴ B23B *27/16*
U.S. Cl. 407—105 **16 Claims**



7. A tool holder of the type having a recess into which a cutting insert is removably secured by passing a locking pin through a cutting insert bore having a bore wall, which extends from a first countersunk portion of an outer face of said cutting insert to an inner face of said cutting insert, and into a first bore of said tool holder, and wherein said cutting insert is caused to be pressed into said recess by a drawing member which extends through a second bore of said tool holder and engages said locking pin, the improvement comprising a locking pin having a first portion dimensioned for insertion through said cutting insert bore; a second adjacent portion dimensioned for insertion into said first bore; first means protruding from said first portion in a first direction for exerting a first positive locking pressure in a first direction against said countersunk portion of said cutting insert bore at said outer face, so that said cutting insert can be pressed downward against one face of said recess; second means protruding from said first portion in a second direction perpendicular to said first direction, for exerting a second positive locking pressures in a second direction against said bore wall so that said cutting insert can be pressed backward against another face of said recess; and, third means in the form of a surface area of said second portion for engagement with said drawing member so that said locking pressures can be exerted in said first and second directions.

4,615,651
THREAD GUIDE BUSHING AND BUSHING HOLDER

George Vinceller, and George Spector, both of 233 Broadway, Rm 3615, New York, N.Y. 10007
Filed Aug. 20, 1984, Ser. No. 642,554
Int. Cl.⁴ B23G *1/30*
U.S. Cl. 408—72 R **1 Claim**

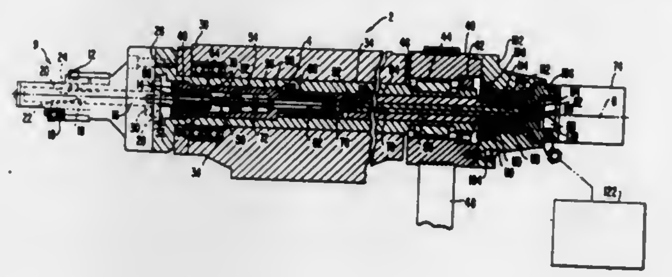


1. An improved threading tool kit for forming threads on cylinders having different diameters; said threading tool kit of

the type having a stock having an underside with two operating handles and a plurality of different size die blocks, each said die block can be placed within said stock wherein the improvement comprises:
(a) a holding member mounted on said underside of said stock having a central socket through said member adapted to receive a plurality of bushings of various sizes;
(b) a plurality of bushings, each said bushing having a constant external diameter and different interior diameter;
(c) means for securing each of said bushings within and through said socket whereby cylinders of different sizes can be guided accurately for threading, wherein said holding member has two ends, with a hole at one end and a slotted hole at the other end and is pivotaly mounted through said hole to said underside of said stock by a shoulder bolt and is secured through said slotted hole to said underside of said stock by a thumb bolt.

4,615,652
CUTTING TOOL COMPENSATOR FOR ROTARY MACHINE TOOL

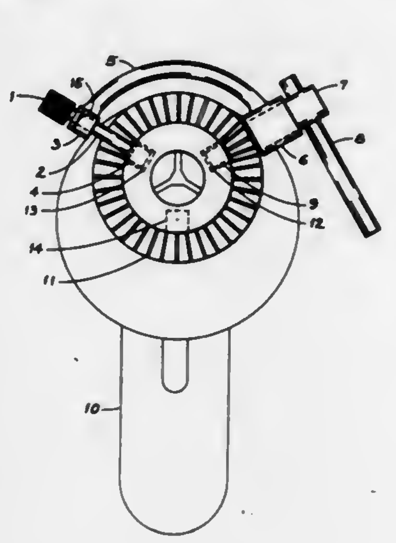
Richard G. Van Sickle, Sterling Heights, and Gerald W. Mathie, Holly, both of Mich., assignors to GTE Valeron Corporation, Troy, Mich.
Filed Dec. 31, 1984, Ser. No. 687,671
Int. Cl.⁴ B23B *29/034*
U.S. Cl. 408—168 **15 Claims**



1. An integral machine tool of the type circumscribing a longitudinal axis of rotation and adapted for having coupled thereto a tool holder which rotates about said axis and includes at least one cutting tool which is adjustable radially of said axis, said machine tool comprising:
a non-rotatable spindle body having a cavity therein extending along said axis from a first end to a second end;
a rotatable spindle shaft extending through said cavity and having an opening therethrough extending along said axis from one end to the other, said one end adapted to be coupled to said tool holder;
means coupled to said rotatable spindle shaft for rotating said rotatable spindle shaft;
a roller screw mounted within said opening, said roller screw including a leadscrew spindle extending along said axis and at least one nut body operatively coupled thereto, said roller screw being so mounted that rotary motion of said leadscrew spindle about said axis causes movement of said at least one nut body along said axis;
means coupled to said leadscrew spindle for controllably rotating said leadscrew spindle, said means including a non-rotating housing coupled to said means coupled to said rotatable spindle shaft;
means including a drawbar which is reciprocatingly and rotatably mounted with said opening and extends along said axis, said drawbar means being adapted to be coupled to said tool holder for rotation therein when said tool holder is rotated and for causing radial movement of said cutting tool when said drawbar means is reciprocated; and,
means positioned within said opening and coupled to said drawbar means and to said at least one nut body for reciprocating said drawbar means along said axis in response to movement of said at least one nut body along said axis, said reciprocating means being non-rotatable.

4,615,653
CHUCK KEY HOLDER WITH LOCKING PIN

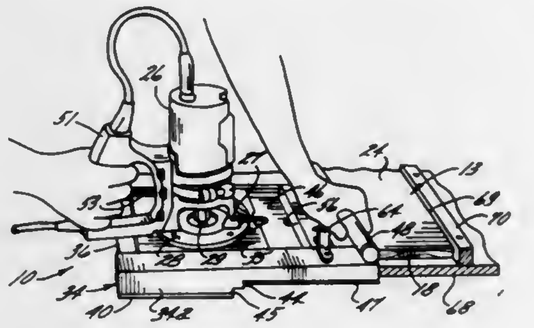
Don D. Watson, 1495 Beebe La., Eugene, Oreg. 97404
Filed May 30, 1985, Ser. No. 739,308
Int. Cl.⁴ B23B *39/00*
U.S. Cl. 408—241 R **8 Claims**



1. A chuck key holder for a chuck having a sleeve rotatable relative to the chuck for tightening and loosening of said chuck and a plurality of pilot holes spaced about the chuck to receive a chuck key to rotate said sleeve, wherein the the chuck key holder comprises chuck key means having a pilot attached to a locking pin, a shaft portion on said locking pin, a knob on one end of said pin having a larger diameter than the shaft portion and a pilot portion on the opposing end of said pin, said pilot portion being larger in diameter than the shaft portion and equal in size to the pilot of said chuck key means.

4,615,654
PORTABLE ROUTER

Craig M. Shaw, Orland Park, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Aug. 31, 1984, Ser. No. 646,908
Int. Cl.⁴ B23C *1/20*
U.S. Cl. 409—178 **13 Claims**



1. A portable router for cutting a first groove in a flat workpiece at a first preselected distance from one end of the workpiece and adapted to be physically re-positioned in space relative to the workpiece to cut a second and similar groove in the workpiece at a second preselected distance from the other end thereof, said router having, in combination, a portable frame adapted to rest on a flat surface of the workpiece, a slide mounted on said frame to slide back and forth on the frame in a direction which corresponds to the longitudinal centerlines of the grooves to be cut, a power-actuated spindle mounted on said slide to move bodily therewith and adapted to carry a cutter for cutting a groove as the slide moves on the frame, a first guide member mounted on said frame to project along one side of said spindle and engage said one end of said workpiece while said cutter cuts said first groove, said first guide member being spaced from said spindle a distance corresponding to said first preselected distance whereby said cutter is properly posi-

tioned to cut said first groove, and a second and similar guide member mounted on said frame to project along the other side of said spindle and engage said other end of said workpiece while said cutter cuts said second groove, said second guide member being spaced from said spindle a distance corresponding to said second preselected distance whereby said cutter is properly positioned to cut said second groove, said guide members being mounted for free movement on said frame to retract freely upon engagement with said flat surface of said workpiece whereby each member is out of the way when the other engages the associated end of the workpiece.

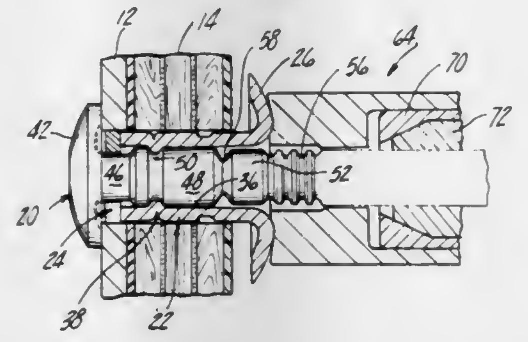
4,615,655
PULL TYPE FASTENER AND FASTENING SYSTEM FOR CONSTRUCTING ARTICLES SUCH AS SHIPPING CONTAINERS AND THE LIKE

Richard D. Dixon, San Juan Capistrano, Calif., assignor to Huck Manufacturing Company, Irvine, Calif.

Filed Jun. 12, 1985, Ser. No. 743,954

Int. Cl.⁴ F16B *21/00;* **B21D** *39/00*

U.S. Cl. 411—339 **16 Claims**



1. In a fastening system for securing workpieces having aligned openings with at least one of the workpieces having a relatively soft core and another of the workpieces being of a relatively hard material with the workpieces being such that the opposite sides of the workpieces are separately accessible but simultaneously inaccessible by a single operator, said system comprising:
a fastener including a tubular sleeve and an elongated pin,
said sleeve having an enlarged sleeve head and an elongated sleeve shank and a through bore,
said sleeve shank having an annular sleeve lock groove in its outer surface and an annular grip adjustment groove in its outer surface axially spaced therefrom, said sleeve lock groove being located farther from said sleeve head than said grip adjustment groove,
said pin having an enlarged pin head and a pin shank, said pin shank comprising a generally uniform intermediate shank portion, a reduced diameter retaining groove adjacent said pin head, a pull portion located on the end of said pin shank opposite said pin head and adapted to be gripped by a tool for applying a relative axial force between said pin and said sleeve to set the fastener, and a breakneck groove being located between said pull portion and said intermediate shank portion, a lock groove being located in said intermediate shank portion,
a retaining clip being of a split construction and adapted to be located and axially captured within said pin retaining groove, said retaining clip being generally non-deformable axially,
said retaining clip having a relaxed inside diameter greater than the diameter of said retaining groove of said pin, said retaining clip having a relaxed outside diameter greater than that one of the aligned openings of that one of the workpieces of hard material and adapted to be radially compressed and located in that one of the aligned openings with an interference fit to provide a frictional connection to hold said pin and said clip in the workpieces in a preinstalled condition,
said frictional connection being sufficient to hold said pin and said clip to said workpieces as said sleeve is inserted over said pin shank and the tool is applied to said pull portion,
said sleeve shank having its free end engageable with said retaining clip under said relative axial force to position said sleeve lock groove in radial alignment with said pin lock groove, said sleeve lock groove being radially deformed into said pin lock groove in response to said relative axial force attaining a first preselected magnitude to thereby lock said pin and sleeve together, said grip adjustment groove being adapted to deform radially outwardly in response to said relative axial force being of a second preselected magnitude greater than said first preselected magnitude to permit axial movement of said sleeve head into engagement with the confronting one of the workpieces, said grip adjustment groove being located within the confines of the relatively soft core whereby radial outward deformation thereof is not inhibited,
said pin severing at said breakneck groove when said relative axial force attains a third preselected magnitude greater than said first and said second preselected magnitudes after said enlarged sleeve head has engaged the opposite one of the workpieces.

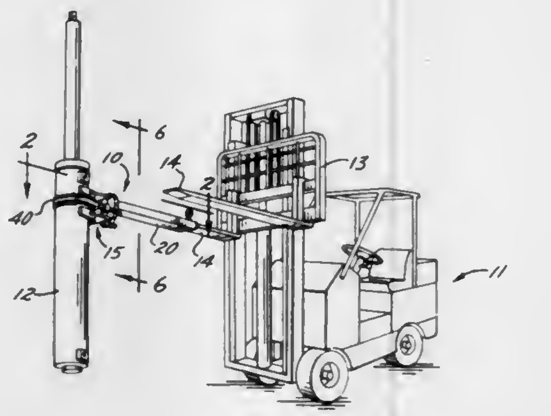
4,615,656
CYLINDER GRIPPING ATTACHMENT FOR A FORK LIFT TRUCK

Joseph T. Geraghty, Jr., c/o Geraghty Industrial Equipment, Inc., 4414 11th St., P.O. Box 3091, Rockford, Ill. 61106

Filed Sep. 10, 1984, Ser. No. 648,515

Int. Cl.⁴ B66F *9/06*

U.S. Cl. 414—607 **9 Claims**



1. An attachment for a fork of a fork lift truck having a longitudinal axis extending along a direction of travel of the truck, said attachment being adapted to enable a generally cylindrical member having a longitudinal axis to be gripped and transported by the truck, said attachment comprising a mounting bracket, means for securing said mounting bracket releasably to a prong of the fork, a gripping mechanism for holding a generally cylindrical member with the axis of the member extending transversely of the longitudinal axis of the truck, said gripping mechanism comprising a cradle for receiving said cylindrical member and further comprising selectively operable means for releasably strapping said cylindrical member in said cradle, means mounting said gripping mechanism on the forward end portion of said mounting bracket for rotation through 360 degress in either direction about a generally horizontal axis extending substantially parallel to the longitudinal axis of the truck, and selectively operable means for releasably holding said gripping mechanism in selected angular positions relative to said mounting bracket whereby a generally cylindrical member placed in the gripping mechanism while in one angular position may be turned about said generally horizontal axis to a different angular position prior to or after being transported by the truck, said holding means being operable when released to enable said gripping mechanism and said cylindrical member to be turned through 360 degrees in either direction relative to said mounting bracket, said mounting bracket and said gripping mechanism comprising generally vertical plates disposed in face-to-face relation, a series of angularly spaced detent openings formed around one of said plates, said holding means comprising a detent connected with the other of said plates and selectively movable into and out of said detent openings.

4,615,657
AIR STORAGE GAS TURBINE

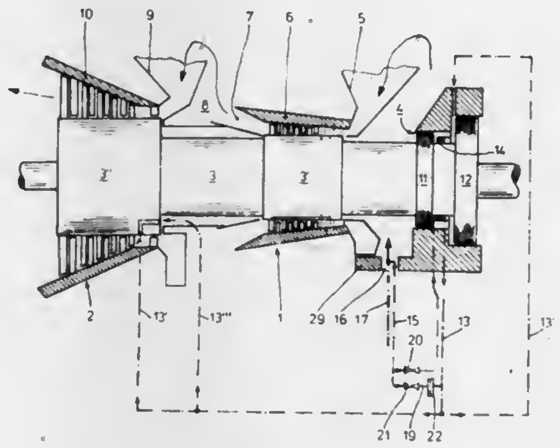
Franz Kreitmeier, Baden, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed May 29, 1985, Ser. No. 738,786

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1984, 3424138

Int. Cl.⁴ F01D *3/00*

U.S. Cl. 415—104 **9 Claims**



1. In an air storage gas turbine of the type including:
a high pressure turbine with an air inlet;
a low pressure turbine utilizing low pressure air for cooling; and
a high pressure balance piston and a low pressure balance piston, located on a common shaft for the high pressure turbine and the low pressure turbine, respectively; the improvement comprising an impulse turbine having an inlet and an outlet, first means for communicating said impulse turbine inlet with the air inlet of the high pressure turbine and second means for communicating said impulse turbine outlet with the low pressure balance piston and parts of the low pressure turbine.

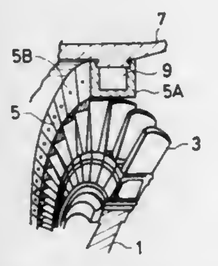
4,615,658
SHROUD FOR GAS TURBINES

Hiromi Kagohara; Yutaka Fukui; Masahiko Sakamoto, and Nobuyuki Iizuka, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 515,977, Jul. 21, 1983, abandoned. This application Jul. 11, 1985, Ser. No. 753,882

Int. Cl.⁴ F01D *25/12, 11/08*

U.S. Cl. 415—178 **10 Claims**



1. A shroud for a gas turbine casing, adapted to be mounted on a gas turbine casing so as to face the tips of moving turbine blades with gaps between the turbine blade tips and the shroud, the shroud having a front portion facing the blade tips, and side portions provided at both sides of said front portion to fit said turbine casing, thereby to form a passage for coolant together with a part of said turbine casing, which shroud has an austenitic structure and consists essentially of 0.35–0.5 wt% C; 22–24 wt% Cr; 24–26 wt% Ni; 0.15–0.35 wt% Ti; 0.2–0.5 wt% Nb; 0.1–1.2 wt% Mn; and less than 0.8 wt% Si; and balance Fe.

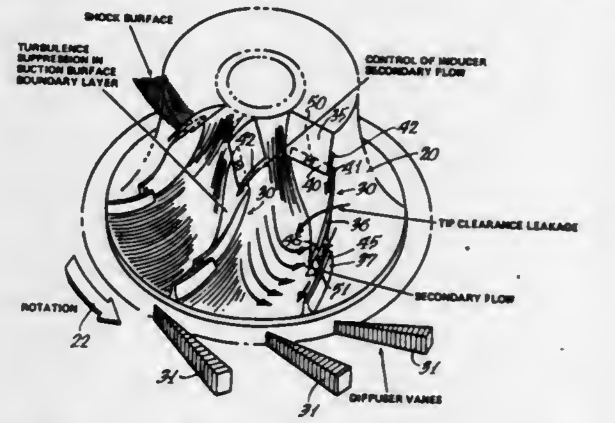
4,615,659
OFFSET CENTRIFUGAL COMPRESSOR

Fred S. Sidransky, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 24, 1983, Ser. No. 545,042

Int. Cl.⁴ F01D *5/10, 5/22*

U.S. Cl. 416—183 **3 Claims**



1. An offset centrifugal compressor having a plurality of blades associated with a rotor and having a length to extend axially of the rotor from a leading edge at the flow inlet end of the rotor and extend radially to an end at the outer periphery of the rotor to define respectively inducer and exducer sections, a plurality of said blades being formed of plural blade parts extending generally end-to-end with ends of a pair of adjacent blade parts of one blade being indexed and immersed relative to each other in said inducer section to form a gap, and with ends of another pair of blade parts being indexed and immersed relative to each other in said exducer section to form a second gap, whereby gas can flow through said gaps from the pressure side of said multi-part part blades to the suction side thereof to affect the boundary layer on the suction side of said blades and a generally airfoil-shaped bridging member in each gap and fixed to said indexed and immersed ends of said blade parts at a location approximately mid-way of the height of the blades to provide for unobstructed flow of gas through said gaps adjacent the tip of the blade remote from the rotor.

4,615,660
ELECTROMAGNETIC METAL MELT PUMP FOR PUMPING OUT AND CHARGING THE MOLTEN METAL FROM A FURNACE

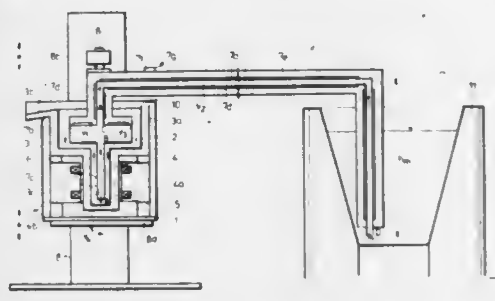
Arnold Rónaföldi, Miskolc; József Ferencsik, Budapest; János Doknás, and László Török, both of Vác, all of Hungary, assignors to Nikex Nehézipari Külkereskedelmi Vállalat, Budapest, Hungary

Continuation of Ser. No. 605,342, Apr. 30, 1984, abandoned. This application Sep. 18, 1985, Ser. No. 777,852

Claims priority, application Hungary, May 4, 1983, 1519/83

Int. Cl.⁴ H02K *44/02*

U.S. Cl. 417—50 **2 Claims**

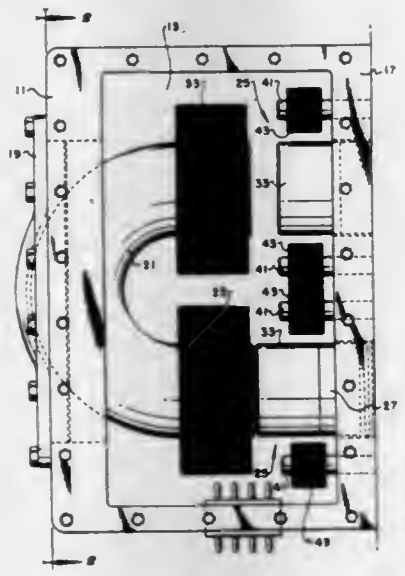


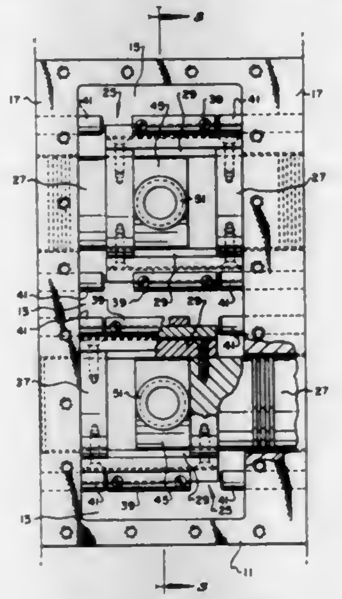
1. Electromagnetic metal melt pump for pumping out and delivering a molten metal from a furnace, comprising a ground plate and including a laminated iron body having slots, multiphase windings placed into said slots and forming an inductor; a metal melt tank made of magnetizable material, heat insulation provided on said tank, said tank is attached to said laminated body, a suction tube (7) is coaxially placed in said metal melt tank (3), said suction tube (7) comprises a first suction tube (7*c*) having a volume (V_4) for closing the magnetic circuit of the inductor on a section defined by a set of points A and B and

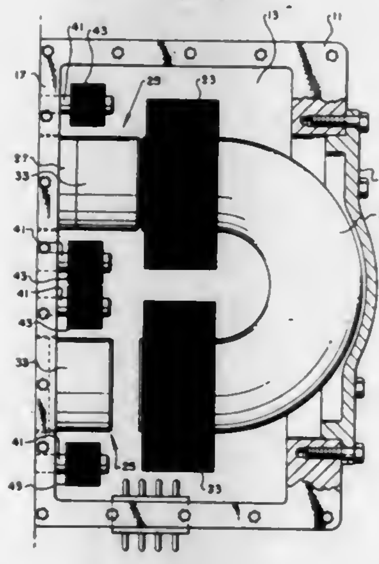
determining an immersing depth; a second buffer tank section (*7b*) having a volume (V_1) for producing a reduced pressure area defined by a set of points B and C; a third suction tube (*7a*) having a volume (V_2) for creating a reduced pressure in the suction tube (7) when immersed into the metal melt of the furnace; said suction tube (7) is provided with controllable heaters (*7d*) and with heat insulation (*7e*); said ground plate (1) being fixed on a lever plate (*8a*) of lever equipment (8); said suction tube (7) is attached to a lever rod (*8b*) of said lever equipment (8), the lever rod (*8b*) is mounted for rotation about the axis thereof.

4,615,661
MAGNETIC PUMP

Jimmy L. King, 416 Falcon Ct., Bedford, Tex. 76021
Continuation of Ser. No. 402,065, Jul. 30, 1982, abandoned. This application Nov. 26, 1985, Ser. No. 802,933
Int. Cl.⁴ F04B *17/04, 19/02*
U.S. Cl. 417—418 **12 Claims**







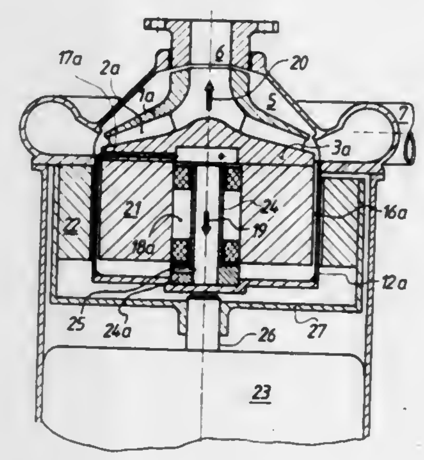
1. A magnetic pump, comprising:
a housing block, having a dry compartment and a fluid compartment for holding a fluid, wherein the compartments are separated by a partition;
a first electromagnet, mounted in the dry compartment;
a piston assembly, mounted for reciprocal movement toward and away from the first electromagnet, and passing through the partition;
a receiver, mounted in the fluid compartment;
wherein the receiver has a neck, which extends through the housing block, so that fluid can flow out of the receiver and out of the pump;
a check valve, on the side of the receiver facing the piston assembly, for allowing fluid to flow from the fluid compartment into the receiver, but not from the receiver into the fluid compartment;
a sliding sleeve, reciprocal between an open position, wherein the interior of the sleeve is in fluid communication with the fluid compartment, and a closed position, wherein the sleeve encloses a portion of the fluid in the fluid compartment;
a second electromagnet, which is not coaxial with the first electromagnet, for moving the sleeve reciprocally; and
means for changing the polarity of the first and second electromagnets.

4,615,662
AXIAL THRUST COMPENSATION FOR CENTRIFUGAL PUMP

Karsten Laing, 3970 Honeycutt St., San Diego, Calif. 92109
Filed Nov. 21, 1985, Ser. No. 800,548
Int. Cl.⁴ F04B *17/00*
U.S. Cl. 417—420 **2 Claims**

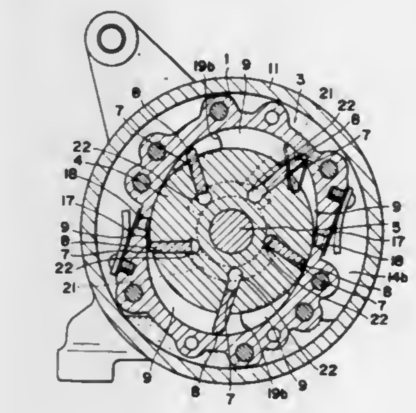
1. A centrifugal pump of the type having a casing, an axial fluid inlet (**6**) in said casing, a rotatable impeller (**1, 2, 3**) in said casing having an inlet area on its front surface opposite said fluid inlet (**6**) of the casing, said rotatable impeller (**1, 2, 3**) subjected to the fluid pressure in said fluid inlet (**6**) of the casing and possessing a shrouded area on the front surface extending radially outward from said inlet area subjected to increased fluid pressure imparted by said impeller (**1, 2, 3**) when said pump is operating, said rotatable impeller (**1, 2, 3**) forming a unit with an annular rotor (**4, 21**) driven by magnetic forces, the impeller rotor unit (**1, 2, 3, 4, 21**) being centered in the bore (**18**) of the rotor (**4, 21**) and supported in the axial direction to counterbalance axial magnetic forces by bearing means (**13, 24**) by which said impeller is mounted for rotation and which are located adjacent to the rear plate (**3**) that divides the impeller (**1, 2, 3**) from the rotor (**4, 21**), magnetic means for effecting a magnetic couple with an inductive drive means (**4, 21**), which is separated by a magnetically permeable separating

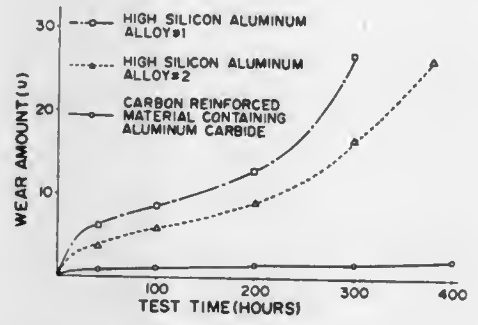
wall (**12**) which forms a narrow gap (**16**) with the rotor (**4, 21**); the improvement comprises channels (**17**) arranged in said rear plate (**3**) and communicating on the periphery of the impeller (**1, 2, 3**) with the pressure side compartment (**5**) of the pump and on the inner side with the gap (**16**).



4,615,663
COMPRESSOR WITH VANES MADE OF COMPOSITE MATERIAL INCLUDING CARBON, ALUMINUM, AND ALUMINUM CARBIDE

Masahiro Iio, Konan; Yasuhiko Saruwatari, Yokosuka, and Hiroshi Yamazoe, Yokohama, all of Japan, assignors to Diesel Kiki Co., Ltd. and Nippon Carbon Co., Ltd., both of Tokyo, Japan
Filed Mar. 27, 1985, Ser. No. 716,709
Claims priority, application Japan, Mar. 29, 1984, 59-61642
Int. Cl.⁴ F04C *18/00, 29/00*
U.S. Cl. 418—152 **2 Claims**

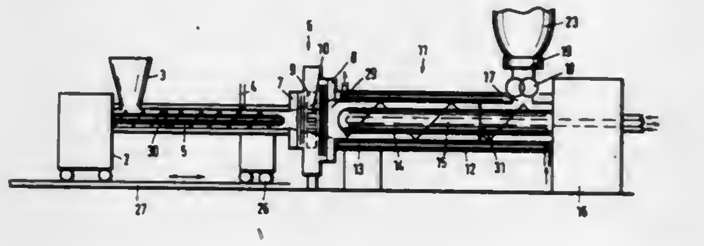



HIGH SILICON ALUMINUM ALLOY#1
HIGH SILICON ALUMINUM ALLOY#2
CARBON REINFORCED MATERIAL CONTAINING ALUMINUM CARBIDE
WEAR AMOUNT (u)
30
20
10
100
200
300
400
TEST TIME (HOURS)

1. A vane-type compressor, comprising:
(a) a main body comprising a cylinder block formed with a bore and end members closing the ends of said bore;
(b) a rotor received within said main body in said bore thereof so as to be rotatable about an axis extending in its longitudinal direction, its surface being formed with a plurality of slots extending in its said longitudinal directions; and
(c) a plurality of vanes, each slidably fitted into one of said slots with its outer edge bearing against the inside surface of said bore in said main body;
(d) wherein the material from which said vanes are formed is a composite material, comprising carbon and a metal including a substantial proportion of aluminum, and further comprising a substantial quantity of aluminum carbide;
said aluminum carbide being situated between the carbon and the aluminum containing metal thereof; the porportion of aluminum carbide in said material for said vanes being between about 1% and about 20%, and said rotor being made from a material which has a similar coefficient of thermal expansion to said material for said vanes.

4,615,664
APPARATUS FOR PRODUCING EXPANDED THERMOPLASTIC MATERIALS

Klaus-Dieter Kolossow, Hambüren, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Fed. Rep. of Germany
Filed Sep. 20, 1984, Ser. No. 652,491
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1983, 3336179
Int. Cl.⁴ B29B *7/18*
U.S. Cl. 425—4 C **10 Claims**



1. An apparatus for producing foamed or expanded thermoplastics materials comprising:
(a) a fusing and homogenising extrusion device comprising a barrel having opposed first and second end regions, material feed means associated with said first end region, means for admitting propellant to said barrel, conveyor means for transporting said material through said barrel from said first end region to said second end region, said second end region forming an outlet end region of said extrusion device, and drive means for driving said conveyor means;
(b) filter unit means connected by flange mountings to and communicating with said outlet end of said extrusion device, said filter unit means including interchangeable filter means, said filter unit means defining a conduit for the passage of said material therethrough, said conduit being conically flared outwardly away from said extrusion device and permitting said material to traverse said filter means;
(c) dynamic cooling means connected by mounting flanges to and communicating with the downstream end of said filter unit means, said cooling means comprising a barrel having opposed first and second end regions, the internal diameter of said barrel of said cooling means being larger than the internal diameter of the barrel of said extrusion device so as to permit a longer dwell time for the material in said cooling means to efficiently effect the cooling of the material, said first end region of said cooling means receiving material which has traversed said filter unit means, conveyor means disposed within said barrel for transporting said material from said first end region to said second end region of said cooling means, and separate drive means for driving said conveyor means in said cooling means;
(d) said extrusion device, said filter unit means, and said cooling means being disposed on a common longitudinal axis and being successively traversed by said material, and
(e) mounting means for said extrusion device, said mounting means permitting longitudinal axial thermal expansion and

contraction to occur and permitting longitudinal axial displacement of said extrusion device away from said cooling means for cleaning purposes.

4,615,665
METHOD FOR MAKING DENTAL PROSTHETIC DEVICE WITH OXYGEN BARRIER LAYER AND VISIBLE LIGHT IRRADIATION TO CURE POLYMER

Louis H. Tateosian, and Shek C. Horne, both of York, Pa., assignors to Dentsply International Inc., York, Pa.

Filed May 6, 1983, Ser. No. 492,441

Int. Cl.^{4} B29C *71/04*

U.S. Cl. 425—16 **7 Claims**

1. A method of preparing a shaped dental prosthetic device for use in a human mouth comprising:

- (1) shaping a curable dental material into a shaped dental prosthetic device having at least two surfaces approximately perpendicular to each other, positioning said device so that one of said surfaces is substantially vertical and the other of said surfaces is substantially horizontal; said material including a polymerization initiator for said substance activatable by visible light in the range of about 400–500 nm;
- (2) coating said surfaces with a liquid composition which will substantially exclude air from said surfaces; said composition comprising;
  - (a) an organic compound present in an amount of about 6 percent or more, based on the weight of said liquid composition, and
  - (b) having a viscosity of about 50 to about 50,000 cps said liquid composition being applied to both the substantially vertical surface and the substantially horizontal surface of said dental members in a residentual layer of at least about 35 mg/dm^2 on a fully dry weight basis; and
- (3) applying visible light radiation of about 400 to about 500 nm to the substantially vertical surface and to the substantially horizontal surface of the device through said composition.

4,615,666
APPARATUS FOR FLATTENING BLOWN-FOIL TUBES

Klaus Steinberg, Troisdorf-Sieglar, Fed. Rep. of Germany, assignor to Reifenhauser GmbH & Co. Maschinenfabrik, Troisdorf, Fed. Rep. of Germany

Filed Jun. 4, 1985, Ser. No. 740,959

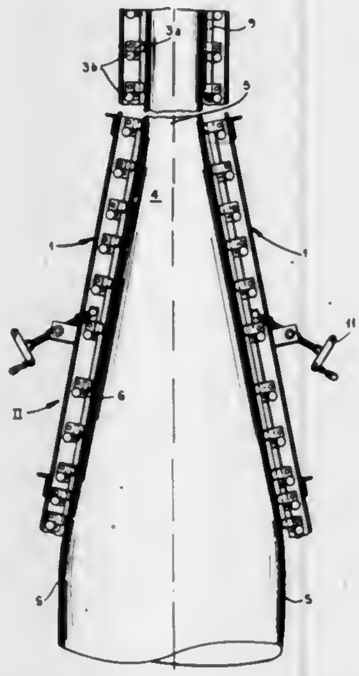
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1984, 3421680

Int. Cl.^{4} B29C *53/20*

U.S. Cl. 425—72 R **10 Claims**

1. An apparatus for flattening a blown-foil tube which comprises:

- a pair of opposing frames disposed on opposite sides of a blown-foil tube passing between said frames in a direction of displacement of said tube, each of said frames having a pair of longitudinally extending frame members; and
- a multiplicity of flattening assemblies spaced along each frame in said direction, each of said assemblies having:
  - a pair of differently functioning flattening elements extending parallel to one another between the respective frame members in ladder-ring orientation,
  - respective end plates carrying both said elements at opposite ends thereof, and
  - means for mounting said end plates on the respective frames so as to enable said assemblies to pivot about a respective axis parallel to said elements between a position in which one of said elements of each assembly is engageable with said tube and a position wherein the other of said elements is engageable with said tube.



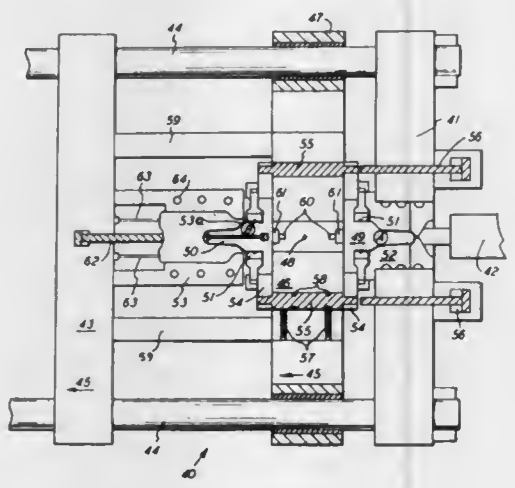
4,615,667
INJECTION BLOW MOLDING

Siegfried S. Roy, 34 Nathan Lord Rd., Amherst, N.H. 03031

Continuation-in-part of Ser. No. 560,592, Dec. 12, 1983, abandoned, which is a continuation-in-part of Ser. No. 367,467, Apr. 12, 1982, abandoned. This application Jun. 3, 1985, Ser. No. 740,893

Int. Cl.^{4} B29C *49/06, 49/62, 49/64*

U.S. Cl. 425—135 **33 Claims**



1. An injection blow molding press for use in making blow molded hollow articles comprising a preform core having a portion of constant cross section adjacent its base end and an adjoining tapered portion, a preform injection molding station and a blow molding station, means for mounting the core for step-wise movement to sequentially bring said core into registry with the preform injection molding station and the blow molding station, a neck ring split mounted with freedom for relative movement axially of the portion of the core of constant cross section and in a direction toward the free end of the core when the core is in registry with the blow molding station, a blow mold in the blow molding station having an open neck to receive the core with the preform thereon and also having a bottom wall, gas inlet passages in the bottom wall, a cylinder associated with the bottom wall and with which said passages communicate, an ejector pin extending through the bottom wall for ejecting the article after blow molding thereof, a piston in said cylinder and to which the ejector pin is connected, and means for introducing gas under pressure into the cylinder alternatively at opposite sides of the piston to provide alternatively for introduction of gas through said inlet passages and into contact with the exterior surface of a preform introduced into the blow mold and for shifting movement of the piston and ejector pin to eject a blown article.

4,615,668
APPARATUS FOR MELT-FORMING BOTTOM STOP OF SLIDE FASTENER CHAIN

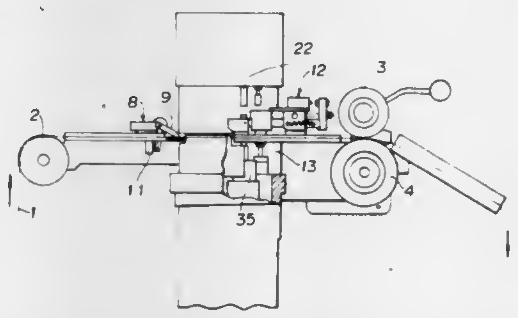
Yasuhiko Matsuda, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Nov. 5, 1984, Ser. No. 668,494

Claims priority, application Japan, Dec. 12, 1983, 58-191438[U]

Int. Cl.^{4} B29C *65/08*

U.S. Cl. 425—145 **1 Claim**



1. An apparatus for melt-forming a bottom stop of a slide fastener chain which melt-forms a bottom stop on a continuous slide fastener chain alternately having a portion in which elements of a thermoplastic synthetic resin material are interlocked with each other and a space portion in which no element is present, said apparatus having: a device which advances said slide fastener chain; a positioning member having a positioning projection which is adapted to enter said space portion and to engage an element at the rear edge of said space portion; a device which is adapted to sense the engagement between said positioning projection and said element and to stop the advance of said fastener chain; an ultrasonic horn which is disposed in close proximity to said positioning projection; an anvil which is adapted to clamp and press said fastener chain between the same and said ultrasonic horn after said fastener chain has stopped, and a groove which is formed on said positioning member, one wall defining the groove being continuous with a side surface of the positioning projection which side surface engages the element at the rear edge of said space portion, said anvil being received in said groove for sliding movement on said side surface of the positioning projection, said anvil having a working portion of a width smaller than that of the positioning projection.

4,615,669
INJECTION MOLDING MACHINE

Shigeru Fujita; Yukio Takanashi, and Hiroshi Kanno, all of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1985, Ser. No. 702,611

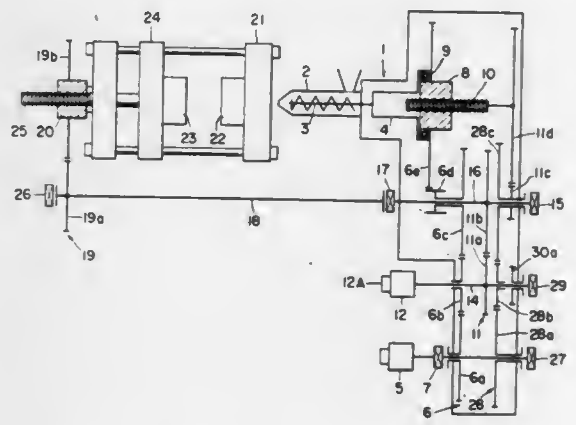
Claims priority, application Japan, Feb. 21, 1984, 59-30967

Int. Cl.^{4} B29C *45/22*

U.S. Cl. 425—147 **1 Claim**

1. An injection molding machine for manufacturing mold products from a molten material, comprising:

- an injection apparatus including a heating cylinder, a screw disposed in said heating cylinder, and means for axially moving said screw in said heating cylinder for injecting the molten material;
- screw rotating means for rotating said screw for plasticizing the material;
- drive means for electrically driving the injection molding machine;
- means for transmitting driving power from said drive means to said injection apparatus; and
- a mold opening and closing apparatus;
- said drive means comprising first servomotor and a second servomotor and said power transmission means comprising three power transmission mechanisms operatively connected to said first servomotor and said second servomotor respectively, so that said first servomotor drives one of said injection apparatus, said screw rotating means and said mold opening and closing apparatus through one of said power transmission mechanisms, and said second servomotor drives one of the other of said injection apparatus, said screw rotating means and said mold opening and closing apparatus through one of the other two of said three power transmission mechanisms, said first servomotor and said second servomotor being operatively connected to at least one of said injection apparatus, said screw rotating means and said mold opening and closing apparatus through one of said power transmission mechanisms and a first clutch means operatively associated with said one power transmission mechanism, and said first servomotor and said second servomotor being operatively connected to one of said injection apparatus, said screw rotating means and said mold opening and closing apparatus through a second clutch means.



4,615,670
ARRANGEMENT FOR MELTING SPINNING OF SYNTHETIC HIGH POLYMERS WITH MEANS FOR EXCHANGING NOZZLE SET

Holger Brandt, Ehndorf; Arnold Beck, Neumuenster, and Joachim Dreyer, Aukrug-Bünzen, all of Fed. Rep. of Germany, assignors to Neumuenstersche Maschinen -und Apparatebau GmbH (NEUMAG), Neumuenster, Fed. Rep. of Germany

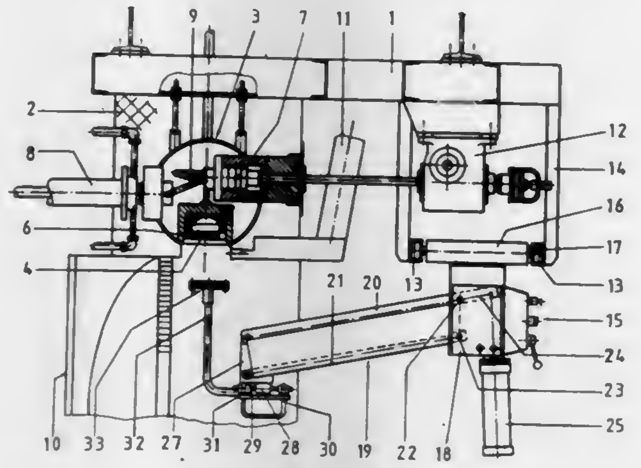
Filed Mar. 11, 1985, Ser. No. 709,779

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1984, 3409530

Int. Cl.^{4} D01D *4/08*

U.S. Cl. 425—186 **11 Claims**

1. An arrangement for melt spinning of synthetic high polymers, comprising a spinning bar extending in a predetermined direction; a nozzle set inserted in said spinning bar and located at a predetermined height; means for exchanging said nozzle set, said exchanging means including rails extending parallel to said spinning bar at a height corresponding to said predetermined height of said nozzle set, a carriage suspended on said rails and movable on said rails, an arm having a free end and mounted on said carriage for movement between a normal position and a working position, and a supporting element arranged on said free end of said arm and movable in said working position to said nozzle set inserted in said spinning bar, said arm being formed as a parallel guide and includes two links pivotally connected with said carriage and a connecting member connected with said supporting element.

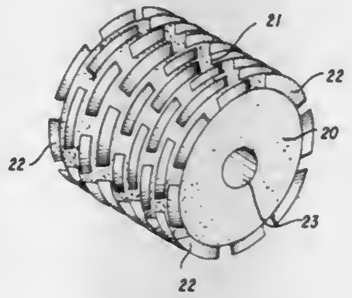


4,615,671
DIE TO PRODUCE MESH IN NON-METALLIC MATERIALS
Eustaquio O. Bernal, Malaga No. 2457, Col. Sta. Monica Guadalajara, Jalisco, Mexico

Filed May 28, 1985, Ser. No. 738,451

Int. Cl.^{4} B32B *3/12;* **B29C** *17/00*

U.S. Cl. 425—289 **12 Claims**



1. A die for use in a press to produce mesh in non-metallic materials using pressures from 5 to 500 tons per square centimeter, comprising a support member forming a plate or a metallic solid bar having more than two spaced and parallel rows of blades protruding from a surface of said plate or bar, each row of blades comprises a plurality of discrete and spaced cutting blades of equal length protruding from said surface, said blades in each adjacent row alternating with the spaces in between the blades of the next adjacent row.

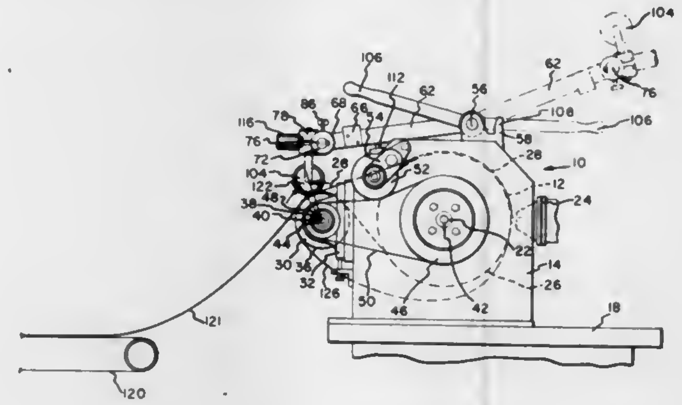
4,615,672
APPARATUS FOR TRIMMING EXTRUDED STRIP COMPONENTS
Larry W. Smith, Toronto, Canada, and Larry G. Lowry, Martin, Tenn., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 563,283, Dec. 19, 1983, abandoned. This application May 31, 1985, Ser. No. 740,173

Int. Cl.^{4} B29C *15/00;* **A21C** *11/00*

U.S. Cl. 425—296 **22 Claims**

1. Apparatus for trimming a heated extruded strip component comprising a rotatable anvil roll having an anvil roll surface for supporting said strip component, means for rotating said anvil roll to move said anvil roll surface at the same speed said strip component is fed to said anvil roll, means for heating said anvil roll to a predetermined temperature, a rotatable knife blade, means mounting said knife blade on a knife holding body for movement toward and away from said anvil roll surface to cut said extruded strip component, means for mounting said knife holding body and pressure means mounted on said holding body for pressing said knife blade against said anvil roll surface.

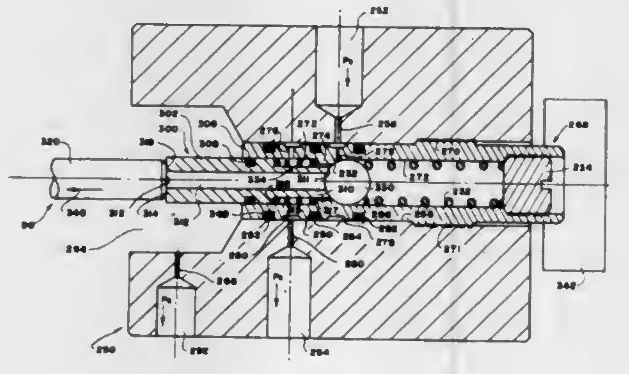


4,615,673
THERMOSTATIC CONTROL SYSTEM
Rodney T. Heath, 4901 E. Main, Farmington, N. Mex. 87401, and Charles R. Gerlach, 639 W. Rhapsody, San Antonio, Tex. 78216

Division of Ser. No. 359,246, Mar. 18, 1982, Pat. No. 4,474,550. This application Jun. 27, 1984, Ser. No. 625,023

Int. Cl.^{4} F23N *1/00*

U.S. Cl. 431—12 **3 Claims**



1. A method of controlling the amount of natural supply gas delivered from a natural gas supply source to a natural gas burner adapted to continuously heat a process fluid or the like in a vessel or the like so as to continuously automatically maintain the temperature of the process fluid within a predetermined minimum range of temperatures above and below a pre-set nominal temperature during normal operating conditions comprising:

controlling operation of the gas burner by varying the pressure of supply gas delivered to the gas burner by use of a control gas pressure operated flow regulator device in a natural gas supply line connecting the gas burner to the natural gas supply source;

controlling operation of said control gas pressure operated flow regulator device by varying the pressure of control gas delivered thereto from the gas supply source in accordance with variations in the temperature of the process fluid in the vessel;

providing a bore having a supply gas orifice means through which supply gas is fed into said bore and a control gas orifice means through which said control gas is fed to said control gas pressure operated flow regulator device;

controlling the pressure of the control gas delivered to said control gas operated flow regulator device by using a relatively substantially large variable orifice means as compared to the supply gas orifice means;

controlling said relatively substantially large variable orifice means by changes in temperature so that a small change in temperature results in a relatively large change in the pressure of the control gas delivered to said control gas pressure operated flow regulator device;

locating said relatively substantially large variable orifice means between said supply gas orifice means and said control gas orifice means; and

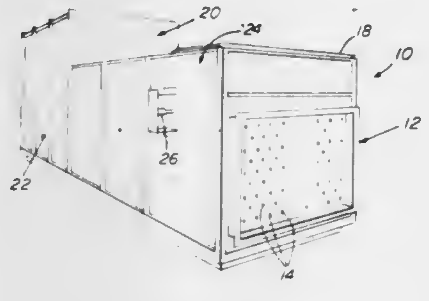
attenuating changes in the pressure of the control gas delivered to said control gas pressure operated flow regulator device by bleeding gas through a relatively small fixed sized orifice leading from said bore to atmospheric pressure.

4,615,674
INCINERATOR SYSTEM
Richard K. Rathmell, Londondery, N.H., assignor to Wolverine Corporation, Methuen, Mass.

Filed Sep. 13, 1985, Ser. No. 776,008

Int. Cl.^{4} F23D *11/44*

U.S. Cl. 431—215 **11 Claims**



1. An incineration system comprising

combustion chamber structure having an inlet, an outlet, and burner structure in said combustion chamber,

heat exchanger structure defining a chamber, divider structure between said heat exchanger chamber and said combustion chamber, an array of tubes extending through said heat exchanger chamber to the inlet of said combustion chamber at said divider structure, said heat exchanger chamber having an inlet coupled to the outlet of the combustion chamber for flow of the combustion products discharged from said combustion chamber through said heat exchanger chamber over said tubes in heat exchange relation, and an outlet for discharge of products from said heat exchanger chamber,

aspirator sleeve structure secured to said divider structure between said heat exchanger chamber and said combustion chamber, each said aspirator sleeve receiving the outlet end of a heat exchanger tube in slip fit relation so that said heat exchanger tubes are free to thermally expand longitudinally within said aspirator sleeves,

and means for flowing vapor through said heat exchanger tubes into said combustion chamber at sufficiently high velocity to produce a reduced pressure effect in said aspirator sleeves to reduce the pressure in said aspirator sleeves below the exhaust gas pressure in said heat exchanger chamber to draw a minor fraction of combustion products through said aspirator sleeves into said combustion chamber for reincineration.

4,615,675
FURNACE CHANNEL HEATING METHOD AND APPARATUS
George M. Vorel, Butler, Pa., assignor to Thermoject, Inc., Butler, Pa.

Filed Nov. 4, 1985, Ser. No. 794,726

Int. Cl.^{4} F27D *7/00, 1/16;* **F24H** *1/00;* **F24J** *3/00*

U.S. Cl. 432—4 **14 Claims**

10. In a furnace having a channel which is maintained in open communication with the main chamber of the furnace to provide a circulatory flow path for molten material contained within the furnace, a method of heating the furnace channel comprising the steps of:

providing fuel and excess combustion air from the exterior of said furnace;

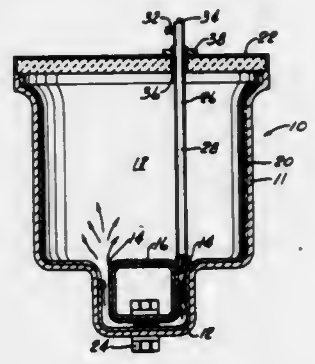
directing said fuel and air along separate elongated flow paths defined within an elongated burner tube through the main chamber of said furnace and to an open end of said channel;

simultaneously with said directing, washing said air over the interior walls of said burner tube to cool said tube;

combining said fuel and a portion of said air adjacent said open end for combustion thereof;

directing products of said combustion and the remainder of said air toward said open end for preheating said channel; and

varying the ratio of fuel to air by varying the fuel flow rate in response to progressive heating of said channel to gradually increase the temperature of said products of combustion and thereby bring the channel gradually to a predetermined elevated temperature.



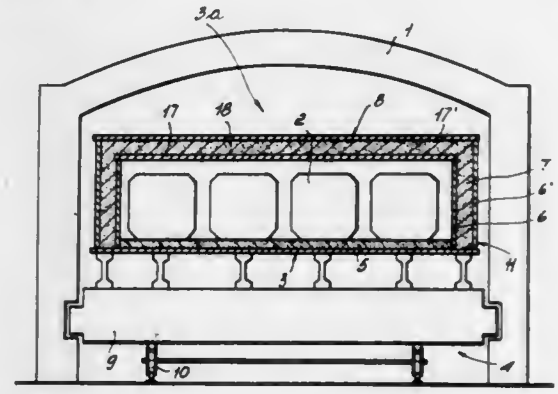
4,615,676
CALCINING METHOD AND ENCLOSURE STRUCTURE THEREFOR
Renzo Corato, Mestre-Venezia, Italy, assignor to Alusuisse Italia, S.p.A., Milan; Italimpianti Societá Italiana Impianti, p.A., Genoa and Sirma S.p.A., Malcontenta, all of, Italy

Filed Dec. 26, 1984, Ser. No. 686,465

Claims priority, application Italy, Dec. 29, 1983, 84151 A/83

Int. Cl.^{4} F27D *3/00;* **F27B** *9/26, 11/00*

U.S. Cl. 432—9 **19 Claims**



1. A method for calcining carbonaceous blocks into carbonaceous bodies, in particular anodes, in furnaces, and with the use

of at least one reusable enclosure structure arranged on bottom defining means and having side walls on said bottom defining means and a cover arranged on said side walls to enclose therewith an openable closed space, at least said side walls and said cover incorporating all over the extension thereof a protective layer for the carbonaceous blocks, at least one amongst said side walls and said cover being removably mounted to form said enclosure structure, the method comprising the steps of arranging at least one of said reusable enclosure structures at the outside of said furnace, placing at least one of said blocks into said space of said enclosure structure and at a distance from at least a prevailing part of said side walls thereof to leave a free space between said blocks and said side walls, introducing said enclosure structure into the furnace, leaving within said furnace said enclosure structure with said blocks in position within said space for a time period and temperature required for the calcination of said blocks into carbonaceous bodies, extracting said enclosure structure from said furnace, extracting the calcined carbonaceous bodies from said enclosure structure and reusing said enclosure structure for a subsequent calcination cycle.

4,615,677

ARRANGEMENT FOR RECOVERING THE SENSIBLE HEAT OF DUMPABLE HOT STOCK

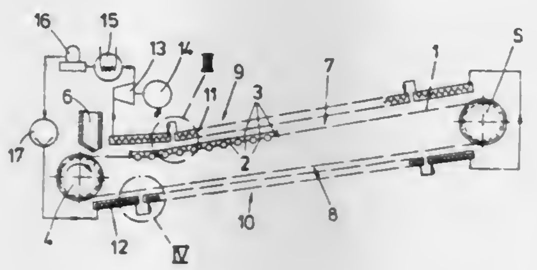
Anton Hulek, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Aug. 26, 1985, Ser. No. 769,459

Claims priority, application Austria, Sep. 6, 1984, 2857/84

Int. Cl.⁴ F27D *15/02;* **B22D** *18/02*

U.S. Cl. 432—77 **18 Claims**



1. In an arrangement for recovering the sensible heat of dumpable hot stock, including an endless conveying belt trained about two deflecting pulleys guiding the belt through an upper carrier run adapted to receive the hot stock and an empty lower run, the conveying belt being formed by articulately connected links, a first cooling zone for the upper carrier run and a second cooling zone for the empty lower run, the improvement comprising hot stock receiving plates fastened to each conveying belt link, each plate comprising a carrier layer supporting the hot stock and a heat insulating layer underlying the carrier layer.

4,615,678

BLANK FROM WHICH A DENTAL IMPLANT CAN BE MACHINED, AND A METHOD OF MAKING THE BLANK

Werner H. Moermann, Zweiackerstrasse 57, CH-8057 Zuerich, and Marco Brandestini, Gartenstrasse 10, CH-8702 Zollikon, both of Switzerland

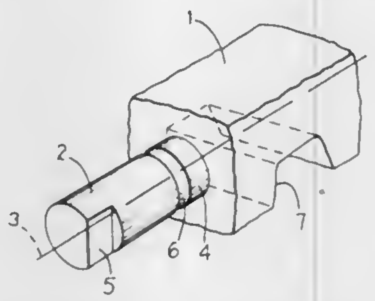
Filed Mar. 5, 1985, Ser. No. 708,309

Claims priority, application Switzerland, Mar. 6, 1984, 1110/84

Int. Cl.⁴ A61C *8/00*

U.S. Cl. 433—201.1 **21 Claims**

1. A blank from which an implant conforming to a cavity in a tooth can be machined by a milling machine, comprising a machinable part which is a block of a raw material for the implant and from which the entire implant is to be machined, and a supporting stub which is fixedly provided on and projects ourwardly from said machinable part, which can support said machinable part in the milling machine, and which can be discarded after the entire implant has been machined from said machinable part, wherein said supporting stub has thereon at a location spaced from said machinable part a cylindrical support surface concentric to an axis which extends through said supporting stub and through said machinable part, has keying means for facilitating a predetermined angular orientation of said supporting stub and said machinable part about said axis relative to the milling machine, and has thereon adjacent said machinable part an arcuate, radially outwardly facing reference surface which is concentric with said axis and which has a predetermined radius which conforms to precise dimensional tolerances at all location thereon.



4,615,679

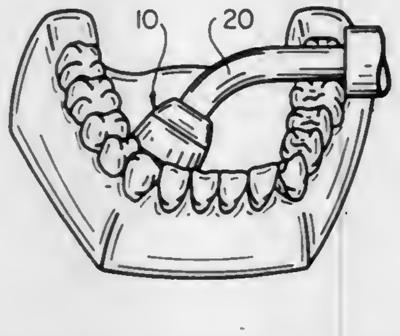
LIGHT SHIELD FOR USE WITH LIGHT CURING APPARATUS

Thomas K. Wyatt, 99 Kilroy Way, Atherton, Calif. 94025

Filed Jun. 3, 1985, Ser. No. 741,253

Int. Cl.⁴ A61C *5/04*

U.S. Cl. 433—229 **4 Claims**



1. A removable and replaceable integral light shield device for use with a light gun having an extending tubular part with an end from which polymer curing blue light radiation is applied to a tooth under treatment comprising:

a clamping section for tight frictional engagement with said tubular part of said light gun; and

a working section for shielding the radiation from impacting the eyes of individuals in the vicinity of such radiation and for limiting the radiation path to the area of the tooth under treatment;

wherein said clamping section includes a first annular portion of a given diameter and a second annular portion of larger diameter than said given diameter for engaging tubular parts of different diameters respectively, said light shield device being made from a flexible and resilient material which is stretched by heating and restored to its normal shape upon cooling.

4,615,680

APPARATUS AND METHOD FOR PRACTICING PRONUNCIATION OF WORDS BY COMPARING THE USER'S PRONUNCIATION WITH THE STORED PRONUNCIATION

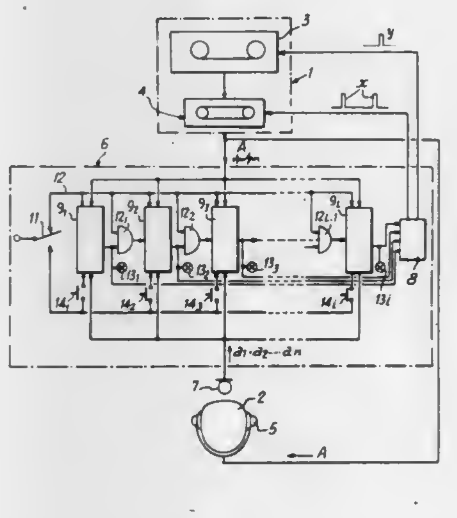
Alfred A. A. Tomatis, 68 Boulevard de Courcelles, 75017 Paris, France

Filed May 16, 1984, Ser. No. 610,643

Claims priority, application France, May 20, 1983, 83 08383

Int. Cl.⁴ G09B *19/04, 19/06*

U.S. Cl. 434—157 **26 Claims**



1. An apparatus for assisting a user in the practice of a language comprising:

(a) a standard signal generator comprising means for storing a plurality of information blocks, said information blocks comprising at least one word in said language;

(b) output means responsive to an applied repeat signal for outputting an audible standard signal which corresponds to one of said plurality of information blocks;

(c) a microphone for inputting a word pronounced by the user and generating a corresponding vocal signal; and

(d) an analysis and comparison circuit for comparing said standard signal and said vocal signal based on at least one parameter and generating a repeat signal only when said vocal signal does not match said standard signal within a predetermined, variable tolerance with respect to said at least one parameter, wherein said apparatus includes means for increasing or decreasing said tolerance as said output means is consecutively actuated.

23. A method of assisting a user in the practice of a language comprising:

(a) storing a plurality of information blocks corresponding to words and phrases in said language;

(b) outputting an audible standard signal which corresponds to one of said plurality of information blocks in response to an applied repeat signal and outputting an audible standard signal which corresponds to another of said plurality of information blocks in response to an applied index signal;

(c) inputting a word pronounced by a user and generating a corresponding vocal signal;

(d) comparing the standard signal which was output and said vocal signal based on at least one parameter;

(e) generating said repeat signal responsive to said comparison only when said vocal signal does not match the standard signal which was output within a predetermined, variable tolerance with respect to said at least one parameter, and

(f) decreasing or increasing said variable tolerance as said audible standard signal is output.

4,615,681

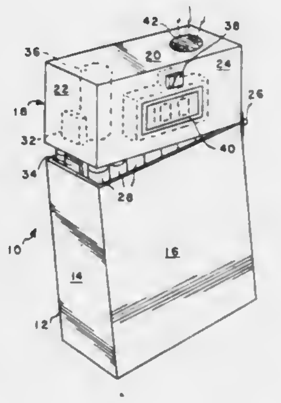
PROGRAMMABLE, USER INTERACTIVE CIGARETTE DISPENSER AND METHOD THEREFOR

Eitan D. Schwarz, 988 Oak Dr., Glencoe, Ill. 60022

Continuation-in-part of Ser. No. 540,680, Oct. 11, 1983. This application Mar. 4, 1985, Ser. No. 707,627

Int. Cl.⁴ G09B *19/00*

U.S. Cl. 434—236 **43 Claims**



1. In a container having a displaceable cover and holding a substance, wherein said cover may be opened by a user of said container who is motivated by impulses to gain access to said substance, apparatus for controlling the behavior of said user in terms of gaining access to said substance following the occurrence of said impulses, said apparatus comprising

first means coupled to the container's cover and responsive to the displacement of the cover by the user for recording an initial behavioral pattern of user access to the substance over a time period of predetermined length;

second means coupled to the container's cover and to said first means for determining the current bdhavioral pattern of user access to the substance and for comparing said current behavioral pattern with said initial behavioral pattern; and

third means coupled to said second means and responsive to the comparison of said current and initial behavioral patterns for providing positive reinforcement to said user when said current behavioral pattern reflects reduced access by thr user to the substance when compared to said initial behavioral pattern and for providing negative reinforcement to said user when said current behavioral pattern reflects increased access by the user to the substance when compared to said initial behavioral pattern.

4,615,682

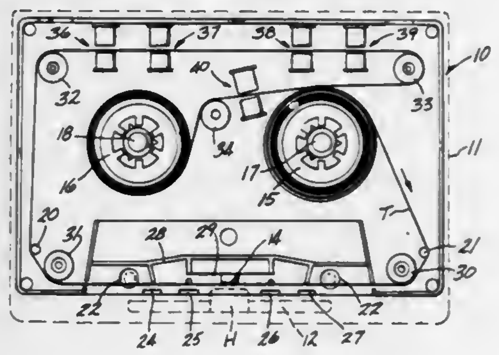
TEACHING SYSTEM UTILIZING MAGNETIC TAPE

Andrew D. Salvo, 10 Gloria Pl., East Haven, Conn. 06512

Filed Dec. 13, 1984, Ser. No. 680,802

Int. Cl.⁴ G09B *7/06*

U.S. Cl. 434—321 **8 Claims**



1. An educational system comprising a pre-prepared magnetic tape and a tape player including a drive motor for driving said tape and a playback head,

said tape including at least one sector which has a message recorded thereon and two windows for passing light through the tape, said message sector and said windows being at predetermined distances from each other,

first means positioned along the path of the tape for photoelectrically detecting one of said windows and de-energizing said drive motor after the recorded message has passed said head,

a plurality of other photoelectric detecting means positioned along the path of said tape, the position of said second window in said tape being selected such that said second window is adjacent one of said other detecting means when said one of said windows is detected by said first detecting means,

a plurality of operator selection means, each corresponding to one of said other detecting means, the recorded message posing a question or choice of selection to the operator, and means for indicating that operation of one of said selection means corresponds to said detecting means adjacent said second window.

4,615,683
OUTBOARD MOTOR

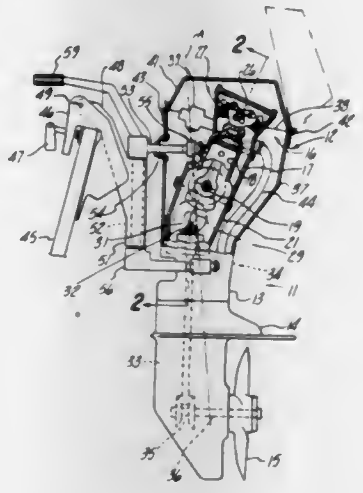
Norimichi Harada, Shizuoka; Ryoji Nakahama, Iwata, and Naoyoshi Kuragaki, Shizuoka, all of Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 23, 1984, Ser. No. 643,646

Claims priority, application Japan, Aug. 24, 1983, 58-153014; Aug. 26, 1983, 58-154889

Int. Cl.^{4} B63H *21/30*

U.S. Cl. 440—52 **17 Claims**



13. A power head engine mounting arrangement for an outboard motor comprising a reciprocating type internal combustion engine having a horizontally extending output shaft, a swivel bracket adapted to be affixed relative to the hull of an associated watercraft, and means for elastically suspending said engine from said swivel bracket comprising a first elastomer element affixed directly to said engine at a point above the axis of rotation of said engine output shaft, and a pair of elastic elements affixed relative to said engine at transversely spaced locations and below the axis of rotation of said engine output shaft.

4,615,684
DEVICE FOR PRECLUDING ELECTROLYTIC CORROSION OF A MARINE PROPULSION APPARATUS

Akinori Kojima, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

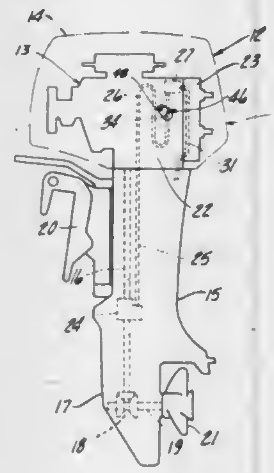
Filed Jul. 23, 1984, Ser. No. 633,144

Claims priority, application Japan, Jul. 28, 1983, 58-136882

Int. Cl.^{4} B63H *21/10*

U.S. Cl. 440—88 **6 Claims**

1. In a cooling system for an internal combustion engine of a marine propulsion unit having a working chamber, a cooling jacket encircling at least in part said working chamber, the improvement comprising said engine having a component defining an external opening communicating with said cooling jacket, a sacrificial anode having a first part supported in said opening and a second part extending at least in part into said cooling jacket, closure means forming a sealed closure for said opening, and fastening means for affixing said closure means to said engine in sealing relationship with said opening, said connection between said closure means and said component defining the opening prevents rotation of said closure means independent of said fastening means.



4,615,685
TWIRLING HOOP WITH EXTENSIBLE TETHER

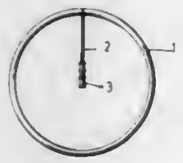
Koenraad Nelissen, Pieter Reypenslei 17, 2510 Mortsel, Belgium

Filed Aug. 29, 1984, Ser. No. 645,219

Claims priority, application Belgium, Sep. 9, 1983, 2/60199

Int. Cl.^{4} A63H *1/06*

U.S. Cl. 446—247 **3 Claims**



1. A game of skill, consisting of

(a) a rigid circular hoop having a fixed diameter;

(b) a single elongated extensible element connected at one end with said hoop, said element having a normal length of about one-third the length of said hoop diameter and extending under tension to an extended length of about two-thirds the length of said hoop diameter; and

(c) a handle connected with the free end of said elongated extensible element, said extensible element and said hoop being so structurally related that when an operator twirls said handle to rotate said hoop, said element extends from its normal length to its extended length owing to the tension exerted thereon by said rotating hoop, and said rotating hoop may be transferred between horizontal and vertical planes of rotation.

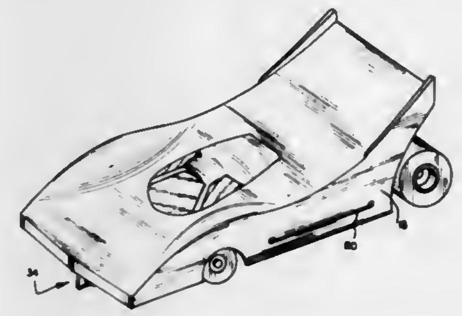
4,615,686
SLOT CAR CHASSIS

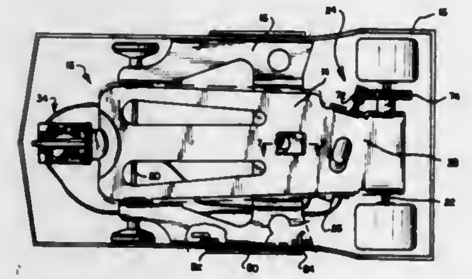
Stephen P. Bartos, Amherst, Ohio, assignor to Parma International Inc., North Royalton, Ohio

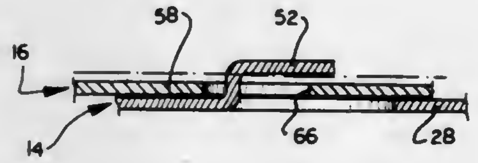
Filed Jul. 3, 1985, Ser. No. 752,292

Int. Cl.^{4} A63H *29/22*

U.S. Cl. 446—462 **7 Claims**







1. A slot car for use on a track having a guide slot comprising

(a) a first bottom chassis;

(b) front and rear axles mounted on said bottom chassis, each of said axles including a pair of rotatable wheels;

(c) an upper body mount plate in superimposed relationship to said bottom chassis including hinging means adjacent the front axle hinging the body mount plate to the bottom chassis;

(d) electric motor drive means mounted on said bottom chassis and operatively engaging said rear axle;

(e) said bottom chassis including connecting means at a point rearward of the front axle engaging the body mount plate for connecting said bottom chassis to said body mount plate while permitting limited sideways and vertical movement of the bottom chassis relative to the body mount plate.

4,615,687
ROTARY DRIVE COUPLING

Charles J. Wirth, North Canton, Conn., assignor to Kamatics Corporation, Bloomfield, Conn.

Filed Feb. 11, 1985, Ser. No. 700,460

Int. Cl.^{4} F16D *3/62*

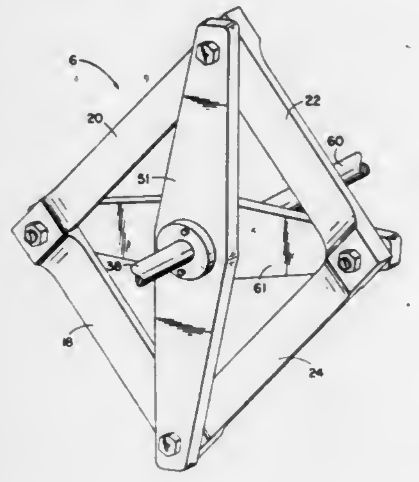
U.S. Cl. 464—69 **30 Claims**

1. A flex member used to rotatably couple two rotatable parts and to provide for some degree of angular and axial misalignment between said parts, said member comprising:

four corner portions each having two corner faces facing in opposite axial directions so that in total said flex member has a first pair of diagonally opposite corner faces and a second pair of diagonally opposite corner faces facing in one axial direction and a third pair and a fourth pair of diagonally opposite corner faces facing in the opposite axial direction, and

four substantially flat flex legs each extending between and integrally connected to two of said four corner portions to give said flex member a generally quadrilateral shape, two opposite ones of said flex legs being parallel to each other, and the other two opposite ones of said flex legs being parallel to each other,

said first and third pairs of corner faces being located on the same two of said corner portions,



said first pair of corner faces being located in a first plane, said second pair of corner faces being located in a second plane, said third pair of corner faces being located in a third plane, and said fourth pair of corner faces being located in a fourth plane,

said first, second, third and fourth planes being parallel to one another, and

said first and fourth planes being spaced from one another by an axial spacing less than the spacing between said second and third planes.

4,615,688
COUPLING DEVICE

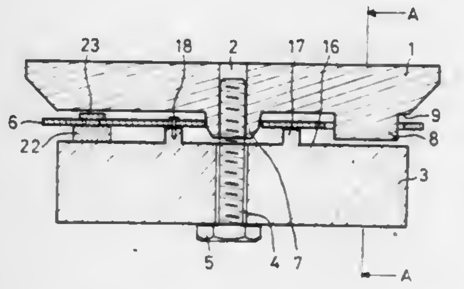
Rudolf Schneider, Reinach, Switzerland, assignor to Erowa AG, Reinach, Switzerland

Filed Oct. 18, 1983, Ser. No. 543,030

Claims priority, application Switzerland, Oct. 18, 1982, 6055/82; Aug. 18, 1983, 4507/83

Int. Cl.^{4} F16D *1/02*

U.S. Cl. 464—93 **14 Claims**



3. A coupling device for transmitting a rotary torque from a first part to a second part, said coupling device comprising:

coaxial first and second members connected, respectively, to said first and second parts for joint rotation therewith,

a driving plate member coaxially arranged between said first and second members, said driving plate member being fixedly connected to one of said first and second members at a predetermined distance from the end face thereof facing said driving plate member;

the other of said first and second members comprising at least two driving pins projecting from the end face thereof facing said driving plate member, said driving plate mem-

ber comprising opening means for engaging outer surfaces of said at least two driving pins;
said coupling device further comprising means for maintaining a predetermined distance between said end faces of said one and other members.

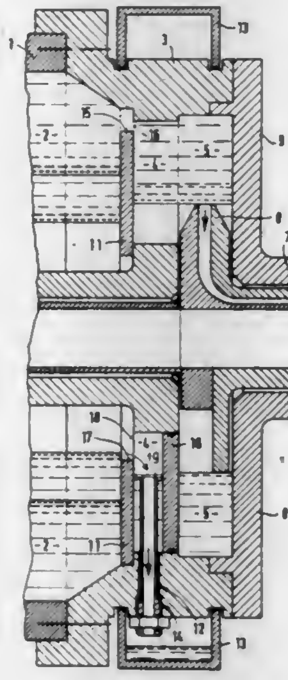
4,615,689
METHOD FOR PREPARING PAPERLIKE PRODUCTS FROM FIBERS THREADED WITH POLYMER

James G. Murray, East Brunswick, and Harold G. Tinger, Wayne, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Dec. 31, 1984, Ser. No. 687,683
Int. Cl.^{4} B31B *1/00;* B05C *1/00;* B27N *3/00*
U.S. Cl. 493—51 **16 Claims**

1. A method for preparing a film-polymer product comprising the sequential steps of:
(a) treating separated fibers with a heated solvent solution of a polyolefin polymer to coat the fibers;
(b) precipitating the polymer on the fibers by cooling the coated fibers to a temperature at which the polyolefin is not soluble;
(c) removing at least the major portion of the solvent as a liquid;
(d) heat treating the coated fibers at a temperature sufficient to fuse the polymer and to form an article.
4. The method of claim 1 in which said article is a container.

4,615,690
CENTRIFUGE

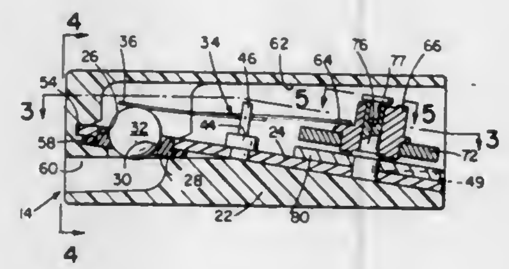
Peter Ecker, Haarbach, Fed. Rep. of Germany, assignor to Flottweg-Werk BMCo. GmbH, Vilsbiburg, Fed. Rep. of Germany
Filed Dec. 5, 1984, Ser. No. 678,452
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1983, 3344432
Int. Cl.^{4} B04B *11/02*
U.S. Cl. 494—56 **8 Claims**



1. A centrifuge for separation of a suspension with two liquid phases of different specific gravities to be removed separately, said centrifuge being provided at one axial end with a cover which closes off a centrifuge separation chamber, said cover comprising a plurality of openings distributed around its periphery, each said opening having a radially inward region and a radially outward region,
a first subset of said openings communicating with a collector through a radially extending outlet tube contained in passages in said cover, said outlet tube defining an outlet threshold that is radially adjustable, and
a second subset of said openings communicating with a receiver equipped with a skimmer mechanism,
said centrifuge comprising a barrier partially covering said openings, and movable between a first position and a second position,
said first barrier position being characterized in that said barrier blocks said radially outward region of said first subset of openings while allowing communication between said separation chamber and said collector through said radially inward region of said first subset of openings, and being further characterized in that said barrier blocks said radially inward region of said second subset of openings while allowing communication between said separation chamber and said receiver through said radially outwrd region of said second subset of openings, and
said second barrier position being characterized in that said barrier blocks said radially inward region of said first subset of openings while allowing communication between said separation chamber and said collector through said radially outward region of said first subset of openings, and being further characterized in that said barrier blocks said radially outward region of said second subset of openings while allowing communication between said separation chamber and said receiver through said radially inward region of said second subset of openings.

4,615,691
SURGICALLY-IMPLANTABLE STEPPING MOTOR

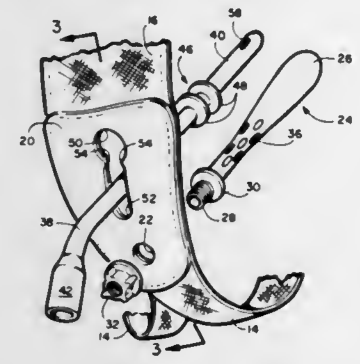
Carlos A. Hakim, 3400 Galt Ocean Dr., Apt. 1702 South, Fort Lauderdale, Fla. 33308, and Salomon Hakim, Carrera 13, N. 48-26, Bogota, Colombia
Filed Dec. 8, 1983, Ser. No. 559,865
Int. Cl.^{4} A61M *5/00*
U.S. Cl. 604—9 **18 Claims**



1. Surgically-implantable apparatus such as a valve, pump, or pacemaker, said apparatus including a stepping motor for adjusting said apparatus, said stepping motor being isolated physically from electrical power sources and powered by the influence of an external magnetic field applied from outside the apparatus, said stepping motor comprising
a rotor,
one or more stator elements,
means for mounting said rotor so that it is capable of movement relative to said stator elements,
said stator elements being composed of magnetically soft and permeable material shaped and positioned with respect to said rotor so that when magnetized under the influence of said external field the said stator elements strengthen and orient the magnetic field in their vicinities so as to cause incremental movement of said rotor,
means for positioning said rotor with respect to said stator elements so that when said stator elements are magnetized under the influence of said external field incremental movement of said rotor occurs,
wherein said apparatus is adapted to be surgically-implanted and said magnetic field is applied from outside the body.

4,615,692
PORTABLE FEMALE CATHETER

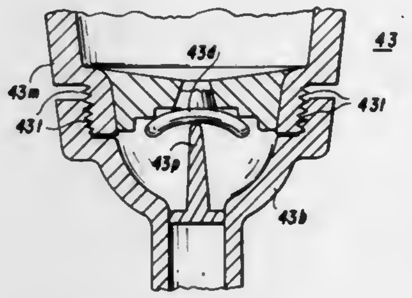
Joseph J. Giacalone, and Joseph S. Giacalone, both of 2547 La Serena, Escondido, Calif. 92025
Filed Oct. 7, 1985, Ser. No. 784,953
Int. Cl.^{4} A61M *11/00, 5/32*
U.S. Cl. 604—94 **11 Claims**



1. A portable catheter for females which comprises:
a shield means secured to an undergarment in a manner positioning said shield over the urethral and vaginal openings when said garment is worn;
a plug means fastened to said shield and adapted to being inserted in the vagina to help hold said shield means in position; and
catheter means including a catheter tube supported by mounting means on said shield so that said catheter tube extends a short distance substantially perpendicularly from said shield and is adapted to being inserted in the urethra when said plug is inserted into the vagina;
said mounting means including slot means in said shield extending along the line extending from vagina to urethra and beyond and locking means permitting movement of said catheter tube along said slot but substantially in no other direction.

4,615,693
ADMINISTRATION OF FLUIDS

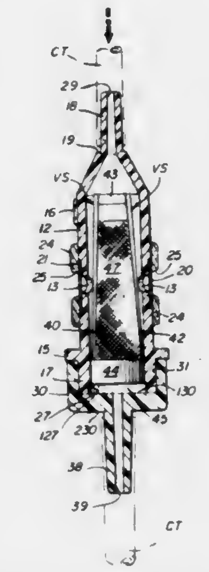
Joseph R. Paradis, Holden, and Eugene J. Zurlo, Concord, both of Mass., assignors to Nypro Inc., Clinton, Mass.
Filed Mar. 27, 1984, Ser. No. 593,970
Int. Cl.^{4} A61M *5/00*
U.S. Cl. 604—122 **11 Claims**



1. A flow-guarded drip chamber comprising
a main housing for receiving fluid droplets in an axial direction;
an outlet in said main housing for said droplets;
a support member positioned in said outlet and having a central opening therethrough; said supported member being an apertured disc that is positioned in said housing before said outlet and including a set of a plurality of stepped concentric recesses facing said outlet;
a flexible disk diaphragm interposed between said support member and said outlet; and
means associated with said outlet for externally adjusting the pre-biasing pressure of said diaphragm against said support member in said axial direction.

4,615,694
VENTED CONE FILTER

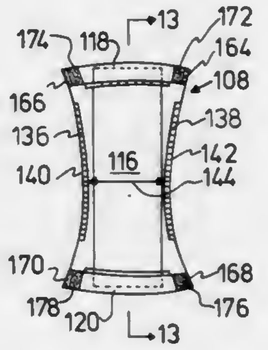
Kenneth C. Raines, Bethlehem, Pa., assignor to Burron Medical Inc., Bethlehem, Pa.
Filed Feb. 15, 1985, Ser. No. 702,357
Int. Cl.^{4} A61M *5/16*
U.S. Cl. 604—126 **8 Claims**



3. A filter for eliminating air during administration of intravenous liquids comprising:
an elongated, hollow tubular body having a small fluid inlet opening at one end thereof, an output vent in the side thereof, and being closed at the other end by a suitable end cap fixed thereto;
said end cap having a fluid output projection with central opening extending therefrom;
a hydrophilic filter element supported within said body by said end cap, said hydrophilic element capable of passing aqueous liquid therethrough when wet while simultaneously blocking small particles as well as air flow therethrough; and
a hydrophobic filter over said output vent in the side of the tubular body for repelling aqueous liquid and yet passing air therethrough so that any air in the inputting liquid will be locked by said hydrophilic filter and expelled out of the overall device by said hydrophobic filter.

4,615,695
COMBINATION DIAPER TRAINING PANT FOR CHILDREN AND ADULTS

Rosanna M. Cooper, 1150 Syracuse, Bldg. 15, Apt. 280, Denver, Colo. 80220
Filed Nov. 14, 1983, Ser. No. 550,969
Int. Cl.^{4} A61F *13/16*
U.S. Cl. 604—385 A **12 Claims**



1. A production blank for a universal two-piece, washable

combination diaper/training pant for infants, children and adults, comprising:

(a) a generally rectangular shaped outer water-resistant portion having a central section and two outer ends and two outer sides;

(b) first elastic means sewn on a portion of the two outer sides;

(c) second elastic means sewn on a portion of the two outer ends;

(d) third elastic means sewn on a portion near the two outer ends;

(e) the first elastic means being sewn on a portion of the two outer sides while in a stretched position so that upon release of the sewn stretched elastic means the two outer sides will gather in an arcuate shape to form a leg opening when the production blank is formed into a combination diaper/training pant; and

(f) the second and third elastic means being sewn while in a stretched position so that upon release of the sewn stretched elastic means the two outer ends will gather in an arcuate shape making a distinctive appearing gathered edge on the combination diaper/training pant when formed.

4,615,696

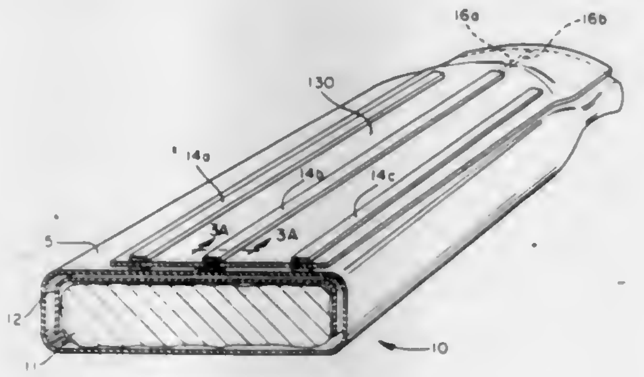
SANITARY NAPKIN WITH FOLDED COVER

David M. Jackson, Fulton County, Ga., and Donald A. Sheldon, Outagamie County, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 30, 1984, Ser. No. 605,335

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—389 **3 Claims**



1. A sanitary napkin comprising in combination:

(a) an elongate absorbent core layer with a substantially planar body facing surface and an opposite substantially planar garment facing surface;

(b) a wrapping layer overlying substantially both surfaces of said absorbent layer with said layer having two parallel longitudinally extending edge faces adjacent each other in butting or nearly touching, but not overlapping, arrangement of said parallel faces overlying said garment facing surface and essentially traversely, centrally disposed with respect to said garment facing surface, said wrapping layer having reduced absorbent capacity per unit weight relative to said absorbent layer;

(c) an elongate strip of thin adhesive permeable nonwoven material overlying said adjacent parallel edge faces of said wrapping layer; and

(d) pressure-sensitive adhesive strips which anchor said nonwoven strip to each of said parallel edge faces and provide for garment attachment when said napkin is used.

4,615,697

BIOADHESIVE COMPOSITIONS AND METHODS OF TREATMENT THEREWITH

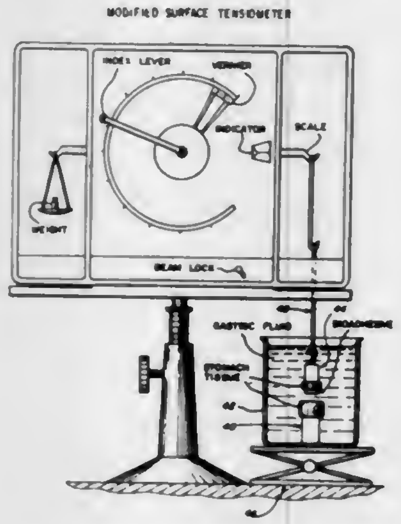
Joseph R. Robinson, Madison, Wis., assignor to Bio-Mimetics, Inc., Lexington, Mass.

PCT No. PCT/US84/01827, § 371 Date Dec. 20, 1984, § 102(e) Date Dec. 20, 1984, PCT Pub. No. WO85/02092, PCT Pub. Date May 23, 1985

Continuation-in-part of Ser. No. 551,295, Nov. 14, 1983. This PCT application Nov. 9, 1984, Ser. No. 690,483

Int. Cl.⁴ A61K *9/22, 9/52, 9/24*

U.S. Cl. 604—890 **39 Claims**



1. A controlled release treatment composition including a bioadhesive and an effective amount of a treating agent, said bioadhesive comprising a water-swellable, but water-insoluble, fibrous, cross-linked carboxy-functional polymer, said polymer containing (a) a plurality of repeating units of which at least about 80 percent contain at least one carboxyl functionality, and (b) about 0.05 to about 1.5 percent cross-linking agent substantially free from polyalkenyl polyether, said percentages being based upon the weights of unpolymerized repeating unit and cross-linking agent, respectively.

36. A laminate defining at least one surface portion on which a bioadhesive is disposed and containing medicinally inert matrices in layers, each of said layers defining a first surface and a second surface, said layer surfaces being in stacked relation with surfaces of adjacent layers being adhered together, at least one of said medicinally inert matrix layers containing an effective amount of a treating agent, and a surface of one of said layers defining said at least one surface portion on which a bioadhesive is disposed, said bioadhesive comprising a water-swellable, but water-insoluble, fibrous, cross-linked carboxy-functional polymer, said polymer containing (a) a plurality of repeating units of which at least about 80 percent contain at least one carboxyl functionality, and (b) about 0.05 to about 1.5 percent cross-linking agent substantially free from polyalkenyl polyether, said percentages being based upon the weights of unpolymerized repeating unit and cross-linking agent, respectively.

4,615,698

TOTAL AGENT OSMOTIC DELIVERY SYSTEM

George V. Guittard, Cupertino; Patrick S. L. Wong, Hayward, and Felix Theeuwes, Los Altos, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Mar. 23, 1984, Ser. No. 593,024

Int. Cl.⁴ A61M *31/00*

U.S. Cl. 604—892 **18 Claims**

1. An osmotic system for the controlled delivery of a beneficial agent formulation to an environment of use, the osmotic system comprising:

(a) a semipermeable wall that is permeable to the passage of an external fluid, substantially impermeable to the passage of beneficial agent, and comprises at least two faced surfaces, said semipermeable wall has a maximum thickness defined by the equation

$$h = \left(\frac{4 \cdot R^2}{E} \right)^{\frac{1}{2}},$$

wherein R is the radius of curvature of the osmotic system and E is the elastic modules of the wall, the wall surrounding and forming:

(b) a compartment;

(c) a beneficial agent formulation in the compartment that is an osmotically effective solute and exhibits an osmotic pressure gradient across the semipermeable wall against an external fluid;

(d) at least one passageway in the semipermeable wall communicating with the exterior of the system and the compartment for dispensing agent formulation from the osmotic system; and,

(e) wherein in operation, when the system is in the environment of use, fluid from the environment is imbided through the semipermeable wall into the compartment forming an agent formulation solution that is dispensed through the pasageway, with the osmotic system collapsing, and the faced surfaces in close contacting arrangement at the end of the delivery period.

4,615,699

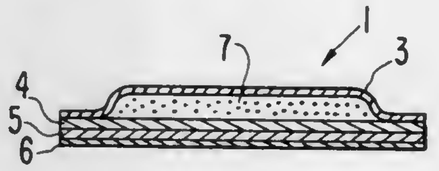
TRANSDERMAL DELIVERY SYSTEM FOR DELIVERING NITROGLYCERIN AT HIGH TRANSDERMAL FLUXES

Robert M. Gale, Los Altos, and Randall G. Berggren, Livermore, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed May 3, 1985, Ser. No. 730,714

Int. Cl.⁴ A61K *9/00*

U.S. Cl. 604—897 **19 Claims**



1. A medical device for the high-flux, transdermal delivery of nitroglycerin over an extended time period comprising, in combination:

(a) an impermeable backing member;

(b) a NG release rate controlling membrane;

(c) a nitroglycerin-ethanol reservoir maintained therebetween, said reservoir composition comprising a carrier having nitroglycerin and ethanol uniformly dispersed therethrough; and

(d) means for maintaining said system in nitroglycerin and ethanol transmitting relationship to the skin;

said device being characterized by a Jnet for nitroglycerin of at least 40 $\mu g/cm^2hr$ and a Jnet of ethanol in the range of about 250-500 $\mu g/cm^2hr$.

4,615,700

ARTIFICIAL EYE LENS

Svyatoslav N. Fedorov; Valery D. Zakharov, and Alexandr O. Axenov, all of Moscow, U.S.S.R., assignors to Moskovsky Nauchno-Issledovatelsky Institut Mikrokhirurgii Glaza, Moscow, U.S.S.R.

Filed Sep. 13, 1984, Ser. No. 649,981

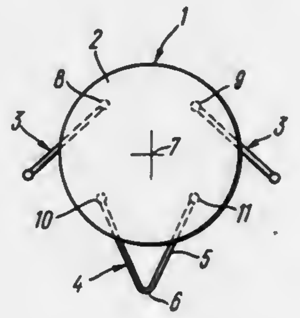
Int. Cl.⁴ A61F *2/16*

U.S. Cl. 623—6 **2 Claims**

1. An artificial eye lens, comprising:

a lens body;

three supporting elements, a first, second and third, made of an elastic material and fixed on said lens body, two of said elements, the first and second, being located on the side diametrically opposite to said third element, said third element being shaped like an angle-piece fixed with its lens in said lens body, while said first and second elements situated on the same diametrical side, are rods with one



end fixed in said lens body and arranged symmetrically with respect to the plane passing through the vertex of said angle-piece and through the centre of said lens body and making an angle 45 to 90 degrees with said plane, all the aforesaid elements, said first, second and third being bent out to form an elbow so that said elements are located parallel to the principal optical plane of said lens body.

4,615,701

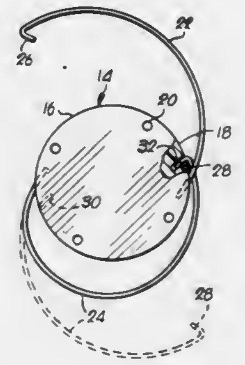
INTRAOCULAR LENS AND METHOD OF IMPLANTATION THEREOF

Randall L. Woods, Rte. 4, Box 65, Clinton, Mo. 64735

Continuation-in-part of Ser. No. 567,641, Jan. 3, 1984. This application Nov. 13, 1984, Ser. No. 670,044

Int. Cl.⁴ A61F *2/16*

U.S. Cl. 623—6 **15 Claims**



1. An intraocular lens adapted to be implanted in a human eye, said lens comprising:

an optic having a peripheral edge;

an elongated, resilient, memory retaining, position fixation haptic substantially within the plane of said edge, having an innermost end and a predetermined, normal, arcuate configuration;

means securing the haptic to the optic with the innermost end thereof extending into the optic through said edge,

said haptic normally extending outwardly beyond the optic, terminating in an outermost, free end in spaced relationship to said edge, and being yieldable to a tensioned position prior to and during implantation of the lens in the eye, disposing its outermost end proximal to said edge, forming a loop presenting a bight spaced radially outwardly from said edge whereby, upon release of said tension after implantation, the haptic will return toward its normal configuration with its outermost end spaced from said edge; and

releasable means for holding the haptic in its tensioned position,

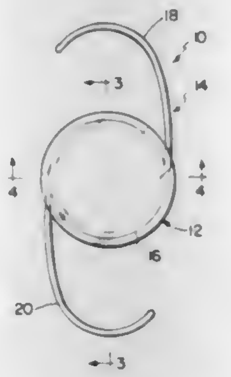
said releasable means being an attachment of the haptic to the optic,

said attachment comprising an elongated, preformed hook at said free end substantially within the plane of the haptic,
said optic having an elongated locking hole extending into said edge in chord-like relation to the optic and being larger than the hook for loosely receiving the hook.

4,615,702
INTRAOCULAR LENS AND METHOD OF FORMING THE LENS

Jeffrey E. Koziol, 601 W. Central, Mount Prospect, Ill. 60056, and Gholam A. Peyman, 535 N. Michigan Ave., Chicago, Ill. 60611

Filed Sep. 10, 1984, Ser. No. 648,600
Int. Cl.⁴ A61F *2/16*
U.S. Cl. 623—6 **10 Claims**

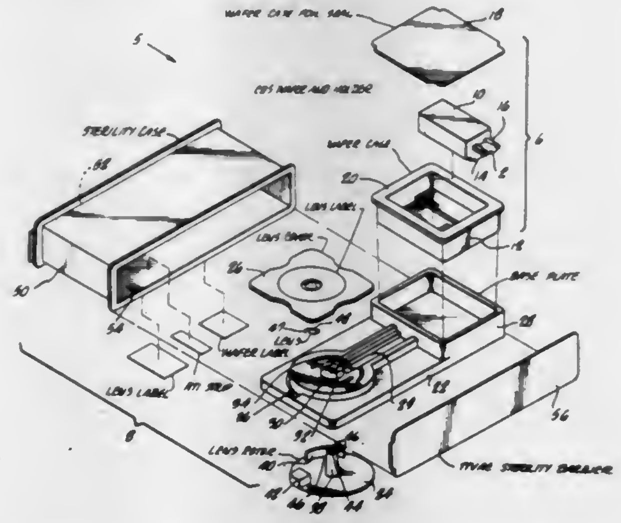


1. An intraocular lens, the combination comprising:
a soft, resilient optical element; and
a resilient support having an annular portion and mounting arms,
said annular portion being completely embedded in and completely surrounded by the material forming said optical element,
said mounting arms being coupled to said annular portion and extending outwardly of the material forming said optical element.

4,615,703
INTRAOCULAR LENS DELIVERY SYSTEM

Wayne B. Callahan, Milton; Timothy B. Cowen, and Harold O. Koch, both of Barboursville, all of W. Va., assignors to Cilco, Inc., Huntington, W. Va.

Filed Jul. 22, 1983, Ser. No. 516,340
Int. Cl.⁴ A61F *2/16;* **A61B** *17/00;* **B65D** *81/24*
U.S. Cl. 623—6 **1 Claim**

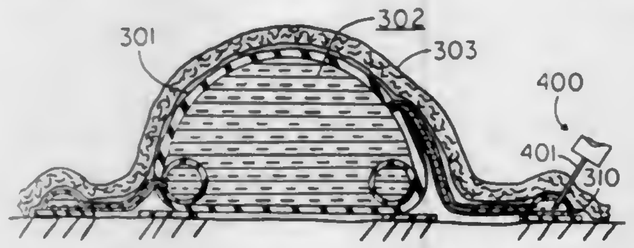


1. A delivery system for placing an intraocular lens having compressible lens loops into a wafer structure having overhanging sections designed to hold the lens loops in compressed position, said system comprising:
a holder means for supporting the wafer;
a baseplate structure having a track means formed therein to receive said holder means and to guide said holder means from a first position to a second position; and
a rotor means mounted on said baseplate structure for supporting the intraocular lens beneath the wafer structure when said holder means is moved from said first to said second positions such that the loops of the lens remain in an uncompressed condition and for rotating in a predetermined direction relative to said baseplate structure while said holder means remains in said second position such that the loops of the intraocular lens are compressed against the overhanging sections of the wafer structure.

4,615,704
SHAPE RETENTION TISSUE EXPANDER AND METHOD OF USING

Eldon E. Frisch, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 26, 1984, Ser. No. 674,457
Int. Cl.⁴ A61F *2/12*
U.S. Cl. 623—8 **4 Claims**



1. A method of expanding tissue to form a generally hemispherical pocket which comprises the steps of
(I) implanting beneath the tissue to be expanded a shape retention tissue expander consisting essentially of (A) a first inflatable biocompatible envelope having a generally hemispherical shape containing a first means for inflating said first envelope with a biocompatible fluid material and (B) a second inflatable biocompatible envelope which surrounds the lower portion of and forms a base for said first envelope, said second envelope containing a second means for inflating said second envelope with a biocompatible fluid material wherein said second envelope forms an annular resilient base about the lower portion of said first envelope after inflation to resiliently resist forces exerted by surrounding tissue to deform the first envelope during inflation from a generally hemispherical shape to a spherical shape,
(II) inflating said second envelope gradually over a period of time to expand the tissue laterally and form a generally flat pocket and thereafter
(III) pressurizing said first envelope gradually over a period of time to expand the tissue upward way from the base formed by said second envelope to complete formation of a generally hemispherical pocket,
(IV) removing said expander, and
(V) implanting a mammary prosthesis in place of the expander.

4,615,705
ANTIMICROBIAL SURGICAL IMPLANTS

John T. Scales, Stanmore, and Michael J. Wilkinson, Radlett, both of England, assignors to National Research Development Corp., London, England

Continuation of Ser. No. 328,594, Nov. 23, 1981, Pat. No. 4,476,590. This application Apr. 24, 1984, Ser. No. 603,449

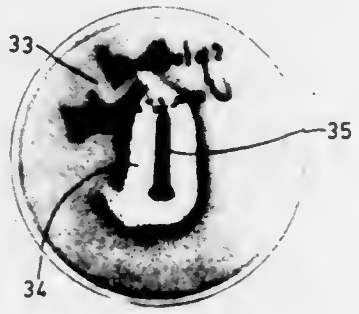
Claims priority, application United Kingdom, Mar. 27, 1980, 8010362; Apr. 3, 1980, 8011429; Oct. 10, 1980, 8032768

The portion of the term of this patent subsequent to Oct. 16, 2001, has been disclaimed.

Int. Cl.⁴ A61F *2/02, 2/28*
U.S. Cl. 623—11 **10 Claims**

1. A method of prophylactic treatment of post-operative infection following endoprosthetic implant surgery, said method comprising:
selecting an endoprosthetic implant comprising a permanent implant structure formed of substantially bioinert structural material providing permanent mechanical integrity to the implant and a latently bioerodible metallic silver component deposited in or on a permanent implant structure,
contacting said selected insert with hydrogen peroxide to render the metallic silver component thereof bioerodible to provide in vivo sustained release of silver ions in a concentration sufficient to provide a localized antimicrobial effect but insufficient to cause significant damage to connective tissue,
subsequently washing the implant free of hydrogen peroxide, and thereafter
surgically implanting the thus activated implant in a human or animal body.

2. A method of rendering antimicrobial an endoprosethetic implant comprising a permanent implant structure formed of a substantially bioinert structural material providing permanent mechanical integrity to the implant, and a latently bioerodible metallic silver component deposited in or on the permanent implant structure, said method comprising:
contacting said implant with hydrogen peroxide to render said silver component bioerodible to provide in vivo a sustained release of silver ions in a concentration sufficient to provide a localized antimicrobial effect but insufficient to cause significant damage to connective tissue and,
subsequently washing the implant free of hydrogen peroxide before implanting.



CHEMICAL

4,615,706

QUATERNARY AMMONIUM-FUNCTIONAL SILICON COMPOUNDS

Eugene R. Martin, Adrian, Mich., assignor to Stauffer-Wacker Silicones Corporation, Adrian, Mich.
Division of Ser. No. 447,547, Dec. 7, 1982, Pat. No. 4,511,727. This application Jul. 2, 1984, Ser. No. 627,365
Int. Cl.^{4} D06M *15/643, 13/46*
U.S. Cl. 8—115.56 **9 Claims**

1. A process for imparting antistatic properties to textile materials which comprises applying a composition obtained from the reaction of a carboxylic acid-functional quaternary ammonium compound and a carbinol-functional silicon compound to a textile material and thereafter heating the textile material to an elevated temperature.

4,615,707

PROCESS FOR IMPROVING FASTNESS OF SULPHUR DYEING ON HYDROXY GROUP CONTAINING FIBERS

Tibor Robinson, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland
Filed Sep. 30, 1985, Ser. No. 781,971
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1984, 3435897
Int. Cl.^{4} D06P *5/00*
U.S. Cl. 8—496 **11 Claims**

1. A process for improving the fastness properties of a sulphur dyestuff on a substrate comprising sulphur dyed or sulphur printed hydroxy group-containing fibres, which process comprises applying to said substrate the reaction product (R) of

(A) the product of reacting a mono- or polyfunctional primary or secondary amine with cyanamide, dicyanodiamide, guanidine or bi-guanidine; said product containing reactive hydrogen atoms bound to nitrogen, and

(B) an N-methylol derivative of a urea, melamine, guanamine, triazinone, urone, carbamate or acid amide

in the presence of (C) a catalyst for the crosslinking of N-methylol compounds of the type (B) above, and subsequently carrying out a heat-curing step.

4,615,708

METHOD FOR INSITU COLORING CROSSLINKED CELLULOSIC MATERIALS

Eugene J. Blanchard, Metairie, and Joseph S. Bruno, Chalmette, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Oct. 18, 1985, Ser. No. 789,298
Int. Cl.^{4} C09B *67/00*
U.S. Cl. 8—585 **14 Claims**

1. A process for coloring cellulose containing fabric comprising:

(a) padding a cellulose containing fabric with a solution of sufficient concentrations of: methylolated crosslinking agent, an effective amount of N-phenyl tertiary amine containing sufficient hydroxy functionality to form a colored nitroso derivative of said N-phenyl tertiary amine, and an acid catalyst to impart smooth-dry properties to said fabric;

(b) drying and curing said fabric for sufficient time and temperature to interact the componments of the solution with the fabric;

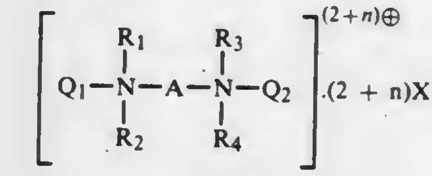
(c) immersing the fabric in a solution of sufficient concentration of nitrous acid for sufficient time to color said fabric.

4,615,709

CATIONIC COMPOUND, PROCESS FOR PREPARING SAME AND TREATMENT OF TEXTILE MATERIAL FOR IMPROVED DYEING

Katsuaki Nakao, Yamatotakada, Japan, assignor to Ipposha Oil Industries Co., Ltd., Ono, Japan
Filed Dec. 17, 1984, Ser. No. 682,457
Claims priority, application Japan, Dec. 16, 1983, 58-238484
Int. Cl.^{4} D06M *13/46;* **C09B** *67/00*
U.S. Cl. 8—599 **7 Claims**

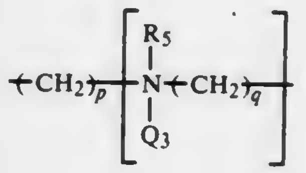
1. A method for improving the dyeing properties of a textile material, which comprises treating a textile material composed of a natural fiber, a regenerated fiber, a semisynthetic fiber, a polyvinyl alcohol fiber or a mixture thereof with a cationic compound represented by the following general formula before or after dyeing of the textile material with an anionic dye, an indigo dye or a vat dye:



$$\left[Q_1-\overset{\displaystyle R_1}{\underset{\displaystyle R_2}{N}}-A-\overset{\displaystyle R_3}{\underset{\displaystyle R_4}{N}}-Q_2 \right]^{(2+n)\oplus} .(2+n)X^{\ominus}$$

[I]

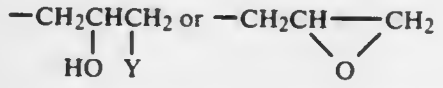
wherein A is a group represented by the following general formula: [II]:



$$\left(CH_2 \right)_p \left[\overset{\displaystyle R_5}{\underset{\displaystyle Q_3}{N}} \left(CH_2 \right)_q \right]$$

[II]

in which each of p and q is an integer of 1 to 8, n is an integer of 0 to 2, X is a halogen atom, each of R_1, R_2, R_3, R_4 and R_3 is independently an alkyl having 1 to 4 carbon atoms, an alkyl having 1 to 4 carbon atoms which has at least one substituent selected from the group consisting of hydroxyl and cyano, or an alkenyl having 2 to 4 carbon atoms, and each of Q_1, Q_2 and Q_3 is independently a group of the following formula:



in which Y is a halogen atom and X and Y may be the same or different.

4,615,710

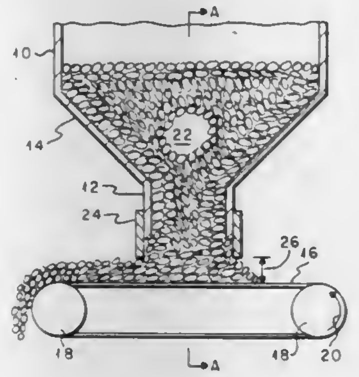
METHOD AND APPARATUS FOR DISCHARGING TREATED COAL AND CONTROLLING EMISSIONS FROM A HEAVY OIL SPRAY SYSTEM

James L. Skinner, Tucson, Ariz., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Division of Ser. No. 594,652, Mar. 29, 1984, Pat. No. 4,547,198. This application Aug. 19, 1985, Ser. No. 767,392
Int. Cl.^{4} C10L *5/22;* **B30B** *11/00*
U.S. Cl. 44—2 **9 Claims**

1. An apparatus for discharging heavy oil-treated particulate coal and controlling emissions from a heavy oil spray contacting vessel for contacting particulate coal and heavy oil, said contacting vessel including a contacting zone into which said heavy oil is injected as a mist to initimately contact said coal as said coal falls through said contacting zone, said apparatus comprising;

(a) a discharge chute positioned to receive said heavy oil-treated coal from the lower end of said contacting vessel and discharge said heavy oil-treated coal from a discharge chute outlet positioned on the lower end of said discharge chute;

(b) a conveyor belt positioned at a distance beneath said discharge chute outlet so that when said conveyor belt is stopped, a bed of said heavy oiltreated coal is retained in said discharge chute and so that when said conveyor belt is activated controlled quantities of said heavy oil-treated coal are discharged through said discharge chute outlet at a rate such that said bed of heavy oil-treated coal is retained in said discharge chute; and,



(c) a drive means for driving said conveyor belt at a selected rate.

4,615,711
SEWAGE SLUDGE FUEL BRIQUETTE

Dietrich Müller, Handelmannweg 1, D 2000 Hamburg 52, Fed. Rep. of Germany
Division of Ser. No. 554,712, Nov. 23, 1983, Pat. No. 4,552,666. This application Aug. 16, 1985, Ser. No. 766,402
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1982, 3243827
Int. Cl.⁴ C10L *5/44*
U.S. Cl. 44—10 A **3 Claims**

1. A deformable fuel briquette shaped from the product made by either (1) a process for the treatment of digested sewage sludge consisting essentially of mixing the sewage sludge with comminuted, dried autumn foliage until a deformable material is obtained, the proportions of autumn foliage to sewage sludge on a dry basis being from 0.3 to 0.6 parts of sewage sludge per part of comminuted autumn foliage and being such that the mixture is bound into a cohesive plastic material, a part of the water being removed from the sewage sludge either prior to the addition of the total autumn foliage, or after a partial addition thereof or (2) a process for the treatment of digested sewage sludge consisting essentially of mixing the sewage sludge with the solvent extraction residue of comminuted, dried, autumn foliage, the proportions of or solvient extraction residue of autumn foliage to sewage sludge being such that the mixture is bound into a cohesive plastic material, and that on a dry basis there is employed 0.6 to 1.0 part of sewage sludge per part of solvent extraction residue, wherein the solvent employed in the extraction being in either (1) solvent group A having a dielectric constant of $\xi = < 30$, (2) solvent group B having a dielectric constant of $\xi = 30$ to 80 or (3) solvent group C having a dielectric constant of $\xi = > 80$, a part of the water being removed from the sewage sludge either prior to the addition of the total solvent residue extraction residue of autumn foliage or after a partial addition thereof.

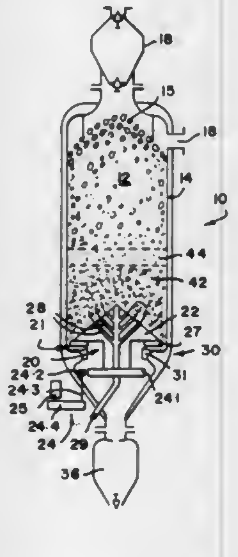
4,615,712
FUEL AGGLOMERATES AND METHOD OF AGGLOMERATION

Wu-Wey Wen, Murrysville, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Aug. 9, 1985, Ser. No. 764,277
Int. Cl.⁴ C10L *5/00, 5/10, 5/02*
U.S. Cl. 44—10 R **15 Claims**

1. A method of producing water-resistant carbonaceous agglomerates suitable for use as a fuel comprising:
providing a solid, oxidized carbonaceous material including chemically combined oxygen as humic acid or a humate salt;
extracting humates from the oxidized material into aqueous alkali solution to form a binder solution;
providing particulate carbonaceous fuel material having a heating value greater than that of the oxidized carbonaceous material;
blending the binder solution in mixture with the particulate fuel to permeate the humate solute into the fuel particles;
consolidating the particulate fuel into agglomerates of convenient size for fuel use; and
drying the agglomerates to reduce moisture content and convert the humate solute into a solid, water-resistent binder material throughout the agglomerate.

4,615,713
ASH TEMPERATURE MEASUREMENT MEANS FOR A FIXED BED GASIFIER

Philippus J. Meyer, Secunda, South Africa, assignor to Sasol Operations (Proprietary) Limited, Johannesburg, South Africa
Filed May 1, 1984, Ser. No. 605,897
Claims priority, application South Africa, May 10, 1983, 83/3339
Int. Cl.⁴ C10J *3/42*
U.S. Cl. 48—77 **4 Claims**



1. A fixed bed dry bottom coal gasifier, which includes
a cylindrical wall defining a fixed coal bed gasification chamber for gasifying coal to produce synthesis gas;
a gas outlet in the chamber wall near the top of the gasification chamber;
an annular ash discharge outlet at the bottom of the gasification chamber;
an ash lock downstream of the ash outlet;
an inner cylindrical water jacket extending between the ash discharge outlet and the ash lock, and providing a central ash flow path between the ash discharge outlet and the ash lock;
rotatable discharge means at the bottom of the chamber for discharging ash from the chamber, the ash outlet being provided between the outer periphery of the discharge means and the chamber wall;
a steam/oxygen mixture supply conduit having at least one discharge opening in the rotatable discharge means;
an annular ash contact device below the ash outlet and protruding radially inwardly from the water jacket around the upper end of the ash flow path, the ash contact device having a flat upper portion extending substantially horizontally on which ash passing through the ash outlet can rest, the ash contact device being capable of assuming a temperature proportional to the temperature of ash resting on its upper portion; and
a plurality of temperature sensing means for sensing the temperature of the ash contact device attached to the

underside of the upper portion in direct contact with the ash contact device so that ash passing over the ash contact device will not impinge directly on the temperature sensing means.

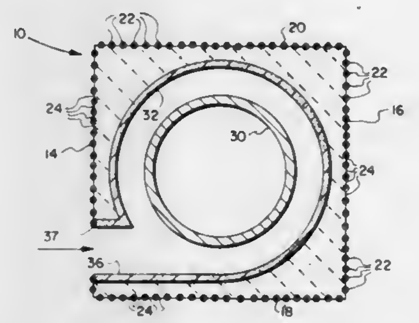
4,615,714
REMOVAL OF HYDROGEN SULFIDE FROM AIR STREAMS

Amos Turk, 7 Tarrywile Lake Dr., Danbury, Conn. 06810, and J. Michael Brassey, 27 W. 89 St., New York, N.Y. 10024
Continuation-in-part of Ser. No. 643,038, Aug. 22, 1984, abandoned. This application Jan. 15, 1986, Ser. No. 819,027
Int. Cl.⁴ B01D *53/04*
U.S. Cl. 55—73 **4 Claims**

1. In a process for removing hydrogen sulfide present in an oxygen-containing gas, which comprises introducing ammonia into the gas, passing the gas through activated carbon, and releasing the gas through a stack into the atmosphere, said gas containing from about 5 ppm by volume to about 10,000 ppm by volume of hydrogen sulfide, the improvement which comprises: (i) determining the concentration of hydrogen sulfide in the gas, and (ii) adding the ammonia in an amount so that the concentration of the ammonia will be at least equal to the concentration of the hydrogen sulfide and not greater than 10,000 ppm by volume, with the proviso that when the concentration of hydrogen sulfide exceeds 4,000 ppm by volume, the concentration of the ammonia will not be greater than 6,000 ppm by volume.

4,615,715
WATER-COOLED CYCLONE SEPARATOR

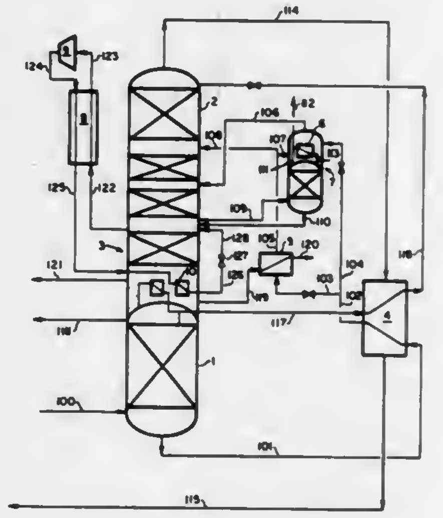
Venkatraman Seshamani, Gillette, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.
Filed Mar. 15, 1985, Ser. No. 712,954
Int. Cl.⁴ B01D *53/24*
U.S. Cl. 55—269 **7 Claims**



1. A cyclone separator comprising an inner tube, an outer tube extending around said inner tube in a coaxial relationship to define an annular chamber, the outer surface of said inner tube and the inner surface of said outer tube each having an abrasion resistance surface, an inlet opening extending through said outer tube and in a tangential relationship to said annular chamber whereby gases containing solid particles entering said inlet opening are directed through said annular space to separate the solid particles from said gases by centrifugal forces, means disposed below said annular chamber for collecting said solid particles, means for directing said gases towards the interior of said inner tube where they pass upwardly through said tube and exit from the upper end thereof, an enclosure extending around said outer tube in a spaced relationship to said outer tube and formed by a plurality of parallel tubes cooled by circulating water or steam to reduce heat losses and minimize the need for interal insulation and a castable material disposed in said space between said outer tube and said enclosure.

4,615,716
PROCESS FOR PRODUCING ULTRA HIGH PURITY OXYGEN

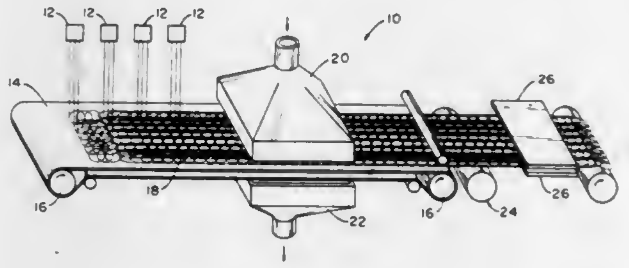
Thomas E. Cormier; Bruce K. Dawson; Keith B. Wilson, all of Allentown, Pa., and Thomas C. Young, Madison, Wis., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Aug. 27, 1985, Ser. No. 769,929
Int. Cl.⁴ F25J *3/02*
U.S. Cl. 62—24 **13 Claims**



1. In a method for the production of ultra high purity oxygen by means of liquefying and fractionally distilling air in a dual-column air separation plant having a high-pressure column and a low-pressure column, the improvement for reducing the net energy requirement comprising the steps of:
removing an oxygen-rich vapor stream from a first intermediate level of the low-pressure column,
compressing the vapor stream,
condensing the compressed vapor stream to liquid in an auxiliary low-pressure column reboiler,
flashing the condensed liquid stream to the pressure of the low-pressure column to form a stream of a gas and liquid mixture,
returning the flashed stream to a second intermediate level of the low-pressure column.

4,615,717
METHOD AND APPARATUS FOR MAKING GLASS FIBER ORIENTED CONTINUOUS STRAND MAT

Jeffrey A. Neubauer, Lewisville, Tex.; Walter J. Reese, North Huntington, Pa., and Dennis O. Spencer, Shelby, N.C., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Sep. 27, 1985, Ser. No. 780,777
Int. Cl.⁴ C03B *37/085*
U.S. Cl. 65—4.4 **11 Claims**



1. A process for forming a glass fiber mat from a molten glass source, comprising the steps of:
forming a plurality of glass fibers from a molten glass;
gathering the fibers into glass fiber strands;
feeding the said glass fiber strands to a plurality of strand feeders positioned serially above an endless conveyor;
traversing said plurality of strand feeders transversely across said endless conveyor while said endless conveyor is

moving generally perpendicularly to the direction of traversal of said strand feeders;

causing selected first ones of said strand feeders to form first small circular or random loops of continuous strands on said endless conveyor; and

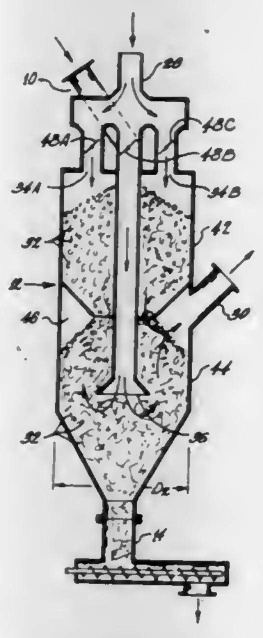
causing selected second ones of said strand feeders to form second elongated, generally elliptical loops of continuous glass on said endless conveyor, said first and said second loops of continuous strands being interlayered on said endless conveyor to form said glass fiber mat, and

needling said mat to entangle the glass fibers and impart mechanical integrity to the mat.

4,615,718

HEATING OF HEAT TRANSFER MEDIA

Stephen Seng, Bladensburg, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Jul. 5, 1985, Ser. No. 751,901
Int. Cl.⁴ C03B *1/00;* **F28D** *15/00*
U.S. Cl. 65—27 **12 Claims**



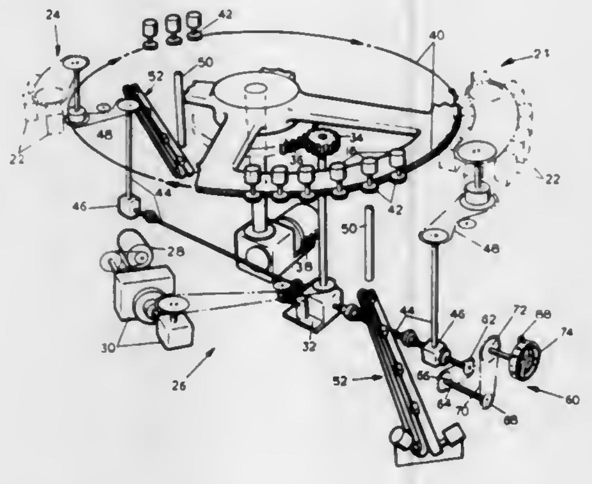
1. Apparatus for heating heat transfer media comprising a chamber having a media inlet at a first end and a media outlet at the second end, a first inlet for hot gases Positioned near the first end of said chamber, a second inlet for hot gases positioned near the second end of said chamber, a hot gas outlet positioned near the middle of said chamber, and means for pulling gases from said chamber at said hot gas outlet, said means for pulling being of sufficient strength to establish two principal hot gas flows, one flow being from said hot gas inlet at said first end to said hot gas outlet, and the other flow being from said hot gas inlet at said second end to said hot gas outlet.

3. Apparatus for heating heat transfer media comprising a chamber having a media inlet at the top end and a media outlet at the bottom end, a top inlet for hot gases positioned near the top end of said chamber, a bottom inlet for hot gases positioned near the bottom end of said chamber, a hot gas outlet positioned near the mid height of said chamber, and means for pulling gases from said chamber at said hot gas outlet, said means for pulling being of sufficient strength to establish two principal hot gas flows, one flow being downward from the top hot gas inlet toward said hot gas outlet, and the other flow being upward from the bottom hot gas inlet toward said hot gas outlet.

4,615,719

STATION INDICATOR

Harry J. Pauluk, Ocean City, and Otto Zauner, Vineland, both of N.J., assignors to Owens-Illinois, Inc., Toledo, Ohio
Division of Ser. No. 457,346, Jan. 12, 1983, Pat. No. 4,477,275, which is a continuation of Ser. No. 239,949, Mar. 3, 1981, abandoned. This application Sep. 14, 1984, Ser. No. 650,595
Int. Cl.⁴ C03B *19/00. 35/26. 35/00*
U.S. Cl. 65—29 **5 Claims**



1. A method of identifying articles tooled by one of a plurality of tooling stations of a machine which tooling stations move in a closed path, a part of the path being adjacent to holding fixtures that move around the periphery of the machine, the method comprising the steps of

providing a machine having a plurality of holding fixtures, each fixture holding and constraining one of said articles, a plurality of tooling stations, means for displaying indicia, drive means for moving the tooling stations around the periphery of the machine and for moving the holding fixtures into position to tool said articles, with the drive means being constructed and arranged such that each displayable indicia corresponds to the appropriate tooling station and holding fixture, a discharge conveyor for moving said tooled articles away from said machine and means for displaying indicia including a plurality of displayable indicia corresponding to each of such plurality of tooling stations,

positioning one of said articles in one of said holding fixtures,

moving said one of said plurality of fixtures and said one of said articles into proximity with one of said tooling stations,

tooling said one article on one of said tooling stations of said machine,

moving the article away from the tooling station after tooling the article,

releasing said one article from said one of said holding fixtures and supplying it to said discharge conveyor,

moving said one article along said discharge conveyor and past a reference location,

displaying the one of the displayable indicia corresponding to said one of said tooling stations, when said one of said articles is generally proximate said reference location.

4,615,720

METHOD AND APPARATUS FOR MELTING GLASS

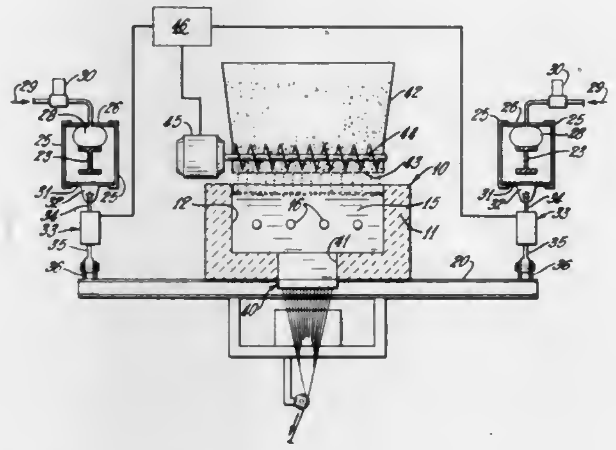
Charles S. Dunn, Pataskala, and Eugene C. Varrasso, Heath, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Continuation of Ser. No. 552,636, Nov. 17, 1983, abandoned. This application Jun. 10, 1985, Ser. No. 742,819
Int. Cl.⁴ C03B *5/24*
U.S. Cl. 65—29 **7 Claims**

1. In a method of melting glass in a glass melting furnace, the steps of:

(a) forming a molten glass pool in said furnace beneath a layer of particulate unmelted glass batch on the surface of the pool;

(b) heating the molten glass pool at a constant nominal heating rate;

(c) weighing the furnace and its contents including the pool and the batch layer; and

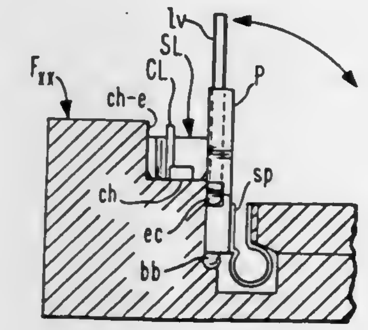


(d) varying the thickness of the batch layer within a range of from about ⅛ inch to about 1 inch as a function of the weight determined in step (c) to vary the batch melting rate, thereby maintaining a substantially constant molten glass level.

4,615,721

GLASS BONDING FIXTURE

Otto Fuchs, Westlake Village, Calif., assignor to Burroughs Corporation, Detroit, Mich.
Filed Sep. 3, 1981, Ser. No. 299,095
Int. Cl.⁴ C03C *29/00*
U.S. Cl. 65—154 **8 Claims**



1. An improved fixture for glass bonding a plurality of identical slider assemblies, the fixture slot means including a pair of orthogonal base and side surfaces which are precisely flat and carefully aligned; said slot means forming N sites along the base, each for receiving a respective slider assembly;

and like retainer means for each site, being adapted to be selectively actuated into and out of resilient contact with the respective slider assembly;

each retainer means comprising spring means adapted to resiliently urge the respective slider assembly against the channel side surface with prescribed pressure; and

selectively actuable displacement means adapted to be selectively moved from a "rest" condition to an "actuate" condition whereby it displaces the spring means into or out of contact with its slider assembly.

4,615,722

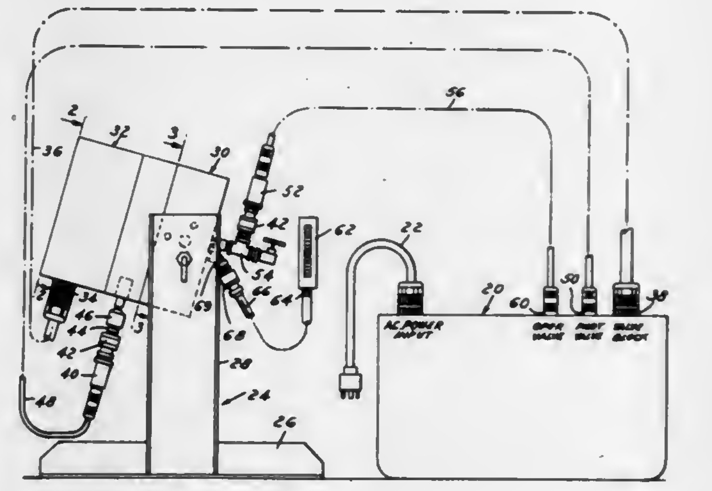
VALVE BLOCK TEST APPARATUS

Leonard D. Steffan, Perrysburg, and Wilbur L. McCoy, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Sep. 20, 1985, Ser. No. 778,105
Int. Cl.⁴ C03B *9/40*
U.S. Cl. 65—158 **8 Claims**

1. Apparatus for testing a valve block assembly for operating an individual section glass forming machine, said valve block assembly including a plurality of solenoid-operated air valves, a manifold including means for supplying input air under pressure to all of said valves and means for individual connection to the output of each said valve, and first electrical connection means individually connected to solenoids of said valves for operating said valves, said apparatus being constructed for individual qualitative testing of operation of said plurality of valves in situ in said assembly and comprising,

a plurality of individually and selectively operable electrical switch means,

second electrical connection means connected to said plurality of switch means and constructed for mating connection with said first electrical connection means such that said plurality of switch means are individually operatively connected to the solenoids of said valves,



a first air pressure transducer constructed for selective individual connection to each said valve output and responsive to air pressure at such valve output for supplying an electrical signal indicative to such pressure,

means connected to all of said switch means for providing first and second signals respectively indicative of activation and de-activation at one of said switch means,

first threshold means connected to said first transducer for providing third and fourth signals respectively indicative of activation and de-activation air pressures at the value output,

a first counter connected to receive said first and third signals for measuring time delay therebetween and thereby indicating turn-off operating time at said valve.

4,615,723

INTELLIGENT CONTROLLER FOR PREDICTING AND AUTOMATICALLY COMPENSATING FOR VARIATIONS IN CYCLE TIME, IN MACHINES FOR FORMING ARTICLES OF GLASS OR OTHER MATERIALS

Hector M. Rodriguez-Fernandez, Garza Garcia, and Santiago Rodriguez-Tovar, Monterrey, both of Mexico, assignors to Vitro Tec Fideicomiso, Monterrey, Mexico
Continuation of Ser. No. 607,817, May 7, 1984, abandoned. This application Oct. 17, 1985, Ser. No. 788,239
Claims priority, application Mexico, May 19, 1983, 197359
Int. Cl.⁴ C03B *9/40*
U.S. Cl. 65—163 **1 Claim**

1. A controller for predicting and automatically compensating for variations in cycle time in glassware forming machines of the I.S. type having multiple sections each including respective molds and forming mechanisms, comprising:

a first data processor for each section of the machine, each of which provides signals representative of the time and sequence of operation for the mechanisms of the corresponding section;

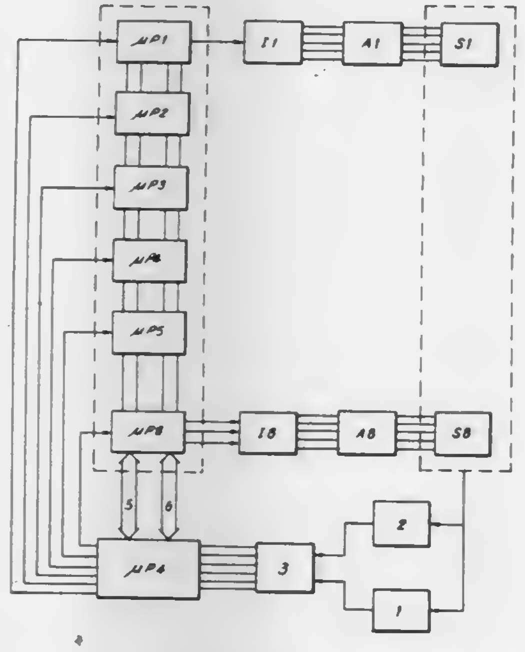
a first signal convertor for each data processor, which adapts the signals provided by the respective data processor;

actuator means for each section, receiving the adapted signals from the respective data processor, to operate the mechanisms of the respective section in time and sequence established by the data processor;

sensing means providing signals representative of forming cycles of the machine;

a second signal convertor which adapts the signals provided by the sensor means; and,

a second real-time data processor which receives and processes the adapted signals of the sensor means which is operative to calculate the initial forming cycle time of the machine;



to compare the present and past cycle times in order to predict the next forming cycle start up of the machine;

to determine the forming cycle if the signals of the sensor means are lost; and,

to compensate for variations in the forming cycle times by providing corresponding signals to the first data processor of each section of the machine.

4,615,724

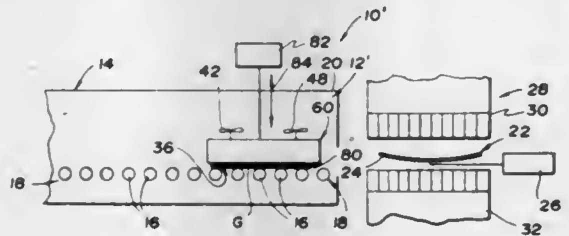
GLASS SHEET FORMING SYSTEM INCLUDING TOPSIDE TRANSFER APPARATUS

Lee E. Fackelman, Howell, Mich., assignor to Glasstech, Inc., Perrysburg, Ohio

Division of Ser. No. 674,083, Nov. 23, 1984, Pat. No. 4,578,103, and a continuation-in-part of Ser. No. 674,083, Nov. 23, 1984, Pat. No. 4,578,103. This application Dec. 3, 1985, Ser. No. 805,316

Int. Cl.⁴ C03B *23/03*

U.S. Cl. 65—182.2 **14 Claims**



1. Glass sheet processing apparatus comprising: a heating conveyor for conveying glass sheets for heating; a topside transfer platen having a downwardly facing surface including a first set of holes through which a vacuum is drawn to support a heated glass sheet received from the heating conveyor; the transfer platen surface having a second set of holes through which pressurized gas is supplied to space the glass sheet from the surface; an actuator for moving the transfer platen downwardly into proximity with the roller conveyor to facilitate the initial support of the heated glass sheet; the actuator thereafter moving the platen upwardly to position the heated glass sheet above the roller conveyor in a spaced relationship; and a curved mold movable under the raised transfer platen to receive the heated glass sheet for forming.

4,615,725

TETRAHYDROFURAN-2-YLMETHYLAMINES AND FUNGICIDAL AND PLANT GROWTH REGULATING USE

Joachim Weissmüller; Wolfgang Krämer; Dieter Berg, all of Wuppertal; Paul Reinecke, Leverkusen; Wilhelm Brandes, Leichlingen; Gerd Hänssler, Leverkusen, and Klaus Lürssen, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

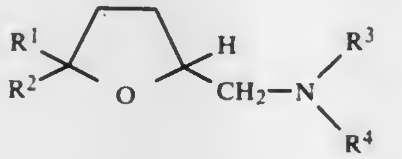
Filed Apr. 8, 1985, Ser. No. 720,827

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1984, 3413996

Int. Cl.⁴ A01N *43/08, 43/40;* **C07D** *307/14, 405/06*

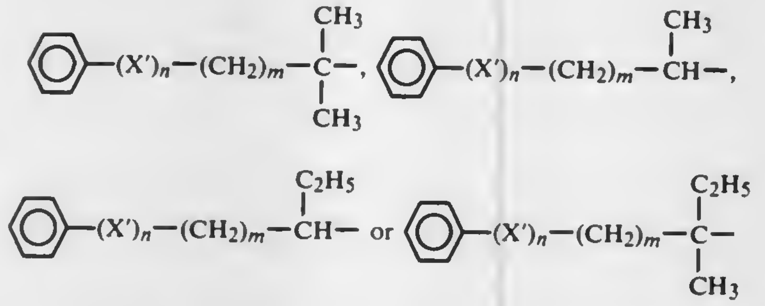
U.S. Cl. 71—88 **13 Claims**

1. A tetrahydrofuran-2-ylemthylamine of the formula



in which

R^1 represents naphthyl which is optionally mono-, di- or tri-substituted by identical or different substituents selected from fluorine, chlorine, bromine, hydroxy, methyl, ethyl, methoxy, ethoxy, allyloxy, propargyloxy and acetoxy; or represents cycloalkyl or cycloalkenyl with 5 to 7 carbon atoms and in each case optionally mono-, di- or tri-substituted by identical or different substituents selected from methyl and ethyl, or represents phenyl which is optionally mono-, di or tri-substituted by identical or different substituents; or represents a radical of the formula



which is optionally mono-, di- or tri-substituted in the phenyl nucleus by identical or different substituents the substituents on the phenyl in each case being selected from hydroxy, fluorine, chlorine, bromine, cyano, nitro, methyl, methoxy, methylthio, ethyl, ethoxy, ethylthio, n- and i-propyl, isopropyloxy, n-,i-,s- and t-butyl, allyloxy, propargyloxy, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, cyclohexyl, methoxycarbonyl, ethoxycarbonyl, acetyloxy, or phenyl or phenoxy, optionally substituted by fluorine, chlorine or methyl; or represents the radical R—O—N═CH—, wherein

R in each case represents methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, allyl or propargyl,

and wherein, in all the radicals shown above by way of their formulae,

X' in each case represents oxygen or sulphur,

n represents 0 when m represents 1, and n represents 1 when m represents 0 or 1,

R^2 represents hydrogen or methyl,

R^3 represents straight-chain or branched alkyl with 1 to 4 carbon atoms and

R^4 represents straight-chain or branched alkyl with 1 to 6 carbon atoms, or represents straight-chain or branched alkenyl or alkinyl with in each case up to 6 carbon atoms, or represents aralkyl which has 1 or 2 carbon atoms in the alkyl part and 6 to 10 carbon atoms in the aryl part and is optionally monosubstituted or polysubstituted by identical or different substituents, substituents on the aryl in each case being selected from halogen, straight-chain or branched alkyl with 1 to 4 carbon atoms or halogenoalkyl with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms, or

R^3 and R^4, together with the nitrogen atom to which they are bonded, represent a 5-membered to 7-membered saturated heterocyclic radical which has 1 to 3 hetero-atoms, and is optionally monosubstituted or polysubstituted by identical or different substituents, selected from straight-chain or branched alkyl with 1 to 4 carbon atoms, straight-chain or branched alkoxycarbonyl with up to 5 carbon atoms, phenyl, hydroxymethyl or the $R'—CO—O—CH_2$ group,

wherein

R' represents straight-chain or branched alkyl, alkoxy or alkylamino or dialkylamino with in each case 1 to 6 carbon atoms in the individual alkyl part, or represents straight-chain or branched alkoxyalkyl with in each case 1 to 6 carbon atoms in the two alkyl parts,

excluding the compound in which R^3 and R^4 both represent methyl, R^1 represents unsubstituted phenyl and R^2 at the same time represents hydrogen.

10. A method of combating fungi which comprises applying to such fungi or to a fungus habitat a fungicidally effective amount of a compound or addition product according to claim **1.**

4,615,726

HERBICIDAL 1-ACYLIMIDAZOLINONES

Roland Schmierer, Gersthofen; Reinhard Handte, Gablingen; Hilmar Mildenberger, Kelkheim; Klaus Bauer, Rodgau; Hermann Bieringer, Eppstein/Taunus, and Helmut Bürstell, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

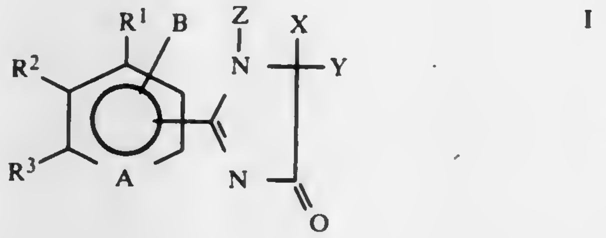
Filed Dec. 18, 1984, Ser. No. 682,795

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1983, 3345901

Int. Cl.⁴ A01N *43/84;* **C07D** *401/04, 233/70*

U.S. Cl. 71—92 **10 Claims**

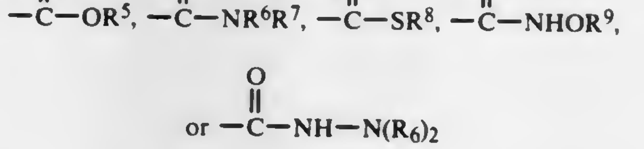
1. A compound of the formula I



in which

A is N or $C—R^4$;

B is



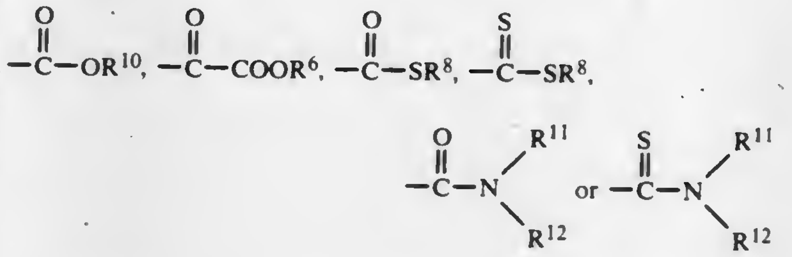
$$-\overset{O}{\overset{\|}{C}}-OR^5,\ -\overset{O}{\overset{\|}{C}}-NR^6R^7,\ -\overset{O}{\overset{\|}{C}}-SR^8,\ -\overset{O}{\overset{\|}{C}}-NHOR^9,\ \text{or}\ -\overset{O}{\overset{\|}{C}}-NH-N(R_6)_2$$

X is C_1 to C_4-alkyl; and

Y is C_1–C_6-alkyl, C_3–C_6-cycloalkyl, C_2–C_4-alkenyl, C_2–C_4-alkinyl, phenyl or benzyl; or

X and Y, together with the carbon atom to which they are bonded, form a C_3–C_6-spirocycloalkyl group which is unsubstituted or substituted by $—CH_3$;

Z is

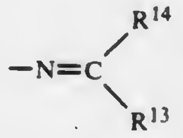


$$-\overset{O}{\overset{\|}{C}}-OR^{10},\ -\overset{O}{\overset{\|}{C}}-COOR^6,\ -\overset{O}{\overset{\|}{C}}-SR^8,\ -\overset{S}{\overset{\|}{C}}-SR^8,\ -\overset{O}{\overset{\|}{C}}-N(R^{11})(R^{12})\ \text{or}\ -\overset{S}{\overset{\|}{C}}-N(R^{11})(R^{12})$$

n is 0, 1 or 2;

R^1, R^2, R^3 and R^4 independently of one another are hydrogen, halogen, C_1–C_4-alkyl, C_1–C_6-alkoxy, C_1–C_6-alkoxycarbonyl, C_1- or C_2-halogenoalkyl, nitro, cyano, phenoxy or phenyl, which is unsubstituted or substituted by C_1-C_4-alkoxy or halogen, it being possible for in each case two R^1, R^2, R^3 or R^4 radicals, ortho to each to form the grouping —CH═CH—CH═CH—;

R^5 is hydrogen, C_1–C_{12}-alkyl, which is unsubstituted or mono- or di substituted by C_1–C_4-alkoxy, (C_1–C_4)-alkoxyethoxy, C_3–C_6-cycloalkyl, benzyloxy, phenyl, halogen, cyano, hydroxyl, (C_1–C_4)-alkylamino-(C_1–C_4)-alkyl, (C_1–C_4)-alkylamino, (C_1–C_4)-dialkylamino, C_1–C_4-alkylthio, C_1–C_4-alkylsulfinyl, C_1–C_4-alkylsulfonyl; C_3–C_6-alkenyl, C_3–C_6-halogenoalkenyl, C_3–C_6-cycloalkyl, C_5–C_6-cycloalkenyl, or C_3–C_6-alkinyl; benzyl, which is unsubstituted or substituted in the benzene nucleus by chlorine or methyl; phenyl which is unsubstituted or mono- or di-substituted by C_1–C_4-alkyl, nitro, halogen or methoxy groups; the group



$$-N=C(R^{14})(R^{13})$$

or a cation of an inorganic or organic base;

R^6 is hydrogen, C_1–C_4-alkyl or phenyl; and

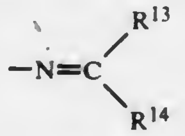
R^7 is hydrogen, C_1–C_6-alkyl, which is unsubstituted or substituted by a hydroxyl group or a C_1–C_3 alkoxy group; C_1–C_4-alkylsulfonyl or halogeno-C_1–C_4-alkylsulfonyl; or C_3-alkenyl or C_3-alkinyl; or

R^6 and R^7, together with the nitrogen atom, form pyrrolidino, piperidino, morpholino or piperazino; which is unsubstituted or substituted by up to two methyl groups;

R^8 is hydrogen, C_1–C_6-alkyl, phenyl, methylphenyl, halogenophenyl or a cation of an inorganic or organic base;

R^9 is hydrogen or C_1–C_6-alkyl;

R^{10} is a radical having the meaning given for R^5, excluding hydrogen, alkylaminoalkyl or



$$-N=C(R^{13})(R^{14})$$

R^{11} is hydrogen, C_1–C_{12}-alkyl, which is unsubstituted or mono-, di- or tri-substituted by halogen atoms or by a C_1–C_4-alkoxy, nitro, cyano or phenyl group, C_3–C_6-cycloalkyl, C_3–C_6-alkenyl, C_3–C_6-alkinyl, phenyl, which is unsubstituted or mono- or di-substituted by halogen, C_1–C_4-alkyl, trihalogenomethyl, nitro, C_1–C_4-alkoxy or cyano groups, amino, C_1–C_4-alkylamino, anilino, C_1–C_4-dialkylamino, C_1–C_6-alkylcarbonyl, trihalogenoacetyl, benzoyl, halogenobenzoyl, methylbenzoyl, phenylsulfonyl, halogenophenyl-sulfonyl or alkylphenylsulfonyl; and

R^{12} is a radical having the meaning given for R^6; or

R^{11} and R^{12}, together with the nitrogen atom, form pyrrolidino, piperidino, morpholino or piperazino which is unsubstituted or substituted by up to two methyl groups; and

R^{13} and R^{14} independently of one another are hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxyalkyl, C_3–C_6-cycloalkyl or phenyl, or together with the carbon atom to which they are bonded are a C_5- or C_6-cycloalkyl group; or an optical isomer if $X \neq Y$, acid addition compound or N-oxide where A is N.

10. A method of combating undesirable plants, which comprises applying an effective amount of a compound of the formula I as claimed in claim 1 to an area where undesired plant growth occurs.

4,615,727

CYCLOALKYL AMINO-S-TRIAZINES AND THEIR USE AS SELECTIVE AGENTS AGAINST WEEDS AND NOXIOUS GRASSES

Helmüt Baltrüschat, Nottuln-Darup, and Horst Schnurbusch, Herne, both of Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

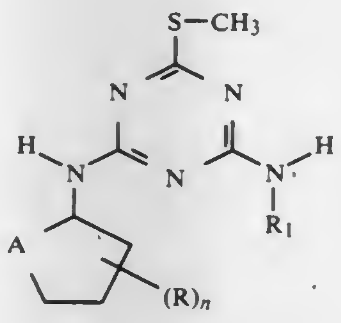
Filed Jun. 2, 1983, Ser. No. 500,381

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1982, 3222147

Int. Cl.⁴ C07D *251/52;* A01N *43/70*

U.S. Cl. 71—93 **9 Claims**

1. A herbicidal compound having the formula:



where R_1 is a straight-chained or a branched-chain alkyl, alkoxy or alkylol radical having less than a total of 15 oxygen and carbon atoms combined or a hydrogen atom; (R) is a lower alkyl group; A is $—CH_2—$ or $—CH_2CH_2—$; with the proviso that n is 3, when A is $—CH_2—$, and n is 3–6, when A is $—CH_2CH_2—$; and wherein the substituents (R) on the cycloalkyl ring are identical to or different from each other.

4,615,728

PYRIDINYLOXY PROPOINAMIDE DERIVATIVES USEFUL IN INCREASING THE RECOVERABLE SUGAR IN SUGARCANE

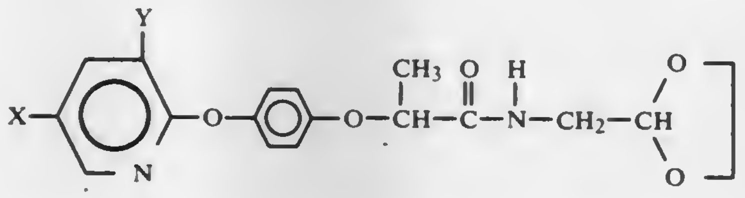
Louis G. Nickell; Leonard J. Stach, and Takeo Hokama, all of Chicago, Ill., assignors to Sandoz Ltd., Basel, Switzerland

Filed Aug. 19, 1985, Ser. No. 766,473

Int. Cl.⁴ A01N *43/40;* C07D *401/12*

U.S. Cl. 71—94 **8 Claims**

1. A compound of the formula:



wherein

X is chlorine or trifluoromethyl

Y is hydrogen or chlorine.

4. A method for increasing the recoverable sugar contained in sugarcane which comprises contacting the sugarcane plant with an effective amount of a propionamide of claim 1.

4,615,729

FLASH SMELTING PROCESS

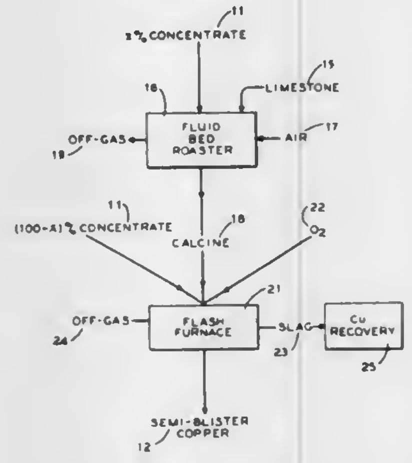
Grigori S. Victorovich, Toronto, and Carlos M. Diaz, Mississauga, both of Canada, assignors to Inco Limited, Toronto, Canada

Filed Feb. 7, 1986, Ser. No. 827,122

Claims priority, application Canada, Mar. 20, 1985, 476988

Int. Cl.⁴ C22B *15/00*

U.S. Cl. 75—21 **7 Claims**



1. A process for producing copper metal comprising roasting a first sulfidic copper material in the presence of a calcareous sulfur dioxide scavenger to produce an oxidic copper product and calcium sulfate and thereafter combusting a second sulfidic copper material with oxygen in a bounded space in the presence of said oxidic copper product and calcium sulfate to produce copper metal, a lime slag containing essentially all silica and iron charged to said bounded space and an off-gas rich in sulfur dioxide.

4,615,730

METHOD FOR REFINING MOLTEN METAL BATH TO CONTROL NITROGEN

Joseph W. Tommaney, Buffalo Township, Butler County, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Apr. 30, 1985, Ser. No. 729,002

Int. Cl.⁴ C21C *7/00*

U.S. Cl. 75—51.2 **8 Claims**

1. A method for refining a molten bath, the method comprising,

introducing a refining gas containing substantially a combination of oxygen and nitrogen to said molten bath until carbon in said bath has been reduced to a selected level,

discontinuing introduction of said refining gas to said bath having slag thereon and, thereafter,

introducing an inert gas to said molten bath at a relatively high flow rate of 12 cubic feet per minute per ton or more from a lance adapted to direct said inert gas onto or beneath said bath to reduce th nitrogen content of said molten bath to desired levels, and

during introduction of said inert gas from said lance, inert gas is additionally introduced to said bath at a low flow rate from beneath the surface thereof.

4,615,731

HYDROMETALLURGICAL PROCESSING OF PRECIOUS METAL-CONTAINING MATERIALS

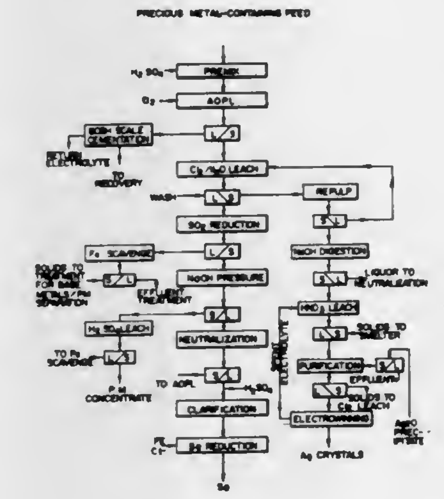
John A. Thomas, Salvador, Brazil; Norman C. Nissen, Oakville, Canada; Malcolm C. E. Bell, Oakville, Canada, and Alexander Illis, Mississauga, Canada, assignors to Inco Limited, Toronto, Canada

Continuation of Ser. No. 304,264, Sep. 21, 1981. This application Feb. 9, 1985, Ser. No. 578,630

Claims priority, application Canada, Sep. 30, 1980, 361246

Int. Cl.⁴ C22B *11/04*

U.S. Cl. 75—97 A **39 Claims**



1. A process for treating an aqueous slurry comprising silver, selenium, at least one precious metal selected from the platinum group metals and gold, at least one of the group tellurium, nickel and copper, and at least one of the nuisance elements bismuth, lead, arsenic, tin and antimony, to separate silver from precious metals and to separate nuisance elements from precious metals and selenium comprising:

(a) subjecting the aqueous slurry to a acid oxidative leach in sulfuric acid;

(b) separating the resultant liquor of the acid oxidative leach from the remaining residue;

(c) treating an aqueous slurry of the remaining residue of the acid oxidative leach with chlorine gas to separate silver from platinum group metals and selenium at a temperature in the range of about 40° to 95° C., the silver remaining in the residue as silver chloride and other metal values being extracted in the chlorine leach liquor;

(d) separating the silver-containing residue from the chlorine leach liquor;

(e) treating the separated chlorine leach liquor with SO_2 gas to precipitate selenium and platinum group metals; the nuisance elements remaining in solution;

(f) separating the resultant precipitate of the SO_2 treatment from the solution;

(g) subjecting the resultant leach residue of the SO_2 treatment to a caustic oxidative leach treatment to extract selenium and separate it from precious metals remaining in the caustic leach residue; and

(h) subjecting separated residue from the caustic oxidative leach treatment to a sulfuric acid leach treatment to leach basic metals from a precious metal containing residue.

4,615,732

FE-AL-CR-P-(B,C) AMORPHOUS ALLOY

Chakrakodi R. Shastry, Bethlehem, and Herbert E. Townsend, Center Valley, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Aug. 19, 1985, Ser. No. 766,729

Int. Cl.⁴ C22C *38/06, 38/32, 38/18*

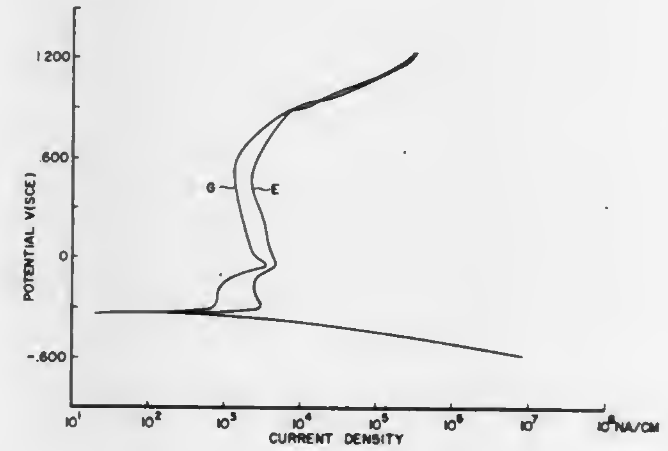
U.S. Cl. 148—403 **3 Claims**

1. An iron-chromium-aluminum-phosphorus series amorphous alloy having improved corrosion resistance, and the ability to be readily pulverized, consisting essentially of an alloy having the formula $Fe_aCr_bAl_cP_d(B,C)_e$ where, in a/o:

$a = 100-(b+c+d+e)$

$b = 4$ to 6

$c = 7.5$ to 10



$d = 12$ to 14

$e = 1$ to 8, and provided further that

$e+d = 15$ to 22, and

$e+d+c = 27$ to 35.

4,615,733

COMPOSITE MATERIAL INCLUDING REINFORCING MINERAL FIBERS EMBEDDED IN MATRIX METAL

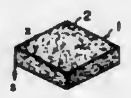
Masahiro Kubo; Tadashi Dohnomoto; Atsuo Tanaka, and Yoshiaki Tatematsu, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

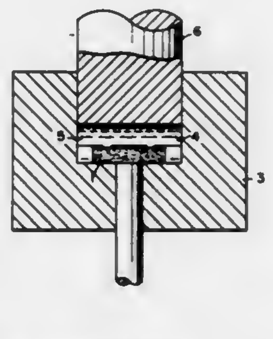
Filed Apr. 2, 1985, Ser. No. 719,247

Claims priority, application Japan, Oct. 18, 1984, 59-219091

Int. Cl.⁴ B22F *3/12, 1/02*

U.S. Cl. 75—229 **7 Claims**





1. A composite material, comprising:

(a) a reinforcing fiber material with the principal components being SiO_2 or CaO or Al_2O_3 or any combination thereof, and having a MgO content by weight of between about 0% and about 10%, a Fe_2O_3 content by weight of between about 0% and about 5%, and a content by weight of other inorganic substances of between about 0% and about 10%, said reinforcing fiber material consisting essentially of:

(i) mineral fibers, wherein the average fiber diameter of said mineral fibers is between about 2 and about 8 microns, and wherein the average fiber length of said mineral fibers is between about 20 microns and about 5 cm; and

(ii) non-fibrous particles having a total percentage of not more than about 20% by weight of the reinforcing fiber material, the weight percentage of the part of said non-fibrous particles which have a diameter of greater than or equal to about 150 microns being not greater than about 7%; and

(b) a matrix metal selected from the group consisting of aluminum, magnesium, copper, zinc, lead, tin and alloys having these as principal components; and wherein the volume proportion of said mineral fibers is in the range of from about 4% to about 25%.

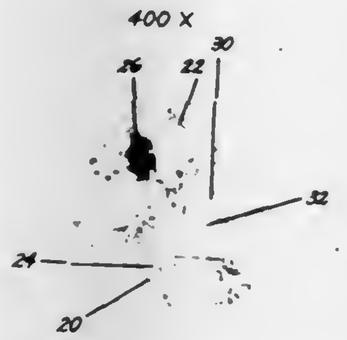
4,615,734
SOLID PARTICLE EROSION RESISTANT COATING UTILIZING TITANIUM CARBIDE, PROCESS FOR APPLYING AND ARTICLE COATED THEREWITH

Donald R. Spriggs, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 588,407, Mar. 12, 1984, abandoned. This application Feb. 7, 1985, Ser. No. 698,943

Int. Cl.^{4} C22C *29/06*

U.S. Cl. 75—237 **26 Claims**



1. A composition of matter comprising by weight about 30% to about 50% angular titantium carbide particles dispersed in a matrix alloy, the matrix alloy including by weight about 10% to about 30% chromium, about 1.5% to about 5% carbon and the balance essentially iron.

4,615,735
ISOSTATIC COMPRESSION TECHNIQUE FOR POWDER METALLURGY

Steven W. Ping, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Sep. 18, 1984, Ser. No. 651,723

Int. Cl.^{4} C22C *1/00*

U.S. Cl. 75—249 **22 Claims**

1. A method of preparing a metal alloy product from a pre-alloyed powder which comprises:

(a) reducing the pressure of the atmosphere surrounding a specimen comprising said powder or a porous compact thereof having substantially fully interconnecting pores and purging said specimen with a substantially dry gas, while heating said specimen to volatilize bound species from said specimen;

(b) immersing said specimen in a gaseous substance capable of combining with said specimen to form a solid reaction product at elevated temperature and pressure; and

(c) compressing said specimen isostatically while immersed in said gaseous substance to form a compact in which substantially all remaining internal void space is comprised of closed discrete pores.

4,615,736
PREPARATION OF METAL POWDERS

John N. Armor, Hanover Township, Morris County, and Emery J. Carlson, Chatham, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 1, 1985, Ser. No. 729,728

Int. Cl.^{4} B22F *1/00*

U.S. Cl. 75—251 **8 Claims**

1. A method of producing metallic powders comprising the steps of:

(a) admixing a metal salt of a metallic material selected from the group consisting of silver, gold, platinum, palladium, ruthenium, rhodium, mercury, rhenium, arsenic, tellurium, iridium, osmium, copper, and mixtures thereof and an organic solvent;

(b) placing the admixture in a container and applying heat and pressure sufficient to convert the admixture to a fluid phase and a metallic product;

(c) segregating the fluid phase from the metallic product; and

(d) collecting the metallic product.

4,615,737
IMPREGNATION COMPOSITION FOR THERMOCHEMICAL MODIFICATION OF WOOD AND PROCESS FOR PREPARING SAME

Karl R. Kiisler; Peep G. Kristianson; Tiya-Maya F. Sjuld; Tiit K. Kaps; Myart A. Riistop, all of Tallin; Juri K. Rokk, Pyarnu; Toomas O. Matvere, Pyarnu; Juri E. Pravon, Pyarnu, and Ilmar M. Evert, Rapla, all of U.S.S.R., assignors to Tallinsky Politekhnichesky Institut, Tallin, U.S.S.R.

Continuation of Ser. No. 501,803, Jun. 7, 1983, abandoned. This application Jan. 23, 1985, Ser. No. 693,726

Int. Cl.^{4} C09G *1/04*

U.S. Cl. 106—12 **7 Claims**

1. An impregnation composition for a thermochemical modification of wood comprising a balanced aqueous-alcoholic solution of water-soluble oil-shale crude phenols with a content of hydroxy groups of from 12.0 to 13.3 meq/g, urea, hexamethylene tetramine and molecular complexes of said phenols with urea and hexamethylene tetramine; as the alcoholic component the impregnation composition contains ethanol and a polyhydric alcohol selected from the group consisting of ethylene glycol, homologs thereof and glycerol; the impregnation composition having the following formulation, parts by mass:

water-soluble oil-shale crude phenols	100
urea	28–36
formaldehyde	35–40
ammonia	13–15
polyhydric alcohol	3–10
ethanol	5–1,750
water	100–3,370.

4,615,738
TRANSPARENT ANTIFOG COMPOSITIONS

Albert J. Sanders, Jr., Toledo, Ohio, and Michael J. Larson, Ypsilanti, Mich., assignors to Stauffer Wacker Silicones Corporation, Adrian, Mich.

Filed Oct. 7, 1985, Ser. No. 785,171

Int. Cl.^{4} C09K *3/18*

U.S. Cl. 106—13 **5 Claims**

1. A transparent organopolysiloxane composition comprising from 0.2 to 6 percent by weight of hexamethylcyclotrisiloxane, from 4 to 35 percent by weight of an aliphatic alcohol having from 1 to 4 carbon atoms, and from 95.8 to about 59 percent by weight of an ammonium fatty alcohol ether sulfate as a surfactant, based on the weight of hexamethylcyclotrisiloxane, alcohol and surfactant, in which the weight ratio of alcohol to hexamethylcyclotrisiloxane is at least 3:1.

4,615,739
OIL-IN-WATER-IN-OIL COATING COMPOSITION

Leonard R. Clark, Olive Branch, Miss., and Robert W. West, Memphis, Tenn., assignors to Formby's Inc., Memphis, Tenn.

Filed Feb. 28, 1985, Ser. No. 706,777

Int. Cl.^{4} C09K *3/00;* **C08L** *3/00*

U.S. Cl. 106—34 **10 Claims**

1. An oil-in-water-in-oil coating composition comprising (a) an oil continuous phase comprising a solution of an oil soluble resin or drying oil or mixtures thereof in a water immiscible solvent, (b) an aqueous discontinuous phase comprising an emulsion with pH of about 4 to 10 of water insoluble resin in an aqueous medium, and (c) an effective dispersing amount of a dispersing agent for dispersing (b) in (a) consisting essentially of hydrated starch or a hydrated starch component.

4,615,740
LIQUID POLYMER CONTAINING COMPOSITIONS FOR THICKENING AQUEOUS MEDIUMS

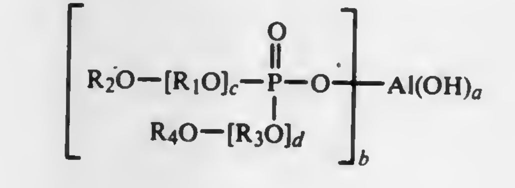
James A. Pelezo, Spring; Garry E. Corbett, Jr., and Don R. Siems, both of Houston, all of Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Mar. 8, 1985, Ser. No. 709,547

Int. Cl.^{4} C08L *1/08;* **E21B** *43/27*

U.S. Cl. 106—177 **7 Claims**

1. A liquid, pourable, water dispersible polymer containing composition for thickening aqueous mediums comprising hydroxyethyl cellulose, an oil base liquid, and an effective, gelling amount of a gelling agent comprising at least one compound selected from the group of aluminum salts consisting of aluminum oxyalkyl phosphates, aluminum oxyalkyl oxyalkyl phosphates and aluminum oxyalkyl alkyl phosphates, said salts having the structural formula



$$\left[\begin{array}{c} R_2O-[R_1O]_c-\overset{\overset{O}{\|}}{\underset{|}{P}}-O- \\ R_4O-[R_3O]_d \end{array}\right]_b Al(OH)_a$$

where

a=0 to 2,
b=1 to 3,
c=1 to 5,
d=1 to 5,

and the sum of a+b=3;

R_1O and R_3O=an alkyloxy, alkenyloxy or alkynyloxy group containing from 1 to 18 carbon atoms, or $CH_2CH(CH_3)O$, or CH_2CH_2O or OH, and

R_2O and R_4O=an alkyloxy, alkenyloxy or alkynyloxy group containing from 1 to 18 carbon atoms,

and where R_1O and R_2O may differ from each other but shall together contain from 1 to 24 carbon atoms, and R_3O and R_4O may differ from each other but shall together contain from 1 to 20 carbon atoms, provided that at least one of R_1O and R_3O shall be either $CH_2CH(CH_3)O$ or CH_2CH_2O, and provided further that where either R_1O or R_3O is neither $CH_2CH(CH_3)O$ nor CH_2CH_2O, then the respective R_2O and R_4O group otherwise bonded thereto shall be deleted and further provided that the number of carbon atoms in at least one of R_1O, R_2O, R_3O and R_4O is at least 6, and

an effective amount of a surfactant sufficient to retard settling and hard packing of said hydroxyethyl cellulose.

4,615,741
FILLER FOR ELECTRONIC ELEMENT ENCAPSULATION RESIN AND ELECTRONIC ELEMENT ENCAPSULATION RESIN COMPOSITION CONTAINING THE SAME

Akira Kobayashi; Ryoichi Ide, and Hirotaka Koga, all of Oomuta, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1984, Ser. No. 669,557

Claims priority, application Japan, Nov. 30, 1983, 58-226285

Int. Cl.^{4} C04B *14/04*

U.S. Cl. 106—308 M **9 Claims**

1. A filler for an electronic element encapsulation resin composition, comprising: 5 to 95 parts, by weight, of fused silica beads each having the largest particle size of substantially not more than 149 μm and containing not less than 80 wt % of beads each having particle size within the range of from 1 to 149 μm, the ratio of the largest diametral length across each bead to the smallest diametral length thereacross being 1 to 1.5; and 95 to 5 parts, by weight, of crushed particles of fused silica each having the largest particle size of substantially not more than 149 μm and containing not less than 80 wt % of particles each having particle size within the range of from 1 to 149 μm, the ratio of the largest diametral length across each crushed particle to the smallest diametral length thereacross being 1.6 to 3.0.

6. A thermosetting resin composition for encapsulating an electronic element and containing 30 to 80 wt % of a fused silica filler, said fused silica filler comprising: 5 to 95 parts, by weight, of fused silica beads each having the largest particle size of substantially not more than 149 μm and containing not less than 80 wt % of beads each having particle size within the range of from 1 to 149 μm, the ratio of the largest diametral length across each bead to the smallest diametral length thereacross being 1 to 1.5; and 95 to 5 parts, by weight of crushed particles of fused silica each having the largest particle size of substantially not more than 149 μm and containing not less than 80 wt % of particles each having particle size within the range of from 1 to 149 μm, the ratio of the largest diametral length across each crushed particle to the smallest diametral length thereacross being 1.6 to 3.0.

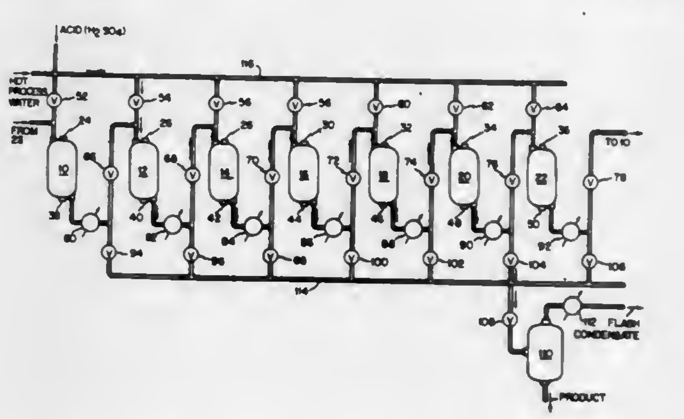
4,615,742
PROGRESSING BATCH HYDROLYSIS PROCESS

John D. Wright, Denver, Colo., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jan. 10, 1985, Ser. No. 690,544

Int. Cl.^{4} C13K *1/02*

U.S. Cl. 127—37 **18 Claims**



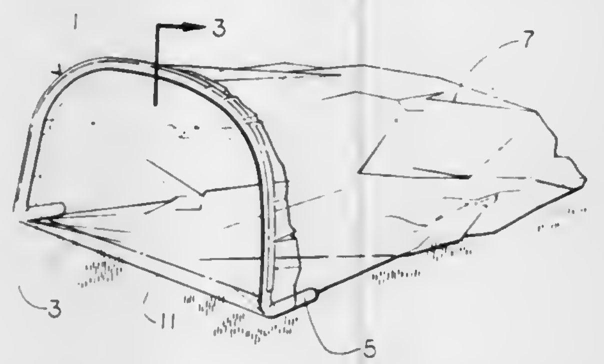
1. A progressive batch prehydrolysis and hydrolysis process for producing sugar from a lignocellulosic feedstock, comprising:

(a) providing at least one percolation reactor, said reactor being initially charged with lignocellulosic feedstock

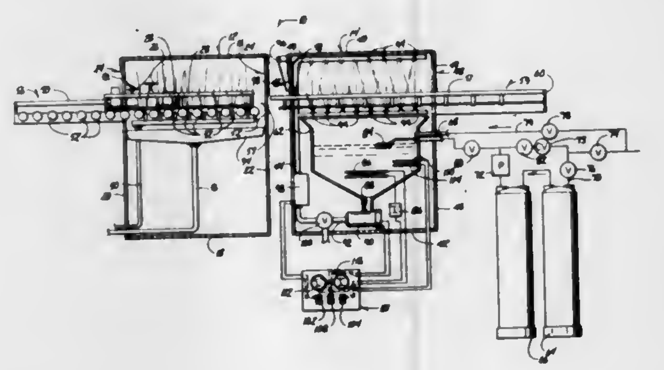
including hemicellulose components and cellulose components, which feedstock has not been prehydrolyzed;
(b) prehydrolyzing said feedstock by passing a liquid stream of dilute acid into and then serially through said reactors in (a) which are charged with said lignocellulosic feedstock, said dilute acid being at a temperature, pressure, and flow rate sufficient to convert, by hydrolysis, substantially all of the hemicellulose components of said feedstock to sugar comprising xylose, glucose and other sugars carried by said liquid acid stream without completely hydrolyzing said cellulose components of said feedstock, said liquid stream of dilute acid being at a temperature and maintained at a temperature such that said sugars produced within said reactors from said hemicellulose component and carried by said dilute acid stream are not subjected to any significant heat degradation;
(c) cooling and recovering said dilute sugar containing acid stream after it exits the last reactor in (a);
(d) providing at least one additional percolation reactor initially charged with said lignocellulosic feedstock including hemicellulose components and cellulose components, which feedstock has not been prehydrolyzed;
(e) serially connecting said reactors in (a) to and upstream of said additional reactors in (d);
(f) passing a liquid stream of dilute acid serially through said reactors in (a) which are now charged with prehydrolyzed lignocellulosic feedstock which is now substantially free of unreacted hemicellulose, said liquid stream of dilute acid being at a temperature, said temperature being higher than the temperature of said liquid acid stream in (b), pressure and flow rate sufficient to convert substantially all of said remaining cellulose components of said feedstock to sugars comprising glucose and other sugars carried by said dilute acid stream;
(g) cooling said dilute acid stream containing sugar after exiting the last reactor in (f), and then prehydrolyzing the feedstock in the additional reactors in (d) by feeding said dilute acid stream containing sugar serially through said additional reactors in (d) charged with said lignocellulosic feedstock including hemicellulose components and cellulose components, said dilute acid being at a temperature, pressure and flow rate sufficient to convert by hydrolysis substantially all of the hemicellulose components of said feedstock to sugars comprising xylose, glucose and other sugars carried by said liquid acid stream without completely hydrolyzing said cellulose components of said feedstock; said cooled liquid stream being at a temperature and maintained at a temperature such that said sugars produced from said hemicellulose components of said feedstock are not subjected to any significant heat degradation; and then
(h) cooling and recovering said dilute sugar containing acid stream after it exits the last reactor in (g).

4,615,743
BAG HOLDING APPARATUS
Peter D. Bylenga, 33 Hiawatha Dr., Greenville, S.C. 29615
Continuation of Ser. No. 453,823, Dec. 27, 1982, abandoned.
This application Aug. 9, 1984, Ser. No. 640,227
Int. Cl.⁴ B08B *7/00*
U.S. Cl. 134—6 **1 Claim**

1. A process for removing debris from the ground comprising the steps of:
providing an apparatus which comprises;
a generally flexible "U" shaped member having an open end, said "U" shaped member having an inside surface and an outside surface,
foreshortened legs at either end of said "U" shaped member extending in a direction substantially transverse to the plane of said "U" shaped member,
said "U" shaped member and said foreshortened legs being discontinuous between said legs at said open end to permit flexing thereof for accommodating varying bag sizes,
a plastic bag distended about said outside surface and convoluted through said inside surface of said "U" shaped member in the direction of said foreshortened legs whereby said "U" shaped member is totally enclosed within a fold of the convoluted bag, and contacts said fold on both said inside and outside surface, said plastic bag being retained in position by the flexing of said "U" shaped member within said fold; and
wherein said foreshortened legs are of sufficient length to maintain the apparatus in a generally upright position so as to maintain said bag open and available for leading with debris;
placing said apparatus upon a horizontal surface with said foreshortened legs maintaining said apparatus in an upright position and with the discontinuous area between said foreshortened legs being upon said horizontal surface with only the fold in said convoluted plastic bag in the discontinuous area between said foreshortened legs defining a portion of the opening of a debris receiving receptacle adjacent to said horizontal surface; and
moving debris across said horizontal surface across said fold in said discontinuous area and into the debris receiving receptacle.

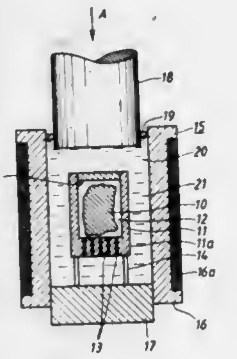


4,615,744
METHOD OF RINSING EATING UTENSILS
James L. Murtha, 4405 Marcourt La., West Des Moines, Iowa 50265
Continuation of Ser. No. 603,164, Apr. 23, 1984, abandoned.
This application Sep. 23, 1985, Ser. No. 778,804
Int. Cl.⁴ B08B *3/10*
U.S. Cl. 134—25.2 **2 Claims**



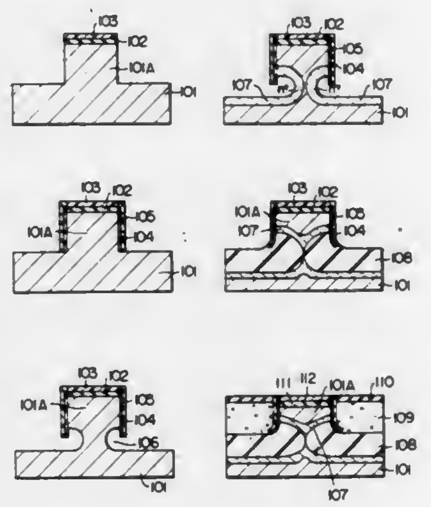
1. A method of finally rinsing eating utensils after said utensils have been washed so as to avoid water spots thereon, comprising:
moving said utensils to a final rinse station from a separate wash station,
finally rinsing said utensils in said final rinse station with a quantity of water heated to at least 180° F. and having less than 275 ppm of total dissolved solids, said quantity of water accumulating additional dissolved solids during said final rinsing,
moving said utensils from said final rinse station,
collecting said quantity of water after said utensils are finally rinsed,
maintainig the temperature of said quantity of water at a minimum of 180° F., and
rinsing additional utensils subsequently moved into said final rinse station with said collected quantity of water without further treatment thereof to reduce the level of total dissolved solids in said quantity of water until the level of total dissolved solids in said quantity of water exceeds 275 ppm.

4,615,745
METHOD OF REDUCING THE PORE DENSITY IN A CASTING
Michael Göransson, Kvicksund, and Jan Nilsson, Robertsfors, both of Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden
Filed Nov. 8, 1985, Ser. No. 796,120
Claims priority, application Sweden, Nov. 9, 1984, 8405604
Int. Cl.⁴ C21D *1/53*
U.S. Cl. 148—4 **15 Claims**



1. A method of reducing the porosity of a casting by subjecting the casting, in a heated state to isostatic pressure with a pressure medium, which method comprises
locating the casting in a container,
heating the container and the casting,
thereafter placing the heated casting and surrounding container in a press chamber of a piston press,
feeding a liquid pressure medium to the press chamber at a lower temperature than that of the container and casting, and
applying pressure to the liquid pressure medium in the press chamber via the piston of the press,
the container having at least one wall provided with a plurality of channels which allow the pressure medium to contact the casting,
whereby the pressure medium extracts heat from the said at least one wall in passing through the channels into the interior of the said container.

4,615,746
METHOD OF FORMING ISOLATED ISLAND REGIONS IN A SEMICONDUCTOR SUBSTRATE BY SELECTIVE ETCHING AND OXIDATION AND DEVICES FORMED THEREFROM
Kenji Kawakita, 21-1-E14-103, Korigaoka-1-chome, Hirakata-shi; Hiroyuki Sakai, 12, Babacho-3-chome, Moriguchi-shi, and Toyoki Takemoto, 9-3, Nishiyamamarou, Yamata-shi, all of Japan
Filed Sep. 19, 1984, Ser. No. 652,096
Claims priority, application Japan, Sep. 29, 1983, 58-182106; Sep. 29, 1983, 58-182121
Int. Cl.⁴ H01L *21/225, 21/302*
U.S. Cl. 148—1.5 **12 Claims**



1. A method of fabricating a semiconductor device comprising the steps of
(a) forming a first oxidation-resistive film on a selected portion of the surface of a semiconductor substrate;
(b) etching away the portion of said substrate not covered by said first oxidation-resistive film to form a semiconductor substrate having a base portion and a vertically protruding portion extending therefrom, said vertically protruding portion having a side surface and an upper surface covered by said first oxidation-resistive film;
(c) forming a second oxidation-resistive film on the side surface of said protruding portion of said semiconductor substrate;
(d) etching a groove in the side surface of said protruding portion adjacent the base portion of said semiconductor substrate;
(e) diffusing impurities having a high impurity concentration into the surface of said groove and base portion of said substrate to form a high impurity-concentration diffusion region;
(f) heat treating said semiconductor substrate in an oxidizing atmosphere to form an oxide film in said groove by using said first and second oxidation resistive films as a mask, said oxide film extending horizontally and transversely with respect to said diffusion region so that said oxide film substantially occupies the region interfacing said protruding and base portions of said substrate inclusive of said groove, whereby said heat treatment develops an increased high impurity-concentration diffusion region continuously extending above and below said oxide film; and
(g) forming a semiconductor component in the protruding portion of said substrate.

4,615,747

PROCESS FOR PRODUCING ALUMINUM MATERIAL FOR USE IN VACUUM

Yutaka Kato, Ibaraki; Kenji Tsukamoto, Izumiohtsu, and Eizo Isoyama, Nara, all of Japan, assignors to Showa Aluminum Corporation, Sakai, Japan

Filed Dec. 17, 1984, Ser. No. 682,456

Claims priority, application Japan, Dec. 16, 1983, 58-238081; Dec. 16, 1983, 58-238082

Int. Cl.⁴ C23C *8/12*

U.S. Cl. 148—6.3 **17 Claims**

1. A process for producing an aluminum material for use in a vacuum comprising the steps of removing a hydrated oxide coating from the surface of a worked aluminum material to obtain a clean surface in a dry state, and heating the aluminum material in an oxygen gas-containing atmosphere out of contact with a water-containing atmosphere to form an oxide coating on the dry clean surface.

4,615,748

AMORPHOUS SOFT MAGNETIC THIN FILM

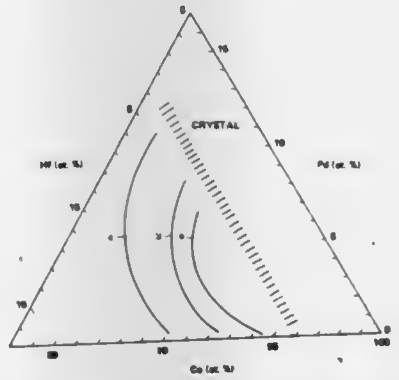
Hiroshi Takino; Kiyonori Hayakawa; Kazuko Kawabata, and Makoto Tsuruoka, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 16, 1985, Ser. No. 788,140

Claims priority, application Japan, Oct. 16, 1984, 216968

Int. Cl.⁴ C04B *35/00*

U.S. Cl. 148—304 **5 Claims**



1. An amorphous soft magnetic material having the formula:

$Co_{1-x-y}Hf_xPd_y$

where

x is in the range from 0.04 to 0.08 and

y is in the range from 0.005 to 0.15.

4,615,749

COLD ROLLED DUAL-PHASE STRUCTURE STEEL SHEET HAVING AN EXCELLENT DEEP DRAWABILITY AND A METHOD OF MANUFACTURING THE SAME

Susumu Satoh; Hideo Suzuki; Takashi Obara; Minoru Nishida, and Osamu Hashimoto, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Continuation of Ser. No. 591,406, Mar. 20, 1984, abandoned. This application Oct. 23, 1985, Ser. No. 790,641

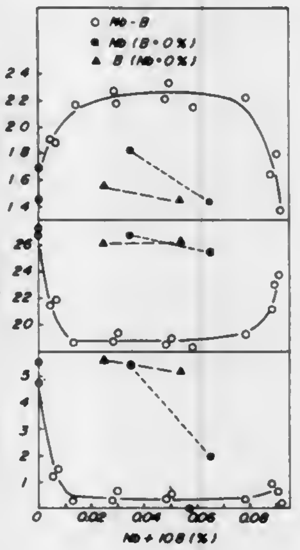
Claims priority, application Japan, Feb. 18, 1984, 59-27995

Int. Cl.⁴ C21D *9/46, 7/02, 7/14*

U.S. Cl. 148—330 **2 Claims**

1. A cold rolled dual-phase structure steel sheet having an excellent deep drawability or $\bar{r}$ value not less than 2.0, a brake hardenability (BH) not smaller than 4.3 Kg/mm^2, an aging index (AI) not less than 3.3 Kg/mm^2, and consisting of a ferrite phase and low temperature transformation product phase, which steel sheet consists of 0.001–0.008% by weight of C, not more than 1.0% by weight of Si, 0.05–1.8% by weight of Mn, not more than 0.15% by weight of P, 0.01–0.10% by weight of Al, 0.002–0.050% by weight of Nb, and 0.0005–0.0050% by weight of B, provided that the value of Nb(%)+10B(%) is in a range of 0.010–0.080%, and the balance being substantially Fe with inevitable impurities, and is produced by the steps of:

hot and cold rolling a steel slab with a composition containing 0.001–0.008% by weight of C, not more than 1.0% by weight of Si, 0.05–1.8% by weight of Mn, not more than 0.15% by weight of P, 0.01–0.10% by weight of Al, and 0.002–0.050% by weight of Nb and 0.0005–0.0050% by weight of B provided that the value of Nb(%)+10(%) is in a range of 0.010–0.080% by weight; and



continuously annealing the resulting steel sheet in such a manner that the steel sheet is heated and soaked at a temperature from α→γ transformation point to 1,000° C. and then cooled at an average cooling rate of not less than 0.5° C./sec but less than 20° C./sec in a temperature range of from the soaking temperature to 750° C., and subsequently at an average cooling rate of not less than 20° C./sec in a temperature range of from 750° C. to not more than 300° C.

4,615,750

PROCESS FOR PRODUCING A GRAIN-ORIENTED ELECTRICAL STEEL SHEET

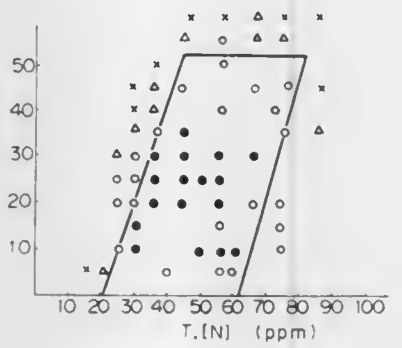
Kishio Mochinaga; Kohichi Fujiwara; Kazutaka Higashine, all of Himeji, and Hisashi Kobayashi, Kawasaki, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed May 11, 1984, Ser. No. 609,201

Claims priority, application Japan, May 12, 1983, 58-83340

Int. Cl.⁴ H01F *1/04*

U.S. Cl. 148—111 **3 Claims**



1. A process for producing a grain-oriented electrical steel sheet, wherein the silicon steel starting material consists essentially of, as basic components, 0.085% or less of C, from 2.0% to 4.0% of Si, from 0.030% to 0.090% of Mn, from 0.010% to 0.060% of S, from 0.02% to 0.2% of Cu, and 0.0050% or less of sol.Al, and said silicon steel starting material is hot-rolled, cold-rolled twice so as to form a sheet having a thickness of from 0.35 mm to 0.15 mm, decarburization-annealed and final annealed said silicon steel starting material contain T. [N] in an amount which satisfies the following the formulas (1) and (2):

$$T.[N] \geqq \{[\text{sol Al }\%]\times 14/27+0.0020\}(\%) \tag{1}$$

$$T.[N] \leqq \{[\text{sol Al }\%]\times 14/27+0.0060\}(\%) \tag{2}$$

thereby segregating excess nitrogen at the grain-boundaries in the decarburization step.

4,615,751

EXPLOSIVE WHICH INCLUDES AN EXPLOSIVE EMULSION

Jeremy G. B. Smith, Edenvale; Arno W. Dölz, Roodepoort, and Carl H. Lübbe, Johannesburg, all of South Africa, assignors to AECI Limited, South Africa

Filed Dec. 31, 1984, Ser. No. 688,156

Claims priority, application South Africa, Feb. 8, 1984, 84/0943

Int. Cl.⁴ C06B *45/02*

U.S. Cl. 149—2 **20 Claims**

1. An explosive which includes

21.4–50% m/m of an explosive emulsion comprising a discontinuous phase which includes an oxidizing salt and a continuous phase which includes a fule and which is immiscible with the discontinuous phase; 50–78.6% m/m ammonium nitrate prills; and a water-resisting agent for inhibiting deterioration of the ammonium nitrate prills in the presence of water with which the explosive may come in contact during use, which agent has the effect of inhibiting access of water to the ammonium nitrate prills, the prills being dispersed in and surrounded by the emulsion and the water-resisting agent.

4,615,752

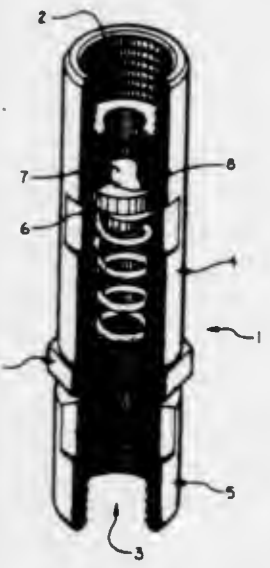
METHODS OF PUMPING AND LOADING EMULSION SLURRY BLASTING COMPOSITIONS

Kenneth A. Miller, West Jordan, Utah, assignor to IRECO Incorporated, Salt Lake City, Utah

Filed Nov. 23, 1984, Ser. No. 674,275

Int. Cl.⁴ D03D *23/00*

U.S. Cl. 149—108.8 **13 Claims**



1. An improved method of pumping a water-in-oil emulsion slurry blasting composition through a hose comprising the steps of pumping the composition through a hose having at or near its end a valve having an orifice smaller in cross-sectional area than that of the hose and pumping the composition through the valve which is adapted to impart a back-pressure to the composition of at least 10.5 kg/cm^2 and thereby increase its viscosity prior to its expulsion from the hose.

4,615,753

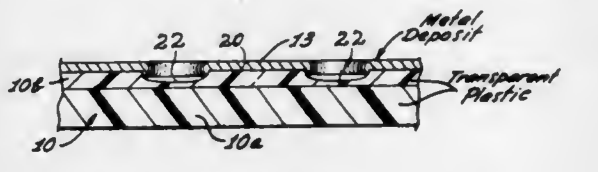
PROCESS FOR MAKING A VIDEO RECORD DISC

David P. Gregg, Los Angeles, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Division of Ser. No. 399,075, Jul. 16, 1982, Pat. No. 4,500,484, which is a continuation of Ser. No. 936,982, Aug. 25, 1978, abandoned, which is a division of Ser. No. 812,157, Jul. 1, 1977, abandoned, which is a division of Ser. No. 571,259, Apr. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 735,007, Jun. 6, 1968, abandoned. This application Nov. 19, 1984, Ser. No. 672,659

Int. Cl.⁴ B31F *1/00;* **B29D** *17/00, 11/00;* **H04N** *5/84*

U.S. Cl. 156—219 **4 Claims**



1. A method for forming a plastic record disc having a spiral-shaped recording track that includes a succession of alternating regions of optical contrast having variable lengths, the method comprising the steps of:

providing a die carrying a recording track complementary to that of a plastic record disc to be formed;

attaching a heat softenable blank to a movable member, said member holding said blank in spaced relationship to the die;

heating the blank to a temperature to render said blank embossable;

moving the blank into compressive engagement with the die by moving said member to form a record disc having a planar recording surface with a spiral-shaped recording track that includes a succession of alternating regions of optical contrast having continuously-variable lengths;

cooling the record disc such that the recording track is retained in the disc; and

laminating the record disc, with the spiral-shaped recording track formed in the planar recording surface thereof, to a rigid, plastic supporting base.

4,615,754

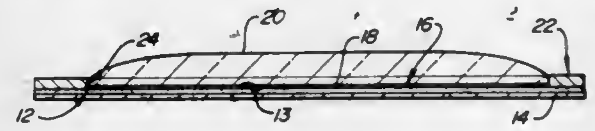
SUBSTRATELESS DECORATIVE EMBLEM AND METHOD OF MAKING

Robert E. Waugh, Sun City Center, Fla.; Urban R. Nannig, North Kingstown, R.I., and Clyde R. Rockwood, Columbus, Ohio, assignors to The D. L. Auld Company, Columbus, Ohio

Filed Jun. 12, 1985, Ser. No. 744,128

Int. Cl.⁴ B60R *13/04*

U.S. Cl. 156—242 **18 Claims**



1. A method of making a substrateless decorative emblem comprising the steps of:

(a) providing a layer of pressure sensitive adhesive,

(b) forming a raised annular boundary on a first surface of said layer of pressure sensitive adhesive to form an enclosed area thereon,

(c) treating said first surface within said enclosed area of pressure sensitive adhesive to render said first surface tack free and suitable for printing directly on the treated surface,

(d) decorating said treated surface by printing indicia directly thereon,

(e) casting a curable liquid plastic resin onto said treated surface so that it flows to the edge of said raised annular boundary, and

(f) curing said resin to harden it and provide substrateless decorative emblems having a plastic cap.

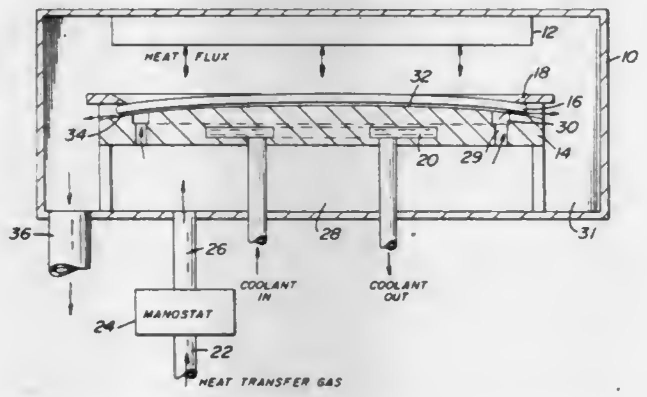
4,615,755
WAFER COOLING AND TEMPERATURE CONTROL FOR A PLASMA ETCHING SYSTEM

David H. Tracy, and Paul G. Saviano, both of Norwalk, Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Aug. 7, 1985, Ser. No. 763,165

Int. Cl.⁴ B44C *1/22;* **C03C** *15/00*

U.S. Cl. 156—345 **9 Claims**



1. In combination with a plasma etching reactor having a process chamber, including a pair of electrodes, for receiving a process gas therein, with one of said electrodes being a chuck electrode for receiving thereon a wafer having a film to be etched, means for cooling said wafer during operation of said plasma etching reactor comprising:

means for cooling said chuck electrode;

means for applying a pressurized gas film between said wafer and said chuck electrode to provide a heat transfer medium between said wafer and said chuck electrode; and

said chuck electrode being domed shaped to minimize the gap between said wafer and said chuck electrode when said wafer bows under pressure.

4,615,756
DRY ETCHING APPARATUS

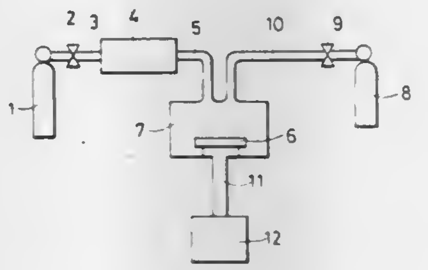
Kanji Tsujii, Nishitama; Yusuke Yajima, Musashino, and Seiichi Murayama, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 11, 1985, Ser. No. 753,858

Claims priority, application Japan, Jul. 11, 1984, 59-142316; Aug. 14, 1984, 59-168843

Int. Cl.⁴ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00;* **C23F** *1/02*

U.S. Cl. 156—345 **22 Claims**



1. A dry etching apparatus comprising means to generate metastable excited species, means to transfer the metastable excited species into a reaction chamber in which a substrate to-be-etched is set, and means to introduce a reactive gas for etching into said reaction chamber in which the substrate to-be-etched is set; the reactive gas being activated by collision between the metastable excited species and the reactive gas so as to etch the substrate to-be-etched owing to a reaction between the activated reactive gas and the substrate to-be-etched.

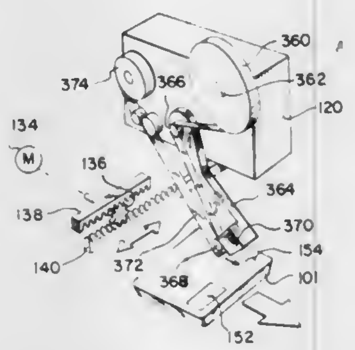
4,615,757
METHOD AND APPARATUS FOR PACKAGE LABELING

Fritz F. Treiber, Centerville, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Jul. 3, 1985, Ser. No. 751,176

Int. Cl.⁴ B44B *9/00*

U.S. Cl. 156—350 **26 Claims**



1. In a package handling system including a package conveyor for transporting packages along said conveyor, package labeling apparatus comprising:

package labeler means for labeling packages supported on said conveyor, said package labeler means being mounted for horizontal movement above said conveyor;

package sensing means for sensing at least one horizontal dimension of said packages as said packages are transported and for generating package signals representative of said at least one dimension; and

label positioning means connected to said package labeler means and said package sensing means for horizontally moving said package labeler means in response to said package signals whereby package labels are positioned on said packages within selected labeling regions for convenient handling, display and sale.

4,615,758
CONTINUOUSLY OPERATING PRESS FOR PRESSING AN ADVANCING WEB OF MATERIAL

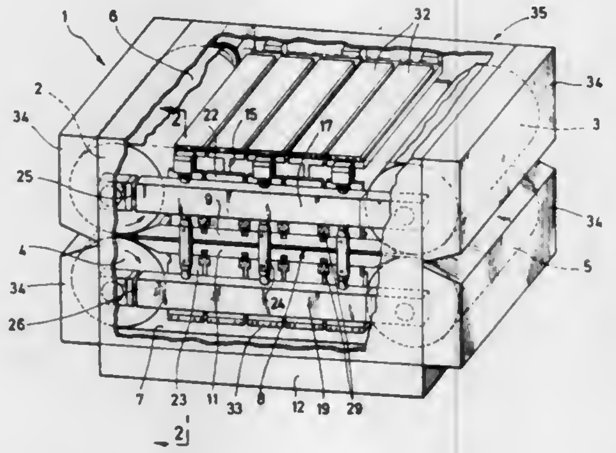
Kurt Held, Alte Strasse 1, 7218 Trossingen 2, Fed. Rep. of Germany

Filed Oct. 1, 1984, Ser. No. 656,524

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1983, 3337913

Int. Cl.⁴ B30B *5/06, 15/34*

U.S. Cl. 156—359 **34 Claims**



1. Continuously operating press for pressing an advancing web of material, comprising a rigid press frame, an upper and a lower endless press belt, each guided over a pair of deflection rollers mounted for rotation on the press frame, comprising a heating device to heat at least one deflection roller of each pair, comprising a reaction zone located between the upper and lower press belt strands facing each other for pressing the advancing web of material with the simultaneous application of heat, and comprising pressure plates with a heating device at the rear sides of the press belt strands remote from the reaction zone for exerting a pressure on these rear sides and, consequently, on the web of material, characterized in that, at least a portion of the press frame (1) are additionally heated by a further heating device (32, 33), and thermal shield caps (34) which may be moved out of the way are arranged on the press frame, said further heating device being controlled via a regulating circuit which responds to deviations of the actual geometry of the press frame from the desired geometry.

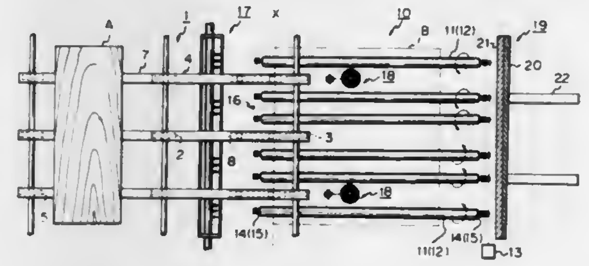
4,615,759
APPARATUS FOR PLACING VENEER PIECES IN EDGE-ABUTTING RELATIONSHIP

Masayuki Ota, 1-22-13, Minami, Meguro-ku, Tokyo, Japan

Filed Jun. 25, 1984, Ser. No. 623,949

Int. Cl.⁴ B27D *1/10*

U.S. Cl. 156—558 **8 Claims**



1. An apparatus for placing veneer pieces in edge-abutting relationship with each other, comprising an infeed section for flat-feeding the veneer pieces, one by one, in the horizontal direction perpendicular to fibers of the veneer pieces, including at least one positive feeding means at one end of the infeed section, and a crowder section comprising a plurality of upper and lower longitudinal rotating rollers, having axes extending substantially in said feeding direction, and spaced in parallel to each other so as to define a free transporting passage following said infeed section, in which the veneer pieces are in turn, held and pressurized from top and bottom by said upper and lower rollers with their respective edges being in contact with the edges of the adjacent veneer pieces, so that a succeeding veneer piece is fed by said positive feeding means and, just before the positive feeding ceases, the front edges of the succeeding veneer piece come into contact with the rear edges of a preceding veneer piece which has been held at the crowder section.

4,615,760
SUPPRESSION OR CONTROL OF LIQUID CONVECTION IN FLOAT ZONES IN A ZERO-GRAVITY ENVIRONMENT BY VISCOUS GAS SHEAR

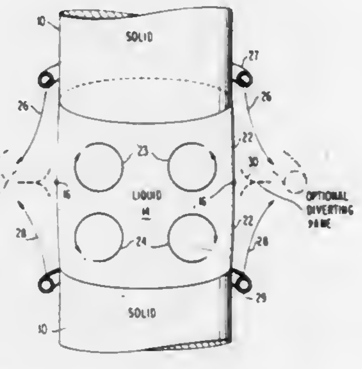
Robert F. Dressler, 8110 Springfield Rd., Glenn Dale, Md. 20769

Continuation of Ser. No. 457,541, Jan. 12, 1983, abandoned. This application Jan. 10, 1985, Ser. No. 696,874

Int. Cl.⁴ C30B *13/02*

U.S. Cl. 156—620 **11 Claims**

1. In a process of zone melting and resolidifying a rod of fusible material wherein a molten float zone is translated axially along the rod, said float zone having a free surface, a resolidification and a melting interface at respective axially opposite ends of the zone, and a midpoint on said surface intermediate the interfaces, the improvement which comprises the steps of carrying out the process in a zero-gravity environment where the only induced convections are Marangoni convections produced by the Marangoni effect, and directing substantially tangentially along the free surface of the float zone an annular stream of non-reactive viscous gas in directions opposite to resultant Marangoni convections at the surface, said stream having a velocity so as to produce viscous shear stresses of the proper magnitude on said surface to suppress or control resultant Marangoni convections within the molten float zone, said free surface being substantially straight in said zero-gravity environment.



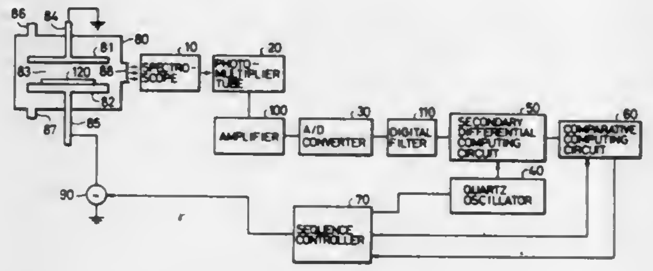
4,615,761
METHOD OF AND APPARATUS FOR DETECTING AN END POINT OF PLASMA TREATMENT

Keiji Tada; Takashi Fujii; Gen Marumoto; Kazuhiro Jyouo, all of Kudamatsu, and Takahiro Fujisawa, Yanai, all of Japan, assignors to Hitachi, Ltd. and Hitachi Sanki Eng Co., Ltd., both of Tokyo, Japan

Filed Mar. 15, 1985, Ser. No. 712,032

Int. Cl.⁴ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00;* **C23F** *1/02*

U.S. Cl. 156—626 **12 Claims**



1. A method of detecting the end point of plasma treatment comprising a step of selecting plasma spectrum having a characteristic wavelength from the plasma spectrum occurring at the time of reaction of the plasma treatment of a specimen, a step of computing a secondary differential value of a function of the quantity of said plasma spectrum selected and the plasma treatment reaction time of said specimen, and a step of detecting the end point of the plasma treatment reaction of said specimen by comparing said computed secondary differential value with preset reference values for judgment.

4,615,762
METHOD FOR THINNING SILICON

Lubomir L. Jastrzebski, Plainsboro; John F. Corboy, Jr., East Amwell Township, Hunterdon County; Robert H. Pagliaro, Jr., Mercer County, and Ramazan Soydan, Berkley Township, Ocean County, all of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Apr. 30, 1985, Ser. No. 729,165

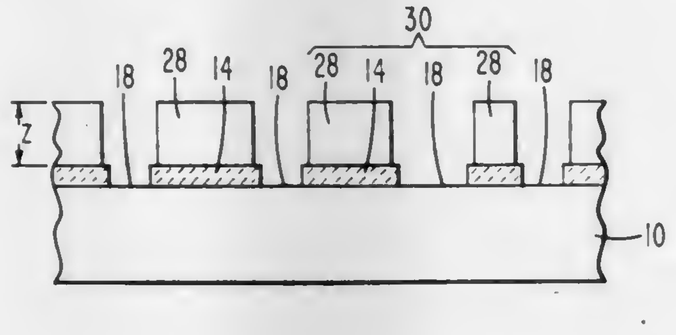
Int. Cl.⁴ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—628 **5 Claims**

1. A method for substantially uniformly thinning an epitaxially grown silicon layer comprising:

forming an insulator layer having a plurality of apertures therein on a substrate, the widest spacing between apertures being X;

epitaxially depositing silicon within the apertures and over the insulator layer so as to form a continuous monocrystalline silicon layer having a thickness substantially equal to X;



oxidizing substantially all of the surface of the monocrystalline silicon layer so as to transform a uniformly thick layer of said silicon layer into oxide; and

removing all of said oxide so as to expose said silicon layer.

4,615,763

ROUGHENING SURFACE OF A SUBSTRATE

Jeffrey D. Gelorme, Binghamton; William H. Lawrence, Greene, and Peter Slota, Jr., Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 2, 1985, Ser. No. 688,388

Int. Cl.⁴ B44C *1/22;* **C03C** *15/00. 25/06;* **B29C** *17/08*

U.S. Cl. 156—643 **19 Claims**

1. A method of improving the adhesion between a photosensitive adhesive and a dielectric substrate which comprises roughening the surface of said dielectric substrate by:

providing a substrate comprising a resinous material and inorganic particulate material;

etching a surface of said substrate which selectively etches said resinous material to thereby provide a roughened surface; and

then coating a photosensitive adhesive onto said roughened surface.

4,615,764

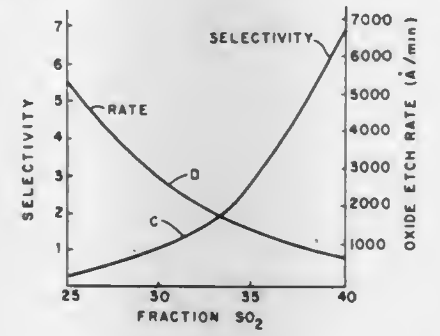
SF6/NITRIDING GAS/OXIDIZER PLASMA ETCH SYSTEM

Stephen M. Bobbio, Winterville, Ga.; Marie C. Flanigan, Lockport, N.Y.; Kenneth M. Thrun, Buffalo, N.Y., and Ralph L. DePrenda, Amherst, N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 5, 1984, Ser. No. 668,052

Int. Cl.⁴ B44C *1/22;* **C03C** *15/00. 25/06;* **H01L** *21/306*

U.S. Cl. 156—643 **11 Claims**



1. Method of enhancing the selectivity in etching silicon dioxide preferentially over silicon or polysilicon in an article containing a layer of silicon dioxide on an underlayer of silicon or polysilicon in which said article is exposed to a low pressure plasma gas mixture discharge and wherein the plasma comprises SF_6 and a nitriding component in the gaseous phase, the improvement comprising adding an oxidizer as a component of the plasma gas mixture and continuing said exposure of said article until the silicon dioxide layer is penetrated.

4,615,765

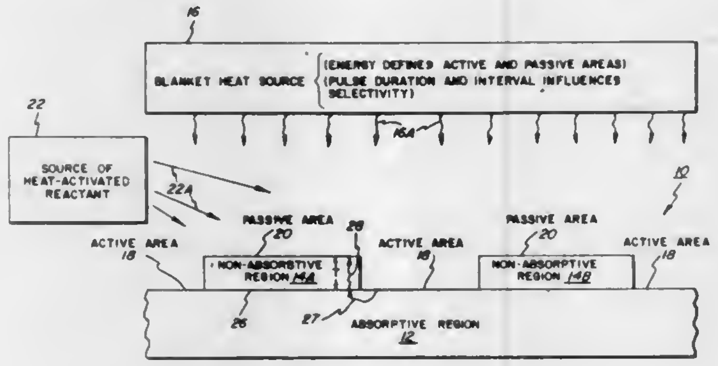
SELF-REGISTERED, THERMAL PROCESSING TECHNIQUE USING A PULSED HEAT SOURCE

Lionel M. Levinson, Schenectady, and Christopher P. Yakymyshyn, Ithaca, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 1, 1985, Ser. No. 697,376

Int. Cl.⁴ H01L *21/306;* **B44C** *1/22*

U.S. Cl. 156—643 **24 Claims**


16
BLANKET HEAT SOURCE
(ENERGY DEFINED ACTIVE AND PASSIVE AREAS)
(PULSE DURATION AND INTERVAL INFLUENCES SELECTIVITY)
22
SOURCE OF HEAT-ACTIVATED REACTANT
16A
22A
10
PASSIVE AREA
20
28
PASSIVE AREA
20
ACTIVE AREA
18
NON-ABSORBTIVE REGION 14A
ACTIVE AREA
18
NON-ABSORPTIVE REGION 14B
ACTIVE AREA
18
26
27
ABSORPTIVE REGION
12

1. A method of thermal processing selected areas of an exposed surface of a workpiece, comprising the steps of:

(a) providing a workpiece having an exposed surface comprising active areas of a first region to be heated for thermal processing thereof and passive areas of a second region to be maintained at a lower temperature than said active areas for minimizing thermal processing thereof;

(b) providing a pulse-mode source of blanket heat energy with predetermined energy, pulse duration, and pulse interval operating parameters;

(c) selecting the energy parameter of said heat energy source to achieve heat absorption in said first region of said workpiece, so as to raise the temperature of said active areas, while minimizing heat absorption in said second region, so as to limit any temperature rise of said passive areas;

(d) selecting the pulse duration of said heat energy source to be sufficiently short and the pulse interval of said heat energy source to be sufficiently long so as to minimize stray heat transfer to said passive areas from either said active areas or any incidentally-heated regions of said workpiece, and thereby to minimize any temperature rise of said passive areas;

(e) directing heat energy from said source of blanket heat energy in blanket fashion to said first and second regions of said workpiece; and

(f) contacting said exposed surface of said workpiece with a heat-activated reactant, whereby thermal processing with said reactant occurs selectively at said active areas of said exposed surface.

4,615,766

SILICON CAP FOR ANNEALING GALLIUM ARSENIDE

Thomas N. Jackson, Peekskill; Gwen Pepper, Croton-on-Hudson, and Richard F. Rutz, Cold Spring, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 27, 1985, Ser. No. 705,959

Int. Cl.⁴ H01L *21/265*

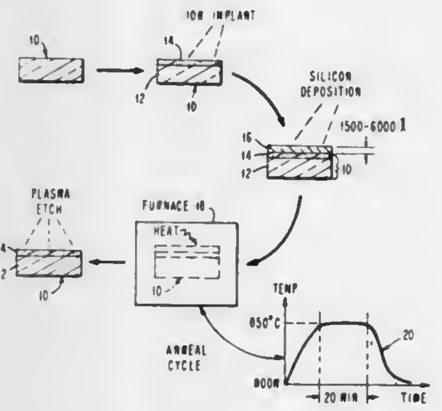
U.S. Cl. 156—662 **12 Claims**

1. A method of forming an ion implanted GaAs device comprising:

implanting ions into at least one surface of a GaAs substrate;

depositing a capping layer of silicon upon said one surface;

annealing said substrate, said capping layer retaining arsenic in said GaAs during said annealing; and



etching said silicon capping layer to remove the silicon from said substrate.

4,615,767

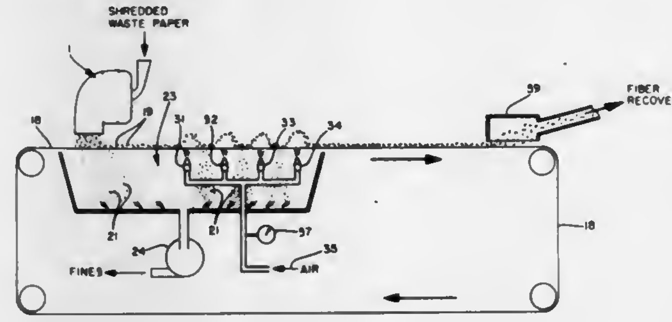
PROCESS FOR REMOVING INK-BEARING FINES FROM DRY-DEINKED SECONDARY FIBER SOURCES

Robert M. Miers, Outagamie County, and Byron R. Terry, Winnebago County, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 25, 1984, Ser. No. 664,462

Int. Cl.⁴ D21B *1/08*

U.S. Cl. 162—4 **12 Claims**



1. A method for deinking a secondary fiber source comprising:

(a) mechanically fiberizing the secondary fiber source in a substantially dry state, thereby producing a fibrous material comprising substantially discrete fibers and ink-bearing fines;

(b) depositing the fibrous material in a thin layer onto a moving screen under which a vacuum is maintained, wherein said moving screen retains the fibers and allows the ink-bearing fines to pass therethrough; and

(c) momentarily lifting the thin layer of fibrous material above the screen with upwardly directed air and redepositing the thin layer of fibrous material onto the screen, whereby upon re-deposition of the thin layer of fibrous material additional ink-bearing fines pass through the screen.

4,615,768

VAPOR GENERATING AND RECOVERY APPARATUS INCLUDING CONTINUOUS CONVEYING MEANS THROUGH A VAPOR ZONE

James W. McCord, 9101 Nottingham Pkwy., Louisville, Ky. 40222

Continuation-in-part of Ser. No. 581,544, Feb. 21, 1984. This application May 6, 1985, Ser. No. 730,506

Int. Cl.⁴ B01D *3/00*

U.S. Cl. 202—170 **20 Claims**

1. A vapor generating and recovery apparatus comprising:

means defining at least one vaporizing chamber in which a liquid is vaporized;

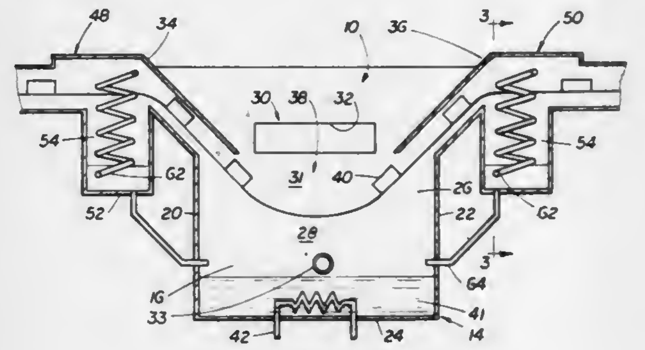
a thermal mass disposed within the at least one vaporizing chamber;

heat emitting means for heating the thermal mass such that the top surface of the thermal mass will be at a temperature higher than the vapor temperature of the liquid to be vaporized, sufficient to substantially instantaneously vaporize any of said liquid coming in contact with the thermal mass;

means defining at least one condensing chamber separate from the vaporizing chamber and laterally adjacent to the vaporizing chamber in which the vapor is condensed;

cooling means located in the condensing chamber for cooling the vapor to a temperature below the vaporizing temperature;

at least one opening in the apparatus providing conveyor inlet and outlet means;



conveyor means extending through the conveyor inlet into the vaporizing chamber, across the vaporizing chamber, and out of the vaporizing chamber through the conveyor outlet; and

means defining a path of vapor communication from the vaporizing chamber to the condensing chamber, the vapor path communication defining means being located laterally to one side of the portion of the conveyor means extending through the vaporizing chamber for moving the vapors in the vaporizing chamber away from said conveyor inlet and outlet means and away from the conveyor means in a direction generally laterally of the portion of the conveyor means extending through the vaporizing chamber and from the vaporizing chamber into the condensing chamber.

4,615,769

PROCESS FOR DISTILLATION OF STYRENES

Tsukumo Horigome; Noriyuki Kawabe, both of Oita; Mamoru Takiue, Fukuoka; Kunihiko Imai, Iwatsuki; Noriaki Uchiyama, Chofu; Fusayuki Tsuzuki, Nagareyama; Kenji Shimada, Kndamatsu; Masahiro Shibuya, Hachioji; Norimasa Hakutoh, Kashiwa; Chiaki Watanabe, and Juniehi Abe, both of Ichikawa, all of Japan, assignors to Nippon Steel Chem. Co., Ltd. and Hitachi, Ltd., both of Tokyo, Japan

Filed Apr. 25, 1985, Ser. No. 727,059

Claims priority, application Japan, Apr. 26, 1984, 59-082863; Aug. 22, 1984, 59-174702; Aug. 24, 1984, 59-176392; Dec. 28, 1984, 59-278874

Int. Cl.⁴ B01D *3/42;* **C07C** *7/04*

U.S. Cl. 203—2 **6 Claims**

1. In a process for distillation of styrenes by distilling a liquid mixture of styrenes obtained by dehydrogenation of ethylbenzenes and separating styrenes from ethylbenzenes, the improvement which comprises

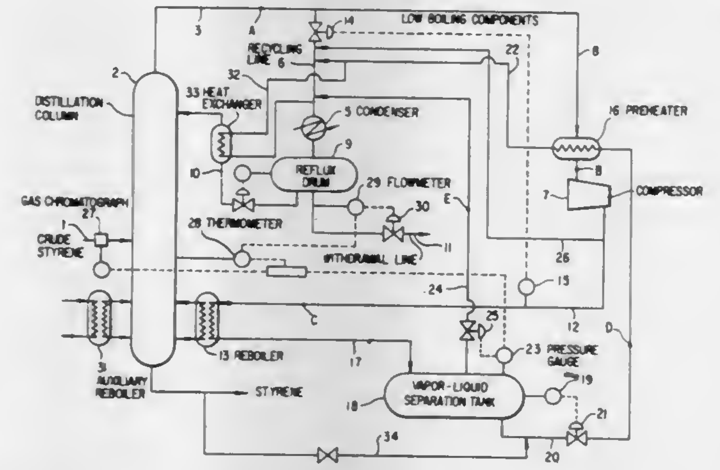
feeding said liquid mixture of styrenes into a middle portion of a distillation column of a packed column type which is operated under reduced pressure;

withdrawing from the top of said distillation column a vapor of low boiling components consisting mainly of ethylbenzenes and withdrawing from the bottom of said distillation column a liquid of high boiling components consisting mainly of styrenes;

leading a large part of said vapor of low boiling components to a compressor to elevate the temperature of said vapor by adiabatic compression and leading the remaining part of said vapor of low boiling components to a condenser;

introducing said compressed vapor of low boiling components to a reboiler of said distillation column wherein a part of said compressed vapor of low boiling components is condensed and the latent heat thereby released is used as a heat source for said reboiler;

leading the condensed liquid of low boiling components condensed in said reboiler and the uncondensed vapor of low boiling components uncondensed in said reboiler to a vapor-liquid separation tank and separating said uncondensed vapor from said condensed liquid;



returning said uncondensed vapor of low boiling components separated in said separation tank to said condenser;

introducing said condensed liquid of low boiling components separated in said separation tank into a preheater wherein the condensed liquid of low boiling components undergo heat exchange with the vapor of low boiling components fed into the compressor through the preheater;

thereafter refluxing a part of said condensed liquid of low boiling components condensed in said condenser and said reboiler to the upper portion of said distillation column via a refluxing line thereof; and

withdrawing the remaining condensed liquid of low boiling components from the distillation system.

4,615,770
DISTILLATION COLUMN AND PROCESS

Rakesh Govind, 14092 Stone Ct., Cincinnati, Ohio 45242

Continuation of Ser. No. 541,991, Oct. 14, 1983, abandoned. This application Feb. 26, 1985, Ser. No. 705,413

Int. Cl.⁴ B01D *3/26, 1/28*

U.S. Cl. 203—25 **11 Claims**

1. A distillation apparatus including: a stripping column; and

a rectifying column maintained separate from said stripping column thereby permitting said rectifying column to be maintained at a higher pressure than said stripping column;

said rectifying column comprising a bottom plenum, a top manifold and a plurality of packed tubes extending through said stripping column between said plenum and said manifold, said packed tubes being completely surrounded by said stripping column;

a condensor forming condensed liquid, a condensed liquid inlet connected between said top manifold and said condensor;

a vapor outlet between said manifold and said condensor;

a vapor inlet into said bottom plenum;

said stripping column including a top and a bottom; an unprocessed feed inlet into said top;

a vapor outlet extending from said top; means to introduce vapor into said bottom, a bottoms outlet extending from said bottom;

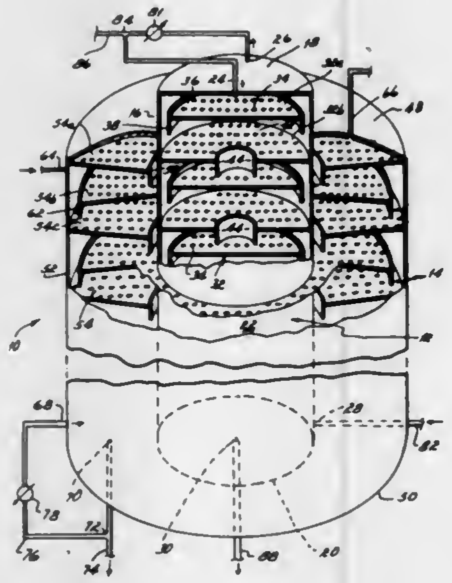
a vapor liquid contact area between said top and said bottom of said stripping column;

said vapor outlet from said stripping column connected to said vapor inlet into said plenum of said rectifying column; and

a means to compress vapors passing from said vapor outlet from said stripping column, said means being connected to said vapor inlet into said bottom plenum of said rectifying column thereby increasing the pressure within said rectifying column.

2. A method of distilling components from a liquid comprising admitting a first liquid into a top section of a stripping column permitting said first liquid to flow downwardly through stripping column to a reboiler;

heating said first liquid in said reboiler thereby generating a first vapor stream and admitting said first vapor stream into the bottom of said stripping column whereby said vapor stream passes upwardly through said stripping column into contact with said first liquid thereby forming a second vapor stream including a component stripped from said first liquid;



passing said second vapor stream from the top of said stripping column to a compressor;

compressing said second vapor stream and admitting said second vapor stream into a bottom portion of a rectifying column;

directing a condensed distillate liquid into a top portion of said rectifying column whereby said distillate liquid flows downwardly contacting said second vapor stream thereby forming a rectified vapor stream; and

removing said rectified vapor stream from the top of said rectifying column and condensing a portion of said rectified vapor stream to thereby form said condensed distillate liquid;

wherein said rectifying column is completely surrounded by said stripping column and in thermal contact with said stripping column and said rectifying column is maintained separate from said stripping column and at a higher temperature and pressure than said stripping column whereby heat from said rectifying section passes outwardly to said stripping column improving the efficiencies of said stripping column and said rectifying column.

4,615,771
METHOD OF SEPARATING BIS-(2-AMINOETHYL)ETHER FROM N-(2-METHOXYETHYL)MORPHOLINE BY AZEOTROPIC DISTILLATION AND EXTRACTION

Robert L. Zimmerman, Austin, and Roger G. Duranleau, Georgetown, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 699,296, Feb. 7, 1985, Pat. No. 4,579,630. This application Jan. 13, 1986, Ser. No. 818,519

Int. Cl.⁴ B01D *3/36;* **C07D** *265/32*

U.S. Cl. 203—46 **12 Claims**

1. A method for the separation of bis-(2-aminoethyl) ether from N-(2-methoxyethyl)morpholine comprising:

a. azeotropically distilling a mixture comprising bis-(2-aminoethyl)ether and N-(2-methoxyethyl)morpholine with an entrainer to selectively remove the N-(2-methoxyethyl)morpholine with the entrainer, and

b. extracting the N-(2-methoxyethyl)morpholine from the entrainer by means of liquid-liquid extraction using a non polar hydrocarbon or aromatic extraction solvent.

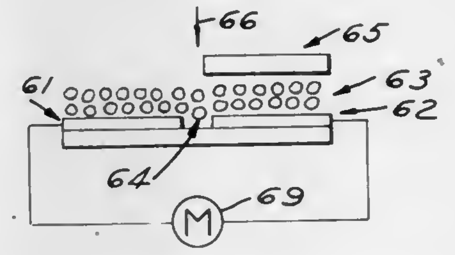
4,615,772
ELECTROCHEMICAL GAS SENSOR

Robert E. Hetrick, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 12, 1985, Ser. No. 744,071

Int. Cl.⁴ G01N *27/26, 27/46, 27/58*

U.S. Cl. 204—1 T **16 Claims**



15. A method of sensing the concentration of a gas by using a photosensitizing chemical reduction-oxidation reaction with an electrochemical photocatalytic sensing structure, including the steps of:

positioning a semiconductor powder in an ambient containing the gas and on two electrical isolated, underlying electronically conducting catalyst layers;

applying light to the semiconductor powder, the light having a wavelength with an energy above the electron bandgap energy of the semiconductor material so that both electron and hole carriers are created in the semiconductor powder; and

sensing an electrical parameter between two portions of the semiconductor powder to determine a parameter representative of the concentration of the gas.

4,615,773
CHROMIUM-IRON ALLOY PLATING FROM A SOLUTION CONTAINING BOTH HEXAVALENT AND TRIVALENT CHROMIUM

John Dash, and Arash S. Kasaaian, both of Portland, Oreg., assignors to State of Oregon Acting By and Through the State Board of Higher Education on Behalf of Portland State University, Portland, Oreg.

Continuation of Ser. No. 607,980, May 7, 1984, abandoned. This application Feb. 7, 1986, Ser. No. 827,196

Int. Cl.⁴ C25D *3/56*

U.S. Cl. 204—43.1 **6 Claims**

1. A method of electrodepositing a chromium-iron alloy on a substrate comprising

preparing an aqueous electrolyte solution through mixing with water the following ingredients (a) a water-soluble inorganic trivalent chromium compound, (b) a water-soluble inorganic hexavalent chromium compound, and (c) a water-soluble inorganic iron compound, said electrolyte solution containing the metals of said compounds as ions in the solution and the amounts of hexavalent and trivalent compounds added being such that the concentration of hexavalent chromium ions in this solution exceeds the concentration of trivalent chromium ions, said solution further being prepared through hydroxyl ion addition to have a pH within the range of 0.5 to 2.0,

immersing said substrate in said electrolyte solution, and

passing an electric current through said solution to effect depositing of chromium and iron on said substrate.

4,615,774
GOLD ALLOY PLATING BATH AND PROCESS

Gerardus A. Somers, Schayk; John R. Lovie, Hertogenbosch, and Jan J. M. Hendriks, Sint Oedenrode, all of Netherlands, assignors to OMI International Corporation, Warren, Mich.

Filed Jan. 31, 1985, Ser. No. 696,932

Int. Cl.⁴ C25D *3/62*

U.S. Cl. 204—44.3 **15 Claims**

1. A citrate-free bath for the electrodeposition of a gold alloy, which bath consists essentially of a bath soluble source of gold in an amount to provide a gold content of 4 to 50 g/l, a bath soluble source of nickel alloying metal in an amount to provide a nickel content of 0.5 to 20 g/l, oxalic acid in an amount of 20 to 100 g/l, and formic acid in an amount of 20 to 100 ml/l.

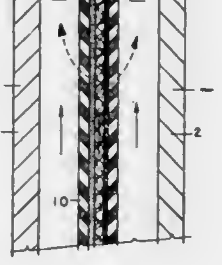
4,615,775
ELECTROLYSIS CELL AND METHOD OF GENERATING HALOGEN

Oronzio de Nora, Piazza della Repubblica 19; Antonio Nidola, Via Farneti 5, and Gian N. Martelli, Via Padova 194, all of Milan, Italy

Continuation-in-part of Ser. No. 382,691, May 27, 1982, Pat. No. 4,468,311, and Ser. No. 268,431, May 29, 1981, Pat. No. 4,381,979, which is a continuation-in-part of Ser. No. 212,172, Dec. 2, 1980, which is a continuation-in-part of Ser. No. 102,629, Dec. 11, 1979, Pat. No. 4,340,452, said Ser. No. 382,691, is a division of Ser. No. 102,629,. This application May 2, 1983, Ser. No. 490,515

Int. Cl.⁴ C25B *1/26*

U.S. Cl. 204—128 **20 Claims**



1. A method of generating chlorine which comprises electrolyzing an aqueous alkali metal chloride in a cell having an ion permeable membrane dividing the cell into an anode compartment, an anode in said anode compartment, and a cathode compartment, a cathode in the cathode compartment, said cathode comprising a screen having a low hydrogen overvoltage in contact with substantially rigid current distribution means and a high hydrogen overvoltage resiliently compressible wire mat compressed between the membrane and the low hydrogen overvoltage screen to maintain the low hydrogen overvoltage screen spaced from the membrane and wherein the mat presses the low voltage screen against the current distribution means.

4,615,776

ELECTROLYTIC DECONTAMINATION PROCESS AND PROCESS FOR REPRODUCING DECONTAMINATING ELECTROLYTE BY ELECTRODEPOSITION AND APPARATUSES THEREFORE

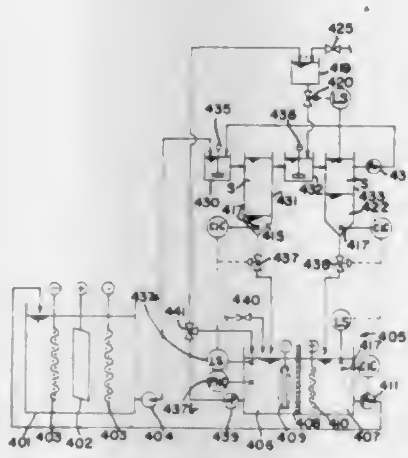
Takashi Sasaki, Miki; Toshio Kobayashi, Kobe, and Koichi Wada, Miki, all of Japan, assignors to Shinko-Pfaudler Company, Kobe, Japan

Filed Oct. 17, 1984, Ser. No. 661,696

Claims priority, application Japan, Oct. 21, 1983, 58-198114; Feb. 28, 1984, 59-037466; Jun. 7, 1984, 59-117847

Int. Cl.⁴ C25F *3/16*

U.S. Cl. 204—129.1 **25 Claims**



1. A process of electrolytic decontamination of a metal object having a radioactively contaminated surface, comprising the stops of positioning the object and one or more electrodes in an electrolyte of an electrolytic decontaminating first cell, connecting a positive DC potential to said object and a negative DC potential to said electrodes so that they respectively operate as an anode and a cathode in the electrolyte, supplying DC current between said cathode and said anode to electrolytically polish the surface of the object, utilizing a metal ion isolating second cell which is divided by a diaphragm into an anode chamber having an insoluble electrode, and a cathode chamber having a capture electrode, supplying DC current between said insoluble electrode and said capture electrode through the diaphragm, circulating a decontaminating electrolyte between said first cell and the anode chamber of said second cell, and injecting the electrolyte from the anode chamber of said second cell into the cathode chamber of said second cell to maintain a hydrogen ion concentration therein to such an extent as to isolate metallic ions by electrodeposition on the capture electrode, and acid ions therein to move through the diaphragm into the circulating electrolyte in the anode chamber during the DC current flow.

4,615,777

METHOD AND COMPOSITION FOR REDUCING THE VOLTAGE IN AN ELECTROLYTIC CELL

Ronald C. Miles; David D. Justice, and Garland E. Hilliard, all of Cleveland, Tenn., assignors to Olin Corporation, Cheshire, Conn.

Filed Nov. 24, 1982, Ser. No. 444,299

Int. Cl.⁴ C25B *1/02, 1/34*

U.S. Cl. 204—129 **1 Claim**

1. A method for reducing the cell voltage of an electrolytic cell having an anode compartment separated from a cathode compartment, said cathode compartment containing an alkaline catholyte solution and producing hydrogen gas, said method which comprises introducing into said cathode compartment trisethylenediamine cobalt III and sodium molybdate.

4,615,778

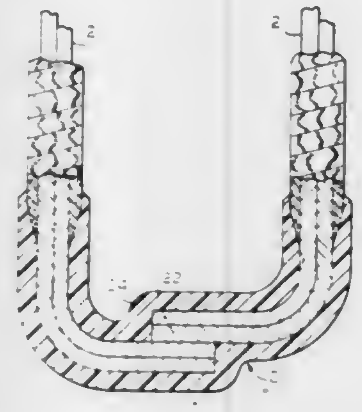
PROCESS FOR ELECTRODEPOSITING MICA ON COIL OR BAR CONNECTIONS AND RESULTING PRODUCTS

Richard K. Elton, Altamont, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 555,058, Nov. 25, 1983, abandoned. This application Feb. 19, 1985, Ser. No. 702,525

Int. Cl.⁴ C25D *13/16, 13/12, 13/06, 13/02*

U.S. Cl. 204—181.1 **12 Claims**



1. A process for depositing an insulating coating on bare portions of electrical connection members comprising the steps of

(a) immersing the bare electrical connections in an aqueous electrodeposition composition consisting essentially in weight percent of 5-35% of particulated mica, 0.2-2% of a water soluble anionic resin binder as calculated in resin solids, 0.001-0.20% of an electrolyte, up to 0.3% of a nonionic surfactant and a polar solvent;

(b) electrodepositing said composition on the bare electrical connections and forming a dry micaceous coating of substantially uniform thickness, said coating being porous and containing a sufficient amount of binder to hold the mica particles together;

(c) impregnating the porous coating with an impregnative resin varnish; and

(d) subjecting the impregnated coating to an elevated temperature bake to cure the resin varish.

4,615,779

CATIONIC COATING COMPOSITIONS FOR ELECTRODEPOSITION OVER ROUGH STEEL

Gregory J. McCollum, Glenshaw; Roger L. Scriven, Gibsonia; Roger M. Christenson, Gibsonia; George W. Mauer, Gibsonia, and Robert R. Zwack, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 7, 1985, Ser. No. 698,993

Int. Cl.⁴ C25D *13/06*

U.S. Cl. 204—181.7 **13 Claims**

1. A method of electrodepositing an electroconductive substrate which serves as a cathode in an electrical circuit comprising said cathode and an anode immersed in an aqueous electrocoating composition, said method comprising passing electric current between the anode and the cathode to cause the electrocoating composition to deposit on the cathode as a substantially continuous film, heating the electrodeposited film at an elevated temperature to form a cured film, characterized in that the electrocoating composition comprises a cationic resin containing blocked polyisocyanate functionality, said cationic resin being derived from a polyepoxide and having cationic groups selected from amine salt groups, quaternary ammonium base groups, quaternary phosphonium groups and ternary sulfonium groups, said cationic resin having a molecular weight less than 50,000; the blocking agent for the polyisocyanate being volatile under curing conditions and having an average molecular weight of 76 or less; said electrocoating composition being pigmented in which the pigments have a size of 6 to 8 as determined with a Hegman grinding gauge, the pigment-to-resin weight ratio being less than 0.4:1; the electrocoating composition being further characterized such that upon electrodeposition and heating to maximum flow, the incompletely cured coating has a profile less than 0.160 micron, and upon heating to complete cure, the percentage cured film weight loss is less than 10, and the product of the profile and the square of the percentage cured film weight loss is less than 7.5.

4,615,780

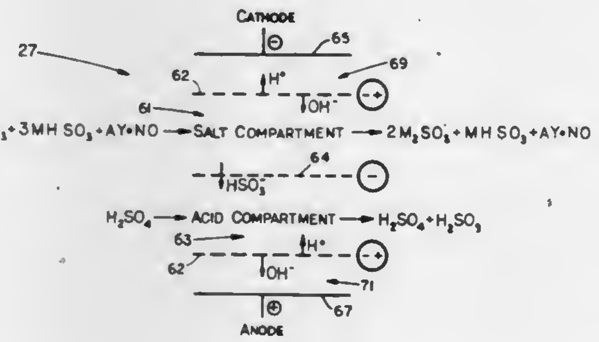
METHOD OF REMOVING OXIDES OF SULFUR AND OXIDES OF NITROGEN FROM EXHAUST GASES

Richard J. Walker, Bethel Park, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 5, 1985, Ser. No. 795,291

Int. Cl.⁴ B01D *13/02*

U.S. Cl. 204—182.4 **18 Claims**



1. A method of removing oxides of sulfur and oxides of nitrogen from an exhaust gas, said method comprising

contacting the exhaust gas with a liquid absorbent including a metal chelate for oxide of nitrogen absorption and a solution of sulfite and bisulfite ions for oxide of sulfur absorption;

regenerating the liquid absorbent capacity for oxide of sulfur gases by electrodialysis in a cell containing at least two bipolar membranes, an anion selective membrane and a plurality of compartments bounded by said membranes wherein the regeneration of absorbent liquid comprises the steps of passing the absorbent liquid through a compartment bounded by a first bipolar membrane and the anion exchange membrane, passing a solution of sulfuric acid through an adjacent compartment bounded by the anion exchange membrane and a second bipolar membrane, imposing a source of electrical potential across the cell sufficient to split water molecules across the bipolar membranes and thereby provide hydroxide ions into the liquid absorbent and hydrogen ions into the sulfuric acid solution while driving bisulfite ions from the liquid absorbent into the sulfuric acid solution to reduce the bisulfite concentration in the liquid absorbent;

stripping oxides of nitrogen from the liquid absorbent into a gas flow to regenerate the capacity of the liquid absorbent for oxide of nitrogen gases; and

recycling the regenerated liquid absorbent into contact with the exhaust gas.

4,615,781

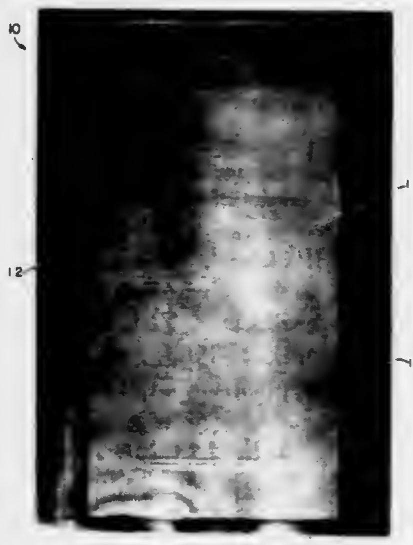
MASK ASSEMBLY HAVING MASK STRESS RELIEVING FEATURE

Robert A. Boudreau, Hampton, N.H., assignor to GTE Products Corporation, Danvers, Mass.

Filed Oct. 23, 1985, Ser. No. 790,589

Int. Cl.⁴ C23C *15/00*

U.S. Cl. 204—192.15 **18 Claims**



1. A mask assembly for patterning thin film structures for a thin film device having at least a substrate, said mask assembly comprising:

a metallic inner shadow mask portion having a predetermined pattern of apertures with a border portion disposed about said apertures;

a metallic outer mask portion located about and coplanar with said inner mask portion; and

means for supporting said inner shadow mask portion while relieving stress in said inner mask portion during deposition of said thin film structures, said supporting means disposed between and in operative contact with said inner and said outer mask portions.

4,615,782

INTERMEDIATE LAYER MATERIAL OF THREE-LAYER RESIST SYSTEM AND METHOD OF FORMING RESIST PATTERN

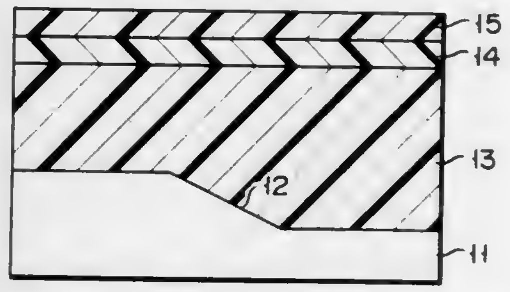
Hideo Namatsu, and Akira Yoshikawa, both of Isehara, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Jun. 6, 1985, Ser. No. 742,100

Claims priority, application Japan, Jun. 11, 1984, 59-119385

Int. Cl.⁴ C23C *15/00*

U.S. Cl. 204—192.36 **13 Claims**



1. A method of forming a resist pattern, comprising the steps of:

forming a bottom resist layer having a planar surface on a semiconductor substrate to be processed;

forming, on said bottom resist layer, an intermediate layer comprising an organopolysiloxane expressed by a general formula

$$(R_3SiO_{\frac{1}{2}})_m.(R_2SiO)_n.(RSiO_{3/2})_p.(SiO_2)_q$$

{where R is independently a hydrocarbon group or an alkoxy group; and m, n, p and q represent composition ratios of respective units and satisfy $m+n+p+q=1$, $1 \geqq m>0$, $1 \geqq n \geqq 0$, $1 \geqq p \geqq 0$, $1 \geqq q \geqq 0$ (where p and q are not simultaneously 0), $m/p \geqq 0.3$ (where $p \neq 0$), and/or $m/q \leqq 1$ (where $q \neq 0$)};

forming a top resist layer of a radiation-sensitive organic polymeric material on said intermediate layer;

forming a predetermined pattern in said top resist layer to obtain a top resist pattern;

etching said intermediate layer using said top resist pattern as a mask to obtain an intermediate layer pattern; and

etching said bottom resist layer using said intermediate layer pattern as a mask to obtain a bottom resist pattern.

4,615,783
ELECTROLYSIS CELL WITH HORIZONTALLY DISPOSED ELECTRODES

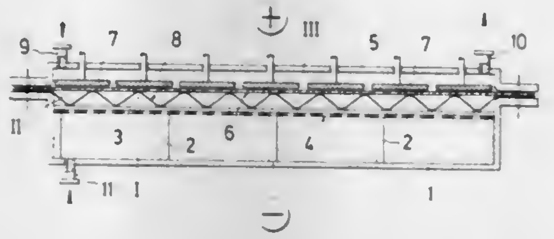
Rudolf Staab, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 11, 1985, Ser. No. 753,915

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1984, 3425862

Int. Cl.^{4} C25B *1/46*

U.S. Cl. 204—252 **3 Claims**



1. An electrolysis cell having horizontally disposed electrodes separated by a membrane and arranged to produce chlorine from an alkali chloride solution, the cell comprising a cell trough, a cell cover, a membrane between the cell trough and cover, a horizontally disposed anode attached to the cell cover and arranged for adjustable spacing relative to the membrane, a horizontally disposed gas diffusion cathode in the cell trough on the side of the membrane opposite the anode, a grating supporting the gas diffusion cathode, support legs extending between the bottom of the cell trough and the grating, and a spacer disposed between the membrane and the gas diffusion cathode.

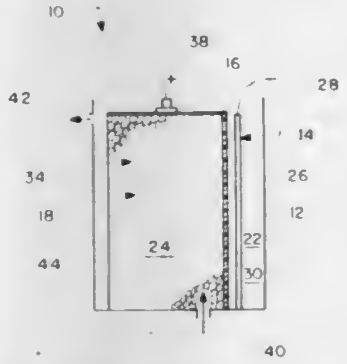
4,615,784
NARROW GAP RETICULATE ELECTRODE ELECTROLYSIS CELL

James J. Stewart, Chardon; Donald W. Abrahamson, and Marilyn J. Harney, both of Painesville, all of Ohio, assignors to Eltech Systems Corporation, Boca Raton, Fla.

Continuation of Ser. No. 386,934, Jun. 10, 1982, abandoned. This application Jun. 5, 1985, Ser. No. 741,491

Int. Cl.^{4} C25B *9/00, 11/03*

U.S. Cl. 204—263 **9 Claims**



1. In an electrolytic cell having anode and cathode compartment defined by a separator, an electrode assembly comprising:

(a) an electrode/current feeder unit having an openly porous, reticulate electrode and a surface uniform current feeder of plated metal, said electrode substantially filling at least one of said compartments and in substantial physical contract with said separator, with the plating for the plated metal forming said electrode while intermetallically binding by electroplate only said current feeder and electrode together into said unit, whereby electrical current is distributed to the metal plate electrode with negligible electrical resistance between the electrode and current feeder; and

(b) distribution means whereby electrolyte can be circulated into the reticulate electrode compartment and out of the electrode compartment.

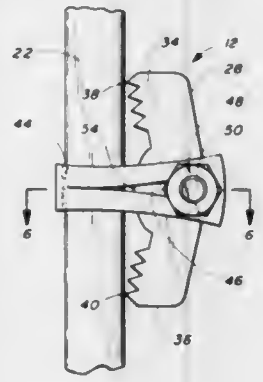
4,615,785
CLIP FOR ANODIZING BATH AND METHOD OF USING THE CLIP

Robert J. Pulido, 24508 Leona Dr., Hayward, Calif. 94542

Filed May 13, 1985, Ser. No. 733,982

Int. Cl.^{4} C25D *17/04*

U.S. Cl. 204—297 W **7 Claims**



1. In a method for securing workpieces to a bar forming part of a framework for suspending the workpieces to a bar forming part of a framework for suspending the workpieces in a bath suitable for anodizing or other electrolytic treatment, the steps comprising

selecting a clip having an elongated body with first and second engagement means formed on one side of the body at opposite ends thereof and means on a central portion of the body adapted for engagement with a resilient flexible band,

positioning the clip with the first and second engagement means against the bar,

wrapping the resilient band around the bar and engaging it with the means on the central portion of the clip body,

selectively pulling one of the first and second engagement means of the clip away from the bar,

inserting a first workpiece therebetween, and

releasing the one engagement means and allowing the flexible band to act through the clip for securing the first workpiece in conductive engagement with the bar.

4,615,786
NON ION SELECTIVE MEMBRANE IN AN EAVF SYSTEM

Joseph B. Culkin, and Adam Koffler, both of Stamford, Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

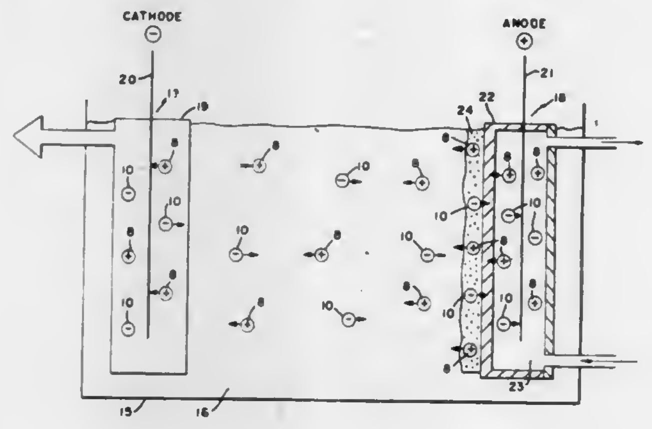
Filed Apr. 18, 1985, Ser. No. 724,859

Int. Cl.^{4} B01D *13/02;* **C02F** *1/46*

U.S. Cl. 204—301 **16 Claims**

1. A treatment system for dewatering a suspension of solids in a carrier liquid by means of an electrically augmented vacuum filter having at least a pair of self-contained mutually opposed electrode structures positioned in a tank containing said suspension of solids, said electrode structures being at least a cathodic electrode structure and an anodic electrode structure having an electric field applied between them while submerged in said suspension of solids, the improvement of which comprises:

disposing a non ion selective membrane which is permeable to both cations and anions about said anodic electrode structure, said non ion selective membrane comprising a substrate and a solid polymeric film, said solid polymeric film comprising a mixture of a cation exchange resin, an anion exchange resin and a binder such that said non ion selective membrane has charge transfer numbers wherein t^+ is in the range of 0.80 to 0.20, and t^- is in the range of 0.80 to 0.20, whereby the combined sum of the values of t^+ and t^- is always equal to 1.



4,615,787
AIR/FUEL RATIO DETECTOR

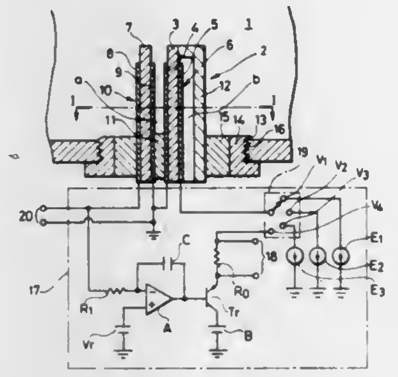
Tetsusyo Yamada, and Shintaro Hirate, both of Aichi, Japan, assignors to Mitsubishi Denki NGK Spark Plug Co. Ltd., Aichi and Kabushiki Kaisha, Tokyo, both of, Japan

Filed Dec. 13, 1984, Ser. No. 681,333

Claims priority, application Japan, Dec. 15, 1983, 58-237621

Int. Cl.^{4} G01N *27/56*

U.S. Cl. 204—406 **8 Claims**



1. In a method for detecting the air/fuel ratio of exhaust gas with a detector comprising an electrochemical cell sensor element and an oxygen pump element, each element being in the form of an oxygen-ion-conductive solid electrolyte having a porous electrode formed on both sides thereof, said electrochemical cell sensor element being disposed to face said pump element with a small gap therebetween, exposed to the exhaust gas and an air compartment which is open to the atmosphere being formed on that side of said pump element which is opposite to said small gap, an electric current being caused to flow through said oxygen pump element so that oxygen is pumped into said small gap from the air compartment or in the opposite direction, thereby producing an electromotive force in said sensor element, said electromotive force and the current flowing through said pump element being used as a basis for detecting the air/fuel ratio of the exhaust gas, the improvement wherein a sufficient amount of current to pump oxygen from said air compartment into said small gap is caused to flow through said oxygen pump element so as to produce an abrupt change in the electromotive force of said sensor element at a stoichiometric air/fuel ratio, the electromotive force of said sensor element being used to determine whether a present air/fuel ratio is in the fuel-rich or fuel-lean region, thereby detecting the air-fuel ratio of the exhaust gas even within a small transition region including the stoichiometric ratio.

4,615,788
ION SELECTIVE ELECTRODE AND METHOD OF PREPARATION THEREOF

Osamu Seshimoto, and Mitsuharu Nirasawa, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

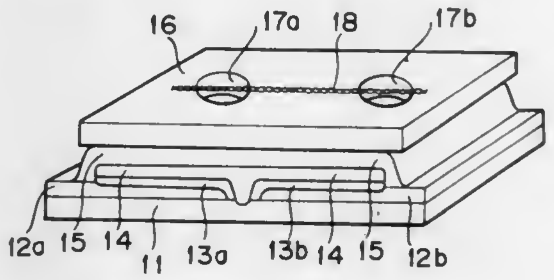
Filed Jun. 19, 1985, Ser. No. 746,985

Claims priority, application Japan, Jun. 20, 1984, 59-128239; Jun. 20, 1984, 59-128241

The portion of the term of this patent subsequent to Feb. 18, 2003, has been disclaimed.

Int. Cl.^{4} G01N *27/30;* **B05D** *5/12*

U.S. Cl. 204—418 **9 Claims**



1. An integral ion selective electrode comprising in the following order:

(I) a support;

(II) an electroconductive metal layer;

(III) a layer of a water-insoluble salt of said metal;

(IV) an electrolyte layer which comprises electrolyte salts of a sodium ion with the same anion as the anion of the water-insoluble salt, said electrolyte salt having a mean crystal size of not more than 8 μm, and said electrolyte layer being substantially free from a binder; and

(V) an ion selective layer selected from the group consisting of a potassium ion selective layer, a halogen ion selective layer and a carbonate ion selective layer.

6. A process for the preparation of an integral ion selective electrode comprising in the following order (I) a support, (II) an electroconductive metal layer, (III) a layer of a water-insoluble salt of said metal, (IV) an electrolyte layer which comprises electrolyte salts of a sodium ion with the same anion as the anion of the water-insoluble salt, said electrolyte salt having a mean crystal size of not more than 8 μm, and said electrolyte layer being substantially free from a binder, and (V) an ion selective layer selected from the group consisting of a potassium ion selective layer, a halogen ion selective layer and a carbonate ion selective layer, which is characterized in that the electrolyte layer is formed by coating a solution of said electrolyte salts in a mixture of water and an organic solvent on the layer of a water-insoluble salt and drying the thus coated layer, thereby producing a layer of crystalline electrolyte having a mean crystal size of not more than 8 μm over the layer of a water-insoluble salt.

4,615,789
HYDROPROCESSING REACTORS AND METHODS

Alan G. Bridge, El Cerrito, and Bruce E. Stangeland, Berkeley, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Aug. 8, 1984, Ser. No. 638,810

Int. Cl.^{4} C10G *45/00*

U.S. Cl. 208—143 **15 Claims**

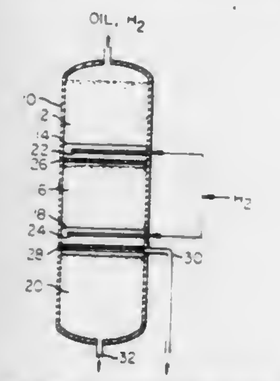
1. In a downflow hydrocarbon hydroprocessing reactor containing a plurality of vertically spaced catalyst beds, the improvement which comprises:

means for increasing the contacting time between hydrocarbon vapor and the catalyst including;

a liquid/vapor separator placed between two of the catalyst beds, the separator comprising a bypass means so arranged that liquid separated by the separator will enter the bypass means and not contact the catalyst bed or beds below the separator while the vapor separated by the separator will pass through the catalyst bed or beds below the separator.

7. In a method for hydroprocessing hydrocarbons by passing them downwardly through a reactor containing a plurality of vertically spaced catalyst beds, the improvement which comprises:

increasing the contacting time between hydrocarbon vapor and the catalyst by;



separating the downflowing hydrocarbons into liquid and vapor phases by a liquid/vapor separator positioned between two of the catalyst beds, causing the vapor phase to pass through the catalyst bed or beds below the separator, and causing the liquid phase to bypass the catalyst bed or beds below the separator so that only the vapor phase is hydroprocessed by the catalyst bed or beds below the separator.

4,615,790
PREPARATION OF SYNTHETIC HYDROCARBON LUBRICANTS

Thomas H. Johnson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 28, 1985, Ser. No. 791,660
Int. Cl.^{4} C10G *71/00;* C07C *2/24*

U.S. Cl. 208—18 **6 Claims**

1. A process for preparing synthetic lubricating materials which process comprises:

(a) reacting
 (i) at least a portion of a reaction product of the liquid phase oligomerization of propylene, butylene or mixtures thereof containing a C_6 olefin component, a C_8 olefin component or mixtures thereof, which reaction product was formed by reacting propylene, butylene or mixtures thereof with a catalyst prepared by reacting a nickel compound with a hydrocarbyl aluminum halide, with
 (ii) a linear olefin reactant having an average carbon number ranging from about 10 to about 18 in the presence of a catalyst comprising pentavalent tantalum, halogen, oxygen and an inorganic oxide substrate wherein at least one valence of tantalum is bound to oxygen which is bound to the substrate, at least one valence at the tantalum is bound to halogen and the remaining tantalum valences are bound to halogen, oxygen or mixtures thereof which may or may not be bound to the substrate,

(b) separating from the reaction mixture of (a) the hydrocarbons which distill at a temperature above about 660° F. (316° C.), and

(c) hydrogenating the reaction product of (b) by contact with hydrogen with or without a catalyst at a temperature ranging from about 25° C. to about 300° C.

4,615,791
VISBREAKING PROCESS

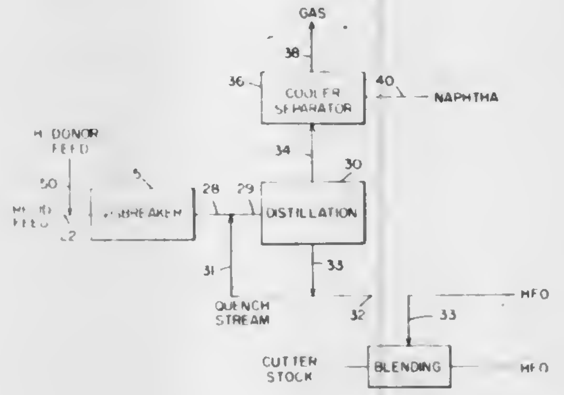
Byung C. Choi; Benjamin Gross, both of Cherry Hill, and Madhava Malladi, W. Deptford, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 688,083, Dec. 31, 1984, abandoned, which is a continuation-in-part of Ser. No. 519,625, Aug. 1, 1983, abandoned, and a continuation-in-part of Ser. No. 519,625,. This application Sep. 3, 1985, Ser. No. 771,739

Claims priority, application European Pat. Off., Jul. 26, 1984, 84/305082.4

Int. Cl.^{4} C10G *47/32*

U.S. Cl. 208—107 **35 Claims**



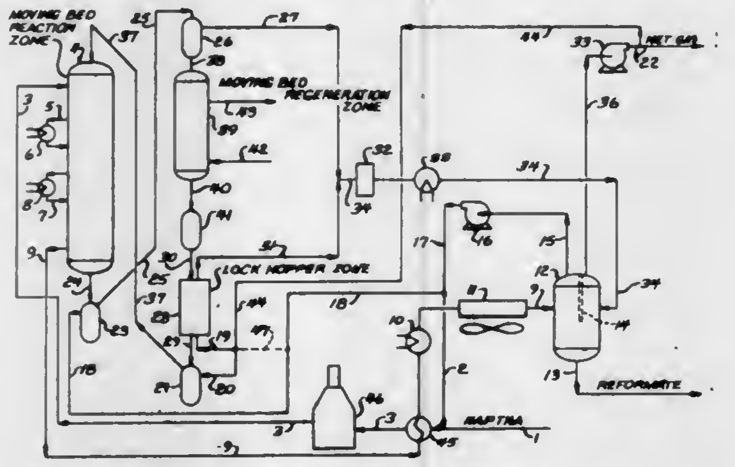
1. A process for visbreaking a heavy petroleum residual oil in which the oil is subjected to visbreaking at an equivalent reaction time, ERT, of less than or equal to about 800 seconds at 800° F. in the absence of added free hydrogen and in the presence of about 0.1 to 50 weight percent of a highly aromatic hydrogen donor material characterized by its hydrogen content distribution, in H_{Ar} and H_{alpha} are each at least 20 percent of the total hydrogen content of the donor, to produce a visbroken oil product having reduced viscosity.

4,615,792
HYDROGEN CIRCULATION FOR MOVING BED CATALYST TRANSFER SYSTEMS

Arthur R. Greenwood, Niles, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Apr. 25, 1985, Ser. No. 727,152
Int. Cl.^{4} C10G *35/06*

U.S. Cl. 208—134 **16 Claims**



1. A moving bed hydrocarbon conversion process which comprises the steps of:

(a) passing particulate catalyst downward through a moving bed reaction zone wherein catalyst is contacted with hydrocarbons at hydrocarbon conversion conditions and producing spent catalyst and a reaction zone effluent stream comprising hydrocarbons and hydrogen;

(b) transporting spent catalyst into a regeneration zone wherein spent catalyst is contacted with an oxygen-containing gas at regeneration conditions and producing regenerated catalyst;

(c) passing the regenerated catalyst through a catalyst handling zone and then into the reaction zone;

(d) separating the reaction zone effluent stream, by cooling and partial condensation, into a liquid hydrocarbon phase and hydrogen-rich vapor phase which are separated in a vapor-liquid separation vessel which has a gas receiving volume located in the upper portion of the vessel, which volume is partitioned into at least first and second gas collection chambers by a vertical partition, with the vapor phase portion of the reaction zone effluent stream entering the separation vessel via the first gas collection chamber;

(e) withdrawing the liquid hydrocarbon phase from the separation vessel as a product stream;

(f) passing hydrogen-rich gas withdrawn from the first gas collection chamber of said separation vessel into the reaction zone as a recycle gas stream;

(g) passing hydrogen-rich gas withdrawn from said separation vessel through the catalyst handling zone wherein the gas contacts regenerated catalyst, and producing a catalyst handing zone gas stream.

(h) passing the catalyst handling zone gas stream into the second gas collection chamber of said vessel; and,

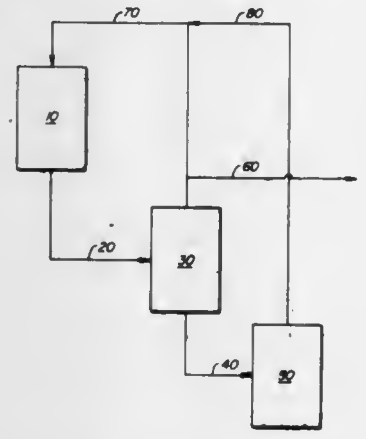
(i) withdrawing a net off-gas stream from the second gas collection chamber of said vessel, and removing the net off-gas stream from the process.

4,615,793
HIGH DENSITY RECYCLE GAS FOR REFORMING PROCESS

Lawrence W. Jossens, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 13, 1984, Ser. No. 579,742
Int. Cl.^{4} C10G *35/06*

U.S. Cl. 208—138 **18 Claims**



1. A reforming process comprising:

(a) contacting a hydrocarbon feed with a monofunctional, reforming catalyst, comprising a large pore zeolite and a Group VIII metal, in a reaction vessel to produce a reformate;

(b) stripping a first fraction from said reformate in a first separator;

(c) stripping a second fraction from said stripped reformate in a second separator; and

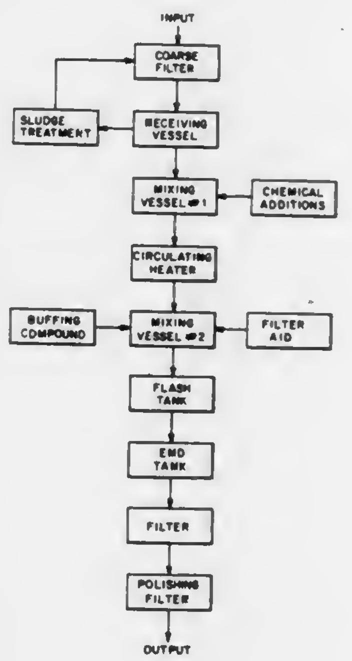
(d) recycling a portion of said first fraction and substantially all of said second fraction to said reaction vessel as a heat carrier so that said first and second fractions may assist in maintaining the heat within the reaction vessel above the point at which the reaction will be extinguished.

4,615,794
METHOD OF REMOVING RADIOACTIVE WASTE FROM OIL

Roger L. Belanger, P.O. Box 187, White Horse Beach, Mass. 02381

Filed Aug. 20, 1984, Ser. No. 642,400
Int. Cl.^{4} C10M *175/00*

U.S. Cl. 208—181 **10 Claims**



1. A method of removing particulates, radioactive contaminants, and moisture from oil, which comprises the following steps:

straining out said particulates by passing the oil through a coarse filter screen to a receiving vessel;

forming an upper stratum of oil and a lower stratum of sludge, consisting of mud, oil, particulates, and moisture, by heating the upper two-thirds of the receiving vessel to a temperature range of 150° to 200° F.;

skimming off the stratum of oil from the receiving vessel;

transferring the sludge from the receiving vessel to a container;

extracting additional oil from the sludge by heating the container to a temperature range of 212° to 225° F. for three to five hours and then cooling the container to approximately 100° F.;

transferring the additional separated oil to the receiving vessel;

conveying the oil skimmed from the receiving vessel to a mixing vessel;

adding an effective amount of Calcium Hypochlorite crystals containing 65% free Chlorine to the mixing vessel to initiate salt formation with the radioactive contaminants;

mixing the contents of the mixing vessel for at least ten minutes;

transferring the mixture from the mixing vessel to a circulating heater;

heating the mixture to 300° F.;

outputting the mixture from the circulating heater to a second mixing vessel;

heating the contents of the second mixing vessel to 375° F.;

adding an effective amount of a carbonated pH buffering compound to the second mixing vessel to convert said radioactive contaminants into solid salts;

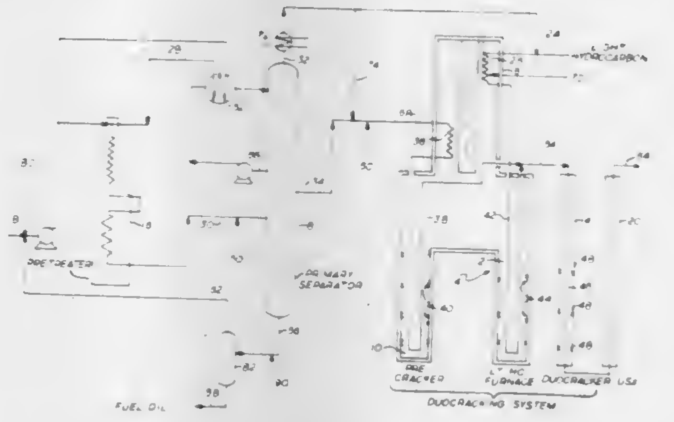
removing moisture from the oil; and

filtering from the oil, the solid radioactive contaminant-salts and residual particulate matter.

4,615,795
INTEGRATED HEAVY OIL PYROLYSIS PROCESS

Herman N. Woebcke, Barnstable; Swami Narayanan, Westwood, both of Mass., and Axel R. Johnson, North Babylon, N.Y., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 658,474, Oct. 9, 1984. This application Dec. 20, 1984, Ser. No. 684,009
Int. Cl.⁴ C10G *51/02, 9/14*
U.S. Cl. 208—72 **25 Claims**

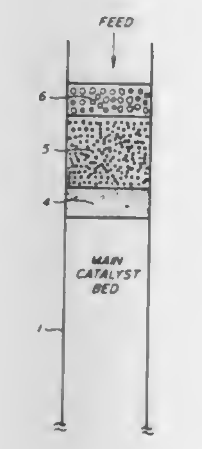


1. A process for converging heavy hydrocarbon feedstocks to olefins comprising the steps of:
(a) cracking in a pre-pyrolysis cracker the heavy hydrocarbon feedstock at pressures above 150 psig; temperatures above 850° F. and residence times of 0.5 to 3 minutes;
(b) subjecting the cracked feedstock to a pressure drop;
(c) separating the cracked feedstock into a lighter hydrocarbon fraction and a heavier hydrocarbon fraction; and
(d) thermally cracking the lighter hydrocarbon fraction to produce olefins.

4,615,796
METHOD FOR CONTACTING SOLIDS-CONTAINING FEEDS IN A LAYERED BED REACTOR

David C. Kramer, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

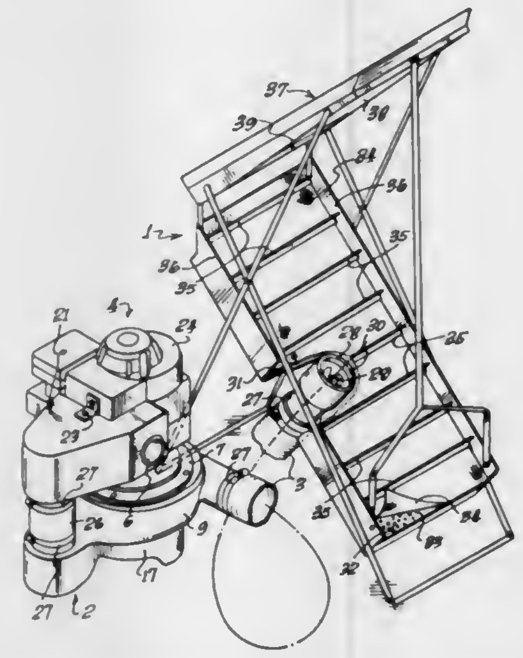
Continuation-in-part of Ser. No. 547,162, Oct. 31, 1983, abandoned, which is a continuation of Ser. No. 316,387, Oct. 29, 1981, abandoned. This application Jan. 20, 1984, Ser. No. 572,483
Int. Cl.⁴ B01J *8/02;* **C07C** *3/34*
U.S. Cl. 208—146 **14 Claims**



1. A process for contacting a fluid hydrocarbon feed containing suspended solids comprising passing said feed through a packed bed reactor containing catalyst particles of about $\frac{1}{8}$ inch diameter or less comprising:
(a) a first packed bed of hydrothermally stable particles in fluid communication with a feed inlet to said reactor, said first packed bed extending more than 3 to 18 inches in the direction of flow and comprising predominantly particles at least about $\frac{3}{8}$ inch in diameter;
(b) a second packed bed of hydrothermally stable particles in fluid communication with said first packed bed and downstream of said first packed bed, said second packed bed extending at least 12 to 18 inches in the direction of flow and comprising predominantly particles having diameters within the range of 3/16 to 5/16 inch and smaller than the average diameter of particles in said first bed; and
(c) a third packed bed of hydrothermally stable particles in fluid communication with said second packed bed in downstream of said second packed bed, said third packed bed comprising predominantly particles having diameters below $\frac{1}{8}$ inch wherein the packed bed reactor is maintained at elevated pressures of up to about 3,500 psig and elevated temperatures of up to 1500° F.

4,615,797
DRY WASHER WITH HOT AIR SUPPLY

Wayne G. Keene, 9330 Corbin Ave., Northridge, Calif. 91324
Filed Jun. 18, 1985, Ser. No. 649,931
Int. Cl.⁴ B03C *7/04;* **B07B** *9/00*
U.S. Cl. 209—131 **4 Claims**



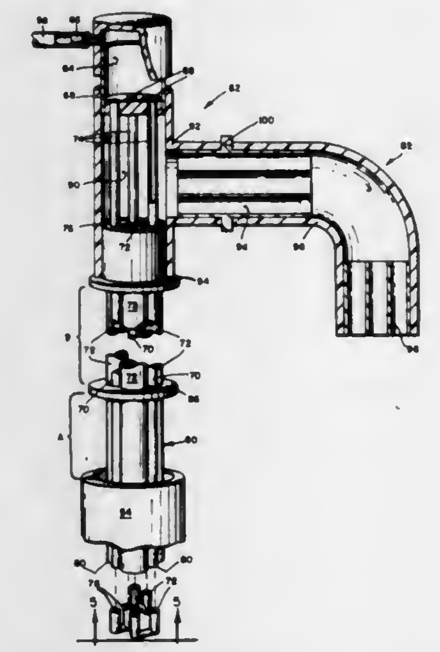
1. In a dry washer assembly train for the electrostatic recovery of values from particles of ore deposited at the elevated end of an inclined, oscillating, rectangular riffle table causing said particles to slowly tumble downwardly thereover and cascade over a plurality of transverse, horizontal riffles, said dry washer assembly train consisting of:
(a) an air blower powered by an air-cooled internal combustion engine having a vertical side wall identified as the external spark plug face, a reel housing on top of said engine enclosing the upper portion thereof, said spark plug face having a finned surface area for the dissipation of waste heat of combustion, said engine having an exhaust muffler, said blower having an inlet and an outlet;
(b) a densely perforated, inclined, rectangular riffle table core bordered by walls at said elevated end and along both sides, said perforated core being the ceiling of an air plenum chamber, said chamber being provided with an air inlet, said core with said three walls and said air plenum chamber comprising a unitary body assembly;
(c) a layer of densely woven fabric of synthetic dielectric fibers overlying said perforated riffle table core, said transverse horizontal riffles being adapted simultaneously to engage the opposed side walls and to secure said layer of fabric to said riffle table core;
(d) an air-driven oscillator to provide orbital motion coplanar with said layer of fabric, said oscillator having an air outlet adapted for rigid clamped engagement with said air plenum chamber inlet and having an air inlet;
(e) a flexible first air conduit of dielectric material connected at one end to said air blower outlet and at the other end to said oscillator inlet; and
(f) means to support said riffle table above ground and at the desired angle of inclination;

the improvement consisting of providing in combination:
(g) a heat collector shroud bolted to said reel housing, enclosing said finned surface area and a major portion of said exhaust muffler, said heat collector shroud having an air outlet in the bottom of said heat collector shroud and an air inlet; and
(h) a blower case with outlet connected mouth to mouth with said inlet of said air blower, said blower case having an inlet connected to said outlet in the bottom of said heat collector shroud outlet by means of a second air conduit of dielectric material;

whereby, in continuous operation of said engine, the ambient air inspired at said inlet of said heat collector shroud is heated in its passage therethrough and, in completing its passage through each component unit along said dry washer assembly train in succession, arrives in said air plenum chamber at about 50° F. above the temperature of said ambient air under steady state conditions.

4,615,798
AQUARIUM FILTER

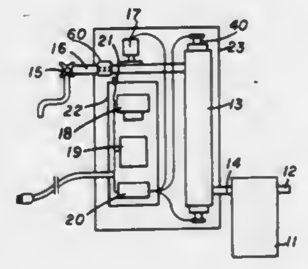
Harold S. O'Dougherty, 534 Dryad Rd., Santa Monica, Calif. 90402
Filed Mar. 27, 1985, Ser. No. 716,453
Int. Cl.⁴ E04H *3/16, 3/20*
U.S. Cl. 210—169 **8 Claims**



1. An aquarium filter operatively adapted for association with an aquarium for continuously removing water from said aquarium, filtering said water and returning said water to said aquarium comprising:
(a) a housing with an opening in the bottom thereof, said housing provided with means for attachment thereof to the outside of said aquarium along one side thereof in cooperative relationship;
(b) removable support means maintained within said aquarium filter for supporting filtering material for filtering out particulate matter and the like from said water, said support means including means defining a chamber in the vicinity of said opening, said chamber configured to receive only filtered water;
(c) at least one inverted J-shaped tube cooperatively associated with said aquarium and said aquarium filter and disposed therebetween in interconnective relationship, said J-shaped tube adapted for introducing said water from said aquarium into said aquarium filter, said J-shaped tube having an inlet end and a discharge end, said inlet end submerged in said aquarium and said discharge end terminating in said aquarium filter, with means provided on said J-shaped tube for providing a syphon action to maintain flow of said water from said aquarium into said aquarium filter;
(d) a plurality of vertically disposed inner tubes cooperatively associated with said aquarium filter for collecting filtered water and returning said filtered water to said aquarium, said plurality of inner tubes comprising a first set of tubes adapted to convey air and a second set of tubes adapted to convey a mixture of air and said filtered water, said plurality of inner tubes extending from above said aquarium filter to below said aquarium filter, passing through said opening in said bottom of said aquarium filter and further including:
  (1) an air distributor wherein the top of said air conveying tubes terminate, for introducing air under pressure through a controlled orifice to said first set of inner tubes,
  (2) a vertically disposed outer tube mounted in said opening in said bottom of said aquarium filter in sealing relationship and extending downwardly therefrom, surrounding said plurality of inner tubes and provided with means inside said aquarium filter and near said bottom thereof to permit filtered water to enter said outer tube,
  (3) a collection chamber wherein said outer tube and said plurality of inner tubes terminate to collect said filtered water in said outer tube and to permit egress of same into said second set of inner tubes,
  (4) means in said collection chamber for communicating between said first set of inner tubes and said second set of inner tubes to entrain said filtered water by said air, and
  (5) a discharge chamber beneath said air distributor for collecting the mixture of said air and said filtered water, said discharge chamber provided with a discharge means for returning said mixture of said air and said filtered water into said aquarium; and
(e) noise suppression means including a plurality of inner tubes mounted in said discharge means for suppressing any noise generated by said mixture of said air and said filtered water during its return to said aquarium.

4,615,799
WATER PURIFICATION AND STERILIZATION SYSTEM

Jorgen G. Mortensen, Kowloon, Hong Kong, assignor to J. Mortensen & Company Limited, Kowloon, Hong Kong
Filed May 1, 1985, Ser. No. 729,393
Int. Cl.⁴ C02F *1/32*
U.S. Cl. 210—117 **2 Claims**



1. In combination with a pressurized water system, a water purifier comprising:
a filter canister comprising a filter inlet, and containing a replaceable filter element, in which water under pressure can be received, through said filter inlet, filtered through said filter element and expelled;
an ultraviolet irradiation chamber for receiving water expelled from said canister;
conduit means for fluidly connecting said filter canister and

ultraviolet irradiation chamber, said received water being exposed to a level of ultraviolet radiation sufficient to kill essentially all living organisms within said water prior to said water being expelled from said chamber;

said ultraviolet irradiation chamber of a generally annular shape, consisting of:
an outer cylindrical wall;
an inner cylindrical wall concentric to said outer cylindrical wall, said inner wall being transparent to ultraviolet radiation;
a tubular source of ultraviolet radiation mounted concentrically with respect to said outer and inner cylindrical walls;
water inlet near one end of said annular chamber;
a water outlet near the other end of said annular chamber; and
means for sealing the ends of said annular chamber consisting of:
a circular end cap concentrically and sealingly bonded at each end of said outer cylindrical wall, each end cap having a hole in its center, and each end cap being mounted orthogonally with respect to the cylindrical axes of said inner and outer cylindrical walls;
an exteriorly-threaded mounting nipple having an interior diameter equal to the hole in the center of each end cap, each nipple sealingly bonded to its respective end cap and projecting longitudinally outward from its respective chamber end, said inner cylindrical wall being slideably installed through both nipples such that the ends of said inner wall extend outwardly from said nipples;
an O-ring installed circumferentially around the gap between said inner cylindrical wall and said mounting nipple at each end of said chamber; and a nut installed on each nipple, which, when tightened, compress their respective O-rings, forcing said O-rings deeper into said respective gaps, creating a water-tight seal at each end of the chamber between the outer surface of said inner cylindrical wall and the interior cylindrical surface of the respective nipple; and

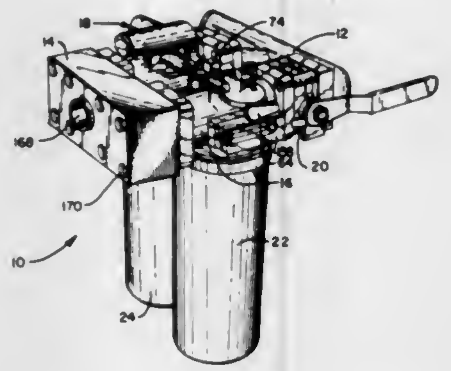
means for stopping the flow of water through said water outlet line when ultraviolet radiation is not present in said irradiation chamber, said means for stopping comprising a normally-closed solenoid-actuated valve interposed within said water outlet line, a single-pole relay having a coil connected in series with the tubular source, said solenoid-actuated valve receiving current for opening said water outlet line when current is flowing through said tubular source.

4,615,800
DUPLEX FILTER APPARATUS

Jack Stifelman; Patrick Fisher, both of Bloomington, and John F. Connelly, Minnetonka, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Jan. 14, 1985, Ser. No. 690,871
Int. Cl.^{4} B01B *29/36*
U.S. Cl. 210—132 **5 Claims**

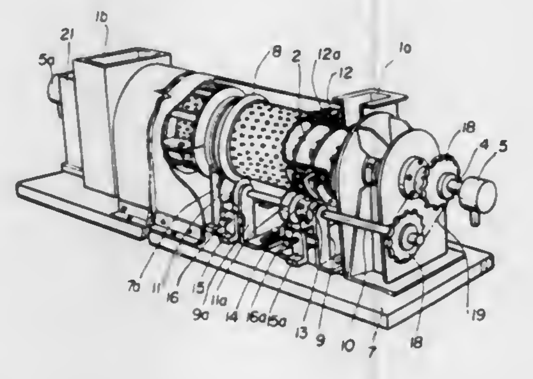
1. Filter apparatus having a main inlet and a main outlet, said apparatus comprising:
primary and secondary filiters in parallel between said main inlet and said main outlet;
first and second means for checking reverse fluid flow into said primary and secondary filters, respectively;
a manual shut-off valve between said primary filter and said main inlet;
means for regulating fluid flow between said primary and secondary filters as a function of differential pressure across said primary filter,
said regulating means including a main bypass valve, said main bypass valve including means for sensing differential pressure across said primary filter from upstream of said shut-off valve to downstream of said first checking means, said main bypass valve further including means for keeping said valve closed until a predetermined level of differential pressure is sensed by said sensing means; and
a secondary bypass valve, said secondary bypass valve including second means for sensing differential pressure across said secondary filter, said secondary bypass valve further including second means for keeping said secondary bypass valve closed until a predetermined level of differential pressure across said secondary filter is sensed by said second sensing means, said secondary bypass valve being connected to divert flow from said secondary filter to a reservoir when the differential pressure across said secondary filter reaches the predetermined level.



4,615,801
ROTARY FILTRATION MEANS IN THE FILTH CONDENSATION-DEHYDRATION APPARATUS

Chung Y. Lee, 375-21, Daebang-dong, Dongjaku-ku, Seoul, Rep. of Korea

Filed Oct. 29, 1984, Ser. No. 666,245
Int. Cl.^{4} B01D *33/02*
U.S. Cl. 210—185 **7 Claims**

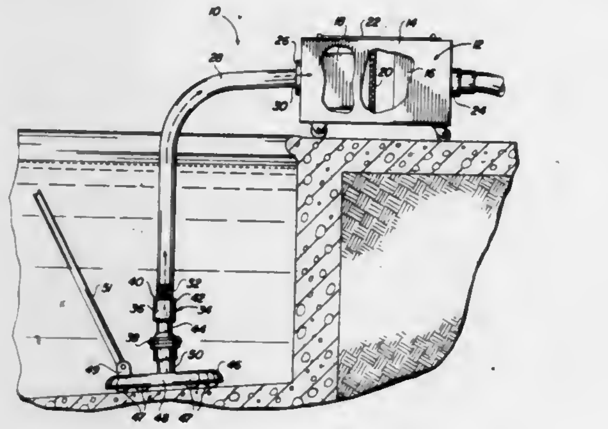


1. A rotary filtration apparatus for the treatment of liquid-containing waste material which comprises
a tapered heating cylinder,
means for introducing a hot vapor into the tapered heating cylinder,
a filtration cylinder rotatably and coaxially disposed around the inlet end portion of the tapered heating cylinder,
a fixed filtration cylinder coaxially disposed around the outlet end portion of the tapered heating cylinder,
screw conveying means rotatably and coaxially disposed within the rotatable and fixed filtration cylinders,
means for spraying the surface of the rotatable filtration cylinder, and
movable support members adapted to engage with and support the rotatable filtration cylinder, whereby the waste product can be easily filtrated and dehydrated through the coaction between the screw cylinder and the filtration cylinder, the said waste product formed around the filtration cylinder can be removed by the pressure of the spraying means, and the gap between the cylinder and screw due to operational defacement can be adjusted.

4,615,802
POOL VACUUM CLEANING SYSTEM

Theodore L. Harbaugh, 8878 Moorcroft Ave., Canoga Park, Calif. 91304

Filed Oct. 31, 1984, Ser. No. 666,776
Int. Cl.^{4} E04H *3/16, 3/20*
U.S. Cl. 210—169 **18 Claims**

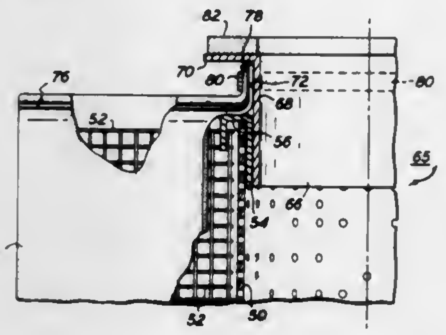


1. In a pool vacuum cleaning system comprising a vacuum generating device, a weighted vacuum head and a flexible conduit connecting said vacuum generating device to said vacuum head, the improvement comprising:
(a) a universal ball joint connector assembly having its upper portion secured to said conduit and its lower portion connected to said vacuum head,
(b) said ball joint connector assembly having means defining a passageway extending therethrough to enable water to pass from said vacuum head, through said passageway to said conduit,
(c) whereby movement of said ball joint connector assembly enables the conduit to automatically position itself with respect to said vacuum head so as to minimize bending stresses developed in said conduit while using the pool vacuum cleaning device.

4,615,803
FLUID FILTER

Frederick E. Tarala, Pittsford, N.Y., assignor to North American Filter Corporation, Newark, N.Y.

Filed Oct. 30, 1984, Ser. No. 666,503
Int. Cl.^{4} B01D *27/04, 27/06*
U.S. Cl. 210—455 **13 Claims**

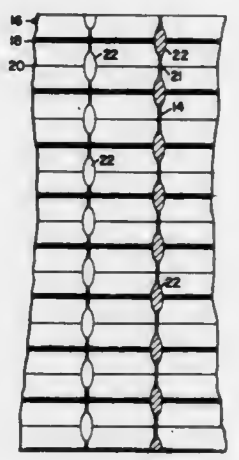


1. A filter medium for a fluid filter element comprising;
a continuous elongated web of filter material having
a plurality of spaced-apart tabs along at least one edge of said web;
at least first and second parallel seams along said at least one edge forming a plurality of pockets;
at least one further seam joining adjacent edges of adjacent ones of said tabs, said further seam intersecting at least one of said first and second parallel seams, whereby said filter element includes;
a generally tubular central core having a neck portion at one end of said core and a plurality of pockets extending radially outwardly from said core.

4,615,804
HIGH DENSITY PLEAT SPACING AND SCORING TOOL AND FILTER MADE THEREWITH

Mervin E. Wright, Apple Valley, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Aug. 30, 1984, Ser. No. 646,705
Int. Cl.^{4} B01D *27/06*
U.S. Cl. 210—493.1 **7 Claims**

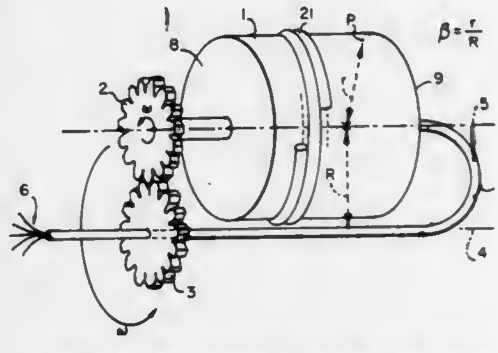


1. A pleated filter assembly comprising:
a corrugated filter media having longitudinally extending corrugations cooperating to define a plurality of parallel alternating peaks and valleys spaced apart by a predetermined spacing;
a pattern scored into said media with said pattern including a pleat fold line extending normal to said peaks and valleys;
said pattern further including a plurality of flats disposed along said pleat fold line with said flats having a first dimension normal to said line and greater than a thickness of said line;
said flats disposed along said line with each of said flats disposed upon a peak of a corrugation of said filter media; and
each of said flats having a second dimension normal to said corrugations and less than a distance between valleys on opposite sides of a corrugation peak on which said flat is disposed.

4,615,805
METHOD FOR CONTINUOUS COUNTERCURRENT FOAM SEPARATION

Yoichiro Ito, Bethesda, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Sep. 13, 1985, Ser. No. 776,044
Int. Cl.^{4} B01D *15/08*
U.S. Cl. 210—657 **4 Claims**



1. A method of fast foam separation from a sample with foam affinity using centrifuge principles comprising the steps of:
continuously extraction enriching, stripping and separating solute and particles of samples with affinity to foam producing carrier or collector molecule, in a dual CCC system,
providing a dual countercurrent flow system including a

multi-layer coiled column wrapped about a cylindrical column holder, said column holder being mounted on a rotary frame for rotation about its central longitudinal axis;

introducing a non-reactive gaseous fluid at one end of said coiled column, said coiled column having two ends and a middle;

introducing a liquid at the other end of said coiled column;

rotating said column holder about said central longitudinal axis while simultaneously rotating said coiled column about a second longitudinal axis parallel to said central longitudinal axis to form a foam phase moving toward one end of said coiled column and a liquid phase moving toward the other end of said coiled column;

introducing a sample liquid into said coiled column after equilibrium is reached between foam phase and liquid phase in said coiled column, said equilibrium being the state where generated foam existing in said coiled column is separated from liquid of said coiled column;

rotating said coiled column having said sample therein about said central longitudinal axis while simultaneously rotating said coiled column about said second longitudinal axis to create foam phase and liquid phase from said sample;

collecting said elements in at least one of said coiled column said coiled column ends.

4,615,806

REMOVAL OF IODIDE COMPOUNDS FROM NON-AQUEOUS ORGANIC MEDIA

Charles B. Hilton, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Mar. 7, 1985, Ser. No. 708,992

Int. Cl.^{4} B01D *15/04*

U.S. Cl. 210—690 **7 Claims**

1. A method for removing iodide compounds from a non-aqueous organic medium comprising contacting the medium containing said iodide compounds with an ion exchange resin characterized in that the resin is a macroreticulated strong-acid cation exchanged resin which is stable in the organic medium and has at least one percent of its active sites converted to the silver or mercury form.

4,615,807

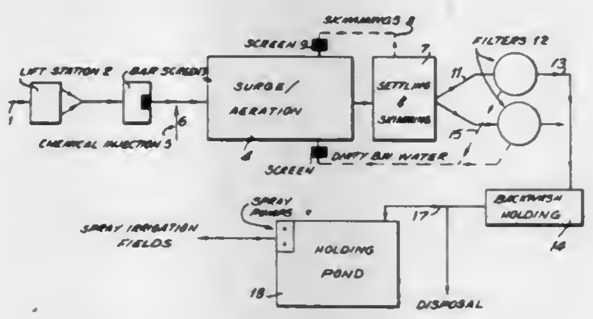
METHOD FOR WASTEWATER TREATMENT

Frederick T. Haines, Boca Raton, and David Forte, Plantation, both of Fla., assignors to United States Environmental Resources, Corp., Port Everglades, Fla.

Filed Jul. 23, 1985, Ser. No. 757,971

Int. Cl.^{4} C02F *1/24, 1/50*

U.S. Cl. 210—704 **12 Claims**



1. A method for treating domestic wastewater containing biodegradable organic material and microorganisms, said method comprising as an alternative to treatment with activated sludge:

mixing into said wastewater a disinfectant/bactericidal compositign comprising compounds selected from the group consisting of quarternary organic ammonium halides or mixtures thereof and an organotin compound in an amount and for a period of time sufficient to disinfect/-sterilize said wastewater, said composition having a ratio of quaternary ammonium halide to organotin of at least about 99 to 1;

aerating said sterilized wastewater for a time sufficient to lower or satisfy its biochemical oxygen demand;

allowing solid particles contained in said wastewater to settle or float;

removing said particles from said wastewater; and

passing said wastewater through filtering means to clarify it from colloidal impurities.

4,615,808

ACIDIFICATION OF STEAM CONDENSATE FOR INCOMPATIBILITY CONTROL DURING MIXING WITH GEOTHERMAL BRINE

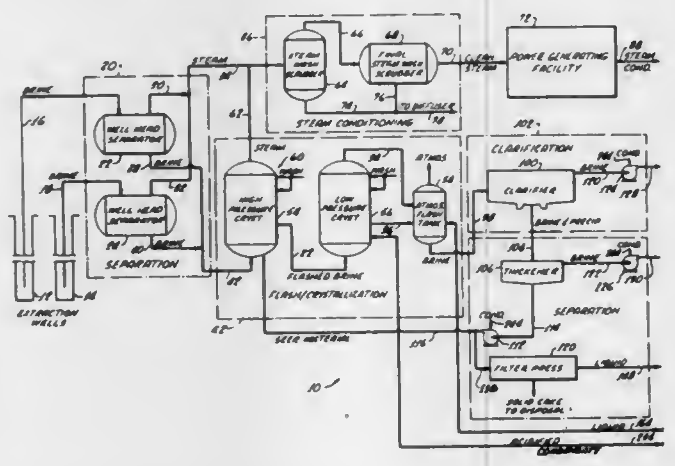
Darrell L. Gallup, Ontario, and John L. Featherstone, El Centro, both of Calif., assignors to Union Oil Co. of California, Los Angeles; Mono Power Co., Rosemead and Southern Pacific Land Co., San Francisco, all of, Calif.

Continuation-in-part of Ser. No. 567,254, Dec. 30, 1983, Pat. No. 4,522,728. This application Mar. 8, 1985, Ser. No. 709,643

The portion of the term of this patent subsequent to Nov. 12, 2002, has been disclaimed.

Int. Cl.^{4} C02F *1/52*

U.S. Cl. 210—714 **21 Claims**



1. A method of combining condensate of geothermally derived steam with a flow of geothermal liquid containing water and impurities, said geothermal liquid having an acidic pH, said condensate having a basic pH and containing water and volatile impurities, the impurities in said geothermal liquid and said condensate being such that, if the liquid and condensate are combined without treatment, suspended particulate matter would form in the mixture as a result of reaction between said geothermal liquid impurities and said condensate volatile impurities, said method comprising reducing the formation of said suspended particulate matter by the steps of:

(a) treating the steam condensate to reduce the pH thereof to no more than about 7; and

(b) combining the acidified condensate with the flow of geothermal liquid.

4,615,809

METHOD FOR STABILIZATION OF SLUDGE

Gayle N. King, Terre Haute, Ind., assignor to Velsicol Chemical Corporation, Chicago, Ill.

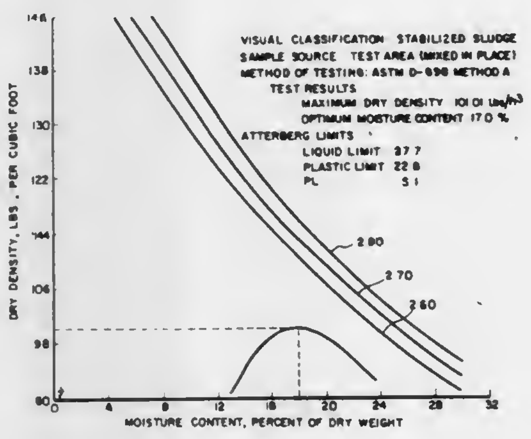
Continuation-in-part of Ser. No. 504,804, Jun. 16, 1983, abandoned. This application May 14, 1985, Ser. No. 734,021

Int. Cl.^{4} C02F *11/14*

U.S. Cl. 210—751 **15 Claims**

1. A method for the stabilization of organic sludge comprising waste resulting from industrial operations to form a stabilized sludge composition, which method consists essentially of mixing the sludge with about 20 to about 75% fly ash, about 11 to about 54% calcium sulfate dihydrate, and about 0.1 to about 10% lime, and adding about 1 to about 35% by weight

Portland cement, based in each case on the organics and solids content of the sludge, in which method the Portland cement is added last to maximize its function as a binder for the stabilized sludge composition.



4,615,810

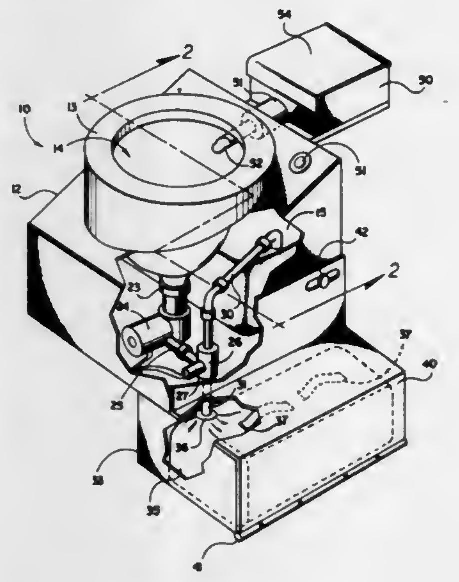
METHOD FOR TREATING HUMAN WASTE BY SOLIDIFICATION

Jesse R. Conner, Atlanta, Ga., assignor to Chem-Technics, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 531,825, Sep. 13, 1983, abandoned. This application Apr. 4, 1985, Ser. No. 719,683

Int. Cl.^{4} C02F *11/14*

U.S. Cl. 210—751 **13 Claims**



1. A method of treating human wastes to render them fit for ultimate disposal in a sedentary mass, comprising the steps of:

(a) receiving the wastes in a receptacle of a recirculating toilet;

(b) removing and transferring the waste from the receptacle along a pathway from the receptacle to a storage chamber;

(c) adding to the waste while in the pathway of solidification into a chemically and physically stable solid end product, said solidification agent having a setting time of a sufficient duration to allow removal of the mixture from the recirculating toilet;

(d) mixing the waste and the solidification agent using a macerating pump prior to the waste leaving the pathway to ensure thorough dispersal of the solidification agent throughout the waste;

(e) removing and transferring the mixture of waste and the solidification agent using a macerating pump from the pathway to a disposable container in the storage chamber; and

(f) removing and discarding the disposable container and the contents thereof.

4,615,811

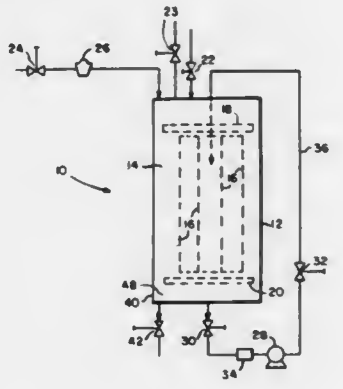
VACUUM PUMP OIL RECOVERY PROCESS

Lawrence J. Watkins, 1000 Toney Dr., Huntsville, Ala. 35802

Filed Jan. 22, 1985, Ser. No. 693,399

Int. Cl.^{4} B01D *23/24*

U.S. Cl. 210—797 **2 Claims**



1. A method for recovering halogenated oil from oil-saturated paper filters which comprises the steps of:

a. providing an extraction vessel containing an extraction bath composed of a mixture of water and trichlorotrifluoroethane solvent;

b. submerging halogenated oil-saturated paper filters into said extraction bath;

c. pressurizing said extraction bath;

d. circulating said mixture through said oil-saturated paper filters to extract oil therefrom;

e. filtering said circulating mixture to prevent clogging of a circulating pump;

f. removing a first solution from said extraction vessel;

g. separating a solvent-oil phase and a water phase by gravity from said first solution;

h. filtering said separated solvent-oil phase;

i. distilling said separated solvent-oil phase at a temperature of about 50° C. for a period of time sufficient to effect the vaporization and removal of a substantial portion of solvent from said solvent-oil phase thereby providing a second solution containing oil and residual amounts of solvent;

j. distilling said second solution under vacuum to vaporize and remove substantially all of said residual amounts of solvent therefrom thereby providing a third solution containing substantially all halogenated oil; and

k. recovering said oil for subsequent reuse.

4,615,812

FILTER HOUSING FOR CLOSED FLUID CIRCULATING SYSTEM

Phillip H. Darling, Huntington Beach, Calif., assignor to Metro-Line Industries, Inc., Brea, Calif.

Filed Oct. 26, 1984, Ser. No. 664,978

Int. Cl.^{4} B01D *35/14*

U.S. Cl. 210—805 **19 Claims**

1. An apparatus comprising:

a container having an inlet orifice and an outlet orifice;

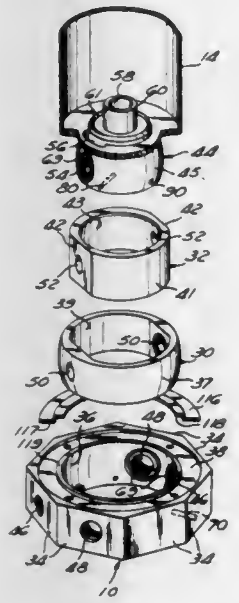
a base for removably supporting said container;

a fluid inlet passage in said base;

a fluid outlet passage in said base;

plural valves for selectively interconnecting said inlet passage to said inlet orifice and said outlet passage to said outlet orifice and for selectively sealing the inlet and the outlet orifices and the inlet and the outlet passages; and

a valve actuator for operating said plural valves in response to insertion and removal of said container in said base to allow fluid to flow from said inlet passage, into said inlet orifice, and through said container when said container is inserted into said base and to seal the orifices and the passages to prevent leakage of said fluid from both said container and said base when said container is removed from said base.



4,615,813

WATER-BASED METAL-CONTAINING ORGANIC PHOSPHATE COMPOSITIONS

John Bretz, Parma, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Division of Ser. No. 634,919, Jul. 26, 1984, Pat. No. 4,582,543. This application Dec. 23, 1985, Ser. No. 812,151

Int. Cl.⁴ C09K *7/02*

U.S. Cl. 252—8.514 **18 Claims**

1. A drilling fluid comprising

(A) a major amount of a suspension of clay in water, and a minor torque reducing amount of a mixture of:

(B) an overbased non-Newtonian colloidal disperse system comprising (B)(1) solid metal-containing colloidal particles predispersed in (B)(2) a dispersing medium of at least one inert organic liquid and (B)(3) at least one member selected from the class consisting of organic compounds which are substantially soluble in said dispersing medium, the molecules of said organic compound being characterized by polar substituents and hydrophobic portions; and

(C) a metal-containing organic phosphate complex derived from the reaction of (C)(1) at least one polyvalent metal salt of an acid phosphate ester, said acid phosphate ester being derived from the reaction of phosphorus pentoxide or phosphoric acid with a mixture of a monohydric alcohol and a polyhydric alcohol, with (C)(2) at least one organic epoxide.

4,615,814

POROUS SUBSTRATE WITH ABSORBED ANTISTAT OR SOFTENER, USED WITH DETERGENT

Deborah Winetzky, Torrance, Calif., assignor to Purex Corporation, Lakewood, Calif.

Filed Apr. 2, 1984, Ser. No. 596,037

Int. Cl.⁴ D06M *11/00*

U.S. Cl. 252—8.6 **23 Claims**

1. A bead useful in a fabric aqueous laundering process to impart to the fabric, when dried, at least one of the properties (i) softness, and (ii) anti static effect, said bead comprising

(a) a porous substrate,

(b) substance absorbed into said substrate to produce at least one of said (i) and (ii) properties in the fabric, said substance being cationic, and

(c) a water dispersable barrier coating consisting of an ingredient selected from the group that consists of amorphous silica, inorganic salts, starch and powdered dyes, on the substrate and covering said substrate and absorbed substance to allow quick release of the said coating in laundry wash water, the coating average thickness being between about 1 micron and 1.0 mm,

(d) a solubilizing or dispersion aid mixed with said substance and also absorbed into the substrate,

(e) and a hardener mixed with said substance and aid and also absorbed into the substrate,

(f) between 1% and 90% of the bead weight being defined by the substrate and between about 0.5% and 75% of the bead weight defined by said substance, and said mix consisting of from about 1% to 100% by weight of said substance, from about 1% to 100% by weight of said solubilizing or dispersion aid, and from about 0.1% to 100% by weight of said hardener.

4,615,815

FREE-FLOWING PARTICULATE FABRIC-SOFTENING ADJUNCT FOR USE IN LAUNDRY DETERGENT COMPOSITIONS AND METHOD OF MAKING SAME

Ho T. Tai, and Léandre Naddeo, both of Lille, France, assignors to Lever Brothers Company, New York, N.Y.

Filed Aug. 24, 1984, Ser. No. 643,932

Claims priority, application United Kingdom, Aug. 25, 1983, 8322905

Int. Cl.⁴ D06M *11/00*

U.S. Cl. 252—8.8 **14 Claims**

1. Free-flowing particulate fabric-softening adjunct for use in laundry detergent composition comprising sodium perborate monohydrate having absorbed therein from about 5% up to about 100% of its weight of a fabric-softening agent selected from the group consisting of organic compounds which contain primary, secondary, tertiary or quaternary nitrogen, or which are phosphonium or sulphonium compounds, having at least one relatively long hydrocarbon group substituent having 6-22 carbon atoms conferring hydrophobicity and lubricity, and mixtures thereof.

4,615,816

LUBRICATING AGENTS FOR PROCESSING YARNS AND METHOD OF PROCESSING THERMOPLASTIC YARNS THEREWITH

Osamu Ogiso, and Ippei Noda, both of Aichi, Japan, assignors to Takemoto Yushi Kabushiki Kaisha, Gamagori, Japan

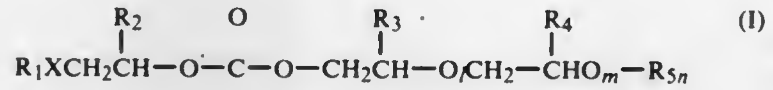
Continuation-in-part of Ser. No. 639,199, Aug. 9, 1984, abandoned. This application May 6, 1985, Ser. No. 731,135

Claims priority, application Japan, Oct. 18, 1983, 58-195437

Int. Cl.⁴ D06M *11/00*

U.S. Cl. 252—8.9 **6 Claims**

1. A lubricating agent for processing yarns, said lubricating agent containing polyalkylene ether polycarbonate compounds shown by the general formula (I) below:



$$R_1XCH_2\overset{R_2}{\overset{|}{C}}H-O-\overset{O}{C}-O-CH_2\overset{R_3}{\overset{|}{C}}H-O(CH_2-\overset{R_4}{\overset{|}{C}}HO)_m-R_{5n} \qquad (I)$$

where R_1 is an organic residue obtainable by removing an active hydrogen group from an organic compound; R_2 to R_4 may be similar or different, each being hydrogen, methyl group or ethyl group; R_5 is hydrogen, alkyl group with 1 to 3 carbon atoms, alkanoyl group with 2 to 18 carbon atoms or trialkylsilyl group with 1 to 3 carbon atoms; X is —O—, —S—, —COO—, —N< or —CON<; l is an integer equal to or larger than 1; m is 0 or an integer equal to or larger than 1; and n is an integer in the range of 1 to 8 such that the product ln is equal to or greater than 2.

4,615,817

ADDITIVES CONTAINING POLYTETRAFLUOROETHYLENE FOR MAKING STABLE LUBRICANTS

Frederic C. McCoy, 12 Regimental Pl., New Windsor, N.Y. 12550

Filed May 17, 1985, Ser. No. 735,390

Int. Cl.⁴ C10M *131/08, 149/00*

U.S. Cl. 252—16 **23 Claims**

1. A concentrated non-aqueous lubricant additive having excellent resistance to sedimentation, said additive comprising in parts by weight, a mixture of:

(a) about 0.5% to about 10% particulate polytetrafluoroethylene having a particle size in the range from about 0.1 microns to about 4 microns;

(b) about 3% to about 15% of a nitrogen-containing polymeric dispersing agent effective to disperse the polytetrafluoroethylene;

(c) about 0.5% to about 2% of an organo-clay anti-sedimentation agent effective to prevent polytetrafluoroethylene sedimentation;

(d) about 1% to about 2.5% of an oil-miscible polar additive to deagglomerate said organo-clay; and

(e) a lubricating carrier oil.

4,615,818

HYDROGEN SULFIDE STABILIZED OIL-SOLUBLE SULFURIZED ORGANIC COMPOSITIONS

Stephen A. DiBiase, Euclid, and James N. Vinci, Mayfield Hts., both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Mar. 15, 1985, Ser. No. 712,587

Int. Cl.⁴ C10M *157/04, 157/06*

U.S. Cl. 252—47.5 **7 Claims**

1. An oil-soluble sulfurized organic composition which suppresses volatile sulfur compound emission in additive formulations, comprising:

(a) an oil-soluble sulfurized organic compound;

(b) a hindered organic amine, structured so as to provide stearic hindrance therein, said hindered organic amine being soluble in said oil-soluble sulfurized organic compound; and

(c) an organic compound selected from the group consisting of carboxylic acids, monoesters of polycarboxylic acids, and acid anhydrides, wherein the organic compound (c) is present in an amount of about 0.1 to about 20% by weight based on the weight of the oil-soluble sulfurized organic compound (a), and the weight ratio of (c):(b) is in the range of about (0.1-20):1.

4,615,819

DETERGENT GEL COMPOSITIONS IN HEXAGONAL LIQUID CRYSTAL FORM

Francis J. Leng, Merseyside; David Machin, Cheshire; David A. Reed, Merseyside, all of England, and Ozalp Erkey, Istanbul, Turkey, assignors to Lever Brothers Company, New York, N.Y.

Filed Feb. 21, 1985, Ser. No. 703,631

Claims priority, application United Kingdom, Feb. 26, 1984, 8405266

Int. Cl.⁴ C11D *1/37, 10/04, 17/00*

U.S. Cl. 252—110 **25 Claims**

1. A detergent composition comprising a gel wholly or predominantly in hexagonal liquid crystal form, said gel comprising:

(a) from 15 to 70% by weight of a surfactant system having a Krafft point below ambient temperature, said system being incapable of forming hexagonal phase spontaneously, and consisting essentially of:

(i) 30 to 100% by weight of an anionic or cationic surfactant, having a polar head group and one or more linear or branched aliphatic or araliphatic hydrocarbon chains containing in total at least 8 aliphatic carbon atoms, the polar head group being positioned non-terminally in a single hydrocarbon chain or carrying more than one hydrocarbon chain; or two or more such surfactants of the same charge type; and

(ii) 0 to 70% by weight of a further surfactant selected from surfactants of the same charge type as (i) but having a polar head group positioned terminally in a linear or branched aliphatic or araliphatic hydrocarbon chain containing at least 8 aliphatic carbon atoms; nonionic surfactants; and mixtures thereof;

(b) from 1 to 45% by weight of an additive which is a water-soluble non-micelle-forming or weakly micelle-forming material capable of forcing the surfactant system (a) into hexagonal phase, said additive having at most 6 aliphatic carbon atoms and being selected from the group consisting of aryl or alkylaryl sulfonates, ammonium salts, amides and mixtures thereof, the additive being nonionic or of the same charge type as the surfactant (a) (i); and

(c) at least 20% by weight of water.

4,615,820

DETERGENT COMPOSITIONS

Paul Hepworth, York, and Roger I. Hancock, Cleveland, both of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 592,004, Mar. 21, 1984, abandoned. This application Oct. 7, 1985, Ser. No. 785,027

Claims priority, application United Kingdom, Mar. 28, 1983, 8308508

Int. Cl.⁴ C11D *7/52*

U.S. Cl. 252—139 **10 Claims**

1. A liquid detergent composition having a pour point of at most about 9° C. and a viscosity at 25° C. in the range of 100 to 1,200 millipascal seconds, which composition comprises 25 to 60% by weight of the composition of solids having average particle diameters of less than 10 microns, suspended in a non-aqueous liquid phase, the solids comprising a builder, in which the liquid phase comprises at least 20% by weight of a condensation product of ethylene oxide with a mono- or di- or tri-hydroxy alkane having 1 to 4 carbon atoms which condensation product has a molecular weight in the range 150 to 600.

4,615,821
BENZYL ALCOHOL FOR IMPROVED POWDERED CLEANSERS

Michael P. Siklosi, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 25, 1984, Ser. No. 654,334

Int. Cl.⁴ C11D *15/00*

U.S. Cl. 252—174.25 **13 Claims**

1. A powdered free flowing abrasive cleanser comprising:
(a) 0.1% to 6% of a surfactant;
(b) 0.5% to 40% benzyl alcohol;
(c) 20% to 95% of a water-insoluble abrasive material having particle diameters ranging from about 0.3 to about 0.001 millimeters; and
(d) 1% to 50% detergency builder; said percentages being percentages by weight, the sum of said (a), (b), (c) and (d) constituting at least 75% by weight of the total composition, the balance being water, inorganic salt and minor ingredients.

4,615,822
COMPATIBILIZED POLYESTER POLYOL BLEND FROM PHTHALIC ANHYDRIDE BOTTOMS

George Magnus, Arlington Heights, Ill., assignor to Stepan Company, Northfield, Ill.

Continuation-in-part of Ser. No. 507,532, Jun. 27, 1983, Pat. No. 4,521,611, which is a continuation-in-part of Ser. No. 381,298, May 24, 1982, abandoned. This application Mar. 13, 1985, Ser. No. 711,629

Int. Cl.⁴ C09K *3/00;* **C08K** *5/10*

U.S. Cl. 252—182 **12 Claims**

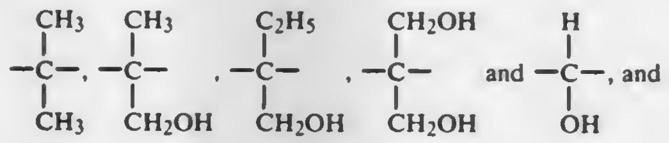
1. A resin prepolymer blend comprising on a 100 weight percent total composition basis:
(A) from about 25 to 50 weight percent of an ester polyol composition,
(B) from about 2 to 45 weight percent of at least one polyol of the formula:

$HO—R^1—OH$

wherein R^1 is a divalent radical selected from the group consisting of:
(1) alkylene radicals each containing from 2 through 6 carbon atoms,
(2) radicals of the formula:

$—CH_2—R^2—CH_2—$

where R^2 is a radical selected from the group consisting of:



$$\underset{CH_3}{\overset{CH_3}{—C—}},\ \underset{CH_2OH}{\overset{CH_3}{—C—}},\ \underset{CH_2OH}{\overset{C_2H_5}{—C—}},\ \underset{CH_2OH}{\overset{CH_2OH}{—C—}}\ \text{and}\ \underset{OH}{\overset{H}{—C—}},\ \text{and}$$

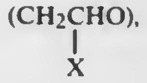
(3) radicals of the formula:

$—(R^3O)_n—R^3—$

where R^3 is an alkylene radical containing from 2 through 3 carbon atoms, and n is an integer of from 1 through 3 inclusive, and
(c) from about 5 to 30 weight percent of at least one nonionic polyalkoxylated compound of the formula:

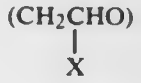
$RO(Y)_n—H$

wherein:
R is a radical selected from the group consisting of alkyl phenyl radicals wherein the alkyl group in each such radical contains from about five to eighteen carbon atoms; alkyl radicals each containing from seven through eighteen carbon atoms;
Y is selected from the group consisting of radical of the formula: (CH_2CH_2O), and mixed radicals of the formula



$$\underset{X}{(CH_2\overset{}{C}HO)},$$

where the mole ratio of (CH_2CH_2O) to



$$\underset{X}{(CH_2\overset{}{C}HO)}$$

ranges from 1:1 to 1:15,
x is selected from the group consisting of methyl and hydrogen,
n is a positive whole number ranging from about 4 to 25, said ester polyol composition being characterized by containing on said dtotal composition basis:
(A′) from about 7.0 to 45 weight percent of acetone insolubles, and
(B′) from about 55 to 93 weight percent of esters produced by the reaction of phthalic anhydride with said polyol, said ester polyol composition having been produced by contacting a phthalic anhydride bottoms composition with at least one said polyol while maintaining liquid phase reaction conditions and a temperature ranging from about 190° to 250° C., the initial mole ratio of said polyol to said phthalic anhydride bottoms composition at the time of said contacting ranges from about 2 to 4 based on an estimate of the total carboxylic acid and carboxylic acid anhydride content of said phthalic anhydride bottoms composition.

4,615,823
DESICCATING AGENT

Shinichi Tokuyama, Kyoto; Masaharu Hongo, Uto, and Hirokazu Iino, Nishinomiya, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 31, 1985, Ser. No. 696,907

Int. Cl.⁴ C09K *3/00*

U.S. Cl. 252—194 **11 Claims**

1. A desiccating agent comprising a mixture of
(A) a deliquescent salt,
(B) a hydrolyzed copolymer containing 50 to 99.8% by mole of vinyl acetate and 50 to 0.2% by mole of an unsaturated dicarboxylic acid or ester thereof in which a degree of hydrolysis of the vinyl acetate component is not less than 70% by mole, and
(C) a fibrous material having a diameter of 0.1 to 0.002 mm and a length of 15 to 0.005 mm as main components.

4,615,824
MIXING COMPONENT FOR LIQUID CRYSTAL SUBSTANCES

Dietrich Demus; Horst Zaschke, both of Halle; Gerhard Pelzl, Halle-Neustadt, and Carsten Tschierske, Halle, all of German Democratic Rep., assignors to VEB Werk fuer Fernsehelektronik im VEB Kombinat Mikroelektronik, Berlin, German Democratic Rep.

Filed Nov. 28, 1984, Ser. No. 675,672

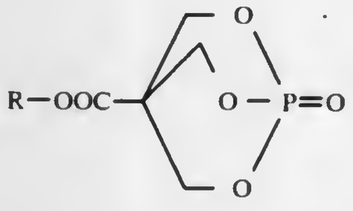
Claims priority, application German Democratic Rep., Dec. 22, 1983, 2583833

Int. Cl.⁴ C09K *3/34, 19/52;* **G02F** *1/13;* **C07F** *9/15*

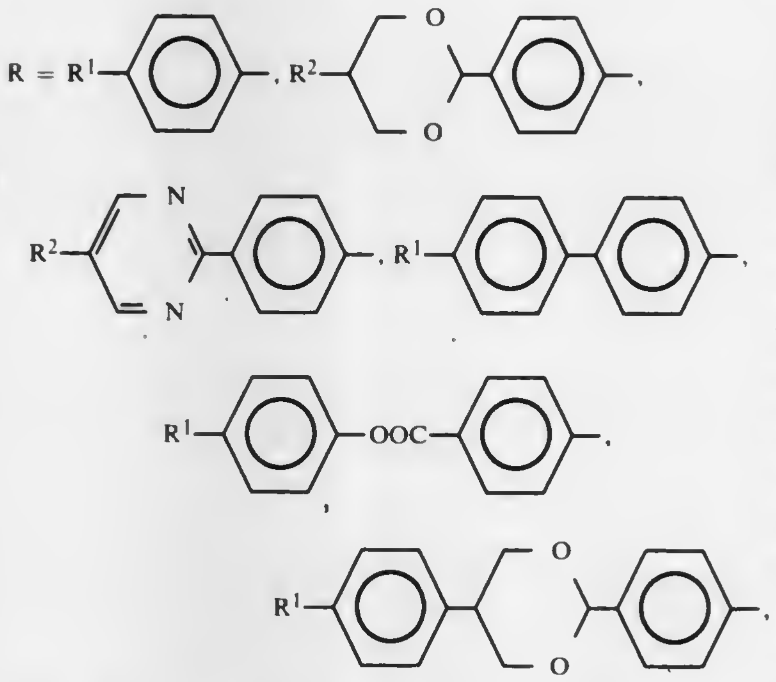
U.S. Cl. 252—299.5 **11 Claims**

1. A nematic liquid crystal mixture including an added component for strongly increasing dielectric anisotropy and decreasing operating voltage, said added component comprising

at least one 1-oxa-2-6,7-trioxa-1-phospha-bicyclo[2.2.2]octane-derivative having the general formula

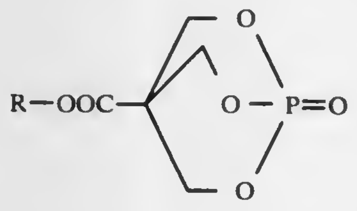


wherein

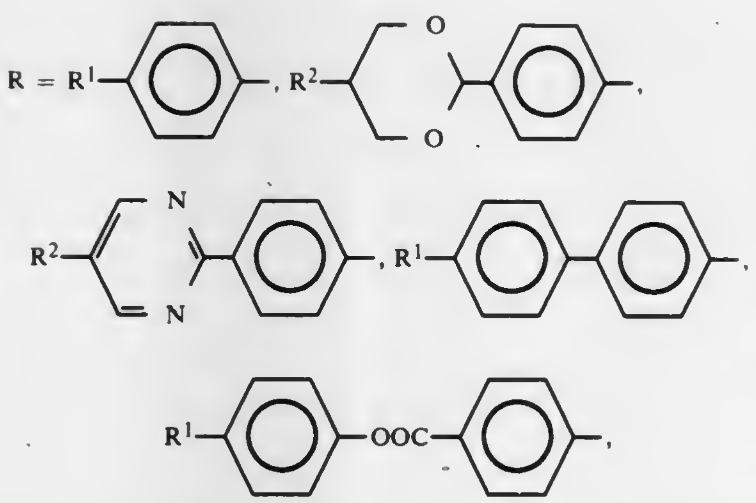


with $R^1=C_nH_{2n+1}—$, $C_nH_{2n+1}O—$, $C_nH_{2n+1}COO—$, $C_nH_{2n+1}OCOO—$ $R_2=C_nH_{2n+1}—$, with n=an integer from 1 to 10.

11. 1-oxa-2,6,7-trioxa-1-phospha-bicyclo[2.2.2]octane-derivatives having the general formula



wherein



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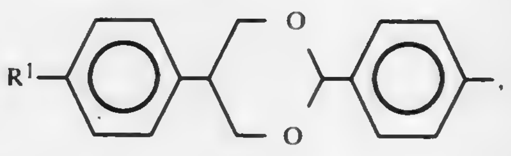


with $R^1=C_nH_{2n+1}—$, $C_nH_{2n+1}O—$, $C_nH_{2n+1}COO—$, $C_nH_{2n+1}OCOO—$ $R^2=C_nH_{2n+1}—$, with n=an integer from 1 to 10.

4,615,825
FRICTION REDUCTION USING A VISCOELASTIC SURFACTANT

Arthur S. Teot; Gene D. Rose, both of Midland, Mich., and Gregory A. Stevens, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 30, 1981, Ser. No. 316,467

Int. Cl.⁴ B01F *17/18*

U.S. Cl. 252—356 **6 Claims**

1. An aqueous liquid composition comprising (1) an aqueous liquid, (2) a friction reducing amount of a viscoelastic cationic surfactant having (a) a cationic surfactant ion and (b) an organic ion associated as a counterion with the cationic surfactant ion and (3) additional organic ions (i) having a charge opposite to that of the cationic surfactant ion and (ii) being capable of associating with the cationic surfactant ion to form a viscoelastic cationic surfactant, said additional organic ions being present in an amount sufficient to further reduce the friction exhibited by the aqueous liquid containing the viscoelastic cationic surfactant as the aqueous liquid passes through a conduit under conditions of nonlaminar flow.

2. The composition of claim **1** wherein the viscoelastic surfactant is cetyl trimethylammonium salicylate or tetradecyl trimethylammonium salicylate and the organic electrolyte is sodium salicylate.

4,615,826
HYDROCARBON SOLUBLE NITROGEN CONTAINING DISPERSANT-FLUOROPHOSPHORIC ACID ADDUCTS

Timothy R. Erdman, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 534,858, Sep. 22, 1983, abandoned. This application Jun. 17, 1985, Ser. No. 745,566

Int. Cl.⁴ C10M *131/00, 133/00*

U.S. Cl. 252—32.5 **9 Claims**

1. A hydrocarbon-soluble fluorophosphoric acid adduct which comprises the reaction product of:
(a) a succinimide having at least one basic nitrogen; and
(b) a fluorophosphoric acid or ammonium salt thereof wherein the amount of said fluorophosphoric acid or salt thereof is from about 0.1 to 1 equivalent per equivalent of basic nitrogen atom of said succinimide.

4,615,827
METHOD FOR REDUCING BRAKE NOISE IN OIL-IMMERSED DISC BRAKES

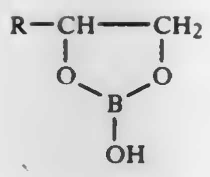
Vernon R. Small, Jr., Rodeo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 525,573, Aug. 22, 1983, abandoned, which is a continuation of Ser. No. 314,632, Oct. 26, 1981, abandoned. This application Apr. 19, 1985, Ser. No. 725,194

Int. Cl.⁴ C10M *1/48*

U.S. Cl. 252—32.7 E **3 Claims**

1. A method for reducing oil-immersed disc brake chatter by lubricating the contacting surfaces of oil-immersed disc brakes with a composition comprising
a lubricating oil containing from about 0.1% to about 5% by weight of a borated 1,2-alkane diol of the formula:



wherein R is alkyl containing from 8 to 28 carbon atoms or mixtures thereof.

4,615,828
METHOD AND APPARATUS FOR DETECTING HYDROCARBON FUEL LEAKS

Jeffrey G. Wegrzyn, Alpharetta, Ga., assignor to Lockheed Corporation, Calabasas, Calif.

Continuation-in-part of Ser. No. 607,450, May 7, 1984. This application Nov. 26, 1984, Ser. No. 674,934

Int. Cl.⁴ G01N *31/00, 33/00*

U.S. Cl. 252—408.1 **8 Claims**

1. A composition of matter suitable for detecting hydrocarbon leaks consisting essentially of a dry powder containing from about 0.1 to about 5.0 percent by weight of a dye soluble in water and lower chain alcohols which will provide vivid color when wet with hydrocarbon fuel and which is essentially nonstaining on painted surfaces, and which does not migrate into or penetrate painted surfaces containing a polyurethane or epoxy resin base from about 0.1 to about 1.0 percent of a surfactant with the balance of said composition of matter consisting essentially of dry inert mineral carrier.

4,615,829
ELECTROCONDUCTIVE ORGANIC POLYMER AND METHOD FOR PRODUCING THE SAME

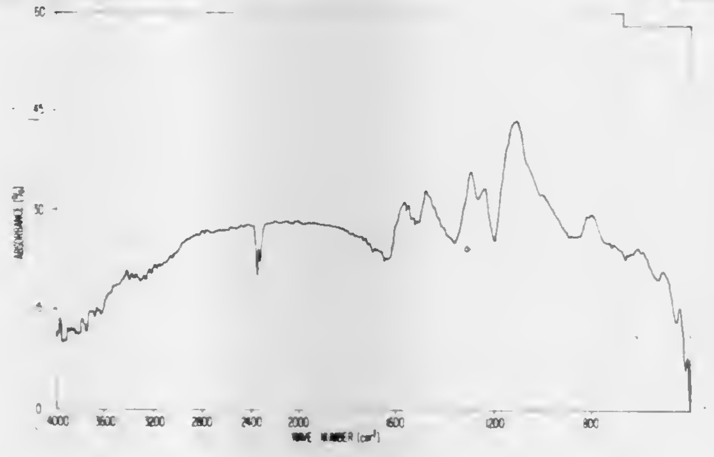
Shohei Tamura, Tokyo; Sadamitsu Sasaki, Osaka; Masao Abe, Osaka; Hitoshi Nakazawa, Osaka; Hisashi Ichinose, Osaka; Keiji Nakamoto, Osaka, and Satoshi Yumoto, Osaka, all of Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 13, 1984, Ser. No. 671,155

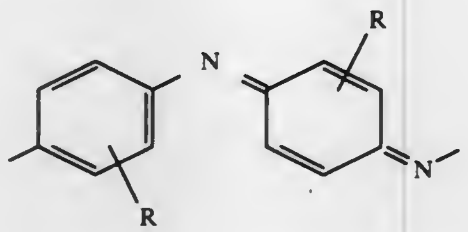
Claims priority, application Japan, Nov. 10, 1983, 58-212280; Sep. 22, 1984, 59-198873

Int. Cl.⁴ H01B *1/00*

U.S. Cl. 252—500 **8 Claims**



1. An electroconductive organic polymer containing an electron acceptor as a dopant, and having electroconductivity of not less than 10^{-6} S/cm, consisting essentially of a linear polymer having as a main repeating unit thereof a quinonediimine structure represented by formula (III)



(III)

wherein R represents a hydrogen atom, a methyl group, or an ethyl group

wherein the polymer has a logarithmic viscosity number of at least 0.10 as determined in 97% sulfuric acid at a concentration of 0.5 g/dl of said polymer at 30° C.

4,615,830
ISOMER-DIRECTED PROCESS FOR PRODUCING ASYMMETRIC KETONES USING CATALYTIC CLAISEN REARRANGEMENT OF ALLYLIC ETHERS, INTERMEDIATES, AND USES OF PRODUCTS AND INTERMEDIATES OF PROCESS IN PERFUMERY

Mark A. Sprecker, Sea Bright; Robert P. Belko, Woodbridge; William L. Schreiber, Jackson, and Michael Licciardello, Little Silver, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

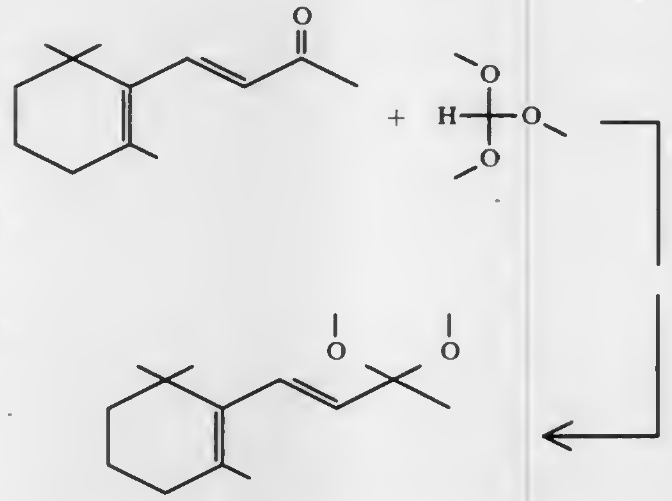
Division of Ser. No. 602,646, Apr. 20, 1984, Pat. No. 4,548,743. This application Aug. 13, 1985, Ser. No. 765,278

The portion of the term of this patent subsequent to Mar. 18, 2003, has been disclaimed.

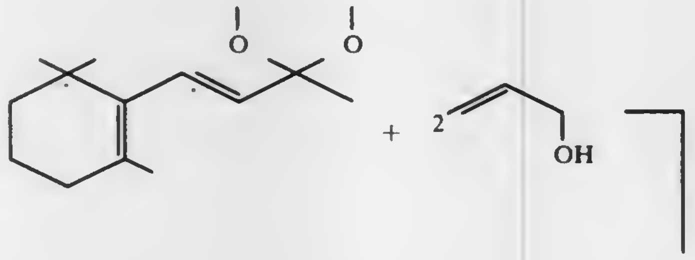
Int. Cl.⁴ A61K *7/46*

U.S. Cl. 252—522 R **4 Claims**

1. A ketone-containing product prepared according to the process comprising the steps of (1) reacting at a temperature in the range of from about −10° C. up to about 50° C. trimethyl orthoformate with β-ionone according to the reaction:



to form a ketal-containing composition with the mole ratio of β-ionone:trimethyl orthoformate being from about 1:1 to about 1:2; (ii) then reacting the ketal-containing composition with allyl alcohol at a temperature in the range of from about 120° C. up to about 220° C. according to the reaction:



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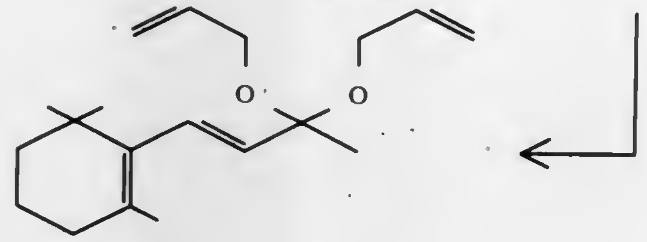
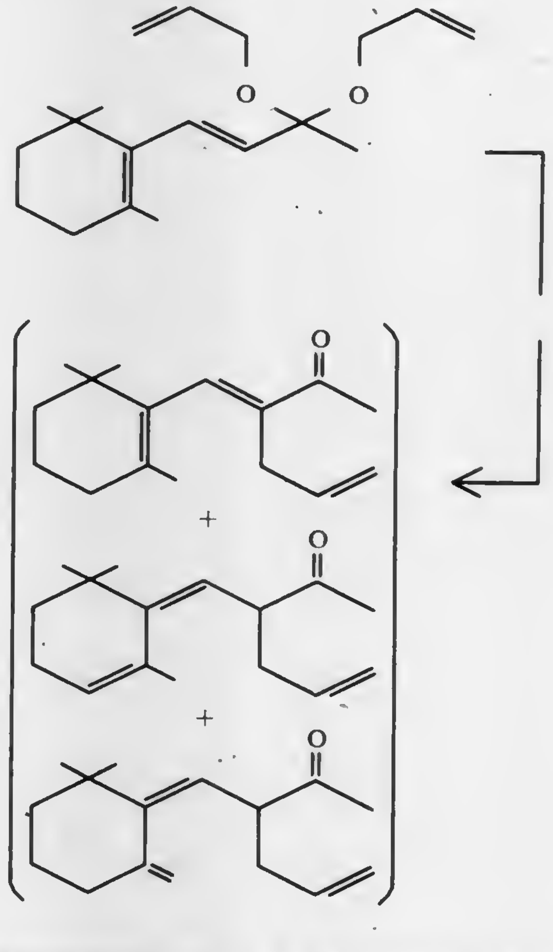


in order to form a diallyl ketal with the mole ratio of ketal-containing composition:allyl alcohol varying from about 1:1 up to about 1:3; then rearranging the resulting diallyl ketal at a temperature of from about 120° C. up to about 220° C. according to the reaction:



at a pH of between 2 and 6.5 in the presence of a citric acid catalyst and then fractionally distilling the resulting product at a vapor temperature of 105°-128° C. at 2.5 mm/Hg pressure.

2. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, perfumed articles and colognes comprising the step of adding to said consumable material an aroma augmenting or enhancing quantity of the product defined according to claim 1.

4,615,831
FIRE RETARDANT POLYOLEFIN COMPOSITION

Fukuo Kanno, Yokohama, and Keiichi Nakaya, Chiba, both of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

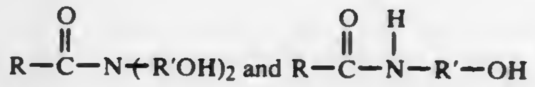
Filed Nov. 21, 1984, Ser. No. 673,846

Claims priority, application Japan, Nov. 22, 1983, 58-218787

Int. Cl.⁴ C09K *21/06, 21/10*

U.S. Cl. 252—609 **5 Claims**

1. A fire retardant polyolefin composition comprising from 40 to 70% by weight of magnesium hydroxide and from 30 to 60% by weight of a polyolefin, wherein from 0.3 to 10% by weight, based on the magnesium hydroxide, of at least one N-hydroxyalkylamide of a higher fatty acid selected from the group represented by the general formulas:



$$R-\overset{\overset{O}{\|}}{C}-N(R'OH)_2 \text{ and } R-\overset{\overset{O}{\|}}{C}-\overset{\overset{H}{|}}{N}-R'-OH$$

where R is a C_{11}–C_{17} alkyl or alkylene group and R′ is C_nH_{2n} where n is an integer of 1 to 6, is incorporated.

4,615,832
FLAMEPROOFING AGENTS, THEIR PREPARATION AND THEIR USE FOR FLAMEPROOFING POLYCARBONATES

Hans-Jürgen Kress, Krefeld, and Klaus Kircher, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

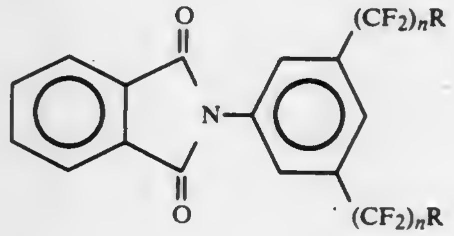
Filed Sep. 26, 1984, Ser. No. 654,582

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1983, 3334822

Int. Cl.⁴ C09K *21/00;* **C07D** *209/48*

U.S. Cl. 252—609 **12 Claims**

1. Phthalimides of the general formula (I)



(I)

wherein

n is an integer from 1 to 12, and

R is H or F.

4. A flameproofing agent comprising (a) 0.1 to 1 part by weight of a phthalimide of the general formula (I) of claim 1, and (b) 0.02 to 2 parts by weight of an alkali metal salt of an organic or inorganic acid.

4,615,833
METHOD FOR VITRIFYING RADIOACTIVE WASTE SOLUTIONS

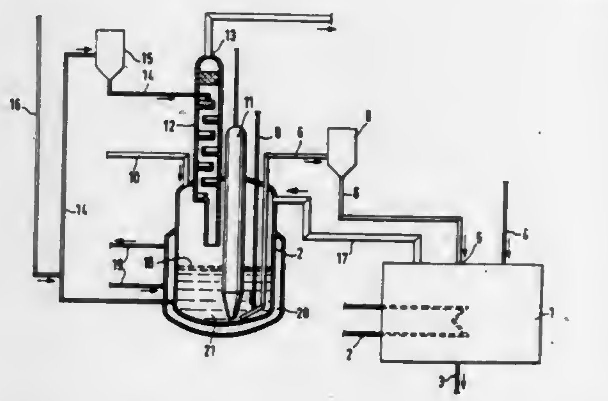
Friedrich Kaufmann, Hanover, Fed. Rep. of Germany, assignor to Deutsche Gesellschaft für Wiederaufarbeitung von Kernbrennstoffen mbH, Hanover, Fed. Rep. of Germany

Division of Ser. No. 474,527, Mar. 11, 1983, Pat. No. 4,592,898. This application Mar. 5, 1985, Ser. No. 708,268

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1982, 3209250

Int. Cl.⁴ G21F *9/16, 9/20*

U.S. Cl. 252—629 **2 Claims**



1. A method of vitrifying radioactive fission products in liquid solution in an apparatus including a vitrifying oven to which the liquid solution is metered from a feed container, and an offgas scrubber wherein the offgas occurring during vitrification is scrubbed of entrained radioactive dust particles and

the like by a scrubbing liquid, the method comprising the steps of:

- moving quantities of said liquid solution from said feed container to said vitrifying oven wherein the fission product contained in said liquid solution is fixed in glass and offgas is generated, the offgas having radioactive dust particles and the like entrained therein;
- passing said offgas from said vitrifying oven into said feed container;
- moving at least a portion of said liquid solution from the feed container to the head of the scrubber;
- passing the offgas through the scrubber in counterflow to said portion of the liquid solution whereby the radioactive dust particles entrained in the offgas are scrubbed therefrom and transferred to said portion of the liquid solution so as to become entrained therein; and,
- returning said portion of the liquid solution and said dust particles entrained therein to the feed container after passing the same through the scrubber.

4,615,834

PROCESS AND APPARATUS FOR PRODUCING MICROSPHERES OF FISSILE AND/OR FERTILE MATERIALS

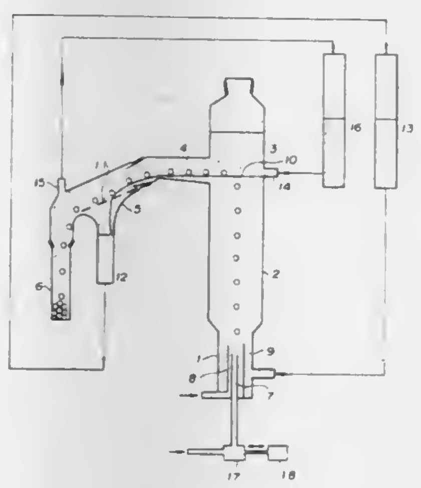
Shigeru Yamagishi; Yoshihisa Takahashi, and Koreyuki Shiba, all of Ibaraki, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Feb. 13, 1984, Ser. No. 578,615

Claims priority, application Japan, Feb. 14, 1983, 58-22300

Int. Cl.⁴ G21C *19/00, 21/00*

U.S. Cl. 252—635 **13 Claims**



1. A process for producing microspheres of fissile and/or fertile materials by gelling in an ammoniacal atmosphere small droplets of a feed solution prepared from a feed solution starter containing at least one metal salt selected from among thorium, uranium and plutonium and subsequently washing, drying and sintering the gelled droplets to produce an oxide, of the metal or metals in the form of spherical particles, wherein the small droplets of the feed solution are formed within an organic solvent having a higher density than the feed solution and a sufficient interfacial tension with water to permit spherical droplets to be formed from said feed solution and which organic solvent has the ability to dissolve ammonia, the resulting droplets being gelled first in the ammonia-containing organic solvent, then in an ammoniacal aqueous solution having a lower density than said organic solvent and said feed solution, and which is overlying and interfacing with said organic solvent, and the gelled particles being recovered into said ammoniacal aqueous solution.

4,615,835

STEROID ESTERS OF N-(2-HALOGENETHYL)-N-NITROSO-CARBAMOYLAMINO AND ACIDS AND PEPTIDES THEREFORE, AS WELL AS METHOD FOR PREPARING THEM

Gerhard Eisenbrand, Sandhausen, and Joachim Schreiber, Stelzenberg, both of Fed. Rep. of Germany, assignors to Stiftung Deutsches Krebsforschungs Zentrum, Heidelberg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 557,138, Nov. 17, 1983. This application May 8, 1985, Ser. No. 731,861

Int. Cl.⁴ C07J *1/00*

U.S. Cl. 260—397.5 **1 Claim**

1. Steroid-N-2-halogenethyl-N-nitroso-carbamoyl amino acid esters selected from the group consisting of N-(2-chloroethyl)-N-nitroso carbamoyl-L-alanyl-L-alanine-estradiol-17-ester; N-(2-chloroethyl)-N-nitrosocarbamoyl-L-alanyl-estradiol-17-ester; and N-(2-chloroethyl)-N-nitrosocarbamoyl-L-alanine-estradiol-3,17-diester.

4,615,836

PROCESS FOR PREPARING ALKYLMERCAPTOALKYL ESTERS

Rex L. Bobsein, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 18, 1984, Ser. No. 611,655

Int. Cl.⁴ C08H *3/00*

U.S. Cl. 260—399 **10 Claims**

1. A process for preparing an alkylmercapto ester free of substantial amounts of solid by-products comprising reacting beta-mercaptoethanol with an organic carboxylic acid containing 2 to 35 carbon atoms per molecule or anhydrides of such carboxylic acids in the presence of a catalyst comprising a titanium compound of the formula $Ti(OR'')_4$ wherein R″ is an organic radical having 3 to 8 carbon atoms.

4,615,837

PROPYLENE OXIDE POLYADDUCTS CONTAINING CARBOXYL GROUPS AND THEIR SALTS USEFUL AS DYEING ASSISTANTS FOR DYEING WOOL FIBERS

Heinz Abel, Reinach, and Paul Schäfer, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 117,912, Feb. 4, 1980, abandoned, which is a continuation of Ser. No. 870,902, Jan. 19, 1978, abandoned. This application Nov. 16, 1981, Ser. No. 321,850

Claims priority, application Luxembourg, Jan. 24, 1977, 76633

Int. Cl.⁴ C09B *67/00;* **C09F** *5/08;* **D06P** *1/613*

U.S. Cl. 260—410.6 **11 Claims**

1. A propylene oxide polyadduct containing carboxyl groups, or a salt thereof, obtained from

- (a) an adduct of propylene oxide and pentaerythritol,
- (b) maleic, glutaric or succinic anhydride,
- (c) an aliphatic diol of the formula $HO—(CH_2—CH_2—O)_nH$ wherein n is 1 to 40,
- (d) a fatty acid having 8 to 22 carbon atoms and
- (e) phthalic anhydride, which is condensed with the reaction product of component (a), (b), (c) and (d) to provide an adduct with external carboxylic acid groups.

4,615,838

UNSATURATED COMPOUNDS AND THEIR PREPARATION

Gerard Mignani, Lyons, and Didier Morel, Villiers sur Orge, both of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

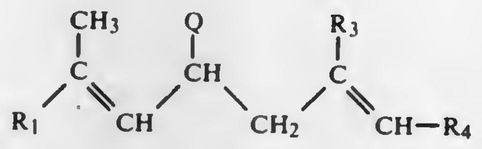
Filed Nov. 16, 1984, Ser. No. 671,963

Claims priority, application France, Nov. 18, 1983, 83 18392

Int. Cl.⁴ C07C *69/738, 69/587, 59/76, 57/04*

U.S. Cl. 260—410.9 R **4 Claims**

1. An unsaturated compound of the formula:



in which

- Q is alkyloxycarbonyl in which the alkyl has 1 to 4 carbon atoms as a straight or branched chain or carboxy;
- R_1 is methyl or $—CH_2CH_2CH═C(CH_3)_2$;
- R_3 is hydrogen or methyl; and
- R_4 is hydrogen, methyl, $—CH_2CH_2C(:CH_2)CH:CH_2$, $—CH_2CH_2C(:CH_2)CH_2CH_2COCH_3$, or $—CH_2CH_2C(CH_3):CHCH_2CH_2COCH_3$.

4,615,839

METHOD OF PREPARING FATTY ACID COMPOSITION CONTAINING HIGH CONCENTRATION OF EICOSAPENTAENOIC ACID

Akira Seto, and Shoko Yamashita, both of Yokohama, Japan, assignors to The Nisshin Oil Mills, Ltd., Japan

Filed Dec. 13, 1984, Ser. No. 681,025

Claims priority, application Japan, Dec. 21, 1983, 58-239639

Int. Cl.⁴ C11B *1/10, 3/00*

U.S. Cl. 260—412 **9 Claims**

1. A method of producing a fatty acid composition comprising the steps of:

- extracting a lipid composition from marine chlorella;
- subjecting said lipid composition to solvent fractionation to remove neutral fats, chlorophyll, sterols and majority of phospholipids, thereby providing a polar lipid composition;
- subjecting the polar lipid composition to hydrolysis to liberate fatty acids; and
- recovering the fatty acids, thereby providing a fatty acid composition with not less than 60% by weight of eicosapentaenoic acid.

4,615,840

AMINOMETHYLENEPHOSPHONIC ACID SOLUTIONS

Michel A. O. Ledent, Saint Marc, and Bronislav H. May, Overijse, both of Belgium, assignors to Monsanto Europe S.A., Brussels, Belgium

Continuation-in-part of Ser. No. 294,872, Aug. 21, 1981, Pat. No. 4,477,390. This application Oct. 11, 1984, Ser. No. 659,593

Claims priority, application United Kingdom, Sep. 1, 1980, 8028124

The portion of the term of this patent subsequent to Oct. 16, 2001, has been disclaimed.

Int. Cl.⁴ C07F *9/38*

U.S. Cl. 260—502.5 E **8 Claims**

1. A method for stabilizing an aqueous solution of aminomethylenephosphonic acid selected from diethylenetriaminepenta(methylenephosphonic acid), diethylenetriaminetetra(methylenephosphonic acid), diethylenetriaminetri(methylenephosphonic acid) and mixtures thereof against crystallization of said aminomethylenephosphonic acid, which comprises adding non-oxidizing mineral acid to the solution until the amount of non-oxidizing mineral acid in the stabilized solution is sufficient to inhibit said crystallization, said non-oxidizing mineral acid comprising sulfuric acid, phosphoric acid, hydrobromic acid, and mixtures containing sulfuric acid, phosphoric acid or hydrobromic acid.

4,615,841

PROCESS FOR MAKING ALKALINE-EARTH METAL SALTS OF ALKARYL SULFONIC ACIDS

Emanuel Stamatakis; Thomas E. Sample, Jr., and Paul H. Javora, all of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 534,905, Sep. 22, 1983, abandoned. This application Apr. 25, 1985, Ser. No. 727,055

Int. Cl.⁴ C07C *143/24*

U.S. Cl. 260—505 N **12 Claims**

1. A distillation-free process for making calcium alkaryl sulfonate solutions containing less than about 3.5 weight percent water comprising reacting together calcium oxide with an alkaryl sulfonic acid wherein the alkyl groups contain 8 to 20 carbon atoms in a medium containing an alkanol solvent containing 1 to 8 carbon atoms, water, initially preesent in an amount of about 0.10 to about 0.5 weight percent water and in an amount less than 10 weight percent of the calcium oxide present.

8. A distillation-free process for making calcium alkaryl sulfonate solutions containing less than about 3.5 weight percent water comprising reacting together calcium oxide with an alkaryl sulfonic acid wherein the alkyl groups contain 8 to 20 carbon atoms, in a solvent medium comprising an alakanol containing 1 to 8 carbon atoms, water, initially present in an amount of about 0.10 to about 0.5 weight percent and in an amount less than 10 weight percent of the calcium oxide, wherein the water for the calcium oxide and alkaryl sulfonic acid reaction is supplied by adding a calcium alkaryl sulfonate solution containing less than 5 weight percent water, about 20 to 80 weight percent of calcium alkaryl sulfonate and the remainder being solvent, in an amount of said solution to provide the 0.10 to about 0.5 weight percent of water.

4,615,842

METHOD FOR MAKING ETHYNYLATED AROMATIC COMPOUNDS AND A METHOD FOR MAKING NITRONIUM TRIFLUOROMETHANESULFONATE

Kreisler S. Y. Lau, Alhambra, and Thomas K. Dougherty, Rancho Palos Verdes, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 614,168, May 25, 1984, abandoned, which is a division of Ser. No. 453,430, Dec. 27, 1982, abandoned. This application Sep. 23, 1985, Ser. No. 779,604

Int. Cl.⁴ C07C *143/02*

U.S. Cl. 260—513 F **3 Claims**

1. A process for making a homogeneous solution of nitronium trifluoromethanesulfonate comprising reacting trifluoromethanesulfonic anhydride with anhydrous nitric acid in an anhydrous solvent to thereby provide said homogeneous solution of nitronium trifluoromethanesulfonate which is free of hydronium trifluoromethanesulfonate.

4,615,843

TREATMENT OF HYDROCARBON SOLUTIONS OF DIALKYLMAGNESIUM COMPOUNDS TO REDUCE THE CONTENT OF SOLUBLE CHLORIDE-CONTAINING COMPLEXES

Loyd W. Fannin, Dickinson; Clark C. Crapo, Houston, and Dennis L. Deavenport, Seabrook, all of Tex., assignors to Texas Alkyls, Inc., Deer Park, Tex.

Filed Sep. 5, 1984, Ser. No. 647,556

Int. Cl.⁴ C07F *3/02*

U.S. Cl. 260—665 R **16 Claims**

1. A method for treating a hydrocarbon solution of a hydrocarbon soluble dialkylmagnesium compound to reduce the content of soluble chloride-containing complexes therein which comprises contacting the hydrocarbon solution with a quantity, with respect to the soluble chloride, of an alkyllithium compound, sufficient to reduce the concentration of soluble chloride-containing complexes to below that at which post-precipitation occurs, by precipitation of soluble chloride

as lithium chloride, and subsequently removing the precipitated lithium chloride from the solution.

4,615,844
WATER DISTRIBUTION SYSTEM

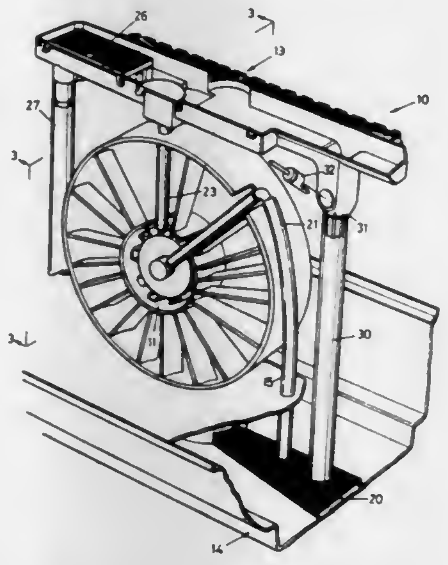
Maxwell Dickison, and Anthony D. Kearney, both of St. Marys, Australia, assignors to F. F. Seeley Nominees Pty. Ltd., St. Marys, Australia

Filed Jun. 19, 1985, Ser. No. 746,392

Claims priority, application Australia, Jun. 26, 1984, PG5691

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—29 **7 Claims**



1. Water distribution means for an evaporative cooler, wherein a pump is located at a lower level than a water container but at a higher level than a base tank, and is arranged to lift water from the base tank, discharge it into the water container and thence over an evaporator element and back into the base tank,

comprising a suction conduit which extends downwardly from the pump to the base tank, the shape of said suction conduit however including an upwardly directed portion located above the pump, and a discharge conduit which extends upwardly from the pump through a wall of the container and into the container, a water flow path between the container and the discharge conduit and having an opening into the container constructed so as to cause water to drain only slowly back into said conduit as said container empties after pump shut-off,

the dimensions of the conduits and opening being such that, when the pump is stationary, water in the conduits will initially drain into the base tank but, after such draining, water flowing from the container through the opening will recharge the conduits and pump sufficiently to prime the pump but siphon action will be inhibited by air entrapped in the upwardly directed portion.

4,615,845
VARIABLE VENTURI TYPE CARBURETOR AND ASSOCIATED METHOD

Michio Tahata, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

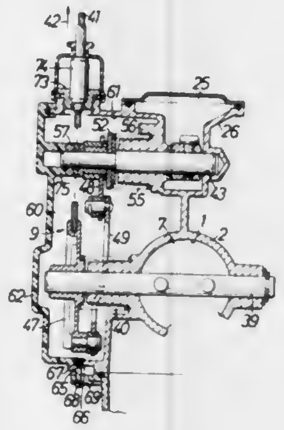
Filed Apr. 18, 1985, Ser. No. 724,522

Claims priority, application Japan, Apr. 25, 1984, 59-83230

Int. Cl.⁴ F02M *9/06*

U.S. Cl. 261—44 B **13 Claims**

1. A variable venturi type carburetor comprising a carburetor body provided with a suction passage therein, a slide valve supported by said body for movement across said suction passage to function as a variable venturi, a butterfly throttle valve pivotably supported by said carburetor body downstream of said slide valve, an interlocking means connecting said slide valve and said butterfly throttle valve for operation in correspondence with one another, said carburetor body comprising a side portion including a wall defining a housing recess, and a cover member fixed to said carburetor body to close said housing recess and form a housing chamber in which said interlocking means is arranged, said cover member including an integral loosening-preventing portion, said interlocking means including a setting nut associated with said slide valve, said loosening-preventing portion engaging said setting nut for preventing turning thereof, thereby to prevent said setting nut from being loosened.



4,615,846
METHOD OF MANUFACTURING A LOW-MELTING POINT ALLOY FOR SEALING IN A FLUORESCENT LAMP

Hisashi Yoshino, Yokohama; Masakatsu Haga, Tokyo; Takashi Yorifuji, Zushi, and Teruo Oshima, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 18, 1984, Ser. No. 651,682

Claims priority, application Japan, Sep. 30, 1983, 58-180531; Sep. 30, 1983, 58-180532; Sep. 30, 1983, 58-180533

Int. Cl.⁴ B01J *2/06;* **B28B** *3/20;* **H01J** *61/26*

U.S. Cl. 264—13 **19 Claims**

1. A method of manufacturing an amalgam for sealing in a fluorescent lamp, comprising the steps of:

melting an analgam for sealing in a fluorescent lamp:

ejecting the molten amalgam through a nozzle; and

bringing the discharged molten amalgam into contact with a coolant to rapidly cool the alloy,

wherein said amalgam consists of 15 to 57% by weight of tin, 5 to 40% by weight of lead, 30 to 70% by weight of bismuth, 4 to 50% by weight of indium and 4 to 25% by weight of mercury.

4,615,847
METHOD AND APPARATUS FOR PRODUCING A LENS HAVING AN ACCURATELY CENTERED ASPHERICAL SURFACE

Harry Howden, Smallfield, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 25, 1985, Ser. No. 705,757

Claims priority, application United Kingdom, Mar. 9, 1984, 8406159

Int. Cl.⁴ B29D *11/00*

U.S. Cl. 264—1.7 **6 Claims**

1. A method of manufacturing a lens having one aspherical surface and one nonaspherical surface arranged opposite the aspherical surface, both surfaces being aligned on a lens axis and being rotationally symmetric about the lens axis, said method comprising the steps of:

providing a mold, said mold having an aspherical mold surface which is the negative of the desired aspherical lens surface, said aspherical mold surface having an axis of rotational symmetry and having an optical finish which is the same as the optical finish of the desired aspherical lens surface;

mounting the mold on a jig;

rotating the mold on a jig around an axis of rotation;

reflecting a beam of light off of the aspherical mold surface to form a light spot on a screen;

adjusting the position of the mold until the light spot no longer moves on the screen when the mold is rotated on the jig;

providing a glass substrate having first and second surfaces on opposite sides of the substrate, the first surface having approximately the asphericity and finish of the desired aspherical surface, the second surface forming the nonaspherical surface of the finished lens;

mounting the substrate on the jig with the aspherical substrate surface facing and spaced from the aspherical mold surface;

rotating the substrate on the jig around the axis of rotation;

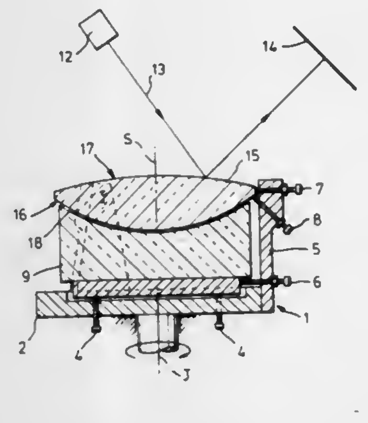
reflecting a beam of light off of the nonaspherical substrate surface to form a light spot on the screen;

adjusting the position of the substrate until the light spot no longer moves on the screen when the substrate is rotated on the jig;

filling the space between the mold and the substrate with a liquid light-transmission polymeric material;

bonding the polymeric material to the aspherical surface of the substrate; and

removing the mold.



5. An apparatus for manufacturing a lens having one aspherical surface and one nonaspherical surface arranged opposite the aspherical surface, both surfaces being aligned on a lens axis and being rotationally symmetrical about the lens axis, said apparatus comprising:

a jig for rotating a mold and a substrate about an axis of rotation, said mold having an aspherical mold surface which is the negative of the desired aspherical lens surface, said aspherical mold surface having an axis of rotational symmetry and having an optical finish which is the same as the optical finish of the desired aspherical lens surface, said substrate having first and second surfaces on opposite sides of the substrate, the first surface having approximately the asphericity and finish of the desired aspherical surface, the second surface forming the nonaspherical surface of the finished lens;

a light source and screen for reflecting a beam of light off of the aspherical mold surface or the nonaspherical substrate surface to form a light spot on the screen;

means for adjusting the position of the mold until the light spot no longer moves on the screen when the mold is rotated on the jig; and

means for adjusting the position of the substrate until the light spot no longer moves on the screen when the substrate is rotated on the jig.

4,615,848
PYROELECTRIC AND ISOTROPIC PIEZOELECTRIC POLYMER BLENDS

Dennis L. Krueger, Hudson, Wis.; Neil W. Loeding, Mounds View, and Claudia I. Poser, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 413,764, Sep. 1, 1982, abandoned, which is a division of Ser. No. 273,901, Jun. 19, 1981, abandoned, which is a continuation-in-part of Ser. No. 171,279, Jul. 23, 1980, abandoned. This application Feb. 15, 1985, Ser. No. 702,023

Int. Cl.⁴ C08L *27/16, 31/04, 33/10;* **C08J** *5/18*

U.S. Cl. 264—22 **3 Claims**

1. A process for forming a pyroelectric and isotropic piezoelectric polyeric film which has not been mechanically oriented comprising:

(a) forming a melt blend by intimately mixing a polymer blend at a sufficient temperature to cause a homogeneous mixture, said polymer blend comprising polyvinylidene flouride and at least one polymer miscible therewith at a temperature above the melting point of said polyvinylidene flouride;

(b) forming a film of said melt blend;

(c) heating said film to a temperature above the melting point of said polyvinylodiene flouride for a sufficient time to render said film substantially amorphous;

(d) cooling said film at a rate and to a temperature sufficient to prevent crystallization of said film; and

(e) polarizing said film to render same pyroelectric and isotropically piezoelectric.

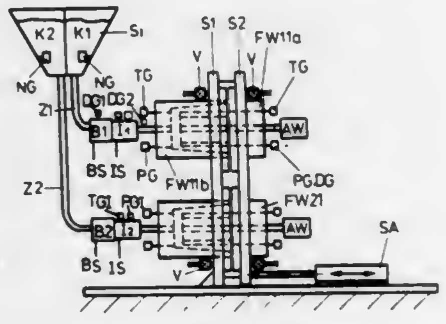
4,615,849
METHOD AND DEVICE FOR SINTERING DIFFERING MOLDED PARTS IN PARTICULAR FROM VARIOUS TYPES OF FOAMING PLASTIC IN PARTICULAR

Ortwin Hahn, Paderborn, Fed. Rep. of Germany, assignor to Sodemape Holding AG, Luxembourg

Filed Nov. 28, 1983, Ser. No. 555,867

Int. Cl.⁴ B29C *67/22, 67/04;* **C08J** *9/22*

U.S. Cl. 264—40.4 **5 Claims**



1. A method of molding expandable plastic particles in consecutive process cycles, said cycle including (a) introducing said particles into a mold cavity, (b) heating the particles in said mold to fuse the particles together to further expand the particles and to form a molded foam, (c) cooling the resultant molded foam, (d) removing the molded foam from the mold cavity, wherein the improvement comprises providing the mold cavity with means to supply and remove air, cold water, steam and vacuum, providing means to measure the temperature and pressure in the mold and to generate and transmit temperature and pressure signals to a control means based on such measurements, providing a memory means for said control means, said memory means for storing given values for material data relating to properties of the plastic and mold parameters and for storing values of said signals from previous process cycles, continuously controlling the flow of the air, cold water, steam and vacuum by the control means by comparing the temperature and pressure signals during each cycle and determining resulting control signals, further by comparing said given values and the measured values from the current

process cycle, providing a storage in said control means for resulting cycle time lengths of the control signals of current process steps, and changing the cycle time length process cycle by process cycle by comparing the current and the earlier cycle time lengths and setting the related given stored values in the direction of decreasing the total process cycle time for the next cycle, and analyzing given upper and lower limits of the given values and the given time limits for the control signal lengths.

4,615,850
FOAMABLE POLYVINYLIDENE FLUORIDE AND METHODS

Roger L. Pecsok, Berwyn, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jul. 16, 1984, Ser. No. 630,924

Int. Cl.⁴ B29D *7/00*

U.S. Cl. 264—45.9 **16 Claims**

1. A method for producing a foamable polyvinylidene fluoride material suitable for forming foamed electrical wire insulation having a dielectric constant of less than about 5.0, comprising:

(a) blending in an intensive powder blender a mixture of
- (i) a polymer selected from the group of polymers consisting essentially of a homopolymer of polyvinylidene fluoride, copolymers or terpolymers containing a major portion of vinylidene fluoride with at least one copolymerizable monomer selected from the group consisting essentially of hexafluoropropylene, trifluoroethylene, chlorotrifluoroethylene and tetrafluoroethylene and mixtures of the homopolymer, copolymer, and terpolymer;
- (ii) 0.05 to 5.0 percent by weight of the polymer of (i) of a nucleating agent of discreet, insoluble particles having a size distribution whose average length in the longest dimension of less than about 5 microns;
- (iii) 0.05 to 5.0 percent by weight of the polymer of (i) of a blowing agent having an activation temperature that is above the melting point of said polymer but below the decomposition temperature of said polymer;
- (iv) 0.05 to 5.0 percent by weight of the polymer of (i) of a dispersing aid selected from the group consisting of dialkyl phthalate, dibutoxyethyl phthalate, diisononyl phthalate, ditridecyl phthalate, dicyclohexyl phthalate, diphenyl alkyl adipate, methyl phthalyl ethyl glycolate, and diethylene glycol monobutyl ether;

to provide a substantially homogeneous powdered mixture;

(b) melt compounding the substantially homogeneous powdered mixture of (a) with high shear melt compounding means while maintaining the temperature of the mixture below the activation temperature of the blowing agent to provide a substantially homogeneous melted blend of the mixture of (a); and then

(c) extruding and quenching the melted mixture of (b) to provide the foamable polyvinylidene fluoride material.

4,615,851
PREPARATION OF BETA″-ALUMINA TUBES BY THE EXTRUSION PROCESS

Ares N. Theodore, Farmington Hills, and Robert A. Pett, Franklin, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 479,105, Mar. 28, 1983, abandoned, which is a continuation of Ser. No. 300,369, Sep. 8, 1981, abandoned. This application Feb. 21, 1985, Ser. No. 704,882

Int. Cl.⁴ C04B *35/64*

U.S. Cl. 264—63 **21 Claims**

1. A method of extruding a tubular green body which comprises:

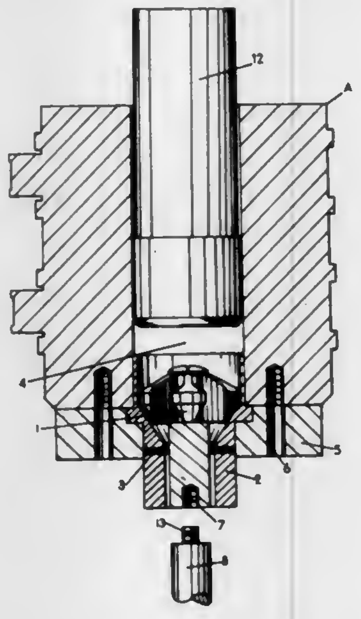
providing a mixture of about 40–60 volume percent of sinterable particulate solids consisting essentially of a particle size distribution of beta″-alumina percursor particulate comprising alpha-alumina and about 60–40 volume percent organic sacrificial binder in a means for extruding said mixture;

applying heat and pressure to the mixture in the extruder means, said extruder means containing an extrusion die wherein the ratio of the length of the die to the wall thickness of said tubular green body is greater than about 5:1, and

maintaining the heat and pressure on said mixture so as to extrude tubing over a mandrel at a rate which allows extrusion of a length of smooth tube, wherein said sacrificial binder consists essentially of:

(a) a thermoplastic block copolymer component selected from the group consisting of linear, radial and linear and radial block copolymers, said block copolymers having a first aromatic block which is glassy or crystalline at 20°–25° C., and which has a softening point between about 80°–250° C. and a second aliphatic block which is different from said first block and behaves as an elastomer at temperatures between about 15° C. below and about 100° C. above said softening point of said first block;

(b) two oils having different initial boiling points and being selected from the group consisting of oil at least about 75 percent by weight of which boils in a range of between about 285°–560° C., and which has a viscosity of between about 30–220 Saybolt Universal Seconds (SUS) at 100° C. and an Aniline Point in a range between about 75°–125° C.;



(c) two waxes having different initial boiling points and being selected from the group consisting of wax melting at a temperature in a range of between about 55° C.–80° C., and at least 75 percent by weight of which boils at temperatures in a range between about 315° C.–490° C.;

(d) a first stiffening thermoplastic polymer which is glassy or crystalline at 20°–25° C. and which has a softening point between about 80°–250° C. and comprises aromatic monomeric units associable with block copolymer (a);

(e) a second stiffening thermoplastic polymer, different from said first polymer and which is glassy or crystalline at 20° C.–25° C., and which has a softening point between about 80°–250° C. and comprises aromatic monomeric units associable with block copolymer (a); and

(f) processing aid comprising an ester of fatty acids, the weight of (a) being greater than (b) and (c) combined, greater than (d) and (e) combined and greater than about two times (b), (c), (d), (e), or (f) alone, and the order of mixing being said thermoplastic block copolymer (a), said sinterable particulate, said waxes (c), said stiffening agent (d) and (e), said oils (b), and said processing aids (f).

4,615,852
METHOD FOR PRODUCING NITROCELLULOSE-BASED CARBON BLACK CONCENTRATES IN THE FORM OF CHIPS

Claus R. Engel, Waldorf, and Lutz Dworowy, Bruehl, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 6, 1984, Ser. No. 577,427

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1983, 3304688

Int. Cl.⁴ B29B *9/02*

U.S. Cl. 264—118 **14 Claims**

1. A method for producing nitrocellulose-based carbon black concentrates comprising:

(a) low molecular weight alcohol free nitrocellulose chips

(b) carbon black

(c) plasticizer, and

(d) wetting agent wherein said alcohol free nitrocellulose is mixed thoroughly in the absence of a low molecular weight alcohol with the other constituents (b), (c) and (d) to form a free-flowing mixture, converting said mixture at an elevated temperature into a dispersion, then forming said dispersion into a film, cooling said film down to a temperature that allows it to be crushed, and crushing it into chips.

4,615,853
METHOD FOR PRODUCING THERMOPLASTIC RESIN SHEET OR FILLER-CONTAINING RESIN SHEET

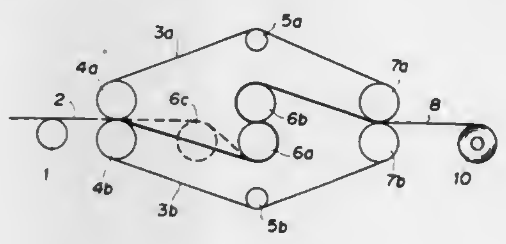
Takeo Aoyama, Yokohama; Tadashi Kamei, Yokosuka, and Mikio Uehara, Tokyo, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Filed Oct. 5, 1984, Ser. No. 658,283

Claims priority, application Japan, Oct. 5, 1983, 58-186097; Nov. 8, 1983, 58-209472

Int. Cl.⁴ B29C *43/24, 43/48, 67/16*

U.S. Cl. 264—122 **4 Claims**



1. A method for producing a thermoplastic resin sheet or a filler-containing resin sheet which method is characterized in that a difficultly-workable thermoplastic resin or a composition of a difficulty-workable thermoplastic resin and a filler is fed in powder or preformed sheet form between a pair of endless steel belts stretched under a tension of at least 3 kg/cm, disposed parallel and traveling together around a set of rolls, said endless belts being heated by being brought into surface-to-surface contact with heating rolls while travelling along a path having at least one bend formed on said heating rolls, said resin or composition heated and compressed in said bend between said endless belts and melted into an integral body at or above the melting point or softening point of said thermoplastic resin.

4,615,854
METHOD OF MAKING A PTFE BASED TAPE SUITABLE FOR IMPREGNATION INTO A POROUS METAL MATRIX

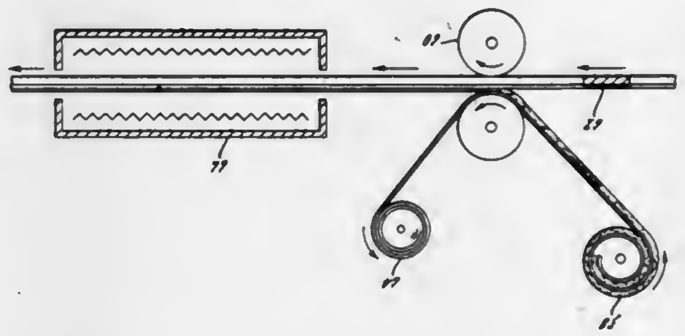
George C. Pratt, Ann Arbor, and Michael C. Montpetit, Chelsea, both of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Apr. 30, 1984, Ser. No. 605,037

Int. Cl.⁴ B27J *5/00*

U.S. Cl. 264—127 **11 Claims**

1. A method of impregnating a porous metal matrix mounted on a backing with a PTFE based composition comprising providing a tape composition comprising PTFE and liquid lubricant on a layer of supporting material, providing a porous metal matrix, impregnating said porous metal matrix with said tape composition, thereby filling the pores of said matrix throughout the said matrix and to said backing, and thereafter removing said layer of supporting material, said tape composition being of the constituency of a semi-compressed, semi-liquid paste having a substantial liquid lubricant content such that the tape composition is capable of being forced into the pores of said porous metal matrix without materially compacting said matrix and thereby closing the pores thereof.



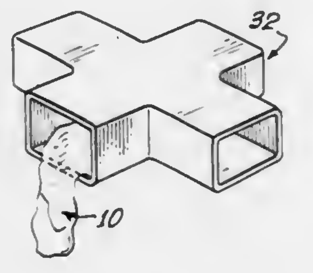
4,615,855
PROCESS FOR FORMING COMPOSITE ARTICLE

Edward Orlowski, La Mirada, and George D. Walker, Brea, both of Calif., assignors to Programmed Composites, Inc., Brea, Calif.

Filed Mar. 15, 1984, Ser. No. 589,881

Int. Cl.⁴ B29C *33/40*

U.S. Cl. 264—221 **12 Claims**



1. A process for forming a hollow, cured composite article comprising the steps of:

preparing a meltable plug having external dimensions equal to the internal shape of the cured composite article;

placing a polymerizable material about that portion of the plug which corresponds to the interior of the composite article to be formed;

inserting the polymerizable-material-covered plug into a cavity formed in a thermally-expansive and heat-resistant polymer and placing the polymer and plug assembly into a rigid container;

affixing the cover over the container and heating the contents of the container thereby causing the thermally-expansive polymer to expand and the polymerizable polymer to crosslink;

cooling the contents of the container;

removing the plug and its cross-linked covering from the container and from the cavity; and

heating the plug and its composite material part to a temperature sufficient to melt the plug thereby leaving a cured composite part.

2. The process of claim **1** further including, after said preparing step, the steps of:

covering that portion of the plug which corresponds to the interior of the composite article to be formed with a removable substance about the thickness of the cured composite article thereby forming a covered plug;

placing the covered plug into a closeable, rigid container which does not significantly deform at an internal pressure of 700 psig;

filling the rigid container with a curable, thermally-expansive and heat-resistant polymer to an extent so that when the rigid container is closed, it will be filled between 90% and 100%;

curing the thermally-expansive polymer;

separating the cured polymer into sufficient parts so that the covered plug can be removed without tearing the cured polymer;

removing the covered plug from the polymer thereby leaving a cavity in the polymer; and

removing the removable substance from the covered plug.

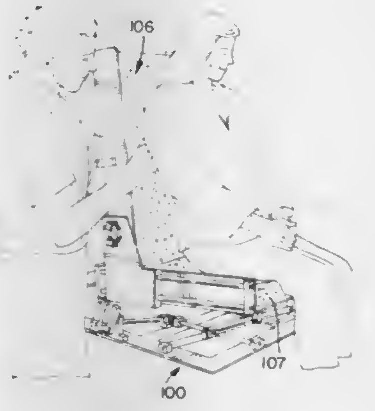
4,615,856
METHOD FOR FORMING AN INDIVIDUALLY CONTOURED CORRECTIVE SEAT FOR A WHEELCHAIR

Michael W. Silverman, 414½ Arlington St., Chicago, Ill. 60614

Division of Ser. No. 524,861, Aug. 19, 1983. This application Jul. 29, 1985, Ser. No. 760,245

Int. Cl.⁴ B29C *33/40, 39/10, 67/22*

U.S. Cl. 264—222 **3 Claims**



1. A method for forming an individually contoured corrective seat for intended use by a disabled person, said seat being of the type having a frame including a substantially vertical back supporting portion and a substantially horizontal buttocks supporting portion adjustably connected thereto, with each portion adapted to retain at least one resilient cushionlike member thereon, said method comprising the steps of:

positioning a human being on an impression forming structure having back and bottom deformable bags positioned thereon with each bag including a mass of bead-like material therein in order to form impressions on said bags of the back and buttocks respectively of said human being;

evacuating air from said back and bottom bags, respectively, to interlock said bead-like material into a form retaining condition;

forming a positive mold surface of said back and buttocks impressions by applying a setable mastic material to said impressions on said bags, and allowing same to set;

making corrective changes to the shape of said impressions by at least one of manipulating said bead-like material in said bags and repositioning mastic material from at least a portion of said positive mold surface;

forming a mold cavity by providing a boundary wall around the portion of said positive mold surface to be utilized in making a seat cushion; and

filling said cavity with a setable fluid material and allowing same to cure into a correctively contoured back and buttocks seat cushions.

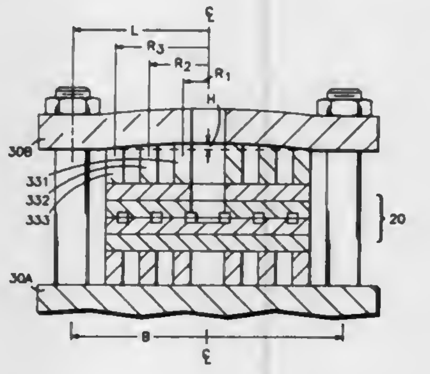
4,615,857
ENCAPSULATION MEANS AND METHOD FOR REDUCING FLASH

John Baird, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 30, 1984, Ser. No. 676,759

Int. Cl.⁴ B29C *33/20, 39/10*

U.S. Cl. 264—272.17 **10 Claims**



1. A molding apparatus for encapsulating electronic devices comprising:

separable mold plates adapted to receive multiple electronic devices for encapsulation;

a press having a first moveable platen and a second fixed platen, said fixed platen being held by four posts, wherein said press is adapted for clamping said mold plates together between said platens with a predetermined force;

mounting blocks for attaching said mold plates to said platens;

wherein said mold plates and said platens have a common centerline perpendicular to said platens;

wherein said mounting blocks between said mold and at least one of said platens have different lengths as a function of their distance R from said center line;

wherein the differences in lengths (H−z) of said said mounting blocks are determined according to the equations,

$$(H-z)=(D/2)-[(D/2)^2-R^2]^{\frac{1}{2}},\text{ where}$$

$$D=(A^2+B^2)/4H,$$

where A and B are the lateral separations between said posts, and where H is the measured deflection of the center of said at least one platen when said predetermined force is applied by said press.

10. A method for encapsulating electronic devices comprising:

providing separable mold plates having mating surfaces and adapted to receive multiple electronic devices for encapsulation;

providing a press having a first moveable platen and a second fixed platen, said fixed platen being held by four posts, wherein said press is adapted for clamping said mold plates together between said platens with a predetermined force;

providing mounting blocks for attaching said mold plates to said platens, wherein said mounting blocks between said mold and at least one of said platens have different lengths as a function of their distance R from the centerline of said press, wherein the differences in lengths (H−z) of said mounting blocks are determined according to the equations,

$$(H-z)=(D/2)-[(D/2)^2-R^2]^{\frac{1}{2}},\text{ where}$$

$$D=(A^2+B^2)/4H.$$

where A and B are the lateral separations between said posts, and where H is the measured deflection of the center of said at least one platen when said predetermined force is applied by said press;

attaching said mold plates to said platens with the centerline of said mold substantially coincident with said centerline of said press and using said attachment blocks of different length;

opening said press to separate said mold into two parts;

placing said electronic parts to be encapsulated in a first of said mold parts;

closing said mold;

applying a clamping force to said mold in said press to seal the mating surfaces of said mold parts;

providing a plastic encapsulant material to a reservoir in said mold;

injecting said plastic encapsulant into said mold cavities surrounding said electronic parts to encapsulate them;

thereafter opening said mold and removing said encapsulated parts.

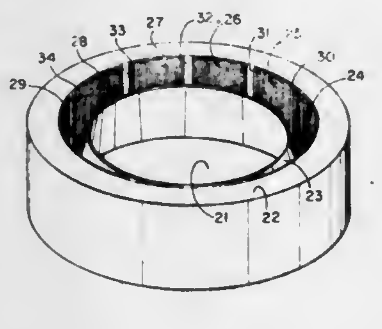
4,615,858
METHOD AND APPARATUS PRODUCING DECORATIVE MELT FRACTURE PATTERNS ON POLYMERIC PRODUCTS

Tien-Kuei Su, Pittsford, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 16, 1985, Ser. No. 734,435

Int. Cl.⁴ B29C *47/12*

U.S. Cl. 264—564 **15 Claims**



1. The method of producing beautifying patterns on the surface of extruded polymer products comprising:

coating an extruding die with a controlled pattern of low surface energy material; and

forcing molten polymer through said die to produce melt fracture texture in the product extruded through the uncoated part of said die.

11. Apparatus for producing beautifying patterns on the surface of extruded products comprising:

an extruding die having a controlled pattern of low surface energy material in said die; and

means for forcing molten polymer through said die to produce melt fracture texture in the product extruded through the uncoated part of said die.

4,615,859
METHOD OF MANUFACTURE OF IMPROVED RADOME STRUCTURE

G. Robert Traut, S. Killingly, Conn., assignor to Rogers Corporation, Rogers, Conn.

Filed May 13, 1981, Ser. No. 263,191

Int. Cl.⁴ B27J *5/00*

U.S. Cl. 264—570 **24 Claims**

1. A method for the production of a complex shape of unitary structure from fiber reinforced polymeric material comprising the steps of:

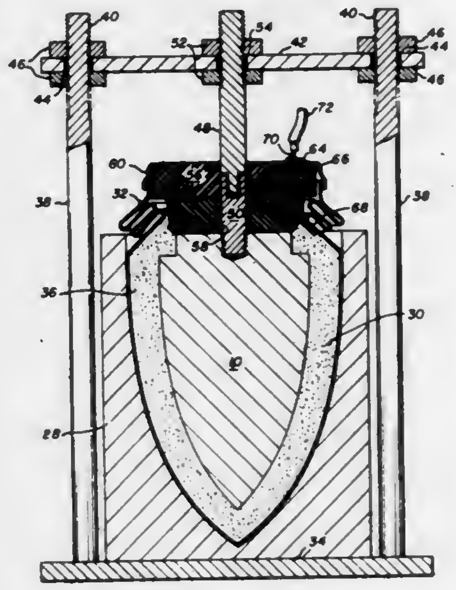
forming a mixture of powdered polymeric material and reinforcing fibers;

packing a layer of said mixture around a mandrel having a surface contour which resembles the interior surface of the complex shape;

subjecting said layer of said mixture to a sufficient pressure to compact said layer upon the mandrel to almost the ultimate desired density of said layer;

applying said pressure equally over and normal to the entire surface of the mandrel;

heating said layer to sinter said mixture;



cooling said layer; and

machining said layer to the desired contour of the complex shape.

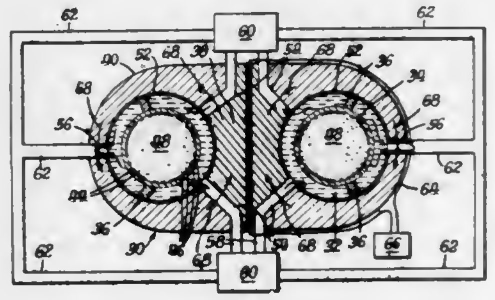
4,615,860
TOKAMAK WITH IN SITU MAGNETOHYDRODYNAMIC GENERATION OF TOROIDAL MAGNETIC FIELD

Michael J. Schaffer, San Diego, Calif., assignor to United States Department of Energy, Washington, D.C.

Filed Feb. 28, 1979, Ser. No. 15,965

Int. Cl.⁴ G21B *1/00*

U.S. Cl. 376—133 **4 Claims**



1. Tokamak apparatus comprising

an electrically conductive metal pressure vessel rotationally symmetric about a major axis and symmetric about a midplane perpendicular to that axis, said vessel having walls for defining a toroidal chamber and confining liquid therein;

a toroidal liner symmetrically disposed within said toroidal chamber and spaced from said vessel walls for defining a toroidal space within said liner and confining gas therein, said metal vessel providing an electrically conductive path poloidally linking said toroidal space,

gas contained in said toroidal space,

liquid metal completely surrounding said toroidal liner and filling said chamber outside said liner, said vessel having inlet and outlet port means through which liquid metal may respectively enter and leave said chamber outside said liner, said inlet and outlet port means being relatively disposed with the latter father from the major axis of said toroidal space than the former,

means within said chamber for insulating said pressure vessel from said liquid metal contained therein,

exciter means for initially establishing an exciter magnetic field within said vessel in a given toroidal direction,

means external to said vessel for forcing liquid metal into said chamber through said inlet port means, outwardly through said chamber outside of said toroidal liner, and out of said chamber through said outlet port means to generate poloidal electric current in said conductive path and thereby generate a toroidal magnetic field within said toroidal space in the given toroidal direction, and

means for developing toroidal plasma within said toroidal space about the major axis thereof.

4,615,861

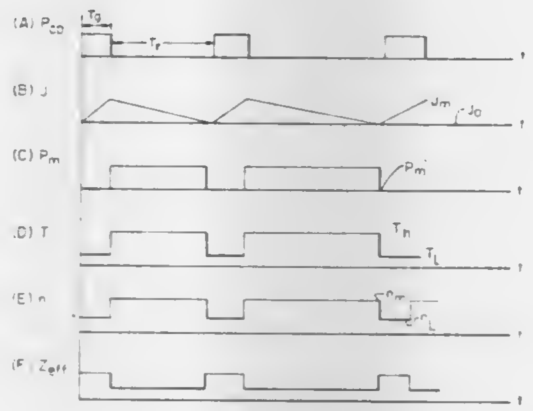
OSCILLATORY NONHMIC CURRENT DRIVE FOR MAINTAINING A PLASMA CURRENT

Nathaniel J. Fisch, Princeton, N.J., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 22, 1983, Ser. No. 477,700

Int. Cl.⁴ G21B *1/00*

U.S. Cl. 376—133 **22 Claims**



1. A system for maintaining a steady-state toroidal current for magnetically confining, in a toroidal magnetic plasma device, a toroidal plasma having a density, temperature, resistivity, purity, average ionic charge state, inductance L, ressitivity R, and an electrical time contant $\tau = L/R$, the system comprising:

pulsed nonohmic current drive means, which includes a first source of external energy, for cyclically energizing said plasma so as to drive, over a plurality of cycles, a toroidal current therethrough, wherein each cycle consists of a generation period during which said first source applies external energy to the plasma so as to drive said toroidal current therethrough, and a relaxation period during which the application of said external energy is ceased and said toroidal current is allowed to decay; and

means for oscillating the plasma resistivity by cyclically degrading the plasma during said generation period of said pulsed nonohmic current drive cycle so as to minimize said toroidal electrical time constant during said generation period to thereby minimize the power required to provide a steady-state toroidal confining current during the overall current drive cycle.

14. A method for maintaining a steady-state toroidal current for magnetically confining, in a toroidal magnetic plasma device, a toroidal plasma having a density, temperature, resistivity, purity, average ionic charge state, inductance L, resistivity R, and an electrical time constant $\tau = L/R$, the method comprising:

cyclically energizing said plasma with pulsed nonohmic current drive means so as to drive, over a plurality of cycles, a toroidal current therethrough, wherein each cycle consists of a generation period during which external energy is applied to the plasma so as to drive said toroidal current therethrough, and a relaxation period during which the application of said external energy is ceased and said toroidal current is allowed to decay, and

oscillating said plasma resistivity by cyclically degrading the plasma during said generation period of said pulsed nonohmic current drive cycle so as to minimize said toroidal electrical time constant during said generation period to thereby minimize the power required to provide a steady-state toroidal confining current during the overall current drive cycle.

4,615,862

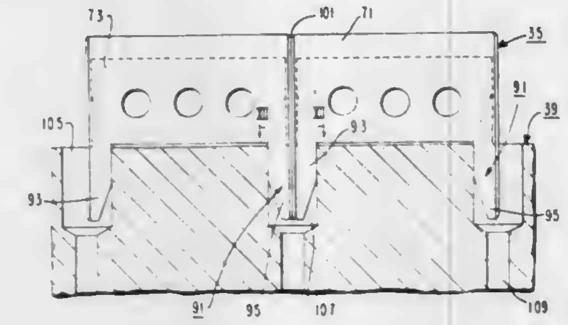
NUCLEAR REACTOR WITH FUEL ASSEMBLY SUPPORT MEANS

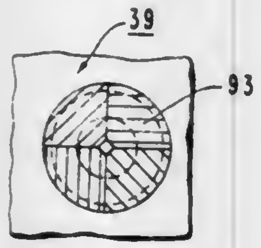
Edgar A. Huckestein, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 21, 1983, Ser. No. 563,896

Int. Cl.⁴ G21C *3/32*

U.S. Cl. 376—362 **6 Claims**





1. A nuclear reactor including a core having a plurality of fuel assemblies, each of generally polygonal transverse cross section, said assemblies being mutually nested side-by-side in an array, each of said fuel assemblies including a plurality of pins, each pin extending downwardly from a region near a corner of the bottom of said each fuel assembly, the pins extending from near the corners of a plurality of fuel assemblies whose corners converge forming a group of adjacent pins, said reactor also including a core support plate having holes, each of said group of adjacent pins extending into a said hole of said core support plate whereby said fuel assemblies are supported and aligned by said support plate.

4,615,863

PROCESS FOR PRODUCTION OF READILY SINTERABLE ALUMINUM NITRIDE POWDER

Hiroshi Inoue, Kawaguchi; Akihiko Tsuge, Yokohama, and Katsutoshi Komeya, Oiso, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 22, 1985, Ser. No. 768,137

Claims priority, application Japan, Sep. 28, 1984, 59-203565; Dec. 27, 1984, 59-274093

Int. Cl.⁴ B22F *1/00*

U.S. Cl. 419—23 **12 Claims**

1. A process for producing readily sinterable aluminum nitride powder, comprising the steps of

(A) mixing
  (i) alumina powder and/or powder of a compound capable of forming alumina by heat treatment,
  (ii) carbon powder and/or powder of a compound capable of forming carbon by heat treatment, and
  (iii) powder of at least one compound selected from the group consisting of alkaline earth metal oxides, compounds capable of forming said alkaline earth metal oxides by heat treatment, rare earth element oxides and compounds capable of forming said rare earth element oxides by heat treatment; and

(B) calcining the resulting mixture in a nitrogen-containing non-oxidative atmosphere.

4,615,864

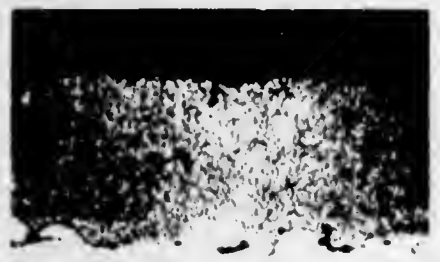
SUPERALLOY COATING COMPOSITION WITH OXIDATION AND/OR SULFIDATION RESISTANCE

Louis E. Dardi, and Srinivasan Shankar, both of Muskegon, Mich., assignors to Howmet Turbine Components Corporation, Greenwich, Conn.

Division of Ser. No. 145,460, May 1, 1980, Pat. No. 4,339,509, which is a continuation-in-part of Ser. No. 67,097, Aug. 16, 1979, Pat. No. 4,313,760, which is a continuation-in-part of Ser. No. 43,146, May 29, 1979, abandoned. This application Apr. 23, 1982, Ser. No. 371,447

Int. Cl.⁴ C22C *19/00*

U.S. Cl. 420—437 **13 Claims**



2. A coating composition for application to nickel, cobalt and iron base superalloys consisting essentially by weight of from 15 to 40% chromium, 3 to 13% aluminum, 0.1 to 10% manganese, up to 5% tantalum, up to 2% tungsten, up to 12% silicon, up to 10% hafnium, and the balance cobalt.

4,615,865

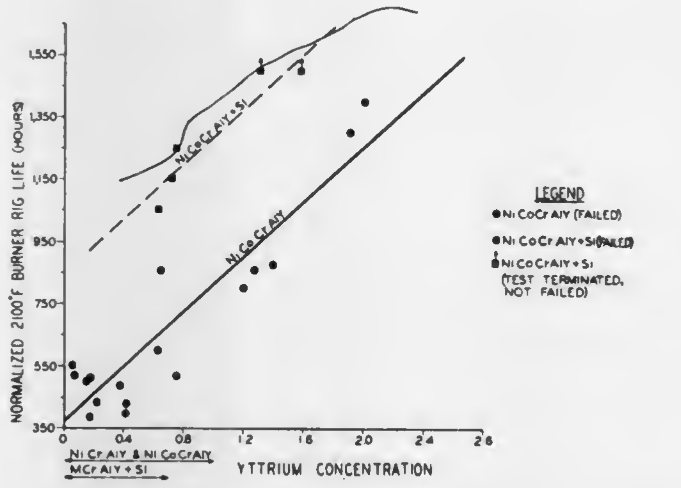
OVERLAY COATINGS WITH HIGH YTTRIUM CONTENTS

David S. Duvall, Cobalt, and Dinesh K. Gupta, Vernon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 289,953, Aug. 5, 1981, abandoned. This application Jul. 12, 1983, Ser. No. 512,945

Int. Cl.⁴ B32B *15/01, 15/20;* C22C *19/03, 30/00*

U.S. Cl. 420—588 **1 Claim**



1. A coating gas turbine component displaying enhanced resistance to oxidation which comprises a superalloy substrate, said superalloy containing 0.1–2% Hf, and a plasma sprayed coating on the substrate, said coating consisting essentially of 10–35% Cr, 8–20% Al, 1.1–3.0% Y, 0–30% Co, balance nickel.

4,615,866

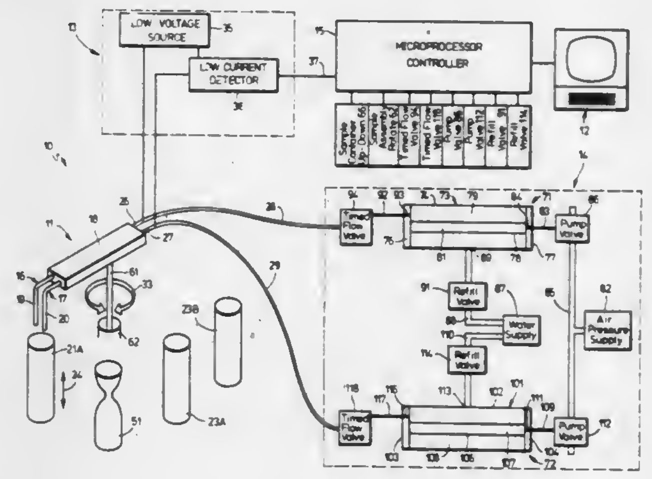
FLUID-SAMPLING SYSTEM AND METHOD

David D. Hyde, Camby, and James R. Stuart, Sheridan, both of Ind., assignors to American Monitor Corporation, Indianapolis, Ind.

Filed Jul. 27, 1984, Ser. No. 635,295

Int. Cl.⁴ G05D *9/00*

U.S. Cl. 422—106 **37 Claims**



27. A system for sampling serum, comprising:

a first conveyor means to move a plurality of specimen containers to a serum-wthdrawal position;

a second conveyor means to move a plurality of reagent containers to a serum-dispensing position;

a serum sampler tube adapted to be moved between the serum-withdrawal position and the serum-dispensing position;

means for moving said serum sample tube between the serum-withdrawal position and the serum-dispensing position;

a fluid-delivery system comprising a pressure-generating means connected with said serum-sampling tube through a timeable control valve for applying a positive and negative pressure to the serum sampler tube to dispense and withdraw serum; and

control means for said system, comprising a microprocessor including means for storing a plurality of predetermined times that correspond to quantities of serum dispensable by said sampler tube and fluid-delivery system with said positive pressure applied, means for entering a serum sample quantity and for selecting from said storage means the time corresponding to said selected serum sample quantity, means for controlling the pressure-generating means and timeable control valve of the fluid delivery system to apply negative pressure to the serum sampler tube to effect withdrawal of serum and to apply positive pressure to said serum sampler tube for said time to effect dispensing of said selected sample quantity, and means for operating said moving means to position the serum sampler at said serum-withdrawal position for withdrawal of serum and to position said serum sampler tube at the serum-dispensing position to dispense the selected serum sample.

4,615,867

APPARATUS FOR COOKING, DEHYDRATION AND STERILIZATION-DRYING OF ORGANIC WASTES

Emile A. Heckmann, Strasbourg, France, assignor to K. Systeme S.A.R.L., Pont Saint Marie, France

Filed Apr. 27, 1984, Ser. No. 604,601

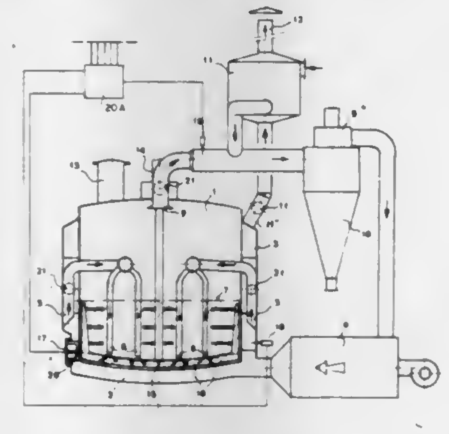
Claims priority, application France, May 2, 1983, 83 07392

Int. Cl.⁴ F26B *3/06*

U.S. Cl. 422—109 **7 Claims**

1. Apparatus for cooking-dehydration and sterilization-drying of organic wastes, comprising a chamber (1) with double walls forming an enclosure (2) comprising fire tubes (3) that

surround said chamber and that empty into conduits (5) connected to diffusion nozzles (6) immersed in a mass of product (7) trained in the chamber (1), a firebox (4) having an outlet connected to the enclosure (2) for supplying hot gases to the enclosure (2) and to said fire tubes (3) of the enclosure (2), a cyclone (10) having an exhaust gas ventilator (8) connected to the chamber (1) and to said firebox (4) so as to withdraw gases from within the chamber (1) and pass a portion of said gases through the cyclone (10) and then back to the firebox (4) for combustion of said gases, an indirect ambient air heat exchanger (11) connected to said fire tubes (3) and to said ventilator (8) so that said ventilator (8) draws fresh ambient air through said heat exchanger (11) in indirect heat exchange with said hot gases from said fire tube (3) in order to preheat said fresh air and said ventilator passes said preheated fresh air to said firebox (4) in admixture with said combusted gases from said chamber (1).



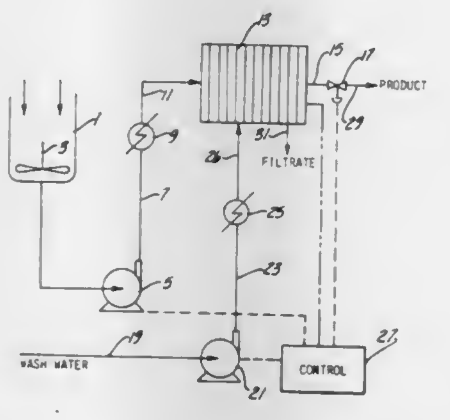
4,615,868
APPARATUS FOR PURIFYING COPPER PHTHALOCYANINE PIGMENT

Matthew K. L. Wong; Rodney G. Schroeder, and Thomas E. Donegan, all of Holland, Mich., assignors to BASF Corporation, Wyandotte, Mich.

Filed Sep. 28, 1982, Ser. No. 425,784

Int. Cl.^{4} G05D *7/00*

U.S. Cl. 422—111 **2 Claims**



1. An apparatus for purifying copper phthalocyanine pigment in a continuous process without the use of acid which comprises a container for preparing a slurry of said pigment in water, a first pumping means having a motor conduit means for conducting said slurry from said container to the inlet of said first pumping means, first heating means capable of heating said slurry to a temperature of at least about 75° C., conduit means for conducting said slurry from said first pumping means to said first heating means, a thin film pressure filter, conduit means for conducting said slurry from said first heating means to said thin film pressure filter, the apparatus being arranged such that the temperature of said slurry passing through said thin film pressure filter is close to the exit temperature of said slurry from said first heating means, product outlet means from said filter, control valve means positioned in said product outlet means, means for washing filter cake formed on said filter comprising a source of wash water, second pumping means having a motor, conduit means from said source of wash water to the inlet of said second pumping means, second heating means, conduit means for conducting wash water from the outlet of said second pumping means to said second heating means, said second heating means having sufficient capacity to provide wash water at a temperature approaching that of said slurry entering said filter, further conduit means for conducting said wash water from said second heating means to said thin film pressure filter, control means constructed and arranged so as to control the speed of both motors on said pumping means, in turn controlling the pressure of said slurry entering said thin film pressure filter and the pressure of said wash water entering said thin film pressure filter, both of said pumping means being so controlled by said controller that the pressure of the slurry entering said thin film pressure filter and the pressure of said wash water entering said thin film pressure filter are approximately the same.

4,615,869
ORE BENEFICIATION PROCESS

Ross A. Kremer, Ringoes, and Stephen W. Saunders, Plainsboro, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 545,553, Oct. 26, 1983, abandoned. This application Jun. 24, 1985, Ser. No. 747,692

Int. Cl.^{4} C01F *1/00, 5/00;* **B03B** *1/00;* **B03D** *3/00*

U.S. Cl. 423—167 **8 Claims**

1. A method for substantially improving the consolidation characteristics of phosphatic clays generated in phosphatic beneficiation, comprising:

(a) adding to an as-mined matrix phosphate, prior to washing or classification, an aqueous solution of an acid selected from the group consisting of short chain organic acids, polybasic acids, mineral acids, and mixtures thereof, the concentration of acid added being between about 0.1 and about 10 pounds per ton of dry matrix phosphate; and

(b) subsequently washing or classifying the resultant aqueous solution containing matrix phosphate.

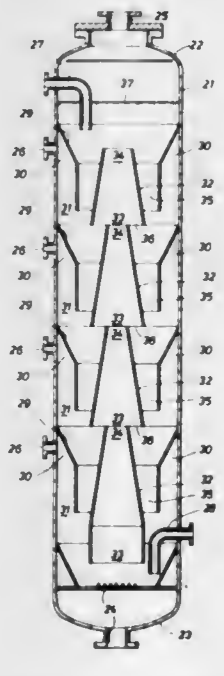
4,615,870
BACK-MIXED HYDROTREATING REACTOR

Robert B. Armstrong, Katy; Huibert S. Jongenburger, Houston, and Pasupati Sadhukhan, Katy, all of Tex., assignors to The M. W. Kellogg Company, Houston, Tex.

Filed Mar. 11, 1985, Ser. No. 710,742

Int. Cl.^{4} B01J *8/08*

U.S. Cl. 422—191 **6 Claims**



1. A hydrotreating reactor comprising:

(a) a vertical pressure vessel having a cylindrical shell and top and bottom heads contiguous with the cylindrical shell;

(b) gas inlet means disposed axially in the vessel proximate the bottom thereof;

(c) gas outlet means disposed in the vessel proximate the top thereof;

(d) oil feed inlet means disposed in the vessel;

(e) a plurality of vertically spaced clear oil outlet means, each of the clear oil outlet means comprising a clear oil outlet disposed in the cylindrical sheel and an annular, internal, hooded baffle having a conical portion contiguous with the cylindrical shell at a point proximately above the clear oil outlet and extending downwardly below the clear oil outlet and away from the cylindrical shell to form an annular stilling chamber with the cylindrical shell, the stilling chamber having an entry with a cross-sectional area between 6 and 60 percent of the cross-sectional area of the cylindrical shell;

(f) a plurality of vertically spaced contacting stages, each of the contacting stages comprising a frusto-conical baffle disposed axially within the cylindrical shell and spaced adjacently from at least one of the annular, internal, hooded baffles to form an intermediate annulus, the frusto-conical baffle having a bottom inlet and a top outlet, the bottom inlet having a cross-sectional area greater than that of the top outlet and wherein the top outlet of a lower frusto-conical baffle is proximate to the bottom inlet of the next higher frusto-conical baffle and lie approximately on a common horizontal plane to form inner annuli therewith; and

(g) slurry oil outlet means disposed in the vessel proximate the bottom thereof and external to a frusto-conical baffle.

4,615,871
FLUE GAS DESULFURIZATION PROCESS

Heeyoung Yoon, McMurray, Pa., assignor to Conoco Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 714,741, Mar. 22, 1985. This application May 20, 1985, Ser. No. 736,157

The portion of the term of this patent subsequent to Jul. 15, 2003, has been disclaimed.

Int. Cl.^{4} C01B *17/00*

U.S. Cl. 423—243 **5 Claims**

1. The method for reducing sulfur dioxide content of a flue gas resulting from combustion of a sulfur-containing fuel, which method comprises:

(a) spraying into said flue gas an aqueous solution of a calcium salt of a low molecular weight carboxylic acid, said acid being selected from formic and acetic;

(b) providing a contact time between said flue gas and droplets resulting from said spraying of at least about 1 second;

(c) subsequently separating from said flue gas solids resulting from drying of said droplets and solids resulting from comustion of said fuel;

(d) discharging from said separating a flue gas of substantially diminished sulfur dioxide content; and

(e) regulating the rate of said spraying relative to the rate of said flue gas such that the temperature of said flue gas at the point of said separating is at most about 30C.° above its saturation temperature.

4,615,872
PROCESS FOR PRODUCING SILICON TETRAFLUORIDE

Wolfgang Porcham, Mils, Austria, assignor to D. Swarovski & Co., Austria

Filed Mar. 27, 1985, Ser. No. 716,390

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1984, 3432678

Int. Cl.^{4} C01B *33/08*

U.S. Cl. 423—341 **2 Claims**

1. A process for producing silicon tetrafluoride comprising hydrolyzing gases containing silicon fluorine, reacting the hydrolysate with a member selected from the group consisting of sodium fluoride, potassium fluoride and barium fluoride and thermally decomposing the reaction product thus obtained thereby forming silicon tetrafluoride

4,615,873
TREATMENT OF CYANIDE-FERROCYANIDE EFFLUENTS

Eric A. P. Devuyst, Toronto; Branka Tandi, Millgrove, and Bruce R. Conard, Oakville, all of Canada, assignors to Inco Limited, Toronto, Canada

Filed Apr. 29, 1985, Ser. No. 728,337

Claims priority, application Canada, May 28, 1984, 455236

Int. Cl.^{4} C02F *1/58*

U.S. Cl. 423—367 **5 Claims**

1. In a process for treating cyanide-containing solution with sulfur dioxide and oxygen in the presence of a soluble copper catalyst to reduce the cyanide content thereof, the improvement comprising precipitating ferrocyanide species in said solution by means of at least one precipitant selected from the group of ions consisting of zinc, nickel, cadmium, cobalt, lead, mercury and silver prior to or simultaneous with said treatment with sulfur dioxide and oxygen.

4,615,874
PROCESS FOR PRODUCING CHLORINE FROM FERRIC CHLORIDE

Richard S. Olsen, Albany, and Glenn C. Brown, Corvallis, both of Oreg., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 27, 1985, Ser. No. 716,440

Int. Cl.^{4} C01B *7/00*

U.S. Cl. 423—502 **8 Claims**

1. A process for producing chlorine from ferric chloride, comprising:

(a) forming ferric chloride pellets from ferric chloride powder;

(b) passing oxygen gas in contact with the ferric chloride pellets at a temperature in the range of 650° to 800° C. in a reaction zone; and

(c) withdrawing chlorine gas and unreacted oxygen gas from the reaction zone.

4,615,875
PROCESS FOR PREPARING HIGH PURITY ALPHA-ALUMINA

Stephen T. Gonczy, Mt. Prospect, and Roy T. Mitsche, Wauconda, both of Ill., assignors to Allied Corporation, Morristown, N.J.

Filed Feb. 3, 1986, Ser. No. 825,163

Int. Cl.^{4} C01F *7/02*

U.S. Cl. 423—626 **10 Claims**

1. A method for the preparation of high purity, fine particulate, friable alpha alumina from an alumina sol comprising the steps of

(a) digesting aluminum metal containing contaminants in an excess of aluminum metal with hydrochloric acid and water at digestion conditions to produce an alumina sol containing solid contaminants and excess aluminum metal;

(b) purifying said sol;

(c) seeding said purified sol with fine particulate alpha alumina;

(d) drying said seeded sol to produce an alpha alumina precursor;

(e) calcining said dried precursor at calcination conditions to produce a high purity, friable alpha alumina; and,

(f) recovering said alpha alumina.

4,615,876
MACROCYCLIC COMPLEXES OF TECHNETIUM-99M FOR USE AS DIAGNOSTIC RADIONUCLIDES

David E. Troutner, and Wynn A. Volkert, both of Columbia, Mo., assignors to Curators of the University of Missouri, Columbia, Mo.

Filed Apr. 25, 1983, Ser. No. 488,184
Int. Cl.⁴ A61K *43/00, 49/00*
U.S. Cl. 424—1.1 **8 Claims**

1. The class of lipophilic macrocyclic complexes of technetium-99m (Tc-99m) useful as diagnostic radionuclides, said complexes being formed by complexing in aqueous solution technetium-99m pertechnetate (TcO_4^--99m) under reducing conditions with an alkylene amine oxime containing from 2 to 4 carbons in the alkylene group, said complexes having a zero charge, containing an O—H—O ring closure bond, and being sufficiently stable for parenteral administration.

4,615,877
METHOD OF DETERMINING THE OXIDIZING ACTIVITY OF A BIOLOGICAL LIQUID, AND A CORRESPONDING REAGENT

Michele Testa, Naples, Italy, assignor to Savapa S.r.l., Naples, Italy

Filed Feb. 27, 1984, Ser. No. 583,859
Int. Cl.⁴ G01N *33/48*
U.S. Cl. 424—2 **8 Claims**

1. A method of determining the oxidizing capacity of a biological liquid (BLOA) which comprises the steps of:
forming the biological liquid into two samples,
incubating one of the two samples at a temperature of 10° C. to 40° C. for a period of 4 to 20 hours,
treating each of the samples with a reagent made by homogenizing the lenses of mammals, and
measuring and comparing the light absorption of the incubated sample and non-incubated reference sample.

4,615,878
METACHROMATIC DYE SORPTION MEANS FOR DIFFERENTIAL DETERMINATION OF SUB-POPULATIONS OF LYMPHOCYTES

Lawrence Kass, 1939 Ridge Rd., Hinckley, Ohio 44233

Continuation-in-part of Ser. No. 129,680, Mar. 12, 1980, Pat. No. 4,581,223, and a continuation-in-part of Ser. No. 242,662, Mar. 11, 1981, Pat. No. 4,400,370, and a continuation-in-part of Ser. No. 356,578, Mar. 9, 1982, Pat. No. 4,500,509. This application Apr. 27, 1984, Ser. No. 604,869
The portion of the term of this patent subsequent to Aug. 23, 2000, has been disclaimed.
Int. Cl.⁴ G01N *1/30, 33/49, 33/52*
U.S. Cl. 424—3 **5 Claims**

1. A method of qualitative and quantitative analysis of a human blood specimen under supravital conditions to determine subpopulatins of lymphphocytes consisting essentially of B-cells, T-helper cells, T-suppressor cells, and Natural Killer (NK) cells which comprises staining a fixative-free specimen with an aqueous solution of not more than about 1% of the cationic dye Basic Orange #21, differentiating, identifying and enumerating said subpopulations by comparison of the size, shape, color and component differentials observable within the individual nucleus and cytoplasm of each cell of said subpopulations including the presence or absence of and the relative size, number and characteristic color of granules observable in the cytoplasm and the characteristic color differentials among said subpopulations in their respective nuclei by exposing the dyed specimen to illumination by at least one of white light and fluorescent light.

4,615,879
PARTICULATE NMR CONTRAST AGENTS FOR GASTROINTESTINAL APPLICATION

Val M. Runge, and Jeffrey A. Clanton, both of Nashville, Tenn., assignors to Vanderbilt University, Nashville, Tenn.

Filed Nov. 14, 1983, Ser. No. 551,003
Int. Cl.⁴ A61K *49/00;* **A61B** *5/05, 6/00*
U.S. Cl. 424—9 **12 Claims**

1. A contrast medium composition for nuclear magnetic resonance (NMR) imaging of the gastrointestinal system, comprising an orally or rectally administrable aqueous suspension of particles of an NMR contrast agent said suspension containing wetting and/or suspending agents to maintain said contrast agent particles in a dispersed suspended condition, said particles comprising a substantially water-insoluble compound of a paramagnetic metal, said particles being sized below 10 microns diameter and being capable of passing through the stomach while remaining in particulate form.

4,615,880
DRESSING FOR WOUNDS AND THE METHOD FOR MANUFACTURING THEREOF

Frith Loth; Horst Dautzenberg, both of Tetlow, German Democratic Rep.; Jirí Stamberg; Jan Peska, both of Prague, Czechoslovakia; Dieter Bertram, and Herbert Lettau, both of Leipzig, German Democratic Rep., assignors to Ceskoslovenska akademie ved of Prague, Prague, Czechoslovakia and Akademie der Wissenschaften der DDR, Berlin, German Democratic Rep.

Division of Ser. No. 537,151, Sep. 23, 1983, Pat. No. 4,536,217, which is a continuation of Ser. No. 286,250, Jul. 23, 1981, abandoned. This application Apr. 12, 1984, Ser. No. 599,637
Claims priority, application Czechoslovakia, Jul. 30, 1980, 5332-80; Jul. 30, 1980, 5333-80
Int. Cl.⁴ C08C *1/24;* **A61K** *9/16, 9/18;* **A61L** *15/03*
U.S. Cl. 424—15 **6 Claims**

1. A powder dressing for wounds comprising spherical particles of water swollen regenerated cellulose beads wherein the water had first been replaced by an organic solvent, the solvent sequentially removed, the beads dried and impregnated with a solution of a therapeutically active compound, said particles having a diameter of between 0.05 to 0.5 mm and a macroporous structure characterized by a porosity in the dry state corresponding to the cyclohexane regain of at least 0.2 ml/g of the dry material.

4,615,881
PHARMACEUTICAL COMPOSITIONS

Heinrich Deibig, Frankfurt; Roland Reiner, Eschborn, both of Fed. Rep. of Germany, and Hendricus B. A. Welle, Maarssen, Netherlands, assignors to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 323,733, Nov. 23, 1981, Pat. No. 4,451,452. This application Mar. 12, 1984, Ser. No. 588,371
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1980, 3045135
The portion of the term of this patent subsequent to May 29, 2001, has been disclaimed.
Int. Cl.⁴ A61K *31/74*
U.S. Cl. 424—78 **2 Claims**

1. A pharmaceutical composition in microencapsulated form comprising a parenterally effective amount of ketotifen wholly or partly encapsulated by a biodegradable polymer in an injectable preparation in a sterile carrier liquid.

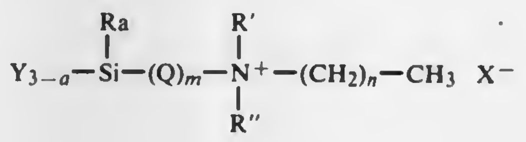
2. A pharmaceutical composition in microencapsulated form comprising a parenterally effective amount of calcitonin wholly or partly encapsulated by a biodegradable polymer in an injectable preparation in a sterile carrier liquid.

4,615,882
DISINFECTANT SOLUTION FOR CONTACT LENS

Richard F. Stockel, 475 Rolling Hills Rd., Bridgewater, N.J. 08807

Continuation-in-part of Ser. No. 424,197, Sep. 27, 1982, abandoned. This application May 2, 1985, Ser. No. 729,560
Int. Cl.⁴ A61K *31/79;* **C11D** *3/48;* **C08F** *8/00;* **C08B** *11/20*
U.S. Cl. 424—80 **37 Claims**

1. An aqueous solution for disinfecting soft contact lenses comprising the reaction product of an organosilicon quaternary ammonium salt of the formula:



$$Y_{3-a}-\overset{Ra}{\overset{|}{Si}}-(Q)_m-\underset{R''}{\underset{|}{\overset{R'}{\overset{|}{N^+}}}}-(CH_2)_n-CH_3\quad X^-$$

where
Y is a hydrolyzable radical, which is alkoxy, or acyloxy;
R is a inonovalent hydrocarbon group, which is lower alkyl or phenyl;
a is 0–2;
Q is a divalent hydrocarbon radical, which is alkylene or phenylene;
m is 1–20;
R′ is alkyl C_1–C_{18}, aryl, alkaryl, or aralkyl;
R″ is lower alkyl;
n is 9–17;
X is monovalent inorganic or organic radical or group selected from the group consisting of halogen; triiodide; acyloxy; or YSO_4, where Y is a monovalent hydrocarbon, hydrogen, and $—(CH_2—)_x—COOR'''$, where x is at least 2 and R‴ is a monovalent hydrocarbon group free of unsaturation with about 75–99 wt % of a water soluble organic polymer reactive with said hydrolyzable group and having a molecular weight sufficient to prevent the reaction product from being adsorbed into or penetrating the soft contact lens.

4,615,883
HYDROGEL ENCAPSULATED NEMATODES

Charles E. Nelsen, and Catharine Mannion, both of Davis, Calif., assignors to Plant Genetics, Inc., Davis, Calif.

Filed Oct. 23, 1985, Ser. No. 790,337
Int. Cl.⁴ A01N *63/00*
U.S. Cl. 424—84 **5 Claims**

1. An insecticidal composition comprising a hydrated hydrogel capsule matrix ercapsulating and containing without excessive viscositycaused damage an insecticidally effective amount of at least one nematode having an associated entomogenous bacteria, usually found in the intestinal lumen, which insect, said entomogenous bacteria will be released and multiply to produce fatal septicemia in the insect host capable of infecting an insect host, which capsule allows nematode respiration by permitting diffusion of gases and has sufficient hydration to maintain the viability and infectivity of said nematode and said capsule being strong enough to resist external abrasion, yet being pliable enough to allow the eventual release of the nematode on ingestion of the insect, siad capsule ranging in size from approximately 0.4 to 5 M.M. in diameter and containing approximately 250 to 50,000 nematodes per milliter, the interior of the capsule remaining wet and having a free water content in excess of 50%, said free water being immediately available to the nematodes within the capsule, thereby providing the anti-desiocation moisture required for maintaining nematode viability and infectivity.

4,615,884
METHOD AND VACCINE FOR TREATMENT OF DEMYELINATING DISEASES

Sidney Harshman, Nashville, Tenn., assignor to Vanderbilt University, Nashville, Tenn.

Filed Apr. 9, 1985, Ser. No. 721,841
Int. Cl.⁴ A61K *39/085*
U.S. Cl. 424—92 **8 Claims**

1. In the treatment of human patients having diseases involving demyelination of nerve sheath myelin, the method of protecting against exacerbation of the demyelination, comprising parenterally administering to the patient staphylococcal alpha toxin in a detoxified, immunogenically active form, the amount administered being effective to immunize the patient against active alpha toxin resulting from a staphylococcal infection.

4,615,885
PHARMACEUTICAL COMPOSITION CONTAINING UROKINASE

Fujio Nakagame, Tokyo; Haruo Honda, Kawasaki; Teppei Maruyama, Komae; Noriko Saito, Kawasaki, and Tomoaki Kimoto, Matsudo, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1984, Ser. No. 659,228
Claims priority, application Japan, Nov. 1, 1983, 58-203683; Apr. 11, 1984, 59-72384
Int. Cl.⁴ A61K *37/48*
U.S. Cl. 424—94 **15 Claims**

1. A pharmaceutical composition containing urokinase comprising a therapeutically effective amount of urokinase and an effective amount of physiological absorption enhancer, said enhancer comprising one or more higher fatty acids, a polyalkylene glycol and a pharmaceutically acceptable calcium.

4,615,886
UTILIZING A HALOHYDROCARBON CONTAINING DISSOLVED WATER TO INACTIVATE A LIPID VIRUS

Robert H. Purcell, Boyds, Md., and Stephen M. Feinstone, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Department of Health & Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 528,258, Aug. 31, 1983, Pat. No. 4,581,231, which is a continuation-in-part of Ser. No. 386,991, Jun. 10, 1982, Pat. No. 4,511,556. This application May 18, 1984, Ser. No. 611,752
Int. Cl.⁴ A61K *35/14*
U.S. Cl. 424—101 **11 Claims**

1. A method of inactivating viruses that contain essential lipids in a dried plasma protein product comprising
contacting said protein product for at least about 10 minutes at a treatment temperature of about 4° C.-40° C. with a treating composition consisting essentially of (a) a treating agent selected from one member of the group consisting of halogenated hydrocarbons and ethers and (b) water dissolved in said treating agent wherein said water is about 75–100% of the amount of water required to saturate the treating agent at the treatment temperature; and
removing the treating agent from the protein product.

4,615,887
METHOD FOR PRODUCING WINE BY FALL CARBONIC MACERATION

Stephen J. Hickinbotham, Burwood, Australia, assignor to Hickinbotham Winemakers Pty. Ltd., Australia

Filed Mar. 19, 1984, Ser. No. 590,765
Claims priority, application Australia, Mar. 23, 1983, PF8576; Nov. 3, 1983, PG2192; Dec. 9, 1983, PG2774; Feb. 9, 1984, 24439/84
Int. Cl.⁴ C12G *1/00, 1/02*
U.S. Cl. 426—8 **20 Claims**

1. A method of producing wine by full carbonic maceration including the steps of:

- (a) placing whole grapes into a closable container containing sufficient solid CO_2 to substantially purge the air therein,
- (b) closing the container to prevent entry of air,
- (c) expelling by vaporization of the solid CO_2 the air within the container prior to commencement of carbonic maceration, and
- (d) by continual vaporization of the solid CO_2 maintaining a sufficiently low concentration of gaseous oxygen in the container for a time effective to initiate intracellular fermentation,

the handling of the grapes, the depth of the grapes in the closable container and the conditions under which the full carbonic maceration is carried out being such as to ensure that more than 85% of the grapes remain whole up to the time that the full carbonic maceration steps (a) to (d) are completed.

4,615,888
BREAD CONTAINING WXSU$_2$ GENOTYPE STARCH AS AN ANTI-STALENT

James Zallie, Bound Brook, N.J.; Robert Trimble, Suffolk, Va., and Harvey Bell, Martinsville, N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Mar. 8, 1984, Ser. No. 587,440

Int. Cl.^{4} A21D *2/00, 8/02, 10/00, 13/00*

U.S. Cl. 426—21 **14 Claims**

1. In a farinaceous-based bakery product prepared from a dough comprising a farinaceous material, an edible liquid, and a leavener, the improvement which comprises the presence in the dough of an effective amount of a waxy starch from a plant of a wxsu$_2$ genotype and translocations, inversions, mutants, and variants thereof containing the wxsu$_2$ genotype, the amount being effective to improve shelf-life and softness retention of the baked dough.

4,615,889
COLLAGEN SAUSAGE CASING AND METHOD OF PREPARATION

Mou-Ying Fu Lu, Lake Bluff, Ill., and Larry L. Hood, Bridgewater, N.J., assignors to Devro, Inc., Somerville, N.J.

Filed Jun. 26, 1985, Ser. No. 748,875

Int. Cl.^{4} A23L *1/31, 1/317*

U.S. Cl. 426—140 **6 Claims**

1. A method of forming a collagen sausage casing comprising forming an extrudable gel in which the solids content of said gel comprise from 50 to 80% by weight of bovine collagen and from 20 to 50% by weight of acidified brine extracted pork skin and then extruding said gel to form a tubular casing.

4,615,890
METHOD OF CONSTRUCTING A PLASTIC ROPE TO BE INTRODUCED INTO A CONICAL ROLLER OR SIMILAR MECHANISM IN THE MANUFACTURE OF HARD BONBONS WITH A STRATIFIED CORE

José Vilchez, Hanover; Reinhard Mergelsberg, Garbsen; Jürgen Schlüter, Feggendorf, and Harmut Hagen, Elze, all of Fed. Rep. of Germany, assignors to Otto Hänsel GmbH, Hanover, Fed. Rep. of Germany

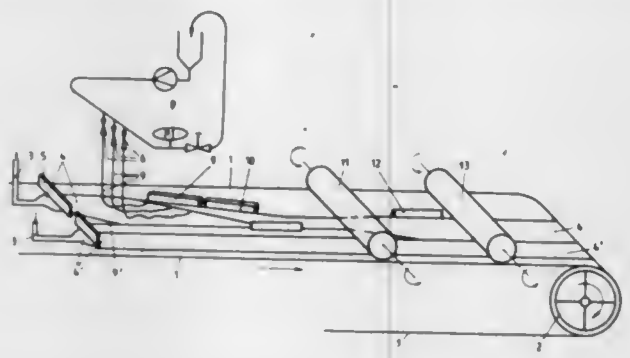
Filed Jun. 26, 1984, Ser. No. 624,713

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1983, 3323551

Int. Cl.^{4} A23G *3/00*

U.S. Cl. 426—297 **5 Claims**

1. Method of constructing an edible plastic rope to be introduced into a conical roller or similar mechanism in the manufacture of hard bonbons with a stratified core having multiple layers of edible plastic sugar ropes and edible plastic filling, comprising the steps of: forming said ropes independently of one another and dimensioning said ropes to a predetermined thickness and width; constantly applying a plastic filling to at least one of the ropes to be stratified and rolling it from a side to produce a tube that is closed into itself by bending longitudinal edges of the rope upwards and inwardly; dimensioning said tube and pushing said tube laterally into an adjacent rope of plastic coating so that the edges overlap and adhere together; introducing thereafter the ropes prepared by said aforementioned steps into a rope shaper, stretching said ropes horizontally if necessary; and supplying said ropes to a cutting machine for cutting said tube into individual pieces.



4,615,891
METHOD OF FORMULATING DAIRY COW RATIONS BASED ON CARBOHYDRATE REGULATION

James E. Nocek, Lafayette; Darwin G. Braund, Fayetteville; Robert L. Steele, Syracuse, and Charles A. Macgregor, Lafayette, all of N.Y., assignors to Agway Inc., Dewitt, N.Y.

Continuation-in-part of Ser. No. 694,105, Jan. 23, 1985, abandoned. This application Sep. 3, 1985, Ser. No. 772,011

Int. Cl.^{4} A01K *43/00*

U.S. Cl. 426—231 **11 Claims**

1. The method of formulating dairy cow rations for optimized milk production comprising:

- (a) determining the percentage, on a dry matter basis, of non-structural carbohydrates of each of a plurality of components, including at least one grain and one forage, collectively comprising a total daily ration and according to the following method:
- (i) weighing first and second, essentially chemically identical samples of said feedstuff;
- (ii) determining the dry matter content of said first and second samples;
- (iii) determining by chemical analysis the respective percentages of said first sample dry matter constituted by crude protein, lipid and ash;
- (iv) separating said second sample into first and second parts, respectively comprising the parts which are soluble and insoluble in neutral detergent solution;
- (v) weighing said second part to determine the percentage of said second sample dry matter constituted thereby;
- (vi) determining by chemical analysis the respective percentages of said second part of said second sample constituted by crude protein, lipid and ash;
- (vii) subtracting from the percentages of crude protein, lipid and ash determined for said first sample, each of the respective quantities of crude protein, lipid and ash determined for said second part of said second sample, to obtain three difference figures; and
- (viii) subtracting the sum of said three difference figures from said percentage of dry matter constituted by said second part of said second sample, and subtracting the result from 100, thereby providing a figure representing the percentage of said dry matter constituted by non-structural carbohydrates; and
- (b) adjusting the proportion and composition of at least one of said components to a level wherein the portion of said total daily ration consisting of non-structural carbohydrates is between about 30% and 45%.

4,615,892
DRIED EMULSION CONCENTRATES HYDRATABLE TO EDIBLE SPREADS

Alpha L. Morehouse, and Charles J. Lewis, both of Muscatine, Iowa, assignors to Grain Processing Corporation, Muscatine, Iowa

Division of Ser. No. 531,752, Sep. 12, 1983, Pat. No. 4,536,408. This application Aug. 9, 1985, Ser. No. 723,210

Int. Cl.^{4} A23D *3/00, 5/00*

U.S. Cl. 426—250 **16 Claims**

1. A dried concentrate obtained by dehydrating an oil-in-water emulsion comprising an edible fat having a melting point above about 32° C. in an amount of from about 15-35 by weight of said emulsion, a non-gel forming starch hydrolyzate having a dextrose equivalent value pf not more than 25 in an amount of from about 15-35 by weight of said emulsion, and water, said dried emulsion concentrate being dispersible in water to undergo inversion to a water-in-oil emulsion to form an edible spread having the consistency of natural butter at room temperature.

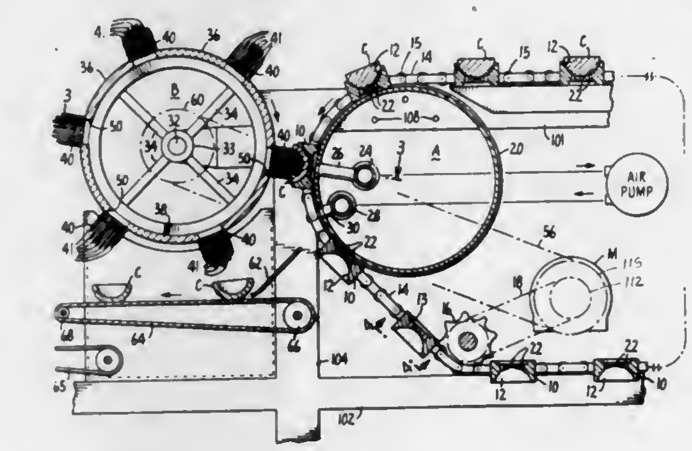
4,615,893
METHOD FOR PREPARING POTATO SHELLS

Richard D. Fogerson, Ontario, Oreg., assignor to Ore-Ida Foods, Inc., Boise, Id.

Division of Ser. No. 602,518, Apr. 20, 1984, Pat. No. 4,526,093. This application Jan. 11, 1985, Ser. No. 690,630

Int. Cl.^{4} A23L *1/216*

U.S. Cl. 426—481 **5 Claims**



1. A method of preparing potato skins from cut baked potatoes comprising the steps of:

providing a plurality of cup shaped molds on a continuous conveyor means, wherein each of said molds is proportioned to receive a potato piece;

placing and retaining each potato piece with the cut side thereof in the upright position in each of said molds,

moving the plurality of cup shaped molds each containing a potato piece in predetermined spaced relation to one another along a horizontal path having a curved portion at the end of said horizontal path leading to a scooping operation;

applying a vacuum through the base of each said cup shaped mold as the potato piece approaches the scooping operation for processing;

rotating a generally cylindrical drum positioned in spaced adjacent relation to the arcuate portion of the continuous conveyor means;

positioning a plurality of knife assemblies on the drum at predetermined radially spaced positions corresponding to the predetermined spaced relation of the cup shaped molds on said continuous conveyor means;

rotating said drum on which said knife assemblies are mounted and moving said continuous conveyor means having said cup shaped molds on parallel axes in spaced relationship so that each said knife assembly meshes with each said potato piece;

synchronizing movement of the continuous conveyor means and rotation of the drum so that each knife assembly cooperates with a corresponding one of the cup shaped molds to scoop potato meat from a potato piece thereby forming a potato shell; and then

discharging each formed potato shell from the associated cup shaped mold by applying pressure to the cup shaped mold.

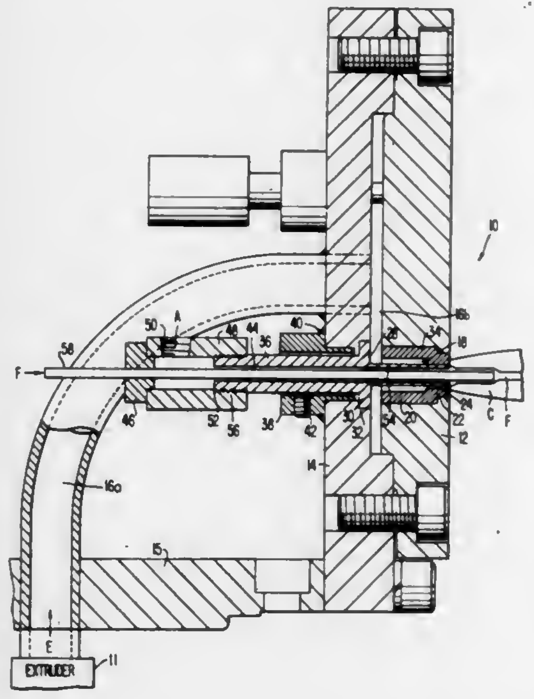
4,615,894
C-SHELL DIE ASSEMBLY AND METHOD OF USING SAME

Richard J. Ruegg, Coppell, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.

Filed Oct. 30, 1985, Ser. No. 793,116

Int. Cl.^{4} B29C *47/06, 47/26;* **A21C** *11/16*

U.S. Cl. 426—516 **9 Claims**



9. A method of continuously extruding a C-shaped collet around a center filling, the method comprising;

- (a) continuously forcing and feeding the center filling in cylindrical form into and past an extrusion die zone;
- (b) continuously and simultaneously extruding an extrudate of C-shell configuration surrounding the cylindrical center filling but spaced slightly therefrom at the extrusion die zone; and
- (c) continuously and simultaneously forming a film of air into the space between the center filling and the C-shaped extrudate at the extrusion die zone so that the film of air carries steam from the C-shaped collet through an opening of the collet.

4,615,895
FORCED AIR/GAS BURNER AND BAKING OVEN INCORPORATING SAME

Amal C. Bhattacharjee, Jackson Heights, N.Y., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Apr. 18, 1985, Ser. No. 724,553

Int. Cl.^{4} A21D *8/06;* **A21B** *1/33*

U.S. Cl. 426—523 **24 Claims**

1. A baking oven comprising:

a housing having walls defining a chamber;

transport means for moving articles to be baked through the chamber; and

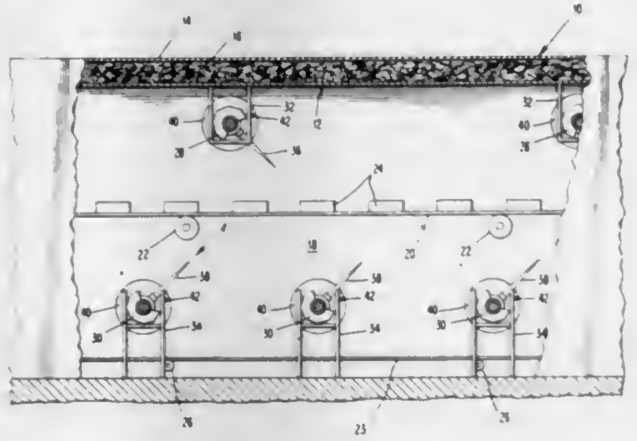
a plurality of gas burners mounted within the chamber and spaced from one another, at least one of the gas burners comprising:

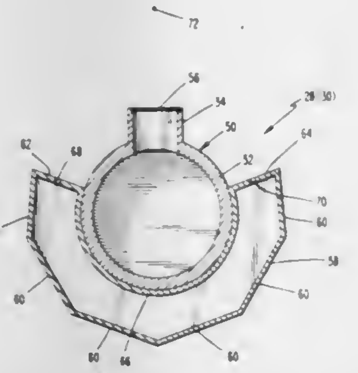
a gas supply conduit;

walls defining an elongate gas plenum communicating with the gas supply conduit, and also defining a row of gas apertures spaced from one another along the length of the gas plenum and extending from the gas plenum to the external surface of the gas burner, such that gas issuing from these gas apertures will burn to produce a flame extending along the length of the gas burner;

an air supply conduit; and

walls defining at least one air plenum communicating with the air supply conduit, and also defining two rows of air apertures extending from the at least one air plenum to the external surface of the gas burner, the two rows of air apertures being disposed on opposed sides of the row of gas apertures, the two rows of air apertures being directed towards the row of gas apertures such that air issuing from the two rows of air apertures will impinge upon the flame produced by the gas issuing from the row of gas apertures and lengthen this flame.





4,615,896
COLD WATER SOLUBLE GELATIN AND PROCESS

James Brown, Huntington, Conn.; Peter E. Ellis, Riverdale, N.Y., and Marta J. Draper, Westport, Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Feb. 25, 1985, Ser. No. 704,749

Int. Cl.⁴ A23L *1/04*

U.S. Cl. 426—576 **12 Claims**

1. A process for preparing a cold water soluble gelatin product comprising:

preparing an aqueous solution comprising water, gelatin, sugar consisting essentially of maltodextrins having a dextrose equivalent in the range of about 5 to about 20, an acid, and an amount of surface-active agent effective to increase dispersibility in the final product; the ratio by weight of said sugar to gelatin being in the range of about 3:1 to about 7:1, the amount of said acid being about 0.05 to about 0.5 parts by weight per part by weight of gelatin and the total solids concentration of said solution being in the range of about 30% to about 70% by weight; and

drying the solution so prepared.

4,615,897
COLD WATER SOLUBLE GELATIN

James Brown, Huntington, Conn.; Peter E. Ellis, Riverdale, N.Y., and Marta J. Draper, Westport, Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Feb. 25, 1985, Ser. No. 704,785

Int. Cl.⁴ A23L *1/04*

U.S. Cl. 426—576 **11 Claims**

1. A process for preparing a cold water gelatin product comprising:

preparing an aqueous solution comprising water, gelatin, a sugar consisting essentially of a hydrolysed corn starch having a dextrose equivalent in the range of about 24 to 30, an acid, and an amount of surface-active agent effective to increase dispersibility in the final product; the ratio by weight of said sugar to gelatin being in the range of about 3:1 to about 7:1, the amount of said acid being about 0.05 to about 0.5 parts by weight per part by weight of gelatin and the total solids concentration of said solution being in the range of about 30 to about 70% by weight; and

drying the solution so prepared.

4,615,898
COLD WATER SOLUBLE GELATIN

James Brown, Huntington, Conn.; Peter E. Ellis, Riverdale, N.Y., and Marta J. Draper, Westport, Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Feb. 25, 1985, Ser. No. 704,713

Int. Cl.⁴ A23L *1/04*

U.S. Cl. 426—576 **20 Claims**

1. A process for preparing a cold water soluble gelatin product comprising:

preparing an aqueous solution by heating, at a temperature of about 150° F. to about 180° F., a mixture comprising water, gelatin, a sugar selected from the group consisting of corn syrup solids, maltodextrin and mixtures thereof, and an amount of surface-active agent effective to increase dispersibility in the final product;

maintaining the solution so obtained at at least one temperature in the range of about 110° F. to about 180° F. for a period of about 1 hour at the higher end of the temperature range to about 24 hours at the lower end of the temperature range; and

thereafter drying the resulting solution in the presence of an acid.

4,615,899
SAUCE CONTAINING ACIDIFIED TEXTURED PROTEIN

John E. Hunter, and Albert M. Ehrman, both of Cincinnati, Ohio, assignors to The Procter & Gamble Co., Cincinnati, Ohio

Filed Dec. 10, 1984, Ser. No. 679,856

Int. Cl.⁴ A23L *1/39, 3/34*

U.S. Cl. 426—589 **18 Claims**

1. A process for preparing an improved shelf-stable sauce product containing a textured protein meat analog comprising:

(a) contacting an edible acid in aqueous solution with textured protein extrudate prepared by extrusion cooking of a vegetable protein material having at least about 25% protein to lower the pH of said textured protein extrudate to a pH between about 3.8 and about 4.8;

(b) separating the acid and the acidified textured protein extrudate;

(c) adding a proteinaceous binder to the acidified textured protein extrudate to effect agglomeration;

(d) heatsetting the agglomerated acidified textured protein to form a meat analog similar in appearance to cooked ground meat;

(e) combining the meat analog with a sauce, said sauce having a pH of less than about 4.5;

(f) heating the sauce product comprising the combination to effect sterilization; and

(g) equilibrating the pH of the components combined in said sauce until the pH of any portion of said sauce product is less than about 4.6, said pH of 4.6 being achieved within a period of about 48 hours.

4,615,900
FLAVOR AND MOUTHFEEL CHARACTER OF BEVERAGES

Anne F. Schenz, Haworth, N.J., and Jerome Trumbetas, Tarrytown, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Apr. 15, 1985, Ser. No. 723,026

Int. Cl.⁴ A23L *2/38*

U.S. Cl. 426—590 **19 Claims**

1. A method of producing an enhanced flavor impact and an improved mouthfeel character in an acidic dry powdered beverage mix comprising the addition to said beverage of a co-dried, pH adjusted, protein or protein hydrolyzate-emulsifier complex at a level of from about 0.05% to about 0.5% on a dry weight basis.

4,615,901
PROCESS FOR PREPARING FOODSTUFF HAVING FIBER STRUCTURE

Tetsuo Yoshioka, Takasago; Takatsugu Yamamoto, Kobe; Toshihiko Nishiyama, Kyoto; Hiroyuki Fujita, Shiga, and Shigeki Ashida, Otsu, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 30, 1984, Ser. No. 666,536

Int. Cl.⁴ A23J *3/00*

U.S. Cl. 426—656 **8 Claims**

1. A process for preparing foodstuff having fiber structure, which comprises forming a wet mixture by adding food matter to wheat gluten alone or to a mixture of wheat gluten with other vegetable proteins, adjusting the moisture content of the mixture within the range of 40 to 80 wt. vol. % and extruding the material, stretching the wet mixture at least 2.5 fold, and heating the stretched wet mixture in a high-temperature dry atmosphere wherein steam is mixed with air alone or with a mixture of air and an inert gas, and the relative humidity is maintained within the range of 75 to less than 100% and the temperature of the high-temperature dry atmosphere is within the range of 75° to 120° C. and drying the resultant product until the water content is reduced to a desired level.

4,615,902
COLOR PANEL STANDARDS SORTING SYSTEM

Allan F. Falcoff, Lake Orion, and David H. Alman, Royal Oak, both of Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 3, 1985, Ser. No. 771,687

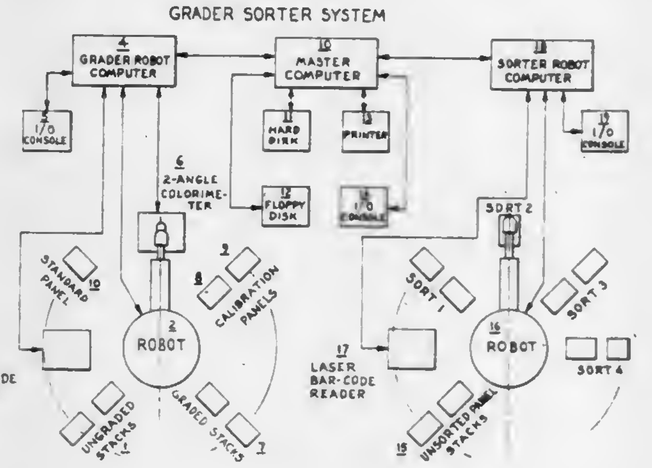
Int. Cl.⁴ B05D *1/00*

U.S. Cl. 427—8 **8 Claims**

1. An improved process for forming paint panel color standards wherein a multiplicity of panels are each coated with a paint and dried and each panel is marked with a separate identification (ID) number; the improvement used therewith comprises

(1) electronically determining the ID number of each panel with a readout device and measuring color co-ordinate values of each panel with a color measuring instrument using an electromechanical robot to move the panel to the readout device and then to the color measuring device and feeding the ID number and color coordinate values to a computer which assimilates the values and establishes criteria based on these values for various panel quality standards categories;

(2) sorting panels using an electromechanical robot to move the panels to a readout device that electronically reads the panel ID number and feeds the ID number to the computer which determines the quality standard category of the panel and feeds this information to the robot which then moves the panel to a groups of panels that are within the same quality standard category.



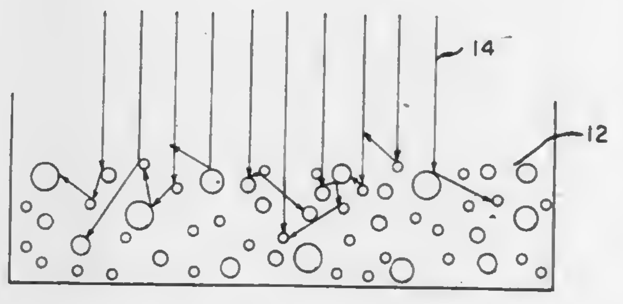
4,615,903
METHOD FOR MELT-COATING A SURFACE

Douglas L. Miller, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 1, 1985, Ser. No. 750,218

Int. Cl.⁴ B05D *1/04*

U.S. Cl. 427—26 **20 Claims**



1. A method of melt-coating a surface which comprises:

providing a powder for forming said coating;

electrostatic-charging said powder, said charge being sufficient to provide separation between particles of said powder;

placing said electrostatically charged powder on said surface;

irradiating said powder with energy until said powder melts and

cooling said melted powder below the melting point thereof, thereby coating said surface.

8. A method of melt-coating a surface which comprises:

placing a powder for forming said coating on said surface;

electrostatically charging said powder, said charge being sufficient to provide separation between particles of said powder;

irradiating said powder with energy until said powder melts; and

cooling said melted powder below the melting point, thereby coating said surface.

11. A method of melt-coating a surface which comprises:

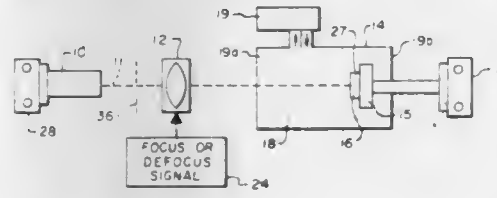
providing an electrostatically charged powder on said surface;

irradiating said powder on said surface with energy until said surface melts, thereby causing said powder to embed into said surface; and

cooling said surface below the melting point thereof.

4,615,904
MASKLESS GROWTH OF PATTERNED FILMS

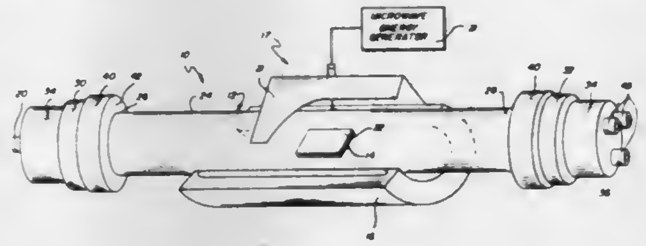
Daniel J. Ehrlich, Lexington; Thomas F. Deutsch, Cambridge, both of Mass.; Richard M. Osgood, Chappaqua, N.Y., and Howard Schlossberg, Annandale, Va., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Division of Ser. No. 403,752, Jul. 19, 1982. This application Apr. 1, 1985, Ser. No. 718,494
Int. Cl.⁴ B05D *3/06*
U.S. Cl. 427—38 **20 Claims**



1. A method for depositing a patterned film onto a substrate in a deposition chamber, the method comprising:
a. introducing a dissociable fluid medium into said chamber and depositing therefrom an absorbed layer of the dissociable fluid medium onto said substrate;
b. removing any excess amounts of said dissociable fluid medium from said chamber to render the chamber substantially free of said dissociable fluid medium except for said absorbed layer formed on said substrate;
c. focusing a beam source of energy onto said substrate to dissociate portions of said absorbed layer to produce an initial distribution of deposited nuclei on the substrate and thereby define prenucleation regions for further deposition; and
d. introducing atoms into said chamber for selective deposition onto said prenucleated regions.

4,615,905
METHOD OF DEPOSITING SEMICONDUCTOR FILMS BY FREE RADICAL GENERATION

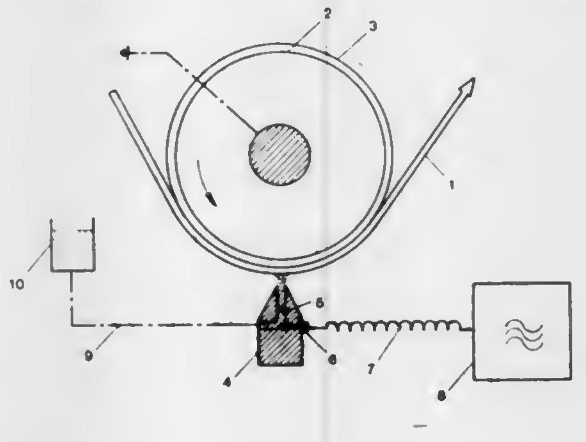
Stanford R. Ovshinsky, Bloomfield Hills; David D. Allred, Troy; Lee Walter, Bloomfield Hills, and Stephen J. Hudgens, Southfield, all of Mich., assignors to Sovonics Solar Systems, Inc., Troy, Mich.
Continuation of Ser. No. 423,424, Sep. 29, 1982, Pat. No. 4,517,223. This application Apr. 22, 1985, Ser. No. 725,616
Int. Cl.⁴ C23C *11/02*
U.S. Cl. 427—39 **22 Claims**



1. A process for depositing semiconductor alloy films onto a substrate, comprising:
providing a plurality of sources of energy;
providing a substantially enclosed reaction vessel containing the substrate;
evacuating the reaction vessel to a pressure below atmospheric;
providing at least first and second gaseous mixtures including a semiconductor-containing reaction gas;
activating the plurality of energy sources to form at least a first and second group of desired free radicals from the first and second gaseous mixtures;
providing separate control over the first and second groups of free radicals;
selectively incorporating the first and second groups of desired free radicals into a semiconductor alloy film deposited onto the substrate at high deposition rates with high gas conversion efficiencies and without any significant powder or polymeric inclusions.

4,615,906
METHOD AND DEVICE FOR SURFACE TREATMENT OF FILM WEBS

Andreas Kolbe, Wiesbaden, and Peter Dinter, Oestrich-Winkel, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Apr. 24, 1985, Ser. No. 726,455
Claims priority, application Fed. Rep. of Germany, May 4, 1984, 3416405
Int. Cl.⁴ B05B *3/06*
U.S. Cl. 427—40 **10 Claims**



1. A method for corona treatment of at least one surface of a moving thermoplastic substrate comprising:
(i) guiding said substrate over an electrically grounded support surface which is in close proximity to a high voltage electrode;
(ii) supplying an aqueous solution consisting essentially of water and a solute selected from the group consisting of organic acids, inorganic acids, inorganic bases, and the salts thereof to said electrode;
(iii) supplying high voltage alternating current to said electrode such that an electrical corona discharge is formed between said electrode and said electrically grounded support surface, said corona discharge passing through said thermoplastic substrate;
(iv) simultaneously subjecting the surface of said thermoplastic substrate to at least one ionized substance which was either dissolved in said solution or generated in situ from said solution.

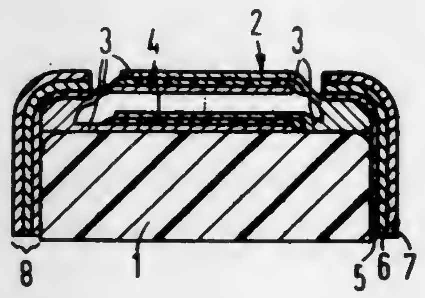
4,615,907
PLATING POLY(ARYLENE SULFIDE) SURFACES

Paul J. Boeke, and John E. Leland, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Nov. 23, 1984, Ser. No. 674,374
Int. Cl.⁴ B05D *3/06, 1/18;* **C25D** *5/00*
U.S. Cl. 427—53.1 **14 Claims**

1. A method for plating a poly(arylene sulfide) substrate comprising:
(a) contacting at least one surface of said poly(arylene sulfide) substrate with a beam of laser radiation of sufficient intensity to render the surface of the substrate water-wettable, and
(b) contacting the laser treated poly(arylene sulfide) substrate with a plating solution.

4,615,908
METHOD FOR THE MANUFACTURE OF PLASMA-POLYMER MULTILAYER CAPACITORS

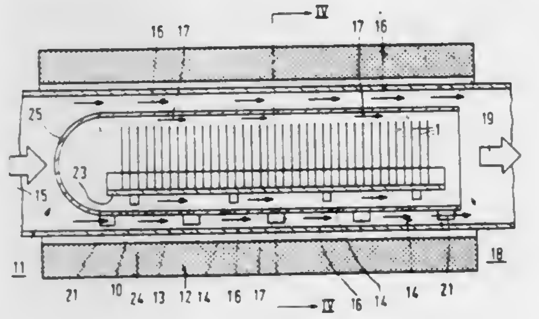
Reinhard Behn, Munich, and Rudolf Wittmann, Heidenheim, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Sep. 18, 1985, Ser. No. 777,357
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1984, 3440703; May 15, 1985, 3517631
Int. Cl.⁴ H01G *1/01*
U.S. Cl. 427—81 **8 Claims**



1. A method for the manufacture of electrical plasmapolymer multilayer capacitors which includes the steps of:
depositing alternate layers of metal conductors and dielectric layers produced by radiation polymerization on a substrate,
etching the portions of said metal layers to which electrical contact is to be made to remove oxide layers therefrom, and
applying contact layers to opposite end faces of said substrate to provide electrical connections for said portions of said metal layer, said contact layers consisting of the sequence: (1) an aluminum layer, (2) a nickel layer, and (3) a palladium layer.

4,615,909
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES, IN WHICH MATERIAL IS DEPOSITED FROM A REACTION GAS, AND APPARATUS FOR CARRYING OUT SUCH A METHOD

Henri J. Thijssen; Antonius J. M. Uijen, both of Nijmegen, Netherlands, and Paulus Z. A. M. Van der Putte, Sunnyvale, Calif., assignors to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 15, 1985, Ser. No. 723,122
Claims priority, application Netherlands, Apr. 17, 1984, 8401233
Int. Cl.⁴ H01L *21/314*
U.S. Cl. 427—82 **13 Claims**



1. A method of manufacturing semiconductor devices comprising
arranging a number of wafer slices of semiconductor material on a slice carrier boat in a reactor tube having a plurality of openings, said openings being arranged only below said slice carrier boat,
heating said wafer slices of semiconductor material by a furnace tube surrounding said reactor tube,
passing a reaction gas into said reactor tube to deposit a layer of material onto said wafer slices by producing a flow of said reaction gas along the outer side of said reaction tube within said furnace tube and by passing only a part of said flow into said reactor tube through said openings, and discharging residual gases through an open end of said reactor tube.

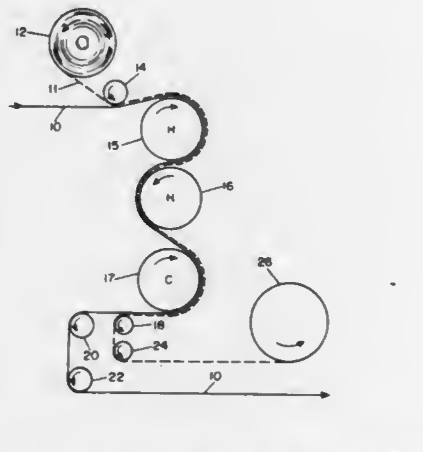
4,615,910
REPLASTICIZATION OF AN ALREADY MANUFACTURED FLEXIBLE VINYL PRODUCT TO PREVENT CRACKING OR TEARING OF SAID PRODUCT

Robert C. Gasman, 60 Kitchell Lake Dr., West Milford, N.J. 07480
Filed Apr. 15, 1985, Ser. No. 723,434
Int. Cl.⁴ B32B *35/00*
U.S. Cl. 427—140 **5 Claims**

1. A process for preventing the formation of cracks and tears in already manufactured and fabricated flexible vinyl products from plasticizer loss caused embrittlement, which process comprises replasticizing the flexible vinyl products by applying to the surface of the flexible vinyl product at between 4° C. and 60° C. a uniform coating of a liquid plasticizer having:
(a) a room temperature (25° C.) surface tension less than 34 dynes/cm.; and
(b) an absorption time at 4° C. of less than 10 days for an application of 0.0088 lbs./sq. ft. of plasticizer to flexible vinyl fabric; and
(c) and a kerosene extraction value of less than 10% at 23° C. from 40 mil milled and molded flexible PVC; and
by subsequently allowing the product to remain undisturbed for up to 10 days at between 4° C. and 60° C. until the plasticizer has been absorbed into the interior of the vinyl as evidenced by the surface of the vinyl feeling dry, and non tacky to the touch.

4,615,911
METHOD OF USING POWDERS TO CURE SOLVENT FREE INKS

William B. Neuberg, Perrineville, and John J. Aclin, Bricktown, both of N.J., assignors to Shamrock Chemicals Corporation, Newark, N.J.
Filed Aug. 13, 1984, Ser. No. 640,326
Int. Cl.⁴ B05D *1/40*
U.S. Cl. 427—197 **11 Claims**



1. In a process for curing solvent free ink, wherein resin powder is applied to a printed surface on a web and cured, the improvement wherein a caulstock laminate having a release agent is applied to said powdered, printed surface of said web, wherein said web and said caulstock are heated, wherein said web and said caulstock are pressed together, wherein said web and said caulstock are cooled, and wherein said caulstock is peeled from said web.

4,615,912

PROVIDING HYDROPHOBIC SURFACES ON HYDROPHILIC INORGANIC MATERIALS WITH METAL GLYCOLATES

Tetsuyu Inoue, Warabi; Kouji Tsuruga, Omiya, and Masashi Harada, Yokohama, all of Japan, assignors to Adeka Argus Chemical Co., Ltd.,, Saitama, Japan

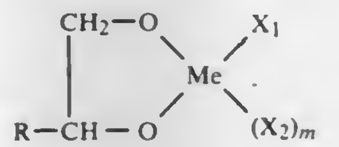
Filed Aug. 1, 1984, Ser. No. 636,526

Claims priority, application Japan, Aug. 10, 1983, 58-146029

Int. Cl.⁴ B05D *7/00;* **C04B** *14/00*

U.S. Cl. 427—212 **21 Claims**

1. A process for providing a hydrophobic surface on hydrophilic inorganic material which comprises applying to the surface of the hydrophilic inorganic material in particulate form an amount of at least 0.01 part per 100 parts of hydrophilic inorganic material, sufficient to provide a hydrophobic surface thereon, of a metal glycolate compound having the formula:



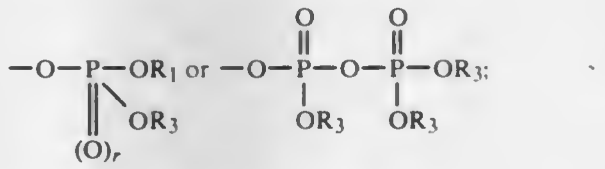
wherein:

Me is Sn, Ti, Zr or Al;

when Me is Sn, Ti or Zr, m is 1, and when Me is Al, m is 0;

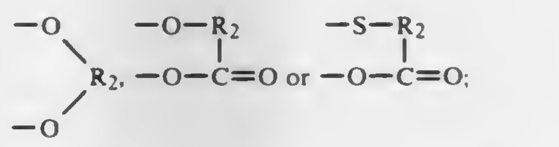
R is alkyl having from about eight to about fifty carbon atoms;

X_1 and X_2 are independently selected from the group consisting of $—R_1$, $—OR_1$, $—OCOR_1$, $—SR_1$, $—S(CH_2)_nCOOR_1$, $—OSO_2—R_1$, $—SR_2OCOR_1$,



$$—O—\underset{\underset{(O)_r}{\|}}{P}(OR_3)—OR_1 \text{ or } —O—\underset{OR_3}{\overset{O}{\overset{\|}{P}}}—O—\underset{OR_3}{\overset{O}{\overset{\|}{P}}}—OR_3;$$

X_1 and X_2 can be combined to form



R_1 is selected from the group consisting of alkyl having from one to about eighteen carbon atoms; alkenyl having from three to about eighteen carbon atoms; cycloalkyl having from five to about eight carbon atoms; and aryl and alkaryl having from six to about eighteen carbon atoms;

R_2 is alkylene having from one to about fifty carbon atoms;

R_3 is selected from the group consisting of hydrogen, alkyl having from one to about eighteen carbon atoms; alkenyl having from three to about eighteen carbon atoms; cycloalkyl having from five to about eight carbon atoms; and aryl and alkaryl having from six to about eighteen carbon atoms;

r is 0 or 1.

4,615,913

MULTILAYERED CHROMIUM OXIDE BONDED, HARDENED AND DENSIFIED COATINGS AND METHOD OF MAKING SAME

Jack L. Jones, Colorado Springs, Colo., and Kenneth M. Chidester, Los Alamos, N. Mex., assignors to Kaman Sciences Corporation, Colorado Springs, Colo.

Filed Mar. 13, 1984, Ser. No. 589,135

Int. Cl.⁴ B05D *3/02, 1/36, 7/00*

U.S. Cl. 427—226 **33 Claims**

1. A method of producing a multiple layered relatively thick chemically hardened refractory coating on a substrate at least the surface of which is a refractory oxide having a vitrification temperature in excess of 600° F. which comprises:

(a) applying an initial coating layer to the substrate comprised of a slurry of a finely divided, particulate refractory material at least the surface of which is a refractory oxide and a solution of a suitable inorganic binder which is capable of being converted to an oxide on being heated;

(b) drying and curing said applied coating by heating same to a temperature below the vitrification temperature of the refractory material but sufficient to convert the binder in situ to an oxide to harden and densify the coating;

(c) impregnating the initial hardened coating with a solution containing an effective amount of a chromium compound which is capable of being converted to a water insoluble oxide on being heated and characterized by:

(d) applying, to the impregnated coating, a second coating layer of a slurry of a finely divided particulate refreactory material at least the surface of which is a refractory oxide and a solution of a suitable inorganic binder which is capable of being converted to a water insoluble oxide on being heated;

(e) drying and curing the slurry coating by heating same to a temperature below the vitrification temperature of the refractory oxide but sufficient to convert the chromium compound in situ to a water insoluble oxide; and,

(f) repeating the impregnation step (c) before coating, then coating (d) and curing (e) and repeating the impregnating (c), coating (d) and curing (e) steps unitl a desired thickness multiple layered coating is achieved.

4,615,914

TREATMENT OF THE INTERIOR SURFACES OF RESINOUS ENCLOSURE MEMBERS

Wilhelm E. Walles, Freeland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 7, 1985, Ser. No. 785,305

Int. Cl.⁴ B05D *7/22, 5/00;* **C08F** *8/40*

U.S. Cl. 427—237 **10 Claims**

1. An improvement in the method of sulfonating the interior surface of an enclosure member formed of a resinous organic polymer which is capable of being surface sulfonated when contacted with SO_3 vapors wherein the interior surface is contacted with a sufficient quantity of gaseous SO_3 to thereby form sulfonic acid groups along the backbone of the resinous organic polymer, the improvement which comprises: introducing into the interior of the enclosure member a solid particulate form of a sulfur trioxide and heating said solid material to form a sufficient quantity of sulfur trioxide gas to react with at least a portion of the interior surface of said enclosure member thereby forming said sulfonic acid groups attached to the resinous organic polymer.

4,615,915

METHOD FOR FORMING THICK COATED FILM ON THE WELDED JOINT PART OF WELDED METALLIC CAN

Susumu Takeda, Urawa; Shigeru Kobayashi, Tokyo, and Kenji Kunimitsu, Urawa, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

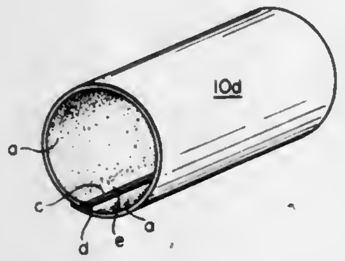
Filed Mar. 27, 1985, Ser. No. 716,696

Claims priority, application Japan, Mar. 27, 1984, 59-57,277

Int. Cl.⁴ B05D *7/22, 3/02*

U.S. Cl. 427—239 **13 Claims**

1. A method for forming a thick coated film on the welded joint part of a welded metallic can which comprises a first step of coating the joint part with a primer composed of a solution of a thermosetting resin in an organic solvent and setting it, and a second step of coating the set primer layer with a slurry paint composed of a dispersion of a thermoplastic resin powder in a poor solvent, said resin powder having a specific gravity differing from that of the poor solvent by not more than 0.2, and drying the coating.



4,615,916

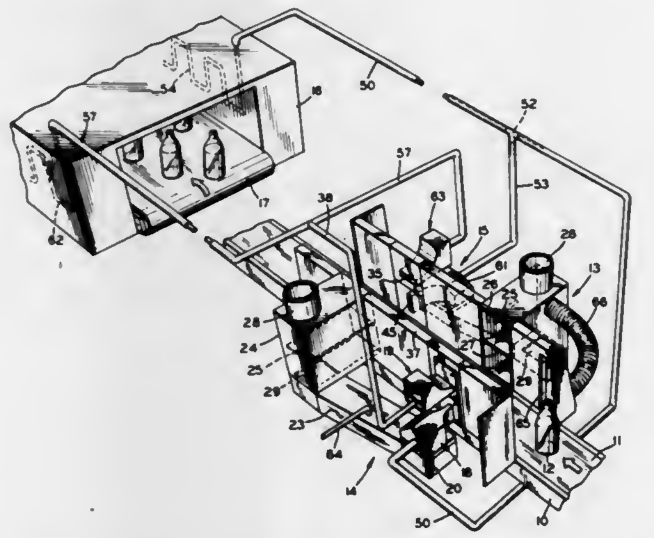
SURFACE TREATMENT OF GLASS CONTAINERS

Henry N. Henderson, Lacoochee, Fla., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 25, 1984, Ser. No. 624,558

Int. Cl.⁴ C23C *16/00*

U.S. Cl. 427—255 **5 Claims**



1. The method of forming a metal oxide coating on the exterior of glass containers having a body portion and upper, finish portion while moving in succession on a conveyor through a treatment zone, comprising the steps of creating a first generally horizontal flow path of compressed air directed across the width of the conveyor in one direction, said flow being narrow in width and height dimension, surrounding said first flow path with a first tapering chamber having a narrowing outlet, said first chamber being of a larger size than the first flow path, introducing a metal halide treatment vapor into the tapering chamber and propelling the vapor across the width of the conveyor with the directed flow of heated compressed air, collecting the vapor containing air flow on the opposite side, creating a second horizontal flow path of compressed air across the conveyor at a second position, surrounding said second flow path with a second tapering chamber, having a narrowing outlet, said second chamber being larger than the second flow path, introducing the vapor containing air collected from said first flow path into the second tapering chamber and propelling the vapor in said second chamber by said second flow path, collecting the vapor containing flow from said second flow path and introducing it to the inlet to the first tapering chamber with the addition of treatment vapor whereby the vapor and air are circulated and recirculated across the width of the conveyor to treat the body portion of containers passing through the vapor and creating a flow of compressed air across the upper finish portion of the containers, in parallel to the first and second flow paths to prevent treatment reaching the finish.

4,615,917

SURFACE PENETRATING FLUOROPOLYMER LUBRICANT

Harry V. Runge, Reston, Va., assignor to Fluorocarbon Technologies, Inc., Annapolis, Md.

Filed Apr. 11, 1985, Ser. No. 722,724

Int. Cl.⁴ B05D *3/02*

U.S. Cl. 427—385.5 **28 Claims**

24. A method of coating a surface with a thin film containing particles of a fluoropolymer comprising the steps of:

providing a dispersion comprising particles of a fluoropolymer and a carrier lubricant medium;

providing a solvent capable of diluting the dispersion and which is adapted to evaporate after application to the surface;

mixing the dispersion with the solvent to form a mixture such that said dispersion is well dispersed in said solvent; and

applying the mixture to a surface after which substantially all of the solvent evaporates thereby leaving a thin film containing the particles of a fluoropolymer on the surface.

4,615,918

COATING COMPOSITION AND PROCESS FOR PROTECTING A SURFACE FROM CORROSION

William W. Reichert, Freehold; Charles A. Cody, East Windsor; Michael A. De Sesa, Fair Haven, and Bruce K. Faulseit, Mount Holly, all of N.J., assignors to NL Industries, Inc., New York, N.Y.

Filed Jul. 10, 1985, Ser. No. 753,456

Int. Cl.⁴ B05D *3/02;* **C04B** *9/02;* **C08K** *3/00*

U.S. Cl. 427—385.5 **66 Claims**

30. A process for protecting a surface from corrosion comprising:

(a) coating the surface with a coating composition comprising

  (i) from about 30 to about 99% by weight of an organic solvent based coating material; and

  (ii) from about 1 to about 70% by weight of non-pigmentary anti-corrosive agent comprised of a calcined mixture consisting essentially of from about 5 to about 95% by weight of magnesium oxide and from about 5 to about 95% by weight of zinc oxide; and

(b) permitting the coating composition to dry.

4,615,919

LIQUID CRYSTAL DEVICE

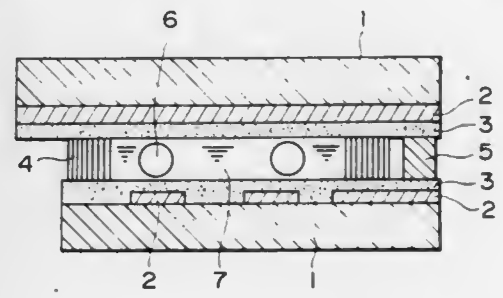
Hiroshi Inoue, Yokohama, and Keiko Nakohsai, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 7, 1985, Ser. No. 784,763

Claims priority, application Japan, Oct. 9, 1984, 59-210449; Oct. 9, 1984, 59-210450; Oct. 9, 1984, 59-210451; Oct. 9, 1984, 59-210452

Int. Cl.⁴ C09K *3/34*

U.S. Cl. 428—1 **44 Claims**



1. A liquid crystal device, comprising:

a pair of base plates and a liquid crystal disposed between the base plates, at least one of said pair of base plates having a coating film formed from a coating solution containing a nylon, an epoxy resin and at least one member selected from the group consisting of organic tantalum compounds and organic indium compounds.

4,615,920
PYROPHORIC STAINLESS STEEL

Alfonso L. Baldi, Wynnewood, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 479,211, Mar. 28, 1983, and a continuation-in-part of Ser. No. 417,214, Sep. 13, 1982, abandoned, and a continuation-in-part of Ser. No. 311,621, Oct. 14, 1981, abandoned, and a continuation-in-part of Ser. No. 302,979, Sep. 17, 1981, abandoned, and a continuation-in-part of Ser. No. 191,780, Sep. 29, 1980, abandoned, and a continuation-in-part of Ser. No. 172,671, Jul. 28, 1980, Pat. No. 4,435,481, and a continuation-in-part of Ser. No. 851,504, Nov. 14, 1977, said Ser. No. 479,211, said Ser. No. 417,214, said Ser. No. 311,621, said Ser. No. 302,979, is a continuation-in-part of Ser. No. 238,500, Feb. 26, 1981, Pat. No. 4,350,719, and Ser. No. 230,333, Feb. 8, 1981, Pat. No. 4,347,267, said Ser. No. 479,211, said Ser. No. 417,214, said Ser. No. 311,621, said Ser. No. 302,979, said Ser. No. 191,780, said Ser. No. 172,671, is a continuation-in-part of Ser. No. 25,456, Mar. 30, 1979, Pat. No. 4,349,612, said Ser. No. 238,500, said Ser. No. 230,333, said Ser. No. 191,780, said Ser. No. 172,671, is a continuation-in-part of Ser. No. 89,949, Oct. 31, 1979, abandoned, Ser. No. 98,654, Nov. 29, 1979, Pat. No. 4,290,391, and Ser. No. 73,539, Sep. 7, 1979, Pat. No. 4,260,654, said Ser. No. 238,500, said Ser. No. 230,333, is a continuation-in-part of Ser. No 25,456, said Ser. No. 191,780, said Ser. No. 172,671, said Ser. No. 89,949, said Ser. No. 98.654, said Ser. No. 73,539, said Ser. No. 25,456, is a continuation-in-part of Ser. No. 963,313, Nov. 24, 1978, abandoned, Ser. No. 953,762, Oct. 23, 1979, Pat. No. 4,241,147, Ser. No. 809,189, Jun. 23, 1977, Pat. No. 4,308,160, and Ser. No. 752,855, Dec. 21, 1976, Pat. No. 4,208,453, said Ser. No. 851,504, said Ser. No. 963,313, said Ser. No. 953,762, is a continuation-in-part of Ser. No. 809,189, which is a continuation-in-part of Ser. No. 752,855, Ser. No. 694,951, Jun. 11, 1976, abandoned, and Ser. No. 614,834, Sep. 19, 1975, Pat. No. 4,141,760, said Ser. No. 614,834, is a continuation-in-part of Ser. No. 441,473, Feb. 27, 1974, Pat. No. 3,958,046, said Ser. No. 302,979, said Ser. No. 238,500, said Ser. No. 230,333, is a continuation-in-part of Ser. No. 809,189. This application Apr. 25, 1983, Ser. No. 488,103

Int. Cl.⁴ B32B *15/02*

U.S. Cl. 428—652 **5 Claims**

1. In the process of preparing catalytically activated stainless steel by diffusing aluminum into its surface to form an aluminized case and then leaching out such aluminum with aqueous caustic, the improvement according to which the diffusion is effected at a temperature no greater than about 1100° F., and the leaching is effected at temperatures sufficiently low to render the activated stainless steel pyrophoric.

4,615,921
THERMAL/OPTICAL CAMOUFLAGE WITH CONTROLLED HEAT EMISSION

Lars E. Johansson, Ottawa, Canada, assignor to Diab-Barracuda AB, Laholm, Sweden

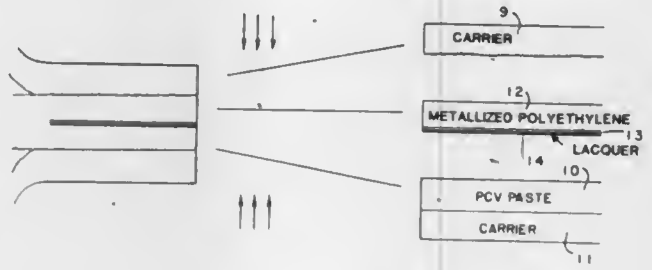
Continuation-in-part of Ser. No. 592,237, Mar. 22, 1984, Pat. No. 4,560,595. This application Aug. 30, 1985, Ser. No. 771,493

Claims priority, application Sweden, Mar. 25, 1983, 8301666

Int. Cl.⁴ F41H *3/00*

U.S. Cl. 428—17 **23 Claims**

1. Camouflage material in a sheet form comprising a reflecting metal layer and a continuous layer of plastic overlying said metal layer, said layer of plastic comprising at least two different plastic materials having respectively different emissivities and transparencies, said plastic materials being situated in a side-by-side relationship with plastic materials of differing emissivities and transparencies adjacent one another such that a mosaic of diverse emissivities is created.



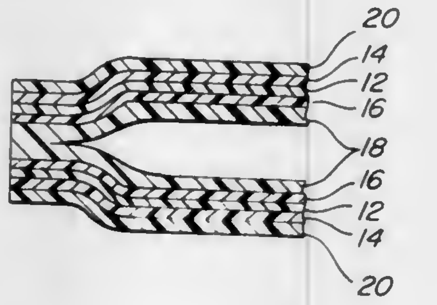
4,615,922
ORIENTED POLYMERIC FILM

David L. Newsome, Neenah, and Arnold R. Rein, Menasha, both of Wis., assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 542,031, Oct. 14, 1983, Pat. No. 4,557,780. This application Feb. 14, 1985, Ser. No. 701,861

Int. Cl.⁴ B65D *85/00;* C08G *41/04*

U.S. Cl. 428—35 **14 Claims**



8. A fabricated plastic bag having an opening on one edge thereof, the remainder of the periphery of the bag having been closed by heat seals, said bag having been fabricated from an oriented film comprising five polymeric layers, including:

(a) a first oriented barrier layer having a composition of greater than 0% and no more than 50% nylon or nylon copolymer, and conversely less than 100% and at least 50% ethylene vinyl alcohol, said first layer having two opposing surfaces;

(b) second and third oriented adhesive layers adhered to said surfaces of said first layer, said second and third adhesive layers both comprising olefinic polymers or copolymers having carboxyl modifications thereto; and

(c) fourth and fifth oriented layers adhered to said second and third layers on the respective surfaces opposite said first layer, said fourth and fifth layers comprising 40% to 100% ethylene vinyl acetate and no more than 60% linear low density polyethylene, with greater than 0% linear low density polyethylene in at least one of said fourth and fifth layers;

said layers being adhered to each other directly at the recited surface interfaces without the use of additional adhesive materials;

said bag being susceptible to being made into a closed and sealed container by means of a heat seal along said opening.

14. A plastic bag as in claim 8 wherein said fourth and fifth layers comprise a blend of 25% to 40% linear low density polyethylene and 75% to 60% ethylene vinyl acetate.

4,615,923
WATER-ABSORBING INSERT FOR FOOD PACKS

Rudolf Marx, Rittershofstrasse 14, D-6670 St.-Ingbert-Hassel, Fed. Rep. of Germany

Continuation of Ser. No. 299,606, Sep. 4, 1981, abandoned. This application Feb. 28, 1983, Ser. No. 470,706

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1980, 3034169

Int. Cl.⁴ B65D *25/02*

U.S. Cl. 428—35 **9 Claims**

1. A water-absorbing, bag insert for food packs adapted to directly contact food, said insert having a water pervious outer covering containing an absorbent filling, and said filling including at least one member of the group consisting of water absorbing, organic gel formers capable of binding up water and being essentially free of all organic materials other than the members of said group.

4,615,924
COATING AND CONTAINER FOR RETENTION OF GREEN COLOR OF VEGETABLES

Ihab M. Hekal, and Paul M. Erlandson, both of Stamford, Conn., assignors to Continental Can Company, Inc., Norwalk, Conn.

Division of Ser. No. 293,575, Aug. 17, 1981, Pat. No. 4,478,860, which is a continuation-in-part of Ser. No. 185,034, Sep. 9, 1980, abandoned. This application Oct. 3, 1984, Ser. No. 640,474

Int. Cl.⁴ B65D *25/14*

U.S. Cl. 428—35 **10 Claims**

1. In a coating composition for application to the internal surface of a can to effect the retention of the green color of vegetables contained therein, the coating being comprised of a water insoluble organic coating, the improvement comprising incorporating in the coating a combination of zinc oxide and about 20 to about 80 percent by weight of the coating of an alkaline earth metal material selected from the group consisting of an alkaline earth metal salt, an alkaline earth metal oxide and an alkaline earth metal hydroxide, wherein said alkaline earth metal and said zinc oxide are present in the coating in an amount sufficient to effect green color retention of said vegetables during storage for a period of time in excess of that achievable by either material alone.

4,615,925
BARRIER-COATED TUBE OF BIAXIALLY STRETCHED THERMOPLASTIC MATERIAL HAVING A MONOAXIALLY STRETCHED BARRIER COATING THEREON

Claes T. Nilsson, Loddekopinge, Sweden, assignor to PLM AB, Stockholm, Sweden

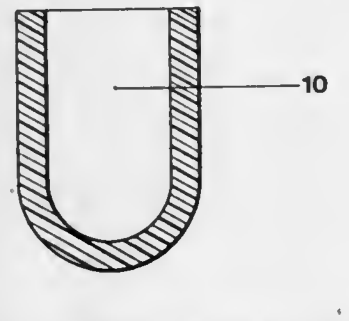
Division of Ser. No. 264,425, May 18, 1981, Pat. No. 4,381,277. This application Apr. 25, 1983, Ser. No. 487,945

Claims priority, application Sweden, May 29, 1980, 8004003; Dec. 10, 1980, 800865

The portion of the term of this patent subsequent to Jul. 5, 2000, has been disclaimed.

Int. Cl.⁴ B29C *17/07*

U.S. Cl. 428—35 **13 Claims**



1. A barrier-coated article comprising a tube of thermoplastic material which has been axially stretched from an amorphic condition to provide a wall of reduced thickness having monoaxially oriented crystallinity, and a barrier layer on said wall, said tube having been circumferentially expanded after axial stretching, said barrier layer being stretched substantially only circumferentially.

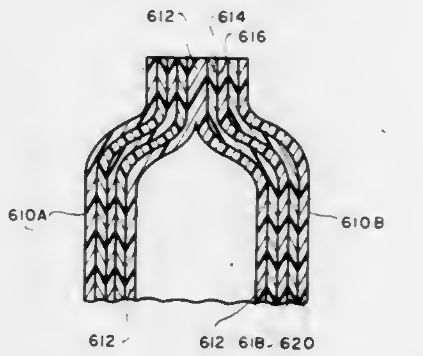
4,615,926
FILM AND PACKAGE HAVING STRONG SEALS AND A MODIFIED PLY-SEPARATION OPENING

Joseph C. Hsu, Neenah, and Anthony C. Guckenberger, Appleton, both of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Jul. 20, 1984, Ser. No. 632,701

Int. Cl.⁴ B65D *11/00;* B32B *27/08*

U.S. Cl. 428—35 **20 Claims**



1. A flexible multiple layer packaging film, comprising, in order:

(a) a first layer of ionomer;

(b) a second layer of an olefin-based adhesive polymer having good adhesion to said first layer, said olefin base being chosen from the group consisting of ethylene vinyl acetate and low density polyethylene;

(c) a third layer whose composition is selected from the group consisting of nylon and ethylene vinyl alcohol copolymer;

(d) a fourth layer of an olefin-based adhesive polymer, said olefin base being chosen from the group consisting of ethylene vinyl acetate and low density polyethylene; and

(e) a fifth layer of an olefinic polymer selected from the group consisting of low density polyethylene, linear low density polyethylene copolymer, and high density polyethylene,

said film being susceptible to being made into a flexible package having, as a combination of properties, hermetic seals, peelable opening without tearing across the entire thickness of said film, and good oxygen and moisture barriers.

4,615,927
STRIP FOR HOLDING AND PROTECTING ELECTRICAL CONTACTS

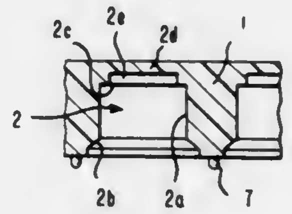
Hubert A. Holzmann, Biblis, Fed. Rep. of Germany, assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Mar. 22, 1985, Ser. No. 715,133

Claims priority, application France, Mar. 26, 1984, 84 04673

Int. Cl.⁴ B65D *73/02*

U.S. Cl. 428—35 **16 Claims**



1. A strip for holding, positioning to a given pitch and protecting contacts (4), in particular female contacts, to be brazed or soldered to a printed circuit card (5), said contacts having

on one end, a body (**4***a*) intended to pass through an opening in said card (**5**) and to be brazed on one side (**5***a*) thereof, and, on the other opposite end, a head (**4***b*) of larger width than the body (**4***a*), intended to be positioned on the other side (**5***b*) of the card, said head (**4***b*) intended to receive a complementary contact, said strip comprisign a band (**1**) of resilient insulative material resisting heat released during brazing and having cells (**2**) opening only on one side thereof, said cells being adapted to receive sealingly, by elastic deformation, said heads (**4***b*) of the contacts (**4**) and being spaced apart according to said given pitch, each cell being defined by a cavity (**2***a*) extending into said one side, a bottom wall (**2***c*) and a recess (**2***e*) extending into said bottom wall, a portion of said bottom wall peripherally bounding said recess defining an abutment against which a contact head (**4***b*) will bear upon receipt into said cell.

4,615,928
METHOD AND APPARATUS FOR MAKING A PLASTIC CONTAINER AND AN IMPROVEMENT THEREOF

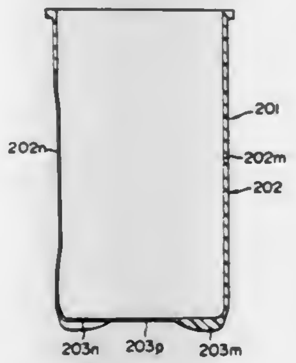
Kiyoshi Kawaguchi, Yokohama, and Muneki Yamada, Fujisawa, both of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Division of Ser. No. 480,308, Mar. 30, 1983, Pat. No. 4,519,977. This application Nov. 20, 1984, Ser. No. 660,678

Claims priority, application Japan, Sep. 27, 1982, 57-166640; Sep. 27, 1982, 57-166641; Sep. 27, 1982, 57-166642; Nov. 10, 1982, 57-196038

Int. Cl.⁴ B65D *25/00, 1/44*

U.S. Cl. 428—35 **1 Claim**



1. A tubular plastic container having a flange portion, a sidewall portion and a bottom wall portion, in which said sidewall portion is molecularly oriented by stretching at a molecularly orientable temperature and has thick wall portions and thin wall portions extending axially along a greater part of the height thereof and formed alternately in a circumferential direction thereof so as to be outwardly convex in a horizontal cross-section, said thick wall portion having a relatively large substantially uniform wall thickness and an inner surface and an outer surface both of a large curvature, and said thin wall portion having a relatively small substantially uniform wall thickness and an inner surface and an outer surface both of a small curvature.

4,615,929
COMPUTER PAPER

George Alexander, Jr., 2910 McKinney, Houston, Tex. 77002

Filed Oct. 30, 1985, Ser. No. 792,798

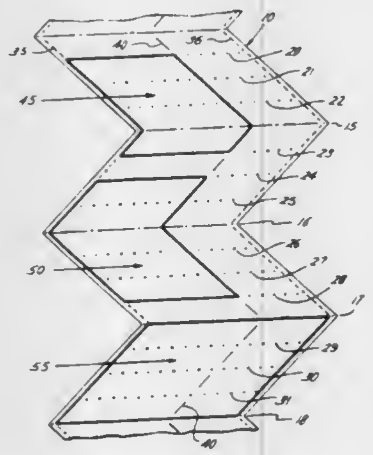
Int. Cl.⁴ B42D *19/00*

U.S. Cl. 428—43 **15 Claims**

1. A sheet of computer paper, comprising:
a sheet of paper,
said sheet including at least one horizontal line of perforations;
said sheet including three vertical lines of perforations, the middle vertical line of said vertical lines of perforations being eight to nine and one-half inches from the left-hand said edge of said sheet of paper, as measured by facing said sheet of paper.

14. A set of computer paper, comprising:
at least two sheets of paper, said sheets being fan-folded along horizontal lines of perforations;
each of said sheets of paper including
three substantially evenly spaced horizontal lines of perforations,
a vertical line of perforations, said vertical line of perforations being eight to nine and one-half inches from the left-hand edge of said sheet of paper, as measured by facing said sheet of paper.

15. A set of computer paper, comprising:
at least two sheets of paper, said sheets being fan-folded along horizontal lines of perforations;
each of said sheets of paper having twelve to twenty-four pound basis weight, registered bond, 100% pulp;



each of said sheets of paper including three substantially evenly spaced horizontal lines of perforations;
each of said horizontal lines of perforations include eight to twelve slots per inch cut by the slicing method, spaced substantially at 2.75 inch intervals along each of said sheets of paper;
each of said sheets of paper including three vertical lines of perforations;
said first vertical line of perforations includes eight to seventy-two slots per inch cut by the slicing method;
said second and third vertical lines of perforations being substantially one-half inch from each edge of each of said sheets and said first vertical line of perforations being substantially nine inches from said left-hand edge of each of said sheets of paper.

4,615,930
MAGNETIC RECORDING MEDIA HAVING AN UNDERCOAT AS ISLANDS

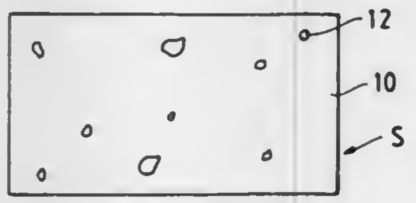
Yukio Matsumoto, and Hirokazu Moriizumi, both of Mito, Japan, assignors to Victor Company of Japan, Limited, Japan

Filed Apr. 27, 1984, Ser. No. 605,674

Claims priority, application Japan, Apr. 30, 1983, 58-77125

Int. Cl.⁴ G11B *5/72*

U.S. Cl. 428—142 **6 Claims**



1. A magnetic recording medium which comprises a non-magnetic resin support, islands of a polyester or polyurethane resin undercoat layer formed on one surface of the non-magnetic support, and a magnetic layer formed on the islands-bearing resin support wherein said resin support is a film made of a resin composition comprising a thermoplastic resin and 0.3 to 10 wt% of titanium oxide particles having an average size below 2.5 μm, and wherein the islands are formed by coating the resin undercoat with a thickness of 0.01 to 1.0 μm on the resin support and stretching the resin support to a draw ratio of 2 to 10.

4,615,931
SHAPED GLASS PANEL FOR AUTOMOBILE REAR WINDOW OR REAR DOOR

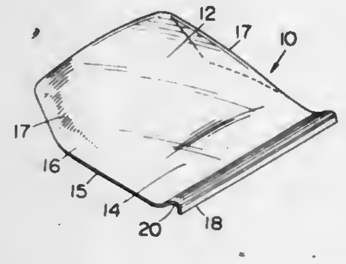
Yukio Matsuyoshi, and Masao Tsukagoshi, both of Matsusaka, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Feb. 11, 1985, Ser. No. 700,131

Claims priority, application Japan, Feb. 22, 1984, 59-22972[U]; Feb. 22, 1984, 59-30306; Feb. 23, 1984, 59-31404

Int. Cl.⁴ B32B *1/00;* **C03B** *23/023*

U.S. Cl. 428—174 **4 Claims**



1. A glass panel for use as a rear window or rear door of an automobile, said glass panel comprising
(i) a main portion so shaped as to close a rear opening of an automobile body, and
(ii) an upwardly projecting rear spoiler portion which is inseparably contiguous to said main portion and which is formed by bending the glass panel along a laterally transverse first line parallel to and at a relatively short distance from a bottom edge of the glass panel, wherein said glass panel is further bent in said spoiler portion along a second line parallel to the bottom edge of the glass panel inversely to the bending along said first line such that said spoiler portion has a ridge-like shape and that said bottom edge becomes a rear and lower edge of said spoiler portion.

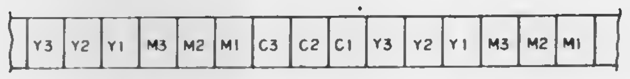
4,615,932
MULTI-GRADATION HEAT SENSITIVE TRANSFER MEDIUM

Masaru Onishi, Kamakura; Masayuki Saito, Fujisawa, and Yoshikazu Shimazaki, Osaka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo and Fuji Kagakushi Kogyo Co., Ltd., Osaka, both of, Japan

Filed Apr. 17, 1984, Ser. No. 601,406

Int. Cl.⁴ B41M *5/26*

U.S. Cl. 428—207 **5 Claims**



1. A multi-gradation heat sensitive transfer medium for use in multi-gradation thermal transfer for adjusting the density of a transfer print image by superimposing ink layers on a recording medium a plurality of times by thermal transfer, which comprises a foundation and ink layers provided thereon in a side-by-side relationship, each of said ink layers containing a color pigment having a high transparency and a high tinting strength in an amount smaller than sufficient to provide a maximal degree of reflection density, each of said ink layers having a light transmittance of not less than about 65% in a region where the color pigment does not have any absorption band.

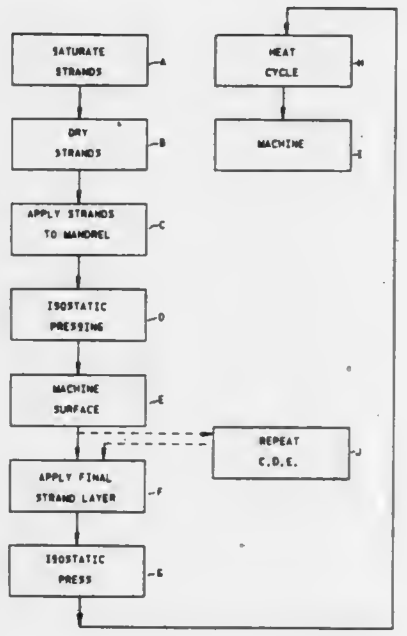
4,615,933
RADOME STRUCTURE AND METHOD OF MANUFACTURE THEREOF

G. Robert Traut, Danielson, Conn., assignor to Rogers Corporation, Rogers, Conn.

Filed Apr. 6, 1984, Ser. No. 597,710

Int. Cl.⁴ C23C *16/00;* **H01Q** *1/42;* **D04H** *1/20*

U.S. Cl. 428—252 **78 Claims**



1. A method for the production of bodies of complex shape, including the steps of:
(a) saturating continuous strands of inorganic fiber material with fluorocarbon polymer material, the fluorocarbon polymer material being in the form of an aqueous dispersion;
(b) drying the saturated fiber material to form fiber material having fluorocarbon polymer particles interspersed among and coated onto the fibers;
(c) forming a structural preform of a plurality of layers of the dried fiber material on a forming surface;
(d) isostatically pressing the plurality of layers to form a rigid and densified composite of the layers;
(e) machining said composite to a desired shape;
(f) applying at least one more layer of saturated fiber material to said composite;
(g) isostatically pressing to coalesce the polymer particles of said layer to said machined preform.
(h) heating the assembly to an elevated temperature above the crystalline melt point of the fluorocarbon polymer material and maintaining said assembly at said elevated temperature for a predetermined period of time; and
(i) cooling said assembly.

4,615,934
WARP KNIT WEFT INSERTION FABRIC AND PLASTIC SHEET REINFORCED THEREWITH

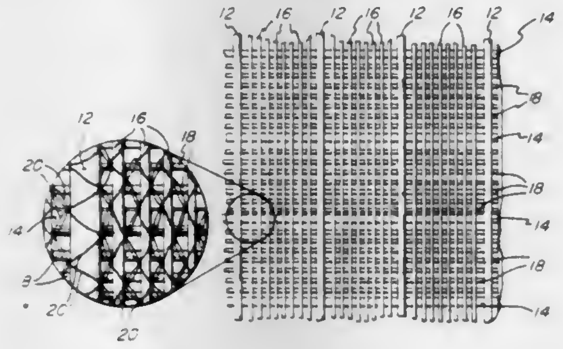
James R. Ellison, Leesburg, Ind., assignor to Peabody ABC Corporation, Warsaw, Ind.

Filed Nov. 22, 1985, Ser. No. 800,751

Int. Cl.⁴ B32B *7/00*

U.S. Cl. 428—254 **26 Claims**

15. A fabric reinforced sheet of thermoplastic synthetic resin wherein the fabric reinforcement comprises a warp knit weft inserted fabric having a plurality of warp and weft insert yarns of a denier of about 500 to about 6000, each of said warp and said weft insert yarns being separated from its neighbors by a plurality of yarns of a lower denier in the range of about 220 to about 1800, the ratio of denier of the heavier yarns to that of the lighter yarns being in the range of about 1.5:1 to about 6:1.



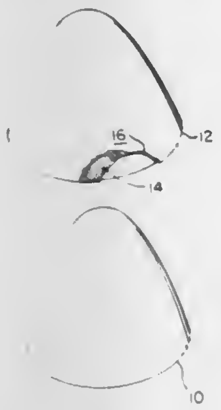
4,615,935
GLASS FIBER REINFORCED CERAMIC PREFORM AND METHOD OF CASTING IT

Anna L. Bendig, Seattle, and Bruce L. Zornes, Lynnwood, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 29, 1985, Ser. No. 728,003

Int. Cl.^{4} C03C *25/02;* **B32B** *17/02*

U.S. Cl. 428—268 **21 Claims**



1. A method for forming a freestanding, net-shaped, glass fiber reinforced ceramic protective coating useful for providing thermal and/or impact protection to heat senstitive materials, which cannot withstand the normal firing of glass coating, comprising the steps of:
(a) laying an aluminoborosilicate glass fiber cloth on a silica fiber preform of predetermined shape;
(b) applying a slurry of glass powder to the cloth;
(c) drying the slurry;
(d) firing the perform, slurry, and cloth to melt the glass powder so that the glass forms a smooth surface on the cloth and to shrink the silica preform away from the cloth to release the cloth and glass from the preform without need of other release agents; and
(e) cooling the glass and cloth to form the freestanding ceramic coating that is separable from the preform.

13. A composite, comprising:
(a) a heat sensitive substrate which is unable to withstand the firing temperature necessary to form a protective glass coating directly on the substrate; and
(b) a freestanding glass fiber reinforced protective glass coating made in a process not involving the substrate, bonded to one surface of the substrate;

wherein the glass coating comprises borosilicate glass reinforced with a boron nitride barrier coated aluminoborosilicate fiber cloth.

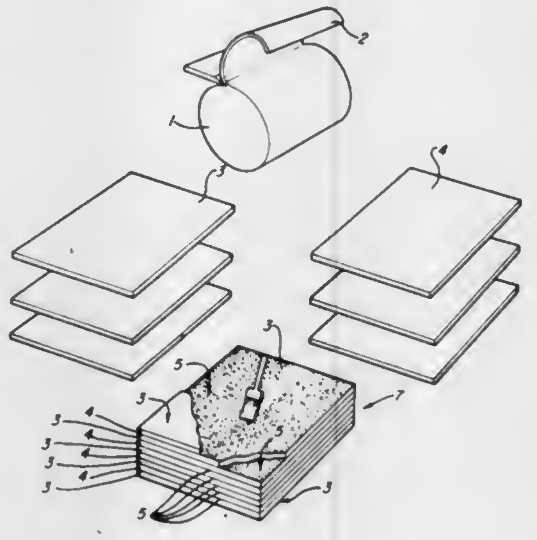
4,615,936
VENEER LAMINATE COMPOSITE STRUCTURE

Charles S. Baum, 34108 E. Jefferson, St. Clair Shores, Mich. 48082

Continuation-in-part of Ser. No. 649,215, Sep. 10, 1984, Pat. No. 4,543,284. This application Mar. 12, 1985, Ser. No. 710,870

Int. Cl.^{4} B32B *15/00, 17/08;* **C09J** *5/02*

U.S. Cl. 428—285 **7 Claims**



1. A veneer laminate composite structure comprising:
A. a sheet of wood veneer;
B. another sheet of wood veneer;
C. a sheet of fibrous material including fiber strands running in the plane of the sheet; and
D. a resin between and bonding said sheets together with said sheet of fibrous material sandwiched between said sheets of wood veneer to form a reinforcing skeleton providing tensile strength for the composite structure, the wood veneer sheets encapsulating the strands of the sheet of fibrous material to discourage failure of the composite structure in compression and provide compressive strength for the composite structure, and the resin penetrating the interposed sheets to lock the sheets together and augment the overall unity strength of the composite structure.

4,615,937
ANTIMICROBIALLY ACTIVE, NON-WOVEN WEB USED IN A WET WIPER

Michael P. Bouchette, Appleton, Wis., assignor to The James River Corporation, Richmond, Va.

Filed Sep. 5, 1985, Ser. No. 772,845

Int. Cl.^{4} D04H *1/58*

U.S. Cl. 428—288 **12 Claims**

1. An antimicrobially active, non-woven web comprising:
(a) bonded fibers;
(b) a binder substantially uniformly distributed on the fibers, the binder being present in an amount effective to bind the fibers; and
(c) an antimicrobial agent substantially uniformly distributed on the fibers, the antimicrobial agent being substantive to the fibers and to the binder when the web is either wet or dry to prevent the antimicrobial agent from substantially diffusing from the fibers or the binder.

4,615,938
DYE-RECEIVING SHEETS FOR THERMAL RECORDING

Shu Hotta, Osaka; Tokihiko Shimizu, Nara, and Nobuyoshi Taguchi, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

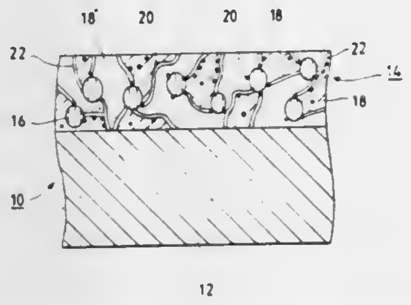
Filed Dec. 5, 1984, Ser. No. 678,489

Claims priority, application Japan, Dec. 7, 1983, 58-230811

Int. Cl.^{4} B41M *5/26*

U.S. Cl. 428—323 **6 Claims**

1. A heat sublimable dye-receiving sheet for thermal recording comprising a support and a color-developing layer formed on the support, said layer being made of a dispersion of inorganic fine particles having a size below 10 μm in a binder consisting essentially of a first resin having functional groups permitting good dye receptivity and a solubility parameter not less than 10.0 and a second resin immiscible with the first resin and having a solubility parameter not greater than 8.5 whereby microscopic interstices are formed at and along boundaries between the two resins to permit dye molecules to be passed through the interstices.



4,615,939
BIAXIALLY DRAWN, COMPOSITE POLYESTER FILM SUBSTRATES

Philippe Corsi, and Marcel Eyraud, both of Lyons, France, assignors to Rhone-Poulenc Films, Courbevoie, France

Filed Jul. 13, 1984, Ser. No. 630,574

Claims priority, application France, Jul. 13, 1983, 83 11931

Int. Cl.^{4} B05D *5/12;* **B32B** *5/16*

U.S. Cl. 428—323 **19 Claims**

1. A biaxially drawn, thin multilayer polyester film substrate, comprising a composite of at least two adjacent layers of biaxially stretched thermoplastic polyester film, said at least two layers being adjoined at an interface, one of said layers having an inner surface at said interface containing a roughness formed by particles having a median volume diameter x, said particles forming peak protuberances and dome protuberances projecting from said inner surface, another of said at least two layers having a thickness less than or equal to 10 times the diameter x such that an outer surface of said other layer opposite said interface has a roughness formed by peak protuberances and dome protuberances which are characterized by the peak protuberances and dome protuberances of said inner surface, said dome protuberances on said outer surface being present in a concentration of at least 5 per mm^2 and having heights of at least 9/100 of one micron, the ratio of the height of such dome protuberances to the diameter of the base thereof being less than 1/100, and the ratio of the height of said peak protuberances on said outer surface to the diameter of the base thereof being at least 1/100.

4,615,940
PRIMER PRODUCED OPALESCENT COATING

Sol Panush, Farmington Hills; James M. Gelmini, Warren, and Nancy B. Bradey, West Bloomfield, all of Mich., assignors to Inmont Corporation, Clifton, N.J.

Filed May 20, 1985, Ser. No. 736,027

The portion of the term of this patent subsequent to Jan. 14, 2002, has been disclaimed.

Int. Cl.^{4} B32B *5/16, 19/00*

U.S. Cl. 428—324 **8 Claims**

1. A substrate material coated with at least three layers of a decorative, protective coating comprising a non-metallic primer coat having an N-4 to N-8 value on the Munsell color chart, said primer coat applied onto the substrate material, a transparent interference coat comprising a polymeric binder containing metal oxide encapsulated mica in a pigment to binder ratio of 0.06 to 0.13 on the primer coat, and a transparent protective polymeric clear coat on the transparent interference coat, the coating producing an opalescent color effect on the substrate material.

4. A method of coating a substrate with a plurality of layers of polymer comprising applying at least one layer of a non-metallic primer coat having an N-4 to N-8 value on the Munsell color chart directly onto the substrate, applying a transparent interference coat comprising a polymeric binder containing metal oxide encapsulated mica in a pigment to binder ratio of 0.06 to 0.13 on the primer coat, and applying a transparent polymeric protective clear coat on the transparent interference coat, heating the applied coatings thus producing an opalescent color effect on the substrate material.

4,615,941
OPAQUE PEARLESCENT FILMS CONTAINING DISPERSED INCOMPATIBLE POLYMER AND POLYMERIC INTERFACIAL AGENT

Pang-Chia Lu, Pittsford, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 27, 1984, Ser. No. 686,809

Int. Cl.^{4} B32B *5/16, 27/06*

U.S. Cl. 428—327 **16 Claims**

1. In an opaque to translucent, biaxially oriented melt extruded polymeric film comprising a continous phase of a polyolefin first polymer; and a discontinuous dispersed phase of a finely divided second polymer comprising a polyamide or polyester which is incompatible with said first polymer comprising a polyolefin; the improvement comprising including in said film a third polymer comprising a copolymer of ethylene and a carboxyl containing monomer or a salt thereof as an interfacial agent in an amount sufficient to disperse said second polymer in smaller particles with fewer stringy particles than in the film made without said polymeric interfacial agent.

4,615,942
OPAQUE PEARLESCENT FILMS CONTAINING BLENDS OF POLYMERS FOR IMPROVED DISPERSION OF INCOMPATIBLE POLYMER PHASE

Pang-Chia Lu, Pittsford, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 27, 1984, Ser. No. 686,808

Int. Cl.^{4} B32B *5/16, 27/06*

U.S. Cl. 428—327 **14 Claims**

1. In an opaque to translucent, biaxially oriented melt extruded polymeric film comprising a continuous phase of polypropylene; and a discontinuous dispersed phase of a finely divided second polymer comprising a polyamide or polyester which is incompatible with said first polymer; the improvement comprising a blend of said first polymer with a third polymer which is compatible therewith but is incompatible with said second dispersed polymer selected from the group consisting of ethylene-propylene copolymers, low density polyethylene and linear low density polyethylene; said third polymer altering the character of said first polymer so that the dispersed second polymer is formed in small particles with fewer stringy particles than the film made without said compatible polymer.

4,615,943
VINYLIDENE FLUORIDE COPOLYMER FILM

Teruo Sakagami; Noriyuki Arakawa, and Naohiro Murayama, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 640,596, Aug. 14, 1984, abandoned. This application Dec. 20, 1985, Ser. No. 810,905

Claims priority, application Japan, Aug. 15, 1983, 58-148019

Int. Cl.^{4} B32B *27/00, 15/00;* **C08F** *29/16*

U.S. Cl. 428—332 **15 Claims**

1. A crystalline vinylidene fluoride copolymer film, having a parallel light transmittance of 85% or higher when measured at a film thickness of 30 microns and a coefficient of absorption of 2.35×10^3/m or below according to Lambert's law for deter-

mining a parallel light transmittance for variable film thickness: said vinylidene fluoride copolymer film being a film of a vinylidene fluoride copolymer having a crystalline melting point of 140° C. or higher obtained from a mixture of the vinylidene fluoride copolymer with a solvent, said copolymer having an inherent viscosity of 3.0 dl/g or higher, when measured as a solution dissolved in a solvent with a greater solubility selected from dimethylacetamide and dimethylformamide at a concentration of 0.4 g/dl and a temperature of 30° C., and consisting essentially of the β-phase crystalline structure.

4,615,944

AMORPHOUS MAGNETO OPTICAL RECORDING MEDIUM

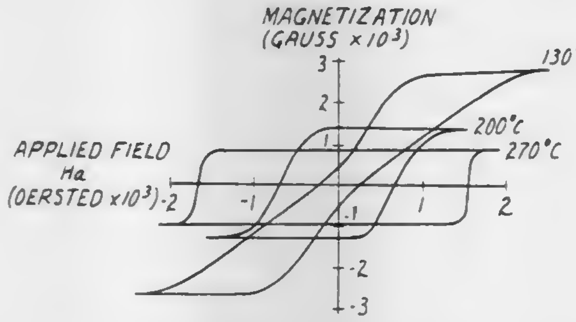
Richard N. Gardner, Grant Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 495,175, May 17, 1983. This application Apr. 12, 1984, Ser. No. 599,669

The portion of the term of this patent subsequent to Feb. 11, 2003, has been disclaimed.

Int. Cl.^{4} G11B *7/24*

U.S. Cl. 428—332 **18 Claims**



1. A magneto-optical recording medium comprising a substrate and magnetizable amorphous film having a magnetic anisotropy perpendicular to the film surface, and said film being characterized by having a multiplicity of magnetic domains substantially all of which have a domain size of less than 500 angstroms in largest dimension.

10. A magneto optical recording medium comprising a substrate and a passivated magnetizable amorphous film having a magnetic anisotropy perpendicular to the film surface, said film being characterized by a magneto-optic rotation angle, for polarized light reflected from the recording medium, of at least 0.24° measured with a helium neon laser at a wavelength of 6328 angstroms and at least 0.4° measured with a laser diode at a wavelength of about 7800 to 8500 angstroms, and having a multiplicity of magnetic domains characterized by a domain size of less than 500 angstroms in largest dimension.

4,615,945

COPPER-FOILED LAMINATE FOR BASE PLATE

Tamaki Iida, Tokyo, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 14, 1985, Ser. No. 701,422

Claims priority, application Japan, Feb. 14, 1984, 59-25892

Int. Cl.^{4} B32B *15/04, 15/20*

U.S. Cl. 428—335 **4 Claims**

1. A copper-foiled laminate which comprises:

(a) an aluminum plate as a base;

(b) a layer of aluminum oxide formed on the surface of the aluminum plate;

(c) a layer of an amorphous silicon carbide formed on the surface of the layer of aluminum oxide; and

(d) a copper foil adhesively bonded to the surface of the layer of the amorphous silicon carbide by use of an adhesive.

2. The copper-foiled laminate as claimed in claim 1 wherein the thickness of the layer of aluminum oxide is in the range from 20 to 60 μm.

4,615,946

CHEMICALLY TREATED GLASS FIBERS FOR REINFORCING POLYMERIC MATRICES

Chester S. Temple, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 29, 1985, Ser. No. 717,760

Int. Cl.^{4} D02G *3/00*

U.S. Cl. 428—361 **21 Claims**

1. Glass fibers coated with a dried residue of an aqueous chemical treating composition consisting of:

(a) two aqueous soluble, dispersible or emulsifiable film forming polymers selected from the group consisting of epoxy polymers and polyurethane polymers, and epoxy polyurethane copolymers and polyurethane polymers,

(b) an amino alkyl silane coupling agent or a combination thereof with a polyamine organo functional silane coupling agent,

(c) organo silane coupling agent selected from the group consisting of lubricant-modified amine organo functional silane coupling agent, polyamino organo functional silane coupling agent, epoxy organo functional silane coupling agent and vinyl functional organo silane coupling agent or mixture thereof,

(d) reaction product obtained by reacting alkoxylated nitrogen-containing compound selected from the group consisting of an alkoxylated fatty amine and an alkoxylated fatty amide with a polycarboxylic acid and the resulting product reacted with an epoxide-containing compound wherein the reaction product is present in a lubricating, processability and stabilizing effective amount,

(e) water in an amount to give an effective solids content for treating glass fibers.

4,615,947

ACRYLIC PRIMER FOR ADHERING AN ORGANOPOLYSILOXANE

John C. Goossens, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Apr. 29, 1985, Ser. No. 728,093

Int. Cl.^{4} B03Q *27/36*

U.S. Cl. 428—412 **11 Claims**

1. An article comprising a thermoplastic substrate, having adhered on at least one surface a primer layer, said primer layer comprising in admixture:

(i) a thermoplastic acrylic polymer or the solid reaction products of a thermosettable acrylic polymer, and

(ii) solid condensation products of partial condensates of silanols derived from compounds having the general formula:

$R^3_aSiZ_{(4-a)}$

wherein R^3 is selected from a monovalent hydrocarbon radical or halogenated monovalent hydrocarbon radical, a is 0, 1, or 2, and Z is independently a member of one or more hydrolyzable groups, said condensation products being in weight ratio to the acrylic of from about 1/14 up to about 9/6.

4,615,948

POLYPHENYLENE ETHER BLENDS CONTAINING ELECTROSTATICALLY BOUND ADDITIVE

Bruce A. Luxon, Stamford, Conn., assignor to General Electric Company, Selkirk, N.Y.

Division of Ser. No. 669,461, Nov. 7, 1984, Pat. No. 4,537,925, which is a continuation-in-part of Ser. No. 596,559, Apr. 4, 1984, abandoned. This application Jul. 15, 1985, Ser. No. 755,021

Int. Cl.^{4} B32B *7/10*

U.S. Cl. 428—420 **16 Claims**

1. An article molded from a thermoplastic composition comprising:

(a) a polyphenylene ether resin, alone, or with another thermoplastic polymer, and

(b) an alkenyl aromatic resin having pendant polar ionic groups thereon, said article having on the surface thereof

(c) a layer of one or more property modifying additives electrostatically bound to pendant polar ionic groups of component (b).

4,615,949

MAGNETIC RECORDING MEDIUM

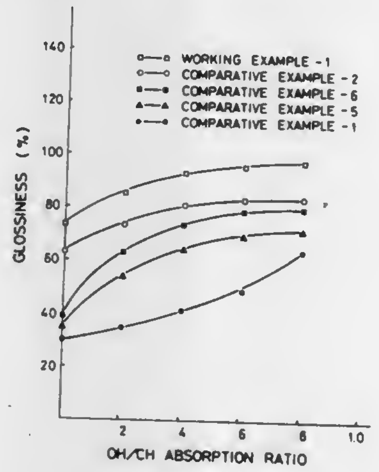
Kuniichi Yoda; Yuji Ishihara, both of Saku, and Hitoshi Azegami, Tobu, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jul. 12, 1985, Ser. No. 755,630

Claims priority, application Japan, Jul. 17, 1984, 59-146731

Int. Cl.^{4} G11B *5/70*

U.S. Cl. 428—425.9 **10 Claims**



1. A magnetic recording medium comprising a magnetic coating material, or a dispersion of magnetic particles in a resinous binder, and a base to which the coating material is solidly applied, said resinous binder comprising as ingredients thereof a copolymer composed of vinyl chloride, vinylidene chloride, a vinyl alkylcarboxylate, another monomer copolymerizable with vinyl chloride, and a saponified vinyl alkylcarboxylate and having an OH/CH absorption ratio according to the infrared absorption spectrum of at least 0.2, a polyurethane resin having in the molecule thereof a —SO_3M group wherein M represents an alkali metal atom, and a polyisocyanate.

4,615,950

PRINTED CIRCUIT BOARDS HAVING IMPROVED ADHESION BETWEEN SOLDER MASK AND METAL

Paul L. K. Hung, Edison; Richard J. Radigan, Toms River, and David S. Rosen, Avenel, all of N.J., assignors to M&T Chemicals Inc., Woodbridge, N.J.

Filed Mar. 15, 1985, Ser. No. 712,308

Int. Cl.^{4} B32B *15/08*

U.S. Cl. 428—461 **4 Claims**

1. A printed circuit board which exhibits excellent adhesion between mask and metal comprising:

(a) a substrate which includes a metal,

(b) a primer film on said substrate deposited from an aqueous solution which includes 0.01 to 10% by weight of a carboxyl-containing polymer or copolymer selected from the group consisting of a polyacrylic acid polymer, an ethylene-maleic acid copolymer or its half-acid ester, a butadienemaleic acid copolymer or its half-acid ester, and a styrene-maleic acid copolymer or its half-acid ester; and

(c) a u.v. curable solder mask coating thereon, wherein said coating is a urethane acrylate or an epoxy acrylate.

4,615,951

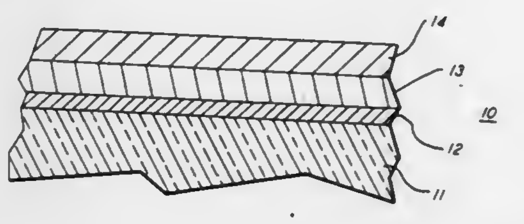
METALLIZED RARE EARTH GARNET AND METAL SEALS TO SAME

Robert L. Bronnes, Irvington, N.Y.; James K. McKinlay, Ridgefield, Conn.; Richard C. Sweet, North Tarrytown, and Walter K. Zwicker, Scarborough, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Division of Ser. No. 682,965, Dec. 18, 1984, Pat. No. 4,559,280. This application Sep. 23, 1985, Ser. No. 779,330

Int. Cl.^{4} B32B *15/04*

U.S. Cl. 428—615 **6 Claims**



1. A metallized garnet comprising a body of garnet having a surface to be bonded, a first layer of a reactive metal sputter deposited on at least a portion of the garnet surface, a second layer of a refractory metal sputter deposited on the first layer, and a third layer of a solderable metal sputter deposited on the second layer.

4,615,952

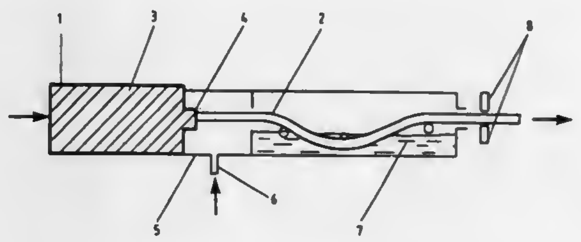
ALUMINUM SHAPES COATED WITH BRAZING MATERIAL AND PROCESS OF COATING

Richard Knoll, Cocoa Beach, Fla., assignor to Norsk Hydro a.s., Oslo, Norway

Continuation-in-part of Ser. No. 437,884, Oct. 29, 1982, abandoned. This application Jan. 16, 1984, Ser. No. 570,845

Int. Cl.^{4} F28F *21/08;* C23C *2/00;* B23K *1/20*

U.S. Cl. 428—650 **12 Claims**



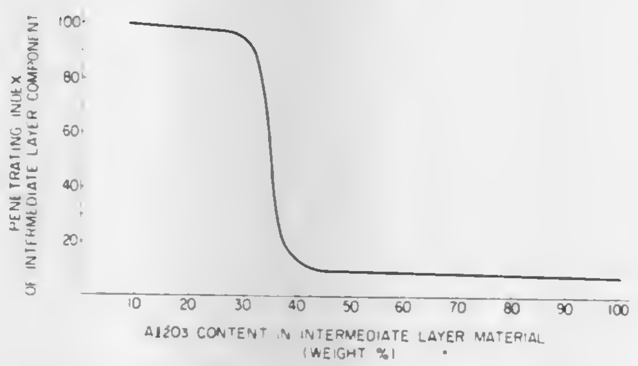
1. A heat exchanger section having at least two bonded heat transfer surfaces and comprising at least one aluminum or aluminum alloy core defining a first said heat transfer surface and formed by a process in which said first heat transfer surface is formed substantially free of oxide, an outer layer of fluxless soldering material of zinc or zinc base alloy which has been deposited on said first heat transfer surface of said core in a thickness sufficient for acting as a fluxless solder, the deposition having been carried out with said soldering material in a molten state while the metal of said core is in a nascent state such that a portion of said soldering material which is toward said first heat transfer surface is diffused into said core and said soldering material is interbonded to said core, and at least one other member defining a second said heat transfer surface and bonded to said core by said soldering material.

4,615,953

LINING STRUCTURE COMPOSITION FOR A TUNDISH

Kenji Ichikawa; Hiroyuki Sugimoto; Ryosuke Nakamura, all of Bizen; Takashi Yamamura, Okayama, and Kenji Mitsuhata, Bizen, all of Japan, assignors to Shinagawa Refractories Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1985, Ser. No. 706,163
Claims priority, application Japan, Feb. 27, 1984, 59-34193
Int. Cl.⁴ B32B *9/00*
U.S. Cl. 428—699 **1 Claim**



1. A lining for an inner surface of a tundish comprising:
an intermediate alumina-silica base lining layer containing approximately 35–65% by weight of Al_2O_3; and
a surface coating layer of a magnesian gunning material on top of said intermediate layer, containing approximately 70–90% by weight of MgO, approximately 1–20% by weight of CaO and at leat one member selected from the group consisting of SiO_2 and Na_2O in amounts of approximately 2 to 10% by weight and approximately 0.2 to 4% by weight respectively.

4,615,954

FAST RESPONSE, HIGH RATE, GAS DIFFUSION ELECTRODE AND METHOD OF MAKING SAME

Frank Solomon, Great Neck, N.Y., and Charles Grun, Matawan, N.J., assignors to ELTECH Systems Corporation, Boca Raton, Fla.

Filed Sep. 27, 1984, Ser. No. 655,129
Int. Cl.⁴ H01M *12/06, 4/96*
U.S. Cl. 429—27 **19 Claims**

1. A fast response, high current density oxygen cathode comprising: a form-stable, electrically conductive, wetproofing layer composed essentially of an intimate, consolidated and heat sintered mixture of carbon black and particulate hydrophobic polymeric binder derived predominantly from tetrafluoroethylene, having at least one anisometric electroconductive reinforcing material incorporated therein; and, directly adhered to one surface of said wetproofing layer, a porous active layer having a thickness between about 0.03 and about 0.1 millimeter and composed essentially of a mixture of particles of a polymer of tetrafluoroethylene and cobalt catalyst-containing particles of an active carbon predominantly of a size between about 2 and about 20 micrometers and having a B.E.T. surface area of over about 1000 m^2/gram.

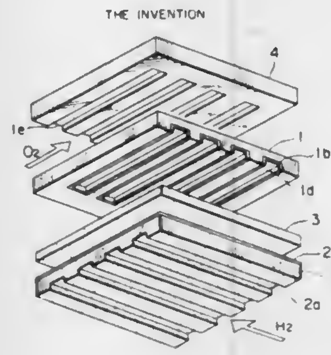
4,615,955

FUEL CELL

Koji Amakawa, and Norihira Uozumi, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 22, 1985, Ser. No. 757,450
Claims priority, application Japan, Jul. 23, 1984, 59-151242
Int. Cl.⁴ H01M *2/00*
U.S. Cl. 429—34 **18 Claims**

1. A fuel cell for generating electricity by reaction of reacting gases through a catalyst, which comprises a pair of electrodes, each having a gas passage formed thereby and being made from a porous substrate; an electrolyte-retaining matrix provided between the electrodes; and a pair of separator plates for partitioning the cells at the outer ends; one electrode, in which a gas is formed by reaction of the reacting gases to thereby generate electricity, among the pair of electrodes, having a catalyst layer; and an independent gas inflow passage closed at one end and an independent gas outflow passage closed at one end, the independent gas inflow and gas outflow passages being located such that the reacting gas supplied from the gas inflow passage passes through the one electrode and the catalyst layer toward the gas outflow passage, passing through the catalyst layer of the one electrode toward the gas outflow passage accompanied with the gas formed by the reaction of the reacting gas.

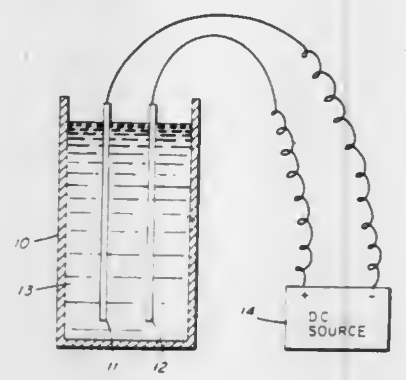


4,615,956

METHOD OF TREATING LITHIUM CELLS TO REDUCE START-UP DELAY TIME

Franz Goebel, Sudbudy, and William T. McHugh, Westwood, both of Mass., assignors to GTE Government Systems Corporation, Stamford, Conn.

Filed Dec. 4, 1985, Ser. No. 804,561
Int. Cl.⁴ H01M *10/36, 6/14*
U.S. Cl. 429—50 **2 Claims**



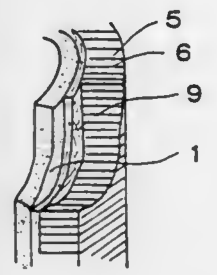
1. A method of reducing voltage delay time of electrochemical cells of the type having a lithium metal anode and a cathode current collector wetted by an electrolyte solution of thionyl chloride and lithium tetrachloroaluminate, comprising the steps of:
providing a cell prior to storage;
applying negative voltage to said lithium metal anode and positive voltage to said cathode current collector at a level sufficient to cause a current flow opposite to the current flow of said cell during normal discharge; and
maintaining said current flow at a level and time sufficient to deposit lithium metal to the surface of said lithium metal anode.

4,615,957

SODIUM-SULFUR STORAGE BATTERY

Hiroshi Kagawa, Takatsuki, Japan, assignor to Yuasa Battery Co., Ltd., Osaka, Japan

Filed Apr. 19, 1985, Ser. No. 724,989
Claims priority, application Japan, Apr. 19, 1984, 59-79901[U]; May 8, 1984, 59-92503; May 8, 1984, 59-93504
Int. Cl.⁴ H01M *10/39*
U.S. Cl. 429—104 **10 Claims**



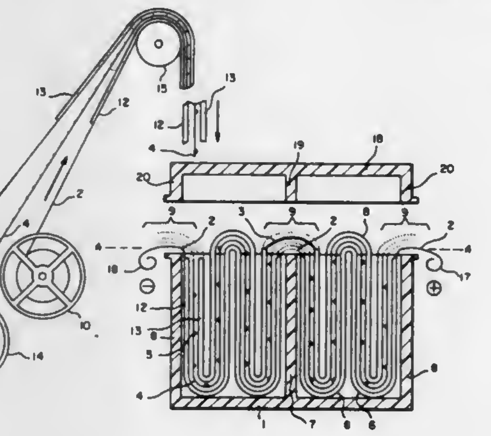
1. A sodium-sulfur storage battery comprising a sodium-ion conductive solid electrolyte tube; a positive electroconductive material consisting of graphite felt or carbon felt, a metal sulfide layer disposed between the solid electrolyte tube and the positive electroconductive material, and a metal member disposed between the solid electrolyte tube and the positive electroconductive material, said metal sulfide layer being formed by a sulfurated part formed at least at the surface of said metal member.

4,615,958

MULTICELL BATTERY USING CONTINUOUS MANUFACTURE

Hans-Joachim Golz, Hanover, Fed. Rep. of Germany, assignor to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Continuation of Ser. No. 230,543, Feb. 2, 1981, abandoned, which is a continuation-in-part of Ser. No. 931,162, Aug. 4, 1978, abandoned. This application Jun. 24, 1983, Ser. No. 507,953
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1977, 2737838
Int. Cl.⁴ H01M *10/04*
U.S. Cl. 429—127 **10 Claims**



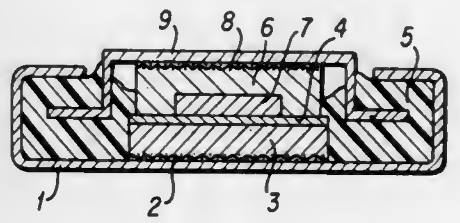
1. A multicell lead storage battery comprising:
a block casing divided into at least two cells by a cell separating partition;
a plurality of electrode packages, one for each cell of the battery,
wherein the electrode packages are comprised of two continuous strips of electrically conductive electrode supports and one continuous strip of separator material, each of the two continuous electrode strips being at least long enough to extend continuously through all the electrode packages of the battery, and are formed by applying a unitary active mass to each of the electrode supports, bringing the supports with the applied active mass together with the separator to produce a continuous three-layer structure of electrode-separator-electrode, and folding the three-layer structure into a plurality of zig-zag electrode packages, one for each cell of the battery, after removing the active mass from one of the two electrode strips and removing the active mass and the support from the other of the electrode strips along those portions of the structure which are to extend across the partition separating two adjacent cells when the electrode packages are inserted into the respective cells, the resulting active mass segments of any given electrode being formed to give alternate polarity to the electrode material in adjoining cells; and
a closure for the block casing applied after the electrode packages have been inserted, said closure consisting of a sidewall of the battery.

4,615,959

SECONDARY BATTERY OR CELL WITH IMPROVED RECHARGEABILITY

Hiroshi Hayashi, Otu, and Masahiro Satoh, Kyoto, both of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Mar. 7, 1985, Ser. No. 709,397
Claims priority, application Japan, May 7, 1984, 59-91455
Int. Cl.⁴ H01M *6/14, 4/58*
U.S. Cl. 429—194 **13 Claims**



1. A secondary battery or cell with improved rechargeability, which comprises:
(A) a cathode active material comprising a chalcogen compound of a transition metal,
(B) an electrolyte comprising a organic solvent having dissolved therein a lithium salt, and
(C) an anode active material comprising lithium metal in electrical contact with an electrically conductive substantially amorphous carbonaceous material having a conductivity of at least 10^{-5} mho/cm and a density of at most 1.8 g/cm^3,
said carbonaceous material being a pyrolysis residue formed by heating at least one organic material selected from the group consisting of synthetic high polymers, natural high polymers, pitches and coals, in an inert atmosphere to a temperature ranging from about 300° C. to 1500° C.,
wherein said anode material is formed in situ within the secondary battery or cell, by self discharge of lithium metal into said carbonaceous material.

4,615,960

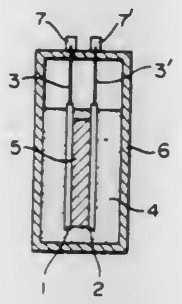
INSOLUBLE AND INFUSIBLE SUBSTRATE WITH A POLYACENE-TYPE SKELETAL STRUCTURE, AND ITS APPLICATIONS FOR ELECTRICAL CONDUCTOR OR ORGANIC CELL

Shizukuni Yata, Hyogo, Japan, assignor to Kanebo, Ltd., Tokyo, Japan

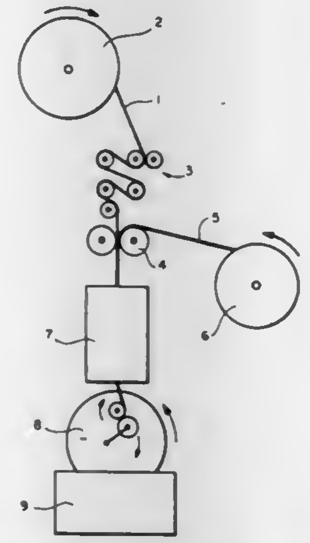
Filed Jan. 11, 1985, Ser. No. 690,799
Claims priority, application Japan, Jan. 19, 1984, 59-8152; Feb. 10, 1984, 59-24165
Int. Cl.⁴ H01M *4/60, 10/40;* **H01B** *1/20*
U.S. Cl. 429—194 **31 Claims**

1. An insoluble and infusible substrate with a polyaceene skeletal structure having a hydrogen/carbon atomic ratio from 0.05 to 0.60 and a specific surface area, measured by the BET

method, of at least 600 m^2/g, said substrate being a heat-treated product of an aromatic condensation polymer consisting of carbon, hydrogen and oxygen, said aromatic condensation polymer being selected from the group consisting of (1) condensation products of aromatic hydrocarbon compounds having a phenolic hydroxyl group with aldehydes, (2) condensation products of a mixture of aromatic hydrocarbon compounds having a phenolic hydroxyl group and aromatic hydrocarbon compounds free of phenolic hydroxyl groups with aldehydes, and (3) furan resins.



4,615,961
PROTECTED METAL COMPONENTS
George B. Park, Purton, Nr. Swindon; John A. Cook, Faringdon, and Robert H. McLoughlin, Swindon, all of England, assignors to Raychem Corporation, Menlo Park, Calif.
Continuation-in-part of Ser. No. 618,094, Jun. 7, 1984, abandoned. This application Nov. 1, 1984, Ser. No. 667,033
Claims priority, application United Kingdom, Nov. 2, 1983, 8329209; Dec. 15, 1983, 8333385
Int. Cl.⁴ H01M *2/16, 2/32*
U.S. Cl. 429—218 **21 Claims**



1. An electrode article comprising a continuous body of an alkali or alkaline earth metal, at least part of which body is protected by a layer of substantially non-porous, relatively fluid-impermeable flexible polymeric protective material; said protective material having a component which can be removed while said protective material is protecting said body to render said protective material relatively fluid permeable and said body having been deformed so as to decrease its thickness, thereby substantially increasing its surface area, while it is in contact with said protective material.

4,615,962
DIACETYLENES HAVING LIQUID CRYSTAL PHASES
Anthony F. Garito, Radnor, Pa., assignor to University Patents, Inc., Norwalk, Conn.
Continuation-in-part of Ser. No. 340,471, Jan. 18, 1982, Pat. No. 4,439,514, which is a continuation of Ser. No. 113,552, Jan. 21, 1980, abandoned, which is a continuation-in-part of Ser. No. 52,007, Jun. 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 129,560, Mar. 12, 1980, Pat. No. 4,431,263, which is a continuation-in-part of Ser. No. 52,007, Jun. 25, 1979. This application Aug. 24, 1983, Ser. No. 526,033
Int. Cl.⁴ G03C *1/68*
U.S. Cl. 430—20 **13 Claims**

1. A method for preparing a polymerized article comprising providing a substrate,

placing upon the substrate at least one layer of at least one composition comprising at least one divinyl or dialkenyl diacetylene monomer having a liquid crystalline state,

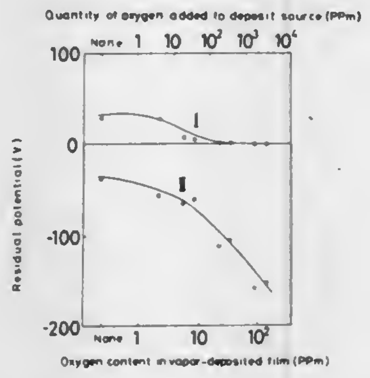
causing said layer substantially to assume a liquid crystalline state, and

imagewise polymerizing the layer while it is substantially in a liquid crystalline state.

4,615,963
ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER AND PREPARATION OF PHOTOCONDUCTIVE COMPOSITION THEREFOR
Masakazu Matsumoto, and Hideyuki Takahashi, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 6, 1985, Ser. No. 708,781
Claims priority, application Japan, Mar. 10, 1984, 59-44842
Int. Cl.⁴ G03G *5/04, 5/05*
U.S. Cl. 430—56 **14 Claims**

1. An electrophotographic photosensitive member, comprising a photosensitive layer comprising a photoconductive organic pigment or dye dried by the freeze vacuum drying method and a binder resin.

4,615,964
VAPOR-DEPOSITED FILM OF SELENIUM AS PHOTORECEPTOR FOR ELECTROPHOTOGRAPHY AND PROCESS FOR PRODUCING THE SAME
Osamu Oda, Urawa; Arata Onozuka, Yono, and Akio Koyama, Urawa, all of Japan, assignors to Nihon Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 6, 1984, Ser. No. 568,679
Claims priority, application Japan, Jan. 11, 1983, 58-1703; Nov. 10, 1983, 58-209978
Int. Cl.⁴ G03G *5/082*
U.S. Cl. 430—84 **3 Claims**



1. A vapor-deposited film of selenium as a photoreceptor for electrophotgraphy characterized by an oxygen content of not more than 10 ppm whereby a well balanced positive- and negative-residual potentials of the selenium photreceptor is obtained.

4,615,965
METHOD OF MAKING PHOTOCONDUCTIVE FILM AND ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER
Masakazu Matsumoto, and Hideyuki Takahashi, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 10, 1985, Ser. No. 721,652
Claims priority, application Japan, Apr. 13, 1984, 59-74774
Int. Cl.⁴ G03G *5/06*
U.S. Cl. 430—134 **16 Claims**

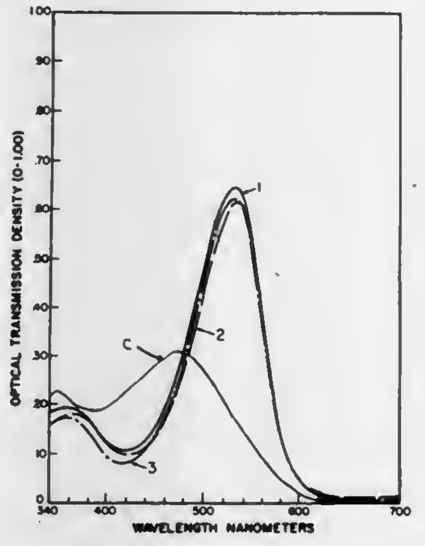
1. A photoconductive film formed by the steps of:

(a) combining a binder resin containing an organic photoconductive dye or pigment with a first solvent to form a dispersion;

(b) admixing said dispersion with a second solvent, wherein the binder resin is less soluble in the second solvent than in the first solvent, to form a diluted dispersion; and

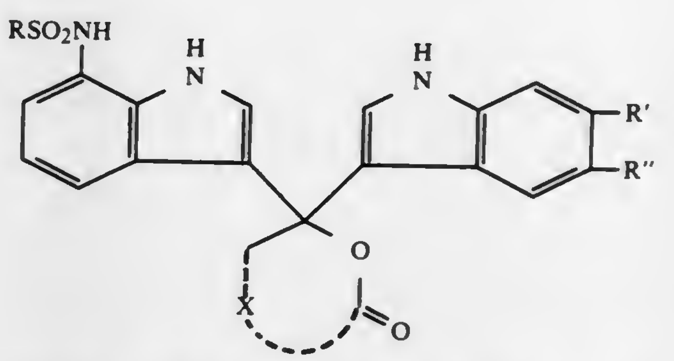
(c) applying said diluted dispersion to a surface.

4,615,966
COLOR TRANSFER PHOTOGRAPHIC PROCESSES AND PRODUCTS WITH INDOLE PHTHALEIN FILTER DYES
Alan L. Borror, Andover; Efthimios Chinoporos, Belmont, and Cheryl P. Petersen, Arlington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of Ser. No. 752,444, Jul. 3, 1985, abandoned. This application Jan. 21, 1986, Ser. No. 821,074
Int. Cl.⁴ G03C *1/40, 1/84, 5/54;* **C07D** *405/00*
U.S. Cl. 430—221 **29 Claims**



9. In a photographic film unit adapted for forming a transfer image viewable as a reflection print including a negative component comprising a photosensitive silver halide emulsion carried on a support; a positive component comprising an image-receiving layer carried on a transparent support; an acid-reacting layer disposed in at least one of said negative and positive components; and an aqueous alkaline processing composition comprising a light-reflecting pigment and at least one light-absorbing, pH sensitive optical filter agent releasably contained in a rupturable container positioned to release said composition for distribution between said negative and said positive components, the combination of said light-reflecting pigment and said optical filter agent being effective to prevent further exposure of said photosensitive emulsion during processing in the presence of radiation actinic to said emulsion and said light-reflecting pigment providing a layer after development which is effective to mask said photosensitive layer and provide a background for viewing the transfer image by reflected light;

the improvement which comprises employing as said processing composition, an aqueous alkaline solution comprising a light-reflecting pigment and as at least one said light-absorbing pH-sensitive optical filter agent, a pH-sensitive indole phthalein of the formula



wherein R is selected from alkyl, aryl, aralkyl and alkaryl, R' and R'' each are selected from hydrogen, halo and $-SO_2NR^1R^2$ provided one of said R' and R'' is said $-SO_2NR^1R^2$, R^1 and R^2 each are selected from hydrogen, alkyl, aryl, aralkyl and alkaryl, and X represents the carbon atoms necessary to complete phthalide or naphthalide.

4,615,967
OPTICAL INFORMATION STORAGE MATERIAL
Michael A. Tenhover, Solon, and Robert K. Grasselli, Aurora, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio
Filed Feb. 11, 1985, Ser. No. 700,428
Int. Cl.⁴ G03F *7/02;* **G03C** *1/00*
U.S. Cl. 430—270 **8 Claims**

1. A device fo recording information in readable form comprising a film formed of a compound having a decrease in light absorbancy with increasing temperature and having a formula:

$$(A_xB_{1-x})_{1-y}S_y$$

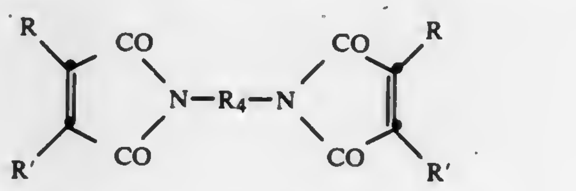
where x is greater than zero and less than one, y is at least equal to 0.67 and is less than 1, A and B are different elements each chosen from silicon, tin and lead and S is chosen from selenium and sulfur and mixtures thereof.

4,615,968
COMPOSITIONS OF MATTER WHICH CROSSLINK UNDER THE ACTION OF LIGHT IN THE PRESENCE OF SENSITIZERS
Joseph Berger, Basel, and Friedrich Lohse, Oberwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Oct. 26, 1983, Ser. No. 545,555
Claims priority, application Switzerland, Nov. 4, 1982, 6417/82
Int. Cl.⁴ G03C *1/70;* **C08F** *8/30*
U.S. Cl. 430—283 **15 Claims**

1. A composition of matter which crosslinks under light in the presence of sensitisers and contains

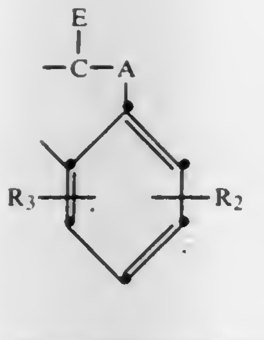
(A) an aliphatically unsaturated polycondensation product and

(B) a bisimide of the formula II



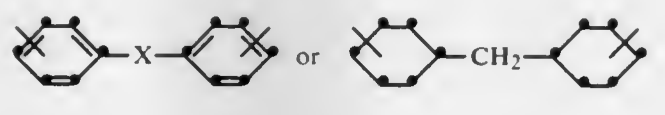
(II)

in which R and R' independently of each other are each C_{1-4}-alkyl or together teramethylene which is unsubstituted or substituted by a methyl group, or a grouping of the formula III



(III)

R_2 and R_3, independently of each other, are each hydrogen, halogen, C_{1-4}-alkyl or methoxy, A is $—CH_2—$, $—CH_2CH_2—$ or $—OCH_2—$ with oxygen bonded to the aromatic ring, and E is hydrogen, or A is —O— and E is 13 CH_3, R_4 is $—C_mH_{2m}—$ with $m=1$ to 20, $—(CH_2)_xQ(CH_2)x'—$, $—(CH_2)_2NH(CH_2)_2NH(CH_2)_2—$, $—CH_2—Z—CH_2—$, phenylene which is unsubstituted or substituted by one or two chlorine atoms or one or two methyl groups, naphthylene or a group of the formula

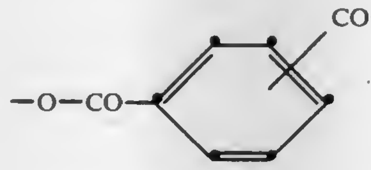


Q is —S—, —O— or —NH—, x and x', indpendently of each other, are each a number from 2 to 4, Z is phenylene or C_{4-6}-cycloalkylene, X is a direct bond, —O—, —S—, $—SO_2—$, $—CH_2—$ or $—C(CH_3)_2—$, and the proportion of bisimide of the formula II is 0.1 to 75% by weight based on polymer (A), and (C) a photosensitizer.

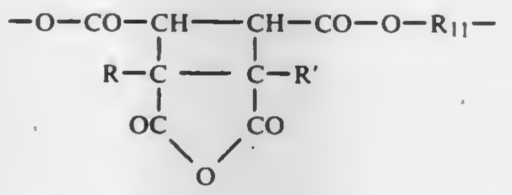
8. A composition of matter according to claim **1**, wherein said polycondensation product is the polyester consisting of recurring structural elements of the formula VIa

$$—O—CO—CH=CH—CO—O—R_{11}— \qquad (VIa)$$

or of formula VIa plus those of formula VIb, of formula Ia or of mixtures thereof

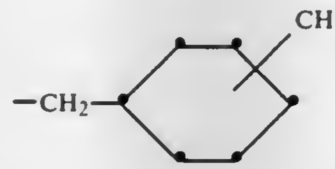


(VIb)



(Ia)

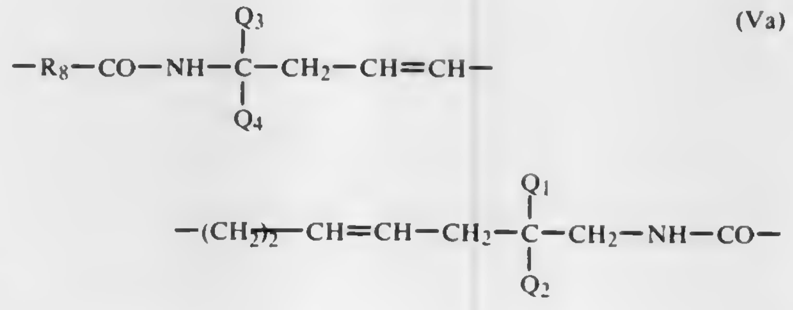
in which R and R' together are tetramethylene or are each methyl, R_{11} is a group of the formula



or $(CH_2)_s$

with s=2-12, and the proportion of structural elements of the formula Ia is up to 95% of the total number of recurring structural elements of the polyester.

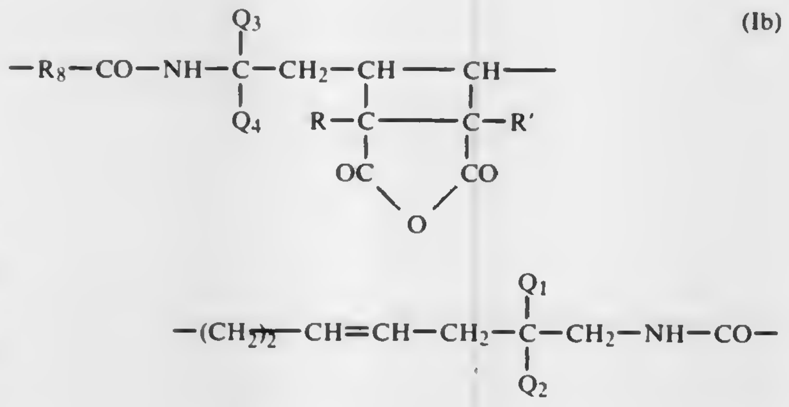
10. A composition of matter according to claim **1**, wherein said polycondensation product is the polyamide of recurring structural elements of the formula Va



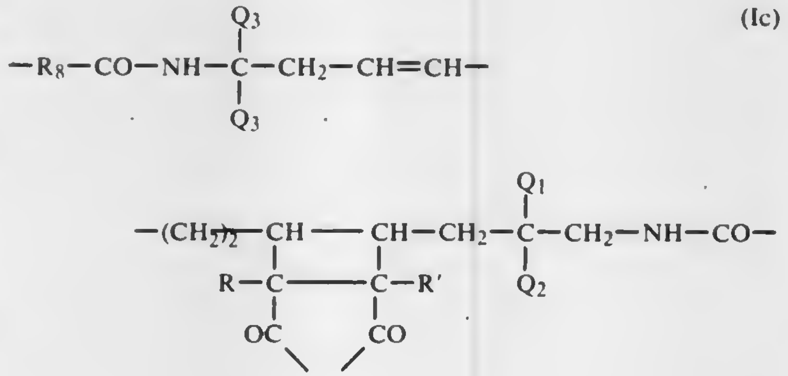
$$-R_8-CO-NH-\overset{Q_3}{\underset{Q_4}{C}}-CH_2-CH=CH- \qquad (Va)$$

$$-(CH_2)_2-CH=CH-CH_2-\overset{Q_1}{\underset{Q_2}{C}}-CH_2-NH-CO-$$

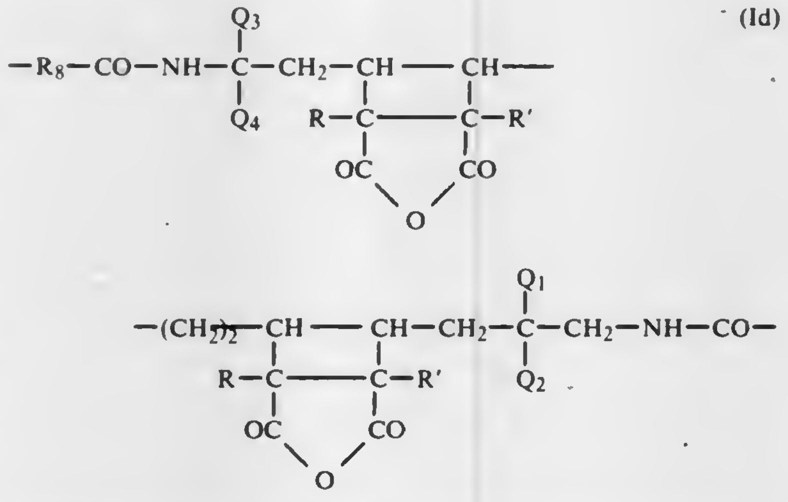
or of formula Va plus those of formula Ib, of formula Ic, of formulat Id or of mixtures thereof



(Ib)



(Ic)



(Id)

in which R and R' together are tetramethylene or are each methyl, Q_1 is C_{1-12}-alkyl, Q_2 is hydrogen or C_{1-12}-alkyl, Q_3 is C_{1-12}-alkyl, cycloalkyl having 4-12 ring carbon atoms, aralkyl having 7 or 8 carbon atoms, or phenyl, or Q_1 and Q_2 and/or Q_3 and Q_4 together are alkylene having 3-11 carbon atoms, and R_8 is the radical of terephthalic acid, isophthalic acid and/or of a saturated aliphatic dicarboxylic acid having 6-12 carbon atoms, the proportion of structural elements of th formulae Ib, Ic and/or Id is up to 95% of the total number of recurring structural elements of the polyamide.

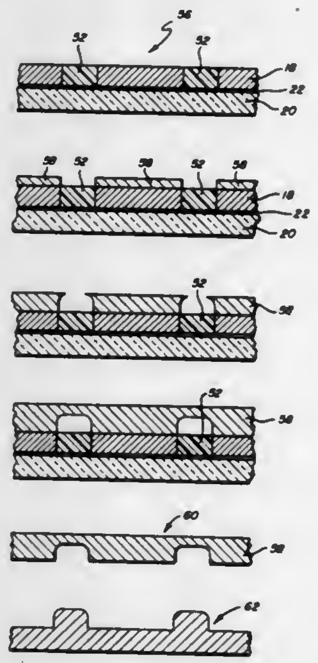
4,615,969
METHOD AND APPARATUS FOR MAKING A STAMPING MASTER FOR VIDEO DISK REPLICATION

David A. Strand, West Bloomfield, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Division of Ser. No. 383,176, May 28, 1982, abandoned. This application Apr. 25, 1984, Ser. No. 603,626

Int. Cl.⁴ G03C *5/00*

U.S. Cl. 430—320 **32 Claims**



1. A method of making a stamping master to facilitate video disk replication comprising:

(a) providing a substrate;

(b) depositing a thin film of material over said substrate, said material being reversibly convertible at least twice between a state of high electrical conductivity and a state of low electrical conductivity, said film being deposited in one of said states;

(c) converting selected areas of said film from one of said states to the other said state in a predetermined pattern;

(d) depositing at least one additional material onto at least a portion of said areas of said film corresponding to one of said states;

(e) forming a continuous backing layer over at least part of said additional material; and

(f) separating said backing layer and said additional material from said film, said backing layer and said additional material forming a first stamping master.

4,615,970
SILVER HALIDE PHOTOGRAPHIC MATERIAL

Tetsuro Kojima; Koki Nakamura, and Takashi Toyoda, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

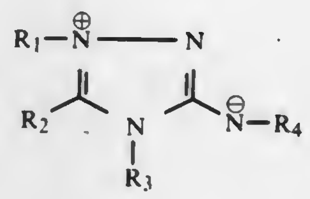
Filed Dec. 6, 1984, Ser. No. 678,906

Claims priority, application Japan, Dec. 7, 1983, 58-231088

Int. Cl.⁴ G03C *1/34*

U.S. Cl. 430—446 **34 Claims**

1. A silver halide photographic material which is developed by a processing liquid comprising a support having thereon at least one silver halide emulsion layer, wherein said silver halide photographic material contains in at least one hydrophilic layer thereof a compound selected from the group consisting of compounds represented by formula (I) and salts formed from said compound and an acid;

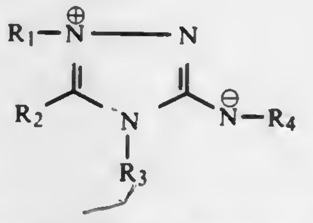


(I)

wherein R_1, R_2, R_3 and R_4 each represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic ring group; or one or both of said R_1 and R_2 and said R_3 and R_4 combine with each other to form a ring

wherein the compound represented by formula (I) is present in an amount effective to prevent the formation of fog occurring upon high temperature quick processing, control the development speed, and provide a high-quality image.

20. A method for obtaining a silver image from a silver halide photographic material comprising a support having thereon at least one silver halide emulsion layer, which comprises (i) incorporating in at least one hydrophilic layer of said silver halide photographic material at least one compound selected from the group consisting of compounds represented by formula (I) and salts formed from said compound and an acid;



(I)

wherein R_1, R_2, R_3 and R_4 each represents a substituted or unsubstituted alkyl group, a substituted of unsubstituted alkenyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic ring group; or one or both of said R_1 and R_2 and said R_3 and R_4 combine with each other to form a ring, (ii) exposing to light, and (iii) developing the material exposed with a processing liquid

and wherein the compound represented by formula (I) is present in an amount effective to prevent the formation of fog occurring upon high temperature quick processing, control the development speed, and provide a high-quality image.

4,615,971
PHOTOGRAPHIC DEVELOPER COMPOSITION

Helmut Häseler, Leverkusen, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 581,877, Feb. 21, 1984, abandoned. This application Sep. 10, 1985, Ser. No. 774,806

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1983, 3307507

Int. Cl.⁴ G03C *5/30, 7/30*

U.S. Cl. 430—491 **6 Claims**

1. A developer composition for the development of silver halide-containing recording materials comprising a silver halide developing agent and at least one complex former for binding metal ions, comprising a hydrolysed polymaleic acid anhydride with an average molecular weight of from 800 to 1000 and in that said anhydride is present in an amount of at least 0.5 g per liter.

4,615,972
STABILIZATION OF INDICATORS FOR DETECTING ENZYME ACTIVITY

James J. Gallacher, Irving, Tex., assignor to Immuno Concepts, Inc., Sacramento, Calif.

Filed Nov. 4, 1983, Ser. No. 548,623

Int. Cl.^{4} C12Q *1/28*

U.S. Cl. 435—28 **24 Claims**

1. A process for preparing a stabilized indicator powder for subsequent use in a wet chemical assay procedure, comprising the steps of:

providing an indicator compound which is capable of being oxidized by a hydrogen acceptor in the presence of a peroxidatively active substance, the indicator compound being selected from the group consisting of 4-chloro-1-napthol, 3-amino-9-ethylcarbazole, and 3,3′,5,5′-tetramethylbenzidine;

providing a stabilizer compound selected from the group consisting of polyethylene glycol, polyethyleneoxide, polyvinylpyrrolidone, and their water soluble derivatives;

mixing together the indicator compound and the stabilizer compound to form a solid powder mixture; and

grinding the solid powder mixture together to form a stabilized indicator powder, whereby the indicator powder is resistant to deterioriation as a powder and also to deterioriation by spontaneous oxidation when dissolved in an aqueous solution.

4,615,973
GENETICALLY ENGINEERED ORGANISMS EXPRESSING SURFACE PROTEINS OF *T. CRUZI*

Paul Lizardi, New York, N.Y., and Nadia Nogueira, Princeton, N.J., assignors to The Rockefeller University, New York, N.Y.

Filed Sep. 30, 1983, Ser. No. 537,798

Int. Cl.^{4} A61K *39/005;* **C12P** *21/00;* **C12N** *15/00;* **C12M** *1/02*

U.S. Cl. 435—68 **14 Claims**

13. Method of producing insect stage specific surface glycoproteins of *T. cruzi* comprising culturing microorganisms containing plasmids which contain DNA expressing said glycoproteins, under conditions favoring expression of said glycoproteins and harvesting glycoproteins therefrom.

4,615,974
YEAST EXPRESSION VECTORS

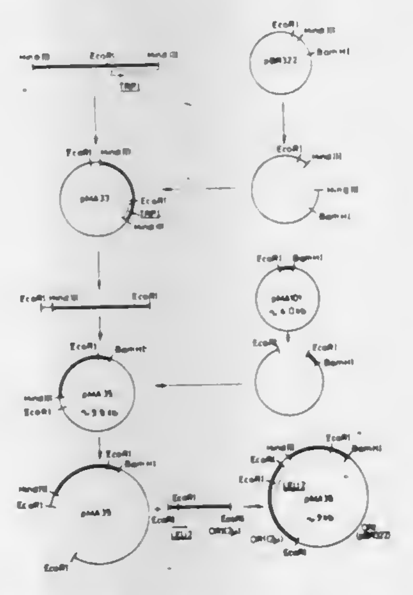
Alan J. Kingsman, and Susan M. Kingsman, both of Islip, England, assignors to Celltech Limited, Berkshire, England

Filed Aug. 17, 1982, Ser. No. 408,826

Claims priority, application United Kingdom, Aug. 25, 1981, 8125934; Mar. 23, 1982, 8208422; Jun. 16, 1982, 8217496

Int. Cl.^{4} C12P *2/1, 21/02;* **C12N** *15/00, 1/18*

U.S. Cl. 435—68 **11 Claims**



1. A yeast expression vector having a *Saccharomyces cerevisiae* promoter positioned relative to a non *Saccharomyces cerevisiae* polypeptide coding sequence in such a way that expression may be obtained of said polypeptide coding sequence

wherein said *Saccharomyces cerevisiae* promoter consists essentially of at least a functionally active promoter portion of the 5′ region of the PGK gene or at least a functionally active promoter portion of the 5′ region of the TRP1 gene,

said yeast expression vector also including a *Saccharomyces cerevisiae* selective marker and a *Saccharomyces cerevisiae* replication origin.

4,615,975
PURIFIED CULTURE OF *ACTINOMADURA VERRUCASPORA* SUBSPECIES *VERACTIMYCES*

Josefino B. Tunac, Troy, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 512,088, Jul. 8, 1983, Pat. No. 4,530,835. This application Oct. 29, 1984, Ser. No. 665,894

Int. Cl.^{4} C12P *1/06;* **C12N** *1/20;* **C12R** *1/025*

U.S. Cl. 435—169 **1 Claim**

1. A biologically pure culture of *Actinomadura verrucaspora* subspecies *veractimyces* having the identifying characteristics of ATCC 39363, which culture is capable of producing the antibiotic CL-1577A and CL-1577B compounds in recoverable amounts under conditions of aerobic fermentation in a culture medium containing assimilable sources of carbon and nitrogen;

said CL-1577A compound characterized by:

(a) a molecular weight (FAB mass spectrometry) of 1248 a.m.u.

(b) an ultraviolet absorption spectrum in methanol solution exhibiting absorption maxima at 215 nm (a=27.4), 252 nm (a=28.2), 282 nm (a=16.7), and 318 nm (a=11.6);

(c) an infrared absorption spectrum (potassium bromide pellet) exhibiting principal absorption peaks at 3450, 2970, 2930, 1690, 1630, 1610, 1600, 1525, 1465, 1450, 1410, 1370, 1310, 1250, 1210, 1155, 1075, 1020, 990, 905, 880, 855, 795, 780, and 750 reciprocal centimeters;

(d) a 200 MHz proton magnetic resonance spectrum ($CDCl_3$) exhibiting signals at 1.11 (doublet), 1.33 (doublet), 1.35 (doublet), 1.41 (doublet), 1.56 (multiplet), 1.95 (doublet), 2.12 (multiplet), 2.13 (singlet), 2.22 (multiplet), 2.30 (multiplet), 2.52 (doublet of doublets), 2.53 (singlet), 2.75 (multiplet), 3.42 (singlet), 3.4–4.2 (multiplet), 3.81 (singlet), 3.89 (singlet), 3.98 (singlet), 4.21 (singlet), 4.57 (doublet), 4.67 (multiplet), 4.97 (doublet), 5.40 (multiplet), 5.50 (multiplet), 5.70 (doublet), 5.82 (doublet), 6.00 (doublet), 6.15 (broad singlet), 6.26 (singlet), 6.60 (doublet of doublets), 7.49 (singlet), 8.60 (singlet), and 11.71 (singelt) parts per million downfield from tetramethylsilane;

(e) an optical rotation $[\alpha]_D=-198°$ ($c=1.25$, $CHCl_3$); and

(f) the elemental analysis, 53.26% C, 6.04% H, 3.82% N, and 8.95% S;

said CL-1577B compound characterized by:

(a) an ultraviolet absorption spectrum in methanol solution exhibiting absorption maxima at 215 nm (a=26.8), 282 nm (a=16.1), and 325 nm (a=11.9);

(b) an infrared spectrum (potassium bromide pellet) exhibiting principal absorption peaks at 3450, 2970, 2930, 1690, 1630, 1610, 1600, 1525, 1465, 1450, 1410, 1370, 1310, 1250, 1210, 1155, 1075, 1020, 945, 905, 880, 855, 795, 780, and 750 reciprocal centimeters;

(c) a 200 MHz proton magnetic resonance spectrum ($CDCl_3$) exhibiting signals at 1.11 (doublet), 1.12 (doublet), 1.24 (doublet), 1.35 (doublet), 1.41 (doublet), 1.43 (singlet), 1.46 (multiplet), 2.00 (multiplet), 2.13 (singlet), 2.14 (multiplet), 2.31 (multiplet), 2.52 (singlet), 2.53 (multiplet), 2.75 (multiplet), 3.42 (singlet), 3.4–4.2 (multiplet), 3.79 (singlet), 3.89 (singlet), 3.99 (singlet), 4.19 (singlet), 4.49 (multiplet), 4.56 (doublet), 4.66 (doublet), 4.77 (multiplet), 4.97 (doublet), 5.35 (broad singlet), 5.47

(multiplet), 5.72 (doublet), 5.83 (doublet), 5.93 (doublet), 6.21 (multiplet), 6.24 (singlet), 6.59 (doublet of doublets), 7.61 (singlet), 8.64 (singlet), and 11.58 (singlet) parts per million downfield from tetramethylsilane;

(d) an optical rotation $[\alpha]_D=-189°$ ($c=0.63$, $CHCl_3$); and

(e) the elemental analysis, 54.81% C, 6.33% H, 3.86% N, and 8.96% S.

4,615,976
SYNTHESIS AND ISOLATION OF OCTOPINE AND ITS ANALOGUES

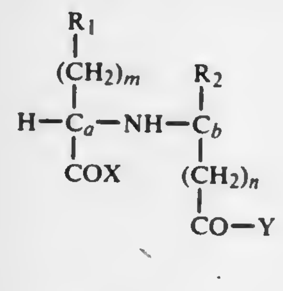
Kenneth B. Taylor, Birmingham, and Leo M. Hall, Homewood, both of Ala., assignors to The University of Alabama in Birmingham, Ala.

Filed Aug. 15, 1983, Ser. No. 523,082

Int. Cl.^{4} C07C *101/26, 101/30, 109/18, 127/15, 129/08;* **C12N** *15/00, 1/20, 5/00;* **C07B** *57/00*

U.S. Cl. 435—172.3 **58 Claims**

1. A method of separating a compound of the formula:



wherein

$m=1$–4, $n=0$–1,

$R_1=$ —NH—CNH—NH_2, —O—NH—CNH—NH_2, —ONH_2, —NH—CO—NH_2, —O—NH—CO—NH_2, or —NH_2,

$R_2=$ —H, alkyl of C_1–C_{10} carbons or their halogenated derivatives,

X and Y may be the same or different and represent —OH and —NH_2, with the proviso that at least one is —OH, from its diastereoisomer, which comprises:

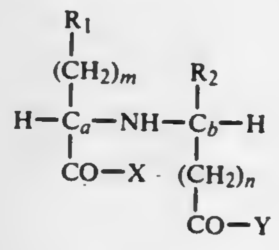
(a) adjusting the pH of an aqueous first solution containing said compound and its diastereoisomer to the appropriate isoelectric point of the compound, whereby a pH-adjusted first solution is obtained;

(b) seeding with purified crystals of the first precipitate compound thereby obtaining a seeded solution;

(c) allowing said seeded solution to stand until a partially purified first precipitate forms and a mother liquor remains; and

(d) collecting said partially purified first precipitate.

37. A compound of the formula:



wherein:

R_1 is —NH—CNH—NH_2, —O—NH—CNH—NH_2, —ONH_2, —NH—CO—NH_2, —O—NH—CO—NH_2 or —NH_2,

R_2 is —H, alkyl of C_1–C_{10} carbons or their halo-derivatives,

C_a and C_b may be the same or different and represent the S and R carbon tetrahedral forms,

X and Y are different and represent —OH, or —NH_2,

$n=0$–1, and

$m=1$–4.

50. A bacterial growth medium, comprising:

(a) the compound of claim **37** in an amount sufficient to sustain bacterial growth; and

(b) other supplementary nutrients.

4,615,977
METHOD FOR THE CULTIVATION OF NORMAL DIPLOID CELLS AND CULTIVATION MEDIUM USED THEREFOR

Akio Hasegawa, and Sadakazu Horiguchi, both of Shizuoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 2, 1982, Ser. No. 446,144

Claims priority, application Japan, Dec. 24, 1981, 57-212619; Aug. 24, 1982, 56-145572

Int. Cl.^{4} C12N *5/00*

U.S. Cl. 435—240 **19 Claims**

1. A method for the cultivation of normal diploid cells originating from mammals, comprising the steps of:

(A) providing a basic culture medium for normal diploid cells originating from mammals comprising a carbon source, a nitrogen source, inorganic salts and, as additional components, 0.06 to 180 ng/ml of epidermal growth factor, 0.03 to 250 μg/ml of transferrin, 0.1 to 0.4% by volume of serum and an amine derivative or derivatives represented by the general formula: $NR^1R^2R^3$ wherein R^1, R^2 and R^3 may be the same or different, and each is a hydrogen atom or an unsubstituted or substituted straight, branched or cyclic alkyl group of 1 to 8 carbon atoms, wherein the substituent for the substituted alkyl group is a hydroxyl group, a phosphoric acid group or an amino group, provided that R^1, R^2 and R^3 are not hydrogen atoms at the same time;

(B) providing normal diploid cells originating from mammals on a surface of the culture medium; and

(C) allowing the cells to grow.

15. A cultivation medium for normal diploid cells originating from mammals, comprising a basic cultivation medium for normal diploid cells originating from mammals comprising a carbon source, a nitrogen source, inorganic salts and, as additional components, 0.06 to 180 ng/ml of epidermal growth factor, 0.03 to 250 μg/ml of transferrin, 0.1 to 0.4% by volume of serum and an amine derivative or derivatives represented by the general formula: $NR^1R^2R^3$ wherein R^1, R^2 and R^3 may be the same or different, and each is a hydrogen atom or an unsubstituted or substituted straight, branched or cyclic alkyl group of 1 to 8 carbon atoms, wherein the substituent for the substituted alkyl group is a hydroxyl group, a phosphoric acid group or an amino group, provided that R^1, R^2 and R^3 are not hydrogen atoms at the same time.

4,615,978
BACTERIAL GROWTH MEDIUM AND METHOD OF USE

William E. Sandine, and James W. Ayres, both of Corvallis, Oreg., assignors to The State of Oregon, by and through the Oregon State Board of Higher Education on behalf of Oregon State University, Eugene, Oreg.

Continuation of Ser. No. 450,797, Dec. 17, 1982, abandoned, which is a continuation of Ser. No. 237,883, Feb. 25, 1981, abandoned, which is a continuation-in-part of Ser. No. 52,960, Jun. 28, 1979, Pat. No. 4,282,255. This application Dec. 18, 1984, Ser. No. 682,495

Int. Cl.^{4} C12N *1/20;* **C12P** *7/56;* **A23C** *9/123, 9/12*

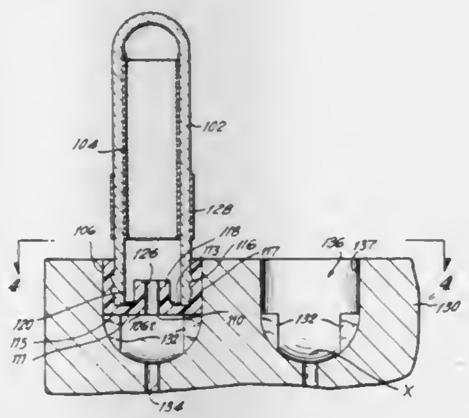
U.S. Cl. 435—253 **14 Claims**

1. In the method for growing acid producing bacteria in an aqueous growth medium including bacterial nutrients, particularly a carbohydrate, a nitrogen source and essential minerals, the improvement which comprises:

providing a compound A, which compound is a dry, water soluble magnesium compound; and

reacting in water containing the bacterial nutrients and prior to addition of the bacteria, a magnesium cation from compound A with an anion from a compound B which reacts with the magnesium cation to form, by a reaction in situ, an aqueous medium containing an essentially water insoluble reaction product that (a) is a salt, base or mixture thereof, (b) includes the magnesium cation and the anion, and (c) is acid neutralizing in the medium, wherein the resulting medium includes an amount of the insoluble reaction product sufficient to neutralize at least some of the acid generated by acid producing bacteria grown in the medium and wherein the resulting medium is nontoxic to the bacteria.

4,615,979
DIAGNOSTIC URINE CULTURE APPARATUS AND METHOD OF USING SAME
Mark Perloe, 1026 Faulkner Dr., Claremore, Okla. 74017
Filed Mar. 10, 1983, Ser. No. 473,788
Int. Cl.⁴ C12M *1/00, 1/24, 1/20*
U.S. Cl. 435—287 **3 Claims**



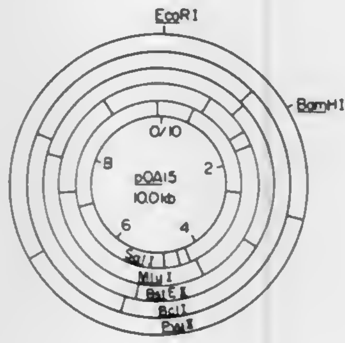
1. In combination, a diagonistic culture apparatus for catheterized urine collection, bacterial detection and identification, and an incubation tray for use with the culture apparatus, said culture apparatus comprising:

a culture tube having interior and exterior surfaces, a closed bottom end, and open top end;
typing medium coated on the interior surface of said tube for detecting and identifying bacteria;
a cap at least in part closing the open end of the culture tube, said cap including a top wall having a generally planar outer surface, an annular wall depending from the top wall, and a channel extending through the top wall; and
catheter means for collecting a urine specimen, said catheter means extending through the cap channel such that urine may pass through said catheter means into said culture tube for diagnostic analysis;
an incubation tray comprising:
at least one hollow cavity recessed in a surface of said tray, said at least one hollow cavity including support means for supporting said culture tube, and
ventilation means in said tray, said ventialtion means communicating with said cap channel for gas exchange between the ambient atmosphere and the culture medium.

4,615,980
PLASMID POA15
Shuichi Aiba, Suita, and Tetsuo Ohnuki, Minoo, both of Japan, assignors to Sanraku-Ocean Co., Ltd., Tokyo, Japan
Filed Feb. 1, 1984, Ser. No. 575,848
Claims priority, application Japan, Feb. 3, 1983, 58-15515
Int. Cl.⁴ C12N *1/00, 15/00*
U.S. Cl. 435—317 **3 Claims**

1. A biologically pure plasmid pOA15 in isolated form having the property of conferring pock-forming ability on *Streptomyces griseus* (ATCC 10137) and a molecular length of about 10 kb, and further having

(a) one restriction site recognized by BamHI,
(b) one restriction site recognized by EcoRI,
(c) 7 restriction sites recognized by SalI, and

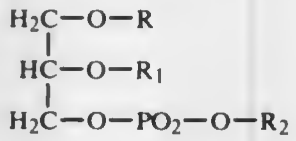


(d) not being cleavable at the BglII, HindIII, KpnI, PstI and XbaI restriction sites.

4,615,981
PROCESS FOR OBTAINING CHOLESTEROL ESTERASE FROM MICROORGANISMS
Herbert von der Eltz, Weilheim; Helmgard Gauhl, and Hans Seidel, both of Tutzing, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany
Filed Oct. 22, 1984, Ser. No. 663,149
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1983, 3340950
Int. Cl.⁴ C12N *9/18*
U.S. Cl. 435—197 **11 Claims**

1. In a process for obtaining cholesterol esterase from microorganisms by culturing a micro-organism capable of forming cholesterol esterase in an appropriate nutrient medium in the presence of an inductor and obtaining the enzyme from the culture liquid and/or from the cells,

the improvement comprising said inductor being a compound of the formula:



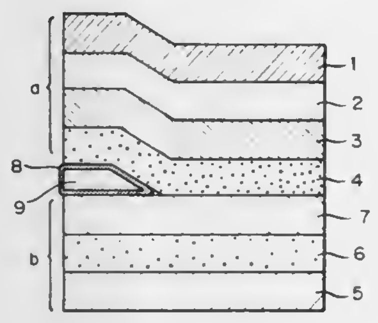
$$\begin{array}{l} H_2C-O-R \\ \quad | \\ HC-O-R_1 \\ \quad | \\ H_2C-O-PO_2-O-R_2 \end{array}$$

wherein R and R_1 are alkyl or alkoxy containing 14 to 18 carbon atoms or are hydrogen atoms; and
R_2 is alkylamino containing 2 to 8 carbon atoms, alkyl-trimethylammonium containing 3 to 8 carbon atoms in the alkyl moiety, alkylpyridine containing up to 4 carbon atoms in the alkyl moiety or a radical of the formula $-CH_2-(CHOH)_n-CH_2OH$, in which n is a whole number of from 1 to 4.

4,615,982
FECAL OCCULT BLOOD TEST
Paul J. Lawrence, 2082 Abbey La., Campbell, Calif. 95008
Filed Dec. 11, 1984, Ser. No. 680,357
Int. Cl.⁴ G01N *21/78, 33/72*
U.S. Cl. 436—66 **13 Claims**

1. In a fecal occult blood test wherein a fecal specimen is placed on a solid test matrix having a leuco dye impregnated therein and a hydroperoxide developer solution is subsequently placed on the matrix, the improvement comprising applying as the hydroperoxide developer solution a solution whose solvent comprises at least 50% by volume of dimethyl sulfoxide.

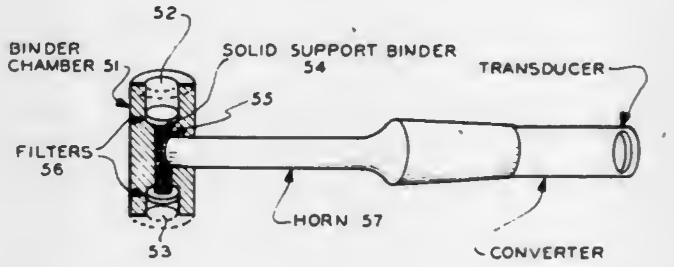
4,615,983
IMMUNOLOGICAL MEASURING ELEMENT
Mikio Koyama, Hino, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Nov. 9, 1981, Ser. No. 319,391
Claims priority, application Japan, Nov. 11, 1980, 55-157682
Int. Cl.⁴ G01N *33/54, 33/58, 1/48;* **B65D** *71/00*
U.S. Cl. 436—514 **35 Claims**



1. In an immunoassay method for the qualitative and quantitative determination of an antigen in a sample and further including a labelled form of said antigen; a first antibody which is capable of binding to said antigen and said labelled antigen; and a second antibody which is capable of binding to said first antibody; wherein said antigen and said labelled antigen undergo a competitive binding reaction with said first antibody to produce first antibody bound complexes of said antigen and said labelled antigen, and separating said first antibody bound complexes from unreacted labelled antigen, the improvement comprising:

(a) contacting said first antibody complexes with a reaction zone of an immunological element, said reaction zone comprising a liquid impervious support and a layer provided on one side of said support, said layer containing said second antibody and containg a matrix of a hydrophilic colloid, wherein said first antibody complexes react with said second antibody to form immobilized complexes thereof in said second antibody containing layer;
(b) superimposing said reaction zone on a receiving zone of said immunological element, said receiving zone for receiving said unreacted labelled antigen and comprising a liquid impervious support; a receiving layer for receiving said labelled antigen, said receiving layer provided on said support and containing a matrix of a hydrophilic colloid; and a diffusion rate controlling layer consisting essentially of a combination of hydrophilic polymer and a hydrophobic polymer, said diffusion rate controlling layer being provided on said receiving layer, said reaction zone being superimposed in a manner in which said liquid impervious supports are at opposed ends of said superimposed zones and said second antibody layer of said reaction zone is in contact with said diffusion rate controlling layer of said receiving zone, whereby said unreacted labelled antigen migrates from said reaction zone into the receiving layer of said receiving zone via said diffusion rate controlling layer;
(c) measuring the amount of the unreacted labelled antigen in said receiving layer or the amount of the immobilized complex containing said labelled antigen in said second antibody containing layer; and
(d) determining the amount of said antigen in said sample by comparing the amount of the unreacted labelled antigen or the amount of the immobilized complex containing said labelled antigen to a standared solution containing a known amount of said antigen.

4,615,984
DISSOCIATION OF LIGAND-BINDER COMPLEX USING ULTRASOUND
Ronald L. Stoker, Bountiful, Utah, assignor to Becton Dickinson & Company, Franklin Lakes, N.J.
Filed Feb. 23, 1984, Ser. No. 582,949
Int. Cl.⁴ G01N *33/543, 33/545;* **B06B** *1/00;* **C12N** *13/00*
U.S. Cl. 436—518 **14 Claims**



1. A process for dissociating a complex of a ligand bound to a binder specific for the ligand, comprising:

directing a beam of ultrasound at a complex of a ligand bound to a binder specific for the ligand for a time and under conditions effective to separate the ligand from the binder.

14. An apparatus, comprising:

flowthrough chamber; a binder, for specifically binding a ligand, supported on a solid support in said chamber; and ultrasonic means connected to said chamber for producing and directing a beam of ultrasound against said binder.

4,615,985
IMMOBILIZED PROTEIN ON NYLON FOR IMMUNOASSAY
Alice Deutsch, New York, and Nancy Dorsey, Lynbrook, both of N.Y., assignors to Genetic Diagnostics Corporation, Great Neck, N.Y.
Filed Apr. 16, 1984, Ser. No. 601,142
Int. Cl.⁴ G01N *33/545*
U.S. Cl. 436—531 **9 Claims**

1. An immobilized protein comprising a partially hydrolyzed still solid nylon matrix, protein molecules, and divalent radicals linking the protein to the matrix, the divalent radicals being the residues of diimide molecules, produced by partially hydrolyzing a nylon matrix, terminating hydrolysis while the nylon is still solid, reacting the nylon with an acylating agent, reacting the nylon with a diimide, and then reacting the product with a protein.

6. In an immunoassay wherein an antigen and an antibody are caused to interact, and the extent of interaction is monitored, the improvement wherein the antigen or antibody is employed in immobilized form according to claim 1.

4,615,986
METHOD FOR COMPETITIVE PROTEIN BINDING ASSAYS INHIBITING NON-SPECIFIC INTERFERENCE
Robert A. Yoshida, Mountain View, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.
Division of Ser. No. 411,180, Aug. 25, 1982, Pat. No. 4,508,892, which is a continuation of Ser. No. 17,874, Mar. 5, 1979. This application Jan. 18, 1985, Ser. No. 692,941
Int. Cl.⁴ G01N *33/53, 33/544, 33/542*
U.S. Cl. 436—500 **7 Claims**

1. In an assay of a serum sample involving a conjugate of a fluorescent molecule and a ligand analog having a heavy atom capable of quenching the fluorescence of said fluorescent molecule, wherein said quenching is subject to variation due to serum sample variation, wherein the assay is performed by:

A. combining in an aqueous medium to form an assay solution:
  1. said sample,

2. said conjugate, and
3. ligand receptor;

B. exciting said fluorescer, and

C. measuring the amount of light emitted from said assay solution at at least one wavelength as compared to the amount of light emitted from an assay solution having a known amount of ligand, the improvement comprising a support comprising a ligand analog-fluorescer conjugate covalently bonded to a macromolecular polysaccharide support having a molecular weight of at least 35,000 and not exceeding 2,000,000, said ligand analog-fluorescer conjugate comprising a fluorescent molecule that absorbs light having a wavelength longer than 350 nanometers with an extinction coefficient above 10^4 and emits light having a wavelength longer than 400 nanometers, said fluorescent molecule being covalently bonded to a ligand that is a modified hapten or antigen having a heavy atom capable of quenching said fluorescent molecule by inhibiting the fluorescence of said fluorescent molecule upon contact therewith.

4,615,987
REINFORCEMENT OF ALKALINE EARTH ALUMINOSILICATE GLASS-CERAMICS

Kenneth Chyung, Painted Post; Reid F. Cooper, Odessa; Kishor P. Gadkaree, Painted Post; Ronald L. Stewart, Big Flats, and Mark P. Taylor, Painted Post, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Apr. 15, 1985, Ser. No. 723,572

Int. Cl.⁴ C03C *10/06, 14/00;* **C04B** *35/56*

U.S. Cl. 501—8 **3 Claims**

1. A whisker reinforced glass-ceramic matrix composite body having a use temperature up to 1300° C. consisting essentially of 10–60% by weight deagglomerated SiC whiskers having a thickness less than 100 microns with a length-to-diameter ratio of at least 10 substantially uniformly distributed in a glass-ceramic matrix consisting essentially, expressed in terms of weight percent on the oxide basis, of

CaO	0–25	MgO	0–15
SrO	0–30	Na_2O	0–4
CaO + SrO	10–30	K_2O	0–6
Al_2O_3	25–38	TiO_2	0–12
SiO_2	35–60	ZrO_2	0–15
BaO	0–25	As_2O_3	0–3
$BaO + MgO + Na_2O + K_2O + TiO_2ZrO_2 + As_2O_3$			0–30

wherein the predominant crystal phase in the glass-ceramic matrix is selected from the group of anorthite and its pseudobinaries with mullite ($3Al_2O_3.2SiO_2$), cordierite ($2MgO.2Al_2O_3.5SiO_2$), barium osumilite ($BaO.2MgO.3Al_2O_3.9SiO_2$), albite solid solution ($Na_2O.Al_2O_3.6SiO_2$), Al_2O_3, SiO_2, $CaO.SiO_2$, and gehlenite ($2CaO.Al_2O_3.SiO_2$).

4,615,988
GLASS FIBERS AND A COMPOSITION FOR MANUFACTURING THE SAME

Simone Le Moigne, Athis Mons; Marcel Boivent, Courbevoie, and Guy Matzen, Paris, all of France, assignors to Isover Saint-Gobain, Courbevoie, France

Filed Sep. 19, 1984, Ser. No. 652,014

Claims priority, application France, Sep. 19, 1983, 8314834

Int. Cl.⁴ C03C *3/04, 13/00*

U.S. Cl. 501—30 **10 Claims**

1. Glass fibers consisting essentially of the following proportions of constituents: SiO_2, 57 to 70 wt.%, Al_2O_3, 2 to 7 wt.%, CaO, 5 to 10 wt.%, MgO, 0 to 4.0 wt.%, Na_2O, 14 to 17 wt.%, K_2O, 0.5 to 3.5 wt.%, B_2O_3, 0 to 4.5 wt.%, and F, 0.5 to 4 wt.%, wherein the alkaline oxides are in proportions:

$$16 \text{ wt.\%} < Na_2O + K_2O < 20 \text{ wt.\%}$$

and wherein wt.% B_2O_3 and 1.5×wt.% fluorine content is in accordance with:

$3 \leqq B_2O + 1.5F \leqq 6.5$, wherein said fibers have an upper devitrification temperature of below 980° C. and the temperature corresponding to the zero devitrification rate is less than 920° C.

4,615,989
OPTICAL QUALITY COLORED GLASS

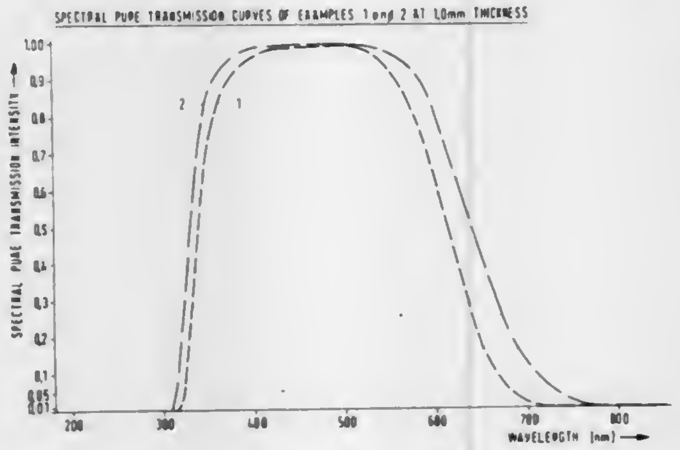
Willy Ritze, Mainz-Finthen, Fed. Rep. of Germany, assignor to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Apr. 17, 1985, Ser. No. 724,091

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1984, 3414682

Int. Cl.⁴ C03C *3/247, 3/19, 3/17, 3/068*

U.S. Cl. 501—44 **15 Claims**



1. A phosphate glass rich in alkali and alkaline earth metal oxides and containing CuO as a coloring component for optical filter glass in the spectral range from 350 nm to 850 nm, consisting essentially of the following synthesis-composition (in wt. %):

P_2O_5	65.00–70.00
SiO_2	0.00–0.75
B_2O_3	0.00–2.00
Al_2O_3	2.50–6.00
R_2O	11.00–17.00
BaO	3.00–9.50
CeO_2	0.45–2.00
Cl^-	0.15–0.75
CuO	2.55–6.55
F^-	0.25–1.50
Refining Agents	0.10–2.00

wherein R_2O is at least one alkali metal oxide.

4,615,990
SILICON NITRIDE SINTERED BODIES AND A METHOD FOR THEIR PRODUCTION

Dominique Richon, Ville La Grand, France, and Olivier de Pous, Geneva, Switzerland, assignors to Battelle Memorial Institute, Geneva, Switzerland

Filed Sep. 17, 1985, Ser. No. 777,071

Claims priority, application European Pat. Off., Sep. 19, 1984, 84810458.4

Int. Cl.⁴ C04B *35/52*

U.S. Cl. 501—92 **4 Claims**

1. Silicon nitride sintered bodies which contain metal compounds selected from SiC, TiN, WC, TiC and TiB_2, and MgO/Al_2O_3, characterized in having such metal compounds in a quantity by weight not exceeding 15%, the total amounts of MgO and Al_2O_3 in a quantity by weight of 4 to 25% relative to the total of the composition and in having the MgO/Al_2O_3 weight ratio from 19 to 2.

4,615,991
METHOD FOR RECOVERING DENITRATING CATALYST

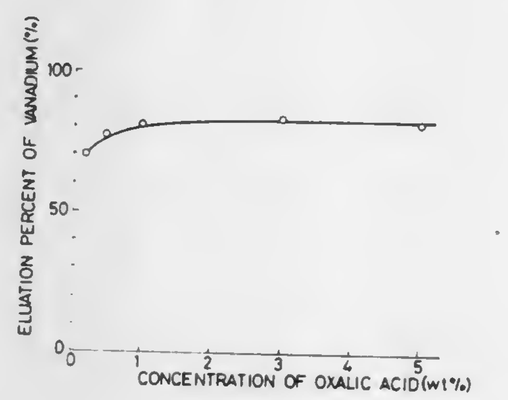
Yoshiaki Obayashi, and Shigeaki Mitsuoka, both of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1985, Ser. No. 719,163

Claims priority, application Japan, Apr. 3, 1984, 59-65268; Apr. 3, 1984, 59-65269

Int. Cl.⁴ B01J *38/62, 23/92, 21/20;* **C01B** *21/00*

U.S. Cl. 502—28 **3 Claims**



1. A method for recovering used tungsten-titania denitrating catalyst in which SO_2-oxidizing power has risen due to adhesion or accumulation of dust components, the method comprising washing said used denitrating catalyst with an aqueous oxalic acid solution having a concentration of 0.1 to 5.0 wt % at a temperature within the range of about 20° C. to 100° C.; impregnating said catalyst with a tungsten compound; and drying and calcining said catalyst.

2. A method for recovering used tungsten-titania-vanadium denitrating catalyst, comprising washing said catalyst with water or an aqueous dilute inorganic acid solution; further washing said catalyst with an aqueous oxalic acid solution having a concentration of 0.1 to 5.0 wt % at a temperature within the range of about 20° C. to 100° C.; impregnating said catalyst with a tungsten compound; and drying and calcining said catalyst.

3. The method for recovering a denitrating catalyst according to claim **1** wherein said impregnation of said used denitrating catalyst with the tungsten compound is carried out by impregnating said catalyst with an aqueous tungstate salt solution.

4,615,992
CATALYST REGENERATION PROCESS WITH IMPROVED CATALYST DISTRIBUTION IN A FLUIDIZED BED

James R. Murphy, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

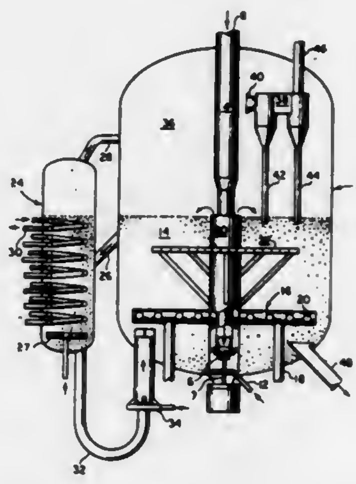
Filed Apr. 2, 1985, Ser. No. 718,922

Int. Cl.⁴ B01J *38/32, 38/30, 38/14;* **F27B** *15/08*

U.S. Cl. 502—41 **8 Claims**

1. A process for regenerating spent catalyst which comprises:
- (a) passing said spent catalyst through a vertical stand pipe positioned within a regenerator vessel;
- (b) withdrawing said spent catalyst from the vertical stand pipe and introducing it into an upright well pipe which extends part way up the interior of the regenerator vessel and being concentrically arranged around the exterior of the vertical stand pipe;
- (c) withdrawing the spent catalyst from the upright well pipe and depositing it in a fluidized catalyst bed located within the regeneration vessel;
- (d) establishing a baffle or subway grating between 2 ft–4 ft below the top of the fluidized catalyst bed;
- (e) fluidizing said catalyst bed with an oxidizing agent to burn off carbon deposits on the catalysts, thereby regenerating said catalysts; and
- (f) withdrawing said regenerated catalysts from the regenerator vessel.

2. A process in accordance with claim **1** wherein at least a portion of the catalyst is withdrawn from the fluidized catalyst bed within the regeneration vessel, passed through an external catalyst cooler and subsequently returned to a lower portion of the fluidized catalyst bed within the regenerator.



3. A process in accordance with claim **2** wherein the fluidizing gas used to regenerate the spent catalyst above the subway grating has an oxygen content between 3–5%.

4,615,993
METHOD AND DEVICE FOR CARRYING OUT GAS/SOLID REACTIONS PARTICULARLY THE ACTIVATION AND RE-ACTIVATION OF ACTIVATED CARBON

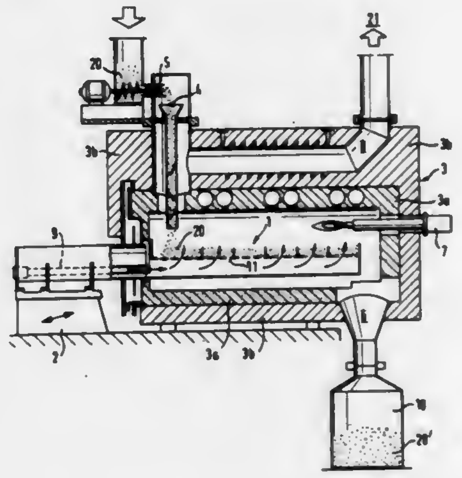
Rüdiger Schirrmacher, Hanau, and Gisbert Semmerau, Reichelsheim, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 431,882, Sep. 30, 1982, abandoned. This application Feb. 11, 1985, Ser. No. 699,508

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1981, 3139926; Oct. 22, 1981, 3141906

Int. Cl.⁴ B01J *38/06*

U.S. Cl. 502—55 **1 Claim**



1. A method for carrying out gas/solid reactions for the activation and reactivation of activated carbon, comprising:

conveying carbonaceous material to a first zone and directly contacting said carbonaceous material in said first zone with gas sufficient to subject said carbonaceous material to drying,

thereafter conveying said carbonaceous material to a second zone which is a horiztonally vibrating fluidized bed maintained at a temperature of 600° to 950° C. by combustion gas which is at a temperature of 950° to 1200° C. and depositing said carbonaceous material onto said vibrating horizontal bed,

directly contacting said carbonaceous material in said bed with an activating gas, said activating gas being introduced into said bed from beneath said bed, said activating gas comprising steam, at a temperature of 600° to 900° C., passing the activating gas up through said carbonaceous material to thereby fluidize said bed while said material is being vibrated in a horizontal manner to thereby approximate plug flow of said material, the composition of said combustion gas and said activating gas being different,

there being cross flow of the fluidizing gases to ensure high water vapor partial pressure in the bed of carbonaceous material and rapid removal of inhibiting product gases.

4,615,994
ZEOLITE ADSORBENT FOR SEPARATION OF PARA-XYLENE

William Smolin, Fishkill, and John H. Estes, Wappingers Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.
Filed Jul. 29, 1982, Ser. No. 403,237
The portion of the term of this patent subsequent to Sep. 15, 1998, has been disclaimed.
Int. Cl.⁴ B01J *29/06*
U.S. Cl. 502—62 **2 Claims**

1. A synthetic crystalline lithium aluminosilicate zeolite HP, formed by ion exchange from a sodium aluminosilicate zeolite HP having a lattice constant of 25.02–25.10 Å, containing a pyridine.

2. A synthetic crystalline lithium aluminosilicate zeolite HP as claimed in claim 1 wherein said pyridine is pyridine se or a substituted pyridine selected from the group consisting of 2-picoline, 3-picoline, 4-picoline, 2,4-lutidine, 2,6-lutidine, and 3,4-lutidine.

4,615,995
ZEOLITE CATALYSTS

Raymond Le Van Mao, Montreal, Canada, assignor to The Asbestos Institute, Montreal, Canada
Filed Jan. 3, 1984, Ser. No. 688,639
Int. Cl.⁴ B01J *29/28, 21/16*
U.S. Cl. 502—64 **6 Claims**

1. A pentasil zeolite-asbestos composite catalyst comprising a magnesium, and iron leached asbestos micro-matrix having a crystallized pentasil zeolite within its micro-matrix, said pentasil zeolite having a portion of its internal acid reaction sites replaced with zinc ions and having manganese ions adsorbed on the external surface thereof, said magnesium and iron leached asbestos micro-matrix is doped internally with zinc ions and externally with manganese ions, the amount of zinc ions being from 0.1 to 0.5% w/w of the metal content and the amount of manganese being from 0.2 to 5.0% w/w of the metal content.

4,615,996
DUAL FUNCTION CRACKING CATALYST (DFCC) COMPOSITION

Mario L. Occelli, Allison Park, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Aug. 25, 1983, Ser. No. 526,482
Int. Cl.⁴ B01J *29/06*
U.S. Cl. 502—65 **27 Claims**

1. A novel catalytic cracking composition comprising a cracking catalyst having high activity and, as a separate and distinct entity, a diluent comprising a substantially catalytically inactive crystalline aluminosilicate having a fresh MAT Activity below about 1.

5. The novel catalytic cracking composition of claim 1 wherein said diluent is clinoptilolite.

19. The novel catalytic cracking composition of claim 1 wherein said cracking catalyst contains a rare earth-exchanged crystalline aluminum silicate.

20. The novel catalytic cracking composition of claim 1 wherein said cracking catalyst comprises from about ten to about 60 weight percent of a zeolite having cracking characteristics dispersed in a refractory metal oxide matrix.

4,615,997
METHOD FOR PREPARING HYDROISOMERIZATION CATALYSTS

Nai Y. Chen, Titusville, N.J.; Sharon B. McCullen, Newtown, Pa., and Stephen M. Oleck, Moorestown, N.J., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Jun. 3, 1985, Ser. No. 740,690
Int. Cl.⁴ B01J *29/06*
U.S. Cl. 502—66 **19 Claims**

1. A method for preparing a highly dispersed noble metal-containing hydroisomerization catalyst comprising a zeolite having a Constraint Index less than 2 and a binder, said method comprising:

(a) incorporating at least one noble metal in anionic or cationic form with said zeolite and binder by physical intimate mixing;

(b) calcining the product of step (a) in air containing from 0.5 to 1.0 atm H_2O at a temperature ranging from about 450° to 540° C.; and

(c) contacting the product of step (b) with a stream of inert gas containing about 0.001 to 10 wt % chlorine at temperatures ranging from about 250° to 550° C.

3. The method of claim 1, wherein said at least one noble metal is selected from the group consisting of platinum, palladium, osmium, rhenium and ruthenium.

12. A method for preparing a highly dispersed noble metal-containing hydroisomerization zeolite catalyst, said zeolite catalyst comprising a zeolite having a Constraint Index not more than 2 and a binder, which comprises:

(a) physically, intimately contacting at least one noble metal in anionic or cationic form with said zeolite and binder and water;

(b) extruding the product of step (a);

(c) drying the product of step (b) at a temperature of about 130° C.;

(d) calcining the combination of said zeolite, said binder and said at least one noble metal in air containing from 0.5 to 1.0 atm H_2O at a temperature ranging from about 450° to 540° C.;

(e) reducing the product of step (d) in hydrogen; and;

(f) contacting the product of step (e) with a stream of inert gas containing about 0.001 to 10 wt % chlorine at temperatures ranging from about 250° to 550° C.

4,615,998
CATALYST SUITABLE FOR SYNTHESIZING 1-BUTENE BY DIMERIZATION OF ETHYLENE

Nhuong Lé Quan, Aubergenville; Daniel Cruypelinck, Nanteuil-le-Haudouin; Dominique Commereuc, Meudon; Yves Chauvin, Le Pecq, and Gérard Léger, Ecully, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France
Continuation of Ser. No. 652,555, Sep. 20, 1984, Pat. No. 4,532,370. This application Apr. 30, 1985, Ser. No. 728,901
Claims priority, application France, Sep. 20, 1983, 83 15040; Sep. 20, 1983, 83 15041
Int. Cl.⁴ B01J *31/14*
U.S. Cl. 502—126 **14 Claims**

1. A catalyst suitable for the dimerization of ethylene and produced by reacting a preformed mixture consisting essentially of an alkyl titanate and an ether, in a molar ratio of ether/titanate from 0.5:1 to 10:1, with an aluminum compound of formula AlR_3 or AlR_2H, wherein each R is a hydrocarbyl radical.

4,615,999
METHOD FOR PREPARING HYDRODESULFURIZATION CATALYST

Shizuo Takumi, Kamakura; Toshio Hashimoto, and Masaru Tatsushima, both of Isehara, all of Japan, assignors to Nikki-Universal Co., Ltd., Tokyo, Japan
Filed Aug. 6, 1985, Ser. No. 762,974
Claims priority, application Japan, Dec. 11, 1984, 59-261629
Int. Cl.⁴ B01J *21/04, 23/85*
U.S. Cl. 502—314 **2 Claims**

1. A method for preparing a hydrodesulfurization catalyst which comprises:

(a) preparing a filter cake of amorphous alumina hydrate having a pH of 7.5–10.5;

(b) dewatering said filter cake by a filter press to raise the Al_2O_3 concentration to 28–35% by weight and kneading the dewatered filter cake for at least 10 seconds by a self-cleaning type kneader to obtain a dough;

(c) adding to the dough obtained from the step (b), aqueous solutions of (i) water-soluble salts of Group VIB and (ii) at least one member selected from the catalyst metal group consisting of Fe, Co and Ni, respectively, in an amount of 20–60% by weight, calculated as the metals, of the total amount of catalyst metals to be incorporated in the catalyst, said aqueous solutions being added at a position just before the entrance of a kneader, kneading the resultant mixture and extruding the kneaded mixture by an extruder;

(d) drying and calcining the extrudate; and

(e) impregnating the calcined product with the remaining catalyst metals in an aqueous ammonia solution of salts of the metals and drying and calcining the resultant product.

4,616,000
COPPER BERYLLIUM-CONTAINING CATALYSTS FOR THE PRODUCTION OF ALCOHOLS

Terry J. Mazanec; John G. Frye, Jr., both of Solon, and Harley F. Hardman, Lyndhurst, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio
Filed Aug. 9, 1985, Ser. No. 763,868
Int. Cl.⁴ B01J *23/02, 23/72*
U.S. Cl. 502—341 **5 Claims**

1. A ruthenium-free catalyst represented by the formula

$$Cu_a\ Be\ M_b\ A_c\ O_x$$

where

M is selected from the group consisting of Th, Pd, Mn, Cr, Co, Zn, Ce, V, Ni, Rh, Al, Re, Os, Pt, Ir, Ag, Ti, La, Si, U, Pr, Nd, Zr, Sc and Eu, A is an alkali metal or alkaline earth metal other than Be and

a is from about 0.01 to about 20.0

b is from 0.0 to about 7.5

c is from 0.01 to about 10.0

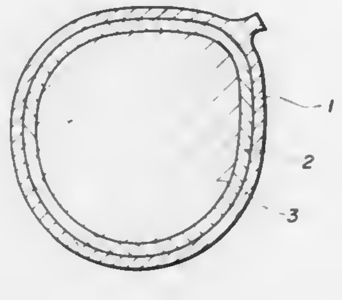
and x is a number such that the valence requirements of the other elements for oxygen is satisfied.

4,616,001
ACTIVATED CARBON

Eiichi Sato, 1857 Kami-iida-cho, Totsuka-ku, Yokohama-shi, Japan
Filed Jul. 19, 1985, Ser. No. 756,610
Claims priority, application Japan, Jun. 21, 1985, 60-136323
Int. Cl.⁴ B01J *20/20;* **C01B** *31/10*
U.S. Cl. 502—437 **5 Claims**

1. Activated carbon which is made of carbonized shells of macadamia nuts separated from kernels thereof.

2. Activated carbon according to claim 1 which has been prepared by coking the shells followed by activation and with at least one member of the group consisting of steam, air, carbon dioxide about 900° C.

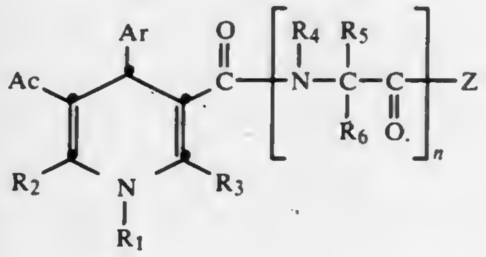


5. Activated carbon according to claim 1 having an ash content of about 0.5% and a specific surface area of about 1320 m^2/g.

4,616,002
DIHYDRO PYRIDINE COMPOUNDS, COMPOSITIONS AND USE

Bruno Kamber, Arlesheim; Thomas Leutert, Dornach; Hans Kühnis, Basel, and Kurt Eichenberger, Therwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation-in-part of Ser. No. 669,705, Nov. 9, 1984, abandoned. This application Jan. 6, 1986, Ser. No. 816,461
Int. Cl.⁴ A61K *31/535, 37/02;* **C07D** *413/12;* **C07K** *5/06*
U.S. Cl. 514—18 **32 Claims**

1. Compounds of the formula I



(I)

in which n represents 1, 2 or 3, Ar represents a carbocyclic or heterocyclic aryl radical, Ac represents the acyl radical of an acid, Z represents a radical $—OR_7$ or $—NR_8R_9$, R_1 represents hydrogen, unsubstituted or substituted lower alkyl, a carbocyclic or heterocyclic aryl radical or free, etherified or esterified hydroxy, R_2 and R_3, independently of one another, each represents hydrogen, unsubstituted or substituted lower alkyl, formyl or functionally modified formyl, carboxy or functionally modified carboxy, a carbocyclic or heterocyclic aryl radical or unsubstituted or mono- or di-substituted amino, R_4 represents hydrogen or lower alkyl, R_5 and R_6, independently of one another, each represents hydrogen, unsubstituted or substituted lower alkyl or a carbocyclic or heterocyclic aryl radical, R_7, R_8 and R_9, independently of one another, each represents hydrogen, unsubstituted or substituted alkyl or a carbocyclic or heterocyclic aryl radical; in which R_1 and R_2 together or R_1 and R_3 together may represent unsubstituted or substituted lower alkylene in which a carbon atom is optionally replaced by a hetero atom, in which R_4 and R_5 together, and likewise R_5 and R_6 together and/or R_8 and R_9 together, independently of one another, may represent unsubstituted or substituted lower alkylene in which a carbon atom may have been replaced by a hetero atom, optical isomers of compounds of the formula I, mixtures of these optical isomers, and salts of such compounds that have a salt-forming grouping.

31. Pharmaceutical preparations containing a compound of the formula I according to claim 1 or a pharmaceutically acceptable salt thereof in combination with a pharmaceutically acceptable carrier.

4,616,003

N^6-DIHYDROXYPROPYLADENOSINES

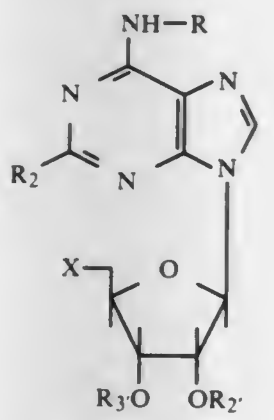
Harriet W. Hamilton, and William C. Patt, both of Chelsea, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 665,229, Oct. 26, 1984, abandoned. This application Sep. 5, 1985, Ser. No. 771,589

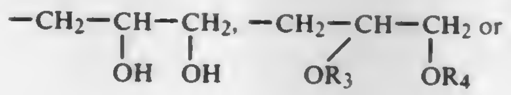
Int. Cl.^{4} A61K *31/70*

U.S. Cl. 514—46 **15 Claims**

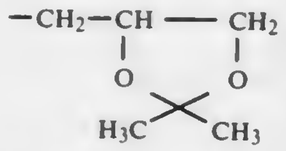
1. A compound of the formula



wherein R is



$-CH_2-\underset{OH}{CH}-\underset{OH}{CH_2}$, $-CH_2-\underset{OR_3}{CH}-\underset{OR_4}{CH_2}$ or



wherein R_3 and R_4 are the same or different and are lower alkanoyl, benzoyl, or benzoyl substituted by lower alkyl, lower alkoxy, halogen, or trifluoromethyl; R_2 is H, NH_2, NHR_6 where R_6 is alkanoyl, benzoyl, or benzoyl substituted by lower alkyl, lower alkoxy, halogen, or trifluoromethyl; or halogen; R_2' and $R_3'=H$, lower alkanoyl, benzoyl or benzoyl substituted by lower alkyl, lower alkoxy, halogen or trifluoromethyl, or when taken together lower alkylidene; X is OH, acetyloxy, H, Cl, SCH_3, or OR_5' wherein R_5' is H, lower alkanoyl, benzoyl, benzoyl substituted by lower alkyl, lower alkoxy, halogen, or trifluoromethyl; its diastereomers or mixtures thereof, or a pharmaceutically acceptable acid addition salt thereof.

11. A method of treating sleep disorders in a mammal suffering therefrom comprising administering to such mammal a sedative effective amount of a compound as claimed in claim **1** in unit dosage form.

4,616,004

1-IODOPROPARGYL-3,4-DISUBSTITUTED-Δ^2-1,2,4-TRIAZOLIDIN-5-ONE FUNGICIDES

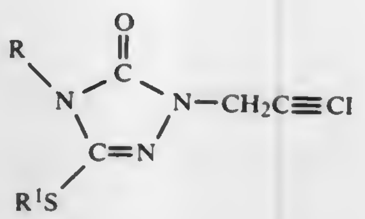
Laroy H. Edwards, Napa, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 27, 1984, Ser. No. 655,484

Int. Cl.^{4} C07D *249/12;* **A61K** *31/41;* **A01N** *55/00;* **C07F** *7/10*

U.S. Cl. 514—63 **23 Claims**

1. A compound of the formula:



wherein R is aryl of 6 to 12 carbom atoms; substituted aryl of 6 to 12 carbon atoms substituted with 1 to 3 substituents selected from halogen, lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms, lower alkylthio of 1 to 4 carbon atoms, nitro, cyano, or $-S(O)_nR^2$ wherein n is 1 or 2 and R^2 is lower alkyl of 1 to 4 carbon atoms; or alkyl of 1 to 10 carbon atoms, cycloalkyl of 3 to 8 carbon atoms, lower alkenyl of 2 to 6 carbon atoms, or lower alkynyl of 2 to 6 carbon atoms, all optionally substituted with 1 to 3 halogen atoms; and R^1 is lower alkyl of 1 to 6 carbon atoms, trialkylsilylmethylene of 4 to 10 carbon atoms, aryldialkylsilylmethylene of 10 to 17 carbon atoms, aryl of 6 to 10 carbons, aralkyl of 7 to 12 carbon atoms, or substituted aryl of 6 to 10 carbon atoms or substituted aralkyl of 6 to 10 carbon atoms each substituted with 1 to 3 substituents independently selected from halogen, lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms nitro, cyano, trihalomethyl, lower carbalkoxy and $-S(O)_nR^2$.

12. A method of controlling fungi which comprises contacting said fungi or their plant growth environment with a fungicidally effective amount of a compound of claim **1**.

4,616,005

PHOSPHONYL HYDROXYACYL AMINO ACID DERIVATIVES AS ANTIHYPERTENSIVES

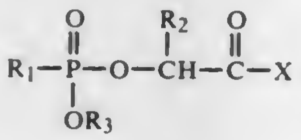
Donald S. Karanewsky, East Windsor, and Edward W. Petrillo, Jr., Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 764,449, Aug. 12, 1985, abandoned, which is a division of Ser. No. 608,752, May 10, 1984, abandoned, which is a division of Ser. No. 391,884, Jun. 23, 1984, Pat. No. 4,452,790. This application Dec. 16, 1985, Ser. No. 809,630

Int. Cl.^{4} A61K *31/66, 31/675;* **C07F** *9/40, 9/64*

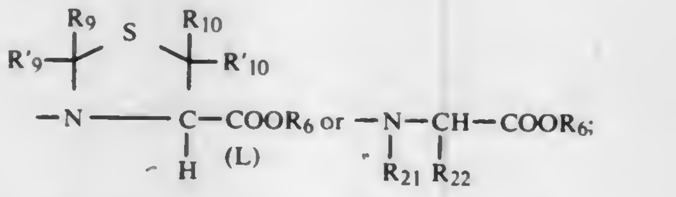
U.S. Cl. 514—80 **21 Claims**

1. A compound of the formula

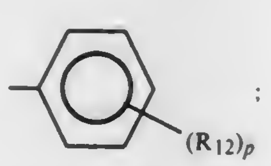


$R_1-\underset{OR_3}{\overset{O}{\overset{\|}{P}}}-O-\overset{R_2}{\overset{|}{CH}}-\overset{O}{\overset{\|}{C}}-X$

and pharmaceutically acceptable salts thereof wherein: X is



R_9, R'_9, R_{10} and R'_{10} are independently selected from hydrogen and lower alkyl or R'_9, R_{10}, R'_{10} are hydrogen and R_9 is



R_{11} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro,

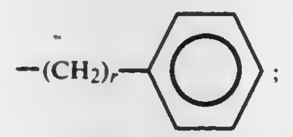
bromo, fluoro, trifluoromethyl, hydroxy, phenyl, phenoxy, phenylthio, or phenylmethyl;

R_{12} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, or hydroxy;

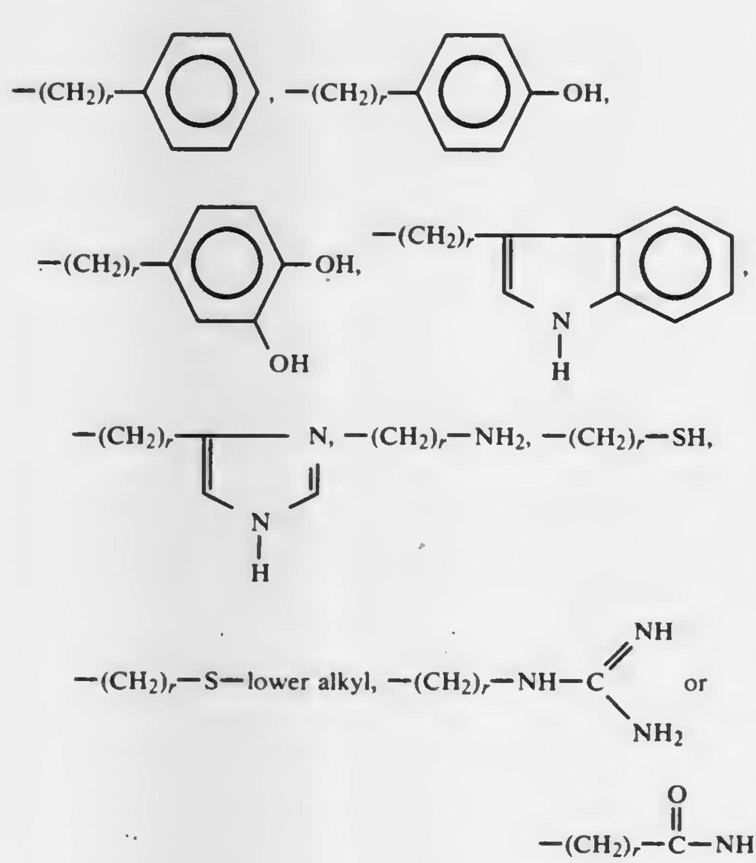
m is zero, one, two or three;

p is one, two or three provided that p is more than one only if R_{11} or R_{12} is hydrogen, methyl, methoxy, chloro, or fluoro;

R_{21} is hydrogen, lower alkyl, cycloalkyl, phenyl or

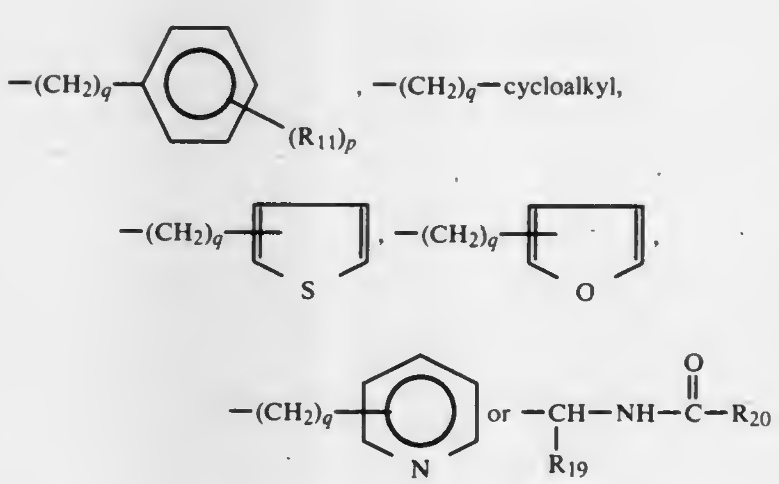


R_{22} is hydrogen, lower alkyl,



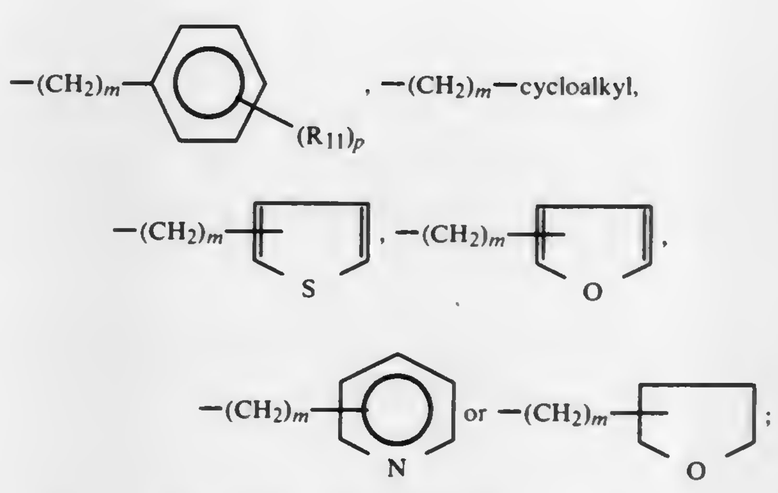
r is an integer from 1 to 4;

R_1 is alkyl of 1 to 10 carbons, aminoalkyl, haloalkyl,



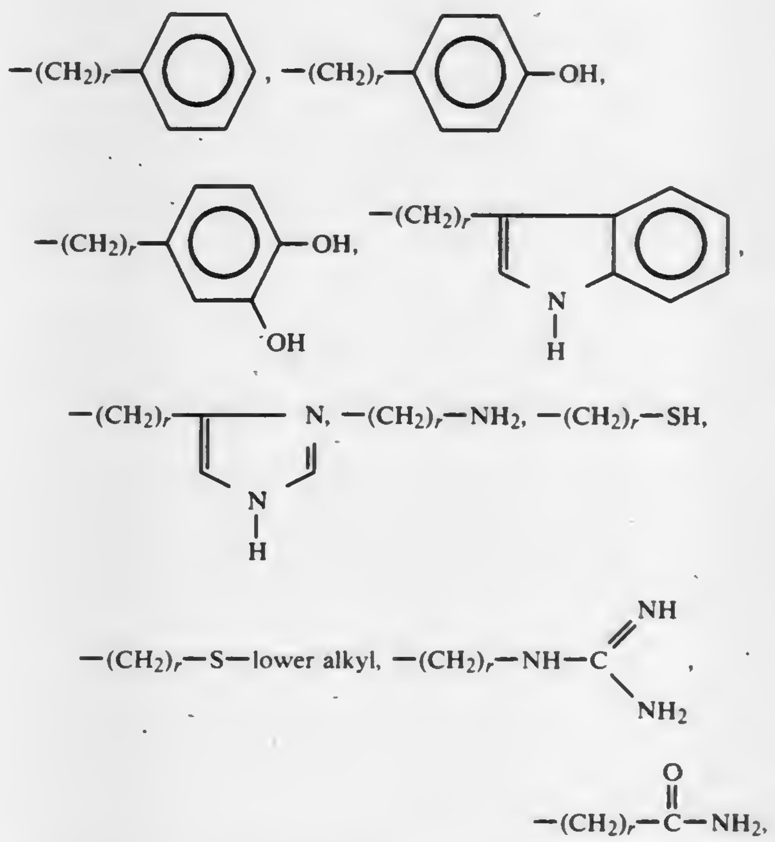
wherein q is zero or an integer from 1 to 7; and R_{11} and p are as defined above; and

R_{19} and R_{20} are independently selected from the group consisting of hydrogen, lower alkyl, halo substituted lower alkyl,



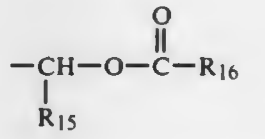
wherein m, R_{11} and p are as defined above;

R_2 is hydrogen, lower alkyl, halo substituted lower alkyl,



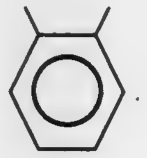
wherein r is as defined hereinbefore;

R_3 and R_6 are independently selected from hydrogen, lower alkyl, benzyl, benzhydryl, alkali metal or

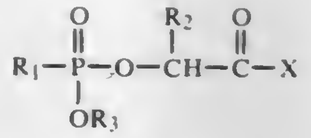


$-\underset{R_{15}}{CH}-O-\overset{O}{\overset{\|}{C}}-R_{16}$

wherein R_{15} is hydrogen, lower alkyl, cycloalkyl, or phenyl, and R_{16} is hydrogen, lower alkyl, lower alkoxy, phenyl, or R_{15} and R_{16} taken together are $-(CH_2)_2-$, $-(CH_2)_3$, $-CH=CH-$ or



19. A composition useful for treating hypertension comprising a pharmaceutically acceptable carrier and an effective amount of a hypotensive agent or pharmaceutically acceptable salt thereof of the formula



$$R_1-\underset{\underset{OR_3}{|}}{\overset{\overset{O}{\|}}{P}}-O-\overset{\overset{R_2}{|}}{CH}-\overset{\overset{O}{\|}}{C}-X$$

wherein X, R_1, R_2 and R_3 are as defined in claim 1.

4,616,006
TRIPHASIC ORAL CONTRACEPTIVE

Samuel A. Pasquale, Basking Ridge, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Continuation of Ser. No. 607,038, May 4, 1984, Pat. No. 4,544,554, which is a continuation-in-part of Ser. No. 536,135, Sep. 26, 1983, abandoned. This application Jun. 13, 1985, Ser. No. 744,189

Int. Cl.⁴ A01N *45/00;* **A61K** *31/56*

U.S. Cl. 514—170 **10 Claims**

1. A triphasic oral contraceptive unit consisting of 21 separate dosage units, adapted for successive daily oral administration comprising:

7 dosage units containing, in admixture with a pharmaceutically acceptable carrier, a combination of an estrogen and a progestogen at contraceptively effective dosages corresponding in activity to 0.02–0.05 mg of 17α-ethinylestradiol and in progestogenic activity to 0.065–0.75 mg of norethindrone as the first phase; followed by 7 dosage units containing in admixture with a pharmaceutically acceptable carrier, a combination of an estrogen at a contraceptively effective dosage corresponding in activity to 0.02–0.05 mg of 17α-ethinylestradiol and in progestogenic activity to 0.25–1.0 mg of norethindrone as the second phase; followed by 7 dosage units containing in admixture with a pharmaceutically acceptable carrier, a combination of an estrogen at a contraceptively effective dosage corresponding to 0.02–0.05 mg of 17α-ethinylestradiol and in progestogenic activity to 0.35–2.0 mg of norethindrone as the third phase, and optionally containing 7 dosage units free of estrogen and progestogen; provided that the estrogen daily dosage is the same in all three phases.

4,616,007
HETEROCYCLTHIO COMPOUNDS, PROCESS FOR THEIR MANUFACTURE, PHARMACEUTICAL PREPARATIONS THAT CONTAIN THESE COMPOUNDS, AND THE THE USE OF THE LATTER

Marc Lang, Rixheim, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

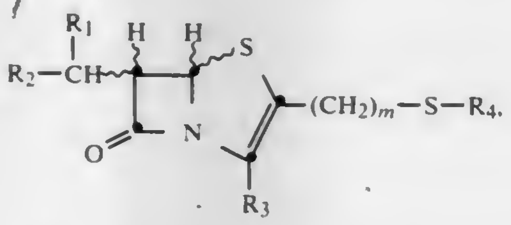
Continuation of Ser. No. 549,142, Nov. 7, 1983, abandoned. This application Jul. 15, 1985, Ser. No. 755,225

Claims priority, application Switzerland, Nov. 16, 1982, 6671/82

Int. Cl.⁴ C07D *205/08, 513/04;* **A61K** *31/425*

U.S. Cl. 514—192 **9 Claims**

1. 2-heterocyclylthio-lower alkyl-2-penem compounds of the formula



(I)

in which R_1 represents hydrogen or methyl; R_2 represents hydroxy; R_3 represents carboxy, lower alkanoyloxymethoxycarbonyl, or 1-lower alkoxycarbonyloxy-lower alkoxycarbonyl; R_4 represents a heterocyclic bonded to the sulfur atom via a ring carbon atom, said heterocyclic being selected from (a) 1,2,3-thiadiazol-4-yl, 1,2,3-thiadiazol-5-yl, 1,3,4-thiadiazol-2-yl or 1,2,4-thiadiazol-5-yl, each optionally substituted by lower alkyl, (b) 1,2,4-oxadiazol-5-yl or 1,3,4-oxadiazol-2-yl each optionally substituted by lower alkyl, (c) 1H- or 2H-tetrazol-5-yl optionally substituted by lower alkyl, carboxy-lower alkyl, sulpho-lower alkyl or by di-lower alkylamino-lower alkyl, and (d) pyridyl; and m represents 2 or 3, and pharmaceutically acceptable salts of such compounds of the formula I that have a salt-forming group, optical isomers of compounds of the formual I and mixtures of these optical isomers.

8. A pharmaceutical preparation containing an antibacterial therapeutically effective amount of a compound of the formula I according to claim 1 or a pharmaceutically acceptable salt thereof.

4,616,008
ANTIBACTERIAL SOLID COMPOSITION FOR ORAL ADMINISTRATION

Shin-ichiro Hirai, Kyoto; Tadashi Makino, Ibaraki, and Hiroyoshi Koyama, Mishima, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 29, 1985, Ser. No. 728,502

Claims priority, application Japan, May 2, 1984, 59-89050; Apr. 8, 1985, 60-75082

Int. Cl.⁴ A61K *31/545, 47/00*

U.S. Cl. 514—200 **7 Claims**

1. An antibacterial solid composition for oral administration which comprises a lipid soluble cephalosporin compound having an n-octanol/water partition coefficient of about 100 to 1,000 in a proportion of about 20 to 95 percent by weight relative to the composition, and α-, β, or γ-cyclodextrin, tri-O-methylcyclodextrin, di-O-methylcyclodextrin or triaminocyclodextrin in a proportion of about 10 to 70 percent by weight relative to the lipid soluble cephalosporin compound, in combination with a pharmaceutically acceptable additive thereof.

4,616,009
NEUROLEPTIC INDOLE-3-CARBOXAMIDE DERIVATIVES

Tetsuya Tahara, Oita; Takemi Fukuda, Fukuoka, and Michihide Setoguchi, Oita, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Filed Dec. 7, 1984, Ser. No. 679,437

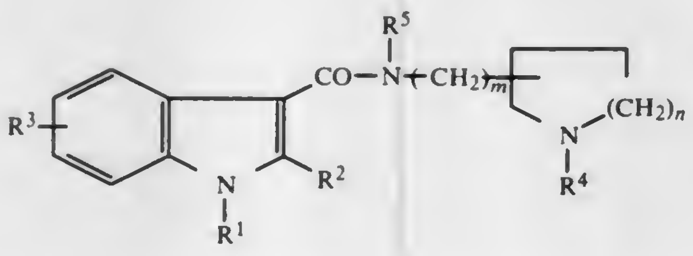
Claims priority, application Japan, Dec. 8, 1983, 58-232514

The portion of the term of this patent subsequent to Mar. 18, 2003, has been disclaimed.

Int. Cl.⁴ A61K *31/55;* **C07D** *401/12, 403/12*

U.S. Cl. 514—212 **8 Claims**

1. An indole-3-carboxamide derivative of the formula:



(I)

wherein R^1 is a hydrogen atom, a C_{1-4} alkyl group, a phenyl group which may be optionally substituted by a halogen atom or a phenyl-C_{1-4} alkyl group which may be optionally substituted by a halogen atom on the benzene ring; R^2 is a hydrogen atom or a C_{1-4} alkyl group; R^3 is a hydrogen atom, a halogen atom, a C_{1-4} alkyl group, a hydroxyl group, a C_{1-4} alkoxy group; R^4 is a hydrogen atom, a C_{1-4} alkyl group, a C_{3-7} cycloalkyl group, an alkyl group or a benzyl group which may be optionally substituted by a halogen atom on the benzene ring or by a methyl group on the α-carbon; R^5 is a hydrogen atom or a C_{1-4} alkyl group; m is 0 or 1; and n is an integer of 1 to 3, or a pharmaceutically acceptable acid addition salt or hydrate form thereof.

8. A pharmaceutical composition comprising a neuroleptic, anxiolytic or psychosomatic disturbance treatment effective amount of the compound of claim 1 and a pharmaceutically acceptable carrier.

4,616,010
IMIDAZODIAZEPINE DERIVATIVES

Walter Hunkeler, Magden, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

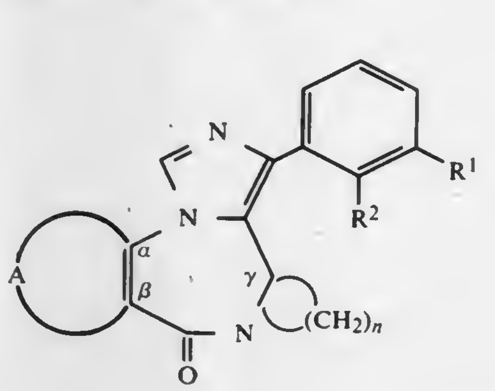
Filed Feb. 20, 1986, Ser. No. 831,206

Claims priority, application Switzerland, Feb. 28, 1985, 902/85

Int. Cl.⁴ A61K *31/55;* **C07D** *487/14, 513/22*

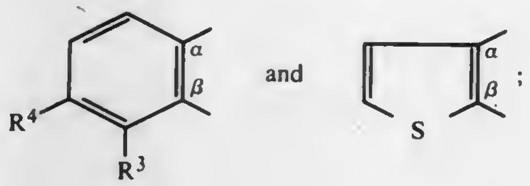
U.S. Cl. 514—214 **33 Claims**

1. A compound of the formula



I

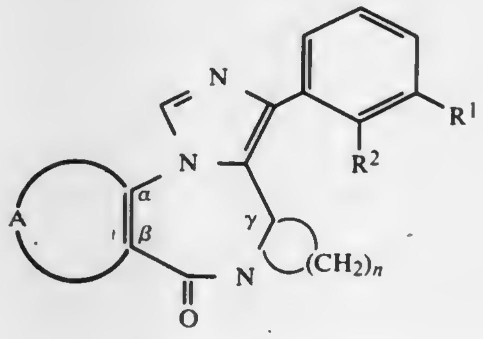
wherein A together with the carbon atoms denoted by α and β represents one of the groups



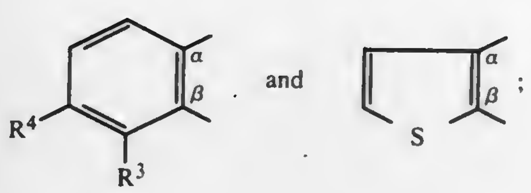
(a) (b)

one of R^1 and R^2 represents hydrogen and the other represents hydrogen, halogen or trifluoromethyl; R^3 and R^4 each represent hydrogen or halogen; and n is 2 or 3, the compound having the (S)- or (R,S)-configuration with reference to the carbon atom denoted by γ, and pharmaceutically acceptable acid addition salts thereof.

21. An anxiolytic, anticonvulsant, muscle relaxant and sedative-hypnotic composition which comprises (1) an effective amount of a compound of the formula



wherein A together with the carbon atoms denoted by α and ϕ represents one of the groups



(a) (b)

one of R^1 and R^2 represents hydrogen and the other represents hydrogen, halogen or trifluoromethyl; R^3 and R^4 each represent hydrogen or halogen; and n is 2 or 3, the compound having the (S)- or (R,S)-configuration with reference to the carbon atom denoted by γ, or a pharmaceutically acceptable acid addition salt thereof, and (2) an inert carrier.

4,616,011
NOVEL INDOLE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Manfred Reiffen, Biberach; Joachim Heider, Warthausen; Volkhard Austel; Norbert Haüel, both of Biberach, all of Fed. Rep. of Germany; Walter Kobinger, and Christian Lillie, both of Vienna, Austria, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

Filed Nov. 26, 1984, Ser. No. 675,084

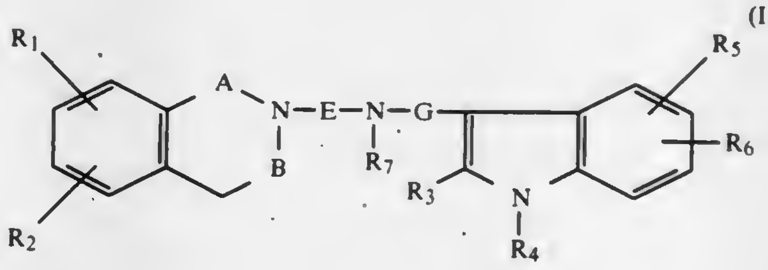
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1983, 3343801

Int. Cl.⁴ A61K *31/55;* **C07D** *403/12, 405/14*

U.S. Cl. 514—221 **8 Claims**

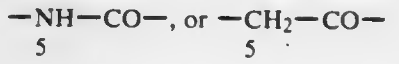
1. A compound of the formula

(I)



wherein

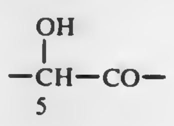
A represents a —CH_2—CH_2—, —CH=CH—,



$$\underset{5}{-NH}-CO-,\ \text{or}\ \underset{5}{-CH_2}-CO-$$

group and B represents a methylene, carbonyl, or thiocarbonyl group or

A represents a —CO—CO— or



$$\underset{5}{-\overset{\overset{OH}{|}}{CH}}-CO-$$

group and B represents a methylene group,

E represents a linear alkylene group having from 2 to 4 carbon atoms, optionally substituted by an alkyl group having from 1 to 3 carbon atoms, or a 2-hydroxy-n-propylene, 2-hydroxy-n-butylene, or 3-hydroxy-n-butylene group,

G represents a linear alkylene group having from 1 to 5 carbon atoms, optionally substituted by an alkyl group having from 1 to 3 carbon atoms,

R_1 represents a hydrogen, chlorine, or bromine atom or a trifluoromethyl, nitro, amino, alkylamino, dialkylamino, alkyl, hydroxyl, alkoxy, or phenylalkoxy group, where each alkyl moiety may have from 1 to 3 carbon atoms,

R_2 represents a hydrogen, chlorine, or bromine atom or a hydroxyl, alkoxy, phenylalkoxy or alkyl group, where each alkyl moiety may have from 1 to 3 carbon atoms, or

R_1 and R_2 together represent an alkylenedioxy group having 1 or 2 carbon atoms,

R_3 represents a hydrogen, chlorine, or bromine atom or an alkyl group having from 1 to 4 carbon atoms,

R_4 represents a hydrogen atom or an alkyl or phenylalkyl group, where each alkyl moiety may have from 1 to 3 carbon atoms,

R_5 represents a hydrogen, fluorine, chlorine, or bromine atom or an alkyl, hydroxyl, alkoxy, or phenylalkoxy group, where each alkyl moiety may have from 1 to 3 carbon atoms,

R_6 represents a hydrogen atom or an alkoxy group having from 1 to 3 carbon atoms, and

R_7 represents a hydrogen atom, an alkenyl group having from 3 to 5 carbon atoms, or an alkyl or phenylalkyl group, where each alkyl moiety may have from 1 to 3 carbon atoms,

or an acid addition salt thereof.

8. A process for treating sinus tachycardia or ischaemic heart disease in a host which comprises administering to a host in need of such treatment an effective amount of at least one compound of claim 1.

4,616,012
CARBOXYALKYL DIPEPTIDES AS ANTIGLAUCOMA AGENTS

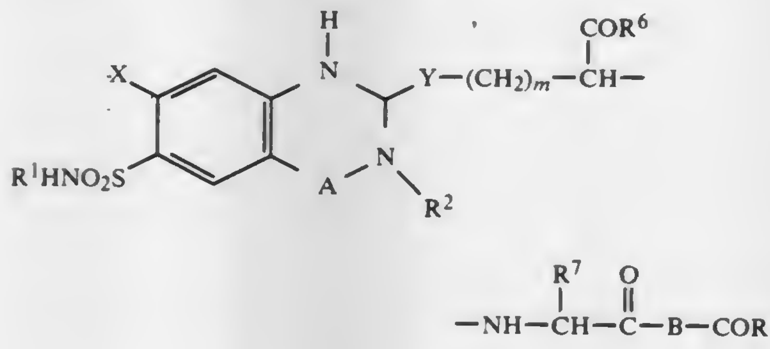
Bernard R. Neustadt, West Orange; David R. Andrews, Bloomfield; Paul E. McNamara, Scotch Plains, and Robert W. Watkins, Great Meadows, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 555,311, Nov. 25, 1983, Pat. No. 4,559,340. This application Nov. 12, 1985, Ser. No. 797,104

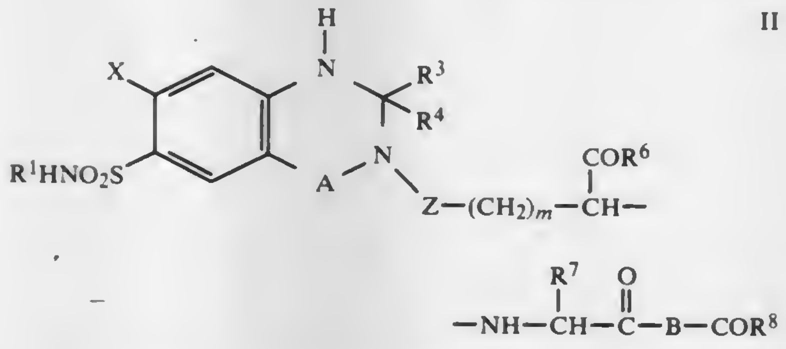
Int. Cl.⁴ A61K *31/54*

U.S. Cl. 514—222 **20 Claims**

1. A method for reducing elevated intraocular pressure in a mammal which comprises topically administering to an eye of said mammal a composition comprising an intraocular pressure reducing effective amount of a compound represented by the formulae:



I



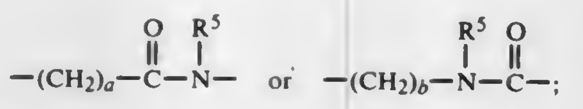
II

or their isomers or pharmaceutically acceptable salts thereof, in combination with an ophthamologically acceptable carrier for topical use, wherein

A is $—SO_2—$;

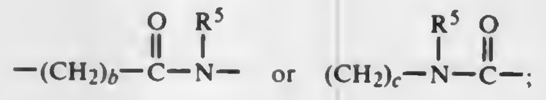
X is Cl or CF_3;

Y is



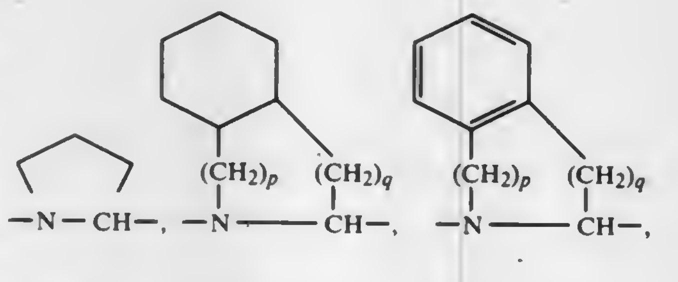
$$-(CH_2)_a-\overset{\overset{O}{\|}}{C}-\overset{\overset{R^5}{|}}{N}- \quad \text{or} \quad -(CH_2)_b-\overset{\overset{R^5}{|}}{N}-\overset{\overset{O}{\|}}{C}-;$$

Z is

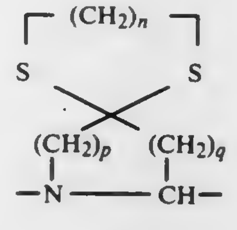


$$-(CH_2)_b-\overset{\overset{O}{\|}}{C}-\overset{\overset{R^5}{|}}{N}- \quad \text{or} \quad (CH_2)_c-\overset{\overset{R^5}{|}}{N}-\overset{\overset{O}{\|}}{C}-;$$

B is



IIIa IIIb IIIc



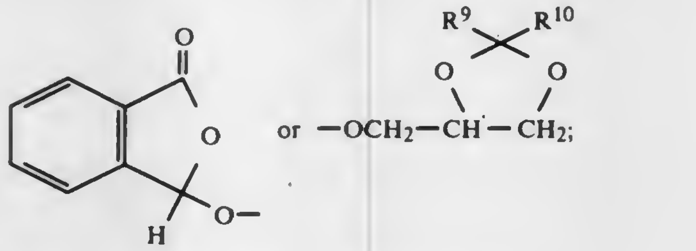
IIId

R^1 is hydrogen or lower alkyl;

R^2 and R^5 are independently hydrogen, lower alkyl, phenyl, or phenyl(lower)alkyl;

R^3 and R^4 are independently hydrogen, lower alkyl, haloloweralkyl, phenyl, or phenyl(lower)alkyl, or R^3 and R^4 taken together with the carbon to which they are attached can form a 5–7 membered cycloalkyl ring;

R^6 and R^8 are independently hydroxy, alkoxy having from 1 to 8 carbon atoms, $L—Q_r—(CH_2)_s—O—$, wherein L is phenyl, substituted phenyl, 1-naphthyl or 2-naphthyl; Q is oxygen or sulfur; r is 0 or 1 and s is 0 to 4; and wherein the substituents on the phenyl are chosen from group M, wherein M is halogen, hydroxy, trifluoromethyl, alkoxy having from 1 to 6 carbon atoms, alkyl from 1 to 6 carbon atoms, 2-furanyl, 3-furanyl, 2-thienyl, 3-thienyl and phenyl (which phenyl group may be substituted with halogen, hydroxy, trifluoromethyl, alkoxy having from 1 to 6 carbon atoms or alkyl having from 1 to 6 carbon atoms); provided that when s is zero, r is zero; $—OCH_2—OCO—$alkyl wherein the alkyl has from 3 to 8 carbon atoms, $—OCH_2CO—$phenyl, wherein the phenyl may be substituted with group M, 1-gylceryl,



R^7 is hydrogen, lower alkyl, or aminoloweralkyl;

R^9 is hydrogen, lower alkyl, unsubstituted or substituted phenyl, and substituted or unsubstituted phenyl lower alkyl, wherein phenyl may be substituted by group M;

R^{10} is hydrogen or lower alkyl;

a is 0–8;

b is 1–8;

c is 2–8;

m is 1–4;

n is 0 or 1;

p and q are each 0, 1 or 2, provided that in formulae IIIb and IIIc the sum of p and q is 1 or 2, and that in formulae IIId, p is not 0.

4,616,013
FUSED THIADIAZINES

William J. Coates, Welwyn Garden City, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

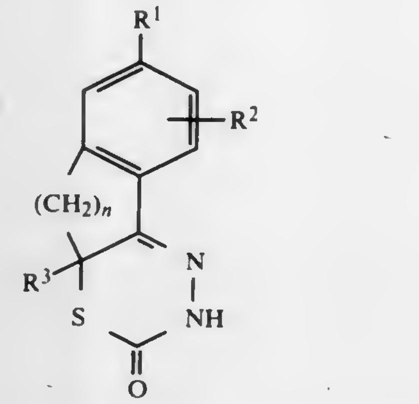
Filed Nov. 6, 1984, Ser. No. 668,781

Claims priority, application United Kingdom, Nov. 8, 1983, 8329784

Int. Cl.⁴ C07D *285/16;* **A61K** *31/54*

U.S. Cl. 514—222 **31 Claims**

1. A compound of the formula (I):



(I)

or a pharmaceutically acceptable salt thereof, wherein:

R^1 is hydrogen, C_{1-6}alkyl, halo, cyano, nitro, amino, a group $—NHCOR^4$, a group $—COR^5$, or a group $—NHC(NCN)NHR^6$; wherein R^4 is hydrogen, C_{1-6}alkoxy, C_{1-6}alkyl optionally substituted by phenyl, or R^4 is a group NR^7R^8 wherein R^7 and R^8 are independently hydrogen, C_{1-6}alkyl or benzyl; R^5 is hydroxy, hydrogen, C_{1-6}alkyl, C_{1-6}alkoxy, or a group $—NR^7R^8$; and R^6 is hydrogen or C_{1-6}alkyl;

R^2 is hydrogen or C_{1-4}alkyl;

R^3 is hydrogen or C_{1-4}alkyl; and

n is one, and when R^3 is hydrogen n can also be two.

4,616,014
TRIAZINE DERIVATIVES, AND PHARMACEUTICAL COMPOSITIONS COMPRISING THE SAME

Tsutomu Teraji, Osaka; Youichi Shiokawa, Ibaraki; Kazuo Okumura, Sakai, and Yoshinari Sato, Takaishi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

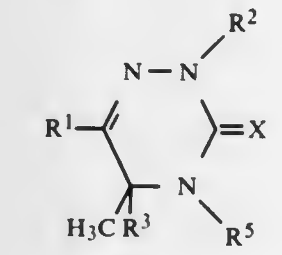
Filed Oct. 8, 1982, Ser. No. 433,513

Claims priority, application United Kingdom, Oct. 22, 1981, 8131900; Aug. 23, 1982, 8224151

Int. Cl.⁴ C07D *253/06, 401/04, 403/04;* **A61K** *31/53*

U.S. Cl. 514—242 **18 Claims**

1. A compound of the formula:



wherein R^1 pyridyl, thienyl, 2-oxo-1,2,3,4,-tetrahydroquinolyl or 2-oxo-1,3,4,5-tetrahydro-2H-1-benazepinyl optionally substituted with lower alkyl, lower alkoxy, halogen, or nitro;

R^2 is hydrogen, lower alkyl or carbamoyl substituted with lower alkyl or ar(lower)alkyl wherein ar is phenyl, xylyl, tolyl or naphthyl;

R^3 is hydrogen or ar(lower)alkyl wherein ar is phenyl, tolyl, xylyl or naphthyl;

R^5 is hydrogen, lower alkyl or carbamoyl substituted with lower alkyl or ar(lower)alkyl wherein ar is phenyl, tolyl, xylyl or naphthyl; and

X is O or S, and pharmaceutically acceptable salt thereof.

4,616,015
TRIAZINE DERIVATIVES, AND PHARMACEUTICAL COMPOSITIONS COMPRISING THE SAME

Tsutomu Teraji, Osaka; Youichi Shiokawa, Ibaraki; Kazuo Okumura, Sakai, and Yoshinari Sato, Takaishi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

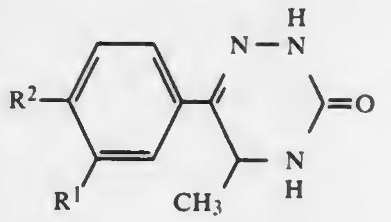
Filed Apr. 10, 1984, Ser. No. 598,685

Claims priority, application United Kingdom, Apr. 18, 1983, 8310435

Int. Cl.⁴ C07D *253/06;* **A61K** *31/53*

U.S. Cl. 514—242 **11 Claims**

1. A compound of the formula:



wherein

R^1 is hydrogen or halogen, and

R^2 is mono- or di-(lower)alkylamino, mono- or di-(lower)alkynylamino, mono- or di-(lower)alkylamino substituted by lower alkoxy, or a group of the formula $—NH—CO—R^4$ in which R^4 is lower alkyl substituted by a group selected from halogen, amino, hydroxy, lower alkanoyloxy and mono- or di-(lower)alkylamino, or its phermaceutically acceptable salt.

4,616,016
MIXTURES WHICH PROMOTE GROWTH AND INCREASE PRODUCTION, AND FEEDS AND DRINKING LIQUIDS WHICH CONTAIN SMALL AMOUNTS OF THESE MIXTURES

Peter Lechtken, Frankenthal; Axel Nuerrenbach, Gruenstadt; Walter Kohler, Frankenthal; Peter P. Hoppe, Wachenheim; Hubert Tiefenbacher, Leinfelden-Echterdingen, and Juergen Schole, Wedemark, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 6, 1984, Ser. No. 597,664

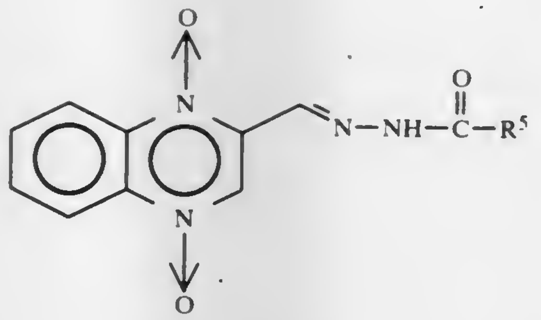
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1983, 3312425

Int. Cl.⁴ A61K *9/40, 31/50, 31/47, 31/535*

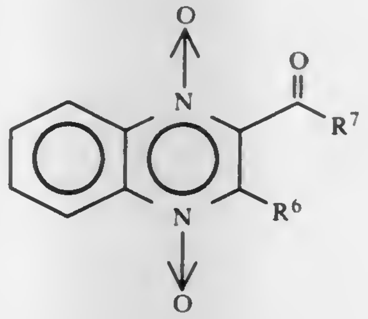
U.S. Cl. 514—249 **8 Claims**

1. A mixture which contains

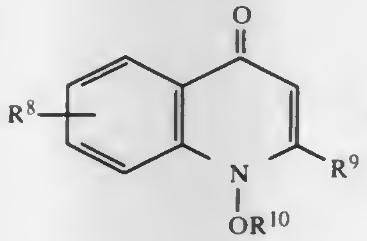
(A) a commercial growth promoter selected from the group consisting of compounds of the formulae II, III and IVa and b



II

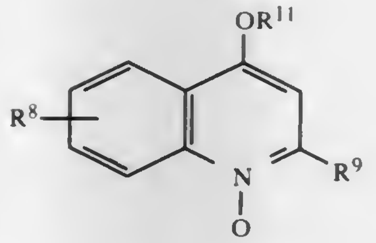


III



IV a

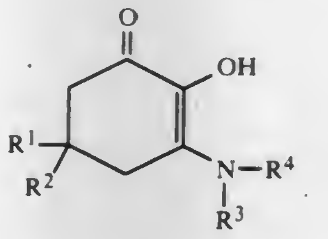
or



IV b

where R^5 is C_1–C_6-alkyl which can be substituted by halogen or cyano, or is C_1–C_6-alkoxy, R^6 is hydrogen or a low molecular weight alkyl radical, R^7 is a low molecular weight alkyl, alkoxy or alkylamine radical, these radicals being unsubstituted or substituted by hydroxyl or alkoxy groups, R^8 is hydrogen, one or more low molecular weight alkyl or alkoxy radicals or halogen, R^9 is hydrogen or a low molecular weight alkyl radical and R^{10} and R^{11} are each hydrogen, a low molecular weight aliphatic radical or an araliphatic radical,

(B) an aminoreductone of the formula I



I

where R^1, R^2 and R^3 are identical or different and are each hydrogen, methyl or ethyl and R^4 is a straight-chain or branched C_1–C_{20}-alkyl or alkenyl group which can carry one or more hydroxyl groups, low molecular weight alkoxy groups or low molecular weight acyloxy groups, or is a radical $—(CH_2—CH_2—O)_n$, where n is from 1 to 10, which can be etherified with a low molecular weight alkanol or esterified with a low molecular weight carboxylic acid, or is the radical, bonded at the amino group, of a natural α- or β-aminoacid or a C_1–C_{10}-alkyl ester of this, or, in the case of an α-aminoacid, is a radical in which the carboxyl group of the aminoacid and the 2-hydroxyl group of the cyclohexenone ring form a lactone, or its physiologically tolerated salt with a mineral acid, the weight ratio of the growth promoter (A) to the aminoreductone (B) being from 50:1 to 1:50.

4,616,017
AMINOHYDROXYPROPOXY SUBSTITUTED ARYL COMPOUNDS

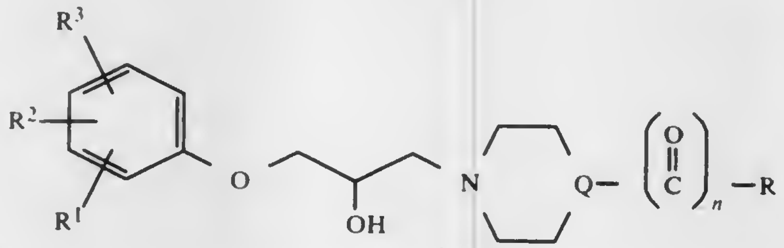
John J. Baldwin, Gwynedd Valley, and Gerald S. Ponticello, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 4, 1984, Ser. No. 617,297

Int. Cl.⁴ C07D *401/04, 211/00;* **A61K** *31/495, 31/435*

U.S. Cl. 514—252 **6 Claims**

1. A compound of structural formula:



or a pharmaceutically acceptable salt thereof wherein:

R^1 is
- (1) hydrogen,
- (2) hydroxy, or
- (3) hydroxymethyl;

R^2 is
- (1) hydrogen,
- (2) halo,
- (3) hydroxy,
- (4) nitro,
- (5) cyano,
- (6) C_{1-6}alkyl,
- (7) C_{3-8}cycloalkyl,
- (8) C_{2-5}alkenyl,
- (9) C_{1-4}alkoxy,
- (10) C_{1-4}alkylthio,
- (11) C_{21-5}alkenyloxy, or
- (12) C_{1-5}alkanoyl; and

R^3 is
- (1) hydrogen or
- (2) cyano;

Q is >N— or >CH—;

n is 0 or 1; and

R is
- (1) phenyl,
- (2) methoxyphenyl
- (3) halophenyl, or
- (4) halopyridyl;

provided that one of R^1 and R^2 is hydrogen.

4,616,018
BENZOTRIAZOLYL-4,5-DIHYDRO-3(2H)-PYRIDAZINONES

Norbert Hauel; Volkhard Austel, both of Biberach; Joachim Heider, Warthausen; Manfred Reiffen, Biberach; Willi Diederen, Biberach, and Walter Haarman, Biberach, all of Fed. Rep. of Germany, assignors to Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

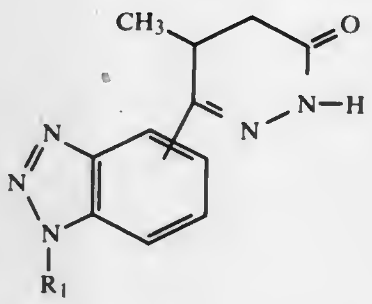
Continuation of Ser. No. 656,081, Sep. 28, 1984, abandoned, which is a continuation of Ser. No. 568,270, Jan. 5, 1984, abandoned, which is a continuation of Ser. No. 397,590, Jul. 12, 1982, abandoned. This application Jun. 27, 1985, Ser. No. 749,580

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1981, 3129447

Int. Cl.⁴ C07D *403/02;* **A61K** *31/50*

U.S. Cl. 514—254 **4 Claims**

1. A compound of the formula



wherein R_1 is alkyl of 1 to 4 carbon atoms, or a non-toxic pharmacologically acceptable acid addition salt thereof.

4. The method of strengthening the action of the heart, lowering the blood pressure or preventing or relieving thromboses in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective cardiotonic, hypotensive or antithrombotic amount of a compound of claim **1**.

4,616,019
NAPHTHYRIDINE ANTIBACTERIAL COMPOUNDS

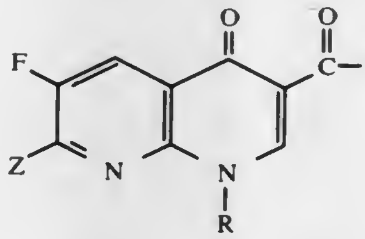
Daniel T. Chu, Vernon Hills, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation of Ser. No. 574,120, Jan. 26, 1984, abandoned. This application Oct. 4, 1985, Ser. No. 784,286

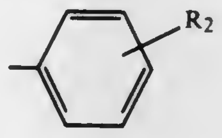
Int. Cl.⁴ A61K *31/44;* **C07D** *471/04*

U.S. Cl. 514—254 **22 Claims**

1. A compound having the formula



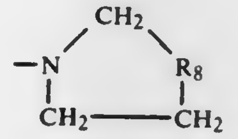
wherein R_1 is hydrogen or a carboxy protecting group which with the remainder of the carboxy group completes a carboxylic acid ester group; R is selected from the group consisting of (1) an aromatic heterocyclic ring containing 5 to 6 atoms therein, with 1 to 2 hetero atoms being selected from the group consisting of S, O and N and the remaining atoms in the ring being carbon atoms and substituted derivatives of said aromatic heterocyclic ring wherein the aromatic heterocyclic ring is mono-substituted with C_1 to C_6 alkyl; and (2) a phenyl group having the formula:



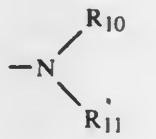
wherein R_2 is one, two or three substituents independently selected from the group consisting of hydrogen, halogen, cyano, C_1 to C_6 alkyl, halo-substituted C_1 to C_6 alkyl, a group having the formula:

$—Y—R_3$

wherein —Y— is —O— or —S— and R_3 is hydrogen or C_1 to C_6 alkyl, and NH_2; and Z is selected from the group consisting of (1) a heterocyclic ring having the structure:

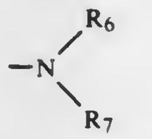


wherein R_8 is CH_2, $(CH_2)_2$ or a group of the formula $—(CH_2)_n—R_9—$ wherein R_9 is —N—, —O—, or —S— and n is 0, 1 or 2, and substituted derivatives thereof wherein the heterocyclic ring is substituted with one, two or three substituents independently selected from the group consisting of C_1 to C_6 alkyl, C_1 to C_3 alkylamino-substituted C_1 to C_6 alkyl, amino-substituted C_1 to C_6 alkyl, hydroxy, alkanoyl containing 1 to 6 carbon atoms, alkanoylamido containing 1 to 6 carbon atoms, halogen, an amine of the formula:



$$—N\begin{matrix} R_{10} \\ R_{11} \end{matrix}$$

wherein R_{10} and R_{11} are each independently selected from the group consisting of hydrogen and C_1 to C_6 alkyl; and (2) an amino group of the formula:



$$—N\begin{matrix} R_6 \\ R_7 \end{matrix}$$

wherein R_6 is hydrogen or C_1 to C_6 alkyl, and R_7 is selected from the group consisting of C_1 to C_6 alkyl, NH_2, a mono-(C_1 to C_4)alkylamino group and a di-(C_1 to C_4)alkylamino group, and pharmaceutically acceptable salts thereof.

21. A method of treating a bacterial infection in a patient comprising administering to a patient in need a therapeutically effective amount of a compound as defined in claim **1**.

4,616,020
MEDICAMENTS, VICINAL DIHYDROXYALKYLXANTHINES CONTAINED THEREIN, PROCESSES FOR THE PREPARATION OF THESE XANTHINE COMPOUNDS AND INTERMEDIATE PRODUCTS SUITABLE FOR THESE

Harald Furrer, Kelkheim; Hiristo Anagnostopulos, Taunusstein; Ulrich Gebert, Kelkheim, and Heinz-Joachim Hinze, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

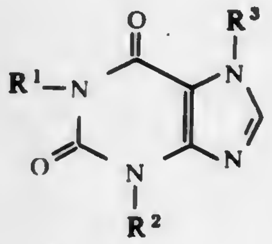
Filed Sep. 17, 1982, Ser. No. 420,932

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1981, 3138397

Int. Cl.⁴ A61K *31/505;* **C07D** *473/06*

U.S. Cl. 514—264 **22 Claims**

15. A medicament composition containing a galenic auxiliary and, per dosage unit, having from 20 to 1,000 mg of a compound of formula I



(I)

wherein one of the radicals R^1, R^2 or R^3 denotes a straight-chain alkyl group having 4 to 8 C atoms and two vicinal hydroxyl groups in the ω, ω-1 or ω-1, ω-2 positions and the two other radicals represent straight-chain or branched alkyl groups having up to 12 C atoms in the position of R^1 and R^3 and up to 4 C atoms in the position of R^2, the total of C atoms in these two alkyl substituents being a maximum of 14.

4,616,021
CHROMAN DERIVATIVES

Valerie A. Ashwood, Bishop's Stortford, and John M. Evans, Roydon, both of England, assignors to Beecham Group p.l.c., England

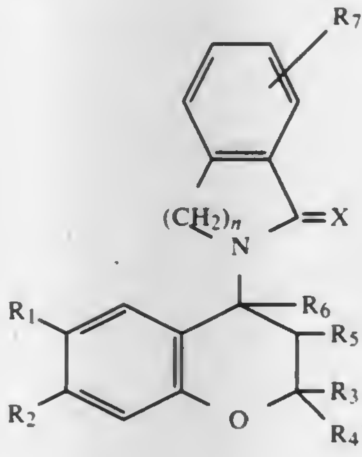
Filed Apr. 12, 1985, Ser. No. 722,709

Claims priority, application United Kingdom, Apr. 14, 1984, 8409745

Int. Cl.⁴ A61K ***31/47, 31/40;*** **C07D** ***405/04***

U.S. Cl. 514—309 **9 Claims**

1. A compound of formula (I):



(I)

wherein:

either one of R_1 and R_2 is hydrogen and the other is selected from the class of C_{1-6} alkylcarbonyl, C_{1-6} alkoxycarbonyl, C_{1-6} alkylcarbonyloxy, C_{1-6} alkylhydroxymethyl, nitro, cyano, chloro, trifluoromethyl, C_{1-6} alkylsulphinyl, C_{1-6} alkylsulphonyl, C_{1-6} alkoxysulphinyl, C_{1-6} alkoxysulphonyl, C_{1-6} alkylcarbonylamino, C_{1-6} alkoxycarbonylamino, C_{1-6} alkyl-thiocarbonyl, C_{1-6} alkoxy-thiocarbonyl, C_{1-6} alkyl-thiocarbonyloxy, 1-mercapto C_{2-7} alkyl, formyl, or aminosulphinyl, aminosulphonyl or aminocarbonyl, the amino moiety being optionally substituted by one or two C_{1-6} alkyl groups, or C_{1-6} alkylsulphinylamino, C_{1-6} alkylsulphonylamino, C_{1-6} alkoxysulphinylamino or C_{1-6} alkoxysulphonylamino, or ethylenyl terminally substituted by C_{1-6} alkylcarbonyl, nitro or cyano, or $-C(C_{1-6}\ alkyl)NOH$ or $-C(C_{1-6}\ alkyl)NNH_2$, or one of R_1 and R_2 is nitro, cyano or C_{1-3} alkylcarbonyl and the other is methoxy or amino optionally substituted by one or two C_{1-6} alkyl or by C_{2-7} alkanoyl; one of R_3 and R_4 is hydrogen or C_{1-4} alkyl and the other is C_{1-4} alkyl or R_3 and R_4 together are C_{2-5} polymethylene;

either R_5 is hydrogen, hydroxy, C_{1-6} alkoxy or C_{1-7} acyloxy and R_6 is hydrogen or R_5 and R_6 together are a bond;

R_7 is hydrogen, C_{1-6} alkyl, C_{1-6} alkoxy, hydroxy, halogen, trifluoromethyl, nitro, cyano, C_{1-12} carboxylic acyl, or amino or aminocarbonyl optionally substituted by one or two C_{1-6} alkyl;

X is oxygen or sulphur;

n is 1 or 2; the nitrogen-containing group in the 4-position being trans to the R_5 group when R_5 is hydroxy, C_{1-6} alkoxy or C_{1-7} acyloxy; or a pharmaceutically acceptable salt or solvate thereof.

9. A method of treating hypertension in mammals including man, which comprises administering to the sufferer an antihypertensive amount of the compound according to claim **1** or a pharmaceutically acceptable salt thereof.

4,616,022
PROCATEROL STABILIZATION

Isaac Ghebre-Sellassie, Randolph, and Russell U. Nesbitt, Jr., Somerville, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 17, 1984, Ser. No. 641,631

Int. Cl.⁴ C07D ***215/22;*** **A61K** ***31/47***

U.S. Cl. 514—312 **2 Claims**

1. An oxidation- and moisture-resistant salt of procaterol produced by contacting, in an acidic environment, at least one reactant selected from the group consisting of procaterol and pharmaceutically acceptable salts of procaterol with at least one reagent selected from the group consisting of the monovalent metal and ammonium salts of lauryl sulfate.

4,616,023
PHARMACEUTICAL COMPOSITIONS OF 4-(DIBENZO-[A,D]CYCLOALKENYL)PIPERAZINE COMPOUNDS AND METHODS

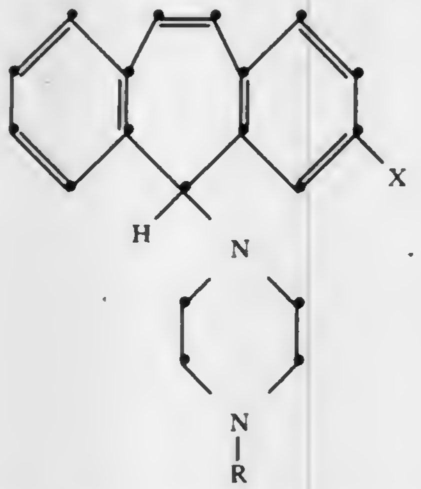
David C. Remy, North Wales, and Steven D. Young, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 596,957, Apr. 5, 1984, abandoned. This application Feb. 21, 1985, Ser. No. 703,965

Int. Cl.⁴ A61K ***31/445***

U.S. Cl. 514—325 **9 Claims**

1. A composition useful for the treatment of cardiovascular disorders caused by high cellular concentration of Ca^{++} comprising a therapeutically effective amount of a compound having the formula:



wherein

X is hydrogen, halogen, lower alkoxy, lower alkylthio, lower alkylsulfonyl, or trifluoromethyl,

R is cinnamyl, lower alkoxycinnamyl, cinnamoyl, lower alkoxycinnamoyl, lower hydroxyalkyl or carbalkoxy;

or a pharmaceutically acceptable acid addition salt thereof; said compound in admixture with a pharmaceutically acceptable carrier.

4,616,024
DIHYDROPYRIDINE ANTI-ISCHAEMIC AND ANTIHYPERTENSIVE AGENTS

Simon F. Campbell, Deal; Peter E. Cross, Canterbury, and John K. Stubbs, Deal, all of England, assignors to Pfizer Inc., New York, N.Y.

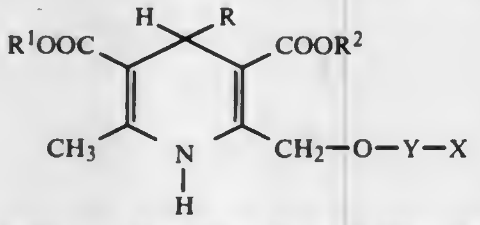
Division of Ser. No. 515,231, Jul. 19, 1983, Pat. No. 4,515,799, and a continuation-in-part of Ser. No. 463,095, Feb. 2, 1983, abandoned. This application Feb. 21, 1985, Ser. No. 704,103

Claims priority, application United Kingdom, Jul. 22, 1982, 8221214

Int. Cl.⁴ C07D ***401/12;*** **A61K** ***31/41***

U.S. Cl. 514—340 **6 Claims**

1. A 1,4-dihydropyridine compound having the formula:



or a pharmaceutically acceptable addition salt thereof wherein:

R is 2-chlorophenyl or 2,3-dichlorophenyl;

R^1 and R^2 are each independently C_1–C_4 alkyl or 2-methoxyethyl;

Y is $-(CH_2)_n-$, $-CH_2CH(CH_3)-$ or $-CH_2C(CH_3)_2-$;

n is an integer from 1 to 3; and

X is a triazolyl ring or said ring substituted by cyano, carboxy, carbamoyl, amino or $CO_2(C_1$–C_4 alkyl) groups with the proviso that if the triazolyl ring is linked to Y by a ring nitrogen atom n is 2 or 3.

4,616,025
THIAZOLIDINE DERIVATIVES, PROCESS FOR THE PREPARATION AND PHARMACEUTICAL COMPOSITIONS THEREOF

Elemer Ezer; Kalman Harsanyi; György Domány; László Szporny; Judit Matuz; Béla Hegedüs; Katalin Pallagi; István Szabadkai, and Peter Tétényi, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

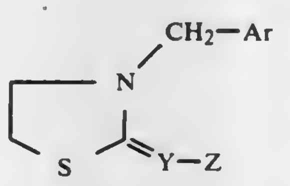
Filed Mar. 16, 1984, Ser. No. 590,486

Claims priority, application Hungary, Mar. 16, 1983, 888/83

Int. Cl.⁴ C07D ***277/10, 277/18;*** **A61K** ***31/425***

U.S. Cl. 514—342 **7 Claims**

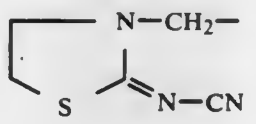
1. A thiazolidine of the formula (I)



(I)

wherein

Ar is a 2-furyl or phenyl, naphthyl or pyridyl group which can be substituted by one or more of C_{1-4}-alkyl, C_{1-6}-alkoxy, halo-C_{1-4} alkoxy, di- or trihalomethyl, hydroxyl or nitro or by a group of the formula (II)



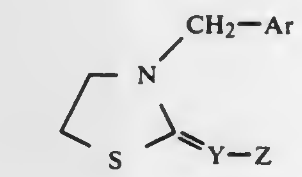
(II)

wherein

Y is nitrogen or CH,

Z is cyano when Y is nitrogen, and is nitro when Y is CH.

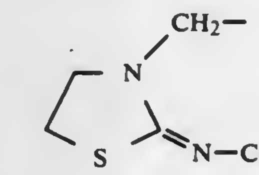
7. A method of treating a gastrointestinal ulcer in an animal subject afflicted with said gastrointestinal ulcer, which comprises the step of administering to said animal subject a pharmaceutically effective amount of a compound of the Formula (I)



(I)

wherein

Ar is 2-furyl or phenyl, naphthyl or pyridyl which can be substituted by one or more of C_1–C_4 alkoxy, halo-C_1 to C_4 alkoxy, di- or trihalomethyl, hydroxyl or nitro, or by a group of the Formula (II)



(II)

wherein

Y is nitrogen or CH;

Z is cyano or carbamoyl when Y is nitrogen, and is nitro when Y is CH.

4,616,026
ANTIFUNGAL 2-ARYL-1,1-DIFLUORO-3-(1H-1,2,4-TRIAZOL-1-YL)2-PROPANOLS

Kenneth Richardson, and Peter J. Whittle, both of Canterbury, England, assignors to Pfizer Inc., New York, N.Y.

Filed Jul. 25, 1983, Ser. No. 517,175

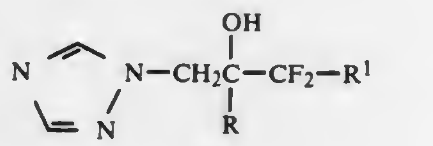
Claims priority, application United Kingdom, Feb. 16, 1983, 8304282

The portion of the term of this patent subsequent to Nov. 20, 2001, has been disclaimed.

Int. Cl.⁴ A01N ***43/653, 43/713;*** **C07D** ***249/08, 403/06***

U.S. Cl. 514—381 **9 Claims**

1. A compound of the formula



or a pharmaceutically acceptable acid addition salt thereof, wherein R is fluorophenyl or difluorophenyl, and R^1 is H, Cl, 1-methyltetrazol-5-yl or fluorophenyl.

9. A method of treating a fungal infection in an animal in need of such treatment which comprises administration to said animal an antifungal amount of a compound or pharmaceutically acceptable salt according to claim **1**.

4,616,027
ANTIFUNGAL 1-ARYL-1-FLUOROALKYL-2-(1H-1,2,4-TRIAZOL-1-YL)ETHANOLS

Kenneth Richardson, and Peter J. Whittle, both of Canterbury, Great Britain, assignors to Pfizer Inc., New York, N.Y.

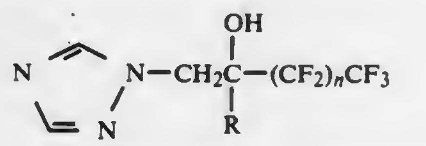
Filed Jul. 25, 1983, Ser. No. 517,183

Claims priority, application United Kingdom, Aug. 14, 1982, 8223459; Nov. 2, 1982, 8231309

Int. Cl.⁴ A01N ***43/653;*** **C07D** ***249/08***

U.S. Cl. 514—383 **15 Claims**

1. A compound of the formula



a pharmaceutically or agriculturally acceptable acid addition salt thereof, wherein n is zero, 1 or 2; and R is trifluoromethylphenyl or phenyl substituted by 1 to 3 substituents each independently selected from F, Cl and Br.

13. An agricultural antifungal composition suitable for use on a plant or seed which comprises an antifungal amount of a compound or agriculturally acceptable salt according to claim **1** and an agriculturally acceptable diluent or carrier.

4,616,028
SUBSTITUTED 2,3,4,9-TETRAHYDRO-1H-CARBAZOLE-1-ACETIC ACID DERIVATIVES, COMPOSITIONS AND USE

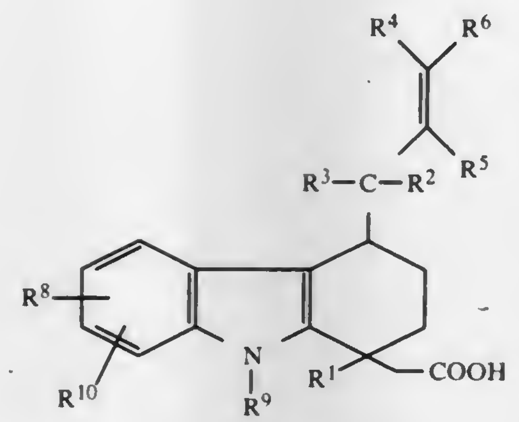
Dominick Mobilio; Christopher A. Demerson, both of Plainsboro, and Leslie G. Humber, North Brunswick, all of N.J., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 726,197, Apr. 22, 1985. This application Nov. 13, 1985, Ser. No. 797,561

Int. Cl.⁴ A61K ***31/40;*** **C07D** ***209/82***

U.S. Cl. 514—411 **18 Claims**

1. A compound of the formula (I)



(I)

wherein R^1 is lower alkyl, R^2, R^3, R^4, R^5 and R^6 are hydrogen or lower alkyl or R^3 and R^4 are joined together to form $(CH_2)_m$ or R^5 and R^6 are joined together to form

$-CH{=}CH-CH{=}CH-$,

$(CH_2)_n$,

$-CH{=}CH-O-$ or

$-CH{=}CH-S-$,

R^8 and R^{10} are independently hydrogen, lower alkyl or halogen, R^9 is hydrogen or lower alkyl, m is 2 to 3, and n is 2 to 4 and the pharmaceutically acceptable salts thereof.

18. A method for treating inflammatory or painful conditions in a mammal which comprises the administration to said mammal of an effective amount of a compound selected from those of formula (I), or a pharmaceutically acceptable salt thereof, as claimed in claim **1**.

4,616,029

PERHYDROMDOLE-2-CARBOXYLIC ACIDS AS ANTIHYPERTENSIVES

Michel Vincent, Bagneux; Georges Remond, Versailles, and Michel Laubie, Vaucresson, all of France, assignors to ADIR, Neuilly-sur-Seine, France

Continuation of Ser. No. 308,234, Oct. 2, 1981, Pat. No. 4,508,729, which is a continuation-in-part of Ser. No. 212,607, Dec. 3, 1980, Pat. No. 4,404,206. This application Oct. 10, 1984, Ser. No. 659,275

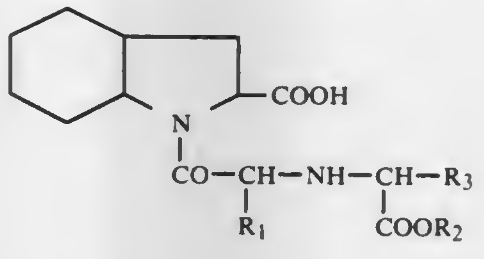
Claims priority, application France, Dec. 7, 1979, 79 30046; Jul. 31, 1980, 80 16875; Oct. 2, 1980, 80 21095; Apr. 7, 1981, 81 06916

The portion of the term of this patent subsequent to Apr. 2, 2002, has been disclaimed.

Int. Cl.^{4} A61K ***31/40;*** **C07D** ***209/42***

U.S. Cl. 514—412 **7 Claims**

1. A compound selected from the group consisting of iminodiacid compounds having the formula:

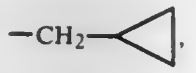


wherein

R_1 represents lower-alkyl having 1 to 4 carbon atoms, inclusive,

R_2 represents hydrogen or lower-alkyl having 1 to 4 carbon atoms, inclusive,

R_3 is



in racemic form or as an optical isomer, a salt thereof with a pharmaceutically-acceptable inorganic or organic base, and an addition salt thereof with a pharmaceutically-acceptable inorganic or organic acid.

4,616,030

PERHYDROINDOLE-2-CARBOXYLIC ACIDS AS ANTIHYPERTENSIVES

Michel Vincent, Bagneux; Georges Remond, Versailles, and Michel Laubie, Vaucresson, all of France, assignors to ADIR, Neuilly-sur-Seine, France

Continuation of Ser. No. 308,234, Oct. 2, 1981, Pat. No. 4,508,729, which is a continuation-in-part of Ser. No. 212,607, Dec. 3, 1980, Pat. No. 4,404,206. This application Dec. 6, 1984, Ser. No. 679,320

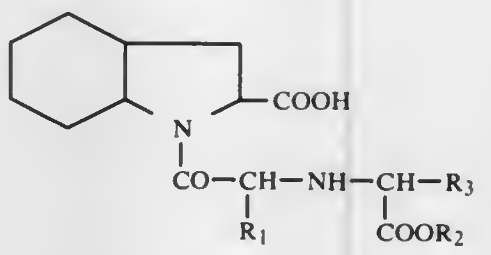
Claims priority, application France, Dec. 7, 1979, 79 30046; Jul. 31, 1980, 80 16875; Oct. 2, 1980, 80 21095; Apr. 7, 1981, 81 06915

The portion of the term of this patent subsequent to Apr. 2, 2002, has been disclaimed.

Int. Cl.^{4} A61K ***31/40;*** **C07D** ***209/42***

U.S. Cl. 514—412 **7 Claims**

1. A compound selected from the group consisting of iminodiacid compounds having the formula:

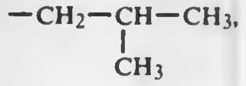


wherein

R_1 represents lower-alkyl having 1 to 4 carbon atoms, inclusive,

R_2 represents hydrogen or lower-alkyl having 1 to 4 carbon atoms, inclusive,

R_3 is



$$-CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_3,$$

in racemic form or as an optical isomer, a salt thereof with a pharmaceutically-acceptable inorganic or organic base, and an addition salt thereof with a pharmaceutically-acceptable inorganic or organic acid.

4,616,031

PERHYDROINDOLE-2-CARBOXYLIC ACIDS AS ANTIHYPERTENSIVES

Michel Vincent, Bagneux; Georges Rémond, Versailles, and Michel Laubie, Vaucresson, all of France, assignors to ADIR, Neuilly-sur-Seine, France

Continuation of Ser. No. 308,234, Oct. 2, 1981, Pat. No. 4,508,729, which is a continuation-in-part of Ser. No. 212,607, Dec. 3, 1980, Pat. No. 4,404,206. This application Oct. 10, 1984, Ser. No. 659,276

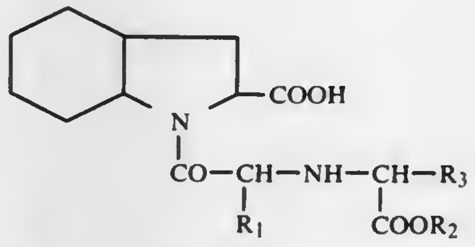
Claims priority, application France, Dec. 7, 1979, 79 30046; Jul. 31, 1980, 80 16875; Oct. 2, 1980, 80 21095; Apr. 7, 1981, 81 06916

The portion of the term of this patent subsequent to Apr. 2, 2002, has been disclaimed.

Int. Cl.^{4} A61K ***31/40;*** **C07D** ***209/42***

U.S. Cl. 514—412 **7 Claims**

1. A compound selected from the group consisting of iminodiacid compounds having the formula:

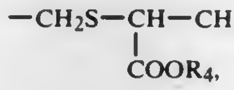


wherein

R_1 represents lower-alkyl having 1 to 4 carbon atoms, inclusive,

R_2 represents hydrogen or lower-alkyl having 1 to 4 carbon atoms, inclusive,

R_3 is



$$-CH_2S-\underset{COOR_4,}{\underset{|}{CH}}-CH_3,$$

wherein R_4 is H or C_1–C_4 lower alkyl, in racemic form or as an optical isomer, a salt thereof with a pharmaceutically-acceptable inorganic or organic base, and an addition salt thereof with a pharmaceutically-acceptable inorganic or organic acid.

4,616,032

USE OF NITROGEN HETEROCYCLIC COMPOUNDS

Morton Harfenist, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

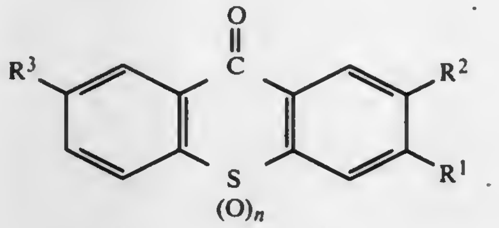
Filed Jan. 4, 1985, Ser. No. 688,704

Claims priority, application United Kingdom, May 1, 1984, 8400202

Int. Cl.^{4} A61K ***31/385***

U.S. Cl. 514—436 **4 Claims**

1. A method of preventing reoccurrence or treatment of a mental disorder in a mammal identified as having had or having a mental disorder, comprising administration to said mammal of a mental disorder reversing amount of a compound of formula (I')



(I')

wherein

n is 0, 1 or 2;

one of R^1 and R^2 is hydrogen and the other is a tetrazol-5-yl group optionally substituted by one or more C_{1-4} alkyl groups; and

R^3 is selected from hydrogen, saturated and unsaturated aliphatic hydrocarbon moieties containing from 1 to 4 carbon atoms, groups OR^4 (where R^4 is selected from hydrogen and saturated and unsaturated aliphatic hydrocarbon moieties containing from 1 to 4 carbon atoms), halo, groups of formula—NR^5R^6 (where R^5 and R^6 are independently selected from hydrogen, C_{1-4} alkyl and hydroxy-C_{1-4} alkyl, provided that the total number of carbon atoms in R^5 and R^6 does not exceed 4), amino-C_{1-4}alkylamino and morpholino);

or a physiologicaly acceptable salt thereof.

4,616,033

7 HYDROXY-COUMARIN AS A TREATMENT FOR HIGH PROTEIN OEDEMAS

John R. Casley-Smith, Tennyson, Australia, assignor to Lamorna Investments Proprietary Ltd., Malvern, Australia

Filed Mar. 14, 1985, Ser. No. 711,651

Int. Cl.^{4} A61K ***31/35***

U.S. Cl. 514—457 **5 Claims**

1. A method of treating high-protein oedemas in a human or animal in need of such treatment which comprises administering to said human or animal a pharmaceutically effective amount of the compound 7 hydroxy-coumarin.

4,616,034

15(R)-5-FLUOROPROSTACYCLINS, PHARMACEUTICAL COMPOSITIONS AND ANTI-THROMBOTIC METHOD OF USE THEREOF

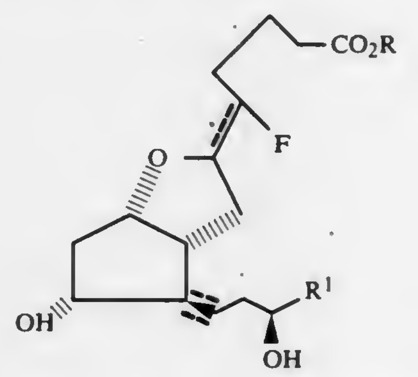
Stevan W. Djuric, Evanston, and Robert B. Garland, Northbrook, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Feb. 28, 1985, Ser. No. 706,806

Int. Cl.^{4} A61K ***31/557;*** **C07D** ***307/935***

U.S. Cl. 514—469 **20 Claims**

1. A platelet anti-aggegatory compound selected from at least one compound of the formula:

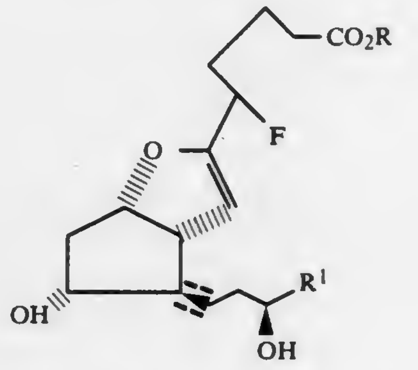


wherein R represents hydrogen, lower alkyl, or a pharmaceutically acceptable cation;

R^1 represents a cycloalkyl group of 3 to 7 carbon atoms; and

The symbol between the 5-, 6-, and 7-positions indicates that a single or double bond exists between either the 5- and 6-positions or the 6- and 7-positions; and the symbol between the 13- and 14- positions indicates that a single, double, or triple bond exists between the 13- and 14-positions.

14. A platelet anti-aggregatory compound selected from at least one compound of the formula:



wherein R represents hydrogen, lower alkyl, or a pharmaceutically acceptable cation;

R' represents a straight or branched chain alkyl group of 1 to 5 carbon atoms optionally containing 1 or 2 double bonds or 1 ethynyl group; and

The symbol between the 13- and 14-positions indicates that a single, double or triple bond exists between the 13- and 14-positions.

4,616,035

PESTICIDALLY ACTIVE NOVEL N-OXALYL DERIVATIVES OF N-METHYLCARBAMATES

Gerhard Heywang; Engelbert Kühle, both of Bergisch-Gladbach, and Bernhard Homeyer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 15, 1984, Ser. No. 661,008

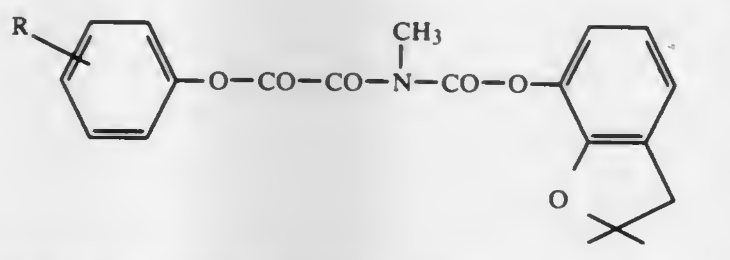
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1983, 3337858

The portion of the term of this patent subsequent to Mar. 26, 2002, has been disclaimed.

Int. Cl.⁴ A01N *47/22;* **C07D** *307/86*

U.S. Cl. 514—469 **8 Claims**

1. An N-oxalyl-N-methyl-carbamic acid ester of the formula



in which R represents 4-methyl, 2-isopropyl, 4-chlorine or —CH_2—$C(CH_3)_2$—O—.

7. A method of combating insects, arachnids and nematodes which comprises applying thereto or to a habitat thereof an insecticidally, arachnicidally or nematicidally effective amount of a compound according to claim 1.

4,616,036

FORMULATION FOR THE CONTROL OF NEMATODES

Byron Hodgin, 631 White Pine Tree Rd., Venice, Fla. 33595

Filed Sep. 12, 1985, Ser. No. 775,415

Int. Cl.⁴ A01N *33/18, 33/24*

U.S. Cl. 514—470 **2 Claims**

1. A nematocidal agricultural formulation for the control of nematodes consisting essentially of a D-limonene solvent and between 15% and 20% of chloropicrin, the percentage being by weight.

4,616,037

SYNERGISTIC BIOCIDE OF 1,5-PENTANEDIAL AND METHYLENE BIS THIOCYANATE

Thomas M. LaMarre, Aurora, and Cynthia H. Martin, Joliet, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Jul. 29, 1985, Ser. No. 759,781

Int. Cl.⁴ A01N *47/40, 47/46, 47/48, 35/00*

U.S. Cl. 514—515 **1 Claim**

1. A synergistic biocidal composition useful in treating industrial process waters to prevent the growth of *Psuedomonas aeruginosa* which comprises the biocides 1,5-pentanedial and methylene bis thiocyanate in the following synergistic ratios and dosage ranges:

Ratio 1,5-Pentanedial/Methylene Bis Thiocyanate
90/10 at a dosage ranging between 20 ppm and 50 ppm,
10/90 at a dosage ranging between 3 ppm and 50 ppm,
75/25 at a dosage ranging between 20 ppm and 50 ppm,
25/75 at a dosage ranging between 3 ppm and 50 ppm,
50/50 at a dosage ranging between 3 ppm and 50 ppm.

4,616,038

COMBINATION OF THIENAMYCIN-TYPE ANTIBIOTICS WITH DIPEPTIDASE INHIBITORS

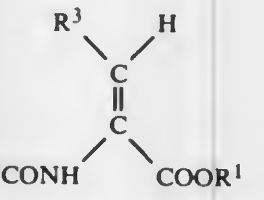
Frederick M. Kahan, Scotch Plains, and Helmut Kropp, Kenilworth, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 340,152, Jan. 18, 1982, abandoned, which is a continuation-in-part of Ser. No. 187,929, Sep. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 50,232, Jun. 22, 1979, abandoned, which is a continuation-in-part of Ser. No. 927,213, Jul. 24, 1978, abandoned. This application Jun. 24, 1985, Ser. No. 747,750

Int. Cl.⁴ A61K *31/195*

U.S. Cl. 514—563 **6 Claims**

1. A method for inhibiting the dipeptidase enzyme (E.C.3.4.13.11) which comprises administering to an animal from 3–200 mg/kg daily of a compound of the following formula:



wherein R^2 and R^3 are hydrocarbon radicals in the range respectively of 3–10 and 1–15 carbon atoms; in either one of these R^2 or R^3 hydrocarbon chains 1–6 hydrogens may be replaced by halogens or a nonterminal methylene may be replaced by oxygen or sulfur, including oxidized forms of the latter; additionally, a terminal hydrogen in R^3 can also be replaced by hydroxyl or thiol, which may be acylated or carbamoylated; or the hydrogen can be replaced by amino, which may be derivatized as in an acylamino, ureido amidino, quanidino, or alkyl or substituted amino group, including quaternary nitrogen groupings; or, there may be replacement by acid groups such as carboxylic, phosphonic or sulfonic acid groups or esters or amides thereof, or cyano; or combinations thereof, such as a terminal amino acid grouping; and R^1 is hydrogen or lower alkyl (C_{1-6}) or dialkylaminoalkyl, or a pharmaceutically acceptable cation.

4,616,039

METHYLSULFONYLMETHANE IN DIETARY PRODUCTS

Robert J. Herschler, 3080 N.W. 8th Ave., Camas, Wash. 98607

Continuation-in-part of Ser. No. 601,771, Apr. 17, 1984, Pat. No. 4,559,329, which is a continuation-in-part of Ser. No. 584,354, Feb. 28, 1984, Pat. No. 4,568,547, which is a continuation-in-part of Ser. No. 418,110, Sep. 14, 1982, Pat. No. 4,514,421, which is a continuation-in-part of Ser. No. 277,592, Jun. 26, 1981, Pat. No. 4,477,469, which is a division of Ser. No. 71,068, Aug. 6, 1979, Pat. No. 4,296,130. This application Apr. 29, 1985, Ser. No. 727,989

The portion of the term of this patent subsequent to Apr. 30, 2002, has been disclaimed.

Int. Cl.⁴ A61U *31/10*

U.S. Cl. 514—711 **11 Claims**

1. A method of providing a source of metabolizable sulfur to an animal whose diet comprises sufficient processed food to render the animal's diet deficient in metabolizable sulfur, which comprises physically admixing with one or more of the foodstuffs ingested daily by the animal, prior to the ingestion thereof by the animal, an amount of methylsulfonylmethane equivalent to at least 0.01 mg/kg of body weight per day.

4,616,040

PRODUCTION OF C_2-C_6 ALIPHATIC ALCOHOLS

Michael V. Grazioso, Poughkeepsie, N.Y.; Edwin R. Kerr, deceased, late of Wappinger, N.Y. (by Myra L. Kerr, administrator); Richard F. Love, Beacon, N.Y., and David A. Storm, Montvale, N.J., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 22, 1985, Ser. No. 757,408

Int. Cl.⁴ C07C *27/06*

U.S. Cl. 518—713 **23 Claims**

1. A method for preparing lower aliphatic alcohols characterized by producing a substantial proportion of aliphatic alcohols having from 2 to 6 carbon atoms which comprises reacting carbon monoxide and hydrogen in the presence of a catalyst at a temperature from about 240° to about 400° C., a pressure from about 500 to about 3000 psi and a gas hourly space velocity of at least 1000, said catalyst comprising from about 5 to about 50 weight percent of molybdenum calculated as MoO_3, from about 0.3 to about 15 weight percent of a metal selected from the group consisting of cobalt, iron and nickel, calculated as CoO, Fe_2O_3 or NiO, respectively, and from about 1.5 to 8 weight percent of copper, calculated as CuO, and the balance a support, said catalyst being modified by the addition of an alkali metal promoter from the class consisting of potassium, cesium and rubidium in an amount ranging from about 1.8 to 13.0 micromoles of said alkali metal per square meter of catalyst surface area.

4,616,041

MEMBRANES OF SUBSTANTIALLY NON-CROSSLINKED ORGANIC POLYMERS

Hans-Josef Sterzel, Dannstadt-Schauerheim, and Axel Sanner, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 26, 1985, Ser. No. 705,635

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1984, 3407720

Int. Cl.⁴ C08F *8/30*

U.S. Cl. 521—27 **8 Claims**

1. A membrane of a substantially non-crosslinked organic polymer having a softening point above 80° C. which contains complex-forming groups bonded to the polymer chain via an alkylene radical, said complex-forming groups being positioned on said alkylene radical at a distance of not less than 4 carbon atoms from the polymer chain.

4,616,042

LOW TEMPERATURE IMPACT MODIFIED THERMOPLASTIC FOAM

Roger W. Avakian, Brasschaat, Belgium, assignor to General Electric Company, Pittsfield, Mass.

Filed Jun. 14, 1985, Ser. No. 744,610

Int. Cl.⁴ C08J *9/06*

U.S. Cl. 521—81 **8 Claims**

1. A thermoplastic blend comprising:
(i) at least one thermoplastic resin selected from the group consisting of polyester, polycarbonates and poly(ester-carbonates);
(ii) an effective amount of polysiloxane-polycarbonate block copolymer to increase low temperature impact strength; and
(iii) an effective amount of blowing agent.

4,616,043

ALIPHATIC POLYURETHANE SPRAYABLE COATING COMPOSITIONS AND METHOD OF PREPARATION

Stuart B. Smith, Conyers, Ga., assignor to Thermocell Development, Ltd., Knoxville, Tenn.

Filed Apr. 26, 1985, Ser. No. 727,776

Int. Cl.⁴ C08G *18/14, 18/77, 18/30*

U.S. Cl. 521—107 **27 Claims**

1. A process for preparing a light stable, fast reacting, aliphatic polyurethane product, which process comprises admixing and reacting an A side and a B side composition as a reaction mixture, the A side composition comprising 100 parts of a trimerized or biuret polymethylene polyisocyanate prepolymer having free NCO groups and a B side component composition comprising an admixture of an alkoxy polyalkylene glycol and an aromatic diamine, wherein the aromatic diamine is present in a chain-extending amount of from about 10 to 50 parts by weight per 100 parts by weight of the prepolymer, and the alkoxy polyalkylene glycol is present in an amount of from about 10 to 150 parts by weight of the prepolymer, to provide a fast reacting, aliphatic polyurethane reaction product.

4,616,044

HEAT LAMINATABLE POLYETHER URETHANE FOAM

Gerald Fesman, Teaneck, N.J., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jan. 25, 1985, Ser. No. 695,016

Int. Cl.⁴ C08G *18/14;* **G08G** *18/48;* **B32B** *31/20, 5/14*

U.S. Cl. 521—107 **18 Claims**

1. A heat laminatable polyether flexible urethane foam composition which comprises at least one organophosphorus additive, said additive being present in an amount effective to impart heat laminatable properties to the resulting foam and wherein the organophosphorus additive is an organophosphite.

2. The composition of claim 1 wherein the organophosphite is selected from the group consisting of diphosphites, pentaerythritol diphosphites, alkyl phosphites and aryl phosphites.

4,616,045

PROCESS OF PREPARING AN OXYGEN PERMEABLE, STYRENE BASED, CONTACT LENS MATERIAL

Billy T. Upchurch, Norfolk, Va., assignor to GBF, Inc., Virginia Beach, Va.

Division of Ser. No. 506,975, Jun. 23, 1983, Pat. No. 4,528,301. This application May 13, 1985, Ser. No. 733,314

Int. Cl.⁴ G08J *3/28;* **C08L** *83/04, 100/10;* **G02C** *7/04*

U.S. Cl. 522—60 **20 Claims**

1. A process comprising copolymerizing a reaction mixture comprising:
(1) about 40–97% by weight of a styrene component selected from styrene, a ring substituted styrene, or mixtures thereof;
(2) about 1–20% by weight of a vinyl alcohol ester component selected from vinyl acetate, vinyl alcohol esters prepared by addition of either aliphatic or aromatic carboxylic acids having from 1 to about 10 carbon atoms to acetylene or substituted alkynes, or mixtures thereof;
(3) about 1–20% by weight of a polyethylene glycol ester component selected from pentaethyleneglycol monomethacrylate, polyethylene glycol esters having from 2 through 10 PEG units (CH_2CH_2O) monoesterified with a carboxylic acid having at least one vinyl or substituted vinyl group or mixtures thereof; and
(4) about 1–20% by weight of a substituted polysiloxane or substituted silane component selected from methyl polysiloxane, dimethyl polysiloxane, ethyl polysiloxane, phenyl polysiloxane, methoxy polysiloxane, vinyl polysiloxane, fluoropropyl polysiloxane, cyano polysiloxane, dimethylphenylmethyl polysiloxane, a methyl substituted silane, a dimethyl substituted silane, an ethyl substituded silane, a phenyl substituted silane, a methoxy substituted silane, a vinyl substituted silane, a fluoropropyl substituted silane, a cyano substituted silane, a dimethylphenylmethyl substituted silane, or mixtures thereof;

wherein said copolymerizing is in the presence of about 350 nanometer ultraviolet radiation.

4,616,046

STERILIZATION OF OBJECTS MADE OF HALOGENO-VINYLIC POLYMERS USING IONIZING RADIATION

Simon Kornbaum, Caluire, and Jean-Yves Chenard, Pau, both of France, assignors to Ato Chimie, France

Continuation-in-part of Ser. No. 565,522, Dec. 27, 1983, abandoned, which is a continuation of Ser. No. 309,434, Oct. 7, 1981, abandoned. This application May 7, 1984, Ser. No. 607,510

Claims priority, application France, Oct. 10, 1980, 80 21662

Int. Cl.^{4} C08K *5/57, 5/58;* **C08J** *3/28*

U.S. Cl. 522—79 **30 Claims**

1. In a process for the ionizing radiation of a vinylic halide polymer at doses sufficient to cause sterilization, the polymer incorporating a composition which is effective for preventing the discoloration produced thereby, the improvement which comprises said composition comprising a metallic heat stabilizer, and a carboxylic acid ester carrying at least one mercaptan function in the proportion of one SH group for each 3 to 10 carbon atoms.

4,616,047

GALENIC FORM FOR ORAL ADMINISTRATION AND ITS METHOD OF PREPARATION BY LYOPHILIZATION OF AN OIL-IN-WATER EMULSION

Louis Lafon, Paris, France, assignor to Laboratoire L. Lafon, Alfort, France

Filed Mar. 21, 1985, Ser. No. 714,686

Claims priority, application France, Mar. 30, 1984, 84 05058

Int. Cl.^{4} A61K *9/50*

U.S. Cl. 523—105 **23 Claims**

1. A method for preparing a galenic form for oral administration by lyophilization of an oil-in-water emulsion containing at least one pharmaceutically active ingredient and obtained from a lipid phase and an aqueous phase, wherein said method comprises:

(a) preparing the lipid phase by stirring at a temperature lower than or equal to 80° C. so as to mix all the lipid-phase components, whereby said lipid phase is liquid,

(b) preparing the aqueous phase, by stirring at a temperature lower than or equal to 80° C. so as to mix the water and the other components of said aqueous phase, said aqueous phase including an organic filler selected from the group consisting of lactose, whole milk powder, semi-skimmed milk powder, skimmed milk powder, glycocoll, mannitol, maltodextrins, and mixtures thereof; said aqueous phase also containing a thickening agent selected from the group consisting of natural natural and synthetic gums, cellulose derivatives, pectins, bentonites, colloidal silicas, polyvinyl alcohol, polyvinylpyrrolidone, acrylic polymers and copolymers, and mixtures thereof, said organic filler and thickening agent constituting from 10 to 85% by weight of the total aqueous phase, not counting the pharmaceutically active substance present;

(c) preparing an emulsion under stirring at a temperature within the range of 10° C. to 80° C. by introducing the liquid lipid phase into the aqueous phase in order to obtain a homogeneous emulsion,

(d) distributing the resulting mixture into alveolar packs,

(e) freezing the contents of said alveolar packs at a temperature within the range of −20° C. to −50° C., then lyophilizing said contents under a pressure within the approximate range of 80 Pa to 0.13 Pa, with a heat supply such that the temperature of the treated mass is always lower than the starting melting temperature of said mass, the pharmaceutically effective material being incorporated before step (d).

4,616,048

SOLUTION COMPOUNDING PROCESS FOR ACHIEVING UNIFORM, FINE PARTICLE SIZE DISPERSION OF CURING AGENTS

Mario N. De Trano, Massillon; William L. Hergenrother, Akron; Ralph A. Maglio, Wadsworth, and David M. Roggeman, North Royalton, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 29, 1985, Ser. No. 728,020

Int. Cl.^{4} C08L *23/22;* **B60C** *21/08;* **C08K** *5/08*

U.S. Cl. 523—166 **20 Claims**

1. A solution compounding process for forming a dry sealant composition, comprising the steps of:

(A) adding at least one quinoid curing agent to a solubilizing organic polar solvent and forming a dissolved quinoid solution,

(B) adding said dissolved quinoid curing agent solution to a rubber cement, and mixing and precipitating during mixing said curing agent in said cement so that a uniform fine dispersion of said curing agent is formed, and

(C) removing the volatile solvent of said mixture to form the dry sealant component wherein the average particle size of said dispersed quinoid curing agent is less than 10 microns.

4,616,049

SURFACE-MODIFIED ANTIMONY OXIDE PARTICLES

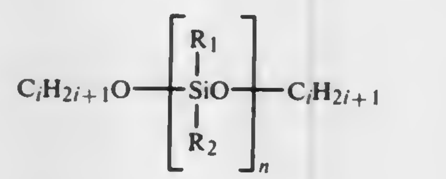
Ralph B. Thompson, Oakbrook, and Kenneth J. Sienkowski, Downers Grove, both of Ill., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 24, 1985, Ser. No. 726,548

Int. Cl.^{4} C08K *9/06;* **B32B** *15/02, 15/20*

U.S. Cl. 523—212 **25 Claims**

1. Particles of antimony oxide surface-modified with poly(-dialkylsiloxane) or condensation residue thereof, wherein said poly(dialkylsiloxane) is represented by the formula



$$C_iH_{2i+1}O\left[\begin{matrix}R_1\\ |\\ SiO\\ |\\ R_2\end{matrix}\right]_n C_iH_{2i+1}$$

in which

(a) each R_1 and each R_2 are alkyl groups,

(b) the average value of i is in the range of from 0 to 2, and

(c) the average value of n is such that the number average molecular weight of said poly(dialkylsiloxane) is in the range of from about 700 to about 5000.

4,616,050

FILLER-CONTAINING HARDENABLE RESIN PRODUCTS

Walter J. Simmons, Rt. 2, Box 234, Martinsburg, W. Va. 25401, and Frank M. Willis, 102 Lenape Tr., Wenonah, N.J. 08090

Continuation-in-part of Ser. No. 615,855, May 31, 1984, abandoned. This application Apr. 9, 1985, Ser. No. 720,026

Int. Cl.^{4} C08K *7/00, 3/34*

U.S. Cl. 523—220 **31 Claims**

1. A filled resin composition of improved flowability and miscibility characteristics and adapted to harden on mixing with a catalyst, said resin composition containing (a) an unsaturated polymerizable polyester resin mixed with a monomeric polymerizable ethylenic crosslinking agent therefor and (b) about from 78 to 88 percent by weight of a particulate solid filler consisting of about from 5 to 50 percent by weight of a coarse filler component comprised of particles in the size range of from 1 to 12.5 mm, and the remainder a fine filler component comprised of particles in a size range whose maximum is below 1 mm.

4,616,051

COMBINATION OF PHENOLIC ANTIOXIDANT AND STABILIZER FOR USE IN ORGANIC MATERIAL

Paula A. Paolino, Watertown, Conn., assignor to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Continuation-in-part of Ser. No. 259,868, May 4, 1981, abandoned, which is a continuation-in-part of Ser. No. 188,191, Sep. 18, 1980, abandoned. This application Sep. 13, 1982, Ser. No. 417,308

Int. Cl.^{4} C08K *5/34, 5/20*

U.S. Cl. 524—102 **15 Claims**

1. A stabilized organic composition comprising an organic material and a stabilizer wherein the stabilizer comprises a mixture of:

(A) the phenolic antioxidant N,N′-bis[2-(3-[3,5-di-t-butyl-4-hydroxyphenyl]propionyloxy)ethyl]oxamide with one of the following stabilizers:

(B_1) 2-hydroxy-4-n-octoxybenzophenone,

(B_2) 2-(3,5-di-t-butyl-2-hydroxyphenyl-5-chlorobenzotriazole, or

(B_3) N-hydroxyethyl-2,2,6,6-tetramethylpiperidino succinic acid ester, wherein the ratio of A/B_1, A/B_2, or A/B_3 is from 1/9 to 9/1

and the stabilizer is from 0.005–5% by weight of the organic material.

4,616,052

HIGH TEMPERATURE CREEP RESISTANT THERMOPLASTIC ELASTOMER COMPOSITIONS

Mohammed Habibullah, Flanders, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jul. 5, 1985, Ser. No. 752,276

Int. Cl.^{4} C08K *5/34*

U.S. Cl. 524—104 **7 Claims**

1. A composition for producing elastomer objects capable of withstanding autoclave temperatures while avoiding high temperature creep, characterized by

(a) within the range of between about 65 and 90 percent of a principle component comprised of dynamically vulcanized ethylen-propylene-diene terpolymer and polypropylene;

(b) within the range of between about 5 and 20 percent of a butyl based rubber;

(c) within the range of between about 0.01 and 5.0 percent of a hindered amine; and

(d) within the range of between about 1 and 20 percent of a plasticizer.

4,616,053

HYDROPHOBIC POLYAMIDES

Klaus-Dieter Schultz; Rolf-Volker Meyer; Rolf Dhein, all of Krefeld; Heinz-Josef Füllmann, Leverkusen, and Dietrich Michael, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 12, 1985, Ser. No. 743,986

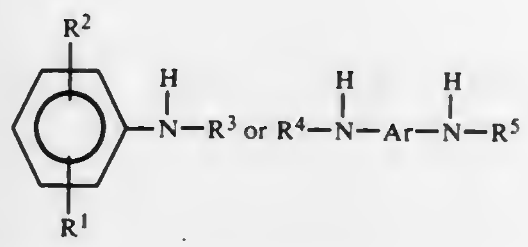
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1984, 3423291

Int. Cl.^{4} C08K *5/17*

U.S. Cl. 524—171 **9 Claims**

1. Thermoplastic polyamide moulding compositions, which contain

(a) from 1.5 to 8% by weight, based on the polyamide, of at least one aromatic amine corresponding to the formulae



wherein

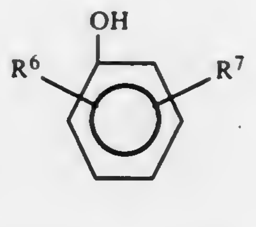
R^1 and R^2 independently represent a hydrogen atom, a C_1–C_{24} alkyl radical, a substituted C_1–C_{24} alkyl radical, a C_6–C_{18} aryl radical, a substituted C_6–C_{18} aryl radical, a C_7–C_{20} aralkyl radical or a substituted C_7–C_{20} aralkyl radical wherein each of the substituted radicals is substituted by at least one C_1–C_{12} alkyl group or a halogen atom and the aryl radicals may be bound to the aromatic amine by a direct bond, —O—, C_1–C_3 alkylene or —SO_2 bridging members, or R^1 and R^2 together represents an aromatic or cycloaliphatic ring having C_5–C_{12},

R^3 represents a hydrogen atom or C_1–C_{24} alkyl radical, C_6–C_{10} aryl radical, or C_7–C_{15} aralkyl radical,

Ar represents a phenylene radical or naphthalene radical unsubstituted or substituted by R^4 and R^5 or Ar is a C_{12}–C_{36} diarylene radical which is unsubstituted or substituted with at least one C_1–C_4 alkyl group and is Ar directly bound to the nitrogen or bound to the nitrogens via —O—, C_1–C_3 alkylene or —SO_2 bridging members, and

R^4 and R^5 are the same or different and each represents a hydrogen atom or a C_1–C_{24} alkyl radical, and

(b) 2 to 8% by weight, based on the polyamide, of a mono phenolic compound having at least 10 carbon atoms, which has at most one substitution in the o-position of the phenolic OH group and corresponds to the formula



wherein

R^6 and R^7 independently represent a hydrogen atom, a C_1–C_{16} alkyl radical, a substituted C_1–C_{16} alkyl radical, a C_6–C_{18} aryl radical, a substituted C_6–C_{18} aryl radical, a C_7–C_{20} aralkyl radical or a substituted C_7–C_{20} aralkyl radical, wherein each of the substituted radicals is substituted by at least one C_1–C_{12} alkyl group or a halogen atom and the aryl radicals may be bound to the phenolic ring via a direct bond, —O—, C_1–C_3 alkylene or —SO_2 bridging members, or R^6 and R^7 together represent an aromatic or cycloaliphatic ring having C_5–C_{12},

with the proviso that the sum of components (a) and (b) always amounts to at most 10% by weight, based on the polyamide.

4,616,054

REDUCTION OF VOLATILE ORGANIC EMISSIONS FROM POLYESTER COMPOSITIONS

Morris R. Olson, Minnetonka, Minn., assignor to Cargill Incorporated, Minneapolis, Minn.

Continuation-in-part of Ser. No. 518,371, Jul. 29, 1983, abandoned, which is a continuation of Ser. No. 339,515, Jan. 15, 1982, abandoned. This application Dec. 18, 1984, Ser. No. 683,182

Int. Cl.^{4} C08L *67/02*

U.S. Cl. 524—317 **35 Claims**

1. A coating composition consisting essentially of

a polyester having a hydroxyl value of at least about 150, said polyester being a reaction product of a dibasic acid or acid anhydride thereof with a polyol selected from the group consisting of propylene glycol, neopentyl glycol, trimethylol propane and mixtures thereof;

a cosolvent comprising water and an organic solvent, said water comprising at least about 2% by weight of said coating composition, said organic solvent having a water solubility in the range from about 5% by weight to complete miscibility in water, and

a cross-linking agent miscible with said polyester and with said cosolvent.

4,616,055

POROUS IRRIGATION PIPE AND METHOD

James W. Mason, Huntington Beach, Calif., assignor to Dasurat Enterprises PTE, Ltd., apore

Continuation-in-part of Ser. No. 573,497, Jan. 24, 1984, Pat. No. 4,517,316. This application May 13, 1985, Ser. No. 733,711

Int. Cl.⁴ C08L *9/00*

U.S. Cl. 524—381 **20 Claims**

1. A porous pipe comprising a hollow pipe having a pipe wall containing uniformly spaced pores, said pipe being formed of uniformly sized, vulcanized elastomer particles differing by no more than 5% from an average size dispersed in a thermoplastic resin, at least 90% of the particles exposed on the inner wall of the pipe being coated with said binder resin.

4,616,056

POLY(ARYL ETHER KETONES) CONTAINING SULFUR

Chi M. Chan, Palo Alto, and Adam C. Tanous, San Francisco, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed May 16, 1985, Ser. No. 735,881

Int. Cl.⁴ C08L *61/16, 71/00*

U.S. Cl. 524—392 **14 Claims**

1. A composition comprising a poly(aryl ether ketone) having intimately dispersed therein from about 0.1% to about 5% sulfur, by weight, based on the weight of the poly(aryl ether ketone), the sulfur present as at least one member of the class consisting of elemental sulfur, aliphatic and aromatic dithiols, polymeric oxidation products thereof comprising repeat units of the formula —R—S—S— where R is a bivalent aliphatic or aromatic radical and inorganic sulphides.

4,616,057

POLYMER EMULSION CONTAINING AN INTERPENETRATING POLYMER NETWORK

Martin K. Lindemann, Greenville, and Kim Deacon, Rockhill, both of S.C., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Jul. 10, 1985, Ser. No. 753,685

Int. Cl.⁴ C08K *3/20*

U.S. Cl. 524—458 **24 Claims**

1. Process for preparing an aqueous polymer emulsion comprising:

(a) forming a first polymer emulsion containing an active crosslinking agent;

(b) mixing a second monomer emulsion with the first polymer emulsion;

(c) allowing the emulsion mixture to equilibrate; and

(d) then polymerizing the emulsion mixture providing a first polymer network which is intertwined on a molecular scale with the second polymer network, wherein the second polymer differs from the first polymer and the first polymer comprises 5 to 95% on a solids by weight basis of the emulsion mixture.

4,616,058

PROCESS FOR PREPARING A STABLE DISPERSION IN AN AQUEOUS MEDIUM OF PARTICLES OF POLYMER

Motoshi Yabuta; Yoshio Sasaki, and Mototaka Iihashi, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Oct. 18, 1985, Ser. No. 789,274

Int. Cl.⁴ C08L *33/02*

U.S. Cl. 524—461 **14 Claims**

1. A process for preparing a stable dispersion in an aqueous medium of particles of polymer, said process comprising the steps of:

(a) reacting at least one radically polymerizable monomer in an organic liquid in the presence of a dispersion stabilizer for the particles to form particles of polymer insoluble in said organic liquid and water, said stabilizer being a resin having in each of its molecules on the average at least 0.3 unit of a polymerizable double bond and a functional group that can be neutralized with an acid or a base, said resin being capable of being emulsifiably dispersed or dissolved in an aqueous medium by neutralization;

(b) neutralizing with acids or bases the functional group of the resin as a dispersion stabilizer; and

(c) replacing the organic liquid of the resulting dispersion of polymer particles with an aqueous medium.

4,616,059

GRAFT-MODIFIED ULTRAHIGH-MOLECULAR-WEIGHT POLYETHYLENE AND PROCESS FOR PRODUCING SAME

Masanori Motooka, and Hitoshi Mantoku, both of Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Aug. 28, 1985, Ser. No. 770,058

Claims priority, application Japan, Aug. 30, 1984, 59-179214

Int. Cl.⁴ C08K *5/01*

U.S. Cl. 524—487 **12 Claims**

1. A graft-modified ultrahigh-molecular-weight polyethylene obtained by grafting (A) an ultrahigh-molecular-weight polyethylene having an inherent viscosity [η], determined at 135° C. in decalin, of at least 5 dl/g with (C) an unsaturated carboxylic acid graft-copolymerizable therewith or its graft-copolymerizable derivative, under melt-kneading condition in the presence of (B) an aliphatic compound having a melting point, determined by the DSC method, of at least 10° C. and a boiling point of at least 130° C. an amount of the component (C) grafted in said graft-modified ultrahigh-molecular-weight polyethylene being 0.01 to 10% by weight, and said graft-modified ultrahigh-molecular-weight polyethylene being substantially free of an insoluble gel product and having a tensile strength of at least 1.0 GPa.

4,616,060

WINDSHIELD WIPER MATERIAL

Paul C. Killgoar, Jr., Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US83/02033, § 371 Date Dec. 27, 1983, § 102(e) Date Dec. 27, 1983, PCT Pub. No. WO85/02856, PCT Pub. Date Jul. 4, 1985

Continuation of Ser. No. 573,971, Dec. 27, 1983, abandoned. This PCT application Dec. 27, 1983, Ser. No. 721,488

Int. Cl.⁴ C08K *3/04;* **B60S** *1/38*

U.S. Cl. 524—574 **12 Claims**

1. An elastomer composition which may be formed into windshield wiper blades and cured, characterized in that said composition comprises an intimate mixture of:

(a) 100 parts by weight of elastomer having a fully saturated backbone;

(b) curing agent for said elastomer in an amount sufficient to crosslink said elastomer;

(c) at least 25 parts by weight particulate graphite; and

(d) reinforcing particulate filler.

4,616,061

AQUEOUS SOLUTIONS OR DISPERSIONS OF POLYISOCYANATE ADDITION PRODUCTS, A PROCESS FOR THE PRODUCTION THEREOF AND THE USE THEREOF AS COATING AGENTS OR AS SIZING AGENTS FOR PAPER

Wolfgang Henning, Kuerten; Walter Meckel, Neuss; Ulrich Beck, Bornheim, and Heinz Bäumgen, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 9, 1985, Ser. No. 785,818

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1984, 3438563

Int. Cl.⁴ C08L *75/04*

U.S. Cl. 524—591 **5 Claims**

1. An aqueous solution or dispersion of a polyisocyanate addition product which contains about 2 to 300 milliequivalents per 100 g of solids of chemically incorporated sulphonate and/or carboxylate groups and up to about 25% by weight, based on solids, of chemically incorporated ethylene oxide units, $-CH_2-CH_2-O-$, in a lateral and/or terminal polyether chain, said sulphonate and/or carboxylate groups and said ethylene oxide units being present in an amount sufficient to guarantee the solubility or dispersibility of said polyisocyanate addition product in water, said polyisocyanate addition product additionally containing structural units corresponding to the formula:

$$-NH-CO-\underset{|}{N}-CO-R$$

wherein

R represents a saturated or unsaturated aliphatic hydrocarbon radical having from 1 to 35 carbon atoms, and aromatic hydrocarbon radical having 6 to 10 carbon atoms or an araliphatic hydrocarbon radical having 7 to 10 carbon atoms, or if several radicals R are present in the same molecule, R may represent different radicals corresponding to this definition;

said polyisocyanate addition product containing a total of incorporated structural units as set forth in the above formula which is determined by the quantity of acylated urea groups corresponding to the formula:

$$-NH-CO-\underset{|}{N}-CO-$$

of about 0.1 to 20% by weight.

4,616,062

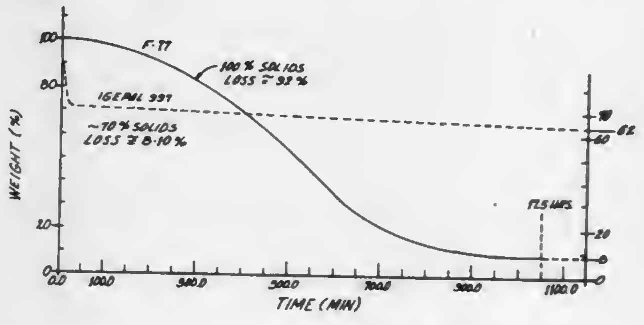
POLYESTER EMULSION

Robert C. Brannon; David A. Coleman, both of Newark, and David G. Miller, Pataskala, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 21, 1985, Ser. No. 789,887

Int. Cl.⁴ C08K *5/13*

U.S. Cl. 524—601 **6 Claims**



SURFACTANT STABILITY

1. Cure stable polyester emulsion consisting essentially of an unsaturated polyester resin emulsified with nonylphenoxypoly (ethyleneoxy) ethanol.

4,616,063

WATER ABSORBENT POLYMER COMPOSITION

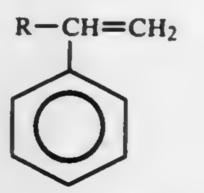
Bi Le-Khac, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 708,772, Mar. 6, 1985, abandoned. This application Jun. 17, 1985, Ser. No. 744,872

Int. Cl.⁴ C08L *53/00*

U.S. Cl. 525—91 **9 Claims**

1. A polymer composition which comprises a first copolymer of recurring units of an αβ-ethylenically unsaturated dicarboxylic anhydride and recurring units of at least one monomer selected from the group consisting of ethylene, propylene, isobutylene, a C_1 to C_4 alkyl acrylate, a C_1 to C_4 alkyl substituted methacrylate, vinyl acetate, methyl vinyl ether and a styrenic monomer having the formula:



wherein R represents hydrogen, an alkyl group having from 1 to 6 carbon atoms and wherein the benzene ring may be substituted with low molecular weight alkyl, or hydroxy groups; and, a multi arm block second copolymer of styrene and ethylene oxide, wherein at least a portion of the recurring anhydride units of said first copolymer have been hydrolyzed to form hydrogen atoms thereon and wherein at least a portion of the oxide groups on the ethylene oxide are interacted with the said hydrogen atoms so that said first copolymer and said second copolymer are linked by hydrogen bonds, said second copolymer having the following formula:

$$(A/B)_nX$$

wherein each A separately represents a polystyrene segment having a number average molecular weight of from about 10,000 to about 100,000; each B separately represents a polyethylene oxide segment having a number average molecular weight of from about 5,000 to about 200,000; X represents the radical of a polyfunctional coupling agent forming the nucleus of the multi arm block copolymer and, n represents an integer from 2 to 12.

4,616,064

POLYMERIC COMPOSITIONS SUITABLE FOR USE IN THE MEDICAL FIELD AND COMPRISING A THERMOPLASTIC OLEFIN, A SILOXANE POLYMER, AND AN ELASTOMER

Mimzee Zukosky, Redwood City, and Ronald L. Dieck, Sunnyvale, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 488,861, Apr. 26, 1983, Pat. No. 4,525,531. This application Jul. 23, 1984, Ser. No. 633,369

Int. Cl.⁴ C08L *53/02, 67/02, 77/00*

U.S. Cl. 525—92 **11 Claims**

1. A polymeric composition which comprises:

(a) 5 to 40% of a thermoplastic polymer which is a polyolefin or a copolymer of an olefin and one or more polar comonomers,

(b) 1 to 10% of a polymeric component consisting essentially of an interpenetrating network of a polysiloxane and a polyurethane or polyamide, the polymeric component containing 2 to 70% by weight of the polysiloxane, and at least 30% by weight of the polyurethane or polyamide, and

(c) 55 to 94% of an elastomer having a Shore D Hardness of less than 60, said elastomer being selected from the group consisting of ionomers, styrene/butadiene copolymers, copolyester thermoplastic elastomers and amorphous polyamides,

the amounts of components (a), (b) and (c) being by weight, based on the total weight of (a), (b) and (c).

4,616,065

HIGH TRANS BUTADIENE BASED ELASTOMERIC BLOCK COPOLYMERS AND BLENDS

Ivan G. Hargis, Tallmadge; Hubert J. Fabris, Akron; Russell A. Livigni, Akron; Sundar L. Aggarwal, Akron; George B. Thomas, Tallmadge, and John A. Wilson, Akron, all of Ohio, assignors to GenCorp Inc., Akron, Ohio

Filed Apr. 15, 1985, Ser. No. 723,385

Int. Cl.⁴ C08L *9/00, 53/00, 47/00*

U.S. Cl. 525—99 **10 Claims**

1. A composition of matter comprising a rubbery solution polymer selected from the group consisting of

I. a high trans copolymer-high vinyl polymer diblock copolymer,

II. a blend of a high trans copolymer and a high vinyl polymer and

III. a blend or mixture of a high trans copolymer-high vinyl polymer diblock copolymer, a high trans copolymer and a high vinyl polymer

a. where said high trans copolymer is a copolymer of butadiene-1,3 and at least one copolymerizable monomer selected from the group consisting of styrene and isoprene, has a Tg of less than about −70° C., has an overall content of about 75 to 85% trans units and not over about 8% vinyl units in the butadiene segments and comprises about 25 to 80% by weight of the composition,

b. where said high vinyl polymer is at least one polymer selected from the group consisting of homo polybutadiene and copolymers of butadiene-1,3 and at least one monomer selected from the group consisting of styrene and isoprene, has a Tg of greater than about −70° C. and not above about −35° C. and has about 40 to 80% vinyl units in the butadiene segments and

c. where in said composition the total overall amount of styrene and/or isoprene is from about 5 to 20% by weight and the total overall amount of vinyl groups is from about 30 to 60%.

4,616,066

VINYL OR ACRYLIC POLYMER-MODIFIED EPOXY RESIN

Akira Tominaga, Hiratsuka, Japan, assignor to Kansai Paint Co., Ltd., Amagasaki, Japan

Filed Oct. 4, 1985, Ser. No. 784,251

Claims priority, application Japan, Oct. 8, 1984, 59-209926

Int. Cl.⁴ C08F *8/00;* **C08L** *61/04, 63/00, 69/00*

U.S. Cl. 525—109 **10 Claims**

1. A vinyl or acrylic polymer-modified epoxy resin comprising a reaction product of

(A) an epoxy group-containing vinyl or acrylic polymer,

(B) a bisphenol compound, and

(C) a diglycidyl ether of a bisphenol compound.

4,616,067

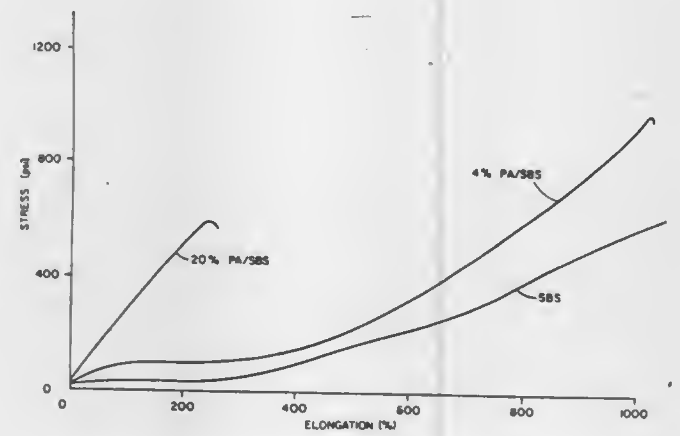
ELECTRICALLY CONDUCTIVE POLYMER BLENDS OF AN ACETYLENE POLYMER AND A TRIBLOCK THERMOPLASTIC ELASTOMER

Kang I. Lee, Framingham, and Harriet Jopson, Weston, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Division of Ser. No. 554,671, Nov. 23, 1983, Pat. No. 4,510,076. This application Dec. 27, 1984, Ser. No. 686,973

Int. Cl.⁴ C08F *1/00*

U.S. Cl. 525—192 **6 Claims**



1. In a method of forming an electrically conductive polymer blend by polymerizing an acetylene monomer in the presence of a triblock copolymer having an elastomeric central block and glassy outer blocks:

the improvement of polymerizing said acetylene monomer under conditions to form an acetylene polymer in the central block portion of said triblock thermoplastic elastomer and doping said acetylene polymer with an electron donor or electron acceptor to provide a conductivity of at least about 10^{-6} ohm^{-1} cm^{-1}.

4,616,068

POLYAMINE TREATED GUAYULE RESIN AND RUBBER COMPOSITIONS CONTAINING THE SAME

William W. Schloman, Jr., Stow, and James A. Davis, Uniontown, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

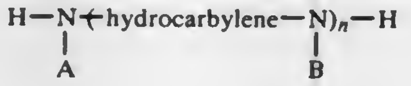
Filed Jul. 2, 1985, Ser. No. 750,955

Int. Cl.⁴ C08F *36/14, 36/02*

U.S. Cl. 525—332.7 **18 Claims**

1. A composition of matter, comprising:

guayule resin chemically crosslinked by treating with a polyamine or a sulfur-containing polyamine, said polyamine having the formula



$$\mathrm{H{-}\underset{A}{N}{+}hydrocarbylene{-}\underset{B}{N})_{\mathit{n}}{-}H}$$

wherein A or B, independently, is hydrogen or hydrocarbon having from 1 to 30 carbon atoms, wherein said hydrocarbylene has from 2 to 20 carbon atoms, and wherein n is an integer from 1 to 10, and said sulfur-containing polyamine having the formula

$H_2N—Z—S—Z—NH_2$,

$H_2N—Z—SO—Z—NH_2$,

$H_2N—Z—SO_2—Z—NH_2$,

and

$H_2N—Z—SS—Z—NH_2$

wherein said Z is a hydrocarbylene having from 2 to 20 carbon atoms.

4,616,069

PROCESS FOR MAKING DIENE POLYMER RUBBERS

Hiroyuki Watanabe, Yokohama; Kohkichi Noguchi, Kamakura; Toshio Kase, Tokyo, and Shuichi Akita, Kamakura, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Oct. 22, 1985, Ser. No. 790,168

Claims priority, application Japan, Oct. 26, 1984, 225495; Oct. 26, 1984, 225496

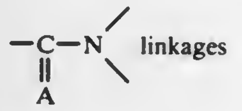
Int. Cl.⁴ C08F *8/00*

U.S. Cl. 525—370 **14 Claims**

1. A process for making a diene polymer rubber which comprises reacting an active diene polymer rubber having alkali metal and/or alkaline earth metal terminals, which is obtained by polymerizing a conjugated diene monomer alone or together with an aromatic vinyl monomer in a hydrocarbon solvent, using an alkali metal and/or alkaline earth metal initiator, with

(1) a tin compound expressed by the general formula R_aSnX_b (in which R stands for an alkyl, alkenyl, cycloalkenyl or aromatic hydrocarbon group; X is a halogen atom; a is an integer of 0–2, and b is an integer of 2–4), and

(2) at least one organic compound selected from the group consisting of aminoaldehydes, aminoketones, aminothioaldehydes, aminothioketones and the organic compounds having in their molecules



$$-\underset{\underset{A}{\|}}{C}-N\langle \quad \text{linkages}$$

in which A stands for an oxygen or sulfur atom).

4,616,070

THERMOPLASTIC MOLDING MATERIALS

Hartmut Zeiner, Plankstadt; Gerhard Heinz, Weisenheim; Peter Neumann, Wiesloch; Juergen Fischer, Ludwigshafen, and Dietmar Nissen, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 8, 1985, Ser. No. 733,048

Claims priority, application Fed. Rep. of Germany, May 8, 1984, 3416856

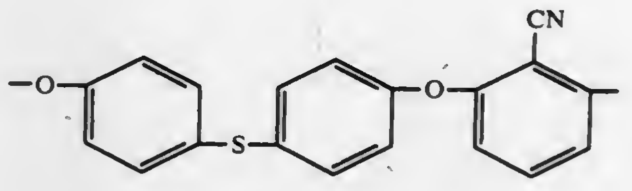
Int. Cl.⁴ C08G *65/48*

U.S. Cl. 525—390 **8 Claims**

1. A thermoplastic molding material containing a mixture of

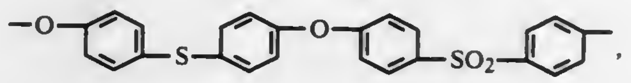
A. from 1 to 99 parts by weight of a polymer which does not contain any reactive groups and has a glass transition temperature above 80° C. and

B. from 99 to 1 parts by weight of a thermoplastic polymeric material containing reactive groups of the formula



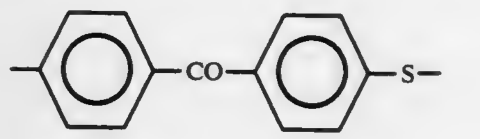
(I)

or of the formula



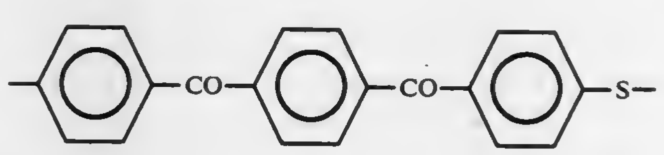
(II)

or of the formula



(III)

or of the formula



(IV)

said polymeric material having a glass transition temperature above 80° C.

4,616,071

COATING COMPOSITION COMPRISING BIS-DIENE OLIGOMERS AND BIS-DIENEOPHILE OLIGOMERS

Joseph W. Holubka, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 456,067, Jan. 6, 1983, Pat. No. 4,515,926. This application Jan. 7, 1985, Ser. No. 689,207

The portion of the term of this patent subsequent to Apr. 30, 2002, has been disclaimed.

Int. Cl.⁴ C08G *59/16;* **C08L** *63/10*

U.S. Cl. 525—524 **11 Claims**

1. A novel thermosetting, solvent-based crosslinkable coating composition comprising:

(A) bis-diene oligomer of number average molecular weight about 300–5000, having the general formula A—R—A′, wherein A and A′ are the same or different and each comprises a substituted or unsubstituted monovalent diene moiety;

(B) bis-dieneophile oligomer, being other than said bis-diene oligomer, of number average molecular weight about 400–1200, having the general formula B—R′—B′, wherein B and B′ are the same or different and each comprises a substituted or unsubstituted dieneophile moiety reactive with said diene moieties A or A′ at elevated cure temperature; said R and R′ being the same or different and each having a bivalent hydrocarbon linking moiety which is substantially unreactive with A, A′, B and B′; and wherein at least one of A—R—A′ and B—R′—B′ bears crosslinking functionality other than diene and dieneophille functionality;

(C) crosslinking agent substantially reactive with said crosslinking functionality at said elevated cure temperature; and

(D) organic solvent.

4,616,072
HALOGENATED ETHYLENE-CARBON MONOXIDE INTERPOLYMER

Mary L. N. White, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 3, 1985, Ser. No. 740,667

Int. Cl.⁴ C08G *69/02;* **C08F** *8/22*

U.S. Cl. 525—539 **22 Claims**

1. A process for halogenating ethylene-carbon monoxide interpolymer, comprising the steps of:

(a) preparing a mixture which includes:

(i) a backbone polymer having interpolymerized therein ethylene and carbon monoxide;

(ii) an ionic halogenation catalyst selected from the group consisting of: Lewis acids and Lewis bases; and

(iii) a liquid medium, said catalyst and halogen being at least partially soluble in said liquid medium and substantially nonreactive therewith;

(b) contacting said backbone polymer in said mixture with halogen in substantial absence of halogen free radicals to react said halogen with said backbone polymer; and

(c) recovering said halogenated polymer from step (b).

4,616,073
HYDROPHOBIC DENTAL COMPOSITES BASED ON A POLYFLUORINATED DENTAL RESIN

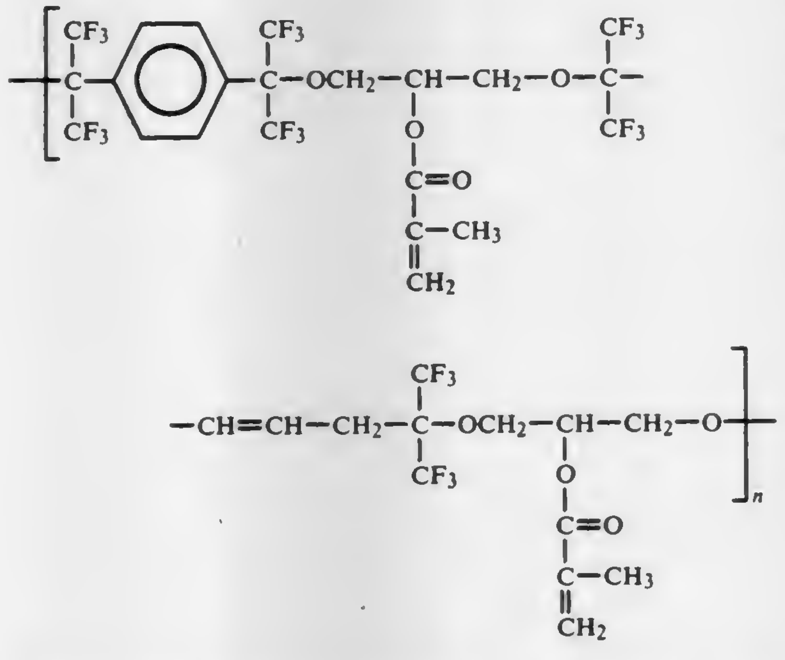
Joseph M. Antonucci, Kensington, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Aug. 9, 1984, Ser. No. 639,673

Int. Cl.⁴ A61C *13/08;* **C08F** *214/18*

U.S. Cl. 526—246 **5 Claims**

1. A dental composition comprising a resinifiable mixture, wherein said mixture comprises a major portion of a polyfluorinated polyfunctional methacrylate prepolymer according to the following formula:



wherein n is an integer averaging about 10, and a minor portion of a diluent monomer selected from the group consisting of compatible alkyl methacrylates, unsubstituted alkylene dimethacrylates and fluoroalkyl methacrylates.

4,616,074
ACRYLIC-METHYLENE SUCCINIC ESTER EMULSION COPOLYMERS FOR THICKENING AQUEOUS SYSTEMS

Charles G. Ruffner, Hamilton County, Tenn., assignor to Alco Chemical Corporation, Chattannoga, Tenn.

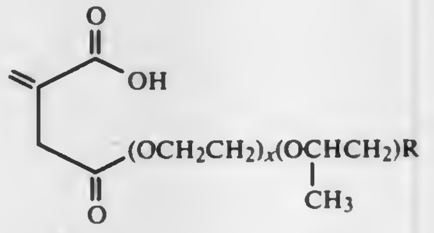
Continuation-in-part of Ser. No. 782,571, Oct. 1, 1985, which is a continuation-in-part of Ser. No. 719,768, Apr. 4, 1985, abandoned. This application Jan. 13, 1986, Ser. No. 818,027

Int. Cl.⁴ C08F *20/28*

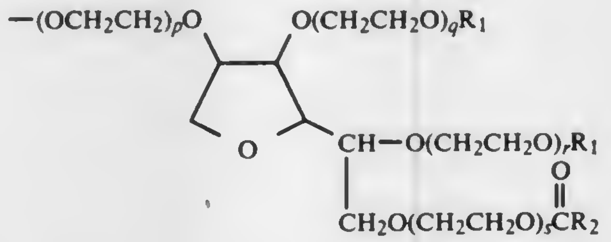
U.S. Cl. 526—318 **20 Claims**

1. A copolymer obtained by aqueous emulsion copolymerization of a monomer system comprising

(A) about 1 to about 25 percent of at least one substituted monomer of the formula:

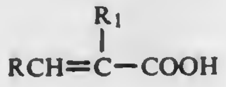


in which x is an integer from 1 to 150, and y is an integer from 0 to 50, where R is alkoxy, alkylphenoxy, dialkylphenoxy, or alkyl carbonyloxy having 5 to 30 carbon atoms, or a sorbitan fatty ester of the formula



where each of p, q, r and s is an integer and the sum of said integers is from 0 to 100, R_1 is H or $—COR_2$ and R_2 is alkyl, alkylphenyl, or dialkylphenyl having 5 to 30 carbon atoms;

(B) about 5 to about 70 percent of a copolymerizable α, β-ethylenically unsaturated carboxylic acid monomer of the formula



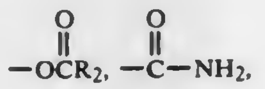
$$RCH{=}\overset{\displaystyle R_1}{\overset{|}{C}}—COOH$$

where R is H and R_1 is H, an alkyl group containing from 1 to 4 carbon atoms, or $—CH_2COOX$; R is —COOX and R_1 is H, and X is H or an alkyl group containing from 1 to 4 carbon atoms,

(C) about 10 to about 90 percent of at least one nonionic, copolymerizable α, β-ethylenically unsaturated monomer of the formula

$CH_2{=}CYZ$

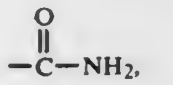
where Y is H and Z is CN, Cl, —COOR, $—C_6H_4R$,



$$—O\overset{\displaystyle O}{\overset{\|}{C}}R_2,\ —\overset{\displaystyle O}{\overset{\|}{C}}—NH_2,$$

or

$—CH{=}CH_2$; Y and Z are Cl, and Y is CH_3 and Z is CN,



$$—\overset{\displaystyle O}{\overset{\|}{C}}—NH_2,$$

$—CH{=}CH_2$, $—C_6H_4R$, or $—COOR_1$, and R is H, Cl, Br or alkyl containing from 1 to 4 carbon atoms; R_1 is alkyl containing from 1 to 12 carbon atoms, or hydroxyalkyl containing from 2 to 8 carbon atoms, and R_2 is alkyl containing from 1 to 8 carbon atoms; and

(D) up to 1 percent of a copolymerizable polyethylenically unsaturated cross-linking monomer, said percentages being by weight, based on the total weight of said monomers.

4,616,075
STORAGE OF GUAYULE BY DENSIFICATION

Shrikant R. Malani, Akron, and Frank J. Clark, Massillon, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 4, 1985, Ser. No. 719,843

Int. Cl.⁴ C08G *83/00;* **C08C** *4/00*

U.S. Cl. 528—1 **17 Claims**

1. A process for prolonged storage of guayule by densification, comprising the steps of:

shear free compressing ground guayule material, and forming in a cavity of densified brittle pellet having about a 50% to about a 325% increase in density so that said pellet retains at least 70% of its molecular weight during a two week period of time.

9. A densified guayule pellet comprising:

the pellet, said pellet being brittle and having a density of from about 3 pounds to about 8.5 pounds per gallon, said pellet having approximately a 70% weight average molecular weight retention based upon the original molecular weight over a two-week period of time.

4,616,076
ORGANOPOLYSILOXANE COMPOUNDS CONTAINING SIC-BONDED ALKOXYSILYLALKYL AND POLYOXYALKYLENE RADICALS

Isao Ona; Masaru Ozaki; Tadashi Fujii, and Yoichioro Taki, all of Chiba, Japan, assignors to Toray Silicone Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1985, Ser. No. 800,186

Claims priority, application Japan, Nov. 27, 1984, 59-249890

Int. Cl.⁴ C08G *77/06*

U.S. Cl. 528—15 **10 Claims**

1. Organopolysiloxane compounds having the formula

$A(R_2SiO)_x(RQSiO)_y(RGSiO)_zSiR_2A$

wherein

Q denotes a radical having the formula $—R'SiX_aR_{(3\text{-}a)}$

G denotes a radical having the formula

$—R'O(C_2H_4O)_b(C_3H_6O)_cR''$,

A denotes a radical selected from the group consisting of R, Q and G radicals and, at each occurrence,

X denotes an alkoxy or alkoxyalkoxy radical having from 1 to 5 carbon atoms,

R denotes a monovalent hydrocarbon or halogenated hydrocarbon radical having from 1 to 10 carbon atoms,

R′ denotes an alkylene radical having from 2 to 5 carbon atoms,

R″ denotes a hydrogen atom or a monovalent organic radical having from 1 to 5 carbon atoms,

a has a value of 2 or 3,

b has a value of from 0 to 100,

c has a value of from 0 to 100,

c plus b has a value of from 2 to 200,

x has a value of from 1 to 500,

y has a value of from 0 to 100 and

z has a value of from 0 to 100,

there being, per molecule of said organopolysiloxane compound, an average of at least 1 each of Q radicals and G radicals, at least one of which is an A radical.

4,616,077
METHOD FOR PREPARING CYCLIC POLYCARBONATE OLIGOMER FROM BISCHLOROFORMATE COMPOSITION

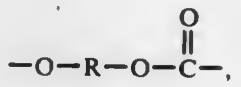
James M. Silva, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 22, 1985, Ser. No. 800,865

Int. Cl.⁴ C08G *63/62*

U.S. Cl. 528—371 **16 Claims**

1. A method for preparing a composition comprising cyclic polycarbonate oligomers characterized by structural units of the formula

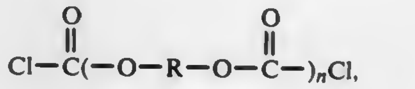


$$—O—R—O—\overset{\displaystyle O}{\overset{\|}{C}}—, \qquad (I)$$

where R is a divalent aromatic radical, which comprises:

simultaneously charging the following to a tank reactor:

(A) a bischloroformate composition consisting essentially of bischloroformates of the formula



$$Cl—\overset{\displaystyle O}{\overset{\|}{C}}(—O—R—O—\overset{\displaystyle O}{\overset{\|}{C}}—)_nCl, \qquad (II)$$

wherein n is at most 3 in a major proportion of said bischloroformates;

(B) at least one aliphatic or heterocyclic tertiary amine which dissolves preferentially in the organic phase of the reaction mixture;

(C) an aqueous alkali metal hydroxide solution; and

(D) a substantially non-polar organic liquid which forms a two-phase system with water;

reagent A being charged separately from reagents B and C: while maintaining the reaction mixture in said tank reactor under agitation conditions just sufficient to prevent segregation of the aqueous and organic liquid phases;

allowing said reagents to react for a period of time sufficient to form the desired cyclic oligomers; and

recovering said oligomers.

4,616,078
PROCESS FOR PURIFYING PROINSULIN-LIKE MATERIALS

Richard D. DiMarchi, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 8, 1985, Ser. No. 720,641

Int. Cl.⁴ C07K *3/12, 3/18, 3/20*

U.S. Cl. 530—305 **14 Claims**

1. A process for separating impurities from an impure mixture containing proinsulin-like material with substantially complete recovery of said proinsulin-like material, which comprises:

(1) applying a complex, impure mixture obtained, without purification, as a result of recombinant DNA expression of a proinsulin-like material to a reverse phase macroporous acrylate ester copolymer resin support at a pH of from about 7 to about 10; and

(2) eluting said proinsulin-like material from said support with an aqueous eluant having a pH of from about 8 to about 11 and containing from about 10% to about 30% by volume of an organic diluent selected from the group consisting of acetone, acetonitrile, and a combination of acetone and acetonitrile.

4,616,079

IMMUNOAMPLIFIERS AND PROCESSES FOR THE EXTRACTION THEREOF

A. Arthur Gottlieb, New Orleans, La., assignor to Imreg, Inc., New Orleans, La.

Filed Aug. 24, 1984, Ser. No. 643,724

Int. Cl.^{4} C07K *1/14, 15/06;* **A61K** *35/14*

U.S. Cl. 530—344 **18 Claims**

1. A process of purifying amplifier material from an extract of human leukocytes, and of separating said material from substantially all fluorescamine-reactive material and from other extraneous material, comprising the steps of:

(1) dialyzing said extract through a dialysis membrane having a nominal molecular weight cutoff of about 3500, thereby producing a dialysate;
(2) applying said dialysate to a reverse-phase high pressure liquid chromatography column, packed with octadecylsilane;
(3) eluting said column with a pH-adjusted acetonitrile-in-aqueous-phosphate-solution gradient, thereby producing a plurality of effluent-fractions; and
(4) selecting predetermined effluent-fractions, and collecting them.

4,616,080

SIMPLIFIED PROCESS OF FORMING CRYSTALLINE CEFTAZIDIME PENTAHYDRATE

Ta-Sen Chou, Indianapolis, and Robert E. Lakin, Brownsburg, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jul. 2, 1984, Ser. No. 627,321

Int. Cl.^{4} C07D *501/46;* **A61K** *31/545*

U.S. Cl. 540—225 **6 Claims**

1. In the process for preparing (6R, 7R)-7-[(Z)-2-(2-aminothiazol-4-yl)-2-(2-carboxyprop-2-oxyimino)acetamido]-3-(1-pyridiniummethyl)-3-cephem-4-carboxylate pentahydrate in crystalline form which comprises the steps of (1) mixing (6R, 7R)-7-[(Z)-2-(2-tritylaminothiazol-4-yl)-2-(2-t-butyloxycarbonylprop-2-oxyamino)acetamido]-3-(1-pyridiniummethyl)-3-cephem-4-carboxylate with 98% formic acid and concentrated hydrochloric acid or concentrated hydrobromic acid, (2) isolating the (6R, 7R)-7-[(Z)-2-(2-aminothiazol -4-yl)-2-(2-carboxyprop-2-oxyimino)acetamido]-3-(1-pyridiniummethyl)-3-cephem-4-carboxylic acid dihydrochloride or dihydrobromide, (3) forming an aqueous solution of said dihydrochloride or said dihydrobromide and (4) adjusting the pH of said solution to 3.3 to 4, the improvement which comprises mixing said acid mixture of step 1 with an organic solvent selected from the group consisting of ethyl acetate, methyl ethyl ketone, diethyl ketone, methyl isobutyl ketone, methylene chloride and methyl n-propyl ketone in an amount sufficient to form a 2-phase system; separating the aqueous phase and adjusting the pH of the aqueous phase to between about 3.5 and about 4.5.

4,616,081

CEPHALOSPORIN COMPOUNDS

Joji Nishikido; Eiji Kodama, and Chisei Shibuya, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

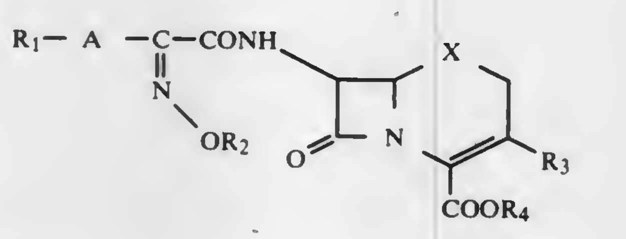
Filed Jul. 6, 1983, Ser. No. 511,183

Claims priority, application Japan, Jul. 7, 1982, 57-116945; Oct. 8, 1982, 57-176048; Jan. 11, 1983, 58-1720; Apr. 13, 1983, 58-63750; Apr. 18, 1983, 58-66960; Apr. 18, 1983, 58-66961

Int. Cl.^{4} C07D *501/36;* **A61K** *31/545*

U.S. Cl. 540—222 **8 Claims**

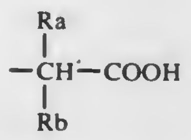
1. A cephalosporin compound represented by the following formula (II) or a physiologically acceptable addition salt thereof:



(I)

wherein

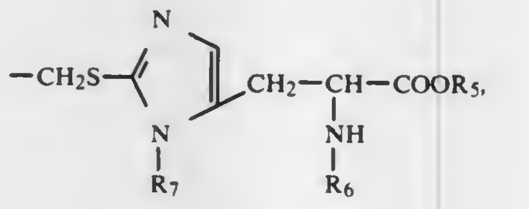
R$_1$ represents an amino group or a protected amino group;
A represents a 5- or 6-membered heterocyclic ring containing therein 1 to 4 nitrogen, oxygen or sulfur atoms;
R$_2$ represents a normal alkyl group having 1 to 6 carbon atoms, a branched alkyl group having 3 to 6 carbon atoms, an alkoxyalkyl group having 2 to 6 carbon atoms, a cycloalkyl group having 3 to 6 carbon atoms; a cycloalkenyl group having 3 to 6 carbon atoms; a phenyl group; a benzyl group; a 3- to 6-membered heterocyclic ring containing 1 to 4 nitrogen, sulfur or oxygen atoms, or,

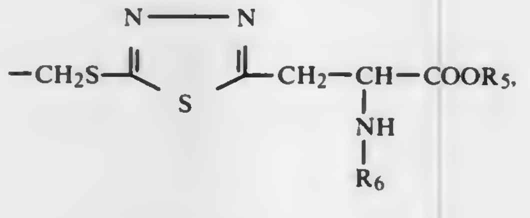


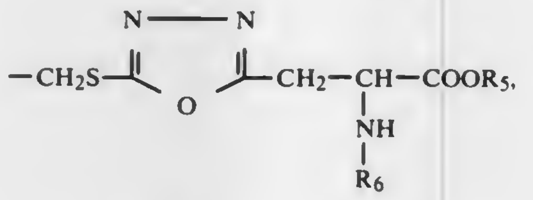
$$-\underset{Rb}{\overset{Ra}{\underset{|}{\overset{|}{CH}}}}-COOH$$

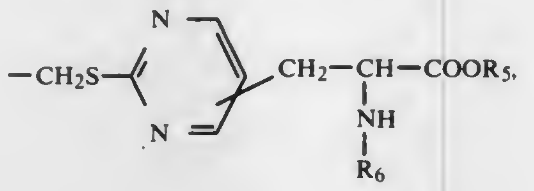
wherein Ra and Rb each, which may be the same or different, represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms;

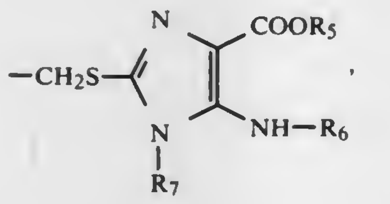
R$_3$ represents a compound selected from the group consisting of:











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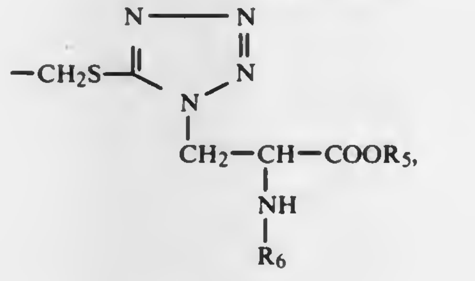
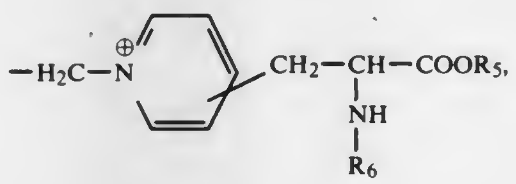
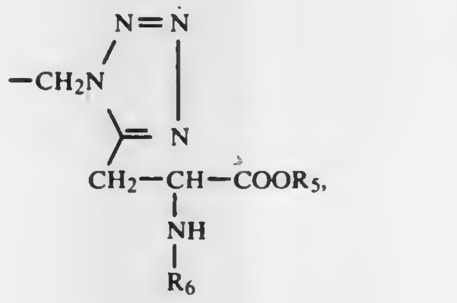
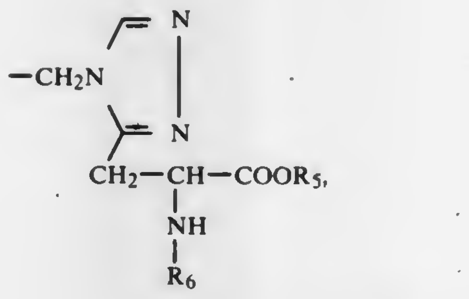
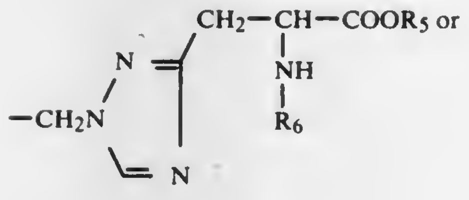
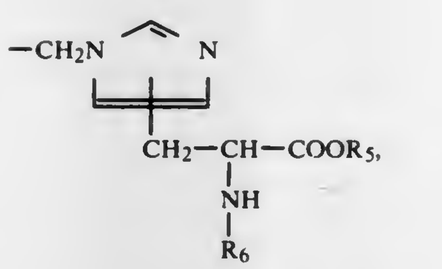












wherein R$_5$ represents a hydrogen atom or a protective group of a carboxyl group; R$_6$ represents a hydrogen atom or a protective group of an amino group; and R$_7$ represents a hydrogen atom or a normal alkyl group having 1 to 6 carbon atoms or a branched alkyl group having 3 to 6 carbon atoms;

X represents a sulfur atom; and

R$_4$ represents a hydrogen atom or a protective group of a carboxyl group.

4,616,082

HYDROQUINONE ETHER COMPOUNDS

Frederick H. Howell, Atherton, England, assignor to Ciba-Geigy AG, Basel, Switzerland

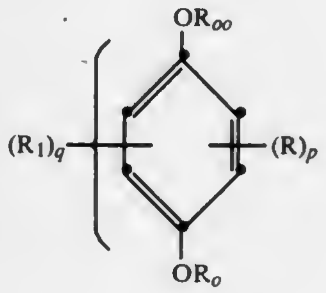
Division of Ser. No. 504,283, Jun. 14, 1983, Pat. No. 4,549,015. This application Jun. 7, 1985, Ser. No. 743,473

Claims priority, application United Kingdom, Jun. 16, 1982, 8217445; Dec. 15, 1982, 8235665

Int. Cl.^{4} C07C *43/205, 43/23;* **C07D** *265/30*

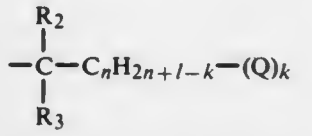
U.S. Cl. 544—87 **10 Claims**

1. A compound having the formula I



(I)

wherein p is 1 or 2 and q is 0 or 1, provided that p+q is 1 or 2; R is a residue of formula II

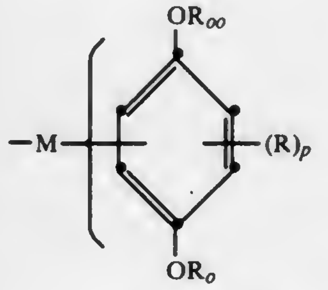


$$-\underset{R_3}{\overset{R_2}{\underset{|}{\overset{|}{C}}}}-C_nH_{2n+1-k}-(Q)_k$$

(II)

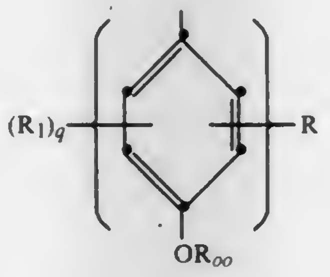
wherein Q is selected from the residues:

(i) —OX wherein X is R$_7$ or —COR$_7$, wherein R$_7$ is —H or a C$_1$–C$_{20}$ straight or branched chain alkyl group, a C$_3$–C$_{20}$ straight or branched chain alkenyl group, a C$_3$–C$_{12}$ cycloalkyl group, a C$_7$–C$_{13}$ aralkyl group, or a C$_6$–C$_{10}$ aryl group, optionally substituted by one or two C$_1$–C$_4$ alkyl groups;
(ii) —N(R$_8$)(R$_9$) wherein R$_8$ and R$_9$ independently, are —H or a C$_1$–C$_{20}$ straight or branched chain alkyl group, a C$_3$–C$_{20}$ straight or branched chain alkenyl group, a C$_3$–C$_{12}$ cycloalkyl group, a C$_7$–C$_{13}$ aralkyl group or a C$_6$–C$_{10}$ aryl group optionally substituted by one or two C$_1$–C$_4$ alkyl groups, or an acyl group of formula —COR$_7$ wherein R$_7$ has its previous significance, or R$_8$ and R$_9$, together with the nitrogen atom to which they are each bonded, form a 5- or 6-membered heterocyclic ring, optionally substituted by one or two C$_1$–C$_4$ alkyl groups;
(iii) —SO$_2$R$_{12}$ wherein R$_{12}$ is —OH, —Cl or —N(R$_5$)(R$_7$) wherein R$_5$ is hydrogen, a straight or branched chain C$_1$–C$_{20}$ alkyl group or a C$_5$–C$_6$ cycloalkyl group and R$_7$ is as previously defined; provided that, when R$_{12}$ is —OH, then R$_1$ is a residue of formula II; and
(iv) —NO$_2$; n is an integer from 1 to 20; k is 1 or 2; R$_2$ and R$_3$ are the same or different and each is straight or branched chain alkyl group having from 1 to 5 carbon atoms; R$_1$ is C$_1$–C$_8$ straight or branched chain alkyl, C$_5$–C$_7$ cycloalkyl optionally substituted by one or two methyl or ethyl groups, C$_7$–C$_9$ aralkyl or a residue of formula II as hereinbefore defined, and when R$_1$ is a residue of formula II then R$_1$ and R may be the same or different; or R$_1$ is a residue of formula III:



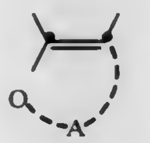
(III)

in which R and p have their previous significance; and M is a direct bond; —C(R_{13})(R_{14})— in which R_{13} and R_{14} are the same or different and are hydrogen, C_1-C_{20} straight or branched chain alkyl optionally interrupted by 1 to 3 sulphur atoms, C_6-C_{10} aryl or R_{13} and R_{14}, together with the carbon atom to which they are attached may form a 5- or 6-membered ring which may be further substituted by one or two C_1-C_8 straight or branched chain alkyl groups; —S—; —S-S—; —SO_2—; —CH_2SCH_2—; —CH_2OCH_2— or —$C(CH_3)_2$-p-phenylen-$C(CH_3)_2$—; R_o and R_{oo} are the same or different and each is hydrogen, a C_1-C_{20} straight or branched chain alkyl group optionally interrupted by 1 to 5 oxygen atoms, a C_3-C_{12} cycloalkyl group, a C_6-C_{10}aryl group optionally substituted by one or two C_1-C_4 straight or branched chain alkyl groups, or a C_7-C_{13}aralkyl group provided that both of R_o and R_{oo} are not hydrogen, or R_{oo} has its previous significance and R_o is a residue of formula IV:



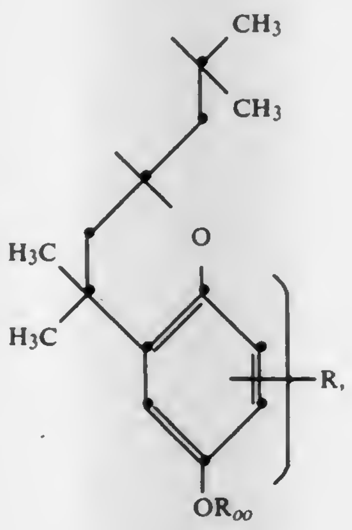
(IV)

in which R, R_{oo}, R_1 and q have their previous significance, or R_o and R_1, when in ortho position to one another, together with the carbon atoms to which they are attached, may form an optionally substituted residue of formula V:



(V)

wherein A is a carbon residue containing 4 to 20 carbon atoms which forms a substituted chroman or coumaran system, or R_o and R_1 together may form a residue having the formula VI or VII:



(VI)

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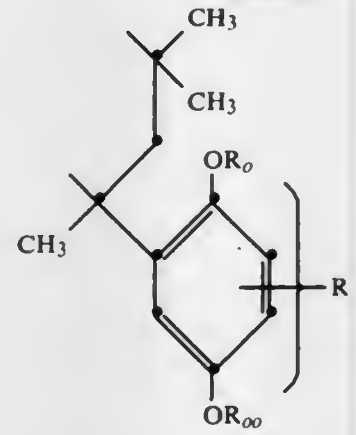
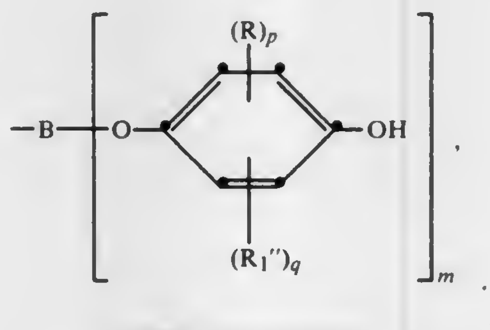
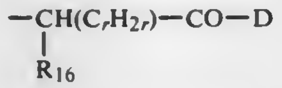


(VII)

wherein R, R_o and R_{oo} have their previous significance, provided that the compound of formula I contains only one residue of formula III or IV; or R_{oo} is hydrogen and R_o is a residue having the formula IVa or IVb:



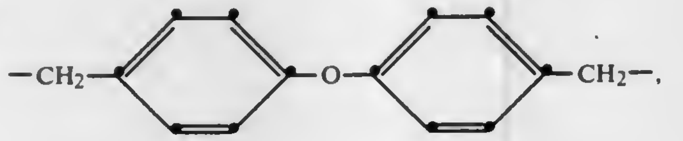
(IVa)

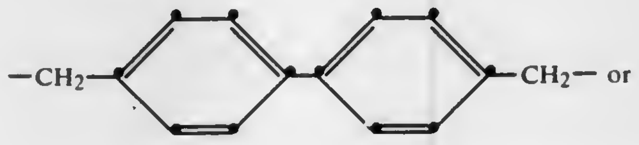


$$-\underset{\displaystyle R_{16}}{\underset{|}{C}}H(C_rH_{2r})-CO-D$$

(IVb)

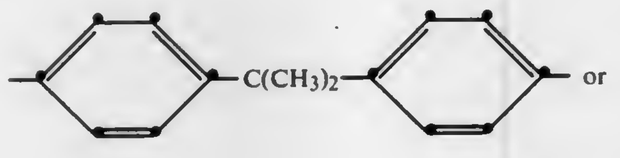
wherein p, q and R have their previous significance, R_1'' is C_1-C_8 straight or branched alkyl, C_7-C_9 aralkyl or a residue of formula II, as hereinbefore defined, m is 1 or 2, B, when m is 1, represents C_2-C_{12} alkylene which may be interrupted by 1 to 3 oxygen or sulphur atoms, C_4-C_{10} alkenylene, C_5-C_{12} cycloalkylene, C_6-C_{12}arylene, C_8-C_{12} aralkylene, C_{4-6}alkynylene, xylylene, —$CH_2CH(OH)CH_2$—, —$CH_2CH(OH)CH_2$—O—Y—O—$CH_2CH(OH)CH_2$—,





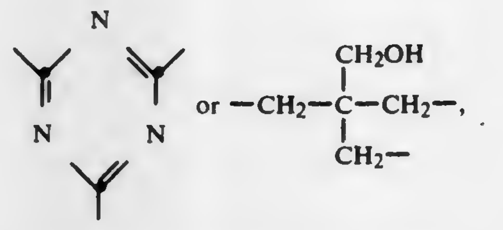
—CH_2COO—B'—$OCOCH_2$—

wherein Y is C_2-C_{10}alkylene, C_6-C_{12} arylene,

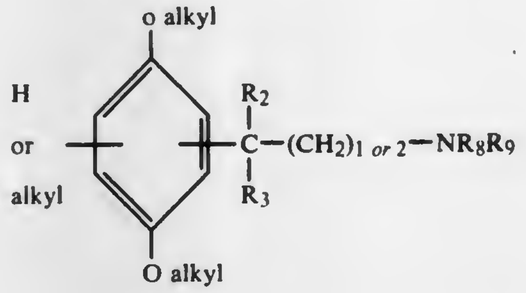


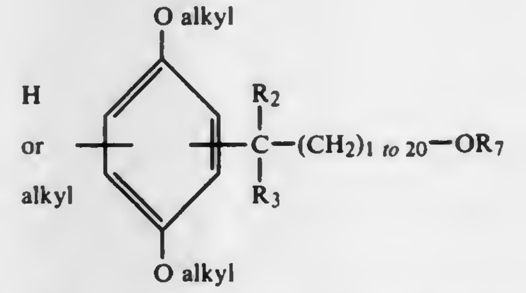
C_6-C_{12} cycloalkylene,

B' is C_2-C_8alkylene, C_4-C_8 oxaalkylene, or cyclohexylene and, when m is 2, B represents a group of the formula



r is 0 to 12, R_{16} represents hydrogen or straight or branched C_1-C_{12}alkyl and D is —OR_4 or —N(R_4)(R_5) wherein R_4 independently is (1) —H, (2) a C_1-C_{20} straight or branched chain alkyl optionally interrupted by 1 to 5 oxygen atoms and optionally substituted by a group —OR_6 wherein R_6 is C_3-C_{12} cycloalkyl, straight or branched C_3-C_{20} alkenyl, C_6-C_{10} aryl optionally substituted by one or two C_1-C_4 alkyl groups or C_7-C_{13} aralkyl, (3) a C_2-C_{20} divalent straight or branched chain alkylene residue, (4) a C_3-C_{20} straight or branched chain alkenyl group, (5) a C_3-C_{12} cycloalkyl group, (6) a C_6-C_{10} aryl group optionally substituted by one or two C_1-C_8 alkyl groups, (7) a C_7-C_{13} aralkyl group, (8) a 5 or 6 membered heterocycle containing an oxygen atom, and optionally substituted by one or two C_1-C_4 straight or branched chain alkyl groups, or (9) methyl substituted by a 5 or 6 membered heterocycle containing an oxygen atom and optionally substituted by one or two C_1-C_4 straight or branched chain alkyl groups and R_5 is hydrogen, a straight or branched chain C_1-C_{20} alkyl group or a C_5-C_6 cycloalkyl group and with the proviso that the compounds of the following formulas are excluded





wherein R_2 and R_3 are as defined herein, R_8 and R_9 are H or alkyl and R_7 is H or alkyl; or a salt of compounds of formula I with a base or organic or inorganic acid, respectively, when Q is an acidic or basic group.

4,616,083
STABLE ANTIBACTERIAL LYOPHILIZATES

Kazuhiro Shima, Nara; Masayoshi Inoue, Osaka, and Takayuki Tsukada, Hyogo, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Aug. 17, 1984, Ser. No. 641,821

Claims priority, application Japan, Aug. 22, 1983, 58-153938

The portion of the term of this patent subsequent to Jul. 30, 2002, has been disclaimed.

Int. Cl.⁴ C07D *498/04*

U.S. Cl. **544—90** **5 Claims**

1. A lyophilized preparation of an antibacterial, 7β-difluoromethylthioacetamido-7α-methoxy-3-[1-(2-hydroxyalkyl)-1H-tetrazol-5-yl]thiomethyl-1-dethia-1-oxa-3-cephem-4-carboxylic acid alkali metal salt, containing, as a stabilizer, an alkali metal salt of a mineral acid.

4,616,084
PROCESS FOR THE PREPARATION OF 7-ACYLAMINO-3-HYDROXY-CEPHEM-4-CARBOXYLIC ACIDS AND 7-ACYLAMINO-3-HYDROXY-1-DETHIA-1-OXACEPHEM-4-CARBOXYLIC ACIDS

Dieter Häbich, and Wolfgang Hartwig, both of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

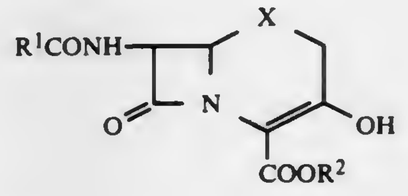
Filed Jul. 31, 1984, Ser. No. 636,470

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1983, 3328707; May 23, 1984, 3419135

Int. Cl.⁴ C07D *501/02;* **A61K** *31/545*

U.S. Cl. **540—215** **7 Claims**

1. A process for the preparation of a 7-acylamino-3-hydroxy-2-cephem-4-carboxylic acid, 7-acylamino-3-hydroxy-1-dethia-1-oxa-3-cephem-4-carboxylic acid or derivative thereof of the formula



in which

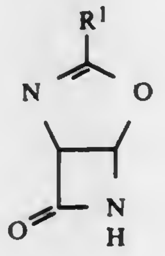
R^1 is hydrogen or optionally substituted alkyl, alkenyl, alkinyl, aralkyl, aryl, heteroaryl, heteroaralkyl, aryloxyalkyl, heteroaryloxyalkyl, alkoxyalkyl, arylthioalkyl, heteroarylthioalkyl, alkylthioalkyl, alkoxy, aryloxy, alkylthio or arylthio,

R^2 is hydrogen, a carboxy-protective group or a pharmaceutically useful ester radical, and

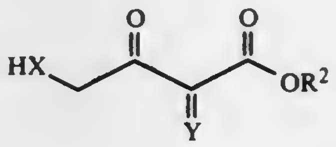
X is sulphur or oxygen,

which comprises:

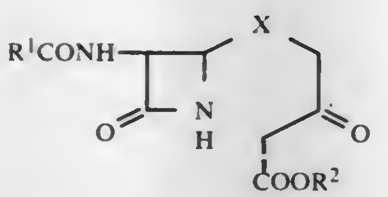
(a) reacting a compound of the formula



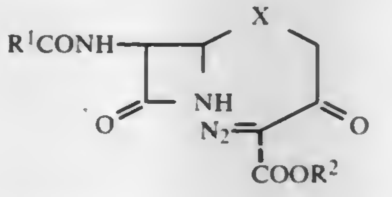
with a compound of the formula



in which R^2 and X have the abovementioned meaning and Y represents diazo (N_2) or hydrogen (H_2) in an inert solvent in the presence of a Lewis acid or proton acid catalyst, selected from the group consisting of trifluoroacetic acid, trifluoromethanesulphonic acid, perchloric acid, tetrafluoboric acid, hydrochloric acid, quadratic acid, p-toluenesulphonic acid, camphorsulphonic acid, polyphosphoric acid, boron trifluoride, zinc-II chloride, silicon tetrachloride, tin-II chloride, titanium-IV chloride, antimony-V chloride, iron-III chloride, antimony-III chloride, trimethylsilyl trifluoromethanesulphate, trimethylsilyl trifluoroacetate, an acid ion exchanger and silica gel, the compounds thus obtained, for Y being hydrogen (H_2)—(in case of Y=diazo (N_2) directly the compounds of formula (2) are obtained) thereby to produce a compound of the formula



(b) reacting such compound with an azide in a solvent in the presence of a base selected from the group consisting of an alkali metal carbonate, alkali metal amide, triethylamine, diethylamine, diisopropylethylamine, pyridine, dimethylaniline, 1,5-diazabicyclo-undec-5-ene (DBU) and DBN to give a compound of the formula



and

(c) converting said compound at a temperature of about 40°-120° C. to the desired product by
(i) irradiation with a light source of wavelength ≧ 300 nm
(ii) warming in the presence of catalyst selected from the group consisting of complexes or salts of transition metals or elemental transition metals.

4,616,085

THIOETHERS OF IMIDAZOLINES

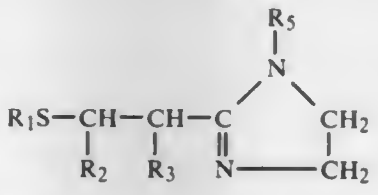
Neil E. S. Thompson, Creve Coeur; Derek Redmore, Webster Groves; Bernardus A. Oude Alink, St. Louis, and Benjamin T. Outlaw, Webster Groves, all of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 320,050, Nov. 10, 1981, which is a division of Ser. No. 161,198, Jun. 19, 1980, Pat. No. 4,332,967. This application Nov. 24, 1982, Ser. No. 444,417

Int. Cl.⁴ C07D *239/02, 233/04*

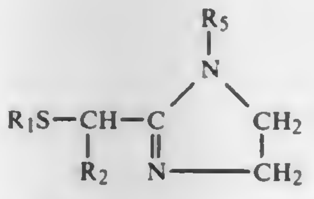
U.S. Cl. 544—335 **10 Claims**

1. A composition having the following formula:



where R_1 is an alkyl or cycloalkyl group, R_2 and R_3 are hydrogen or alkyl and R_5 is hydrogen, alkyl, cycloalkyl or hydroxyalkyl.

8. A composition having the following formula:



where R_1 is an alkyl or cycloalkyl group, R_2 is hydrogen or alkyl and R_5 is hydrogen, alkyl, cycloalkyl or hydroxyalkyl.

4,616,086

PIPERAZINE-SUBSTITUTED ARYL AND ARALKYL CARBOXYLIC ACIDS USEFUL FOR TREATING INFIRMATIES CAUSED BY EXCESS LIPIDS OR THROMBOCYTE

Ernst-Christian Witte, Mannheim; Hans P. Wolff, Hirschberg-Grosssachsen; Bernd Hagenbruch, Lampertheim; Karlheinz Stegmeir, Heppenheim, and Johannes Pill, Leimen, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

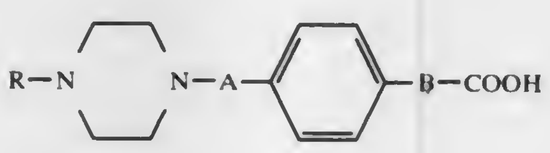
Continuation of Ser. No. 422,638, Sep. 24, 1982, abandoned. This application Oct. 1, 1984, Ser. No. 657,032

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1981, 3139970

Int. Cl.⁴ C07D *241/04;* **A61K** *31/495*

U.S. Cl. 544—383 **22 Claims**

1. A carboxylic acid compound of the formula:



(I)

wherein
- A is a valency bond or a saturated branched or straight-chained lower alkylene chain having 1 to 3 carbon atoms,
- B is a valency bond, a saturated lower aliphatic chain having 1 to 3 carbon atoms or an unsaturated lower aliphatic chain having 2 or 3 carbon atoms, and
- R is a hydrogen atom, a straight-chained or branched alkyl group with 1 to 16 carbon atoms, a straight-chained or branched alkyl group with 1 to 3 carbon atoms substituted up to three times by substituents individually selected from the group consisting of hydroxyl, carboxyl, sulphonic acid, 3,5-di-tert-butyl-4-hydroxyphenoxy, phenoxy or phenoxy substituted by a substituent individually selected from the group consisting of C_1–C_6 lower alkyl, C_1–C_6 lower alkoxy, halogen, nitro, cyano, carboxyl or acetylamino residue; or
- R is a phenylalkyl group, or a 3,5-di-tert-butyl-4-hydroxyphenylalkyl group or a phenylalkyl group the phenyl part being substituted by a substituent individually selected from the group consisting of halogen, hydroxyl, C_1–C_6 lower alkoxy, cyano, carboxyl, nitro, acetylamino residue, C_1–C_6 lower alkyl or trifluoromethyl and wherein the alkyl part of which is saturated or unsaturated and has up to 4 carbon atoms; or R is a phenacyl group or a phenacyl group the phenyl part of which is substituted by halogen, hydroxyl or C_1–C_6 lower alkyl; or
- R is 2-methyl-3-phenylpropionyl, 3-phenylpropionyl, cinnamoyl, phenacetyl, benzoyl, the phenyl group being the 3,5-di-tert-butyl-4-hydroxyphenyl group or being unsubstituted or substituted by a substituent individually selected from the group consisting of halogen, hydroxyl or C_1–C_6 lower alkyl, or an acyl group derived from methane-sulphonic acid, benzenesulphonic acid or phenacylsulphonic acid; or
- R is a phenyl group or a phenyl group substituted by halogen, trifluoromethyl, phenyl, phenoxy, benzyloxy, 4-chlorobenzyl or 4-chlorophenoxy;

with the proviso that when A is a valency bond, R cannot be hydrogen, methyl, ethyl, hydroxyethyl, benzyl or phenyl; and

a physiologically acceptable salt, ester or amide thereof formed at the B-COOH carboxyl group, wherein the amides are simple or C_1–C_6 lower alkyl or hydroxy lower amides and the esters are C_1–C_6 lower alkyl, C_2–C_{12} di-lower alkyl, amino C_1–C_6 lower alkyl or benzyl.

21. Composition for depressing lipids, which composition comprises a pharmacologically acceptable carrier and, in effective amounts, the compound claimed in claim **1**.

22. Composition for inhibiting thrombocyte aggregation which composition comprises a pharmacologically acceptable carrier and, in effective amounts the compound claimed in claim **1**.

4,616,087

2,5-BIS ALKYL SULFONYL AND 2,5-BIS ALKYL THIO SUBSTITUTED-PYRIDINES

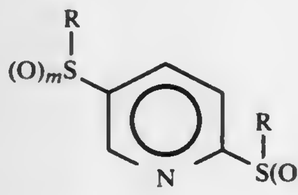
Steven G. Wood, Orem, Utah, assignor to The Dow Chemical Company, Midland, Mich.

Filed May 21, 1982, Ser. No. 380,642

Int. Cl.⁴ C07D *211/72, 211/84*

U.S. Cl. 546—294 **20 Claims**

1. A compound of the formula:



wherein m represents the integer 0 or 2; and R represents an alkyl group of from 1 to 7 carbon atoms, inclusive, cyclopentyl, cyclohexyl, or a Ar—$(CH_2)_q$— group wherein q represents the integer 0, 1, 2 or 3 and Ar represents a phenyl or naphthyl group, which phenyl or naphthyl group is optionally substituted with 1 to 3 substituents each independently selected from bromo, chloro, fluoro, methyl or methoxy.

4,616,088

AMINO ACID ESTER AND AMIDE RENIN INHIBITOR

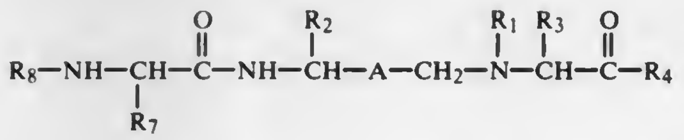
Denis E. Ryono, Princeton, and Edward W. Petrillo, Jr., Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 666,015, Oct. 29, 1984, abandoned. This application Dec. 14, 1984, Ser. No. 681,756

Int. Cl.⁴ C07D *211/70, 333/22, 307/02, 233/64, 209/18;* **C07C** *103/19, 103/00, 103/20, 103/07, 125/06, 101/02, 125/06*

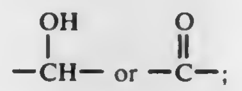
U.S. Cl. 546—336 **14 Claims**

1. A compound of the formula



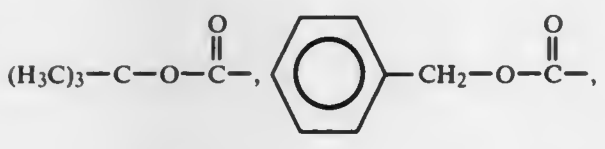
$$R_8-NH-\underset{R_7}{\underset{|}{CH}}-\overset{O}{\overset{\|}{C}}-NH-\overset{R_2}{\overset{|}{CH}}-A-CH_2-\overset{R_1}{\overset{|}{N}}-\overset{R_3}{\overset{|}{CH}}-\overset{O}{\overset{\|}{C}}-R_4$$

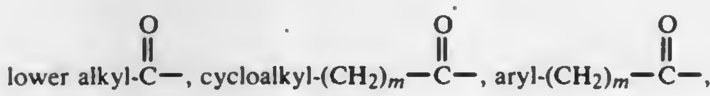
including a pharmaceutically acceptable salt thereof wherein:
A is



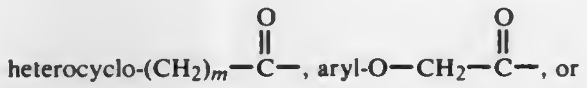
$$-\overset{OH}{\overset{|}{CH}}-\text{ or }-\overset{O}{\overset{\|}{C}}-;$$

R_4 is —NR-R_5;
R_5 is hydrogen, lower alkyl, —$(CH_2)_m$-aryl or —$(CH_2)_m$-heterocyclo;
m is zero, one, two, three or four;
R_8 is hydrogen,



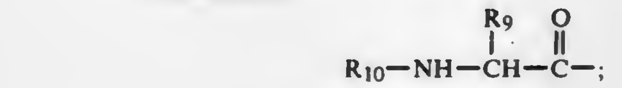


$$\text{lower alkyl-}\overset{O}{\overset{\|}{C}}-,\ \text{cycloalkyl-}(CH_2)_m-\overset{O}{\overset{\|}{C}}-,\ \text{aryl-}(CH_2)_m-\overset{O}{\overset{\|}{C}}-,$$



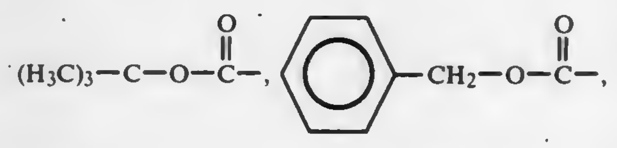
$$\text{heterocyclo-}(CH_2)_m-\overset{O}{\overset{\|}{C}}-,\ \text{aryl-}O-CH_2-\overset{O}{\overset{\|}{C}}-,\text{ or}$$

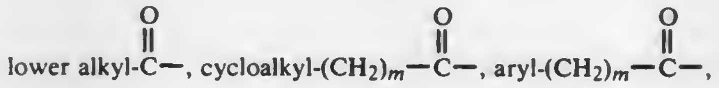
-continued



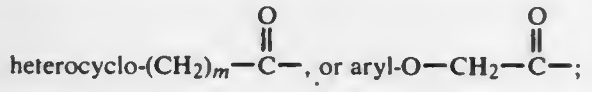
$$R_{10}-NH-\overset{R_9}{\overset{|}{CH}}-\overset{O}{\overset{\|}{C}}-;$$

R_{10} is hydrogen,



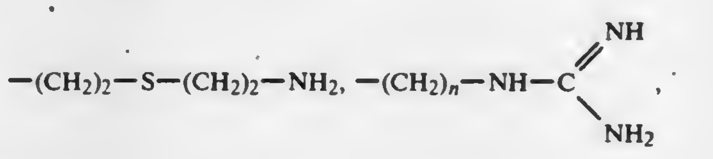


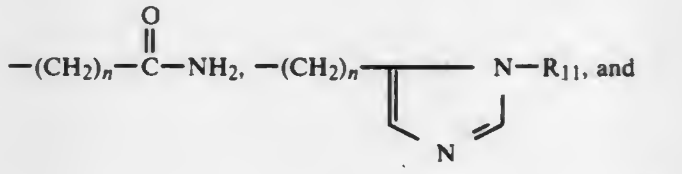
$$\text{lower alkyl-}\overset{O}{\overset{\|}{C}}-,\ \text{cycloalkyl-}(CH_2)_m-\overset{O}{\overset{\|}{C}}-,\ \text{aryl-}(CH_2)_m-\overset{O}{\overset{\|}{C}}-,$$



$$\text{heterocyclo-}(CH_2)_m-\overset{O}{\overset{\|}{C}}-,\text{ or aryl-}O-CH_2-\overset{O}{\overset{\|}{C}}-;$$

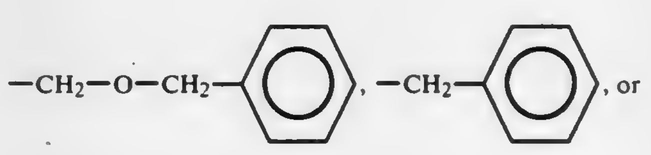
R_2, R_3, R_7 and R_9 are independently selected from the group consisting of hydrogen, lower alkyl, halo substituted lower alkyl, —$(CH_2)_n$—aryl, —$(CH_2)_n$—heterocyclo, —$(CH_2)_n$—OH, —$(CH_2)_n$—NH_2, —$(CH_2)_n$—SH, —$(CH_2)_n$—S-lower alkyl,

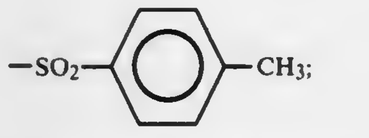




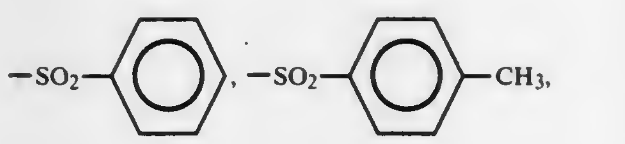
$-(CH_2)_n-$cycloalkyl;

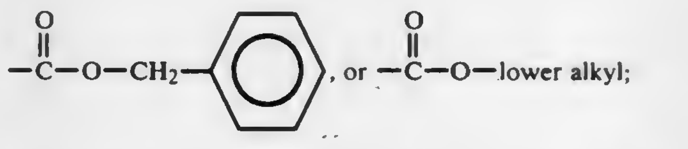
n is an integer from 1 to 4;
R_{11} is





R_1 hydrogen, lower alkyl, —$(CH_2)_n$—aryl, —$(CH_2)_n$—cycloalkyl,





the term lower alkyl refers to straight or branched chain radicals having up to seven carbon atoms;
the term cycloalkyl refers to saturated rings of 4 to 7 carbon atoms;
the term halogen refers to Cl, Br, and F;

the term halo substituted lower alkyl refers to such lower alkyl groups in which one or more hydrogens have been replaced by Cl, Br, or F groups;

the term aryl refers to phenyl, 1-naphthyl, 2-naphthyl, mono substituted phenyl, 1-naphthyl, or 2-naphthyl wherein said substituent is lower alkyl of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, halogen, hydroxy, amino, —NH-alkyl wherein alkyl is of 1 to 4 carbons, or $—N(alkyl)_2$ wherein alkyl is of 1 to 4 carbons, di or tri substituted phenyl, 1-naphthyl or 2-naphthyl wherein said substituents are methyl, methoxy, methylthio, halogen, or hydroxy; and

the term heterocyclo refers to 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, imidazolyl, and indolyl.

4,616,089

SYNTHETIC ANTI-INFLAMMATORY DERIVATIVES OF MANOALIDE

Robert S. Jacobs, Santa Barbara, and D. John Faulkner, La Jolla, both of Calif., assignors to University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 519,853, Aug. 3, 1983, abandoned. This application Jun. 18, 1984, Ser. No. 621,879

Int. Cl.^{4} C07D *307/58*

U.S. Cl. 549—323 **1 Claim**

1. 3,7-Bis(hydroxymethyl)-4-hydroxy-11-methyl-13-(2′,6′,6′-trimethylcyclohexenyl)-2,6,10-tridecatrienoic acid γ-lactone.

4,616,090

2-ARYLIMIDAZOPYRIDINES INTERMEDIATES

Rochus Jonas, Darmstadt, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

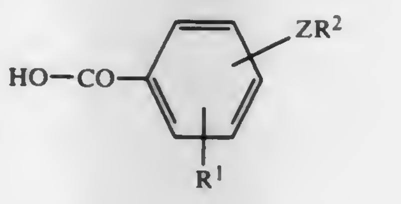
Filed Aug. 19, 1982, Ser. No. 409,471

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1981, 3132754; Oct. 1, 1981, 3139064

Int. Cl.^{4} C07C *121/66, 63/64*

U.S. Cl. 558—397 **7 Claims**

1. A compound of the formula



wherein

R^1 is alkoxy of 1-5 C atoms,

R^2 is propargyl or cyanomethyl, and

Z is —O—, —S— or —SO—.

4,616,091

NAPHTHALENYLOXY CARBOXYLIC ACIDS

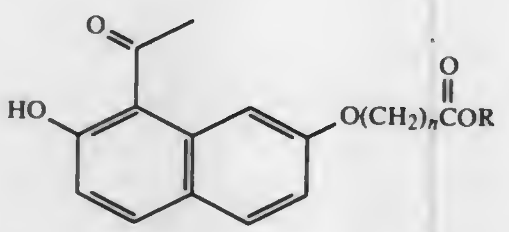
Ronald A. LeMahieu, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 763,120, Aug. 7, 1985, abandoned, which is a division of Ser. No. 477,100, Mar. 21, 1983, Pat. No. 4,550,190. This application Jan. 8, 1986, Ser. No. 817,791

Int. Cl.^{4} C07C *69/76*

U.S. Cl. 560—53 **7 Claims**

1. A compound of the formula



VII

wherein R is hydrogen or lower alkyl, and n is an integer of 1 to 5.

4,616,092

β-FORMYL-β-HYDROXY ESTER

Teruaki Mukaiyama, Tokyo; Yoji Sakito, Ibaraki, and Masatoshi Asami, Yokohama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 18, 1981, Ser. No. 235,559

Claims priority, application Japan, Mar. 31, 1980, 55-42412

Int. Cl.^{4} C07C *69/675*

U.S. Cl. 560—177 **1 Claim**

1. An optically active or inactive ethyl β-formyl-β-hydroxybutyrate.

4,616,093

PROCESS FOR PREPARING A DIESTER OF OXALIC ACID IN THE VAPOR PHASE

Louis A. Kapicak, Charleston, and Joseph P. Henry, South Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 227,640, Jan. 23, 1981, abandoned. This application Mar. 12, 1981, Ser. No. 239,762

Int. Cl.^{4} C07C *67/36*

U.S. Cl. 560—204 **1 Claim**

1. The vapor phase heterogeneous process for preparing a diester of oxalic acid which comprises contacting a vaporous ester of nitrous acid with carbon monoxide in the vapor state in the presence of a solid palladium supported catalyst comprising metallic palladium or a salt thereof deposited on a non-acidic, alpha alumina carrier having a surface area between about 0.001 and 10 square meters per gram at a temperature of between about 50° C. and about 200° C., wherein such ester of nitrous acid is formed by reaction of a nitrogen compound with a saturated aliphatic monohydric alcohol and recovering a diester of oxalic acid, in which the ester group corresponds to the alcohol formed in making the ester of nitrous acid.

4,616,094

ISOLATION OF LIQUID UREA FROM THE OFF-GAS OF THE SYNTHESIS OF MELAMINE

Klaus Borho, Mutterstadt; Dieter Fromm, Gruenstadt; Ernst-Juergen Schier, Altleiningen; Hans H. Schneehage, Weisenheim, and Alfred Widmann, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 287,785, Jul. 28, 1981, abandoned. This application Jan. 5, 1984, Ser. No. 568,500

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1980, 3031124

Int. Cl.^{4} C07C *126/08*

U.S. Cl. 564—073 **3 Claims**

1. In a process for isolating liquid urea or a mixture of liquid urea and its thermal decomposition products from the off-gases of the synthesis of melamine, which arise on catalytic conversion of urea at an elevated temperature, and have been freed from melamine by fractional condensation and subsequently been washed with a wash liquid comprising molten urea or a mixture of molten urea and its thermal decomposition products, the improvement which comprises: passing the gas-liquid mixture coming from the wash zone and containing 2-10 kg of the melt per kg of pure gas tangentially, at a velocity of 8-30

m/sec, into the upper part of an axially symmetrical separation zone, where, due to the rotation imparted to the gas-liquid mixture, the two phases are separated from one another and both are moved downward, in the same direction, through the separation zone, and gas and separated-out liquid are taken off separately from one another at the bottom end of the separation zone, the mean residence time of the gas mixture in the separation zone being not less than 0.5 second.

4,616,095

ISOMER-DIRECTED PROCESS FOR PRODUCING ASYMMETRIC KETONES USING CATALYTIC CLAISEN REARRANGEMENT OF ALLYLIC ETHERS, INTERMEDIATES, AND USES OF PRODUCTS AND INTERMEDIATES OF PROCESS IN PERFUMERY

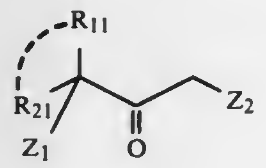
Mark A. Sprecker, Sea Bright; Robert P. Belko, Woodbridge; William L. Schreiber, Jackson, and Michael Licciardello, Little Silver, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 602,646, Apr. 20, 1984, Pat. No. 4,548,743. This application Aug. 13, 1985, Ser. No. 765,342

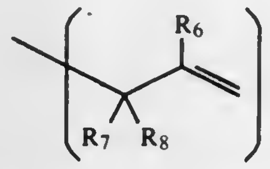
Int. Cl.^{4} C07C *45/51*

U.S. Cl. 568—322 **10 Claims**

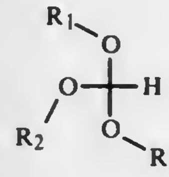
1. A process for preparing a mixture of asymmetric ketones defined according to the structure:



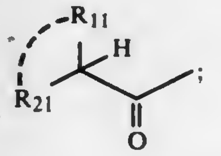
wherein one of the Z_1 or Z_2 is the moiety:



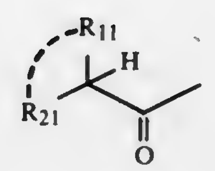
and the other of Z_1 or Z_2 is hydrogen; wherein (i) one of R_{11} or R_{21} represents hydrogen and the other of R_{11} or R_{21} represents a moiety selected from the group consisting of n-pentyl and phenylmethyl or (ii) R_{11} and R_{21} taken together form a 3,3-dimethylcyclohexyl moiety; and wherein R_6, R_7 and R_8 are the same or different and each represents hydrogen and methyl, comprising the steps of reacting a trialkylorthoformate having the structure:



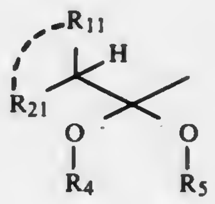
with a ketone having the structure:



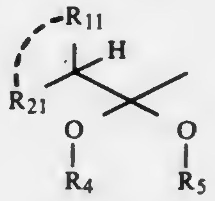
wherein R_1, R_2 and R_3 are the same or different C_1-C_3 lower alkyl at a temperature in the range of from −10° C. up to 50° C., with the mole ratio of ketone having the structure:



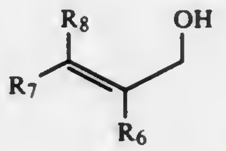
to trialkylorthoformate is from 1:1 up to 1:2 whereby a ketal having the structure:



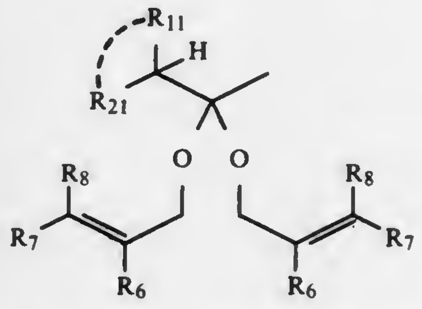
is formed; then reacting the ketal having the structure:



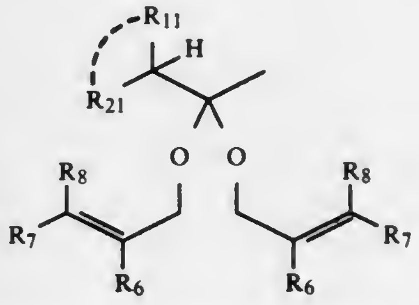
with an allylic alcohol having the structure:



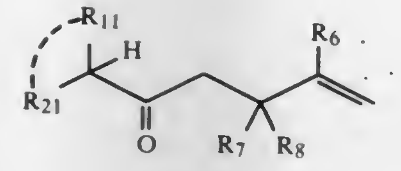
at a temperature of from 120° C. up to 220° C. with the mole ratio of ketal:allylic alcohol being from 1:1 up to 1:3, in order to form a diallyl ketal having the structure:



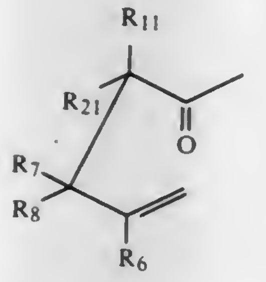
wherein R_4 and R_5 each represents one of R_1, R_2 or R_3; and then effecting a Claisen rearrangement of the diallylic ketal having the structure:



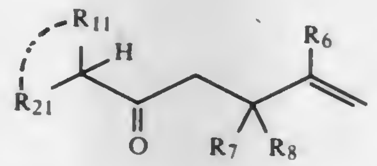
in the presence of a basic catalyst which is an alkali metal alkanoate at a temperature in the range of from 120° C. up to 150° C., the mole percent of basic catalyst in the reaction mass varying from about 0.01% up to about 0.40 mole percent, the reaction mass being maintained at a pH of between 7 and 11 and then distilling the reaction product, the mixture of isomers thus produced having the structures:



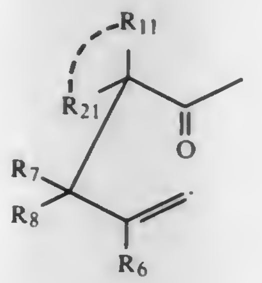
and



from the reaction mass by means of fractional distillation; with more than 50% of the reaction product containing the isomer having the structure:



and less than 50% of the reaction product being an isomer having the structure:



4,616,096

PROCESS FOR THE PRODUCTION OF ALDEHYDES

Boy Cornils, Dinslaken; Helmut Bahrmann, Brunen; Wolfgang Lipps, Isny, and Werner Konkol, Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 29, 1985, Ser. No. 770,732

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1984, 3431840

Int. Cl.⁴ C07C *45/50*

U.S. Cl. 568—454 **14 Claims**

1. A process for the production of aldehydes having 3 to 21 carbon atoms comprising reacting olefins having 2 to 20 carbon atoms with carbon monoxide and hydrogen in the presence of water and a water-soluble rhodium complex, containing carbon monoxide, hydrogen, and sulfonated or carboxylated phosphines as a catalyst in a reaction mixture, thereby forming an organic phase and an aqueous phase, and subjecting said mixture to ultrasound of at least 20 kHz.

4,616,097

PROCESS FOR LOW PRESSURE SYNTHESIS OF ETHYLENE GLYCOL FROM SYNTHESIS GAS PLUS FORMALDEHYDE

John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Oct. 22, 1984, Ser. No. 663,281

Int. Cl.⁴ C07C *29/00, 31/20*

U.S. Cl. 568—852 **4 Claims**

1. A process for making ethylene glycol from synthesis gas, i.e., a mixture of carbon monoxide and hydrogen, and formaldehyde which comprises reacting said synthesis gas and formaldehyde in the presence of a catalyst comprising an effective amount of cobalt carbonyl compound and a halogen-free organosilicone compound from the group consisting of triethysilane, triphenylsilane, hydroxytriphenylsilane, diphenylsilane, tricyclohexylsilane and tetramethylsilane in the presence of a monocyclic ether at a temperture of from 100° C. to 220° C. and a pressure of from about 1000 psi to less than 4000 psi, wherein the molar ratio of cobalt to silicon in the added cobalt-containing compound and the silicon-containing promoter is in the range from 1:0.1 to 1:10.

4,616,098

PREPARATION OF OLEFINS FROM METHANOL/DIMETHYL ETHER

Wolfgang Hoelderich, Frankenthal; Walter Himmel, Fussgoenheim; Wolf D. Mross, Frankenthal, and Matthias Schwarzmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 478,996, Mar. 25, 1983, abandoned. This application Sep. 12, 1984, Ser. No. 649,977

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1982, 3211399; Jan. 14, 1983, 3300982

Int. Cl.⁴ C07C *1/20*

U.S. Cl. 585—640 **9 Claims**

1. A process for the preparation of olefins by converting methanol and/or dimethyl ether in the presence of a zeolite catalyst at elevated temperatures, wherein the catalyst used is a borosilicate zeolite which has been molded together with an amorphous binder containing aluminum oxide and silicon dioxide wherein said binder is selected from aluminum silicate or a mixture of highly dispersed silicon dioxide and highly dispersed aluminum oxide.

4,616,099

FAMILY GROUP OF SUCCESSIVE RADIATION INDUCED CHRYSANTHEMUM MUTANTS NAMED SNAPPER

A. Graham Sparkes, Hangleton Lane, Ferring, Worthing, West Sussex, England (BN12 6PP)

Filed Jul. 19, 1982, Ser. No. 399,899

Int. Cl.⁴ A01G *1/00;* **A01H** *5/00*

U.S. Cl. 800—1 **(15 of 17 Drawing(s) in Color)** **18 Claims**

1. A chrysanthemum plant of the *morifolium ramat* species having a rapid growth rate reaching a height ranging from about 85 cm. to about 112 cm. within substantially two long-day weeks at 60° F. with internode lengths approximately 30 mm. and a stem diameter of from 4 to 7 mm.; a reliable 8 to 12 weeks short-day response in winter light and 45° to 60° night temperature, this plant having a continuous year-round flowering capability producing a profusion of flowers borne in compound lateral clusters; each cluster comprising 10 to 14 flowers each having a newly-opened diameter of 70 to 80 mm., a fully expanded diameter of 70 to 90 mm., florets comprising approximately 23 to 30 ray florets of about 35 to 45 mm. long and about 10 to 20 mm. wide and approximately 220–260 disc florets, the disc florets being of a green color (R.H.S. 144B) before dehiscence and yellowing on dehiscence, the average disc diameter being about 20 mm.; this plant being further distinguished by its high sensitivity and responsiveness to CO_2 and supplementary light, with bud and flower development at 50° F. or less, by its very rapid apical leaf formation with as

much as one leaf per day in high light, by its free branching with rapid and erect shoot development, by having a chromosome count of 54 of which one chromosome is telocentric; and wherein the color of the ray florets is one of the group consisting of the R.H.S. designations 4D (Primrose Yellow), 5D (Dresden Yellow), 12D (Aureolin) overlaid with 182A, 11B (Straw Yellow), 14C (Lemon Yellow), 22B (Orange Buff), 23D (Cadmium Orange), 24B, 24C (Tangerine Orange), 26C, 26D (Spanish Orange), 34B, 31B (Burnt Orange), 75C-D, 155D (White), 159B overlaid with 186A, 161C overlaid with 182C and 4C overlaid with 70A.

4,616,100

PRODUCTION OF IMPROVED PLANTS HAVING AN INCREASED TOLERANCE TO THE PRESENCE OF A NORMALLY DELETERIOUS CONCENTRATION OF A PLURALITY OF INORGANIC SALTS

Alan G. McHughen, Saskatoon, Canada, assignor to Crop Development Centre of the University of Saskatchewan, Saskatoon, Canada

Filed Jan. 26, 1984, Ser. No. 574,052

Int. Cl.⁴ A01B *79/00;* **C12N** *5/00*

U.S. Cl. 800—1 **45 Claims**

1. A process for providing plants of a non-halophytic angiosperm crop which is capable of undergoing self-pollination having an enhanced ability to grow successfully in a soil comprising a noramlly deleterious concentration of a plurality of inorganic salts comprising:

(a) tissue culturing in vitro in a first culture medium a substantial quantity of cells derived from at least one of said plants of said non-halophytic angiosperm crop in the absence of a deleterious concentration of inorganic salts wherein substantial disorganized cell growth takes place which is accompanied by genetic variation,

(b) tissue culturing in vitro cells from said first culture medium in a second culture medium which is substantially lacking in a hormone component and comprises a plurality of inorganic salts which are provided in a concentration which is normally injurious to cells of said crop wherein a substantial quantity of said cells are killed and at least one cell survives and multiplies which has undergone genetic variation wherein an atypical functioning single gene is present which is dominant for increased tolerance to the totality of salts present in said normally injurious concentration in said second culture medium,

(c) recovering from said second culture medium living cells which possess said genetic variation, and

(d) regenerating at least one complete plant from said cells which were receovered in step (c).

ELECTRICAL

4,616,101
VENTILATION PANEL FOR ELECTROMAGNETIC SHIELDING

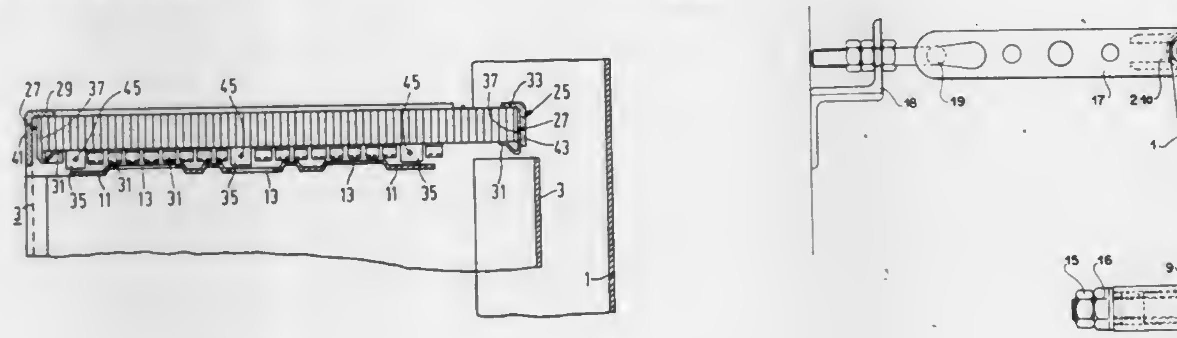
Frederik W. J. Veerman, and Jan H. Jonker, both of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 15, 1984, Ser. No. 671,662

Claims priority, application Netherlands, Jul. 13, 1984, 8402224

Int. Cl.⁴ H05K *9/00*

U.S. Cl. 174—35 MS **13 Claims**



1. A ventilation and electromagnetic shielding panel comprising a rectangular frame having two pairs of opposite sides, and situated therein a rectangular plate-shaped grating composed of cells, wherein said frame sides each have an L-shaped cross-section formed by top and side flanges, said panel further comprising a mounting spring having a body part secured to said side flange of said frame and a plurality of resilient comb-shaped feet, said grating being resiliently clamped between said feet and said top flange of said frame.

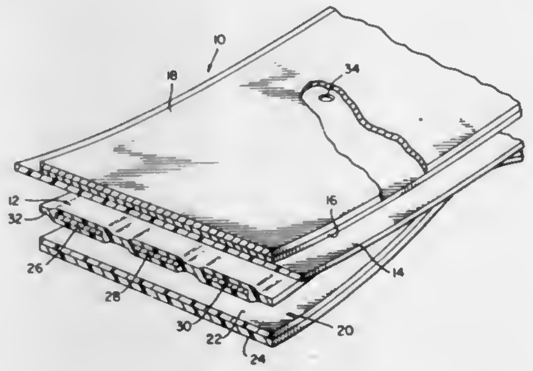
4,616,102
FLAT CONDUCTOR ELECTRICAL CABLE ASSEMBLY

Peter Noorily, Queens, N.Y., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Feb. 21, 1980, Ser. No. 123,489

Int. Cl.⁴ H01B *7/08, 7/18*

U.S. Cl. 174—36 **13 Claims**



1. An electrical cable assembly, comprising:

an elongate electrical cable having a plurality of flat conductors in an electrically insulative casing;

an electrically insulative member extending lengthwise on said cable and having a portion defining an opening therethrough in registry with an exclusive one of said conductors;

a first electrically conductive member extending lengthwise with said cable, overlying said insulative member, and having successive lengthwise extents respectively secured and unsecured to said cable, a secured conductive member extent being electrically connected to said exclusive conductor through said opening; and

a second electrically conductive member extending lengthwise on and separably overlying said first electrically conductive member, said first conductive member being not more anodic in the electromotive series than said second conductive member.

4,616,103
DEVICE WITH CONTROLLED DEFORMATION FOR PROTECTING POWER LINES AGAINST OVERLOADING DUE TO THE WEATHER

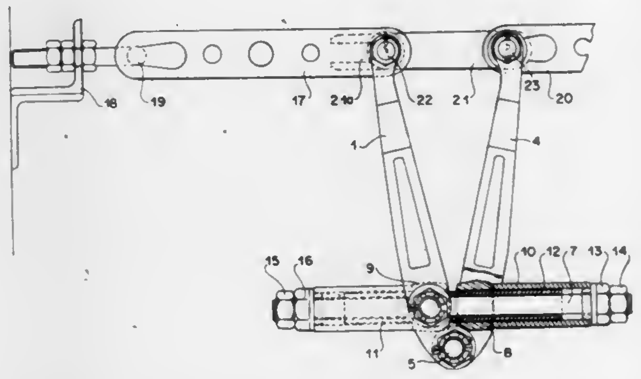
Jacques Balteau, Charleville-Mezieres, France, assignor to Usines Metallurgiques L.C.A.B. SA, France

Filed Feb. 27, 1985, Ser. No. 706,144

Claims priority, application France, Mar. 5, 1984, 84 03502

Int. Cl.⁴ H02G *7/02, 7/04;* **F16F** *7/12*

U.S. Cl. 174—40 TD **10 Claims**



10. A device with controlled deformation for reducing the stresses exerted on a power line conductor and power line pole by reducing the tension of the conductor and increasing its sag comprising:

(a) a first pole-side arm and a first conductor-side arm, said arms being pivotally connected to one another at a first pivot axis, each of said arms having a distal end remote from said pivot axis, said distal ends of said pole-side and conductor-side arms being adapted, respectively, for mechanical connection to the power line pole and to the power line conductor, said arms being movable between a closed position wherein said distal ends are adjacent one another and a full open position wherein said arms extend in opposite directions from said pivot axis and said distal ends are remote from one another; and

(b) a rod of predetermined tensile elongation properties disposed adjacent said pivot axis, said rod extending traverse to said arms and protruding outwardly beyond said arms when said arms are in said closed position, one end of said rod being connected to each of said arms between said pivot axis and said distal ends of said arms so that said rod normally retains said arms in said closed position and said rod is elongated upon movement of said arms towards said full open position, said rod being adapted to elongate without breakage upon movement of said arms to said full open position.

4,616,104
FIRE RESISTANT ELECTRICAL JUNCTION BOXES

Travis C. Lindsey, 7177 Enterprise Dr., Las Vegas, Nev. 89117

Filed Nov. 16, 1984, Ser. No. 672,086

Int. Cl.⁴ H02G *3/08*

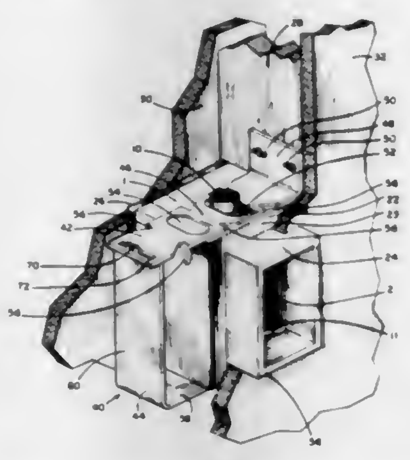
U.S. Cl. 174—48 **16 Claims**

1. A fire-resistant electrical box comprising

a rigid housing having fire-resistant walls, said housing having a first opening adapted to be enclosed by means of a cover plate,

a one-piece, non-combustible casing enclosing the exterior housing walls and having a body portion completely surrounding said walls,

said casing also having a collar portion integrally molded with the casing extending forwardly around the entire periphery of the front opening, said collar portion having a thickness at least ¼", and



conduit means extending from the interior of the box through a housing wall and the casing for enclosing electrical wiring.

4,616,105

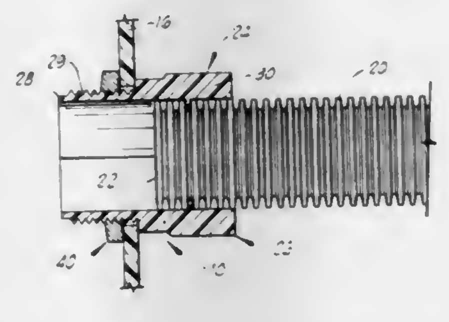
ADAPTER FITTING FOR CONNECTING FLEXIBLE CONDUIT TO ELECTRICAL OUTLET BOXES

Richard J. Borsh, Chagrin Falls, Ohio, assignor to TBG Inc., New York, N.Y.

Filed Oct. 26, 1984, Ser. No. 665,304

Int. Cl.⁴ F16L *3/02*

U.S. Cl. 174—65 R **1 Claim**



1. A tubular adapter fitting for connecting a conduit to an electrical outlet box comprising:

a pair of identical semi-cylindrical cooperating fitting halves, each fitting half having a concave inner side and a convex outer side, and having a first end and a second end, and further including:

an externally threaded neck portion adjacent the first end of the fitting half;

a conduit-receiving portion extending from said neck portion to the second end of said fitting half and having an external surface of greater diameter than the external diameter of said neck portion;

a plurality of circumferentially spaced, axially extending ribs projecting radially outwardly from the external surface of said conduit receiving portion, said ribs including a pair of guiding and broadening ribs spaced from each other about 180° around the semi-cylindrical convex outer side of the respective fitting half;

a pair of opposed, axially extending, smooth, uninterrupted side edges extending from the first end thereof to the second end thereof, each of said side edges being positioned in contiguous coplanar alignment with a radial surface of one of said axially extending guiding and broadening ribs whereby said semi-cylindrical fitting halves may be slid axially relative to each other to axially offset one of the fitting halves relative to the other; and

a radially inwardly projecting, circumferentially extending rib carried on the concave inner side of the respective fitting half; and

an internally threaded locking ring threadedly engaging the externally threaded neck portions portions of said fitting halves to join said fitting halves into a tubular fitting.

4,616,106

GRAPHIC TABLET AND METHOD

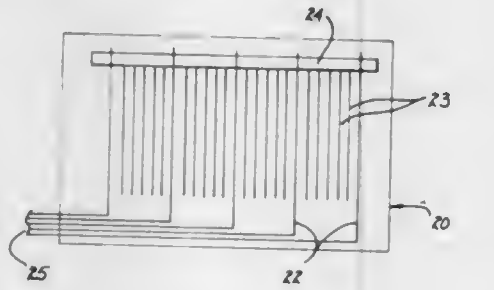
Billy C. Fowler, Scottsdale; Alan R. Headley, Phoenix, and James L. Rodgers, Mesa, all of Ariz., assignors to Kurta Corporation, Phoenix, Ariz.

Filed Jul. 16, 1984, Ser. No. 631,146

The portion of the term of this patent subsequent to Jan. 8, 2002, has been disclaimed.

Int. Cl.⁴ G08C *21/00*

U.S. Cl. 178—18 **6 Claims**



1. In an apparatus for determining a position of an instrument on a tablet surface, an improvement comprising:

a. a plurality of parallel conductors separated by a predetermined distance, said conductors extending in a plane parallel to said surface and insulated therefrom;

b. each of said conductors connected to adjacent conductors through a predetermined resistance;

c. selected ones of said conductors connected to output terminals for connection to signal sensing circuits, all unselected ones of said conductors remaining electrically unconnected except to said adjacent conductors.

4,616,107

PATTERN INPUT APPARATUS

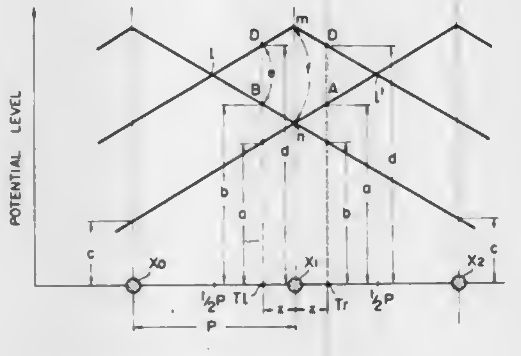
Kiyomi Abe, Noda; Mitsuo Kazama, Soka, and Hiroshi Kobayashi, Koshigaya, all of Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1985, Ser. No. 705,550

Claims priority, application Japan, Feb. 29, 1984, 59-37679

Int. Cl.⁴ G08C *21/00*

U.S. Cl. 178—18 **3 Claims**



1. A pattern input apparatus comprising:

a tablet having a matrix composed of two sets of conductors disposed at intervals along coordinate axes;

a pair of scanning means respectively connected to said two sets of conductors for successively supplying the conductors of said respective sets with scanning pulses;

an input pen for detecting application of said scanning pulse on adjacent ones of said conductors when said pen is positioned on said tablet, thereby producing position signals;

a selecting circuit for selecting at lest three ones of said position signals respectively having higher electric potentials; and

an operation circuit for determining the position of said input pen in such a manner that one of said three selected position signals having the highest level is regarded as a reference signal and subtractions are performed between said reference signal and each of the remainder ones of said three selected position signals to obtain two potential differences, whereby the position of said pen is determined from the ratio between said two potential differences.

4,616,108

DOMESTIC SATELLITE COMMUNICATION SYSTEM

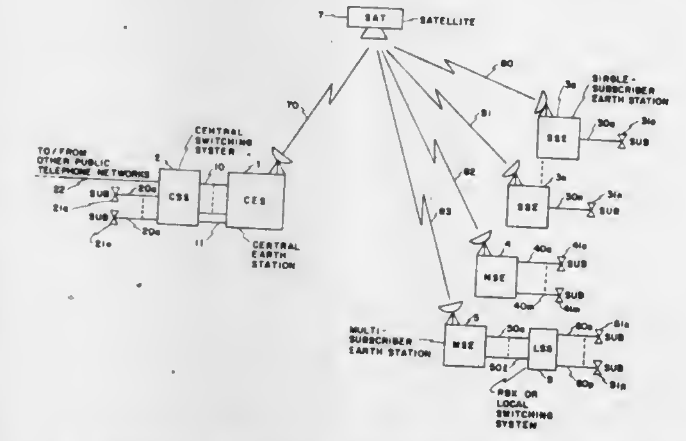
Mamoru Yamaguchi, and Masanori Oshima, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 1, 1984, Ser. No. 636,844

Claims priority, application Japan, Aug. 4, 1983, 58-142937

Int. Cl.⁴ H01M *11/00*

U.S. Cl. 179—2 E **11 Claims**


SAT
SATELLITE
CENTRAL SWITCHING SYSTEM
TO/FROM OTHER PUBLIC TELEPHONE NETWORKS
CSS
CES
SUB
SUB
CENTRAL EARTH STATION
SINGLE-SUBSCRIBER EARTH STATION
SSE
SUB
SSE
SUB
MSE
SUB
SUB
MULTI-SUBSCRIBER EARTH STATION
MSE
LSS
SUB
SUB
PBX OR LOCAL SWITCHING SYSTEM

1. A domestic satellite communication system including a central earth station and a plurality of subscriber earth stations, means at said central earth station responsive to a demand for controlling a frequency assignment of voice communication satellite channels in response to an occurrence of a call which identifies a subscriber earth station-to-subscriber earth station call, a central switching system for carrying out voice switching operations, and each of said plurality of subscriber earth stations serving at least one voice communication terminal,

each of said subscriber earth stations comprising:

indication means for indicating that a call identified at said central earth station is for a subscriber earth station-to-subscriber earth station; means for monitoring the continuity of a communication channel at said voice communication terminal; and means for periodically transmitting an out-of-band signal in a voice communication satellite channel which is assigned by said central earth station while said monitoring means detects the continuity of a communication channel and said indication means indicates the subscriber earth station-to-subscriber earth station call,

said central earth station comprising:

means for demodulating said out-of-band signal transmitted from said subscriber earth station; means for receiving said out-of-band signal which has been demodulated by said demodulating means; means for monitoring the continuity of a communication channel between said subscriber earth stations by periodically reading out the output of said receiving means; and means for tuning the frequency of said demodulating means to coincide with a frequency assigned to said voice communication between said subscriber earth stations,

whereby said subscriber earth station-to-subscriber earth station call is connected through one satellite link.

4,616,109

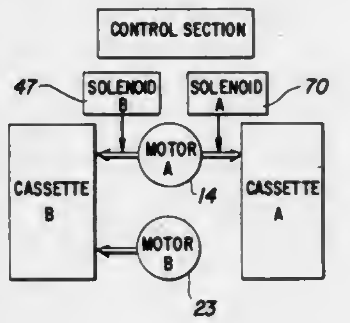
DOUBLE CASSETTE DECK

Tseng Chee, Flat C., 5/F., Hanking Court, 43-49 Cloudview Rd., North Point, Hong Kong

Filed Jan. 12, 1984, Ser. No. 570,129

Int. Cl.⁴ H04M *1/64*

U.S. Cl. 179—6.03 **11 Claims**



1. Double cassette deck adapted to be used for a telephone answering machine, comprising

a main chassis having first and second side portions for mounting first and second tape cassettes respectively to be used in the cassette deck in mutually parallel relation,

a drive shaft rotationally retained in the main chassis and having first and second coaxial driving shaft portions at opposite ends thereof, said driving portions extending into the respective first and second side portions of the main chassis, said mounting means holding the tapes of said first and second cassettes in positions to be laterally engaged by the sides of said first and second driving shaft portions so that when the tapes are firmly engaged by the driving shaft portions, the tapes are moved at constant speed,

at least one driving means provided at the main chassis for rotating the drive shaft,

a first head assembly connected to the first side portion of the main chassis, said first head assembly including first actuating means for engaging the tape of the first cassette with said first driving shaft portion,

a second head assembly connected to the second side portion of the sain chassis, said second head assembly including second actuating means for engaging the tape of the second cassette with said second driving shaft portion, and

controlling means for controlling the first and second head assemblies so that the cassette deck can be used as a tape recorder and telephone answering machine.

4,616,110

AUTOMATIC DIGITAL TELEPHONE ANSWERING APPARATUS

Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan

Filed Jul. 17, 1984, Ser. No. 631,755

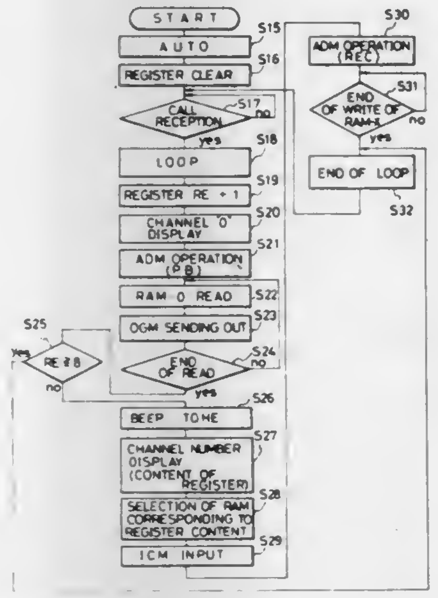
Claims priority, application Japan, Jul. 18, 1983, 58-130549

Int. Cl.⁴ H04M *1/64*

U.S. Cl. 179—6.03 **13 Claims**

1. An automatic telephone answering apparatus comprising:

converting means for coverting an audio analog signal to a digital signal or a digital signal to an audio analog signal; a first integrated circuit memory for storing an outgoing message as a digital signal converted by said converting means; a plurality of second integrated circuit memories for storing a digital signal which is obtained by conversion by said converting means of an incoming message of a calling party through a telephone line, ringing signal detecting means for detecting a ringing signal from a telphone line to form a loop circuit; a register for counting and storing the number of incoming calls; outgoing message sending means for reading out the digital signal of the outgoing message in accordance with an output signal from said ringing signal detecting means and sending onto the telephone line the outgoing message as the audio analog signal obtained by conversion of the digital signal of the message by said converting means; writing means for storing the digital signal in a corresponding one of said plurality of second integrate ciruit memories which corresponds to a count of said register, the digital signal being 'obtained by conversion by said converting means of the incoming message of the calling party through the telephone line after the outgoing message is sent out, disengaging means for opening the loop circuit and disengaging said apparatus after the incoming message is stored in said



corresponding one of said plurality of second integrated memories; reading means for reading out the incoming message from said corresponding one of said plurality of second integrated circuit memories through said converting means and

disengaging means for opening the loop circuit and disengaging said apparatus after the outgoing message is sent when said count fo incoming calls in said register exceeds the number of said plurality of second integrated circuit memories.

4,616,111

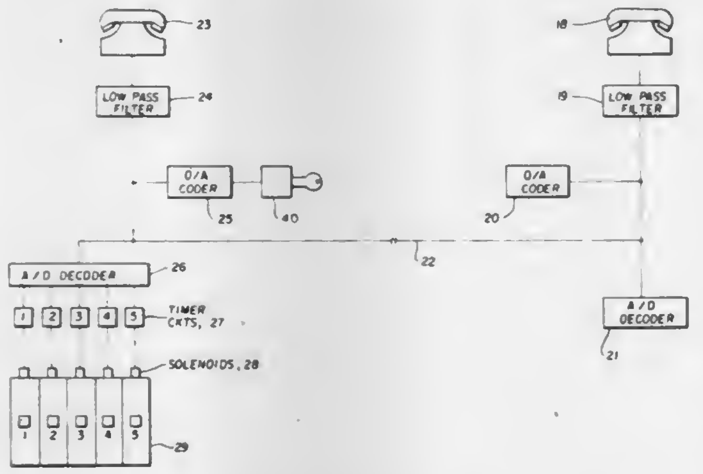
REMOTE CONTROLLED KEY DISPENSING APPARATUS

Tulio Vasquez, Carrera 15 - N° 39-27, Bogota, Colombia

Filed Mar. 30, 1984, Ser. No. 597,654

Int. Cl.⁴ H04M *11/00*

U.S. Cl. 179—2 A **14 Claims**



14. A system for storing and selectively dispensing keys, at a security facility at a first location, to an identifiable user at the first location from a remote second location, comprising:

a plurality of key storage devices at said first location, each said storage device having an upper portion, and a lower portion, for holding only one of said keys,

the upper portion of each said key storage device including an aperture, having slotted portions,

each aperture having a configuration corresponding with only said one of said keys,

said aperture defining means for introducing

each said one key into a respective one of said storage device upper portions;

means, supported within each said key storage device, for selectively blocking travel of an introduced key from said upper portion to said lower portion;

means, at said first location, for generating a first set of user-generated coded electrical signals, whereby said user identifies himself;

means, at a location remote from said first location, for receiving said first set of signals,

said receiving means including means for decoding said first set of signals, whereby the identity of said user may be verified;

means, at said remote location, for generating a second set of coded electrical signals upon verification of the identity of said user;

means, interconnecting said first and second locations, for transmitting said first set of signals to said remote location and said second set of signals to said first location; and

means, associated with an appropriate one of each of said key storage devices and actuatable by said second set of coded electrical signals, for releasing the respective blocking means of said one key storage device from a travel blocking position,

whereby after a user has transmitted the first set of coded signals to said remote location, said second set of signals is transmitted to said first location only after identification of said user is verified.

4,616,112

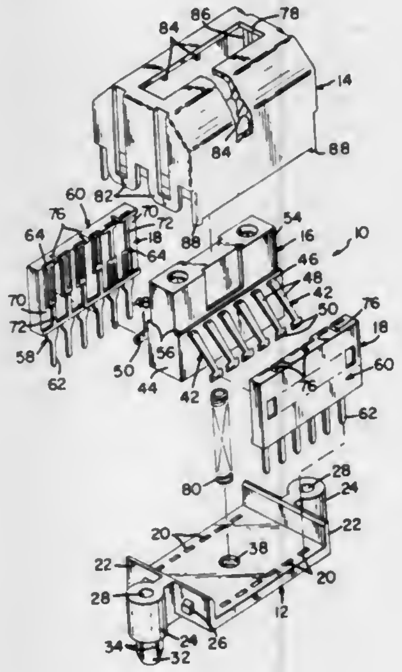
ELECTRICAL SWITCH HAVING ARC-PROTECTED CONTACTS

Michael D. Galloway, Middletown; William H. Rose, and David T. Shaffer, both of Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 644,736, Aug. 27, 1984, abandoned. This application Oct. 3, 1985, Ser. No. 784,695

Int. Cl.⁴ H01H *9/30, 13/50, 15/02*

U.S. Cl. 200—5 R **23 Claims**



1. An electrical switch, comprising:

dielectric cover means;

movable contact assembly means disposed in said cover means movable along an axis therewithin and capable of spring-biased actuation by actuating means and having opposing side surfaces;

first electrical contact members secured to said movable contact assembly means by mounting sections and each having a pair of first contact section means, each of said pair being disposed along a respective said opposing side surface;

two stationary contact assembly means disposed in said cover means each proximate and spaced from a respective opposing side surface of said movable contact assembly means;

second electrical contact members secured to each said stationary contact assembly means arranged in opposing pairs and having second contact section means proximate said opposing side surfaces of said movable contact means, said second electrical contact members also having terminal sections capable of electrical connection to respective conductive elements of an electrical article;

ones of said first and said second electrical contact members having their contact section means disposed on respective surface portions of one of said movable and said two stationary contact assembly means, and being axially aligned with respective dielectric section means of said respective surface portions and joined thereto at respective junctions forming separate contact segment means;

the others of said first and said second electrical contact members having their contact section means disposed along and extending outwardly from respective surface portions of the other of said movable and said two stationary contact assembly means, associated with and springably engaging respective said contact segment means, and capable of relative axial movement along said respective said contact segment means when said movable contact assembly means is actuated by said actuating means whereby each said opposing pair of second contact members will be electrically connected by a respective said first contact member when said first contact section means thereof are in electrical engagement with respective said second contact section means, and will be electrically disconnected when said first contact section means are in engagement with respective said dielectric section means; and

ends of said ones of said first and said second contact section means proximate respective said junctions have means at which an electric arc will occur rather than over the entire said ends thereby extending the operating life of said ones of said contact section means.

4,616,113

SAFETY CLIP FOR PROTECTING ARTICLES FROM THEFT

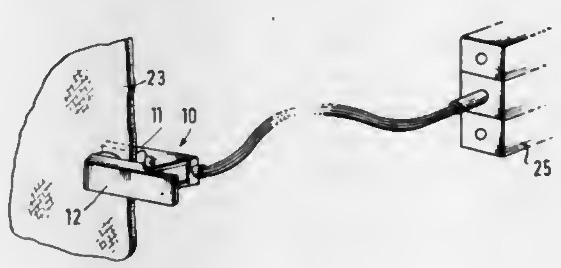
Wilhelm Jank, Industriestrasse 18, D-6794 Brücken/Pfalz, and Karl Schneider, Herschweiler-Pettersheim, both of Fed. Rep. of Germany, assignors to Wilhelm Jank, Fed. Rep. of Germany

Filed Feb. 28, 1985, Ser. No. 706,591

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1984, 8406202[U]; Jun. 15, 1984, 3422227

Int. Cl.⁴ A41F *1/00;* **H01H** *27/04*

U.S. Cl. 200—61.13 **13 Claims**



1. A safety clip device for protecting textile articles and the like from theft, said device comprising:

(a) two clip legs having confronting clamping surfaces and being tensioned to a closed position by biassing means,

(b) a first of the clip legs contains a fixedly mounted pressure-responsive switch means having a depressible actuator facing the second of the clip legs and projecting outwardly from one of the confronting clamping surfaces and,

(c) elevations projecting from the confronted clamping surfaces of the clip legs and limiting a curve-shaped path for a clamped fabric web when the safety clip is in the closed position which clamped fabric causes the actuator to be depressed thereby activating the switch means,

(d) the second clip leg including pivotally supported disk means being movable with respect to the switch means and having a top surface for contacting and adjusting to the thickness of the clamped web,

(e) the elevations including projections on the first and second clip legs surrounding the actuator to preclude maintaining of the activated switch means upon unauthorized removal of the clamped web,

(f) the elevation of at least one clip leg meets with the clamping surface of the other clip leg without depressing the actuator to prohibit actuation of the switch means when the safety clip is empty and in a closed position.

4,616,114

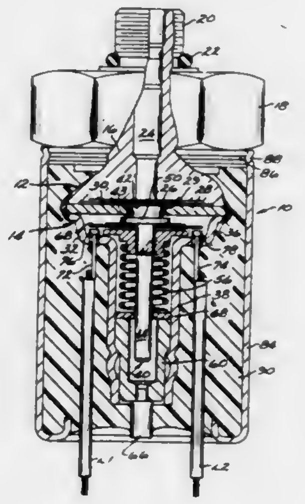
PRESSURE RESPONSIVE SWITCH HAVING LITTLE OR NO DIFFERENTIAL BETWEEN ACTUATION RELEASE PRESSURE LEVELS

Werner Strasser, Lexington, Ky., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 19, 1984, Ser. No. 672,644

Int. Cl.⁴ H01H *35/34*

U.S. Cl. 200—83 J **8 Claims**



1. A pressure responsive switch comprising a sensor assembly and a switch assembly, the sensor assembly comprising a port fitting having a fluid pressure receiving bore extending therethrough, the fitting having an end with a wall portion recessed from the end and with the bore extending to the wall portion, a support plate disposed over the end, the plate having a bore therethrough in alignment with the bore in the fitting, a creep acting metallic sensing membrane hermetically attached to the fitting and interposed between the fitting and the support plate in direct contact with fluid received in the port fitting bore; the switch assembly comprising a switch housing attached to the sensor assembly forming an enclosure, stationary contact means mounted in the enclosure, the housing formed with a generally tubular portion having a longitudinal axis, a piston movably mounted in the tubular portion along the longitudinal axis, the piston having a force receiving surface at one end engaging a surface of the membrane through the bore in the support plate, an electrically conductive bridge element mounted on the piston and movable therewith, the bridge element moving into and out of engagement with the station-

ary contact means, and means to bias the piston toward the membrane with a selectable force.

4,616,115
COORDINATE SWITCH

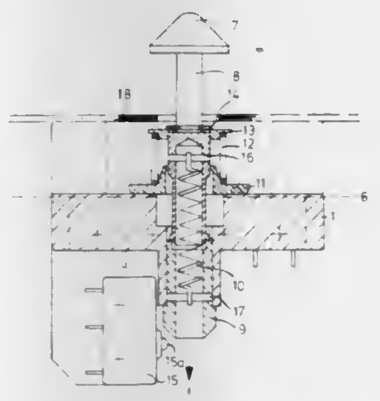
Dieter Potyka, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New Ycrk, N.Y.

Filed Aug. 16, 1984, Ser. No. 641,530

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1983, 3329673

Int. Cl.⁴ H01H *3/46*

U.S. Cl. 200—153 T **6 Claims**



1. A coordinate switch comprising
an actuation member fixed to an elongate switching ram,
a mounting and guiding body having a bore therethrough,
at least four electrical switches, each having a side provided with a switching member, the switches being fixed to the mounting and guiding body, the switches being arranged such that the sides are located in a first plane and such that the switching members are located at the corners of a quadrangle which lies in a second plane parallel to the first plane,
a further switch axially displaced from said second plane, and
a switching disk including a central opening therethrough, the central opening communicating with the bore of the mounting and guiding body, the switching disk being movable in the second plane and having a diameter which is slightly smaller than a diagonal of the quadrangle,
the switching ram being bi-partite, comprising first and second ram portions axially offset from each other and a tension spring urging said portions against each other, said first ram portion cooperating with said switching disk and being fixed to said actuation member and being tiltable relative to the second ram portion, said first ram portion being axially movable for displacing said second ram portion axially, said ram being slidably disposed through the central opening and the bore so that a lateral displacement of the actuation member moves the switching disk into contact with at least one of said switching members, and axial displacement of the actuation member actuates said further switch.

4,616,116
SWITCH

Akira Sato, Yokohama, Japan, assignor to Alps Electric Co., Ltd., Japan

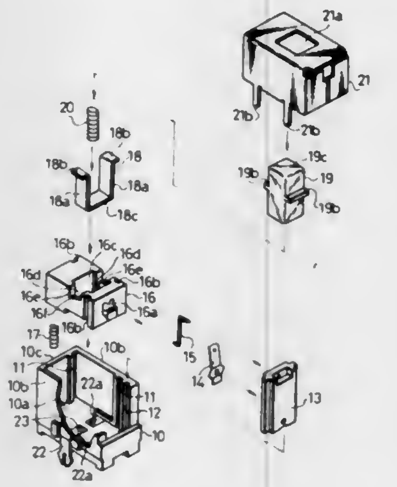
Filed Mar. 8, 1985, Ser. No. 709,448

Claims priority, application Japan, Mar. 8, 1984, 59-33462[U]

Int. Cl.⁴ H01H *1/60*

U.S. Cl. 200—242 **4 Claims**

1. A switch comprising a casing, a fixed contact in said casing, a moving contact movable into and out of contact with said fixed contact, a slider supporting said moving contact, and an operation member for operating said slider for moving said moving contact toward and away from said fixed contact,
wherein said moving contact has a first portion extending toward said fixed contact and a flange portion transverse to said first portion,
said slider has a guide portion for supporting said first portion of said moving contact, said guide portion having a transverse width larger than a width of said first portion such that said first portion can assume an inclined pose in said guide portion relative to a direction of movement of said slider, and said slider further has a rest portion on which said flange portion of said moving contact can abut, one of said rest portion and said flange portion being inclined relative to the other such that when said flange portion abuts said rest portion, said moving contact is positioned in said inclined pose,
and said switch further comprising a spring for biasing said flange portion to abut said rest portion such that said moving contact can contact said fixed contact in said inclined pose.



4,616,117
DOUBLE POLE CIRCUIT BREAKER

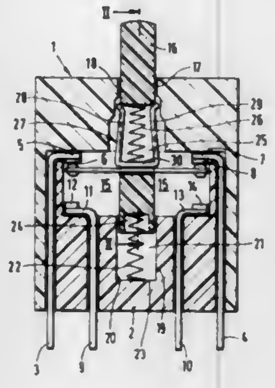
Heinz Kleine, Marienheide-Müllenbach, Fed. Rep. of Germany, assignor to Square D Starkstrom GmbH, Marienheide-Rodt, Fed. Rep. of Germany

Filed Aug. 28, 1985, Ser. No. 770,640

Claims priority, application European Pat. Off., Sep. 1, 1984, 84110419.3

Int. Cl.⁴ H01H *3/50, 1/02*

U.S. Cl. 200—243 **8 Claims**



1. A contact device, comprising, a housing; a pressure spring in said housing; a plunger movable in said housing against a force of said pressure spring and having at least one recess; a contact pressure spring arranged in said recess of said plunger; a contact bridge arranged in said recess of said plunger and extending outwardly beyond its both sides; movable contact pieces arranged on said contact bridge; immovable contact pieces arranged so that said movable contact pieces form together with said immovable contact pieces contact breakers and/or contact makers; and a member cooperating with said contact bridge so as to provide a forced opening of adhering or welded contacts between said movable and immovable contact pieces, said member being formed as a U-shaped bracket which has a web extending between said contact bridge and said contact pressure spring, and two legs connected with said web; and formations provided in said housing and formed as stepped extensions, said legs of said bracket and said stepped extensions of said housing being formed so that said bracket and contact bridge over a first part of a stroke of said plunger are forcibly taken along by the latter and said legs of said bracket over a further part of the stroke of said plunger spread outwardly and release said plunger.

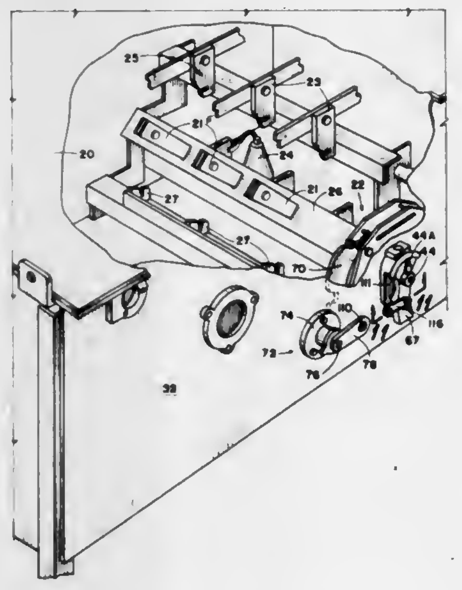
4,616,118
COCK AND TRIP SWITCH ACTUATING MECHANISM

Robert Gasnier, Bixby, and Larry N. Wolfenbarger, Tulsa, both of Okla., assignors to General Signal Corporation, Stamford, Conn.

Continuation of Ser. No. 622,260, Jun. 19, 1984, abandoned. This application Jan. 21, 1986, Ser. No. 820,583

Int. Cl.⁴ H01H *3/30*

U.S. Cl. 200—153 SC **9 Claims**



9. A cock and trip switch actuating mechanism for operating a switch inside a housing wall, comprising:
an energy storage means rotatably mounted on a housing wall and having a plate rotatable about a plate shaft extending perpendicularly of the housing wall, the plate having spaced apart notches in a peripheral edge thereof;
a switch carriage means secured to and moved by said rotatable energy storage means between switch positions;
means of storing mechanical energy in said energy storage means tending to rotate said plate from an energy stored position to an energy released position;
a carriage block member affixed to the inner surface of said housing wall in juxtaposed position relative to said energy storage means;
a plunger reciprocally supported by said carriage block member and extendable between a forward, locking position, and a rearward, unlocking position, the reciprocal axis of the plunger being coincident with a radius of said plate shaft;
a compression spring normally urging said plunger towards said plate;
means on the inner end of said plunger to be received within said notches in said plate peripheral edge; and
means operable to move said plunger from the forward locking position to the rearward unlocking position so as to permit said plate to rotate in response to energy stored in the energy storage means to thereby move said switch carriage means.

4,616,119
UNIFORMLY HEATING APPARATUS FOR MICROWAVE OVENS

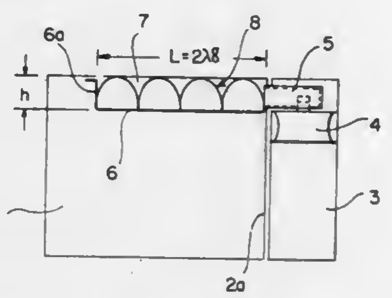
Kyu C. Shin, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 28, 1984, Ser. No. 687,565

Claims priority, application Rep. of Korea, Dec. 31, 1983, 6379/1983[U]

Int. Cl.⁴ H05B *6/74*

U.S. Cl. 219—10.55 F **7 Claims**



1. A microwave oven comprising a cavity a microwave generator and a wave guide through which a microwave from said microwave generator is guided into said cavity, so that the microwave heats an object to be heated in said cavity, a uniform heating apparatus including a guide plate mounted on an inner wall of said cavity and connected to said wave guide, a guide space defined between said guide plate and said inner wall of said cavity for converting the microwave into a standing wave having a predetermined wavelength in said guide space and a fan disposed in said guide space for dispersing said standing wave into said cavity, the length of said guide plate being a multiple of ½ the wave length of said standing wave generated within said guide space.

4,616,120
MICROWAVE-HEATING APPARATUS HAVING MEANS FOR MEASURING REFLECTION COEFFICIENT UNDER LOW POWER OPERATION

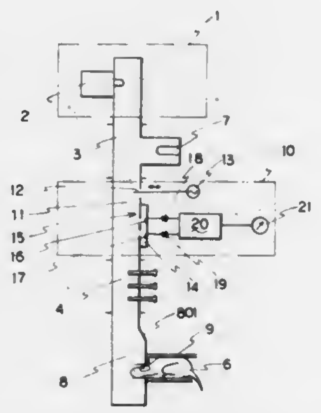
Yuji Maruyama, 1565-59, Notuke-machi, Tadasaki-shi, Gumma-ken; Kohei Otake, Kawagoe, and Hisao Kizaki, Kamifukuoka, all of Japan, assignors to Yuji Maruyama and New Japan Radio Co. Ltd., both of, Japan

Filed Jul. 16, 1985, Ser. No. 755,386

Claims priority, application Japan, Jul. 31, 1984, 59-160838

Int. Cl.⁴ H05B *6/68*

U.S. Cl. 219—10.55 A **4 Claims**



1. A microwave-heating apparatus having means for measuring reflection coefficient under low power operation, comprising:
a high-power microwave oscillator;
a waveguide connected to an output of the high-power microwave oscillator;
means for measuring reflection coefficient connected to one wall of the waveguide;

impedance matching means connected to an output of the waveguide;

an applicator formed by a short-circuited rectangular waveguide tapered at one wall thereof and connected to an output of the impedance matching means and having an insertion port for inserting a load therein in the one wall of the tapered rectangular waveguide; and

a container, for holding a test animal disposed at the insertion port of the applicator; wherein the means for measuring reflection coeffcient comprises a low-power microwave oscillator connected to an antenna which can be inserted into or withdrawn from the one wall of the waveguide so as to be connected to or separated from the waveguide, connecting holes formed in the one wall of the waveguide for introducing an incident power supplied from the low-power microwave oscillator and a reflected power returned back from a load, a shutter-plate for covering the connecting holes when a high-power microwave output is supplied from the high-power microwave oscillator, and a comparator for comparing the incident power with the reflected power.

4,616,121

AUTOMATIC WELDING WITH IMAGING OF WORKPIECE SURFACES AND OF THE JUNCTION BETWEEN THE SURFACES

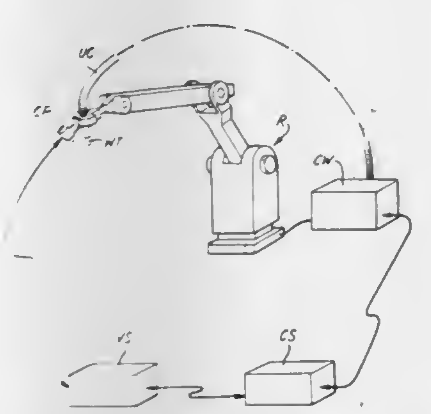
William F. Clocksin, Cambridge; Peter G. Davey; Colin G. Morgan, both of Oxford, and Albert R. Vidler, Oxon, all of England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 547,600, Nov. 1, 1983, abandoned. This application Jul. 3, 1985, Ser. No. 751,467

Claims priority, application United Kingdom, Nov. 1, 1982, 8231147

Int. Cl.⁴ B23K *9/12*

U.S. Cl. 219—124.34 **11 Claims**



10. A method controlling an automatic arc welding process at a junction of surfaces, said method comprising the steps of:

producing an image of a welding area containing the junction and illuminated by a light sheet;

extracting from the image that portion representing the junction of the surfaces by constructing a hit array of the points at which said junction intersects the light sheet;

cleaning the hit array by removing noise and hypothesizing missing data;

examining the extracted portion to unambiguously define the form and position of the junction by fitting line segments to the hit array between end points of connected runs of hits and identifying the type of junction as any one of a butt, lap or T-joint from the configuration of the fitted line segments; and

deriving control information from said image portion to control the welding process to operate along said junction.

4,616,122

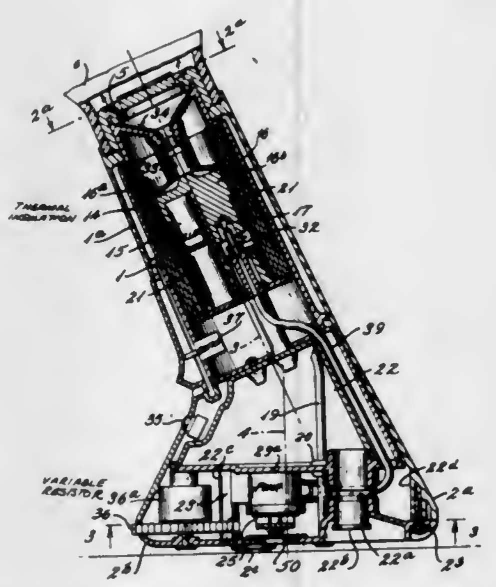
ELECTRICALLY HEATED FACIAL SAUNA VAPOR GENERATING APPARATUS

Paul D. Burian, deceased, late of Elmsford, N.Y. (by Elissa Burian, administratrix), and Raymond W. Kunz, Monroe, Conn., assignors to Clairol Incorporated, New York, N.Y.

Continuation of Ser. No. 175,603, Aug. 6, 1980, abandoned. This application May 25, 1983, Ser. No. 496,875

Int. Cl.⁴ H05B *1/00;* **F22B** *1/28;* **F04B** *43/04;* **A61H** *33/12*

U.S. Cl. 219—273 **14 Claims**



1. An apparatus for generating vapor from a liquid comprising:

a housing having an inlet for receiving the liquid therethrough and an outlet for discharging vapor therefrom;

a tank portion within said housing interconnected with said inlet for holding the liquid received through said inlet;

an air vent tube in said housing interconnecting said tank portion with an external air supply;

vapor generating means in said housing including heating means for heating a vaporization surface above the vaporization temperature of the liquid so as to generate at least some vapor from the liquid upon contact of the liquid with said vaporization surface, said vapor generating means communicating with said housing outlet for discharge of said vapor from said outlet;

a conduit interconnecting said tank portion with said vapor generating means for delivery of the liquid thereto from said tank portion;

an electric diaphragm pump for pumping the liquid from said tank portion through said conduit to said vaporization surface of said generating means, said pump including adjusting means for adjusting the pumping rate, said pump having an elastic diaphragm portion, said pump including an armature which operates said pump diaphragm, said pump being enclosed in said housing, said housing having an elastic wall portion immediately adjacent and confronting said pump such that said armature can be displaced to operate said pump diaphragm by manually inwardly deforming to a sufficient extent said elastic portion of said housing, to enable priming of said pump; and

baffle means associated with said vapor generating means for preventing liquid from discharging with said generated vapor through said outlet.

4,616,123

SHRINK OVEN

Dimiter S. Zagoroff, 10 Hilliard Pl., Cambridge, Mass. 02138

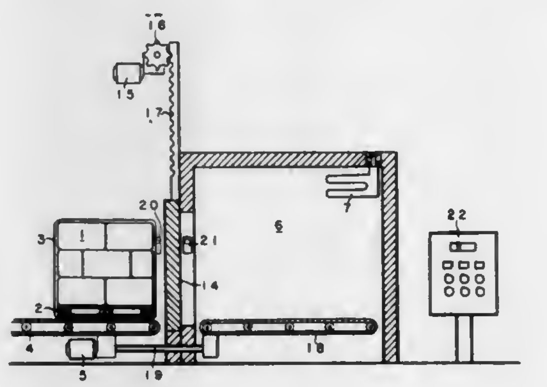
Filed Nov. 13, 1984, Ser. No. 670,766

The portion of the term of this patent subsequent to Sep. 3, 2002, has been disclaimed.

Int. Cl.⁴ F26B *15/16*

U.S. Cl. 219—388 **6 Claims**

1. A shrink oven for heating and shrinking, in a shrink cycle, plastic film disposed about a load, said oven having an exterior, an interior and at least one opening for entry or exit of the load from the interior of said oven, a closure for said opening and conveyor means for conveying said load through the opening between the exterior and the interior of said oven, said oven characterized in having first load position control means operable when said load approaches said opening with said closure closed for stopping said conveyor means to position said load immediately preceding said closure, in a first blocking position to block flow of heat air out of said oven to the exterior, means operable while said load is in said first blocking position to open said closure, second position control means operable when said load passes through said opening for stopping said conveyor means after said load transits said opening to position said load immediately following said opening in a second blocking position to block flow of heated air out of said oven to the exterior, and means operable while said load is in said second blocking position to close said closure thereby to conserve energy during movement of the load between the exterior and the interior of said oven and to enable improvement in the shrink cycle.



4,616,124

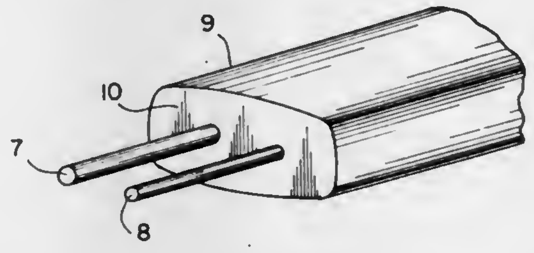
ELECTRIC HOT-SPOT DETECTION APPARATUS AND ELECTRIC HEATING APPARATUS

Milton S. Greenhalgh, Fairfield, Conn., assignor to General Electric Company, Bridgeport, Conn.

Division of Ser. No. 548,376, Nov. 3, 1983. This application Mar. 7, 1985, Ser. No. 709,245

Int. Cl.⁴ H05B *1/02*

U.S. Cl. 219—505 **18 Claims**



1. An electric hot-spot detection apparatus comprising a first wire reference conductor and a second wire sensing conductor, both of which are connectable to an electric power source overheat signal means, actuating means operatively associated with the signal means and the first and second wires to actuate the signal means when D.C. resistance between the first and second wires exceeds a predetermined maximum, said first and second wires being uniformly spaced apart over their full lengths and embedded in a coextensive body of thermal-sensitive polymeric material selected from the group consisting essentially of (1) a thermosetting acrylonitrile-butadiene rubber containing at least one percent by weight of acrylonitrile, and (2) thermoplastic blends of a polyvinyl chloride and an acrylonitrile-butadiene rubber containing at least one percent by weight of acrylonitrile, in which thermosetting rubber (1) after curing and thermoplastic blend (2) contain substantially no free sulphur.

4,616,125

HEATING ELEMENT

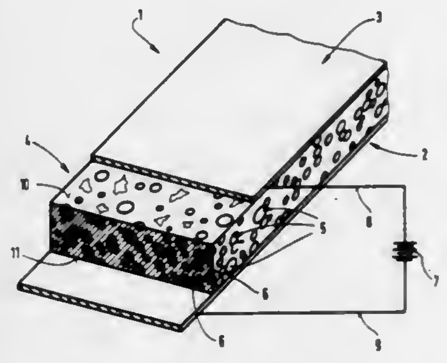
Hans Oppitz, Mils, Austria, assignor to ELTAC Nogler & Daum KG, Innsbruck, Austria

Filed Jan. 28, 1985, Ser. No. 695,839

Claims priority, application Austria, Feb. 3, 1984, 344/84

Int. Cl.⁴ H05B *3/10*

U.S. Cl. 219—553 **11 Claims**



1. A heating element comprising a resistance layer forming an electrical resistance disposed between two planar electrodes extending generally parallel to each other and to the resistance layer in which flow of current between the electrodes occurs at right angles to a plane extending generally parallel to the resistance layer, the resistance layer comprising a matrix of an electrically conductive synthetic resin material having a positive temperature coefficient of electrical resistance and a particulate thermally and electrically insulating filler material dispersed throughout the synthetic resin material matrix, the electrodes being disposed at opposite surfaces of the resistance layer and being electrically interconnected through the conductive synthetic resin material matrix.

4,616,126

INFORMATION RETRIEVAL SYSTEM

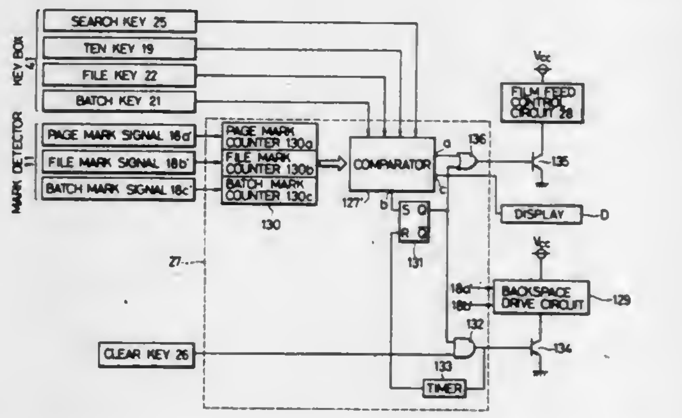
Hitoshi Yanagawa, Tokyo; Yasutoshi Sugita, Urayasu; Satoshi Ono, Yokohama; Masami Maetani, Ohmiya, and Tomoo Tsunenari, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 23, 1984, Ser. No. 633,293

Claims priority, application Japan, Aug. 1, 1983, 58-140898; Dec. 12, 1983, 58-234077

Int. Cl.⁴ G06F *15/20*

U.S. Cl. 235—375 **13 Claims**



1. An information retrieval system for retrieving desired information from an information record media having at least first marks attached to lower class information and second marks attached to higher class information;

feed means for feeding said information record medium;

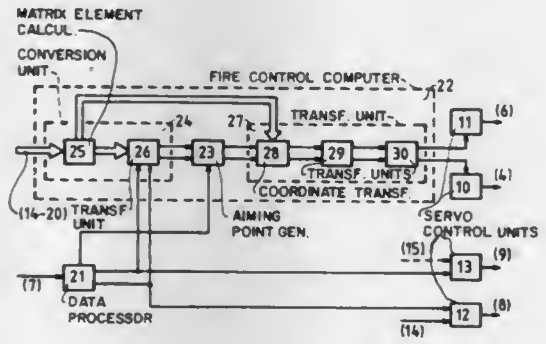
mark detection means for detecting said first marks and said second marks;

feed control means for stopping said information record medium when said mark detection means detects said first mark during the feed of said information record medium and feeding said information record medium a preset time after the stop; and

feed inhibit means for inhibiting the feed of said information record medium when said mark detection means detects said second mark during the feed of said information record medium.

4,616,127
FIRE CONTROL SYSTEM FOR A VEHICLE OR VESSEL

Ian G. Whiting, Borne, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands
Filed Aug. 22, 1983, Ser. No. 525,192
Claims priority, application Netherlands, Sep. 3, 1982, 8203445
Int. Cl.⁴ G05D *3/00;* **G06F** *15/58;* **F41G** *3/22*
U.S. Cl. 235—412 **4 Claims**



1. A fire control system for a vehicle/vessel-mounted weapon, said system comprising:

a. a turret-mounted gun;

b. a target tracking unit rotatable about orthogonal axes defining a coordinate system for tracking a target;

c. a target position data processor electrically connected to the target tracking unit for determining in the target tracking coordinate system annular error data instantaneously establishing the position of a target being tracked;

d. a servo control unit electrically connected to the target position data processor for aiming the target tracking unit at the target in response to the angular error data determined by the data processor;

e. reference orientation means for defining a geographically fixed reference coordinate system and for determining the instantaneous orientation relative thereto of a coordinate system defined by the vehicle/vessel;

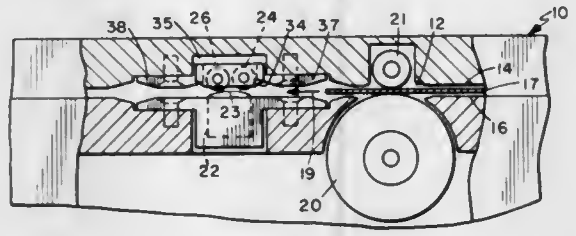
f. a fire control computer including:

1. a first coordinate conversion unit electrically connected to the target tracking unit, to the reference orientation means and to the target position data processor for producing from the data provided thereby the elements of a transformation matrix H for transforming successive target position data in the target position coordinate system into successive target position data in the reference coordinate system;
2. an aiming point generator electrically connected to the first coordinate conversion unit for producing from the successive target position data in the reference coordinate system gun aiming data in such reference coordinate system;
3. a second coordinate conversion unit electrically connected to the aiming point generator and to the reference orientation means and comprising means for transforming the gun aiming data from the reference coordinate system to the target position coordinate system and further means for transforming the gun aiming data from the target position coordinate system to the vehicle/vessel coordinate system; and

g. means electrically connected to the second coordinate conversion unit for controlling the aiming of the gun in the vehicle/vessel coordinate system in response to the gun aiming data produced in that coordinate system by the second coordinate conversion unit.

4,616,128
MECHANISM TO MAINTAIN CONTACT BETWEEN A MAGNETICALLY-ENCODED CARD AND A MAGNETIC TRANSDUCER SURFACE

Robert F. Case, San Diego, Calif., assignor to Cubic Western Data, San Diego, Calif.
Filed Jan. 30, 1984, Ser. No. 575,036
Int. Cl.⁴ G06K *13/00*
U.S. Cl. 235—475 **8 Claims**



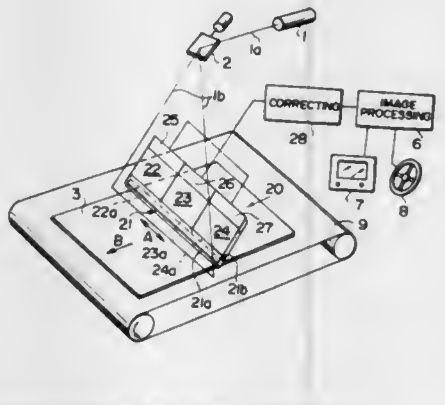
1. In an apparatus for transporting and reading magnetically-encoded cards in which a pair of opposing channel surfaces form a card transport channel and which includes a cylindrical transducer surface that protrudes through a first one of said channel surfaces into said channel and a mechanism for holding a magnetically-encoded card against said transducer surface while the card is moving in a feeding direction through said channel, the improvement to said mechanism comprising:

a pair of substantially parallel rollers, each of which protrudes through the second one of said channel surfaces to be disposed on a respective side of and adjacent to said transducer surface so as to confine a magnetically-encoded card moving in said channel in said feeding direction to follow a curved contacting path around said transducer surface, and each of which is disposed to rotate around a respective axis having a predetermined fixed relationship with respect to said channel; and

a frame module for rotatably holding said rollers in a spaced relationship and a recess means in said second channel surface opposite said transducer surface for holding said frame module.

4,616,129
LIGHT DETECTING APPARATUS

Junichi Yamada; Kazuo Horikawa, and Masaru Noguchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Nov. 30, 1984, Ser. No. 676,998
Claims priority, application Japan, Dec. 1, 1983, 58-227543
Int. Cl.⁴ H01J *40/14*
U.S. Cl. 250—207 **7 Claims**



1. A light detecting apparatus comprising:

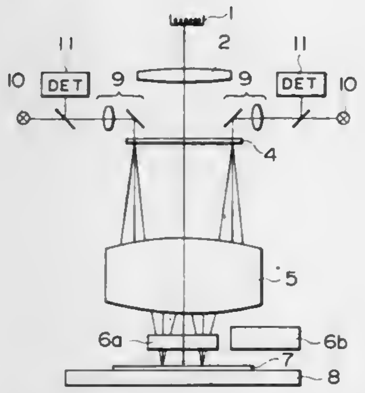
(i) an elongated plate-shaped light guide member having an end face at one long side as a light input face and an end face at the other long side as a light output face,

(ii) N number of photomultipliers having elongated light receiving faces optically associated with N divisions of said light output face divided into N divisions in the length direction of said light output face of said light guide member, said photomultipliers converting the light emitted from said divisions of said light output face into electric signals, and

(iii) a correction circuit for electrically eliminating deterioration in sensitivity at least at adjacent photomultiplier side end portions of said photomultipliers.

4,616,130
PROJECTION EXPOSURE APPARATUS

Takashi Omata, Yokosuka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 11, 1985, Ser. No. 722,015
Claims priority, application Japan, Apr. 19, 1984, 59-79008
Int. Cl.⁴ G01J *1/20;* **H01J** *3/14, 40/14*
U.S. Cl. 250—201 **5 Claims**



1. A projection exposure apparatus, comprising:

means for projecting, in a reduced scale, a pattern of a first object onto a second object;

means for transferring the pattern of the first object onto the second object through said projecting means, said transferring means using light of a predetermined wavelength;

means for aligning the first object with the second object through said projecting means, said aligning means using a wavelength of light different from that used with said transferring means; and

means for correcting a focus error of said projecting means with respect to at least one of the wavelengths used with said transferring means and with said aligning means relative to the other, said correcting means having an optical element for changing the optical path length between said projecting means and the second object, said optical element being detachably introduced into the optical path between said projecting means and the second object.

4,616,131
INCREMENTAL LENGTH OR ANGLE MEASURING SYSTEM

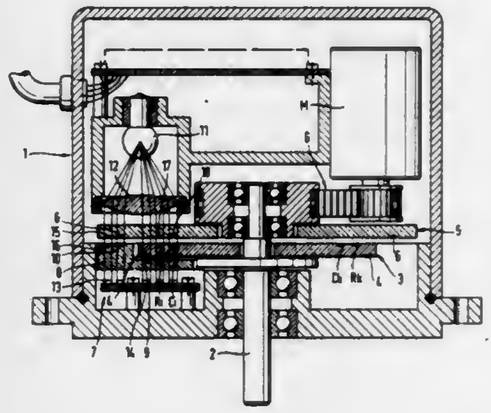
Horst Burkhardt, Truchtlaching, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany
Filed Mar. 20, 1984, Ser. No. 591,467
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1983, 3311204
Int. Cl.⁴ G01D *5/34*
U.S. Cl. 250—231 SE **13 Claims**

1. In an incremental measuring system of the type which comprises a measuring scale which defines a first plurality of scannable markings including an incremental graduation and at least one reference mark, the position of which is absolutely fixed with respect to a zero point of the graduation; a scanning unit which comprises a plurality of scanning fields for scanning selected ones of the first plurality of scannable markings along a scanning direction and means for generating scanning signals in response thereto, said scanning signals including periodic measuring signals generated in response to the incremental graduation; and an evaluating system for evaluating the scanning signals, said evaluating system comprising means for counting pulses derived from the measuring signals as a measure of relative movement between the scanning unit and the measuring scale; the improvement comprising:

a carrier body which defines a second plurality of scannable markings;

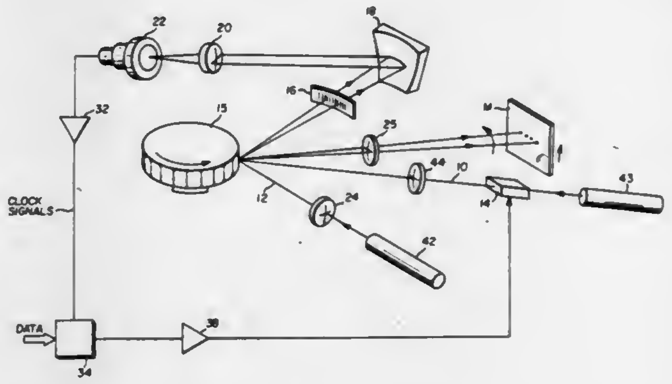
means for mounting the carrier body for movement relative both to the measuring scale and the scanning unit such that the second plurality of scannable markings can be brought into alignment along the scanning direction with at least a portion of the first plurality of scannable markings and scanning fields; and

means for controlling the operation of the evaluating system upon alignment along the scanning direction of selected ones of the second plurality of scannable markings and selected ones of the scanning fields and first plurality of scannable markings.



4,616,132
SYNCHRONIZATION APPARATUS FOR SCANNER

David Kessler, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 29, 1984, Ser. No. 614,501
Int. Cl.⁴ H01J *3/14*
U.S. Cl. 250—236 **4 Claims**



1. Apparatus for producing clock signals in a scanner having means for modulating a first beam and means for projecting the beam onto a moving reflective surface which scans the beam through a plurality of positions, said apparatus being adapted to synchronize the position of said beam with the modulation thereof, said apparatus comprising:

(a) means for projecting a second light beam onto said moving reflective surface;

(b) an optical grating, positioned to intercept said second light beam from said surface, for intensity modulating said second light beam;

(c) a paraboloid mirror, disposed to receive said second beam from said grating, for collimating said second light beam;

(d) lens means, positioned to receive said second light beam from said mirror, for focusing the second light beam at a plane to form a stationary image; and

(e) detector means, positioned in said plane to receive the stationary image, for producing clock signals in response to the intensity modulation of said second beam.

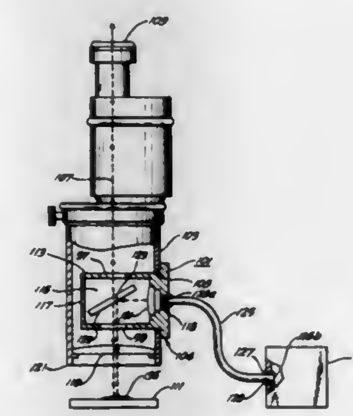
4,616,133
METHOD AND APPARATUS FOR CHARACTERIZING KEROGENS

Joseph T. Senftle, Lake Elsinore, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Nov. 16, 1984, Ser. No. 672,404

Int. Cl.⁴ G01V *5/00*

U.S. Cl. 250—253 **16 Claims**



1. A method of characterizing kerogens which comprises:

(a) irradiating a sample comprising said kerogens with ultraviolet radiation to cause said kerogens to emit a fluorescent spectrum;

(b) separating said fluorescent spectrum into a spectrum of individual wave lengths;

(c) measuring the change in intensity of said individual wavelengths with time; and

(d) comparing the change in intensity with data generated from samples of various kerogens.

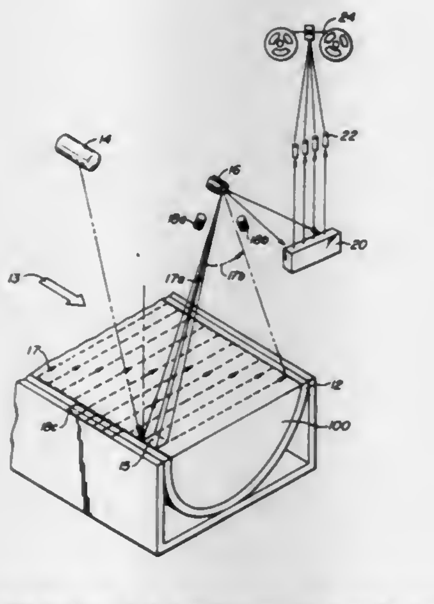
4,616,134
HIGH RESOLUTION GEOLOGIC SAMPLE SCANNING APPARATUS AND PROCESS OF SCANNING GEOLOGIC SAMPLES

Frank D. Pruett, Walnut Creek, and Floyd F. Sabins, Jr., Fullerton, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jul. 17, 1984, Ser. No. 631,662

Int. Cl.⁴ G01V *5/00*; G01F *23/00*

U.S. Cl. 250—255 **25 Claims**



1. An apparatus for analyzing the reflected radiation from a geologic sample comprising:

means for holding a sample in a fixed plane;

means for moving said sample at a uniform rate along said fixed plane connected to said holding means;

means for irradiating the sample with a source of electromagnetic radiation;

reflector means located in a plane above the sample and oriented at an angle and distance therefrom such that said reflector means is capable of receiving reflected/emitted radiation from said sample and directing said reflected/emitted radiation along a predetermined plane;

means for moving said reflector means connected thereto;

a spectrometer located in the plane of reflected/emitted radiation, said spectrometer capable of dividing said reflected radiation into predetermined energy bandwidths and directing said predetermined energy bandwidths towards detector means, said reflector means and said spectrometer adjusted to have a sample spatial resolution finer than about 1.0 mm by about 1.0 mm.

detector means responsive to said predetermined energy bandwidths, said detector means capable of converting said predetermined energy bandwidths into electrical signals;

means for encoding the electrical signals digitally from said detector means; and

means for recording said digitally encoded signal.

4,616,135
RADIATION IMAGE RECORDING AND REPRODUCING METHOD

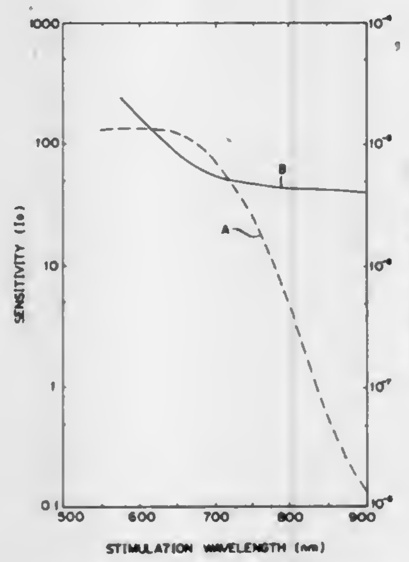
Yuichi Hosoi, and Kenji Takahashi, both of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Sep. 5, 1984, Ser. No. 647,476

Claims priority, application Japan, Sep. 6, 1983, 58-163877

Int. Cl.⁴ G01T *1/105*

U.S. Cl. 250—327.2 **3 Claims**



1. A radiation image recording and reproducing method comprising steps of:

(i) causing a radiation image storage panel containing a divalent europium activated barium fluorohalide stimulable phosphor to absorb a radiation having passed through an object or having radiated from an object;

(ii) exposing the panel to stimulating rays to release the radiation energy stored therein as light emission;

(iii) detecting the emitted light; and

(iv) exposing the panel to light having a wavelength at least within the stimulation wavelength region of the phosphor to erase the radiation energy remaining therein,

in which said stimulating rays are electromagnetic waves having a wavelength within the range of 670–850 nm.

4,616,136
INFRA-RED RADIATION DETECTOR

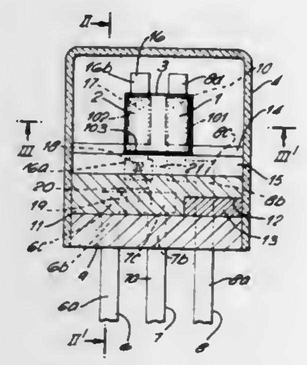
Patrick J. R. Ball; Geoffrey Baker, and Martin Renals, all of Southampton, England, assignors to U.S Philips Corporation, New York, N.Y.

Filed Nov. 13, 1984, Ser. No. 671,149

Claims priority, application United Kingdom, Dec. 2, 1983, 8332264

Int. Cl.⁴ G01J *5/10*

U.S. Cl. 250—338 **18 Claims**



1. An infrared radiation detector comprising:

a housing having a window which is transparent to infrared radiation;

a first electrically conductive lead extending through a portion of the housing, said lead having an extended portion which is supported in the housing by the remainder of the lead; and

a first pyroelectric detector element in the housing, said pyroelectric detector element being electrically connected to and fastened to the extended portion of the lead such that the lead supports the pyroelectric detector element in a cantilever arrangement.

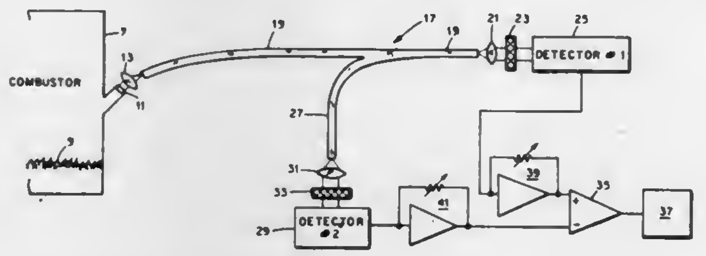
4,616,137
OPTICAL EMISSION LINE MONITOR WITH BACKGROUND OBSERVATION AND CANCELLATION

David R. Goff, Star City, and John E. Notestein, Morgantown, both of W. Va., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 4, 1985, Ser. No. 688,670

Int. Cl.⁴ G01N *21/00*

U.S. Cl. 250—554 **6 Claims**



1. An optical emission line monitoring system for remotely detecting a selected emission line from a light source in the presence of interferring background radiation, comprising:

a bifurcated fiber optic cable having first and second branches and a common trunk and adapted at the end of said first branch to optically couple light from said light source to said cable;

a first bandpass optical filter having a bandpass centered about and corresponding in width to said selected emission line and disposed to intercept light passing from the end of said common trunk of said cable and reflect light outside of said bandpass of said first filter back into said common trunk end of said cable;

a second bandpass optical filter having a bandpass centered about a wavelength identical to said first filter and a bandwidth substantially wider than the bandwidth of said first filter, said second filter disposed at the end of said second branch of said cable to view a portion of the light reflected back into said common trunk of said cable;

a first light detector means for generating a first signal having an amplitude proportional to the intensity of light transmitted through said first filter;

a second light detector means for generating a second signal having an amplitude proportional to the intensity of light transmitted through said second filter; and

a differencing circuit means for subtracting said second signal from said first signal and generating an output signal having an amplitude proportional thereto so that said output signal is proportional to the intensity of said emission line being monitored.

4,616,138
ANALOG-TYPE FIRE DETECTOR

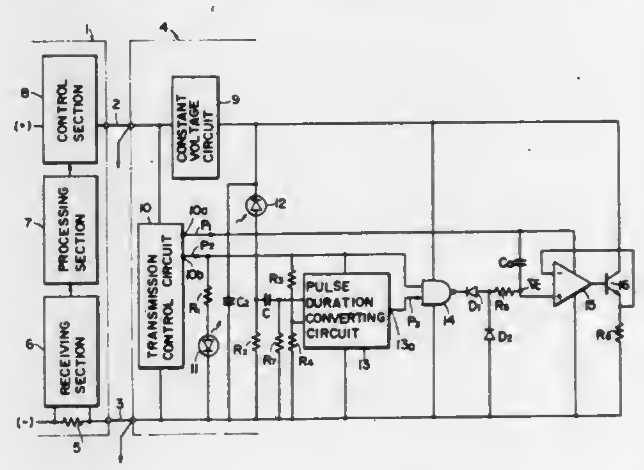
Sadataka Yuchi, Sagamihara, Japan, assignor to Hochiki Corporation, Tokyo, Japan

Filed Nov. 19, 1984, Ser. No. 672,834

Claims priority, application Japan, Nov. 29, 1983, 58-225255; Apr. 27, 1984, 59-85604

Int. Cl.⁴ G06K *7/10*

U.S. Cl. 250—554 **10 Claims**



1. An analog type fire detector for detecting a change in physical environment caused due to occurrence of a fire, which comprises:

a detecting means for intermittently detecting an amount of a change in ambient physical phenomena due to an occurrence of a fire to generate an analog signal corresponding to the change amount;

a pulse duration converting means for converting said analog signal into a pulse signal having a duration corresponding to the level of the signal;

a reference pulse generating means for generating a reference pulse having a predetermined duration with a predetermined period in correspondence to the detection operation of said detecting means;

a discriminating means for detecting a difference in pulse durations between an output signal from the pulse duration converting means and the reference pulse upon comparison thereof;

a charge-and-discharge means for charging or discharging a capacitor corresponding to the difference detected by the discriminating means; and

a hold-output means for holding and outputting, for a predetermined time, a signal corresponding to a voltage across the capacitor when the charging or discharging in said charge-and-discharge means is stopped.

4,616,139

APPARATUS FOR OPTICAL SCANNING OF THE EXTERIOR OF A MOVING CIGARETTE ROD OR THE LIKE

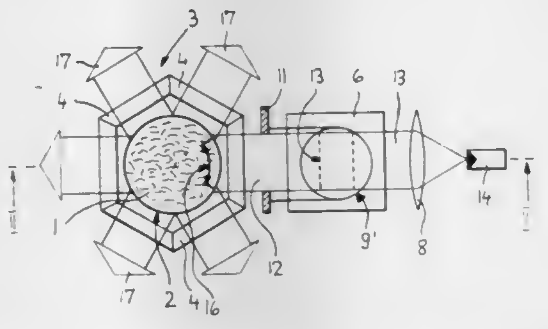
Uwe Heitmann, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed May 24, 1984, Ser. No. 613,899

Claims priority, application Fed. Rep. of Germany, May 31, 1983, 3319691

Int. Cl.^{4} G01N *21/88;* B07C *5/00*

U.S. Cl. 250—572 **16 Claims**



1. Apparatus for optically scanning the exterior of cigarette rods and analogous rod-shaped products of the tobacco processing industry which move lengthwise along a predetermined path, comprising a plurality of radiation conducting units at least partially surrounding a portion of said path and arranged to conduct radiation substantially radially inwardly toward and at right angles to the axis of the rod; an annular carrier for said units, said carrier surrounding the rod in said portion of said path; means for admitting radiation to said conducting units so that such radiation is directed against the corresponding portions of the exterior of the moving rod and is reflected back into the respective units, the characteristics of reflected radiation being indicative of the condition of the corresponding portion of the exterior of the rod; means for generating signals denoting the characteristics of reflected radiation; and a light-transmitting rod guide provided in said carrier and interposed between said units and the rod in said portion of said path so that radiation issuing from said admitting means as well as radiation which is reflected by the exterior of the rod passes through said guide, said guide including a radiation transmitting plate for each of said units, said plates together constituting a polygonal sleeve and being disposed in planes extending at right angles to the direction of propagation of radiation from the respective units to the corresponding portions of the exterior of the rod in said path and the direction of propagation of reflected radiation back to the respective units.

4,616,140

SYSTEM AND A METHOD FOR CONVERSION OF SOLAR RADIATION INTO ELECTRIC POWER

Jan C. Bratt, Malmö, Sweden, assignor to United Stirling AB, Malmö, Sweden

Filed Nov. 9, 1983, Ser. No. 550,174

Int. Cl.^{4} F03G *7/02*

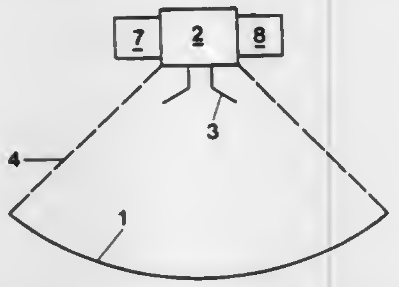
U.S. Cl. 290—1 R **3 Claims**

1. A system for conversion of solar radiation into electric power, comprising:

a parabolic mirror for focusing said solar radiation on a focal space;

a single hot gas engine including a heater head mounted with said heater head in said focal space of said parabolic mirror; and

two electric generators of equal size and capacity symmetrically arranged on each side of said engine and mechanically coupled to said engine, said generators being separately operable at differing loads.



4,616,141

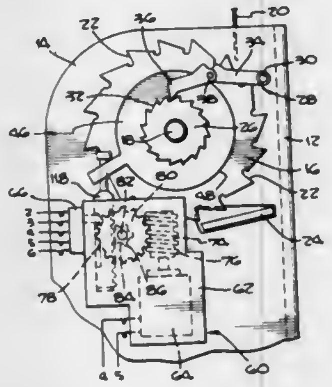
ELECTRICALLY ACTIVATED TENSION ELIMINATOR ACTUATOR

William Hollowell, Pacific Palisades, Calif., assignor to American Safety Equipment Corporation, Troy, Mich.

Filed Dec. 14, 1984, Ser. No. 682,054

Int. Cl.^{4} H02G *15/07;* B60R *21/10*

U.S. Cl. 307—10 SB **6 Claims**



1. In a safety belt retractor for use in restraining a passenger in a vehicle, the retractor including a safety belt wound upon a spool for protraction to a position of use and retraction under a spool rewind spring bias to a storage position, and a spring tension eliminator mechanism for selectively inhibiting spool rewind rotation in response to the bias occurring when said belt is manipulated into a position for use, said mechanism being known per se and including a ratchet wheel, a releasable pawl and a frictionally driven cam disc for moving said pawl into and out of engagement with said ratchet to normally operate said mechanism between belt rewind inhibiting and noninhibiting conditions in response to spool rotation imparted by protractive and retractive belt manipulation occurring when said belt is manipulated into said position of use the improvement in an actuator means for overriding operation of said tension eliminator mechanism upon operation of a vehicle component, such as the vehicle door between door closed and door open positions, comprising the provision of:

override means for overriding said tension eliminator mechanism's operation between belt rewind inhibiting and noninhibiting conditions in an overriding manner relative its operation otherwise caused by the normal operation of said mechanism by belt manipulation by the user;

electrical motor means connected to said override means for operating said override means to predetermined positions upon selective operation of said motor means, and

switch means, associated with a component of said vehicle operable by said user, for selectively connecting said motor means to a source of electrical energy to electrically operate said override means via said motor means to override the operation of said tension eliminator mechanism in response to said user manipulation of said component.

4,616,142

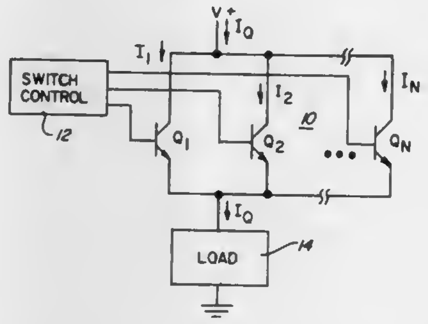
METHOD OF OPERATING PARALLEL-CONNECTED SEMICONDUCTOR SWITCH ELEMENTS

Anand K. Upadhyay, Rockford, Ill.; W. William Wold, Edina, Minn., and Pierre Thollot, Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 31, 1984, Ser. No. 687,803

Int. Cl.^{4} H03K *17/56, 3/01;* G06F *1/56*

U.S. Cl. 307—242 **5 Claims**



1. In a method of operating a power switch coupled to a power source to produce an output having a desired average level I_{AV} at a selected output duty cycle, the power switch comprising N parallel-connected semiconductor switch elements, each switch element conducting an average current equal to I_{AV}/N, the improvement comprising:

operating each of the N switch elements for a length of time while maintaining the remaining switch elements in an off state to produce a series of pulses so that each switch element is operated at a duty cycle less than the selected output duty cycle of the power switch.

4,616,143

HIGH VOLTAGE BOOTSTRAPPING BUFFER CIRCUIT

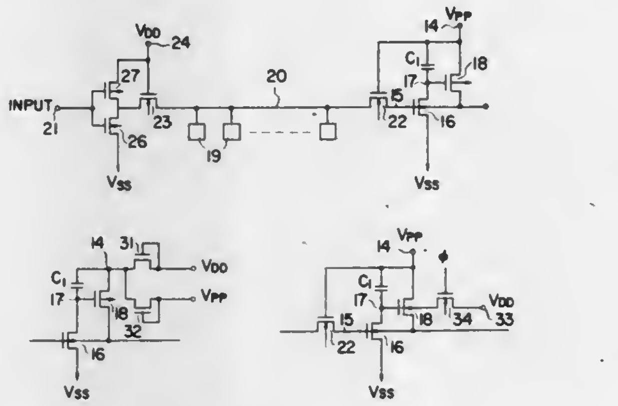
Junichi Miyamoto, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 30, 1984, Ser. No. 645,627

Claims priority, application Japan, Aug. 31, 1983, 58-160123

Int. Cl.^{4} H03K *17/10, 3/027, 17/687;* G11C *11/40*

U.S. Cl. 307—264 **6 Claims**



1. A logic circuit comprising:

a first MOS transistor of a first conductive type having a gate connected to an input/output line and a source connected to a first power source;

a second MOS transistor of a second conductive type having a gate connected to the drain of the first MOS transistor, a source connected to a second power source, and a drain connected to the gate of the first MOS transistor; and

a capacitor connected across the gate and source of the second MOS transistor.

4,616,144

HIGH WITHSTAND VOLTAGE DARLINGTON TRANSISTOR CIRCUIT

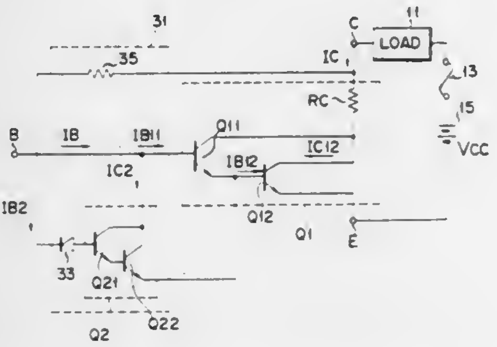
Makoto Hideshima, Tokyo; Wataru Takahashi, and Kenichi Muramoto, both of Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 12, 1984, Ser. No. 680,659

Claims priority, application Japan, Dec. 14, 1983, 58-235383

Int. Cl.^{4} H03K *19/08*

U.S. Cl. 307—315 **11 Claims**



1. A Darlington transistor circuit comprising:

a Darlington transistor comprising at least two contiquous transistors, an earlier stage transistor and a later stage transistor, each having a base, a collector and an emitter, of which the emitter of the earlier stage transistor is connected to the base of the later stage transistor, said later stage emitter constituting an emitter of the Darlington transistor, and the collectors of both earlier and later stage transistors are connected in common and constitute a collector of the Darlington transistor; and

bypass means, having a first, second and third terminal, said first terminal connected to the collector of said Darlington transistor, said second terminal connected to the base of said earlier stage transistor and said third terminal connected to the base of said later stage transistor, such that when the voltage between the collector and emitter of said Darlington transistor is higher than a specified voltage, which specified voltage is higher than a saturation voltage of said Darlington transistor, and which specified voltage is within the safe operation area of said Darlington transistor, said bypass means is operative to cause a base current, which is normally supplied to the base of said earlier stage transistor, to substantially flow to the base of said later stage transistor, while substantially interrupting the supply of the base current to the base of said earlier stage transistor, to thereby substantially decrease the current amplification ratio of said Darlington transistor.

4,616,145

ADJUSTABLE CMOS HYSTERESIS LIMITER

Brent A. Myers, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Apr. 2, 1984, Ser. No. 595,738

Int. Cl.^{4} H03K *5/08*

U.S. Cl. 307—555 **28 Claims**

1. An electrical signal limiter with hysteresis, said limiter comprising:

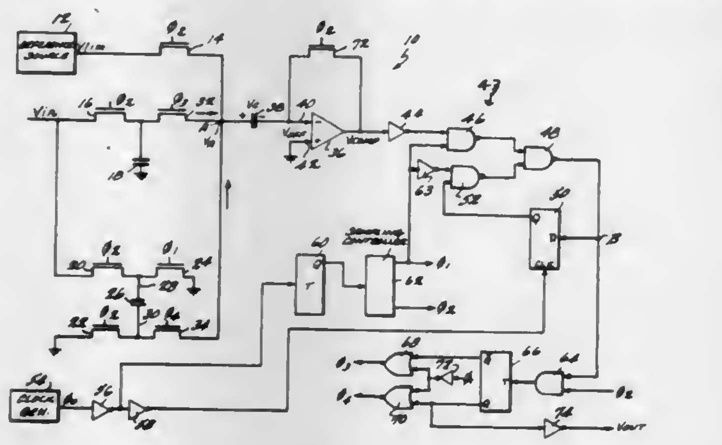
a voltage comparator having first and second inputs and an output, said comparator having two different output states depending upon which of its inputs is at the higher relative voltage and having said first input connected to a reference voltage point;

a first switched capacitor means for storing a sample of a limiting voltage V_{lim};

a second switched capacitor means for storing a sample of an input voltage V_{in};

a third switched capacitor means for storing an inverted sample of the input voltage, that is $-V_{in}$; and

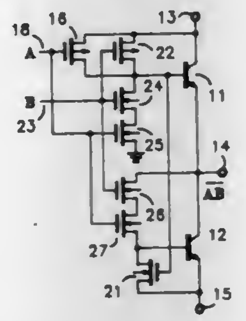
sampling control means connected to said output of the voltage comparator and to said first, second and third switched capacitor means for alternatively connecting either said first and second or said first and third switched capacitor means in circuit with the second input of the voltage comparator as required to cause a change of state in the comparator output when $|V_{in}| > V_{lim}$.



4,616,146
BI-CMOS DRIVER CIRCUIT

Shi-Chuan Lee, Del Mar, Calif., and Douglas W. Schucker, Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 4, 1984, Ser. No. 647,216
Int. Cl.^{4} H03K *19/01, 19/082, 19/094*
U.S. Cl. 307—446 **2 Claims**

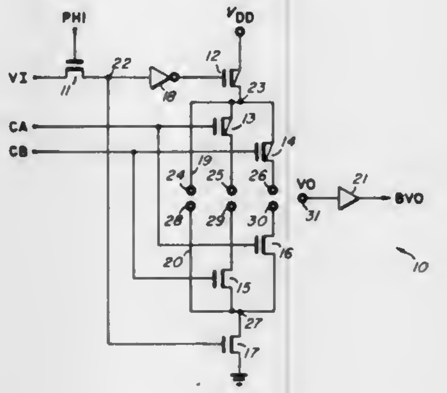


1. A gate circuit comprising:
a plurality of input terminals;
an output terminal;
a first bipolar transistor having its emitter-collector current path coupled between a first supply voltage terminal and said output terminal;
a second bipolar transistor having its emitter-collector current path coupled between said output terminal and a second supply voltage terminal;
a first plurality of MOS transistors, each having its drain-source current path coupled in parallel between said first supply voltage terminal and a base of said first bipolar transistor, each of said first plurality of MOS transistors having a control electrode coupled to one of said plurality of input terminals;
a second plurality of MOS transistors, each having its drain-source current path coupled in series between said output terminal and a base of said second bipolar transistor, each of said second plurality of MOS transistors having a control electrode coupled to one of said plurality of input terminals;
a third plurality of MOS transistors, each having its drain-source current path coupled in series between said base of said first bipolar transistor and said second supply voltage terminal, and having a control electrode coupled to one of said plurality of input terminals; and
a first MOS transistor having its drain-source current path coupled between said base of said second bipolar transistor and said second supply voltage terminal, and having a control electrode coupled to said base of said first bipolar transistor.

4,616,147
PROGRAMMABLE EDGE DEFINED OUTPUT BUFFER

Joseph Pumo, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 15, 1984, Ser. No. 672,538
Int. Cl.^{4} H03K *17/693*
U.S. Cl. 307—481 **14 Claims**

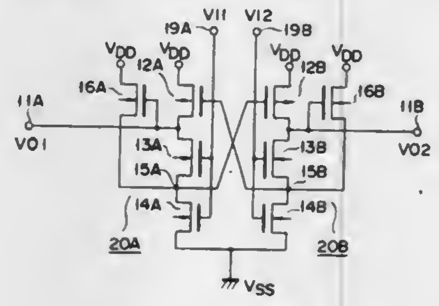


1. A programmable output buffer, comprising:
first means for coupling a first logic state to a first node when a first signal is in a first condition;
second means for coupling a second logic state to a second node when the first signal is in a second condition;
an output amplifier having an input, and an output;
a first programming terminal capable of being programmed to be coupled to the input of the amplifier;
a second programming terminal capable of being programmed to be coupled to the input of the amplifier;
third means for coupling the first logic state from the first node to the first programming terminal in response to a first clock signal; and
fourth means for coupling the second logic state from the second node to the second programming terminal in response to a second clock signal;
whereby the output buffer is programmed by connecting selected ones of the first node, second node, first programming terminal, and second programming terminal to the input of the output amplifier.

4,616,148
SENSE AMPLIFIER

Kiyofumi Ochii, Yokohama; Hiroshi Yasuda, Tokyo, and Fujio Masuoka, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Oct. 30, 1985, Ser. No. 792,854
Claims priority, application Japan, Oct. 31, 1984, 59-229246
Int. Cl.^{4} H03K *5/24, 3/023, 3/356;* **G11C** *7/06*
U.S. Cl. 307—530 **6 Claims**

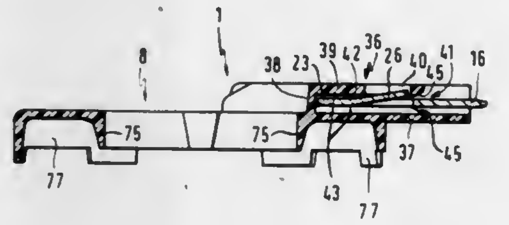


1. A sense amplifier comprising:
a first Schmitt trigger circuit comprising a first MOS transistor of the first polarity connected between a first power source potential and a first output terminal, second and third MOS transistors of the second polarity, the source-drain paths of said second and third MOS transistors being inserted in series between said first output terminal and a second power source potential, the gates of said second and third MOS transistors being connected together and to a first input terminal to be coupled for reception with a first input potential, and a fourth MOS transistor of the second polarity of which the source-drain path is inserted between said first power source potential and a node between the source-drain paths of said second and third MOS transistors, the gate of said fourth MOS transistor being connected to said first output terminal;
a second Schmitt trigger circuit comprising a fifth MOS transistor of the first polarity connected between said first power source potential and a second output terminal, sixth and seventh MOS transistors of the second polarity, the source-drain paths of said sixth and seventh MOS transistors being inserted in series between said second output terminal and said second power source potential, the gates of said sixth and seventh MOS transistors being connected together and to a second input terminal to be coupled for reception with a second input potential, and an eighth MOS transistor of the second polarity whose source-drain path is inserted between said first power source potential and a node between the source-drain paths of said sixth and seventh MOS transistors, the gate of said eighth MOS transistor being connected to said second output terminal;
the gate of said first MOS transistor in said first Schmitt trigger circuit being connected to said node between the source-drain paths of said sixth and seventh MOS transistors; and
the gate of said fifth MOS transistor in said second Schmitt trigger circuit being connected to said node between the source-drain paths of said second and third MOS transistors.

4,616,149
ARRANGEMENT FOR JOINING THE CABLE ENDS OF A STATOR WINDING OF ELECTRIC MOTORS BY MEANS OF A CONNECTOR

Dieter Best, Ingelfingen, Fed. Rep. of Germany, assignor to ebm Elektrobau Mulfingen GmbH & Co., Mulfingen, Fed. Rep. of Germany

Filed Sep. 4, 1984, Ser. No. 646,950
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1983, 3335035
Int. Cl.^{4} H02K *11/00*
U.S. Cl. 310—71 **18 Claims**

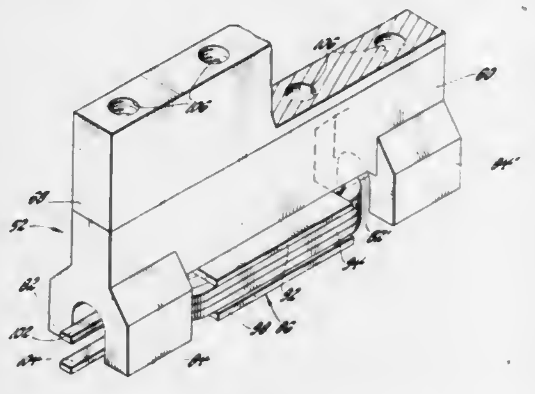


1. In apparatus for joining the cable ends of a stator winding of electric motors, in particular external rotor motors, with a connecting lead using electrical connecting elements and an insulating disc arranged at one end of the stator, which disc has an opening extending from the front insulating shaft of the stator plates of the electric motor and serves to cover as well as insulate the coil winding head of the stator winding, the improvement comprising:
said connecting elements being formed as connectors, and each connector being retained on the insulating disc,
said connectors being flat and formed from stamped-out sheet metal parts;
said insulating disc having receiving pockets defining recesses and configured to receive and retain said connecting elements;
each said connecting element including a catch means operative to retain the connecting element in said receiving pocket; and
said catch means comprising catch tongues stamped out from said sheet metal parts and bent at an acute angle so as to engage in corresponding said recesses of said pockets, so as to retain said connecting elements engaged in said pockets.

4,616,150
INTERPOLE ASSEMBLY FOR A DC MACHINE

Brian T. Concannon, Bolingbrook, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 28, 1985, Ser. No. 695,476
Int. Cl.^{4} H02K *1/10*
U.S. Cl. 310—186 **5 Claims**



1. In an interpole located intermediate a pair of main field poles in a DC machine for circulating magnetic flux in a closed loop path which extends in part through a portion of the armature of the machine as the armature rotates about the machine axis, the interpole including a pair of pole pieces one of which conducts flux from the interpole into the armature and the other of which conducts flux from the armature into the interpole, the flux conducted through one of the pole pieces intercepting each armature winding of the machine as the winding rotates through a commutation position in which the direction of current flow through the winding is reversed by a commutator mechanism and the flux conducted through the other pole piece bypassing the winding as it rotates through the commutation position, the flux intercepting each winding in the commutation position acting to counteract the induced EMF that would otherwise exist in the winding as it rotates through the commutation position thereby to reduce commutator arcing; the improvement wherein:
the pair of pole pieces of the interpole are so positioned and so configured that they are spaced in nonoverlapping relation as measured with respect to the dimension of the machine axis so that the general dimension of the interpole extending between the pair of main field poles transverse to the machine axis may be reduced as compared to the general dimension that would be required if an overlapping relation between the pole pieces existed, thereby to effect a reduction in the leakage flux between said pair of main field poles.

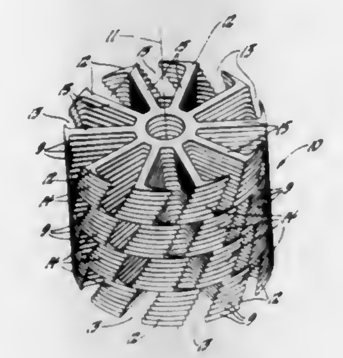
4,616,151
ARMATURE WITH QUIET CORE CONSTRUCTION

Bohdan I. Pryjmak, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 7, 1984, Ser. No. 679,244
Int. Cl.^{4} H02K *1/00*
U.S. Cl. 310—216 **6 Claims**

1. An armature for use in a DC motor of the type subject to noise-causing case vibrations in characteristic modes due to periodic variations in magnetic forces between armature poles and field magnets during armature rotation, the armature comprising a laminated core defining poles extending generally axially, each of said poles comprising a body portion with a winding thereabout and a plurality of axially disposed tooth portions, each tooth portion exhibiting a primary skew of its laminations in one direction while the tooth portions of each of

said pole exhibit a smaller secondary skew in the opposite direction, whereby magnetic forces between the armature and said field magnets are modified so as to produce less audible noise with armature rotation.



4,616,152

PIEZOELECTRIC ULTRASONIC PROBE USING AN EPOXY RESIN AND IRON CARBONYL ACOUSTIC MATCHING LAYER

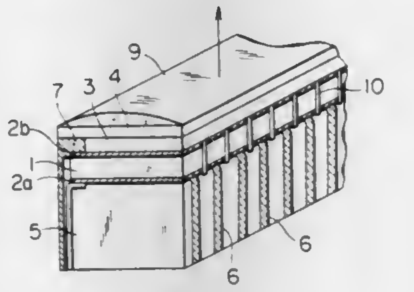
Koetsu Saito, Sagamihara; Keisaku Yamaguchi, Isehara, and Masami Kawabuchi, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 5, 1984, Ser. No. 668,214

Claims priority, application Japan, Nov. 9, 1983, 58-210103

Int. Cl.^{4} H01L *41/08*

U.S. Cl. 310—334 **8 Claims**



1. An untrasonic probe comprising: a piezoelectric vibrator with electrodes attached onto both surfaces thereof; a first acoustic matching layer which is provided on the surface of one electrode of said piezoelectric vibrator; and a second acoustic matching layer which is provided on said first acoustic matching layer; said first acoustic matching layer comprising a thermosetting resin mixed with iron carbonyl material.

4,616,153

CLOSED-LOOP LINEAR POSITION SERVOMOTOR

Robert E. Lee, 68 Dean St., Westwood, N.J. 07675

Filed Dec. 10, 1984, Ser. No. 680,137

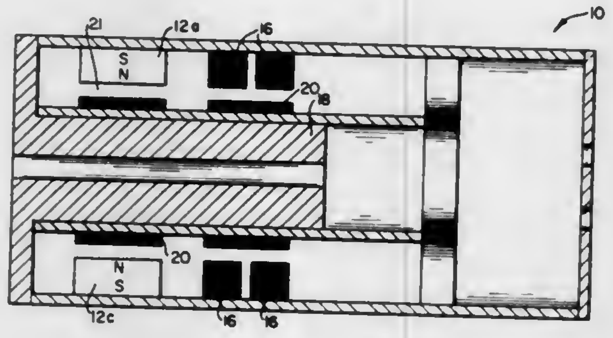
Int. Cl.^{4} H02K *41/00*

U.S. Cl. 318—687 **3 Claims**

1. A closed-loop linear position servomotor including a servo-amplifier, comprising:

(a) a hollow, tubular stator having radially disposed throughout the shell thereof a plurality of magnetically symmetric field magnets, each having its magnetic axis directed to the radial center of said stator, said stator further comprising a plurality of symmetric, longitudinally disposed feedback windings, the longitudinal extent thereof corresponding to the extent of change of linear position of the servomotor, said feedback windings comprising the secondary windings of the servomotor; and

(b) radially within said stator, an elongate armature having a radius smaller than the radius of said stator, said armature longitudinally wound with high current excitation windings, said excitation windings comprising the primary windings of the servomotor, the longitudinal length of said windings corresponding in length to at least the longitudinal length of said feedback windings of said stator, wherein the difference in radii between said armature and said stator define an air gap and, further wherein, current flowing through said excitation windings will magnetically interact with said secondary windings of the stator responsive to the character of the electrical input to said excitation windings, whereby said feedback windings will magnetically monitor motion and force of said armature relative to said stator to thereby generate a corresponding motion and force feedback to said servo-amplifier to thusly produce a corrected excitation signal to said excitation winding to provide continuously corrected linear motion and force to said armature.



4,616,154

CATHODE RAY TUBE HAVING AN FE-CO-CR SHADOW MASK AND METHOD OF MANUFACTURING SUCH A SHADOW MASK

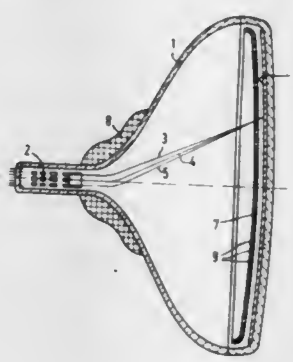
Marcel Brouha; Johannes T. Klomp, and Johannes T. C. van Roosmalen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 22, 1984, Ser. No. 623,600

Claims priority, application Netherlands, Jun. 28, 1983, 8302276

Int. Cl.^{4} H01J *29/07, 9/14;* **C22C** *38/18*

U.S. Cl. 313—402 **2 Claims**



1. In a cathode-ray tube for displaying coloured pictures, including in an evacuated envelope means to generate a number of electron beams, a display screen comprising a large number of regions luminescing in different colours, and colour selection means formed by a ferromagnetic plate having a plurality of apertures which associate each electron beam with luminescent regions of one colour, said plate being magnetized so that a magnetic quadrupole field is formed in each aperture, the improvement comprising said ferromagnetic plate being formed from a foil consisting of an Fe-Co-Cr alloy having 25-27% by weight of Cr, 10-11% by weight of Co, and, not counting inevitable impurities, the remainder essentially Fe, said foil being magnetized after keeping said foil at 650° C. and then reducing the temperature below 550° C., said temperature reduction being accomplished in a substantially exponential manner.

4,616,155

OVERVOLTAGE DISCHARGER FOR COAXIAL CABLES AND METHOD OF MAKING SAME

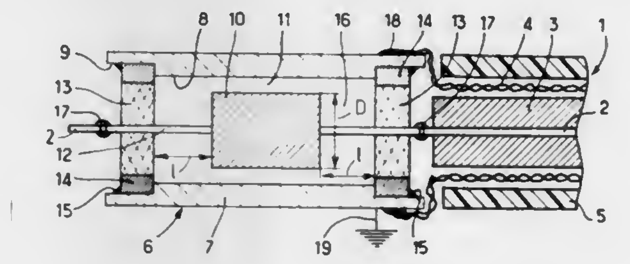
Francois Guichard, Paris, France, assignor to Compagnie Industrielle de Tubes et Lampes Electriques CITEL, Issy-les-Moulineaux, France

Filed Jul. 9, 1984, Ser. No. 629,099

Claims priority, application France, Jul. 18, 1983, 83 11830

Int. Cl.^{4} H01J *17/04, 17/16, 17/18*

U.S. Cl. 313—573 **15 Claims**



1. A bipolar overvoltage discharger for a coaxial cable comprising:

a first tubular electrically conductive electrode having an inner surface of circular section defining a central passage having a first end and a second end,

a second electrode within said first electrode, said second electrode comprising an electrically conductive element having an outer conductive surface coaxial with the inner conductive surface of the first electrode, and spaced therefrom to define an annular flashover space between said surfaces,

first electrically conductive rod means electrically connected to said second electrode and extending axially from a first end thereof, in coaxial relation to said conductive inner surface of the first electrode,

second electrically conductive rod means electrically connected to said second electrode and extending axially from a second end thereof, in coaxial relation to said conductive inner surface of the first electrode,

said first and second rod means being of a diameter less than the outer conductive surface of the second electrode, and having outer portions extending axially outwardly of the respective ends of said tubular electrode,

first and second electrically insulating seal means sealing the respective ends of said first electrode, with respect to said first and second rod means, to define a sealed region between the ends of the first electrode, and

a low pressure inert gas in said sealed region,

said outer portions of said rod means being adapted to be connected to a central conductor of a coaxial cable, and

said first electrode being adapted to be connected to a shielding braid of the coaxial cable.

4,616,156

TRI-MODEL TYPE CIRCUIT BREAKER AND RAPID-START FLUORESCENT LAMP

William J. Roche, Merrimac, and John W. Anderson, Jr., Ipswich, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 582,672, Feb. 23, 1984, abandoned. This application Jan. 6, 1986, Ser. No. 817,753

Int. Cl.^{4} H05B *39/04*

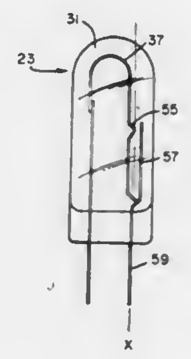
U.S. Cl. 315—107 **15 Claims**

1. A tri-model circuit breaker for use in a rapid-start fluorescent lamp comprising:

a glass bulb;

first and second electrical conductors sealed into and passing through said bulb; and

a thermally sensitive electrically conductive bi-metal strip disposed within said bulb and having first and second end portions separated by an intermediate portion, said first end portion being affixed to said first electrical conductor, said second end portion being formed to contact said second electrical conductor at ambient bulb temperatures, to be spaced from said second electrical conductor at a given range of bulb temperatures higher than said ambient bulb temperature, and said intermediate portion of said bi-metal strip being spaced from said second electrical conductor at ambient and at said given range of bulb temperatures and contacting said second electrical conductor at bulb temperature higher than said given range of bulb temperatures whereby said first and second electrical conductors are electrically connected at ambient temperature and at bulb temperatures higher than said given range of temperatures.



4,616,157

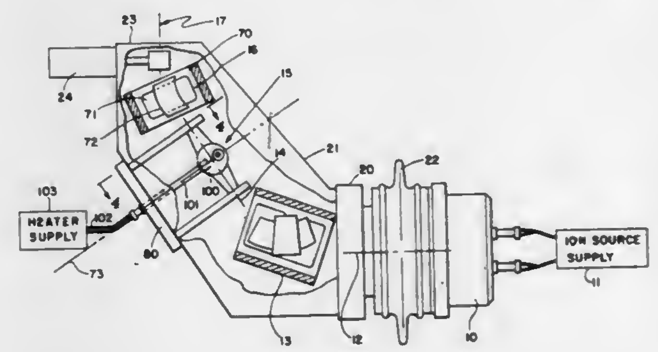
INJECTOR FOR NEGATIVE IONS

Harry Naylor, Richmond, New Zealand, and Kenneth H. Purser, Manchester, Mass., assignors to General Ionex Corporation, Newburyport, Mass.

Filed Jul. 26, 1985, Ser. No. 759,465

Int. Cl.^{4} H01J *7/24*

U.S. Cl. 315—111.01 **10 Claims**



1. An injector for negative ions at a predetermined energy level along an injection axis, said injector comprising:

A. ion source means for producing He+ ions,

B. vacuum chamber means connected to said ion source for providing a vacuum environment through which the ions pass,

C. vapor canal means in said vacuum chamber for producing charge exchange vapor in a contained space,

D. first permanent magnet means in said vacuum chamber for deflecting the He+ ions from said ion source means onto an axis through said vapor and for focusing the positive ion beam to a focal point in the vapor, the vapor transferring electrons to said ions to produce He− ions,

E. second permanent magnet means in said vacuum chamber at the exit of said canal means for focusing said He− ions and deflecting the negative ions onto the injection axis,

F. power supply means connected to said ion source for elevating the energy of said ions to the predetermined energy level.

4,616,158
ARRANGEMENT FOR SHUTTING OFF AN INVERTER

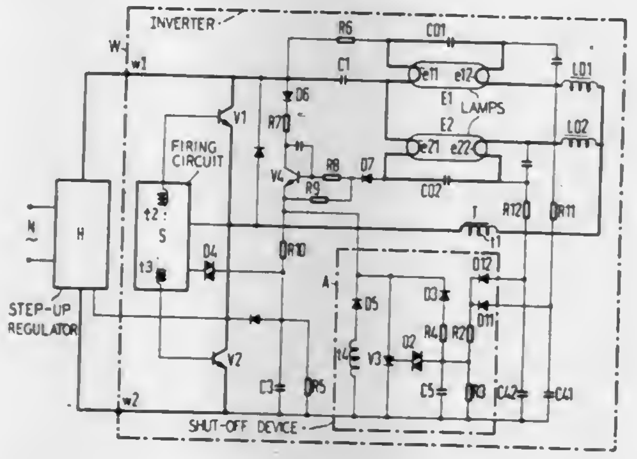
Peter Krummel, St. Georgen, and Manfred Klamt, Trostberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 19, 1983, Ser. No. 563,170

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1982, 3247863

Int. Cl.⁴ H05B *37/03, 41/24*

U.S. Cl. 315—225 **5 Claims**



1. An arrangement for shutting off an inverter which feeds at least one lamp circuit with a discharge lamp which has heatable electrodes, comprising:

a bistable shut-off device operable in response to the current in the lamp circuit to switch to a disconnect condition to turn off the inverter when the integral of the current in the lamp circuit reaches a shut-off limit value, the bistable shut-off device being held in said disconnect condition by a holding current and switching back to normal condition when the lamp circuit is disconnected by removing the lamp electrode from the lamp circuit and therefore holding current falls below a predetermined flyback limit value;

a monitoring circuit including at least one electrode of the at least one discharge lamp and operable to provide a monitoring current; and

a holding circuit connected to said bistable shut-off device including a controllable resistor and providing the holding current as long as the electrode of the at least one lamp is included in the monitoring circuit, said controllable resistor having a resistance controlled by the monitoring current to provide a holding current equal to or greater than a minimum holding current when said bistable shut-off device is in its disconnect condition.

4,616,159
DRIVING CIRCUIT FOR PULSATING RADIATION DETECTOR

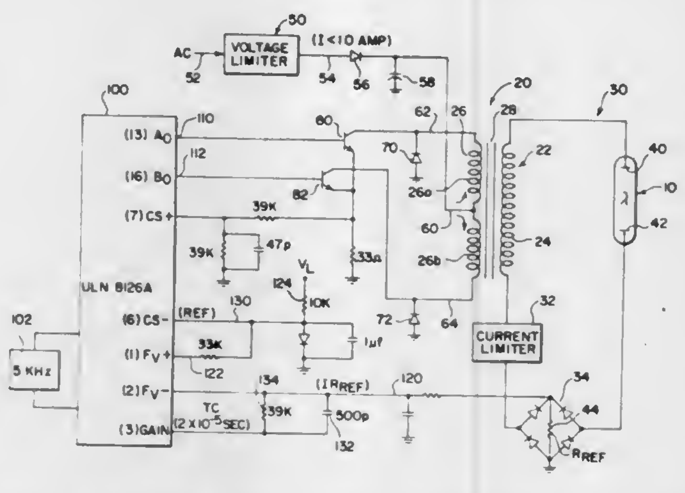
Wen H. Ko, Cleveland Hts., and Gong-Jong Yeh, Cleveland, both of Ohio, assignors to The North American Manufacturing Company, Cleveland, Ohio

Continuation of Ser. No. 525,274, Aug. 22, 1983, abandoned. This application Apr. 22, 1985, Ser. No. 724,955

Int. Cl.⁴ H05B *37/02;* **G05F** *1/00*

U.S. Cl. 315—307 **11 Claims**

1. In a pulsing radiation detector system comprising means in a series circuit for emitting radiation in pulses of a selected, adjusted frequency (f), means responsive to pulses of radiation at said frequency for creating a control signal related to the received radiation, and a driving circuit for pulsing said radiation emitting means in said series circuit, said pulsing radiation detector further comprising: said driving circuit having means for creating voltage pulses in said series circuits, said pulses having a time base width (t) less than 1/f in seconds, means for sensing current flow in said series circuit, means for limiting the current in said series circuit and means for adjusting said pulse width (t) as an inverse function of said sensed current; said radiation emitting means is a fluorescent light tube and said radiation pulses are light pulses; said pulse creating means including a transformer with a primary winding and a closely coupled secondary winding in said series circuit and means for applying pulses of voltage across said primary winding; said primary winding divided into a first segment and a second segment and said pulse applying means includes means for applying voltage pulses alternately across said first and second segments; and wherein said current limiting means is a winding in said series circuit and loosely coupled with both said primary winding and said secondary winding.



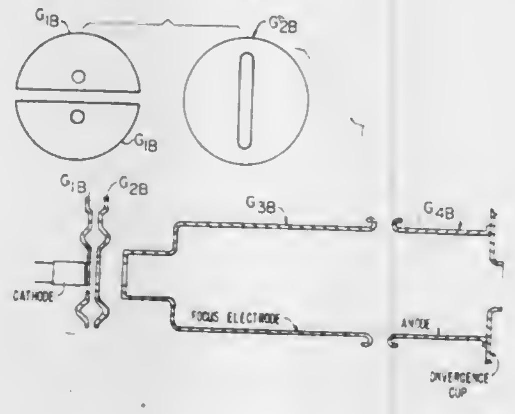
4,616,160
MULTIPLE BEAM HIGH DEFINITION PAGE DISPLAY

Thomas O. Holtey, Newton, and J. Nathaniel Marshall, Boston, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Division of Ser. No. 537,929, Sep. 30, 1983. This application Jul. 29, 1985, Ser. No. 760,014

Int. Cl.⁴ G06K *15/20;* **H01J** *31/16*

U.S. Cl. 315—365 **11 Claims**



1. A high definition page display system for image generation utilizing multiple electron beams in a cathode ray tube (CRT) and multiple image generators comprising:

(a) a CRT tube having at least one cathode, and a heater for each cathode, a focusing electrode, an anode, and a screen coated with a material sensitive to electron impingement;

(b) a biasing grid for controlling beam strength, said biasing grid split to comprise at least two sections, each section having a small hole for permitting electrons to pass through any of said holes and wherein each section of said biasing grid is separated from each other by a space less than 0.1 mm;

(c) an accelerator for accelerating electrons and having an oblong opening for permitting electrons that pass through the holes in said biasing grid to also pass through the oblong opening in said accelerator; and

(d) multiple image generating means coupled to said CRT for electronically generating images on said CRT utilizing said multibeam CRT.

4,616,161
CURRENT DEPENDENT TYPE COLOR CATHODE RAY TUBE

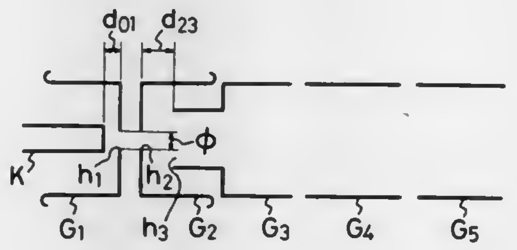
Takahiro Yukawa, Tokyo; Hideo Kusama, Yokohama; Koji Kanbayashi, Tomisato, and Osamu Takeuchi, Hino, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 17, 1983, Ser. No. 542,478

Claims priority, application Japan, Oct. 19, 1982, 57-183173

Int. Cl.⁴ H01J *29/58*

U.S. Cl. 315—382 **7 Claims**



1. A current dependent type color cathode ray tube comprising; a color phosphor screen formed of at least two phosphors which overlay each other having current density versus brightness characteristics which are different from each other and which emit light energy of different colors; an electron gun emitting an electron beam which impinges on said color phosphor screen, means for changing the current density of said electron beam in response to color signals to generate light energy of different colors to thereby produce a color image, wherein the focussing voltage for said electron gun is set to be a voltage such that a focussed state occurs at the highest drive current within a drive current range in which light emissions of respective colors are obtained by said electron beam and the focal length which occurs with said focussing voltage at said focussed state is displaced by more than 5% from the focal length obtained at the lowest drive current.

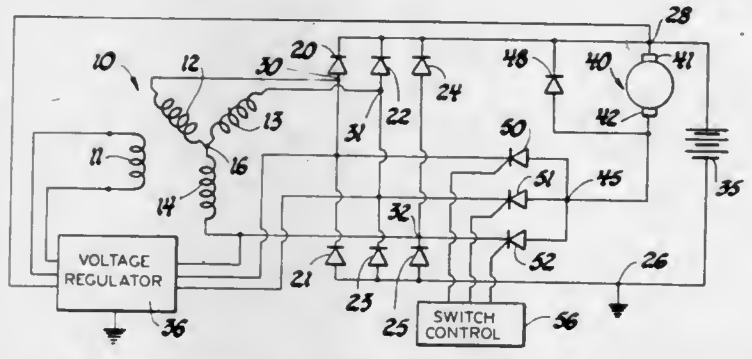
4,616,162
SPEED SELECTION CONTROL FOR VEHICLE MOUNTED ELECTRIC ACCESSORY MOTOR

Thomas A. Radomski, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 18, 1985, Ser. No. 712,785

Int. Cl.⁴ H02P *5/00, 11/00*

U.S. Cl. 318—317 **1 Claim**



1. A speed selection control for a DC electric accessory motor having an armature winding and being mounted on a vehicle having a high reactance, multiphase alternator with a diode bridge rectifying output circuit, a battery connected across the output circuit and a voltage regulator controlling the voltage across the output circuit to a substantially constant voltage, the speed control comprising in combination:

first circuit means connecting one end of the motor armature winding to the ungrounded end of the output circuit;

second circuit means connecting the other end of the motor armature winding to the output circuit only at the junctions of the diodes of each phase thereof, the second circuit means comprising a plurality of switched rectifiers, each having an anode connected to the other end of the motor armature winding and a cathode connected to the junction of the diodes of one phase of the output circuit; and

switch control means effective to vary the speed of the motor by providing a continuous activation signal to selected numbers of the switched rectifiers, including at least one such number less than all and greater than none of the switched rectifiers, whereby the motor armature receives electric power from the alternator with voltage duty cycle controlled according to the number of switched rectifiers activated and thus the number of alternator phases used.

4,616,163
POSITION CONTROL SYSTEM FOR WHEELED VEHICLE

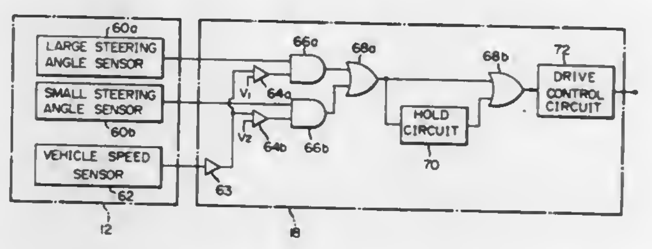
Seita Kanai; Toshimichi Tokunaga, both of Hiroshima, and Somi Hibino, Gifu, all of Japan, assignors to Mazda Motor Corporation, Hiroshima and Kayaba Industry Co., Ltd., Tokyo, both of, Japan

Filed Aug. 15, 1983, Ser. No. 523,828

Claims priority, application Japan, Aug. 31, 1982, 57-151306; Aug. 31, 1982, 57-151307

Int. Cl.⁴ G05B *5/01;* **B60G** *21/00*

U.S. Cl. 318—611 **14 Claims**



1. A system for controlling the position of a wheeled vehicle which includes suspension means for damping shock while the vehicle is running, said system comprising:

vehicle position sensor means for sensing a change in the position of the vehicle from a usual position to an unusual position and producing a signal indicative of said unusual position;

damping force regulator means for regulating the shock damping force exerted by the suspension means;

control means comprising a drive control circuit for controlling said damping force regulator means in response to the output signal of the vehicle position sensor means to increase the shock damping force; and

hold means for holding the drive control circuit of the control means to maintain the increased condition of the shock damping force of the damping force regulator means for a predetermined period of time after the vehicle position sensor means produces the signal indicating that the vehicle regains the usual position, such that the shock damping force is maintained at the increased condition.

4,616,164
FEEDBACK SERVO ACTUATOR

Andrew A. Kenny, Roselle; Daniel C. Stahly, Elmhurst, and Dennis DeVera, Bloomingdale, all of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 594,080, Mar. 28, 1984. This application Jul. 3, 1985, Ser. No. 751,996

Int. Cl.⁴ G05B *1/06;* **H02K** *7/10*

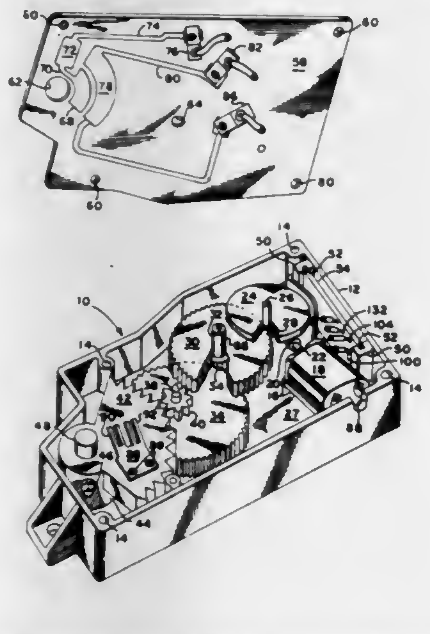
U.S. Cl. 318—666 **18 Claims**

1. A servoactuator having an output shaft rotated by a motor in response to an electrical signal, said servoactuator comprising:

(a) housing means including a shell member and a cover therefor, with said motor mounted in said shell;

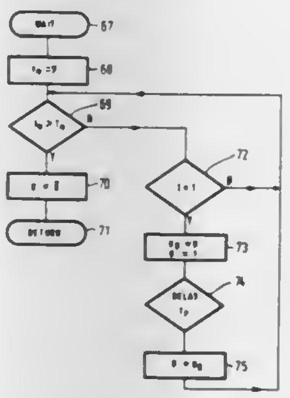
(b) speed reducing means disposed in said shell and connecting said motor with said output shaft, said speed reducing means including,

(i) a first stage cluster gear and motor pinion formed of relatively soft low modulus thermoplastic urethane elastomer;
(ii) a second stage cluster gear driven by said first stage and formed of non-metallic material having a minimum hardness of 120 as measured on the Rockwell "R" scale;
(iii) a third stage cluster gear driven by said second stage and formed of thermoplastic polyester material having about thirty percent (30%) glass fiber fill;
(c) variable resistor means including a resistive strip formed integrally on the inner surface of said cover plate and



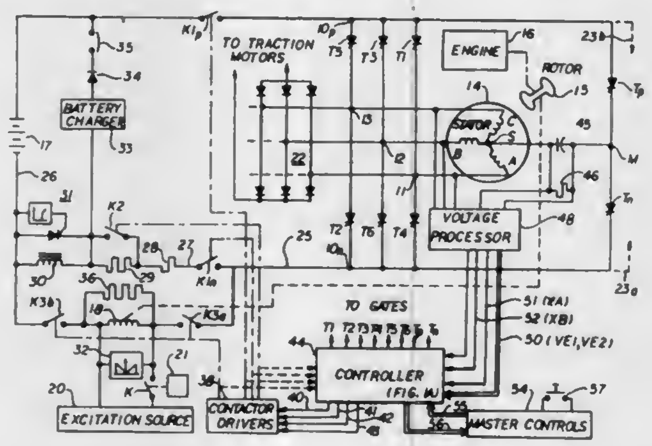
wiper means moveable with said speed reducer means for wiping said resistor means, said resistor means comprising at least one arcuate strip of polymeric material admixed with a material of predetermined electrical resistivity;
(d) electrical connector means connected to said resistor means and adapted for external electrical lead connection thereto, said connector means being series connected with said electrical contacts to provide a predetermined variable electrical resistance in said circuit with variable positions of said output shaft; and,
(e) means securing said cover plate over said shell.

4,616,165
SINGLE-PHASE RELUCTANCE MOTOR
Johan C. Compter, Hoogeveen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 22, 1985, Ser. No. 725,882
Claims priority, application Netherlands, Apr. 26, 1984, 8401336
Int. Cl.⁴ H02P *1/42*
U.S. Cl. 318—701 **14 Claims**



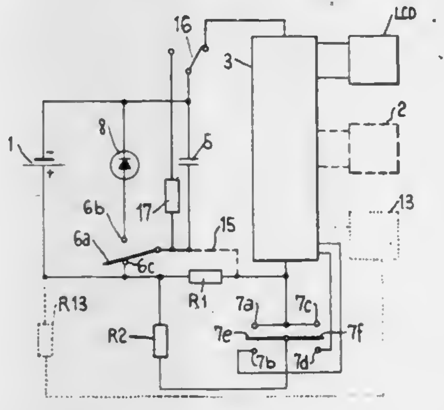
1. A single-phase reluctance motor having a stator with an excitation coil and an iron rotor constructed such that the flux which is coupled to the excitation coil depends on the rotor position, comprising
permanent magnet means for obtaining a preferential stationary position from which starting in a desired direction is possible,
a position sensor for generating position pulses at diametrically opposite rotor positions,
a switch for energizing the excitation coil under command of energizing pulses,
means for generating a first energizing pulse of predetermined length in order to start the motor,
means for generating at least a second energizing pulse after the appearance of the first position pulse during starting, which pulse starts a predetermined time interval after the appearance of said position pulse and has a predetermined length,
means for determining the time interval between consecutive position pulses,
means for determining, after starting, a measure of a first and a second time interval as a function of the time intervals measured between consecutive position pulses, and
means for supplying energizing pulses which each start when the first time interval has elapsed after the appearance of a respective position pulse and which are each sustained for the second time interval.

4,616,166
ELECTRIC POWER SYSTEM FOR STARTING A LARGE ROTATABLE SYNCHRONOUS MACHINE
Charles E. Cooper, and Thomas D. Stitt, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.
Filed Dec. 10, 1984, Ser. No. 679,979
Int. Cl.⁴ H02P *5/40, 7/66;* **H02K** *23/52*
U.S. Cl. 318—712 **12 Claims**



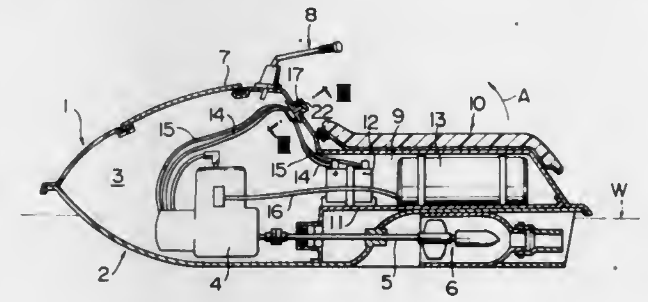
1. In a system for starting a rotatable a-c electrical machine of the synchronous type having a stator, a rotor adapted to be coupled to a mechanical load, a set of 3-phase a-c windings on said stator, and a d-c field winding on said rotor, the improvement comprising:
a. an electric storage battery;
b. an electric power converter having a pair of d-c terminals and three a-c terminals which are respectively connected to different phases of said stator windings;
c. means for providing a path for load current between said d-c terminals and said battery;
d. connecting means for inserting said field winding in said load current path while the rotor of said machine is at rest, said connecting means being effective when said rotor is rotating faster than a predetermined rate for disconnecting said field winding from said path and for reconnecting it to a different source of excitation;
e. control means associated with said converter and operative in a "cranking" mode to cause said converter to supply said stator windings with alternating current which tends to increase in frequency and decrease in magnitude as said rotor accelerates from rest, said cranking mode of operation commencing on command and concluding in response to rotor speed attaining said predetermined rate;
f. resistance means connected in parallel circuit relationship with said field winding in said load current path, the ohmic value of said resistance means having a predetermined initial magnitude; and
g. means for reducing the ohmic value of said resistance means to a lower magnitude on command.

4,616,167
ELECTRONIC APPARATUS
Karl Adler, Dorfstrasse 41, 2545 Selzach, Switzerland
PCT No. PCT/CH81/00078, § 371 Date Mar. 14, 1983, § 102(e) Date Mar. 14, 1983, PCT Pub. No. WO83/00237, PCT Pub. Date Jan. 20, 1983
PCT Filed Jul. 13, 1981, Ser. No. 475,165
Int. Cl.⁴ G04C *10/00;* **G04G** *1/00;* **H02J** *7/00*
U.S. Cl. 320—1 **15 Claims**



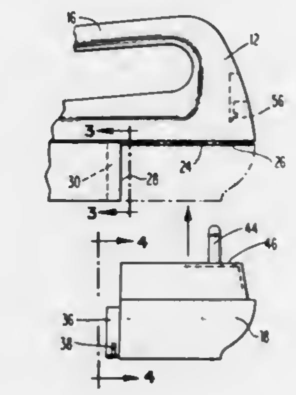
1. An electronic apparatus energized by a long-life solid state battery having a battery voltage comprising a first voltage level, said electronic apparatus comprising an integrated circuit operable to be powered at a second voltage level lower than said first voltage level, and a load controlled by said integrated circuit, a power supply circuit connected between the battery and the integrated circuit comprising a resistance for dropping the first voltage level to the second voltage level, and a capacitor having a capacity of 5 to 10 μf for delivering peaks of current to the load.

4,616,168
BATTERY SERVICE SYSTEM FOR SMALL-SIZED MARINE CRAFT
Hiroshi Nishida, Miki, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan
Filed Aug. 14, 1985, Ser. No. 765,511
Claims priority, application Japan, Aug. 16, 1984, 59-124838[U]
Int. Cl.⁴ H02J *7/00;* **B63B** *35/00*
U.S. Cl. 320—2 **3 Claims**



1. A battery service system for a small-sized marine craft having a deck and engine comprising service terminals provided on a portion of the deck of said marine craft above the water line so as to project from the deck surface, and electric wiring which connects an inboard battery to the engine of said marine craft through said service terminals.

4,616,169
BATTERY-POWERED APPLIANCE
Richard V. Proffitt, Essex, Conn., assignor to Scovill Inc., Waterbury, Conn.
Filed Apr. 8, 1985, Ser. No. 720,868
Int. Cl.⁴ H02J *7/00;* **H01M** *45/00*
U.S. Cl. 320—2 **4 Claims**



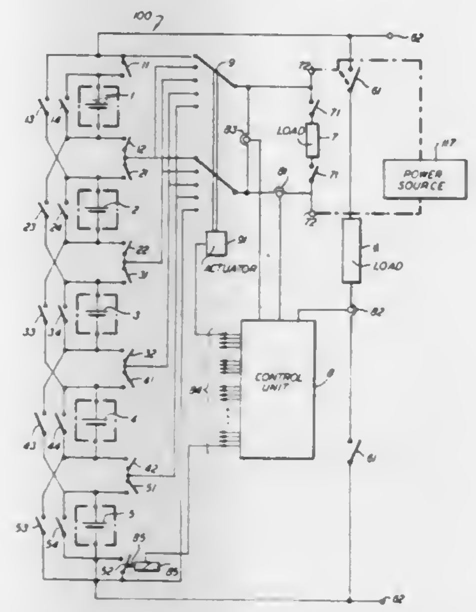
1. A battery-powered handheld appliance having a smooth housing, a lower section of the housing enclosing rechargeable battery-pack means, the lower section being removable to leave a recess having a vertical and a horizontal wall, motor means for driving an appliance disposed in the housing spaced from the said lower section, vertically extending and engaging interconnecting electrical means in the removable section and the housing adjacent the recess and releaseably connecting the battery-pack means and the motor, the rear of the housing above the recess including manually operable latch means, the removable section having a front vertical wall with a forward vertical projection having first interfitting means on the sides thereof, the vertical wall of the recess having a vertical cavity complementing the vertical projection, the cavity having second interfitting means in its side walls to accommodate slidingly the first interfitting means, and latch-engaging means at the rear end of the lower battery pack containing removable section, the latch and the interfitting means in cooperation keeping the removable section stored snugly up in the recess.

4,616,170
ARRANGEMENT AND METHOD FOR OPERATING AN ELECTROCHEMICAL STORAGE DEVICE
Rupert Urstöger, Uttenreuth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Jul. 25, 1984, Ser. No. 634,649
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1983, 3326729
Int. Cl.⁴ H02J *7/00*
U.S. Cl. 320—5 **6 Claims**

1. A method for operating an electrochemical storage device in which electrochemically active material enters into solution during a discharging process and is redeposited on electrodes of the storage device during a charging process, said storage device having a multiplicity of groups of electrochemical cells connected in series to a load, discharging means being operatively couplable to said storage device for breaking up nonuniformly distributed deposits at the electrodes of the storage device by completely discharging the cells of the storage device via a resistor, energizing means being operatively connectable to the storage device for recharging the cells thereof, said method comprising the steps of:
(a) preliminarily discharging via the resistor one of the cell groups of the storage device while maintaining said one of said cell groups in a series-connected circuit including the other cell groups of said storage device and the load;
(b) monitoring the operating condition of said one of said cell groups;
(c) disconnecting said one of said cell groups from said series-connected circuit upon detecting a predetermined state of discharge of said one of said cell groups, the others

of said cell groups and said load being maintained in a series-connected circuit with each other;

(d) upon the disconnecting of said one of said cell groups in step (c), further discharging said one of said cell groups so that deposits on the electrodes of said one of said cell groups are removed;



(e) recharging said one of said cell groups and reconnecting same in a series-connected circuit with the others of said cell groups and said load; and

(f) repeating steps (a) through (e) for each of said cell groups in a cyclic sequence.

4,616,171
BATTERY CHARGER INCLUDING THERMISTOR

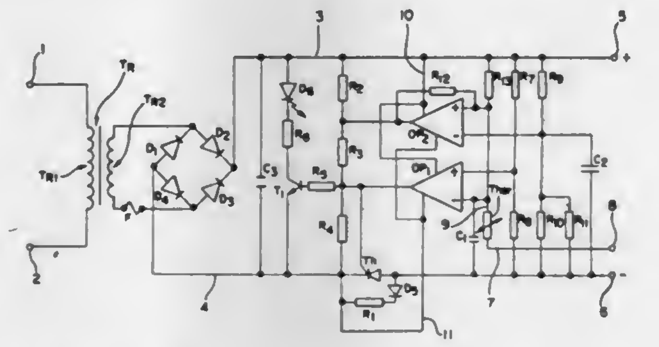
Jean R. Hernandez, Villeurbanne, and Alain Verdier, Ste Foy les Lyon, both of France, assignors to Black & Decker Inc., Newark, Del.

Filed Apr. 3, 1985, Ser. No. 719,319

Claims priority, application France, Apr. 6, 1984, 84 05470

Int. Cl.^{4} H02J *7/00*

U.S. Cl. 320—30 **15 Claims**



3. A device for charging an electrical battery pack, comprising:

electrical supply means for providing a supply voltage and having two poles connected via a controlled switch to output terminals adapted to be connected to the battery pack for charging the latter when the controlled switch is closed;

a heat-sensitive resistive member having a first terminal free of any electrical connection in the absence of the battery pack and a second terminal connected via a resistor to one pole of the supply means;

mechanical support means for supporting said heat-sensitive resistive member and for bringing the heat-sensitive resistive member into heat-conducting relation with a rechargeable battery cell of the battery pack and for placing said first terminal in electrical communication with a terminal of this battery cell;

comparator means for comparing the voltage on said second terminal with at least one fraction of said supply voltage in order to:

(i) lock the controlled switch in open, non-conductive position when the voltage on said second terminal is in a first given range representative of a lack of an electrical connection between the heat-sensitive resistive member and the battery pack;

(ii) allow closure, to the conductive state, of the controlled switch when the voltage on said second terminal leaves said first range and reaches a second range representative of the establishment of electrical connection between the heat-sensitive resistive member and the battery pack; and

(iii) lock the controlled switch in the open position when the voltage on said second terminal passes beyond a threshold value representative of a temperature corresponding to a predetermined level of charge of the battery pack being reached;

said comparator means comprising first and second comparators;

said first comparator comparing the voltage present on said second terminal and a first fraction of said supply voltage and for inhibiting a circuit of a control electrode of said controlled switch when the voltage on said second terminal indicates a lack of connection of said first terminal to the battery pack;

said second comparator comparing the voltage present on said second terminal and a second fraction of said supply voltage and for validating the circuit of the control electrode of said controlled switch when the voltage on said second terminal indicates a connection of said first terminal to the battery pack and a temperature of the heat-sensitive resistive member lower than a predetermined threshold temperature; and

said second comparator also inhibiting the circuit of the control electrode of said controlled switch when the voltage on said second terminal indicates that the temperature thereof has exceeded said predetermined threshold temperature.

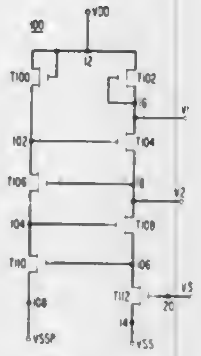
4,616,172
VOLTAGE GENERATOR FOR TELECOMMUNICATION AMPLIFIER

Chowdhury F. Rahim, Bridgewater, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 29, 1983, Ser. No. 566,823

Int. Cl.^{4} G05F *3/24*

U.S. Cl. 323—313 **8 Claims**



1. Voltage generator circuitry, supplying a first reference voltage to target circuitry, comprising:

a first branch circuit comprising a first plurality of interconnected field effect transistors with at least one circuitry output terminal coupled thereto;

a second branch circuit comprising a second plurality of interconnected field effect transistors having at least one output terminal which is coupled to an input terminal of the first branch circuit;

said second branch circuit being adapted to bias the first branch circuit, said second branch circuit containing at least one transistor, said one transistor having a gate terminal and one of its two output terminals coupled respectively to one of two output terminals and to a gate terminal of one of the transistors of the first branch circuit;

the target circuitry having at least a first reference voltage supply input terminal; and

conductive means for connecting the other of the two output terminals of said one of the transistors of the first branch circuit to the first reference voltage supply input terminal of the target circuitry.

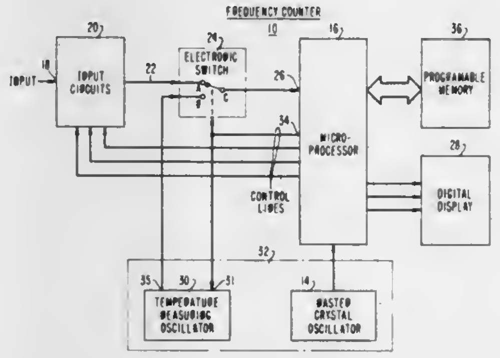
4,616,173
FREQUENCY COUNTER

Terry Cook, Sioux Falls, and Timothy Graham, Hartford, both of S. Dak., assignors to Sencore, Inc., Sioux Falls, S. Dak.

Filed Mar. 21, 1984, Ser. No. 591,875

Int. Cl.^{4} G01R *23/02*

U.S. Cl. 324—78 D **9 Claims**



1. A method of measuring and displaying a visible representation of the frequency of an input signal, comprising the steps of

mounting first and second oscillators in mutual proximity so that said oscillators have a common ambient temperature,

said second oscillator having an output frequency which changes in response to changes in said ambient temperature to a greater extent than does the output frequency of said first oscillator,

periodically comparing the output frequencies of said first and second oscillators and developing therefrom a compensating factor relative to the difference between said output frequencies,

comparing the frequency of said input signal with the output frequency of said first oscillator to provide a frequency representative signal proporational to the frequency of said output signal,

combining said correction factor with said frequency representative signal to provide a temperature compensated frequency related signal, and

displaying a visible representation of the frequency of said compensated, frequency related signal.

4,616,174
DETECTOR CIRCUIT FOR CURRENT MEASUREMENTS

Hans-Erik Jorgensen, Jyllinge, Denmark, assignor to Danfysik A/S, Jyllinge, Denmark

Filed Sep. 14, 1984, Ser. No. 650,718

Claims priority, application Denmark, Sep. 15, 1983, 4216/83

Int. Cl.^{4} G01R *19/00*

U.S. Cl. 324—117 R **4 Claims**

1. A detector circuit to be used in current measurements, comprising:

two toroidal transformers which are wound substantially identically, in which a primary current induces first magneto-motive forces, which first magneto-motive forces are neutralized by other magneto-motive forces induced therein by a secondary current;

an external current source which produces a sensing current;

two cores;

two sensing windings wound on each said core, at least one of said sensing windings carrying said sensing current from said external current source,

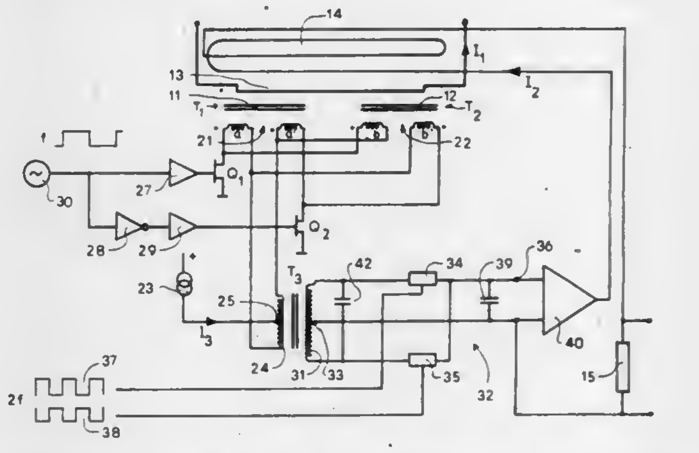
rectifier means responsive to said sensing current for producing a d.c. control signal which is used as said secondary current;

wherein said two sensing windings are wound on said two cores in a way to magnetize each winding to have mutually opposite magnetic senses when said sensing current is passed therethrough,

each of said two sensing windings further being divided into two equal subwindings in such a manner that a number of ampere-turns of all four subwindings are substantially equal, said subwindings further being connected to each other,

a plurality of switching means, coupled to said external current source and said subwindings, for selectively applying said sensing current to different ones of said subwindings; and

means for controlling said switching means in a way such that odd-harmonic components of said sensing currents passing through said subwindings are outbalanced and even-harmonic components thereof are added.



4,616,175
WAVEFORM OBSERVATION APPARATUS

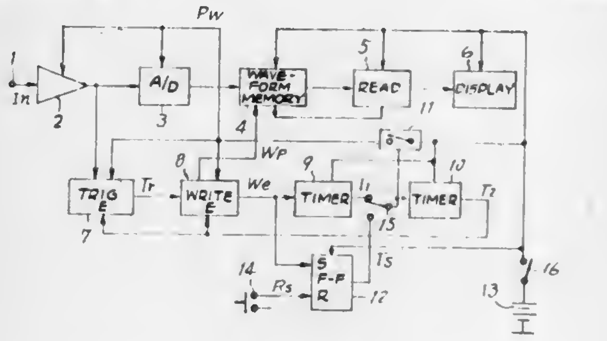
Hisao Hanmura, Kumagaya, Japan, assignor to Shin-Kobe Electric Machinery Co., Ltd., Tokyo, Japan

Filed Jan. 23, 1984, Ser. No. 572,944

Claims priority, application Japan, Jan. 24, 1983, 58-9601

Int. Cl.^{4} G01R *13/00, 1/00*

U.S. Cl. 324—121 R **7 Claims**



1. A waveform observation apparatus comprising at least a waveform memory in which waveform data is to be written, an input circuit adapted to receive waveform data and connected to control said waveform memory to write said waveform data therein, and a power supply circuit to supply operating voltage to said waveform memory and said input circuit, characterized in that said power supply circuit includes means to intermittently energize at least part of said input circuit from the power supply for a time necessary for writing said waveform data, and said intermittent means establishing said at least part of said input circuit deenergized for a time longer than said energization time even though waveform data is being received.

4,616,176

DYNAMIC CURRENT TRANSDUCER

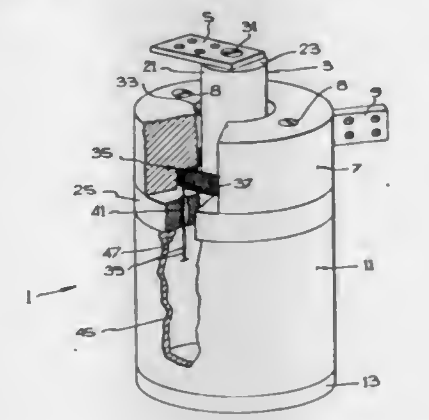
Hubert P. Mercure, Beloeil, and Michel G. Drouet, St-Bruno, both of Canada, assignors to Hydro Quebec, Montreal, Canada

Filed Jan. 12, 1984, Ser. No. 570,082

Claims priority, application Canada, Feb. 8, 1983, 421127

Int. Cl.^{4} G01R *1/20;* H01F *15/04*

U.S. Cl. 324—127 **34 Claims**



1. A dynamic current transducer comprising:

a first conducting element in which a current to be measured flows, said first conducting element having a first end and a second end,

a differentiating Rogowski coil extending around said first conducting element to define a plane, said Rogowski coil having a non-saturable dielectric core, a pair of terminals, and structural characteristics selected so that the ratio of self-inductance of the coil with respect to the total impedance viewed by said coil is much smaller than the period of the current to be detected when this current is alternating,

a first terminal connector on said first end of said first conducting element,

a second conducting element mounted to said first conducting element so as to cover the external periphery of said Rogowski coil, said second conducting element having a first end and a second end, said first end of said second conducting element being electrically connected to the second end of said first conducting element, and

a second terminal connector mounted on said second conducting element second end on the same side of said plane as said first terminal connector to force the current flowing between the first and second terminal connectors via the first and second conducting elements to flow all around the periphery of said coil and thus to shield said coil.

4,616,177

SAFETY MEASUREMENT DEVICE JUNCTION BOX

James E. McClain, and William D. Dickson, both of Greenville, Tex., assignors to ESCO Manufacturing Company, Greenville, Tex.

Filed May 17, 1984, Ser. No. 611,126

Int. Cl.^{4} G01R *1/04*

U.S. Cl. 324—156 **6 Claims**

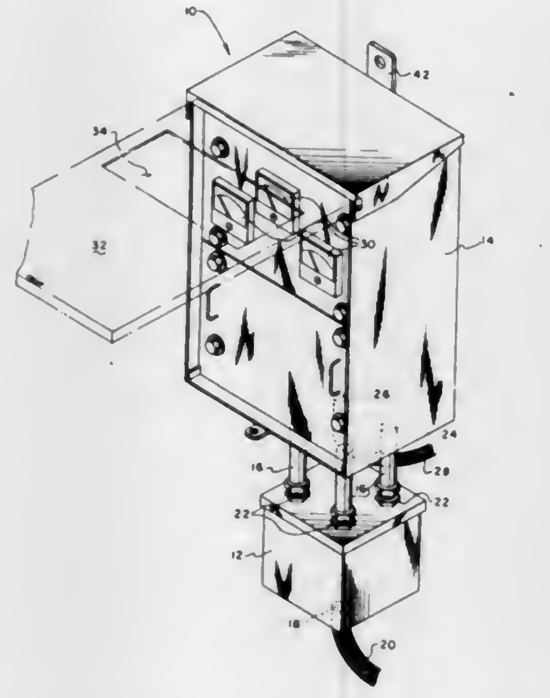
1. A measurement device junction box for use in the measurement of components of three-phase electric power supplied from a power source to a load, said box comprising:

a first housing having an inlet therein for receiving a first power cable from said power source;

a second housing spaced from said first housing, said second housing having an outlet therein for receiving a second power cable connected to said load;

a plurality of voltmeters for measuring phase-to-phase voltages, said voltmeters being disposed within said second housing;

a plurality of electrically conductive, non-magnetic spaced apart conduits interconnecting said first housing and said second housing; and



electrical conductors electrically connected with said first and second cables passing respectively through said spaced conduits.

4,616,178

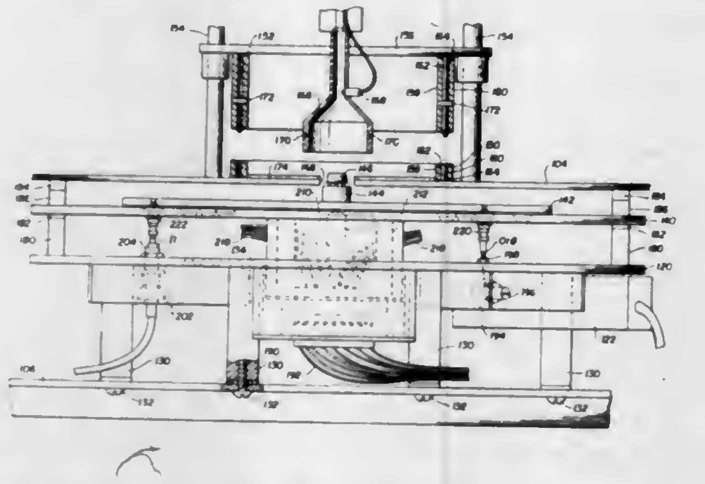
PULSED LINEAR INTEGRATED CIRCUIT TESTER

Max C. Thornton, Jr., Palm Bay; Paul Kuntz; Russell L. Meyer, both of Melbourne, and Kenneth M. Rosier, Rockledge, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 382,603, May 27, 1982, Pat. No. 4,528,504. This application Jun. 13, 1985, Ser. No. 744,336

Int. Cl.^{4} G01R *31/02, 31/28*

U.S. Cl. 324—158 F **7 Claims**



1. An integrated circuit tester comprising:

a test cabinet means having a bottom, side and top walls for forming an electromagnetic shielded enclosure, said top wall includes an aperture;

a first horizontal electromagnetic shielded plate mounted in said enclosure displaced from said bottom wall;

a plurality of A.C. probes each mounted below said first plate and connected to a respective first A.C. probe terminal extending onto the top surface of said first plate;

a plurality of A.C. input lines each connected below said first plate to a respective first A.C. input terminal extending onto the top surface of said first plate;

a plurality of first D.C. input and output lines connected below said first plate to a D.C. receptacle having D.C. socket means accessible from the top side of said first plate;

a second horizontal electromagnetic shielded plate, removably mounted in said closure to the top of said first plate;

a printed circuit board mounted to the top surface of said second plate;

a device under test receptacle mounted on and electrically connected to said printed circuit board and positioned within said aperture in said top wall of said cabinet;

a plurality of second A.C. probe terminals on the bottom of said second plate electrically connected to said printed circuit board and contacting said first A.C. probe terminals on the top of said first plate;

a plurality of second A.C. input terminals on the bottom of said electrically second plate connected to said printed circuit board and contacting said first A.C. input terminals on the top of said first plate; and

a plurality of second D.C. input and output lines interconnecting a D.C. plug means and said printed circuit board, said D.C. plug means being received in said D.C. socket means of said first plate.

4,616,179

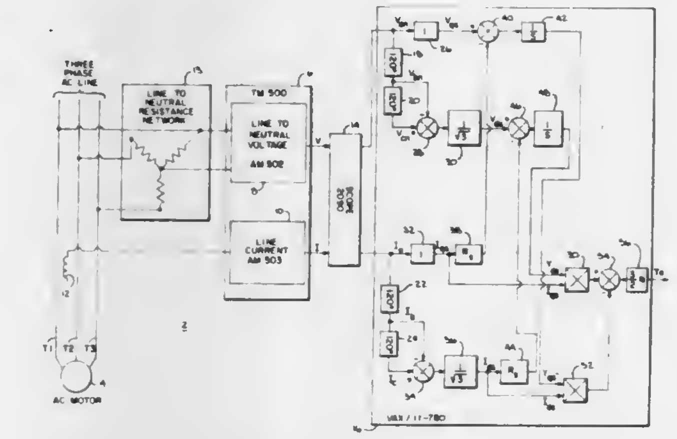
METHOD OF MEASURING TORQUE OF AN AC MOTOR

Dennis H. Braun, Brookfield, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 11, 1984, Ser. No. 609,459

Int. Cl.^{4} G01L *3/00*

U.S. Cl. 324—158 MG **3 Claims**



1. A method of measuring torque of an AC motor comprising:

sensing input voltage to said motor;

sensing input current to said motor without discrimination against out-of-phase components relative to said voltage; and

calculating said torque from said sensed input voltage and current;

wherein said input voltage and current are sensed for at least one full AC cycle, said input current being sensed regardless of its phase relative to said input voltage;

wherein said AC motor is a three-phase motor with three respective input lines, and comprising:

sensing the line to neutral voltage of one of said input lines;

phase shifting in time said sensed voltage of said one input line to yield the other two line to neutral voltages of the other two input lines;

sensing the line current of one of said input lines;

phase shifting in time said sensed current of said one input line to yield the other two line currents of the other two input lines;

determining direct and quadrature voltages from said line to neutral voltages;

determining direct and quadrature currents from said line currents;

determining direct and quadrature stator flux linkages from said direct and quadrature voltages and currents; and

determining torque from said direct and quadrature currents and stator flux linkages.

4,616,180

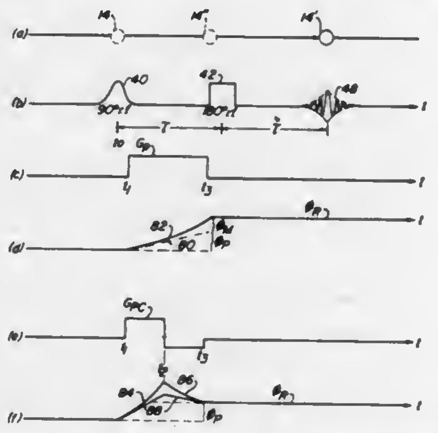
NUCLEAR MAGNETIC RESONANCE IMAGING WITH REDUCED SENSITIVITY TO MOTIONAL EFFECTS

Russell A. Compton, Chesterland, Ohio, assignor to Technicare Corporation, Solon, Ohio

Filed Nov. 14, 1983, Ser. No. 551,245

Int. Cl.^{4} G01V *3/00*

U.S. Cl. 324—309 **12 Claims**



1. In an NMR imaging system, a method for acquiring NMR signals which are substantially insensitive to motional effects in a first direction in a sample being imaged comprising the steps of:

(a) applying an r.f. excitation signal to said sample;

(b) applying spatially encoding gradients to said sample, with the gradient in said first direction being produced in response to a gradient pulse sequence which exhibits a zero value first moment referenced to a point in time at which phase determination occurs; and

(c) acquiring NMR signals resulting from said excitation signal and spatially encoding gradients.

4,616,181

NUCLEAR MAGNETIC RESONANCE TOMOGRAPHY APPARATUS

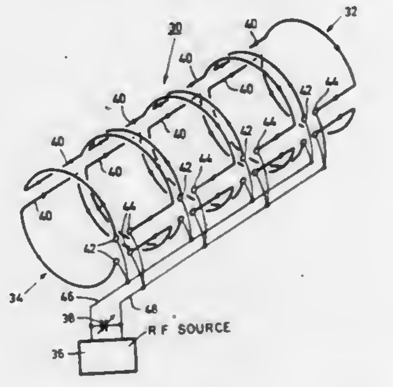
Rudolf Kemner, and Dirk Sinnema, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 6, 1983, Ser. No. 539,581

Claims priority, application Netherlands, Oct. 12, 1982, 8203934

Int. Cl.^{4} G01R *33/20*

U.S. Cl. 324—309 **6 Claims**



1. In nuclear magnetic resonance tomography apparatus which comprises:

first coil means for generating a primary magnetic field;

second coil means for generating a pulsed RF magnetic field,

said first and second coil means being disposed around a substantially cylindrical examination space for an object to be examined; and

measurement means for detecting nuclear magnetic resonance signals which are generated in the object; the improvement wherein:

the self-resonance frequency of the second coil means is substantially higher than the highest frequency component of the resonance signals which are to be detected;

the second coil means comprises two saddle-shaped coils which are disposed on diametrically opposite sides of the examination space, each of said saddle-shaped coils comprising at least two sub-coils;
each of the sub-coils comprises a winding; further comprising
means which supply the sub-coils with pulsed radio frequency electric current;
the windings of all the sub-coils being connected, in parallel, to the means which supply them with pulsed radio frequency electric current.

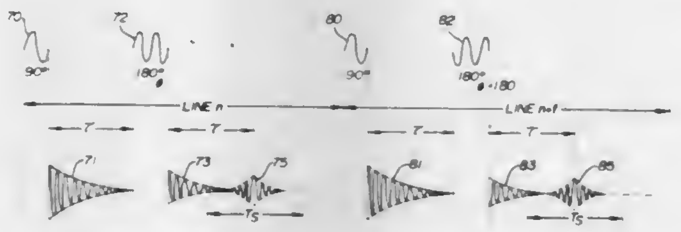
4,616,182
NUCLEAR MAGNETIC RESONANCE SIGNAL ARTIFACT REMOVAL

David M. Kramer, Cleveland Heights, and Hong-Ning Yeung, Richmond Heights, both of Ohio, assignors to Technicare Corporation, Solon, Ohio

Filed Nov. 9, 1983, Ser. No. 550,522

Int. Cl.^{4} G01V *29/3*

U.S. Cl. 324—309 **11 Claims**



1. In a nuclear magnetic resonance imaging system in which resultant NMR signals comprising desired NMR signals and undesired artifact signal components are collected by a two-pulse excitation sequence, including a source of gradient field signals for spatially encoding said NMR signals, apparatus comprising:
means for exciting an imaging subject during alternate lines of signal acquisition using a two-pulse excitation sequence and detecting resultant NMR signals during subsequent data collection periods during which undesired artifact signal components and desired NMR signals exhibit a first phase relationship;
means for exciting an imaging subject during the remaining lines of signal acquisition using a two-pulse excitation sequence and detecting resultant NMR signals during subsequent data collection periods during which undesired artifact signal components and desired NMR signals exhibit a second phase relationship;
means for performing a Fourier transformation of said lines of artifact signal and NMR signal information with said artifact signal components exhibiting a phasing which varies from line to line so as to form an NMR image in which the line rate phase variation of said artifact signal components results in the location of said artifact signal components away from the center of said NMR image when said resultant NMR signals are converted to a spatially representative frequency domain through Fourier transformation.

4,616,183
METHOD FOR REDUCING BASELINE ERROR COMPONENTS IN NMR SIGNALS

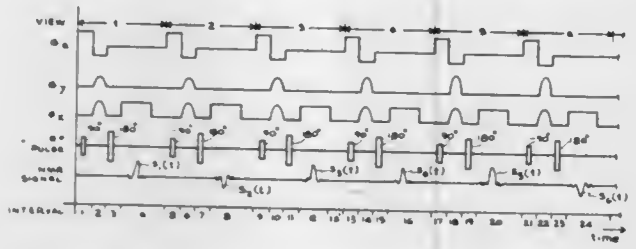
Gary H. Glover, Waukesha, and James R. MacFall, Hartland, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Oct. 22, 1984, Ser. No. 663,659

Int. Cl.^{4} G01R *33/20*

U.S. Cl. 324—309 **19 Claims**

1. A method of performing NMR studies of a sample object, the method including multiple steps of exciting nuclear spins in a region of the sample object and receiving the resulting NMR signals, said method comprising:
irradiating the sample object with at least one pair of RF pulses which are 180° out of phase relative to one another;



deriving a first baseline error signal from the NMR signals due to said pair of RF pulses; and
using the derived baseline error signal to compensate for the baseline error component in at least one other NMR signal.

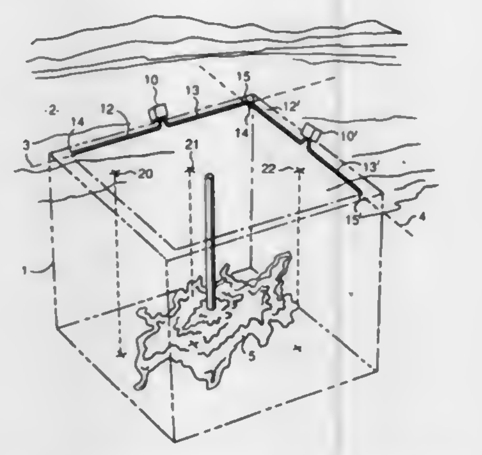
4,616,184
CSAMT METHOD FOR DETERMINING DEPTH AND SHAPE OF A SUB-SURFACE CONDUCTIVE OBJECT

David O. Lee; Paul C. Montoya, and J. Robert Wayland, Jr., all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 27, 1984, Ser. No. 625,321

Int. Cl.^{4} G01V *3/08*

U.S. Cl. 324—335 **8 Claims**



1. A method for determining from ground surface the size and depth of an underground conductive object, said method comprising the steps of:
transmitting a first CSAMT signal into the ground at a first location, the frequency of said signal being swept continuously from a low frequency to a higher frequency;
receiving said first CSAMT signal at each of a plurality of receiving locations spaced from said first location; and
determining the frequency at which a plot of apparent resistivity at any location as a function of frequency indicates an abrupt increase in apparent resistivity in the form of a peak; and
determining the depth of the underground object from the frequency at which said peak occurs; said depth being equal to one-fourth the wavelength in the ground material at said frequency.

4,616,185
MULTIPLYING CIRCUIT COMPRISING SWITCHED-CAPACITOR CIRCUITS

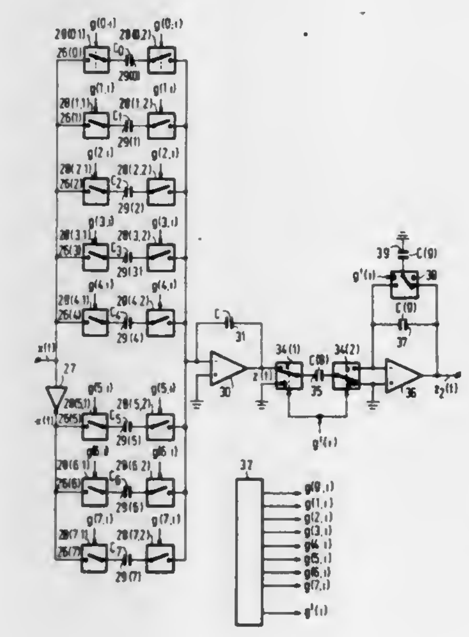
Arthur H. M. van Roermund, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 13, 1984, Ser. No. 630,510

Claims priority, application Netherlands, Jul. 20, 1983, 8302591

Int. Cl.^{4} H03B *19/00;* H03C *1/00*

U.S. Cl. 328—160 **3 Claims**



1. In a multiplying circuit for multiplying a first signal x(t) by a periodic second signal y(t) to produce a product signal z(t), such multiplying circuit comprising:
a plurality N of signal channels for receiving the first signal, each such signal channel comprising:
a switched-capacitor circuit which is switched by control pulses g(k,i) applied thereto of finite duration so as to convert the first signal into a sequence of pulses, where k is the number of the signal channel and k=0, 1, 2, . . . N−1, and i= . . . −2, −1, 0, 1, 2, 3, . . . ; and
means connected to such switched-capacitor circuit for weighting the relative amplitudes of such sequence of pulses in accordance with a constant weighting factor W(k) such that $W(k)=y(t_0+k(T_0/N)$, where T_0 and t_0 are constants, and for converting such pulses into pulses of predetermined duration, the resultant sequence of pulses being the channel output signal;
pulse generating means connected to each of said signal channels for producing said control pulses g(k,i) with a repetition period T_0 and at instants $t_0+k(T_0/N)+iT_0$; and
means connected to said N signal channels for combining the channel output signals produced thereby, the combination of said signals being the product signal z(t);
such multiplying circuit being characterized in that said means for combining the N channel output signals comprises:
means for adding the N channel output signals to generate a sum signal; and
a sampling circuit for sampling the sum signal during the intervals between successive control pulses, such sampled sum signal being the product signal z(t).

4,616,186
FM QUADRATURE DEMODULATOR WITH DISTORTION COMPENSATION

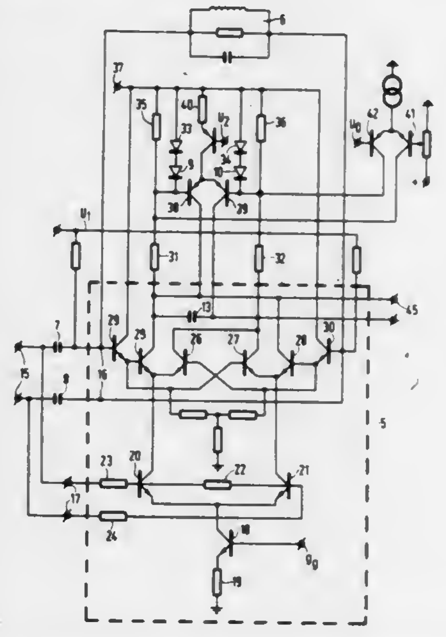
Winfrid B. Jansen, Ellerbek; Wilfried E. Knop, Appen, and Hermann Jabs, Hamburg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 24, 1985, Ser. No. 738,128

Claims priority, application Fed. Rep. of Germany, May 25, 1984, 3419602

Int. Cl.^{4} H03D *3/00*

U.S. Cl. 329—103 **6 Claims**



1. In an FM quadrature demodulation apparatus having a pair of input terminals connected to a resonant network for producing a reference phase shift signal having a phase shift proportional to the frequency of a received intermediate frequency signal, and a pair of push-pull output terminals producing differential signals feeding a linear amplifier; a circuit for reducing distortion of said differential signals comprising:
a first and second diode branch connected from said output terminals to a common signal connection for said demodulation apparatus, whereby a circuit is formed having a frequency transfer function substantially the inverse of the transfer function of said quadrature demodulation apparatus.

4,616,187
FREQUENCY SHIFT KEYING SIGNAL FOR A DEMODULATOR

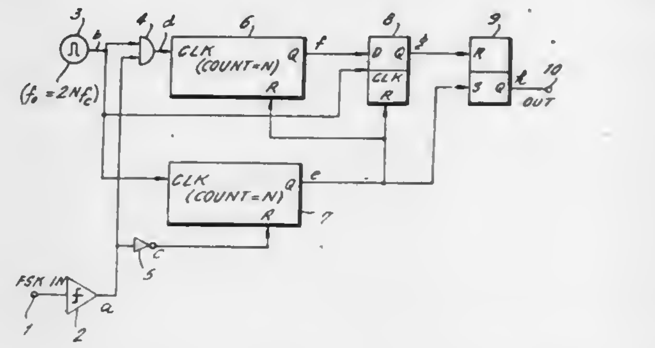
Kyoji Watanabe, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jul. 12, 1985, Ser. No. 754,392

Claims priority, application Japan, Jul. 18, 1984, 59-147574

Int. Cl.^{4} H03D *3/04*

U.S. Cl. 329—126 **7 Claims**



1. A demodulator for a frequency shift keying signal, said demodulator comprising:
signal converter means for converting an analog frequency

shift keying signal having a space frequency, f_s, and a higher mark frequency, f_m, to a rectangular-wave signal having two wavelengths T_s and T_m, respectively, said wavelengths T_s and T_m equalling the reciprocal values of the space frequency, f_s, and the mark frequency, f_m, respectively;

a clock means for producing digital signals at a frequency of repitition that is an integer multiple of a frequency, f_c, intermediate the space frequency, f_s, and the mark frequency, f_m;

first counter means with a count N_1 for counting said digital clock signals and producing a first output signal indicative of the mark frequency, f_m, being present in the frequency keying signal, said output signal being produced only when the counter means has continuously counted clock signals for a period of $T_c/2$, where T_c is a wavelength equalling the reciprocal of the intermediate frequency, f_c; and

second counter means with a count N_2 for intermittently counting said digital clock signals and producing a second output signal indicative of the space frequency, f_s, being present in the frequency keying signal.

4,616,188

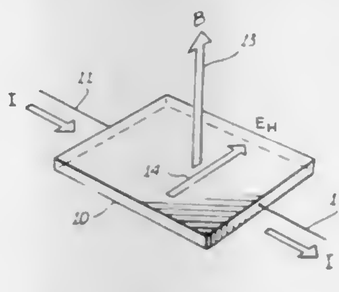
HALL EFFECT ISOLATION AMPLIFIER

Robert M. Stitt, and Rodney T. Burt, both of Tucson, Ariz., assignors to Burr-Brown Corporation, Tucson, Ariz.

Filed Jun. 20, 1985, Ser. No. 746,860

Int. Cl.^{4} H03F *15/00;* G01R *33/00*

U.S. Cl. 330—6 21 Claims



1. An isolation amplifier comprising:

first magnetic field means for producing a magnetic field in response to an input signal;

Hall effect means for producing an induced voltage in response to said magnetic field; and

second magnetic field means for producing a compensating magnetic field approximately cancelling said magnetic field at said Hall effect means in response to said induced voltage.

4,616,189

GALLIUM ARSENIDE DIFFERENTIAL AMPLIFIER WITH CLOSED LOOP BIAS STABILIZATION

M. Louis Pengue, Jr., Portland, Oreg., assignor to TriQuint Semiconductor, Inc., Beaverton, Oreg.

Filed Apr. 26, 1985, Ser. No. 727,487

Int. Cl.^{4} H03F *3/16, 3/45*

U.S. Cl. 330—253 19 Claims

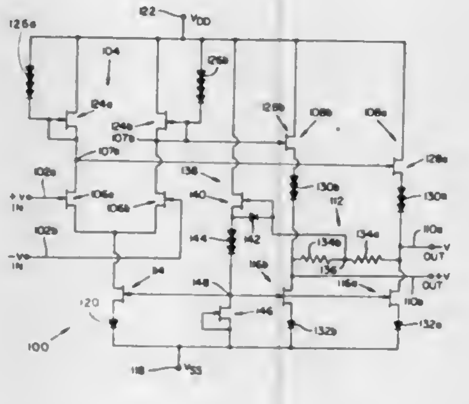
1. A gallium arsenide (GaAs) differential voltage amplifier, compensated for temperature and process variations, comprising:

signal input means for inputting an input logic signal;

signal output means for outputting an output logic signal;

a common source gallium arsenide field effect transistor (GaAsFET) differential amplifier comprising a pair of common source connected GaAsFETS, each having a drain coupled to a voltage input through a voltage dropping means, each GaAsFET having a gate input and a drain output, said gate inputs being coupled to the signal input means and the drain outputs providing output differential logic signals;

the GaAsFET differential amplifier further including a current source means connected to the common source of the GaAsFETs for producing current flow through the GaAsFETs and the voltage dropping means, the current source means being adjustably responsive to a signal applied to a control signal input of the current source means to vary said current flow;



first coupling means for coupling the differential logic signals from the GaAsFET drains to the signal output means;

sampling means coupled to the GaAsFET drains for generating a true common mode signal from the differential logic signal; and

second coupling means for coupling the true common mode signal to the control signal input of the current source.

4,616,190

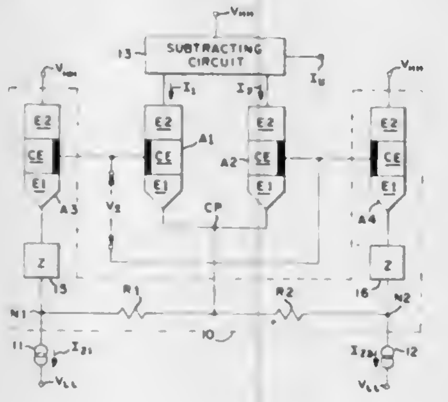
DIFFERENTIAL AMPLIFIER WITH CURRENT STEERING TO ENHANCE SLEW RATE

Rudy J. van de Plassche, Cupertino, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Sep. 3, 1985, Ser. No. 771,748

Int. Cl.^{4} H03F *3/45*

U.S. Cl. 330—261 14 Claims



1. A circuit for amplifying an input voltage V_I to produce a pair of circuit currents whose difference is representative of V_I, the circuit having: supply means for providing current at a control point; and like-configured first and second input amplifiers, each having a first flow electrode, a second flow electrode, and a control electrode for regulating current transmission between the flow electrodes, V_I being differentially supplied to the control electrodes, the first electrodes coupled together through the control point, the second electrodes respectively providing the circuit currents, the second amplifier turning substantially off when V_I rises to a high voltage V_{TH} greater than zero, and the first amplifier turning substantially off when V_I drops to a low voltage V_{TL} less than zero; characterized in that the supply means comprises:

first and second current sources for providing first and second supply currents; and

steering means (1) for progressively steering more of the second supply current through the first amplifier as V_I rises above V_{TH} to a higher voltage V_H and (2) for progressively steering more of the first supply current through the second amplifier as V_I drops below V_{TL} to a lower voltage V_L.

4,616,191

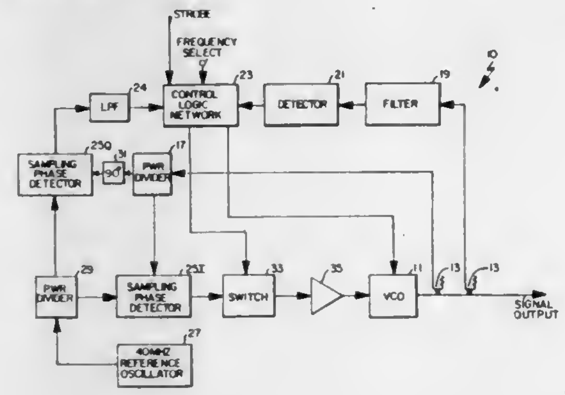
MULTIFREQUENCY MICROWAVE SOURCE

Zvi Galani, Bedford, and Richard A. Campbell, Concord, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jul. 5, 1983, Ser. No. 511,067

Int. Cl.^{4} H03L *7/12;* H03B *23/00*

U.S. Cl. 331—4 2 Claims



1. A frequency-agile source of microwave frequency signals, such source comprising:

(a) a voltage-controlled oscillator for producing a microwave frequency signal anywhere within a predetermined band of such signals in response to applied control signals;

(b) a crystal-controlled oscillator operating at a frequency lower than the predetermined band of microwave frequency signals, such crystal-controlled oscillator also producing equally spaced harmonics within the predetermined band of microwave signals;

(c) first means for generating a first control signal operative, per se, to sweep the frequency of the voltage-controlled oscillator through the predetermined band of microwave frequencies, starting from a predetermined side of such band;

(d) second means, responsive to the signal out of the crystal-controlled oscillator, for simultaneously producing a positive-going and a negative-going sampling signal each time a positive-going zero crossover occurs in such signal, the time duration of each such sampling signal being equal to, or less than, the half-period of the highest microwave frequency signal out of the voltage-controlled oscillator; diode means, responsive to each positive-going and negative-going sampling pulse, for rectifying the then-existing microwave frequency signal to produce an indicating signal having an amplitude and polarity corresponding to the difference in phase between the then existing microwave frequency signal and the nearest one of the harmonics of the crystal-controlled oscillator; and means for integrating the indicating signal to produce a second control signal, such control signal being effective to change the frequency of the voltage-controlled oscillator, ultimately to null the indicating signal; and

(e) control means, responsive to the indicating signal and to a predetermined frequency signal indicative of the number of harmonics between a desired harmonic and the harmonic nearest to the predetermined side of the band of microwave frequencies, for producing a third control signal upon the attainment of equality between the number of indicating signals and the predetermined frequency command signal, such third control signal being effective to inhibit further operation of the first means and to connect the second control signal to the voltage-controlled oscillator to phase-lock the voltage-controlled oscillator to the desired harmonic.

4,616,192

PHASE-LOCKED LOOP WITH SWITCHABLE PHASE DETECTOR

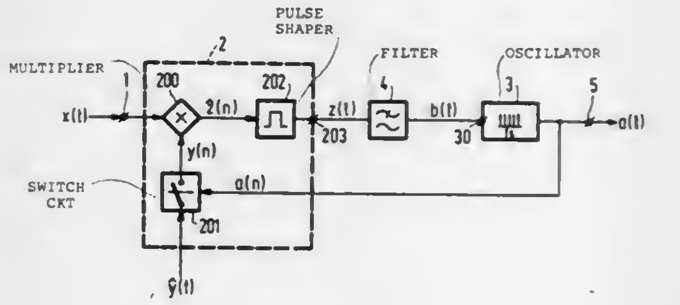
Arthur H. M. van Roermund, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 12, 1985, Ser. No. 722,891

Claims priority, application Netherlands, Apr. 19, 1984, 8401277

Int. Cl.^{4} H03L *7/16*

U.S. Cl. 331—14 1 Claim



1. A phase-locked loop, comprising:

(a) a reference signal input for receiving an analogue reference signal;

(b) a clock pulse oscillator having a control input for receiving a control signal and supplying clock pulses a(n) at a rate f_s which is an integral multiple N of a predetermined fundamental frequency f_o of a fundamental signal n(t), where $n=0, 1, 2, \ldots$

(c) a multiplying circuit for multiplying the reference signal by a periodical analogue comparison signal having a frequency which is an integral multiple p of said fundamental frequency, comprising:

  (c1) a pulse distribution circuit receiving said clock pulses from the clock pulse oscillator, comprising a control input for setting the parameter p, and having a number of not more than N distributor outputs and applying the clock pulse having number N to the distributor output having number np modulo N, as a result of which a sequence of main control pulses is produced at each distributor output;

  (c2) a plurality of signal channels each receiving the reference signal and each comprising a cascade arrangement comprising a switching circuit and a weighting network the switching circuit of each cascade arrangement being controlled by at least one of the sequences of main control pulses, the weighting network having a constant weighting factor and the value of the weighting factor of the weighting network in the k^{th} signal channel being related to the value of the fundamental signal at the instant t_o+kT_s, where t_o represents a constant and T_s is the reciprocal value of f_s, and each signal channel for each sequence of main control pulses applied to the relevant switching circuit producing a main signal;

  (c3) an adder arrangement for adding together all the main signals produced by the different signal channels for generating a multiplying circuit output signal and having a multiplying circuit output;

(d) a coupling circuit for coupling the multiplying circuit output to the control input of the clock pulse oscillator and which in reponse to the multiplying circuit output signal produces said control signal.

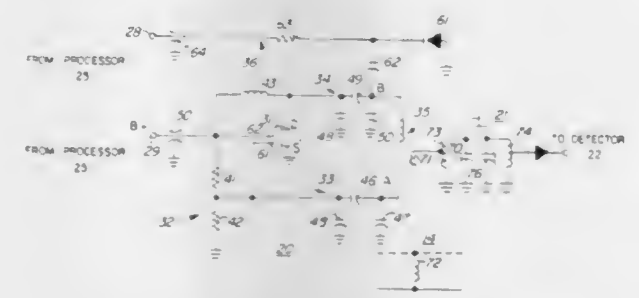
4,616,193
HIGH FREQUENCY TRANSISTOR OSCILLATOR WITH DISCRETE RESONATOR ELEMENTS FOR TRANSPONDER

Walter Meyer, Sparks, Nev., assignor to Northern Illinois Gas Company, Aurora, Ill.

Filed Jan. 22, 1985, Ser. No. 693,208

Int. Cl.⁴ H03B *1/04, 5/08*

U.S. Cl. 331—105 **16 Claims**



1. A solid state oscillator circuit for operation at very high frequencies, said oscillator circuit comprising: an active element having an input port and an output port; bias means connected to a control electrode of said active element for establishing the operating point for said active element; an inductance; an input network coupling said inductance to said input port of said active semiconductor element; an output network coupling said inductance to said output port of said active element; said input and output networks each including a plurality of discrete capacitive elements, first capacitive elements of said input and output networks being connected in parallel with said input and output ports, respectively, second capacitive elements of said input and output networks coupling respective first and second terminals of said inductance to said input and output ports, respectively, and third capacitive elements of said input and output networks being connected in series with one another and in parallel with said inductance and in parallel with said first and second capacitive elements of said input and output networks defining a tuned circuit which is connected between said output and input ports of said element and which determines the operating frequency for the oscillator circuit and provides a signal feedback path between said output port and said input port, the relative ratio of impedance of the input and output networks determining the amount of oscillator feedback provided for the output port to the input port.

4,616,194
PIEZOELECTRIC OSCILLATOR WITH CRYSTAL FILTER AND TEMPERATURE COMPENSATION

Patrick Renoult, Paris, and Gérard Marotel, Sartrouville, both of France, assignors to Compagnie d'Electronique et de Piezo-Electricite C.E.P.E., Argenteuil, France

Filed Mar. 25, 1985, Ser. No. 715,822

Claims priority, application France, Mar. 27, 1984, 84 04746

Int. Cl.⁴ H03B *5/36;* **H03L** *1/02*

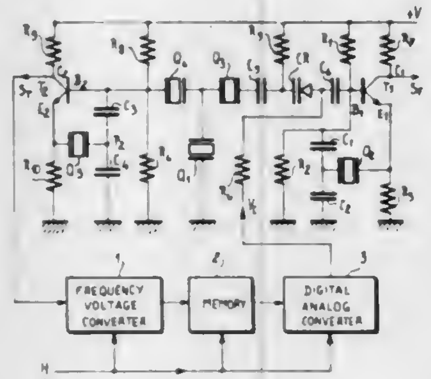
U.S. Cl. 331—116 R **7 Claims**

1. A piezoelectric oscillator of the Clapp type operating in the overtone mode comprising:

a first piezoelectric resonator having a resonance frequency at which the oscillator is to operate, said first resonator being connected between the base of a transistor and ground, as well as a capacitive divider bridge connected between the base of said transistor and ground having a middle point and the emitter of the transistor being loaded by a load resistor;

a second piezoelectric resonator having in common with the first piezoelectric resonator a mode at said resonance frequency, but whose intrinsic quality factor is between 30 and 1000 times smaller than that of the first piezoelectric resonator, said second piezoelectric resonator being connected between said middle point of the capacitive divider bridge and the emitter of said transistor; and

a third piezoelectric resonator having in common with the first resonator a mode at said resonance frequency, but whose quality factor is of the same order of size as that of said second resonator, said third resonator being disposed in series between the ungrounded terminal of said first resonator and the base of said transistor.



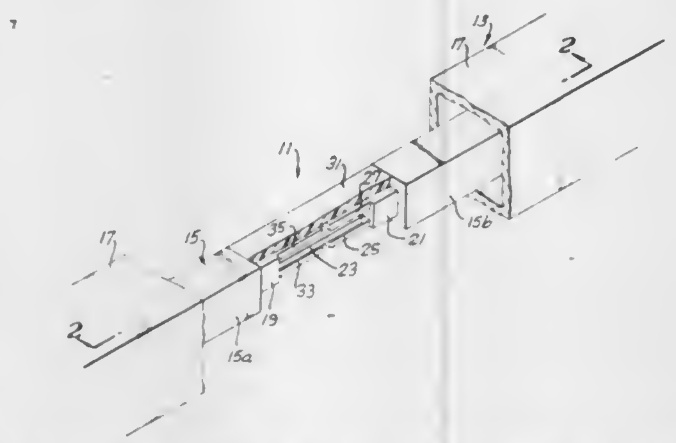
4,616,195
COAXIAL PHASE SHIFTER FOR TRANSVERSE ELECTROMAGNETIC TRANSMISSION LINE

Robert D. Ward, Manhattan Beach; Frank A. Taormina, Glendale, and Mon N. Wong, Torrance, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 8, 1985, Ser. No. 709,878

Int. Cl.⁴ H01P *1/18*

U.S. Cl. 333—160 **18 Claims**



1. A coaxial phase shifter for use in shifting the phase of a signal being transmitted along a transverse electromagnetic transmission line of the kind including an inner conductor, a coaxial outer conductor, and a dielectric located between the conductors, wherein the coaxial phase shifter is in line with the inner conductor and it interconnects a first segment of the inner conductor with a second segment of the inner conductor, the coaxial phase shifter comprising:

first means electrically connected to the first segment of the inner conductor of the transmission line, the first means having a cross section less than that of the inner conductor and including finger means projecting aiolng the axis of the transmission line;

second means electrically connected to the second segment of the inner conductor of the transmission line, the second means having a cross section less than that of the inner conductor and including finger means projecting along the axis of the transmission line;

wherein the first and second means are positioned with their respective finger means in spaced, confronting relationship with each other, such that the first and second means cooperate to form a capacitive coupling between the first and second segments of the inner conductor of the transmission line; and

an insulating sheath encircling and securing together the first and second means in their predetermined aligned relationship, whereby the coaxial phase shifter shifts the phase of the signal being transmitted along the transmission line by a predetermined amount.

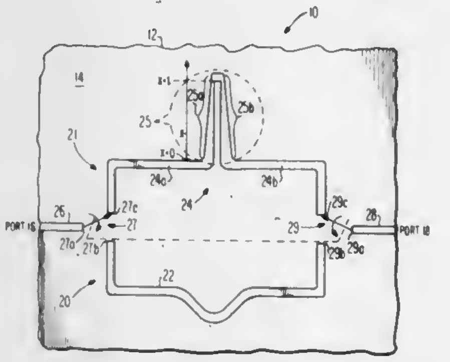
4,616,196
MICROWAVE AND MILLIMETER WAVE SWITCHED-LINE TYPE PHASE SHIFTER INCLUDING EXPONENTIAL LINE PORTION

Arvind K. Sharma, Cranbury, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jan. 28, 1985, Ser. No. 695,523

Int. Cl.⁴ H01P *1/18*

U.S. Cl. 333—161 **5 Claims**



1. An RF phase shifter comprising: a dielectric substrate; at least one RF signal port;

a reference RF transmission line comprising a first elongated conductor disposed on a first major surface of said substrate and having a reference phase length, said reference transmission line having a reference phase change versus frequency characteristic;

an alternate RF transmission line comprising a second elongated conductor disposed on a second major surface of said substrate and having an alternate phase length different from said reference phase length, said alternate transmission line including as a portion thereof, a coupled exponential transmission line comprising a segment of said second conductor, said segment having first and second ends disposed adjacent to each other and first and second halves extending substantially parallel from said first and second ends, respectively, to a common connection between them, said halves being spaced apart along their lengths by a separation distance, said coupled exponential transmission line having a continuous narrowing taper along its length from said first and second ends of said conductor segment to said common connection, the length of said halves, their separation distance, their width and said continuous narrowing taper together being tailored to provide said alternate RF transmission line with an alternate phase change versus frequency characteristic over an operating frequency range which is substantially the same as said reference phase change versus frequency characteristic; and

means coupled between said at least one RF signal port and said reference and alternate transmission lines for selectively connecting either said reference transmission line or said alternate transmission line to said at least one RF signal port to select the one of said reference and alternate transmission lines which is connected to said at least one RF signal port as the existing RF signal transmission path through said phase shifter.

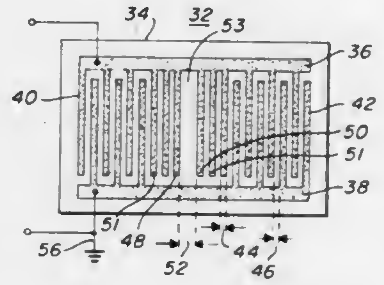
4,616,197
RESONATOR

Peter V. Wright, Dallas, Tex., assignor to R. F. Monolithics, Inc., Dallas, Tex.

Filed Dec. 5, 1985, Ser. No. 804,855

Int. Cl.⁴ H03H *9/25, 9/64, 9/145*

U.S. Cl. 333—194 **11 Claims**



1. A surface acoustic wave resonator filter comprising:

a. a substrate means having at least a surface layer of piezoelectric material on which acoustic waves may be propagated,

b. first and second grating structures provided on said piezoelectric surface of said substrate means in juxtaposed spaced relationship,

c. input and output spaced, aligned transducers interposed between said first and second grating structures, each said input and output transducer comprising:

(i) opposed conductive transducer pads defined on said substrate as signal terminals, and

(ii) a plurality of interdigitated electrodes having a width of λ/4 and having a spacing of λ/4 extending from said opposed pads to form an elongated transducer,

d. one adjacent pair of said electrodes at approximately the center of only said input transducer having a spacing forming a cavity with a width of (N)λ/2 where N is an integer, and

e. a third grating structure interposed between said input and output transducers and being resonant at the same frequency as said input and output transducers.

4,616,198
CONTACT ARRANGEMENT FOR A CURRENT LIMITING CIRCUIT BREAKER

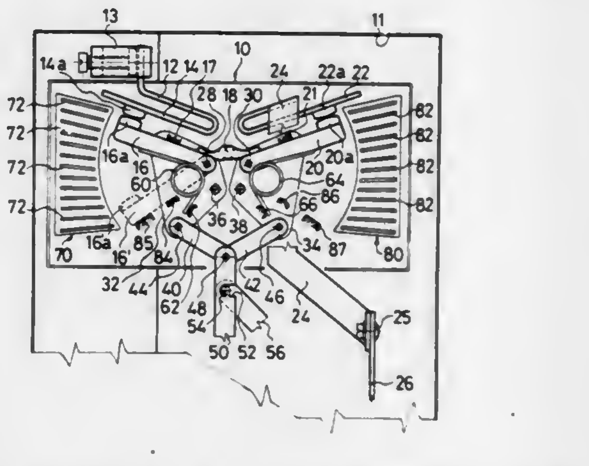
Franco P. Pardini, Milan, Italy, assignor to General Electric Company, New York, N.Y.

Filed Jul. 11, 1985, Ser. No. 754,042

Claims priority, application Italy, Aug. 14, 1984, 22405 A/84

Int. Cl.⁴ H01H *75/00, 77/00, 83/00*

U.S. Cl. 335—16 **10 Claims**



1. A contact arrangement for a current limiting circuit breaker of the type consisting of two movable contacts on two movable contact arms electrically connected in series and arranged for electrodynamic repulsion with respect to two fixed contacts on two fixed contact arms upon short circuit

current through said two movable and said two fixed contacts, comprising in combination;

a pair of operating levers connected with said movable contact arms and adapted for manual operation by means of a push rod, said push rod being pivotally connected with said operating levers by means of a pair of connecting rods;

a pair of contact springs, said contact springs being supported on said operating levers for holding said movable contact arms in a closed position with respect to said fixed contact arms;

an electromagnet operatively connected with one of said movable contact arms whereby said one movable contact arm is held in an open position when said electromagnet is de-energized and said one movable contact arm is returned to a closed position when said electromagnet is energized and said operating levers are arranged for contact closure;

said electromagnet comprising a fixed core and an armature arranged within a winding, said armature being operatively connected with one of said movable contact arms for operating said one movable contact arm against the bias of one of said contact springs; and

an indicating flag operatively connected with one of said movable contact arms for providing visual indication as to the open and closed position of said movable contact arms.

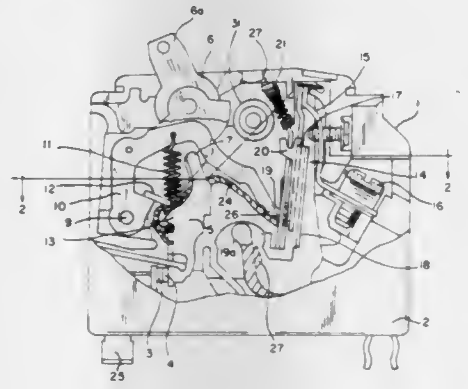
4,616,199
CIRCUIT BREAKER IMPROVEMENT TO PREVENT SETTING OF TRIP ASSEMBLY

Clark L. Oster, Cedar Rapids, Iowa, assignor to Square D Company, Palatine, Ill.

Filed Dec. 21, 1984, Ser. No. 684,561

Int. Cl.⁴ H01H *73/12, 77/00, 81/00, 83/00*

U.S. Cl. 335—35 **13 Claims**



1. An automatic electric circuit breaker comprising:

a casing;

a pair of separable contacts within said casing,

release means for separating said pair of contacts;

a conducting member fixed within said casing and providing a first current path;

a magnetic yoke having a supported end and a free end, said magnetic yoke extending approximately parallel to and adjacent to, but not touching said conducting member, said yoke forming a second current path, said magnetic yoke moving in a first direction upon the occurrence of an overload current to cause said release means to separate said contacts; and

a stop positioned adjacent to and a predetermined distance from the free end of said yoke, said stop being located on the side of said yoke opposite said conducting member to stop the movement of said magnetic yoke at a predetermined distance in a second direction opposite to the first direction.

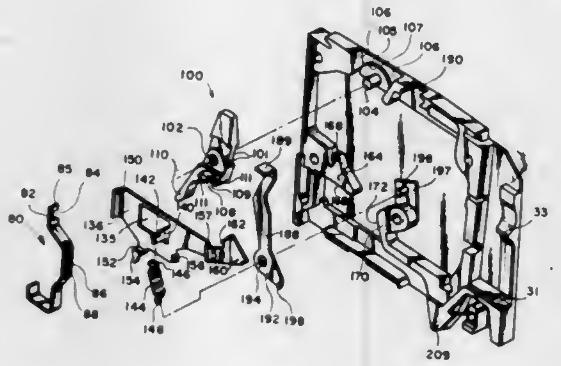
4,616,200
CIRCUIT BREAKER

James V. Fixemer, Denton, Nebr.; Neil R. Palmer, Swisher, Iowa; Charles H. Wagner, Lincoln, Nebr., and John M. Winter, Cedar Rapids, Iowa, assignors to Square D Company, Palatine, Ill.

Filed Sep. 12, 1984, Ser. No. 649,784

Int. Cl.⁴ H01A *75/12*

U.S. Cl. 335—35 **24 Claims**



1. An automatic electric circuit breaker having a molded casing formed with barriers and recesses therein, a line terminal, a load terminal electrically connected to said line terminal, a stationary contact in said casing intermediate said line terminal and said load terminal, a movable blade within said casing having one end and an opposite end, a movable contact mounted on said one end of said blade and movable thereby into and out of engagement with said stationary contact, a releasably latchable generally flat, thin trip lever pivotally mounted in said casing and releasable from a latched position for movement to a tripped position to effect separation of said contacts, an armature releasably latching said trip lever in said latched position and movable to release said trip lever enabling said trip lever to move to said tripped position, a yoke carrying said armature and operably associated therewith to attract said armature to release said trip lever, said yoke connected to said load side terminal, a handle pivotally supported within and extending beyond said casing, said opposite end of said blade connected to said handle, a spring having a first end connected to said trip lever and a second end connected to said blade, said spring biasing said trip lever toward said tripped position, said trip lever including a shoulder portion adapted to be engaged by said handle to pivot said trip lever to said latched position, said handle including a protuberance extending from one end thereof in overlapping relationship with said trip lever and adapted to engage said shoulder portion of said trip lever to move said trip lever to said latched position.

4,616,201
ELECTROMAGNETIC RELAY

Mitsuki Nagamoto, Tsu, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Nov. 16, 1984, Ser. No. 672,222

Claims priority, application Japan, Nov. 30, 1983, 58-184929[U]

Int. Cl.⁴ H01H *67/02*

U.S. Cl. 335—129 **9 Claims**

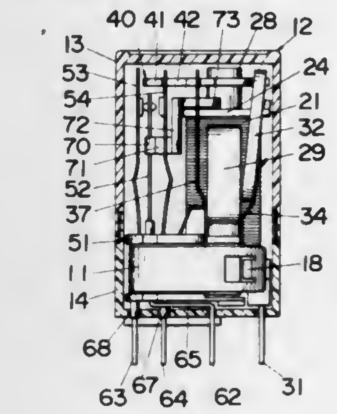
1. An electromagnetic relay comprising:

(a) a contact unit having a base upon which are mounted a plurality of first movable contacts, a plurality of second movable contacts, and a plurality of fixed common contacts, each fixed common contact being disposed between a first and a second movable contact

(b) an electromagnetic unit having an electromagnetic unit base upon which is mounted an excitation coil,

(c) means for moving said first and second movable contacts alternately into and out of contact with said fixed common contacts in response to the energizing and deenergizing of said excitation coil,

(d) first, second and common terminal lugs projecting from the base of said contact unit, said lugs being connected to said first and second moveable contacts and said fixed common contacts respectively, said first and second terminal lugs being linear extensions of said contacts through said base, and said common lugs being displaced toward the electromagnetic unit side of said first and second lugs, said common lugs being connected to said common contacts by insulated transition segments extending horizontally therebetween.



(e) a header formed from an electrically nonconductive material encasing an upper portion of said fixed common contacts and having an extension portion for abutting an upper flange portion of said excitation coil, whereby said contact portion of said common contacts is held in a fixed position relative to said electromagnetic unit.

4,616,202
ELECTROMAGNETIC CONTACTOR

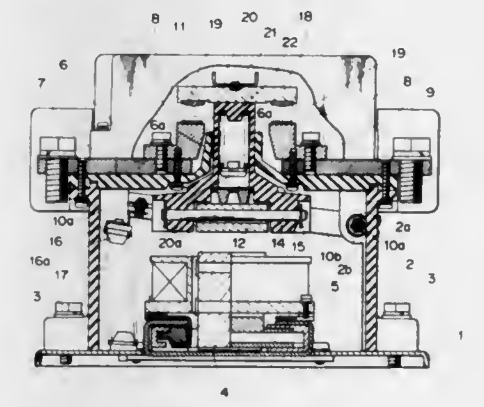
Masahiro Kakizoe, Tajimi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1985, Ser. No. 799,763

Claims priority, application Japan, Nov. 20, 1984, 59-174945[U]; Nov. 20, 1984, 59-174946[U]; Nov. 26, 1984, 59-178222[U]; Nov. 30, 1984, 59-180872[U]; Nov. 30, 1984, 59-180873[U]

Int. Cl.⁴ H01H *63/02, 67/02*

U.S. Cl. 335—133 **9 Claims**



1. An electromagnetic contactor comprising: a base; a stand fixed to the base plate; an electromagnet consisting of a fixed core and an operating coil mounted on the fixed core, and disposed within the stand; a plurality of fixed contacts provided in the upper portion of the stand; a crossbar disposed above the fixed core; a plurality of contact bars each associated with the crossbar and provided with a pair of movable contacts so that the movable contacts are located opposite the corresponding fixed contacts, respectively; a movable core joined to the lower portion of the crossbar so as to be located opposite fixed core; and a rigid frame consisting of two parallel polygonal bars and two parallel connecting bars interconnecting the respective opposite ends of the polygonal bars, and pivotally supporting the assembly of the crossbar and the movable core at the opposite ends of the movable core, wherein one of the polygonal bars is supported at the opposite ends thereof in bearings provided on one side of the stand, while the other polygonal bar is urged upward by springs so that the rigid frame is swingable on the former polygonal bar, a slot is formed in each end of each connecting bar so as to extend longitudinally of the connecting bar, the middle portion of the slot is expanded to form a hole for receiving one end of the polygonal bar perpendicularly to the connecting bar, and the frame is assembled by fitting the respective opposite ends of the polygonal bars into the corresponding holes of the connecting bars and pressing the slotted outer ends of the connecting bars with screws so as to fasten the polygonal bars to the connecting bars.

4,616,203
ELECTROMAGNETIC CONTACTOR

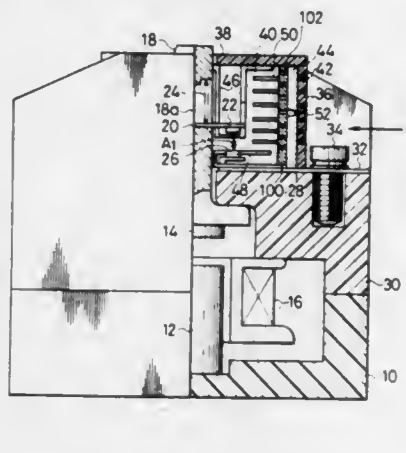
Masahiro Kakizoe; Shizutaka Nishizako; Shigeru Masuda, all of Aichi; Yuichi Wada, and Teijiro Mori, both of Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Dec. 3, 1984, Ser. No. 677,406

Claims priority, application Japan, Dec. 1, 1983, 58-184549[U]

Int. Cl.⁴ H01H *9/30*

U.S. Cl. 335—201 **6 Claims**



1. An electromagnetic contactor comprising:

an arc-extinguishing chamber defined by a partition wall of electrically insulating material, said partition wall having a plurality of through-holes therein;

at least one pair of contacts which are provided in said arc-extinguishing chamber and which produces arcs at the interruption of an electric current flowing therethrough;

an absorbing member of porous metal arranged on an inner surface of said partition wall in such a manner as to cover said through-holes of said partition wall; and

a shield plate of electrically insulating material which has a plurality of through-holes and which is arranged on an inner surface of said absorbing member in such a manner that said through-holes of said shield plate are shifted from the through-holes of said partition wall.

4,616,204
CUT MAGNETIC CORE FORMED OF A GLASSY METAL ALLOY

Hsin L. Li, Parsippany; John D. Misson, Rumson, and David G. Carrigan, Oak Ridge, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

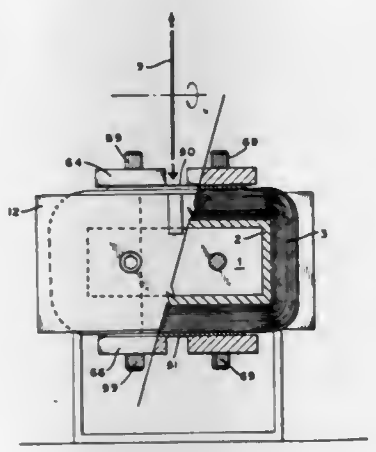
Division of Ser. No. 406,664, Aug. 9, 1982, Pat. No. 4,046,753. This application Jun. 29, 1984, Ser. No. 626,256

Int. Cl.⁴ H01F *3/00*

U.S. Cl. 335—297 **6 Claims**

1. A cut magnetic core, prepared by the process comprising: spirally winding a magnetic glassy metal alloy into succes-

sive, multiple layers to form a core having a substantially closed loop magnetic circuit and

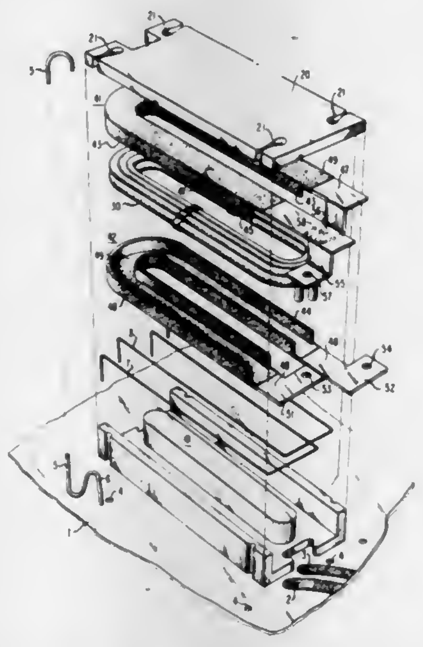


cutting through the closed core to form mating, cut surfaces that are substantially free of delaminations.

4,616,205
PREFORMED MULTIPLE TURN TRANSFORMER WINDING

Ronald B. Praught, Towaco, and Matthew A. Wilkowski, Bayonne, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 8, 1985, Ser. No. 709,894
Int. Cl.⁴ H01F *15/02, 27/30*
U.S. Cl. 336—82 **12 Claims**

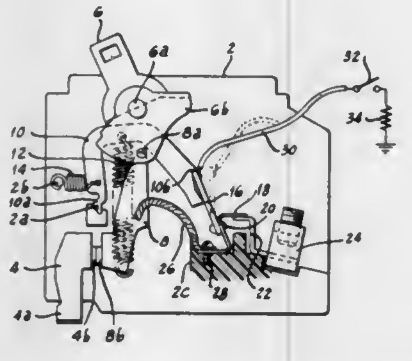


1. A transformer comprising:
a core having first and second windows around a central core leg,
a first conductor unit threaded through the first and second windows to encircle the central core leg and having a channel shaped cross section,
a second conductor unit threaded through the first and second windows to encircle the central core leg and having a channel shaped cross section,
the first and second conductor units positioned adjacent to one another with an open edge of the channel cross section of each of the first and second conductor units being substantially adjacent to one another and including means for electrically insulating the first and second conductor units from each other,
a conducting mechanism electrically connecting the first and second conductors in a series connection,
a third conductor encircling the central core leg leg and included within the channel cross section of each of the first and second conductor units.

4,616,206
CIRCUIT BREAKER AND SHUNT TRIP APPARATUS COMBINED WITHIN SINGLE POLE DEVICE

Robert B. Bridges, Elm Grove, and John R. Brubaker, Milwaukee, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 7, 1984, Ser. No. 648,240
Int. Cl.⁴ H01H *71/16, 61/08*
U.S. Cl. 337—71 **32 Claims**

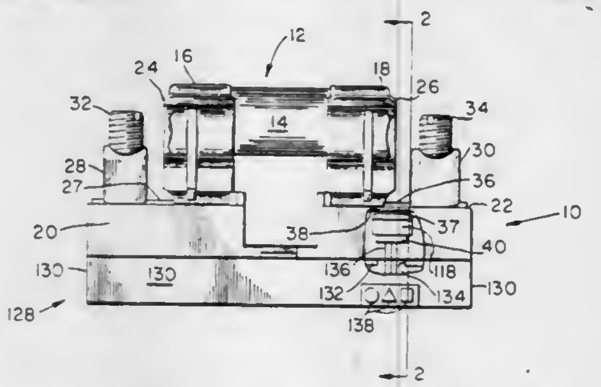


1. A circuit breaker comprising: a single pole molded case of a residential and commercial type having a width of one inch or less;
separable contact means within said case;
means for electrically connecting said contact means in a circuit to be protected by said circuit breaker;
operating means connected to said contact means for operating said contact means between open and closed positions;
latchable means connected with said operating means for enabling said operating means for operation of said contact means in a latched position and for effecting separation of said contacts independently of said operating means in an unlatched position;
current responsive trip means within said case operable for releasing said latchable means in response to predetermined current values in said protected circuit; and
means within said case controllable from a remote location for selectively operating said trip means.

4,616,207
ELECTRIC FUSE HOLDER HAVING A HALL-EFFECT CURRENT SENSOR

Edward J. Knapp, Jr., Salisbury, and Jerry L. Mosesian, Newburyport, both of Mass., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Oct. 12, 1984, Ser. No. 659,971
Int. Cl.⁴ H01L *43/00*
U.S. Cl. 338—32 H **10 Claims**

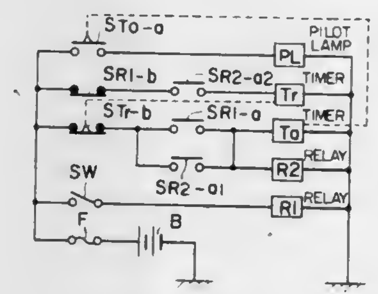


1. A holder for an electric fuse, the fuse having a pair of spaced electrical terminals, the holder comprising:
a mounting base formed from a dielectric material;
first means, carried by said base, for electrically conductively cooperating with one of the fuses electrical terminals and for electrically conductively cooperating with a first external conductor;
second means, carried by said base, for electrically conductively cooperating with the other of the fuses electrical terminals and for electrically conductively cooperating with a second external conductor;
said first means and said second means together defining the current path through said fuse holder when an electric fuse is in cooperating relationship therewith; and,
Hall-effect sensor means carried by said mounting base in close proximity to a portion of said current path, providing an output voltage responsive to the magnetic field resulting from the flow of current along said current path.

4,616,208
SYSTEM FOR INDICATING OPERATION TIME OF MOTOR VEHICLES AND THE LIKE

Koichi Nakamura, 1-9-2, Shinyashiki, Kochi-Shi, Kochi-Ken, Japan

Filed Feb. 17, 1983, Ser. No. 467,265
Claims priority, application Japan, Mar. 26, 1982, 57-47250
Int. Cl.⁴ G08B *1/00, 23/00*
U.S. Cl. 340—309.15 **20 Claims**



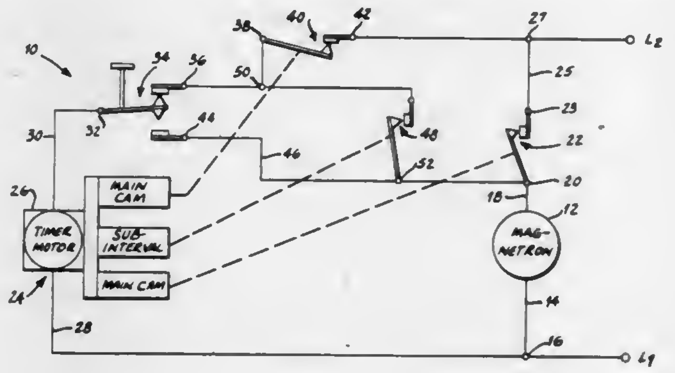
1. A system for informing a driver of a vehicle of elapsed driving time, said system comprising:
means for detecting starting and stopping of the driving of the vehicle;
a first timer for counting a limit driving time period;
first electric circuit means connecting said detecting means to said first timer, causing the first timer to start operating to count driving time in response to detection of the starting of the driving of the vehicle by said detecting means;
a second timer for counting a rest time period;
second electric circuit means connecting said detecting means to said second timer, causing the second timer to start operating to count rest time in respect to detection of stopping of driving of the vehicle by said detecting means;
warning means for generating and emitting a warning;
third electric circuit means connecting said first timer to said warning means, causing the warning means to generate and emit a warning in respect to completion of the counting of said limit driving time period by said first timer;
fourth electric circuit means connecting said second timer to said warning means, causing the warning means to become inoperative in response to completion of the counting of said rest time period by said second timer; and fifth electric circuit means connecting said detecting means to said first and second timers permitting the counting operation of the first timer to continue and causing the counting operation of the second timer to be nullified in response to detection, by said detecting means, of restarting of the driving of the vehicle before completion of the counting of said rest time period by the second timer.

4,616,209
"KEEP WARM" CONTROL

Joseph J. Mahon, Libertyville, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 18, 1983, Ser. No. 495,895
Int. Cl.⁴ G08B *1/00*
U.S. Cl. 340—309.15 **10 Claims**

1. A control system for an electrical cooking appliance comprising:
(a) means operable upon connection to a source of electrical power to provide radiant energy for cooking;
(b) first switch means operable upon actuation and to make and upon de-actuation to break a circuit between said radiant energy provider and said source of power;
(c) programmer timer means having a single timing motor and operable upon electrical energization to provide a pre-selected cooking interval of actuation for said first switch means;
(d) second switch means operable upon actuation to made and upon de-actuation to break a connection between said timer motor and said source of power;
(e) third switch means electrically in parallel with said first switch means and operable upon actuation to complete and upon de-actuation to break a circuit between said radiant energy provider and said power source;
(f) said programmer timer means including first cam means operable to effect actuation of said first switch means for a pre-selected program interval and third cam means operable to actuate and de-actuate said third switch means at sub-intervals of said program interval and second cam means operable to effect actuation of said second switch means for a predetermined interval for maintaining said timer motor energized when said first and third switch means are de-actuated; and,
(g) mode selector switch means operable upon user actuation to one position to enable energization of said radiant energy source through said second and third switch means and operable upon user actuation to another position to enable energization of said radiant energy source only through said first switch means;
(h) said programmer timer means includes dwell means operable to prevent actuation of said first switch means when said mode selector is in said one position and said second switch means is actuated.



4,616,210
SPECTROPHOTOMETERS

Alan C. Ferber, Hillside, and Morteza M. Chamran, deceased, late of Elmhurst, both of Ill. (by Delories M. Chamran, legal representative), assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Sep. 14, 1984, Ser. No. 651,188
Int. Cl.⁴ H03M *1/00;* **G01J** *3/06*
U.S. Cl. 340—347 AD **4 Claims**

1. A spectrophotometric system comprising, in combination:
means for producing a photometric signal;
optical chopper means for modulating said signal to produce a voltage alternating between a dark level and a light level;
a sample and hold circuit for said dark level voltage signal;
a sample and hold circuit for said light level voltage signal;
auto-zero amplifier means;
gain selecting amplifier means;
comparator means;
a microprocessor unit;
said microprocessor unit having control means for operating said spectrophotometric system in a dark signal mode wherein:

said auto-zero amplifier means receives said dark level voltage signal from said dark level sample and hold circuit and outputs a dark level signal;

said gain selecting amplifier means receives the output signal from said auto-zero amplifier means and outputs a dark level signal;

said comparator means including a digital to analog converter which receives control signals from said microprocessor unit and outputs a responsive constant voltage signal;

said comparator means receiving the output signal from said gain selecting amplifier means and compares it with said constant voltage signal to output a background signal voltage as a stored feedback to said auto-zero amplifier means;

said microprocessor unit having control means for operating said spectrophotometric system in a light signal mode wherein:

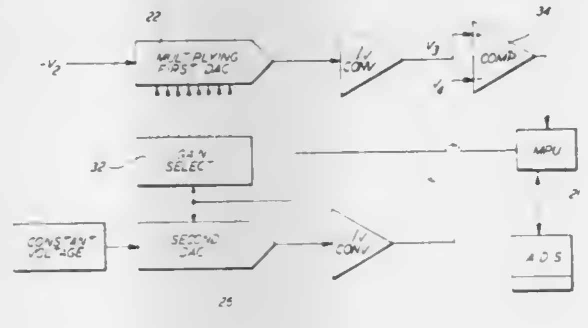
said auto-zero amplifier means receives a light level voltage signal from said light level sample and hold circuit and subtracts said background signal voltage to output a light level signal;

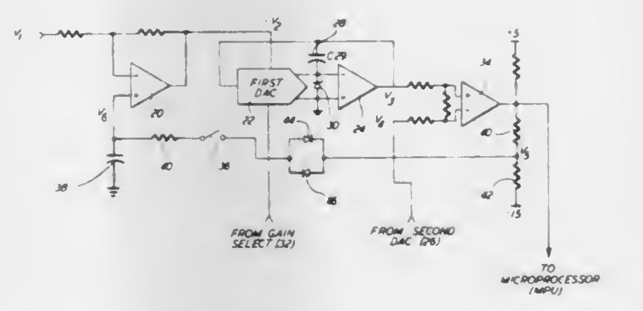
said gain selecting amplifier means receiving the output signal from said auto-zero amplifier means and incorporating a feed back gain factor to output a light level signal;

said digital to analog converter included in said comparator means receiving control signals from said microprocessor unit and outputting responsive limit voltages;

said comparator means receiving the light signal output from said gain selecting amplifier means and comparing it with said limit voltages to output a feedback gain control signal to said gain selecting amplifier means;

said comparator means including successive approximation means for analog to digital conversion which receives control signals from said microprocessor unit and light signals outputted from said gain selecting amplifier means to output digital signals to said microprocessor unit.





4,616,211
DETECTING CODEWORDS

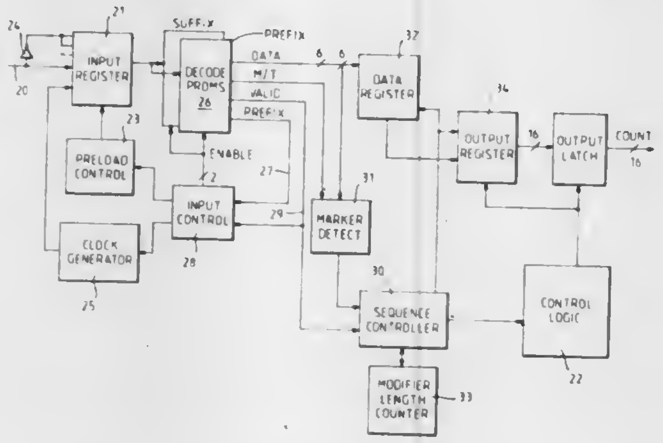
Peter F. Ross; Ian W. Rodgers, and Rupert L. A. Goodings, all of Cambridge, England, assignors to Crosfield Electronics Limited, London, England

Filed Dec. 10, 1984, Ser. No. 680,017

Claims priority, application United Kingdom, Dec. 8, 1983, 8332773

Int. Cl.⁴ H03M *7/42*

U.S. Cl. 340—347 DD **10 Claims**



1. A method for detecing digital codewords or predetermined portions of digital codewords in a stream of codewords of a codeword system of digital codewords of varying length in which no short codeword forms the prefix of a longer codeword in the same system, comprising the steps of:

(a) inverting a leading bit of said stream of codewords to provide a logical complement of said leading bit,

(b) loading a shift register, having a length at least one bit greater than the longest said codeword or said predetermined codeword portion to be detected, with the logical complement of the leading bit of said stream of codewords;

(c) serially shifting said data in said stream into said shift register; and

(d) determining whether said data in said shift register upstream of the first change between data in said shift register of one type and data in said shift register of said complementary type comprises one of a codeword and a predetermined codeword portion.

4,616,212
TWO STAGE WEIGHTED CAPACITOR DIGITAL TO ANALOG CONVERTER

Simon M. Law, Torrance, Calif., and Bruce Long, Cary, N.C., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 7, 1985, Ser. No. 709,479

Int. Cl.⁴ H03K *13/03*

U.S. Cl. 340—347 DA **1 Claim**

1. (As Amended) A weighted capacitor digital to analog converter comprising:

a reference voltage (V),

a first group of capacitors (**C21**), one electrode of each being mutually connected,

a first group of switches (**S11**) for selectively connecting the other electrodes of said first group of capacitors to said reference voltage or ground potential,

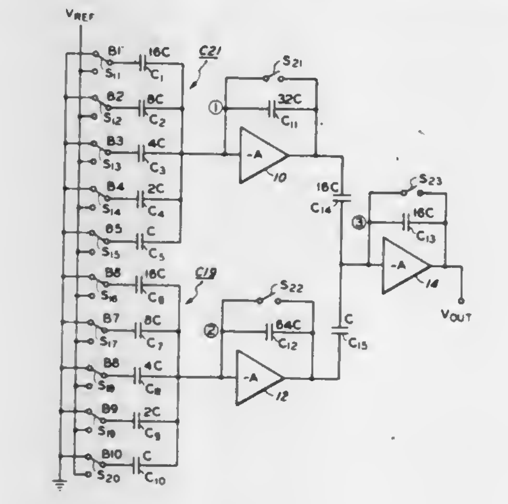
a second group of capacitors (**C19**), one electrode of each being mutually connected,

a second group of switches (**S16**) for selectively connecting the other electrodes of said second group of capacitors to said reference voltage or ground potential, said first and second groups of switches being selectively switched upon a binary digital signal being applied to each of said switches, said digital to analog converter being parasitic insensitive,

a first single input high speed amplifier means (**10**) for amplifying the output analog signal as received from said first group of capacitors, a first output capacitor (**C11**) coupling the output of said first amplifier means to said input of said first amplifier means for providing voltage feedback to said first amplifier, a first output switch (**S21**) coupled across said first output capacitor for neutralizing the charge on said first output capacitor and thereby neutralizing the output voltage in relation to the input voltage of said first amplifier means,

a second single input high speed amplifier means (**12**) for amplifying the output analog signal as received from said second group of capacitors, a second output capacitor (**C12**) coupling the output of said second amplifier means to said input of said second amplifier means for providing voltage feedback to said second amplifier means, a second output switch (**S22**) coupled across said second output capacitor for neutralizing the charge on said second output capacitor and thereby neutralizing the output voltage in relation to the input voltage of said second amplifier means, and

a third single input high speed amplifier means (**14**) for amplifying the output analog signal as received from said first and second amplifier means, a third output capacitor coupling the output of said third amplifier means to said input of said third amplifier means for providing voltage feedback to said first amplifier means, a third output switch coupled across said third output capacitor for neutralizing the charge on said third output capacitor and thereby neutralizing the output voltage in relation to the input voltage of said third amplifier means.



4,616,213
CAPACITIVE MULTIKEY KEYBOARD FOR INPUTTING DATA INTO A COMPUTER

Sherif Danish, Tulsa, Okla., assignor to Polytel Corporation, Tulsa, Okla.

Filed Jan. 14, 1983, Ser. No. 458,142

Int. Cl.⁴ G06F *3/02*

U.S. Cl. 340—365 C **18 Claims**

1. A multikey keyboard for inputting data into a computer comprising:

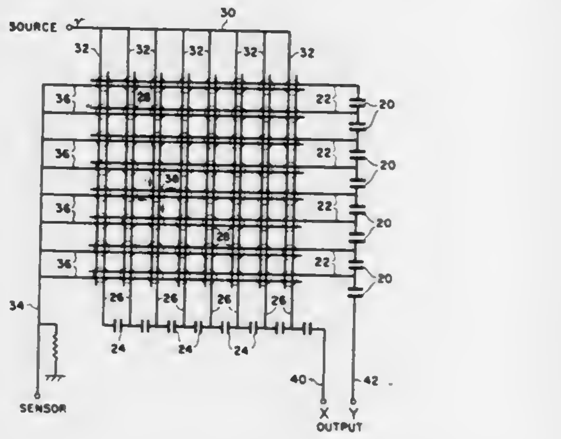
(a) a first and second separate sequential series of a plurality of capacitors wherein one end of each of said sequential series, respectively, represents the row and column keyboard output to said computer;

(b) a first plurality of essentially parallel conductors representing rows of keys on said keyboard wherein one of said plurality of conductors is connected between each of said capacitors of one of said separate sequential series;

(c) a second plurality of essentially parallel conductors superimposed and essentially perpendicular to said first parallel conductors, thus representing columns of keys, wherein one of said second plurality of conductors is connected between each of said capacitors of said other separate sequential series;

(d) a plurality of normally open, key activated, switch means located at the intersection of the row and column conductors forming a matrix keyboard; and

(e) a common circuit lead operatively connected to each of said plurality of switch means such that when a key is pressed, the corresponding normally open switch means closes thus completing the circuit between said common circuit lead and that portion of both of said sequential series of said plurality of capacitors cumulatively corresponding to the capacitance associated with the row and column of said pressed key, thus allowing the computer to establish which key was pressed by measuring the capacitance of said completed keyboard circuits between said common circuit lead and each of said ends of said sequential series representing the row and column keyboard output as the relative position of said pressed key.



4,616,214
SECURITY SYSTEM

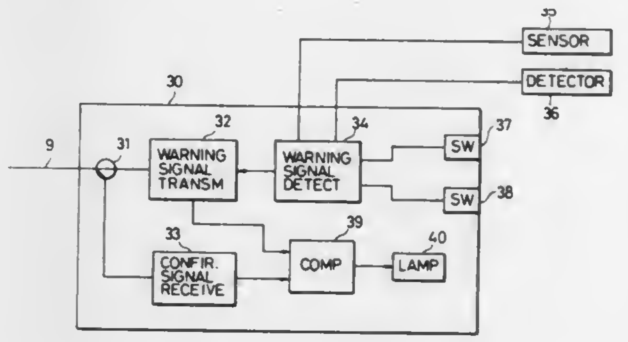
Akihiko Naito, Tokyo, Japan, assignor to Pioneer Electronic Corp., Tokyo, Japan

Filed May 25, 1982, Ser. No. 381,658

Claims priority, application Japan, May 27, 1981, 56-81621

Int. Cl.⁴ G08B *1/08*

U.S. Cl. 340—533 **4 Claims**



1. A security system, comprising:

a plurality of security terminals, said terminals being connected to a monitoring center so as to permit bidirectional data communication therebetween, each of said plurality of security terminals comprising means for transmitting a warning signal to said monitoring center when an abnormal condition is detected at said security terminal; means for receiving a confirmation signal issued from said monitoring center; and display means responsive to the transmitting means and the receiving means, operating in response to both the transmitting of said warning signal only by said each security terminal and the receiving of said confirmation signal for displaying a response from said monitoring center.

4,616,215

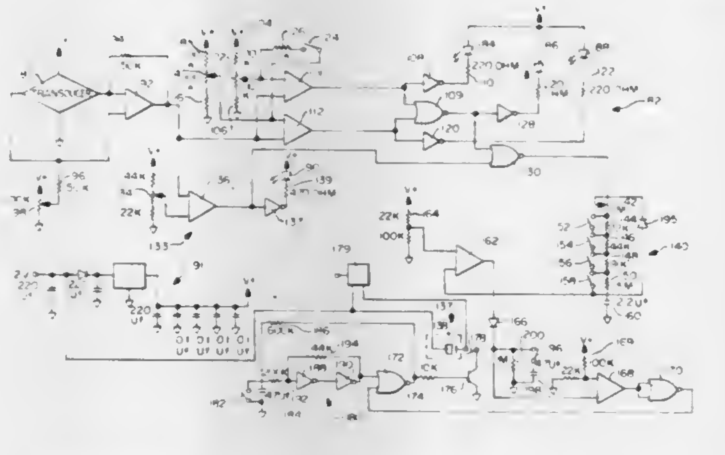
VACUUM MONITORING AND SIGNALING APPARATUS

Richard E. Maddalena, Petaluma, Calif., assignor to Maddalena's, Inc., Petaluma, Calif.

Filed Jul. 31, 1984, Ser. No. 636,150

Int. Cl.^{4} G08B *21/00;* **A01J** *7/00;* **F16K** *37/00*

U.S. Cl. 340—626 **19 Claims**



1. Apparatus for monitoring vacuum conditions in a system employing vacuum, comprising the combination a control circuit including transducer means for sensing the level of the vacuum at a given location in the system and generating an output signal which is a function of the sensed level, a high vacuum level adjustment circuit for selectively establishing a first reference signal which is a function of a predetermined upper limit of vacuum in the system, a low vacuum level adjustment circuit for selectively establishing a second reference signal which is a function of a predetermined lower limit of vacuum in the system, comparator circuit means for comparing the output signal with the first and second reference signals, said comparator circuit means establishing a first control signal responsive to a predetermined relation between the output signal and first reference signal, said comparator circuit further establishing a second control signal responsive to a predetermined relation between the output signal and second reference signal, and indicator circuit means for signaling a high vacuum condition responsive to the first control signal and for signaling a low vacuum condition responsive to the second control signal.

4,616,216

EMERGENCY STOP MONITOR

Jack Meirow, Sterling Heights, Mich., and Earl J. Schnur, 523 S. Bellevue, Lake Orion, Mich. 48035, assignors to Earl Joseph Schnur, Lake Orion, Mich.

Filed Jul. 27, 1984, Ser. No. 635,042

Int. Cl.^{4} G08B *21/00*

U.S. Cl. 340—644 **19 Claims**

1. An apparatus for monitoring the activity states of a plurality of current altering devices in a circuit capable of conducting current from a source to a load comprising:

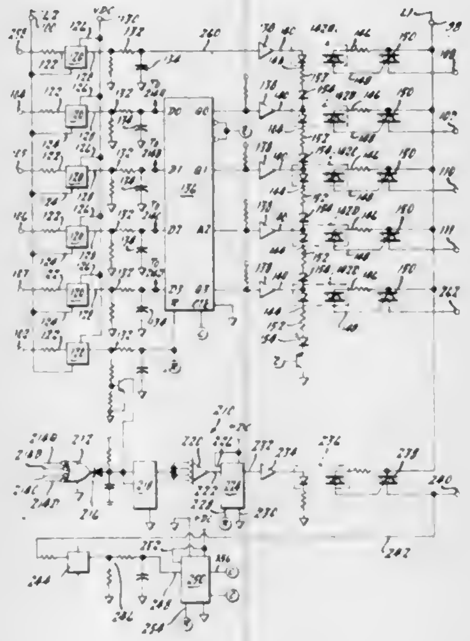
monitoring means having a plurality of device status inputs for electrically coupling to said devices for providing a plurality of fault status signals indicating the activity state of said devices;

said monitoring means further having a cascade input for daisy-chain connection to another like monitoring apparatus;

means for providing a clock signal when said current flow is altered by one or more of said devices;

latch means responsively coupled to said device status inputs for storing said fault status signals in response to said clock signal, said latch means having a plurality of output terminals for providing logic signals indicative of said stored fault status signals;

fault identifying means responsively coupled to said cascade input and to said latch output terminals and responsive to said devices which altered said current flow and for providing an indication thereof;



said fault identifying means further having a cascade output for daisy-chain connection to yet another like monitoring apparatus.

4,616,217

VISUAL SIMULATORS, COMPUTER GENERATED IMAGERY, AND DISPLAY SYSTEMS

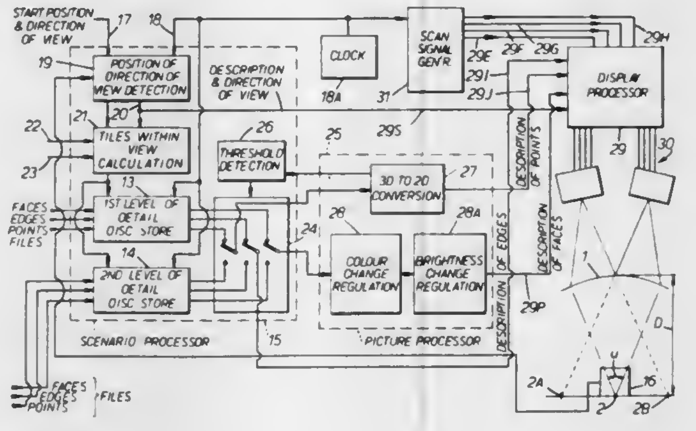
Norman R. S. Nesbitt, Newark; Edwin Skeels, Earl Shilton; Robert W. Laker, Braunstone; Terence W. Rowley, Nuneaton, and Michael E. Judge, Groby, all of England, assignors to The Marconi Company Limited, Stanmore, England

Filed May 20, 1982, Ser. No. 380,295

Claims priority, application United Kingdom, May 22, 1981, 8115866

Int. Cl.^{4} G09G *1/00*

U.S. Cl. 340—747 **22 Claims**



1. A display system comprising a screen and two spaced projectors arranged to illuminate respective parts of the screen, the screen comprising: imperfect diffusion means serving to scatter light incident on its at particular point in a manner such that more of said light is propagated, after scattering, in a given direction of maximum intensity than in any other given direction; and refraction means serving to deflect the light from each of said projectors so as to reduce or eliminate an angle between the directions of maximum intensity of light from said respective projectors which is incident at adjacent points of said respective parts.

4,616,218

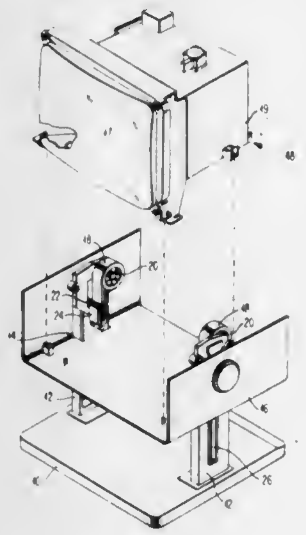
ADJUSTABLE CRT DISPLAY

Edward L. Bailey, Rochester; Raymond L. Cimijotti, Chatfield, and Levern H. Lowrie, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 3, 1983, Ser. No. 455,086

Int. Cl.^{4} G09G *1/00;* **A47B** *91/00*

U.S. Cl. 340—720 **10 Claims**



1. A data entry display station comprising:

a base,

a display head,

at least one vertical column defining limits of travel of said display head,

a constant force spring means supported by said column and attached to said display head to support at least a portion of the weight of said head,

means for retaining said head in a plurality of selected positions intermediate said limits of travel relative to said column.

4,616,219

CHARACTER GENERATING DEVICE

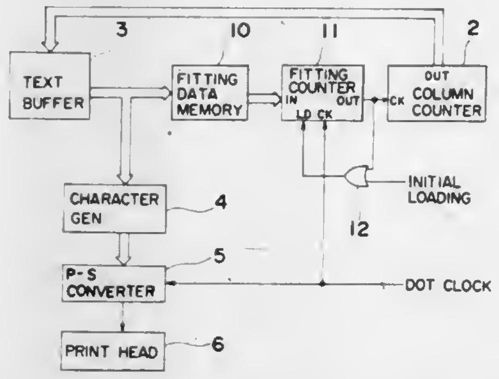
Atsuyuki Tanaka, Toyohashi; Shozo Kaieda, Okazaki, and Masaaki Nishiyama, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 23, 1983, Ser. No. 469,037

Claims priority, application Japan, Feb. 23, 1982, 57-28274

Int. Cl.^{4} G09G *1/00*

U.S. Cl. 340—724 **10 Claims**



1. A character generating device of a raster scan system comprising a character storage means for storing character codes, a character generator for generating information of dot patterns with respect to said character codes and a register for converting said dot patterns generated from said character generator into display serial data to be output therefrom, said character generating device further including:

a region data storage means for storing display region data of a predetermined value with respect to each of said character codes, said region data storage means having a memory area for storing said region display data corresponding to each of the respective widths of character codes and being accessed by each of the character codes fed to the region data storage means from the character storage means so as to output said region display data corresponding to said character code, said character code being fed directly to the character generator and region data storage means simultaneously; and

a region counter being set by said display region data;

said region data storage means and said region counter being so correlated with each other that a region datum corresponding to the generated character code is read out from said region data storage means and set in said region counter upon generation of the character code from said character code storage means whereby the dot output from said register is counted by said region counter for generating a signal of output the next character when said count value reaches a set region datum value.

4,616,220

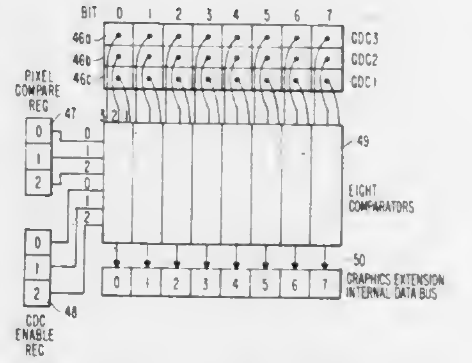
GRAPHICS DISPLAY COMPARATOR FOR MULTIPLE BIT PLANE GRAPHICS CONTROLLER

Paul Grunewald, Flemington; Roy L. Blanch, Hampton, and James R. Schrage, Flemington, all of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 22, 1983, Ser. No. 524,904

Int. Cl.^{4} G09G *1/16*

U.S. Cl. 340—747 **7 Claims**



1. In a graphic control system for coupling a host digital processor to a raster scan display monitor, said system including a plurality of memories for storing data bit patterns representing an image to be displayed by said monitor, said image having a boundary, the method comprising:

simultaneously fetching a plurality of data bits, one from each of said memories where the bit from each respective memory represents a significant bit of a digital code employed to specify a luminance level of a picture element to be displayed by said display monitor;

comparing said digital code with a specified digital code received from said host processor, said specified code representing an image boundary luminance level;

repeating said fetching and comparing steps for a plurality of picture elements; and

signalling said host processor when a comparison occurs thereby indicating that said code specifying an image boundary has been detected.

4,616,221

ELECTROMAGNETIC DISPLAY

Hidehiro Tanaka, Odawara, and Takashi Ishii, Kawasaki, both of Japan, assignors to NEI Canada Limited, Toronto, Canada and MIWA Electric, Co. Ltd., Japan

Filed Jan. 19, 1984, Ser. No. 572,075

Int. Cl.^{4} G09G *3/34*

U.S. Cl. 340—783 **4 Claims**

1. Electromagnetic display or indicator element for viewing in a viewing direction, comprising:

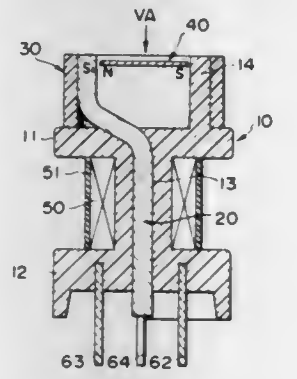
a display disc, contrastingly colored on opposite sides, pivotally mounted on said housing, with the pivotal axis located approximately midway across said disc,

said pivotal axis being approximately perpendicular to said viewing direction,

a permanent magnet located on said disc to define north and south poles on said disc on opposite sides of said pivotal axis,

a viewing axis being a line parallel to the viewing direction, passing through said pivotal axis and approximately midway between the edges of the disc,

a high remanence magnetically permeable core including:



a rearward extent extending approximately along the viewing axis and located rearward of the locus of said disc; and a forward extent extending from said rearward extent, outside the locus of said disc to a forward end located transversely from the centre of said disc relative to the viewing direction, and relative to the viewing axis,

whereby for one and the opposite polarity of said forward end, said forward end will, through said permanent magnet, control said disc to display one and the other side, respectively, in the viewing direction.

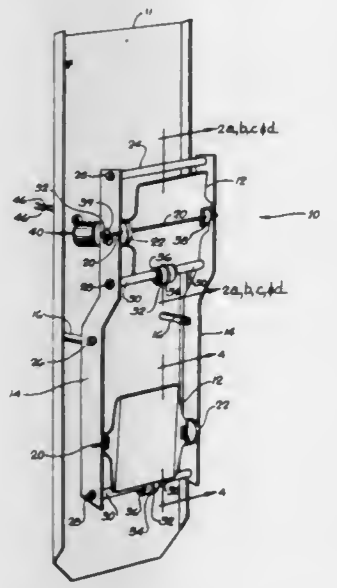
4,616,222
DISPLAY SIGN ELEMENT WITH ANTI-BOUNCE LIMIT STOP

Keith S. Wood, Danville, Ill., assignor to Time-O-Matic, Inc., Danville, Ill.

Filed Oct. 19, 1983, Ser. No. 543,373

Int. Cl.⁴ G08B *5/00;* G04C *17/00*

U.S. Cl. 340—815.24 **10 Claims**



1. In a display sign including a plurality of rotatable display units to be flipped between opposite extreme display positions, each said unit being rotatably mounted for rotation in either direction about an axis of rotation by cyclic actuating means, each said unit having associated therewith a display element having contrasting appearing surfaces on opposite sides thereof to present one or the other of said contrasting surfaces to view and having associate therewith limit stop means for terminating at said extreme positions the rotation thereof induced by said actuating means, the improvement comprising pivot-forming means associated with said limit stop means and a display element motion-arresting member pivotally movable about said pivot-forming means and configured to hang therebelow as a pendulum, said arresting member being disposed so that a portion of said rotatable display unit strikes said arresting member during a terminal portion of rotational movement from one of said extreme positions to the other to transfer at least a portion of the angular kinetic energy of said display unit to said arresting member as a pendulum pivoting motion so as to assist in termination the movement of said display unit at said extreme positions.

4,616,223
SYSTEM OF IDENTIFYING LOCAL STATIONS BY A CENTRAL INTERROGATING STATION

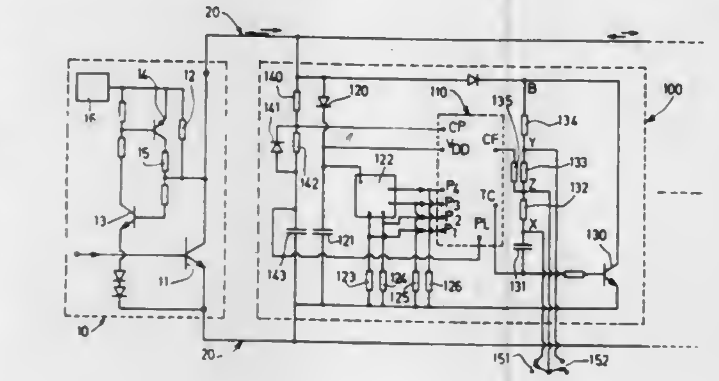
Geert J. Naaijer, Louviers, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 2, 1983, Ser. No. 557,574

Claims priority, application France, Dec. 3, 1982, 8220289

Int. Cl.⁴ H04Q *9/14;* G08B *11/00*

U.S. Cl. 340—825.54 **9 Claims**



1. A station-identification system comprising a central interrogating station and a plurality of M local stations coupled in parallel with each other along a transmission bus which connects them to said central station, characterized in that:

(A) an output stage of the central station supplies to the transmission bus a station-interrogation signal comprising a synchronizing pulse of a first length during which it has a high level and M interrogation pulses of a second length which have a high level and comprises, a d.c. system-supply source, a first transistor receiving a drive signal at its control electrode so as to be turned on only in the intervals separating the pulses of the interrogation signal, second and third transistors turned on only during the pulses of the interrogation signal and controlled into conduction by turning off the first transistor, and resistors coupled to said transistors to provide the correct drive and bias for said transistors;

(B) each local station, which receives the interrogation signal from the output stage of the central station and returns a specific answer signal to said central station, which answer signal represents the state of at least one detection circuit in said local station, comprises a sequential loading circuit for the temporary storage of a digital identification word which is specific to said station, said loading circuit comprising a series network including a diode and a capacitor coupled in parallel with the bus and connected to an input of an encoder wheel having N outputs that enable an N-bit digital identification word to be defined, 2^N being greater than or equal to the number M of stations, a discrimination circuit for validating said word, a comparator circuit for comparing said temporarily stored digital word with a digital reference word, and a circuit for returning the answer signal to the central station via the transmission bus when the compared words are identical.

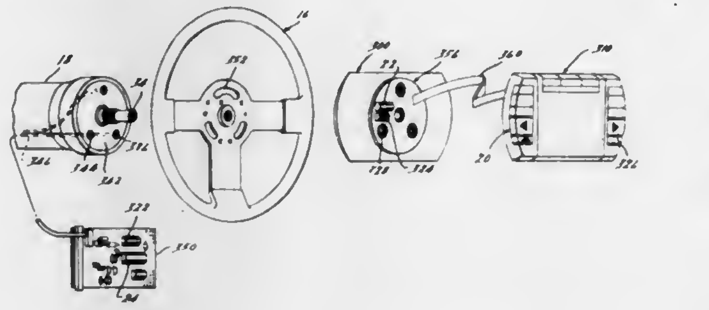
4,616,224
MULTIFUNCTION STEERING WHEEL

Robert P. Reighard, Toledo, Ohio, assignor to Sheller-Globe Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 475,891, Mar. 16, 1983, abandoned. This application Dec. 12, 1983, Ser. No. 560,550

Int. Cl.⁴ H04Q *9/00*

U.S. Cl. 340—825.69 **21 Claims**



1. A multifunction steering wheel for operating functions of a vehicle having a steering column comprising:

steering wheel member rotatably carried on said steering column;

first means supported on said steering column member for receiving instruction from an operator;

means for maintaining said first means stationary relative to said steering column;

transmitting means responsive to said first means for generating a radiant energy signal in accordance with said instruction;

receiving means disposed on said vehicle and receptive of said radiant energy signal for operating said vehicle functions.

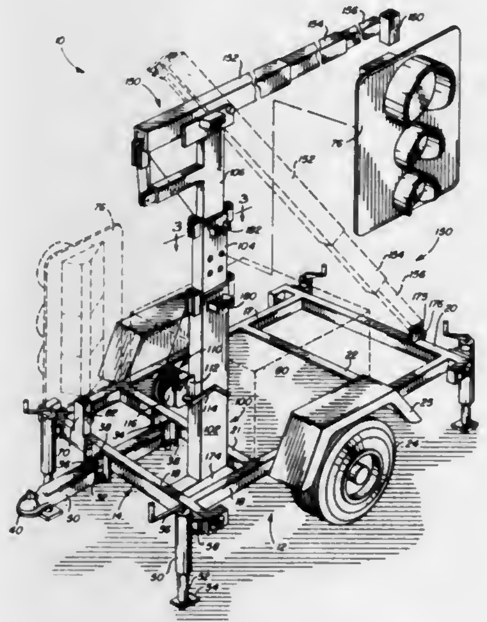
4,616,225
PORTABLE TRAFFIC CONTROL SIGNAL DEVICE

John D. Woudenberg, Phoenix, Ariz., assignor to Material Sales, Inc., Tempe, Ariz.

Filed Mar. 31, 1983, Ser. No. 480,919

Int. Cl.⁴ G08G *1/095*

U.S. Cl. 340—908 **5 Claims**



1. A portable traffic control signal apparatus comprising:

(a) a trailer adapted for attachment to a towing vehicle;

(b) a vertical telescopic mast assembly on said trailer, said vertical mast assembly carrying a first traffic signal assembly;

(c) a telescopic boom assembly pivotally secured to said mast assembly and assuming a non-horizontal position in a non-use condition, said boom being movable to a horizontal position of use;

(d) a second traffic signal assembly detachably secured to said boom assembly;

(e) actuation means operatively connected to said boom and mast for simultaneously extending said mast and said boom and thereafter rotating said boom to a horizontal position; and

(f) means for locking said boom in a horizontal position.

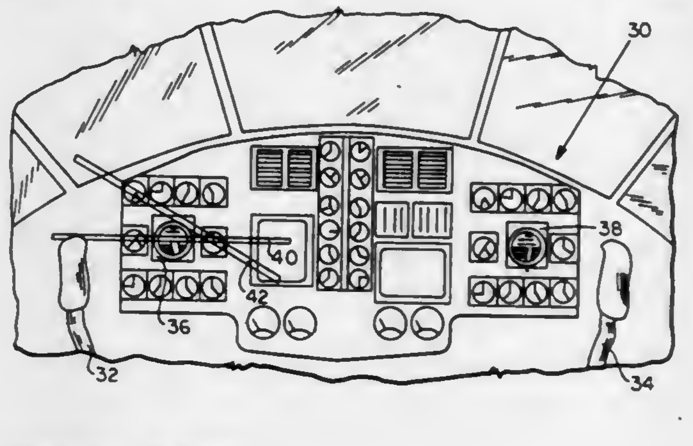
4,616,226
PERIPHERAL VISION ARTIFICIAL HORIZON DEVICE AND ASSOCIATED METHODS

Edwin W. Morley, Mississauga, Canada, assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Nov. 12, 1982, Ser. No. 441,196

Int. Cl.⁴ G01C *21/00, 9/02;* G02B *26/08*

U.S. Cl. 340—980 **9 Claims**



3. Apparatus comprising:

a chassis;

a light source mounted upon said chassis, said light source providing a light beam having an axis of propagation;

scanning means mounting upon said chassis for receiving said light beam from said light source and projecting said light beam upon a surface while scanning said light beam both horizontally and vertically to illuminate a selected area of said surface;

means for adjusting the position of said axis of propagation of said light beam as received by said scanning means in a first plane and also in a second plane mutually perpendicular with said first plane, both said first and said second planes being parallel with said propagation axis;

said adjusting means comprising a first reflector receiving said light beam from said light source and reflecting said light beam to said scanning means, and means for selectively moving said first reflector pivotally about a first axis and also about a second axis which is mutually perpendicular with said first axis, movement of said first reflector about said first and said second axis respectively moving said light beam in said first and said second planes;

said selective moving means comprising a post member which is pivotally carried by said chassis to define said first axis, said post member defining means for selective pivotal movement thereof relative to said chassis and carrying said first reflector, said post member and said chassis defining a one cooperating means for constraining relative movement therebetween;

said selective moving means comprising a mirror holder member which is pivotally carried by said post member to define said second axis, said mirror holder member carrying said first reflector, said post member and said mirror holder member defining another cooperating means for constraining relative movement therebetween;

further including a first means for selectively relocating said light beam which is projected by said scanning means in a third plane independently of scanning of said light beam by said scanning means, whereby said area of said surface which is to be illuminated by said apparatus may be selected in said third plane.

4,616,227

METHOD OF RECONSTRUCTING SYNTHETIC APERTURE RADAR IMAGE

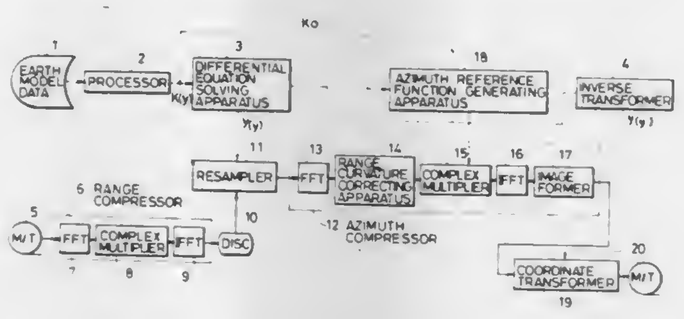
Koichi Homma; Nobuo Hamano, both of Sagamihara; Akira Maeda, Machida, and Shimbu Yamagata, Kawasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 12, 1984, Ser. No. 630,200

Claims priority, application Japan, Jul. 15, 1983, 58-127687

Int. Cl.⁴ G01S *13/90*

U.S. Cl. 342—25 **1 Claim**



1. In an image reconstruction system for reconstructing an image from data collected by a synthetic aperture radar carried by a flying object, a method of reconstructing a synthetic aperture radar image comprising: a first step of determining Doppler rate time change data as a space variant component in the azimuth direction from the orbit data of said flying object and from earth model data, a second step of determining coordinate transformation data of the image after range compression from said Doppler rate time change data so that said Doppler rate after said transformation is fixed; a third step of performing geometric transformation by resampling the pixel value of the image after range compression using said coordinate transformation data; a fourth step of executing compression processing of the image after said geometric transformation, in the azimuth direction using fast Fourier transformation; a fifth step of determining coordinate inverse transformation data by inverse geometric transformation of the image after azimuth compression to a coordinate system equivalent to that of an original image; and a sixth step of reconstructing the image by resampling the pixel value of the iamge after azimuth compression, using said inverse transformation data.

4,616,228

SYSTEM FOR SUPPRESSING UNWANTED LONG-RANGE AND/OR SECOND-TIME-AROUND RADAR ECHOES

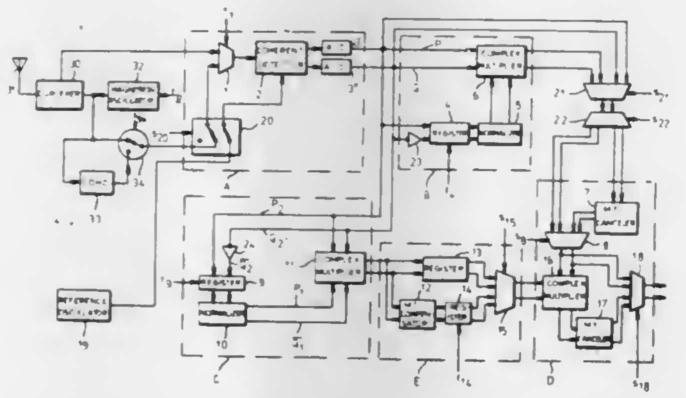
Ennio Giaccari, and Gaspare Galati, both of Rome, Italy, assignors to Selenia Industrie Elettroniche Associate S.p.A., Rome, Italy

Filed Oct. 17, 1983, Ser. No. 542,773

Claims priority, application Italy, Oct. 15, 1982, 49272 A/82

Int. Cl.⁴ G01S *13/52, 7/28*

U.S. Cl. 342—160 **9 Claims**



1. In a pulse-type radar provided with a transmitting section and a receiving section, said transmitting section including pulse-generating means periodically triggered to emit outgoing pulses with a recurrence period establishing a predetermined unambiguous range, said receiving section including a signal path said siganl path having an in phase and quadrature channel, for incoming echo pulses and a first cancellation means in said signal path for the suppression of second-time-around echoes from reflectors having unwanted relative velocities,

the combination therewith of a source of continuous wave maintaining coherence at least for the duration of a recurrence period, coherent detector means at an input end of said signal path controlled by said continuous wave, storage means being connected by a first branch to said in phase channel and by a second branch to said quadrature channel, said second branch containing an inverter, at the beginning of a recurrence period for preserving a reference value representative of an initial phase of said continuous wave, and corrective means connected to said signal path upstream of said cancellation means controlled by said storage means for correlating the phase of an incoming echo pulse with said initial phase,

said corrective means comprising a first complex multiplier with a first pair of inputs connected to in-phase and quadrature outputs of said storage means and with a second pair of inputs connected to said in-phase and quadrature channels, an analog/digital converter inserted in each of said channels upstream of said corrective means, and

said corrective means further includes register means introducing a delay of one recurrence period in said branches and a second complex multiplier connected across said register means for delivering to said cancellation means a reference value based upon the initial phases of said continuous wave at the beginning of two consecutive recurrence periods.

4,616,229

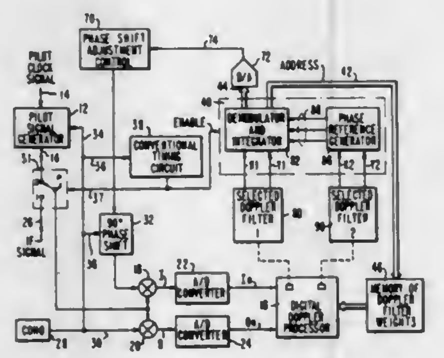
SYSTEM AND METHOD OF COMPENSATING A DOPPLER PROCESSOR FOR INPUT UNBALANCE AND AN UNBALANCE MEASURING SENSOR FOR USE THEREIN

John W. Taylor, Jr., Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 30, 1983, Ser. No. 537,900

Int. Cl.⁴ G01S *7/40, 13/04*

U.S. Cl. 342—171 **28 Claims**


70
PHASE SHIFT ADJUSTMENT CONTROL
74
72
D/A
ADDRESS
42
PILOT CLOCK SIGNAL
14
12
PILOT SIGNAL GENERATOR
34
38
CONVENTIONAL TIMING CIRCUIT
ENABLE
DEMODULATOR AND INTEGRATOR
PHASE REFERENCE GENERATOR
16
36
37
SELECTED DOPPLER FILTER 1
SELECTED DOPPLER FILTER 2
90° PHASE SHIFT
32
IF SIGNAL
22
A/D CONVERTER
A/D CONVERTER
DIGITAL DOPPLER PROCESSOR
MEMORY OF DOPPLER FILTER WEIGHTS
COHO
24
30
20
46

1. A sensor system for measuring uncompensated unbalance in the in-phase I and quadrature Q input signals of a digital doppler processor which includes a set of digital doppler filters, said I and Q input signals being provided to said doppler processor through respective I and Q channels, said sensor system including means for generating a test frequency signal having imposed thereon a predetermined doppler frequency content and for injecting said test frequency signal, at times, through said I and Q channels to render the I and Q component signals thereof at their respective inputs of said doppler processor, one doppler filter of said doppler processor having characteristics of substantially rejecting signals having said predetermined doppler frequency content at the output thereof and substantially passing signals of a doppler frequency content representative of said uncompensated unbalance in said I and Q input signals to the output thereof, said sensor system comprising:

- first means for generating a reference signal representative of the phase of said predetermined doppler frequency content of said test frequency signal at the output of said one doppler filter; and
- second means governed by said phase reference signal to demodulate the output signalling of said one doppler filter in response to said injected test frequency signal for generating separate signals representative of uncompensated gain and phase unbalance in the I and Q input signals to said digital doppler processor.

4,616,230

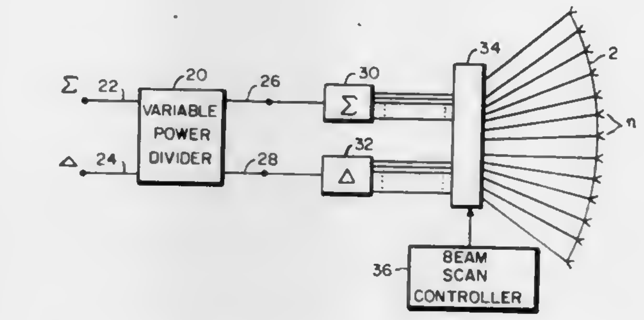
CONFORMAL PHASED ARRAY ANTENNA PATTERN CORRECTOR

John D. Antonucci, Lexington, and Peter R. Franchi, Winchester, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 15, 1984, Ser. No. 671,393

Int. Cl.⁴ H01Q *3/22*

U.S. Cl. 342—373 **5 Claims**



1. A conformal phased array monopulse antenna system comprising:

- a plurality of radiating elements arranged along a curved surface;
- beam scanning means directly connected to said plurality of radiating elements for varying the scan angle of the beam produced by said radiating elements;
- sum and difference networks directly connected to said beam scanning means for producing sum and difference radiation patterns from said plurality of radiating elements; and
- a variable power divider coupled to said sum and difference networks for redistributing the power applied to said sum and difference networks as a function of said scan angle, and whereby distortions in said sum and difference antenna patterns are corrected.

4,616,231

NARROW-BAND BEAM STEERING SYSTEM

Samuel W. Autrey, Fullerton, and Harold G. Drab, Long Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 26, 1984, Ser. No. 593,155

Int. Cl.⁴ H01Q *3/12*

U.S. Cl. 342—374 **16 Claims**

1. In a phase shift beamforming system adapted to form a beam directed in a predetermined direction for a signal at a predetermined signal frequency, comprising (i) a plurality of spatially disposed energy transducers providing respective transducer signals, (ii) coupling means coupled to each transducer and adapted to form first and second transducer component signals, the amplitude of the first component signal being proportional to the sine of the desired phase shift for the respective transducer and the amplitude of the second component signal being proportional to the cosine of the desired phase shift for the respective transducer, and (iii) summing means adapted to introduce a relative phase shift between the two component signals and combine such signals to provide a sum signal, the improvement wherein:

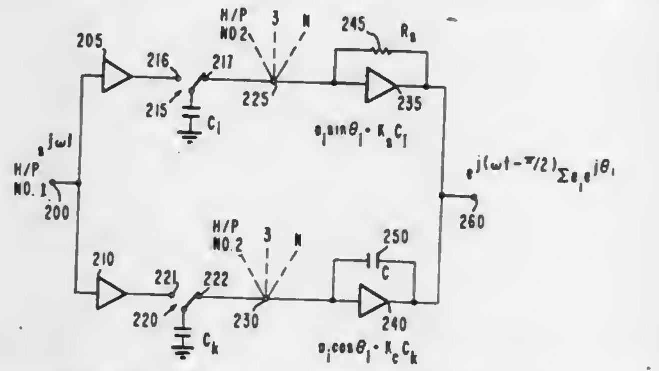
said coupling means comprises:

(i) first switched capacitor circuit means coupling such transducer to such summing means for transferring to said summing means a precise charge amplitude comprising said first component signal; and

(ii) second switched capacitor circuit means coupling such transducer to such summing means for transferring to said summing means a precise charge amplitude comprising said second component signal;

said first and second circuit means being cooperativley arranged so that said charge amplitudes form a predetermined ratio; and

wherein said summing means comprises means for collecting the charges transferred from said respective circuit means and coverting said charges into working voltages which may be combined to form said sum signal.


H/P NO2
3
N
245
Rs
205
216
217
215
C1
225
235
$e_i \sin\theta_i \cdot K_s C_1$
$e^{j\omega t}$
H/P NO. 1
200
$e^{j(\omega t-\pi/2)}\Sigma e_i e^{j\theta_i}$
260
H/P NO.2
3
N
250
C
210
221
222
220
Ck
230
240
$e_i \cos\theta_i \cdot K_c C_k$

4,616,232

SIDE-LOBE BLANKING CIRCUIT

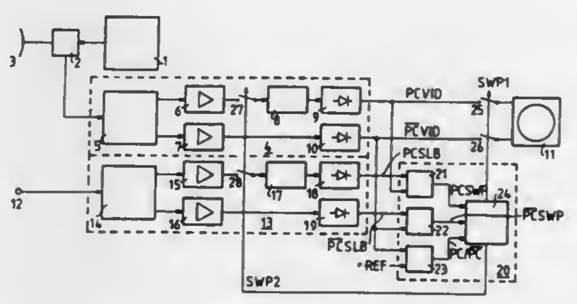
Bernard J. Reits, Hengelo, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Jul. 16, 1985, Ser. No. 755,384

Claims priority, application Netherlands, Aug. 21, 1984, 8402559

Int. Cl.⁴ G01S *3/16, 3/28*

U.S. Cl. 342—379 **2 Claims**



1. A side-lobe blanking circuit for a pulse radar apparatus, provided with a transmitting and receiving unit containing a transmitter, a directional transmitting and receiving antenna, a first receiver containing a pulse compression filter and an omnidirectional receiving antenna, and a second receiver containing a pulse compression filter, said transmitting and receiving unit being suitable for the transmission, reception and processing of relatively long-duration and relatively short-duration radar pulses into video signals in the two receivers, whereby at least the relatively long-duration pulses are frequency-modulated, said radar apparatus being further provided with first switching means, whereby in response to the video signals from the two receivers the side-lobe blanking circuit supplies a first switching signal to block, when applied to said switching means, the transport of the video signals from the first receiver to the switching means, characterised in that the side-lobe blanking circuit comprises:

(a) first comparator means for receiving the video signals of the relatively long-duration pulses compressed and processed in the two receivers, and for supplying a first control signal indicative of the maximum amplitude of the two kinds of video signals;

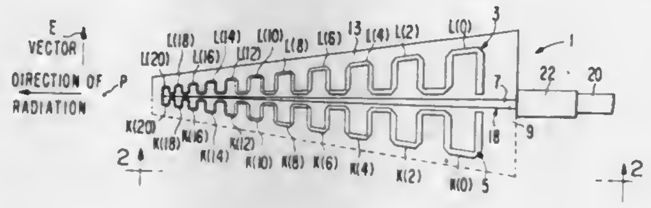
(b) second comparator means for receiving the video signals of the relatively short-duration pulses processed in the two receivers and for supplying a second control signal indicative of the maximum amplitude of the two kinds of video signals;

(c) third comparator means for supplying, in response to the video signals of the relatively short-duration pulses processed in the first receiver, a third control signal to indicate whether the amplitude of said latter video signals exceeds a given value; and

(d) a logic circuit for supplying the first switching signal, being dependent on the first control signal only if the third control signal indicates that the amplitude of the relatively short-duration pulses processed in the first receiver does not exceed said given value, and being dependent on the second control signal only if the third control signal indicates that the amplitude of the relatively short-duration pulses processed in the first receiver exceeds said given value.

4,616,233
TWIN ZIG ZAG LOG PERIODIC ANTENNA

Charles W. Westerman, El Toro, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.
Filed Apr. 25, 1984, Ser. No. 603,807
Int. Cl.⁴ H01Q *11/10*
U.S. Cl. 343—792.5 **7 Claims**


E VECTOR
DIRECTION OF P RADIATION
L(18) L(14) L(10) L(8) L(6) L(4) L(2) L(0)
L(20) L(16) L(12)
K(20) K(18) K(16) K(14) K(12) K(10) K(8) K(6) K(4) K(2) K(0)
1
2
3
5
7
9
18
20
22

1. An antenna comprising:

first and second nonresonant elongated log periodic conductive structures each comprising a set of several continuously connected loops lying in a single plane; wherein

the two structures lie side-by-side when viewed from a direction orthogonal to the planes of the structures, but are separated by a thin planar dielectric board; and

the two structures are mirror images of each other, axisymmetric about a line of symmetry that bifurcates the long axes of the two structures.

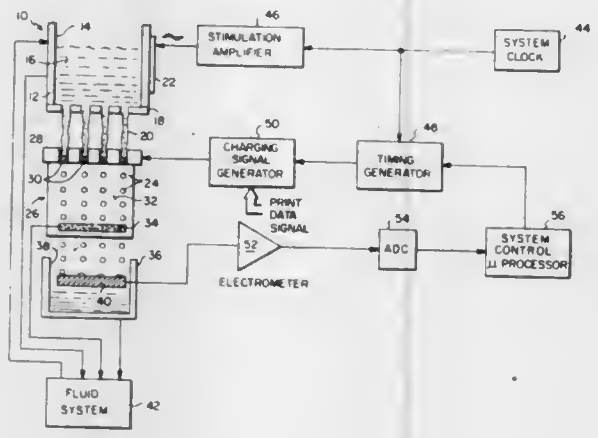
4,616,234
SIMULTANEOUS PHASE DETECTION AND ADJUSTMENT OF MULTI-JET PRINTER

Robert L. Wint, Dayton, Ohio, assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 15, 1985, Ser. No. 765,974
Int. Cl.⁴ G01D *15/18*
U.S. Cl. 346—75 **16 Claims**

1. A method for detecting the phase of drop separation with respect to stimulation cycle in a continuous multi-jet with a plurality of charging electrodes ink jet printer, characterized by:

generating a short sample pulse and applying the sample pulse to all of the drop charging electrodes simultaneously;

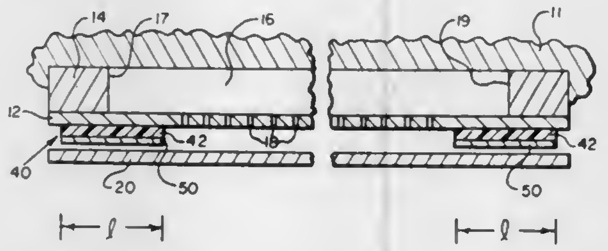
shifting the phase of the sample pulse with respect to the stimulation cycle; and



monitoring the ink jets to determine the drop separation profile.

4,616,235
EXTERNAL ACOUSTIC ABSORBER FOR INK JET PRINTER

Hilarion Braun, Beavercreek, and Ralph E. Antolik, III, Huberheights, both of Ohio, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 16, 1985, Ser. No. 766,231
Int. Cl.⁴ G01D *15/18;* H01L *41/08;* H04R *17/00*
U.S. Cl. 346—75 **3 Claims**



1. In an ink jet printer comprising an orifice plate having a waveguide, a charge plate, and an acoustic absorbing means for preventing acoustic reflections from being generated at the ends of the waveguide,

the improvement wherein said acoustic absorbing means comprises (a) a sheet of elastomer disposed outside of and on said orifice plate in a position between said orifice plate and said charge plate, and (b) a diffuser disposed between said elastomer sheet and said charge plate, in contact with said elastomer sheet but not with said orifice plate, said diffuser having an acoustic impedance of at least 3×10^7 kg/m^2 sec,

said elastomer sheet and said diffuser both having a width and a length that are sufficient to cause said absorbing means to absorb said vibrations and prevent internal reflections from occurring at the ends of said waveguide.

4,616,236
IMAGE FORMING APPARATUS WITH COLOR TRANSFER MATERIAL

Junji Watanabe, and Eiichi Yamanishi, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jul. 10, 1984, Ser. No. 629,492
Claims priority, application Japan, Jul. 15, 1983, 58-128923
Int. Cl.⁴ G01D *10/15;* H04N *1/22*
U.S. Cl. 346—76 PH **21 Claims**

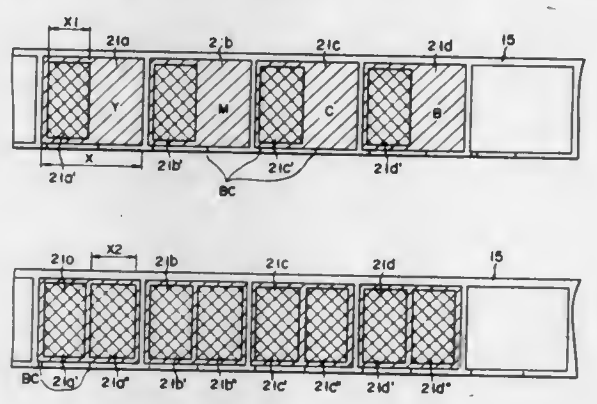
1. Image forming apparatus for applying a multicolored image to an object with a transfer material including successive

sections of a predetermined number of coloring agents of different colors, said apparatus comprising:

first means for detecting the size of said sections and generating a first detection signal related thereto;

second means for detecting the size of said object and generating a second detection signal related thereto;

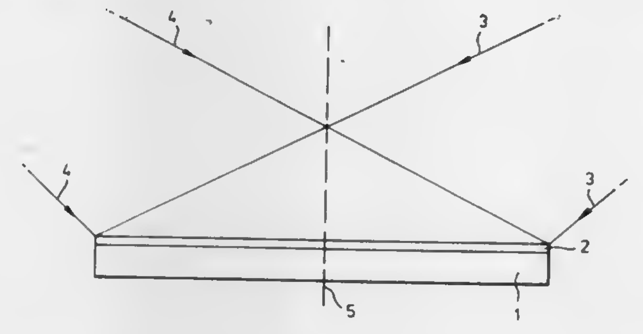
discriminating means for determining whether a dimension of said object, as indicated by said second detection signal, is greater than half of a dimension of said sections, as indicated by said first detection signal, and establishing a first image forming mode when said determination is positive and a second image forming mode when said determination is negative; and



imaging means for: (1) transferring coloring agents from, said successive sections to said object to form an image in response to said first image forming mode, and (2) transferring coloring agents from a first portion of each of said successive sections to one said object to form a first image and then transferring coloring agents from a second portion of each of said successive sections to another said object to form a second image in response to said second image forming mode.

4,616,237
DATA STORAGE MEDIUM

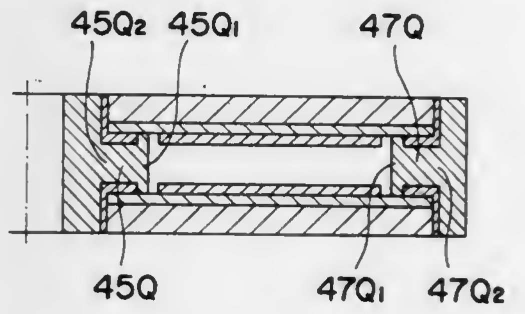
Robert M. Pettigrew, Foxton; Victor C. Humberstone, Stapleford, and Keith Gardner, Foxton, all of England, assignors to Pa Management Consultants, Ltd., London, England
Filed Sep. 26, 1983, Ser. No. 535,866
Claims priority, application United Kingdom, Sep. 27, 1982, 8227500
Int. Cl.⁴ G01D *15/34;* B05D *3/00;* B32B *15/04;* G03C *1/00*
U.S. Cl. 346—135.1 **32 Claims**



1. A data storage medium having a surface or a surface region which is strongly absorbent of at least a predetermined band of wavelengths of electromagnetic radiation, whereby the surface or surface region can be written-upon by such radiation, the said surface or surface region including a layer of heat sensitive material which has a textured surface pattern which is a regular pattern comprising an arrangement of grooves or protruberances, the pitch of which is smaller than the shortest wavelength within said predetermined band of wavelengths, and the depth (peak-to-trough) of which pattern is at least 100 nm, the textured surface pattern being free from undercutting so as to be suitable for production or replication by moulding, casting, embossing or similar process against a tool, and the textured surface pattern being overcoated with a thin film of a material which has a high opacity at the predetermined band of wavelengths, information may be stored on said data storage medium by irradiating selected areas on the surface of said medium to heat underlying heat sensitive material and change the local reflectivity of the surface of the medium.

4,616,238
INFORMATION RECORDING MEDIUM OF AIR-SANDWICH STRUCTURE

Yoshio Tani; Kyoichi Naruo, and Masao Yabe, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Japan
Filed Oct. 15, 1985, Ser. No. 787,253
Claims priority, application Japan, Oct. 12, 1984, 59-213579
Int. Cl.⁴ G01D *15/32;* G11B *7/26*
U.S. Cl. 346—137 **5 Claims**



1. In an information recording medium having an air-sandwich structure comprising two disc-shaped substrates opposed to each other at a given space by interposing therebetween a ring-shaped inner spacer and a ring-shaped outer spacer and a recording layer for writing and/or reading information with laser beam which is provided on the inner surface of at least on substrate,

the improvement in which at least one spacer is an adhesive-retainable spacer comprisign a ring portion of protecting circumferences of the substrates and a protruding ring portion of arranging the two substrates apart, the latter ring portion protruding from a side of the protective ring portion and comprising a front portion for defining the space between the substrates and a stem portion being thinner than the front portion for retaining an adhesive, whereby an excessive adhesive or a volatile material of the adhesive is discharged through a space between the substrate and the stem portion of the protruding ring portion.

4,616,239
4-HYDROXY-4'-ISOPROPOXYDIPHENYLSULFONE AND ITS USE FOR COLOR-DEVELOPABLE RECORDING MATERIAL

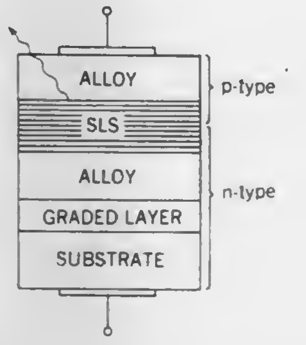
Masakichi Yahagi, Tokyo; Tetsuo Igaki, Kawagoe; Shinji Yoshinaka, Iwatsuki; Kosaku Morita, Saitama; Kimiaki Kinoshita, Kitamoto; Masashi Enokiya, Tokyo; Akio Kaneko, Fujimi, and Toshiyuki Yamashita, Tokyo, all of Japan, assignors to Shin Nisso Kako Co., Ltd., Tokyo, Japan
Division of Ser. No. 624,253, Jun. 25, 1984, Pat. No. 4,568,766. This application Sep. 16, 1985, Ser. No. 776,367
Claims priority, application Japan, Jul. 4, 1983, 58-120209
Int. Cl.⁴ B41M *5/18*
U.S. Cl. 346—201 **13 Claims**

7. A method of recording by development of color, which comprises intimately contacting 4-hydroxy-4'-isopropoxydiphenylsulfone with a colorless or light-colored dye which develops a color under the action of an acidic substance in a layer on a surface of a supporting material.

4,616,240
THERMOSENSITIVE RECORDING SHEET
Norihiko Inaba; Hiroshi Sakamoto, and Takanori Motosugi, all of Numazu, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Continuation of Ser. No. 492,080, May 6, 1983, abandoned. This application Apr. 2, 1985, Ser. No. 718,828
Claims priority, application Japan, May 28, 1982, 57-89878
Int. Cl.^{4} B41M *5/18*
U.S. Cl. 346—208 **20 Claims**

1. A thermosensitive recording sheet, comprising:
a support material;
a thermosensitive coloring layer formed on said support material, said thermosensitive coloring layer comprising a colorless or light-colored leuco dye, and an acidic material which develops color in said leuco dye upon application of heat to said thermosensitive coloring layer; and
a protective layer formed on said thermosensitive coloring layer, said protective layer comprising a water-soluble polymeric binder and silica powder having an oil absorption of 150% or higher and a bulk density of 5 ml/g or higher, as measured in accordance with Japanese Industrial Standard K 5101.

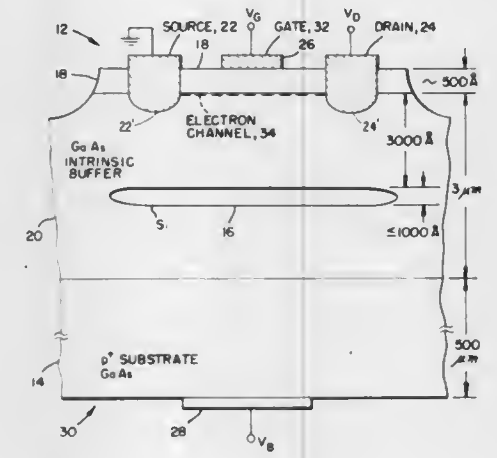
4,616,241
SUPERLATTICE OPTICAL DEVICE
Robert M. Biefeld; Ian J. Fritz; Paul L. Gourley, and Gordon C. Osbourn, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Mar. 22, 1983, Ser. No. 477,698
Int. Cl.^{4} H01L *33/00;* H01S *3/19*
U.S. Cl. 357—16 **9 Claims**



1. A semiconductor device comprising a superlattice having direct transitions between conduction band and valence band states with the same wavector, said superlattice consisting of a plurality of alternating layers of at least two different materials, at least the material having the smallest band gap having indirect transitions between conduction bahd and valence band states with unequal wavevectors, each of said layers being grown along the direction in which indirect conduction minima lie.

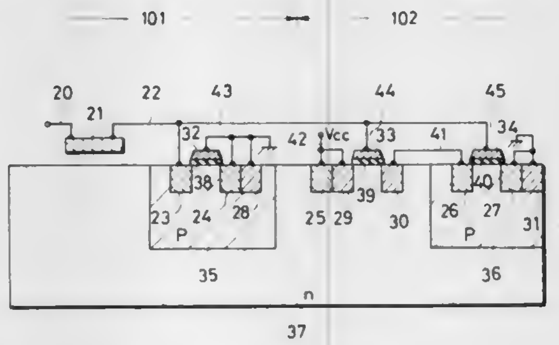
4,616,242
ENHANCEMENT AND DEPLETION MODE SELECTION LAYER FOR FIELD EFFECT TRANSISTOR
Paul M. Solomon, and Steven L. Wright, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 8, 1985, Ser. No. 731,822
Int. Cl.^{4} H01L *29/64, 29/80*
U.S. Cl. 357—22 **38 Claims**

1. A semiconductor system of field-effect transistors operative in either of two modes, namely, a depletion mode and an enhancement mode, the system comprising:
a first layer of semiconductor material and a second layer of semiconductor material, said first layer being grown epitaxially on said second layer;
a plurality of field-effect transistors;
each of said tansistors sharing said first layer of semiconductor material and said second layer of semiconductor material;
each of said transistors comprising a source region a drain region and a gate electrode; in each of said transistors said source and said drain region contacting said second layer to establish a charge conduction channel therein in response to the application of a voltage between said source and said drain region; in each of said transistors said gate electrode contacting said first layer between said source region and said drain region to form a gate terminal with said first layer; and



means buried within said second layer beneath at least one of said transistors for changing the mode of operation of one of said operating modes to the other of said operating modes.

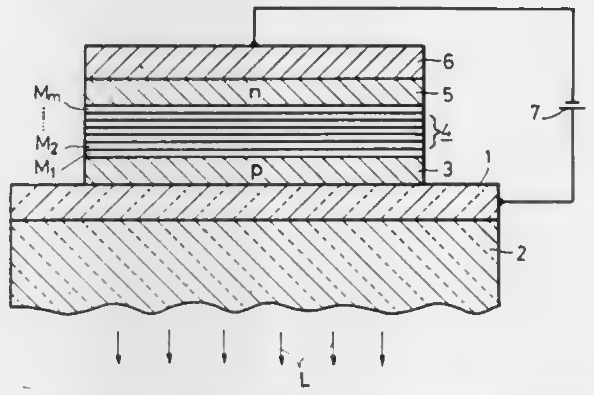
4,616,243
GATE PROTECTION FOR A MOSFET
Osamu Minato, Nishitama; Toshio Sasaki, Hachioji, and Toshiaki Masuhara, Nishitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 18, 1984, Ser. No. 621,682
Claims priority, application Japan, Jun. 17, 1983, 56-107678
Int. Cl.^{4} H01L *29/78*
U.S. Cl. 357—23.13 **6 Claims**



1. A semiconductor device comprising:
a semiconductor substrate of a first conductivity type;
a first impurity region of a second conductivity type formed at a first predetermined portion of said semiconductor substrate;
a first insulated gate field effect transistor formed inside said first impurity region;
a second insulated gate field effect transistor formed at a second predetermined portion of said semiconductor substrate;
a second impurity region of the second conductivity type, having a concentration higher than that of said first impurity region, and formed at a third preddetermined portion of said semiconductor substrate;
a third insulated gate field effect transistor having a source and drain thereof comprised of third impurity regions of the first conductivity type, and disposed inside said second impurity region; and

a fourth impurity region of the second conductivity type, disposed inside said second impurity region, and connected electrically to the source and gate of said third insulated gate field effect transistor, and kept fixed at a ground potential,
wherein the drain of said third insulated gate field effect transistor is connected to a gate of at least one of said first and second insulated gate field effect transistors to serve as a protection transistor for preventing destruction of the gate of said at least one transistor that it is connected to.

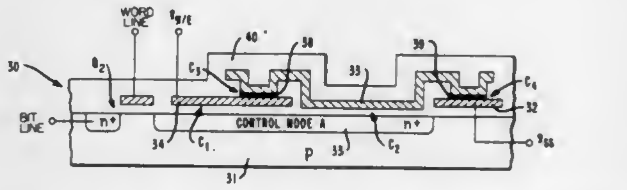
4,616,244
NON-SINGLE-CRYSTAL SEMICONDUCTOR LIGHT EMITTING DEVICE
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Japan
Filed Aug. 30, 1984, Ser. No. 645,773
Claims priority, application Japan, Aug. 30, 1983, 58-160026
Int. Cl.^{4} H01L *33/00*
U.S. Cl. 357—17 **4 Claims**



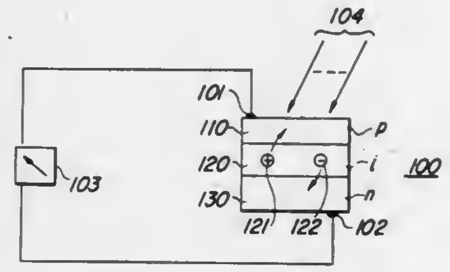
1. A non-single-crystal semiconductor light emitting device comprising:
a first electrode;
a first non-single-crystal semiconductor layer of a first conductivity type, formed on said first electrode and making ohmic contact therewith;
a non-single-crystal semiconductor region formed in layers on said first non-single-crystal semiconductor layer;
a second non-single-crystal semiconductor layer of a second conductivity type reverse from the first conductivity type and formed on said non-single-crystal semiconductor region; and
a second electrode formed on said second non-single-crystal semiconductor layer and making ohmic contact therewith;
wherein said non-single-crystal semiconductor region is formed by a non-single-crystal semiconductor laminate member made up of a plurality m (where $m \geqq 3$) of third non-single-crystal semiconductor layers M_1, M_2, . . . and M_m sequentially laminate in this order, and
wherein the energy gaps Eg_1, Eg_2, . . . and Eg_m of said third non-single-crystal semiconductor layers M_1, M_2, . . . and M_m bear such relationships as $Eg_1 > Eg_2 < Eg_3$, $Eg_3 > Eg_4 < Eg_5$, . . . $Eg_{(m-2)} < Eg_{(m-1)} > Eg_m$.

4,616,245
DIRECT-WRITE SILICON NITRIDE EEPROM CELL
James A. Topich, Centerville, Ohio; Thomas E. Cynkar, Sunnyvale, Calif.; Raymond A. Turi, Miamisburg, and George C. Lockwood, Dayton, both of Ohio, assignors to NCR Corporation, Dayton, Ohio
Filed Oct. 29, 1984, Ser. No. 665,874
Int. Cl.^{4} H01L *29/78*
U.S. Cl. 357—23.5 **5 Claims**

1. An electrically programmable nonvolatile memory cell comprising a substrate having a surface adjacent control electrode formed therein and having a dielectric region formed on the surface; an electrically isolated floating gate formed in the dielectric region from a second homogeneous layer overlying and in capacitive relationship with the control electrode; a first write electrode formed in the dielectric region from a first homogeneous layer and adapted for receiving a program voltage, said first write electrode overlying and being in capacitive relationship with the control electrode and underlying and being in capacitive relationship with the floating gate through a dielectric layer selected from silicon nitride and silicon oxynitride interposed between the first write electrode and the floating gate for transporting charge between the floating gate and the first write electrode to write the floating gate to a first voltage level; a second write electrode formed in the dielectric region from a first homogeneous layer and being adapted for receiving a selected reference voltage and underlying and being in capacitive relationship with the floating gate through an interposed dielectric layer selected from silicon nitride and silicon oxynitride for transferring charge between the floating gate and the second write electrode to write the floating gate to a second voltage level; and means for applying a selected voltage to the control electrode to select writing to the first or second voltage level.



4,616,246
ENHANCEMENT OF PHOTOCONDUCTIVITY IN PYROLYTICALLY PREPARED SEMICONDUCTORS
Alan E. Delahoy, Princeton, N.J., assignor to Chronar Corp., Princeton, N.J.
Filed Nov. 22, 1982, Ser. No. 443,206
Int. Cl.^{4} H01L *27/14, 25/00, 31/00*
U.S. Cl. 357—30 **9 Claims**

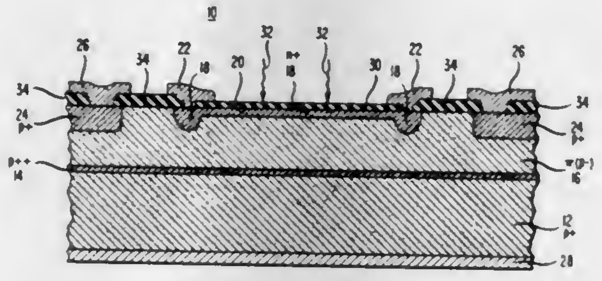


1. In a semiconductor device comprising a first semiconductor layer of a first conductivity type, an intrinsic semiconductor layer on said first semiconductor layer, and a second semiconductor layer of a second conductivity type on said intrinsic semiconductor layer;
said intrinsic semiconductor layer being formed by the decomposition of one or more gaseous semiconductanes, which layer exhibits enhanced photoconductivity by the addition of a non-incidental amount of an n-type dopant.

4,616,247
P-I-N AND AVALANCHE PHOTODIODES
Gee-Kung Chang; Adrian R. Hartman, both of New Providence, and McDonald Robinson, Chester, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Nov. 10, 1983, Ser. No. 550,230
Int. Cl.^{4} H01L *27/14, 31/00*
U.S. Cl. 357—30 **15 Claims**

1. In a semiconductor photodiode having in combination a semiconductor body of a first conductivity type and being of a first impurity concentration, said semiconductor body having a predetermined thickness, a first semiconductor layer of said

first conductivity type and of a second impurity concentration less than said first impurity concentration, a localized first semiconductor region of a second, opposite conductivity type and of a third impurity concentration substantially equal to said first impurity concentration, said first localized region being of a predetermined thickness, the combination forming a photosensitive semiconductor junction, CHARACTERIZED BY:



a second semiconductor layer of the first conductivity type and of a fourth impurity concentration greater than the first impurity concentration of the semiconductor body, the second semiconductor layer being disposed between the first semiconductor layer and the semiconductor body.

4,616,248

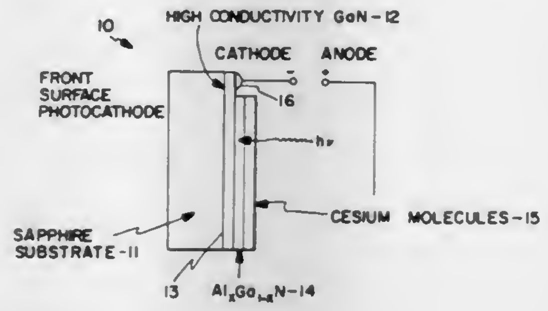
UV PHOTOCATHODE USING NEGATIVE ELECTRON AFFINITY EFFECT IN $AL_xGA_{1-x}N$

M. Asif Khan, Burnsville, and Richard G. Schulze, Hopkins, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 20, 1985, Ser. No. 735,928

Int. Cl.⁴ H01L *27/14, 31/00*

U.S. Cl. 357—30 **4 Claims**



1. In a UV photocathode detector comprising:

a single crystalline basal plane sapphire (Al_2O_3) substrate having a substantially planar major surface;

a thin film epitaxial layer of aluminum gallium nitride ($Al_xGa_{1-x}N$) grown over said major surface where $x>0$; and,

a monolayer thickness layer of cesium molecules evaporated over said $Al_xGa_{1-x}N$ layer.

4,616,249

SOLID STATE IMAGE PICK-UP ELEMENT OF STATIC INDUCTION TRANSISTOR TYPE

Jun-ichi Nishizawa, Sendai, and Tsutomu Nakamura, Ina, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 29, 1983, Ser. No. 555,988

Claims priority, application Japan, Dec. 14, 1982, 57-217715

Int. Cl.⁴ H01L *27/14, 31/00*

U.S. Cl. 357—30 **5 Claims**

1. A solid state image pick-up element of static induction transistor type comprising

a semiconductor body;

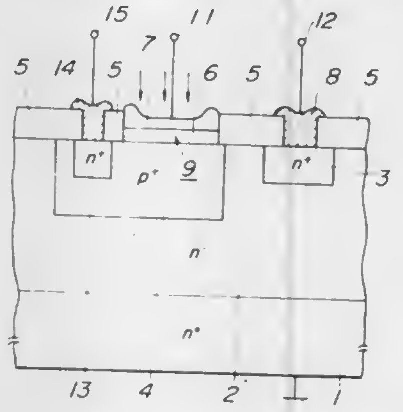
a first main electrode region of one conductivity type formed in said semiconductor body;

a second main electrode region of one conductivity type formed in said semiconductor body;

a channel region of one conductivity type formed in the semiconductor body between said first and second main electrode regions;

a signal storing gate region of a second conductivity type formed in said channel region for storing charge carriers induced in said channel in response to light input;

an isolating gate region arranged in said channel region for isolating said element from adjacent elements;



a resetting region of one conductivity type formed in said isolating region to construct a p-n junction therebetween; and

means for selectively biasing said p-n junction in a forward direction to discharge charge carriers stored in said signal storing gate region through said channel region, said isolating gate region and said resetting region.

4,616,250

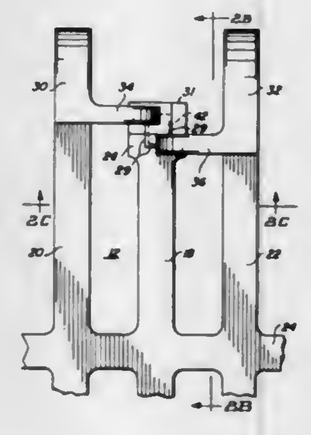
CONTACT ASSEMBLY FOR SMALL SEMICONDUCTOR DEVICE

Lee E. Folk, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 627,712, Jul. 3, 1984, abandoned. This application Jan. 7, 1985, Ser. No. 689,546

Int. Cl.⁴ H01L *23/48*

U.S. Cl. 357—70 **5 Claims**



1. A resilient contact assembly for making contact through electrodes on the upper or lower surfaces of a semiconductor device, comprising:

a center segment having an open-ended pocket at one end thereof for receiving, positioning and supporting said semiconductor device;

first and second segments adjacent opposite sides of said central segment, the ends of said first and second segments approximate said pocket being bent out of the plane of said center segment; and

first and second contact arms extending from the ends of said first and second segments toward said pocket.

4,616,251

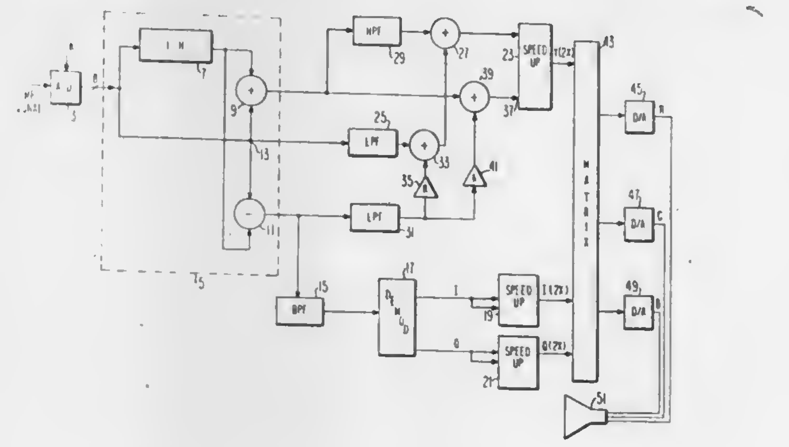
PROGRESSIVE SCAN TELEVISION SYSTEM EMPLOYING A COMB FILTER

Dalton H. Pritchard, Mercer County, and Walter E. Sepp, Middlesex County, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Division of Ser. No. 526,702, Aug. 26, 1983, Pat. No. 4,558,347. This application Oct. 31, 1985, Ser. No. 793,314

Int. Cl.⁴ H04N *11/20*

U.S. Cl. 358—11 **5 Claims**



1. A progressive scan display system comprising:

comb filter means having an input for receiving a composite video input signal having a given line rate, having a first output for providing a comb filtered luminance output signal and having a second output for providing a comb filtered chrominance output signal;

first speed-up circuit means coupled to said input of said comb filter means for receiving said composite video input signal and coupled to said first output of said comb filter means for receiving said comb filtered luminance signal for providing a processed luminance output signal having a line rate double said given line rate;

second speed-up circuit means coupled to said second output of said comb filter means for providing a processed chrominance output signal having a line rate double said given line rate;

display means coupled to said first and second speed-up circuit means for displaying said processed luminance and chrominance signals in progressive scan fashion; and wherein

said first speed-up circuit means being of a non-interpolating type and including circuit means for suppressing a chrominance component of said composite video input signal supplied thereto from said input of said comb filter means.

4,616,252

SAMPLED COLOR DIFFERENCE SIGNAL PROCESSING SYSTEM HAVING A QUADRATURE DISTORTION REDUCTION DIFFERENTIATOR

Leonard N. Schiff, Lawrence Township, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jul. 16, 1984, Ser. No. 631,073

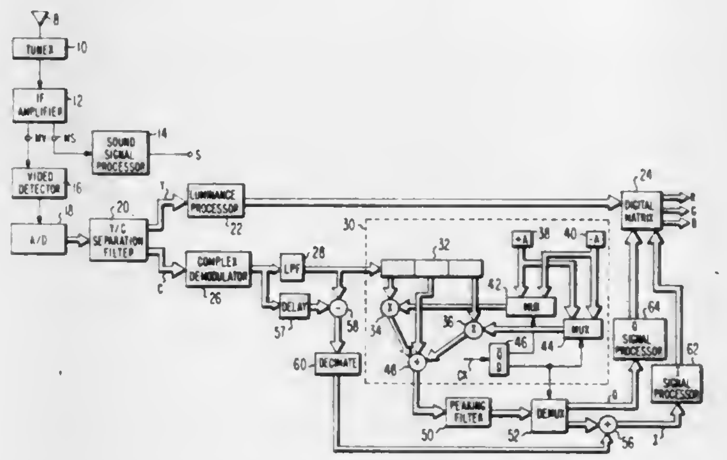
Int. Cl.⁴ H04N *11/14*

U.S. Cl. 358—23 **7 Claims**

1. In a video signal processing system for processing signals having chrominance signal components including first and second color difference signal components that modulate a suppressed carrier signal in quadrature, wherein said first color difference signal includes quadrature distortion signal components related to said second color difference signal and said second color difference signal includes quadrature distortion signal components related to said first color difference signal, said chrominance signal components being in sampled data format and occurring in a sequence of alternating first and second color difference signal samples, apparatus for reducing said quadrature distortion comprising:

cascaded delay elements having initial and final stages for providing samples representative of one of said color difference signals and an intermediate stage for providing samples representative of the other one of said color difference signals; and

sample combining means couled to said cascaded delay elements for developing samples proportional to the difference in magnitude between the samples from said initial and final stages and for combining said developed samples and the samples from said intermediate stage to substantially cancel the quadrature distortion signal components included in the samples from said intermediate stage.



4,616,253

WHITE BALANCE CONTROL APPARATUS FOR COLOR VIDEO CAMERAS

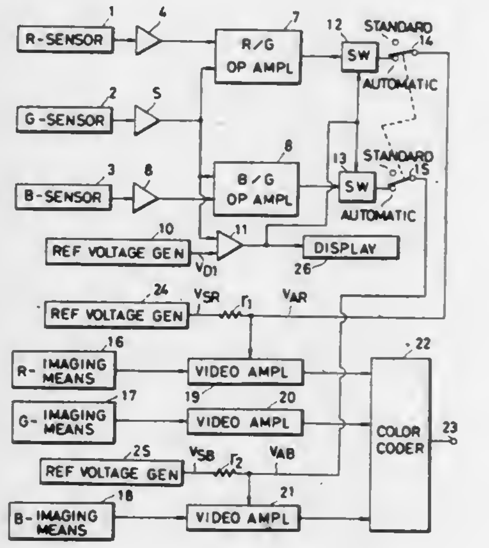
Takaaki Hashimoto, Noda, and Kazushi Minagawa, Yokohama, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed May 31, 1983, Ser. No. 499,232

Claims priority, application Japan, Jun. 2, 1982, 57-94446

Int. Cl.⁴ H04N *9/73, 9/04*

U.S. Cl. 358—29 **5 Claims**



1. In a color video camera for generating video signals of an image of an object, the combination comprising:

(a) means for detecting a color temperature of incident light from an object field;

(b) means for generating at least one first color temperature signal indicative of said color temperature detected by said color temperature detecting means;

(c) means for generating at least one second color temperature signal indicative of a predetermined color temperature;

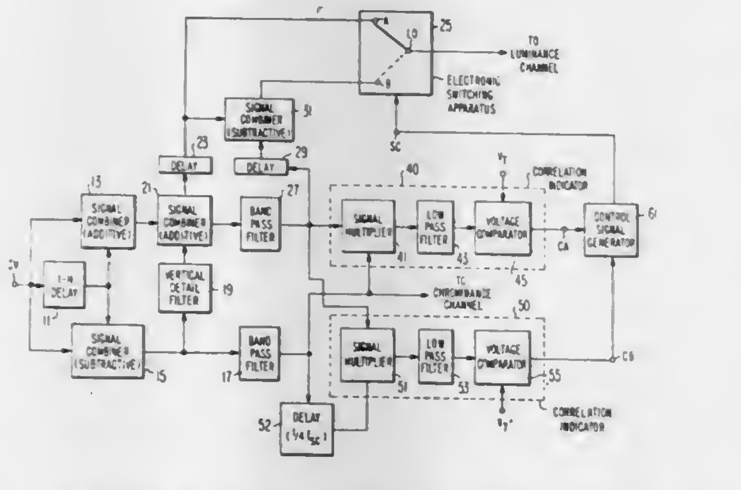
(d) means for controlling a white balance of video signals;

(e) incident light quantity detecting means for detecting that the incident light quantity from said object field is less than a predetermined value and generating a detection signal; and

(f) transmitting means adapted to usually transmit said first color temperature signal to said control means and to be responsive to the generation of said detection signal so as to transmit to said control means said second color temperature signal in place of said first color temperature signal,

wherein said incident light quantity detecting means includes means for comparing a green component of the incident light from said object field with said predetermined value.

4,616,254
HANGING DOT REDUCTION SYSTEM
Leopold A. Harwood, Bridgewater, and Kirk A. Law, East Windsor, both of N.J., assignors to RCA Corporation, Princeton, N.J.
Filed Apr. 18, 1985, Ser. No. 724,647
Int. Cl.⁴ H04N *9/64*
U.S. Cl. 358—31 **7 Claims**



1. In a system for processing composite color television signals inclusive of a luminance signal component and a chrominance signal component comprising modulated subcarrier waves, said system including comb filter apparatus comprising a 1—H delay line having an input to which undelayed composite signals are applied and having an output at which delayed composite signals appear, means for subtractively combining said undelayed and said delayed composite signals to form a first comb filtered signal output, and means for additively combining said undelayed and delayed composite signals to form a second comb filtered signal output; apparatus comprising:

a first filter responsive to said first comb filtered signal output, and removing low frequency components therefrom;

chrominance signal component utilization means responsive to an output of said first filter;

a second filter responsive to said second comb filtered signal output, and removing low frequency components therefrom;

a first correlation indicator, responsive to the respective outputs of said first and second filters, for developing a first indication signal in the presence of correlation between a relatively undelayed signal derived from the output of one of said first and second filters and a relatively delayed signal derived from the output of the other of said first and second filters; the difference in delay between said relatively undelayed and relatively delayed signals being substantially equal to a quarter period at the nominal frequency of said subcarrier waves;

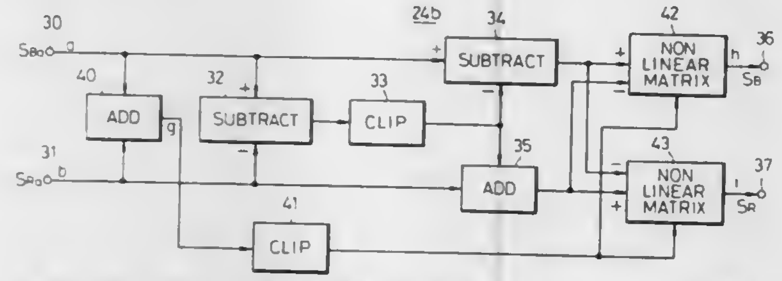
a second correlation indicator, responsive to the respective outputs of said first and second filters, for developing a second indication signal in the presence of correlation between respective signals derived without difference in delay from the outputs of said first and second filters;

luminance signal component utilization means;

means, responsive to the outputs of said first and second correlation indicators, for developing a control signal in response to the presence of either or both of said first and second indication signals; and

controlled means, responsive to said second comb filtered signal output and to said control signal, for delivering a modified version of said second comb filtered signal output to said luminance signal component utilization means during periods of development of said control signal, and for delivering an unmodified version of said second comb filtered signal output to said luminance signal component utilization means in the absence of development of said control signal.

4,616,255
COLOR TELEVISION SIGNAL GENERATING APPARATUS HAVING CIRCUIT FOR REDUCING NOISE IN OUTPUT PRIMARY COLOR SIGNALS OF CAMERA TUBE HAVING COLOR-RESOLVING STRIPED FILTER
Shintaro Nakagaki, Fujisawa, and Hiroshi Ichimura, Tokyo, both of Japan, assignors to Victor Company of Japan Ltd., Yokohama, Japan
Filed Apr. 4, 1984, Ser. No. 596,550
Claims priority, application Japan, Apr. 7, 1983, 58-61294
Int. Cl.⁴ H04N *9/083, 9/64*
U.S. Cl. 358—47 **5 Claims**



1. A color television signal generating apparatus comprising:

a color-resolving striped filter comprising a plurality of groups of filter stripes, said groups being disposed in parallel and consecutively in a sequentially repeated arrangement, each of said groups comprising first, second and third filter stripes, said first filter stripe having a light transmission characteristic for transmitting the light of one of three additive primary colors, said second filter stripe having a light transmission characteristic for transmitting the light of a mixed color which includes said one of the three additive primary colors and another of the remaining two additive primary colors, and said third filter stripe being transparent and transmitting white light, said first, second and third filter stripes being arranged in parallel and consecutively in a predetermined sequence;

a camera tube having said color-resolving striped filter disposed on the front surface thereof, said camera tube having a scanning electron beam of predetermined scanning speed;

first separating means for separating and deriving, from an output signal of the camera tube, a fundamental component in which a carrier having a frequency equal to a space frequency being determined by the pitch of said groups of filter stripes in said color-resolving striped filter is amplitude-modulated;

second separating means for separating and deriving, from the output signal of the camera tube, a second order harmonic component in which a carrier having a frequency twice the space frequency is amplitude-modulated;

multiplying means for multiplying an output signal of said first separating means by an output signal of said second separating means;

obtaining means for separating and obtaining two primary color signals corresponding to said remaining two additive primary colors from an output signal of said multiplying means and the output signal of said first separating means;

a noise reduction circuit for reducing noise in said two primary color signals which are obtained from said obtaining means and for producing two primary color signals in which the noise has been reduced;

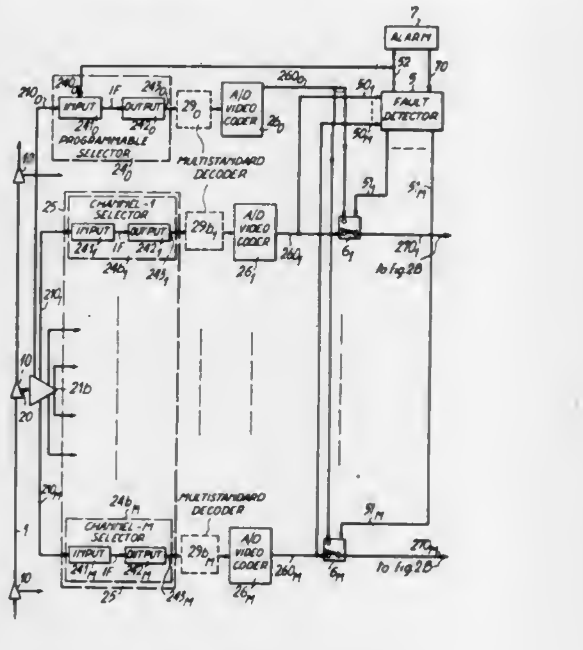
third separating means for separating and deriving, from the output signal of the camera tube, a DC component signal containing signals corresponding to all of said three additive primary colors; and

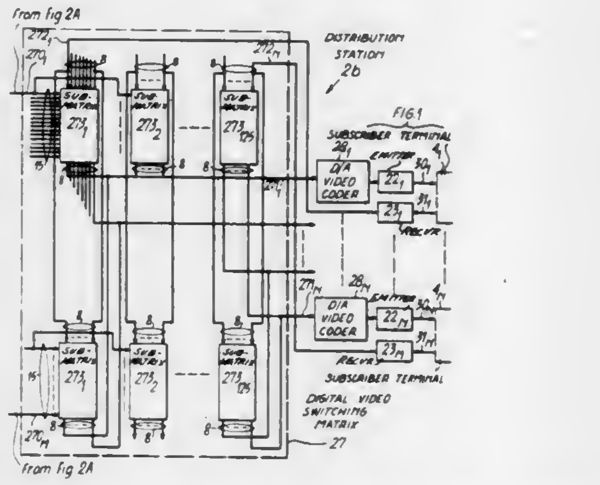
matrix means, responsive to the primary color signals from said noise reduction circuit and to the separated DC component signal from said third separating means, for producing three primary color signals,

said noise reduction circuit comprising a first subtracting circuit supplied with the two primary color signals from said obtaining means for performing a subtracting operation between the signals supplied thereto, an amplitude limiter for amplitude-limiting an output signal of said first subtracting circuit to a level of a noise component which is included within the output signal of said first subtracting circuit, a second subtracting circuit supplied with a first primary color signal which is one of the primary color signals from said obtaining means and an output signal of said amplitude limiter for performing a subtracting operation between the signals supplied thereto, and a first adder supplied with a second primary color signal which is the other of the two primary color signals from said obtaining means and the output signal of said amplitude limiter for performing an adding operation between the signals supplied thereto, said second subtracting circuit and said first adder respectively producing the two primary color signals in which the noise has been reduced.

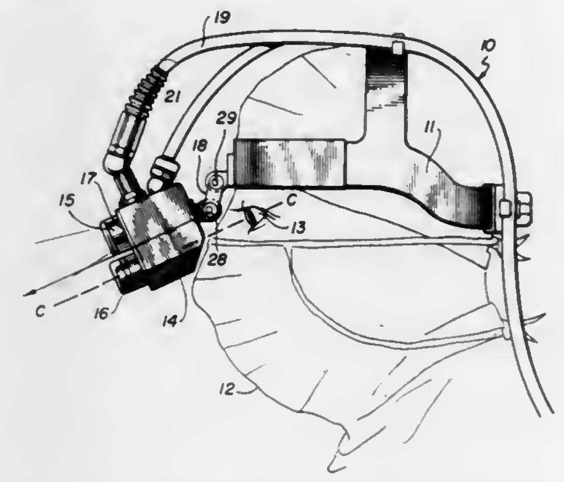
4,616,256
TELEVISION CHANNEL DISTRIBUTION NETWORK
Patrick E. Boutmy, Paris, France, assignor to Societe Anonyme de Telecommunications, Paris, France
Filed Mar. 6, 1984, Ser. No. 586,860
Claims priority, application France, Mar. 23, 1983, 83 04752
Int. Cl.⁴ H04N *7/10*
U.S. Cl. 358—86 **6 Claims**

1. A distribution station for a videocommunication network, the station receiving M television channels 1 . . . h . . . M from a single wideband distribution line and routing the M channels to N subscriber television terminals 1 . . . k . . . N, where M and N are integers, k is selectively each of 1 through N, and h is selectively each of 1 through M, terminal k being connected to said distribution station via a bidirectional wideband transmission medium including a first line carrying one of said television channels from said station to terminal k and a second line carrying a channel address signal from terminal k to said station, said distribution station comprising 1 . . . h . . . M individual channel selectors, each of said selectors receiving said M television channels and continuously selecting a respective television channel, 1 . . . h . . . M video coding means for respectively converting the channels selected by said 1 . . . h . . . M selectors into 1. . . h . . . M digital signals, digital video switching means controlled by said channel address signals in said N second lines, said switching means including 1 . . . h . . . M inputs respectively responsive to said 1 . . . h . . . M digital signals and 1 . . . k . . . N outputs respectively associated with said 1 . . . k . . . N television terminals in response to a respective digital channel address signal carried by the 1 . . . h . . . M inputs, input h being addressed by the digital channel address signal in said second line of the transmission medium including said first line associated with said output, and N video decoding means connected to said switching means outputs and to supply signals to said N first lines for converting the digital signals delivered by said switching means outputs into the corresponding television channels carried by said N first lines, said distribution station comprising a programmable spare selector for receiving said M television channels from said distribution line, spare video coding means for converting a television channel selected by said spare selector into a digital signal, and means for selectively substituting said spare selector and said spare video coding means for a faulty assembly comprising one of said M selectors and one of said M video coding means associated with one of said television channels.





4,616,257
HEADLIGHT
Jacobus Kloots, Sturbridge, and Frans G. Van Der Bel, Southbridge, both of Mass., assignors to Luxtec Corporation, Sturbridge, Mass.
Filed Jun. 13, 1985, Ser. No. 744,801
Int. Cl.⁴ H04N *7/18*
U.S. Cl. 358—93 **8 Claims**



1. Headlight, comprising:

(a) a headband adapted to fit snugly on a human head above the eyes,

(b) a main housing having an illuminating lense system and a viewing lense fixedly mounted in and extending from one face of the main housing, the centerlines of the lenses lying in a vertical plane midway between the user's eyes and intersecting at a substantial distance from the said face,

(c) a bracket holding the housing on a level with the eyes of the user and midway between the eyes, the bracket permitting adjustment of the housing relative to the eyes, the adjustment permitted being of distance, level, and angle in the said vertical plane,

(d) a light source fibre-optic cable extending from the top of the housing and connected to the illuminating lense system to provide it will light,

(e) a light-signal to electrical-signal transducer located in the housing behind the viewing lense, and

(f) a communication cable connected to the tranducer and extending from the top of the housing to transmit an image from the transducer to a viewing screen that is substantially the same as the image seen by the eyes.

4,616,258

DEVICE FOR MONITORING THE INTERIOR OF A CONDUIT

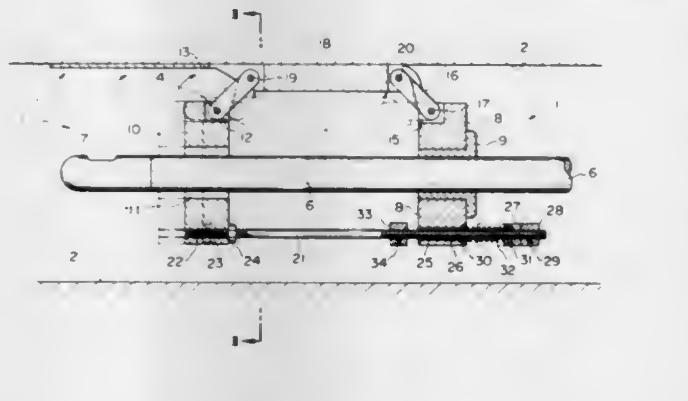
Kimizo Ono; Yoshikazu Nishiwaki; Koichi Tsuno; Toru Iwai, and Mitsuru Nishikawa, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jan. 20, 1983, Ser. No. 459,554

Claims priority, application Japan, Feb. 1, 1982, 57-15425

Int. Cl.^{4} H04N *7/18*

U.S. Cl. 358—100 **14 Claims**



1. A device for monitoring the interior of a conduit, said device comprising:

a body;

a plurality of sliding members supported on said body for slidably engaging an interior surface of said conduit; and

a resilient mechanism for urging said sliding members for equal amounts of radially outward movement from said body toward said interior surface, wherein each said sliding member has first and second ends and wherein said resilient mechanism comprises:

a first member having a fixed position with respect to a direction substantially parallel to an axis of said conduit;

a second member movable with respect to said first member, in said direction substantially parallel to said axis of said conduit;

a plurality of first arms each pivotably connected at one end to said first member and at another end to a respective one of said sliding members;

a plurality of second arms each pivotably connected at one end to said second member and at another end to a respective one of said sliding members; and

bias means for urging said first and second members for relative movement along said movement direction to urge said sliding members away from said body.

4,616,259

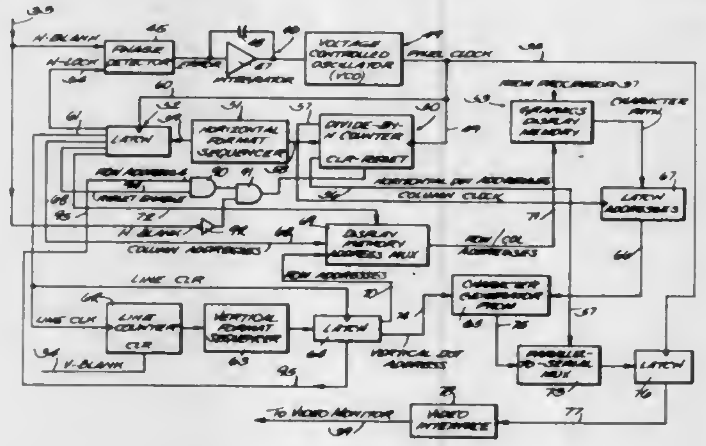
INSTANT PHASE CORRECTION IN A PHASE-LOCKED LOOP

Brian P. Moran, Arlington Heights, Ill.; Edward W. Andrews, Brookfield, and Stanford W. Miller, New Berlin, both of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 27, 1984, Ser. No. 604,580

Int. Cl.^{4} H04N *5/04*

U.S. Cl. 358—148 **3 Claims**



1. In combination, a phase-locked loop (PLL), a video monitor having a raster scanned screen and input means for video signals representative of an image, and a video camera for producing said video signals,

said phase-locked loop comprising a controlled oscillator means for generating pixel clock pulses whose frequency is varied by input of a control signal to said oscillator means, said frequency corresponding to the frequency of picture elements (pixels) in a horizontal raster line,

phase detector means having an input for reference signals which have a frequency corresponding to the frequency of a horizontal blanking signal of said video camera, and another input for receiving lock signals,

feedback circuit means including divide-by-N counter means having an input for said pixel clock pulses and an output, said counter means for counting said pixel clock pulses to provide at the output digital values corresponding to the count of said pixel clock pulses

said phase detector means comparing the phase of said lock and said reference signals and producing said control signal for the oscillator means corresponding to the detected phase and frequency difference error between said lock and said reference signals, said oscillator means responding to said control signal by changing the frequency of the pixel clock pulses to reduce said difference error when the difference error is within predetermined limits,

said feedback circuit means further including a sequencer means having input means for said digital values provided by said counter means and responding to the counts represented by said digital values by producing a plurality of timing signals including said lock signals having substantially the same frequency as said reference signals, counter means reset enable timing signals of predetermined duration and the complement of said reset enable signals such that if said reference signals occur during existence of said complement signals said difference error is within said limits and reset of said counter means is disabled and said control signal resulting from occurrence of said difference error is effective to change said frequency of the pixel clock pulses to reduce said difference error between said reference and lock signals,

gate means having input means for said reset enable signals and for said reference signals, said gate means producing a counter means reset signal that is supplied to said counter means for resetting said counter means,

means for producing video signals representative of characters and for mixing the character signals with said video signals representative of an image, and means for coupling

said mixed video signals to said input means of said monitor for effecting display of said mixed video signals on the monitor, and

means for generating a scan position signal indicative of the scan nearing the bottom of the raster, and means for coupling said scan position signal to said input means of said gate means, said gate means producing said counter means reset signal in response to occurrence of said scan position signal concurrently with the aforementioned reset enable and reference signals.

4,616,260

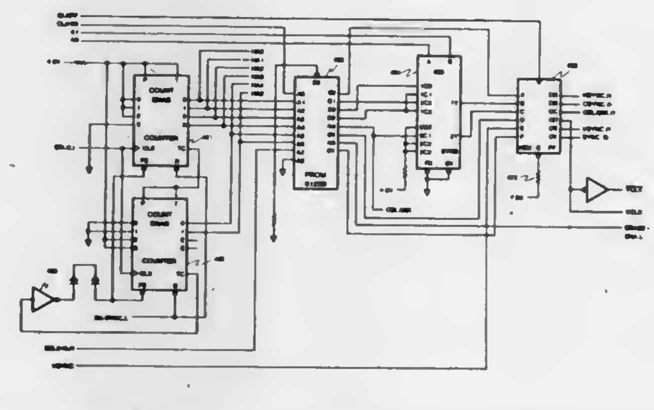
TERMINAL HAVING USER SELECTABLE FASTER SCANNING

Douglas A. Erwin, and Robert L. Skinner, both of Austin, Tex., assignors to Data General Corporation, Westboro, Mass.

Filed Feb. 28, 1983, Ser. No. 470,699

Int. Cl.^{4} H04N *5/04*

U.S. Cl. 358—150 **6 Claims**



1. Apparatus for generating video synchronization signals in a raster scan display terminal having plural selectable scan modes and plural selectable scan rates, said apparatus comprising:

means for generating a timing signal based on the scan mode selected;

means responsive to said timing signal for counting incremental positions along each horizontal scan line;

means for counting horizontal scan lines;

first logic means, responsive to an output of said horizontal scan line counting means and to the selected scan mode of the terminal, for indicating a field to be displayed;

second logic means, responsive to the outputs of said horizontal scan line counting means and to the output of said first logic means, for generating output signals;

third logic means responsive to the outputs of said incremental counting means, to the output signals of said second logic means and to the selected scan rate for generating said video synchronization signals; and

means for loading said horizontal scan line counting means to a value based on at least the selected scan mode and the output of said first logic means.

4,616,261

METHOD AND APPARATUS FOR GENERATING SUBLIMINAL VISUAL MESSAGES

James R. Crawford, Lainsburg; Jerald L. Winegeart, Niles, and Michael H. Erb, DeWitt, all of Mich., assignors to Stimutech, Inc., Ann Arbor, Mich.

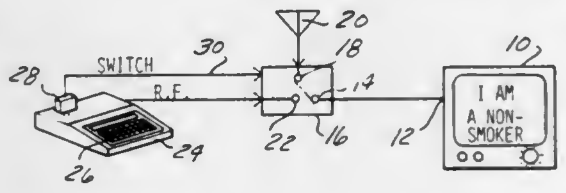
Continuation-in-part of Ser. No. 491,612, May 4, 1983, abandoned. This application Oct. 17, 1983, Ser. No. 542,467

Int. Cl.^{4} H04N *5/262, 13/02*

U.S. Cl. 358—181 **22 Claims**

1. The method of generating subliminal visual messages on a television receiver, having horizontal and vertical scan generators, during the display of a supraliminal television program derived from a program source comprising:

generating a signal representative of one of said subliminal messages with independent horizontal and vertical synchronizing signals independent of synchronizing signals of the program source and switching the television receiver from the program source to said subliminal signal for intervals sufficiently short to prevent the presentation of said subliminal signal as a supraliminal display, whereby the horizontal and vertical scan generators of the television receiver are controlled by said synchronizing signals



of the program source at such time as the receiver is connected to the program source and by said independent horizontal and vertical synchronizing signals of said signal representative of one of said subliminal messages at such time as the television receiver is switched to the last said signal to produce display of a program containing one of said subliminal messages.

4,616,262

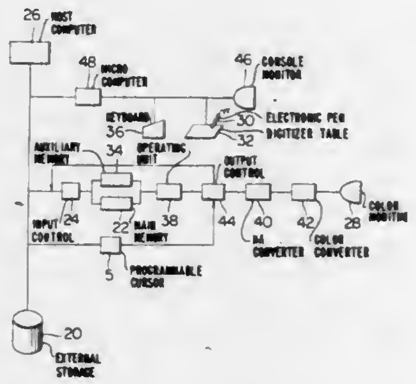
METHOD AND APPARATUS FOR FORMING A COMBINED IMAGE SIGNAL

Wataru Toriumi, Hiratsuka; Hideyuki Shoji, Niiza; Yoshihiko Inoue, Iruma; Soji Shiba, Urawa, and Yasuhiko Ushio, Tokyo, all of Japan, assignors to Dainippon Ink and Chemicals, Incorporated, Tokyo, Japan

Filed Nov. 14, 1983, Ser. No. 551,100

Int. Cl.^{4} H04N *5/22*

U.S. Cl. 358—183 **13 Claims**



1. An apparatus for forming a combined image signal from a plurality of image signals representative of a plurality of images, comprises a main memory for storing image signals; an auxiliary memory for storing gradation signals; means for preparing gradation mask signal comprising a programmable cursor, a digitizdr table, an electronic pen for writing on said digitizer table, an input key board, and a microcomputer controlling said digitizer table and key board: an input control unit for reading the necessary mask signals from said auxiliary memory and for successively inputting and comparing the signal from said programmable cursor to generate a gradation mask signal and write it into said auxiliary memory; an operating unit having operating function for reading the gradation mask signal in said auxiliary memory and the image signal in said main memory; an output control unit for controlling the operating signal; a converter for converting a digital signal from said output control unit into an analogue signal; a color monitor for displaying the output of said converter; and a host computer for controlling the above-mentioned devices, whereby the density difference of the combined images at the interface is smoothed out by a correcting factor to gradate the interface.

4,616,263

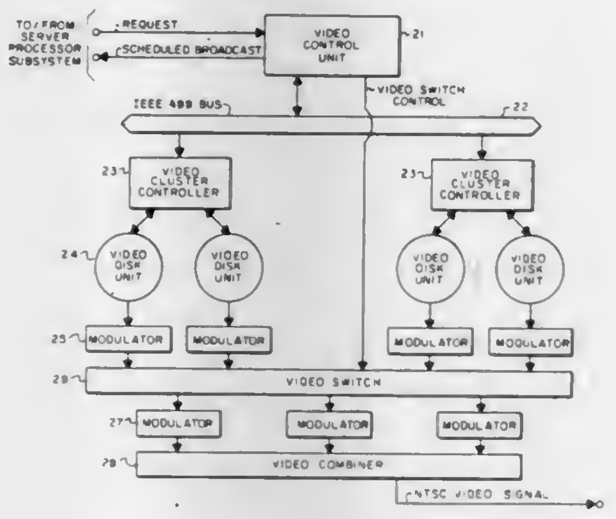
VIDEO SUBSYSTEM FOR A HYBRID VIDEOTEX FACILITY

George P. Eichelberger, Fairfield, Conn., assignor to GTE Corporation, Stamford, Conn.

Filed Feb. 11, 1985, Ser. No. 700,424

Int. Cl.⁴ H04N *5/222*

U.S. Cl. 358—185 **1 Claim**



1. A video subsystem for a hybrid videotex system, the video subsystem comprising:

a general purpose interface bus capable of parallel data transfer at a requisite data rate,

a computer-based video control unit coupled to the bus for determining the storage location of video segments and for scheduling video segments to be broadcast,

a plurality of randomly accessible video storage units,

a plurality of microprocessor-based video cluster controllers appended from the bus and coupled to specified ones of the video storage units for supervising the retrieval of selected video segments from said video storage units,

a plurality of first modulators coupled to a respective one of the video storage units for frequency translating the selected video segments,

a video switch coupled to the video control unit and to the outputs of said first modulators for selecting, under direction from the video control unit, said frequency-translated video segments,

a plurality of second modulators coupled to the video switch for raising the selected and frequency-translated video segments, and

a video combiner for arranging the output signals at the second modulators into a composite signal suitable for transmission via, for example, a CATV system.

4,616,264

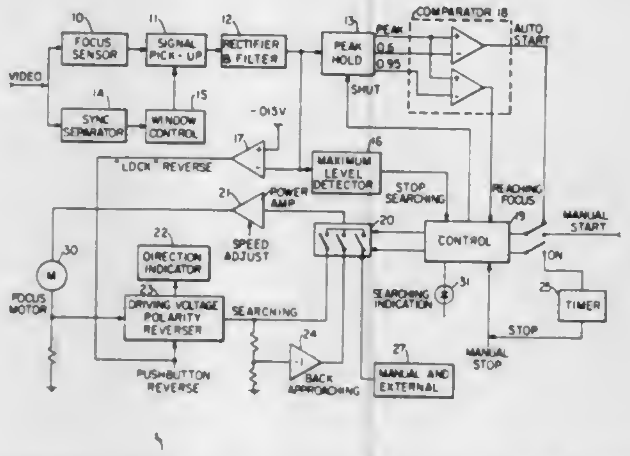
AUTO FOCUS SYSTEM

Yacov A. Pshtissky, Bayside, N.Y., assignor to Vicon Industries, Inc., Melville, N.Y.

Filed Aug. 28, 1984, Ser. No. 645,015

Int. Cl.⁴ G03B *7/08*

U.S. Cl. 358—227 **24 Claims**



1. An autofocus device for a lens system comprising sensing means for sensing an image focussed thereon through said lens system;

means for detecting maximum focus sharpness of said image on said sensing means and for providing a maximum force sharpness signal indicative thereof;

electric motor operable in first and second opposing directions coupled to said lens system for adjusting said lens system in respective first and second opposing lens directions to vary the focus of said image on said sensor, said motor drawing a higher current when stalled then when operating in said first and second directions;

said lens system having first and second limit means defining a predetermined range of focus for preventing adjustment of said lens system past said limits, said motor stalling when driven up against said limits;

driving means coupled to said detecting means and said electric motor for driving said electric motor to adjust said lens system in said first and second directions; and

motor current sensing means coupled to said driving means for sensing a rise in current drawn by said motor, said driving means reversing said direction of said motor upon sensing of current above a predetermined level by said sensing means;

whereby said direction of said motor reverses when said lens system is adjusted to said limits.

4,616,265

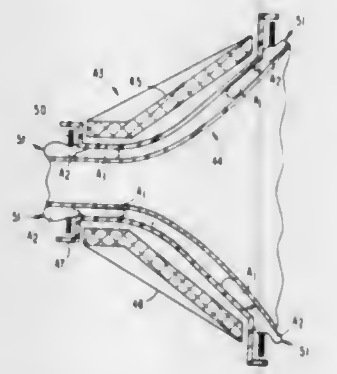
DEFLECTION YOKE ASSEMBLY AND MOUNTING ARRANGEMENT

Thomas B. Lyden, Schaumburg, Ill., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 21, 1984, Ser. No. 684,603

Int. Cl.⁴ H01J *9/00*

U.S. Cl. 358—248 **31 Claims**



1. A method for attaching a deflection yoke to a cathode ray tube comprising the steps of:

placing said deflection yoke in a desired position on said cathode ray tube via a positioning means;

dispensing a first quantity of adhesive having a first hardening rate between said deflection yoke and said cathode ray tube via a dispensing means, sufficient to temporarily maintain said deflection yoke on said cathode ray tube;

dispensing a second quantity of adhesive, having a second hardening rate slower than said first hardening rate, between said deflection yoke and said cathode ray tube via said dispensing means, said adhesive having said second hardening rate purging said adhesive having said first hardening rate from said dispensing means, said first and second quantities of adhesive being sufficient to permanently maintain said deflection yoke on said cathode ray tube; and

maintaining said deflection yoke on said cathode ray tube via said positioning means until said adhesive having said first hardening rate hardens.

25. An assembly comprising:

a cathode ray tube;

a deflection yoke located on said cathode ray tube;

a first quantity of a first multi-component adhesive having a first hardening rate disposed between said deflection yoke and said cathode ray tube; and

a second quantity of a second multi-component adhesive having a second hardening rate slower than said first hardening rate also disposed between said deflection yoke and said cathode ray tube, the combination of said first and second quantities of adhesive being sufficient to permanently mount said deflection yoke to said cathode ray tube.

4,616,266

METHOD AND APPARATUS FOR ELECTRICALLY CONTROLLABLE SCANNING DEVICE FOR MOIRE-FREE SCANNING OF RASTERED MASTERS

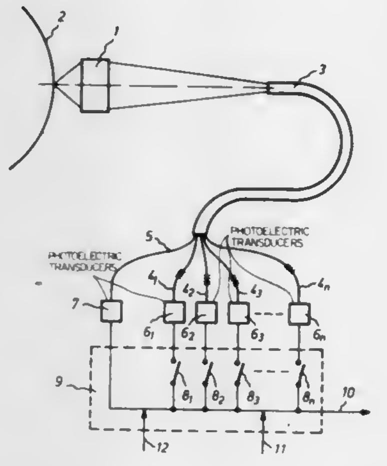
Eberhard Hennig, Ascheberg, Fed. Rep. of Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed Oct. 3, 1983, Ser. No. 538,275

Claims priority, application European Pat. Off., Oct. 9, 1982, 82109373.9

Int. Cl.⁴ H04N *1/40, 1/00*

U.S. Cl. 358—280 **12 Claims**



2. Apparatus for electro-optical scanning and moire-free recording of unrastered or rastered masters comprising a scanning optics means for scanning a master, a preferable circular-shaped bundle of a multitude of individual fiber optical waveguides, preferably an ordered fiber bundle receiving the output of said scanning optics means and the individual fibers of the bundle are conducted to a plurality of photo-electrical transducers; switching means connected to said photo-electrical transducers for switching them on and off in groupings during scanning and the geometrical contour of said groupings corresponding to the raster configuration which is to be scanned; and the outputs of all of said transducers switched in parallel.

4,616,267

OVERCURRENT DETECTION AND PROTECTION METHOD FOR PHOTOMULTIPLIER

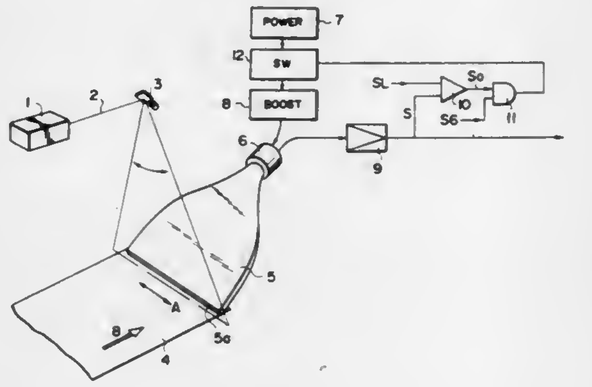
Kazuo Horikawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 16, 1983, Ser. No. 467,043

Claims priority, application Japan, Feb. 26, 1982, 57-30298; Feb. 26, 1982, 57-30299

Int. Cl.⁴ H04N *1/40*

U.S. Cl. 358—280 **14 Claims**



1. A method of detecting an overcurrent flowing in a photomultiplier and protecting the photomultiplier therefrom in an image scanning and read-out system wherein a sheet carrying an image recorded thereon is scanned with a light beam at an amplitude larger than the width of said sheet, and detecting the light from said sheet by use of the photomultiplier, which comprises a step of:

decreasing the value of voltage applied to said photomultiplier when the output current value of said photomultiplier obtained at the time said photomultiplier receives light from outside said image during said scanning is larger than a predetermined reference level.

4,616,268

METHOD AND SYSTEM FOR INCREASING USE EFFICIENCY OF A MEMORY OF AN IMAGE REPRODUCING SYSTEM

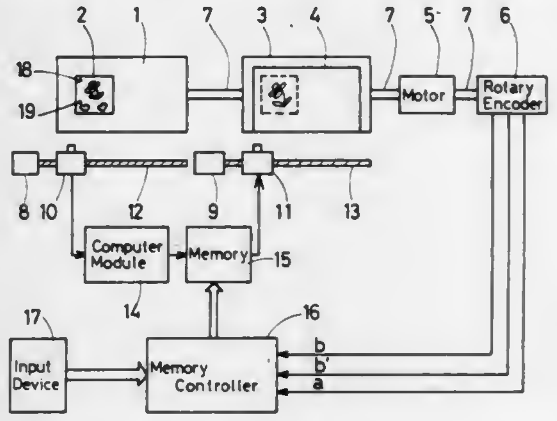
Junji Shida, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Mar. 5, 1984, Ser. No. 586,121

Claims priority, application Japan, Jun. 20, 1983, 58-111670

Int. Cl.⁴ H04N *1/04*

U.S. Cl. 358—287 **19 Claims**



1. A method for increasing use efficiency of a memory of an image reproducing system in which image data obtained by scanning an original picture are stored in a memory having a number of memory cells and then read to be used for recording a reproduction image comprising the steps of:

(a) obtaining a unit length (pixel length) by dividing a length of a portion of the original picture by substantially the entire number of cells of the memory;

(b) storing image data of each pixel of the portion of the original picture; and

(c) reading the image data from the memory in a desired magnification ratio.

4,616,269

DOCUMENT READER

Ikuo Mori, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Japan

Filed Sep. 23, 1985, Ser. No. 779,037

Claims priority, application Japan, Oct. 17, 1984, 59-216428

Int. Cl.⁴ H04N *1/10*

U.S. Cl. 358—293 **11 Claims**

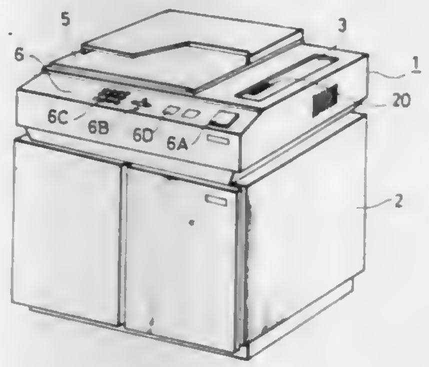
1. A document reader for reading out information of picture elements in a pertinent region of a manuscript laid on a platen glass by main scanning and sub-scanning and converting said information into electric signals, which document reader comprises

light-source means for illuminating at least a reading area of said manuscript,

a multiplicity of photoelectric conversion elements on which an image of said reading area of said manuscript is focussed,

means for moving said reading area of said manuscript in the direction of sub-scanning,

a manuscript display window disposed at such a position in said document reader as to be observed from outside and provided with a reference mark for designating said pertinent region,



optical means adapted to direct a reflected light from said reading area of said manuscript toward said manuscript display window and display the image of said reading area of said manuscript in said manuscript display window, and

coordinates detecting means for reading out and memorizing coordinates on said manuscript whenever a boundary of said pertinent region of the image of manuscript displayed in said manuscript display window coincide with said reference mark.

4,616,270

SYNCHRONIZING SIGNAL SEPARATING CIRCUIT FOR A RECORDING AND REPRODUCING APPARATUS

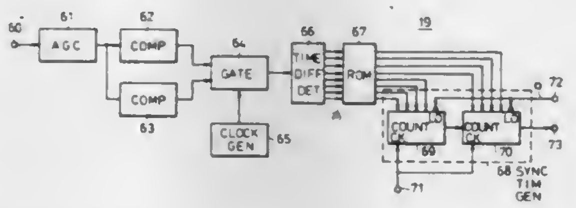
Naomichi Nishimoto, Tachikawa, Japan, assignor to Victor Company of Japan, Ltd., Japan

Filed Jul. 6, 1984, Ser. No. 628,500

Claims priority, application Japan, Jul. 14, 1983, 58-128222; Jul. 14, 1983, 58-128223

Int. Cl.⁴ H04N *5/08, 5/93*

U.S. Cl. 358—320 **4 Claims**



1. A synchronizing signal separating circuit for a color video signal recording and reproducing apparatus which records a time-division-multiplexed signal on a recording medium, said time-division-multiplexed signal having a time base compressed luminance signal and one of two kinds of time base compressed color difference signals time-division-multiplexed within one horizontal scanning period and having the two kinds of time base compressed color difference signals time-division-multiplexed in line-sequence with the time base compressed luminance signal, said time base compressed luminance signal and said time base compressed color difference signal being subjected to a time base compression responsive to a clock pulse which is formed based on an output signal of said synchronizing signal separating circuit, said recording and reproducing apparatus reproducing said time-division-multiplexed signal from the recording medium, said reproduced time-division-multiplexed signal being subjected to a time base expansion responsive to a clock pulse which is formed based on an output signal of said synchronizing signal separating circuit so as to obtain a reproduced luminance signal and a reproduced line-sequential color difference signal which are returned to an original time base, said synchronizing signal separating circuit comprising:

an input terminal for receiving a composite color video signal to be recorded at the time of a recording, and for receiving said time-division-multiplexed signal at the time of a reproduction;

measuring means for measuring a time interval between a time when a horizontal synchronizing signal within an input signal received through said input terminal assumes a first predetermined value and a time when the horizontal synchronizing signal assumes a second predetermined value;

a memory circuit having various correcting data pre-stored therein, for producing one correcting data in accordance with the time interval measured by said measuring means, said various correcting data being pre-stored in said memory circuit for each of various time intervals required for said horizontal synchronizing signal to reach said second predetermined value from said first predetermined value, and containing data for constantly generating a separated horizontal synchronizing signal at a time position which is approximately constant in each of said various time intervals; and

signal generating means for generating the separated horizontal synchronizing signal at a time position in accordance with said one correcting data which is produced from said memory circuit.

4,616,271

DIGITAL AUDIO SYSTEM WITH AUTOMATIC FADE IN AND FADE OUT OPERATIONS

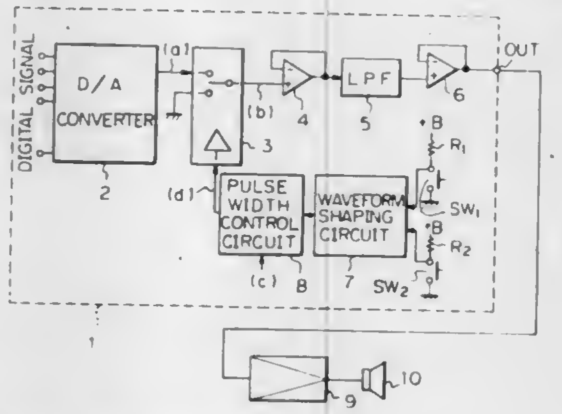
Kenichiro Yasukawa; Toshio Hirano; Masayuki Yoshida, and Junichi Yoshio, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 26, 1984, Ser. No. 674,667

Claims priority, application Japan, Nov. 25, 1983, 58-221914

Int. Cl.⁴ G11B *5/02, 5/09*

U.S. Cl. 360—32 **1 Claim**



1. A digital audio system comprising:

a digital to analog converter for conerting an input digital signal to an analog signal;

a switching means connected to said digital to analog converter or transmitting said analog signal from said digital to analog converter when control pulse signals of a predetermined level are applied thereto;

a low pass filter connected to said switching means for permitting signals within an audio signal range;

a fade in switch for generating a fade in command signal;

a fade out switch for generating a fade out command signal; and

pulse width control means for gradually increasing the pulse width of said control pulse signals within a predetermined variation range, in accordance with said fade in command signal and for decreasing the pulse width of said control pulse signals within said predetermined variation range, in response to said fade out command signal, whereby the level of signal output by said low pass filter is gradually varied in accordance with the variation of the pulse width of said control pulse signals.

4,616,272

DIGITAL SIGNAL REPRODUCING APPARATUS

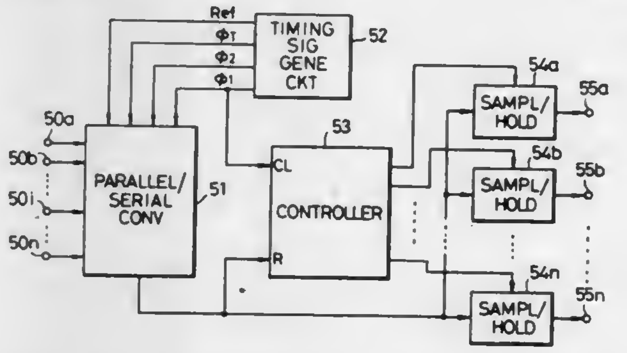
Masaru Moriyama, Yamato, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Mar. 12, 1985, Ser. No. 710,862

Claims priority, application Japan, Mar. 16, 1984, 59-50557

Int. Cl.⁴ G11B *5/09, 15/12*

U.S. Cl. 360—47 **5 Claims**



1. A digital signal reproducing apparatus comprising:

reproducing element means for reproducing from a magnetic tape digital signals which are magnetically recorded on n tracks of the magnetic tape, where n is a natural number greater than one, said magnetic tape having a guard band separating each of two adjacent tracks among the n tracks, said reproducing element means comprising n reproducing element groups provided in corrspondence with the n tracks, each of said n reproducing element groups comprising a plurality of reproducing elements arranged in the tape width direction over a range of a corresponding track and guard bands on both sides thereof;

selecting means for selectively obtaining outputs of those reproducing elements opposing a uniform part of the magnetic field intensity distribution of said corresponding track among outputs of the plurality of reproducing elements in each of said n reproducing element groups, said selecting means being provided for each of said n reproducing element groups;

adding means for adding outputs of said selecting means and for producing a reproduced signal from each of said n tracks;

a parallel-to-serial converter for subjecting the output signal of each of said adding means obtained for each of said n tracks to parallel-to-serial conversion;

a plurality of sample and hold circuits supplied with an output signal of said parallel-to-serial converter;

a timing signal generating circuit for supplying clock signals, a reference signal and a transfer signal to said parallel-to-serial converter; and

a controller having a clock terminal applied with an output clock signal of said timing signal generating circuit and a reset terminal applied with the output signal of said parallel-to-serial converter for successively supplying a sample and hold signal to each of said sample and hold circuits.

4,616,273

TAPE RECORDING APPARATUS PROVIDED WITH A BIAS CONTROL DEVICE

Eiichi Ishii, and Makoto Yoshimizu, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 18, 1985, Ser. No. 724,572

Claims priority, application Japan, Apr. 18, 1984, 59-77732

Int. Cl.⁴ G11B *5/03*

U.S. Cl. 360—66 **8 Claims**

1. A tape recording apparatus comprising:

an input terminal receiving an input recording signal;

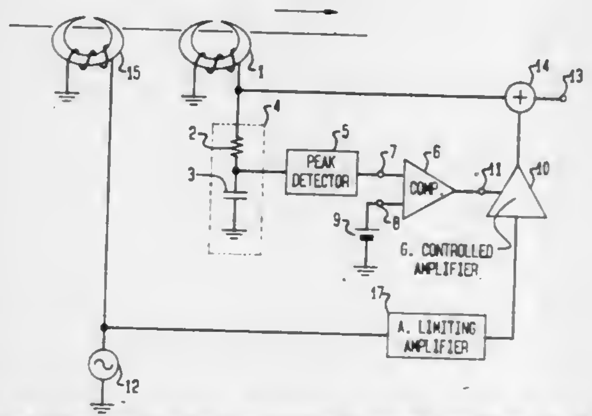
an erasing head for demagnetizing a magnetic tape;

a recording head for recording said input recording signal on said magnetic tape;

an oscillator generating an A.C. signal which is applied to said erasing head for demagnetizing said magnetic tape;

an amplitude-limiting amplifier receiving said A.C. signal and deriving a constant amplitude A.C. signal;

a gain-controlled amplifier amplifying said constant amplitude A.C. signal with a gain controlled by a gain control signal to obtain an A.C. bias signal;



an adder adding said input recording signal with said A.C. bias signal;

a means for applying the added signal obtained from said adder to said recording head; and

a means for obtaining said gain control signal from said added signal.

4,616,274

TAPE END DETECTING DEVICE FOR EXTRACTABLE TAPE TYPE CASSETTE

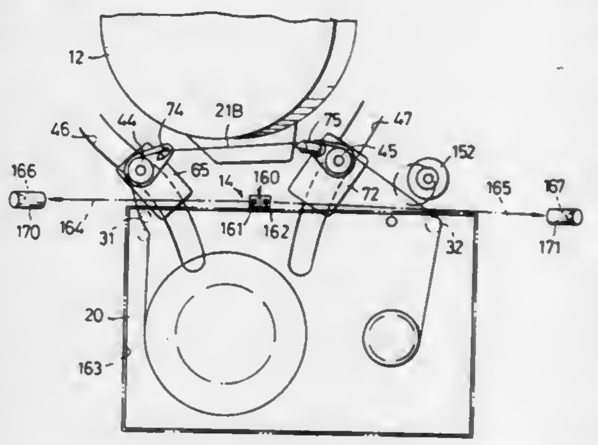
Yoshimichi Nagaoka, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 25, 1983, Ser. No. 469,972

Claims priority, application Japan, Mar. 1, 1982, 57-32041; Mar. 2, 1982, 57-29293[U]

Int. Cl.⁴ G11B *15/08, 15/66*

U.S. Cl. 360—71 **5 Claims**



5. A tape end detector for use in a tape cassette system having two reels comprising a cassette containing an elongated opaque tape having two ends said tape being wound on and transportable between said two reels, each of said end of said opaque tape terminating in a transparent leader, a recording and/or reproducing means for receiving said cassette, said recording and/or reproducing means having means for turning said reels and for drawing said tape out of a front of said cassette and for transporting said tape over a path extending from said front of said cassette and past at least one recording and/or reproducing head means, the path followed by said drawn out tape lying in a plane at least in front of said cassette from which said tape is drawn out whereby a clear space is required to draw out said tape from the front of said cassette, and optical sensor means comprising a light source means and a light detector means positioned outside the cassette itself and on opposite sides of said tape in said vicinity of said front of said cassette where said tape path lies in said plane, said light source means and said light detector means being respectively positioned above said tape on one side of said path and below said

tape on the opposite side of said path so that an optical path between said light source means and said light detector means etends through said tape and at an acute angle with respect to the width of the tape, whereby neither said light source nor said light detector lies in a position in said plane and within said clear space which would interfer with either the loading/unloading of said cassette in said recording and/or reproducing means or the drawing out of said tape.

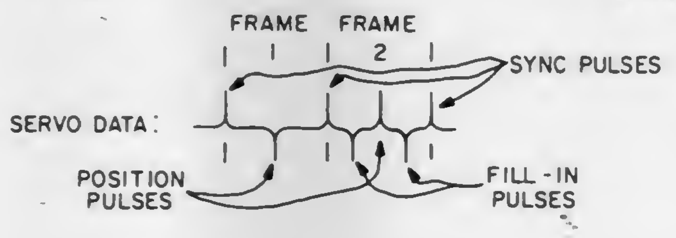
4,616,275
DISC SERVO WITH 1F-2F SERVO PATTERN

Bradford D. Peeters, Dublin, Calif., assignor to Priam Corporation, San Jose, Calif.

Filed Oct. 22, 1984, Ser. No. 663,398

Int. Cl.⁴ G11B *5/56*

U.S. Cl. 360—77 **18 Claims**



1. In a system for reading and writing data on a magnetic disc, having a servo head for reading a servo pattern on a magnetic disc and for producing a servo carrier signal corresponding thereto:

a magnetic disc having a servo data area formatted with a multiplicity of servo tracks formatted with a 1F-2F servo pattern; each said servo track being divided into a multiplicity of frames each having a single sync pulse and a single position pulse at predefined positions;

wherein

a multiplicity of said frames are 1F frames having a 1F format wherein said sync pulse and said position pulse are of opposite polarity, and a multiplicity of said frames are 2F frames having a 2F format wherein said sync and position pulses are of like polarity and are separated by a fill-in pulse of opposite polarity to said neighboring sync and position pulses;

each said servo track having a multiplicity of both 1F and 2F frames arranged in a predefined pattern.

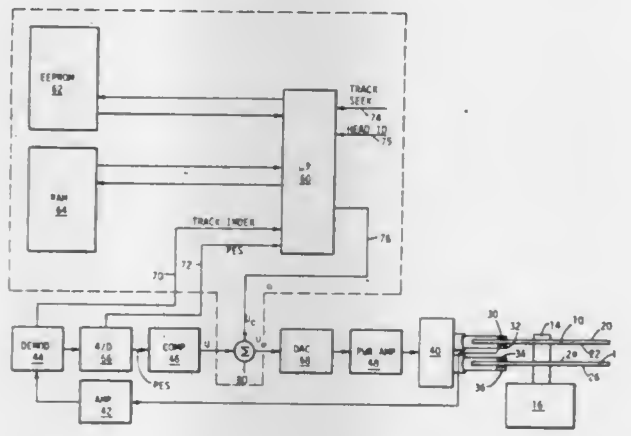
4,616,276
DISK FILE SERVO CONTROL SYSTEM WITH FAST REDUCTION OF REPEATABLE HEAD POSITION ERROR

Michael L. Workman, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 16, 1985, Ser. No. 755,527

Int. Cl.⁴ G11B *5/56*

U.S. Cl. 360—77 **15 Claims**



9. In a disk file of the type having a disk with servo information thereon defining data track centerlines, a head for reading samples of servo information, means for generating from the sampled servo information a sampled head position error signal (PES) corresponding to misposition of the head from a data track centerline, means for generating a control signal from the PES, and an actuator connected to the head for positioning the head over the track centerline in response to the control signal, an improvement for removing repeatable error from the PES during data track following, the improvement comprising:

memory storage means for storing a learning rate factor and values of a sine function having a frequency corresponding to the disk rotational frequency;

means for generating, for each PES sample, a repeatable error correction signal, the error correction signal generating means further comprising

means for computing from the PES sample, the sine function values and the learning rate factor, a group of tap weights, each tap weight in the group being the sum of the previous tap weight and the product of the PES sample, a preselected one of the sine function values and the learning rate factor, and

means for summing the tap weights in the group to generate a repeatable error correction signal; and

means for summing the repeatable error correction signal to the control signal so as to provide a modified control signal to the actuator, whereby the head positioning error from the track centerline due to repeatable error is substantially removed from the PES.

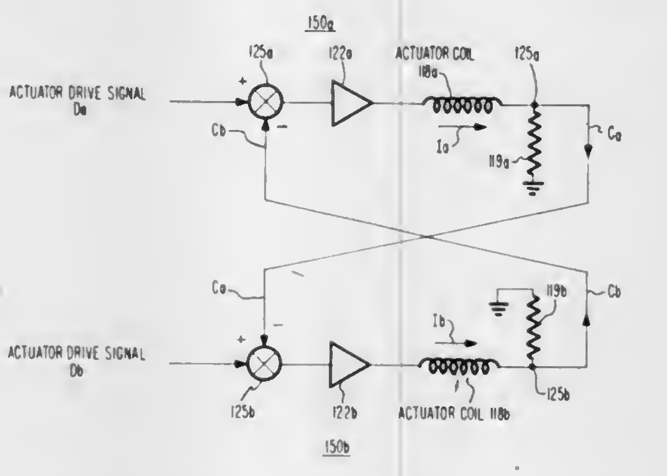
4,616,277
DISK DRIVE STORAGE SYSTEM HAVING MEANS FOR COMPENSATING FOR SEEK DRIVING FORCES COUPLED BETWEEN HEAD ACTUATORS

Eugenio Berti, San Jose, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Filed Jun. 15, 1984, Ser. No. 621,022

Int. Cl.⁴ G11B *21/08, 21/02*

U.S. Cl. 360—78 **11 Claims**



8. A method of compensating for seek operation drive forces coupled between head actuators in a disk storage system employing a plurality of concentric rotatable disks, a first head actuator for radially moving a first group of heads in transducing relation with particular ones of said disks, and a separately controllable second actuator mechanically coupled to said first actuator for radially moving a second group of heads in transducing relation with particular ones of said disks, said method comprising the steps of:

deriving a compensating signal in response to the performance of a seek operation by a head actuator; and

coupling said compensating signal as a drive signal to the other actuator in a feed forward direction with a polarity and magnitude chosen so that sufficient cancellation of the coupled driving forces are produced to maintain reliable head positioning operation thereof.

4,616,278
INFORMATION RECORD DISK HAVING A UNIFIED STRUCTURE

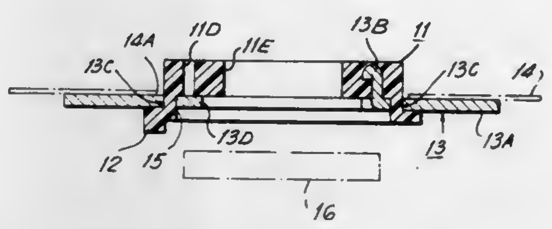
Koushi Yamaguchi, Tagajyo, and Kazuo Igari, Miyagi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 20, 1983, Ser. No. 534,066

Claims priority, application Japan, Sep. 21, 1982, 57-142959[U]

Int. Cl.⁴ G11B *5/012, 5/016, 3/70;* **B65D** *85/30*

U.S. Cl. 360—99 **7 Claims**



1. An information record disc comprising:

a substantially cylindrical central core means formed of a deformable plastic material and adapted to receive a spindle of an information recording apparatus;

annular magnetic plate means which is relatively dimensionally stable over the normal temperature range for operation of the record disc and which has a radially inner portion formed in interlocking configuration with said central core means to constitute an integral structure therewith;

said annular magnetic plate means having flange means extending radially outward from said central core means, said flange means being formed with a relatively flat surface; and

magnetic disc means secured directly to said relatively flat surface of said flange means of the relatively dimensionally stable magnetic plate means so as to avoid temperature induced distortions of said disc means.

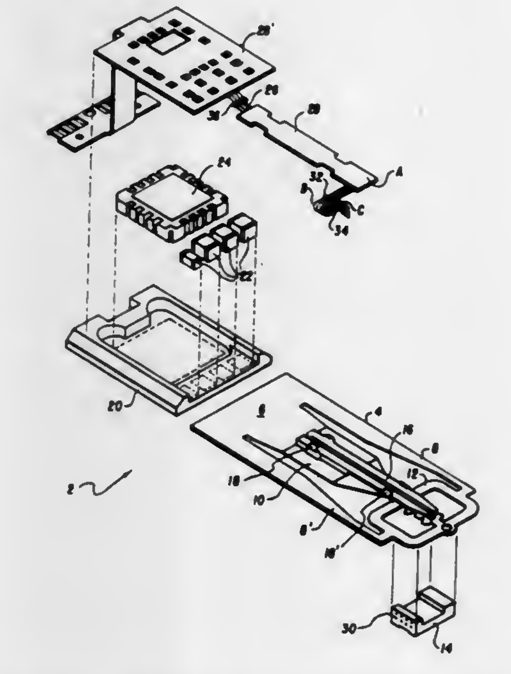
4,616,279
ELECTRICAL CONNECTIONS FOR THIN FILM TRANSDUCER HEADS

Paul W. Poorman, Boise, Id., assignor to Hewlett Packard Company, Palo Alto, Calif.

Filed May 19, 1983, Ser. No. 496,028

Int. Cl.⁴ G11B *15/64, 17/32, 21/20*

U.S. Cl. 360—103 **4 Claims**



1. In a magnetic transducer mechanism having a write/read transducer member carried by a flexure support member, and electrical connection means comprising a plurality of electrical conductors encapsulated in an electrically insulating film, said electrical connection means extending along the length of said flexure support member, said electrical connection means for providing electrical connections to said write/read transducer member, an improvement comprising: said electrical connection means having predetermined portions of said electrically insulating film removed from said plurality of electrical conductors such that said electrical connection means is encapsulated in said film along straight portions of said conductors and devoid of said film along bent portions thereof, whereby said plurality of conductors turn in a predetermined angle to permit greater flexibility and substantially eliminate bias effects resulting from an increase in stiffness of said electrical connection means when said conductors encapsulated in said film are bent.

4,616,280
MECHANISM FOR ADJUSTING MAGNETIC HEAD

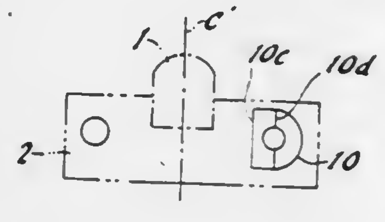
Hidehiro Kobayashi, Maebashi; Yutaka Fukuda, Gunma, and Seiji Kamiya, Maebashi, all of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Aug. 8, 1983, Ser. No. 521,071

Claims priority, application Japan, Aug. 13, 1982, 57-122919[U]

Int. Cl.⁴ G11B *5/56*

U.S. Cl. 360—109 **7 Claims**



1. A mechanism for adjusting the azimuth of a magnetic head, comprising:

(a) an elongated base plate carrying said magnetic head thereon, said base plate having first and second holes at its right and left ends, said magnetic head being secured to said base plate between said first and second holes such that a center axis of said magnetic head, which extends in a direction normal to a plane of a magnetic recording medium, is normal to a longitudinal direction of said base plate;

(b) an adjusting screw inserted through said first or second hole of said base plate to be engaged with a screw hole made in a chassis, said adjusting screw being inserted through a coil spring which is positioned between a lower side of said base plate and said chassis so that said base plate is upwardly biased and;

(c) a stationary supporting leg secured to and extending away from a surface of said chassis and having a center screw hole, said stationary supporting leg having a flat top end remotely positioned relative to said chassis surface and defined between two straight parallel edges, said flat top end providing a supporting surface for one of the ends of said base plate and wherein said straight parallel edges act as axes about which said plate may alternatively rotate, one of said edges being positioned to pass through said center hole in a direction generally normal to the axis thereof, said base plate being secured to said stationary supporting leg by means of a screw which is inserted through said second or first hole of said base plate to be engaged with said screw hole, said stationary supporting leg being secured to said chassis such that said straight parallel edges are parallel to said center axis of said magnetic head.

4,616,281
DISPLACEMENT DETECTING APPARATUS COMPRISING MAGNETORESISTIVE ELEMENTS

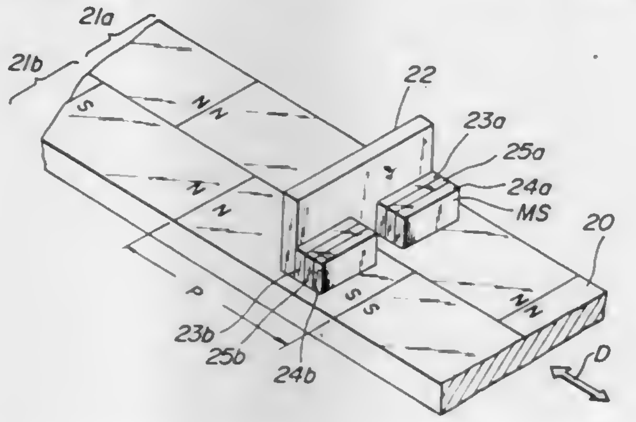
Shigekazu Nakamura, Ageo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Mar. 8, 1983, Ser. No. 473,250

Claims priority, application Japan, Mar. 10, 1982, 57-36640; Mar. 10, 1982, 57-36641; Dec. 17, 1982, 57-221138

Int. Cl.⁴ G11B *5/30;* G01B *7/14;* G01R *33/02*

U.S. Cl. 360—113 **14 Claims**



1. In an apparatus for detecting relative displacement between a magnetic record medium having at least one magnetic track on which a magnetization pattern is recorded in a plane of said magnetic record medium and a magnetic sensor for detecting a magnetic field produced by the magnetization pattern, the improvement comprising:

at least two magnetoresistive elements provided in said magnetic sensor and spaced apart from one another and aligned to extend in a direction substantially perpendicular to a direction of the magnetization pattern, a major surface of said magnetoresistive elements being aligned to extend substantially perpendicular to a direction of said relative displacement;

means connected to said magnetoresistive elements for deriving two output signals whose phases are shifted from each other; and

means connected to said means to produce a differential output signal as a detection output signal representing the relative displacement.

4,616,282
MAGNETIC RECORDING AND/OR PLAYBACK DEVICE AND MAGNETIC TRANSDUCING HEAD THEREFOR

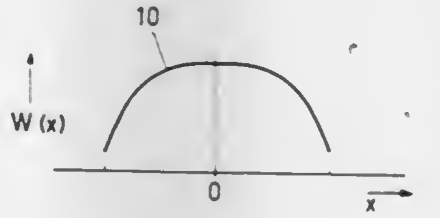
Budiman Sastra, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 727,617, Apr. 29, 1985, abandoned, which is a continuation of Ser. No. 640,633, Aug. 13, 1984, abandoned, which is a continuation of Ser. No. 333,360, Dec. 22, 1981, abandoned. This application Dec. 4, 1985, Ser. No. 805,397

Claims priority, application Netherlands, Jan. 14, 1981, 8100143

Int. Cl.⁴ G11B *5/22*

U.S. Cl. 360—122 **8 Claims**



5. A device for recording signals on and/or reproducing signals from a flexible magnetic tape, comprising:

a magnetic head including a curved face having a transducing gap, and

transport and guide means for physically contacting a moving flexible magnetic tape with at least a portion of said curved face over a wrapping angle of the tape, said portion being a tape contact face,

characterized in that said tape contact face has a varying local radius of curvature which has a maximum value at the gap region and which, on each side of the gap, decreases continuously from said maximum value to a minimum value at a location remote from said gap, whereby the contact pressure at the area of the gap is smaller than the contact pressure at locations remote from the gap.

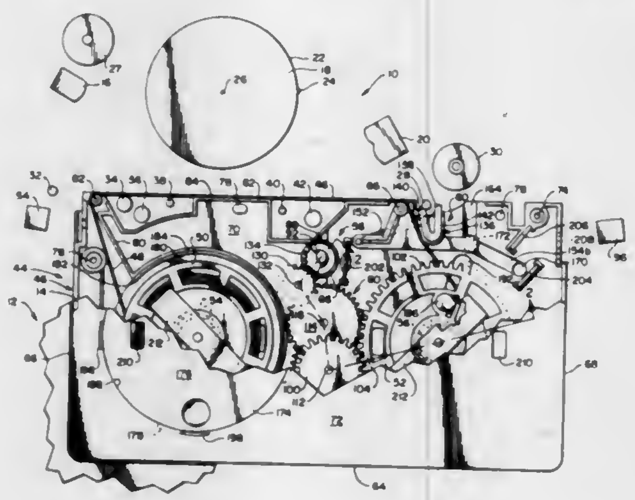
4,616,283
APPARATUS FOR CLEANING A VIDEO PLAYER/RECORDER

Eivind Clausen, and James D. Allsop, both of Bellingham, Wash., assignors to Allsop, Inc., Bellingham, Wash.

Continuation-in-part of Ser. No. 332,333, Dec. 12, 1981, Pat. No. 4,498,113, which is a continuation-in-part of Ser. No. 253,943, Apr. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 223,025, Jan. 6, 1981, Pat. No. 4,387,411, which is a continuation-in-part of Ser. No. 109,650, Jan. 4, 1980, abandoned. This application Jun. 3, 1983, Ser. No. 500,852

Int. Cl.⁴ G11B *5/41*

U.S. Cl. 360—128 **15 Claims**



1. A cleaning apparatus to clean a playing and/or recording apparatus, wherein said playing and/or recording apparatus comprises:

(a) a structure defining an operating location to receive a tape cassette in an operating position in the operating location;

(b) at least one head member which has a head surface that is subject to contamination;

(c) guide means adapted to engage a tape of said tape cassette at a tape engaging location and move said tape outwardly to a head engaging location;

(d) a capstan and pinch roller at a capstan and pinch roller location to engage the tape and move said tape through the playing and/or recording apparatus;

(e) drive spindles to engage spools of said tape cassette so as to cause rotation of the same;

said cleaning apparatus comprising:

(a) a cassette housing adapted to be positioned in the operating location of the playing and/or recording apparatus, said cassette housing having a forward end, a rear end and first and second side portions;

(b) a cleaning ribbon having a lengthwise axis and positioned in said cassette housing so as to have a guide engaging ribbon portion which, with said cassette housing located in the operating location, is positioned to be engaged by said guide means and moved from said cassette housing into a cleaning position to be in cleaning engagement with at least said head, said ribbon being so mounted in said cassette housing so as to be able to travel from and into said cassette housing in a path along the lengthwise axis of the ribbon;

(c) a capstan and pinch roller cleaning device mounted in the cassette housing and having a first cleaning position to engage the capstan and pinch roller in cleaning engagement at the capstan and pinch roller location, said cleaning device being movable to a second location removed from said capstan and pinch roller location;

(d) a ribbon locating means having a first locating mode to locate said ribbon on a path bypassing said capstan and pinch roller, and a second locating mode to locate the ribbon between the capstan and pinch roller;

whereby, with said cleaning device in its first cleaning position and the ribbon locating means is its first locating mode, said cleaning device is able to be in cleaning engagement with the capstan and pinch roller with said ribbon bypassing said capstan and pinch location and the ribbon locating means in its second locating mode, said ribbon is engaged by the capstan and pinch roller to be moved by the capstan and pinch roller in its path along the lengthwise axis of the ribbon.

4,616,284
CLEANING CASSETTE WITH MEANS FOR INTERMITTENTLY WETTING A CLEANING TAPE

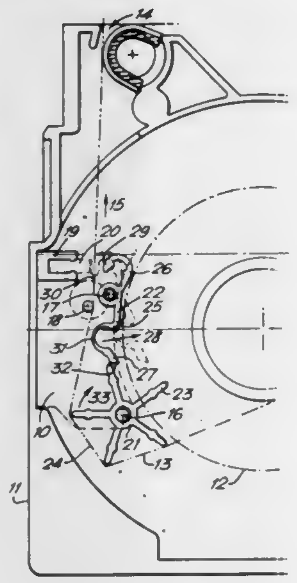
Joseph F. Fritsch, Dunmore East, Ireland, assignor to Ryan Plastics Ireland Limited, Waterford, Ireland

Filed Nov. 21, 1984, Ser. No. 674,057

Claims priority, application Ireland, Nov. 21, 1983, 2721/83

Int. Cl.⁴ G11B *5/10, 5/127, 5/41*

U.S. Cl. 360—128 **5 Claims**



1. A mechanism for intermittently wetting a cleaning tape contained within a tape cassette housing, the mechanism being located within the housing at a position along the tape path prior to the tape exit in the direction of forward motion of the tape, the mechanism comprising a star wheel rotatably mounted adjacent the inside surface of the cleaning tape and whose arms are driven by friction with the tape to rotate the star wheel, a wetting member mounted adjacent the outside surface of the tape, and means adapted for intermittent deflection by successive arms of the star wheel as the star wheel rotates during forward motion of the tape, said means upon each such deflection by the star wheel being adapted to bear against and deflect the tape outwardly to such an extent that the outer surface of the tape is brought temporarily into contact with the wetting member.

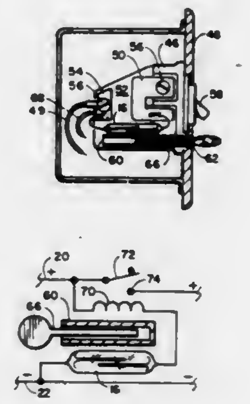
4,616,285
SAFETY AND SELECTIVE USE SWITCH FOR A POWER OUTLET

Robert L. Sackett, 2282 #43 Caminito Pescado, San Diego, Calif. 92107

Filed May 14, 1984, Ser. No. 610,277

Int. Cl.⁴ H02H *7/00*

U.S. Cl. 361—1 **14 Claims**



1. A safety switch comprising: an electrical power circuit, said power circuit having at least one electrical connection extending between a power source and said safety switch remotely positioned from said power source;

a first magnetically activated switch means connected in series between said source and termination means;

a magnet; and

a magnet positioning means located adjacent to said first magnetically activated switch means for receiving said magnet therein whereby the magnetic influence of said magnet changes the state of said first magnetically operated switch means and opens said electrical power circuit.

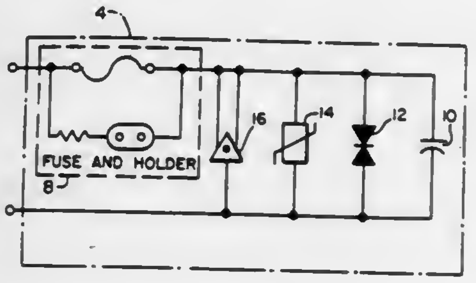
4,616,286
POWER LINE FILTER

Lee K. Breece, McLean, Va., assignor to Puroflow Corporation, Santa Monica, Calif.

Continuation of Ser. No. 403,937, Aug. 2, 1982, abandoned. This application Dec. 12, 1984, Ser. No. 681,068

Int. Cl.⁴ H02H *9/04*

U.S. Cl. 361—56 **13 Claims**



1. A power line filter, having first and second terminals connected line-to-line or line-to-neutral, for dissipating a line-to-line and/or both a line-to-line and a line-to-neutral transient received over a period of time and for clamping a line-to-line voltage and/or both a line-to-line voltage and line-to-neutral voltage during the period of time, the period of time being defined by first, second, third and fourth time periods, said power line filter comprising:

energy storage means, operatively connected between the first and second terminals, for storing the energy of the received transient during the first time period and for storing part of the energy of the received transient during the second and third time periods, said energy storage means comprising a capacitor;

first clamping means, operatively connected between the first and second terminals, beginning operation during the second time period, for shunting a part of the energy of the received transient and clamping the line voltage during the second and third time periods, said second clamping means comprising a selenium surge suppressor having an energy dissipation capability of at least 800 joules;

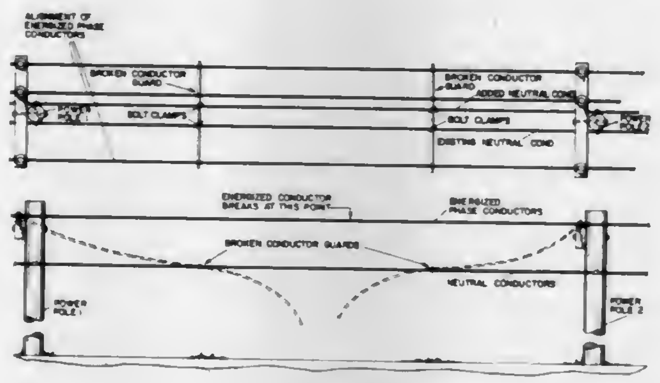
second clamping means, operatively connected between the first and second terminals, beginning operation during the third time period, for shunting a part of the energy of the transient and clamping the line voltage in conjunction with said first clamping means during the third time period; and

shunt means, operatively connected between the first and second terminals, beginning operation during the fourth time period, for shunting the energy of the received transient during the fourth time period, for turning off said first and second clamping means at the beginning of said fourth time period and for discharging the energy stored in said energy storage means during the first through third time period, thereby clamping the line-to-line voltage and/or both the line-to-line and the line-to-neutral voltage for the time period.

4,616,287

ELECTRICAL POWER TRANSMISSION SYSTEM WITH BROKEN CONDUCTOR GUARD

Irving Reedy, 3560 Holliday Ave., Apopka, Fla. 32703
Filed May 9, 1985, Ser. No. 732,266
Int. Cl.⁴ H02G *7/18*
U.S. Cl. 361—107 **6 Claims**



5. In an electrical power transmission system including at least one high-potential power conductor positioned vertically above two neutral conductors attached adjacent to a power pole, a broken conductor guard comprising a conductive rod electrically connected to and oriented transversely with respect to the neutral conductors and extending a predetermined substantially horizontal distance on each side thereof such that a broken high-potential power conductor will fall on said rod and be short-circuited to the neutral conductors.

4,616,288

SURGE VOLTAGE PROTECTION MEANS FOR ATTACHMENT TO A MAIN DISTRIBUTION FRAME

Hans Scholtholt, Lohhof, and Ewald Steiner, Berg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Feb. 17, 1984, Ser. No. 581,354
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1983, 3311488
Int. Cl.⁴ H05F *3/02*
U.S. Cl. 361—119 **4 Claims**

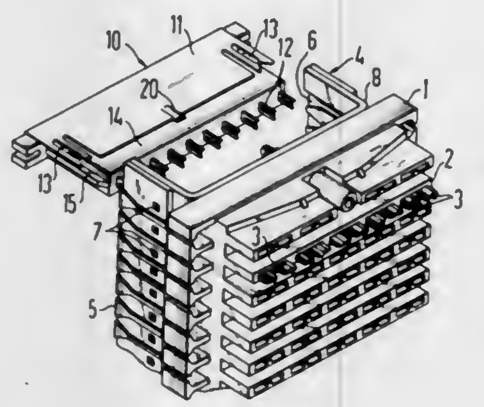
1. A distribution block including surge voltage protection means, and a main distribution frame, said block comprising:

a plurality of parallel rows of connection terminals for connection of incoming and outgoing electrical wires,

a guide frame attached to said main distribution frame and including

fuse strips having arresters carried thereon, each fuse strip being plugged into a separate row of said connection terminals,

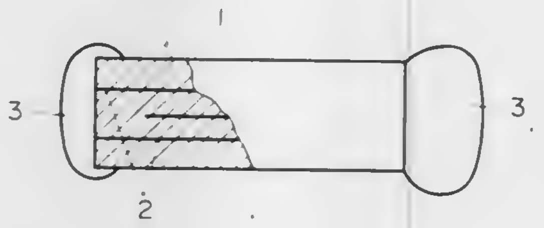
each fuse strip in its inserted condition providing contact with each connection terminal in a row and connecting each connection terminal to ground through an arrester, said guide frame includes two U-shaped fastening parts, and lateral portions extending between said fastening parts, said lateral portions having inwardly disposed guide grooves receiving said fuse strips.



4,616,289

CERAMIC HIGH DIELECTRIC COMPOSITION

Gen Itakura, Hirakata; Tadayoshi Ushijima, Kadoma; Kenji Kusakabe, Katano, and Takayuki Kuroda, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
PCT No. PCT/JP82/00472, § 371 Date Aug. 17, 1983, § 102(e) Date Aug. 17, 1983, PCT Pub. No. WO83/02270, PCT Pub. Date Jul. 7, 1983
Continuation of Ser. No. 537,365, Aug. 17, 1983, abandoned. This PCT application Dec. 20, 1982, Ser. No. 746,011
Claims priority, application Japan, Dec. 21, 1981, 56-206573[U]; Dec. 21, 1981, 56-206574[U]; Dec. 21, 1981, 56-206575[U]; Feb. 17, 1982, 57-24965[U]
Int. Cl.⁴ C04B *35/46;* H01G *4/12*
U.S. Cl. 361—321 **9 Claims**



8. A ceramic composition having a high dielectric constant and containing $BaTiO_3$ as host material, the improvement in which the host material consists essentially of:

1–5 parts by weight of $CaTiO_3$;

2–3 parts by weight of Ta_2O_5; and

the remainder of the host material is $BaTiO_3$,

wherein each of the aforesaid parts by weight are parts by weight per 100 parts by weight of $BaTiO_3$,

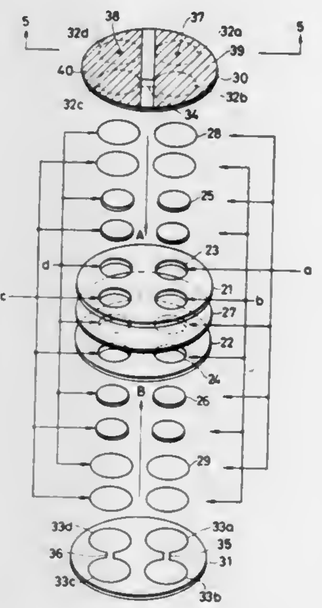
said ceramic compostion having a dielectric constant ξ_{25} of at least 3,000 measured at 25° C. with a 1 KHz at 1 VAC, a voltage dependency tan δ not more than 2.0 measured at an effective voltage of 50/V/mm and a bending strength of at least 690 Kg/cm^2.

9. A ceramic capacitor consisting of a ceramic dielectric body formed by the ceramic composition of claim **8** having a plurality of internal electrodes therein and a pair of external electrodes attached to the surface of the dielectric body each external electrode in electrical contact with alternating adjacent inner electrodes.

4,616,290

ELECTRIC DOUBLE LAYER CAPACITOR

Koichi Watanabe, Osaka, and Michihiro Murata, Kyoto, both of Japan, assignors to Murata Manufacturing Co., Ltd., Nakaokakyo, Japan
Filed Apr. 18, 1984, Ser. No. 601,700
Claims priority, application Japan, Apr. 19, 1983, 58-69621; Apr. 27, 1983, 58-75604
Int. Cl.⁴ H01G *4/38, 9/00*
U.S. Cl. 361—328 **8 Claims**



1. A capacitor comprising:

a plurality of double-layer capacitive elements, each of said capacitive elements comprising a first polarizable electrode made of a mixture of carbon and electrolyte, a second polarizable electrode made of a mixture of carbon and electrolyte, and an electrically insulative-ionically conductive separator between said first and said second polarizable electrodes,

wherein each of said first polarizable electrodes is pair-wise associated with a different one of said second polarizable electrodes with said electrically insulative-ionically conductive separator being interposed between associated polarizable electrodes;

an insulative material for electrically insulating said capacitive elements from each other, wherein said insulative material for electrically insulating said capacitive elements includes an upper gasket having a first plurality of apertures singly receiving said first polarizable electrodes, and a lower gasket having a second plurality of apertures singly receiving said second polarizable electrodes;

a first collector electrode for connecting said first polarizable electrodes; and

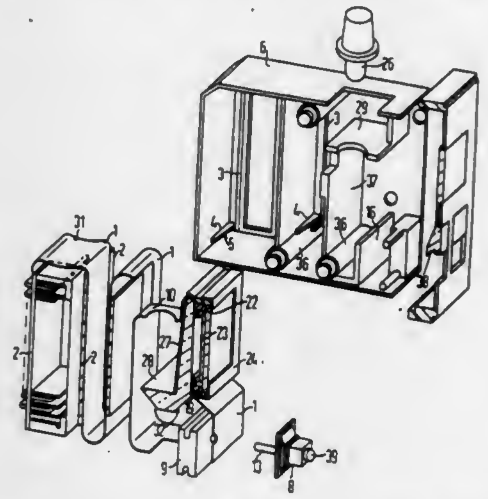
a second collector electrode for connecting said second polarizable electrodes.

4,616,291

ELECTRONIC DEVICE WITH DENSELY PACKED COMPONENTS

Herbert Sarnezki, and Torsten Schlemmer, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 514,189, Jul. 15, 1983, abandoned. This application Dec. 5, 1985, Ser. No. 805,980
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1982, 3226972
Int. Cl.⁴ H05K *5/02*
U.S. Cl. 361—398 **15 Claims**

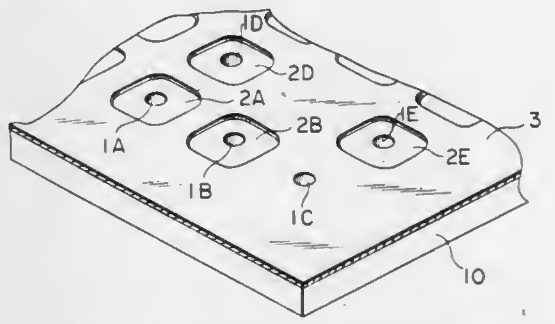
1. Electronic device with densely packed components, comprising a bipartite housing, a film circuit guided meander-like in said housing, at least one reinforcement plate for reinforcing said film circuit over part of the length of said film circuit, means integral with at least one part of said housing for fixing said reinforcement plate in position, an illuminated display disposed in said housing, a calibration potentiometer disposed in said housing for contacting said film circuit, a light conductor disposed in said housing with a light outlet surface disposed behind said display as seen from outside the device, said light conductor having bordering surfaces inclined relative to each other in vicinity of said display, and said light conductor having another bordering surface extended parallel to said display, a lamp disposed on said housing behind said light conductor, as seen from said display and an opaque covering disposed on the side of said light conductor facing said lamp, said covering having a strongly reflective surface facing toward said light conductor, and said light conductor having a light entry surface with a light inlet formed therein substantially perpendicular to said display, and said light conductor having two reflective surfaces disposed along said bordering surfaces at an angle relative to said light entry surface for reflecting a portion of light emitted from said lamp onto said strongly reflective surface of said covering.



4,616,292

MULTILAYER PRINTED CIRCUIT BOARD

Norio Sengoku; Hiroshi Kozai, both of Hadano, and Fumiyuki Kobayashi, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jul. 22, 1985, Ser. No. 757,494
Claims priority, application Japan, Jul. 24, 1984, 59-153468
Int. Cl.⁴ H05K *1/14*
U.S. Cl. 361—414 **3 Claims**



1. A multilayer printed circuit board including a plurality of conductor layers laminated via insulator layers, a plurality of through-holes used for selective connection between the conductor layers, and clearances disposed for insulation at respective through-hole formation positions of conductor layers which function as power supply layers, wherein each of said clearance is nearly a quadrangle having four circular corners.

4,616,293

LIGHT-DIFFUSION BOX

Mardick Baliozian, 10 E. Ontario St., Chicago, Ill. 60610
Filed Aug. 29, 1984, Ser. No. 645,304
Int. Cl.⁴ G03B *15/06*
U.S. Cl. 362—7 **7 Claims**

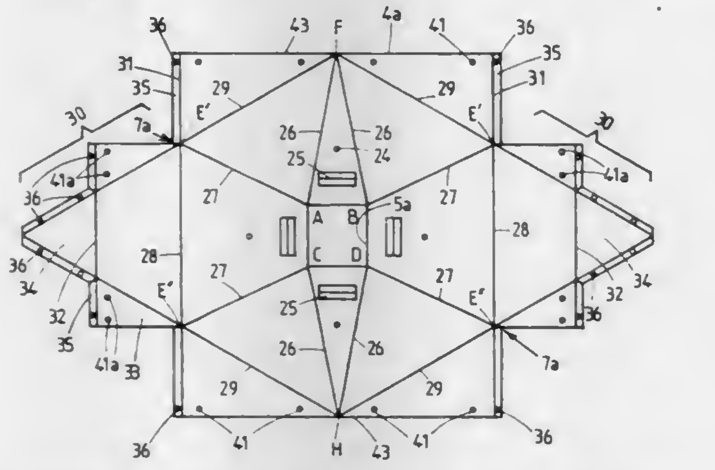
1. A box for diffusing the light emitted by a light source

placed within said box, especially for the purpose of illuminating a subject, wherein said box comprises in combination:

a hollow rear portion having multiple facets and a reflecting internal face, said rear portion being constituted by a first sheet of opaque material provided between the facets of said rear portion with folding lines for collapsing the box to its flat state of for erecting the box in its ready to use three dimensional form;

a light-diffusing screen consisting of a second sheet made of translucent material which is capable of being erected on said first sheet of opaque material in a first configuration forming a flat planar diffusion surface or a second configuration forming a three dimensional diffusion surface;

assembling means provided respectively on the edges of the first sheet and on the edges of the second sheet for erecting said second sheet in either said first or said second configurations;



a polygonal contour at the periphery of the first sheet, a central opening being formed in said first sheet in order to place a light source within the diffusion box;

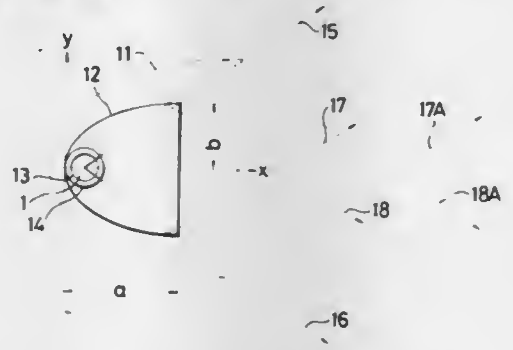
folding lines which start from said central opening of the first sheet and terminate at the periphery of said sheet;

near the periphery of the first sheet, a series of cut-out portions increasing in width toward the periphery and having edges which are adapted to be joined together in order to convert said first sheet into a three dimensional state so as to form the hollow rear portion of the light-diffusion box;

a polygonal contour at the periphery of the second sheet and corresponding in shape to the contour of the hollow casing formed by the first sheet when this latter is converted to its three dimensional state in order to form said hollow casing.

4,616,294
ELECTRONIC FLASH DEVICE

Yoshiharu Tenmyo, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 29, 1985, Ser. No. 792,509
Claims priority, application Japan, Nov. 6, 1984, 59-168285
Int. Cl.⁴ G03B *15/02;* F21V *7/08*
U.S. Cl. 362—18 **5 Claims**



1. An electronic flash device comprising:

(a) reflector, said reflector being almost elliptical and represented by

$$\frac{(x-a)^2}{a^2}+\frac{y^2}{b^2}=1$$

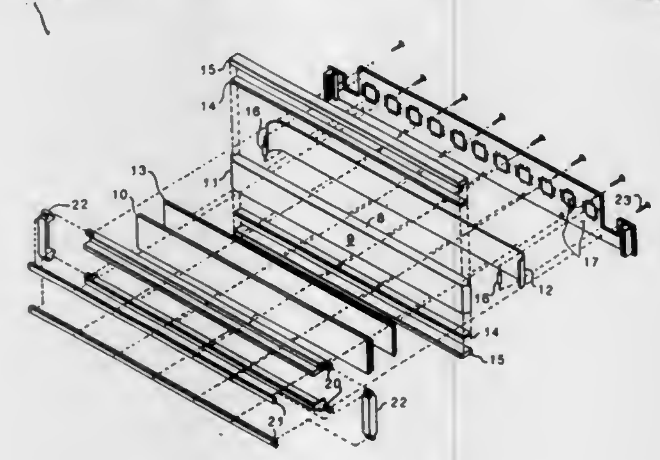
$$1.2 \leqq \frac{a}{b} \leqq 2.3,\ 4\text{ mm} \leqq b \leqq 8\text{ mm}$$

where 2*a* is a longer diameter of the ellipse formed by said reflector and 2*b* is a shorter diameter of the ellipse formed by said reflector; and

(b) supporting means for supporting said reflector at a predetermined position.

4,616,295
APPARATUS FOR MOUNTING AND ILLUMINATING LIQUID CRYSTAL DISPLAYS

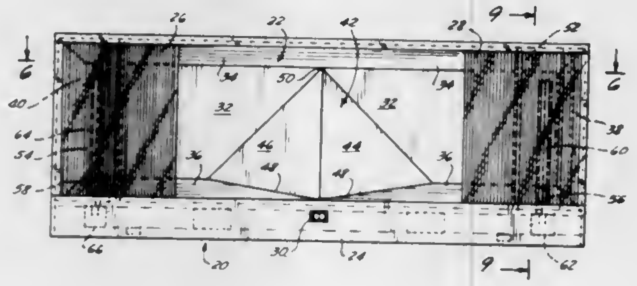
Michael B. Jewell, Spokane, Wash., and Merle L. Olmstead, Sandpoint, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jul. 3, 1984, Ser. No. 627,591
Int. Cl.⁴ G02F *1/133*
U.S. Cl. 362—31 **3 Claims**



1. Apparatus for illuminating a liquid crystal display comprising a primary diffuser having two longitudinal edges, a front window surface for emitting light, end portions formed to substantially collimate light within the diffuser from light sources mounted near thereat, and a rear surface, said rear surface having a gradient of fine-to-coarse surface roughness extending from each of said end portions to the longitudinal center of said rear surface, said roughened rear surface diffusing and reflecting substantially the same intensity of light through said front window at the longitudinal center as near each of said end portions.

4,616,296
LAMP

Donald J. Westgaard, Bloomingdale, and Scott L. Roos, Skokie, both of Ill., assignors to Alkco Manufacturing Company, Franklin Park, Ill.
Filed Aug. 7, 1985, Ser. No. 763,342
Int. Cl.⁴ A01G *13/00*
U.S. Cl. 362—33 **14 Claims**



1. A lamp, comprising:

a reflector assembly having a planar reflecting surface, a front reflecting surface extending from the planar reflecting surface, a back reflecting surface extending from the planar reflecting surface, a first side reflecting surface running between the front and back reflecting surfaces and extending from the planar reflecting surface, a second side reflecting surface running between the front and back reflecting surfaces and extending from the planar reflecting surface, and a pyramidal reflecting piece extending from the planar reflecting surface, the pyramidal reflecting piece having a base positioned against one of the front and back reflecting surfaces and a vertex positioned proximate the other of the front and back reflecting surfaces, the front reflecting surface, the back reflecting surface, and the first and second side reflecting surfaces having predetermined angles with respect to a vertical plane when the lamp is in a normal operating position;

first socket means for receiving a first light bulb;

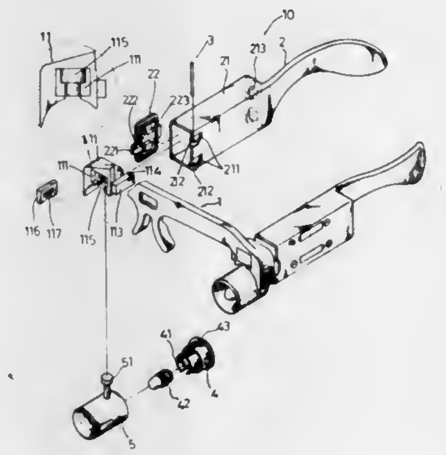
second socket means for receiving a second light bulb; and

a housing;

wherein the reflector assembly, the first socket means, and the second socket means are mounted in the housing so that the pyramidal reflecting piece is located between the first socket means and the second socket means, the first socket means being mounted to position the first light bulb proximate the first side reflecting surface when the first light bulb is inserted in the first socket means, the second socket means being mounted to position the second light bulb proximate the second side reflecting surface when the second light bulb is inserted in the second socket means.

4,616,297
SPECTACLES-LIKE ILLUMINATING DEVICE

Ju-Fu Liu, No. 720, Tung Ta Road, Shin Chu, Taiwan
Filed Oct. 18, 1985, Ser. No. 789,021
Int. Cl.⁴ F21L *15/14*
U.S. Cl. 362—105 **1 Claim**



1. A spectacles-like illuminating device comprising:

a frame being provided at the both ends with a pair of seats, each seat being furnished at the one side with a recess in which a T-shaped slot is formed and at the other side with a protuberance;

a pair of plates each of which is arranged to cooperate with the recess of each seat and is provided at one side with a T-shaped slot which corresponds to the T-shaped slot of the corresponding recess;

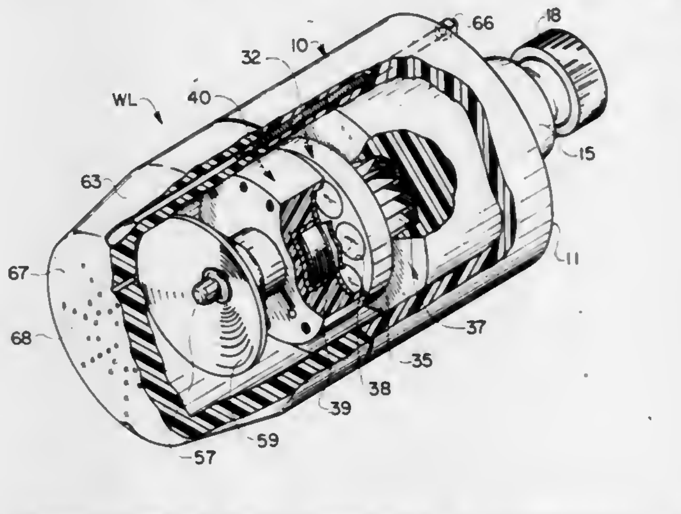
a pair of supporting members each of which is arranged to be pivotally connected to each seat of the frame, each supporting member being provided with a battery chamber to receive the batteries, the rear wall of the battery chamber being provided at the inner side with springs while at the outer side with a switch, a pair of covers each pivotally connected to the corresponding recess being provided at the inner side with metal conductors which associate with the springs of each battery chamber to clamp the batteries received therein;

a pair of lamp sockets each of which is provided with a pair of metal conductors between which a lamp is clamped, the metal conductors of each lamp socket being electrically connected to the metal conductors of each cover to form a complete circuit;

a pair of hollow cylindrical members to each of which the corresponding lamp socket is secured, each cylindrical member being provided at the outer periphery with a supporting means of T-shaped cross-section which is arranged to be clamped between the T-shaped slot of the seat and the T-shaped slot of the plate to make each cylindrical member pivotally connected to the corresponding seat of the frame thereby the illuminating direction of the lamp disposed in the cylindrical member capable of being adjusted according to the requirements of the user.

4,616,298
WATER-POWERED LIGHT

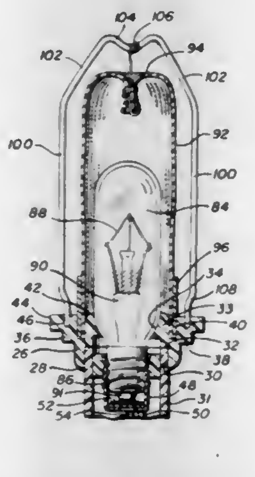
Frank J. Bolson, Rte. 1 - Box 86-#6, Cottonwood, Calif. 96022
Filed Dec. 26, 1985, Ser. No. 813,406
Int. Cl.⁴ F21V *31/00*
U.S. Cl. 362—192 **16 Claims**



1. A water-powered light comprising, in combination, a housing having a pair of end portions, one of which is substantially closed and the other of which is substantially open, a stationary shaft means having one end cantilever supported at the closed end portion of the housing, the shaft means projecting therefrom substantially axially of the housing and having a free end within the housing, a rotor assembly journaled on the shaft means, the rotor assembly including an impeller and further including a rotor member, passageway means within the closed end portion of the housing for directing water flow to the impeller, thereby driving the rotor assembly, permanent magnet means carried on the rotor member, a stator assembly mounted on the free end of the shaft means, the stator assembly being disposed axially forwardly of the rotor assembly and having an annular clearance relative to the housing, the stator assembly including a stator housing having first and second stator members secured therein and further having a coil nested between the stator members, a lamp assembly in the housing forwardly of the stator assembly and electrically connected thereto, and lens means mounted on the open end portion of the housing forwardly of the lamp assembly, the lens means having aperture means formed therein, whereby the water may flow out of the rotor assembly, through the annular clearance between the stator assembly and the housing, and out of the aperture means in the lens means.

4,616,299
ELECTRIC GASLIGHT SIMULATIVE FOR CANDELABRA LIGHT SOCKET

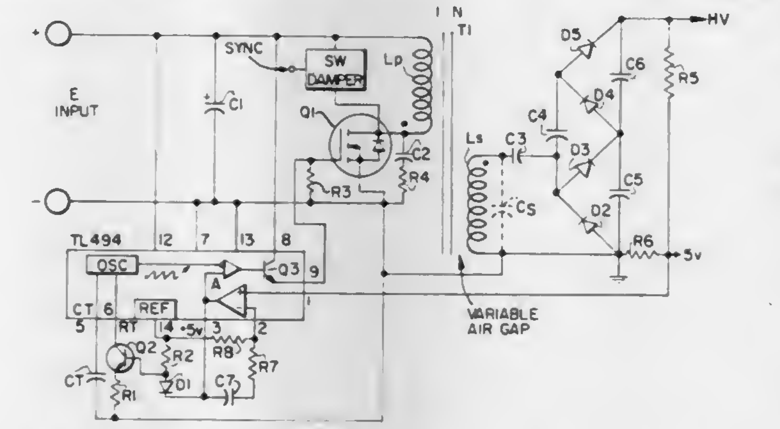
A. Frank Krause, Jr., P.O. Box 190, Fairfax City, Va. 22030
Continuation-in-part of Ser. No. 671,500, Nov. 15, 1984, Pat. No. 4,577,265. This application Dec. 20, 1985, Ser. No. 811,361
Int. Cl.⁴ F21M *3/14*
U.S. Cl. 362—255 **13 Claims**



1. An assembly to enable an electric light fixture to be converted to a simulated gaslight comprising an adapter having means engaged with the light socket mount on the light fixture and having a bore for a light bulb to extend therethrough and into a socket of said light socket mount, a flexible glass cloth mantle supported from the adapter in a distended position in enclosing relation to a generally cylindrical light bulb whereby illumination of the light bulb will produce a light glow similar to that produced by a gaslight, and means disposed externally of the mantle detachable supporting the mantle from the adapter to enable removal and replacement of the light bulb.

4,616,300
METHOD OF AND APPARATUS FOR EFFICIENT HIGH VOLTAGE GENERATION BY RESONANT FLY BACK

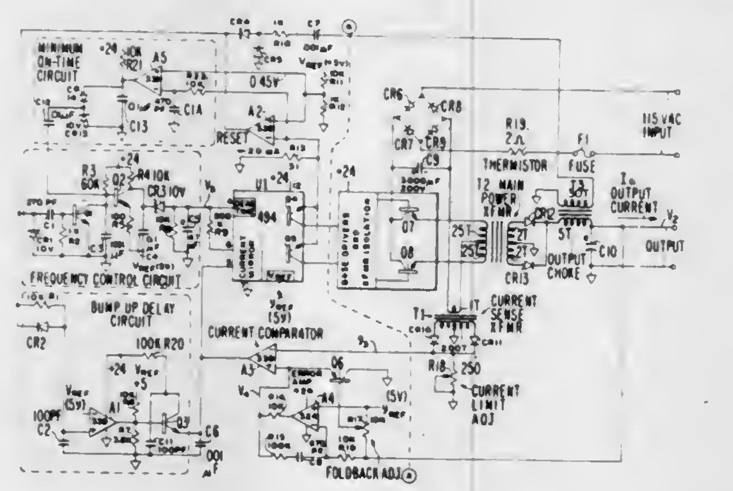
William F. Santelmann, Jr., Lexington, Mass., assignor to Kel-tron Corporation, Waltham, Mass.
Filed Dec. 17, 1982, Ser. No. 450,532
Int. Cl.⁴ H02M *3/335*
U.S. Cl. 363—21 **17 Claims**



1. A method of low-current, high voltage generation for high-impedance application to a load with the aid of a resonant circuit, that comprises, successively switching input energy from a source into the resonant circuit during an energy input interval that is a portion of each of a plurality of power conversion cycles; adjusting the resonant circuit to enable resonant flyback operation, with storage inductance thereof resonating with capacitance thereof, and to permit free ringing of the circuit during another portion of each conversion cycle; delivering energy from said circuit to a load at the voltage peak developed within the circuit; returning to the source at the end of each conversion cycle the remainder of the energy therein after each energy delivery to the load; and varying the energy input interval in each of the conversion cycles in response to variations in the load so that the length of the energy input intervals is directly proportional to the load.

4,616,301
REGULATOR CONTROL SYSTEM

Kenneth T. Small, Cupertino, Calif., assignor to Boschert Inc., Milpitas, Calif.
Filed Apr. 30, 1984, Ser. No. 605,524
Int. Cl.⁴ H02M *3/335*
U.S. Cl. 363—26 **14 Claims**



1. A switching power supply for converting an input voltage to a different output voltage comprising:

a power switch for producing a sequence of pulses and for producing an output voltage therefrom;

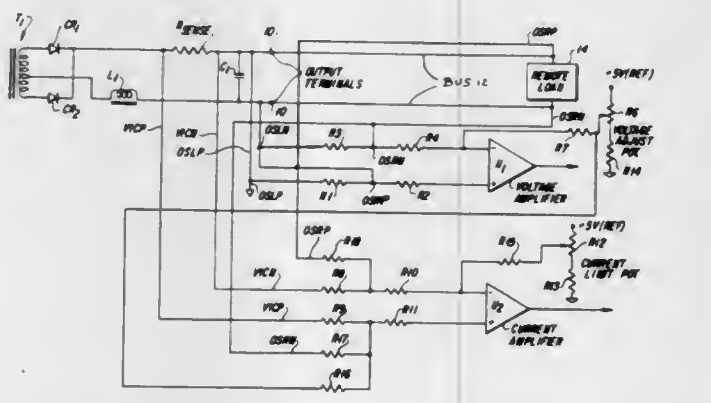
means for sensing said output voltage and for controlling said output voltage to a specified value;

means for producing a measure of the frequency of said pulses from said power switch and for comparing said measure to a reference voltage; and

means for varying the off-time of the pulses in said sequence of pulses in response to a deviation in said measure from said reference voltage in order to control said frequency to a selected value.

4,616,302
OVER-CURRENT SENSING CIRCUIT FOR SWITCHING-TYPE POWER SUPPLY

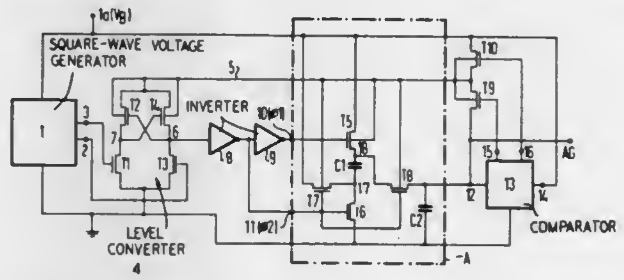
Josh Mandelcorn, Los Angeles, Calif., assignor to Pioneer Magnetics, Inc., Santa Monica, Calif.
Filed May 28, 1985, Ser. No. 738,287
Int. Cl.⁴ H02H *7/10;* **G05F** *1/46*
U.S. Cl. 363—50 **3 Claims**



1. A current limiting voltage regulating circuit for a direct current power supply including: a voltage regulator circuit including a potentiometer having a wiper adjustable to set the regulated output voltage appearing across the output terminals of the power supply to a selected level; current sensing means coupled to the power supply for producing a voltage proportional to the load current flowing in the power supply; a current limiting circuit including an amplifier for generating an output signal when the current flow in the power supply exceeds a pre-set current limit point; a current limit circuit connected to said amplifier for establishing said pre-set current limit point; and a network connected to the current sensing means and to the wiper of the potentiometer for applying input signals to the amplifier of an amplitude to reduce the output signal of the amplifier to zero during normal operation of the power supply below said pre-set current limit point and independent of the setting of said potentiometer, and to cause the amplifier to generate an output signal during current overload conditions of the power supply above the current limit point so as to reduce the output voltage thereof with resulting current feedback.

4,616,303
CIRCUIT FOR VOLTAGE MULTIPLICATION

Manfred Mauthe, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jun. 25, 1984, Ser. No. 624,348
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1983, 3335423
Int. Cl.⁴ H02M *3/18*
U.S. Cl. 363—60 **5 Claims**



1. A voltage multiplication circuit comprising:

first and second capacitors;

a voltage source for producing a supply voltage V_B a reference potential;

first and second transistors, each including a gate, connected in series across said voltage source and said reference potential with said first capacitor connected therebetween;

third and fourth transistors, each including a gate, said third transistor connected between said first capacitor and said voltage source, said fourth transistor connected between said first and second capacitors, and said second capacitor connected to the reference potential; said second capacitor including a terminal constituting an output of said circuit;

first and second voltage supply lines, said first voltage supply line including a terminal for receiving said supply voltage V_B;

a clock pulse generator connected to and controllable via said second voltage supply line to produce in a first mode of operation clock voltage pulses alternating between said supply voltage value V_B and said reference potential and in a second mode of operation clock voltage pulses alternating between an output voltage V_A and said reference potential;

fifth and sixth transistors each including a gate and connected in series between said first supply line and said output of said multiplication circuit, said second voltage supply line being connected to a circuit node connecting said fifth and sixth transistors with one another;

a comparator including a pair of inputs, and a pair of outputs respectively connected to said gates of said fifth and sixth transistors;

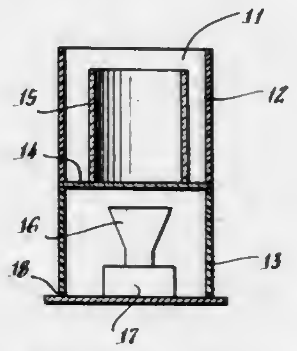
said clock voltage generator comprising a square wave generator connected to and operated by said first voltage supply line, and pulse means connected to said generator for producing opposite polarity clock pulses ϕ_1, ϕ_2; and

pulse output means, including a pair of inputs respectively connected to receive the clock pulses, ϕ_1, ϕ_2, and alternately connecting said first capacitor ad said first and second capacitors connected in series in circuit with said first supply line and a reference for charging and discharging in response to said clock pulses ϕ_1, ϕ_2; and

said inputs of said comparator respectively connected to said first supply line and said circuit output for comparing the voltages thereon and operating said fifth and sixth transistors.

4,616,304
ILLUMINATING DEVICE

Henry Von Kohorn, 215 Rocky Rapids Rd., Stamford, Conn. 06903
Continuation-in-part of Ser. No. 660,905, Oct. 15, 1984, Pat. No. 4,594,646, and a continuation-in-part of Ser. No. 660,906, Oct. 15, 1984, and a continuation-in-part of Ser. No. 697,168, Feb. 1, 1985, which is a continuation of Ser. No. 669,905, Nov. 8, 1984. This application May 14, 1985, Ser. No. 733,936
Int. Cl.⁴ F21V *33/00*
U.S. Cl. 362—101 **9 Claims**



1. An apparatus for displaying a stemmed flower arrangement having a plurality of grouped inner and outer, unpotted flowers, and individually illuminating said stemmed flower arrangement in a penetrating manner comprising:

an upper, vertically elongated housing means comprising:

a watertight peripheral wall having an upper opening and rim, said upper housing means having means for preventing the lateral passage of light and having a non-reflective surface on the inside of the upper portion of said wall,

a watertight shelf having transparent portions joined to said peripheral wall below said rim in a watertight manner forming a first cavity adapted to serve as a vase having dimensions so as to accommodate the stems of said flowers in substantially vertical, loosely spaced relationship,

spacing means disposed above said shelf, comprising light-conductive members forming a plurality of hollow compartments having light-conductive vertical walls adapted to receive light through said transparent shelf portions and to project said light from their upper edges in predetermined directions towards said inner flowers, and further adapted to maintain said stems in said compartments in separated, side-by-side relationship without substantially impeding the upward passage of light between said stems,

wherein the height of said spacing means is such that said rim and upper portions of the first peripheral cavity wall protrude above said spacing means,

lower housing means having a watertight, light-passage impeding, peripheral wall, forming a second cavity disposed below said first cavity, said second cavity being adapted to accommodate a central light source and a light-reflective surface disposed below said light source,

an electric light source comprising a lamp and a lampholder, said lamp being disposed in said second cavity below and in close proximity to said shelf and said lampholder being positioned so as not to impede the upward passage of light, and

a light-reflective surface means provided in said second cavity and adapted to reflect light upwardly, wherein illumination generated by said light source is projected or reflected upwardly through said transparent portions of said shelf towards the loosely spaced stems of the flowers in said vase, and through the spaces between and around said flower stems and through said light-conductive compartment walls towards the foliage of substantially all inner and outer flowers in a penetrating manner,

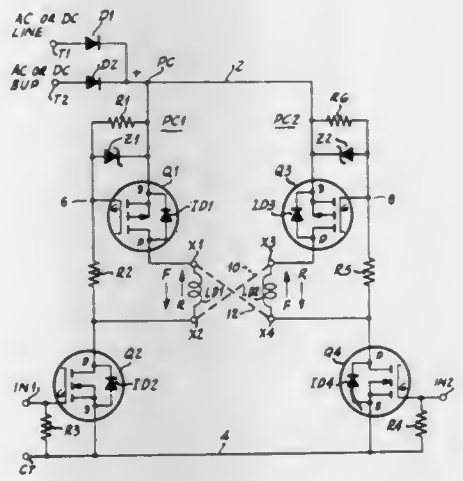
said illumination being provided to the inner and outer reaches of the flower foliage by a short upward light path, whereby,

the eyes of observers grouped in an encircling fashion around the flower arrangement are shielded from direct view of the light source and from reflections of the light from said apparatus and thereby view only reflections of light from said flowers.

4,616,305
AC/DC POWER MOSFET REVERSING H-DRIVE SYSTEM

Michael A. Damiano, Germantown, and Richard F. Schmerda, Oak Creek, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Feb. 11, 1985, Ser. No. 700,843
Int. Cl.⁴ H02M *7/538*
U.S. Cl. 363—132 **7 Claims**



1. A power MOSFET reversing H-drive system having a first pair of N-channel and P-channel MOSFETs connected for completing a power circuit to a load and a second pair of N-channel and P-channel MOSFETs connected for completing a power circuit to the load and logic level signal means for gating each of said N-channel MOSFETs selectively into conductive state; and a power supply connected to said power circuits characterized by:

said N-channel and P-channel MOSFETs having their on-state resistances and the flyback capability of their intrinsic diodes matched to the size of the load to be driven, thereby avoiding the necessity of any auxiliary components to handle the flyback currents or any other power dissipating elements in series in said power circuits;

means for selectively directly gating said N-channel MOSFETs into conductive state;

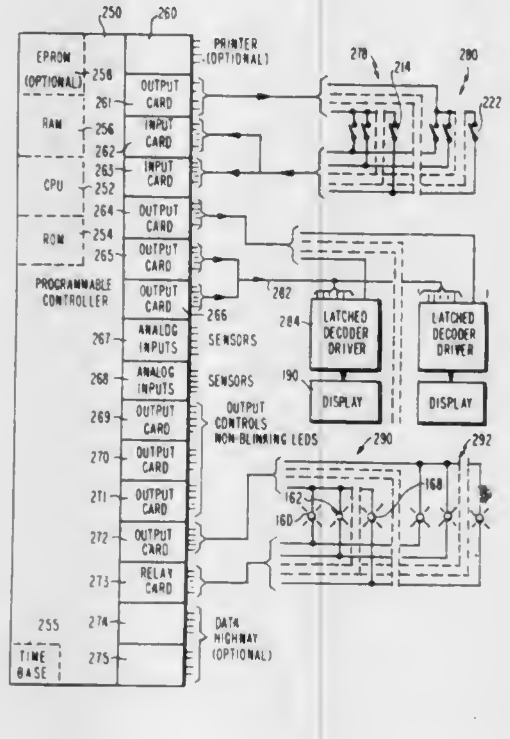
means comprising a pair of resistance voltage dividers responsive to gating each of said N-channel MOSFETs respectively into conductive state for applying a gating signal directly therefrom to the corresponding P-channel MOSFET to gate the same into conductive state thereby to cause energization of the load to be driven thereby;

and gate turn on voltage overload protection means connected to each of said P-channel MOSFETs whereby to afford operation of said H-drive system throughout a wider input power supply voltage range.

4,616,306
METAL TREATING PROCESS CONTROL

Andrew E. Kuzma, Landsdale; James W. Costello, Sellersville, and Alexander G. T. Wallace, Ambler, all of Pa., assignors to Amchem Products, Inc., Ambler, Pa.

Filed Aug. 10, 1984, Ser. No. 639,335
Int. Cl.⁴ G06F *3/00*
U.S. Cl. 364—140 **24 Claims**
MICROFICHE APPENDIX INCLUDED
(2 Microfiche, 75 Pages)



1. An apparatus for controlling a process comprising:

a programmable controller including a plurality of inputs, first and second pluralities of outputs, memory means including data storage means and program means with a series of program instructions, and means for continuously cycling through the series of program instructions;

at least two groups of pluralities of condition means, each condition means having conductive and nonconductive states for indicating a condition;

each group of condition means having one sides of its condition means connected together to a respective output of the first plurality of outputs;

each respective condition means of each group of condition means having its other side connected together with the corresponding condition means of each other group to a respective input of the plurality of inputs;

said program means including channel selecting means for sequentially selecting respective channel windows to sequentially energize corresponding outputs of the first plurality of outputs during the channel windows wherein each channel window extends for a duration at least equal to one cycle through the series of program instructions, reading means for reading data from the inputs and storing the data in the data storage means at memory locations corresponding to the respective selected channel windows during continuous cycling of the program means, processing means for processing the stored data, and output means for selectively operating the second plurality of outputs; and

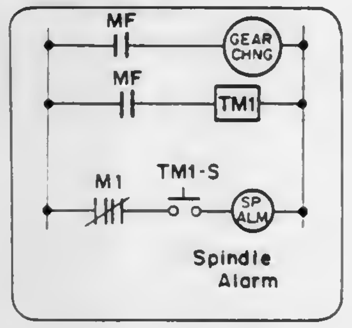
process control means responsive to the second plurality of outputs for controlling the process.

4,616,307
PROGRAMMABLE CONTROLLER ALARM DISPLAY METHOD

Katsuaki Kusumi, Hachioji, and Yoshihiro Nakashima, Machida, both of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP84/00173, § 371 Date Dec. 6, 1984, § 102(e) Date Dec. 6, 1984, PCT Pub. No. WO84/03964, PCT Pub. Date Oct. 11, 1984

PCT Filed Apr. 6, 1984, Ser. No. 682,361
Claims priority, application Japan, Jun. 4, 1983, 58-060533
Int. Cl.⁴ G06F *15/46, 11/32*
U.S. Cl. 364—147 **3 Claims**



1. An alarm display method in a programmable controller for controlling an apparatus, the controller having a memory for storing a sequence program in which messages are programmed, a processor for performing sequence control by successively executing the sequence program stored in said memory, and a display unit for displaying a ladder diagram corresponding to the sequence program of said memory as well as the messages, said method comprising the steps of:

(a) determining alarm conditions for the apparatus

(b) generating display information representing a ladder diagram for a sequence program associated with each of said alarm conditions;

(c) generating a sequence program for the apparatus, including ladder data specifying said display information for each of said alarm conditions, and data defining a message for each of said alarm conditions;

(d) executing said sequence program to control the apparatus;

(e) sensing execution of the sequence program;

(f) accessing the memory to retrieve the display information associated with the sensed alarm condition on the basis of the ladder data within said sequence program; and

(g) displaying on the display unit the ladder diagram represented by the accessed display information, together with the message associated with the sensed alarm condition.

4,616,308
DYNAMIC PROCESS CONTROL

Abdol M. Morshedi; Charles R. Cutler, both of Houston; Thomas J. Fitzpatrick, Katy, and Thomas A. Skrovanek, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 552,567, Nov. 15, 1983, abandoned. This application Dec. 2, 1985, Ser. No. 803,797
Int. Cl.⁴ G06F *15/46*
U.S. Cl. 364—159 **13 Claims**

13. A method of controlling a process having a plurality of independently controlled, manipulated variables and at least one controlled variable dependent on said manipulated variables, said method comprising the steps of:

gathering data about said process by introducing test disturbances in said manipulated variables and measuring the effect of the disturbances on said controlled variable;

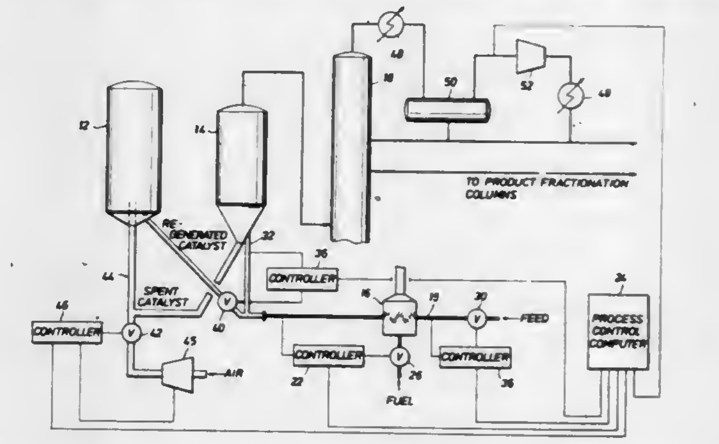
measuring the values of said variables at a first time;

calculating from said gathered data and said measured values of said variables at said first time a first set of changes in at least one of said manipulated variables such that said controlled variable is driven towards its set point without exceeding a predetermined limit;

adjusting said manipulated variables in accordance with at least one change from said first set of calculated changes;

measuring the values of said variables at a second time;

calculating from said gathered data, said first set of changes and said measured values at said second time a second set of changes in at least one of said manipulated variables such that said controlled variable is driven towards its set point without exceeding a predetermined limit; and

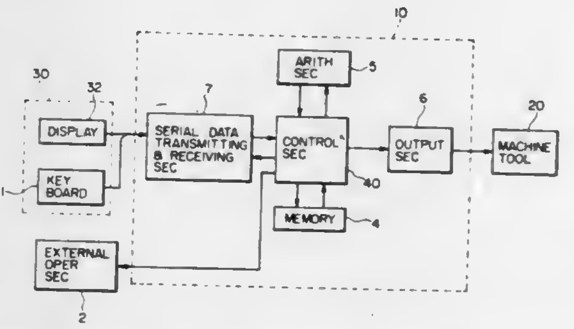


adjusting said manipulated variables in accordance with at least one change from said second set of calculated changes.

4,616,309
NUMERICAL CONTROL SYSTEM

Akihiko Fujimoto, and Morio Kiyokawa, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1984, Ser. No. 596,194
Claims priority, application Japan, Apr. 1, 1983, 58-57665
Int. Cl.⁴ G06F *15/46;* **G05B** *19/18*
U.S. Cl. 364—171 **7 Claims**



1. A numerical control system comprising:

a serial data transmitting and receiving section to which external signals are applied;

an arithmetic section for performing predetermined operations on data received from said serial data transmitting and receiving section;

a memory section for storing data from said serial data transmitting and receiving section, results of calculations from said arithmetic section, and programs;

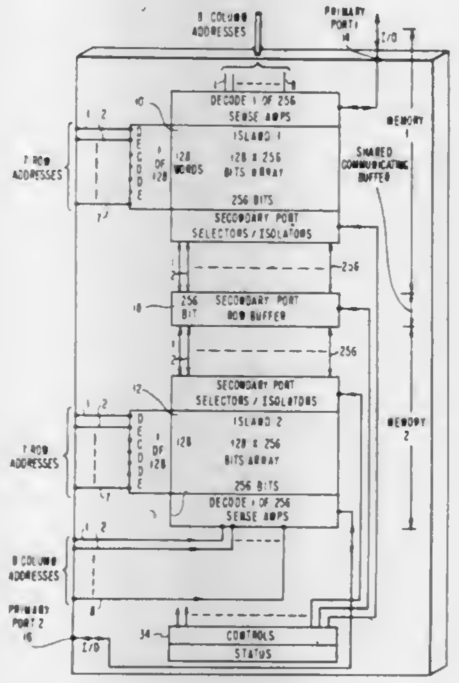
an output section for outputting results of calculations from said arithmetic section and contents of said memory section as instruction signals to a machine tool;

a control section for controlling said serial data transmitting and receiving section, arithmetic section, memory section and output section; and

a general purpose operating panel comprising a general purpose full keyboard and a general purpose display unit, said operating panel being freely connectible to and disconnectable from said serial data transmitting and receiving section;

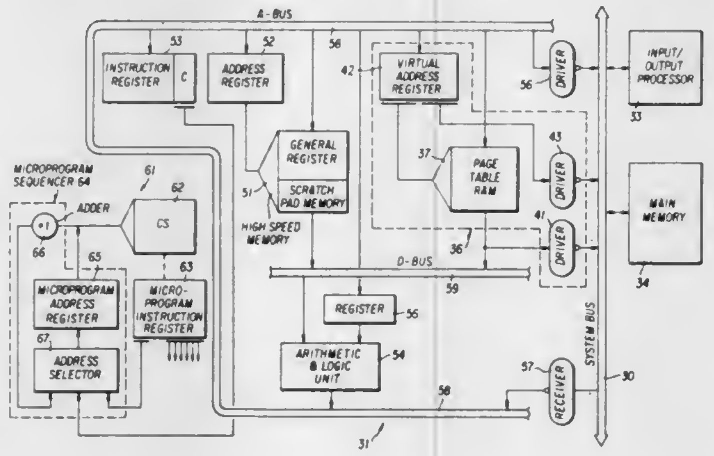
wherein said control section comprises a general purpose code processing unit comprising:
a general purpose code decision program memory in which is stored a decision program for determining whether data received by said serial data transmitting and receiving section is in a format of a general purpose code;
a general purpose code data memory in which a general purpose code is stored;
a data control bus for delivering data from said serial data transmitting and receiving section; and
a central processing unit for determining according to said general purpose decision program said data received by said serial data transmitting and receiving section and delivered thereto through said address data control bus; and wherein said general purpose code decision program comprises:
a step of inputting said data received by said serial data transmitting and receiving section into a first register;
a step in which one data point is read out of said general purpose code data memory and inputted into a second register;
a step of determining whether or not contents of said first and second registers coincide with each other; and
a step in which, when said contents of said first and second registers coincide with each other, a code decision completion flag is set.

4,616,310
COMMUNICATING RANDOM ACCESS MEMORY
Frederick H. Dill, South Salem; Daniel T. Ling; Richard E. Matick, both of Peekskill, and Dennis J. McBride, Shrub Oak, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 20, 1983, Ser. No. 496,726
Int. Cl.⁴ G06F *15/16;* G11C *7/00*
U.S. Cl. 364—200 **7 Claims**



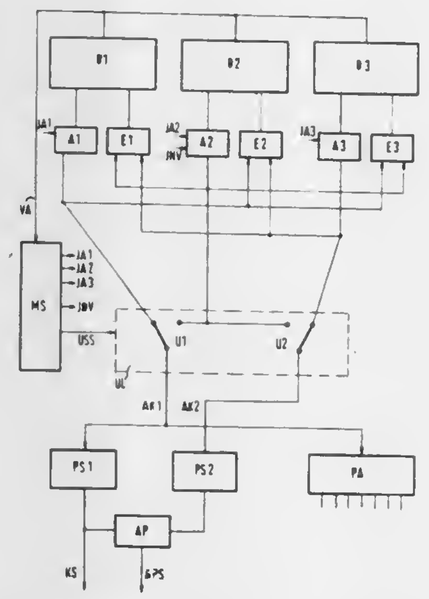
1. In a multiprocessor system, a communicating random access shared memory configuration connected to said processors by electrically conductive buses for transferring data between said processors comprising a plurality of interconnected random access memory chips,
each of said memory chips including first and second separate memory bit arrays having N word storage locations of M bit length,
M bit buffer means connected in between said first and second bit arrays on each memory chip,
a first input/output port connected to said first bit array on each chip and an electrically conductive bus for entering and removing data externally to and from said chip,
a second input/output port connected to said second bit array on each chip and an electrically conductive bus for entering and removing data externally to and from said chip, and—
control means on each chip connected to said first and second memory arrays and said M bit buffer means for transferring data between said first and second memory arrays and into and out of said first and second input/output ports.

4,616,311
DATA PROCESSING SYSTEM
Fumitaka Sato, Oome, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Continuation of Ser. No. 604,423, Apr. 30, 1984, abandoned, which is a continuation of Ser. No. 308,516, Oct. 5, 1981, abandoned. This application Apr. 29, 1985, Ser. No. 727,197
Claims priority, application Japan, Oct. 3, 1980, 55-137575
Int. Cl.⁴ G06F *9/00*
U.S. Cl. 364—200 **3 Claims**



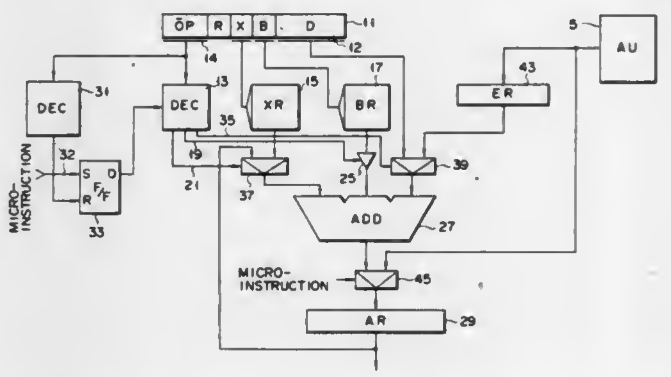
1. A virtual memory data processing system comprising:
main memory means for storing instructions and data;
second memory means for storing an entire address conversion table comprising a plurality of entries each of which includes a plurality of control bits and a portion of a real address corresponding to a continuous portion of the bits which form a virtual address and to each of which an address defined by said continuous portion of the corresponding virtual address is assigned;
instruction execution means for executing said instructions in said main memory means and supplying said second memory means with a virtual address to access said main memory means;
second memory addressing means for addressing said second memory means by said continuous portion of said virtual address supplied by said instruction execution means both for the purpose of address conversion and for the purpose of updating the address conversion table, said continuous portion including the effective most upper bit of said virtual address;
main memory addressing means for concatenating said portion of a real address delivered from said second memory means for address conversion and the remaining part of said virtual address supplied by said instruction execution means so that said instruction execution means access said main memory;
said instructions including at least one instruction for handling contents of said entry in said second memory means; and
said instruction execution means revising the contents of said second memory means only when said at least one second memory handling instruction is executed and referencing the contents of said second memory means only for the purpose of address conversion when an instruction other than said at least one second memory handling instruction is executed.

4,616,312
2-OUT-OF-3 SELECTING FACILITY IN A 3-COMPUTER SYSTEM
Helmut Uebel, Leonberg, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Feb. 28, 1983, Ser. No. 470,756
Int. Cl.⁴ G06F *11/18, 11/00*
U.S. Cl. 364—200 **2 Claims**



1. 2-out-of-3 selecting facility for a 3-computer system in which all computers process the same information in parallel, and in which a result is delivered for further processing only if at least two of the computers have arrived at this result, said facility comprising an output port (**A1** . . . **A3**) in each of the computers and a comparison data input port (**E1** . . . **E3**) in each of the computers which is connected to the output ports of the other two computers for the transfer of the results produced by these computers, and comprising comparison circuitry in each of the computers for comparing the result produced by it with the results produced by the neighboring computers and providing a corresponding comparison indication, to a majority voting circuit (**MS**), connected to receive said comparison indication depending on the comparison indications from all computers, and comprising two separate transfer switches (**U1**, **U2**) which are controlled by the majority voting circuit, said computers having outlet ports and said facility having two separate data output channels whereby said majority voting circuit controls said two separate transfer switches to connect the output ports to said two separate data channels wherein the output port (**A1**) of one of the computers (**R1**) is permanently connected to one of the transfer switches (**U1**), while the output port (**A3**) of another computer (**R3**) is permanently connected to the other transfer switch (**U2**), and that the output port of the third computer (**R2**) is connected to both transfer switches and, in response to a control instruction from the majority voting circuit (**MS**), can be connected to the first data output channel (**AK1**) by said one of the transfer switches (**U1**) or to the second data channel (**AK2**) by the other transfer switch (**U2**,) the output port of the computer previously permanently connected to the respective transfer switch being disconnected from the associated data output channel and wherein with ports (**A1**, **A3**) permanently connected to the transfer switches (**U1**, **U2**,) the results produced by the associated computers (**R1**, **R3**) appear in nonequivalent form, and that at the output port (**A2**) of the third computer (**R2**) the result produced by the latter appears in uninverted or inverted form depending on a control instruction (**JNV**) from the majority voting circuit (**MS**) and wherein the two data output channels (**AK1**, **AK2**) have parallel-serial converters (**PS1**, **PS2**) connected thereto whose outputs are connected to the inputs of a serial nonequivalence check circuit (**AP**), and that the output ports of the computers and the computers themselves can be disconnected in response to the output signal (**APS**) from the nonequivalence check circuit.

4,616,313
HIGH SPEED ADDRESS CALCULATION CIRCUIT FOR A PIPELINE-CONTROL-SYSTEM DATA-PROCESSOR
Keizo Aoyagi, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Mar. 21, 1984, Ser. No. 592,012
Claims priority, application Japan, Mar. 25, 1983, 58-49925
Int. Cl.⁴ G06F *9/38*
U.S. Cl. 364—200 **6 Claims**



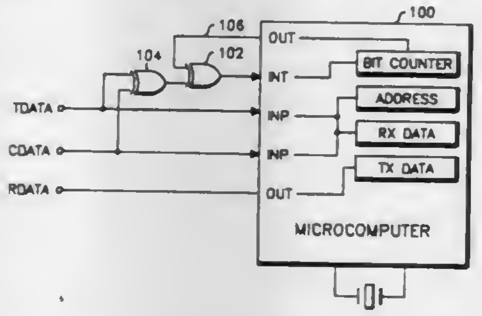
1. In a pipeline-control-system data-processing apparatus having a main memory for storing an instruction and an operand, an instruction processing unit for decoding the instruction, calculating an operand address and reading out the operand, and an arithmetic unit for processing the instruction under the control of a microprogram and for generating an initial address of the operand, said instruction processing unit comprising:
an instruction register for storing the instruction read out from said main memory;
a register file, addressed in accordance with register designation data of the instruction, for storing at least one of index address data and base address data;
an address register for storing the operand address;
a first data selector for receiving the address generated from said address register and data read out from said register file and for selecting one of the address generated from said address register and the data read out from said register file;
an increment register for storing increment data calculated by said arithmetic unit;
a second data selector for receiving data read out from said increment register and destination field data read out from said instruction register and for selecting one of the data read out from said increment register and the destination field data;
decoding means for generating a signal for specifying data to be selected by said first and second data selectors;
an adder for receiving the data selected from said first and second data selectors and for calculating an operand address; and
a third data selector for receiving the operand address generated from said adder and the initial address generated from said arithmetic unit and for selecting one of the operand addresses and the generated address such that selected data is supplied to said address register.

4,616,314
MICROCOMPUTER CONTROLLED DATA RECEIVER
James L. Wilson, Schaumburg, and Shannon Edwards, Marengo, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 12, 1983, Ser. No. 493,919
Int. Cl.⁴ G06F *7/38*
U.S. Cl. 364—200 **8 Claims**

1. A method for enabling processing means to receive a block of binary data bits from first and second data signals generated by a signal source, the first and second data signals having a binary zero state before and after the block of data bits, the first data signal having the binary zero state and the second data signal having a binary one state for data bits hav-

ing a binary zero state, the first data signal having a binary one state and the second data signal having the binary zero state for data bits having a binary one state, and the first and second data signals having the binary one state between successive data bits, said processing means generating a binary interrupt control signal initially having a binary one state, said method comprising for each data bit the steps of:

(a) generating data transition signal having a binary one state when the first and second data signals have different states and having a binary zero state when the first and second data signals have the same state;



(b) interrupting the processing means when the data transition signal and the interrupt control signal have the same state;

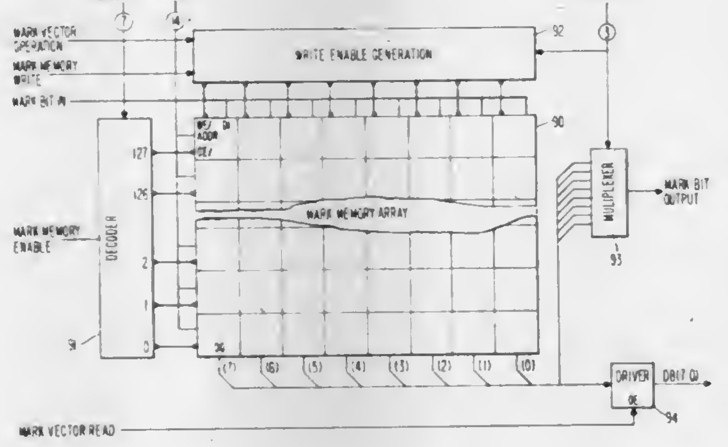
(c) storing the data bit in the processing means in response to said interrupting step, the first data signal and a binary one state of the interrupt control signal; and

(d) changing the state of the interrupt control signal in response to the binary one state of the interrupt control signal.

4,616,315
SYSTEM MEMORY FOR A REDUCTION PROCESSOR EVALUATING PROGRAMS STORED AS BINARY DIRECTED GRAPHS EMPLOYING VARIABLE-FREE APPLICATIVE LANGUAGE CODES

Gary L. Logsdon; Mark R. Scheevel, and Michael A. Winchell, all of Austin, Tex., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 11, 1985, Ser. No. 690,842
Int. Cl.⁴ G06F *12/00*
U.S. Cl. 364—200 **10 Claims**



1. A processing system including:

a storage location memory having a plurality of storage locations;

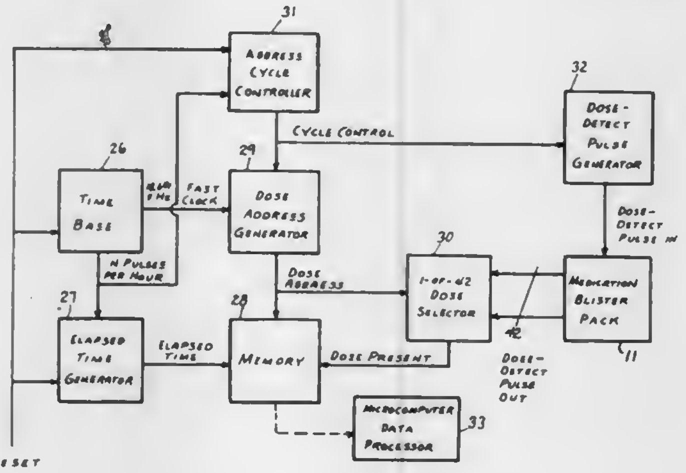
a mark bit memory containing a plurality of mark bit positions each of which corresponds to a storage location in said storage location memory to indicate that that location has been allocated when the mark bit has been set and that the corresponding storage location is available for use when the mark bit has been reset; and

bus means coupled to both memories to access at least one of said memories.

4,616,316
MEDICATION COMPLIANCE MONITORING DEVICE HAVING CONDUCTIVE TRACES UPON A FRANGIBLE BACKING OF A MEDICATION COMPARTMENT

John A. Hanpeter; Seth A. Eisen, both of St. Louis, Mo., and Michael F. Gard, Catoosa, Okla., assignors to The United States of América as represented by the Administrator of Veterans Affairs, Washington, D.C.

Continuation-in-part of Ser. No. 394,432, Jul. 1, 1982, abandoned. This application Jan. 13, 1983, Ser. No. 458,312
Int. Cl.⁴ G07F *9/02;* **G04F** *1/00;* **B65D** *85/56*
U.S. Cl. 364—413 **18 Claims**



1. A medication compliance monitoring device, comprising:

a medication package including

- an array of medication compartments each being designed to carry a unit close of medication therein and each being yieldable for medication removal,
- a frangible backing sheet closing all of of said medication compartments such that medication can be removed from each said compartment by pushing the yieldable compartments to force the medication through the frangible backing sheet by rupturing the backing sheet adjacent the compartment being pushed; and

an electronic monitoring circuit including

- a plurality of conductive traces disposed on said backing sheet, a unique trace being disposed adjacent each said compartment such that the rupture of said frangible sheet during removal of a unit dose of medication from a compartment will cause rupture of one of said conductive traces,
- detection means for addressing each said unique trace periodically at a constant predetermined time interval over a predetermined extended period of time and detecting whether each such trace is ruptured or intact,
- memory means for storing the time that the rupture of each unique trace is first detected by said detection means, and
- connecting means for permitting said memory means to be connected to a microcomputer, whereby said microcomputer can extract data from said memory means for processing and display.

4,616,317
DATA LINK FOR A RADIOACTIVITY DISTRIBUTION DETECTION SYSTEM

Francis R. Croteau, Burlington, Mass., assignor to Baird Corporation, Bedford, Mass.

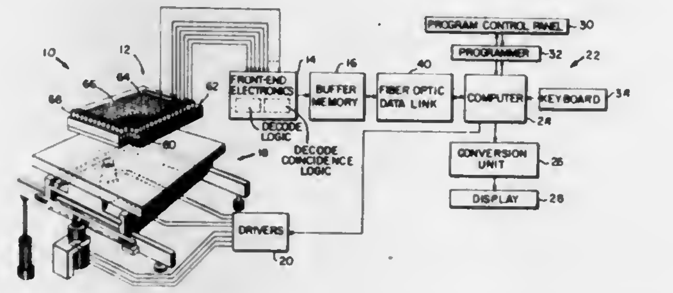
Filed Sep. 14, 1983, Ser. No. 532,002
Int. Cl.⁴ G06F *15/42;* **G02B** *5/14*
U.S. Cl. 364—414 **2 Claims**

1. In a radioactivity distribution detection system including a plurality of sensors and detectors of radioactive events for generating electronic data signals defining address locations thereof, a front-end electronics for processing said electronic data signals and a buffer memory for accumulating and storing said electronic data signals prior to their transmission to a computer of a data processing console, the improvement of electrically isolating a subject under diagnosis comprising:

(a) a first converter for converting said electronic data signals accumulated and stored in said buffer memory to optical signals;

(b) a coupler for providing an optical path of transmission between said buffer memory and said computer for said optical signals;

(c) a second converter for converting said transmitted optical signals to electronic data signals acceptable to said computer;



(d) said coupler comprising a pair of fiber optic cables for complete, duplex, bidirectional transmission of optical signals carrying said accumulated and stored data;

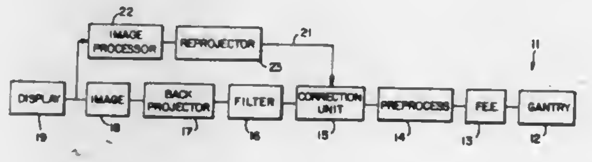
(e) said coupler allowing said data processing console to be removed from said plurality of sensors and detectors of radioactive events;

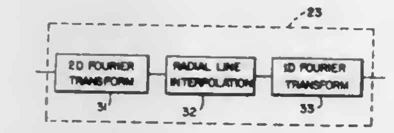
(f) said coupler serving to protect a subject under diagnosis from the potentially harmful effects of leakage currents emanating from said console.

4,616,318
SYSTEM FOR REPROJECTING IMAGES USING TRANSFORM TECHNIQUES

Carl R. Crawford, Haifa, Israel, assignor to Elscint, Inc., Boston, Mass.

Filed Jun. 7, 1983, Ser. No. 501,832
Int. Cl.⁴ G06F *15/42*
U.S. Cl. 364—414 **12 Claims**





1. A system for reprojecting images comprising:

means for detecting radiation attenuated by passing through a subject,

means for preprocessing said detected radiation to obtain data corresponding to projections of said detected radiation,

means for filtering said data to obtain filtered data,

means for backprojecting said filtered data to obtain digital images,

feedback for feeding back said digital images,

means for taking the two dimensional Fourier transforms of the image in the feedback means,

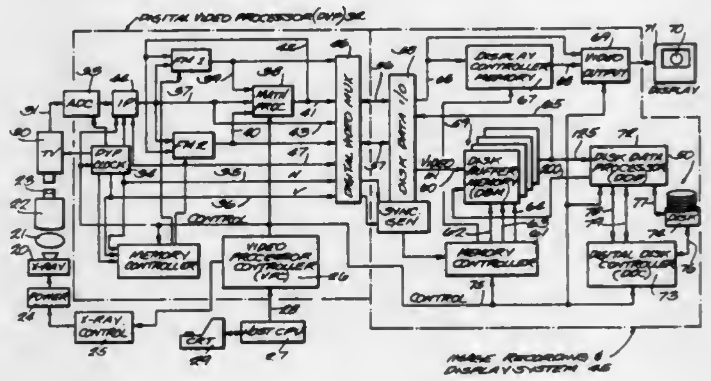
means for obtaining the values of the Fourier transforms of the image along radial lines using interpolation, and

means for forming the one-dimensional inverse Fourier transform of the radial lines to obtain data corresponding to reprojections.

4,616,319
STORAGE OF DIGITIZED VIDEO IMAGES ON DISK

Michael A. Peters, Waukesha, and Gerd Mewitz, New Berlin, both of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 6, 1984, Ser. No. 638,286
Int. Cl.⁴ G06F *3/00, 15/42*
U.S. Cl. 364—414 **2 Claims**



1. In a system comprising a video camera means and means for generating symmetrically shaped images such as circular and rectangular images that are converted by the camera means to analog video signals, means for converting the analog signals for each image frame to digital data having values corresponding to the intensities of the picture elements (pixels) composing the images, a digital disk drive operable to record digital data on magnetic disk, an addressable digital buffer memory (DBM) means coupled to the recorder to permit reading image pixel data from said memory means and writing the data on disk and alternatively reading image data from disk and writing said data into said memory means, said disk drive issuing an image-start signal when the read/write heads of said recorder are in readiness for beginning to read or write an image, and

- means for reducing disk storage requirements by limiting the data transferred to and from said buffer memory to valid pixel data actually representing image information, comprising:
- a first register means loaded with the digital Y-read start address of the first horizontal line on which valid image data is to be read from a frame in the DBM,
- a first counter having input means for said Y-read start address and starting to count in response to said image-start signal, said counter being incremented by one for every horizontal line so as to produce the succession of Y-addresses indicative of the lines on which valid image data appears,
- means coupling the Y-addresses produced by said counter to the address input means of said DBM,
- an X-read start address memory means having input and output means and containing a lookup table providing the X-addresses of the first valid image data pixel in each horizontal line, said memory means responding to input of the current Y-addresses from said first counter by output of the X-address of the first valid image pixel data in the corresponding horizontal line,
- an X-read counter having input and output means, said input means coupled to the output of said X-read start memory for being loaded successively with said X-read start addresses in the order said memory receives the Y-addresses indicative of the line in memory that is being read, said X-read counter being incremented by one for successive pixel X-positions in the line, the X-read counter thereby providing on its output means the X-addresses for the pixels in the horizontal line for any line whose Y-address is currently input to said DBM,
- means for coupling said X-addresses related to the current Y-address from the output means of X-read counter to the

address input means of said DBM to thereby read the pixel data from the DBM,

a 2's complement device having input means for the X-start address for the valid image pixels in a line and having output means, said 2's complement device being operative to convert said X-start addresses to the negative equivalent of the X-start addresses,

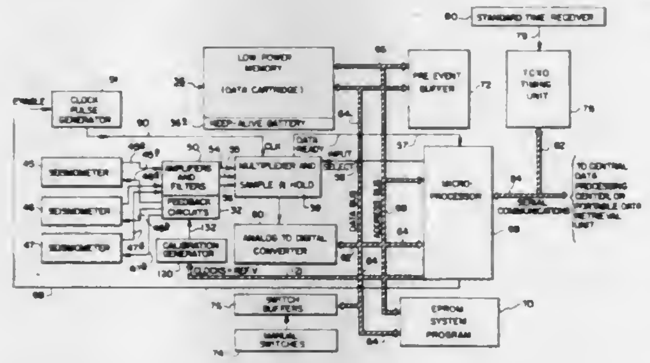
comparator means having one input for receiving the 2's complemented X-start addresses and another input for receiving the current pixel X-addresses from the output of said X-read counter, said comparator having output means and responding to the 2's complemented X-start address for a horizontal line and the current X-address from said counter comparing by providing an end-of-X signal on the comparator output means indicative of where reading of valid image data on the horizontal line must end for the image to be symmetrical, and

means for applying said end-of-X signal to said Y-read address counter to increment said counter and provide the new Y-read address to said X-read memory lookup table so it can generate the X-read start address for the next horizontal line.

4,616,320
SEISMIC STRONG-MOTION RECORDER

James D. Kerr, Allen, and Howard Thompson, Dallas, both of Tex., assignors to Teledyne Industries Inc., Los Angeles, Calif.

Filed Mar. 12, 1984, Ser. No. 588,633
Int. Cl.⁴ G06F *15/20;* G01V *1/00*
U.S. Cl. 364—421 **17 Claims**



1. A digital recorder system for recording digital representations of portions of a continuously variable waveform which portions are of interest because they have amplitudes that exceed a preset threshold level, and for leaving unrecorded other non-interesting portions of the continuous waveform whose amplitudes fail to exceed said threshold level, the recorder comprising:

(a) signal input means;

(b) periodic amplitude sampling means operative to sample the amplitude of the input signal waveform from said input means at uniformly spaced sampling intervals to produce sample point data;

(c) data processing means including a microprocessor and programmable read only memory (PROM) means operative to program the microprocessor to format said point data for subsequent recording, and the processing means further including recording timing means;

(d) a digital electronic pre-event buffer having an output and having an input connected to receive continuously all of the formatted point data, which is entered into it under control of the microprocessor, newly entered data displacing from said output of the buffer previously entered data;

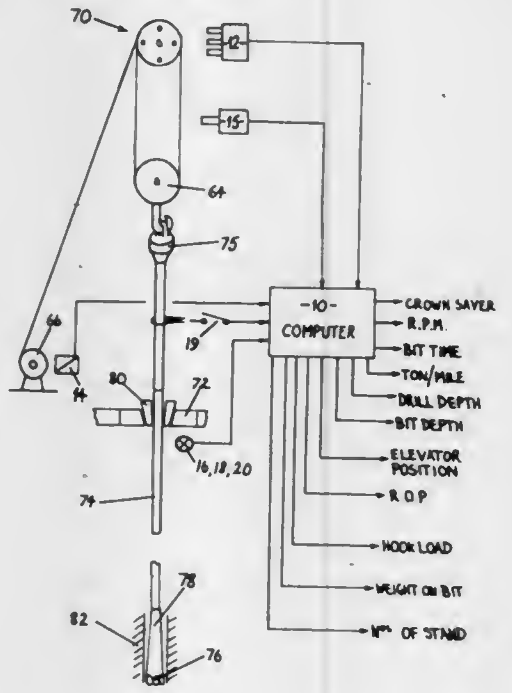
(e) a digital electronic permanent memory having data recording capacity larger than the capacity of the pre-event buffer, the memory being operative to receive and permanently store point data;

(f) the processing means further including means for comparing with said threshold level with the input signal amplitude level represented by each data point entered at the input of the pre-event buffer, and the microprocessor then entering for storage in said permanent memory all point data which is displaced from the buffer output continuously for as long as said threshold level is exceeded at the input plus an interval of time determined by said timing means and commencing when the input amplitude level falls below said threshold level,

(g) whereby a digital representation of the continuously variable waveform is permanently stored in the memory from a time beginning prior to its input amplitude exceeding said threshold level and extending through said timing interval after the input amplitude fails to exceed said threshold level.

4,616,321
DRILLING RIG MONITORING SYSTEM

Yun T. Chan, Hanover St., Aberdeen, Scotland
Continuation-in-part of Ser. No. 181,484, Aug. 26, 1980, abandoned. This application Sep. 26, 1983, Ser. No. 536,053
Claims priority, application United Kingdom, Aug. 29, 1979, 7929874
Int. Cl.⁴ G06F *15/20;* E21B *47/04*
U.S. Cl. 364—422 **10 Claims**



1. In a drilling rig having a derrick including a crown block having a fast line pulley and a travelling block operable to lift pipe lengths to assemble and disassemble a drill string, and a rotary table engageable with the drill string to rotate it, an improved instrumentation system comprising:

a weight transducer mounted to provide a weight signal which is a function of the weight of the drill string on the rig;

a sensing means for providing at least a movement signal representative of the amount of movement of the travelling block, said sensing means detecting the movement of the crown block fast line pulley;

clock means providing a timing signal;

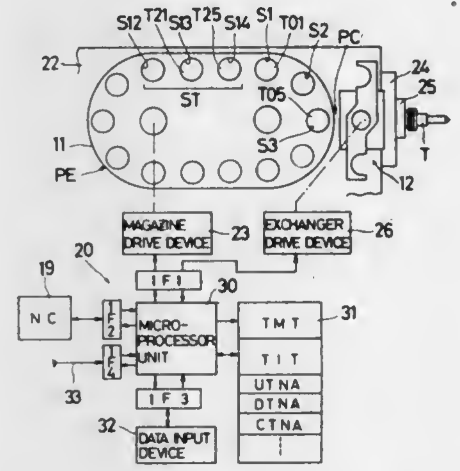
calculating means connected to receive the weight signal, the movement signal and the timing signal to calculate therefrom the weight on bit and rate of penetration;

said calculating means having a memory for storing data defining the relationship between the length and weight of the drill string, said calculating means including means to calculate true drilling depth from the weight signal, the movement signal and said stored data; and

a unitary display means responsive to said calculating means to make all of said signals and the calculations calculated by said calculating means available to an operator, wherein the sensing means comprises a plurality of magnet means substantially inwardly disposed with respect to the rim of the fast line pulley and equispaced about said fast line pulley, and a sensor unit also substantially inwardly disposed with respect to the rim of the fast line pulley responsive to passage of said plurality of magnet means, said sensor unit including further means for producing a pulse signal representative of said movement signal and a signal indicative of the direction of movement.

4,616,322
METHOD AND APPARATUS FOR PREPARING SPARE TOOLS FOR A MACHINE TOOL

Kuniyuki Niwa, and Yoshiyuki Fujimura, both of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan
Filed Jun. 21, 1984, Ser. No. 622,882
Claims priority, application Japan, Jun. 29, 1983, 58-117696
Int. Cl.⁴ G06F *15/46*
U.S. Cl. 364—474 **11 Claims**



1. A machine tool of the type wherein spare tools respectively associated with primary tools, along with said primary tools, are stored in a tool magazine each for use on a tool spindle of said machine tool in place of an associated one of said primary tools when the same reaches the end of its life, a method of preparing said spare tools for storage in said tool magazine comprising the steps of:

dividing the operational period of said machine tool into a plurality of operational period sections;

estimating when the life of at least one of said primary tools will expire within each of said operational period sections, based upon a cumulative past used time, a prospective used time and a life time of said at least one primary tool;

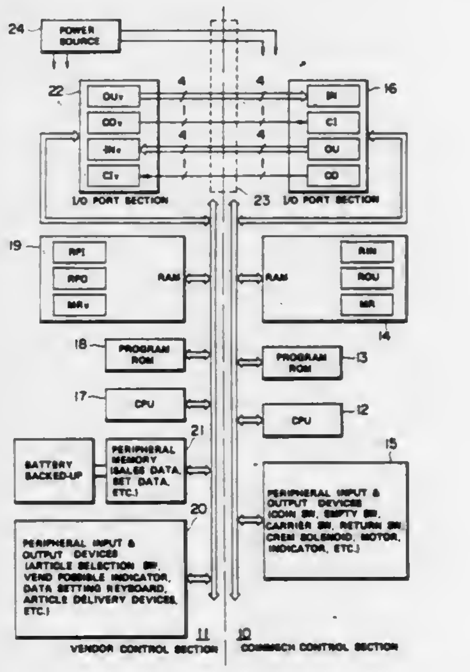
reading out from a data memory information on one of said spare tools associated with said at least one primary tool which is estimated to reach the end of its life within each of said operational period sections, so as to identify said one of said spare tools;

setting up in said tool magazine said identified spare tool to be used in place of said at least one primary tool, before said at least one primary tool reaches the end of its life; and

attaching said identified spare tool to said tool spindle in place of said at least one primary tool when said at least one primary tool reaches the end of its life within each of said operational period sections.

4,616,323
CONTROL DEVICE AND A METHOD FOR SENDING AND RECEIVING INFORMATION IN A VENDING MACHINE AND THE LIKE APPARATUS

Yukichi Hayashi, Sakado, Japan, assignor to Kabushiki Kaisha Nippon Coinco., Tokyo, Japan
Filed Feb. 21, 1984, Ser. No. 581,532
Claims priority, application Japan, Feb. 23, 1983, 58-29129
Int. Cl.⁴ G06F *15/46;* G07F *11/16*
U.S. Cl. 364—479 **10 Claims**


24
POWER SOURCE
22
OUv
COv
INv
CIv
4
4
4
4
IN
CI
OU
CO
16
I/O PORT SECTION
23
I/O PORT SECTION
19
RPI
RPO
MRv
RAM
RAM
RIN
ROU
MR
14
18
PROGRAM ROM
PROGRAM ROM
13
17
CPU
CPU
12
21
BATTERY BACKED-UP
PERIPHERAL MEMORY (SALES DATA, SET DATA, ETC.)
15
20
PERIPHERAL INPUT & OUTPUT DEVICES (ARTICLE SELECTION SW, VEND POSSIBLE INDICATOR, DATA SETTING KEYBOARD, ARTICLE DELIVERY DEVICES, ETC.)
PERIPHERAL INPUT & OUTPUT DEVICES (COIN SW, EMPTY SW, CARRIER SW, RETURN SW, CREM SOLENOID, MOTOR, INDICATOR, ETC.)
11
10
VENDOR CONTROL SECTION
COINMECH CONTROL SECTION

1. A control device in a vending machine and the like apparatus including a first control section for performing control functions relating to receiving and paying out of coins and a second control section for performing control functions relating to selection and vending of an article, said first and second control sections utilizing predetermined information generated by each other control section characterized in that the control device comprises:

first means in which said second control section exclusively generates a demand signal requiring that predetermined information be delivered from said first control section to said second control section or, concersely, that said first control section receive predetermined information from said second control section; and

second means which, reponsive to said demand signal, brings one of said first and second control sections into a state in which it can deliver out the predetermined information and the other control section into a state in which it can receiving the information;

whereby sending and receiving of the information between said two control sections are performed under the supervision of said second control section in response to said generated demand signals from said second control section.

4,616,324
DIGITAL OVERCURRENT TRIPPING ARRANGEMENT

Hans-Eberhard Simmel, Karlsruhe, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Continuation of Ser. No. 714,064, Mar. 20, 1985, abandoned, which is a continuation of Ser. No. 419,430, Sep. 17, 1982, abandoned. This application Oct. 23, 1985, Ser. No. 790,643
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1985, 3137496
Int. Cl.⁴ H02H *5/04, 7/085;* G06F *15/56*
U.S. Cl. 364—483 **2 Claims**

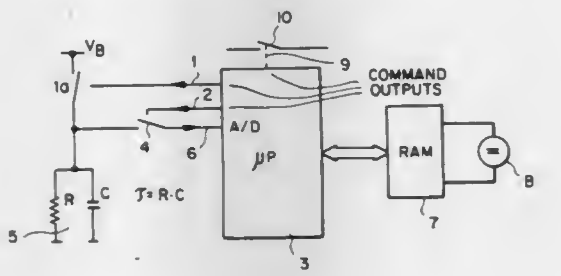
1. In a digital overcurrent tripping arrangement with a disconnectable and reconnectable main current supply from a circuit to be monitored; a nonpermanent digital memory for

storing digital values; and a resistor-capacitor stage chargeable with a voltage and having a discharge process to ground that simulates a cooling-down process of a body through a reduction of the voltage appearing across the resistor-capacitor stage, the improvement comprising:

a microprocessor that uses a thermal excitation state digital value stored in the nonpermanent digital memory to calculate a digital normalized voltage value which is then stored in the nonpermanent digital memory, the microprocessor having a command output;

an analog-to-digital converter, within the microprocessor, which has an analog input connectable to the resistor-capacitor stage and which has a digital output;

a charging switch connected between a current source and the resistor-capacitor stage and connected to the command output of the microprocessor;



a digital comparator means within the microprocessor which, while charging switch is closed, compares the digital normalized voltage value that is in the nonpermanent digital memory with a digital output of the analog-to-digital converter, the digital output corresponding to a voltage across the resistor-capacitor stage, the charging switch being opened by the comparator means by way of the command output of the microprocessor when the digital normalized voltage value agrees with the digital output of the analog-to-digital converter, whereupon reconnection of the main current supply after disconnection, the microprocessor stores the digital output of the analog-to-digital converter in the nonpermanent digital memory, the digital output corresponding to a residual voltage across the resistor-capacitor stage.

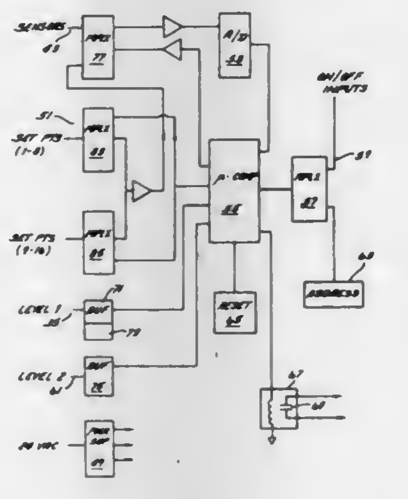
4,616,325
ZONE CONDITION CONTROLLER AND METHOD OF USING SAME

Terry A. Heckenbach, Middlebury, and Henry A. Gleason, III, Goshen, both of Ind., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Jun. 17, 1983, Ser. No. 505,224

Int. Cl.⁴ G06F *15/20;* **F24F** *3/00*

U.S. Cl. 364—505 **9 Claims**



1. A process zone control apparatus for controlling an environmental condition within a single zone of a building and including:

power supply means for providing a plurality of output voltages;

first multiplexing means coupled to said power supply means to receive analog status signals from a plurality of signaling devices and mutiplexing said status signals to a converting means;

converter means coupled to said first multiplexing means, said converter means being to receive analog status signals therein, convert said status signals to digital data signals and direct said data signals to a computing means;

second multiplexing means to receive binary input signals and multiplex said binary input signals to said computing means, and;

computing means coupled to said first and second multiplexing means for performing algorithmic decisional functions relative to signals received therein, said computing means periodically, selectively transmitting digital output signals to a plurality of digitally-addressable load devices coupled to said computing means by a single communication bus, said computing means periodically receiving digital input signals from said load devices, said apparatus thereby controlling an environmental condition within the zone, said digital output signals including a first set of nonredundant interrogating meesages, at least one of said interrogating messages being uniquely addressed for each of all possible addresses of load devices which may be coupled to said apparatus by said bus.

4,616,326
SELF OPTIMIZING ROBOT CONTROLLER

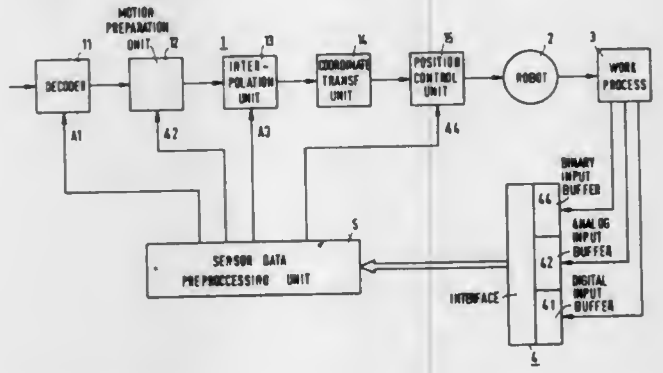
Christof Meier, Heroldsbach; Richard Bartelt, and Hans-Joachim Massat, both of Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 28, 1983, Ser. No. 546,440

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1982, 3244307

Int. Cl.⁴ G09C *1/00;* **G05B** *19/18, 13/00;* **G06K** *9/54*

U.S. Cl. 364—513 **16 Claims**



1. In a motion control system for a robot, said system comprising:

interface means operatively connected to sensors for receiving and relaying signals from said sensors;

position control means, including an interpolation unit, linked to the robot for controlling the motion of said robot along a predetermined path; and

separate data preprocessing means tied between said interface means and said position control means for feeding signals to said position control means upon processing sensor signals received from said interface means, the improvement wherein said data preprocessing means includes:

first memory means for storing incoming sensor generated data;

second memory means for storing results of preprocessing operations;

data transfer control means servicing the interface means and operatively linked to said first memory means for transferring sensor generated data to said first memory means from said interface means;

basic function control means, including a comparison module, operatively connected to said first memory means for performing elementary operations, including comparisons, on sensor generated data from said first memory means, said basic function control means being operatively coupled to said second memory means for storing results of said elementary operations in said second memory means; and

complex function control means, including a velocity correction module and a path correction module, operatively connected to said second memory means and to the interpolation unit of the position control means for executing velocity corrections and path corrections for the robot in at least two mutually independent directions by intervening in the operations of said interpolation unit at least partially in accordance with preprocessed data stored in said second memory means by said basic function control means, each of said control means including a plurality of independently functioning modules for performing respective mathematical operations related to robot control, said modules being activated in a temporal sequence predetermined at least in part by a technological task to be performed by said robot.

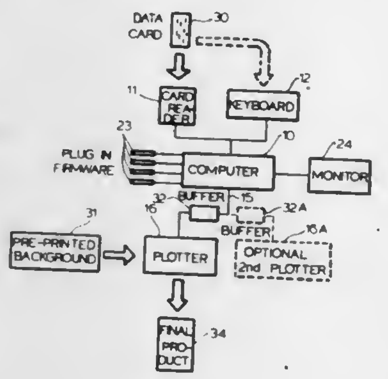
4,616,327
PERSONALIZED GRAPHICS AND TEXT MATERIALS, APPARATUS AND METHOD FOR PRODUCING THE SAME

Fenton Rosewarne, Los Angeles, and Sean F. O'Donnell, San Francisco, both of Calif., assignors to Computer Humor Systems, Pty, Ltd, South Melbourne, Australia

Filed Jan. 13, 1984, Ser. No. 570,621

Int. Cl.⁴ G06F *15/20*

U.S. Cl. 364—518 **28 Claims**



1. An apparatus for producing a personalized drawing of a user within preprinted background material comprising:

a means for recording a plurality of factors affecting the user's appearence;

a means for selecting at least two predesigned visual features most fitting to the user from a plurality of predesigned visual features in accordance with the plurality of factors affecting the user's appearance;

a means for automatically controlling a plotter to draw the at least two predesigned visual features most fitting to the user within the preprinted background material to produce a continuous and personalized drawing of the user.

4,616,328
APPARATUS FOR THE DETERMINATION OF THE TECHNICAL PARAMETERS OF MACHINES PARTICULARLY AGRICULTURAL MACHINES, BASED ON PROBABLE USE

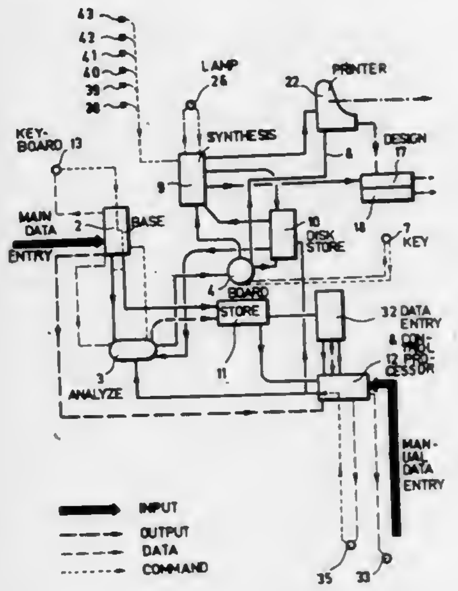
Laszlo Kassay, and Sandor Nemeth, both of Budapest, Hungary, assignors to Mezogazdasagi es Elelmiszeripari Szervezo Vallalat, Budapest, Hungary

Continuation-in-part of Ser. No. 283,620, Jul. 15, 1981, abandoned. This application Sep. 28, 1984, Ser. No. 655,708

Claims priority, application Hungary, Jan. 12, 1981, 1624/80

Int. Cl.⁴ G06F *15/20;* **G08B** *19/00;* **A01D** *41/00*

U.S. Cl. 364—551 **12 Claims**



1. Apparatus for evaluating construction of machines, particularly agricultural machines, by calculation of a set of output parameters identifying characteristics of machinery useful in judging the utility of the machinery wherein each of the output parameters is associated with a specific one of the characteristics, there being input parameters and input data which quantifies the input parameters with specific values, there being intermediary parameters for which data is not available, the input parameters and the intermediary parameters being used in the calculation of the output parameters, the apparatus comprising:

a keyboard for entry of the input data of the input parameters;

a parameter base module having a parameter memory for storage of a set of the input parameters and the intermediary parameters, and a set of the output parameters for characterization of a machine to be constructed;

a numerical board coupled to said base module and employing electric signals for displaying individual parameters of the set of input and intermediary parameters;

an analyzer module connecting with said base module for selecting specific ones of the input and the intermediary parameters to be used in producing mathematical correlations among the input and the intermediary parameters;

processing means including a microprocessor connecting with said keyboard and said base module and said analyzer module, said processing means interpolating said input data of said keyboard and calculating said intermediary parameters by the aid of predetermined patterns of such data, said processing means further including a data memory for storing information describing the predetermined patterns of data;

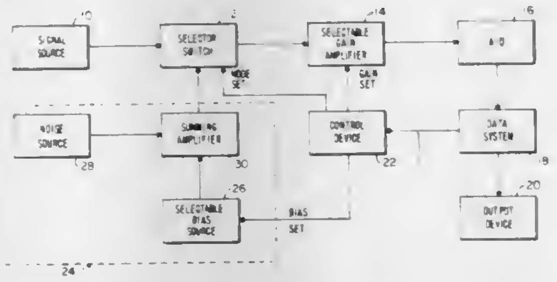
synthesizer means connecting with said data memory, said parameter memory, and said analyzer module for developing mathematically, by a sequence of mathematical steps, correlations among the input and the intermediary parameters selected by the analyzer module, the correlations providing values for the output parameters in the characterization of a machine to be constructed and being stored in said parameter memory; and an object module connecting with said analyzer module and being responsive to said microprocessor for displaying the numerical values of the output parameters provided by said base module for a machine to be constructed.

4,616,329

SELF-CALIBRATING ADAPTIVE RANGING APPARATUS AND METHOD

David Abrams, Somerville; Raul Curbelo, Lexington, and R. Brough Turner, Newton, all of Mass., assignors to Bio-Rad Laboratories, Inc., Richmond, Calif.

Filed Aug. 26, 1983, Ser. No. 526,663
Int. Cl.^{4} G05B *1/00;* H03K *13/02*
U.S. Cl. 364—571 14 Claims



1. Apparatus for calibrating an amplifier coupled to the input of an analog-to-digital signal converter having an established dynamic range and output resolution, said apparatus comprising:

means for generating a plurality of reference signals each of a predetermined amplitude;

means for adding to each of said reference signals a noise signal having (a) maximum amplitude variations about its average value exceeding the resolution of said converter, and (b) a statistically predetermined average amplitude over time, so as to provide a plurality of noisy reference signals having maximum amplitude variations about its average value within the dynamic range of said converter;

means for applying each of said noisy reference signals to the input of said amplifier so as to generate a calibration signal as a function of the actual gain of said amplifier in response to each of said noisy reference signals; and

means for averaging the values of said calibration signals for each of said nominal gain settings so as to provide an average signal as a function and representative of the actual gain of said amplifier.

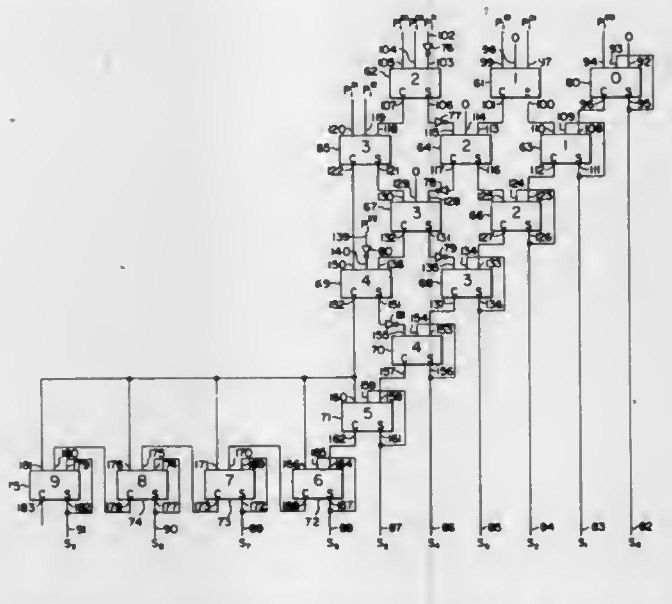
4,616,330

PIPELINED MULTIPLY-ACCUMULATE UNIT

B. Keith Betz, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 25, 1983, Ser. No. 526,562
Int. Cl.^{4} G06F *7/52*
U.S. Cl. 364—728 5 Claims

1. Apparatus for calculating a sum of products of pairs of input numbers, each of said pairs of input numbers including a first member presented as an m bit binary number and a second member presented as an n bit binary number, said apparatus providing a k bit binary number as an output signal at k apparatus output means, where n, m, and k are positive integers, said system comprising: clock conductor line means, a plurality of basic cell means each of said basic cell means having a clock input terminal means, a plurality of signal input terminal means, and q output terminal means, where q is an integer, said clock input terminal means being electrically connected to said clock conductor line means each of said basic cell means being capable of performing an adder operation on signals arriving at said signal input terminal means and further being capable of latching results from said adder operation at said output terminal means upon receipt of a predetermined signal at said clock input terminal means, each of said basic cell means having a cell bit weight associated therewith, said cell bit weights being integers in the range of zero to k−1, each of said basic cell signal input terminal means having a device bit weight and array bit weight associated therewith, said array bit weight being equal to said device bit weight plus the cell bit weight of a basic cell means of which said basic cell signal input terminal means is a portion, each of said basic cell means output terminal means having a device bit weight and an array bit weight, said array bit weight being equal to said device bit weight plus the cell bit weight of a basic cell means of which said basic cell means output terminal means is a portion, k of said basic cell means being designated output cells, each of said output cells having a cell bit weight associated therewith which differs from cell bit weights associated with all other output cells, the remainder of said basic cell means being designated nonoutput cells, one of said output cells having a cell bit weight equal to k−1 and being designated a highest order output cell, each of said output cells having at least one basic cell means output terminal means having a device bit weight equal to zero and at least one basic cell input signal terminal means having a device bit weight equal to zero, said output terminal means having a device bit weight equal to zero serving as one of said apparatus output means and being electrically connected to said signal input terminal means having a device bit weight equal to zero, and all remaining output terminal means of each of said output cells except said highest order output cell, being electrically connected to one of said signal input means of an output cell, said signal input terminal means to which said remaining output terminal means is connected having an array bit weight equal to said array bit weight of said remaining output terminal means, and each of said output terminal means of said nonoutput cells being electrically connected to one of said signal input terminal means of a basic cell means, said signal input terminal means having an array bit weight equal to said array bit weight of said output terminal means to which said signal input terminal means is connected.



4,616,331

INFORMATION PROCESSING SYSTEM CONSISTING OF AN ARITHMETIC CONTROL UNIT FORMED INTO A ONE-CHIP TYPED BY APPLICATION OF A HIGHLY-INTEGRATED SEMICONDUCTOR DEVICE

Tsuneo Kinoshita, 2-21-18, Fujimoto, Kokubunji-shi, Tokyo; Fumitaka Sato, 4-18-3, Imadera, Ome-shi, Tokyo, and Isamu Yamazaki, 1-6-1, Haginuma, Takatsu-ku, Kawasaki-shi, all of Japan

Filed Feb. 19, 1981, Ser. No. 236,116
Claims priority, application Japan, Feb. 25, 1980, 55-22489; Mar. 11, 1980, 55-30531; Mar. 11, 1980, 55-30532
Int. Cl.^{4} G06F *9/30, 13/00*
U.S. Cl. 364—736 4 Claims

1. In an information-processing system, an arithmetic control unit formed on one chip comprising:

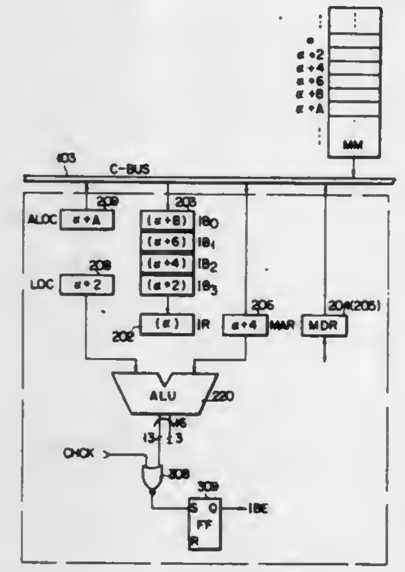
a flip-flop for indicating that user instructions are to be prefetched from an external main memory;

means for prefetching a plurality of user instructions from the main memory while the flip-flop is not set;

a plurality of instruction buffers for storing the user instructions prefetched from the main memory, each of said buffers having M stages each having a memory capacity of N bytes;

a location counter for storing data representing the location of a user instruction to be executed next;

a memory address register for storing data designating an address of the main memory to be accessed;



subtracting means for subtracting the contents of the location counter from the contents of the memory address register;

means for setting the flip-flop when branching is established while the user instructions are being executed or when the result of the subtraction carried out by the subtracting means is equal to or greater than 0 and smaller than M×N and

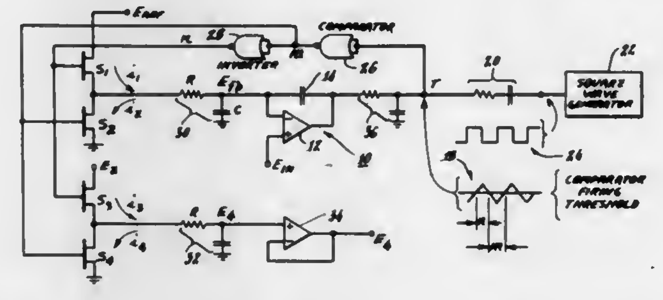
means for causing the user instruction-prefetching means to replace the contents of the instruction buffers while the flip-flop is set.

4,616,332

APPARATUS FOR CONVERTING ANALOG-FORMAT SIGNALS TO PULSE-FORMAT SIGNALS

Robert J. Robinson, Mansfield, Mass., and David A. Richardson, East Greenwich, R.I., assignors to The Foxboro Company, Foxboro, Mass.

Filed Sep. 24, 1982, Ser. No. 423,256
Int. Cl.^{4} H03M *5/08;* G06G *7/20*
U.S. Cl. 364—814 39 Claims



1. In an industrial process instrumentation system wherein analog-format electrical signals are developed responsive to process conditions or the like, apparatus for transforming an analog-format signal into a corresponding pulsed signal comprising:

signal-translation means having an input circuit and an output circuit;

means for coupling an analog-format input signal to said signal-translation means;

a comparator coupled to the output circuit of said signal-translation means and responsive to the output signal in the output circuit;

ramp-generating circuit means for producing a periodic ramp signal;

said ramp-generating circuit means comprising capacitor means coupling the ramp signal to said output circuit, whereby the d-c signal level of said ramp signal in said output circuit is controlled by said output circuit signal;

said comparator thereby producing pulses having a duty-cycle controlled by said output circuit signal; and

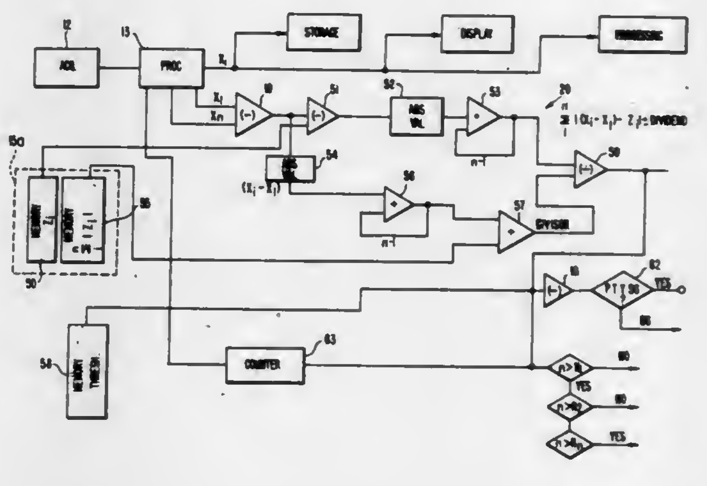
negative feedback means responsive to said pulses for producing an analog-format negative feedback signal having a magnitude corresponding to said duty-cycle and opposing said analog-format input signal to control said output circuit signal to provide that said duty-cyle corresponds to the magnitude of said analog-format input signal.

4,616,333

DATA CORRELATION SYSTEM

Yair Shimoni, Jerusalem, Israel, assignor to Elscint, Ltd., Haifa, Israel

Filed Jun. 5, 1984, Ser. No. 617,554
Int. Cl.^{4} G06G *7/19*
U.S. Cl. 364—819 30 Claims



1. A method of determining whether a first shape defined by a first plurality of data matches a predetermined shape, said method comprising the steps of:

obtaining a selected set of data values (Yi) at a plurality of data points N describing said pre-determined shape,

obtaining a first set of data values from said first plurality of data using at least the same number of data points as said plurality of data points,

obtaining a sub-set of data values (Xi) from said first set of data values using said same number N of data points,

selecting a fiducial value from said selected set of data values and said sub-set of data values, computing a quotient from a dividend and a divisor consisting of summation of differences obtained using said data values from said selected set of data values, said sub-set of data values and said fiducial values, and using said quotient to determine whether said first shape matches said pre-determined shape.

4,616,334

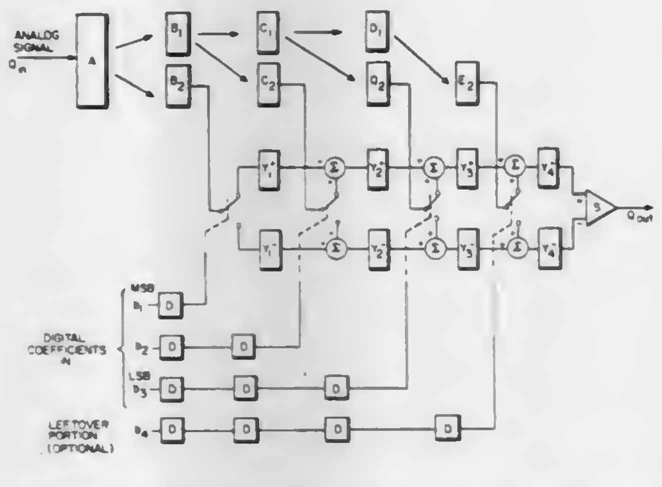
PIPELINED PROGRAMMABLE CHARGE DOMAIN DEVICE

Thomas L. Vogelsong, Clifton Park, and Jerome J. Tiemann, Schenectady, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 7, 1984, Ser. No. 679,332

Int. Cl.⁴ G06G *7/02;* **G11C** *19/28;* **H01L** *29/78;* **H03H** *7/28*

U.S. Cl. 364—825 **2 Claims**



1. A pipelined programmable charge domain device for multiplying a succession of sampled analog signals by associated multiple bit digital word coefficients, the throughput rate of said device being equal to the clock rate of said device, comprising:

a semiconductor substrate having electrodes insulatively disposed on said substrate to which signal potentials are applied for inducing wells in said substrate for the storage and propagation of packets of charge in said wells;

a plurality of cascaded charge splitter stages formed in said substrate;

each of said charge splitter stages having first and second charge splitter wells of substantially equal charge storage capacity, first and second charge accumulator wells, and charge transfer means for channelling equal parts of a charge packet applied thereto to its first and second charge splitter wells, for selectively channelling a charge packet in its second charge splitter well to either its first or its second charge accumulator well in accordance with the value of a bit of a digital word coefficient applied, for channelling equal parts of a charge packet in its first splitter well to the first and second charge splitter wells in the next one of said stages, and for channelling charge packets in its first and second accumulator wells to the first and second accumulator wells respectively in the next one of said stages;

means during successive clock cycles of said device for introducing a charge packet representative of an analog input signal to the first and second charge splitter wells in the first one of said plurality of cascaded charge splitter stage;

means during said successive clock cycles for receiving ordered bits of a digital word coefficient for delayed application to the charge transfer means of like-ordered ones of said plurality of cascaded charge splitter stages, the application of said bits of a digital word coefficient being delayed at each stage of said plurality of cascaded splitter stages by a number of clock cycles equal to the ordered number of the stage, whereby synchronism is maintained between an applied input signal and its associated digital word coefficient; and

charge combiner means coupled to the first and second accumulator wells of the last one of said plurality of charge splitter stages for providing an output signal whose value corresponds to the difference in the magnitudes of the charge packets stored in said charge combiner means.

4,616,335

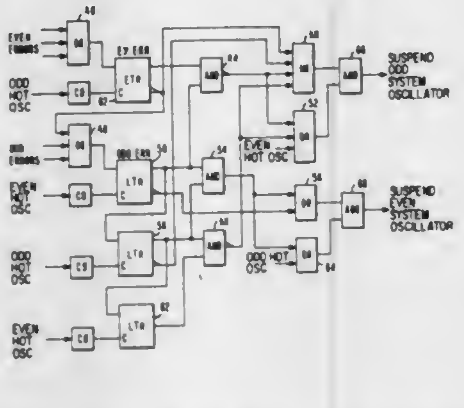
APPARATUS FOR SUSPENDING A SYSTEM CLOCK WHEN AN INITIAL ERROR OCCURS

Leland D. Howe, Jr., Owego; Bharatkumar J. Oza, Endicott, and Thomas J. Roche, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,494

Int. Cl.⁴ G06F *11/00*

U.S. Cl. 364—900 **4 Claims**



3. In a computer system including a first oscillator means for generating clock pulses, second oscillator means for generating a system clock signal, means responding to said system clock signal for executing a set of instructions, and error determination means responding to the execution of said set of instructions for determining if an error has developed during the execution of one of said instructions and for developing an error signal when said error develops, an apparatus for stopping said computer system in response to said error signal, comprising:

system clock suspension means interposed between said first oscillator means and said second oscillator means and responding to said error signal from said error determination means and to said clock pulses from said first oscillator means for developing a suspension signal when a predetermined number of said clock pulses, greater than zero, are generated from said first oscillator means following the receipt of said error signal from said error determination means, said suspension signal suspending the generation of said system clock signal from said second oscillator means, the execution of said set of instructions terminating when said system clock signal is suspended, said computer system stopping when the execution of said set of instructions terminates, said system clock signal including odd cycles and even cycles, said suspension signal including an odd suspension signal for suspending the generation of the odd cycles of said system clock signal and an even suspension signal for suspending the generation of the even cycles of said system clock signal, said predetermined number of clock pulses including a first pulse and a last pulse, said system clock suspension means further comprising,

first speed-up means responding to said error signal and to said clock pulses for generating said odd suspension signal at a leading edge of a first selected clock pulse, said first selected clock pulse being the last pulse within said predetermined number of clock pulses;

first maintaining means connected to said first speed-up means and responding to said first selected clock pulse for maintaining the generation of said odd suspension signal following the generation of said odd suspension signal by said first speed-up means;

second speed-up means responding to said error signal and to said first selected clock pulse for generating said even suspension signal at a leading edge of a second selected clock pulse, said second selected clock pulse being generated immediately subsequent to the generation of said predetermined number of clock pulses; and

second maintaining means connected to said second speed-up means and responding to said second selected clock pulse for maintaining the generation of said even suspension signal following generation of said even suspension signal by said second speed-up means,

whereby the odd cycles and the even cycles of said system clock are suspended and the execution of said set of instructions terminates when said odd suspension signal and said even suspension signal are simultaneously generated, said computer system stopping when the execution of said set of instructions terminates.

4,616,336

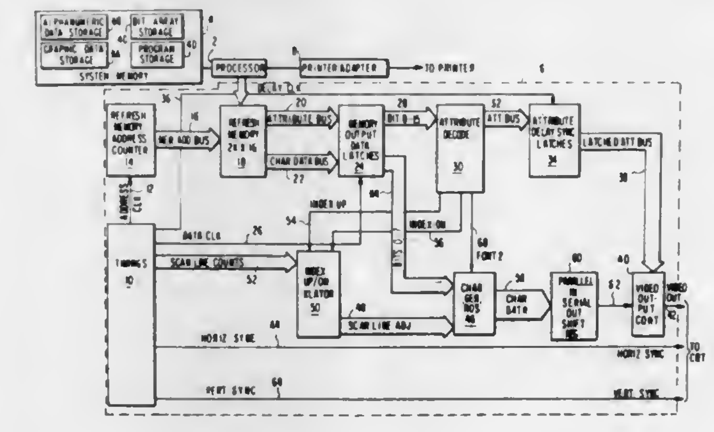
INDEPENDENT IMAGE AND ANNOTATION OVERLAY WITH HIGHLIGHTING OF OVERLAY CONFLICTS

David B. Robertson, Round Rock; Stephen A. Wagh, Austin, both of Tex.; Mary F. Piller, Baltimore; Donald T. Crehan, Gaithersburg, both of Md., and Charles J. Lovell, Austin, Tex., assignors to International Business Machines Corp., Armonk, N.Y.

Filed May 11, 1983, Ser. No. 493,581

Int. Cl.⁴ G06F *15/00, 3/14;* **G06G** *1/06*

U.S. Cl. 364—900 **5 Claims**



1. A word processing system having an interactive display terminal for displaying alphanumeric and calculated graphic images while maintaining the integrity of the calculated graphic data comprising:

first storage means for storing data representative of calculated graphic data;

second storage means for storing alphanumeric character data entered by a user;

merging means connected to said first and second storage means for merging the data in said first and second storage means for display on said display terminal;

detecting means in said merging means for detecting overlaying conflicts between the merged data by resolving said overlaying conflicts in favor of the data from said second storage means while preserving the data in said first storage means, whereby erasure of conflicting data in said second storage means results in the display of data from said first storage means previously in overlaying conflict with data erased from said second storage means, said detecting means providing an output indicating an overlaying conflict between the data in said first and second storage means; and

means responsive to said detecting means output for causing the corresponding data from said second storage means to be highlighted in its display on said display terminal.

4,616,337

AUTOMATIC READ SYSTEM FOR PERIPHERAL-CONTROLLER

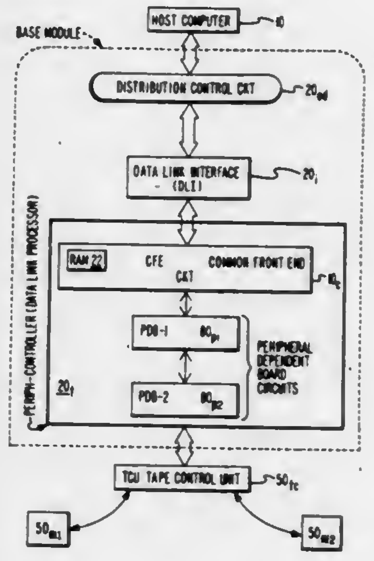
Jayesh V. Sheth, El Toro, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 30, 1983, Ser. No. 480,517

The portion of the term of this patent subsequent to Feb. 4, 2003, has been disclaimed.

Int. Cl.⁴ G06F *3/00*

U.S. Cl. 364—900 **7 Claims**



1. In a network wherein a peripheral controller can request connection to and service from a main host computer and wherein data is transferred between a main host computer and a magnetic tape peripheral unit via a peripheral-controller, wherein said peripheral-controller is initiated by commands from said host computer to execute data transfer operations and said peripheral-controller includes a common control circuit unit for sequencing microcode instructions and a peripheral dependent circuit unit for managing said tape peripheral unit, said peripheral dependent circuit unit having its own internal basic clock unit, an automatic read-logic system for transfer of data from said tape peripheral unit to a buffer memory means for later transfer to said host computer without requiring continuous instructions from said common control circuit unit, said automatic read-logic system comprising:

(a) a block organized buffer memory means in said peripheral-controller for temporarily storing blocks of data-words being transferred from said tape peripheral unit, said buffer memory means providing N blocks of memory space, and having channels of connection to said tape peripheral unit and said host computer;

(b) automatic selection and control means, activated by said common control circuit unit, for enabling an automatic read-logic unit;

(c) said automatic read-logic unit, when enabled, functioning to transfer blocks of data-words from said tape peripheral unit to said buffer memory means without further instructions from said common control circuit unit;

(d) status sensing means for sensing the number "X" of blocks of data residing in said buffer memory means and including:

(d1) signal output means connected to said common control circuit unit for generating status signals indicating the number "X" of data blocks occupied;

(e) said common control circuit unit functioning to select operating routines according to said status signals received during Read operations, and including:

(e1) means to generate a service-connection request to said main host computer when said status signals indicate that a portion "n", of the N blocks, are full, where "n" may be a fraction such as $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$.

4,616,338

FIFO ARRANGEMENT FOR TEMPORARY DATA STORAGE

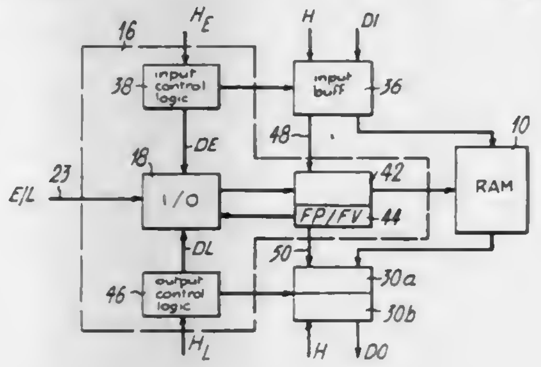
Andre Helen, 7, Allée des Fouchères, Louannec - 22700 Perros Guirec; Michel Servel, Le Rhu en Servel, and Alain Thomas, Ar Santé L 222, both of 22300 Lannion, all of France

Filed Nov. 15, 1983, Ser. No. 551,840

Claims priority, application France, Nov. 15, 1982, 82 19093

Int. Cl.^{4} G06F *12/00;* G11C *7/00*

U.S. Cl. 364—900 **6 Claims**



1. A FIFO arrangement for temporary data storage which includes:

a random access memory having an input and an output,

a control system for said random access memory,

a first and a second output buffer register connected in series relation to the output of said random access memory,

a single input buffer register connected to the input of said random access memory,

wherein said control system includes:

a first control logic for controlling operation of said input buffer register, having:

first means for storing write requests one at a time,

second means for storing the condition of said input buffer register, said second means being operatively associated with additional means arranged for setting said second storing means in response to the presence of an external writing request stored in said first storing means when said second storing means are in a condition indicating that said input buffer register is empty,

generating means for generating an internal writing request signal and directing it to said randon access memory when said second storing means indicate that said input buffer register is loaded and as long as said random access memory has not acknowledged said internal writing request, said generating means being arranged and connected to reset said second storing means into a condition indicating that said input buffer register is empty when said writing request has been acknowledged,

a second control logic having:

third storing means for storing the condition of said first output buffer register,

fourth storing means for storing the condition of said second buffer register,

supplemental means for generating an internal reading request and directing it to said random access memory when said third storing means are in a condition indicating that the first output buffer register is empty and as long as said reading request has not been acknowledged, and for resetting said thid storing means into a condition indicating that said first output register is loaded as soon as the reading request has been acknowledged,

a unit for setting said fourth storing means when the third storing means indicate that the first output register is loaded and said fourth storing means indicate that the second output register is empty, said unit being connected to simultaneously reset said third storing means into a condition indicating that said first output buffer register is empty,

and means for setting said fourth storing means when the latter indicates said second output buffer register is loaded and after an external signal representative of a request for reading out of the said second output buffer register has been delivered,

and a logic circuit for solving conflicts between an internal writing-in request and an internal reading-out request.

4,616,339

INTEGRATED CIRCUIT WITH IMPROVED PROGRAMMABLE READ-ONLY MEMORY

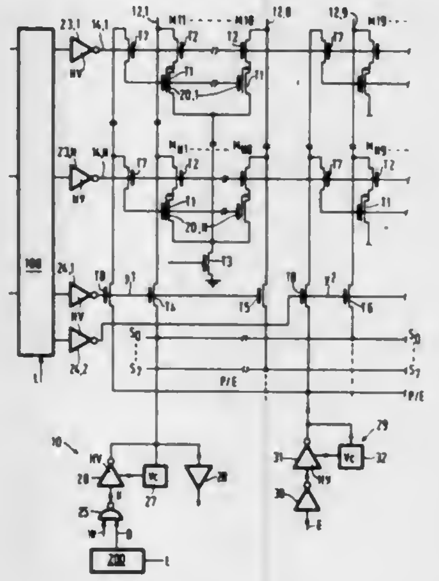
Roger Cuppens, and Cornelis D. Hartgring, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 6, 1984, Ser. No. 618,006

Claims priority, application Netherlands, Feb. 3, 1984, 8400326

Int. Cl.^{4} G11C *7/00*

U.S. Cl. 365—185 **3 Claims**



1. An integrated logic memory circuit which comprises a semiconductor body and at least one memory matrix of erasable programmable memory cells, a control unit having transistors of the insulated gate field effect type (MOST's) and capable of assuming a current-conducting condition and a current-nonconducting condition and comprising programming means for supplying a programming voltage to said memory matrix, said programming voltage being higher than the breakdown voltage between the source and drain electrodes of a plurality of the field effect transistors in the current-conducting condition, but lower than said breakdown voltage in the current-nonconducting condition, and switching means for maintaining the field effect transistors in the control unit in the current-nonconducting condition while recording logic information.

4,616,340

NON-VOLATILE SEMICONDUCTOR MEMORY

Yutaka Hayashi, Sakuramura; Yoshikazu Kojima, Tokyo; Masaaki Kamiya, Tokyo, and Kojiro Tanaka, Tokyo, all of Japan, assignors to Agency of Industrial Science & Technology and Kabushiki Kaisha Daini Seikosha, both of Tokyo, Japan

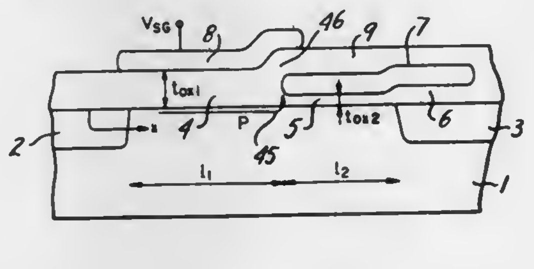
Filed Sep. 30, 1982, Ser. No. 431,304

Claims priority, application Japan, Oct. 14, 1981, 56-163583

Int. Cl.^{4} G11C *7/00*

U.S. Cl. 365—185 **8 Claims**

1. A non-volatile semiconductor memory device comprising: a semiconductor substrate; a source region and drain region disposed in spaced apart isolation from one another adjacent to the surface of said semiconductor substrate; a first gate insulating layer on said drain region; a channel extending between said source region and said drain region, the channel consisting of a first channel region and a second channel region in contact with one another, the second channel region being in contact with the drain region; a second gate insulating layer on said first channel region; a third gate insulating layer on the second channel region; a floating gate electrode on said first and third gate insulating layers; a select gate electrode on said second gate insulating layer; and means operable in a write mode for applying a drain write voltage V_{DW} of one polarity to said drain region and for applying a select gate write voltage V_{SGW} of said one polarity to said select gate electrode in order to write in the memory and operable in a read mode for applying a drain read voltage V_{DR} of said one polarity to said drain region and for applying a select gate read voltage V_{SGR} of said one polarity to said select gate electrode in order to read out the memory by detecting the drain current dependent on electric charges memorized in the floating gate electrode so as to satisfy the following relations:



$V_{SGR} \geqq V_{SGW}$, and

$\phi_S > \phi_C$

where ϕ_S represents the surface potential of said semiconductor substrate, and

ϕ_C represents the barrier energy potential between said semiconductor substrate and

said third gate insulating layer in order to accelerate electrons escaping from said source region and inject some of the accelerated escaping electrons into said floating gate electrode at a position where said first and second channel regions make contact with one another, said position being located sufficiently far from the drain region so as to greatly increase the number of accelerated escaping electrons injected into said floating gate.

4,616,341

DIRECTORY MEMORY SYSTEM HAVING SIMULTANEOUS WRITE AND COMPARISON DATA BYPASS CAPABILITIES

John E. Andersen; Joseph A. Petrosky, both of LaGrangeville; Benedicto U. Messina, Poughkeepsie, and William D. Silkman, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,674

Int. Cl.^{4} G11C *7/00*

U.S. Cl. 365—189 **7 Claims**

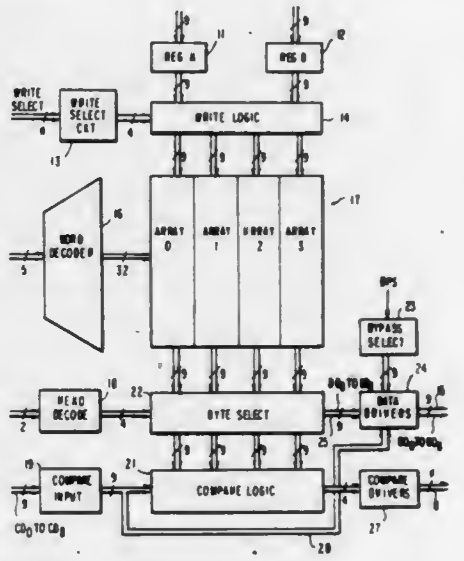
1. A directory memory system having simultaneous writing and comparison data bypass capabilities, comprising:

a memory block arranged in a plurality of arrays;

byte select means responsive to each said array, for selectively coupling the output of one said arrays to a byte select output;

compare logic receiving said outputs of each of said arrays and comparison data, for comparing said array outputs with said comparison data and for directing a comparison output to a first output data bus;

means for coupling a selected one of (a) a data byte on said byte select output or (b) said comparison data, to a second output data bus; and



selecting means for supplying a selection signal to said coupling means.

4,616,342

SEMICONDUCTOR MEMORY DEVICE

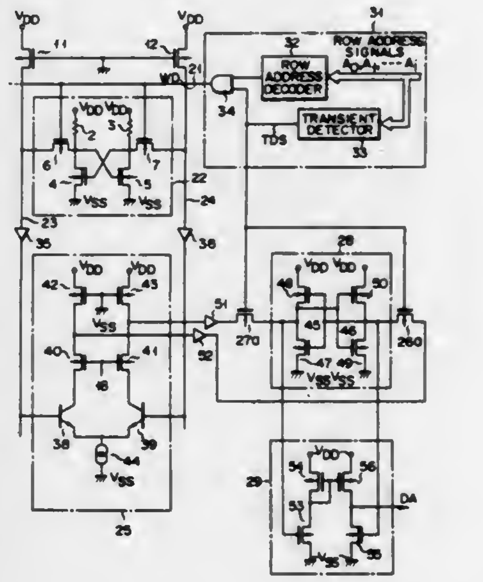
Junichi Miyamoto, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 8, 1983, Ser. No. 502,264

Claims priority, application Japan, Oct. 8, 1982, 57-177098

Int. Cl.^{4} G11C *7/00*

U.S. Cl. 365—190 **8 Claims**



1. A semiconductor memory device responsive to row address signals and a column selection signal comprising:

memory cells arrayed in a matrix of rows and columns of memory cells;

word lines, each of which is connected to different row of said memory cells;

pairs of bit lines, each pair of which is connected to a different column of said memory cells;

a row address decoder for decoding said row address signals to produce a word line selection signal lasting for a first predetermined duration;

word line drive means, coupled to said row address decoder and said word lines, for driving said selected word line at a first level only during a second predetermined time duration, said second predetermined time duration beig shorter than said first predetermined time duration, said word line drive means being activated when said word line selection signal changes from a second level to said first level;

data sensing means for sensing, within said second predetermined time period, data stored in a selected memory cell coupled to said selected word line, said data being sensed through one of said pairs of bit lines which is connected to said selected memory cell, and said data sensing means including a differential amplifier having a pair of transfer gates coupled to and controlled by said a column selection signal, and pair of bipolar transistors each having a base electrode connected to a different one of said one pair of bit lines and each having an emitter-collector path serially connected to a different one of said transfer gates;

data latching means coupled to said data sensing means for latching said data sensed by said data sensing means within said second predetermined time duration; and

data output means coupled to said data latching means for outputting said data latched in said data latching means.

4,616,343
SEMICONDUCTOR MEMORY DEVICE

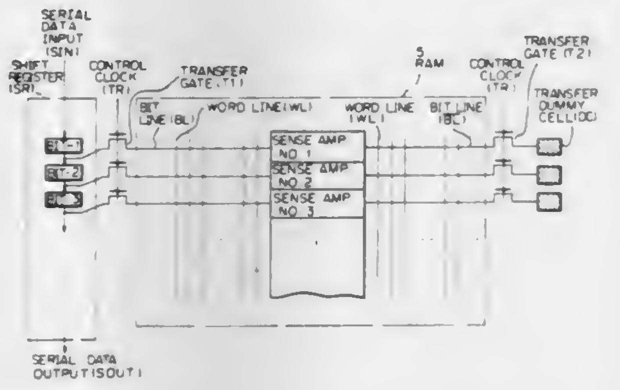
Junji Ogawa, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 16, 1985, Ser. No. 788,049

Claims priority, application Japan, Oct. 16, 1984, 59-216786

Int. Cl.⁴ G11C *11/40, 13/00*

U.S. Cl. 365—203 **2 Claims**



1. A semiconductor memory device comprising:

a random access memory cell array including a plurality of memory cells, word lines, and bit lines, each of said memory cell being connected to one of said word lines and to one of said bit lines;

series/parallel data transfer means capable of parallel transfer of data of one word line amount of said random access memory as well as series transfer of said data, said series/parallel data transfer means having a plurality of stages;

transfer gate means inserted between bit lines of said random access memory cell array and said series/parallel data transfer means for carrying out parallel transfer of data, parallel output data from said stages of said series/parallel data transfer means being simultaneously written in a group of memory cells of selected word lines of said random access memory cell array by turning-on of said transfer gate means and selection of a word line; and

a plurality of active pull-up circuit means, operatively connected to said bit lines and to receive said parallel data, respectively, each for charging the associated bit line of said random access memory cell array when corresponding one of said parallel output data from the associated stage of said series/parallel data transfer means is logic "1".

4,616,344
STATIC MEMORY CIRCUIT

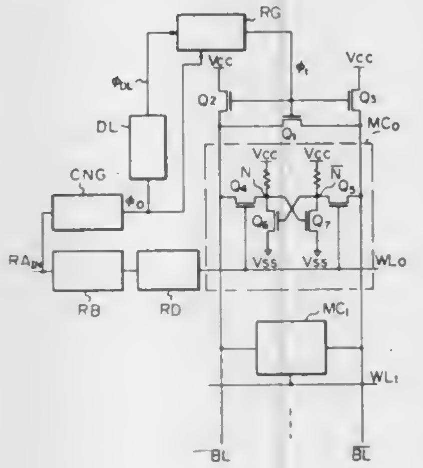
Eiji Noguchi, Kanagawa, and Keizo Aoyama, Yamato, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 29, 1983, Ser. No. 536,880

Claims priority, application Japan, Sep. 30, 1982, 57-172152

Int. Cl.⁴ G11C *7/00*

U.S. Cl. 365—203 **15 Claims**



1. A static memory circuit operatively connected to receive an input address signal, comprising:

a plurality of memory cells arranged in a matrix having columns and rows;

a plurality of word lines, operatively connected to receive the input address signal, for selecting one of said word lines and operatively connected to respective rows of said memory cells;

a plurlaity of pairs of bit lines operatively connected to respective columns of said memory cells; and

reset means, operatively connected to said pairs of bit lines, for resetting at least one of each of said pairs of bit lines to an intermediate level between a high level potential and a low level potential of the bit lines, in response to a change of the input address signal for selecting one of said word lines,

said reset means comprising a first reset signal generating circuit, operatively connected to one of said pairs of bit lines, for generating a first reset signal at a first time after a read/write operation period during each cycle between a first change in the input address signal and a second change in the input address signal, whereby said at least one of each of said pairs of bit lines is reset after the read/-write operation.

4,616,345
SEMICONDUCTOR MEMORY

Trevor K. Monk, Bexley, England, assignor to ITT Industries, Inc., New York, N.Y.

Filed Dec. 5, 1983, Ser. No. 558,421

Claims priority, application United Kingdom, Dec. 7, 1982, 8234844; Dec. 22, 1982, 8236510

Int. Cl.⁴ G11C *7/00*

U.S. Cl. 365—226 **5 Claims**

1. A static random access memory comprising:

at least two sets of memory cells;

a plurality of row decoders each of said row decoder being operable to access memory cells in a corresponding one of said memory cell sets;

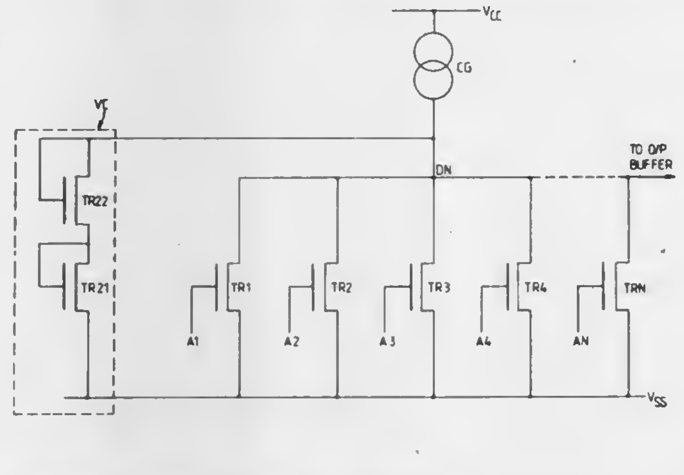
power control means coupled to each of said plurality of row decoders for controlling power supplied to said plurality of decoders such that, when a memory cell is to be accessed, power is supplied from a power source only to the one row decoder of said plurality of row decoders corresponding to said memory cell, each row decoder of said plurality of row decoders comprising:

a decoding node;

circuit ground;

a plurality of address inputs;

a plurality of field effect transistors each coupled between said decoding node and said circuit ground and each



having a control terminal coupled to a corresponding one of said address inputs; and

a voltage clamp means for limiting the voltage at said decoding node to a value significantly less than the voltage of said power source.

4,616,346
RANDOM ACCESS MEMORY CAPABLE OF VARYING A FREQUENCY IN ACTIVE AND STANDBY MODES

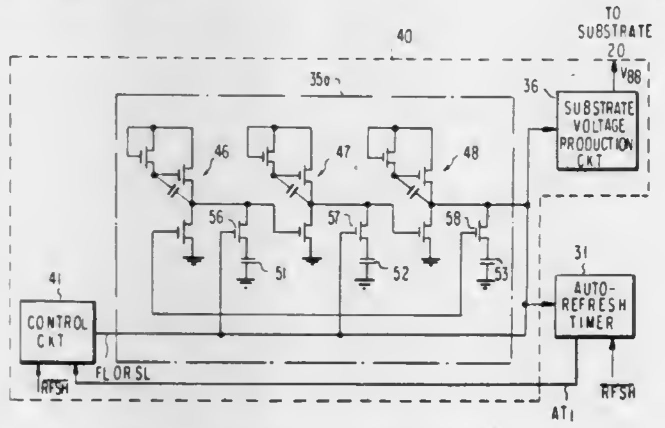
Kazuo Nakaizumi, and Yasaburo Inagaki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 2, 1984, Ser. No. 585,656

Claims priority, application Japan, Mar. 4, 1983, 58-35331

Int. Cl.⁴ G11C *11/40*

U.S. Cl. 365—229 **9 Claims**



1. In a semiconductor memory selectively operable in an active and a standby mode, said memory comprising a semiconductor substrate, a memory array on said substrate for storage of information, and substrate voltage supplying means for supplying a substrate voltage to said substrate, the improvement wherein said substrate voltage supplying means comprises:

first means for selectively producing a first drive signal only during a first duration defined in said standby mode and a second drive signal only in said active mode and the period of said standby mode that excludes said first duration;

second means responsive to said first and said second drive signals for selectively producing a first and said second drive signals for selectively producing a first and a second oscillation signal having a first frequency and a second frequency higher than said first frequency, respectively; and

third means for selectively supplying said first and said second oscillation signals to said substrate as said subtrate voltage.

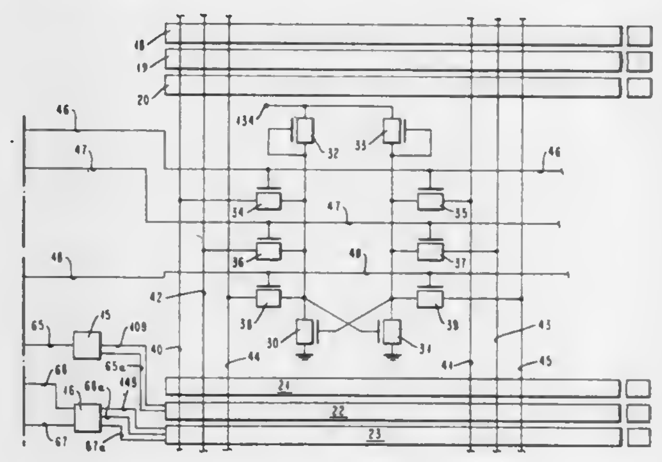
4,616,347
MULTI-PORT SYSTEM

Kerry Bernstein, South Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1983, Ser. No. 499,730

Int. Cl.⁴ G11C *8/00*

U.S. Cl. 365—230 **7 Claims**



1. In a memory array having cells each of which is separately addressable from a plurality of write lines and is readable by a plurality of sets of low to high order bit lines, comprising:

a memory cell array,

a set of low to high order word decoders coupled to each cell of the array,

a set of low to high order read heads coupled to each cell of the array, the lowest order read head being coupled to the cell via the lowest order bit lines and the higher read heads being respectively coupled to the cell, via respective higher order bit lines, said read heads being equal in number to the number of said word decoders,

each read head containing a bit line activated transistor,

at least one inhibit and copy circuit coupled to each of said higher order read heads,

address comparison means coupled to said higher order word decoders and said higher order read heads,

each of said inhibit and copy circuit comprising a set of coupling transistors having their control electrodes respectively coupled to the outputs of the address comparison means and its complement.

4,616,348
METHOD OF ATTENUATING SEA ICE FLEXURE NOISE DURING SEISMIC SURVEYS OF PERMAFROST REGIONS

William J. Ostrander, Benicia, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 31, 1983, Ser. No. 547,703

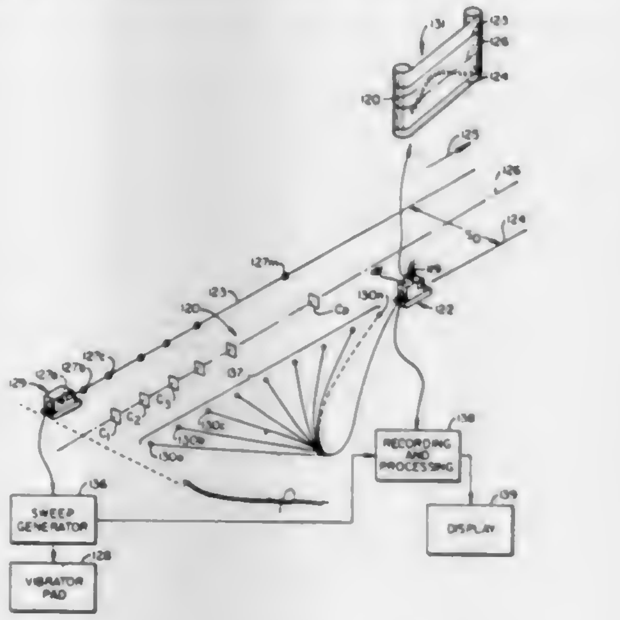
Int. Cl.⁴ G01V *1/20, 1/38*

U.S. Cl. 367—21 **10 Claims**

1. Method of improving resolution of seismic data collected in a transition zone of a permafrost region between a frozen land mass and an adjacent sea-ice region, said data being collected by common midpoint (CMP) collection methods including sequentially activating at least one conventional vibratory source at a series of sourcepoint locations across the surface of said permafrost region in which amplitude and phase spectra of the generated energy are controlled so that said generated energy changes smoothly as a function of time, and redundantly collection reflections thereof via a series of receivers at a plurality of receiver stations to provide 2-dimensional multifold coverage of the subsurface along a survey line, comprising the steps of:

(a) adopting a survey strategy wherein said sourcepoint locations established for said at least one vibratory source, are always separated from said receiver stations by one or more ice fracture areas formed on or about the surface of the transition zone along said survey line;

(b) generating seismic field records by positioning and employing said at least one vibratory source and said series of receivers in accordance with the collection strategy of step (a) such that individual sourcepoint-receiver station locations can be redundantly associated with a selected number of traces to form a series of CMP gathers associated with said survey line but wherein generated flexure vibrations associated with activation of said at least one vibratory source has been surprisingly attenuated by passage through said one or more ice fracture area whereby resolution of seismic reflection events associated with and depicted in said each trace, is much improved.



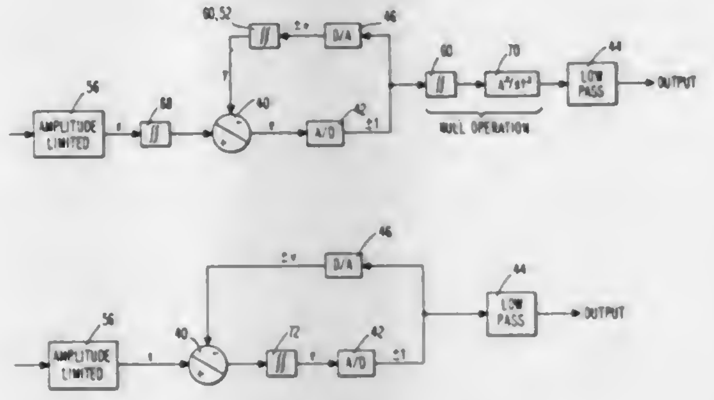
4,616,349
ANALOG-TO-DIGITAL CONVERTER FOR SEISMIC EXPLORATION USING DELTA MODULATION

Thomas E. Shirley, Richardson, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 22, 1982, Ser. No. 443,504

Int. Cl.⁴ G01V *1/24;* **H03K** *13/01*

U.S. Cl. 367—66 **13 Claims**



1. A seismic exploration system comprising:

means for imparting seismic energy to the earth;

means for detecting return of said seismic energy after reflection within the earth, said means for detecting comprising means for supplying an analog electronic signal as input to analog-to-digital converter means;

analog-to-digital converter means for converting said input analog signal to a digital signal for convenience in signal transmission and storage, said analog-to-digital converter means comprising:

means for generating a series of predicted analog signal values:

means for comparing said series of predicted values to a series of instantaneous values of said input analog signal;

means for outputtting a series of single digital bits each indicative of whether one of the predicted analog values is greater or lesser than the corresponding instantaneous value;

means for updating said predicted value based on said series of digital bits;

means for integrating said input analog signal prior to being supplied to said means for comparison;

means for amplitude limiting the input analog signal prior to supply of said signal to said means for integrating said input analog signal; and

low pass filter means and subsampling means connected to said means for outputting a series of digital bits for outputting a digital word representative of the instantaneous value of said analog input signal at selected sampling times, said series of single digital bits being applied to said integrator means prior to said low pass filter means and subsampling means.

4,616,350
TALKING DEPTH SOUNDER

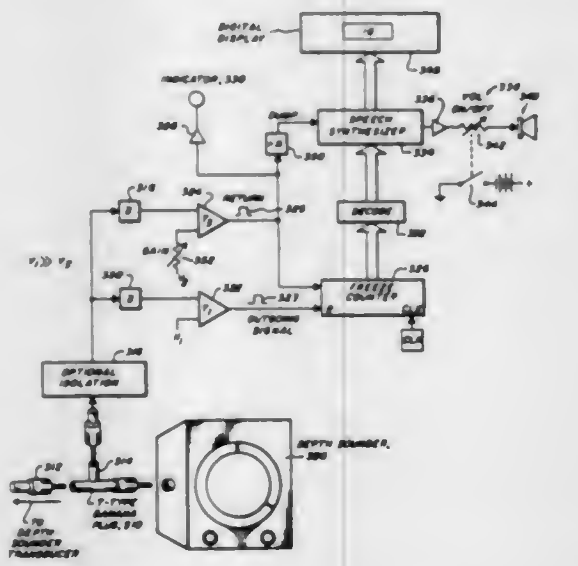
Robert K. Tendler, 19 Lawrence Ave., Chestnut Hill, Mass. 02167

Continuation-in-part of Ser. No. 412,939, Aug. 30, 1982, Pat. No. 4,489,405. This application Aug. 29, 1984, Ser. No. 645,491

The portion of the term of this patent subsequent to Dec. 18, 2001, has been disclaimed.

Int. Cl.⁴ G01S *7/56*

U.S. Cl. 367—116 **7 Claims**



1. Apparatus for converting a depth sounder wherein pulses of electromagnetic radiation are produced in providing a visual depth indication into one in which depth is periodically called out, said depth sounder having a case comprising:

means outside of said case for sensing the pulses of electromagnetic radiation produced by said depth sounder in providing said depth indication;

means for converting the sensed electromagnetic radiation into a number; and

means for converting the number into a speech equivalent.

7. The apparatus of claim 1 wherein said depth sounder has an acoustic transducer and a cable connected between said transducer and said case and wherein the sensed electromagnetic radiation is that transmitted through said cable.

4,616,351
PEST CONTROL APPARATUS

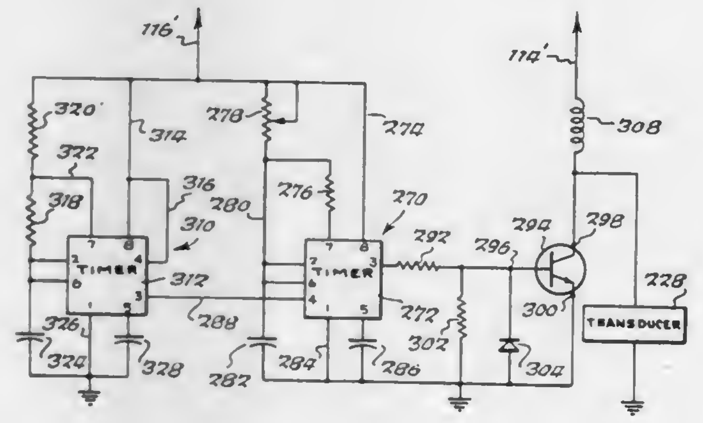
Lester B. Hall, Kenmore, N.Y., assignor to Gary L. Hall, Kenmore, N.Y.

Continuation of Ser. No. 887,601, Mar. 17, 1978, Pat. No. 4,392,215, which is a continuation-in-part of Ser. No. 840,536, Oct. 11, 1979, Pat. No. 4,178,578. This application Sep. 29, 1982, Ser. No. 427,915

The portion of the term of this patent subsequent to Jul. 5, 2000, has been disclaimed.

Int. Cl.⁴ H04B *1/02*

U.S. Cl. 367—139 **3 Claims**



1. Apparatus for generating and radiating ultrasonic sound waves for the control of pests comprising:

(a) an elongated housing having two ends and being of electrically insulative material;

(b) sound generating means carried by said housing adjacent one end thereof, said sound generating means comprising at least one transducer means having a natural frequency of oscillation for providing sound waves when driven by an electrical signal, said sound waves being in a frequency range normally inaudible to humans and intolerable by pests such as rodents and the like, said sound generating means including driver means operatively connected to said transducer means for applying to said transducer means an electrical signal having a frequency different from the natural frequency of said transducer means thereby causing said transducer means to provide said sound waves in a varying pattern of frequencies with amplitude peaking;

(c) said sound generating means being positioned to direct said output sound waves outwardly away from said one end of said housing;

(d) an electrical connector fixed to the other end of said housing and integral with said housing adapted to be inserted manually in a standard electrical outlet receptacle commonly found in buildings and the like, said connector comprising first and second portions of electrically conductive material on said end of said housing and separated by insulative material, there being mechanical engagement between said connector and the outlet receptacle to mechanically support said housing in the outlet;

(e) first and second electrical conductor means for connecting said first and second portions, rspectively, of said connector electrically to said sound generating means; and

(f) said connector when inserted in an outlet providing for supply of electric current to said sound generating means and simultaneously providing for mechanical support for said housing.

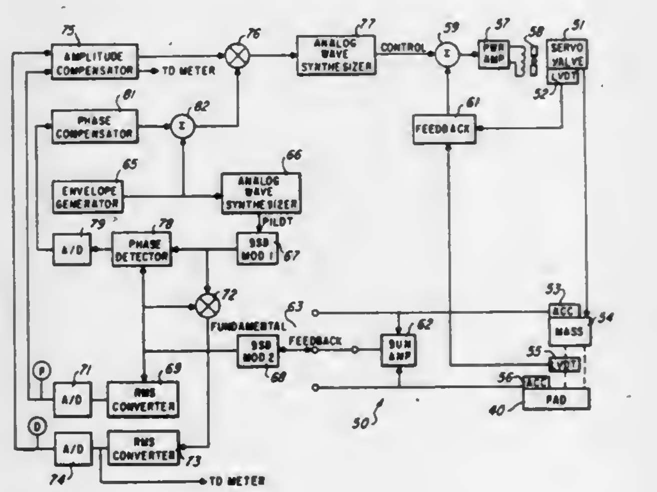
4,616,352
VIBRATOR SEISMIC SOURCE HAVING DISTORTION LIMITING CONTROL SYSTEM

John J. Sallas, Plano; Toby R. Trevino, Garland; Haroon I. Alvi; John S. Shoffner, both of Dallas, and Cameron B. Wason, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 18, 1982, Ser. No. 435,124

Int. Cl.⁴ G01V *1/02*

U.S. Cl. 367—190 **26 Claims**



1. A vibrator seismic source, having a power amplifier, comprising:

(a) a pad for imparting elastic waves to the underlying ground;

(b) hydraulic system means, including a mass, responsive to the power amplifier, for applying reciprocating forces to the pad;

(c) sensor means for sensing and providing a feedback signal representative of the force applied to the ground; the feedback signal including a first harmonic fundamental signal and harmonic distortion,

(d) means for generating a distortion-free pilot signal representative of the desired force to be applied to the ground;

(e) means for separating the first harmonic fundamental signal from the feedback signal to provide a fundamental signal;

(f) means for separating the harmonic distortion from the feedback signal to provide an amplitude error signal proportional to the distortion;

(g) means for generating a system error signal, the means including a summer for performing an algebraic summation of the pilot, fundamental and amplitude error signals to provide a system error signal representative of the positive or negative difference between the pilot and fundamental signals, reduced by the amplitude error signal; and

(h) loop filter means for providing a control signal, adapted to receive the system error signal and to adjust the amplitude of the control signal either positively or negatively as determined by the system error signal, the control signal being applied to the power amplifier to cause a corresponding increase or decrease in the reciprocating forces applied to the pad.

4,616,353
TRACKING SERVO WITH CLOSED LOOP GAIN CORRECTION

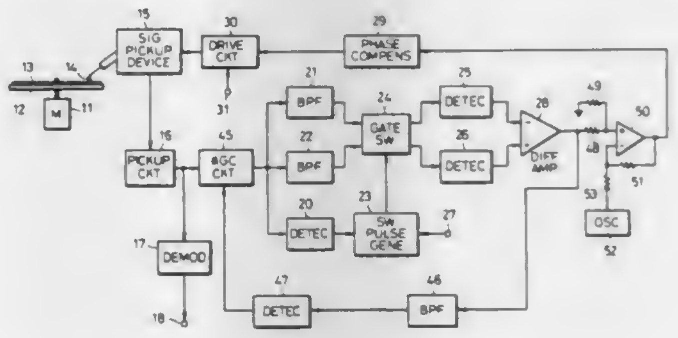
Isami Kaneda, Yokohama, and Yasushi Sano, Yamato, both of Japan, assignors to Victor Company of Japan Ltd., Yokohama, Japan

Filed Apr. 13, 1984, Ser. No. 599,941

Claims priority, application Japan, Apr. 14, 1983, 58-56043[U]

Int. Cl.⁴ G11B *21/10;* **H04N** *5/903*

U.S. Cl. 369—43 **5 Claims**



1. A tracking servo circuit for a rotary recording medium reproducing apparatus which picks up and reproduces a recorded signal from a rotary recording medium by a reproducing element, said rotary recording medium being recorded with a main information signal on a spiral information signal recorded track or concentric information signal recorded tracks thereon, said information signal recorded track having a first reference signal for tracking control recorded on one side thereof and having a second reference signal for tracking control recorded on the other side thereof such that the sides on which the first and second reference signals are recorded with respect to said information signal recorded track are interchanged for each track turn of the rotary recording medium, a third reference signal being recorded at positions on the rotary recording medium where the sides on which said first and second reference signals are recorded with respect to said information signal recorded track are interchanged, said tracking servo circuit comprising:

control means for controlling said reproducing element to follow and scan over said information signal recorded track;

separating means for separating said first, second, and third reference signals from a reproduced RF signal which is reproduced by said reproducing element;

detecting means for detecting said first and second reference signals separated in said separating means;

circuit means for switching an input transmission path of said first and second reference signals to said detecting means in response to said third reference signal which is separated in said separating means, and for forming and producing a tracking error signal from a differential amplifier based on a detection signal from said detecting means;

an cscillator for producing a signal which has a constant amplitude and a constant frequency within a frequency band which is lower than a frequency band in which said main information signal is recorded;

signal superimposing means for superimposing the signal from said oscillator on said tracking error signal;

signal supplying means for supplying to said control means a superimposed signal from said signal superimposing means; a filter circuit for filtering said signal having the constant frequency from said tracking error signal; and

automatic cain control circuit means provided in a stage before said circuit means, for generating a gain control signal which is obtained by detecting an envelope of an output signal of said filter circuit, said automatic gain control circuit means controlling the level of said reproduced RF signal so that said signal which is within the input tracking error signal of said filter circuit and has the constant frequency is kept to an approximately constant level.

4,616,354
TRACKING CONTROL ARRANGEMENTS FOR USE IN OPTICAL DISC PLAYERS

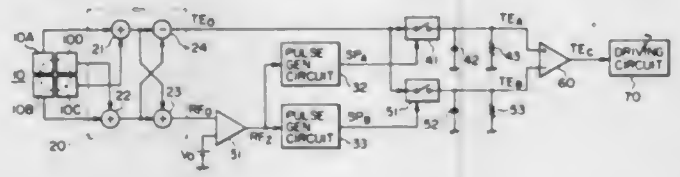
Tadao Yoshida, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 13, 1984, Ser. No. 588,929

Claims priority, application Japan, Mar. 14, 1983, 58-41842

Int. Cl.⁴ G11B *7/00*

U.S. Cl. 369—44 **4 Claims**



1. In an optical disc player for use with an optical disc having an information signal recorded thereon in the form of a sequence of pits arranged along the median of a record track with a maximum interval between adjacent pits of said sequence and with said disc being susceptible to marring and thereby acquiring a relatively non-reflective surface area extending over a substantial number of said pits and thereby obscuring the respective portion of the recorded information signal; said optical disc player including beam directing means for focussing a light beam at a spot on the optical disc, a tracking control circuit having photodetecting means including a plurality of photodetecting elements each for receiving the light beam reflected from said spot on the optical disc and producing respective output signals in response thereto, circuit means receiving said output signals from said photodetecting elements and generating a reproduced information signal and also a resultant signal upon deviation of said spot from a centered position in respect to said median, said resultant signal varying in phase relative to said reproduced information signal in response to the direction of said deviation of said spot from said median of said record track, and varying in amplitude in response to the amount of said deviation, pulse generating means receiving said reproduced information signal and generating a sampling pulse each time an edge of one of said puts passes said spot of the light beam, sample and hold means for sampling and holding the level of said resultant signal as a tracking error signal in response to each said sampling pulse, and drive circuit means responsive to said tracking error signal for driving said beam directing means to control the position of said spot on said optical disc in the direction across said record track; the improvement comprising discharging means operative independently of said sampling pulse for discharging said sample and hold means a predetermined period after each said sampling of said resultant signal, said predetermined period being at least several times longer than a time period corresponding to said maximum interval and shorter than a time period corresponding to an expected length of said non-reflective surface area along said record track of said optical disc.

4,616,355
OPTICAL HEAD DEVICE

Akihiro Kasahara, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 28, 1984, Ser. No. 645,104

Claims priority, application Japan, Sep. 26, 1983, 58-177375

Int. Cl.⁴ G11B *7/08*

U.S. Cl. 369—45 **10 Claims**

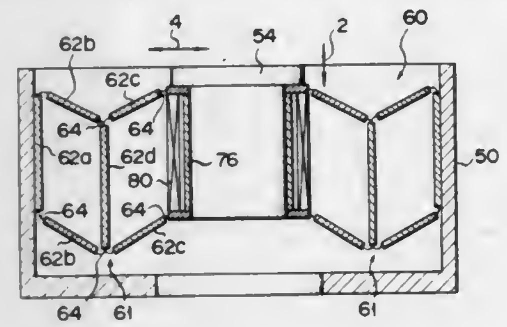
1. An optical head device for moving a lens in focusing and tracking directions comprising:

a casing;

a support mechanism for supporting the lens movable in the focusing direction and also in the tracking direction perpendicular to the focusing direction; and

a driving means for moving the lens, which is supported by the support mechanism, in the focusing and tracking directions;

said support mechanism having connector portions for forming a pair of structures comprising two adjacent parallelograms whose one sides are common to each other, holder portions arranged between the structures to hold the lens, and hinge portions for connecting the two connector portions or connector and holder portions swingable around the hinge portion, wherein the structures deform, holding their parallelograms, to move the lens in the focusing and tracking directions.



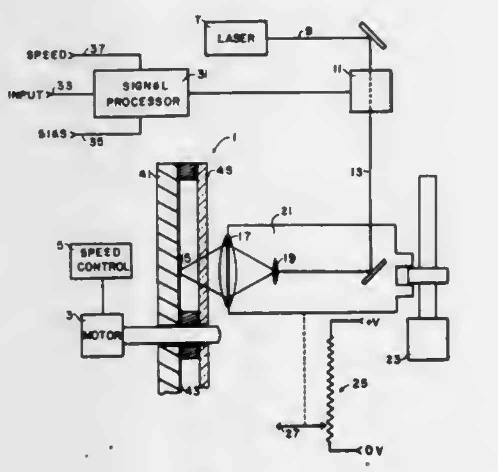
4,616,356
APERTURE COMPENSATION SIGNAL PROCESSOR FOR OPTICAL RECORDING

Richard L. Wilkinson, El Toro, and Wayne R. Dakin, Huntington Beach, both of Calif., assignors to Optical Disc Corporation, Cerritos, Calif.

Filed Mar. 6, 1984, Ser. No. 586,675

Int. Cl.⁴ G11B *7/00*

U.S. Cl. 369—116 **23 Claims**



1. A signal processing system for use in an optical recording apparatus including an optical modulator for modulating the intensity of a writing beam of light above and below a threshold level of a moving recording medium in response to a driving signal for recording information on the medium, said apparatus including optical components including an objective lens for focussing the writing beam to a spot of finite size on the medium, said optical components having a known modulation transfer function expressing the ratio between the intensity modulation of the unfocussed writing beam exiting the modulator and the point to point modulation of the level of exposure of the medium by the focussed beam as a function of the spatial frequency of the exposure pattern on the moving recording medium, said spatial frequency being the product of the frequency of the driving signal and the reciprocal of the speed of the medium relative to the focussed beam, said signal processing system comprising:

a substantially linear phase frequency compensation means for varying the gain of the drive signal for controlling the modulator as a function of the frequency of the driving signal, the frequency response of said compensation means being substantially the inverse of said modulation transfer function of the optical components of the apparatus at the relative speed between the medium and the focussed writing beam, whereby the modulation amplitude of the level of exposure of the medium by the focussed beam is substantially independent of the frequency of said drive signal.

4,616,357
DISC PLAYER

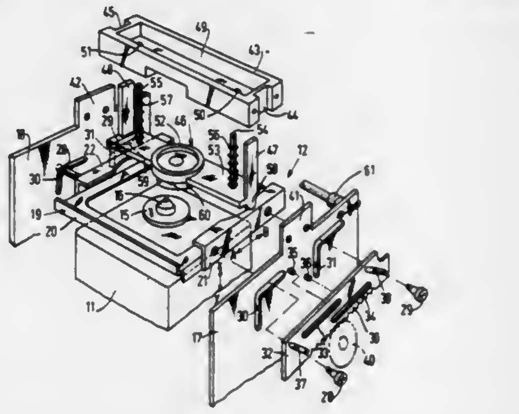
Mitsuhisa Nakayama, Kanagawa, Japan, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 28, 1984, Ser. No. 675,494

Claims priority, application Japan, Dec. 7, 1983, 58-188122

Int. Cl.⁴ G11B *17/04, 17/26*

U.S. Cl. 369—194 **8 Claims**



1. A disc player having a turntable for rotating information discs and a loading device for loading said information discs on said turntable, said loading device comprising:

a frame, said frame at least in part enclosing said disc player; and

a loading support for supporting said disc during transport of said disc to said turntable, said loading support being movable in directions both parallel and transverse to the rotating axis of said turntable to transfer said disc to said turntable for rotation therewith; and

said disc player comprising:

a pressure member and a pressure member support, said pressure member being mounted on said pressure member support, said pressure member being positioned in opposition to said turntable on said disc player, said pressure member support bearing against said loading support of said loading device;

spring means for urging said pressure member support to bear against said loading support, a sliding contact being maintained between said loading support and said pressure member support permitting relative motion between them in said transverse directions; and

guide means rigidly connected to said frame for guiding movement of said pressure member in said directions parallel to the rotating axis of said turntable, and for maintaining said pressure member opposite said turntable, said pressure member following motions of said loading support in the directions parallel to said turntable axis under the urging of said spring means, said pressure member pressing on a disc loaded into said turntable by said loading support.

4,616,358

SWITCHING MATRIX NETWORK

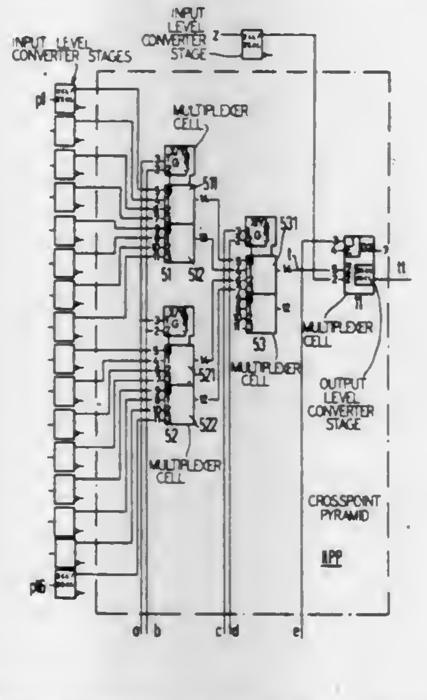
Hans Rehm, Munich, and Günter Donig, Ottobrunn, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 459,258, Jan. 19, 1983, abandoned. This application Jan. 2, 1986, Ser. No. 815,136

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1982, 3204900

Int. Cl.⁴ H04Q *3/52*

U.S. Cl. 370—58 **10 Claims**


INPUT LEVEL CONVERTER STAGES
INPUT LEVEL CONVERTER STAGE
MULTIPLEXER CELL
MULTIPLEXER CELL
MULTIPLEXER CELL
OUTPUT LEVEL CONVERTER STAGE
MULTIPLEXER CELL
CROSSPOINT PYRAMID

1. A broadband switching matrix network for switching or distributing communication signals in communication switching systems, comprising:

a plurality of crosspoint circuits each comprising an uncyclically controllable multiplexer including emitter-coupled logic circuits and control inputs for receiving selection signals to establish a variable sequence of respective specific switch-through states of said multiplexer;

said controllable multiplexers each including a plurality of incoming lines and an outgoing line which form the respective receiving and transmitting terminals of the broadband switching matrix, and said multiplexers interconnected to define switching circuit pyramids; and

said multiplexers of a respective plurality of switching circuit pyramids combined on an integrated circuit chip module.

4,616,359

ADAPTIVE PREFERENTIAL FLOW CONTROL FOR PACKET SWITCHING SYSTEM

Michael L. Fontenot, Boulder, Colo., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 19, 1983, Ser. No. 563,256

Int. Cl.⁴ H04Q *11/04*

U.S. Cl. 370—60 **30 Claims**

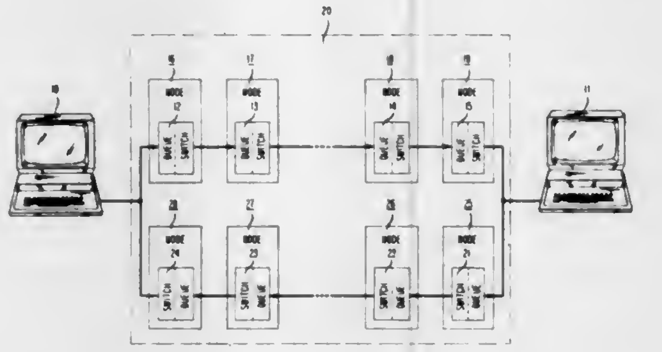
1. A packet flow control method for a packet switching node comprising

receiving a congestion test packet during an established packet communication session through said node, and prior to an entry of data packets into said node,

determining an absence of packet congestion in buffer storage of said node in response to a receipt of said test packet,

advancing said test packet from said node in response to the determination of an absence of congestion, and

subsequently, in response to a receipt of a congestion absent packet at said node within a prescribed timed period following said receiving of said congestion test packet,



entering at least one data packet into said node for communication toward a destination.

4,616,360

PERIPHERAL CONTROL FOR A DIGITAL TELEPHONE SYSTEM

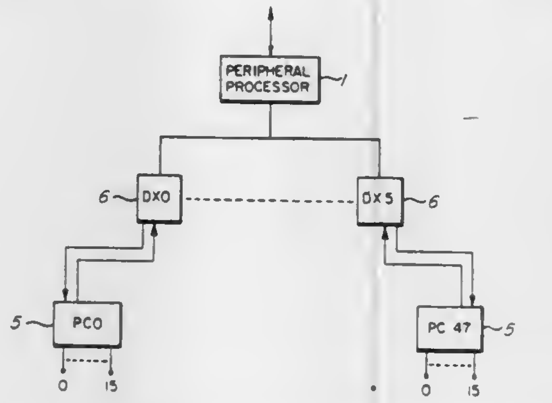
Conrad Lewis, Nepean, Canada, assignor to Mitel Corporation, Ontario, Canada

Filed Feb. 6, 1984, Ser. No. 577,496

Claims priority, application Canada, Jun. 29, 1983, 431426

Int. Cl.⁴ H04Q *11/04;* **H04J** *3/02*

U.S. Cl. 370—67 **19 Claims**



1. A peripheral control system for a digital signal switching system comprising:

(a) means for receiving peripheral unit control signals on a parallel bus,

(b) a plurality of serial lines, each for carrying time division multiplexed signals divided into channels,

(c) switching means for translating said control signals from the parallel bus into predetermined channels on predetermined ones of the lines for transmission to peripheral units, whereby each peripheral unit is allocated a particular channel on one of said lines, the number of peripheral units being a multiple of the number of lines.

4,616,361

DIGITAL SIGNAL AND MULTIPLEX DEVICE

Herbert Strehl, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 19, 1984, Ser. No. 602,205

Claims priority, application Fed. Rep. of Germany, May 10, 1983, 3317116

Int. Cl.⁴ H04J *3/12*

U.S. Cl. 370—110.1 **10 Claims**

1. A digital signal multiplex system having a transmitting portion and a receiving portion, and a means for transmitting data therebetween,

said transmitting portion comprising:

a first transmitter digital signal multiplex device having a plurality of inputs to which digital data to be transmitted is supplied,

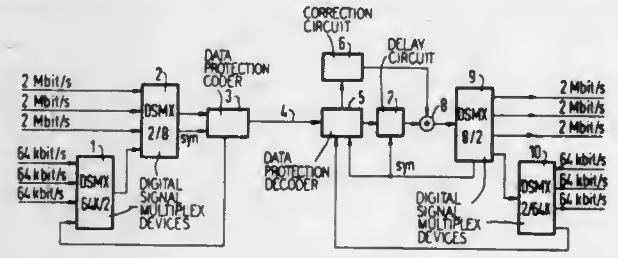
a second transmitter digital signal multiplex device having a plurality of inputs to which digital data to be transmitted is supplied and an input connected to the output of said first transmitter digital signal multiplex device,

a data protection coder having an input connected to the output of said second transmitter digital signal multiplex device,

said data protection coder having a first output connected to one of the inputs of said first transmitter digital signal multiplex device and a second output connected to said means for transmitting data to said receiver portion; and

said receiver portion comprising:

a data protection decoder having an input connected to said means for transmitting data for receiving the output of said data protection coder, said data protection decoder having first and second outputs and an additional input,



a delay circuit connected to said first output of said data protection decoder,

a correction circuit connected to said second output of said data protection decoder for investigating the transmitted data for errors,

an adder for summing the outputs of said delay circuit and said correction circuit,

a first receiver digital signal multiplex device having an input connected to the output of said adder, said first receiver digital signal multiplex device having a plurality of digital signal outputs,

a second receiver digital signal multiplex device having an input connected to one of the outputs of said first receiver digital signal multiplex device and having a plurality of digital signal outputs, one of said outputs of said second receiver digital signal multiplex device being connected to said additional input of said data protection decoder.

4,616,362

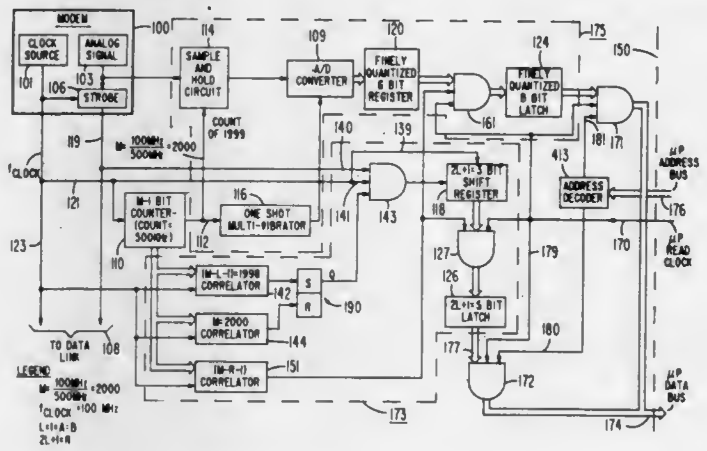
LOGIC FOR CALCULATING BIT ERROR RATE IN A DATA COMMUNICATION SYSTEM

Leonard N. Schiff, Lawrence Township, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jul. 19, 1984, Ser. No. 632,423

Int. Cl.⁴ G06F *11/00*

U.S. Cl. 371—5 **2 Claims**



1. In a communication system for transmitting and receiving a high speed stream of data bits, a method of determining the current bit error rate but not the specific bits that are in error and comprising the steps of:

extracting and storing consecutive sequences of A, B, and C data bits at known and identifiable time intervals, where A and C are an equal small number of bits and B is a single bit;

extracting and storing finely quantized sample of the amplitude of the center portion of the B data bit by auxiliary means shown in FIG. 1;

storing in memory the finely quantized center amplitudes of the B bit for each different combination of binary 1's and 0's for each different sequence of bits A, B, and C;

calculating from known and predetermined algorithms the current bit error rate of the system from the information stored in said memory.

4,616,363

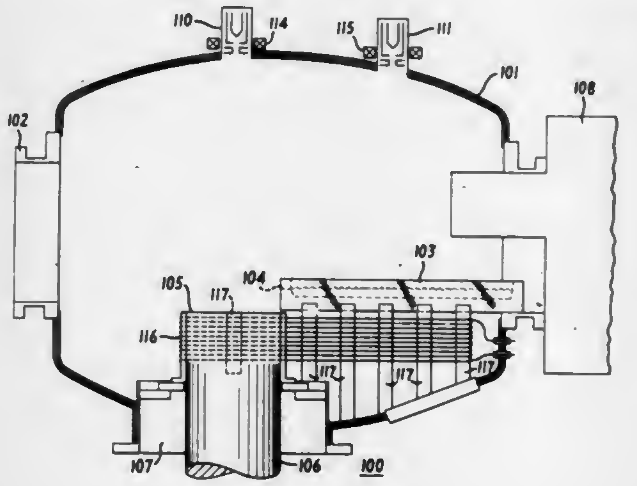
ELECTRON-BEAM FURNACE WITH MAGNETIC STABILIZATION

Howard R. Harker, Malvern, and Joseph A. Knecht, II, Morgantown, both of Pa., assignors to A. Johnson Metals Corporation, Exton, Pa.

Filed May 22, 1985, Ser. No. 737,026

Int. Cl.⁴ H01J *37/305*

U.S. Cl. 373—14 **5 Claims**



1. An electron-beam furnace comprising:

a. An evacuable chamber having a port for coupling the chamber to vacuum pump means;

b. a trough-shaped hearth within the chamber for holding material to be melted, the hearth having a spout for issuing a flow of molten material therefrom;

c. a crucible positioned within the chamber for receiving molten material flowing from the hearth;

d. one or more electron guns each for producing an energetic beam of electrons, each electron gun being positioned a relatively large distance away from the hearth and the crucible;

e. magnetic beam deflection means forming an integral part of each electron gun for scanning and shaping the beam produced thereby across the hearth or the crucible; and

f. magnetic means adjacent to the hearth and the crucible for producing a relatively weak magnetic field in the vicinity of the hearth and the crucible for preventing erratic deflections of the scanning electron beams without significantly altering the trajectories of such beams.

4,616,364

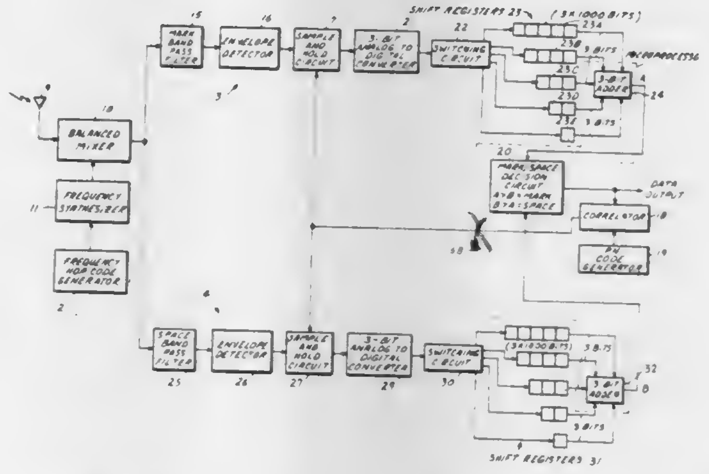
DIGITAL HOPPED FREQUENCY, TIME DIVERSITY SYSTEM

William C. Lee, Denville, N.J., assignor to ITT Corporation, New York, N.Y.

Filed Jun. 18, 1984, Ser. No. 621,963

Int. Cl.^{4} H04B *15/00*

U.S. Cl. 375—1 **36 Claims**



1. A digital hopped frequency, time diversity system comprising:

first means to provide a binary bit stream having a plurality of groups each having N bits, each of said plurality of groups of N bits being repeated on at least M different frquencies, where N and M are intergers greater than one, each of said bits of said plurality of groups of N bits being a selected one of a mark and a space, said mark being represented by at least a first frequency and said space being represented by at least a second frequency different than said first frequency;

second means coupled to said first means to recover an envelope of a selected one of said first and second frequencies for each bit of said plurality of groups of N bits in each of said M repetitions and to convert said recovered mark and space envelopes to a binary representation of the amplitude thereof;

third means coupled to said second means to add said binary representation of at least a first predetermined number of said recovered mark envelopes representing an associated one of said bits of said plurality of groups of N bits in each of said M repetitions;

fourth means coupled to said second means to add said binary representation of at least a second predetermined number of said recovered space envelopes representing an associated one of said bits of said plurality of groups of N bits in each of said M repetitions; and

fifth means coupled to said third and fourth means to provide a mark-space output signal dependent upon the relative amplitude values of the output signal of said third and fourth means.

DESIGN PATENTS

GRANTED OCT. 7, 1986

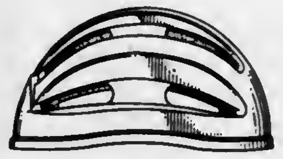
ERRATA

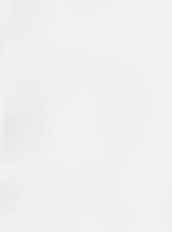
For CLASS	See PATENT NO.
D08–381	286,156
D03–101	186,171

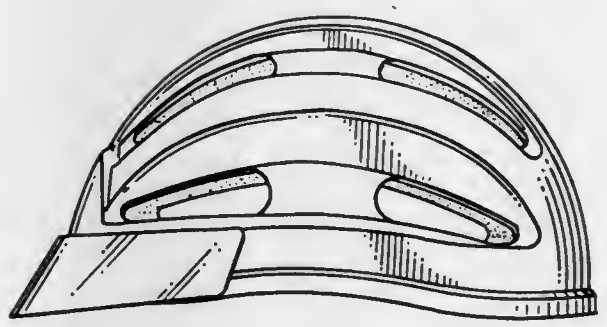
DESIGNS

OCTOBER 7, 1986

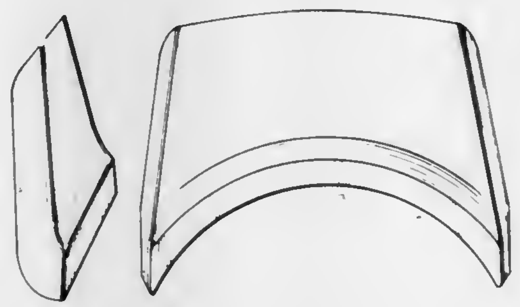
285,980
CYCLIST'S RIBBED HELMET
Otho F. McNabb, Long Beach, Calif., assignor to Bell Helmets Inc., Norwalk, Calif.
Filed Aug. 15, 1983, Ser. No. 523,384
Term of patent 14 years
U.S. Cl. D29—12



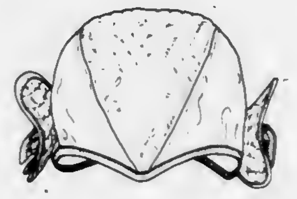


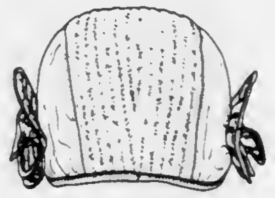


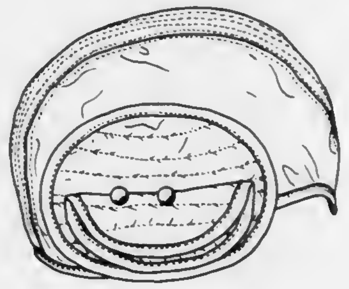
285,981
VISOR FOR A HELMET
David L. Ekins, Calabasas, Calif., assignor to The Gold Belt Line, Inc., Reseda, Calif.
Filed Oct. 20, 1983, Ser. No. 544,116
Term of patent 14 years
U.S. Cl. D29—16



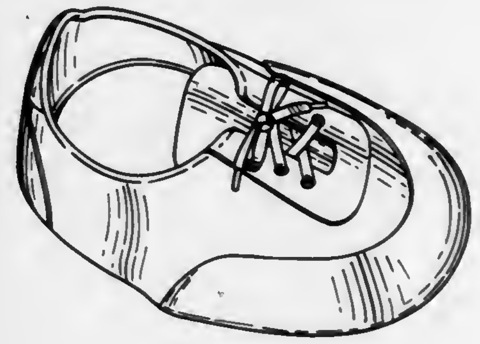
285,982
CAP
Giuseppe D. Vaniglia, 90 Cours de Vincennes, 75012 Paris, France
Filed May 31, 1984, Ser. No. 615,955
Term of patent 14 years
U.S. Cl. D2—249



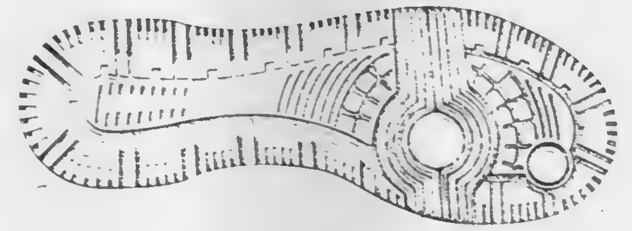




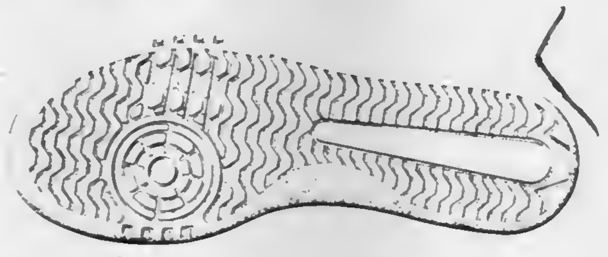
285,983
NOVELTY HAT
David A. Greufe, 37342 Parson's Creek Rd., Springfield, Oreg. 97477
Filed Apr. 26, 1984, Ser. No. 603,968
Term of patent 14 years
U.S. Cl. D2—252



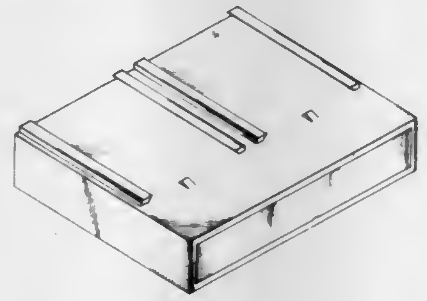
285,984
SHOE SOLE
James K. Tong, Beaverton, and Jerry D. Stubblefield, Portland, both of Oreg., assignors to Pensa, Inc., Portland, Oreg.
Filed Jan. 31, 1986, Ser. No. 824,980
Term of patent 14 years
U.S. Cl. D2—320

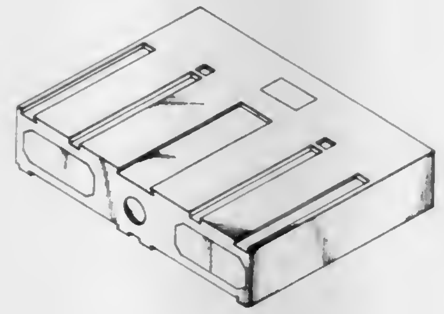


285,985
SHOE SOLE
James K. Tong, Beaverton, Oreg., assignor to Pensa, Inc., Portland, Oreg.
Filed Nov. 13, 1985, Ser. No. 805,104
Term of patent 14 years
U.S. Cl. D2—320

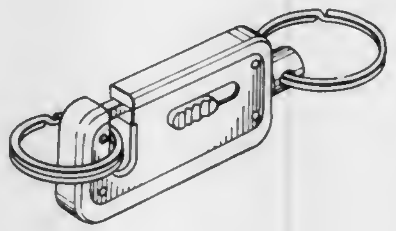


285,986
TAPE-CASSETTE BOX
Lung-Fei Huang, No. 22-2, Alley 24, Lane 30, Wu Chen Street, Pan Chiao, Taipei, Taiwan
Filed May 13, 1983, Ser. No. 494,513
Term of patent 14 years
U.S. Cl. D3—35

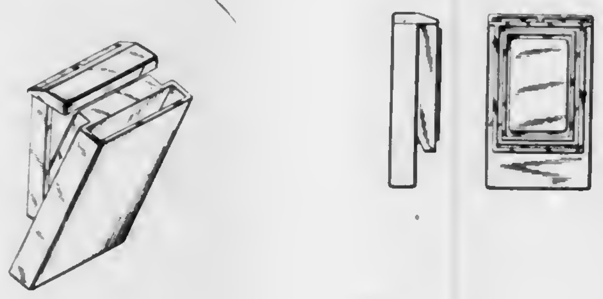




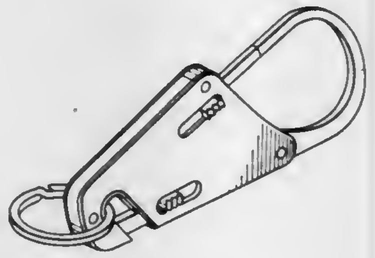
285,987
KEY HOLDER
Sumner MacDonald, Warren, R.I., assignor to MacDonald/Associates Inc., Warren, R.I.
Filed Aug. 28, 1984, Ser. No. 645,416
Term of patent 14 years
U.S. Cl. D3—61



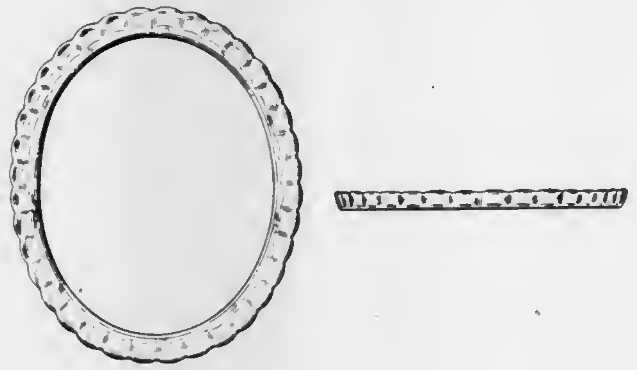
285,988
KEY CASE
Kazumi Sakai, Tokyo, Japan, assignor to Car Mate Mfg. Co., Ltd., Tokyo, Japan
Filed Oct. 16, 1984, Ser. No. 661,410
Term of patent 14 years
U.S. Cl. D3—61



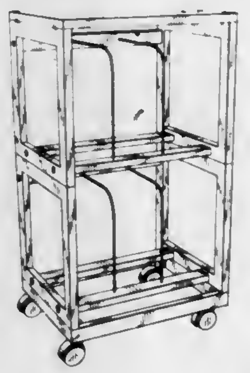
285,989
KEY HOLDER
Sumner MacDonald, Warren, R.I., assignor to MacDonald/Associates Inc., Warren, R.I.
Filed Dec. 31, 1984, Ser. No. 688,173
Term of patent 14 years
U.S. Cl. D3—61



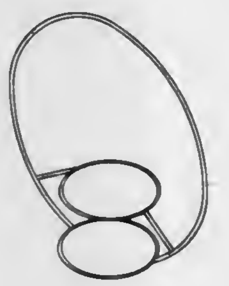
285,990
MIRROR FRAME
Charles D. Miller; Bernard O. Daniels, and William C. McKeone, all of Kansas City, Mo., assignors to Broadway Industries, Inc., Kansas City, Mo.
Filed Jan. 19, 1984, Ser. No. 572,058
Term of patent 14 years
U.S. Cl. D6—314



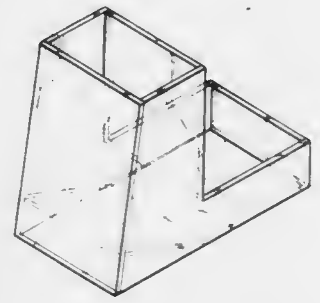
285,991
MODULAR RECORD STORAGE UNIT
Per Madsen, 843 Filbert St., San Francisco, Calif. 94133
Filed Oct. 5, 1983, Ser. No. 539,291
Term of patent 14 years
U.S. Cl. D6—407

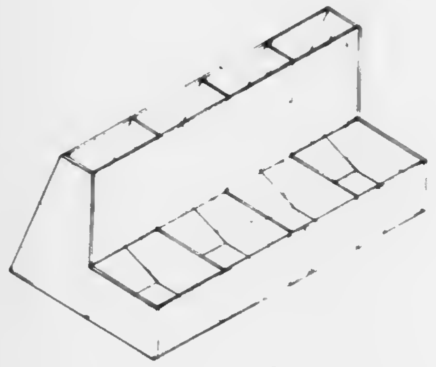


285,992
DISPLAY STAND
Jacob De Vries, 1729 E. 33rd Ave., Vancouver, British Columbia, Canada
Filed Jun. 12, 1984, Ser. No. 619,908
Term of patent 14 years
U.S. Cl. D6—462

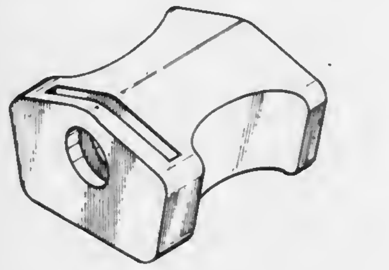


285,993
DISPENSER BIN FOR EDIBLE PRODUCTS SUCH AS NUTS, CANDIES AND THE LIKE
Salvatore A. Genna, New Haven, Conn., assignor to Neil A. Russo, East Haven, Conn., a part interest
Filed Mar. 29, 1984, Ser. No. 595,000
Term of patent 14 years
U.S. Cl. D6—475





285,994
CONTACT PAD FOR FOLDING CHAIR
Howell N. Cornell, 7310 SW. 4th Ct., Miami, Fla. 33143
Filed Aug. 12, 1983, Ser. No. 522,504
Term of patent 14 years
U.S. Cl. D6—491



285,995

PAPER TOWEL DISPENSER

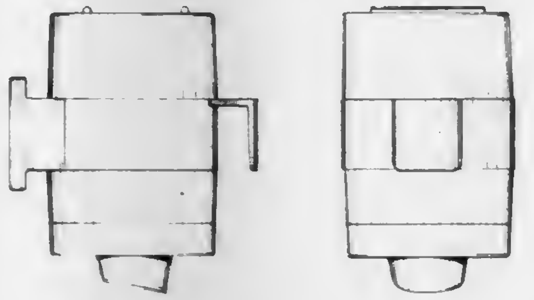
Henri Minost, Neuilly S/Seine, France, assignor to Beghin-Say S.A., Thumeries, France

Filed Oct. 1, 1984, Ser. No. 656,679

Claims priority, application France, Mar. 29, 1984, 841432

Term of patent 14 years

U.S. Cl. D6—522



285,996

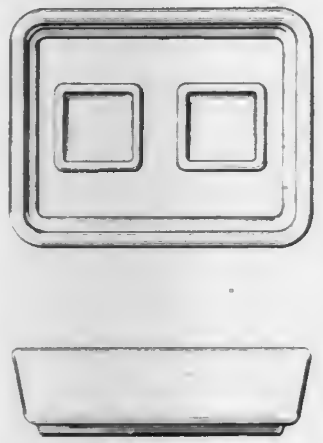
SOAP DISH

Vanda J. Bussell, 283 Nottingham Rd., Ramsey, N.J. 07446

Filed Jun. 20, 1983, Ser. No. 505,945

Term of patent 14 years

U.S. Cl. D6—536



285,997

ADJUSTABLE SEAT BACK CUSHION

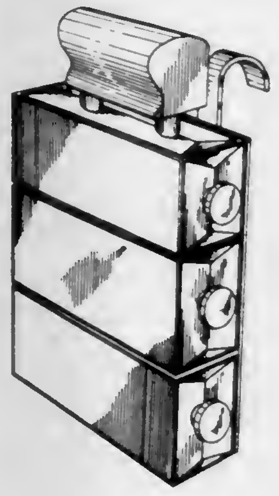
Emil Natchev, Upplandsgatan 50, S-113 28 Stockholm, Sweden

Filed Mar. 19, 1984, Ser. No. 590,766

Claims priority, application Sweden, Sep. 30, 1983, 83-2539

Term of patent 14 years

U.S. Cl. D6—596



285,998

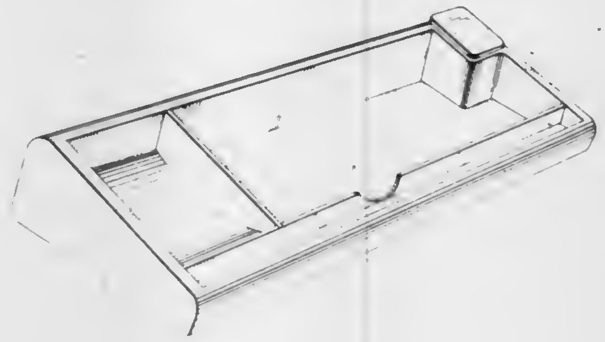
AUTOMOBILE TRAY

Eric Langensiepen, New York, N.Y., assignor to Allison Corporation, Livingston, N.J.

Filed Mar. 15, 1984, Ser. No. 590,423

Term of patent 14 years

U.S. Cl. D3—40



285,999

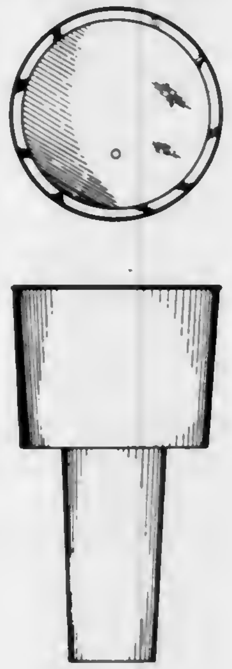
COMBINED FOOD AND BEVERAGE CONTAINER

Arthur R. Ludwick, deceased, late of San Luis Obispo, Calif. (by Lorine E. Ludwick, heir), and Judith E. Ludwick-McPhail, South Lake Tahoe, Calif., assignors to Lorine E. Ludwick, heir, San Luis Obispo, Calif.

Filed May 24, 1984, Ser. No. 613,432

Term of patent 14 years

U.S. Cl. D7—6



286,000

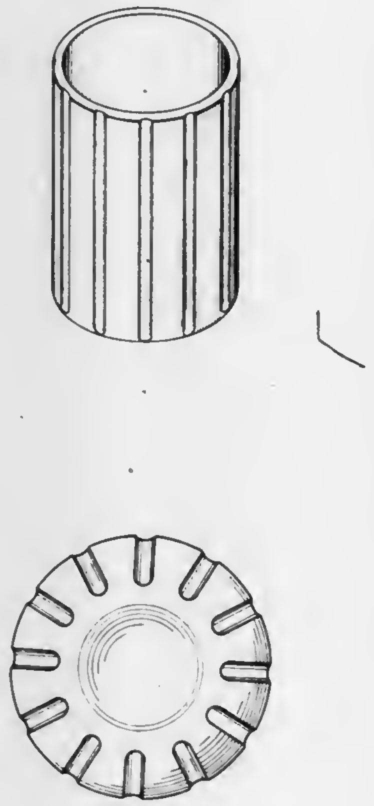
TUMBLER

Vanda J. Bussell, 283 Nottingham Rd., Ramsey, N.J. 07446

Filed Jun. 28, 1984, Ser. No. 625,733

Term of patent 14 years

U.S. Cl. D7—14



286,001

DINNER PLATE

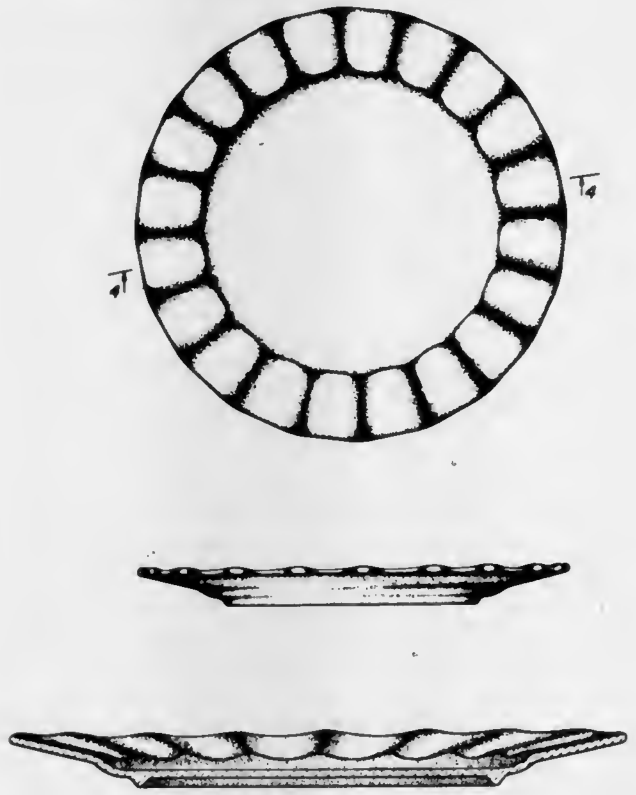
Walter Everhan, Klettenberg, Fed. Rep. of Germany, assignor to American Commercial, Incorporated, Secaucus, N.J.

Filed May 26, 1983, Ser. No. 498,529

The portion of the term of this patent subsequent to Sep. 30, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D7—30



286,002

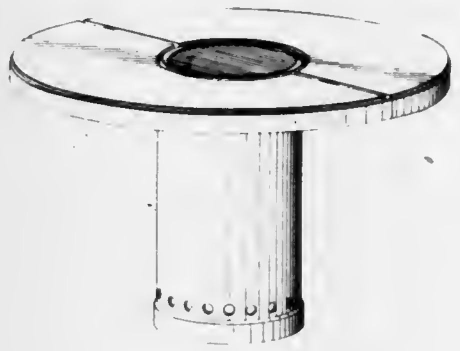
COMBINED GRILL AND TABLE

Dennis Brix, Odense N.Ö., Denmark, assignor to Vagn Hvam Pedersen, Denmark

Filed Aug. 8, 1984, Ser. No. 638,987

Term of patent 14 years

U.S. Cl. D7—332



286,003

KITCHEN OVEN

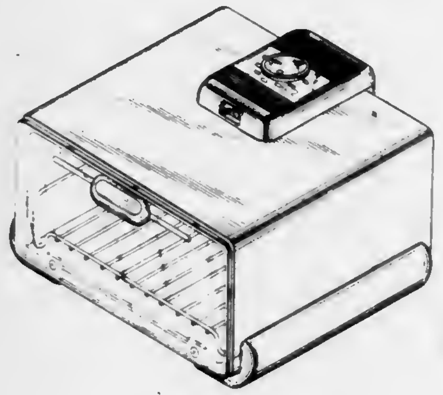
Claude Viancin, Rumilly, France, assignor to Vivalp, Rumilly, France

Filed Dec. 23, 1983, Ser. No. 565,041

Claims priority, application France, Jun. 24, 1983, 832581

Term of patent 14 years

U.S. Cl. D7—350



286,004

MICROWAVE OVEN

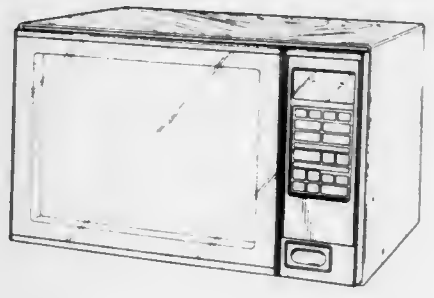
Kensuke Mizuma; Masuo Ichihara, and Toshio Harada, all of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 10, 1983, Ser. No. 503,108

Claims priority, application Japan, Dec. 28, 1982, 57-58723

Term of patent 14 years

U.S. Cl. D7—351



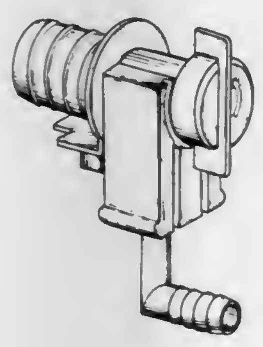
286,005
COMBINED FLUID DISPENSING TAP AND CLIP-ON TUBING CONNECTOR

Christopher C. Rutter, 21063 Cabot Blvd., Hayward, Calif. 94545

Filed Nov. 8, 1983, Ser. No. 549,777

Term of patent 14 years

U.S. Cl. D7—398



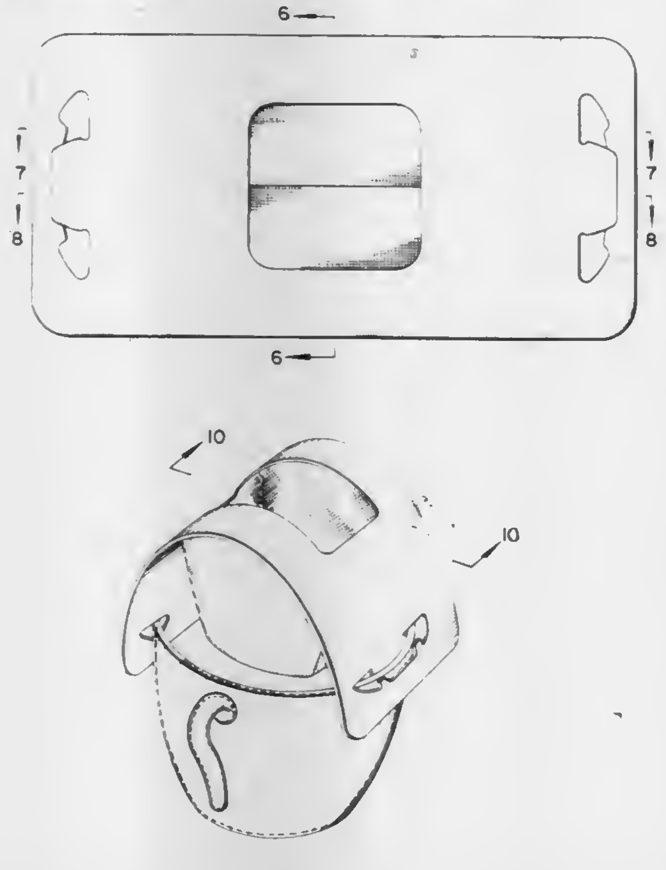
286,006
COFFEE FILTER

Jyoji Kataoka, Tokyo, Japan, assignor to Kataoka & Co., Ltd, Tokyo, Japan

Filed Nov. 2, 1983, Ser. No. 548,140

Term of patent 14 years

U.S. Cl. D7—400



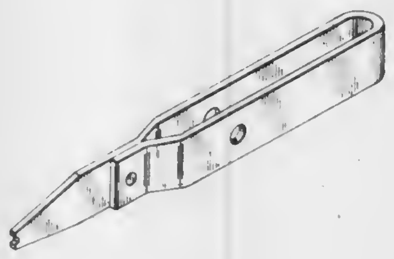
286,007
WIRE CLAMPING TOOL

William H. Hardgrove, P.O. Box 353, Libby, Mont. 59923

Filed Oct. 26, 1983, Ser. No. 545,618

Term of patent 14 years

U.S. Cl. D8—44



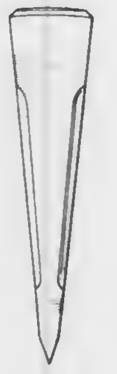
286,008
RECESSED SIDEWALL WEDGE

George Hillinger, Los Angeles, Calif., assignor to Alltrade Inc., Commerce, Calif.

Filed Mar. 4, 1983, Ser. No. 472,336

Term of patent 14 years

U.S. Cl. D8—47



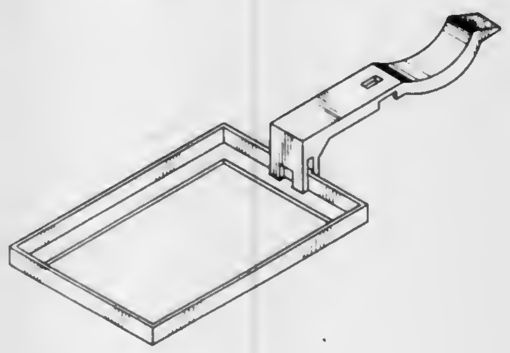
286,009
COMBINED BRACKET AND HOLDER FOR TISSUE BOXES FOR AUTOMOBILES, HOME USE OR THE LIKE

Jehuda Nadav, 925 N. Curson, #8, Los Angeles, Calif. 90046

Filed Jan. 12, 1982, Ser. No. 338,989

Term of patent 14 years

U.S. Cl. D8—373



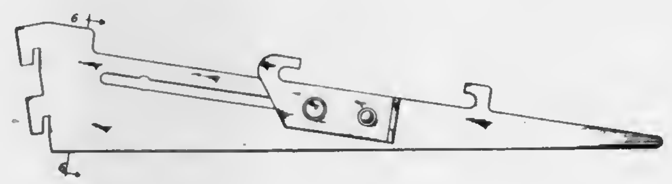
286,010
ADJUSTABLE SHELVING BRACKET

Arthur R. Mastrodicasa, 5 Elmcrest Cir., Walpole, Mass. 02081

Continuation-in-part of Ser. No. 593,664, Mar. 26, 1984. This application Nov. 1, 1984, Ser. No. 667,450

Term of patent 14 years

U.S. Cl. D8—381



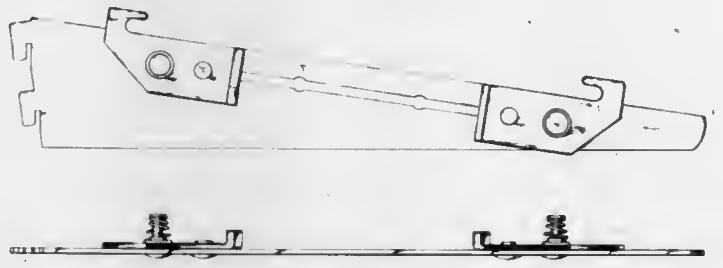
286,011
ADJUSTABLE SHELVING BRACKET

Arthur R. Mastrodicasa, 5 Elmcrest Cir., Walpole, Mass. 02081

Filed Jul. 8, 1985, Ser. No. 752,517

Term of patent 14 years

U.S. Cl. D8—381



286,012
CLAMP FOR AN INTERNAL COMBUSTION ENGINE FUEL INJECTOR

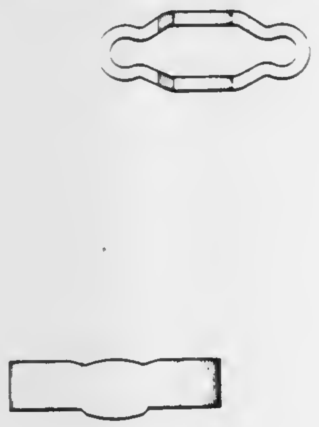
Michael Knight, and Ronald G. Moore, both of Peterborough, England, assignors to Massey-Ferguson-Perkins Limited, London, England

Filed May 27, 1983, Ser. No. 499,099

Claims priority, application United Kingdom, Nov. 27, 1982, 1009973

Term of patent 14 years

U.S. Cl. D8—394



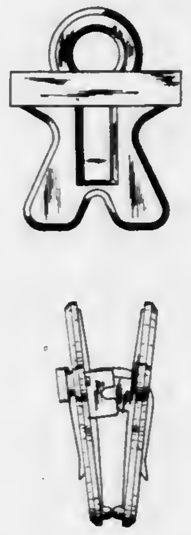
286,013
SPRING CLIP

William E. Adams, Portersville, Pa., assignor to Adams Manufacturing, Portersville, Pa.

Filed Jul. 9, 1984, Ser. No. 628,859

Term of patent 14 years

U.S. Cl. D8—395



286,014
DIAPER CLIP

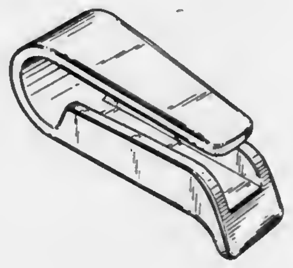
Andrew E. Davis, Wallsend, Australia, assignor to Douglas Charles Holliday, New South Wales, Australia, a part interest

Filed Jul. 24, 1984, Ser. No. 633,852

Claims priority, application Australia, Apr. 4, 1984, 7066/84

Term of patent 14 years

U.S. Cl. D8—395



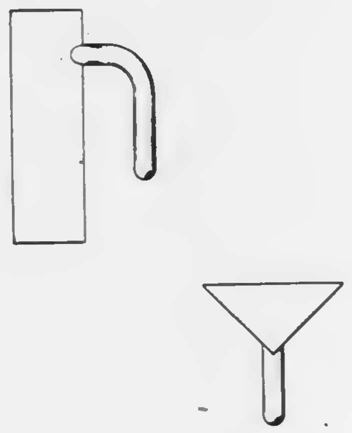
286,015
DOOR STOP

John F. Johnson, 4913 Admiration La., Virginia Beach, Va. 23464

Filed Aug. 29, 1984, Ser. No. 645,493

Term of patent 14 years

U.S. Cl. D8—402



286,016

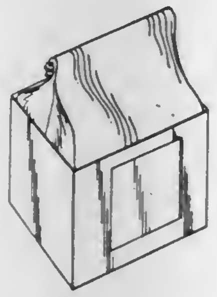
PACKAGING CONTAINER FOR FOOD OR THE LIKE

Joseph Addiego, Montville, N.J., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Sep. 29, 1983, Ser. No. 537,149

Term of patent 14 years

U.S. Cl. D9—305



286,017

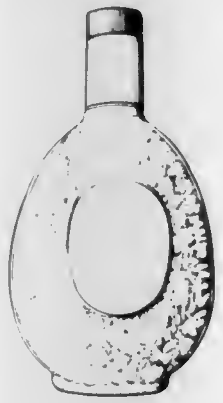
COMBINED BOTTLE AND CAP

Ruggero Ariotti, Bologna, Italy, assignor to Montenegro, S.p.A., Bologna, Italy

Filed Jul. 9, 1984, Ser. No. 630,724

Term of patent 14 years

U.S. Cl. D9—329



286,018

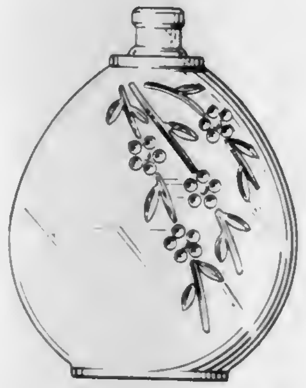
PERFUME BOTTLE

J. Michael O'Reilly, Brooklyn, N.Y., assignor to Revlon, Inc., New York, N.Y.

Filed May 17, 1984, Ser. No. 611,261

Term of patent 14 years

U.S. Cl. D9—336



286,019

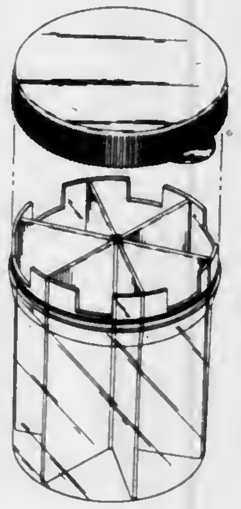
PARTITIONED DISPENSING CONTAINER

A. Harry Fishman, Hewlett Harbor, N.Y., and Joseph Bottitta, Bellville, N.J., assignors to APL Corporation, Miami Beach, Fla.

Filed Mar. 15, 1984, Ser. No. 590,299

Term of patent 14 years

U.S. Cl. D9—341



286,020

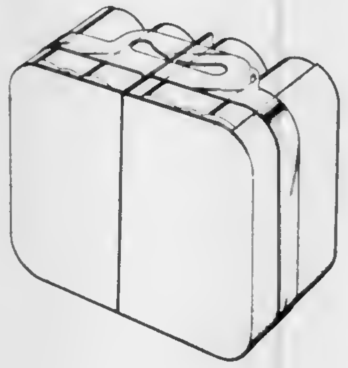
PACKAGE OF CANS

Marshall J. Barrash, Atlanta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Dec. 27, 1983, Ser. No. 565,931

Term of patent 14 years

U.S. Cl. D9—369



286,021

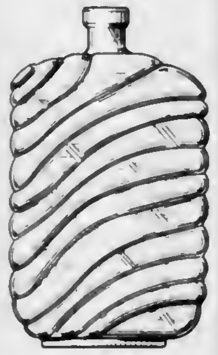
PERFUME BOTTLE

J. Michael O'Reilly, Brooklyn, N.Y., assignor to Revlon, Inc., New York, N.Y.

Filed May 17, 1984, Ser. No. 611,260

Term of patent 14 years

U.S. Cl. D9—370



286,022

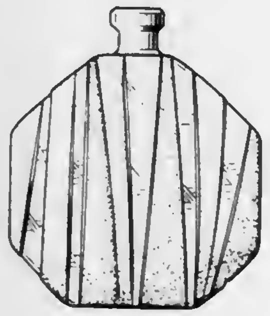
PERFUME BOTTLE

J. Michael O'Reilly, Brooklyn, N.Y., assignor to Revlon, Inc., New York, N.Y.

Filed May 18, 1984, Ser. No. 611,786

Term of patent 14 years

U.S. Cl. D9—384



286,023

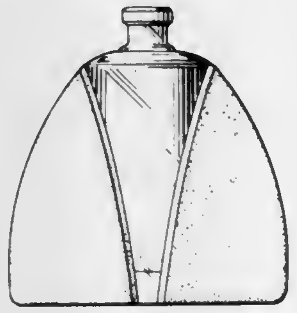
PERFUME BOTTLE

J. Michael O'Reilly, Brooklyn, N.Y., assignor to Revlon, Inc., New York, N.Y.

Filed Jun. 6, 1984, Ser. No. 617,785

Term of patent 14 years

U.S. Cl. D9—384



286,024

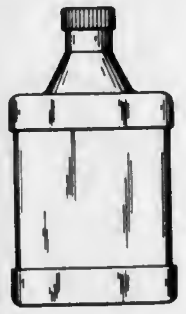
CONTAINER FOR FLUIDS

Rao K. Murukurthy, 9311 Osceola Ave., Morton Grove, Ill. 60053

Filed Aug. 4, 1983, Ser. No. 520,182

Term of patent 14 years

U.S. Cl. D9—401



286,025

CONTAINER FOR FLUIDS

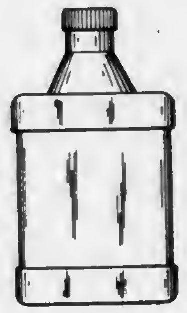
Rao K. Murukurthy, 9311 Osceola Ave., Morton Grove, Ill. 60053

Filed Aug. 4, 1983, Ser. No. 520,181

The portion of the term of this patent subsequent to Oct. 7, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D9—405



286,026

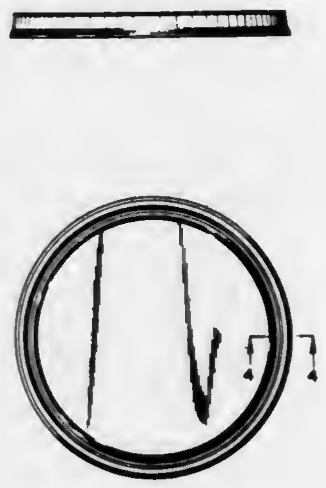
LID FOR A CONTAINER

Adrien P. Rayner, Iver, England, assignor to Metal Box plc, England

Filed May 27, 1983, Ser. No. 498,656

Term of patent 14 years

U.S. Cl. D9—435



286,027

COMBINED CLOSURE FOR MEDICAL BOTTLE AND SAFETY CAP THEREFOR

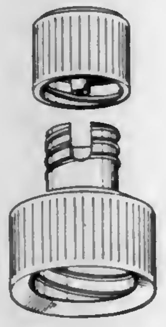
Paavo Waher; Timo Norkela, both of Turku, and Olavi Raasakka, Jaali, all of Finland, assignors to Farmos-Yhtymä Oy, Finland

Filed Feb. 27, 1984, Ser. No. 583,680

Claims priority, application Finland, Sep. 5, 1983, 754/83

Term of patent 14 years

U.S. Cl. D9—435



286,028

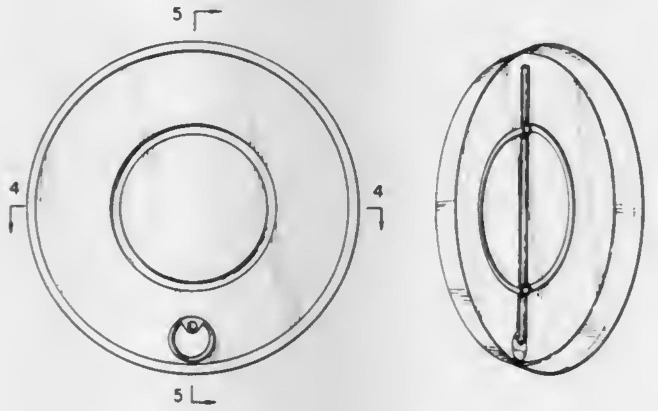
COMBINED POUR SPOUT AIR BLEEDER AND LID FOR A FLUID CONTAINER

John DiFede, 24878 Tiogo Rd., Hayward, Calif. 94544

Filed May 30, 1984, Ser. No. 615,168

Term of patent 14 years

U.S. Cl. D9—435



286,029

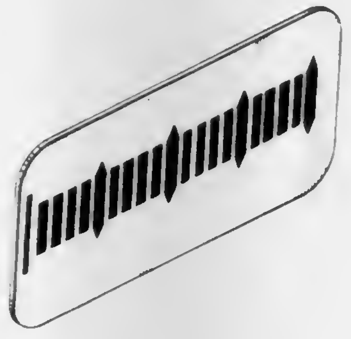
LIQUID CRYSTAL BAR GRAPH DISPLAY

Robert J. Graumann, Jacksonville, Fla., assignor to Bristol-Myers Company, New York, N.Y.

Filed Feb. 15, 1984, Ser. No. 580,222

Term of patent 14 years

U.S. Cl. D10—125



286,030

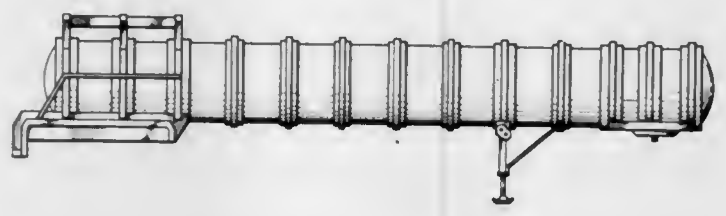
TRACTOR TRAILER TANK BODY

Robert J. Short, 127 Emerald Bay, Laguna Beach, Calif. 92651

Filed Dec. 30, 1983, Ser. No. 567,639

Term of patent 14 years

U.S. Cl. D12—95



286,031

TRUCK DRIVER CAB

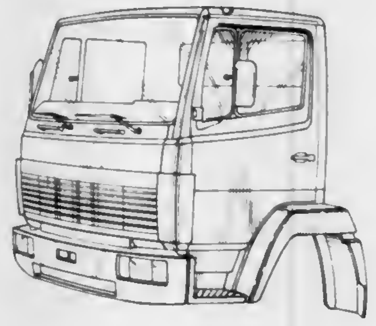
Werner Breitschwerdt, Stuttgart; Arthur Mischke, Ostfildern, and Bruno Sacco, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 2, 1983, Ser. No. 528,955

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1983, MR 5607

Term of patent 14 years

U.S. Cl. D12—96



286,032

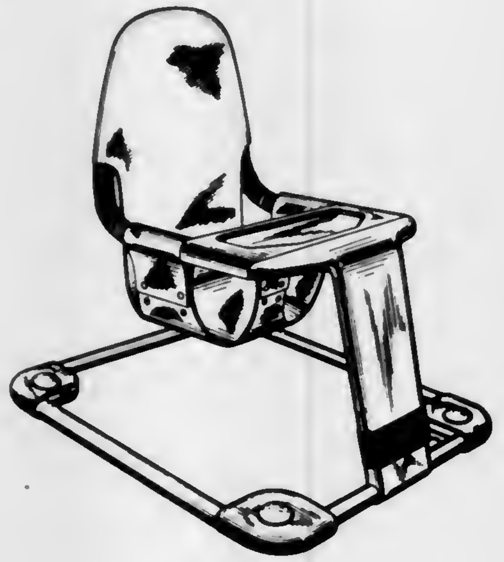
INFANT WALKER

Cooper C. Woodring, Plandome, N.Y.; Francis W. MacGregor, Simsbury, and Robert H. Bruno, Avon, both of Conn., assignors to J. C. Penney Company, Inc., New York, N.Y.

Filed Jan. 31, 1984, Ser. No. 575,531

Term of patent 14 years

U.S. Cl. D12—130



286,033

VEHICLE TIRE

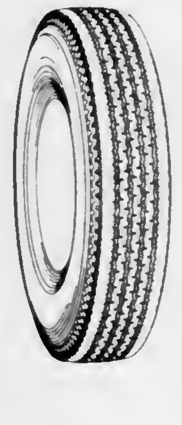
Kenichi Motomura, and Hiroshi Ogawa, both of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Aug. 16, 1982, Ser. No. 408,294

Claims priority, application Japan, Feb. 19, 1982, 57-6578

Term of patent 14 years

U.S. Cl. D12—142



286,034

COMBINED MOTORCYCLE HANDLE BAR HANDGRIP AND BRAKE LEVER UNIT

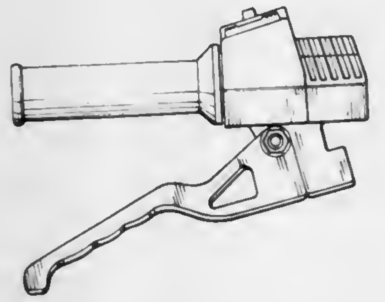
Alberto Giorgetti, Paladina, Italy, assignor to Brembo S.p.A., Paladina, Italy

Filed Dec. 27, 1983, Ser. No. 565,674

Claims priority, application Italy, Jun. 28, 1983, 22231/82[U]

Term of patent 14 years

U.S. Cl. D12—179



286,035

TRIM RING FOR VEHICLE SUN ROOF OPENING

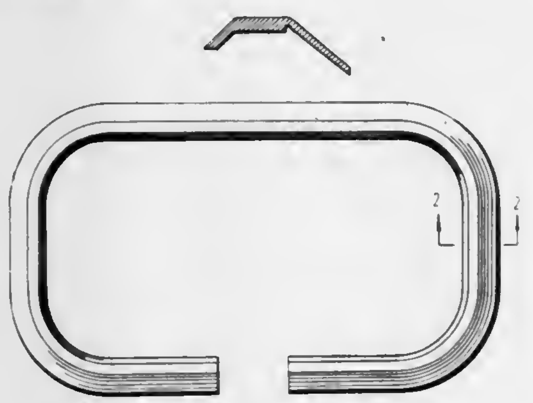
Sidney E. Fisher, Birmingham, England, assignor to Britax Weathershields Limited, Birmingham, England

Filed Jan. 10, 1984, Ser. No. 569,666

Claims priority, application United Kingdom, Jul. 14, 1983, 1 014 080

Term of patent 14 years

U.S. Cl. D12—190



286,036

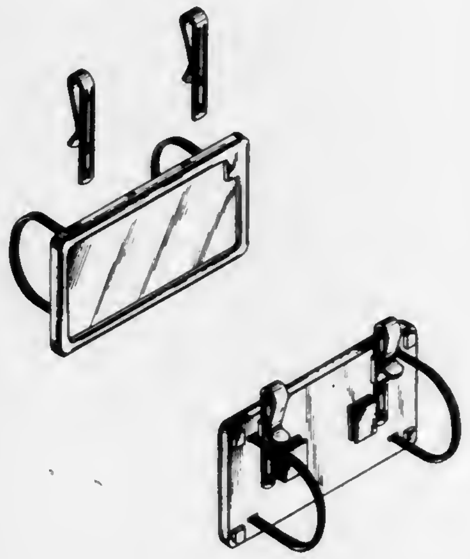
MIRROR FOR AUTOMOBILE VISOR

Eric Langensiepen, New York, N.Y., assignor to Allison Corporation, Livingston, N.J.

Filed Apr. 11, 1984, Ser. No. 599,267

Term of patent 14 years

U.S. Cl. D12—191



286,037

WHEEL

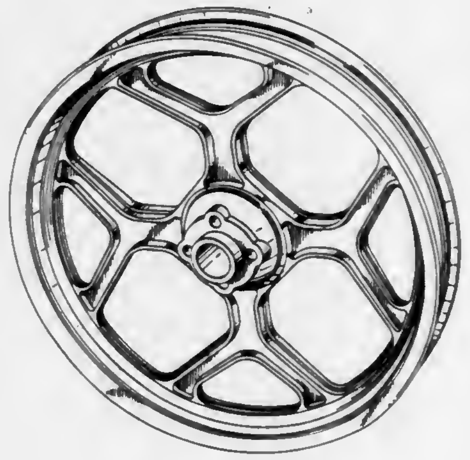
Hubert Walter, Penzberg, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 24, 1983, Ser. No. 478,512

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, MR 13095

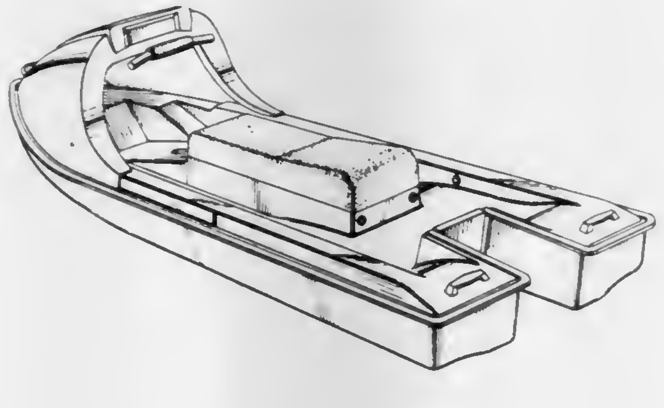
Term of patent 14 years

U.S. Cl. D12—211



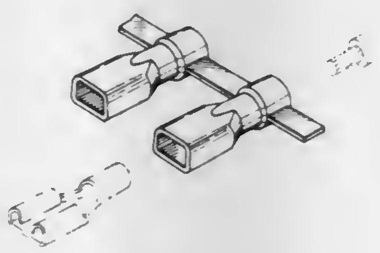
286,038
BOAT

Mark A. Dopps, Sedgwick County, Kans., assignor to Ski-Horse Corporation, Wichita, Kans.
Filed Mar. 26, 1984, Ser. No. 593,384
Term of patent 14 years
U.S. Cl. D12—307



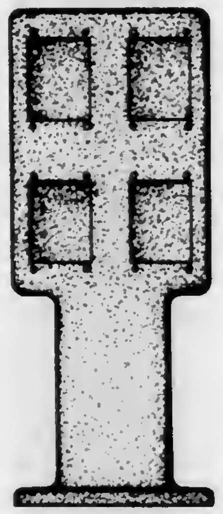
286,039
INTEGRALLY FORMED INSULATOR ASSEMBLY

Keiji Sonoda, Hirakata, Japan, assignor to Nichifu Terminal Industries Co., Ltd., Osaka, Japan
Filed Nov. 2, 1983, Ser. No. 547,826
Term of patent 14 years
U.S. Cl. D13—18



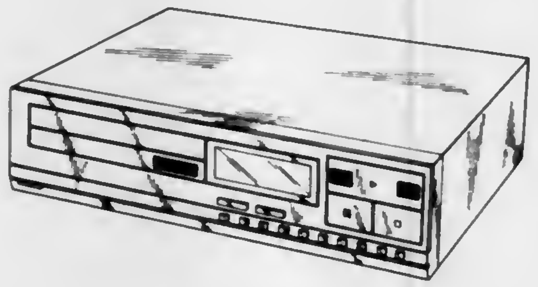
286,040
ELECTRICAL FIXTURE FOR MARINAS

James G. LaValle, P.O. Box 1807, New Rochelle, N.Y. 10802
Filed Dec. 27, 1983, Ser. No. 565,705
Term of patent 14 years
U.S. Cl. D13—24



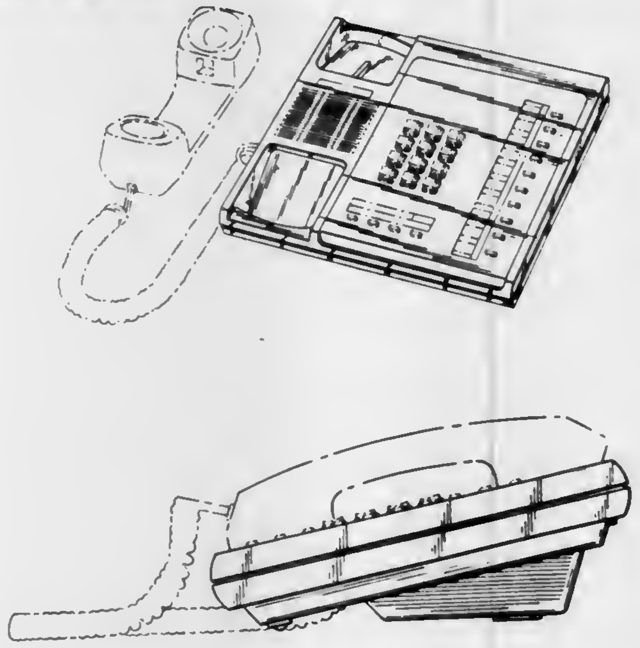
286,041
AUDIO DISC PLAYER

Kazuhiko Hiraoka; Kazuhiko Nishiyama, both of Tokyo; Takao Itoh, Tachikawa, and Sadao Tani, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 28, 1984, Ser. No. 584,450
Claims priority, application Japan, Aug. 29, 1983, 58-37349; Jan. 23, 1984, 59-1660
Term of patent 14 years
U.S. Cl. D14—1



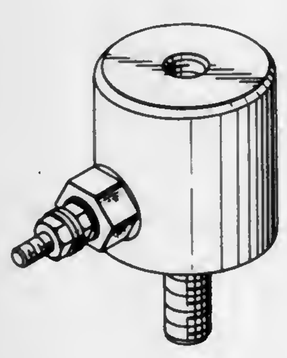
286,042
TELEPHONE

Yoshifumi Fukutani, Chiba, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed May 3, 1982, Ser. No. 374,065
Claims priority, application Japan, Nov. 7, 1981, 56-49330
Term of patent 14 years
U.S. Cl. D14—60



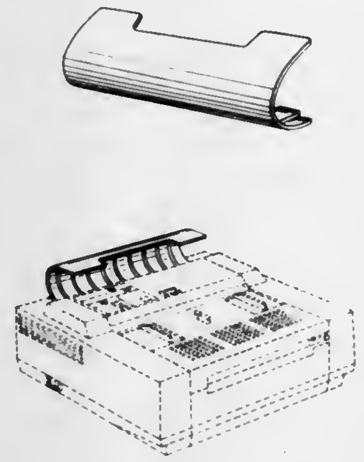
286,043
COMBINED ANTENNA ADAPTOR AND LIGHTNING ARRESTER THEREFOR

Peter R. Peterson, 8701 Sundale Dr., Silver Spring, Md. 20910
Filed Feb. 23, 1984, Ser. No. 582,801
Term of patent 14 years
U.S. Cl. D14—90



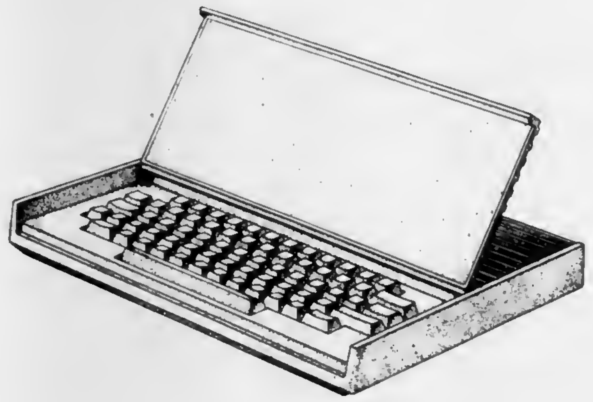
286,044
PAPER DISCHARGING TRAY FOR A FACSIMILE

Masahiro Kando, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 27, 1984, Ser. No. 584,019
Claims priority, application Japan, Aug. 31, 1983, 58-37923
Term of patent 14 years
U.S. Cl. D14—94



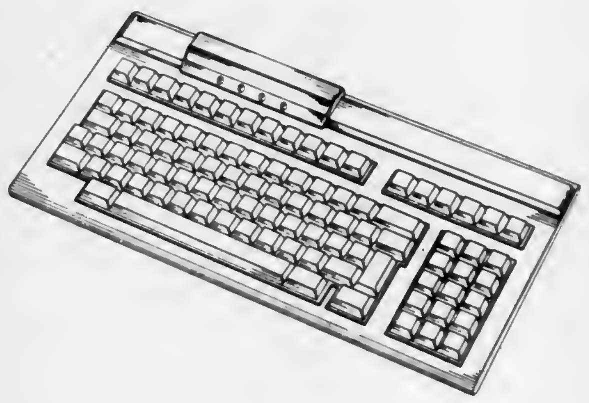
286,045
CONTROLLER HOUSING

John N. McGarvey, Drexel Hill, Pa.; Terry B. Prince, Indianapolis; Ronald L. Wild, Carmel, both of Ind., and Michael P. Zambelli, Maplewood, N.J., assignors to AT&T Information System Inc., Morristown, N.J.
Filed Sep. 23, 1985, Ser. No. 778,999
Term of patent 14 years
U.S. Cl. D14—100



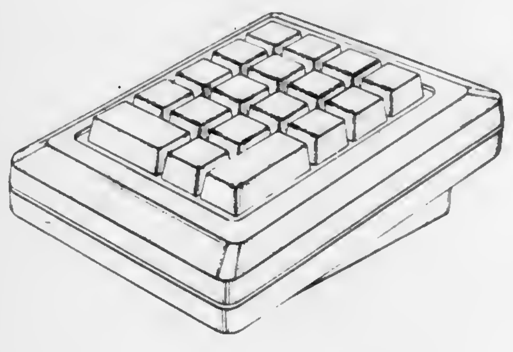
286,046
KEYBOARD

Roland P. O. Lindhé, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Oct. 27, 1983, Ser. No. 546,012
Claims priority, application Sweden, Apr. 29, 1983, 831224
Term of patent 14 years
U.S. Cl. D14—100



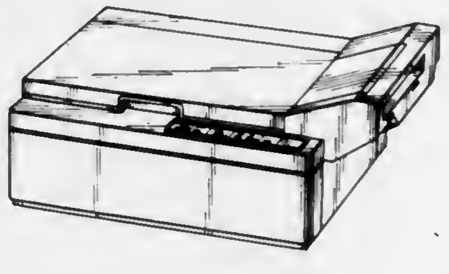
286,047
KEYPAD

David Roots, Santa Cruz; Jerrold C. Manock, Palo Alto, and Terrell A. Oyama, Los Altos, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Feb. 21, 1984, Ser. No. 581,920
Term of patent 14 years
U.S. Cl. D14—100



286,048
READER FOR IMAGE INFORMATION STORING/RETRIEVING MACHINE

Shigeru Sutoh, Urawa; Tooru Okuyama, Isehara, and Kunio Hara, Chiba, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan
Filed May 24, 1984, Ser. No. 613,615
Claims priority, application Japan, Nov. 29, 1983, 58-51468
Term of patent 14 years
U.S. Cl. D14—107



286,049
MAGNETIC-CARD READER

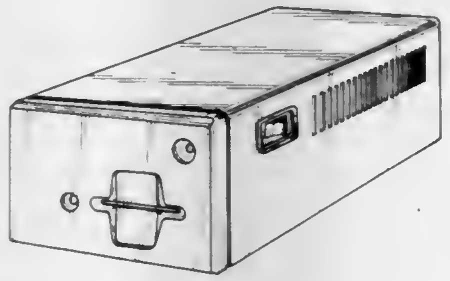
Yoshiaki Nishida, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Aug. 14, 1984, Ser. No. 640,529

Claims priority, application Japan, Feb. 15, 1984, 59-4891

Term of patent 14 years

U.S. Cl. D14—107



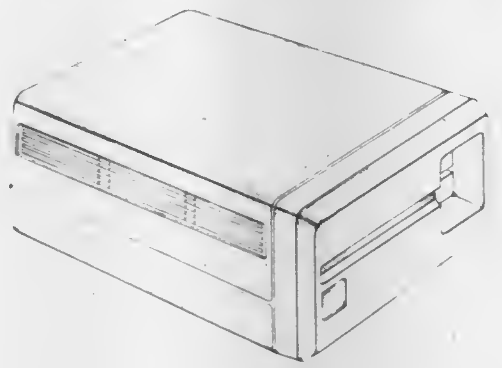
286,050
DISK DRIVE HOUSING

David H. Roots, Santa Cruz; Terrell A. Oyama, Los Altos, and Jerrold C. Manock, Palo Alto, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Oct. 13, 1983, Ser. No. 541,712

Term of patent 14 years

U.S. Cl. D14—109



286,051
LINE PRINTER

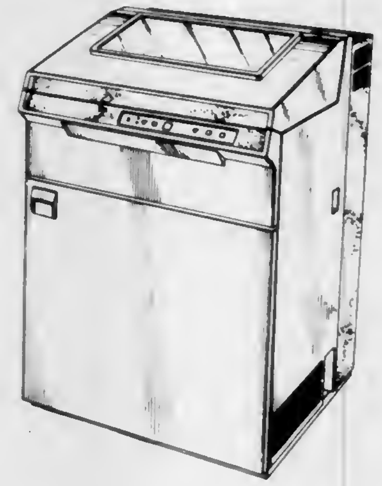
Yutaka Nakano, Kawasaki; Masami Watari, Hatano, and Toshiharu Fudatsuji, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 21, 1984, Ser. No. 581,649

Claims priority, application Japan, Aug. 20, 1983, 58-36409; Dec. 29, 1983, 58-56646

Term of patent 14 years

U.S. Cl. D14—111



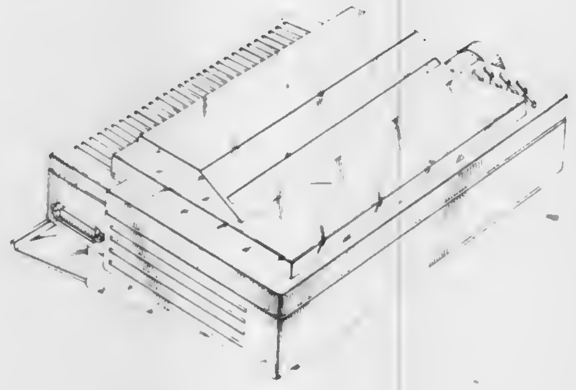
286,052
PRINTER HOUSING

Stephen Peart, Los Gatos; Mark F. Pruitt, Sunnyvale, and William G. MacKenzie, San Jose, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Apr. 20, 1984, Ser. No. 602,597

Term of patent 14 years

U.S. Cl. D14—111



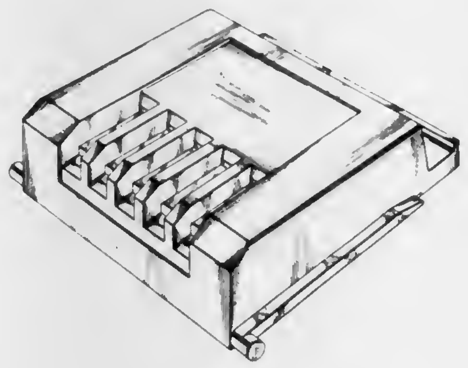
286,053
DATA MEMORY MODULE

Robert F. McDaniel, Paris, and James P. Wang, Lexington, both of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 29, 1983, Ser. No. 537,221

Term of patent 14 years

U.S. Cl. D14—114



286,054
SEWING MACHINE

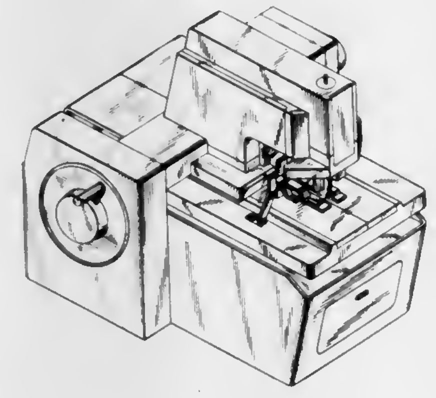
Masamitsu Shibuya, and Masaaki Tsukiji, both of Hachioji, Japan, assignors to Tokyo Juki Industrial Co., Ltd., Tokyo, Japan

Filed Dec. 1, 1983, Ser. No. 556,798

Claims priority, application Japan, Jun. 16, 1983, 58-026047

Term of patent 14 years

U.S. Cl. D15—69



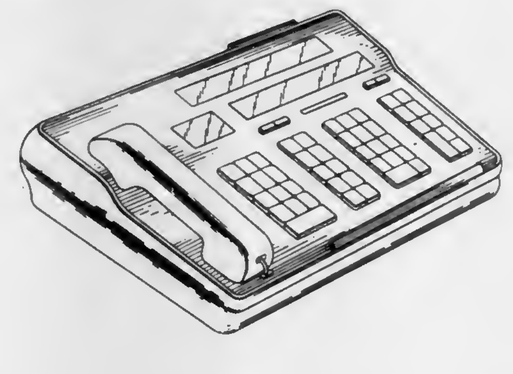
286,055
TELEPHONE-CALCULATOR CONSOLE WITH DIGITAL CLOCK DISPLAY

Angela Leone, 191 Hickory Hill, Williamsville, N.Y. 14221

Continuation-in-part of Ser. No. 287,274, Jul. 27, 1981, abandoned. This application Jul. 18, 1983, Ser. No. 515,672

Term of patent 14 years

U.S. Cl. D18—2



286,056
DESK-TOP ELECTRONIC CALCULATOR

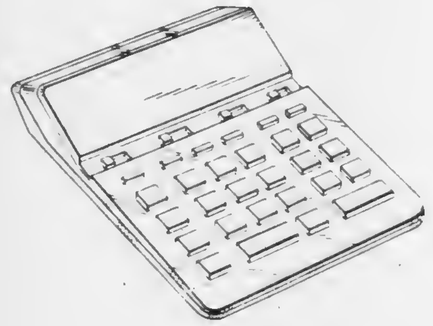
Nobuo Kikuchi, Tokyo, and Kazuyoshi Odagawa, Koshigaya, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1984, Ser. No. 683,145

Claims priority, application Japan, Jul. 2, 1984, 59-27238

Term of patent 14 years

U.S. Cl. D18—7



286,057
RIBBON CASSETTE FOR TYPEWRITER

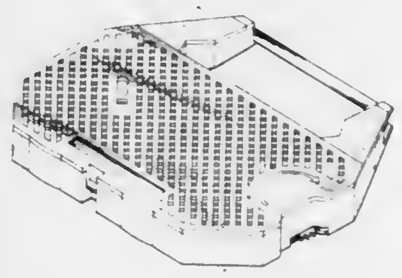
Kenji Tamada; Junzo Ueki, and Yoshiaki Nakajima, all of Tokyo, Japan, assignors to Silver Seiko Ltd., Japan

Filed Nov. 28, 1984, Ser. No. 675,950

Claims priority, application Japan, Jul. 5, 1984, 59-27863

Term of patent 14 years

U.S. Cl. D18—12



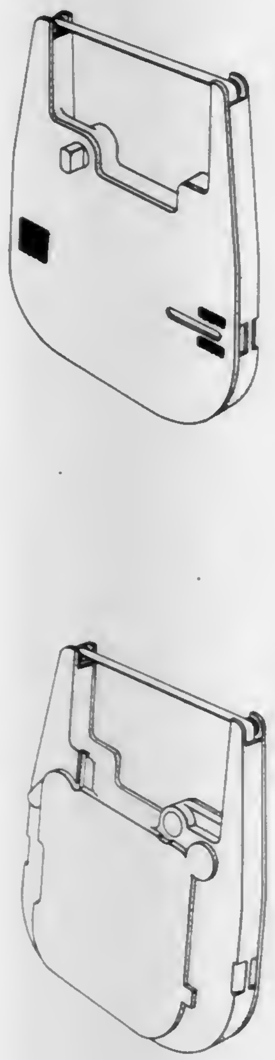
286,058
PRINTING RIBBON CASSETTE
Toshio Yamamoto, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Oct. 2, 1984, Ser. No. 656,868

Claims priority, application Japan, Apr. 3, 1984, 59-013019

Term of patent 14 years

U.S. Cl. D18—22



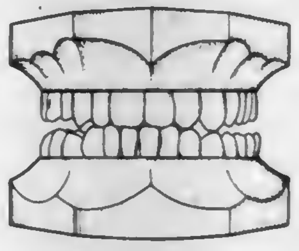
286,059
TEETH MODEL
Michael Craft, Cambridge, and Peter C. Hemming, Northampton, both of England, assignors to Health Education Counsil, London, England

Filed Dec. 1, 1983, Ser. No. 556,857

Claims priority, application United Kingdom, Apr. 23, 1983, 1012667

Term of patent 14 years

U.S. Cl. D19—62

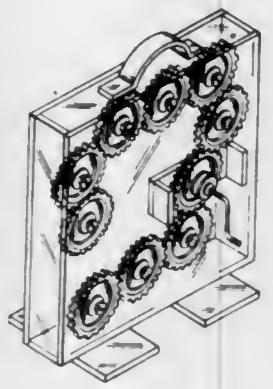


286,060
DEMONSTRATOR FOR INDICATING THE EFFECT OF ADDITIVE IN ENGINE OIL AND THE LIKE
Clinton H. Morey, Mesa, Ariz., assignor to Dolores E. Stead, Federal Way, Wash.

Filed Apr. 30, 1984, Ser. No. 605,066

Term of patent 14 years

U.S. Cl. D19—62

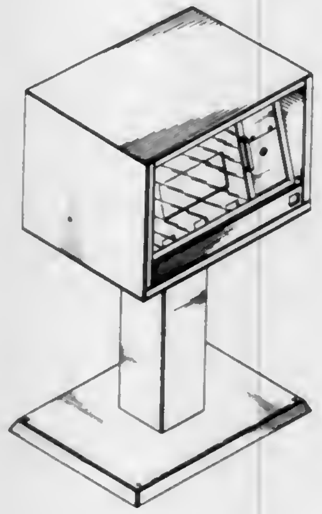


286,061
NEWSPAPER VENDING MACHINE
Jack S. Chalabian, Huntington Beach, Calif., assignor to K-Jack Engineering Co., Inc., Gardena, Calif.

Filed Mar. 7, 1984, Ser. No. 587,215

Term of patent 14 years

U.S. Cl. D20—6

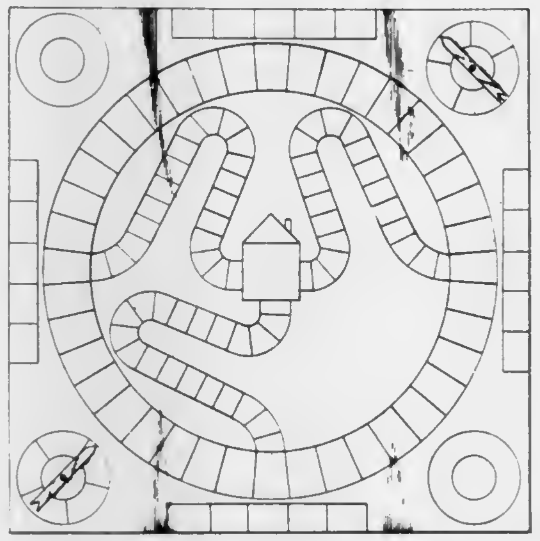


286,062
GAME BOARD
Richard L. Kernea, 9012 Burnwood Dr., Chattanooga, Tenn. 37416, and Angela Bilbrey, 18 N. View Dr., Ringgold, Ga. 30736

Filed Apr. 12, 1984, Ser. No. 599,634

Term of patent 14 years

U.S. Cl. D21—35

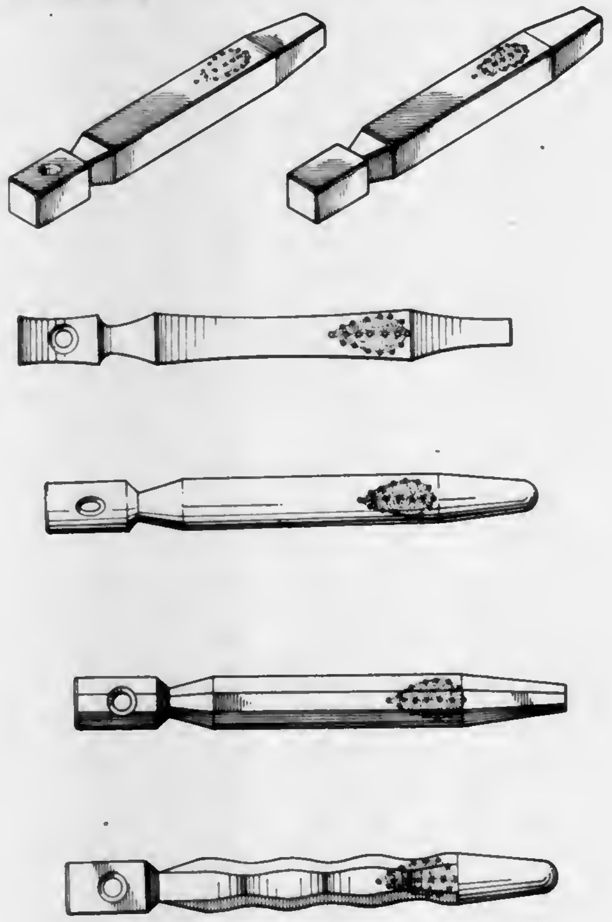


286,063
HANDGRIP FOR RUNNER OR SIMILAR ARTICLE
Peter Z. Valentine, 55 Blanche St., Cambridge, Mass. 02139; Franco Vitaliano, 19 Arlington St., Boston, Mass. 02115, and Ivor S. Smith, 575 Washington St., Brookline, Mass. 02146

Filed May 14, 1984, Ser. No. 609,796

Term of patent 14 years

U.S. Cl. D21—191

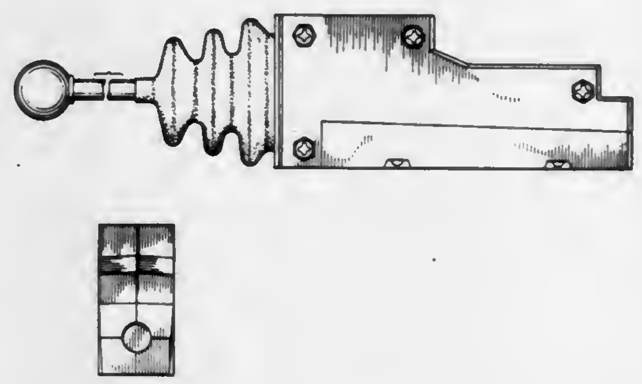


286,064
VALVE ACTUATOR CONTROL UNIT
Peter D. Adams, La Canada, and John M. Hartshorne, Chino, both of Calif., assignors to Quadrastat Corporation, City of Industry, Calif.

Filed Jun. 13, 1983, Ser. No. 504,024

Term of patent 14 years

U.S. Cl. D23—19



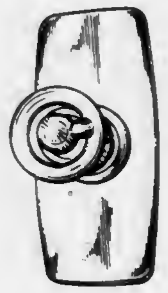
286,065
THERMOSTAT VALVE CONTROL
Gerhard E. Joerger, Hans-Thoma-Strasse 93, Mannhein, Fed. Rep. of Germany

Filed May 9, 1983, Ser. No. 493,098

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1982, MRV/1248

Term of patent 14 years

U.S. Cl. D23—30

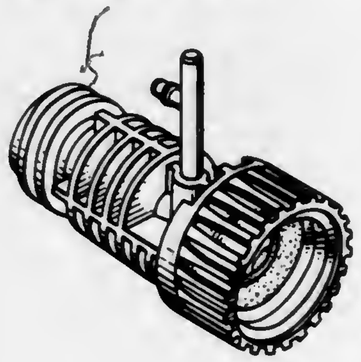


286,066
INJECTOR NOZZLE
Kent W. Goessling, Fullerton, and Erich E. Ginkel, San Dimas, both of Calif., assignors to Rain Bird Consumer Products Mfg. Corp., Duarte, Calif.

Filed Oct. 11, 1983, Ser. No. 540,843

Term of patent 14 years

U.S. Cl. D23—34



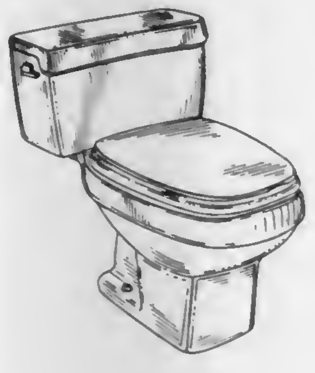
286,067
WATER CLOSET

Andrew L. Alger, Wilmette, Ill., assignor to Household Manufacturing, Inc., Prospect Heights, Ill.

Filed Mar. 18, 1983, Ser. No. 476,596

Term of patent 14 years

U.S. Cl. D23—65



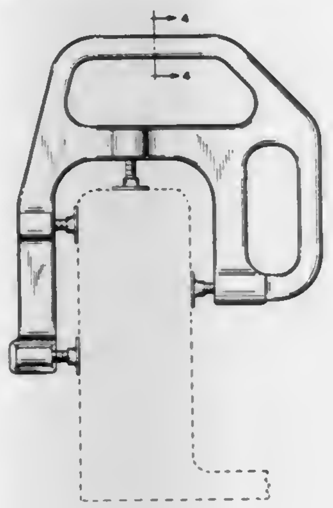
286,068
BATHTUB RAIL

Kurt Landsberger, 103 Harrison St., Verona, N.J. 07044

Filed Mar. 12, 1984, Ser. No. 588,196

Term of patent 14 years

U.S. Cl. D23—69



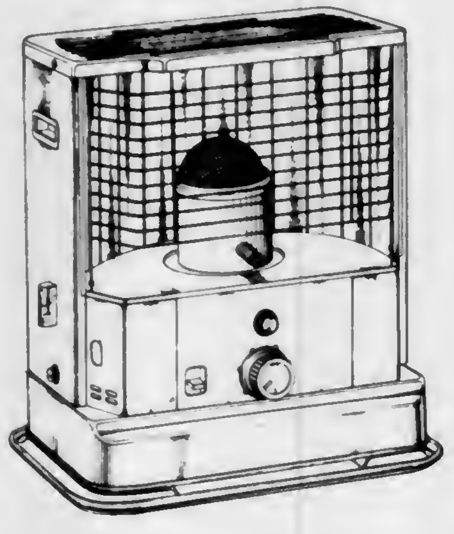
286,069
STOVE

Hideo Nishikawa; Kenzo Okamoto; Koichi Sakai, all of Osaka, and Fumihiko Kitada, Neyagawa, all of Japan, assignors to Imanishi Kinzoku Kogyo Kabushiki Kaisha (Imarflex Mfg. Co., Ltd.), Osaka, Japan

Filed Jun. 21, 1983, Ser. No. 506,394

Term of patent 14 years

U.S. Cl. D23—122



286,070
SPHYGMOMANOMETER

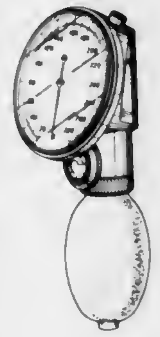
Norio Moro, Shibukawa, Japan, assignor to Nihon Seimitsu Sokki Co., Ltd., Shibukawa, Japan

Filed Mar. 29, 1984, Ser. No. 594,519

Claims priority, application Japan, Mar. 14, 1984, 59-9845

Term of patent 14 years

U.S. Cl. D24—21



286,071
NATURAL NIPPLE

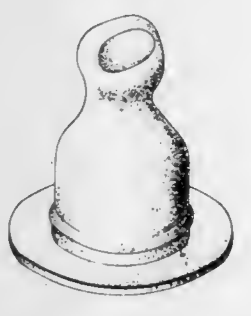
Ronald C. Fuller, Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.

Filed Feb. 11, 1983, Ser. No. 465,739

The portion of the term of this patent subsequent to May 15, 1998, has been disclaimed.

Term of patent 14 years

U.S. Cl. D24—46



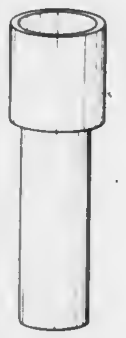
286,072
BIOLOGICAL SAMPLE CUP OR THE LIKE

James B. Miller, Arcadia, Calif., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Jul. 16, 1982, Ser. No. 399,156

Term of patent 14 years

U.S. Cl. D24—56



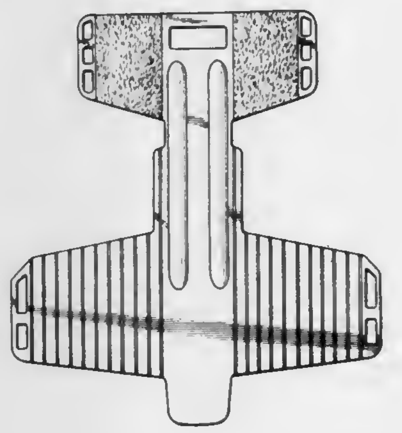
286,073
SPLINT

Robert A. Russell, Annandale, Australia, assignor to Consulting Organization of Sydney College of the Arts, Ltd., Glebe, Australia

Filed Apr. 25, 1983, Ser. No. 488,141

Term of patent 14 years

U.S. Cl. D24—64



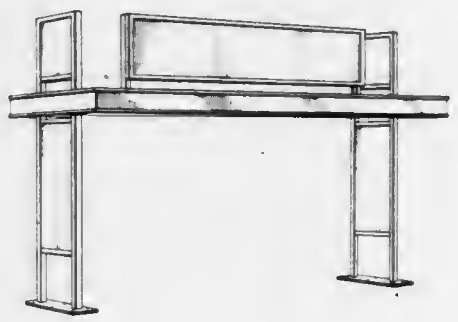
286,074
SHELTER

Manuel R. Corte, Rogers, Tex., assignor to Bushe, Inc., Rogers, Tex.

Filed Jan. 23, 1984, Ser. No. 572,902

Term of patent 14 years

U.S. Cl. D25—1



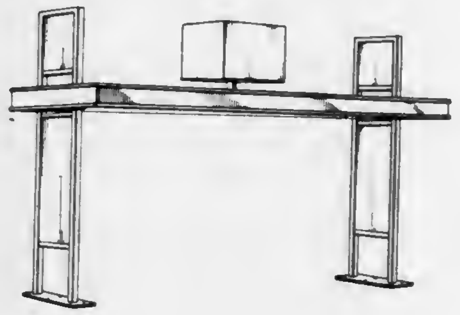
286,075
SHELTER

Manuel R. Corte, Rogers, Tex., assignor to Bushe, Inc., Rogers, Tex.

Filed Jan. 23, 1984, Ser. No. 572,903

Term of patent 14 years

U.S. Cl. D25—1



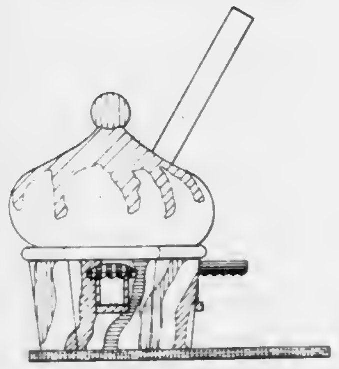
286,076
ICE CREAM SHOP

Joseph J. DeStefano, 531 DeCoursey St., Independence, Ky. 41051

Filed Oct. 28, 1983, Ser. No. 547,662

Term of patent 14 years

U.S. Cl. D25—10



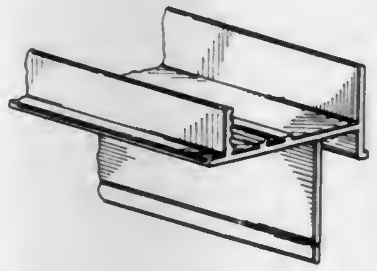
286,077
FRAME FIXED JAMB

Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Aug. 2, 1985, Ser. No. 761,820

Term of patent 14 years

U.S. Cl. D25—74



286,078
STANDARD FRAME HEAD

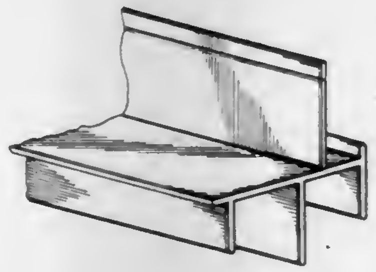
Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Aug. 2, 1985, Ser. No. 761,822

The portion of the term of this patent subsequent to Oct. 14, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—74



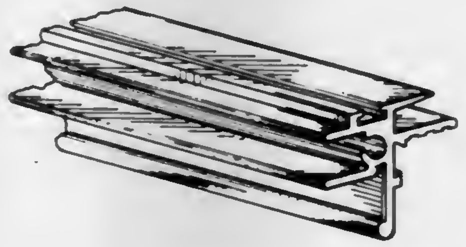
286,079
VENT JAMB

Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Aug. 2, 1985, Ser. No. 761,879

Term of patent 14 years

U.S. Cl. D25—74



286,080
VENT HEAD AND SILL

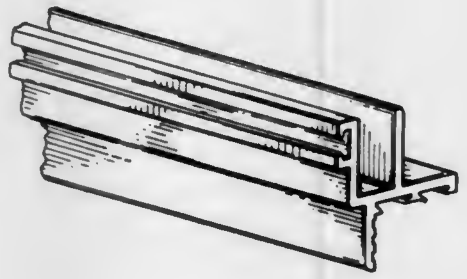
Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Aug. 2, 1985, Ser. No. 761,880

The portion of the term of this patent subsequent to Oct. 14, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—74



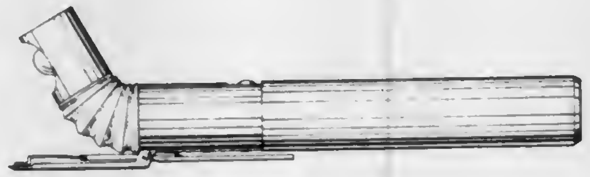
286,081
COMBINED HIGH INTENSITY LIGHT AND HOLDER FOR SILICON WAFERS OR SIMILAR ARTICLES

Ardelle R. Johnson, Minnetonka, Minn., assignor to FSI Corporation, Chaska, Minn.

Filed May 24, 1984, Ser. No. 613,429

Term of patent 14 years

U.S. Cl. D26—38



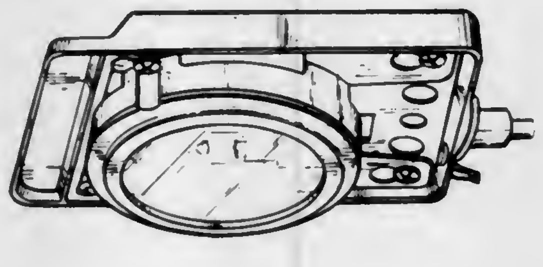
286,082
ADJUSTABLE LAMP

Haim Shwisha, Westport, Conn., assignor to Electrix, Inc., New Haven, Conn.

Filed Jun. 8, 1984, Ser. No. 618,725

Term of patent 14 years

U.S. Cl. D26—61



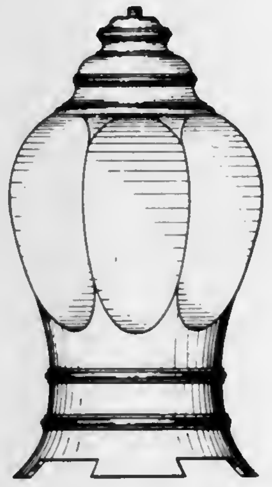
286,083
LAMP BASE

Joseph A. Minicucci, New York, N.Y., and Terry Manton, Clifton, N.J., assignors to Westwood Lighting Group, Inc., Paterson, N.J.

Filed Mar. 6, 1984, Ser. No. 586,630

Term of patent 14 years

U.S. Cl. D26—110



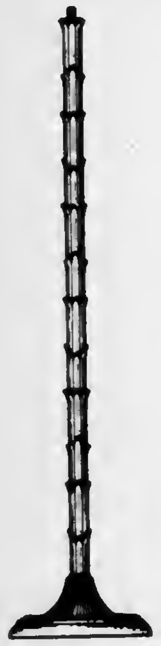
286,084
LAMP BASE

Joseph A. Minicucci, New York, N.Y., and Terry Manton, Clifton, N.J., assignors to Westwood Lighting Group, Inc., Paterson, N.J.

Filed Mar. 6, 1984, Ser. No. 586,900

Term of patent 14 years

U.S. Cl. D26—110



286,085
PHARMACEUTICAL TABLET

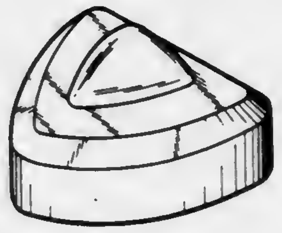
Geoffrey D. Tovey, Harpenden, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed Dec. 28, 1984, Ser. No. 687,396

The portion of the term of this patent subsequent to Oct. 14, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D28—2



286,086
PHARMACEUTICAL TABLET

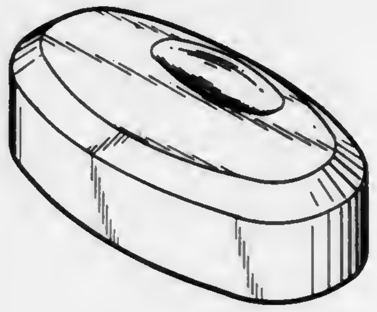
Geoffrey D. Tovey, East Common, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed Dec. 28, 1984, Ser. No. 687,405

The portion of the term of this patent subsequent to Feb. 8, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D28—2



286,087
HAIR-DRYER

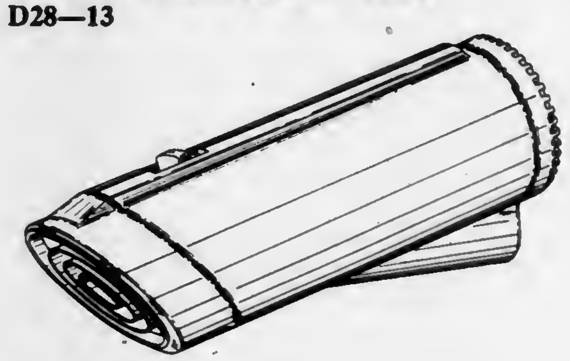
Murray I. C. Camens, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 2, 1984, Ser. No. 626,954

Claims priority, application United Kingdom, Jan. 25, 1984, 1017515

Term of patent 14 years

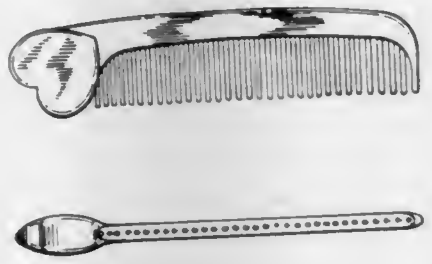
U.S. Cl. D28—13



286,088

COMB

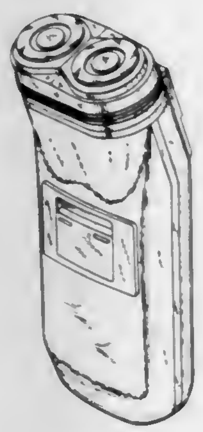
Dominic L. Scoccola, Cleveland, Ohio, assignor to S.A.S. Ventures, Inc., Cleveland, Ohio
Filed Oct. 3, 1984, Ser. No. 657,156
Term of patent 14 years
U.S. Cl. D28—22



286,089

DRY SHAVER

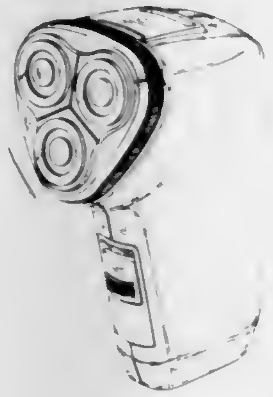
Klaas T. Oord, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 30, 1984, Ser. No. 645,637
Claims priority, application Benelux, Mar. 12, 1984, 58805-02
Term of patent 14 years
U.S. Cl. D28—50



286,090

DRY SHAVER

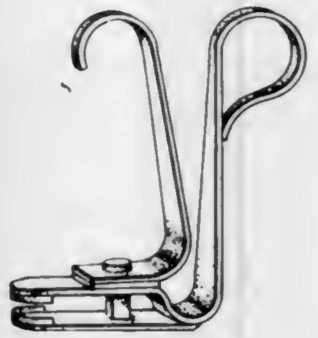
Klaas T. Oord, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 27, 1984, Ser. No. 644,590
Claims priority, application Benelux, Mar. 1, 1984, 58773-00
Term of patent 14 years
U.S. Cl. D28—50



286,091

MANICURE CUTTER OR THE LIKE

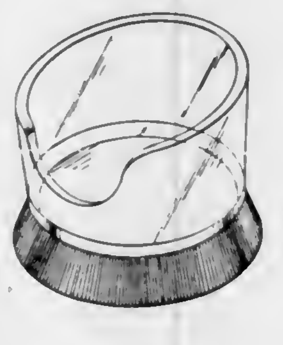
Lloyd D. Hill, 664 Upper Wentworth St., Hamilton, Ontario, Canada (L9A 4V3)
Filed Jan. 6, 1984, Ser. No. 568,646
Term of patent 14 years
U.S. Cl. D28—60



286,092

MAGNIFYING MIRROR FOR USE IN SELF-EXAMINATION OF THE EYE

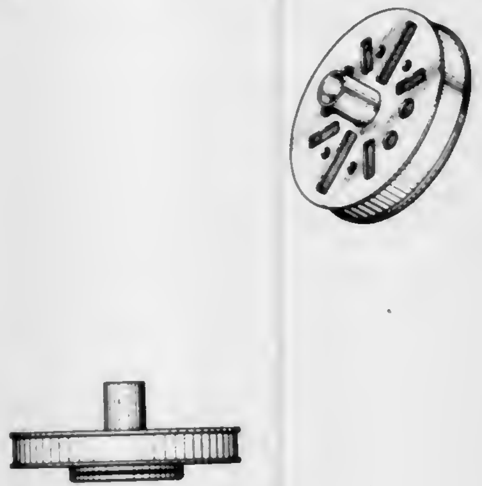
Steven Weimar, San Dimas, Calif., assignor to Optical Dynamics, Anaheim, Calif.
Filed Apr. 18, 1983, Ser. No. 486,199
Term of patent 14 years
U.S. Cl. D28—64.1



286,093

CARROUSEL COSMETIC TRAY

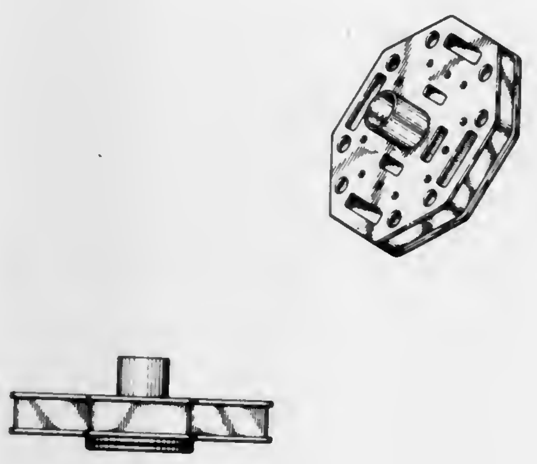
Delaine Coller, 1419 S. 1300 East, Salt Lake City, Utah 84105
Filed May 1, 1984, Ser. No. 605,900
Term of patent 14 years
U.S. Cl. D28—76



286,094

CARROUSEL COSMETIC TRAY

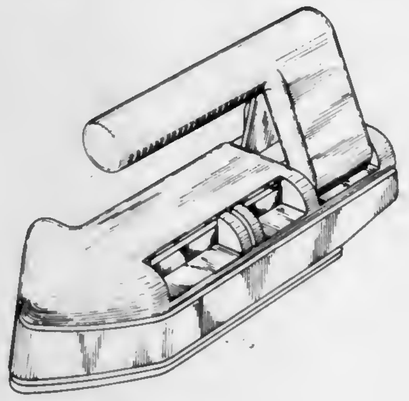
Delaine Coller, 1419 S. 1300 East, Salt Lake City, Utah 84105
Filed May 1, 1984, Ser. No. 605,901
Term of patent 14 years
U.S. Cl. D28—76



286,095

TRAVEL IRON

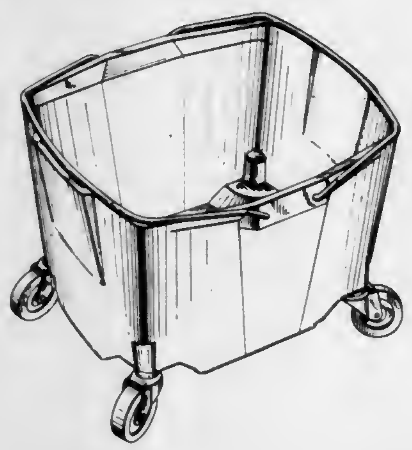
Jan F. Van Asten, Leek, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 29, 1984, Ser. No. 594,637
Claims priority, application Benelux, Oct. 11, 1983, 58337-02
Term of patent 14 years
U.S. Cl. D32—69



286,096

BUCKET

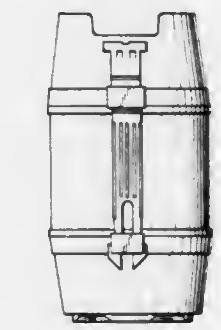
Philip Jaros, Gloversville, and Paul O. Wright, Schenectady, both of N.Y., assignors to White Mop Wringer Company, Fultonville, N.Y.
Filed Jan. 18, 1984, Ser. No. 571,727
Term of patent 14 years
U.S. Cl. D32—53.1



286,097

CONTAINER FOR LIQUIDS

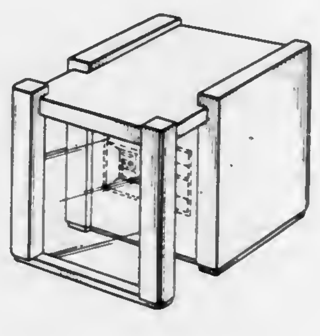
Masamichi Imanishi, Ikoma, and Haruyoshi Taguchi, Osaka, both of Japan, assignors to Suntory Kabushiki Kaisha (Suntory Limited), Osaka, Japan
Filed Jul. 26, 1983, Ser. No. 517,650
Claims priority, application Japan, Feb. 26, 1983, 58-27810
Term of patent 14 years
U.S. Cl. D34—39



286,098

BUILDING

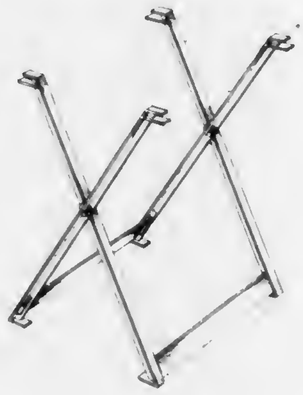
Ernest F. J. Prinzhorn, Pasadena, Calif., assignor to QRS Corporation, Los Angeles, Calif.
Filed Nov. 17, 1983, Ser. No. 552,727
Term of patent 14 years
U.S. Cl. D99—28



286,099

PLASTIC BAG SUPPORTER

Richard S. Risch, 1942 Deerpark #58, Fullerton, Calif. 92631
Filed Sep. 19, 1984, Ser. No. 651,889
Term of patent 14 years
U.S. Cl. D34—6



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF OCTOBER, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. Johnson Metals Corporation: *See—*
  - Harker, Howard R.; and Knecht, Joseph A., II, 4,616,363, Cl. 373-14.000.
- A. Monforts GmbH & Co.: *See—*
  - Gierse, Franz-Josef; Hermanns, Heinrich; Hermes, Werner; Lupnitz, Gerhard; Pabst, Manfred; and Schlicht, Heribert, 4,615,124, Cl. 34-82.000.
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  - Bell, Robert; Westius, Stefan; and Skold, Bjorn-Ake, 4,615,562, Cl. 297-250.000.
- AB Fixfabriken: *See—*
  - Lindahl, Per-Olof, 4,615,081, Cl. 24-90.00R.
- AB Sandvik Hard Materials: *See—*
  - Johansson, Anders I., 4,615,220, Cl. 73-789.000.
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- Abbott Laboratories: *See—*
  - Chu, Daniel T., 4,616,019, Cl. 514-254.000.
- Abe, Junichi: *See—*
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- Abe, Kiyomi; Kazama, Mitsuo; and Kobayashi, Hiroshi, to Pentel Kabushiki Kaisha. Pattern input apparatus. 4,616,107, Cl. 178-18.000.
- Abe, Masao: *See—*
  - Tamura, Shohei; Sasaki, Sadamitsu; Abe, Masao; Nakazawa, Hitoshi; Ichinose, Hisashi; Nakamoto, Keiji; and Yumoto, Satoshi, 4,615,829, Cl. 252-500.000.
- Abel, Heinz; and Schafer, Paul, to Ciba-Geigy Corporation. Propylene oxide polyadducts containing carboxyl groups and their salts useful as dyeing assistants for dyeing wool fibers. 4,615,837, Cl. 260-410.600.
- Abrahamson, Donald W.: *See—*
  - Stewart, James J.; Abrahamson, Donald W.; and Harney, Marilyn J., 4,615,784, Cl. 204-263.000.
- Abrams, David; Curbelo, Raul; and Turner, R. Brough, to Bio-Rad Laboratories, Inc. Self-calibrating adaptive ranging apparatus and method. 4,616,329, Cl. 364-571.000.
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- Aclin, John J.: *See—*
  - Neuberg, William B.; and Aclin, John J., 4,615,911, Cl. 427-197.000.
- Adeka Argus Chemical Co., Ltd.,: *See—*
  - Inoue, Tetsuyu; Tsuruga, Kouji; and Harada, Masashi, 4,615,912, Cl. 427-212.000.
- Adelphi Center For Energy Studies: *See—*
  - Wright, Donald G., 4,615,210, Cl. 73-55.000.
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  - Vincent, Michel; Remond, Georges; and Laubie, Michel, 4,616,029, Cl. 514-412.000.
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- Adolph Coors Company: *See—*
  - Lane, Michael L.; and Whitney, Lowell T., 4,615,177, Cl. 62-79.000.
- AE PLC: *See—*
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- Agency of Industrial Science & Technology: *See—*
  - Hayashi, Yutaka; Kojima, Yoshikazu; Kamiya, Masaaki; and Tanaka, Kojiro, 4,616,340, Cl. 365-185.000.
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- Agency of Industrial Science & Technology, Ministry of International Trade & Industry: *See—*
  - Fukuta, Kenji; Aoki, Eiji; Nagatsuka, Yoshihiro; and Kitano, Takeshi, 4,615,256, Cl. 87-33.000.
- Agfa-Gevaert Aktiengesellschaft: *See—*
  - Haseler, Helmut, 4,615,971, Cl. 430-491.000.
  - Muller, Jurgen; Krobel, Heinz; Reichart, Michael; and Schindlbeck, Gunther, 4,615,596, Cl. 354-76.000.
- Aggarwal, Sundar L.: *See—*
  - Hargis, Ivan G.; Fabris, Hubert J.; Livigni, Russell A.; Aggarwal, Sundar L.; Thomas, George B.; and Wilson, John A., 4,616,065, Cl. 525-99.000.
- Agway Inc.: *See—*
  - Nocek, James E.; Braund, Darwin G.; Steele, Robert L.; and Macgregor, Charles A., 4,615,891, Cl. 426-231.000.
- Aiba, Kazumi: *See—*
  - Niwa, Toshikazu; Takahashi, Mineo; and Aiba, Kazumi, 4,615,091, Cl. 29-156.40R.
- Aiba, Shuichi; and Ohnuki, Tetsuo, to Sanraku-Ocean Co., Ltd. Plasmid pOA15. 4,615,980, Cl. 435-317.000.
- Ainsworth Nominees Pty. Ltd.: *See—*
  - Boudville, Glenn H., 4,615,350, Cl. 133-1.00R.
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  - Cormier, Thomas E.; Dawson, Bruce K.; Wilson, Keith B.; and Young, Thomas C., 4,615,716, Cl. 62-24.000.
  - Murphy, James R., 4,615,992, Cl. 502-41.000.
- Aisin Seiki Kabushiki Kaisha: *See—*
  - Kodama, Hisashi; and Kobayashi, Yukimori, 4,615,307, Cl. 123-90.160.
  - Mizuno, Tomokimi; and Yamaguchi, Kazuaki, 4,615,378, Cl. 165-10.000.
  - Takahashi, Shigeo, 4,615,231, Cl. 74-467.000.
- Aisin Seiki Kabushikikaisha: *See—*
  - Kobayashi, Hideyuki; and Mitsui, Tsutomu, 4,615,425, Cl. 192-0.076.
- Aiuchi, Susumu: *See—*
  - Noguchi, Minori; Otsubo, Toru; and Aiuchi, Susumu, 4,615,620, Cl. 356-378.000.
- Akademie der Wissenschaften der DDR: *See—*
  - Loth, Frith; Dautzenberg, Horst; Stamberg, Jiri ; Peska, Jan; Bertram, Dieter; and Lettau, Herbert, 4,615,880, Cl. 424-15.000.
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  - Watanabe, Hiroyuki; Noguchi, Kohkichi; Kase, Toshio; and Akita, Shuichi, 4,616,069, Cl. 525-370.000.
- Alco Chemical Corporation: *See—*
  - Ruffner, Charles G., 4,616,074, Cl. 526-318.000.
- Alexander, George, Jr. Computer paper. 4,615,929, Cl. 428-43.000.
- Alkco Manufacturing Company: *See—*
  - Westgaard, Donald J.; and Roos, Scott L., 4,616,296, Cl. 362-33.000.
- Allebach, Gene E., to National Machinery Company, The. Thread rolling monitoring system. 4,615,197, Cl. 72-88.000.
- Allegheny Ludlum Steel Corporation: *See—*
  - Tommaney, Joseph W., 4,615,730, Cl. 75-51.200.
- Allen, David L.; and Larsen, Tor G., to Eaton Corporation. Auto-focus alignment and measurement system and method. 4,615,621, Cl. 356-399.000.
- Allied Corporation: *See—*
  - Armor, John N.; and Carlson, Emery J., 4,615,736, Cl. 75-251.000.
  - Bobbio, Stephen M.; Flanigan, Marie C.; Thrun, Kenneth M.; and DePrenda, Ralph L., 4,615,764, Cl. 156-643.000.
  - Boggs, Beryl A.; and Gordon, Rob R., Jr., 4,615,245, Cl. 83-37.000.
  - Gaiser, Robert F., 4,615,419, Cl. 188-181.00T.
  - Gonczy, Stephen T.; and Mitsche, Roy T., 4,615,875, Cl. 423-626.000.
  - Li, Hsin L.; Misson, John D.; and Carrigan, David G., 4,616,204, Cl. 335-297.000.
  - Sainz, Mario A., 4,615,225, Cl. 73-864.330.
  - Wakeman, Russell J., 4,615,306, Cl. 123-90.160.
- Allinson, Francis W. Penile support. 4,615,337, Cl. 128-79.000.
- Allison, Robert S.: *See—*
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- Alloy Surfaces Company, Inc.: *See—*
  - Baldi, Alfonso L., 4,615,920, Cl. 428-652.000.
- Allred, David D.: *See—*
  - Ovshinsky, Stanford R.; Allred, David D.; Walter, Lee; and Hudgens, Stephen J., 4,615,905, Cl. 427-39.000.
- Allsop, Inc.: *See—*
  - Clausen, Eivind; and Allsop, James D., 4,616,283, Cl. 360-128.000.
- Allsop, James D.: *See—*
  - Clausen, Eivind; and Allsop, James D., 4,616,283, Cl. 360-128.000.
- Alman, David H.: *See—*
  - Falcoff, Allan F.; and Alman, David H., 4,615,902, Cl. 427-8.000.
- Alpern, Marvin; Cerwin, Robert J.; and Roshdy, Constance E., to Ethicon, Inc. Retainer for surgical sutures. 4,615,435, Cl. 206-63.300.
- Alps Electric Co., Ltd.: *See—*
  - Sato, Akira, 4,616,116, Cl. 200-242.000.
- Alusuisse Italia, S.p.A.: *See—*
  - Corato, Renzo, 4,615,676, Cl. 432-9.000.

Alvarez, Luis W.; and Schwemin, Arnold J., to Schwem Instruments. Optically stabilized camera lens system. 4,615,590, Cl. 350-500.000.

Alvi, Haroon I.: *See—*

Sallas, John J.; Trevino, Toby R.; Alvi, Haroon I.; Shoffner, John S.; and Wason, Cameron B., 4,616,352, Cl. 367-190.000.

Alvin, Pierre L. M., to Alvin, Pierre L. M. Lateral street cleaning brush. 4,615,064, Cl. 15-180.000.

ALZA Corporation: *See—*

Gale, Robert M.; and Berggren, Randall G., 4,615,699, Cl. 604-897.000.

Guittard, George V.; Wong, Patrick S. L.; and Theeuwes, Felix, 4,615,698, Cl. 604-892.000.

Amakawa, Koji; and Uozumi, Norihira, to Hitachi, Ltd. Fuel cell. 4,615,955, Cl. 429-34.000.

Amano, Sayoko: *See—*

Kitagishi, Nozomu; Itoh, Susumu; and Amano, Sayoko, 4,615,603, Cl. 354-479.000.

Amchem Products, Inc.: *See—*

Kuzma, Andrew E.; Costello, James W.; and Wallace, Alexander G. T., 4,616,306, Cl. 364-140.000.

American Can Company: *See—*

Hsu, Joseph C.; and Guckenberger, Anthony C., 4,615,926, Cl. 428-35.000.

Newsome, David L.; and Rein, Arnold R., 4,615,922, Cl. 428-35.000.

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von Reckinghausen, Daniel R., 4,615,222, Cl. 73-861.210.

American Home Products Corporation: *See—*

Mobilio, Dominick; Demerson, Christopher A.; and Humber, Leslie G., 4,616,028, Cl. 514-411.000.

American Monitor Corporation: *See—*

Hyde, David D.; and Stuart, James R., 4,615,866, Cl. 422-106.000.

American Safety Equipment Corporation: *See—*

Hollowell, William, 4,616,141, Cl. 307-10.0SB.

Amerock Corporation: *See—*

Shaw, Craig M., 4,615,654, Cl. 409-178.000.

Ametek, Inc.: *See—*

Ache, Lani G., 4,615,219, Cl. 73-741.000.

Ammco Tools, Inc.: *See—*

Bogaerts, Leo C., 4,615,152, Cl. 51-332.000.

AMP Incorporated: *See—*

Galloway, Michael D.; Rose, William H.; and Shaffer, David T., 4,616,112, Cl. 200-5.00R.

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Furrer, Harald; Anagnostopulos, Hiristo; Gebert, Ulrich; and Hinze, Heinz-Joachim, 4,616,020, Cl. 514-264.000.

Anbe, Yoshinori, to Showa Precision Machinery Co., Ltd. Reciprocating gas compressor. 4,615,259, Cl. 92-86.000.

Andersen, John E.; Petrosky, Joseph A.; Messina, Benedicto U.; and Silkman, William D., to International Business Machines Corporation. Directory memory system having simultaneous write and comparison data bypass capabilities. 4,616,341, Cl. 365-189.000.

Anderson, John W., Jr.: *See—*

Roche, William J.; and Anderson, John W., Jr., 4,616,156, Cl. 315-107.000.

Anderson, Mark M., to Northrop Corporation. Electrical connector. 4,615,577, Cl. 339-103.00M.

Andre, Paul R.: *See—*

Nash, Robert W.; Andre, Paul R.; and Knoblock, Dennis F., 4,615,546, Cl. 285-26.000.

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Neustadt, Bernard R.; Andrews, David R.; McNamara, Paul E.; and Watkins, Robert W., 4,616,012, Cl. 514-222.000.

Andrews, Edward W.: *See—*

Moran, Brian P.; Andrews, Edward W.; and Miller, Stanford W., 4,616,259, Cl. 358-148.000.

Anson, Larry D.; and Miller, Donald W., to Environmental Elements Corp. Fluid valve system. 4,615,505, Cl. 251-174.000.

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Braun, Hilarion; and Antolik, Ralph E., III, 4,616,235, Cl. 346-75.000.

Antonucci, John D.; and Franchi, Peter R., to United States of America, Air Force. Conformal phased array antenna pattern corrector. 4,616,230, Cl. 342-373.000.

Antonucci, Joseph M., to United States of America, Health and Human Services. Hydrophobic dental composites based on a polyfluorinated dental resin. 4,616,073, Cl. 526-246.000.

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Fukuta, Kenji; Aoki, Eiji; Nagatsuka, Yoshihiro; and Kitano, Takeshi, 4,615,256, Cl. 87-33.000.

Aoyagi, Keizo, to Tokyo Shibaura Denki Kabushiki Kaisha. High speed address calculation circuit for a pipeline-control-system data-processor. 4,616,313, Cl. 364-200.000.

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Noguchi, Eiji; and Aoyama, Keizo, 4,616,344, Cl. 365-203.000.

Aoyama, Takeo; Kamei, Tadashi; and Uehara, Mikio, to Nippon Petrochemicals Company, Limited. Method for producing thermoplastic resin sheet or filler-containing resin sheet. 4,615,853, Cl. 264-122.000.

Arakawa, Noriyuki: *See—*

Sakagami, Teruo; Arakawa, Noriyuki; and Murayama, Naohiro, 4,615,943, Cl. 428-332.000.

Arase, Akira, to Okamura Corporation. Device for accurately forwarding and retrieving articles. 4,615,429, Cl. 198-456.000.

Arbter, Conrad, to Kolb & Schule. Coiled flexible workpiece transporting device. 4,615,432, Cl. 198-725.000.

Archer, David H.: *See—*

Ciliberti, David F.; Lippert, Thomas E.; and Archer, David H., 4,615,283, Cl. 110-216.000.

Armor, John N.; and Carlson, Emery J., to Allied Corporation. Preparation of metal powders. 4,615,736, Cl. 75-251.000.

Armstrong, Robert B.; Jongenburger, Huibert S.; and Sadhukhan, Pasupati, to M. W. Kellogg Company, The. Back-mixed hydrotreating reactor. 4,615,870, Cl. 422-191.000.

Arnall, Harry L. Tool support for a wood turning lathe. 4,615,365, Cl. 142-49.000.

Arnold, Loren G., to Unverferth Manufacturing Company, Inc. Multiple farm implement actuating system. 4,615,396, Cl. 172-138.000.

Asahi Glass Company, Ltd.: *See—*

Kanno, Fukuo; and Nakaya, Keiichi, 4,615,831, Cl. 252-609.000.

Ohotoshi, Sachio; and Hase, Fumio, 4,615,479, Cl. 228-180.100.

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Hasegawa, Akio; and Horiguchi, Sadakazu, 4,615,977, Cl. 435-240.000.

Nishikido, Joji; Kodama, Eiji; and Shibuya, Chisei, 4,616,081, Cl. 540-222.000.

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Yamauchi, Takao; and Asahi, Yasuhiko, 4,615,252, Cl. 84-1.100.

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Nakajima, Yukio; Higuchi, Tatsuji; and Asakura, Yasuo, 4,615,600, Cl. 354-451.000.

Asami, Masatoshi: *See—*

Mukaiyama, Teruaki; Sakito, Yoji; and Asami, Masatoshi, 4,616,092, Cl. 560-177.000.

Asanomi, Koji; and Ishimi, Haruyoshi, to Mazda Motor Corporation. Auxiliary mechanism driving device in a V-type engine. 4,615,308, Cl. 123-90.270.

Asbestos Institute, The: *See—*

Le Van Mao, Raymond, 4,615,995, Cl. 502-64.000.

ASEA Aktiebolag: *See—*

Goransson, Michael; and Nilsson, Jan, 4,615,745, Cl. 148-4.000.

ASEA Electric, Incorporated: *See—*

Jones, Howard T.; and Golner, Thomas M., 4,615,114, Cl. 29-858.000.

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Yoshioka, Tetsuo; Yamamoto, Takatsugu; Nishiyama, Toshihiko; Fujita, Hiroyuki; and Ashida, Shigeki, 4,615,901, Cl. 426-656.000.

Ashwood, Valerie A.; and Evans, John M., to Beecham Group p.l.c. Chroman derivatives. 4,616,021, Cl. 514-309.000.

AT&T Bell Laboratories: *See—*

Chang, Gee-Kung; Hartman, Adrian R.; and Robinson, McDonald, 4,616,247, Cl. 357-30.000.

Fontenot, Michael L., 4,616,359, Cl. 370-60.000.

Geary, John M.; Goodby, John W.; and Leslie, Thomas M., 4,615,586, Cl. 350-350.00S.

Praught, Ronald B.; and Wilkowski, Matthew A., 4,616,205, Cl. 336-82.000.

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Atlantic Richfield Company: *See—*

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Skinner, James L., 4,615,710, Cl. 44-2.000.

Ato Chimie: *See—*

Kornbaum, Simon; and Chenard, Jean-Yves, 4,616,046, Cl. 522-79.000.

Atwell, William L. Hydraulic safety brake. 4,615,418, Cl. 188-170.000.

Aubert, Stephen A., to United States of America, Air Force. Bomb and bomb liner. 4,615,272, Cl. 102-466.000.

Austel, Volkhard: *See—*

Hauel, Norbert; Austel, Volkhard; Heider, Joachim; Reiffen, Manfred; Diederen, Willi; and Haarman, Walter, 4,616,018, Cl. 514-254.000.

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Autoflug GmbH: *See—*

Sedlmayr, Gerhard; and Just, Herbert, 4,615,540, Cl. 280-806.000.

Autrey, Samuel W.; and Drab, Harold G., to Hughes Aircraft Company. Narrow-band beam steering system. 4,616,231, Cl. 342-374.000.

Avakian, Roger W., to General Electric Company. Low temperature impact modified thermoplastic foam. 4,616,042, Cl. 521-81.000.

Awe, Russell C.: *See—*

Saperstein, Zalman P.; Awe, Russell C.; Costello, Norman F.; and Larrabee, Scott R., 4,615,385, Cl. 165-175.000.

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Fedorov, Svyatoslav N.; Zakharov, Valery D.; and Axenov, Alexandr O., 4,615,700, Cl. 623-6.000.

Ayata, Kenzo: *See—*

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Ayres, James W.: *See—*

Sandine, William E.; and Ayres, James W., 4,615,978, Cl. 435-253.000.

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Yoda, Kuniichi; Ishihara, Yuji; and Azegami, Hitoshi, 4,615,949, Cl. 428-425.900.

B.A.T. Cigaretten-Fabriken GmbH: *See—*

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B.S.L. (Bignier Schmidt-Laurent): *See—*

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Babcock & Wilcox Company, The: *See—*

Spada, Ralph E.; and Shilot, Thomas, 4,615,477, Cl. 228-119.000.

Badenhop, Stanley. Apparatus and method for controlling a vacuum cooler. 4,615,178, Cl. 62-100.000.

Bahrmann, Helmut: *See—*

Cornils, Boy; Bahrmann, Helmut; Lipps, Wolfgang; and Konkol, Werner, 4,616,096, Cl. 568-454.000.

Bailey, Edward L.; Cimijotti, Raymond L.; and Lowrie, Levern H., to International Business Machines Corporation. Adjustable CRT display. 4,616,218, Cl. 340-720.000.

Bailey, Michael P.; Brooks, Raymond G.; Frank, James R., Jr.; Johnson, Justin J. J.; and Maholm, Mark B., to JVI Laser Systems Inc. Apparatus for determining the relationship of vehicle thrust line, and body center line for use in wheel alignment. 4,615,618, Cl. 356-152.000.

Baird Corporation: *See—*

Croteau, Francis R., 4,616,317, Cl. 364-414.000.

Baird, John, to Motorola, Inc. Encapsulation means and method for reducing flash. 4,615,857, Cl. 264-272.170.

Baker, Geoffrey: *See—*

Ball, Patrick J. R.; Baker, Geoffrey; and Renals, Martin, 4,616,136, Cl. 250-338.000.

Baker, William G., to Design Engineering Pty. Limited. Filling and weighing machine. 4,615,363, Cl. 141-193.000.

Baldi, Alfonso L., to Alloy Surfaces Company, Inc. Pyrophoric stainless steel. 4,615,920, Cl. 428-652.000.

Baldwin, John J.; and Ponticello, Gerald S., to Merck & Co., Inc. Aminohydroxypropoxy substituted aryl compounds. 4,616,017, Cl. 514-252.000.

Baliozian, Mardick. Light-diffusion box. 4,616,293, Cl. 362-7.000.

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Balteau, Jacques, to Usines Metallurgiques L.C.A.B. SA. Device with controlled deformation for protecting power lines against overloading due to the weather. 4,616,103, Cl. 174-40.0TD.

Baltruschat, Helmut; and Schnurbusch, Horst, to Chemische Werke Huls Aktiengesellschaft. Cycloalkyl amino-s-triazines and their use as selective agents against weeds and noxious grasses. 4,615,727, Cl. 71-93.000.

Bandura, Vitaly: *See—*

Wright, Henry L.; Bandura, Vitaly; and Woodman, Daniel W., Jr., 4,615,089, Cl. 29-33.00K.

Bank, Morton A. Fishing sinker. 4,615,136, Cl. 43-44.910.

Barnes, Russell M.: *See—*

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Bartle, David C., Sr. Evacuating pump. 4,615,361, Cl. 141-65.000.

Bartos, Stephen P., to Parma International Inc. Slot car chassis. 4,615,686, Cl. 446-462.000.

BASF Aktiengesellschaft: *See—*

Borho, Klaus; Fromm, Dieter; Schier, Ernst-Juergen; Schneehage, Hans H.; and Widmann, Alfred, 4,616,094, Cl. 564-073.000.

Hoelderich, Wolfgang; Himmel, Walter; Mross, Wolf D.; and Schwarzmann, Matthias, 4,616,098, Cl. 585-640.000.

Lechtken, Peter; Nurrenbach, Axel; Kohler, Walter; Hoppe, Peter P.; Tiefenbacher, Hubert; and Schole, Jurgen, 4,616,016, Cl. 514-249.000.

Sterzel, Hans-Josef; and Sanner, Axel, 4,616,041, Cl. 521-27.000.

Zeiner, Hartmut; Heinz, Gerhard; Neumann, Peter; Fischer, Jurgen; and Nissen, Dietmar, 4,616,070, Cl. 525-390.000.

BASF Corporation: *See—*

Wong, Matthew K. L.; Schroeder, Rodney G.; and Donegan, Thomas E., 4,615,868, Cl. 422-111.000.

Batch, Joseph; and Stafford, Robert G., to Telsmith Division Barber-Greene Company. Gyratory crusher with automatic tramp iron release. 4,615,491, Cl. 241-37.000.

Bateham, Joseph E. Pick up tool and jaw apparatus therefor. 4,615,555, Cl. 294-19.100.

Batesville Casket Company, Inc.: *See—*

Hartman, Robert J., 4,615,085, Cl. 27-1.000.

Battelle Memorial Institute: *See—*

Richon, Dominique; and de Pous, Olivier, 4,615,990, Cl. 501-92.000.

Ringrose, Anthony, 4,615,344, Cl. 131-198.200.

Bauer, Bernhard: *See—*

Haefner, Gunther; Bauer, Bernhard; Letsche, Ulrich; and Noreikat, Karl-Ernst, 4,615,321, Cl. 123-479.000.

Bauer, Klaus: *See—*

Schmierer, Roland; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, 4,615,726, Cl. 71-92.000.

Baugh, Benton F., to Smith International, Inc. Subsea wellhead system. 4,615,544, Cl. 285-18.000.

Baugh, James D., to Cummins Engine Company, Inc. Reversible oil pan assembly. 4,615,314, Cl. 123-195.00C.

Baum, Charles S. Veneer laminate composite structure. 4,615,936, Cl. 428-285.000.

Baumgen, Heinz: *See—*

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Baus, Heinz G. Forming tool for producing an engraved motif on a sheet. 4,615,090, Cl. 29-121.800.

Bayer Aktiengesellschaft: *See—*

Habich, Dieter; and Hartwig, Wolfgang, 4,616,084, Cl. 540-215.000.

Henning, Wolfgang; Meckel, Walter; Beck, Ulrich; and Baumgen, Heinz, 4,616,061, Cl. 524-591.000.

Heywang, Gerhard; Kuhle, Engelbert; and Homeyer, Bernhard, 4,616,035, Cl. 514-469.000.

Kress, Hans-Jurgen; and Kircher, Klaus, 4,615,832, Cl. 252-609.000.

Schultz, Klaus-Dieter; Meyer, Rolf-Volker; Dhein, Rolf; Fullmann, Heinz-Josef; and Michael, Dietrich, 4,616,053, Cl. 524-171.000.

Weissmuller, Joachim; Kramer, Wolfgang; Berg, Dieter; Reinecke, Paul; Brandes, Wilhelm; Hanssler, Gerd; and Lurssen, Klaus, 4,615,725, Cl. 71-88.000.

BBC Brown, Boveri & Company, Limited: *See—*

Kreitmeier, Franz, 4,615,657, Cl. 415-104.000.

Mayer, Andreas, 4,615,172, Cl. 60-274.000.

Beck, Arnold: *See—*

Brandt, Holger; Beck, Arnold; and Dreyer, Joachim, 4,615,670, Cl. 425-186.000.

Beck, Ulrich: *See—*

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Beckey, Thomas J., to Honeywell Inc. Adaptive clock thermostat means for controlling over and undershoot. 4,615,380, Cl. 165-12.000.

Becton, Dickinson and Company: *See—*

Cronenberg, Richard A.; and Shapiro, Stephen I., 4,615,340, Cl. 128-635.000.

Habibullah, Mohammed, 4,616,052, Cl. 524-104.000.

Stoker, Ronald L., 4,615,984, Cl. 436-518.000.

Bednar, John M.: *See—*

Johnson, Dale V.; and Bednar, John M., 4,615,387, Cl. 166-242.000.

Beebe, Jay W. Game skinning aid. 4,615,077, Cl. 17-44.200.

Beecham Group p.l.c.: *See—*

Ashwood, Valerie A.; and Evans, John M., 4,616,021, Cl. 514-309.000.

Beeken, Leslie E., to Loosey Goosey Waterfowl Products, Inc. Receptacle for roll of sheet material. 4,615,442, Cl. 206-397.000.

Behn, Reinhard; and Wittmann, Rudolf, to Siemens Aktiengesellschaft. Method for the manufacture of plasma-polymer multilayer capacitors. 4,615,908, Cl. 427-81.000.

Belanger, Roger L. Method of removing radioactive waste from oil. 4,615,794, Cl. 208-181.000.

Belko, Robert P.: *See—*

Sprecker, Mark A.; Belko, Robert P.; Schreiber, William L.; and Licciardello, Michael, 4,615,830, Cl. 252-522.00R.

Sprecker, Mark A.; Belko, Robert P.; Schreiber, William L.; and Licciardello, Michael, 4,616,095, Cl. 568-322.000.

Bell, Frank H., to Morton Thiokol, Inc. Printed sheet urethane propellant. 4,615,270, Cl. 102-289.000.

Bell, Harvey: *See—*

Zallie, James; Trimble, Robert; and Bell, Harvey, 4,615,888, Cl. 426-21.000.

Bell, Malcolm C. E.: *See—*

Thomas, John A.; Nissen, Norman C.; Bell, Malcolm C. E.; and Illis, Alexander, 4,615,731, Cl. 75-97.00A.

Bell, Robert; Westius, Stefan; and Skold, Bjorn-Ake, to AB Akta Barnsakerhet. Reversible child restraint for automobiles. 4,615,562, Cl. 297-250.000.

Bendig, Anna L.; and Zornes, Bruce L., to Boeing Company, The. Glass fiber reinforced ceramic preform and method of casting it. 4,615,935, Cl. 428-268.000.

Beneteau, Christian, to Champion Spark Plug Europe S.A. Wiper arm. 4,615,067, Cl. 15-250.200.

Bengtson, Bjorn R. Fletching for stabilizing arrow flight. 4,615,552, Cl. 273-423.000.

Bentell, Lars; and Martensson, Jarl, to SKF Steel Engineering, AB. Method of destroying hazardous wastes. 4,615,285, Cl. 110-346.000.

Beretta, Pier G., to Fabrica d'Armi P. Beretta S.p.A. Retaining mechanism for rifle magazines. 4,615,134, Cl. 42-6.000.

Berg, Dieter: *See—*

Weissmuller, Joachim; Kramer, Wolfgang; Berg, Dieter; Reinecke, Paul; Brandes, Wilhelm; Hanssler, Gerd; and Lurssen, Klaus, 4,615,725, Cl. 71-88.000.

Berger, Joseph; and Lohse, Friedrich, to Ciba-Geigy Corporation. Compositions of matter which crosslink under the action of light in the presence of sensitizers. 4,615,968, Cl. 430-283.000.

Berggren, Randall G.: *See—*

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Bergh, Ralph A.: *See—*

Lefevre, Herve C.; and Bergh, Ralph A., 4,615,582, Cl. 350-96.290.

Berkeley, James E., to Shopsmith, Inc. Anti-kickback system. 4,615,247, Cl. 83-102.100.

Bernal, Eustaquio O. Die to produce mesh in non-metallic materials. 4,615,671, Cl. 425-289.000.

Bernard, Daniel; and Dubois, Jean C., to LCC-CICE Compagnie Europeenne De Composants Electroniques. Metalized film for constructing capacitors and a process for manufacturing said capacitors. 4,615,088, Cl. 29-25.420.

Bernstein, Kerry, to International Business Machines Corporation. Multi-port system. 4,616,347, Cl. 365-230.000.

Berti, Eugenio, to Memorex Corporation. Disk drive storage system having means for compensating for seek driving forces coupled between head actuators. 4,616,277, Cl. 360-78.000.

Bertram, Dieter: *See—*

Loth, Frith; Dautzenberg, Horst; Stamberg, Jiri ; Peska, Jan; Bertram, Dieter; and Lettau, Herbert, 4,615,880, Cl. 424-15.000.

- Bessinger, Walter L.; and Hoffman, Keith A., to Knape & Vogt Manufacturing Company. Inclined drawer slide incorporating scale. 4,615,095, Cl. 29-407.000.
- Best, Dieter, to ebm Elektrobau Mulfingen GmbH & Co. Arrangement for joining the cable ends of a stator winding of electric motors by means of a connector. 4,616,149, Cl. 310-71.000.
- Bethlehem Steel Corporation: *See—*
  - Shastry, Chakrakodi R.; and Townsend, Herbert E., 4,615,732, Cl. 148-403.000.
- Betz, B. Keith, to Honeywell Inc. Pipelined multiply-accumulate unit. 4,616,330, Cl. 364-728.000.
- Bhattacharjee, Amal C., to Nabisco Brands, Inc. Forced air/gas burner and baking oven incorporating same. 4,615,895, Cl. 426-523.000.
- Bianchi, Costanzo, to S.I.G.M.A. - Societa Idraulica Generale Macchine Accessori. Valve system timing device for pipes carrying liquid under pressure. 4,615,354, Cl. 137-110.000.
- Biass, David, to Cibeles International Inc. Continuous operation linear hydraulic winch. 4,615,509, Cl. 254-264.000.
- Bibbens, William H. Machine tool. 4,615,099, Cl. 29-560.000.
- Biche, Michael R.: *See—*
  - Krolak, Michael; and Biche, Michael R., 4,615,615, Cl. 356-1.000.
- Biefeld, Robert M.; Fritz, Ian J.; Gourley, Paul L.; and Osbourn, Gordon C., to United States of America, Energy. Superlattice optical device. 4,616,241, Cl. 357-16.000.
- Bieringer, Hermann: *See—*
  - Schmierer, Roland; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, 4,615,726, Cl. 71-92.000.
- Bierwirth, Rolf: *See—*
  - Bottenschein, Karl; and Bierwirth, Rolf, 4,615,406, Cl. 180-191.000.
- Biller, Cleveland J.; and Johnson, David D., to United States of America, Agriculture. Locking balls for logging carriage. 4,615,532, Cl. 279-32.000.
- Bio-Mimetics, Inc.: *See—*
  - Robinson, Joseph R., 4,615,697, Cl. 604-890.000.
- Bio-Rad Laboratories, Inc.: *See—*
  - Abrams, David; Curbelo, Raul; and Turner, R. Brough, 4,616,329, Cl. 364-571.000.
- Black & Decker Inc.: *See—*
  - Henning, Brian, 4,615,069, Cl. 15-326.000.
  - Hernandez, Jean R.; and Verdier, Alain, 4,616,171, Cl. 320-30.000.
- Blain, Rene H. Movable and foldable wheel support particularly for rubber boats. 4,615,534, Cl. 280-47.13B.
- Blanch, Roy L.: *See—*
  - Grunewald, Paul; Blanch, Roy L.; and Schrage, James R., 4,616,220, Cl. 340-747.000.
- Blanchard, Eugene J.; and Bruno, Joseph S., to United States of America, Agriculture. Method for insitu coloring crosslinked cellulosic materials. 4,615,708, Cl. 8-585.000.
- Blondeau, Roland A. Folding table/bench combination. 4,615,559, Cl. 297-124.000.
- Bloxham, Roger W. Floating dry dock. 4,615,289, Cl. 114-45.000.
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- Bobsein, Rex L., to Phillips Petroleum Company. Process for preparing alkylmercaptoalkyl esters. 4,615,836, Cl. 260-399.000.
- Bodine, Albert G. Sonic drilling system employing spherical drill bit. 4,615,400, Cl. 175-55.000.
- Boebel, Manfred: *See—*
  - Buess, Gerd; Hiltebrandt, Siegfried; and Boebel, Manfred, 4,615,332, Cl. 128-6.000.
- Boehringer Mannheim GmbH: *See—*
  - von der Eltz, Herbert; Gauhl, Helmgard; and Seidel, Hans, 4,615,981, Cl. 435-197.000.
  - Witte, Ernst-Christian; Wolff, Hans P.; Hagenbruch, Bernd; Stegmeir, Karlheinz; and Pill, Johannes, 4,616,086, Cl. 544-383.000.
- Boeing Company, The: *See—*
  - Bendig, Anna L.; and Zornes, Bruce L., 4,615,935, Cl. 428-268.000.
  - Knowler, John C., 4,615,499, Cl. 244-134.00B.
  - Lederer, Richard W.; Musgrove, Max D.; and Jones, Robert E., 4,615,452, Cl. 220-1.00B.
  - Pinson, George T., 4,615,496, Cl. 244-3.160.
- Boeke, Paul J.; and Leland, John E., to Phillips Petroleum Company. Plating poly(arylene sulfide) surfaces. 4,615,907, Cl. 427-53.100.
- Bofinger, Gunter; and Maier, Claus, to Robert Bosch GmbH. RPM governor for fuel injection pumps. 4,615,317, Cl. 123-373.000.
- Bogaerts, Leo C., to Ammco Tools, Inc. Cylinder hone. 4,615,152, Cl. 51-332.000.
- Boggs, Beryl A.; and Gordon, Rob R., Jr., to Allied Corporation. Method of cutting elongated material using a cutter reel with spaced blades. 4,615,245, Cl. 83-37.000.
- Boivent, Marcel: *See—*
  - Le Moigne, Simone; Boivent, Marcel; and Matzen, Guy, 4,615,988, Cl. 501-30.000.
- Bokamp, Gerhard: *See—*
  - Hell, Gunter; and Bokamp, Gerhard, 4,615,190, Cl. 68-241.000.
- Bollinger, Hans, to Eta Sa Fabriques d'Ebauches. Timepiece bracelet. 4,615,185, Cl. 63-5.00R.
- Bolson, Frank J. Water-powered light. 4,616,298, Cl. 362-192.000.
- Boots, Robert T., to Vermeulen-Hollandia Octrooien II B.V. Crank device for an open roof construction for a vehicle. 4,615,236, Cl. 74-545.000.
- Borg-Warner Corporation: *See—*
  - Lech, Thaddeus, Jr., 4,615,426, Cl. 192-106.200.
- Borho, Klaus; Fromm, Dieter; Schier, Ernst-Juergen; Schneehage, Hans H.; and Widmann, Alfred, to BASF Aktiengesellschaft. Isolation of liquid urea from the off-gas of the synthesis of melamine. 4,616,094, Cl. 564-073.000.
- Borror, Alan L.; Chinoporos, Efthimios; and Petersen, Cheryl P., to Polaroid Corporation. Color transfer photographic processes and products with indole phthalein filter dyes. 4,615,966, Cl. 430-221.000.
- Borsh, Richard J., to TBG Inc. Adapter fitting for connecting flexible conduit to electrical outlet boxes. 4,616,105, Cl. 174-65.00R.
- Borsoi, Bruno, to Nordica S.p.A. Ski boot incorporating a flex control device. 4,615,128, Cl. 36-120.000.
- Boschert Inc.: *See—*
  - Small, Kenneth T., 4,616,301, Cl. 363-26.000.
- Bosshard, Andreas; and Lammler, Bernhard, to Huber & Suhner AG. Method for connecting a plug connector to a cable. 4,615,115, Cl. 29-860.000.
- Botes, Hendrik P. Accessory for a toilet receptacle. 4,615,055, Cl. 4-235.000.
- Bottenschein, Karl; and Bierwirth, Rolf. Golfcart with battery driven drive assist. 4,615,406, Cl. 180-191.000.
- Bouchette, Michael P., to James River Corporation, The. Antimicrobially active, non-woven web used in a wet wiper. 4,615,937, Cl. 428-288.000.
- Boudreau, Robert A., to GTE Products Corporation. Mask assembly having mask stress relieving feature. 4,615,781, Cl. 204-192.150.
- Boudville, Glenn H., to Ainsworth Nominees Pty. Ltd. Coin dispensing devices. 4,615,350, Cl. 133-1.00R.
- Boutmy, Patrick E., to Societe Anonyme de Telecommunications. Television channel distribution network. 4,616,256, Cl. 358-86.000.
- Bower, John E.; Vranka, Ronald S.; and Mahler, Mark H., to United States Steel Corporation. Continuous casting mold friction monitor. 4,615,375, Cl. 164-451.000.
- Brach, Ulrich: *See—*
  - Sacherer, Klaus D.; Weiss, Erich; Koehn, Jochen; and Brach, Ulrich, 4,615,462, Cl. 220-339.000.
- Bradey, Nancy B.: *See—*
  - Panush, Sol; Gelmini, James M.; and Bradey, Nancy B., 4,615,940, Cl. 428-324.000.
- Brandes, Wilhelm: *See—*
  - Weissmuller, Joachim; Kramer, Wolfgang; Berg, Dieter; Reinecke, Paul; Brandes, Wilhelm; Hanssler, Gerd; and Lurssen, Klaus, 4,615,725, Cl. 71-88.000.
- Brandestini, Marco: *See—*
  - Moermann, Werner H.; and Brandestini, Marco, 4,615,678, Cl. 433-201.100.
- Brandt, Holger; Beck, Arnold; and Dreyer, Joachim, to Neumuenstersche Maschinen -und Apparatebau GmbH (NEUMAG). Arrangement for melting spinning of synthetic high polymers with means for exchanging nozzle set. 4,615,670, Cl. 425-186.000.
- Brandt, Incorporated: *See—*
  - Di Blasio, John, 4,615,518, Cl. 271-10.000.
- Brannon, Robert C.; Coleman, David A.; and Miller, David G., to Owens-Corning Fiberglas Corporation. Polyester emulsion. 4,616,062, Cl. 524-601.000.
- Brassey, J. Michael: *See—*
  - Turk, Amos; and Brassey, J. Michael, 4,615,714, Cl. 55-73.000.
- Bratt, Jan C., to United Stirling AB. System and a method for conversion of solar radiation into electric power. 4,616,140, Cl. 290-1.00R.
- Braun, Dennis H., to Eaton Corporation. Method of measuring torque of an AC motor. 4,616,179, Cl. 324-158.0MG.
- Braun, Hilarion; and Antolik, Ralph E., III, to Eastman Kodak Company. External acoustic absorber for ink jet printer. 4,616,235, Cl. 346-75.000.
- Braund, Darwin G.: *See—*
  - Nocek, James E.; Braund, Darwin G.; Steele, Robert L.; and Macgregor, Charles A., 4,615,891, Cl. 426-231.000.
- Breece, Lee K., to Puroflow Corporation. Power line filter. 4,616,286, Cl. 361-56.000.
- Breitenbach, Otto: *See—*
  - Wcislo, Manfred; Breitenbach, Otto; Schatz, Friedrich; and Riepling, Ulrich, 4,615,109, Cl. 29-732.000.
- Breitscheidel, Hans-Ulrich; Lorry, Cosmas; Rehlen, Helmut; and Roellinghoff, Jurgen, to Dynamit Nobel AG; Rehlen, Helmut; and Roellinghoff, Jurgen. Sound-insulated flow duct and process for the manufacture thereof. 4,615,411, Cl. 181-224.000.
- Breneman, Wayne: *See—*
  - O'Brien, Errol C.; Placko, Martin; and Breneman, Wayne, 4,615,487, Cl. 239-281.000.
- Bretz, John, to Lubrizol Corporation, The. Water-based metal-containing organic phosphate compositions. 4,615,813, Cl. 252-8.514.
- Bridge, Alan G.; and Stangeland, Bruce E., to Chevron Research Company. Hydroprocessing reactors and methods. 4,615,789, Cl. 208-143.000.
- Bridges, Robert B.; and Brubaker, John R., to Eaton Corporation. Circuit breaker and shunt trip apparatus combined within single pole device. 4,616,206, Cl. 337-71.000.
- Bridgestone Corporation: *See—*
  - Takagi, Takeo; and Sakaguchi, Yuji, 4,615,260, Cl. 92-92.000.
- Bridgestone Tire Co., Ltd.: *See—*
  - Maekawa, Takashi; Sasaki, Hiroshi; and Morimura, Shinji, 4,615,301, Cl. 119-3.000.
- Briscoe, William E., to Halliburton Company. Linear force centralizer. 4,615,386, Cl. 166-241.000.
- Brittain, John C.: *See—*
  - Jenkins, Cecil; Peaster, Leroy K.; and Brittain, John C., 4,615,508, Cl. 254-106.000.
- Brody, J. Kenneth: *See—*
  - Curtis, Albert B.; and Brody, J. Kenneth, 4,615,163, Cl. 52-730.000.

- Bronnes, Robert L.; McKinlay, James K.; Sweet, Richard C.; and Zwicker, Walter K., to North American Philips Corporation. Metallized rare earth garnet and metal seals to same. 4,615,951, Cl. 428-615.000.
- Brooks, Raymond G.: *See—*
  - Bailey, Michael P.; Brooks, Raymond G.; Frank, James R., Jr.; Johnson, Justin J. J.; and Maholm, Mark B., 4,615,618, Cl. 356-152.000.
- Brooks, Stephen, III: *See—*
  - Burriss, John T., 4,615,597, Cl. 354-293.000.
- Brouha, Marcel; Klomp, Johannes T.; and van Roosmalen, Johannes T. C., to U.S. Philips Corporation. Cathode ray tube having an Fe-Co-Cr shadow mask and method of manufacturing such a shadow mask. 4,616,154, Cl. 313-402.000.
- Brown, Bernard T., to Emerson Electric Co. Hot surface ignition system control module with accelerated igniter warm-up test program. 4,615,282, Cl. 110-186.000.
- Brown, Ernest C. Apparatus for the continuous treatment of solid particles in a fluidized state. 4,615,123, Cl. 34-57.00A.
- Brown, Glenn C.: *See—*
  - Olsen, Richard S.; and Brown, Glenn C., 4,615,874, Cl. 423-502.000.
- Brown, James; Ellis, Peter E.; and Draper, Marta J., to Nabisco Brands, Inc. Cold water soluble gelatin and process. 4,615,896, Cl. 426-576.000.
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- Brown, William B. Brake locking system. 4,615,192, Cl. 70-181.000.
- Brubaker, John R.: *See—*
  - Bridges, Robert B.; and Brubaker, John R., 4,616,206, Cl. 337-71.000.
- Bruner, Jeffrey W.: *See—*
  - Ko, Frank; Johnston, James B.; Bruner, Jeffrey W.; and Hursh, David F., 4,615,188, Cl. 66-196.000.
- Bruno, Joseph S.: *See—*
  - Blanchard, Eugene J.; and Bruno, Joseph S., 4,615,708, Cl. 8-585.000.
- Buccellato, Ronald I.; Card, Wayne T.; Foote, Duane M.; Lewis, Cinda B.; Soland, Peter A.; Stevens, Brian J.; and Widmann, Philip C., to General Dynamics Corporation/Convair Div. Anti-contamination covers for structure openings. 4,615,460, Cl. 220-307.000.
- Buecheler, Herbert; and Tuerk, Erich, to Henkel Kommanditgesellschaft auf Aktien. Basket for toilet bowl cleaning blocks. 4,615,054, Cl. 4-231.000.
- Buess, Gerd; Hiltebrandt, Siegfried; and Boebel, Manfred, to Richard Wolf GmbH. Flexible multichannel endoscope having axial shaft portions of different flexibility. 4,615,332, Cl. 128-6.000.
- Burg-Wachter KG Alfred Luling: *See—*
  - Luling, Adalbert, 4,615,193, Cl. 70-297.000.
- Burian, Elissa, administratrix: *See—*
  - Burian, Paul D., deceased; and Kunz, Raymond W., 4,616,122, Cl. 219-273.000.
- Burian, Paul D., deceased (by Burian, Elissa, administratrix); and Kunz, Raymond W., to Clairol Incorporated. Electrically heated facial sauna vapor generating apparatus. 4,616,122, Cl. 219-273.000.
- Burk, Robert G., to Incom International Inc. Bicycle chain lubrication. 4,615,171, Cl. 59-78.000.
- Burkhardt, Horst, to Dr. Johannes Heidenhain GmbH. Incremental length or angle measuring system. 4,616,131, Cl. 250-231.0SE.
- Burns, Joseph R. Piezoelectric wind sensor. 4,615,214, Cl. 73-189.000.
- Burr-Brown Corporation: *See—*
  - Stitt, Robert M.; and Burt, Rodney T., 4,616,188, Cl. 330-6.000.
- Burriss, John T., to Brooks, Stephen, III, a part interest. Camera mount for vehicles. 4,615,597, Cl. 354-293.000.
- Burron Medical Inc.: *See—*
  - Raines, Kenneth C., 4,615,694, Cl. 604-126.000.
- Burroughs Corporation: *See—*
  - Fuchs, Otto, 4,615,721, Cl. 65-154.000.
  - Grunewald, Paul; Blanch, Roy L.; and Schrage, James R., 4,616,220, Cl. 340-747.000.
  - Logsdon, Gary L.; Scheevel, Mark R.; and Winchell, Michael A., 4,616,315, Cl. 364-200.000.
  - Sheth, Jayesh V., 4,616,337, Cl. 364-900.000.
  - Smith, Grant M.; Romania, Samuel R.; and Tamarkin, Vladimir M., 4,615,224, Cl. 73-863.330.
- Burroughs Wellcome Co.: *See—*
  - Harfenist, Morton, 4,616,032, Cl. 514-436.000.
- Burstell, Helmut: *See—*
  - Schmierer, Roland; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, 4,615,726, Cl. 71-92.000.
- Burt, Rodney T.: *See—*
  - Stitt, Robert M.; and Burt, Rodney T., 4,616,188, Cl. 330-6.000.
- Butkovich, Michael S.: *See—*
  - Hartman, Harry B.; LaLonde, Gerard V.; and Butkovich, Michael S., 4,615,362, Cl. 141-86.000.
- Bykov, Vyacheslav M.: *See—*
  - Ilizarov, Gavriil A.; Predein, Alexandr P.; and Bykov, Vyacheslav M., 4,615,338, Cl. 128-92.00A.
- Bylenga, Peter D. Bag holding apparatus. 4,615,743, Cl. 134-6.000.
- Byrns, James E., to Custom-Pak, Incorporated. Molded container case with hinge and method for making same. 4,615,464, Cl. 220-469.000.
- C. Uyemura & Co., Ltd.: *See—*
  - Matsumoto, Hiroshi; and Fujiki, Man, 4,615,145, Cl. 51-19.000.
- Cabloptic S.A. & Fondation Suisse pour la Recherche en Microtechnique: *See—*
  - Genequand, Pierre, 4,615,097, Cl. 29-466.000.
- Cabrelli, Peter A. Shelving apparatus and method of assembling same. 4,615,278, Cl. 108-111.000.
- Cale, David; and Little, Rodney, to Dadant & Sons, Inc. Bee smoker. 4,615,138, Cl. 43-128.000.
- Caledonian Mining Co. Ltd.: *See—*
  - MacLeod, Colin J., 4,615,199, Cl. 72-170.000.
- Callahan, Wayne B.; Cowen, Timothy B.; and Koch, Harold O., to Cilco, Inc. Intraocular lens delivery system. 4,615,703, Cl. 623-6.000.
- Calmar, Inc.: *See—*
  - Grogan, Richard P.; and Corsette, Douglas F., 4,615,467, Cl. 222-189.000.
- Campbell, Richard A.: *See—*
  - Galani, Zvi; and Campbell, Richard A., 4,616,191, Cl. 331-4.000.
- Campbell, Simon F.; Cross, Peter E.; and Stubbs, John K., to Pfizer Inc. Dihydropyridine anti-ischaemic and antihypertensive agents. 4,616,024, Cl. 514-340.000.
- Canadian Patents & Development Ltd.: *See—*
  - Whitehead, Lorne A., 4,615,579, Cl. 350-96.100.
- Cannon, James H. Latch-type tubing protector. 4,615,543, Cl. 285-12.000.
- Canon Kabushiki Kaisha: *See—*
  - Eguchi, Masaharu, 4,615,602, Cl. 354-478.000.
  - Honma, Toshio, 4,615,609, Cl. 355-14.00R.
  - Inoue, Hiroshi; and Nakohsai, Keiko, 4,615,919, Cl. 428-1.000.
  - Kataoka, Hiroyuki; Yamada, Masanori; and Suzuki, Nobuyuki, 4,615,599, Cl. 354-415.000.
  - Kitagishi, Nozomu; Itoh, Susumu; and Amano, Sayoko, 4,615,603, Cl. 354-479.000.
  - Matsumoto, Masakazu; and Takahashi, Hideyuki, 4,615,963, Cl. 430-56.000.
  - Matsumoto, Masakazu; and Takahashi, Hideyuki, 4,615,965, Cl. 430-134.000.
  - Mizutani, Morikazu, 4,615,608, Cl. 355-3.0DD.
  - Ohno, Akio; Murayama, Yasushi; Hirooka, Kazuhiko; and Hayashi, Kimiyoshi, 4,615,612, Cl. 355-14.00D.
  - Omata, Takashi, 4,616,130, Cl. 250-201.000.
  - Shiomi, Yasuhiko, 4,615,616, Cl. 356-1.000.
  - Suzuta, Mikio; Yamamoto, Hironori; and Nakazawa, Kazuo, 4,615,515, Cl. 269-73.000.
  - Tenmyo, Yoshiharu, 4,616,294, Cl. 362-18.000.
  - Ueda, Hiroyuki; Yamada, Yasuaki; Ozawa, Toshiaki; Nakajima, Hiroharu; and Kondo, Hiroatsu, 4,615,631, Cl. 400-705.100.
  - Yamada, Akira, 4,615,604, Cl. 354-485.000.
  - Yanagawa, Hitoshi; Sugita, Yasutoshi; Ono, Satoshi; Maetani, Masami; and Tsunenari, Tomoo, 4,616,126, Cl. 235-375.000.
- Caporaso, Anthony J., Jr.; and Mox, Dana W., to Venture VII, Ltd. Portable data recorder. 4,615,267, Cl. 101-269.000.
- Carboxyque Francaise: *See—*
  - Gibot, Claude, 4,615,352, Cl. 137-7.000.
- Card, Wayne T.: *See—*
  - Buccellato, Ronald I.; Card, Wayne T.; Foote, Duane M.; Lewis, Cinda B.; Soland, Peter A.; Stevens, Brian J.; and Widmann, Philip C., 4,615,460, Cl. 220-307.000.
- Carew, Martin T.: *See—*
  - Peacock, Wally E.; and Carew, Martin T., 4,615,144, Cl. 51-5.00D.
- Carey, Robert J. Leader filter. 4,615,153, Cl. 52-12.000.
- Cargill Incorporated: *See—*
  - Olson, Morris R., 4,616,054, Cl. 524-317.000.
- Carl-Zeiss-Stiftung: *See—*
  - Schob, Wolfgang; and Fischer, Horst, 4,615,592, Cl. 350-531.000.
- Carlson, Emery J.: *See—*
  - Armor, John N.; and Carlson, Emery J., 4,615,736, Cl. 75-251.000.
- Carlsson, Curt I.: *See—*
  - Thaung, Kurt I.; and Carlsson, Curt I., 4,615,513, Cl. 267-63.00R.
- Carr, Keith E.: *See—*
  - Martin, William J.; Carr, Keith E.; and Peterson, Edward C., 4,615,068, Cl. 15-323.000.
- Carrigan, David G.: *See—*
  - Li, Hsin L.; Misson, John D.; and Carrigan, David G., 4,616,204, Cl. 335-297.000.
- Carter, Jack O., to Rice, J. L.; and Warner, H. D., a part interest to each. Shotgun shell reloader apparatus. 4,615,255, Cl. 86-27.000.
- Carter, Robert E.: *See—*
  - Kolm, Henry H.; and Carter, Robert E., 4,615,211, Cl. 73-146.200.
- Case, Robert F., to Cubic Western Data. Mechanism to maintain contact between a magnetically-encoded card and a magnetic transducer surface. 4,616,128, Cl. 235-475.000.
- Casley-Smith, John R., to Lamorna Investments Proprietary Ltd. 7 hydroxy-coumarin as a treatment for high protein oedemas. 4,616,033, Cl. 514-457.000.
- Castro, Valentin: *See—*
  - Rosenberg, Isadore; Terisse, Patrick R.; and Castro, Valentin, 4,615,438, Cl. 206-223.000.
- Caudill, Keith E.: *See—*
  - Vogel, Ralph A.; and Caudill, Keith E., 4,615,195, Cl. 72-38.000.
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  - Hilton, Charles B., 4,615,806, Cl. 210-690.000.
- Celltech Limited: *See—*
  - Kingsman, Alan J.; and Kingsman, Susan M., 4,615,974, Cl. 435-68.000.
- Center, Warren A., to K. W. Thompson Tool Company, Inc. Firing pin selector for gun. 4,615,133, Cl. 42-69.010.

- Central Glass Company, Limited: *See—*
  - Matsuyoshi, Yukio; and Tsukagoshi, Masao, 4,615,931, Cl. 428-174.000.
- Cerwin, Robert J.: *See—*
  - Alpern, Marvin; Cerwin, Robert J.; and Roshdy, Constance E., 4,615,435, Cl. 206-63.300.
- Ceskoslovenska akademie ved of Prague: *See—*
  - Loth, Frith; Dautzenberg, Horst; Stamberg, Jiri ; Peska, Jan; Bertram, Dieter; and Lettau, Herbert, 4,615,880, Cl. 424-15.000.
- Chamberlain, Sam R. Modular building construction. 4,615,155, Cl. 52-90.000.
- Champion Spark Plug Europe S.A.: *See—*
  - Beneteau, Christian, 4,615,067, Cl. 15-250.200.
- Chamran, Delories M., legal representative: *See—*
  - Ferber, Alan C.; and Chamran, Morteza M., deceased, 4,616,210, Cl. 340-347.0AD.
- Chamran, Morteza M., deceased: *See—*
  - Ferber, Alan C.; and Chamran, Morteza M., deceased, 4,616,210, Cl. 340-347.0AD.
- Chan, Chi M.; and Tanous, Adam C., to Raychem Corporation. Poly(aryl ether ketones) containing sulfur. 4,616,056, Cl. 524-392.000.
- Chan, Yun T. Drilling rig monitoring system. 4,616,321, Cl. 364-422.000.
- Chang, A-Shen. Continuous mechanism for re-moulding, length-setting and assembling blind's plastic strips. 4,615,087, Cl. 29-24.500.
- Chang, Gee-Kung; Hartman, Adrian R.; and Robinson, McDonald, to AT&T Bell Laboratories. P-I-N and avalanche photodiodes. 4,616,247, Cl. 357-30.000.
- Change, Nicholas D., Jr. Multi range impulse hammer. 4,615,209, Cl. 73-12.000.
- Chartrand, Henry H. Fish cleaner and scraper. 4,615,079, Cl. 17-66.000.
- Chauvin, Yves: *See—*
  - Le Quan, Nhuong; Cruypelinck, Daniel; Commereuc, Dominique; Chauvin, Yves; and Leger, Gerard, 4,615,998, Cl. 502-126.000.
- Cheatum, Leo G., to Deere & Company. Planetary gear drive for balers. 4,615,238, Cl. 74-674.000.
- Chee, Tseng. Double cassette deck. 4,616,109, Cl. 179-6.030.
- Chem-Technics, Inc.: *See—*
  - Conner, Jesse R., 4,615,810, Cl. 210-751.000.
- Chemische Werke Huls Aktiengesellschaft: *See—*
  - Baltruschat, Helmut; and Schnurbusch, Horst, 4,615,727, Cl. 71-93.000.
- Chen, Ming-Yaw. Child's walker with height adjustment apparatus. 4,615,523, Cl. 272-70.300.
- Chen, Nai Y.; McCullen, Sharon B.; and Oleck, Stephen M., to Mobil Oil Corporation. Method for preparing hydroisomerization catalysts. 4,615,997, Cl. 502-66.000.
- Chenard, Jean-Yves: *See—*
  - Kornbaum, Simon; and Chenard, Jean-Yves, 4,616,046, Cl. 522-79.000.
- Chevance, Claude P.; and Meyer, Jean-Claude, to Compagnie Industrielle de Mechanismes en abrege C.I.M. Device for winding a traction and thrust cable and a window-raiser provided with such a device. 4,615,234, Cl. 74-501.00R.
- Chevron Research Company: *See—*
  - Bridge, Alan G.; and Stangeland, Bruce E., 4,615,789, Cl. 208-143.000.
  - Edwards, Laroy H., 4,616,004, Cl. 514-63.000.
  - Erdman, Timothy R., 4,615,826, Cl. 252-32.500.
  - Jossens, Lawrence W., 4,615,793, Cl. 208-138.000.
  - Kramer, David C., 4,615,796, Cl. 208-146.000.
  - Ostrander, William J., 4,616,348, Cl. 367-21.000.
  - Pruett, Frank D.; and Sabins, Floyd F., Jr., 4,616,134, Cl. 250-255.000.
  - Small, Vernon R., Jr., 4,615,827, Cl. 252-32.70E.
- Chicago Bridge & Iron Company: *See—*
  - Grove, Robert B.; Peters, Steven W.; and Tellalian, Martin L., 4,615,458, Cl. 220-222.000.
- Chidester, Kenneth M.: *See—*
  - Jones, Jack L.; and Chidester, Kenneth M., 4,615,913, Cl. 427-226.000.
- Chinoporos, Efthimios: *See—*
  - Borror, Alan L.; Chinoporos, Efthimios; and Petersen, Cheryl P., 4,615,966, Cl. 430-221.000.
- Chiu, Norman H.; and Schneider, David A., to General Electric Company. Defrost diagnostic arrangement for self-defrosting refrigerator appliance. 4,615,179, Cl. 62-129.000.
- Choi, Byung C.; Gross, Benjamin; and Malladi, Madhava, to Mobil Oil Corporation. Visbreaking process. 4,615,791, Cl. 208-107.000.
- Chou, Ta-Sen; and Lakin, Robert E., to Eli Lilly and Company. Simplified process of forming crystalline ceftazidime pentahydrate. 4,616,080, Cl. 540-225.000.
- Choushi, Masahiro; and Ishimi, Haruyoshi, to Mazda Motor Corporation. Exhaust gas recirculation system for a V-type engine. 4,615,324, Cl. 123-568.000.
- Christ, Rolf: *See—*
  - Schliefer, Heinrich; Naaf, Rudiger; and Christ, Rolf, 4,615,351, Cl. 137-2.000.
- Christenson, Roger M.: *See—*
  - McCollum, Gregory J.; Scriven, Roger L.; Christenson, Roger M.; Mauer, George W.; and Zwack, Robert R., 4,615,779, Cl. 204-181.700.
- Chronar Corp.: *See—*
  - Delahoy, Alan E., 4,616,246, Cl. 357-30.000.
- Chu, Daniel T., to Abbott Laboratories. Naphthyridine antibacterial compounds. 4,616,019, Cl. 514-254.000.
- Chyung, Kenneth; Cooper, Reid F.; Gadkaree, Kishor P.; Stewart, Ronald L.; and Taylor, Mark P., to Corning Glass Works. Reinforcement of alkaline earth aluminosilicate glass-ceramics. 4,615,987, Cl. 501-8.000.
- Ciba-Geigy AG: *See—*
  - Howell, Frederick H., 4,616,082, Cl. 544-87.000.
- Ciba-Geigy Corporation: *See—*
  - Abel, Heinz; and Schafer, Paul, 4,615,837, Cl. 260-410.600.
  - Berger, Joseph; and Lohse, Friedrich, 4,615,968, Cl. 430-283.000.
  - Kamber, Bruno; Leutert, Thomas; Kuhnis, Hans; and Eichenberger, Kurt, 4,616,002, Cl. 514-18.000.
  - Lang, Marc, 4,616,007, Cl. 514-192.000.
- Cibeles International Inc.: *See—*
  - Biass, David, 4,615,509, Cl. 254-264.000.
- Cilco, Inc.: *See—*
  - Callahan, Wayne B.; Cowen, Timothy B.; and Koch, Harold O., 4,615,703, Cl. 623-6.000.
- Ciliberti, David F.; Lippert, Thomas E.; and Archer, David H., to Westinghouse Electric Corp. Apparatus and method for disposal of hazardous waste material. 4,615,283, Cl. 110-216.000.
- Cimijotti, Raymond L.: *See—*
  - Bailey, Edward L.; Cimijotti, Raymond L.; and Lowrie, Levern H., 4,616,218, Cl. 340-720.000.
- Clairol Incorporated: *See—*
  - Burian, Paul D., deceased; and Kunz, Raymond W., 4,616,122, Cl. 219-273.000.
- Clamp Swing Pricing Co.: *See—*
  - Garfinkle, Benjamin L., 4,615,503, Cl. 248-224.400.
- Clanton, Jeffrey A.: *See—*
  - Runge, Val M.; and Clanton, Jeffrey A., 4,615,879, Cl. 424-9.000.
- Clark, Frank J.: *See—*
  - Malani, Shrikant R.; and Clark, Frank J., 4,616,075, Cl. 528-1.000.
- Clark, Leonard R.; and West, Robert W., to Formby's Inc. Oil-in-water-in-oil coating composition. 4,615,739, Cl. 106-34.000.
- Clarke, James B. Ladder rest device. 4,615,412, Cl. 182-214.000.
- Clausen, Eivind; and Allsop, James D., to Allsop, Inc. Apparatus for cleaning a video player/recorder. 4,616,283, Cl. 360-128.000.
- Clauss Markisen: *See—*
  - Clauss, Ulrich, 4,615,371, Cl. 160-22.000.
- Clauss, Ulrich, to Clauss Markisen. Awning with resilient motor coupling. 4,615,371, Cl. 160-22.000.
- Clement, Ronald P.: *See—*
  - Hyland, John G.; and Clement, Ronald P., 4,615,470, Cl. 222-402.160.
- Clements, Jack D., to Solo Cup Company. Lid with drinking opening. 4,615,459, Cl. 220-254.000.
- Clocksin, William F.; Davey, Peter G.; Morgan, Colin G.; and Vidler, Albert R., to National Research Development Corporation. Automatic welding with imaging of workpiece surfaces and of the junction between the surfaces. 4,616,121, Cl. 219-124.340.
- Coates, William J., to Smith Kline & French Laboratories Limited. Fused thiadiazines. 4,616,013, Cl. 514-222.000.
- Coca-Cola Company, The: *See—*
  - Credle, William S., Jr., 4,615,466, Cl. 222-129.100.
- Cody, Charles A.: *See—*
  - Reichert, William W.; Cody, Charles A.; De Sesa, Michael A.; and Faulseit, Bruce K., 4,615,918, Cl. 427-385.500.
- Coleman, David A.: *See—*
  - Brannon, Robert C.; Coleman, David A.; and Miller, David G., 4,616,062, Cl. 524-601.000.
- Colognori, Aldo. Backscrubber and/or backscratcher with removable sponge element. 4,615,066, Cl. 15-244.00R.
- Come, Philippe; and Vasselet, Joel, to Societe Anonyme D.B.A. Process for forming an hydraulic connection. 4,615,098, Cl. 29-512.000.
- Commereuc, Dominique: *See—*
  - Le Quan, Nhuong; Cruypelinck, Daniel; Commereuc, Dominique; Chauvin, Yves; and Leger, Gerard, 4,615,998, Cl. 502-126.000.
- Compagnie d'Electronique et de Piezo-Electricite C.E.P.E.: *See—*
  - Renoult, Patrick; and Marotel, Gerard, 4,616,194, Cl. 331-116.00R.
- Compagnie Francaise d'Articles de Sport: *See—*
  - Delery, Marc, 4,615,127, Cl. 36-117.000.
- Compagnie Industrielle de Mechanismes en abrege C.I.M.: *See—*
  - Chevance, Claude P.; and Meyer, Jean-Claude, 4,615,234, Cl. 74-501.00R.
- Compagnie Industrielle de Tubes et Lampes Electriques CITEL: *See—*
  - Guichard, Francois, 4,616,155, Cl. 313-573.000.
- Compter, Johan C., to U.S. Philips Corporation. Single-phase reluctance motor. 4,616,165, Cl. 318-701.000.
- Compton, Russell A., to Technicare Corporation. Nuclear magnetic resonance imaging with reduced sensitivity to motional effects. 4,616,180, Cl. 324-309.000.
- Computer Humor Systems, Pty, Ltd: *See—*
  - Rosewarne, Fenton; and O'Donnell, Sean F., 4,616,327, Cl. 364-518.000.
- Conard, Bruce R.: *See—*
  - Devuyst, Eric A. P.; Tandi, Branka; and Conard, Bruce R., 4,615,873, Cl. 423-367.000.
- Concannon, Brian T., to General Motors Corporation. Interpole assembly for a DC machine. 4,616,150, Cl. 310-186.000.
- Connelly, John F.: *See—*
  - Stifelman, Jack; Fisher, Patrick; and Connelly, John F., 4,615,800, Cl. 210-132.000.
- Conner, Jesse R., to Chem-Technics, Inc. Method for treating human waste by solidification. 4,615,810, Cl. 210-751.000.
- Conoco Inc.: *See—*
  - Yoon, Heeyoung, 4,615,871, Cl. 423-243.000.

- Construction Robotics, Inc.: *See—*
  - Deike, Robert F., 4,615,156, Cl. 52-98.000.
- Continental Can Company, Inc.: *See—*
  - Hekal, Ihab M.; and Erlandson, Paul M., 4,615,924, Cl. 428-35.000.
  - Newman, Brett E., 4,615,120, Cl. 30-324.000.
- Cook, John A.: *See—*
  - Park, George B.; Cook, John A.; and McLoughlin, Robert H., 4,615,961, Cl. 429-218.000.
- Cook, Terry; and Graham, Timothy, to Sencore, Inc. Frequency counter. 4,616,173, Cl. 324-78.00D.
- Cooper, Charles E.; and Stitt, Thomas D., to General Electric Company. Electric power system for starting a large rotatable synchronous machine. 4,616,166, Cl. 318-712.000.
- Cooper, Reid F.: *See—*
  - Chyung, Kenneth; Cooper, Reid F.; Gadkaree, Kishor P.; Stewart, Ronald L.; and Taylor, Mark P., 4,615,987, Cl. 501-8.000.
- Cooper, Rosanna M. Combination diaper training pant for children and adults. 4,615,695, Cl. 604-385.00A.
- Copal Company Limited: *See—*
  - Nakamura, Shigekazu, 4,616,281, Cl. 360-113.000.
- Corato, Renzo, to Alusuisse Italia, S.p.A.; Italimpianti Societa Italiana Impianti, p.A.; and Sirma S.p.A. Calcining method and enclosure structure therefor. 4,615,676, Cl. 432-9.000.
- Corbett, Garry E., Jr.: *See—*
  - Pelezo, James A.; Corbett, Garry E., Jr.; and Siems, Don R., 4,615,740, Cl. 106-177.000.
- Corboy, John F., Jr.: *See—*
  - Jastrzebski, Lubomir L.; Corboy, John F., Jr.; Pagliaro, Robert H., Jr.; and Soydan, Ramazan, 4,615,762, Cl. 156-628.000.
- Cordiano, Ettore, to CORINT S.r.l. Rack power-steering systems. 4,615,408, Cl. 180-148.000.
- Corghi Elettromeccanica S.p.A.: *See—*
  - Cuccolini, Maria, 4,615,370, Cl. 157-1.240.
- CORINT S.r.l.: *See—*
  - Cordiano, Ettore, 4,615,408, Cl. 180-148.000.
- Cormier, Thomas E.; Dawson, Bruce K.; Wilson, Keith B.; and Young, Thomas C., to Air Products and Chemicals, Inc. Process for producing ultra high purity oxygen. 4,615,716, Cl. 62-24.000.
- Cornils, Boy; Bahrmann, Helmut; Lipps, Wolfgang; and Konkol, Werner, to Ruhrchemie Aktiengesellschaft. Process for the production of aldehydes. 4,616,096, Cl. 568-454.000.
- Corning Glass Works: *See—*
  - Chyung, Kenneth; Cooper, Reid F.; Gadkaree, Kishor P.; Stewart, Ronald L.; and Taylor, Mark P., 4,615,987, Cl. 501-8.000.
- Correll, James F., Jr., to Dixie Yarns, Inc. Cylindrical package of low modulus, highly elastic yarn. 4,615,495, Cl. 242-159.000.
- Corsette, Douglas F.: *See—*
  - Grogan, Richard P.; and Corsette, Douglas F., 4,615,467, Cl. 222-189.000.
- Corsi, Philippe; and Eyraud, Marcel, to Rhone-Poulenc Films. Biaxially drawn, composite polyester film substrates. 4,615,939, Cl. 428-323.000.
- Costello, James W.: *See—*
  - Kuzma, Andrew E.; Costello, James W.; and Wallace, Alexander G. T., 4,616,306, Cl. 364-140.000.
- Costello, Norman F.: *See—*
  - Saperstein, Zalman P.; Awe, Russell C.; Costello, Norman F.; and Larrabee, Scott R., 4,615,385, Cl. 165-175.000.
- Cousar, Robert. Combination brush holder and tray. 4,615,456, Cl. 220-90.000.
- Couture, Jeffrey B., to Schlage Lock Company. Dual backset latch. 4,615,549, Cl. 292-169.210.
- Cowen, Timothy B.: *See—*
  - Callahan, Wayne B.; Cowen, Timothy B.; and Koch, Harold O., 4,615,703, Cl. 623-6.000.
- Crapo, Clark C.: *See—*
  - Fannin, Loyd W.; Crapo, Clark C.; and Deavenport, Dennis L., 4,615,843, Cl. 260-665.00R.
- Crawford, Carl R., to Elscint, Inc. System for reprojecting images using transform techniques. 4,616,318, Cl. 364-414.000.
- Crawford, James R.; Winegeart, Jerald L.; and Erb, Michael H., to Stimutech, Inc. Method and apparatus for generating subliminal visual messages. 4,616,261, Cl. 358-181.000.
- Credle, William S., Jr., to Coca-Cola Company, The. Beverage dispenser system convertable between gravity and pressure. 4,615,466, Cl. 222-129.100.
- Crehan, Donald T.: *See—*
  - Robertson, David B.; Wagh, Stephen A.; Piller, Mary F.; Crehan, Donald T.; and Lovell, Charles J., 4,616,336, Cl. 364-900.000.
- Crone, Kenneth E., to Du Pont de Nemours, E. I., and Company. Hand tool for inserting and withdrawing a pin grid into and from a socket. 4,615,110, Cl. 29-741.000.
- Cronenberg, Richard A.; and Shapiro, Stephen I., to Becton, Dickinson and Company. Sensor assembly suitable for blood gas analysis and the like and the method of use. 4,615,340, Cl. 128-635.000.
- Crop Development Centre of the University of Saskatchewan: *See—*
  - McHughen, Alan G., 4,616,100, Cl. 800-1.000.
- Crosfield Electronics Limited: *See—*
  - Ross, Peter F.; Rodgers, Ian W.; and Goodings, Rupert L. A., 4,616,211, Cl. 340-347.0DD.
- Cross, Peter E.: *See—*
  - Campbell, Simon F.; Cross, Peter E.; and Stubbs, John K., 4,616,024, Cl. 514-340.000.
- Croteau, Francis R., to Baird Corporation. Data link for a radioactivity distribution detection system. 4,616,317, Cl. 364-414.000.
- Crowley, John C., Jr. Backhoe log splitter. 4,615,367, Cl. 144-366.000.
- Cruse, Lee H., to Foster Manufacturing Company. Connect-disconnect coupling for a plural-passage fluid line. 4,615,545, Cl. 285-24.000.
- Cruypelinck, Daniel: *See—*
  - Le Quan, Nhuong; Cruypelinck, Daniel; Commereuc, Dominique; Chauvin, Yves; and Leger, Gerard, 4,615,998, Cl. 502-126.000.
- Cubic Western Data: *See—*
  - Case, Robert F., 4,616,128, Cl. 235-475.000.
- Cuccolini, Maria, to Corghi Elettromeccanica S.p.A. Device for selecting the tools of the tool carrying head of tire removal machines in general. 4,615,370, Cl. 157-1.240.
- Culkin, Joseph B.; and Koffler, Adam, to Dorr-Oliver Incorporated. Non ion selective membrane in an EAVF system. 4,615,786, Cl. 204-301.000.
- Cummins Engine Company, Inc.: *See—*
  - Baugh, James D., 4,615,314, Cl. 123-195.00C.
- Cuppens, Roger; and Hartgring, Cornelis D., to U.S. Philips Corporation. Integrated circuit with improved programmable read-only memory. 4,616,339, Cl. 365-185.000.
- Curbelo, Raul: *See—*
  - Abrams, David; Curbelo, Raul; and Turner, R. Brough, 4,616,329, Cl. 364-571.000.
- Curtis, Albert B.; and Brody, J. Kenneth. Reinforced lumber. 4,615,163, Cl. 52-730.000.
- Custom-Pak, Incorporated: *See—*
  - Byrns, James E., 4,615,464, Cl. 220-469.000.
- Cutler, Charles R.: *See—*
  - Morshedi, Abdol M.; Cutler, Charles R.; Fitzpatrick, Thomas J.; and Skrovanek, Thomas A., 4,616,308, Cl. 364-159.000.
- Cynkar, Thomas E.: *See—*
  - Topich, James A.; Cynkar, Thomas E.; Turi, Raymond A.; and Lockwood, George C., 4,616,245, Cl. 357-23.500.
- D. L. Auld Company, The: *See—*
  - Waugh, Robert E.; Nannig, Urban R.; and Rockwood, Clyde R., 4,615,754, Cl. 156-242.000.
- D.M.C. Divisione Meccanica Castelli S.p.A.: *See—*
  - Tassoni, Vittorio, 4,615,146, Cl. 51-90.000.
- D.O.M. Associates, Inc.: *See—*
  - Fateley, William G., 4,615,619, Cl. 356-310.000.
- D. Swarovski & Co.: *See—*
  - Porcham, Wolfgang, 4,615,872, Cl. 423-341.000.
- Dadant & Sons, Inc.: *See—*
  - Cale, David; and Little, Rodney, 4,615,138, Cl. 43-128.000.
- Daikin Kogyo Co., Ltd.: *See—*
  - Ohmori, Akira; Tomihashi, Nobuyuki; and Kitahara, Takahiro, 4,615,584, Cl. 350-96.340.
- Daimler-Benz Aktiengesellschaft: *See—*
  - Haefner, Gunther; Bauer, Bernhard; Letsche, Ulrich; and Noreikat, Karl-Ernst, 4,615,321, Cl. 123-479.000.
  - Solleder, Otto, 4,615,538, Cl. 280-690.000.
- Dainippon Ink and Chemicals, Inc.: *See—*
  - Takeda, Susumu; Kobayashi, Shigeru; and Kunimitsu, Kenji, 4,615,915, Cl. 427-239.000.
  - Toriumi, Wataru; Shoji, Hideyuki; Inoue, Yoshihiko; Shiba, Soji; and Ushio, Yasuhiko, 4,616,262, Cl. 358-183.000.
- Dainippon Screen Manufacturing Co., Ltd.: *See—*
  - Mori, Noriaki, 4,615,521, Cl. 271-264.000.
  - Shida, Junji, 4,616,268, Cl. 358-287.000.
- Dakin, Wayne R.: *See—*
  - Wilkinson, Richard L.; and Dakin, Wayne R., 4,616,356, Cl. 369-116.000.
- Dalgety Australia Operations Limited: *See—*
  - Worthington, William, 4,615,182, Cl. 62-310.000.
- Damiano, Michael A.; and Schmerda, Richard F., to Eaton Corporation. AC/DC power MOSFET reversing H-drive system. 4,616,305, Cl. 363-132.000.
- Damon, James J., to Ford Motor Company. Reduced friction automotive suspension strut mounting. 4,615,537, Cl. 280-668.000.
- Danfysik A/S: *See—*
  - Jorgensen, Hans-Erik, 4,616,174, Cl. 324-117.00R.
- Danish, Sherif, to Polytel Corporation. Capacitive multikey keyboard for inputting data into a computer. 4,616,213, Cl. 340-365.00C.
- Dansk Industri Syndikat A/S: *See—*
  - Persson, Viggo, 4,615,374, Cl. 164-442.000.
- Dardi, Louis E.; and Shankar, Srinivasan, to Howmet Turbine Components Corporation. Superalloy coating composition with oxidation and/or sulfidation resistance. 4,615,864, Cl. 420-437.000.
- Darling, Phillip H., to Metro-Line Industries, Inc. Filter housing for closed fluid circulating system. 4,615,812, Cl. 210-805.000.
- Darowski, Waldemar S. Crib or cradle for children. 4,615,059, Cl. 5-108.000.
- Dash, John; and Kasaaian, Arash S., to State of Oregon Acting By and Through the State Board of Higher Education on Behalf of Portland State University. Chromium-iron alloy plating from a solution containing both hexavalent and trivalent chromium. 4,615,773, Cl. 204-43.100.
- Dasurat Enterprises PTE Ltd.: *See—*
  - Mason, James W., 4,615,642, Cl. 405-45.000.
  - Mason, James W., 4,616,055, Cl. 524-381.000.
- Data General Corporation: *See—*
  - Erwin, Douglas A.; and Skinner, Robert L., 4,616,260, Cl. 358-150.000.
- Dautzenberg, Horst: *See—*
  - Loth, Frith; Dautzenberg, Horst; Stamberg, Jiri ; Peska, Jan; Bertram, Dieter; and Lettau, Herbert, 4,615,880, Cl. 424-15.000.

- Davey, Peter G.: *See—*
  - Clocksin, William F.; Davey, Peter G.; Morgan, Colin G.; and Vidler, Albert R., 4,616,121, Cl. 219-124.340.
- Davis, Dalton W. Pipe reaming device. 4,615,243, Cl. 82-1.200.
- Davis, James A.: *See—*
  - Schloman, William W., Jr.; and Davis, James A., 4,616,068, Cl. 525-332.700.
- Dawson, Bruce K.: *See—*
  - Cormier, Thomas E.; Dawson, Bruce K.; Wilson, Keith B.; and Young, Thomas C., 4,615,716, Cl. 62-24.000.
- Dayco Corporation: *See—*
  - Foster, Randy C., 4,615,096, Cl. 29-434.000.
- Dazzi, Jean-Louis, to Renault Vehicules Industriels. Method and apparatus for controlling fuel injection. 4,615,322, Cl. 123-506.000.
- de la Haye, Cornelis F. Stacking element and a gallery, platform or the like, provided with such a stacking element. 4,615,277, Cl. 108-101.000.
- de la Haye, Cornelis F. Vertically adjustable table. 4,615,279, Cl. 108-144.000.
- Deacon, Kim: *See—*
  - Lindemann, Martin K.; and Deacon, Kim, 4,616,057, Cl. 524-458.000.
- Dearman, Kenneth W. J., to Icore International Limited. Device for terminating an electrical cable. 4,615,574, Cl. 339-61.00C.
- Deavenport, Dennis L.: *See—*
  - Fannin, Loyd W.; Crapo, Clark C.; and Deavenport, Dennis L., 4,615,843, Cl. 260-665.00R.
- Deere & Company: *See—*
  - Cheatum, Leo G., 4,615,238, Cl. 74-674.000.
  - Weiss, Heinz, 4,615,240, Cl. 74-740.000.
  - Wohlford, William P.; and Orlandea, Nicolae V., 4,615,567, Cl. 305-40.000.
- Deffner, John F.; Young, Raymond R.; and Barnes, Russell M., to Visual Marketing Inc. Beverage bottle package display system. 4,615,443, Cl. 206-427.000.
- Degussa Aktiengesellschaft: *See—*
  - Engel, Claus R.; and Dworowy, Lutz, 4,615,852, Cl. 264-118.000.
  - Schirrmacher, Rudiger; and Semmerau, Gisbert, 4,615,993, Cl. 502-55.000.
- Deha Baubedarf GmbH & Co. KG: *See—*
  - Schilla, Henning; Hatz, Ernst; and Zipf, Eckart, 4,615,554, Cl. 294-89.000.
- Deibig, Heinrich; Reiner, Roland; and Welle, Hendricus B. A., to Sandoz Ltd. Pharmaceutical compositions. 4,615,881, Cl. 424-78.000.
- Deike, Robert F., to Construction Robotics, Inc. Post anchor. 4,615,156, Cl. 52-98.000.
- Delahoy, Alan E., to Chronar Corp. Enhancement of photoconductivity in pyrolytically prepared semiconductors. 4,616,246, Cl. 357-30.000.
- de Larosiere, Pierre J. Tray for supporting articles in a package. 4,615,444, Cl. 206-427.000.
- Delery, Marc, to Compagnie Francaise d'Articles de Sport. Ski boot. 4,615,127, Cl. 36-117.000.
- de los Angeles Tello, Maria: *See—*
  - Lovatto, Pietro; and de los Angeles Tello, Maria, 4,615,062, Cl. 8-149.300.
- Delta Resins & Refractories: *See—*
  - Kopac, Jordan J.; and Khachaturian, Arek, 4,615,372, Cl. 164-16.000.
- Demerson, Christopher A.: *See—*
  - Mobilio, Dominick; Demerson, Christopher A.; and Humber, Leslie G., 4,616,028, Cl. 514-411.000.
- Demetriades, Peter G. Natural fiber mop. 4,615,065, Cl. 15-229.00A.
- Demus, Dietrich; Zaschke, Horst; Pelzl, Gerhard; and Tschierske, Carsten, to VEB Werk fuer Fernsehelektronik im VEB Kombinat Mikroelektronik. Mixing component for liquid crystal substances. 4,615,824, Cl. 252-299.500.
- Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
  - Kobayashi, Akira; Ide, Ryoichi; and Koga, Hirotaka, 4,615,741, Cl. 106-308.00M.
- de Nora, Oronzio; Nidola, Antonio; and Martelli, Gian N. Electrolysis cell and method of generating halogen. 4,615,775, Cl. 204-128.000.
- Dentsply International Inc.: *See—*
  - Tateosian, Louis H.; and Horne, Shek C., 4,615,665, Cl. 425-16.000.
- de Pous, Olivier: *See—*
  - Richon, Dominique; and de Pous, Olivier, 4,615,990, Cl. 501-92.000.
- DePrenda, Ralph L.: *See—*
  - Bobbio, Stephen M.; Flanigan, Marie C.; Thrun, Kenneth M.; and DePrenda, Ralph L., 4,615,764, Cl. 156-643.000.
- DeRoche, William M.; Kearney, David A.; and Sibley, Franklin L., to Markem Corporation. Printing apparatus employing deformable transfer pad. 4,615,266, Cl. 101-163.000.
- De Sesa, Michael A.: *See—*
  - Reichert, William W.; Cody, Charles A.; De Sesa, Michael A.; and Faulseit, Bruce K., 4,615,918, Cl. 427-385.500.
- Design Engineering Pty. Limited: *See—*
  - Baker, William G., 4,615,363, Cl. 141-193.000.
- De Trano, Mario N.; Hergenrother, William L.; Maglio, Ralph A.; and Roggeman, David M., to Firestone Tire & Rubber Company, The. Solution compounding process for achieving uniform, fine particle size dispersion of curing agents. 4,616,048, Cl. 523-166.000.
- Detrich, M. H.: *See—*
  - Schurmeier, Gustave B., 4,615,471, Cl. 222-598.000.
- Deutsch, Alice; and Dorsey, Nancy, to Genetic Diagnostics Corporation. Immobilized protein on nylon for immunoassay. 4,615,985, Cl. 436-531.000.
- Deutsch, Thomas F.: *See—*
  - Ehrlich, Daniel J.; Deutsch, Thomas F.; Osgood, Richard M.; and Schlossberg, Howard, 4,615,904, Cl. 427-38.000.
- Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH: *See—*
  - Kaufmann, Friedrich, 4,615,833, Cl. 252-629.000.
- Deutsche Perrot-Bremse GmbH: *See—*
  - Schneider, Wilhelm; Jobke, Norbert; and Rupprecht, Bernd, 4,615,417, Cl. 188-72.800.
- Deutz-Allis Corporation: *See—*
  - Hastings, Dawson W., 4,615,397, Cl. 172-776.000.
- DeVera, Dennis: *See—*
  - Kenny, Andrew A.; Stahly, Daniel C.; and DeVera, Dennis, 4,616,164, Cl. 318-666.000.
- Devrø, Inc.: *See—*
  - Fu Lu, Mou-Ying; and Hood, Larry L., 4,615,889, Cl. 426-140.000.
- Devuyst, Eric A. P.; Tandi, Branka; and Conard, Bruce R., to Inco Limited. Treatment of cyanide-ferrocyanide effluents. 4,615,873, Cl. 423-367.000.
- Dhein, Rolf: *See—*
  - Schultz, Klaus-Dieter; Meyer, Rolf-Volker; Dhein, Rolf; Fullmann, Heinz-Josef; and Michael, Dietrich, 4,616,053, Cl. 524-171.000.
- Diab-Barracuda AB: *See—*
  - Johansson, Lars E., 4,615,921, Cl. 428-17.000.
- Diaz, Carlos M.: *See—*
  - Victorovich, Grigori S.; and Diaz, Carlos M., 4,615,729, Cl. 75-21.000.
- DiBiase, Stephen A.; and Vinci, James N., to Lubrizol Corporation, The. Hydrogen sulfide stabilized oil-soluble sulfurized organic compositions. 4,615,818, Cl. 252-47.500.
- Di Blasio, John, to Brandt, Incorporated. Document handling and counting apparatus. 4,615,518, Cl. 271-10.000.
- Dickison, Maxwell; and Kearney, Anthony D., to F. F. Seeley Nominees Pty. Ltd. Water distribution system. 4,615,844, Cl. 261-29.000.
- Dickson, William D.: *See—*
  - McClain, James E.; and Dickson, William D., 4,616,177, Cl. 324-156.000.
- Diebold Incorporated: *See—*
  - Shoop, James D.; Graef, Harry T.; Newton, Kevin H.; and Grucza, Spencer M., 4,615,280, Cl. 109-24.100.
- Dieck, Ronald L.: *See—*
  - Zukosky, Mimzee; and Dieck, Ronald L., 4,616,064, Cl. 525-92.000.
- Diederen, Willi: *See—*
  - Hauel, Norbert; Austel, Volkhard; Heider, Joachim; Reiffen, Manfred; Diederen, Willi; and Haarman, Walter, 4,616,018, Cl. 514-254.000.
- Diesel Kiki Co., Ltd.: *See—*
  - Iio, Masahiro; Saruwatari, Yasuhiko; and Yamazoe, Hiroshi, 4,615,663, Cl. 418-152.000.
- Dill, Frederick H.; Ling, Daniel T.; Matick, Richard E.; and McBride, Dennis J., to International Business Machines Corporation. Communicating random access memory. 4,616,310, Cl. 364-200.000.
- DiMarchi, Richard D., to Eli Lilly and Company. Process for purifying proinsulin-like materials. 4,616,078, Cl. 530-305.000.
- Dinter, Peter: *See—*
  - Kolbe, Andreas; and Dinter, Peter, 4,615,906, Cl. 427-40.000.
- DiNuzzo, Francis M.; and Fullemann, James S., to Hewlett-Packard Company. Apparatus and method for introducing solutes into a stream of carrier gas of a chromatograph. 4,615,226, Cl. 73-864.870.
- Discovision Associates: *See—*
  - Gregg, David P., 4,615,753, Cl. 156-219.000.
- Dixie Yarns, Inc.: *See—*
  - Correll, James F., Jr., 4,615,495, Cl. 242-159.000.
- Dixon, Richard D., to Huck Manufacturing Company. Pull type fastener and fastening system for constructing articles such as shipping containers and the like. 4,615,655, Cl. 411-339.000.
- Djuric, Stevan W.; and Garland, Robert B., to G. D. Searle & Co. 15(R)-5-fluoroprostacyclins, pharmaceutical compositions and antithrombotic method of use thereof. 4,616,034, Cl. 514-469.000.
- Dr. Ing. Rudolf Hell GmbH: *See—*
  - Hennig, Eberhard, 4,616,266, Cl. 358-280.000.
- Dr. Johannes Heidenhain GmbH: *See—*
  - Burkhardt, Horst, 4,616,131, Cl. 250-231.0SE.
  - Kober, Hans-Rudolf, 4,615,568, Cl. 384-12.000.
- Dr. Karl Thomae GmbH: *See—*
  - Reiffen, Manfred; Heider, Joachim; Austel, Volkhard; Hauel, Norbert; Kobinger, Walter; and Lillie, Christian, 4,616,011, Cl. 514-221.000.
- Dohnomoto, Tadashi: *See—*
  - Kubo, Masahiro; Dohnomoto, Tadashi; Tanaka, Atsuo; and Tatematsu, Yoshiaki, 4,615,733, Cl. 75-229.000.
- Doknas, Janos: *See—*
  - Ronafoldi, Arnold; Ferencsik, Jozsef; Doknas, Janos; and Torok, Laszlo , 4,615,660, Cl. 417-50.000.
- Dolz, Arno W.: *See—*
  - Smith, Jeremy G. B.; Dolz, Arno W.; and Lubbe, Carl H., 4,615,751, Cl. 149-2.000.
- Domany, Gyorgy: *See—*
  - Ezer, Elemer; Harsanyi, Kalman; Domany, Gyorgy; Szporny, Laszlo ; Matuz, Judit; Hegedus, Bela; Pallagi, Katalin; Szabadkai, Istvan; and Tetenyi, Peter, 4,616,025, Cl. 514-342.000.

- Donaldson Company, Inc.: *See—*
  - Stifelman, Jack; Fisher, Patrick; and Connelly, John F., 4,615,800, Cl. 210-132.000.
  - Wright, Mervin E., 4,615,804, Cl. 210-493.100.
- Donegan, Thomas E.: *See—*
  - Wong, Matthew K. L.; Schroeder, Rodney G.; and Donegan, Thomas E., 4,615,868, Cl. 422-111.000.
- Donig, Gunter: *See—*
  - Rehm, Hans; and Donig, Gunter, 4,616,358, Cl. 370-58.000.
- Dorr-Oliver Incorporated: *See—*
  - Culkin, Joseph B.; and Koffler, Adam, 4,615,786, Cl. 204-301.000.
- Dorsey, Nancy: *See—*
  - Deutsch, Alice; and Dorsey, Nancy, 4,615,985, Cl. 436-531.000.
- Dougherty, Thomas K.: *See—*
  - Lau, Kreisler S. Y.; and Dougherty, Thomas K., 4,615,842, Cl. 260-513.00F.
- Dow Chemical Company, The: *See—*
  - Teot, Arthur S.; Rose, Gene D.; and Stevens, Gregory A., 4,615,825, Cl. 252-356.000.
  - Walles, Wilhelm E., 4,615,914, Cl. 427-237.000.
  - White, Mary L. N., 4,616,072, Cl. 525-539.000.
  - Wood, Steven G., 4,616,087, Cl. 546-294.000.
- Dow Corning Corporation: *See—*
  - Frisch, Eldon E., 4,615,704, Cl. 623-8.000.
- Downie, William J. Pulping apparatus. 4,615,492, Cl. 241-46.00R.
- Downing, Todd R., to Stanadyne, Inc. Tappet cartridge assembly container and applicator. 4,615,440, Cl. 206-229.000.
- Drab, Harold G.: *See—*
  - Autrey, Samuel W.; and Drab, Harold G., 4,616,231, Cl. 342-374.000.
- Drag Specialties, Inc.: *See—*
  - Stahel, Alwin J., 4,615,556, Cl. 296-78.100.
- Draper, Marta J.: *See—*
  - Brown, James; Ellis, Peter E.; and Draper, Marta J., 4,615,896, Cl. 426-576.000.
  - Brown, James; Ellis, Peter E.; and Draper, Marta J., 4,615,897, Cl. 426-576.000.
  - Brown, James; Ellis, Peter E.; and Draper, Marta J., 4,615,898, Cl. 426-576.000.
- Dresig, Hans: *See—*
  - Rossler, Jurgen; Dresig, Hans; Hertzsch, Manfred; Forster, Gunther; and Eckelmann, Franz-Christian, 4,615,186, Cl. 66-57.000.
- Dresser Industries, Inc.: *See—*
  - Stamatakis, Emanuel; Sample, Thomas E., Jr.; and Javora, Paul H., 4,615,841, Cl. 260-505.00N.
- Dressler, Robert F. Suppression or control of liquid convection in float zones in a zero-gravity environment by viscous gas shear. 4,615,760, Cl. 156-620.000.
- Dreyer, Joachim: *See—*
  - Brandt, Holger; Beck, Arnold; and Dreyer, Joachim, 4,615,670, Cl. 425-186.000.
- Drouet, Michel G.: *See—*
  - Mercure, Hubert P.; and Drouet, Michel G., 4,616,176, Cl. 324-127.000.
- Dubois, Jean C.: *See—*
  - Bernard, Daniel; and Dubois, Jean C., 4,615,088, Cl. 29-25.420.
- Dunn, Charles S.; and Varrasso, Eugene C., to Owens-Corning Fiberglas Corporation. Method and apparatus for melting glass. 4,615,720, Cl. 65-29.000.
- Du Pont de Nemours, E. I., and Company: *See—*
  - Crone, Kenneth E., 4,615,110, Cl. 29-741.000.
  - Falcoff, Allan F.; and Alman, David H., 4,615,902, Cl. 427-8.000.
- Duranleau, Roger G.: *See—*
  - Zimmerman, Robert L.; and Duranleau, Roger G., 4,615,771, Cl. 203-46.000.
- Duringer, Rudi, to S. Franzen Sohne (GmbH & Co.). Permutation lock. 4,615,194, Cl. 70-312.000.
- Durocher, Donald F., to Kimberly-Clark Corporation. Wrapper constructions for self-extinguishing smoking articles. 4,615,345, Cl. 131-365.000.
- Durville, Gerard, to Textilma AG. Warp knitting machine, particularly galloon crocheting machine. 4,615,189, Cl. 66-204.000.
- Duvall, David S.; and Gupta, Dinesh K., to United Technologies Corporation. Overlay coatings with high yttrium contents. 4,615,865, Cl. 420-588.000.
- Dworowy, Lutz: *See—*
  - Engel, Claus R.; and Dworowy, Lutz, 4,615,852, Cl. 264-118.000.
- Dynamit Nobel AG: *See—*
  - Breitscheidel, Hans-Ulrich; Lorry, Cosmas; Rehlen, Helmut; and Roellinghoff, Jurgen, 4,615,411, Cl. 181-224.000.
- E. R. Squibb & Sons, Inc.: *See—*
  - Karanewsky, Donald S.; and Petrillo, Edward W., Jr., 4,616,005, Cl. 514-80.000.
  - Ryono, Denis E.; and Petrillo, Edward W., Jr., 4,616,088, Cl. 546-336.000.
- Eastman Kodak Company: *See—*
  - Braun, Hilarion; and Antolik, Ralph E., III, 4,616,235, Cl. 346-75.000.
  - Jacobs, Merrit N., 4,615,360, Cl. 141-18.000.
  - Kessler, David, 4,616,132, Cl. 250-236.000.
  - Wint, Robert L., 4,616,234, Cl. 346-75.000.
- Eaton Corporation: *See—*
  - Allen, David L.; and Larsen, Tor G., 4,615,621, Cl. 356-399.000.
  - Braun, Dennis H., 4,616,179, Cl. 324-158.0MG.
  - Bridges, Robert B.; and Brubaker, John R., 4,616,206, Cl. 337-71.000.
  - Damiano, Michael A.; and Schmerda, Richard F., 4,616,305, Cl. 363-132.000.
  - Kenny, Andrew A.; Stahly, Daniel C.; and DeVera, Dennis, 4,616,164, Cl. 318-666.000.
  - Lane, E. James; and Speelman, Paul L., 4,615,421, Cl. 192-3.540.
  - Mahon, Joseph J., 4,616,209, Cl. 340-309.150.
- ebm Elektrobau Mulfingen GmbH & Co.: *See—*
  - Best, Dieter, 4,616,149, Cl. 310-71.000.
- Eckelmann, Franz-Christian: *See—*
  - Rossler, Jurgen; Dresig, Hans; Hertzsch, Manfred; Forster, Gunther; and Eckelmann, Franz-Christian, 4,615,186, Cl. 66-57.000.
- Ecker, Peter, to Flottweg-Werk BMCo. GmbH. Centrifuge. 4,615,690, Cl. 494-56.000.
- Eckstein, Karl-Albert: *See—*
  - Kupper, Rolf; and Eckstein, Karl-Albert, 4,615,409, Cl. 180-176.000.
- Edwards, Jeffrey A.; and Peterson, Thomas W., to Intelledex Incorporated. Tool interface for robot end effectors. 4,615,101, Cl. 29-568.000.
- Edwards, Laroy H., to Chevron Research Company. 1-iodopropargyl-3,4-disubstituted-Δ^2-1,2,4-triazolidin-5-one fungicides. 4,616,004, Cl. 514-63.000.
- Edwards, Shannon: *See—*
  - Wilson, James L.; and Edwards, Shannon, 4,616,314, Cl. 364-200.000.
- Eguchi, Masaharu, to Canon Kabushiki Kaisha. Apparatus for adjusting the position of a light sensing element in a camera. 4,615,602, Cl. 354-478.000.
- Ehara, Shaw: *See—*
  - Matsuyama, Toshiro; Hayakawa, Takashi; Kojima, Yoshimi; Narikawa, Shiro; and Ehara, Shaw, 4,615,299, Cl. 118-723.000.
- Ehrlich, Daniel J.; Deutsch, Thomas F.; Osgood, Richard M.; and Schlossberg, Howard, to Massachusetts Institute of Technology. Maskless growth of patterned films. 4,615,904, Cl. 427-38.000.
- Ehrman, Albert M.: *See—*
  - Hunter, John E.; and Ehrman, Albert M., 4,615,899, Cl. 426-589.000.
- Eichelberger, George P., to GTE Corporation. Video subsystem for a hybrid videotex facility. 4,616,263, Cl. 358-185.000.
- Eichenberger, Kurt: *See—*
  - Kamber, Bruno; Leutert, Thomas; Kuhnis, Hans; and Eichenberger, Kurt, 4,616,002, Cl. 514-18.000.
- Eisai Co., Ltd.: *See—*
  - Tagaya, Ryosaku; Kojima, Osamu; and Sonobe, Yasuo, 4,615,622, Cl. 356-427.000.
- Eisen, Seth A.: *See—*
  - Hanpeter, John A.; Eisen, Seth A.; and Gard, Michael F., 4,616,316, Cl. 364-413.000.
- Eisenbrand, Gerhard; and Schreiber, Joachim, to Stiftung Deutsches Krebsforschungs Zentrum. Steroid esters of N-(2-halogenethyl)-N-nitroso-carbamoylamino and acids and peptides therefore, as well as method for preparing them. 4,615,835, Cl. 260-397.500.
- Eisenloeffel, Adolf. Drill bit and extension adapter. 4,615,402, Cl. 175-320.000.
- Elecompack Company Ltd.: *See—*
  - Naito, Hanichiro; and Miura, Masamichi, 4,615,449, Cl. 211-162.000.
- Eli Lilly and Company: *See—*
  - Chou, Ta-Sen; and Lakin, Robert E., 4,616,080, Cl. 540-225.000.
  - DiMarchi, Richard D., 4,616,078, Cl. 530-305.000.
- Ellis, Peter E.: *See—*
  - Brown, James; Ellis, Peter E.; and Draper, Marta J., 4,615,896, Cl. 426-576.000.
  - Brown, James; Ellis, Peter E.; and Draper, Marta J., 4,615,897, Cl. 426-576.000.
  - Brown, James; Ellis, Peter E.; and Draper, Marta J., 4,615,898, Cl. 426-576.000.
- Ellison, James R., to Peabody ABC Corporation. Warp knit weft insertion fabric and plastic sheet reinforced therewith. 4,615,934, Cl. 428-254.000.
- Elscint, Inc.: *See—*
  - Crawford, Carl R., 4,616,318, Cl. 364-414.000.
- Elscint, Ltd.: *See—*
  - Shimoni, Yair, 4,616,333, Cl. 364-819.000.
- ELTAC Nogler & Daum KG: *See—*
  - Oppitz, Hans, 4,616,125, Cl. 219-553.000.
- ELTECH Systems Corporation: *See—*
  - Solomon, Frank; and Grun, Charles, 4,615,954, Cl. 429-27.000.
  - Stewart, James J.; Abrahamson, Donald W.; and Harney, Marilyn J., 4,615,784, Cl. 204-263.000.
- Elton, Richard K., to General Electric Company. Process for electrodepositing mica on coil or bar connections and resulting products. 4,615,778, Cl. 204-181.100.
- Emerson Electric Co.: *See—*
  - Brown, Bernard T., 4,615,282, Cl. 110-186.000.
- Energy Conversion Devices, Inc.: *See—*
  - Strand, David A., 4,615,969, Cl. 430-320.000.
- Engel, Claus R.; and Dworowy, Lutz, to Degussa Aktiengesellschaft. Method for producing nitrocellulose-based carbon black concentrates in the form of chips. 4,615,852, Cl. 264-118.000.
- Enokiya, Masashi: *See—*
  - Yahagi, Masakichi; Igaki, Tetsuo; Yoshinaka, Shinji; Morita, Kosaku; Kinoshita, Kimiaki; Enokiya, Masashi; Kaneko, Akio; and Yamashita, Toshiyuki, 4,616,239, Cl. 346-201.000.

Environmental Elements Corp.: *See—*

Anson, Larry D.; and Miller, Donald W., 4,615,505, Cl. 251-174.000.

Erb, George H., to Erblok Associates. Multiple hook fastener media and method and system for making. 4,615,084, Cl. 24-442.000.

Erb, Michael H.: *See—*

Crawford, James R.; Winegeart, Jerald L.; and Erb, Michael H., 4,616,261, Cl. 358-181.000.

Erblok Associates: *See—*

Erb, George H., 4,615,084, Cl. 24-442.000.

Erdman, Timothy R., to Chevron Research Company. Hydrocarbon soluble nitrogen containing dispersant-fluorophosphoric acid adducts. 4,615,826, Cl. 252-32.500.

Ergonomen HB: *See—*

Hakansson, Sigurd, 4,615,121, Cl. 30-371.000.

Erhard, Raymond, to Smid, S.A. Machine for sawing the contours of plate material. 4,615,248, Cl. 83-165.000.

Erkey, Ozalp: *See—*

Leng, Francis J.; Machin, David; Reed, David A.; and Erkey, Ozalp, 4,615,819, Cl. 252-110.000.

Erlandson, Paul M.: *See—*

Hekal, Ihab M.; and Erlandson, Paul M., 4,615,924, Cl. 428-35.000.

Erowa AG: *See—*

Schneider, Rudolf, 4,615,688, Cl. 464-93.000.

Erwin, Douglas A.; and Skinner, Robert L., to Data General Corporation. Terminal having user selectable faster scanning. 4,616,260, Cl. 358-150.000.

ESCO Manufacturing Company: *See—*

McClain, James E.; and Dickson, William D., 4,616,177, Cl. 324-156.000.

Esmil B.V.: *See—*

Klaren, Dick G., 4,615,382, Cl. 165-104.160.

Essex Group, Inc.: *See—*

Vogel, Ralph A.; and Caudill, Keith E., 4,615,195, Cl. 72-38.000.

Estes, John H.: *See—*

Smolin, William; and Estes, John H., 4,615,994, Cl. 502-62.000.

Eta Sa Fabriques d'Ebauches: *See—*

Bollinger, Hans, 4,615,185, Cl. 63-5.00R.

Ethicon, Inc.: *See—*

Alpern, Marvin; Cerwin, Robert J.; and Roshdy, Constance E., 4,615,435, Cl. 206-63.300.

Evans, John M.: *See—*

Ashwood, Valerie A.; and Evans, John M., 4,616,021, Cl. 514-309.000.

Evans, Michael E., to Owens-Corning Fiberglas Corporation. Insulated wall construction. 4,615,162, Cl. 52-409.000.

Evert, Ilmar M.: *See—*

Kiisler, Karl R.; Kristianson, Peep G.; Sjuld, Tiya-Maya F.; Kaps, Tiit K.; Riistop, Myart A.; Rokk, Juri K.; Matvere, Toomas O.; Pravon, Juri E.; and Evert, Ilmar M., 4,615,737, Cl. 106-12.000.

Exxon Production Research Co.: *See—*

Johnson, Dale V.; and Bednar, John M., 4,615,387, Cl. 166-242.000.

Exxon Research and Engineering Co.: *See—*

Sedillo, Lawrence P.; Newlove, John C.; Peiffer, Dennis G.; and Lundberg, Robert D., 4,615,393, Cl. 166-308.000.

Eyraud, Marcel: *See—*

Corsi, Philippe; and Eyraud, Marcel, 4,615,939, Cl. 428-323.000.

Ezer, Elemer; Harsanyi, Kalman; Domany, Gyorgy; Szporny, Laszlo ; Matuz, Judit; Hegedus, Bela; Pallagi, Katalin; Szabadkai, Istvan; and Tetenyi, Peter, to Richter Gedeon Vegyeszeti Gyar RT. Thiazolidine derivatives, process for the preparation and pharmaceutical compositions thereof. 4,616,025, Cl. 514-342.000.

F. F. Seeley Nominees Pty. Ltd.: *See—*

Dickison, Maxwell; and Kearney, Anthony D., 4,615,844, Cl. 261-29.000.

Fabrica d'Armi P. Beretta S.p.A.: *See—*

Beretta, Pier G., 4,615,134, Cl. 42-6.000.

Fabris, Hubert J.: *See—*

Hargis, Ivan G.; Fabris, Hubert J.; Livigni, Russell A.; Aggarwal, Sundar L.; Thomas, George B.; and Wilson, John A., 4,616,065, Cl. 525-99.000.

Fackelman, Lee E., to Glasstech, Inc. Glass sheet forming system including topside transfer apparatus. 4,615,724, Cl. 65-182.200.

Falcoff, Allan F.; and Alman, David H., to Du Pont de Nemours, E. I., and Company. Color panel standards sorting system. 4,615,902, Cl. 427-8.000.

Falk Corporation, The: *See—*

Seireg, Ali, 4,615,639, Cl. 403-356.000.

Fannin, Loyd W.; Crapo, Clark C.; and Deavenport, Dennis L., to Texas Alkyls, Inc. Treatment of hydrocarbon solutions of dialkylmagnesium compounds to reduce the content of soluble chloride-containing complexes. 4,615,843, Cl. 260-665.00R.

Fanuc Ltd: *See—*

Kusumi, Katsuaki; and Nakashima, Yoshihiro, 4,616,307, Cl. 364-147.000.

Fateley, William G., to D.O.M. Associates, Inc. Stationary, electrically alterable, optical masking device and spectroscopic apparatus employing same. 4,615,619, Cl. 356-310.000.

Faulkner, D. John: *See—*

Jacobs, Robert S.; and Faulkner, D. John, 4,616,089, Cl. 549-323.000.

Faulseit, Bruce K.: *See—*

Reichert, William W.; Cody, Charles A.; De Sesa, Michael A.; and Faulseit, Bruce K., 4,615,918, Cl. 427-385.500.

Favreau, Jean, to Groupe Axinove. Process for moulding hollow articles of synthetic plastic material having an external finishing layer applied to during the moulding. 4,615,057, Cl. 4-420.000.

Featherstone, John L.: *See—*

Gallup, Darrell L.; and Featherstone, John L., 4,615,808, Cl. 210-714.000.

Federal-Mogul Corporation: *See—*

Pratt, George C.; and Montpetit, Michael C., 4,615,854, Cl. 264-127.000.

Federle, Hartmut; and Walther, Friedrich, to B.A.T. Cigaretten-Fabriken GmbH. Device for determining continuously the hardness of a smokable article. 4,615,342, Cl. 131-84.100.

Fedorov, Svyatoslav N.; Zakharov, Valery D.; and Axenov, Alexandr O., to Moskovsky Nauchno-Issledovatelsky Institut Mikrokhirurgii Glaza. Artificial eye lens. 4,615,700, Cl. 623-6.000.

Fehrenbach, Siegfried; Herbst, Kurt; Schulz, Wolfgang; and Utz, Eberhard, to Robert Bosch GmbH. Damper element. 4,615,320, Cl. 123-467.000.

Feinstone, Stephen M.: *See—*

Purcell, Robert H.; and Feinstone, Stephen M., 4,615,886, Cl. 424-101.000.

Feinwerktechnik Schleicher & Co., Firma: *See—*

Goldhammer, Albert, 4,615,490, Cl. 241-36.000.

Feldt, Mats, to Landstingens Inkopscentral Lic, Ekonomisk Forening. Delivery bed. 4,615,058, Cl. 5-60.000.

Fennel, Robert B. Pilfer proofing system and method for electric utility meter box. 4,615,113, Cl. 29-874.000.

Ferag AG: *See—*

Stauber, Hans-Ulrich, 4,615,517, Cl. 270-58.000.

Ferber, Alan C.; and Chamran, Morteza M., deceased (by Chamran, Delories M., legal representative), to Perkin-Elmer Corporation, The. Spectrophotometers. 4,616,210, Cl. 340-347.0AD.

Ferencsik, Jozsef: *See—*

Ronafoldi, Arnold; Ferencsik, Jozsef; Doknas, Janos; and Torok, Laszlo , 4,615,660, Cl. 417-50.000.

Fesman, Gerald, to Stauffer Chemical Company. Heat laminatable polyether urethane foam. 4,616,044, Cl. 521-107.000.

Fichtel & Sachs AG: *See—*

Klauke, Dieter; and Steuer, Werner, 4,615,423, Cl. 192-64.000.

Figgie International Inc.: *See—*

Rosenberg, Isadore; Terisse, Patrick R.; and Castro, Valentin, 4,615,438, Cl. 206-223.000.

Fijimoto, Shinichiro, to Fuji Medical Instruments Mfg. Co., Ltd. Automatic massaging machine. 4,615,336, Cl. 128-52.000.

Fink, Arthur C., Jr.: *See—*

Sutcliffe, Grenville G.; and Fink, Arthur C., Jr., 4,615,547, Cl. 285-136.000.

Finke, Robert-Gunter; Schumacher, Clemens; Kolb, Albert; Lautenschlager, Horst; and Konetzka, Jurgen, to Robert Finke Kommanditgesellschaft. Bottle closure with separable capsule. 4,615,437, Cl. 206-222.000.

Finsterwalder, Kurt; and Guthle, Rainer, to L. Schuler GmbH. Coining press. 4,615,203, Cl. 72-345.000.

Firestone Tire & Rubber Company, The: *See—*

De Trano, Mario N.; Hergenrother, William L.; Maglio, Ralph A.; and Roggeman, David M., 4,616,048, Cl. 523-166.000.

Malani, Shrikant R.; and Clark, Frank J., 4,616,075, Cl. 528-1.000.

Schloman, William W., Jr.; and Davis, James A., 4,616,068, Cl. 525-332.700.

Fisch, Nathaniel J., to United States of America, Energy. Oscillatory nonhmic current drive for maintaining a plasma current. 4,615,861, Cl. 376-133.000.

Fischer, Horst: *See—*

Schob, Wolfgang; and Fischer, Horst, 4,615,592, Cl. 350-531.000.

Fischer, Jurgen: *See—*

Zeiner, Hartmut; Heinz, Gerhard; Neumann, Peter; Fischer, Jurgen; and Nissen, Dietmar, 4,616,070, Cl. 525-390.000.

Fisher, Patrick: *See—*

Stifelman, Jack; Fisher, Patrick; and Connelly, John F., 4,615,800, Cl. 210-132.000.

Fitzpatrick, Thomas J.: *See—*

Morshedi, Abdol M.; Cutler, Charles R.; Fitzpatrick, Thomas J.; and Skrovanek, Thomas A., 4,616,308, Cl. 364-159.000.

Fixemer, James V.; Palmer, Neil R.; Wagner, Charles H.; and Winter, John M., to Square D Company. Circuit breaker. 4,616,200, Cl. 335-35.000.

Flammann, Norbert; and Rixen, Edgar, to Robert Krups Stiftung & Co. KG. Household appliance and an adjustable guard for its tool. 4,615,250, Cl. 83-399.000.

Flanigan, Marie C.: *See—*

Bobbio, Stephen M.; Flanigan, Marie C.; Thrun, Kenneth M.; and DePrenda, Ralph L., 4,615,764, Cl. 156-643.000.

Flath, Roland. Fits-all power bar. 4,615,117, Cl. 30-122.000.

Flexible Manufacturing Systems, Inc.: *See—*

Krolak, Michael; and Biche, Michael R., 4,615,615, Cl. 356-1.000.

Flores Agell, Jose L. Automatic lubricating device for machine shafts. 4,615,414, Cl. 184-13.100.

Flottweg-Werk BMCo. GmbH: *See—*

Ecker, Peter, 4,615,690, Cl. 494-56.000.

Fluorocarbon Technologies, Inc.: *See—*

Runge, Harry V., 4,615,917, Cl. 427-385.500.

Focke, Bernhard: *See—*

Focke, Heinz; and Focke, Bernhard, 4,615,494, Cl. 242-68.300.

Focke & Co. (GmH & Co.): *See—*

Focke, Heinz; and Focke, Bernhard, 4,615,494, Cl. 242-68.300.

Focke, Heinz; and Focke, Bernhard, to Focke & Co. (GmH & Co.). Device for receiving reels. 4,615,494, Cl. 242-68.300.

Fogerson, Richard D., to Ore-Ida Foods, Inc. Method for preparing potato shells. 4,615,893, Cl. 426-481.000.

Folk, Lee E., to Motorola, Inc. Contact assembly for small semiconductor device. 4,616,250, Cl. 357-70.000.

Fontenot, Michael L., to AT&T Bell Laboratories. Adaptive preferential flow control for packet switching system. 4,616,359, Cl. 370-60.000.

Foote, Duane M.: *See—*

Buccellato, Ronald I.; Card, Wayne T.; Foote, Duane M.; Lewis, Cinda B.; Soland, Peter A.; Stevens, Brian J.; and Widmann, Philip C., 4,615,460, Cl. 220-307.000.

Ford Aerospace & Communications Corporation: *See—*

Westerman, Charles W., 4,616,233, Cl. 343-792.500.

Ford Motor Company: *See—*

Damon, James J., 4,615,537, Cl. 280-668.000.

Hetrick, Robert E., 4,615,772, Cl. 204-1.00T.

Holubka, Joseph W., 4,616,071, Cl. 525-524.000.

Killgoar, Paul C., Jr., 4,616,060, Cl. 524-574.000.

Mourray, Jack W., 4,615,420, Cl. 188-322.150.

Stockton, Thomas R., 4,615,227, Cl. 74-7.00E.

Theodore, Ares N.; and Pett, Robert A., 4,615,851, Cl. 264-63.000.

Forkel, Dirk. Torsional vibration damper. 4,615,237, Cl. 74-574.000.

Formby's Inc.: *See—*

Clark, Leonard R.; and West, Robert W., 4,615,739, Cl. 106-34.000.

Forster, Gunther: *See—*

Rossler, Jurgen; Dresig, Hans; Hertzsch, Manfred; Forster, Gunther; and Eckelmann, Franz-Christian, 4,615,186, Cl. 66-57.000.

Forte, David: *See—*

Haines, Frederick T.; and Forte, David, 4,615,807, Cl. 210-704.000.

Foster-Boyd, Inc.: *See—*

Ko, Frank; Johnston, James B.; Bruner, Jeffrey W.; and Hursh, David F., 4,615,188, Cl. 66-196.000.

Foster Manufacturing Company: *See—*

Cruse, Lee H., 4,615,545, Cl. 285-24.000.

Foster, Randy C., to Dayco Corporation. Method of making a belt tensioner with a rotary fluid dampener. 4,615,096, Cl. 29-434.000.

Foster Wheeler Energy Corporation: *See—*

Seshamani, Venkatraman, 4,615,715, Cl. 55-269.000.

Fowler, Billy C.; Headley, Alan R.; and Rodgers, James L., to Kurta Corporation. Graphic tablet and method. 4,616,106, Cl. 178-18.000.

Foxboro Company, The: *See—*

Robinson, Robert J.; and Richardson, David A., 4,616,332, Cl. 364-814.000.

Franchi, Peter R.: *See—*

Antonucci, John D.; and Franchi, Peter R., 4,616,230, Cl. 342-373.000.

Francisco, David G.: *See—*

Hawkins, Phillip J.; and Francisco, David G., 4,615,198, Cl. 72-122.000.

Frank, James R., Jr.: *See—*

Bailey, Michael P.; Brooks, Raymond G.; Frank, James R., Jr.; Johnson, Justin J. J.; and Maholm, Mark B., 4,615,618, Cl. 356-152.000.

Frank, Peter; and Giger, Kurt, to Wild Heerbrugg Aktiengesellschaft. Pulse delay measurement apparatus. 4,615,617, Cl. 356-5.000.

Frankenwald-Presserei Horst Rebhan: *See—*

Rebhan, Horst, 4,615,451, Cl. 215-100.00A.

Frano, Francis G., to Illinois Tool Works Inc. Vine tie. 4,615,140, Cl. 47-44.000.

Frederick, Sherman B.; Grimes, Charles E.; and Kimzey, Paul W., to Tennant Company. Sweeper with speed control for brush and vacuum fan. 4,615,070, Cl. 15-339.000.

Freisinger, Henry: *See—*

Stritzl, Karl; Freisinger, Henry; and Luschnig, Franz, 4,615,536, Cl. 280-631.000.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*

Reiter, Norbert; and Tack, Hans, 4,615,244, Cl. 82-36.00B.

Frisch, Eldon E., to Dow Corning Corporation. Shape retention tissue expander and method of using. 4,615,704, Cl. 623-8.000.

Frito-Lay, Inc.: *See—*

Ruegg, Richard J., 4,615,894, Cl. 426-516.000.

Fritsch, Joseph F., to Ryan Plastics Ireland Limited. Cleaning cassette with means for intermittently wetting a cleaning tape. 4,616,284, Cl. 360-128.000.

Fritz, Ian J.: *See—*

Biefeld, Robert M.; Fritz, Ian J.; Gourley, Paul L.; and Osbourn, Gordon C., 4,616,241, Cl. 357-16.000.

Frohbieter, Edwin H., to Whirlpool Corporation. Vacuum cleaner power drive. 4,615,071, Cl. 15-340.000.

Fromm, Dieter: *See—*

Borho, Klaus; Fromm, Dieter; Schier, Ernst-Juergen; Schneehage, Hans H.; and Widmann, Alfred, 4,616,094, Cl. 564-073.000.

Frye, John G., Jr.: *See—*

Mazanec, Terry J.; Frye, John G., Jr.; and Hardman, Harley F., 4,616,000, Cl. 502-341.000.

Fu Lu, Mou-Ying; and Hood, Larry L., to Devro, Inc. Collagen sausage casing and method of preparation. 4,615,889, Cl. 426-140.000.

Fuchs, Otto, to Burroughs Corporation. Glass bonding fixture. 4,615,721, Cl. 65-154.000.

Fuhrmeister, Ralph, to Neitek Pty. Ltd. Feeders for headed fasteners. 4,615,475, Cl. 227-136.000.

Fuji Kagakushi Kogyo Co., Ltd.: *See—*

Onishi, Masaru; Saito, Masayuki; and Shimazaki, Yoshikazu, 4,615,932, Cl. 428-207.000.

Fuji Medical Instruments Mfg. Co., Ltd.: *See—*

Fijimoto, Shinichiro, 4,615,336, Cl. 128-52.000.

Fuji Photo Film Co., Ltd.: *See—*

Horikawa, Kazuo, 4,616,267, Cl. 358-280.000.

Hosoi, Yuichi; and Takahashi, Kenji, 4,616,135, Cl. 250-327.200.

Kojima, Tetsuro; Nakamura, Koki; and Toyoda, Takashi, 4,615,970, Cl. 430-446.000.

Seshimoto, Osamu; and Nirasawa, Mitsuharu, 4,615,788, Cl. 204-418.000.

Tani, Yoshio; Naruo, Kyoichi; and Yabe, Masao, 4,616,238, Cl. 346-137.000.

Yamada, Junichi; Horikawa, Kazuo; and Noguchi, Masaru, 4,616,129, Cl. 250-207.000.

Fuji Xerox Co., Ltd.: *See—*

Mori, Ikuo, 4,616,269, Cl. 358-293.000.

Fujii, Tadashi: *See—*

Ona, Isao; Ozaki, Masaru; Fujii, Tadashi; and Taki, Yoichioro, 4,616,076, Cl. 528-15.000.

Fujii, Takashi: *See—*

Tada, Keiji; Fujii, Takashi; Marumoto, Gen; Jyouo, Kazuhiro; and Fujisawa, Takahiro, 4,615,761, Cl. 156-626.000.

Fujiki, Man: *See—*

Matsumoto, Hiroshi; and Fujiki, Man, 4,615,145, Cl. 51-19.000.

Fujimori, Hiroyoshi: *See—*

Nagasaki, Tatsuo; and Fujimori, Hiroyoshi, 4,615,330, Cl. 128-4.000.

Fujimoto, Akihiko; and Kiyokawa, Morio, to Mitsubishi Denki Kabushiki Kaisha. Numerical control system. 4,616,309, Cl. 364-171.000.

Fujimoto, Takahiko: *See—*

Mori, Takasuke; Ayata, Kenzo; and Fujimoto, Takahiko, 4,615,376, Cl. 164-466.000.

Fujimura, Yoshiyuki: *See—*

Niwa, Kuniyuki; and Fujimura, Yoshiyuki, 4,616,322, Cl. 364-474.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*

Teraji, Tsutomu; Shiokawa, Youichi; Okumura, Kazuo; and Sato, Yoshinari, 4,616,014, Cl. 514-242.000.

Teraji, Tsutomu; Shiokawa, Youichi; Okumura, Kazuo; and Sato, Yoshinari, 4,616,015, Cl. 514-242.000.

Fujisawa, Takahiro: *See—*

Tada, Keiji; Fujii, Takashi; Marumoto, Gen; Jyouo, Kazuhiro; and Fujisawa, Takahiro, 4,615,761, Cl. 156-626.000.

Fujita, Hiroyuki: *See—*

Yoshioka, Tetsuo; Yamamoto, Takatsugu; Nishiyama, Toshihiko; Fujita, Hiroyuki; and Ashida, Shigeki, 4,615,901, Cl. 426-656.000.

Fujita, Shigeru; Takanashi, Yukio; and Kanno, Hiroshi, to Toshiba Kikai Kabushiki Kaisha. Injection molding machine. 4,615,669, Cl. 425-147.000.

Fujitsu Limited: *See—*

Noguchi, Eiji; and Aoyama, Keizo, 4,616,344, Cl. 365-203.000.

Ogawa, Junji, 4,616,343, Cl. 365-203.000.

Suzuki, Masahisa; and Mimura, Takashi, 4,615,102, Cl. 29-571.000.

Fujiwara, Kohichi: *See—*

Mochinaga, Kishio; Fujiwara, Kohichi; Higashine, Kazutaka; and Kobayashi, Hisashi, 4,615,750, Cl. 148-111.000.

Fujiwara, Kunio: *See—*

Tsuno, Koichi; and Fujiwara, Kunio, 4,615,583, Cl. 350-96.330.

Fukuda, Takemi: *See—*

Tahara, Tetsuya; Fukuda, Takemi; and Setoguchi, Michihide, 4,616,009, Cl. 514-212.000.

Fukuda, Yutaka: *See—*

Kobayashi, Hidehiro; Fukuda, Yutaka; and Kamiya, Seiji, 4,616,280, Cl. 360-109.000.

Fukui, Yutaka: *See—*

Kagohara, Hiromi; Fukui, Yutaka; Sakamoto, Masahiko; and Iizuka, Nobuyuki, 4,615,658, Cl. 415-178.000.

Fukuta, Kenji; Aoki, Eiji; Nagatsuka, Yoshihiro; and Kitano, Takeshi, to Agency of Industrial Science & Technology, Ministry of International Trade & Industry. Method for formation of three-dimensional woven fabric and apparatus therefor. 4,615,256, Cl. 87-33.000.

Fullemann, James S.: *See—*

DiNuzzo, Francis M.; and Fullemann, James S., 4,615,226, Cl. 73-864.870.

Fuller Company: *See—*

Lukacz, Stephen A., 4,615,647, Cl. 406-60.000.

Fullmann, Heinz-Josef: *See—*

Schultz, Klaus-Dieter; Meyer, Rolf-Volker; Dhein, Rolf; Fullmann, Heinz-Josef; and Michael, Dietrich, 4,616,053, Cl. 524-171.000.

Furrer, Harald; Anagnostopulos, Hiristo; Gebert, Ulrich; and Hinze, Heinz-Joachim, to Hoechst Aktiengesellschaft. Medicaments, vicinal dihydroxyalkylxanthines contained therein, processes for the preparation of these xanthine compounds and intermediate products suitable for these. 4,616,020, Cl. 514-264.000.

Furubayashi, Tadashi: *See—*

Yamamoto, Takeshi; Furubayashi, Tadashi; Igami, Masanobu; and Hashino, Tsutomu, 4,615,204, Cl. 72-347.000.

Furuta, Hideya: *See—*

Yanagawa, Nobuyuki; Koike, Tadao; Ishikawa, Toyoji; Sakai, Katsuo; and Furuta, Hideya, 4,615,607, Cl. 355-3.00R.

G. D. Searle & Co.: *See—*

Djuric, Stevan W.; and Garland, Robert B., 4,616,034, Cl. 514-469.000.

G. Maunsell & Partners: *See—*

Head, Peter R., 4,615,166, Cl. 52-309.110.

Gadkaree, Kishor P.: *See—*

Chyung, Kenneth; Cooper, Reid F.; Gadkaree, Kishor P.; Stewart, Ronald L.; and Taylor, Mark P., 4,615,987, Cl. 501-8.000.

Gaiser, Robert F., to Allied Corporation. Torque sensing braking controller for brakes. 4,615,419, Cl. 188-181.00T.

Galani, Zvi; and Campbell, Richard A., to Raytheon Company. Multifrequency microwave source. 4,616,191, Cl. 331-4.000.

Galati, Gaspare: *See—*

Giaccari, Ennio; and Galati, Gaspare, 4,616,228, Cl. 342-160.000.

Gale, Robert M.; and Berggren, Randall G., to ALZA Corporation. Transdermal delivery system for delivering nitroglycerin at high transdermal fluxes. 4,615,699, Cl. 604-897.000.

Gallacher, James J., to Immuno Concepts, Inc. Stabilization of indicators for detecting enzyme activity. 4,615,972, Cl. 435-28.000.

Galloway, Michael D.; Rose, William H.; and Shaffer, David T., to AMP Incorporated. Electrical switch having arc-protected contacts. 4,616,112, Cl. 200-5.00R.

Gallup, Darrell L.; and Featherstone, John L., to Union Oil Co. of California; Mono Power Co.; and Southern Pacific Land Co. Acidification of steam condensate for incompatibility control during mixing with geothermal brine. 4,615,808, Cl. 210-714.000.

Gamberini, Ernesto, to MG 2 S.p.A. Product capsuling plant, particularly for pharmaceutical products. 4,615,165, Cl. 53-282.000.

Gandolfi, Luciano; Grasso, Antonio; and Perniciaro, Antonio, to SGS-ATES Componenti Elettronici S.p.A. Method for the soldering of semiconductor chips on supports of not-noble metal. 4,615,478, Cl. 228-123.000.

Garabedian, Aram G. Shelf divider assembly. 4,615,276, Cl. 108-61.000.

Garcia, Gervasio B.; Valdesuso, Eduardo E.; and Quintero, Nicolas G. B. Automobile anti-theft device. 4,615,355, Cl. 137-383.000.

Gard, Michael F.: *See—*

Hanpeter, John A.; Eisen, Seth A.; and Gard, Michael F., 4,616,316, Cl. 364-413.000.

Gardner, Keith: *See—*

Pettigrew, Robert M.; Humberstone, Victor C.; and Gardner, Keith, 4,616,237, Cl. 346-135.100.

Gardner, Richard N., to Minnesota Mining and Manufacturing Company. Amorphous magneto optical recording medium. 4,615,944, Cl. 428-332.000.

Garfinkle, Benjamin L., to Clamp Swing Pricing Co. Deli pegbar apparatus. 4,615,503, Cl. 248-224.400.

Garito, Anthony F., to University Patents, Inc. Diacetylenes having liquid crystal phases. 4,615,962, Cl. 430-20.000.

Garland, Robert B.: *See—*

Djuric, Stevan W.; and Garland, Robert B., 4,616,034, Cl. 514-469.000.

Garrett Corporation, The: *See—*

Morley, Edwin W., 4,616,226, Cl. 340-980.000.

Garrett, Emmitt G., to Hydrofoam Mining, Inc. Foam process for recovering underground rock fragments. 4,615,564, Cl. 299-7.000.

Garrett, William R., to Smith International. Automatic hydraulic thruster. 4,615,401, Cl. 175-230.000.

Garsin, Paul A., to Xerox Corporation. Charge particle removal device. 4,615,613, Cl. 355-15.000.

Garthoffner, Egon H., to Tenneco Oil Company. In-situ combustion in hydrocarbon-bearing formations. 4,615,391, Cl. 166-257.000.

Gasman, Robert C. Replasticization of an already manufactured flexible vinyl product to prevent cracking or tearing of said product. 4,615,910, Cl. 427-140.000.

Gasnier, Robert; and Wolfenbarger, Larry N., to General Signal Corporation. Cock and trip switch actuating mechanism. 4,616,118, Cl. 200-153.0SC.

Gasser, Arthur. Holder for pre-knotted neckties. 4,615,048, Cl. 2-153.000.

Gaston, Robert E. Key safe. 4,615,281, Cl. 109-50.000.

Gauhl, Helmgard: *See—*

von der Eltz, Herbert; Gauhl, Helmgard; and Seidel, Hans, 4,615,981, Cl. 435-197.000.

Gay, Don D., to United States of America, Energy. Gas ampoule-syringe. 4,615,468, Cl. 222-327.000.

GBF, Inc.: *See—*

Upchurch, Billy T., 4,616,045, Cl. 522-60.000.

Geary, John M.; Goodby, John W.; and Leslie, Thomas M., to AT&T Bell Laboratories. Liquid crystal devices. 4,615,586; Cl. 350-350.00S.

Gebert, Ulrich: *See—*

Furrer, Harald; Anagnostopulos, Hiristo; Gebert, Ulrich; and Hinze, Heinz-Joachim, 4,616,020, Cl. 514-264.000.

Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH: *See—*

Schupphaus, Herbert, 4,615,565, Cl. 299-75.000.

Geiser, Peter, to Grapha-Holding AG. Apparatus for trimming stacks of paper sheets or the like. 4,615,249, Cl. 83-221.000.

Gelmini, James M.: *See—*

Panush, Sol; Gelmini, James M.; and Bradey, Nancy B., 4,615,940, Cl. 428-324.000.

Gelorme, Jeffrey D.; Lawrence, William H.; and Slota, Peter, Jr., to International Business Machines Corporation. Roughening surface of a substrate. 4,615,763, Cl. 156-643.000.

GenCorp: *See—*

Sharma, Satish C., 4,615,369, Cl. 152-565.000.

GenCorp Inc.: *See—*

Hargis, Ivan G.; Fabris, Hubert J.; Livigni, Russell A.; Aggarwal, Sundar L.; Thomas, George B.; and Wilson, John A., 4,616,065, Cl. 525-99.000.

Genequand, Pierre, to Cabloptic S.A. & Fondation Suisse pour la Recherche en Microtechnique. Apparatus for precise positioning of optical components. 4,615,097, Cl. 29-466.000.

General Dynamics Corporation/Convair Div.: *See—*

Buccellato, Ronald I.; Card, Wayne T.; Foote, Duane M.; Lewis, Cinda B.; Soland, Peter A.; Stevens, Brian J.; and Widmann, Philip C., 4,615,460, Cl. 220-307.000.

General Electric Company: *See—*

Avakian, Roger W., 4,616,042, Cl. 521-81.000.

Chiu, Norman H.; and Schneider, David A., 4,615,179, Cl. 62-129.000.

Cooper, Charles E.; and Stitt, Thomas D., 4,616,166, Cl. 318-712.000.

Elton, Richard K., 4,615,778, Cl. 204-181.100.

Glover, Gary H.; and MacFall, James R., 4,616,183, Cl. 324-309.000.

Goossens, John C., 4,615,947, Cl. 428-412.000.

Greenhalgh, Milton S., 4,616,124, Cl. 219-505.000.

Levinson, Lionel M.; and Yakymyshyn, Christopher P., 4,615,765, Cl. 156-643.000.

Luxon, Bruce A., 4,615,948, Cl. 428-420.000.

Moran, Brian P.; Andrews, Edward W.; and Miller, Stanford W., 4,616,259, Cl. 358-148.000.

Myers, Brent A., 4,616,145, Cl. 307-555.000.

Pardini, Franco P., 4,616,198, Cl. 335-16.000.

Peters, Michael A.; and Mewitz, Gerd, 4,616,319, Cl. 364-414.000.

Silva, James M., 4,616,077, Cl. 528-371.000.

Spriggs, Donald R., 4,615,734, Cl. 75-237.000.

General Foods Corporation: *See—*

Schenz, Anne F.; and Trumbetas, Jerome, 4,615,900, Cl. 426-590.000.

General Ionex Corporation: *See—*

Naylor, Harry; and Purser, Kenneth H., 4,616,157, Cl. 315-111.010.

General Motors Corporation: *See—*

Concannon, Brian T., 4,616,150, Cl. 310-186.000.

Hoke, Roger E., 4,615,512, Cl. 267-8.00R.

Horvath, Robert A., 4,615,235, Cl. 74-516.000.

Pryjmak, Bohdan I., 4,616,151, Cl. 310-216.000.

Radomski, Thomas A., 4,616,162, Cl. 318-317.000.

Richard, Dennis J., 4,615,092, Cl. 29-159.200.

Thebert, Glenn W., 4,615,422, Cl. 192-53.00B.

General Signal Corporation: *See—*

Gasnier, Robert; and Wolfenbarger, Larry N., 4,616,118, Cl. 200-153.0SC.

Genetic Diagnostics Corporation: *See—*

Deutsch, Alice; and Dorsey, Nancy, 4,615,985, Cl. 436-531.000.

Geraghty, Joseph T., Jr. Cylinder gripping attachment for a fork lift truck. 4,615,656, Cl. 414-607.000.

Gerber Garment Technology, Inc.: *See—*

Osthus, Harold; and Nymark, Roald, 4,615,273, Cl. 104-102.000.

Gerke, Dieter; and Muller, Manfred, to Krone GmbH. Terminal strip having U-shaped LSA-PLUS terminals. 4,615,576, Cl. 339-97.00P.

Gerlach, Charles R.: *See—*

Heath, Rodney T.; and Gerlach, Charles R., 4,615,673, Cl. 431-12.000.

Ghebre-Sellassie, Isaac; and Nesbitt, Russell U., Jr., to Warner-Lambert Company. Procaterol stabilization. 4,616,022, Cl. 514-312.000.

Giacalone, Joseph J.; and Giacalone, Joseph S. Portable female catheter. 4,615,692, Cl. 604-94.000.

Giacalone, Joseph S.: *See—*

Giacalone, Joseph J.; and Giacalone, Joseph S., 4,615,692, Cl. 604-94.000.

Giaccari, Ennio; and Galati, Gaspare, to Selenia Industrie Elettroniche Associate S.p.A. System for suppressing unwanted long-range and/or second-time-around radar echoes. 4,616,228, Cl. 342-160.000.

Gibot, Claude, to Carboxyque Francaise. Process and apparatus for supplying a mixture of CO_2 and SO_2 or a like mixture under pressure. 4,615,352, Cl. 137-7.000.

Gierse, Franz-Josef; Hermanns, Heinrich; Hermes, Werner; Lupnitz, Gerhard; Pabst, Manfred; and Schlicht, Heribert, to A. Monforts GmbH & Co. Fluff filtering device of a convection drying and/or setting machine. 4,615,124, Cl. 34-82.000.

Giger, Kurt: *See—*

Frank, Peter; and Giger, Kurt, 4,615,617, Cl. 356-5.000.

Glasstech, Inc.: *See—*

Fackelman, Lee E., 4,615,724, Cl. 65-182.200.

Gleason, Henry A., III: *See—*

Heckenbach, Terry A.; and Gleason, Henry A., III, 4,616,325, Cl. 364-505.000.

Glover, Gary H.; and MacFall, James R., to General Electric Company. Method for reducing baseline error components in NMR signals. 4,616,183, Cl. 324-309.000.

Goebel, Franz; and McHugh, William T., to GTE Government Systems Corporation. Method of treating lithium cells to reduce start-up delay time. 4,615,956, Cl. 429-50.000.

Goff, David R.; and Notestein, John E., to United States of America, Energy. Optical emission line monitor with background observation and cancellation. 4,616,137, Cl. 250-554.000.

Gold Star Co., Ltd.: *See—*

Shin, Kyu C., 4,616,119, Cl. 219-10.55F.

Goldhammer, Albert, to Feinwerktechnik Schleicher & Co., Firma. Shredder or microfilm destruction apparatus. 4,615,490, Cl. 241-36.000.

Goldhar, Julius; and Henesian, Mark A., to United States of America, Energy. Transparent electrode for optical switch. 4,615,588, Cl. 350-392.000.

Golner, Thomas M.: *See—*

Jones, Howard T.; and Golner, Thomas M., 4,615,114, Cl. 29-858.000.

Golz, Hans-Joachim, to Varta Batterie Aktiengesellschaft. Multicell battery using continuous manufacture. 4,615,958, Cl. 429-127.000.

Gonczy, Stephen T.; and Mitsche, Roy T., to Allied Corporation. Process for preparing high purity alpha-alumina. 4,615,875, Cl. 423-626.000.

Goodby, John W.: *See—*

Geary, John M.; Goodby, John W.; and Leslie, Thomas M., 4,615,586, Cl. 350-350.00S.

Goodings, Rupert L. A.: *See—*

Ross, Peter F.; Rodgers, Ian W.; and Goodings, Rupert L. A., 4,616,211, Cl. 340-347.0DD.

Goodman, Steven F., to Herman Miller, Inc. Flipper door mounting assembly for cabinet. 4,615,570, Cl. 312-110.000.

Goodrich, George W. Trail monitor. 4,615,624, Cl. 368-1.000.

Goodyear Tire & Rubber Company, The: *See—*

Smith, Larry W.; and Lowry, Larry G., 4,615,672, Cl. 425-296.000.

Goossens, John C., to General Electric Company. Acrylic primer for adhering an organopolysiloxane. 4,615,947, Cl. 428-412.000.

Goransson, Michael; and Nilsson, Jan, to ASEA Aktiebolag. Method of reducing the pore density in a casting. 4,615,745, Cl. 148-4.000.

Gordon, Rob R., Jr.: *See—*

Boggs, Beryl A.; and Gordon, Rob R., Jr., 4,615,245, Cl. 83-37.000.

Goto, Hideki: *See—*

Kumeta, Masao; Ide, Masahiro; Nishizawa, Nobuyoshi; Inoue, Nobuya; and Goto, Hideki, 4,615,107, Cl. 29-623.100.

Gottlieb, A. Arthur, to Imreg, Inc. Immunoamplifiers and processes for the extraction thereof. 4,616,079, Cl. 530-344.000.

Gould Inc.: *See—*

Knapp, Edward J., Jr.; and Mosesian, Jerry L., 4,616,207, Cl. 338-32.00H.

Gourley, Paul L.: *See—*

Biefeld, Robert M.; Fritz, Ian J.; Gourley, Paul L.; and Osbourn, Gordon C., 4,616,241, Cl. 357-16.000.

Gouvenot, Daniel, to Soletanche. Method of sealing off a mass of waste stock containing metal cations. 4,615,643, Cl. 405-128.000.

Govind, Rakesh. Distillation column and process. 4,615,770, Cl. 203-25.000.

Grabarski, David L.; and Williams, Harvey A. Power driven bottle opener. 4,615,241, Cl. 81-3.200.

Graco Inc.: *See—*

Larson, James H.; and McKee, Sheila S., 4,615,485, Cl. 239-124.000.

Graef, Harry T.: *See—*

Shoop, James D.; Graef, Harry T.; Newton, Kevin H.; and Grucza, Spencer M., 4,615,280, Cl. 109-24.100.

Graham, Neil A., to AE PLC. Oil cleaning assemblies for engines. 4,615,315, Cl. 123-196.00A.

Graham, Timothy: *See—*

Cook, Terry; and Graham, Timothy, 4,616,173, Cl. 324-78.00D.

Grain Processing Corporation: *See—*

Morehouse, Alpha L.; and Lewis, Charles J., 4,615,892, Cl. 426-250.000.

Granbom, Bo. Device for translating a rotary motion to a linear one. 4,615,229, Cl. 74-424.80C.

Grandy, Kenneth N., to Master Lock Company. Barrel combination lock. 4,615,191, Cl. 70-26.000.

Grant, Rixwell S., to Rudman, Max. Flushing cistern. 4,615,056, Cl. 4-366.000.

Grapha-Holding AG: *See—*

Geiser, Peter, 4,615,249, Cl. 83-221.000.

Grasselli, Robert K.: *See—*

Tenhover, Michael A.; and Grasselli, Robert K., 4,615,967, Cl. 430-270.000.

Grasso, Antonio: *See—*

Gandolfi, Luciano; Grasso, Antonio; and Perniciaro, Antonio, 4,615,478, Cl. 228-123.000.

Grazioso, Michael V.; Kerr, Edwin R., deceased (by Kerr, Myra L., administrator); Love, Richard F.; and Storm, David A., to Texaco Inc. Production of C_2–C_6 aliphatic alcohols. 4,616,040, Cl. 518-713.000.

Green, George D. Double ring piston sealing arrangement. 4,615,531, Cl. 277-216.000.

Greenberg, Neville G. Highly entangled thread development. 4,615,167, Cl. 57-6.000.

Greenhalgh, Milton S., to General Electric Company. Electric hot-spot detection apparatus and electric heating apparatus. 4,616,124, Cl. 219-505.000.

Greenwood, Arthur R., to UOP Inc. Hydrogen circulation for moving bed catalyst transfer systems. 4,615,792, Cl. 208-134.000.

Greenwood, Robert. Cooling apparatus for air conditioning compressor equipment. 4,615,181, Cl. 62-279.000.

Gregg, David P., to Discovision Associates. Process for making a video record disc. 4,615,753, Cl. 156-219.000.

Grethe, Klaus: *See—*

Pollmann, Siegfried; and Grethe, Klaus, 4,615,284, Cl. 110-343.000.

Grimes, Charles E.: *See—*

Frederick, Sherman B.; Grimes, Charles E.; and Kimzey, Paul W., 4,615,070, Cl. 15-339.000.

Grimes, Frank H.; and Krause, Robert F., to Westinghouse Electric Corp. Methods of consolidating a magnetic core. 4,615,106, Cl. 29-605.000.

Grogan, Richard P.; and Corsette, Douglas F., to Calmar, Inc. Liquid foam dispenser. 4,615,467, Cl. 222-189.000.

Gross, Benjamin: *See—*

Choi, Byung C.; Gross, Benjamin; and Malladi, Madhava, 4,615,791, Cl. 208-107.000.

Grote & Hartmann GmbH & Co.: *See—*

Reinertz, Rudolf, 4,615,100, Cl. 29-564.800.

Grothoff, Hans. Atomizing pump for water solutions. 4,615,465, Cl. 222-1.000.

Groupe Axinove: *See—*

Favreau, Jean, 4,615,057, Cl. 4-420.000.

Grove, Robert B.; Peters, Steven W.; and Tellalian, Martin L., to Chicago Bridge & Iron Company. Floating roof tank with rim space seal. 4,615,458, Cl. 220-222.000.

Grucza, Spencer M.: *See—*

Shoop, James D.; Graef, Harry T.; Newton, Kevin H.; and Grucza, Spencer M., 4,615,280, Cl. 109-24.100.

Grun, Charles: *See—*

Solomon, Frank; and Grun, Charles, 4,615,954, Cl. 429-27.000.

Grunewald, Paul; Blanch, Roy L.; and Schrage, James R., to Burroughs Corporation. Graphics display comparator for multiple bit plane graphics controller. 4,616,220, Cl. 340-747.000.

GTE Corporation: *See—*

Eichelberger, George P., 4,616,263, Cl. 358-185.000.

GTE Government Systems Corporation: *See—*

Goebel, Franz; and McHugh, William T., 4,615,956, Cl. 429-50.000.

GTE Laboratories Incorporated: *See—*

Lee, Kang I.; and Jopson, Harriet, 4,616,067, Cl. 525-192.000.

GTE Products Corporation: *See—*

Boudreau, Robert A., 4,615,781, Cl. 204-192.150.

Roche, William J.; and Anderson, John W.; Jr., 4,616,156, Cl. 315-107.000.

GTE Valeron Corporation: *See—*

Hunt, Carl E., 4,615,650, Cl. 407-105.000.

Van Sickle, Richard G.; and Mathie, Gerald W., 4,615,652, Cl. 408-168.000.

Guckenberger, Anthony C.: *See—*

Hsu, Joseph C.; and Guckenberger, Anthony C., 4,615,926, Cl. 428-35.000.

Guichard, Francois, to Compagnie Industrielle de Tubes et Lampes Electriques CITEL. Overvoltage discharger for coaxial cables and method of making same. 4,616,155, Cl. 313-573.000.

Guichard, Roland. Gear transmission comprising two worms. 4,615,230, Cl. 74-427.000.

Guittard, George V.; Wong, Patrick S. L.; and Theeuwes, Felix, to ALZA Corporation. Total agent osmotic delivery system. 4,615,698, Cl. 604-892.000.

Gulf Research & Development Company: *See—*

Occelli, Mario L., 4,615,996, Cl. 502-65.000.

Gupta, Dinesh K.: *See—*

Duvall, David S.; and Gupta, Dinesh K., 4,615,865, Cl. 420-588.000.

Guthle, Rainer: *See—*

Finsterwalder, Kurt; and Guthle, Rainer, 4,615,203, Cl. 72-345.000.

Haak, Raymond L. Tree topping device having hinged, adjustable clamping members. 4,615,073, Cl. 16-253.000.

Haarman, Walter: *See—*

Hauel, Norbert; Austel, Volkhard; Heider, Joachim; Reiffen, Manfred; Diederen, Willi; and Haarman, Walter, 4,616,018, Cl. 514-254.000.

Haas, Everett L.: *See—*

Johnson, David S.; and Haas, Everett L., 4,615,119, Cl. 30-276.000.

Habibullah, Mohammed, to Becton, Dickinson and Company. High temperature creep resistant thermoplastic elastomer compositions. 4,616,052, Cl. 524-104.000.

Habich, Dieter; and Hartwig, Wolfgang, to Bayer Aktiengesellschaft. Process for the preparation of 7-acylamino-3-hydroxy-cephem-4-carboxylic acids and 7-acylamino-3-hydroxy-1-dethia-1-oxacephem-4-carboxylic acids. 4,616,084, Cl. 540-215.000.

Haefner, Gunther; Bauer, Bernhard; Letsche, Ulrich; and Noreikat, Karl-Ernst, to Daimler-Benz Aktiengesellschaft. Method and apparatus for checking sensors. 4,615,321, Cl. 123-479.000.

Haga, Masakatsu: *See—*

Yoshino, Hisashi; Haga, Masakatsu; Yorifuji, Takashi; and Oshima, Teruo, 4,615,846, Cl. 264-13.000.

Hagan, Floyd W., to Rosemount Inc. Pressure sensing instrument for aircraft. 4,615,213, Cl. 73-180.000.

Hagen, Harmut: *See—*

Vilchez, Jose ; Mergelsberg, Reinhard; Schluter, Jurgen; and Hagen, Harmut, 4,615,890, Cl. 426-297.000.

Hagenbruch, Bernd: *See—*

Witte, Ernst-Christian; Wolff, Hans P.; Hagenbruch, Bernd; Stegmeir, Karlheinz; and Pill, Johannes, 4,616,086, Cl. 544-383.000.

Hahn, Ortwin, to Sodemape Holding AG. Method and device for sintering differing molded parts in particular from various types of foaming plastic in particular. 4,615,849, Cl. 264-40.400.

Hailey, Robert W. Hydraulic press frame. 4,615,208, Cl. 72-455.000.

Haines, Frederick T.; and Forte, David, to United States Environmental Resources, Corp. Method for wastewater treatment. 4,615,807, Cl. 210-704.000.

Hakansson, Sigurd, to Hakansson, Sigurd, a part interest; Ergonomen HB, a part interest; and Lindahl, Arne, a part interest. Device for a chain saw for the slitting of bark layers of a log. 4,615,121, Cl. 30-371.000.

Hakim, Carlos A.; and Hakim, Salomon. Surgically-implantable stepping motor. 4,615,691, Cl. 604-9.000.

Hakim, Salomon: *See—*

Hakim, Carlos A.; and Hakim, Salomon, 4,615,691, Cl. 604-9.000.

Hakutoh, Norimasa: *See—*

Horigome, Tsukumo; Kawabe, Noriyuki; Takiue, Mamoru; Imai, Kunihiko; Uchiyama, Noriaki; Tsuzuki, Fusayuki; Shimada, Kenji; Shibuya, Masahiro; Hakutoh, Norimasa; Watanabe, Chiaki; and Abe, Junichi, 4,615,769, Cl. 203-2.000.

Hall, Charles B., to Outboard Marine Corporation. Marine propulsion steering assist device. 4,615,290, Cl. 114-150.000.

Hall, Gary L.: *See—*

Hall, Lester B., 4,616,351, Cl. 367-139.000.

Hall, Leo M.: *See—*

Taylor, Kenneth B.; and Hall, Leo M., 4,615,976, Cl. 435-172.300.

Hall, Lester B., to Hall, Gary L. Pest control apparatus. 4,616,351, Cl. 367-139.000.

Halliburton Company: *See—*

Briscoe, William E., 4,615,386, Cl. 166-241.000.

Kuhlman, Robert D., Jr., 4,615,394, Cl. 166-327.000.

Hamano, Nobuo: *See—*

Homma, Koichi; Hamano, Nobuo; Maeda, Akira; and Yamagata, Shimbu, 4,616,227, Cl. 342-25.000.

Hamilton, Harriet W.; and Patt, William C., to Warner-Lambert Company. N^6-dihydroxypropyladenosines. 4,616,003, Cl. 514-46.000.

Hamlin, Jerry J. Holding apparatus and method for securely positioning members to be joined by welding or the like. 4,615,514, Cl. 269-41.000.

Hammond, John A. G.; and Morley, Andrew C., to Vickers, Incorporated. Pilot valves for two-stage hydraulic devices. 4,615,358, Cl. 137-625.630.

Hanatani, Sakio: *See—*

Morino, Taisuke; Hanatani, Sakio; and Ohuchi, Mituo, 4,615,405, Cl. 177-210.00C.

Hancock, Roger I.: *See—*

Hepworth, Paul; and Hancock, Roger I., 4,615,820, Cl. 252-139.000.

Handte, Reinhard: *See—*

Schmierer, Roland; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, 4,615,726, Cl. 71-92.000.

Hanmura, Hisao, to Shin-Kobe Electric Machinery Co., Ltd. Waveform observation apparatus. 4,616,175, Cl. 324-121.00R.

Hanning, John H.: *See—*

Hobbs, Richard E.; and Hanning, John H., 4,615,476, Cl. 222-153.000.

Hanpeter, John A.; Eisen, Seth A.; and Gard, Michael F., to United States of America, Veterans Affairs. Medication compliance monitoring device having conductive traces upon a frangible backing of a medication compartment. 4,616,316, Cl. 364-413.000.

Hanson, Thomas E.; and Sevigny, Roger J., to United Technologies Corporation. Slitting apparatus. 4,615,116, Cl. 30-90.400.

Hanssler, Gerd: *See—*

Weissmuller, Joachim; Kramer, Wolfgang; Berg, Dieter; Reinecke, Paul; Brandes, Wilhelm; Hanssler, Gerd; and Lurssen, Klaus, 4,615,725, Cl. 71-88.000.

Harada, Masashi: *See—*

Inoue, Tetsuyu; Tsuruga, Kouji; and Harada, Masashi, 4,615,912, Cl. 427-212.000.

Harada, Norimichi; Nakahama, Ryoji; and Kuragaki, Naoyoshi, to Sanshin Kogyo Kabushiki Kaisha. Outboard motor. 4,615,683, Cl. 440-52.000.

Harbaugh, Theodore L. Pool vacuum cleaning system. 4,615,802, Cl. 210-169.000.

Harding, Richard D. Disposable combination lid and straw for containers. 4,615,457, Cl. 220-90.200.

Hardman, Harley F.: *See—*

Mazanec, Terry J.; Frye, John G., Jr.; and Hardman, Harley F., 4,616,000, Cl. 502-341.000.

Harfenist, Morton, to Burroughs Wellcome Co. Use of nitrogen heterocyclic compounds. 4,616,032, Cl. 514-436.000.

Hargis, Ivan G.; Fabris, Hubert J.; Livigni, Russell A.; Aggarwal, Sundar L.; Thomas, George B.; and Wilson, John A., to GenCorp Inc. High trans butadiene based elastomeric block copolymers and blends. 4,616,065, Cl. 525-99.000.

Harker, Howard R.; and Knecht, Joseph A., II, to A. Johnson Metals Corporation. Electron-beam furnace with magnetic stabilization. 4,616,363, Cl. 373-14.000.

Harney, Marilyn J.: *See—*

Stewart, James J.; Abrahamson, Donald W.; and Harney, Marilyn J., 4,615,784, Cl. 204-263.000.

Harper, John F., Jr. Orbital barrel finishing machine and automated system therefor. 4,615,148, Cl. 51-164.200.

Harrigal, Robert L., to Shell California Production Inc. Recovering oil by injecting hot CO_2 into a reservoir containing swelling clay. 4,615,392, Cl. 166-272.000.

Harris Corporation: *See—*

Thornton, Max C., Jr.; Kuntz, Paul; Meyer, Russell L.; and Rosier, Kenneth M., 4,616,178, Cl. 324-158.00F.

Harsanyi, Kalman: *See—*

Ezer, Elemer; Harsanyi, Kalman; Domany, Gyorgy; Szporny, Laszlo ; Matuz, Judit; Hegedus, Bela; Pallagi, Katalin; Szabadkai, Istvan; and Tetenyi, Peter, 4,616,025, Cl. 514-342.000.

Harshman, Sidney, to Vanderbilt University. Method and vaccine for treatment of demyelinating diseases. 4,615,884, Cl. 424-92.000.

Hartgring, Cornelis D.: *See—*

Cuppens, Roger; and Hartgring, Cornelis D., 4,616,339, Cl. 365-185.000.

Hartman, Adrian R.: *See—*

Chang, Gee-Kung; Hartman, Adrian R.; and Robinson, McDonald, 4,616,247, Cl. 357-30.000.

Hartman, Harry B.; LaLonde, Gerard V.; and Butkovich, Michael S., to Standard Oil Company (Indiana). Overfill and spillage protection device. 4,615,362, Cl. 141-86.000.

Hartman, Robert J., to Batesville Casket Company, Inc. Burial casket hardware alignment device. 4,615,085, Cl. 27-1.000.

Hartwig, Wolfgang: *See—*

Habich, Dieter; and Hartwig, Wolfgang, 4,616,084, Cl. 540-215.000.

Harvest Tec, Inc.: *See—*

Roberts, Jeffrey S., 4,615,139, Cl. 47-1.700.

Harvey, Robert A.: *See—*

Smith, Ian R.; and Harvey, Robert A., 4,615,591, Cl. 350-507.000.

Harwood, Leopold A.; and Law, Kirk A., to RCA Corporation. Hanging dot reduction system. 4,616,254, Cl. 358-31.000.

Hase, Fumio: *See—*

Ohotoshi, Sachio; and Hase, Fumio, 4,615,479, Cl. 228-180.100.

Hasegawa, Akio; and Horiguchi, Sadakazu, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for the cultivation of normal diploid cells and cultivation medium used therefor. 4,615,977, Cl. 435-240.000.

Haseler, Helmut, to Agfa-Gevaert Aktiengesellschaft. Photographic developer composition. 4,615,971, Cl. 430-491.000.

Hashimoto Corporation: *See—*

Hashimoto, Kazuo, 4,616,110, Cl. 179-6.030.

Hashimoto, Kazuo, to Hashimoto Corporation. Automatic digital telephone answering apparatus. 4,616,110, Cl. 179-6.030.

Hashimoto, Kenji, to Yabumoto, Kenji, a part interest. Undergarments and method of making same. 4,615,051, Cl. 2-406.000.

Hashimoto, Osamu: *See—*

Satoh, Susumu; Suzuki, Hideo; Obara, Takashi; Nishida, Minoru; and Hashimoto, Osamu, 4,615,749, Cl. 148-330.000.

Hashimoto, Takaaki; and Minagawa, Kazushi, to Nippon Kogaku K.K. White balance control apparatus for color video cameras. 4,616,253, Cl. 358-29.000.

Hashimoto, Toshio: *See—*

Takumi, Shizuo; Hashimoto, Toshio; and Tatsushima, Masaru, 4,615,999, Cl. 502-314.000.

Hashino, Tsutomu: *See—*

Yamamoto, Takeshi; Furubayashi, Tadashi; Igami, Masanobu; and Hashino, Tsutomu, 4,615,204, Cl. 72-347.000.

Hastie, John L. Magnetic razor blade conditioning device. 4,615,436, Cl. 206-208.000.

Hastings, Dawson W., to Deutz-Allis Corporation. Agricultural implement with double wing folding mechanism using toggle linkage and hydraulic actuator. 4,615,397, Cl. 172-776.000.

Hata, Shunichi: *See—*

Kishi, Ichiro; Miyata, Makoto; and Hata, Shunichi, 4,615,469, Cl. 222-327.000.

Hatz, Ernst: *See—*

Schilla, Henning; Hatz, Ernst; and Zipf, Eckart, 4,615,554, Cl. 294-89.000.

Hauel, Norbert; Austel, Volkhard; Heider, Joachim; Reiffen, Manfred; Diederen, Willi; and Haarman, Walter, to Karl Thomae GmbH. Benzotriazolyl-4,5-dihydro-3(2H)-pyridazinones. 4,616,018, Cl. 514-254.000.

Hauel, Norbert: *See—*

Reiffen, Manfred; Heider, Joachim; Austel, Volkhard; Hauel, Norbert; Kobinger, Walter; and Lillie, Christian, 4,616,011, Cl. 514-221.000.

Hauni-Werke Korber & Co. KG.: *See—*

Heitmann, Uwe, 4,616,139, Cl. 250-572.000.

Komossa, Werner, 4,615,343, Cl. 131-111.000.

Haupenthal, Rudi, to Heidelberger Druckmaschinen AG. Transfer drum for conveying sheets. 4,615,265, Cl. 101-142.000.

Hawkins, Phillip J.; and Francisco, David G., to Westinghouse Electric Corp. Apparatus and method for reforming and rolling tube ends. 4,615,198, Cl. 72-122.000.

Hayakawa, Kiyonori: *See—*

Takino, Hiroshi; Hayakawa, Kiyonori; Kawabata, Kazuko; and Tsuruoka. Makoto, 4,615,748, Cl. 148-304.000.

Hayakawa, Takashi: *See—*

Matsuyama, Toshiro; Hayakawa, Takashi; Kojima, Yoshimi; Narikawa, Shiro; and Ehara, Shaw, 4,615,299, Cl. 118-723.000.

Hayashi, Hiroshi; and Satoh, Masahiro, to Sanyo Chemical Industries, Ltd. Secondary battery or cell with improved rechargeability. 4,615,959, Cl. 429-194.000.

Hayashi, Kimiyoshi: *See—*

Ohno, Akio; Murayama, Yasushi; Hirooka, Kazuhiko; and Hayashi, Kimiyoshi, 4,615,612, Cl. 355-14.00D.

Hayashi, Masakatsu: *See—*

Tanaami, Taichi; Kogure, Hiroshi; and Hayashi, Masakatsu, 4,615,481, Cl. 236-38.000.

Hayashi, Yoshimasa, to Nissan Motor Co., Ltd. Arrangement of boiling liquid cooling system of internal combustion engine. 4,615,304, Cl. 123-41.210.

Hayashi, Yukichi, to Kabushiki Kaisha Nippon Coinco. Control device and a method for sending and receiving information in a vending machine and the like apparatus. 4,616,323, Cl. 364-479.000.

Hayashi, Yutaka; Kojima, Yoshikazu; Kamiya, Masaaki; and Tanaka, Kojiro, to Agency of Industrial Science & Technology; and Kabushiki Kaisha Daini Seikosha. Non-volatile semiconductor memory. 4,616,340, Cl. 365-185.000.

HBS: *See—*

Pavie, Claude, 4,615,446, Cl. 209-583.000.

Head, Peter R., to G. Maunsell & Partners. Structural panel. 4,615,166, Cl. 52-309.110.

Headley, Alan R.: *See—*

Fowler, Billy C.; Headley, Alan R.; and Rodgers, James L., 4,616,106, Cl. 178-18.000.

Heath, Rodney T.; and Gerlach, Charles R. Thermostatic control system. 4,615,673, Cl. 431-12.000.

Heckenbach, Terry A.; and Gleason, Henry A., III, to Johnson Service Company. Zone condition controller and method of using same. 4,616,325, Cl. 364-505.000.

Heckmann, Emile A., to K. Systeme S.A.R.L. Apparatus for cooking, dehydration and sterilization-drying of organic wastes. 4,615,867, Cl. 422-109.000.

Hegedus, Bela: *See—*

Ezer, Elemer; Harsanyi, Kalman; Domany, Gyorgy; Szporny, Laszlo ; Matuz, Judit; Hegedus, Bela; Pallagi, Katalin; Szabadkai, Istvan; and Tetenyi, Peter, 4,616,025, Cl. 514-342.000.

Heggeland, Bruce: *See—*

Tisbo, Cosmo N.; Tisbo, Thomas A.; Recker, Richard D.; and Heggeland, Bruce, 4,615,636, Cl. 403-8.000.

Heidelberger Druckmaschinen AG: *See—*

Haupenthal, Rudi, 4,615,265, Cl. 101-142.000.

Jahn, Hans-Georg, 4,615,293, Cl. 118-46.000.

Jeschke, Willi; and Pollich, Gerhard, 4,615,520, Cl. 271-227.000.

Heider, Joachim: *See—*

Hauel, Norbert; Austel, Volkhard; Heider, Joachim; Reiffen, Manfred; Diederen, Willi; and Haarman, Walter, 4,616,018, Cl. 514-254.000.

Reiffen, Manfred; Heider, Joachim; Austel, Volkhard; Hauel, Norbert; Kobinger, Walter; and Lillie, Christian, 4,616,011, Cl. 514-221.000.

Heinz, Gerhard: *See—*

Zeiner, Hartmut; Heinz, Gerhard; Neumann, Peter; Fischer, Jurgen; and Nissen, Dietmar, 4,616,070, Cl. 525-390.000.

Heitmann, Uwe, to Hauni-Werke Korber & Co. KG. Apparatus for optical scanning of the exterior of a moving cigarette rod or the like. 4,616,139, Cl. 250-572.000.

Hekal, Ihab M.; and Erlandson, Paul M., to Continental Can Company, Inc. Coating and container for retention of green color of vegetables. 4,615,924, Cl. 428-35.000.

Held, Kurt. Continuously operating press for pressing an advancing web of material. 4,615,758, Cl. 156-359.000.

Helen, Andre; Servel, Michel; and Thomas, Alain. FIFO arrangement for temporary data storage. 4,616,338, Cl. 364-900.000.

Hell, Gunter; and Bokamp, Gerhard, to Herbert Kannegiesser GmbH & Co. Wet laundry dewatering apparatus. 4,615,190, Cl. 68-241.000.

Henderson, Henry N., to Owens-Illinois, Inc. Surface treatment of glass containers. 4,615,916, Cl. 427-255.000.

Hendriks, Jan J. M.: *See—*

Somers, Gerardus A.; Lovie, John R.; and Hendriks, Jan J. M., 4,615,774, Cl. 204-44.300.

Henesian, Mark A.: *See—*

Goldhar, Julius; and Henesian, Mark A., 4,615,588, Cl. 350-392.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*

Buecheler, Herbert; and Tuerk, Erich, 4,615,054, Cl. 4-231.000.

Hennig, Eberhard, to Dr. Ing. Rudolf Hell GmbH. Method and apparatus for electrically controllable scanning device for moire-free scanning of rastered masters. 4,616,266, Cl. 358-280.000.

Henning, Brian, to Black & Decker Inc. Apparatus for collecting debris. 4,615,069, Cl. 15-326.000.

Henning, Wolfgang; Meckel, Walter; Beck, Ulrich; and Baumgen, Heinz, to Bayer Aktiengesellschaft. Aqueous solutions or dispersions of polyisocyanate addition products, a process for the production thereof and the use thereof as coating agents or as sizing agents for paper. 4,616,061, Cl. 524-591.000.

Henry, Joseph P.: *See—*

Kapicak, Louis A.; and Henry, Joseph P., 4,616,093, Cl. 560-204.000.

Henze, Siegfried; Mussig, Karl; and Ziegler, Hans, to TEXPA Arbter Maschinenbaugesellschaft mbH. Device for finishing at least one lengthwise edge of a sheet of material. 4,615,287, Cl. 112-121.140.

Hepworth, Paul; and Hancock, Roger I., to Imperial Chemical Industries PLC. Detergent compositions. 4,615,820, Cl. 252-139.000.

Herbert Kannegiesser GmbH & Co.: *See—*

Hell, Gunter; and Bokamp, Gerhard, 4,615,190, Cl. 68-241.000.

Herbst, Kurt: *See—*

Fehrenbach, Siegfried; Herbst, Kurt; Schulz, Wolfgang; and Utz, Eberhard, 4,615,320, Cl. 123-467.000.

Hergenrother, William L.: *See—*

De Trano, Mario N.; Hergenrother, William L.; Maglio, Ralph A.; and Roggeman, David M., 4,616,048, Cl. 523-166.000.

Hergeth Hollingsworth GmbH: *See—*

Wirth, Walter, 4,615,080, Cl. 19-106.00R.

Herman Miller, Inc.: *See—*

Goodman, Steven F., 4,615,570, Cl. 312-110.000.

Hermann Berstorff Maschinenbau GmbH: *See—*

Kolossow, Klaus-Dieter, 4,615,664, Cl. 425-4.00C.

Hermanns, Heinrich: *See—*

Gierse, Franz-Josef; Hermanns, Heinrich; Hermes, Werner; Lupnitz, Gerhard; Pabst, Manfred; and Schlicht, Heribert, 4,615,124, Cl. 34-82.000.

Hermes, Werner: *See—*

Gierse, Franz-Josef; Hermanns, Heinrich; Hermes, Werner; Lupnitz, Gerhard; Pabst, Manfred; and Schlicht, Heribert, 4,615,124, Cl. 34-82.000.

Hernandez, Jean R.; and Verdier, Alain, to Black & Decker Inc. Battery charger including thermistor. 4,616,171, Cl. 320-30.000.

Herschler, Robert J. Methylsulfonylmethane in dietary products. 4,616,039, Cl. 514-711.000.

Hertzsch, Manfred: *See—*

Rossler, Jurgen; Dresig, Hans; Hertzsch, Manfred; Forster, Gunther; and Eckelmann, Franz-Christian, 4,615,186, Cl. 66-57.000.

Hetrick, Robert E., to Ford Motor Company. Electrochemical gas sensor. 4,615,772, Cl. 204-1.00T.

Hewlett-Packard Company: *See—*

DiNuzzo, Francis M.; and Fullemann, James S., 4,615,226, Cl. 73-864.870.

Jewell, Michael B.; and Olmstead, Merle L., 4,616,295, Cl. 362-31.000.

Poorman, Paul W., 4,616,279, Cl. 360-103.000.

Heywang, Gerhard; Kuhle, Engelbert; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. Pesticidally active novel N-oxalyl derivatives of N-methylcarbamates. 4,616,035, Cl. 514-469.000.

Hibino, Somi: *See—*

Kanai, Seita; Tokunaga, Toshimichi; and Hibino, Somi, 4,616,163, Cl. 318-611.000.

Hickinbotham, Stephen J., to Hickinbotham Winemakers Pty. Ltd. Method for producing wine by fall carbonic maceration. 4,615,887, Cl. 426-8.000.

Hickinbotham Winemakers Pty. Ltd.: *See—*

Hickinbotham, Stephen J., 4,615,887, Cl. 426-8.000.

Hideshima, Makoto; Takahashi, Wataru; and Muramoto, Kenichi, to Kabushiki Kaisha Toshiba. High withstand voltage Darlington transistor circuit. 4,616,144, Cl. 307-315.000.

Higashine, Kazutaka: *See—*

Mochinaga, Kishio; Fujiwara, Kohichi; Higashine, Kazutaka; and Kobayashi, Hisashi, 4,615,750, Cl. 148-111.000.

Higuchi, Tatsuji: *See—*

Nakajima, Yukio; Higuchi, Tatsuji; and Asakura, Yasuo, 4,615,600, Cl. 354-451.000.

Hilliard, Garland E.: *See—*

Miles, Ronald C.; Justice, David D.; and Hilliard, Garland E., 4,615,777, Cl. 204-129.000.

Hiltebrandt, Siegfried: *See—*

Buess, Gerd; Hiltebrandt, Siegfried; and Boebel, Manfred, 4,615,332, Cl. 128-6.000.

Hilton, Charles B., to Celanese Corporation. Removal of iodide compounds from non-aqueous organic media. 4,615,806, Cl. 210-690.000.

Himmel, Walter: *See—*

Hoelderich, Wolfgang; Himmel, Walter; Mross, Wolf D.; and Schwarzmann, Matthias, 4,616,098, Cl. 585-640.000.

Hinze, Heinz-Joachim: *See—*

Furrer, Harald; Anagnostopulos, Hiristo; Gebert, Ulrich; and Hinze, Heinz-Joachim, 4,616,020, Cl. 514-264.000.

Hirai, Shin-ichiro; Makino, Tadashi; and Koyama, Hiroyoshi, to Takeda Chemical Industries, Ltd. Antibacterial solid composition for oral administration. 4,616,008, Cl. 514-200.000.

Hirakawa, Osamu: *See—*

Umeha, Genkichi; and Hirakawa, Osamu, 4,615,310, Cl. 123-90.340.

Hirano, Toshio: *See—*

Yasukawa, Kenichiro; Hirano, Toshio; Yoshida, Masayuki; and Yoshio, Junichi, 4,616,271, Cl. 360-32.000.

Hirata, Jiro, to Nippon Seiko Kabushiki Kaisha. Linear guide apparatus. 4,615,569, Cl. 384-45.000.

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Yamada, Tetsusyo; and Hirate, Shintaro, 4,615,787, Cl. 204-406.000.

Hirmann, Georg. Drive device operated by a pressure fluid. 4,615,258, Cl. 92-40.000.

Hirooka, Kazuhiko: *See—*

Ohno, Akio; Murayama, Yasushi; Hirooka, Kazuhiko; and Hayashi, Kimiyoshi, 4,615,612, Cl. 355-14.00D.

Hirt, Manfred; and John, Eric, to Zahnraderfabrik Renk AG. Ship gear train arrangement. 4,615,239, Cl. 74-720.000.

Hisao, Aoki, to Sanden Corporation. Serpentine heat exchanging apparatus having corrugated fin units. 4,615,383, Cl. 165-150.000.

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Amakawa, Koji; and Uozumi, Norihira, 4,615,955, Cl. 429-34.000.

Homma, Koichi; Hamano, Nobuo; Maeda, Akira; and Yamagata, Shimbu, 4,616,227, Cl. 342-25.000.

Horigome, Tsukumo; Kawabe, Noriyuki; Takiue, Mamoru; Imai, Kunihiko; Uchiyama, Noriaki; Tsuzuki, Fusayuki; Shimada, Kenji; Shibuya, Masahiro; Hakutoh, Norimasa; Watanabe, Chiaki; and Abe, Junichi, 4,615,769, Cl. 203-2.000.

Ito, Tosikazu, 4,615,357, Cl. 137-596.170.

Kagohara, Hiromi; Fukui, Yutaka; Sakamoto, Masahiko; and Iizuka, Nobuyuki, 4,615,658, Cl. 415-178.000.

Kobayashi, Satoru; Sugimoto, Shigeo; and Terasaki, Masatosi, 4,615,184, Cl. 62-512.000.

Koike, Masahiro; Takahashi, Fuminobu; Ogura, Satoshi; and Koga, Kazunori, 4,615,217, Cl. 73-624.000.

Maeshima, Mikio, 4,615,630, Cl. 400-608.300.

Minato, Osamu; Sasaki, Toshio; and Masuhara, Toshiaki, 4,616,243, Cl. 357-23.130.

Niwa, Toshikazu; Takahashi, Mineo; and Aiba, Kazumi, 4,615,091, Cl. 29-156.40R.

Noguchi, Minori; Otsubo, Toru; and Aiuchi, Susumu, 4,615,620, Cl. 356-378.000.

Sengoku, Norio; Kozai, Hiroshi; and Kobayashi, Fumiyuki, 4,616,292, Cl. 361-414.000.

Sugiyama, Shuji, 4,615,614, Cl. 355-53.000.

Tada, Keiji; Fujii, Takashi; Marumoto, Gen; Jyouo, Kazuhiro; and Fujisawa, Takahiro, 4,615,761, Cl. 156-626.000.

- Tanaami, Taichi; Kogure, Hiroshi; and Hayashi, Masakatsu, 4,615,481, Cl. 236-38.000.
- Tsujii, Kanji; Yajima, Yusuke; and Murayama, Seiichi, 4,615,756, Cl. 156-345.000.
- Usui, Toshifumi; and Yanagisawa, Shozo, 4,615,173, Cl. 60-286.000.
- Hitachi, Ltd: *See—*
  - Imoto, Kosuke; and Katada, Hiroshi, 4,615,318, Cl. 123-414.000.
- Hitachi Sanki Eng Co., Ltd.: *See—*
  - Tada, Keiji; Fujii, Takashi; Marumoto, Gen; Jyouo, Kazuhiro; and Fujisawa, Takahiro, 4,615,761, Cl. 156-626.000.
- Hobart Corporation: *See—*
  - Treiber, Fritz F., 4,615,757, Cl. 156-350.000.
- Hobbs, Richard E.; and Hanning, John H., to Huntington Laboratories, Inc. Fluid-dispensing apparatus. 4,615,476, Cl. 222-153.000.
- Hochiki Corporation: *See—*
  - Yuchi, Sadataka, 4,616,138, Cl. 250-554.000.
- Hodgin, Byron. Formulation for the control of nematodes. 4,616,036, Cl. 514-470.000.
- Hoechst Aktiengesellschaft: *See—*
  - Furrer, Harald; Anagnostopulos, Hiristo; Gebert, Ulrich; and Hinze, Heinz-Joachim, 4,616,020, Cl. 514-264.000.
  - Kolbe, Andreas; and Dinter, Peter, 4,615,906, Cl. 427-40.000.
  - Schmierer, Roland; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, 4,615,726, Cl. 71-92.000.
  - Staab, Rudolf, 4,615,783, Cl. 204-252.000.
- Hoehn, Robert A. Indexing conveyor for robotic production operations. 4,615,274, Cl. 104-167.000.
- Hoelderich, Wolfgang; Himmel, Walter; Mross, Wolf D.; and Schwarzmann, Matthias, to BASF Aktiengesellschaft. Preparation of olefins from methanol/dimethyl ether. 4,616,098, Cl. 585-640.000.
- Hoffman, Keith A.: *See—*
  - Bessinger, Walter L.; and Hoffman, Keith A., 4,615,095, Cl. 29-407.000.
- Hoffman, Terry P.: *See—*
  - Messina, Louis; and Hoffman, Terry P., 4,615,346, Cl. 132-7.000.
- Hoffmann-La Roche Inc.: *See—*
  - Hunkeler, Walter; and Kyburz, Emilio, 4,616,010, Cl. 514-214.000.
  - LeMahieu, Ronald A., 4,616,091, Cl. 560-53.000.
- Hoge, Renon M.; and Mathews, Albert A., to Mole Constuction Company. Prestressed tunnel lining. 4,615,644, Cl. 405-151.000.
- Hogenkamp, Wilhelm; and Schumann, Manfred, to Otto Hansel GmbH. Packaging machine for flat-shaped articles such as chocolate bars, bolts, blocks or the like. 4,615,164, Cl. 53-53.000.
- Hokama, Takeo: *See—*
  - Nickell, Louis G.; Stach, Leonard J.; and Hokama, Takeo, 4,615,728, Cl. 71-94.000.
- Hoke, Roger E., to General Motors Corporation. Internal pressurized vehicle suspension strut assembly. 4,615,512, Cl. 267-8.00R.
- Holder, James D., to United States of America, Army. Constrained stepping motor unique code device. 4,615,269, Cl. 102-221.000.
- Hollandse Signaalapparaten B.V.: *See—*
  - Reits, Bernard J., 4,616,232, Cl. 342-379.000.
  - Whiting, Ian G., 4,616,127, Cl. 235-412.000.
- Hollowell, William, to American Safety Equipment Corporation. Electrically activated tension eliminator actuator. 4,616,141, Cl. 307-10.0SB.
- Holodnak, Richard S.; and Hooper, Clinton E., to Pitney Bowes Inc. Mail separating device. 4,615,519, Cl. 271-122.000.
- Holtey, Thomas O.; and Marshall, J. Nathaniel, to Honeywell Information Systems Inc. Multiple beam high definition page display. 4,616,160, Cl. 315-365.000.
- Holubka, Joseph W., to Ford Motor Company. Coating composition comprising bis-diene oligomers and bis-dieneophile oligomers. 4,616,071, Cl. 525-524.000.
- Holzmann, Hubert A., to Thomas & Betts Corporation. Strip for holding and protecting electrical contacts. 4,615,927, Cl. 428-35.000.
- Homeyer, Bernhard: *See—*
  - Heywang, Gerhard; Kuhle, Engelbert; and Homeyer, Bernhard, 4,616,035, Cl. 514-469.000.
- Homma, Koichi; Hamano, Nobuo; Maeda, Akira; and Yamagata, Shimbu, to Hitachi, Ltd. Method of reconstructing synthetic aperture radar image. 4,616,227, Cl. 342-25.000.
- Honda Giken Kogyo Kabushiki Kaisha: *See—*
  - Imoto, Kosuke; and Katada, Hiroshi, 4,615,318, Cl. 123-414.000.
  - Nomura, Kaoru, 4,615,561, Cl. 297-243.000.
  - Tahata, Michio, 4,615,845, Cl. 261-44.00B.
- Honda, Haruo: *See—*
  - Nakagame, Fujio; Honda, Haruo; Maruyama, Teppei; Saito, Noriko; and Kimoto, Tomoaki, 4,615,885, Cl. 424-94.000.
- Honeywell Inc.: *See—*
  - Beckey, Thomas J., 4,615,380, Cl. 165-12.000.
  - Betz, B. Keith, 4,616,330, Cl. 364-728.000.
  - Khan, M. Asif; and Schulze, Richard G., 4,616,248, Cl. 357-30.000.
  - White, William J.; and Ortolf, James M., 4,615,573, Cl. 339-17.00M.
- Honeywell Information Systems Inc.: *See—*
  - Holtey, Thomas O.; and Marshall, J. Nathaniel, 4,616,160, Cl. 315-365.000.
- Hongo, Masaharu: *See—*
  - Tokuyama, Shinichi; Hongo, Masaharu; and Iino, Hirokazu, 4,615,823, Cl. 252-194.000.
- Honma, Toshio, to Canon Kabushiki Kaisha. Image forming apparatus including turn-on and turn-off setting means. 4,615,609, Cl. 355-14.00R.
- Honmoto, Syuichi: *See—*
  - Yoshieda, Keiichi; Sodeno, Toshiaki; and Honmoto, Syuichi, 4,615,246, Cl. 83-42.000.
- Hood, Larry L.: *See—*
  - Fu Lu, Mou-Ying; and Hood, Larry L., 4,615,889, Cl. 426-140.000.
- Hooper, Clinton E.: *See—*
  - Holodnak, Richard S.; and Hooper, Clinton E., 4,615,519, Cl. 271-122.000.
- Hoppe, Peter P.: *See—*
  - Lechtken, Peter; Nurrenbach, Axel; Kohler, Walter; Hoppe, Peter P.; Tiefenbacher, Hubert; and Schole, Jurgen, 4,616,016, Cl. 514-249.000.
- Horigome, Tsukumo; Kawabe, Noriyuki; Takiue, Mamoru; Imai, Kunihiko; Uchiyama, Noriaki; Tsuzuki, Fusayuki; Shimada, Kenji; Shibuya, Masahiro; Hakutoh, Norimasa; Watanabe, Chiaki; and Abe, Junichi, to Nippon Steel Chem. Co., Ltd.; and Hitachi, Ltd. Process for distillation of styrenes. 4,615,769, Cl. 203-2.000.
- Horiguchi, Sadakazu: *See—*
  - Hasegawa, Akio; and Horiguchi, Sadakazu, 4,615,977, Cl. 435-240.000.
- Horikawa, Kazuo, to Fuji Photo Film Co., Ltd. Overcurrent detection and protection method for photomultiplier. 4,616,267, Cl. 358-280.000.
- Horikawa, Kazuo: *See—*
  - Yamada, Junichi; Horikawa, Kazuo; and Noguchi, Masaru, 4,616,129, Cl. 250-207.000.
- Horlacher, Hans. Slider for a slide fastener. 4,615,082, Cl. 24-418.000.
- Hornbeck, Larry J., to Texas Instruments Incorporated. Frame addressed spatial light modulator. 4,615,595, Cl. 353-122.000.
- Horne, Shek C.: *See—*
  - Tateosian, Louis H.; and Horne, Shek C., 4,615,665, Cl. 425-16.000.
- Horvath, Robert A., to General Motors Corporation. Variable ratio brake pedal mechanism. 4,615,235, Cl. 74-516.000.
- Hosaka, Akio, to Nissan Motor Co., Ltd. Method of detecting slip of driving wheel of automotive vehicle. 4,615,410, Cl. 180-197.000.
- Hosoi, Yuichi; and Takahashi, Kenji, to Fuji Photo Film Co., Ltd. Radiation image recording and reproducing method. 4,616,135, Cl. 250-327.200.
- Hosokawa, Toshihiro, to Tsubakimoto Chain Co. Device for connecting a wheel-like body to a shaft. 4,615,640, Cl. 403-369.000.
- Hotta, Shu; Shimizu, Tokihiko; and Taguchi, Nobuyoshi, to Matsushita Electric Industrial Co., Ltd. Dye-receiving sheets for thermal recording. 4,615,938, Cl. 428-323.000.
- Houston, James L. Slide valve. 4,615,506, Cl. 251-326.000.
- Howden, Harry, to U.S. Philips Corporation. Method and apparatus for producing a lens having an accurately centered aspherical surface. 4,615,847, Cl. 264-1.700.
- Howe, Harvey J.: *See—*
  - Wilson, Freddie W.; Howe, Harvey J.; and Nichols, James H., Jr., 4,615,407, Cl. 180-128.000.
- Howe, Leland D., Jr.; Oza, Bharatkumar J.; and Roche, Thomas J., to International Business Machines Corporation. Apparatus for suspending a system clock when an initial error occurs. 4,616,335, Cl. 364-900.000.
- Howell, Frederick H., to Ciba-Geigy AG. Hydroquinone ether compounds. 4,616,082, Cl. 544-87.000.
- Howmet Turbine Components Corporation: *See—*
  - Dardi, Louis E.; and Shankar, Srinivasan, 4,615,864, Cl. 420-437.000.
- Hsu, Joseph C.; and Guckenberger, Anthony C., to American Can Company. Film and package having strong seals and a modified ply-separation opening. 4,615,926, Cl. 428-35.000.
- Huber, Johann; and Thanner, Otto, to Tyrolit Schleifmittelwerke Swarovski K.G. Method for manufacturing of grinding wheel. 4,615,151, Cl. 51-293.000.
- Huber & Suhner AG: *See—*
  - Bosshard, Andreas; and Lammler, Bernhard, 4,615,115, Cl. 29-860.000.
- Huck Manufacturing Company: *See—*
  - Dixon, Richard D., 4,615,655, Cl. 411-339.000.
  - Rosier, Hendrik E., 4,615,206, Cl. 72-391.000.
- Huckestein, Edgar A., to Westinghouse Electric Corp. Nuclear reactor with fuel assembly support means. 4,615,862, Cl. 376-362.000.
- Hudgens, Stephen J.: *See—*
  - Ovshinsky, Stanford R.; Allred, David D.; Walter, Lee; and Hudgens, Stephen J., 4,615,905, Cl. 427-39.000.
- Hughes Aircraft Company: *See—*
  - Autrey, Samuel W.; and Drab, Harold G., 4,616,231, Cl. 342-374.000.
  - Lau, Kreisler S. Y.; and Dougherty, Thomas K., 4,615,842, Cl. 260-513.00F.
  - Scapple, Robert Y.; Peters, John W.; Linder, Jacques F.; and Yee, Edward M., 4,615,294, Cl. 118-50.100.
  - Ward, Robert D.; Taormina, Frank A.; and Wong, Mon N., 4,616,195, Cl. 333-160.000.
- Hulek, Anton, to Voest-Alpine Aktiengesellschaft. Arrangement for recovering the sensible heat of dumpable hot stock. 4,615,677, Cl. 432-77.000.
- Hultine, Donald W. Auxiliary shovel handle. 4,615,553, Cl. 294-58.000.
- Humber, Leslie G.: *See—*
  - Mobilio, Dominick; Demerson, Christopher A.; and Humber, Leslie G., 4,616,028, Cl. 514-411.000.
- Humberstone, Victor C.: *See—*
  - Pettigrew, Robert M.; Humberstone, Victor C.; and Gardner, Keith, 4,616,237, Cl. 346-135.100.

- Hung, Paul L. K.; Radigan, Richard J.; and Rosen, David S., to M&T Chemicals Inc. Printed circuit boards having improved adhesion between solder mask and metal. 4,615,950, Cl. 428-461.000.
- Hunkeler, Walter; and Kyburz, Emilio, to Hoffmann-La Roche Inc. Imidazodiazepine derivatives. 4,616,010, Cl. 514-214.000.
- Hunt, Carl E., to GTE Valeron Corporation. Locking pin for a tool holder. 4,615,650, Cl. 407-105.000.
- Hunter, John E.; and Ehrman, Albert M., to Procter & Gamble Co., The. Sauce containing acidified textured protein. 4,615,899, Cl. 426-589.000.
- Huntington Laboratories, Inc.: *See—*
  - Hobbs, Richard E.; and Hanning, John H., 4,615,476, Cl. 222-153.000.
- Hursh, David F.: *See—*
  - Ko, Frank; Johnston, James B.; Bruner, Jeffrey W.; and Hursh, David F., 4,615,188, Cl. 66-196.000.
- Husky Corporation: *See—*
  - Sutcliffe, Grenville G.; and Fink, Arthur C., Jr., 4,615,547, Cl. 285-136.000.
- Hutchinson, Christopher D., to Royal Ordnance plc. Shock-augmenting charge with axially-grooved booster housing. 4,615,271, Cl. 102-318.000.
- Hyde, David D.; and Stuart, James R., to American Monitor Corporation. Fluid-sampling system and method. 4,615,866, Cl. 422-106.000.
- Hydro Quebec: *See—*
  - Mercure, Hubert P.; and Drouet, Michel G., 4,616,176, Cl. 324-127.000.
- Hydrofoam Mining, Inc.: *See—*
  - Garrett, Emmitt G., 4,615,564, Cl. 299-7.000.
- Hyland, John G.; and Clement, Ronald P., to Aerosol Inventions & Development S.A. AIDSA. Valve assembly for container of pressurized fluid. 4,615,470, Cl. 222-402.160.
- I. M. Engineering Ltd.: *See—*
  - Milin, Ivan, 4,615,242, Cl. 81-3.080.
- Ichikawa, Kenji; Sugimoto, Hiroyuki; Nakamura, Ryosuke; Yamamura, Takashi; and Mitsuhata, Kenji, to Shinagawa Refractories Co., Ltd. Lining structure composition for a tundish. 4,615,953, Cl. 428-699.000.
- Ichimura, Hiroshi: *See—*
  - Nakagaki, Shintaro; and Ichimura, Hiroshi, 4,616,255, Cl. 358-47.000.
- Ichinose, Hisashi: *See—*
  - Tamura, Shohei; Sasaki, Sadamitsu; Abe, Masao; Nakazawa, Hitoshi; Ichinose, Hisashi; Nakamoto, Keiji; and Yumoto, Satoshi, 4,615,829, Cl. 252-500.000.
- Icore International Limited: *See—*
  - Dearman, Kenneth W. J., 4,615,574, Cl. 339-61.00C.
- Ide, Masahiro: *See—*
  - Kumeta, Masao; Ide, Masahiro; Nishizawa, Nobuyoshi; Inoue, Nobuya; and Goto, Hideki, 4,615,107, Cl. 29-623.100.
- Ide, Ryoichi: *See—*
  - Kobayashi, Akira; Ide, Ryoichi; and Koga, Hirotaka, 4,615,741, Cl. 106-308.00M.
- Ideno, Eiichiro; Tamiya, Masaru; Ogawa, Katsumi; and Kumakiri, Tadashi, to Agency of Industrial Science & Technology. Telescopic riser joint. 4,615,542, Cl. 285-11.000.
- Igaki, Tetsuo: *See—*
  - Yahagi, Masakichi; Igaki, Tetsuo; Yoshinaka, Shinji; Morita, Kosaku; Kinoshita, Kimiaki; Enokiya, Masashi; Kaneko, Akio; and Yamashita, Toshiyuki, 4,616,239, Cl. 346-201.000.
- Igami, Masanobu: *See—*
  - Yamamoto, Takeshi; Furubayashi, Tadashi; Igami, Masanobu; and Hashino, Tsutomu, 4,615,204, Cl. 72-347.000.
- Igari, Kazuo: *See—*
  - Yamaguchi, Koushi; and Igari, Kazuo, 4,616,278, Cl. 360-99.000.
- Ihata, Sachiko, to Nippon Tenshashi Kabushiki Kaisha. Magazine type knife. 4,615,118, Cl. 30-151.000.
- Iida, Tamaki, to Shin-Etsu Chemical Co., Ltd. Copper-foiled laminate for base plate. 4,615,945, Cl. 428-335.000.
- Iihashi, Mototaka: *See—*
  - Yabuta, Motoshi; Sasaki, Yoshio; and Iihashi, Mototaka, 4,616,058, Cl. 524-461.000.
- Iino, Hirokazu: *See—*
  - Tokuyama, Shinichi; Hongo, Masaharu; and Iino, Hirokazu, 4,615,823, Cl. 252-194.000.
- Iio, Masahiro; Saruwatari, Yasuhiko; and Yamazoe, Hiroshi, to Diesel Kiki Co., Ltd.; and Nippon Carbon Co., Ltd. Compressor with vanes made of composite material including carbon, aluminum, and aluminum carbide. 4,615,663, Cl. 418-152.000.
- Iizuka, Nobuyuki: *See—*
  - Kagohara, Hiromi; Fukui, Yutaka; Sakamoto, Masahiko; and Iizuka, Nobuyuki, 4,615,658, Cl. 415-178.000.
- Ilizarov, Gavriil A.; Predein, Alexandr P.; and Bykov, Vyacheslav M., to Kurgansky Nauchno-Issledovatelsky Institut Experimentalnoi I Klinicheskoi Ortopedii I Travmatologii. Automatic compression-distraction apparatus. 4,615,338, Cl. 128-92.00A.
- Illinois Tool Works Inc.: *See—*
  - Frano, Francis G., 4,615,140, Cl. 47-44.000.
- Illis, Alexander: *See—*
  - Thomas, John A.; Nissen, Norman C.; Bell, Malcolm C. E.; and Illis, Alexander, 4,615,731, Cl. 75-97.00A.
- Imai, Kunihiko: *See—*
  - Horigome, Tsukumo; Kawabe, Noriyuki; Takiue, Mamoru; Imai, Kunihiko; Uchiyama, Noriaki; Tsuzuki, Fusayuki; Shimada, Kenji; Shibuya, Masahiro; Hakutoh, Norimasa; Watanabe, Chiaki; and Abe, Junichi, 4,615,769, Cl. 203-2.000.
- Imai, Takahiro: *See—*
  - Yamamura, Yukio; Otsuka, Shinpei; Imai, Takahiro; and Kakiyama, Kenji, 4,615,325, Cl. 124-7.000.
- Immuno Concepts, Inc.: *See—*
  - Gallacher, James J., 4,615,972, Cl. 435-28.000.
- Imoto, Eiji: *See—*
  - Oboshi, Takamitsu; Koga, Tomoaki; and Imoto, Eiji, 4,615,207, Cl. 72-404.000.
- Imoto, Kosuke; and Katada, Hiroshi, to Hitachi, Ltd; and Honda Giken Kogyo Kabushiki Kaisha. Ignition apparatus for internal combustion engine. 4,615,318, Cl. 123-414.000.
- Imperial Chemical Industries PLC: *See—*
  - Hepworth, Paul; and Hancock, Roger I., 4,615,820, Cl. 252-139.000.
- Imreg, Inc.: *See—*
  - Gottlieb, A. Arthur, 4,616,079, Cl. 530-344.000.
- Inaba, Norihiko; Sakamoto, Hiroshi; and Motosugi, Takanori, to Ricoh Company, Ltd. Thermosensitive recording sheet. 4,616,240, Cl. 346-208.000.
- Inagaki, Yasaburo: *See—*
  - Nakaizumi, Kazuo; and Inagaki, Yasaburo, 4,616,346, Cl. 365-229.000.
- Inco Limited: *See—*
  - Devuyst, Eric A. P.; Tandi, Branka; and Conard, Bruce R., 4,615,873, Cl. 423-367.000.
  - Thomas, John A.; Nissen, Norman C.; Bell, Malcolm C. E.; and Illis, Alexander, 4,615,731, Cl. 75-97.00A.
  - Victorovich, Grigori S.; and Diaz, Carlos M., 4,615,729, Cl. 75-21.000.
- Incom International Inc.: *See—*
  - Burk, Robert G., 4,615,171, Cl. 59-78.000.
- Inmont Corporation: *See—*
  - Panush, Sol; Gelmini, James M.; and Bradey, Nancy B., 4,615,940, Cl. 428-324.000.
- Inoue, Hiroshi; Tsuge, Akihiko; and Komeya, Katsutoshi, to Kabushiki Kaisha Toshiba. Process for production of readily sinterable aluminum nitride powder. 4,615,863, Cl. 419-23.000.
- Inoue, Hiroshi; and Nakohsai, Keiko, to Canon Kabushiki Kaisha. Liquid crystal device. 4,615,919, Cl. 428-1.000.
- Inoue, Masayoshi: *See—*
  - Shima, Kazuhiro; Inoue, Masayoshi; and Tsukada, Takayuki, 4,616,083, Cl. 544-90.000.
- Inoue, Nobuya: *See—*
  - Kumeta, Masao; Ide, Masahiro; Nishizawa, Nobuyoshi; Inoue, Nobuya; and Goto, Hideki, 4,615,107, Cl. 29-623.100.
- Inoue, Tetsuyu; Tsuruga, Kouji; and Harada, Masashi, to Adeka Argus Chemical Co., Ltd.,. Providing hydrophobic surfaces on hydrophilic inorganic materials with metal glycolates. 4,615,912, Cl. 427-212.000.
- Inoue, Yoshihiko: *See—*
  - Toriumi, Wataru; Shoji, Hideyuki; Inoue, Yoshihiko; Shiba, Soji; and Ushio, Yasuhiko, 4,616,262, Cl. 358-183.000.
- Institut Francais du Petrole: *See—*
  - Le Quan, Nhuong; Cruypelinck, Daniel; Commereuc, Dominique; Chauvin, Yves; and Leger, Gerard, 4,615,998, Cl. 502-126.000.
- Intelledex Incorporated: *See—*
  - Edwards, Jeffrey A.; and Peterson, Thomas W., 4,615,101, Cl. 29-568.000.
- Interaction: *See—*
  - Walter, Jean-Jacques, 4,615,170, Cl. 57-328.000.
- International Business Machines Corporation: *See—*
  - Andersen, John E.; Petrosky, Joseph A.; Messina, Benedicto U.; and Silkman, William D., 4,616,341, Cl. 365-189.000.
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  - Dill, Frederick H.; Ling, Daniel T.; Matick, Richard E.; and McBride, Dennis J., 4,616,310, Cl. 364-200.000.
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  - Howe, Leland D., Jr.; Oza, Bharatkumar J.; and Roche, Thomas J., 4,616,335, Cl. 364-900.000.
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  - Robertson, David B.; Wagh, Stephen A.; Piller, Mary F.; Crehan, Donald T.; and Lovell, Charles J., 4,616,336, Cl. 364-900.000.
  - Solomon, Paul M.; and Wright, Steven L., 4,616,242, Cl. 357-22.000.
  - Workman, Michael L., 4,616,276, Cl. 360-77.000.
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  - Sprecker, Mark A.; Belko, Robert P.; Schreiber, William L.; and Licciardello, Michael, 4,615,830, Cl. 252-522.00R.
  - Sprecker, Mark A.; Belko, Robert P.; Schreiber, William L.; and Licciardello, Michael, 4,616,095, Cl. 568-322.000.
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  - Uebel, Helmut, 4,616,312, Cl. 364-200.000.
- Intravascular Surgical Instruments, Inc.: *See—*
  - Nash, John, 4,615,472, Cl. 226-127.000.
-Ipposha Oil Industries Co., Ltd.: *See—*
  - Nakao, Katsuaki, 4,615,709, Cl. 8-599.000.
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  - Miller, Kenneth A., 4,615,752, Cl. 149-108.800.
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Corato, Renzo, 4,615,676, Cl. 432-9.000.
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Ito, Yoichiro, to United States of America, Health and Human Services. Method for continuous countercurrent foam separation. 4,615,805, Cl. 210-657.000.
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ITT Corporation: *See—*
Lee, William C., 4,616,364, Cl. 375-1.000.
ITT Industries, Inc.: *See—*
Monk, Trevor K., 4,616,345, Cl. 365-226.000.
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O'Brien, Errol C.; Placko, Martin; and Breneman, Wayne, 4,615,487, Cl. 239-281.000.
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Puppala, Janaki R., 4,615,232, Cl. 74-473.00R.
J. Mortensen & Company Limited: *See—*
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Jacobs, Robert S.; and Faulkner, D. John, to University of California. Synthetic anti-inflammatory derivatives of manoalide. 4,616,089, Cl. 549-323.000.
Jaeger, John C. Surgical pad for gynecological procedures. 4,615,334, Cl. 128-17.000.
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Tomisawa, Naoki, 4,615,319, Cl. 123-440.000.
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Jenkins, Cecil; Peaster, Leroy K.; and Brittain, John C., to Lee C. Moore Corporation. Apparatus for skidding a load on a support. 4,615,508, Cl. 254-106.000.
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Johnson, Dale V.; and Bednar, John M., to Exxon Production Research Co. Annular gas trap. 4,615,387, Cl. 166-242.000.
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Johnson, Thomas H., to Shell Oil Company. Preparation of synthetic hydrocarbon lubricants. 4,615,790, Cl. 208-18.000.
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Jones, Jack L.; and Chidester, Kenneth M., to Kaman Sciences Corporation. Multilayered chromium oxide bonded, hardened and densified coatings and method of making same. 4,615,913, Cl. 427-226.000.
Jones, Robert E.: *See—*
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Jongenburger, Huibert S.: *See—*
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Yoshino, Hisashi; Haga, Masakatsu; Yorifuji, Takashi; and Oshima, Teruo, 4,615,846, Cl. 264-13.000.
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  - Nishida, Hiroshi, 4,616,168, Cl. 320-2.000.
  - Tsumiyama, Yoshinori, 4,615,312, Cl. 123-182.000.
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  - Satoh, Susumu; Suzuki, Hideo; Obara, Takashi; Nishida, Minoru; and Hashimoto, Osamu, 4,615,749, Cl. 148-330.000.
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  - Saito, Kenji; Nakanishi, Kyoji; Nanba, Akihiko; Onishi, Masayuki; Yao, Minoru; Kato, Toshio; and Kojima, Shinji, 4,615,373, Cl. 164-125.000.
- Kawata, Shun, to Konishiroku Photo Industry Co., Ltd. Developer incoming device in electrostatic reproducing apparatus. 4,615,364, Cl. 141-364.000.
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  - Kanai, Seita; Tokunaga, Toshimichi; and Hibino, Somi, 4,616,163, Cl. 318-611.000.
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  - Abe, Kiyomi; Kazama, Mitsuo; and Kobayashi, Hiroshi, 4,616,107, Cl. 178-18.000.
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- Keene, Wayne G. Dry washer with hot air supply. 4,615,797, Cl. 209-131.000.
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  - Santelmann, William F., Jr., 4,616,300, Cl. 363-21.000.
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  - Kopac, Jordan J.; and Khachaturian, Arek, 4,615,372, Cl. 164-16.000.
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  - Durocher, Donald F., 4,615,345, Cl. 131-365.000.
  - Jackson, David M.; and Sheldon, Donald A., 4,615,696, Cl. 604-389.000.
  - Miers, Robert M.; and Terry, Byron R., 4,615,767, Cl. 162-4.000.
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  - Nakagame, Fujio; Honda, Haruo; Maruyama, Teppei; Saito, Noriko; and Kimoto, Tomoaki, 4,615,885, Cl. 424-94.000.
- Kimura-Shin Co., Ltd.: *See—*
  - Matsuda, Keiichiro, 4,615,634, Cl. 401-197.000.
- Kimzey, Paul W.: *See—*
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- Kinaga, Eiichi; Sakai, Masanori; and Tanno, Masaaki, to Toyota Jidosha Kabushiki Kaisha; and Shiroki Kinzoku Kogyo Kabushiki Kaisha. Apparatus for positioning the backrest of a vehicle seat. 4,615,551, Cl. 297-341.000.
- King, Gayle N., to Velsicol Chemical Corporation. Method for stabilization of sludge. 4,615,809, Cl. 210-751.000.
- King, Jimmy L. Magnetic pump. 4,615,661, Cl. 417-418.000.
- Kingsman, Alan J.; and Kingsman, Susan M., to Celltech Limited. Yeast expression vectors. 4,615,974, Cl. 435-68.000.
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  - Yahagi, Masakichi; Igaki, Tetsuo; Yoshinaka, Shinji; Morita, Kosaku; Kinoshita, Kimiaki; Enokiya, Masashi; Kaneko, Akio; and Yamashita, Toshiyuki, 4,616,239, Cl. 346-201.000.
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  - Kress, Hans-Jurgen; and Kircher, Klaus, 4,615,832, Cl. 252-609.000.
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  - Krummel, Peter; and Klamt, Manfred, 4,616,158, Cl. 315-225.000.
- Klann, Paul A. Organ drawknob. 4,615,254, Cl. 84-343.000.
- Klaren, Dick G., to Esmil B.V. Apparatus for carrying out physical and/or chemical processes, more specifically a heat exchanger of the continuous type. 4,615,382, Cl. 165-104.160.
- Klauke, Dieter; and Steuer, Werner, to Fichtel & Sachs AG. Hub for a two-wheeled vehicle. 4,615,423, Cl. 192-64.000.
- Kleine, Heinz, to Square D Starkstrom GmbH. Double pole circuit breaker. 4,616,117, Cl. 200-243.000.
- Klomp, Johannes T.: *See—*
  - Brouha, Marcel; Klomp, Johannes T.; and van Roosmalen, Johannes T. C., 4,616,154, Cl. 313-402.000.
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  - Bessinger, Walter L.; and Hoffman, Keith A., 4,615,095, Cl. 29-407.000.
- Knapp, Edward J., Jr.; and Mosesian, Jerry L., to Gould Inc. Electric fuse holder having a Hall-effect current sensor. 4,616,207, Cl. 338-32.00H.
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  - Harker, Howard R.; and Knecht, Joseph A., II, 4,616,363, Cl. 373-14.000.
- Knifton, John F., to Texaco Inc. Process for low pressure synthesis of ethylene glycol from synthesis gas plus formaldehyde. 4,616,097, Cl. 568-852.000.
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- Knoll, Richard, to Norsk Hydro a.s. Aluminum shapes coated with brazing material and process of coating. 4,615,952, Cl. 428-650.000.
- Knop, Wilfried E.: *See—*
  - Jansen, Winfrid B.; Knop, Wilfried E.; and Jabs, Hermann, 4,616,186, Cl. 329-103.000.
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- Knowler, John C., to Boeing Company, The. Wing slat anti-ice air duct system. 4,615,499, Cl. 244-134.00B.
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- Kobayashi, Hidehiro; Fukuda, Yutaka; and Kamiya, Seiji, to Victor Company of Japan, Limited. Mechanism for adjusting magnetic head. 4,616,280, Cl. 360-109.000.
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  - Mochinaga, Kishio; Fujiwara, Kohichi; Higashine, Kazutaka; and Kobayashi, Hisashi, 4,615,750, Cl. 148-111.000.
- Kobayashi, Satoru; Sugimoto, Shigeo; and Terasaki, Masatosi, to Hitachi, Ltd. Compression refrigerating machine with vapor-liquid separator. 4,615,184, Cl. 62-512.000.
- Kobayashi, Shigeru: *See—*
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- Kobayashi, Toshio: *See—*
  - Sasaki, Takashi; Kobayashi, Toshio; and Wada, Koichi, 4,615,776, Cl. 204-129.100.
- Kobayashi, Yukimori: *See—*
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- Kober, Hans-Rudolf, to Dr. Johannes Heidenhain GmbH. Guide device. 4,615,568, Cl. 384-12.000.
- Kobinger, Walter: *See—*
  - Reiffen, Manfred; Heider, Joachim; Austel, Volkhard; Hauel, Norbert; Kobinger, Walter; and Lillie, Christian, 4,616,011, Cl. 514-221.000.
- Koch, Harold O.: *See—*
  - Callahan, Wayne B.; Cowen, Timothy B.; and Koch, Harold O., 4,615,703, Cl. 623-6.000.
- Koch, Mark E.: *See—*
  - Krasutsky, Nicholas J.; and Koch, Mark E., 4,615,587, Cl. 350-353.000.
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  - Sacherer, Klaus D.; Weiss, Erich; Koehn, Jochen; and Brach, Ulrich, 4,615,462, Cl. 220-339.000.
- Koffler, Adam: *See—*
  - Culkin, Joseph B.; and Koffler, Adam, 4,615,786, Cl. 204-301.000.
- Koga, Hirotaka: *See—*
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- Koga, Kazunori: *See—*
  - Koike, Masahiro; Takahashi, Fuminobu; Ogura, Satoshi; and Koga, Kazunori, 4,615,217, Cl. 73-624.000.
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  - Lechtken, Peter; Nurrenbach, Axel; Kohler, Walter; Hoppe, Peter P.; Tiefenbacher, Hubert; and Schole, Jurgen, 4,616,016, Cl. 514-249.000.
- Koike, Masahiro; Takahashi, Fuminobu; Ogura, Satoshi; and Koga, Kazunori, to Hitachi, Ltd. Two-probe ultrasonic flaw detection apparatus. 4,615,217, Cl. 73-624.000.
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- Kojima, Akinori, to Sanshin Kogyo Kabushiki Kaisha. Device for precluding electrolytic corrosion of a marine propulsion apparatus. 4,615,684, Cl. 440-88.000.
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- Kojima, Yoshimi: *See—*
  - Matsuyama, Toshiro; Hayakawa, Takashi; Kojima, Yoshimi; Narikawa, Shiro; and Ehara, Shaw, 4,615,299, Cl. 118-723.000.
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  - Arbter, Conrad, 4,615,432, Cl. 198-725.000.
- Kolbe, Andreas; and Dinter, Peter, to Hoechst Aktiengesellschaft. Method and device for surface treatment of film webs. 4,615,906, Cl. 427-40.000.
- Kolibas, James A., to Nordson Corporation. Continuous coating system for discrete articles. 4,615,296, Cl. 118-314.000.
- Kolm, Henry H.; and Carter, Robert E., to Piezo Electric Products, Inc. Pressure gauge for tires and other elastic vessels. 4,615,211, Cl. 73-146.200.
- Kolossow, Klaus-Dieter, to Hermann Berstorff Maschinenbau GmbH. Apparatus for producing expanded thermoplastic materials. 4,615,664, Cl. 425-4.00C.
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  - Finke, Robert-Gunter; Schumacher, Clemens; Kolb, Albert; Lautenschlager, Horst; and Konetzka, Jurgen, 4,615,437, Cl. 206-222.000.
- Konicek, Tim R., to S. C. Johnson & Son, Inc. Automatic door-activated air freshener. 4,615,486, Cl. 239-274.000.
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  - Kawata, Shun, 4,615,364, Cl. 141-364.000.
  - Koyama, Mikio, 4,615,983, Cl. 436-514.000.
- Konkol, Werner: *See—*
  - Cornils, Boy; Bahrmann, Helmut; Lipps, Wolfgang; and Konkol, Werner, 4,616,096, Cl. 568-454.000.
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- Kornbaum, Simon; and Chenard, Jean-Yves, to Ato Chimie. Sterilization of objects made of halogeno-vinylic polymers using ionizing radiation. 4,616,046, Cl. 522-79.000.
- Koshiishi, Shinichirou. Method of extracting automatic-focusing information. 4,615,598, Cl. 354-402.000.
- Kossor, Michael G. Modular connector for securing telephone line. 4,615,575, Cl. 339-82.000.
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  - Oda, Osamu; Onozuka, Arata; and Koyama, Akio, 4,615,964, Cl. 430-84.000.
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  - Hirai, Shin-ichiro; Makino, Tadashi; and Koyama, Hiroyoshi, 4,616,008, Cl. 514-200.000.
- Koyama, Mikio, to Konishiroku Photo Industry Co., Ltd. Immunological measuring element. 4,615,983, Cl. 436-514.000.
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- Koziol, Jeffrey E.; and Peyman, Gholam A. Intraocular lens and method of forming the lens. 4,615,702, Cl. 623-6.000.
- Kramann, Bernhard, to Sterimed Gesellschaft fur medizinischen Bedarf mbH. Medical instruments with aid to introduction. 4,615,331, Cl. 128-4.000.
- Kramer, David C., to Chevron Research Company. Method for contacting solids-containing feeds in a layered bed reactor. 4,615,796, Cl. 208-146.000.
- Kramer, David M.; and Yeung, Hong-Ning, to Technicare Corporation. Nuclear magnetic resonance signal artifact removal. 4,616,182, Cl. 324-309.000.
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- Krasutsky, Nicholas J.; and Koch, Mark E., to LTV Aerospace and Defense Company. High speed erasing and rebiasing of thermoptic thin films. 4,615,587, Cl. 350-353.000.
- Krause, A. Frank, Jr. Electric gaslight simulative for candelabra light socket. 4,616,299, Cl. 362-255.000.
- Krause, Robert F.: *See—*
  - Grimes, Frank H.; and Krause, Robert F., 4,615,106, Cl. 29-605.000.
- Kreitmeier, Franz, to BBC Brown, Boveri & Company, Limited. Air storage gas turbine. 4,615,657, Cl. 415-104.000.
- Kremer, Ross A.; and Saunders, Stephen W., to Mobil Oil Corporation. Ore beneficiation process. 4,615,869, Cl. 423-167.000.
- Kress, Hans-Jurgen; and Kircher, Klaus, to Bayer Aktiengesellschaft. Flameproofing agents, their preparation and their use for flameproofing polycarbonates. 4,615,832, Cl. 252-609.000.
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Kuntz, Paul: *See—*

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Kunzel, Jurgen, to Sigri GmbH. Storage body for a regenerator. 4,615,379, Cl. 165-10.000.

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Sakagami, Teruo; Arakawa, Noriyuki; and Murayama, Naohiro, 4,615,943, Cl. 428-332.000.

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Ilizarov, Gavriif A.; Predein, Alexandr P.; and Bykov, Vyacheslav M., 4,615,338, Cl. 128-92.00A.

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Itakura, Gen; Ushijima, Tadayoshi; Kusakabe, Kenji; and Kuroda, Takayuki, 4,616,289, Cl. 361-321.000.

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Fowler, Billy C.; Headley, Alan R.; and Rodgers, James L., 4,616,106, Cl. 178-18.000.

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Kusko, Alexander, to San Francisco Bay Area Rapid Transit District. Insulative protective device for rail fastener. 4,615,484, Cl. 238-264.000.

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Hunkeler, Walter; and Kyburz, Emilio, 4,616,010, Cl. 514-214.000.

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Pollmann, Siegfried; and Grethe, Klaus, 4,615,284, Cl. 110-343.000.

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Finsterwalder, Kurt; and Guthle, Rainer, 4,615,203, Cl. 72-345.000.

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Nestlen, David J., 4,615,368, Cl. 152-213.00A.

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Chou, Ta-Sen; and Lakin, Robert E., 4,616,080, Cl. 540-225.000.

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LaMarre, Thomas M.; and Martin, Cynthia H., to Nalco Chemical Company. Synergistic biocide of 1,5-pentanedial and methylene bis thiocyanate. 4,616,037, Cl. 514-515.000.

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Sherrod, Earle H.; Lamers, Clarence J.; and Smits, Kenneth C., 4,615,122, Cl. 34-18.000.

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Casley-Smith, John R., 4,616,033, Cl. 514-457.000.

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Feldt, Mats, 4,615,058, Cl. 5-60.000.

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Lane, Michael L.; and Whitney, Lowell T., to Adolph Coors Company. Solution heat pump apparatus and method. 4,615,177, Cl. 62-79.000.

Lang, Marc, to Ciba-Geigy Corporation. Heterocyclthio compounds, process for their manufacture, pharmaceutical preparations that contain these compounds, and the the use of the latter. 4,616,007, Cl. 514-192.000.

Langner, Carl G., to Shell Oil Company. Pipeline trenching. 4,615,645, Cl. 405-159.000.

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Saperstein, Zalman P.; Awe, Russell C.; Costello, Norman F.; and Larrabee, Scott R., 4,615,385, Cl. 165-175.000.

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Allen, David L.; and Larsen, Tor G., 4,615,621, Cl. 356-399.000.

Larson, James H.; and McKee, Sheila S., to Graco Inc. Paint circulation adapter and coupler. 4,615,485, Cl. 239-124.000.

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Sanders, Albert J., Jr.; and Larson, Michael J., 4,615,738, Cl. 106-13.000.

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Lau, Kreisler S. Y.; and Dougherty, Thomas K., to Hughes Aircraft Company. Method for making ethynylated aromatic compounds and a method for making nitronium trifluoromethanesulfonate. 4,615,842, Cl. 260-513.00F.

Laubie, Michel: *See—*

Vincent, Michel; Remond, Georges; and Laubie, Michel, 4,616,029, Cl. 514-412.000.

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Laugier, Jean-Pierre: *See—*

Ser, Jean-Claude; and Laugier, Jean-Pierre, 4,615,633, Cl. 401-196.000.

Laukien, Gunther R. Submersible twin-hull watercraft. 4,615,292, Cl. 114-312.000.

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Lautenschlager, Horst: *See—*

Finke, Robert-Gunter; Schumacher, Clemens; Kolb, Albert; Lautenschlager, Horst; and Konetzka, Jurgen, 4,615,437, Cl. 206-222.000.

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Law, Kirk A.: *See—*

Harwood, Leopold A.; and Law, Kirk A., 4,616,254, Cl. 358-31.000.

Law, Simon M.; and Long, Bruce, to Xerox Corporation. Two stage weighted capacitor digital to analog converter. 4,616,212, Cl. 340-347.0DA.

Lawrence, Paul J. Fecal occult blood test. 4,615,982, Cl. 436-66.000.

Lawrence, William H.: *See—*

Gelorme, Jeffrey D.; Lawrence, William H.; and Slota, Peter, Jr., 4,615,763, Cl. 156-643.000.

Layson, Jeffrey D. Catalytic converter support hanger. 4,615,500, Cl. 248-65.000.

LCC-CICE Compagnie Europeenne De Composants Electroniques: *See—*

Bernard, Daniel; and Dubois, Jean C., 4,615,088, Cl. 29-25.420.

Lear Siegler, Inc.: *See—*

Pierce, William C., 4,615,539, Cl. 280-690.000.

LeBlanc, Jean; and Rossignol, Francois, to Robert Bosch GmbH. Pump/nozzle unit for fuel injection in internal combustion engines. 4,615,323, Cl. 123-509.000.

LeBlond, Marc. Adjustable staircase. 4,615,160, Cl. 52-183.000.

Lech, Thaddeus, Jr., to Borg-Warner Corporation. Clutch driven plate assembly. 4,615,426, Cl. 192-106.200.

Lechtken, Peter; Nurrenbach, Axel; Kohler, Walter; Hoppe, Peter P.; Tiefenbacher, Hubert; and Schole, Jurgen, to BASF Aktiengesellschaft. Mixtures which promote growth and increase production, and feeds and drinking liquids which contain small amounts of these mixtures. 4,616,016, Cl. 514-249.000.

Ledent, Michel A. O.; and May, Bronislav H., to Monsanto Europe S.A. Aminomethylenephosphonic acid solutions. 4,615,840, Cl. 260-502.50E.

Lederer, Richard W.; Musgrove, Max D.; and Jones, Robert E., to Boeing Company, The. Compound toroidal tanks. 4,615,452, Cl. 220-1.00B.

Lee C. Moore Corporation: *See—*

Jenkins, Cecil; Peaster, Leroy K.; and Brittain, John C., 4,615,508, Cl. 254-106.000.

Lee, Chung Y. Rotary filtration means in the filth condensation-dehydration apparatus. 4,615,801, Cl. 210-185.000.

Lee, David O.; Montoya, Paul C.; and Wayland, J. Robert, Jr., to United States of America, Energy. CSAMT method for determining depth and shape of a sub-surface conductive object. 4,616,184, Cl. 324-335.000.

Lee, Kang I.; and Jopson, Harriet, to GTE Laboratories Incorporated. Electrically conductive polymer blends of an acetylene polymer and a triblock thermoplastic elastomer. 4,616,067, Cl. 525-192.000.

Lee, Robert E. Closed-loop linear position servomotor. 4,616,153, Cl. 318-687.000.

Lee, Shi-Chuan; and Schucker, Douglas W., to Motorola, Inc. BI-CMOS driver circuit. 4,616,146, Cl. 307-446.000.

Lee, William C., to ITT Corporation. Digital hopped frequency, time diversity system. 4,616,364, Cl. 375-1.000.

Lefevre, Herve C.; and Bergh, Ralph A., to Leland Stanford Junior University, The Board of Trustees of the. Magneto-optic rotator for providing additive Faraday rotations in a loop of optical fiber. 4,615,582, Cl. 350-96.290.

Leger, Gerard: *See—*

Le Quan, Nhuong; Cruypelinck, Daniel; Commereuc, Dominique; Chauvin, Yves; and Leger, Gerard, 4,615,998, Cl. 502-126.000.

Legrand, Bernard: *See—*

Stulberg, S. David; and Legrand, Bernard, 4,615,516, Cl. 269-328.000.

Lehmler, Hansfriedrich; and Wilkens, Gunter, to Oxytechnik. Device for transporting profiles. 4,615,510, Cl. 266-48.000.

Leiter Industries, Inc.: *See—*

Swank, Robert P., 4,615,571, Cl. 312-211.000.

Le-Khac, Bi, to Atlantic Richfield Company. Water absorbent polymer composition. 4,616,063, Cl. 525-91.000.

Leland, John E.: *See—*

Boeke, Paul J.; and Leland, John E., 4,615,907, Cl. 427-53.100.

Leland Stanford Junior University, The Board of Trustees of the: *See—*

Lefevre, Herve C.; and Bergh, Ralph A., 4,615,582, Cl. 350-96.290.

LeMahieu, Ronald A., to Hoffmann-La Roche Inc. Naphthalenyloxy carboxylic acids. 4,616,091, Cl. 560-53.000.

Le Moigne, Simone; Boivent, Marcel; and Matzen, Guy, to Isover Saint-Gobain. Glass fibers and a composition for manufacturing the same. 4,615,988, Cl. 501-30.000.

Leng, Francis J.; Machin, David; Reed, David A.; and Erkey, Ozalp, to Lever Brothers Company. Detergent gel compositions in hexagonal liquid crystal form. 4,615,819, Cl. 252-110.000.

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Leslie, Thomas M.: *See—*

Geary, John M.; Goodby, John W.; and Leslie, Thomas M., 4,615,586, Cl. 350-350.00S.

Letsche, Ulrich: *See—*

Haefner, Gunther; Bauer, Bernhard; Letsche, Ulrich; and Noreikat, Karl-Ernst, 4,615,321, Cl. 123-479.000.

Lettau, Herbert: *See—*

Loth, Frith; Dautzenberg, Horst; Stamberg, Jiri ; Peska, Jan; Bertram, Dieter; and Lettau, Herbert, 4,615,880, Cl. 424-15.000.

Leutert, Thomas: *See—*

Kamber, Bruno; Leutert, Thomas; Kuhnis, Hans; and Eichenberger, Kurt, 4,616,002, Cl. 514-18.000.

Le Van Mao, Raymond, to Asbestos Institute, The. Zeolite catalysts. 4,615,995, Cl. 502-64.000.

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Leng, Francis J.; Machin, David; Reed, David A.; and Erkey, Ozalp, 4,615,819, Cl. 252-110.000.

Tai, Ho T.; and Naddeo, Leandre, 4,615,815, Cl. 252-8.800.

Levinson, Lionel M.; and Yakymyshyn, Christopher P., to General Electric Company. Self-registered, thermal processing technique using a pulsed heat source. 4,615,765, Cl. 156-643.000.

Lewis, Charles J.: *See—*

Morehouse, Alpha L.; and Lewis, Charles J., 4,615,892, Cl. 426-250.000.

Lewis, Cinda B.: *See—*

Buccellato, Ronald I.; Card, Wayne T.; Foote, Duane M.; Lewis, Cinda B.; Soland, Peter A.; Stevens, Brian J.; and Widmann, Philip C., 4,615,460, Cl. 220-307.000.

Lewis, Conrad, to Mitel Corporation. Peripheral control for a digital telephone system. 4,616,360, Cl. 370-67.000.

Li, Hsin L.; Misson, John D.; and Carrigan, David G., to Allied Corporation. Cut magnetic core formed of a glassy metal alloy. 4,616,204, Cl. 335-297.000.

Licciardello, Michael: *See—*

Sprecker, Mark A.; Belko, Robert P.; Schreiber, William L.; and Licciardello, Michael, 4,615,830, Cl. 252-522.00R.

Sprecker, Mark A.; Belko, Robert P.; Schreiber, William L.; and Licciardello, Michael, 4,616,095, Cl. 568-322.000.

Lillie, Christian: *See—*

Reiffen, Manfred; Heider, Joachim; Austel, Volkhard; Hauel, Norbert; Kobinger, Walter; and Lillie, Christian, 4,616,011, Cl. 514-221.000.

Lindahl, Arne: *See—*

Hakansson, Sigurd, 4,615,121, Cl. 30-371.000.

Lindahl, Per-Olof, to AB Fixfabriken. Attachment device. 4,615,081, Cl. 24-90.00R.

Lindemann, Martin K.; and Deacon, Kim, to Sun Chemical Corporation. Polymer emulsion containing an interpenetrating polymer network. 4,616,057, Cl. 524-458.000.

Linder, Jacques F.: *See—*

Scapple, Robert Y.; Peters, John W.; Linder, Jacques F.; and Yee, Edward M., 4,615,294, Cl. 118-50.100.

Lindsey, Travis C. Fire resistant electrical junction boxes. 4,616,104, Cl. 174-48.000.

Ling, Daniel T.: *See—*

Dill, Frederick H.; Ling, Daniel T.; Matick, Richard E.; and McBride, Dennis J., 4,616,310, Cl. 364-200.000.

Linton, Kenneth D. Grain drill mounted harrow device. 4,615,286, Cl. 111-52.000.

Lippert, Thomas E.: *See—*

Ciliberti, David F.; Lippert, Thomas E.; and Archer, David H., 4,615,283, Cl. 110-216.000.

Lipps, Wolfgang: *See—*

Cornils, Boy; Bahrmann, Helmut; Lipps, Wolfgang; and Konkol, Werner, 4,616,096, Cl. 568-454.000.

Lisec, Peter. Apparatus for conveying plate- or frame-shaped elements. 4,615,431, Cl. 198-468.600.

Little, Rodney: *See—*

Cale, David; and Little, Rodney, 4,615,138, Cl. 43-128.000.

Liu, Jackie. Accessory container structure. 4,615,461, Cl. 220-331.000.

Liu, Ju-Fu. Spectacles-like illuminating device. 4,616,297, Cl. 362-105.000.

Livigni, Russell A.: *See—*

Hargis, Ivan G.; Fabris, Hubert J.; Livigni, Russell A.; Aggarwal, Sundar L.; Thomas, George B.; and Wilson, John A., 4,616,065, Cl. 525-99.000.

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Wegrzyn, Jeffrey G., 4,615,828, Cl. 252-408.100.

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Topich, James A.; Cynkar, Thomas E.; Turi, Raymond A.; and Lockwood, George C., 4,616,245, Cl. 357-23.500.

Loeding, Neil W.: *See—*

Krueger, Dennis L.; Loeding, Neil W.; and Poser, Claudia I., 4,615,848, Cl. 264-22.000.

Logsdon, Gary L.; Scheevel, Mark R.; and Winchell, Michael A., to Burroughs Corporation. System memory for a reduction processor evaluating programs stored as binary directed graphs employing variable-free applicative language codes. 4,616,315, Cl. 364-200.000.

Lohse, Friedrich: *See—*

Berger, Joseph; and Lohse, Friedrich, 4,615,968, Cl. 430-283.000.

Long, Bruce: *See—*

Law, Simon M.; and Long, Bruce, 4,616,212, Cl. 340-347.0DA.

Lonnstedt, Bo G. Headband structure for ear coverings. 4,615,050, Cl. 2-209.000.

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Beeken, Leslie E., 4,615,442, Cl. 206-397.000.

Lorry, Cosmas: *See—*

Breitscheidel, Hans-Ulrich; Lorry, Cosmas; Rehlen, Helmut; and Roellinghoff, Jurgen, 4,615,411, Cl. 181-224.000.

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Love, Richard F.: *See—*

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- Lovell, Charles J.: *See—*
  - Robertson, David B.; Wagh, Stephen A.; Piller, Mary F.; Crehan, Donald T.; and Lovell, Charles J., 4,616,336, Cl. 364-900.000.
- Lovie, John R.: *See—*
  - Somers, Gerardus A.; Lovie, John R.; and Hendriks, Jan J. M., 4,615,774, Cl. 204-44.300.
- Lowrie, Levern H.: *See—*
  - Bailey, Edward L.; Cimijotti, Raymond L.; and Lowrie, Levern H., 4,616,218, Cl. 340-720.000.
- Lowry, Larry G.: *See—*
  - Smith, Larry W.; and Lowry, Larry G., 4,615,672, Cl. 425-296.000.
- LTV Aerospace and Defense Company: *See—*
  - Krasutsky, Nicholas J.; and Koch, Mark E., 4,615,587, Cl. 350-353.000.
- Lu, Pang-Chia, to Mobil Oil Corporation. Opaque pearlescent films containing dispersed incompatible polymer and polymeric interfacial agent. 4,615,941, Cl. 428-327.000.
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- Lubbe, Carl H.: *See—*
  - Smith, Jeremy G. B.; Dolz, Arno W.; and Lubbe, Carl H., 4,615,751, Cl. 149-2.000.
- Lubrizol Corporation, The: *See—*
  - Bretz, John, 4,615,813, Cl. 252-8.514.
  - DiBiase, Stephen A.; and Vinci, James N., 4,615,818, Cl. 252-47.500.
- Lucas, Philip J.; Reese, Charles P.; and Ocondi, Cham, to Standard Oil Company (Indiana). System to control the combining of two fluids. 4,615,390, Cl. 166-250.000.
- Luk Lamellen und Kupplungsbau GmbH: *See—*
  - Kohler, Helmut, 4,615,424, Cl. 192-70.180.
- Lukacz, Stephen A., to Fuller Company. Pneumatic conveying device and flap valve. 4,615,647, Cl. 406-60.000.
- Luling, Adalbert, to Burg-Wachter KG Alfred Luling. Combination lock. 4,615,193, Cl. 70-297.000.
- Lundberg, Robert D.: *See—*
  - Sedillo, Lawrence P.; Newlove, John C.; Peiffer, Dennis G.; and Lundberg, Robert D., 4,615,393, Cl. 166-308.000.
- Lupnitz, Gerhard: *See—*
  - Gierse, Franz-Josef; Hermanns, Heinrich; Hermes, Werner; Lupnitz, Gerhard; Pabst, Manfred; and Schlicht, Heribert, 4,615,124, Cl. 34-82.000.
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  - Weissmuller, Joachim; Kramer, Wolfgang; Berg, Dieter; Reinecke, Paul; Brandes, Wilhelm; Hanssler, Gerd; and Lurssen, Klaus, 4,615,725, Cl. 71-88.000.
- Luschnig, Franz: *See—*
  - Stritzl, Karl; Freisinger, Henry; and Luschnig, Franz, 4,615,536, Cl. 280-631.000.
- Luxon, Bruce A., to General Electric Company. Polyphenylene ether blends containing electrostatically bound additive. 4,615,948, Cl. 428-420.000.
- Luxtec Corporation: *See—*
  - Kloots, Jacobus; and Van Der Bel, Frans G., 4,616,257, Cl. 358-93.000.
- Lyden, Thomas B., to RCA Corporation. Deflection yoke assembly and mounting arrangement. 4,616,265, Cl. 358-248.000.
- M&T Chemicals Inc.: *See—*
  - Hung, Paul L. K.; Radigan, Richard J.; and Rosen, David S., 4,615,950, Cl. 428-461.000.
- M. W. Kellogg Company, The: *See—*
  - Armstrong, Robert B.; Jongenburger, Huibert S.; and Sadhukhan, Pasupati, 4,615,870, Cl. 422-191.000.
- MacFall, James R.: *See—*
  - Glover, Gary H.; and MacFall, James R., 4,616,183, Cl. 324-309.000.
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  - Nocek, James E.; Braund, Darwin G.; Steele, Robert L.; and Macgregor, Charles A., 4,615,891, Cl. 426-231.000.
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- MacLeod, Colin J., to Caledonian Mining Co. Ltd. Strip bending. 4,615,199, Cl. 72-170.000.
- Maddalena, Richard E., to Maddalena's, Inc. Vacuum monitoring and signaling apparatus. 4,616,215, Cl. 340-626.000.
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  - Maddalena, Richard E., 4,616,215, Cl. 340-626.000.
- Maeda, Akira: *See—*
  - Homma, Koichi; Hamano, Nobuo; Maeda, Akira; and Yamagata, Shimbu, 4,616,227, Cl. 342-25.000.
- Maekawa, Takashi; Sasaki, Hiroshi; and Morimura, Shinji, to Bridgestone Tire Co., Ltd. Fish breeding apparatus. 4,615,301, Cl. 119-3.000.
- Maeshima, Mikio, to Hitachi, Ltd. Paper feeding control apparatus. 4,615,630, Cl. 400-608.300.
- Maetani, Masami: *See—*
  - Yanagawa, Hitoshi; Sugita, Yasutoshi; Ono, Satoshi; Maetani, Masami; and Tsunenari, Tomoo, 4,616,126, Cl. 235-375.000.
- Maglio, Ralph A.: *See—*
  - De Trano, Mario N.; Hergenrother, William L.; Maglio, Ralph A.; and Roggeman, David M., 4,616,048, Cl. 523-166.000.
- Magna-Graphics Corporation: *See—*
  - Wittkopf, Eugene W., 4,615,295, Cl. 118-261.000.
- Magnus, George, to Stepan Company. Compatibilized polyester polyol blend from phthalic anhydride bottoms. 4,615,822, Cl. 252-182.000.
- Mahler, Mark H.: *See—*
  - Bower, John E.; Vranka, Ronald S.; and Mahler, Mark H., 4,615,375, Cl. 164-451.000.
- Maholm, Mark B.: *See—*
  - Bailey, Michael P.; Brooks, Raymond G.; Frank, James R., Jr.; Johnson, Justin J. J.; and Maholm, Mark B., 4,615,618, Cl. 356-152.000.
- Mahon, Joseph J., to Eaton Corporation. "Keep warm" control. 4,616,209, Cl. 340-309.150.
- Maier, Claus: *See—*
  - Bofinger, Gunter; and Maier, Claus, 4,615,317, Cl. 123-373.000.
- Majima, Hidekazu, to Kabushiki Kaisha Daikin Seisakusho. Clutch disk having combined organic and ceramic-metallic facings. 4,615,427, Cl. 192-107.00M.
- Makino, Tadashi: *See—*
  - Hirai, Shin-ichiro; Makino, Tadashi; and Koyama, Hiroyoshi, 4,616,008, Cl. 514-200.000.
- Malani, Shrikant R.; and Clark, Frank J., to Firestone Tire & Rubber Company, The. Storage of guayule by densification. 4,616,075, Cl. 528-1.000.
- Malladi, Madhava: *See—*
  - Choi, Byung C.; Gross, Benjamin; and Malladi, Madhava, 4,615,791, Cl. 208-107.000.
- Maloney, Timothy J., to One Design, Inc. Solar heating and cooling diode module. 4,615,381, Cl. 165-48.200.
- Mandelcorn, Josh, to Pioneer Magnetics, Inc. Over-current sensing circuit for switching-type power supply. 4,616,302, Cl. 363-50.000.
- Mannion, Catharine: *See—*
  - Nelsen, Charles E.; and Mannion, Catharine, 4,615,883, Cl. 424-84.000.
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- Mantoku, Hitoshi: *See—*
  - Motooka, Masanori; and Mantoku, Hitoshi, 4,616,059, Cl. 524-487.000.
- Marconi Company Limited, The: *See—*
  - Nesbitt, Norman R. S.; Skeels, Edwin; Laker, Robert W.; Rowley, Terence W.; and Judge, Michael E., 4,616,217, Cl. 340-747.000.
- Markem Corporation: *See—*
  - DeRoche, William M.; Kearney, David A.; and Sibley, Franklin L., 4,615,266, Cl. 101-163.000.
- Marotel, Gerard: *See—*
  - Renoult, Patrick; and Marotel, Gerard, 4,616,194, Cl. 331-116.00R.
- Marr, Robert: *See—*
  - Wynnyckyj, John R.; Rhodes, Edward; and Marr, Robert, 4,615,302, Cl. 122-379.000.
- Marshall, J. Nathaniel: *See—*
  - Holtey, Thomas O.; and Marshall, J. Nathaniel, 4,616,160, Cl. 315-365.000.
- Martelli, Gian N.: *See—*
  - de Nora, Oronzio; Nidola, Antonio; and Martelli, Gian N., 4,615,775, Cl. 204-128.000.
- Martensson, Jarl: *See—*
  - Bentell, Lars; and Martensson, Jarl, 4,615,285, Cl. 110-346.000.
- Martin, Cynthia H.: *See—*
  - LaMarre, Thomas M.; and Martin, Cynthia H., 4,616,037, Cl. 514-515.000.
- Martin, Eugene R., to Stauffer-Wacker Silicones Corporation. Quaternary ammonium-functional silicon compounds. 4,615,706, Cl. 8-115.560.
- Martin, John H. Shock absorber element for fingers. 4,615,046, Cl. 2-21.000.
- Martin, William J.; Carr, Keith E.; and Peterson, Edward C., to Whirlpool Corporation. Convertible vacuum and powder carpet cleaner. 4,615,068, Cl. 15-323.000.
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- Marx, Rudolf. Water-absorbing insert for food packs. 4,615,923, Cl. 428-35.000.
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  - Johnstonbaugh, George S., 4,615,448, Cl. 211-94.000.
- Massachusetts Institute of Technology: *See—*
  - Ehrlich, Daniel J.; Deutsch, Thomas F.; Osgood, Richard M.; and Schlossberg, Howard, 4,615,904, Cl. 427-38.000.

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  - Meier, Christof; Bartelt, Richard; and Massat, Hans-Joachim, 4,616,326, Cl. 364-513.000.
- Massey-Ferguson Services N.V.: *See—*
  - Lasoen, Jean J., 4,615,233, Cl. 74-473.00R.
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  - Grandy, Kenneth N., 4,615,191, Cl. 70-26.000.
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  - Kakizoe, Masahiro; Nishizako, Shizutaka; Masuda, Shigeru; Wada, Yuichi; and Mori, Teijiro, 4,616,203, Cl. 335-201.000.
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  - Ochii, Kiyofumi; Yasuda, Hiroshi; and Masuoka, Fujio, 4,616,148, Cl. 307-530.000.
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  - Woudenberg, John D., 4,616,225, Cl. 340-908.000.
- Mathauser, William R. Hand operated hydraulic bicycle brake. 4,615,415, Cl. 188-24.220.
- Mathews, Albert A.: *See—*
  - Hoge, Renon M.; and Mathews, Albert A., 4,615,644, Cl. 405-151.000.
- Mathews, Dennis P. Footwear for physical exercise. 4,615,126, Cl. 36-102.000.
- Mathie, Gerald W.: *See—*
  - Van Sickle, Richard G.; and Mathie, Gerald W., 4,615,652, Cl. 408-168.000.
- Matick, Richard E.: *See—*
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- Matsuda, Keiichiro, to Kimura-Shin Co., Ltd. Coating roller device with scraper means. 4,615,634, Cl. 401-197.000.
- Matsuda, Yasuhiko, to Yoshida Kogyo K. K. Mechanism for drawing an elongated sewn product from a sewing machine. 4,615,288, Cl. 112-121.290.
- Matsuda, Yasuhiko, to Yoshida Kogyo K.K. Apparatus for melt-forming bottom stop of slide fastener chain. 4,615,668, Cl. 425-145.000.
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- Matsumoto, Kuniyoshi, to Sanshin Kogyo Kabushiki Kaisha. Separate lubricating system for marine propulsion device. 4,615,305, Cl. 123-73.0AD.
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- Matsuoka, Kyusuke, to Redken Laboratories, Inc. Shampoo cape. 4,615,047, Cl. 2-50.000.
- Matsushita Electric Industrial Co., Ltd.: *See—*
  - Hotta, Shu; Shimizu, Tokihiko; and Taguchi, Nobuyoshi, 4,615,938, Cl. 428-323.000.
  - Itakura, Gen; Ushijima, Tadayoshi; Kusakabe, Kenji; and Kuroda, Takayuki, 4,616,289, Cl. 361-321.000.
  - Miyatake, Yoshito; and Yamamoto, Yoshiharu, 4,615,589, Cl. 350-477.000.
  - Saito, Koetsu; Yamaguchi, Keisaku; and Kawabuchi, Masami, 4,616,152, Cl. 310-334.000.
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  - Kishi, Ichiro; Miyata, Makoto; and Hata, Shunichi, 4,615,469, Cl. 222-327.000.
  - Nagamoto, Mitsuki, 4,616,201, Cl. 335-129.000.
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- Matsuyoshi, Yukio; and Tsukagoshi, Masao, to Central Glass Company, Limited. Shaped glass panel for automobile rear window or rear door. 4,615,931, Cl. 428-174.000.
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  - Ezer, Elemer; Harsanyi, Kalman; Domany, Gyorgy; Szporny, Laszlo ; Matuz, Judit; Hegedus, Bela; Pallagi, Katalin; Szabadkai, Istvan; and Tetenyi, Peter, 4,616,025, Cl. 514-342.000.
- Matvere, Toomas O.: *See—*
  - Kiisler, Karl R.; Kristianson, Peep G.; Sjuld, Tiya-Maya F.; Kaps, Tiit K.; Riistop, Myart A.; Rokk, Juri K.; Matvere, Toomas O.; Pravon, Juri E.; and Evert, Ilmar M., 4,615,737, Cl. 106-12.000.
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  - Le Moigne, Simone; Boivent, Marcel; and Matzen, Guy, 4,615,988, Cl. 501-30.000.
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  - McCollum, Gregory J.; Scriven, Roger L.; Christenson, Roger M.; Mauer, George W.; and Zwack, Robert R., 4,615,779, Cl. 204-181.700.
- Mauthe, Manfred, to Siemens Aktiengesellschaft. Circuit for voltage multiplication. 4,616,303, Cl. 363-60.000.
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  - Ledent, Michel A. O.; and May, Bronislav H., 4,615,840, Cl. 260-502.50E.
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- Mayer, Edward F., to Ricoh Company, Ltd.; and Ricoh Systems, Inc. Fiber optic high speed pulse scanner. 4,615,580, Cl. 350-96.200.
- Mayerhofer, Friedrich, to Speedomatic AG. Locking slider for slide fastener and method of production thereof. 4,615,083, Cl. 24-418.000.
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- Mazda Motor Corporation: *See—*
  - Asanomi, Koji; and Ishimi, Haruyoshi, 4,615,308, Cl. 123-90.270.
  - Choushi, Masahiro; and Ishimi, Haruyoshi, 4,615,324, Cl. 123-568.000.
  - Kanai, Seita; Tokunaga, Toshimichi; and Hibino, Somi, 4,616,163, Cl. 318-611.000.
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  - Dill, Frederick H.; Ling, Daniel T.; Matick, Richard E.; and McBride, Dennis J., 4,616,310, Cl. 364-200.000.
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- McCollum, Gregory J.; Scriven, Roger L.; Christenson, Roger M.; Mauer, George W.; and Zwack, Robert R., to PPG Industries, Inc. Cationic coating compositions for electrodeposition over rough steel. 4,615,779, Cl. 204-181.700.
- McCord, James W. Vapor generating and recovery apparatus including continuous conveying means through a vapor zone. 4,615,768, Cl. 202-170.000.
- McCoy, Frederic C. Additives containing polytetrafluoroethylene for making stable lubricants. 4,615,817, Cl. 252-16.000.
- McCoy, Wilbur L.: *See—*
  - Steffan, Leonard D.; and McCoy, Wilbur L., 4,615,722, Cl. 65-158.000.
- McCullen, Sharon B.: *See—*
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- McDonald, Walter; and Seitel, Norbert F., to Norwalt Design, Inc. High speed article orienting and feeding apparatus. 4,615,428, Cl. 198-399.000.
- McDonough, John P. Litter box liner. 4,615,300, Cl. 119-1.000.
- McGee, Michael H. Door lock system. 4,615,548, Cl. 292-144.000.
- McGovern, James R. Motor driven fretting belt device. 4,615,253, Cl. 84-317.000.
- McHugh, William T.: *See—*
  - Goebel, Franz; and McHugh, William T., 4,615,956, Cl. 429-50.000.
- McHughen, Alan G., to Crop Development Centre of the University of Saskatchewan. Production of improved plants having an increased tolerance to the presence of a normally deleterious concentration of a plurality of inorganic salts. 4,616,100, Cl. 800-1.000.
- McKee, James E. Pneumatic control valves with diaphragm actuators and modular body structure. 4,615,353, Cl. 137-102.000.
- McKee, Sheila S.: *See—*
  - Larson, James H.; and McKee, Sheila S., 4,615,485, Cl. 239-124.000.
- McKinlay, James K.: *See—*
  - Bronnes, Robert L.; McKinlay, James K.; Sweet, Richard C.; and Zwicker, Walter K., 4,615,951, Cl. 428-615.000.
- McLaughlin, Thomas F. Carrier for computer displays. 4,615,502, Cl. 248-176.000.
- McLoughlin, Robert H.: *See—*
  - Park, George B.; Cook, John A.; and McLoughlin, Robert H., 4,615,961, Cl. 429-218.000.
- McMurtrey, David K., to Wald Manufacturing Company, Inc. Bicycle training wheel assembly. 4,615,535, Cl. 280-293.000.
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  - Neustadt, Bernard R.; Andrews, David R.; McNamara, Paul E.; and Watkins, Robert W., 4,616,012, Cl. 514-222.000.
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  - Henning, Wolfgang; Meckel, Walter; Beck, Ulrich; and Baumgen, Heinz, 4,616,061, Cl. 524-591.000.
- Meier, Christof; Bartelt, Richard; and Massat, Hans-Joachim, to Siemens Aktiengesellschaft. Self optimizing robot controller. 4,616,326, Cl. 364-513.000.
- Meijer, Roelf J., to Stirling Thermal Motors, Inc. Stirling engine with improved piston ring assembly. 4,615,261, Cl. 92-200.000.
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- Mellor, Malcolm, to United States of America, Army. Triaxial compression test apparatus. 4,615,221, Cl. 73-798.000.
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  - Berti, Eugenio, 4,616,277, Cl. 360-78.000.
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  - Baldwin, John J.; and Ponticello, Gerald S., 4,616,017, Cl. 514-252.000.
  - Kahan, Frederick M.; and Kropp, Helmut, 4,616,038, Cl. 514-563.000.
  - Remy, David C.; and Young, Steven D., 4,616,023, Cl. 514-325.000.
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  - Jonas, Rochus, 4,616,090, Cl. 558-397.000.
- Mercure, Hubert P.; and Drouet, Michel G., to Hydro Quebec. Dynamic current transducer. 4,616,176, Cl. 324-127.000.

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- Merz, Walter, to Swiss Aluminium Ltd. Conveyance system for transporting powdery or granular material. 4,615,648, Cl. 406-95.000.
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  - Seeler, Hartwig; and Zimmermann, Helmut, 4,615,497, Cl. 244-75.00A.
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  - Ottow, Manfred, 4,615,433, Cl. 198-766.000.
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  - Darling, Phillip H., 4,615,812, Cl. 210-805.000.
- Mewitz, Gerd: *See—*
  - Peters, Michael A.; and Mewitz, Gerd, 4,616,319, Cl. 364-414.000.
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  - Chevance, Claude P.; and Meyer, Jean-Claude, 4,615,234, Cl. 74-501.00R.
- Meyer, Philippus J., to Sasol Operations (Proprietary) Limited. Ash temperature measurement means for a fixed bed gasifier. 4,615,713, Cl. 48-77.000.
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- Meyer, Russell L.: *See—*
  - Thornton, Max C., Jr.; Kuntz, Paul; Meyer, Russell L.; and Rosier, Kenneth M., 4,616,178, Cl. 324-158.00F.
- Meyer, Walter, to Northern Illinois Gas Company. High frequency transistor oscillator with discrete resonator elements for transponder. 4,616,193, Cl. 331-105.000.
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  - Kassay, Laszlo; and Nemeth, Sandor, 4,616,328, Cl. 364-551.000.
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  - Vilcsek, Endre, 4,615,196, Cl. 72-85.000.
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  - Gamberini, Ernesto, 4,615,165, Cl. 53-282.000.
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  - Schmierer, Roland; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, 4,615,726, Cl. 71-92.000.
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- Milin, Ivan, to I. M. Engineering Ltd. Cap collecting opener. 4,615,242, Cl. 81-3.080.
- Miller, David G.: *See—*
  - Brannon, Robert C.; Coleman, David A.; and Miller, David G., 4,616,062, Cl. 524-601.000.
- Miller, Donald W.: *See—*
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- Miller, Douglas L., to United States of America, Navy. Method for melt-coating a surface. 4,615,903, Cl. 427-26.000.
- Miller, Kenneth A., to IRECO Incorporated. Methods of pumping and loading emulsion slurry blasting compositions. 4,615,752, Cl. 149-108.800.
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  - Moran, Brian P.; Andrews, Edward W.; and Miller, Stanford W., 4,616,259, Cl. 358-148.000.
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  - Gardner, Richard N., 4,615,944, Cl. 428-332.000.
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  - Tanaka, Atsuyuki; Kaieda, Shozo; and Nishiyama, Masaaki, 4,616,219, Cl. 340-724.000.
- Misson, John D.: *See—*
  - Li, Hsin L.; Misson, John D.; and Carrigan, David G., 4,616,204, Cl. 335-297.000.
- Mitel Corporation: *See—*
  - Lewis, Conrad, 4,616,360, Cl. 370-67.000.
- Mitsche, Roy T.: *See—*
  - Gonczy, Stephen T.; and Mitsche, Roy T., 4,615,875, Cl. 423-626.000.
- Mitsubishi Denki Kabushiki Kaisha: *See—*
  - Fujimoto, Akihiko; and Kiyokawa, Morio, 4,616,309, Cl. 364-171.000.
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- Mitsubishi Denki NGK Spark Plug Co. Ltd.: *See—*
  - Yamada, Tetsusyo; and Hirate, Shintaro, 4,615,787, Cl. 204-406.000.
- Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
  - Obayashi, Yoshiaki; and Mitsuoka, Shigeaki, 4,615,991, Cl. 502-28.000.
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- Mitsui High-Tec, Inc.: *See—*
  - Oboshi, Takamitsu; Koga, Tomoaki; and Imoto, Eiji, 4,615,207, Cl. 72-404.000.
- Mitsui Petrochemical Industries, Ltd.: *See—*
  - Motooka, Masanori; and Mantoku, Hitoshi, 4,616,059, Cl. 524-487.000.
- Mitsui, Tsutomu: *See—*
  - Kobayashi, Hideyuki; and Mitsui, Tsutomu, 4,615,425, Cl. 192-0.076.
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  - Obayashi, Yoshiaki; and Mitsuoka, Shigeaki, 4,615,991, Cl. 502-28.000.
- Miura, Masamichi: *See—*
  - Naito, Hanichiro; and Miura, Masamichi, 4,615,449, Cl. 211-162.000.
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  - Tanaka, Hidehiro; and Ishii, Takashi, 4,616,221, Cl. 340-783.000.
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- Mizutani, Morikazu, to Canon Kabushiki Kaisha. Developing apparatus. 4,615,608, Cl. 355-3.0DD.
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  - Chen, Nai Y.; McCullen, Sharon B.; and Oleck, Stephen M., 4,615,997, Cl. 502-66.000.
  - Choi, Byung C.; Gross, Benjamin; and Malladi, Madhava, 4,615,791, Cl. 208-107.000.
  - Kremer, Ross A.; and Saunders, Stephen W., 4,615,869, Cl. 423-167.000.
  - Lu, Pang-Chia, 4,615,941, Cl. 428-327.000.
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  - Shirley, Thomas E., 4,616,349, Cl. 367-66.000.
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- Moermann, Werner H.; and Brandestini, Marco. Blank from which a dental implant can be machined, and a method of making the blank. 4,615,678, Cl. 433-201.100.
- Mohndruck Graphische Betriebe GmbH: *See—*
  - Kwauka, Gerd-Georg, 4,615,541, Cl. 281-29.000.
- Mole Constuction Company: *See—*
  - Hoge, Renon M.; and Mathews, Albert A., 4,615,644, Cl. 405-151.000.
- Monk, Trevor K., to ITT Industries, Inc. Semiconductor memory. 4,616,345, Cl. 365-226.000.

- Mono Power Co.: *See—*
  - Gallup, Darrell L.; and Featherstone, John L., 4,615,808, Cl. 210-714.000.
- Monsanto Europe S.A.: *See—*
  - Ledent, Michel A. O.; and May, Bronislav H., 4,615,840, Cl. 260-502.50E.
- Montoya, Paul C.: *See—*
  - Lee, David O.; Montoya, Paul C.; and Wayland, J. Robert, Jr., 4,616,184, Cl. 324-335.000.
- Montpetit, Michael C.: *See—*
  - Pratt, George C.; and Montpetit, Michael C., 4,615,854, Cl. 264-127.000.
- Moore, Boyd B.: *See—*
  - Neely, Aaron B.; Walhaug, Warren W.; and Moore, Boyd B., 4,615,389, Cl. 166-250.000.
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- Moran, Brian P.; Andrews, Edward W.; and Miller, Stanford W., to General Electric Company. Instant phase correction in a phase-locked loop. 4,616,259, Cl. 358-148.000.
- Morehouse, Alpha L.; and Lewis, Charles J., to Grain Processing Corporation. Dried emulsion concentrates hydratable to edible spreads. 4,615,892, Cl. 426-250.000.
- Morel, Didier: *See—*
  - Mignani, Gerard; and Morel, Didier, 4,615,838, Cl. 260-410.90R.
- Morgan, Colin G.: *See—*
  - Clocksin, William F.; Davey, Peter G.; Morgan, Colin G.; and Vidler, Albert R., 4,616,121, Cl. 219-124.340.
- Mori, Ikuo, to Fuji Xerox Co., Ltd. Document reader. 4,616,269, Cl. 358-293.000.
- Mori, Noriaki, to Dainippon Screen Manufacturing Co., Ltd. Elevator between transfer passages. 4,615,521, Cl. 271-264.000.
- Mori, Takasuke; Ayata, Kenzo; and Fujimoto, Takahiko, to Kabushiki Kaisha Kobe Seiko Sho. Method and device for electromagnetically regulating pouring rate in continuous casting. 4,615,376, Cl. 164-466.000.
- Mori, Teijiro: *See—*
  - Kakizoe, Masahiro; Nishizako, Shizutaka; Masuda, Shigeru; Wada, Yuichi; and Mori, Teijiro, 4,616,203, Cl. 335-201.000.
- Moriizumi, Hirokazu: *See—*
  - Matsumoto, Yukio; and Moriizumi, Hirokazu, 4,615,930, Cl. 428-142.000.
- Morimoto, Yoshitaka, to Nippon Electric Co., Ltd. Optical fiber connector. 4,615,581, Cl. 350-96.210.
- Morimura, Shinji: *See—*
  - Maekawa, Takashi; Sasaki, Hiroshi; and Morimura, Shinji, 4,615,301, Cl. 119-3.000.
- Morino, Taisuke; Hanatani, Sakio; and Ohuchi, Mituo, to Sharp Kabushiki Kaisha. Food weight measuring device for a cooking appliance. 4,615,405, Cl. 177-210.00C.
- Morita, Kosaku: *See—*
  - Yahagi, Masakichi; Igaki, Tetsuo; Yoshinaka, Shinji; Morita, Kosaku; Kinoshita, Kimiaki; Enokiya, Masashi; Kaneko, Akio; and Yamashita, Toshiyuki, 4,616,239, Cl. 346-201.000.
- Moriya, Tatsuo, to Seiko Epson Kabushiki Kaisha. Analog electronic timepiece. 4,615,625, Cl. 368-156.000.
- Moriyama, Masaru, to Victor Company of Japan, Ltd. Digital signal reproducing apparatus. 4,616,272, Cl. 360-47.000.
- Morley, Andrew C.: *See—*
  - Hammond, John A. G.; and Morley, Andrew C., 4,615,358, Cl. 137-625.630.
- Morley, Edwin W., to Garrett Corporation, The. Peripheral vision artificial horizon device and associated methods. 4,616,226, Cl. 340-980.000.
- Morse, Albert I., to USM Corporation. Powder reinforcing machine. 4,615,297, Cl. 118-503.000.
- Morshedi, Abdol M.; Cutler, Charles R.; Fitzpatrick, Thomas J.; and Skrovanek, Thomas A., to Shell Oil Company. Dynamic process control. 4,616,308, Cl. 364-159.000.
- Mortensen, Jorgen G., to J. Mortensen & Company Limited. Water purification and sterilization system. 4,615,799, Cl. 210-117.000.
- Morton Thiokol, Inc.: *See—*
  - Bell, Frank H., 4,615,270, Cl. 102-289.000.
- Mosesian, Jerry L.: *See—*
  - Knapp, Edward J., Jr.; and Mosesian, Jerry L., 4,616,207, Cl. 338-32.00H.
- Moskovsky Nauchno-Issledovatelsky Institut Mikrokhirurgii Glaza: *See—*
  - Fedorov, Svyatoslav N.; Zakharov, Valery D.; and Axenov, Alexandr O., 4,615,700, Cl. 623-6.000.
- Moss, Robert J. Oil game of skill and chance. 4,615,527, Cl. 273-278.000.
- Motooka, Masanori; and Mantoku, Hitoshi, to Mitsui Petrochemical Industries, Ltd. Graft-modified ultrahigh-molecular-weight polyethylene and process for producing same. 4,616,059, Cl. 524-487.000.
- Motorola, Inc.: *See—*
  - Baird, John, 4,615,857, Cl. 264-272.170.
  - Folk, Lee E., 4,616,250, Cl. 357-70.000.
  - Lee, Shi-Chuan; and Schucker, Douglas W., 4,616,146, Cl. 307-446.000.
  - Pumo, Joseph, 4,616,147, Cl. 307-481.000.
  - Wilson, James L.; and Edwards, Shannon, 4,616,314, Cl. 364-200.000.
- Motosugi, Takanori: *See—*
  - Inaba, Norihiko; Sakamoto, Hiroshi; and Motosugi, Takanori, 4,616,240, Cl. 346-208.000.
- Mourray, Jack W., to Ford Motor Company. Piston assembly for shock absorber. 4,615,420, Cl. 188-322.150.
- Mox, Dana W.: *See—*
  - Caporaso, Anthony J., Jr.; and Mox, Dana W., 4,615,267, Cl. 101-269.000.
- Mross, Wolf D.: *See—*
  - Hoelderich, Wolfgang; Himmel, Walter; Mross, Wolf D.; and Schwarzmann, Matthias, 4,616,098, Cl. 585-640.000.
- Mukaiyama, Teruaki; Sakito, Yoji; and Asami, Masatoshi, to Sumitomo Chemical Company, Limited. β-formyl-β-hydroxy ester. 4,616,092, Cl. 560-177.000.
- Muller, Dietrich. Sewage sludge fuel briquette. 4,615,711, Cl. 44-10.00A.
- Muller, Jurgen; Krobel, Heinz; Reichart, Michael; and Schindlbeck, Gunther, to Agfa-Gevaert Aktiengesellschaft. Apparatus for producing photographic pictures of projection screen images. 4,615,596, Cl. 354-76.000.
- Muller, Manfred: *See—*
  - Gerke, Dieter; and Muller, Manfred, 4,615,576, Cl. 339-97.00P.
- Murakami, Tsuneo: *See—*
  - Teranishi, Akio; and Murakami, Tsuneo, 4,615,493, Cl. 242-35.50A.
- Muramoto, Kenichi: *See—*
  - Hideshima, Makoto; Takahashi, Wataru; and Muramoto, Kenichi, 4,616,144, Cl. 307-315.000.
- Murata Manufacturing Co., Ltd.: *See—*
  - Watanabe, Koichi; and Murata, Michihiro, 4,616,290, Cl. 361-328.000.
- Murata, Michihiro: *See—*
  - Watanabe, Koichi; and Murata, Michihiro, 4,616,290, Cl. 361-328.000.
- Murayama, Naohiro: *See—*
  - Sakagami, Teruo; Arakawa, Noriyuki; and Murayama, Naohiro, 4,615,943, Cl. 428-332.000.
- Murayama, Seiichi: *See—*
  - Tsujii, Kanji; Yajima, Yusuke; and Murayama, Seiichi, 4,615,756, Cl. 156-345.000.
- Murayama, Yasushi: *See—*
  - Ohno, Akio; Murayama, Yasushi; Hirooka, Kazuhiko; and Hayashi, Kimiyoshi, 4,615,612, Cl. 355-14.00D.
- Murphy, James R., to Air Products and Chemicals, Inc. Catalyst regeneration process with improved catalyst distribution in a fluidized bed. 4,615,992, Cl. 502-41.000.
- Murray, James G.; and Tinger, Harold G., to Mobil Oil Corporation. Method for preparing paperlike products from fibers threaded with polymer. 4,615,689, Cl. 493-51.000.
- Murray, Thomas M., to Nucor Corporation. Floor joist damper. 4,615,157, Cl. 52-167.000.
- Murtha, James L. Method of rinsing eating utensils. 4,615,744, Cl. 134-25.200.
- Musgrove, Max D.: *See—*
  - Lederer, Richard W.; Musgrove, Max D.; and Jones, Robert E., 4,615,452, Cl. 220-1.00B.
- Mussig, Karl: *See—*
  - Henze, Siegfried; Mussig, Karl; and Ziegler, Hans, 4,615,287, Cl. 112-121.140.
- Myers, Brent A., to General Electric Company. Adjustable CMOS hysteresis limiter. 4,616,145, Cl. 307-555.000.
- Naaf, Rudiger: *See—*
  - Schliefer, Heinrich; Naaf, Rudiger; and Christ, Rolf, 4,615,351, Cl. 137-2.000.
- Naaijer, Geert J., to U.S. Philips Corporation. System of identifying local stations by a central interrogating station. 4,616,223, Cl. 340-825.540.
- Nabisco Brands, Inc.: *See—*
  - Bhattacharjee, Amal C., 4,615,895, Cl. 426-523.000.
  - Brown, James; Ellis, Peter E.; and Draper, Marta J., 4,615,896, Cl. 426-576.000.
  - Brown, James; Ellis, Peter E.; and Draper, Marta J., 4,615,897, Cl. 426-576.000.
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- Naddeo, Leandre: *See—*
  - Tai, Ho T.; and Naddeo, Leandre, 4,615,815, Cl. 252-8.800.
- Nagahara, Yoshikazu, to Kabushiki Kaisha Komatsu Seisakusho. Fluid circuit system for operating bidirectional hydraulic motor. 4,615,174, Cl. 60-442.000.
- Nagamine, Yoshifumi, to Kubota, Ltd. Reversible rotary cultivating apparatus. 4,615,395, Cl. 172-91.000.
- Nagamoto, Mitsuki, to Matsushita Electric Works, Ltd. Electromagnetic relay. 4,616,201, Cl. 335-129.000.
- Nagaoka, Yoshimichi, to Victor Company of Japan, Ltd. Tape end detecting device for extractable tape type cassette. 4,616,274, Cl. 360-71.000.
- Nagasaki, Tatsuo; and Fujimori, Hiroyoshi, to Olympus Optical Co., Ltd. Noise suppressor for electronic endoscope. 4,615,330, Cl. 128-4.000.
- Nagashima, Akira, to Kioritz Corporation. Throttle cushion. 4,615,398, Cl. 173-162.00H.
- Nagatsuka, Yoshihiro: *See—*
  - Fukuta, Kenji; Aoki, Eiji; Nagatsuka, Yoshihiro; and Kitano, Takeshi, 4,615,256, Cl. 87-33.000.
- Naito, Akihiko, to Pioneer Electronic Corp. Security system. 4,616,214, Cl. 340-533.000.
- Naito, Hanichiro; and Miura, Masamichi, to Elecompack Company Ltd. Apparatus for preventing a movable rack from falling down. 4,615,449, Cl. 211-162.000.

- Nakagaki, Shintaro; and Ichimura, Hiroshi, to Victor Company of Japan Ltd. Color television signal generating apparatus having circuit for reducing noise in output primary color signals of camera tube having color-resolving striped filter. 4,616,255, Cl. 358-47.000.
- Nakagame, Fujio; Honda, Haruo; Maruyama, Teppei; Saito, Noriko; and Kimoto, Tomoaki, to Terumo Kabushiki Kaisha. Pharmaceutical composition containing urokinase. 4,615,885, Cl. 424-94.000.
- Nakahama, Ryoji: *See—*
  - Harada, Norimichi; Nakahama, Ryoji; and Kuragaki, Naoyoshi, 4,615,683, Cl. 440-52.000.
- Nakaizumi, Kazuo; and Inagaki, Yasaburo, to NEC Corporation. Random access memory capable of varying a frequency in active and standby modes. 4,616,346, Cl. 365-229.000.
- Nakajima, Hiroharu: *See—*
  - Ueda, Hiroyuki; Yamada, Yasuaki; Ozawa, Toshiaki; Nakajima, Hiroharu; and Kondo, Hiroatsu, 4,615,631, Cl. 400-705.100.
- Nakajima, Yukio; Higuchi, Tatsuji; and Asakura, Yasuo, to Olympus Optical, Co. Ltd. Camera of the automatic aperture control type. 4,615,600, Cl. 354-451.000.
- Nakamoto, Keiji: *See—*
  - Tamura, Shohei; Sasaki, Sadamitsu; Abe, Masao; Nakazawa, Hitoshi; Ichinose, Hisashi; Nakamoto, Keiji; and Yumoto, Satoshi, 4,615,829, Cl. 252-500.000.
- Nakamura, Koichi. System for indicating operation time of motor vehicles and the like. 4,616,208, Cl. 340-309.150.
- Nakamura, Koki: *See—*
  - Kojima, Tetsuro; Nakamura, Koki; and Toyoda, Takashi, 4,615,970, Cl. 430-446.000.
- Nakamura, Ryosuke: *See—*
  - Ichikawa, Kenji; Sugimoto, Hiroyuki; Nakamura, Ryosuke; Yamamura, Takashi; and Mitsuhata, Kenji, 4,615,953, Cl. 428-699.000.
- Nakamura, Ryuichi, to Yamaichi Electric Mfg. Co., Ltd. IC package carrier. 4,615,441, Cl. 206-329.000.
- Nakamura, Shigekazu, to Copal Company Limited. Displacement detecting apparatus comprising magnetoresistive elements. 4,616,281, Cl. 360-113.000.
- Nakamura, Toru, to Kabuchiki Kaisha Ishida Koki Seisakusho. Weighing device. 4,615,403, Cl. 177-25.000.
- Nakamura, Tsutomu: *See—*
  - Nishizawa, Jun-ichi; and Nakamura, Tsutomu, 4,616,249, Cl. 357-30.000.
- Nakamura, Yoshiharu; and Nishimiya, Ryuji, to Nissan Motor Company, Limited; and Nissan Shatai Company, Limited. Installation structure for striker of door lock mechanism in center-pillarless vehicle. 4,615,558, Cl. 296-203.000.
- Nakanishi, Kyoji: *See—*
  - Saito, Kenji; Nakanishi, Kyoji; Nanba, Akihiko; Onishi, Masayuki; Yao, Minoru; Kato, Toshio; and Kojima, Shinji, 4,615,373, Cl. 164-125.000.
- Nakano, Masashi; and Ueda, Takeo, to Nippon Oil and Fats Company Limited. Remote blasting system for effecting multiple-step explosion and switching unit for use in this system. 4,615,268, Cl. 102-217.000.
- Nakao, Katsuaki, to Ipposha Oil Industries Co., Ltd. Cationic compound, process for preparing same and treatment of textile material for improved dyeing. 4,615,709, Cl. 8-599.000.
- Nakashima, Yoshihiro: *See—*
  - Kusumi, Katsuaki; and Nakashima, Yoshihiro, 4,616,307, Cl. 364-147.000.
- Nakata, Chiaki; and Takenaka, Toshio, to Taoka Chemical Company Limited; and Sumitomo Chemical Co. Limited. Method for adhering artificial nail. 4,615,348, Cl. 132-73.000.
- Nakaya, Keiichi: *See—*
  - Kanno, Fukuo; and Nakaya, Keiichi, 4,615,831, Cl. 252-609.000.
- Nakayama, Mitsuhisa, to U.S. Philips Corporation. Disc player. 4,616,357, Cl. 369-194.000.
- Nakazawa, Hitoshi: *See—*
  - Tamura, Shohei; Sasaki, Sadamitsu; Abe, Masao; Nakazawa, Hitoshi; Ichinose, Hisashi; Nakamoto, Keiji; and Yumoto, Satoshi, 4,615,829, Cl. 252-500.000.
- Nakazawa, Kazuo: *See—*
  - Suzuta, Mikio; Yamamoto, Hironori; and Nakazawa, Kazuo, 4,615,515, Cl. 269-73.000.
- Nakohsai, Keiko: *See—*
  - Inoue, Hiroshi; and Nakohsai, Keiko, 4,615,919, Cl. 428-1.000.
- Nalco Chemical Company: *See—*
  - LaMarre, Thomas M.; and Martin, Cynthia H., 4,616,037, Cl. 514-515.000.
- Namatsu, Hideo; and Yoshikawa, Akira, to Nippon Telegraph and Telephone Corporation. Intermediate layer material of three-layer resist system and method of forming resist pattern. 4,615,782, Cl. 204-192.360.
- Nanba, Akihiko: *See—*
  - Saito, Kenji; Nakanishi, Kyoji; Nanba, Akihiko; Onishi, Masayuki; Yao, Minoru; Kato, Toshio; and Kojima, Shinji, 4,615,373, Cl. 164-125.000.
- Nannig, Urban R.: *See—*
  - Waugh, Robert E.; Nannig, Urban R.; and Rockwood, Clyde R., 4,615,754, Cl. 156-242.000.
- Narayanan, Swami: *See—*
  - Woebcke, Herman N.; Narayanan, Swami; and Johnson, Axel R., 4,615,795, Cl. 208-72.000.
- Narikawa, Shiro: *See—*
  - Matsuyama, Toshiro; Hayakawa, Takashi; Kojima, Yoshimi; Narikawa, Shiro; and Ehara, Shaw, 4,615,299, Cl. 118-723.000.
- Naruo, Kyoichi: *See—*
  - Tani, Yoshio; Naruo, Kyoichi; and Yabe, Masao, 4,616,238, Cl. 346-137.000.
- Nash, John, to Intravascular Surgical Instruments, Inc. Catheter placement device. 4,615,472, Cl. 226-127.000.
- Nash, Robert W.; Andre, Paul R.; and Knoblock, Dennis F., to William H. Nash Co., Inc. Multiple connector fluid coupling. 4,615,546, Cl. 285-26.000.
- National Machinery Company, The: *See—*
  - Allebach, Gene E., 4,615,197, Cl. 72-88.000.
- National Research Development Corporation: *See—*
  - Clocksin, William F.; Davey, Peter G.; Morgan, Colin G.; and Vidler, Albert R., 4,616,121, Cl. 219-124.340.
  - Scales, John T.; and Wilkinson, Michael J., 4,615,705, Cl. 623-11.000.
- National Starch and Chemical Corporation: *See—*
  - Zallie, James; Trimble, Robert; and Bell, Harvey, 4,615,888, Cl. 426-21.000.
- National Steel Corporation: *See—*
  - Whitaker, Eugene, 4,615,377, Cl. 164-477.000.
- Nause, Gregory L. Increasing frictional resistance measuring apparatus. 4,615,223, Cl. 73-862.030.
- Nava, Pier L. Helmet with tilting visor especially suited for sports use. 4,615,052, Cl. 2-424.000.
- Naylor, Harry; and Purser, Kenneth H., to General Ionex Corporation. Injector for negative ions. 4,616,157, Cl. 315-111.010.
- NCR Corporation: *See—*
  - Topich, James A.; Cynkar, Thomas E.; Turi, Raymond A.; and Lockwood, George C., 4,616,245, Cl. 357-23.500.
- NEC Corporation: *See—*
  - Ishii, Eiichi; and Yoshimizu, Makoto, 4,616,273, Cl. 360-66.000.
  - Nakaizumi, Kazuo; and Inagaki, Yasaburo, 4,616,346, Cl. 365-229.000.
  - Watanabe, Kyoji, 4,616,187, Cl. 329-126.000.
  - Yamaguchi, Mamoru; and Oshima, Masanori, 4,616,108, Cl. 179-2.00E.
- Neefe, Charles W. Fluorescent non-optical corneal color change device. 4,615,593, Cl. 351-162.000.
- Neely, Aaron B.; Walhaug, Warren W.; and Moore, Boyd B., to Shell Oil Company. Method of producing supercritical carbon dioxide from wells. 4,615,389, Cl. 166-250.000.
- Neely, Aaron B.: *See—*
  - Walhaug, Warren W.; Neely, Aaron B.; and Moore, Boyd B., 4,615,388, Cl. 166-250.000.
- NEI Canada Limited: *See—*
  - Tanaka, Hidehiro; and Ishii, Takashi, 4,616,221, Cl. 340-783.000.
- Neitek Pty. Ltd.: *See—*
  - Fuhrmeister, Ralph, 4,615,475, Cl. 227-136.000.
- Nelissen, Koenraad. Twirling hoop with extensible tether. 4,615,685, Cl. 446-247.000.
- Nelsen, Charles E.; and Mannion, Catharine, to Plant Genetics, Inc. Hydrogel encapsulated nematodes. 4,615,883, Cl. 424-84.000.
- Nelson, Gary W. Cantilevered drawer slide arrangement. 4,615,572, Cl. 312-341.00R.
- Nemeth, Sandor: *See—*
  - Kassay, Laszlo; and Nemeth, Sandor, 4,616,328, Cl. 364-551.000.
- Nesbitt, Norman R. S.; Skeels, Edwin; Laker, Robert W.; Rowley, Terence W.; and Judge, Michael E., to Marconi Company Limited, The. Visual simulators, computer generated imagery, and display systems. 4,616,217, Cl. 340-747.000.
- Nesbitt, Russell U., Jr.: *See—*
  - Ghebre-Sellassie, Isaac; and Nesbitt, Russell U., Jr., 4,616,022, Cl. 514-312.000.
- Nestlen, David J., to LaGrand Chain Corporation. Apparatus for detachably fastening lateral cable in tire chain. 4,615,368, Cl. 152-213.00A.
- Neubauer, Jeffrey A.; Reese, Walter J.; and Spencer, Dennis O., to PPG Industries, Inc. Method and apparatus for making glass fiber oriented continuous strand mat. 4,615,717, Cl. 65-4.400.
- Neuberg, William B.; and Aclin, John J., to Shamrock Chemicals Corporation. Method of using powders to cure solvent free inks. 4,615,911, Cl. 427-197.000.
- Neumann, Peter: *See—*
  - Zeiner, Hartmut; Heinz, Gerhard; Neumann, Peter; Fischer, Jurgen; and Nissen, Dietmar, 4,616,070, Cl. 525-390.000.
- Neumuenstersche Maschinen -und Apparatebau GmbH (NEUMAG): *See—*
  - Brandt, Holger; Beck, Arnold; and Dreyer, Joachim, 4,615,670, Cl. 425-186.000.
- Neustadt, Bernard R.; Andrews, David R.; McNamara, Paul E.; and Watkins, Robert W., to Schering Corporation. Carboxyalkyl dipeptides as antiglaucoma agents. 4,616,012, Cl. 514-222.000.
- New Japan Radio Co. Ltd.: *See—*
  - Maruyama, Yuji; Otake, Kohei; and Kizaki, Hisao, 4,616,120, Cl. 219-10.55A.
- Newlove, John C.: *See—*
  - Sedillo, Lawrence P.; Newlove, John C.; Peiffer, Dennis G.; and Lundberg, Robert D., 4,615,393, Cl. 166-308.000.
- Newman, Brett E., to Continental Can Company, Inc. Collapsible spoon. 4,615,120, Cl. 30-324.000.
- Newman, Ira R.: *See—*
  - Affa, Stephen N.; Allison, Robert S.; and Newman, Ira R., 4,615,359, Cl. 138-104.000.
- Newsome, David L.; and Rein, Arnold R., to American Can Company. Oriented polymeric film. 4,615,922, Cl. 428-35.000.

- Newton, Kevin H.: *See—*
  - Shoop, James D.; Graef, Harry T.; Newton, Kevin H.; and Grucza, Spencer M., 4,615,280, Cl. 109-24.100.
- Nichols, James H., Jr.: *See—*
  - Wilson, Freddie W.; Howe, Harvey J.; and Nichols, James H., Jr., 4,615,407, Cl. 180-128.000.
- Nickell, Louis G.; Stach, Leonard J.; and Hokama, Takeo, to Sandoz Ltd. Pyridinyloxy propoinamide derivatives useful in increasing the recoverable sugar in sugarcane. 4,615,728, Cl. 71-94.000.
- Nidola, Antonio: *See—*
  - de Nora, Oronzio; Nidola, Antonio; and Martelli,. Gian N., 4,615,775, Cl. 204-128.000.
- Nihon Kogyo Kabushiki Kaisha: *See—*
  - Oda, Osamu; Onozuka, Arata; and Koyama, Akio, 4,615,964, Cl. 430-84.000.
- Nihon Radiator Co., Ltd.: *See—*
  - Shimada, Yukio; and Sonoda, Noriaki, 4,615,384, Cl. 165-152.000.
- Nikex Nehezipari Kulkereskedelmi Vallalat: *See—*
  - Ronafoldi, Arnold; Ferencsik, Jozsef; Doknas, Janos; and Torok, Laszlo , 4,615,660, Cl. 417-50.000.
- Nikki-Universal Co., Ltd.: *See—*
  - Takumi, Shizuo; Hashimoto, Toshio; and Tatsushima, Masaru, 4,615,999, Cl. 502-314.000.
- Nilsson, Claes T., to PLM AB. Barrier-coated tube of biaxially stretched thermoplastic material having a monoaxially stretched barrier coating thereon. 4,615,925, Cl. 428-35.000.
- Nilsson, Jan: *See—*
  - Goransson, Michael; and Nilsson, Jan, 4,615,745, Cl. 148-4.000.
- Nippon Air Brake Co., Ltd.: *See—*
  - Ishiwata, Ichiro; and Nishimura, Toshifumi, 4,615,175, Cl. 60-535.000.
- Nippon Carbon Co., Ltd.: *See—*
  - Iio, Masahiro; Saruwatari, Yasuhiko; and Yamazoe, Hiroshi, 4,615,663, Cl. 418-152.000.
- Nippon Electric Co., Ltd.: *See—*
  - Morimoto, Yoshitaka, 4,615,581, Cl. 350-96.210.
- Nippon Gakki Seizo Kabushiki Kaisha: *See—*
  - Yamauchi, Takao; and Asahi, Yasuhiko, 4,615,252, Cl. 84-1.100.
- Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See—*
  - Tokuyama, Shinichi; Hongo, Masaharu; and Iino, Hirokazu, 4,615,823, Cl. 252-194.000.
- Nippon Kogaku K. K.: *See—*
  - Okubo, Yuji, 4,615,601, Cl. 354-460.000.
- Nippon Kogaku K.K.: *See—*
  - Hashimoto, Takaaki; and Minagawa, Kazushi, 4,616,253, Cl. 358-29.000.
- Nippon Notion Kogyo Co., Ltd.: *See—*
  - Taga, Yukio, 4,615,473, Cl. 227-15.000.
- Nippon Oil and Fats Company Limited: *See—*
  - Nakano, Masashi; and Ueda, Takeo, 4,615,268, Cl. 102-217.000.
- Nippon Petrochemicals Company, Limited: *See—*
  - Aoyama, Takeo; Kamei, Tadashi; and Uehara, Mikio, 4,615,853, Cl. 264-122.000.
- Nippon Piston Ring Co., Ltd.: *See—*
  - Umeha, Genkichi; and Hirakawa, Osamu, 4,615,310, Cl. 123-90.340.
- Nippon Seiko Kabushiki Kaisha: *See—*
  - Hirata, Jiro, 4,615,569, Cl. 384-45.000.
- Nippon Steel Chem. Co., Ltd.: *See—*
  - Horigome, Tsukumo; Kawabe, Noriyuki; Takiue, Mamoru; Imai, Kunihiko; Uchiyama, Noriaki; Tsuzuki, Fusayuki; Shimada, Kenji; Shibuya, Masahiro; Hakutoh, Norimasa; Watanabe, Chiaki; and Abe, Junichi, 4,615,769, Cl. 203-2.000.
- Nippon Steel Corporation: *See—*
  - Mochinaga, Kishio; Fujiwara, Kohichi; Higashine, Kazutaka; and Kobayashi, Hisashi, 4,615,750, Cl. 148-111.000.
- Nippon Telegraph and Telephone Corporation: *See—*
  - Namatsu, Hideo; and Yoshikawa, Akira, 4,615,782, Cl. 204-192.360.
- Nippon Tenshashi Kabushiki Kaisha: *See—*
  - Ihata, Sachiko, 4,615,118, Cl. 30-151.000.
- Nippon Zeon Co., Ltd.: *See—*
  - Watanabe, Hiroyuki; Noguchi, Kohkichi; Kase, Toshio; and Akita, Shuichi, 4,616,069, Cl. 525-370.000.
- Nirasawa, Mitsuharu: *See—*
  - Seshimoto, Osamu; and Nirasawa, Mitsuharu, 4,615,788, Cl. 204-418.000.
- Nishibayashi, Kazuo: *See—*
  - Sugimoto, Yasuhiko; Wada, Sadao; Tanide, Naoyosi; Kawabata, Osamu; Yamaguchi, Tadashi; Yano, Shozo; Suda, Kobun; Nishibayashi, Kazuo; and Ishida, Shohei, 4,615,215, Cl. 73-866.000.
- Nishida, Hiroshi, to Kawasaki Jukogyo Kabushiki Kaisha. Battery service system for small-sized marine craft. 4,616,168, Cl. 320-2.000.
- Nishida, Minoru: *See—*
  - Satoh, Susumu; Suzuki, Hideo; Obara, Takashi; Nishida, Minoru; and Hashimoto, Osamu, 4,615,749, Cl. 148-330.000.
- Nishijima, Masaru: *See—*
  - Kida, Hiroshi; Kato, Tutomu; and Nishijima, Masaru, 4,615,605, Cl. 355-3.00R.
- Nishikawa, Masaji, to Olympus Optical Co., Ltd. Apparatus for developing electrostatic latent image. 4,615,606, Cl. 355-3.0DD.
- Nishikawa, Mitsuru: *See—*
  - Ono, Kimizo; Nishiwaki, Yoshikazu; Tsuno, Koichi; Iwai, Toru; and Nishikawa, Mitsuru, 4,616,258, Cl. 358-100.000.
- Nishikido, Joji; Kodama, Eiji; and Shibuya, Chisei, to Asahi Kasei Kogyo Kabushiki Kaisha. Cephalosporin compounds. 4,616,081, Cl. 540-222.000.
- Nishimiya, Ryuji: *See—*
  - Nakamura, Yoshiharu; and Nishimiya, Ryuji, 4,615,558, Cl. 296-203.000.
- Nishimoto, Naomichi, to Victor Company of Japan, Ltd. Synchronizing signal separating circuit for a recording and reproducing apparatus. 4,616,270, Cl. 358-320.000.
- Nishimura, Toshifumi: *See—*
  - Ishiwata, Ichiro; and Nishimura, Toshifumi, 4,615,175, Cl. 60-535.000.
- Nishiwaki, Yoshikazu: *See—*
  - Ono, Kimizo; Nishiwaki, Yoshikazu; Tsuno, Koichi; Iwai, Toru; and Nishikawa, Mitsuru, 4,616,258, Cl. 358-100.000.
- Nishiyama, Masaaki: *See—*
  - Tanaka, Atsuyuki; Kaieda, Shozo; and Nishiyama, Masaaki, 4,616,219, Cl. 340-724.000.
- Nishiyama, Toshihiko: *See—*
  - Yoshioka, Tetsuo; Yamamoto, Takatsugu; Nishiyama, Toshihiko; Fujita, Hiroyuki; and Ashida, Shigeki, 4,615,901, Cl. 426-656.000.
- Nishizako, Shizutaka: *See—*
  - Kakizoe, Masahiro; Nishizako, Shizutaka; Masuda, Shigeru; Wada, Yuichi; and Mori, Teijiro, 4,616,203, Cl. 335-201.000.
- Nishizawa, Jun-ichi; and Nakamura, Tsutomu, to Olympus Optical Co., Ltd. Solid state image pick-up element of static induction transistor type. 4,616,249, Cl. 357-30.000.
- Nishizawa, Nobuyoshi: *See—*
  - Kumeta, Masao; Ide, Masahiro; Nishizawa, Nobuyoshi; Inoue, Nobuya; and Goto, Hideki, 4,615,107, Cl. 29-623.100.
- Nishizono, Minoru: *See—*
  - Wada, Hiroto; and Nishizono, Minoru, 4,615,105, Cl. 29-594.000.
- Nissan Motor Co., Ltd.: *See—*
  - Hayashi, Yoshimasa, 4,615,304, Cl. 123-41.210.
  - Hosaka, Akio, 4,615,410, Cl. 180-197.000.
  - Nakamura, Yoshiharu; and Nishimiya, Ryuji, 4,615,558, Cl. 296-203.000.
  - Taniguchi, Fumio, 4,615,262, Cl. 98-2.080.
  - Yamamoto, Takeshi; Furubayashi, Tadashi; Igami, Masanobu; and Hashino, Tsutomu, 4,615,204, Cl. 72-347.000.
  - Yasuhara, Seishi, 4,615,316, Cl. 123-333.000.
- Nissan Shatai Company, Limited: *See—*
  - Nakamura, Yoshiharu; and Nishimiya, Ryuji, 4,615,558, Cl. 296-203.000.
- Nissen, Dietmar: *See—*
  - Zeiner, Hartmut; Heinz, Gerhard; Neumann, Peter; Fischer, Jurgen; and Nissen, Dietmar, 4,616,070, Cl. 525-390.000.
- Nissen, Norman C.: *See—*
  - Thomas, John A.; Nissen, Norman C.; Bell, Malcolm C. E.; and Illis, Alexander, 4,615,731, Cl. 75-97.00A.
- Nisshin Oil Mills, Ltd., The: *See—*
  - Seto, Akira; and Yamashita, Shoko, 4,615,839, Cl. 260-412.000.
- Nitto Electric Industrial Co., Ltd.: *See—*
  - Tamura, Shohei; Sasaki, Sadamitsu; Abe, Masao; Nakazawa, Hitoshi; Ichinose, Hisashi; Nakamoto, Keiji; and Yumoto, Satoshi, 4,615,829, Cl. 252-500.000.
- Nitto Kohki Co., Ltd.: *See—*
  - Takeuchi, Hirosato; Kishi, Katsunobu; and Mikiya, Toshio, 4,615,329, Cl. 126-438.000.
- Niwa, Kuniyuki; and Fujimura, Yoshiyuki, to Toyoda Koki Kabushiki Kaisha. Method and apparatus for preparing spare tools for a machine tool. 4,616,322, Cl. 364-474.000.
- Niwa, Toshikazu; Takahashi, Mineo; and Aiba, Kazumi, to Hitachi, Ltd. Method of and apparatus for processing a scroll member for a scroll type compressor. 4,615,091, Cl. 29-156.40R.
- NL Industries, Inc.: *See—*
  - Pelezo, James A.; Corbett, Garry E., Jr.; and Siems, Don R., 4,615,740, Cl. 106-177.000.
  - Reichert, William W.; Cody, Charles A.; De Sesa, Michael A.; and Faulseit, Bruce K., 4,615,918, Cl. 427-385.500.
- Nocek, James E.; Braund, Darwin G.; Steele, Robert L.; and Macgregor, Charles A., to Agway Inc. Method of formulating dairy cow rations based on carbohydrate regulation. 4,615,891, Cl. 426-231.000.
- Noda, Ippei: *See—*
  - Ogiso, Osamu; and Noda, Ippei, 4,615,816, Cl. 252-8.900.
- Noguchi, Eiji; and Aoyama, Keizo, to Fujitsu Limited. Static memory circuit. 4,616,344, Cl. 365-203.000.
- Noguchi, Kohkichi: *See—*
  - Watanabe, Hiroyuki; Noguchi, Kohkichi; Kase, Toshio; and Akita, Shuichi, 4,616,069, Cl. 525-370.000.
- Noguchi, Masaru: *See—*
  - Yamada, Junichi; Horikawa, Kazuo; and Noguchi, Masaru, 4,616,129, Cl. 250-207.000.
- Noguchi, Minori; Otsubo, Toru; and Aiuchi, Susumu, to Hitachi, Ltd. Apparatus for measuring the depth of fine engraved patterns. 4,615,620, Cl. 356-378.000.
- Nogueira, Nadia: *See—*
  - Lizardi, Paul; and Nogueira, Nadia, 4,615,973, Cl. 435-68.000.
- Nomura, Kaoru, to Honda Giken Kogyo Kabushiki Kaisha. Vehicle seat. 4,615,561, Cl. 297-243.000.
- Noorily, Peter, to Thomas & Betts Corporation. Flat conductor electrical cable assembly. 4,616,102, Cl. 174-36.000.
- Norddeutsche Affinerie AG: *See—*
  - Schliefer, Heinrich; Naaf, Rudiger; and Christ, Rolf, 4,615,351, Cl. 137-2.000.
- Nordica S.p.A.: *See—*
  - Borsoi, Bruno, 4,615,128, Cl. 36-120.000.
- Nordson Corporation: *See—*
  - Kolibas, James A., 4,615,296, Cl. 118-314.000.

Sharpless, John, 4,615,649, Cl. 406-138.000.
Noreikat, Karl-Ernst: *See—*
  Haefner, Gunther; Bauer, Bernhard; Letsche, Ulrich; and Noreikat, Karl-Ernst, 4,615,321, Cl. 123-479.000.
Norsk Hydro a.s.: *See—*
  Knoll, Richard, 4,615,952, Cl. 428-650.000.
North American Filter Corporation: *See—*
  Tarala, Frederick E., 4,615,803, Cl. 210-455.000.
North American Manufacturing Company, The: *See—*
  Ko, Wen H.; and Yeh, Gong-Jong, 4,616,159, Cl. 315-307.000.
North American Philips Corporation: *See—*
  Bronnes, Robert L.; McKinlay, James K.; Sweet, Richard C.; and Zwicker, Walter K., 4,615,951, Cl. 428-615.000.
Northern Illinois Gas Company: *See—*
  Meyer, Walter, 4,616,193, Cl. 331-105.000.
Northrop Corporation: *See—*
  Anderson, Mark M., 4,615,577, Cl. 339-103.00M.
Norwalt Design, Inc.: *See—*
  McDonald, Walter; and Seitel, Norbert F., 4,615,428, Cl. 198-399.000.
Notestein, John E.: *See—*
  Goff, David R.; and Notestein, John E., 4,616,137, Cl. 250-554.000.
Novay, Paul L. Barge repair device. 4,615,641, Cl. 405-12.000.
NTN-Bower: *See—*
  Schilling, Leonhard G.; and Winters, John K., 4,615,627, Cl. 384-551.000.
Nucor Corporation: *See—*
  Murray, Thomas M., 4,615,157, Cl. 52-167.000.
Nurrenbach, Axel: *See—*
  Lechtken, Peter; Nurrenbach, Axel; Kohler, Walter; Hoppe, Peter P.; Tiefenbacher, Hubert; and Schole, Jurgen, 4,616,016, Cl. 514-249.000.
Nymark, Roald: *See—*
  Osthus, Harold; and Nymark, Roald, 4,615,273, Cl. 104-102.000.
Nypro Inc.: *See—*
  Paradis, Joseph R.; and Zurlo, Eugene J., 4,615,693, Cl. 604-122.000.
Obara, Takashi: *See—*
  Satoh, Susumu; Suzuki, Hideo; Obara, Takashi; Nishida, Minoru; and Hashimoto, Osamu, 4,615,749, Cl. 148-330.000.
Obayashi, Yoshiaki; and Mitsuoka, Shigeaki, to Mitsubishi Jukogyo Kabushiki Kaisha. Method for recovering denitrating catalyst. 4,615,991, Cl. 502-28.000.
Oboshi, Takamitsu; Koga, Tomoaki; and Imoto, Eiji, to Mitsui High-Tec, Inc. Progressive metal mold apparatus for production of laminated iron cores. 4,615,207, Cl. 72-404.000.
O'Brien, Errol C.; Placko, Martin; and Breneman, Wayne, to J-B Industrial Corp. Hydrocannon system for cleaning power plants. 4,615,487, Cl. 239-281.000.
Occelli, Mario L., to Gulf Research & Development Company. Dual function cracking catalyst (DFCC) composition. 4,615,996, Cl. 502-65.000.
Ochiai, Tsurunosuke. Wheel and tire for aircraft. 4,615,498, Cl. 244-103.00S.
Ochii, Kiyofumi; Yasuda, Hiroshi; and Masuoka, Fujio, to Kabushiki Kaisha Toshiba. Sense amplifier. 4,616,148, Cl. 307-530.000.
Ocondi, Cham: *See—*
  Lucas, Philip J.; Reese, Charles P.; and Ocondi, Cham, 4,615,390, Cl. 166-250.000.
Oda, Osamu; Onozuka, Arata; and Koyama, Akio, to Nihon Kogyo Kabushiki Kaisha. Vapor-deposited film of selenium as photoreceptor for electrophotography and process for producing the same. 4,615,964, Cl. 430-84.000.
O'Donnell, Sean F.: *See—*
  Rosewarne, Fenton; and O'Donnell, Sean F., 4,616,327, Cl. 364-518.000.
O'Dougherty, Harold S. Aquarium filter. 4,615,798, Cl. 210-169.000.
Oestreich, Ulrich, to Siemens Aktiengesellschaft. Apparatus comprising two concentrically disposed tube stores. 4,615,168, Cl. 57-7.000.
Ogawa, Junji, to Fujitsu Limited. Semiconductor memory device. 4,616,343, Cl. 365-203.000.
Ogawa, Katsumi: *See—*
  Ideno, Eiichiro; Tamiya, Masaru; Ogawa, Katsumi; and Kumakiri, Tadashi, 4,615,542, Cl. 285-11.000.
Ogawa, Koji: *See—*
  Yasuda, Yoshinori; Takase, Akio; Ogawa, Koji; Tsutsumi, Takao; and Taguchi, Hiroaki, 4,615,526, Cl. 273-183.00A.
Ogiso, Osamu; and Noda, Ippei, to Takemoto Yushi Kabushiki Kaisha. Lubricating agents for processing yarns and method of processing thermoplastic yarns therewith. 4,615,816, Cl. 252-8.900.
Ogura, Satoshi: *See—*
  Koike, Masahiro; Takahashi, Fuminobu; Ogura, Satoshi; and Koga, Kazunori, 4,615,217, Cl. 73-624.000.
Ohmori, Akira; Tomihashi, Nobuyuki; and Kitahara, Takahiro, to Daikin Kogyo Co., Ltd. Optical material. 4,615,584, Cl. 350-96.340.
Ohno, Akio; Murayama, Yasushi; Hirooka, Kazuhiko; and Hayashi, Kimiyoshi, to Canon Kabushiki Kaisha. Color image forming apparatus. 4,615,612, Cl. 355-14.00D.
Ohnuki, Tetsuo: *See—*
  Aiba, Shuichi; and Ohnuki, Tetsuo, 4,615,980, Cl. 435-317.000.
Ohotoshi, Sachio; and Hase, Fumio, to Asahi Glass Company Ltd.; and Seimi Chemical Company Ltd. Method for soldering an electrical product. 4,615,479, Cl. 228-180.100.
Ohuchi, Mituo: *See—*
  Morino, Taisuke; Hanatani, Sakio; and Ohuchi, Mituo, 4,615,405, Cl. 177-210.00C.
Okamura Corporation: *See—*
  Arase, Akira, 4,615,429, Cl. 198-456.000.
Okubo, Yuji, to Nippon Kogaku K. K. Exposure control apparatus of a camera. 4,615,601, Cl. 354-460.000.
Okumura, Kazuo: *See—*
  Teraji, Tsutomu; Shiokawa, Youichi; Okumura, Kazuo; and Sato, Yoshinari, 4,616,014, Cl. 514-242.000.
  Teraji, Tsutomu; Shiokawa, Youichi; Okumura, Kazuo; and Sato, Yoshinari, 4,616,015, Cl. 514-242.000.
Oleck, Stephen M.: *See—*
  Chen, Nai Y.; McCullen, Sharon B.; and Oleck, Stephen M., 4,615,997, Cl. 502-66.000.
Olin Corporation: *See—*
  Miles, Ronald C.; Justice, David D.; and Hilliard, Garland E., 4,615,777, Cl. 204-129.000.
Olmstead, Merle L.: *See—*
  Jewell, Michael B.; and Olmstead, Merle L., 4,616,295, Cl. 362-31.000.
Olsen, Richard S.; and Brown, Glenn C., to United States of America, Interior. Process for producing chlorine from ferric chloride. 4,615,874, Cl. 423-502.000.
Olson, Morris R., to Cargill Incorporated. Reduction of volatile organic emissions from polyester compositions. 4,616,054, Cl. 524-317.000.
Olympus Optical Co., Ltd.: *See—*
  Nagasaki, Tatsuo; and Fujimori, Hiroyoshi, 4,615,330, Cl. 128-4.000.
  Nakajima, Yukio; Higuchi, Tatsuji; and Asakura, Yasuo, 4,615,600, Cl. 354-451.000.
  Nishikawa, Masaji, 4,615,606, Cl. 355-3.0DD.
  Nishizawa, Jun-ichi; and Nakamura, Tsutomu, 4,616,249, Cl. 357-30.000.
  Taguchi, Akihiro, 4,615,333, Cl. 128-6.000.
Omata, Takashi, to Canon Kabushiki Kaisha. Projection exposure apparatus. 4,616,130, Cl. 250-201.000.
OMI International Corporation: *See—*
  Somers, Gerardus A.; Lovie, John R.; and Hendriks, Jan J. M., 4,615,774, Cl. 204-44.300.
Ona, Isao; Ozaki, Masaru; Fujii, Tadashi; and Taki, Yoichioro, to Toray Silicone Co., Ltd. Organopolysiloxane compounds containing sic-bonded alkoxysilylalkyl and polyoxyalkylene radicals. 4,616,076, Cl. 528-15.000.
One Design, Inc.: *See—*
  Maloney, Timothy J., 4,615,381, Cl. 165-48.200.
Onishi, Masaru; Saito, Masayuki; and Shimazaki, Yoshikazu, to Mitsubishi Denki Kabushiki Kaisha; and Fuji Kagakushi Kogyo Co., Ltd. Multi-gradation heat sensitive transfer medium. 4,615,932, Cl. 428-207.000.
Onishi, Masayuki: *See—*
  Saito, Kenji; Nakanishi, Kyoji; Nanba, Akihiko; Onishi, Masayuki; Yao, Minoru; Kato, Toshio; and Kojima, Shinji, 4,615,373, Cl. 164-125.000.
Ono, Kimizo; Nishiwaki, Yoshikazu; Tsuno, Koichi; Iwai, Toru; and Nishikawa, Mitsuru, to Sumitomo Electric Industries, Ltd. Device for monitoring the interior of a conduit. 4,616,258, Cl. 358-100.000.
Ono, Satoshi: *See—*
  Yanagawa, Hitoshi; Sugita, Yasutoshi; Ono, Satoshi; Maetani, Masami; and Tsunenari, Tomoo, 4,616,126, Cl. 235-375.000.
Onozuka, Arata: *See—*
  Oda, Osamu; Onozuka, Arata; and Koyama, Akio, 4,615,964, Cl. 430-84.000.
Oppitz, Hans, to ELTAC Nogler & Daum KG. Heating element. 4,616,125, Cl. 219-553.000.
Optical Disc Corporation: *See—*
  Wilkinson, Richard L.; and Dakin, Wayne R., 4,616,356, Cl. 369-116.000.
Ore-Ida Foods, Inc.: *See—*
  Fogerson, Richard D., 4,615,893, Cl. 426-481.000.
Orlandea, Nicolae V.: *See—*
  Wohlford, William P.; and Orlandea, Nicolae V., 4,615,567, Cl. 305-40.000.
Orlowski, Edward; and Walker, George D., to Programmed Composites, Inc. Process for forming composite article. 4,615,855, Cl. 264-221.000.
Ortho Pharmaceutical Corporation: *See—*
  Pasquale, Samuel A., 4,616,006, Cl. 514-170.000.
Ortolf, James M.: *See—*
  White, William J.; and Ortolf, James M., 4,615,573, Cl. 339-17.00M.
Osbourn, Gordon C.: *See—*
  Biefeld, Robert M.; Fritz, Ian J.; Gourley, Paul L.; and Osbourn, Gordon C., 4,616,241, Cl. 357-16.000.
Osgood, Richard M.: *See—*
  Ehrlich, Daniel J.; Deutsch, Thomas F.; Osgood, Richard M.; and Schlossberg, Howard, 4,615,904, Cl. 427-38.000.
Oshima, Masanori: *See—*
  Yamaguchi, Mamoru; and Oshima, Masanori, 4,616,108, Cl. 179-2.00E.
Oshima, Teruo: *See—*
  Yoshino, Hisashi; Haga, Masakatsu; Yorifuji, Takashi; and Oshima, Teruo, 4,615,846, Cl. 264-13.000.
Oster, Clark L., to Square D Company. Circuit breaker improvement to prevent setting of trip assembly. 4,616,199, Cl. 335-35.000.
Osthus, Harold; and Nymark, Roald, to Gerber Garment Technology, Inc. Conveyorized transport system. 4,615,273, Cl. 104-102.000.
Ostrander, William J., to Chevron Research Company. Method of attenuating sea ice flexure noise during seismic surveys of permafrost regions. 4,616,348, Cl. 367-21.000.

Ota, Masayuki. Apparatus for placing veneer pieces in edge-abutting relationship. 4,615,759, Cl. 156-558.000.
Otake, Kohei: *See—*
  Maruyama, Yuji; Otake, Kohei; and Kizaki, Hisao, 4,616,120, Cl. 219-10.55A.
Otsubo, Toru: *See—*
  Noguchi, Minori; Otsubo, Toru; and Aiuchi, Susumu, 4,615,620, Cl. 356-378.000.
Otsuka, Shinpei: *See—*
  Yamamura, Yukio; Otsuka, Shinpei; Imai, Takahiro; and Kakiyama, Kenji, 4,615,325, Cl. 124-7.000.
Otto Hansel GmbH: *See—*
  Hogenkamp, Wilhelm; and Schumann, Manfred, 4,615,164, Cl. 53-53.000.
  Vilchez, Jose ; Mergelsberg, Reinhard; Schluter, Jurgen; and Hagen, Harmut, 4,615,890, Cl. 426-297.000.
Ottow, Manfred, to Metallgesellschaft Aktiengesellschaft. Method of conveying particulate solids. 4,615,433, Cl. 198-766.000.
Oude Alink, Bernardus A.: *See—*
  Thompson, Neil E. S.; Redmore, Derek; Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,616,085, Cl. 544-335.000.
Outboard Marine Corporation: *See—*
  Hall, Charles B., 4,615,290, Cl. 114-150.000.
Outlaw, Benjamin T.: *See—*
  Thompson, Neil E. S.; Redmore, Derek; Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,616,085, Cl. 544-335.000.
Ovshinsky, Stanford R.; Allred, David D.; Walter, Lee; and Hudgens, Stephen J., to Sovonics Solar Systems, Inc. Method of depositing semiconductor films by free radical generation. 4,615,905, Cl. 427-39.000.
Owens-Corning Fiberglas Corporation: *See—*
  Brannon, Robert C.; Coleman, David A.; and Miller, David G., 4,616,062, Cl. 524-601.000.
  Dunn, Charles S.; and Varrasso, Eugene C., 4,615,720, Cl. 65-29.000.
  Evans, Michael E., 4,615,162, Cl. 52-409.000.
  Seng, Stephen, 4,615,718, Cl. 65-27.000.
Owens-Illinois, Inc.: *See—*
  Henderson, Henry N., 4,615,916, Cl. 427-255.000.
  Pauluk, Harry J.; and Zauner, Otto, 4,615,719, Cl. 65-29.000.
  Steffan, Leonard D.; and McCoy, Wilbur L., 4,615,722, Cl. 65-158.000.
Oxytechnik: *See—*
  Lehmler, Hansfriedrich; and Wilkens, Gunter, 4,615,510, Cl. 266-48.000.
Oy All-Plast Ab: *See—*
  Masalin, Heikki; Mannisto, Kalervo; and Saarinen, Eero, 4,615,053, Cl. 4-191.000.
Oza, Bharatkumar J.: *See—*
  Howe, Leland D., Jr.; Oza, Bharatkumar J.; and Roche, Thomas J., 4,616,335, Cl. 364-900.000.
Ozaki, Masaru: *See—*
  Ona, Isao; Ozaki, Masaru; Fujii, Tadashi; and Taki, Yoichioro, 4,616,076, Cl. 528-15.000.
Ozawa, Toshiaki: *See—*
  Ueda, Hiroyuki; Yamada, Yasuaki; Ozawa, Toshiaki; Nakajima, Hiroharu; and Kondo, Hiroatsu, 4,615,631, Cl. 400-705.100.
Pa Management Consultants, Ltd.: *See—*
  Pettigrew, Robert M.; Humberstone, Victor C.; and Gardner, Keith, 4,616,237, Cl. 346-135.100.
Pabst, Manfred: *See—*
  Gierse, Franz-Josef; Hermanns, Heinrich; Hermes, Werner; Lupnitz, Gerhard; Pabst, Manfred; and Schlicht, Heribert, 4,615,124, Cl. 34-82.000.
Pagano, Dominick A. Ultrasonic wheel probe with acoustic barrier. 4,615,218, Cl. 73-639.000.
Pagliaro, Robert H., Jr.: *See—*
  Jastrzebski, Lubomir L.; Corboy, John F., Jr.; Pagliaro, Robert H., Jr.; and Soydan, Ramazan, 4,615,762, Cl. 156-628.000.
Pallagi, Katalin: *See—*
  Ezer, Elemer; Harsanyi, Kalman; Domany, Gyorgy; Szporny, Laszlo ; Matuz, Judit; Hegedus, Bela; Pallagi, Katalin; Szabadkai, Istvan; and Tetenyi, Peter, 4,616,025, Cl. 514-342.000.
Palmer, Neil R.: *See—*
  Fixemer, James V.; Palmer, Neil R.; Wagner, Charles H.; and Winter, John M., 4,616,200, Cl. 335-35.000.
Panetti, Romolo, to Speno International S.A. Device for the in situ reprofiling of the head of at least one rail of a railroad track. 4,615,150, Cl. 51-178.000.
Panush, Sol; Gelmini, James M.; and Bradey, Nancy B., to Inmont Corporation. Primer produced opalescent coating. 4,615,940, Cl. 428-324.000.
Paolino, Paula A., to Uniroyal Chemical Company, Inc. Combination of phenolic antioxidant and stabilizer for use in organic material. 4,616,051, Cl. 524-102.000.
Paradis, Joseph R.; and Zurlo, Eugene J., to Nypro Inc. Administration of fluids. 4,615,693, Cl. 604-122.000.
Pardini, Franco P., to General Electric Company. Contact arrangement for a current limiting circuit breaker. 4,616,198, Cl. 335-16.000.
Park, George B.; Cook, John A.; and McLoughlin, Robert H., to Raychem Corporation. Protected metal components. 4,615,961, Cl. 429-218.000.
Parma International Inc.: *See—*
  Bartos, Stephen P., 4,615,686, Cl. 446-462.000.
Pasquale, Samuel A., to Ortho Pharmaceutical Corporation. Triphasic oral contraceptive. 4,616,006, Cl. 514-170.000.
Patt, William C.: *See—*
  Hamilton, Harriet W.; and Patt, William C., 4,616,003, Cl. 514-46.000.
Pauluk, Harry J.; and Zauner, Otto, to Owens-Illinois, Inc. Station indicator. 4,615,719, Cl. 65-29.000.
Pavie, Claude, to HBS. Sorting machine. 4,615,446, Cl. 209-583.000.
Peabody ABC Corporation: *See—*
  Ellison, James R., 4,615,934, Cl. 428-254.000.
Peacock, Wally E.; and Carew, Martin T. Portable skate sharpener. 4,615,144, Cl. 51-5.00D.
Peaster, Leroy K.: *See—*
  Jenkins, Cecil; Peaster, Leroy K.; and Brittain, John C., 4,615,508, Cl. 254-106.000.
Pecsok, Roger L., to Pennwalt Corporation. Foamable polyvinylidene fluoride and methods. 4,615,850, Cl. 264-45.900.
Peeters, Bradford D., to Priam Corporation. Disc servo with 1F-2F servo pattern. 4,616,275, Cl. 360-77.000.
Peiffer, Dennis G.: *See—*
  Sedillo, Lawrence P.; Newlove, John C.; Peiffer, Dennis G.; and Lundberg, Robert D., 4,615,393, Cl. 166-308.000.
Pelezo, James A.; Corbett, Garry E., Jr.; and Siems, Don R., to NL Industries, Inc. Liquid polymer containing compositions for thickening aqueous mediums. 4,615,740, Cl. 106-177.000.
Pelischek, Timothy E., to United States of America, National Aeronautics and Space Administration. Foldable self-erecting joint. 4,615,637, Cl. 403-85.000.
Pelzl, Gerhard: *See—*
  Demus, Dietrich; Zaschke, Horst; Pelzl, Gerhard; and Tschierske, Carsten, 4,615,824, Cl. 252-299.500.
Pengue, M. Louis, Jr., to TriQuint Semiconductor, Inc. Gallium arsenide differential amplifier with closed loop bias stabilization. 4,616,189, Cl. 330-253.000.
Pennwalt Corporation: *See—*
  Pecsok, Roger L., 4,615,850, Cl. 264-45.900.
Pentel Kabushiki Kaisha: *See—*
  Abe, Kiyomi; Kazama, Mitsuo; and Kobayashi, Hiroshi, 4,616,107, Cl. 178-18.000.
Pepper, Gwen: *See—*
  Jackson, Thomas N.; Pepper, Gwen; and Rutz, Richard F., 4,615,766, Cl. 156-662.000.
Perkin-Elmer Corporation, The: *See—*
  Ferber, Alan C.; and Chamran, Morteza M., deceased, 4,616,210, Cl. 340-347.0AD.
  Tracy, David H.; and Saviano, Paul G., 4,615,755, Cl. 156-345.000.
Perloe, Mark. Diagnostic urine culture apparatus and method of using same. 4,615,979, Cl. 435-287.000.
Perniciaro, Antonio: *See—*
  Gandolfi, Luciano; Grasso, Antonio; and Perniciaro, Antonio, 4,615,478, Cl. 228-123.000.
Perrin, Alain, to Societe Anonyme D.B.A. Braking corrector. 4,615,566, Cl. 303-6.00C.
Persson, Viggo, to Dansk Industri Syndikat A/S. Foundry plant and a manoeuvering apparatus for use in it. 4,615,374, Cl. 164-442.000.
Peschl, Ivan A. S. Z. System for measuring container weight in the field independent of wind load. 4,615,404, Cl. 177-132.000.
Peska, Jan: *See—*
  Loth, Frith; Dautzenberg, Horst; Stamberg, Jiri ; Peska, Jan; Bertram, Dieter; and Lettau, Herbert, 4,615,880, Cl. 424-15.000.
Peters, John W.: *See—*
  Scapple, Robert Y.; Peters, John W.; Linder, Jacques F.; and Yee, Edward M., 4,615,294, Cl. 118-50.100.
Peters Machinery Company: *See—*
  Rose, Edward, 4,615,264, Cl. 99-450.400.
Peters, Michael A.; and Mewitz, Gerd, to General Electric Company. Storage of digitized video images on disk. 4,616,319, Cl. 364-414.000.
Peters, Steven W.: *See—*
  Grove, Robert B.; Peters, Steven W.; and Tellalian, Martin L., 4,615,458, Cl. 220-222.000.
Petersen, Cheryl P.: *See—*
  Borror, Alan L.; Chinoporos, Efthimios; and Petersen, Cheryl P., 4,615,966, Cl. 430-221.000.
Peterson, Edward C.: *See—*
  Martin, William J.; Carr, Keith E.; and Peterson, Edward C., 4,615,068, Cl. 15-323.000.
Peterson, Thomas W.: *See—*
  Edwards, Jeffrey A.; and Peterson, Thomas W., 4,615,101, Cl. 29-568.000.
Petrillo, Edward W., Jr.: *See—*
  Karanewsky, Donald S.; and Petrillo, Edward W., Jr., 4,616,005, Cl. 514-80.000.
  Ryono, Denis E.; and Petrillo, Edward W., Jr., 4,616,088, Cl. 546-336.000.
Petrolite Corporation: *See—*
  Thompson, Neil E. S.; Redmore, Derek; Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,616,085, Cl. 544-335.000.
Petrosky, Joseph A.: *See—*
  Andersen, John E.; Petrosky, Joseph A.; Messina, Benedicto U.; and Silkman, William D., 4,616,341, Cl. 365-189.000.
Pett, Robert A.: *See—*
  Theodore, Ares N.; and Pett, Robert A., 4,615,851, Cl. 264-63.000.
Pettigrew, Robert M.; Humberstone, Victor C.; and Gardner, Keith, to Pa Management Consultants, Ltd. Data storage medium. 4,616,237, Cl. 346-135.100.
Peyman, Gholam A.: *See—*
  Koziol, Jeffrey E.; and Peyman, Gholam A., 4,615,702, Cl. 623-6.000.

Pezold, Ralph W. Accordion type hose holder. 4,615,501, Cl. 248-75.000.
Pfizer Inc.: *See—*
  Campbell, Simon F.; Cross, Peter E.; and Stubbs, John K., 4,616,024, Cl. 514-340.000.
  Richardson, Kenneth; and Whittle, Peter J., 4,616,026, Cl. 514-381.000.
  Richardson, Kenneth; and Whittle, Peter J., 4,616,027, Cl. 514-383.000.
Phillips Petroleum Company: *See—*
  Bobsein, Rex L., 4,615,836, Cl. 260-399.000.
  Boeke, Paul J.; and Leland, John E., 4,615,907, Cl. 427-53.100.
Pierburg GmbH & Co. KG: *See—*
  Marusiak, Wojciech; and Sommer, Wolfgang, 4,615,482, Cl. 236-48.00R.
Pierce, William C., to Lear Siegler, Inc. Suspension for automotive vehicles. 4,615,539, Cl. 280-690.000.
Piezo Electric Products, Inc.: *See—*
  Kolm, Henry H.; and Carter, Robert E., 4,615,211, Cl. 73-146.200.
Pill, Johannes: *See—*
  Witte, Ernst-Christian; Wolff, Hans P.; Hagenbruch, Bernd; Stegmeir, Karlheinz; and Pill, Johannes, 4,616,086, Cl. 544-383.000.
Piller, Mary F.: *See—*
  Robertson, David B.; Wagh, Stephen A.; Piller, Mary F.; Crehan, Donald T.; and Lovell, Charles J., 4,616,336, Cl. 364-900.000.
Ping, Steven W., to Kaiser Aluminum & Chemical Corporation. Isostatic compression technique for powder metallurgy. 4,615,735, Cl. 75-249.000.
Pinson, George T., to Boeing Company, The. Hybrid semi-strapdown infrared seeker. 4,615,496, Cl. 244-3.160.
Pioneer Electronic Corp.: *See—*
  Naito, Akihiko, 4,616,214, Cl. 340-533.000.
  Yasukawa, Kenichiro; Hirano, Toshio; Yoshida, Masayuki; and Yoshio, Junichi, 4,616,271, Cl. 360-32.000.
Pioneer Fishing and Rental Tools, Inc.: *See—*
  Schoeffler, William N., 4,615,399, Cl. 175-38.000.
Pioneer Magnetics, Inc.: *See—*
  Mandelcorn, Josh, 4,616,302, Cl. 363-50.000.
Pitney Bowes Inc.: *See—*
  Holodnak, Richard S.; and Hooper, Clinton E., 4,615,519, Cl. 271-122.000.
Placko, Martin: *See—*
  O'Brien, Errol C.; Placko, Martin; and Breneman, Wayne, 4,615,487, Cl. 239-281.000.
Plant Genetics, Inc.: *See—*
  Nelsen, Charles E.; and Mannion, Catharine, 4,615,883, Cl. 424-84.000.
PLM AB: *See—*
  Nilsson, Claes T., 4,615,925, Cl. 428-35.000.
Plough, Harold G. Therapeutic finger exercise devices. 4,615,522, Cl. 272-67.000.
Polaroid Corporation: *See—*
  Borror, Alan L.; Chinoporos, Efthimios; and Petersen, Cheryl P., 4,615,966, Cl. 430-221.000.
Pollich, Gerhard: *See—*
  Jeschke, Willi; and Pollich, Gerhard, 4,615,520, Cl. 271-227.000.
Pollmann, Siegfried; and Grethe, Klaus, to L. & C. Steinmuller GmbH. Method of binding vanadium compounds. 4,615,284, Cl. 110-343.000.
Polytel Corporation: *See—*
  Danish, Sherif, 4,616,213, Cl. 340-365.00C.
Ponticello, Gerald S.: *See—*
  Baldwin, John J.; and Ponticello, Gerald S., 4,616,017, Cl. 514-252.000.
Poorman, Paul W., to Hewlett Packard Company. Electrical connections for thin film transducer heads. 4,616,279, Cl. 360-103.000.
Porcham, Wolfgang, to D. Swarovski & Co. Process for producing silicon tetrafluoride. 4,615,872, Cl. 423-341.000.
Poser, Claudia I.: *See—*
  Krueger, Dennis L.; Loeding, Neil W.; and Poser, Claudia I., 4,615,848, Cl. 264-22.000.
Potyka, Dieter, to U.S. Philips Corporation. Coordinate switch. 4,616,115, Cl. 200-153.00T.
Powell, John G., to Southern California Edison Company, Inc. Method of sealing between relatively movable components. 4,615,530, Cl. 277-1.000.
Powell, Joseph L. Document sending system. 4,615,480, Cl. 229-71.000.
Power, Daniel J. Input keyboard. 4,615,629, Cl. 400-486.000.
PPG Industries, Inc.: *See—*
  McCollum, Gregory J.; Scriven, Roger L.; Christenson, Roger M.; Mauer, George W.; and Zwack, Robert R., 4,615,779, Cl. 204-181.700.
  Neubauer, Jeffrey A.; Reese, Walter J.; and Spencer, Dennis O., 4,615,717, Cl. 65-4.400.
  Temple, Chester S., 4,615,946, Cl. 428-361.000.
  Thompson, Ralph B.; and Sienkowski, Kenneth J., 4,616,049, Cl. 523-212.000.
Pratt, George C.; and Montpetit, Michael C., to Federal-Mogul Corporation. Method of making a PTFE based tape suitable for impregnation into a porous metal matrix. 4,615,854, Cl. 264-127.000.
Praught, Ronald B.; and Wilkowski, Matthew A., to AT&T Bell Laboratories. Preformed multiple turn transformer winding. 4,616,205, Cl. 336-82.000.
Pravon, Juri E.: *See—*
  Kiisler, Karl R.; Kristianson, Peep G.; Sjuld, Tiya-Maya F.; Kaps, Tiit K.; Riistop, Myart A.; Rokk, Juri K.; Matvere, Toomas O.; Pravon, Juri E.; and Evert, Ilmar M., 4,615,737, Cl. 106-12.000.
Predein, Alexandr P.: *See—*
  Ilizarov, Gavriil A.; Predein, Alexandr P.; and Bykov, Vyacheslav M., 4,615,338, Cl. 128-92.00A.
Priam Corporation: *See—*
  Peeters, Bradford D., 4,616,275, Cl. 360-77.000.
Price, Humphrey W.; and Wood, Robert P., to Katz, Stephen A. Insulated container for a fluid receptacle. 4,615,463, Cl. 220-412.000.
Pritchard, Dalton H.; and Sepp, Walter E., to RCA Corporation. Progressive scan television system employing a comb filter. 4,616,251, Cl. 358-11.000.
Procter & Gamble Co., The: *See—*
  Hunter, John E.; and Ehrman, Albert M., 4,615,899, Cl. 426-589.000.
  Siklosi, Michael P., 4,615,821, Cl. 252-174.250.
Proffitt, Richard V., to Scovill Inc. Battery-powered appliance. 4,616,169, Cl. 320-2.000.
Programmed Composites, Inc.: *See—*
  Orlowski, Edward; and Walker, George D., 4,615,855, Cl. 264-221.000.
Projiso: *See—*
  Lafata, Ange, 4,615,489, Cl. 241-4.000.
Protoned B.V.: *See—*
  Walter, Herbert, 4,615,447, Cl. 211-4.000.
Pruett, Frank D.; and Sabins, Floyd F., Jr., to Chevron Research Company. High resolution geologic sample scanning apparatus and process of scanning geologic samples. 4,616,134, Cl. 250-255.000.
Pryjmak, Bohdan I., to General Motors Corporation. Armature with quiet core construction. 4,616,151, Cl. 310-216.000.
Pshtissky, Yacov A., to Vicon Industries, Inc. Auto focus system. 4,616,264, Cl. 358-227.000.
Pulido, Robert J. Clip for anodizing bath and method of using the clip. 4,615,785, Cl. 204-297.00W.
Pumo, Joseph, to Motorola, Inc. Programmable edge defined output buffer. 4,616,147, Cl. 307-481.000.
Puppala, Janaki R., to J. I. Case Company. Control linkage. 4,615,232, Cl. 74-473.00R.
Purcell, Robert H.; and Feinstone, Stephen M., to United States of America, Health & Human Services. Utilizing a halohydrocarbon containing dissolved water to inactivate a lipid virus. 4,615,886, Cl. 424-101.000.
Purdue Research Foundation: *See—*
  Janick, Jules; and Kitto, Sherry L., 4,615,141, Cl. 47-57.600.
Purex Corporation: *See—*
  Winetzky, Deborah, 4,615,814, Cl. 252-8.600.
Puroflow Corporation: *See—*
  Breece, Lee K., 4,616,286, Cl. 361-56.000.
Purser, Kenneth H.: *See—*
  Naylor, Harry; and Purser, Kenneth H., 4,616,157, Cl. 315-111.010.
Quintero, Nicolas G. B.: *See—*
  Garcia, Gervasio B.; Valdesuso, Eduardo E.; and Quintero, Nicolas G. B., 4,615,355, Cl. 137-383.000.
R.E. Tyre & Rubber Co., Ltd.: *See—*
  Wilson, Michael F., 4,615,416, Cl. 188-32.000.
R. F. Monolithics, Inc.: *See—*
  Wright, Peter V., 4,616,197, Cl. 333-194.000.
Racicot, Gerald. Snowplow mounted on longitudinal frame attachable to chassis. 4,615,130, Cl. 37-231.000.
Radigan, Richard J.: *See—*
  Hung, Paul L. K.; Radigan, Richard J.; and Rosen, David S., 4,615,950, Cl. 428-461.000.
Radmanovich, Theodore J. Energy efficient aerated bait container. 4,615,137, Cl. 43-57.000.
Radomski, Thomas A., to General Motors Corporation. Speed selection control for vehicle mounted electric accessory motor. 4,616,162, Cl. 318-317.000.
Ragland, Frank R., Jr., to RCA Corporation. Forming a shadow mask from a flat blank. 4,615,205, Cl. 72-347.000.
Rahim, Chowdhury F., to AT&T Bell Laboratories. Voltage generator for telecommunication amplifier. 4,616,172, Cl. 323-313.000.
Raines, Kenneth C., to Burron Medical Inc. Vented cone filter. 4,615,694, Cl. 604-126.000.
Rathbun, Clifford D. Archery bow attachment. 4,615,326, Cl. 124-88.000.
Rathmell, Richard K., to Wolverine Corporation. Incinerator system. 4,615,674, Cl. 431-215.000.
Raychem Corporation: *See—*
  Chan, Chi M.; and Tanous, Adam C., 4,616,056, Cl. 524-392.000.
  Park, George B.; Cook, John A.; and McLoughlin, Robert H., 4,615,961, Cl. 429-218.000.
  Stadler, Edwin B.; and Vidakovits, Lajos J., 4,615,578, Cl. 339-143.00R.
  Zukosky, Mimzee; and Dieck, Ronald L., 4,616,064, Cl. 525-92.000.
Raytheon Company: *See—*
  Galani, Zvi; and Campbell, Richard A., 4,616,191, Cl. 331-4.000.
RCA Corporation: *See—*
  Harwood, Leopold A.; and Law, Kirk A., 4,616,254, Cl. 358-31.000.
  Jastrzebski, Lubomir L.; Corboy, John F., Jr.; Pagliaro, Robert H., Jr.; and Soydan, Ramazan, 4,615,762, Cl. 156-628.000.
  Lyden, Thomas B., 4,616,265, Cl. 358-248.000.
  Pritchard, Dalton H.; and Sepp, Walter E., 4,616,251, Cl. 358-11.000.
  Ragland, Frank R., Jr., 4,615,205, Cl. 72-347.000.
  Sandercock, John R., 4,615,504, Cl. 248-550.000.
  Schiff, Leonard N., 4,616,252, Cl. 358-23.000.
  Schiff, Leonard N., 4,616,362, Cl. 371-5.000.

  Sharma, Arvind K., 4,616,196, Cl. 333-161.000.
Rebhan, Horst, to Frankenwald-Presserei Horst Rebhan. Suspension device for a container having a cap. 4,615,451, Cl. 215-100.00A.
Recker, Richard D.: *See—*
  Tisbo, Cosmo N.; Tisbo, Thomas A.; Recker, Richard D.; and Heggeland, Bruce, 4,615,636, Cl. 403-8.000.
Redken Laboratories, Inc.: *See—*
  Matsuoka, Kyusuke, 4,615,047, Cl. 2-50.000.
Redmore, Derek: *See—*
  Thompson, Neil E. S.; Redmore, Derek; Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,616,085, Cl. 544-335.000.
Reed, David A.: *See—*
  Leng, Francis J.; Machin, David; Reed, David A.; and Erkey, Ozalp, 4,615,819, Cl. 252-110.000.
Reedy, Irving. Electrical power transmission system with broken conductor guard. 4,616,287, Cl. 361-107.000.
Reese, Charles P.: *See—*
  Lucas, Philip J.; Reese, Charles P.; and Ocondi, Cham, 4,615,390, Cl. 166-250.000.
Reese, Walter J.: *See—*
  Neubauer, Jeffrey A.; Reese, Walter J.; and Spencer, Dennis O., 4,615,717, Cl. 65-4.400.
Reeves, Irvin H. Burglar bars. 4,615,142, Cl. 49-55.000.
Rehlen, Helmut: *See—*
  Breitscheidel, Hans-Ulrich; Lorry, Cosmas; Rehlen, Helmut; and Roellinghoff, Jurgen, 4,615,411, Cl. 181-224.000.
Rehm, Hans; and Donig, Gunter, to Siemens Aktiengesellschaft. Switching matrix network. 4,616,358, Cl. 370-58.000.
Reichart, Michael: *See—*
  Muller, Jurgen; Krobel, Heinz; Reichart, Michael; and Schindlbeck, Gunther, 4,615,596, Cl. 354-76.000.
Reichert, William W.; Cody, Charles A.; De Sesa, Michael A.; and Faulseit, Bruce K., to NL Industries, Inc. Coating composition and process for protecting a surface from corrosion. 4,615,918, Cl. 427-385.500.
Reifenhauser GmbH & Co. Maschinenfabrik: *See—*
  Steinberg, Klaus, 4,615,666, Cl. 425-72.00R.
Reiffen, Manfred; Heider, Joachim; Austel, Volkhard; Hauel, Norbert; Kobinger, Walter; and Lillie, Christian, to Dr. Karl Thomae GmbH. Novel indole derivatives and pharmaceutical compositions containing same. 4,616,011, Cl. 514-221.000.
Reiffen, Manfred: *See—*
  Hauel, Norbert; Austel, Volkhard; Heider, Joachim; Reiffen, Manfred; Diederen, Willi; and Haarman, Walter, 4,616,018, Cl. 514-254.000.
Reighard, Robert P., to Sheller-Globe Corporation. Multifunction steering wheel. 4,616,224, Cl. 340-825.690.
Rein, Arnold R.: *See—*
  Newsome, David L.; and Rein, Arnold R., 4,615,922, Cl. 428-35.000.
Reinecke, Paul: *See—*
  Weissmuller, Joachim; Kramer, Wolfgang; Berg, Dieter; Reinecke, Paul; Brandes, Wilhelm; Hanssler, Gerd; and Lurssen, Klaus, 4,615,725, Cl. 71-88.000.
Reiner, Roland: *See—*
  Deibig, Heinrich; Reiner, Roland; and Welle, Hendricus B. A., 4,615,881, Cl. 424-78.000.
Reinertz, Rudolf, to Grote & Hartmann GmbH & Co. Crimping process and crimping apparatus for carrying out the process. 4,615,100, Cl. 29-564.800.
Reip, Raymond G., to Vapor Corporation. Modulating pressure operated pilot relief valve. 4,615,356, Cl. 137-488.000.
Reiter, Norbert; and Tack, Hans, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Tool assembly having a replaceable tool head. 4,615,244, Cl. 82-36.00B.
Reits, Bernard J., to Hollandse Signaalapparaten B.V. Side-lobe blanking circuit. 4,616,232, Cl. 342-379.000.
Remond, Georges: *See—*
  Vincent, Michel; Remond, Georges; and Laubie, Michel, 4,616,029, Cl. 514-412.000.
  Vincent, Michel; Remond, Georges; and Laubie, Michel, 4,616,030, Cl. 514-412.000.
  Vincent, Michel; Remond, Georges; and Laubie, Michel, 4,616,031, Cl. 514-412.000.
Remy, David C.; and Young, Steven D., to Merck & Co., Inc. Pharmaceutical compositions of 4-(dibenzo-[a,d]cycloalkenyl)piperazine compounds and methods. 4,616,023, Cl. 514-325.000.
Renals, Martin: *See—*
  Ball, Patrick J. R.; Baker, Geoffrey; and Renals, Martin, 4,616,136, Cl. 250-338.000.
Renault Vehicules Industriels: *See—*
  Dazzi, Jean-Louis, 4,615,322, Cl. 123-506.000.
Renoult, Patrick; and Marotel, Gerard, to Compagnie d'Electronique et de Piezo-Electricite C.E.P.E. Piezoelectric oscillator with crystal filter and temperature compensation. 4,616,194, Cl. 331-116.00R.
Rheinisch-Westfalischer Technischer Uberwachungsverein E.V.: *See—*
  Vykoupil, Peter, 4,615,216, Cl. 73-593.000.
Rhodes, Edward: *See—*
  Wynnyckyj, John R.; Rhodes, Edward; and Marr, Robert, 4,615,302, Cl. 122-379.000.
Rhone-Poulenc Films: *See—*
  Corsi, Philippe; and Eyraud, Marcel, 4,615,939, Cl. 428-323.000.
Rhone-Poulenc Sante: *See—*
  Mignani, Gerard; and Morel, Didier, 4,615,838, Cl. 260-410.90R.
Rice, J. L.: *See—*
  Carter, Jack O., 4,615,255, Cl. 86-27.000.
Richard, Dennis J., to General Motors Corporation. Method of sealing a hydraulic power steering gear and rotary valve therefor. 4,615,092, Cl. 29-159.200.
Richard Wolf GmbH: *See—*
  Buess, Gerd; Hiltebrandt, Siegfried; and Boebel, Manfred, 4,615,332, Cl. 128-6.000.
Richardson, David A.: *See—*
  Robinson, Robert J.; and Richardson, David A., 4,616,332, Cl. 364-814.000.
Richardson, Kenneth; and Whittle, Peter J., to Pfizer Inc. Antifungal 2-aryl-1,1-difluoro-3-(1H-1,2,4-triazol-1-yl)2-propanols. 4,616,026, Cl. 514-381.000.
Richardson, Kenneth; and Whittle, Peter J., to Pfizer Inc. Antifungal 1-aryl-1-fluoroalkyl-2-(1H-1,2,4-triazol-1-yl)ethanols. 4,616,027, Cl. 514-383.000.
Richon, Dominique; and de Pous, Olivier, to Battelle Memorial Institute. Silicon nitride sintered bodies and a method for their production. 4,615,990, Cl. 501-92.000.
Richter Gedeon Vegyeszeti Gyar RT: *See—*
  Ezer, Elemer; Harsanyi, Kalman; Domany, Gyorgy; Szporny, Laszlo; Matuz, Judit; Hegedus, Bela; Pallagi, Katalin; Szabadkai, Istvan; and Tetenyi, Peter, 4,616,025, Cl. 514-342.000.
Ricoh Company, Ltd.: *See—*
  Inaba, Norihiko; Sakamoto, Hiroshi; and Motosugi, Takanori, 4,616,240, Cl. 346-208.000.
  Mayer, Edward F., 4,615,580, Cl. 350-96.200.
  Yanagawa, Nobuyuki; Koike, Tadao; Ishikawa, Toyoji; Sakai, Katsuo; and Furuta, Hideya, 4,615,607, Cl. 355-3.00R.
Ricoh Systems, Inc.: *See—*
  Mayer, Edward F., 4,615,580, Cl. 350-96.200.
Riepling, Ulrich: *See—*
  Wcislo, Manfred; Breitenbach, Otto; Schatz, Friedrich; and Riepling, Ulrich, 4,615,109, Cl. 29-732.000.
Rieter Machine Works Limited: *See—*
  Wurmli, Arthur, 4,615,169, Cl. 57-270.000.
Riistop, Myart A.: *See—*
  Kiisler, Karl R.; Kristianson, Peep G.; Sjuld, Tiya-Maya F.; Kaps, Tiit K.; Riistop, Myart A.; Rokk, Juri K.; Matvere, Toomas O.; Pravon, Juri E.; and Evert, Ilmar M., 4,615,737, Cl. 106-12.000.
Ringrose, Anthony, to Battelle Memorial Institute. Cigarette with automatic ventilation valve. 4,615,344, Cl. 131-198.200.
Ritze, Willy, to Schott Glaswerke. Optical quality colored glass. 4,615,989, Cl. 501-44.000.
Rixen, Edgar: *See—*
  Flammann, Norbert; and Rixen, Edgar, 4,615,250, Cl. 83-399.000.
Robert Bosch GmbH: *See—*
  Bofinger, Gunter; and Maier, Claus, 4,615,317, Cl. 123-373.000.
  Fehrenbach, Siegfried; Herbst, Kurt; Schulz, Wolfgang; and Utz, Eberhard, 4,615,320, Cl. 123-467.000.
  LeBlanc, Jean; and Rossignol, Francois, 4,615,323, Cl. 123-509.000.
Robert Finke Kommanditgesellschaft: *See—*
  Finke, Robert-Gunter; Schumacher, Clemens; Kolb, Albert; Lautenschlager, Horst; and Konetzka, Jurgen, 4,615,437, Cl. 206-222.000.
Robert Krups Stiftung & Co. KG: *See—*
  Flammann, Norbert; and Rixen, Edgar, 4,615,250, Cl. 83-399.000.
Roberts, Jeffrey S., to Harvest Tec, Inc. Process for applying liquid chemical drying agents to hay using a 3-bar assembly. 4,615,139, Cl. 47-1.700.
Robertson, David B.; Wagh, Stephen A.; Piller, Mary F.; Crehan, Donald T.; and Lovell, Charles J., to International Business Machines Corp. Independent image and annotation overlay with highlighting of overlay conflicts. 4,616,336, Cl. 364-900.000.
Robinson, Arnie. Security cover for truck beds. 4,615,557, Cl. 296-100.000.
Robinson, Joseph R., to Bio-Mimetics, Inc. Bioadhesive compositions and methods of treatment therewith. 4,615,697, Cl. 604-890.000.
Robinson, McDonald: *See—*
  Chang, Gee-Kung; Hartman, Adrian R.; and Robinson, McDonald, 4,616,247, Cl. 357-30.000.
Robinson, Robert J.; and Richardson, David A., to Foxboro Company, The. Apparatus for converting analog-format signals to pulse-format signals. 4,616,332, Cl. 364-814.000.
Robinson, Tibor, to Sandoz Ltd. Process for improving fastness of sulphur dyeing on hydroxy group containing fibers. 4,615,707, Cl. 8-496.000.
Roche, Thomas J.: *See—*
  Howe, Leland D., Jr.; Oza, Bharatkumar J.; and Roche, Thomas J., 4,616,335, Cl. 364-900.000.
Roche, William J.; and Anderson, John W., Jr., to GTE Products Corporation. Tri-model type circuit breaker and rapid-start fluorescent lamp. 4,616,156, Cl. 315-107.000.
Rockefeller University, The: *See—*
  Lizardi, Paul; and Nogueira, Nadia, 4,615,973, Cl. 435-68.000.
Rockwood, Clyde R.: *See—*
  Waugh, Robert E.; Nannig, Urban R.; and Rockwood, Clyde R., 4,615,754, Cl. 156-242.000.
Rodgers, Ian W.: *See—*
  Ross, Peter F.; Rodgers, Ian W.; and Goodings, Rupert L. A., 4,616,211, Cl. 340-347.0DD.
Rodgers, James L.: *See—*
  Fowler, Billy C.; Headley, Alan R.; and Rodgers, James L., 4,616,106, Cl. 178-18.000.
Rodriguez-Fernandez, Hector M.; and Rodriguez-Tovar, Santiago, to Vitro Tec Fideicomiso. Intelligent controller for predicting and automatically compensating for variations in cycle time, in machines

for forming articles of glass or other materials. 4,615,723, Cl. 65-163.000.

Rodriguez-Tovar, Santiago: *See—*
Rodriguez-Fernandez, Hector M.; and Rodriguez-Tovar, Santiago, 4,615,723, Cl. 65-163.000.

Roellinghoff, Jurgen: *See—*
Breitscheidel, Hans-Ulrich; Lorry, Cosmas; Rehlen, Helmut; and Roellinghoff, Jurgen, 4,615,411, Cl. 181-224.000.

Rogers Corporation: *See—*
Traut, G. Robert, 4,615,859, Cl. 264-570.000.
Traut, G. Robert, 4,615,933, Cl. 428-252.000.

Roggeman, David M.: *See—*
De Trano, Mario N.; Hergenrother, William L.; Maglio, Ralph A.; and Roggeman, David M., 4,616,048, Cl. 523-166.000.

Rokk, Juri K.: *See—*
Kiisler, Karl R.; Kristianson, Peep G.; Sjuld, Tiya-Maya F.; Kaps, Tiit K.; Riistop, Myart A.; Rokk, Juri K.; Matvere, Toomas O.; Pravon, Juri E.; and Evert, Ilmar M., 4,615,737, Cl. 106-12.000.

Rolen, Carl R. Box girder and suspension assembly. 4,615,063, Cl. 14-18.000.

Romania, Samuel R.: *See—*
Smith, Grant M.; Romania, Samuel R.; and Tamarkin, Vladimir M., 4,615,224, Cl. 73-863.330.

Rommel, Reiner. Wiring tool for wiring electric, multipin plug connectors, connector strips or the like, using clamping cutter techniques. 4,615,111, Cl. 29-749.000.

Rommen, Hans: *See—*
Stoy, Erich; and Rommen, Hans, 4,615,202, Cl. 72-245.000.

Ronafoldi, Arnold; Ferencsik, Jozsef; Doknas, Janos; and Torok, Laszlo , to Nikex Nehezipari Kulkereskedelmi Vallalat. Electromagnetic metal melt pump for pumping out and charging the molten metal from a furnace. 4,615,660, Cl. 417-50.000.

Roos, Scott L.: *See—*
Westgaard, Donald J.; and Roos, Scott L., 4,616,296, Cl. 362-33.000.

Rose, Edward, to Peters Machinery Company. Filler diverting valve mechanism. 4,615,264, Cl. 99-450.400.

Rose, Gene D.: *See—*
Teot, Arthur S.; Rose, Gene D.; and Stevens, Gregory A., 4,615,825, Cl. 252-356.000.

Rose, William H.: *See—*
Galloway, Michael D.; Rose, William H.; and Shaffer, David T., 4,616,112, Cl. 200-5.00R.

Rosemount Inc.: *See—*
Hagan, Floyd W., 4,615,213, Cl. 73-180.000.

Rosen, David S.: *See—*
Hung, Paul L. K.; Radigan, Richard J.; and Rosen, David S., 4,615,950, Cl. 428-461.000.

Rosenberg, Isadore; Terisse, Patrick R.; and Castro, Valentin, to Figgie International Inc. Helmet shell assembly and method and apparatus for making. 4,615,438, Cl. 206-223.000.

Rosewarne, Fenton; and O'Donnell, Sean F., to Computer Humor Systems, Pty, Ltd. Personalized graphics and text materials, apparatus and method for producing the same. 4,616,327, Cl. 364-518.000.

Roshdy, Constance E.: *See—*
Alpern, Marvin; Cerwin, Robert J.; and Roshdy, Constance E., 4,615,435, Cl. 206-63.300.

Rosier, Hendrik E., to Huck Manufacturing Company. Offset tool and cartridge nose assembly. 4,615,206, Cl. 72-391.000.

Rosier, Kenneth M.: *See—*
Thornton, Max C., Jr.; Kuntz, Paul; Meyer, Russell L.; and Rosier, Kenneth M., 4,616,178, Cl. 324-158.00F.

Ross, Peter F.; Rodgers, Ian W.; and Goodings, Rupert L. A., to Crosfield Electronics Limited. Detecting codewords. 4,616,211, Cl. 340-347.0DD.

Rossignol, Francois: *See—*
LeBlanc, Jean; and Rossignol, Francois, 4,615,323, Cl. 123-509.000.

Rossler, Jurgen; Dresig, Hans; Hertzsch, Manfred; Forster, Gunther; and Eckelmann, Franz-Christian, to VEB Kombinat Textima. Cam gear for textile machines, especially for pattern controlling of chain stitching machines. 4,615,186, Cl. 66-57.000.

Roth, Anton: *See—*
Kugler, Artur; and Roth, Anton, 4,615,212, Cl. 73-162.000.

Rottmann, Maximilian R.: *See—*
Tews, Uwe; and Rottmann, Maximilian R., 4,615,093, Cl. 29-407.000.

Rousset, Andre ; and Tardy, Maurice. Spring return system for a component able to move reciprocally. 4,615,507, Cl. 251-337.000.

Rowley, Terence W.: *See—*
Nesbitt, Norman R. S.; Skeels, Edwin; Laker, Robert W.; Rowley, Terence W.; and Judge, Michael E., 4,616,217, Cl. 340-747.000.

Roy, Siegfried S. Injection blow molding. 4,615,667, Cl. 425-135.000.

Royal Ordnance plc: *See—*
Hutchinson, Christopher D., 4,615,271, Cl. 102-318.000.

Rudman, Louis. Apparatus for control of a vehicle air conditioner. 4,615,180, Cl. 62-133.000.

Rudman, Max: *See—*
Grant, Rixwell S., 4,615,056, Cl. 4-366.000.

Ruegg, Richard J., to Frito-Lay, Inc. C-shell die assembly and method of using same. 4,615,894, Cl. 426-516.000.

Ruffner, Charles G., to Alco Chemical Corporation. Acrylic-methylene succinic ester emulsion copolymers for thickening aqueous systems. 4,616,074, Cl. 526-318.000.

Ruhrchemie Aktiengesellschaft: *See—*
Cornils, Boy; Bahrmann, Helmut; Lipps, Wolfgang; and Konkol, Werner, 4,616,096, Cl. 568-454.000.

Runge, Harry V., to Fluorocarbon Technologies, Inc. Surface penetrating fluoropolymer lubricant. 4,615,917, Cl. 427-385.500.

Runge, Val M.; and Clanton, Jeffrey A., to Vanderbilt University. Particulate NMR contrast agents for gastrointestinal application. 4,615,879, Cl. 424-9.000.

Rupprecht, Bernd: *See—*
Schneider, Wilhelm; Jobke, Norbert; and Rupprecht, Bernd, 4,615,417, Cl. 188-72.800.

Rutz, Richard F.: *See—*
Jackson, Thomas N.; Pepper, Gwen; and Rutz, Richard F., 4,615,766, Cl. 156-662.000.

Ryan Plastics Ireland Limited: *See—*
Fritsch, Joseph F., 4,616,284, Cl. 360-128.000.

Ryono, Denis E.; and Petrillo, Edward W., Jr., to E. R. Squibb & Sons, Inc. Amino acid ester and amide renin inhibitor. 4,616,088, Cl. 546-336.000.

S. C. Johnson & Son, Inc.: *See—*
Konicek, Tim R., 4,615,486, Cl. 239-274.000.

S. Franzen Sohne (GmbH & Co.): *See—*
Duringer, Rudi, 4,615,194, Cl. 70-312.000.

S.I.G.M.A. - Societa Idraulica Generale Macchine Accessori: *See—*
Bianchi, Costanzo, 4,615,354, Cl. 137-110.000.

Saarinen, Eero: *See—*
Masalin, Heikki; Mannisto, Kalervo; and Saarinen, Eero, 4,615,053, Cl. 4-191.000.

Sabins, Floyd F., Jr.: *See—*
Pruett, Frank D.; and Sabins, Floyd F., Jr., 4,616,134, Cl. 250-255.000.

Sacherer, Klaus D.; Weiss, Erich; Koehn, Jochen; and Brach, Ulrich, to Zeller Plastik, Koehn Grabner & Co. Snap hinge made of plastic and container for longitudinally extending diagnostic test supports. 4,615,462, Cl. 220-339.000.

Sacilor: *See—*
Michaux, Jacques, 4,615,201, Cl. 72-239.000.
Michaux, Jacques M., 4,615,200, Cl. 72-225.000.

Sackett, Robert L. Fluid flow failure detection means. 4,615,303, Cl. 123-41.150.

Sackett, Robert L. Safety and selective use switch for a power outlet. 4,616,285, Cl. 361-1.000.

Sadhukhan, Pasupati: *See—*
Armstrong, Robert B.; Jongenburger, Huibert S.; and Sadhukhan, Pasupati, 4,615,870, Cl. 422-191.000.

Sainz, Mario A., to Allied Corporation. In-situ analysis of a liquid conductive material. 4,615,225, Cl. 73-864.330.

Saito, Kenji; Nakanishi, Kyoji; Nanba, Akihiko; Onishi, Masayuki; Yao, Minoru; Kato, Toshio; and Kojima, Shinji, to Kawaski Steel Corporation. Method and an apparatus for manufacturing a hollow steel ingot. 4,615,373, Cl. 164-125.000.

Saito, Koetsu; Yamaguchi, Keisaku; and Kawabuchi, Masami, to Matsushita Electric Industrial Co., Ltd. Piezoelectric ultrasonic probe using an epoxy resin and iron carbonyl acoustic matching layer. 4,616,152, Cl. 310-334.000.

Saito, Masayuki: *See—*
Onishi, Masaru; Saito, Masayuki; and Shimazaki, Yoshikazu, 4,615,932, Cl. 428-207.000.

Saito, Noriko: *See—*
Nakagame, Fujio; Honda, Haruo; Maruyama, Teppei; Saito, Noriko; and Kimoto, Tomoaki, 4,615,885, Cl. 424-94.000.

Sakagami, Teruo; Arakawa, Noriyuki; and Murayama, Naohiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Vinylidene fluoride copolymer film. 4,615,943, Cl. 428-332.000.

Sakaguchi, Yuji: *See—*
Takagi, Takeo; and Sakaguchi, Yuji, 4,615,260, Cl. 92-92.000.

Sakai, Hiroyuki: *See—*
Kawakita, Kenji; Sakai, Hiroyuki; and Takemoto, Toyoki, 4,615,746, Cl. 148-1.500.

Sakai, Katsuo: *See—*
Yanagawa, Nobuyuki; Koike, Tadao; Ishikawa, Toyoji; Sakai, Katsuo; and Furuta, Hideya, 4,615,607, Cl. 355-3.00R.

Sakai, Masanori: *See—*
Kinaga, Eiichi; Sakai, Masanori; and Tanno, Masaaki, 4,615,551, Cl. 297-341.000.

Sakakibara, Yasuji: *See—*
Yoneda, Takao; and Sakakibara, Yasuji, 4,615,149, Cl. 51-165.710.

Sakamoto, Hiroshi: *See—*
Inaba, Norihiko; Sakamoto, Hiroshi; and Motosugi, Takanori, 4,616,240, Cl. 346-208.000.

Sakamoto, Masahiko: *See—*
Kagohara, Hiromi; Fukui, Yutaka; Sakamoto, Masahiko; and Iizuka, Nobuyuki, 4,615,658, Cl. 415-178.000.

Sakito, Yoji: *See—*
Mukaiyama, Teruaki; Sakito, Yoji; and Asami, Masatoshi, 4,616,092, Cl. 560-177.000.

Sallas, John J.; Trevino, Toby R.; Alvi, Haroon I.; Shoffner, John S.; and Wason, Cameron B., to Texas Instruments Incorporated. Vibrator seismic source having distortion limiting control system. 4,616,352, Cl. 367-190.000.

Salvo, Andrew D. Teaching system utilizing magnetic tape. 4,615,682, Cl. 434-321.000.

Samelian, John K. Easy access hand covering. 4,615,049, Cl. 2-163.000.

Sample, Thomas E., Jr.: *See—*
Stamatakis, Emanuel; Sample, Thomas E., Jr.; and Javora, Paul H., 4,615,841, Cl. 260-505.00N.

San Francisco Bay Area Rapid Transit District: *See—*
Kusko, Alexander, 4,615,484, Cl. 238-264.000.

Sanden Corporation: *See—*
Hisao, Aoki, 4,615,383, Cl. 165-150.000.

Sandercock, John R., to RCA Corporation. Anti-vibration device. 4,615,504, Cl. 248-550.000.

Sanders, Albert J., Jr.; and Larson, Michael J., to Stauffer Wacker Silicones Corporation. Transparent antifog compositions. 4,615,738, Cl. 106-13.000.

Sandine, William E.; and Ayres, James W., to State of Oregon, by and through the Oregon State Board of Higher Education on behalf of Oregon State University, The. Bacterial growth medium and method of use. 4,615,978, Cl. 435-253.000.

Sandoz Ltd.: *See—*
Deibig, Heinrich; Reiner, Roland; and Welle, Hendricus B. A., 4,615,881, Cl. 424-78.000.
Nickell, Louis G.; Stach, Leonard J.; and Hokama, Takeo, 4,615,728, Cl. 71-94.000.
Robinson, Tibor, 4,615,707, Cl. 8-496.000.

Sands, Ned R. Toy water gun having three directional nozzles. 4,615,488, Cl. 239-391.000.

Sanner, Axel: *See—*
Sterzel, Hans-Josef; and Sanner, Axel, 4,616,041, Cl. 521-27.000.

Sano, Yasushi: *See—*
Kaneda, Isami; and Sano, Yasushi, 4,616,353, Cl. 369-43.000.

Sanraku-Ocean Co., Ltd.: *See—*
Aiba, Shuichi; and Ohnuki, Tetsuo, 4,615,980, Cl. 435-317.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Harada, Norimichi; Nakahama, Ryoji; and Kuragaki, Naoyoshi, 4,615,683, Cl. 440-52.000.
Kojima, Akinori, 4,615,684, Cl. 440-88.000.
Matsumoto, Kuniyoshi, 4,615,305, Cl. 123-73.0AD.

Santelmann, William F., Jr., to Keltron Corporation. Method of and apparatus for efficient high voltage generation by resonant fly back. 4,616,300, Cl. 363-21.000.

Santo, Phillip J. Corner chambers for a floatation sleep system. 4,615,060, Cl. 5-451.000.

Sanyo Chemical Industries, Ltd.: *See—*
Hayashi, Hiroshi; and Satoh, Masahiro, 4,615,959, Cl. 429-194.000.

Sanyo Electric Co., Ltd.: *See—*
Kumeta, Masao; Ide, Masahiro; Nishizawa, Nobuyoshi; Inoue, Nobuya; and Goto, Hideki, 4,615,107, Cl. 29-623.100.

Saperstein, Zalman P.; Awe, Russell C.; Costello, Norman F.; and Larrabee, Scott R., to Modine Manufacturing Inc. Heat exchanger. 4,615,385, Cl. 165-175.000.

Sarnezki, Herbert; and Schlemmer, Torsten, to Siemens Aktiengesellschaft. Electronic device with densely packed components. 4,616,291, Cl. 361-398.000.

Saruwatari, Yasuhiko: *See—*
Iio, Masahiro; Saruwatari, Yasuhiko; and Yamazoe, Hiroshi, 4,615,663, Cl. 418-152.000.

Sasaki, Hiroshi: *See—*
Maekawa, Takashi; Sasaki, Hiroshi; and Morimura, Shinji, 4,615,301, Cl. 119-3.000.

Sasaki, Sadamitsu: *See—*
Tamura, Shohei; Sasaki, Sadamitsu; Abe, Masao; Nakazawa, Hitoshi; Ichinose, Hisashi; Nakamoto, Keiji; and Yumoto, Satoshi, 4,615,829, Cl. 252-500.000.

Sasaki, Takashi; Kobayashi, Toshio; and Wada, Koichi, to Shinko-Pfaudler Company. Electrolytic decontamination process and process for reproducing decontaminating electrolyte by electrodeposition and apparatuses therefore. 4,615,776, Cl. 204-129.100.

Sasaki, Toshio: *See—*
Minato, Osamu; Sasaki, Toshio; and Masuhara, Toshiaki, 4,616,243, Cl. 357-23.130.

Sasaki, Yoshio: *See—*
Yabuta, Motoshi; Sasaki, Yoshio; and Iihashi, Mototaka, 4,616,058, Cl. 524-461.000.

Sasol Operations (Proprietary) Limited: *See—*
Meyer, Philippus J., 4,615,713, Cl. 48-77.000.

Sastra, Budiman, to U.S. Philips Corporation. Magnetic recording and/or playback device and magnetic transducing head therefor. 4,616,282, Cl. 360-122.000.

Sato, Akira, to Alps Electric Co., Ltd. Switch. 4,616,116, Cl. 200-242.000.

Sato, Eiichi. Activated carbon. 4,616,001, Cl. 502-437.000.

Sato, Fumitaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Data processing system. 4,616,311, Cl. 364-200.000.

Sato, Fumitaka: *See—*
Kinoshita, Tsuneo; Sato, Fumitaka; and Yamazaki, Isamu, 4,616,331, Cl. 364-736.000.

Sato, Yoshinari: *See—*
Teraji, Tsutomu; Shiokawa, Youichi; Okumura, Kazuo; and Sato, Yoshinari, 4,616,014, Cl. 514-242.000.
Teraji, Tsutomu; Shiokawa, Youichi; Okumura, Kazuo; and Sato, Yoshinari, 4,616,015, Cl. 514-242.000.

Satoh, Masahiro: *See—*
Hayashi, Hiroshi; and Satoh, Masahiro, 4,615,959, Cl. 429-194.000.

Satoh, Ryozo, to Tokyo Electron Limited. Precision pallet stacking type storage system for use in clean environment or the like. 4,615,430, Cl. 198-465.100.

Satoh, Susumu; Suzuki, Hideo; Obara, Takashi; Nishida, Minoru; and Hashimoto, Osamu, to Kawasaki Steel Corporation. Cold rolled dual-phase structure steel sheet having an excellent deep drawability and a method of manufacturing the same. 4,615,749, Cl. 148-330.000.

Saunders, Charles A. Resiliently mounted stabilizer. 4,615,327, Cl. 124-89.000.

Saunders, Stephen W.: *See—*
Kremer, Ross A.; and Saunders, Stephen W., 4,615,869, Cl. 423-167.000.

Savapa S.r.l.: *See—*
Testa, Michele, 4,615,877, Cl. 424-2.000.

Saviano, Paul G.: *See—*
Tracy, David H.; and Saviano, Paul G., 4,615,755, Cl. 156-345.000.

Scales, John T.; and Wilkinson, Michael J., to National Research Development Corp. Antimicrobial surgical implants. 4,615,705, Cl. 623-11.000.

Scapple, Robert Y.; Peters, John W.; Linder, Jacques F.; and Yee, Edward M., to Hughes Aircraft Company. Barrel reactor and method for photochemical vapor deposition. 4,615,294, Cl. 118-50.100.

Scarbrough, John D., Jr. Log splitter with rapid return hydraulic cylinder. 4,615,366, Cl. 144-193.00A.

Schafer, Paul: *See—*
Abel, Heinz; and Schafer, Paul, 4,615,837, Cl. 260-410.600.

Schaffer, Michael J., to United States of America, Energy. Tokamak with in situ magnetohydrodynamic generation of toroidal magnetic field. 4,615,860, Cl. 376-133.000.

Schaller, Herta. Adjustable children's chair. 4,615,560, Cl. 297-130.000.

Schatz, Friedrich: *See—*
Wcislo, Manfred; Breitenbach, Otto; Schatz, Friedrich; and Riepling, Ulrich, 4,615,109, Cl. 29-732.000.

Scheckel, William D. Combined manual and power starting device for gasoline engines. 4,615,311, Cl. 123-179.00P.

Scheevel, Mark R.: *See—*
Logsdon, Gary L.; Scheevel, Mark R.; and Winchell, Michael A., 4,616,315, Cl. 364-200.000.

Schenz, Anne F.; and Trumbetas, Jerome, to General Foods Corporation. Flavor and mouthfeel character of beverages. 4,615,900, Cl. 426-590.000.

Schering Corporation: *See—*
Neustadt, Bernard R.; Andrews, David R.; McNamara, Paul E.; and Watkins, Robert W., 4,616,012, Cl. 514-222.000.

Schier, Ernst-Juergen: *See—*
Borho, Klaus; Fromm, Dieter; Schier, Ernst-Juergen; Schneehage, Hans H.; and Widmann, Alfred, 4,616,094, Cl. 564-073.000.

Schiff, Leonard N., to RCA Corporation. Sampled color difference signal processing system having a quadrature distortion reduction differentiator. 4,616,252, Cl. 358-23.000.

Schiff, Leonard N., to RCA Corporation. Logic for calculating bit error rate in a data communication system. 4,616,362, Cl. 371-5.000.

Schilla, Henning; Hatz, Ernst; and Zipf, Eckart, to Deha Baubedarf GmbH & Co. KG. Screw-in fastener for a tubular anchor embedded in a concrete element. 4,615,554, Cl. 294-89.000.

Schilling, Leonhard G.; and Winters, John K., to NTN-Bower. Roller bearing assembly. 4,615,627, Cl. 384-551.000.

Schimko, Reinhold, to Universal Maschinenfabrik Dr Rudolf Schieber. Needle selection device on a knitting machine, particularly a flat knitting machine. 4,615,187, Cl. 66-75.200.

Schindlbeck, Gunther: *See—*
Muller, Jurgen; Krobel, Heinz; Reichart, Michael; and Schindlbeck, Gunther, 4,615,596, Cl. 354-76.000.

Schirrmacher, Rudiger; and Semmerau, Gisbert, to Degussa Aktiengesellschaft. Method and device for carrying out gas/solid reactions particularly the activation and re-activation of activated carbon. 4,615,993, Cl. 502-55.000.

Schlage Lock Company: *See—*
Couture, Jeffrey B., 4,615,549, Cl. 292-169.210.

Schlemmer, Torsten: *See—*
Sarnezki, Herbert; and Schlemmer, Torsten, 4,616,291, Cl. 361-398.000.

Schlicht, Heribert: *See—*
Gierse, Franz-Josef; Hermanns, Heinrich; Hermes, Werner; Lupnitz, Gerhard; Pabst, Manfred; and Schlicht, Heribert, 4,615,124, Cl. 34-82.000.

Schliefer, Heinrich; Naaf, Rudiger; and Christ, Rolf, to Norddeutsche Affinerie AG. Method of and apparatus for monitoring the surface level of material in a vessel. 4,615,351, Cl. 137-2.000.

Schloman, William W., Jr.; and Davis, James A., to Firestone Tire & Rubber Company, The. Polyamine treated guayule resin and rubber compositions containing the same. 4,616,068, Cl. 525-332.700.

Schlossberg, Howard: *See—*
Ehrlich, Daniel J.; Deutsch, Thomas F.; Osgood, Richard M.; and Schlossberg, Howard, 4,615,904, Cl. 427-38.000.

Schluter, Jurgen: *See—*
Vilchez, Jose ; Mergelsberg, Reinhard; Schluter, Jurgen; and Hagen, Harmut, 4,615,890, Cl. 426-297.000.

Schmerda, Richard F.: *See—*
Damiano, Michael A.; and Schmerda, Richard F., 4,616,305, Cl. 363-132.000.

Schmierer, Roland; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, to Hoechst Aktiengesellschaft. Herbicidal 1-acylimidazolinones. 4,615,726, Cl. 71-92.000.

Schneehage, Hans H.: *See—*
Borho, Klaus; Fromm, Dieter; Schier, Ernst-Juergen; Schneehage, Hans H.; and Widmann, Alfred, 4,616,094, Cl. 564-073.000.

Schneider, David A.: *See—*
Chiu, Norman H.; and Schneider, David A., 4,615,179, Cl. 62-129.000.

Schneider, Karl: *See—*
Jank, Wilhelm; and Schneider, Karl, 4,616,113, Cl. 200-61.130.

- Schneider, Rudolf, to Erowa AG. Coupling device. 4,615,688, Cl. 464-93.000.
- Schneider, Wilhelm; Jobke, Norbert; and Rupprecht, Bernd, to Deutsche Perrot-Bremse GmbH. Mechanically operated sliding saddle disc brake. 4,615,417, Cl. 188-72.800.
- Schnur, Earl J.: *See—*
  - Meirow, Jack; and Schnur, Earl J., 4,616,216, Cl. 340-644.000.
- Schnur, Earl Joseph: *See—*
  - Meirow, Jack; and Schnur, Earl J., 4,616,216, Cl. 340-644.000.
- Schnurbusch, Horst: *See—*
  - Baltruschat, Helmut; and Schnurbusch, Horst, 4,615,727, Cl. 71-93.000.
- Schob, Wolfgang; and Fischer, Horst, to Carl-Zeiss-Stiftung. Coupling for the drive of a mechanical stage. 4,615,592, Cl. 350-531.000.
- Schoeffler, William N., to Pioneer Fishing and Rental Tools, Inc. Valved jet device for well drills. 4,615,399, Cl. 175-38.000.
- Schoenmakers, Johannes J. M.: *See—*
  - Van Sluys, Robert N. J.; and Schoenmakers, Johannes J. M., 4,615,585, Cl. 350-255.000.
- Schole, Jurgen: *See—*
  - Lechtken, Peter; Nurrenbach, Axel; Kohler, Walter; Hoppe, Peter P.; Tiefenbacher, Hubert; and Schole, Jurgen, 4,616,016, Cl. 514-249.000.
- Scholtholt, Hans; and Steiner, Ewald, to Siemens Aktiengesellschaft. Surge voltage protection means for attachment to a main distribution frame. 4,616,288, Cl. 361-119.000.
- Schooley, Teresa D. Scent disk for hair dryer. 4,615,347, Cl. 132-9.000.
- Schott Glaswerke: *See—*
  - Ritze, Willy, 4,615,989, Cl. 501-44.000.
- Schrage, James R.: *See—*
  - Grunewald, Paul; Blanch, Roy L.; and Schrage, James R., 4,616,220, Cl. 340-747.000.
- Schreiber, Joachim: *See—*
  - Eisenbrand, Gerhard; and Schreiber, Joachim, 4,615,835, Cl. 260-397.500.
- Schreiber, William L.: *See—*
  - Sprecker, Mark A.; Belko, Robert P.; Schreiber, William L.; and Licciardello, Michael, 4,615,830, Cl. 252-522.00R.
  - Sprecker, Mark A.; Belko, Robert P.; Schreiber, William L.; and Licciardello, Michael, 4,616,095, Cl. 568-322.000.
- Schroeder, Rodney G.: *See—*
  - Wong, Matthew K. L.; Schroeder, Rodney G.; and Donegan, Thomas E., 4,615,868, Cl. 422-111.000.
- Schucker, Douglas W.: *See—*
  - Lee, Shi-Chuan; and Schucker, Douglas W., 4,616,146, Cl. 307-446.000.
- Schultz, Klaus-Dieter; Meyer, Rolf-Volker; Dhein, Rolf; Fullmann, Heinz-Josef; and Michael, Dietrich, to Bayer Aktiengesellschaft. Hydrophobic polyamides. 4,616,053, Cl. 524-171.000.
- Schulz, Wolfgang: *See—*
  - Fehrenbach, Siegfried; Herbst, Kurt; Schulz, Wolfgang; and Utz, Eberhard, 4,615,320, Cl. 123-467.000.
- Schulze, Richard G.: *See—*
  - Khan, M. Asif; and Schulze, Richard G., 4,616,248, Cl. 357-30.000.
- Schumacher, Clemens: *See—*
  - Finke, Robert-Gunter; Schumacher, Clemens; Kolb, Albert; Lautenschlager, Horst; and Konetzka, Jurgen, 4,615,437, Cl. 206-222.000.
- Schumann, Manfred: *See—*
  - Hogenkamp, Wilhelm; and Schumann, Manfred, 4,615,164, Cl. 53-53.000.
- Schupphaus, Herbert, to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH. Tunnel or road header. 4,615,565, Cl. 299-75.000.
- Schurmeier, Gustave B., to Detrich, M. H. Refractory plate and method for reinforcing. 4,615,471, Cl. 222-598.000.
- Schwarz, Eitan D. Programmable, user interactive cigarette dispenser and method therefor. 4,615,681, Cl. 434-236.000.
- Schwarzmann, Matthias: *See—*
  - Hoelderich, Wolfgang; Himmel, Walter; Mross, Wolf D.; and Schwarzmann, Matthias, 4,616,098, Cl. 585-640.000.
- Schwem Instruments: *See—*
  - Alvarez, Luis W.; and Schwemin, Arnold J., 4,615,590, Cl. 350-500.000.
- Schwemin, Arnold J.: *See—*
  - Alvarez, Luis W.; and Schwemin, Arnold J., 4,615,590, Cl. 350-500.000.
- Scott, Diane M. Pocketed and interconnected upper and lower sheets. 4,615,061, Cl. 5-497.000.
- Scovill Inc.: *See—*
  - Proffitt, Richard V., 4,616,169, Cl. 320-2.000.
- Scriven, Roger L.: *See—*
  - McCollum, Gregory J.; Scriven, Roger L.; Christenson, Roger M.; Mauer, George W.; and Zwack, Robert R., 4,615,779, Cl. 204-181.700.
- Searcy, Charles C. Motorized exercise apparatus for mounting on hospital bedrail. 4,615,335, Cl. 128-25.00R.
- Sedillo, Lawrence P.; Newlove, John C.; Peiffer, Dennis G.; and Lundberg, Robert D., to Exxon Research and Engineering Co. Hydrocarbon soluble polymer complexes useful as viscosifiers in fracturing operations. 4,615,393, Cl. 166-308.000.
- Sedlmayr, Gerhard; and Just, Herbert, to Autoflug GmbH. Safety belt system. 4,615,540, Cl. 280-806.000.
- Seeler, Hartwig; and Zimmermann, Helmut, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Method and flutter brake for an aircraft. 4,615,497, Cl. 244-75.00A.
- Seidel, Hans: *See—*
  - von der Eltz, Herbert; Gauhl, Helmgard; and Seidel, Hans, 4,615,981, Cl. 435-197.000.
- Seiko Epson Kabushiki Kaisha: *See—*
  - Moriya, Tatsuo, 4,615,625, Cl. 368-156.000.
- Seimi Chemical Company Ltd.: *See—*
  - Ohotoshi, Sachio; and Hase, Fumio, 4,615,479, Cl. 228-180.100.
- Seireg, Ali, to Falk Corporation, The. Key and key joint. 4,615,639, Cl. 403-356.000.
- Seitel, Norbert F.: *See—*
  - McDonald, Walter; and Seitel, Norbert F., 4,615,428, Cl. 198-399.000.
- Selenia Industrie Elettroniche Associate S.p.A.: *See—*
  - Giaccari, Ennio; and Galati, Gaspare, 4,616,228, Cl. 342-160.000.
- Semiconductor Energy Laboratory Co., Ltd.: *See—*
  - Yamazaki, Shunpei, 4,616,244, Cl. 357-17.000.
- Semmerau, Gisbert: *See—*
  - Schirrmacher, Rudiger; and Semmerau, Gisbert, 4,615,993, Cl. 502-55.000.
- Sencore, Inc.: *See—*
  - Cook, Terry; and Graham, Timothy, 4,616,173, Cl. 324-78.00D.
- Senftle, Joseph T., to Union Oil Company of California. Method and apparatus for characterizing kerogens. 4,616,133, Cl. 250-253.000.
- Seng, Stephen, to Owens-Corning Fiberglas Corporation. Heating of heat transfer media. 4,615,718, Cl. 65-27.000.
- Sengoku, Norio; Kozai, Hiroshi; and Kobayashi, Fumiyuki, to Hitachi, Ltd. Multilayer printed circuit board. 4,616,292, Cl. 361-414.000.
- Sepp, Walter E.: *See—*
  - Pritchard, Dalton H.; and Sepp, Walter E., 4,616,251, Cl. 358-11.000.
- Ser, Jean-Claude; and Laugier, Jean-Pierre, to Societe Anonyme dite: L'Oreal. Pharmaceutical or cosmetic composition in the form of a rod or stick constituted from two concentric fatty phases and a casting permitting its preservation and distribution. 4,615,633, Cl. 401-196.000.
- Servel, Michel: *See—*
  - Helen, Andre; Servel, Michel; and Thomas, Alain, 4,616,338, Cl. 364-900.000.
- Seshamani, Venkatraman, to Foster Wheeler Energy Corporation. Water-cooled cyclone separator. 4,615,715, Cl. 55-269.000.
- Seshimoto, Osamu; and Nirasawa, Mitsuharu, to Fuji Photo Film Co., Ltd. Ion selective electrode and method of preparation thereof. 4,615,788, Cl. 204-418.000.
- Seto, Akira; and Yamashita, Shoko, to Nisshin Oil Mills, Ltd., The. Method of preparing fatty acid composition containing high concentration of eicosapentaenoic acid. 4,615,839, Cl. 260-412.000.
- Setoguchi, Michihide: *See—*
  - Tahara, Tetsuya; Fukuda, Takemi; and Setoguchi, Michihide, 4,616,009, Cl. 514-212.000.
- Severinsson, Lars M. Device for mechanically transforming a torque into an axial force. 4,615,228, Cl. 74-89.000.
- Sevigny, Roger J.: *See—*
  - Hanson, Thomas E.; and Sevigny, Roger J., 4,615,116, Cl. 30-90.400.
- Sewell, Daniel W. Method and apparatus for improved operation of pallet trucks. 4,615,533, Cl. 280-43.120.
- SGS-ATES Componenti Elettronici S.p.A.: *See—*
  - Gandolfi, Luciano; Grasso, Antonio; and Perniciaro, Antonio, 4,615,478, Cl. 228-123.000.
- Shaffer, David T.: *See—*
  - Galloway, Michael D.; Rose, William H.; and Shaffer, David T., 4,616,112, Cl. 200-5.00R.
- Shamrock Chemicals Corporation: *See—*
  - Neuberg, William B.; and Aclin, John J., 4,615,911, Cl. 427-197.000.
- Shankar, Srinivasan: *See—*
  - Dardi, Louis E.; and Shankar, Srinivasan, 4,615,864, Cl. 420-437.000.
- Shannon, John K. Apparatus and method for presenting fasteners. 4,615,112, Cl. 29-822.000.
- Shape Inc.: *See—*
  - Swinburne, Stephen G., 4,615,628, Cl. 400-242.000.
- Shapiro, Stephen I.: *See—*
  - Cronenberg, Richard A.; and Shapiro, Stephen I., 4,615,340, Cl. 128-635.000.
- Sharma, Arvind K., to RCA Corporation. Microwave and millimeter wave switched-line type phase shifter including exponenial line portion. 4,616,196, Cl. 333-161.000.
- Sharma, Satish C., to GenCorp. Adhesion of brass plated steel to rubber. 4,615,369, Cl. 152-565.000.
- Sharp Kabushiki Kaisha: *See—*
  - Kida, Hiroshi; Kato, Tutomu; and Nishijima, Masaru, 4,615,605, Cl. 355-3.00R.
  - Matsuyama, Toshiro; Hayakawa, Takashi; Kojima, Yoshimi; Narikawa, Shiro; and Ehara, Shaw, 4,615,299, Cl. 118-723.000.
  - Morino, Taisuke; Hanatani, Sakio; and Ohuchi, Mituo, 4,615,405, Cl. 177-210.00C.
  - Yoshiura, Shoichiro, 4,615,610, Cl. 355-14.00R.
  - Yoshiura, Shoichiro, 4,615,611, Cl. 355-14.00R.
- Sharpless, John, to Nordson Corporation. Powder pump having suction tube deflector. 4,615,649, Cl. 406-138.000.
- Shastry, Chakrakodi R.; and Townsend, Herbert E., to Bethlehem Steel Corporation. Fe-Al-Cr-P-(B,C) amorphous alloy. 4,615,732, Cl. 148-403.000.
- Shaw, Craig M., to Amerock Corporation. Portable router. 4,615,654, Cl. 409-178.000.

- Sheets, Kerney T. Warm air diverter for vehicles. 4,615,483, Cl. 237-12.30A.
- Sheldon, Donald A.: *See—*
  - Jackson, David M.; and Sheldon, Donald A., 4,615,696, Cl. 604-389.000.
- Shell California Production Inc.: *See—*
  - Harrigal, Robert L., 4,615,392, Cl. 166-272.000.
- Shell Oil Company: *See—*
  - Johnson, Thomas H., 4,615,790, Cl. 208-18.000.
  - Langner, Carl G., 4,615,645, Cl. 405-159.000.
  - Langner, Carl G., 4,615,646, Cl. 405-169.000.
  - Morshedi, Abdol M.; Cutler, Charles R.; Fitzpatrick, Thomas J.; and Skrovanek, Thomas A., 4,616,308, Cl. 364-159.000.
  - Neely, Aaron B.; Walhaug, Warren W.; and Moore, Boyd B., 4,615,389, Cl. 166-250.000.
- Shell Western E&P Inc.: *See—*
  - Walhaug, Warren W.; Neely, Aaron B.; and Moore, Boyd B., 4,615,388, Cl. 166-250.000.
- Sheller-Globe Corporation: *See—*
  - Reighard, Robert P., 4,616,224, Cl. 340-825.690.
- Sherrod, Earle H.; Lamers, Clarence J.; and Smits, Kenneth C., to Kimberly-Clark Corporation. Method for providing steam and hot air for hooded drying cylinders. 4,615,122, Cl. 34-18.000.
- Sherwood, William L. Continuous steelmaking and casting. 4,615,511, Cl. 266-208.000.
- Sheth, Jayesh V., to Burroughs Corporation. Automatic read system for peripheral-controller. 4,616,337, Cl. 364-900.000.
- Shiba, Koreyuki: *See—*
  - Yamagishi, Shigeru; Takahashi, Yoshihisa; and Shiba, Koreyuki, 4,615,834, Cl. 252-635.000.
- Shiba, Soji: *See—*
  - Toriumi, Wataru; Shoji, Hideyuki; Inoue, Yoshihiko; Shiba, Soji; and Ushio, Yasuhiko, 4,616,262, Cl. 358-183.000.
- Shibuya, Chisei: *See—*
  - Nishikido, Joji; Kodama, Eiji; and Shibuya, Chisei, 4,616,081, Cl. 540-222.000.
- Shibuya, Masahiro: *See—*
  - Horigome, Tsukumo; Kawabe, Noriyuki; Takiue, Mamoru; Imai, Kunihiko; Uchiyama, Noriaki; Tsuzuki, Fusayuki; Shimada, Kenji; Shibuya, Masahiro; Hakutoh, Norimasa; Watanabe, Chiaki; and Abe, Junichi, 4,615,769, Cl. 203-2.000.
- Shida, Junji, to Dainippon Screen Mfg. Co., Ltd. Method and system for increasing use efficiency of a memory of an image reproducing system. 4,616,268, Cl. 358-287.000.
- Shilot, Thomas: *See—*
  - Spada, Ralph E.; and Shilot, Thomas, 4,615,477, Cl. 228-119.000.
- Shima, Kazuhiro; Inoue, Masayoshi; and Tsukada, Takayuki, to Shionogi & Co., Ltd. Stable antibacterial lyophilizates. 4,616,083, Cl. 544-90.000.
- Shimada, Kenji: *See—*
  - Horigome, Tsukumo; Kawabe, Noriyuki; Takiue, Mamoru; Imai, Kunihiko; Uchiyama, Noriaki; Tsuzuki, Fusayuki; Shimada, Kenji; Shibuya, Masahiro; Hakutoh, Norimasa; Watanabe, Chiaki; and Abe, Junichi, 4,615,769, Cl. 203-2.000.
- Shimada, Yukio; and Sonoda, Noriaki, to Nihon Radiator Co., Ltd. Heat exchanger fin with louvers. 4,615,384, Cl. 165-152.000.
- Shimadzu Corporation: *See—*
  - Sugimoto, Yasuhiko; Wada, Sadao; Tanide, Naoyosi; Kawabata, Osamu; Yamaguchi, Tadashi; Yano, Shozo; Suda, Kobun; Nishibayashi, Kazuo; and Ishida, Shohei, 4,615,215, Cl. 73-866.000.
- Shimazaki, Yoshikazu: *See—*
  - Onishi, Masaru; Saito, Masayuki; and Shimazaki, Yoshikazu, 4,615,932, Cl. 428-207.000.
- Shimizu, Tokihiko: *See—*
  - Hotta, Shu; Shimizu, Tokihiko; and Taguchi, Nobuyoshi, 4,615,938, Cl. 428-323.000.
- Shimokawa, Katsusuke, to Sun Plant Industry Co., Ltd. Kneaded food molding apparatus of the rotary type. 4,615,076, Cl. 17-32.000.
- Shimoni, Yair, to Elscint, Ltd. Data correlation system. 4,616,333, Cl. 364-819.000.
- Shin-Etsu Chemical Co., Ltd.: *See—*
  - Iida, Tamaki, 4,615,945, Cl. 428-335.000.
- Shin-Kobe Electric Machinery Co., Ltd.: *See—*
  - Hanmura, Hisao, 4,616,175, Cl. 324-121.00R.
- Shin, Kyu C., to Gold Star Co., Ltd. Uniformly heating apparatus for microwave ovens. 4,616,119, Cl. 219-10.55F.
- Shin Nisso Kako Co., Ltd.: *See—*
  - Yahagi, Masakichi; Igaki, Tetsuo; Yoshinaka, Shinji; Morita, Kosaku; Kinoshita, Kimiaki; Enokiya, Masashi; Kaneko, Akio; and Yamashita, Toshiyuki, 4,616,239, Cl. 346-201.000.
- Shinagawa Refractories Co., Ltd.: *See—*
  - Ichikawa, Kenji; Sugimoto, Hiroyuki; Nakamura, Ryosuke; Yamamura, Takashi; and Mitsuhata, Kenji, 4,615,953, Cl. 428-699.000.
- Shinko-Pfaudler Company: *See—*
  - Sasaki, Takashi; Kobayashi, Toshio; and Wada, Koichi, 4,615,776, Cl. 204-129.100.
- Shinozaki, Satoshi: *See—*
  - Kameyama, Shuichi; Shinozaki, Satoshi; and Iwai, Hiroshi, 4,615,103, Cl. 29-576.00W.
  - Kameyama, Shuichi; Shinozaki, Satoshi; and Iwai, Hiroshi, 4,615,104, Cl. 29-576.00W.
- Shiokawa, Youichi: *See—*
  - Teraji, Tsutomu; Shiokawa, Youichi; Okumura, Kazuo; and Sato, Yoshinari, 4,616,014, Cl. 514-242.000.
  - Teraji, Tsutomu; Shiokawa, Youichi; Okumura, Kazuo; and Sato, Yoshinari, 4,616,015, Cl. 514-242.000.
- Shiomi, Yasuhiko, to Canon Kabushiki Kaisha. Measuring distance apparatus. 4,615,616, Cl. 356-1.000.
- Shionogi & Co., Ltd.: *See—*
  - Shima, Kazuhiro; Inoue, Masayoshi; and Tsukada, Takayuki, 4,616,083, Cl. 544-90.000.
- Shirley, Thomas E., to Mobil Oil Corporation. Analog-to-digital converter for seismic exploration using delta modulation. 4,616,349, Cl. 367-66.000.
- Shiroki Kinzoku Kogyo Kabushiki Kaisha: *See—*
  - Kinaga, Eiichi; Sakai, Masanori; and Tanno, Masaaki, 4,615,551, Cl. 297-341.000.
- Shoffner, John S.: *See—*
  - Sallas, John J.; Trevino, Toby R.; Alvi, Haroon I.; Shoffner, John S.; and Wason, Cameron B., 4,616,352, Cl. 367-190.000.
- Shoji, Hideyuki: *See—*
  - Toriumi, Wataru; Shoji, Hideyuki; Inoue, Yoshihiko; Shiba, Soji; and Ushio, Yasuhiko, 4,616,262, Cl. 358-183.000.
- Shoop, James D.; Graef, Harry T.; Newton, Kevin H.; and Grucza, Spencer M., to Diebold Incorporated. High security support and enclosure structure for electronic equipment. 4,615,280, Cl. 109-24.100.
- Shopsmith, Inc.: *See—*
  - Berkeley, James E., 4,615,247, Cl. 83-102.100.
- Showa Aluminum Corporation: *See—*
  - Kato, Yutaka; Tsukamoto, Kenji; and Isoyama, Eizo, 4,615,747, Cl. 148-6.300.
- Showa Precision Machinery Co., Ltd.: *See—*
  - Anbe, Yoshinori, 4,615,259, Cl. 92-86.000.
- Sibley, Franklin L.: *See—*
  - DeRoche, William M.; Kearney, David A.; and Sibley, Franklin L., 4,615,266, Cl. 101-163.000.
- Sidransky, Fred S., to Sundstrand Corporation. Offset centrifugal compressor. 4,615,659, Cl. 416-183.000.
- Siemens Aktiengesellschaft: *See—*
  - Behn, Reinhard; and Wittmann, Rudolf, 4,615,908, Cl. 427-81.000.
  - Krummel, Peter; and Klamt, Manfred, 4,616,158, Cl. 315-225.000.
  - Mauthe, Manfred, 4,616,303, Cl. 363-60.000.
  - Meier, Christof; Bartelt, Richard; and Massat, Hans-Joachim, 4,616,326, Cl. 364-513.000.
  - Oestreich, Ulrich, 4,615,168, Cl. 57-7.000.
  - Rehm, Hans; and Donig, Gunter, 4,616,358, Cl. 370-58.000.
  - Sarnezki, Herbert; and Schlemmer, Torsten, 4,616,291, Cl. 361-398.000.
  - Scholtholt, Hans; and Steiner, Ewald, 4,616,288, Cl. 361-119.000.
  - Simmel, Hans-Eberhard, 4,616,324, Cl. 364-483.000.
  - Strehl, Herbert, 4,616,361, Cl. 370-110.100.
  - Urstoger, Rupert, 4,616,170, Cl. 320-5.000.
- Siems, Don R.: *See—*
  - Pelezo, James A.; Corbett, Garry E., Jr.; and Siems, Don R., 4,615,740, Cl. 106-177.000.
- Sienkowski, Kenneth J.: *See—*
  - Thompson, Ralph B.; and Sienkowski, Kenneth J., 4,616,049, Cl. 523-212.000.
- Signetics Corporation: *See—*
  - van de Plassche, Rudy J., 4,616,190, Cl. 330-261.000.
- Sigri GmbH: *See—*
  - Kunzel, Jurgen, 4,615,379, Cl. 165-10.000.
- Siklosi, Michael P., to Procter & Gamble Company, The. Benzyl alcohol for improved powdered cleansers. 4,615,821, Cl. 252-174.250.
- Silkman, William D.: *See—*
  - Andersen, John E.; Petrosky, Joseph A.; Messina, Benedicto U.; and Silkman, William D., 4,616,341, Cl. 365-189.000.
- Silva, James M., to General Electric Company. Method for preparing cyclic polycarbonate oligomer from bischloroformate composition. 4,616,077, Cl. 528-371.000.
- Silverman, Michael W. Method for forming an individually contoured corrective seat for a wheelchair. 4,615,856, Cl. 264-222.000.
- Simmel, Hans-Eberhard, to Siemens Aktiengesellschaft. Digital overcurrent tripping arrangement. 4,616,324, Cl. 364-483.000.
- Simmons, Walter J.; and Willis, Frank M. Filler-containing hardenable resin products. 4,616,050, Cl. 523-220.000.
- Sinnema, Dirk: *See—*
  - Kemner, Rudolf; and Sinnema, Dirk, 4,616,181, Cl. 324-309.000.
- Sirma S.p.A.: *See—*
  - Corato, Renzo, 4,615,676, Cl. 432-9.000.
- Siwek, Melinda L. Pediatric arm restraining device. 4,615,339, Cl. 128-133.000.
- Sjuld, Tiya-Maya F.: *See—*
  - Kiisler, Karl R.; Kristianson, Peep G.; Sjuld, Tiya-Maya F.; Kaps, Tiit K.; Riistop, Myart A.; Rokk, Juri K.; Matvere, Toomas O.; Pravon, Juri E.; and Evert, Ilmar M., 4,615,737, Cl. 106-12.000.
- Skeels, Edwin: *See—*
  - Nesbitt, Norman R. S.; Skeels, Edwin; Laker, Robert W.; Rowley, Terence W.; and Judge, Michael E., 4,616,217, Cl. 340-747.000.
- SKF Steel Engineering, AB: *See—*
  - Bentell, Lars; and Martensson, Jarl, 4,615,285, Cl. 110-346.000.
- Skinner, James L., to Atlantic Richfield Company. Method and apparatus for discharging treated coal and controlling emissions from a heavy oil spray system. 4,615,710, Cl. 44-2.000.
- Skinner, Robert L.: *See—*
  - Erwin, Douglas A.; and Skinner, Robert L., 4,616,260, Cl. 358-150.000.

Skold, Bjorn-Ake: *See—*

Bell, Robert; Westius, Stefan; and Skold, Bjorn-Ake, 4,615,562, Cl. 297-250.000.

Skrovanek, Thomas A.: *See—*

Morshedi, Abdol M.; Cutler, Charles R.; Fitzpatrick, Thomas J.; and Skrovanek, Thomas A., 4,616,308, Cl. 364-159.000.

Slota, Peter, Jr.: *See—*

Gelorme, Jeffrey D.; Lawrence, William H.; and Slota, Peter, Jr., 4,615,763, Cl. 156-643.000.

Small, Kenneth T., to Boschert Inc. Regulator control system. 4,616,301, Cl. 363-26.000.

Small, Vernon R., Jr., to Chevron Research Company. Method for reducing brake noise in oil-immersed disc brakes. 4,615,827, Cl. 252-32.70E.

Smid, S.A.: *See—*

Erhard, Raymond, 4,615,248, Cl. 83-165.000.

Smith, David E. Self loading pistol having a rear sight which secures a detachable breech block insert. 4,615,132, Cl. 42-25.000.

Smith, Grant M.; Romania, Samuel R.; and Tamarkin, Vladimir M., to Burroughs Corporation. Air sampling system for smoke detection. 4,615,224, Cl. 73-863.330.

Smith, Ian R.; and Harvey, Robert A., to VG Instruments Group Limited. Mechanical positioning device for scientific instruments. 4,615,591, Cl. 350-507.000.

Smith International: *See—*

Garrett, William R., 4,615,401, Cl. 175-230.000.

Smith International, Inc.: *See—*

Baugh, Benton F., 4,615,544, Cl. 285-18.000.

Smith, Jeremy G. B.; Dolz, Arno W.; and Lubbe, Carl H., to AECI Limited. Explosive which includes an explosive emulsion. 4,615,751, Cl. 149-2.000.

Smith Kline & French Laboratories Limited: *See—*

Coates, William J., 4,616,013, Cl. 514-222.000.

Smith, Larry W.; and Lowry, Larry G., to Goodyear Tire & Rubber Company, The. Apparatus for trimming extruded strip components. 4,615,672, Cl. 425-296.000.

Smith, Paul: *See—*

Juncos, Jorge L.; Wellner, Edward; and Smith, Paul, 4,615,183, Cl. 62-306.000.

Smith, Stuart B., to Thermocell Development, Ltd. Aliphatic polyurethane sprayable coating compositions and method of preparation. 4,616,043, Cl. 521-107.000.

Smits, Kenneth C.: *See—*

Sherrod, Earle H.; Lamers, Clarence J.; and Smits, Kenneth C., 4,615,122, Cl. 34-18.000.

Smolin, William; and Estes, John H., to Texaco Inc. Zeolite adsorbent for separation of para-xylene. 4,615,994, Cl. 502-62.000.

SMS Schloemann-Siemag AG: *See—*

Stoy, Erich; and Rommen, Hans, 4,615,202, Cl. 72-245.000.

Snyder, Michael H.: *See—*

Marzolf, Willis L.; and Snyder, Michael H., 4,615,341, Cl. 128-765.000.

Societe Anonyme D.B.A.: *See—*

Come, Philippe; and Vasselet, Joel, 4,615,098, Cl. 29-512.000.

Perrin, Alain, 4,615,566, Cl. 303-6.00C.

Societe Anonyme de Telecommunications: *See—*

Boutmy, Patrick E., 4,616,256, Cl. 358-86.000.

Societe Anonyme dite: L'Oreal: *See—*

Ser, Jean-Claude; and Laugier, Jean-Pierre, 4,615,633, Cl. 401-196.000.

Sodem Diffusion S.A.: *See—*

Stulberg, S. David; and Legrand, Bernard, 4,615,516, Cl. 269-328.000.

Sodemape Holding AG: *See—*

Hahn, Ortwin, 4,615,849, Cl. 264-40.400.

Soden, D.: *See—*

Sutherland, James W., 4,615,524, Cl. 272-123.000.

Sodeno, Toshiaki: *See—*

Yoshieda, Keiichi; Sodeno, Toshiaki; and Honmoto, Syuichi, 4,615,246, Cl. 83-42.000.

Sokolov, Vladimir A.: *See—*

Strekopytov, Alexei A.; Sokolov, Vladimir A.; Kuzmichev, Alexandr P.; and Strekopytov, Vladimir A., 4,615,474, Cl. 227-19.000.

Soland, Peter A.: *See—*

Buccellato, Ronald I.; Card, Wayne T.; Foote, Duane M.; Lewis, Cinda B.; Soland, Peter A.; Stevens, Brian J.; and Widmann, Philip C., 4,615,460, Cl. 220-307.000.

Soletanche: *See—*

Gouvenot, Daniel, 4,615,643, Cl. 405-128.000.

Solleder, Otto, to Daimler-Benz Aktiengesellschaft. Elastically flexible pivot bearing for mutual pivotable connection of parts of a motor vehicle. 4,615,538, Cl. 280-690.000.

Solo Cup Company: *See—*

Clements, Jack D., 4,615,459, Cl. 220-254.000.

Solomon, Frank; and Grun, Charles, to ELTECH Systems Corporation. Fast response, high rate, gas diffusion electrode and method of making same. 4,615,954, Cl. 429-27.000.

Solomon, Paul M.; and Wright, Steven L., to International Business Machines Corporation. Enhancement and depletion mode selection layer for field effect transistor. 4,616,242, Cl. 357-22.000.

Somers, Gerardus A.; Lovie, John R.; and Hendriks, Jan J. M., to OMI International Corporation. Gold alloy plating bath and process. 4,615,774, Cl. 204-44.300.

Sommer, Wolfgang: *See—*

Marusiak, Wojciech; and Sommer, Wolfgang, 4,615,482, Cl. 236-48.00R.

Sonobe, Yasuo: *See—*

Tagaya, Ryosaku; Kojima, Osamu; and Sonobe, Yasuo, 4,615,622, Cl. 356-427.000.

Sonoda, Noriaki: *See—*

Shimada, Yukio; and Sonoda, Noriaki, 4,615,384, Cl. 165-152.000.

Sony Corporation: *See—*

Takino, Hiroshi; Hayakawa, Kiyonori; Kawabata, Kazuko; and Tsuruoka, Makoto, 4,615,748, Cl. 148-304.000.

Yamaguchi, Koushi; and Igari, Kazuo, 4,616,278, Cl. 360-99.000.

Yoshida, Tadao, 4,616,354, Cl. 369-44.000.

Yukawa, Takahiro; Kusama, Hideo; Kanbayashi, Koji; and Takeuchi, Osamu, 4,616,161, Cl. 315-382.000.

Southern California Edison Company, Inc.: *See—*

Powell, John G., 4,615,530, Cl. 277-1.000.

Southern Pacific Land Co.: *See—*

Gallup, Darrell L.; and Featherstone, John L., 4,615,808, Cl. 210-714.000.

Sovonics Solar Systems, Inc.: *See—*

Ovshinsky, Stanford R.; Allred, David D.; Walter, Lee; and Hudgens, Stephen J., 4,615,905, Cl. 427-39.000.

Soydan, Ramazan: *See—*

Jastrzebski, Lubomir L.; Corboy, John F., Jr.; Pagliaro, Robert H., Jr.; and Soydan, Ramazan, 4,615,762, Cl. 156-628.000.

Spada, Ralph E.; and Shilot, Thomas, to Babcock & Wilcox Company, The. Method for replacing tubes in a header or drum. 4,615,477, Cl. 228-119.000.

Sparkes, A. Graham. Family group of successive radiation induced chrysanthemum mutants named snapper. 4,616,099, Cl. 800-1.000.

Spector, George: *See—*

Vinceller, George; and Spector, George, 4,615,651, Cl. 408-72.00R.

Speedomatic AG: *See—*

Mayerhofer, Friedrich, 4,615,083, Cl. 24-418.000.

Speelman, Paul L.: *See—*

Lane, E. James; and Speelman, Paul L., 4,615,421, Cl. 192-3.540.

Spencer, Dennis O.: *See—*

Neubauer, Jeffrey A.; Reese, Walter J.; and Spencer, Dennis O., 4,615,717, Cl. 65-4.400.

Speno International S.A.: *See—*

Panetti, Romolo, 4,615,150, Cl. 51-178.000.

Sprecker, Mark A.; Belko, Robert P.; Schreiber, William L.; and Licciardello, Michael, to International Flavors & Fragrances Inc. Isomer-directed process for producing asymmetric ketones using catalytic Claisen rearrangement of allylic ethers, intermediates, and uses of products and intermediates of process in perfumery. 4,615,830, Cl. 252-522.00R.

Sprecker, Mark A.; Belko, Robert P.; Schreiber, William L.; and Licciardello, Michael, to International Flavors & Fragrances Inc. Isomer-directed process for producing asymmetric ketones using catalytic claisen rearrangement of allylic ethers, intermediates, and uses of products and intermediates of process in perfumery. 4,616,095, Cl. 568-322.000.

Spriggs, Donald R., to General Electric Company. Solid particle erosion resistant coating utilizing titanium carbide, process for applying and article coated therewith. 4,615,734, Cl. 75-237.000.

Square D Company: *See—*

Fixemer, James V.; Palmer, Neil R.; Wagner, Charles H.; and Winter, John M., 4,616,200, Cl. 335-35.000.

Oster, Clark L., 4,616,199, Cl. 335-35.000.

Square D Starkstrom GmbH: *See—*

Kleine, Heinz, 4,616,117, Cl. 200-243.000.

Staab, Rudolf, to Hoechst Aktiengesellschaft. Electrolysis cell with horizontally disposed electrodes. 4,615,783, Cl. 204-252.000.

Stach, Leonard J.: *See—*

Nickell, Louis G.; Stach, Leonard J.; and Hokama, Takeo, 4,615,728, Cl. 71-94.000.

Stadler, Edwin B.; and Vidakovits, Lajos J., to Raychem Corporation. Mass termination device and connection assembly. 4,615,578, Cl. 339-143.00R.

Stafford, Robert G.: *See—*

Batch, Joseph; and Stafford, Robert G., 4,615,491, Cl. 241-37.000.

Stahel, Alwin J., to Drag Specialties, Inc. Windshield vent wing and hinge. 4,615,556, Cl. 296-78.100.

Stahly, Daniel C.: *See—*

Kenny, Andrew A.; Stahly, Daniel C.; and DeVera, Dennis, 4,616,164, Cl. 318-666.000.

Stamatakis, Emanuel; Sample, Thomas E., Jr.; and Javora, Paul H., to Dresser Industries, Inc. Process for making alkaline-earth metal salts of alkaryl sulfonic acids. 4,615,841, Cl. 260-505.00N.

Stamberg, Jiri : *See—*

Loth, Frith; Dautzenberg, Horst; Stamberg, Jiri ; Peska, Jan; Bertram, Dieter; and Lettau, Herbert, 4,615,880, Cl. 424-15.000.

Stanadyne, Inc.: *See—*

Downing, Todd R., 4,615,440, Cl. 206-229.000.

Standard Oil Company, The: *See—*

Mazanec, Terry J.; Frye, John G., Jr.; and Hardman, Harley F., 4,616,000, Cl. 502-341.000.

Tenhover, Michael A.; and Grasselli, Robert K., 4,615,967, Cl. 430-270.000.

Standard Oil Company (Indiana): *See—*

Hartman, Harry B.; LaLonde, Gerard V.; and Butkovich, Michael S., 4,615,362, Cl. 141-86.000.

Lucas, Philip J.; Reese, Charles P.; and Ocondi, Cham, 4,615,390, Cl. 166-250.000.

Stangeland, Bruce E.: *See—*

Bridge, Alan G.; and Stangeland, Bruce E., 4,615,789, Cl. 208-143.000.

State of Oregon Acting By and Through the State Board of Higher Education on Behalf of Portland State University: *See—*

Dash, John; and Kasaaian, Arash S., 4,615,773, Cl. 204-43.100.

State of Oregon, by and through the Oregon State Board of Higher Education on behalf of Oregon State University, The: *See—*

Sandine, William E.; and Ayres, James W., 4,615,978, Cl. 435-253.000.

Stauber, Hans-Ulrich, to Ferag AG. Apparatus for placing flat cover elements, preferably cover sheets, on stacks of flat articles, preferably printed products. 4,615,517, Cl. 270-58.000.

Stauffer Chemical Company: *See—*

Fesman, Gerald, 4,616,044, Cl. 521-107.000.

Stauffer-Wacker Silicones Corporation: *See—*

Martin, Eugene R., 4,615,706, Cl. 8-115.560.

Sanders, Albert J., Jr.; and Larson, Michael J., 4,615,738, Cl. 106-13.000.

Steele, Robert L.: *See—*

Nocek, James E.; Braund, Darwin G.; Steele, Robert L.; and Macgregor, Charles A., 4,615,891, Cl. 426-231.000.

Steffan, Leonard D.; and McCoy, Wilbur L., to Owens-Illinois, Inc. Valve block test apparatus. 4,615,722, Cl. 65-158.000.

Stegmeir, Karlheinz: *See—*

Witte, Ernst-Christian; Wolff, Hans P.; Hagenbruch, Bernd; Stegmeir, Karlheinz; and Pill, Johannes, 4,616,086, Cl. 544-383.000.

Steinberg, Klaus, to Reifenhauser GmbH & Co. Maschinenfabrik. Apparatus for flattening blown-foil tubes. 4,615,666, Cl. 425-72.00R.

Steiner, Ewald: *See—*

Scholtholt, Hans; and Steiner, Ewald, 4,616,288, Cl. 361-119.000.

Stepan Company: *See—*

Magnus, George, 4,615,822, Cl. 252-182.000.

Sterimed Gesellschaft fur medizinischen Bedarf mbH: *See—*

Kramann, Bernhard, 4,615,331, Cl. 128-4.000.

Sterzel, Hans-Josef; and Sanner, Axel, to BASF Aktiengesellschaft. Membranes of substantially non-crosslinked organic polymers. 4,616,041, Cl. 521-27.000.

Steuer, Werner: *See—*

Klauke, Dieter; and Steuer, Werner, 4,615,423, Cl. 192-64.000.

Stevens, Brian J.: *See—*

Buccellato, Ronald I.; Card, Wayne T.; Foote, Duane M.; Lewis, Cinda B.; Soland, Peter A.; Stevens, Brian J.; and Widmann, Philip C., 4,615,460, Cl. 220-307.000.

Stevens, Gregory A.: *See—*

Teot, Arthur S.; Rose, Gene D.; and Stevens, Gregory A., 4,615,825, Cl. 252-356.000.

Stevenson, Basil C. J., to Westland plc. Recirculating lubricating system with monitor filter unit. 4,615,413, Cl. 184-6.400.

Stewart, James J.; Abrahamson, Donald W.; and Harney, Marilyn J., to Eltech Systems Corporation. Narrow gap reticulate electrode electrolysis cell. 4,615,784, Cl. 204-263.000.

Stewart, Ronald L.: *See—*

Chyung, Kenneth; Cooper, Reid F.; Gadkaree, Kishor P.; Stewart, Ronald L.; and Taylor, Mark P., 4,615,987, Cl. 501-8.000.

Stifelman, Jack; Fisher, Patrick; and Connelly, John F., to Donaldson Company, Inc. Duplex filter apparatus. 4,615,800, Cl. 210-132.000.

Stiftung Deutsches Krebsforschungs Zentrum: *See—*

Eisenbrand, Gerhard; and Schreiber, Joachim, 4,615,835, Cl. 260-397.500.

Stimutech, Inc.: *See—*

Crawford, James R.; Winegeart, Jerald L.; and Erb, Michael H., 4,616,261, Cl. 358-181.000.

Stirling Thermal Motors, Inc.: *See—*

Meijer, Roelf J., 4,615,261, Cl. 92-200.000.

Stitt, Robert M.; and Burt, Rodney T., to Burr-Brown Corporation. Hall effect isolation amplifier. 4,616,188, Cl. 330-6.000.

Stitt, Thomas D.: *See—*

Cooper, Charles E.; and Stitt, Thomas D., 4,616,166, Cl. 318-712.000.

Stocchiero, Olimpio. Box made of plastic material particularly suited to contain floppy discs for electronic processors. 4,615,445, Cl. 206-444.000.

Stockel, Richard F. Disinfectant solution for contact lens. 4,615,882, Cl. 424-80.000.

Stockton, Thomas R., to Ford Motor Company. Engine starter and accessory drive system. 4,615,227, Cl. 74-7.00E.

Stoker, Ronald L., to Becton Dickinson & Company. Dissociation of ligand-binder complex using ultrasound. 4,615,984, Cl. 436-518.000.

Stone & Webster Engineering Corporation: *See—*

Woebcke, Herman N.; Narayanan, Swami; and Johnson, Axel R., 4,615,795, Cl. 208-72.000.

Storm, David A.: *See—*

Grazioso, Michael V.; Kerr, Edwin R., deceased; Love, Richard F.; and Storm, David A., 4,616,040, Cl. 518-713.000.

Stoy, Erich; and Rommen, Hans, to SMS Schloemann-Siemag AG. Six-high rolling stand. 4,615,202, Cl. 72-245.000.

Strand, David A., to Energy Conversion Devices, Inc. Method and apparatus for making a stamping master for video disk replication. 4,615,969, Cl. 430-320.000.

Strasser, Werner, to Texas Instruments Incorporated. Pressure responsive switch having little or no differential between actuation release pressure levels. 4,616,114, Cl. 200-83.00J.

Strehl, Herbert, to Siemens Aktiengesellschaft. Digital signal and multiplex device. 4,616,361, Cl. 370-110.100.

Strekopytov, Alexei A.; Sokolov, Vladimir A.; Kuzmichev, Alexandr P.; and Strekopytov, Vladimir A., to Vsesojuzny Nauchno-Issledovatelsky I Ispytatelny Institut Meditsinskoi Tekhniki. Instrument for ligating bone tissues of ribs and clavicles with metal staples. 4,615,474, Cl. 227-19.000.

Strekopytov, Vladimir A.: *See—*

Strekopytov, Alexei A.; Sokolov, Vladimir A.; Kuzmichev, Alexandr P.; and Strekopytov, Vladimir A., 4,615,474, Cl. 227-19.000.

Stritzl, Karl; Freisinger, Henry; and Luschnig, Franz, to TMC Corporation. Heel holder. 4,615,536, Cl. 280-631.000.

Stuart, James R.: *See—*

Hyde, David D.; and Stuart, James R., 4,615,866, Cl. 422-106.000.

Stubbs, John K.: *See—*

Campbell, Simon F.; Cross, Peter E.; and Stubbs, John K., 4,616,024, Cl. 514-340.000.

Stulberg, S. David; and Legrand, Bernard, to Sodem Diffusion S.A. Splint for surgical operations on the knee. 4,615,516, Cl. 269-328.000.

Su, Tien-Kuei, to Mobil Oil Corporation. Method and apparatus producing decorative melt fracture patterns on polymeric products. 4,615,858, Cl. 264-564.000.

Suda, Kobun: *See—*

Sugimoto, Yasuhiko; Wada, Sadao; Tanide, Naoyosi; Kawabata, Osamu; Yamaguchi, Tadashi; Yano, Shozo; Suda, Kobun; Nishibayashi, Kazuo; and Ishida, Shohei, 4,615,215, Cl. 73-866.000.

Sugimoto, Hiroyuki: *See—*

Ichikawa, Kenji; Sugimoto, Hiroyuki; Nakamura, Ryosuke; Yamamura, Takashi; and Mitsuhata, Kenji, 4,615,953, Cl. 428-699.000.

Sugimoto, Shigeo: *See—*

Kobayashi, Satoru; Sugimoto, Shigeo; and Terasaki, Masatosi, 4,615,184, Cl. 62-512.000.

Sugimoto, Yasuhiko; Wada, Sadao; Tanide, Naoyosi; Kawabata, Osamu; Yamaguchi, Tadashi; Yano, Shozo; Suda, Kobun; Nishibayashi, Kazuo; and Ishida, Shohei, to Takenaka Komuten Co., Ltd.; and Shimadzu Corporation. Method and apparatus for testing ready-mixed concrete. 4,615,215, Cl. 73-866.000.

Sugita, Yasutoshi: *See—*

Yanagawa, Hitoshi; Sugita, Yasutoshi; Ono, Satoshi; Maetani, Masami; and Tsunenari, Tomoo, 4,616,126, Cl. 235-375.000.

Sugiyama, Shuji, to Hitachi, Ltd. Optical exposure apparatus. 4,615,614, Cl. 355-53.000.

Sumitomo Chemical Company, Limited: *See—*

Mukaiyama, Teruaki; Sakito, Yoji; and Asami, Masatoshi, 4,616,092, Cl. 560-177.000.

Nakata, Chiaki; and Takenaka, Toshio, 4,615,348, Cl. 132-73.000.

Sumitomo Electric Industries, Ltd.: *See—*

Ono, Kimizo; Nishiwaki, Yoshikazu; Tsuno, Koichi; Iwai, Toru; and Nishikawa, Mitsuru, 4,616,258, Cl. 358-100.000.

Tsuno, Koichi; and Fujiwara, Kunio, 4,615,583, Cl. 350-96.330.

Sun Chemical Corporation: *See—*

Lindemann, Martin K.; and Deacon, Kim, 4,616,057, Cl. 524-458.000.

Sun Plant Industry Co., Ltd.: *See—*

Shimokawa, Katsusuke, 4,615,076, Cl. 17-32.000.

Suncast Corporation: *See—*

Tisbo, Cosmo N.; Tisbo, Thomas A.; Recker, Richard D.; and Heggeland, Bruce, 4,615,636, Cl. 403-8.000.

Sundstrand Corporation: *See—*

Sidransky, Fred S., 4,615,659, Cl. 416-183.000.

Upadhyay, Anand K.; Wold, W. William; and Thollot, Pierre, 4,616,142, Cl. 307-242.000.

Sutcliffe, Grenville G.; and Fink, Arthur C., Jr., to Husky Corporation. Multi-plane swivel connector. 4,615,547, Cl. 285-136.000.

Sutherland, James W., to Wilcox, P.; Soden, D.; and Barnes, T. Adjustable barbell exercise rack. 4,615,524, Cl. 272-123.000.

Suzuki, Hideo: *See—*

Satoh, Susumu; Suzuki, Hideo; Obara, Takashi; Nishida, Minoru; and Hashimoto, Osamu, 4,615,749, Cl. 148-330.000.

Suzuki, Masahisa; and Mimura, Takashi, to Fujitsu Limited. Method of producing enhancement mode and depletion mode FETs. 4,615,102, Cl. 29-571.000.

Suzuki, Nobuyuki: *See—*

Kataoka, Hiroyuki; Yamada, Masanori; and Suzuki, Nobuyuki, 4,615,599, Cl. 354-415.000.

Suzuta, Mikio; Yamamoto, Hironori; and Nakazawa, Kazuo, to Canon Kabushiki Kaisha. Precise movement device. 4,615,515, Cl. 269-73.000.

Swank, Robert P., to Leiter Industries, Inc. Storage apparatus and sorting tray. 4,615,571, Cl. 312-211.000.

Sweet, Richard C.: *See—*

Bronnes, Robert L.; McKinlay, James K.; Sweet, Richard C.; and Zwicker, Walter K., 4,615,951, Cl. 428-615.000.

Swinbanks, Brian J.: *See—*

Swinbanks, Duncan J.; and Swinbanks, Brian J., 4,615,135, Cl. 43-43.130.

Swinbanks, Duncan J.; and Swinbanks, Brian J., to Knotless Fishing Tackle Ltd. Knotless weight boom. 4,615,135, Cl. 43-43.130.

Swinburne, Stephen G., to Shape Inc. Ribbon cartridge with self-contained ratchet and drive gear assembly. 4,615,628, Cl. 400-242.000.

Swiss Aluminium Ltd.: *See—*

Merz, Walter, 4,615,648, Cl. 406-95.000.

Syntex (U.S.A.) Inc.: *See—*

Yoshida, Robert A., 4,615,986, Cl. 436-500.000.

Syringe Industries, Inc.: *See—*

Marzolf, Willis L.; and Snyder, Michael H., 4,615,341, Cl. 128-765.000.

Szabadkai, Istvan: *See—*

Ezer, Elemer; Harsanyi, Kalman; Domany, Gyorgy; Szporny, Laszlo ; Matuz, Judit; Hegedus, Bela; Pallagi, Katalin; Szabadkai, Istvan; and Tetenyi, Peter, 4,616,025, Cl. 514-342.000.

Szporny, Laszlo : *See—*

Ezer, Elemer; Harsanyi, Kalman; Domany, Gyorgy; Szporny, Laszlo ; Matuz, Judit; Hegedus, Bela; Pallagi, Katalin; Szabadkai, Istvan; and Tetenyi, Peter, 4,616,025, Cl. 514-342.000.

Tabacchi, Vittorio; and Viel, Vincenzo. Method of manufacturing front pieces for eyeglass frames. 4,615,086, Cl. 29-20.000.

Tachikawa Spring Co., Ltd.: *See—*

Kobayashi, Hideo, 4,615,563, Cl. 297-284.000.

Tack, Hans: *See—*

Reiter, Norbert; and Tack, Hans, 4,615,244, Cl. 82-36.00B.

Tada, Keiji; Fujii, Takashi; Marumoto, Gen; Jyouo, Kazuhiro; and Fujisawa, Takahiro, to Hitachi, Ltd.; and Hitachi Sanki Eng Co., Ltd. Method of and apparatus for detecting an end point of plasma treatment. 4,615,761, Cl. 156-626.000.

Taga, Yukio, to Nippon Notion Kogyo Co., Ltd. Apparatus for assembling a pair of fastener elements. 4,615,473, Cl. 227-15.000.

Tagaya, Ryosaku; Kojima, Osamu; and Sonobe, Yasuo, to Eisai Co., Ltd. Process for detecting resident air in a liquid charged receptacle and apparatus therefor. 4,615,622, Cl. 356-427.000.

Taguchi, Akihiro, to Olympus Optical Co., Ltd. Rigid endoscope of oblique window type. 4,615,333, Cl. 128-6.000.

Taguchi, Hiroaki: *See—*

Yasuda, Yoshinori; Takase, Akio; Ogawa, Koji; Tsutsumi, Takao; and Taguchi, Hiroaki, 4,615,526, Cl. 273-183.00A.

Taguchi, Nobuyoshi: *See—*

Hotta, Shu; Shimizu, Tokihiko; and Taguchi, Nobuyoshi, 4,615,938, Cl. 428-323.000.

Tahara, Tetsuya; Fukuda, Takemi; and Setoguchi, Michihide, to Yoshitomi Pharmaceutical Industries, Ltd. Neuroleptic indole-3-carboxamide derivatives. 4,616,009, Cl. 514-212.000.

Tahata, Michio, to Honda Giken Kogyo Kabushiki Kaisha. Variable venturi type carburetor and associated method. 4,615,845, Cl. 261-44.00B.

Tai, Ho T.; and Naddeo, Leandre, to Lever Brothers Company. Free-flowing particulate fabric-softening adjunct for use in laundry detergent compositions and method of making same. 4,615,815, Cl. 252-8.800.

Takagi, Takeo; and Sakaguchi, Yuji, to Bridgestone Corporation. Pneumatic actuator for manipulator. 4,615,260, Cl. 92-92.000.

Takahashi, Fuminobu: *See—*

Koike, Masahiro; Takahashi, Fuminobu; Ogura, Satoshi; and Koga, Kazunori, 4,615,217, Cl. 73-624.000.

Takahashi, Hideyuki: *See—*

Matsumoto, Masakazu; and Takahashi, Hideyuki, 4,615,963, Cl. 430-56.000.

Matsumoto, Masakazu; and Takahashi, Hideyuki, 4,615,965, Cl. 430-134.000.

Takahashi, Kenji: *See—*

Hosoi, Yuichi; and Takahashi, Kenji, 4,616,135, Cl. 250-327.200.

Takahashi, Mineo: *See—*

Niwa, Toshikazu; Takahashi, Mineo; and Aiba, Kazumi, 4,615,091, Cl. 29-156.40R.

Takahashi, Shigeo, to Aisin Seiki Kabushiki Kaisha. Planetary gear unit. 4,615,231, Cl. 74-467.000.

Takahashi, Wataru: *See—*

Hideshima, Makoto; Takahashi, Wataru; and Muramoto, Kenichi, 4,616,144, Cl. 307-315.000.

Takahashi, Yoshihisa: *See—*

Yamagishi, Shigeru; Takahashi, Yoshihisa; and Shiba, Koreyuki, 4,615,834, Cl. 252-635.000.

Takanashi, Yukio: *See—*

Fujita, Shigeru; Takanashi, Yukio; and Kanno, Hiroshi, 4,615,669, Cl. 425-147.000.

Takase, Akio: *See—*

Yasuda, Yoshinori; Takase, Akio; Ogawa, Koji; Tsutsumi, Takao; and Taguchi, Hiroaki, 4,615,526, Cl. 273-183.00A.

Takeda Chemical Industries, Ltd.: *See—*

Hirai, Shin-ichiro; Makino, Tadashi; and Koyama, Hiroyoshi, 4,616,008, Cl. 514-200.000.

Takeda, Susumu; Kobayashi, Shigeru; and Kunimitsu, Kenji, to Dainippon Ink and Chemicals, Inc. Method for forming thick coated film on the welded joint part of welded metallic can. 4,615,915, Cl. 427-239.000.

Takemoto, Toyoki: *See—*

Kawakita, Kenji; Sakai, Hiroyuki; and Takemoto, Toyoki, 4,615,746, Cl. 148-1.500.

Takemoto Yushi Kabushiki Kaisha: *See—*

Ogiso, Osamu; and Noda, Ippei, 4,615,816, Cl. 252-8.900.

Takenaka Komuten Co., Ltd.: *See—*

Sugimoto, Yasuhiko; Wada, Sadao; Tanide, Naoyosi; Kawabata, Osamu; Yamaguchi, Tadashi; Yano, Shozo; Suda, Kobun; Nishibayashi, Kazuo; and Ishida, Shohei, 4,615,215, Cl. 73-866.000.

Takenaka, Toshio: *See—*

Nakata, Chiaki; and Takenaka, Toshio, 4,615,348, Cl. 132-73.000.

Takeuchi, Hirosato; Kishi, Katsunobu; and Mikiya, Toshio, to Nitto Kohki Co., Ltd. Solar heat collector arrangement. 4,615,329, Cl. 126-438.000.

Takeuchi, Osamu: *See—*

Yukawa, Takahiro; Kusama, Hideo; Kanbayashi, Koji; and Takeuchi, Osamu, 4,616,161, Cl. 315-382.000.

Taki, Yoichioro: *See—*

Ona, Isao; Ozaki, Masaru; Fujii, Tadashi; and Taki, Yoichioro, 4,616,076, Cl. 528-15.000.

Takino, Hiroshi; Hayakawa, Kiyonori; Kawabata, Kazuko; and Tsuruoka, Makoto, to Sony Corporation. Amorphous soft magnetic thin film. 4,615,748, Cl. 148-304.000.

Takiue, Mamoru: *See—*

Horigome, Tsukumo; Kawabe, Noriyuki; Takiue, Mamoru; Imai, Kunihiko; Uchiyama, Noriaki; Tsuzuki, Fusayuki; Shimada, Kenji; Shibuya, Masahiro; Hakutoh, Norimasa; Watanabe, Chiaki; and Abe, Junichi, 4,615,769, Cl. 203-2.000.

Takumi, Shizuo; Hashimoto, Toshio; and Tatsushima, Masaru, to Nikki-Universal Co., Ltd. Method for preparing hydrodesulfurization catalyst. 4,615,999, Cl. 502-314.000.

Tallinsky Politekhnichesky Institut: *See—*

Kiisler, Karl R.; Kristianson, Peep G.; Sjuld, Tiya-Maya F.; Kaps, Tiit K.; Riistop, Myart A.; Rokk, Juri K.; Matvere, Toomas O.; Pravon, Juri E.; and Evert, Ilmar M., 4,615,737, Cl. 106-12.000.

Tamarkin, Vladimir M.: *See—*

Smith, Grant M.; Romania, Samuel R.; and Tamarkin, Vladimir M., 4,615,224, Cl. 73-863.330.

Tamiya, Masaru: *See—*

Ideno, Eiichiro; Tamiya, Masaru; Ogawa, Katsumi; and Kumakiri, Tadashi, 4,615,542, Cl. 285-11.000.

Tamura, Shohei; Sasaki, Sadamitsu; Abe, Masao; Nakazawa, Hitoshi; Ichinose, Hisashi; Nakamoto, Keiji; and Yumoto, Satoshi, to Nitto Electric Industrial Co., Ltd. Electroconductive organic polymer and method for producing the same. 4,615,829, Cl. 252-500.000.

Tanaami, Taichi; Kogure, Hiroshi; and Hayashi, Masakatsu, to Hitachi, Ltd. Air conditioner. 4,615,481, Cl. 236-38.000.

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Kubo, Masahiro; Dohnomoto, Tadashi; Tanaka, Atsuo; and Tatematsu, Yoshiaki, 4,615,733, Cl. 75-229.000.

Tanaka, Atsuyuki; Kaieda, Shozo; and Nishiyama, Masaaki, to Minolta Camera Kabushiki Kaisha. Character generating device. 4,616,219, Cl. 340-724.000.

Tanaka, Hidehiro; and Ishii, Takashi, to NEI Canada Limited; and MIWA Electric, Co. Ltd. Electromagnetic display. 4,616,221, Cl. 340-783.000.

Tanaka, Kojiro: *See—*

Hayashi, Yutaka; Kojima, Yoshikazu; Kamiya, Masaaki; and Tanaka, Kojiro, 4,616,340, Cl. 365-185.000.

Tandi, Branka: *See—*

Devuyst, Eric A. P.; Tandi, Branka; and Conard, Bruce R., 4,615,873, Cl. 423-367.000.

Tani, Yoshio; Naruo, Kyoichi; and Yabe, Masao, to Fuji Photo Film Co., Ltd. Information recording medium of air-sandwich structure. 4,616,238, Cl. 346-137.000.

Tanide, Naoyosi: *See—*

Sugimoto, Yasuhiko; Wada, Sadao; Tanide, Naoyosi; Kawabata, Osamu; Yamaguchi, Tadashi; Yano, Shozo; Suda, Kobun; Nishibayashi, Kazuo; and Ishida, Shohei, 4,615,215, Cl. 73-866.000.

Taniguchi, Fumio, to Nissan Motor Co., Ltd. Heater unit of automotive air conditioning system. 4,615,262, Cl. 98-2.080.

Tanno, Masaaki: *See—*

Kinaga, Eiichi; Sakai, Masanori; and Tanno, Masaaki, 4,615,551, Cl. 297-341.000.

Tanous, Adam C.: *See—*

Chan, Chi M.; and Tanous, Adam C., 4,616,056, Cl. 524-392.000.

Tansill, Horace A. Explosion-resistant fuel tank device. 4,615,455, Cl. 220-88.00R.

Taoka Chemical Company Limited: *See—*

Nakata, Chiaki; and Takenaka, Toshio, 4,615,348, Cl. 132-73.000.

Taormina, Frank A.: *See—*

Ward, Robert D.; Taormina, Frank A.; and Wong, Mon N., 4,616,195, Cl. 333-160.000.

Taquoi, Jean-Pierre, to B.S.L. (Bignier Schmidt-Laurent). Tank having reinforcing support means. 4,615,453, Cl. 220-71.000.

Tarala, Frederick E., to North American Filter Corporation. Fluid filter. 4,615,803, Cl. 210-455.000.

Tardy, Maurice: *See—*

Rousset, Andre ; and Tardy, Maurice, 4,615,507, Cl. 251-337.000.

Task, Harry L., to United States of America, Air Force. Vision test chart and method using Gaussians. 4,615,594, Cl. 351-239.000.

Tassoni, Vittorio, to D.M.C. Divisione Meccanica Castelli S.p.A. Smoothing machine for wood panels. 4,615,146, Cl. 51-90.000.

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Kubo, Masahiro; Dohnomoto, Tadashi; Tanaka, Atsuo; and Tatematsu, Yoshiaki, 4,615,733, Cl. 75-229.000.

Tateosian, Louis H.; and Horne, Shek C., to Dentsply International Inc. Method for making dental prosthetic device with oxygen barrier layer and visible light irradiation to cure polymer. 4,615,665, Cl. 425-16.000.

Tatsushima, Masaru: *See—*

Takumi, Shizuo; Hashimoto, Toshio; and Tatsushima, Masaru, 4,615,999, Cl. 502-314.000.

Taylor, John W., Jr., to Westinghouse Electric Corp. System and method of compensating a doppler processor for input unbalance and an unbalance measuring sensor for use therein. 4,616,229, Cl. 342-171.000.

Taylor, Kenneth B.; and Hall, Leo M., to University of Alabama in Birmingham, The. Synthesis and isolation of octopine and its analogues. 4,615,976, Cl. 435-172.300.

Taylor, Mark P.: *See—*

Chyung, Kenneth; Cooper, Reid F.; Gadkaree, Kishor P.; Stewart, Ronald L.; and Taylor, Mark P., 4,615,987, Cl. 501-8.000.

TBG Inc.: *See—*

Borsh, Richard J., 4,616,105, Cl. 174-65.00R.

TDK Corporation: *See—*

Yoda, Kuniichi; Ishihara, Yuji; and Azegami, Hitoshi, 4,615,949, Cl. 428-425.900.

Technicare Corporation: *See—*

Compton, Russell A., 4,616,180, Cl. 324-309.000.

Kramer, David M.; and Yeung, Hong-Ning, 4,616,182, Cl. 324-309.000.

Teich, Kurt P. Gripping tool. 4,615,078, Cl. 17-66.000.

Teijin Seiki Co. Ltd.: *See—*

Teranishi, Akio; and Murakami, Tsuneo, 4,615,493, Cl. 242-35.50A.

Teledyne Industries Inc.: *See—*

Kerr, James D.; and Thompson, Howard, 4,616,320, Cl. 364-421.000.

Tellalian, Martin L.: *See—*

Grove, Robert B.; Peters, Steven W.; and Tellalian, Martin L., 4,615,458, Cl. 220-222.000.

Telsmith Division Barber-Greene Company: *See—*

Batch, Joseph; and Stafford, Robert G., 4,615,491, Cl. 241-37.000.

Temple, Chester S., to PPG Industries, Inc. Chemically treated glass fibers for reinforcing polymeric matrices. 4,615,946, Cl. 428-361.000.

Tendler, Robert K. Talking depth sounder. 4,616,350, Cl. 367-116.000.

Tenhover, Michael A.; and Grasselli, Robert K., to Standard Oil Company, The. Optical information storage material. 4,615,967, Cl. 430-270.000.

Tenmyo, Yoshiharu, to Canon Kabushiki Kaisha. Electronic flash device. 4,616,294, Cl. 362-18.000.

Tennant Company: *See—*

Frederick, Sherman B.; Grimes, Charles E.; and Kimzey, Paul W., 4,615,070, Cl. 15-339.000.

Tenneco Oil Company: *See—*

Garthoffner, Egon H., 4,615,391, Cl. 166-257.000.

Teot, Arthur S.; Rose, Gene D.; and Stevens, Gregory A., to Dow Chemical Company, The. Friction reduction using a viscoelastic surfactant. 4,615,825, Cl. 252-356.000.

Teraji, Tsutomu; Shiokawa, Youichi; Okumura, Kazuo; and Sato, Yoshinari, to Fujisawa Pharmaceutical Co., Ltd. Triazine derivatives, and pharmaceutical compositions comprising the same. 4,616,014, Cl. 514-242.000.

Teraji, Tsutomu; Shiokawa, Youichi; Okumura, Kazuo; and Sato, Yoshinari, to Fujisawa Pharmaceutical Co., Ltd. Triazine derivatives, and pharmaceutical compositions comprising the same. 4,616,015, Cl. 514-242.000.

Teranishi, Akio; and Murakami, Tsuneo, to Teijin Seiki Co. Ltd. Method for doffing packages from a winding machine and an apparatus for effecting the same. 4,615,493, Cl. 242-35.50A.

Terasaki, Masatosi: *See—*

Kobayashi, Satoru; Sugimoto, Shigeo; and Terasaki, Masatosi, 4,615,184, Cl. 62-512.000.

Terisse, Patrick R.: *See—*

Rosenberg, Isadore; Terisse, Patrick R.; and Castro, Valentin, 4,615,438, Cl. 206-223.000.

Terry, Byron R.: *See—*

Miers, Robert M.; and Terry, Byron R., 4,615,767, Cl. 162-4.000.

Terumo Kabushiki Kaisha: *See—*

Nakagame, Fujio; Honda, Haruo; Maruyama, Teppei; Saito, Noriko; and Kimoto, Tomoaki, 4,615,885, Cl. 424-94.000.

Testa, Michele, to Savapa S.r.l. Method of determining the oxidizing activity of a biological liquid, and a corresponding reagent. 4,615,877, Cl. 424-2.000.

Tetenyi, Peter: *See—*

Ezer, Elemer; Harsanyi, Kalman; Domany, Gyorgy; Szporny, Laszlo ; Matuz, Judit; Hegedus, Bela; Pallagi, Katalin; Szabadkai, Istvan; and Tetenyi, Peter, 4,616,025, Cl. 514-342.000.

Tews, Uwe; and Rottmann, Maximilian R., to Zevatech AG. Method and an apparatus for the positioning of components with reference to a workpiece. 4,615,093, Cl. 29-407.000.

Texaco Inc.: *See—*

Grazioso, Michael V.; Kerr, Edwin R., deceased; Love, Richard F.; and Storm, David A., 4,616,040, Cl. 518-713.000.

Knifton, John F., 4,616,097, Cl. 568-852.000.

Smolin, William; and Estes, John H., 4,615,994, Cl. 502-62.000.

Zimmerman, Robert L.; and Duranleau, Roger G., 4,615,771, Cl. 203-46.000.

Texas Alkyls, Inc.: *See—*

Fannin, Loyd W.; Crapo, Clark C.; and Deavenport, Dennis L., 4,615,843, Cl. 260-665.00R.

Texas Instruments Incorporated: *See—*

Hornbeck, Larry J., 4,615,595, Cl. 353-122.000.

Sallas, John J.; Trevino, Toby R.; Alvi, Haroon I.; Shoffner, John S.; and Wason, Cameron B., 4,616,352, Cl. 367-190.000.

Strasser, Werner, 4,616,114, Cl. 200-83.00J.

TEXPA Arbter Maschinenbaugesellschaft mbH: *See—*

Henze, Siegfried; Mussig, Karl; and Ziegler, Hans, 4,615,287, Cl. 112-121.140.

Textilma AG: *See—*

Durville, Gerard, 4,615,189, Cl. 66-204.000.

Thanner, Otto: *See—*

Huber, Johann; and Thanner, Otto, 4,615,151, Cl. 51-293.000.

Thaung, Kurt I.; and Carlsson, Curt I., to Volvo BM AB. Flexible, force-transmitting element. 4,615,513, Cl. 267-63.00R.

Thebert, Glenn W., to General Motors Corporation. Coupling with spline clutch having different helix angles. 4,615,422, Cl. 192-53.00B.

Theeuwes, Felix: *See—*

Guittard, George V.; Wong, Patrick S. L.; and Theeuwes, Felix, 4,615,698, Cl. 604-892.000.

Theodore, Ares N.; and Pett, Robert A., to Ford Motor Company. Preparation of beta"-alumina tubes by the extrusion process. 4,615,851, Cl. 264-63.000.

Thermocell Development, Ltd.: *See—*

Smith, Stuart B., 4,616,043, Cl. 521-107.000.

Thermoject, Inc.: *See—*

Vorel, George M., 4,615,675, Cl. 432-4.000.

Thijssen, Henri J.; Uijen, Antonius J. M.; and Van der Putte, Paulus Z. A. M., to U.S. Philips Corporation. Method of manufacturing semiconductor devices, in which material is deposited from a reaction gas, and apparatus for carrying out such a method. 4,615,909, Cl. 427-82.000.

Thollot, Pierre: *See—*

Upadhyay, Anand K.; Wold, W. William; and Thollot, Pierre, 4,616,142, Cl. 307-242.000.

Thomas, Alain: *See—*

Helen, Andre; Servel, Michel; and Thomas, Alain, 4,616,338, Cl. 364-900.000.

Thomas & Betts Corporation: *See—*

Holzmann, Hubert A., 4,615,927, Cl. 428-35.000.

Noorily, Peter, 4,616,102, Cl. 174-36.000.

Thomas, George B.: *See—*

Hargis, Ivan G.; Fabris, Hubert J.; Livigni, Russell A.; Aggarwal, Sundar L.; Thomas, George B.; and Wilson, John A., 4,616,065, Cl. 525-99.000.

Thomas, John A.; Nissen, Norman C.; Bell, Malcolm C. E.; and Illis, Alexander, to Inco Limited. Hydrometallurgical processing of precious metal-containing materials. 4,615,731, Cl. 75-97.00A.

Thompson, Howard: *See—*

Kerr, James D.; and Thompson, Howard, 4,616,320, Cl. 364-421.000.

Thompson, Neil E. S.; Redmore, Derek; Oude Alink, Bernardus A.; and Outlaw, Benjamin T., to Petrolite Corporation. Thioethers of imidazolines. 4,616,085, Cl. 544-335.000.

Thompson, Ralph B.; and Sienkowski, Kenneth J., to PPG Industries, Inc. Surface-modified antimony oxide particles. 4,616,049, Cl. 523-212.000.

Thonney, Michel. Machine for tumbling, deburring and/or polishing bulk products. 4,615,147, Cl. 51-164.100.

Thornton, Max C., Jr.; Kuntz, Paul; Meyer, Russell L.; and Rosier, Kenneth M., to Harris Corporation. Pulsed linear integrated circuit tester. 4,616,178, Cl. 324-158.00F.

Thornton, Sandra K. Mobile home tornado shelter. 4,615,158, Cl. 52-169.600.

Thrun, Kenneth M.: *See—*

Bobbio, Stephen M.; Flanigan, Marie C.; Thrun, Kenneth M.; and DePrenda, Ralph L., 4,615,764, Cl. 156-643.000.

Tiefenbacher, Hubert: *See—*

Lechtken, Peter; Nurrenbach, Axel; Kohler, Walter; Hoppe, Peter P.; Tiefenbacher, Hubert; and Schole, Jurgen, 4,616,016, Cl. 514-249.000.

Tiemann, Jerome J.: *See—*

Vogelsong, Thomas L.; and Tiemann, Jerome J., 4,616,334, Cl. 364-825.000.

Time-O-Matic, Inc.: *See—*

Wood, Keith S., 4,616,222, Cl. 340-815.240.

Tinger, Harold G.: *See—*

Murray, James G.; and Tinger, Harold G., 4,615,689, Cl. 493-51.000.

Tippmann, Robert T. Cooling method, system and apparatus for minimizing dehydration of fresh meat products and the like. 4,615,176, Cl. 62-62.000.

Tisbo, Cosmo N.; Tisbo, Thomas A.; Recker, Richard D.; and Heggeland, Bruce, to Suncast Corporation. Connector construction. 4,615,636, Cl. 403-8.000.

Tisbo, Thomas A.: *See—*

Tisbo, Cosmo N.; Tisbo, Thomas A.; Recker, Richard D.; and Heggeland, Bruce, 4,615,636, Cl. 403-8.000.

Titterud, Curtiss W. Dry vent for motor homes. 4,615,263, Cl. 98-2.140.

TMC Corporation: *See—*

Stritzl, Karl; Freisinger, Henry; and Luschnig, Franz, 4,615,536, Cl. 280-631.000.

Tokunaga, Toshimichi: *See—*

Kanai, Seita; Tokunaga, Toshimichi; and Hibino, Somi, 4,616,163, Cl. 318-611.000.

Tokuyama, Shinichi; Hongo, Masaharu; and Iino, Hirokazu, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Desiccating agent. 4,615,823, Cl. 252-194.000.

Tokyo Electron Limited: *See—*

Satoh, Ryozo, 4,615,430, Cl. 198-465.100.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*

Aoyagi, Keizo, 4,616,313, Cl. 364-200.000.

Kameyama, Shuichi; Shinozaki, Satoshi; and Iwai, Hiroshi, 4,615,103, Cl. 29-576.00W.

Kameyama, Shuichi; Shinozaki, Satoshi; and Iwai, Hiroshi, 4,615,104, Cl. 29-576.00W.

Miyamoto, Junichi, 4,616,342, Cl. 365-190.000.

Sato, Fumitaka, 4,616,311, Cl. 364-200.000.

Wada, Hiroto; and Nishizono, Minoru, 4,615,105, Cl. 29-594.000.

Tomatis, Alfred A. A. Apparatus and method for practicing pronunciation of words by comparing the user's pronunciation with the stored pronunciation. 4,615,680, Cl. 434-157.000.

- Tomazic, Gerd, to Johnson Service Company. Process for the manufacture of bipolar electrodes and separators. 4,615,108, Cl. 29-623.200.
- Tomihashi, Nobuyuki: *See—*
    - Ohmori, Akira; Tomihashi, Nobuyuki; and Kitahara, Takahiro, 4,615,584, Cl. 350-96.340.
- Tominaga, Akira, to Kansai Paint Co., Ltd. Vinyl or acrylic polymer-modified epoxy resin. 4,616,066, Cl. 525-109.000.
- Tomisawa, Naoki, to Japan Electronic Control Systems Co., Ltd. Apparatus for learning control of air-fuel ratio of airfuel mixture in electronically controlled fuel injection type internal combustion engine. 4,615,319, Cl. 123-440.000.
- Tommaney, Joseph W., to Allegheny Ludlum Steel Corporation. Method for refining molten metal bath to control nitrogen. 4,615,730, Cl. 75-51.200.
- Topich, James A.; Cynkar, Thomas E.; Turi, Raymond A.; and Lockwood, George C., to NCR Corporation. Direct-write silicon nitride EEPROM cell. 4,616,245, Cl. 357-23.500.
- Toray Silicone Co., Ltd.: *See—*
    - Ona, Isao; Ozaki, Masaru; Fujii, Tadashi; and Taki, Yoichioro, 4,616,076, Cl. 528-15.000.
- Toriumi, Wataru; Shoji, Hideyuki; Inoue, Yoshihiko; Shiba, Soji; and Ushio, Yasuhiko, to Dainippon Ink and Chemicals, Incorporated. Method and apparatus for forming a combined image signal. 4,616,262, Cl. 358-183.000.
- Torok, Laszlo : *See—*
    - Ronafoldi, Arnold; Ferencsik, Jozsef; Doknas, Janos; and Torok, Laszlo , 4,615,660, Cl. 417-50.000.
- Toshiba Kikai Kabushiki Kaisha: *See—*
    - Fujita, Shigeru; Takanashi, Yukio; and Kanno, Hiroshi, 4,615,669, Cl. 425-147.000.
- Townsend, Herbert E.: *See—*
    - Shastry, Chakrakodi R.; and Townsend, Herbert E., 4,615,732, Cl. 148-403.000.
- Toyo Seikan Kaisha, Ltd.: *See—*
    - Kawaguchi, Kiyoshi; and Yamada, Muneki, 4,615,928, Cl. 428-35.000.
- Toyoda Gosei Co., Ltd.: *See—*
    - Kai, Toru; and Kubo, Norihisa, 4,615,094, Cl. 29-407.000.
- Toyoda Koki Kabushiki Kaisha: *See—*
    - Niwa, Kuniyuki; and Fujimura, Yoshiyuki, 4,616,322, Cl. 364-474.000.
    - Yoneda, Takao; and Sakakibara, Yasuji, 4,615,149, Cl. 51-165.710.
- Toyoda, Takashi: *See—*
    - Kojima, Tetsuro; Nakamura, Koki; and Toyoda, Takashi, 4,615,970, Cl. 430-446.000.
- Toyota Jidosha Kabushiki Kaisha: *See—*
    - Isetani, Hideki, 4,615,143, Cl. 49-374.000.
    - Kinaga, Eiichi; Sakai, Masanori; and Tanno, Masaaki, 4,615,551, Cl. 297-341.000.
    - Kubo, Masahiro; Dohnomoto, Tadashi; Tanaka, Atsuo; and Tatematsu, Yoshiaki, 4,615,733, Cl. 75-229.000.
- Tracy, David H.; and Saviano, Paul G., to Perkin-Elmer Corporation, The. Wafer cooling and temperature control for a plasma etching system. 4,615,755, Cl. 156-345.000.
- Traut, G. Robert, to Rogers Corporation. Method of manufacture of improved radome structure. 4,615,859, Cl. 264-570.000.
- Traut, G. Robert, to Rogers Corporation. Radome structure and method of manufacture thereof. 4,615,933, Cl. 428-252.000.
- Treiber, Fritz F., to Hobart Corporation. Method and apparatus for package labeling. 4,615,757, Cl. 156-350.000.
- Trevino, Toby R.: *See—*
    - Sallas, John J.; Trevino, Toby R.; Alvi, Haroon I.; Shoffner, John S.; and Wason, Cameron B., 4,616,352, Cl. 367-190.000.
- Trimble, Robert: *See—*
    - Zallie, James; Trimble, Robert; and Bell, Harvey, 4,615,888, Cl. 426-21.000.
- TriQuint Semiconductor, Inc.: *See—*
    - Pengue, M. Louis, Jr., 4,616,189, Cl. 330-253.000.
- Troutner, Arthur L., to Trus Joist Corporation. Utility line transmission tower apparatus. 4,615,154, Cl. 52-40.000.
- Troutner, David E.; and Volkert, Wynn A., to University of Missouri, Curators of the. Macrocyclic complexes of technetium-99m for use as diagnostic radionuclides. 4,615,876, Cl. 424-1.100.
- Trumbetas, Jerome: *See—*
    - Schenz, Anne F.; and Trumbetas, Jerome, 4,615,900, Cl. 426-590.000.
- Trus Joist Corporation: *See—*
    - Troutner, Arthur L., 4,615,154, Cl. 52-40.000.
- TRW Ehrenreich GmbH & Co., KG: *See—*
    - Ito, Eiichi, 4,615,638, Cl. 403-135.000.
- Tschierske, Carsten: *See—*
    - Demus, Dietrich; Zaschke, Horst; Pelzl, Gerhard; and Tschierske, Carsten, 4,615,824, Cl. 252-299.500.
- Tsubakimoto Chain Co.: *See—*
    - Hosokawa, Toshihiro, 4,615,640, Cl. 403-369.000.
- Tsuge, Akihiko: *See—*
    - Inoue, Hiroshi; Tsuge, Akihiko; and Komeya, Katsutoshi, 4,615,863, Cl. 419-23.000.
- Tsujii, Kanji; Yajima, Yusuke; and Murayama, Seiichi, to Hitachi, Ltd. Dry etching apparatus. 4,615,756, Cl. 156-345.000.
- Tsukada, Takayuki: *See—*
    - Shima, Kazuhiro; Inoue, Masayoshi; and Tsukada, Takayuki, 4,616,083, Cl. 544-90.000.
- Tsukagoshi, Masao: *See—*
    - Matsuyoshi, Yukio; and Tsukagoshi, Masao, 4,615,931, Cl. 428-174.000.
- Tsukamoto, Kenji: *See—*
    - Kato, Yutaka; Tsukamoto, Kenji; and Isoyama, Eizo, 4,615,747, Cl. 148-6.300.
- Tsumiyama, Yoshinori, to Kawasaki Jukogyo Kabushiki Kaisha. Motorcycle engine having automatic decompression device. 4,615,312, Cl. 123-182.000.
- Tsumiyama, Yoshinori, to Kawasaki Jukogyo Kabushiki Kaisha. Automatic decompression device for internal combustion engine. 4,615,313, Cl. 123-182.000.
- Tsunenari, Tomoo: *See—*
    - Yanagawa, Hitoshi; Sugita, Yasutoshi; Ono, Satoshi; Maetani, Masami; and Tsunenari, Tomoo, 4,616,126, Cl. 235-375.000.
- Tsuno, Koichi; and Fujiwara, Kunio, to Sumitomo Electric Industries, Ltd. Image fibers. 4,615,583, Cl. 350-96.330.
- Tsuno, Koichi: *See—*
    - Ono, Kimizo; Nishiwaki, Yoshikazu; Tsuno, Koichi; Iwai, Toru; and Nishikawa, Mitsuru, 4,616,258, Cl. 358-100.000.
- Tsuruga, Kouji: *See—*
    - Inoue, Tetsuyu; Tsuruga, Kouji; and Harada, Masashi, 4,615,912, Cl. 427-212.000.
- Tsuruoka, Makoto: *See—*
    - Takino, Hiroshi; Hayakawa, Kiyonori; Kawabata, Kazuko; and Tsuruoka, Makoto, 4,615,748, Cl. 148-304.000.
- Tsutsumi, Takao: *See—*
    - Yasuda, Yoshinori; Takase, Akio; Ogawa, Koji; Tsutsumi, Takao; and Taguchi, Hiroaki, 4,615,526, Cl. 273-183.00A.
- Tsuzuki, Fusayuki: *See—*
    - Horigome, Tsukumo; Kawabe, Noriyuki; Takiue, Mamoru; Imai, Kunihiko; Uchiyama, Noriaki; Tsuzuki, Fusayuki; Shimada, Kenji; Shibuya, Masahiro; Hakutoh, Norimasa; Watanabe, Chiaki; and Abe, Junichi, 4,615,769, Cl. 203-2.000.
- Tuerk, Erich: *See—*
    - Buecheler, Herbert; and Tuerk, Erich, 4,615,054, Cl. 4-231.000.
- Tunac, Josefino B., to Warner-Lambert Company. Purified culture of *Actinomadura verrucaspora* subspecies *veractimyces*. 4,615,975, Cl. 435-169.000.
- Turi, Raymond A.: *See—*
    - Topich, James A.; Cynkar, Thomas E.; Turi, Raymond A.; and Lockwood, George C., 4,616,245, Cl. 357-23.500.
- Turk, Amos; and Brassey, J. Michael. Removal of hydrogen sulfide from air streams. 4,615,714, Cl. 55-73.000.
- Turner, R. Brough: *See—*
    - Abrams, David; Curbelo, Raul; and Turner, R. Brough, 4,616,329, Cl. 364-571.000.
- Tyrolit Schleifmittelwerke Swarovski K.G.: *See—*
    - Huber, Johann; and Thanner, Otto, 4,615,151, Cl. 51-293.000.
- U.S Philips Corporation: *See—*
    - Ball, Patrick J. R.; Baker, Geoffrey; and Renals, Martin, 4,616,136, Cl. 250-338.000.
- Uchiyama, Noriaki: *See—*
    - Horigome, Tsukumo; Kawabe, Noriyuki; Takiue, Mamoru; Imai, Kunihiko; Uchiyama, Noriaki; Tsuzuki, Fusayuki; Shimada, Kenji; Shibuya, Masahiro; Hakutoh, Norimasa; Watanabe, Chiaki; and Abe, Junichi, 4,615,769, Cl. 203-2.000.
- Uebel, Helmut, to International Standard Electric Corporation. 2-out-of-3 Selecting facility in a 3-computer system. 4,616,312, Cl. 364-200.000.
- Ueda, Hiroyuki; Yamada, Yasuaki; Ozawa, Toshiaki; Nakajima, Hiroharu; and Kondo, Hiroatsu, to Canon Kabushiki Kaisha. Printing apparatus with means for indicating the selected printing pitch and paper advancing pitch. 4,615,631, Cl. 400-705.100.
- Ueda, Takeo: *See—*
    - Nakano, Masashi; and Ueda, Takeo, 4,615,268, Cl. 102-217.000.
- Uehara, Mikio: *See—*
    - Aoyama, Takeo; Kamei, Tadashi; and Uehara, Mikio, 4,615,853, Cl. 264-122.000.
- Uijen, Antonius J. M.: *See—*
    - Thijssen, Henri J.; Uijen, Antonius J. M.; and Van der Putte, Paulus Z. A. M., 4,615,909, Cl. 427-82.000.
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  - Ciliberti, David F.; Lippert, Thomas E.; and Archer, David H., 4,615,283, Cl. 110-216.000.
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  - Hawkins, Phillip J.; and Francisco, David G., 4,615,198, Cl. 72-122.000.
  - Huckestein, Edgar A., 4,615,862, Cl. 376-362.000.
  - Taylor, John W., Jr., 4,616,229, Cl. 342-171.000.
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  - Bell, Robert; Westius, Stefan; and Skold, Bjorn-Ake, 4,615,562, Cl. 297-250.000.
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  - Wetzel, Otto K., Jr., 4,615,328, Cl. 126-433.000.
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- Whitaker, Eugene, to National Steel Corporation. Method of striping hot steel slabs. 4,615,377, Cl. 164-477.000.
- White, Mary L. N., to Dow Chemical Company, The. Halogenated ethylene-carbon monoxide interpolymer. 4,616,072, Cl. 525-539.000.
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  - Lane, Michael L.; and Whitney, Lowell T., 4,615,177, Cl. 62-79.000.
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  - Richardson, Kenneth; and Whittle, Peter J., 4,616,026, Cl. 514-381.000.
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  - Wiczer, Max, 4,615,525, Cl. 273-127.00D.
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- Widmann, Philip C.: *See—*
  - Buccellato, Ronald I.; Card, Wayne T.; Foote, Duane M.; Lewis, Cinda B.; Soland, Peter A.; Stevens, Brian J.; and Widmann, Philip C., 4,615,460, Cl. 220-307.000.
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  - Sutherland, James W., 4,615,524, Cl. 272-123.000.
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  - Frank, Peter; and Giger, Kurt, 4,615,617, Cl. 356-5.000.
- Wilkens, Gunter: *See—*
  - Lehmler, Hansfriedrich; and Wilkens, Gunter, 4,615,510, Cl. 266-48.000.
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  - Scales, John T.; and Wilkinson, Michael J., 4,615,705, Cl. 623-11.000.
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  - Nash, Robert W.; Andre, Paul R.; and Knoblock, Dennis F., 4,615,546, Cl. 285-26.000.
- Williams, Harvey A.: *See—*
  - Grabarski, David L.; and Williams, Harvey A., 4,615,241, Cl. 81-3.200.
- Willis, Frank M.: *See—*
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- Wilson, James L.; and Edwards, Shannon, to Motorola, Inc. Microcomputer controlled data receiver. 4,616,314, Cl. 364-200.000.
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  - Hargis, Ivan G.; Fabris, Hubert J.; Livigni, Russell A.; Aggarwal, Sundar L.; Thomas, George B.; and Wilson, John A., 4,616,065, Cl. 525-99.000.
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  - Cormier, Thomas E.; Dawson, Bruce K.; Wilson, Keith B.; and Young, Thomas C., 4,615,716, Cl. 62-24.000.
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  - Crawford, James R.; Winegeart, Jerald L.; and Erb, Michael H., 4,616,261, Cl. 358-181.000.
- Winetzky, Deborah, to Purex Corporation. Porous substrate with absorbed antistat or softener, used with detergent. 4,615,814, Cl. 252-8.600.
- Wint, Robert L., to Eastman Kodak Company. Simultaneous phase detection and adjustment of multi-jet printer. 4,616,234, Cl. 346-75.000.
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  - Fixemer, James V.; Palmer, Neil R.; Wagner, Charles H.; and Winter, John M., 4,616,200, Cl. 335-35.000.
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  - Schilling, Leonhard G.; and Winters, John K., 4,615,627, Cl. 384-551.000.
- Wirth, Charles J., to Kamatics Corporation. Rotary drive coupling. 4,615,687, Cl. 464-69.000.
- Wirth, Walter, to Hergeth Hollingsworth GmbH. Method and apparatus for making a web from staple fibers. 4,615,080, Cl. 19-106.00R.
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- Wittkopf, Eugene W., to Magna-Graphics Corporation. Doctor blade apparatus for coating apparatus. 4,615,295, Cl. 118-261.000.
- Wittmann, Rudolf: *See—*
  - Behn, Reinhard; and Wittmann, Rudolf, 4,615,908, Cl. 427-81.000.
- Woebcke, Herman N.; Narayanan, Swami; and Johnson, Axel R., to Stone & Webster Engineering Corporation. Integrated heavy oil pyrolysis process. 4,615,795, Cl. 208-72.000.
- Wohlford, William P.; and Orlandea, Nicolae V., to Deere & Company. Flexor for sections of endless track. 4,615,567, Cl. 305-40.000.
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  - Upadhyay, Anand K.; Wold, W. William; and Thollot, Pierre, 4,616,142, Cl. 307-242.000.
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  - Gasnier, Robert; and Wolfenbarger, Larry N., 4,616,118, Cl. 200-153.0SC.
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  - Rathmell, Richard K., 4,615,674, Cl. 431-215.000.
- Wong, Matthew K. L.; Schroeder, Rodney G.; and Donegan, Thomas E., to BASF Corporation. Apparatus for purifying copper phthalocyanine pigment. 4,615,868, Cl. 422-111.000.
- Wong, Mon N.: *See—*
  - Ward, Robert D.; Taormina, Frank A.; and Wong, Mon N., 4,616,195, Cl. 333-160.000.
- Wong, Patrick S. L.: *See—*
  - Guittard, George V.; Wong, Patrick S. L.; and Theeuwes, Felix, 4,615,698, Cl. 604-892.000.
- Wood, Keith S., to Time-O-Matic, Inc. Display sign element with anti-bounce limit stop. 4,616,222, Cl. 340-815.240.
- Wood, Robert P.: *See—*
  - Price, Humphrey W.; and Wood, Robert P., 4,615,463, Cl. 220-412.000.
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- Woods, Randall L. Intraocular lens and method of implantation thereof. 4,615,701, Cl. 623-6.000.
- Workman, Michael L., to International Business Machines Corporation. Disk file servo control system with fast reduction of repeatable head position error. 4,616,276, Cl. 360-77.000.

Worthington, William, to Dalgety Australia Operations Limited. Evaporative air conditioner. 4,615,182, Cl. 62-310.000.

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Wright, Donald G., to Adelphi Center For Energy Studies. Viscometer system. 4,615,210, Cl. 73-55.000.

Wright, Henry L.; Bandura, Vitaly; and Woodman, Daniel W., Jr., to USM Corporation. Machine for inserting multi-lead components. 4,615,089, Cl. 29-33.00K.

Wright, John D., to United States of America, Energy. Progressing batch hydrolysis process. 4,615,742, Cl. 127-37.000.

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Wurmli, Arthur, to Rieter Machine Works Limited. Apparatus for removing individual textile bobbin tubes from a reservoir including bobbin tube jam break-up mechanism. 4,615,169, Cl. 57-270.000.

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Garsin, Paul A., 4,615,613, Cl. 355-15.000.

Law, Simon M.; and Long, Bruce, 4,616,212, Cl. 340-347.0DA.

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Yabuta, Motoshi; Sasaki, Yoshio; and Iihashi, Mototaka, to Kansai Paint Co., Ltd. Process for preparing a stable dispersion in an aqueous medium of particles of polymer. 4,616,058, Cl. 524-461.000.

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Levinson, Lionel M.; and Yakymyshyn, Christopher P., 4,615,765, Cl. 156-643.000.

Yamada, Akira, to Canon Kabushiki Kaisha. Circuit board for electrical instrument control. 4,615,604, Cl. 354-485.000.

Yamada, Junichi; Horikawa, Kazuo; and Noguchi, Masaru, to Fuji Photo Film Co., Ltd. Light detecting apparatus. 4,616,129, Cl. 250-207.000.

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Kataoka, Hiroyuki; Yamada, Masanori; and Suzuki, Nobuyuki, 4,615,599, Cl. 354-415.000.

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Ueda, Hiroyuki; Yamada, Yasuaki; Ozawa, Toshiaki; Nakajima, Hiroharu; and Kondo, Hiroatsu, 4,615,631, Cl. 400-705.100.

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Mizuno, Tomokimi; and Yamaguchi, Kazuaki, 4,615,378, Cl. 165-10.000.

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Yoshikawa, Masaaki, 4,615,309, Cl. 123-90.270.

Yamaichi Electric Mfg. Co., Ltd.: *See—*

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Kinoshita, Tsuneo; Sato, Fumitaka; and Yamazaki, Isamu, 4,616,331, Cl. 364-736.000.

Yamazaki, Shunpei. Method of making non-crystalline semiconductor layer. 4,615,298, Cl. 118-723.000.

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Iio, Masahiro; Saruwatari, Yasuhiko; and Yamazoe, Hiroshi, 4,615,663, Cl. 418-152.000.

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Yano, Shozo: *See—*

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Yao, Minoru: *See—*

Saito, Kenji; Nakanishi, Kyoji; Nanba, Akihiko; Onishi, Masayuki; Yao, Minoru; Kato, Toshio; and Kojima, Shinji, 4,615,373, Cl. 164-125.000.

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Yasuda, Yoshinori; Takase, Akio; Ogawa, Koji; Tsutsumi, Takao; and Taguchi, Hiroaki, to Mitsubishi Denki Kabushiki Kaisha. Computing golf trainer with magnetic sensor. 4,615,526, Cl. 273-183.00A.

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Yasukawa, Kenichiro; Hirano, Toshio; Yoshida, Masayuki; and Yoshio, Junichi, to Pioneer Electronic Corporation. Digital audio system with automatic fade in and fade out operations. 4,616,271, Cl. 360-32.000.

Yata, Shizukuni, to Kanebo, Ltd. Insoluble and infusible substrate with a polyacene-type skeletal structure, and its applications for electrical conductor or organic cell. 4,615,960, Cl. 429-194.000.

Yee, Edward M.: *See—*

Scapple, Robert Y.; Peters, John W.; Linder, Jacques F.; and Yee, Edward M., 4,615,294, Cl. 118-50.100.

Yeh, Gong-Jong: *See—*

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Yoneda, Takao; and Sakakibara, Yasuji, to Toyoda Koki Kabushiki Kaisha. Feed control apparatus for grinding machine. 4,615,149, Cl. 51-165.710.

Yoon, Heeyoung, to Conoco Inc. Flue gas desulfurization process. 4,615,871, Cl. 423-243.000.

Yorifuji, Takashi: *See—*

Yoshino, Hisashi; Haga, Masakatsu; Yorifuji, Takashi; and Oshima, Teruo, 4,615,846, Cl. 264-13.000.

York, Henry A. Soccer training device. 4,615,528, Cl. 273-396.000.

Yoshida Kogyo K. K.: *See—*

Matsuda, Yasuhiko, 4,615,288, Cl. 112-121.290.

Yoshieda, Keiichi; Sodeno, Toshiaki; and Honmoto, Syuichi, 4,615,246, Cl. 83-42.000.

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Yoshimizu, Makoto: *See—*

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Yoshinaka, Shinji: *See—*

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Yoshino, Hisashi; Haga, Masakatsu; Yorifuji, Takashi; and Oshima, Teruo, to Kabushiki Kaisha Toshiba. Method of manufacturing a low-melting point alloy for sealing in a fluorescent lamp. 4,615,846, Cl. 264-13.000.

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Yoshitomi Pharmaceutical Industries, Ltd.: *See—*

Tahara, Tetsuya; Fukuda, Takemi; and Setoguchi, Michihide, 4,616,009, Cl. 514-212.000.

Yoshiura, Shoichiro, to Sharp Kabushiki Kaisha. Copying apparatus having one set-two copy mode. 4,615,610, Cl. 355-14.00R.

Yoshiura, Shoichiro, to Sharp Kabushiki Kaisha. Variable magnification copying machine. 4,615,611, Cl. 355-14.00R.

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Young, Steven D.: *See—*

Remy, David C.; and Young, Steven D., 4,616,023, Cl. 514-325.000.

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Cormier, Thomas E.; Dawson, Bruce K.; Wilson, Keith B.; and Young, Thomas C., 4,615,716, Cl. 62-24.000.

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Yuchi, Sadataka, to Hochiki Corporation. Analog-type fire detector. 4,616,138, Cl. 250-554.000.

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Zagoroff, Dimiter S. Shrink oven. 4,616,123, Cl. 219-388.000.

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Hirt, Manfred; and John, Eric, 4,615,239, Cl. 74-720.000.

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Pauluk, Harry J.; and Zauner, Otto, 4,615,719, Cl. 65-29.000.

Zeiner, Hartmut; Heinz, Gerhard; Neumann, Peter; Fischer, Jurgen; and Nissen, Dietmar, to BASF Aktiengesellschaft. Thermoplastic molding materials. 4,616,070, Cl. 525-390.000.

Zeller Plastik, Koehn Grabner & Co.: *See—*

Sacherer, Klaus D.; Weiss, Erich; Koehn, Jochen; and Brach, Ulrich, 4,615,462, Cl. 220-339.000.

Zevatech AG: *See—*

Tews, Uwe; and Rottmann, Maximilian R., 4,615,093, Cl. 29-407.000.

Ziegler, Hans: *See—*

Henze, Siegfried; Mussig, Karl; and Ziegler, Hans, 4,615,287, Cl. 112-121.140.

Zimmerman, Robert L.; and Duranleau, Roger G., to Texaco Inc. Method of separating bis-(2-aminoethyl)ether from N-(2-methoxyethyl)morpholine by azeotropic distillation and extraction. 4,615,771, Cl. 203-46.000.

Zimmermann, Helmut: *See—*

Seeler, Hartwig; and Zimmermann, Helmut, 4,615,497, Cl. 244-75.00A.

Zipf, Eckart: *See—*

Schilla, Henning; Hatz, Ernst; and Zipf, Eckart, 4,615,554, Cl. 294-89.000.

Zornes, Bruce L.: *See—*

Bendig, Anna L.; and Zornes, Bruce L., 4,615,935, Cl. 428-268.000.

Zukosky, Mimzee; and Dieck, Ronald L., to Raychem Corporation. Polymeric compositions suitable for use in the medical field and comprising a thermoplastic olefin, a siloxane polymer, and an elastomer. 4,616,064, Cl. 525-92.000.

Zurlo, Eugene J.: *See—*

Paradis, Joseph R.; and Zurlo, Eugene J., 4,615,693, Cl. 604-122.000.

Zwack, Robert R.: *See—*

McCollum, Gregory J.; Scriven, Roger L.; Christenson, Roger M.; Mauer, George W.; and Zwack, Robert R., 4,615,779, Cl. 204-181.700.

Zwicker, Walter K.: *See—*

Bronnes, Robert L.; McKinlay, James K.; Sweet, Richard C.; and Zwicker, Walter K., 4,615,951, Cl. 428-615.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF OCTOBER, 1986

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Dyson, James, to Prototypes, Ltd. Vacuum cleaning appliances. Re. 32,257, Cl. 15-335.000.
Eastman Kodak Company: *See—*
Kasper, George P.; Kroll, Arthur S.; and Mosehauer, Michael, Re. 32,259, Cl. 355-3.00R.
Fansteel Inc.: *See—*
Fry, Stanley S., Re. 32,260, Cl. 75-230.000.
Fry, Stanley S., to Fansteel Inc. Tantalum powder and method of making the same. Re. 32,260, Cl. 75-230.000.
Hirota, Kuniomi; Masumoto, Akio; Ozawa, Hiroshi; Kobayashi, Nobuki; and Honda, Teruo, to Mitsui Toatsu Chemicals, Incorporated. Process for producing thermosetting finishing powders. Re. 32,261, Cl. 525-285.000.
Honda, Teruo: *See—*
Hirota, Kuniomi; Masumoto, Akio; Ozawa, Hiroshi; Kobayashi, Nobuki; and Honda, Teruo, Re. 32,261, Cl. 525-285.000.
Kaminsky, Murray F., to RCA Corporation. Charge time start control for interconnect PABX. Re. 32,263, Cl. 179-7.10R.
Kasper, George P.; Kroll, Arthur S.; and Mosehauer, Michael, to Eastman Kodak Company. Method and means for improving maximum density and tonal range of electrographic images. Re. 32,259, Cl. 355-3.00R.
Kobayashi, Nobuki: *See—*
Hirota, Kuniomi; Masumoto, Akio; Ozawa, Hiroshi; Kobayashi, Nobuki; and Honda, Teruo, Re. 32,261, Cl. 525-285.000.
Kondo, Katsumi; Noda, Fumiyoski; Murachi, Mikio; Watanabe, Yuji; and Usui, Masaru, to Toyota Jidosha Kabushiki Kaisha. Method of filling a casing with heat insulating fibers. Re. 32,258, Cl. 29-157.00R.
Kroll, Arthur S.: *See—*
Kasper, George P.; Kroll, Arthur S.; and Mosehauer, Michael, Re. 32,259, Cl. 355-3.00R.
Masumoto, Akio: *See—*
Hirota, Kuniomi; Masumoto, Akio; Ozawa, Hiroshi; Kobayashi, Nobuki; and Honda, Teruo, Re. 32,261, Cl. 525-285.000.
May, John C.: *See—*
Stewart, Bonner B., Re. 32,262, Cl. 296-171.000.
Mitsui Toatsu Chemicals, Incorporated: *See—*
Hirota, Kuniomi; Masumoto, Akio; Ozawa, Hiroshi; Kobayashi, Nobuki; and Honda, Teruo, Re. 32,261, Cl. 525-285.000.
Mosehauer, Michael: *See—*
Kasper, George P.; Kroll, Arthur S.; and Mosehauer, Michael, Re. 32,259, Cl. 355-3.00R.
Murachi, Mikio: *See—*
Kondo, Katsumi; Noda, Fumiyoski; Murachi, Mikio; Watanabe, Yuji; and Usui, Masaru, Re. 32,258, Cl. 29-157.00R.
Noda, Fumiyoski: *See—*
Kondo, Katsumi; Noda, Fumiyoski; Murachi, Mikio; Watanabe, Yuji; and Usui, Masaru, Re. 32,258, Cl. 29-157.00R.
Ozawa, Hiroshi: *See—*
Hirota, Kuniomi; Masumoto, Akio; Ozawa, Hiroshi; Kobayashi, Nobuki; and Honda, Teruo, Re. 32,261, Cl. 525-285.000.
Prototypes, Ltd.: *See—*
Dyson, James, Re. 32,257, Cl. 15-335.000.
RCA Corporation: *See—*
Kaminsky, Murray F., Re. 32,263, Cl. 179-7.10R.
Stewart, Bonner B., to May, John C. Telescoping room for travel trailers. Re. 32,262, Cl. 296-171.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Kondo, Katsumi; Noda, Fumiyoski; Murachi, Mikio; Watanabe, Yuji; and Usui, Masaru, Re. 32,258, Cl. 29-157.00R.
Usui, Masaru: *See—*
Kondo, Katsumi; Noda, Fumiyoski; Murachi, Mikio; Watanabe, Yuji; and Usui, Masaru, Re. 32,258, Cl. 29-157.00R.
Watanabe, Yuji: *See—*
Kondo, Katsumi; Noda, Fumiyoski; Murachi, Mikio; Watanabe, Yuji; and Usui, Masaru, Re. 32,258, Cl. 29-157.00R.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Ault, Robert L., to Epic Metals Corporation. Metal deck raceway construction. B1 4,454,692, 10-7-86, Cl. 52-221.000.
Bailey, Fred J.: *See—*
McAleer, William J.; Bailey, Fred J.; and Markus, Henry Z., B1 4,412,002, Cl. 435-235.000.
Book Covers, Inc.: *See—*
Carter, Leewood C.; and Neary, Robin P., B1 4,405,156, Cl. 281-29.000.
Calgon Corp.: *See—*
McAleer, William J.; Bailey, Fred J.; and Markus, Henry Z., B1 4,412,002, Cl. 435-235.000.
Carter, Leewood C.; and Neary, Robin P., to Book Covers, Inc. Reinforced hinge for book cover. B1 4,405,156, 10-7-86, Cl. 281-29.000.
Epic Metals Corporation: *See—*
Ault, Robert L., B1 4,454,692, Cl. 52-221.000.
Markus, Henry Z.: *See—*
McAleer, William J.; Bailey, Fred J.; and Markus, Henry Z., B1 4,412,002, Cl. 435-235.000.
McAleer, William J.; Bailey, Fred J.; and Markus, Henry Z., to Calgon Corp. Process for preparing hepatitis A virus. B1 4,412,002, 10-7-86, Cl. 435-235.000.
Neary, Robin P.: *See—*
Carter, Leewood C.; and Neary, Robin P., B1 4,405,156, Cl. 281-29.000.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See—*
Miller, James B., 286,072, Cl. D24-56.000.
Adams Manufacturing: *See—*
Adams, William E., 286,013, Cl. D8-395.000.
Adams, Peter D.; and Hartshorne, John M., to Quadrastat Corporation. Valve actuator control unit. 286,064, 10-7-86, Cl. D23-19.000.
Adams, William E., to Adams Manufacturing. Spring clip. 286,013, 10-7-86, Cl. D8-395.000.
Addiego, Joseph, to Nabisco Brands, Inc. Packaging container for food or the like. 286,016, 10-7-86, Cl. D9-305.000.
Alger, Andrew L., to Household Manufacturing, Inc. Water closet. 286,067, 10-7-86, Cl. D23-65.000.
Allison Corporation: *See—*
Langensiepen, Eric, 285,998, Cl. D3-40.000.
Langensiepen, Eric, 286,036, Cl. D12-191.000.
Alltrade Inc.: *See—*
Hillinger, George, 286,008, Cl. D8-47.000.

American Commercial, Incorporated: *See—*
Everhan, Walter, 286,001, Cl. D7-30.000.
APL Corporation: *See—*
Fishman, A. Harry; and Bottitta, Joseph, 286,019, Cl. D9-341.000.
Apple Computer, Inc.: *See—*
Peart, Stephen; Pruitt, Mark F.; and MacKenzie, William G., 286,052, Cl. D14-111.000.
Roots, David; Manock, Jerrold C.; and Oyama, Terrell A., 286,047, Cl. D14-100.000.
Roots, David H.; Oyama, Terrell A.; and Manock, Jerrold C., 286,050, Cl. D14-109.000.
Ariotti, Ruggero, to Montenegro, S.p.A. Combined bottle and cap. 286,017, 10-7-86, Cl. D9-329.000.
AT&T Information System Inc.: *See—*
McGarvey, John N.; Prince, Terry B.; Wild, Ronald L.; and Zambelli, Michael P., 286,045, Cl. D14-100.000.
Bancroft, Joseph C. Frame fixed jamb. 286,077, 10-7-86, Cl. D25-74.000.
Bancroft, Joseph C. Standard frame head. 286,078, 10-7-86, Cl. D25-74.000.
Bancroft, Joseph C. Vent jamb. 286,079, 10-7-86, Cl. D25-74.000.
Bancroft, Joseph C. Vent head and sill. 286,080, 10-7-86, Cl. D25-74.000.
Barrash, Marshall J., to Coca-Cola Company, The. Package of cans. 286,020, 10-7-86, Cl. D9-369.000.
Bayerische Motoren Werke Aktiengesellschaft: *See—*
Walter, Hubert, 286,037, Cl. D12-211.000.
Beghin-Say S.A.: *See—*
Minost, Henri, 285,995, Cl. D6-522.000.
Bell Helmets Inc.: *See—*
McNabb, Otho F., 285,980, Cl. D29-12.000.
Bilbrey, Angela: *See—*
Kernea, Richard L.; and Bilbrey, Angela, 286,062, Cl. D21-35.000.
Bottitta, Joseph: *See—*
Fishman, A. Harry; and Bottitta, Joseph, 286,019, Cl. D9-341.000.
Breitschwerdt, Werner; Mischke, Arthur; and Sacco, Bruno, to Daimler-Benz Aktiengesellschaft. Truck driver cab. 286,031, 10-7-86, Cl. D12-96.000.
Brembo S.p.A.: *See—*
Giorgetti, Alberto, 286,034, Cl. D12-179.000.
Bridgestone Tire Company Limited: *See—*
Motomura, Kenichi; and Ogawa, Hiroshi, 286,033, Cl. D12-142.000.
Bristol-Myers Company: *See—*
Graumann, Robert J., 286,029, Cl. D10-125.000.
Britax Weathershields Limited: *See—*
Fisher, Sidney E., 286,035, Cl. D12-190.000.
Brix, Dennis, to Pedersen, Vagn Hvam. Combined grill and table. 286,002, 10-7-86, Cl. D7-332.000.
Broadway Industries, Inc.: *See—*
Miller, Charles D.; Daniels, Bernard O.; and McKeone, William C., 285,990, Cl. D6-314.000.
Bruno, Robert H.: *See—*
Woodring, Cooper C.; MacGregor, Francis W.; and Bruno, Robert H., 286,032, Cl. D12-130.000.
Bushe, Inc.: *See—*
Corte, Manuel R., 286,074, Cl. D25-1.000.
Corte, Manuel R., 286,075, Cl. D25-1.000.
Bussell, Vanda J. Soap dish. 285,996, 10-7-86, Cl. D6-536.000.
Bussell, Vanda J. Tumbler. 286,000, 10-7-86, Cl. D7-14.000.
Camens, Murray I. C., to U.S. Philips Corporation. Hair-dryer. 286,087, 10-7-86, Cl. D28-13.000.
Canon Kabushiki Kaisha: *See—*
Kando, Masahiro, 286,044, Cl. D14-94.000.
Kikuchi, Nobuo; and Odagawa, Kazuyoshi, 286,056, Cl. D18-7.000.
Car Mate Mfg. Co., Ltd.: *See—*
Sakai, Kazumi, 285,988, Cl. D3-61.000.
Chalabian, Jack S., to K-Jack Engineering Co., Inc. Newspaper vending machine. 286,061, 10-7-86, Cl. D20-6.000.
Coca-Cola Company, The: *See—*
Barrash, Marshall J., 286,020, Cl. D9-369.000.
Coller, Delaine. Carrousel cosmetic tray. 286,093, 10-7-86, Cl. D28-76.000.
Coller, Delaine. Carrousel cosmetic tray. 286,094, 10-7-86, Cl. D28-76.000.
Consulting Organization of Sydney College of the Arts, Ltd.: *See—*
Russell, Robert A., 286,073, Cl. D24-64.000.
Cornell, Howell N. Contact pad for folding chair. 285,994, 10-7-86, Cl. D6-491.000.
Corte, Manuel R., to Bushe, Inc. Shelter. 286,074, 10-7-86, Cl. D25-1.000.
Corte, Manuel R., to Bushe, Inc. Shelter. 286,075, 10-7-86, Cl. D25-1.000.
Craft, Michael; and Hemming, Peter C., to Health Education Counsil. Teeth model. 286,059, 10-7-86, Cl. D19-62.000.
Daimler-Benz Aktiengesellschaft: *See—*
Breitschwerdt, Werner; Mischke, Arthur; and Sacco, Bruno, 286,031, Cl. D12-96.000.
Daniels, Bernard O.: *See—*
Miller, Charles D.; Daniels, Bernard O.; and McKeone, William C., 285,990, Cl. D6-314.000.
Davis, Andrew E., to Holliday, Douglas Charles, a part interest. Diaper clip. 286,014, 10-7-86, Cl. D8-395.000.
DeStefano, Joseph J. Ice cream shop. 286,076, 10-7-86, Cl. D25-10.000.
De Vries, Jacob. Display stand. 285,992, 10-7-86, Cl. D6-462.000.
DiFede, John. Combined pour spout air bleeder and lid for a fluid container. 286,028, 10-7-86, Cl. D9-435.000.
Dopps, Mark A., to Ski-Horse Corporation. Boat. 286,038, 10-7-86, Cl. D12-307.000.
Ekins, David L., to Gold Belt Line, Inc., The. Visor for a helmet. 285,981, 10-7-86, Cl. D29-16.000.
Electrix, Inc.: *See—*
Shwisha, Haim, 286,082, Cl. D26-61.000.
Everhan, Walter, to American Commercial, Incorporated. Dinner plate. 286,001, 10-7-86, Cl. D7-30.000.
Farmos-Yhtyma Oy: *See—*
Waher, Paavo; Norkela, Timo; and Raasakka, Olavi, 286,027, Cl. D9-435.000.
Fisher, Sidney E., to Britax Weathershields Limited. Trim ring for vehicle sun roof opening. 286,035, 10-7-86, Cl. D12-190.000.
Fishman, A. Harry; and Bottitta, Joseph, to APL Corporation. Partitioned dispensing container. 286,019, 10-7-86, Cl. D9-341.000.
FSI Corporation: *See—*
Johnson, Ardelle R., 286,081, Cl. D26-38.000.
Fudatsuji, Toshiharu: *See—*
Nakano, Yutaka; Watari, Masami; and Fudatsuji, Toshiharu, 286,051, Cl. D14-111.000.
Fujitsu Limited: *See—*
Nakano, Yutaka; Watari, Masami; and Fudatsuji, Toshiharu, 286,051, Cl. D14-111.000.
Fukutani, Yoshifumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Telephone. 286,042, 10-7-86, Cl. D14-60.000.
Fuller, Ronald C., to Mead Johnson & Company. Natural nipple. 286,071, 10-7-86, Cl. D24-46.000.
Genna, Salvatore A., to Russo, Neil A., a part interest. Dispenser bin for edible products such as nuts, candies and the like. 285,993, 10-7-86, Cl. D6-475.000.
Ginkel, Erich E.: *See—*
Goessling, Kent W.; and Ginkel, Erich E., 286,066, Cl. D23-34.000.
Giorgetti, Alberto, to Brembo S.p.A. Combined motorcycle handle bar handgrip and brake lever unit. 286,034, 10-7-86, Cl. D12-179.000.
Goessling, Kent W.; and Ginkel, Erich E., to Rain Bird Consumer Products Mfg. Corp. Injector nozzle. 286,066, 10-7-86, Cl. D23-34.000.
Gold Belt Line, Inc., The: *See—*
Ekins, David L., 285,981, Cl. D29-16.000.
Graumann, Robert J., to Bristol-Myers Company. Liquid crystal bar graph display. 286,029, 10-7-86, Cl. D10-125.000.
Greufe, David A. Novelty hat. 285,983, 10-7-86, Cl. D2-252.000.
Hara, Kunio: *See—*
Sutoh, Shigeru; Okuyama, Tooru; and Hara, Kunio, 286,048, Cl. D14-107.000.
Harada, Toshio: *See—*
Mizuma, Kensuke; Ichihara, Masuo; and Harada, Toshio, 286,004, Cl. D7-351.000.
Hardgrove, William H. Wire clamping tool. 286,007, 10-7-86, Cl. D8-44.000.
Hartshorne, John M.: *See—*
Adams, Peter D.; and Hartshorne, John M., 286,064, Cl. D23-19.000.
Health Education Counsil: *See—*
Craft, Michael; and Hemming, Peter C., 286,059, Cl. D19-62.000.
Hemming, Peter C.: *See—*
Craft, Michael; and Hemming, Peter C., 286,059, Cl. D19-62.000.
Hill, Lloyd D. Manicure cutter or the like. 286,091, 10-7-86, Cl. D28-60.000.
Hillinger, George, to Alltrade Inc. Recessed sidewall wedge. 286,008, 10-7-86, Cl. D8-47.000.
Hiraoka, Kazuhiko; Nishiyama, Kazuhiko; Itoh, Takao; and Tani, Sadao, to Hitachi, Ltd. Audio disc player. 286,041, 10-7-86, Cl. D14-1.000.
Hitachi, Ltd.: *See—*
Hiraoka, Kazuhiko; Nishiyama, Kazuhiko; Itoh, Takao; and Tani, Sadao, 286,041, Cl. D14-1.000.
Holliday, Douglas Charles: *See—*
Davis, Andrew E., 286,014, Cl. D8-395.000.
Household Manufacturing, Inc.: *See—*
Alger, Andrew L., 286,067, Cl. D23-65.000.
Huang, Lung-Fei. Tape-cassette box. 285,986, 10-7-86, Cl. D3-35.000.
Ichihara, Masuo: *See—*
Mizuma, Kensuke; Ichihara, Masuo; and Harada, Toshio, 286,004, Cl. D7-351.000.
Imanishi Kinzoku Kogyo Kabushiki Kaisha (Imarflex Mfg. Co., Ltd.): *See—*
Nishikawa, Hideo; Okamoto, Kenzo; Sakai, Koichi; and Kitada, Fumihiko, 286,069, Cl. D23-122.000.
Imanishi, Masamichi; and Taguchi, Haruyoshi, to Suntory Kabushiki Kaisha (Suntory Limited). Container for liquids. 286,097, 10-7-86, Cl. D34-39.000.
International Business Machines Corporation: *See—*
McDaniel, Robert F.; and Wang, James P., 286,053, Cl. D14-114.000.
Itoh, Takao: *See—*
Hiraoka, Kazuhiko; Nishiyama, Kazuhiko; Itoh, Takao; and Tani, Sadao, 286,041, Cl. D14-1.000.
J. C. Penney Company, Inc.: *See—*
Woodring, Cooper C.; MacGregor, Francis W.; and Bruno, Robert H., 286,032, Cl. D12-130.000.
Jaros, Philip; and Wright, Paul O., to White Mop Wringer Company. Bucket. 286,096, 10-7-86, Cl. D32-53.100.
Joerger, Gerhard E. Thermostat valve control. 286,065, 10-7-86, Cl. D23-30.000.

- Johnson, Ardelle R., to FSI Corporation. Combined high intensity light and holder for silicon wafers or similar articles. 286,081, 10-7-86, Cl. D26-38.000.
- Johnson, John F. Door stop. 286,015, 10-7-86, Cl. D8-402.000.
- K-Jack Engineering Co., Inc.: *See—*
  - Chalabian, Jack S., 286,061, Cl. D20-6.000.
- Kabushiki Kaisha Toshiba: *See—*
  - Nishida, Yoshiaki, 286,049, Cl. D14-107.000.
  - Sutoh, Shigeru; Okuyama, Tooru; and Hara, Kunio, 286,048, Cl. D14-107.000.
- Kando, Masahiro, to Canon Kabushiki Kaisha. Paper discharging tray for a facsimile. 286,044, 10-7-86, Cl. D14-94.000.
- Kataoka & Co., Ltd: *See—*
  - Kataoka, Jyoji, 286,006, Cl. D7-400.000.
- Kataoka, Jyoji, to Kataoka & Co., Ltd. Coffee filter. 286,006, 10-7-86, Cl. D7-400.000.
- Kernea, Richard L.; and Bilbrey, Angela. Game board. 286,062, 10-7-86, Cl. D21-35.000.
- Kikuchi, Nobuo; and Odagawa, Kazuyoshi, to Canon Kabushiki Kaisha. Desk-top electronic calculator. 286,056, 10-7-86, Cl. D18-7.000.
- Kitada, Fumihiko: *See—*
  - Nishikawa, Hideo; Okamoto, Kenzo; Sakai, Koichi; and Kitada, Fumihiko, 286,069, Cl. D23-122.000.
- Knight, Michael; and Moore, Ronald G., to Massey-Ferguson-Perkins Limited. Clamp for an/internal combustion engine fuel injector. 286,012, 10-7-86, Cl. D8-394.000.
- Landsberger, Kurt. Bathtub rail. 286,068, 10-7-86, Cl. D23-69.000.
- Langensiepen, Eric, to Allison Corporation. Automobile tray. 285,998, 10-7-86, Cl. D3-40.000.
- Langensiepen, Eric, to Allison Corporation. Mirror for automobile visor. 286,036, 10-7-86, Cl. D12-191.000.
- LaValle, James G. Electrical fixture for marinas. 286,040, 10-7-86, Cl. D13-24.000.
- Leone, Angela. Telephone-calculator console with digital clock display. 286,055, 10-7-86, Cl. D18-2.000.
- Lindhe, Roland P. O., to Telefonaktiebolaget LM Ericsson. Keyboard. 286,046, 10-7-86, Cl. D14-100.000.
- Ludwick, Arthur R., deceased (by Ludwick, Lorine E., heir); and Ludwick-McPhail, Judith E., to Ludwick, Lorine E., heir. Combined food and beverage container. 285,999, 10-7-86, Cl. D7-6.000.
- Ludwick, Lorine E., heir: *See—*
  - Ludwick, Arthur R., deceased; and Ludwick-McPhail, Judith E., 285,999, Cl. D7-6.000.
  - Ludwick, Arthur R., deceased; and Ludwick-McPhail, Judith E., 285,999, Cl. D7-6.000.
- Ludwick-McPhail, Judith E.: *See—*
  - Ludwick, Arthur R., deceased; and Ludwick-McPhail, Judith E., 285,999, Cl. D7-6.000.
- MacDonald/Associates Inc.: *See—*
  - MacDonald, Sumner, 285,987, Cl. D3-61.000.
  - MacDonald, Sumner, 285,989, Cl. D3-61.000.
- MacDonald, Sumner, to MacDonald/Associates Inc. Key holder. 285,987, 10-7-86, Cl. D3-61.000.
- MacDonald, Sumner, to MacDonald/Associates Inc. Key holder. 285,989, 10-7-86, Cl. D3-61.000.
- MacGregor, Francis W.: *See—*
  - Woodring, Cooper C.; MacGregor, Francis W.; and Bruno, Robert H., 286,032, Cl. D12-130.000.
- MacKenzie, William G.: *See—*
  - Peart, Stephen; Pruitt, Mark F.; and MacKenzie, William G., 286,052, Cl. D14-111.000.
- Madsen, Per. Modular record storage unit. 285,991, 10-7-86, Cl. D6-407.000.
- Manock, Jerrold C.: *See—*
  - Roots, David; Manock, Jerrold C.; and Oyama, Terrell A., 286,047, Cl. D14-100.000.
  - Roots, David H.; Oyama, Terrell A.; and Manock, Jerrold C., 286,050, Cl. D14-109.000.
- Manton, Terry: *See—*
  - Minicucci, Joseph A.; and Manton, Terry, 286,083, Cl. D26-110.000.
  - Minicucci, Joseph A.; and Manton, Terry, 286,084, Cl. D26-110.000.
- Massey-Ferguson-Perkins Limited: *See—*
  - Knight, Michael; and Moore, Ronald G., 286,012, Cl. D8-394.000.
- Mastrodicasa, Arthur R. Adjustable shelving bracket. 286,010, 10-7-86, Cl. D8-381.000.
- Mastrodicasa, Arthur R. Adjustable shelving bracket. 286,011, 10-7-86, Cl. D8-381.000.
- Matsushita Electric Industrial Co., Ltd.: *See—*
  - Mizuma, Kensuke; Ichihara, Masuo; and Harada, Toshio, 286,004, Cl. D7-351.000.
- McDaniel, Robert F.; and Wang, James P., to International Business Machines Corporation. Data memory module. 286,053, 10-7-86, Cl. D14-114.000.
- McGarvey, John N.; Prince, Terry B.; Wild, Ronald L.; and Zambelli, Michael P., to AT&T Information System Inc. Controller housing. 286,045, 10-7-86, Cl. D14-100.000.
- McKeone, William C.: *See—*
  - Miller, Charles D.; Daniels, Bernard O.; and McKeone, William C., 285,990, Cl. D6-314.000.
- McNabb, Otho F., to Bell Helmets Inc. Cyclist's ribbed helmet. 285,980, 10-7-86, Cl. D29-12.000.
- Mead Johnson & Company: *See—*
  - Fuller, Ronald C., 286,071, Cl. D24-46.000.
- Metal Box plc: *See—*
  - Rayner, Adrien P., 286,026, Cl. D9-435.000.
- Miller, Charles D.; Daniels, Bernard O.; and McKeone, William C., to Broadway Industries, Inc. Mirror frame. 285,990, 10-7-86, Cl. D6-314.000.
- Miller, James B., to Abbott Laboratories. Biological sample cup or the like. 286,072, 10-7-86, Cl. D24-56.000.
- Minicucci, Joseph A.; and Manton, Terry, to Westwood Lighting Group, Inc. Lamp base. 286,083, 10-7-86, Cl. D26-110.000.
- Minicucci, Joseph A.; and Manton, Terry, to Westwood Lighting Group, Inc. Lamp base. 286,084, 10-7-86, Cl. D26-110.000.
- Minost, Henri, to Beghin-Say S.A. Paper towel dispenser. 285,995, 10-7-86, Cl. D6-522.000.
- Mischke, Arthur: *See—*
  - Breitschwerdt, Werner; Mischke, Arthur; and Sacco, Bruno, 286,031, Cl. D12-96.000.
- Mizuma, Kensuke; Ichihara, Masuo; and Harada, Toshio, to Matsushita Electric Industrial Co., Ltd. Microwave oven. 286,004, 10-7-86, Cl. D7-351.000.
- Montenegro, S.p.A.: *See—*
  - Ariotti, Ruggero, 286,017, Cl. D9-329.000.
- Moore, Ronald G.: *See—*
  - Knight, Michael; and Moore, Ronald G., 286,012, Cl. D8-394.000.
- Morey, Clinton H., to Stead, Dolores E. Demonstrator for indicating the effect of additive in engine oil and the like. 286,060, 10-7-86, Cl. D19-62.000.
- Moro, Norio, to Nihon Seimitsu Sokki Co., Ltd. Sphygmanometer. 286,070, 10-7-86, Cl. D24-21.000.
- Motomura, Kenichi; and Ogawa, Hiroshi, to Bridgestone Tire Company Limited. Vehicle tire. 286,033, 10-7-86, Cl. D12-142.000.
- Murukurthy, Rao K. Container for fluids. 286,024, 10-7-86, Cl. D9-401.000.
- Murukurthy, Rao K. Container for fluids. 286,025, 10-7-86, Cl. D9-405.000.
- Nabisco Brands, Inc.: *See—*
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- Nadav, Jehuda. Combined bracket and holder for tissue boxes for automobiles, home use or the like. 286,009, 10-7-86, Cl. D8-373.000.
- Nakajima, Yoshiaki: *See—*
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- Nakano, Yutaka; Watari, Masami; and Fudatsuji, Toshiharu, to Fujitsu Limited. Line printer. 286,051, 10-7-86, Cl. D14-111.000.
- Natchev, Emil. Adjustable seat back cushion. 285,997, 10-7-86, Cl. D6-596.000.
- Nichifu Terminal Industries Co., Ltd.: *See—*
  - Sonoda, Keiji, 286,039, Cl. D13-18.000.
- Nihon Seimitsu Sokki Co., Ltd.: *See—*
  - Moro, Norio, 286,070, Cl. D24-21.000.
- Nishida, Yoshiaki, to Kabushiki Kaisha Toshiba. Magnetic-card reader. 286,049, 10-7-86, Cl. D14-107.000.
- Nishikawa, Hideo; Okamoto, Kenzo; Sakai, Koichi; and Kitada, Fumihiko, to Imanishi Kinzoku Kogyo Kabushiki Kaisha (Imarflex Mfg. Co., Ltd.). Stove. 286,069, 10-7-86, Cl. D23-122.000.
- Nishiyama, Kazuhiko: *See—*
  - Hiraoka, Kazuhiko; Nishiyama, Kazuhiko; Itoh, Takao; and Tani, Sadao, 286,041, Cl. D14-1.000.
- Norkela, Timo: *See—*
  - Waher, Paavo; Norkela, Timo; and Raasakka, Olavi, 286,027, Cl. D9-435.000.
- Odagawa, Kazuyoshi: *See—*
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- Ogawa, Hiroshi: *See—*
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  - Sutoh, Shigeru; Okuyama, Tooru; and Hara, Kunio, 286,048, Cl. D14-107.000.
- Oord, Klaas T., to U.S. Philips Corporation. Dry shaver. 286,089, 10-7-86, Cl. D28-50.000.
- Oord, Klaas T., to U.S. Philips Corporation. Dry shaver. 286,090, 10-7-86, Cl. D28-50.000.
- Optical Dynamics: *See—*
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- O'Reilly, J. Michael, to Revlon, Inc. Perfume bottle. 286,018, 10-7-86, Cl. D9-336.000.
- O'Reilly, J. Michael, to Revlon, Inc. Perfume bottle. 286,021, 10-7-86, Cl. D9-370.000.
- O'Reilly, J. Michael, to Revlon, Inc. Perfume bottle. 286,022, 10-7-86, Cl. D9-384.000.
- O'Reilly, J. Michael, to Revlon, Inc. Perfume bottle. 286,023, 10-7-86, Cl. D9-384.000.
- Oyama, Terrell A.: *See—*
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  - Tong, James K., 285,985, Cl. D2-320.000.
- Peterson, Peter R. Combined antenna adaptor and lightning arrester therefor. 286,043, 10-7-86, Cl. D14-90.000.
- Prince, Terry B.: *See—*
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  - O'Reilly, J. Michael, 286,023, Cl. D9-384.000.
- Ricoh Company, Ltd.: *See—*
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- Risch, Richard S. Plastic bag supporter. 286,099, 10-7-86, Cl. D34-6.000.
- Roots, David; Manock, Jerrold C.; and Oyama, Terrell A., to Apple Computer, Inc. Keypad. 286,047, 10-7-86, Cl. D14-100.000.
- Roots, David H.; Oyama, Terrell A.; and Manock, Jerrold C., to Apple Computer, Inc. Disk drive housing. 286,050, 10-7-86, Cl. D14-109.000.
- Russell, Robert A., to Consulting Organization of Sydney College of the Arts, Ltd. Splint. 286,073, 10-7-86, Cl. D24-64.000.
- Russo, Neil A.: *See—*
  - Genna, Salvatore A., 285,993, Cl. D6-475.000.
- Rutter, Christopher C. Combined fluid dispensing tap and clip-on tubing connector. 286,005, 10-7-86, Cl. D7-398.000.
- S.A.S. Ventures, Inc.: *See—*
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- Sakai, Kazumi, to Car Mate Mfg. Co., Ltd. Key case. 285,988, 10-7-86, Cl. D3-61.000.
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- Shibuya, Masamitsu; and Tsukiji, Masaaki, to Tokyo Juki Industrial Co., Ltd. Sewing machine. 286,054, 10-7-86, Cl. D15-69.000.
- Short, Robert J. Tractor trailer tank body. 286,030, 10-7-86, Cl. D12-95.000.
- Shwisha, Haim, to Electrix, Inc. Adjustable lamp. 286,082, 10-7-86, Cl. D26-61.000.
- Silver Seiko Ltd.: *See—*
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  - Tovey, Geoffrey D., 286,086, Cl. D28-2.000.
- Sonoda, Keiji, to Nichifu Terminal Industries Co., Ltd. Integrally formed insulator assembly. 286,039, 10-7-86, Cl. D13-18.000.
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  - Imanishi, Masamichi; and Taguchi, Haruyoshi, 286,097, Cl. D34-39.000.
- Sutoh, Shigeru; Okuyama, Tooru; and Hara, Kunio, to Kabushiki Kaisha Toshiba. Reader for image information storing/retrieving machine. 286,048, 10-7-86, Cl. D14-107.000.
- Taguchi, Haruyoshi: *See—*
  - Imanishi, Masamichi; and Taguchi, Haruyoshi, 286,097, Cl. D34-39.000.
- Tamada, Kenji; Ueki, Junzo; and Nakajima, Yoshiaki, to Silver Seiko Ltd. Ribbon cassette for typewriter. 286,057, 10-7-86, Cl. D18-12.000.
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- Tokyo Juki Industrial Co., Ltd.: *See—*
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- Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
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- Tong, James K.; and Stubblefield, Jerry D., to Pensa, Inc. Shoe sole. 285,984, 10-7-86, Cl. D2-320.000.
- Tong, James K., to Pensa, Inc. Shoe sole. 285,985, 10-7-86, Cl. D2-320.000.
- Tovey, Geoffrey D., to Smith Kline & French Laboratories Limited. Pharmaceutical tablet. 286,085, 10-7-86, Cl. D28-2.000.
- Tovey, Geoffrey D., to Smith Kline & French Laboratories Limited. Pharmaceutical tablet. 286,086, 10-7-86, Cl. D28-2.000.
- Tsukiji, Masaaki: *See—*
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- Ueki, Junzo: *See—*
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  - Oord, Klaas T., 286,090, Cl. D28-50.000.
  - Van Asten, Jan F., 286,095, Cl. D32-69.000.
- Valentine, Peter Z.; Vitaliano, Franco; and Smith, Ivor S. Handgrip for runner or similar article. 286,063, 10-7-86, Cl. D21-191.000.
- Van Asten, Jan F., to U.S. Philips Corporation. Travel iron. 286,095, 10-7-86, Cl. D32-69.000.
- Vaniglia, Giuseppe D. Cap. 285,982, 10-7-86, Cl. D2-249.000.
- Viancin, Claude, to Vivalp. Kitchen oven. 286,003, 10-7-86, Cl. D7-350.000.
- Vitaliano, Franco: *See—*
  - Valentine, Peter Z.; Vitaliano, Franco; and Smith, Ivor S., 286,063, Cl. D21-191.000.
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- Walter, Hubert, to Bayerische Motoren Werke Aktiengesellschaft. Wheel. 286,037, 10-7-86, Cl. D12-211.000.
- Wang, James P.: *See—*
  - McDaniel, Robert F.; and Wang, James P., 286,053, Cl. D14-114.000.
- Watari, Masami: *See—*
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- Weimar, Steven, to Optical Dynamics. Magnifying mirror for use in self-examination of the eye. 286,092, 10-7-86, Cl. D28-64.100.
- Westwood Lighting Group, Inc.: *See—*
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  - Minicucci, Joseph A.; and Manton, Terry, 286,084, Cl. D26-110.000.
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- Wild, Ronald L.: *See—*
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- Woodring, Cooper C.; MacGregor, Francis W.; and Bruno, Robert H., to J. C. Penney Company, Inc. Infant walker. 286,032, 10-7-86, Cl. D12-130.000.
- Wright, Paul O.: *See—*
  - Jaros, Philip; and Wright, Paul O., 286,096, Cl. D32-53.100.
- Yamamoto, Toshio, to Ricoh Company, Ltd. Printing ribbon cassette. 286,058, 10-7-86, Cl. D18-22.000.
- Zambelli, Michael P.: *See—*
  - McGarvey, John N.; Prince, Terry B.; Wild, Ronald L.; and Zambelli, Michael P., 286,045, Cl. D14-100.000.

LIST OF STATUTORY INVENTION REGISTRATIONS

APPLICANTS TO WHOM

STATUTORY INVENTION REGISTRATIONS WERE ISSUED ON THE 7TH DAY OF OCTOBER, 1986

Blische, H. John, to United States of America, Army. Vise and method for loading explosive in trails of an explosive logic element. H143, 10-7-86, Cl. 269-252.000.

Briggs, Gifford G.; Kato, Takeo R.; and Schonegg, Edward, to United States of America, Energy. Process for reducing beta activity in uranium. H137, 10-7-86, Cl. 75-84.10A.

Bruns, Alfred E.; Lehman, Jerry K.; Wetzler, Dallas G.; and Holman, Harry A., Jr., to United States of America, Air Force. Carbon/carbon combustor external insulation. H140, 10-7-86, Cl. 428-213.000.

Bryant, Lowell K.: *See—*
  Finnerty, Anthony E.; Bryant, Lowell K.; and Stumpfel, Charles R., H141, Cl. 169-28.000.

Cohen, Arthur: *See—*
  Decker, Leon J.; Cohen, Arthur; and Donnelly, Emmet, H146, Cl. 239-323.000.

Decker, Leon J.; Cohen, Arthur; and Donnelly, Emmet, to United States of America, Army. Powder dispersal unit. H146, 10-7-86, Cl. 239-323.000.

Donnelly, Emmet: *See—*
  Decker, Leon J.; Cohen, Arthur; and Donnelly, Emmet, H146, Cl. 239-323.000.

Field, Werner, to United States of America, Army. Electrically detonated grenade. H136, 10-7-86, Cl. 102-487.000.

Finnerty, Anthony E.; Bryant, Lowell K.; and Stumpfel, Charles R., to United States of America, Army. Fast dispensing fire extinguisher. H141, 10-7-86, Cl. 169-28.000.

Gilbert, Everett E., to United States of America, Army. Solid poly(azidomethyl)benzene explosive composition. H138, 10-7-86, Cl. 260-349.000.

Holman, Harry A., Jr.: *See—*
  Bruns, Alfred E.; Lehman, Jerry K.; Wetzler, Dallas G.; and Holman, Harry A., Jr., H140, Cl. 428-213.000.

James, John T., to United States of America, Army. Research apparatus. H145, 10-7-86, Cl. 128-716.000.

Kato, Takeo R.: *See—*
  Briggs, Gifford G.; Kato, Takeo R.; and Schonegg, Edward, H137, Cl. 75-84.10A.

Lehman, Jerry K.: *See—*
  Bruns, Alfred E.; Lehman, Jerry K.; Wetzler, Dallas G.; and Holman, Harry A., Jr., H140, Cl. 428-213.000.

Savioli, Giulio V., to United States of America, Army. Weapon trigger and sear mechanism. H144, 10-7-86, Cl. 89-142.000.

Schonegg, Edward: *See—*
  Briggs, Gifford G.; Kato, Takeo R.; and Schonegg, Edward, H137, Cl. 75-84.10A.

Stumpfel, Charles R.: *See—*
  Finnerty, Anthony E.; Bryant, Lowell K.; and Stumpfel, Charles R., H141, Cl. 169-28.000.

Task, Harry L., to United States of America, Air Force. Removable cleanable antireflection shield. H139, 10-7-86, Cl. 244-121.000.

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    Task, Harry L., H139, Cl. 244-121.000.
  Army: *See—*
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    Decker, Leon J.; Cohen, Arthur; and Donnelly, Emmet, H146, Cl. 239-323.000.
    Field, Werner, H136, Cl. 102-487.000.
    Finnerty, Anthony E.; Bryant, Lowell K.; and Stumpfel, Charles R., H141, Cl. 169-28.000.
    Gilbert, Everett E., H138, Cl. 260-349.000.
    James, John T., H145, Cl. 128-716.000.
    Savioli, Giulio V., H144, Cl. 89-142.000.
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  Energy: *See—*
    Briggs, Gifford G.; Kato, Takeo R.; and Schonegg, Edward, H137, Cl. 75-84.10A.

Wetzler, Dallas G.: *See—*
  Bruns, Alfred E.; Lehman, Jerry K.; Wetzler, Dallas G.; and Holman, Harry A., Jr., H140, Cl. 428-213.000.

Wyluda, Paul M., to United States of America, Army. Channelled sabot. H142, 10-7-86, Cl. 102-522.000.

CLASSIFICATION OF PATENTS

ISSUED OCTOBER 7, 1986

NOTE.—First number, class; second number, subclass; third number, patent number

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512	4,615,184
CLASS 63	
5 R	4,615,185
CLASS 65	
4.4	4,615,717
27	4,615,718
29	4,615,719
	4,615,720
154	4,615,721
158	4,615,722
163	4,615,723
182.2	4,615,724
CLASS 66	
57	4,615,186
75.2	4,615,187
196	4,615,188
204	4,615,189
CLASS 68	
241	4,615,190
CLASS 70	
26	4,615,191
181	4,615,192
297	4,615,193
312	4,615,194
CLASS 71	
88	4,615,725
92	4,615,726
93	4,615,727
94	4,615,728
CLASS 72	
38	4,615,195
85	4,615,196
88	4,615,197
122	4,615,198
170	4,615,199
225	4,615,200
239	4,615,201
245	4,615,202
345	4,615,203
347	4,615,204
	4,615,205
391	4,615,206
404	4,615,207
455	4,615,208
CLASS 73	
12	4,615,209
55	4,615,210
146.2	4,615,211
162	4,615,212
180	4,615,213
189	4,615,214
593	4,615,216
624	4,615,217
639	4,615,218
741	4,615,219
789	4,615,220
798	4,615,221
861.21	4,615,222
862.03	4,615,223
863.33	4,615,224
864.33	4,615,225
864.87	4,615,226
866	4,615,215
CLASS 74	
7 E	4,615,227
89	4,615,228
424.8 C	4,615,229
427	4,615,230
467	4,615,231
473 R	4,615,232
	4,615,233
501 R	4,615,234
516	4,615,235
545	4,615,236
574	4,615,237
674	4,615,238
720	4,615,239
740	4,615,240
CLASS 75	
21	4,615,729
51.2	4,615,730
97 A	4,615,731
229	4,615,733
230	Re.32,260
237	4,615,734
249	4,615,735
251	4,615,736
CLASS 81	
3.08	4,615,242
3.2	4,615,241
CLASS 82	
1.2	4,615,243
36 B	4,615,244
CLASS 83	
37	4,615,245
42	4,615,246
102.1	4,615,247
165	4,615,248
221	4,615,249
399	4,615,250
574	4,615,251
CLASS 84	
1.1	4,615,252
317	4,615,253
343	4,615,254
CLASS 86	
27	4,615,255
CLASS 87	
33	4,615,256
CLASS 91	
499	4,615,257
CLASS 92	
40	4,615,258
86	4,615,259
92	4,615,260
200	4,615,261
CLASS 98	
2.08	4,615,262
2.14	4,615,263
CLASS 99	
450.4	4,615,264
CLASS 101	
142	4,615,265
163	4,615,266
269	4,615,267
CLASS 102	
217	4,615,268
221	4,615,269
289	4,615,270
318	4,615,271
466	4,615,272
CLASS 104	
102	4,615,273
167	4,615,274
CLASS 105	
438	4,615,275
CLASS 106	
12	4,615,737
13	4,615,738
34	4,615,739
177	4,615,740
308 M	4,615,741
CLASS 108	
61	4,615,276
101	4,615,277
111	4,615,278
144	4,615,279
CLASS 109	
24.1	4,615,280
50	4,615,281
CLASS 110	
186	4,615,282
216	4,615,283
343	4,615,284
346	4,615,285
CLASS 111	
52	4,615,286
CLASS 112	
121.14	4,615,287
121.29	4,615,288
CLASS 114	
45	4,615,289
150	4,615,290
280	4,615,291
312	4,615,292
CLASS 118	
46	4,615,293
50.1	4,615,294
261	4,615,295
314	4,615,296
503	4,615,297
723	4,615,298
	4,615,299
CLASS 119	
1	4,615,300
3	4,615,301
CLASS 122	
379	4,615,302
CLASS 123	
41.15	4,615,303
41.21	4,615,304
73 AD	4,615,305
90.16	4,615,306
	4,615,307
90.27	4,615,308
	4,615,309
90.34	4,615,310
179 P	4,615,311
182	4,615,312
	4,615,313
195 C	4,615,314
196 A	4,615,315
333	4,615,316
373	4,615,317
414	4,615,318
440	4,615,319
467	4,615,320
479	4,615,321
506	4,615,322
509	4,615,323
568	4,615,324
CLASS 124	
7	4,615,325
88	4,615,326
89	4,615,327
CLASS 126	
433	4,615,328
438	4,615,329
CLASS 127	
37	4,615,742
CLASS 128	
4	4,615,330
	4,615,331
6	4,615,332
	4,615,333
17	4,615,334
25 R	4,615,335
52	4,615,336
79	4,615,337
92 A	4,615,338
133	4,615,339
635	4,615,340
765	4,615,341
CLASS 131	
84.1	4,615,342
111	4,615,343
198.2	4,615,344
365	4,615,345
CLASS 132	
7	4,615,346
9	4,615,347
73	4,615,348
91	4,615,349
CLASS 133	
1 R	4,615,350
CLASS 134	
6	4,615,743
25.2	4,615,744
CLASS 137	
2	4,615,351
7	4,615,352
102	4,615,353
110	4,615,354
383	4,615,355
488	4,615,356
596.17	4,615,357
625.63	4,615,358
CLASS 138	
104	4,615,359
CLASS 141	
18	4,615,360
65	4,615,361
86	4,615,362
193	4,615,363
364	4,615,364
CLASS 142	
49	4,615,365
CLASS 144	
193 A	4,615,366
366	4,615,367
CLASS 148	
1.5	4,615,746
4	4,615,745
6.3	4,615,747
111	4,615,750
304	4,615,748
330	4,615,749
403	4,615,732
CLASS 149	
2	4,615,751
108.8	4,615,752
CLASS 152	
213 A	4,615,368
565	4,615,369
CLASS 156	
219	4,615,753
242	4,615,754
345	4,615,755
	4,615,756
350	4,615,757
359	4,615,758
558	4,615,759
620	4,615,760
626	4,615,761
628	4,615,762
643	4,615,763
	4,615,764
	4,615,765
662	4,615,766
CLASS 157	
1.24	4,615,370
CLASS 160	
22	4,615,371
CLASS 162	
4	4,615,767
CLASS 164	
16	4,615,372
125	4,615,373
442	4,615,374
451	4,615,375

466	4,615,376
477	4,615,377
CLASS 165	
10	4,615,378
	4,615,379
12	4,615,380
48.2	4,615,381
104.16	4,615,382
150	4,615,383
152	4,615,384
175	4,615,385
CLASS 166	
241	4,615,386
242	4,615,387
250	4,615,388
	4,615,389
	4,615,390
257	4,615,391
272	4,615,392
308	4,615,393
327	4,615,394
CLASS 172	
91	4,615,395
138	4,615,396
776	4,615,397
CLASS 173	
162 H	4,615,398
CLASS 174	
35 MS	4,616,101
36	4,616,102
40 TD	4,616,103
48	4,616,104
65 R	4,616,105
CLASS 175	
38	4,615,399
55	4,615,400
230	4,615,401
320	4,615,402
CLASS 177	
25	4,615,403
132	4,615,404
210 C	4,615,405
CLASS 178	
18	4,616,106
	4,616,107
CLASS 179	
2 A	4,616,111
2 E	4,616,108
6.03	4,616,109
	4,616,110
7.1 R	Re.32,263
CLASS 180	
128	4,615,407
148	4,615,408
176	4,615,409
191	4,615,406
197	4,615,410
CLASS 181	
224	4,615,411
CLASS 182	
214	4,615,412
CLASS 184	
6.4	4,615,413
13.1	4,615,414
CLASS 188	
24.22	4,615,415
32	4,615,416
72.8	4,615,417
170	4,615,418
181 T	4,615,419
322.15	4,615,420
CLASS 192	
0.076	4,615,425
3.54	4,615,421
53 B	4,615,422
64	4,615,423
70.18	4,615,424
106.2	4,615,426
107 M	4,615,427
CLASS 198	
399	4,615,428
456	4,615,429
465.1	4,615,430
468.6	4,615,431
725	4,615,432
766	4,615,433
823	4,615,434
CLASS 200	
5 R	4,616,112
61.13	4,616,113
83 J	4,616,114
153 SC	4,616,118
153 T	4,616,115
242	4,616,116
243	4,616,117
CLASS 202	
170	4,615,768
CLASS 203	
2	4,615,769
25	4,615,770
46	4,615,771
CLASS 204	
1 T	4,615,772
43.1	4,615,773
44.3	4,615,774
128	4,615,775
129	4,615,777
129.1	4,615,776
181.1	4,615,778
181.7	4,615,779
182.4	4,615,780
192.15	4,615,781
192.36	4,615,782
252	4,615,783
263	4,615,784
297 W	4,615,785
301	4,615,786
406	4,615,787
418	4,615,788
CLASS 206	
63.3	4,615,435
208	4,615,436
222	4,615,437
223	4,615,438
229	4,615,439
	4,615,440
329	4,615,441
397	4,615,442
427	4,615,443
	4,615,444
444	4,615,445
CLASS 208	
18	4,615,790
72	4,615,795
107	4,615,791
134	4,615,792
138	4,615,793
143	4,615,789
146	4,615,796
181	4,615,794
CLASS 209	
131	4,615,797
583	4,615,446
CLASS 210	
117	4,615,799
132	4,615,800
169	4,615,798
	4,615,802
185	4,615,801
455	4,615,803
493.1	4,615,804
657	4,615,805
690	4,615,806
704	4,615,807
714	4,615,808
751	4,615,809
	4,615,810
797	4,615,811
805	4,615,812
CLASS 211	
4	4,615,447
94	4,615,448
162	4,615,449
CLASS 212	
187	4,615,450
CLASS 215	
100 A	4,615,451
CLASS 219	
10.55 A	4,616,120
10.55 F	4,616,119
124.34	4,616,121
273	4,616,122
388	4,616,123
505	4,616,124
553	4,616,125
CLASS 220	
1 B	4,615,452
71	4,615,453
88 R	4,615,454
	4,615,455
90	4,615,456
90.2	4,615,457
222	4,615,458
254	4,615,459
307	4,615,460
331	4,615,461
339	4,615,462
412	4,615,463
469	4,615,464
CLASS 222	
1	4,615,465
129.1	4,615,466
153	4,615,476
189	4,615,467
327	4,615,468
	4,615,469
402.16	4,615,470
598	4,615,471
CLASS 226	
127	4,615,472
CLASS 227	
15	4,615,473
19	4,615,474
136	4,615,475
CLASS 228	
119	4,615,477
123	4,615,478
180.1	4,615,479
CLASS 229	
71	4,615,480
CLASS 235	
375	4,616,126
412	4,616,127
475	4,616,128
CLASS 236	
38	4,615,481
48 R	4,615,482
CLASS 237	
12.3 A	4,615,483
CLASS 238	
264	4,615,484
CLASS 239	
124	4,615,485
274	4,615,486
281	4,615,487
391	4,615,488
CLASS 241	
4	4,615,489
36	4,615,490
37	4,615,491
46 R	4,615,492
CLASS 242	
35.5 A	4,615,493
68.3	4,615,494
159	4,615,495
CLASS 244	
3.16	4,615,496
75 A	4,615,497
103 S	4,615,498
134 B	4,615,499
CLASS 248	
65	4,615,500
75	4,615,501
176	4,615,502
224.4	4,615,503
550	4,615,504
CLASS 250	
201	4,616,130
207	4,616,129
231 SE	4,616,131
236	4,616,132
253	4,616,133
255	4,616,134
327.2	4,616,135
338	4,616,136
554	4,616,137
	4,616,138
572	4,616,139
CLASS 251	
174	4,615,505
326	4,615,506
337	4,615,507
CLASS 252	
8.514	4,615,813
8.6	4,615,814
8.8	4,615,815
8.9	4,615,816
16	4,615,817
32.5	4,615,826
32.7 E	4,615,827
47.5	4,615,818
110	4,615,819
139	4,615,820
174.25	4,615,821
182	4,615,822
194	4,615,823
299.5	4,615,824
356	4,615,825
408.1	4,615,828
500	4,615,829
522 R	4,615,830
609	4,615,831
	4,615,832
629	4,615,833
635	4,615,834
CLASS 254	
106	4,615,508
264	4,615,509
CLASS 260	
397.5	4,615,835
399	4,615,836
410.6	4,615,837
410.9 R	4,615,838
412	4,615,839
502.5 E	4,615,840
505 N	4,615,841
513 F	4,615,842
665 R	4,615,843
CLASS 261	
29	4,615,844
44 B	4,615,845
CLASS 264	
1.7	4,615,847
13	4,615,846
22	4,615,848
40.4	4,615,849
45.9	4,615,850
63	4,615,851
118	4,615,852
122	4,615,853
127	4,615,854
221	4,615,855
222	4,615,856
272.17	4,615,857
564	4,615,858
570	4,615,859
CLASS 266	
48	4,615,510
208	4,615,511
CLASS 267	
8 R	4,615,512
63 R	4,615,513
CLASS 269	
41	4,615,514
73	4,615,515
328	4,615,516
CLASS 270	
58	4,615,517
CLASS 271	
10	4,615,518
122	4,615,519
227	4,615,520
264	4,615,521
CLASS 272	
67	4,615,522
70.3	4,615,523
123	4,615,524
CLASS 273	
127 D	4,615,525
183 A	4,615,526
278	4,615,527
396	4,615,528
421	4,615,529
423	4,615,552
CLASS 277	
1	4,615,530
216	4,615,531
CLASS 279	
32	4,615,532
CLASS 280	
43.12	4,615,533
47.13 B	4,615,534
293	4,615,535
631	4,615,536
668	4,615,537
690	4,615,538
	4,615,539
806	4,615,540
CLASS 281	
29	4,615,541
	B1 4,405,156
CLASS 285	
11	4,615,542
12	4,615,543
18	4,615,544
24	4,615,545
26	4,615,546
136	4,615,547
CLASS 290	
1 R	4,616,140
CLASS 292	
144	4,615,548
169.21	4,615,549
192	4,615,550
CLASS 294	
19.1	4,615,555
58	4,615,553
89	4,615,554
CLASS 296	
78.1	4,615,556
100	4,615,557
171	Re.32,262
203	4,615,558
CLASS 297	
124	4,615,559
130	4,615,560
243	4,615,561
250	4,615,562
284	4,615,563
341	4,615,551
CLASS 299	
7	4,615,564
75	4,615,565
CLASS 303	
6 C	4,615,566
CLASS 305	
40	4,615,567
CLASS 307	
10 SB	4,616,141
242	4,616,142
264	4,616,143
315	4,616,144
446	4,616,146
481	4,616,147
530	4,616,148
555	4,616,145
CLASS 310	
71	4,616,149
186	4,616,150
216	4,616,151
334	4,616,152
CLASS 312	
110	4,615,570
211	4,615,571
341 R	4,615,572
CLASS 313	
402	4,616,154
573	4,616,155
CLASS 315	
107	4,616,156
111.01	4,616,157
225	4,616,158
307	4,616,159
365	4,616,160
382	4,616,161
CLASS 318	
317	4,616,162
611	4,616,163
666	4,616,164
687	4,616,153
701	4,616,165
712	4,616,166
CLASS 320	
1	4,616,167
2	4,616,168
	4,616,169
5	4,616,170
30	4,616,171
CLASS 323	
313	4,616,172
CLASS 324	
78 D	4,616,173
117 R	4,616,174
121 R	4,616,175
127	4,616,176
156	4,616,177
158 F	4,616,178
158 MG	4,616,179
309	4,616,180
	4,616,181
	4,616,182
	4,616,183
335	4,616,184
CLASS 328	
160	4,616,185
CLASS 329	
103	4,616,186
126	4,616,187
CLASS 330	
6	4,616,188
253	4,616,189
261	4,616,190
CLASS 331	
4	4,616,191
14	4,616,192
105	4,616,193
116 R	4,616,194
CLASS 333	
160	4,616,195
161	4,616,196
194	4,616,197
CLASS 335	
16	4,616,198
35	4,616,199
	4,616,200
129	4,616,201
133	4,616,202
201	4,616,203
297	4,616,204
CLASS 336	
82	4,616,205
CLASS 337	
71	4,616,206
CLASS 338	
32 H	4,616,207
CLASS 339	
17 M	4,615,573
61 C	4,615,574
82	4,615,575
97 P	4,615,576
103 M	4,615,577
143 R	4,615,578
CLASS 340	
309.15	4,616,208
	4,616,209
347 AD	4,616,210
347 DA	4,616,212
347 DD	4,616,211
365 C	4,616,213
533	4,616,214
626	4,616,215
644	4,616,216
720	4,616,218
724	4,616,219
747	4,616,217
	4,616,220
783	4,616,221
815.24	4,616,222
825.54	4,616,223
825.69	4,616,224
908	4,616,225
980	4,616,226
CLASS 342	
25	4,616,227
160	4,616,228
171	4,616,229
373	4,616,230
374	4,616,231
379	4,616,232
CLASS 343	
792.5	4,616,233
CLASS 346	
75	4,616,234
	4,616,235
76 PH	4,616,236
135.1	4,616,237
137	4,616,238
201	4,616,239
208	4,616,240
CLASS 350	
96.1	4,615,579
96.20	4,615,580
96.21	4,615,581
96.29	4,615,582
96.33	4,615,583
96.34	4,615,584
255	4,615,585
350 S	4,615,586
353	4,615,587
392	4,615,588
477	4,615,589
500	4,615,590
507	4,615,591
531	4,615,592
CLASS 351	
162	4,615,593
239	4,615,594
CLASS 353	
122	4,615,595
CLASS 354	
76	4,615,596
293	4,615,597
402	4,615,598
415	4,615,599

451	4,615,600
460	4,615,601
478	4,615,602
479	4,615,603
485	4,615,604
CLASS 355	
3 DD	4,615,606
	4,615,608
3 R	Re.32,259
	4,615,605
	4,615,607
14 D	4,615,612
14 R	4,615,609
	4,615,610
	4,615,611
15	4,615,613
53	4,615,614
CLASS 356	
1	4,615,615
	4,615,616
5	4,615,617
152	4,615,618
310	4,615,619
378	4,615,620
399	4,615,621
427	4,615,622
CLASS 357	
16	4,616,241
17	4,616,244
22	4,616,242
23.13	4,616,243
23.5	4,616,245
30	4,616,246
	4,616,247
	4,616,248
	4,616,249
70	4,616,250
CLASS 358	
11	4,616,251
23	4,616,252
29	4,616,253
31	4,616,254
47	4,616,255
86	4,616,256
93	4,616,257
100	4,616,258
148	4,616,259
150	4,616,260
181	4,616,261
183	4,616,262
185	4,616,263
227	4,616,264
248	4,616,265
280	4,616,266
	4,616,267
287	4,616,268
293	4,616,269
320	4,616,270
CLASS 360	
32	4,616,271
47	4,616,272
66	4,616,273
71	4,616,274
77	4,616,275
	4,616,276
78	4,616,277
99	4,616,278
103	4,616,279
109	4,616,280
113	4,616,281
122	4,616,282
128	4,616,283
	4,616,284
CLASS 361	
1	4,616,285
56	4,616,286
107	4,616,287
119	4,616,288
321	4,616,289
328	4,616,290
398	4,616,291
414	4,616,292
CLASS 362	
7	4,616,293
18	4,616,294
31	4,616,295
33	4,616,296
101	4,616,304
105	4,616,297
192	4,616,298
255	4,616,299
CLASS 363	
21	4,616,300
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50	4,616,302
60	4,616,303
132	4,616,305
CLASS 364	
140	4,616,306
147	4,616,307
159	4,616,308
171	4,616,309
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413	4,616,316
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728	4,616,330
736	4,616,331
814	4,616,332
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825	4,616,334
900	4,616,335
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CLASS 365	
185	4,616,339
	4,616,340
189	4,616,341
190	4,616,342
203	4,616,343
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226	4,616,345
229	4,616,346
230	4,616,347
CLASS 366	
279	4,615,623
CLASS 367	
21	4,616,348
66	4,616,349
116	4,616,350
139	4,616,351
190	4,616,352
CLASS 368	
1	4,615,624
156	4,615,625
CLASS 369	
43	4,616,353
44	4,616,354
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116	4,616,356
194	4,616,357
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58	4,616,358
60	4,616,359
67	4,616,360
110.1	4,616,361
CLASS 371	
5	4,616,362
CLASS 373	
14	4,616,363
CLASS 375	
1	4,616,364
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133	4,615,860
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362	4,615,862
CLASS 384	
12	4,615,568
45	4,615,569
539	4,615,626
551	4,615,627
CLASS 400	
242	4,615,628
486	4,615,629
608.3	4,615,630
705.1	4,615,631
CLASS 401	
69	4,615,632
196	4,615,633
197	4,615,634
270	4,615,635
CLASS 403	
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369	4,615,640
CLASS 405	
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151	4,615,644
159	4,615,645
169	4,615,646
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138	4,615,649
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105	4,615,650
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72 R	4,615,651
168	4,615,652
241 R	4,615,653
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178	4,615,654
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339	4,615,655
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607	4,615,656
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104	4,615,657
178	4,615,658
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183	4,615,659
CLASS 417	
50	4,615,660
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CLASS 418	
152	4,615,663
CLASS 419	
23	4,615,863
CLASS 420	
437	4,615,864
588	4,615,865
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106	4,615,866
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111	4,615,868
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167	4,615,869
243	4,615,871
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626	4,615,875
CLASS 424	
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101	4,615,886
CLASS 425	
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72 R	4,615,666
135	4,615,667
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147	4,615,669
186	4,615,670
289	4,615,671
296	4,615,672
CLASS 426	
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140	4,615,889
231	4,615,891
250	4,615,892
297	4,615,890
481	4,615,893
516	4,615,894
523	4,615,895
576	4,615,896
	4,615,897
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589	4,615,899
590	4,615,900
656	4,615,901
CLASS 427	
8	4,615,902
26	4,615,903
38	4,615,904
39	4,615,905
40	4,615,906
53.1	4,615,907
81	4,615,908
82	4,615,909
140	4,615,910
197	4,615,911
212	4,615,912
226	4,615,913
237	4,615,914
239	4,615,915
255	4,615,916
385.5	4,615,917
	4,615,918
CLASS 428	
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35	4,615,922
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252	4,615,933
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268	4,615,935
285	4,615,936
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324	4,615,940
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332	4,615,943
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420	4,615,948
425.9	4,615,949
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615	4,615,951
650	4,615,952
652	4,615,920
699	4,615,953
CLASS 429	
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34	4,615,955
50	4,615,956
104	4,615,957
127	4,615,958
194	4,615,959
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218	4,615,961
CLASS 430	
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56	4,615,963
84	4,615,964
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221	4,615,966
270	4,615,967
283	4,615,968
320	4,615,969
446	4,615,970
491	4,615,971
CLASS 431	
12	4,615,673
215	4,615,674
CLASS 432	
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77	4,615,677
CLASS 433	
201.1	4,615,678
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CLASS 434	
157	4,615,680
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169	4,615,975
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317	4,615,980
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514	4,615,983
518	4,615,984
531	4,615,985
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52	4,615,683
88	4,615,684
CLASS 446	
247	4,615,685
462	4,615,686
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69	4,615,687
93	4,615,688
CLASS 493	
51	4,615,689
CLASS 494	
56	4,615,690
CLASS 501	
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44	4,615,989
92	4,615,990
CLASS 502	
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41	4,615,992
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64	4,615,995
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66	4,615,997
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325	4,616,023
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383	4,616,027
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563	4,616,038
711	4,616,039
CLASS 518	
713	4,616,040
CLASS 521	
27	4,616,041
81	4,616,042
107	4,616,043
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CLASS 522	
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79	4,616,046
CLASS 523	
105	4,616,047
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212	4,616,049
220	4,616,050
CLASS 524	
102	4,616,051
104	4,616,052
171	4,616,053
317	4,616,054
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458	4,616,057
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92	4,616,064
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318	4,616,074
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305	4,616,078
344	4,616,079
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225	4,616,080
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87	4,616,082
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335	4,616,085
383	4,616,086
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294	4,616,087
336	4,616,088
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323	4,616,089
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397	4,616,090
CLASS 560	
53	4,616,091
177	4,616,092
204	4,616,093
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073	4,616,094
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322	4,616,095
454	4,616,096
852	4,616,097
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640	4,616,098
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94	4,615,692
122	4,615,693
126	4,615,694
385 A	4,615,695
389	4,615,696
890	4,615,697
892	4,615,698
897	4,615,699
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6	4,615,700
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	4,615,702
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8	4,615,704
11	4,615,705
CLASS 800	
1	4,616,099
	4,616,100

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	252	285,983
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D3—	35	285,986
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D6—	314	285,990
	407	285,991
	462	285,992
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	491	285,994
	522	285,995
	536	285,996
	596	285,997
D7—	6	285,999
	14	286,000
	30	286,001
	332	286,002
	350	286,003
	351	286,004
	398	286,005
	400	286,006
D8—	44	286,007
	47	286,008
	373	286,009
	381	286,010
		286,011
	394	286,012
	395	286,013
		286,014
	402	286,015
D9—	305	286,016
	329	286,017
	336	286,018
	341	286,019
	369	286,020
	370	286,021
	384	286,022
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	401	286,024
	405	286,025
	435	286,026
		286,027
		286,028
D10—	125	286,029
D12—	95	286,030
	96	286,031
	130	286,032
	142	286,033
	179	286,034
	190	286,035
	191	286,036
	211	286,037
	307	286,038
D13—	18	286,039
	24	286,040
D14—	1	286,041
	60	286,042
	90	286,043
	94	286,044
	100	286,045
		286,046
		286,047
	107	286,048
		286,049
	109	286,050
	111	286,051
		286,052
	114	286,053
D15—	69	286,054
D18—	2	286,055
	7	286,056
	12	286,057
	22	286,058
D19—	62	286,059
		286,060
D20—	6	286,061
D21—	35	286,062
	191	286,063
D23—	19	286,064
	30	286,065
	34	286,066
	65	286,067
	69	286,068
	122	286,069
D24—	21	286,070
	46	286,071
	56	286,072
	64	286,073
D25—	1	286,074
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	10	286,076
	74	286,077
		286,078
		286,079
		286,080
D26—	38	286,081
	61	286,082
	110	286,083
		286,084
D28—	2	286,085
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	13	286,087
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	64.1	286,092
	76	286,093
		286,094
D29—	12	285,980
	16	285,981
D32—	53.1	286,096
	69	286,095
D34—	6	286,099
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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

Note that the amount of the international search fee for the European Patent Office and the amounts of the International PCT fees will change effective June 1, 1986. For information on these fee changes see the notice appearing in the *Official Gazette* at 1065 O.G. 41 on Apr. 29, 1986.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before June 1, 1986	830.00
if paid on or after June 1, 1986	930.00
International fees	
Basic fee (first 30 pages):	
if paid before June 1, 1986	325.00
if paid on or after June 1, 1986	375.00
Basic Supplemental fee (for each page over 30):	
if paid before June 1, 1986	6.00
if paid on or after June 1, 1986	7.00
Designation fee for the first 10 national or regional offices:	
if paid before June 1, 1986	80.00
if paid on or after June 1, 1986	90.00
Designation fee for 11th and subsequent designations	No charge

Mar. 31, 1986.

DONALD J. QUIGG,
Assistant Secretary and
Commissioner of Patents
and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Oct. 11, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,408,355 through 4,409,688
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . $ 225.00
By other than a small entity . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . $ 55.00
By other than a small entity . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JULY 27, 1986, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,340,982	06/246,957	7/27/82
4,340,989	06/227,318	7/27/82
4,341,008	06/220,373	7/27/82
4,341,033	06/199,111	7/27/82
4,341,034	06/252,310	7/27/82
4,341,037	06/255,889	7/27/82
4,341,040	06/222,248	7/27/82
4,341,051	06/217,695	7/27/82
4,341,060	06/230,807	7/27/82
4,341,150	06/251,111	7/27/82
4,341,203	06/271,654	7/27/82
4,341,204	06/271,655	7/27/82
4,341,211	06/300,028	7/27/82
4,341,248	06/231,541	7/27/82
4,341,285	06/221,493	7/27/82
4,341,331	06/286,797	7/27/82
4,341,375	06/260,419	7/27/82
4,341,376	06/228,751	7/27/82
4,341,384	06/236,706	7/27/82
4,341,388	06/225,872	7/27/82
4,341,451	06/251,122	7/27/82
4,341,520	06/226,408	7/27/82
4,341,521	06/238,669	7/27/82
4,341,530	06/276,610	7/27/82
4,341,539	06/215,815	7/27/82
4,341,544	06/294,466	7/27/82
4,341,576	06/269,111	7/27/82
4,341,580	06/228,997	7/27/82
4,341,591	06/252,250	7/27/82
4,341,613	06/231,266	7/27/82
4,341,649	06/243,760	7/27/82
4,341,693	06/273,799	7/27/82
4,341,697	06/264,637	7/27/82
4,341,703	06/304,727	7/27/82
4,341,708	06/230,539	7/27/82
4,341,713	06/219,772	7/27/82
4,341,719	06/238,327	7/27/82
4,341,794	06/229,860	7/27/82
4,341,799	06/220,367	7/27/82
4,341,917	06/263,806	7/27/82
4,341,920	06/224,755	7/27/82
4,341,922	06/218,968	7/27/82
4,341,948	06/230,704	7/27/82
4,341,956	06/240,242	7/27/82
4,341,986	06/227,311	7/27/82
4,341,996	06/265,475	7/27/82
4,342,024	06/228,712	7/27/82
4,342,039	06/227,863	7/27/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,111,727, Re. S.N. 887,466, Filed July 21, 1986, Cl. 149/2, WATER IN-OIL BLASTING COMPOSITION, Robert B. Clay, Owner of Record: *Inventor,* Attorney or Agent: I. William Millen, et al., Ex. Gp.: 223

4,462,569, Re. S.N. 890,930, Filed July 28, 1986, Cl. 254/8B, APPARATUS FOR JACKING UP AND SUPPORTING A STRUCTURE, Harry H. Arzouman, Owner of Record: *Safe T. Jack, Inc., Santa Fe Springs, Calif.,* Attorney or Agent: Gene W. Arant, Ex. Gp.: 323

4,507,569, Re. S.N. 881,936, Filed July 3, 1986, Cl. 307/130, ELECTRICAL CONTROL SYSTEM AND DRIVER, John E. Hess II, Owner of Record: *Conservolite, Inc., Pittsburgh, Pa.,* Attorney or Agent: Andrew J. Cornelius, et al., Ex. Gp.: 214

4,511,127, Re. S.N. 891,677, Filed Aug. 1, 1986, Cl. 269/032, HYDRAULIC-MECHANICAL CLAMPING DEVICE, Jack H. Schron, et al., Owner of Record: *Jergens, Inc., Cleveland, Ohio,* Attorney or Agent: Charles B. Gordon, et al., Ex. Gp.: 323

4,513,295, Re. S.N. 889,319, Filed July 23, 1986, Cl. 346/33 ME, METHOD AND APPARATUS FOR RECORDING MEDICAL INFORMATION ON A STRIP CHART, Flave L. Jones, et al., Owner of Record: *American Home Products, New York, N.Y.,* Attorney or Agent: Morris Relson, et al., Ex. Gp.: 216

4,529,427, Re. S.N. 868,028, Filed May 29, 1986, Cl. 65/3.12, METHOD FOR MAKING LOW-LOSS OPTICAL WAVEGUIDES ON AN INDUSTRIAL SCALE, William G. French, Owner of Record: *Bell Telephone Laboratories, Inc., Berkeley Heights, N.J.,* Attorney or Agent: S. E. Hollander, et al., Ex. Gp.: 133

4,580,369, Re. S.N. 893,389, Filed Aug. 5, 1986, Cl. 51/170R, HAND GRINDER AND VALVE THEREFORE, Keld O. Hundebol, Owner of Record: *Inventor,* Attorney or Agent: Leonard J. Robbins, et al., Ex. Gp.: 323

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Venus Industries, Inc., Chicago, Ill., Reg. No. 211,096, for the mark "VENUS AND DESIGN", and Reg. No. 585,761, for the mark "VENUS", Canc. No. 15,690.

Boyd Manufacturing, Inc., Navarre, Ohio, Reg. No. 885,761, for the mark "SCHOONER AND WAGON DESIGN", Canc. No. 15,752.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of default of such proceedings sent to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, judgment will be entered against registrant and said registration will be cancelled.

Edipsa of Miami, Inc., Miami, Fla., Reg. No. 1,233,520, for the mark "INTERNATIONAL YELLOW PAGES", Canc. No. 15,404.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

NOTICE OF CHANGES IN THE ADMINISTRATION OF 42 U.S.C. 2182 AND 2457 (PROPERTY RIGHTS STATEMENTS TO DOE AND NASA).

Effective Nov. 1, 1986, the PTO will change the procedures under which property rights statements to the Department of Energy (DOE), 42 U.S.C. 2182, or National Aeronautics and Space Administration (NASA), 42 U.S.C. 2457 are requested and processed. These statements are required before a patent can issue on any invention useful in the production or utilization of special nuclear material or atomic energy (for the Department of Energy) or having significant utility in the conduct of aeronautical and space activities (for the National Aeronautics and Space Administration).

Currently, the PTO waits until after an application is otherwise in condition for allowance before property rights statements are requested. Under the new procedure, if a statement is necessary, an informal request for the statement will be issued shortly after filing. The request will identify which chapter(s) of the statute apply and an informal period of 45 days will begin running from the mail date of the notice.

If no response is received within 45 days, a formal notice will be issued. The statutory period for response to the formal notice is 30 days. There is no provision for extension of this time limit, and the penalty for failure to file an acceptable, timely statement is abandonment. In view of these strict time limits and penalties, applicants are strongly urged to take advantage of the period for informal correspondence by responding to the so-called 45-Day Letter. Additionally, the new 45-Day Letter will provide extensive information on the format and content of an acceptable statement. This should relieve many of the difficulties applicants currently experience in generating the statement. See also 914 OG. 2 for additional information on the form and content of property rights statements.

The statement should be an accurate reflection of the ownership of the invention on which patent protection is granted. Thus, if during prosecution before the examiner the claimed invention is so changed or the property rights situation so altered as to impact the accuracy of a statement submitted earlier, a supplemental statement must be filed. In those rare situations where property rights may be changed by an amendment to the claims after the statement has been filed, applicants are reminded that failure to submit such additional information where appropriate may be considered a false representation of material facts and render the patent owner vulnerable to sanctions as set forth in the above statutes. The PTO will not review applications for this possibility. The responsibility for complying with the statutes rests with the applicants.

The text of the new 45-Day Letter is reproduced below.

* * * * *

The subject matter of this application appears to:

- be "useful in the production or utilization of special nuclear material or atomic energy " as recited in 42 U.S.C. 2181 (Department of Energy (DOE)).
- have significant utility in the conduct of aeronautical and space activities as recited in 42 U.S.C. 2457 (National Aeronautics and Space Administration (NASA)).

Accordingly, no patent can issue on this application unless applicant(s) file a statement (under oath or in the form of a declaration as provided by 37 CFR 1.68) setting forth (1) the full facts concerning the circumstances under which the invention was made and conceived and (2) the relationship (if any) of the invention to the performance of any work under any contract or other arrangement with the Agency(ies) noted above. On the reverse side of this form is an example of an acceptable format for this statement. The language appearing in paragraphs III and/or IV of the example *must* appear if applicant is attempting to establish that no relationship (under item 2 above) exists.

If the invention disclosed in this application was developed under a contract, grant or cooperative agreement between the Agency(ies) indicated above and a person, small business or nonprofit organization and rights to the invention have been determined by specific reference to 35 U.S.C. 202 in the contract, grant or cooperative agreement, then applicant need not submit the statement described above. Instead, applicant may file a verified statement (under oath or in the form of a declaration, 37 CFR 1.68) setting forth the information required by 35 U.S.C. 202(c)(6).

IF NO STATEMENT HAS BEEN RECEIVED WITHIN FORTY-FIVE DAYS OF THE MAIL DATE INDICATED ABOVE, a formal requirement for statement will then be issued. No provision is made for extension of the statutory thirty-day period for response to the formal requirement and the penalty for failure to file an acceptable and timely statement is abandonment of the application. Therefore, applicants are strongly encouraged to submit a statement at this time in order to avoid the issuance of a formal requirement.

IT IS IMPORTANT TO NOTE that the statement must accurately represent the property rights situation of the claimed invention if and when the application is found allowable. Thus, if during prosecution before the examiner, the claimed invention is so altered or the property rights situation so changed as to impact the accuracy of a statement submitted earlier, a supplemental statement must be filed. Failure to submit such additional information where appropriate may be considered as false representation of material facts and render the patent owner vulnerable to loss of patent rights and other sanctions as set forth in the statutes. The PTO will not review allowed applications for this possibility. The responsibility for complying with the statutes rests with the applicants.

Any questions regarding this requirement should be directed to Licensing and Review at (703) 557-4948.

* * * * *

The following is an example of an acceptable property rights statement. Statements of this type are, of course, only suitable for situations in which *NO* Agency funds or other considerations were involved in the making or conception of the invention. While this example is in the form of a declaration, a sworn document is equally acceptable.

* * * * *

I (We)________________________________,
citizens of ____________________________residing
at ____________________________________,
declare:

That I (we) made and conceived the invention described and claimed in patent application Serial Number ____________________filed in the United States of America on ________________________, titled
____
____.

(Check and complete either I. or II. below)

____I. (For Inventors Employed by an Organization)

That I (we made and conceived this invention while employed by ______________________________
____.

That the invention is related to the work I am (we are) employed to perform and was made within the scope of my (our) employment duties;

That the invention was made during working hours and with the use of facilities, equipment, materials, funds, information and services of ____(name of employer)____. Other relevant facts are ______________________
____
____
____.

That to the best of my (our) knowledge and belief (and/or based upon information provided by __________
____
of ______________________________________):

—OR—

____II. (For Self-Employed Inventors)

that I (we) made and conceived this invention on my (our) own time using only my (our) own facilities, equipment, materials, funds, information and services. Other relevant facts are ______________________
____.
____.

That to the best of my (our) knowledge and belief:

(Check III and/or IV below as appropriate)

____III. The invention was not made or conceived in the course of, or in connection with, or under the terms of any contract, subcontract or arrangement entered into with or for the benefit of the United States Atomic Energy Commission or its successors: Energy Research and Development Administration or the Department of Energy.

—AND/OR—

____IV. The invention was not made (conceived or first actually reduced to practice) under nor is there any relationship of the invention to the performance of any work under any contract of the National Aeronautics and Space Administration.

The undersigned inventor(s) declare further that all statements made herein of his or her (their) own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Inventor's Signature:
Post Office Address:
Date:

Inventor's Signature:
Post Office Address:
Date:

* * * * *

Information regarding these changes in the processing of property rights statements may be obtained by calling or writing Mr. Kenneth L. Cage, Director, Special Laws Administration, Group 220, Washington, D.C. 20231 (703-557-2877).

Sept. 16, 1986.

DONALD J. QUIGG,
Assistant Secretary and
Commissioner of Patents
and Trademarks.

Patents Available for License or Sale

General Electric Co. is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for licenses may be addressed to: Patent Counsel, Consumer Electronic Business Operations, General Electric Co., Portsmouth, Va. 23705.

4,371,980.	SELF ALIGNING BAND-PASS FILTERING SYSTEM.
4,375,701.	BATTERY OR AC DRIVEN RADIO RECEIVER POWER SUPPLY.
4,375,650.	SYSTEM FOR PROCESSING VIDEO SIGNALS.
4,377,870.	ELECTRONIC AUDIENCE POLLING SYSTEM.
4,380,760.	SMOKE DETECTOR WITH DELAYED ALARM AFTER CHANGE TO STAND-BY POWER.
4,381,487.	RESONATOR COUPLED DIFFERENTIAL AMPLIFIER.
4,383,007.	BATTERY COMPARTMENT.
4,383,333.	AM RADIO HAVING AN AUTOMATIC FINE TUNING CIRCUIT.
4,408,186.	POWER LINE COMMUNICATIONS OVER GROUND AND NEUTRAL CONDUCTORS OF PLURAL RESIDENTIAL BRANCH CIRCUITS.
4,409,590.	BUILDING SECURITY, COMMUNICATION AND CONTROL SYSTEM.
4,420,896.	METHOD FOR FABRICATION OF ELECTROSCOPIC DISPLAY DEVICES AND TRANSMISSIVE DISPLAY DEVICES FABRICATED THEREBY.
4,426,555.	TELEPHONE COMMUNICATIONS DEVICE FOR HEARING-IMPAIRED PERSON.

4,426,736. PROGRAMMABLE CLOCK RADIO HAVING NAP AND SLEEP TYPE FEATURES.
4,432,608. VIEWING SCREEN WITH ENHANCED CONTRAST.
4,433,326. POWER LINE COMMUNICATION SYSTEM USING THE NEUTRAL AND GROUND CONDUCTORS OF A RESIDENTIAL BRANCH CIRCUIT.
4,434,421. METHOD FOR DIGITAL DATA TRANSMISSION WITH BIT-ECHOED ARBITRATION.
4,438,519. METHOD AND APPARATUS FOR TRANSMITTING HIGH-BIT-RATE DIGITAL DATA IN POWER LINE COMMUNICATION MEDIA HAVING HIGH HARMONIC NOISE CONTENT.
4,464,793. RESONANCE SELECTION CIRCUIT FOR SERIES CONNECTION IN A RADIO RECEIVER CIRCUIT.
4,468,792. METHOD AND APPARATUS FOR DATA TRANSMISSION USING CHIRPED FREQUENCY-SHIFT-KEYING MODULATION.
4,473,837. SYSTEM FOR ENCODING AND DECODING VIDEO SIGNALS.
4,478,005. REMOVABLE INTEGRALLY MOLDED CLOSURE.
4,485,394. AUTOMATIC CONVERGENCE AND GRAY SCALE CORRECTION FOR TELEVISION RECEIVERS AND PROJECTION TELEVISION SYSTEMS.
4,495,445. BRIGHTNESS CONTROL FOR A VACUUM FLUORESCENT DISPLAY.
4,498,191. DIGITAL AUTOMATIC FREQUENCY CONTROL WITH TRACKING.
4,510,611. TRANSCEIVER CIRCUIT FOR INTERFACING BETWEEN A POWER LINE COMMUNICATION SYSTEM AND A DATA PROCESSOR.
4,510,623. TELEVISION CHANNEL LOCKOUT.
4,514,732. TECHNIQUE FOR INCREASING BATTERY LIFE IN REMOTE CONTROL TRANSMITTERS.
4,521,803. SYSTEM FOR COMPATIBLE TRANSMISSION OF HIGH-RESOLUTION TV.
4,525,703. PORTABLE SMOKE ALARM.
4,525,745. TEMPERATURE COMPENSATION FOR TV PROJECTION LENS AND CRT ASSEMBLY.
4,533,936. SYSTEM FOR ENCODING AND DECODING VIDEO SIGNALS.
4,533,960. SYSTEM FOR ENCODING AND DECODING VIDEO SIGNALS.
4,535,870. QUICK ATTACH-DETACH MECHANISM FOR AUDIO COMPONENTS.
4,542,533. TUNING SYSTEM WITH AUTOMATIC FREQUENCY CONTROL.
4,543,584. COLLAPSIBLE MAGNETIC ANTENNA MOUNT.
4,544,955. IMPLOSION RESISTANT CATHODE RAY TUBES.
4,554,426. MULTIPLE KEY WITH INVISIBLE HINGE.
4,556,857. DEFLECTION YOKE FOR SMALL GUN-BASE CRT.
4,560,941. FREQUENCY MODULATION DETECTOR USING DIGITAL SIGNAL VECTOR PROCESSING.
4,564,729. TELEPHONE ILLUMINATION CIRCUIT.
4,575,640. POWER CIRCUIT CONTROL APPARATUS FOR PRIMARY AND AUXILIARY LOADS.
4,578,653. FREQUENCY SELECTIVE FILTER CIRCUIT.
4,580,754. APPARATUS FOR MOUNTING AN APPLIANCE UNDER A CABINET OR THE LIKE.
4,583,115. CIRCUIT FOR AND METHOD OF BROADBAND COMB FILTERING A COMPOSITE VIDEO SIGNAL WHICH HAS BEEN DOUBLE-SIDE BAND DETECTED.
4,583,232. CARRIER CURRENT DIGITAL DATA TRANSCEIVER.
4,586,087. CATHODE RAY TUBE MOUNTING SYSTEM.

Applications for license may be addressed to Counsel Patent and Legal Operation, Corporate Research and Development, General Electric Co., P.O. Box 8, Bldg. K-1, Rm. 4A70, Schenectady, N.Y. 12301.

4,522,065. REMOTE PRESSURE SENSOR.
4,559,790. APPARATUS FOR MAINTAINING ELECTRONIC EQUIPMENT AND THE LIKE AT LOW TEMPERATURES IN HOT AMBIENT ENVIRONMENTS.
4,563,337. METHOD AND APPARATUS FOR CONTINUOUS ION EXCHANGE.

Applications for license should be addressed to Patent Counsel-SSD, General Electric Co., P.O. Box 8555, Philadelphia, Pa. 19101.

4,575,493. LOW EXPANSION, MULTIBAND TRANSMITTING GLASSES AND GLASS-CERAMICS.
4,575,679. AUTOMATIC LOAD SHED CONTROL FOR SPACECRAFT POWER SYSTEM.
4,576,770. METHOD OF MANUFACTURING A TURBOMACHINERY ROTOR.
4,580,922. VERTEX FITTINGS DERIVED FROM A MASTER FITTING.

3,746,823. ELECTRONIC COOKING APPLIANCE. *Robert O. Vidas, Esq.*, 2925 Multifoods Tower, 33 S. Sixth St., Minneapolis, Minn. 55402.
4,052,771. CUFF-LINKING DEVICE. *William E. Shull*, c/o Butler & Binion, 1600 Allied Bank Plz., Houston, Tex. 77002.
4,231,061. INSTANT COLOR SLIDE RECORDER OF CRT IMAGE. *Samuel Freeman*, 13 Birchwood Ct. East, Syosset, N.Y. 11791.
4,367,586. DUSTLESS CUTTER. *Edwin E. Greigg, Esq.*, 1201 S. Eads St., Suite 100, Arlington, Va. 22202.
4,377,925. BRACKET FOR CONDUIT TRENCHES ABLE, INC. *Walter J. Monacelli*, P.O. Box 13107, St. Petersburg, Fla. 33733-3107.
4,588,863. SYSTEM FOR FACILITATING PROFESSIONAL TELEPHONE COMMUNICATION. *James M. Ress*, 5300 27th St., North Arlington, Va. 22207.
SN. 06,239,501. STEN-ALL. *William Ruckstein*, 140 Gardenia La., Port Richey, Fla. 33568.
SN. 06,690,888. ROTARY INTERNAL COMBUSTION ENGINE. *Joseph F. Frasca*, 5801 Yorktown Rd., Lorain, Ohio 44053.
Des. 253,382. COMBINED HANGING PLANTER AND LIGHTS THEREFOR. *Anthony J. Spruiel*, 1210 34th St., Newport News, Va. 23607.

- *PTO Entering of Attorney Docket Number on Missing Part/Incomplete Notices*

In response to several requests from patent attorneys, the PTO is now entering the attorney docket number on the Notice of Incomplete Application and Notice to File Missing Parts of Application.

The attorney docket number which will be entered on the Notice will be that which was submitted on the transmittal letter as filed with a new patent application. The number must be clearly identified as an

"attorney docket number". This number will be entered by the PTO under the Title of Invention on the Notices.

If the Office makes a mistake in recording the attorney docket number on the Notice of Incomplete Application or the Notice to File Missing Parts of Application, such mistake is not to be used by the attorney as cause for delay in response. Nor is the attorney to request that the Office correct the docket number prior to response to the Notice. The attorney can notify the Office in the response, but no change will be made by the Office until the Filing Receipt is issued.

If the attorney wishes to change the attorney docket number from that which was entered on transmittal letter as filed, the request must be submitted through amendment, submitted to the Patent Examining Corps.

THERESA A. BRELSFORD,
Assistant Commissioner
for Administration.

Sept. 18, 1986.

PATENT NOTICES

Certificates of Correction for the Week of Oct. 14, 1986

Re. 31,903
Re. 32,145
Re. 32,191
D. 283,137
D. 284,899
4,154,994
4,390,872
4,401,677
4,424,189
4,425,642
4,434,226
4,442,727
4,453,725
4,458,293
4,465,230
4,466,046
4,467,801
4,468,246
4,469,993
4,474,964
4,479,172
4,489,306
4,490,374
4,495,262
4,495,589
4,496,555
4,505,302
4,505,441
4,512,184
4,513,976
4,515,704
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4,528,772
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4,604,042
4,604,401
4,604,467
4,604,478
4,604,486
4,605,325
4,605,691
4,605,709

Disclaimers

3,978,645.—*George H. Bennett,* Berrien Springs, Mich.; and *Wilbur L. Pringle,* Washington, Ill. SICKLE GUARD. Patent dated Sept. 7, 1976. Disclaimer filed July 9, 1986, by the assignee, *National Standard Co.*

Hereby enters this disclaimer to claims 1, 4, 5, 7 and 8 of said patent.

4,167,585.—*Andrew A. Caridis,* Foster City and *Clark K. Benson,* Millbrae, Calif. METHOD FOR HEATING AND COOKING FOOD IN A CLOSED TREATMENT CHAMBER BY MAINTAINING THE TEMPERATURE AND MOISTURE CONTENT. Patent dated Sept. 11, 1979. Disclaimer filed June 6, 1986, by the assignee, *Heat and Control, Inc.*

Hereby enters this disclaimer to claim 9 of said patent.

4,186,786.—*George F. Kirkpatrick,* Downers Grove, Ill. COLORED INTERLOCKING CLOSURE STRIPS FOR A CONTAINER. Patent dated Feb. 5, 1980. Disclaimer filed Apr. 2, 1986, by the assignee, *Union Carbide Corp.*

Hereby enters this disclaimer to all claims of said patent.

Dedications

4,050,042.—*Albert M. Anthony,* Bangor, Mich. STATIC CONVERGENCE DEVICES FOR COLOR TELEVISION PICTURE TUBES. Patent dated Sept. 20, 1977. Dedication filed May 7, 1980, by the assignee, *Tractor, Inc.*

Hereby dedicates the entire term of said patent to the Public.

4,490,165.—*David M. Spatz, Trenton and Barrington Cross,* Rocky Hill, N.J. META-(PHENYLALKOXY)PHENYL-N-METHOXY-N-METHYLUREA COMPOUNDS, METHODS FOR PREPARING SAME AND HERBICIDAL USE THEREOF. Patent dated Dec. 25, 1984. Dedication filed June 26, 1986, by the assignee, *American Cyanamid Co.*

Hereby dedicates to the Public the entire remaining term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7609
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Irvine: University of California, Irvine Library	(714) 856-7234
	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Connecticut	New Haven: Science Park Library	(203) 786-5000
Delaware	Newark: University of Delaware Library	(302) 451-2965
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4284
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-7040
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1227
	The Free Library	(215) 686-5330
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2371
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas.	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TECTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF September 13, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	5-21-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-24-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-01-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-08-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	10-09-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	4-11-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	4-25-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	11-09-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	7-17-84
DESIGN, GROUP 290—K. L. CAGE, Director	4-02-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	2-19-85
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	12-24-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	5-21-84
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	2-25-85
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-02-86

Expiration of patents: The patents within the range of numbers indicated below expire during September 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,464,063 to 3,470,563, inclusive
Plant Patents	Numbers 2,918 to 2,926 inclusive

REEXAMINATIONS

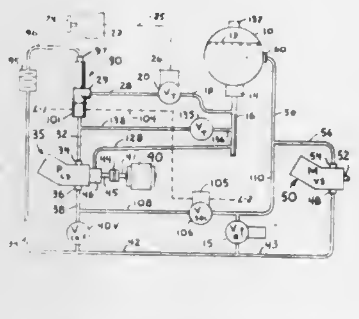
OCTOBER 14, 1986

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 3,449,911 (580th)

POWER TRANSFER SYSTEM

Paul W. Schlosser, Chicago, Ill., assignor to Muncie Power Products, Inc., Muncie, Ind.
Reexamination Request No. 90/000,806, Jun. 19, 1985.
Reexamination Certificate for Patent No. 3,449,911, issued Jun. 17, 1969, Ser. No. 577,552, Sep. 6, 1966.
Int. Cl.⁴ F16D *31/02;* **F15B** *21/04;* **F04B** *21/00*
U.S. Cl. 60—453



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **3** and **4** is confirmed.

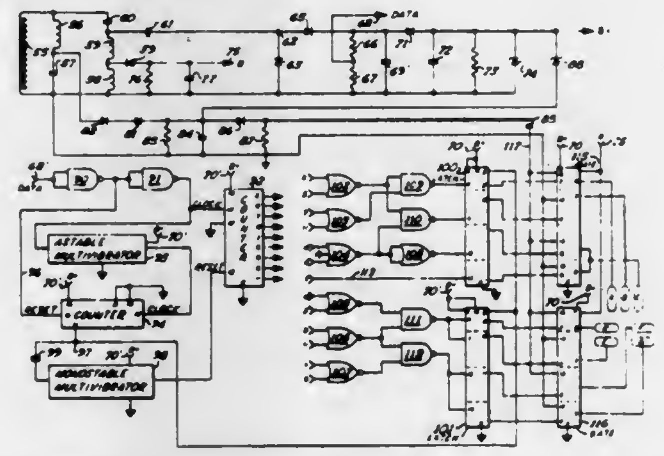
Claims **1**, **2**, and **5–12** are cancelled.

3. Apparatus generally as forth in claim **1**, including power limiting means for said system, comprising a pressurized liquid operated shut-off valve further controlling the supply of liquid to said pump in response to the pressure of liquid delivered from same, and means controlled by said shut-off valve for reducing the pressure of liquid delivered by said pump.

B1 4,019,518 (581st)

ELECTRICAL STIMULATION SYSTEM

Donald D. Maurer, Anoka, and Paul D. Sorenson, Blaine, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Reexamination Request No. 90/000,376, May 9, 1983.
Reexamination Certificate for Patent No. 4,019,518, issued Apr. 26, 1977, Ser. No. 603,434, Aug. 11, 1975.
Int. Cl.⁴ A61N *1/36*
U.S. Cl. 128—419 R



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

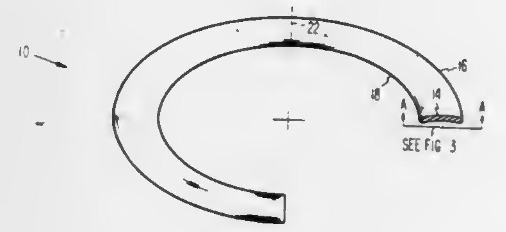
Claims **1–34** are cancelled.

[1. In an electrical stimulation system for selectively stimulating portions of the body of the type having external means for transmitting stimulus signals and control signals, implantable means for receiving said transmitted signals, a plurality of output means adapted to apply said stimulus signals to the body and means interconnecting said receiving means and said output means and responsive to said control signals for routing said stimulus signals to said output means, the improvement wherein: said output means are adapted for combination in a plurality of preselected configurations: said transmitting means includes means for alterably preselecting a predetermined characteristic of each control signal, said predetermined characteristic manifesting a desired one of said output means configurations; and said routing means comprises means for selectively routing said stimulus signals to the desired output means configuration in accordance with the predetermined characteristic of said control signals.**]**

B1 4,104,822 (582nd)

ROTATING CIRCULAR AIRFOIL

Henry W. Rodgers, 9725 W. 21st Ave., Lakewood, Colo. 80215
Reexamination Request No. 90/000,352, Mar. 31, 1983.
Reexamination Certificate for Patent No. 4,104,822, issued Aug. 8, 1978, Ser. No. 747,310, Dec. 3, 1976.
Int. Cl.⁴ A63H *27/00*
U.S. Cl. 446—48



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **2**, **4**, **6–11** and **14** is confirmed.

Claims **1**, **3**, **5**, **12** and **13** are cancelled.

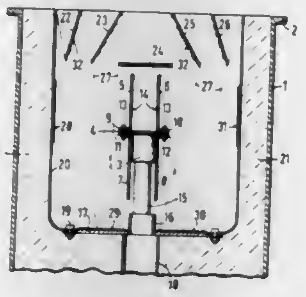
New claims **15–24** are added and determined to be patentable.

15. A rotating circular ring airfoil body for use as a flying toy, which airfoil body is defined by an outer circumferential edge and an inner circumferential edge and an upper camber surface and a bottom camber surface, said edges and surfaces defining an airfoil profile in cross section radially through said airfoil body, said airfoil profile being of uniform cross sectional configuration circumferentially around said airfoil body, said airfoil profile being further defined with respect to a reference chord line extending across said profile from said outer circumferential edge to said inner circumferential edge, said upper camber surface is located above said chord line and has a maximum height above said chord line at approximately equal distance between said outer circumferential edge and said inner circumferential edge, said bottom camber surface is located below and extends generally parallel with respect to said chord line, said upper camber surface has a first curvature from said maximum height to said outer circumferential edge and a second curvature from said maximum height to said inner circumferential edge, and said first and second curvatures are substantially identical to one another and symmetrical *about a reference line perpendicular to said chord line and passing through a midpoint of said chord line.*

B1 4,121,430 (583rd)
CRYOPUMP HAVING IMPROVED HEAT RADIATION SHIELDING

Werner Bächler, Hoffnungsthal; Hans-Joachim Forth, and Rudiger Frank, both of Cologne, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH & Co. KG, Cologne, Fed. Rep. of Germany

Reexamination Request No. 90/000,642, Oct. 2, 1984.
Reexamination Certificate for Patent No. 4,121,430, issued Oct. 24, 1978, Ser. No. 793,488, May 4, 1977.
Claims priority, application Fed. Rep. of Germany, May 11, 1976, 2620880
Int. Cl.⁴ B01D *8/00*
U.S. Cl. 62—55.5



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **5-8** is confirmed.

Claims **1-4** and **9** are cancelled.

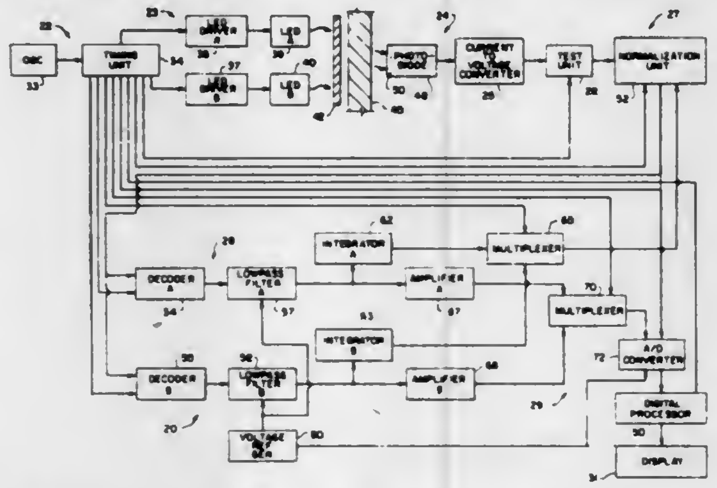
New claim **10** is added and determined to be patentable.

10. In a cryopump composed of a housing presenting an entrance opening defined by a plane for passage of molecules of a gas to be pumped, a member arranged to be brought to low temperature and presenting planar condensation surfaces for molecules of the gas to be pumped, and a thermal radiation shield disposed in the region of the entrance opening, the improvement wherein said member is positioned so that said condensation surfaces are substantially at right angles to the plane of the entrance opening, and said radiation shield comprises a plurality of elongated metal strips so positioned that their longitudinal axes are parallel to the condensation surfaces, further wherein said member comprises two plates which face one another and extend through the pump housing, the surfaces of said plates which face away from one another constituting said condensation surfaces, and said member further comprising adsorption material covering only the surfaces of said plates which face one another, and further wherein the surfaces of said plates which face away from one another are arranged to be more accessible to molecules of gas entering the cryopump through said entrance opening than the surfaces of said plates which face one another.

B1 4,407,290 (584th)
BLOOD CONSTITUENT MEASURING DEVICE AND METHOD

Scott A. Wilber, Boulder, Colo., assignor to Biox Technology, Inc., Boulder, Colo.

Reexamination Request No. 90/000,794, Jun. 10, 1985.
Reexamination Certificate for Patent No. 4,407,290, issued Oct. 4, 1983, Ser. No. 250,956, Apr. 1, 1981.
Int. Cl.⁴ G01N *33/16;* **A61B** *5/00*
U.S. Cl. 128—633



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1-6**, **10-16** and **18-33** is confirmed.

Claims **7-9**, **17** and **34-36** are cancelled.

1. A blood constituent measuring device, comprising:
electromagnetic energy emitting means for emitting electromagnetic energy at a plurality of predetermined wavelengths through a blood-containing sample at a test area;
sensing means for receiving electromagnetic energy from said sample at said plurality of wavelengths;
signal producing means connected with said sensing means to produce output signals responsive to electromagnetic energy received by said sensing means at said plurality of wavelengths;
normalizing means for receiving said output signals from said signal producing means and scaling the same so that the DC components are normalized; and
processing means for receiving said output signals from said normalizing means and producing an output indicative of changes in the thickness of preselected constituents of blood relative to the total change in blood thickness.

B1 4,494,365 (585th)
MOWER CUTTING UNIT

Lawrence L. Lloyd, 1001 Olmstead Ave., Pacific Grove, Calif. 93950

Reexamination Request No. 90/000,912, Nov. 25, 1985.
Reexamination Certificate for Patent No. 4,494,365, issued Jan. 22, 1985, Ser. No. 545,971, Oct. 26, 1983.
Int. Cl.⁴ A01D *34/53, 34/42*
U.S. Cl. 56—256

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **23** is confirmed.

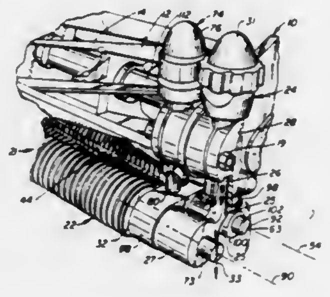
Claim **5** is cancelled.

Claims **1**, **2** and **6** are determined to be patentable as amended.

Claims **3**, **4** and **7-22**, dependent on an amended claim, are determined to be patentable.

New claim **24** is added and determined to be patentable.

1. A mower cutting unit of the type including a mower blade mounted for rotation to a frame and support members mounted to the frame which support the cutting unit on a mowing surface, the improvement comprising:
a supplementary cutter including a plurality of cutting edges spaced apart in a predetermined axial pattern;
one said support member comprising a generally horizontal slotted expunger roller mounted to the frame for rotation about an expunger roller axis, an outer expunger roller surface and a plurality of vertically disposed annular slots located in [a] *the* predetermined axial pattern along said expunger roller, said slots dividing said expunger roller surface into a plurality of expunger roller surface segments;
[a supplementary cutter;]
means for mounting said supplementary cutter adjacent and behind said expunger roller *with the cutting edges passing within the annular slots*; and
means for actuating said supplementary cutter;
whereby horizontally disposed plant matter is [pulled] *raised* up into said circular slots as said expunger roller surface segments roll over said plant matter to allow said supplementary cutter to cut said [pulled] *raised* up plant matter *while leaving the mower surface substantially undamaged.*



REISSUES

OCTOBER 14, 1986

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,264

DOUBLE TORIC SEALING RING

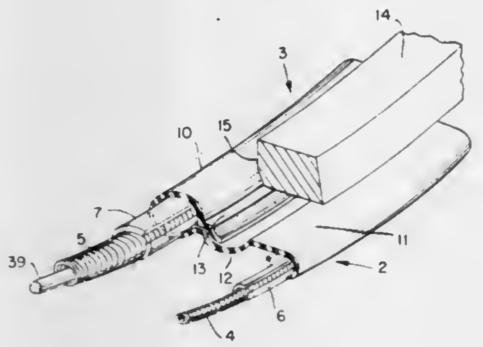
Maurice Bonafous, Oloron, France, assignor to Applications Mechaniques et Robinetterie Industrielle (AMRI S.A.), France

Original No. 4,415,170, dated Nov. 15, 1983, Ser. No. 337,279, Jan. 5, 1982. Application for reissue Nov. 6, 1985, Ser. No. 795,646

Claims priority, application France, Jan. 13, 1981, 81 00460

Int. Cl.^{4} F16J *15/12, 15/32*

U.S. Cl. 277—163 **10 Claims**



1. A flexible double toric sealing ring comprising first and second sealing ring structures **2, 3**, positioned about a common concentric axis, which ensure respectively a static seal and a dynamic seal, a counter ring which absorbs the compressive forces at the valve seat and also distributes contact pressure along the circumference, said counter ring movably mounted around the second sealing ring structure to allow self-centering of the sealing ring structure on the valve seat, and a sealing membrane, having an elastically deformable part, which interconnects the two sealing ring structures while partially covering them, said double toric sealing ring being characterized by said sealing membrane having one lateral side facing in a first direction along said common concentric axis and having an opposite lateral side facing in a second direction, opposite said first direction, along said common concentric axis, and by the placement of the two sealing ring structures on opposite lateral sides of the middle section of the membrane.

Re. 32,265

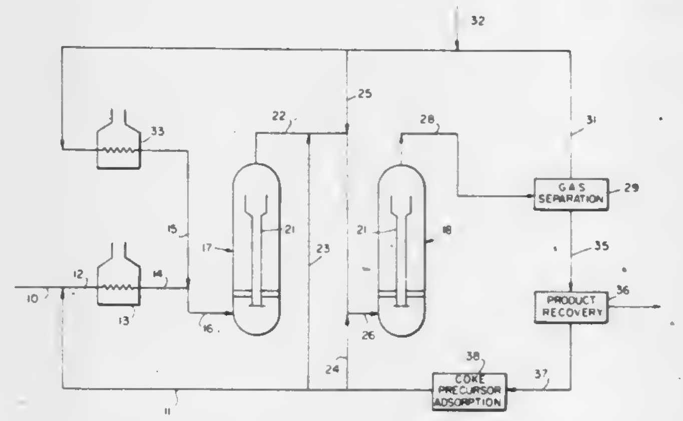
HYDROGENATION OF HIGH BOILING HYDROCARBONS

Harold Unger, Fort Lee, N.J.; Morgan C. Sze, Portsmouth, N.H., and Roger P. Van Dreisen, Titusville, N.J., assignors to Lummus Crest, Inc., Bloomfield, N.J.

Original No. 4,411,768, dated Oct. 25, 1983, Ser. No. 370,416, Apr. 21, 1982. Continuation-in-part of Ser. No. 272,720, Jun. 11, 1981, abandoned, which is a continuation of Ser. No. 106,274, Dec. 21, 1979, abandoned. Application for reissue May 17, 1985, Ser. No. 735,101

Int. Cl. C10G *47/26, 47/36*

U.S. Cl. 208—59 **10 Claims**



1. In a process for upgrading high boiling hydrocarbon materials to valuable lower boiling materials is a hydrogenation operation including at least one expanded bed catalytic hydrogenation zone to produce an upgraded hydrogenated product, the improvement comprising:

recovering from the upgraded hydrogenation product a recycle liquid having a 5-volume percent distillation temperature of at least 450° F. with at least 25 -volume percent thereof boiling above 950°F.; cooling the liquid recycle to a temperature of at least 350° F. and no greater than 700° F. to [separate precipitate coke precursors; removing] *essentially only* coke precursors from the *cooled* liquid recycle; and subsequent to [separation removal] *of said coke* precursors providing the liquid recycle to an expanded bed catalytic hydrogenation zone.

PATENTS

GRANTED OCT. 14, 1986

ERRATA

For CLASS	See PATENT NO.
187–029	4,616,733
384–007	4,616,881
384–015	4,616,885
384–045	4,616,886
420–117	4,617,052
530–324	4,617,149
540–364	4,617,150
540–001	4,617,151
540–200	4,617,152
558–450	4,617,154

PATENTS

GRANTED OCTOBER 14, 1986

GENERAL AND MECHANICAL

4,616,365

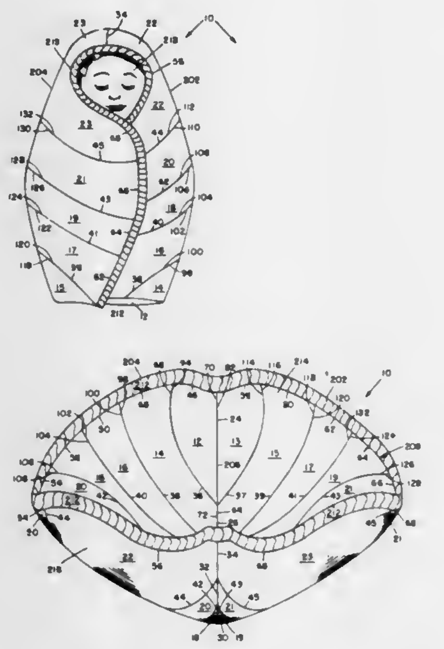
WRAP

Shirley Lyons, 11064 N. 300 W., Huntington, Ind. 46750

Filed Apr. 15, 1985, Ser. No. 723,621

Int. Cl.⁴ A41B *13/06*

U.S. Cl. 2—69 **18 Claims**



1. A wrap comprising a plurality of segments of relatively flexible planar material, said segments being joined together by lengthwise connectors, said wrap having a substantially three-dimensional conchiform or clamshell shape when said wrap is not being worn and is supported in generally wrinkle and fold free configuration, said segments being joined together as bilaterally arranged pairs, and said segments comprising top, middle and bottom segment pairs, each pair being dissimilar in shape form the other pairs.

13. A pattern for a wrap, said pattern comprising planar material having indicia of a plurality of segments, said segments having outer borders, central borders, and lateral borders, said segments being reproducable in relatively flexible planar material wherein respective pairs of said central borders and respective pairs of said lateral borders are joinable to concatenate said segments and form said wrap, said wrap having a substantially conchiform or clam shell three-dimensional shape when said wrap is supported in wrinkle and fold free configuration.

4,616,366

PLACKET

George B. Mueller, 3540 Chalet, Crete, Ill. 60417

Filed Dec. 24, 1984, Ser. No. 686,134

Int. Cl.⁴ A41B *1/00*

U.S. Cl. 2—115 **9 Claims**

1. A shirt, comprising:

a right front side marginal edge having an upper right portion extending from a collar portion to a breast portion and a lower right portion extending from the breast portion to a waist portion;

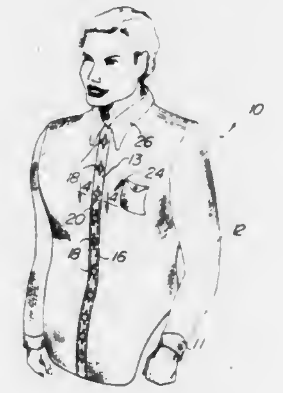
a left front side marginal edge having an upper left portion extending from the collar portion to the breast portion and a lower left portion extending from the breast portion to the waist portion;

the upper right portion and upper left portion being separable to enable a wearer to don the shirt by slipping the shirt over the user's head, and closeable to enable a user to draw the upper right portion and upper left portion together for buttoning once the shirt is donned; and

the lower right portion and lower left portion overlapping along a central line extending from the breast portion to the waist portion;

a placket extending along one of the upper right portion and the upper left portion, from the collar portion to the breast portion, and continuously from the breast portion along the center line to the waist portion, the placket having a series of spaced-apart buttonholes along substantially its entire length, the series of buttonholes including an upper group of buttonholes between the collar portion and the breast portion and a lower group of buttonholes between the breast portion and the waist portion;

a series of spaced-apart buttons corresponding to the buttonholes, the series of buttons including an upper group of buttons for engagement with the upper group of buttonholes and a lower group of buttons located at corresponding ones of the lower group of buttonholes;



placket stitching means for attaching the overlapping lower right and lower left portions together along the central line, and for attaching the placket to the lower right and lower left portions;

upper button stitching means for attaching the upper group of buttons;

lower button stitching means for attaching the lower group of buttons to the shirt, the lower button stitching means extending through the lower group of buttonholes; and

traverse stop stitching means for reinforced attachment of the placket to the lower right and lower left portions along a stress line extending traversely to the central line at the breast portion;

wherein the lower right and lower left portions are permanently attached together to prevent undesired separation, while providing the appearance of a conventional front-buttoned dress shirt.

4,616,367

HEADBAND WITH DETACHABLE LENSES

Joseph A. Jean, Jr., 1631 E. Grove Pl., Fullerton, Calif. 92631, and Lynne Laurence, 1020 Riverside Dr., #46, Burbank, Calif. 91506

Filed Nov. 14, 1984, Ser. No. 671,479

Int. Cl.⁴ A61F *9/02*

U.S. Cl. 2—452 **6 Claims**

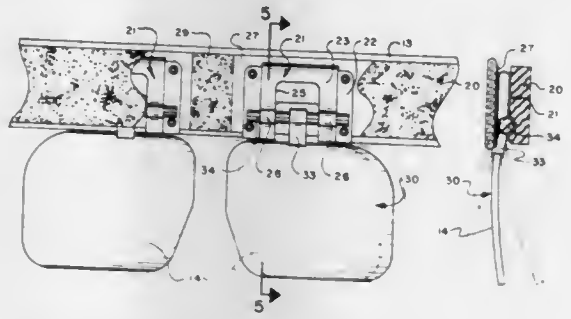
1. An article comprising, in combination:

a headband adapted to encircle the head of a user;

a strip of moisture-absorbing material secured to one side of said headband;

a pair of clips positioned in parallel, spaced relationship and retained between said headband and said moisture-absorbing material strip, with the open ends of said clips extending transverse to the longitudinal dimension of said headband; and

a pair of lenses, each of said lenses including an elongate member extending parallel to the top edge thereof and means for interconnecting each of said lenses and the corresponding one of said members, said clips being adapted to independently receive said members of said lenses, said lenses being adjustable relative to said clips both laterally and angularly about the axes of said elongate members.



4,616,368

SANITARY CLEANING APPARATUS

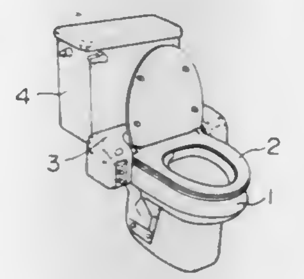
Kazutoshi Nagai, Nara, and Hirofumi Aoyagi, Habikino, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 25, 1985, Ser. No. 748,668

Claims priority, application Japan, Jun. 29, 1984, 59-135642

Int. Cl.⁴ A47K *3/20, 4/00;* **E03D** *9/00, 9/081*

U.S. Cl. 4—420.2 8 Claims



1. A sanitary cleaning apparatus comprising a first functional means which discharges cleaning water to object parts, a second functional means which has a function identical to or different from the first functional means, and latch circuit means including first switching means switchable between a first state for turning on the first functional means and a second state for turning off the first functional means, second switching means switchable between a first state for turning on the second functional means and a second state for turning off the second functional means, and human body detector means for detecting the presence or absence of a human body, wherein the latch circuit means permits operation of a selected one of said first and second functional means only when the switching means for the selected functional means is placed in the first state in combination with detection of the presence of a human body by the human body detector means, and wherein the latch circuit prohibits operation of the selected functional means when said switching means for the other of said functional means is placed in the first state, said switching means for said selected functional means is placed in the second state, or the human body detector means setects the absence of a human body, the latch circuit means prohibiting the operation of the selected first or second functional means by placing the switching means for the selected functional means in the second state.

4,616,369

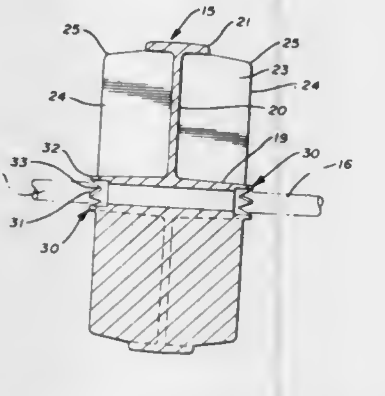
AQUATIC TURBULENCE SUPPRESSION DEVICE

Thomas P. Rademacher, Medina, Ohio, assignor to McNeil Corporation, Akron, Ohio

Filed May 28, 1985, Ser. No. 738,294

Int. Cl.⁴ E04H *3/16*

U.S. Cl. 4—497 18 Claims



1. A device for use in a body of water as one of a plurality of such devices assembled in axial alignment with one another along a restraining element to suppress incident wave turbulence, said devices comprising, hub means adapted to receive the restraining element, a plurality of planar vane means for directing incident water extending generally radially and axially of said hub means, annular baffle means disposed proximate the radial extremity of said vane means, web means for suppressing wave turbulence extending radially of said hub means and oriented substantially perpendicular to said vane means, and interlocking means on said hub means matingly engaging opposed interlocking means of adjacent devices for precluding relative rotation between adjacent of such devices assembled along the restraining element, said interlocking means being a sawtooth configuration positioned on the axial extremity of said hub means.

4,616,370

FURNITURE

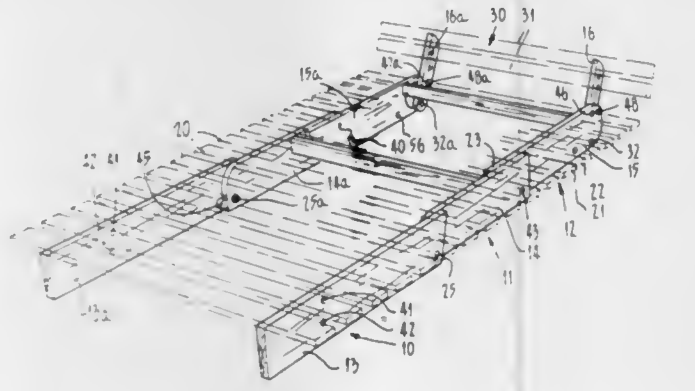
Phillip R. Keenan, and Anthony F. Keenan, both of 48 Ethel Street, East Brunswick, Victoria 3057, Australia

Filed Dec. 12, 1984, Ser. No. 680,803

Claims priority, application Australia, Dec. 13, 1983, PG2820/83

Int. Cl.⁴ A47B *83/00;* **A47D** *11/00*

U.S. Cl. 5—2 R 5 Claims



1. In an article of furniture convertible into a bed, lounge, chair, or table, said article having interconnected intermediate and first and second end panels, each of which has a pair of spaced longitudinal members which are connected by a plurality of transverse slots, said first end panel being pivotally connected to one end of said intermediate panel by pivot means, said second end panel connected to the other end of said intermediate panel by hinge means connected between the transverse slats at the adjacent ends of said panels, said article being constructed and arranged so that said panels can be located in different angular positions relative to each other to form said bed, lounge, chair, or table, the improvement comprising:

said spaced members of said intermediate panel are transversely located within and closely adjacent to the spaced members of said first end panel and said spaced members of said second end panel are transversely located within and closely adjacent to the spaced members of said intermediate panel;

said panels are adapted to be arranged in a horizontal position engaging a floor wherein said slats are in the same plane to form a horizontal upper surface for said bed, said first end panel being a foot panel and said second end panel being a head panel of said bed;

when said article is configured as a lounge, said foot panel and said intermediate panel are adapted to be arranged in a horizontal position on said floor and said head panel is rotated about said hinge means to an upstanding position relative to said horizontal panels, said head panel being adjustably lockable in a desired angular position by lock means connected between the adjacent spaced longitudinal members of said head and intermediate panels;

when said article is configured as a chair, said foot panel is rotated about said pivot means so that the slats on said foot panel are substantially horizontal and facing downward to engage said floor and said intermediate panel is adapted to be arranged above said foot panel and the slats of said intermediate panel form a substantially horizontal upper seat surface of said chair, and said head panel is rotated about said hinge means to an upstanding position relative to said intermediate panel, said head panel being adjustable to a desired angular position wherein it is fixed by said lock means; and

when said article is configured as a table, said head panel is adapted to be arranged in a horizontal position on said floor wherein the slats of said head panel form a horizontal upper surface above said floor, said intermediate panel is rotated on said hinge means so that the slats on said intermediate panel are positioned above and engaged downwardly against said upper surface, and said foot panel is rotated about said pivot means so that the slats on said foot panel are positioned above said head and intermediate panels to form a substantially horizontal upper surface for said table.

4,616,371

BED FOR BABY CARRIAGES

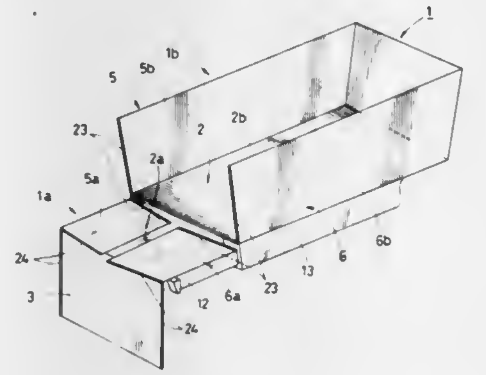
Kenzou Kassai, Osaka, Japan, assignor to Aprica Kassai Kabushikikaisha, Osaka, Japan

Division of Ser. No. 583,130, Feb. 24, 1984, abandoned. This application Sep. 25, 1985, Ser. No. 781,192

Claims priority, application Japan, Mar. 2, 1983, 58-35000

Int. Cl.⁴ B62B *9/12;* **A47D** *7/01*

U.S. Cl. 5—99 A 1 Claim



1. A bed for baby carriages which is in the form of a box as a whole comprising a bottom wall (**2**), a front wall (**3**), a back wall (**4**), and left-hand and right-hand walls (**5**,**6**), wherein longitudinally slidable draw links (**12**) are provided on both sides under the bottom wall (**2**) so that when the draw links (**12**) are forwardly withdrawn, they hold front portions (**2***a*, **5***a*, **6***a*) of the bottom wall (**2**) and left-hand and right-hand side walls (**5**, **6**) and the front wall (**3**), means for separating said front portions (**5***a*, **6***a*) of the left-hand and right-hand side walls (**5**, **6**) from their respective rear portions (**5***b*, **6***b*), wherein said front portions (**2***a*) of the bottom wall (**2**) are displaceable with respect to the rear portion (**2***b*), means arranged so that when the draw links (**12**) are rearwardly retracted, the front portions (**2***a*, **5***a*, **6***a*) of the bottom wall (**2**) and left-hand and right-hand side walls (**5**, **6**) and the front wall (**3**) are displaced in such a manner as to open the front of the baby carriage bed to enable the bed to be used as a chair, wherein said front and rear portions (**2***a*, **2***b*) of the bottom wall (**2**) are formed of separate members disposed on different levels, said front portion (**2***a*) being attached to said draw links (**12**), so that when the draw links (**12**) are rearwardly retracted, the front and rear portions (**2***a*, **2***b*) slide in a mutually overlapping relation, wherein said front wall (**3**) is constructed to be separable from the left-hand and right-hand side walls (**5**, **6**), said front wall being foldable along a boundary line between the front wall (**3**) and the bottom wall (**2**), wherein said front portion (**2***a*) of the bottom wall (**2**) lies below the plane of said rear portion (**2***b*), and comprising means for folding said front portions (**5***a*, **6***a*) of the left-hand and right-hand side walls (**5**, **6**) along a boundary line between said side walls and the front portion (**2***a*) of the bottom wall (**2**), so that when the draw links (**12**) are rearwardly retracted, the front portions (**5***a*, **6***a*) of the left-hand and right-hand side walls (**5**,**6**), which are now folded on the front portion (**2***a*) of the bottom wall (**2**), are received under the rear portion (**2***b*) of the bottom wall (**2**).

4,616,372

METHOD OF OPERATING COUNTER FLOW CYCLING WASHING MACHINE

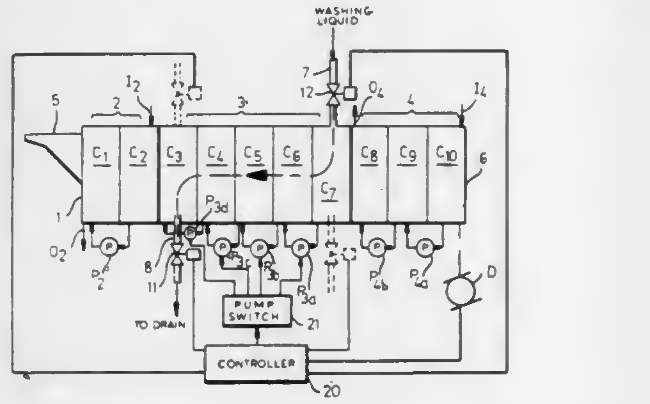
Karl-Heinz Stoll, Wiesbaden, Fed. Rep. of Germany, assignor to Senkingwerk GmbH, Hildesheim, Fed. Rep. of Germany

Division of Ser. No. 672,582, Nov. 16, 1984. This application Jan. 15, 1986, Ser. No. 819,135

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1983, 3341504

Int. Cl.⁴ D06F *31/00*

U.S. Cl. 8—158 1 Claim



1. A method of operating a counterflow continuous washing machine which comprises the steps of:

(a) introducing successive batches of laundry into an inlet end of a washing trommel rotatable about a longitudinal axis and axially subdivided into a multiplicity of compartments in respective groups forming washing zones including a main washing zone;

(b) angularly oscillating said trommel to agitate each batch within a respective compartment in a treating liquid and thereafter rotating said trommel to transfer each batch to an adjacent compartment in a laundry-displacement direction;

(c) pumping treating liquid from compartment to compartment in the opposite direction along at least said main washing zone;

(d) introducing the treating liquid of step (c) at a downstream end of said main washing zone and removing the treating liquid of step (c) at an upstream end of said main washing zone in said laundry-displacement direction; and

(e) upon the passage of colored laundry into said main washing zone, terminating the pumping in step (c) and interrupting step (d) while introducing a treating liquid into said main washing zone at said upstream end and removing treating liquid at said downstream end.

4,616,373
LOADING AND UNLOADING RAMP UNIT FOR RAILWAY CONVOY TRAIN

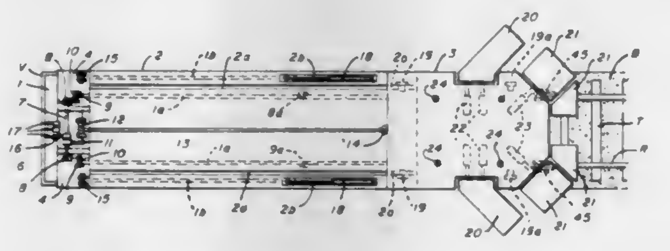
Juan J. B. Perez, Madrid, Spain, assignor to Jefatura de Ingenieros del Ejercito, Madrid, Spain

Filed Nov. 30, 1983, Ser. No. 556,543

Claims priority, application Spain, Nov. 30, 1982, 517,837

Int. Cl.⁴ E01D *1/00, 15/12*

U.S. Cl. 14—72.5 **7 Claims**



1. A loading ramp system for railway flat cars and the like comprising a generally stationary base portion mounted on said flat car, guide means mounted on said base extending generally longitudinally thereof, an extendable ramp movably supported on said guide means and said base for longitudinal displacement between extended and retracted positions including pivot means carried by said ramp configured to permit said ramp to swing angularly downwardly when in an extended position to angularly engage a surface therebeneath, a platform carried by said ramp in stacked relation and extensible relative thereto along said surface to define a generally parallel transitional surface overlying the rail bed when in extended relation with respect to said ramp, said platform including at least one pivotally attached apron movable between a folded and an extended position laterally of the platform, said apron carried by and angularly related to the plaform when extended to define bridge means for loading and unloading cargo from said flat car, said ramp, and said platform onto said apron and thereby to and from a position displaced laterally from said railway bed to avoid damage thereto during loading and unloading operations.

4,616,374
MICROFLOSS TOOTHBRUSH

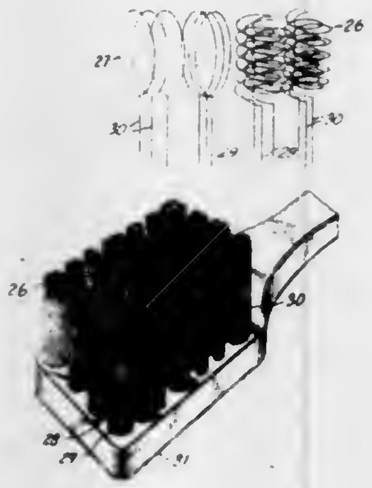
William Novogrodsky, 901 SW. 70th Ave., Plantation, Fla. 33317

Division of Ser. No. 511,889, Jul. 8, 1983, abandoned. This application May 28, 1985, Ser. No. 738,570

Int. Cl.⁴ A46B *9/04*

U.S. Cl. 15—167 R **6 Claims**

1. A microfloss dental brush head comprised of filaments perpendicularly affixed to a shaft wherein a portion of each of said filaments nearest the shaft is linear and the remaining portion of each of said filaments is circularly formed in a closed loop.



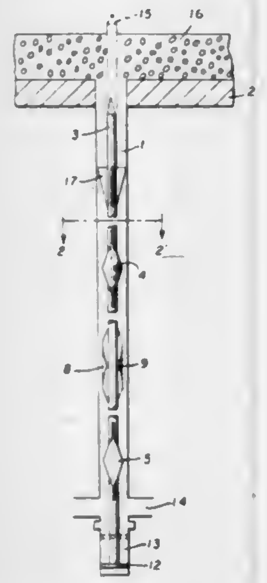
4,616,375
CLEANING DEVICE FOR JET PIPES IN TiO_2 REACTOR

Frank Green, Gulfport, Miss., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 13, 1984, Ser. No. 670,973

Int. Cl.⁴ B08B *9/02*

U.S. Cl. 15—246 **1 Claim**



1. A device for cleaning a chlorine jet pipe in a chlorine process fluid bed reactor for producing titanium dioxide comprising

(a) a central shaft fitted within the pipe to slide along the pipe's longitudinal axis, the shaft bearing a forward point for penetrating the fluid bed, and a plurality of diamond-shaped scraping elements whose outer surfaces are arcuate about said axis to closely mate the inner surface of the pipe, each element having an oppositely mounted partner to form a pair, each pair being mounted 90° about said axis from the pair directly above it, and

(b) piston and cylinder means for imparting longitudinal reciprocal motion to the shaft by application of air pressure;

wherein the shaft and scraping elements are fabricated from a metal capable of withstanding corrosion in a chlorine jet pipe atmosphere.

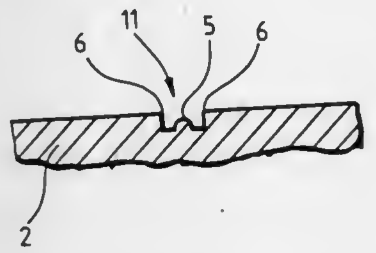
4,616,376
MEANS FOR CLEANING A BLADE OF A WINDOW GLASS WIPER OF A VEHICLE

Mikko Paretskoi, Vantaa, Finland, assignor to Turvaura OY, Helsinki, Finland

Filed Dec. 12, 1985, Ser. No. 807,984

Int. Cl.⁴ B60S *1/02*

U.S. Cl. 15—250 R **2 Claims**



1. Means for cleaning a blade of a window glass wiper of a vehicle, comprising at least one wiping edge (6) provided on the outer surface of the glass (2) within the area of motion of the wiper blade (3), whereby said blade (3) slides across the wiping edge when the wiper is on operation, which wiping edge (6) is formed by an edge of a groove provided on the surface of the glass (2), characterized in that the bottom of the groove (11) is provided with a ridge (5) extending longitudinally with respect to the groove essentially in the middle thereof, whereby the upper edge of said ridge (5) is rounded and has a lower position than the outer surface of the glass (2).

4,616,377
RECYCLED LIQUID CLEANING SYSTEM

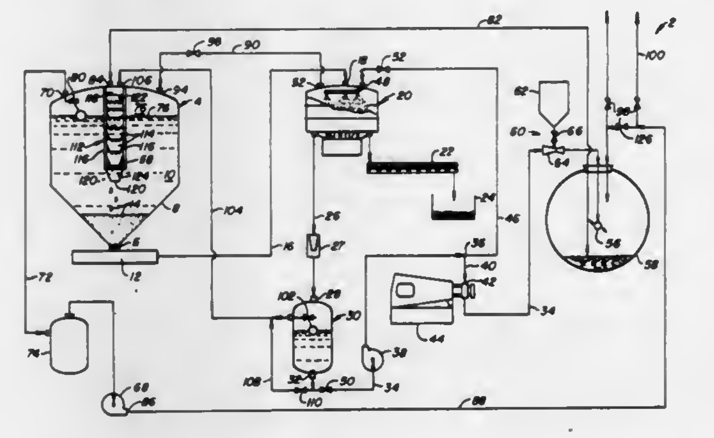
William G. Urbani, Stockton, Calif., assignor to Industrial Innovations, Inc., Stockton, Calif.

Filed Oct. 19, 1984, Ser. No. 662,880

The portion of the term of this patent subsequent to Aug. 21, 2001, has been disclaimed.

Int. Cl.⁴ B08B *9/08*

U.S. Cl. 15—302 **10 Claims**



1. A system for cleaning a dirty surface comprising:

a main vessel partially filled with a cleaning liquid;

means for drawing a partial vacuum within the main vessel in a partial vacuum region above the free surface of the cleaning liquid;

means for removing liquid from the main vessel and directing it thorough a liquid cleaner nozzle and against the dirty surface to dislodge contaminants from the dirty surface;

hose means for fluidly connecting said partial vacuum region to a cleaning liquid and dislodged contaminants collection point associated with the dirty surface for passage of the cleaning liquid and dislodged contaminants through the hose means and into the main vessel through a suction inlet; and

said liquid removing means including a solids/liquid removal pump fluidly connected to a bottom region of the main vessel, a solids separator connected to an outlet of the removal pump to separate solids from liquid, a makeup tank connected to a liquid outlet of the solids separator having a first outlet fluidly connected to the inlet of a pressure pump and a second outlet fluidly connected to the partial vacuum region, the pressure pump having an outlet fluidly connected to the liquid cleaner nozzle.

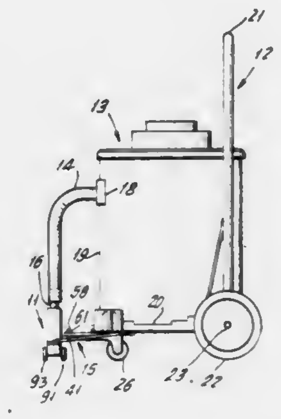
4,616,378
MEANS FOR MOUNTING FLOOR PICKUP NOZZLE TO DOLLY FOR VACUUM CLEANER

Robert C. Berfield, Jersey Shore, and Robert Crevling, Williamsport, both of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.

Filed Apr. 24, 1985, Ser. No. 726,612

Int. Cl.⁴ A47L *11/30, 7/00*

U.S. Cl. 15—353 **20 Claims**



1. Mobile vacuum cleaner apparatus including:

a vacuum cleaner, a dolly supporting said cleaner, a floor nozzle unit, mounting means securing said nozzle unit to said dolly in operative position at the front thereof, and conduit means operatively connecting an outlet of said nozzle unit to an inlet of said cleaner;

said dolly including a horizontal base having well means at the front thereof, floor engaging swivel-type wheel means having a vertical axis portion removably held in said well means, handle means extending from said base at the rear thereof, and floor engaging additional wheel means connected to said base at the rear thereof;

said nozzle unit including an elongated slot-like inlet facing the floor, said outlet being relatively small compared to said slot-like inlet; and

said mounting means including a plate extending forward of said base and including aperture means through which said vertical axis portion extends before entering said well means.

4,616,379
CONCEALED PULL HANDLE

Kuei M. Lio, No. 6-1, Lane 291, Chung-Cheng Road, Taichung City, Taiwan

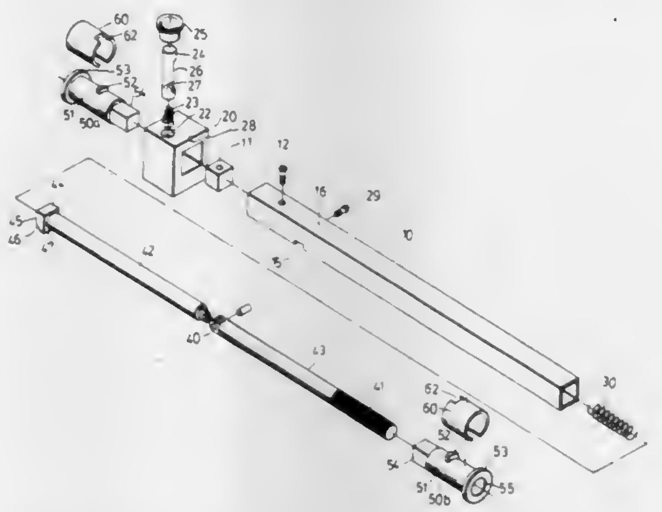
Filed Oct. 15, 1984, Ser. No. 661,181

Int. Cl.⁴ B25G *1/04*

U.S. Cl. 16—115 **1 Claim**

1. A pull handle assembly for a piece of luggage comprising: an elongated tube; mounting members attached to each end of said tube for mounting said tube inside the piece of luggage; an elongated handle, comprised of at least two rods pivoted to each other and a butt provided at a remote end of one rod of said at least two rods, located in said tube; a first spiral compression spring positioned in said elongated tube between a first end of the tube and said butt for biassing said handle to extend outward through a second end of said tube; and means for locking said handle to maintain said handle substantially within said tube, the means comprising an opening in a wall of said tube, a body, the body being sleeved onto said tube at said opening and having a blind hole which is substantially orthogonal to said tube, a one piece cylindrical shaped key rod re-

ceived in said blind hole and having a hook end at a first bottom portion and a separate button head attached to a second top portion of the key rod with a hatched portion therebetween, and a second spiral compression spring positioned between the bottom of said blind hole and the bottom of the hook end for biassing said key rod to project out of said body so that said button head is accessible from outside of the piece



of luggage and, said key rod extends through the opening provided in the wall of the tube with said notched portion extending at least partially around said one rod and said hook end catches said butt on the side of the butt adjacent said second spring and remote from the button head, said hook end releasing said butt when said button head is depressed allowing the handle to be extended out of said tube under the force of said first spiral compression spring.

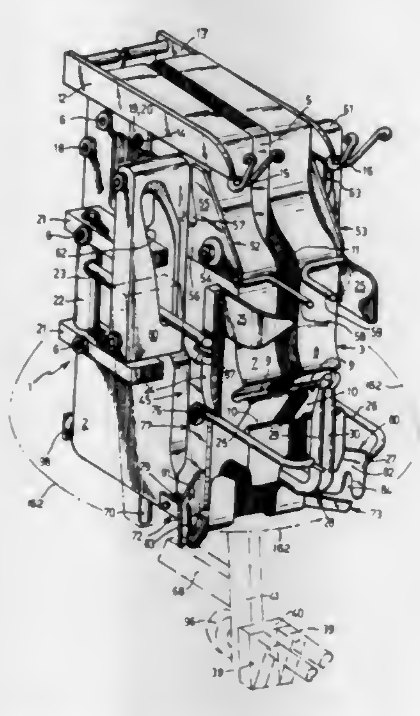
4,616,380
POULTRY HOLDING MECHANISM WITH IMPROVED BOTTOM PRESSING MEANS

Rudolf J. Tieleman, Doesburg, Netherlands, assignor to Linco Holland Engineering B.V., Doesburg, Netherlands

Filed Jan. 20, 1984, Ser. No. 572,456

Int. Cl.⁴ A22C *21/06*

U.S. Cl. 17—11 **9 Claims**



1. A mechanism for holding slaughtered birds in a poultry cutting machine, said cutting machine having a leg-cutting knife for cutting the legs from the rumps of the birds, comprising,

a support member having a support face which engages and supports a bird while the bird is being cut into pieces, means for holding the bird at a position where it lies against said support member,

rump engaging means spaced inwardly of the legs of a bird on the support member, means for moving the rump engaging means in a forward direction relative to the bird to engage the bottom of the bird and press it in a forward direction to a position where it will not be cut by the leg-cutting knife while the legs are being cut from the rumps.

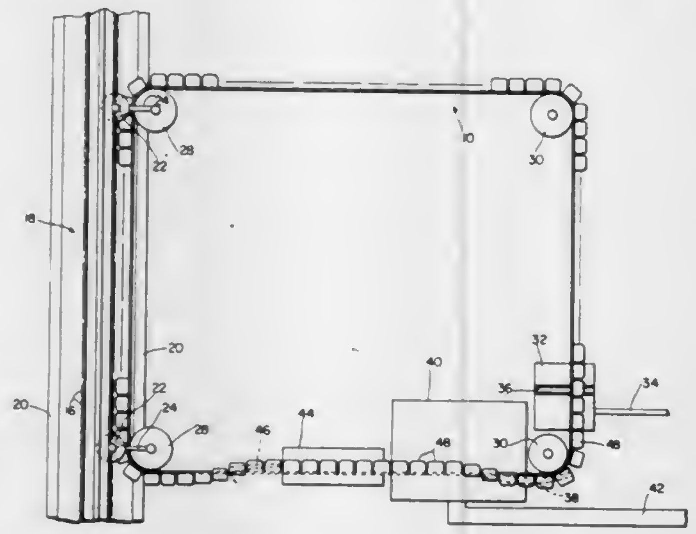
4,616,381
OVA HARVESTING SYSTEM

Clarence E. Harris, Jr., Beltsville, Md., assignor to The United States of America as represented by the Secretary of the Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 496,518, May 20, 1983, abandoned. This application Apr. 17, 1985, Ser. No. 724,013

Int. Cl.⁴ A22C *21/06*

U.S. Cl. 17—45 **7 Claims**



7. A method of harvesting ova from the carcasses of slaughtered fowl being treated on a poultry evisceration line of the type which includes a carcass conveyor for moving carcasses to various work stations including, in sequence, an opening cut station, a viscera pulling station, and an inspection station, the method comprising:

removing ova from a poultry carcass at an ova collecting station located on said evisceration line between said opening cut station and said viscera pulling station;

placing the ova in a cup located in close proximity below said carcass, said cup being one of a plurality of cups mounted sequentially along a cup conveyor positioned in a manner such that said cup conveyor converges with said carcass conveyor upstream from said ova collecting station and diverges from said carcass conveyor upstream from said viscera pulling station;

driving said cup conveyor in a manner such that when a carcass is at said inspection station the cup containing the ova from that carcass is over an ova reject tank which is located beneath said cup conveyor at a point remote from said evisceration line;

discharging into said ova reject tank all ova from carcasses which have been rejected by remote control from the inspection station;

collecting all nonrejected ova.

4,616,382
SHRIMP-PEELING MACHINE ACCORDING TO THE METHOD

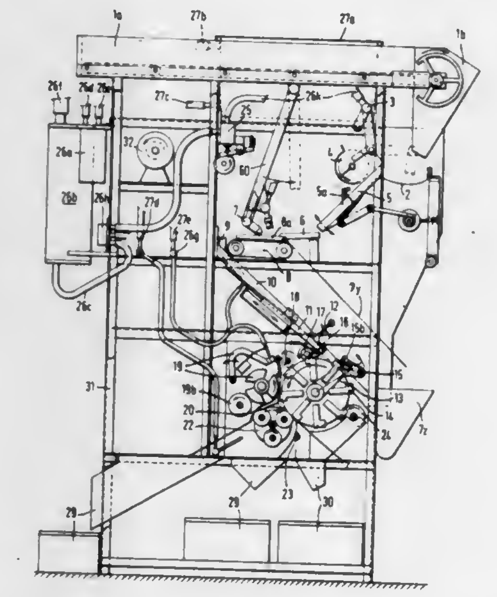
Dirk Van Woensel, and Ilja Van Woensel, both of Haarlem, Netherlands, assignors to Megapel BV Mechanische Garnalenpeltechniek, Haarlem, Netherlands

Filed Apr. 12, 1985, Ser. No. 722,530

Claims priority, application Netherlands, Aug. 17, 1983, 8302887

Int. Cl.⁴ A22C *29/02*

U.S. Cl. 17—73 **14 Claims**



1. Shrimp-peeling machine, comprising a supply unit for boiled shrimps from which impurities have already been removed, a receptacle unit for receiving shrimps, means for picking up, further conveying and transferring in a correct position and in a correct sequence the shrimps (FIGS. 3-12), a peeling unit comprising a peeling disc (**13**), provided with means (**14**) for individually clamping and further conveying with the peeling disc the separate shrimps, cutting means (**17**), cooperating with the peeling disc for slitting the shrimps, tail-pulling elements (**19**) and means for removing the shrimp meat from the shell of each shrimp (**22**) and means for separately removing and collecting the shell and the meat (**28-30**), characterized in that the receptacle unit (FIG. **2**) is adapted for keeping a small quantity of shrimps in a vibratory motion and at some distance above the bottom of the receptacle unit is mounted a suction mouth being mounted (**36**) for picking up a separate shrimp and, after displacement of the suction mouth, repelling a picked-up shrimp by means of compressed air into a time-divider (FIG. **4**) for periodically transferring a shrimp in the pick-up and conveying means.

4,616,383
BELT BUCKLE

Günter H. Röhm, Heinrich-Röhm-Str. 50, 7927 Sontheim, Fed. Rep. of Germany

Filed Oct. 24, 1985, Ser. No. 790,964

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1984, 3438996

Int. Cl.⁴ A44B *11/25*

U.S. Cl. 24—265 BC **7 Claims**

1. A belt buckle comprising:

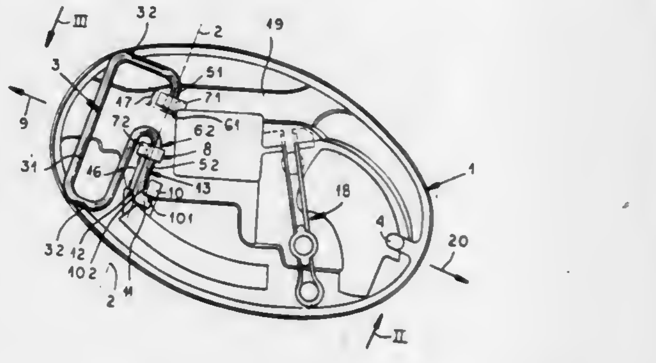
a generally planar buckle plate having a rear face;

a pair of pivots on the rear face defining and spaced apart along an axis extending generally parallel to the plane of the buckle, one of the pivots being formed as a radially closed eye open only axially and the other pivot being open axially and also being formed with a slot open in a radial direction generally parallel to the plane;

a loop adapted to engage through the end of a belt;

a short pintle and a long pintle extending in the same direction from the loop in line with one another, the short pintle normally extending on the axis through the eye pivot and the long pintle normally extending in a fully engaged position on the axis through the slotted pivot and at least a predetermined axial distance in one axial direction past the slotted pivot, the slot being wider than the long pintle, the loop being movable angularly in the pivots between a normal end position and an opposite end position angularly offset therefrom;

a retainer formation on the rear face spaced axially less than the predetermined distance in the one direction from the slotted pivot and spaced in the radial direction from the slotted eye, the long pintle in the fully engaged position normally engaging the retainer formation in the radial direction, whereby the retainer formation normally prevents the long pintle from moving in the radial direction out of the slotted eye through the slot thereof;



a radial projection on the long pintle axially offset in the one axial direction in the fully engaged position thereof from the slotted pivot by the predetermined distance; and

an abutment on the buckle plate offset axially from the slotted pivot generally by the predetermined distance and engageable axially with the slotted pivot in an axial direction opposite the one direction except when the loop is generally in the opposite end position in which case the abutment and projection are axially out of line and the projection can move axially past the abutment.

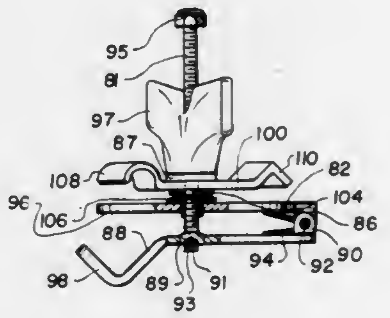
4,616,384
FLAG FRAME AND CLAMP

Ross Lowell, Pound Ridge, N.Y.; Marvin Seligman, Teaneck, N.J., and Edward Calamai, Pleasantville, N.Y., assignors to Lowel-Light Manufacturing, Inc., N.Y.

Continuation of Ser. No. 483,488, Apr. 11, 1983, abandoned. This application Apr. 30, 1985, Ser. No. 728,156

Int. Cl.⁴ A44B *21/00*

U.S. Cl. 24—335 **5 Claims**



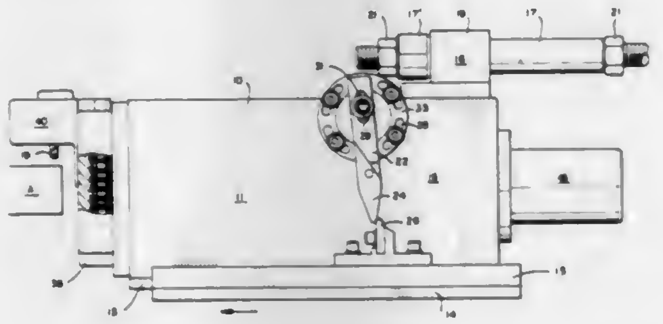
1. A clamp assembly for clamping together rod-like members of photographic equipment at any angular relationship, comprising a first clamp plate having opposite flat sides and a substantially central opening therethrough, a second clamp plate pivotally connected to said first clamp plate at a pivotal connection, said first and second clamp plates having juxtaposable engaging portions spaced from said pivotal connection for holding a rod-like member therebetween, said engaging portion of said first clamp plate defined on one of said flat sides and said engaging portion of said second clamp plate having an

elongated profiled concave cross-section facing said first clamp plate, a third clamp plate having a substantially central opening aligned with said opening of said first clamp plate and mounted for rotation on said first clamp plate on a side of said first clamp plate facing away from said second clamp plate, a threaded presser rod extending through said aligned openings of said first and third clamp plates, said threaded presser rod being freely rotatable and freely axially movable with respect to said aligned openings, means engaged between said presser rod and said second clamp plate for establishing a fixed rotational position between said presser rod and said second clamp plate and for permitting pivotal motion between said second clamp plate and said presser rod, a knob threadably engaged on said presser rod and movable into a fixed position on said presser rod against said third clamp plate on a side of said third clamp plate away from said first and second plates, to simultaneously press said first, second and third clamp plates together for pressing said engaging portions of said first and second clamp plates together and for pressing engaging portions of said third clamp plate toward the other of said flat sides of said first clamp plate, said third clamp plate being mounted for rotation about said presser rod and including a pair of elongated concave engaging portions on opposite sides of said presser rod respectively, each of said engaging portions having an elongated profiled concave cross-section facing said first clamp plate for clamping an elongated member between said first and third clamp plates in any rotational position of said third clamp plate and the elongated member with respect to said first clamp plate, said first and second clamp plates being pivotally mounted to each other about a first axis, said threaded presser rod extends in a second axis which is orthogonal to said first axis, first spring means connected between said first and second clamp plates adjacent said pivotal connection for biasing said juxtaposable engaging portions of said first and second clamp plates away from each other, and second spring means engaged between said first and third clamp plates for biasing said first and third clamp plates apart so as to aid in unclamping an elongated member from between said third and first clamp plates.

4,616,385
ROTARY SYNCHRONOUS CROSS DRILLING ATTACHMENT

Harold E. Wheeler, Athens, Pa., assignor to Wheeler Tool Company, Athens, Pa.

Filed Aug. 24, 1984, Ser. No. 644,008
Int. Cl.⁴ B23B *3/26*
U.S. Cl. 29—27 C **12 Claims**

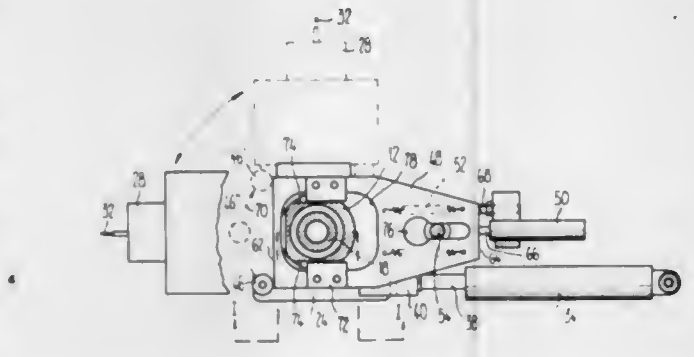


1. A rotary synchronous cross drilling apparatus for use with a machine tool assembly having a synchronous rotating workpiece, comprising
- a movable slide member for slidably supporting said drilling apparatus parallel to a workpiece and advancing said drilling apparatus towards and away from said workpiece at a right angle thereto,
- a stop means for arresting said drilling apparatus at a desired location with respect to said workpiece,
- said drilling apparatus having a rotary portion and a means for rotating said rotary portion,
- a drill means including means for rotating said drill means and having a movable support means therefor disposed on said rotary portion, and
- actuating means disposed in said drilling apparatus and responsive to the location of said movable slide member for actuating said movable support means at said desired location, whereby said drill means is moved perpendicular to said workpiece and caused to enter said rotating workpiece.

4,616,386
APPARATUS FOR CUTTING AND PREPARING CABLES

Hans Schmid, Langnau, Switzerland, assignor to Megomat AG, Rüschlikon, Switzerland

Filed Oct. 29, 1984, Ser. No. 666,290
Claims priority, application Switzerland, Nov. 7, 1983, 5986/83
Int. Cl.⁴ H01R *43/00;* **H02G** *1/12*
U.S. Cl. 29—33 M **12 Claims**



1. In apparatus for preparing cables including a grip head having a cable gripping device swingable by a drive between end positions delimited by shock absorbing means and being mounted on one end on a shaft rotatable about an axis extending rectangularly to a cable run,

the improvement comprising in combination:
- a force-transmitting element coupled to be swingable with said grip head in spaced relationship to said axis;
- a link between said force-transmitting element and said shock absorbing means; and
- means for positioning said force-transmitting element in a mid-position between end positions thereof opposite to said shock absorbing means and on a line intersecting said axis at right angles.

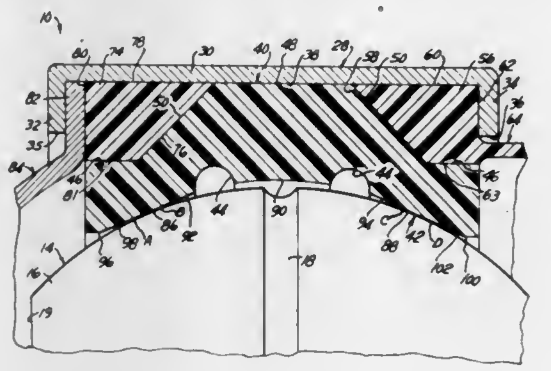
4,616,387
METHOD OF MANUFACTURING SPHERICAL AND CYLINDRICAL BEARINGS

Joseph E. Smith, Jr., Birmingham, Mich., assignor to O & S Manufacturing Company, Whitmore Lake, Mich.

Division of Ser. No. 356,368, Mar. 9, 1982, Pat. No. 4,493,512, which is a continuation-in-part of Ser. No. 286,470, Jul. 24, 1981, Pat. No. 4,386,869. This application Oct. 9, 1984, Ser. No. 659,531
Int. Cl.⁴ B21D *53/10*
U.S. Cl. 29—149.5 B **3 Claims**

1. A method of manufacturing a bearing comprising an inner member having a peripheral surface of regular predetermined contour, a hollow shell, a bearing ring disposed in said shell and having a bearing surface in sliding engagement with a peripheral bearing surface of said inner member, and means between the inner surface of said shell and the peripheral surface of said bearing ring for biasing the bearing surface of said bearing ring towards the peripheral bearing surface of said inner member, said method comprising forming said bearing surfaces such that major areas of the bearing surfaces are non-conforming in shape to a slight degree and the bearing surfaces in sliding engagement have each a minor area substantially less than the total bearing surface area available, inserting said bearing ring into said hollow shell and onto said inner

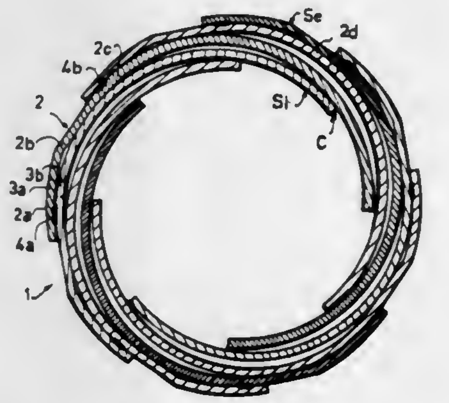
member with said biasing means disposed between the inner surface of said shell and the peripheral surface of said ring to preload and cause engagement of said minor area of said ring with said inner member, and wearing-in said surfaces in sliding engagement for progressively causing an increase in areas of said surfaces in sliding engagement, wherein the bearing surface of said bearing ring and the peripheral bearing surface of said inner member in sliding engagement mutually engage after assembly at portions intermediate the ends of said bearing ring available bearing surface.



4,616,388
PROCESS FOR PRODUCING A HYDRODYNAMIC BEARING HAVING INTERNAL FOIL CARTRIDGE

Jacques Soum, and Christian Malabre, both of Paris, France, assignors to ABG Semca, Paris, France

Filed May 23, 1983, Ser. No. 496,824
Claims priority, application France, May 27, 1982, 82 09476
Int. Cl.⁴ B21D *53/10*
U.S. Cl. 29—149.5 S **11 Claims**

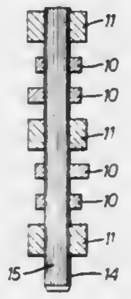


1. A process for producing a hydrodynamic bearing for supporting and guiding a rotary machine shaft, said bearing being of the type comprising, in the bore of a bearing shell, several thin curved foils partially overlapping so as to form an internal floating surface and which cause, during rotation thereof, the formation of a fluid film between said shaft and said surface, said process consisting of:
- manufacturing a self contained cartridge thus forming the internal functional assembly of the bearing, said cartridge being formed from thin foils each fixed to its two next adjacent foils at locations staggered along said foils at overlapping parts thereof, so as to form a self-contained assembly having an internal floating surface and, an external peripheral surface of the self-contained cartridge formed by the outermost foil areas which has a diameter corresponding to that of the bore of the bearing shell,
- inserting said cartridge into the bore of the bearing shell, then securing it against rotation and axial translation with respect thereto.

4,616,389
MANUFACTURE OF CAMSHAFTS

Roger H. Slee, Warwick, England, assignor to AE PLC, Warwickshire, England

Filed Apr. 12, 1985, Ser. No. 722,855
Claims priority, application United Kingdom, Apr. 14, 1984, 84 09771
Int. Cl.⁴ B23P *15/00;* **F16H** *53/06;* **B22F** *3/10, 5/08*
U.S. Cl. 29—156.4 R **7 Claims**



1. A method of manufacturing a camshaft, comprising forming a plurality of cams separately from a shaft on which the cams are to be fixed, with each cam having a profiled shaft-engaging hole whose size is smaller than the required final size thereof, positioning the cams on a correspondingly profiled dummy shaft so that the cams have a required relative angular orientation and axial spacing, the profiles of the dummy shaft and the cams preventing relative angular movement therebetween, holding the positioned cams in a jig to maintain said required relative orientation and spacing, removing the dummy shaft, heating the cams and machining the holes to be concentric and of a precise final size and profile, inserting a correspondingly sized and profiled shaft through the machine holes and then cooling the cams to shrink the cams onto the shaft to fix the cams to the shaft in said required relative orientation and spacing.

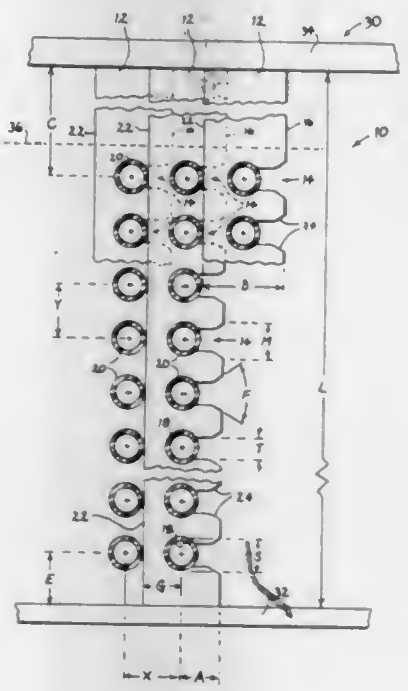
4,616,390
SUPERDENSITY ASSEMBLY METHOD AND SYSTEM FOR PLASTIC HEAT EXCHANGER RESISTS LARGE BUOYANCY FORCES AND PROVIDES FAST MELT DOWN IN PHASE CHANGE THERMAL STORAGE

Calvin D. MacCracken, 325 Morrow Rd., Englewood, N.J. 07631

Filed Oct. 18, 1984, Ser. No. 662,387
Int. Cl.⁴ B23P *19/02*
U.S. Cl. 29—157.3 R **4 Claims**

1. A method of making a coil tube bundle for a heat exchanger which comprises
- (a) forming substantially equally spaced slots inwardly along a front edge of each of a multiplicity of substantially rigid strips with each slot defining a rounded seat opening through a narrower funnel throat to the front edge of the strip,
- (b) disposing the strips parallel to one another with their respective slots aligned in rows and facing in the same direction,
- (c) disposing flexible tubes of resilient circular cross-section across the strips transverse to the respective rows of aligned slots,
- (d) engaging the strips and tubes so that each tube passes through the respective slot throat and is resiliently flattened and then springs back into substantially circular cross-section tightly embraced within the rounded seat of the slot to form an interconnected grid of rigid strips and flexible tubes, and
- (e) coiling the grid into a bundle with the strips parallel to a central axis and the tubes forming respective spirals with

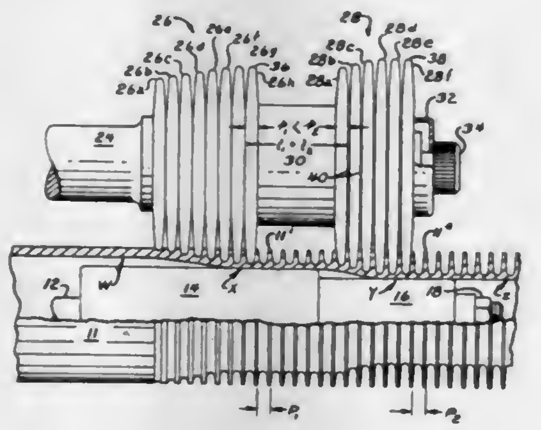
convolutions of each contacting and being spaced apart by rear edges of the strips opposite the slotted front edges



with the tubes supported at substantially equal intervals throughout their lengths.

4,616,391
APPARATUS FOR MAKING HEAT EXCHANGE TUBES

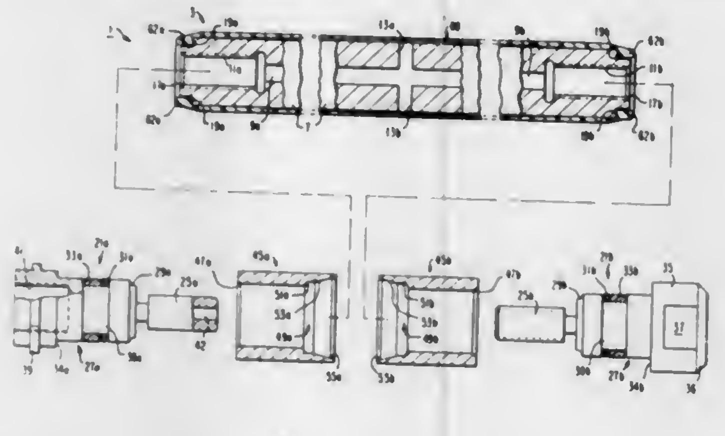
James L. Cunningham, and Bonnie J. Campbell, both of Decatur, Ala., assignors to Wolverine Tube, Inc., Decatur, Ala.
Filed Jun. 24, 1985, Ser. No. 748,098
Int. Cl.⁴ B21D *53/02;* **B23P** *15/26*
U.S. Cl. 29—157.3 AH **2 Claims**



1. Apparatus for finning a heat exchange tube of difficult to fin material such as titanium or stainless steel to obtain greater than normal fin heights in a single pass, said apparatus comprising at least two disc supporting arbors positioned around a mandrel which has at least two axially spaced surfaces of different diameters, said arbors each supporting at least first and second sets of axially spaced finning discs and an intermediate spacer, said discs being of identical contour at their tips but of progressively increasing diameter, with the discs of said second set being spaced at a greater pitch than the discs of the first set, said at least two sets of discs being positioned so as to overlie said at least two axially spaced surfaces of said mandrel when a tube is being finned, the first of said sets of discs being adapted to form fins on said tube to at least about their final diameter but only a fraction of their final fin height and the second of said sets of discs being adapted to deepen the roots of the fins formed by the first disc set to their final depth while leaving the tips of the fins substantially unaffected.

4,616,392
BLADDER MANDREL FOR HYDRAULIC EXPANSIONS OF TUBES AND SLEEVES

David A. Snyder, N. Huntingdon Township, Huntingdon County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Oct. 4, 1984, Ser. No. 657,553
Int. Cl.⁴ B23P *19/04*
U.S. Cl. 29—283.5 **11 Claims**

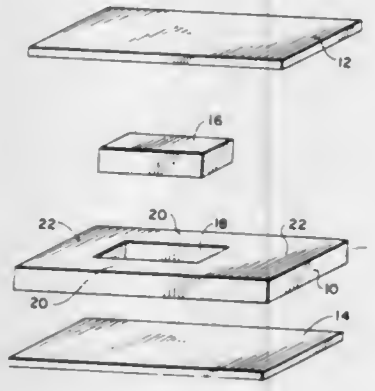


1. A bladder mandrel for applying a radially expansive force to the interior of a conduit, comprising:

(a) a mandrel assembly circumscribed by first and second grooves having a fluid port for conducting fluid to the outside surface of the mandrel assembly;
(b) a pressurized fluid source fluidly connected to the port of the mandrel, and
(c) a bladder formed from a sleeve of resilient material circumscribing the mandrel assembly over the fluid port, wherein each of the edges of the sleeve terminates in a sealing bead receivable within one of said mandrel grooves and having a fluid-capturing recess for capturing pressurized fluid flowing out of the fluid port of the mandrel assembly, each bead having an inner portion and an outer portion, and said fluid-capturing recess of each bead being located between the inside surfaces of the sleeve and the inner portion of the sealing bead so that the pressurized fluid sealingly engages each bead into its respective groove.

4,616,393
APPARATUS AND METHOD FOR ROLLING A METAL MATRIX COMPOSITE PLATE OR SHEET

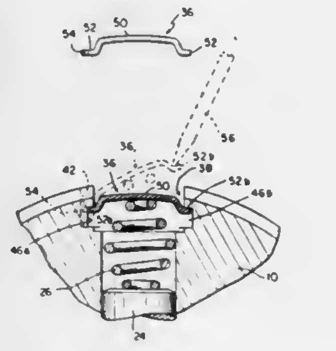
Richard J. Beauregard, Forest, and John B. Boyd, Lynchburg, both of Va., assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Feb. 1, 1985, Ser. No. 697,555
Int. Cl.⁴ B23P *17/00*
U.S. Cl. 29—423 **8 Claims**



1. Apparatus for constraining a metal matrix composite material during the rolling process comprising a frame member having an aperture formed therein with a configuration complementary to the configuration of the material to be rolled and being formed from a ductile material having deformation properties compatible with the deformation properties of the material to be rolled, said aperture receiving the material and constraining same during the rolling process.

4,616,394
METHOD OF LOCK CAPPING

Walter E. Best, and William R. Foshee, both of Indianapolis, Ind., assignors to Best Lock Corporation, Indianapolis, Ind.
Division of Ser. No. 471,277, Mar. 2, 1983, Pat. No. 4,531,390.
This application May 13, 1985, Ser. No. 733,102
Int. Cl.⁴ B23P *11/00, 11/02*
U.S. Cl. 29—436 **5 Claims**



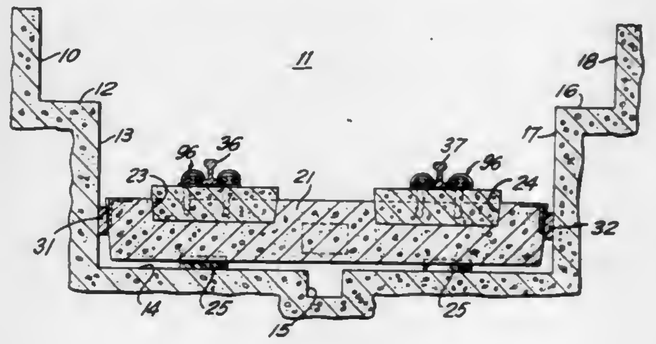
1. The method of capping a tumbler pin lock comprising
forming a lock body with a series of tumbler pin bores and a groove crossing the outer ends of the bores and having undercuts in its sides,
inserting tumbler pins with springs thereon into said tumbler pin bores,
providing an elongated cap including opposite outward-presented edge portions which are resiliently retractable toward each other,
engaging one such edge portion edgewise in the undercut at one side of the groove, and applying force to the opposite edge portion to yieldingly move such opposite edge portion into the undercut at the opposite side of the groove.

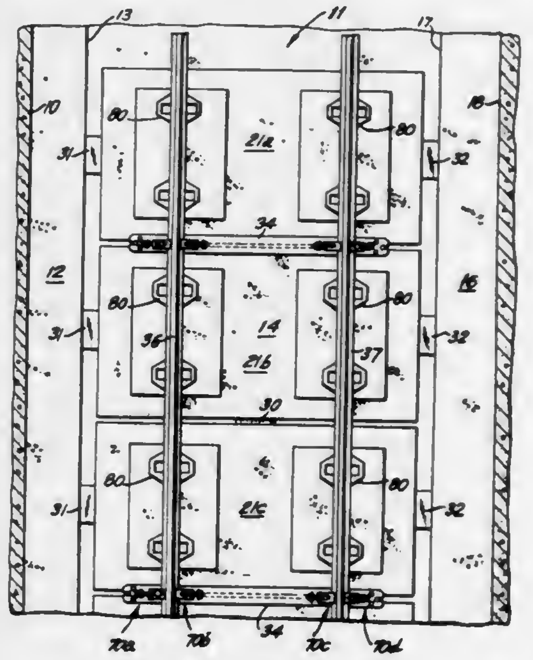
4,616,395
RAILROAD TRACK FIXATION METHOD AND APPARATUS

Virgil A. Farese, Framingham; Fred C. Grover, West Rox.; Steve R. Moore, Woburn, and Robert W. Gilfillan, Framingham, all of Mass., assignors to Perini Corporation, Framingham, Mass.
Filed Jun. 30, 1983, Ser. No. 510,087
Int. Cl.⁴ B23Q *3/00;* **E01B** *3/28*
U.S. Cl. 29—460 **7 Claims**

1. A method of laying a railroad track having parallel rails comprising the following sequence of steps:

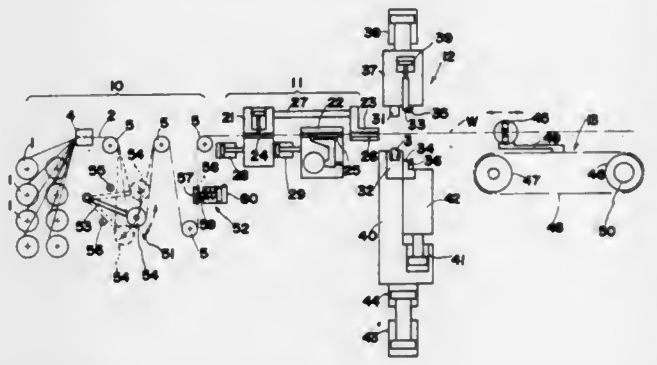
(a) forming an elongated road bed for the track;
(b) positioning, in tandem, a series of preformed concrete slabs along the track bed, each of the slabs having a bottom face facing the track bed, and a top face with at least one cavity in its top face;
(c) locating a series of elongated gauge beams above the slabs, each gauge beam adapted to temporarily hold a pair of rails at the proper height, gauge and cant relative to the slab on which it is located, each gauge beam being aligned across the direction of the rails:
(d) positioning a pair or rails in the series of gauge beams and adjusting the rails to the said proper height, gauge and cant thereon by gauge beam adjustment means:
(e) removably positioning a template over the slab cavity:
(f) removably attaching a rail-holding shoulder pin, having a shoulder and a pin portion, to the template and to the rail so that the pin portion of the shoulder-pin is within the slab cavity and the template is held suspended above the cavity:
(g) pouring concrete into each cavity up to the bottom face of the template and letting the concrete harden to securely hold said pin portion;
(h) lifting the rails, removing the gauge beams and templates; and
(i) lowering the rails and applying spring clips to the shoulder-pins so that the rails are gripped by the spring clips.





4,616,396
WIRE LENGTH VARYING DEVICE IN COMBINATION WITH APPARATUS FOR MAKING ELECTRICAL HARNESSES

Minoru Matsui, Okayama, Japan, assignor to Nippon Acchakutansi Seizo Kabushlki Kaisha, Osaka, Japan
Filed Nov. 27, 1984, Ser. No. 675,408
Claims priority, application Japan, Nov. 29, 1983, 58-225012
Int. Cl.⁴ B23P *19/60;* **H01R** *43/04*
U.S. Cl. 29—566.1 **1 Claim**



1. A wire length varying device for use in combination with an apparatus for making electrical harnesses, wherein the apparatus includes a connector attaching device for affixing connectors to wire groups continuously supplied along a wire

feed path; a wire length measuring and feeding device including a moving chuck for pulling the wire group already having the connector thereon for a distance corresponding to a desired length of an intended electrical harness; and a wire cutting means and an insulating covering stripping means, said wire cutting means and said insulating covering striping being operable independently of each other, the wire length varying device comprising:

a tension pulley unit located on a wire supply path extending in a wire supplying device communicating with the connector attaching device through the wire feed path, the tension pulley unit including a plurality of pulleys carried to respective swinging arms mounted on a support means of the length varying device, each pulley being placed on the wire running therethrough such that the pulleys exert their weight on the respective wires so as to urge the same in a downward direction;

a return preventive chuck unit for holding the individual wire groups, the return preventive chuck unit being located on the support means between the tension pulley unit and a wire selecting device receiving wires from the wire supplying device,

the return preventive chuck unit includes first means for accomodating the individual wires, and second pneumatically operable means for selectively holding the individual wires;

whereby upon an operation of the apparatus, the moving chuck pulls the wire group already having the connector thereon for a distance corresponding to a desired electrical harness, and is then caused to return in the counterflow direction along the wire feed path, thereby allowing the wires therein to return under the additional urge provided by the tension pulleys, and in the course of returning by the first means in accordance with the distances over which the moving chuck is returned, thereby enabling the wires to slacken between the moving chuck and the connector attaching position, and causing the cutting means and the stripping means to work on the respective terminal ends of the wires, and finally causing the moving chuck to advance so as to stretch the wires from the slackened states.

4,616,397

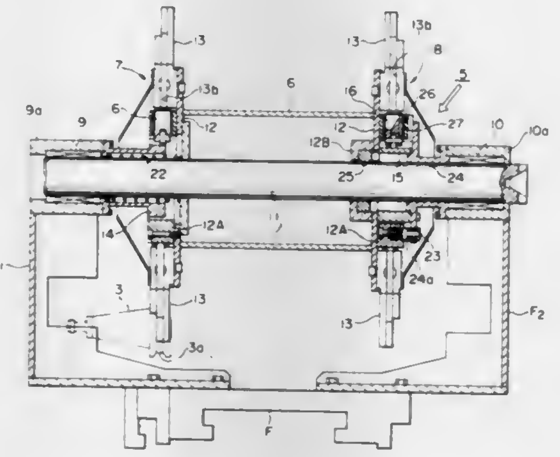
MAGAZINE FOR REPLACEABLE TOOLS AND OPERATION METHOD OF INDEXING TOOLS USING THE MAGAZINE

Hiroshi Yasukawa, Niigata, Japan, assignor to Niigata Engineering Co., Ltd., Tokyo, Japan

Filed Jan. 20, 1984, Ser. No. 572,347

Int. Cl.⁴ B23Q *3/157*

U.S. Cl. 29—568 **21 Claims**



1. A magazine for replaceable tools comprising:
(a) a frame (F1, F2) mounted on a tool pallet (F) adapted to be fed to a rotary table of a machine tool;
(b) a pair of magazine units (7, 8) each comprising a supporter (12) and a plurality of tool holding mechanisms (13) supported on an outer peripheral portion of said supporter (12), said pair of magazine units being rotatably supported relative to a center axis extending through said frame (F1, F2), said magazine units (7, 8) being spaced from each other with a predetermined distance therebetween in the direction of said center axis, a respective tool holding mechanism (13) of one of the magazine units (7, 8) being offset by half a pitch in phase relative to a respective tool holding mechanism of the other magazine unit (8, 7), each of said tool holding mechanisms (13) of a magazine unit comprising means for holding a tool such that it faces a direction opposite the facing direction of tools in tool holding mechanisms of the other magazine unit and in such a manner that the longitudinal axis of the tool extends in parallel with said center axis and means for permitting the tool to be inserted thereinto or released therefrom in a direction perpendicular to the center axis; and,
(c) a positioning mechanism disposed between said magazine units (7, 8) and said frame (F1 F2) to position each of said tool holding mechanisms (13) of each of said magazine units into a predetermined index position.

4,616,398

TOOLHOLDER FOR A MACHINE TOOL

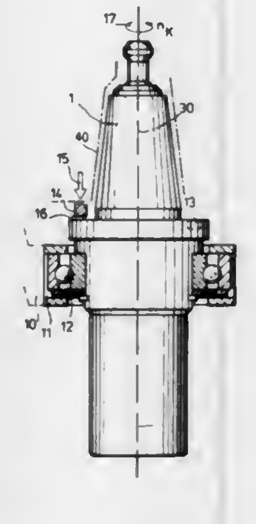
Eugen Rütschle, Mühlheim; Rudolf Haninger, and Hans-Henning Winkler, both of Tuttlingen, all of Fed. Rep. of Germany, assignors to Chirom-Werke GmbH, Fed. Rep. of Germany

Filed Oct. 24, 1984, Ser. No. 664,491

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1983, 3339619

Int. Cl.⁴ B23Q *3/157*

U.S. Cl. 29—568 **11 Claims**



1. In a tool change apparatus for a machine tool having a magazine containing multiple toolholders from which a selected toolholder can be taken by means of an arm and introduced into a working position in a rotating receiving means of the machine tool by said arm having a rotatable holding part enabling the arm to remain in the working position continuously holding said toolholder during operation thereof, the improvement including braking means for, during the introduction of the toolholder into the rotating means, increasing the frictional connection between the holding part and the toolholder in cooperation with the holding part.

4,616,399

METHOD OF MANUFACTURING AN INSULATED GATE FIELD EFFECT TRANSISTOR

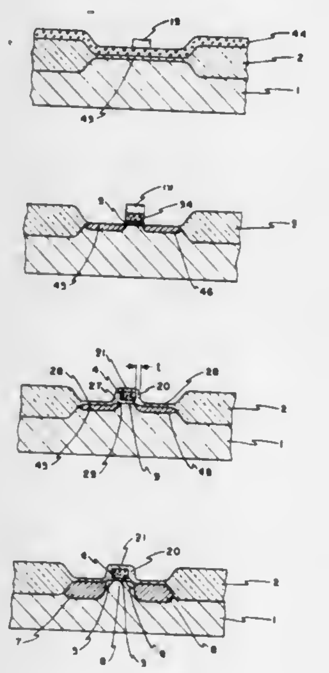
Hideyuki Ooka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 597,248, Apr. 5, 1984, abandoned. This application Dec. 23, 1985, Ser. No. 810,849

Claims priority, application Japan, Apr. 11, 1983, 58-63170

Int. Cl.⁴ H01L *21/26*

U.S. Cl. 29—571 **4 Claims**



1. A method of manufacturing an insulated gate field effect transistor comprising the steps of forming a polycrystalline silicon gate pattern on a gate insulating film in a central portion of an active region of one conductivity type of a semiconductor substrate, said active region abutting against a field oxide film formed on a major surface of said substrate, introducing an impurity of the opposite conductivity type in a first portion of said active region adjacent to one side of said central portion and to said field oxide film and in a second portion of said active region adjacent to the opposite side of said central portion and to said field oxide film to form impurity regions of the opposite conductivity type having a low impurity concentration in the entire surface areas of said first and second portions, respectively, converting both of the side portions of said polycrystalline silicon gate pattern into silicon oxide by thermal oxidation to form a polycrystalline silicon gate electrode under a condition of any antioxidant film being free on said first and second portions, and under such a condition that the upper surface of said polycrystalline silicon gate is exposed, and introducing an impurity of the opposite conductivity type in a part of said first portion which is separate from said central portion and in a part of said second portion which is separate from said central portion by using said polycrystalline silicon oxide on both sides of said silicon gate electrode as a mask to form impurity regions of the opposite conductivity type having high impurity concentration in said parts of said first and second portions, respectively, said last introducing process being conducted under a condition of an exposure of said silicon oxide converted from said side portions of said polycrystalline silicon pattern.

4,616,400

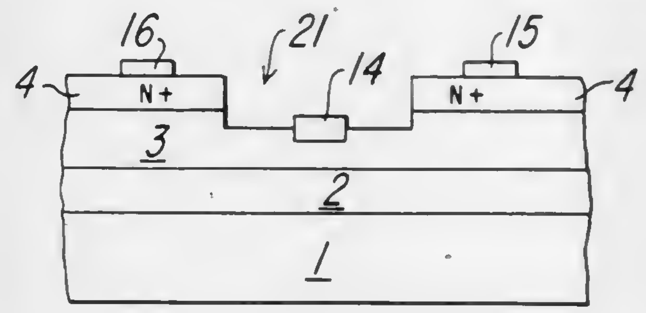
PROCESS FOR FABRICATING A DOUBLE RECESS CHANNEL FIELD EFFECT TRANSISTOR

Harry M. Macksey, McKinney, and Rick D. Hudgens, Irving, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 21, 1984, Ser. No. 684,523

Int. Cl.⁴ H01L *21/203, 21/285*

U.S. Cl. 29—571 **18 Claims**



1. A process for forming a double recess field effect transistor, comprising the steps of:
(a) providing a semiconductor structure having a first semiconductor layer of a first conductivity type, a second more highly doped semiconductor layer thereover of said first conductivity type, source and drain contacts on said second semiconductor layer, a first masking layer over said second layer and said contacts, a support layer over said masking layer, an etchable layer over said support layer and a second masking layer over said etchable layer;
(b) forming a mask in said second masking layer and between said source and drain contacts;
(c) etching away said etchable layer portion beneath said mask with an etchant specific thereto relative to said support layer;
(d) etching away said support layer and said first masking layer portions beneath said mask with an etchant specific thereto relative to said second semiconductor layer;
(e) etching away a portion of the second semiconductor layer portion beneath said mask;
(f) removing a portion of said first masking layer beneath said support layer, the second semiconductor layer portion beneath said just removed portion of said first masking layer and a portion of said first semiconductor layer beneath said portion of said second semiconductor layer beneath said mask;
(g) depositing a electrically conductive material through said mask in said portion of said first semiconductor layer beneath said mask; and
(h) removing said first masking layer and all material thereabove.

4,616,401

METHOD OF FABRICATING AN INSULATED GATE TYPE FIELD-EFFECT TRANSISTOR

Hiroshi Takeuchi, Chigasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 10, 1985, Ser. No. 690,302

Claims priority, application Japan, Jun. 19, 1984, 59-126175

Int. Cl.⁴ H01L *21/425, 21/445*

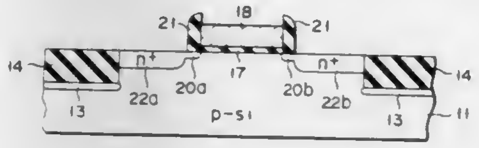
U.S. Cl. 29—571 **4 Claims**

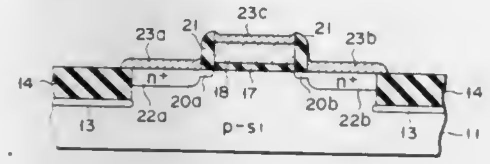
1. A method of fabricating an insulated gate type field-effect transistor, comprising the steps of:
forming a gate electrode on a gate insulating film and patterned by selective etching using a masking member, said gate insulating film being formed on a semiconductor region of a substrate surrounded by a field insulating film;
forming source and drain regions aligned to said gate electrode by doping impurities into the semiconductor region;
forming a first insulating film on the entire surface of the substrate by chemical vapor depositon;

etching the first insulating film by reactive ion etching, except for the portions of the first insulating film that are formed on both sides of a laminate consisting of the masking member and the gate electrode;

removing said masking member, thereby exposing said gate electrode;

forming conductive material films by selective chemical vapor deposition on the exposed surfaces of said gate electrode, said source and drain regions and regions surrounding said source and drain regions extending onto said field insulating film;





forming a second insulating film on the entire surface of the substrate including said conductive material films;

forming contact holes in those portions of said second insulating film which are positioned above said gate electrode and said source and drain regions; and

forming interconnection layers contacting said conductive material films exposed through said contact holes.

4,616,402

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE WITH A STACKED-GATE-ELECTRODE STRUCTURE

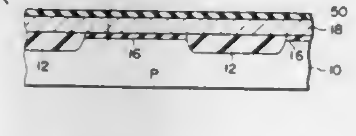
Seiichi Mori, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

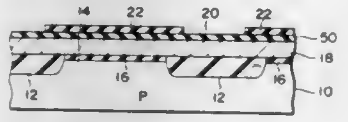
Filed May 2, 1985, Ser. No. 729,660

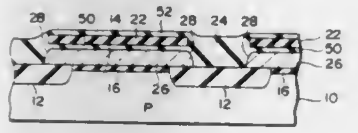
Claims priority, application Japan, May 7, 1984, 59-90414

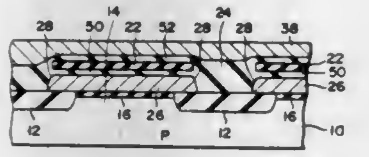
Int. Cl.^{4} H01L *21/26*

U.S. Cl. 29—571 **14 Claims**









1. A method of manufacturing a semiconductor device with a stacked-gate-electrode structure, comprising the steps of:

forming an element separation area in the surface portion of a semiconductor substrate;

forming a gate insulating film on an island region of said semiconductor substrate surrounded by the element separation area;

forming a non-monocrystalline silicon layer on the whole surface of the resultant structure;

forming over the non-monocrystalline silicon layer an oxidation-resistant film pattern having an opening at a portion thereof corresponding to a portion of the element separation area, an area of said opening being smaller than that of said portion of the element separation area;

forming a first gate electrode by selectively oxidizing a non-monocrystalline silicon layer within the opening with the oxidation-resistant film pattern as a mask to form a separation insulating film with a portion of the non-monocrystalline silicon layer insulatingly separated; and

forming, with said oxidation-resistant film pattern left over the first gate electrode and with said separation insulating film left within the opening, a second gate electrode over the surface of the resultant structure to permit the whole surface of the resultant structure to be planarized.

4,616,403

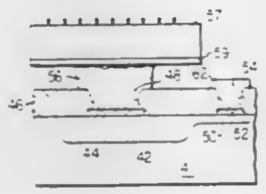
CONFIGURATION OF A METAL INSULATOR SEMICONDUCTOR WITH A PROCESSOR BASED GATE

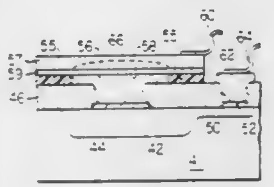
Eric F. Schulte, and Adam J. Lewis, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 31, 1984, Ser. No. 646,659

Int. Cl.^{4} H01L *21/447*

U.S. Cl. 29—572 **12 Claims**





1. A method for fabricating a photodetector, comprising:

fabricating a substrate having an array of switching elements formed therein, the outputs of each of said array elements selectable for connection to a first external terminal;

forming a plurality of vias on said substrate, each via extending to one of said outputs,

forming a plurality of deformable conductive gates, each of said gates disposed in and substantially filling its associated via and being in conductive contact with the input of one of said array elements, the upper surface of each of said deformable gates being higher than the highest point on the surface of said substrate by a predetermined distance;

disposing a layer of dielectric insulating material on one surface of a layer of photosensitive semiconductor material to form a superstrate;

disposing said superstrate adjacent said substrate with said dielectric layer in proximity to said deformable gates;

applying pressure to said substrate and said superstrate directed toward the interface therebetween to conform said deformable gates with the surface of said dielectric layer and force excess deformable gate material over a large portion of the surface of said substrate surrounding said via without contacting a gate of an adjacent via; and

connecting the surface of said photosensitive layer opposite said dielectric layer to a second external terminal.

4,616,404

METHOD OF MAKING IMPROVED LATERAL POLYSILICON DIODE BY TREATING PLASMA ETCHED SIDEWALLS TO REMOVE DEFECTS

Scott W. Wang, Sunnyvale; Mammen Thomas, and Wen C. Ko, both of San Jose, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

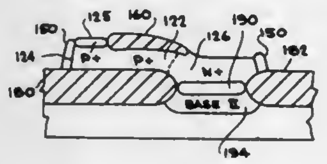
Filed Nov. 30, 1984, Ser. No. 676,684

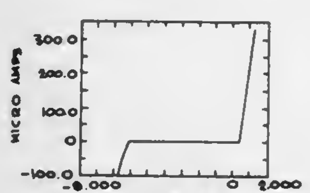
Int. Cl.^{4} H01L *21/265, 21/425*

U.S. Cl. 29—576 B **19 Claims**

1. An improvement in the process for forming a lateral polysilicon diode in a polysilicon layer on an integrated circuit structure wherein said polysilicon layer is initially plasma etched to form the polysilicon body for said diode and then selectively doped sufficiently in two areas to form a low resistance semiconductor diode; said improvement comprising:

treating the lateral edges of said polysilicon remaining after said plasma etch to remove defects therein whereby current leakage around the lateral edges of the resulting diode are reduced resulting in a polysilicon diode characterized by low reverse current leakage, a breakdown voltage of at least 5 volts, and low series resistance permitting high current flow before being limited by saturation.





4,616,405

SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD THEREOF

Hideki Yasuoka, Musashino, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

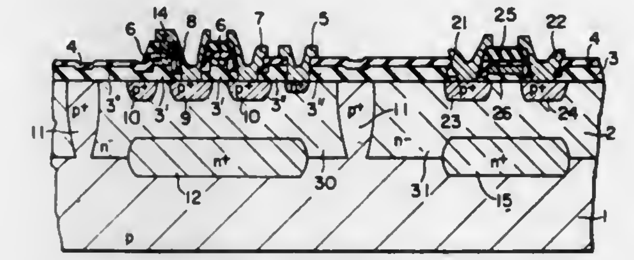
Division of Ser. No. 378,737, May 17, 1982, abandoned, which is a continuation of Ser. No. 158,879, Jun. 12, 1980, abandoned.

This application Jan. 14, 1985, Ser. No. 691,061

Claims priority, application Japan, Jun. 29, 1979, 54-81384

Int. Cl.^{4} H01L *21/90*

U.S. Cl. 29—578 **33 Claims**



1. A manufacturing method for forming a semiconductor device, comprising the steps of:

forming a first insulating film on one principal surface of a semiconductor substrate;

forming a conductive film on said first insulating film;

removing said conductive film selectively to leave said conductive film at a given portion on said first insulating film;

removing said first insulating film selectively, with the conductive film left at a given portion used as a mask;

forming emitter and collector areas in surface regions extending to said one principal surface of said semiconductor substrate by introducing impurities where said first insulating film has been removed;

forming a second insulating film at least on the given portion of the conductive film left on the first insulating film;

removing said second insulating film selectively to expose at least a part of the given portion of the conductive film left on the first insulating film; and

forming a first conductor layer electrically connecting the exposed part of the given portion of the conductive film and said emitter area or collector area.

4,616,406

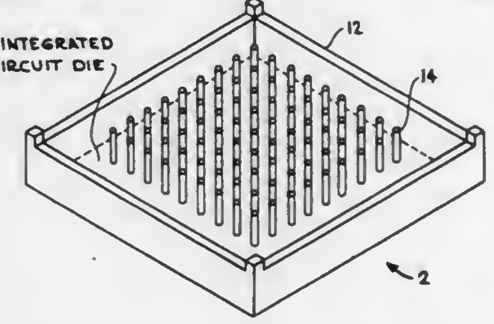
PROCESS OF MAKING A SEMICONDUCTOR DEVICE HAVING PARALLEL LEADS DIRECTLY CONNECTED PERPENDICULAR TO INTEGRATED CIRCUIT LAYERS THEREIN

Candice H. Brown, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 27, 1984, Ser. No. 655,476

Int. Cl.^{4} H01L *23/02, 23/48, 23/28*

U.S. Cl. 29—588 **12 Claims**



1. A method for making a semiconductor device comprising an integrated circuit die and a mounting package including leads to interconnect the die with external electrical components, said process comprising:

(a) forming an array of parallel conductor pins equidistantly spaced apart hexagonal to one another to provide enhanced spacing;

(b) bonding the array of parallel conductor pins directly to an array of contact pads formed on an integrated circuit die in registry with said pin array while maintaining said die in a plane perpendicular to said parallel pins; and

(c) surrounding said die with a package material capable of protecting said die.

4,616,407

INSULATING METHOD FOR ROTARY ELECTRIC MACHINE

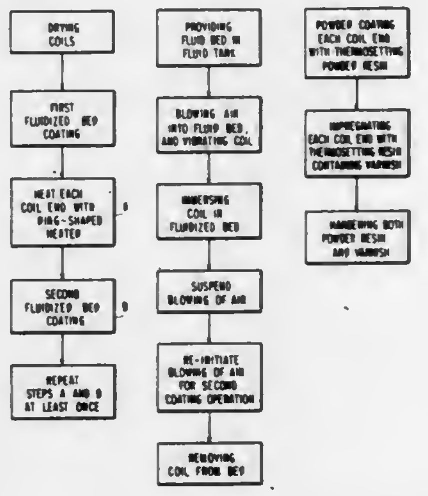
Akinobu Tamaki; Ken Kimura, both of Hyogo; Takeshi Kawakami, and Masao Irie, both of Nagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1983, Ser. No. 563,440

Claims priority, application Japan, Dec. 20, 1982, 57-225670; Dec. 20, 1982, 57-225671; Dec. 20, 1982, 57-225672; Feb. 4, 1983, 58-17694; Mar. 3, 1983, 58-36116; Mar. 3, 1983, 58-36117; Mar. 3, 1983, 58-36124

Int. Cl.^{4} H02K *15/10*

U.S. Cl. 29—596 **7 Claims**


DRYING COILS
FIRST FLUIDIZED BED COATING
HEAT EACH COIL END WITH RING-SHAPED HEATER
A
SECOND FLUIDIZED BED COATING
B
REPEAT STEPS A AND B AT LEAST ONCE
PROVIDING FLUID BED IN FLUID TANK
BLOWING AIR INTO FLUID BED, AND VIBRATING COIL
IMMERSING COIL IN FLUIDIZED BED
SUSPEND BLOWING OF AIR
RE-INITIATE BLOWING OF AIR FOR SECOND COATING OPERATION
REMOVING COIL FROM BED
POWDER COATING EACH COIL END WITH THERMOSETTING POWDER RESIN
IMPREGNATING EACH COIL END WITH THERMOSETTING RESIN CONTAINING VARNISH
HARDENING BOTH POWDER RESIN AND VARNISH

1. A method for insulating a coil of a rotary electric machine, comprising the steps of:

winding a mica sheet or mica tape around that part of each coil to be inserted into a slot cut in an iron core of said rotary electric machine, thus forming a first insulating layer;

inserting said coils thus treated into respective slots of said core;

covering an end of each said coil, defined as the portion of each said coil remaining uncovered by said first insulating layer plus a layer overlap region, in its entirety with a thermosetting synthetic resin; and

hardening said thermosetting synthetic resin applied to each coil end by heating, thus forming a second insulating layer.

4,616,408

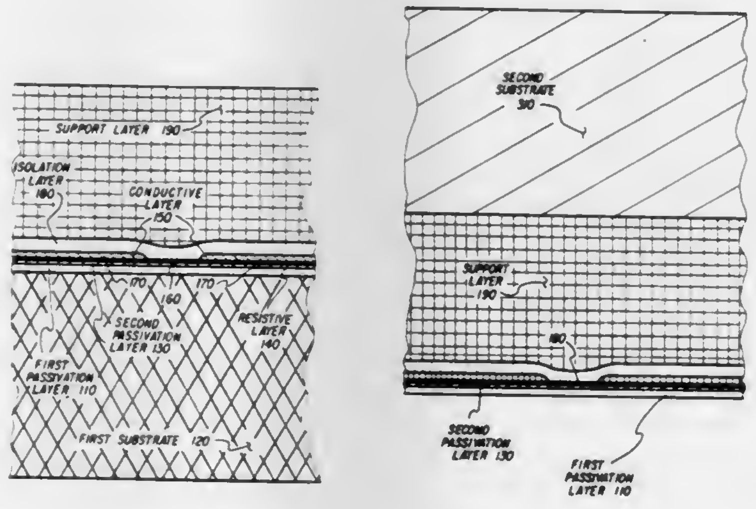
INVERSELY PROCESSED RESISTANCE HEATER

William J. Lloyd, Belmont, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 444,412, Nov. 24, 1982, abandoned. This application Jan. 4, 1985, Ser. No. 687,507

Int. Cl.⁴ H05B *3/00*

U.S. Cl. 29—611 **10 Claims**



1. A method of fabricating a resistance heater on a first substrate, comprising in order the steps of:

(1) depositing a first electrically non-conductive, uniformly thick passivation wear layer on the first substrate;

(2) permanently depositing a resistor connected to a plurality of conductors on the first passivation layer;

(3) depositing a support layer; and

(4) removing the first substrate while leaving said first passivation layer to protect the resistor from externally applied stress and thereby exposing an outer surface of the first uniformly thick passivation layer overlaying the resistor, said outer surface being substantially flat.

4,616,409

NON-CONTACT TYPE RING SETTER AND SENSOR FOR USE THEREWITH

John T. Flammini, 1335 W. Morgan St., Rialto, Calif. 92376

Filed Jun. 27, 1985, Ser. No. 750,521

Int. Cl.⁴ B23Q *15/00*

U.S. Cl. 29—705 **19 Claims**

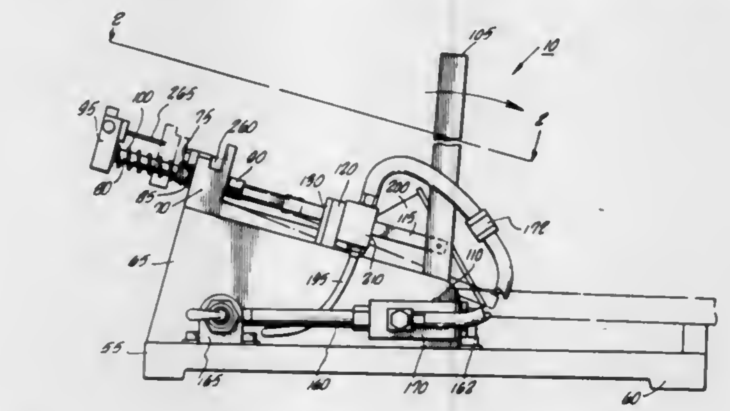
1. In a device for placing an annular collar on a drill bit, the drill bit having a tip, a body, and a shank, the device being used for placing the collar on the shank at a predetermined distance from the tip, the device comprising means for causing relative movement between the collar and the drill bit so that the collar is mounted on the drill bit shank, the improvement comprising:

a pressurized gas operated, non-contact sensor for detecting the advance of the tip of the drill, the sensor comprising:

(a) a pressurized gas source; and

(b) a gas pressure detector spaced apart and opposite the gas source:

the gas source and detector being located so that when the collar and the drill bit are moved relative to each other a predetermined amount, the gas pressure detected by the detector changes.



12. A pressurized gas operated, non-contact sensor suitable for use in a device for placing an annular collar on a drill bit having a nominal diameter of no more than about ⅛ inch, the drill bit having a tip, a body and a shank, the device being used for placing a collor on the shank at a predetermined distance from the tip, the sensor being capable of detecting the advance of the tip of the drill, the sensor comprising:

(a) a pressurized gas source comprising an inlet nozzle for passing a pressurized gas, the inlet nozzle having a tip ending in an elongated opening having a longitudinal axis; and

(b) a gas pressure detector comprising a detector nozzle for passing a pressurized gas, the detector nozzle having a tip ending in an elongated opening having a longitudinal axis;

the two openings being spaced apart by a distance of from about 130 mils to about 250 mils, and being opposite to each other such that the longitudinal axes of the two openings are substantially parallel to each other.

4,616,410

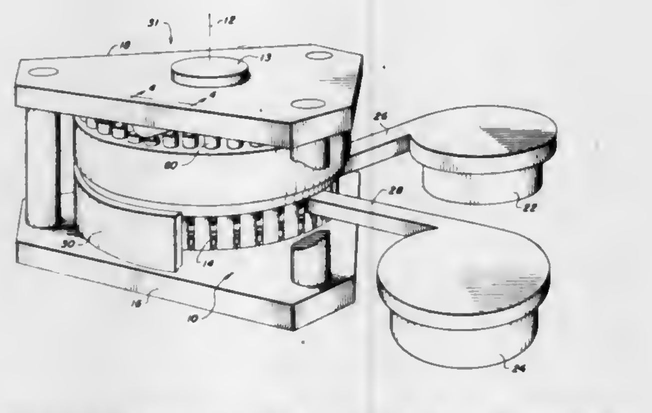
HIGH SPEED LEAD SOCKET ASSEMBLY MACHINE

Philip T. Stokoe, North Attleboro, Mass.; Glenn N. Cleaver, Lincoln, R.I., and Dennis R. Boulais, Danielson, Conn., assignors to Augat Inc., Mansfield, Mass.

Filed May 17, 1985, Ser. No. 735,393

Int. Cl.⁴ H01R *43/00*

U.S. Cl. 29—743 **12 Claims**



1. Apparatus for the assembly of socket contacts comprising:

a cylindrical drum having a plurality of recesses disposed about the circumferential wall thereof, each of the recesses having a lower section adapted to retain the sleeve portion of a socket contact, and an upper section adapted to retain the contact assembly portion of the socket contact;

means for rotating the drum at a predetermined speed;

means for providing vacuum at each of the recesses for retention of the sleeve portion and contact assembly portion of the socket contacts in respective sections of the recesses;

means for supplying sleeve portions and contact assembly portions of the socket contacts to respective sections of the recesses;

means above the drum and operative during rotation of the drum to urge the contact assembly portions into the sleeve portions; and

means for ejecting assembled socket contacts from the drum.

4,616,411

APPARATUS FOR FASTENING A DOOR TO A VEHICLE

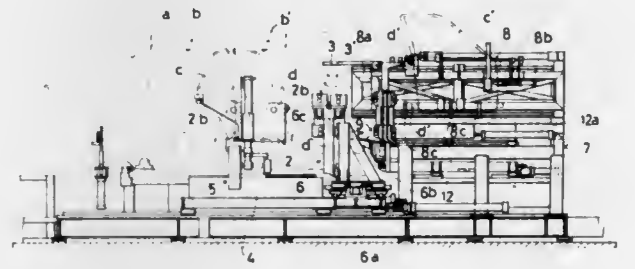
Toshifumi Suzuki, Hidaka; Toshio Kawano, Sakado; Ryoichi Setoguchi, Sayama; Toshio Ishida, Kawagoe, and Seiiti Mikami, Tokorozawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1985, Ser. No. 734,728

Claims priority, application Japan, May 16, 1984, 59-70406[U]

Int. Cl.⁴ B23P *19/00*

U.S. Cl. 29—822 **3 Claims**



1. An apparatus for fastening a door to a vehicle wherein a door hinge of a door inserted in a door opening portion of a vehicle body is bolted to the vehicle body comprising:

a machine frame;

a fastening head movably mounted on the frame;

means for moving the fastening head towards and away from the vehicle body;

a nut runner on the fastening head having a non-gripping means for holding a bolt in a socket on a forward end thereof; and

bolt receiving and supply means on the frame for receiving bolts from a parts feeder and supplying the bolts to the nut runner, said bolt receiving and supply means including:

a bolt supplying head connected to the parts feeder and stationarily positioned to one side of said fastening head relative to the vehicle body,

a bolt transferring head movable between a bolt receiving position facing said supplying head and a bolt delivering position facing said nut runner and having means for holding a bolt, and

means for moving said bolt transferring head between said positions so that a bolt supplied through said supplying head is transferred therefrom by said transferring head to said nut runner.

4,616,412

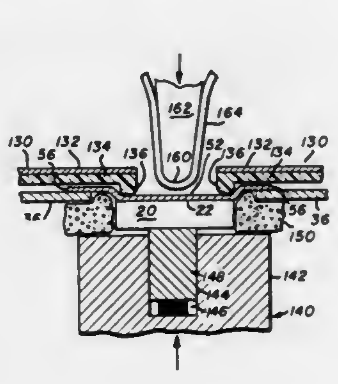
METHOD FOR BONDING ELECTRICAL LEADS TO ELECTRONIC DEVICES

Jon M. Schroeder, 4510 Discovery Point, Byron, Calif. 94514

Continuation of Ser. No. 224,668, Jan. 13, 1981, Pat. No. 4,438,181. This application Nov. 4, 1983, Ser. No. 548,570

Int. Cl.⁴ H01R *43/00*

U.S. Cl. 29—827 **9 Claims**



1. A method for thermocompression bonding comprising the steps of:

(a) aligning an electrical contact pad formed on a surface of an electronic component chip with a first contact pad terminal end region of an electrically conductive lead located within a chip bonding site in a first preformed metallic tape, said chip being disposed so that said contact pad thereof is immediately adjacent to a first bonding surface of said first tape;

(b) compressing said bonding surface of said contact pad terminal end region of said conductive lead between said contact pad of said chip and a stem terminal end of a contact pad bonding pressure pad intimately bonded to and protruding from a pressure pad surface of said first tape while simultaneously heating said first tape to a temperature at which said first tape forms a thermocompression bond to said contact pad of said chip, said pressure pad surface of said first tape being that surface thereof which is substantially parallel to and opposite to said bonding surface thereof, said contact pad bonding pressure pad being formed to have a cap terminal end thereof protrude furthest from said pressure pad surface of said first tape, said contact pad bonding pressure pad being formed from a material which is harder than said material of said first tape in the thermocompression bonding temperature range, said compressing force being applied to said surface of said chip furthest from said chip bonding surface of said first tape and to said cap terminal end of said contact pad bonding pressure pad, whereby said bonding surface of said lead is urged into intimate bonding contact with said contact pad of said chip by said force applied to said contact pad terminal end region of said lead through said stem terminal end of said contact pad bonding pressure pad; and

(c) releasing said bonded chip and said first tape from said compressing force.

4,616,413

PROCESS FOR MANUFACTURING PRINTED CIRCUITS WITH AN INDIVIDUAL RIGID CONDUCTIVE METALLIC SUPPORT

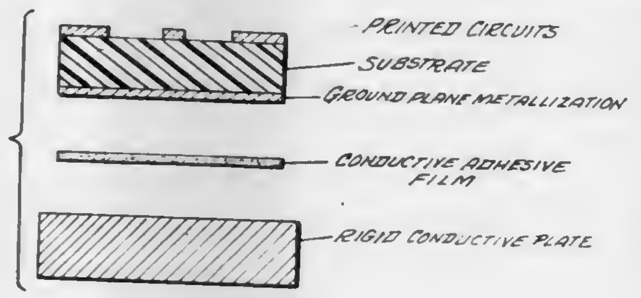
Louis Iliou, and Bruno Gotkovsky, both of Paris, France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 477,521, Mar. 21, 1983, abandoned. This application Jul. 9, 1985, Ser. No. 754,184

Claims priority, application France, Mar. 23, 1982, 82 04916

Int. Cl.⁴ H05K *3/30*

U.S. Cl. 29—832 **7 Claims**



1. A process for manufacturing a microwave integrated circuit (MIC) having its own rigid ground plane, said MIC being of the type wherein certain printed conductors form capacitive circuits with respect to said ground plane, comprising the steps of:

providing a substrate that is metallized on its two faces;

engraving a circuit on one of said two faces;

providing a rigid metallic support plate having dimensions at least as large as those of said substrate;

gluing, using an electrically conductive epoxide thermofusible adhesive film, the non-engraved face of said substrate to a surface of said support plate, the rigid plate and engraved substrate together forming a printed circuit assembly;

machining the printed circuit assemble; and

coupling additional components to said assembly to form said MIC.

4,616,414

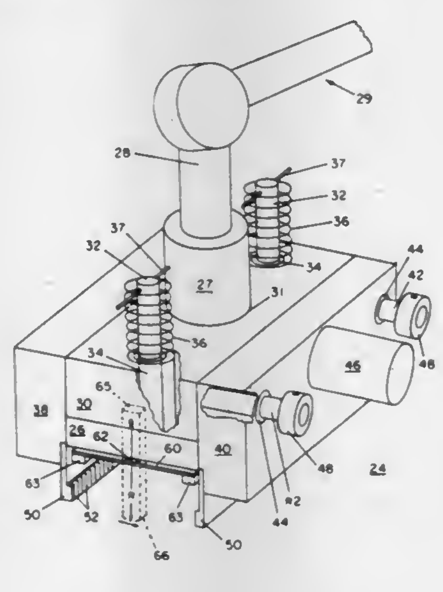
METHOD AND APPARATUS FOR GRIPPING MULTILEAD ARTICLES

Robert H. Cushman, Princeton Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., Barkeley Heights, N.J.

Filed Mar. 13, 1985, Ser. No. 711,314

Int. Cl.⁴ H05K *3/30;* B23P *19/00*

U.S. Cl. 29—835 **7 Claims**



1. A method for inserting each of a plurality of flexible leads depending from opposed sides of an article into corresponding apertures in a substrate comprising the steps of:

releasably gripping the article between a pair of opposed, parallel, spaced jaws having opposed depending combs which have spaced slots therein, each slot including an elongated upper section whose cross-section is half-rounded and a tapered lower section, to seat the tip of each lead article in the upper section of a separate one of the slots in the combs;

positioning the jaws to locate the combs proximate the substrate so that the tapered lower section of each slot in each comb is aligned with a corresponding aperture in the substrate;

applying a force to the article to urge the tip of each lead from the upper section into, and along the lower section of, each slot so that the tips of the leads are guided into the corresponding aperture in the substrate; and

releasing the article once all the tips of the leads thereof have been inserted into the corresponding apertures in the substrate by moving the jaws laterally apart.

4. Apparatus for inserting each of a plurality of flexible leads depending from opposed sides of an article into corresponding apertures in a substrate comprising:

a body having first and second opposed sides;

a first jaw mounted to and depending from the first side of said body for gripping one of the opposed sides of the article;

a second jaw slidably mounted to, and depending from said second opposed side of said body so as to be opposite to said first jaw for contacting the other opposed side of the article;

means connected between said body and said second jaw for moving said second jaw towards said first jaw to capture the article therebetween;

the first and second jaws having opposed combs thereon, each comb having spaced slots therein, the slots each having an upper substantially elongated section whose cross-section is half-rounded and a lower tapered section, the slots guiding the tips of the leads of the captured article into corresponding apertures in the substrate; and

means slidably mounted to said body for urging an article captured between the first and second jaws towards the substrate to move the tip of each lead along the slot and into the corresponding in the substrate.

4,616,415

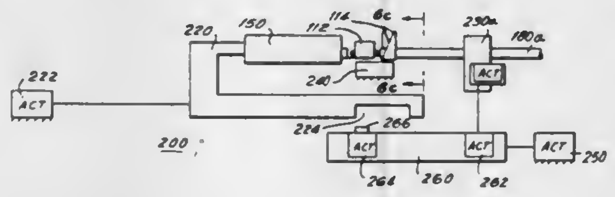
ELECTRICAL CONNECTOR APPARATUS, AND METHODS AND APPARATUS FOR ASSEMBLING SAME

Ray C. Doutrich, Lebanon, and George T. DeShong, East Berlin, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 30, 1985, Ser. No. 729,162

Int. Cl.⁴ H01R *43/00*

U.S. Cl. 29—857 **16 Claims**



1. The method of fabricating an electrical connector comprising the steps of:

providing a partially pre-assembled connector including a housing having a plurality of longitudinal, laterally adjacent, substantially parallel apertures, each aperture extending all the way through the housing between front and rear housing surfaces, and a longitudinal metal terminal partially inserted in each aperture substantially parallel to the longitudinal axis of the associated aperture, each terminal having a front disconnect portion and an uncrimped rear wire crimp portion, the disconnect portion being disposed in the aperture and a least a portion of the wire crimp portion being outside the housing to the rear of the rear surface;

at least partially withdrawing each terminal from the associated aperture to completely expose the uncrimped wire crimp portion;

placing a wire in the exposed uncrimped wire crimp portion of each terminal;

crimping the exposed wire crimp portion of each terminal around the associated wire to secure the wire to the terminal; and

fully re-inserting the terminal in the associated aperture.

4,616,416

METHOD OF APPLYING CONTACTS TO CIRCUIT SUPPORT

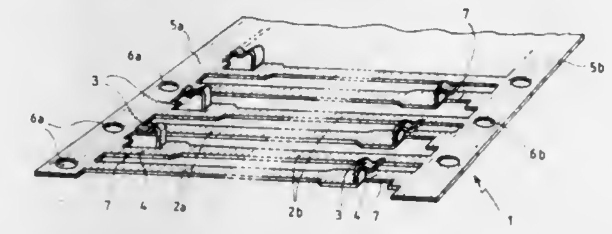
Aimé Cabaud, 28, rue de Villacoublay, Velizy, France

Division of Ser. No. 405,078, Aug. 4, 1982, abandoned. This application Jul. 13, 1984, Ser. No. 630,597

Claims priority, application France, Aug. 14, 1981, 81 15964

Int. Cl.⁴ H01R *43/00*

U.S. Cl. 29—884 **1 Claim**



1. A method of applying contacts to a circuit support which comprises the steps of:

forming a contact assembly to be soldered comprising a web composed of a succession of mutually parallel transversely spaced elongated contacts each formed with a head constituted by a clip and a tail remote from the respective head, said contacts alternating in direction along said web in head-to-tail relationship and being coplanar with a clip of one contact lying adjacent a tail of the next contact in said direction, the projecting portions of the respective clips projecting out of the web plane in the same direction, and respective connecting strips integral with each of said contacts along opposite edges of said web whereby said contacts can be separated from said connecting strips, said connecting strips extending in a direction transverse to the longitudinal directions of said contacts;

separating each of said heads from the connecting strip with which it was integral to form a pair of interdigitating but separate contact combs having free clips at the ends of the respective contacts connected to the other contact strip whereby the free clips of the two combs are oriented in opposite directions and remote from each other;

thereafter relatively displacing said combs in a direction perpendicular to said plane; and

thereafter inserting respective supports into the clips of each of said combs.

4,616,417

HYDRAULIC SHEAR HEAD ATTACHMENT FOR BACKHOE OR THE LIKE

Sol N. Gross, Pittsburgh, Pa., assignor to AAA Steel and Enterprises Corp., North Versailles, Pa.

Filed Jan. 7, 1985, Ser. No. 689,413

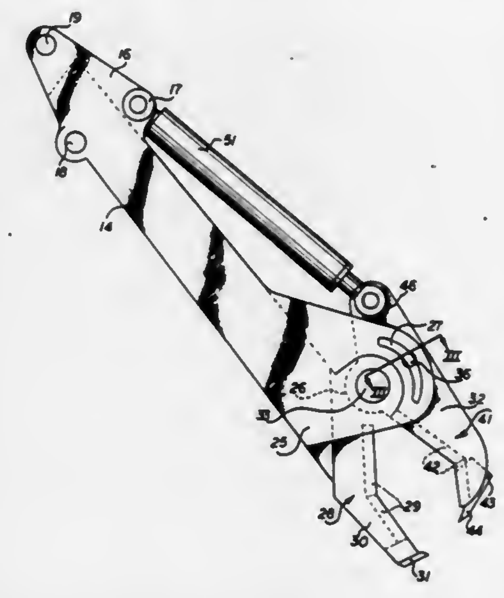
Int. Cl.⁴ B23P *19/00*

U.S. Cl. 30—134 **3 Claims**

1. A hydraulic shear attachment means for backhoes and the like, comprising:

(a) a support arm having at one end means for pivotal attachment to a backhoe or like equipment and at its other end a lower jaw member, said arm including a pair of spaced-apart flange members juxtaposed with respect to said lower jaw, each of said flange members having a pivot housing and an arcuate opening concentrically positioned with respect to the axis of said pivot housing;

(b) an upper jaw member pivotably mounted to and disposed between said pivot housings and having at least one support pin extending through said arcuate opening so as to ride therein during rotation of said upper jaw, said upper jaw including means for pivotably mounting at its other end a hydraulic actuating means;



(c) retaining means secured on each end of said support pivots to maintain said flanges in their spaced-apart, upright position; and

(d) hydraulic actuating means mounted to said upper jaw mounting means and the support arm at said attachment means for actuating the upper jaw.

4,616,418

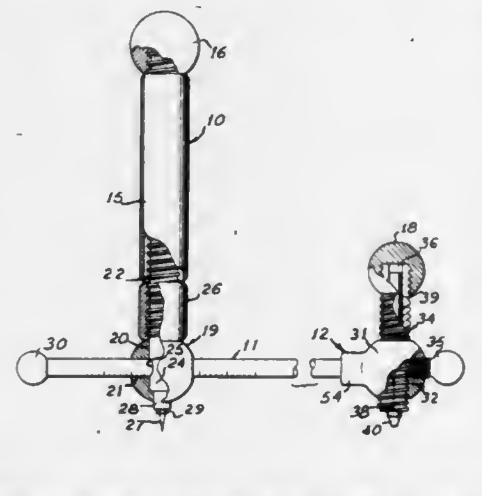
BEAM COMPASS HAVING CHANGEABLE PARTS

Charles R. Wade, III, P.O. Box 297, Dawsonville, Ga. 30534

Filed Jun. 28, 1985, Ser. No. 749,730

Int. Cl.⁴ B43L *9/00*

U.S. Cl. 33—27.01 **8 Claims**



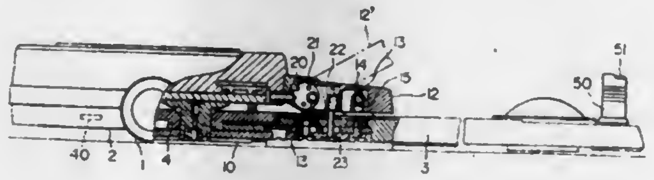
1. A beam compass comprising a central post for placement at the center of a circle to be drawn, said central post including center holding means for engagement with the surface on which said circle is to be drawn, a beam extending from said central post perpendicular to said central post and parallel to said surface on which said circle is to be drawn, and a marker carrier mounted on one end of said beam, said marker carrier having a marking means for drawing said circle on said surface, said central post including a connector for selectively holding said beam relative to said central post, a rod extending from said connector along the centerline of said central post, and a sleeve rotatably received over said rod, the arrangement being such that said sleeve can be held while said beam with said marker carrier is rotated with said center holding means as

the center, said central post further including a knob mounted on the extending end of said rod and serving as a stop for retaining said sleeve on said rod, said knob being fixed to said rod such that said knob may be rotated to cause rotation of said beam, said connector defining a bore for receiving the inner end of said rod, said connector and said rod defining holes therethrough perpendicular to said bore for slidably receiving said beam, and means for urging said rod upwardly to clamp said beam in a selected position with respect to said connector.

4,616,419
MEASURING DEVICE FOR A FIGURE

Akio Kubo, 655, Yamanouchi Kamakura shi Kanagawaken, Japan

Filed Apr. 17, 1985, Ser. No. 724,150
Int. Cl.^{4} G01B *5/26*
U.S. Cl. 33—122 **8 Claims**

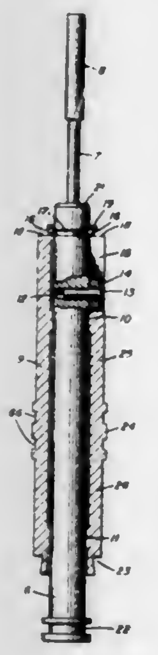


1. A measuring device for a figure comprising; a carriage supported by a pair of wheels for reciprocal movement along a straight line, a measuring lever extending from and pivotally mounted on a shaft attached to said carriage; tracing means provided at the other end of said measuring lever; a locking device for locking said measuring lever in a first horizontal position; switch means cooperating with said locking device for generating a reset signal when said measuring lever is released, said reset signal automatically clearing counters in said measuring device whereby release of said locking device operates sid switch generating a reset signal which measuring counters automatically.

4,616,420
CARTRIDGE HEAD FOR CHECKING LINEAR DIMENSIONS

Guido Golinelli, Bologna, Italy, assignor to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy

Continuation of Ser. No. 521,263, Aug. 8, 1983, abandoned. This application May 21, 1985, Ser. No. 736,526
Claims priority, application Italy, Sep. 9, 1982, 3528 A/82
Int. Cl.^{4} G01B *7/02*
U.S. Cl. 33—172 E **20 Claims**

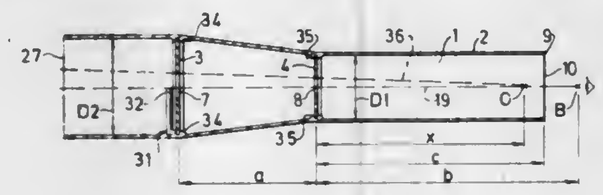


1. A cartridge type gauging head for checking linear dimensions, comprising a substantially tubular casing defining a longitudinal axis, a shaft partially housed in said casing and movable with respect to it along said axis, a feeler coupled to the shaft for contacting the part to be checked, a position transducer for providing a signal depending on the mutual positions of the shaft and the casing, including a first part fixed to the internal surface of the tubular casing and a second part carried by the shaft, resilient means for urging the shaft along a measurement direction, and a guide device including a substantially cylindrical intermediate portion, guide portions lying on either side of the intermediate portion and adapted to guide the axial displacements of the shaft and two substantially cylindrical connection portions connected between the intermediate portion and the guide portions, the intermediate portion having an enlarged thickness with respect to that of both connection portions and being fixed to the internal surface of the tubular casing, both said connection portions defining external surfaces faced to and separate from the internal surface of the casing and being resiliently deformable for preventing the transmission of deformations from the intermediate portion to the guide portions.

4,616,421
SIGHT MEANS

Ivan Forsén, Örnsköldsvik, Sweden, assignor to Inogon Licens AB, Sjalevad, Sweden

Filed May 30, 1985, Ser. No. 739,386
Claims priority, application Sweden, Jun. 7, 1984, 8403082
Int. Cl.^{4} F41G *3/00*
U.S. Cl. 33—233 **9 Claims**



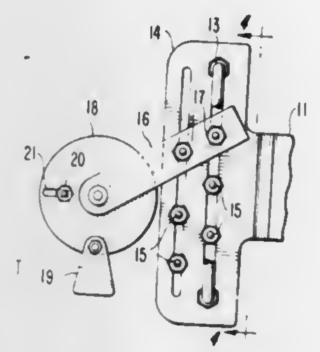
1. A sight means, particularly for weapons and objects which are to be sighted onto a given point, comprising: two mutually spaced and mutually parallel grid discs (3, 4), each of which includes a transparent disc provided with concentrically lying opaque grid lines (5) separated by transparent interspaces (6); said grid discs (3, 4) being arranged in a tubular housing (2) with two ends; located in the centre of each of said discs (3, 4) is a central region (7, 8) which is devoid of opaque lines (5) and which has a size corresponding approximately to 1/5 to ½ of the disc diameter, through which regions the target is intended to be viewed; said two grid discs (3, 4) having opaque lines (5) whose widths exceed the width of the transparent interspaces (6); said grid discs (3, 4) having mutually different graduation, i.e. a mutually different number of opaque lines (5) per unit of length perpendicular to the opaque lines; a first distance (a) between the grid discs (3, 4) being dimensioned shorter than a second distance (c) between one end (9) of the housing (2), said one end defining a viewing aperture (10) for the person using the sight means, and the grid disc (4) located nearest the viewing aperture (10); and said second distance (c) having a dimension which exceeds the distance corresponding to the near point of a normal eye adjacent the viewing aperture.

4,616,422
ELEVATED BOWHUNTERS SIGHT

Donald E. Gaddy, Rte. 1, Box 166, Callao, Mo. 63534

Filed Nov. 5, 1985, Ser. No. 795,181
Int. Cl.^{4} F41G *1/46*
U.S. Cl. 33—265 **3 Claims**

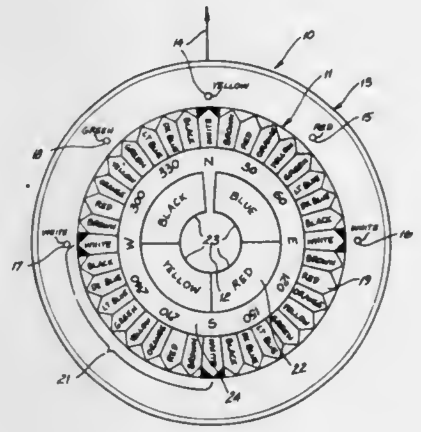
1. A bow hunter sight adapted solely for one shooting from an elevated position, a wheel having a slot formed therein, an adjustable sighting pin mounted in said slot, a counter weight fixedly mounted on said wheel, and two mounting arms for journalling said wheel for rotation and which opposite ends of said arms mounts to most conventional sight plates.



4,616,423
TACTICAL DINGHY COMPASS

Kevin E. Shephard, Wollstonecraft, Australia, assignor to J. & K. Shephard Design Pty Limited, Miranda, Australia

PCT No. PCT/AU83/00149, § 371 Date Jun. 20, 1984, § 102(e) Date Jun. 20, 1984, PCT Pub. No. WO84/01623, PCT Pub. Date Apr. 26, 1984
PCT Filed Oct. 21, 1983, Ser. No. 624,687
Claims priority, application Australia, Oct. 12, 1982, PF6301
Int. Cl.^{4} G01C *17/02*
U.S. Cl. 33—355 R **6 Claims**



1. A compass comprising a moveable compass card, said compass card being marked into quadrant portions and having an annulus portion, each quadrant of the annulus being subdivided angularly into a plurality of equal sectors each colored differently from the other sectors in that quadrant said sectors forming a color sequence which is repeated in each quadrant of the annulus portion.

4,616,424
MAGNETIC DIRECTION SENSOR

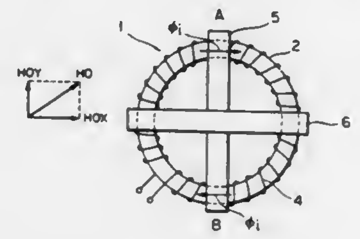
Shunsuke Arakawa, and Hiroya Suzuki, both of Saitama, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

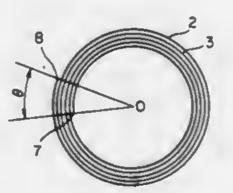
Filed Sep. 12, 1985, Ser. No. 775,412
Claims priority, application Japan, Sep. 13, 1984, 59-192355
Int. Cl.^{4} G01C *17/30*
U.S. Cl. 33—361 **6 Claims**

1. A magnetic direction sensor having a head comprising:

(a) a magnetic wound core composed of a ferromagnetic metal ribbon;
(b) a winding for exciting said magnetic wound core;
(c) a first output winding wound around said core such that it encircles two opposite portions of said core; and
(d) a second output winding wound around said core at a certain angle with said first output winding such that it encircles two other opposite portions of said core; said first and second output windings providing output signals for determining the direction of an external magnetic field with respect to the head;

characterized in that the inner and outer ends of said ribbon overlap each other circumferentially by an angle between 0.5 and θ_{max} satisfying the equation: $\theta_{max}=\frac{1}{4}D+1.5\alpha+1$ wherein D represents the outer diameter of said core, and θ represents a desired direction accuracy.

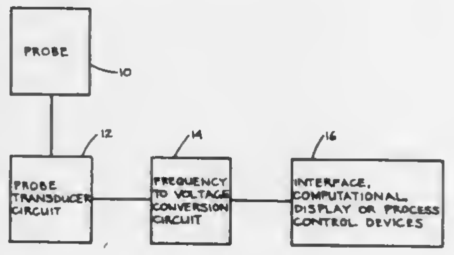




4,616,425
MOISTURE MEASUREMENT APPARATUS AND METHOD

Stanley G. Burns, Ames, Iowa, assignor to Iowa State University Research Foundation, Ames, Iowa

Continuation of Ser. No. 461,311, Jan. 28, 1983, abandoned. This application Nov. 4, 1985, Ser. No. 794,490
Int. Cl.^{4} F26B *1/00*
U.S. Cl. 34—13.8 **14 Claims**

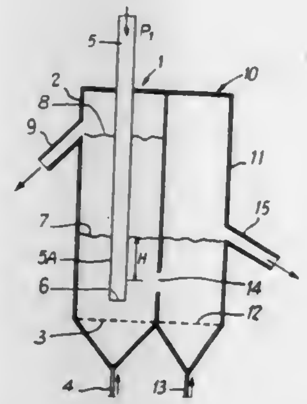

PROBE
10
12
14
16
PROBE TRANSDUCER CIRCUIT
FREQUENCY TO VOLTAGE CONVERSION CIRCUIT
INTERFACE, COMPUTATIONAL, DISPLAY OR PROCESS CONTROL DEVICES

1. A method for measuring the moisture content of wood or paper products comprising the steps of:

(a) forming a substantially two-dimensional resistive element on a single surface of the product, said resistive element having an inner portion and an outer portion spaced outwardly from and surrounding the inner portion;
(b) completing a resistance-controlled oscillator circuit by electrically attaching the inner and outer portions of the resistive element into said circuit;
(c) generation by the resistance-controlled oscillator circuit of an output signal the frequency of which is dependent upon the resistance of the resistive element;
(d) converting said resistance-dependent output signal of the oscillator circuit to a frequency-dependent direct current voltage level, and
(e) initiating a response to said direct current voltage level according to a predetermined relationship between said direct current voltage level and the moisture content of the wood or paper product.

4,616,426
VALVE FOR THE PNEUMATIC DISTRIBUTION OF FLUIDIZABLE MATERIAL

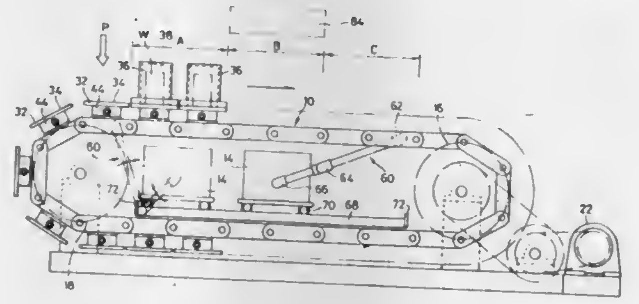
Jean F. Large, Compiegne, France, assignor to Charbonnages de France, Paris, France
Filed Jul. 2, 1985, Ser. No. 751,239
Claims priority, application France, Jul. 4, 1984, 84 10616
Int. Cl.⁴ F26B *17/10*
U.S. Cl. 34—57 A **9 Claims**



1. Valve for the selective distribution of fluidised material between at least two separate outlets, the valve being arranged to receive fluidisable material via a supply pipeline, the valve comprising a main compartment, a side wall and a bottom of the main compartment, a fluidising means which is located at the bottom of the main compartment and is capable of fluidising the said fluidisable material to an upper level, an overflow pipe which is provided in the side wall and is located at the upper level, at least one auxiliary compartment which is adjacent to the main compartment, said auxiliary compartment comprising a side wall, a bottom, and at least one communication passage which is between the main compartment and the auxiliary compartment through said respective side wall, a fluidising means which is located at the bottom of the respective auxiliary compartment and is capable of fluidising the said fluidisable material to a respective specific level, and an overflow pipe which is provided in the side wall of the respective auxiliary compartment and is located at a level which is at most equal to the level of the overflow pipe of the main compartment, said at least one communication passage being positioned at an intermediate level between the level of the highest fluidising means of the main compartment and the respective auxiliary compartment and the level of the overflow pipe of the respective auxiliary compartment.

4,616,427
VACUUM CONVEYOR SYSTEM

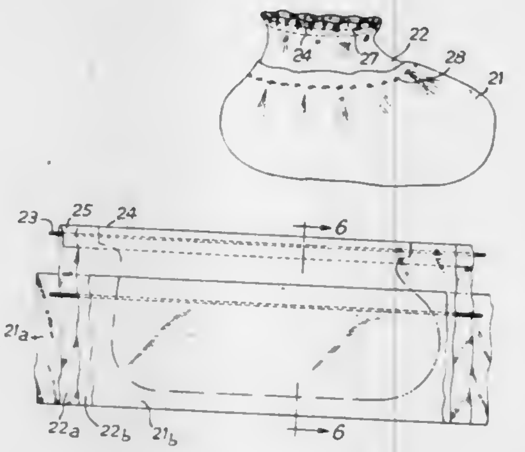
Tsunezo Takeuchi, Aichi, and Isao Mizutani, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan
Filed Sep. 23, 1985, Ser. No. 779,123
Claims priority, application Japan, Sep. 28, 1984, 59-204373
Int. Cl.⁴ F26B *19/00*
U.S. Cl. 34—92 **13 Claims**



1. A vacuum conveyor system, comprising:
conveyor means having plural mounting portions on which workpieces are mounted, said mounting portions being spaced from each other along an endless track of the conveyor means;
drive means for driving said conveyor means along said endless track;
a plurality of enclosure means provided on said plural mounting portions of the conveyor means, respectively, for forming air-tight enclosed chambers in which the workpieces mounted on the mounting portions are accommodated, respectively;
a vacuum source for drawing an atmosphere from said enclosed chambers; and
suction piping means disposed along said conveyor means and travelling together with said conveyor means along said endless track, said suction piping means being connected to said vacuum source and having connections which are adapted to communicate with said enclosed chambers to evacuate the enclosed chambers to a predetermined reduced pressure.

4,616,428
PROTECTIVE SLIPPER ADAPTABLE TO DIFFERENT SIZES

Claude Leger, Thourotte, France, assignor to Dispovet, France
Filed Jan. 28, 1985, Ser. No. 695,260
Claims priority, application France, Dec. 21, 1984, 84 19732
Int. Cl.⁴ A43B *3/16, 1/14, 7/12*
U.S. Cl. 36—7.1 R **10 Claims**



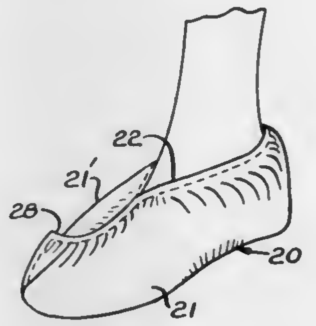
1. A slipper which may be used in particular as an overshoe and is adaptable to feet of different sizes, comprising two susperposed first sheets of a first material, united along a weld line. an upper edge defining an opening, a sole, a first series of elastic gathers along said upper edge, two second sheets of a second material connected one to the other and to the first sheets by said weld line, these first sheets being placed between the second sheets, each second sheet being further connected to the adjacent first sheet by at least one other weld line and at least one second series of elastic gathers located in an intermediate region between said upper edge and said sole along said other weld line.

4,616,429
DISPOSABLE SHOE COVER

Robert Alcala, El Paso, Tex., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Oct. 2, 1984, Ser. No. 657,021
Int. Cl.⁴ A43B *3/16*
U.S. Cl. 36—7.2 **9 Claims**

1. A disposable shoe cover adapted to fit shoes over a range of sizes comprising:
first and second originally separate flat and generally rectangular panels of flexible sheet material, each defining top, bottom, front and rear edges, the edges of said panels being aligned;
first and second adhesive means securing the front and rear edges, respectively of said panels continuously together;

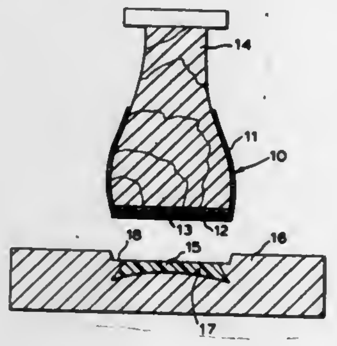
first and second strips of elastic material;
third and fourth adhesive means for fixing said first and second strips of elastic material in stretched condition to said top edges respectively of said first and second panels with said first and second strips of elastic material extending along substantially the entire length of the edge to which it is fixed;
a third strip of elastic material;



fifth adhesive means for fixing said third strip of elastic material in stretched condition to said bottom edges of said panels and for securing said bottom edges of said panels together;
and sixth adhesive means for connecting a portion only of said top edges of said panels together and extending from the front edge of said cover to provide an access opening adjacent to the rear of said cover.

4,616,430
METHOD OF MAKING AN ARTICLE OF FOOTWEAR

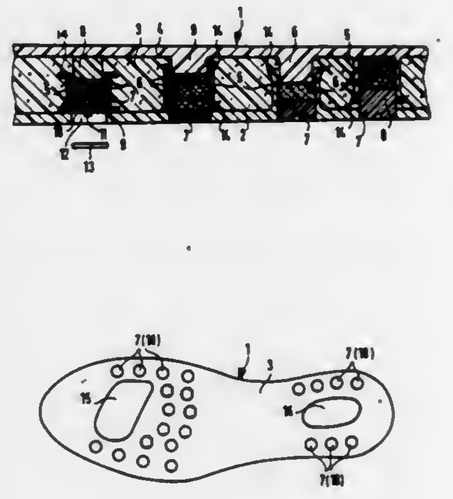
John McQuiggin, Boreham Wood, Great Britain, assignor to E.T.F. Enterprises, Inc., New York, N.Y.
Filed Jun. 25, 1984, Ser. No. 623,922
Claims priority, application United Kingdom, Dec. 23, 1983, 8334445
Int. Cl.⁴ A43C *13/08*
U.S. Cl. 36—14 **22 Claims**



1. A method of making an article of footwear, comprising the steps of:
(a) partially forming the article so as to comprise at least an upper lasted to a first insole;
(b) arranging the partially formed article to fully expose the upper surface of the first insole by turning the partially formed article inside out;
(c) moulding a second insole of elastomeric material onto the exposed surface of the first insole; and
(d) applying an outsole to the article.

4,616,431
SPORT SHOE SOLE, ESPECIALLY FOR RUNNING

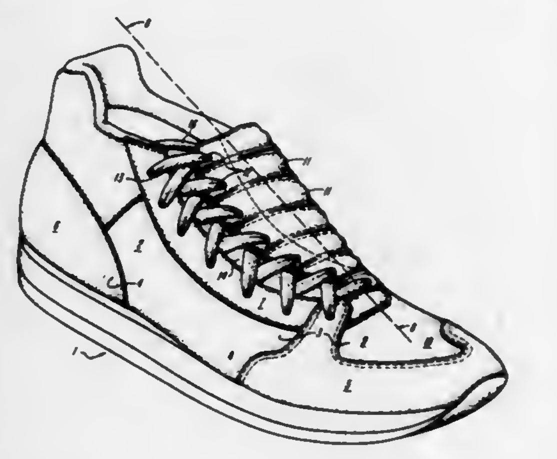
Armin A. Dassler, Herzogenaurach, Fed. Rep. of Germany, assignor to Puma-Sportschunfabriken Rudolf Dassler KG, Fed. Rep. of Germany
Filed Oct. 24, 1984, Ser. No. 664,434
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1983, 3338556
Int. Cl.⁴ A43B *13/18*
U.S. Cl. 36—28 **20 Claims**



1. Sport shoe sole, especially for running shoes of the type having a midsole of shock absorbing material, disposed between an insole made of soft elastic material and an outer sole made of abrasion resistant material, that is provided with vertically oriented damping members therein of harder resiliency characteristics than those of the material of the midsole, wherein the damping members comprise exchangeably insertable damping discs in cylinders and pistons for pressing against the damping discs, each piston being received within a respective cylinder and wherein an opening is associated with each cylinder of a size corresponding to the size of the damping discs for enabling exchange and insertion of said damping discs therethrough.

4,616,432
SHOE UPPER WITH LATERAL FASTENING ARRANGEMENT

Richard P. Bunch, Reading, and Lloyd S. Smith, Newton Center, both of Mass., assignors to Converse Inc., North Reading, Mass.
Filed Apr. 24, 1985, Ser. No. 726,504
Int. Cl.⁴ A43B *11/00, 23/00*
U.S. Cl. 36—50 **10 Claims**



1. A shoe comprising:
an upper having a slot disposed along a path, over relatively planar regions of the wearer's foot, such path commencing proximate to the connection of the phalanges with the metatarsus of the wearer's foot and continuing along the

lateral side of the metatarsus to the top of the upper, such slot defining asymmetric lateral and medial panels of the upper, wherein the medial panel overlies the central longitudinal axis of the foot and includes a plurality of bands disposed transverse to such axis, and

fastening means for adjustably fastening the lateral and medial panels to one another so that the tension of fastening the lateral and medial panels together is transmitted along the length of the bands.

4,616,433

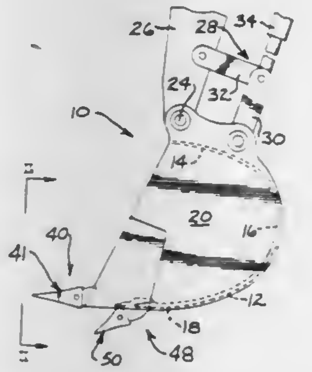
RIPPING BUCKET ARRANGEMENT

Harvey A. Knell, and Lloyd B. Rumble, both of Yorkville, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Feb. 12, 1985, Ser. No. 700,239

Int. Cl.^{4} E02F *3/28*

U.S. Cl. 37—141 T **8 Claims**



6. A bucket arrangement having opposed sidewalls and a bottom portion defining a planar cutting edge extending therebetween and being adapted for movement in a forward direction for excavation of material, comprising:

a first ground engaging tooth assembly defined by each of the sidewalls of the bucket arrangement at a location forward of the connection between said sidewalls and said cutting edge and extending therefrom to a position above said cutting edge; and

a pair of second ground engaging tooth assemblies positioned in a generally straight line along the cutting edge of the bucket arrangement to extend downwardly therefrom at a preselected angle with respect to the first ground engaging teeth and being rearwardly spaced therefrom, said bucket arrangement being selectively operable between a first position wherein only the first ground engaging teeth are engaged with the ground at a location solely subjacent the sidewalls, and a second position wherein only the second ground engaging teeth are engaged with the ground subjacent the area solely between said sidewalls, and a third position wherein said first and second ground engaging teeth are in simultaneous engagement with the ground to permit the grading of the ground to a relatively flat profile.

4,616,434

IRONING TABLE WITH MOUNTING FOR AN IRONING CLOTH

Günther Riba, Rosenbergstr. 26, D-5455 Hardert, and Norbert Cebulla, Neuwied, both of Fed. Rep. of Germany, assignors to Günther Riba, Fed. Rep. of Germany

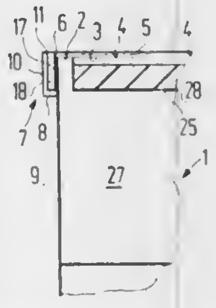
Filed Sep. 4, 1985, Ser. No. 772,383

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1984, 3433170

Int. Cl.^{4} D06F *81/14*

U.S. Cl. 38—140 **11 Claims**

1. An ironing table comprising a table surface, and a mounting for an ironing cloth to be stretched thereacross, said ironing cloth having a first lateral edge and an opposite second lateral edge, said mounting comprising engaging means for engaging said first lateral edge of said ironing cloth, said engaging means being located at a first side of said table surface, and an affixing means for affixing said opposite second lateral edge of said ironing cloth, said affixing means being located at a second side of said ironing table which is opposite to and in spaced parallel relationship to said first side, said first engaging means at said first side of the table defining an elongate, rectilinear groove parallel to said first side and a rigid keeper bar corresponding to substantially the cross section of the groove disposed in the groove with an end of the cloth looped about it to thus anchor said first lateral edge of the cloth, and said affixing means comprising a first securing element at said second side of the table disposed in a downwardly-facing position at the underside of the table and a second securing element attached to the underside of the cloth at the second lateral edge in an upwardly-facing position, said securing elements being releasably interengageable by application of pressure to hold the cloth taut between its ends.



4,616,435

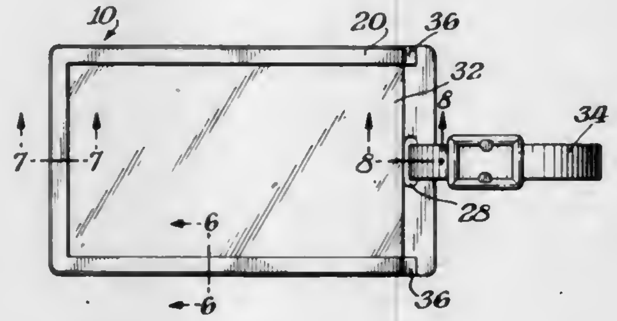
IDENTIFICATION CARD HOLDER

Alan J. Perfect, Crosswicks, N.J., assignor to LaFrance Corporation, Philadelphia, Pa.

Filed Apr. 11, 1984, Ser. No. 599,059

Int. Cl.^{4} G09F *3/20*

U.S. Cl. 40—6 **3 Claims**



1. An identification card holder comprising a one-piece molded body member, said body member including a flat base, an integral upstanding inverted L-shaped flange extending along the periphery of three sides of said base, said inverted L-shaped flange including a vertical leg integral with said base and a horizontal leg extending over and generally parallel to said base, said L-shaped flange forming a narrow-three-sided frame above said base with a slot formed between said horizontal leg and said base, the fourth side of said frame being open to provide access to said slot, the area between the three sides of said frame being open with the major part of said base being visible, a transparent shield inserted in said slot through said open side of said frame, said inverted L-shaped flange preventing said shield from being freely removed from said slot except through said open side of said frame whereby an identification card may be inserted against said base and the identification card will be held in place by said shield when the identification card is disposed between said base and said shield with the identification card being visible through said shield, said body member including locking means for preventing said shield from being readily removed from said open side of said frame, means for attaching said holder to another object, said locking means and said attaching means comprising the same elements, said elements comprising an opening formed in said base member located at said open side of said frame and a securing strap disposed in said opening, a downwardly extending bead located at the periphery of said horizontal leg and in pressure contact with said shield, a ledge on said base and integral therewith, said ledge being located parallel to said horizontal leg to form a three sided open face pocket on said base for receiving an identification card therein, and said shield resting on said ledge with said bead pressing thereagainst, guide surfaces in said slot to guide said shield as it is being inserted to its intended position, said guide surfaces including tapered surfaces at the lead edge of said ledge, a tapered surface at the remote end of said frame, rounded surfaces at the lead edge of said bead, and rounded surfaces on said ledge disposed beneath said tapered surfaces of said frame.

4,616,436

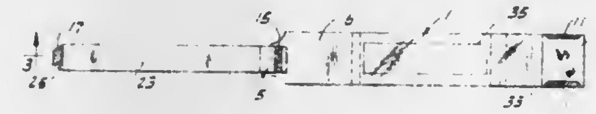
IDENTIFICATION BAND

Irvin S. De Woskin, Highway "M"-P.O. Box 278, Barnhart, Mo. 63012-0278

Filed Jan. 17, 1985, Ser. No. 692,161

Int. Cl.^{4} G09F *3/14*

U.S. Cl. 40—21 C **10 Claims**



1. An identification band, as for hospital patients, comprising a strip adapted to extend around a person's wrist or ankle and to carry identification data, hook and plush fastening elements for fastening the strip around the wrist or ankle, one of said elements forming one side of a loop means at one end of said strip and facing toward the inside of said loop means, the other element being a relatively long and narrow element at the other end of the strip, a protective strip on said other element extending lengthwise thereof secured to said other element adjacent the free end thereof, said other element and the protective strip being adapted to be passed through the loop means to the point where the band encircles the wrist or ankle to the desired extent with said other element facing toward said one element but separated therefrom by said protective strip, whereupon the portion of said other element extending out of the loop means and the protective strip may be removed and the elements pressed together to secure the band around the wrist or ankle, the loop means preventing separation of the elements.

4,616,437

FISHING APPARATUS AND INDICATING DEVICE

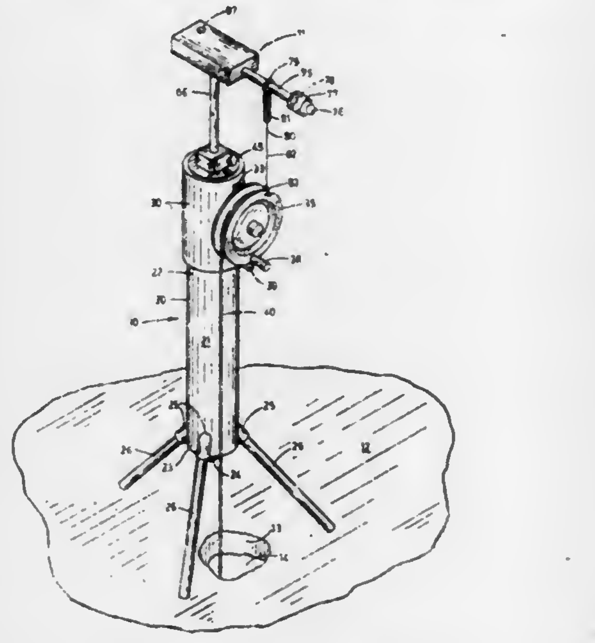
Marvin R. Harvey, P.O. Box 1048, Riverton, Wyo. 82501

Filed Oct. 12, 1984, Ser. No. 660,121

Int. Cl.^{4} A01K *97/12*

U.S. Cl. 43—17 **18 Claims**

1. A fishing apparatus comprising a tubular housing having an internal chamber and an open end portion facing upwardly when the housing is placed in an operative attitude; means for supporting the housing in the operative attitude; a reel for receiving a fishing line mounted on the housing for rotational movement about an axis of rotation which is substantially horizontal when the housing is in said operative attitude; a closure adapted for removably fitted receipt in the open end portion of the housing in closing relation to the chamber thereof to define a storage area; and an indicating device adapted to be mounted on the closure in said operative attitude for registering movement of the reel, the indicating device including a support adapted to be mounted on the closure in the operative attitude in an upstanding condition and an indicating assembly pivotally mounted on the support for movement between a ready position extending substantially horizontally above the reel and a substantially vertical indicating position and being so balanced as gravitationally to urge the indicating assembly to the indicating position and the indicating device further including a release member adapted to be mounted on the indicating assembly and releasably to be attached to the reel to retain the indicating assembly in the ready position.



4,616,438

LINE GUIDE FOR FISHING ROD

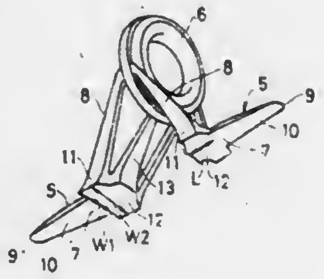
Ryuichi Ohmura, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Japan

Filed Nov. 6, 1984, Ser. No. 668,802

Claims priority, application Japan, Dec. 6, 1983, 58-188403[U]

Int. Cl.^{4} A01K *87/04*

U.S. Cl. 43—24 **10 Claims**



1. A line guide for a fishing rod comprising a guide ring, a pair of downwardly extending front legs terminating in a front foot, and a pair of downwardly extending rear legs terminating in a rear foot, each of said feet:

(A) having a heel portion and a narrow flexible toe portion extending to said heel, said heel portion being significantly wider than said toe portion, and

(B) having a concave lower surface to essentially mate with the surface of said fishing rod, said concave lower surface extending for the full width of said heel portion.

4,616,439

AUTOMATIC FISH HOOK

Jong J. Lee, 4377 Los Angeles Ave., Somis, Calif. 93021

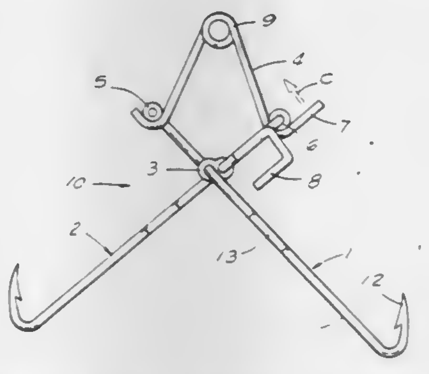
Filed Jul. 2, 1984, Ser. No. 627,342

Int. Cl.^{4} A01K *83/02*

U.S. Cl. 43—36 **1 Claim**

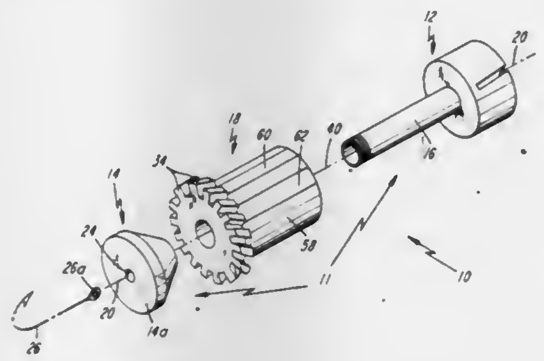
1. A fishhook comprising of two hooks, each having a shaft and movably joined together at the shaft to allow a scissors type motion with the points of the said hooks pointing away from each other, a spring having two extensions, connecting

means for movably attaching respective ends of the extensions to said shafts to allow the force of the spring to forcibly spread apart the said two hooks, and said connection means allowing said spring member to be flexed, after the said two hooks are brought together, to a new position roughly perpendicular to the said two hooks, said fishhook holding said spring in said perpendicular configuration until an outside force is introduced which will unflex said spring member and cause the said two hooks to forcibly spread apart away from each other.



4,616,440
FISHING LURE

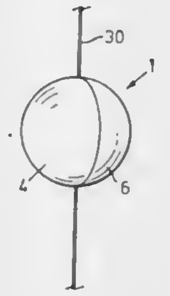
John P. Millroy, 4300 NE. 18th Ave., Oakland Park, Fla. 33308
Filed Jun. 5, 1984, Ser. No. 618,270
Int. Cl.⁴ A01K *85/01*
U.S. Cl. 43—42.12 **4 Claims**



4. A fishing lure, comprising:
(a) a spindle having a longitudinal axis;
(b) means for connecting a fishing line and hook to the spindle so that the fishing line draws the lure through the water;
(c) a first rotor mounted on said spindle for rotation about said axis, said rotor including a plurality of vanes circumferentially arranged thereon so that water can impinge on the vanes to rotate said rotor in a first direction, rotation of the rotor tending to induce co-rotation of the spindle and fishing line in the first direction; and
(d) means for resisting rotation of the spindle, said means including a member fixed to the spindle that deflects water striking the member so that the deflected water creates a force (F) resisting rotation of the spindle in the first direction, said spindle thereby being stationary relative to its axis so that twisting of the fishing line is prevented;
(e) wherein said rotation resisting means includes a generally cylindrical body member fixed to the spindle to establish the forward end of the lure, the body member including a notch formed with a side wall that is offset by a predetermined angle as measured from a plane extending coplanar with said longitudinal axis and intersecting said side wall, whereby water flowing through the notch strikes the side wall to create said force F resisting rotation of the spindle, wherein said spindle is a hollow shaft having a front end attched to the cylindircal body in communication with a first bore extending through the body, and further including a tail piece fixed to the rear end of the hollow shaft, the tail piece including a second bore extending therethrough in communication with the hollow shaft, the fishing line being adapted to pass through the first and second bores and the hollow shaft to locate a fishing hook downstream and in contact with the tail piece, said fishing hook retaining the lure on the line, wherein said cylindrical body member has a generally flat, front face extending orthogonal to said longitudinal axis, three of said notches being peripherally formed in said space at equispaced intervals from each other about the first bore, and further including a pluarlity of third bores formed in said front face to trap air when the lure breaks the water and thereby produce air bubbles when the lure submerges, said air bubbles gradually leaking from the first and third bores into a gap formed between adjacent faces of the rotor and body member, the bubbles discharging from the gap flowing downstream towards the vanes to be agitated thereby.

4,616,441
FISHING FLOAT

Walter Dmytriw, 65 Southport St., Apt. 404, Toronto, Ontario, Canada (M6S 3N6)
Filed Jul. 10, 1985, Ser. No. 753,511
Claims priority, application Canada, Jul. 12, 1984, 458726
Int. Cl.⁴ A01K *93/00*
U.S. Cl. 43—44.91 **22 Claims**

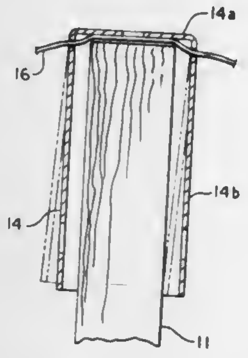


1. A fishing float comprising:
a first body member, which is formed as a shell and includes, along a free edge thereof, a first coupling lip which has a first sealing surface and which coupling lip includes a groove; and
a second body member, which is formed as a shell and includes along a free edge thereof, a second coupling lip, which has a second sealing surface and which coupling lip includes a rib projecting therefrom for engagement with the groove of the first body member;
wherein at least one of the first and second body members is sufficiently resilient to permit engagement of the ribs and groove, and at least two slits are provided in the coupling lips for receiving a fishing line;
whereby, in use, the first and second body members are coupled together with the rib seated in the groove and with the fishing line extending through the two slits and across the float, the first and second sealing surfaces sealing the first and second body members together to form an integral float and to prevent the ingress of water.

4,616,442
PLANT SUPPORT

Phillip M. Lenzner, 6438 Virginia, St. Louis, Mo. 63111
Continuation-in-part of Ser. No. 336,447, Dec. 31, 1981, abandoned. This application Aug. 28, 1984, Ser. No. 645,169
Int. Cl.⁴ A01G *17/06*
U.S. Cl. 47—45 **6 Claims**

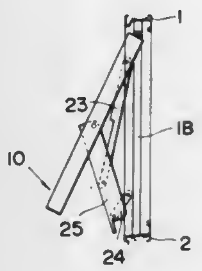
1. A plant support comprising:
(a) a plant stake having an upper end portion,
(b) a hollow housing having an upper end portion and a lengthwise extending sidewall portion said housing being sized to receive the plant stake therewithin in loosely fitted relation, the stake upper end portion being engageable by the housing upper end portion and the housing being retained on the stake in liftably removable relation without the need for fasteners, and



(c) a plurality of flexible straps each having a free distal end, said straps being carried solely by the housing in depending relation for selective attachment to the plant.

4,616,443
REVERSIBLE WINDOW STRUCTURE

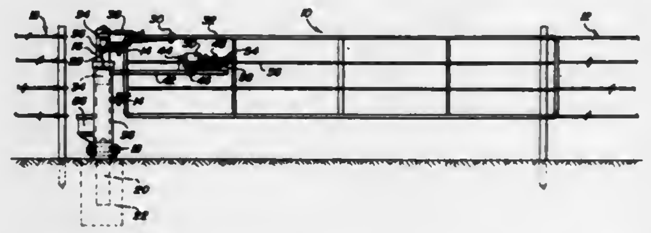
Tokio Araki, and Iwao Aoki, both of Toyama, Japan, assignors to Sankyo Aluminium Industry Company Limited, Japan
Filed Dec. 27, 1983, Ser. No. 565,805
Claims priority, application Japan, Oct. 7, 1983, 58-186684
Int. Cl.⁴ E05D *15/30*
U.S. Cl. 49—252 **2 Claims**



1. A reversible window structure comprising:
a window frame assembly comprised of upper and lower window frame members and vertical window frame members defining a rectangular opening;
a sash housed in said window frame assembly comprising upper and lower sash frame members, vertical sash frame members and a rectangular window glass supported by said sash frame members;
complementary guide means mounted on opposite sides of said sash at the upper end thereof adjacent said upper sash frame member and on said vertical window frame members for freely guiding the upper end of said sash for movement along a substantially vertical path; and
support means comprised of a pair of link assemblies each including first and second movable link members pivotably connected at one end thereof to said vertical window frame members adjacent the top and bottom thereof and a third movable link member pivotally connected to the opposite end of said first and second movable link members, said third movable link member being pivotally connected at the middle portion thereof to said opposite end of said first movable link member and being pivotally connected adjacent one end to said opposite end of said second movable link member with the opposite end portion of said third link movable being pivotally connected to said sash at substantially the center of gravity of said sash, whereby upon pivotal movement of said sash about said guide means the pivot connections between said sash and each third link member will move along a substantially horizontal path perpendicular to said vertical path.

4,616,444
RADIO CONTROLLED GATE OPENER

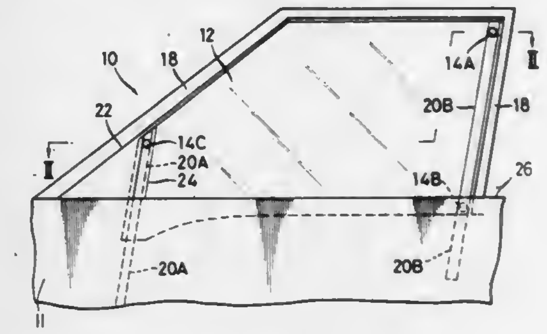
Daniel E. Taylor, Rte. 2, Box 30, Sundance, Wyo. 82729
Filed Jun. 6, 1984, Ser. No. 618,366
Int. Cl.⁴ E05F *11/04*
U.S. Cl. 49—347 **15 Claims**



1. Apparatus for operating a swinging gate hinged on a gatepost between open and closed positions comprising a weight, means connecting the weight to the gate for providing movement of the gate in one direction between said positions responsive to falling movement of the weight under gravity, and raising of the weight responsive to movement of the gate in the opposite direction, and powered means connected with the gate for moving the gate in said opposite direction between said positions, thereby raising the weight, and for holding the gate in one of said positions with the weight in raised position.

4,616,445
CONSTRUCTION OF DOOR IN MOTOR VEHICLE

Hiroyuki Watanabe; Eiichi Hamada, both of Toyota; Motomu Hayashi, Okazaki, and Kenji Ono, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan
Filed Jul. 27, 1984, Ser. No. 635,247
Claims priority, application Japan, Jul. 29, 1983, 58-119489[U]
Int. Cl.⁴ E05F *11/38*
U.S. Cl. 49—374 **8 Claims**



1. A vehicle door comprising:
a door section having a door panel and a window frame, said door panel having an inner housing extending between an exterior and an interior of said vehicle when said door section is closed, said inner housing including an opening along an upper surface of said door panel, said window frame being secured to said door section at opposite ends of said opening and defining a window section;
a forward and rearward guide channel secured to said door panel and extending within said inner portion and said window section, at least a portion of said forward and rearward guide channels being aligned in parallel;
a door glass slidably mounted within said window section, at least a portion of said door glass being housed within said inner housing;
means connecting said door glass with said pair of guide channels for slidably mounting said door glass within said window section, said connecting means including guide means for riding within said forward and rearward guide channels and having attachment means secured to said door glass for positioning said door glass in response to movement of said guide means within said forward and rearward guide channels;
bracket means attached to said window frame and including

a forward bracket and a rearwad bracket, said bracket means also including sealing means affixed to said forward and said rearward brackets for providing a substantially airtight seal between said bracket means and said door glass;

a mirror housing and a mirror, said mirror being supporting on said mirror housing; and

means for mounting said mirror housing on the vehicle door to extend along at least said forward bracket, wherein said mirror is positioned rearwardly of said forward bracket and said guide channel as determined relative to the length of the vehicle to prevent an obstructed view of said mirror by a vehicle occupant.

4,616,446
CONSTRUCTION OF DOOR GLASS RUNS IN MOTOR VEHICLE

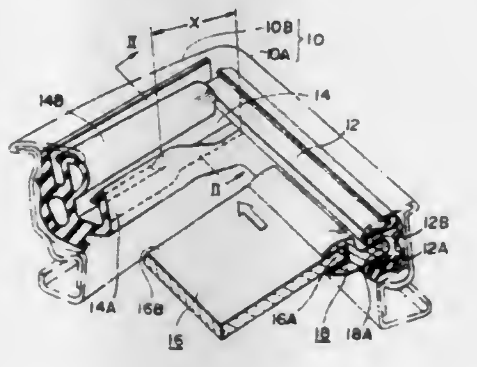
Yuji Okamoto, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Aug. 15, 1985, Ser. No. 766,010

Claims priority, application Japan, Aug. 21, 1984, 59-126869[U]

Int. Cl.⁴ E06B *7/16*

U.S. Cl. 49—441 **8 Claims**



1. Construction of door glass runs in a motor vehicle, wherein: there are provided vertical side glass runs and a top side glass run, which are secured to vertical sides and a top side of a door frame, respectively, in vehicle door with said door frame; said vertical side glass runs slidably guide a forward end sliding portion of a slider in the opening or closing direction of a door glass and restrain the forward end sliding portion in the direction of thickness of said door glass, said slider is mounted to end edges of the door glass in the longitudinal direction thereof, and, has said forward end sliding portion shifted into a compartemnt and being of a crank shape in cross section; and said top side glass run has an inner lip for contacting the inner surface of a top end edge of said door glass to seal when said door glass is fully closed; characterized in that said inner lip in said top side glass run is decreased in cross section thereof toward said vertical side glass runs within a range of contacting said slider when said door glass is fully closed, made gradually thinner at the distal ends thereof in wall thickness than the other general portion thereof and thicker at the proximal ends thereof in wall thickness than the other general portion thereof.

4,616,447
METHOD AND APPARATUS FOR MACHINING A WORKPIECE ULTRASONICALLY

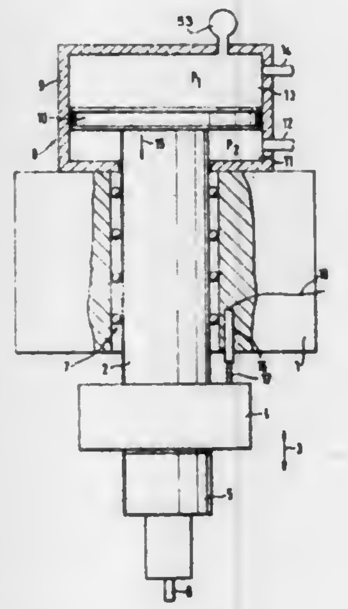
Rudiger Haas, Dunningen; Ernst Krauss, Oberndorf-Aistaig, and Herbert Walter, Fluorn-Winzeln, all of Fed. Rep. of Germany, assignors to Mafell-Saschinenfabrik Rudolf Mey GmbH & Co. KG, Fed. Rep. of Germany

Filed Feb. 27, 1984, Ser. No. 583,278

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1983, 3306841

Int. Cl.⁴ B24B *7/00*

U.S. Cl. 51—59 SS **12 Claims**



1. A method of machining a workpiece by means of ultrasound using an ultrasonic machine having a tool head for movement toward and away from the workpiece on a feed path, and an ultrasonic machine tool mounted for movement on the tool head and with respect to the tool head toward and away from the workpiece on the feed path, comprising feeding the tool head on the feed path toward the workpiece to establish a contact pressure between the machine tool and the workpiece which is maintained substantially constant, measuring an instantaneous absolute displacement of the machine tool on the tool head in the feed path and from a zero reference point as the machine tool penetrates the workpiece to form a displacement signal corresponding to the instantaneous absolute displacement, using the displacement signal to feed the tool head so as to maintain the substantially constant contact pressure between the machine tool and the workpiece, and repositioning the machine tool to its zero reference point on the tool head by moving the machine tool along the feed path.

4,616,448
AUTOMATIC WORK LOADING DEVICE FOR USE IN GRINDING MACHINE

Tetsuya Nagata, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Chiba, Japan

Filed Aug. 22, 1984, Ser. No. 643,062

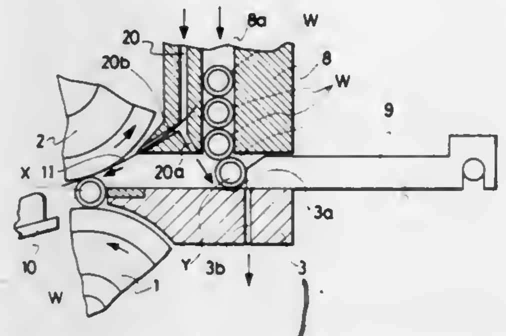
Claims priority, application Japan, Aug. 23, 1983, 58-130182[U]

Int. Cl.⁴ B24B *47/22*

U.S. Cl. 51—215 H **12 Claims**

1. A device for individually transferring workpieces to a working position of a machine, the device comprising: a support member having an upper surface, the upper surface having means therealong defining a workpiece standby position and the upper surface terminating at one end adjacent to a workpiece working position; a loading chute disposed above the support member for receiving a supply of workpieces during use of the device, the loading chute having means for effecting the feeding by gravity of individual workpieces such that the workpieces drop one by one from a loading chute discharge opening onto the support member upper surface at

the standby position so that only one workpiece at a time can occupy the standby position; reciprocable pushing means mounted to undergo reciprocable sliding movement through forward and return strokes relative to the support member upper surface and operable during a forward stroke to push a workpiece from the standby position along the support member upper surface toward the working position while blocking the loading chute discharge opening to prevent another workpiece from dropping from the loading chute into the standby position and operable during a return stroke to unblock the loading chute discharge opening to permit another workpiece to drop from the loading chute into the standby position; and fluid supply means for supplying a pressurized fluid and directing the pressurized fluid in a first fluid stream directed toward the standby position in a direction such that the first fluid stream assists in maintaining a workpiece in the standby position and directing the pressurized fluid in a second fluid stream directed toward the working position in a direction such that the second fluid stream assists the pushing means in transferring a workpiece from the one end of the support member upper surface to the working position.



4,616,449
SUCTION HOUSING FOR VACUUM SANDING DEVICES

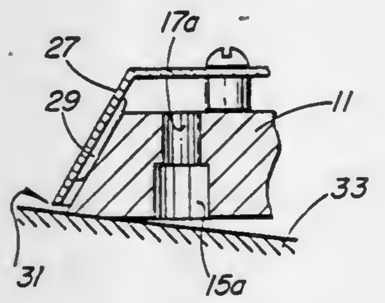
Miksa Marton, R.R. #1, Old Castle (Windsor), Ontario, Canada N0R 1L0

Filed Sep. 28, 1984, Ser. No. 656,138

Claims priority, application Spain, Aug. 31, 1984, 535819

Int. Cl.⁴ B24B *55/06*

U.S. Cl. 51—273 **9 Claims**



1. A suction plate for a vacuum sander of the type including a backup pad, said suction plate having means for spacing said plate above the upper surface of said backup pad; a depending rim on the periphery of said plate defining a relatively narrow peripheral opening between the inside surface of said rim and the opposing surface of said backup pad; the lower, peripheral edge of said rim being coterminous, or nearly so, with the peripheral edge of the backup pad; said spacing means comprising leg members on the undersurface of said plate; said rim being directed outwardly and downwardly from the plate to define the narrow peripheral opening between said rim and the edge of the backup pad; at least one opening in the upper surface of the plate to provide communication between said peripheral opening and a vacuum source of said sander; and a plurality of projections on said inside surface of said rim to maintain space between the latter and the opposing surface of said backup pad.

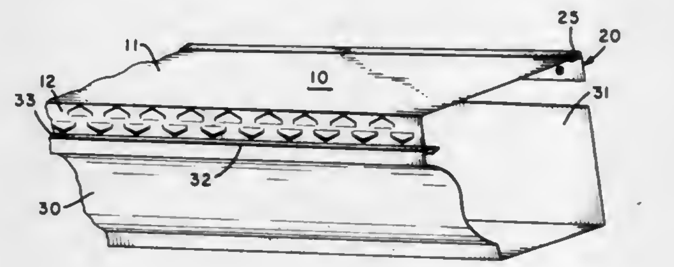
4,616,450
EAVES TROUGH/RAIN GUTTER SHIELD

George K. Shouse, 235 South Dr., Hampton, Ga. 30228, assignor to George K. Shouse and Joe B. Newsome, both of Hampton, Ga.

Filed Mar. 5, 1985, Ser. No. 708,499

Int. Cl.⁴ E04D *13/00*

U.S. Cl. 52—12 **20 Claims**



1. An eaves trough/rain gutter shield extending lengthwise to cover a length of rain gutter of the type having a longitudinal groove for the collection of rain comprising:

(a) a flat, solid, near horizontal top member having a width slightly larger than the width of the longitudinal groove of the gutter;

(b) a side member connected to said top member and extending substantially vertically downward to an outer top portion of said gutter, with a multiplicity of liquid guidance apertures and a multiplicity of liquid receiving apertures inscribed therein; wherein said liquid guidance apertures are spaced apart in a substantially horizontal upper row; wherein said liquid receiving apertures are spaced apart in a substantially horizontal lower row; wherein each liquid receiving aperture is located below and between two liquid guidance apertures; wherein all edges of said liquid guidance apertures are non-horizontal; wherein all edges of said liquid receiving apertures are non-horizontal; and wherein said each liquid guidance aperture is generally chevron-shaped, having an upper central point located from about 2.38125 mm (3/32 inch) to about 7.9375 mm (5/16 inch) below the juncture of said top member and said side member, with a left barrier edge extending downward and to the left from said point at an angle of from about 30 degrees to about 40 degrees from horizontal a distance of about 9.525 mm ($\frac{3}{8}$ inch) and then extending vertically downward a distance of about 3.175 mm ($\frac{1}{8}$ inch), with a right barrier edge extending downward and to the right from said point at an angle of from about 30 degrees to about 40 degrees from horizontal a distance of about 9.525 mm ($\frac{3}{8}$ inch) and then extending vertically downward a distance of about 3.175 mm ($\frac{1}{8}$ inch), the material therebetween being bent along a generally horizontal corner extending between the lowermost portions of said barrier edges and extending inward and upward at an angle of from about 30 degrees to about 45 degrees, forming a barrier tab; and

(c) attachment means for attaching said top member and side member above said gutter;

further provided that the outer surfaces of said top member and said side member are pre-weathered to durable, uniformly wettable surfaces.

4,616,451
TELESCOPING ROOF STRUCTURE

Sidney E. Glick, 15 Lafayette La., Cherry Hill, N.J. 08034

Filed Jun. 3, 1985, Ser. No. 740,258

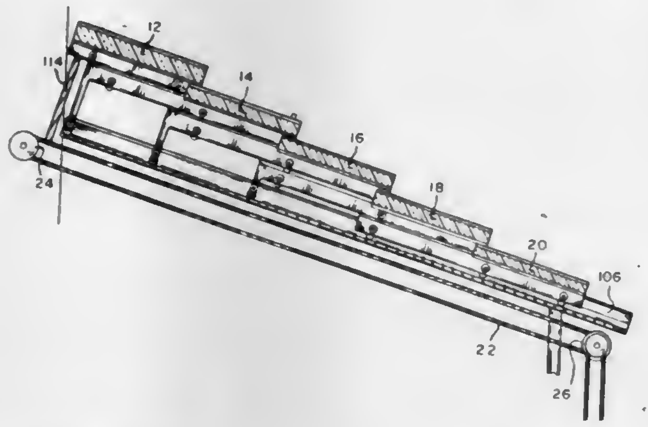
Int. Cl.⁴ E04B *1/346*

U.S. Cl. 52—66 **12 Claims**

1. A movable roof structure comprising:

a plurality of roofing units, each of said roofing units being comprised of at least one extrusion member and a pair of roofing panels, one of each of said pair of panels being connected to either side of said extrusion member;

wheel and track means carried by each of said extrusion members and being in cooperative relationship with an adjacent extrusion member of an adjacent roofing unit, each of said track means including means for preventing the wheel means from the next adjacent roofing unit from moving upwardly away from each said track means;



said roofing units being movable in telescoping relationship with respect to each other whereby said roof can be moved between an open position and a closed position and including spring biased detent means for maintaining said roofing units in said open and in said closed positions, and means for moving said roofing units.

4,616,452
PREFABRICATED CONSTRUCTIONS AND THEIR COMPONENTS

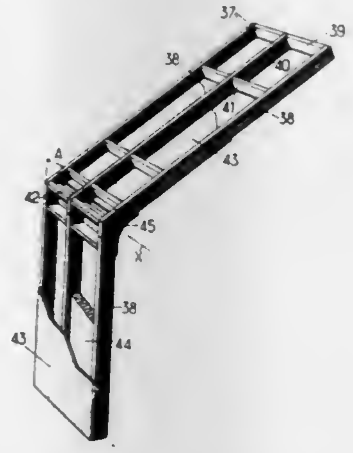
Guy Lemerre, 10 Rue Sadi-Carnot, 14000 Caen, France

Filed Jun. 6, 1984, Ser. No. 617,811

Claims priority, application France, Jun. 6, 1983, 83 09353; Jan. 27, 1984, 84 01323

Int. Cl.⁴ E04B *7/00*

U.S. Cl. 52—71 **14 Claims**



1. A prefabricated constructional component for an assembly formed by a flat bent self-supporting panel containing a heat insulating material and adapted to form a vertical section of the assembly,

said panel forming an outer wall pane of the assembly and a roof pane extending from this wall pane upwardly;

characterized in that said panel is in the form of a wooden frame (**37**) having a closed contour defining said two flat panes (**8,9**) which are joined together in a V shape,

this wooden frame being defined laterally by two opposed beams made at least partly of bonded laminated wood (**38**) and bent in a V shape, said beams having an opened out length greater than 5 meters, and each pane of said wooden frame being closed by two flat parallel facings (**43**) of which at least one is formed from plywood,

and further characterized in that each of the two bent beams (**38**) which laterally define the wooden frame is formed by an intermediate key made from bonded laminate wood and two straight wood stringers with the bonded laminate wood having laminations inclined with respect to a vertical mean plane of said outer wall pane at an angle equal to one half of an inclination angle of a mean plane of said roof pane, said intermediate key being located between said wood stringers and having a pair of opposed toothed surfaces, and said wood stringers each having a toothed end surface which is assembled to a respective one of said opposed toothed surfaces of said intermediate key by imbricating and sticking to form said bent beam.

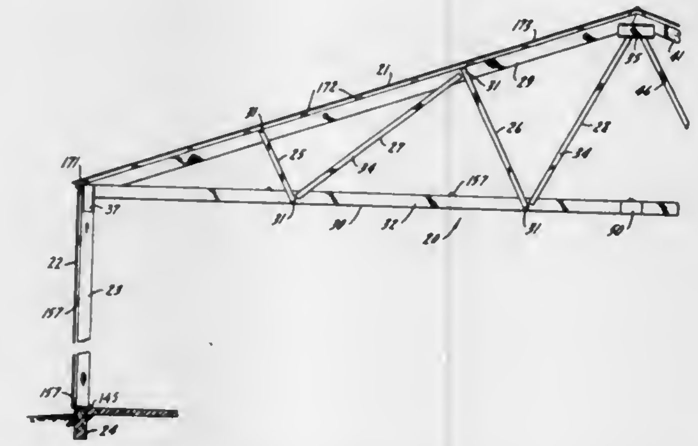
4,616,453
LIGHT GAUGE STEEL BUILDING SYSTEM

Isaac Sheppard, Jr., 1030 W. Elmwood, Clawson, Mich. 48017; Everett Jewell, 1302 Gaston Way, Dallas, N.C. 28034; Steven E. Levitz, 5108 Chestershire Ct., West Bloomfield, Mich. 48033, and Rudolph T. Taylor, 512 N. Vermont, Royal Oak, Mich. 48067

Filed May 20, 1982, Ser. No. 380,446

Int. Cl.⁴ E04B *7/02*

U.S. Cl. 52—93 **20 Claims**



1. A light gauge metal building system composed of roll-formed sheet metal structural components and associated fastening means, said system comprising, in combination,

(a) truss means having a plurality of member including top and bottom chords having generally C-shaped crosssection with top and bottom flanges interconnected by substantially flat web sections, the top and bottom chord members being arranged in intersecting relationship to each other with the top flange of the bottom chord being notched to receive the bottom flange and web of an interescting top chord so that the two chords can overlap and be securely fixed to each other with the top and bottom flanges thereof projecting away from the webs in the same direction,

(b) roof means including roll-formed roof purlins for fastening the truss means to one another in spaced apart relation,

(c) a wall system including a plurality of roll-formed generally C-shaped wall studs and a plurality of roll-formed horizontal support girts, each support girt being spaced a predetermined distance from the next one and securely fastened to the wall studs, and

(d) means for connecting the wall system to the roof means where the two intersect.

4,616,454
SLANT SERVICE RIG

John M. Ballachey; Leon V. Jankowski; C. W. Johnson; George S. Ward, all of Calgary, and John R. Ward, Ardmore, all of Canada, assignors to Suncor Inc., Calgary, Canada

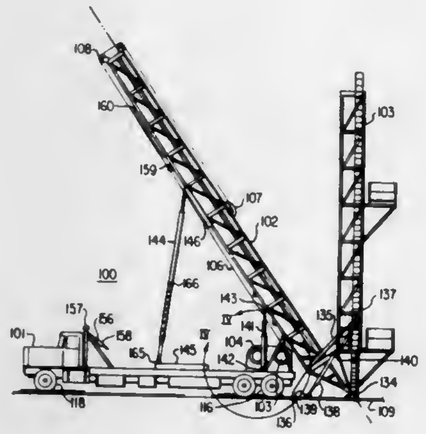
Filed Sep. 19, 1985, Ser. No. 777,720

Claims priority, application Canada, Feb. 19, 1985, 474,684

Int. Cl.⁴ E04H *12/34*

U.S. Cl. 52—115 **18 Claims**

7. A slant rig comprising a carrier, a mast mounted on said carrier having a series of attachment points and a base portion, frame members mounted between one of said series of attachment points and said carrier, said mast being rotatable about said one of said series of attachment points and being detachable from said frame members, the length of said mast between said one of said series of attachment points and said base portion defining a radial distance, said mast being operable to be moved from said one to a second of said series of said attachment points to increase or decrease said radial distance between said base portion and said second of said series of attachment points.



4,616,455
FASTENING ASSEMBLY

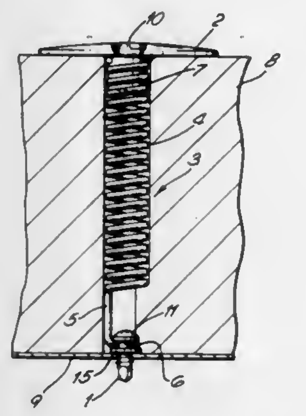
George D. Hewison, Hants, England, assignor to ITW Limited, Windsor, England

Filed Jan. 7, 1985, Ser. No. 689,410

Claims priority, application United Kingdom, Jan. 9, 1984, 8400388; May 25, 1984, 8413277

Int. Cl.⁴ E04B *5/00, 7/00;* **F16B** *23/00, 25/00*

U.S. Cl. 52—127.12 **13 Claims**



1. A fastening assembly for fastening a thick insulating layer onto a roof decking, said fastening assembly comprising:

a screw-threaded fastener;

a load distributing plate; and

an extensible resilient element,

said screw-threaded fastener including a shank having a first and second end, a driving head at said first end of said shank, a drill point at said second end of said shank, and a self-tapping screw thread formed around said shank;

said loading distributing plate having a lateral extent substantially greater than said screw-threaded fastener and said extensible resilient element, said plate being adapted to engage an upper surface of said insulation material to hold said insulation material and distribute a fastening load whereby said fastening assembly is prevented from pulling through said insulation material, said plate having a central through opening to allow relation of said screw-threaded fastener by a driving tool extending through said plate;

said extensible resilient element including opposed ends and coupling means located at said opposed ends and coupling said extensible resilient element to said first end of said shank of said screw-threaded fastener and to said load distributing plate, said coupling means permitting said screw-threaded fastener to rotate with respect to said load distributing plate to allow said fastener to be driven through and screw-threaded into said roof decking to fasten said insulation material to said roof decking.

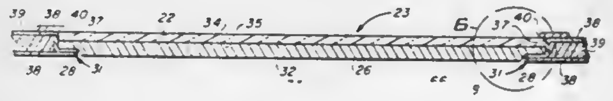
4,616,456
INSULATED WINDOW COVER APPARATUS

Gregory H. Parker, 6450 N. 78th St., #242, Scottsdale, Ariz. 85253

Continuation of Ser. No. 488,261, Apr. 25, 1983, Pat. No. 4,513,548. This application Jan. 9, 1985, Ser. No. 689,861

Int. Cl.⁴ E06B *3/26*

U.S. Cl. 52—202 **6 Claims**



1. An insulated window insert apparatus for use in a motor vehicle having at least one window in the top thereof, said at least one window including a window pane and a window pane holder, comprising:

a generally rectangular sheet of support material for blocking out light from the sun;

insulation means operably disposed proximate said sheet of support material for insulating an interior of said motor vehicle from external temperature conditions; and

means for covering said generally rectangular sheet of support material and said insulation means, said covering means including a bottom portion having a surface which is substantially consistent with said motor vehicle interior for aesthetic purposes and the like, wherein said sheet of support material includes a relatively resilient material capable of flexing and includes apparatus for removably attaching said insert apparatus near the periphery of said window, said insert apparatus being attached beneath said window pane.

4,616,457
ENHANCED SAFETY FLUE CONSTRUCTION

Andrew H. Yoder, Fair Play, S.C., and Richard A. Rhodes, Harrisonburg, Va., assignors to KemStone Manufacturing, Inc., Waynesboro, Va.

Filed Oct. 4, 1985, Ser. No. 784,655

Int. Cl.⁴ E04H *12/28*

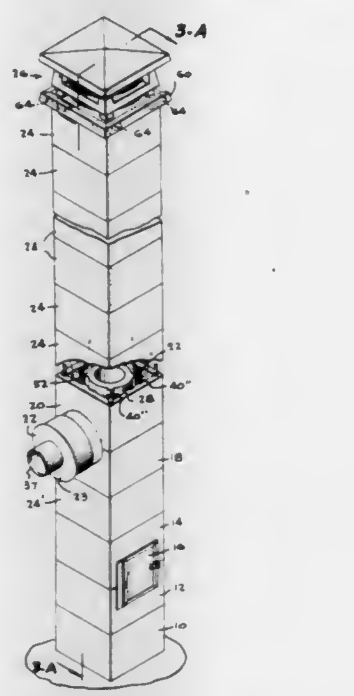
U.S. Cl. 52—218 **20 Claims**

10. A chimney block comprising:

block having parallel upper and lower surfaces and comprising a discrete outer block component and a discrete inner block component, said inner block component comprising a central combustion gas conduit having an outer surface;

said outer block component including outwardly positioned cool air downflow passageways, inner cool air upflow conduits defined by substantially the entire outer surface of the central combustion gas conduit and an inner surface of the outer block component;

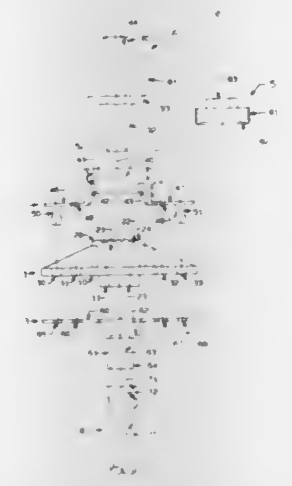
the outer block component also including four exterior vertical side panels joined at vertical edges to define corners as viewed from above to define a quadrilateral outer plan periphery and vertical internal diagonal panels bridging adjacent corners and having inwardly facing surfaces which define a smaller approximately quadrilateral shaped opening in which said central combustion gas conduit is positioned and wherein said central combustion gas conduit includes tapered V-shaped vertical positioning ridges extending into mating slots in said diagonal panels and wherein said cool air downflow passageways comprise a space outwardly of each diagonal panel and inwardly of the corner bridged by each such diagonal panel.



4,616,458
PROTECTIVE APPARATUS FOR TENDONS IN TENDON TENSIONING ANCHOR ASSEMBLIES

Edgar A. Davis, San Jose; Rose M. Dexter, Los Gatos, and John D. McCarthy, San Jose, all of Calif., assignors to VSL Corporation, Los Gatos, Calif.

Filed Jul. 1, 1985, Ser. No. 750,293
Int. Cl.⁴ E04C *3/26, 5/08*
U.S. Cl. 52—230 **14 Claims**

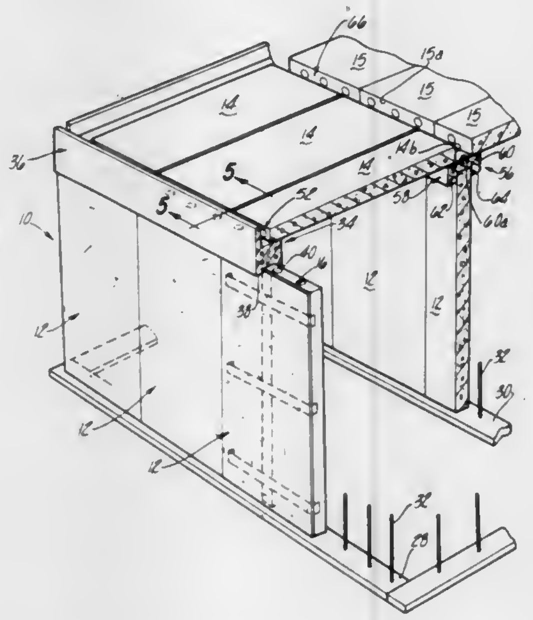


1. A protective apparatus for protecting an exposed end of a tendon in a tendon tensioning anchor plate having a base member and a tubular member extending from said base member with a central bore located therein, comprising:

a top member having a collar with a central bore located therein, said central bore of said collar having a predetermined inside diameter for permitting said collar to be closely fitted over and around said tubular member of said anchor plate;
means insertable within said collar for covering one end of said bore in said tubular member in said plate in a watertight fashion;
a bottom member having a hollow tubular member extending therefrom with a central bore located therein for use in forming a watertight seal with a tendon inserted therein; and
means insertable through a hole in said base member of said anchor plate for attaching said top and bottom members together with said anchor plate located therebetween.

4,616,459
BUILDING CONSTRUCTION USING HOLLOW CORE WALL

Calvin Shubow, 30995 Hunter's Dr., Farmington, Mich. 48024
Continuation-in-part of Ser. No. 268,598, May 29, 1981, Pat. No. 4,461,130. This application Jun. 11, 1984, Ser. No. 619,627
Int. Cl.⁴ E04H *1/00*
U.S. Cl. 52—309.12 **17 Claims**



1. A building construction comprising:

(A) at least one precast concrete wall slab positioned vertically and having a plurality of generally parallel core channels extending vertically therethrough from the lower edge thereof to the upper edge thereof between opposite side faces thereof;
(B) at least one precast concrete bond beam positioned on and extending generally horizontally along the top edge of said wall slab and having at least one core channel extending vertically therethrough and aligned with a selected core channel in said precast slab to form a continuous vertical core passage extending from the upper face of said bond beam substantially to the lower edge of said wall slab;
(C) a vertically extending reinforcing rod positioned in said continuous core passage and extending within said core passage from substantially the lower edge of said wall slab to the upper face of said bond beam;
(D) poured concrete filling said core channel in said precast bond beam to lock said reinforcing rod to said bond beam and filling said core channel in said precast slab to lock said reinforcing rod to said precast slab and form a concrete, rod-reinforced column extending from substantially the lower edge of said wall slab to the upper face of said bond beam; and
(E) at least one precast concrete floor slab extending horizontally and at right angles with respect to the plane of said wall slab and resting at one end thereof on said bond beam with its vertical end edge disposed intermediate the width of said bond beam.

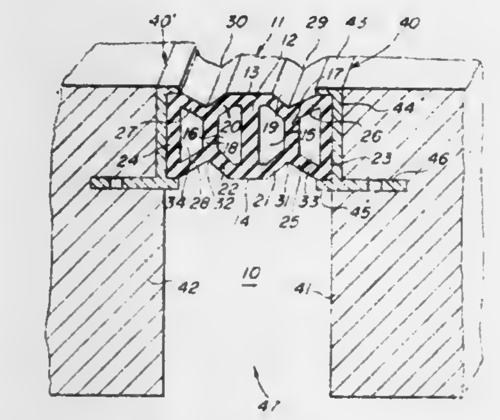
4,616,460
ELASTOMERIC GLANDS

John D. Nicholas, Tucker, Ga., assignor to MM Systems Corporation, Tucker, Ga.

Filed Dec. 3, 1985, Ser. No. 804,046
Int. Cl.⁴ E01C *11/10;* **F16J** *15/10*
U.S. Cl. 52—396 **18 Claims**

1. An elastomeric gland for use inside a movement tolerance

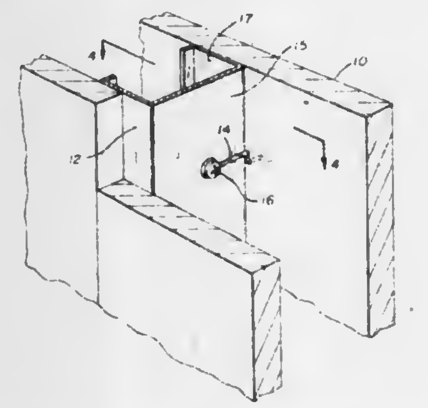
space between relatively movable bodies, said gland comprising: a generally octagonal wall member tubular longitudinally of said gland and an intermediate strut wall interconnecting a first pair of side walls of said octagonal wall member medially of said first pair of side walls inside said octagonal wall member thereby producing an I-beam aspect with said first pair of side walls prior to said octagonal wall member being compressed, a second pair of side walls of said octagonal wall member being spaced oppositely of said intermediate strut wall from opposite sides of said intermediate strut wall, and opposite lateral ends of said first and second pairs of side wall of said octagonal wall member being interconnected by third and fourth pairs of side walls of said octagonal wall member; and side end and slanted connecting structure including, opposite side end means to be against said relatively movable bodies when said gland is inside said movement tolerance space, and two pairs of slanted intermediate connecting walls interconnecting said second pair of side walls of said octagonal wall member and said opposite side end means, and said slanted intermediate connecting walls being spaced outwardly apart from one another in said pairs a progressively increased distance leading from said octagonal wall member, for supporting said octagonal wall member and transmitting thrust to move said second pair of side walls of said octagonal wall member toward said intermediate strut wall having said third and fourth pairs of side walls of said octagonal wall member flex reaching from said opposite lateral ends of said first pair of side walls of said octagonal wall member and ultimately, when said octagonal wall member is fully compressed, be in contact with said intermediate strut wall along with said second pair of side walls of said octagonal wall member, with said intermediate strut walls and said first pair of side walls of said octagonal wall member still appreciably preserving said I-beam aspect.



4,616,461
WALL PANEL ATTACHMENT HOOK

Alan C. Wendt, Barrington, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Dec. 30, 1983. Ser. No. 566,912
Int. Cl.⁴ E04B *5/52*
U.S. Cl. 52—481 3 Claims

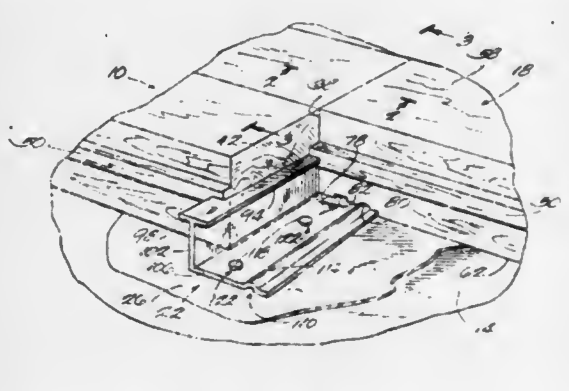


1. A wall construction system comprising in combination an aligned row of contiguous panels, a plurality of vertical studs disposed in abutting relationship with the panels at the joints between said contiguous panels and at intermediate locations between the joints, and a wire hook which attaches a panel to an intermediate stud, said hook comprising a shank juxtaposed against an intermediate stud face normal to a panel and fastened to said face and an arcuate talon curving into the core of a panel from the juncture of the stud and the panel.

4,616,462
FASTENER FOR FLOORING SYSTEMS

Carl W. Abendroth, 210 Crystal Ave., Crystal Falls, Mich. 49920

Filed Oct. 1, 1984, Ser. No. 656,699
Int. Cl.⁴ E04C *1/40;* **E04B** *2/04*
U.S. Cl. 52—509 **15 Claims**

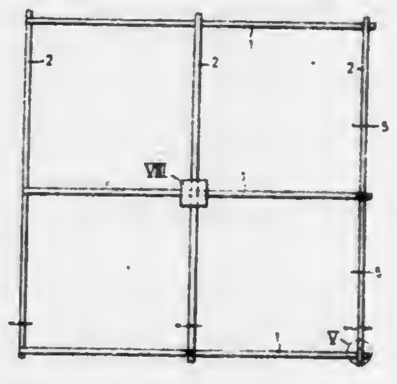


1. A flooring system comprising a foundation, a plurality of adjacent floorboards, each of said floorboards including a generally vertical side including a generally horizontal slot, and a base adjacent said foundation and including therein an opening spaced from said side, a clip including a generally horizontal upper portion received in said slot in one of said floorboards, a generally vertical portion, a lower generally horizontal base portion extending between said foundation and said base of said one floorboard, and a projection extending outwardly on said base portion, and a fastener in said base portion of said clip for securing said clip to said foundation, said fastener including a head projecting above said base position of said clip and received in said opening in said one of said floorboards.

4,616,463
SUSPENDED CEILING

Heinz Kagemann, Am Heidekamp 7, D-3380 Goslar 1, Fed. Rep. of Germany

Filed Nov. 28, 1984, Ser. No. 675,962
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1983, 3343468
Int. Cl.⁴ E04B *5/52*
U.S. Cl. 52—665 **12 Claims**



1. A dropped ceiling, comprising:

a plurality of upper and a plurality of lower crosspiece elements having, respectively, top and bottom edges and being adapted to cooperatingly interact in crossing and edgewise position with respect to one another for forming a grid with open spaces which in comparison with the dimensions of said crosspiece elements are relatively large, said crosspiece elements including respective slot-like transverse apertures which extend in opposite senses in the two pluralities of said elements, in each case over approximately half the height of the associated crosspiece element and with adjacent ones of said apertures in each cross piece element disposed at a distance from each other corresponding to the desired grid dimension of the ceiling, so as to interconnect said elements by way of a cross-lap or like joint;

each of said crosspiece elements having the structure of a hollow chamber profile made of synthetic plastic material, with each chamber extending in the longitudinal direction of the respective crosspiece element;

at least said top edge of each upper and lower crosspiece element being provided at least in part with at least one upwardly directed opening extending longitudinally of that element, the uppermost portion of each of the two lateral walls of each upper and lower crosspiece element that define the boundaries of the uppermost chamber of that crosspiece element being bent over and down into said uppermost chamber thereof in substantially parallel relation to each other and said walls to define between the two bent down wall portions a space constituting said at least one opening, and each bent down wall portion being spaced from the adjacent remainder of the same wall to define therebetween a respective downwardly open recess;

a plurality of attachment members adapted to be releasably interconnected with said upper crosspiece elements and to be moved along the latter, each attachment member including a suspension rod having a lower end and carrying at said lower end an adapter constructed for insertion into a respective opening of a respective crosspiece element, and said adapters being operable to coact with the downturned edges of the associated bent down wall portions to firmly suspend said upper crosspiece elements from said attachment members; and

a plurality of bridge components each adapted to be located at a respective crossing region of an upper and a lower crosspiece element, each of said bridge components including a plate which at least corresponds in width to the width of the lower crosspiece element and has at least two projecting parts depending therefrom, each projecting part having a narrow portion carried by said plate and a wide portion carried by said narrow portion, and the thickness of each of said narrow portions being somewhat less and the thickness of each of said wide portions being somewhat greater than the width of said at least one opening between said bent down wall portions of said lower crosspiece element, whereby with said bridge components being disposed across the respective crossing regions of said upper and said lower crosspiece elements, transversely of and above the former and longitudinal of and above the latter, said wide portions of the associated projecting parts can be inserted into the respective openings of said lower crosspiece elements with a snap fit to underlie the lowermost edges of the associated bent down wall portions and firmly secure said lower crosspiece elements to said upper crosspiece elements.

4,616,464
COMPOSITE FIRE-RESISTANT CONCRETE/STEEL COLUMN OR POST

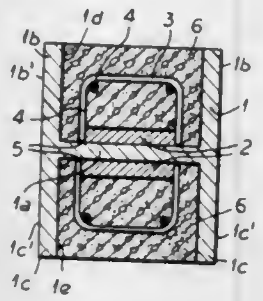
Jean-Baptiste Schleich, Kockelscheuer; Erwin Lahoda, Dahlem, and Jean-Paul Lickes, Kayl, all of Luxembourg, assignors to Arbed S.A., Luxembourg, Luxembourg

Filed Aug. 9, 1984, Ser. No. 639,375

Claims priority, application Luxembourg, Aug. 12, 1983, 84966

Int. Cl.^{4} E04C *3/34*

U.S. Cl. 52—723 **19 Claims**



1. A fire-resistant composite structural element, comprising:

a one-piece steel structural shape comprising at least one pair of flanges bridged by a web having a web surface and defining between said flanges a channel;

a flat steel plate having a plate surface affixed to the web surface and extending over at least part of the length of said structural shape within said channel, the plate being completely out of contact with the flanges and having opposite edges spaced inward from the respective flanges;

steel reinforcement secured substantially only to the plate; and

a body of concrete at least partially filling said channel, imbedding the reinforcement, and affixed to said structural shape while enclosing said plate and filling between the plate edges and said flanges, outer surfaces of said flanges being free from concrete covering.

4,616,465
STORAGE VESSEL AND METHOD OF ASSEMBLY

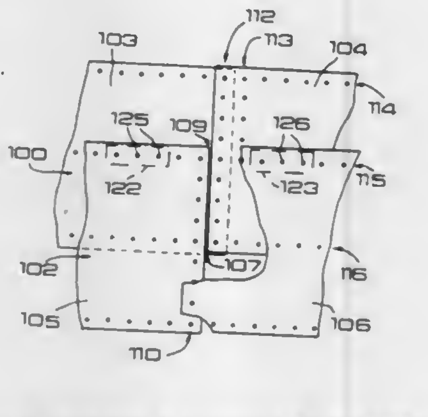
Stuart D. Byers, and John F. Clark, both of Mississauga, Canada, assignors to Crophandling Systems Limited, Mississauga, Canada

Continuation-in-part of Ser. No. 516,987, Jul. 25, 1983. This application Jul. 27, 1984, Ser. No. 635,049

Claims priority, application Canada, Mar. 22, 1983, 1,193,821

Int. Cl.^{4} E04B *1/32;* **B65D** *90/02*

U.S. Cl. 52—748 **5 Claims**



1. A method of building a cylindrical storage vessel from a plurality of flangeless plates, which comprises the following steps:

(a) providing a foundation plinth of concrete cast into a first ring of steel plates having inner and outer surfaces;

(b) forming on the plinth a second row of rectangular steel plates, each having respective upper margins, lower margins, and right-hand and left-hand edges and edge margins, and inner and outer surfaces, into a continuous ring by overlapping and bolting together right-hand and left-hand edge margins, respectively, of adjacent plates so as to have surface to surface contact in the overlapped region between adjacent pairs of plates;

(c) raising said second ring just formed using lifting jacks, and similarly forming on the plinth a further row of similar rectangular steel plates into a continuous ring;

(d) said second and all further rings of plates being raised in such a manner that the upper margins of the plates in a lower ring overlap the lower margins of the plates in a next successive higher ring of plates; so as to have surface to surface contact in the overlapped region between adjacent rings of plates;

(e) positioning said second and all further rings of plates so that the plates in each ring are staggered with respect to the plates in the next successive higher ring of plates so that an upper portion of one side edge of each of said plates in a first ring of plates is in direct edge to edge abutment with a lower portion of the opposite side edge of each of said plates in the next successive higher ring of plates respectively;

(f) bolting all of said overlapped regions together; and

(g) repeating steps (c) to (f) until the required number of rings of plates have been formed and assembled one to another; and wherein:

in step (d), and for at least two adjacent lower and higher rings of plates, said adjacent rings are so positioned that the extent of the surface to surface contact between the upper margins of the plates of the lower ring of said at least two adjacent rings of plates and of the lower margins of the higher ring of said at least two adjacent rings of plates is more than half of the vertical height of each of said plates.

4,616,466
CAPPING APPARATUS

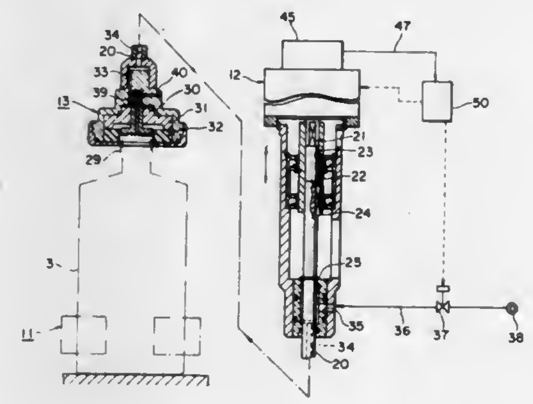
Hideo Tanaka, and Shiaru Muranaka, both of Kanazawa, Japan, assignors to Shibuya Kogyo Co., Ltd., Japan

Filed Nov. 8, 1984, Ser. No. 670,429

Claims priority, application Japan, Nov. 15, 1983, 58-214428

Int. Cl.^{4} B67B *3/20;* **B65B** *7/28*

U.S. Cl. 53—75 **3 Claims**



1. Apparatus for capping a container by having a cap screwed onto a mouth portion of said container at a predetermined tightening torque, comprising:

carrier means for carrying thereon said container along a predetermined path;

holding means for releasably holding a cap to be applied to said container, said holding means being movable between an inoperative position where said holding means is located away from said container and an operative position where said holding means is located closer to said container for applying said cap to said container;

torque applying means for applying a torque to said holding means when said holding means is located at said operative position; and

control means for controlling the level of said torque applied to said holding means such that during a first stage of capping, said torque has a first level high enough to achieve proper orientation of said cap on said container, during a second stage subsequent to said first stage said torque has a second level which is lower than said predetermined tightening torque, and during a third stage subsequent to said second stage, said torque has said predetermined tightening torque level.

4,616,467
MACHINE FOR INSERTING TABS IN CONTAINER PACKS

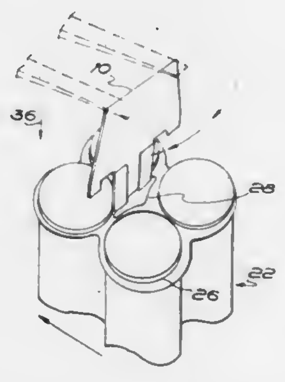
Michael Brain, 72 Holmwood Avenue, Leeds LS64NJ; Richard D. Wade, "Badgerstone", Langford Ride, Borley in Wharedale, Yorkshire, and Brian Barker, 2 Church Lane, Corringham, Gainsborough Lincs DN215RA, all of England

Filed May 18, 1984, Ser. No. 612,108

Claims priority, application United Kingdom, May 21, 1983, 8314146

Int. Cl.^{4} B65B *61/14*

U.S. Cl. 53—134 **18 Claims**



1. A machine for inserting a tab in an assembly of containers held together by a holding device which has at least one aperture comprising:

(a) means for folding in two a cut and creased blank which forms the tab;

(b) means for folding flaps of the blank onto tongues of the blank;

(c) means for inserting the tongues and folded flaps of the blank into said aperture or apertures in the holding device so that the flaps will spring outwardly and engage under the holding device connecting the tab to the assembly;

(d) means for effecting the above operations on a repeating basis so that tabs are sequentially erected and inserted in respective assemblies which travel as a queue relative to the means for inserting; and

(e) means for transporting the blank after the folding steps (a) and (b) from a receiving station of the means for transporting to the inserting means, wherein said means for transporting comprises a rotatable drum having angularly arranged holders for respective blanks, said holders each comprising a pair of radially arranged plates.

4,616,468
HARVESTING/PACKING SYSTEM

Miguel A. Munoz, 248 E. Gillett Rd., El Centro, Calif. 92243

Filed Jun. 7, 1984, Ser. No. 618,338

Int. Cl.^{4} A01D *67/00;* **B65B** *67/00*

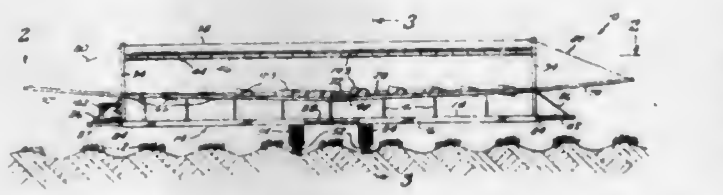
U.S. Cl. 53—391 **26 Claims**

1. For the harvesting and packing or produce grown in low rows, a moveable on-site harvesting/packing plant comprising:

a frame elevated above and transversely extensive over said crop rows and moveable along said rows,

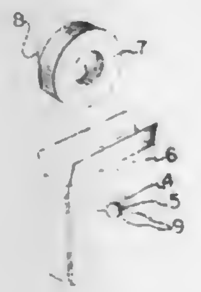
said frame supporting a floor area and table area elevated relative to said floor area,

said frame defining discrete work stations of said plant, said work stations comprising a picking station, a station for the assembly of packing boxes, and a packing station, said picking station comprising said table area and a pair of inclined transverse wings extending laterally outwardly and upwardly from opposite sides of said table area, whereby pickers walking along with said plant as it is being moved along said crop rows may place harvested produce on said table area and on said wings, and such produce placed on said wings will roll down said wings onto said table area owing to the incline of said wings.



4,616,469
METHOD FOR PRODUCING A PACKAGE

Öystein Skalleberg, Järfälla, Sweden, assignor to Skaltek AB, Kungsangen, Sweden
PCT No. PCT/SE81/00124, § 371 Date Jan. 20, 1982, § 102(e) Date Jan. 20, 1982, PCT Pub. No. WO81/03319, PCT Pub. Date Nov. 26, 1981
Continuation of Ser. No. 346,069, Jan. 20, 1982, abandoned. This PCT application Apr. 24, 1981, Ser. No. 732,904
Claims priority, application Sweden, May 21, 1980, 8003826
Int. Cl.⁴ B65B *61/00*
U.S. Cl. 53—410 **6 Claims**

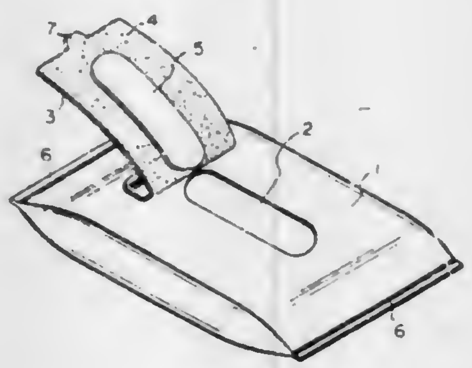


1. In the packaging of an elongated article, especially a length of electrical cable (8), wherein the elongated article is provided in a coiled or ring form (7) of a given outer radius and having a center opening therein, a method of packaging such elongated article to permit alternative modes of dispensing the elongated article comprising:

(a) providing a pair of substantially square, flat panels of selfsupporting rigidity;
(b) providing each said panel with a line of perforation continuously encompassing a portion of the respective panel having a radius at least as great as said given radius;
(c) orienting said panels in spaced, substantially parallel relationship and introducing a ring (7) of such elongated article, without a central core support in its center opening, between said parallel panels with the center axis of the ring (7) substantially perpendicular to said panels;
(d) subsequently introducing a substantially tubular means (10) through said encompassed portion of each of said parallel panels and the intervening center opening of the ring (7) disposed therebetween; and
(e) releasably securing said tubular means (10) in the introduced position in relation to the ring (7) and said parallel panels to provide a central core support for supporting the ring (7) with respect to the parallel panels whereby the contents of the ring (7) may be subsequently removed from the ring either by breaking out the portions of said panels within the confines of said perforations to form a reel on which the ring (7) is coiled for access to the outermost turns of the ring (7) or by removing said tubular means from the ring (7) and said panels for access to the innermost turns of the ring (7).

4,616,470
METHOD OF FORMING RE-SEALABLE DISPENSER-CONTAINER

Konji Nakamura, 3-7, Nishiawaji 6-chome, Higashiyodogawa-ku, Osaka, Japan
Continuation of Ser. No. 320,553, Nov. 12, 1981, Pat. No. 4,538,396. This application Dec. 18, 1984, Ser. No. 683,178
Claims priority, application Japan, Dec. 3, 1979, 54-156676; Dec. 3, 1979, 54-167459[U]; May 22, 1980, 55-70397[U]; Aug. 13, 1980, 55-111380
The portion of the term of this patent subsequent to Sep. 3, 2002, has been disclaimed.
Int. Cl.⁴ B65B *61/18*
U.S. Cl. 53—412 **3 Claims**

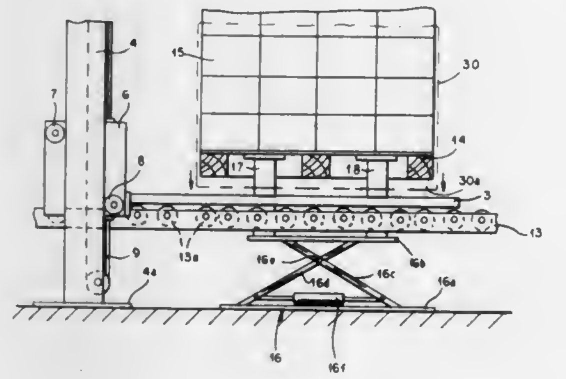


1. A continuous process for producing from a continuous flexible sheet a re-sealable dispenser container formed in a rectangular shape and having at least one opening, and being wrapped around a plurality of solid sheet-like materials for cosmetic or toilet use contained therein, comprising the steps of:

continuously feeding said continuous flexible sheet of impervious material in a substantially horizontal plane;
periodically weakening a line drawn in a closed elongated shape at a central portion in said continuous flexible sheet;
periodically disposing a flexible flap from above, the flap having an adhesive surface covering substantially one entire side of the flap, the flap also having an uncoated tab, on the upper surface of said continuous sheet in such a manner that the flap contacts the upper surface of said sheet and covers said weakening line, adhering the adhesive surface of said flap to the surface of said elongated shape;
periodically fixing one end portion of said flap to said continuous sheet;
guiding said continuous sheet by means of a guide unit comprising a plurality of guide rollers to invert said continuous sheet such that the lower surface becomes the new upper surface;
continuously moving said continuous sheet in a substantially horizontal plane;
periodically disposing said sheet-like materials for cosmetic or toilet use on the new upper surface of said continuous sheet at a position corresponding to said flap when the continuous sheet is moved in said substantially horizontal plane;
said weakening, flap disposing and fixing steps being continuously performed on said continuously running sheet;
continuously wrapping said continuous sheet around said sheet-like materials for cosmetic or toilet use with the continuous sheet so folded that longitudinal edges of said continuous sheet are brought together upon each other at the central portion of said continuous sheet;
continuously heat sealing the longitudinal edges of the continuous sheet to each other to form a continuous longitudinal heat seal and heat sealing said sheet transversely to form a succession of transversely sealed portions; and
periodically cutting said continuous sheet at said transversely sealed portions to provide a plurality of separate re-sealable dispenser containers.

4,616,471
METHOD OF PACKAGING A PALLET-SUPPORTED STACK OF GOODS

Reiner W. Hannen, Goch, Fed. Rep. of Germany, assignor to MSK-verpackungs-Systeme Gesellschaft mit beschrankter Haftung, Kleve, Fed. Rep. of Germany
Filed Aug. 3, 1984, Ser. No. 637,522
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1983, 3327996
Int. Cl.⁴ B65B *53/06*
U.S. Cl. 53—442 **3 Claims**

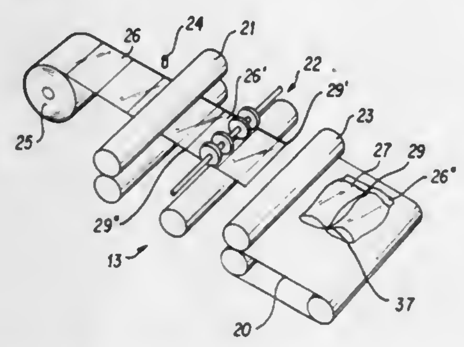


1. A method of tightly packaging a load including a stack of goods mounted on a pallet, comprising the steps of:

(a) moving the load to be packaged onto a supporting surface inside a heating zone;
(b) elevating said load above said supporting surface;
(c) pulling a hood of heat-shrinkable plastic foil from above over the elevated load, with a lower rim of said hood projecting downward below the underside of said pallet;
(d) initially blowing hot gases substantially only against the lower hood rim from an annular burner surrounding the rim in the heating zone and thereby heating only said lower rim to shrinking temperature for contracting same around the periphery of said pallet;
(e) with said rim still at substantially shrinking temperature clamping bent-over portions thereof against the underside of said pallet; and
(f) only thereafter shrinking the remainder of said hood around said load by raising the annular burner up around the load.

4,616,472
METHOD AND APPARATUS FOR LOADING SIDE-SEAL BAGS

Joseph E. Owensby, Spartanburg; Frederick A. Dobbins, Lyman, and Billy W. Austin, Duncan, all of S.C., assignors to W. R. Grace & Co., Cryovac Div., Duncan, S.C.
Filed Oct. 10, 1985, Ser. No. 786,383
Int. Cl.⁴ B65B *43/34, 43/36, 43/16, 43/22*
U.S. Cl. 53—459 **10 Claims**

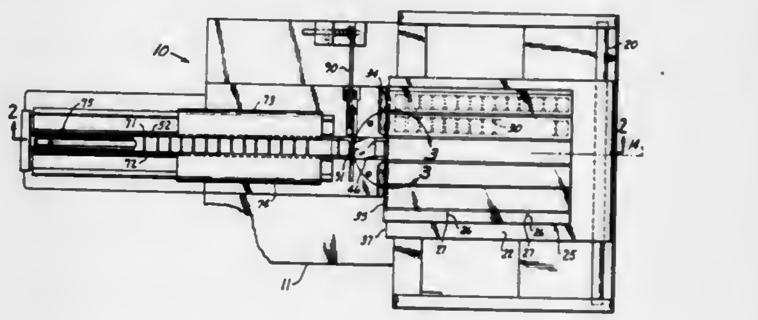


1. A method of simultaneously loading products into each bag in a plurality of bags comprising the steps of:

(a) providing a chain of individually separable side-seal bags, each bag having a lip which can be gripped so that the mouth of the bag is unobstructed and can be readily opened;
(b) feeding a plurality of bags from the chain, the plurality lying in a first horizontal plane;
(c) separating the plurality of bags from the chain and partially separating the bags within the plurality from each other;
(d) advancing said plurality of bags to a product loading station;
(e) holding said plurality in the first horizontal plane at the loading station while the immediately preceding plurality of bags is being loaded;
(f) gripping the lip of each of the bags in the plurality so that the mouths of the bags are not obstructed;
(g) after the preceding bags have been loaded and removed, moving the plurality of bags upwardly to a second horizontal plane;
(h) opening each of the plurality of bags with a stream of air;
(i) guiding a product into each bag; and,
(j) removing the plurality of loaded bags from the loading station and separating each bag in the plurality from the other.

4,616,473
APPARATUS TO PLACE MICROFILM FRAMES IN JACKETS

Paul L. Hodges, Claremont, and David R. Duerr, Sugarloaf, both of Calif., assignors to Data Conversion Inc., Pomona, Calif.
Filed Aug. 16, 1985, Ser. No. 766,771
Int. Cl.⁴ B65B *63/00, 43/26*
U.S. Cl. 53—520 **7 Claims**



1. In apparatus for inserting microfilm frames into a jacket, said jacket being the type having a top and bottom sheet joined to ribs at spaced intervals to leave between them channels having a width for containing microfilm frames, there being an entry slot through one of said sheets for each channel, each microfilm frame having a width somewhat less than the width of the channel, said microfilm frames being initially intended for individual or plural insertion into one or more of said channels, said apparatus including projection means to project an individual microfilm frame, a platform to support a jacket into which a microfilm frame is to be inserted, and a cutter to sever the strip at a selected location, the improvement comprising:

a feed structure having a guide passage therethrough, with which a channel of the jacket will be aligned when a microfilm frame(s) is to be inserted, said guide passage having transverse dimensions such as to guide the microfilm frame along a path toward said channel;
a strip passage and a pusher passage, both smoothly merging with said guide passage and intersecting one another at a junction to form an acute angle between them;
grip means slidably mounted in said strip passage, adapted to grip an end of a strip which is slidably fitted in said strip passage so as to move it toward and away from said guide passage; and
a pusher member slidably fitted in said pusher passage and adapted to press against the end of a microfilm frame(s) which is disposed in said guide passage, said strip and said pusher member mutually excluding the other from said guide passage when present at said junction.

4,616,474

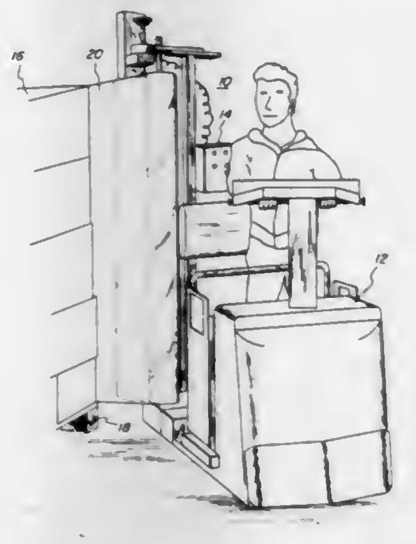
MOBILE FILM WRAPPING APPARATUS

Edmond Morley, Chester; Neil DiLorenzo, Campbell Hall, and James Karras, Kerhonkson, all of N.Y., assignors to Wrap & Roll, Inc., Fort Lee, N.J.

Filed Apr. 25, 1985, Ser. No. 727,374

Int. Cl.^{4} B65B *13/10*

U.S. Cl. 53—556 **4 Claims**



1. Mobile film wrapping apparatus for dispensing heated stretchable film and rapidly wrapping the film about stationary goods, comprising:

first means for holding a supply roll of stretchable film in a substantially vertical orientation for film dispensing, said first means being adjustable to accommodate film rolls of different heights;

second means for controlling the speed at which said film is dispensed from said supply roll, said second means comprising an electrically powered adjustable tension brake;

a self-contained heated roller, about which the film from the supply roll is partially wound, for heating said film to facilitate stretching of said film prior to the film being wrapped around said goods, said heated roller being at least partially DC powered and mounted for rotation about a substantially vertical axis, said rotation resulting from contact with said film;

said heated roller comprising: a hollow cylindrical tube constructed of heat conducting material having a top end cap and a bottom end cap, the tube and end caps forming an interior cavity which serves as a reservoir for heating fluid, a heating element mounted within said cavity for immersion in said fluid, said heating element comprising a first DC heating element and a second auxiliary AC heating element, said auxiliary heating element being selectively connectable to an AC power source for rapid heat-up of the fluid, and a thermostatic switch mounted within said cavity for sensing the temperature of the fluid, said heating elements and thermostatic switch being rotatable along with said tube about said substantially vertical axis;

relay means for activating said DC heating element when said thermostatic switch senses that the temperature of the fluid has fallen below a preselected level, said relay means simultaneously activating said AC heating element when said AC heating element is connected to an AC power source;

an upper shaft attached to said top end cap and extending upwardly therefrom and a lower shaft attached to said bottom end cap and extending downwardly threfrom, said shafts cooperating with bearing units mounted on a common support means to permit said tube to freely rotate about said substantially vertical axis, and a slip-ring assembly associated with one of said shafts for connecting the DC heating element and thermostatic switch within said tube to an electric power supply;

common support means for supporting said first means, second means and said heated roller;

third means for attaching said common support means to a self-propelled vehicle; and

a self-propelled, operator driven vehicle, said vehicle being powered by a DC power source, said DC power source also supplying power to said tension brake, said DC heating element and said thermostatic switch, whereby goods can be rapidly wrapped with prestretched film under tension by driving said vehicle and attached film wrapping apparatus around said goods.

4,616,475

PACKAGE FORMING APPARATUS

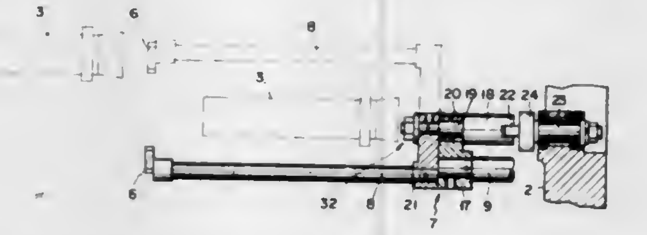
Tomizou Nagata, Tokyo, Japan, assignor to The Japan Tobacco & Salt Public Corporation, Tokyo, Japan

Filed Feb. 27, 1985, Ser. No. 706,335

Claims priority, application Japan, May 22, 1984, 59-101729

Int. Cl.^{4} B65B *19/24*

U.S. Cl. 53—575 **6 Claims**



1. A package forming apparatus comprising:

a shaft;

a stationary body for rotatably supporting said shaft;

a rotary drum-like member provided on said shaft for rotation in unison therewith;

a plurality of cylindrical core members provided on said rotary drum-like member for movement in axial and radial directions, sheet material being wound on the outer periphery of said cylindrical core members, said core members being grouped into first and second groups spaced apart from each other in the axial direction of the shaft;

an extension shaft provided on said rotary drum-like member for movement in the axial direction;

a pushing member provided at one end of said extension shaft and capable of being inserted into the core member;

bottom folding means for forming the bottom of a package by folding an end portion of the sheet material wound on said core member in co-operation with said pushing member inserted into said core member;

a sliding shaft provided on said rotary drum-like member for movement in the axial direction;

first driving means for moving said sliding shaft in the axial directions;

an arm member having one end secured to one end of said sliding shaft;

a socket member having an intermediate portion rotatably supported at the other end of said arm member;

second driving means provided for engagement and disengagement with respect to said rotary drum-like member and rotating said socket member when in engagement therewith;

a crank arm having one end secured to one end of said socket member, the other end of said extension shaft being secured to the other end of said socket member;

coupling means for snap coupling together said arm member and crank arm at a predetermined rotational positon; and

means for moving the core members of the first and second groups in the axial direction of the shaft to change the positions of the core members to each other.

4,616,476

CYLINDER DRIVING APPARATUS

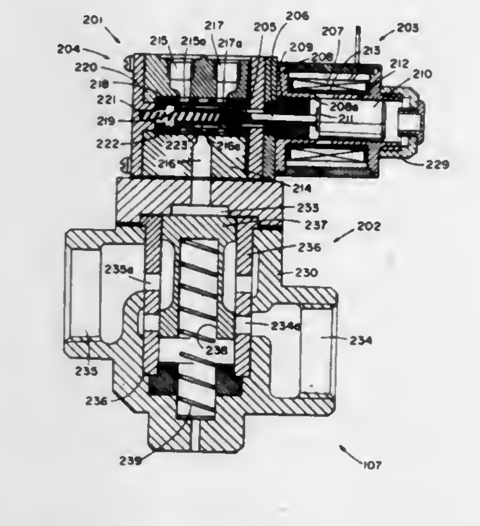
Naotake Oneyama, Kashiwa, and Akibisa Yoshikawa, Mastudo, both of Japan, assignors to Shokestu Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 266,498, May 22, 1981, abandoned. This application Apr. 12, 1984, Ser. No. 599,592

Claims priority, application Japan, May 30, 1980, 55-76064

Int. Cl.^{4} F15B *1/02, 13/043, 13/044*

U.S. Cl. 60—414 **8 Claims**



1. A cylinder driving apparatus for driving a load upwardly and downwardly, said cylinder driving apparatus comprising:

(a) a pneumatic cylinder divided into a first chamber and a second chamber by a piston, said cylinder further comprising a load supporting rod operatively connected to said piston, said cylinder being arranged such that an increase in pressure in said first chamber causes the rod to move upwardly and an increase in pressure in said second chamber causes the rod to move downwardly;

(b) a pressure accumulation tank;

(c) means for supplying pressurized air at a selected pressure to said pressure accumulation tank;

(d) a balance pipeway communicating said first chamber to said pressure accumulation tank;

(e) second means for generating a selectively variable first energizing current;

(f) third means for generating a second energizing current;

(g) a first electromagnetic proportional flow control valve operatively disposed in said balance pipeway, said first electromagnetic proportional flow control valve being selectively movable between a first position in which it prevents communication between said first chamber and said pressure accumulation tank and a second position in which it regulates air flow between said first chamber and said pressure accumulation tank in proportion to said first energizing current;

(h) a recycling pipeway communicating said second chamber to said pressure accumulation tank; and

(i) a pressure control valve mechanism operatively disposed in said recycling pipeway, said pressure control valve mechanism being selectively movable in response to said second energizing current between a first position in which it communicates said second chamber with the atmosphere and a second position in which it blocks flow through said recycling pipeway,

wherein said pressure control valve mechanism comprises:

(a) a three-port electromagnetic valve for pneumatic charge and discharge and

(b) a pilot type pressure reduction valve for providing pilot pressure, said pilot type pressure reduction valve including pressure reduction valves set at different pressure levels by a switching valve such that when the load is moved upwardly said three-port electromagnetic valve is energized to place said second chamber in fluid communication with said relief valve, and, during downward movement of the load, said three-port electromagnetic valve is de-energized to communicate said second chamber with pressure from said pressure accumulation tank which is modulated by said pilot pressure,

whereby, during use of said cylinder driving apparatus:

(j) the load supporting rod is moved downwardly by a combination of the air pressure in said second chamber and the force of gravity acting on the load, both of which act against the air pressure in said first chamber, and

(k) a backward pressurized air flow from said first chamber to said pressure accumulation tank during downward movement of the load supporting rod is partially recycled to said second chamber via said recycling pipeway.

4,616,477

PNEUMATIC SERVOMOTOR

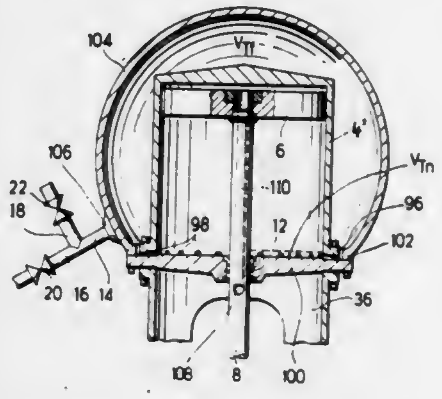
Markus Baumeler, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Division of Ser. No. 474,285, Mar. 11, 1983, Pat. No. 4,566,273. This application Jul. 2, 1985, Ser. No. 751,190

Claims priority, application Switzerland, Mar. 17, 1982, 1665

Int. Cl.^{4} F15B *11/06*

U.S. Cl. 60—415 **7 Claims**



1. A pneumatic servomotor comprising

a cover;

a cup-shaped cylinder secured to said cover at an open end thereof, said cylinder having a predetermined inside diameter and a plurality of radial grooves at said open end defining apertures having a flow resistance to a given rate of flow or air passing therethrough equivalent to a free cross-sectional area not more than 0.02 times the square of said inside diameter;

a piston slidably mounted in said cylinder to move between a lowered position spaced from said open end to define a first chamber between said cover and said piston and a raised position adjacent a closed end of said cylinder;

a piston rod secured to said piston and passing through said cover, said rod having a bore communicating an upper end face of said piston with the exterior of said cover;

a part-spherical pressure tank secured to said cover about said cylinder to define a second chamber therewith, said chamber being in communication with said first chamber through said radial grooves in said cylinder;

means including a first control valve for controlling a flow of pressurized medium from a source into said second chamber; and

means including a second control valve for controlling a flow of medium from said second chamber to a pressure medium sink.

4,616,478

ROTATABLE HYDROSTATIC TRANSMISSION

Falle Jensen, 44 W. Del Amo, Long Beach, Calif. 90805

Continuation-in-part of Ser. No. 317,126, Oct. 30, 1981, abandoned. This application Aug. 21, 1984, Ser. No. 643,261

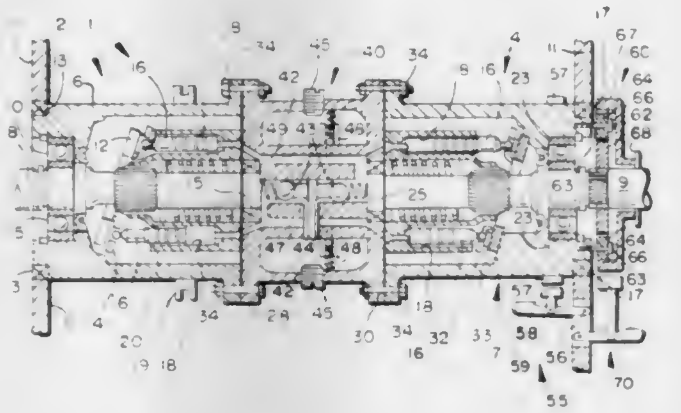
Int. Cl.^{4} F16D *39/00*

U.S. Cl. 60—487 **4 Claims**

1. A rotatable hydrostatic transmission comprising:

a hydraulic pump and a hydraulic motor each having a rotatable housing member at one end and a rotary shaft member at the other end with bearing means supporting said shaft member in said housing member so that said shaft member protrudes from said housing member, and said shaft members and said housing members of said hydraulic pump and said hydraulic motor are all aligned for rotation about a common axis, and wherein one member of said pump is rigidly coupled coaxially with one member of said motor so that said rigidly coupled members rotate together as a unit, and wherein the other member of said pump is an input and the other member of said motor is an output,

a driving input connected to said other member of said pump,



a driven output connected to said other member of said motor,

hydraulic fluid transfer means coupled to allow hydraulic fluid flow between said pump and said motor to accommodate differences in rotational speed between said driving input and said driven output, whereby a hydraulic fluid circulation loop is defined through said transfer means and said hydraulic pump and said hydraulic motor, and said loop is filled with hydraulic fluid,

a hydraulic fluid reservoir means coupled to provide hydraulic fluid to said hydraulic pump and motor through said hydraulic transfer means, and

control means for providing an infinite degree of control of hydraulic fluid flow in said loop.

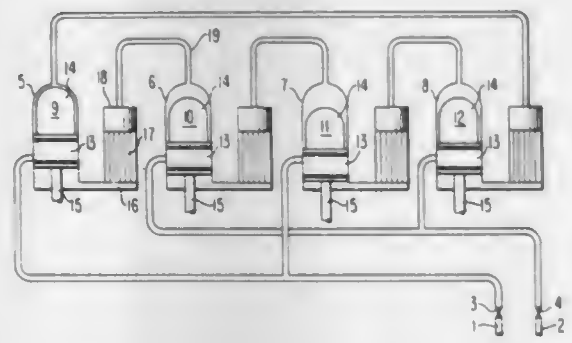
4,616,479
POWER CONTROL SYSTEM FOR A DOUBLE-ACTING HOT GAS ENGINE

Yngve R. Göthberg, Storabackegatan 15 D 216 15, Malmö , Sweden

Filed Nov. 26, 1985, Ser. No. 801,963

Int. Cl.⁴ F02G *1/06*

U.S. Cl. 60—521 **3 Claims**



1. A power control system for a double-acting hot gas engine having an even number of working gas charges each of which being limited by reciprocating pistons in two cylinders and each of said pistons being provided with two axially spaced piston rings allowing flow of gas to pass each ring in one direction only

characterized in that a first one of two pistons limiting a working gas charge is provided with piston rings adapted to provide maximum working gas pressure between them, whereas the other one of said two pistons is provided with piston rings adapted to provide minimum working gas pressure between them, a controllable connection being established from a high pressure gas source to the space between the piston rings of said other one of said two pistons, whereas another controllable connection is established from the space between the piston rings of said first one of said two pistons to a low pressure gas source.

4,616,480
CONTROL SYSTEM FOR THE ENGAGEMENT AND DISENGAGEMENT OF AN EXHAUST GAS TURBOCHARGER

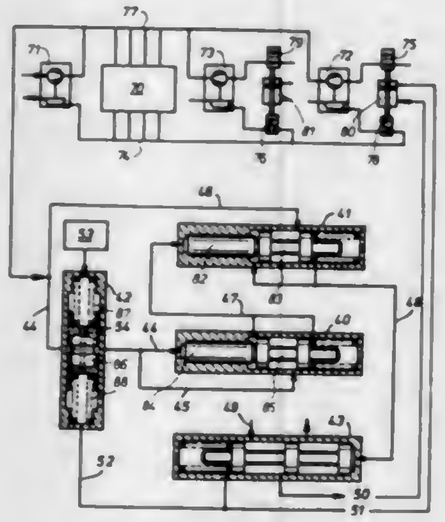
Herbert Deutschmann, Friedrichshafen, and Gerd-Michael Wolters, Markdorf, both of Fed. Rep. of Germany, assignors to MTU Motoren- und Turbinen-Union Friedrichshafen GmbH, Del.X

Filed Aug. 7, 1984, Ser. No. 638,498

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1983, 3335471

Int. Cl.⁴ F02B *37/12*

U.S. Cl. 60—600 **11 Claims**



1. A control system for the engagement and disengagement of at least one exhaust has turbocharger means of a piston internal combustion engine having an exhaust-gas and a charging-air line for the exhaust gas turbocharger means, closure means for opening and closing said exhaust-gas and charging-air lines to cause engagement and disengagement of the exhaust-gas turbocharger means, said control system being operable to control a working medium for the actuation of the closure means and being supplied with and responsive to magnitudes of charging air pressure of the piston internal combustion engine in a control line means connected between the internal combustion engine and said control system, said control system comprising means for closing the control like means after each engagement and disengagement of the exhaust gas turbocharger means caused by the closure means and for reopening the control line means after passage of a predeterminable time period.

4,616,481
SUPERCHARGED INTERNAL COMBUSTION ENGINES HAVING A BYPASS CONDUIT AND AN AUXILIARY COMBUSTION CHAMBER WHICH ARE PROVIDED WITH A REGULATING SYSTEM

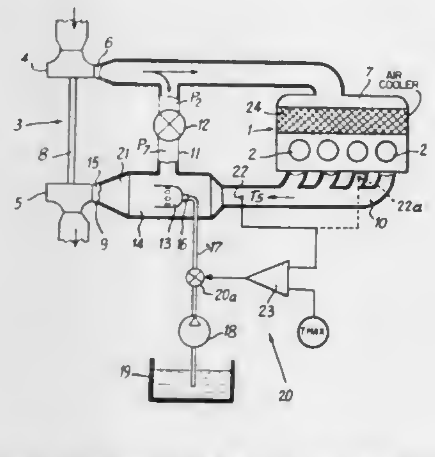
Jean Melchior; Thierry Andre, both of Paris, and Alain Dourille, Elancourt, all of France, assignors to French State, France

Filed Jan. 29, 1985, Ser. No. 696,217

Claims priority, application France, Jan. 30, 1984, 84 01355

Int. Cl.⁴ F02B *37/00*

U.S. Cl. 60—606 **13 Claims**



1. An internal combustion engine having work chambers of variable volume, supercharged by a turbocompressor whose air outlet of the compressor communicates with the air inlet of the work chambers, said compressor being driven by a turbine whose gas inlet is connected to the gas outlet of the work chambers through at least an exhaust manifold, which engine comprises a bypass conduit putting the air outlet of the compressor in communication with the gas inlet of the turbine through an auxiliary combustion chamber which is divided in the upstream to downstream direction into a primary combustion zone and a secondary dilution zone and whose gas outlet communicates with the inlet of the turbine, said primary zone comprising at least one fuel supply nozzle connected to a source of fuel under pressure through fuel flow regulating means for the fuel admitted by said nozzle, said regulating means being responsive to an operating parameter of the engine, wherein said regulating means are so arranged so as to act in the direction for increasing the fuel flow up to a maximum value, if at least a parameter characteristic of the thermal load of the engine exceeds, or has a tendency to exceed, a predetermined threshold T_{MAX}, and in the direction for reducing the fuel flow down to a minimum value, if said characteristic parameter drops, or has a tendency to drop, below said threshold T_{MAX}.

4,616,482
TURBOCHARGING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Sven-Olof Kronogard, Lomma; Clas-Olof Kronogard, Gråbo, and Hakan Kronogard, Lund, all of Sweden, assignors to AB Volvo, Sweden

Division of Ser. No. 292,947, Aug. 14, 1981, Pat. No. 4,474,007. This application Aug. 1, 1984, Ser. No. 636,593

Claims priority, application Sweden, Sep. 29, 1980, 80068042

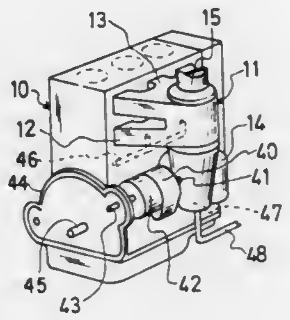
Int. Cl.⁴ F02B *37/00*

U.S. Cl. 60—624 **3 Claims**

1. A turbocharging device for an internal combustion engine comprising:

(A) a first turbine supplied with exhaust gas from said engine and having an output shaft driving a compressor feeding combustion air to said engine, said first turbine and said compressor being mounted with their shafts vertically and perpendicularly disposed to the crank shaft of said engine;

(B) a second turbine mounted with its shaft parallel to said crank shaft and supplied with gas exhausted from said first turbine and having an output shaft drivingly connected to said engine, and



(C) means to supply additional fuel to the passage between said first and said second turbine.

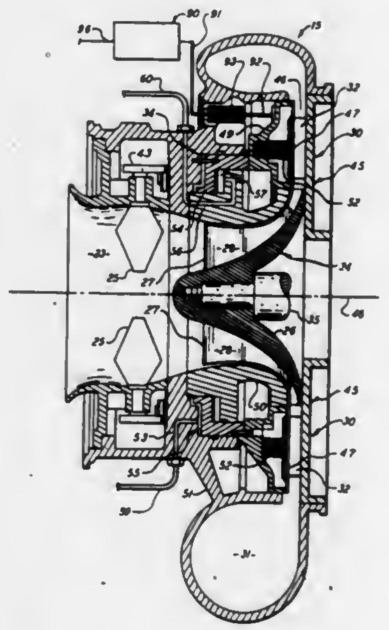
4,616,483
DIFFUSER WALL CONTROL

Gary S. Leonard, Minoa, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 29, 1985, Ser. No. 730,411

Int. Cl.⁴ F25B *1/04, 49/00;* F04B *29/46*

U.S. Cl. 62—115 **5 Claims**



1. A method of controlling a motor driven centrifugal compressor used in a refrigeration system that includes

movably mounting at least one wall in a compressor diffuser so that the size of the diffuser opening may be varied,

developing a theoretical condenser water schedule curve for optimum operation of the compressor,

relating the water schedule curve to the motor current and the wall position so that desired wall positions can be determined from motor current values,

measuring the motor current and determining a desired wall position,

sensing the actual position of the movable wall,

comparing the actual position of said wall to the desired position of said wall,

moving said wall to the desired position in the event the actual position is different than the desired position.

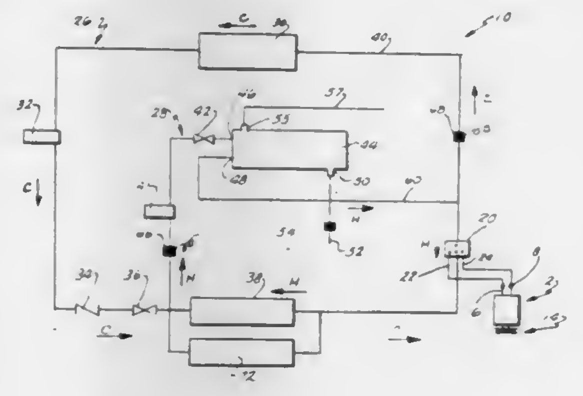
4,616,484
VEHICLE REFRIGERANT HEATING AND COOLING SYSTEM

Syed A. Mehdi; William E. Zieske, both of Rockford, and David R. Ward, Byron, all of Ill., assignors to Kysor Industrial Corporation, Cadillac, Mich.

Filed Nov. 30, 1984, Ser. No. 676,679

Int. Cl.⁴ F25D *17/00;* B60H *1/32*

U.S. Cl. 62—180 **16 Claims**



1. A heat pump for heating a vehicle interior, said heat pump comprising:
- a refrigerant compressor;
- an inside coil connected to said compressor;
- an expansion valve connected to said coil;
- a heat exchanger connected to said expansion valve, said heat exchanger including an engine fluid heat source inlet and an engine fluid heat source outlet;
- valve means connected to said fluid heat source inlet for controlling the flow of fluid to said heat exchanger and hence the output capacity of said inside coil; and
- control means operatively connected to said valve means for controlling said valve means as a function of coolant temperature, vehicle interior temperature and a desired temperature so that said control means closes said valve means to reduce the flow of fluid at said engine fluid heat source inlet when said vehicle interior temperature exceeds said desired temperature.

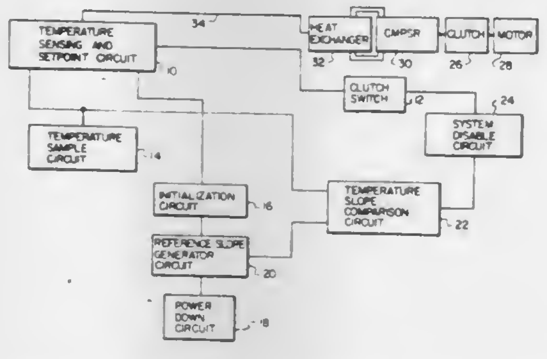
4,616,485
TEMPERATURE CONTROLLER FOR AN AIR CONDITIONING APPARATUS

Jimmie D. Gillett, Garland; Ronald E. Ellis, Flower Mound, and Michael D. Robertson, Coppell, all of Tex., assignors to Ranco Electronics Division, Irving, Tex.

Filed Feb. 14, 1985, Ser. No. 701,403

Int. Cl.⁴ F25B *1/00*

U.S. Cl. 62—228.1 **15 Claims**


TEMPERATURE SENSING AND SETPOINT CIRCUIT
HEAT EXCHANGER
CMPSR
CLUTCH
MOTOR
CLUTCH SWITCH
SYSTEM DISABLE CIRCUIT
TEMPERATURE SAMPLE CIRCUIT
INITIALIZATION CIRCUIT
TEMPERATURE SLOPE COMPARISON CIRCUIT
REFERENCE SLOPE GENERATOR CIRCUIT
POWER DOWN CIRCUIT

1. A temperature controller for an air conditioning device comprising:
- a temperature sensing means for providing an output temperature signal from the air conditioning device;
- a temperature rate of change comparison means for providing an indication signifying the rate of temperature change from the temperature sensing means exceeds a predetermined limit in comparison with a reference rate of temperature change; and
- disabling means for disabling the air conditioning device upon receiving the indication from the temperature rate of change comparison means.

4,616,486
APPARATUS FOR RETAINING COOLING PIPES FOR AN ICE RINK

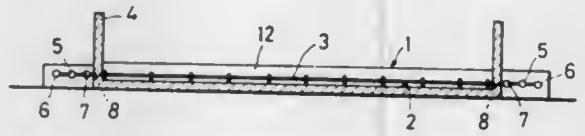
Kazuo Ohashi, 46-6, 4-chome, Nukui, Nerima-ku, Tokyo, Japan

Filed Jun. 20, 1985, Ser. No. 747,109

Claims priority, application Japan, Aug. 10, 1984, 59-121981[U]

Int. Cl.⁴ A63C *19/10*

U.S. Cl. 62—235 **6 Claims**



1. An apparatus for retaining cooling pipes employed in an ice rink, comprising:
- at least one belt-shaped base member which is disposed on the floor portion of a rink; and
- a supporting member integrally formed with said base member to project vertically therefrom above the height of upper ends of said cooling pipes, said supporting member including fitting notch portions for retaining said cooling pipes at positions over and above the floor portion of the rink and at predetermined spacings over the length of said supporting member, and further including cut portions at respective upper ends of said fitting notch portions, wherein said retaining apparatus is made of flexible synthetic resin and retains said cooling pipes at predetermined positions in said ice rink so that ice forms directly about and beneath the cooling pipes when a liquid is provided on the floor portion and coolant is circulated in the pipes, said liquid being prevented by said supporting member from movement across the floor portion in the direction of the pipes.

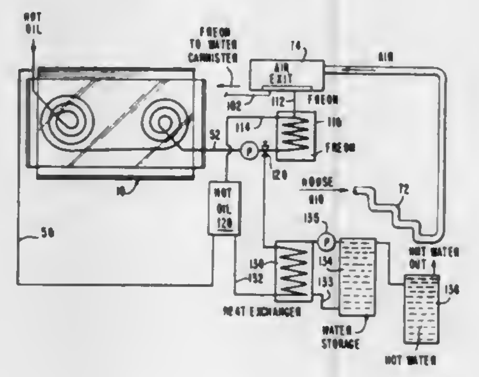
4,616,487
LOW ENERGY CONSUMPTION AIR CONDITIONING SYSTEM

William N. Franklin, 6003 Greentree Rd., Bethesda, Md. 20817

Filed Aug. 23, 1985, Ser. No. 768,760

Int. Cl.⁴ F25B *27/00*

U.S. Cl. 62—235.1 **12 Claims**



1. A system which utilizes solar energy for conditioning air in a building comprising, in combination:
- (A) solar energy collection means which comprises:
  - (1) an enclosure having a bottom and side and end walls,
  - (2) a continuous hollow heat exchange coil having an inlet end and an outlet end,
  - (3) heat exchange oil circulating through said coil, and
  - (4) adjustable reflectors for reflecting and concentrating solar energy into said enclosure;
- (B) first means for exchanging heat with said air comprising:
  - (1) a water evaporator having a water inlet, means for circulating water through said evaporator, a water outlet, means for effecting heat exchange between air flowing therethrough and said water, an air inlet end, and an air outlet end,
  - (2) closed circuit recirculating means for supplying water to said water inlet and receiving water from said water outlet;
- (C) second means for exchanging heat with said air comprising subterranean conduit means having an inlet end connected to said air outlet end of said water evaporator, and an outlet end, and disposed at a sufficient depth such that the ambient temperature is substantially constant, whereby air flowing through said conduit exchanges heat with the surrounding ground;
- (D) third means for exchanging heat with said air comprising a refrigerant evaporator having a refrigerant inlet, a refrigerant outlet, a heat exchange coil between said refrigerant inlet and outlet, an air inlet connected to said outlet end of said conduit means, and an air outlet end from which conditioned air exits to said building;
- (E) secondary heat exchange means comprising:
  - (1) first secondary means for exchanging heat between said water and said refrigerant having a refrigerant inlet connected to said refrigerant outlet of said refrigerant evaporator, and a refrigerant outlet, and disposed in said closed circuit water recirculating means,
  - (2) second secondary means for exchanging heat between said refrigerant and said oil having a refrigerant inlet end connected to said refrigerant outlet of said first secondary heat exchange means, a refrigerant outlet end connected to said refrigerant inlet of said refrigerant evaporator, an oil inlet end connected to said outlet end of said solar collection means coil, and an oil outlet end connected to said inlet end of said solar collection means coil; and
- (F) blower means for forcing air seriatim through said first heat exchange means, said second heat exchange means, and said third heat exchange means.

4,616,488
SINGLE OR MULTI-CAM SYSTEM FOR FLAT-BED KNITTING MACHINES

Hermann Schmodde, Albstadt, Fed. Rep. of Germany, assignor to H. Stoll GmbH & Company, Fed. Rep. of Germany.

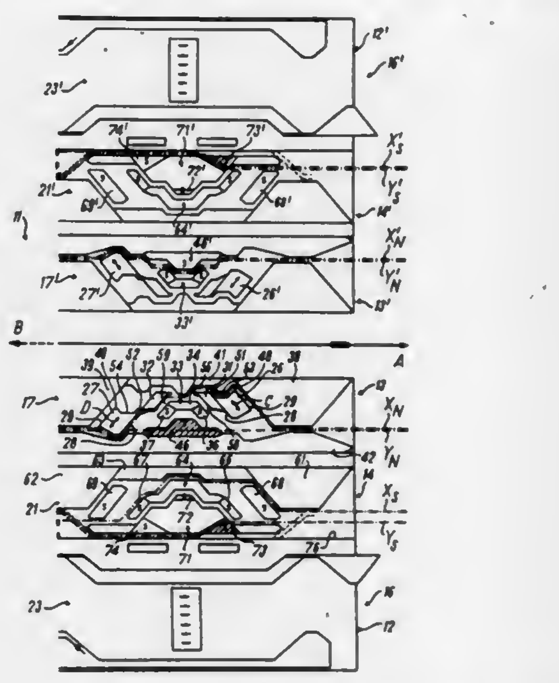
Continuation of Ser. No. 644,900, Aug. 28, 1984. This application Oct. 7, 1985, Ser. No. 784,974

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1983, 3334040

Int. Cl.⁴ D04B *7/10*

U.S. Cl. 66—70 **7 Claims**

1. A single or multi-cam system for flat-bed knitting machines having at least a needle cam unit and a selector cam unit arranged one beneath the other, the needle cam unit including at least one integrated knitting/transfer cam assembly for both carriage traverse and transfer directions, wherein:
- (i) the knitting cam portion of said integrated knitting/transfer cam assembly includes spaced apart stitch cams, each having a leading lobe and a trailing lobe, said leading lobe being higher than said trailing lobe for pretensioning the loops/stitches and said trailing lobe serving to transfer the loops/stitches; and
- (ii) the transfer cam portion of said integrated knitting/transfer cam assembly includes a transfer receiving cam part associated with the stitch cams and at least one of said stitch cams.



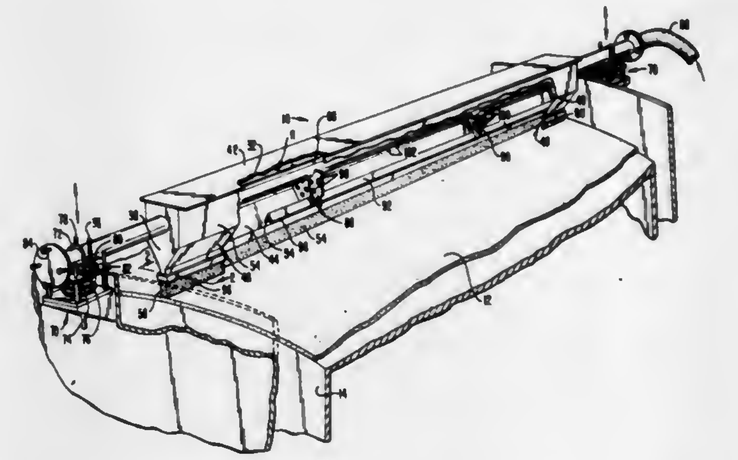
4,616,489
STOCK WASHER

Robert F. Wood, Portland, Oreg., and William R. Vanderveer, Vancouver, Wash., assignors to Fabcon, Inc., San Francisco, Calif.

Filed Oct. 29, 1984, Ser. No. 665,677

Int. Cl.⁴ D21C *9/02*

U.S. Cl. 68—200 **11 Claims**



1. An improved washer for removing chemicals from a mat of porous material impregnated by the chemicals, the washer comprising an elongate housing defining a non-pressurized chamber therein, the housing being positioned above the mat, the housing being polygonal in section with a bottom portion narrower than a top portion, and the housing having a longitudinal slot proximate the mat, and dispersion means within the chamber for controlling the flow of cleaning liquid as it moves through the chamber and into the slot, wherein the improvement comprises:
- a pressurized dispersion pipe extending through the elongate chamber above the longitudinal slot;
- inlet means attached to the pipe for introducing cleaning liquid into the pipe; and
- the pipe defining a plurality of spaced apart holes positioned along the length of the pipe within the housing to permit the cleaning liquid to flow out of the holes and into the chamber.

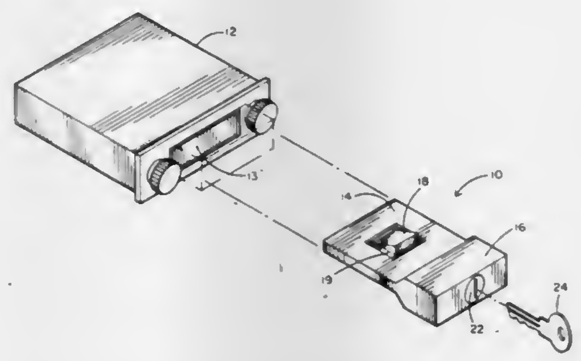
4,616,490
LOCKING APPARATUS FOR DISCOURAGING THEFT OF TAPE CASSETTE PLAYERS

Leslie D. Robbins, 6325 Arbutus St., Huntington Park, Calif. 90255

Filed Jan. 31, 1985, Ser. No. 696,961

Int. Cl.⁴ E05B *73/00*

U.S. Cl. 70—14 **2 Claims**



1. A locking device adapted for insertion into the cassette compartment of a tape cassette player, the device comprising:

an external portion having a locking mechanism accessible when said locking device is inserted into said compartment,

an internal portion of dimensions substantially equivalent to a tape cassette for insertion into said compartment,

said internal portion having at least one latch selectively extendable through a window in a surface of said internal portion, said latch being adapted for engaging structure of said player within said compartment adjacent said internal portion, and

a latch actuator communicating with said locking mechanism and with said latch, said actuator being responsive to said locking mechanism for extending said latch through said window when said locking mechanism is locked and retracting said latch when said locking mechanism is unlocked,

said latch actuator comprising an elongated rod having a first side and a second side, the first side being greater in width than the second side, said rod being connected to said locking mechanism for rotation upon activation of said locking mechanism whereby either said rod first side or said rod second side is directed toward said latch for selective engagement therewith.

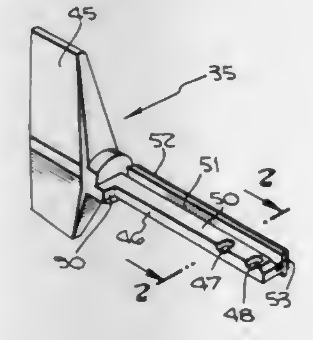
4,616,491
KEY OPERATED ELECTRONIC LOCK

Leonard J. Genest, 1061 Tropic La., Santa Ana, Calif. 92705

Filed May 30, 1984, Ser. No. 615,221

Int. Cl.⁴ E05B *47/00*

U.S. Cl. 70—276 **49 Claims**



1. A key operated electronically programmed release mechanism for enabling manipulation of a latch bolt comprising a frame having therein an extendable and retractable latch bolt, a blocker having a first position blocking movement of the latch bolt and a second position removed from said first position, a motor in operable engagement with the blocker for moving the blocker between said positions, an electrically programmed actuating circuit for said motor, a lock mechanism comprising a lock body having a key responsive element mounted therein, said key responsive element having a keyway and a key for said keyway, operating means interconnecting said latch bolt and said key responsive element for shifting said latch bolt between locked and unlocked positions, an activating means for said actuating circuit, magnetic coding on said key and a read head in the actuating circuit and subject to said magnetic coding when the key is in the keyway whereby said coding is adapted to implement activation of said actuating circuit to a condition wherein said blocker is shifted by motor action to enable manipulation of said latch bolt by key movement.

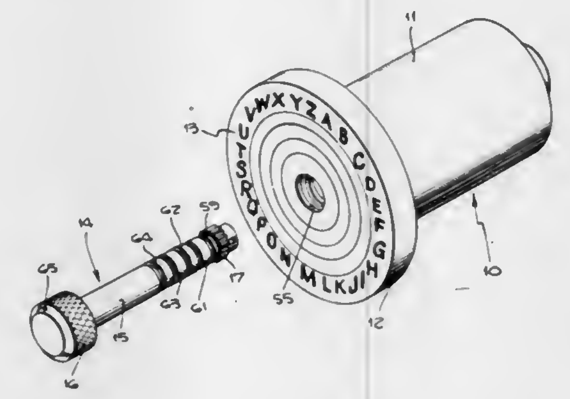
4,616,492
KEY COMBINATION LOCK

J. David Barfield, 3361 Bagley Ave. #1, Los Angeles, Calif. 90034

Filed Sep. 7, 1984, Ser. No. 648,756

Int. Cl.⁴ E05B *37/02*

U.S. Cl. 70—284 **20 Claims**



1. A combination type locking device for operation with a key member, said device comprising a substantially cylindrical housing having a key access outer end and a lock operating inner end, a lock operating plug rotatably mounted in said housing at the inner end, a plurality of pairs of discs rotatably mounted in said housing intermediate the outer and inner ends, one disc of each pair being a combination disc and the other disc of each pair being a locking disc, said locking disc having a circumferentially disposed release slot and said combination disc having a plurality of circumferentially spaced combination slots, a longitudinally extending slide bar having a first position in rotation blocking engagement with said plug and a second position free of engagement with said plug, longitudinally spaced blockers on said slide bar having positions respectively in said combination slots when said slide bar is in said first position and having positions in said release slots when said slide bar is in said second position, said slide bar being shiftable from said first position to said second position when the release slot of each pair of discs has been rotated to decoding alignment with the respective blocker whereby to release said plug for lock operation.

4,616,493
SHROUDED TRACK SLIDE BOLT

Anthony Fazzolari, and Nicholas Fazzolari, both of 2205 Utica Ave., Brooklyn, N.Y. 11234

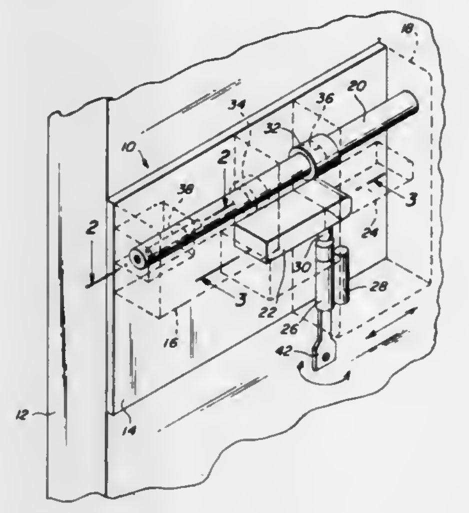
Filed Feb. 22, 1984, Ser. No. 582,374

Int. Cl.⁴ E05B *65/06*

U.S. Cl. 70—129 **7 Claims**

1. A shrouded track slide bolt comprising in combination a slide bolt, a housing for said slide bolt, said housing being split to include a fixed block and a laterally positioned sliding block, a rear portion of said slide bolt being permanently imbedded into said slide block, said fixed block acting as a bushing for slidably receiving a forward portion of said slide bolt, a steel

support plate for affixing onto a door and fixedly supporting said fixed block and slidably supporting said sliding block, said sliding block being slidable between a retracted position laterally spaced from said fixed block wherein the slide bolt is retained within the fixed block and an extended position abutting the fixed block wherein the slide bolt projects from the fixed block, whereby in the vicinity of the door said slide bolt is completely shrouded within the housing in the extended position without any sliding handle attached to the slide bolt, a block guide securely fixed onto said support plate and received in the extended position within an accommodating mating channel in the sliding block, a pair of spaced apart lock receiving means in said block guide, lock means retained in said sliding block for selective insertion in one of said lock receiving means to selectively lock the slide bolt in a corresponding one of its extended and retracted positions, a rotatable collar around the portion of the slide bolt spanning said fixed and sliding blocks in the extended position, and corresponding annular detents formed in said fixed and sliding blocks for accommodating said rotatable collar, said rotatable collar preventing breach of said slide bolt by cutting through said slide bolt at the abutting faces of said fixed and sliding blocks.



4,616,494
METHOD OF AND APPARATUS FOR CONTROLLING LOAD DISTRIBUTION FOR A CONTINUOUS ROLLING MILL

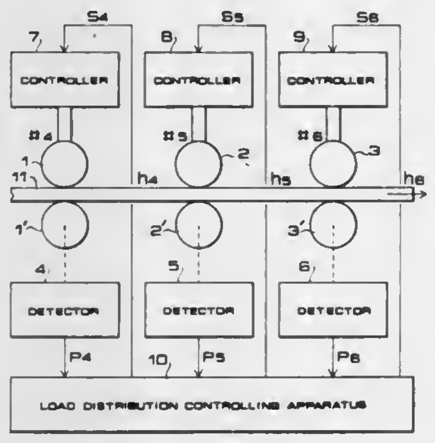
Yoshikazu Kotera, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 12, 1984, Ser. No. 660,273

Claims priority, application Japan, Oct. 15, 1983, 58-192738

Int. Cl.⁴ B21B *37/08*

U.S. Cl. 72—8 **1 Claim**



1. A load distribution controlling method for a continuous rolling mill for rolling plate material, comprising the steps of:

judging whether the rolling load amounts at two downstream stands, including the most downstream stand, coincide with preset values for a preset load distribution ratio;

calculating, if coincidence is not found, changing amounts to plate thickness rolling reduction rates at said two downstream stands;

correcting the rolling reduction position at said two downstream stands in accordance with the thus calculated changing amounts to effect load distribution control;

judging, when the rolling load amounts at said two downstream side stands are made to coincide with the values for the preset load distribution ratio by the load distribution control, whether rolling load amounts at the three downstream stands coincide with values for a preset load distribution ratio;

calculating, if coincidence is not found, changing amounts to the plate thickness rolling reduction rates at said three downstream stands;

correcting the rolling reduction positions at said three downstream stands in accordance with the changing amounts thus calculated to effect load distribution control;

repeating, in a similar manner, such correction of the load distribution ratio depending upon a determination whether a desired load distribution ratio is established among a plurality of stands, always including the last stand; and

repeating such correction of the load distribution ratio successively to stands further upstream in said rolling mill.

4,616,495
HELICALLY-FORMED PIPE WINDING MACHINE

Stanley W. O. Menzel, Hartsville, S.C., assignor to Rib Loc Hong Kong Limited, Hong Kong

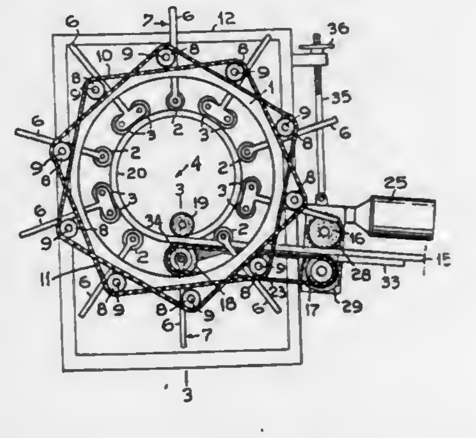
PCT No. PCT/AU83/00065, § 371 Date Jan. 10, 1984, § 102(e) Date Jan. 10, 1984, PCT Pub. No. WO83/04196, PCT Pub. Date Dec. 8, 1983

Continuation of Ser. No. 572,534, Jan. 10, 1984, abandoned. This PCT application May 20, 1983, Ser. No. 807,772

Claims priority, application Australia, May 27, 1982, PF4172

Int. Cl.⁴ B21C *37/12*

U.S. Cl. 72—49 **13 Claims**



1. A machine for forming helically wound pipe from a plastic ribbed preformed strip comprising a frame, a series of rollers axially extending and rotatably mounted on spaced apart end rings, said rings being mounted in said frame for rotation in opposite directions, said rollers being positioned to form an annulus of rollers arranged to curve the strip to a helical form within the annulus with the edges of the strip overlapping, joining means carried by said rings to press the overlapping edges together to form a pipe, said joining means comprising a joining roller on a shaft supported by said rings and a pressure member positioned at the meeting of the first convolution with the strip to press the end of the convolution into locking engagement with the said strip, a strip guide engaging at one end the said shaft of the joining roller and projecting tangentially to the annulus, a pair of feed rollers remote from the said joining roller mounted on an opposite end of said strip guide to control the rate of feed of the strip to the joining rollers, and driving means for the joining roller and for at least one of the

feed rollers to cause the said joining roller to have a greater peripheral speed than the said feed rollers whereby to maintain the strip between the joining roller and the said feed rollers in tension, whereby when rotating said one ring opposite to the other the angle of the said annulus of rollers and the said strip guide are variable in relation to the axis of the pipe being formed to compensate for diameter and strip width.

4,616,496

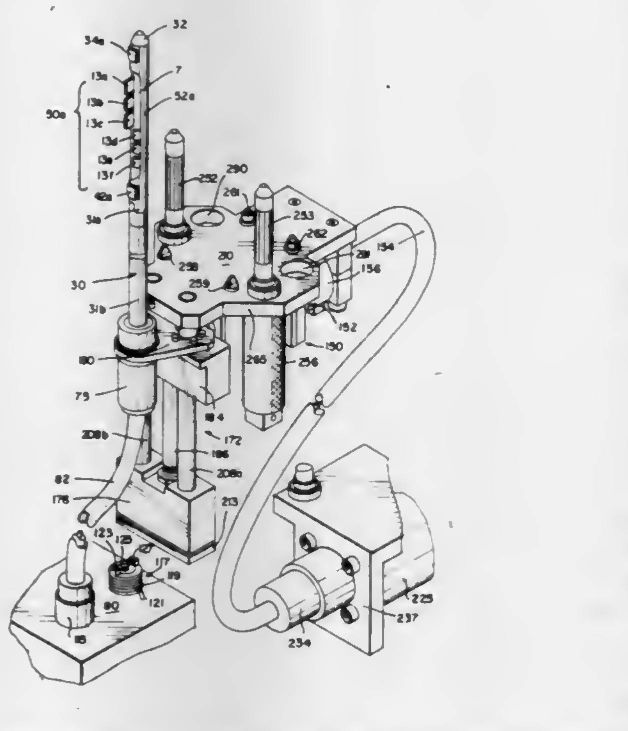
ROTOPEENING APPARATUS HAVING A FLEXIBLE SPINDLE

Phillip J. Hawkins, Penn Hills Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 7, 1985, Ser. No. 731,241

Int. Cl.^{4} B24C *3/16;* C21D *7/06*

U.S. Cl. 72—53 **31 Claims**



1. An apparatus for rotopeening the inside wall of a conduit, comprising:

(a) at least one peening spindle having a flexible, rotatable and reciprocable housing, wherein said housing includes a lateral opening, but has an otherwise substantially continuous outer surface;

(b) a flexible mandrel contained within the housing having at least one peening means operatively connected thereto, and

(c) bearing means located within and supported by the housing for rotatably mounting the mandrel within the housing off-center relative to the longitudinal axis of the housing and with said peening means in alignment with said lateral opening of said housing so that said peening means rotates, orbits and reciprocates within the conduit when said mandrel and housing are rotated and reciprocated.

4,616,497

ROTOPEENING METHOD

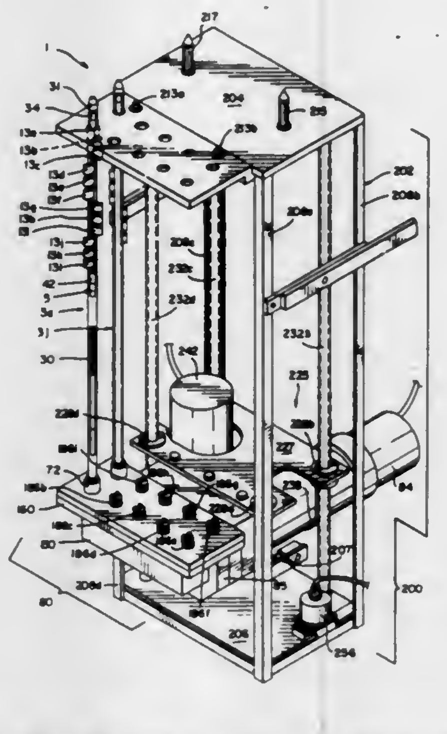
Douglas G. Harman, Pensacola Beach, Fla.; Luciano Veronesi, O'Hara Township, Allegheny County, and Andrew Wowczuk, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 7, 1985, Ser. No. 731,256

Int. Cl.^{4} C21D *7/06*

U.S. Cl. 72—53 **27 Claims**

1. A method of uniformly peening the inside wall of a conduit to a desired final peening intensity by means of at least one rotatable peening flapper, comprising the step of simultaneously rotating and orbiting the flapper within the conduit with the axis of rotation substantially parallel to but radially displaced from the longitudinal axis of the conduit by a constant distance, wherein the angular speed of the flapper and the constant distance of radial displacement are selected so that the slope of the function defined by the peening intensity of the inside conduit wall with respect to time is substantially flat in the vicinity of the desired final peening intensity.



4,616,498

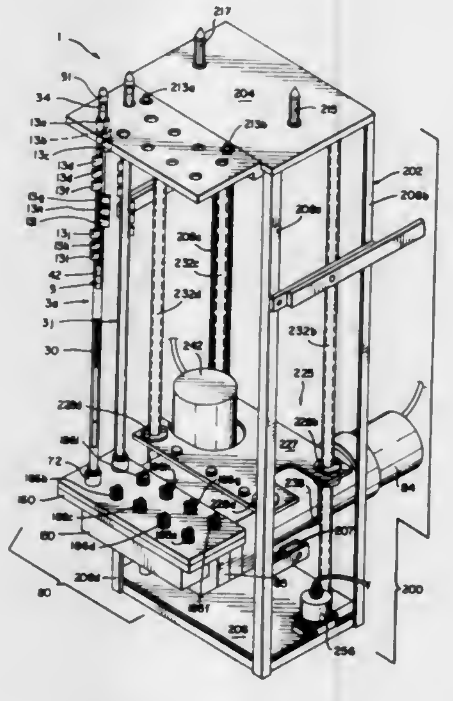
MULTI-SPINDLE ROTOPEENING APPARATUS

Bruce W. Bevilacqua, Penn Township, Westmoreland County; Ralph W. Klug, Oakmont; David C. Carlsen, Baldwin Boro, and Dennis J. Dinucci, Hopewell, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 7, 1985, Ser. No. 731,260

Int. Cl.^{4} B24C *3/16;* C21D *7/06*

U.S. Cl. 72—53 **38 Claims**



1. An apparatus for rotopeening the inside wall of a conduit, comprising:

(a) at least one peening spindle which is insertable within the conduit and which includes a rotatable housing which substantially encloses a rotatable mandrel having a peening means, wherein said mandrel is journalled within the housing in an off-center relationship;

(b) a rotary and orbital drive assembly having a co-axial drive shaft which is coupled to the housing and the mandrel of the peening spindle for simultaneously rotating and orbiting said peening means within said conduit, and

(c) an oscillatory drive assembly coupled to the rotary and orbital drive assembly for reciprocating said peening means within said conduit while said peening means rotates and orbits.

4,616,499

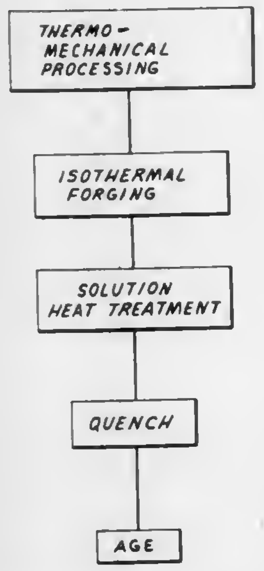
ISOTHERMAL FORGING METHOD

Robert M. Gray, Atlanta, Ga., assignor to Lockheed Corporation, Calabasas, Calif.

Filed Oct. 17, 1985, Ser. No. 788,359

Int. Cl.^{4} B21D *22/00*

U.S. Cl. 72—56 **9 Claims**



1. A method of fabricating articles from precipitation hardening aluminum alloys which comprise the steps of:

(a) thermomechanically processing the alloy to achieve a microstructure in which the grain size of the alloy does not exceed an average of 20 microns taken along the longest dimension of the grain;

(b) forging the alloy to a desired configuration in hot dies at a constant forging temperature at which deformation of the alloy occurs at a minimum strain rate and which is above the temperature at which substantial precipitation of the alloy constituents will occur;

(c) heat treating the forged article to obtain desired mechanical properties; and

(d) reducing the temperature of the article to a temperature below the crystallization temperature of the alloy constituents at a rate at which crystallization of said alloy constituents cannot occur.

4,616,500

METHOD FOR PRODUCING TUBING OF VARYING WALL THICKNESS

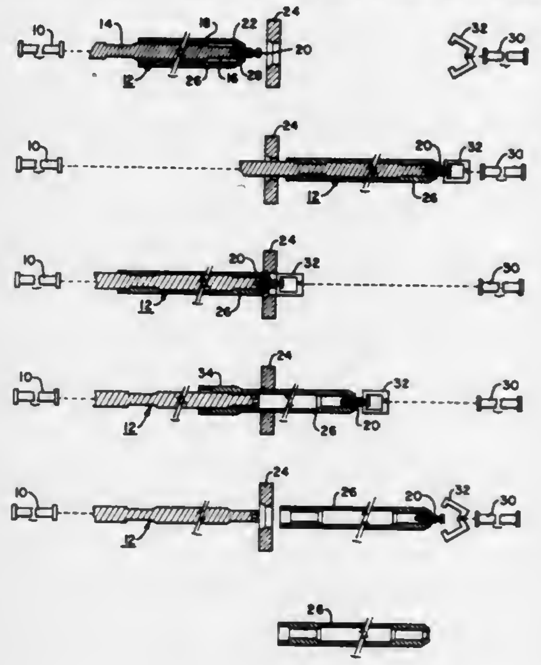
Randall L. Alexoff, Youngstown, Ohio, assignor to George A. Mitchell Company, Youngstown, Ohio

Filed Feb. 25, 1985, Ser. No. 704,755

Int. Cl.^{4} B21C *1/24*

U.S. Cl. 72—283 **13 Claims**

9. A method for producing tubing having a variable wall thickness along its length which comprises nosing-down one end of a tube of constant wall thickness to produce an opening in said one end which is of smaller cross section than the remainder of the tube, threading the tube over a mandrel having a removable plug at one end thereof until a portion of said plug extends through the opening in said nosed-down end, pushing the tube and the mandrel through a die to cause the tube to extrude while reducing its outer periphery and while causing the inner periphery of the tube to conform to the periphery of the mandrel due to the plasticity of the material from which the tube is formed, and pulling said removable plug and said tube from the remainder of the mandrel while causing the outer periphery of the tube to pass through a die.



4,616,501

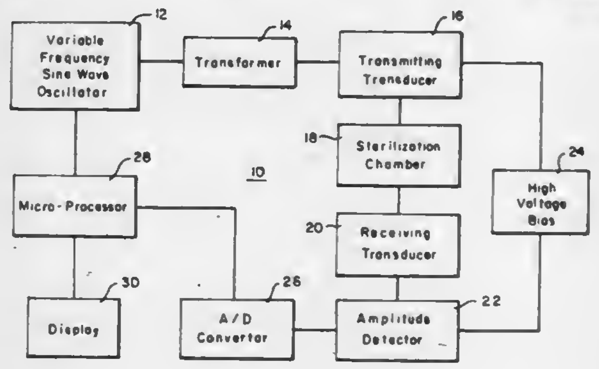
SYSTEM FOR DETERMINING GAS CONCENTRATION

Douglas M. Mechlenburg, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Apr. 23, 1985, Ser. No. 726,136

Int. Cl.^{4} G01N *29/02*

U.S. Cl. 73—24 **3 Claims**



1. A system that provides an indication of the concentration of at least one gas present within a chamber comprising:

means for causing mechanical radiant energy to propagate through the chamber at at least two operating frequencies which provide unique information over at least a portion of various gas concentrations;

means for measuring the amplitude of said propagating mechanical radiant energy at each operating frequency at a predetermined point within the chamber; and

means for fitting said measured amplitudes to a modeled amplitude response representative of a plurality of concentrations of the at least one gas to determine the concentration of the at least one gas present in the chamber.

4,616,502

KNOCKING DETECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

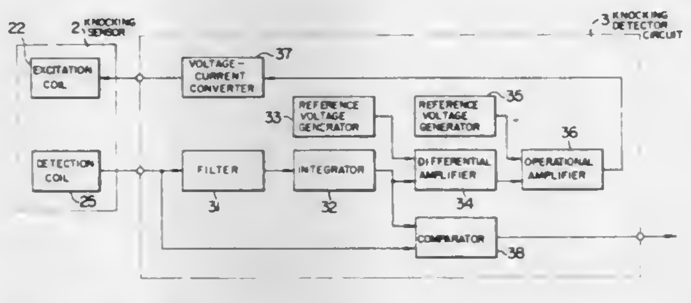
Yoshinori Ootsuka; Tadashi Hattori, both of Okazaki; Tadashi Ozaki, Gamagori, and Kazuhiko Miura, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Sep. 20, 1983, Ser. No. 533,972

Claims priority, application Japan, Sep. 21, 1982, 57-165770; Sep. 21, 1982, 57-165771

Int. Cl.⁴ G01L *23/22*

U.S. Cl. 73—35 **2 Claims**



1. A knocking detection system for an internal combustion engine, comprising:

vibration detector means for producing in response to engine vibrations a controllable electrical output signal representing a knocking component of said engine vibrations in the presence of knocking and a noise component of said engine vibrations in the absence of a knocking wherein said vibration detector means includes a magnetic path with a magnetic gap changing in accordance with vibrations of said engine, excitation coil means for driving magnetic flux of said magnetic path, and detection coil means for detecting change of magnetic flux caused with change of said magnetic gap;

means for deriving the noise-component from said controllable electrical output signal;

means for producing a knocking detection signal in response to said knocking component of said electrical output signal; and

feedback control means responsive to the derived noise component for controlling said vibration detector means to maintain the level of the derived consequent noise component substantially constant regardless of engine operating conditions, thereby enhancing the knocking-/noise component ratio of said output signal during engine operating conditions which would otherwise increase said noise component wherein said feedback control means includes an integrator circuit for integrating an output of said detection coil means, and a variable current source for changing excitation current supplied to said excitation coil means to maintain the integrated output of said integrator circuit substantially constant.

4,616,503

TIMER TRIGGER FOR CAPILLARY TUBE VISCOMETER AND METHOD OF MEASURING OIL PROPERTIES

Donald W. Plungis, No. Brunswick; Charles S. Seymour, Neptune, and William Higgins, Old Budge, all of N.J., assignors to Analysts, Inc., Rolling Hills Estates, Calif.

Filed Mar. 22, 1985, Ser. No. 714,727

Int. Cl.⁴ G01N *11/04*

U.S. Cl. 73—55 **5 Claims**

1. A capillary tube viscometer for use in determining viscosity of oil of any clarity flowing between two predetermined points in said viscometer wherein said tube includes a labyrinth of bent glass tube portions including an enlarged upper tube reservoir having an open top a restricted bottom portion moving into a reduced diameter portion a middle tube section, a lower bend portion moving into an upwardly extending tube portion having an upper end and an enlarged testing bulb portion between said lower bend portion and said tube portion, all of said portions and sections having communicating bores forming a continuous flow bore therein, said capillary tube viscometer including:

a mounting block adjacent the open top of said reservoir for receiving and holding said reservoir and for receiving and holding the upper end of said upwardly extending tube section;

said enlarged bulb portion having a bottom start point wherein said bulb portion and said bore of said upwardly extending tube portion communicate and the peripheral wall around said bore is thicker than the diameter of said bore and having an upper stop point wherein said bulb portion and said bore of said upwardly extending end section communicate and the peripheral wall around said bore is thicker than the diameter of said bore;

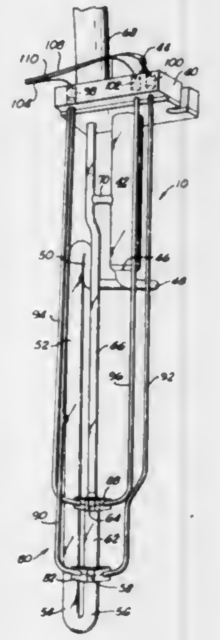
start light metering means positioned on said tube adjacent said start point adapted to meter said point at one value and yet change the value when said point is interrupted by the flow of oil of any clarity and a light input fiber optic rod extending between said mounting block and said start point receiving light from said light means, a light detector fiber optic rod extending from said block to said start point, and said input fiber optic rod and said light detecting fiber optic rod at said start point are mounted 90° apart;

stop light metering means positioned on said tube adjacent said stop point adapted to meter said point at one value and yet change the value when said point is interrupted by the flow of oil of any clarity and a light input fiber optic rod extending from said block to said stop point receiving light from said light means, a light detector fiber optic rod extending from said block to said stop point, and said light input fiber optic rod and said light detecting fiber optic rod at said start point are mounted 90° apart;

light means in said mounting block connected to said start and stop fiber optic rods;

sensing circuitry mounted in said mounting block associated with said start and stop light metering means adapted to receive the value changes and communicate said changes; and

leads from said sensing circuitry adapted to pass the values to appropriate apparatus for calibrating the elapsed time oil moves from the start to stop point to determine viscosity of said oil.



4,616,504

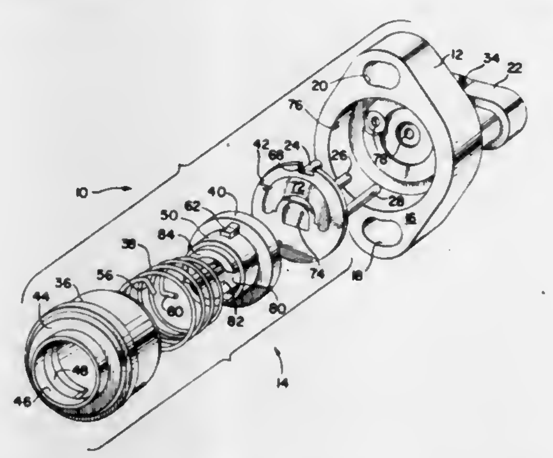
THROTTLE POSITION SENSOR

Donald A. Overcash, San Juan Capistrano; Lloyd E. Hall, Fullerton, and Guenter W. Mueller, Santa Ana, all of Calif., assignors to Duncan Electronics, Costa Mesa, Calif.

Continuation-in-part of Ser. No. 491,220, May 3, 1983, abandoned. This application Mar. 29, 1984, Ser. No. 594,758

Int. Cl.⁴ G01M *15/00*

U.S. Cl. 73—118.1 **29 Claims**



20. A throttle position sensor comprising:

a one piece casing having first and second ends, said casing having a first bearing surface formed as part of said casing and a second bearing surface aligned with said first bearing surface formed as part of said casing, said first and second bearing surfaces being spaced from one another;

a rotor having a first bearing surface designed to mate with said first bearing surface of said casing and a second bearing surface designed to mate with said second bearing surface of said casing, said rotor being mounted for rotational movement in said casing on said bearing surfaces; and

said throttle position sensor configured so as to be connectable to a throttle assembly.

4,616,505

FLUID FLOW MEASURING DEVICE

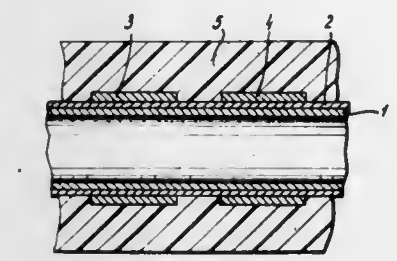
Wijbren Jouwsma, Lochem, Netherlands, assignor to Bronkhorst High-Tech B.V., Netherlands

Filed May 18, 1984, Ser. No. 611,598

Claims priority, application Netherlands, May 18, 1983, 8301765

Int. Cl.⁴ G01F *1/68*

U.S. Cl. 73—204 **29 Claims**



1. A fluid flow measuring device comprising:

(a) an elongated channel to contain the fluid flow being measured, said channel comprising a thin wall permitting good thermal conductance thereacross;

(b) a plurality of temperature sensitive electrical resistance elements integral with an electrically insulative substrate having a high thermal conductivity, said substrate being positioned at the outside surface of said channel wall, a first said resistance element being positioned upstream from a second said resistance element;

(c) means to heat at least one said resistance element, a temperature differential representative of said fluid flow thereby being created between said first resistance element and said second resistance element; and

(d) means to generate an electrical signal representative of said temperature differential.

4,616,506

APPARATUS FOR MEASURING THE MASS OF A FLOWING MEDIUM AND METHOD FOR PRODUCING AN APPARATUS FOR MEASURING THE MASS OF A FLOWING MEDIUM

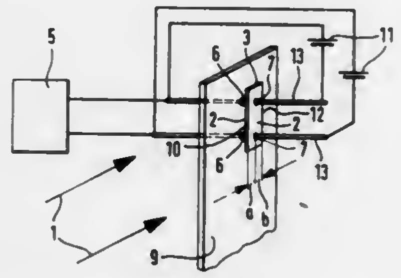
Jaihind S. Sumal, Vaihingen/Ensingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 486,764, Apr. 20, 1983, abandoned. This application Apr. 18, 1985, Ser. No. 795,731

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1982, 3229844

Int. Cl.⁴ G01F *1/68*

U.S. Cl. 73—204 **6 Claims**



1. An apparatus for measuring the mass of a flowing medium comprising at least one temperature-dependent resistor in a flow of said medium and disposed on a carrier in the form of a resistance coating, said carrier supportable in said flow by means of rigid electrical connections to said resistance coating, further wherein said electrical connections protrude entirely through a fastening opening in said carrier and said resistance coating and are soldered to said resistance coating.

4,616,507

DEVICE FOR ASSEMBLING/DISASSEMBLING A READER HEAD ON OR FROM ITS GUIDED SCALE WHILE THIS REMAINS SECURED TO A MACHINE TOOL BED PLATE

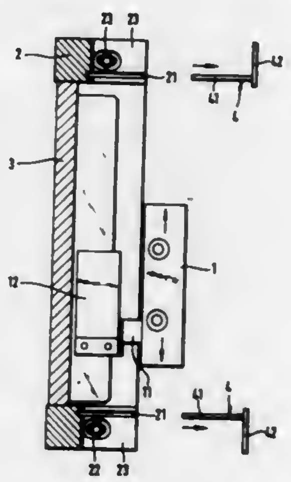
Manuel B. Rementería, Guipûzcoa, Spain, assignor to Aurki, S. Coop. Ltda., Spain

Filed Dec. 21, 1984, Ser. No. 684,692

Claims priority, application Spain, May 31, 1984, 279621

Int. Cl.⁴ G01D *11/24*

U.S. Cl. 73—431 **3 Claims**



1. An improved device for assembling/disassembling a reader head on or from its guided scale while said guided scale

remains secured to a machine tool bed plate, said guided scale having a main body and two side blocks, each of said side blocks having a means to attach to said main body and a means to attach to said machine tool bed plate wherein the improvement comprises each of said side blocks having a generously sized hollow opening, said hollow located at the sides of said side blocks and at the side facing the reader head, each said hollow having a guide around the perimeter of said hollow, and a side cover for each of said side blocks, said side cover having means for engaging said guide around the perimeter such that in order to assemble/disassemble the reader head without disturbing the alignment of the scale one of the side covers is removed.

4,616,508

METHOD AND APPARATUS FOR PRODUCING A TEST PIECE OF MOLDING COMPOUND USEFUL IN MEASURING PROPERTIES THEREOF

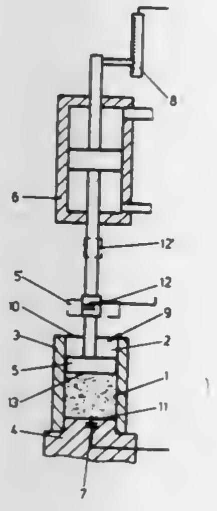
Alfred Jörn, Bibern, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Feb. 13, 1984, Ser. No. 579,661

Claims priority, application Switzerland, Feb. 28, 1983, 1093/83

Int. Cl.^{4} G01N *3/08*

U.S. Cl. 73—823 **11 Claims**



10. Apparatus for producing a test piece of molding compound useful for measurement of the properties of said compound by compressing said compound to a specified pressure at a particular volume comprising means defining a cavity having a certain geometry within which a specific measured volume of said molding compound may be provided, compaction means for applying a compaction pressure to said compound from one side of said cavity, sensing means for measuring the pressure on said compound on a side of said cavity opposite said one side, means for measuring the distance moved by said compaction means, said sensing means being located to measure the pressure applied by said compaction means directly at the surface of said molding compound on a side of said cavity opposite said one side.

4,616,509

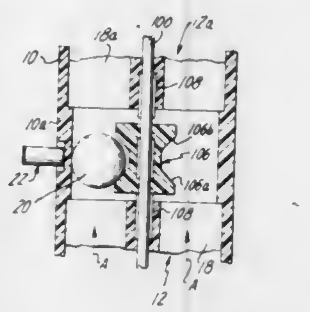
FLOW DETECTORS

Murray F. Feller, Box 1247, Dunnellon, Fla. 32630

Filed Jan. 15, 1985, Ser. No. 691,698

Int. Cl.^{4} G01F *1/32*

U.S. Cl. 73—861.05 **11 Claims**



1. Apparatus for sensing the flow of fluid, including an orbital ball, a tubular wall defining an axial fluid flow passage and providing an outer circular ball-guiding track on the inside of the wall, means providing an inner circular ball-guiding track, both of said tracks being centered at the axis of the tubular wall and defining an orbital path for the ball, vane means in said passage for forming a swirling ball-orbiting fluid-flow pattern crossing said orbital path, and means for detecting the orbiting of the ball, said detecting means including piston-mode piezoelectric transducer means fixed to said tubular wall and disposed on the exterior thereof substantially opposite said outer circular track, and excitation and receiver circuit means connected to said transducer means.

4,616,510

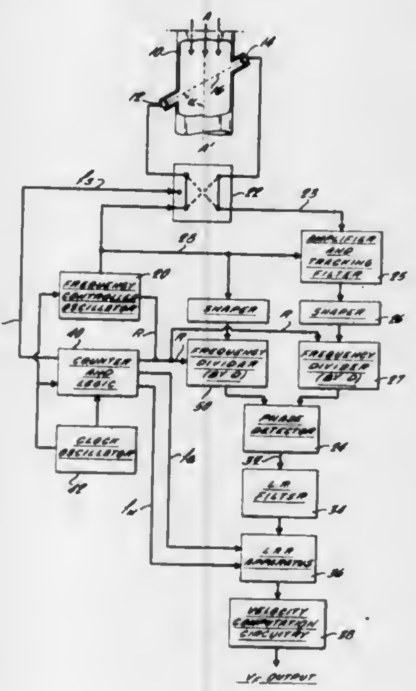
FLUID VELOCITY MEASURING METHOD AND APPARATUS

James O. Moore, Worcester, Pa., assignor to Moore Products Company, Spring House, Pa.

Filed Apr. 15, 1985, Ser. No. 723,501

Int. Cl.^{4} G01F *1/66*

U.S. Cl. 73—861.27 **10 Claims**



1. The method of measuring the velocity of a fluid along a predetermined direction, comprising:

transmitting acoustic waves through said fluid from a transmitting acoustic transducer to a receiving acoustic transducer;

varying the frequency of said acoustic waves between different values;

measuring the phase delays of said acoustic signals of different frequencies in travelling through said fluid from said transmitter acoustic transducer to said receiver acoustic transducer, to produce first signals representative of said phase delays;

producing second signals representative of said different values of frequency of said acoustic waves; and

deriving, from said first and second signals, third signals representative of the rate of change of said delays with frequency; and

from said third signals, deriving fourth signals representative of said fluid velocity.

4,616,511

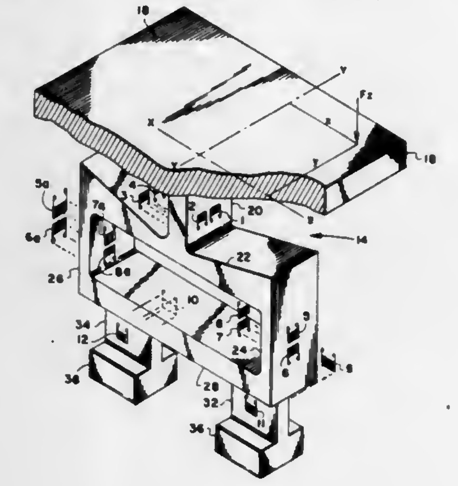
TACTILE SENSOR

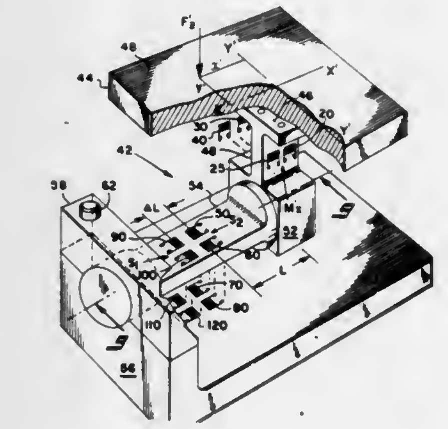
Sherif S. Gindy, and Ronald R. Tremonti, both of Troy, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Feb. 20, 1985, Ser. No. 703,353

Int. Cl.^{4} G01L *5/16;* **G01G** *3/14;* **B25J** *15/02, 19/00*

U.S. Cl. 73—862.04 **3 Claims**





1. A tactile transducer for determining location and magnitude of an applied load upon a load plate comprising:

(a) an elongated vertically extending pedestal portion having the transverse section thereof having a greater width in one of two orthogonal directions, said pedestal portion movement deflection sensitive about an "Y" axis in the direction of said greater transverse width;

(b) a yoke bar portion having the base end of said pedestal portion attached intermediate the ends thereof;

(c) a plurality of spaced vertical load sensing leg portions disposed one at each opposite end of said yoke bar portion and joined integrally thereto in rigid moment deflection resisting attachment,

(d) a rigid transverse member interconnecting the opposite ends of said vertical load sensing leg members;

(e) at least one support member having one end thereof joined to said transverse member on and extending therefrom in a direction opposite said vertical load sensing leg poritons, said support member operatively moment sensitive about an "X" axis orthogonal to said "Y" axis;

(f) an attachment base portion on the end of said support member remote from said transverse member;

(g) said load plate rigidly secured to said pedestal in moment deflection resisting connection for transmitting therethrough moments applied to said plate; and,

(h) electrical strain gage means disposed on said pedestal portion, said vertical load sensing leg portions and said support member, said strain gage means on all of said vertical load sensing leg portions having the signals therefrom summed to provide an indication of the total load F_z applied to said load plate, said strain gage means on said pedestal portion providing a signal indicative of the distance y in a direction normal to said "X" axis along said load plate from the center of said pedestal portion of application of F_z in accordance with the expression $y=F_z/M_x$ wherein M_x is the bending moment of F_z about the "X" axis, said strain gage means on said support member providing a signal indicative of the distance x in a direction normal to said "Y" axis along said load plate from the center of said pedestal of application of F_z in accordance with the expression $x=F_z/M_y$, where M_y is the bending moment of F_z about the "X" axis.

4,616,512

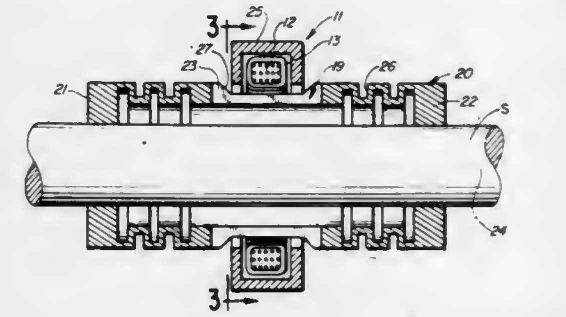
TORQUEMETER

Sydney Himmelstein, Barrington Hills; Richard S. Tveter, Barrington, and James P. Beck, Elgin, all of Ill., assignors to S. Himmelstein and Company, Hoffman Estates, Ill.

Filed Nov. 23, 1984, Ser. No. 674,165

Int. Cl.^{4} G01L *3/10*

U.S. Cl. 73—862.36 **32 Claims**



1. In a noncontact shaft torquemeter for use in measuring torque transmission through a rotatable shaft, said torquemeter having an annular torque-sensing coil structure including an annular excitation coil arranged to be disposed coaxially of the shaft and a pickup coil associated with the excitation coil to be magnetically coupled to the excitation coil to provide an output signal varying as a function of variation in the magnetic coupling therebetween, the improvement comprising:

a tube coaxially fixed to the shaft and defining a magnetostrictive coupling portion;

means associated with said coupling portion and having an axial extent substantially greater than the axial extent of said coil structure for preventing as continuous annular conductive path through substantially the entirety of said coupling portion of the tube in all angular portions of the shaft without introducing a torque reading discontinuity; and

means for mounting said coil structure coaxially about said coupling portion for coupling said excitation and pickup coil through said coupling portion.

4,616,513

DUST COLLECTION

Harold Gibson; Gordon Lynch, both of Edinburgh; David Mark, Stow, and James H. Vincent, Haddington, all of Scotland, assignors to Coal Industry (Patents) Limited, London, England

Filed Apr. 22, 1985, Ser. No. 725,500

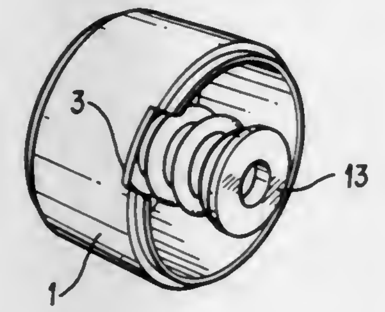
Claims priority, application United Kingdom, May 3, 1984, 8411325

Int. Cl.^{4} G01N *1/24*

U.S. Cl. 73—863.23 **7 Claims**

1. A total dust sampler comprising a sampling head having a protruding lipped gas entry connecting with a filter mounted within the head, a gas exit connecting with the filter and seal-

ably engaging gas suction means, and drive means drivably engaging the sampling head which drive means is capable of



providing a continuous rotational movement of the sampling head.

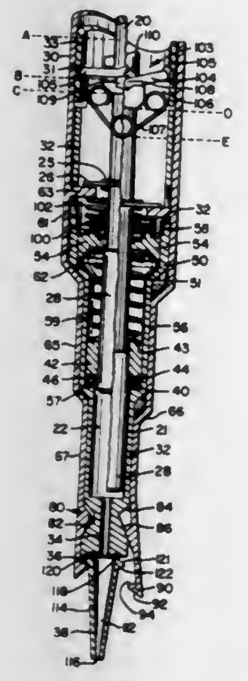
4,616,514
REPLACEABLE TIP ASSEMBLY FOR PIPETTE

Haakon T. Magnussen, Jr., Pinole, and Stephen J. Ruskewicz, Kensington, both of Calif., assignors to Rainin Instrument Co., Inc., Emeryville, Calif.

Continuation of Ser. No. 501,585, Jun. 6, 1983, abandoned. This application Dec. 20, 1985, Ser. No. 814,535

Int. Cl.⁴ G01N *1/14*

U.S. Cl. 73—864.14 **26 Claims**



1. In a pipetting assembly of the type wherein a plunger reciprocates into and out of a chamber in a pipette body to displace air through a passageway to a detachable pipetting tip, the improvement comprising:

tip attachment means including a shell slidably disposed around said pipette body and including a plurality of spring biased flexible fingers having hooks for gripping said pipetting tip; and

annular tip sealing means disposed around said passageway at a lower end of said pipette body.

4,616,515
PROCESS AND DEVICE FOR AUTOMATIC SAMPLING OF BULK MATERIALS CONTAINED IN TRANSPORT VEHICLES

Daniel Dancoine, Herbandiere de Saivres par, Saint-Maixent L'Ecole - 79400, France

Filed Aug. 20, 1984, Ser. No. 642,357

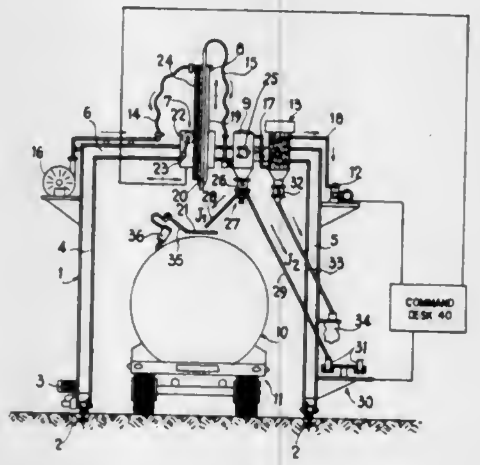
Claims priority, application France, Aug. 19, 1983, 83 13469

Int. Cl.⁴ G01N *1/08, 1/14, 1/18*

U.S. Cl. 73—864.31 **25 Claims**

1. An automatic sampling device for sampling products in containers carried by at least one automobile vehicle using a mobile sampling probe, comprising:

(a) a travelling gantry movably attached to at least two rails, having two columns and an upper horizontal beam, wherein mobile means for supporting and horizontally moving said mobile sampling probe are attached to said upper horizontal beam and wherein said at least one automobile vehicle can be brought between said at least two rails;



(b) means for applying suction to an interior of said mobile sampling probe for drawing said product towards a temporary receiver;

(c) sample receiving means for receiving said product connected to said temporary receiver; and

wherein said means for applying suction and said sample receiving means are carried by said gantry and are connected to a control desk installed at a bottom portion of one of said columns of said gantry.

4,616,516
PUSH-BUTTON TUNER

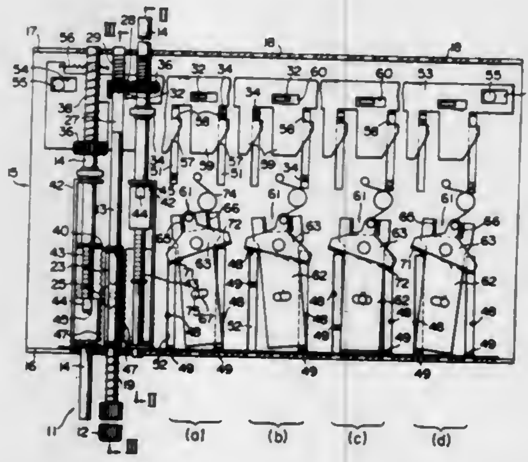
Tamaki Ohashi, Tokyo, Japan, assignor to Nihon Technical Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1984, Ser. No. 652,349

Claims priority, application Japan, Sep. 19, 1983, 58-171207; Sep. 19, 1983, 58-171208

Int. Cl.⁴ H03J *5/12*

U.S. Cl. 74—10.33 **9 Claims**



1. A push-button tuner comprising a support, a tuning means mounted on said support in a manner so that said tuning means is movable to positions corresponding to tuned frequencies for producing the tuned frequencies, and a plurality of presettable tuning mechanisms for adjusting said tuning means to move selectively to positions respectively corresponding to specific frequencies, in which each of said tuning mechanisms comprises:

a rotatable operation member movable between a front non-actuation position and a rear actuation position, said operation member being normally urged to said front non-actuation position, said operation member having a drive rotary body and a push-button provided at an end of said operation member, said push-button being used also as a rotating knob;

a rotatable tuning member having a driven rotary body for selectively engaging with said drive rotary body to rotate together with said drive rotary body, said rotatable tuning member being supported by said support in a manner so that said rotatable tuning member is normally urged to said front non-actuation position while it is movable between said front non-actuation position and said rear actuation position, said rotatable tuning member having a longitudinally extending threaded portion at a part of the surface thereof and a tuning piece engaged with said threaded portion, said tuning piece being movable in the frontward/rearward direction in response to the rotation of said tuning member;

said tuning means including a plurality of actuator plates engaging with said tuning piece of said tuning member in said rear actuation position to adjust said tuning means, each of said actuator plates cooperating with preset number of said tuning mechanisms, each of said actuator plates being provided with a variable tuning element; and

in which said push-button tuner further comprises a lock member for holding any one of said tuning members so as to permit the transmission of rotation between said drive rotary body and said driven rotary body when said one tuning member is located in said rear actuation position and for releasing said one tuning member held in said rear actuation position when another tuning member is disposed in said rear actuation position.

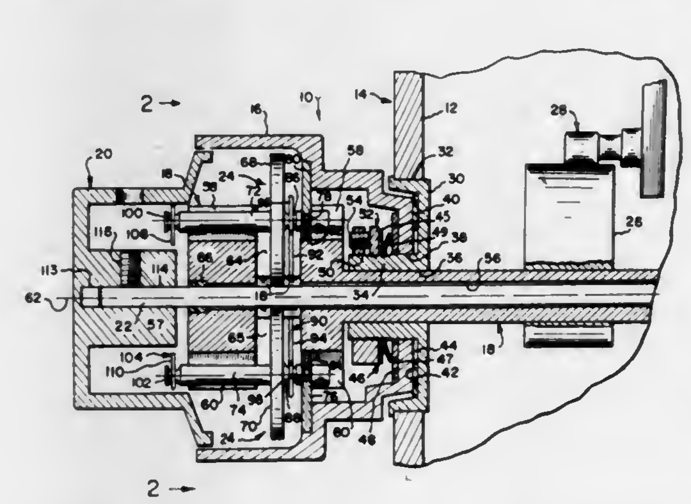
4,616,517
MONOAXIAL COARSE-FINE ADJUSTING MECHANISM FOR OPTICAL INSTRUMENTS, SUCH AS MICROSCOPES

Edward N. Esmay, Webster, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation of Ser. No. 451,901, Dec. 21, 1982, abandoned. This application Feb. 10, 1986, Ser. No. 828,585

Int. Cl.⁴ F16H *35/18;* G02B *21/24*

U.S. Cl. 74—10.45 **9 Claims**



1. Apparatus for accomplishing coarse-fine adjustments in optical instruments, comprising:

a support member;

a coarse focus knob rotatably supported and frictionally engaged to said member, said knob having an internal bearing surface;

a coarse focus shaft coupled to said coarse focus knob, said shaft having first and second pair of slots defined therein for receiving and locating a pair of drive roller assemblies, said first pair of slots being formed longitudinally in said coarse focus shaft and said second pair of slots being formed transverse to said first pair of slots;

a fine focus shaft concentrically received in said coarse focus shaft, said coarse and fine shafts being coupled to a mechanism for translating rotary motion into linear motion;

a fine focus knob mounted to said fine focus shaft;

a pair of drive roller assemblies, each assembly including a friction wheel and an axle, said assemblies being received in said first and second pairs of slots such that said friction wheels engage said fine focus shaft and a portion of said axles engage said internal bearing surface of said coarse focus knob; and

biasing means mounted between said coarse focus shaft and said pair of drive roller assemblies, said biasing means including first and second resilient members, said first resilient member biasing said friction wheels against said fine focus shaft and said axles against said coarse focus knob internal bearing surface, said second resilient member biasing said axles against said longitudinal slots in opposite directions of rotation to thereby remove backlash upon rotation of said fine shaft in either direction, said friction wheels being capable of slipping on said fine shaft when resistance is encountered by said translating mechanism.

4,616,518
SLIDING-LINK MECHANISM

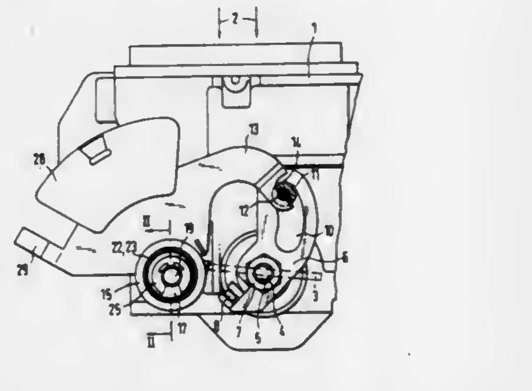
Hermann Nüsser, Markgröningen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 29, 1984, Ser. No. 645,375

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1983, 3338242

Int. Cl.⁴ F16H *21/44, 51/02*

U.S. Cl. 74—96 **2 Claims**

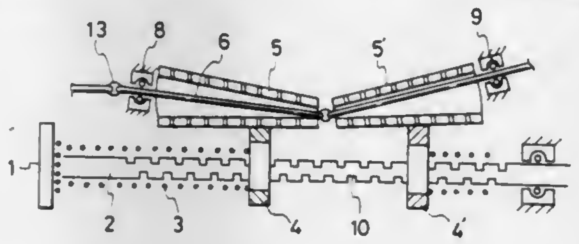


1. A sliding-link mechanism for actuating a throttle device provided in a housing in an intake tube on an internal combustion engine, comprising a roller lever rotatably supported about a roller lever shaft attached to said housing and a variable-fulcrum lever connected at one end with a throttle shaft associated with said throttle device, said roller lever including a roller means constructed and arranged to engage an oblong slot groove in said variable-fulcrum lever, said roller lever shaft further having a hub including an aperture which engages an eccentric sleeve that is rotatable with respect to said hub, said eccentric sleeve further having a bearing bore extending eccentrically with respect to a jacket face of said eccentric sleeve, whereby said eccentric sleeve is slidably disposed on said shaft, said eccentric sleeve includes a shoulder and said hub includes a recess with said shoulder and said recess comprising interengaging sets of teeth to provide for relative adjustment of said roller lever and said variable-fulcrum lever.

4,616,519
MAGNETICALLY OPERATED POWER TRANSMISSION APPARATUS

Tokuichiro Yoshida, 13-14 Iseche Kamasakiku, Kawasaki, Japan

Filed Mar. 26, 1984, Ser. No. 593,346
Claims priority, application Japan, Mar. 28, 1983, 58-52237
Int. Cl.⁴ F16H *15/16, 13/12, 55/34*
U.S. Cl. 74—191 **6 Claims**



1. A magnetically operated or assisted power transmission apparatus for steplessly transmitting rotational force outputted from a prime mover to a power consuming machine or apparatus comprising:

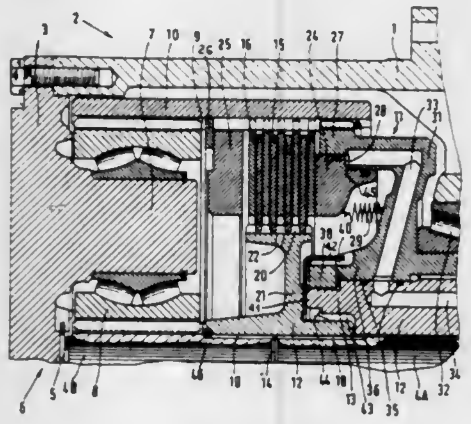
- a rotatably-mounted primary shaft operatively connected at a power input end thereof to the prime mover by way of coupling means, said primary shaft having an outer surface in which a spirally extending groove is formed,
- a disc-shaped driving pulley displaceably fitted onto the primary shaft in operational engagement with said spirally extending groove, said driving pulley comprising a plurality of radially extending permanent magnets in spaced adjacent relation to one another with spacers of non-magnetic material interposed between adjacent ones of said magnets,
- an expansive spring means disposed on the primary shaft so as to cause the driving pulley to be normally urged in a direction away from said power input end of the primary shaft,
- a truncated cone-shaped driven pulley whose outer conical surface is adapted to come in rolling contact with the peripheral surface of the driving pulley, said driven pulley being made of non-magnetic material and having a number of rod-shaped magnetizable pieces embedded in the outer conical surface thereof so as to make a magnetic connection between the driving and driven pulleys, and
- a rotatably-mounted secondary shaft made integral with the driven pulley, said secondary shaft extending at a certain inclination angle relative to the primary shaft and being operatively connected at one end thereof to a power consuming machine or apparatus by way of a universal joint.

4,616,520
ARRANGEMENT OF A BRAKE IN A WHEEL HEAD EQUIPPED WITH REDUCING GEAR

Friedrich Ehrlinger, Friedrichshafen; Karl-Hermann Katzorek, Tettnang; Peter Dziuba, Überlingen; Karl Veser, Friedrichshafen, and Peter Caspar, Oberteuringen, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany
PCT No. PCT/EP83/00259, § 371 Date Aug. 23, 1984, § 102(e) Date Aug. 23, 1984, PCT Pub. No. WO84/02498, PCT Pub. Date Jul. 5, 1984
PCT Filed Oct. 5, 1983, Ser. No. 644,729
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1982, 3248250
Int. Cl.⁴ F16H *57/10*
U.S. Cl. 74—325 **8 Claims**

1. A wheel head which comprises:

- a wheel head housing forming a wheel hub;
- a central shaft extending axially into said housing from a differential and subdivided axially within said housing into a terminal section and a driving section, said sections being provided with external formations of similar dimensions;
- a planet carrier coupled to said housing and formed with planet shafts overhanging said terminal section and on which respective planet gears are journaled;
- a sun gear formed on said terminal section and meshing with said planet gears;
- a hollow shaft surrounding said planet gears and formed with internal toothing meshing with said planet gears and extending axially over both of said sections;
- a hollow wheel carrier concave in the direction of said planet carrier, surrounding said driving section, spaced from said planet gears and said planet carrier and rotationally fixed to said hollow shaft and rotatable relative to said housing;
- a brake disposed within said hollow shaft between said hollow shaft carrier and said planet carrier, said brake comprising a stack of inner and outer disks in axially interleaved relationship, and a pair of bracing disks at opposite ends of said stack and including a bracing proximal to said planet carrier and a further bracing disk guided on said hollow wheel carrier, said outer disks being rotationally coupled to said hollow shaft;

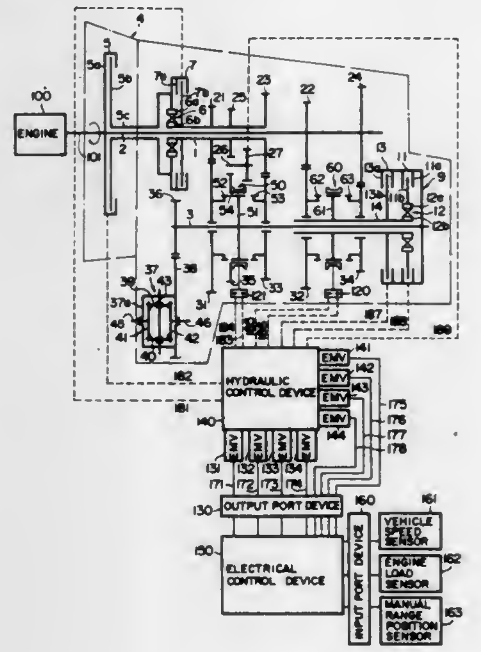


- a hollow axle extending into said housing and surrounding a portion of said driving section whereby a further portion of said drive section proximal to said terminal section projects beyond said axle and is provided with said formations, said hollow shaft carrier being mounted on said axle;
- a support for said inner disks formed with:
  - a sleeve having internal formations engaging said formations on said further portion of said driving section and on said terminal section for angularly coupling said sections together while enabling said terminal section to be removed and to be interchangeable with another terminal section with a sun gear of different diameter, said sleeve being disposed substantially between an end of said axle and said planet carrier,
  - a rim disposed radially outwardly of said sleeve at substantially the radial distance of said planet shafts from said central shaft sections and provided with teeth angularly coupled to said inner disks while enabling axial displacement thereof and
- means connecting said rim with said sleeve; and
- power assistance means for said brake received in said hollow shaft carrier and acting upon said further bracing disk.

4,616,521
TRANSMISSION CONTROL METHOD PROVIDING OVERLAPPED ENGAGEMENT OF POWER TRANSMISSION SYSTEMS

Teruo Akashi; Hiroshi Ito, and Shigemichi Yamada, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 25, 1983, Ser. No. 469,760
Claims priority, application Japan, Mar. 2, 1982, 57-33298
The portion of the term of this patent subsequent to Mar. 18, 2003, has been disclaimed.
Int. Cl.⁴ B60K *41/18, 20/10*
U.S. Cl. 74—335 **6 Claims**



1. A method for controlling a transmission mechanism for a vehicle wherein:

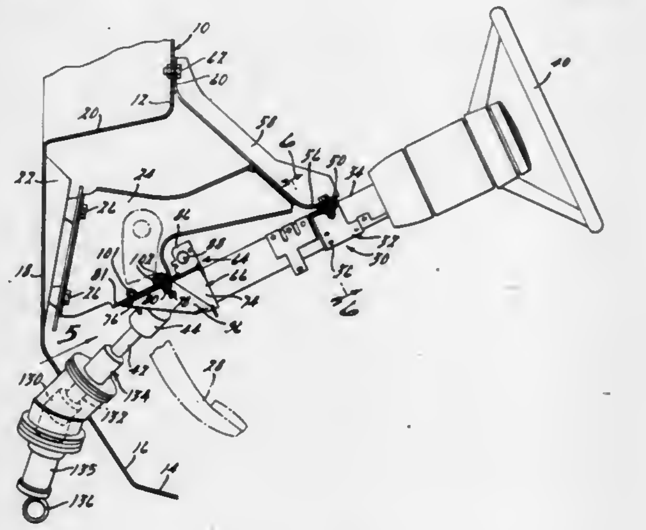
said transmission mechanism comprises an input shaft; an output shaft; a first on-off clutch; a second on-off clutch; a first one way clutch; a second one way clutch; a first gear train having a first reduction gear ratio; a second gear train having a second reduction gear ratio smaller than said first reduction gear ratio; a third gear train having a third reduction gear ratio smaller than said second reduction gear ratio; a fourth gear train having a fourth reduction gear ratio smaller than said third reduction gear ratio; a first synchronizer which connects said input shaft and said output shaft via a series connection of said first on-off clutch, said first one way clutch, and said first gear train when said first synchronizer is shifted to a first side of a neutral position thereof so as to transmit rotational power from said input shaft to said output shaft in a normal rotational direction at a first speed stage and which connects said input shaft and said output shaft via a series connection of said first on-off clutch, said first one way clutch, and said third gear train when said first synchronizer is shifted to a second side of said neutral position so as to transmit rotational power from said input shaft to said output shaft in said normal rotational direction at a third speed stage; and a second synchronizer which connects said input shaft and said output shaft via a series connection of said second on-off clutch, said second one way clutch, and said second gear train when said second synchronizer is shifted to a first side of a neutral position thereof so as to transmit rotational power from said input shaft to said output shaft in said normal rotational direction at a second speed stage and which connects said input shaft and said output shaft via a series connection of said second on-off clutch, said second one way clutch, and said fourth gear train when said second synchronizer is shifted to a second side of said neutral position of said second synchronizer so as to transmit rotational power from said input shaft to said output shaft in said normal rotational direction at a fourth speed stage, wherein the method comprises:

- shifting said transmission mechanism up from operation at said third speed stage to operation at said fourth speed stage by firstly disengaging said second on-off clutch,
- secondly shifting said second synchronizer to said second side of said neutral position thereof; and
- thirdly reengaging said second on-off clutch, with said first on-off clutch being kept as engaged and with said first synchronizer being also kept as shifted to said second side of said neutral position thereof; and
- shifting said transmission mechanism down from operation at said fourth speed stage to operation at said third speed stage by firstly disengaging said second on-off clutch, secondly shifting said second synchronizer to said first side of said neutral position thereof, and thirdly reengaging said second on-off clutch.

4,616,522
STEERING COLUMN ENERGY ABSORBING RELEASE BUSHING AND DEFORMING BRACKET

George E. White, Mt. Clemens, and Dennis C. Heckel, West Bloomfield, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 8, 1985, Ser. No. 709,941
Int. Cl.⁴ B62D *1/16*
U.S. Cl. 74—492 **2 Claims**



1. An energy absorbing steering column assembly for an automotive vehicle body, said steering column assembly comprising an axially extending upper steering shaft having its upper end connected to a steering wheel and its lower end connected by means of a lower shaft to a vehicle steering gear assembly by universal joint means, a tubular steering column jacket surrounding said upper shaft, an upper bracket fixed to said jacket intermediate its upper and lower ends, said upper bracket releasably supporting said jacket to said body by a plurality of releasably impact responsive capsules, the improvement wherein an energy absorbing sheet metal lower support bracket formed with a central collar portion defining a circular aperture, the lower end of said jacket extending through said aperture in concentric spaced relation, said lower bracket having a pair of flanged wings extending forwardly from diametrically opposite sides of said collar portion, each said wing joined for impact deformation to said collar portion at a right angled radiused juncture wherein each said wing extends in a vertically disposed plane parallel to the principal axis of said jacket, fixedly secured to said vehicle body, a bushing formed of rigid plastic material concentrically received in a press fit manner into said collar aperture, said bushing having a tubular body portion containing a central through bore, said through bore formed at its upper end with a counterbore recess sized to receive the forwrad end of said jacket in a press fit manner, said bushing formed with a plurality of resilient fingers extending outwardly from its leading

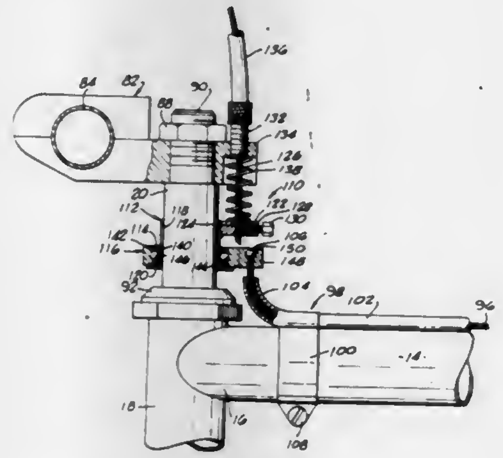
edge, each finger being radially depressible inwardly for assembly through said collar aperture, each said finger having its trailing free end juxtaposed said collar portion, said bushing formed with a plurality of tabs extending radially outwardly from said tubular body portion, said collar aperture including a tubular flanged rim concentrically spaced about said jacket with said flanged rim free edge extending rearwardly toward said steering wheel, a plurality of equally spaced tab receiving notches formed in said flanged rim, each said notch longitudinally aligned with an associated tab and sized so as to receive at least a portion of its associated tab therein, and wherein each said notch having a base defining a transverse shearing edge portion, such that upon the application of a predtermined load on said steering wheel said upper bracket initially is released from said capsules for forward travel in a guided manner relative to said vehicle body, whereby said jacket moves forwardly causing each said tab to be sheared-off by its associated collar member shear edge providing a first stage engergy absorption; and whereby upon said tabs being sheared off said jacket continuing to travel forwardly in a generally oblique manner contacting said collar portion whereby said wings are deformed about their radiused junctures providing a second stage energy absorption.

4,616,523

BICYCLE BRAKE CABLE COUPLING MEANS

Stephen D. Jones, 421 W. Parkwood Ave., La Habra, Calif. 90631

Filed Apr. 8, 1985, Ser. No. 721,902
Int. Cl.⁴ F16C *1/10*
U.S. Cl. 74—501 **9 Claims**



1. A brake cable coupling means for use with a hand brake for the rear wheel of a bicycle wherein said brake is a scissor type of brake adapted to be activated by movement of a rear brake cable by pressure on a hand brake handle mounted on a handle bar secured to a stem of a front wheel fork rotatably mounted in a front post of said bicycle, said handle and said brake being connected therebetween by a cable through said coupling means wherein said last means includes;

an inner sleeve member slidably and rotatably mounted on said stem;

an outer sleeve member mounted around said inner sleeve and adapted to be independent of the rotation of said inner sleeve member yet vertically slidably yieldable simultaniously with the sliding movement of said inner sleeve;

said rear brake cable being formed into an upper portion and a lower rearwardly extending portion, said upper portion extending from said brake handle to said inner sleeve member, and said lower rearwardly extending portion extending from said outer sleeve to said rear brake; and

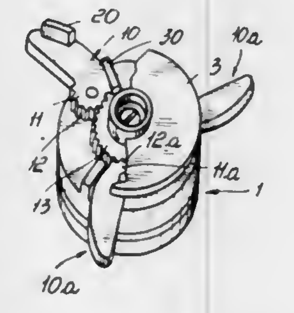
said brake cable coupling activatable to apply said rear brake no matter what degree of rotation said front wheel of said bicycle assumes and said cable will not interfer with said front post and said cable application to said brake.

4,616,524

COMPACT SIZE ACTUATING KNOB FOR ADJUSTING AND CLOSURE DEVICES, PARTICULARLY IN SKI BOOTS

Vincenzo Bidoia, Castelfranco Veneto, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

Filed Mar. 4, 1985, Ser. No. 707,620
Claims priority, application Italy, Mar. 14, 1984, 21234/84[U]
Int. Cl.⁴ G05G *1/10*
U.S. Cl. 74—553 **6 Claims**



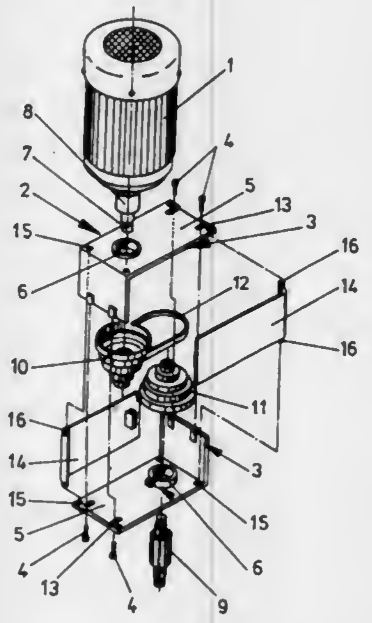
1. An actuating knob for adjusting and closure devices, particularly in ski boots, comprising a body of substantially cylindrical configuration, characterized in that it comprises at least one wing supported on said body for rotation about a substantially parallel axis to the axis of said body, said at least one wing being positionable at a home position, whereat it is contained within the outline of said body, and at an operative position, whereat it protrudes substantially radially from said body to increase the working diameter thereof.

4,616,525

MULTI-STEP REDUCTION GEAR ATTACHMENT FOR MULTI-PURPOSE ELECTROMOTORS

Reinhard Ueberschär, Bielefeld, Fed. Rep. of Germany, assignor to Hanning Elektro-Werke GmbH & Co., Oerlinghausen, Fed. Rep. of Germany

Filed Dec. 20, 1984, Ser. No. 683,806
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1983, 3347137
Int. Cl.⁴ F16H *57/02*
U.S. Cl. 74—606 R **6 Claims**



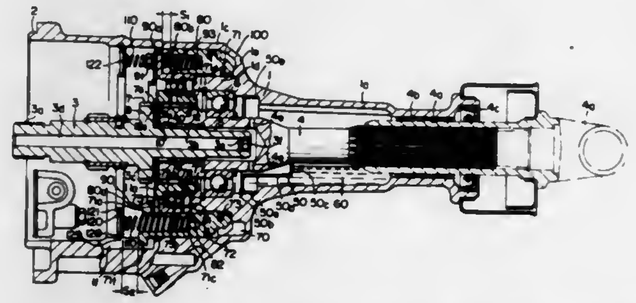
1. Multistep reduction-gear attachment for multipurpose electric motors, with its casing-like gear box, which can be attached to a collar that surrounds the shaft of the motor and is intended for securing accessories, accommodating two axially parallel belt wheels or toothed wheels, of which one is screwed onto the motor shaft, which engages inside the the gear box when the motor is in operation, and the other onto a drill spindle that is inserted into the gear box from the opposite side, characterized in that the gear box (2) consists of two similarly shaped angled components (3), each flank (5) of which has at the end a chuck (6) for the collar (8) of the electric motor (1) or for the drill spindle (9) and which are secured together with means (4 & 13) of attachment that can be loosened in such a way that the components can move toward each other along said flank.

4,616,526

TRANSMISSION DEVICE HOUSING CONSTRUCTION WITH SHAFT LUBRICATING OIL SHIELD COVER GENERATING LUBRICANT POOL

Kunio Morisawa, and Tadashi Kondo, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Feb. 21, 1984, Ser. No. 582,099
Claims priority, application Japan, Feb. 26, 1983, 58-031627; Mar. 9, 1983, 58-039745; Sep. 21, 1983, 58-174838
Int. Cl.⁴ F16H *57/04*
U.S. Cl. 74—606 R **8 Claims**



1. In combination with a transmission device including a casing elongated towards a power transfer aperture defined therein, a first bearing mounted in said power transfer aperture, a second bearing, a power output member rotatably supported in said power transfer aperture by said first bearing, and a power output shaft within said casing, an outer end of which power output shaft is rotationally coupled to said power output member and an inner portion of which power output shaft is supported from said casing by said second bearing, said power output shaft being formed with an axially extending aperture for receiving supply of lubricating oil and with a radially extending aperture communicating at its radially inward end to said axially extending aperture, for squirting out lubricating oil from said power output shaft in generally radial directions as said power output shaft revolves, a lubricating oil shield cover comprising:

a base portion mounted to said casing at a position close to said second bearing on the side thereof towards said first bearing;

an extension portion elongated from said base portion in the direction of said first bearing and positioned under said power output shaft;

an end wall portion reaching upwards from the end of said extension portion closest to said first bearing towards said power output shaft, with the lowest point of the upper edge of said end wall portion closely approaching the power output shaft at an axial position along said power output shaft at which the diameter of said power output shaft is substantially less than it is at the axial part thereof at which said power output shaft is supported by said second bearing from said casing

said extension portion rising on either side of said power output shaft at least to the height of said lowest point of said upper edge of said end wall portion of said lubricating oil shield cover, and said extension portion further having an opening therein at a point not on the lowest part thereof and at an axial position corresponding to the axial position along said power output shaft of said radially extending aperture; and

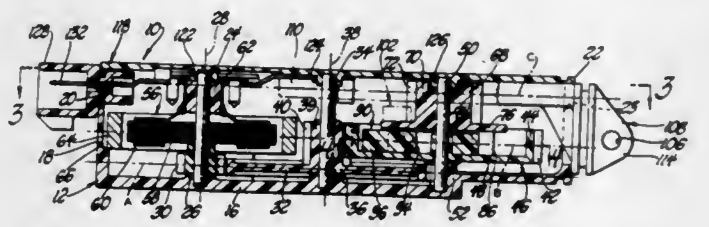
a space for accumulating a pool of lubricating oil ejected from said radially extending aperture in said power output shaft being defined by said lubricating oil shield cover and said casing, so that as lubricating oil accumulates in said space it first can escape therefrom by overflowing over said lowest point of said upper edge of said end wall portion of said lubricating oil shield cover so as to flow to the side of the lower part of said extension portion of said lubricating oil shield cover facing said power output shaft, said lubricating oil pool at such a stage reaching so high as to wet the lower portion of said first bearing.

4,616,527

REMOTE ACTUATOR

Mark W. Frey, Mason; Dallas E. King, Centerville, and William C. Staker, Springfield, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 14, 1985, Ser. No. 690,968
Int. Cl.⁴ F16H *57/00, 57/02*
U.S. Cl. 74—625 **2 Claims**

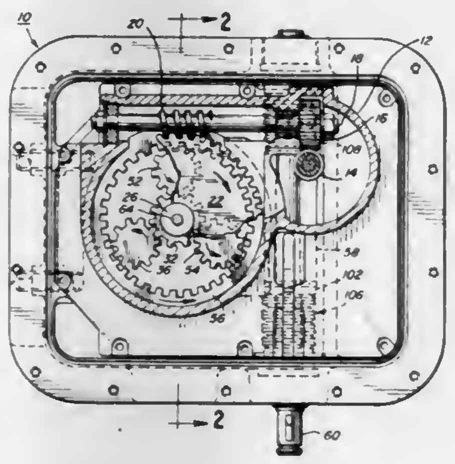


1. A remote actuator comprising, a housing including a planar base and a side wall perpendicular to said base defining an open side of said housing, said housing having a depth dimension perpendicular to said base substantially less than a length dimension parallel to said base, a first pinion gear rotatably supported on said housing is a first tier thereof adjacent said base, an intermediate gear rotatably supported on said housing in said first tier and meshing with said first pinion thereby to define a first gear reduction stage, a second pinion rotatably supported on said housing in a second tier thereof adjacent said first tier and rotatable as a unit with said intermediate gear, an output gear rotatably supported on said housing in said second tier and meshing with said second pinion thereby to define a second gear reduction stage, reversible electric motor means in said second tier connected to said first pinion and operative to drive said output gear in opposite directions between a pair of parked positions, a linear actuator in a third tier of said housing between said second tier and said open side bodily shiftable in either one of an extending direction and a retracting direction parallel to said length dimension between positively defined limits, means on said linear actuator defining a plurality of rack gear teeth, a rack pinion rotabaly supported in said housing in said third tier and meshing with said rack teeth whereby said rack pinion drives said linear actuator in either of said extending and said retracting directions, a slidable detent supported on said rack pinion for rotation as a unit therewith and for bodily shiftable movement relative thereto in a plane perpendicular to the axis of rotation of said rack pinion between an extended position and a retracted position, spring means between said rack pinion and said detent biasing said detent toward said extended position, means defining a follower on said detent, and means on said output gear defining a rigid arm having a pair of converging faces each engageable on said follower in a corresponding one of the directions of rotation of said output gear whereby said rack pinion is rotatable as a unit with said outpur gear while said converging faces are operable to cam said detent to said retracted position when said rack pinion is immobilized thereby to permit continued rotation of said output gear to the corresponding one of said parked positions.

4,616,528
VALVE ACTUATOR WITH CONTINUOUS MANUAL OVERRIDE

Richard F. Malinski, Schaumburg, and John Sikorcin, St. Charles, both of Ill., assignors to Vapor Corporation, Chicago, Ill.

Filed May 3, 1982, Ser. No. 374,382
Int. Cl.⁴ F16H ***1/32***
U.S. Cl. 74—626 **12 Claims**



1. A valve actuator with continuously available manual override comprising;
- a housing;
- an input shaft journaled in said housing;
- first worm gear set mechanically coupled between said input shaft and input signal means;
- an epicyclic sun gear mounted on said input shaft;
- first, second and third planetary gears in driven engagement with said sun gears being spaced approximately 120° from each other;
- a first ring gear in engagement with and surrounding said first, second and third planetary gears;
- an output member;
- gear means engaging said output member and first ring gear;
- manual override means engaging said sun gear for actuating said sun gear; and
- means axially securing first, second and third planetary gears to said fourth, fifth and sixth planetary gears, respectively.

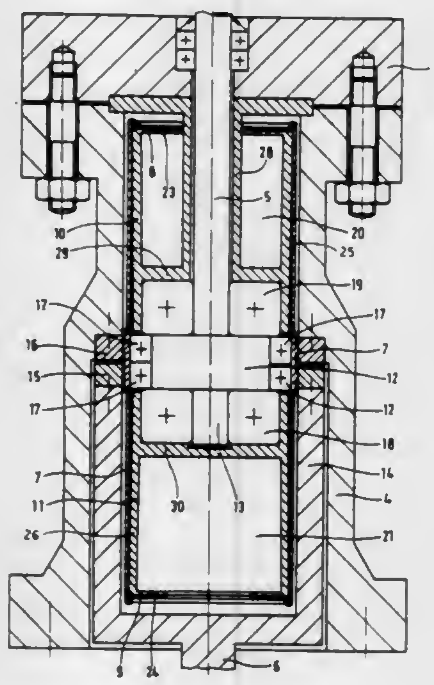
4,616,529
STRAIN-WAVE TRANSMISSION WITH TUBULAR STRAIN WHEEL

Fritz Heinemann, Friedrichshafen, Fed. Rep. of Germany, assignor to ZF-Herion Systemtechnik GmbH, Friedrichshafen, Fed. Rep. of Germany

PCT No. PCT/EP83/00148, § 371 Date Feb. 13, 1984, § 102(e) Date Feb. 13, 1984, PCT Pub. No. WO83/04429, PCT Pub. Date Dec. 22, 1983

PCT Filed Jun. 9, 1983, Ser. No. 589,102
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1982, 3222117
Int. Cl.⁴ F16H ***37/02***
U.S. Cl. 74—640 **5 Claims**

1. A strain-wave transmission comprising:
- a housing having an input side and an output side;
- an input shaft extending axially into said housing at said input side;
- an output shaft extending axially out of the housing at said output side;
- a tubular deformable cylindrical strain wheel received in said housing and extending generally coaxial with respect to said shafts between said sides of said housing, said strain wheel having at an intermediate location along its length, gearing respectively engaging gearing on said housing and on said output shaft;
- a strain-wave generator carried by said input shaft and disposed at said intermediate location for deforming said strain wheel to effect rotation of said output shaft at a speed different from that of said input shaft upon rotation of said input shaft;
- a first cup-shaped support extending from said input side substantially to said intermediate location within said strain wheel and an end of said support rigidly affixed to a corresponding end of said strain wheel at the input side without engagement with the housing; and
- a second cup-shaped support extending substantially from said intermediate locaton toward said output side of said housing and having an end at said output side rigidly affixed to an end of said strain wheel at said output side, said first support being formed with a transverse bottom remote from its end affixed to said strain wheel and a tube section connected to said bottom, said tube section coaxially surrounding said input shaft and affixed at an end of said tube section remote from said bottom to said housing, each of said supports being open in the direction of the respective end affixed to said strain wheel, said second support having a transverse bottom remote from its end affixed to said strain wheel and guided on said input shaft.

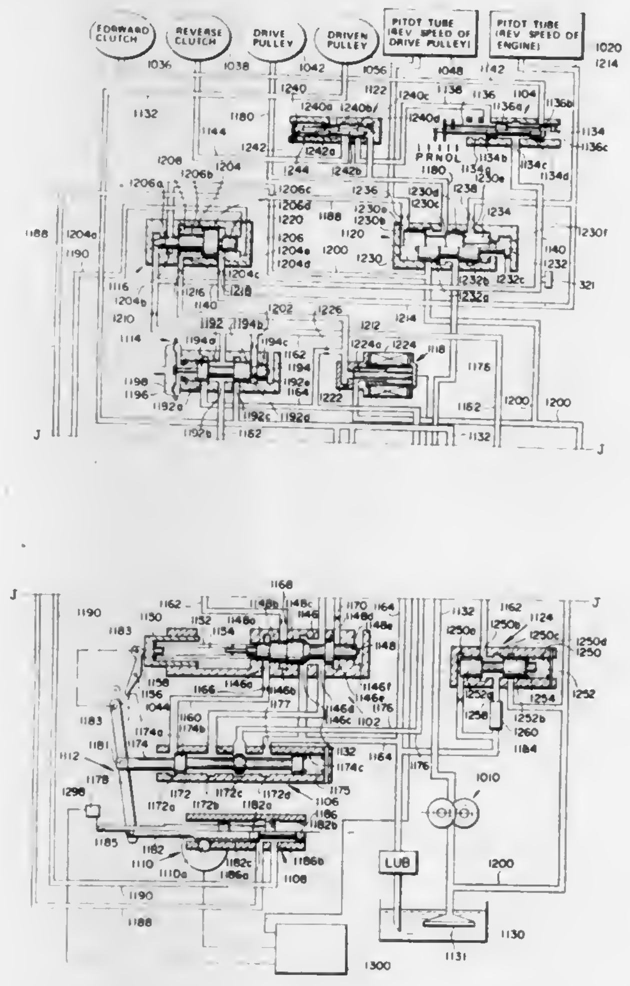


4,616,530
HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION SUCH AS A CONTINUOUSLY VARIABLE TRANSMISSION

Yoshikazu Tanaka; Haruyoshi Kumura, both of Yokohama; Keiju Abo, Yokosuka; Sigeaki Yamamuro, Zushi, and Hiroyuki Hirano, Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 27, 1985, Ser. No. 574,385
Claims priority, application Japan, Jan. 31, 1983, 58-12894
Int. Cl.⁴ B60K ***41/08***
U.S. Cl. 74—851 **5 Claims**

1. In an automotive vehicle having driven wheels:
- an engine;
- a transmission having an input member drivingly connected with the engine and an output member drivingly connected with the driven wheels, the transmission including frictional element means for interrupting a power delivery path between the engine and the driven wheels;
- a source of pressurized fluid;
- a manual valve communicating with said source of pressurized fluid and the frictional element means, said manual valve being shiftable to a forward drive position wherein said manual valve establishes a fluid feed line through which the pressurized fluid is supplied to the frictional element means from said source of pressurized fluid, a neutral position wherein said manual valve establishes a drain fluid line through which the pressurized fluid is discharged from the frictional element means, and a reverse drive position;
- means for delaying a shift to neutral in the transmission when said manual valve is moved to the neutral position from the forward drive position; and
- fuel cut control means for interrupting the supply of fuel to said engine as long as the engine speed is higher than a first predetermined value after a predetermined operating state of the automotive vehicle has been established and until the enginge speed drops to a second predetermined value that is lower than said first predetermined value, and allowing the resumption of the supply of fuel to said engine when said manual valve is shifted to the neutral position.

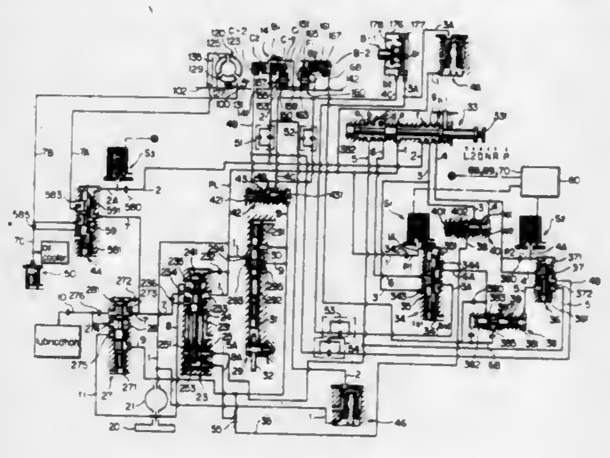


4,616,531
HYDRAULIC AND ELECTRONIC CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION

Tsunehiko Ogasawara, Kariya; Yoshichika Arakawa, Nagoya; Koji Sumiya, Nishio, and Yoshikazu Sakaguchi, Anjo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Aisin Warner Kabushiki Kaisha, Aichi, both of, Japan

Filed Mar. 14, 1984, Ser. No. 589,476
Claims priority, application Japan, Mar. 31, 1983, 58-56444
Int. Cl.⁴ B60K ***41/18***
U.S. Cl. 74—866 **18 Claims**

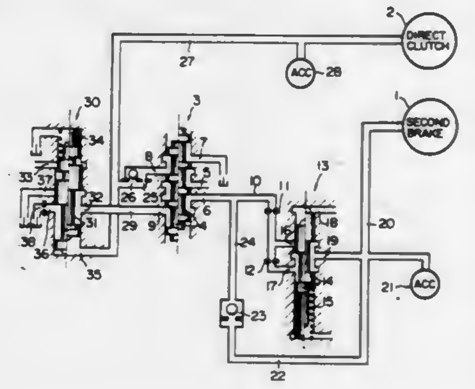
1. In an automatic transmission equipped with a plurality of friction engaging devices for attaining a plurality of shift ranges by locking the elements of a gear mechanism, which is disposed between an input shaft and an output shaft, to a case, or by bringing the elements into and out of engagement with the input shaft or output shaft, or into and out of engagement with each other, said friction engaging devices including a first friction engaging device (C2) which takes part in achieving a reverse shift, and a second friction engaging device (B2) which participates in achieving parking and reverse, a control system for said automatic transmission which comprises:
- sensing means for sensing shift position;
- means for discriminating, based on a signal from said sensing means, a shift from the parking position to the reverse position; and
- electronic control circuit means for controlling valves of a hydraulic circuit in such a manner that, when the shifting operation is discriminated to have taken place, said first friction engaging device (C2) is engaged and said second friction engaging device (B2) is temporarily disengaged, followed by re-engaging said second friction engaging device (B2) upon passage of a predetermined length of time.



4,616,532
AUTOMATIC TRANSMISSION HYDRAULIC PRESSURE CONTROL SYSTEM WITH ONE-WAY FLUID DRAIN PASSAGE BYPASSING DOWNSHIFT TIMING SUBSYSTEM

Takahiro Sakai, and Isamu Minemoto, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jan. 26, 1984, Ser. No. 574,144
Claims priority, application Japan, May 24, 1983, 58-92096
Int. Cl.⁴ B60K ***41/16***
U.S. Cl. 74—869 **1 Claim**



1. In an automatic transmission including a gear transmission mechanism comprising a first and a second hydraulic pressure actuated friction engaging device, which provides a certain lower speed stage when said first friction engaging device is engaged by supply of actuating hyraulic fluid pressure thereto and said second friction engaging device is disengaged by non-supply of actuating hydraulic fluid pressure thereto, and which provides a certain higher speed stage when said first friction engaging device is disengaged by non-supply of actuating hydraulic fluid pressure thereto and said second friction engaging device is engaged by supply of actuating hydraulic fluid pressure thereto,
- a hydraulic fluid pressure control system, comprising:
- a speed shift valve having a first, a second, a third, a fourth, and a fifth port, and a first valve element selectively positioned either to a first position to communicate said first port with said second port and said fourth port with said fifth port, respectively, or to a second position to communicate said first port with said fourth port and said second

port with said third port, respectively, said first port being supplied with a line pressure, while said fifth port is open to drain;

a downshift timing valve having a first port passage, and a second valve element driven by a governor pressure from a third position toward a fourth position against a biasing force so as to interrupt communication of said first port passage when the governor pressure is larger than a predetermined value;

an upshift timing valve having a second port passage, a sixth port, and a third valve element driven by a throttle pressure from a fifth position toward a sixth position against a force applied by a fluid pressure supplied to said sixth port so as to interrupt communication of said second port passage when the balance between the throttle pressure and the fluid pressure supplied to said sixth port is smaller than a predetermined value;

a first hydraulic pressure system for operating said first friction engaging device in relation to said second friction engaging device, including a first passage system which connects said first friction engaging device with said second port, a second passage system which drains said third port, and a third passage system for interrelating operation of said first friction engaging device with that of said second friction engaging device, said first passage system including a parallel connection of a first and a second passage at a middle portion thereof, said first passage including a parallel connection of said first port passage and a first throttling element at a middle portion thereof and further a second throttling element connected in series with said parallel connection of said first port passage and said first throttling element at a middle portion thereof, said second passage including a first one way valve at a middle portion thereof, said first one way valve allowing fluid to flow therethrough only in a direction from said first friction engaging device toward said second port, said second passage system including a third passage which includes a parallel connection of said second port passage and a third throttling element therein, said third passage system including a fourth passage which connects said sixth port with said second friction engaging device; and

a second hydraulic pressure system for operating said second friction engaging device, including a fifth passage which connects said second friction engaging device with said fourth port, said fifth passage including a parallel connection of a fourth throttling element and a second one way valve at a middle portion thereof, said second one way valve allowing fluid to flow therethrough only in a direction from said second friction engaging device toward said fourth port.

4,616,533

STRIPPING DEVICE FOR COAXIAL CABLES

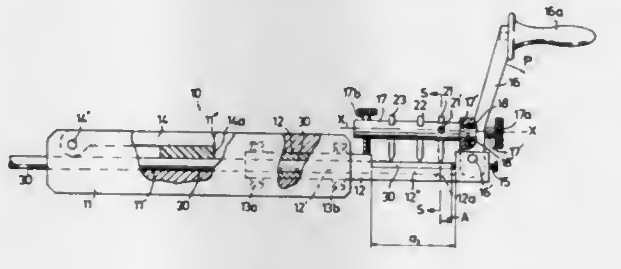
Hans Wiener, Täby, and Hans Undin, Akersberga, both of Sweden, assignors to C. A. Weidmüller GmbH & Co., Detmold, Fed. Rep. of Germany

Filed Aug. 1, 1984, Ser. No. 636,541

Claims priority, application Sweden, Aug. 26, 1983, 8304627

Int. Cl.⁴ H02G *1/12*

U.S. Cl. 81—9.41 **27 Claims**



1. A stripping device for coaxial cables, comprising:

an elongate handle member;

an elongate guiding track member for a terminal portion of a coaxial cable to be stripped, said guiding track member exposing a part of the surface of the insulating sheathing of an inserted cable for treatment and extending between a first end, attached to the handle member, and a second end, remote from the handle member;

an elongate knife holder movably attached to said guiding track member, and at least two knife means arranged spacedly in said knife holder for perfoming in said exposed insulation parts a short incision which by relative rotation of the cable and the knife holder may be extended to the whole circumference of the cable; and

a locking means; wherein;

the handle member is provided with a through-opening for the cable;

the locking means is provided in association with the handle member to temporarily non-rotarily lock a cable inserted in said through-opening with the handle member;

the guiding track means and the knife holder are with the aid of a crank means jointly rotatable relative to the handle member; and

the knife holder is settable relative to the guiding track member so that in the initial phase of a stripping operation, only the knife located nearest to said second end of the guiding track member and performing the deepest incision is brought into engagement with the cable and a translatorial motion of the insulation caused by such incision is not impeded by other knives in engagement with the cable.

4,616,534

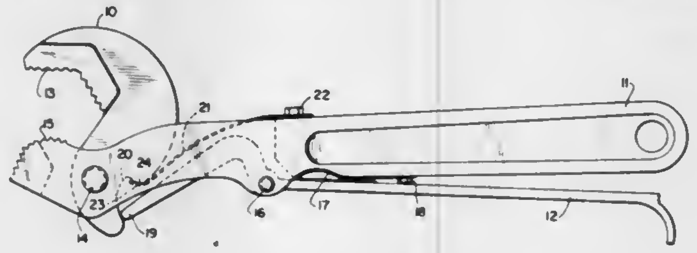
CLOSED END WRENCH

Sea C. Park, and In Pio Park, both of 3836 Birchwood, Skokie, Ill. 60076

Filed Oct. 23, 1984, Ser. No. 664,039

Int. Cl.⁴ B25B *13/28*

U.S. Cl. 81—99 **1 Claim**



1. A wrench comprising

a body member having a lower jaw disposed at one end thereof,

a head member having a spring engaging protrusion surface and a base engaging surface, said head member being pivotally connected to the body member in the vicinity of the lower jaw and defining an upper jaw,

a handle member pivotally connected to the body member,

a biasing spring disposed between said body member and said handle member for biasing said handle member away from said body member, said handle member containing a lever engaging end portion which slidably engages the base engaging surface of the head member for separating the upper jaw of the head member from the lower jaw of the body member through the squeezing of the handle member toward the body member against the bias of the biasing spring and

a retaining spring attached at one end to the body and at an indent portion at the other end with the spring engaging protrusion surface of the head member, whereby, when the handle is released, the upper jaw of the head member is caused to close toward the lower jaw by the action of the retaining spring.

4,616,535

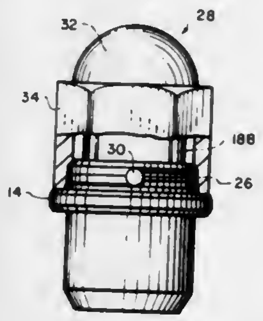
TAMPER-PROOF THREADED FASTENINGS

Ezio R. Chiavon, 17 Walnut La., Harrison, N.Y. 10528

Continuation of Ser. No. 476,031, Mar. 17, 1983, abandoned. This application Jul. 11, 1985, Ser. No. 754,064

Int. Cl.⁴ B25B *13/06*

U.S. Cl. 81—121.1 **19 Claims**



1. An anti-theft fastening device for securing an automobile wheel to a vehicle, said fastening device including a head portion defining a predetermined configuration on the outer periphery thereof adapted to complement the configuration of a tool for removing said head portion from an automobile wheel, and a cap removable mounted over said head portion to conceal said predetermined configuration defined on said head portion, the combined weight of said head portion and said cap being substantially equal in weight to the weight of conventional lug nuts mounted to said automobile wheel.

4,616,536

WRENCH

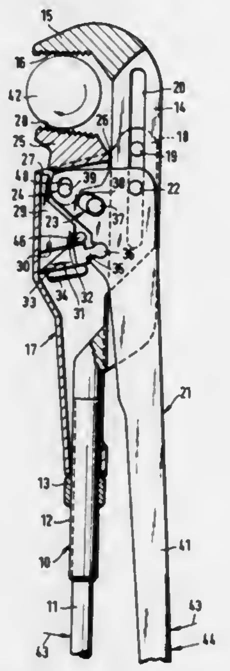
Fritz Knebel, Limburgerhof, and Rudolf Dassel, Gevelsberg, both of Fed. Rep. of Germany, assignors to Beler-Dowiday GmbH Werkzeug-Union, Fed. Rep. of Germany

Filed Dec. 9, 1985, Ser. No. 806,978

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1984, 3444725

Int. Cl.⁴ B25B *13/18*

U.S. Cl. 81—128 **11 Claims**



1. A wrench comprising a first arm carrying a first jaw, a second arm carrying a second jaw, first means for articulately connecting said first and second arms together, means for pivotally connecting said second jaw to said second arm, two stop means for limiting the pivotal movement of said second jaw relative to said second arm in two opposite directions of second jaw movement, a slider, second means for articulately connecting said slider to said second arm, means for movably connecting said slider to said first arm to thereby vary the distance between said first and second jaws, at least one of said stop means is carried by a slide member, a locking element constructed and arranged for moving said one stop means to an operative position thereof to contact said second jaw, and means for connecting said locking element to said second arm whereby relative movement of said second arm moves said locking element to a position freeing said slide member for movement to an inoperative position of said one stop means preventing contact thereof with said second jaw.

4,616,537

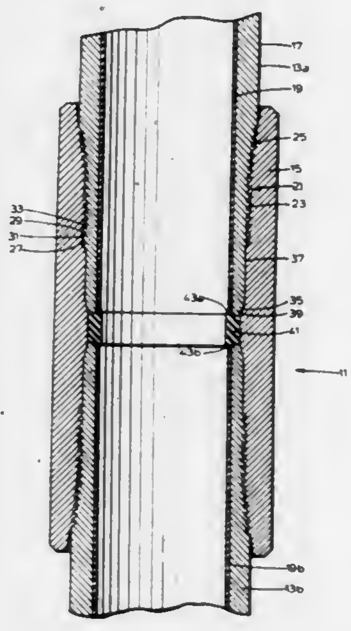
PIPE CONNECTION

Robert A. Axford, Houston; Edgar C. Wood, Jr., Huntsville, and Herbert F. Brandana, Spring, all of Tex., assignors to AWB, Inc., Houston, Tex.

Division of Ser. No. 481,797, Apr. 4, 1983, Pat. No. 4,568,113. This application Oct. 2, 1985, Ser. No. 782,977

Int. Cl.⁴ B23C *1/00;* B23G *1/22*

U.S. Cl. 82—5 **2 Claims**



1. A method of threading a tubular member to form an external continuous helical thread having a first axial length parallel to the axis of said tubular member and a second axial length with an angle of taper with respect to said axis of said tubular member, said helical thread having a form including stabbing and load flanks and an axially extending crest and root, wherein throughout said thread, lead is constant as measured along the load flanks and the length of said crest and the depth of said load flank are constant, which comprises the steps of:

(a) rotating said tubular member at a substantially constant speed of rotation about the axis thereof;

(b) positioning a thread cutting tool adjacent the end of said tubular member, said thread cutting tool including a leading edge for cutting the stabbing flank, a bottom edge for cutting the root, a trailing edge for cutting the load flank, and a top edge for cutting the crest;

(c) moving said thread cutting tool at a substantially constant linear speed toward and along said tubular member in a direction parallel to the axis of said tubular member to cut said first axial length;

(d) when said thread cutting tool has moved said first axial length, moving said thread cutting tool radially outwardly in a direction perpendicular to the axis of said tubular member at substantially constant speed while continuing to move said thread cutting tool at said substantially constant speed in the direction parallel to the axis of said tubular member so that said thread cutting tool moves along said angle of taper to cut said second axial length;

(e) displacing said thread cutting tool axially toward said tubular member a distance equal to the difference between the lengths of the crests in the first axial length and the crests in the second axial length;

(f) moving said displaced thread cutting tool at a said substantially constant linear speed toward and along said tubular member in the direction parallel to the axis of the tubular member to shorten the crests in said first axial length;

(g) and moving said thread cutting tool rapidly radially outwardly in the direction perpendicular to the axis of the tubular member after shortening the crests in said first axial length to clear the threads in said first axial length.

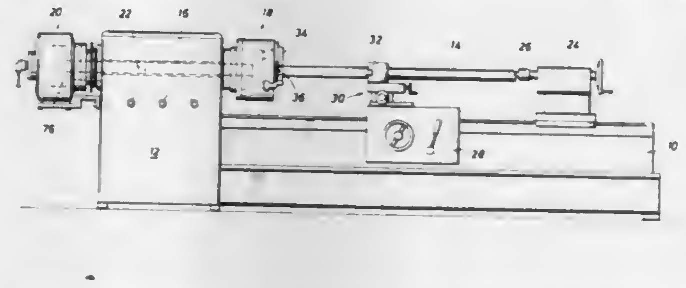
4,616,538
CHUCK ASSEMBLY

Norbert Hessbrüggen, Salach, Fed. Rep. of Germany, assignor to UMA Corporation, Houston, Tex.

Filed Apr. 27, 1984, Ser. No. 604,921

Int. Cl.⁴ B23B *31/00*

U.S. Cl. 82—40 R **35 Claims**



1. An improved chuck assembly for a lathe apparatus comprising:

a base structure;

first holding means for selectively radially gripping the side surface of a workpiece;

second holding means for selectively forcibly axially engaging an end surface of such workpiece independently of said first holding means; and

first and second means connecting said first and second holding means respectively to said base structure for movement independently of each other; said first holding means being both radially and axially movable and said second holding means being axially movable,

actuator means operatively connected to said first and second holding means for effecting such selective independent movement.

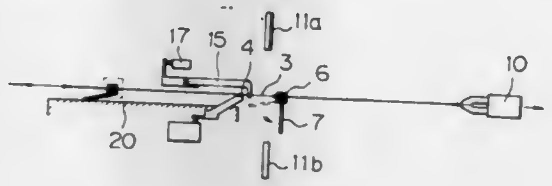
4,616,539
METHOD OF CUTTING SLIDE FASTENER CHAIN

Youichi Horikawa, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jul. 19, 1985, Ser. No. 756,652

Int. Cl.⁴ B26D *5/28*

U.S. Cl. 83—42 **2 Claims**



1. In a method of cutting a fastener chain wherein said fastener chain includes space portions where no element is present, said space portions being provided at regular intervals along continuous interlocking element trains, and sliders each of which has a pull and is inserted into each single length of said interlocking element trains lying between two adjacnet space portions, said fastener chain being fed in a horizontal direction in such a manner that the bottom end of each of the slide fastener sections is disposed forwardly of the upper stop of the same fastener section in terms of the feeding direction, and being cut into individual slide fasteners at the position of said space portion,

an improvement characterized by comprising the steps of feeding said fastener chain to a cutting device in the state wherein the side of said fastener chain on which said pull of said slider inserted in said fastener chain is located faces downward and said slider is in contact with or in close proximity to said upper stop, and hanging said pull in such a manner as to be parallel to the cutting direction of said cutting device when said space portion reaches said cutting device.

4,616,540
METHOD AND APPARATUS FOR MAKING TUBES FORMED WITH HOLES IN THEIR PERIPHERAL WALL

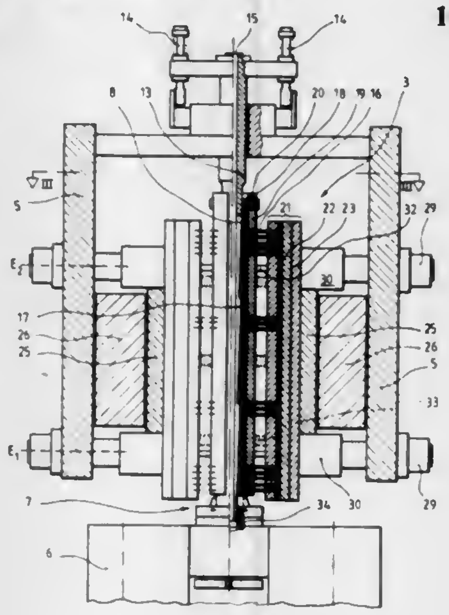
Alfred Morhard, Koenigsberger Strasse 24, D-7272 Altensteig-Walddorf, Fed. Rep. of Germany

Filed May 9, 1984, Ser. No. 608,596

Claims priority, application Fed. Rep. of Germany, May 11, 1983, 3317313

Int. Cl.⁴ B26F *1/04*

U.S. Cl. 83—54 **16 Claims**



1. An apparatus for perforating an elongate tube, comprising: an elongate mandrel having first and second ends and support means cooperable with said first end of said mandrel for supporting said mandrel, the tube being axially slidable over said second end of said mandrel, said mandrel including two elongate, axially extending backing elements and means for effecting radially outward movement of said backing elements in opposite directions so that said backing elements engage the inner surface of the tube at diametrically opposite regions thereof which are each to have holes punched therein; two elongate, axially extending guide elements which are provided on opposite sides of and are supported for radial movement toward and away from said mandrel, each said guide element being approximately angularly aligned with a respective one of said backing elements and being engageable with the exterior surface of the tube; a plurality of punch elements supported on ech of said guide elements at axially spaced locations therealong for generally radial movement toward and away from said mandrel; actuating means which can effect simultaneous radially inward movement of at least one of said punch elements on each of said guide elements, said actuating means including selecting means for selecting a predetermined group of said punch elements on each said guide element which are simultaneously moved radially inwardly by said actuating means, wherein each said punch element which is excluded from said predetermined groups remains in a radially outer position during radially inward movement of said predetermined groups of punch elements, each of said punch elements of said preselected groups punching a hole through said tube during said radially inward movement thereof; and means which cooperates with said second end of said mandrel as said actuating means effects radially inward movement of said punch elements for holding said second end of said mandrel against movement in radial directions as said punch elements punch holes in the tube.

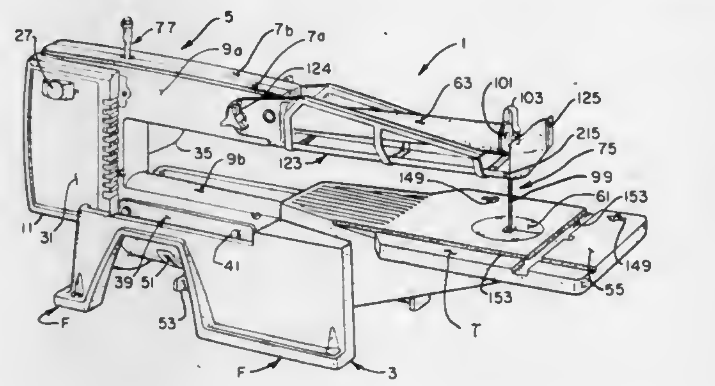
4,616,541
WALKING BEAM SCROLL SAW

Curtis J. Eccardt, St. Charles County, and Richard B. Brundage, St. Louis County, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 13, 1984, Ser. No. 640,399

Int. Cl.⁴ B23D *49/00*

U.S. Cl. 83—98 **9 Claims**



1. A walking beam scroll saw having a base, a frame carried by said base, said frame having a generally vertically extending rear portion, a top frame portion cantilevered forwardly from said rear portion, and a bottom frame portion cantilevered forwardly from said rear portion with said top and bottom frame portions being spaced apart vertically from one another, an induction electric motor secured directly to said rear frame portion, said motor having a drive shaft extending inwardly of said frame, an upper beam pivotally mounted with respect to said upper frame portion intermediate the ends of said upper beam, a lower beam pivotally mounted with respect to said bottom frame portion intermediate the ends of said lower beam, a blade extending between the outer ends of said upper and lower beams, means interposed between said upper and lower beams adjacent the other ends thereof for placing said blade under tension, eccentric linkage means interconnecting said motor shaft and one of said beams at the portion of said one beam proximate said tension means for reciprocably, pivotally moving said one beam up and down with respect to said frame and, via said blade and said tensioning means, effecting up and down movement of said other beam, each of said beams being of hollow, circular, tubular construction so as to minimize the mass of said beams and to minimize vibrations, and yet so as to maximize the stiffness of the beams in both vertical and lateral direction, said saw further comprising means for positively holding said blade on the outer end of each of said beams, said blade holding means comprising a one-piece member having a slot therein for receiving one end of said blade, means for securing said blade with respect to said blade holding member, the latter having a pair of supports on opposite sides thereof, said supports being pivotally, rockably supported in a portion of said beam for rocking in a substantially fore and aft direction as said beams are reciprocated upwardly and downwardly.

4,616,542
FLYING BUCKSAW APPARATUS

John E. Hards, Delta, Canada, assignor to Brunette Machine Works, Ltd., New Westminster, Canada

Filed Sep. 7, 1984, Ser. No. 648,380

Int. Cl.⁴ B27B *5/00*

U.S. Cl. 83—155 **8 Claims**

1. Apparatus for bucksawing a log along a predetermined cutting line while the log is being directed in an endwise, downstream direction along a substantially horizontal path of travel, comprising:

saw means for sawing the log, said saw means being initially disposed above said path of log travel;

means for displacing said saw means downwardly into and upwardly out of said path of log travel to effect cutting of the log;

clamp means for releasably gripping the log;

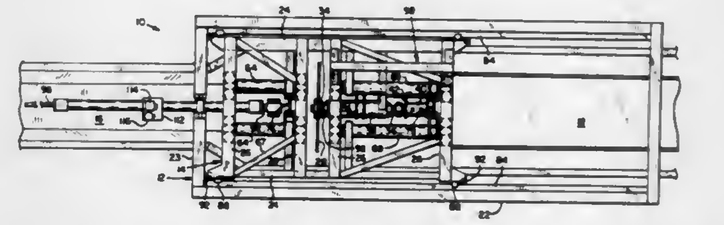
means for reciprocating said saw means and said clamp means along said path of log travel;

control means including means for causing said saw means to be displaced into said path of log travel only when said saw means is traveling at the same velocity as the log, means for causing said clamp means to grip the log only when said clamp means is traveling at said log velocity and for causing said clamp means to release the log after a cut has been effected along the cutting line, and means for causing said reciprocating means to accelerate said saw means and said clamp means in a downstream direction up to said log velocity for sawing the log, and then causing said reciprocating means to index said saw means and said clamp means back in an upstream direction after said clamp means has released the cut log;

substantially horizontal log infeed support means for supporting the log from below and for conveying the log along said path of log travel at a first height;

log outfeed support means for supporting the log from below after it has been cut and for conveying the cut log along said path of log travel at a height which is lower than said first height; and

wherein said clamp means includes means for supporting the log such that a space is defined below the log during at least a portion of the path of log travel, said space extending in a downstream direction from the cutting line, and wherein said control means includes means for causing said saw means to complete cutting of the log when the cutting line is supported over said space.



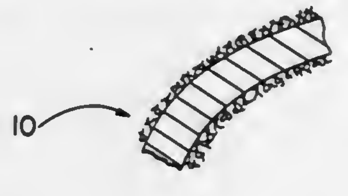
4,616,543
APPARATUS FOR WORKING ON WOVEN FABRIC WOUND ON A SUPPLY ROLL

Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Scientific, Inc., South Windsor, Conn.

Continuation-in-part of Ser. No. 284,783, Jul. 20, 1981, abandoned. This application May 7, 1984, Ser. No. 607,618

Int. Cl.⁴ D06H *7/00*

U.S. Cl. 83—175 **13 Claims**



1. Apparatus for working on woven fabric wound on a supply roll and comprising a table defining a supporting surface upon which fabric may be spread, a fabric spreader for carrying a fabric supply roll and supported for movement in one and an opposite direction longitudinally of said supporting surface for spreading fabric from the supply roll onto the supporting surface, means for moving said fabric spreader in one and an opposite direction longitudinally of said supporting surface, means for paying-off fabric from the supply roll and

onto said supporting surface as said fabric spreader moves longitudinally of said supporting surface, means for vibrating a portion of the fabric located between said supply roll and said supporting surface which portion extends across the full width of said fabric, means for continuously varying the frequency of vibration of said vibrating means instrument means for performing a work operation on the fabric spread on said supporting surface, and means for moving said instrument means longitudinally and transversely of said supporting surface and in working relation to fabric spread on said supporting surface to perform said work operation on the fabric spread on said supporting surface.

4,616,544
CUTTING MACHINE FOR PREPARING MODELS FOR SPECTACLE LENSES

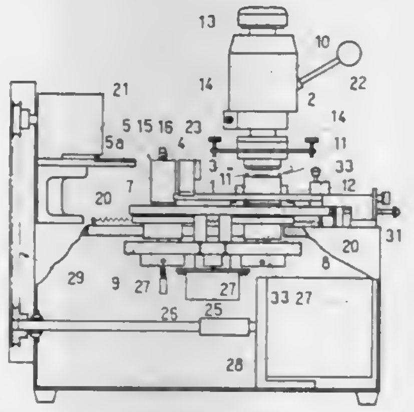
Niro Kato, Sabae, Japan, assignor to Kabushiki Kaisha Kato Kogei, Japan

Filed Feb. 5, 1985, Ser. No. 698,413

Claims priority, application Japan, Jun. 18, 1984, 59-91376; Nov. 1, 1984, 59-231977; Dec. 19, 1984, 59-269141

Int. Cl.⁴ B26D *5/00*

U.S. Cl. 83—413 **9 Claims**



1. A cutting machine for preparing a model for spectacle lenses comprises:

a base rotatable about its axis by drive means and provided with needle-like projections in predetermined positions, the base having concentrically placed thereon a jig with the needle-like projections engaged in holes formed in the jig in coincidence with the projections, the jig being adapted to fixedly hold a real spectacle lens concentrically placed thereon and serving as a model lens,

a clamp rotatable with the base and the lens for holding the lens between the base and the clamp by elastic pressing means,

a profiling member adapted to contact the outer periphery of the lens held between the base and the clamp,

a rotary head rotatable with the base at the same speed as the base by drive means about an axis parallel with the axis of the base for holding a model work thereon concentrically therewith, and

a stationary cutter for cutting the work on the rotary head,

wherein the axis of the combination of the base and the clamp, the point of contact of the profiling member with the outer periphery of the lens, the axis of the rotary head and the point of contact of the cutter with the work are aligned in a plane,

wherein one of the profiling member and the combination of the base and the clamp is slidingly movable in the direction of alignment of the axes and the contact points relative to the other which is stationary such that the rotary head also moves in the direction of alignment in correspondence with the movable one, and

wherein the movable one has connected thereto a spring for biasing the movable one so that the profiling member comes into contact with the outer periphery of the model relative to each other.

4,616,545
CUTTER FOR A WELDING APPARATUS

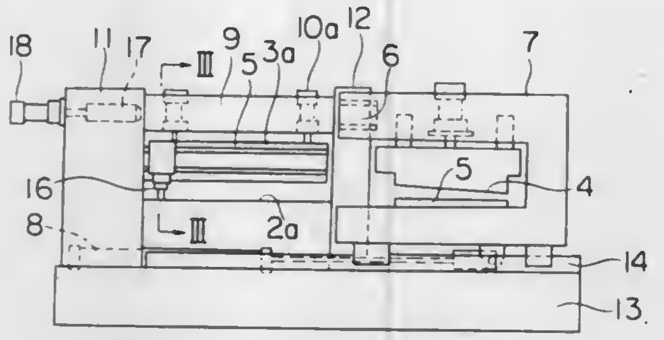
Kazuo Katou, Okayama; Susumu Mizugami; Mamoru Tabuchi, both of Kurashiki; Masayuki Nakamura, Hyogo; Toshiyuki Kobayashi, Suita, and Naotake Ritoh, Minoo, all of Japan, assignors to Kawasaki Steel Corporation and Mitsubishi Denki Kabushiki Kaisha, both of, Japan

Filed Nov. 8, 1984, Ser. No. 669,326

Claims priority, application Japan, Mar. 11, 1983, 58-41352

Int. Cl.⁴ B26D *5/04;* **B23K** *11/00*

U.S. Cl. 83—558 **10 Claims**



1. A cutter for a welding apparatus in which a welding workpiece is cut by being moved into a welding position in said apparatus, said cutter comprising in combination:

a C-shaped shear frame having an upper pendant portion and a lower jaw separated by an opening which forms the gap in the C-shape of the shear frame;

means (1) for moving said shear frame between welding and non-welding positions;

a mechanism spanning said upper pendent portion and said lower jaw for resisting the reactive force created by said upper and lower blades during cutting;

a lock pin housed in said lower jaw and movable between lock and unlock positions; and

a lateral hole in a free end of said mechanism for receiving said lock pin in its locked position, thereby retaining said mechanism in a position spanning said upper pendent portion and said lower jaw.

4,616,546
ELECTRONIC MUSICAL INSTRUMENT FORMING TONES BY WAVE COMPUTATION

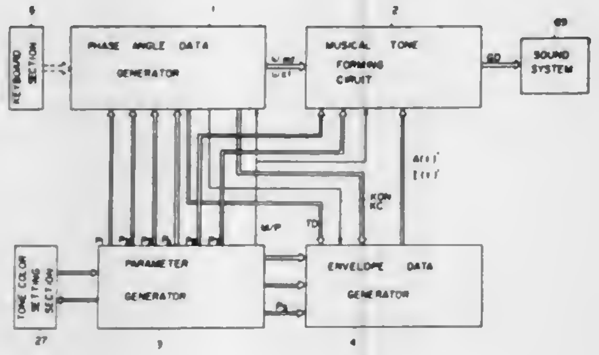
Yasuji Uchiyama, Hamamatsu, and Hideo Suzuki, Kami, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 434,230, Oct. 14, 1982, abandoned. This application Mar. 29, 1985, Ser. No. 718,186

Claims priority, application Japan, Oct. 15, 1981, 56-164443

Int. Cl.⁴ G10H *1/00*

U.S. Cl. 84—1.01 **6 Claims**



1. An electronic musical instrument comprising:

time channel providing means for providing repeated cycles of a plurality of time slots, each correspondingly located time slot over the repeated cycles constituting each time-division-multiplexed time channel;

tone formation assigning means for assigning to each one of said time channels tone formation of each one of musical tone signals to be formed respectively defining individual note pitches and tone colors;

at least first and second signal computing means for computing in combination each said one musical tone signal per each said one time channel using at least two cycles of the time slots as a unit processing perid, in which in the first cycle of said at least two cycles said first signal computing means executes per each said one time channel a first sub-computation according to a first mathematical function to produce a first wave signal for the assigned said one musical tone signal whereas in the second cycle of said at least two cycles said second signal computing means executes per each said one time channel a second sub-computation according to a second mathematical function to produce a second wave signal for the assigned musical tone signal utilizing the result of said first subcomputation as an argument in said second sub-computation; and

musical tone wave forming means for forming a musical tone wave signal having an individual note pitch and a tone color based on the result of said second wave signal.

4,616,547
IMPROVISER CIRCUIT AND TECHNIQUE FOR ELECTRONIC MUSICAL INSTRUMENT

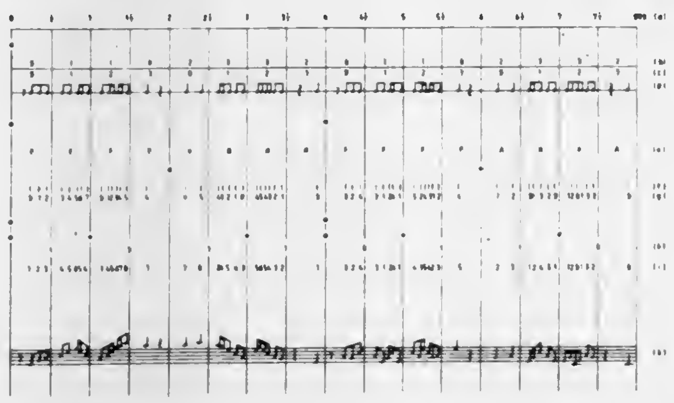
George M. Mancini, E. Setauket, N.Y., and Rudolph A. Huber, Trossingen, Fed. Rep. of Germany, assignors to Matth. Hohner AG, Trossingen, Fed. Rep. of Germany

Filed Jan. 31, 1985, Ser. No. 696,927

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1984, 340355

Int. Cl.⁴ G10H *1/40, 7/00*

U.S. Cl. 84—1.03 **13 Claims**



1. An improvisation circuit for use in an electronic musical instrument comprising:

first memory means, said first memory means having stored therein tone duration data;

first random address generator means, said first random address generator means being coupled to said first memory means and generating address information which causes tone duration data to be read therefrom;

second memory means, said second memory means having tone pitch data stored therein;

second random address generator means, said second random address generator means being coupled to said second memory means and generating address information for causing tone pitch data to be read from said second memory means;

means responsive to the data read from said first and second memory means under the control of said address generator means for producing tone generator command signals, said command signals containing tone pitch and rhythm information;

first control signal generator means for providing a control input to said first random address generator means commensurate with a selected basic rhythm; and

second control signal generator means for providing a control input to said second random address generator commensurate with a selected tonality whereby said command signals means be commensurate with variations on said selected basic rhythm and tonality.

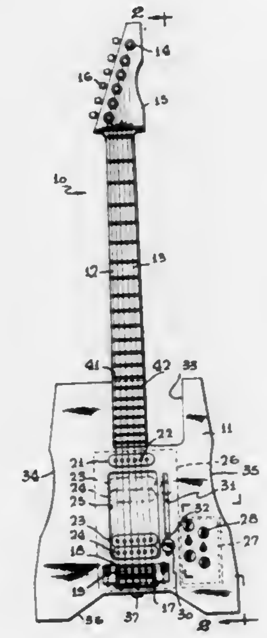
4,616,548
GUITAR COMPOSED OF HIGH STRENGTH-TO-WEIGHT RATIO MATERIAL

Arndt S. Anderson, 9500 Oso St., Chatsworth, Calif. 91311

Filed Mar. 26, 1984, Ser. No. 593,695

Int. Cl.⁴ G10H *3/18*

U.S. Cl. 84—1.16 **11 Claims**



1. An electronic stringed musical instrument comprising:

an instrument body having a fret board outwardly projecting from an edge marginal region of said body;

a plurality of strings extended across said body and fret board having opposite ends of said strings fixed to said body and the free end of said fret board;

electronic pick-up means carried on said body in close proximity to said strings for sensing vibrations thereof and generating electrical signals in response thereto; and

said body composed of an electrically conductive material operably coupled to said electric pick-up means constituting a massive ground therefor.

4,616,549
MUSIC PLAYING DEVICE

Wei-Hsin Lan, No. 45-12, Te Yang Road, Jiau Hsi Country, Yi Lan Hsien, Taiwan

Continuation-in-part of Ser. No. 701,484, Feb. 14, 1985. This application Jun. 7, 1985, Ser. No. 742,355

Int. Cl.⁴ G10F *1/06*

U.S. Cl. 84—94 R **8 Claims**

1. A music playing device comprising:

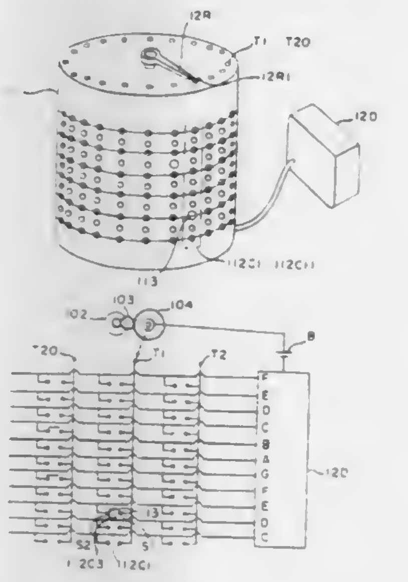
a music composition cylinder member having a plurality of parallel lines arranged circumferentially therearound and a plurality of rows of apertures, each row of apertures being arranged perpendicular to said parallel lines and being generally equally spaced;

a plurality of pins adapted to be selectively and removably inserted into said apertures; and

means for producing sounds of various pitch operable in association with said cylindrical member according to the arrangement of said pins in said apertures, said sound producing means comprising:

a pair of first and second electrical contacts arranged in connection with each one of said apertures and being operable to become electrically closed when one of said plurality of pins is inserted into said aperture, a plurality of contact terminals each connecting said first electrical contact of each pair of electrical contacts of one row of said rows of apertures;

a sound producing unit having a plurality of input terminals each being adapted to cause said sound producing unit to produce sound of a selected pitch when electric power is supplied thereto, each said input terminal being electrically connected to said second electrical contact of each pair of electrical contacts positioned along one of said parallel lines;



means for supplying electric power to said sound producing unit;

a rotary arm rotatably arranged with respect to said cylindrical member and capable of coming into contact with said contact terminals in a sequential order when rotated, said rotary arm being electrically connected between said sound producing unit and said means for supplying electric power; and

means for rotating said rotary arm.

4,616,550
STRING SUPPORT AND NECK DEVICE FOR STRINGED INSTRUMENT

Roger Lacroix, 2, rue de P. J. Proudhon, Villeurbanne, F-69100, and Yves Argant, 8, rue Pierre Robin, Lyon, F-69007, both of France

PCT No. PCT/FR83/00237, § 371 Date Jul. 30, 1984, § 102(e) Date Jul. 30, 1984, PCT Pub. No. WO84/02218, PCT Pub. Date Jun. 7, 1984

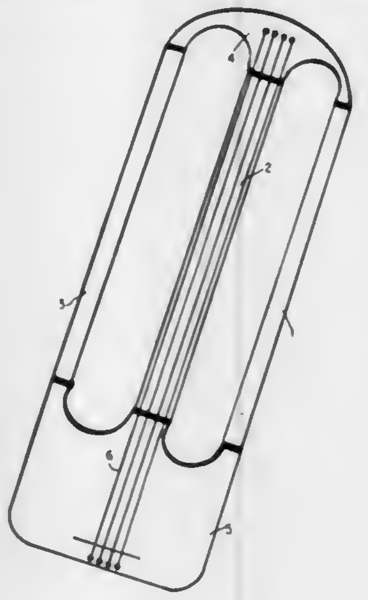
PCT Filed Nov. 29, 1983, Ser. No. 641,966

Claims priority, application France, Nov. 29, 1982, 82 20168

Int. Cl.⁴ G10D *1/00*

U.S. Cl. 84—173 **11 Claims**

1. A musical instrument including a string and neck support device, said musical instrument having at least one neck and a plurality of strings, said support device comprising at least one lateral arm positioned between a head of said musical instrument and a body of said musical instrument, said at least one arm comprising means for at least partially freeing said at least one neck from mechanical stresses applied thereto, wherein said strings are tensioned between said instrument head and said instrument body, said at least one neck being rigidly yet detachably connected to said head and said body, said head and said body comprising means for rigidly and detachably receiving first and second ends, respectively, of said at least one neck, said instrument further comprising means for adjusting the spacing between said strings and said neck.



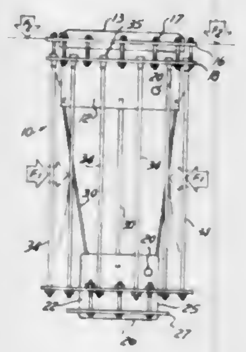
4,616,551
NADA DRUM AND ASSEMBLY

Steven Bookvich, 5300 Walnut, Apt. 2, Oakland, Calif. 94616

Filed Dec. 3, 1984, Ser. No. 677,366

Int. Cl.⁴ G10D *13/02*

U.S. Cl. 84—411 A **27 Claims**



1. An adjustable pitch drum having a dual drum shell, comprising:

a large shell having an outside end;

a small shell having an integral flat disk portion and a protruding end;

support bars having a stem portion located at both ends, the stem portion of said support bars being affixed at one end to said small shell and at the opposite end to said large shell by fastening means;

a small drum head, said small drum head being disposed over the protruding end of said small shell;

a small head rim, said small head rim being disposed over said small drum head and cooperatively connected to the flat disk portion of said small shell by attaching means;

a large drum head, said large drum head being disposed over the outside end of said large shell;

a large head rim, said large head rim being disposed over said large drum head;

a floating suspension ring, said floating suspension ring being positioned between said large head rim and the flat disk portion of said small shell and cooperatively connected to said large head rim by attaching means; and

tension straps, said tension straps being affixed to said floating suspension ring and the flat disk portion of said small shell by connecting means;

whereby, said large drum head can be replaced without disconnecting any of said tension straps.

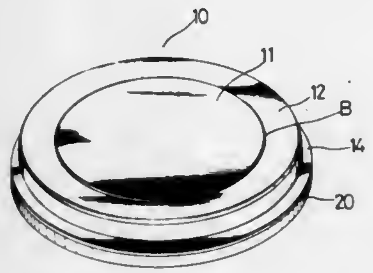
4,616,552
JAZZ DRUMHEAD

Chan-Hwei Jang, 7, Lane 6, Kuang Ming, Hsi Chuan Li, South Dist., Taichung, Taiwan (400)

Filed Dec. 10, 1985, Ser. No. 807,152

Int. Cl.⁴ G10D *13/02*

U.S. Cl. 84—414 **1 Claim**



1. A jazz drumhead, comprising:

a central part;

a circumferential part; and

a stepped and curved buffer ring formed by compression moulding and set between said circumferential part and said central part to make the central part 1-1.2 mm higher than the circumferential part.

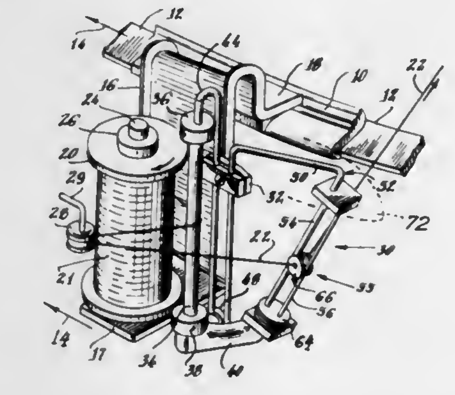
4,616,553
FAST-MOVING EYELET GUIDE FOR A GROUP OF BRAIDABLE STRANDS IN A BRAIDING MACHINE

Charles E. Nixon, 224 Edwards Ave., Sayville, N.Y. 11782

Filed Feb. 6, 1985, Ser. No. 698,811

Int. Cl.⁴ D04C *3/18, 3/06, 3/42*

U.S. Cl. 87—48 **9 Claims**



1. For use in a multiple untwisted strand braiding machine having a movable carrier for carrying a spool of multiple untwisted strands in which the multiple strands are fed from the spool containing a winding of such multiple strands mounted upon the movable carrier, and after unwinding from the spool the multiple untwisted strands are deflected by stationary horizontal cam components for deflecting said multiple strands upwardly and downwardly, multiple untwisted strand guide apparatus comprising:

track means mounted on said movable carrier defining an elongated guide track extending upwardly and downwardly,

a very lightweight eyelet having an overall weight less than one-tenth of an ounce mounted in said elongated guide track and being freely movable along said guide track,

said eyelet having a smoothly rounded opening therethrough with smoothly rounded entry and exit,

said opening being adapted to have said multiple strands fed through it for allowing free upwardly and downwardly movement of said eyelet along said track means, and

said eyelet being spaced less than one inch from the nearest of said stationary horizontal cam components of the braiding machine in at least one position of the upward and downward movement of the eyelet for retaining said multiple untwisted strands grouped compactly with each other at said position less than one inch from the nearest of said stationary horizontal cam components,

whereby said multiple strands are protected from individual friction effects in their collective upward and downward movement and whereby said strands are retained closely grouped together by said eyelet near to said stationary horizontal cam components,

thereby greatly reducing the incidence of breakage of said strands during operation of the braiding machine.

8. In a braiding machine, such as a Wardwell braider and the like, in which multiple untwisted strands are fed from each of a plurality of lower spools supported by moving mounting means upon a movable lower carrier and stationary deflector cam components serve to deflect the multiple untwisted strands during braiding action, apparatus for reducing the incidence of breakage of the strands in the braiding machine comprising:

a plurality of movable lightweight eyelet guides,

respective ones of said eyelet guides being movably mounted near the respective lower spools and having the multiple untwisted strands passing through the eyelet guide and being positioned near said deflector cams, said movable eyelet guides moving to within less than one inch from the nearest deflector cams for controlling the multiple strands being fed from each respective spool for keeping the multiple untwisted strands from the respective spool closely compactly associated near said deflector cams for reducing the incidence of snagging and breakage of individual strands.

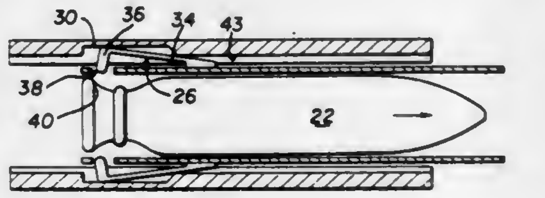
4,616,554
EXTENDABLE TUBE FOR VERTICALLY DELIVERED WEAPONS

Thomas E. Spink, Ellicott City, and Frank C. Rushing, Columbia, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 13, 1984, Ser. No. 640,424

Int. Cl.⁴ F41F *3/042, 3/052, 3/06*

U.S. Cl. 89—1.806 **13 Claims**



12. An extendable launch tube for a rocket comprising:

an inner tube for receiving the rocket concentrically in telescoped configuration;

an outer tube for receiving the inner tube and rocket concentrically in telescoped configuration;

releasable inner tube latch means coupled between the inner and outer tubes for securing the tubes in the telescoped configuration and releasing the inner tube from the outer tube in response to sufficient axial force on said inner tube whereby the inner and outer tubes become axially extended;

releasable rocket latch means coupled between the rocket and inner tube for securing them in the telescoped configuration and releasing the rocket from the inner tube in response to a selected axial extension of the inner and outer tubes.

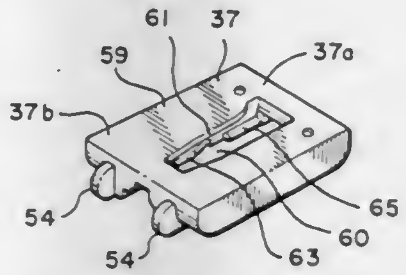
4,616,555
MACHINE GUN FEED BLOCK

Charles W. Goff, 1267 W. 1875 North, Farmington, Utah 84025, and Charles W. Goff, Jr., 479 Laurelwood Dr., Kaysville, Utah 84037

Division of Ser. No. 580,366, Feb. 14, 1984, Pat. No. 4,473,394. This application Nov. 25, 1985, Ser. No. 801,238

Int. Cl.⁴ F41D *10/24*

U.S. Cl. 89—33.02 **2 Claims**



1. A cartridge feed block mounting arrangement for a weapon that employs a feed block for arrangement in a receiver portion thereof that includes an open stepped top, the feed block to serially position cartridge therein for pick-up and insertion into a barrel breech portion thereof comprising a seat for said cartridge feed block adjacent said receiver stepped portion, and a top strap for fitting in covering engagement over said receiver stepped portion, a forward end thereof to overhang one end of said seat to fit closely proximate to and across one end of said cartridge feed block when said top strap is installed in covering attitude over said receiver top; and forwardly projecting spaced apart ears that extend in the plane of said cartridge feed block means to fit within complementary slots formed in opposite sides of the barrel breech.

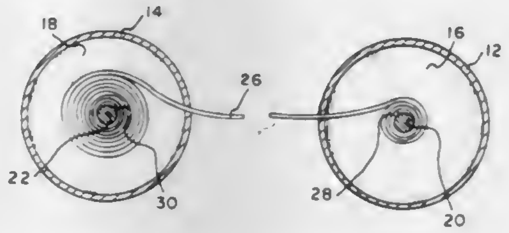
4,616,556
FLEXIBLE COMPRESSIBLE PISTON

Anna Meilman, 514 W. Cherry Hill Apartments, Cherry Hill, N.J. 08002; Sergey Meilman, Apartment E-5, 1865 Welsh Rd., Philadelphia, Pa. 19115, and Piotr Meilman, 514 W. Cherry Hill Apartments, Cherry Hill, N.J. 08002

Filed May 14, 1984, Ser. No. 610,124

Int. Cl.⁴ F01B *19/00*

U.S. Cl. 92—48 **2 Claims**



1. A pump for selectively creating a vacuum or increasing pressure comprising:

first and second housings including first and second airtight chambers, respectively, therein;

an elongated flexible compressible piston;

an opening in each of said housings leading from the exterior of said housings to said chambers to allow said pistons to pass therethrough, each said opening having a configuration complementary to but smaller than the cross-sectional configuration of said piston whereby said piston is compressed as it passes through said opening and an airtight seal is created between the housing around said opening and said piston;

first and second rotatable axles mounted within said first and second chambers, respectively, one end of said piston being connected to said first axle and the other end of said piston being connected to said second axle, and

means extending to the exterior of said housings for rotating said axles for selectively drawing said flexible piston into or out of said chambers by spirally winding said piston onto or unwinding said piston from an axle, whereby when said flexible piston is drawn into one of said chambers, the pressure within that chamber increases and said flexible piston is simultaneously drawn out of the other of said chambers decreasing the pressure in said other chamber.

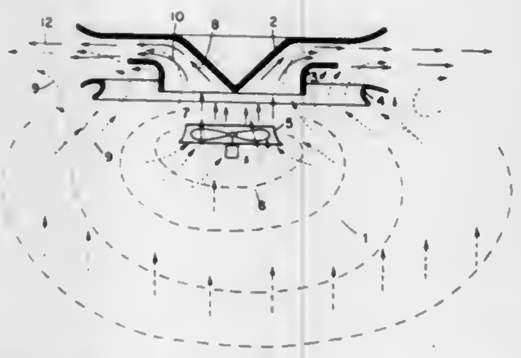
4,616,557
AIR MIXING DEVICE AND METHOD FOR PREVENTING INSECTS FROM FINDING HUMAN BEINGS

John A. Paoluccio, 3530 Kiernan Ave., Modesto, Calif. 95356

Continuation-in-part of Ser. No. 604,904, Apr. 27, 1984, abandoned. This application Jul. 10, 1985, Ser. No. 753,725

Int. Cl.⁴ F24F *7/007*

U.S. Cl. 98—31.5 **5 Claims**



1. Apparatus for mixing air within a room, which comprises:

a hollow leg section having, at one axial location, a circumferentially extending outlet section, said leg section being disposed in substantially perpendicular relationship to said circumferentially extending outlet section;

a sleeve shaped first member disposed (1) in spaced relationship to said hollow leg section and (2) in spaced relationship from said circumferentially extending outlet section; and

a fan disposed in axial spaced relation from the lowest extremity of said leg section with an opening to ambient therebetween and oriented to push ambient air into said leg section and out said circumferentially extending outlet section; and said fan being dimensioned to urge primary air through said fan, said sleeve shaped first member including means to cause the primary air to draw secondary ambient air from the room intermediate said sleeve shaped first member and said circumferentially extending outlet section into the room.

4,616,558
GASEOUS FLUID DISTRIBUTION DEVICES

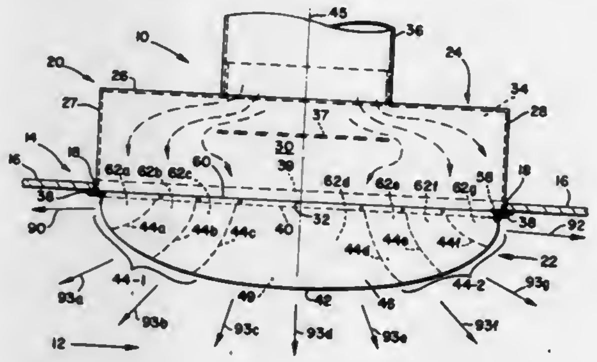
Lewis C. Ball, Clinton, and Anthony F. Delia, Camillus, both of N.Y., assignors to Total Air, Inc., Mattydale, N.Y.

Filed Nov. 1, 1984, Ser. No. 667,144

Int. Cl.⁴ F24F *13/075*

U.S. Cl. 98—40.11 **16 Claims**

13. A device for effecting a non-aspirated flow of air or other gaseous fluid into a room or other enclosure having a ceiling and determined vertical and horizontal dimensions with minimal turbulence, said device comprising: a perforate outlet member having a continuously curved cross-sectional configuration providing a horizontally oriented, curved bottom wall portion which transitions into curved, generally vertical side wall portions which are inwardly inclined at their upper edges and perforations through said side wall portions so located that a selected portion of the gaseous fluid flowing into said enclosure through said outlet member flows therefrom in paths which are generally parallel to said ceiling and perforations through said bottom and side wall portions which are so located as to direct that gaseous fluid flowing therethrough into said enclosure in paths inclined downwardly at selected angles relative to said first-mentioned paths; end walls at the opposite ends of said perforate outlet member; and a plurality of downwardly extending vanes housed in said perforate outlet member for proportioning the flow of the fluid flowing through said outlet member among those segments of the perforate outlet member delineated by the lower edges of said vanes to thereby effect a particularly patterned flow of fluid into said enclosure.



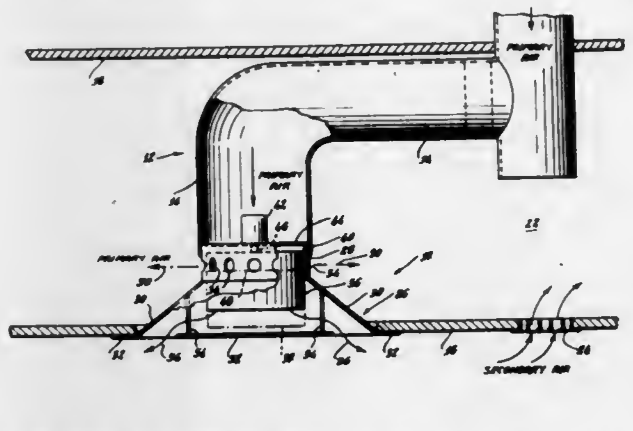
4,616,559
VARIABLE AIR DIFFUSER

Raymond S. Barlow, Tucson, Ariz., assignor to Pure Air Inc., Bethel, Conn.

Filed May 20, 1985, Ser. No. 736,174

Int. Cl.⁴ F24F *13/06*

U.S. Cl. 98—40.11 **18 Claims**



1. A variable air diffuser for discharging conditioned air (primary air) into an enclosure, comprising:

a hollow, open-ended housing having an axis and adapted to receive primary air from a primary air source, the housing being adapted for installation in an opening in a wall of the enclosure, the housing having an axially directed surface with apertures for providing fluid communication with a plenum outside the enclosure;

deflecting means mounted on the housing for blocking part of its open end and deflecting the primary air outwardly as it is discharged into the enclosure;

sleeve means movably mounted within the axially directed surface of the housing and coaxial thereto so as to be axially movable between a closed position in which the apertures of the housing are substantially closed by the sleeve means and an open position in which the apertures of the housing are substantially open; and

actuator means engageable with the sleeve means for selectively moving the sleeve means between the closed and open positions and to positions therebetween so as to cause a desired quantity of air to flow between the plenum and the air diffuser to alter the flow of the primary air discharged into the enclosure.

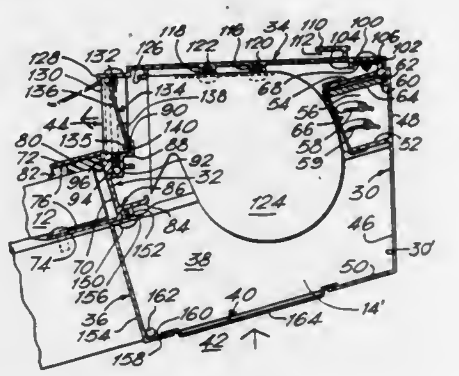
4,616,560
GREENHOUSE CONSTRUCTION PROVIDED WITH SPECIAL RIDGE FOR VENTILATION

Christopher Esposito, West Bay Shore, N.Y., assignor to Four Seasons Solar Products Corp., Farmingdale, N.Y.

Continuation of Ser. No. 565,989, Dec. 27, 1983, which is a continuation of Ser. No. 280,992, Jul. 6, 1981, Pat. No. 4,438,680, which is a continuation-in-part of Ser. No. 77,786, Sep. 21, 1979, Pat. No. 4,316,405. This application Apr. 2, 1985, Ser. No. 718,949

Int. Cl.⁴ A61G *9/24*

U.S. Cl. 98—42.02 **7 Claims**



1. A greenhouse or solarium construction comprising a framework adapted for abutting a supporting structure, glazing on said framework and defining with said framework and supporting structure an enclosure, said framework including a plurality of glazing bars for supporting said glazing, said glazing bars including sloped upper extremities, said glazing including at least one sloped glazing section supported by said sloped under extremities of said glazing bars, said framework including ridge means abutting the supporting structure and receiving said sloped upper extremeties of said glazing bars, said sloped glazing section having an edge portion at least partly defining an opening located between the edge portion and said ridge means, pocket means for receiving said glazing section, and blower means in said opening at least partly obturating the same and coupled by said pocket means to said edge portion of said glazing section for the venting of said enclosure.

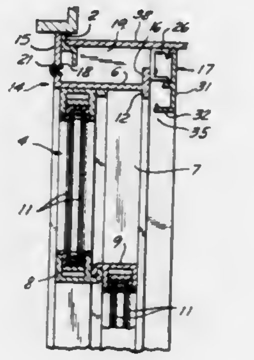
4,616,561
VENTED HEADING FOR WINDOW UNIT

James Giocastro, 53-11 73rd St., Maspeth, N.Y. 11378

Filed Nov. 18, 1985, Ser. No. 798,836

Int. Cl.⁴ E06B *7/02*

U.S. Cl. 98—97 **8 Claims**

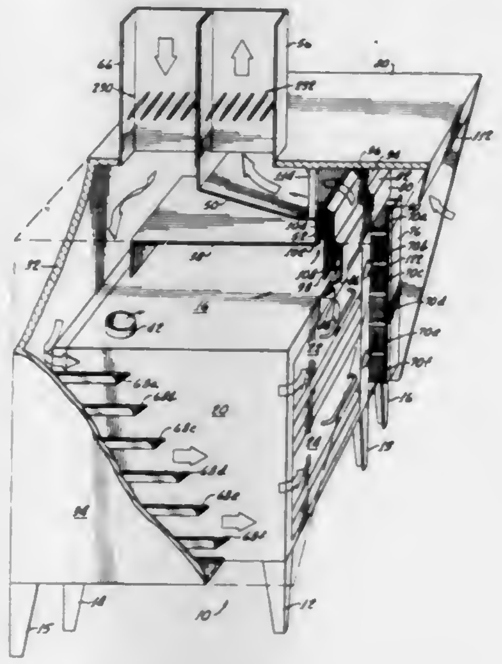


1. A window unit adapted to be seated in a window opening of a wall of an apartment, the opening having a ceiling and side walls provided with a shoulder extending into the opening, the window unit including an outer frame having a top wall, a pair of side walls, a pair of double-hung glazed sashes encased in the frame between the side walls, and a shoulder depending from a rear end of the top wall defining a stop for a rearwardly disposed one of the sashes, wherein the improvement comprises a heading for the frame, the heading having a head panel

extending upwardly from a front end of the top wall, the head panel adapted to be seated at an upper end and sides thereof against the shoulder extending into the opening, a shoulder extending upwardly from the rear end of the top wall, a baffle panel extending in part upwardly relative to the rear end of the top wall and depending in part below the rear end of the top wall and the stop, the baffle panel defining a back to the heading in opposed spaced relation to the head panel, a clip fastened to the upwardly extending shoulder, the clip being engaged with and supporting the baffle panel in spaced relation to the rear end of the top wall, and the head panel having a plurality of vent holes communicating through the head panel with the space between the head panel and the baffle panel, the vent holes serving to allow air flow into the space between the head panel and the baffle panel, and the baffle panel serving to divert the air flow downwardly through the spacing between the baffle panel and the rear end of the top wall to the apartment side of the sashes, wherein the clip is of C-form comprising a back wall having a vertical slot, a fastener extending through the slot and fixing the clip to the upwardly extending shoulder of the top wall, the clip having an upper rearwardly extending arm engaged with an upper end of the baffle panel, the clip having a lower rearwardly extending arm engaged with the baffle panel, the back wall being vertically adjustable in its position relative to the fastener to seat the upper arm of the clip against the ceiling wall of the wall opening, and the upper arm of the clip being adapted to be fastened to the ceiling wall.

4,616,562
VENTILATION SYSTEM FOR PIZZA OVENS

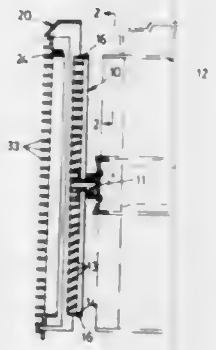
Irvin R. Kuechler, 172 E. 27th St., San Bernardino, Calif. 92404
Filed Jun. 21, 1985, Ser. No. 747,649
Int. Cl.^{4} F23J *11/00;* F24C *15/20*
U.S. Cl. 98—115.1 **13 Claims**



9. A ventilation and heat shield assembly for a cooking device having an opening on at least one substantially vertical side thereof that covers a major portion of such side, said ventilation and heat shield assembly comprising:
an insulating enclosure having an insulating top and side panels forming air flow passages arranged to flow cooling air along the top panel to the side panels and along the side panels to an end of such side panels,
intake fan means for blowing ventilating air from outside of a room in which the assembly is installed to the interior of said enclosure to flow along said top panel and along said side panels to said side panel ends,
means for mounting said intake fan means to draw in outside air
exhaust chamber means extending along an upper portion of said ventilating and heat shield assembly from one of said side panels to the other and having an exhaust port positioned adjacent to said top panel, said ventilation and heat shield assembly having a substantially vertically extending open area at a side thereof that extends from one of said side panel ends to the other,
exhaust fan means for exhausting air from said exhaust chamber, and
air curtain means included in said ventilation and heat shield assembly for causing air drawn into the assembly by said intake fan means to flow along the interior of said assembly and to flow in an air curtain across the open side of said assembly to said exhaust port to be exhausted by said exhaust fan means.

4,616,563
GRILLE CONTROL

Kevin I. Toohey, St. Marys, Australia, assignor to F.F. Seeley Nominees Pty. Ltd., Australia
Filed Jun. 19, 1985, Ser. No. 746,396
Claims priority, application Australia, Jun. 26, 1984, PG5688
Int. Cl.^{4} F24F *13/10*
U.S. Cl. 98—40.3 **4 Claims**



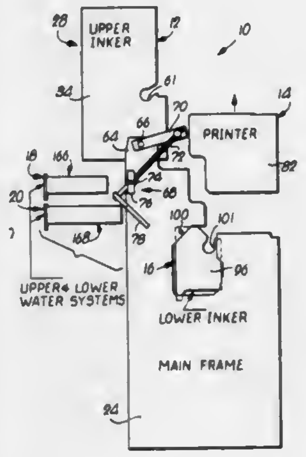
1. Control means for arresting rotation of an air deflector grille which is carried for rotation in a frame, wherein said air deflector grille has a plurality of air deflector blades carried at their ends in an annular ring,
comprising a plurality of minor spaced projections extending outwardly a relatively small distance from the annular ring, and at least one major projection extending outwardly a relatively large distance from the annular ring, guide means on the frame, a slider bar guided for movement by the guide means, two abutment surfaces on the slider bar, the first of those abutment surfaces being engageable with any said projection upon movement of the slider bar in a first direction, and the second abutment surface being engageable only with the major projection upon movement of the slider bar in a second direction, either said engagement inhibiting said rotation.

4,616,564
MODULAR OFFSET LITHOGRAPHIC PRINTING TOWER

Terry N. Faddis, and Glen H. Ensminger, both of Emporia, Kans., assignors to Didde-Glaser, Inc., Emporia, Kans.
Continuation of Ser. No. 969,585, Dec. 14, 1978, abandoned. This application Oct. 6, 1980, Ser. No. 194,373
Int. Cl.^{4} B41F *7/02, 13/00*
U.S. Cl. 101—143 **4 Claims**

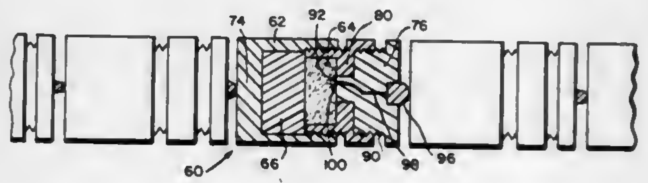
1. A web printing tower, comprising:
a pair of spaced apart main sidewalls each having an upper margin;
a modular printer section removably supported by said main sidewalls and including
a pair of spaced apart printer sidewalls separate from said main sidewalls, each of said printer sidewalls having a lower margin complemental with a portion of a corresponding main sidewall upper margin for complementally and abuttably engaging said upper margin portion,

whereby the printer section is situated generally atop and supported by said main sidewalls;
an elongated, cylindrical plate roller;
an elongated, cylindrical web-contacting blanket roller;
an elongated, cylinder; and
means for mounting said plate and blanket roller between said printer sidewalls in tangential contact with each other and for axial rotation of the plate and blanket rollers;
means for axially rotatably mounting said cylinder between said printer sidewalls and adjacent and generally below said blanket roller to define a web-receiving nip between the cylinder and blanket roller for a web traveling generally horizontally through said tower;
an inker section including spaced apart inker sidewalls separate from said main sidewalls and printer sidewalls, a single, elongated, cylindrical, axially rotatable inker form roller supported by said inker sidewalls, and means for continuously applying ink to the periphery of said inker form roller during printing operations of said tower;
means for mounting said inker section on said tower with said inker sidewalls abuttably engaging said main sidewalls and in a normal position above said printer section, with said single form roller in ink-transferring engagement with said plate roller, and for selective pivoting of the inker section about a generally horizontal axis from said normal position to a retracted printer section-clearing position permitting said printer section to be bodily moved upwardly out of said tower without obstruction from the inker section and while said inker section remains secured to said tower,
said upward movement of said printer section being generally transverse to the horizontal direction of travel of said web through said tower,
said single inker form roller being the sole inking roller in engagement with said plate roller when said inker section is in said normal position thereof;
means for rotating said rollers and said cylinder including respective spur gears drivingly coupled to said single form roller and plate roller and configured for meshed, driving interengagement when said inker section is in said normal position thereof;
the pitch diameter of the spur gear coupled to said inker form roller being substantially the same as the diameter of the inker form roller, and the pitch diameter of said spur gear coupled to said plate roller being substantially the same as the effective diameter of the plate roller,
whereby said tower can accommodate replacement printer sections having different diameter plate and blanket rollers without modification of said inker section.



4,616,565
MODULAR DETONATOR DEVICE

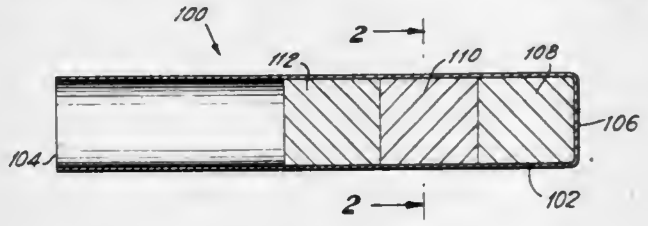
Robert E. Reinovsky, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jun. 20, 1984, Ser. No. 622,613
Int. Cl.^{4} F42B *3/12;* F42C *19/12*
U.S. Cl. 102—202.7 **19 Claims**



1. A detonator module, comprising:
a case having an outer terminus, for housing an explosive pellet;
a base having an outer terminus, for housing an explosive bridgewire;
a coupler for retaining an explosive charge in close proximity to said explosive bridgewire and to said explosive pellet; and
a means for completing an electrical path from said outer terminus of said case to said outer terminus of said base through said coupler and said bridgewire in a manner which allows use of said detonator module in a series of detonator modules.

4,616,566
SECONDARY HIGH EXPLOSIVE BOOSTER, AND METHOD OF MAKING AND METHOD OF USING SAME

Donald N. Yates, Jr., Katy, Tex., assignor to Halliburton Company, Duncan, Okla.
Filed Oct. 5, 1984, Ser. No. 658,266
Int. Cl.^{4} F42B *3/00*
U.S. Cl. 102—318 **23 Claims**



1. An explosive booster, which comprises a secondary high explosive material of HMX having an average density of from 1.2 to 1.7 g./cc. such that the material is capable of receiving a detonation from another explosive material across a discontinuity interposed between the booster and said other explosive material to be detonated, capable of detonating in response to said received detonation, and capable of transmitting said responsive detonation to yet another secondary high explosive mass to effect detonation thereof.

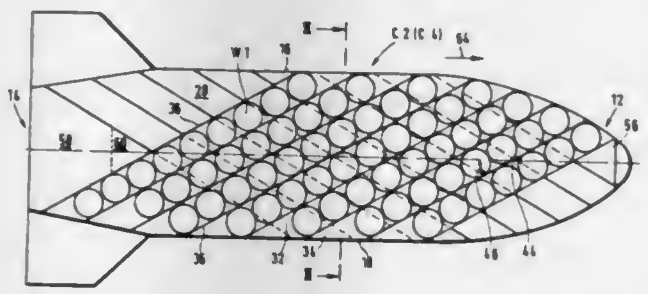
4,616,567
METHOD AND APPARATUS FOR COVERING A TARGET AREA WITH AMMUNITION

Rudolf Romer, Kaarst; Karl W. Bethmann, Moers; Christian Jaeneke, and Manfred Moll, both of Düsseldorf, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany
Division of Ser. No. 398,242, Jul. 14, 1982, Pat. No. 4,555,971. This application Jun. 20, 1985, Ser. No. 747,565
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1981, 3127674
Int. Cl.^{4} F42B *25/16, 25/06;* F41F *5/02*
U.S. Cl. 102—489 **52 Claims**

1. In an apparatus for covering an area with ammunition

using a container which is moved toward the target area at a given height and which contains a plurality of active units, said apparatus including a container, a plurality of active units each having an essentially circular cross section, a number of linear receptacles in said container for simultaneously receiving a number of said active units in each said receptacle, with said receptacles being disposed in the interior of said container such that said receptacle extends along a respective straight line to an associated release opening in the lateral wall of said container when in flight, and with each said straight line (or its extension) forming a given acute angle with the longitudinal axis of said container, and means for causing the release of the active units from the receptacles; the improvement wherein:

said container is a gliding or cruise missile; the point of each said acute angle is disposed in front of the respective release opening when seen in the direction of flight; and said releasing means includes a booster charge which acts in the direction of flight to accelerate said missile.



4,616,568

PROJECTILES INTENDED TO BE FIRED BY A FIRE-ARM

Ladriere Serge, Avenue du Cap Roux, 06360 Eze sur Mer, France

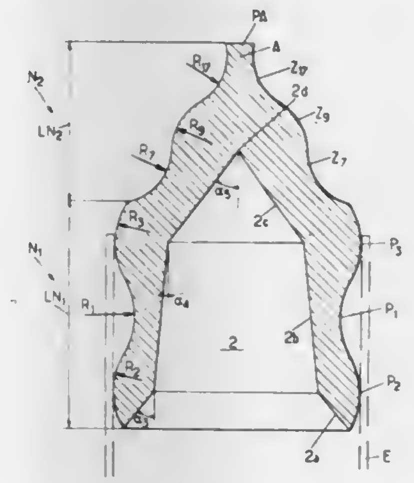
PCT No. PCT/FR83/00227, § 371 Date Jul. 20, 1984, § 102(e) Date Jul. 20, 1984, PCT Pub. No. WO84/02182, PCT Pub. Date Jun. 7, 1984

PCT Filed Nov. 24, 1983, Ser. No. 634,102

Claims priority, application France, Nov. 24, 1983, 82 19659

Int. Cl.⁴ F42B *11/00*

U.S. Cl. 102—501 **8 Claims**



1. A projectile intended to be fired by a firearm comprising:

a rear portion of generally cylindrical configuration whose diameter determines the gauge of the projectile, and

a front portion of generally conical configuration, starting at said rear portion and ending in a front point,

wherein said front portion has, between said front point and said rear portion, a curved front hollow zone circumferentially located about said front portion and defined by a radius of curvature joined to said front point, and a curved rear hollow zone circumferentially located about said front portion and defined by a radius of curvature connected to said rear portion,

wherein these two said hollow zones are joined together by at least one curved bulge zone circumferentially located about said front portion and defined by at least one radius of curvature, and

wherein all of said zones connected together define a continuous surface which in cross-section shows a continuous curve of sinuous shape.

4,616,569

ARMOR PENETRATING PROJECTILE

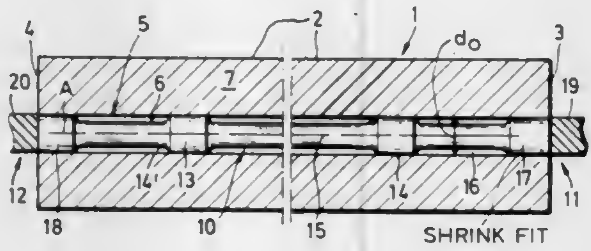
Patrick Montier, Bourges; Jean-Claude Sauvestre, St. Doulchard, both of France; Karl W. Bethmann, Moers, Fed. Rep. of Germany; Bernhard Bisping, Ratingen, Fed. Rep. of Germany, and Peter Wallow, Düsseldorf, Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Fed. Rep. of Germany and L'Etat Francais represente par le Delegue General pour l'Armement Bureau des Brevets et Inventions, Paris Armes, France

Filed Mar. 11, 1983, Ser. No. 474,284

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1982, 3208809

Int. Cl.⁴ F42B *11/00*

U.S. Cl. 102—517 **3 Claims**



1. An armor-penetrating projectile comprising:

an outer substantially cylindrically tubular member of great length/diameter ratio and density, centered on an axis, and having an axially throughgoing bore defined by an inner surface; and

an axially elongated inner member of greater strength and elasticity than the outer member extending axially through the bore the full length of the outer member and having an outer surface in tight radial shrink-fit contact with the inner surface of the outer member at least a plurality of annular locations spaced along the axis,

said inner member is at least partially formed of a bundle of wires; and

wherein the inner member is formed with a plurality of axially spaced thickened regions having cylindrical outer surfaces engaging the inner bore surface.

4,616,570

POWER AND FREE CONVEYOR SYSTEMS

Clarence A. Dehne, Farmington Hills, Mich., assignor to Jervis B. Webb Company, Farmington Hills, Mich.

Continuation-in-part of Ser. No. 272,381, Jun. 10, 1981, abandoned. This application Oct. 14, 1983, Ser. No. 542,257

Int. Cl.⁴ B61B *10/00*

U.S. Cl. 104—172 B **33 Claims**

1. In a conveyor system having a carrier track; carriers each including a driving trolley supported on the carrier track; forwarding and receiving power conveyors each comprising a power track spaced vertically from the carrier track, carrier propelling means mounted on the power track and including pusher members projecting toward the carrier track, an endless chain connected to the pusher members, and a drive unit for the endless chain; the driving trolley having a driving

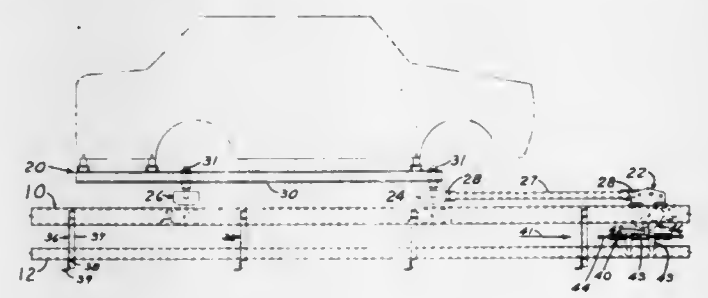
member movable between operable and non-operable positions with respect to the pusher members and biased to the operable position; and a transfer zone to which a carrier is propelled by a pusher member of the forwarding power conveyor and from which a carrier is propelled by a pusher member of the receiving power conveyor; the improvement wherein:

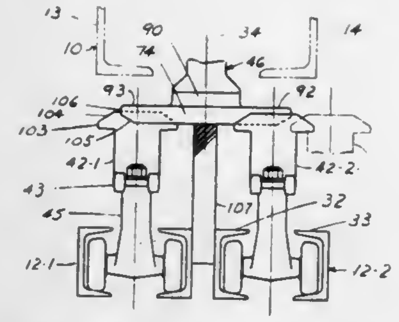
the driving member is formed with a driving dog having a driving face normally engageable by a pusher member in the operable position of the driving member;

the driving dog is provided with a pair of transversely extending wing portions each projecting to one side of the driving member and each having a continuation of the driving face;

a holdback dog is provided on the driving trolley, said holdback dog having a holdback face normally engageable by a pusher member, said wing portions of the driving dog project to each side of said holdback face, and said driving face of the driving dog includes a portion which projects toward the power track a distance greater than said holdback face;

the transfer zone has an entrance end, an exit end and includes a forwarding power track defining the path of travel of a forwarding pusher member and a receiving power track defining the path of travel of a receiving pusher member;





said forwarding and receiving power tracks between said entrance and exit ends have portions positioning the forwarding and receiving pusher members in a transversely spaced relation in which a forwarding pusher member is engageable with one portion of said driving face and a receiving pusher member is engageable with another portion of said driving face;

said driving dog including said wing portions thereof is provided with an anti-jam cam surface located forwardly of said driving face and adapted to move said driving member toward said non-operable position in response to overtaking engagement between said anti-jam cam surface and one of the forwarding and receiving pusher members; and

positioning means is provided in said transfer zone for relatively positioning said driving dog and said forwarding and receiving pusher members vertically such that overtaking and driving engagement between said driving dog and said forwarding and receiving pusher members is limited to said anti-jam cam surface for overtaking engagement and is limited to said outwardly projecting portion of said driving face for driving engagement whereby the drive unit of said forwarding power conveyor and the drive unit of said receiving power conveyor are independently and non-synchronously operable.

23. In a conveyor system having a carrier track, carriers each including a driving trolley supported on the carrier track, a power track mounted at a vertical spacing relative to the carrier track, carrier propelling means mounted on the power track and normally driven in a forward direction, the carrier propelling means including pusher members projecting toward the carrier track, the driving trolley having a driving member movable at said vertical spacing between operable and non-operable positions with respect to a pusher member and biased to the operable position, the improvement wherein;

the driving member is integrally formed with a driving dog and an actuating portion, the driving dog having a driving face engageable by a pusher member in the operable position of the driving member, and said actuating portion extends forwardly from the driving dog;

said driving dog includes a pair of wing portions each projecting transversely to one side of said actuating portion, and the driving face of said driving dog is provided on each of said pair of wing portions, the transverse extent of the wing portions being such that the driving face of said driving dog is engageable by forwarding and receiving pusher members of carrier propelling means mounted on a pair of power tracks arranged substantially at said vertical spacing and in transversely spaced relation at a transfer zone; and

an accumulating cam surface is provided on said actuating portion, each carrier being provided with a rearwardly extending actuator adapted to be engaged by said accumulating cam surface of a following carrier for stopping such following carrier by moving the driving member thereof to said non-operable position, said driving face of said driving dog in said non-operable position of said following carrier driving member being non-engageable by each of said forwarding and receiving pusher members at said transfer zone.

4,616,571

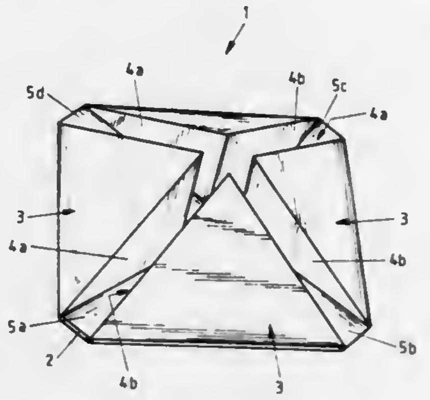
PANEL SECTION INTERCONNECTING MEMBER AND A SHELF STRUCTURE USING A PLURALITY OF THE PANEL SECTION INTERCONNECTING MEMBERS

Gerd Lange, Kapsweyer, Fed. Rep. of Germany, assignor to Willy Glaser, Baden, Switzerland

Filed May 22, 1984, Ser. No. 613,084

Int. Cl.⁴ A47B *47/04*

U.S. Cl. 108—111 **14 Claims**



1. A panel section connector adapted to be used in the construction of shelf structures of shelf-like furniture, comprising:

a generally rectangular base member having a first surface, a second surface opposite to said first surface and four side edges;

first, second, third and fourth generally tetrahedrally shaped supporting members extending from said first surface of said base member and each including a first triangular side wall arranged approximately perpendicular to said first surface of said base member, a second triangular side wall aranged approximately perpendicular to said first surface of said base member and to said first side wall, and a third triangular top surface oblique to said first surface;

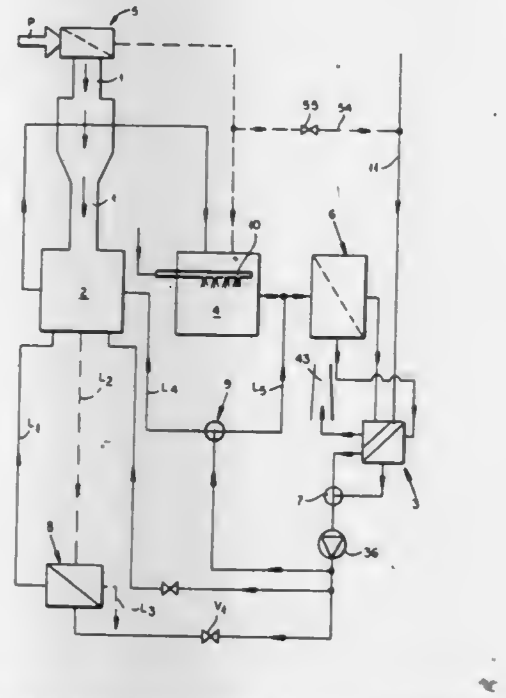
said first side wall of said first supporting member being approximately parallel to and spaced apart from said second side wall of said second supporting member to define therebetween a first receiving channel, said first side wall of said second supporting member being approximately parallel to and spaced apart said second side wall of said third supporting member to define therebetween a second receiving channel, said first side wall of said third supporting member being approximately parallel to and spaced apart from said second side wall of said fourth supporting member to define therebetween a third receiving channel, and said first side wall of said fourth supporting member being approximately parallel to and spaced apart from said second side wall of said first supporting member to define therebetween a fourth receiving channel, each of said receiving channels being adapted to receive a panel member of the shelf structure to be erected;

said first, second, third and fourth receiving channels together forming an approximately cross-shaped channel configuration having a pair of continuous open receiving channels extending completely across said first surface of said base member and parallel to a diagonal of said base member; and

said base member having a central opening therethrough adapted to receive mounting means for mounting said panel section connector to another structure.

4,616,572
BIOMASS INCINERATOR

Franz Berthiller, A-3474 Winkl 2, Niederösterreich, Austria
Filed Oct. 17, 1984, Ser. No. 661,582
Claims priority, application Austria, Oct. 17, 1983, 3699/83
Int. Cl.⁴ F23G *5/04*
U.S. Cl. 110—254 **23 Claims**



1. An incinerator for a biomass such as straw or wine-pressing residue, comprising:

a vertical biomass feed shaft;

an air/solids separator for separating pneumatically conveyed biomass from primary combustion air, communicating with one end of said shaft for delivering biomass freed from conveying air thereto;

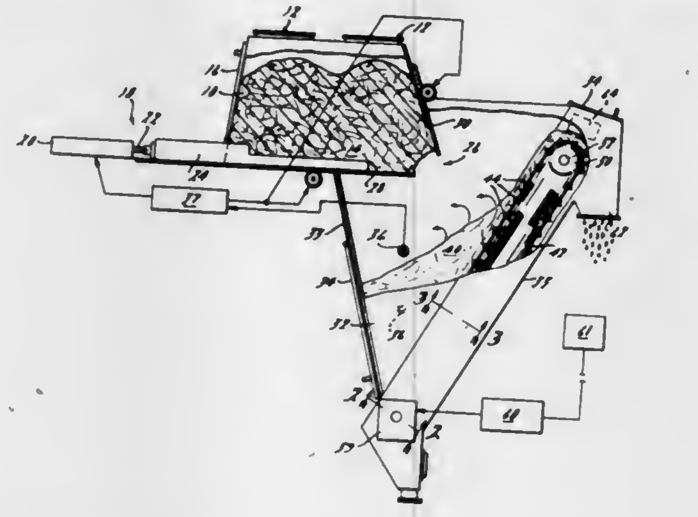
means forming a combustion chamber communicating with the opposite end of said shaft for receiving biomass therefrom and burning said biomass in said combustion chamber with at least a portion of said primary air to form a flue gas;

means connected to said combustion chamber and forming a direct lateral opening from the combustion chamber into said shaft for passing said flue gas transversely through said shaft into contact with biomass therein, thereby preheating said biomass in said shaft and filtering said flue gas by a filter action of said biomass; and

means forming an afterburner chamber receiving said flue gas after it has traversed said shaft for afterburning combustible components in said flue gas, with air at least in part received from said separator.

4,616,573
METERING FEEDER

Thomas A. Giaier, Ypsilanti; Neil H. Johnson, Grosse Ile; David C. Reschly, Monroe; Harold L. Knox, Grosse Ile, all of Mich., and Kim E. Spurlock, Toledo, Ohio, assignors to Detroit Stoker Company, Monroe, Mich.
Continuation of Ser. No. 558,376, Dec. 5, 1983, abandoned, which is a continuation-in-part of Ser. No. 490,657, May 2, 1983. This application Jun. 20, 1985, Ser. No. 747,372
Int. Cl.⁴ F23K *3/00*
U.S. Cl. 110—327 **14 Claims**



1. An apparatus for delivering fuel for combustion, comprising:

a first hopper for containing a quantity of said fuel;

a second hopper disposed below said first hopper;

displacing means for causing a predetermined volume of fuel to drop from said first hopper into said second hopper; and

upwardly extending slat-type conveyor means at least partially disposed within said second hopper for removing fuel from said second hopper for combustion and having an upper portion;

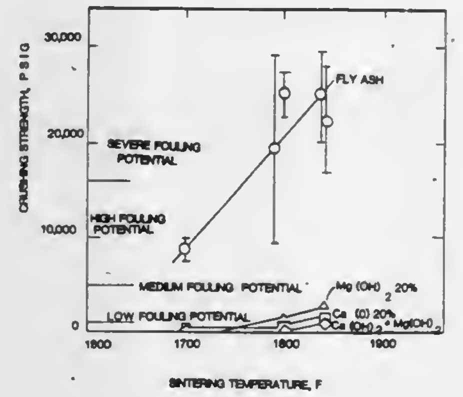
said conveyor means having a closed course of cleats, a portion of said closed course facing interiorly into said second hopper for contacting the fuel therein, said second hopper and said upper portion of said conveyor defining a substantial unrestricted space extending substantially the entire length of said upper portion;

said conveyor means being sufficiently inclined and operable at a speed to promote back tumbling of said fuel from said cleats into said unrestricted space, thereby serving to decompact said fuel before it is delivered for combustion.

4,616,574
PROCESS FOR TREATING COMBUSTION SYSTEMS WITH PRESSURE-HYDRATED DOLOMITIC LIME

Jack Z. Abrams, and Robert M. Sherwin, both of San Rafael, Calif., assignors to Empire State Electric Energy Research Corp. (ESEERCO), New York, N.Y.
Filed May 25, 1984, Ser. No. 614,049
Int. Cl.⁴ B01D *53/34;* **C10L** *10/04, 10/06*
U.S. Cl. 110—343 **19 Claims**

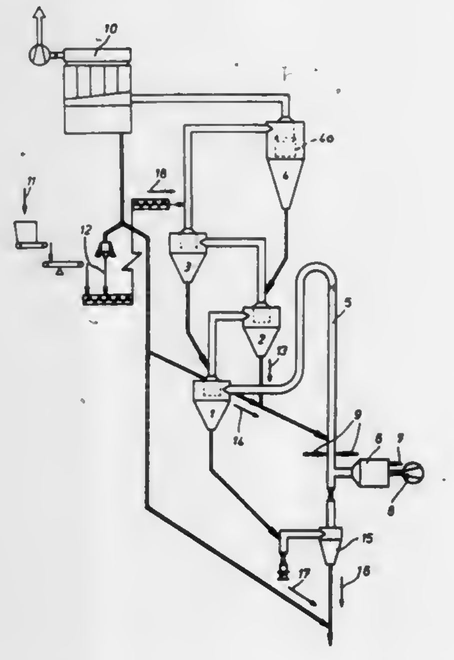
1. In a process for treating a combustion system wherein pressure-hydrated dolomitic lime additives are added to the system, the improvement comprising removing fly ash deposits by locally injecting said pressure-hydrated dolomitic lime additives to the situs of said fly ash deposits, at a temperature above approximately 1800° F., in an amount and concentration sufficient to cause a weakened point in the deposits when they are formed, and so that at least 5% of the total deposit weight is comprised of said pressure-hydrated dolomitic lime additives



thereby facilitating subsequent removal of said deposits; operating said system to permit deposition of fly ash to occur; and subsequently removing said fly ash deposits by breaking off said deposits at their weakened points.

4,616,575
METHOD AND APPARATUS FOR THE HEAT TREATMENT OF FINE-GRAINED MATERIAL

Hans-Gerd Schulte, Bergkamen, Fed. Rep. of Germany, assignor to Krupp Polysius AG, Beckum, Fed. Rep. of Germany
Filed Sep. 16, 1985, Ser. No. 776,583
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1984, 3439129
Int. Cl.⁴ F23J *15/00*
U.S. Cl. 110—345 **15 Claims**



1. In a method for heat treating fine-grained material, such as lime and dolomite, wherein:

(a) the material is preheated in a multi-stage cylone preheater in heat exchange with exhaust gases from a calciner,

(b) then fired in the calciner,

(c) and then cooled in a cooling stage, and

(d) wherein dust is removed from the exhaust gases by a filter and such dust is returned to the apparatus,

the improvement comprising

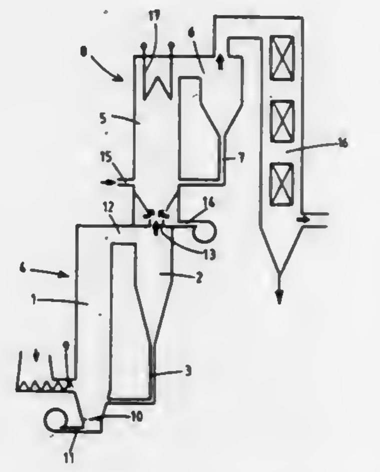
(e) reducing the degree of efficiency of the last cyclone of the preheater preceding the filter in such manner that the finest-grained proportion of the material delivered to said last cyclone and lying below a selected grain size passes with the exhaust gas to the filter;

(f) delivering at least some of the filter dust directly to the calciner; and

(g) further decreasing the degree of efficiency of said last cyclone and increasing the quantity of filter dust delivered directly to the calciner to such an extent that said material neither cakes nor flows in batches.

4,616,576
COMBUSTION METHOD

Folke Engström, Karhula; Bertel K. Hakulin, Helsinki, and Seppo K. Ruottu, Karhula, all of Finland, assignors to A. Ahlstrom Corporation, Noormarku, Finland
Filed May 29, 1985, Ser. No. 739,005
Claims priority, application Finland, Jun. 1, 1984, 842201
Int. Cl.⁴ F23G *5/00;* **F22B** *1/00*
U.S. Cl. 110—345 **12 Claims**



1. A two-stage combustion method utilizing first and second circulating fluidizing bed systems, comprising the steps of:

supplying fuel to the first circulating fluidizing bed system, the fuel remaining fluidized during combustion thereof;

operating the first system under reducing conditions to produce flue gases with combustible solids therein;

separating the solids from the flue gases of the first system, recirculating the separated solids to the first system;

introducing the flue gases, after separation of solids therefrom, from the first system into the second circulating fluidizing bed system;

introducing oxygen containing gas into the second system to effect afterburning of the flue gases from the first system, and wherein in the second circulating fluidized bed system flue gases containing solids therein are produced; and

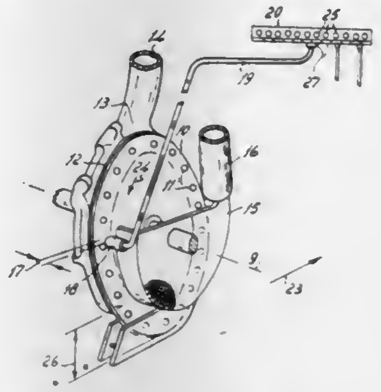
separating the solids from the second bed system flue gases, and returning the separated solids to the second circulating bed system.

4,616,577
SEED SOWING MACHINE WITH MONITORING SYSTEM

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland
Continuation of Ser. No. 4,540, Jan. 18, 1979, abandoned. This application Nov. 28, 1980, Ser. No. 211,186
Claims priority, application Netherlands, Jan. 20, 1978, 7800713
Int. Cl.⁴ A01C *5/00*
U.S. Cl. 111—1 **30 Claims**

1. Apparatus for monitoring material distributed by an agricultural machine, the apparatus comprising material transporting means, curved path defining means for the material including in said transporting means, means for separating said material into discrete units and spacing same an equal distance apart while such units are being moved along said path by said transporting means, an instrument mounted closely adjacent and entirely on one side of said path which includes means for producing an electric field and separately sensing the presence of each said discrete unit in at least a portion of said path while

directly supported by said transporting means by its proximity to said field producing means whereby said field is interrupted in reaction to each said unit, a display element connected to said instrument registering said presence in response to said field interruption.



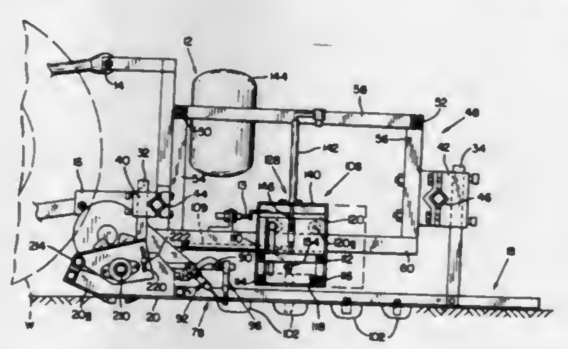
4,616,578
AUTOMATIC METHOD AND APPARATUS FOR TRANSPLANTING CROPS

Gene B. Talbott, Box 173-D, Rte. 1, Banks, Oreg. 97106

Filed May 12, 1983, Ser. No. 493,992

Int. Cl.⁴ A01C *11/00*

U.S. Cl. 111—2 **10 Claims**



1. A method for transplanting seedling plugs from seedling trays having cells aligned in separate rows into a plurality of spaced-apart crop rows in a field comprising:

orienting the seedling trays by a vehicle means over a field to be transplanted;

forming a plurality of laterally spaced-apart plant-receiving cavities in the ground aligned on the crop rows;

maintaining the seedling trays substantially stationary relative to the field at selected intervals during travel of the vehicle means;

engaging upper surfaces of the seedling plugs in different rows of the seedling trays and displacing them substantially vertically downwardly through and free from a cell while holding the seedling plugs by impaling means for insertion into the plant-receiving cavities; and

releasing the seedling plugs from the impaling means into associated plant-receiving cavities.

4,616,579
APPARATUS FOR INJECTING LIQUID MANURE INTO THE GROUND

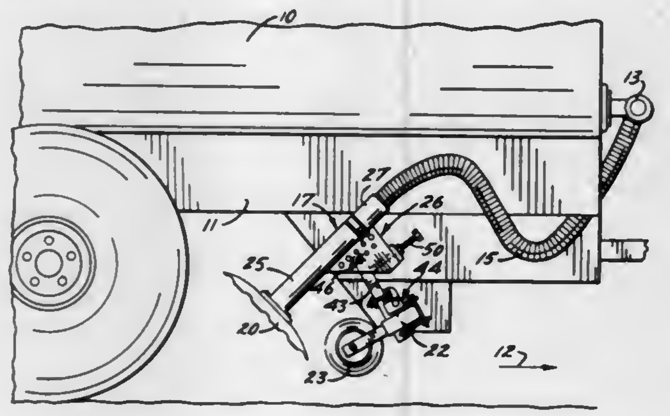
Wayne J. Solt, 473 Rte. 73 South, Pearl City, Ill. 61062

Filed Apr. 1, 1985, Ser. No. 718,493

Int. Cl.⁴ A01C *23/02*

U.S. Cl. 111—7 **7 Claims**

1. Apparatus for injecting liquid manure into the ground and for spreading the liquid manure in the ground, said apparatus being adapted for use with a forwardly traveling vehicle carrying a tank of liquid manure, said apparatus comprising upper and lower axially spaced and axially alined sleeves, means for mounting said sleeves non-rotatably on said vehicle in an upright position, an elongated pipe telescoped into and rotatable within said lower sleeve and having upper and lower ends projecting beyond the upper and lower ends of the lower sleeve, a collar located between and rotatable relative to said sleeves, said collar being connected to the upper end of said pipe and being engageable with the upper end of said lower sleeve to prevent said pipe from sliding downwardly within said lower sleeve, means for releasably coupling said collar to said pipe to permit said pipe to be withdrawn from said lower sleeve out of the lower end of the lower sleeve, a flexible hose communicating with said tank and having an outlet end portion telescoped into said upper sleeve, the outlet end portion of said hose having a reduced diameter lower end telescoped into and communicating with the upper end of said pipe to deliver liquid manure into the pipe, a generally circular disc mounted rigidly on the lower end portion of said pipe to rotate in unison with the pipe and to slice through the ground during forward travel of the vehicle, the underside of said disc being downwardly concave and defining a baffle around the lower end of the pipe, and the periphery of said disc being formed with angularly spaced notches whereby liquid manure delivered to said pipe is injected into the ground through the lower end of said pipe and is spread into the ground by the rotary disc while flowing radially out of the notches in the periphery of the disc.



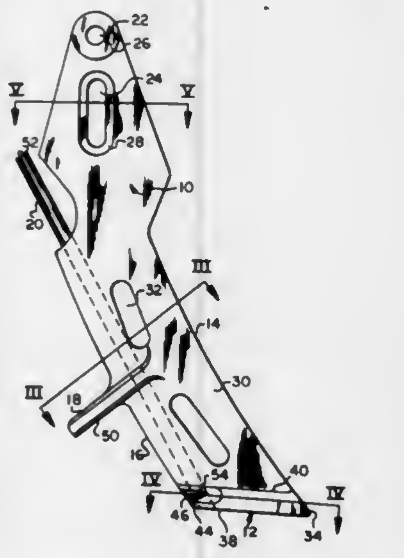
4,616,580
ANHYDROUS KNIFE

Alan R. Moore, Parma, and Nicholas M. Januszewski, Albion, both of Mich., assignors to Hayes-Albion Corporation, Jackson, Mich.

Filed Jan. 23, 1985, Ser. No. 694,033

Int. Cl.⁴ A01B *17/00*

U.S. Cl. 111—7 **8 Claims**



1. An anhydrous knife characterized by its long life and resistance to damage comprising, in combination, an elongated body of homogeneous cast metal having a width defined by lateral sides, a lower toe end, an upper attachment end, an intermediate region, a forward edge and a trailing edge, a dispensing tube within said body extending from adjacent said upper end through said intermediate region to said lower toe end having an accessible upper supply end and a lower dispensing end, said dispensing tube being integrally cast within the configuration of said body and surrounded and protected by the material of said body from adjacent said upper attachment end to said lower toe end, an opening defined in said tube lower end adjacent said body toe end permitting dispensing adjacent said toe end, said lower body toe end being of a homogeneous enlarged, elongated configuration defining a mass of cast sacrificial metal to extend the wear life of said body having a pointed apex defining a portion of said body forward edge and side portions laterally extending beyond the projection of said body lateral sides.

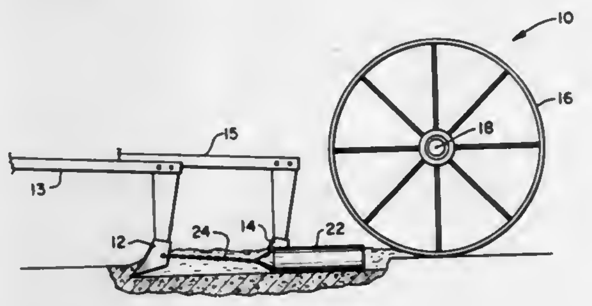
4,616,581
PLANTING APPARATUS

Glen E. Brothers, Rte. 1, Box 80 C, Dix, Nebr. 69133

Continuation of Ser. No. 239,059, Feb. 27, 1981, abandoned. This application Apr. 29, 1985, Ser. No. 728,183

Int. Cl.⁴ A01C *5/00*

U.S. Cl. 111—85 **11 Claims**



1. Apparatus for seeding, which comprises:

a plurality of means for opening a furrow disposed in a rank at uniform intervals;

a plurality of press wheels mounted for rotation, each of said press wheels being disposed in aligned relationship with one of said means for opening a furrow;

a plurality of cylindrical members; and

means for attaching each of said plurality of cylindrical members to one of said means for opening a furrow, said means for attaching consisting solely of a chain fixed to each of said means for opening a furrow and fixed to respective ones of said plurality of cylindrical members, each cylindrical member being free to extend toward an associated press wheel disposed in aligned relationship with said means for opening a furrow disposed in said rank from which said chain is mounted, each chain member extending generally rectilinearly during normal operation, each of said chains being dimensioned to allow the cylindrical member fixed thereto to extend so that an extremity of the member is within one inch of said associated press wheel.

4,616,582
WORK CLAMP FOR BUTTONHOLE SEWING MACHINES

Walter Hager, Kaiserslautern, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

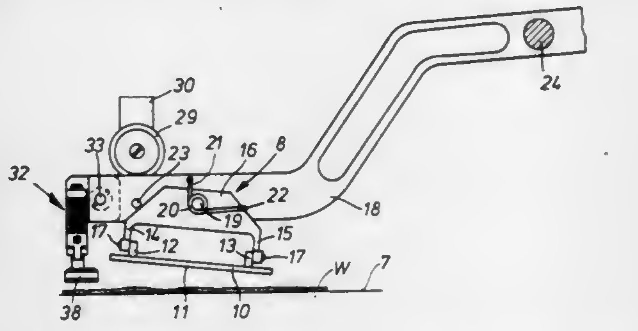
Filed Mar. 13, 1985, Ser. No. 711,397

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1984, 3409942

Int. Cl.⁴ D05B *3/06*

U.S. Cl. 112—76 **7 Claims**

1. A work clamp for a buttonhole sewing machine having a work support plate with an area where a buttonhole is to be sewn, the buttonhole having a longitudinal axis and the sewing machine having a direction of work movement, comprising a carrying lever pivotally mounted at a pivot axis on the sewing machine and having an end which can be raised and lowered over the support plate, a clamping frame pivotally mounted on said carrying lever about an axis parallel to the pivot axis of said lever and at said end of said lever which can be raised and lowered, said clamping frame having a clamping surface for holding a work against the support plate adjacent the area where a buttonhole is sewn, spring means engaged with said clamping frame for biasing said clamping surface into an acute angle with respect to the support plate, said clamping frame being pivotally mounted on said carrying lever so that said clamping surface is movable parallel to the longitudinal axis of the buttonhole, and hold-down means having a presser plate, further spring means engaged with said presser plate for biasing said presser plate in a direction toward the support plate for clamping a work against the support plate, said presser plate being carried by said lever at a location offset in a direction of work movement so that, when said lever is lowered, said presser plate first engages the support plate before said clamping frame and while said clamping surface is disposed at the acute angle with respect to the support plate.



4,616,583
THREAD TIGHTENING CONTROL APPARATUS OF AUTOMATIC SEWING MACHINE

Kunio Takano, Tokyo, and Masanori Nukushina, Kanagawa, both of Japan, assignors to Tokyo Juki Industrial Co., Ltd., Tokyo, Japan

PCT No. PCT/JP84/00622, § 371 Date Aug. 7, 1985, § 102(e) Date Aug. 7, 1985, PCT Pub. No. WO85/03093, PCT Pub. Date Jul. 18, 1985

PCT Filed Dec. 27, 1984, Ser. No. 767,584

Claims priority, application Japan, Dec. 29, 1983, 58-251446

Int. Cl.⁴ D05B *21/00, 47/04*

U.S. Cl. 112—121.12 **3 Claims**

1. A thread tightening control apparatus of an automatic sewing machine, comprising:

a needle rod having a needle secured to a lower end thereof and movable up and down in operative association with a spindle;

a fabric holding body for holding a fabric at a lower end thereof and movable along a horizontal direction relative to the needle rod;

drive means coupled to the fabric holding body and operated by electrical drive pulses for driving the fabric holding body in a horizontal direction with respect to a needle descent point;

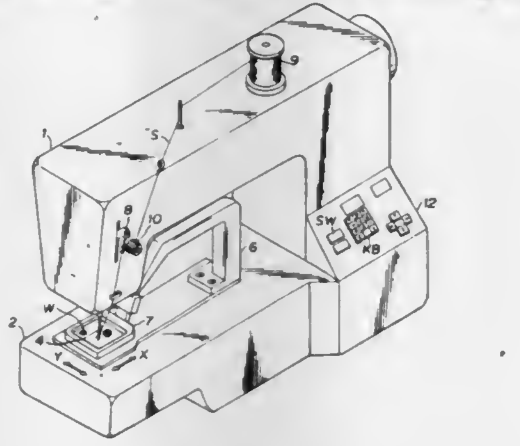
memory means for storing feed data which determine the amount of movement of the fabric holding body for each and every seam;

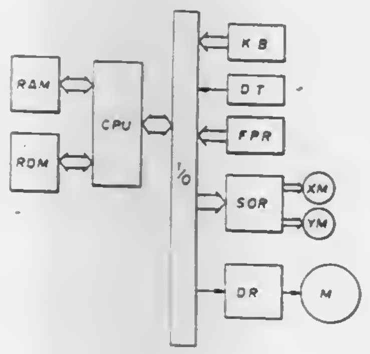
pulse generating means synchronized to the spindle for generating pulse signals of a constant period and of a number proportional to the rotational speed of the spindle;

actuating means for supplying the drive means with drive pulses in a period during which the needle is clear of the fabric in synchronism with said pulse signals and on the basis of the feed data in the memory means;

setting means capable of generating a plurality of setting signals of different timings at which the drive pulses are to be supplied to the drive means in dependence upon fabric thickness; and

shifting means operable in association with the setting signals for moving a period during which the drive means is supplied with drive pulses by the actuating means forward





or backward with respect to a predetermined rotational angle of the spindle.

4,616,584

METHOD AND APPARATUS FOR SEWING MITERED CORNERS OF BOX TYPE ARTICLES

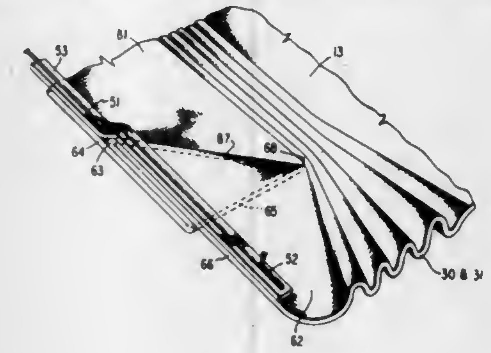
Artin G. Vartoukian, Roselle Park, and Robert P. Haggerty, Elizabeth, both of N.J., assignors to The Singer Company, Stamford, Conn.

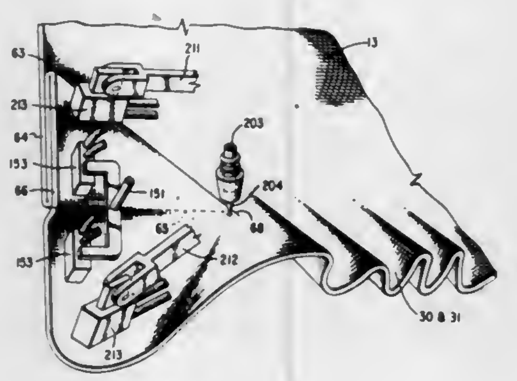
Division of Ser. No. 702,975, Feb. 19, 1985, Pat. No. 4,594,956. This application Mar. 24, 1986, Ser. No. 842,974

Int. Cl.⁴ D05B *21/00*

U.S. Cl. 112—121.15 8 Claims

1. Apparatus for forming and securing in a flat square corner of a fabric panel a mitered corner for a fitted sheet or the like, said apparatus including a sewing machine having stitch forming instrumentalities adapted to produce a straight line of stitches, a fabric manipulating assembly including a fabric folding means effective to position a corner of said fabric panel superposed and flat upon one end of said fabric panel which extends from said corner, a fabric shifting means effective to transport a portion of the other edge of said fabric panel which extends from said corner superposed flat upon and in alignment with said one edge of said fabric panel, means for maintaining said fabric panel edges superposed, and means for presenting said maintained superposed fabric panel edges to said sewing machine stitch forming instrumentalities and for imparting translatory movement to said fabric panel relatively to said





sewing machine and parallel to the line of stitch formation of said sewing machine.

4,616,585

DEVICE PROVIDING FOR THREE SEWING MACHINE NEEDLE STROKES

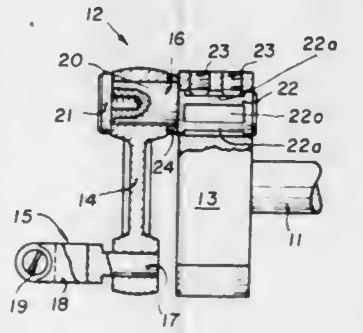
Ulderico Marcandalli, Milan, Italy, assignor to Rockwell-Rimoldi S.p.A., Italy

Filed Nov. 1, 1985, Ser. No. 793,824

Claims priority, application Italy, May 27, 1985, 20910 A/85

Int. Cl.⁴ D05B *55/14*

U.S. Cl. 112—221 1 Claim



1. In a double chain stitch and/or overlock sewing machine having a main shaft connected to a motor, a secondary shaft rotatably driven by the main shaft, a reciprocating needle bar disposed perpendicularly to the secondary shaft, a needle bar actuating device mounted on the secondary shaft having a crank provided with a crank pin, a link mounted on the crank pin to connect said crank to said needle bar for actuating the latter to move in reciprocating motion, the crank pin comprising first and second pins which are arranged in succession and mutually offset and parallel wherein said first pin is rotatably engaged with said link and said second pin is mounted on said crank and is formed with three angularly spaced flat surfaces, each of said three angularly spaced flat surfaces being fixable in one predetermined position with respect to said crank to reciprocate said needle bar in a predetermined different stroke length.

4,616,586

UPPER FEEDING DEVICE OF A SEWING MACHINE

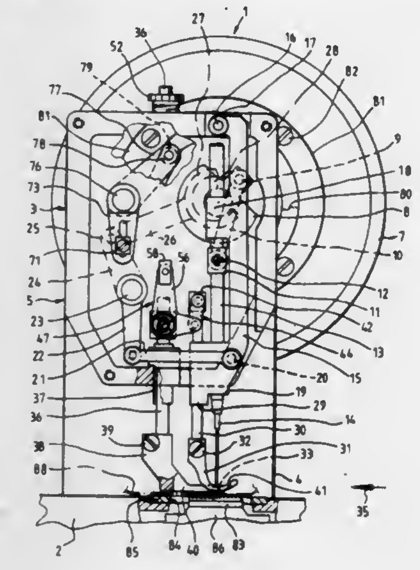
Hans Scholl, Oerlinghausen-Lipperreihe, Fed. Rep. of Germany, assignor to Kochs Adler, AG, Fed. Rep. of Germany

Filed Jun. 7, 1985, Ser. No. 742,695

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1984, 3423843

Int. Cl.⁴ D05B *27/04*

U.S. Cl. 112—320 13 Claims



1. An upper feeding device of a sewing machine comprising a feeding presser foot, a holding presser foot alternatingly cooperating with said feeding presser foot to which is imparted by means of an oscillating means and an angle lever coupled thereto via a jogging mechanism an up and down movement extending perpendicular to a throat plate of the sewing machine, said jogging mechanism being provided with a movable slider and said movable slider being coupled to said angle lever via a slide guide which is positioned parallel to the direction of movement of the presser foot.

4,616,587

LOCKING MECHANISM FOR A SELF-DUMPING BARGE

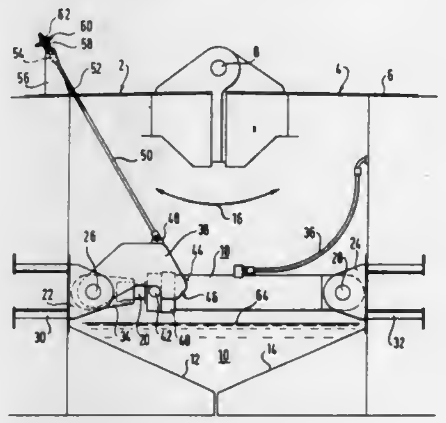
Isidor Weiss, Deggendorf, Fed. Rep. of Germany, assignor to Deggendorfer Werft und Eisenbau Gesellschaft m.b.H., Fed. Rep. of Germany

Filed Jun. 28, 1985, Ser. No. 750,743

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1984, 3424454

Int. Cl.⁴ B63B *35/30*

U.S. Cl. 114—29 13 Claims



1. An actuating and locking mechanism for a self-dumping barge having two parts which are movable with respect to each other between a closed and an open position for closing and opening a hold, comprising:

a cylinder connected to one of the two parts;

a piston rod slidably mounted to said cylinder and having an outer end spaced from the one part of the barge;

a transverse bolt connected to said cylinder;

a hook support connected to the other of the two parts, said outer end of said rod being connected to said hook support for pivoting motion;

a hook pivotally mounted to said hook support for movement into engagement with said transverse bolt when said two parts are in their closed position for locking the two parts together, and for movement out of engagement with said transverse bolt for permitting said two parts to move under the influence of said cylinder and piston to their open position; and

said cylinder having an outer end spaced from the one part of the barge and into which said piston rod extends, said transverse bolt being connected to said cylinder at said outer end thereof.

4,616,588

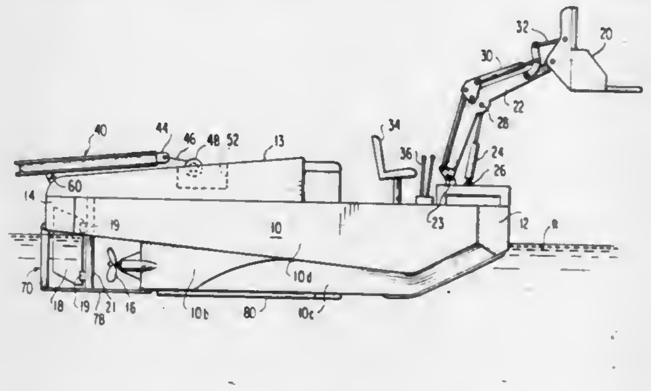
WATER CRAFT AND METHOD FOR REMOVING WEEDS AND POLLUTANTS FROM NAVIGABLE WATERS

Mary J. Caddick, 74 Winifred Lane, Aughton, Ormskirk, Lancs, United Kingdom L39 5DL

Filed Jan. 9, 1985, Ser. No. 689,940

Int. Cl.⁴ B63H *25/06*

U.S. Cl. 114—162 15 Claims



1. A navigable water craft including a hull and having a stern area including a stern and a rudder, a weed removal tool for removing weeds and other marine vegetation, said tool being located at the stern area, means on the craft for lowering the tool into the water at the stern for dragging the tool along a water bed as the craft is navigated through water and for raising the tool onto the stern area, means fixed to the stern and located behind the rudder and extending substantially to the depth of the rudder for protecting the rudder from engagement by the tool, buoyancy means at the stern area for compensating for the weight of the means for protecting the rudder, means including an engine for driving the craft, and a cooling tank having a closed coolant circuit for cooling the engine, said cooling tank being located on the bottom of the hull to be submerged in the water to contact the same when the craft is in use, said hull including a generally flat bottom wall, said cooling tank including a bottom wall spaced from and fixed to the flat bottom wall of the hull to enclose a space sealed from the sea water, said cooling tank further including means fixed to and between the bottom wall of the hull and the bottom wall of the tank forming a continuous serpentine flow path for coolant within said space sealed from the sea water, said bottom wall of the tank having an unobstructed external surface exposed directly to the sea water to promote heat exchange between the sea water and coolant within the tank.

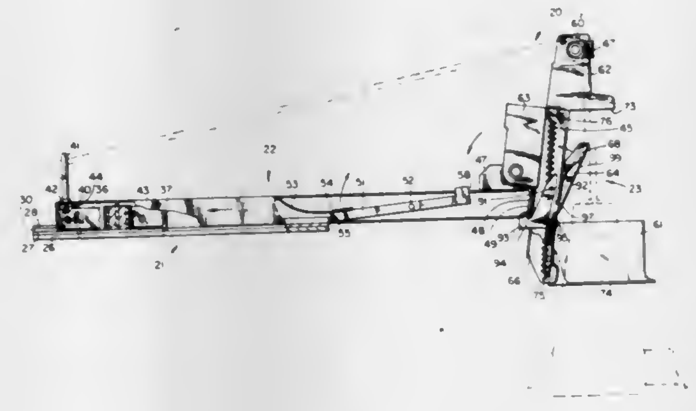
4,616,589
ANCHOR RETRIEVAL MECHANISM

Truman W. Adams, Indianapolis, Ind., assignor to Anchors, Inc., Indianapolis, Ind.

Filed Apr. 6, 1984, Ser. No. 597,361

Int. Cl.⁴ B63B *21/22*

U.S. Cl. 114—210 **19 Claims**



19. An anchor and anchor retriever assembly for deploying an anchor from a boat into the water and retrieving the anchor from the water, said assembly including a releasable anchor having a central body portion, releasable outwardly extending arms and a central rod, and an anchor cable secured to said central rod, wherein the improvement comprises:

support means adapted for attachment of the anchor retriever to a portion of a boat;

a movable anchor carriage slidably received by said support means and movable between an anchor-deployed orientation and an anchor-stowed orientation, said movable anchor carriage including a pivotal anchor retention assembly which is oriented in a first position when said movable anchor carriage is in said anchor-deployed orientation and in a second position which is substantially perpendicular to said first position when said movable anchor carriage is in said anchor-stowed orientation, said anchor retention assembly includes:

anchor holder means adapted for the anchor cable to pass therethrough;

latch means assembled to said anchor holder means and adapted to interlock with said movable carriage when said anchor retention assembly is in said anchor-deployed orientation; and,

pivot attachment means assembled between said movable carriage and said anchor holder means and adapted to allow said anchor holder means to pivot from a first orientation when said anchor retention assembly is in said anchor-deployed orientation to a second orientation which is substantially perpendicular to said first orientation, said second orientation corresponding to said anchor-stowed orientation; and

said support means including an attachment plate designed and arranged for directly attaching to the boat and assembled thereto a guide plate providing a pair of oppositely disposed, longitudinally extending first guide members and said movable anchor carriage having a pair of oppositely disposed, longitudinally extending second guide members, said first and second guide members being cooperatively received, one within the other, for providing a retained sliding motion of said movable anchor carriage relative to said guide plate.

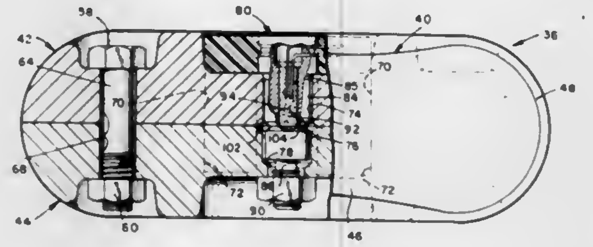
4,616,590
ACOUSTICAL MOORING RELEASE SYSTEM

Rocco D. Albertini, Concordville, Pa.; Ralph E. Clements, Katy, Tex., and Thomas V. Grzeczkowski, Ridley Park, Pa., assignors to Baldt Incorporated, Chester, Pa.

Filed May 7, 1984, Ser. No. 607,760

Int. Cl.⁴ F16G *15/04*

U.S. Cl. 114—230 **27 Claims**



1. A separable link for use with a moorable vessel, such as a semi-submersible drilling rig, having a plurality of chain lockers, a plurality of anchor windlass assemblies and a plurality of fairlead assemblies, a plurality of lengths of chain each having a multiplicity of interconnected links configured to move from a chain locker in cooperative relation through an associated anchor windlass assembly and an associated fairlead assembly, an anchor for each length of chain, and means connecting each anchor to the end of the associated length of chain outboard of the associated fairlead assembly so as to engage with the water bottom, the separable link comprising:

a plurality of removably interconnected parts operable when interconnected to interengage with the adjacent links of the associated length of chain;

said separable link being shaped to be moved from a position inboard of the associated anchor windlass and fairlead assemblies to an operative position outboard thereof;

an acoustical receiver and explosive assembly operable to be disposed in operable relation with said parts within the confines of said separable link so as to enable the separable link with said assembly in said operable relation therewith to be moved from said inboard position into said operative position;

said assembly in said operative relation including (1) retaining means retaining said parts together, (2) acoustical signal receiver means and (3) explosive means, including an explosive, operable when said acoustical receiver means receives a predetermined acoustical signal after the separable link has been moved into said operative position to release the retention of said retaining means and separate the parts of said separable link.

4,616,591
FLOATATION, SPLASHLESS CANOE MOTOR MOUNT

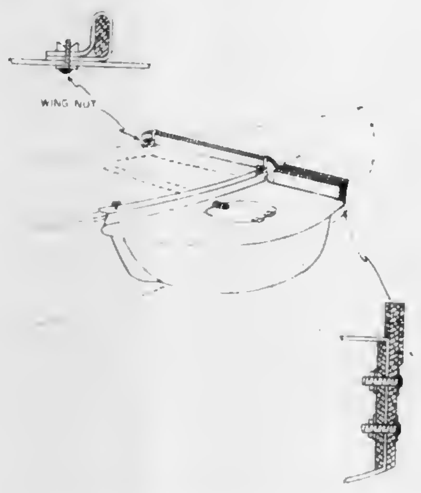
John M. Minor, 9340 Lee Smith Dr., Juneau, Ak. 99801

Filed Apr. 18, 1985, Ser. No. 724,536

Int. Cl.⁴ B63B *35/71*

U.S. Cl. 114—347 **1 Claim**

1. A floatation, splashless motor mount designed to be fastened to the side of a canoe by means of wing nuts and bolts through the metal reinforcing bands of the mount and the canoe gunwales, said mount comprising a transom board extending across both gunwales and fastened to both gunwales and a streamlined floatation body providing a relatively smooth transition from the canoe side and being fastened to the near side gunwale through a lip overhanging the gunwale and fastened to the transom board by means of bolts through the transom board and the floatation body; the floatation body having an access door to its hollow interior to service the transom bolts and to allow storage of light tackle and floatation body also having an overhanging rim on the outside top perimeter to deflect waves and splashes; the transom board having sufficient free margin protruding vertically from the attachment point with the floatation body to accomodate the clamping devices of typical portable outboard motors.



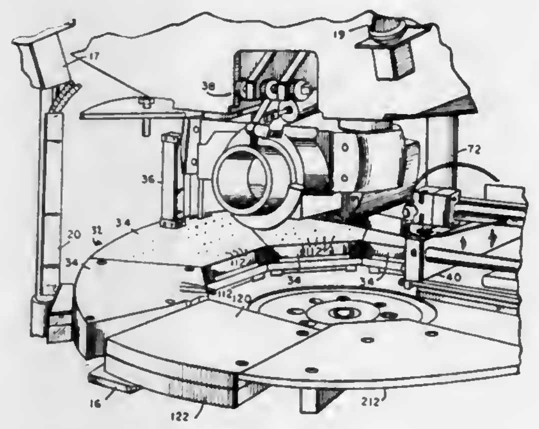
4,616,592
RECEIVING BELT BLOWBACK ARRANGEMENT

Ralph E. Karcher, Jr., Magnolia, and Blandford W. Greene, Manchester, both of Mass., assignors to USM Corporation, Farmington, Conn.

Filed May 25, 1984, Ser. No. 614,059

Int. Cl.⁴ B05C *1/02*

U.S. Cl. 118—202 **4 Claims**



1. A powder deposition machine for fusing powdered material comprising:

conveyor means including a conveyor belt,

a first work station including means for depositing powdered material on said conveyor belt,

a second work station including heater means for fusing material deposited on said conveyor belt, said heater means including

surface means for supporting said conveyor belt,

said surface means having a plurality of orifices,

means for intermittently advancing said conveyor belt to advance deposited powdered material at said first station to said second station,

means for supplying pressurized fluid to said orifices to be expelled from said surface means to define a fluid bearing between said surface means and said conveyor belt,

means for creating a vacuum at said orifices whereby said conveyor belt will be forcefully brought into contact with said surface means,

means for conjointly actuating said supplying means and deactuating said vacuum creating means when said conveyor belt is being advance, and

means for conjointly actuating said vacuum creating means and deactuating said supply mean when said conveyor belt is not being advanced.

4,616,593
PAINT SUPPLY APPARATUS FOR ROTARY PAINTING MACHINE

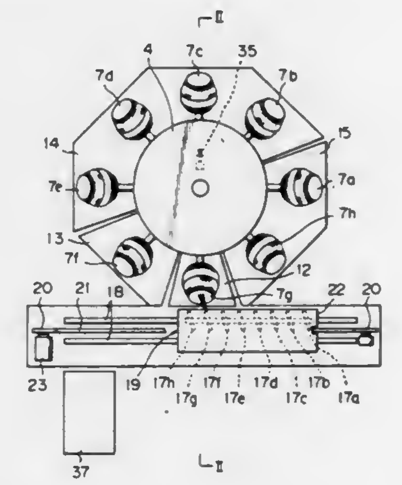
Kaoru Kawamura, and Yuichi Iwaki, both of Toyama, Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Sep. 12, 1985, Ser. No. 775,235

Claims priority, application Japan, Sep. 19, 1984, 59-196137

Int. Cl.⁴ B05B *7/02*

U.S. Cl. 118—303 **2 Claims**



1. A paint supply apparatus for a rotary painting machine having a revolvable turntable, a plurality of angularly spaced, radially extending barrels made of wire mesh mounted on a circumferential portion of said turntable and having respective axes of rotation, each of said barrels being receptive of a batch of parts, and a painting station, a setting station, a baking and drying station and a cooling station successively disposed around said turntable, wherein a batch of parts introduced into said barrels is painted by passing each of said barrels through each of said stations while each barrel is being rotated about its axis of rotation as said turntable is intermittently revolved by a single pitch equivalent to the angular spacing between mutually adjacent ones of said barrels, said paint supply apparatus comprising paint spray guns the number whereof is equivalent to the number of said barrels, a support frame on which said paint spray guns are supported in spaced side-by-side relation, and means for intermittently moving said support frame at said painting station by a single pitch equivalent to the spacing between mutually adjacent ones of said paint spray guns in synchronism with incremental revolution of said barrels, each of said barrels being supplied with a predetermined paint sprayed from one of said paint spray guns.

4,616,594
PAINTING BOOTH

Joji Itho, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 505,467, Jun. 17, 1983, abandoned. This application Nov. 7, 1984, Ser. No. 669,057

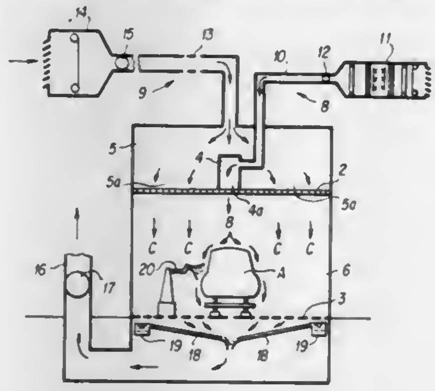
Int. Cl.⁴ B05B *13/02, 15/12*

U.S. Cl. 118—326 **10 Claims**

1. A painting booth for painting an object, comprising:

a painting booth having a filter and a drainboard positioned therein and forming a first air supply chamber above said object to be painted and extending in a direction in which said object to be painted is conveyed, said first air supply chamber having an air-supplying opening facing said filter and having a width which is smaller than that of the object to be painted; a second air supply chamber in which said first air supply chamber is disposed and which is defined by said filter and extending in a direction in which said object to be painted is conveyed; a painting chamber defined by said filter and said drainboard; and a paint mist separating chamber defined by said drainboard in said painting booth;

- a painting device positioned in said painting chamber;
- a first air supply system comprising said first air supply chamber operatively connected with said painting booth and including means for supplying air which flows through said opening of said first air supply chamber to strike said object and to flow down along opposite sides of said object, said object being centrally located in the painting booth, and means for controlling the temperature and humidity of the air to be supplied into a zone in said painting chamber through which said object to be painted is conveyed; and



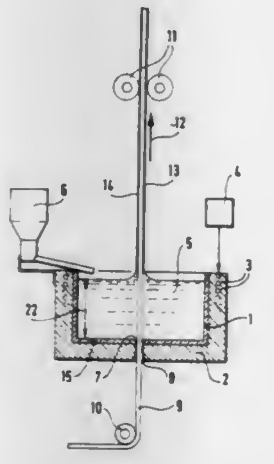
- a second air supply system operatively connected with said painting booth and including means for supplying air without a controlled temperature and humidity into said painting chamber exclusive of said zone through which said object is conveyed.

4,616,595
DEVICE FOR DEPOSITING A LAYER OF SILICON ON A CARBON TAPE

Christian Belouet, Sceaux, France, assignor to Compagnie Generale d'Electricite and Societe Nationale Elf Aquitaine, both of, France

PCT No. PCT/FR85/00054, § 371 Date Jan. 11, 1985, § 102(e) Date Jan. 11, 1985, PCT Pub. No. WO85/04196, PCT Pub. Date Sep. 26, 1985

PCT Filed Mar. 15, 1985, Ser. No. 800,636
Claims priority, application France, Mar. 16, 1984, 84 04074
Int. Cl.^{4} B05C *3/172*
U.S. Cl. 118—405 **2 Claims**



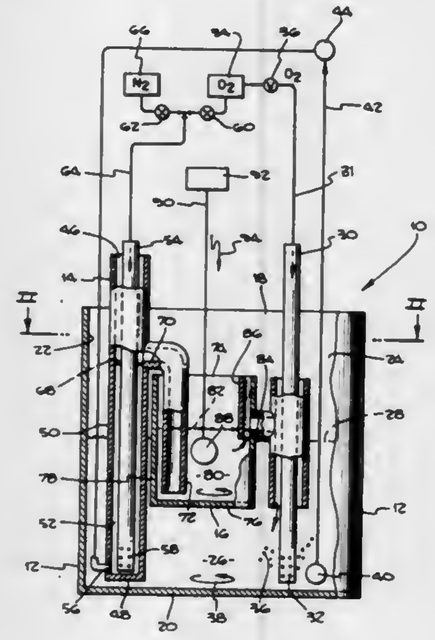
1. A device for depositing a layer of silicon on a carbon tape, the device comprising:

- a receptacle provided with a horizontal bottom having a slot passing therethrough, the horizontal profile of the slot comprising two parallel and facing straight segments, said segments delimiting a rectangular area whose length corresponds to the segments, the tape passing through the slot in such a manner that the width of the tape is parallel to the segments,
- means for disposing a bath of liquid silicon in the receptacle, and
- means for vertically drawing the tape upwardly and lengthwise in such a manner as to deposit said layer, the width of the said rectangular area being sufficiently small for the silicon meniscus connecting the tape to the walls of the slot to be stable; characterized in that
- the wall **(23, 24)** of the slot **(7)** flares **(33)** outwardly at the bottom face **(16)** of the bottom **(15)**;
- the length of the segments **(23, 24)** is equal to the width of the tape **(9)**; and
- the horizontal profile of the slot **(7)** further includes two circular curves **(26, 27)** delimiting two circular areas **(28, 29)** disposed at respective ends of the said rectangular area **(25)**, each of said circular areas being centered on the longitudinal axis **(32)** of the rectangular area **(25)**, the circular curves **(26, 27)** connecting with the ends of the segments **(23, 24)** in such a manner that the circular areas **(28, 29)** are in communication with the rectangular area **(25)**, the diameter **(34)** of the circular areas **(28, 29)** being greater than the width **(19)** of the said rectangular area **(25)** and less than a predetermined limit value.

4,616,596
ELECTROLESS PLATING APPARATUS

Carlyle L. Helber, Jr., Fountain Valley, and Frank A. Ludwig, Rancho Palos Verdes, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 21, 1985, Ser. No. 789,867
Int. Cl.^{4} B05C *11/10, 3/05*
U.S. Cl. 118—603 **11 Claims**



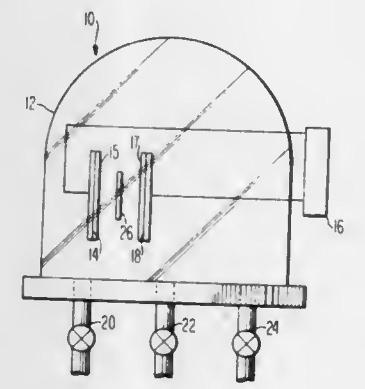
1. An apparatus adapted for use in electroless plating wherein a metal is autocatalytically plated from an electroless plating solution onto a plating surface by a process in which the activity of the plating solution is regulated by the amount of a first predetermined gas dissolved in the plating solution, which comprises:

- (a) an outer container having a top, a bottom, and side walls defining a reservoir for plating solution rich in said first predetermined gas;
- (b) first sparger means for introducing said first gas into said reservoir in a sufficient amount to provide a predetermined level of said first gas in the electroless plating solution in said reservoir, to produce a stabilized plating solution;
- (c) a flux container located inside said outer container, said flux container having a top, a bottom, and side walls defining a flux zone which is separate from said reservoir;
- (d) means for transferring stabilized plating solution from said reservoir to said flux zone;
- (e) second sparger means associated with said flux zone for introducing a second predetermined gas into said flux zone to reduce the amount of said first gas in said stabilized plating solution to a level sufficient to produce active electroless plating solution;
- (f) a plating vessel located inside said outer container, said plating vessel having a top, a bottom, and side walls defining a plating zone which is separate from said reservoir;
- (g) means for transferring active electroless plating solution from said flux zone to said plating zone for plating of metal onto the plating surface which is placed within said plating zone; and
- (h) means for transferring active electroless plating solution from said plating zone to said reservoir.

4,616,597
APPARATUS FOR MAKING A PLASMA COATING

Grzegorz Kaganowicz, Belle Mead, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 31, 1984, Ser. No. 666,838
Int. Cl.^{4} H01L *21/316*
U.S. Cl. 118—723 **7 Claims**



1. In a radio frequency (RF) glow discharge apparatus for deposition of a film of a first material on a substrate, said apparatus having a capacitively coupled electrode, spaced apart from said substrate, which electrode is capable of transferring the power from an RF power source to a gas plasma within said apparatus,

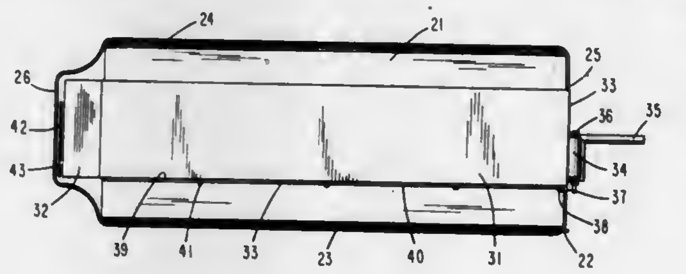
the improvement comprising;

- a plate of a second material affixed to that surface of the electrode which is coupled with the plasma, being of sufficient thickness to render negligible any changes in the potential between the electrode and the substrate to be coated caused by deposition onto said electrode.

4,616,598
EASY CLEAN PET LITTER BOX

Edward W. Burniski, 124 Prospect St., Wilkes-Barre, Pa. 18702, and Michael A. Jannuzzi, 1000 Roosevelt St., Edwardsville, Pa. 18704

Filed Dec. 10, 1984, Ser. No. 679,922
Int. Cl.^{4} A01K *23/00*
U.S. Cl. 119—1 **22 Claims**



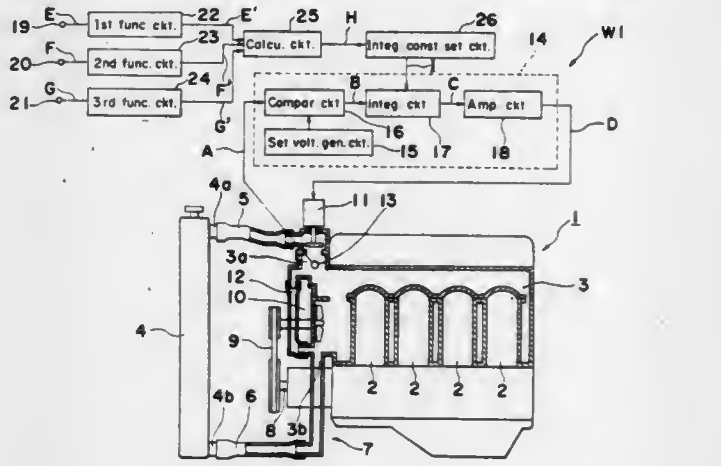
1. An easy to clean pet litter box that saves reusable pet litter, comprising:

- a generally upright box composed of four sides and open at its top and bottom ends;
- a generally flat cover, sized and shaped to be attached to said box at either said top end or said bottom end thereof;
- a tray, sized and shaped to snugly fit said box within said four sides, open at its top and provided with a bottom containing perforations of predetermined shape, size and distribution;
- a perforated sheet, whose perforations match said perforations of predetermined shape, size and distribution in said tray bottom, making substantial sliding contact with and movably attached to the outside of said tray bottom; and
- control means for controllably moving said perforated sheet with respect to said perforated tray bottom so as to selectively obtain substantial congruence or substantial mismatch between said matching perforation distributions therein.

4,616,599
COOLING ARRANGEMENT FOR WATER-COOLED INTERNAL COMBUSTION ENGINE

Takafumi Taguchi; Masahiro Nakano; Nobuo Hiramoto, all of Hiroshima, and Hideki Tominaga, Higashihiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 5, 1985, Ser. No. 698,531
Claims priority, application Japan, Feb. 9, 1984, 59-23699; Feb. 9, 1984, 59-23700; Feb. 9, 1984, 59-23701; Feb. 14, 1984, 59-26782
Int. Cl.^{4} F01P *7/16*
U.S. Cl. 123—41.1 **21 Claims**



1. A cooling arrangement for a water-cooled internal combustion engine, which comprises a radiator, a water jacket of the internal combustion engine, a cooling water passage for circulating the cooling between said radiator and said water jacket, a cooling water temperature detecting means for outputting signal related to the cooling water temperature detecting means for outputting signal related to the cooling water temperature, an adjusting device for adjusting a circulating amount of the cooling water between said radiator and said water jacket, a cooling water temperature control means for periodically increasing and decreasing the cooling water circulating to the radiator through actuation of the adjusting device by receiving the output of the cooling water temperature detecting means, and which operates the adjusting device in the direction to increase the circulating amount when the cooling water temperature is above a set value, and in a direction to decrease said circulating amount when the cooling water temperature is below a set value, an operating condition detecting means for detecting operating condition of the internal combustion engine, and modifying means for modifying the cooling water circulating amount in the increasing direction of the adjusting device and the circulating amount in the decreasing direction of the adjusting device by said cooling water

temperature control means according to the signal received from said operating condition detecting means.

4,616,600
CYLINDER BLOCK FOR INTERNAL COMBUSTION ENGINE

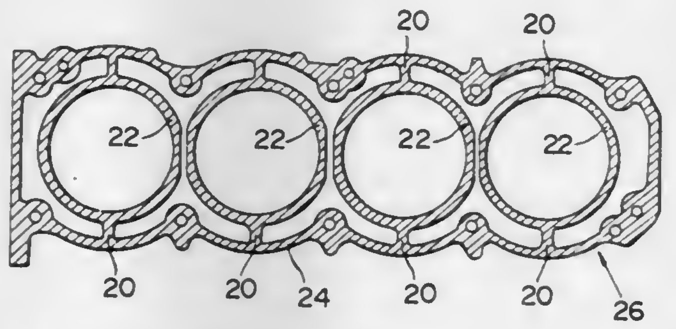
Yoshinori Hirano, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 30, 1983, Ser. No. 556,384

Claims priority, application Japan, Dec. 1, 1982, 57-180563[U]

Int. Cl.⁴ F01P *3/22*

U.S. Cl. 123—41.21 **6 Claims**



1. In an internal combustion engine
- a cylinder block;
- means defining at least one cylinder in said cylinder block;
- a cylinder head attached to said cylinder block in a manner to close one end of said at least one cylinder and define a combustion chamber therein;
- means defining a coolant jacket in said cylinder block, said coolant jacket surrounding said at least one cylinder;
- a condenser in which gaseous coolant is condensed to its liquid form;
- means for communicating between said cylinder block and said condenser for introducing liquid coolant from said condenser into said coolant jacket;
- means for collecting gaseous coolant produced by the boiling of the liquid coolant introduced into said coolant jacket, said collecting means defining a cavity;
- means for conveying the coolant collected in said cavity to said condenser for condensation therein;
- an upper deck formed along the top of said cylinder block and against which said cylinder head is secured;
- a lower deck formed along the bottom of said cylinder block;
- at least one non-perforate rib member in said coolant jacket which extends between and interconnects said upper deck and said lower deck and which interconnects said at least one cylinder and said coolant jacket in a manner which partitions said coolant jacket into cell-like compartments in which coolant stagnates; and
- means defining apertures in said upper deck through which the gaseous coolant produced by the boiling of the coolant in the compartments is transferred to said cavity.

4,616,601
RADIATOR ANTI-FREEZE ARRANGEMENT FOR EVAPORATIVE TYPE COOLING SYSTEM

Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

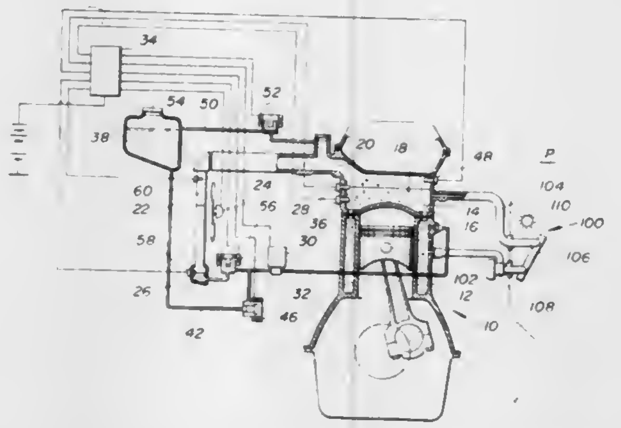
Filed Jul. 15, 1985, Ser. No. 754,980

Claims priority, application Japan, Jul. 16, 1984, 59-147400

Int. Cl.⁴ F01P *3/22*

U.S. Cl. 123—41.21 **8 Claims**

1. A boiling liquid cooling system for an engine, comprising:
- means defining in the engine a coolant jacket into which coolant is introduced in liquid state through an inlet port formed in the engine and from which coolant is discharged in gaseous state through an outlet port formed in the engine;
- a radiator into which gaseous coolant from said outlet port is introduced to be liquefied;
- a coolant container connected to said radiator to contain therein the coolant liquefied by said radiator;
- an electric pump by which the liquid coolant in said coolant container is pumped into said coolant jacket through said inlet port;
- conduit means connecting said outlet port, said radiator, said coolant container, said electric pump and said inlet port in this order to form a hermetically closed coolant circulation circuit;
- first and second coolant level sensors disposed in said coolant jacket to detect first and second coolant levels in the jacket respectively, said second coolant level being higher than said first coolant level; and
- control means for controlling said electric pump in such a manner that when, with the coolant in the coolant jacket being at its boiling point, the coolant in the radiator is at a temperature higher than the freezing point of the coolant, said first level sensor becomes enabled disabling said second level sensor thereby to control said electric pump to keep the coolant level in said coolant jacket at said first coolant level, while, when, with the coolant in the coolant jacket being at its boiling point, the coolant in the radiator comes to its freezing point or points around the same, said second level sensor becomes enabled disabling said first level sensor thereby to control electric pump to keep the coolant level in said coolant jacket at said second coolant level.



4,616,602
COOLING SYSTEM FOR AUTOMOTIVE ENGINE OR THE LIKE

Yoshinori Hirano, Yokohama, and Takao Kubozuka, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

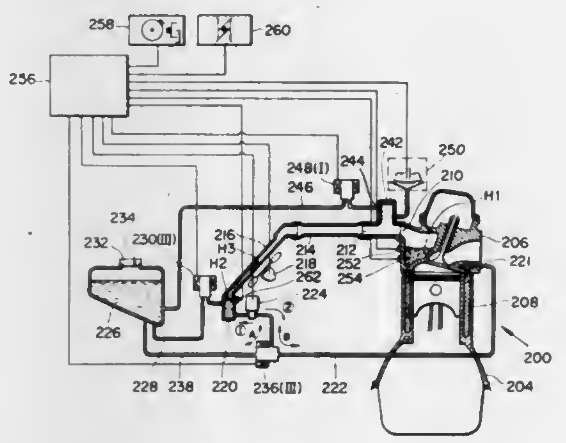
Filed Jul. 3, 1985, Ser. No. 751,536

Claims priority, application Japan, Jul. 6, 1984, 59-140378

Int. Cl.⁴ F01P *3/22, 1/10*

U.S. Cl. 123—41.27 **5 Claims**

1. In an internal combustion engine having a structure subject to high heat flux;
- a cooling circuit for removing heat from said engine comprising:
- a coolant jacket formed about said structure, said coolant jacket being arranged to receive coolant in liquid form and discharge same in gaseous form;
- a radiator in which the gaseous coolant produced in said coolant jacket is condensed to its liquid form;
- a vapor transfer conduit leading from said coolant jacket to said radiator for transfering gaseous coolant from said coolant jacket to said radiator;
- a device associated with said radiator for varying the rate of heat exchange between said radiator and a cooling medium surrounding the radiator;
- a liquid coolant return conduit leading from said radiator to said coolant jacket for returning coolant condensed to its liquid state in said radiator to said coolant jacket;
- a reservoir the interior of which is maintained constantly at atmospheric pressure;
- valve and conduit means for selectively interconnecting said reservoir and said cooling circuit, said valve and conduit means including a three-way valve disposed in said return conduit and a level control conduit leading from said three-way valve to said reservoir, said three-way valve having a first state wherein fluid communication between said radiator and said coolant jacket is interrupted and communication between said radiator and said reservoir established, and a second state wherein communication between said reservoir and said radiator is interrupted and communication between said radiator and said coolant jacket established;
- a reversible pump disposed in said coolant return conduit at a location between said radiator and said three-way valve, said pump being selectively energizable to pump coolant in (a) a first flow direction from said radiator toward said three-way valve and (b) in a second flow direction from said three-way valve toward said radiator;
- a first sensor for sensing a parameter which varies with the temperature of the liquid coolant in said coolant jacket;
- a second sensor for sensing a parameter which varies with the load on the engine; and
- a control circuit responsive to said first and second sensors for controlling the operation of said device, said valve and conduit means and said pump, said control circuit including means for:



- determining the operational mode of the engine;
- deriving a target temperature at which the liquid coolant in said coolant jacket should be maintained;
- operating said device in a manner to vary the rate of condensation in said radiator and bring the temperature of the coolant in said coolant jacket to said target temperature, and
- operating said three-way valve and said pump in a manner to vary the amount of coolant in said cooling circuit and therefore modify the pressure prevailing in said cooling circuit in a manner which tends to bring the temperature of the coolant to said target temperature.

5. A method of cooling an internal combustion engine comprising the steps of:
- introducing liquid coolant into a cooling circuit which includes a coolant jacket formed about structure of the engine subject to high heat flux;
- permitting the coolant in said coolant jacket to boil and produce coolant vapor;
- transferring the coolant vapor to a radiator which defines a further section of said cooling circuit;
- condensing the coolant to its liquid form in said radiator;
- sensing operational parameters of said engine;
- sensing the temperature of the coolant in said coolant jacket;
- using the data obtained during said step of sensing operational parameters to derive a target temperature at which the coolant in said coolant jacket should be maintained under the instant set of operational conditions;
- using a device located externally of said radiator to vary the rate of heat exchange between the radiator and a cooling medium surrounding said radiator in a manner which tends to bring the temperature of said coolant to said target temperature;
- using a reversible pump to pump coolant into and out of said coolant circuit in a manner which varies the pressure prevailing in said cooling circuit in a manner which tends to bring the temperature of said coolant to said target temperature.

4,616,603
CYLINDER LINER FOR A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE AND AN ENGINE BLOCK THEREFOR

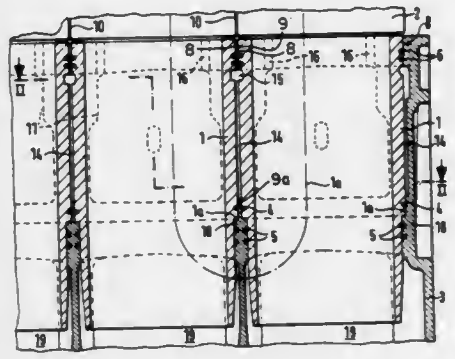
Heribert Kubis, Nürenberg, and Josef Winter, Rednitzhembach, both of Fed. Rep. of Germany, assignors to M.A.N. Nutzfahrzeuge GmbH, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 530,217, Sep. 8, 1983, abandoned. This application Feb. 13, 1985, Ser. No. 701,789

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1982, 3233578

Int. Cl.⁴ F02F *1/16*

U.S. Cl. 123—41.84 **4 Claims**



1. A process for making a multi-cylinder internal combustion engine having a wet cylinder liner with a cylinder therein for each cylinder of the engine and an individual cylinder head therefor, comprising:
- providing each cylinder liner with an outside shoulder near one end for support from a seat in one, crankcase end of the engine;
- providing a sealing land of the outside of each cylinder liner generally parallel to the cylinder therein and near the other end of the cylinder liner;
- separating each two cylinder liners from each other with a web at the opposite, cylinder head end of the engine such that each cylinder liner has a slight superelevation therefrom sufficient for compression sealing by the individual cylinder head thereon toward the shoulder;
- bolting each cylinder head to the engine for the compression sealing to the cylinder liner therefor;
- sealing the sealing land of each two cylinder liners to the web therebetween without affixation for sealing a coolant spaced therebelow, toward the crankcase end of the engine and without any contact between the web and the cylinder heads thereat; and
- designing each cylinder liner at the end near the sealing land without any flange enlargement for the compression sealing by the cylinder head therefor to the shoulder.

3. In a multi-cylinder internal combustion engine having a block and a wet cylinder liner for each cylinder, the improvements comprising:
- an outside shoulder on each cylinder liner near one end for sealingly seating near the crankcase end of the engine block so as to define a coolant space about the thereby wet cylinder liner toward the opposite, cylinder head end of the engine;

a cylinder head for each cylinder liner;

means comprising an opposite, flangeless end on each cylinder liner for compression sealing by the cylinder head therefor toward the shoulder;

bolts bolting each cylinder head to the engine block for providing the compression for sealing each cylinder head to the cylinder liner therefor;

a web of the engine block across the coolant space at the flangeless end of the cylinder liner and having a sealing land said flangeless end of each cylinder liner being superelevated from the web relative to the shoulder; and

a sealing land on the outside of each cylinder liner neat the flangeless end thereof and generally parallel to the cylinder therein for sealing without affixation to the sealing land on the web.

4,616,604

STATOR-ROTOR PISTON INTERNAL COMBUSTION ENGINE

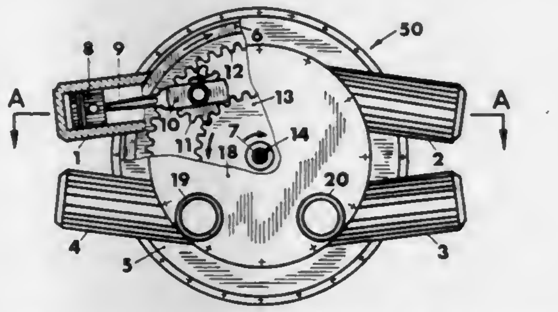
Borislav Ivanov, and Raina Ivanova, both of Stephan-Born-Str. 1, 6200 Weisbaden, Fed. Rep. of Germany

PCT No. PCT/EP83/00249, § 371 Date Oct. 17, 1983, § 102(e) Date Oct. 17, 1983, PCT Pub. No. WO85/01548, PCT Pub. Date Apr. 11, 1985

PCT Filed Sep. 28, 1983, Ser. No. 548,863

Int. Cl.⁴ F02B *75/22*

U.S. Cl. 123—55 AA **1 Claim**



1. A stator-rotor piston internal combustion engine, comprising:

a pair of mirror-image stator halves having an inner section in abutment and operatively connected to one another;

a plurality of cylinders disposed in an outer section of said stator halves, said stator halves having an equal number of cylinders with one another, each cylinder having,

a piston disposed therein,

a single connecting rod operatively connected at one end to said piston;

an individual crankshaft for each piston operatively connected to another end of a respective one of said connecting rods, and

a drive gear mounted coaxially with each of said crankshafts;

a flat rotor connected to an output engine shaft via a connection means, said rotor being disposed between and within said stator halves;

a pair of internal gear rings surrounded by said rotor, one fixed to each side of said rotor being spaced apart and on opposite sides of said connecting means, said gear rings having gear teeth on a radially inner portion thereof;

a pair of spaced apart auxiliary gears disposed radially inwardly and spaced from said interal ring gears with one of said auxiliary gears on each side of said rotor connecting means and being rotatable with respect to said rotor, said auxiliary gears having gear teeth on an outer periphery thereof, and wherein all of said drive gears have equal pitch diameter with and are spaced apart from one another and are engaged on an outer side thereof with the gear teeth of one of said internal gear rings, and on an inner side thereof with the gear teeth of one of said auxiliary gears, to transmit force from the pistons to the output engine shaft;

a pair of annular plates, one each mounted between each stator half and the rotor adjacent an outwardly facing surface of a respective one of said internal ring gears, each plate having bearing means for supporting internal ends of the crankshafts; and

a pair of engine lids, one each mounted on an outer side, away from said rotor, of each stator half, each lid having bearing means for supporting said output engine shaft and outer ends of the crankshafts.

4,616,605

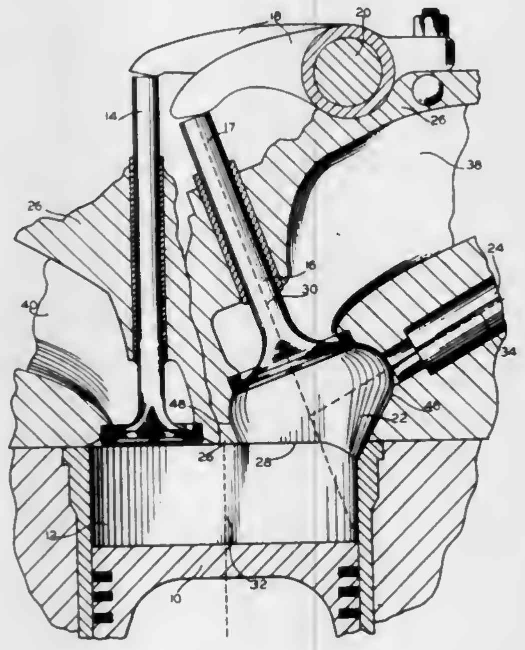
TWO-CYCLE ENGINE WITH IMPROVED SCAVENGING

Herbert E. Kline, P.O. Box 24, Claverack, N.Y. 12513

Filed Dec. 31, 1984, Ser. No. 688,070

Int. Cl.⁴ F02B *75/02;* **F02D** *39/04*

U.S. Cl. 123—65 VD **17 Claims**



1. An improved two-cycle internal combustion engine comprising:

a cylinder;

a cylinder head having an exhaust valve and an open type combustion chamber located therein, said chamber and exhaust valve being located in side-by-side relationship on opposite sides of a central axis of the cylinder;

an air inlet valve located within and in the top of the combustion chamber, said inlet valve having a valve stem located overhead said cylinder;

a piston reciprocally disposed with the cylinder;

means for converging a flow of scavengering air beneath the inlet valve into a colimated column as it enters the cylinder, said converging means comprising the combustion chamber having a generally oblate configuration with sides converging downwardly to form an opening which overlies the opposed sides with predetermined different angles of curvature; and

wherein the inlet valve and the combustion chamber are coaxially aligned and oriented to the central axis of the cylinder at a predetermined angle and wherein the flow of scavenging air is directed toward and along an inside wall of the cylinder, said inside wall being on the same side of the cylinder axis as the combustion chamber.

4,616,606

INTERNAL COMBUSTION ENGINE AND CAM DRIVE MECHANISM THEREFOR

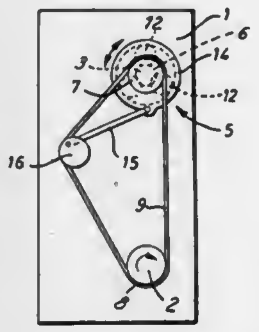
Thomas T. Ma, Chelmsford, United Kingdom, assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 696,621, Jan. 30, 1985, abandoned, Division of Ser. No. 386,851, Apr. 9, 1982, abandoned. This application Jan. 22, 1986, Ser. No. 822,675

Claims priority, application United Kingdom, Apr. 13, 1981, 8111692

Int. Cl.⁴ F01L *1/34*

U.S. Cl. 123—90.17 **2 Claims**



1. A cam drive mechanism for driving the camshaft of a four-stroke internal combustion engine having one or more sets of n number of cylinders where n is a positive integer, a piston connected to a crankshaft and reciprocable in each cylinder and being either in phase or out of phase with any other piston in the set to which it belongs by a phase angle A°, or an integral multiple thereof, and a camshaft carrying a plurality of rotatable cams for actuating inlet and/or exhaust valves for each cylinder in the set, characterized in the cam drive mechanism comprising means for rotating the camshaft with a rotational movement which is a combination of a circular motion about its axis of rotation which has a predetermined phase relationship with the circular movement of the crankshaft and an oscillatory motion about its axis of rotation to advance and retard the angular position of the cams relative to the valves with which they are associated, the oscillatory motion having a predetermined phase relationship with the crankshaft, and means for varying the amplitude of the oscillatory motion whereby the timing of the opening and closing of the valve may be varied, characterized in that the speed of the circular movement of the camshaft is half the speed of the crankshaft and the frequency of oscillations of the camshaft is f times the frequency of rotation of the crankshaft, wherein:

$f=2n$ when the number of engine cylinders $n=1$;

$f=n$ or $n/2$ when $n=2$;

$f=n/2$ when $n=3$ or more;

the cam drive mechanism means comprising a drive member rotatable by the crankshaft, and a plurality of connections between the drive member and camshaft for translating rotational movement of the drive member into a concurrent rotation of the camshaft and a continuous oscillation of the camshaft relative to the drive member superimposed upon the rotational movement, the connections including a planetary gear train having a plurality of gears including a ring gear, a sun gear, and a planet gear rotatably mounted on a planet carrier, one of the connections connecting one of the gears to the drive member for concurrent rotation, means connecting another part of the gear train to the camshaft, and linkage means connecting the drive member to a further one of the gears for automatically and continuously oscillating the further one of the gears to continuously vary the relative angular orientation between the one gear and the another part of the gear train for oscillating the camshaft relative to the drive member, the drive member comprising a crank wheel connected by the linkage means to the further gear, a pivot slidable along the linkage means to vary the oscillatory movement of the further gear, and means to slide the pivot.

4,616,607

VALVE DRIVING DEVICE FOR INTERNAL COMBUSTION ENGINE

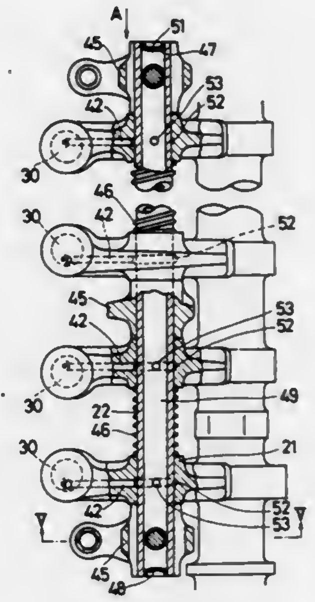
Hisashi Kodama, Nagoya, and Takuro Ono, Chiryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 1, 1985, Ser. No. 697,163

Claims priority, application Japan, Mar. 22, 1984, 59-55659

Int. Cl.⁴ F01L *1/18*

U.S. Cl. 123—90.46 **6 Claims**



1. A valve driving device for an internal combustion engine, of a type which includes a hydraulic lifter encased in each rocker arm for receiving a driving force at a first end thereof and for operating a valve stem at a second end thereof, and a rocker shaft swingably supporting the rocker arm, the device, comprising:

first oil passage means formed through an internal bore of the rocker shaft for supplying an operational oil to a reservoir formed in said hydraulic lifter;

second oil passage means formed through a rocker support supporting said rocker shaft for supplying the oil into said first oil passage;

air exhaust port means for exhausting air located in an upper part of said internal bore of said rocker shaft to outside;

an oil filter provided in said second oil passage means for removing impurities from said oil; and

third oil passage means formed through said rocker air for interconnecting said reservoir and said first oil passage wherein said third passage means opens into said reservoir at an upper part thereof and wherein a connection between said first oil passage means and said third oil passage means further comprises an annular passage formed around said rocker shaft and fourth passage means formed through said rocker shaft.

4,616,608

BALANCER DEVICE FOR A RECIPROCATING ENGINE

Mitsuo Shiga, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1984, Ser. No. 676,006

Claims priority, application Japan, Dec. 1, 1983, 58-184589[U]

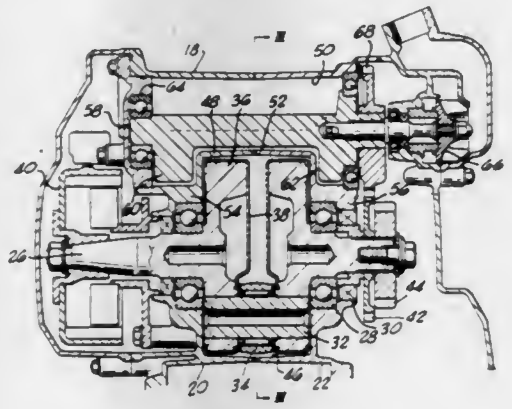
Int. Cl.⁴ F16F *15/26*

U.S. Cl. 123—192 B **4 Claims**

1. A reciprocating engine, comprising

a crankcase having a crank chamber and a balance chamber and a wall between said crank chamber and said balance chamber, said wall including three sections, a first section concave to said crank chamber, and second and third sections concave to said balance chamber, said second and third sections being to either side of said first section and said first section extending toward said balance chamber beyond a projection of the concave surfaces of said second and third sections;

a crankshaft rotatably mounted in said crank chamber; and



a balance shaft rotatably mounted in said balance chamber and having balance weights on said shaft positioned and arranged to pass to either side of said first section when rotated with said shaft.

4,616,609

OIL CIRCULATION CIRCUIT FOR INTERNAL COMBUSTION ENGINE, AND METHOD OF CIRCULATING LUBRICATING OIL

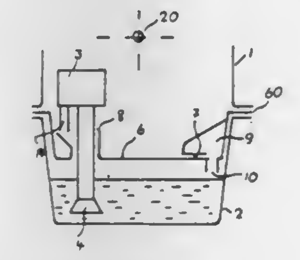
Otto Münch, Lindenweg 11, CH-5703 Seon, and Thomas Schibli, Beatusstrasse 38, CH-3008 Bern, both of Switzerland

Filed Jun. 27, 1985, Ser. No. 749,577

Claims priority, application Switzerland, Jun. 29, 1984, 3135/84

Int. Cl.⁴ F01M *1/00*

U.S. Cl. 123—196 AB **19 Claims**



1. In combination with an internal combustion engine,

a forced-oil circulation circuit including an oil pump (**3**) having a suction inlet (**4**), and

means (**2, 30**) for cooling oil circulating in the forced-flow circuit,

comprising, in accordance with the invention,

means for controlling cooling of oil circulating in the forced-oil flow circulation circuit as a function of viscosity of the oil being circulated by the pump (**3**) including

means (**6, 28**) for receiving oil;

a first controlled outlet (**8, 89, 88**) from the oil receiving means directing oil to the suction inlet (**4**) of the pump;

and a second outlet (**9, 23, 32**) including means (**7, 67, 77, 78, 79, 710, 711**) for introducing resistance to the flow of oil through the second outlet, wherein the resistance is a function of the viscosity of the oil, the second outlet directing oil to the oil cooling means (**2, 30**),

said oil cooling means being in flow communication with the suction inlet (**4**) of the pump.

4,616,610

LUBRICATING APPARATUS IN INTERNAL COMBUSTION ENGINE

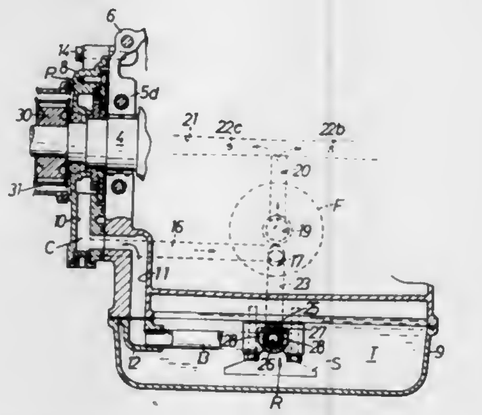
Atsushi Ishida, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1985, Ser. No. 716,820

Claims priority, application Japan, Mar. 27, 1984, 59-43652[U]

Int. Cl.⁴ F01M *1/00*

U.S. Cl. 123—196 A **7 Claims**



1. A lubricating apparatus in an internal combustion engine of the horizontal type having a cylinder block, comprising a crank shaft bearing cap mounted on the cylinder block, a main gallery provided in the bearing cap and extending substantially parallel to the crank shaft, an oil filter mounted on said bearing cap at substantially midlength of the main gallery, said oil filter having an inlet in communication with an oil pump and an outlet in communication with the main gallery at substantially its midlength.

4,616,611

PRECOMBUSTION CHAMBER CONSTRUCTION OF INTERNAL COMBUSTION ENGINE

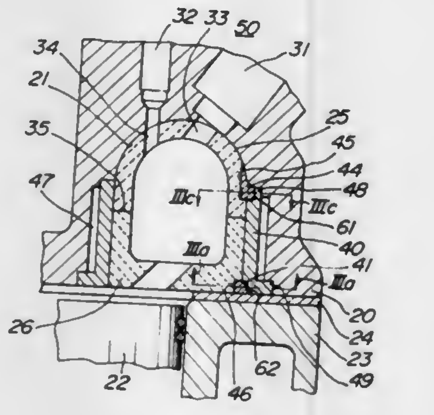
Yutaka Ogawa; Takayuki Ogasawara, and Shigeru Hanzawa, all of Nagoya, Japan, assignors to NGK Insulators, Ltd. and Mazda Motor Corporation, both of, Japan

Filed Oct. 11, 1985, Ser. No. 786,487

Claims priority, application Japan, Oct. 16, 1984, 59-155014[U]; Aug. 27, 1985, 60-129466[U]

Int. Cl.⁴ B41F *13/54*

U.S. Cl. 123—270 **5 Claims**



1. A precombustion chamber construction of an internal combustion engine, including an upper ceramic body, a lower ceramic body abutting against the upper ceramic body to form a precombustion chamber communicating through an injection hole with a main combustion chamber of the internal combustion engine, and a metal ring member fitted on outer circumferences of said upper and lower ceramic bodies, said precombustion chamber construction comprising a first key member whose part is received in a cut-away portion formed in said outer circumference of said upper ceramic body in the proximity of an upper end of said metal ring member and whose remaining part is received in a groove formed in an inner circumference of the upper end of the metal ring member corresponding to said cut-away portion of the upper ceramic body, and a second key member whose part is received in a cut-away portion formed in the outer circumference of the lower ceramic body in the proximity of a lower end of the metal ring member and whose remaining part is received in a groove formed in an inner circumference of the lower end of the metal ring member corresponding to the cut-away portion of the lower ceramic body.

4,616,612

INTERNAL COMBUSTION ENGINE PISTON

Phillip A. Jane, Peterborough, England, assignor to Perkins Engines Group Limited, London, England

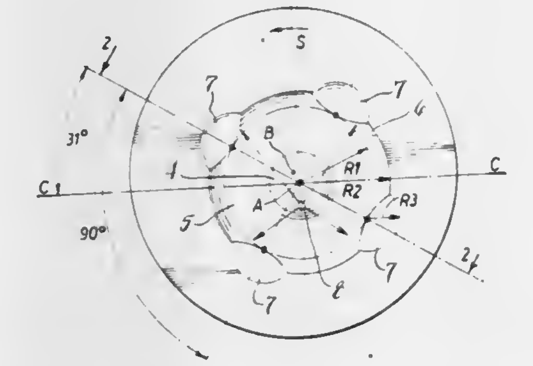
PCT No. PCT/GB84/00224, § 371 Date Feb. 11, 1985, § 102(e) Date Feb. 11, 1985, PCT Pub. No. WO85/00198, PCT Pub. Date Jan. 17, 1985

PCT Filed Jun. 25, 1984, Ser. No. 700,579

Claims priority, application United Kingdom, Jun. 28, 1983, 8317453

Int. Cl.⁴ F02B *19/08*

U.S. Cl. 123—276 **6 Claims**



1. An internal combustion engine piston having a combustion bowl recessed in the crown of the piston and a plurality of recesses formed in the side wall of the bowl so as to extend substantially the full depth of the bowl and which are arcuate in cross-section and spaced apart by arcuate intermediate portions of the side wall, characterised in that the ratio of the maximum distance by which each recess (**7**) extends radially into the side wall (**6**) compared with the radius of the side wall (**6**), lies within the range of 0.10 to 0.20.

4,616,613

DEVICE FOR ELECTRIC REGULATION OF IDLE OF INTERNAL COMBUSTION ENGINES

Harald Collonia, Glasshütten, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 29, 1985, Ser. No. 696,126

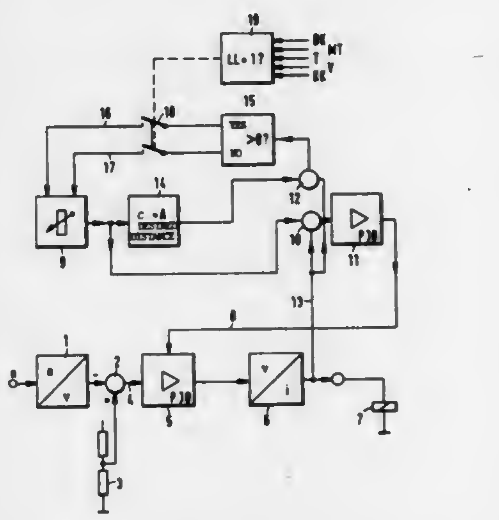
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1984, 3403750

Int. Cl.⁴ F02M *3/07*

U.S. Cl. 123—339 **8 Claims**

1. In a device for electrically controlling the idling of internal combustion engines, particularly in automotive vehicles having an idle flow setting element, a comparator wherein an idling speed-of-rotation/control deviation signal is formed, and a speed-of-rotation regulator, and wherein the comparator and the regulator control a setting current which can be fed into the idle airflow setting element, the device having means for adjusting the setting current, the improvement wherein

the device further comprises a control limiting unit which adjusts itself as a function of the setting current upon idling and which limits the maximum setting current to a value which is a predetermined amount above the idling setting current, said control limiting unit being connected to the regulator.



4,616,614

SYSTEM FOR REGULATING THE IDLE SPEED OF AN INTERNAL COMBUSTION ENGINE

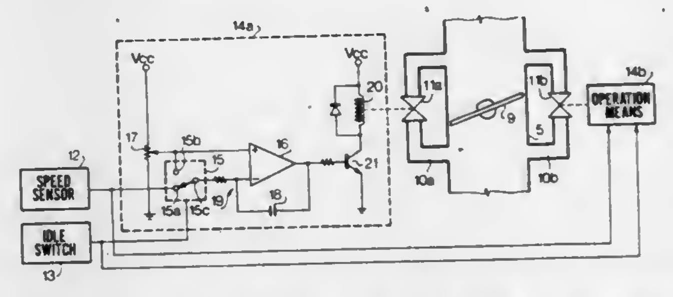
Kunihiro Abe, Higashimurayama, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 557,085, Dec. 1, 1983, abandoned. This application Jul. 18, 1985, Ser. No. 756,571

Claims priority, application Japan, Dec. 3, 1982, 57-212444

Int. Cl.⁴ F02D *11/10*

U.S. Cl. 123—339 **4 Claims**



1. In a system for regulating the idle speed of an internal combustion engine with an electronic fuel injection system having an air flow bypass around a throttle valve of the engine and at least one solenoid operated control valve having at least one solenoid provided in the bypass to control the volume of air flow passing through the bypass, the improvement comprising:

first means for sensing speed of said engine and for producing an engine speed signal;

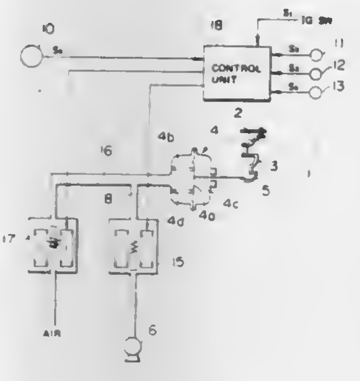
at least one second means for producing a reference voltage corresponding to a predetermined idle speed;

integration operating means operatively for producing during idle operation of said engine a regulating signal dependent on the difference between said engine speed signal and said reference voltage, the regulating signal comprising simultaneously a first integration component, the value of the latter relatively rapidly increasing, and a second integration component, the value of the latter relatively slowly increasing; and

a driver responsive to said regulating signal for energizing at least one said solenoid of at least one said solenoid operated control valve to actuate at least one said control valve in a manner dependent on said first and second integration components to regulate the idle speed to the predetermined idle speed so as to converge thereto with minimized hunting.

4,616,615
METHOD AND SYSTEM FOR CONTROLLING IDLING SPEED FOR A DIESEL ENGINE

Hiroyuki Kawaguchi, Yokohama; Hideyuki Saito, Tokyo, and Seishi Yasuhara, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Japan
Filed Jan. 12, 1984, Ser. No. 570,260
Claims priority, application Japan, Jan. 18, 1983, 58-6385
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—339 **17 Claims**



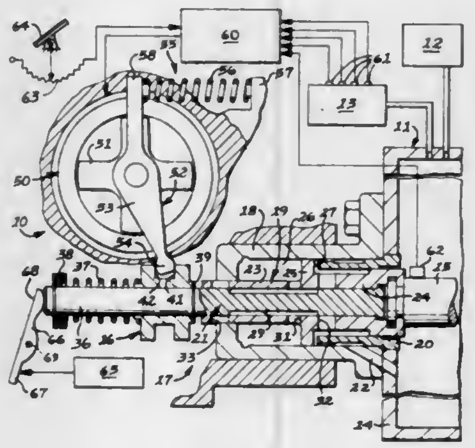
1. A system for controlling the idling speed of a vehicular Diesel engine, the engine having a member for controlling an amount of fuel supplied to the engine according to the position thereof, comprising:

- (a) A stop member, engaged with said control member during engine idling within a positional range said control member displaces, for limiting the amount of fuel supplied to the engine from said control member during engine idling;
- (b) means for selectively adjusting a position of said stop member within the positional range of said control member during engine idling such that the engine idling speed approaches a target idling speed determined according to engine operating conditions at the time of idling,
- (c) said means for selectively adjusting comprising:
  - (i) a pressure-responsive actuator linked with said stop member which actuates said stop member according to pressure introduced thereinto;
  - (ii) a normally closed first valve means which operatively opens to introduce a negative pressure into said actuator so that said control member mediates an increased amount of fuel supply to the engine via said stop member;
  - (iii) a normally open second valve means which opens to introduce the atmospheric pressure into said actuator so that said control member mediates a decreased amount of fuel supply to the engine via said stop member;
- (iv) a control means which selectively closes or opens said first and second valve means such that the engine idling speed approaches the target idling speed, the target idling speed being set according to the engine operating conditions, and
- (d) a normally closed third valve means which is opened or closed by said control means in place of said second valve means when the engine idling speed does not settle to the target idling speed until a predetermined period of time has elapsed.

4,616,616
FUEL CONTROL SYSTEM

Waldema A. Staniak, Geneva, Switzerland; Robert E. Samuelson, Washington, and Michael E. Moncelle, Normal, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.
Filed Aug. 29, 1983, Ser. No. 527,043
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—357 **22 Claims**

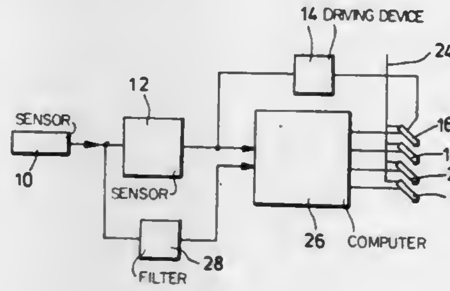
1. A fuel control system (70) comprising:
- a fuel rack (**15**) movable in opposite fuel-increasing and fuel-decreasing directions;
- a rack control member (**16**) movable in opposite fuel-increasing and fuel-decreasing directions;
- servo system means (**17**) for moving said fuel rack in response to movement of said rack control member (**16**);
- an electrically energizable member (**51**) movable in opposite fuel-increasing and fuel-decreasing directions, said electrically energizable member (**51**) being urged to move in its fuel-decreasing direction when energized;
- first coupling means (**52**) for connecting said electrically energizable member (**51**) to said rack control member (**16**) to move said rack control member (**16**) in its fuel-decreasing direction in response to movement of said electrically energizable member (**51**) in its fuel-decreasing direction;
- a mechanical governor control (**80**) having a member (**90**) movable in opposite fuel-increasing and fuel-decreasing directions;
- second coupling means (**98**) for connecting said mechanical governor (**80**) to said rack control member (**16**) to move said rack control member (**16**) in its fuel-decreasing direction in response to movement of said mechanical governor member (**90**) in its fuel-decreasing direction, said second coupling means having the further functions of allowing the position of said rack control member (**16**) to be controlled solely by said electrically energizable member (**51**) when said electrically energizable member (**51**) has been urged to move by the energization thereof to a position calling for less fuel than the position of said mechanical governor member (**90**), and of enabling the position of said rack control member (**16**) to be controlled by said mechanical governor member (**90**) when said mechanical governor member (**90**) is at a position calling for less fuel than the position to which said electrically energizable member (**51**) has been urged by the energization thereof;
- bias means (**55**) for biasing said rack control member (**16**) to move in its fuel-increasing direction.



4,616,617
METHOD AND ARRANGEMENT FOR COMBUSTION CHAMBER IDENTIFICATION IN AN INTERNAL COMBUSTION ENGINE

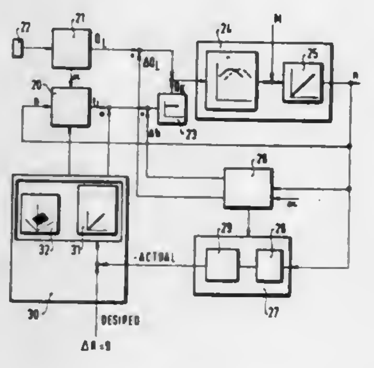
Istvan Geiger, Brunswick, and Uwe Waschatz, Meine, both of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany
Filed Apr. 8, 1985, Ser. No. 720,543
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1984, 3413271
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—436 **7 Claims**

1. A method for combustion chamber identification in an internal combustion engine having a plurality of combustion chambers and a plurality of injection valves individually related to said combustion chambers, comprising the steps of:
- sensing the rotational speed of the engine;
- detecting any unevenness or hunting in the sensed engine speed;
- altering the duration of fuel injection of a selected injection valve in response to any detected unevenness by an amount sufficient to cause additional hunting in the engine speed;
- determining the interval in time or crank angle between the additional hunting and the unevenness; and
- deriving, from the determined interval, an identification signal indicating the combustion chamber causing the unevenness.



4,616,618
APPARATUS FOR METERING AN AIR-FUEL MIXTURE TO AN INTERNAL COMBUSTION ENGINE

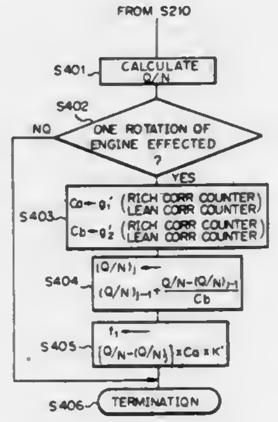
Eberhard Blöcher, Schwieberdingen; Ferdinand Grob, Besigheim; Peter-Jürgen Schmidt, Schwieberdingen, and Josef Wahl, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jan. 30, 1985, Ser. No. 696,651
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1984, 3403394
Int. Cl.⁴ F02B *3/00*
U.S. Cl. 123—478 **5 Claims**



1. Apparatus for metering an air-fuel mixture to an internal combustion engine equipped with fuel injection means, the apparatus comprising:
- an optimzer arrangement for controlling to a minimal specific consumption of fuel, the arrangement including test signal generator means for acting upon the fuel metered to the engine;
- means for applying the rotational speed of the engine and the metering signal indicative of the duration of injection of the fuel as actual-value information for controlling to the minimal specific consumption value; and,
- the quotient of the change in rotational speed change Δn and the change in the duration of fuel injection Δt_e being determined for detecting the actual value.

4,616,619
METHOD FOR CONTROLLING AIR-FUEL RATIO IN INTERNAL COMBUSTION ENGINE

Kimitaka Saito, Okazaki; Tokio Kohama, Nishio; Tsuneyuki Egami, Nukata; Tsutomu Saito, Okazaki; Hiroshi Takahashi, Toyota, and Kunihiko Sato, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan
Filed Jul. 13, 1984, Ser. No. 630,682
Claims priority, application Japan, Jul. 18, 1983, 58-129497; Jul. 21, 1983, 58-131814
Int. Cl.⁴ F02D *41/14*
U.S. Cl. 123—489 **32 Claims**


FROM S210
S401
CALCULATE Q/N
S402
NO
ONE ROTATION OF ENGINE EFFECTED ?
YES
S403
Ca←θ₁' (RICH CORR COUNTER / LEAN CORR COUNTER)
Cb←θ₂' (RICH CORR COUNTER / LEAN CORR COUNTER)
S404
(Q/N)ⱼ ← (Q/N)ⱼ₋₁ + (Q/N−(Q/N)ⱼ₋₁)/Cb
S405
f₁ ← {Q/N−(Q/N)ⱼ}×Ca×K'
S406
TERMINATION

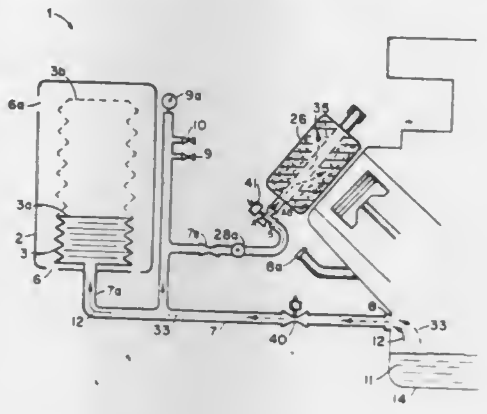
1. A method for controlling air-fuel ratio in an internal combustion engine comprising the steps of:
- (1) every time the engine has rotated through a predetermined crank angle, obtaining a factor value for deciding a correction amount of fuel injection corresponding to an acceleration/deceleration state of the engine;
- (2) calculating the blunted value of said obtained factor value obtained by said obtaining step (1);
- (3) obtaining a correction amount of transient fuel injection from said factor value obtained by said obtaining step (1) and said blunted factor value calculated by said calculating step (2);
- (4) detecting deviation of the air-fuel ratio of said engine from a predetermined reference air-fuel ratio during the acceleration or deceleration of the engine;
- (5) correcting said correction amount of transient fuel injection obtained by said obtaining step (3) in response to said air-fuel ratio deviation detected by said detected step (4) every time the engine has rotated through said predetermined crank angle; and
- (6) supplying the engine with an amount of fuel controlled by said transient fuel injection correction amount as corrected by said correcting step (5).

4,616,620
CONTAMINATION CONTROL APPARATUS

John A. Paoluccio, 3530 Kiernan St., Modesto, Calif. 95356
Continuation of Ser. No. 551,360, Nov. 14, 1983, abandoned. This application Sep. 17, 1985, Ser. No. 777,557
Int. Cl.⁴ F02M *25/06*
U.S. Cl. 123—573 **12 Claims**

1. An internal combustion engine, which comprises:
- an engine having a crankcase;
- a container for collecting crankcase vapors, said containers having a desiccant disposed therein, said container being positioned in heat exchange relation to said engine; and means for providing fluid communication alternately between (1) a first position coupling said container to at least a part of said crankcase of said engine when said engine is not operating in order to supply a crankcase vapors to the container and (2) a second position coupling said container to ambient when said engine is operating, said desiccant absorbing crankcase vapors when said engine is not running and releasing the crankcase vapors

previously absorbed to the atmosphere when said engine is not running whereby in order that crankcase vapors contained therein are released by the heated desiccant to the atmosphere.



4,616,621
METHOD OF AIR-FUEL RATIO CONTROL OF INTERNAL COMBUSTION ENGINES OF AUTOMOBILES

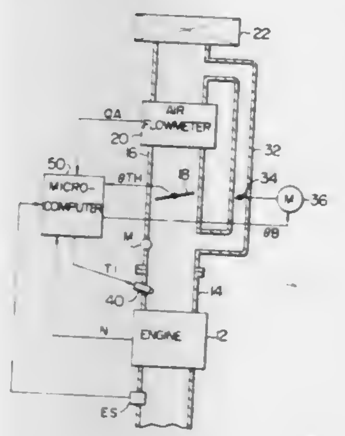
Hiroshi Kuroiwa, Hitachi, and Yoshishige Oyama, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 18, 1983, Ser. No. 542,994

Claims priority, application Japan, Oct. 18, 1982, 57-181283

Int. Cl.⁴ F02B *3/00*

U.S. Cl. 123—585 8 Claims



1. A method of air-fuel ratio control for an internal combustion engine of an automobile, in which the fuel amount to be supplied to the internal combustion engine is determined by detecting only the air amount passing through a main air intake path having a throttle valve therein, controlling the air amount passing through a bypass formed in addition to the main air intake path, said bypass having an inlet coupled to said main air intake path at a location thereof upstream of the location whereat the air amount passing through said main air intake path is detected and an outlet coupled to said main air intake path at a location thereof downstream of the location of said throttle valve, so as to attain a predetermined air-fuel ratio for a lean gas mixture determined for a predetermined operating range of the automobile, thereby performing the lean mixture gas operation in said predetermined operating range, determining the fuel amount in accordance with the output from a sensor provided at said main intake path for detecting only the amount of air passing through the main air intake path, calculating the opening of said bypass suitable for obtaining said predetermined air-fuel ratio and controlling said opening of the bypass in accordance with said calculated bypass opening.

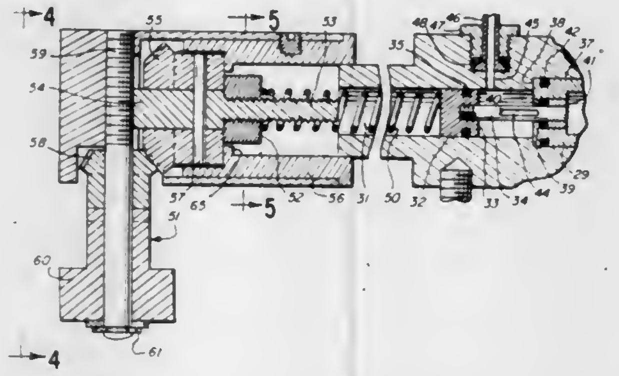
4,616,622
PRESSURE-REGULATED GAS GUN

Keith Milliman, Fairport, N.Y., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Aug. 10, 1984, Ser. No. 639,399

Int. Cl.⁴ F41B *11/00*

U.S. Cl. 124—73 10 Claims



1. In a gas gun having a source of pressureized gas and a gas chamber for storing pressurized gas for propelling a projectile from the gun, a pressure regulator assembly comprising:

(a) valve means between the source of pressurized gas and the gas chamber for permitting gas to flow from the source of pressurized gas to the gas chamber until the pressure of the gas in the gas chamber reaches a predetermined level, the valve means including a gas seal between the source of pressurized gas and the gas chamber and a piston slidably movable in the seal between a first position in which pressurized gas can flow from the source of pressurized gas to the gas chamber and a second position in which gas flow between the source of pressurized gas in the gas chamber is prevented; and

(b) valve-adjusting means for adjusting the predetermined level of the pressure of the gas in the gas chamber, the valve-adjusting means including a spring resiliently biasing the piston toward its first position, a knob rotatably mounted on the exterior of the gun, a first gear attached to the knob for rotation therewith, a second gear meshing with first gear for rotation therewith, a screw attached to the second gear for rotation therewith, and a spring stop threadedly mounted on the screw for axial movement therealong, the spring stop engaging said spring whereby axial movement of the spring stop on the screw adjusts the compression of the spring.

2. The structure of claim 1 in which a slot extends transversely through the piston, the slot extending on both sides of the gas seal when the piston is in its first position whereby gas can flow from the source of pressuzied gas through the slot and into the gas chamber.

4,616,623
INTERCHANGEABLE SIGHT MOUNT FOR BOWS

Paul D. Williams, 9241 Davison, Davison, Mich. 48423

Filed Dec. 9, 1983, Ser. No. 559,750

Int. Cl.⁴ F41B *5/00*

U.S. Cl. 124—87 7 Claims

1. A mount for an archery bow which may interchangeably be employed to mount different sights comprising:

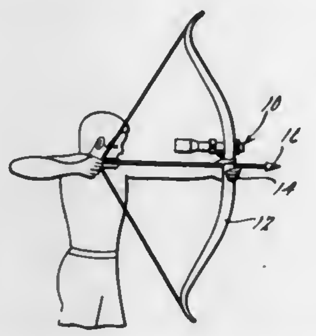
a bow mounting bracket affixed to the bow, said bow mounting bracket having at least one slot for enabling the vertical position of said bow mounting bracket to be adjusted with respect to the bow;

a sliding bracket slidably affixed to said bow mounting bracket, a slot in said sliding bracket for enabling said sliding bracket to slide with respect to said bow mounting bracket;

an intermediate bracket rotatably affixed to said sliding bracket, said intermediate bracket having a limited range of rotation with respect to said sliding bracket about a first axis;

a sight mounting plate having a hole for rotatably attaching said sight mounting plate to said intermediate bracket, said sight mounting plate having a limited range of rotation, with respect to said intermediate bracket about a second axis, and said second axis is perpendicular to said first axis; and

means for mounting a sight to said sight mounting plate.



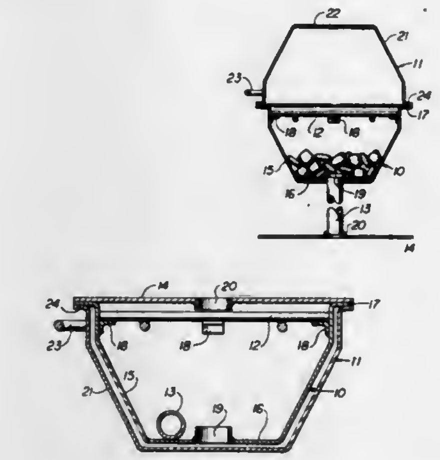
4,616,624
PORTABLE GRILL

Robert F. Parker, P.O. Box 2551, Victoria, Tex. 77902

Filed Feb. 3, 1986, Ser. No. 825,598

Int. Cl.⁴ F24C *1/16*

U.S. Cl. 126—9 R 3 Claims



1. A knock-down nestable grill comprising

a fire pan which is open at its top and tapers downwardly and provided at its top with an outwardly directed marginal flange, the fire pan having a flat bottom wall in a plane parallel to said flange,

a cover which is open at its bottom and which tapers upwardly and having a bottom outwardly directed marginal flange adapted in a use position of the grill to abut and rest on the flange of the fire pan, the cover having a flat top wall in a plane parallel to said flanges and said bottom wall, the cover being somewhat larger in width than the fire pan, whereby the fire pan can nest within the cover when the cover is inverted so that the marginal flange of the cover underlies and supports the marginal flange of the fire pan with the walls of the fire pan and cover somewhat spaced apart during nesting,

a removable grill rack supported within the fire pan near and below the marginal flange of the fire pan, and

a separable pedestal means for the grill including a post having a detachable connection with the bottom wall of the fire pan and a base plate having a detachable connection with the post, the base plate after being separated from the post being adapted to rest on the marginal flange of the nested fire pan to thereby form a cover for the open top of the fire pan.

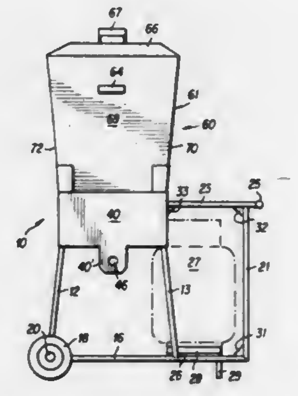
4,616,625
PORTABLE BACKYARD CRAB COOKER OR STEAMER

Beresford E. Froome, 1401 Ritchie Rd., Capitol Heights, Md. 20743

Filed Aug. 21, 1985, Ser. No. 704,050

Int. Cl.⁴ F24C *1/16;* A47J *37/12*

U.S. Cl. 126—25 R 5 Claims



1. A portable steam heating unit for shellfish comprising: a heating assembly and a steamer assembly; said heating assembly comprising a heating base from which depends a wheeled support structure, said heating base comprising a metal frame, the vertical sides of said frame being covered by at least one metal plate, the top of said frame being covered by a metal plate having an opening therein above a liquified gas heating element assembly positioned within said frame, one of said metal plates having a depending portion which mounts a control valve for the supply of liquifed gas to said heating element, said top plate having a plurality of upwardly and outwardly extending brackets; said wheeled support structure comprising a wheel assembly at one end and a fixed depending support assembly at the opposite end, said support assembly including handle means fixed to said base; said steamer assembly comprising an outer lidded pot and an interiorly positioned pot, said inner pot having at least a perforated bottom plate with depending supports to position said inner pot above the bottom of said outer pot, said steamer assembly being fittedly positioned above said opening in said top plate of said heating base in said bracket and removable therefrom.

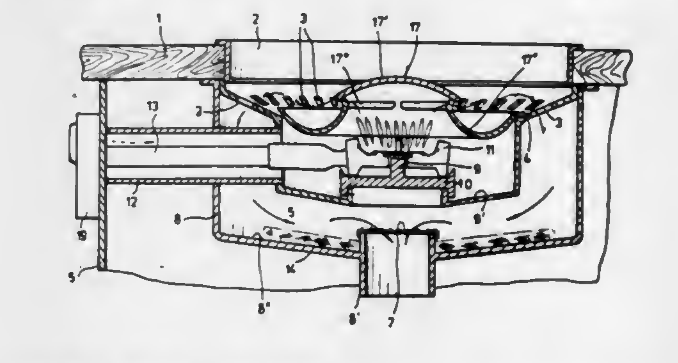
4,616,626
TABLE COOKER WITH VEANTILATOR

Jung K. Kwan Soon, 337-32, Hapjung-Dong, Map-Gu, Seoul, Rep. of Korea

Filed Apr. 20, 1984, Ser. No. 602,333

Int. Cl.⁴ F24C *3/00*

U.S. Cl. 126—39 K 8 Claims



1. A cooking device comprising

a table surface provided with an aperture disposed therein,

a gas burner container extending into said aperture and extending below the table surface, said gas burner container having a plurality of peripherally positioned ventilation holes disposed in the upper end thereof,

a burner means disposed in the lower end of the gas burner container below said plurality of ventilation holes,

a cooking surface disposed above said burner means the major portion of said cooking surface extending below said ventilating holes,

a smoke collecting room disposed below the burner means, said smoke collecting room communicating with said plurality of ventilation holes, and

exhaust means connected to said smoke collecting room for drawing off the cooking gases from said smoke collecting room.

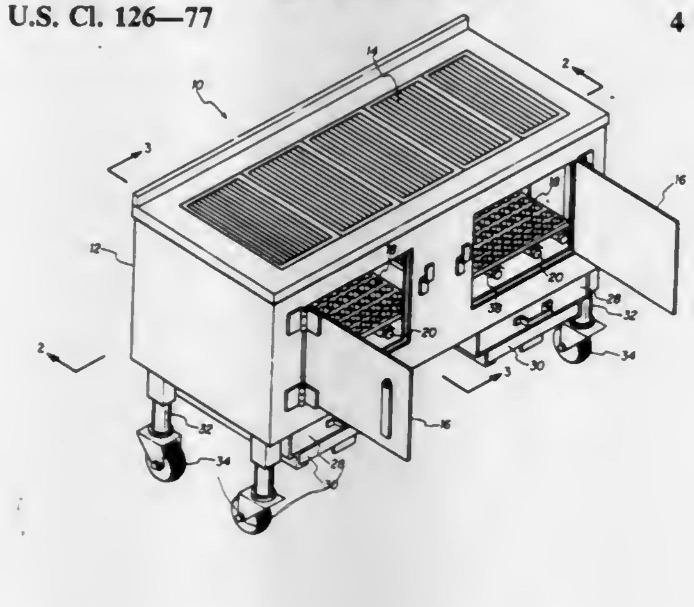
4,616,627
FORCED DRAFT STOVE

Lawton C. Haygood, Dallas, Tex., assignor to Lawton Haygood Corporation, Dallas, Tex.

Filed Nov. 16, 1984, Ser. No. 671,911

Int. Cl.⁴ F24C *1/14*

U.S. Cl. 126—77 **4 Claims**



1. A forced draft solid fuel burning cooking device comprising:

a housing having a combustion chamber bounded by an open upper side and being substantially closed on five sides thereof;

a food support grate covering the upper open side thereof;

a solid fuel support grate disposed within said housing below and parallel to said food support grate;

air injection means disposed within said housing below said fuel support surface for injecting air across solid fuel positioned upon said fuel support grate and into said combustion chamber, said air injection means having an air supply manifold and a plurality of closed end conduits communicating with said air supply manifold, each of said conduits having a plurality of discharge openings directed toward said solid fuel support grate; and,

deflector plate means disposed intermediate said air injection means and said fuel support surface for deflecting air as it is discharged by said air injection means.

4,616,628
FIRE-GUARD

Johannes B. Ratelband, "Rijnstateflat" Utrechtsestraat 55-34, 6811 LV Arnhem, Netherlands

Filed Apr. 10, 1984, Ser. No. 598,713

Claims priority, application Netherlands, Apr. 14, 1983, 8301306

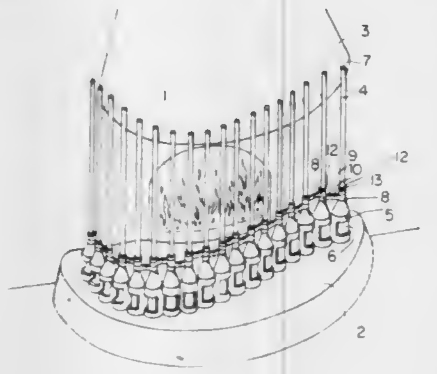
Int. Cl.⁴ F24B *7/00*

U.S. Cl. 126—121 **14 Claims**

1. A fire-guard adapted to convert radiant energy from a fire to convection flow of heated air, comprising a plurality of upstanding pipes having substantially vertical longitudinal axes, and connecting means for interconnecting said pipes in side-by-side relation so as to be disposed in a row on a supporting surface to form a screen between a fire and the space which the fire is heating:

each of said pipes having a lower portion extending to a selected height above the supporting surface and an upper portion extending coaxially therewith to a height substantially greater than said selected height, said connecting means maintaining said pipes with their longitudinal axes in parallel, upright relation with their lower portions adjacent one another and cooperating to form an air barrier extending from said supporting surface to said selected height and an air flow-through region above said selected height through which air may flow toward the fire, said lower portions having laterally facing inlet openings directed toward said space to allow cool air to flow into the interiors of said pipes below said selected height, said upper portions having openings adjacent the upper ends thereof for discharging heated air by convection into said space; and

said connecting means including hinge means connecting the pipes of at least one pair of adjacent pipes, said hinge means comprising a rigid link having its opposite end portions interconnected with said pipes such that the pipes are constrained for lateral movement with the associated ends of the link whereby the longitudinal axes of said pipes are maintained by said link at a fixed distance from one another at all times and each pipe may swing about the longitudinal axis of the opposite pipe only in an arc having a radius equal to said distance, one of said pipes also being independently rotatable about its own longitudinal axis with respect to the link whereby the other pipe may swing about the longitudinal axis of said one pipe while said one pipe remains stationary.



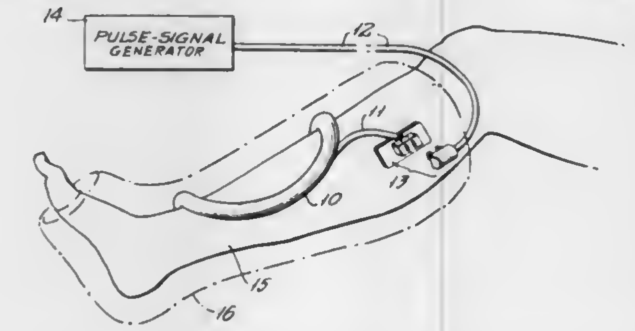
4,616,629
COIL CONSTRUCTION FOR ELECTROMAGNETIC TREATMENT OF AN AFFLICTED BODY REGION

John S. Moore, Upper Montclair, N.J., assignor to Electro-Biology, Inc., Fairfield, N.J.

Filed May 24, 1985, Ser. No. 737,433

Int. Cl.⁴ A61N *1/42*

U.S. Cl. 128—1.5 **8 Claims**



1. An electromagnetic body-treatment device for surgically non-invasive modification of the growth, repair and maintenance behavior of living tissues and cells by a specific and selective change in electrical environment, comprising a single multi-turn electrical coil of initially generally circular configuration, wherein a central axis of symmetry extends normal to the plane of said coil, said coil having an external lead-cable connection and said coil being deformed to an extent S out of the plane of said coil into a first body-adapting configuration which is generally U-shaped and generally symmetrically disposed on opposite sides of a first viewing plane defined by said central axis and by a first viewing-aspect axis normal to said central axis, said deformed coil being also in a second body-adapting configuration which is generally U-shaped and symmetrically disposed on opposite sides of a second viewing plane defined by said central axis and by a second viewing-aspect axis normal to said central axis and to said first viewing-aspect axis, the extent S being related to the span L between ends of one of said U-shapes and to the span W between ends of the other of said U-shapes such that

$$\underline{S} = \underline{k}\left(\frac{L+W}{4}\right),$$

where k is in the range 0.5 to 2.0, and means connected to said cable connection for electrically exciting said single coil with a therapeutically beneficial electrical signal; whereby, upon insertion of an afflicted body region into the U-shaped concavity of one of said configurations, a substantially uniform distribution of magnetic-flux intensity develops in a substantially prismatic volume within the included volume defined by the two U-shaped formations.

4,616,630
ENDOSCOPE WITH AN OBTUSELY ANGLED CONNECTING SECTION

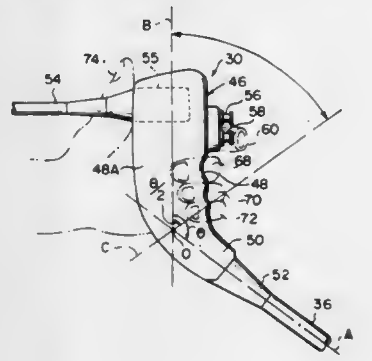
Satoshi Arakawa, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Japan

Filed Aug. 16, 1985, Ser. No. 766,413

Claims priority, application Japan, Aug. 20, 1984, 59-126264[U]; Aug. 20, 1984, 590-126265[U]

Int. Cl.⁴ A61B *1/00*

U.S. Cl. 128—4 **5 Claims**



1. An endoscope wherein a solid state imaging device is provided in the forward end of an insertion section and an object of interest is displayed on a display screen in response to a video signal obtained from said solid state imaging device, characterized in that a main body of control section of said endoscope comprises:

an elongate grip section grasped at least by a third finger and a little finger; and

a connecting section projecting obliquely downwardly from the front surface of the bottom end portion of said grip section, having a center axis A making an obtuse angle $\theta(90° < \theta < 180°)$ with a center axis B of said grip section B and being connected to the rear end of said insertion section on the same axial line.

4,616,631
FLEXIBLE PIPE ASSEMBLY FOR ENDOSCOPE

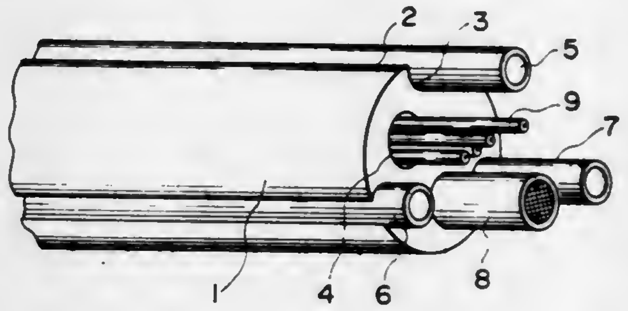
Nagashige Takahashi, Tokyo, Japan, assignor to Kabushiki Kaisha Medos Kenkyusho, Tokyo, Japan

Continuation of Ser. No. 117,416, Jan. 31, 1980, abandoned. This application Apr. 23, 1982, Ser. No. 371,168

Claims priority, application Japan, Feb. 10, 1979, 54-16206[U]

Int. Cl.⁴ A61B *1/06*

U.S. Cl. 128—6 **9 Claims**



1. An endoscope comprising: an elongate body having an axis extending along its length of flexible material having at least one hollow groove having side walls formed in outer wall portions of said body and an opening extending the length of said elongate body and cylindrical through-holes formed in the central portion of said body wherein said hollow grooves and said cylindrical through-holes extend parallel to the axis of said body; a channel forming element disposed in at least one of said hollow grooves and said cylindrical through holes and being strippable from said grooves along said opening and, endoscopic implements delivered through said channel forming elements.

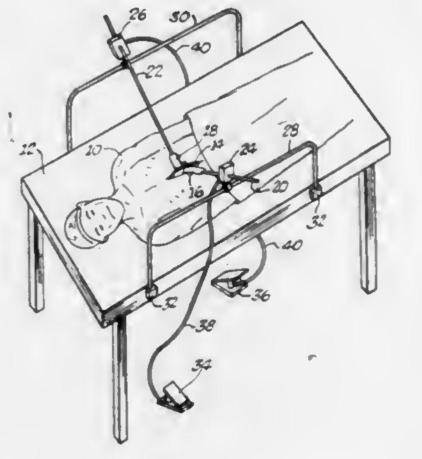
4,616,632
LOCK FOR RETRACTOR APPARATUS

Luis Wigoda, 841 Washington Ave., Miami Beach, Fla. 33139

Filed Jan. 31, 1985, Ser. No. 697,018

Int. Cl.⁴ A61B *17/02*

U.S. Cl. 128—20 **18 Claims**



1. Retractor apparatus for use during a surgical procedure for holding back tissue of a patient undergoing surgery, said apparatus comprising:

at least one retractor adapted to hold back said tissue;

attachment means adapted for attachment relative to an operating platform supporting said patient;

joint means for affixing said retractor to said attachment means in the position to hold back said tissue, said joint means including controllable lock means for releasing said retractor for positioning and thereafter locking said positioned retractor, said retractor being positioned by linear movement through said joint means in a direction away from said attachment means and by rotational movement in a direction about said attachment means; and actuated controller means coupled to said lock means for controlling said lock means to release said retractor upon actuation thereof and for controlling said lock means to lock said retractor upon deactuation thereof.

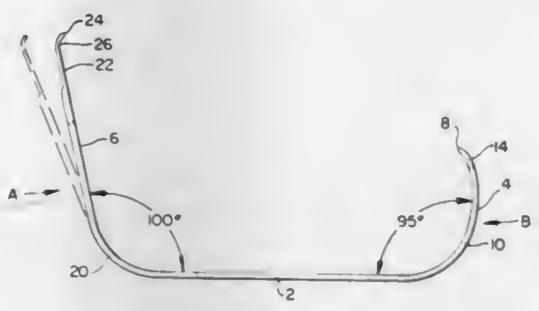
4,616,633
RETRACTOR FOR USE IN ORAL AND MAXILLOFACIAL SURGERY

Arturo Vargas Garcia, Rio Piedras, P.R., assignor to Commonwealth of Puerto Rico, P.R.

Filed Mar. 7, 1985, Ser. No. 709,129

Int. Cl.⁴ A61B *17/02*

U.S. Cl. 128—20 **1 Claim**



1. A retractor for soft tissue for use during oral and maxillofacial surgery formed from a strip of flat bendable material of substantially constant width and thickness, and comprising:
(a) a substantially straight handle part,
(b) a greater active blade part connected to one end of the handle part through an area of reduced thickness and extending from the handle at an obtuse angle of approximately 100° and having:
(i) an outer end part of reduced thickness having a tip end curved toward the handle and a patterened inner surface, and
(c) a lesser active blade part connected to the other end of the handle part the outer end of which is of lesser height above the handle than the outer end of the greater active blade part and being curved throughout its length back toward the handle part through approximately 95°, the connection of the greater active blade part to the handle part being malleable to permit angular adjustment of the greater active blade part with respect to the handle part.

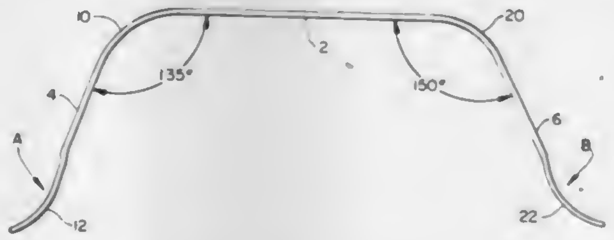
4,616,634
SOFT TISSUE PROTECTOR FOR USE IN ORAL AND MAXILLOFACIAL SURGERY

Arturo Vargas Garcia, Rio Piedras, P.R., assignor to Commonwealth of Puerto Rico, P.R.

Filed Mar. 7, 1985, Ser. No. 709,226

Int. Cl.⁴ A61B *17/02*

U.S. Cl. 128—20 **1 Claim**



1. A unitary instrument for the protection and retraction of the soft tissues of the oral cavity during surgery formed of thin strip stainless steel and comprising:
(a) an elongated handle part of linear configuration,
(b) a first active blade part connected to one end of the handle part through a curved section and forming an obtuse angle with the handle part,
(c) a second active blade part connected to the handle part through a curved section and forming with the handle part an obtuse angle greater than the angle between the handle and the first active blade part,
(d) each of the blade parts having at its outer end a section formed into a curve extending away from the handle part, the curved part at the outer end of the first blade part being thinner and wider than the remainder of the blade part and the curved part at the outer end of the second blade part being thinner and narrower than the remainder of the blade part.

4,616,635
SURGICAL INSTRUMENT FOR THE SPLAYING OF WOUND EDGES

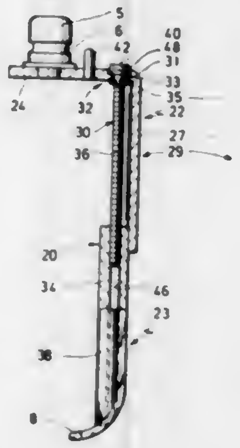
Wolfhard Caspar, Bad Homburg; Theodor Lutze, Balgheim, and Theodor Schwarz, Tuttlingen, all of Fed. Rep. of Germany, assignors to Aesculap-Werke Aktiengesellschaft, Tuttlingen, Fed. Rep. of Germany

Filed Apr. 4, 1985, Ser. No. 719,687

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1984, 3412647; Mar. 19, 1985, 3509787

Int. Cl.⁴ A61B *17/02*

U.S. Cl. 128—20 **11 Claims**



1. Surgical instrument for the splaying of the edges of a wound comprising at least one blade for placement on said edges having a blade shaped middle part, a rim projecting at right angles opposite the middle part, and a mount on which the blade is held at the end of the middle part opposite the projecting rim,
said middle part comprising two parts which are movable against each other, of which one is held on the mount and the other carries the projecting rim, and
an actuator that moves said two parts relative to each other and fixes them in different relative positions to each other so that different lengths of the middle part and these different spacings of the projecting rim result,
said actuator comprising a turnable rod with a screw thread section, a guide part with a screw thread complementary to the screw threads of the rod, and an abutment, whereby the guide part and the abutment are placed at different parts of the middle part and guide and hold the rod parallel to the movement direction, said rod being turnable for adjustment of said instrument from outside of the wound.

4,616,636
LIGHT EMISSION SWITCHING CIRCUIT FOR LARYNX STROBOSCOPE

Hironobu Nagashima, and Hiroshi Koyama, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1985, Ser. No. 756,121

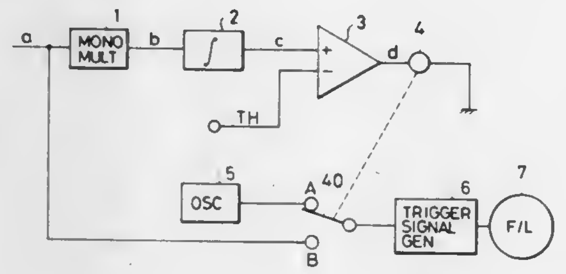
Claims priority, application Japan, Jul. 27, 1984, 59-156572

Int. Cl.⁴ A61B *1/00;* **G01P** *3/40*

U.S. Cl. 128—23 **4 Claims**

1. A light emission switching circuit for use in a larynx stroboscope, comprising:

means for detecting the presence of vocal cords vibration according to a pulse period of a first pulse signal synchronous with said vocal cords vibration;
oscillator means for generating a second pulse signal having a constant frequency; and



switching means for selecting, in accordance with an output of said detecting means, as an output for driving a flash lamp of said stroboscope, one of said first and second pulse signals, wherein when vocal cords vibration is detected by said detector means, light is emitted in synchronism with said vocal cords vibration, and when no vocal cords vibration is detected, light is emitted at said constant frequency.

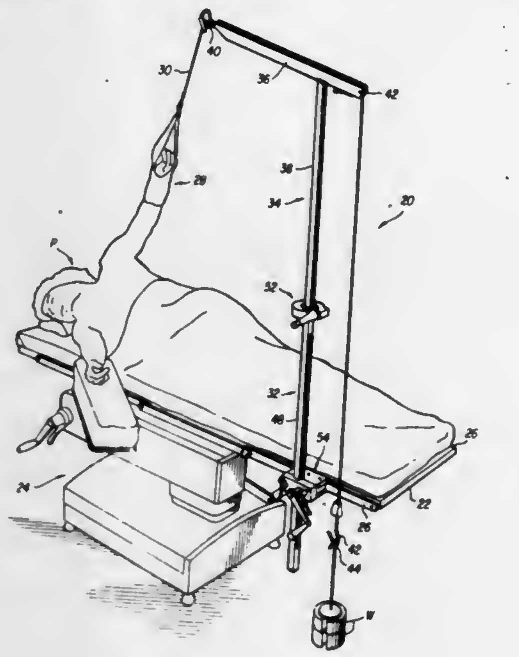
4,616,637
SHOULDER TRACTION APPARATUS

Richard B. Caspari, Maidens; Terry L. Whipple, and James A. Thimsen, both of Richmond, all of Va., assignors to Precision Surgical Instruments, Inc., Richmond, Va.

Filed Sep. 14, 1984, Ser. No. 650,664

Int. Cl.⁴ A61G *13/00*

U.S. Cl. 128—84 R **7 Claims**



1. In a shoulder traction applying apparatus, the combination which comprises
a. boom means secured to an operating table,
(1) said boom means having an upper rotatable portion which extends above and is rotatable relative to said operating table and a lower non-rotatable portion which is fixed relative to said table,
b. means secured to said lower non-rotatable portion for varying the elevation of said boom means,
c. a boom member carried by said upper rotatable portion of said boom means,
d. cord means carried by said boom member and being advanceable forwardly and rearwardly along said boom member,
e. gripping means attached to a forward end of said cord means with said gripping means gripping the arm of the patient,
f. variable means connected to a rearward end of said cord means for applying tension to said cord means whereby said tension will not increase because of movement of the patient,
g. and gear means carried by said rotatable portion for coaction with means on said non-rotatable portion for rotating said rotatable portion of said boom means about a vertical axis.

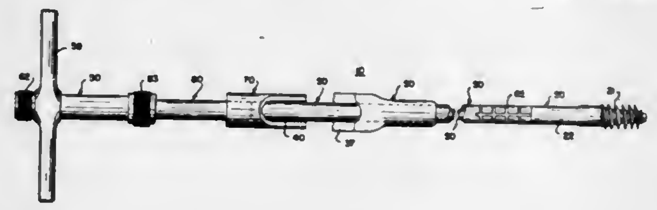
4,616,638
COMPRESSION SCREW ASSEMBLY

Calvin Griggs, Memphis, Tenn., assignor to Richards Medical Company, Memphis, Tenn.

Division of Ser. No. 340,093, Jan. 18, 1982, Pat. No. 4,530,355. This application Nov. 28, 1984, Ser. No. 675,937

Int. Cl.⁴ A61F *5/04*

U.S. Cl. 128—92 BB **6 Claims**



1. A wrench assembly for a compression screw assembly comprising a driving member for releasably engaging a lag screw in axial alignment therewith, said driving member being capable of rotating the lag screw when engaged therewith; and
being adapted to have a means slidably mounted thereon having surface contours complementary with a first engaging means formed on the lag screw and a second engaging means formed on the inner surface of a barrel member of a compression plate for being optionally insertable into the barrel member to prevent axial rotation of the lag screw with respect to the barrel member.

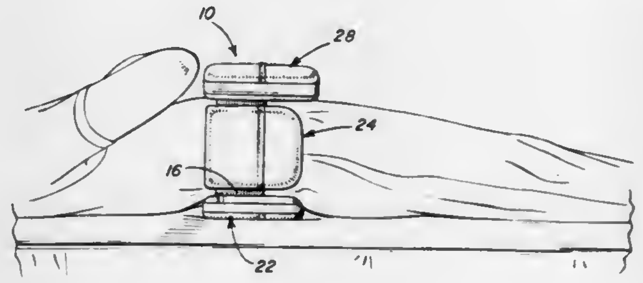
4,616,639
ORTHOPEDIC BELT WITH LEG SUPPORTS

William C. Huber, 3751 E. Fairway Dr., Birmingham, Ala. 35213

Filed Jan. 10, 1984, Ser. No. 570,072

Int. Cl.⁴ A61F *13/00*

U.S. Cl. 128—99 **12 Claims**

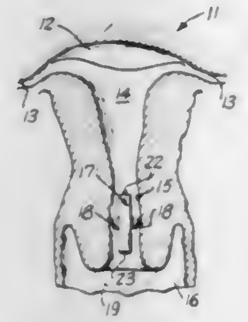


1. Apparatus for use in decreasing stresses and pressures to a person's lower back, the apparatus comprising a waist-embracing belt, at least one cushioning pad associated with the belt for strategic positioning between the wearer and a support surface, so as to provide lower back support, and a pair of support pad assemblies for attachment to the wearer's legs between the knee and ankle, for providing support thereto when the wearer is lying supine, prone and on the side, wherein each leg support assembly comprises a first support pad for positioning against the wearer's calf, a second support pad for positioning against the shin, and tie means attaching the pads together around the wearer's leg.

4,616,640
BIRTH CONTROL METHOD AND DEVICE EMPLOYING ELECTRIC FORCES

Steven Kaali, Penthouse E, 225 E. 63rd St., New York, N.Y. 10021; Peter M. Schwolsky, 4101 Cathedral Ave. NW., Washington, D.C. 20016, and Joseph W. Porter, Washington, D.C., assignors to Steven Kaali, New York, N.Y. and Peter M. Schwolsky, Washington, D.C.

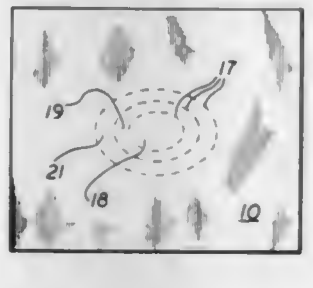
Filed Nov. 14, 1983, Ser. No. 551,590
Int. Cl.⁴ A61F *5/46*
U.S. Cl. 128—130 **44 Claims**



1. The method of birth control which comprises producing an electrical force within and about the cervical canal for preventing migration of male sperm through the cervical canal into the unterine cavity, said method comprising inserting a birth control device formed by a set of spaced-apart opposed low voltage electromotive force producing electrodes within at least the opening to the cervical canal and retaining it in place over extended periods of time and supplying an electromotive force of known voltage across the electrodes from an indepedent source of electric potential.

4,616,641
SURGICAL SHIELD

Edward Teeple, 641 Ridgefield Ave., Pittsburgh, Pa. 15216
Filed Jan. 28, 1985, Ser. No. 695,471
Int. Cl.⁴ A61F *13/00*
U.S. Cl. 128—132 R **6 Claims**



1. A surgical shield for use during laser procedures comprising:

a. a fabric inner sheet

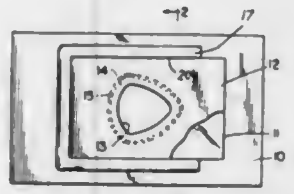
b. first metallic foil sheets respectively positioned over each side of said fabric inner sheet to coextensively interpose said fabric sheet between said foil sheets; and

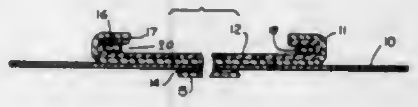
c. means for attaching together the respective foil and fabric sheets about their peripheries, and further wherein said foil sheets and fabric sheet includes at least one bounded perforation for removing the area bounded thereby to expose an operative field.

4,616,642
SURGICAL DRAPE FOR CAESAREAN SECTION

Jeffrey A. Martin, Duluth, and Philip S. Pomeroy, Marietta, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sep. 4, 1984, Ser. No. 647,289
Int. Cl.⁴ A61F *13/00*
U.S. Cl. 128—132 D **15 Claims**





1. A surgical drape comprising:

a flexible, nonwoven base sheet having a primary operative area;

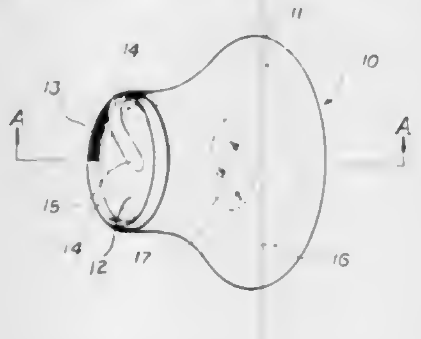
a flexible, liquid-imprevious plastic film overlying and secured to one surface of said base sheet in at least a portion of said primary operative area; and

a sheet of first liquid-absorbent material secured to the outer surface of said liquid-imprevious plastic film in at least a portion of said primary operative area, said primary operative area having a region in which said base sheet, said liquid-imprevious plastic film and said first liquid-absorbent material are conextensive, said conextensive region having a fenestration; and

a second liquid-absorbent material located in said primary operative area and having a U-shaped region partially surrounding and spaced from said fenestration, said second liquid-absorbent material having its U-shaped region located within a U-shaped pocket commensurate thereto in shape, said pocket having an opening facing said fenestration and being defined by peripheral edge portions of a laminate of flexible, liquid-imprevious plastic film and liquid-absorbent material.

4,616,643
DISPOSABLE EAR PROTECTOR

Ha Y. Jung, 3436 Carriage Cir., T 1, Randallstown, Md. 21133
Filed Jul. 31, 1985, Ser. No. 760,889
Int. Cl.⁴ A41D *21/00;* **A61F** *11/00*
U.S. Cl. 128—151 **3 Claims**



1. A disposable ear protecting device comprising:

a cap portion for enclosing the ear, said cap portion provided with an aperture therein,

an adhesive material disposed on the lip of the aperture,

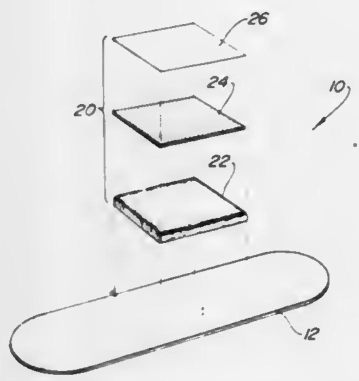
a masking material removably disposed over the adhesive material,

an absorbent pad disposed in said cap, said pad containing a highly moisture absorbent portion located in the central position thereof and adapted to be positioned adjacent to and correspond in size to the hole in the ear.

4,616,644
HEMOSTATIC ADHESIVE BANDAGE

Lowell Saferstein, Edison; Julius A. Lindquist, Bridgewater, and Stephen J. Wolf, Manville, all of N.J., assignors to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Filed Jun. 14, 1985, Ser. No. 744,829
Int. Cl.⁴ A61L *15/00*
U.S. Cl. 128—156 **10 Claims**



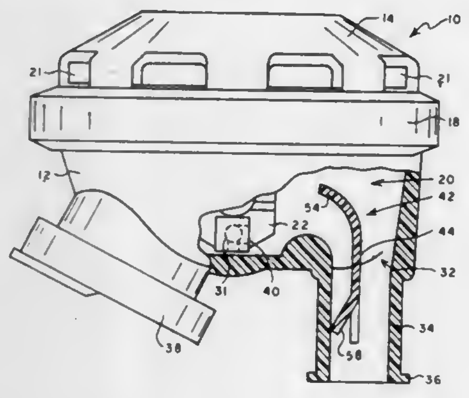
1. In an adhesive bandage of the type used on minor cuts and wounds, which consists of a pressure-sensitive adhesive coated backing having attached thereto an absorbent pad bandage portion covered with a perforated plastic film wound release cover, the improvement comprising:

a very thin coating comprising a polyethylene oxide having a molecular weight of at least 600,000, on said wound release cover, thereby to improve the hemostatic effect of said adhesive bandage.

4,616,645
DIVING REGULATOR WITH ANTI FREE-FLOW VANE

Vernon G. Pedersen, Chicago, and Michael Martin, Des Plaines, both of Ill., assignors to Dacor Corporation, Northfield, Ill.

Filed May 24, 1985, Ser. No. 737,497
Int. Cl.⁴ A62B *7/04*
U.S. Cl. 128—204.26 **8 Claims**



1. A demand regulator for use with underwater breathing apparatus comprising:

a housing,

a flexible diaphragm extending across the housing to provide a breathing chamber within said housing,

a mouthpiece tube communicating with the breathing chamber through a breathing port provided in a wall of the housing,

an inlet valve connected to a supply of pressurized air and having an orifice for discharging a stream of air into said breathing chamber in proximity to said breathing port,

a partition wall extending across the mouthpiece tube for dividing the tube into at least two passageways,

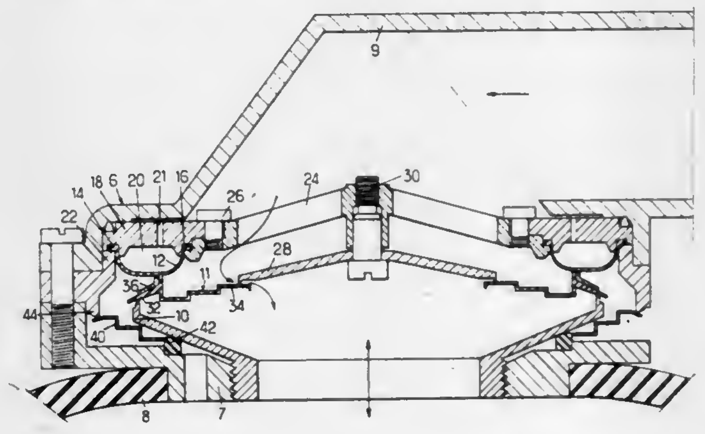
a first air deflection member extending into said breathing chamber for deflecting the stream of pressurized air from said orifice into a first one of said mouthpiece tube passageways, and

a second air deflection member extending partially across said first passageway for applying back pressure to said stream of pressurized air within said first one of said mouthpiece tube passageways.

4,616,646
COMPENSATED VALVE FOR BREATHING SYSTEM

Raymond Beaussant, Bretigny, France, assignor to Intertechnique, France

Filed Mar. 13, 1985, Ser. No. 711,169
Claims priority, application France, Mar. 14, 1985, 84 03945
Int. Cl.⁴ A62B *9/02*
U.S. Cl. 128—205.24 **10 Claims**

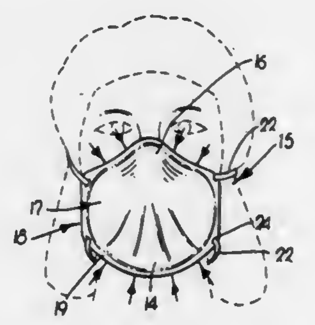


1. A compensated inhalation/exhalation valve comprising a housing, an exhalation seat in said housing, and a deformable one-part diaphragm having a rotational symmetry about an axis of said exhalation seat, wherein said diaphragm has a cup, a substantially radial lip seal integral with a bottom wall of said cup and cooperating with said exhalation valve and wherein said cup has an annular shape and defines with said housing a tore-shaped chamber for connection to a compensation pressure.

4,616,647
MOLDED FIBER DISPOSABLE FACE MASK HAVING ENHANCED NOSE AND CHIN FILTER-SEALS

John B. McCreadie, Shawnee, Kans., assignor to Parmelee Industries, Inc., Kansas City, Mo.

Filed Aug. 13, 1984, Ser. No. 635,632
Int. Cl.⁴ A62B *7/00*
U.S. Cl. 128—206.19 **2 Claims**



1. In a disposable face mask adapted to filter air breathed by a user through either his nostrils or mouth, said mask being fabricated of integral porous sheet material molded to a configuration adapted to fit over the wearer's mouth and under his chin with an upper narrowed, channel-defining segment configured to accommodate the wearer's nose, the peripheral edge of the mask being of generally keyhole shaped configuration with the narrow channel segment terminating in an inverted

V-edge which is adapted to fit over the bridge of the user's nose and complementally engage the wearer's cheeks on each side of his nose, the remaining peripheral edge of the mask being of generally semicircular shape and adapted to complementally fit against the wearer's face along the sides of his cheeks and beneath his chin, the improvement of which comprises:

a generally U-shaped region integral with the interior of the channel-defining segment of the mask adjacent the periphery of said V-edge and having opposed, elongated, outwardly diverging legs presenting permeable nose filter-seals adapted to contact the wearer's nose on opposite sides thereof and provide a seal against leakage of air between the nose filter-seal and the face of the wearer,

said nose filter seals being of substantially the same thickness as the remaining inward areas of the mask and presenting generally planar elongated surface portions configured to lie in flat engagement with the wearer's face across the transverse width of each of the nose filter-seals when the latter are in normal compression against the wearer's face; and

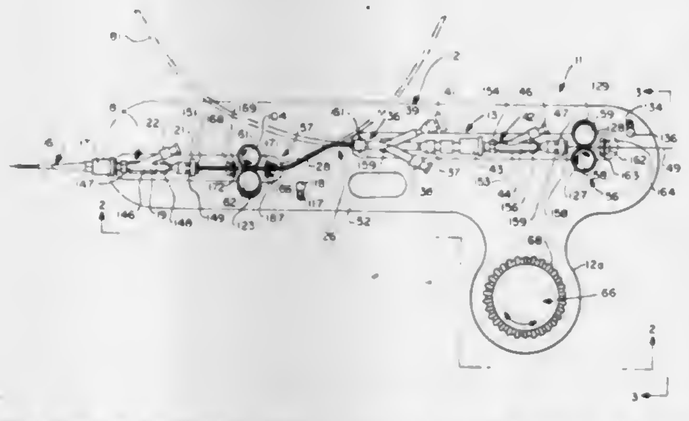
a U-shaped area of the channel-defining segment inboard of the U-shaped region thereof being compressed to a degree greater than the compression of said nose filter-seals when the latter are in normal compression against the wearer's face to define a U-shaped groove complemental with said U-shaped region and having leg portions and separating said nose filter seal portions from the remaining inwardly lying areas of the mask, each of said nose filter-seals having an inboard edge defining an outboard side of the respective leg section of said groove, said leg sections of the groove terminating in proximal relationship to the outer terminal ends of the nose filter-seal leg portions and defining opposed, diverging passageways open to the interior of the mask when the latter is fitted in place over the wearer's face for the discharge of air flowing through said nose filter-seal portions toward the wearer's nose and mouth, the remaining portions of said channel-defining segment inboard of said U-shaped region spaced from the wearer's face a distance such that when said mask is fitted to the wearer air may flow freely through said nose filter seals at any path transverse to the entire length thereof and travel along an unobstructed path transverse to respective longitudinal axes of said nose filter-seals and directly to the wearer's nose,

said groove-defining U-shaped area of the channel-defining segment being cooperable with said nose filter-seal leg portions to maintain the normal shape of the mask.

4,616,648

DEVICE FACILITATING THE EXCHANGE OF DILATATION CATHETERS DURING AN ANGIOPLASTY PROCEDURE

John B. Simpson, Woodside, Calif., assignor to Devices for Vascular Intervention, Palo Alto, Calif.
Filed Jan. 8, 1985, Ser. No. 689,656
Int. Cl.^{4} A61B *17/00*
U.S. Cl. 128—303 R **12 Claims**

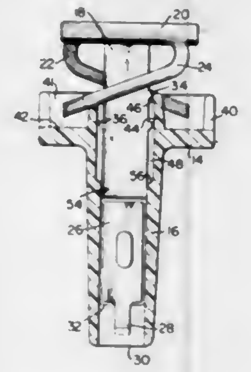


1. In a device facilitating the exchange of dilatation catheters during an angioplasty procedure by the use of an exchange wire in which the exchange wire extends through the dilatation catheter into a predetermined position in a vessel of a patient, first means frictionally engaging the dilatation catheter for advancing or retracting the dilatation catheter, second means frictionally engaging the exchange wire for advancing or retracting the exchange wire, means for causing operation of said first and second friction means in substantial synchronism and causing movement of the dilatation catheter in one direction and the movement of the exchange wire in an opposite direction to form a loop of changing size of the catheter with the exchange wire therein while retaining the distal extremity of the exchange wire and the proximal extremity of the dilatation catheter in predetermined positions during the time that a dilatation catheter is being inserted or being removed from the vessel of the patient.

4,616,649

LANCET

James A. Burns, Elizabeth, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Sep. 20, 1984, Ser. No. 652,386
Int. Cl.^{4} A61B *17/34*
U.S. Cl. 128—314 **9 Claims**

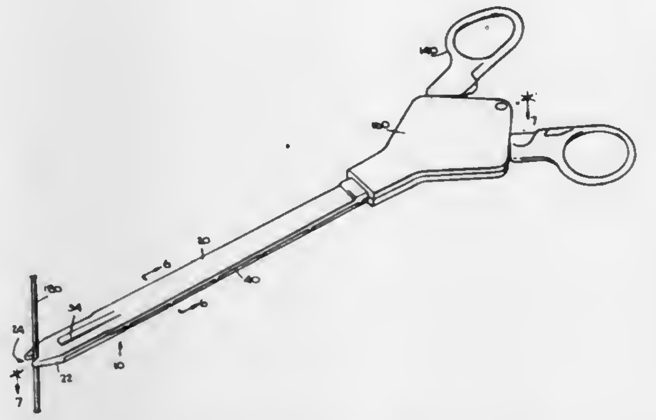


1. A lancet assembly comprising,
(a) an elongated housing;
(b) a passage extending through said housing with a lancet opening at one end thereof;
(c) an elongated lancet body reciprocable in said passage;
(d) a lancet blade positioned in said lancet body at one end thereof;
(e) handle means on said lancet body at the end thereof opposite said lance blade;
the improvement characterized by
(f) a plurality of spaced apart first integral abutment means on said housing and extending into said passage;
(g) a plurality of spaced apart second integral abutment means on said lancet body for cooperating with said first abutment means;
(h) integral resilient means on said handle means and extending between said handle means and said housing;
(i) whereby pushing said handle means causes said body to move through said passage in a first direction making one of said second abutment means to move past one of said first abutment means causing a snap-action in a puncture direction and in turn causing said lancet blade to move through said lance opening;
(j) said pushing first movement compressing said resilient means and damping said snap-action;
(k) said pushing first movement stopped by engagement of one of said second abutment means with one of said first abutment means; and
(l) release of said handle means causing relaxation of said resilient means and movement of said lancet body in said passage in a non-puncture direction until engagement of the other one of said second abutment means with the other one of said first abutment means for maintaining said lance blade, within said housing in a non-contaminating position.

4,616,650

APPARATUS FOR APPLYING SURGICAL CLIPS

David T. Green; Richard A. McGarry, both of Norwalk, and Graham Smith, Ridgefield, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Jul. 27, 1984, Ser. No. 635,262
Int. Cl.^{4} A61B *17/12*
U.S. Cl. 128—325 **13 Claims**



1. Apparatus for applying surgical clips one at a time to body tissue, each clip having two legs joined together at a crown, said apparatus comprising:
(a) a proximal portion;
(b) a distal portion having stationary camming surfaces;
(c) means for holding an array of surgical clips, the array having a distal end and a proximal end;
(d) clip closing means for moving between distal and proximal positions and having at the distal end jaw means for (i) receiving the distal-most clip in the array and (ii) then moving towards the distal portion of the apparatus so that the jaw means contact the camming surfaces and close the clip around the body tissue; and
(e) escapement means for (i) placing the distal-most clip of the array in the jaw means when the clip closing means has moved to the proximal position, which is towards the proximal portion of the apparatus, and (ii) preventing any of the other clips in the array from being placed in the jaw means at the same time, wherein the escapement means comprises three pairs of opposing projecting surfaces, which pairs point towards the plane of motion of the clip closing means and are spaced from one another in the longitudinal direction along the apparatus, the proximal-most pair of projecting surfaces extending beyond the middle pair of projecting surfaces in both the lateral and longitudinal directions, the escapement means being held stationary at its proximal end, the rest of the escapement means being able to move toward and away from the plane of motion of the clip closing means and being biased towards the plane, and the proximal-most pair of projecting surfaces resting against the clip closing means when those means are in the proximal position so that the middle and distal-most pair of projecting surfaces are out of the plane of motion of the clip closing means.

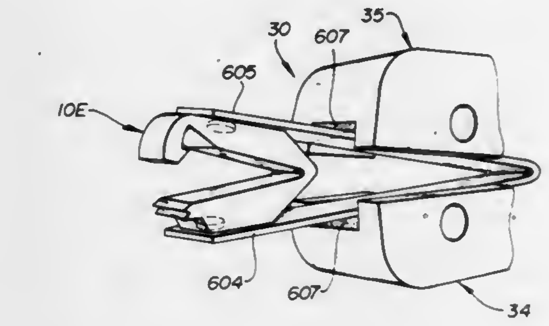
4,616,651

SURGICAL CLIP APPLIER INSTRUMENT ADAPTER JAWS

Donald M. Golden, Cherry Hill, N.J., assignor to Ethicon, Inc., Somerville, N.J.
Division of Ser. No. 723,602, Apr. 15, 1985, Pat. No. 4,570,633, which is a continuation of Ser. No. 306,436, Sep. 28, 1981, abandoned. This application Aug. 22, 1985, Ser. No. 768,532
Int. Cl.^{4} A61B *17/12*
U.S. Cl. 128—325 **3 Claims**

1. In a medical instrument for applying a first type of ligating clip wherein said first type of clip has an extension configuration adapted to be engaged by said instrument and wherein said instrument includes two pivotally connected actuating members, each having on one end a handle and on the other end a jaw for receiving, holding, and applying said first type of clip, each of said jaws defining a channel disposed in confronting relationship with the channel of the other jaw and extending rearwardly from the tip of the jaw, each said jaw including a side wall defining each side wall of the jaw channel, each jaw having a partially cylindrical recess extending across the width of the jaw channel to each jaw side wall, a bore defined through each said jaw side wall in registry with said partially cylindrical recess, the improvement comprising:

an adapter assembly provided with a first and second



adapter member associated with each said jaw, respectively, to accommodate a second type of ligating clip having an extension configuration different than that of said first type of clip;

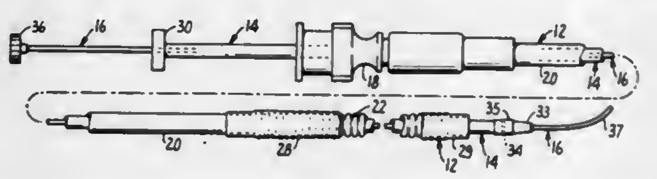
said first member being releasably secured to the channel in one of said jaws and said second member being releasably secured to the channel in the other of said jaws; each said adapter member being inserted in one of said channels; and

each adapter member including a clip applying means disposed on the portion of the adapter member extending beyond the tip of each jaw member, said applying means being in facing relationship and adapted to receive, hold and apply said second type of clip.

4,616,652

DILATATION CATHETER POSITIONING APPARATUS

John B. Simpson, Palo Alto, Calif., assignor to Advanced Cardiovascular Systems, Inc., Mountain View, Calif.
Filed Oct. 19, 1983, Ser. No. 543,345
Int. Cl.^{4} A61M *29/02*
U.S. Cl. 128—344 **12 Claims**



1. Guiding apparatus for affording introduction of a balloon catheter into a stenosis in a blood vessel which is a branch extending at a substantial angle with respect to a main blood vessel comprising a guide tube having an outside dimension sized for entry into the blood vessel, said guide tube having a wall defining a passage having an inside dimension sized to afford introduction of the balloon catheter therethrough, said guide tube having a distal end and a proximal end, the wall of said guide tube in a zone adjacent the distal end thereof being circumferentially formed so that said guide tube can be curvilinearly disposed in a blood vessel while maintaining said passage in an open condition, an introducer tube having an outside dimension sized for entry into the passage in said guide tube, said introducer tube having an axial extent greater than said guide tube and having a distal end, said introducer tube having a centrally disposed lumen extending axially thereof, and a

bendable aiming wire having a length greater than said introducer tube and disposed in said lumen for axial telescoping movement relative to said introducer tube, said introducer tube being telescopically movable within said guide tube passage and being removable therefrom to permit introduction of a balloon catheter through said passage, said aiming wire being adapted to be introduced into the branch blood vessel so that the introducer tube can follow the aiming wire into the branch blood vessel and the guide tube can follow the introducer tube.

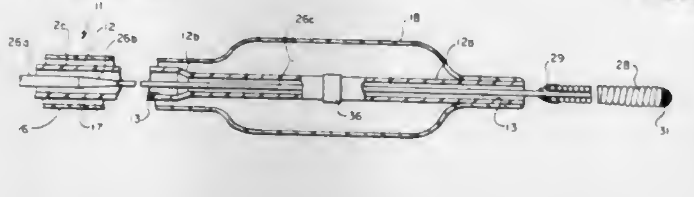
4,616,653
BALLOON DILATATION CATHETER WITH ADVANCEABLE NON-REMOVABLE GUIDE WIRE

Wilfred J. Samson, Saratoga, and Jeffrey S. Frisbie, San Jose, both of Calif., assignors to Advanced Cardiovascular Systems, Inc., Mountain View, Calif.

Filed Jul. 30, 1985, Ser. No. 760,397

Int. Cl.^{4} A61M *25/00*

U.S. Cl. 128—344 **7 Claims**



1. In a balloon dilatation catheter with an advanceable non-removable guide wire, a flexible tubular member having first and second lumens extending therethrough, an inflatable balloon carried by the distal extremity of the tubular member so that the first lumen extends through the balloon and is out of communication with the interior of the balloon and in which the second lumen is in communication with the interior of the balloon and a guide wire slidably mounted in the first lumen, a coil-like tip secured to the distal portion of the guide wire and having a cross-sectional area which is greater than that of the cross-sectional area of the first lumen and preventing removal of the guide wire through the first lumen, said guide wire being capable of being advanced longitudinally of the first lumen so that the coil-like tip of the guide wire can be advanced ahead of the balloon to facilitate the positioning of the balloon.

4,616,654
FIELD PRODUCING INSTRUMENT FOR THE ELECTROTHERAPEUTIC SELF-TREATMENT OF PAIN AND INSOMNIA

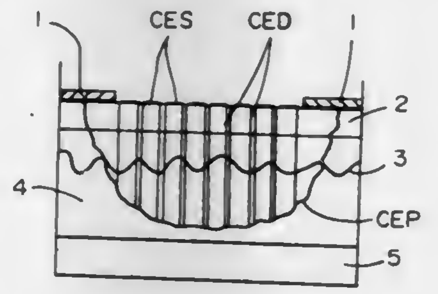
Luciano Bacchelli, 4, rue d'Orzival, Sierre Vallese, Switzerland

Filed Oct. 9, 1984, Ser. No. 658,861

Claims priority, application Italy, Oct. 18, 1983, 12019 A/83

Int. Cl.^{4} A61N *1/20*

U.S. Cl. 128—391 **7 Claims**



1. Field producing instrument for the electrotherapeutic self-treatment of pain and insomnia, comprising: a supporting body having a sealing element made of insulating material, and providing a compact instrument configuration, a first pair of metal electrodes supported by said sealing element at opposite extremities thereof, a second metal electrode, insulated from the said first pair of metal electrodes, and disposed centrally of said sealing element and between said first pair of metal electrodes, wherein the said second electrode is made of a metal different from that of the said first pair of metal electrodes; and a microbattery having a first pole electrically connected with said first pair of metal electrodes and having a second pole electrically connected with said second metal electrode; said supporting body having a receptacle therein for the housing of said microbattery.

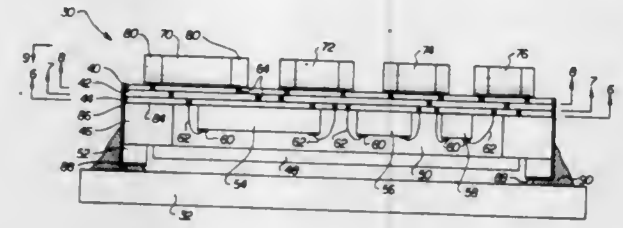
4,616,655
IMPLANTABLE PULSE GENERATOR HAVING A SINGLE PRINTED CIRCUIT BOARD AND A CHIP CARRIER

Alvin H. Weinberg, Miami, and W. Kinzy Jones, Pembroke Pines, both of Fla., assignors to Cordis Corporation, Miami, Fla.

Filed Jan. 20, 1984, Ser. No. 572,310

Int. Cl.^{4} A61N *1/00*

U.S. Cl. 128—419 P **9 Claims**



1. An implantable pulse generator comprising:

a human implantable sealed housing of biocompatible material and containing a power supply and a pulse generator circuit powered by said supply for supplying pulses, said circuit including a plurality of semiconductor chips including active chips and passive chips, a single printed circuit mother board for carrying said chips, and chip carrier means mounted on said mother board and carrying said semiconductor chips wherein said carrier means includes:

a unitized body comprised of a plurality of ceramic layers fused together, said body having oppositely facing major surfaces, a cavity disposed in only a first of said major surface housing a plurality of said active chips and a lid member covering and sealing said cavity,

the second of said major surfaces having a plurality of conductive mounting pads thereon electrically receiving and mounting said passive chips thereto whereby said passive chips are mounted on one of said major surfaces and said active chips are mounted and carried in said cavity in the other of said major surfaces.

4,616,656
SELF-ACTUATING BREAST LESION PROBE AND METHOD OF USING

James E. Nicholson, 14 Meadowdam Rd., Lincoln, Mass. 01773, and Roland F. Gatturna, 169 Kendall St., Walpole, Mass. 02081

Filed Mar. 19, 1985, Ser. No. 713,613

Int. Cl.^{4} A61B *5/00*

U.S. Cl. 128—630 **20 Claims**

5. A probe unit adapted for location of a lesion, and especially for location of a presymptomatic, non-palpable breast lesion, comprising:

(A) a tubular needle cannula adapted for insertion into a body to the site of said lesion;

(B) a probe wire in the form of a simple straight wire closely fitted within, and freely slidable through, said cannula;

(C) said probe wire possessing a memory hook shape at its distal end whereby such end assumes the straight configuration of the cannula when sheathed therein and being dimensioned so as to pierce the body tissue while simultaneously assuming its normal hook configuration when pushed through the cannula to thereby anchor itself in the tissue at the lesion when the probe unit of cannula and probe wire therein has previously been inserted into the body at about the lesion site;

(D) said probe wire possessing the further characteristic of a predetermined degree of soft flexibility whereby said wire is adapted to be manually actuated to release and easily slide from a said anchored location to a fully sheathed disposition within the cannula and without undue destruction of surrounding tissue;

(E) whereby the probe unit may be relocated within the body and the probe wire reanchored within the tissue until a desired accuracy is attained with respect to lesion location; and

(F) the cannula needle being completely withdrawable from the body and operative association with the probe wire.

4,616,657
DIAPHANOSCOPY APPARATUS

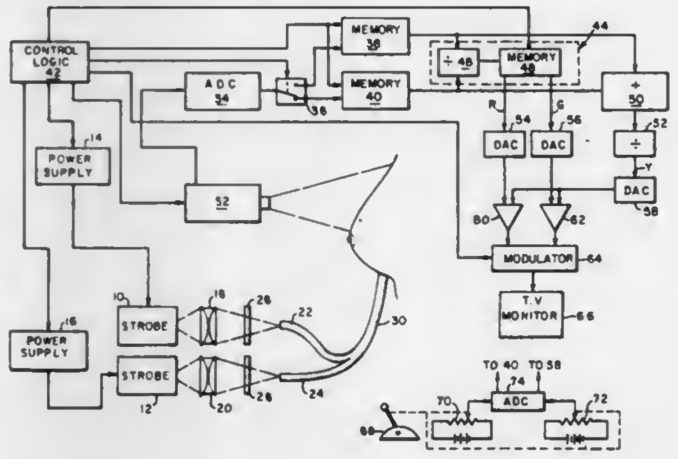
Milton Stoller, West Hartford, Conn., assignor to The First National Bank of Boston, Boston, Mass.

Continuation of Ser. No. 399,865, Jul. 19, 1982, abandoned. This application Jun. 15, 1984, Ser. No. 621,194

The portion of the term of this patent subsequent to Aug. 28, 2001, has been disclaimed.

Int. Cl.^{4} A61B *6/12*

U.S. Cl. 128—664 **20 Claims**



1. Apparatus for the non-invasive and non-destructive examination of tissue comprising:

means for illuminating the tissue to be examined with pulses of light, the light pulses which serially illuminate the tissue exclusively including light having preselected different wavelengths;

detector means for sensing the light which passes through the tissue during illumination thereof, said detector means sequentially generating signals commensurate with the energy content of transilluminated light at least at a first and a second of said preselected wavelengths;

balancing means for adjusting the energy content of the light pulses including light at the first wavelength received by said detector means relative to the energy content of the light pulses including light at the second wavelength received by said detector means;

first memory means coupled to said detector means and said illuminating means for separately recording signals sequentially generated by said detector means and commensurate with light at the first wavelength and the second wavelength which has been received by said detector means;

second memory means for storing display correlated data information commensurate with a plurality of ratios of signals commensurate with light at the said first and second wavelength which may be recorded in said first memory means;

means for reading stored information from said second memory means, said reading means being responsive to at least a pair of said separately recorded signals commensurate with the energy content of the light at the first and second wavelengths which has been sensed by said detector means during illumination of the same point in the tissue under examination, said display correlated data information thereby being read from said second memory means as a function of a pair of signals separately recorded in said first memory means; and

means responsive to the information read from said second memory means for producing an image which represents the absorption characteristics of the tissue at the first and second wavelengths.

4,616,658
NON-RADIOACTIVELY LABELED MICROSPHERES AND USE OF SAME TO MEASURE BLOOD FLOW

William Shell, 435 North Roxbury Dr., Beverly Hills, Calif. 90210, and Jackie R. See, 541 Riveria Ct., Fullerton, Calif. 92635

Filed Feb. 27, 1985, Ser. No. 706,151

Int. Cl.^{4} A61B *5/02*

U.S. Cl. 128—691 **29 Claims**

1. A process for measuring blood flow in an animal comprising the steps of:

(a) non-radioactively labeling microspheres;

(b) introducing said labeled microspheres into the blood stream of an experimental animal;

(c) determining the number of microspheres in a known volume of said animal's blood after introduction;

(d) sacrificing said animal and recovering a portion of said animal's tissue;

(e) determining the number of microspheres present in a known sample size of said tissue;

(f) calculating blood flow to said tissue from the results of said determination.

4,616,659
HEART RATE DETECTION UTILIZING AUTOREGRESSIVE ANALYSIS

Dimitrios P. Prezas, Park Ridge, and Gustavus H. Zimmerman, III, Westmont, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 6, 1985, Ser. No. 730,486

Int. Cl.^{4} A61B *5/04*

U.S. Cl. 128—706 **14 Claims**

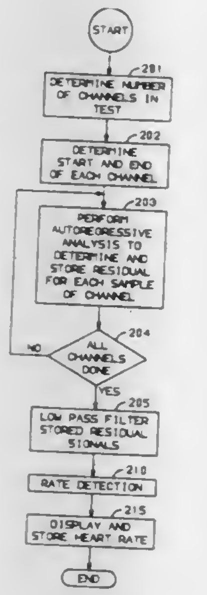
1. A detection system for determining the cardiac cyclic rate by detecting a predetermined component of the cardiac cycle, comprising:

means for obtaining cardiac signals defining a plurality of cardiac cycles;

means for performing an autoregressive analysis filtering of said cardiac signals to remove color noise;

means for executing a low-pass filtering of the autoregressive filtered signals to remove white noise;

means for peak detecting the low-pass filtered signals to detect said predetermined component thereby determining said cyclic rate; and


START
201
DETERMINE NUMBER OF CHANNELS IN TEST
202
DETERMINE START AND END OF EACH CHANNEL
203
PERFORM AUTOREGRESSIVE ANALYSIS TO DETERMINE AND STORE RESIDUAL FOR EACH SAMPLE OF CHANNEL
204
ALL CHANNELS DONE
NO
YES
205
LOW PASS FILTER STORED RESIDUAL SIGNALS
210
RATE DETECTION
215
DISPLAY AND STORE HEART RATE
END

means for displaying said cyclic rate in response to the detection of each predetermined component.

4,616,660

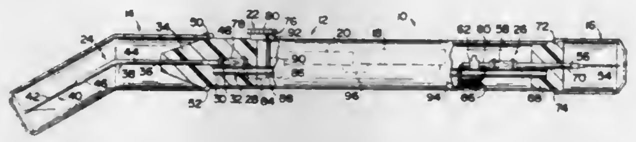
VARIABLE ALTERNATING CURRENT OUTPUT NERVE LOCATOR/STIMULATOR

David L. Johns, Clearwater, Fla., assignor to Suncoast Medical Manufacturing, Inc., Clearwater, Fla.

Filed Dec. 10, 1984, Ser. No. 680,007

Int. Cl.⁴ A61B *15/05*

U.S. Cl. 128—741 **1 Claim**



1. A variable alternating current output nerve locator/-stimulator comprising a hollow enclosure which houses a direct current power source electrically coupled to a current power convertor, said current power convertor including circuit means to convert direct current to alternating current electrically coupled to a current regulator, a nerve probe electrically coupled to said current regulator and a ground electrically coupled to said direct current power source, said ground comprising a ground element partially encased within an insulating element and a retainer element extending from said ground element operatively receivable including an aperture disposed within said hollow enclosure said aperture receiving said retainer element therein selectively retaining said ground within said hollow enclosure, a removable nerve probe cover and a removable ground cover removably attached to opposite ends of said hollow enclosure, said ground element being electrically coupled to a flexible insulated conductor electrically connected to said voltage source, said conductor permitting selective withdrawal of said ground element and a desired portion of said flexible insulated conductor from said hollow enclosure when said removable ground cover is removed from said hollow enclosure and application of said nerve probe to the patient after adjustment of said current regulator to control the alternating current output from said direct current power source when said removable nerve probe cover is removed from said hollow enclosure.

4,616,661

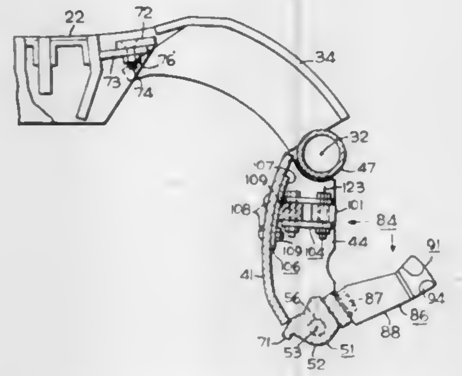
ROCK DOOR LATCH WITH OPPOSED ROLLER DETENTS

Roger D. Hanaway, Blue Spring, and Randall E. Breyer, Independence, both of Mo., assignors to Deutz-Allis Corporation, Milwaukee, Wis.

Filed Jun. 13, 1985, Ser. No. 744,427

Int. Cl.⁴ A01F *12/00*

U.S. Cl. 130—27 JT **3 Claims**



1. A harvester having a threshing chamber, a crop inlet to the threshing chamber, a rotatable threshing rotor within the threshing chamber and a concave beneath the rotor having a predetermined threshing clearance with the latter, characterized by

- a rock door constituting a portion of a floor of the inlet to the threshing chamber forward of said concave, said rock door including
  - a main body portion pivotally connected at its front end to the harvester on a first horizontal axis generally parallel to the axis of said threshing rotor and
  - a lip structure pivotally connected to the rear of the main body portion for pivotal movement about a second horizontal axis generally parallel to said first horizontal axis between a detented operating position in which an edge of said lip structure is in overlapping engagement with the front end of said concave and a tripped position in which said lip structure is disengaged from said concave, and
- a latch mechanism carried by said safety door for normally maintaining said lip structure rigid with respect to said body portion including
  - a finger secured to said lip structure and extending radially in relation to said second horizontal axis and presenting a detent part on its free end having surfaces defining a pair of recesses on axially opposite sides thereof and
  - a detent mechanism releasably maintaining said finger in a predetermined latched position including
    - a pair of rollers having round outer rolling surfaces engaging said surfaces defining said recesses, respectively, and
    - resilient thrust transmitting means on said main body urging said rollers into engagement with said recesses.

4,616,662

METHOD AND APPARATUS FOR PRODUCING A ROD-SHAPED FILLER FROM SEVERAL TYPES OF SMOKABLE MATERIAL

Werner Hartmann, Hamburg; Gottfried Hoffmann, Schwarzenbek, and Joachim Reuland, Neu Börnsen, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Jun. 20, 1984, Ser. No. 622,680

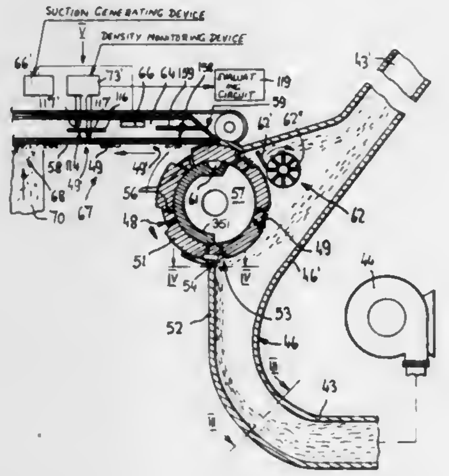
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1983, 3323357; Oct. 6, 1983, 3336293

Int. Cl.⁴ A24C *5/18*

U.S. Cl. 131—84.1 **40 Claims**

1. A method of producing a continuous rod-like filler of fibrous material, especially a tobacco filler, comprising the

steps of accumulating fibrous material of a first type into a row of spaced apart batches and conveying the row along a predetermined path; delivering fibrous material of a second type onto and/or into the spaces between the batches of the row so that the two types of fibrous material together form a rod-like filler; generating first signals which are indicative of at least one parameter of the batches in said path; converting the first



signals into first control signals; utilizing the first control signals to influence at least one parameter of the batches; monitoring at least one parameter of the filler; generating second signals which are indicative of such parameter of the filler; converting the second signals into second control signals; and utilizing the second control signals to influence at least one parameter of the filler.

4,616,663

METHOD AND APPARATUS FOR FORMING A HOMOGENEOUS MASS OF COMMINUTED SMOKABLE MATERIAL

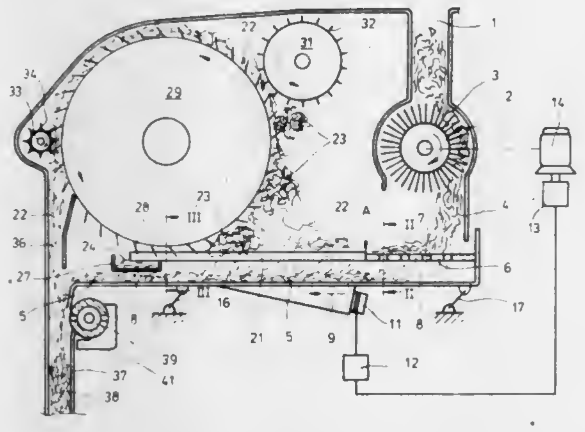
Heinz-Christen Lorenzen, Wentorf; Uwe Heitmann, Hamburg, and Wolfgang Steiniger, Börnsen, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Oct. 29, 1984, Ser. No. 666,189

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1983, 3339588

Int. Cl.⁴ A24C *5/39*

U.S. Cl. 131—109.3 **25 Claims**



1. A method of forming a homogeneous mass from an agglomeration of tobacco and/or other smokable material including short, medium long and long shreds as well as lumps of shreds and elongated relatively rigid constituents, such as portions of tobacco ribs, comprising the steps of sifting the agglomeration to thereby separate short and medium long shreds from long shreds, lumps and rigid constituents; imparting to the rigid constituents a predetermined orientation; segregating the long shreds and the lumps from the thus oriented rigid constituents; and merging the thus segregated long shreds and the shreds of the lumps with the short and medium long shreds.

4,616,664

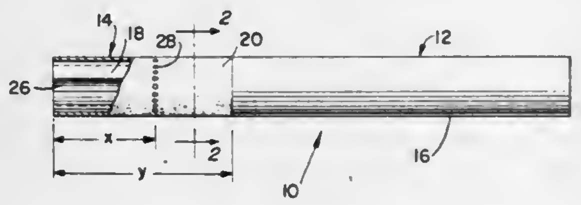
TOBACCO PRODUCT

Richard D. Chumney, Jr., Mechanicsville, Va., assignor to American Brands, Inc., New York, N.Y.

Filed Mar. 17, 1981, Ser. No. 244,729

Int. Cl.⁴ A24D *3/64*

U.S. Cl. 131—336 **29 Claims**



28. A smoke filter for a tobacco product including a filter element comprising:

(a) a smoke pervious filter rod having first and second longitudinally spaced ends, one of said ends being adapted to be connected to said tobacco product;

(b) smoke-impervious rod wrap means wrapped about said filter rod, said rod wrap means being recessed into said filter rod to define at least one continuous grooved portion of said rod wrap means extending from said first end to said second end whereby a portion of smoke from said tobacco product enters said continuous grooved portion and moves from said one end toward said other end of said filter rod; and

(c) tipping means disposed about said rod wrap means to cover said grooved portion, said tipping means being made of material which is impervious to smoke, said tipping means including ventilation means for providing gas flow communication between said grooved portion and ambient air whereby said ambient air mixes and commingles with said portion of smoke from said tobacco product entering said continuous grooved portion.

4,616,665

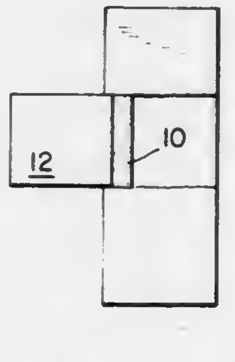
LIGHTING DEVICE FOR CIGARETTES

Saeng K. Cho, 1428 Whitburn Ave., Fayetteville, N.C. 28304

Filed Jul. 18, 1983, Ser. No. 514,781

Int. Cl.⁴ A24D *1/00, 47/00*

U.S. Cl. 131—351 **11 Claims**



1. A lighting device for cigarettes or the like tobacco products comprising:

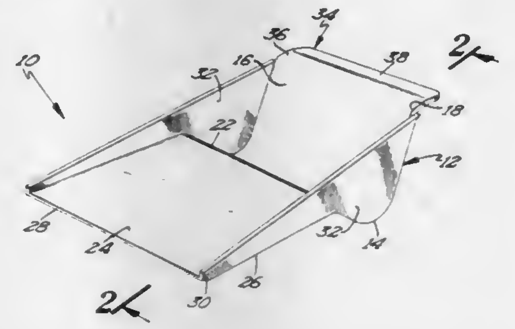
- substantially cylindrical support means for slidably engaging a tobacco product;
- a match means associated with said support means;
- a match striking means associated with said support means for lighting a match; and
- a movable cover means for covering said match striking means when not in use and being movable to a position for exposing said match striking means said movable cover

means comprising a perforated portion in said cylindrical support means.

4,616,666
HAIR TREATMENT SOLUTION COLLECTOR

Luigi G. Losenno, 2741 Thomas Ave. South, Minneapolis, Minn. 55416

Filed May 26, 1983, Ser. No. 498,358
Int. Cl.⁴ A45D *1/00*
U.S. Cl. 132—9 **4 Claims**



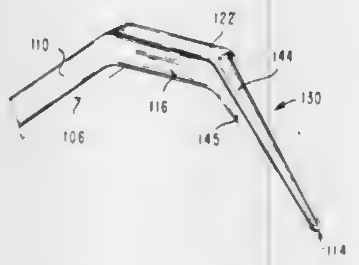
1. Hair treatment solution collector comprising, in combination: a solution catching area having a first side edge, a second side edge, a front edge, and a back edge; a solution introduction ramp having a first side edge, a second side edge, a first edge, and a second, free edge, with the first edge of the solution introduction ramp being connected to the front edge of the solution catching area; a first side wall attached to the first side edge of the solution catching area and the first side edge of the solution introduction ramp; a second side wall attached to the second side edge of the solution catching area and the second side edge of the solution introduction ramp, with the first and second side walls and the solution catching area defining a receiving volume for receiving and storing hair treatment solution, with the second, free edge of the solution introduction ramp being spaced vertically below the back edge of the solution catching area, with the first and second side walls extending generally from the back edge of the solution catching area to a point vertically spaced above the free edge of the solution introducing ramp for forming a treatment solution entrapment portion throughout the length of the solution introduction ramp for preventing solution from flowing over the side edges of the solution introduction ramp, with an obstruction free opening being formed by and defined by the free edge of the solution introduction ramp and the first and second side walls; a handle member attached to the back edge of the solution catching area for grasping by the operator allowing the solution introduction ramp to be placed under a hair curler type device for receipt of hair solution therefrom; and means for supporting the collector on a generally horizontal support surface to prevent escape or spillage of the solution from the receiving volume defined by the solution catching area and the first and second side walls comprising a stand attached to the bottom surface of the solution introduction ramp, with the stand having a first end attached to the front wall of the solution catching area and having a second end spaced from the second, free edge of the solution introduction ramp, and with the stand having a generally horizontal support surface.

4,616,667
TOOTH CLEANING IMPLEMENT

I. Ping Tang, 606 Union Ave., Elizabeth, N.J. 07208

Filed Oct. 17, 1983, Ser. No. 542,765
Int. Cl.⁴ A61C *15/00*
U.S. Cl. 132—89 **6 Claims**

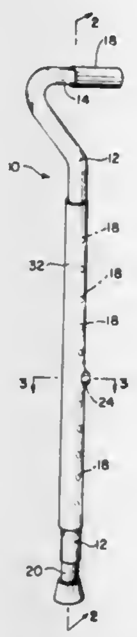
1. A dental instrument for cleaning teeth which comprises: an elongated shaft having an upper end and a lower end, said lower end being provided with a first tapered portion which is tapered to a first tip and which is provided with at least one planar surface thereon, said shaft additionally comprising a linking shaft member at the upper end of said shaft, said linking shaft member being angularly disposed from said shaft; and a head portion which is integrally joined to the upper end of said linking shaft member and which projects angularly therefrom, said head portion having at least one planar surface thereon and being tapered to a second tip, at least one of said planar surfaces in at least one of said first tapered portion and said head portion being further provided with longitudinal groove means for increasing the flexibility and tooth cleaning efficiency of the associated said tip, said first tapered portion and said head portion being each integrally formed from a material selected from the group consisting of a thermoplastic material and a thermosetting material said head portion, said linking shaft member and said shaft being in an angular relation to one another such that said head portion projects outwardly at an angle from 70 to 135 degrees relative to said shaft.

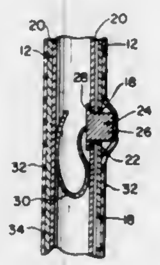


4,616,668
INVALID DEVICE HAVING INTERLOCKING TELESCOPING MEMBERS

Joseph Battiston, Clifton, N.J., assignor to Tubular Fabricators, Industry, Inc., Passaic, N.J.

Filed Oct. 16, 1984, Ser. No. 661,515
Int. Cl.⁴ A61H *3/00;* **A45B** *9/00*
U.S. Cl. 135—75 **5 Claims**





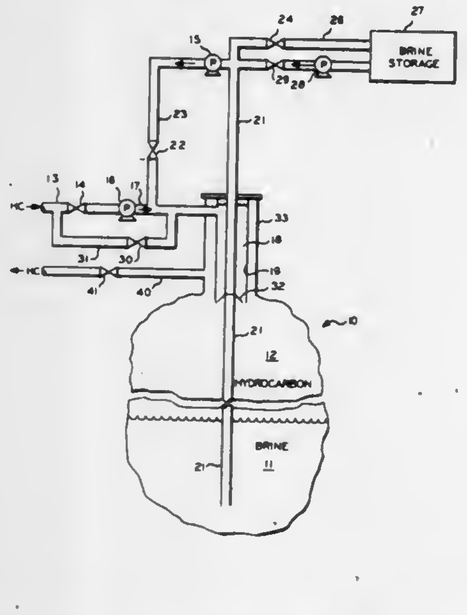
1. An arrangement of interlocking telescoping members for an invalid device, comprising:

an outer telescoping member having a plurality of apertures spaced and substantially aligned along the longitudinal direction of said outer telescoping member;
an inner telescoping member telescopically received within said outer telescoping member and having an aperture;
button means engaging with said inner telescoping member and said outer telescoping member by extending through said aperture of said inner telescoping member and a selected aperture of said outer telescoping member, and with an outer end of said button means extending outwardly beyond said selected aperture;
first biasing means for outwardly biasing said button means with a first force to normally bias said outer end of said button means outwardly beyond said selected aperture; and
elastic sleeve means tightly surrounding only said outer telescoping member about said plurality of apertures thereof for biasing said button means against the force of said first biasing means, whereby to permit pinch-free depression of said button means to adjust said outer telescoping member with respect to said inner telescoping member and to prevent rattle between said inner telescoping member and said outer telescoping member.

4,616,669
MIXING FLUIDS

Stone P. Washer, and Bruce A. Bush, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 8, 1985, Ser. No. 720,929
Int. Cl.⁴ B65G *65/30*
U.S. Cl. 137—1 **11 Claims**

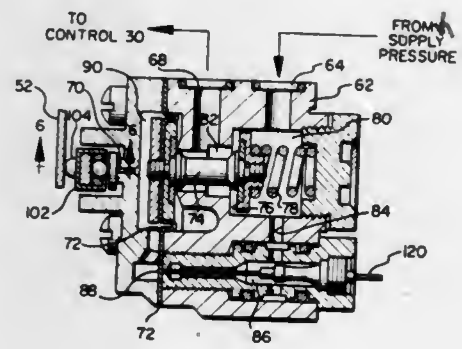


1. A method for mixing stored fluids in an underground storage covern in which said fluids are stored over heavier immiscible fluids comprising admixing said immiscible fluids with said stored fluids by forcing said immiscible fluids from the lower portion of said cavern to the upper portion of said cavern where said immiscible fluid flows through said stored fluids and returns to the lower portion of said cavern.

4,616,670
HIGH-LOW PRESSURE PILOT

John W. Duffy, Tama, Iowa; Robert A. Funke, Anna, Tex., and David W. Shollenbarger, Marshalltown, Iowa, assignors to Fisher Controls International, Inc., Marshalltown, Iowa

Continuation of Ser. No. 459,178, Jan. 19, 1983, abandoned. This application Apr. 22, 1985, Ser. No. 725,147
Int. Cl.⁴ G05D *16/00*
U.S. Cl. 137—84 **10 Claims**



1. A pressure pilot monitoring a process fluid pressure and for sensing predetermined high and low fluid pressure set points to control a process shutdown system when the monitored process pressure extends beyond the high or low pressure set points, said pressure pilot comprising:

a frame;
a Bourdon tube mounted on said frame having an input end coupled to the process fluid pressure and a moving output end responding to the process fluid pressure to move in a first direction upon sensing a decreasingly lower pressure and in a second direction upon sensing an increasingly higher pressure;
means mounted on said frame, including a pair of pivot members for setting a respective low pressure set point and a high pressure set point;
a lever arm pivotally mounted to said Bourdon tube moving output end between said pair of pivot members, including means enabling said lever arm to move in said first direction and contact one of said pivot members when the Bourdon tube senses a pressure reaching the low pressure set point and thereby pivoting the lever arm, and enabling the lever arm to move in a second direction and contact the other of said pivot members when the Bourdon tube senses a pressure reaching the preset high pressure set point to thereby pivot the lever arm;
a fluid operated relay mounted on said frame having an inlet port for connection to a fluid pressure line, an outlet port, and a nozzle port, wherein the inlet port is in fluid communication with the outlet port with the nozzle port closed, and wherein the inlet port is blocked from the outlet port with the nozzle port opened;
relay operating cap means responding to engagement with said lever arm for rapdily snap-closing said nozzle port when said sensed fluid pressure is between said low and high pressure set points and for responding to non-engagement with said lever arm for quick release opening of said nozzle port when said sensed fluid pressure has reached either said low or said high pressure set points, thereby providing a pressure level change at the relay outlet port;
said fluid operated relay includes a piston having a piston seal at one end and a diaphragm at the other end, said piston seal being adapted to seal the inlet port from the outlet port with the outlet port being coupled through the inlet port to said pressure line with the nozzle port closed, and the diaphragm having the nozzle port on one diaphragm side and the outlet port on the other diaphragm side, and including means for for developing a higher positive pressure on the outlet port side of the diaphragm than on the nozzle port side of the diaphram in response to unsealing of said nozzle port, thereby providing a positive movement of the diapragm towards the nozzle port and a corresponding rapid, snap-acting sealing of the inlet port from the outlet port by the piston seal; and
said relay operating means includes snap-acting cap means having a self-aligning cap member adapted for self-alignment with said nozzle port upon movement into engagement therewith.

4,616,671
VALVE WITH FLOW FORCE COMPENSATOR

Allan R. Steinkuhl, West Lafayette, and Steven D. Cayton, Lafayette, both of Ind., assignors to TRW Inc., Cleveland, Ohio

Filed Jan. 27, 1984, Ser. No. 574,403
Int. Cl.⁴ F15B *13/06*
U.S. Cl. 137—101 **9 Claims**

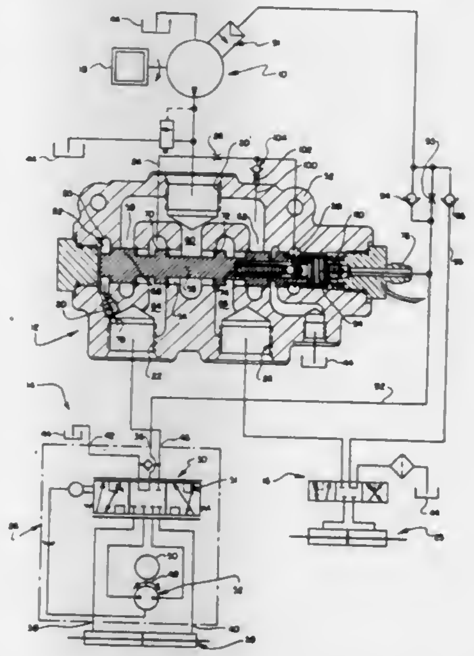
1. A valve comprising:

a housing having a valve chamber, an inlet communicating with said valve chamber, and at least two outlets communicating with said valve chamber,
a valve member located in said valve chamber for controlling fluid flow from said inlet to said outlets,
said valve member having a land across which fluid flows from said inlet to one of said outlets, the fluid flow across said land creating a force acting on said valve member urging said valve member in a first direction in which flow

across said valve member to said one of said outlets is restricted,

means for causing a balancing fluid pressure to be applied to said valve member, said balancing fluid pressure urging said valve member in a second direction that is opposite said first direction,

said valve member comprising a spool that can move axially in said valve chamber in response to a differential pressure applied thereto, said differential pressure being created by a first fluid pressure force applied to a first end of said spool and a second fluid pressure force applied to a second end of said spool and urging said spool in said second direction, said means for causing a balancing pressure to be applied to said valve member including fluid conduit means communicating with the other of said outlets and for directing the balancing fluid pressure to said second end of said spool to increase the fluid pressure force on said second end of said spool.



4,616,672

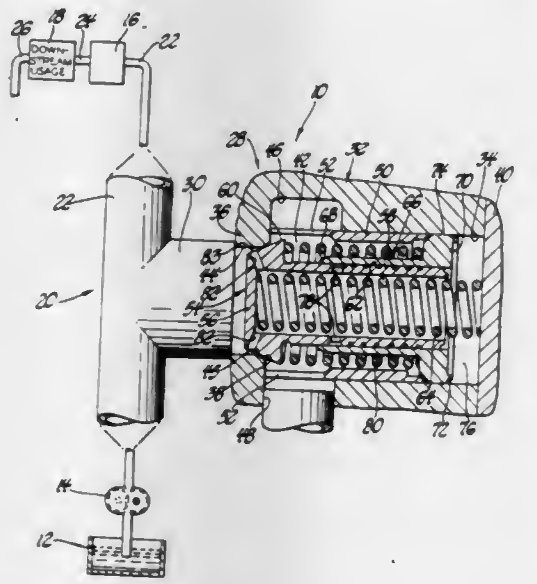
PRESSURE RELIEF AND DRAIN VALVE

Michael R. Schmidt, Carmel, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 27, 1986, Ser. No. 822,653

Int. Cl.^{4} F16K *17/34*

U.S. Cl. 137—107 **3 Claims**



1. A pressure relief and drain valve for a fluid circuit having a pressurized fluid selectively circulated therein comprising:

a valve body connected to said circuit and to a sump,

a valve element on said valve body moveable between an open position and a closed position wherein a primary surface area of said valve element is exposed to fluid pressure in said circuit and blocks fluid flow from said circuit to said sump,

said fluid pressure in said circuit exerting a force on said primary surface area in the valve opening direction,

spring means biasing said valve element toward said closed position,

valve seat means on said valve element and said valve body operative to define an annular orifice in said valve element open position through which said fluid flows from said circuit to said sump to relieve circuit pressure,

means on said valve element and on said valve body defining a variable volume secondary chamber,

said valve element having a secondary surface area exposed to said secondary chamber,

means on said valve element primary surface area defining a suction surface over which said fluid flows in said valve element open position,

means on said valve element defining a passage between said suction surface and said secondary chamber whereby said fluid pressure in said circuit exists in said secondary chamber in said valve element closed position so that the net fluid pressure force on said valve element in the valve opening direction is proportional to the difference between said primary and said secondary surface areas,

the flow of fluid over said suction surface in said valve element open position effecting a decrease in pressure in said secondary chamber proportional to the velocity over said suction surface so that the net fluid pressure force on said valve element in the valve opening direction and the depth of said annular orifice increase when the fluid flow velocity increases, and

means on said valve body and said valve element responsive to the pressure of said fluid in said circuit in said valve element closed position to open said secondary chamber to said sump when said fluid circuit is substantially depressurized so that said fluid circuit drains to said sump when said circuit is depressurized.

4,616,673

REPLACEMENT FAUCET HANDLE KIT

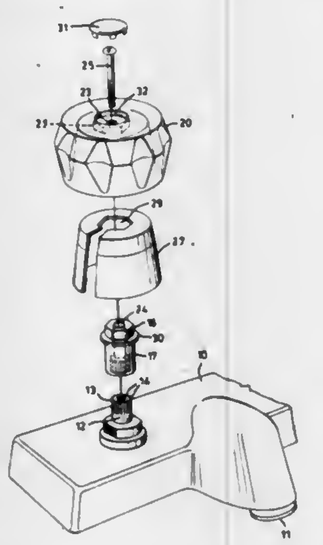
Jerry Bondar, 43 Lissom Crescent, Willowdale, Ontario, Canada M2R 2P2

Continuation of Ser. No. 715,589, Mar. 25, 1985, abandoned, which is a continuation of Ser. No. 422,480, Sep. 23, 1982, abandoned. This application Dec. 6, 1985, Ser. No. 805,266

Claims priority, application Canada, May 21, 1982, 403591

Int. Cl.^{4} F16K *31/60*

U.S. Cl. 137—315 **3 Claims**



1. In combination a replacement faucet handle for replacing an original faucet handle, a skirt member having an opening therein, a plurality of adapters each having a first end portion adapted to be connected to the replacement faucet handle, a

second end portion adapted to be connected to an upper end portion of a faucet valve stem, and an outwardly projecting flange between the first end portion and the second end portion of the adapter, and means permitting securement of the replacement faucet handle and a selected one of the adapters to the upper end portion of the faucet valve stem on which the original faucet handle has been mounted at a predetermined level, the replacement faucet handle having an underface, a concavity in said underface of the handle, and a recess provided in said concavity in said underface of the handle, the first end portions of the adapters being substantially identical and each being of non-circular, transverse cross-sectional configuration complementary to the transverse cross-sectional configuration of the recess in the handle, and the second end portion of each adapter having a bore of non-circular transverse cross-sectional configuration, with the second end portion of each adapter differing from the second end portion of each remaining adapter with respect to at least one characteristic selected from the group of characteristics consisting of the length thereof, the length of the bore therein, and the transverse cross-sectional dimensions of the bore therein, the length and transverse cross-sectional configuration and dimensions of the bore in the second end portion of said selected one of the adapters being complementary to the length and transverse cross-sectional configuration and dimensions of the upper end portion of the faucet valve stem, whereby said selected one of the adapters is adapted to be non-rotatably mounted on the upper end portion of the faucet valve stem by disposing the upper end portion of said faucet valve stem within said bore in the second end portion of said selected one of the adapters, and the replacement faucet handle is adapted to be non-rotatably mounted on said selected one of the adapters by disposing only the first end portion of said selected one of the adapters through the opening in the skirt member and within the recess in the replacement faucet handle, with the skirt member disposed within the concavity in the underface of the handle, the replacement faucet handle and said selected one of the adapters being securable to the upper end portion of the faucet valve stem with the skirt member securely clamped in the concavity in the underface of the replacement faucet handle by the outwardly projecting flange of said selected one of the adapters, wherein the length of said second end portion of said selected adapter is such that when the replacement faucet handle and said selected adapter are secured to the upper end portion of the faucet valve stem the replacement faucet handle is positioned at substantially said predetermined level at which the original faucet handle has been mounted on the upper end portion of the faucet valve stem.

4,616,674

4/3-DIRECTIONAL CONTROL VALVE

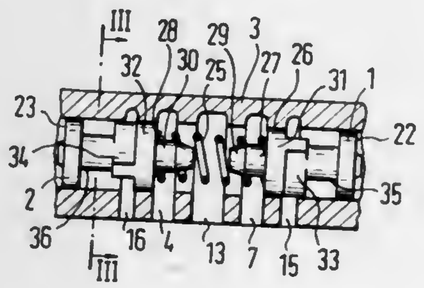
Meinrad Bardoll, Gaggenau, Fed. Rep. of Germany, assignor to Dr.Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 31, 1984, Ser. No. 646,250

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1983, 3331582

Int. Cl.^{4} F15B *15/00*

U.S. Cl. 137—596.18 **6 Claims**



1. A 4/3-directional control valve for the control of a hydraulic piston of a hydraulic shifting mechanism, comprising: control piston means biased by a coil spring in a nonactuating position, tubularly shaped housing means, said control piston means being longitudinally guided in said housing means, said housing means having working connections connected to the hydraulic piston, pump connections connected with a pump and a return connection connected with a reservoir tank, said control piston means including two oppositely operating control pistons guided within said valve housing means, said control pistons having first end forces facing one another and second end faces away from one another said spring disposed between said first end faces, said return connection having a port opening centrally within said housing said pump connections having port openings axially disposed on either side of said return port opening said pump connections having port openings disposed between said return opening and said pump openings said control piston means having surface means blocking communication between said working openings and said pump openings in said non actuating position while said working openings and said return opening communicate with one another wherein said hydraulic pistons can operate to pass fluid from one side of its piston to its other side via said working connectons and said working openings, means for acting on said second end faces to move said control piston means for locating said surface means to block communicating between one of said working port openings and said return port opening wherein said one of said working port openings communicates with one of said pump openings.

4,616,675

SOLENOID-ACTUATED DIRECTIONAL CONTROL VALVE

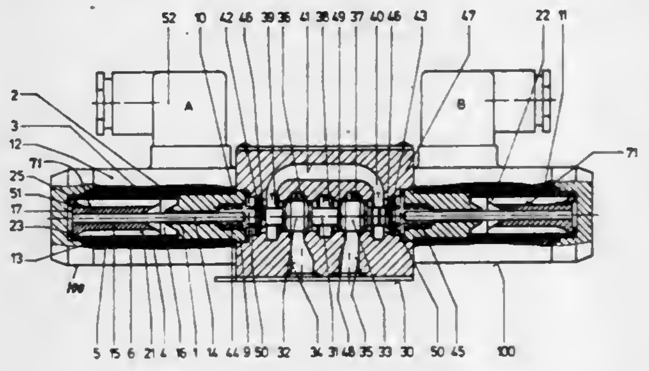
Reinhard Amrhein, Frammersbach, Fed. Rep. of Germany, assignor to Mannesmann Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Feb. 22, 1985, Ser. No. 704,542

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1984, 3406570

Int. Cl.^{4} F16K *47/00*

U.S. Cl. 137—625.65 **7 Claims**



1. A three chamber solenoid-actuated directional control valve comprising:

a valve housing having a bore extending longitudinally therethrough;

a spool having at least one land thereon reciprocally mounted within said bore and defining with said housing, between first and second ends of said spool, three chambers, a first chamber being adapted to be connected to a pump for supplying hydraulic fluid, a second chamber being adapted to be connected to a first load and a third chamber being adapted to be connected to a second load and defining with said housing at least one recess adapted for connection to a tank and located between one of said ends and said chambers;

throttle means on said at least one land between at least one chamber and said recess;

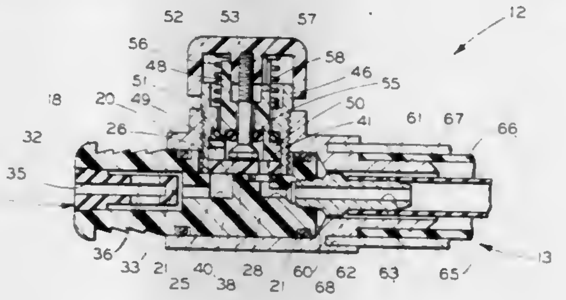
solenoid means in said spool including a solenoid housing having an inner bore surface defining a bore extending therethrough along said bore direction from said one end of said spool, an armature reciprocally mounted for longitudinal movement along said bore direction in response to actuation of said solenoid means, and an actuating rod fixedly mounted to said armature for actuating said spool when said solenoid means is actuated, a space being defined between the end of said armature remote from said spool and said valve housing and at least one armature groove being formed between the outer surface of said armature and said inner bore surface of said solenoid housing and connected to said recess; and

motion damping means including at least a single cross wall between said space and said groove adjacent said remote armature end and having a throttling groove between said cross wall and said inner bore surface for dampening movement of said armature to reduce pressure peaks during switching.

4,616,676
TWO-WAY SELECTOR VALVE FOR A VEHICLE SEAT INFLATION DEVICE

Norman R. Adams, Angola, Ind., and Charles A. Gifford, Osseo, Mich., assignors to Cooper Tire & Rubber Company, Auburn, Ind.

Filed Jul. 27, 1984, Ser. No. 634,959
Int. Cl.^{4} F16K *11/18*
U.S. Cl. 137—636.4 **28 Claims**



21. A two-way selector valve adapted to selectively provide communication between a means for selectively supplying pressurized fluid, first and second pneumatic chambers, and the atmosphere comprising:

a first passageway in communication with the means for selectively supplying pressurized fluid and with a valve chamber;

a second passageway in communication with the first pneumatic chamber;

a third passageway in communication with the second pneumatic chamber;

rotatable valve plate means disposed in said valve chamber for providing communication between said valve chamber and a selected one of said second and third passageways; and

relief valve means mounted for rotation with said valve plate means and movable relative thereto for selectively providing communication between said valve chamber and the atmosphere to deflate the selected chamber.

4,616,677
MANIFOLD FITTING FOR A COMPRESSED AIR TANK

Joseph L. Krechel, Ladue, and Michael J. Purvis, Fenton, both of Mo., assignors to Control Devices, Incorporated, St. Louis, Mo.

Continuation of Ser. No. 474,806, Mar. 14, 1983, abandoned. This application Apr. 15, 1985, Ser. No. 723,135
Int. Cl.^{4} F16K *11/10*
U.S. Cl. 137—881 **5 Claims**

1. A manifold fitting for a compressed air tank comprising:

an elongate main body of hexagonal cross-section with first and second ends of reduced circular cross-section;

said body having an axial passage therethrough from one end to the other;

said first end being externally threaded for attachment of the fitting to a tank for communication with the tank via the portion of the axial passage in said first reduced end;

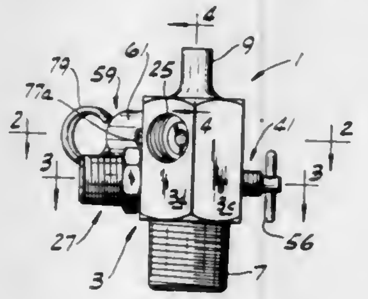
said body having a first lateral opening extending inwardly to said axial passage from a first face of the six faces of the body;

an outlet member threaded in said first lateral opening in the body having a valve seat at its inner end toward said passage;

said second reduced end being adapted for passage of air via the portion of said axial passage therein;

said body having a second lateral opening extending inwardly to said passage from a second of the six faces of the body opposite said first face, said second lateral opening being opposite said first lateral opening and in axial alignment therewith;

a valve member threaded in said second lateral opening extending across said passage with space around said valve member for flow of air, said valve member being adapted to be threaded inwardly in said second lateral opening for engagement of its inner end with the valve seat and to be threaded outwardly with respect to said second lateral opening to an open position for flow of air from the tank through said passage and through said outlet member;



said body having a third lateral opening extending inwardly from a third of said six faces to said passage;

a pressure relief safety valve comprising a valve body threaded at one end constituting its inner end in said third lateral opening in the body, a vent port in the valve body, a valve member movable in the valve body from a closed position blocking said port to an open position for escape of air through the port, and spring means for biasing the valve member to its closed position; and

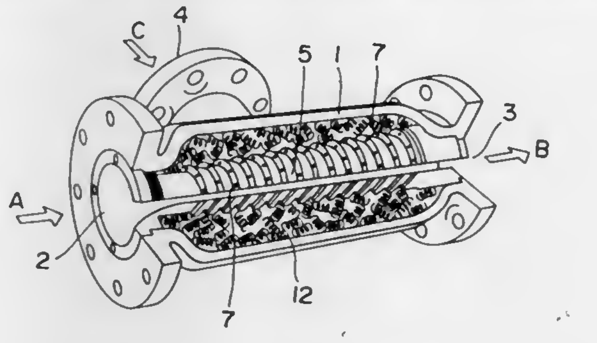
said body having a fourth threaded lateral opening extending inwardly from a fourth of said faces to said passage for receiving a pressure gauge.

4,616,678
MEANS FOR PREVENTING WATER HAMMER IN FLUID-FEEDING SYSTEM

Mitsuo Hoshi, Tokyo, Japan, assignor to Hokuto MFG, Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1985, Ser. No. 771,026
Claims priority, application Japan, Jun. 6, 1985, 60-123107
Int. Cl.^{4} F16K *19/00*
U.S. Cl. 137—888 **2 Claims**

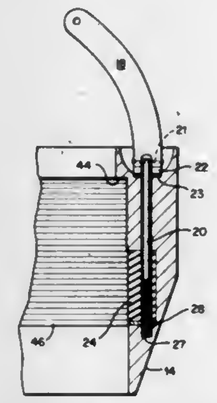
1. In an apparatus for preventing water hammer in a fluid-feeding system having a jet mixer therein, said jet mixer comprising a surrounding casing having an inlet and an outlet for fluid flowing in said system and a supply port for supplying a gaseous or fluid material to be mixed into said system, and a venturi-type jet tube interposed between and fixed to said inlet and said outlet and having a plurality of jets at the periphery thereof, the improvement comprising a group of a plurality of discreet spring-shaped elements made of materials which are compatable to the properties of said material to be mixed, said elements being uniformly disposed within a chamber defined between said jet tube and the surrounding casing.



4,616,679
PIPE THREAD PROTECTOR

Jerry A. Benton, 26 Amarillo Dr., Houma, La. 70360

Filed May 31, 1985, Ser. No. 739,685
Int. Cl.^{4} F16L *57/00;* B65D *59/00*
U.S. Cl. 138—96 T **6 Claims**

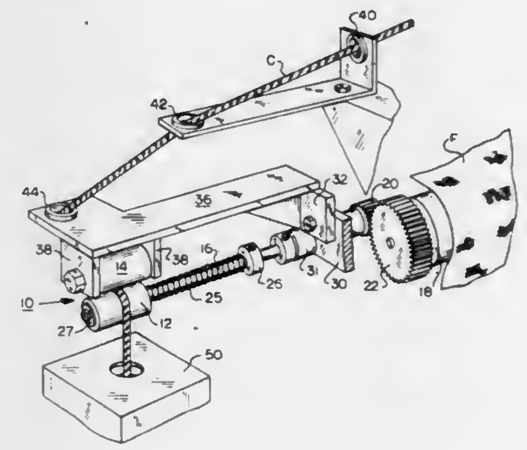


1. A device for protecting the threads of a threaded pipe section comprising: a cylindrical member having interior and exterior side walls and with end walls at opposite ends of said side walls, said interior side wall having a recessed portion therein, said cylindrical member defining an opening for receiving a section of pipe; and means for forming a friction grip between said cylindrical member and the outer wall of a pipe section received by said cylindrical member, said friction grip means providing for said pipe section to be open across the entire diameter of said pipe section throughout the length thereof and to allow the pipe section to be drifted without obstruction, said friction grip means including a compressible member mounted in said recessed portion of said interior side wall, said compressible member, when compressed by a force applied in a direction generally parallel to the longitudinal axis of said cylindrical member, expanding laterally to extend radially inwardly of said interior side wall, a compression plate secured to said compressible member, said compression plate being disposed in a plane generally perpendicular to the longitudinal axis of said cylindrical member, a compression shaft mounted within said cylindrical member between the interior and exterior side walls and extending in a direction generally parallel to the longitudinal axis of said cylindrical member, said compression shaft having one end thereof threadedly received in said compression plate and the other end extending to the exterior of said cylindrical member, and a handle pivotally mounted to the exterior end of said compression shaft, said handle having cam means for moving said compression shaft in a direction generally parallel to the longitudinal axis of said cylindrical member to increase or reduce the degree of compression of said compressible member.

4,616,680
CATCH-CORD DRAWING DEVICE FOR LOOMS

Pepper Y. Lai, Greensboro, N.C., assignor to Draper Corporation, Greensboro, N.C.

Filed Jun. 8, 1984, Ser. No. 618,664
Int. Cl.^{4} D03D *49/20*
U.S. Cl. 139—304 **3 Claims**



1. A catch-cord selvage drawing device for use on fluid jet or shuttleless looms of the type wherein the woven fabric is taken off the loom under tension applied by a take-up roll, and wherein a plurality of catch yarns are introduced alongside the fabric sheet and adjacent one selvage thereof to catch and retain the cut ends of inserted weft yarns to form a "catch-cord selvage" thereof; said winding device being for the purpose of removing such catch-cord selvage and comprising:

- (a) a pair of cooperating rotating members for nipping said catch-cord therebetween and drawing therethrough; said pair of rotating members including an idler roller and a drive roller; said idler roller and drive roller including smooth outer surfaces for preventing entanglement of the catch-cord as it is being drawn therebetween;
- (b) synchronizing means for connecting said drive roller to the fabric take-up mechanism so that the surface speed of said drive roller is the same as the speed of the fabric as the fabric is removed from the loom onto the take-up roll;
- (c) said synchronizing means comprising:
  - (i) a rotating shaft and means for mounting said drive roller thereon;
  - (ii) a plurality of meshing, interacting gears connecting said rotating shaft and said take-up roll;
  - (iii) said drive roller being mounted on one end of said rotating shaft in operative relationship with said idler roller; the surface diameter of said drive roller and the gear ratios of said gears being such that the tension on the catch-cord is substantially the same as the tension on the fabric;

whereby the matching of the speeds of the catch-cord drawing device and the fabric take-up roll results in the same tension upon the selvage ends as is on the fabric.

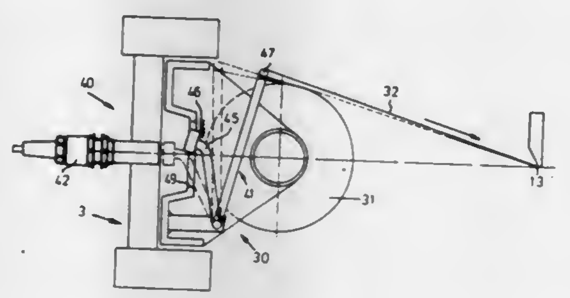
4,616,681
ARRANGEMENT FOR THE SUPERVISION OF WEFT THREADS ON A CIRCULAR LOOM

Franz X. Huemer, Sonnenuhrgasse 4, 1060 Vienna, Austria

Filed May 22, 1985, Ser. No. 736,792
Claims priority, application Switzerland, Jun. 8, 1984, 2798/84
Int. Cl.^{4} D03D *37/00, 51/34*
U.S. Cl. 139—371 **10 Claims**

1. In a circular weaving machine having a circular reed in which a traveling shed is formed by warp threads to produce a tubular fabric along an edge of said shed by weft thread paid-off from a bobbin of a shuttle traveling in a circular path in said reed and said shed, the improvement which comprises a weft thread monitoring device comprising:

a tipping lever pivotally mounted on said shuttle and comprising a rod extending parallel to said bobbin and over which the weft thread from said bobbin is paid-out after being at least partially wound about said rod, respective support arms connected to each end of said rod and pivotally mounting said lever on said shuttle, and an actuating arm connected to one of said support arms for swinging movement with said lever toward said reed upon relaxation of a force applied to said rod by said warp thread as it is paid-out from said bobbin into said shed to form said fabric at said edge;



means for generating a restoring force on said tipping lever biasing same in a direction tending to swing said actuating arm toward said reed; and

at least one signal generator disposed along said reed and responsive to the passage of said shuttle when said actuating arm has been swung toward said reed in contactless manner for generating a stop signal to terminate operation of the loom and prevent weft threads faults from being produced in said fabric upon a weft thread failure.

4,616,682

METHOD OF MANUFACTURING HELICALLY WOUND FILAMENTS AND FILAMENTS MANUFACTURED BY MEANS OF THIS METHOD

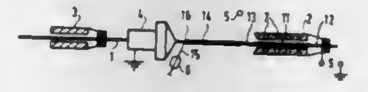
Martinus A. Groenewegen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

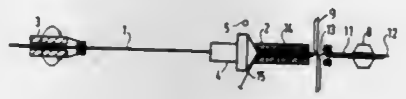
Filed Dec. 13, 1984, Ser. No. 681,471

Claims priority, application Netherlands, Jan. 13, 1984, 8400117

Int. Cl.⁴ B21F *45/00*

U.S. Cl. 140—71.5 **4 Claims**





1. A method of manufacturing helically wound filaments, comprising the steps of winding a filament wire on a mandrel, heating the helically wound wire while holding it on the mandrel so that winding stresses in the wire are eliminated, and drawing the mandrel out of the filament, characterized by:

winding a plurality of filaments from one filament wire, while forming a filament wire portion between each preceding filament and the next subsequent filament, extending substantially longitudinally with respect to the mandrel,

heating said next subsequent filament to eliminate winding stresses therein and in said portion between said next subsequent filament and the preceding filament, while keeping the preceding filament cool and the filament wire extending to said next subsequent filament stretched,

then, while relatively rotating the mandrel and the filaments about their axes in a sense opposite to the winding sense, and holding the next subsequent filament at its last-formed end, drawing the mandrel out of the preceding filament and displacing the mandrel through said next subsequent filament,

interrupting the connection between the preceding filament and said next subsequent filament wire portion at the longitudinal filament wire portion, and

moving the mandrel back beyond the free end of said filament wire portion.

4,616,683

PARTICLE-FREE DOCKABLE INTERFACE FOR INTEGRATED CIRCUIT PROCESSING

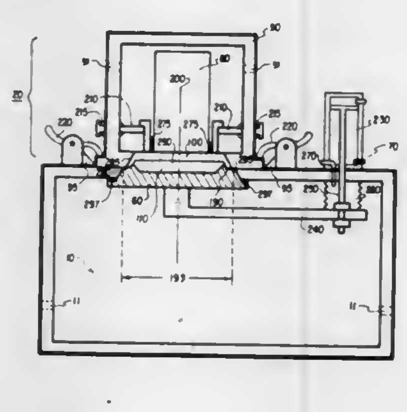
Barclay J. Tullis, Palo Alto; Mihir Parikh, San Jose; David L. Thrasher, Menlo Park, and Mark E. Johnston, Saratoga, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 536,600, Sep. 28, 1983, Pat. No. 4,532,970. This application Apr. 8, 1985, Ser. No. 721,332

The portion of the term of this patent subsequent to Aug. 6, 2002, has been disclaimed.

Int. Cl.⁴ B65B *1/04*

U.S. Cl. 141—98 **4 Claims**



1. An interface between first and second containers comprising:

alignment means for orienting the first container in a fixed position relative to the second container;

a first door for independently sealing the first container;

a second door for independently sealing the second container;

said first and second doors each having a mating outer surface of substantially equal exterior dimensions, so that substantially all contamination which has accumulated on the exterior surface of the doors when the containers are separated will be trapped between said doors when the containers are positioned together with said alignment means; and

elevator means coupled to said doors for transporting said doors into said containers as a single unit while said doors are coupled together at their mating outer surfaces and said doors are held together substantially only by gravity.

4,616,684

AUTOMATIC BOTTLING MACHINE BOTTLE HOLDER

Franco Tincati, Parma, Italy, assignor to SARCMI S.p.A., Noceto, Italy

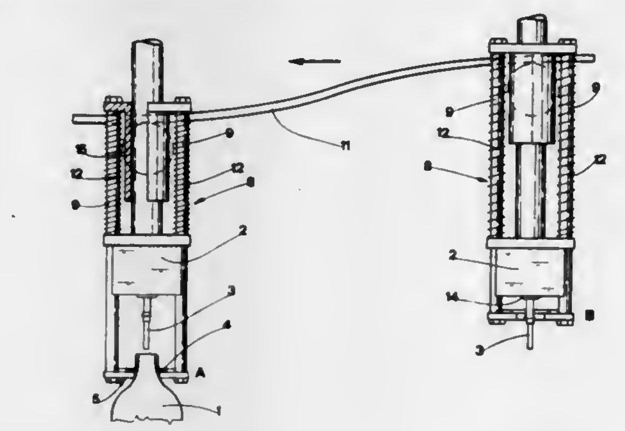
Filed Feb. 21, 1985, Ser. No. 703,746

Claims priority, application Italy, Mar. 2, 1984, 40017 A/84

Int. Cl.⁴ B65B *3/04*

U.S. Cl. 141—114 **6 Claims**

1. An automatic bottling machine bottle holder for filling a bottle having a circumferential neck projection on its neck adjacent to its open end comprising; a bottle support means at one end thereof, said bottle support means having an opening therein sized to receive the bottle neck and sized smaller than the circumferential neck projection, to thereby support the bottle when the neck projections rests thereon; a valve means positioned between said one end and the other end of said holder, said holder being movable with respect to said valve means, said valve means having a filler tube projecting from one end thereof toward said opening, and said filler tube and said opening being positioned to permit the filler tube to project through said opening when said opening is moved a predetermined distance towards said valve means.



4,616,685

PNEUMATIC TIRE TREAD OF STABLE DYNAMIC PERFORMANCE

Katsuyuki Harakon, 2800-1, Ogawahigashicho, Kodaira City, Tokyo, and Masanori Kawamura, 1293-10, Tateno 3-chome, Yamato City, Tokyo, both of Japan

Filed Sep. 24, 1984, Ser. No. 653,986

Claims priority, application Japan, Sep. 30, 1983, 58-180622

Int. Cl.⁴ C08K *5/01, 5/06, 5/51;* **C08L** *9/06*

U.S. Cl. 152—209 R **3 Claims**

1. Pneumatic tire tread of stable dynamic performance comprising a rubber component selected from the group consisting of styrene-rich styrene-butadiene copolymer rubbers containing more than 35% by weight styrene and mixtures of said styrenebutadiene rubbers with at least one of butyl rubber, butyl halide rubber and butadiene-acrylonitrile copolymer rubber, 5 to 60 weight parts of an ester selected from the group consisting of phthalic acid ester, octyl oleate, octyl adipate, glyceric acid ester, maleic acid ester, fumaric acid ester, phosphonic acid ester and phosphoric acid ester and 5 to 300 weight parts of a petroleum-based processing oil together with said ester per 100 weight parts of the rubber.

4,616,686

TIRE CONTAINING IMPROVED LINER

Dominic A. Berta, New Castle County, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 691,334, Jan. 14, 1985. This application Jan. 13, 1986, Ser. No. 818,423

Int. Cl.⁴ G60C *5/02, 5/12, 5/14*

U.S. Cl. 152—510 **12 Claims**

1. In a pneumatic tire having cured rubber liner ply overlying all internal tire surfaces exposed in service to pressurized gas and having, as essential rubbery constituents, (a) (i) halobutyl rubber or (ii) a mixture of butyl rubber and halobutyl rubber wherein the halobutyl rubber is present in an amount of at least 50% by weight of the mixture; and (b) an epihalohydrin rubber, the improvement which comprises curing the rubber liner with a composition consisting essentially of, for each 100 parts by weight of the rubber blend: (a) from about 1.0 part to about 20 parts of a sulfur curative system consisting essentially of (i) sulfur, (ii) an accelerator, and (iii) a zinc oxide promoter; and (b) from about 0.3 part to about 10 parts of a nonsulfur curative system consisting essentially of (i) a nonsulfur curative selected from the group consisting of di- and tri-functional mercapto compounds and derivatives thereof; and (ii) a metal compound promoter selected from the group consisting of oxides, hydroxides, and carbonates of metals in Groups Ia and IIa and said composition cured from about 140° C. to about 260° C. from about 5 seconds to 10 hours.

4,616,687

TIRE CONTAINING IMPROVED LINER

Dominic A. Berta, New Castle County, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 715,326, Mar. 25, 1985. This application Jan. 13, 1986, Ser. No. 818,424

Int. Cl.⁴ B60C *5/02, 5/12, 5/14*

U.S. Cl. 152—510 **6 Claims**

1. In a pneumatic tire, the improvement which consists of a vulcanized rubber liner ply overlying all internal tire surfaces exposed in service to pressurized gas and comprising, as essential rubbery constituents, a composition consisting essentially of:

(a) from about 80% to about 90% of a rubber material selected from the group consisting of butyl rubber, halobutyl rubber having from about 1% to about 3% by weight of halogen, and mixtures thereof; and

(b) from about 1% to about 20% chlorinated hydrocarbon polymer selected from the group consisting of chlorinated polyisoprene having a chlorine content from about 63% to about 66% by weight and chlorinated polyolefins having a chlorine content from about 30% to about 70% by weight.

4,616,688

SIMPLE OR ROTATING TRAVERSERS FOR VERTICAL WINDOW BLINDS

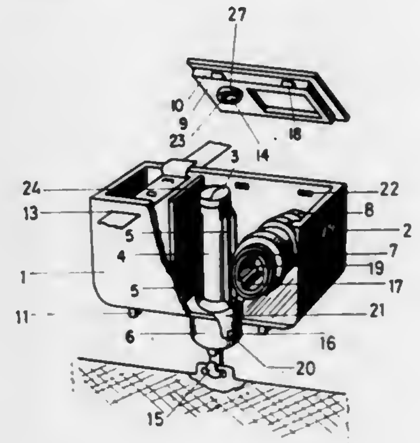
Angel Agos, Vitoria, Spain, assignor to Aryho, S.A., Malago, Spain

Filed Dec. 16, 1983, Ser. No. 562,141

Claims priority, application European Pat. Off., Dec. 21, 1982, 8211192.9

Int. Cl.⁴ E06B *9/36*

U.S. Cl. 160—176 R **4 Claims**



1. A device to control and protect the operating mechanisms of vertical slats for window blinds actuated from a main shaft comprising

a box for each of the slats containing the mechanism of the device;

a worm gear horizontally mounted in said box and connected to be rotated by the main shaft;

a pinion mounted vertically in said box adjacent to said worm gear;

said pinion including

a hollow external body having a lower portion housed in a vertical position in the bottom of said box,

said lower portion having an annular keyway indented therein with end walls at each end of the keyway,

a projection from the bottom of said box which enters said keyway and limits the rotation of said external body by

contact with said end walls of said keyway to approximately 180 degrees,
an internal body housed within said external body having an upper circular boss positioned to rest on the upper edge of said external body and a circular arch-shaped projection extending upward from said upper circular boss,
a vertical toothed portion on said external body positioned to contact said worm gear for rotation of said external body,
said external body and said internal body having a notch on one of said bodies and a matching tooth to fit in said notch on the other of said bodies;
a lid covering a portion of said box having a portion to receive said circular arch-shaped projection;
a hooking means on the bottom of said pinion for supporting a slat;
an internal vertical wall having at least a flexible upper portion with said upper portion adjacent a side of said lid;
means to move said pinion from its vertical position to a position at a slant from the vertical towards said internal vertical wall;
the movement of said pinion moving said lid against said flexible upper portion of said internal vertical wall with the return of said pinion to a vertical position returning said lid away from said internal vertical wall.

4,616,689

FOUNDRY MOULDING PROCESS AND MOULD USING A PATTERN OF GASIFIABLE MATERIAL SURROUNDED BY SAND FREE OF A BINDING AGENT FOR LOW PRESSURE PRECISION CASTING

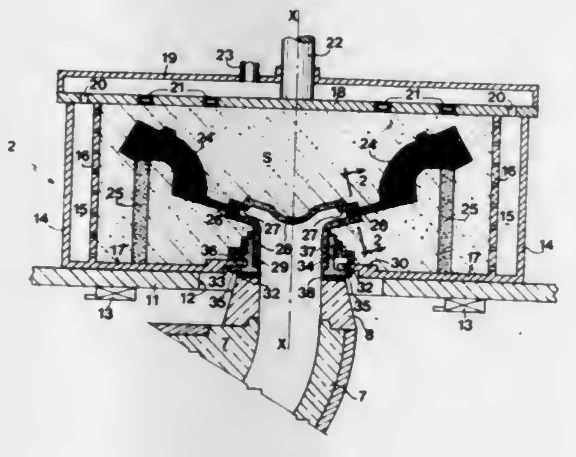
Jean-Pierre Denis, Nancy, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Feb. 12, 1985, Ser. No. 700,839

Claims priority, application France, Feb. 15, 1984, 84 02907

Int. Cl.⁴ B22C *9/04;* B22D *18/04*

U.S. Cl. 164—34 **17 Claims**



1. A foundry mould for the low pressure casting of metal parts comprising:
a mould chamber (**14**) including a bottom surface (**17**) with an opening (**31**) through which molten metal can ascend, and side walls (**16**);
a peripheral pressure chamber (**15**) surrounding said side walls, said side walls having apertures for communicating the interior of said mould chamber with said peripheral pressure chamber;
a sealing and suction means (**18, 19**) covering the top of said mould chamber and said peripheral pressure chamber, and containing suction apertures for communicating said sealing and suction means with said mould chamber and said peripheral pressure chamber;
at least one pattern (**24**) of gasifiable material positioned within said mould chamber;
masking means (**27, 42**) positioned in the vicinity of said opening (**31**) and being connected to said at least one pattern for supporting said at least one pattern in a position to receive said ascending molten metal;
binderless sand (**5**) surrounding said at least one pattern, and overlying said masking means, said masking means preventing sand from entering said opening; and
centering and locking sleeve means (**34**) located at least partially within said opening (**31**) for supporting said masking means, the lowermost portion of said sleeve defining the position of the mould casting mouth.

15. A method for low pressure foundry casting metal parts using a foundry mould chamber (**14**) having a bottom surface (**17**) with an opening (**31**) through which molten metal to be cast can ascend comprising the steps of:
positioning a pattern of gasifiable material in the mould chamber;
providing said pattern with an appendage;
mounting a masking device to said opening (**31**), and attaching said pattern appendage to a portion of the masking device to thereby support the pattern and locate the pattern a desired location relative to said opening;
filling the remaining volume of said mould chamber with binderless sand, the masking device preventing sand from entering said opening;
vibrating and pressure packing said sand to produce a rigid sand mass surrounding said pattern; and
applying ascending molten metal through said opening and said masking device to said pattern, the heat of the molten metal gasifying the pattern material allowing the molten material to replace the pattern material, thereby forming metal parts in the shape of the pattern as the molten metal cools.

4,616,690

PROCESS AND APPARATUS FOR MOULDING INGOTS OF FERRO-ALLOYS BY CHILL CASTING IN A COOLED COPPER MOULD

Michel Demange, LeFayet, and Louis Septier, Chamonix, both of France, assignors to Societe Francaise d'Electrometallurgie-SOFREM, Paris, France

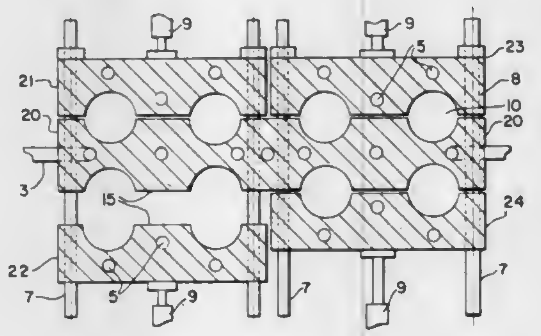
PCT No. PCT/FR84/00005, § 371 Date Sep. 6, 1984, § 102(e) Date Sep. 6, 1984, PCT Pub. No. WO84/02668, PCT Pub. Date Jul. 19, 1984

PCT Filed Jan. 6, 1984, Ser. No. 653,240

Claims priority, application France, Jan. 6, 1983, 83 00474

Int. Cl.⁴ B22D *27/04*

U.S. Cl. 164—128 **10 Claims**



1. A process for molding ingots of ferro-alloys at a high casting rate, and extending the life of the mold material, comprising the steps of:
(a) forming an ingot mold by juxtaposing in sealed relationship two mold halves of copper of high thermal conductivity, having a thermal conductivity of at least 400 W/mK, at least one of said halves comprising a plurality of impressions of ingots to be molded, each said impression communicating with its adjacent impression in series by means of a duct, said series of impressions opening at the upper part of the ingot mold by means of at least one in-gate, and opening to the atmosphere after the final impression in series;

(b) establishing a cooling circuit in each mold half by circulation of a heat exchange fluid sufficient to maintain the high thermal conductivity copper of the ingot mold at all points at a temperature which substantially does not exceed 200° C.;
(c) pouring a liquid ferro-alloy into the in-gate until the ingot mold is filled, the mass of the copper forming said mold being at least about 6 times the mass of said liquid ferro-alloy;
(d) allowing said liquid ferro-alloy to solidify and cool to a temperature which is about 200° C. to about 300° C. below its solidus point; and
(e) immediately separating said mold halves to effect removal of the solidified, cooled ferro-alloy at the temperature of step (c) in the form of ingots.

4,616,691

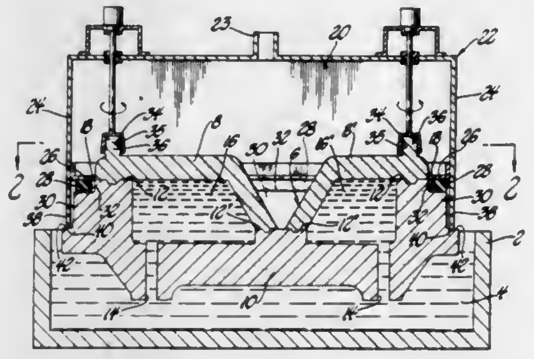
COUNTERGRAVITY CASTING APPARATUS

Karl D. Voss, Standish, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 9, 1985, Ser. No. 806,618

Int. Cl.⁴ B22D *18/06*

U.S. Cl. 164—255 **3 Claims**



1. Apparatus for the vacuum countergravity casting of molten metal comprising:
a mold comprising a porous, gas-permeable upper shell at least in part defining a molding cavity and a bottom-gated lower portion secured to said upper shell for admitting said metal into said cavity from an underlying pot of said metal;
a sealing surface atop said mold and thermally remote from the metal in said pot;
a vacuum box defining a vacuum chamber confronting said upper shell for evacuating said cavity through said shell, said box comprising a peripheral wall having a lip on the underside thereof defining a mouth of said chamber;
an elastomeric gasket compressed between the underside of said lip and said sealing surface of said mold for sealing said mold to the mouth of said chamber; and
a skirt depending from said box beneath said lip so as to surround said gasket and shield it from heat radiating from said pot.

4,616,692

METHOD OF RECOVERING HEAT OF REACTION

Kenji Yasuda, Amagasaki, Tsutomu Nakamura, Osaka; Shinichi Tomita, Toyonaka, all of Japan, assignor to Hitachi Zosen Corporation, Osaka, Japan

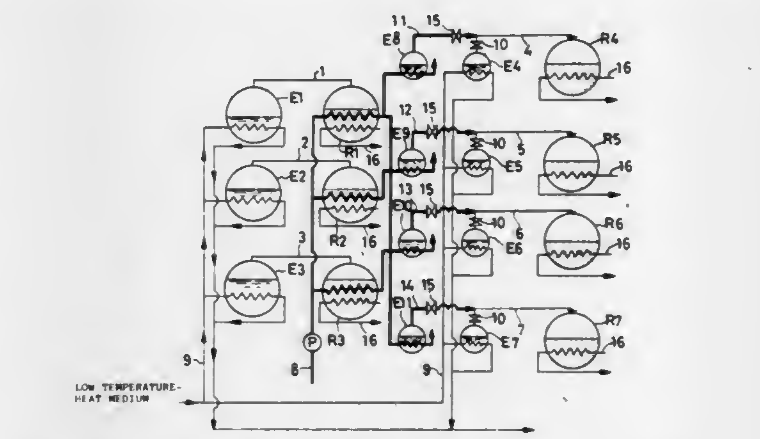
Filed Jun. 10, 1985, Ser. No. 743,135

Claims priority, application Japan, Jun. 12, 1984, 59-121112

Int. Cl.⁴ F28D *21/00;* F25B *15/00*

U.S. Cl. 165—1 **2 Claims**

1. In a chemical heat storage or chemical heat pump system wherein 2 moles of water vapor is reacted with 1 mole of calcium bromide anhydride to utilize the heat of hydration evolved, a method of recovering the heat of reaction characterized by producing water vapor at a high temperature level by heating water in an evaporator with use of the heat of hydration evolved by the hydration reaction of calcium bromide monohydrate into calcium bromide dihydrate in a first reactor included in a plurality of reactors, and supplying the resulting water vapor to a second reactor included in the reactors as water vapor for the hydration reaction of the monohydrate into the dihydrate, whereby heat is obtained substantially at the same high temperature level as the heat of hydration of the anydride into the monohydrate.



4,616,693

HEATING AND/OR AIR CONDITIONING APPARATUS FOR AUTOMOTIVE VEHICLES

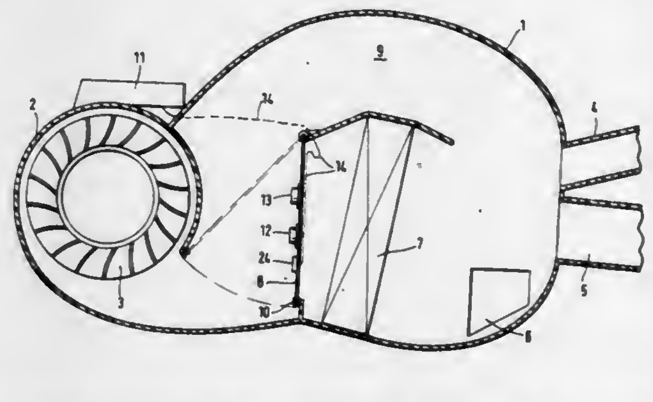
Kurt Dietzsch, Leonberg-Eltingen, and Karlheinz Witzel, Stuttgart, both of Fed. Rep. of Germany, assignors to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Filed Aug. 28, 1984, Ser. No. 645,091

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1983, 3331890

Int. Cl.⁴ B60H *3/00*

U.S. Cl. 165—41 **23 Claims**



1. A heating and/or air-conditioning installation for automotive vehicles, comprising:
at least one blower;
at least one flap which affects the air flow through the installation;
an electronic control element which includes at least one heatgenerating electronic component mounted on said flap; and a thermally conductive connection for joining said flap to said component.

4,616,694

FIREPROOF CABINET SYSTEM FOR ELECTRONIC EQUIPMENT

Shih-yung Hsieh, Apt. 4G, 41-70 Union St., Flushing, N.Y. 11355

Filed Oct. 22, 1984, Ser. No. 663,344

Int. Cl.⁴ A62C *37/18;* F28D *5/02;* B67D *1/08*

U.S. Cl. 165—47 **17 Claims**

1. A system for protecting electronic equipment and maintaining its continuous function during an external fire in a room area surrounding said equipment, comprising:
a fire resistant and waterproof wall shield enclosure for

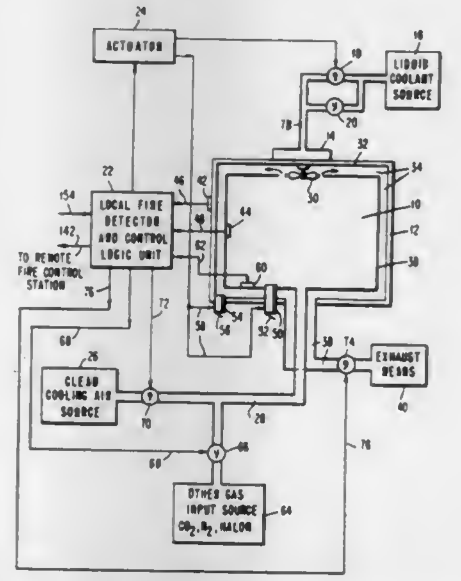
enclosing said equipment, said wall shield enclosure including an outer metal layer having a high thermal conductivity and providing a radiation shield, an adjacent support layer having a low thermal conductivity and high mechanical strength, and an inner wall duct means extending along the support layer on the inside of said wall shield means for passage of a gas coolant adjacent said wall shield enclosure for cooling said wall shield;

water supply means for continuously providing coolant water on substantially the entire outside surfaces of said outer metal layer of said wall shield enclosure to remove heat therefrom and preventing fire damage to said wall shield enclosure;

forced gas cooling means for providing coolant gas from outside said wall shield enclosure into said inner wall duct means of said wall shield enclosure for cooling an interior thereof and also removing heat received from said outer metal layer, said forced gas cooling means including a coolant gas supply, an intake duct means leading from said coolant gas supply into the interior of said wall shield enclosure, and exhaust duct means for removing heated air from said inner wall duct means to the outside of said wall shield enclosure; and

control means responsive to the detection of a fire condition in said room area for activating said water supply means;

whereby said coolant gas in combination with said continuous coolant water on said outer metal layer act to decrease the heating effects of fire on said wall shield enclosure and remove heat from the interior thereof to maintain said electronic equipment in operation at a desired temperature and air quality.


ACTUATOR
LIQUID COOLANT SOURCE
LOCAL FIRE DETECTOR AND CONTROL LOGIC UNIT
TO REMOTE FIRE CONTROL STATION
CLEAN COOLING AIR SOURCE
EXHAUST MEANS
OTHER GAS INPUT SOURCE CO₂, N₂, HALON

4,616,695

HEAT EXCHANGER

Kenzo Takahashi, Kawanishi; Nobuo Kumazaki, Nakatsugawa; Hisao Yokoya, Tajimi; Hironobu Nakamura, and Tadakatsu Kachi, both of Nakatsugawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1985, Ser. No. 699,163

Claims priority, application Japan, May 11, 1984, 59-94101

Int. Cl.⁴ F24H *3/02*

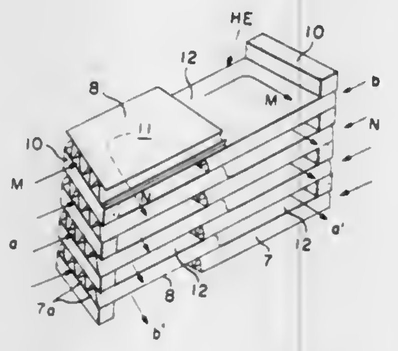
U.S. Cl. 165—54 **13 Claims**

1. A heat exchanger, comprising:

a plurality of partially overlapped plates disposed in mutual confrontation at predetermined spaced intervals to separate two fluids to be heat-exchanged;

a trapezoidally shaped fin disposed in said spaced interval among the mutually opposed plates to form a plurality of parallel flow paths for controlling flow of said two fluids in the space interval wherein the spaced intervals to be formed by said plates are in a plurality of stacked layers, and wherein an upstream portion where the fin is present and an empty space where no fin is present are so disposed in said plurality of spaced intervals in layer form that they are staggered in the direction of stacking the plates; and

a control member obliquely provided in each of said spaced intervals in layer form to separate and alternately lead into each space interval a primary fluid and a secondary fluid so that the heat exchanging operation may be effected between said primary fluid and said secondary fluid as led into each of said spaced intervals in layer form through the partitioning plate in the course of their passage through said space interval in layer form, while producing a flow rate distribution in, and proper to, each of said fin section and said empty section by a static pressure loss distribution in the fin section wherein inlet ports for said two fluids to be heat-exchanged are provided on mutually opposite side surfaces and wherein outlet ports for said two fluids to be heat exchanged are provided on the same side surface.



4,616,696

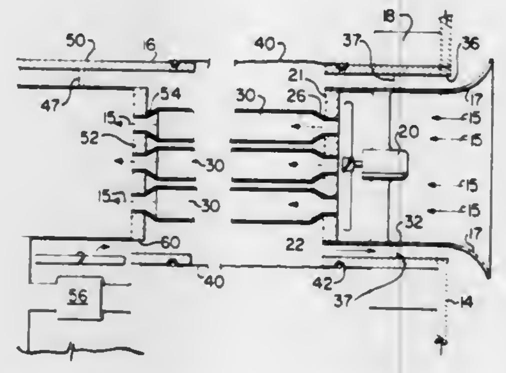
EXHAUST AIR HEAT EXCHANGER

Ewart Brundrett, and Laurence Brundrett, both of Baden, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Aug. 10, 1984, Ser. No. 639,408

Int. Cl.⁴ F24H *3/02;* **F24F** *7/10*

U.S. Cl. 165—54 **3 Claims**



3. An apparatus for use in exchanging heat between incoming and outgoing air in a greenhouse said apparatus comprising a plurality of elongated nonconcentric inner tubes of thin walled flexible transparent plastic of a thickness capable of being inflated by air flowing through said tubes, an elongated housing of thin walled flexible transparent plastic of a thickness requiring that it be inflated by air flowing through said housing enclosing said inner tubes, means for supporting said inner tubes in a selected spaced apart relation within said housing, first manifold means in sealing engagement with said inner tubes and said housing, second manifold means in sealing engagement with said inner tubes and said housing and means on said first and second manifolds for forcing air through said inner tubes and said housing to cause air flow through and inflation of said tubes and said housing; the diameter of said inner tubes and said housing being great enough to prevent ice blocking said tubes, and provide a high flow rate and heat exchange area to achieve heat exchanger effectiveness of at least 40% over a length of 10 meters.

4,616,697

HEAT EXCHANGER

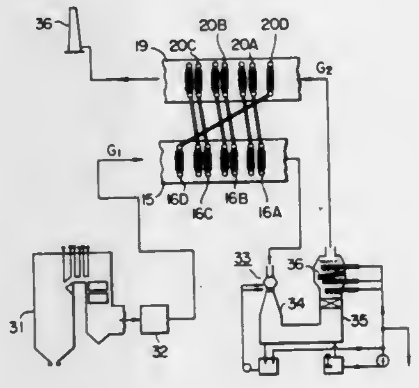
Ikuo Kotaka, Hiroshima, Japan, assignor to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1984, Ser. No. 622,725

Claims priority, application Japan, Jun. 21, 1983, 58-110233; Jun. 21, 1983, 58-110235; Jun. 22, 1983, 58-94949[U]

Int. Cl.⁴ F28D *15/00*

U.S. Cl. 165—104.14 **1 Claim**



1. A heat exchanger incorporating a heat pipe apparatus, said heat pipe apparatus comprising:

a plurality of evaporative pipe groups disposed within a flow of a heating fluid;

a plurality of first condenser pipe groups located away from said evaporative pipe groups and disposed within a flow of fluid to be heated; and

first passage means for connecting said evaporative pipe groups with said condenser pipe groups and for circulating therethrough a working medium between said both pipe groups;

one evaporative pipe group of said evaporative pipe groups being disposed in an uppermost stream-side of the flow of heating fluid and connected by means of said first passage means to one condenser pipe group of said first condenser pipe groups disposed in an uppermost stream-side of the flow of the fluid to be heated, and the remainder of said evaporative pipe groups being so connected to the remainder of said first condenser pipe groups such that the evaporative pipe group disposed in an upper stream-side of the heating fluid is connected to the condenser pipe group disposed in a down stream-side of the flow of the fluid to be heated in order; and

said evaporative pipe group disposed in the uppermost stream-side of the flow of the heating fluid comprising tubular pipes provided therearound with fins, and said condenser pipe group disposed in the uppermost stream-side of the flow of the fluid to be heated comprising bare tubular pipes.

4,616,698

HEAT EXCHANGER FOR LIQUID/LIQUID HEAT EXCHANGER

Dick G. Klaren, Hillegom, Netherlands, assignor to Esmil BV, Amsterdam, Netherlands

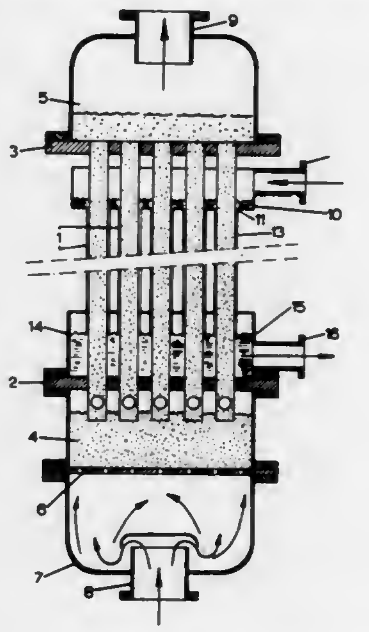
Filed Apr. 15, 1982, Ser. No. 368,569

Claims priority, application Netherlands, Apr. 24, 1981, 8102024

Int. Cl.⁴ F28D *13/00, 3/02*

U.S. Cl. 165—104.16 **6 Claims**

1. Heat exchanger for liquid-liquid heat exchange having a plurality of parallel vertical tubes arranged for the upward transport within the tubes of a first heat-exchange liquid, supply and discharge tanks for the first liquid into which lower and upper ends of the said tubes respectively open, a granular mass which during operation is fluidized by the flow of the first liquid so as to occupy at least the said tubes, supply means for a second heat exchange liquid arranged to cause the second liquid to contact the tubes in the form of a film flowing downwardly along the outer surface of each tube, said supply means for the second liquid having a slot extending around each of the said tubes, so that the second liquid forms the said film on passing through the slot and the discharge means for the second liquid arranged to collect the said films from the tubes.



4,616,699

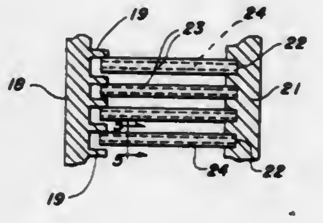
WICK-FIN HEAT PIPE

Michael G. Grote, Maryland Heights, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Jan. 5, 1984, Ser. No. 568,295

Int. Cl.⁴ F28D *15/00*

U.S. Cl. 165—104.26 **7 Claims**



1. A heat pipe device comprising:

(a) a housing providing an elongated closed chamber havng closed ends;

(b) heat transfer fins in said closed chamber, each fin being characterized by having wicking grooves on opposite surfaces thereof, and said finss being arranged in longitudinally spaced groups with a group thereof being positioned adjacent each end of said closed chamber and providing extended heat transfer surfaces;

(c) heat transfer medium in said chamber capable of existing in liquid form upon giving up heat and existing in vapor form upon absorbing heat; and

(d) wicking means in said chamber extending longitudinally in the closed chamber between said spaced groups of heat transfer fins for transferring the liquid form of said medium from one group of fins to another group thereof.

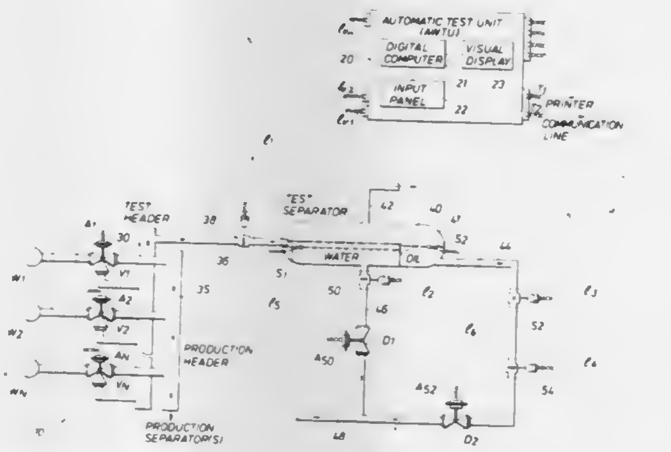
4,616,700
AUTOMATIC WELL TEST SYSTEM AND METHOD

John R. Wood; Margaret M. Siska, both of Houston, and Patrick A. Raymond, Sugarland, all of Tex., assignors to Hydril Company, Los Angeles, Calif.

Filed Sep. 18, 1984, Ser. No. 652,175

Int. Cl.⁴ E21B *34/16, 43/12, 43/34*

U.S. Cl. 166—250 **8 Claims**



2. An automatic well test system for testing a plurality of wells in an oilfield comprising

a plurality of controllable diverter valves, one valve disposed in each output line of each well, each diverter valve having a divert line and a production line, each production line connected to a common production header,

a test header to which the divert line of each diverter valve is connected, the test header having a test output line,

a test separator having an input port to which the test header output line is connected, and having an emulsion oil output line and a free water output line, and having means for separating input fluid into a first section of emulsion oil and free water and a second section of emulsion oil, and having a first dump signalling means in said first section for generating a first dump signal indicative that free water in the separator is at a predetermined level, and having a second dump signalling means in said second section for generating a second dump signal indicative that emulsion oil in the second section is at a predetermined level,

a dump valve disposed in said free water output line responsive to said first dump signal for dumping free water in said first section of said test separator,

a dump valve disposed in said emulsion oil output line responsive to said second dump signal for dumping emulsion oil in said second section of said test separator,

a water/oil measuring means disposed in said emulsion oil output line for generating a signal indicative of the ratio of water to oil in said line,

a flow rate measuring means disposed in said emulsion oil output line for generating a signal indicative of the flow rate of the emulsion oil flowing in said line,

a flow rate measuring means disposed in said free water output line for generating a signal indicative of the flow rate of the free water flowing in the free water output line, and

a system controller means responsive to operator data inputs for automatically testing each well by,

sequentially signalling each of said controllable diverter valves associated with a well to direct the output of such well to its divert line and to said test separator, and in sequence for each well,

purging said test separator of free water and emulsion oil by counting the number of free water dumps and the number of emulsion oil dumps occurring after a well has been switched to the test separator and comparing the number of such dumps with respect to operator input data for such dumps for enabling the well test when the number of dumps specified by said operator input data has been accomplished, and

for each well in sequence, testing the well by generating a net oil flow rate signal in response to said signals indicative of said water to oil ratio flowing in said emulsion oil output line and to said signal indicative of the flow rate of the emulsion oil flowing in said emulsion oil output line signal and to said signal indicative of the flow rate of the free water flowing in the free water output line.

7. In an automatic well test system for testing a plurality of wells in an oilfield including a test separator and a test header connected to each of said wells and a test header output line connected between said test separator and said test header and a flow determining means in said header output line, a method for detecting leaks in any of the diverter valves prior to the testing of each well in sequence comprising the steps of

signalling all of said controllable diverter valves to connect each well to the production header,

maintaining the connection of each well to the production header for a predetermined wait time period,

monitoring said flow determining means in said test header output line, and

generating an alarm signal if a signal is generated by said flow determining means during said predetermined wait time, said alarm signifying that at least one of said diverter valves is leaking.

8. In an automatic well test system for testing a plurality of wells in an oilfield including a test separator and a test header connected to each of said wells and a test header output line connected between said test separator and said test header,

said test separator having means for separating within the separator emulsion oil from free water and having means for dumping free water via a free water output line after free water reaches a predetermined level in the separator and means for dumping emulsion oil via an emulsion oil output line after emulsion oil reaches a predetermined level in the separator,

a method for purging the test separator of emulsion oil and free water comprising the steps of

initiating purging of the test separator after a well has been switched to the test separator,

counting the number of free water dumps and the number of emulsion oil dumps occurring after the initiation of the purging of the test separator,

stopping the purging of the test separator when the number of free water dumps is greater than or equal to the operator input data for such water dumps and the number of emulsion oil dumps is greater than or equal to the operator input data for such emulsion oil dumps.

4,616,701
WELL PERFORATING APPARATUS INCLUDING AN UNDERBALANCING VALVE

Gregg W. Stout, Montgomery, and William D. Myers, Jr., Woodlands, both of Tex., assignors to Baker Oil Tools, Inc., Houston, Tex.

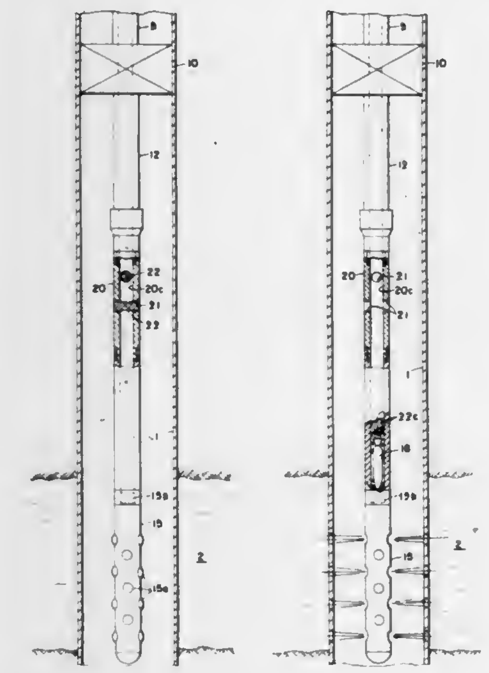
Filed Jun. 6, 1985, Ser. No. 742,095

Int. Cl.⁴ E21B *43/116*

U.S. Cl. 166—55.1 **9 Claims**

1. Well perforating apparatus comprising: a tubing-carried perforating gun positionable adjacent a production formation, said gun having an impact detonatable primer at one end; a tubular conduit connectable between a tubing string and the top end of said perforating gun; at least one pair of axially aligned radial holes in the wall of said tubular conduit; and a frangible member traversing the bore of said tubular conduit, the ends of said frangible member being slidably and sealingly

mounted in said radial holes, whereby the dropping of a detonating bar through said conduit to detonate said primer breaks said member and opens said radial holes to pressured fluid flow from the perforated production formation.



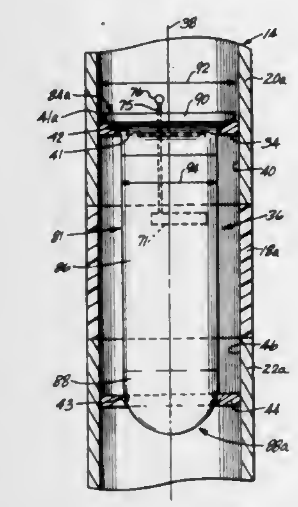
4,616,702
TOOL AND COMBINED TOOL SUPPORT AND CASING SECTION FOR USE IN TRANSMITTING DATA UP A WELL

Merle E. Hanson, Livermore; Paul F. Titchener, Menlo Park, both of Calif., and Clifford W. Hamberlin, Kingwood, Tex., assignors to Comdisco Resources, Inc., San Francisco, Calif.

Filed May 1, 1984, Ser. No. 606,472

Int. Cl.⁴ E21B *47/022, 47/06, 47/12*

U.S. Cl. 166—65.1 **78 Claims**



1. A tool for changing the electrical conductance across a nonconductive separation in a string of electrically conductive well casing in a well located in the earth, for transmission of data up the well, the casing having at least one inwardly extending landing shoulder for the tool, the tool comprising:

a housing elongated between first and second ends and comprising:

a first externally conductive housing portion, substantially circular in cross-section, for electrical connection to the casing on one side of the nonconductive separation,

a second conductive housing portion; substantially circular in cross-section, spaced from the first conductive housing portion for electrical connection to the casing on another side of the nonconductive separation from said one side, and

a nonconductive housing portion, substantially circular in cross-section, electrically separating

the first and second housing portions;

an outwardly extending landing shoulder on the housing for landing and for supporting the tool on the casing landing shoulder; and

controllable switch means contained in the housing for electrically connecting together and disconnecting the first and second housing portions to thereby cause changes in the electrical conductance in the casing across the nonconductive separation for flow of an electrical signal applied between earth and the casing.

56. A tool for changing the electrical conductivity across a nonconductive separation in a string of electrically conductive well casing in a well, for transmission of data up the well, the casing having at least one inwardly extending landing shoulder for the tool, the tool comprising:

an elongated substantially bullet-shaped housing, a support shoulder extending radially out from the housing for landing and supporting the tool on the casing shoulder, first and second electrically conductive contacts electrically separated and spaced apart along the housing for separate electrical connection on opposite sides of the nonconductive separation to the electrically conductive casing string, the housing comprising an elongated nonconductive housing portion positioned between the first and second contacts, and switch means in the housing for electrically connecting together and disconnecting the first and second contacts.

4,616,703
DEVICE FOR ANCHORING A PROBE IN A WELL, BY OPENING MOBILE ARMS

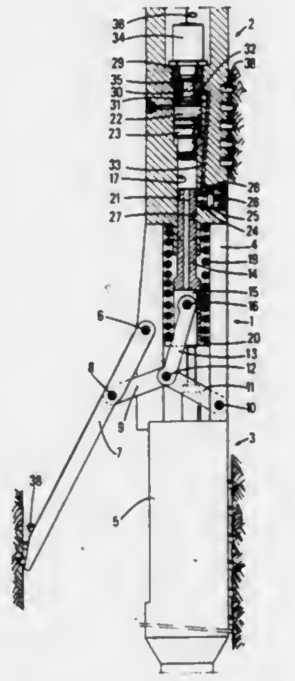
Jean Laurent, Orgeval, and André Fabre, Saint-Cloud, both of France, assignors to Institut Francais du Petrole, France

Filed Jun. 29, 1984, Ser. No. 625,969

Claims priority, application France, Jul. 6, 1983, 83 11383

Int. Cl.⁴ E21B *23/04*

U.S. Cl. 166—66.4 **6 Claims**



1. An anchorage device for immobilizing an apparatus lowered into a well by outwardly opening at least one anchorage arm which may pivot with respect to the apparatus, the anchorage device comprising a body, at least one spring, disposed in said body, a movable rod slidably positioned in said body and driven in translation by the expansion of the spring, means connecting said rod to the anchorage arm for transforming the translational movement of the rod into a pivoting movement of the anchorage arm and releasable means for immobilizing the rod in a compression position of the spring,

said releasable means comprising a bolt and means for pushing the bolt into engagement in a radial recess in the rod in the compression position of the spring, said anchorage device also comprising hydraulic means for moving the bolt out of engagement with the rod and releasing the rod, said hydraulic means including a cavity formed in the body of the apparatus, a head firmly secured to the bolt with a larger section than said bolt and adapted for sliding in said cavity, and a hydraulic circuit for intermittently applying a fluid to said bolt a pressure which is substantially constantly equal to the pressure prevailing in the well, thereby disengaging the bolt from the rod.

4,616,704

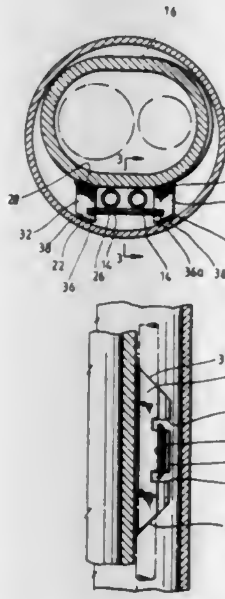
CONTROL LINE PROTECTOR FOR USE ON A WELL TUBULAR MEMBER

Russell A. Johnston, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Jul. 26, 1985, Ser. No. 759,384

Int. Cl.⁴ E21B *17/14*

U.S. Cl. 166—242 **10 Claims**



1. A control line protector for use on a well tubular member comprising,

first and second members having a first side for attachment to the outside of the tubular member in a parallel spaced relationship for enclosing a portion of a well control line,

each of said members having ends which are tapered inwardly for avoiding catching on any shoulders in a well,

each of said members having a longitudinal groove on the inside,

a plate adapted to be inserted in said grooves for enclosing a control line between the plate and the outside of the tubular member, and

means on each of the members for securing the plate in the grooves and to said members.

4,616,705

MINI-WELL TEMPERATURE PROFILING PROCESS

George L. Stegemeier; Peter Van Meurs, and Cor F. H. Van Egmond, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 658,238, Oct. 5, 1984, abandoned. This application Mar. 24, 1986, Ser. No. 843,858

Int. Cl.⁴ E21B *36/04, 47/06*

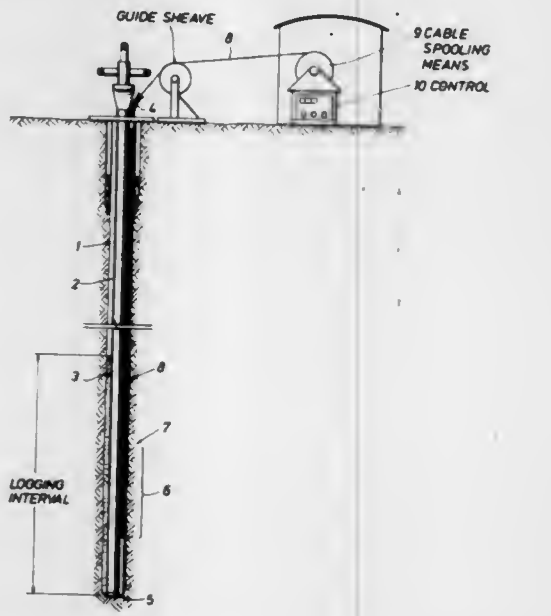
U.S. Cl. 166—250 **5 Claims**

1. In a process in which an elongated electrical resistance heater is installed and operated within a well for substantially uniformly heating an interval of subterranean earth formations which interval is longer than about 100 feet and is heated to a temperature between about 600° C. and a temperature damaging to the well or earth formation, an improvement for installing and operating the heater and measuring the pattern of temperature with depth along the heater, comprising:

positioning a spooled electrical heater and a spooled tubular stainless steel measuring conduit having an internal diameter of from about 5/16ths to 9/16ths inch at the well site and unspooling the heater and conduit substantially simultaneously into the well while periodically attaching the heater to the conduit so that the conduit supports the weight of the heater;

interconnecting a flexible weighting member, a thermocouple and a metal-sheathed cable for telemetering thermocouple responses, with those elements having outer diameters small enough to slide freely within the measuring conduit;

arranging the telemetering cable and a means for spooling and unspooling the metal-sheathed cable so that (a) the gravitational force on the weighting means is capable of pulling the thermocouple and cable downward within the measuring conduit means while the cable is being unspooled and substantially straightening the bends imparted to the cable by the spooling means drum and (b) the correlation between the gravitational force on the weighing means and the diameter of the spooling means is such that the cold working of the cable is not more than about 0.3 percent;



arranging the metal-sheathed cable spooling means for unattended automatic operation capable of moving the thermocouple through the interval being heated at a rate of about 3 to 2000 inches per minute capable of maintaining a substantial thermal equilibrium between the thermocouple and the temperature within the well; and

operating the heater while measuring the pattern of temperature with depth throughout the interval.

4,616,706

APPARATUS FOR PERFORMING SUBSEA THROUGH-THE-FLOWLINE OPERATIONS

Roger W. Huffaker, and Paul N. Stanton, both of Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Feb. 21, 1985, Ser. No. 703,961

Int. Cl.⁴ E21B *23/08, 33/076*

U.S. Cl. 166—341 **6 Claims**

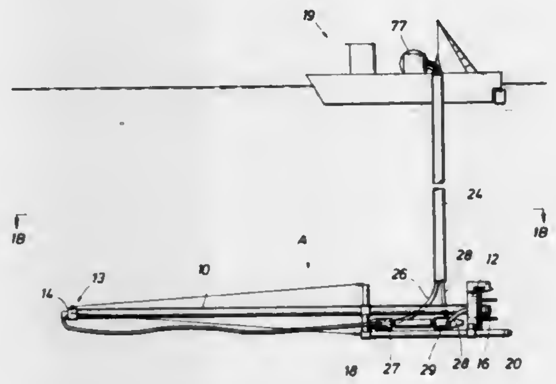
1. A subsea apparatus remotely operated from a surface support station for introducing and removing TFL tools through a receiving end of a subsea wellhead assembly comprising:

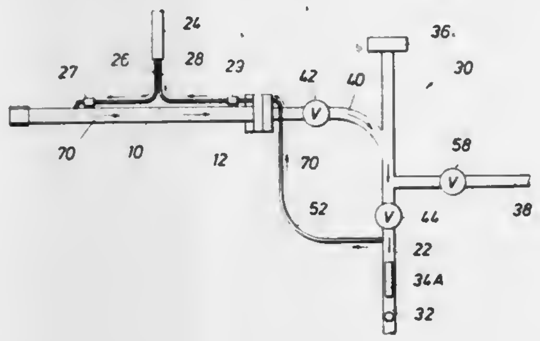
a subsea frame assembly remotely installable substantially adjacent said subsea wellhead assembly;

a first hollow elongate member connected to said subsea frame assembly and adapted to contain at least one TFL tool, said elongate member having a first sealed end and a second end, said second end adapted to engage said receiving end of said wellhead assembly;

a second hollow elongate member connected to said subsea frame assembly and adapted to contain at least one TFL tool, said second elongate member having a first sealed end and a second end;

means for aligning said second end of said elongate members with said receiving end of said wellhead assembly, said aligning means being connected to said subsea frame assembly;





means for sealably engaging said second end of said elongate members to said receiving end of said wellhead assembly;

a diverter attached at one end to said second end of said first and second elongate members and attached at the other end to said means for sealable engagement, said diverter being adapted to alternate fluid communication between the interior of said first and second elongate members and the interior of said wellhead assembly; and

means for circulating fluid within said elongate member and said wellhead assembly to transport the TFL tool between said elongate members and said wellhead assembly.

4,616,707

RISER BRAKING CLAMP APPARATUS

Carl G. Langner, Spring, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 8, 1985, Ser. No. 720,841

The portion of the term of this patent subsequent to Oct. 8, 2002, has been disclaimed.

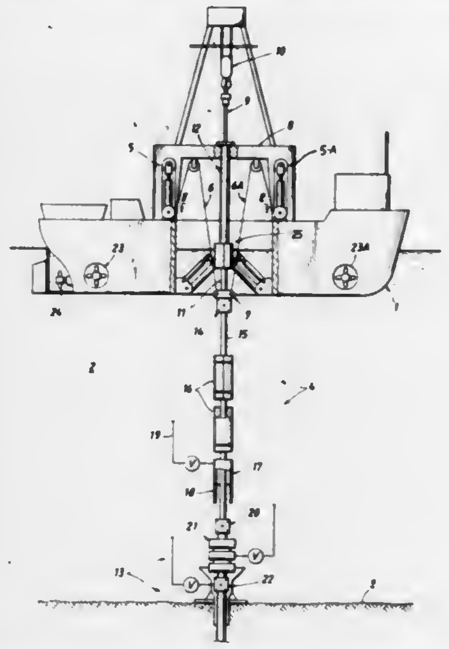
Int. Cl.⁴ E21B *19/09*

U.S. Cl. 166—345 **9 Claims**

1. For use in a floating vessel having a substantially centrally positioned vertical hull opening therethrough, said vessel being provided with well drilling equipment, including an elongated vertical riser, said riser extending in tension down through said hull opening to a point adjacent the ocean floor, and motion-compensating and tensioning means carried by said vessel operatively connected to said riser for tensioning said riser during normal operations, the invention comprising:

riser braking clamp apparatus located substantially within the hull opening through the vessel, said riser braking clamp apparatus comprising:

telescopic joint means having a first member and a second member, each member having a lower end and an upper end and an axial throughbore, said lower end of said first member operatively connected to said upper end of said riser, said upper end of said first member slideably engaged with said lower end of said second member, said second member operatively connected to said vessel; and



brake means carried by one member of said telescopic joint means, operatively and selectively engageable with said other member of said telescopic joint means, to dampen, arrest, and prevent further movement of said first member relative to said second member of said telescopic joint means.

4,616,708

RISER TENSIONING SYSTEM

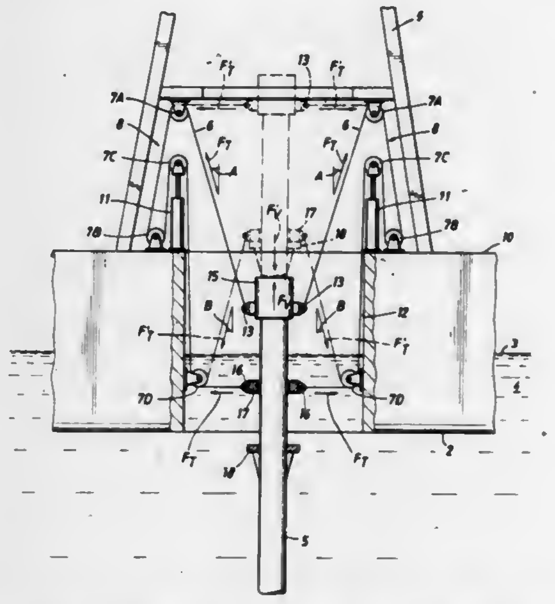
Augusto L. C. da Mota, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 21, 1985, Ser. No. 800,185

Claims priority, application United Kingdom, Jan. 25, 1985, 8501920

Int. Cl.⁴ E21B *19/09*

U.S. Cl. 166—355 **10 Claims**



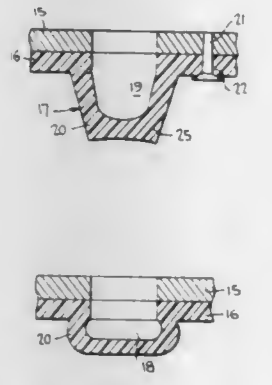
1. Riser tensioning system for a riser extending between a platform floating in a body of water and a submerged riser base, the system comprising at least one riser tensioner cable running along a set of sheaves that form part of a heave compensator unit mounted on the platform, the riser tensioner cable being operatively connected to the riser and to a collar which is slidably arranged around the riser, wherein stop means are provided to restrict axial movement of the collar relative to the riser if the riser after disconnection thereof from

the base is pulled in upward direction by means of the tensioner cable.

4,616,709

PODDED CLEAT HORSESHOE

James M. Lee, 351 Warwick Ave., South Orange, N.J. 07079
Filed Feb. 22, 1985, Ser. No. 704,183
Int. Cl.^{4} A01L *5/00, 7/06*
U.S. Cl. 168—13 **15 Claims**

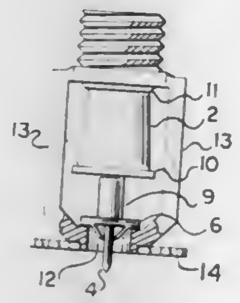


1. A horseshoe comprising:
a base member for attachment to a horse's hoof as a lower part thereof and having a bottom surface; and
a plurality of podded cleats extending generally downwardly from the bottom surface of said base member in spaced relationship along at least the area of said bottom surface adjacent the peripheral region thereof to support the horn of the hoof around the peripheral region thereof;
each podded cleat comprising
a pod of elastomeric material protruding from the bottom surface of said base member, and a hollow cavity within said pod having a size and shape relative to the dimensions of the pod to form a wall surrounding said cavity which facilitates substantial compression of the pod under impact and compressive load by mechanical collapse of said wall to maximize cushioning of the impact and load on the horse's hoof in use.

4,616,710

HEAT-RELEASED PLUG

Frank J. Pilant, P.O. Box 634, Pine Valley, Calif. 92062, and Milton D. Cornsweet, 3608 Lorimer La., Encinitas, Calif. 92024
Filed Dec. 27, 1984, Ser. No. 686,689
Int. Cl.^{4} A62C *37/18*
U.S. Cl. 169—41 **12 Claims**

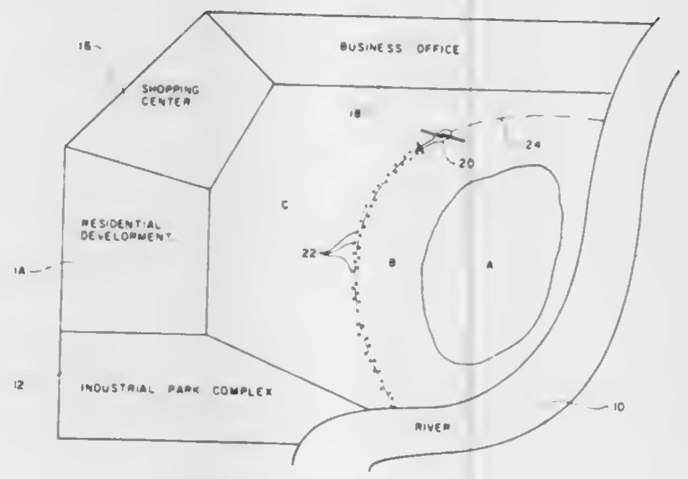


1. A heat-released plug assembly for obstructing the flow of fluid from an opening which comprises:
a resilient, generally cylindrical body having an axial bore therethrough;
a rod engaged through said bore;
a barrier at one end of said rod for stopping the axial translation of said body along said rod;
a fusible spacer mounted between said body and the other end of said rod; and
means engaged over the other end of the rod and against said spacer for compressing the body axially against said barrier, including a self-gripping means for limiting the recoiling movement of said body.

4,616,711

SYSTEM AND METHOD OF CONTROLLING AND PREVENTING THE SPREAD OF FOREST FIRES

John D. Johnson, 1009 Julian Pl., Rockville, Md. 20852
Filed Aug. 27, 1984, Ser. No. 644,621
Int. Cl.^{4} A62C *1/00*
U.S. Cl. 169—45 **1 Claim**

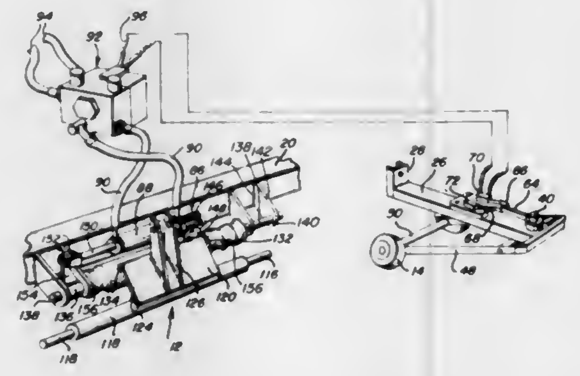


1. A method of controlling a land fire such as a forest fire comprising the steps of: forming a foam strip along a land area spaced from an area where fire is present; the step of forming said foam strip including flying an aircraft over the selected area where the foam strip is to be formed, dropping containers containing the foam along the selected area, and actuating said foam containing containers to release the foam upon or after impact of the containers with the ground such that a continuous foam strip is formed along an area spaced from the area where fire is present; and back burning from the foam strip towards the area of fire so as to burn material disposed between the formed foam strip and the area of fire in order to control the movement of fire and to generally prevent the fire from spreading over and beyond the foam strip.

4,616,712

ROW FINDER

Ray G. Jorgensen, R.R. 3, Box 44, Hampton, Iowa 50441
Filed Oct. 10, 1984, Ser. No. 659,536
Int. Cl.^{4} A01B *69/00*
U.S. Cl. 172—6 **10 Claims**



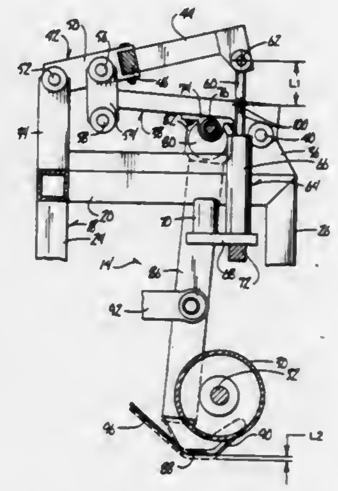
7. A row finder system for positioning an implement in predeterminded orientation in relation to a desired path of movement of the implement along a ground surface comprising a sensing device supported for engagement with guide means associated with the ground surface and defining the desired path of movement of the implement and an adjusting device supported for moving the implement sideways in relation to the actual path of movement in response to control from the sensing device to maintain an implement in predetermined orientation in relation to the guide means defining the desired path of movement, said guide means adapted to cooperate with a ridge in a ridge planting system, said sensing device including wheel means adapted to cooperate with a guided by said ridge with deviation of the wheel means from a desired path of movement controlling the adjusting device to move the implement sideways to center it in relation to the ridge and the desired path of movement, said adjusting device comprising a generally horizontally disposed piston and cylinder assembly oriented transversely of the path of movement and interposed between a vehicle and implement connected thereto for moving the implement sideways in relation to the vehicle in response to control from the sensing device, said implement being supported from a transversely extending tool bar, said sensing device also being supported from said tool bar, said adjusting device being interposed between the tool bar and a three point hitch mounting assembly, said adjusting device including a double acting hydraulically operated piston and cylinder assembly, means connecting one end of the piston and cylinder assembly to the tool bar and means connecting the other end of the piston and cylinder assembly to the three point hitch mounting assembly for moving the tool bar sideways in relation to the hitch assembly, said means connecting the piston and cylinder assembly to the tool bar including brackets on the tool bar engaged with a horizontal support member, a sleeve slidable on the horizontal support member and laterally fixedly engaged with the three point hitch mounting assembly, one end of the piston and cylinder arrangement being connected to the sleeve and the other end being connected to the horizontal member to cause lateral movement of the tool bar upon actuation of the piston and cylinder assembly, said wheel means including a pair of inclined wheels, a mounting assembly for supporting said wheels and enabling said wheels to follow the inclined side surfaces of a pair of ridges, switch means mounted for actuation by said wheel mounting assembly when the wheels move laterally in relation to the implement, said piston and cylinder assembly being communicated with the hydraulic system of the farm tractor through a solenoid controlled valve, said switch means being connected to the valve and electrical system of the tractor for controlling the valve and position of the tool bar and implement in response to actuation of the switch means, said switch means including two adjustably supported switches to sense deviation in two directions.

4,616,713

BLADE ADJUSTMENT DEVICE FOR SOD CUTTING MACHINE

Thomas G. Shattuck, P.O. Box 818, R.R. 2, Waukee, Iowa 50263
Filed Nov. 29, 1984, Ser. No. 676,491
Int. Cl.^{4} A01B *45/04;* **G05G** *1/04*
U.S. Cl. 172—19 **5 Claims**

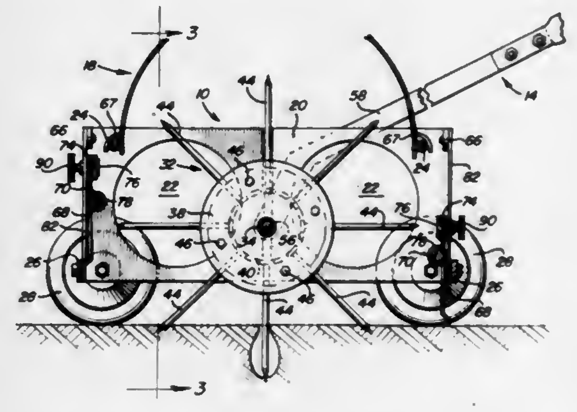
1. A sod cutting machine comprising:
a machine frame;
a sod roller rotatably mounted to said machine frame for rotation about a horizontal sod roller axis;
a blade supporting frame having a sod cutting blade attached thereto;
a linkage mechanism pivotally interconnecting said machine frame and said blade supporting frame for permitting selective movement of said blade toward and away from said sod roller between first and second blade positions relative to said sod roller, said blade being closer to said roller when in said second blade position than when in said first blade position;
said linkage mechanism comprising first, second and third links, each of which have first and second ends,
said first ends of said first and second links being pivotally connected to said machine frame about first and second horizontal link axes, respectively;
said first link being pivotally connected to said first and second links about third and fourth link axes, respectively;
said blade supporting frame being pivotally connected to said second link about a fifth link axis;
a power means pivotally connected to said first link at an input point for moving said first link between first and second input positions; said second and third links, said blade supporting frame, and said blade being movable in response to movement of said first link between said first and second input positions for causing said blade to move between said first and second blade positions.



4,616,714

SOIL PERFORATOR

Robert W. Lister, 570 Den-Mar Ct., Greensburg, Pa. 15601
Filed Dec. 17, 1984, Ser. No. 682,742
Int. Cl.^{4} A01B *45/02*
U.S. Cl. 172—21 **12 Claims**

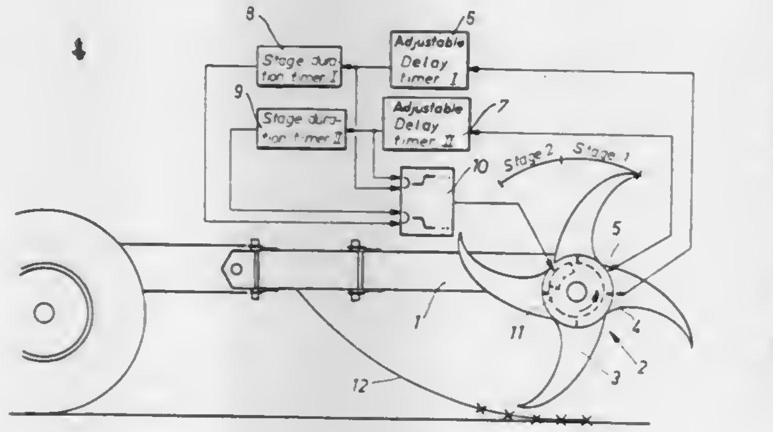


1. A soil perforator comprising a wheeled frame, a spiked rotor for mounting on the frame in a manner enabling the rotor spikes to penetrate soil accompanied by rotation of the rotor when the frame is moved along the ground, and a handle for manually pushing the assembled frame and rotor along the ground, wherein the frame includes side plates with top-opening vertical slots defining means for vertically adjustably mounting the rotor in the frame, wherein the rotor includes a rotor shaft with end portions adapted to project outwardly through the slots, and means for releasably clamping the shaft in selected vertical position in the slots, wherein the handle has arms received on the end portions of the shaft, wherein the rotor comprises plural spiked disc assemblies freely rotatably mounted on the shaft and spacer means, separate from the disc assemblies, the spacer means being mounted on the shaft between the respective disc assemblies, the disc assemblies and spacer means being removable from the shaft upon removal of the rotor from said slots for enabling the number of assemblies on the shaft to be changed so as to vary the density of soil perforations formed by the perforator.

4,616,715
FOREST MATTOCK WITH BRAKED ROTATION SYSTEM

Aarre Sinkkilä, 16630 Tennilä, Finland
Filed Dec. 13, 1983, Ser. No. 560,800
Claims priority, application Finland, Dec. 15, 1982, 824301
Int. Cl.⁴ A01B *39/08*
U.S. Cl. 172—61 **5 Claims**

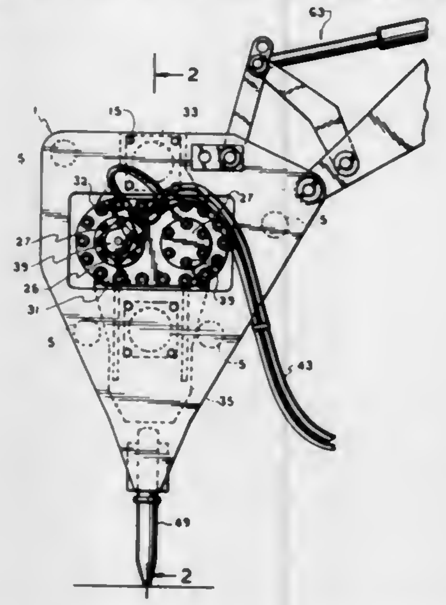
1. A turf-building forest mattock, for use in timed digging, grading the surface, and accumulating earth upon the ground during its operations, comprising a mattock means in the form of a gear with multiple picks, the rotation of said mattock means being adapted to be braked stepwise in a timed manner that each pick of the gear in turn works the ground in a first digging stage, brake means operatively associated with the mattock means to stop its turning while one of said picks digs into the ground to form a hole during said first digging stage, sensor means responsive to a first pick position, a timer means responsive to the sensor means and timing the length of time during which one of said picks of the mattock means digs within the ground, the timer means after a short segment of time signaling a release of the brake means for the turning of the mattock means for a short distance and in a manner that provides an intermediate work stage of the mattock means wherein one of said pick of said mattock means removes surface deposits from the ground in front of the finished hole, and said one of said picks of the mattock means after a defined removal of surface deposits releases the turf to be built into a mound of earth upon the ground.



4,616,716
SYNCHRONOUS VIBRATORY IMPACT HAMMER

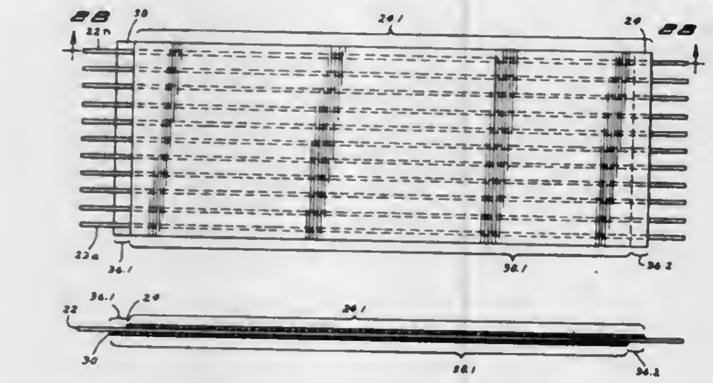
Edward J. Bouplon, Solon, Ohio, assignor to Allied Steel & Tractor Products, Inc., Solon, Ohio
Continuation-in-part of Ser. No. 353,628, Mar. 1, 1982, abandoned. This application Mar. 26, 1984, Ser. No. 593,678
Int. Cl.⁴ B25D *11/06*
U.S. Cl. 173—49 **8 Claims**

1. A vibratory impact hammer including a support frame, a hammer body assemblage suspended within the support frame by resilient means, having a selected suspension system spring rate, arranged to provide guiding and damping action in either direction of axial movement of the hammer body assemblage, said hammer body having a given stroke, wherein the stroke of the hammer body assemblage is equal to 2 wr/W, wherein w = unbalanced weight, r = radius where unbalance is located from the center of rotation and W = total weight vibrated, said resilient means being the sole means engaging the hammer body assemblage so that extraneous frictional forces are avoided, vibration drive means, including a pair of oppositely rotating eccentric weights, arranged to develop a forcing frequency to vibrate the hammer body assemblage in an axial direction, said forcing frequency, responsive to the relationship between hammer weight, eccentric weight, and spring rate of the suspension system so selected that the eccentric weights lead (set to lead the vibrated frequency of) the hammer body assemblage by 135°, and a tool reciprocably mounted in the support frame and positioned to receive impact blows of the hammer body assemblage when reciprocated by the vibration drive means.



4,616,717
FLEXIBLE WIRE CABLE AND PROCESS OF MAKING SAME

Edwin J. Luetzow, Northfield, Minn., assignor to Tel Tec Inc., Farmington, Minn.
Filed Nov. 9, 1978, Ser. No. 959,074
Int. Cl.⁴ H01B *7/08*
U.S. Cl. 174—117 F **28 Claims**



1. A flexible wire cable comprising a plurality of wire conductors and two insulation sheets adhesively bonded over and around said wire conductors to substantially surround each of said wire conductors by one hundred and eighty degrees and form channels in between each of said wire conductors, and offsetting and overlapping at least one end of said insulation sheet beyond the other end of said insulation sheet whereby said wire conductors extend beyond said ends of said overlapped insulation sheets.

4,616,718
FIRING HEAD FOR A TUBING CONVEYED PERFORATING GUN

Louis M. Gambertoglio, The Woodlands, Tex., assignor to Hughes Tool Company, Houston, Tex.
Filed Aug. 5, 1985, Ser. No. 762,171
Int. Cl.⁴ E21B *43/17*
U.S. Cl. 175—4.54 **12 Claims**

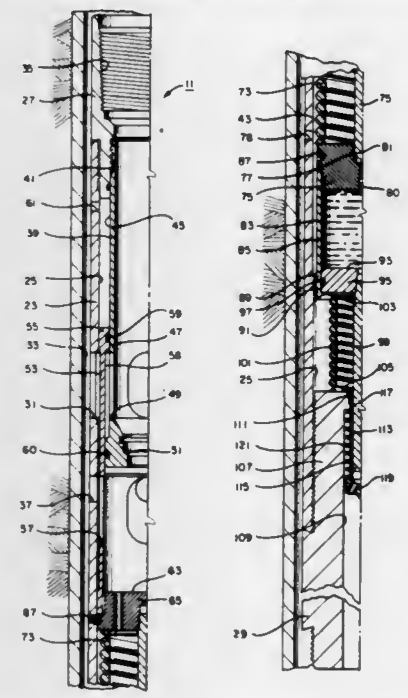
1. A firing head for a tubing conveyed perforating gun of the type which uses a firing pin to strike an explosive charge to perforate a well bore for production of well bore fluids, comprising:

a tubular sub having an interior bore and oppositely disposed connecting ends for connection in a well pipe string;

a firing pin contained within said interior bore and initially restrained in a cocked position by a firing pin holder;

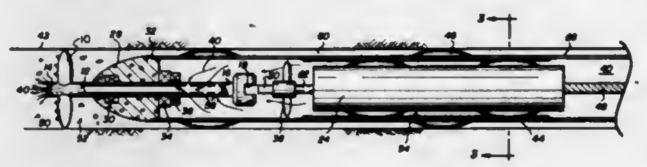
biasing means for propelling said firing pin toward said explosive charge upon the release of said firing pin holder; and

hydraulic delay means contained within said interior bore and actuable by a pressure change within said sub interior bore from the well surface to move said firing pin holder out of locking engagement with said firing pin to release said firing pin after a predetermined time interval, and wherein said hydraulic delay means includes a fluid piston located within a fluid chamber and a means for evacuating said chamber.



4,616,719
CASING LATERAL WELLS

Newton B. Dismukes, 2952 Buttonwood Dr., Carrollton, Tex. 75006
Filed Sep. 26, 1983, Ser. No. 535,990
Int. Cl.⁴ E21B *4/04*
U.S. Cl. 175—94 **16 Claims**



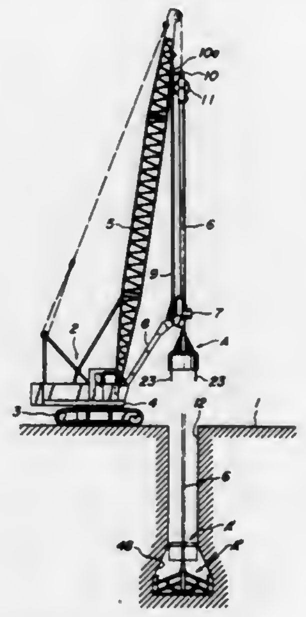
1. A system for overcoming a resistance to advance of a pipe string in a well bore at least partly filled with drilling fluid comprising:

a. A rotary prime mover releasably mounted inside the nether end of said pipe string;
b. A marine screw propeller means spaced outside of, and beyond, said pipe string; and
c. Means interconnecting said prime mover and said propeller whereby said propeller may be rotated by said prime mover to provide an advancing force acting on said pipe string.

4,616,720
DIVIDED-BUCKET TYPE ROTARY EXCAVATOR

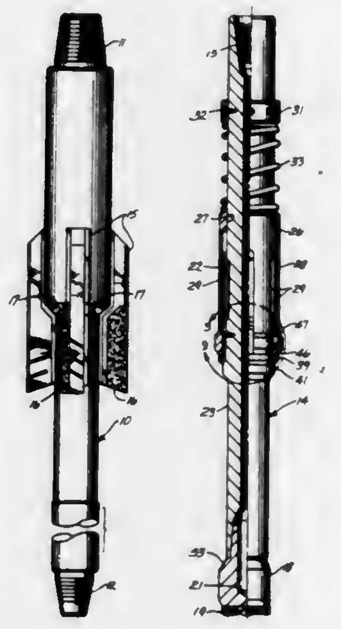
Katsumi Kitanaka, 24-8, Sakuragaoka-Cho, Shibuya-Ku, Tokyo, Japan
Filed Sep. 24, 1984, Ser. No. 653,841
Claims priority, application Japan, May 15, 1984, 59-95751
Int. Cl.⁴ E21B *11/00, 7/28*
U.S. Cl. 175—267 **8 Claims**

1. A divided bucket type rotary excavator comprising a plurality of cutter units having generally flat bottom plates and curved sidewalls with bits on their leading edges, said cutter units being arranged about a center shaft and mounted to be radially movably toward and away from said center shaft, said center shaft consisting of an outer hollow cylinder having a polygonal cross-section and an inner hollow cylinder slidably fitted in said outer hollow cylinder, and the excavator further comprising a fluid operated cylinder arranged in said inner and outer hollow cylinders to move said center shaft telescopically, a set of parallel links connecting said outer hollow cylinder to each said cutter unit, and a link having a length one half of that of said parallel links for connecting a middle point of each lower link of said parallel links to a lower end of said inner hollow cylinder, thereby moving said cutter units radially toward and away from said center shaft by telescopically moving said outer and inner hollow cylinders relatively to each other by means of said fluid operated cylinder.



4,616,721
PACKER MILL

John H. Furse, Kingwood, Tex., assignor to Smith International, Inc., Newport Beach, Calif.
Filed Nov. 27, 1984, Ser. No. 675,354
Int. Cl.⁴ E21B *17/06*
U.S. Cl. 175—320 **20 Claims**



1. A packer mill comprising:

catcher means for passing through the bore of a packer and catching remains of a milled packer; and

release means for releasing the remains of a packer upon application of a selected lifting force by failing in tension at a single location and formed to remain in a single piece and be retained on the packer mill after failing in tension.

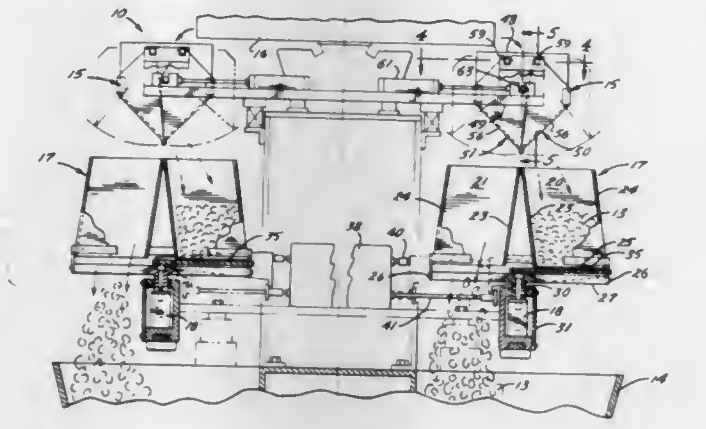
4,616,722
WEIGHING APPARATUS WITH COMPARTMENTALIZED WEIGHING BUCKET

Michael J. Moran, Raleigh, N.C., assignor to USM Corporation, Farmington, Conn.

Filed Mar. 28, 1985, Ser. No. 717,002

Int. Cl.⁴ G01G *13/22, 19/22, 13/16*

U.S. Cl. 177—99 **11 Claims**



1. Weighing apparatus comprising a weighing bucket unit having first and second side-by-side and generally upright containers for momentarily holding product to be weighed, means associated with said weighing bucket unit for producing a signal representative of the weight of the product in said containers, means for receiving the product from the containers after the product has been weighed, each of said containers having open upper and lower ends, metering means positioned above said containers for intermittently dropping alternate batches of product into the upper ends of alternate containers whereby the containers are filled alternately, a door mounted to shuttle back and forth beneath the lower ends of said containers along a substantially linear path, means for moving said door along said path between (1) a first position in which the door opens the lower end of said first container and closes the lower end of said second container and (2) a second position in which the door closes the lower end of said first container and opens the lower end of said second container, said last-mentioned means moving said door from said first position toward said second position at substantially the same time said metering means start dropping product to said first container and moving said door from said second position toward said first position at substantially the same time said metering means start dropping product to said second container whereby product may be dropped to one container while product is dropping out of the other container.

4,616,723
WHEEL LOAD INDICATOR

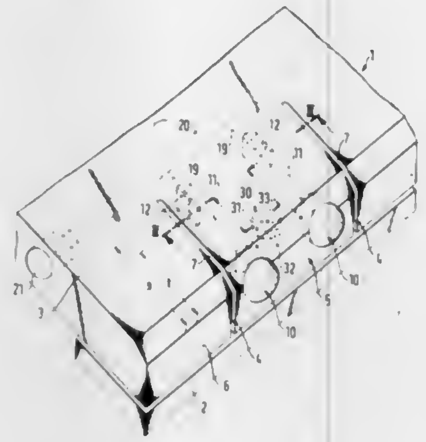
Ludwig Pietzsch, Karlsruhe; Knud Overlach, Ettlingen, and Siegfried Gassner, Pfinztal, all of Fed. Rep. of Germany, assignors to Ing Ludwig Pietzsch GmbH & Co., Ettlingen, Fed. Rep. of Germany

Filed Jun. 19, 1985, Ser. No. 746,294

Claims priority, application European Pat. Off., May 15, 1985, 85106025.1

Int. Cl.⁴ G01G *3/14, 19/02, 19/52*

U.S. Cl. 177—211 **25 Claims**



19. In a flat plate wheel load indicator adapted for support at its lateral edges and having plate with its lateral edges slotted to form a plurality of laterally extending webs to which strain gauges are attached, the improvement wherein said strain gauges are located internally of cavities extending into said webs from said lateral edges.

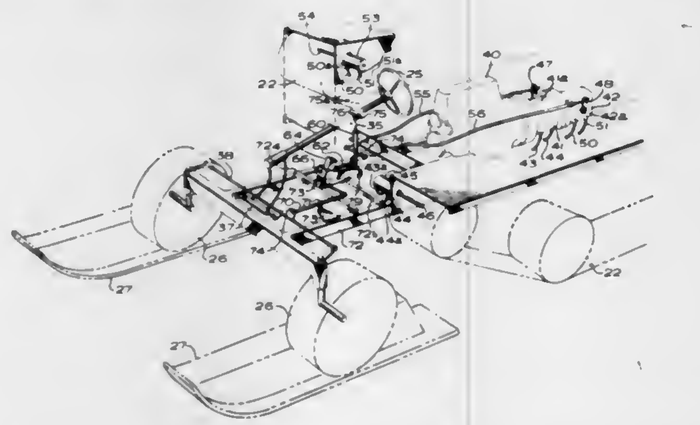
4,616,724
STEERING MECHANISM FOR ALL SEASON VEHICLE

Gary Lemke, Marcell, Minn., assignor to ASV Corporation, Marcell, Minn.

Filed Mar. 25, 1985, Ser. No. 715,205

Int. Cl.⁴ B62D *11/04*

U.S. Cl. 180—6.48 **20 Claims**



1. A control mechanism for steering an all-seasons vehicle comprising:

(a) a pair of tread means having motors producing movement of each said tread means over the terrain traversed by the vehicle;

(b) power means operably connected to said motors of said pair of tread means for causing movement of the same, said power means having a pair of controlable valve means controlling the flow of power to said motors;

(c) tread control means having a movable handle pivotally connected at the bottom thereof and including an arm extended outwardly and above the bottom of said movable handle, said tread control means connected to said pair of controllable valve means;

(d) oscillating block means having an axis of fluctuation at right angles to said movable handle pivot, said oscillating block means having slot means as a part thereof facing said movable handle through which said extended arm is disposed causing relative actuation of said valve means; and

(e) steerable means engaging the terrain over which the vehicle moves, and communicating with said oscillating block means providing steering control for the vehicle.

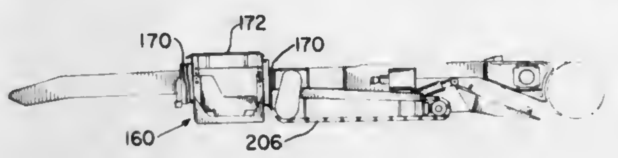
4,616,725
SUSPENSION SYSTEM FOR OPERATOR'S COMPARTMENT

Donald E. McDaniel, Clintonville, Pa., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Feb. 1, 1984, Ser. No. 575,952

Int. Cl.⁴ B62D *33/06*

U.S. Cl. 180—89.13 **15 Claims**



1. A suspension system for the operator's compartment of a mine vehicle having a body wherein the operator's compartment is of the type freely floatingly supported on said body adjacent one side thereof for riding on the mine floor as said vehicle moves in said mine, said suspension system comprising:

a chain means secured to said body for supporting said compartment for generally vertical movement with respect to said body; and

said chain means includes means for distributing equally to each end of said compartment the forces developed between said mine floor and any point on the operator's compartment whereby each end of said operator's compartment moves the same upward vertical distance with respect to said body as said operator's compartment floats upwardly in response to enegagement with said mine floor.

4,616,726
DEVICE FOR TURNING AN ARTICULATED MOTOR VEHICLE

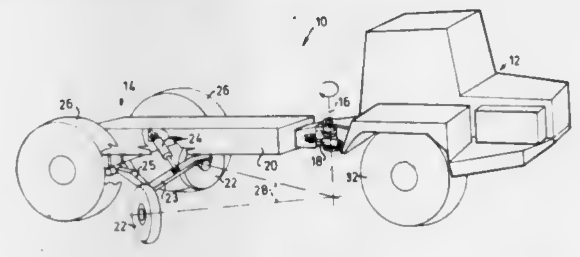
Sixten Johansson, Eskilstuna, Sweden, assignor to VOLVO BM AB, Eskilstuna, Sweden

Filed Oct. 31, 1985, Ser. No. 793,296

Claims priority, application Sweden, Nov. 8, 1984, 8405593

Int. Cl.⁴ B62D *13/06, 53/00*

U.S. Cl. 180—135 **4 Claims**



1. Articulated motor vehicle, especially a dumper, comprising a front drive unit supporting vehicle portion and a rear load carrying vehicle portion, said vehicle portions being articulated about a vertical axis and swingable in relation to each other about said axis by power means, characterized in that the rear vehicle portion is mounted on at least one supporting wheel, which can be lowered to the road surface to raise the rear vehicle portion and which, in the lowered position, has its axis of rotation lying in a vertical plane substantially intersecting the vertical axis of articulation between the vehicle portions.

4,616,727
HYDRAULIC STEERING FORCE BOOSTER

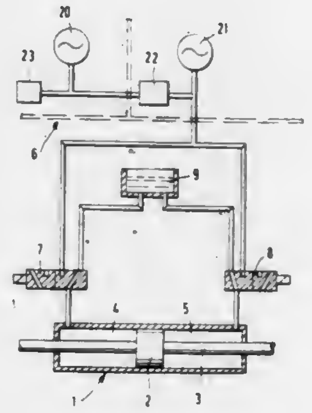
Dieter Kircher, Frankfurt am Main; Hubertus von Gruenberg, Kronberg; Klaus D. Blum, Kelkheim, and Peter Becker, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 14, 1985, Ser. No. 711,856

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1984, 3410033

Int. Cl.⁴ B62D *5/08, 5/10*

U.S. Cl. 180—142 **4 Claims**



1. A device for boosting the steering force on a steering arm of a steering system comprising:

a hydraulic cylinder;

a piston in said cylinder dividing said cylinder into two working chambers and including a piston rod adapted to be connected to the steering arm of said steering system;

a pair of electrically operated multidirection, hydraulic, control valves each having an outlet connected to a respective one of said two working chambers and an inlet;

two hydraulic pressure accumulators each accumulator connected to an external hydraulic fluid pressure source and having outlets connected together and to said control valves in parallel relationship;

a normally closed pressure responsive priority switch at the outlet of one of said accumulators isolating said one accumulator from the outlet of the other accumulator, said priority switch responsive to open at a predetermined outlet pressure from said second accumulator; and

electrical control means for operating said control valves to direct fluid to said working chambers in response to movement of a steering wheel including at least a pair of electrical switches responsive to the position of said steering wheels, each switch electrically coupled to a respective one of said control valves for sending an operating signal to said control valves.

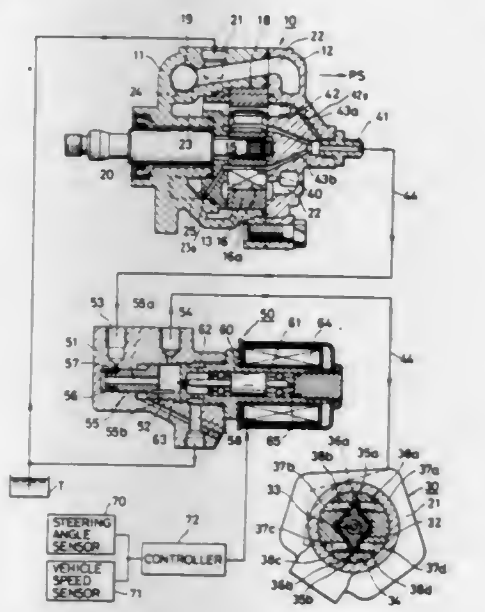
4. The device of claim **1**, wherein said electrical control means further includes means for comparing an actual vehicle speed to a predetermined threshold value and generating an electrical signal for controlling the operating signal from said switches;

electrical means for generating a signal when a first gear, a second gear, and a reverse gear is engaged; and

a gate having inputs coupled to said means for comparing the vehicle speed and the threshold value and to the signal from said means for generating a signal responsive to the first, second, and reverse gear, said gate having an output coupled to said switch, whereby said signal from said gear responsive electrical means controls said control valves only below the threshold speed value.

4,616,728
POWER STEERING DEVICE

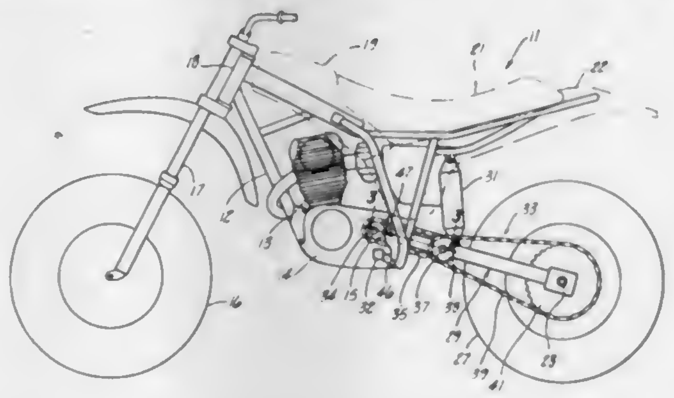
Yoshio Suzuki, and Takeshi Ohe, both of Saitama, Japan, assignors to Jidoshi Kiki Co., Ltd., Tokyo, Japan
Filed Mar. 13, 1985, Ser. No. 711,439
Claims priority, application Japan, Mar. 13, 1984, 59-46584
Int. Cl.^{4} B62D *5/06*
U.S. Cl. 180—142 **13 Claims**



1. In a power steering device including a vane type oil pump having vanes which are radially movable in slits of a rotor to supply a first portion of hydraulic fluid from an oil tank to a power cylinder through a flow passage switching valve, the improvement wherein secondary pumping chambers are defined behind said vanes at base ends of said slits, and a second portion of hydraulic fluid having a pressure built up by reciprocal motion of said vanes in said chambers is supplied to an input of a solenoid coil type flow control valve and through an output thereof to hydraulic reaction force chambers which impart a reaction force to a steering wheel which operates said flow passage switching valve, said flow control valve having a pressure-operated first valve means for decreasing a fluid pressure level at said flow control valve output independently of a fluid pressure level at said input, and a second valve means operated by a solenoid coil for changing said fluid pressure level at said flow control valve output.

4,616,729
TRANSMISSION CHAIN ADJUSTER FOR MOTORCYCLES

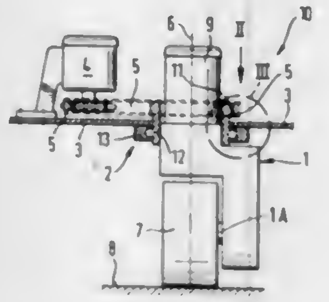
Yasuhiro Kasai, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Mar. 6, 1985, Ser. No. 708,708
Claims priority, application Japan, Mar. 7, 1984, 59-44395
Int. Cl.^{4} B62K *25/02*
U.S. Cl. 180—231 **14 Claims**



1. A chain drive for a wheeled vehicle comprising frame means, power means carried by said frame means for driving a drive shaft rotatably about a first axis extending transversely to the longitudinal axis of said frame means, trailing arm means supported for pivotal movement about a pivot axis by said frame means, an idler shaft rotatably journaled on said trailing arm means about a second axis parallel to said first axis and said pivot axis and spaced therefrom, first flexible transmitter means driving said idler shaft from said drive shaft, a wheel journaled by said trailing arm means for rotation about a third axis spaced from said first, said second and said pivot axes, second flexible transmitter means for driving said wheel from said idler shaft and means for adjusting the distance between said second axis and said first axis for adjusting the tension of said first flexible transmitter means.

4,616,730
CONTROL CHAIN CONNECTION

Richard Strehler, Chieming, and Guenter Babisch, Munich, both of Fed. Rep. of Germany, assignors to Carl Hurth Maschinen und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany
Filed May 9, 1985, Ser. No. 732,484
Claims priority, application Fed. Rep. of Germany, May 30, 1984, 3420146
Int. Cl.^{4} B62D *1/20*
U.S. Cl. 180—253 6 Claims

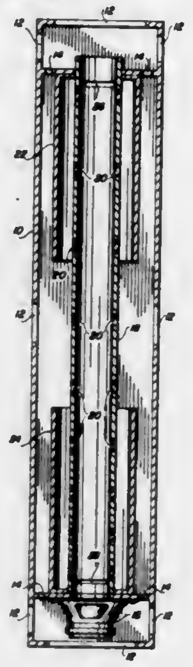


1. In a control chain connection between a sprocket on a drive motor and a drive unit of an industrial vehicle having a steerable drive wheel, said steerable drive wheel having an inner ring to which is secured said drive wheel and a support means for supporting said inner ring for movement about a vertically upright axis, said control chain at least partially encircling said inner ring so as to define two mutually adjacent ends, the improvement comprising wherein said inner ring has a plurality of holes therein arranged on a circle which concentrically surrounds said pivot axis, wherein a chain holder is provided and includes a pin adapted to be received in a selected one of said holes, said chain holder having securement means thereon for releasably securing said two mutually adjacent ends of said control chain together, said securement means including a chain tensioning means thereon for facilitating a tensioning of said control chain.

4,616,731
SPEAKER SYSTEM

James R. Robinson, 6001 W. Indianapolis, Phoenix, Ariz. 85033
Filed Mar. 2, 1984, Ser. No. 585,828
Int. Cl.^{4} H05K *5/00*
U.S. Cl. 181—148 **17 Claims**

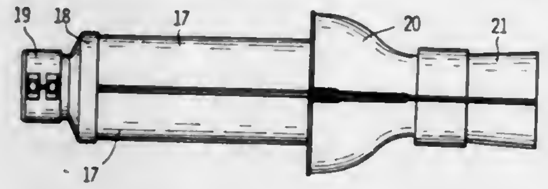
1. An improved speaker assembly, comprising:
a speaker having a frontal side;
a tube having one open inlet portion and at least one open outlet portion;
first means proximate said speaker for permitting the passage of air into said tube; and



second means coupled to said speaker and to said tube for positioning said inlet portion adjacent the frontal side of said speaker so as to receive sound waves therefrom.

4,616,732
SILENCING SYSTEM FOR EXHAUST GASES FROM INTERNAL COMBUSTION ENGINES

Luigi Carboni, Turin, Italy, assignor to S.I.V. S.p.A., Volvera, Italy, a part interest
Filed Sep. 10, 1985, Ser. No. 774,535
Claims priority, application Italy, Sep. 18, 1984, 67930 A/84
Int. Cl.^{4} F01N *1/10, 1/14, 7/02*
U.S. Cl. 181—232 **14 Claims**

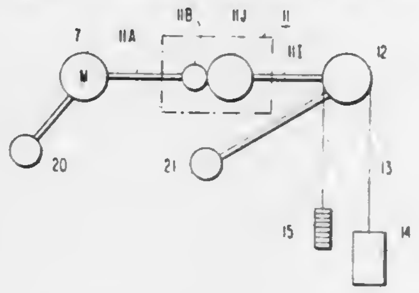


1. A silencing system for exhaust gases from internal combustion engines, comprising an intermediate silencing device having an inlet for connection to the exhaust manifold of an engine and an outlet, a final silencing device having an inlet for connection to the outlet of said intermediate silencing device and an exhaust outlet, wherein said final silencing device comprises an envelope, a number of spaced annular members arranged in said envelope forming a plurality of successive non-identical groups, and a number of perforated radial partition walls intersecting said annular members, whereby said annular members and partition walls define successive series of chambers having different characteristics which occupy the peripheral portion of said envelope and open towards the axial portion of said envelope by leaving said axial portion substantially free for passage of the flow of exhaust gases.

4,616,733
METHOD AND APPARATUS FOR REDUCING GEAR BACKLASH IMPACTS IN AN ELEVATOR SYSTEM

Toshiaki Ishii, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 26, 1984, Ser. No. 674,632
Claims priority, application Japan, Dec. 13, 1983, 58-234882; Dec. 16, 1983, 58-237343
Int. Cl.^{4} B66B *5/00*
U.S. Cl. 187—29 R **17 Claims**

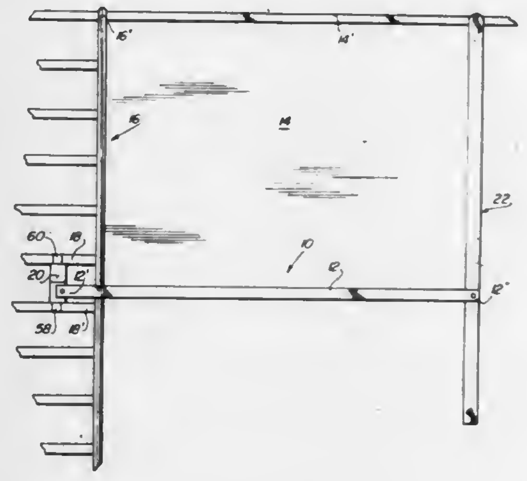
1. In an elevator system including a drive motor (**7**), a sheave (**12**) carrying a cable (**13**) having an elevator cage (**15**) suspended from one end and a counterweight (**14**) suspended from another end, and a speed reduction mechanism (**11**) comprising a first helical gear (**11B**) fixed to an output shaft (**11A**) of the motor and a second helical gear (**11J**) fixed to an input shaft (**11I**) of the sheave and operatively meshing with the first gear, a method for reducing collision impacts due to backlash during transitions between power/driving and regenerative/driven modes of operation, comprising the steps of:



(a) detecting a separation between teeth of the first and second gears, and
(b) reducing the torque applied to the output shaft by the motor in response to the separation detection to attendantly reduce a relative speed difference between the output and input shafts and thereby soften collision impacts upon the re-engagement of the gear teeth.

4,616,734
ROOF SCAFFOLDING

Philip Phelps, 1305 Eastern Dr., Urbana, Ill. 61801, and Ricky Rose, St. Joseph, Ill., assignors to Philip W. Phelps, Urbana, Ill.
Filed Sep. 20, 1984, Ser. No. 652,136
Int. Cl.^{4} E04G *3/12*
U.S. Cl. 182—45 **17 Claims**

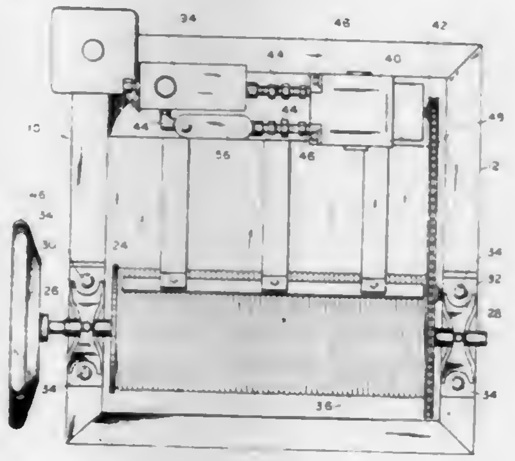


1. A firefighters' roof of scaffolding for use in forming ventilating holes in the roof of a building, which roof has a peak, comprising:
a cross beam of sufficient width to permit at least one firefighter to stand thereon to form at least one ventilating opening in the roof of a building, said cross beam having a first end and a second end;
a first attaching means mounted to said first end of said cross beam for attaching said first end of said cross beam to a first ladder emplaced on the roof to be ventilated, which first ladder is attached to the roof from the peak thereof and extends downwardly toward the lower edge of the roof; said first attaching means comprising a first mounting block, and ladder-rung holding means which firmly grip at least one rung of the ladder to attach said first end of said cross beam to the ladder; and
a second attaching means pivotally mounted to said second end of said cross beam for attaching said second end of said cross beam to one of a second ladder and a pole attached to the roof at a portion of the roof spaced from

the portion at which the first ladder is hung, said second attaching means comprising a second mounting block mountable to said second end of said cross beam in a plurality of relative positions so as to be able to fold the scaffolding during non-use and during carrying, and to readily and easily open up the scaffolding for use, means mounting said second attaching means for rotational movement relative to said second end of said cross beam in a plane parallel to a longitudinal side of said cross beam, means for firmly holding said second mounting block in each of said plurality of relative positions, and means attachable to said second mounting block for connecting said second end of said cross beam to one of the second ladder and the pole attached to the portion of the roof spaced along the peak of the roof from the portion thereof to which is connected the first ladder.

4,616,735
ESCAPE DEVICE FOR USE IN HIGH-RISE STRUCTURES

Orey C. Orgeron, 706 Souvenir Gate, Lafayette, La. 70506
Continuation-in-part of Ser. No. 477,143, Mar. 21, 1983, Pat. No. 4,520,900, which is a continuation-in-part of Ser. No. 438,035, Nov. 11, 1982, abandoned. This application Sep. 10, 1984, Ser. No. 648,770
Int. Cl.^{4} A62B *1/02*
U.S. Cl. 182—238 **11 Claims**



1. A fire escape device for use in lowering persons from high-rise structures, comprising:

a frame;

a spool rotatably mounted on the frame;

a cable wound around the spool;

a first sprocket wheel fixed to the spool for rotation therewith;

a fluid pump mounted on the frame and provided with a second sprocket wheel, the diameter of the second sprocket being less than the diameter of the first sprocket wheel, the second sprocket wheel being provided with the means for moving fluid through a fluid circuit from a discharge side to a suction side of the pump when the second wheel rotates;

a drive chain around the first and second sprocket wheels for transmitting rotational movement between the first and second sprocket wheels;

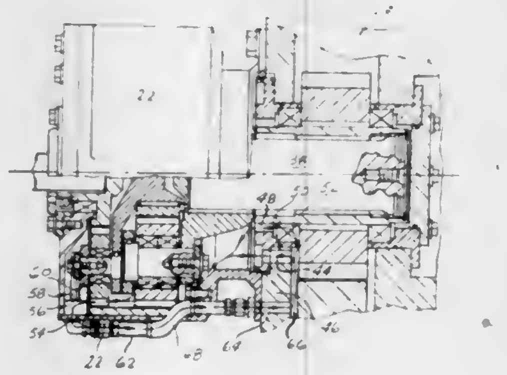
person engaging means attached to the cable;

a pressure compensated flow control valve in the fluid circuit for maintaining a constant speed of revolution of the spool independently of a weight exerting a downward force on the engaging means, wherein said compensated flow valve comprises a valve body with an inlet and an outlet, the valve body being divided by a barrier into an inlet chamber and an outlet chamber, the barrier preventing flow of fluid from the inlet to the outlet, the barrier being provided with a passageway therethrough, a first opening between the inlet chamber and the passageway and a second opening between the passageway and the outlet chamber, a movable piston between the first and second openings, an increase of pressure in the inlet chamber moving the piston into at least partially obstructive relationship to the flow of fluid through the second opening, thereby slowing the flow of fluid through the fluid circuit and breaking descent of the engaging means, the degree to which the piston obstructs the second opening being proportional to the pressure in the inlet chamber, the piston is spring biased into normally non-obstructive relationship to the flow of fluid through the second opening, the bias of the spring being overcome by increased pressure on the inlet side of the barrier to move the piston into at least partially obtructive relationship to the flow of fluids through the second opening; and

means for selectively, at least partially, obstructing the flow of fluid through the first opening, wherein the means for at least partially obstructing the flow of fluid into the first opening comprises a rod having a hole-plugging end adjacent the first opening, and means outside the valve body for selectively moving the plugging end into obstructing relationship with the first opening, wherein a reverse fluid flow aperture is provided in the barrier, the aperture being closed by a plug during flow of fluids through the fluid circuit during descent of the engaging means, the plug being displaced during reverse flow of fluid when rewinding the cable around the spool, wherein the plug is normally spring biased into closing relationship with the aperture, the spring constant of the spring around the plug, being lower than the spring constant of the spring biasing the piston out of obstructing relationship to the second opening, so that the plug is displaced more easily against the bias of its spring than the piston moves against the bias of its spring.

4,616,736
OIL SYSTEM FOR CONTIGUOUS GEAR BOXES

Charles H. Fox, Greenville, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Jul. 25, 1985, Ser. No. 758,782
Int. Cl.^{4} F01M *9/06*
U.S. Cl. 184—6.12 **5 Claims**



1. In a machine having gears in a first gear case contiguous to but separated by a common wall from and driven by gears in a smaller second gear case, an improved method of lubrication comprising the steps of:

a. forming an oil passage in said common wall between said first gear case and said contiguous second gear case,

b. forming an oil orifice in said second gear case remote from said wall oil passage,

c. forming an oil aperture in said first gear case,

d. connecting said second gear case oil orifice to said oil aperture of said first gear case externally of said gear cases,

e. forming a rotatable carrier in said second gear case, the periphery of which is adjacent to said oil orifice,

f. mounting a plurality of vanes on said carrier having outer ends for distributing oil throughout said second gear case, and

g. forming an internal projection on the inner periphery of said second gear case radially adjacent said outer ends of said vanes and adjacent to and circumferentially following

said oil orifice for forming a dam to catch oil distributed by said vanes to create a pressure head and force said oil out of said oil orifice thereby creating a pumping action which circulates said oil between said first and second gear cases through said external oil connection means and said oil passage coupling said first gear case to said second gear case whereby oil from a single oil supply is circulated between said gear boxes thereby eliminating the need for two separate oil supplies and enabling the oil in said second gear box to achieve lower operating temperatures than when operated with a separate oil supply.

4,616,737
BUFFER DEVICE

Makoto Orii, Nagano, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan
Continuation of Ser. No. 384,113, Jun. 1, 1982, abandoned. This application Dec. 3, 1984, Ser. No. 677,330
Claims priority, application Japan, Jun. 3, 1981, 56-81043[U]
Int. Cl.^{4} B60T *8/02*
U.S. Cl. 188—184 **6 Claims**

1. A buffer device, comprising:

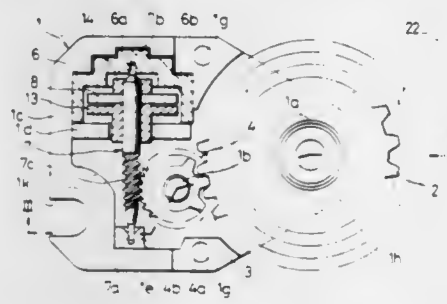
a first shaft having a worm portion;

a worm gear engaged with said portion;

a substantially planar damping member integrally formed of an elastic substance and connected to said first shaft at a central portion of said damping member, said damping member being outwardly openable and bending at an elastic portion of said damping member due to centrifugal force;

fixed sliding contact means with which said damping member contacts at, at least, two portions of said damping member when said damping member is opened outwardly, whereby rotation of said worm gear is frictionally damped; and

retaining means for holding said damping member;



wherein said retaining means comprises a planar retaining plate confronted with and spaced apart from movable outer portions of said damping member and contacting inner portions of said damping member, said contacting preventing rotation of said inner portions of said damping member with respect to said retaining plate.

4,616,738
DAMPED BORING BAR AND TOOL HOLDER

Norval E. Shurtliff, 87486 Cinnabar La., Veneta, Oreg. 97487
Filed Jul. 27, 1983, Ser. No. 517,665
Int. Cl.^{4} B23B *29/02;* **F16F** *7/10*
U.S. Cl. 188—380 **6 Claims**

4. A damped tool-holding assembly comprising:

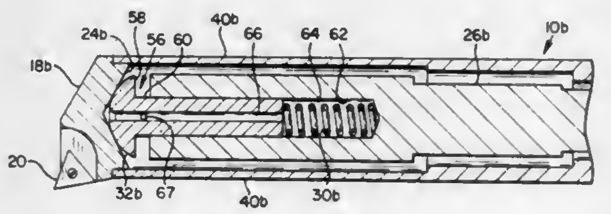
(a) a hollow, elongated case having a reach end and a shank end, the reach end being closed and having an inner front face and the shank end being open;

(b) tool-holding means on the reach end of the case;

(c) the inner front face of the closed reach end of the case providing a frictional bearing surface;

(d) within the case a weighted elongated damper body having a reach end and a shank end, the reach end having an axial bore therein;

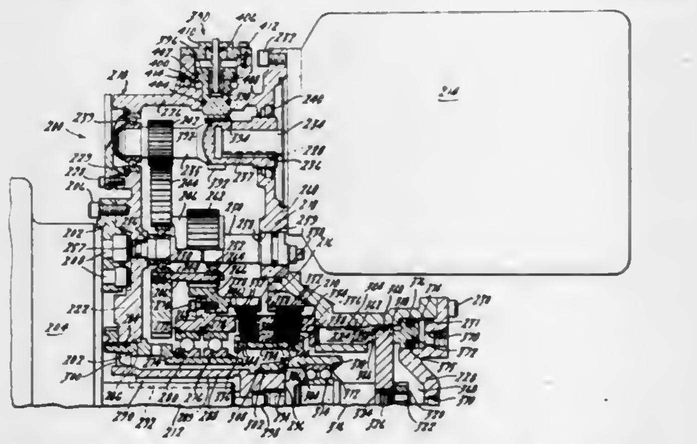
(e) a cap piece comprising a stem having a reach end and dimensioned for sliding fit in said axial bore and extending longitudinally beyond and spaced from the reach end of the damper body and having a cap on the reach end provided with a frictional bearing surface positioned for laterally slidable frictional engagement with the frictional bearing surface on the inner front face of the closed reach end of the case; and



(f) a spring directly engaging both the damper body and the cap piece for pressing the frictional bearing surface on the reach end of the cap against the frictional bearing surface on the inner front face of the closed reach end of the case.

4,616,739
INCHING DRIVE

Gordon M. Sommer, Boca Raton, Fla., assignor to Sommer Co., Warren, Mich.
Continuation-in-part of Ser. No. 403,300, Jul. 30, 1982, Pat. No. 4,494,635. This application Aug. 3, 1983, Ser. No. 521,243
The portion of the term of this patent subsequent to Jan. 22, 2002, has been disclaimed.
Int. Cl.^{4} F16D *67/04*
U.S. Cl. 192—18 A **7 Claims**



2. An inching drive unit for an apparatus having a housing, and a main rotatable member operably associated with said housing, said housing having a first portion having an interior portion, said inching drive unit comprising:

inching motor means for driving said inching drive unit, having a drive shaft extending therefrom;

a second portion of said housing secured to said inching motor means, said drive shaft of said inching motor means extending into said second portion of said housing;

first gear means disposed within said second portion of said housing and fixedly secured to said inching motor drive shaft;

a second member rotatably disposed within said second portion of said housing and extending into said first portion of said housing;

second gear means disposed within said second portion of said housing on said second member and operably engageable with said first gear means to be driven by said first gear means and thereby drive said second member;

third gear means also disposed on said second member spaced apart from said second gear means and disposed within said first portion of said housing;

fourth gear means operably associated with said main rotatable member of said apparatus; and

means for selectively engaging said third gear means with said fourth gear means wherein engagement of said third gear means with said fourth gear means permits said inching motor means to drive said main rotatable member of said apparatus.

4,616,740
MAGNETIC PARTICLE TYPE ELECTROMAGNETIC COUPLING APPARATUS

Kiyohide Okamoto, Himeji, and Ryosuke Okita, Aioi, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

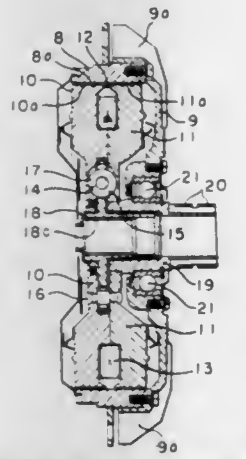
Filed Dec. 24, 1984, Ser. No. 685,795

Claims priority, application Japan, Dec. 26, 1983, 58-249072

Int. Cl.⁴ F16D *37/02, 3/12, 3/66*

U.S. Cl. 192—21.5 **3 Claims**

1. A magnetic particle type electromagnetic coupling apparatus characterized by comprising a first coupling body having a coupling surface at its inner circumferential part, a second coupling body constituted by two members divided in the axial direction which is placed inside the coupling surface of said first coupling body and has a coupling surface connectable to said coupling surface of said first coupling body, magnetic particles filled between said coupling surfaces, an electromagnetic coil received in said second coupling body to magnetize said magnetic particles thereby controlling connection between said coupling surface, a rotary body including a rotary plate placed at the inner circumferential part of said second coupling body and extending between said two members of the second coupling body with predetermined air gaps and having elongated holes extending in the circular direction at parts facing said two members, connecting pieces passing through said elongated holes to connect said two members of the second coupling body to said rotary plate, so as to transmit torque, said connecting pieces being supported at both ends by said members so as to reduce the stress on said connecting means and a damper means which is placed between said second coupling body and said rotary body so as to transmit torque and which is sealingly held between said two members of said second coupling body, wherein torque is transmitted only through said dampers until said dampers are compressed by a predetermined amount and then torque is transmitted through said connecting pieces, so as to reduce stress on said connecting pieces.



4,616,741
CLUTCH COVER ASSEMBLY

René Billet, Allée des Cerfs Résidence Beaularris, 60620 Lamorlaye, France, assignor to Valeo, Paris, France

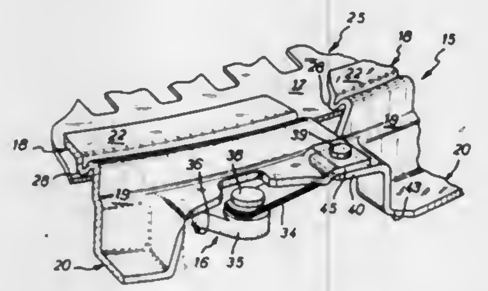
Filed May 10, 1985, Ser. No. 732,572

Claims priority, application France, May 15, 1984, 84 07468

Int. Cl.⁴ F16D *13/50, 13/71*

U.S. Cl. 192—70.18 **14 Claims**

1. Clutch cover assembly comprising an annular cover adapted to be attached to a reaction plate, an annular pressure plate rotationally coupled to said cover and movable axially relative to said cover, and axially acting elastic means bearing on said cover and continuously urging said pressure plate away from said cover, wherein said cover is circumferentially divided into separate sectors and means are provided whereby said sectors overlap.



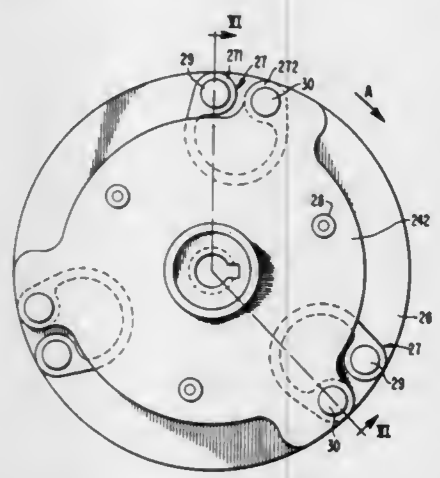
4,616,742
SPRING COUPLING FOR AN ELECTROMAGNETIC CLUTCH

Takashi Matsushita, Isesaki, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Mar. 30, 1983, Ser. No. 480,286

Int. Cl.⁴ F16D *19/00, 27/00*

U.S. Cl. 192—84 C **5 Claims**



1. In an electromagnetic clutch including a first rotatable member having an axial end plate of magnetic material, a second rotatable member, an annular armature plate of magnetic material joined to said second rotatable member so that said annular armature plate is capable of limited axial movement, said annular armature plate facing said axial end plate of said first rotatable member with an axial air gap therebetween, and an electromagnetic means associated with said axial end plate for attracting said armature plate to said axial end plate so that rotation of said first rotatable member can be transmitted to said second rotatable member through said armature plate by the operation of said electromagnetic means, the improvement comprising:

- said second rotatable member including a drive shaft, a hub fastened to the end of said drive shaft and a radially extending flange mounted on said hub;
- a plurality of spring members coupling said annular armature plate to said radially extending flange, each of said spring members having first fitting means coupling said spring member to said annular armature plate and second fitting means coupling said spring member to said radially extending flange, said first and second fitting means being positioned opposite each other at a predetermined gap for preventing excessive bending of said spring members when the predetermined gap is closed by the initial rotation of said annular armature plate in response to the operation of said electromagnetic means and said first rotatable member, said excessive bending being prevented by said first and second fitting means contacting each other.

4,616,743
CENTRIFUGAL CLUTCH PARTICULARLY USEFUL IN TRANSPORT REFRIGERATION UNIT

Robert K. Havemann, Bloomington, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

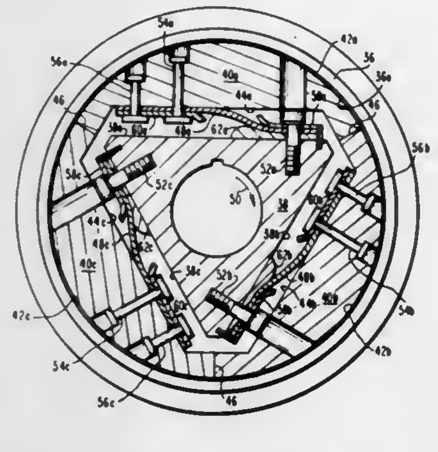
Filed Jan. 11, 1985, Ser. No. 690,718

Int. Cl.⁴ F16D *43/18*

U.S. Cl. 192—105 BA **7 Claims**

1. A centrifugal clutch having the capability of absorbing driving torque peaks from a driver, said clutch comprising:

- a clutch drum having an internal annular surface;
- a hub in said drum connected to be rotatably driven by said driver in one direction only;
- a plurality of friction shoes between said hub and drum, each shoe having a radially outer surface for contacting said internal surface of said drum, and a radially inner surface;
- the periphery of said hub comprising a plurality of successive surface areas corresponding in number to the plurality of said shoes; and
- a single leaf spring connecting each shoe to each said surface area, each spring being located between one of said surface areas of said hub and the facing part of said radially inner surface of said shoe, each said spring having one portion connected to the leading end portion, relative to said direction of rotation, of the respective surface area facing said shoe, and having the opposite end portion connected to a more trailing portion, relative to said direction of rotation, of said radially inner surface of said shoe, said single leaf spring being the sole connection between each shoe and said hub.



4,616,744
FRICTION CLUTCH UNIT WITH A STOP ELEMENT FOR LIMITING PRESSER PLATE TRAVEL

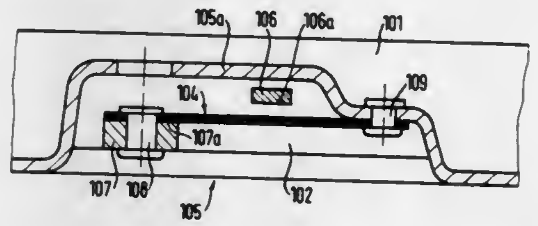
Dagwin Tomm, Kaiserslautern; Dieter Kolb, Bad Kissingen; Siegmund Gehrig, Arnstein-Binsfeld, and Alfred Meyer, Schweinfurt, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Jan. 14, 1985, Ser. No. 691,270

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1984, 3401366

Int. Cl.⁴ F16D *13/69, 13/71*

U.S. Cl. 192—109 R **4 Claims**



1. A friction clutch unit such as for motor vehicles, comprising a clutch housing (1) having an axis and adapted for being fixed to a driving disc (10), a presser plate (2) connected to said clutch housing (1) for common rotation therewith about said axis and for limited axial movement with respect to the clutch housing (1), main spring means (14) supported by said clutch housing (1) and engaging said presser plate (2) such as to urge said presser plate (2) towards a clutch disc (16) and said clutch disc (16) towards a friction face (18) of said driving disc (10), said presser plate (2) being connected to said clutch housing (1) by a plurality of leaf spring elements (4) which are substantially tangential with respect to said axis and are fixed by a first respective end (4*a*) to said clutch housing (1) and by a second respective end (4*b*) to said presser plate (2), travel limiting means being provided for limiting the axial travel of said presser plate (2) away from said clutch housing (1) under at least one of gravitational force and the action of said main spring means (14), said travel limiting means comprising at least one stop element (6) fixed to said presser plate (2) and located axially on the side of at least one of said leaf spring elements remote from said driving disc (10) and in tangential direction between said first (4*a*) and second (4*b*) ends of the respective leaf spring elements (4), said stop element (6) being axially spaced from the respective leaf spring element (4) in operation of the clutch and abutting said leaf spring element (4) on axial travel of said presser plate (2) away from said clutch housing (1) when said clutch housing is separated from said driving disc (10).

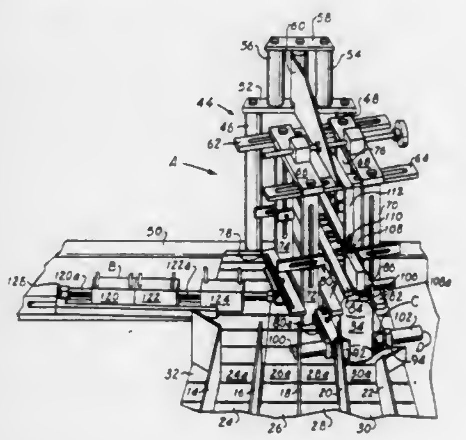
4,616,745
APPARATUS FOR ALIGNING AND FEEDING ARTICLES UPRIGHT ON AN ARTICLE LOADING MACHINE

Robert G. Hartness, 1720 Hudson, Greer, S.C. 29651

Filed Mar. 26, 1984, Ser. No. 593,574

Int. Cl.⁴ B65G *47/26*

U.S. Cl. 198—442 **14 Claims**



1. For use in an article loading machine of the type having a conveyor on which articles are conveyed, a plurality of parallel plates spaced across a width of the conveyor defining parallel lanes therebetween through which the articles are conveyed in separated parallel rows, apparatus for automatically feeding the articles into parallel lanes comprising:

- pivoting guide chute means carried by said article loading machine adjacent said conveyor for receiving the articles conveyed on the conveyor and holding the articles in a single file row;
- said pivoting guide chute means having an inlet end through which said articles are received and an outlet end from which said articles are fed into said lanes;
- indexing drive means for sequentially moving said pivoting guide chute means in a lateral motion across the width of the conveyor to successively position said outlet end of said pivoting guide chute means adjacent an entrance end of each said lane;
- releasable feed means means carried adjacent said outlet end of said guide chute means for engaging and retaining an article in a feed position in said chute until said chute reaches a discharge feed position adjacent said entrance of each said lane, said releasable feed means including:
  - (i) upper fixed rail means for contacting an upper portion of said article;
  - (ii) upper stop means for positioning said upper portion of said article adjacent said upper fixed rail means; and
  - (iii) lower oppositely moving stop means for contacting a

lower portion of said article on opposite sides thereof for a non-tilting arresting of said article therebetween;

actuation means included for opening said releasable feed means and feeding an article into said lane upon said pivoting guide chute means reaching one of said discharge feed positions;

said actuation means closing said releasable feed means to positively hold a next remaining article in said guide chute means in said discharge feed position while said pivoting guide chute means is moved to a next adjacent discharge feed position at an entrance end of the next adjacent lane; and

said indexing drive means including a plurality of air cylinders being connected serially together to advance said pivoting guide chute means across said conveyor.

4,616,746

APPARATUS FOR REMOVING STRIPS FROM COMPARTMENTS

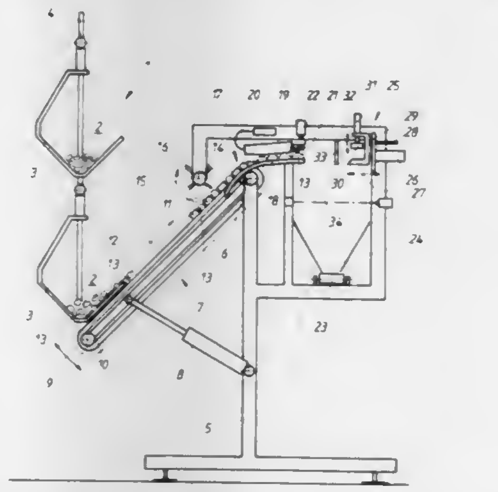
Peter Lisec, Bahnhofstrasse 34, 3363 Amstetten-Hausmening, Austria

Filed Jul. 27, 1984, Ser. No. 635,437

Claims priority, application Austria, Sep. 5, 1983, 3166/83

Int. Cl.⁴ B65G *47/14, 47/52*

U.S. Cl. 198—463.3 **10 Claims**



1. Apparatus for the removal of strips from a compartment wherein the strips are disposed horizontally, comprising an inclined conveyor (7) having an upper end and a lower end, said lower end being disposed in the vicinity of said compartment (2) to engage strips (13) in the compartment and raise the strips to said upper end, means (18) at said upper end of the conveyor for lifting strips off the conveyor and for forming an advancing series of strips (13), a further conveyor (23), and means (25) for removing strips from said lifting means and for depositing said removed strips on said further conveyor, said removing means (25) comprising gripper means that grasp the most advanced strip of said series of strips (13) on said lifting means (18) and move said most advanced strip transverse to the length of said strips off said lifting means, and a stop (33) arranged in the path of movement of the strips to contact said most advanced strip and remove said most advanced strips from said gripper means after which said most advanced strip falls onto said further conveyor (25), said lifting means (18) comprising a plurality of curved rails that receive said strips (13) transverse to the length of the rails, and a pressure member (19) spring urged toward the upper surface of each of said curved rails, the strips forcing each other into said series between said curved rails and said pressure member.

4,616,747

HAIR PIECE STORAGE AND CARRYING CASE

Marlin Zimmerman, 807 Williams Charles Ct., Apt. K, Green Bay, Wis. 54304

Filed Aug. 30, 1985, Ser. No. 771,501

Int. Cl.⁴ A45C *11/02;* **B65D** *25/10, 85/18*

U.S. Cl. 206—8 **5 Claims**

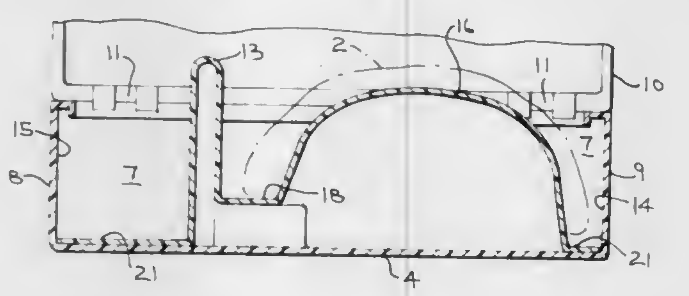
1: A hairpiece storage and carrying case, comprising:

a housing having a bottom wall, a plurality of upright side walls and a lid defining a hollow interior;

a divider for partitioning said hollow interior into a hairpiece-receiving compartment and an implement-receiving compartment;

a frame member disposed in said hairpiece-receiving compartment dimensioned to substantially conform to the shape of a human skull for supporting a hairpiece having front, rear and side portions thereon so that said front portion of said hairpiece is disposed between said frame member and said divider and said rear and side portions of said hairpiece are disposed between side frame member and said side walls; and

a landing interconnecting said frame member and said divider and defining a support surface in spaced relationship from said bottom wall to support the front portion of the hairpiece at a desired height above that of the sides and rear of the hairpiece to maintain the hairpiece in a simulated natural style of arranging hair.



4,616,748

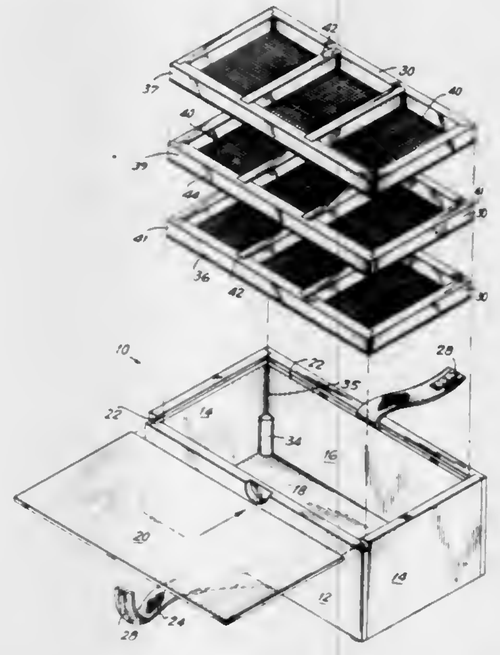
CONTAINER FOR ARTIST'S PASTELS

Warren R. Thomas, and Edna H. Thomas, both of 32 Park St., Johnson City, N.Y. 13790

Filed Dec. 31, 1984, Ser. No. 687,793

Int. Cl.⁴ A45C *11/34*

U.S. Cl. 206—214 **7 Claims**



1. An outer container for cleaning artist's pastels while storing or transporting them which comprises:

side, front and rear walls, a top and a bottom, the top being movable away from, and toward, the rear wall to at least partially open and to close the outer container;

means for supporting at least a first inner tray container above the bottom of the outer container; the first inner tray container being vertically removably supported on the supporting means and having a fully open top and an open mesh bottom adapted to hold a plurality of pastels thereon;

a freely flowing, granular abrasive below the first inner tray container;

the fully open top and mesh bottom of said first inner tray container comprising means for passage of the granular abrasive therethrough for cleaning the pastels thereon;

the top of the outer container comprising, when closed, means for retaining the granular abrasive in the outer container; and for restraining the first inner tray container from moving substantially away from the bottom of the outer container and for restraining the pastels within the first inner tray container from moving substantially away from the open mesh bottom of the first inner tray container when the outer container is inverted;

whereby the outer container constitutes means for storing the transporting pastels and is adapted to be inverted so that the granular abrasive passes through the open mesh bottom of the first inner tray container and around, and in abrasive contact with, the pastels to clean them while storing or transporting them.

4,616,749

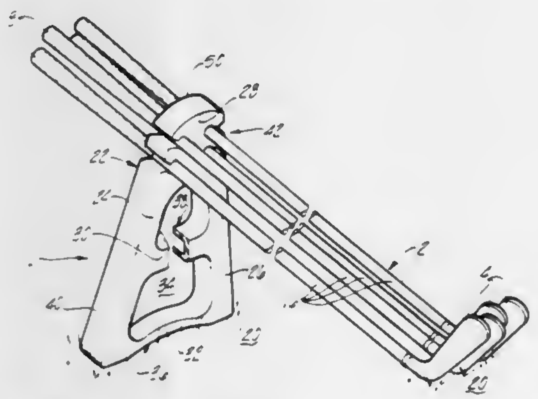
GOLF CLUB CARRIER AND HOLDER

Cyril F. Briggs, 1450 Inverness, Adrian, Mich. 49221

Filed Jan. 17, 1985, Ser. No. 692,404

Int. Cl.⁴ A63B *55/00*

U.S. Cl. 206—315.2 **5 Claims**



1. A golf club carrier for transporting and retaining a plurality of golf clubs each having a club head, a shaft and a grip, said grip being of a layered cross-section across the end of said shaft, said carrier comprising:

a body having a pair of downwardly extending legs, each leg having a first end and a second end, said first ends of said legs being joined at an apex at a top of said body and at least one lateral support extending between said legs wherein said legs and said support form first and second surfaces of said body and a peripheral edge, each leg further comprising an elongated planar portion;

said body being of a one piece molded construction,

means formed in said body for retaining a plurality of golf clubs, said retaining means comprising a plurality of notches formed in said peripheral edge, said notches being generally perpendicular to said first and second surfaces and wherein said notches extend through said body, said notches being formed at said apex of said body so that either leg can be freely grasped between said retaining means and said first end of said either leg;

wherein said planar portion of each leg extends continuously from said retaining means to said second end of each leg and forms a means for grasping and transporting said carrier, said grasping and transporting means being integrally formed in said body;

said notches having a cross-sectional area to disengagingly receive said shaft of said club but to engage said grip to retain said club when said club is moved in a longitudinal direction to bring said grip into said retaining means

wherein with the grips of golf clubs positioned in said notches and said carrier positioned on a ground support surface, said carrier together with said clubs form a stand in which said second ends of said legs and the club heads of the clubs abut against and are supported by the ground surface.

4,616,750

CONTAINER FOR THE STORAGE OF PHOTOGRAPHIC FILMS AND THE LIKE

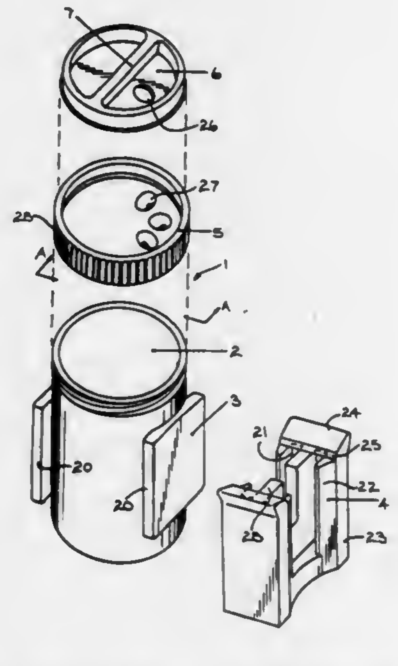
Bart Nouwen, Edelfalter 11, D-4044 Kaarst, Fed. Rep. of Germany

Filed Mar. 30, 1984, Ser. No. 595,308

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1983, 3312064

Int. Cl.⁴ B65D *85/671*

U.S. Cl. 206—316 **19 Claims**



1. A container assemblage for the storage of photographic films, film cartridges, film spools and the like comprising:

a pair of hollow cylindrical container bodies suitable for receiving films, cartridges or spools, said container having, on diametrically oppositely lying positions on its outer surface, projecting locking members;

a coupling element interposable between said container bodies for engaging said locking members, said coupling element arranging said container bodies along a common diametral line with which coupling element lying between the container bodies on said diametral line;

each of said projecting locking members of said container bodies comprising a pair of locking sections engageable with a mating pair of locking sections of said coupling element, said locking sections of said container bodies and coupling element being spaced from each other in a direction normal to said diametral line, said locking sections on said container bodies comprising a circumferentially spaced pair of ridges (12) projecting from the outer surface of said container bodies for forming locking grooves (41) between said ridges and the container body outer surface, said locking grooves formed between said ridges and said container body outer surface subtending acute angles, said coupling element having mating corners (13) insertable in said grooves; and

a container cover for each of said bodies, said cover being sealable to the respective container body, said cover having a rotatable indicator for indicating the condition of the contents of said container body.

4,616,751

SLEEVE FOR PROMOTIONAL PRODUCTS

Hampton E. Forbes, Jr., Wilmington, Del., assignor to Westvaco Corporation, New York, N.Y.

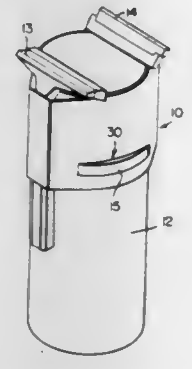
Filed Sep. 10, 1982, Ser. No. 416,643

Int. Cl.⁴ B65D *73/00*

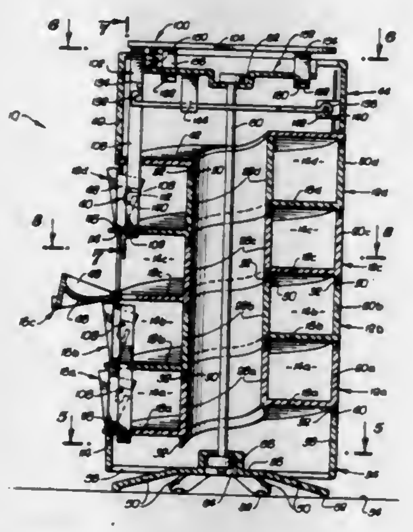
U.S. Cl. 206—485 **5 Claims**

1. In combination, a primary container and a display sleeve telescoped over and extending around said primary container said primary container comprising a can and lid of generally round configuration in cross section and adapted to be dis-

posed in an upright manner, said lid including a peripheral flange located near an end thereof and spaced from the top of the lid, and a display sleeve of generally elliptical configuration in cross section, formed from a single blank of foldable material and comprising at least two elongated main penels of substantially rectangular shape and a glue flap foldably attached to one main panel and adhered to the end of the other main panel, the height of all panels of said display sleeve being greater than the nominal height of said primary container lid, said display sleeve including at least one pair of locking slots located in the main panels near the lower edges thereof, said locking slots extending over a major portion of the length of said main panels and having a width dimension substantially equal to the width of said primary container lid flange, wherein with the display sleeve telescoped over said primary container lid, said locking slots become engaged with said peripheral flange to retain said display sleeve on said primary container, and spaces are formed at each end of said display sleeve between the generally round edges of said primary container lid portion and the ends of the elliptically shaped display sleeve for accomodating and retaining one or more promotional products with said primary container.

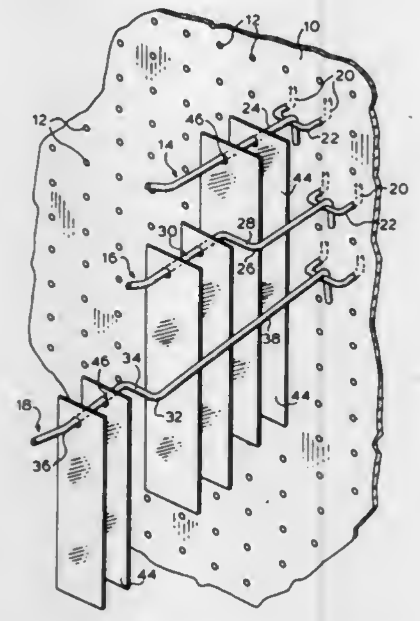


4,616,752
PILL DISPENSER
Brad Ridgley, 16400 Ventura Blvd., #233, Encino, Calif. 91436
Filed Oct. 30, 1984, Ser. No. 666,550
Int. Cl.⁴ B65D *83/04*
U.S. Cl. 206—533 **16 Claims**



1. A container for storing and dispensing pills comprising:
a wall defining an interior space within which pills are stored, said wall further defining an aperture providing access to the interior space; and a spiral-shaped downward sloping floor positioned relative to the aperture for supporting and guiding the pills to the aperture.

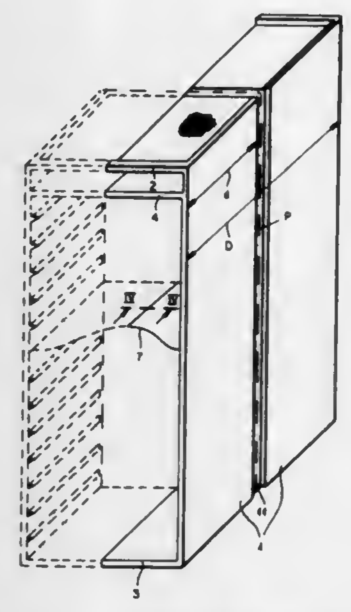
4,616,753
PEGBOARD HANGERS
Ozay Aslan, Brampton, Canada, assignor to Cochrane-Dunlop Limited, Etobicoke, Canada
Filed Oct. 15, 1985, Ser. No. 787,187
Int. Cl.⁴ A47F *7/00*
U.S. Cl. 211—57.1 **2 Claims**



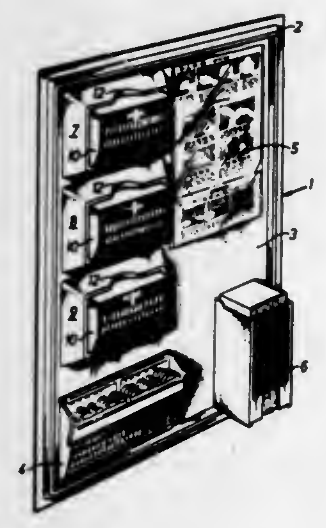
1. A package-display apparatus comprising a base having a plurality of holes arranged in equispaced horizontal and vertical rows, a plurality of vertically-aligned bracket rods having mounting means at one end for attaching said rods to the base, said rods each having a distal end extending in a direction away from the base, the uppermost rod of said plurality of rods being linear and mounted in a first pair of vertical rows of holes, each successively lower bracket rod beinq mounted in a pair of vertical rows of holes laterally offset at least one row of holes from said first pair of vertical rows of holes, said successively lower rods having lateral, horizontally offset portions formed in the distal ends progressively more distant from the base whereby merchandise supported on said rods on the horizontally offset distal portions thereof are vertically aligned in horizontal rows more distant from the base at progressively lower levels.

4,616,754
MANUFACTURE OF TRAY HOLDER FROM SINGLE MOLDED ARTICLE
Burno Heinzl; Herbert Frowein; Hartmut Stiegler, all of Herborn; Joachim Würz, Driedorf; Horst Schmidt, Trinkenstein; Willi Huttel, Ehringshausen, and Karl-Heinz Schmitz, Herborn-Seelbach, all of Fed. Rep. of Germany, assignors to Buderus Aktiengesellschaft, Wetzlar, Fed. Rep. of Germany
Filed Mar. 27, 1984, Ser. No. 593,874
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1983, 8309164[U]
Int. Cl.⁴ A47G *29/00*
U.S. Cl. 211—71 **8 Claims**

1. An article for making a tray holder, the article comprising:
a generally rectangular side panel having upper and lower edges and inner and outer faces;
a generally rectangular roof panel projecting generally perpendicularly from the inner face of the side panel along the upper edge thereof; and
a generally rectangular floor panel projecting generally perpendicularly from the inner face of the side panel along the lower edge thereof, the panels being unitary and formed along a plane perpendicular to and bisecting all panels with a weakened region, the roof and floor panels having straight outer edges remote from the side panel that have a predetermined male profile to one side of the plane and a complementary female profile to the opposite side of the plane, whereby the article can be subdivided at the region into two complementary and interfitting pieces along the plane and joined together to make a holder by bonding together the complementary outer edges.

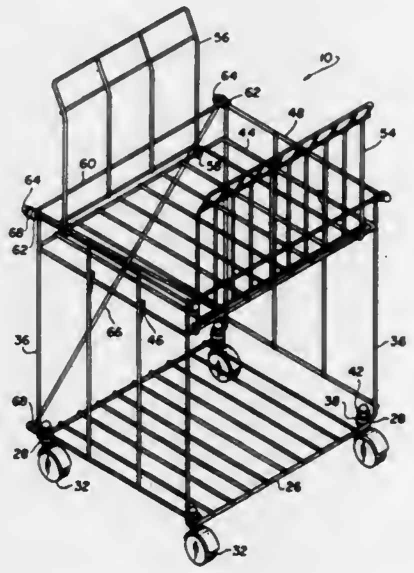


4,616,755
MEANS FOR WALL BOARDS
Roger Adolfsson, Stockholm, Sweden, assignor to Cederroths AB, Sweden
Continuation of Ser. No. 386,023, Jun. 7, 1982. This application May 4, 1984, Ser. No. 607,150
Int. Cl.⁴ A47F *5/08*
U.S. Cl. 211—89 **10 Claims**



1. In combination:
(A) a board for displaying and releasably holding articles such as medical articles, said board comprising:
  (1) a generally flat rear sheet having a shape which permits it to be hung on a wall;
  (2) a plurality of compartments extending outwardly from a front surface of said sheet, each of said compartments being defined by a rear wall lying generally parallel to said rear sheet and four smooth planar side walls extending from said rear wall in a direction generally perpendicular to the plane of said flat rear sheet and defining an open parallelepiped recess; and
(B) at least one medical article, each said article being located in a respective said compartment, each said article having a shape which allows it to be snuggly received in its said respective said compartment, the rigidity of said side walls of each said compartment being greater than the rigidity of its respective said article such that each of said articles is elastically deformed by said side walls and is held in its said respective compartment by the friction force resulting from the compressive forces exerted on said rigid side walls of said respective compartment by the said elastically deformed article located therein, the depth of each of said article as measured in a direction perpendicular to said rear surface being greater than the depth of its respective said compartment such that said articles extend outwardly from their respective compartments along substantially the entire periphery of it's respective compartments and can easily be grasped from a position in front of said compartment, the side walls of each said article contacting substantially the entire surface of said side walls of its respective compartment.

4,616,756
READILY ASSEMBLED TWO-SHELF CART
Gilbert J. Holtz, 188 Tibbetts Rd., Yonkers, N.Y. 10705
Filed Apr. 26, 1984, Ser. No. 604,240
Int. Cl.⁴ A47F *5/01*
U.S. Cl. 211—181 **3 Claims**

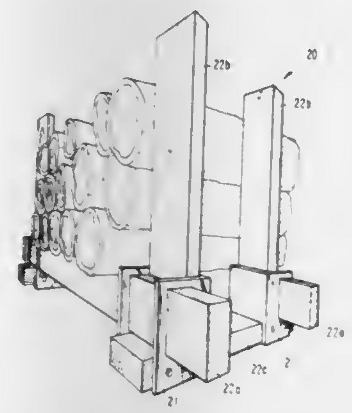


1. A readily assembled two-shelf cart adapted in said assembled condition to store and receive fan-folded computer paper comprising, in combination, a rectangular horizontally oriented lower shelf having an extending eyelet at each corner for supporting a shelf for said fan-folded computer paper thereon, a pair of vertically oriented side walls each having inwardly extending eyelets at opposite ends along their bottom edge in aligning relation to said eyelets of said lower shelf, casters at each corner of said cart each having an upstanding axle adapted to be secured in a projected relation through said aligning eyelets of said lower shelf and side walls for partially completing the assembly of said cart, and hook means provided inwardly of each of said side walls and an upper shelf engaged therein so as to be supported in spanning relation between said side walls, whereby the engagement of said upper shelf between said side walls completes the assembly of said cart and provides a support for said computer paper after the imprinting thereof.

4,616,757
THREE AXIS CORNER BRACKET
Willis S. Hobson, Columbus, Ind., assignor to Seymour Manufacturing Company, Seymour, Ind.
Filed Nov. 9, 1984, Ser. No. 669,827
Int. Cl.⁴ A47F *7/00*
U.S. Cl. 211—189 **15 Claims**

1. A corner bracket for use as a part of a support system wherein a plurality of said brackets is used in combination with connecting members to complete said system, said corner bracket comprising:
a three-sided hollow frame member having first and second sides facing each other and a third side disposed between said first and second sides;

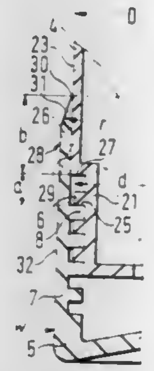
said first side being designed and arranged to define a first opening, said first opening being suitably sized and shaped for receipt of a first connecting member;
said second side being designed and arranged to define a second opening, said first and second openings being aligned with each other and being of a similar shape;
said third side defining in combination with said first and second sides, a channel which is suitably sized and shaped for receipt of a second connecting member, and said third side further defining a third opening, said third opening being suitably sized and shaped for receipt of a third connecting member; and
said third opening being of a shape similar to said first and second openings all of said openings being of a shape similar to said channel.



4,616,758

INSULATING CONTAINER, IN PARTICULAR INSULATING BOTTLE

Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany, assignor to Rotpunkt Dr. Anso Zimmermann, Niederaula, Fed. Rep. of Germany
Filed Feb. 22, 1985, Ser. No. 704,633
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1984, 8407009[U]
Int. Cl.⁴ A47J *41/00*
U.S. Cl. 215—13 R **3 Claims**

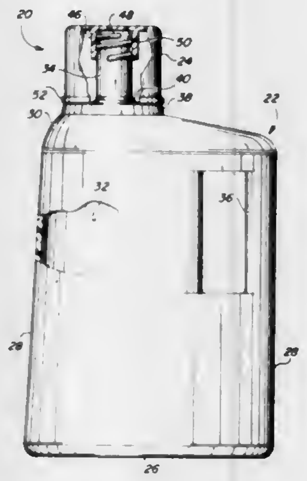


1. In an insulating container, in particular an insulating flask, with a vacuum glass insert and a hollow cylindrical housing surrounding the latter, which housing consists basically of an upper housing part and a lower housing part, in the form of a base with a raised-up edge and at least one supporting means for the arrangement and mounting of the vacuum glass insert, wherein the upper housing part and the edge of the base are provided with a screw thread and are screwed together until the supporting means is arranged on the vacuum glass insert, wherein the upper housing part has an outer screw thread and the inner screw thread is formed on the edge of the base and wherein a cover ring is provided, which covers an unused area of the outer screw thread; the improvement comprising in that the cover ring is formed by a single-piece extension of the edge of the base, the cover ring overlaps the upper housing part beyond the outer screw thread, the covering being internally dimensioned so as to roughly closely surround the upper part of the housing, and the free end of the cover ring converges conically into the housing wall.

4,616,759

LIQUID-DISPENSING CONTAINER ASSEMBLY

Darrell Mahler, 2600 Hodgson Cir., Topanga, Calif. 90290
Filed Nov. 8, 1985, Ser. No. 796,167
Int. Cl.⁴ B65D *51/24*
U.S. Cl. 215—228 **9 Claims**

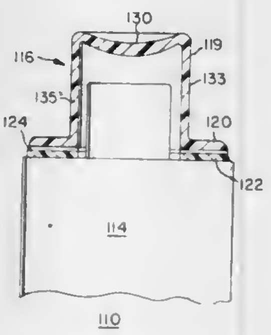


1. An improved cap-containing, liquid-dispensing container assembly, said assembly comprising, in combination:
(a) a container having interconnected bottom, side and top walls defining a hollow interior storage space, said top wall having an upstanding liquid-dispensing pour spout communicating with said storage space, a raised cap base-receiving annular platform disposed peripheral of the base of said spout, and a recessed liquid drainage channel between said platform and said spout, said channel including a bottom drain hole communicating with said storage interior;
(b) a measuring cap disposed over and releasably secured to said spout by first sealing means, the base of said cap abutting said platform; and,
(c) second sealing means releasably sealing said cap base to said platform.

4,616,760

PORT AND CLOSURE ASSEMBLY FOR A CONTAINER

Jean Kersten, Villers St. Amand, and Jean M. Mathias, Nivelles, both of Belgium, assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Jan. 30, 1985, Ser. No. 696,567
Int. Cl.⁴ B65D *41/02*
U.S. Cl. 215—232 **12 Claims**

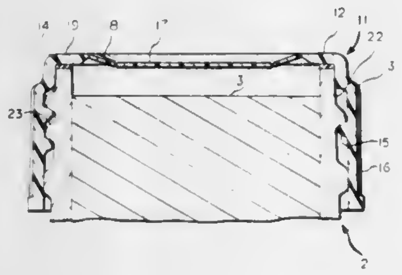


1. A port and closure assembly for a container comprising:
a port having a neck portion;
a closure for sealing the port having a cup shaped construction and including a body member having a top portion and sidewalls, and a rim member, the cross-sectional width of the top portion being greater than the cross-sectional width of the sidewalls and the rim member having a bonded thereto an interface layer, the interface layer being bonded to the neck portion of the port when the closure seals the port; and
the bond strength of the interface layer to the rim member of the closure being less than the bond strength of the interface layer to the neck portion of the port so that when the sidewalls are compressed together the interface layer delaminates from the rim member of the port and the closure may be removed from the port.

4,616,761

VACUUM INDICATING THERMOPLASTIC CLOSURE

James F. Nolan, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Nov. 19, 1984, Ser. No. 673,063
Int. Cl.⁴ B65D *41/04*
U.S. Cl. 215—271 **20 Claims**



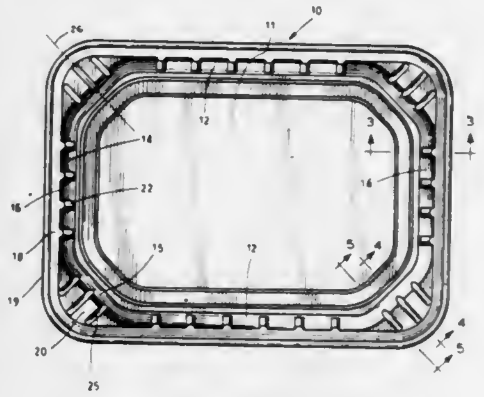
1. In combination with a container containing a vacuum-packed product therein and having a finish portion for receiving a closure to close and seal said container, a closure sealingly engaging the finish portion of said container, said closure comprising, in combination: a top portion spanning the finish of the container; and an annular skirt extending downwardly from the top portion over the upper portion of the finish and securely engaging said finish, said top portion being formed from a generally planar thermoplastic material and comprising a circular inner portion, an annular portion surrounding said circular inner portion and a second annular portion surrounding said first annular portion, said circular inner portion, said first annular portion and said second annular portion being integrally formed in one piece with the circular inner portion being hinged to said first annular portion and the first annular portion being hinged to said second annular portion, the plane of said generally planar circular inner portion being movable with respect to the plane of the second annular portion from a first dimensionally stable postion when there is a vacuum in the container to a second dimensionally stable position when there has been a loss of the desired vacuum in the container, with the second dimensionally stable position being higher in elevation than the first dimensionally stable position when the container is in its normal upright position.

4,616,762

DISPOSABLE COOKING PAN

Frederick D. Alexander, Arlington Heights, Ill., assignor to Ekco Products, Inc., Wheeling, Ill.
Filed Apr. 2, 1985, Ser. No. 719,262
Int. Cl.⁴ B65D *8/08, 1/39, 1/42*
U.S. Cl. 220—74 **3 Claims**

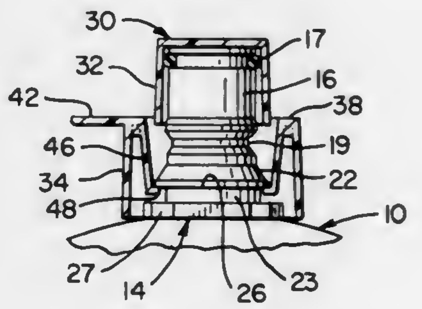
1. A disposable cooking pan formed from a single sheet of thin gauge metal, comprising a bottom panel; a continuous wall panel encompassing said bottom panel and extending upwardly and outwardly from the periphery thereof; and a continuous rim encompassing an upper edge portion of said wall panel and projecting laterally outwardly therefrom; said rim including a substantially planar inner section and a bead-like outer section, the outer section encompassing a multilateral area including the inner section, said inner section having relatively spaced enlarged areas disposed adjacent corner-forming portions of said outer section, said enlarged areas being provided with elongated strengthening ribs extending towards the upper edge portion of said wall panel; wherein each strengthening rib formed in the enlarged areas of the rim inner section includes a first segment declining at a first angle from adjacent the rim outer section towards the wall panel and terminating a predetermined distance from the wall panel, and a second segment declining at a second angle from the termination of said first segment to the wall panel, said second angle being greater than said first angle, said second segment terminating at the wall panel at a location substantially below the upper edge portion of the wall panel.



4,616,763

TAMPER-EVIDENT DISPOSABLE CAP FOR CONTAINER VALVE PLUG

Gerald F. Ruhl, Greenville, Ohio, assignor to Replicap Products, Inc., Greenville, Ohio
Filed Dec. 3, 1985, Ser. No. 804,684
Int. Cl.⁴ B65D *41/32*
U.S. Cl. 220—270 **16 Claims**



1. A protective one-piece tamper-evident cap for mouting on a valve plug projecting from a fluid container, said cap being molded of a plastics material and comprising an inverted cup-shaped upper cover portion having an annular wall completely surrounding the plug and being closed by a top wall, said cap further including an annular lower skirt portion projecting downwardly from said upper cover portion and being larger in cross-section than said cover portion, a plurality of peripherally spaced frangible ties integrally connecting said upper cover portion to said lower skirt portion, a plurality of peripherally spaced spring fingers integrally connected to said lower skirt portion outwardly of said frangible ties and positioned to engage the valve plug, and means for separating said lower skirt portion and said fingers from said upper cover portion by breaking said frangible ties in response to a force manually applied to one of said portions of said cap to provide access to the valve plug.

4,616,764

CASE HAVING SNAP-ON COVER

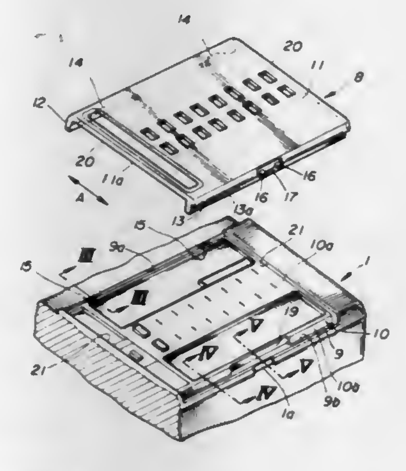
Yoshihiro Utoh; Shinichi Shibata, both of Hino, and Hiroyuki Kitahara, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Dec. 2, 1985, Ser. No. 803,735

Claims priority, application Japan, Nov. 30, 1984, 59-251555

Int. Cl.⁴ B65D *41/16, 41/18*

U.S. Cl. 220—306 **7 Claims**



1. A case comprising:

a cover;

a main body of said case, said main body having a concave portion to which said cover is mounted;

first engaging means for preventing one edge of said cover from moving away from one side wall of said concave portion;

second engaging means for preventing another edge, of said cover opposing to said one edge from moving away from another side wall of said concave portion opposing to said one side wall; and

positioning means for preventing, in the vicinity of said another side wall of said concave portion, said cover from moving toward said one side wall of said concave portion.

4,616,765

HINGE STRUCTURE WITH TORSION BAR FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

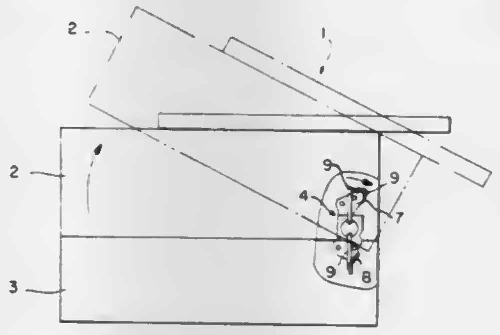
Tutomu Katoh, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 7, 1985, Ser. No. 785,216

Claims priority, application Japan, Oct. 12, 1984, 59-155582[U]

Int. Cl.⁴ B65D *43/24*

U.S. Cl. 220—335 **5 Claims**



1. An electrophotographic copying machine comprising:

first body means accommodating parts of the electrophotographic copying machine;

second body means accommodating the other parts of the copying machine;

torsion bar means for stressing said first body means in a predetermined direction; and

adjustment means provided for controlling the stressing force of said torsion bar means.

4,616,766

CAN-LIKE CONTAINER

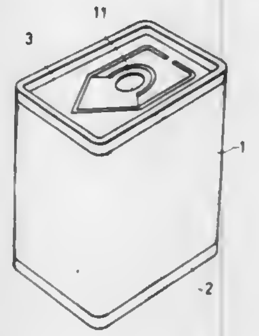
Otohiko Miyauchi; Michihiro Ohkawachi, and Junji Yotsuyanagi, all of Kanagawa, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1984, Ser. No. 661,747

Claims priority, application Japan, Oct. 17, 1983, 58-192452; Oct. 18, 1983, 58-193439

Int. Cl.⁴ B65D *1/34*

U.S. Cl. 220—450 **18 Claims**



1. A can-like container comprising:

a container body having side walls and a bottom, said container body being formed of a single multi-layer sheet composed of at least a metal foil layer and a hot-melt resin layer formed on at least one side of said metal foil layer, said metal foil layer having a thickness of no more than 40 m, at least margin portions of said container body containing folds in side wall portions thereof;

a cover made of a multi-layer sheet compsed of at least a metal foil layer and a hot-melt resin layer formed on one side of said metal foil layer, at least peripheral portions of said hot-melt resin layer of said cover being heat-sealed to said hot-melt resin layer of said container body; and

a tray injection molded directly to the outer surface of said container body, said tray enclosing at least a lower portion of the outer surface of said container body.

4,616,767

TISSUE PAPER BOX

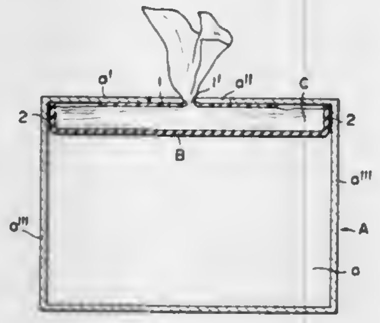
Mitsuro Seido, 26 Ooaza Maemachi, Kuroishi-shi, Aomori-ken, Japan

Filed Jun. 8, 1984, Ser. No. 618,610

Claims priority, application Japan, Jun. 9, 1983, 58-88870[U]

Int. Cl.⁴ A47K *10/42;* **B65H** *1/04*

U.S. Cl. 221—58 **3 Claims**



1. A tissue paper box comprising:

a plurality of side walls, a bottom wall and a top wall which define an enclosure for containing tissue papers;

said top wall being cut-away to define a paper outlet through which said tissue papers can be removed;

said side walls being collapsible to provide said tissue paper box in compact form after at least some of said tissue papers are removed therefrom;

at least one elastic strip provided in said box and secured to interior surfaces of at least one wall of said box for biasing said tissue papers toward said paper outlet, said at least one elastic strip being at least partly removable through said paper outlet when all of said tissue papers are removed from said box, to be wrapped around said box so as to maintain said box in said collapsed, compact form.

4,616,768

DISCHARGE BARRIER FOR COLLAPSIBLE TUBES

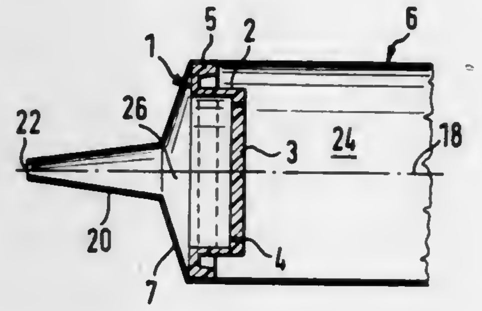
Gustav Flier, Rottenburg, Fed. Rep. of Germany, assignor to Lingner & Fischer GmbH, Bühl (Baden), Fed. Rep. of Germany

Filed Jun. 1, 1984, Ser. No. 616,048

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1983, 3320482; Jul. 14, 1983, 3327852; Jul. 27, 1983, 3327853; Jan. 25, 1984, 3402478

Int. Cl.⁴ B65D *35/14*

U.S. Cl. 222—92 **49 Claims**



45. A valve member for insertion into a container having a flexible tubular wall and having a discharge opening to emit material stored in the container when the tubular wall is squeezed, the container additionally having a shoulder region adjacent the discharge opening, said member comprising:

a unitary plastic dividing element which includes

an annular holding flange having first and second ends and an outer surface between the first and seconds ends, the first end of the holding flange being disposed adjacent the shoulder region and the outer surface of the holding flange being pressed against the tubular wall of the container when the valve member is inserted into the container,

a tubular mounting portion having first and second ends, the mounting portion being disposed within the holding flange with the first end of the mounting portion being oriented toward the first end of the holding flange and with the second end of the mounting portion being oriented toward the second end of the holding flange,

first means, sealingly connecting the first ends of the mounting portion and holding flange, for mounting the mounting portion at a position spaced apart from the holding flange, there being an annular recess between the mounting portion and the holding flange,

a flexible partition having a periphery and at least one slit adjacent the periphery, and

second means for sealingly connecting the periphery of the partition to the second end of the mounting portion.

4,616,769

DOLL HAIR MAKER AND METHOD OF USE

Thomas F. Steigler, and Pamela S. Steigler, both of 800 Johnson St., Coos Bay, Oreg. 97420

Filed Aug. 27, 1984, Ser. No. 644,462

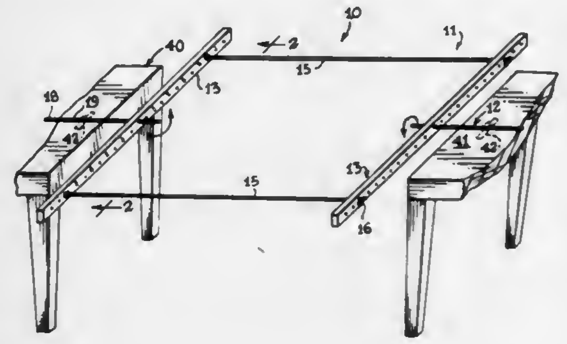
Int. Cl.⁴ A41H *43/00*

U.S. Cl. 223—46 **4 Claims**

1. An apparatus used in combination with at least one elongated length of yarn, a sewing machine and a plurality of elevated generally horizontal independent support surfaces for the purpose of creating hair pieces for cloth dolls wherein the apparatus comprises:

an adjustable framework unit comprising: a plurality of elongated generally rectangular apertured framework members having a plurality of aligned apertures disposed along their length, and at least one centrally disposed aperture intermediate said plurality of aligned apertures; a plurality of elongated rod elements adapted to be received within the apertured framework members and be secured thereto via securing means;

a relatively rotatable support unit operatively connected to the apertured framework members and adapted to suspend and rotatably support the adjustable framework unit on the generally horizontal independent support surfaces; and,



means associated with said support unit to constrain the relative rotational movement of the support unit with respect to the generally horizontal independent support surfaces.

4,616,770

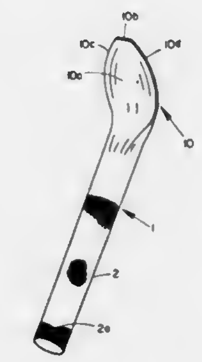
QUILTING TOOL

Thelma D. Johns, 514 Fairway Dr., Kerrville, Tex. 78028

Filed Oct. 10, 1985, Ser. No. 786,060

Int. Cl.⁴ D05B *91/04*

U.S. Cl. 223—101 **5 Claims**



1. A quilting tool comprising a rod-like handle grippable by at least three fingers of the user, a spoon shaped tool portion rigidly secured to one end of said handle, said tool portion defining a concave surface snugly engagable by the thumb or index finger of the user, whereby said tool portion may be firmly held in a generally vertical position beneath a laminated assembly of cloths to be sewn, said spoon shaped portion having a generally horizontal top end portion having a horizontal length less than 0.375 inches engagable with the cloth laminations and shaped to form an upstanding, limited length, narrow ridge in the quilting cloth laminations, thereby facilitating the passage of a threaded needle through said ridge.

4,616,771

MODULAR LUGGAGE RACK WITH ACCESSORIES

Robert C. Heideman, Studio City, Calif., assignor to AMCO Manufacturing Corporation, N. Hollywood, Calif.

Division of Ser. No. 88,864, Oct. 29, 1979, Pat. No. 4,358,037. This application Nov. 5, 1982, Ser. No. 439,430

The portion of the term of this patent subsequent to Nov. 9, 1999, has been disclaimed.

Int. Cl.⁴ B60R *9/00*

U.S. Cl. 224—321 **2 Claims**

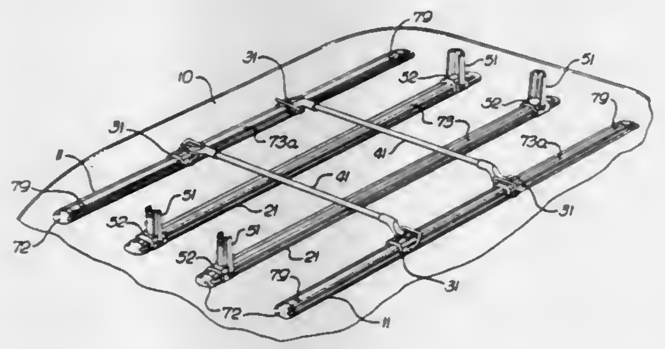
1. A slidable, lockable bracket for use in a vehicle-mounted

luggage carrier having a plurality of slats, each with external tracks formed along opposite edges thereof, said bracket comprising:

a housing adapted to span the width of such a slat and slidably engage such external tracks;

an intermediate clamping member retained by the housing but movable with respect thereto, and wherein the clamping member is positioned between the housing and at least one such track and is adapted to fit slidably along such at least one track when the housing is engaged with such tracks;

means for applying force between the housing and the clamping member, the force-applying means comprising a screw threaded through the housing, manipulable from outside the housing and engaging the clamping member inside the housing, whereby when the housing is engaged with such tracks the clamping member may be forced against such at least one track;



the aforesaid bracket in combination with means for use in restraining such luggage and in combination with at least one such slat, the slat having external tracks formed along its opposite edges and a trim strip secured along its center and extending upwards above the tracks; and

wherein the central portion of the clamping member is contoured upward to clear the trim strip while remaining in contact with at least one track.

4,616,772

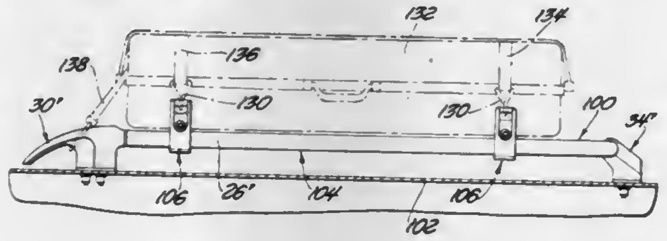
CARRIER RACK AND STANCHION

Ray G. Mareydt, 1800 W. Maple Rd., Troy, Mich. 48084

Continuation of Ser. No. 462,332, Jan. 31, 1983, abandoned. This application Nov. 29, 1984, Ser. No. 676,112

Int. Cl.⁴ B60R *9/04*

U.S. Cl. 224—326 **1 Claim**



1. A carrier rack of the type adapted to be mounted upon an exterior surface of the trunk portion of a vehicle, said rack including a load restraining rail supported by stanchion means above the vehicle trunk surface and fastening means adapted to secure said stanchion means to said surface, the improvement comprising:

a. said rail being of a U-shape configuration with its closed end portion extending transversely of the rearward end of the trunk surface and a pair of transversely spaced leg portions projecting forwardly from the closed end portion and respectively terminating toward the forward end of said trunk surface,

b. a first pair of stanchion members adapted to support respectively the forward ends of the rail leg portions, each stanchion comprising:

(1) a pedestal having a base adapted to be supported upon the trunk surface,

(2) fastening means coacting with said pedestal and adapted to engage with the trunk surface to fasten each stanchion thereto,

(3) a first integral portion projecting rearwardly from the upper end of said pedestal and telescopingly supporting the forward end of one rail leg portion above said trunk surface,

(4) a second integral tie-down portion longitudinally aligned with said first integral portion and projecting forwardly and downwardly from the upper end of said pedestal, said second integral portion having an unsupported end spaced forwardly of the pedestal and terminating proximate said trunk surface in a spaced relationship thereto whereby said second integral portion and said pedestal coact to define a cargo tie-down opening, said second integral portion has a curved shape extending downwardly from the upper end of the pedestal, said pedestal including an outwardly opening recessed portion and said fastening means disposed within said recessed portion, and a flexible cover member adhered to said pedestal so as to enclose said recessed portion and said fastening means, and wherein said flexible cover member being flush with the upper end of said pedestal, and

c. a second pair of stanchion members supporting the closed end portion of said tubular rail above the trunk surface, and

d. rail mounting devices for securing at least one cross rail member between said spaced leg portions, each rail mounting device including first and second coacting elements, said first coacting element including a portion projecting within an open end of said cross rail member, said second coacting element secured to said first coacting element for clamping engaging a rail leg portion therebetween, and said second coacting element including an upper portion which is spaced vertically above said cross rail member and having an opening therethrough for receiving one end of a tie-down member.

4,616,773

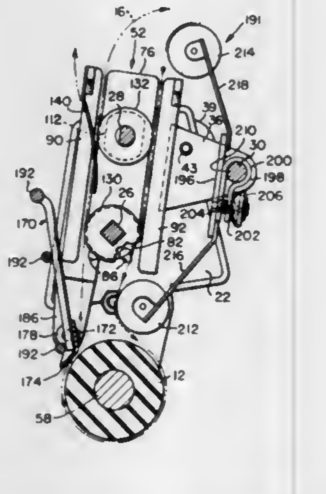
FORMS FEEDING APPARATUS

Leo J. Kerivan, Somerset, Mass., assignor to Precision Handling Devices Inc., Fall River, Mass.

Filed Apr. 27, 1984, Ser. No. 604,761

Int. Cl.⁴ B65H *17/38, 35/10*

U.S. Cl. 225—99 **73 Claims**



1. Continuous forms feeding apparatus for use with a platen which comprises tractors engagable with feed perforations along margins of the forms which are partially severed by side perforations, successive ones of the forms being defined by cross perforations which also partially sever the forms and enable them to be stacked in fan folded configuration, means connecting said tractors and platen in conjointly driven relationship for feeding said forms around said platen and through said tractors, means for bursting said side perforations, said bursting means being defined by flexural members and portions of said tractors, said flexural members being disposed in the path of said forms to oscillate in response to energy derived from said forms and repetitively burst said side perforations, means for enabling the bursting of said cross perforations operative for clamping said forms against said platen upstream of said cross perforations between said platen and said tractors and including a bar having a longitudinal edge engageable with said platen and pivotally mounted to define a toggle with said platen to increase the clamping force of said bar edge against said platen when said bar engages said form against said platen and when said form is pulled in said downstream direction to burst said cross perforations, means disposed upstream of said platen between said platen and said tractors yieldably biasing the surface of said forms opposite to the surface which bears against said platen into an arc sufficient to compensate the relative displacement of said forms linearly fed by said tractors and rotationally fed by said platen, flexurally supported means disposed upstream of said tractors on the opposite side of said tractors from said compensating means for inverting tents at the cross perforations in said forms, and means for bowing said forms to increase the stiffness thereof in the region thereof driven by said tractors and burst by said means for bursting said side perforations.

4,616,774

STAPLER

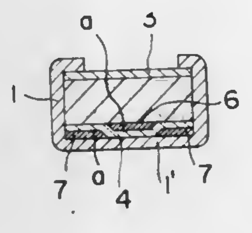
Yasuo Yasuda, Tokyo, Japan, assignor to Plus Corporation, Tokyo, Japan

Filed Feb. 27, 1985, Ser. No. 706,000

Claims priority, application Japan, Mar. 1, 1984, 59-29549[U]; Aug. 1, 1984, 59-118713[U]

Int. Cl.⁴ B25C *5/02*

U.S. Cl. 227—113 **1 Claim**



1. A stapler comprising a base frame, a stapler magazine and handle frame which are coupled together for pivotal motion, wherein a magnet attracting a bar of staples is fixed at the front end of the magazine, the magnet being interposed and securely held between an upper yoke and a lower yoke, said lower yoke being bent into a substantially wave-shape in cross-section and an adhesive agent being applied in gaps between the magnet and the lower yoke and between the lower yoke and the staple magazine.

4,616,775

TRANSLATABLE SOLDERING MACHINE

Jean-Pierre Simonetti, Gif-sur-Yvette, France, assignor to Outillages Scientifiques et de Laboratoires O.S.L. S.A., Carros, France

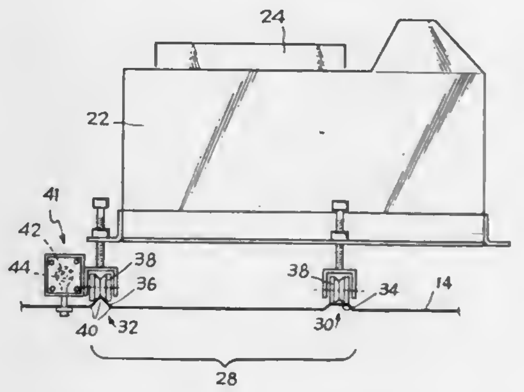
Filed Nov. 14, 1985, Ser. No. 798,170

Claims priority, application France, Nov. 15, 1984, 84 17451

Int. Cl.⁴ B23K *3/00, 3/06*

U.S. Cl. 228—37 **17 Claims**

1. Wave soldering apparatus of the type comprising a frame, at least one solder pot mounted on said frame and equipped with a nozzle designed to produce a wave of solder, a conveyor mounted on said frame and adapted to carry printed circuit boards along a substantially linear path into operative relationship with said wave of solder for soldering, and means for adjusting the height of said solder pot with respect to said path, thus permitting adjustment of the height of the nozzle with respect to said path, wherein said frame comprises an elongated track extending in a direction similar to that of the conveyor and on which is mounted the solder pot, said path and track converging toward each other at a predetermined angle of small value, said track being substantially parallel with respect to the horizontal, and further including means for adjusting the position of the solder pot along said elongated track.



4,616,776

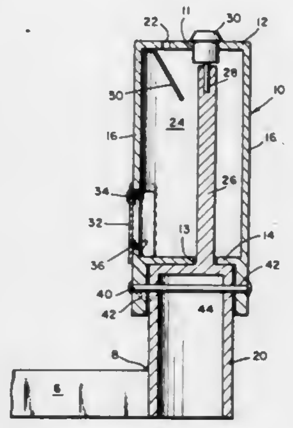
RECEPTACLE ATTACHED TO A PARKING METER FOR COLLECTION OF MONIES ON A MASS LOCATION BASIS AS DONATIONS FOR CHARITABLE PURPOSES

Scott Blumenthal, 6748 Gloria Ave., Van Nuys, Calif. 91432, and George Beacon, 15333 Sherman Way; #V335, Van Nuys, Calif. 91405

Filed Apr. 22, 1985, Ser. No. 725,542

Int. Cl.⁴ E05G *1/00*

U.S. Cl. 232—4 R **7 Claims**



1. A receptacle for collection of money comprising:

a. a substantially cylindrical receptacle having a substantially cylindrical side wall, a top wall attached to the top of said side wall, a bottom wall attached to the bottom of said side wall, and a depending skirt portion of said side wall extending below said bottom wall;

b. a slot in said top wall for receiving donations of money into said receptacle;

c. a lockable hinged wall portion in said side wall near said bottom wall for facilitating removal of money from said receptacle;

d. an opening in said top wall;

e. an opening in said bottom wall vertically aligned with said opening in said top wall;

f. a cylindrical support column having a top wall, an integral vertical upstanding locking column member fixedly attached to said top wall of said support column, said support column being attached to an external means for support, the outside diameter of said support column sized to fit within said depending skirt of said receptacle, said top wall of said support column and the adjacent side wall portion of said support column being received within said depending skirt so that said top wall of said support column and said bottom wall of said receptacle are in mutual contact and said locking column member of said support column is inserted through said opening of said bottom wall of said receptacle; and

g. means for locking said receptacle to said support column.

4,616,777
AIR-CONDITIONING SYSTEM

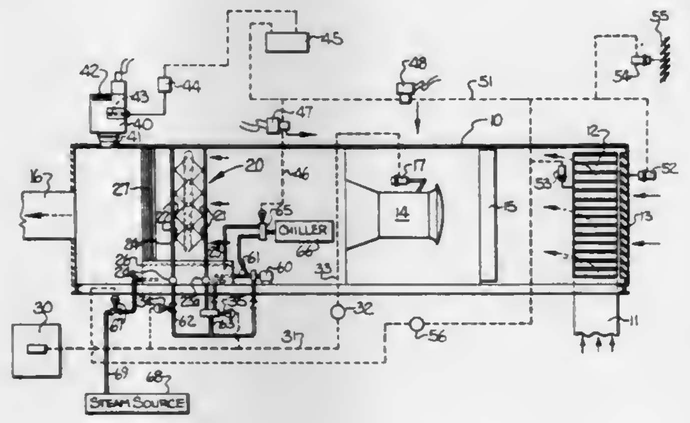
Gary H. Fisher, and H. Pat Padgett, both of Rockingham, N.C., assignors to Industrial Sheet Metal & Mechanical Corporation, Rockingham, N.C.

Continuation of Ser. No. 415,577, Sep. 7, 1982, Pat. No. 4,552,303. This application Aug. 1, 1985, Ser. No. 761,419

The portion of the term of this patent subsequent to Nov. 12, 2002, has been disclaimed.

Int. Cl.⁴ B01F *3/02*

U.S. Cl. 236—44 C **7 Claims**



1. An energy efficient air conditioning system for conditioning the air being delivered to an air conditioned area comprising, in combination

a housing having an inlet end for receiving air to be conditioned and a discharge end connected to a supply duct for delivering conditioned air to the conditioned area,

return air damper means associated with said inlet end of the housing for controlling the admission of return air from the air conditioned area to the housing,

outside air damper means associated with said inlet end of the housing for controlling the admission of outside air into the housing,

variable capacity fan means cooperating with said housing for directing air at a desired flow rate through the housing from said inlet end toward said discharge end thereof,

spary means located in the path of air flow through the housing for contacting the air which passes through the housing with a spray of water to cool and condition the air,

mist eliminator means extending across the path of air flow between said spray means and the discharge end of said housing for removing excess water mist from the airstream,

dew point sensing means for sensing the dew point of the conditioned air which is delivered to the conditioned area,

control means associated with said dew point sensing means for controlling the operation of said return air damper means and said outside air damper means,

temperature sensing means for sensing the dry bulb temperature of the air in the conditioned area, and

control means associated with said temperature sensing means for modulating the capacity of said variable capacity fan means and also regulating the quantity of water which is directed into contact with the air by said spray means.

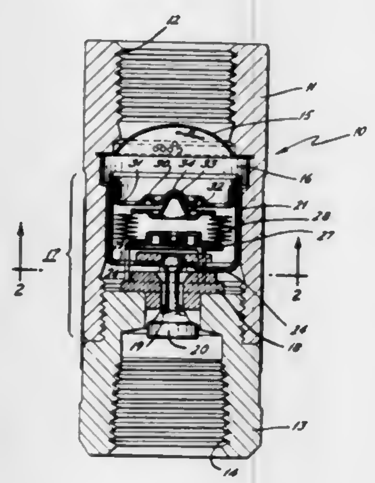
4,616,778
THERMOSTATIC STEAM TRAP

Horst R. Thieme, Harleysville, Pa., assignor to YWHC, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 632,508, Jul. 19, 1984, abandoned. This application Sep. 6, 1985, Ser. No. 773,449

Int. Cl.⁴ F16T *1/02*

U.S. Cl. 236—58 **3 Claims**



1. A thermostatic steam trap comprising:

a body member; and

an insert assembly;

said body member having an inlet passage at one end thereof, an outlet passage at the other end thereof and means forming a control chamber intermediate the inlet and outlet passages;

said insert assembly positioned with the control chamber and including an annular member having a central opening forming a valve seat facing toward the outlet passage, a cage freely movable within the control chamber, a valve member fixed to the cage and adapted to be pulled toward the valve seat upon movement of the cage in a direction away from said annular member, said valve member having a head adapted to operate in conjunction with the walls of the outlet passage to cause rapid movement of the valve member away from the valve seat upon displacement of said valve member from said valve seat, expandable and contractable thermostatic means within said cage, means extending through said cage in engagement with said thermostatic means and said annular member whereby expansion of said thermostatic means will move said cage in a direction away from said annular member, and centering means to center said cage and valve member with respect to said valve seat when said thermostatic means is fully expanded;

said inlet passage, outlet passage and control chamber are longitudinally aligned along a common longitudinal axis, and said annular member forming said valve seat is coaxial with said longitudinal axis and adjacent said outlet passage;

said valve member includes a stem portion extending through said seat opening and secured to said cage;

said thermostatic means is a temperature-responsive bellows containing a fluid having a temperature of vaporization less than the temperature of vaporization of water and is expandable and contractable with temperature changes in a direction toward and away from said valve seat;

said cage is of generally cylindrical shape, having a first end adjacent said annular member and a second end facing in the opposite direction, said first end having a series of equally spaced protuberances adapted to engage said annular member to limit movement of said cage within said control chamber in a direction toward said annular member.

4,616,779
PROCESS AND DEVICE FOR INJECTING A FINELY DIVIDED MATERIAL INTO A HOT GASEOUS FLOW AND APPARATUS FOR CARRYING OUT THIS PROCESS

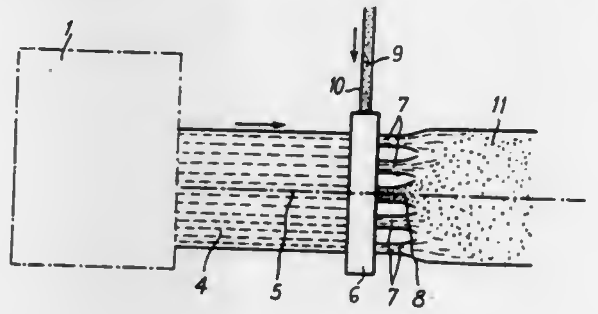
Jean-Pierre Serrano, St. Aubin-de-Medoc, and Jean Feuillerat, Bordeaux, both of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Jul. 18, 1984, Ser. No. 632,060

Claims priority, application France, Aug. 8, 1983, 83 13039

Int. Cl.⁴ B05B *1/24*

U.S. Cl. 239—79 **10 Claims**



5. Device for injecting at least one stream of a finely divided material into a hot gaseous flow, comprising:

(a) a thick plate pierced with a plurality of traversing jets and capable of being transversely interposed on the path of said hot gaseous flow, in order to fractionate said hot gaseous flow into a plurality of elementary flows which are at least approximately parallel to each other; and

(b) at least one channel made in the thickness of said plate and connecting a supply means arranged at a periphery of said plate to at least one jet supported by said plate and surrounded at least partially by said traversing jet, said supply means being adapted to be fed with finely divided material and the axis of said jet being at least approximately parallel to said elementary flows.

4,616,780
POP-UP SPRINKLER

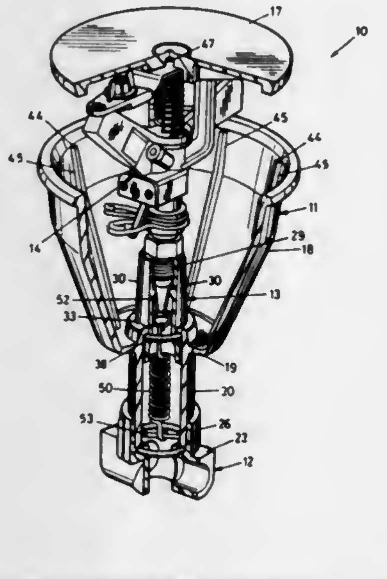
Eion A. Abbott, 7 Mais Street, Brompton, Australia

Filed May 23, 1984, Ser. No. 613,505

Claims priority, application Australia, May 24, 1983, PF9510

Int. Cl.⁴ B05B *15/02, 15/10*

U.S. Cl. 239—113 **8 Claims**



1. An improved pop-up sprinkler of the type comprising:

a housing having walls defining a sprinkler head housing cavity and a tubular stem depending from said cavity the lower end of said stem being adapted for connection to an underground water supply pipe,

a sprinkler head support means for supporting a sprinkler head on top thereof, said support means being movable between a retracted out-of-use position and an extended in-use water sprinkling position in response to the removal and establishment of water pressure respectively,

characterized by an open ended riser tube constituting said support means, slidably located for vertical up and down movement within said tubular stem, there being a water flushing flow path which fluidly interconnects the stem and said cavity and wherein water flows across the outer surface of said riser tube and the inner surface of said stem, there being cooperable sealing means and sealing engagement means between said riser tube and said tubular stem, arranged to seal off said water flushing flow path when said riser tube is in its extended in-use water sprinkling position, but permitting water flow along said water flow path during said up or down movement of said riser tube the water flow along said first water flushing flow path being effective to flush the surfaces of said riser tube and said stem which are in sliding contact and the space between said stem and said riser tube, and further characterized by a spring assembly operatively connected between said riser tube and said stem for returning said tube to its retracted out-of-use position when the water pressure is removed, said spring assembly comprising a tension spring which, when the tube is in its out-of-use position, is housed interiorly of the riser tube, upper spring end retention means within the riser tube intermediate its ends for releasably retaining the upper end of the spring, and lower spring end retention means adjacent the lower end of said stem and secured with respect thereto for releasably retaining the lower end of said spring, said tension spring terminating at its upper and lower ends in hook formations, said upper spring end retention means comprising spring clip means removably insertable within said riser tube and having a loop portion at its lower end to which is releasably hooked said upper hook formation of the tension spring, said riser tube having respective inwardly projecting shoulders formed interiorly of the riser tube, said spring clip means having out-turned leg portions for abutting engagement with said inwardly projecting shoulders and wherein said lower spring end retention means comprises a transverse retention pin having a length greater than the outside diameter of the riser tube, the inner surface of the stem having diametrically opposed recesses at its lower end and the retention pin having projecting ends for engagement in the opposed recesses of the stem.

4,616,781
FUEL INJECTION NOZZLES

David J. Gaskell, Sudbury, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

Filed May 4, 1984, Ser. No. 607,240

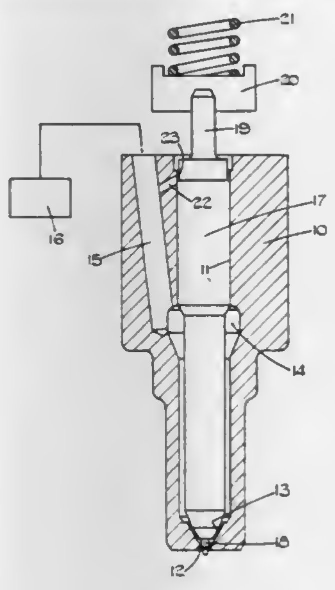
Claims priority, application United Kingdom, May 19, 1983, 8313904

Int. Cl.⁴ F02M *55/00*

U.S. Cl. 239—124 **1 Claim**

1. A fuel injection nozzle for supplying fuel to a compression ignition internal combustion engine and of the kind comprising a nozzle body, a bore defined in the body, an outlet at one end of the bore, a seating defined in the bore adjacent said outlet, a valve member slidable in said bore, said valve member being shaped for co-operation with said seating, resilient means biasing the valve member into contact with the seating, a fuel supply passage in the body, said passage communicating with said bore, and the valve member defining a surface against which in use, fuel under pressure in said passage can act to lift the valve member from the seating thereby to allow fuel flow from the supply passage through said outlet, characterized by a variable area restrictor in a flow passage extending from said supply passage to a drain, said variable area restrictor being constituted by a port in said flow passage opening into said bore and the valve member, said port being progressively covered by said valve member as the valve member is lifted

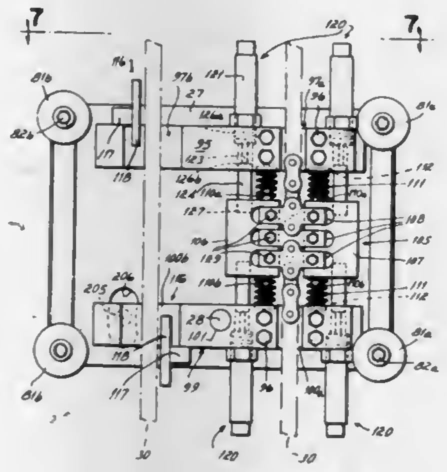
from its seating, whereby the degree of restriction offered by said restrictor is dependent upon the axial position of the valve member in the bore and the flow area of the restrictor decreases as the valve member moves away from the seating.

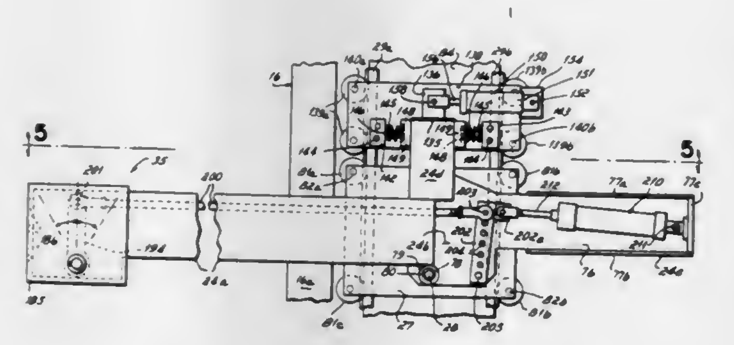


4,616,782
SPRAY GUN CARRIAGE ASSEMBLY HAVING INERTIAL DAMPING AND A VARIABLE STROKE

Charles F. Marietta, Norwalk, and Kenneth Holley, South Amherst, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Jan. 22, 1985, Ser. No. 693,676
Int. Cl.⁴ B05B *3/18, 3/00;* B25J *17/00;* F16H *27/02*
U.S. Cl. 239—752 **24 Claims**





1. A spray gun carriage assembly comprising:

a base;

a spray gun mount adapted to support at least one spray gun operable to spray a coating upon a workpiece;

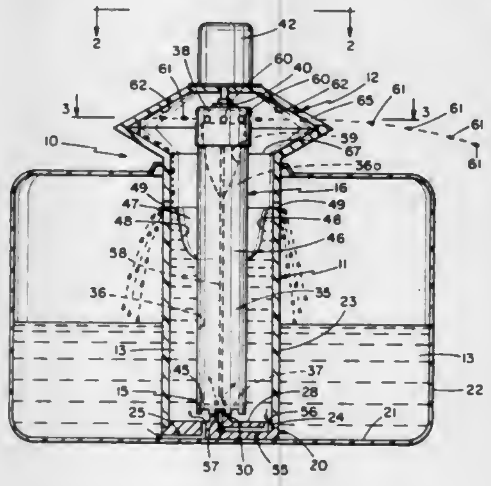
reciprocating means connected to said base for reciprocating said spray gun mount along a vertical axis, said reciprocating means accelerating and decelerating said spray gun mount to produce a rotational and a linear inertial force while moving along said vertical axis;

damping means carried by said reciprocating means for damping said rotational and linear inertial forces.

4,616,783
CONSTANT FLOW ROTARY SPRAYING DEVICE

James R. Weber, R.R. 1, Box 268, Lacon, Ill. 61540, and John R. Weber, 15905 N. Brougham Dr., Galena Knolls, Chillicothe, Ill. 61523

Filed Aug. 13, 1984, Ser. No. 640,512
Int. Cl.⁴ B05B *1/28, 3/08*
U.S. Cl. 239—216 **15 Claims**



1. A spraying device for spraying droplets of liquid from a liquid supply comprising a two stage pump system, and a spray control chamber, said two stage pump system having a manifold with a first stage inlet passage system and a second stage outlet passage system, said first stage of said pump system having a reservoir and a first stage pump interconnecting said liquid supply with said reservoir by said manifold first stage inlet passage system for directing and controlling the flow of liquid drawn therethrough by said first stage pump from said supply and into said reservoir, said reservoir having a liquid level control means for maintaining a predetermined level of liquid therein to provide a predetermined static liquid pressure in said reservoir, said second stage of said pump system having a second stage pump interconnecting said reservoir with said chamber by said manifold second stage outlet passage system for directing and controlling the flow of liquid drawn therethrough by said second stage pump from said pump reservoir supply and rotatably impelling said liquid in droplets away from said second stage pump within said spray control chamber and against the walls thereof, said spray control chamber having a discharge opening in the path of said impelled spray droplets for allowing a predetermined quantity and pattern flow of said impelled liquid from said chamber as a droplet spray.

4,616,784
SLURRY ATOMIZER

Harold C. Simmons, Richmond Hts., and Curtis F. Harding, Parma, both of Ohio, assignors to Parker Hannifin Corporation, Cleveland, Ohio

Filed Nov. 20, 1984, Ser. No. 673,294
Int. Cl.⁴ B05B *7/10*
U.S. Cl. 239—404 **11 Claims**

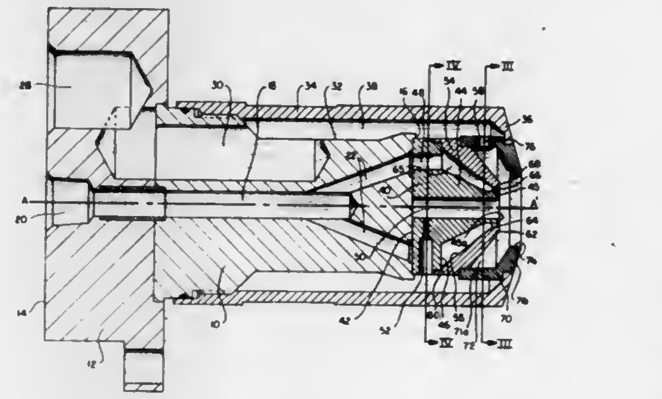
1. A slurry atomizer comprising:

a body having an input end and a discharge end, said body including at least one passageway in communication with the input end and forming an opening at the discharge end;

a casing that covers at least the discharge end of said body and cooperates with said body to define a fluid annulus therebetween, said fluid annulus having a fluid inlet;

a forming element located at the discharge end of said body and having an input face at one end and a generally axially extending projection at the opposite end, said forming element also including slurry passgeways that communicate with the passageway of said body, and further including at internal bore and at least one passageway that opens to the internal bore and is in communication with the fluid annulus;

a conical member having an apical end, a base end, an inner conical surface and an outer conical surface, said base end being located adjacent said forming element and said inner conical surface cooperating with the projection of said forming element to define a conically shaped chamber having an annulus between the projection and apical end of said conical member and with the slurry passageways of said forming element opening to the conically shaped chamber; and

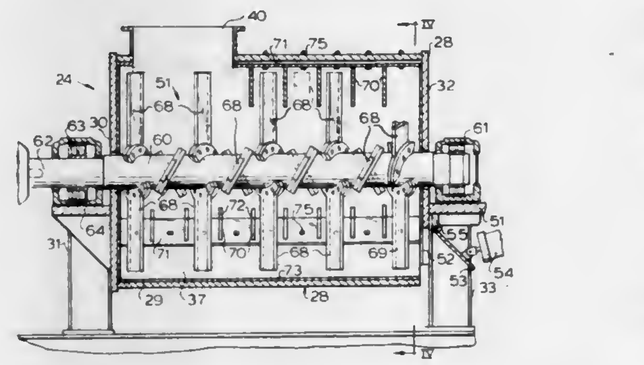


means for swirling fluid, said swirling means being located between the casing and the base end of said conical member, said swirling means having a discharge orifice and cooperating with the outer conical surface of said conical member to define a swirl chamber therebetween, said swirling means further having a flow path between the fluid annulus and the swirl chamber.

4,616,785
METHOD OF AND APPARATUS FOR DEBARKING WOOD CHIPS

Adrian Artiano, Oregon City, Oreg., assignor to Beloit Corporation, Beloit, Wis.

Filed Jul. 30, 1982, Ser. No. 403,487
Int. Cl.⁴ B02C *19/12*
U.S. Cl. 241—26 **21 Claims**



1. A method of debarking wood chips in a container containing no free elements, comprising:

axially compacting a mass of bark carrying wood chips in said container so as to force said mass toward one end of said container;

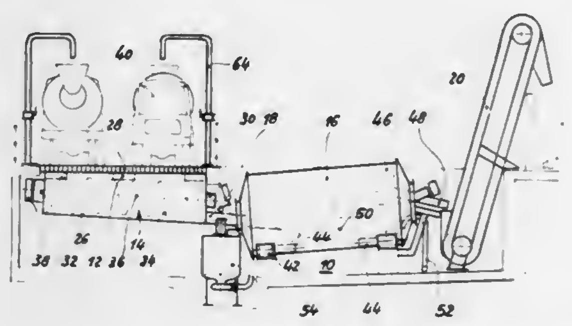
agitating the compacted mass in said container and causing the chips to rub against one another in the compacted mass;

and thereby removing the bark from the chips by rubbing friction of chip against chip as agitated in the compacted mass and without crushing or otherwise damaging the chips.

4,616,786
PLANT FOR PROCESSING SURPLUS CONCRETE

Rudolf Riker, Memmingen, Fed. Rep. of Germany, assignor to Stetter GmbH, Memminger, Fed. Rep. of Germany

Filed Aug. 13, 1984, Ser. No. 639,698
Int. Cl.⁴ B02C *25/00*
U.S. Cl. 241—35 **13 Claims**



1. In a plant for processing surplus concrete comprising a receiving bin having mutually opposite end walls, two side walls, a bottom and a top covering grate, a cleansing apparatus adapted to supply rinsing water into the receiving bin, also comprising a washing apparatus for separating the surplus concrete into a plurality of components, such as sand and gravel, on the one hand, and very fine components, on the other hand, which latter are entrained by rinsing water discharged at one end of the washing apparatus whereas the first component is discharged at the opposite end of the washing apparatus, also comprising an inclined transfer duct, which adjoins the inclined bottom of the receiving bin and connects the receiving bin to the washing apparatus, and discharge control apparatus for controlling the discharge of surplus concrete from the receiving bin in dependence on the free processing capacity of the washing apparatus, the improvement comprising: the receiving bin consists of an elongate trough, the length of which is at least twice its width and which has a bottom in the shape of a segment of a cylindrical surface, the trough contains a conveyor screw, whereby the concrete in the trough is revolved and setting thereof prevented, which at least in part constitutes the discharge control apparatus and which conveyor screw is rotatably mounted in the end walls of the receiving bin and outside the receiving bin is operatively connected to a drive motor, the axis of rotation of the conveyor screw coincides at least approximately with the geometrical axis of the bottom having the shape of a segment of a cylindrical surface, and the speed of the drive motor for the conveyor screw is adapted to be controlled in dependence on the instantaneous current consumption of a second drive motor for an implement which succeeds the conveyor, said implement being selected from the group consisting of the washing apparatus, an elevator which succeeds the washing apparatus and a belt conveyor for discharged concrete components.

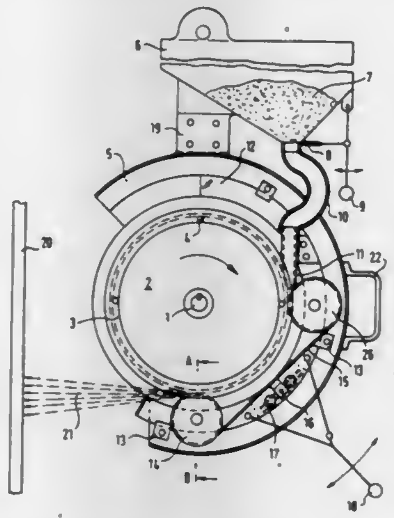
4,616,787
PORTABLE PROJECTION APPARATUS

Walter Kirsten, Weinheim, Fed. Rep. of Germany, assignor to BKW Handels-und Vertriebsgesellschaft, Weinheim, Fed. Rep. of Germany

PCT No. PCT/DE83/00148, § 371 Date Apr. 16, 1984, § 102(e) Date Apr. 16, 1984, PCT Pub. No. WO84/00917, PCT Pub. Date Mar. 15, 1984
PCT Filed Aug. 26, 1983, Ser. No. 605,028
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1982, 3231787
Int. Cl.⁴ B02C *19/00*
U.S. Cl. 241—275 **19 Claims**

1. Portable projection apparatus comprising a housing, a disk member rotatably mounted on said housing about a central axis, an outer band member mounted on said disk member, said outer band member having a plurality of spaced outer band grooves for receiving projecting material, said band grooves

being parallel to one another and extending endlessly circumferentially around the outer peripheral surface of said outer band member, a belt means partially in contact with a circumferential area of said outer band member, said belt means comprising an endless belt and rollers over which said endless belt is disposed, said belt means further comprising ring means disposed radially outwardly of said outer band member and



rotatably movable on said housing, said rollers being mounted on said rings means, and operable means operably connected to said ring means for rotating and displacing said ring means about said central axis such that said rollers are displaced together with said ring means so that the entire circumferential area of said endless belt which contacts said drum member is circumferentially displaced about said central axis.

4,616,788

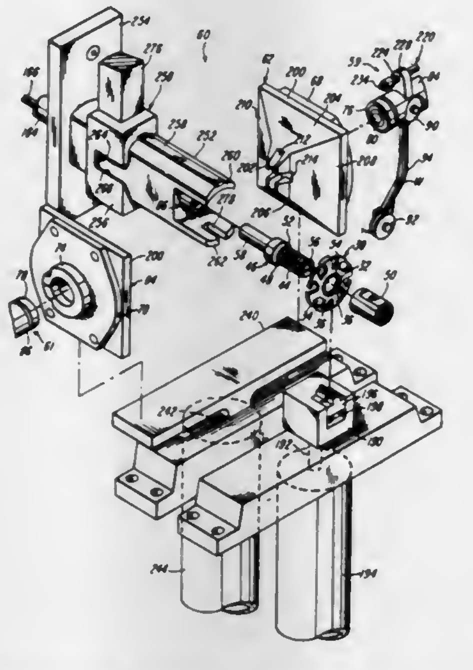
METHOD AND APPARATUS FOR WINDING DYNAMOELECTRIC DEVICES

Hyman B. Finegold, Dayton, Ohio, assignor to The Globe Tool & Engineering Co., Dayton, Ohio

Filed Feb. 5, 1985, Ser. No. 698,246

Int. Cl.⁴ H02K *15/09*

U.S. Cl. 242—7.03 **16 Claims**



10. In an armature winding machine of the type having a flier, a spindle on which the flier is mounted, means for rotatably driving said spindle about a predetermined axis to cause coils of wire to be wound into spaced coil-receiving slots of cores of dynamoelectric devices, and a winding form for guiding wire wound by said flier into said slots, the improvement wherein said winding form has a first pair of wire guiding surface portions having edges adapted to be substantially aligned with the outward openings of a pair of said slots to guide wire into said pair of slots and a second pair of wire guiding surface portions fixedly spaced from said first pair of wire guiding surface portions and having edges adapted to be aligned with the outward openings of a pair of said slots to guide wire into said last mentioned pair of slots, said second pair of wire guiding surface portions having a configuration different from said first pair of wire guiding surface portions, and means for rotating said winding form about said axis for selectively positioning said first and said second pairs of wire guiding surface portions with their edges substantially aligned with the outward openings of a pair of said slots so that coils having different geometries may be wound.

4,616,789

YARN END READYING DEVICE IN WINDER

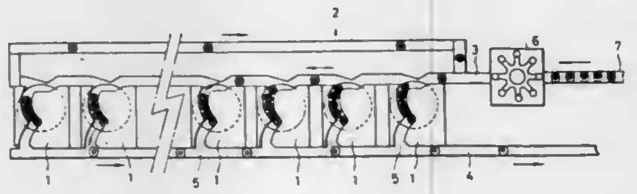
Isamu Matsui, Kyoto; Hiroshi Uchida, Oumihachiman; Kazuo Nakanishi, Uji, and Akira Shimano, Kyoto, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

Filed Oct. 12, 1983, Ser. No. 541,096

Claims priority, application Japan, Oct. 13, 1982, 57-180464

Int. Cl.⁴ B65H *54/20, 54/22*

U.S. Cl. 242—35.5 R **10 Claims**



1. In a system in which cops having yarn wound around hollow core bobbins are conveyed on carriers, a device for readying a starting end of said yarn for delivery to a winder comprising:

cop hanging means for removing each of said cops from its respective carrier and refitting said cop onto said carrier;
starting yarn end unwinding and cutting means for unwinding said starting yarn end from said cop and cutting said unwound starting yarn end,
tangled yarn cutting means for separating said starting yarn end from said yarn wound on said cop; and
yarn end inserting means for inserting said starting yarn end into the hollow core of said bobbin;

wherein said starting yarn end unwinding and cutting means, said tangled yarn cutting means and said yarn end inserting means are arranged sequentially.

4,616,790

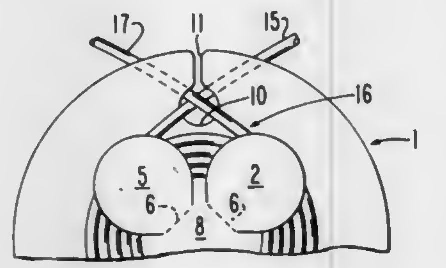
EXCESS TUBING RETAINER FOR A FLUID OR GAS DELIVERY SYSTEM

Delfin J. Beltran, 30 Zapata Way, Portola Valley, Calif. 94025

Filed Jul. 26, 1984, Ser. No. 634,603

Int. Cl.⁴ B65H *75/28*

U.S. Cl. 242—85.1 **12 Claims**



1. For use in fluid and gas delivery systems shaving an excess of flexible, hollow tubing between an input end of said tubing coupled to a source of fluids or gases and an output end of said tubing coupled to a receiver of fluids or gases, an excess tubing retaining apparatus comprising:

a disk-shaped member having an outer periphery and means extending from an interior surface of said disk-shaped member for supporting coils of said excess tubing;
a hole located in said disk-shaped member comprising a predetermined diameter; and
a slot which extends from said hole to said outer periphery of said disk-shaped member, said slot having a width which is less than half said predetermined diameter of said hole for releasably retaining in a substantially nonoccluding manner a first segment of said tubing located between said coils and said input end and a second segment of said tubing located between said coils and said output end such that said first and said second segments cross in the vicinity of said hole at a point located between said coils and said input and said output ends, respectively.

4,616,791

IRRIGATION OR OTHER MACHINE HAVING A ROTATABLE DRUM CARRYING A HOSE OR OTHER FLEXIBLE ELEMENT WOUND THEREON

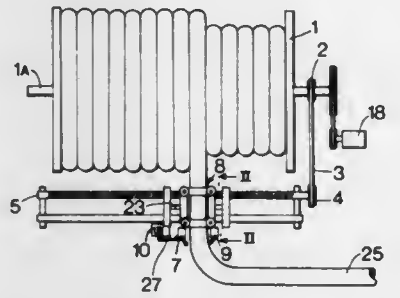
Vernon B. W. Harvey, Tanglewood, Stour Close, Little Canford, Wimborne, Dorset, Great Britain

Filed Feb. 20, 1985, Ser. No. 713,792

Claims priority, application United Kingdom, Mar. 31, 1984, 8408371; Nov. 28, 1984, 8429988

Int. Cl.⁴ B65H *75/40, 75/34*

U.S. Cl. 242—86.2 **9 Claims**



1. An irrigation or other machine which is to be driven or otherwise propelled along the ground including a drum, having a flexible element, such as a hose, wound thereon in a plurality of side-by-side convolutions in at least one layer; a drum-driving motor operable in both the winding on and winding off directions, and a hose-laying device by which a hose-guide through which the hose or other element passes tangentially with respect to an upper part of a convolution of said flexible element is reciprocated parallel to the axis of rotation of the drum as the drum is rotated in either direction, said hose-laying device comprising said hose-guide and a carriage to which said reciprocation is applied, said hose-guide mounted for movement relatively to said carriage for movement in directions parallel to the axis of rotation of the drum between two extreme positions, in one of which said hose-guide is nearer to one end of said carriage and in the other of which said hose-guide is nearer to the other end of said carriage, said hose-laying device also including means responsive to the position of said hose-guide in the length of said carriage to control one of (a) the rotational speed of said drum-driving motor or (b) the ground speed of said machine, whereby to maintain the linear velocity of said flexible element and the ground speed of machine substantially equal to each other, one of said extreme positions of the hose-guide on the carriage corresponding to maximum permitted drum rotational speed and the other of said extreme positions of the hose-guide on the carriage corresponding to minimum drum rotational speed.

4,616,792

CRANK AND BRAKING MECHANISM FOR FISHING REELS

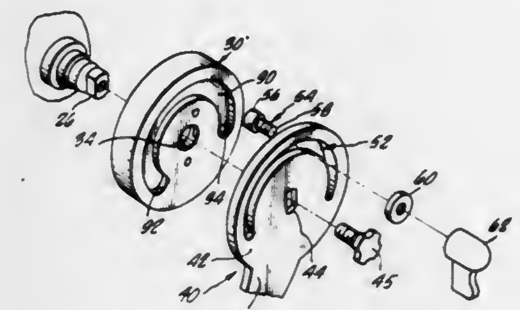
M. Larry Tunks, 16042 Mariner Dr., Huntington Bch., Calif. 92649

Continuation-in-part of Ser. No. 550,757, Nov. 10, 1983, Pat. No. 4,526,331. This application Jun. 13, 1985, Ser. No. 744,334

The portion of the term of this patent subsequent to Jul. 2, 2002, has been disclaimed.

Int. Cl.⁴ A01K *89/00, 89/02*

U.S. Cl. 242—218 **16 Claims**



5. A braking mechanism for retrofitting a fishing reel, the fishing reel comprising a spool, a brake for controlling the amount of drag on fishing line being unwound from the spool, and a shaft for driving the spool and provided with a threaded end portion extending axially outwardly of the spool, the braking mechanism comprising:

(a) a disc-shaped braking wheel for threading onto the end portion of the shaft to rotate therewith, the braking wheel including an outer surface facing away from the spool, the amount the braking wheel is threaded onto the shaft controlling the amount of drag, the braking wheel having a raised portion extending circumferentially around part of the periphery of its outer surface;
(b) a crank mountable on the end portion of the shaft beyond the braking wheel for rotating the shaft and the braking wheel;
(c) a stop extending from the surface of the crank facing the braking wheel, for limiting the amount the braking wheel can be threaded onto the shaft;
(d) means for adjustably mounting the stop on the crank comprising a circumferential slot extending through a disc-shaped portion of the crank, the crank slot being in register with at least a portion of the raised portion of the braking wheel, and wherein the stop is slideable in the crank disc slot.

4,616,793

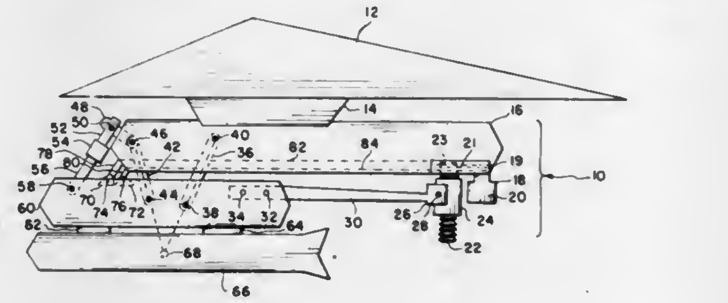
REMOTE PIVOT DECOUPLER PYLON: WING/STORE FLUTTER SUPPRESSOR

John M. Hassler, Jr., Fort Worth, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 10, 1985, Ser. No. 690,274

Int. Cl.⁴ B64C *1/22*

U.S. Cl. 244—137 A **3 Claims**



1. A device for suspending a store from an aircraft support structure including an airfoil lifting surface subjected to flutter comprising:

store means;

dual link pivot means for suspending said store means from said airfoil lifting surface and for enabling movement of said store means about a remote pivot axis;

spring means connected between said airfoil lifting surface and said store means;

control means actuated by movement of said spring means;

said spring means and said control means maintaining alignment of said store means about a spanwise axis of the lifting surface and isolating the pitch modes of the store means from the torsion modes of the airfoil lifting surface and thereby alleviating airfoil lifting surface flutter and vibratory modes,

an upper pylon section fixed to said airfoil lifting surface,

a movable lower pylon section spaced from said upper pylon section and connected thereto by said dual link pivot means,

damper means connected between said upper pylon and one end of said lower pylon and serving to dampen transient oscillations of said store means,

said dual link pivot means including two spaced angular disposed link members,

one end of each said angular disposed link member being pivotally connected to said upper pylon and the opposite end of each said angular disposed link member being pivotally connected to said lower pylon at substantially the midpoint thereof;

said store means being releasably attached to said lower pylon and adapted to rotate in pitch therewith relative to said upper pylon and about a remote pivot axis located within said store means;

said spring means being a leaf spring and including means rigidly connecting one end of said leaf spring to an end of said lower pylon;

a clevis-type arm secured to the other end of said leaf spring;

an internally threaded sleeve pivotally connected to said clevis-type arm;

a threaded shaft threadingly received through said internally threaded sleeve;

a gear fixed to one end of said threaded shaft;

a gear train meshing with said gear fixed to said threaded shaft and serving to induce rotation of said threaded shaft, whereby

rotation of said threaded shaft causes relative movement of said threaded sleeve to thereby pivot one end of said leaf spring and cause pitching movement of said lower pylon and said attached store means relative to said aircraft structure.

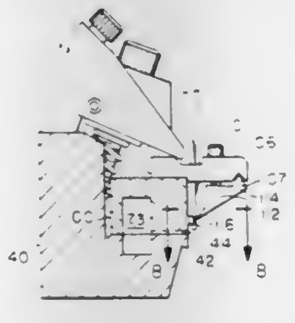
4,616,794
AIR COMB ARRANGEMENT FOR JET DYEING MACHINE

Herbert R. King, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 658,741, Oct. 9, 1984, Pat. No. 4,584,854. This application Aug. 26, 1985, Ser. No. 769,079

Int. Cl.⁴ F16L *3/10*

U.S. Cl. 248—67.5 **3 Claims**



1. An apparatus to secure and align a plurality of tubular members, each located in a groove of a holder comprising: an elongated tube holder, a plurality of openings in said holder with the centerline of some of said openings being displaced out of alignment with the centerline of other openings in said holder, tube members located in and projecting through said openings and adapted to abut a groove in an adjacent member, an elongated triangular shaped member pivotally mounted to said tube holder and having one portion thereof abutting the projecting portions of said tube members and means operably associated with said triangular members to pivot said triangular member in said holder into contact with the projecting portions of the tube members.

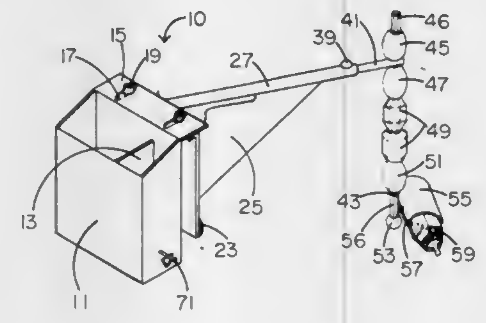
4,616,795
NURSING BOTTLE HOLDER

Larry J. Bender, 21 Shar-Denn Dr., Hampton, Iowa 50441

Filed Apr. 12, 1985, Ser. No. 722,510

Int. Cl.⁴ A47D *15/00*

U.S. Cl. 248—103 **3 Claims**



1. A nursing bottle holder which is adaptable to a crib or infant seat comprising:

a container for temporary storage of infant feeding accessories;

a crib plate adjustably attached to the container for clamping the nursing bottle holder to the side of the crib;

a support flange affixed to the crib plate;

a bottom flange affixed to the crib plate;

a horizontally extending cylindrical telescoping arm pivotally attached to the support flange;

a webbing affixed to the lower side of the telescoping arm and pivotally attached to the bottom flange;

a swivel lock nut for locking the telescoping arm in a desired direction;

a telescope lock nut for locking the telescoping arm at a desired extension and in the desired rotation;

a cylindrical threaded rod slidably mounted near the outer end of the telescoping arm in a plane perpendicular to the axis of the telescoping arm;

first and second adjusting beads with threaded interiors for locking the threaded rod onto the telescoping arm;

a sleeve slidably and rotatably encasing the threaded rod;

a bottom cap removably attached to the bottom of the threaded rod to prevent the sleeve from sliding off;

a third adjusting bead with a threaded interior for friction locking the sleeve between the bottom cap and the third adjusting bead;

a concave planer arc affixed to the sleeve and approximating the shape of a nursing bottle and with a circumference arcing through at least ninety degrees; and

an elastic strap cooperatively attached to the planer arc for holding the nursing bottle in place.

4,616,796
MAGNETIC RETAINER ASSEMBLY

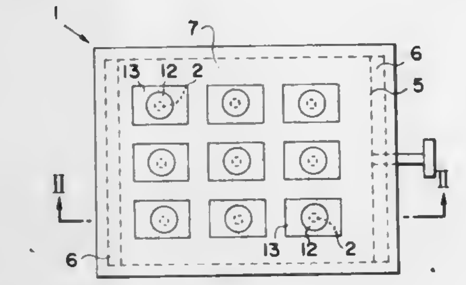
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Kanagawa, Japan

Filed Apr. 1, 1982, Ser. No. 364,407

Claims priority, application Japan, Jul. 23, 1981, 56-109966; Jul. 23, 1981, 56-109967

Int. Cl.⁴ F16B *47/00*

U.S. Cl. 248—206.5 **37 Claims**



1. A magnetic retainer assembly (**1**) for selectively securing thereto and detaching therefrom a magnetizable object (**14**), comprising:

a plurality of columnar permanent magnets (**2**) of a like shape and size, each of which is axially magnetized and has two opposed magnetic poles at its two axially opposite end faces, the magnets (**2**) being arranged respectively at predetermined positions regularly spaced apart and constituting a predetermined set in the assembly (**1**) so as to individually produce magnetic fluxes of a uniform strength emanating from one of said two axially opposite end faces and terminating at the other of said two axially opposite end faces of each of said columnar permanent magnets;

support means (**5**) having each of said permanent magnets (**2**) individually at least laterally embedded therein for holding said magnets (**2**) at said spaced-apart positions in an essentially magnetically insulating relationship with each other;

first magnetic-path forming means (**7,12**) associated with said support means (**5**) for magnetically connecting said opposed poles of each of said permanent magnets (**2**) individually with said magnetizable object (**14**) through a first magnetic circuit (**12**, **14**, **7**, **5**) of a sufficiently low magnetic reluctance to cause said assembly (**1**) to be attached to said object (**14**) or vice versa; and

second magnetic-path forming means (**13**) associated with said support means (**5**) for establishing, for each of said permanent magnets (**2**) and parallel to the first magnetic circuit thereof, a respective second magnetic circuit (**13**, **14**, **7**, **5**) of a relatively high magnetic reluctance for shunting said first magnetic circuit when said object (**14**) is to be, or remains detached from said assembly, said permanent magnets (**2**) having their areas of magnetization essentially in parallel with one another.

4,616,797
ADJUSTABLE SUPPORT ASSEMBLY

Mina M. Cramer, Montrose, Pa., assignor to Mina Manufacturing, Inc., Enwell, N.Y.

Filed Aug. 13, 1984, Ser. No. 640,192

Int. Cl.⁴ A47B *96/06*

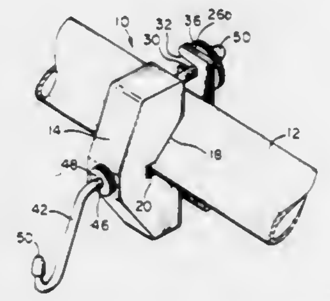
U.S. Cl. 248—230 **13 Claims**

1. An adjustable support assembly adapted for being releasably secured to an elongated support member comprising:

a clamp body member having a first lateral side for engaging the surface of the support member, the width of the body member, at least across the first lateral side, being greater than the width of the support member;

a pair of generally cylindrical pin members, secured to and extending outwardly from the first lateral side of the body member, the pin members being at least partially threaded and being generally parallel and spaced a distance greater than the width of the support member, the length of the pin members extending beyond the body member being greater than the depth of the support member, the body member with the two pin members forming a structure generally U-shaped in cross-section for receiving the support member;

an arm member having a length at least as long as the distance between the two pin members, one end of the arm member including a circular opening extending therethrough proximate the one end, one pin member extending through the opening for attaching the arm member to permit the arm member to pivot about the one pin member generally normal to the axis of the one pin member, the other end of the arm member being adapted for engagement with the other pin member; and



locking means comprised of a nut-like member for engaging the threaded portion of the other pin member for retaining the other end of the arm member into engagement with the other pin member and for urging the arm member into clamping engagement with the support member

whereby the arm member may be pivoted away from the other pin member to permit the support member to be received within the U-shaped structure and then pivoted into engagement with the other pin member to enclose the support member within the support assembly, the locking means being operated to urge the arm member into clamping engagement with the support member to secure the support assembly to the support member.

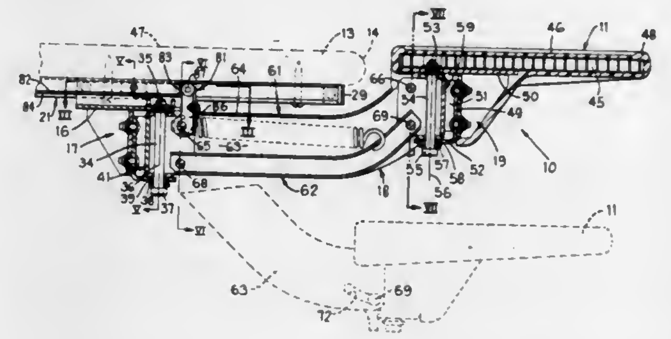
4,616,798
ADJUSTABLE SUPPORT FOR CRT KEYBOARD

Paul A. Smeenge, Cascade Township, Kent County; Harold R. Wilson, Holland Township, Ottawa County, and Randy P. Nelsen, Wyoming, all of Mich., assignors to Haworth, Inc., Holland, Mich.

Continuation of Ser. No. 386,131, Jun. 7, 1982, abandoned. This application Feb. 26, 1985, Ser. No. 706,231

Int. Cl.⁴ A47F *5/00*

U.S. Cl. 248—281.1 **38 Claims**



1. In combination, a primary support defining thereon an enlarged upwardly facing primary work surface, said primary support defining a front edge adjacent said primary work surface, an auxiliary shelflike support defining thereon an upwardly facing auxiliary work surface for supporting a keyboard unit thereon, and mounting means connecting said primary and auxiliary work supports together for movably sup-

porting said auxiliary support relative to said primary support in the vicinity of said side edge, the improvement wherein said mounting means comprises:

carriage means positioned under and movably mounted on the underside of said primary support for linear horizontal translation of said carriage means relative to said primary support along a direction which extends substantially transverse to said front edge;

first means positioned under said primary support and mounted on said carriage means for pivotal movement relative thereto about a first substantially vertical hinge axis;

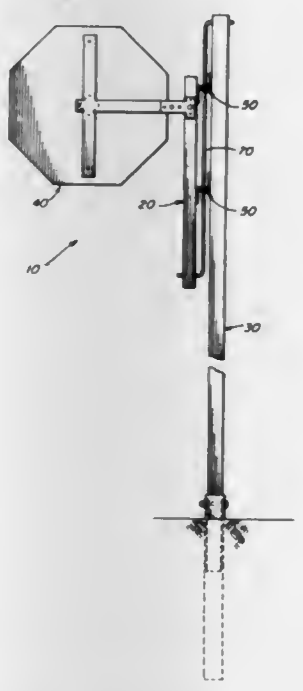
second means mounted on the underside of said auxiliary support for pivotal movement relative thereto about a second substantially vertical hinge axis;

vertically swingable, elongated link means having the opposite ends thereof pivotally connected to said first and second means for permitting vertical displacement of the auxiliary support relative to the primary support while maintaining said auxiliary support oriented so that the upper surface thereof retains its predetermined upwardly facing orientation, said link means comprising a vertical parallelogram linkage with elongated upper and lower links having their rearward ends pivotally interconnected to said first means and their forward ends pivotally interconnected to said second means;

spring means associated with said link means for exerting a biasing force tending to swing said link means upwardly to effect raising of said auxiliary support; and

holding means including a manually movable actuator for preventing vertical pivotal displacement of said parallelogram linkage.

4,616,799
AUTOMATIC RECOVERY SWING SIGN STRUCTURE
Hugo E. Rebentisch, Wayne, Mich., assignor to GTE Products Corporation, Stamford, Conn.
Continuation of Ser. No. 603,801, Apr. 25, 1984, abandoned. This application Oct. 9, 1985, Ser. No. 786,164
Int. Cl.⁴ F16F *1/14*
U.S. Cl. 248—289.3 **8 Claims**



1. A yieldable structure comprising

a yieldable member;

support member for supporting said yieldable member, said yieldable member being substantially parallel to said support member;

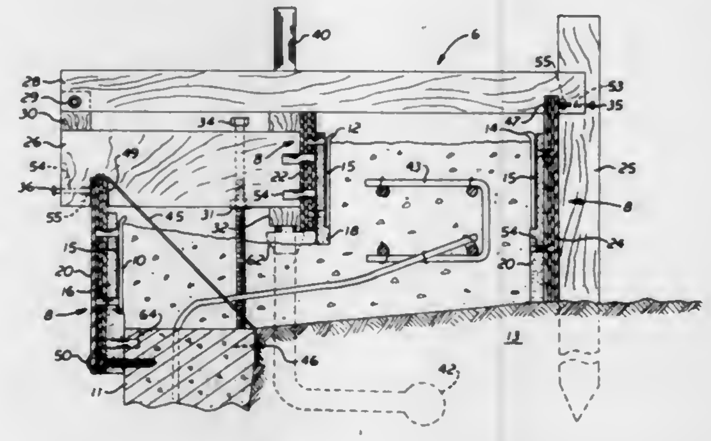
pivoting means coacting with said support member and said yieldable member for pivoting said yieldable member pivots, said pivoting means having one pivotal axis about which said yieldable member, said yieldable member pivoting about said pivotal axis, said pivotal axis being substantially parallel to said support member;

positioning means for positioning said yieldable member in a selected position in relationship to said support member;

limiting means for limiting the displacement of said yieldable member from the selected position in relationship to said support member and for maintaining said yieldable member at said selected position under a given force and yielding from said selected position when said force is exceeded, said pivoting means comprising said positioning means and said limiting means; and

torsion means coacting with said support member and said yieldable member for resisting a radial displacement of said yieldable member from said selected position, said torsion means coacting axially through said pivotal axis of said pivoting means providing a center of rotation for said pivoting means, a first portion of said torsion means being substantially parallel to said yieldable means and said support member, said first portion of said torsion means acting like a hinge pin for said pivoting means, and said torsion means resisting an axial displacement of said yieldable member in relation to said support member.

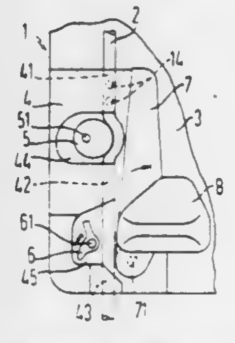
4,616,800
SWIMMING POOL BOND BEAM FORM SYSTEM
Constantine C. Scourtes, and Ralph A. Doerfling, both of 9602 Morris Bridge Rd., Tampa, Fla. 33617
Filed Dec. 17, 1984, Ser. No. 682,418
Int. Cl.⁴ E04B *1/16*
U.S. Cl. 249—4 **8 Claims**



1. In a swimming pool having concrete sidewalls, a form system for pouring a concrete bond beam, gutter and curb contiguous with said sidewalls and simultaneously bonding tiles to the edges of said bond beam comprising:

(a) a set of elongate form boards having
   (i) a first form board attached to said sidewall for defining the waterline edge of said bond beam and gutter,
   (ii) a second form board disposed outboard and spaced apart from said first form board for defining an outer edge of said gutter, and
   (iii) a third form board disposed outboard and spaced apart from said second form board for defining an outer edge of said curb;
(b) a set of tile holding panels in which
   (i) a first of said panels is attached to an outboard face of said first form board,
   (ii) a second of said panels is attached to an outboard face of said second form board, and
   (iii) a third of said panels is attached to an inboard face of said third form board;
(c) adhesive means disposed on and along the exposed surface of each of said panels for receiving a finished surface of the tiles to thereby temporarily attach the tiles to said panels; and
(d) a plurality of form board support members disposed over and essentially transverse to said set of form boards, said support members temporarily attached to said first, second, and third form boards for supporting said set of form boards in a first preselected spacing between said first form board and said second form board, and a second preselected spacing between said second form board and said third form board.

4,616,801
APPARATUS TO REGULATE THE FLOW OF LIQUIDS
Goeran Cewers, Lund; Jan Johansson, Esloev, and Sven-Gunnar Olsson, Soedra, all of Sweden, assignors to Siemens Elema AB, Solna, Sweden and Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Jan. 20, 1984, Ser. No. 572,712
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1983, 3302214
Int. Cl.⁴ F16L *55/14;* F16K *51/00*
U.S. Cl. 251—6 **18 Claims**



1. An apparatus for regulating the flow of liquid through a hose, comprising:

means for guiding the hose comprising at least one guide for supporting and engaging at least a portion of the hose; means for clamping the hose, including a motor-driven eccentric; and a pivotal blocking device forming a separate part of the hose guiding means from the at least one guide, as well as forming a part of the clamping means, the blocking device being pivotal between a closed position, in which position the at least one guide cooperates with the closed blocking device so that the at least portion of hose is safely and completely enclosed between the hose guiding means and the pivotal blocking device, which portion of hose may or may not be clamped shut, and the closed blocking device further cooperates with the motor-driven eccentric for controlling the cross-section of the hose, and an open position in which the hose is released when the pivotal blocking device no longer cooperates with the at least one guide to completely enclose the at least portion of hose.

4,616,802
TUBING OCCLUDER
Charles C. Tseng, Lake Bluff, and Kenneth Lynn, Spring Grove, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Dec. 6, 1984, Ser. No. 678,624
Int. Cl.⁴ F16L *55/14*
U.S. Cl. 251—7 **10 Claims**

1. A device for releasably occluding a flexible tubing comprising:

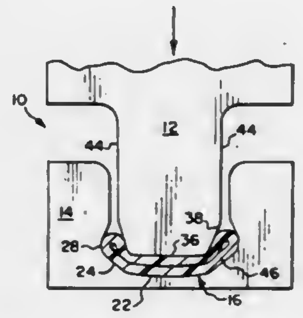
a housing adapter to receive said flexible tubing and defining a recessed tubing occluding surface against which a transverse section of the tubing is transversely urged and compressed when in an occluded position;

a wedge-shaped tongue for urging the transverse section of the tubing against said tubing occluding surface;

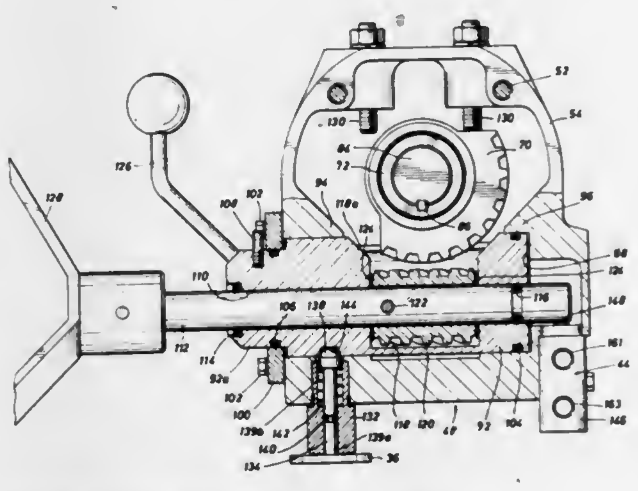
said tubing occluding surface including a slightly concave mid-portion, said slightly concave mid-portion extending transversely to said tubing when said tubing is received in said housing, said tubing occluding surface further having at each transverse end of said concave mid-portion a sloped, planar surface, each sloped, planar surface forming an angle at the intersection with said concave mid-portion of between about 120° and 150°, a concave side surface defining a pocket in said housing at the end of each sloped, planar surface opposite the end of each sloped, planar surface at said mid-portion;

said tongue defining a tongue surface for urging said transverse section of tubing against said tubing occluding surface and including a planar tongue mid-portion surface generally parallel to and substantially corresponding in width to said slightly concave mid-portion of said tubing occluding surface for urging said transverse section of tubing against said mid-portion of said tubing occluding surface, and tongue surface further including at each transverse end of said planar tongue mid-portion surface a planar side portion extending from said planar tongue mid-portion and forming an angle with the intersection of said planar tongue mid-portion of between about 225° and 270° for urging transverse ends of the tubing against said sloped planar surfaces and concave side surfaces of said tubing occluding surface;

said housing and tongue being mounted for movement relative to and away from each other in a generally normal direction relative to said tubing occluding mid-portion surface and said planar tongue mid-portion surface for occluding and releasing the transverse section of tubing contained between said tongue and housing.



4,616,803
DECLUTCHABLE VALVE OVERRIDE
Petrus J. R. Schils, Breda, Netherlands, assignor to Keystone International, Inc., Houston, Tex.
Filed Aug. 23, 1983, Ser. No. 525,655
Int. Cl.⁴ F16K *31/14*
U.S. Cl. 251—14 **12 Claims**



1. Flow control apparatus comprising:

a main valve assembly having an open position and a closed position and comprising a valve body defining a flowway therethrough and a valve element mounted in said flowway for movement between said open and closed positions;

a fluid operated main valve actuator operatively connected to said main valve assembly for moving said main valve assembly between said open and closed positions;

actuator control means for communicating a source of pressurized control fluid to said actuator for selectively causing said actuator to place said main valve assembly in said open or closed position;

override means associated with said main valve assembly and selectively shiftable between an engaged mode, in which said override means is operatively connected with said main valve assembly for moving said main valve assembly between said open and closed positions, and a disengaged mode, in which the operative connection between said override means and said main valve assembly is interrupted whereby said main valve assembly may move independently of said override means,

said override means comprising

a first rotary element having an axis and being connected to said valve element,

a second rotary element having an axis and being rotatably connected to said valve body,

clutch means for moving one of said rotary elements laterally with respect to the axis of said one rotary element toward and away from the other of said rotary elements between said engaged mode and said disengaged mode,

and drive means operatively connected to said second rotary element for rotating said second rotary element about an axis of said second rotary element;

and shut-off means functionally interconnected with said override means and fluidly connected to said actuator control means said shut-off means comprising a shut-off valve interconnecting said actuator and said source of control fluid, said shut-off valve having a flow position, associated with said disengaged mode, for communicating said source of control fluid to said actuator, and a shut-off position, associated with said engaged mode, for blocking said source of control fluid to said actuator and simultaneously exhausting said control fluid from said actuator.

4,616,804
GATE VALVE

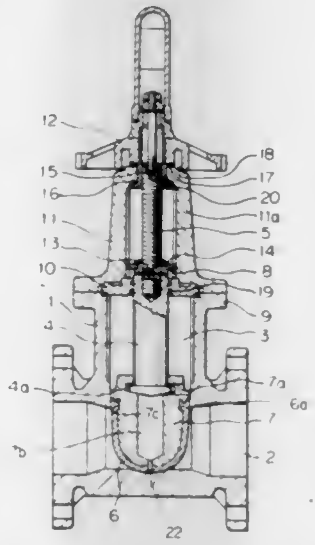
Nichiro Sano, and Hirotoshi Ogawa, both of Nobeoka, Japan, assignors to Asahi Yukizai Kogyo Co., Ltd., Miyazaki, Japan

Filed Jan. 30, 1984, Ser. No. 575,400

Claims priority, application Japan, Sep. 19, 1983, 58-143690[U]

Int. Cl.^{4} F16K *31/50, 3/28*

U.S. Cl. 251—267 2 Claims



1. A gate valve capable of handling slurries, comprising:

a plastic valve casing having a passage and a valve chamber which extends in a direction perpendicular to a longitudinal axis of said passage, the valve chamber communicating with the said passage and being open at its upper end;

a valve body arranged in said valve chamber such that the up and down movement of the body is effective to open and shut said passage, the valve body being covered with a resilient cover, said resilient cover having an upper portion with an integrally formed, inwardly directed annular projection fitted into an annular groove located at an upper peripheral portion of the valve body, said valve body having a cavity, said valve body and resilient cover having spherical bottom portions with a passage extending through said bottom portions to said cavity, and a spindle engaged with said valve body at a lower end of said spindle and arranged to move up and down in dependence on rotation of a handle coupled with said spindle, whereby handle rotation is effective to move the valve body up and down in said valve chamber;

a plastic hollow cover mounted over the upper end of the valve chamber, the hollow cover being provided with an aperture at an upper end thereof and being formed with vertical lead grooves on an inner wall thereof;

a spindle support member isolating the valve chamber from the interior of the hollow cover;

the spindle comprising a lower first spindle and an upper second spindle, said lower first spindle being constructed from plastic, said upper second spindle being made of metal and having a threaded portion, said first spindle sliding through in a sealed manner through the spindle support member from the valve chamber into the interior of the cover;

a guide ring having projections, said guide ring being attached to an upper end of said first spindle, said projections of said guide ring engaging with said vertical lead grooves of said hollow cover, said first spindle including an axial projection at its upper end, said guide ring fitted onto said axial projection so as to be interlocked against rotation relative to said first spindle, said axial projection provided with a snap ring which engages a transverse groove on an upper region of said axial projection so as to secure said guide ring to said axial projection;

said threaded portion of said second spindle passing through said aperture of said cover.

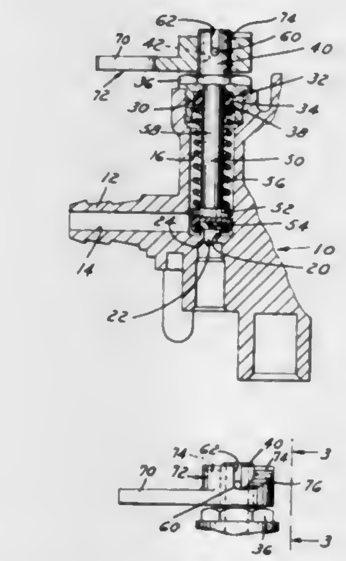
4,616,805
FUEL SHUT-OFF VALVE

Albert L. Haas, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

Filed Jun. 3, 1985, Ser. No. 740,575

Int. Cl.^{4} F16K *31/528*

U.S. Cl. 251—297 2 Claims



1. A fuel shut-off valve to be interposed between a fuel source passage and a fuel utilization device which includes:

(a) a body having a valve bore,

(b) means forming a seat at one end of said bore open on one side to a fuel source passage and at another side to a fuel utilization passage,

(c) a valve element slidable in said bore having a valve head at one end to cooperate in opening and closing said valve seat and an actuator stem extending from said valve head,

that improvement which comprises,

(d) a valve stem guide fitting closing the end of side bore opposite said seat, and a stationary turret on said fitting having an axial side slot,

(e) an annular valve stem seal positioned in said bore adjacent said fitting backed by means to retain said seal,

(f) means to bias said valve head to a closing position on said seat and to retain said seal adjacent said fitting comprising a coil spring seated at one end against said means to retain said seal and at the other end against said valve head,

(g) means to actuate said valve to an open position comprising:

(1) an actuating lever,

(2) a collar on and integral with said lever having a ramp surface rising from a point of origin to a point at the top of said collar,

(3) follower means comprising a cross-pin on said valve stem to ride on said ramp whereby turning said collar and lever raises said valve stem and said valve head against the bias of said coil spring to open said valve seat, and

(h) means to restrain said valve element against rotation in said bore comprising an extension on said cross-pin engaged in said side slot of said turret.

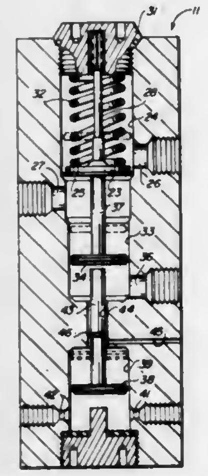
4,616,806
VALVE

Bill G. Davis, Phoenix, Ariz., assignor to Jetco, Inc., Phoenix, Ariz.

Continuation of Ser. No. 534,797, Sep. 22, 1983, abandoned. This application Jul. 3, 1985, Ser. No. 751,474

Int. Cl.^{4} F16K *31/12*

U.S. Cl. 251—63.4 1 Claim



1. A valve device for controlling the flow of fuel to an internal combustion engine having a pressurized lubricating oil system associated therewith, said valve being adapted to be disposed in the fuel line between a fuel pump and the engine, said device comprising a valve body having a bore with an axis therein, a pair of fuel inlet passages in said body both simultaneously and continuously communicating with said bore and said fuel line, means providing a valve seat between one of said inlet passages and said outlet passage, valve means disposed in said bore and moveable axially therein for cooperation with said valve seat to close communication between said one inlet passage and said outlet passage, a balancing piston disposed in sealing relationship with said bore between the other of said inlet passages and said outlet passage and moveable axially in said bore, means connecting said piston and said valve means for transmitting fuel pressure forces acting on said piston to said valve means, the construction and arrangement being such that when said valve means is out of engagement with said valve seat pressure from fuel entering said bore through said one inlet passage acts on one side of said piston and balances pressure from fuel entering said bore through said other inlet passage and acting on the opposite side of said piston, spring means urging said valve means into engagement with said valve seat, means carried by said valve body and adapted to communicate with and to be moved in response to changes in the pressure in the lubricating oil system of the engine, and mans for transmitting movement of said pressure responsive means to move said valve means away from said valve seat when the pressure responsive means senses a predetermined pressure in said oil system.

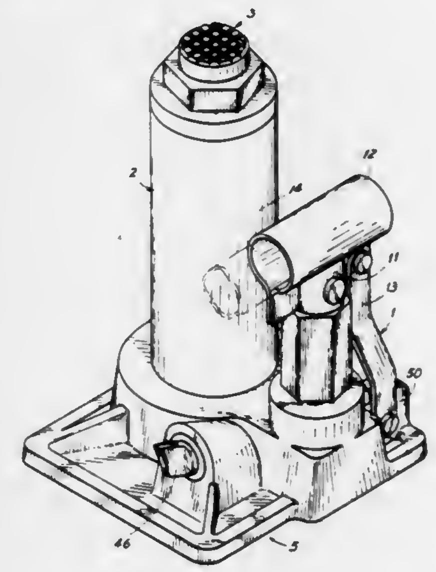
4,616,807
MOLDING JACK BASE

Tsung-Hua Cheng, P.O. Box 10160, Taipei, Taiwan

Filed Apr. 8, 1985, Ser. No. 721,223

Int. Cl.^{4} B66F *3/24*

U.S. Cl. 254—93 H 2 Claims

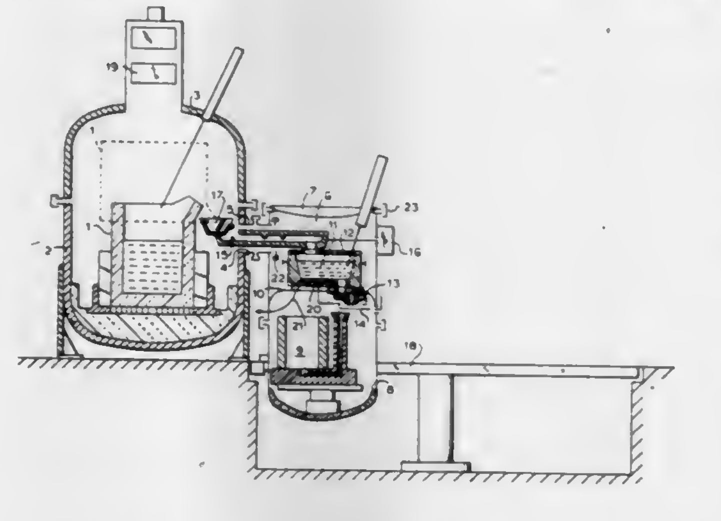


1. A jack base comprisng a preformed plastic base having a socket adapted for the lower portion of a hydraulic cylinder and a hydraulic pump of a jack having a hydraulic oil conduit connected between said pump and said cylinder, said lower portion of said cylinder and said pump connected with said hydraulic oil conduit, which includes an upper tube transversely connected between the jacket of said hydraulic cylinder and the bottom of said hydraulic pump and formed with a check valve therebetween, a lower tube transversely connected between the bottom of said cylinder and the bottom of said pump and formed with a check valve therebetween, and a side pipe vertically connected between said upper tube and said lower tube and formed with a control valve therebetween, being fitted into said socket of said preformed plastic base and a resin binder being further filled into said socket and heated, cured so as to sturdily bind said binder with said preformed base in combination with said lower portion of said cylinder and said pump, and said conduit to form an integrated body.

4,616,808
APPARATUS FOR THE TREATMENT AND CASTING OF METALS AND ALLOYS IN A CLOSED SPACE

Ivan D. Nikolov, deceased, late of Sofia; by Vassilka P. Dimova, heir, Sofia; Dobromir I. Dimov, heir, Sofia; Petar I. Dimovsons, heir, Sofia; Marin I. Marinov, Sofia; Ivan M. Peytchev, Sofia; Tzolo V. Rashev, Sofia, and Iliya G. Tchorbov, Sofia, all of Bulgaria, assignors to Institute po Metaloznanie i Technologia no Metalite, Sofia, Bulgaria

Filed Feb. 4, 1985, Ser. No. 698,086
Int. Cl.⁴ C21C *7/10*
U.S. Cl. 266—207 **2 Claims**

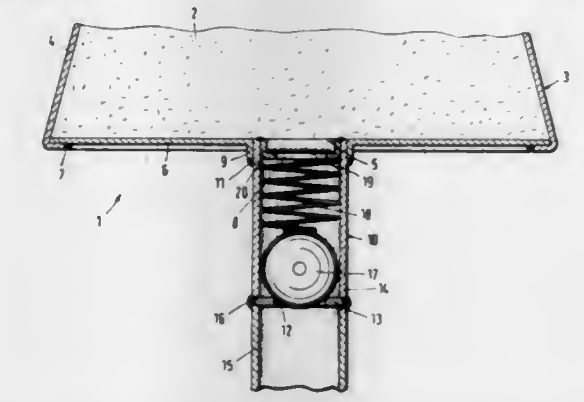


1. In an apparatus for treating and casting metals and alloys, said apparatus including an induction furnace and a hermetic chamber, inside which there is disposed a casting mold, the induction furnace and the hermetic chamber being interconnected by a movable launder, the improvement wherein above one end of the movable launder there is mounted a siphon, and underneath its other end there is disposed a tundish which is mounted inside a first hermetic chamber that is gas-tightly sealed against a separating plate attached to a second hermetic chamber containing the casting mold, the tundish being provided with a bottom for blowing-through with alloying gas.

4,616,809
GAS BUBBLE BRICK FOR METALLURGICAL VESSELS

Hans Höffgen, IM Silbertal 13, 5410 Höhr-Grenzhausen, Fed. Rep. of Germany

Filed Oct. 24, 1984, Ser. No. 664,437
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1983, 3341446
Int. Cl.⁴ C21B *7/16*
U.S. Cl. 266—220 **3 Claims**



1. Gas bubble brick for metallurgical vessels consisting of a porous, gas-permeable shaped brick made of refractory material, a gas-tight partial encasing surrounding the latter, which encasing is welded together from a metal jacket extending around the lateral curcumferential area of the shaped brick and a metal cover covering the outer face of the shaped brick, a gas supply pipe which is welded to the rim of a central gas inlet orifice of the metal cover, as well as a break-through safeguard in the area of the gas supply pipe, wherein

a constricted cross-section, defining a valve seat, is provided in the gas supply pipe at a distance from the gas inlet orifice of the metal cover,

a closure body is provided in the pipe section between the metal cover and the constricted cross-section, said body being movable at least in the axial direction of the gas supply pipe, and

a compression spring is provided between the closure body and the metal cover which presses the closure body against the valve seat,

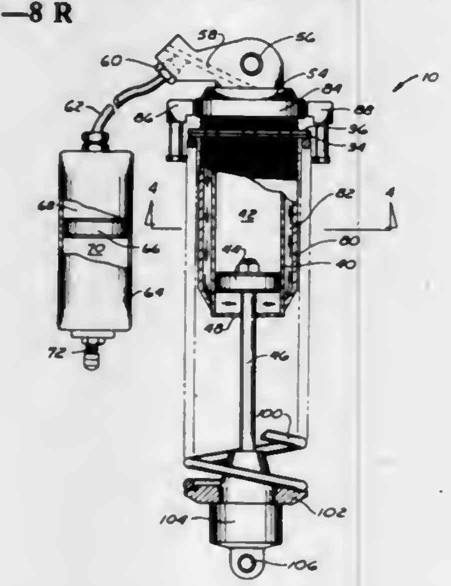
the cross-section of said closure body being smaller than the inside diameter of the gas supply pipe and greater than the constricted cross-section,

the closure body, together with the constricted cross-section, forming a non-return valve.

4,616,810
LIQUID COOLED SHOCK ABSORBER

Wayne U. Richardson, and Robert H. Richardson, both of 862 N. Pleasant St., Southington, Conn. 06489

Filed Mar. 28, 1985, Ser. No. 716,963
Int. Cl.⁴ F16F *9/42*
U.S. Cl. 267—8 R **13 Claims**



1. A temperature stabilizable shock absorber for a motorcycle or other vehicle comprising:

cylinder means to form a generally fluid tight damping chamber;

damping piston means received by said cylinder means and axially displaceable therein comprising a piston connecting a shaft projecting through an end of said first cylinder means to produce a reciprocating damping displacement of said piston in response to axial forces applied to said shaft;

fluid reservoir means to supply a source to damping fluid for said damping chamber;

shaft mounting means to mount an end of said shaft to a vehicle;

cylinder mounting means to mount said cylinder means to a said vehicle;

jacket means to form a stabilizing chamber at least partially surrounding said damping chamber and extending axially therealong said stabilizing chamber being in fluid isolation relative to said damping chamber and said reservoir means and forming a generally axially extending first passage having an inlet opening and a generally axially extending second passage having an outlet opening in fluid communication therewith, said openings being disposed at the same general axial position of said stabilizing chamber; and

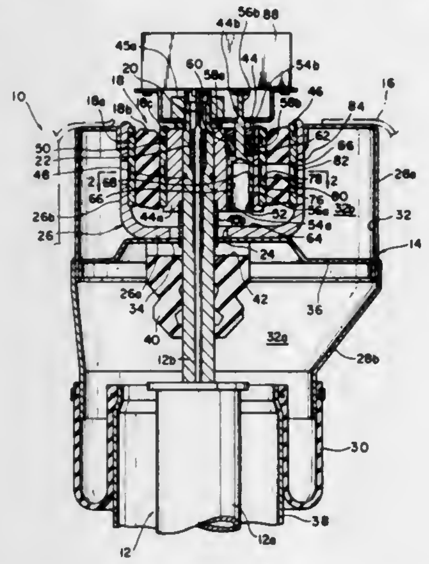
suspension spring means comprising a coil spring surrounding said jacket means for axially biasing said shaft for projection from said cylinder means said spring means having opposite ends, both said ends being axially spaced from said openings in one axial direction of said jacket means;

so that a fluid circulating in said stabilizing chamber between said inlet opening and said outlet opening traverses said first passage in a generally axially extending direction and circulates said second passage in a generally opposing axial direction along a circulation path which is in heat exchange relationship with said damping fluid and said spring.

4,616,811
AIR SUSPENSION

Shuuichi Buma, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 8, 1985, Ser. No. 709,661
Claims priority, application Japan, Jul. 12, 1984, 59-104457[U]
Int. Cl.⁴ F16F *3/08*
U.S. Cl. 267—35 **10 Claims**



1. An air suspension capable of varying the spring constant by controlling communication between a main air chamber and an auxiliary air chamber provided in association with a shock absorber including a cylinder, a piston and a piston rod, comprising:

a peripheral wall member defining a wall portion of one of said air chambers and having one or a plurality of first air paths penetrating from an inner peripheral surface to an outer peripheral surface to open to said one air chamber;

a tubular elastic member disposed inside said peripheral wall member and having one or a plurality of second air paths penetrating from an inner peripheral surface to an outer peripheral surface of said tubular elastic member to communicate to said first air path;

a valve container disposed inside said tubular elastic member and coupled to said piston rod and having a valve containing section, one or a plurality of third air paths penetrating from said valve containing section to an outer peripheral surface of said valve container, and a fourth air path provided circumferentially on the outer peripheral surface of said valve container and communicating to said second and third air paths respectively; and

a valve body disposed in said valve containing section of said valve container and having a fifth air path communicating to the other one of said two air chambers, and one or a plurality of sixth air paths penetrating from said fifth air path to an outer peripheral surface of said valve body and being able to communicate to said third air path.

4,616,812
HYDROPNEUMATIC SPRING CYLINDER AND METHOD OF FILLING THE SAME

Lino E. Tornero, 629 Joyner St., Greensboro, N.C. 27403

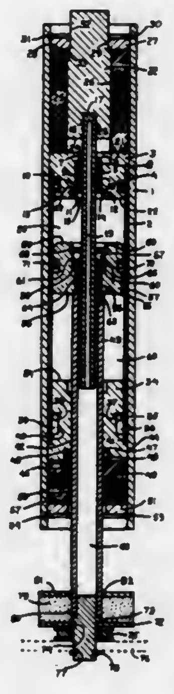
Filed Nov. 13, 1984, Ser. No. 671,292
Int. Cl.⁴ F16F *1/00*
U.S. Cl. 267—131 **6 Claims**

1. A hydropneumatic spring for use as an adjustable columnar support for such apparatuses as chairs, tables, stools, and the like requiring height or angle adjustments, said spring comprising:

(a) a cylindrical casing including plug means for closing said casing adjacent each end and containing a fluid under pressure therein;

(b) a piston movably supported within said cylindrical casing with respect to the inner wall thereof, said piston dividing said casing into an upper chamber and a lower chamber and having an axial passageway therethrough for providing a path for said fluid therebetween;

(c) a hollow piston support rod having one open end thereof



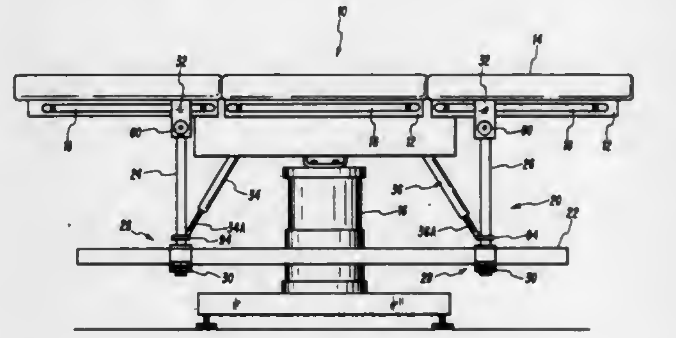
received in the passageway in said piston for defining said fluid path therethrough between said upper and lower chambers, the other end of said support rod extending through one of the closed ends of said casing in sealed, slidable, axially guidable relation thereto and being closed at the bottom end thereof;

(d) valve means for selectively opening and closing the fluid path between said upper and lower chambers by passing said fluid from one of said chambers to the other chamber through said hollow piston support rod responsive to axial forces exerted on said hydropneumatic spring which tend to move said cylinder relative to said piston.

4,616,813
SUSPENSION FOR SURGICAL SUPPORT APPARATUS

Bernard E. McConnell, Rte. 2, Box 87, Greenville, Tex. 75401

Continuation-in-part of Ser. No. 598,579, Apr. 10, 1984, Pat. No. 4,579,324. This application Jan. 22, 1985, Ser. No. 693,146
Int. Cl.⁴ A61G *13/00*
U.S. Cl. 269—328 **12 Claims**



1. A suspension assembly for use in combination with a table comprising, in combination:

a horizontal support bar;

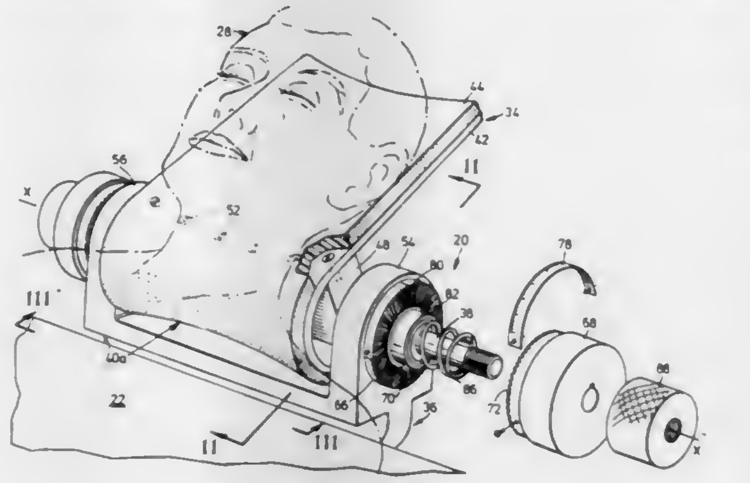
first and second clamps each adapted for releasable attachment to said table;
first and second support legs, each support leg having a first end portion coupled to said support bar and having a second end portion attached to one of said clamps;
said first and second clamps each including a clamp body having an attachment portion adapted for coupling engagement with one of said support legs, a fixed jaw member projecting from said clamp body for engaging a portion of said table, and having a cavity for receiving a compression member;
a compression member received within the cavity in each clamp body and mounted thereon for movement away from said fixed jaw member to an open, retracted position allowing positioning of said fixed jaw member and said compression member about said table portion, and for movement from the retracted position to an extended position for engagement with said table portion;
means coupled to said clamp body for driving said compression member from its open, retracted position toward its extended position and into compressive engagement with said table portion; and,
said compression member on each clamp body being mounted for pivotal movement to and from the extended and retracted positions, and said compression member comprising a cam portion for engaging said drive means and a movable jaw portion for engaging said table portion.

4,616,814
X-RAY HEAD HOLDER

Derek C. Harwood-Nash, Willowdale; Charles R. Fitz, Toronto; Edward T. Zouch, Toronto, and John M. Smith, Toronto, all of Canada, assignors to The Hospital for Sick Children, Toronto, Canada

Filed Dec. 7, 1983, Ser. No. 559,137
Int. Cl.⁴ A61G *13/00*

U.S. Cl. 269—328 **15 Claims**



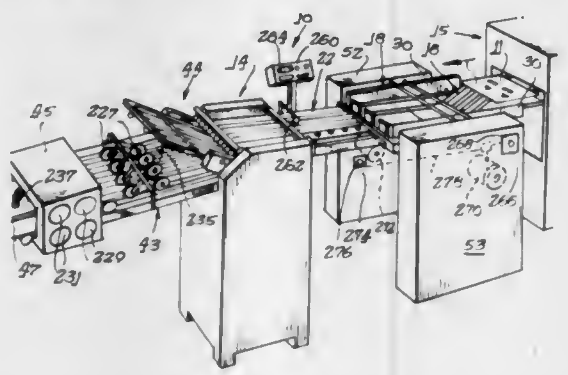
1. A device for supporting at least the head of a patient during x-ray examination and the like, the device comprising:
a support capable of carrying the head of an adult patient;
a base adapted to be secured to external structure and defining two upstanding lugs on respectively opposite sides of said support; and,
means coupling the support and base and adapted to permit pivotal movement of the support with respect to the base about an axis which normally extends generally horizontally transversely of and below the neck area of an adult patient whose head is disposed on said support, said coupling means including: a shaft coupled to the support and extending through openings in said lugs in which the shaft can turn as the attitude of the support is adjusted; and means for securing the support in an adjusted position about said axis, comprising: first and second collars adapted to be releasably locked together in any of a series of angularly spaced positions of said shaft, one of said collars being secured to said base and the other collar being keyed to the shaft for longitudinal sliding movement therealong between a first position in which said collars are disengaged, and a second position, in which said collars are releasably locked together;
said support including a lower portion which is intended to underlie the neck area of said patient and which curves generally about the axis defined by said coupling means, and an upper portion which extends generally tangentially outwardly from said lower portion and which is adapted to support the rear head area of an adult patient, said portions defining respective outer surfaces which merge together to present a substantially smooth profile to the patient;
whereby the support can be adjusted to a variety of angular positions about said axis, in any of which said outer surfaces provide substantially continuous support for the head and neck area of the patient.

4,616,815
AUTOMATIC STACKING AND FOLDING APPARATUS

Michael Vijuk, Oakbrook, Ill., assignor to Vijuk Bindery Equipment, Inc., Elmhurst, Ill.

Filed Mar. 5, 1985, Ser. No. 708,300
Int. Cl.⁴ B42C *1/00*

U.S. Cl. 270—45 **16 Claims**



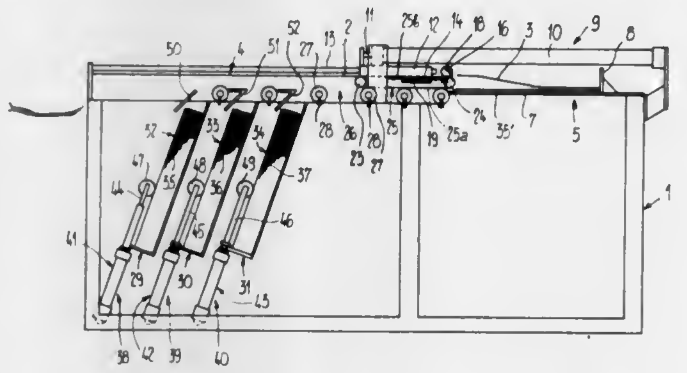
1. An apparatus for stacking thin, non-folded, flexible sheets, feeding sheets from the stack and for folding the sheets comprising the combination of:
a conveyor for continuously feeding a stream of shingled sheets at a predetermined speed into a stacking station and for dropping the sheets while still shingled one by one on top of the other to form a stack of sheets at the stacking station,
a front stop in the stacking station abutted by the imcoming sheets to limit their forward travel and to define the forward location of the stack of sheets,
a back jogger means located at the back of the stack for jogging the rearward edges of the incoming sheets and the sheets in the stack toward and against the front stop,
side jogger means for jogging the incoming lateral sides of the sheets to align the sheets with their lateral edges aligned within the stack,
air levitating means for providing a layer of air between sheets in the stacking station for separating the lowermost sheets in the stack by air while the sheets are being jogged,
bottom suction feed means including a continuously rotating suction roller for gripping the leading end of the bottom sheet of the stack while incoming sheets are being stacked on top of the stack in the stacking station,
means defining a gap at the lower front end of the stacking station to allow passage of only the lowermost sheet through the gap,
a continuously operating conveyor means for conveying each sheet from the stacking station to a folding station,
adjustable speed conrol means to adjust the speed of the vacuum cylinder and conveyor means relative to that of said conveyor continuously feeding shingled sheets to said stacking station to prevent an over or under accumulation of sheets in the stacking station, and
folding means at the folding station for folding a continuous stream of sheets being fed from the stack hy the conveyor means.

4,616,816
APPARATUS FOR SUPERPOSING FLEXIBLE FLAT STRUCTURES, ESPECIALLY SHEETS AND SIGNATURES, AND METHOD OF USING SUCH APPARATUS

Hans-Ulrich Stauber, Grüt, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Sep. 23, 1985, Ser. No. 778,615
Claims priority, application Switzerland, Sep. 24, 1984, 4561/84
Int. Cl.⁴ B65H *39/02*

U.S. Cl. 270—58 **12 Claims**



1. An apparatus for superposing flexible flat structures, especially sheets and signatures, comprising:
at least one receiving bin open toward its top;
said at least one receiving bin accommodating a supply of said flexible flat structures;
deposit means operatively associated with said at least one receiving bin and in which said flexible flat structures are collected in a superposed condition;
a predetermined conveying path leading from said at least one receiving bin to said deposit means;
said at least one receiving bin being arranged below said conveying path;
collecting means displaceable along said predetermined conveying path in order to thereby convey said flexible flat structures to said deposit means after their withdrawal from said at least one receiving bin;
said collecting means containing at least one endless conveyor belt drivable in a predetermined direction of movement;
means for driving said endless conveyor belt;
said conveyor belt defining a first run which faces said at least one receiving bin; and
said first run of said conveyor belt being circulatingly drivable in said predetermined direction of movement of said conveyor belt.

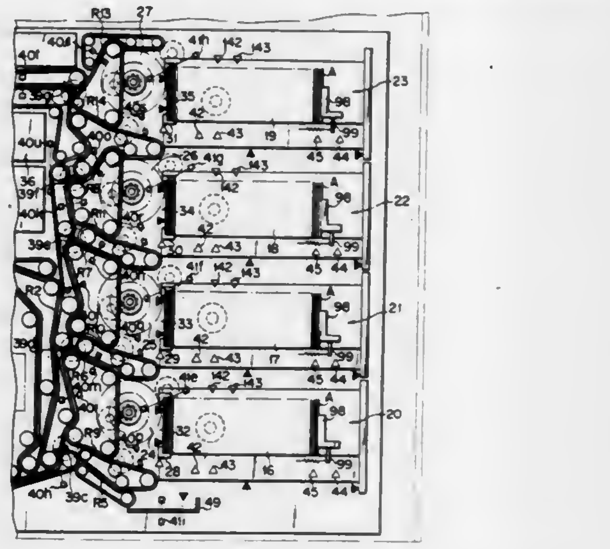
4,616,817
PAPER SHEET DISPENSING APPARATUS

Masahide Yamauchi, Kawasaki, and Minoru Hirose, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 3, 1984, Ser. No. 606,684
Claims priority, application Japan, May 9, 1983, 58-80291
Int. Cl.⁴ B65H *3/44*

U.S. Cl. 271—9 **19 Claims**

1. A paper sheet dispensing apparatus comprising:
storage means for stacking paper sheets along a predetermined stacking direction, said storage means having an outlet port on one edge of one end thereof;
rotating means, rotatably disposed at said outlet port, for engaging one of the paper sheets stacked in said one end of said storage means;
biasing means for biasing the paper sheets toward said rotating means so as to cause said rotating means to be engaged with said one of the paper sheets;
first driving means for rotating said rotating means to convey said one of said paper sheets which is engaged with said rotating means through said outlet port in response to rotation of said rotating means;
first engaging means, movable in the predetermined stacking direction, for freely engaging with a paper sheet whose end is located in a position opposite to said one edge of said storage means;
second driving means for moving said first engaging means



apart from said rotating means in the predetermined stacking direction while said first engaging means continues to be engaged with said one end of the paper sheets; and
third driving means for moving said first engaging means thereby disengaging said first engaging means from said one end of the paper sheet after said first engaging means is moved apart from said rotating means by said second driving means,
wherein the paper sheets disengaged from said first engaging means by said third driving means are engaged with said rotating means due to the biasing force of said biasing means.

4,616,818
CARTON BLANK FEED APPARATUS

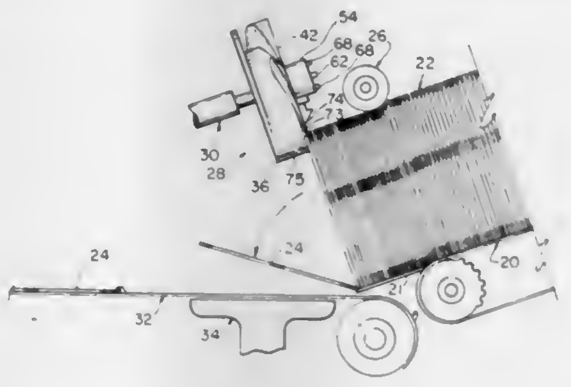
Peter Vischer, Golden, Colo., assignor to Adolph Coors Company, Golden, Colo.

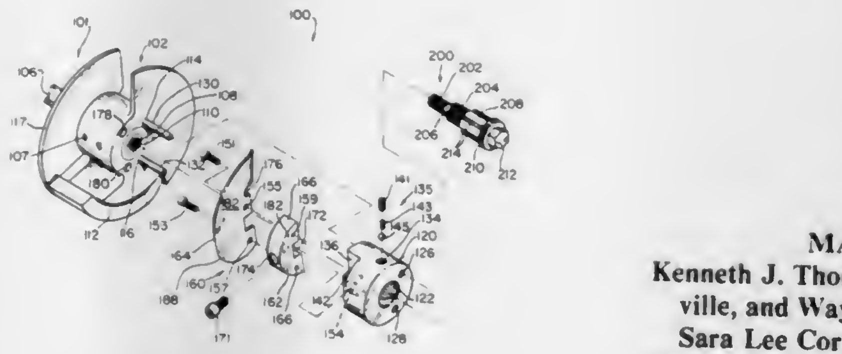
Filed Mar. 15, 1985, Ser. No. 714,080
Int. Cl.⁴ B65H *3/32*

U.S. Cl. 271—113 **5 Claims**

1. A carton separating apparatus for separating a carton from a stack of cartons comprising:
a rotatable body means;
a drive shaft means connected to said rotatable body means;
a plate means mounted axially adjacent said body means;
a separating blade means attached to said plate means and having a side surface facing said body means and defining an axial gap therebetween adapted to receive a portion of a carton;
a single screw means supporting and connecting said plate means to said body means and including a first threaded portion of one thread pitch connected to said body means and a second threaded portion of another thread pitch connected to said plate means whereby rotation of said

single screw means causes differential relative axial displacement of said plate means and said separating blade means whereby the length of said axial gap therebetween is adjustable by rotation of said single screw means.





4,616,819

PAPER SHEET FEEDING ARRANGEMENT

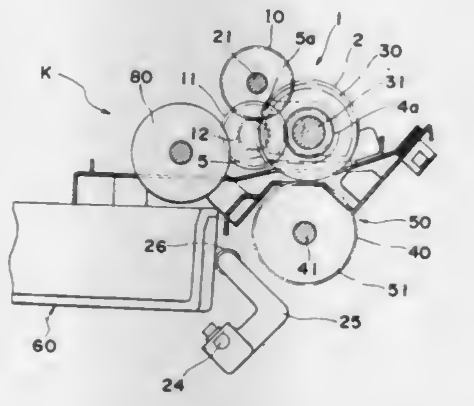
Tatsumi Makio, Toyohashi; Kazumasa Hayakawa, and Genta Sakaguchi, both of Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 1, 1985, Ser. No. 793,951

Claims priority, application Japan, Nov. 8, 1984, 59-169522[U]

Int. Cl.⁴ B65H *3/52*

U.S. Cl. 271—122 **8 Claims**



1. A paper sheet feeding arrangement for feeding paper sheets one sheet by one sheet, comprising:

a cassette for accommodating a stack of the paper sheets, which is detachably mounted on a paper feeding section;

a paper feeding roller for feeding the paper sheet in a paper feeding direction from said cassette;

a feed roller for transporting the paper sheet fed by said paper feeding roller;

a paper sheet separating roller in contact with said feed roller and rotatable in a direction counter to the paper feeding direction;

said feed roller and said paper sheet separating roller being provided forwardly of said paper feeding roller in the paper feeding direction;

a return roller which is rotatably provided coaxially with one of said feed roller and said paper sheet separating roller and is formed, at its outer peripheral portion, with a cutoff face such that said cutoff face confronts a feed passage of the paper sheet when the paper sheet is fed by said paper feeding roller; and

a paper sheet returning means associated with the release action of said cassette from said paper feeding section for bringing said feed roller and said paper sheet separating roller out of contact with each other and causing said return roller to rotate in the direction counter to the paper feeding direction, whereby the paper sheet gripped between said feed roller and said paper sheet separating roller is returned into said cassette.

4,616,820

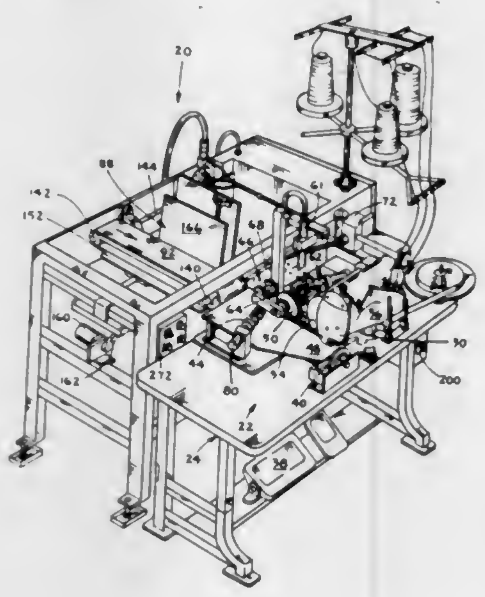
MATERIAL HANDLING SYSTEM

Kenneth J. Thompson, Lexington; Joel C. Rosenquist, Kernersville, and Wayne G. Foster, Advance, all of N.C., assignors to Sara Lee Corporation, Winston-Salem, N.C.

Division of Ser. No. 457,457, Jan. 12, 1983, Pat. No. 4,550,670. This application May 3, 1985, Ser. No. 730,159

Int. Cl.⁴ B65H *29/34*

U.S. Cl. 271—189 **5 Claims**



1. A stacking assembly for garment components and the like comprising: an elevator tray for receiving components on its upper surface for stacking, support means positioned above said elevator tray for sequentially receiving and releasing individual components for deposit upon said elevator tray, means including timer means for selectively actuating said support means to permit a garment component to drop therefrom and onto said elevator tray, elevator tray control means for selectively displacing said tray, said elevator tray control means including fluid means for displacing said tray in a generally vertical plane and sensor means for detecting the top portion of a stack of components upon said tray for controlling said fluid means for lowering said elevator tray as the stack of components builds up to maintain the top of the stack at a predetermined level, said control means also including timer means for facilitating precise stacking of the components and preventing inaccurate positioning of said stack tray by periodically positioning said elevator tray provided said sensor means does not detect the top portion of the stack of components.

4,616,821

SHEET IMAGING APPARATUS

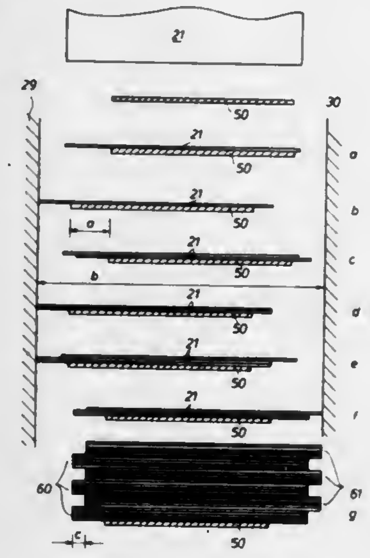
Gerard J. Boeve, and Etienne M. De Cock, both of Edegem, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Mar. 25, 1985, Ser. No. 715,940

Claims priority, application European Pat. Off., Mar. 30, 1984, 84200453.3

Int. Cl.⁴ B65H *31/04*

U.S. Cl. 271—213 **5 Claims**



1. Sheet imaging apparatus wherein sheets are taken in succession from a supply stack of sheets, passed through an imaging station wherein an image is formed on the sheets, and then delivered one by one into a collecting tray, and wherein said collecting tray is provided with a sheet-supporting back plate movably mounted for back and forth movement in a direction transverse to the direction of sheet delivery, thereby to produce two part-stacks of sheets in the collecting tray, characterised in that said collecting tray comprises opposed stationary wall means spaced transversely of either lateral side of the sheet-supporting plate, and means for driving the back plate cyclically between transversely spaced dead end points in such a way that at one dead point of the movement a first group of sheets is received one-by-one on the sheet-supporting plate and at the other dead point such sheets are displaced by abutment against the corresponding stationary wall, thereby to form one part-stack of sheets, and that at said other dead point of movement a second group of sheets is received one-by-one on the back plate and at said first dead point said sheets of said second group are displaced by abutment against the corresponding stationary wall, thereby to form the other part-stack of sheets.

4,616,822

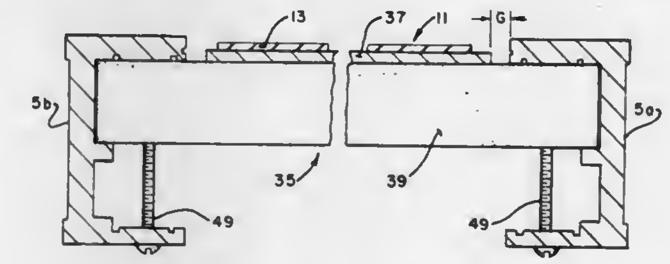
EXERCISE TREADMILL

James A. Trulaske, 609 Sunbridge Dr., and Frank R. Trulaske, 576 Sunbridge Dr., both of, Chesterfield, Mo. 63017

Filed Aug. 1, 1984, Ser. No. 636,747

Int. Cl.⁴ A63B *23/06*

U.S. Cl. 272—69 **7 Claims**



1. An exercise treadmill having a frame, said frame comprising a pair of spaced side members extending generally lengthwise of said treadmill, a pair of generally parallel, spaced rollers journaled on said side members and extending transversely between said side members, an endless belt entrained around said rollers, said belt having an upper reach on which a user of said treadmill runs or walks and a lower reach, means for driving one of said rollers and said belt, said belt moving along an endless path around said rollers, and means carried by said frame for supporting said upper reach of said belt and for effectively dissipating heat therefrom generated by the friction of said upper reach of said belt rubbing on said supporting means, said support means comprising a metal plate disposed generally at the elevation of said frame side members and below said upper reach of said belt having a length sufficient so as to substantially continuously support said upper reach between said rollers and a width somewhat less than the distance between said side members such that a gap is present between the sides of said plate and each of said side members, said support means further comprising a plurality of transverse beams disposed below said upper reach with said plate bearing thereon, said beams being secured to said side frame members and being spaced from one another, with the area of said plate in contact with said beams being small in relation to the area between said beams such that frictional heat generated by said rubbing on said plate is conducted from said belt into said plate, and such that relatively cool ambient air between the upper and lower reaches of said belt is heated by the lower face of said face, and such that the heated air is exhausted from the below said plate via said gaps, said beams being sufficiently flexible in vertical direction so as to at least in part cushion the impact of a runner's feet on said belt.

4,616,823

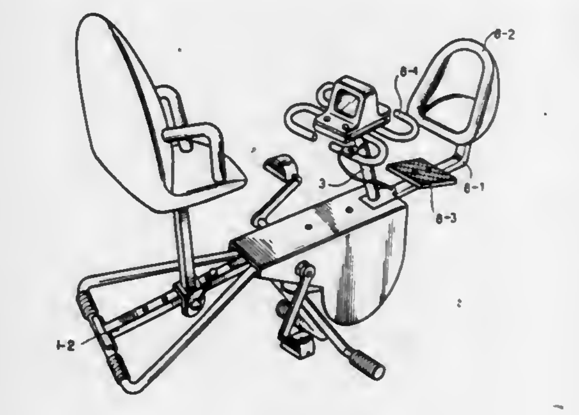
EXERCISE BICYCLE WITH INCLINED SEATS FOR TWO PEOPLE

Tai-Her Yang, 5-1, Tai-Pin Street, Si-Hu Town, Dzan-Hwa, Taiwan

Filed Aug. 14, 1984, Ser. No. 640,775

Int. Cl.⁴ A63B *23/04*

U.S. Cl. 272—73 **4 Claims**



1. An exercising device comprising:

a main frame for resting on a surface;

a subsidiary frame member, mounted to and supported by said main frame at an angle inclined with respect to said surface, said subsidiary frame member defining a plurality of apertures arranged along a common line on a first surface thereof;

an elongated supporting shaft having first and second ends;

a mounting plate fixed to the first end of said supporting shaft;

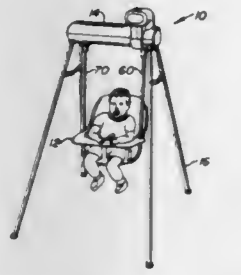
U-shaped flange means fixed to the second end of said supporting shaft, said flange means including a flat portion and at least first and second legs extending from said flat portion in a direction axial to said supporting shaft, said first and second ends spaced apart a distance exceeding at least one dimension of said subsidiary frame member first surface, said flange means further including a pin projecting axially therefrom between said first and second legs, said pin having a length which is less than the lengths of either of said first and second legs, said pin having a diameter which is slightly less than the diameter of any of said

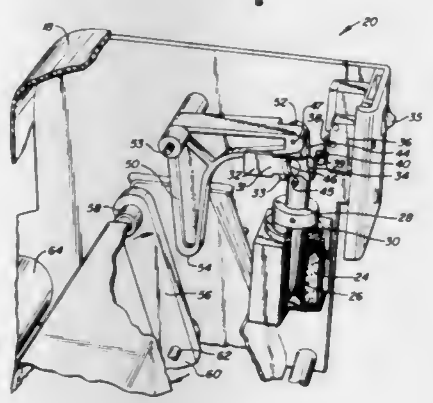
plurality of apertures, said first and second legs defining first and second holes, respectively, in registry with one another, said flange means for reciprocally sliding along said subsidiary frame member and for engaging with a selected one of said plurality of apertures;
a locking means, extending through said hole in said first leg to said hole in said second leg, for pulling said first and second legs together and thereby retaining said elongated supporting shaft in a selected position whereat said pin extends into said selected one of said plurality of apertures;
a first seat fixed to said mounting plate; and
a first set of pedals, rotatably journalled to one of said main frame and said subsidiary frame member, for being rotated by the feet of a person seated in said seat.

4,616,824
ELECTRIC SWING

Robert L. Quinlan, Jr., Barberton, and Charles W. Lauro, Akron, both of Ohio, assignors to Gerber Products Company, Fremont, Mich.

Filed May 29, 1984, Ser. No. 615,402
Int. Cl.⁴ A63G *9/16*
U.S. Cl. 272—86 **1 Claim**



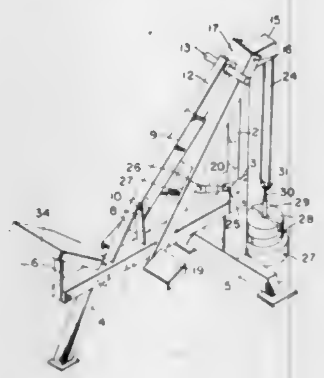


1. An electric swing mechanism for exerting a swinging force on a swing hanger supporting a swing seat, comprising:
a low voltage direct current power source;
solenoid means mounted to the frame structure of the swing and linked to the power source for producing a motive force through a vertical piston when energized, the piston linearly reciprocating through the solenoid;
normally open switch means mounted to the frame for selectively energizing the solenoid when closed, said switch means further comprising a switch arm pivotally linked to engage a switch contact for closing said switch means, wherein said switch arm further comprises a roller;
link means having one end pivotally mounted to the top of said piston about an axis which is perpendicular to the central axis of the piston, said link means having an imbalanced actuator lever pivotally connected thereto, said imbalanced actuator lever pivoting in a pinned connection to the link means and, having an actuator head at one end with a curved edge surface shaped for closing the switch only in one direction of the stroke of the piston by causing the switch arm to abut against actuator stop means on said link means to engage the switch contact to close the switch on the downward stroke of the piston and causing the imbalanced lever to pivot and so rotate the roller along the curved surface edge of the actuator head of the lever without engaging the switch contact on the upward stroke of the piston; and
linkage means for linking the swing hanger to the link means by transmitting the motive force to the swing hanger via intermittent physical contact between the linkage means and the swing hanger, wherein said linkage means further comprises
a driver arm, shaped like an inverted L, having one end pivotally linked to the other end of the link means, the other end free to intermittently contact the swing hanger with a pushing force, and the apex of said driver arm pivotally pinned to a frame structure for the swing.

4,616,825
AEROBIC EXERCISE MACHINE

Melvin J. Anderson, Rte. #1, Box 8800, Inkom, Id. 83245

Filed Mar. 4, 1985, Ser. No. 708,019
Int. Cl.⁴ A63B *21/06*
U.S. Cl. 272—134 **6 Claims**

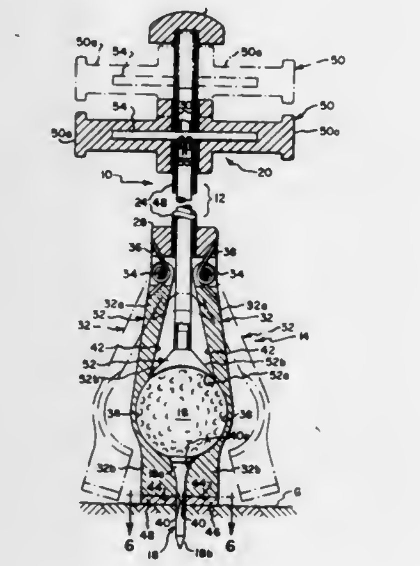


1. An aerobic exercising machine that works all the major body muscles simultaneously comprising:
a. a vertical beam having a cross arm at the foot end and a forward extension at the top end, said forward extension supporting a plurality of free weights;
b. a horizontal beam pivotally connected to said vertical beam by a plate means at approximately one third the height of said vertical beam;
c. a rear leg support pivotally connected to said horizontal beam at the end opposite said vertical beam connection;
d. an adjustable sloping seat bolted to a seat bracket attached to the horizontal beam above the rear leg support;
an adjustable sloping seat connected to said horizontal beam above said rear leg support;
e. a foot lever pivotally attached to the top of said vertical beam, the bottom end of said foot lever having a pair of foot pedals, said foot pedals straddling said horizontal beam;
f. a vertical support connected to said horizontal beam directly forward of said seat, said vertical support having a hand lever pivotally attached thereto, the upper end of said hand lever having a pair of handgrips;
g. a first pulley means operatively connected to said forward extension, a second pulley means operatively connected to said plate means, a third pulley means operatively connected to said hand lever, and a fourth pulley means operatively connected to said horizontal beam proximate said vertical support;
h. cable means having a first end connected to the bottom end of said foot lever and extending through said fourth pulley means, said second pulley means, said third pulley means, back through said second pulley means, through said first pulley means, and having a second end attached to said free weights;
i. a digital counter at the top of said vertical beam and connected to the top end of said foot lever.

4,616,826
GOLF BALL AND TEE SETTING APPARATUS

George M. Trefts, 216-A Eagle Point, Punta Gorda, Fla. 33950

Filed Apr. 22, 1985, Ser. No. 725,933
Int. Cl.⁴ A63B *57/00*
U.S. Cl. 273—32.5 **3 Claims**

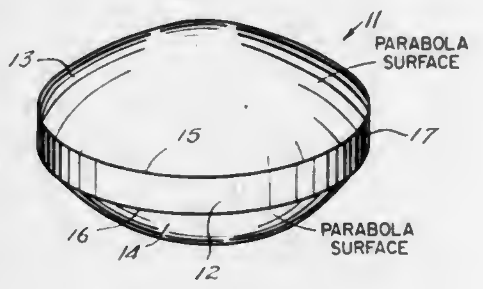


1. A unit for use in teeing a golf ball incident to driving a tee into the ground, said unit comprising in combination:
an elongated main frame element, said frame element includes a tubular member having a U-shaped mounting bracket fixed to its lower end, a knob fixed to its upper end and a pair of aligned, axially extending guide slots formed adjacent its upper end;
a retaining mechanism mounted adjacent a lower end of said main frame element, said mechanism including a pair of arms supported for relative movement between an adjacent retaining position and a remote releasing position, said arms having upper end and lower end portions, said upper end portions are supported by pivot pins bridging between legs of said mounting bracket and have facing cam follower surfaces, said lower end portions define recess means on facing surfaces thereof cooperating when said arms are in said retaining position for retaining a tee to extend generally coaxially with said main frame element with a head end of said tee supported by said arms and a pointed end of said tee projecting outwardly beyond said arms for insertion into the ground and for retaining a golf ball in essentially centered engagement with said head end of said tee, said lower end portions when said arms are in said retaining position limiting the extent of insertion of said pointed end of said tee into the ground by engagement with the ground, said arms when in said release position permitting said tee and golf ball to be removably inserted between said arms, and spring devices surrounding said pivot pins and engaging said arms and said mounting bracket for normally biasing said arms towards said retaining position; and
handle mechanism movably carried by said main frame element for controlling movement of said arms between said retaining and releasing positions, said handle mechanism including an operating member slidably received within said tubular member, a handle fixed to an upper end of said operating member by a mounting pin slidably received within said guide slots and a foot fixed to a lower end of said operating member, said foot having a lower surface arranged to engage with said golf ball when retained between said arms for applying pressure thereto for driving said pointed end of said tee into the ground and said foot having cam surfaces arranged to slidably engage with said cam follower surfaces for moving said arms towards said releasing position against the bias of said spring devices, when said foot is moved away from said golf ball and towards said mounting bracket incident to sliding movement of said operating member within said tubular member in a direction towards said knob.

4,616,827
PLAYING BALL

James H. Bergland, 102 York, St. Louis, Mich. 48880

Filed Aug. 23, 1984, Ser. No. 643,445
Int. Cl.⁴ A63B *65/00, 41/00*
U.S. Cl. 273—58 A **6 Claims**

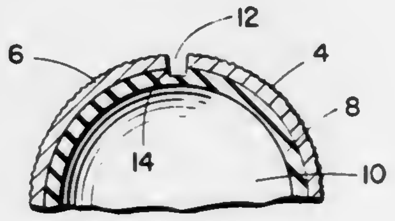


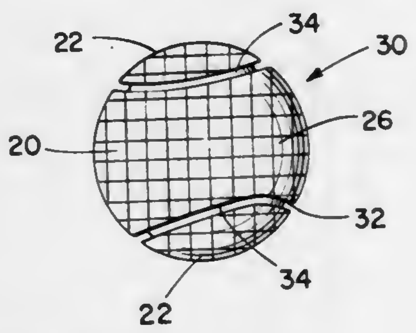
1. A playing ball having a circular center disc portion and having a parabola dome upper configuration and a parabola dome lower configuration, the base portion of said domes each peripherally connected to said disc.

4,616,828
TENNIS BALL

James Haythornthwaite, 567 Main Road, Hudson, Quebec, Canada (J0P 1J0)

Filed Feb. 1, 1985, Ser. No. 697,237
Int. Cl.⁴ A63B *39/06*
U.S. Cl. 273—61 R **16 Claims**



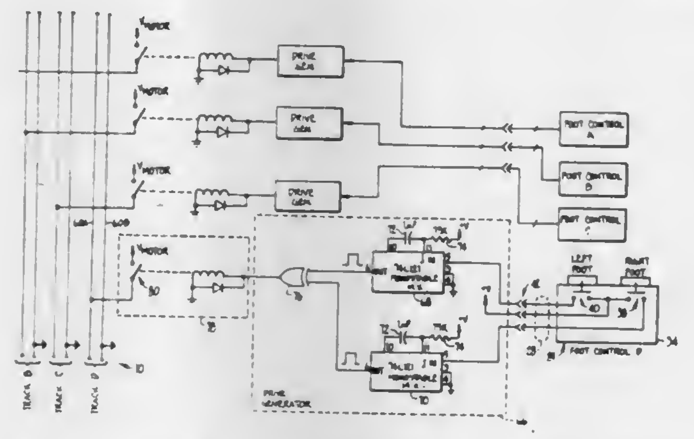


1. A tennis ball comprising:
a hollow spherical core;
two cover members having peripheral edges secured to said core and being spaced from one another along said edges; and
a groove in an outer peripheral surface of said spherical core, said groove being in alignment with and below said edges of said two cover members for controlling air turbulence around said tennis ball during its trajectory.
5. A tennis ball comprising:
a hollow spherical core;
two cover members having spaced apart peripheral edges, said two cover members being secured to an outer peripheral surface of said spherical core and substantially surrounding said spherical core, each of said two cover mem-

bers including synthetic fibers, said synthetic fibers extending at right angles toeach other and being sufficiently spaced from each other to expose portions of said outer peripheral surface of said spherical core for controlling air turbulence around said tennis ball during its trajectory.

4,616,829
APPARATUS FOR SIMULATING RUNNING GAMES
Melvin F. Smack, Sr., Valinda, and Garland J. Semien, Jr., Los Angeles, both of Calif., assignors to World Inventions, Valinda, Calif.

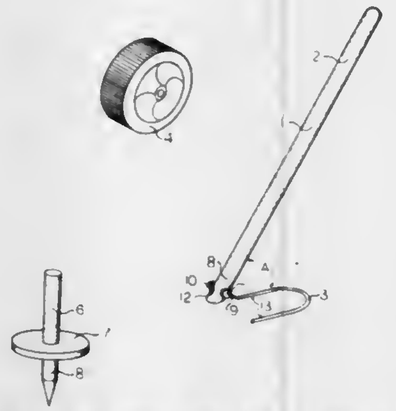
Filed Apr. 2, 1984, Ser. No. 595,913
Int. Cl.^{4} A63F *9/14*
U.S. Cl. 273—86 B 17 Claims



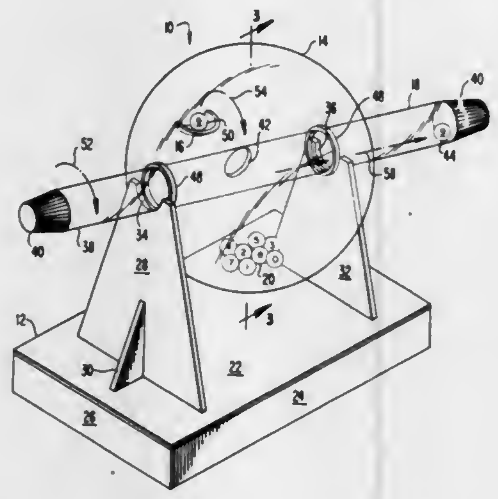
1. An apparatus for simulating a running contest comprising:
a track about which running contest is conducted;
movement indicator means positioned for movement on the track for indicating distance travelled by a contestant; and
means coupled to the movement indicator means for controlling the movement indicator means, including means operated by depressive foot movements in the form of running that are supplied by a user for generating control signals, wherein the amount of distance travelled indicated by the movement indicator means is a function of the control signals supplied from the controlling means, wherein the controlling means includes:
first activating means operated by the depressive foot movement of one foot of the user for providing a first signal;
second activating means operated by the depressive foot movement of the other foot of the user for providing a second signal; and
means coupled to the first and second activating means for transmitting control signals to the movement indicator means wherein the control signals are transmitted when either the first or the second, but not both activating means are being operated.

4,616,830
ROLLING HOOP GAME
Arnold R. Moore, 5901 Craig Rd., Box 54, Durham, N.C. 27712
Filed Sep. 17, 1985, Ser. No. 776,783
Int. Cl.^{4} A63F *3/00*
U.S. Cl. 273—126 R 4 Claims

1. A wheely-hoop game, comprising, in combination:
(a) a set of at least two marking pegs;
(b) a wheel having a circumferential edge, and further having a center of gravity such that it is substantially incapable of standing on its circumferential edge by itself;
(c) a guiding shaft having an upper end and a lower end, said lower end having a hole passing diametrically therethrough; and
(d) a U-hook having a first arm and a second arm, the end of said first arm being threaded and disposed in a perpendicular manner to the rest of said first arm but in a manner coplanar with said first and second arms;
said arms of said U-hook being of a length no greater than the diameter of said wheel;
said first and second arms being separated by a distance no less than the width of said wheel and no greater than the diameter of said wheel; and
the threaded end of said first arm passing through the diametrical hole in the lower end of said guiding shaft, and further being secured thereto.

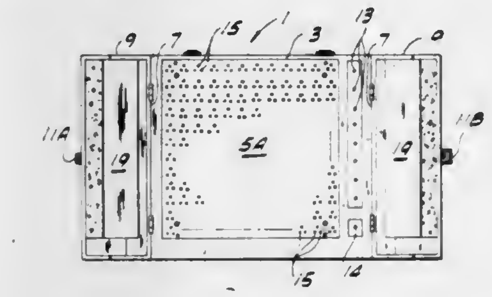


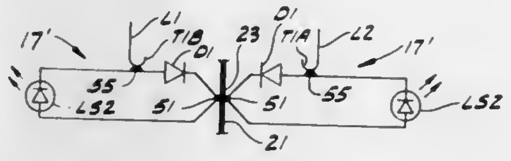
4,616,831
LOTTERY DEVICE
Ronald D. Testerman, 3810 Rock Run Rd., Havre DeGrace, Md.
Filed Aug. 14, 1985, Ser. No. 765,455
Int. Cl.^{4} A63F *9/00*
U.S. Cl. 273—144 B 12 Claims



1. A device for selecting random numbers and other similar combinations, comprising:
a main base frame structure, said main frame having first and second surfaces, one of said surfaces being set at a higher elevation than the other of said first and second surfaces;
a globe like structure;
a tube-like member having an aperture provided in its side wall, said tube-like member being suitably located through and extending from each side of said globe-like structure and affixed thereto, said tube-like member being suitably removably affixed to said main base frame structure;
a pair of closure means, said pair of closure means being suitably affixed to said tube-like member, at least one of said pair of closure means being removably so affixed;
a ball selection means, said ball selection means being suitably affixed to the inside of said globe-like structure; and
a plurality of sequentially marked balls, said plurality of sequentially marked balls being located within said globe-like structure.

4,616,832
ELECTRICAL HIDDEN MOVEMENT GAME
Guy H. Groner, 32 Glen Aire Dr., Springfield, Ill. 62703
Filed Mar. 1, 1985, Ser. No. 707,238
Int. Cl.^{4} A63F *3/00*
U.S. Cl. 273—238 19 Claims

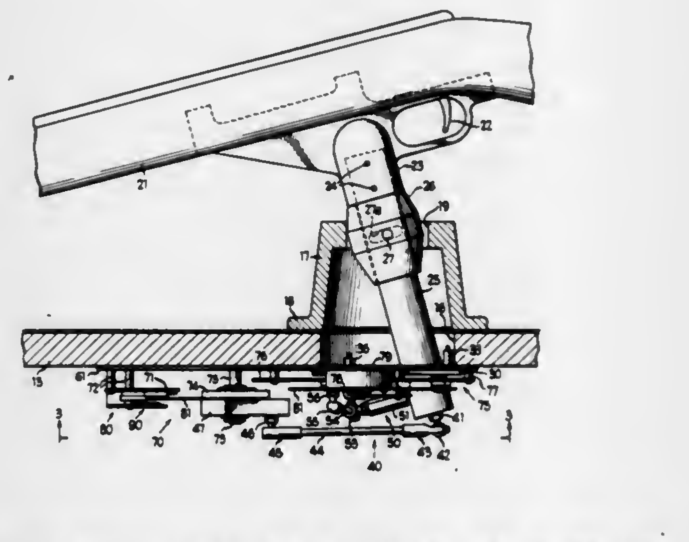




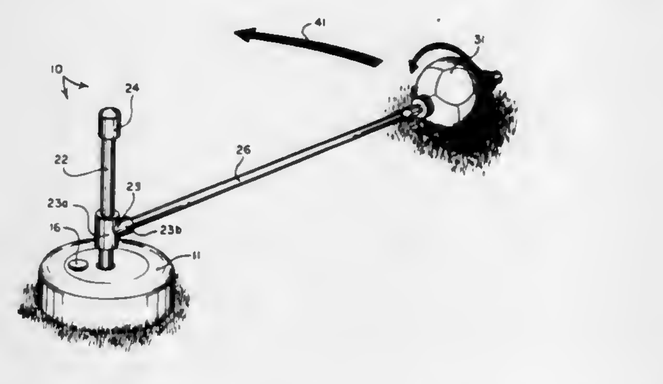
1. A game comprising:
a game board having at least a pair of substantially identical playing surfaces, one for each game player, with each playing surface positioned so that the playing surface for any one game player is obscured from the view of all other game players;
each playing surface having a plurality of receptacles, each representing a location for positioning a playing piece, said receptacles being arranged on the respective playing surfaces in substantially identical patterns, the receptacles on any one playing surface having respective correspondingly positioned receptacles on each other playing surface, a plurality of said playing piece receptacles on one playing surface each having an electrical terminal adapted to be commonly connected to one terminal of an A.C. power source, a plurality of said playing piece receptacles on a second playing surface each having an electrical terminal adapted to be connected to an opposite polarity terminal of the A.C. power source;
a plurality of first playing pieces each adapted to mate with any receptacle and having a pair of electrical contacts, a first diode connected across said contacts, and a second diode and an electrically powered light source also connected across said contacts with the anode of one diode and the cathode of the other diode being commonly connected to the same contact; each of said playing pieces having one of its contacts positioned to contact a receptacle terminal and its other contact positioned to be brought into electrical contact connection with the other contact of a playing piece positioned in a corresponding receptacle on a second playing surface whereby both light sources are energized.

4,616,833
TARGET SHOOTING GAME WITH PHOTOELECTRIC ORIENTATION SENSING APPARATUS
David A. Geller, Chicago, Ill., assignor to Wico Corporation, Niles, Ill.
Filed Mar. 11, 1985, Ser. No. 710,394
Int. Cl.^{4} A63F *9/02*
U.S. Cl. 273—313 6 Claims

1. In a target shooting game including a target assembly and a shooting device movable parallel to a plurality of predetermined planes for aiming, apparatus for sensing the direction in which the shooting device is aimed comprising: a plurality of photoelectric means equal in number to said planes, each of said photoelectric means including light source means for projecting a beam of light and light detecting means disposed for detecting said beam, a plurality of encoding members equal in number to and respectively corresponding to said photoelectric means and movable in parallel planes, each of said encoding members being positioned for intercepting the corresponding light beam and having a plurality of apertures therethrough dimensioned and arranged in accordance with a predetermined code, and a plurality of linkage assemblies connecting the shooting device respectively to said encoding members, each of said linkage assemblies being responsive to movement of the shooting device parallel to only a corresponding one of said planes to effect movement of only the corresponding one of said encoding members for varying the positions on said encoding members at which said light beams are intercepted, each of said encoding members blocking selected portions of the corresponding light beam for encoding said beam to indicate the distance between the position on said encoding member at which said light beam is intercepted and a reference position thereon, each said light detecting means being responsive to the corresponding encoded light beam for generating signals indicative of the absolute position of the shooting device with respect to a predetermined reference position, whereby the signals from said plurality of light detecting means cooperate accurately to define the absolute orientation of the shooting device.



4,616,834
BALL-KICKING ASSEMBLY
Roy J. Davis, 940 Berkeley Ave., Menlo Park, Calif. 94026
Filed Apr. 12, 1985, Ser. No. 722,696
Int. Cl.^{4} A63B *43/00, 69/00*
U.S. Cl. 273—411 4 Claims

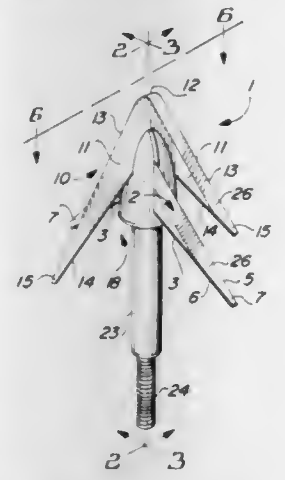


1. A ball kicking assembly comprising a mounting base of substantial mass, means carried to extend upwardly from said base for defining a pivot axis, an elongate semi-rigid radius arm, a ball carried by one end of said arm in a manner permitting the ball to rotate about the axis of said arm, the other end of said arm being coupled to the first named said means in a manner permitting said other end of said arm to travel freely

about and along said axis to permit said arm to rise and fall along said axis to dispose said arm to extend a radius from said axis at a position along said axis serving to locate the ball adjacent to support surface, the rigidity of said radius arm serving to cause the ball to travel a predictable path preventing the ball from travelling toward said axis.

4,616,835
ARROW TIP

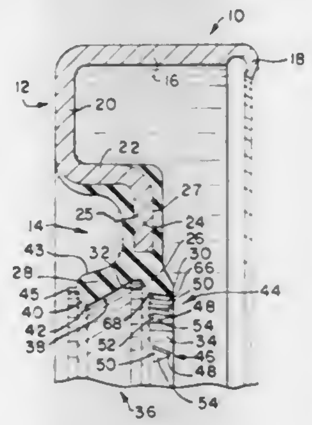
George H. Trotter, 7107 Janey St., Shreveport, La. 71108
Filed Apr. 24, 1985, Ser. No. 726,633
Int. Cl.⁴ F41B *5/02*
U.S. Cl. 273—421 **6 Claims**



1. An arrow tip for removable mounting on an arrow shaft, said arrow tip comprising:
- (a) a generally bullet-shaped blade mount and a threaded shank extending from one end of said blade mount from threadibly connecting said blade mount to the arrow shaft;
- (b) a first V-shaped slot provided longitudinally in said blade mount;
- (c) a base blade having a truncated tip and a pair of base blade legs inserted in said first V-shaped slot, said base legs extending from said first V-shaped slot in a selected angular relationship;
- (d) a second V-shaped slot provided longitudinally in said blade mount, said second V-shaped slot located above said first V-shaped slot and substantially transversely oriented with respect to said first V-shaped slot; and
- (e) a top blade having a sharpened tip and a pair of top blade legs inserted in said second V-shaped slot, said top blade legs extending from said second V-shaped slot in said selected angular relationship.

4,616,836
REVERSE LIP POSITIVE VENTING SEAL

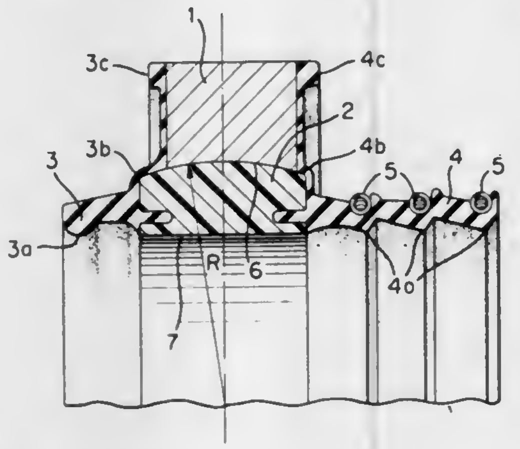
Gordon T. Drygalski, Chicago, Ill.; Dennis L. Otto, Malvern, and Donald K. Ross, Eastlake, both of Ohio, assignors to Chicago Rawhide Mfg. Co., Elgin, Ill.
Continuation-in-part of Ser. No. 484,490, Apr. 13, 1983, Pat. No. 4,556,225. This application Dec. 2, 1985, Ser. No. 803,534
Int. Cl.⁴ E16J *15/32*
U.S. Cl. 277—152 **9 Claims**



1. A fluid seal for retaining lubricant within a sealed region during relative movement of a first machine member and a shaft associated in use with said machine member, said seal comprising, in combination, a relatively rigid casing portion adapted to be received in fluid tight relation with respect to said first machine member, and a sealing lip body having portions adapted to contact said associated shaft, said casing including a mounting surface portion adapted for snug engagement with respect to said first machine member, and a bonding portion adapted to have a portion of an associated sealing lip body bonded thereto, said sealing lip body being bonded to said bonding portion of said casing and comprising a primary lip portion and an auxiliary lip portion, said primary lip portion being defined at least in part by an axially innermost, radially inwardly and axially inwardly extending, annular oil side surface, an axially spaced apart, generally frusto-conical air side surface, and an annular, primary seal band surface which is generally cylindrical in its relaxed condition and which extends between the innermost edges of said oil side and air side surfaces, said seal band surface having thereon at least one hydrodynamic pumping element, said element having a radially inwardly directed surface portion and at least one working surface, said auxiliary lip portion being defined in part by a first frusto-conical surface partially directed in use toward said shaft and away from said sealed region, and a second frusto-conical surface directed partially towards said shaft and partially toward said sealed region, said frusto-conical surfaces meeting each other along a generally circular locus to form an auxiliary lip seal band, said second surface defining said portion of said auxiliary lip and said air side surface of said primary lip being axially spaced from each other and at least partially defining therebetween an annular groove of generally V-shaped cross-section, said seal being adapted for reception over an associated shaft to provide a generally fluid tight seal, with said radially inwardly directed surface of said pumping element and said primary seal band dimensioned, in the relaxed condition of said seal, so that said pumping element surface and said primary seal band are spaced slightly apart from said associated shaft in use to provide vent means permitting the free passage of gas and vapor from said sealed region, without substantial prior pressure buildup in said region.

4,616,837
SEAL RING WITH TIPPABLY SUPPORTED GUIDE RING

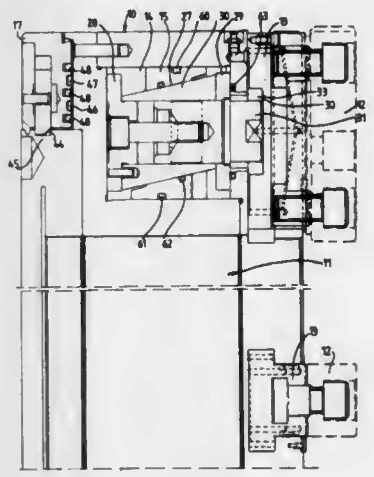
Achim Beutel, Weinheim, Fed. Rep. of Germany, assignor to H. Weissenfeld-Richters, Weinheim, Fed. Rep. of Germany
Filed Dec. 11, 1985, Ser. No. 808,006
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1985, 3501334
Int. Cl.⁴ F16J *15/32*
U.S. Cl. 277—153 **16 Claims**



1. A seal ring, comprising:
- a holding ring for fixedly mounting the seal ring on one machine part;
- a guide ring axially concentric with the holding ring and tippably supported on one side of the holding ring, the other side of the guide ring being for guiding the seal ring on another, relatively-movable machine part; and
- a resiliently-deformable sealing ring sealingly connected to the guide ring and having a sealing lip for sealing about the relatively-movable machine part.

4,616,838
WORK HOLDING DEVICES

Joseph F. Jackson, Halifax, and Ralph A. Waite, Queensbury, Near Bradford, both of England, assignors to Pratt Burnerd International Limited, Halifax, England
Filed Aug. 23, 1983, Ser. No. 525,729
Claims priority, application United Kingdom, Aug. 28, 1982, 8224769
Int. Cl.⁴ B23B *31/30*
U.S. Cl. 279—4 **14 Claims**

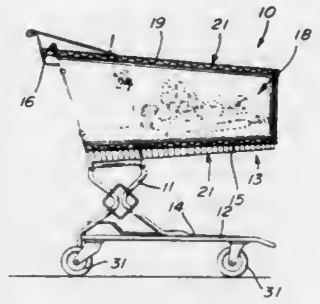


1. A work holding device for holding a workpiece comprising:
- a cylinder having an axis and a pair of axially spaced apart end walls;
- jaws movably mounted on the cylinder for holding said workpiece and movable laterally of said axis toward and away from said workpiece;
- motion translation means located entirely within said cylinder and including piston means located within said cylinder for moving axially therein;
- jaw drive means located within said cylinder for moving said jaws laterally of said axis;
- a plurality of passages extending through said piston means, each of passages being inclined with respect to the cylinder axis, and said jaw drive means including a plurality of jaw drive members, each jaw drive member associated with a respective passage, with a portion of each jaw drive member slidably received within the respective passage, and
- said cylinder, said piston means, said jaw drive means and said motion translation means located proximate said jaws.

4,616,839
SHOPPING CART HAVING SOLID FLAT VERTICAL CONTAINER BASKET WALLS

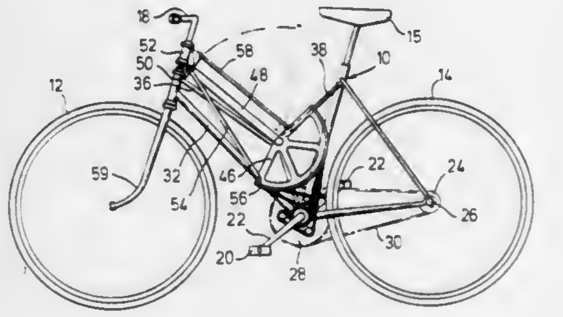
Antoine Trubiano, Pointe aux Trembles, Canada, assignor to Cari-All Inc., Monreal East, Canada
Filed Dec. 31, 1984, Ser. No. 688,012
Int. Cl.⁴ B62B *11/00*
U.S. Cl. 280—33.99 R **3 Claims**

1. In a nesting shopping cart having a basket support frame supported on castors, a container basket secured to said support frame, a handle means for displacing said cart; said container basket having a bottom wall, a rear hinged gate wall, a front wall, opposed side walls and an open top end; the improvement comprising wherein at least said opposed side walls and said front wall of said basket are constructed at least in a major portion thereof as a solid flat removable panel having an information display on an outer surface thereof, said side walls and said front wall having a structural peripheral support frame having panel securement means wherein to secure thereto said side wall panels and said front wall panel, respectively; said panel securement means including a top and bottom one of said structural peripheral support frame, two or more transverse attachment bars secured between said top and bottom structural peripheral support frame with said panels being secured to said bars by fasteners, said top and bottom support frame comprising a pair of straight steel wire rods spaced apart in a vertical plane and secured to an intermediate undulated intermediate structural steel wire rod, said channels being U-shape channels having an open end and secured to the inside of opposed outer ones of said pair of rods with said open ends facing one another whereby to slidingly receive said side wall and front wall panels.



4,616,840
MACHINE FOR UTILIZING ENERGY

Francis H. Green, 97 Lawrie Park Gardens, London, England (SE26 6HW)
Filed Jun. 11, 1984, Ser. No. 619,115
Claims priority, application United Kingdom, Jun. 11, 1983, 8316073; Jan. 10, 1984, 8400575
Int. Cl.⁴ B62M *1/12*
U.S. Cl. 280—234 **10 Claims**



1. A machine for utilizing muscular energy, the machine comprising means for supporting the body of an operator, an output member in the form of a spindle rotatable about a spindle axis, first operating means to be driven by the operator's legs to turn the spindle, and a set of handlebars which can be gripped by the operator's hands and are connected to a horizontal pivot axis through a parallelogram linkage so that they can be moved backwards and forwards in a vertical arc by torso and arm movement to turn the spindle, and a means for converting alternating directional movement of said parallelogram linkage into rotational movement of said spindle in a single predetermined direction, wherein movement of the first operating means is independent of movement of the second operating means, and wherein the spindle is driven by the second operating means during both backward and forward upper body movement.

4,616,841
BUCKLING CONTROL SYSTEM FOR ARTICULATED VEHICLES

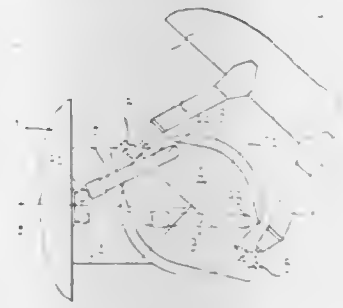
Bernhard Reichl, Stuttgart; Rudolf Maurath, Esslingen; Dieter Koch, Aichwald, and Gerhard Hametner, Unterensingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Feb. 17, 1984, Ser. No. 581,099

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1983, 3305751

Int. Cl.⁴ B62D *53/06*

U.S. Cl. 280—432 **13 Claims**



1. Anti-buckling control system for a steerable articulated vehicle of the type having a first steerable vehicular section hingedly connected to a second vehicular section, said first and second vehicular sections being configured to pivot with respect to one another and define a buckling angle therebetween during vehicle travel around curves and the like, said control system comprising:

buckling angle control device means interposed between the first and second vehicular sections to forceably control the buckling angle therebetween by providing a first resistance against a buckling angle increase,

vehicle velocity detecting means for detecting the velocity of the vehicle and supplying a vehicle velocity signal, and

computer control means for controlling the buckling angle control device means, said computer control means including:

(i) maximum buckling angle determining means for determining a velocity dependent maximum permitted buckling angle as a function of the vehicle velocity, said velocity dependent maximum buckling angle being the maximum buckling angle that will still result in essentially skid-free drive of the vehicle for the associated vehicle velocity, and

(ii) maximum buckling angle limiting means for controlling the buckling control device means to act against increases in the buckling angle beyond the determined velocity dependent maximum permitted buckling angle by providing a second increased resistance against a buckling angle increase in the buckling control device means only when said buckling angle approaches the velocity dependent maximum permitted buckling angle.

4,616,842
SKI

Michel Echevin, Meylan; Yves Piegay, and Maurice Legrand, both of Voiron, all of France, assignors to Skis Rossignol S.A.-Club Rossignol S.A., Voiron, France

Filed Apr. 12, 1984, Ser. No. 599,450

Claims priority, application France, Apr. 12, 1983, 83 06252

Int. Cl.⁴ A63C *5/075*

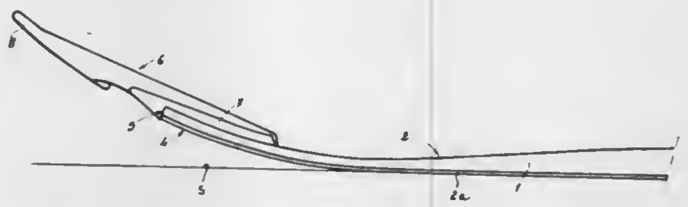
U.S. Cl. 280—602 **4 Claims**

1. An alpine ski comprising

an elongated ski body having a central portion terminating forwardly at an upwardly curved front end and terminating at the front end at a transverse leading edge, the body being primarily of a relatively dense and stiff material and having longitudinal edges;

a shovel-shaped element independent of the body and having a rear part formed with an indentation complementary to the transverse leading edge of the front end and an opposite tip, the element being continuous and primarily unitarily formed from the indentation to the tip of a material that is more supple and flexible than that of the body; and

means fixing the element at the indentation to the leading edge of the front end against movement relative thereto, said element extending forward and upward from said indentation as an arcuate continuation of the front end of the body, the rear part being flush with the longitudinal edges of the body at the indentation where the element is secured to the front end of the ski body.



4,616,843
RELEASE SKI BINDING

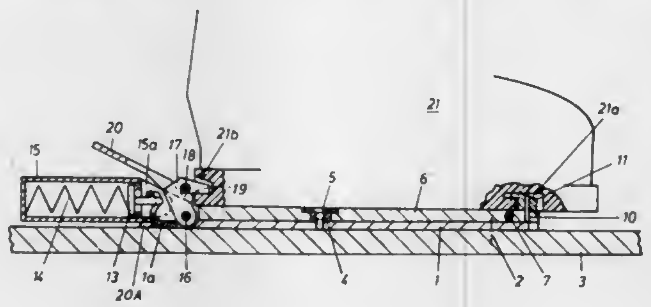
Henry Freisinger, Vienna; Franz Luschnig, Traiskirchen; Karl Stritzl, and Johann Zotter, both of Vienna, all of Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Dec. 19, 1984, Ser. No. 683,745

Claims priority, application Austria, Dec. 19, 1983, 4418/83

Int. Cl.⁴ A63C *9/081, 9/084*

U.S. Cl. 280—618 **13 Claims**



1. In a release ski binding comprising a sole plate having thereon a rear jaw for a ski shoe, a central part of said sole plate being pivotal relative to said ski about a vertically upright axle and about a transversely extending axle arranged in front of said vertical axle, said sole plate being held in a skiing position by an elastic holding mechanism on said ski, said holding mechanism beng responsive to a swivel movement occurring between said sole plate and said ski and upon reaching of a predetermined angle of traverse, effects an opening of a release locking means on said rear jaw, the improvement comprising wherein said sole plate consists of first and second parts, said first part being pivotally supported for movement about a vertical axis of a sleeve and said second part being hingedly connected to said first part through said transverse axle, wherein said first part, at its front end and in a vertical longitudinal center plane thereof, has a bolt thereon which is vertically upright on the upper side of said ski, on which bolt is pivotally supported a front jaw, and wherein said front jaw is adapted to be received in a recess in a sole of said ski shoe and has, spaced from the vertical longitudinal center plane, two control bolts, each having vertically upright axes, said control bolts being guided on a cam surface formed by a transversely extending front narrow side surface of a base plate.

4,616,844
MECHANISM FOR LOCKING OPENED STATE OF BABY CARRIAGE

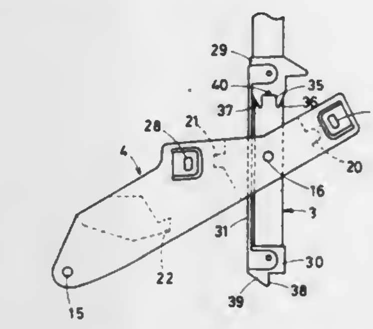
Kenzou Kassai, Osaka, Japan, assignor to Aprica Kassai Kabushikikaisha, Osaka, Japan

Filed Jun. 28, 1984, Ser. No. 626,110

Claims priority, application Japan, Jul. 15, 1983, 58-110370[U]; Nov. 4, 1983, 58-207729

Int. Cl.⁴ B62B *7/08*

U.S. Cl. 280—650 **6 Claims**



1. In a mechanism for locking the open and closed states of a foldable baby carriage having a pair of front legs (1), a pair of rear legs (2), a pair of push rods (3), and a pair of connecting rods (4) for turnably connecting, each at its opposite ends, the respective rear legs (2) and push rods (3), wherein an unfolded state of the baby carriage is locked when said push rods (3) and said connecting rods (4) associated therewith are in their straight state, while the folded state of the baby carriage is locked when said push rods (3) and said connecting rods (4) associated therewith in their folded position, the improvement comprising a first pivot point (15) located on one end of each said connecting rods (4) for turnably connecting each of said rear legs (2) to its respective connecting rod, a second pivot point (16) positioned substantially in the middle of each of said connecting rods (4) for turnably connecting each of said push rods (2) to its respective connecting rod, said second pivot point (16) being positioned a predetermined distance above the lower end of each push rod (3), so that in said unfolded state each of said push rods (3) and each of said connecting rods (4) overlap each other along said predetermined distance, wherein each of said push rods (3) comprises a lock operating member (29) positioned above said second pivot point (16) so that it is slidable in the direction of the length of the respective push rod, spring means (34) for constantly urging each lock operating member toward the lower end of the push rod (3), the lower end of each lock operating member (29) comprising a portion (35) for engaging said connecting rods, each of said connecting rods (4) comprising a first open state latch member (20) for cooperation with said engaging portion (35) when said lock operating member (29) is in its lower end position and in said unfolded state, and a closed state second latch member (21) for cooperation with said engaging portion (35) when said lock operating member (29) is in its lower end position and in said folded state, at least either said engaging portion (35) or said first and second latch members (20, 21) comprising inclined surfaces (36, 37) for leading the respective portion or member into automatic engagement against the force of said spring means (34) when they approach each other in the course of the opening and closing movements of said baby carriage, each of said lock operating members (29) having a first surface comprising temporary engaging means (40) opposed to the respective connecting rod (4) for temporary engagement with a second surface of the respective connecting rod; said second surface of each of said connecting rods (4) comprising unlocking and locking engaging means (27, 28) corresponding to said opened and closed states for cooperation with first and second latch members (20, 21), whereby when said lock operating member (29) slides on said push rod (3) toward the upper end of the push rod (3) against the force of said spring means (34), said temporary engaging means (40) engages said open or closed state engaging means (27 or 28) and said engaging portion disengages from said first or second latch members (20, 21), and wherein each of said lock operating members (29) is temporarily fixed for preventing sliding relative to each of said connecting rods (4).

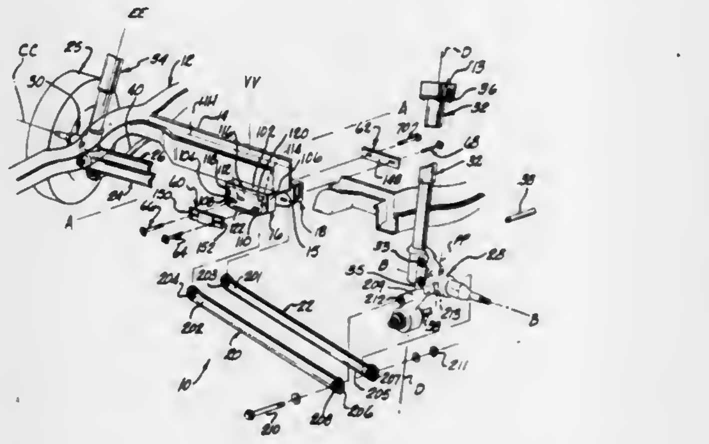
4,616,845
TOE ADJUSTMENT APPARATUS

Craig R. Pettibone, Lafayette, Colo., assignor to Specialty Products, Inc., Longmont, Colo.

Filed Jan. 18, 1985, Ser. No. 692,825

Int. Cl.⁴ B62D *17/00*

U.S. Cl. 280—661 **37 Claims**



12. A toe adjustment assembly for adjusting the toe of a rear wheel of an automotive vehicle comprising:

(a) an elongate plate having a recessed portion therein defining two transversely extending parallel cam engaging surfaces and having a longitudinally extending slot provided in said recessed portion of substantially identical size and shape as a frame slot provided in a cross member portion of a vehicle frame, said frame slot extending laterally of the vehicle central longitudinal axis;

(b) at least one cam assembly adapted to coact with said elongate plate, said frame slot and a vehicle control arm, said cam assembly comprising:

(i) a shaft portion having a central longitudinal axis and being adapted to be received in laterally shiftable relationship in same cam plate slot and said frame slot and adapted to be received in laterally nonshiftable relationship in a bore portion of said vehicle control arm; said shaft portion having a torque tool engaging portion at a first end thereof and a threaded portion adapted to accept a nut at a second end thereof;

(ii) a disc portion having a central longitudinal axis and a cylindrical periphery adapted to engage said cam engaging surfaces of said elongate plate and having a diameter slightly less than the distance between said cam engaging surfaces, said disc portion being affixed to said shaft portion proximate a first end thereof, said shaft portion passing through said disc portion; said shaft central longitudinal axis being positioned in parallel offset relationship with said disc central longitudinal axis; and

(iii) a nut means mountable on said threaded portion for axially urging said elongate plate, an end portion of said control arm and a portion of said vehicle frame into longitudinally fixed relationship;

(c) said elongate plate being adapted to be secured to and remain in laterally fixed relationship with said vehicle frame by said cam means; said cam means being constructed and arranged whereby said cam disc portion is displaceable in a direction parallel said cam engagement surfaces and whereby said cam shaft portion is displaceable laterally along said frame slot and said plate slot by rotation of said cam assembly about said cam shaft central longitudinal axis; said lateral displacement of said cam shaft causing lateral displacement of said control arm relative the vehicle central longitudinal axis whereby the toe of an associated rear wheel assembly is selectively adjustable.

4,616,846
CONTROL DEVICE FOR A SUSPENSION

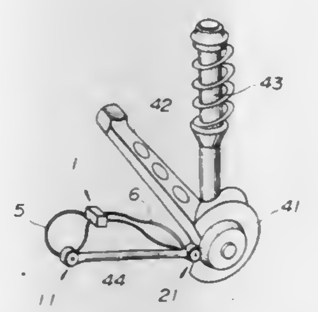
Kunitaka Furuya; Hiromi Inagaki; Kiyoshi Koga; Masaru Yorita; Tsunehiko Fukatsu, and Kazuo Matsuura, all of Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 13, 1985, Ser. No. 765,341

Claims priority, application Japan, Aug. 14, 1984, 59-169839; Aug. 14, 1984, 59-169840; Aug. 14, 1984, 59-169841; Aug. 14, 1984, 59-169842

Int. Cl.⁴ B60G *17/04, 15/00*

U.S. Cl. 280—673 **16 Claims**



1. A control device in a suspension having a link rod in a vehicle including a vehicle body and a steering wheel, comprising:
- a pair of fluid-sealed bushings provided on the respective opposite ends of the link rod and having hydraulically adjustable compliances;
- valve means for varying the compliances of said fluid-sealed bushings;
- an actuator for actuating said valve means; and control means for controlling said actuator.

4,616,847
SUSPENSION SYSTEM FOR VEHICLE

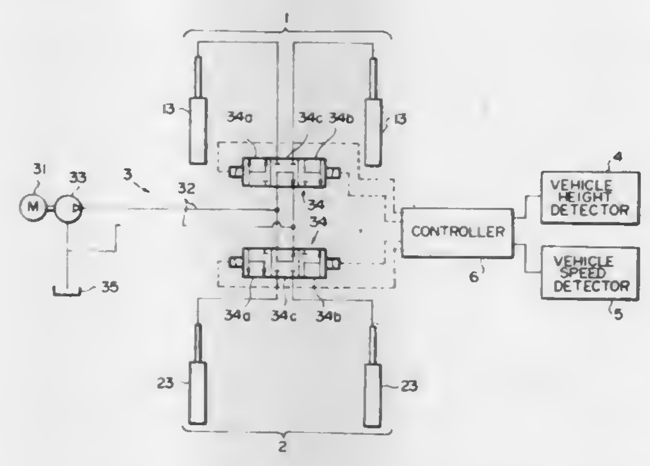
Seita Kanai, and Takashi Hirochika, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Japan

Filed Mar. 28, 1985, Ser. No. 716,947

Claims priority, application Japan, Apr. 2, 1984, 59-66597

Int. Cl.⁴ B60G *11/28*

U.S. Cl. 280—707 **11 Claims**



1. A vehicle suspension system comprising a front suspension for supporting the front wheels, a rear suspension for supporting the rear wheels, an adjustable-height supporting means which connects the front and rear suspensions to the vehicle body and supports the vehicle body to be variable in height with respect to the front and rear suspensions, a vehicle speed detecting means which detects the vehicle speed, and a control means which receives the output of the vehicle speed detecting means and controls the adjustable-height supporting means so that the vehicle height is increased during low speed travel and is reduced during high speed travel, said front and rear suspensions being arranged so that the rate of change of the roll center height due to bump/rebound is larger in the rear suspension than in the front suspension.

4,616,848
AUTOMOTIVE SUSPENSION CONTROL SYSTEM WITH VEHICLE SPEED-DEPENDENT DAMPING CHARACTERISTICS

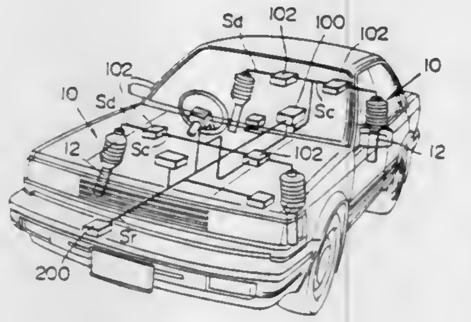
Fukashi Sugasawa; Junsuke Kuroki, and Yohsuke Akatsu, all of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 3, 1985, Ser. No. 771,766

Claims priority, application Japan, Sep. 6, 1984, 59-187152

Int. Cl.⁴ B60G *11/00*

U.S. Cl. 280—707 **17 Claims**



1. A suspension control system for an automotive vehicle comprising:
- a damper means interpositioned between a vehicle body and a road wheel for absorbing, at least in part, relative displacement between the vehicle body and the road wheel, said damper means having variable damper characteristics;
- a first sensor detecting roughness of the road surface and producing a first sensor signal having a value variable depending upon roughness of the road surface;
- a second sensor detecting vehicle speed and producing a second signal having a value variable depending upon vehicle speed; and
- a controller associated with said damper means for normally operating the latter in said first softer damping characteristics mode, said contrller being responsive to said second sensor signal for detecting the second sensor signal value within a given range representing a specific vehicle speed range, which given range being defined by an upper reference value representative of an upper vehicle speed criteria and a lower reference value representative of a lower vehicle speed criteria, comparing said second sensor signal value with said upper and lower reference values to determine whether the vehicle speed is within said given range or not, and varying variation characteristics of variable damping characteristics of said damper means in such a manner that, when said second sensor signal value is out of said given range, said controller derives sensing ability of road roughness and/or hardening magnitude of said variable damping characteristics damping means at relatively higher level, and when said second sensor signal value is within said given range, said controller derives sensing ability of road roughness and/or hardening magnitude of said variable damping characteristics damping means at relatively lower level.

4,616,849
TRAILING LINK BEAM SUSPENSION

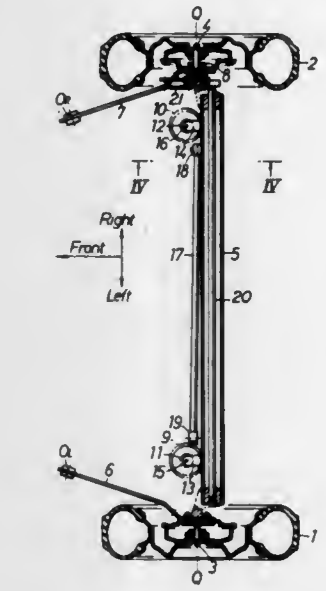
Yoshiyuki Matsumoto, Tokyo, and Hideki Maru, Wako, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 8, 1984, Ser. No. 578,358

Claims priority, application Japan, Sep. 27, 1983, 58-178500

Int. Cl.⁴ B60G *11/16*

U.S. Cl. 280—724 **11 Claims**



1. A trailing link type beam suspension for a vehicle having a chassis with left and right sides and a longitudinal axis, said beam suspension comprising: a pair of left and right trailing arms; an axle beam fixed to one of said trailing arms and pivotally connected to the other of said trailing arms; said axle beam supporting a pair of left and right wheels for rotation about an axis; said other trailing arm being pivotably connected to said axle beam for rotation about the axis of rotation of the wheels, said axle beam being rotatable where it is connected to said other of said trailing arms for rotation about the axis of rotation of the wheels and a pair of dampers mounted between said axle beam and the chassis of a vehicle; said axle beam being disposed in a position displaced from the axis of rotation of the wheels in the longitudinal direction of the chassis, said dampers being operative along axes which pass through the axis of rotation of the wheels.

4,616,850
AUTOMATIC HEIGHT ADJUSTMENT DEVICE

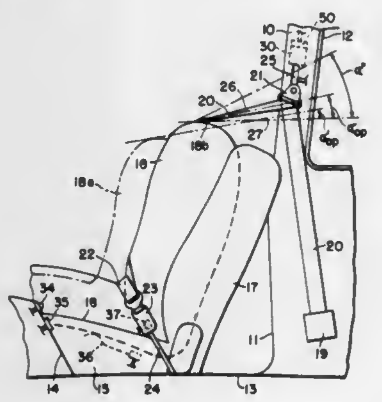
Gerhard Sedlmayr, Hamburg, Fed. Rep. of Germany, assignor to Autoflug GmbH, Rellingen, Fed. Rep. of Germany

Filed Nov. 21, 1984, Ser. No. 673,565

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1983, 3342203

Int. Cl.⁴ B60R *21/10*

U.S. Cl. 280—808 **20 Claims**



1. An apparatus for automatically adjusting the height of the upper attachment or guide fitting for the shoulder strap of a safety belt system, said apparatus including means for adapting the height position of said attachment or guide fitting to the seated position of the person who is to be strapped in position in order to achieve an optimum belt position, and also including a sensing device associated with said attachment or guide fitting for sensing the position of said shoulder strap with respect to at least one parameter of its operative connection with the person strapped in, and for triggering a reaction from said adapting means to the situation ascertained;
- the improvement comprising an arrangement including an electronic value detection and computing system operatively connected to said sensing device for comparing the actual value detected with respect to said at least one parameter with a fixed desired value, said reaction being triggered if a predetermined deviation between said desired value and said actual value is continuously exceeded so that only angular changes above this deviation lead to triggering of the reaction.

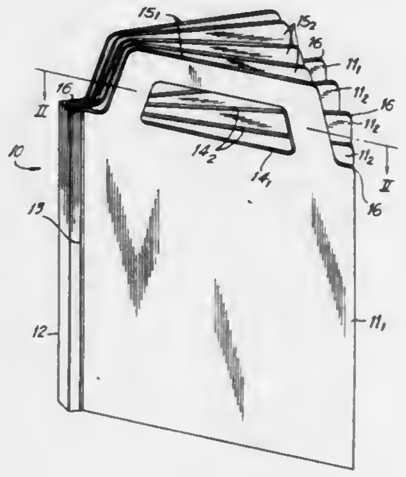
4,616,851
BOOK STRUCTURE

Philip Mann, New York, N.Y., assignor to Tuffy Books, Inc., Harrison, N.Y.

Continuation of Ser. No. 394,273, Jul. 1, 1982, abandoned. This application Jan. 28, 1985, Ser. No. 695,417

Int. Cl.⁴ B42D *1/00*

U.S. Cl. 281—15 R **5 Claims**



1. A children's book comprising a plurality of substantially identical sheet members each having a top edge, a bottom edge, a spine edge and an outer edge, said sheet members respectively constituting a pair of covers and leaves therebetween and being fastened together adjacent to said spine edges to form a spine and to permit relative angular displacements of said sheet members about said spine for opening and closing the book; wherein:
- all of the sheet members are formed of a substantially stiff cardboard-like material;
- all of said sheet members having substantially identical elongated openings extending therethrough adjacent to at least one of said top and outer edges,
- said openings are aligned when the book is closed; and
- said openings are accessible from opposite sides of the book when the book is closed to form a handle portion in the book and are large enough that a child's hand can be extended through the openings for carrying the book, thereby inducing the child to carry and read the book.

4,616,852
MONEY DEBIT CARD APPLICATION FORM AND METHOD OF PROCESSING SAME

David J. Cash, 1000 Sixty Fourth St., LaGrange, Ill. 60525

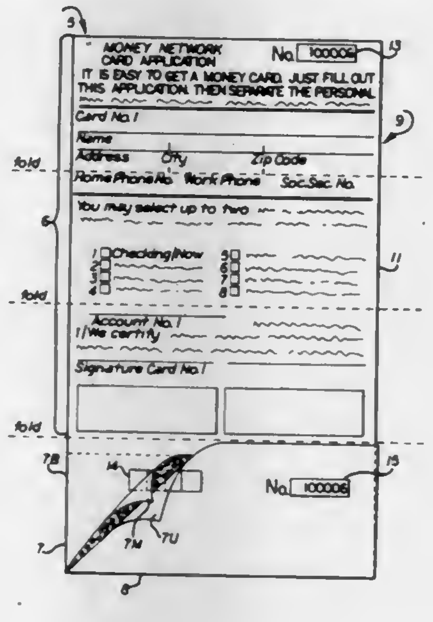
Filed Nov. 26, 1984, Ser. No. 674,564

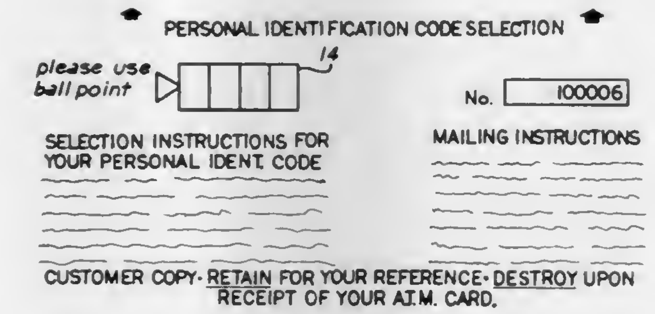
Int. Cl.⁴ B41L *1/22*

U.S. Cl. 282—27 R **6 Claims**

1. As an article of manufacture, a printed form comprising a

manually detachable first and second sections, with each side of said form bearing reading matter of differing content the entire first section further comprising on one side an application for issue of a money account debit card that is adapted for use in automatic computing machines and bearing an overt serial number on said one side, and the obverse side of which form has in part a return mail legend directed to a debit card issuing agency, the separable second section further comprising a three sheet form, which sheets are manually detachable from each other with the obverse side of the lowest sheet consisting of a second return mail legend directed to the same card issuing agency, said the second section further comprising the following elements:




PERSONAL IDENTIFICATION CODE SELECTION
please use ball point
14
No. 100006
SELECTION INSTRUCTIONS FOR YOUR PERSONAL IDENT. CODE
MAILING INSTRUCTIONS
CUSTOMER COPY- RETAIN FOR YOUR REFERENCE- DESTROY UPON RECEIPT OF YOUR A.T.M. CARD.

a. a printed instruction top sheet providing space for entry of a several digit number to constitute the personal identification number (PIN) of the card applicant and also reciting instructions for proper disposition of the second section components after their separation from the upper first section;

b. a paper sheet interleafing the front and back sheets and adapted to record the number manually entered on the front side of the front sheet to the front side of the back sheet;

c. the back sheet being adapted to permanently record the said entry number on its face as an identification code; and

d. both of the top and back sheets displaying the said serial number as in the first section, thereby serving to correlate the biographical data of said applicant with said identification number when needed.

4,616,853
FOOD SERVER AID
Anita Pensavecchia, P.O. Box 503, Lake Orion, Mich. 48035
Filed Oct. 29, 1984, Ser. No. 665,554
Int. Cl.⁴ B42D *15/00;* **B41L** *1/24*
U.S. Cl. 283—60 A **2 Claims**

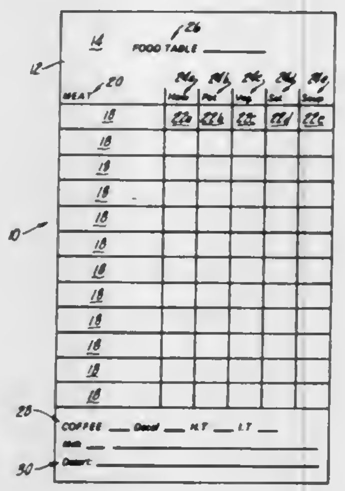
1. A food server aid comprising:

a pad of sheets, each sheet printed on both sides and being roughly four inches wide and seven inches high;

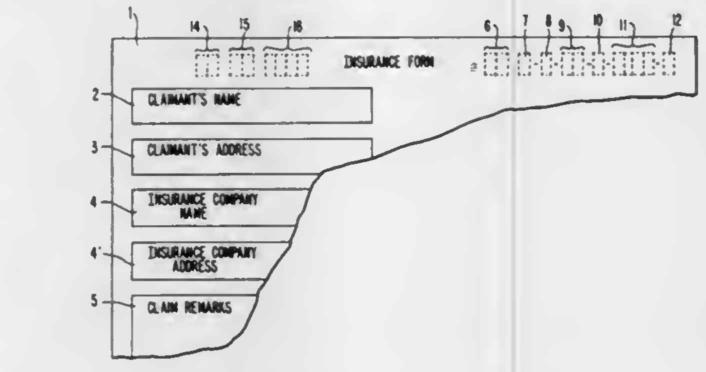
one side of each sheet printed with an array of blank spaces and associated notations comprising a vertical series of blank spaces formed by a grid of printed lines arranged beneath a notation designating the spaces as a location to mark main course food items, a plurality of rows corresponding to blank spaces formed by a grid of printed lines aligned horizontally with a respective one of said first-mentioned main course blank spaces, each of said blank spaces in said rows vertically aligned beneath notations indicating respectively the degree of cooking of the main course food item, the type of potato, vegetable, salad dressing and soup;

the other side of each of said sheets printed with notation indicating a listing of alcoholic and other beverages and the manner of serving of at least some of such listings of beverage;

both sides of said sheets printed with a notation and space for indicating the table identification.



4,616,854
INSURANCE FORM INDICIA SYSTEM
Van O. Landrum, P.O. Box 514, Moss Point, Miss. 39563, and Hollis T. Landrum, First United Methodist Church, P.O. Box 72, Brandon, Miss. 39042
Filed Jul. 16, 1985, Ser. No. 755,344
Int. Cl.⁴ G09C *1/06;* **B42D** *15/00*
U.S. Cl. 283—74 **6 Claims**



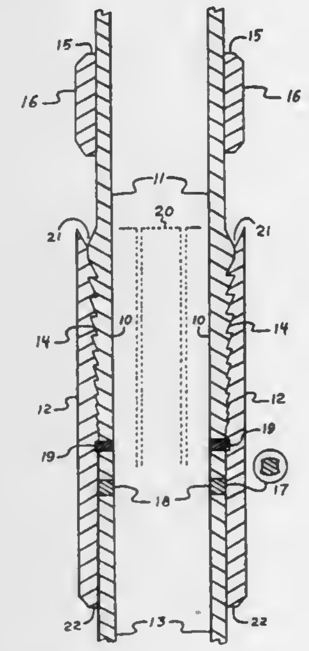
1. An insurance claim form comprising a plurality of first pattern areas including data representing identity of an insurance claimant and identity of a health insurance company,

a plurality of second pattern areas including symbols sensible by optical character recognition technique,

each second pattern area being spaced from all others of said second pattern areas so as to isolate the sensing of said each second pattern area from the sensing of all other second pattern areas in order to prevent erroneous sensing,

said symbols carried in at least one of said second pattern areas being correlated in a predetermined manner with at least one datum entered in one of said first pattern areas, wherein at least one of said first pattern areas includes data corresponding to one of the insurance claimant's name, the insurance claimant's address, the name of a health insurance company against which a claim is filed, the address of a health insurance company against which a claim is filed.

4,616,855
THREADLESS NONROTATING STEEL COUPLING SYSTEM
James L. Ruhle, 2535 E. Balfour Ave., Fullerton, Calif. 92634
Filed Oct. 29, 1984, Ser. No. 665,996
Int. Cl.⁴ F16L *35/00*
U.S. Cl. 285—24 **1 Claim**



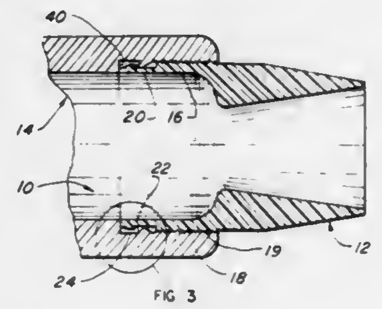
1. A quickly-coupled and quickly-uncoupled threadless non-rotating steel coupling system having a central passage therethrough comprising:

a steel male half-coupling that contains around its circumference a first set of a plurality of circular saw-toothed ridges and grooves which become progressively smaller in the direction of the distal end of the steel male half-coupling, one side of the groove being at right angles to the longitudinal axis of the coupling and the other side of the groove sloping radially outwardly away from said distal end, a steel female half-coupling that is partially divided longitudinally into a plurality of flexible steel fingers and contains a second set of saw-toothed ridges and grooves that match said first set and mate there with and which become progressively smaller toward the proximal end of the steel female half-coupling, said female half-coupling having slots therein which extend longitudinally from the open end thereof toward said proximal end; drive shoulders means fixed to the male half-coupling rearwardly of said first set of saw tooth ridges and grooves for engagement by tool means to force the rigid steel male half-coupling into said steel female half-coupling spreading said flexible steel fingers as said saw-toothed ridges ratchet past each other; said male half-coupling having a beveled surface spaced rearwardly of said first set of saw-toothed ridges and grooves, said female half-coupling having a beveled surface formed on the interior surface at the terminal end thereof opposite said distal end, said beveled surfaces intersecting when the two half-couplings are completely joined together defining a V-shaped annular groove therebetween opening toward said drive shoulder means so that a tool may be inserted thereinto to simultaneously spread said fingers to allow said couplings to be separated, a compressible gasket positioned between said couplings and compressed thereby to seal the coupling system when the two half-coupling are completely joined together, which, in the uncompressed state is concave on its inner and outer side edges and convex on its top and bottom surfaces,

the same gasket, which is transformed in the compressed state when both half-couplings are completely joined together, into a gasket that has straight-sided edges and straight-sided surfaces on the top and bottom of the gasket resulting in an internally-flush central passage through the coupling system.

a pair of steel pins which are permanently affixed to the distal end of the male half-coupling, and occupy said slots in the female half-coupling so as to guide and lock the two half-couplings together in such a manner that rotation of one with respect to the other cannot occur.

4,616,856
NOZZLE AND RETAINING ARRANGEMENT
Henry W. Kowalyshen, Chicago, Ill., assignor to S&C Electric Company, Chicago, Ill.
Filed Apr. 25, 1985, Ser. No. 726,860
Int. Cl.⁴ A16L *15/00*
U.S. Cl. 285—92 **8 Claims**



1. An arrangement for retaining a first member within a second member, the first member including outer threads and the second member including mating internal threads, wherein the improvement comprises a first protruding ridge formed on the outside of the first member at a predetermined location, and a second protruding ridge formed on the inside of the second member at a predetermined location, said first and second members being circumferentially continuous at said predetermined locations, upon engagement of the first member into the second member said first ridge moving over and past said second ridge, upon subsequent continuing engagement to a predetermined point of engagement of the two members said first and second ridges interfering in the direction of disassembly of the two members, one of the members in the vicinity of said respective ridge being resiliently deformable with respect to the engaged portion of the other member.

4,616,857
BI-DIRECTIONAL SELF-RETAINING CYLINDRICAL SURFACE SEAL
Daniel C. Woodman, Torrance, and Stephen A. Neely, Long Beach, both of Calif., assignors to Hughes Tool Company, Houston, Tex.
Continuation of Ser. No. 554,742, Nov. 24, 1983, abandoned.
This application Feb. 19, 1985, Ser. No. 702,853
Int. Cl.⁴ F16J *15/02;* **F16L** *19/03*
U.S. Cl. 285—140 **2 Claims**

1. In a supporting connection system for a subsea well having a multi-sectioned riser run from a floating vessel to the well of the type having a termination head removably mounted within a termination housing and having adapter means for co-axially engaging an uppermost section of the riser run, and hose means connected between ports in the termination housing and vessel, the improvement comprising in combination:

a longitudinal bore formed in the termination housing having an open top and bottom, the bore having an annular face formed therein that is curved in a vertical direction and has a greater diameter at the top of the face than at the bottom;

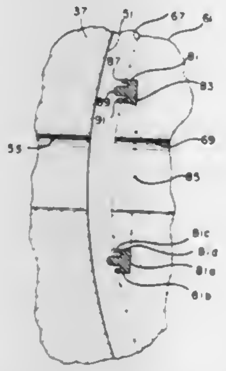
an annular face formed in the exterior of the termination head that is curved in a vertical direction the same as the face of the housing for mating with the face of the bore;

at least one passageway formed in the termination head and extending inward from the face of the termination head for aligning with one of the ports in the housing;

a groove formed in one of the mating faces, encircling the passageway in that face, the groove having a depth that varies continuously with the curvature of that face, the groove having a flat bottom located in a single plane, the groove also having an inner sidewall and an outer sidewall, said inner sidewall being greater in depth than said outer sidewall the groove having its maximum depth along opposing diametric portions of the groove about points intersected by a single first diametric line, the groove decreasing in depth from the maximum on either side of said first diametric line, the groove having its minimum depth along opposing diametric portions of the groove about points intersected by a single second diametric line perpendicular to said first diametric line, the groove having the inner sidewall of greater depth than the outer sidewall at said second diametric line, the groove increasing in depth from the minimum on either side of said second diametric line, the groove varying in depth symmetrically from the maxmium to minimum depths on either side of said first diametric line; and

an elastomeric seal ring located in the groove having a cross-sectional thickness that varies along its diameter in the same manner as the groove, the seal ring having an inner wall and an outer wall connected by a flat bottom wall, the inner wall having a greater height than the outer wall at said second diametric line, the seal ring having its maximum cross-sectional height along opposing diametric portions of the seal ring about points intersected by said first diametric line, the cross-sectional height decreasing in depth from the maximum on either side of said first diametric line, the seal ring having its minimum cross-sectional height along opposing diametric portions of the seal ring about points intersected by said second diametric line, the cross-sectional height increasing in depth from the minimum on either side of said second diametric line, the seal ring varying in height symmetrically from the maximum to minimum heights on either side of said first diametric line, the seal ring having an inner lip, an outer lip and a central lip separated from each other by annular recesses, the inner and outer lips protruding outwardly from the groove and the central lip protruding outwardly from the groove greater than the inner and outer lips for contact with the corresponding mating face to deform the ring and press the inner and outer lips into sealing contact with said mating face; the annular recesses varying continuously in distance to the bottom of the seal ring with the variance in cross-sectional thickness of the seal ring;

the difference in depth of the inner and outer sidewalls of the grooves, and the differences in height of the inner and outer sidewalls of the seal ring providing a uniform protrusion of the seal ring from the groove for sealing against said mating face.



4,616,858
FLEXIBLE PIPE COUPLING

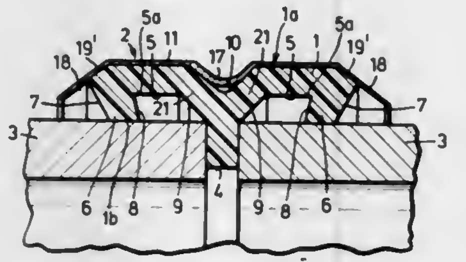
Heinz Sauer, Ronneburg, Fed. Rep. of Germany, assignor to Rasmussen GmbH, Maintal, Fed. Rep. of Germany

Filed Oct. 24, 1984, Ser. No. 664,346

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1983, 3339169

Int. Cl.⁴ F16L *21/00*

U.S. Cl. 285—235 **20 Claims**



1. A coupling for the establishment of a fluidtight connection between the neighboring end portions of two pipes, comprising a deformable elastic sleeve having two open ends, an external surface, an internal surface, a substantially centrally located annular partition extending from said internal surface and disposed between the end portions of the pipes which are inserted into the sleeve through the respective open ends, two inner circumferential grooves provided in said internal surface at the opposite sides of said partition, and a third circumferential groove provided in said external surface; and a clamping unit including a split ring surrounding said external surface and having a first corrugation extending into said third groove, said ring further having two outwardly extending projections which are relatively movable between a first position in which said projections are separated by a first distance as considered circumferentially of said ring and a second position in which said projections are separated by a smaller second distance as considered circumferentially of said ring, and said clamping unit further having tightening means for drawing said projections from said first position to said second position to thereby tighten said ring around the external surface of and deform said sleeve, said clamping unit also including an arcuate insert which bridges at least the major part of the gap between said projections in said first position and is at least partially disposed between said ring and the external surface of said sleeve in said second position, and said insert having a second corrugation extending into said third groove and receiving the adjacent portion of the first corrugation in said second position.

4,616,859
QUICK-COUPLING CONNECTOR

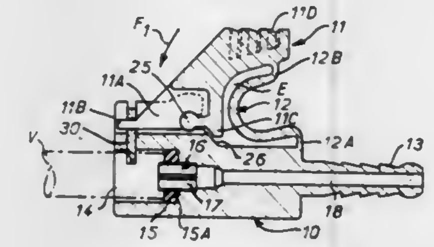
Patrice Brunet, Neuilly-sur-Seine, France, assignor to Poutrait-Morin, Aubervilliers, France

Filed Jan. 16, 1985, Ser. No. 691,766

Claims priority, application France, Jan. 16, 1984, 84 00562

Int. Cl.⁴ F16L *39/00*

U.S. Cl. 285—317 **15 Claims**



1. A quick-coupling connector for an air valve, said connector comprising a hollow body having a first orifice adapted to be connected to the air valve and a second orifice in communication with said first orifice and adapted to be connected to a hose for supplying compressed air, an operating member, mounting means rockably mounting said operating member on said body about a pivot axis, a spring biasing said operating member to an operative position, a clamping member for clamping the air valve to said body, said clamping member being controlled by said operating member and being slidably mounted on said body between a clamping position under the bias of said spring for temporarily securing said connector to the air valve and a retracted position for positioning said connector on and removing said connector from the air valve, the improvement wherein said operating member and said spring are of one-piece molded construction with there being a strap defining said spring and joining said operating member to said body.

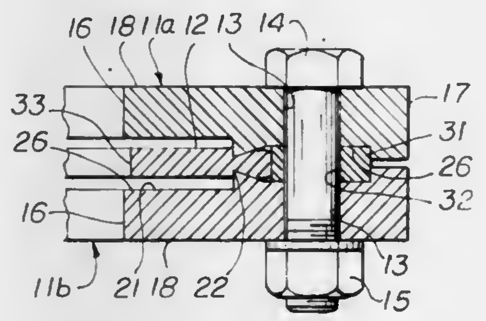
4,616,860
SEAL STRUCTURE FOR METAL VACUUM JOINT

Carl R. Faria, San Leandro, and Thomas W. Snouse, Fremont, both of Calif., assignors to Thermionics Laboratory, Inc., Hayward, Calif.

Filed Mar. 12, 1984, Ser. No. 588,452

Int. Cl.⁴ F16L *19/00*

U.S. Cl. 285—336 **3 Claims**



1. A vacuum joint comprising a pair of spaced flange members adapted for relative movement along a longitudinal axis, each said member having facing surfaces normal to said axis, each said facing surface having an inner edge and outer edge, each said facing surface being formed with a milled annular inner groove having an outer edge parallel to said axis, a milled annular outer groove having an outer shoulder, a milled annular slanted surface extending radially inwardly and axially toward the opposite member from the outer edge of said inner groove in a sharp corner spaced inward from said inner edge,

an annular soft metal gasket of substantially rectangular cross-section between said flange members extending outward of said sharp corners and inward of said sharp corners,

a spacer ring discrete from said members and from said gasket filling said outer groove and abutting said outer shoulder and having a thickness to hold said facing surface spaced apart, said deformable member being initially of slightly smaller outside dimension than the inside dimension of said spacer ring, said spacer ring confining deformation of said deformable member when said flange members are drawn together to cause said deformable member to seal against said sharp corners and said slanted surfaces, said sharp corners being closer together than said portions of said facing surfaces outside said outer grooves, said inner and outer grooves, said slanted surface, said deformable member and said spacer ring being non circular.

4,616,861
LOCK DEVICE

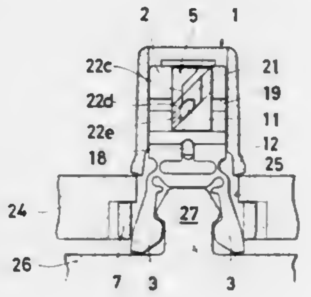
Mutsuo Kurosaki, Yahata, Japan, assignor to Nifco, Inc., Yokohama, Japan

Filed Jul. 17, 1985, Ser. No. 755,868

Claims priority, application Japan, Jul. 23, 1984, 59-151184

Int. Cl.⁴ E05C *19/02*

U.S. Cl. 292—6 **1 Claim**



1. A lock device which is locked by a first push and unlocked by a second push comprising: a case open at one end and provided with a spring formed in one face, said spring having on its tip an inward-facing projecting portion; a slidable engaging piece housed in the case, said engaging piece being provided with a transverse guide groove; a spring which constantly urges said engaging piece towards the opening of the case; and a cam plate interposed between the engaging piece and the wall of the case, one face of said cam plate being provided with a ridge which slidably engages with said transverse guide groove of the engaging piece and the other face being provided with a one-way passage loop in which said projection engages; a first push of the engaging piece moving said projecting portion along said one-way passage loop and the cam plate laterally along the guide groove, guiding the projecting portion into engagement with an engaging portion provided partway along said passage, putting the device into the locked state, and a second push disengaging the projecting portion from said engaging portion and transversely returning the cam plate, putting the device into the unlocked state.

4,616,862
ELECTRICALLY CONTROLLED DOOR LOCKING SYSTEM

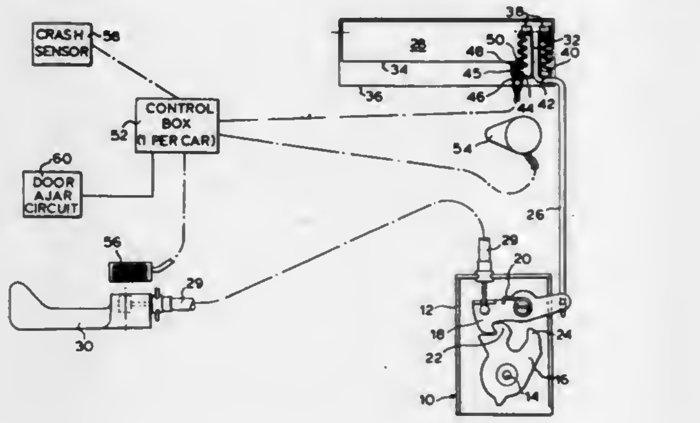
Marcus J. S. Ward, Billericay, United Kingdom, assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 12, 1985, Ser. No. 754,806

Claims priority, application United Kingdom, Jul. 14, 1984, 8417983

Int. Cl.⁴ E05C *3/26;* E05B *5/00*

U.S. Cl. 292—201 **14 Claims**



1. A vehicle door locking system comprising a door latch mechanism and an outside door handle mounted on a vehicle door, characterized in that the handle is connected to the latch mechanism by means including a pneumatic bellows having an electrically actuated valve, the bellows being sealed when the

valve is closed to transmit movement of the handle to the latch mechanism and the bellows being deflated by movement of the handle when the valve is open without transmitting handle movement to the latch mechanism.

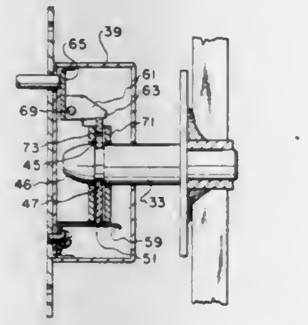
4,616,863
LOCK FOR RELEASABLY HOLDING A HINGED GUARD ELEMENT ON A WINDOW

Edgar E. Bryant, Mingus, Tex., assignor to Ultimate Security Products Corp., Fort Worth, Tex.

Filed Jul. 6, 1984, Ser. No. 628,638

Int. Cl.⁴ E05C *1/12, 19/00*

U.S. Cl. 292—302 **3 Claims**



1. A lock for releasably holding closed to a fixed structure such as a building or the like a hingedly mounted closing element such as a guard element on a window, consisting essentially of:

a. a lock bar means for being locked in a closed position; said lock bar means having a penetrating end with a shoulder and adjacent recessed groove on at least two sides; said lock bar means being connectable with said guard element that are hingedly mounted over said window opening;

b. a lock housing that is connectable with the building and has interiorly thereof a latch means for locking said lock bar means in the closed position; said latch being inaccessible to an outsider when said lock bar means is inserted and in the closed position; said latch means being operable atuomatically to lock said lock bar means in the closed position when said lock bar means is pushed into the closed position; said latch means being accessible to an insider and operable to release said lock bar means when pushed by a push bar means; said latch means including:

i. a trapped slideable release bar having an aperture adapted to receive said penetrating end of said lock bar means and an extended aperture segment of smaller dimensions defined by sides adapted to engage said recessed groove on said lock bar means;

ii. biasing means for biasing said release bar to engage said sides of said extended aperture when said recessed groove is disposed adjacent thereto by pushing said penetrating end of said lock bar means into said aperture;

iii. release bell crank pivotally mounted and having a release arm positioned to push said release bar and release said penetrating end of said lock bar means when pivoted; and

iv. means for pivoting said release bell crank; and

c. said push bar means for releasing said lock bar means, said push bar means being accessible and operable by said insider; said push bar means comprising two portions, an interior portion extending interiorly of said building disposed in a wall aperture for pushing on said latch means to release said lock bar means; and an exterior portion; said exterior portion comprising a small diameter shaft with a shoulder on its interior end with a retainer washer on its exterior end; and a first small diameter passageway encompassing said small diameter shaft;

wherein said release bar is slideably trapped between a cover and a base, said cover is shorter than said release bar and disposed intermediate said release bar and said lock housing; said bar includes extended support members having apertures at their extended ends, said bell crank including two upright striker portions and an actuator portion and is journalled by apertures for pivotal movement about a pin shaft, said pin shaft being inserted within said apertures of said extended ends and said pivotal bell crank such that said bell crank can be pivoted by a force on said actuator portion to slide said release bar and release said lock bar means.

4,616,864
FASTENERS FOR DOORS, WINDOWS AND THE LIKE

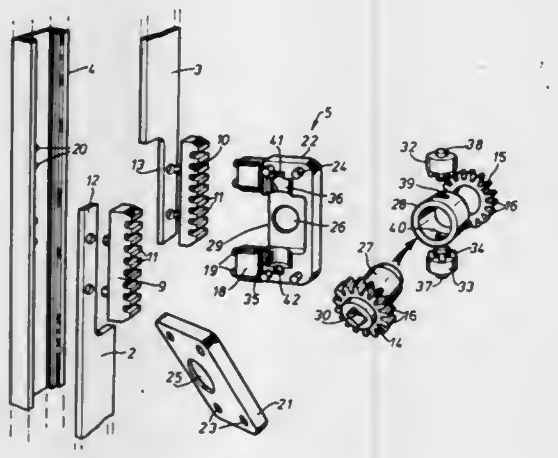
Jack E. Douglas, Stratford-on-Avon, England, assignor to Hardware & Systems Patents Limited, London, England

Filed Oct. 18, 1984, Ser. No. 662,173

Claims priority, application United Kingdom, Oct. 22, 1983, 8328302

Int. Cl.⁴ E05C *9/12*

U.S. Cl. 292—336.3 **12 Claims**



1. A fastener for a door, window and the like comprising first and second elongate bars mounted for displacement longitudinally thereof, a drive mechanism comprising a respective rack and pinion assembly for each of said bars of which the respective racks are provided on the bars and the respective pinions are mounted for rotation about a common axis, a rotatable actuator connected to said first pinion for effecting rotation of said first pinion in one sense, and means connecting said second pinion to said first pinion for effecting simultaneous rotation of said second pinion in the opposed sense whereby said bars are simultaneously displaced in opposite directions on rotation of said actuator to provide a fastening action.

4,616,865
SECURITY LOCK ASSEMBLY

Michael T. Mackle, St. Ives, Australia, assignor to Wormald International, Limited, New South Wales, Australia

Filed Aug. 28, 1984, Ser. No. 645,049

Int. Cl.⁴ E05C *13/10*

U.S. Cl. 292—341.16 **10 Claims**

1. A security lock assembly comprising:

a movable lock bolt;

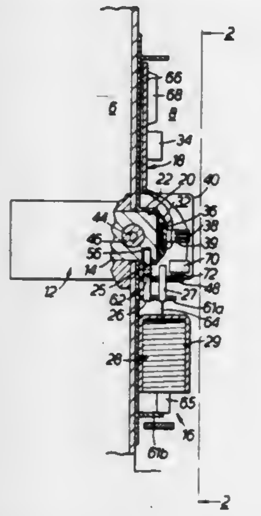
a striker unit which is adapted for mounting in a door jamb and which defines a cavity to receive said lock bolt;

latch means mounted on said striker unit for movement to an operative position protruding into said cavity in which said latch means is engageable with said bolt therein to prevent its withdrawal from said cavity;

drive means to drive said latch means to said operative position;

a magnetized element in said lock bolt;

a magnetically operable switch mounted on said striker unit adjacent said bolt cavity, which switch is located near said element so as to be responsive to said magnetized element, on receipt of said lock bolt in said cavity; and



circuit means between said drive means and said switch to activate said drive means upon operation of said switch.

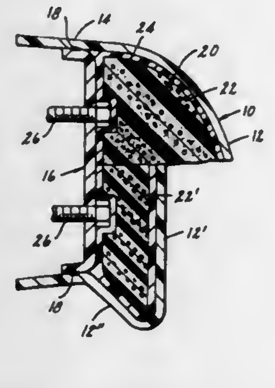
4,616,866
VEHICLE BUMPER

Norman S. Loren, Warren, and William E. Gordon, Sterling Heights, both of Mich., assignors to Michael Ladney, Jr., Sterling Heights, Mich.

Continuation-in-part of Ser. No. 568,215, Dec. 30, 1983, abandoned. This application Jun. 25, 1984, Ser. No. 624,202

Int. Cl.⁴ B60R *19/08*

U.S. Cl. 293—120 **12 Claims**



1. A vehicle bumper, comprising:

a fascia having a front portion adapted to receive impact forces and upper and lower flanges extending rearwardly from said front portion;

a backing member positioned rearwardly of the front portion of the fascia and extending vertically relative to said upper and lower flanges, said member including means for mounting the bumper on the vehicle; and

a resiliently compressible plastic foam molded in situ in at least the volume bounded by the backing member and the fascia, said foam having an integral skin bonded to adjacent surfaces of the fascia and the backing member.

4,616,867
MEASURING SCOOP

John J. O'Hara, 3689 Karen Pkwy., Pontiac, Mich. 48054

Continuation of Ser. No. 319,452, Sep. 29, 1983, abandoned. This application Jun. 10, 1985, Ser. No. 742,658

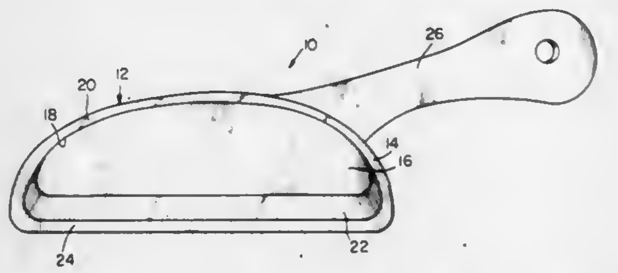
Int. Cl.⁴ A47F *13/08;* **G01F** *19/00*

U.S. Cl. 294—55 **1 Claim**

1. A measuring scoop comprising:

a housing having a peripheral wall, an end wall, and an open end, thereby defining an open-ended chamber, said peripheral wall having an elongated, flat portion defining an elongated narrow edge along a corresponding portion of the open end, and an arcuate wall portion extending over said elongated, flat portion, the distance between a midpoint of said arcuate wall portion and said elongated flat portion being substantially less than the length of said flat portion whereby said open end of said housing is elongated having one flat side and one arcuate side,

an elongated handle integrally formed with said arcuate wall portion of said housing closely adjacent one end of said flat portion so that said handle is longitudinally aligned in a direction substantially parallel to said elongated edge and substantially coplanar with said end wall, and spaced upwardly apart from said elongated flat portion, so that with said elongated flat portion lying on a flat surface, said handle is spaced upwardly from the surface by an amount sufficient so that with said handle grasped by a human hand, the hand is spaced upwardly from said surface



wherein the longitudinal length of said elongated flat portion is greater than the longitudinal length of said handle so that, with said flat portion resting on a support surface, said handle remains in a raised position.

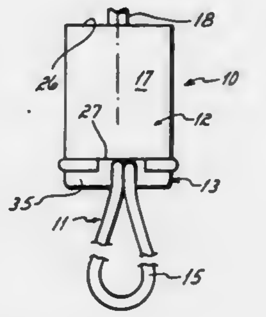
4,616,868
HANDLE WITH CARRYING STRAP

Toshio Okuda, Hirakata, Japan, assignor to 'Totes', Incorporated, Loveland, Ohio

Filed Jan. 24, 1985, Ser. No. 694,529

Int. Cl.⁴ A45B *25/00*

U.S. Cl. 294—137 **8 Claims**



1. An umbrella handle comprising

a carrying strap having a connector loop and a hand loop, said connector and hand loops being defined from a single closed loop strap configuration,

a sleeve that defines an exterior peripheral surface which surrounds said handle's longitudinal axis, said sleeve's exterior surface being grippable by a user's hand during normal use of said handle,

a cap connectable with said sleeve, said cap defining an exterior end surface which traverses said handle's longitudinal axis, said cap's exterior surface not being grippable by a user's hand during normal use of said handle,

structure defining a peripheral groove that extends around the exterior surface of said sleeve, said peripheral groove being partially formed by said sleeve and partially formed by said cap, said carrying strap's connector loop being seated within said peripheral groove, and

two posts spaced one from the other within said peripheral groove, said posts cooperating to partially define a strap slot therebetween through which a double thickness of said hand loop extends into the handle's interior, each of said posts also cooperating to partially define a guide slot spaced from said strap slot through which a single thickness of said connector loop extends into the handle's interior, said guide slot structure cooperating with said strap slot structure to define a tortuous path around which a portion of said strap's connector loop must pass, the juxtaposition of said strap's connector loop and said hand loop thereby being positioned internally of said handle.

4,616,869
AERODYNAMIC FAIRING FOR PASSENGER CARS AND UTILITY-TYPE MOTOR VEHICLES

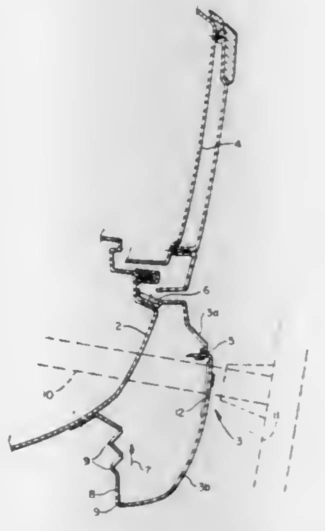
Bruno Sacco; Johann Tomforde, both of Sindelfingen; Joachim Paschke, Gechingen, and Harald Leschke, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 14, 1983, Ser. No. 561,231

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1982, 3246767

Int. Cl.⁴ B62D *35/02*

U.S. Cl. 296—1 S **18 Claims**



1. An aerodynamic fairing, made of plastic material, for outer laterally disposed longitudinally extending members of bodies for wheeled motor vehicles, which in conjunction with an outer wall of a respective outer member, forms a closed hollow body means, comprising an upper zone made of a plastic material which is comparatively form-rigid, and a lower zone having a lower portion depending below the outer wall which can be elastically deformed and an upper portion which is fastened to the upper zone, the closed hollow body being bounded by the outer wall and the upper and lower zones, and the lower zone including means for enabling a reduction in height of the fairing without the fairing being damaged.

4,616,870
MOBILE DISPLAY SYSTEM

Keith W. Halden, Owlwood Farm, Allerton Bywater, Castleford, West Yorks WF10 2AN, England

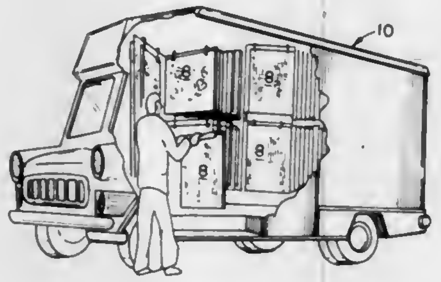
Filed Jun. 4, 1985, Ser. No. 741,157

Int. Cl.⁴ B60R *13/00*

U.S. Cl. 296—21 **16 Claims**

1. A mobile display system for carpet samples and the like, comprising:

- a vehicle having an interior space defining a mobile showroom for carpet samples and the like;
- a framework having at least one elongated support member secured to the vehicle within the interior space;
- a plurality of racks pivotally mounted in a row on the at least one elongated rack support member and adapted to hold samples of carpet and the like on both sides thereof, the racks being so closely spaced as to tend to randomly engage one another, the carpet samples and the like cushioning the engagement to reduce damage to the racks and noise during vehicle movement without damaging the carpet samples and the like; and,
- rack restraining means affixed to the vehicle and adapted to be detachably engaged to the racks to prevent swinging during transport, whereby very large numbers of samples may be transported and displayed.



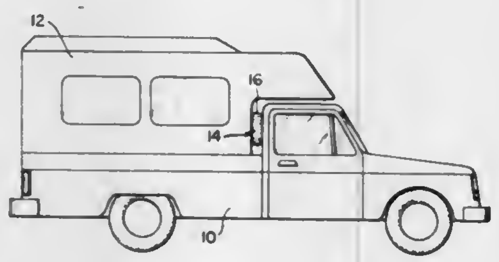
4,616,871
SNAP-IN WINDOW BOOT FOR TRUCK-CAMPER COMBINATIONS AND THE LIKE

Thomas L. Pettit, 21420 118th Ave. East, Graham, Wash. 98338

Filed Jul. 22, 1985, Ser. No. 757,258

Int. Cl.⁴ B60P *3/32*

U.S. Cl. 296—166 **8 Claims**



1. A sealing means or boot for use between adjacent window or passageway openings in the cab of a vehicle and a component mounted on th vehicle such as a camper, cap or canopy, said boot comprising: a tunnel made of relatively flexible material having an external circumference approximately equal the internal circumference of the passageway openings in which the boot is installed, said tunnel having a length somewhat greater than the spacing between the vehicle cab and component passageway openings, said tunnel terminating in opposed ends; and retention means at each of said opposed ends of said tunnel for retaining said opposed ends behind the passageway openings, outside of the space between the passageway openings, each said retention means being substantially quadrilateral in configuration and having a circumference greater than that of the passageway opening behind which it is placed, at least one of said retention means including a first pair of opposed legs joined by a pair of opposed, inwardly compressible legs, each said compressible leg having slidably interfitted members spring urged to an expanded state, said slidably interfitted members being constructed and arranged to permit substantial relative movement of one of said first pair of opposed legs towards the other of said first pair of opposed legs, whereby said one retention means may be installed behind a passageway opening by grasping said first pair of legs and squeezing the same together, inserting said one retention means through a passageway opening, and releasing said one retention means whereupon said compressible legs expand and said one retention means assumes a circumference greater than that of the passageway opening through which it was inserted.

4,616,872
EARTH MOVING VEHICLE

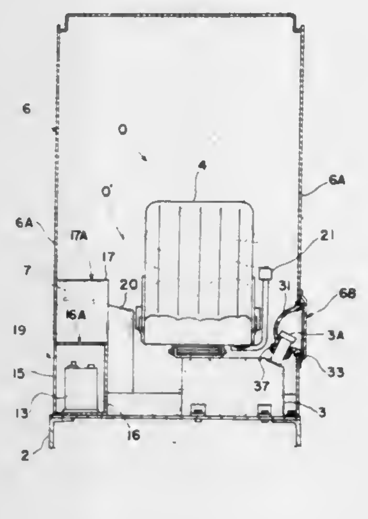
Takashima Akira; Masahiko Kobayashi; Hitoo Nasu; Yoshishiro Okida, all of Sakai, and Kazuhiko Tsuji, Izumi, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Mar. 14, 1985, Ser. No. 711,874

Claims priority, application Japan, Nov. 28, 1984, 59-181435[U]

Int. Cl.⁴ B62D *33/06*

U.S. Cl. 296—190 **2 Claims**



1. An earth moving vehicle, comprising:

- a moving device for running the earth moving vehicle;
- a swivel deck including an upper surface having front, rear and two side portions, said swivel deck being rotatably connected to the moving device relative to a vertical axis extending through the moving device;
- a motor section situated on the rear portion of the upper surface of the swivel deck, and
- a driver's cabin situated on the entire upper surface of the swivel deck except the rear portion for the motor section, said driver's cabin including a front wall, a rear wall, first and second side walls, said first wall having a first opening at a lower portion thereof, a second opening adjacent to the first opening and a lid for covering the second opening, said second side wall having a third opening and a lid for covering the third opening, said all walls being arranged substantially perpendicularly to the swivel deck, a driver's seat situated in front of the rear wall between the first and second side walls, an interior cover situated inside the driver's cabin adjacent the first side wall so that a space surrounded by the interior cover can be accessible through the first opening, said interior cover having a top surface which is located under the driver's elbow when a driver is seated on the driver's seat, a console box situated between the interior cover and the driver's seat and having a top surface located below the top surface of the interior cover, a battery case situated inside the driver's cabin adjacent the first side wall next to the interior cover so that a space surrounded by the battery case is accessible through the second opening which is closable by the lid for the second opening, said battery case having a top surface lower than the top surface of the interior cover, a fuel tank situated under the driver's seat and having a refilling port situated adjacent to the third opening of the second side wall, and a partition element attached around the refilling port and connected to the second side wall around the third opening so that the refilling port communicates with atmosphere outside the driver's cabin, whereby interior of the driver's cabin can be effectively utilized.

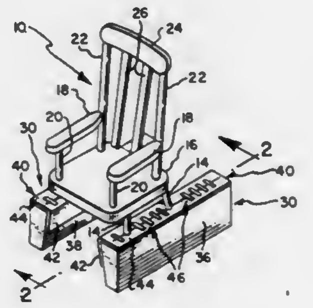
4,616,873
ROCKER SAFETY BOOT

Joseph G. Debo, 70 Puritan Rd., Tonawanda, N.Y. 14150

Filed Sep. 25, 1985, Ser. No. 779,818

Int. Cl.⁴ A47C *3/02*

U.S. Cl. 297—272 **6 Claims**



1. A safety boot for freely enclosing each rocker of a rocking chair having front and rear legs respectively connecting the front and rear ends of each rocker to a seat, in order to prevent injury to human extremities caused by pinching beneath each rocker and the floor, while at the same time permitting the desired rocking motion, said boot comprising: an elongated bottom wall of greater width and length than each rocker and adapted to support each rocker; elongated front and rear end walls extending upwardly from the front and rear ends respectively of said bottom wall, and adapted to extend sufficiently above the highest rise of the front and rear ends respectively of each rocker, in order to enclose the same when so elevated; elongated outer and inner side walls of greater height and length than each rocker, connecting said end walls, extending upwardly from said bottom wall, and adapted to enclose each rocker and its connecting legs during rocking; and an elongated flexible cover connecting said end walls and said side walls and adapted to enclose each rocker and its connecting legs; said cover being split longitudinally into inner and outer sections to permit installation and removal of said boot, as well as to provide spacing for movement of the legs during rocking; and means for removably fastening the split cover sections together lengthwise above each rocker.

4,616,874
VEHICLE SEAT ASSEMBLY

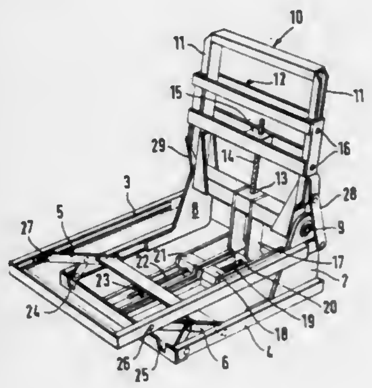
Helge Pietsch, Detmold; Manfred Rink, Bielefeld, and Christian Süss, Bad Salzuflen, all of Fed. Rep. of Germany, assignors to Gebr. Isringhausen, Lemgo, Fed. Rep. of Germany

Filed May 29, 1984, Ser. No. 615,045

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1983, 3320009

Int. Cl.⁴ B60N *1/06*

U.S. Cl. 297—321 **3 Claims**



1. A seat assembly for a vehicle seat comprising:

(a) an underframe;

(b) a seat frame above said underframe;

(c) a pair of spaced support levers supporting the forward portion of said seat frame on said underframe so that the forward portion of said seat frame is adjustably positionable in spaced relation above the forward portion of said underframe;

(d) a support frame pivotally mounted on the rear portion of said underframe so that it is pivotable toward and away from said seat frame about an axis located in the rear portion of said underframe;

(e) a backrest frame slidably mounted on said support frame so that it is movable thereon toward and away from said axis but so that it is adjustably securable with respect to said suport frame; and

(f) means for maintaining said backrest frame in adjusted position relative to said support frame;

(g) means pivotally suspending the rear portion of said seat frame from said backrest frame;

(h) whereby vertical movement of said backrest frame effects vertical movement of the rear portion of said seat frame.

4,616,875

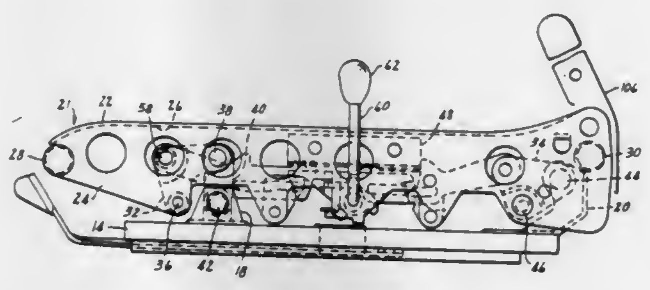
ADJUSTABLE SEAT CONSTRUCTION

Bob L. McFalls, Roseville, and William R. Tighe, Dearborn, both of Mich., assignors to Ferro Manufacturing Corporation, Southfield, Mich.

Filed Oct. 17, 1983, Ser. No. 542,458

Int. Cl.⁴ A47C *3/20;* **F16M** *13/00*

U.S. Cl. 297—325 **4 Claims**



1. An adjustable seat assembly comprising a lower support, a rigid rectangular seat frame, front and rear bell crank levers pivotally connected between said support and the front and rear respectively of said frame, said bell crank levers being pivotal on said frame as a consequence of substantially vertical movement of the adjacent edge of said frame, an elongated longitudinally extending rack plate having a series of openings therein fixed to said frame, elongated longitudinally extending, longitudinally slotted front and rear pawls pivotally connected at one end to corresponding bell crank levers and having teeth at their other ends receivable in the openings in said rack plate, a manually operable control lever having an inwardly extending end pivotal on said frame to provide for pivotal movement of said control lever forwardly and rearwardly from an intermediate position in which both bell cranks are locked against pivotal movement, an operator fixed to said control lever having a lug thereon, front and rear actuators pivoted for independent movement on the inwardly extending end of said control lever engaging said lug, front and rear latch levers pivoted to said frame for independent movement about transverse axes by said actuators, said latch levers having projections thereon receivable in the slots in said pawls and operable to swing the toothed end of the corresponding pawl to disengage its teeth from the openings in said rack plate, the elongated slots in said pawls providing for longitudinal movement thereof on pivotal movement of the associated bell crank levers.

4,616,876

ROTATION ADJUSTING APPARATUS

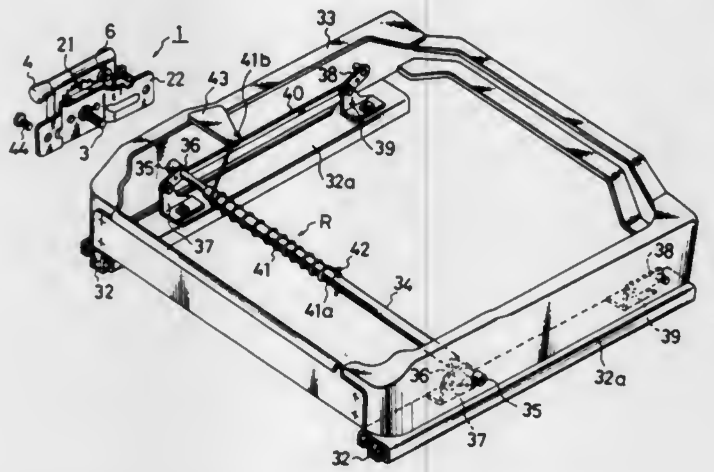
Hiroshi Suzuki; Masatatsu Kanai; Seishiro Saitoh, and Shigeru Kanai, all of Tokyo, Japan, assignors to Tachikawa Spring Co., Ltd., Tokyo, Japan

Filed Jul. 3, 1985, Ser. No. 752,079

Claims priority, application Japan, Aug. 31, 1984, 59-182144; Mar. 28, 1985, 60-64559

Int. Cl.⁴ B60N *1/02*

U.S. Cl. 297—328 **6 Claims**



1. A rotation adjusting apparatus comprising;

(a) a base bracket fixed to a shaft to be driven;

(b) a fixed gear;

(c) a lock gear rotatably supported by said base bracket and engageable with said fixed gear;

(d) a guide bracket rotatably supported by said base bracket;

(e) a handle slidably supported by said base bracket;

(f) means for coupling said guide bracket to said lock gear; and

(g) means fixed to said handle and for rotating said guide bracket when said handle is slid relative to

said base bracket, said apparatus being so constructed that when said handle is slidably extended most outwardly from said base bracket, said guide bracket is rotated by said rotating means relative to said base bracket and said lock gear is also rotated through said coupling means so that the engagement between said lock gear and said fixed gear is released whereby said base bracket and hence said shaft can be rotatable by said handle.

4,616,877

CHAIR WITH BACK HEIGHT ADJUSTMENT

Mathew A. Slaats, and James E. Blesinger, both of Jasper, Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed May 9, 1985, Ser. No. 732,516

Int. Cl.⁴ A47C *1/00*

U.S. Cl. 297—353 **21 Claims**

1. A chair comprising:

a base, a seat and a support column connected to one of said base and seat,

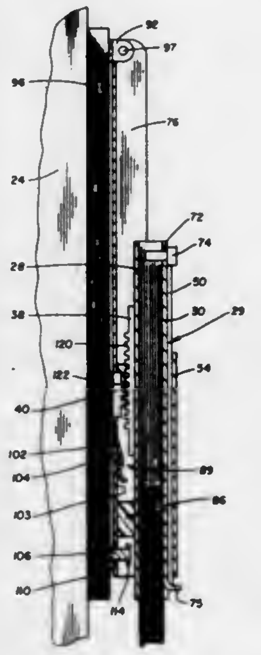
a carrier slidably connected to said column,

a back panel,

first pivot means secured to an upper portion of said back panel for pivotally connecting said panel to said carrier for limited rotation about a first pivot axis,

locking means comprising a first locking element on said back panel selectively engageable with a second locking element on said support column when the panel is rotated about the first pivot axis to a locked position to thereby lock the panel and carrier in a selected vertical position, said first and second lock elements disengaging when the panel is rotated about the first pivot axis to a release position wherein the panel and carrier can be moved vertically relative to said support column,

biasing means operatively associated with said panel for yieldably urging said panel towards its lock position to cause engagement of said first and second lock elements, and



second pivot means for pivotally connecting said carrier to said support column for rotation about a second pivot axis, said second axis being located below the first axis and in proximity to said locking means.

4,616,878

FITTING FOR A SAFETY BELT FOR MOTOR VEHICLES

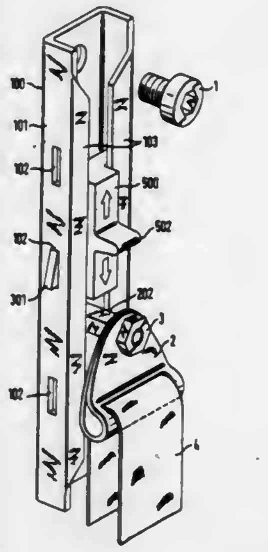
Artur Fohl, Schorndorf, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed Aug. 3, 1984, Ser. No. 637,518

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1983, 3328258

Int. Cl.⁴ B60R *21/10*

U.S. Cl. 297—483 **19 Claims**



1. An adjustable safety belt anchorage comprising a guiding rail adapted to be mounted in a motor vehicle, a carriage longitudinally slidable in first and second directions along said guiding rail, said guiding rail having longitudinally spaced locking openings, a locking member movably mounted on said carriage for selective engagement with said spaced locking openings, said carriage having support means for the safety belt, an actuator member movable relative to said carriage for a limited distance in the first and second directions, means for converting relative movement between said actuator member and said carriage in a selected one of the first and second directions into movement of said locking member away from one of said locking openings, and means interconnecting said actuator member and carriage for moving said carriage along said guiding rail in the selected one of the first and second directions in response to continued movement of said actuator member in the selected one of the first and second directions.

4,616,879

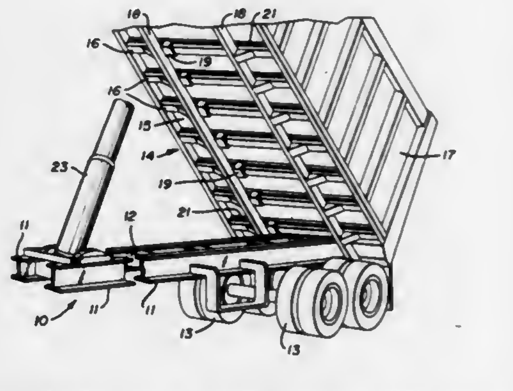
DUMP TRAILER WITH QUIET CUSHIONS

Howard Booher, P.O. Box 277, Randolph, Ohio 44265

Filed Mar. 21, 1984, Ser. No. 591,929

Int. Cl.⁴ B60P *1/16*

U.S. Cl. 298—10 **5 Claims**



1. An improvement in a dump trailer, said dump trailer comprising a chassis having longitudinally extending beams with ground engaging wheels under one end and a dump body pivoted to said chassis, said dump body having cross frame members transversely thereof and transversly of said longitudinally extending beams, said cross frame members each having side walls, and means for elevating said dump body with respect to said chassis; the improvement comprising means for preventing direct contact of said cross frame members of said dump body with said longitudinally extending beams of said chassis, said means consisting of grooved means defined in said cross frame members side walls, and a plurality of resilient cushion members having flanges located thereon for engagement with said grooved means, a plurality of said cushion members being positioned on each of a plurality of said cross frame members of said dump body, each of said cushion members being located to be interposed between each of said plurality of cross frame members and corresponding ones of said longitudinally extending beams of said chassis when said dump body is positioned on said chassis whereby essentially all contact between said plurality of dump body cross frame members and said chassis longitudinally extending beams is prevented, said plurality of cross frame members of said dump body being of a known cross sectional configuration and each of said plurality of said resilient cushion members being formed in a cross sectional configuration substantially the same as the cross sectional configuration of said plurality of cross frame members and are distorted and placed on said plurality of cross frame members so as to be self-securing with respect thereto.

4,616,880

CONTINUOUS EXCAVATING MACHINE

Yasuo Nozaki, Hyogo; Yoshikazu Oishi, Kakogawa, and Takanori Koga, Akashi, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Dec. 21, 1982, Ser. No. 451,972

Claims priority, application Japan, Dec. 26, 1981, 56-212168

Int. Cl.⁴ E02F *3/18;* **E21C** *35/20*

U.S. Cl. 299—39 **3 Claims**

1. A continuous excavator comprising a self-propelled main frame,

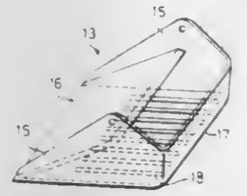
forwardly projecting booms pivotably supported on said frame for pivotal up and down movement,

a self-rotated cutter drum supported on said booms and having a plurality of cutter bits on its outer periphery,

A scraper supported on said frame behind a lower portion of said drum to collect excavated material dug by said cutter bits,

a first upwardly sloping conveyor supported on said frame and having its lower end positioned adjacent said scraper for conveying the material away from said scraper, and

a pivotable second conveyor supported on said frame below the upper end of said first conveyor and pivotable both horizontally and in a vertical plane, to convey the material from said first conveyor out of said excavator, said scraper comprising a bottom plate having slits through its rearward portion, and a rearwardly and upwardly sloping plate above the forward portion of said bottom plate, for guiding the material to said first conveyor.



4,616,881

TRACTOR-TRAILER BRAKE SYSTEM INCLUDING A TRAILER BRAKE CONTROL VALVE

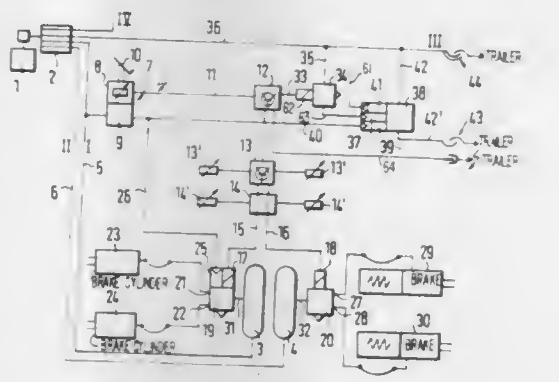
Egbert Müller, Eberdingen-Hochdorf; Ingolf Grauel, Vaihingen/Enz, and Werner Stumpe, Kornwestheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 415,301, Sep. 7, 1982, abandoned. This application Nov. 7, 1984, Ser. No. 669,740

Claims priority, application Fed. Rep. of Germany, May 21, 1982, 3219140

Int. Cl.⁴ B60T *8/02, 13/26, 13/68, 13/74*

U.S. Cl. 303—7 **9 Claims**



1. A tractor-trailer compressed air brake system having a protective valve on said tractor for dividing compressed air from a compressed air supply source into four different compressed air circuits on said tractor and to said trailer, a dual-circuit brake control means on said tractor controlled by a foot-operated brake control pedal for operating a first and second service brake control circuit, a compressed air control valve on said tractor for controlling compressed air to said trailer, said compressed air control valve including at least two pressure control elements, one of said at least two pressure control elements controllable by said first service brake control circuit and another of said at least two pressure control elements controllable by said second service brake control circuit via said foot-operated dual circuit brake control means, one of said first and second service brake control circuits including an electrically responsive control circuit means for controlling one service brake control circuit and one control element of said control valve for the trailer.

4,616,882

BRAKE ARRANGEMENT FOR HYDRAULICALLY POWERED VEHICLES

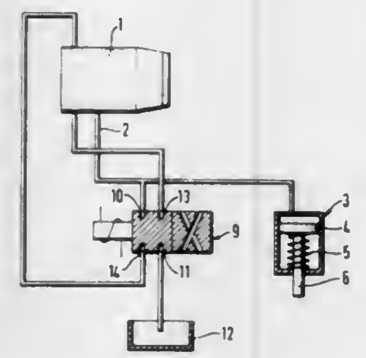
Alfredo Bueno, Sao Paulo-Sp, Brazil, assignor to Dynapac AB, Solna, Sweden

Filed Aug. 30, 1984, Ser. No. 645,928

Claims priority, application Sweden, Sep. 1, 1983, 8304730.8

Int. Cl.⁴ B60T *11/28*

U.S. Cl. 303—68 **1 Claim**



1. A brake arrangement for hydraulically powered vehicles comprising:

hydraulic fluid tank means for supplying hydraulic fluid;

a hydraulic cylinder;

pump means for pumping said hydraulic fluid from said fluid tank means under pressure into said hydraulic cylinder;

first hydraulic circuit means for connecting said cylinder directly to said tank means;

spring means arranged in said cylinder;

a piston in operative contact with said spring means and slideably engaging said cylinder so as to be displaceable from a first position whereat said piston holds said spring means in a charged condition under the pressure of said hydraulic fluid to a second position under the force of said spring means in response to a loss in pressure of said fluid; and,

brake means for halting the vehicle, said brake means being operatively connected to said piston for movement from a relaxed position corresponding to said first position of said piston to a braking position corresponding to said second position of said piston;

second hydraulic circuit means for short-circuiting said pump means thereby reducing the hydraulic propellant force and yet enabling the same to continue to function; and,

hydraulic switching valve means switchable from a deenergized condition to an energized condition; said valve means being connected into said first circuit means for opening the same to divert the fluid away from said hydraulic cylinder and into said tank means when switched into said energized condition thereby causing said brake to be moved into said braking position independently of any loss of pressure in said braking arrangement caused by leakage, said valve means also being connected into said second circuit means for opening the same when in said energized condition thereby short-circuiting said pump means by returning the fluid directly to the latter.

4,616,883

ENDLESS DRIVE SYSTEM

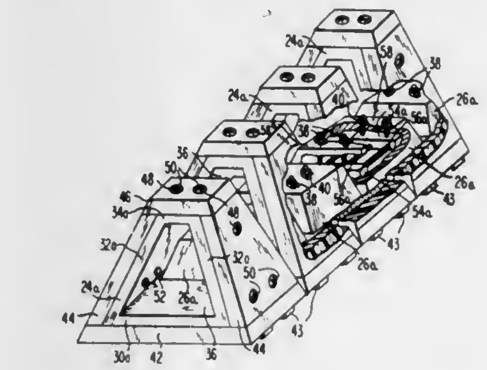
John W. Edwards, Brandon; Daniel R. Harper, and Quinton B. McNew, both of Fort Myers, all of Fla., assignors to Edwards, Harper, McNew and Company, Fort Myers, Fla.

Division of Ser. No. 607,067, May 4, 1984, Pat. No. 4,569,561, which is a continuation-in-part of Ser. No. 516,831, Jul. 25, 1983, abandoned. This application Oct. 18, 1985, Ser. No. 789,265

The portion of the term of this patent subsequent to Feb. 11, 2003, has been disclaimed.

Int. Cl.⁴ B62D *55/12, 55/18*

U.S. Cl. 305—40 **23 Claims**



1. An endless drive system comprising:

a plurality of endless drive sections each including a substantially closed shoe portion having first and second side edges, first and second substantially closed side walls extending from the first and second side edges of the shoe portion and sloping inwardly therefrom toward the center of the endless drive section, and a central surface joining the first and second side walls to define therewith and with the shoe portion a drive section body; and

a like plurality of cable connector section, each including at least one cable member and means to attach one end of the cable connector section to a first one of the endless drive sections and the other end of the cable connector section a second one of the endless drive sections, such attachments being within the drive section bodies of the endless drive sections, to cause the plurality of cable connector sections to join the plurality of endless drive sections in a closed loop as an endless drive system.

4,616,884

STRUCTURAL BEARINGS

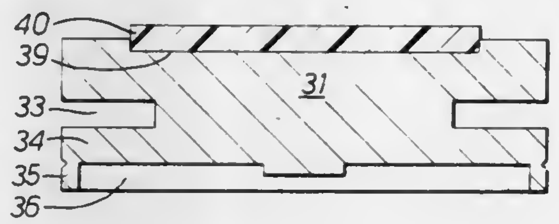
John C. Baker, Crewkerne, England, assignor to AEPLC, England

Filed Jan. 11, 1985, Ser. No. 690,764

Claims priority, application United Kingdom, Jan. 12, 1984, 8400773

Int. Cl.⁴ F16C *29/02*

U.S. Cl. 384—7 **6 Claims**



1. A structural bearing adapted to rest on a support surface and capable of deformation comprising a plate having a dependent peripheral support means for engaging the support surface and a load engaging bridge means for extending between and connecting said peripheral support means on opposite sides of the plate, said bridge means including deformation means adjacent said peripheral support means for deforming to permit said bridge to shift its planar relationship to the support surface when said bearing is subjected to a non-uniformly applied load resulting from the spacing between the top surface of the bridge and the support surface being different from one side of the plate to another whereby the load distribution over said support surface is redistributed to render it more uniform.

4,616,885

DUST-FREE ROLLING-CONTACT BEARING ASSEMBLY

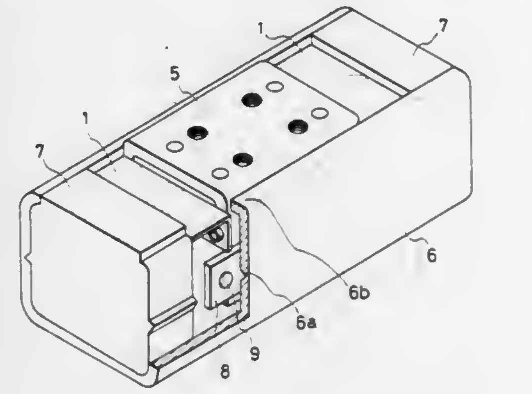
Yoshiyuki Komiya, Kawasaki, Japan, assignor to Nippon Thompson Co., Ltd., Japan

Filed May 7, 1985, Ser. No. 731,682

Claims priority, application Japan, May 21, 1984, 59-73231[U]

Int. Cl.⁴ F16C *29/08*

U.S. Cl. 384—15 **5 Claims**



1. A rolling-contact bearing assembly comprising:

a track rail elongated in shape and including a pair of side wall sections which are placed opposite to each other in parallel as spaced apart over a predetermined distance and a bottom section connecting the bottom ends of said side wall sections;

a pair of end blocks each fixedly attached to each end of said track rail, said end block covering the corresponding end of said track rail;

a moving table disposed substantially inside of said track rail as located between said pair of side wall sections;

a plurality of rolling members interposed between said table and said track rail thereby allowing said table to move along said track rail between said pair of end blocks; wherein said table includes a generally U-shaped cross section comprising a pair of side wall sections oppositely arranged in parallel and a top section connecting the top ends of the pair of side wall sections, whereby an outer guide groove is formed in the inner surface of each of the side wall sections of said track rail and an inner guide groove is formed in the outer surface of each of the side wall sections of said table, said inner and outer guide grooves being oppositely located to define a guide passage in which said rolling members are located; and

shielding means for uniformly shielding the space between said pair of side wall sections of said track rail to completely enclose the rolling members as said table moves along said track rail, in cooperation with the rail, end blocks, and table.

4,616,886
LINEAR SLIDE BEARING AND LINEAR SLIDE TABLE UNIT EMPLOYING THE SAME

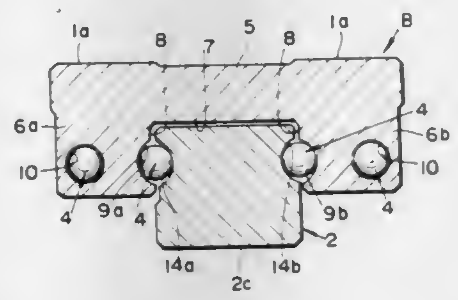
Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-Ku, Tokyo, Japan

Continuation of Ser. No. 602,839, Apr. 23, 1984, abandoned. This application Dec. 26, 1985, Ser. No. 815,285

Claims priority, application Japan, May 2, 1983, 58-76233; May 16, 1983, 58-84020

Int. Cl.⁴ F16C *29/06*

U.S. Cl. 384—45 **4 Claims**



1. A linear slide bearing adapted to slidably mount a mounting table on a bed comprising:

a main body of substantially inverted U-shaped cross-section having a horizontal portion and a pair of sleeve portions downwardly extending from both ends of said horizontal portion and defining therebetween a cavity on the lower side of said main body, each sleeve having a raceway groove of substantially semicircular cross-section formed in its inner surface along the longitudinal direction thereof, and each sleeve further having a recirculating ball bore longitudinally extending therethrough;

a track shaft having its upper part fitted in said cavity in said main body with a predetermined clearance therebetween, said track shaft being provded, in each of the side surfaces facing the inner surfaces of both sleeve portions of said main body, with a raceway groove of substantially semicircular cross-section extending in the longitudinal direction of said track shaft while confronting the corresponding one of said raceway grooves formed in the inner surfaces of said sleeve portions to constitute a loaded ball region;

a pair of covers adapted to be attached to both longitudinal ends of said main body, each cover being provided in its inner surface with guide grooves for providing communication between said recirculating ball bores and loaded ball regions to constitute endless tracks, respectively;

two rows of balls disposed between the opposed raceway grooves in the sleeve inner surfaces and the track shaft side surfaces so as to be recirculated through said endless tracks for bearing loads acting in all directions including lateral and vertical directions between said main body and said track shaft;

said horizontal portion of aaid main body having at its top a mounting surface inclined in either direction with respect to a mounting surface constituted by the bottom surface of said track shaft;

each of said raceway grooves formed in said main body and said track shaft being constituted by a circular arch groove having an inner surface with a curvature radius slightly larger than that of said balls such as to provide two-point contact between said balls and said raceway grooves; and

said main body being adapted to receive bolt means for securing said main body to said mounting table such that tightening of said bolt means applies a twisting force to said main body because of said inclined mounting surface to thereby apply a preload between said balls and said raceway grooves.

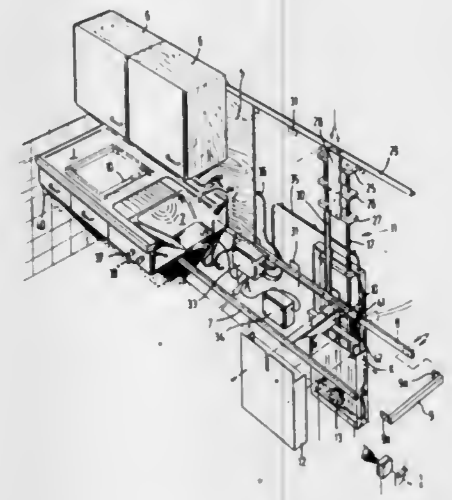
4,616,887
ADJUSTABLE WORK TOP

Dirk J. Oudman, Assen, Netherlands, assignor to Wigboma B.V., Netherlands

Filed Apr. 23, 1984, Ser. No. 603,112

Int. Cl.⁴ A47B *57/06*

U.S. Cl. 312—140.1 **15 Claims**



1. An adjustable work top attachable to a wall, in particular suitable for a kitchen, including means for attaching said work top to said wall and means for vertically adjusting said work top; characterized in that said means for vertically adjusting said work top include at least one electric motor-driven lifting device attachable vertically to said wall, which lifting device is provided with a horizontally extending carrier arm for carrying said work top and attachment members for mounting said carrier arm in cantilever fashion, which lifting device further includes a vertically mounted, telescoping assembly adjustable by means of the electric motor, said assembly having a member which is extensible and retractable relative to a stationary guide tube, said member comprising at least one substanitally horizontally extending yoke to which said carrier arm for said work top can be attached, said adjustable work top further including an electric control device for controlling said electric motor.

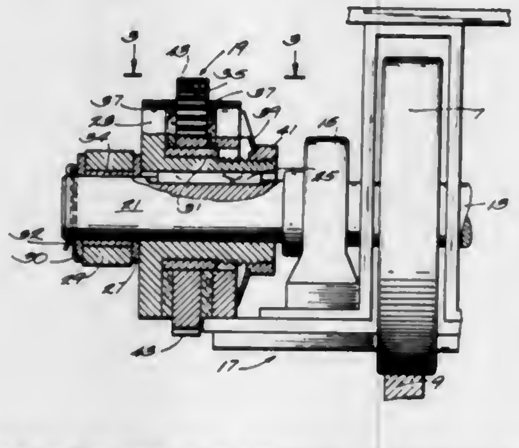
4,616,888
SAFETY BRAKE FOR MOBILE STORAGE APPARATUS

Robert J. Peterman, Hartland, Wis., assignor to Spacesaver Corporation, Fort Atkinson, Wis.

Filed Sep. 12, 1984, Ser. No. 649,692

Int. Cl.⁴ A47B *53/02*

U.S. Cl. 312—201 **4 Claims**



1. A brake for smoothly stopping a bidirectional rotating shaft journaled in a frame comprising:

a. a carrier having a flange and a threaded hub mounted to the shaft for rotation therewith;

b. a cylindrical plate carried by the carrier hub and having at least one notch on the periphery thereof;

c. a pair of friction disks carried by the carrier hub, one disk being disposed on either side of the plate;

d. resilient biasing means for axially forcing the friction disks and plate against the carrier flange to cause the plate to rotate with the carrier;

e. a nut threaded onto the carrier threaded hub for producing an adjustable axial force on the friction disks and plate against the carrier flange;

f. lever means for preventing rotation of the plate in both directions;

g. an electric solenoid having a plunger connected to the lever means for operating the lever means in one direction to engage the lever means with the plate notch; and

h. spring means for operating the lever means in the opposite direction as the solenoid to disengage the lever means from the plate notch,

so that the kenetic energy associated with the rotating shaft is dissipated as heat between the friction disks and the non-rotating plate when the lever tooth is engaged in the plate notch.

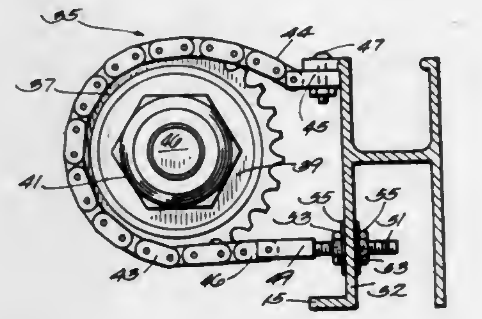
4,616,889
ANTI-ROLL BRAKE FOR MOBILE STORAGE SYSTEM

Robert J. Peterman, Hartland, Wis., assignor to Spacesaver Corporation, Fort Atkinson, Wis.

Filed Sep. 14, 1984, Ser. No. 650,270

Int. Cl.⁴ A47B *87/00*

U.S. Cl. 312—201 **4 Claims**



1. In combination with a mobile storage system having at least one movable storage carriage having a frame; rails embedded in a building floor; at least one first axle journaled in the frame; a plurality of wheels mounted to the first axle for moving the carriage along the rails; and drive means for transmitting power from a power source to move the carriage along the rails,

the improvement comprising:

a. a second axle journaled for rotation in the frame;

b. at least two wheels mounted to the second axle for supporting the second axle on the rails;

c. shaft means coupled to the second axle for rotating in conjuntion with the second axle;

d. a pair of friction discs mounted on the shaft means for rotation therewith;

e. plate means interposed between the friction discs and stationarily fastened to the frame and having opposed faces for mating with the friction discs; and

f. adjustment means for producing a predetermined force between mating faces of the friction discs and the plate means,

so that a friction force is produced at the faces between the rotating friction discs and the stationary plate means when the shaft means tends to rotate and a portion of the power applied to move the carriage is expended to overcome the friction force between the friction discs and plate means while the carriage is moving and the friction force between the friction discs and plate means prevents unpowered rolling of the carriage at all times the power is not applied.

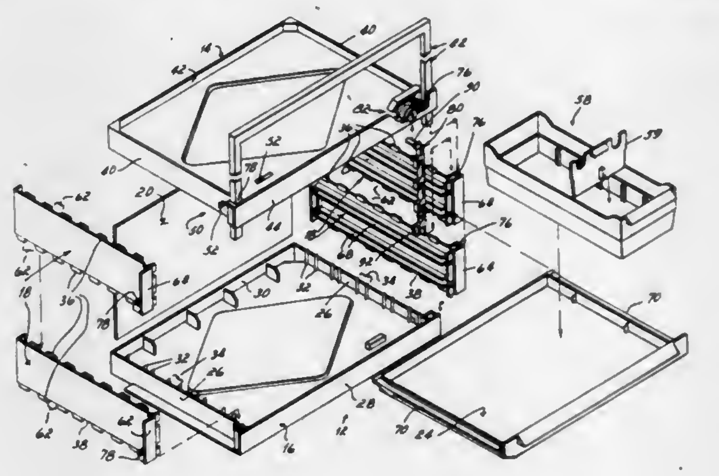
4,616,890
MEDICATION CARTS AND CASSETTES

Jerome M. Romick, 170 N. Drexel Ave., Columbus, Ohio 43209

Filed Jan. 14, 1985, Ser. No. 691,272

Int. Cl.⁴ A47B *47/00*

U.S. Cl. 312—257 R **10 Claims**



1. A medication cassette for use in a medication cart comprising

top, bottom, a plurality of side, and back panels,

connecting means on said side panels and said top and bottom panel which cooperate to position the side panels with respect to said top and bottom panels,

said connecting means including a plurality of interlock tabs on said side panels adapted to cooperate with interlock tabs on other side panels whereby said side panels may be stacked on top of each other to provide a single planar wall surface, said interlock tabs extending above and below each side panel and spaced apart a distance slightly greater than the width of a interlock tab,

said connecting means on said top and bottom panels including ribs that define channels which receive interlock tabs on said side panels,

a U-shaped frame adapted to engage said side, top and bottom panels to hold said side, top and bottom panels rigidly together,

engagement means on said top, bottom and side panels for receiving said channel frame means,

means for securing said back panel with respect to said bottom, top and side panels, and

a medication receptacle adapted to be inserted in said cassette.

4,616,891
STORAGE CABINET WITH MULTIPLE STORAGE COMPARTMENTS

Eric Jantzen, 39 bis, rue Greneta, 75002 Paris, France

Filed Jun. 18, 1984, Ser. No. 621,470

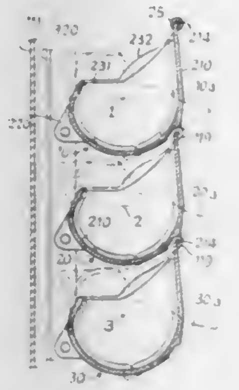
Claims priority, application France, Jun. 20, 1983, 83 10167

Int. Cl.⁴ A47B *88/02*

U.S. Cl. 312—328 **14 Claims**

1. A storage cabinet with multiple storage compartments comprising a support frame holding a plurality of storage compartments, said storage compartments are distributed in at least two superposed rows, each of said storage compartments is adapted to pivot about parallel horizontal axes mounted in the support frame, each of said storage compartments is shaped as a trough having two lateral end walls and a bottom wall, said bottom wall is defined by a portion of cylinder and has a first rear part, a second main part, and a third front part, said third front part having a free end, said bottom wall having an external side and an internal side, each of said storage compartments is adapted to present a first closed position and a second open position, each of said storage compartments is provided with a tongue member, said tongue member is attached to said external side of said bottom wall and extends outwardly sub-

stantially perpendicular to said bottom wall, said tongue member is adapted to come into a position adjacent to the free rear end of the first rear part of the bottom wall of a lower adjacent storage compartment when said storage compartments are in said first closed position, said external side of said bottom wall



is adapted to come into a position adjacent to the free end of the third front part of a lower adjacent storage compartment when said storage compartments are in said first closed position whereby each of said storage compartments is entirely closed.

4,616,892
PLASTIC DRAWER

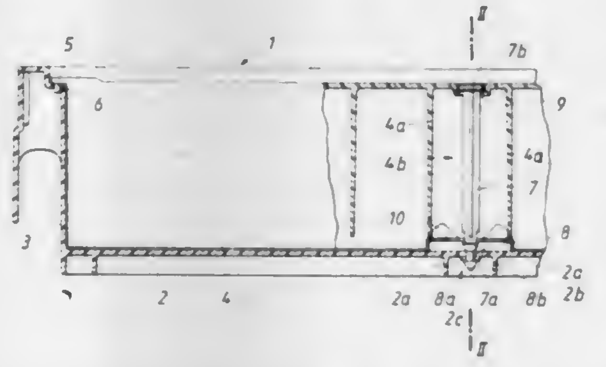
Siegfried Schleicher, Eferding, Austria, assignor to Ernst Stadelmann Gesellschaft m.b.H., Eferding, Austria

Filed Feb. 27, 1985, Ser. No. 705,990

Claims priority, application European Pat. Off., May 7, 1984, 84890080.9

Int. Cl.⁴ A47B *88/00*

U.S. Cl. 312—330 R **11 Claims**



1. In a plastic drawer comprising a bottom, two longitudinal side walls and at least one vertical transverse partition detachably connected to and supported by said side walls,

the improvement residing in the provision of tension-resisting anchoring means connecting said bottom at said transverse partition and resisting a separation of said bottom from said partition, said means having a locking portion disposed under said bottom.

4,616,893
SURFACE MOUNT, MINIATURE, BUSSING CONNECTOR

Steven Feldman, Seminole, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

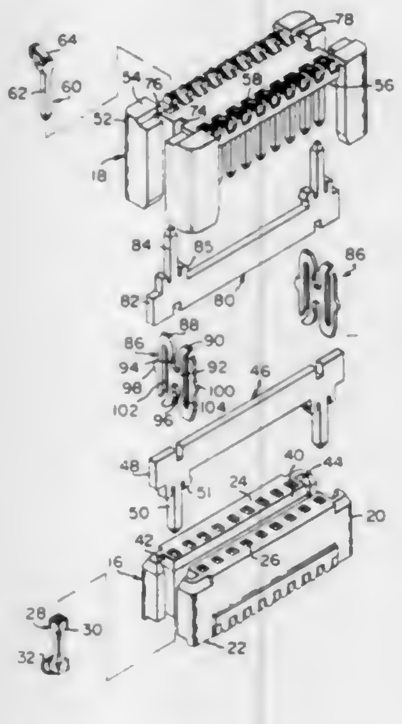
Filed Apr. 25, 1984, Ser. No. 603,802

Int. Cl.⁴ H01R *9/09*

U.S. Cl. 339—14 R **15 Claims**

1. A surface mount, miniature, bussing connector for mounting on a printed circuit board, comprising:

mutually mating plug and receptacle members each having a housing of insulative material defining a mating face, the plug and receptacle members being connectable on mutually mating faces, and an oppositely-directed surface mounting face with a plurality of terminal passages extending between said faces, each said housing having an elongated bus bar receiving groove extending longitudinally along the respective mating face and with at least one leg passage connecting said groove to said surface mounting face;



a pluality of compliant electrical terminals each mounted in a respective terminal passage of a respective one of said housing, each terminal having a mating portion directed towards said mating face and a compliant solder tail extending from said surface mounting face for being soldered to the circuit board; and

a bus bar affixed in each said connector housing groove, each said bus bar being an elongated member of rigid conductive material having at least one depending leg which extends through said leg passage beyond the surface mounting face of the respective connector to engage in a bore in said circuit board.

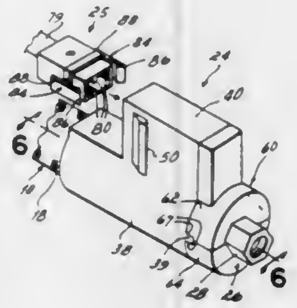
4,616,894
ELECTRICAL CONNECTOR FOR HOT MELT HOSE UNIT AND GUN

Robert G. Baker, Buford, Ga., assignor to Nordson Corporation, Amherst, Ohio

Filed Jan. 14, 1985, Ser. No. 691,074

Int. Cl.⁴ H01R *4/64*

U.S. Cl. 339—15 **2 Claims**



1. For use in a system where molten material is delivered from a bulk source to a hot melt applicator through a hose, said hose having an end remote from said bulk source of material terminating in an outboard end connectable to the applicator by a nipple, said nipple having a hex nut thereon, and carrying along at least a portion of its length wires connected at one end to a source of electrical power and, at the said remote end, passing radially from the side of the hose and terminating in electrical leads, an electrical connector for connecting the hot melt applicator to the source of electrical power through said wires comprising:

a one-piece molded plastic cuff having a through opening of a size such that said cuff can be slid on said remote end of said hose,

a plug block housing integral with said cuff including an integral plug block having a plurality of through openings for receiving and retaining said electrical leads, said leads being adapted to be inserted therein in a direction from the outboard end of said hose generally along the long axis of the hose, and a plug block cavity through which said wires terminating in said leads can pass, said plug block cavity being adapted to be disposed at the outboard end of said hose when said connector is mounted on said remote end of said hose,

said cuff and housing having a peripheral groove about said plug block cavity and said cuff through opening and a pair of diametrically opposed ears across said groove,

an end cover covering said plug block cavity, said end cover including two portions adapted to mate and be secured together, each said end cover portion including a peripheral flange adapted to slide in said groove and be retained therein, each said peripheral flange having a pair of opposed cutouts such that when said portions are mated said cutouts define a slot capturing said ears to prevent rotation of said cuff and integral housing with respect to said end cover, each said end cover portion further including a Y-shaped slot having a pair of flats adapted to engage the flats on said hex nut to prevent rotation of said end cover and in turn said cuff and integral housing with respect to said hose.

4,616,895
INTEGRATED CIRCUIT SOCKET

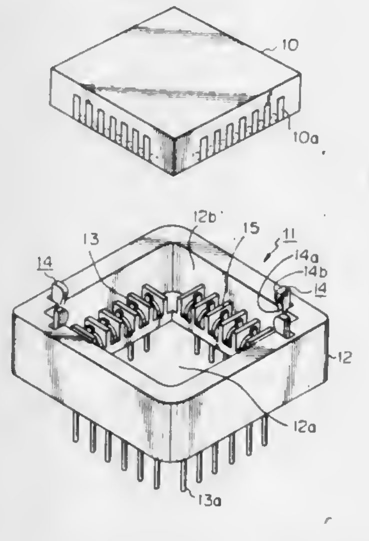
Tsutomu Yoshizaki, Yokosuka, and Toshimasa Ishii, Yokohama, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 534,213, Sep. 20, 1983, abandoned. This application Sep. 9, 1985, Ser. No. 774,182

Claims priority, application Japan, Sep. 29, 1982, 57-168276

Int. Cl.⁴ H01R *13/627*

U.S. Cl. 339—17 CF **6 Claims**



1. An IC socket for an IC device such as a quadrilateral-shaped leadless chip carrier having a bottom surface, and a plurality of electrodes formed on the bottom surface, said IC socket comprising:

a box-shaped housing of dielectric material opening at an upper side thereof and having a quadrilateral-shaped recess for receiving said IC device and a bottom;

a plurality of contacts for contacting with said electrodes of said IC device within said recess, each of said contacts comprising a springy conductive member and being disposed in the bottom of said housing so as to contact with the electrodes formed on the bottom surface of said IC device; and

two pairs of pressing members for holding said IC device within said recess, each pressing member being formed as one body integral with said housing and comprising a springy member extending vertically in said recess with an inwardly projecting rounded projection formed at a top end of said springy member for pressing said IC device, said two pairs of pressing members being arranged at the sides of said socket at two diagonally opposed corners of said recess in such a manner that a pressing member of each pair engages with a different side edge of said IC device, at each of two diagonally opposed corners, while the other two diagonally opposed corners of said recess and the sides adjacent thereto are not provided with any pressing members whereby the edges of said IC device thereat are accessible for withdrawal of said IC device from said upper side against force exerted by said pressing members.

4,616,896
CONNECTING TERMINAL FOR PRINTED CIRCUIT BOARD

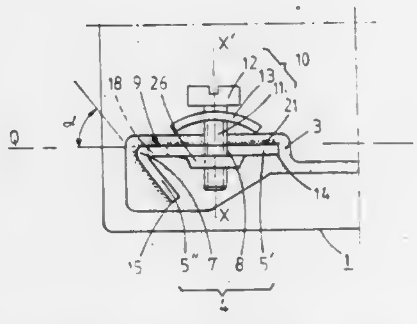
Gabriel R. J. Martin, Houilles, and Jean-Marie J. G. Riquier, Villepreux, both of France, assignors to La Telemecanique Electrique, France

Continuation of Ser. No. 472,507, Mar. 7, 1983, abandoned. This application Apr. 15, 1985, Ser. No. 722,431

Claims priority, application France, Mar. 5, 1982, 82 03678

Int. Cl.⁴ H05K *1/00*

U.S. Cl. 339—17 C **3 Claims**



1. In a circuit board assembly which includes a dielectric board having a conducting layer forming electrical circuitry disposed on one side thereof and first, second and third metallized openings bored through the said dielectric board, a terminal for connecting conductors to said electrical circuitry, said terminal comprising, within the contour of a single piece capable of being cut from a sheet of metal blank:

i—a thin flat metal plate with first and second surface portions joining along a folding line with a predetermined angle between said first and second surface portions, said plate having a contact face, an edge surface contained in a plane substantially at right angles to the folding line, and, projecting from said edge surface in the planes of the respective surface portions, first, second and third substantially rigid conductive lugs extending substantially at right angles to the plane of the edge surface, the first and second lugs extending from the first surface portion with the second lug substantially nearer from the folding line than the first lug and the third lug extending from the second surface portion and being located substantially farther from the folding line than the second lug; said first, second and third conductive lugs being respectively inserted in the said first, second and third openings with the said edge surface being soldered to said conductive layer of the dielectric board;

ii—a threaded hole bored through the first surface portion of the metal plate substantially at right angles thereto and a clamping screw screwing into said hole;

iii—said screw having a head and a threaded body and a convex profiled drilled strap mounted about said threaded body, said strap having an inner face which cooperates with said contact face for defining a space adapted to receive said conductors;

iv. the convex-profiled strap is substantially rectangular and has an edge in close proximity to the said edge surface of the first surface portion of the plate.

4,616,897

NETWORK INTERFACE DEVICE

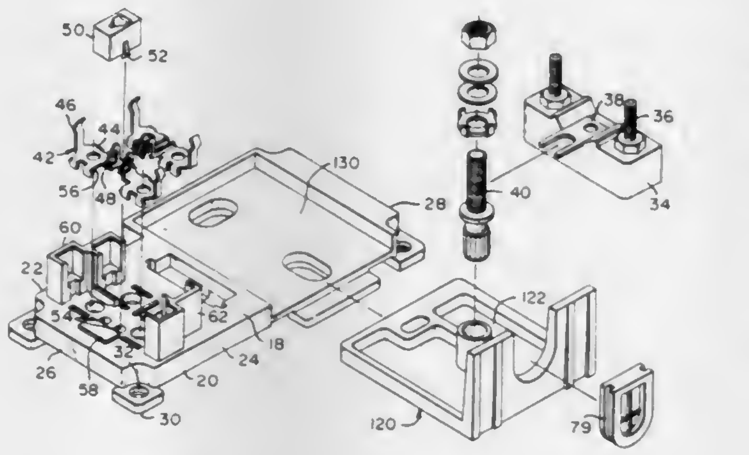
Frank P. Dola, Hudson, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 499,659, May 31, 1983, Pat. No. 4,500,158. This application Dec. 13, 1984, Ser. No. 681,400

The portion of the term of this patent subsequent to Feb. 19, 2002, has been disclaimed.

Int. Cl.⁴ H01R *13/514*

U.S. Cl. 339—122 R **9 Claims**



1. A network interface device for terminating network telephone wiring at a subscriber's premises and for connecting the subscriber's wiring to the network, which device comprises:

a base having a first surface, means for mounting said base to a fixed surface, said base carrying on said first surface a telephone jack having a plurality of spring contacts therein and a like plurality of first terminals for connecting to said network telephone wiring, said spring contacts being electrically connected to like ones of said first terminals, a lightning arrester recess, and a removable insert;

a cover having a first surface, an opposed second surface, and means for mounting said cover to said base so that said second surface of said cover faces said first surface of said base, said cover having a plurality of apertures therethrough between said first and second surface thereof which provide access to said first terminals and said jack, said cover defining a cavity over said lightning arrester recess; and

a plug member having a first surface, an opposed second surface, and means for mounting said plug member to said cover so that said second surface of said plug member faces said first surface of said cover, said plug member carrying on said second surface a plurality of second terminals for connecting to said subscriber's wiring and arranged for mating to said first terminals through said apertures when said cover is mounted to said base and said plug member is mounted to said cover,

said recess being profiled to receive a first large lightning arrester when said insert is removed, and said recess being profiled to receive said insert, said insert being profiled to receive a second smaller lightning arrester.

4,616,898

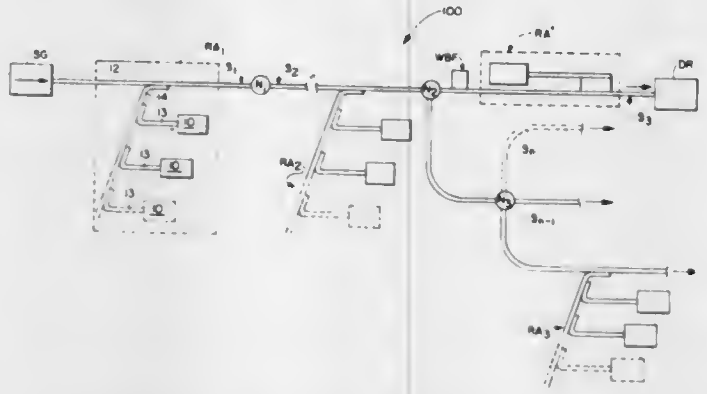
OPTICAL COMMUNICATION SYSTEMS USING RAMAN REPEATERS AND COMPONENTS THEREFOR

John W. Hicks, Jr., Northborough, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 403,759, Jul. 30, 1982, abandoned, which is a continuation-in-part of Ser. No. 135,798, Mar. 31, 1980, Pat. No. 4,342,499. This application Sep. 28, 1983, Ser. No. 536,655

Int. Cl.⁴ G02B *6/42, 6/26, 6/28*

U.S. Cl. 350—96.15 **97 Claims**



1. An optical fiber communication system, said system comprising:

an optical fiber transmission line including a core fabricated of a given material;

means, coupled to said optical fiber transmission line, for introducing a plurality of information-bearing optical signals thereonto for transmission therealong, each of said information-bearing optical signals being carried in a distinct channel of predetermined wavelength; and

means coupled to said optical fiber transmission line at a predetermined location, downline of said means for introducing information-bearing optical signals thereonto, for effecting collective optical amplification of all of said information-bearing optical signals, said optical amplification effecting means comprising means for introducing optical energy into said optical fiber transmission line at a plurality of preselected wavelengths relative to the wavelengths of said information-bearing optical signals to collectively amplify all of said information-bearing optical signals by stimulated Raman scattering, said plurality of said preselected wavelengths of said optical energy including an initial wavelength and other wavelengths separated from each other and said initial wavelength wherein adjacent wavelengths thereof are separated in wavenumber by an amount sufficient to minimize the effects of any Brillouin backscattering tending to interfere with said information-bearing optical signals.

4,616,899

METHODS OF AND APPARATUS FOR COUPLING AN OPTOELECTRONIC COMPONENT TO AN OPTICAL FIBER

John D. Schlafer, Wayland, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Aug. 31, 1984, Ser. No. 645,980

Int. Cl.⁴ G02B *6/32*

U.S. Cl. 350—96.18 **1 Claim**

1. A method of coupling an optoelectronic component to an optical fiber comprising

(a) affixing said optoelectronic component to header;

(b) enclosing said component affixed header, to maintain said component in a fixed environment, while providing a window therewith for optically exposing said component;

(c) positioning a first body of optical quality transparent plastic having an optical axis and having

(1) a reference surface, and

(2) a lens on said optical axis having a convex surface molded into said body, recessed inward from said reference surface,

said first body being positioned with respect to said component so that said component is approximately one focal length away from said lens surface and approximately along said optical axis,

(d) positioning an alignment body of optical quality transparent plastic having an optical axis and having

(1) a reference surface,

(2) a lens on said optical axis of said alignment body having a convex surface molded into said alignment body, recessed inward from said reference surface of said alignment body, and

(3) a viewing plane surface, perpendicular to said optical axis of said alignment body, oriented approximately one focal length from said convex surface of said alignment body, said viewing plane surface having an alignment mark centered on said optical axis of said alignment body and oriented one focal length from said convex lens surface of said alignment body,

said alignment body and said first body being so positioned that their reference surfaces engage each other and so that their optical axes are co-aligned;

(e) aligning said first body with respect to said component so that an image of said component, formed by said lenses of said first body and said alignment body, is focused on the center of said alignment mark;

(f) affixing said aligned first body to said header;

(g) removing said alignment body from said first body; and

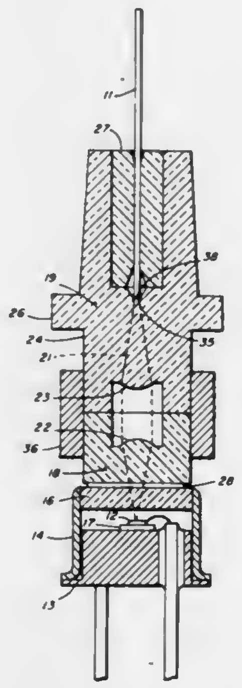
(h) positioning an optical fiber connector body molded of optical quality transparent plastic having an optical axis and having

(1) a reference surface,

(2) a lens on said optical axis of said connector body having a convex surface molded into said connector body, recessed inward from said reference surface of said connector body, and

(3) means for mating said optical fiber with said connector body along said optical axis thereof one focal length from said lens surface of said connector body;

so that said connector body and said first body are oriented with their reference surfaces engaged with each other, and with their optical axes co-aligned.



4,616,900

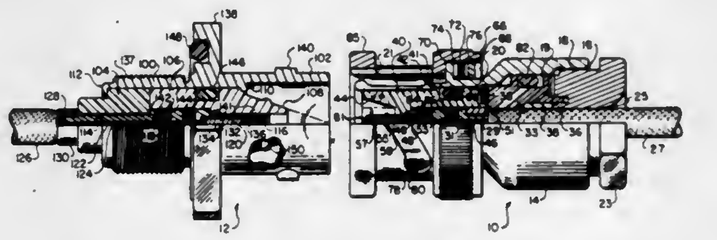
COAXIAL UNDERWATER ELECTRO-OPTICAL CONNECTOR

James L. Cairns, Mims, Fla., assignor to Lockheed Corporation, Burbank, Calif.

Filed Apr. 2, 1984, Ser. No. 595,686

Int. Cl.⁴ G02B *6/42*

U.S. Cl. 350—96.20 **23 Claims**



1. An underwater electro-optical connector, comprising:

a male unit with an open end;

a first electrically-conductive member in the open end, including bore means for receiving an electrical conductor, means for connecting to an optical conductor, and a forward tip;

first optically transmissive means adjacent said male unit bore means for conducting optical signals to and from said bore means and including a collimating leans in said forward tip;

a female unit for detachably fitting to said male unit open end;

a second electrically-conductive member in said female unit for connecting to said first conductive member when said female unit fits into said male unit and including bore means for receiving another optical conductor and means for connecting to another electrical conductor;

second optically transmissive means adjacent said female conductive member bore means for conducting optical signals to and from said bore means; and

alignment means in said male and female units for aligning said first and second optically transmissive means and for forming a watertight chamber when said male and female units are fitted together, said chamber containing said first and second conductive members and said first and second optically transmissive means.

4,616,901

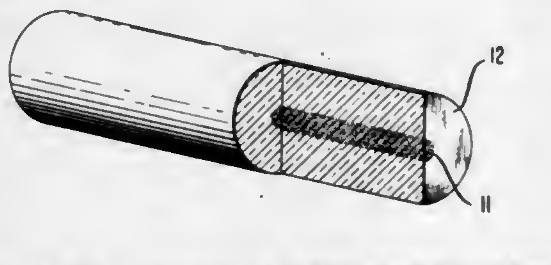
DOPED OPTICAL FIBER

John B. MacChesney, Lebanon; Jay R. Simpson, Fanwood, and Kenneth L. Walker, New Providence, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 367,091, Apr. 9, 1982, abandoned. This application Aug. 31, 1983, Ser. No. 527,970

Int. Cl.⁴ G02B *6/00*

U.S. Cl. 350—96.34 **10 Claims**



1. An optical fiber comprising at least 80% by weight silica, at least some of the silica being doped silica,

characterized in that

the doped silica comprises more than 5 mole percent alumina or zirconia and also comprises an effective amount of at least one phosphorus oxide for preventing devitrification of the doped silica during fiber manufacture.

4,616,902
COMPOSITE FILTER, OBSERVATION SYSTEM AND FILAMENTARY DISPLAY DEVICE

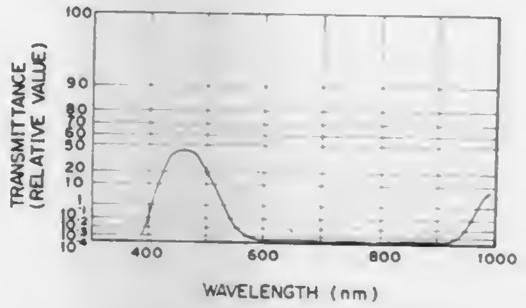
Kiyoshi Nagai, 228-91, Sachigawa, Oomiya-shi, Japan

Filed Jul. 10, 1984, Ser. No. 629,317

Claims priority, application Japan, Jul. 12, 1983, 58-126576; Jul. 12, 1983, 58-107934[U]; Jul. 12, 1983, 58-107935[U]

Int. Cl.^{4} G02B *5/22*

U.S. Cl. 350—316 **9 Claims**



1. A composite filter (i) which transmits starlight radiation having a wavelength of 400 up to but not including 600 nm and (ii) does not transmit radiation having a wavelength of 600 to 900 nm comprising at least one organic film filter and at least one glass filter, in which said organic film filter absorbs light radiation having a wavelength of 600–700 nm and said glass filter comprises a glass plate colored with a cobalt-containing salt which absorbs light radiation having a wavelength of 700–900 nm.

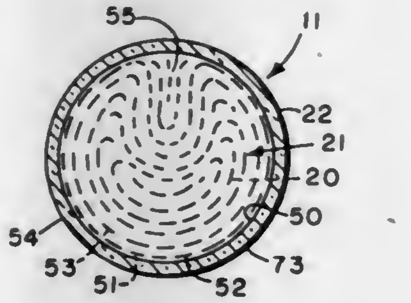
4,616,903
ENCAPSULATED LIQUID CRYSTAL AND METHOD

James L. Fergason, Kent, Ohio, assignor to Manchester R & D Partnership, Pepper Pike, Ohio

Continuation-in-part of Ser. No. 302,780, Sep. 16, 1981, Pat. No. 4,435,047. This application Mar. 21, 1983, Ser. No. 477,242

Int. Cl.^{4} G02F *1/13;* **C09K** *19/52, 19/00*

U.S. Cl. 350—334 **94 Claims**



1. A billboard display comprising a liquid crystal apparatus, including operationally nematic liquid crystal material and containment means having a curvilinear surface for inducing a generally non-parallel alignment of said liquid crystal material which in response to such alignment at least one of scatters and absorbs light and which in response to a prescribed input reduces the amount of such scattering or absorption.

4,616,904
ULTRAVIOLET BEAM CONCENTRATOR

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

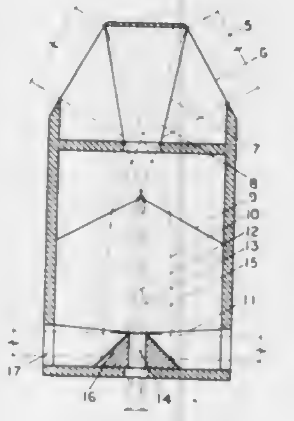
Filed Nov. 15, 1984, Ser. No. 671,715

Int. Cl.^{4} G02B *13/18, 17/00*

U.S. Cl. 350—432 **1 Claim**

1. An ultraviolet beam concentrator L-TR-RT:CUV comprising in general an upper component lens RT which receives and refracts a convergent conical incipient beam of diffused sunlight to form a convergent-divergent conical concentrated beam, a middle component lens TR which receives and refracts said concentrated beam to form a spectral beam, and a conical mirror L which emits the ultraviolet portion of said spectral beam through a conical aperture and which reflects laterally the remaining portion of said spectral beam, and comprising in particular;

- an upper component lens RT (**1**) having a convex conical section (**6**) which receives and transmits a convergent conical incipient beam (**5**) of diffused sunlight,
- said upper component lens RT having a concave conical section (**7**) which refracts said incipient beam to form a convergent-divergent conical concentrated beam (**8**),
- a lower component lens TR (**2**) mounted below said upper component lens RT,
- said lower component lens TR having a convex conical section (**9**) which refracts said concentrated beam to form a spectral beam (**10**),
- said lower component lens TR having a convex conical section (**11**) which emits said spectral beam, and
- a mirror L (**3**) mounted below said lower component lens TR,
- said mirror L having a conical aperture (**14**) which emits the ultraviolet portion (**12**) and violet portion (**13**) of said spectral beam,
- said mirror L having a convex conical reflective section (**16**) which reflects the remaining visible portion (**15**) of said spectral beam laterally through a circular slot (**17**) in the casing of the ultraviolet beam concentrator.



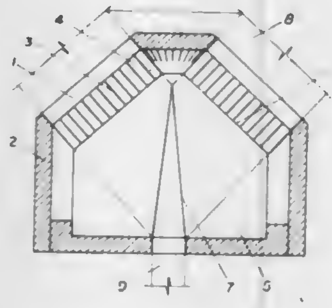
4,616,905
LOUVERED CONVERGENT CONICAL LENS

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed Aug. 20, 1984, Ser. No. 642,241

Int. Cl.^{4} G02B *3/02*

U.S. Cl. 350—432 **1 Claim**



1. A louvered convergent conical lens comprising in general conical louvers mounted on the convex conical section of a conical lens as means of admitting a diffused incipient convergent conical beam of sunlight to the lens section and intercepting non-convergent sunlight, and comprising in particular;

- conical lens RT (**5**) having a convex conical section (**6**) which receives and transmits said convergent conical incipient beam (**8**) of diffused sunlight, and having a concave conical section (**7**) which refracts said incipient beam (**8**), forming a concentrated circular whole beam (**9**) which is emitted parallel to the vertical optic axis of the lens,
- said conical louvers (**3**) comprising a series of thirteen conical louvers with parallel walls and graduated diameters, mounted adjacent to and perpendicular to the convex conical section (**6**) of conical lens RT (**5**), each conical louver (**3**) having twenty-four slots (**10**) occupying radial planes separated by angles of 15°, and
- radial fin louvers (**4**) comprising twenty-four fins occupying radial planes separated by angles of 15° and meshed with the slots (**10**) of conical louvers (**3**), and
- conical glass cover (**1**) mounted outside and adjacent to conical louvers (**3**) and radial fin louvers (**4**).

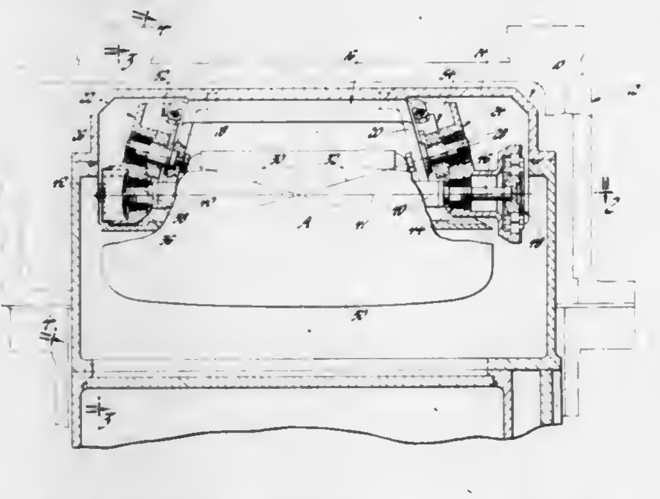
4,616,906
ADJUSTMENT MECHANISM

David C. Schweitzer, Santa Barbara, Calif., assignor to General Motor Corporation, Detroit, Mich.

Continuation of Ser. No. 538,583, Oct. 3, 1983, abandoned. This application Sep. 23, 1985, Ser. No. 778,843

Int. Cl.^{4} G02B *7/18*

U.S. Cl. 350—486 **8 Claims**



1. A mechanism for supporting a device and providing adjustable movement thereof about a pair of substantially perpendicular pivot axes, said mechanism including a yoke having a pair of laterally spaced legs, said legs supporting a pair of swing arms for pivotal movement about a pair of inclined axes, bearing means mounted in each of said swing arms for supporting said device for pivotal movement about one of said pivot axes, and means connecting said swing arms to each other for providing synchronous movement of said swing arms in opposite directions about said inclined axes so as to rotate said device and provide adjustable movement thereof about the other of said pivot axes.

4,616,907
ZOOMING MECHANISM FOR COMPACT BINOCULARS

Masakazu Nakamura, Tokyo, Japan, assignor to Enshu Kogaku Seiki Company Limited, Japan

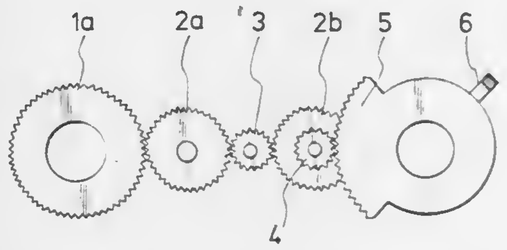
Filed Apr. 11, 1985, Ser. No. 722,263

Claims priority, application Japan, Apr. 13, 1984, 59-54266[U]

Int. Cl.^{4} G02B *7/02*

U.S. Cl. 350—552 **5 Claims**

1. A zooming mechanism for binoculars having right and left eye lenses pivotally connected to each other about a machine shaft axis for adjusting a width between light beams passing through the eye lenses, and a pair of magnification adjustment elements engaged with the eye lenses for adjusting the magnification thereof, comprising spaced apart right and left ring gears mounted for concentric rotation about respective light beams of the right and left eye lenses, right and left intermediate gears disposed between the right and left ring gears and engaged respectively to the right and left ring gears, the intermediate gears connected to the magnification adjustment elements for adjusting magnification of the lens elements with rotation of the intermediate gears, engagement means operatively connected between the intermediate gears for transmitting rotation between the right and left intermediate gears, said engagement means including at least one element which is substantially coaxially mounted with respect to the machine shaft axis for transmitting rotation between the right and left gears to an extent which is only slightly effected by a pivoting of the right and left eye lenses about the machine shaft axis, a small gear fixedly connected to one of the intermediate gears and concentric with an axis of the one intermediate gear for rotation therewith, a drive gear mounted for rotation about an axis of one of the ring gears and rotatable independently of the one ring gear, said drive gear engaged with said small gear and having a rotation ratio so that a small rotation of the drive gear causes a large rotation of the small gear, and a zooming lever connected to the drive gear for rotating the drive gear which in turn rotates the small gear for turning the one intermediate gear which turns the other intermediate gear over the engagement means whereby the right and left ring gears are rotated and the magnification of the eye lenses is adjusted.



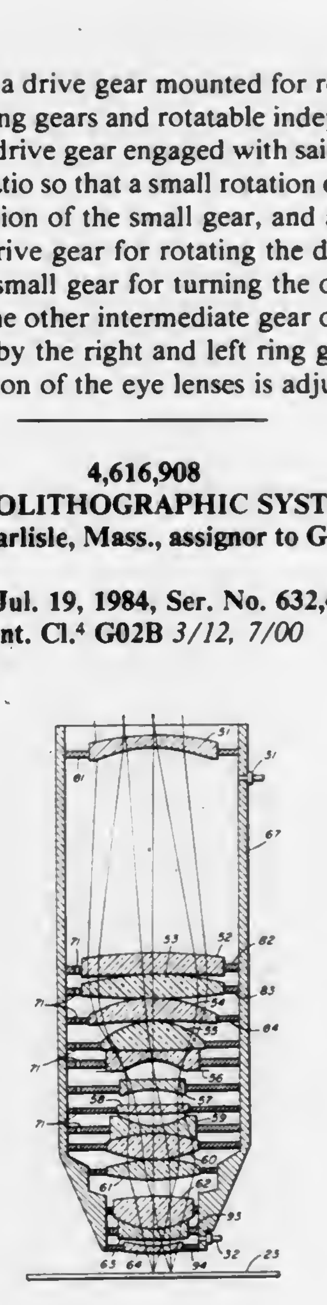
4,616,908
MICROLITHOGRAPHIC SYSTEM

Michael C. King, Carlisle, Mass., assignor to GCA Corporation, Andover, Mass.

Filed Jul. 19, 1984, Ser. No. 632,449

Int. Cl.^{4} G02B *3/12, 7/00*

U.S. Cl. 350—576 **1 Claim**



1. In a microlithographic system for projecting a reduced image of a reticle onto the surface of a semiconductor wafer for creating circuit patterns thereon, an optical system comprising:

- a reticle holder;
- aligned with said reticle holder, a wafer stage;
- on the axis between said reticle holder and wafer stage, a lens for projecting an image of a reticle held in said holder onto a wafer held on said stage, said lens comprising a plurality of spaced, axially-aligned, optically-transmissive, refractor elements and tubular lens holder means for sup-

porting and enclosing said elements, the holder means being essentially sealed to the two endmost of said elements, the interior spaces between successive elements being vented to each other;

first port means communicating with the interior of said holder means between one endmost element and the respective adjacent element;

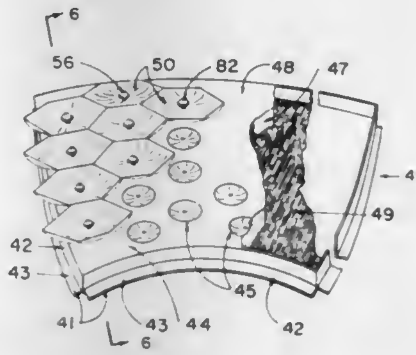
second port means communicating with the interior of said holder means between the other endmost element and the respective adjacent element;

means for applying a controlled flow of helium gas to said first port means; and

means for venting helium from said holder through said second said port means, the space between the lens and the reticle holder and the space between the lens and wafer stage being open to the atmosphere and subject to barometric changes.

4,616,909
BOWL-SHAPED REFLECTOR MEMBERS FOR PARABOLIC REFLECTORS

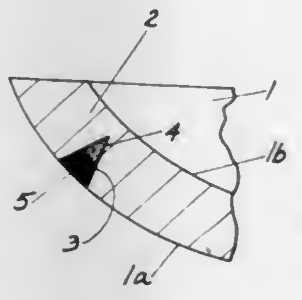
John A. Dane, 8823 Shellie La., Boise, Id. 83704
Filed Nov. 7, 1984, Ser. No. 668,899
The portion of the term of this patent subsequent to May 27, 2003, has been disclaimed.
Int. Cl.⁴ G02B *7/18, 5/10*
U.S. Cl. 350—613 **9 Claims**



1. Reflector members for a parabolic reflector having reflector support panels, each of said reflecting members mountable upon a selected support panel, and each of said reflecting members having a concave reflecting surface terminating in a rim lying in a single plane, the rim defining a polygon.

4,616,910
VISUAL INDICATOR ON SOFT CONTACT LENSES

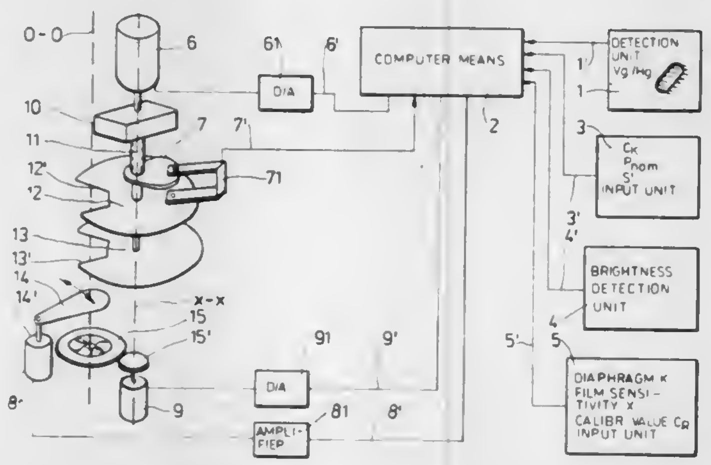
Robert E. Klein, 7350 Willow Brook La., Cincinnati, Ohio 45237
Continuation-in-part of Ser. No. 471,187, Mar. 1, 1983, abandoned. This application Feb. 24, 1984, Ser. No. 581,098
Int. Cl.⁴ G02C *7/04*
U.S. Cl. 351—162 **17 Claims**



1. A visual indicator on an optical lens, said indicator having an appearance, when viewed from the exterior surface of said lens, which is distinctly different from its appearance when viewed from the inner surface of said lens, said indicator comprising two superposed parts, each of which, when viewed from its respective side of said lens, in part at least masks the other to achieve said distinct appearance difference, whereby said indicator will visually distinguish one side of said lens from the other.

4,616,911
METHOD FOR A NON-RETARDED SHUTTER RELEASE OF ROTARY SHUTTERS IN PHOTOGRAMMETRIC AERIAL CAMERAS

Ulrich Zeth; Wilfried Rempke, and Klaus-Ditmar Voigt, all of Jena, German Democratic Rep., assignors to Jenoptik Jena G.m.b.H., Jena, German Democratic Rep.
Filed May 28, 1985, Ser. No. 738,313
Claims priority, application German Democratic Rep., Jun. 14, 1984, 2641354
Int. Cl.⁴ G03B *29/00*
U.S. Cl. 354—66 **3 Claims**



1. A method for non-retarded triggering of a rotary section shutter in aerial cameras for taking aerial photographs of a terrain from an aircraft or the like, having an exposure time control, a diaphragm control, and a shutter control, a computer means, the former being connected to the computer means, a removable light stop for blocking an exposure beam to prevent undesired exposure, comprising the steps of

computing a sequence time of photographs t_{BF} from the relation between the speed of flight V_g and the height of flight h_g of said aircraft and from a set degree of overlap P_{nom} of each two subsequent photographs, computing from the brightness of the terrain and from the film material sensitivity a diaphragm and exposure time setting value,

feeding said diaphragm and exposure time setting value into the diaphragm control and the shutter control, respectively, thus defining feasible exposure points of time via the rate of revolution of said rotary sectors of the shutter,

feeding the feasible exposure points of time into the computer means,

computing $\Delta t_{v\ddot{o}}$ being the interval between two feasible exposure points of time, varying $\Delta t_{v\ddot{o}}$ to $\Delta t^*_{v\ddot{o}}$ to satisfy the condition $T_{BF}=n\cdot\Delta t^*_{v\ddot{o}}$,

wherein n is any suitable integer,

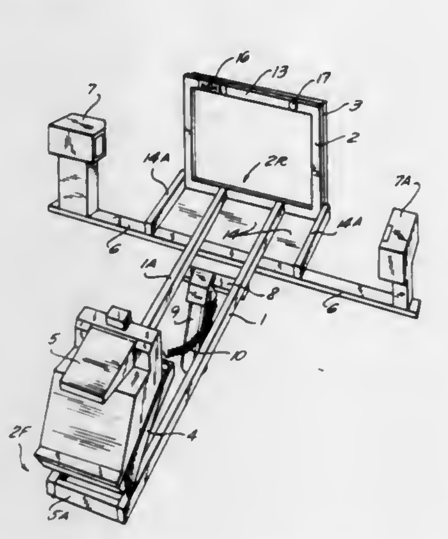
computing correction signals from $\Delta t^*_{v\ddot{o}}$,

applying said correction signals to the shutter control for varying the rate of revolutions of the rotary sectors of the shutter, thus minimizing the difference between a preset exposure time and the exposure time realised by the rate of revolutions of the rotary sector shutter, and

removing the light stop out of the exposure beam for exposure of a film material.

4,616,912
APPARATUS FOR THE PHOTOGRAPHIC RECORDING OF PLATE THERMOGRAPHY

Andreas O. Johnsen, Griesheim, Fed. Rep. of Germany, assignor to Röhm GmbH, Darmstadt, Fed. Rep. of Germany
Filed Sep. 13, 1984, Ser. No. 650,088
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1983, 8326341[U]
Int. Cl.⁴ G03B *29/00*
U.S. Cl. 354—80 **6 Claims**

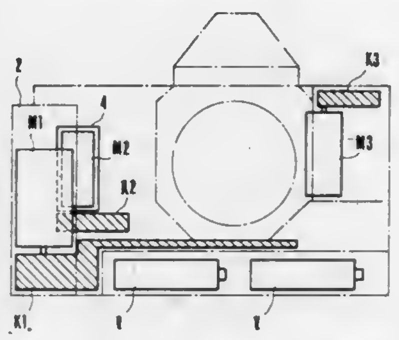


1. A compact apparatus of light-weight construction for the performance and simultaneous photographic recording of plate thermography, comprising a pair of spaced generally parallel straight rails having pairs of opposed free ends; a frame mounted on and at right angles to one of said pairs of free ends and including means for holding a thermographic plate thereon, a camera mount secured to the other pair of said opposed free ends for supporting a camera thereon with the camera lens located substantially in alignment with the center of said frame and with the front of the lens parallel thereto, said mount interconnecting the two rails; said means for holding a thermographic plate being formed of plastic and located on the side of said frame away from the camera; at least one cross bar secured and extending transversely to the rails at said one end of said pairs of free ends; a pair of photographic flash units mounted in fixed spaced relation on said cross bar adjacent said frame and facing each other parallel to said frame; a camera grip; means for mounting said grip obliquely at the approximate center of gravity of the compact apparatus between said two rails; and cable means connected to said grip for tripping said flash units and a camera.

4,616,913
CAMERA

Masayuki Suzuki; Hidehiko Fukahori; Masaharu Kawamura; Yoshihito Harada; Ryuichi Kobayashi, all of Kanagawa, and Tsunemasa Ohara, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 30, 1985, Ser. No. 739,383
Claims priority, application Japan, May 30, 1984, 59-110062
Int. Cl.⁴ G03B *1/18*
U.S. Cl. 354—173.1 **13 Claims**

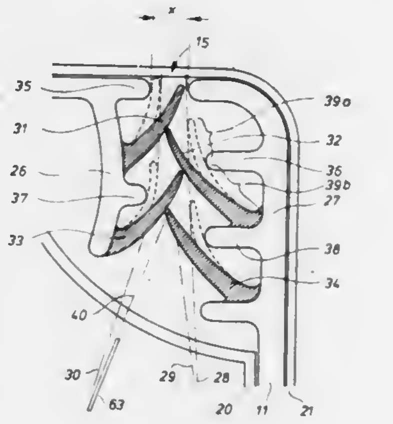
1. A camera comprising:
(a) a shutter charging transmission system;
(b) a first electric motor for driving at least said shutter charging transmission system;
(c) a film winding transmission system;
(d) a second electric motor for driving at least said film winding transmission system;
(e) a film rewinding transmission system; and



(f) a third electric motor for driving said film rewinding transmission system.

4,616,914
LIGHT-TIGHT CASSETTE

Edward Buelens, Kontich, and Carolus C. Goossens, Berchem, both of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium
Filed Feb. 21, 1985, Ser. No. 703,660
Claims priority, application European Pat. Off., Feb. 28, 1984, 84200276.8
Int. Cl.⁴ G03B *17/26*
U.S. Cl. 354—277 **11 Claims**

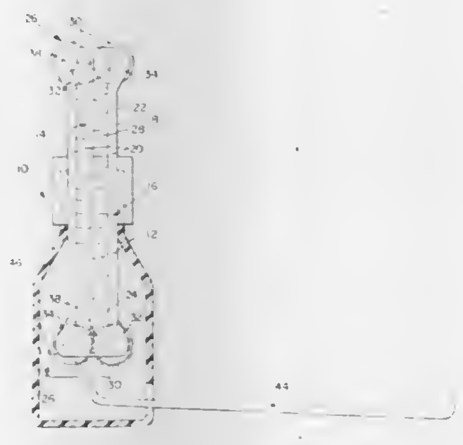


1. A light-tight cassette for holding a roll of light-sensitive material, which cassette has a peripheral exit slot defined between opposed spaced apart generally parallel slot walls and through which light-sensitive material can be drawn from the roll along a path therethrough, and light-sealing means within said slot for making light-sealing contact with the light-sensitive material during its passage through said slot, said light-sealing means comprising at least one pair of opposed flexible lips, each projecting from one slot wall at an angle thereto in converging relation to the other in the direction of passage of the light-sensitive material through the slot and into generally overlapping relation adjacent their free ends, said ends being adapted to flex away from the opposing lip toward the corresponding side wall during passage of said material therebetween, and generally rigid stop means disposed in the included angle between each such lip and the corresponding slot wall and adapted to limit flexing of the respective free lip ends toward the corresponding side wall to maintain sealing contact with said material during passage through said slot.

4,616,915
IMMERSION TYPE FILM PROCESSING APPARATUS

Philip R. Norris, Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 30, 1984, Ser. No. 677,090
Int. Cl.^{4} G03D *3/08*
U.S. Cl. 354—320 **4 Claims**

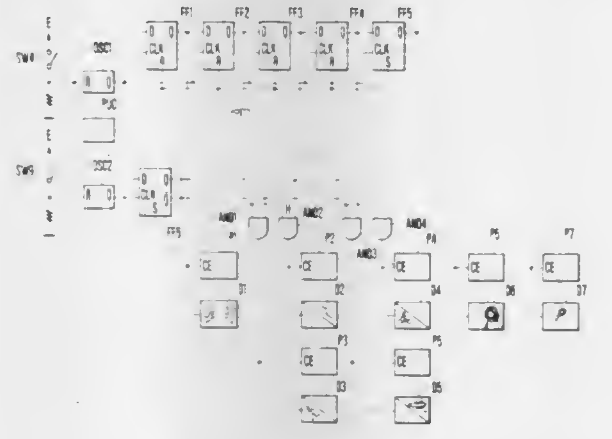


1. Photographic processing apparatus comprising:
a plurality of elongated wall members connected together to define an elongated open ended space adapted to accommodate an exposed photographic film unit therein; and
means for cooperating with said wall members adjacent said open end of said space defined thereby to effect a fluid seal thereat, thereby facilitating the retention of a reservoir of photographic film processing fluid within said space, and for selectively advancing an exposed fluid treated, processed film unit from said fluid containing space, said fluid seal effecting and fluid unit advancing means comprising a pair of elongated rollers disposed in parallel relationship, each of said rollers including a resiliently flexible peripheral surface portion, which two said peripheral surface portions being disposed in engagement one with the other and which further are configured to substantially exclusively engage said wall members to provide both a static and a dynamic fluid seal adjacent said open end of said space, said rollers when actuated adapted to withdraw therebetween a fluid treated, processed film unit from said fluid containing space.

4,616,916
EXPOSURE CONTROL MODE SELECTING DEVICE FOR CAMERA

Hiromi Someya, Kanagawa; Yoshihiko Aihara, Tokyo; Nobuyuki Suzuki, and Toyokazu Mizogui, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1985, Ser. No. 722,166
Claims priority, application Japan, Apr. 13, 1984, 59-75385
Int. Cl.^{4} G03B *7/097*
U.S. Cl. 354—442 **23 Claims**



1. A photographic mode setting device for a camera which can set a plurality of photographic modes constituting a first group and a plurality of photographic modes different from said first group and forms pictograph displays corresponding to each one of said set photographic modes, comprising:
(a) a first operating member for setting a desired one of the photographic modes of said first group;
(b) a designating circuit for selectively designating the photographic mode of the first group set by said first operating member;
(c) a selection circuit for permitting designation of a mode different from the first group only when a specific photographic mode out of said first group has been selected; and
(d) a second operating member for causing said selection circuit to perform a selecting action of said different photographic mode from the first group only under when said certain specific photographic mode of the first group has been selected;
whereby setting of a mode by the second operating member does not occur when said certain specific photographic mode is not set by said first operating member, but only when said certain specific photographic mode is selected setting of the certain specific mode by operating the second operating member.

4,616,917
FIXING DEVICE

Masaaki Sakurai, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

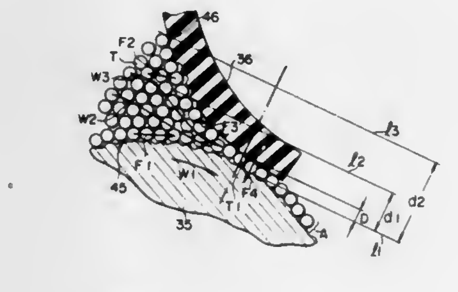
Filed Oct. 14, 1983, Ser. No. 542,103
Claims priority, application Japan, Oct. 20, 1982, 57-183996
Int. Cl.^{4} G03G *15/00*
U.S. Cl. 355—3 FU **44 Claims**

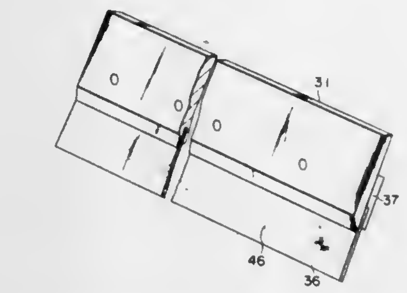
1. A fixing device for fixing material having a predetermined electric polarity to a face of a recording material, comprising:
a first rotatable member mounted to contact the face of the recording material which carries the material to be fixed;
a second rotatable member cooperable with said first rotatable member to transport therebetween the recording material, said second rotatable member having a surface layer adapted to contact a face of the recording material opposing said face that carries the material to be fixed;
wherein said surface layer of said second rotatable member contains an electrification agent which causes triboelectrical charging of the surface of said surface layer to a polarity opposite to the predetermined polarity to urge the material to be fixed toward the recording material, and wherein an electric field is formed between said surface layer and the material to be fixed and is stronger than an electric field formed in a region prior to entry of the recording material between said first and second rotatable members, by the potential of the recording material with respect to the material to be fixed.

4,616,918
DEVELOPING APPARATUS

Mitsuaki Kohyama, Tokyo, and Takashi Shimazaki, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 1, 1984, Ser. No. 636,605
Claims priority, application Japan, Aug. 4, 1983, 58-143340
Int. Cl.^{4} G03G *15/08*
U.S. Cl. 355—3 DD **15 Claims**



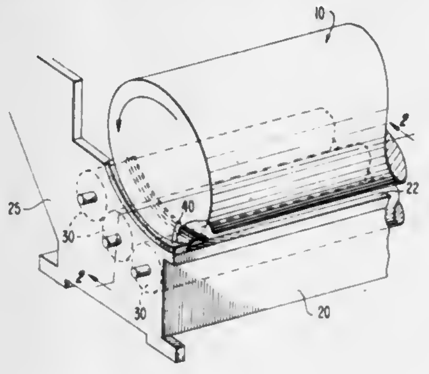


1. A developing apparatus comprising a developing agent carrier for carrying a developing agent thereon, and an elastic member pressed against the surface of the developing agent carrier to apply the developing agent thereto, so that the developing agent is applied to the surface of the developing agent carrier by the elastic member to form a thin layer on the surface of the developing agent carrier, and that the thin layer is opposed to an image carrier at a predetermined space to deposit the developing agent on a latent image on the image carrier, wherein a first rugged surface portion is formed on that part of the surface of the elastic member which faces the developing agent, carrier, said first rugged surface portion being located in a region on the upper-course side with respect to the flow of the developing agent and not in contact with a monolayer of the developing agent touching the surface of the developing agent carrier.

4,616,919
NON-CONTACT DEVELOPER SEAL

James M. Adley, Longmont, and Phillip Chang, Boulder, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 5, 1985, Ser. No. 772,806
Int. Cl.^{4} G03G *15/08*
U.S. Cl. 355—3 DD **9 Claims**

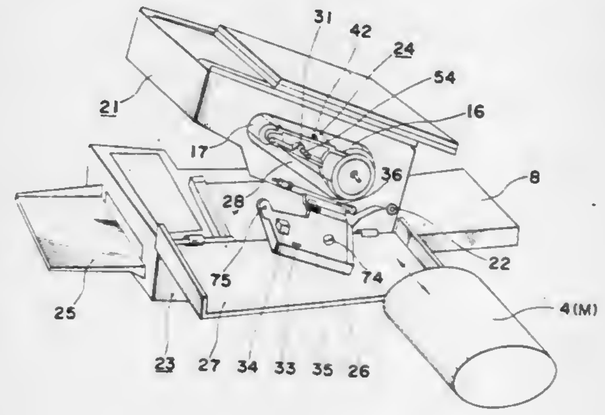


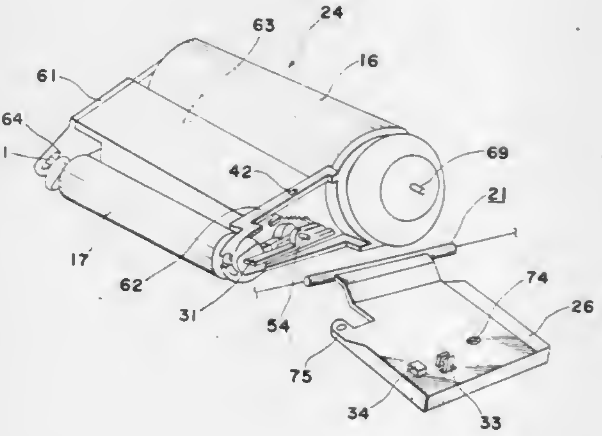
1. A sealing apparatus in an electrophotographic development device comprising:
a developer housing having a magnetic roll rotatably mounted about its axis above a developer sump containing a carrier mix having toner and toner beads;
a photoconductor movable in close proximity to said magnetic roll;
a seal positioned between said magnetic roll and said photoconductor;
means for effectuating a differential air flow above said seal and below said moving photoconductor said differential air flow inhibiting the toner dust and bead carryout of the carrier mix from axially migrating along said magnetic roll past said seal.

4,616,920
COPYING MACHINE HAVING AN ENDLESS PHOTORECEPTOR BELT

Masakatsu Itoigawa, Nara, and Masaru Nishijima, Hirakata, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 17, 1984, Ser. No. 682,349
Claims priority, application Japan, Dec. 20, 1983, 58-242549; Dec. 23, 1983, 58-252161; Dec. 26, 1983, 58-250750; Dec. 27, 1983, 58-249984
Int. Cl.^{4} G03G *15/00*
U.S. Cl. 355—3 BE **13 Claims**





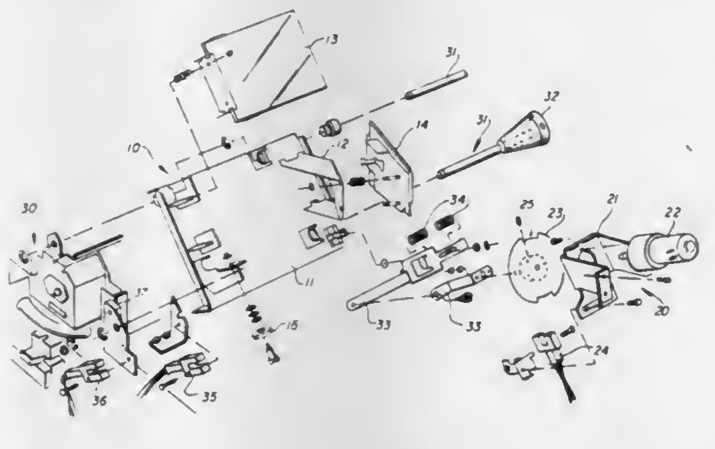
1. A copying machine, comprising:
a roller unit including a driving roller and an idler roller positioned substantially parallel to each other, said roller unit having opposite ends in the axial direction of said rollers;
an upper frame for carrying said roller unit and a lower frame for supporting said upper frame, said upper frame being movable between an open position and a closed position with respect to said lower frame;
an endless photoreceptor belt mounted on said driving and idler rollers;
first supporting means for supporting one end of said roller unit;
moving means for moving said idler roller between a tension-released position, in which the distance between said driving roller and said idler roller is narrowed to loosely mount said photoreceptor belt thereon, and a tension-

applied position, in which the distance between said driving roller and idler roller is widened to apply a predetermined tension to the mounted photoreceptor belt; and
second supporting means provided to move between an attached position and detached position, such that when said second supporting means is in the attached position, said other end of said roller unit is supported by said supporting means and, when said second supporting means is in the detached position, said other end of said roller unit is free from attachment with said second supportin means, thereby enabling the removal and mounting of said endless photoreceptor belt in the axial direction of said rollers while said second supporting means is in said detached position.

4,616,921
READER-PRINTER APPARATUS WITH AN IMPROVED VIEWING AND PRINT MIRROR ASSEMBLY

Gary R. Matson; Winston G. Pottle, and Francis L. Soucy, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 29, 1985, Ser. No. 727,992
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—5 **4 Claims**



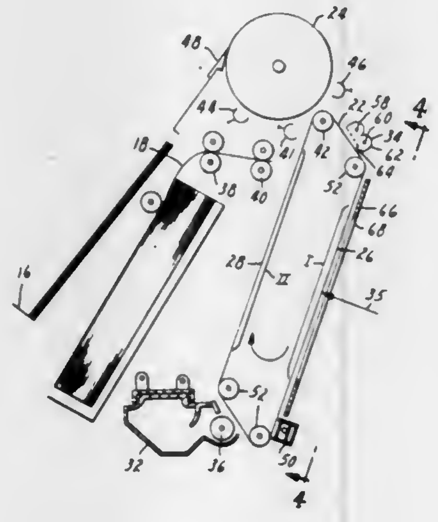
1. Reader-printer apparatus for viewing and reproducing a microform image including means for projecting an enlarged image of the microform image onto a view screen; means for projecting microform image modulated light; and copier means having a photoconductive member for receiving such projected image modulated light to produce a latent image, and image processing means for reproducing a visible image from such latent image on a copy sheet, the improvement comprising:
a mirror assembly which includes a view mirror moveable between viewing and non-viewing positions, a print mirror moveable between print and non-print positions, control means effective in a first state to move said viewing mirror to its viewing position and said print mirror to its non-print position and effective in a second state to move said view mirror to its non-viewing position and said print mirror to its print position; and
motor driving means coupled to said mirror assembly for selectively causing said control means to be effective in either the first or second states.

4,616,922
ELECTROPHOTOGRAPHIC COPYING APPARATUS AND PROCESS

James F. Sobieski, Mahtomedi, and Robert A. Muehlhausen, Marine, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 5, 1985, Ser. No. 720,089
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—14 R **6 Claims**

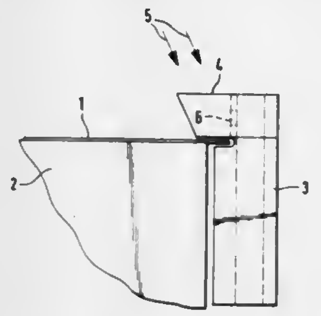
1. An electrophotographic copying apparatus for providing copies by reproducing images onto receptor sheets comprising:
an endless photosensitive element rotatably mounted and having a surface length at least twice the length of a said receptor sheet;
drive means for revolving said photosensitive element;
charging means for selectively imparting a substantially uniform electrical charge to an area of said photosensitive element;
exposing means for selectively imagewise exposing said photosensitive element to produce a latent electrostatic image at said charged area of said photosensitive element;
developer means for selectively developing said photosensitive element by imparting toner to said latent image on said photosensitive element;
transfer means for effecting the transfer of said toner from said photosensitive element to a said receptor sheet;
cleaner means for selectively cleaning said photosensitive element by removing any residual toner remaining on said photosensitive element after said transfer of said toner to a said receptor sheet;
wherein said developer means and said cleaner means are adjacent one another to define a developer/cleaner section and wherein said charging means is spaced from said developer/cleaner section a distance sufficient so that a length along said surface of said photosensitive element at least equal to the length of a said receptor sheet exists between said charging means and said developer/cleaner section in each direction along said photosensitive element to define a first image area between said charging means and said developer/cleaner section in one direction from said charging means along said photosensitive element and a second image area between said charging means and said developer/cleaner section in the opposite direction from said charging means along said photosensitive element; and
control means for selectively activating said drive means, said charging means, said exposing means, said developer means and said cleaning means such that development and cleaning of said photosensitive element always alternates between said first image area and said second image area, regardless of whether said copying apparatus is operated in a series of single-copy modes wherein said copying apparatus intermittently produces a single copy per cycle or a multiple-copy mode wherein said copying apparatus produces a multiplicity of copies per cycle.



4,616,923
POTENTIAL CONTROL ON PHOTOSENSITIVE LAYERS IN ELECTROSTATIC CHARGING PROCESSES

Klaus Reuter, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 14, 1985, Ser. No. 711,711
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1984, 3409701
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—14 E **25 Claims**

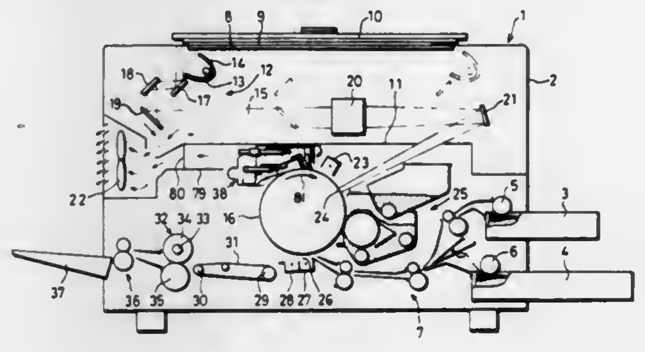


1. A method for maintaining a given potential ratio in the exposure of electrostatically charged light-sensitive layers on carriers, on which an electrostatic latent image of an original is formed during the exposure comprising the steps of:
(a) charging the light-sensitive layer to a given surface potential;
(b) measuring the surface potential in a bright area of the light-sensitive layer by means of an electrostatic potential detector;
(c) continuously comparing the measured surface potential with a set value of the residual potential of the light-sensitive layer; and
(d) terminating the exposure when the measured surface potential bears a predetermined relationship to the given set value.

4,616,924
CLEANING DEVICE FOR USE WITH TRANSFER TYPE ELECTROSTATIC COPYING MACHINES

Hiroshi Kimura, Habikino; Masahiko Hisajima, Osaka; Kiyoshi Shibata, Osaka, and Kiyoshi Morimoto, Osaka, all of Japan, assignors to Mita Kogyo Kabushiki Kaisha, Japan

Filed Mar. 29, 1984, Ser. No. 594,624
Claims priority, application Japan, Apr. 1, 1983, 58-58299
Int. Cl.⁴ G03G *21/00*
U.S. Cl. 355—15 **4 Claims**



1. In a cleaning device for use with a transfer type electrostatic copying machine, a wiping assembly disposed upstream of a charging-purpose corona discharger along the direction of travel of a photoreceptor to be brought into sliding contact with the photoreceptor during exposure to intercept residual toner particles on the photoreceptor, said wiping assembly comprising upstream and downstream members adapted to be brought into sliding contact with the photoreceptor, and pressure setting means for applying a first preset sliding contact pressure to the upstream member and a second, higher preset sliding contact pressure to the downstream member and for separating the upstream member and the downstream member from the photoreceptor during non-exposure to permit carrying of the intercepted residual toner particles to a developing device by movement of the photoreceptor, said pressure setting means including:
a casing,
a first arm having a first end and a second end,
a second arm having a first end and a second end and partially enclosing the first arm,
a first spring connecting the first end of the first arm to the first end of the second arm,
a pin fixed to the casing,
the second end of the first arm pivotally connected to the pin to pivotally support the first arm on the casing,
the second arm pivotally supported on the pin at a point intermediate the second arm first and second ends,
a first swing lever, having a first end and a second end,
a first rotary shaft extending parallel to an axis of the photoreceptor and coupling the upstream member to the first end of the first swing lever,
a second swing lever having a first end and a second end,
a second rotary shaft extending parallel to the axis of the photoreceptor and coupling the downstream member to the first end of the second swing lever,
a second spring connecting the second end of the second swing lever to the second end of the first swing lever,
a third spring connecting the second end of the second swing lever to the casing,
a control member fixed to the first end of the first arm and positioned between the second ends of the first and second swing levers, and
actuating means operative during exposure to push down the second end of the second arm and during non-exposure to move the second end of the second arm upwardly, whereby
during exposure, the second end of the second arm moves down to pull up the second spring and the control member which pushes up the second end of the second swing lever to bring the downstream member into sliding contact with the photoreceptor, presetting sliding contact pressure of the downstream member on the photoreceptor, and the second spring pulls up the second end of the first swing lever to bring the upstream member into sliding contact with the photoreceptor, presetting sliding contact pressure of the upstream member on the photoreceptor, and
during non-exposure the second end of the second arm moves upwardly freeing the control member from the second end of the second swing lever and the third spring pulls the second end of the second swing lever down to raise the downstream member, separating the downstream member from the photoreceptor, and the control member pushes down the second end of the first swing member to raise the upstream member, separating the upstream member from the photoreceptor.

4,616,925
READER PRINTER

Takao Saijo, Tama; Takanori Saito, Kawasaki; Kuniaki Kamimura, Ebina, and Masafumi Fujita, Kawasaki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 19, 1984, Ser. No. 683,770
Claims priority, application Japan, Dec. 28, 1983, 58-249961
Int. Cl.⁴ G03B *13/24, 13/26*
U.S. Cl. 355—44 **4 Claims**

1. A reader printer for handling an image of microfilm held by an aperture card and positioned in such a manner that the microfilm center aligns with the center of the card aperture, comprising;
means for projecting the image of microfilm onto a screen at the time of reading or onto a photosensitive member at the time of printing,
means, at the time of printing, for scanning the aperture card

across a projection axis for slit manner projection from the same scanning start position for each aperture card irrespective of film size,

means for supplying paper web from rolled paper,

means for cutting the web supplied in a paper transporting path so as to provide a sheet paper of desired size,

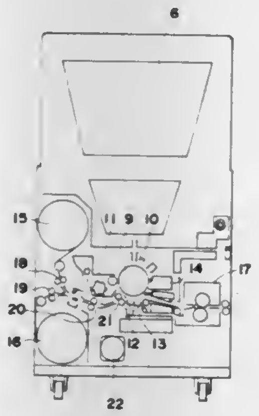
means for altering a magnification ratio for projecting the image of microfilm,

means for selecting a paper cutting size to be cut by the web cutting means,

first timer means which has a timer value in accordance with an altered magnification ratio and a selected cutting size and starts counting of the time simultaneously with the start of scanning of the microfilm,

second timer means which has a timer value in accordance with a selected cutting size and starts counting of the time simultaneously with the end of counting of said first timer, and

control means which controls said web supplying means and said web cutting means so that the supply of the web starts when the first timer means completes the counting of the time and the web is cut when the second timer means completes the counting of the time.



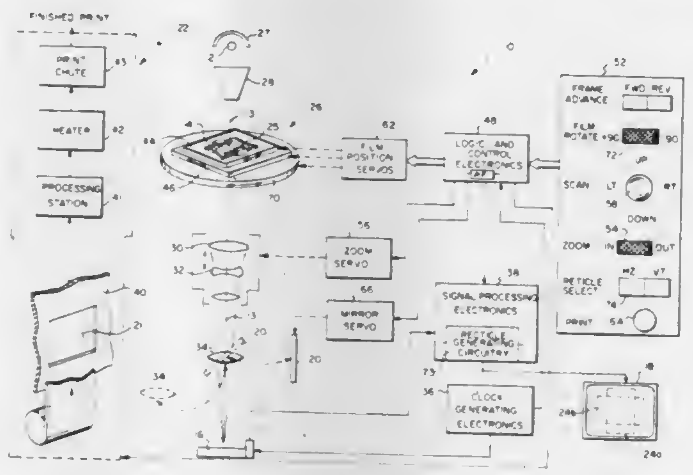
4,616,926
FILM VIDEO PLAYER/PRINTER

Matthew DiPietro, Webster, and Daniel C. Maslanka, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 28, 1985, Ser. No. 770,120

Int. Cl.^{4} G03B *13/28;* H04N *5/84*

U.S. Cl. 355—45 **11 Claims**



1. In a film video player including photographic printer means for making an optical print from a photographic film corresponding to a film image displayed on a video monitor, the improvement comprising:

(a) electronic display means for selectively displaying a rectangular reticle that is substantially centered on said video monitor, the orientation of the reticle portraying the format of a print to be made; and

(b) logic and control means, responsive to the framing format portrayed by the reticle, for coordinating said printer means and the photographic film, to cause said printer means to make a photographic print corresponding to the image displayed in the format portrayed on said video monitor.

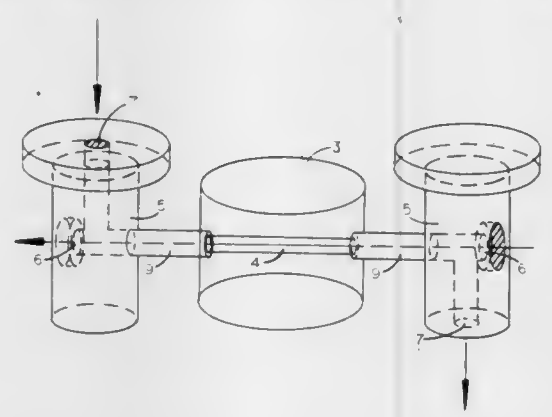
4,616,927
SAMPLE CELL FOR LIGHT SCATTERING MEASUREMENTS

Steven D. Phillips, Goleta; Jeffrey M. Reece, and Philip J. Wyatt, both of Santa Barbara, all of Calif., assignors to Wyatt Technology Corporation, Santa Barbara, Calif.

Filed Nov. 15, 1984, Ser. No. 671,181

Int. Cl.^{4} G01N *21/00*

U.S. Cl. 356—338 **20 Claims**



1. A sample cell for measuring the light scattering properties of a liquid suspension of particles at a plurality of scattering angles, where said liquid suspension of particles is illuminated by a light beam, comprising

(a) optically polished sample channel means by which said suspended particles may be transported in a direction essentially parallel to said light beam through said sample cell;

(b) light beam entrance and exit means sealed against said sample channel means and providing windows for said light beam to enter and exit said sample channel means without contacting walls of said sample channel means during passage through the sample cell;

(c) scattered light transfer and refraction means of refractive index greater than said liquid sample and surrounding said liquid so that some light scattered by particles in said liquid may enter said refraction means;

(d) optically polished external surface means surrounding said refraction means whereby some of the light scattered by the sample that has been refracted into said refraction means will exit said surface essentially normal to it and provide, thereby, a signal that may be detected by external detector means collimated to accept light passing through said surface at said detector location and essentially passing in a direction normal to said external surface; and

(e) liquid transport means comprised of channels external and essentially normal to said illuminated sample channel through which liquid samples may be introduced to and removed from said illuminated sample channel.

4,616,928
PHOTOELECTRIC SMOKE DETECTOR WITH ADJUSTABLE BACKGROUND SIGNAL

George E. Leavitt, Ashland, and Felice LoStracco, Worcester, both of Mass., assignors to Kidde, Inc., Saddle Brook, N.J.

Filed Jun. 20, 1984, Ser. No. 622,769

Int. Cl.^{4} G01N *21/53*

U.S. Cl. 356—338 **16 Claims**

1. A photoelectric smoke detector comprising:

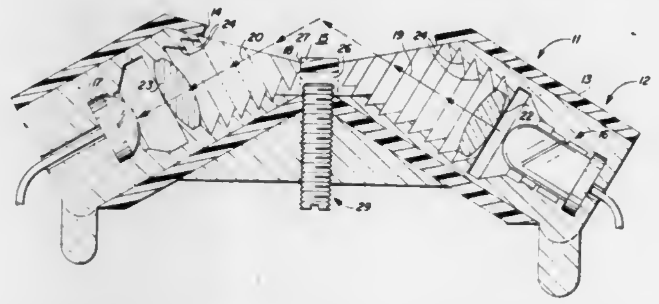
a housing means defining a test zone and an opening for admitting smoke thereinto;

light source means arranged to direct light into said zone;

light responsive means arranged to receive light scattered by smoke particles in said zone;

optical barrier means arranged to prevent the direct transmission of light through said zone and between said light source means and said light responsive means, said barrier means defining a light passage for transmitting light directly between said light source means and said light responsive means; and

mechanical gate means projecting an adjustable distance into said passage so as to permit variation in the size thereof and consequently in the level of light transmitted directly therethrough between said light source means and said light responsive means.



4,616,929
COMPACT, INTEGRAL, 6-MIRROR, TRIAXIAL, LASER RATE GYRO

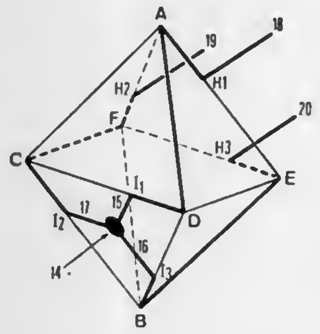
Bernard Bernelin, Antony, and Bernard de Salaberry, Versailles, both of France, assignors to Ste. Francaise d'Equipements pour la Navigation Aerienne, Villacoublay, France

Filed Mar. 20, 1981, Ser. No. 252,229

Claims priority, application France, Mar. 21, 1980, 80 06298

Int. Cl.^{4} G01C *19/64;* H01S *3/101*

U.S. Cl. 356—350 **7 Claims**



1. A triaxial laser gyroscope having three sensing axes and being adapted to produce simultaneously distinct measurements of angular movement around each of said axes, comprising:

(a) a solid body;

(b) three square-shaped optical paths formed in said body and arranged mutually orthogonally with respect to each other, the geometrical axis of each of the square shapes defined by said paths corresponding to respective ones of said sensing axes; each of said paths comprising four coplanar, linearly extending capillaries arranged to form said square shapes, said paths being situated such that any two opposite corners of one square path coincide with two opposite corners of one of the other square paths, whereby said capillaries are arranged to form an octahedron having six apexes, each of said apexes corresponding to one of said respective sets of two coinciding corners; and

(c) six optical mirrors located respectively at said six apexes, each of said mirrors intersecting the four respective capillaries forming the respective apex, and each of said mirrors being effective in two of said optical paths.

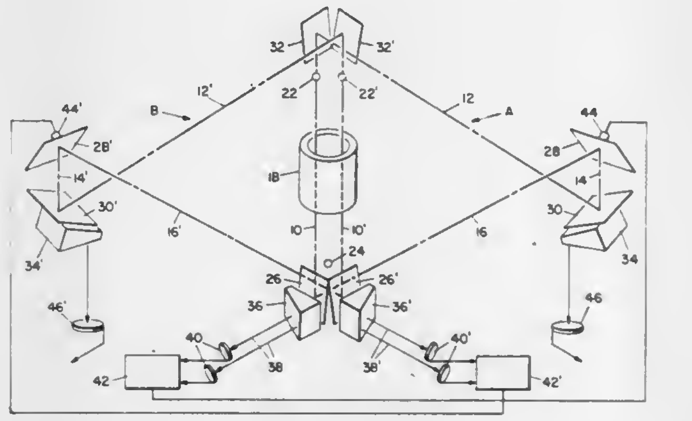
4,616,930
OPTICALLY BIASED TWIN RING LASER GYROSCOPE

Graham J. Martin, Canoga Park, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Apr. 20, 1983, Ser. No. 486,662

Int. Cl.^{4} G01C *19/64*

U.S. Cl. 356—350 **5 Claims**



1. A ring laser rotational rate sensor of the type wherein counter-rotating beams of laser light are utilized to measure the rate of rotation of said sensor comprising, in combination:

(a) first and a second lasing cavities comprising mirror images of one another and arranged substantially back-to-back;

(b) each of said first and said second lasing cavities comprising four substantially straight segments arranged to form an out-of-plane shape, portions of said cavities intersecting so that a corresponding segment of each cavity lies entirely within the other cavity;

(c) said cavities sharing a common fill gas;

(d) a common cathode associated with each of said corresponding segments so that a common gas discharge laser gain medium is shared by said cavities;

(e) a plurality of mirrors arranged adjacent the intersections of said cavity segments so that at least one circularly polarized mode may resonate within each cavity;

(f) means for applying a common magnetic field to said gas discharge laser gain medium whereby equal and opposite optical biases are effected in said cavities; and

(g) means for combining the energy within said first and second lasing cavities to produce a measurement of rotation of said sensor.

4,616,931
PROCESS AND DEVICE FOR THE CONTACT FREE DETERMINATION OF THE MOVEMENT OF AN OBJECT

Urs-Peter Studer, Riehen, Switzerland, assignor to Zumbach Electronic AG, Orpund, Switzerland

Filed Nov. 7, 1983, Ser. No. 549,507

Claims priority, application Switzerland, Nov. 12, 1982, 6600/82

Int. Cl.^{4} G01B *11/14*

U.S. Cl. 356—373 **6 Claims**

1. A process for the contact-free determination of the movement in at least one dimension of an object of optically differentiatable structure, including the steps of

providing a grid of opto-electric transducers comprising at least one group of four similar opto-electric transducers forming a row extending in one of said dimensions,

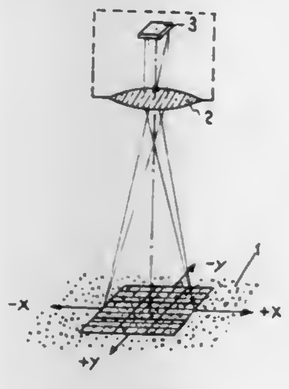
projecting a light image of the object onto said grid of opto-electric transducers, whereby each of said for transducers produces a signal A to D,

deriving from each group of four opto-electric transducers two phase-shifted signals I and II which vary priodically with a frequency determined by the speed of said object as follows:

$$I=(A+B)-(C+D)$$

and

$$II=(B=C)-(D+A)$$



determining said speed from said frequency and determining the direction of said movement of said object from the phase of said signals.

4,616,932
METHOD OF OBSERVING CHANGE IN A SHAPE

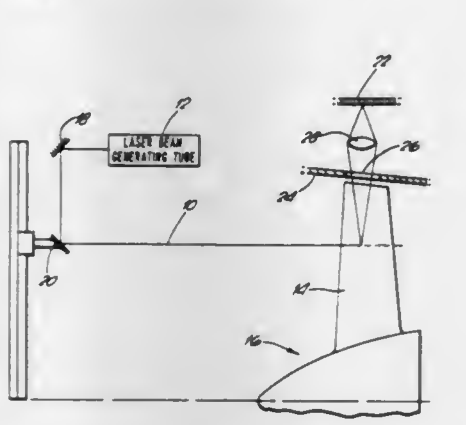
Richard J. Parker, Derby, England, assignor to Rolls-Royce plc, London, England

Filed Sep. 18, 1984, Ser. No. 651,853

Claims priority, application United Kingdom, Nov. 1, 1983, 8329161

Int. Cl.⁴ G01B *11/24*

U.S. Cl. 356—376 **6 Claims**



1. A method of observing change in the shape of a bodily rotating blade comprising the steps of:

directing a collimated beam of light onto the blade at such an angle relative to a flank of the blade as to enable traversing of the flank by the light beam in a direction chordally of the blade as it rotates;

exposing a light sensitive, signal generating means to the resulting light spot at the point of contact between the beam and the blade to generate exposure signals;

simultaneously using a means to derive signals representative of the rotational speed of the blade;

and using signals generated by the exposure in conjunction with signals which relate the rotational speed of the blade with the generating said signals, to produce a visual display of the blade shape on display means.

4,616,933
PROCESS AND APPARATUS FOR MAKING A NUMERICAL DETERMINATION OF THE COLOR, OR OF A CHANGE IN COLOR, OF AN OBJECT

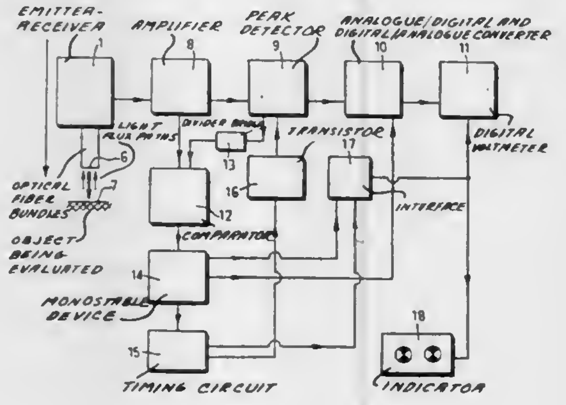
Jean-Luc M. Lévêque, Montfermeil, and Gilbert J. Gras, Aulnay-Sous-Bois, both of France, assignors to L'Oreal, Paris, France

Continuation-in-part of Ser. No. 186,325, Sep. 11, 1980, abandoned. This application Mar. 27, 1984, Ser. No. 593,882

Claims priority, application France, Sep. 13, 1979, 79 22881

Int. Cl.⁴ G01J *3/51;* **G01N** *21/55*

U.S. Cl. 356—416 **17 Claims**



1. Apparatus for making numerical-determination of one of the colors or of a change in a given color of an object, which apparatus is comprised of:

(a) a source of light to irradiate the object whose numerical-determination of color is desired and to be found;

(b) a photo transducer measn to pick up the light returned by the object;

(c) optical fiber receiving means to direct the light returned by the object to the said photo transducer means; with

the said optical fiber receiving means having an end that is displaceable substantially perpendicularly to the said object being investigated whose numerical-determination of color is desired and to be found in order to obtain such desired determination;

(d) optical fiber emitter means having an end to direct the emission of said light source to a said object being investigated, said optical fiber receiving means and said emitter means being coaxially disposed at least at said ends to provide coaxial ends and to provide first and second optical fiber bundles; with

said optical fiber emitter means and said optical fiber receiving means being disposed as a unit to be passed within and to make traversing entry substantially perpendicularly into a zone of access wherein is located the object to be investigated;

(e) signal processing means for determining the value of the maximum of the signal supplied by the photo transducer means during the displacement of the said optical receiver means; with said signal processing means including means to provide said maximum signal value determination substantially instantaneously at the time during displacement of the said end of the optical receiving means when said receiving means is at least in very near maximum signal-generating proximity of contact with said object to be investigated; and

(f) a display unit responsive to said signal processing means for substantially instantaneously displaying information according to the determination made; with

(g) means associated with said apparatus assembly for moving said coaxial ends of said first and second optical fiber bundles in said unit towards and away from said object.

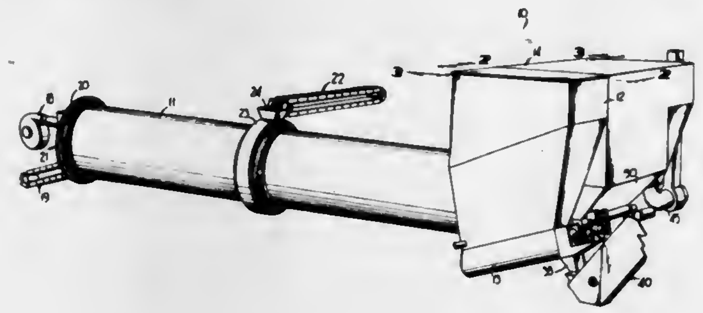
4,616,934
DRUM MIX ASPHALT PLANT WITH KNOCK-OUT BOX AND SEPARATE COATER

J. Donald Brock, P.O. Box 2787, 4101 Jerome Ave., Chattanooga, Tenn. 37407

Filed Nov. 5, 1984, Ser. No. 668,290

Int. Cl.⁴ B28C *5/46*

U.S. Cl. 366—4 **26 Claims**



1. In an asphalt plant including an inclined rotary drum dryer operative to heat and to dry aggregate material introduced into said drum dryer and to discharge said aggregate material from the lower end of said drum dryer, said drum dryer including a heat source at the upper end thereof and exhaust means for drawing a flow of gases from the upper end of said drum dryer out of the lower end of said drum dryer, the improvement comprising:

mixing means positioned below the lower end of the drum dryer to directly receive the aggregate material discharged from the drum dryer;

collection means for causing particulate matter suspended in said flow of gases to drop directly into said mixing means; and

means for introducing liquid asphalt into said mixing means.

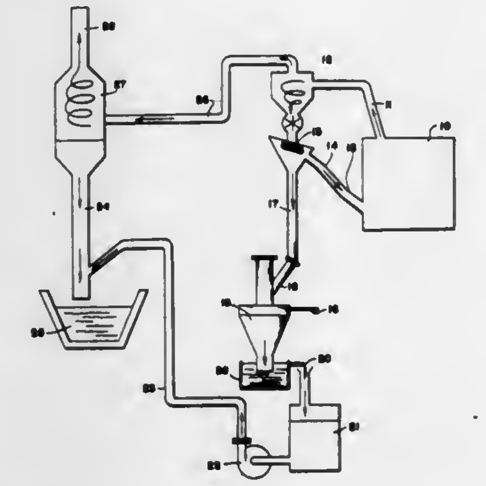
4,616,935
APPARATUS AND PROCESS FOR BOILER ASH COLLECTION

James E. Harrison, and John B. Presnell, both of Port St. Joe, Fla., assignors to St. Joe Forest Products Company, Port St. Joe, Fla.

Filed Dec. 19, 1984, Ser. No. 683,584

Int. Cl.⁴ B01F *15/02*

U.S. Cl. 366—165 **9 Claims**



1. An apparatus for continuously mixing dust and water for disposal purposes, comprising a vertical pipe with a removable cover at its upper end and with its lower end opening into an enclosed chamber, an inlet opening into the side of said pipe at an acute angle thereto for introducing dust particles thereinto, said chamber having its upper end closed except for said pipe and said inlet and its lower end submerged in a pool of water, a plurality of water inlets discharging substantially horizontally and tangentially with respect to the walls of said chamber into the upper end of said chamber, an inlet for introducing water into said pool, an annular ring concentrically placed around the lower end of said pipe and spaced outwardly from said pipe and inwardly from said water inlets, an outlet for continuously removing a mixture of water and dust from said pool, and means for maintaining said chamber at subatmospheric pressure.

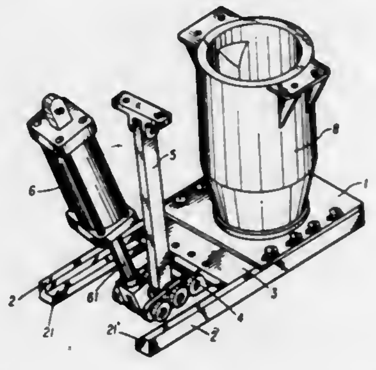
4,616,936
CONSTRUCTION OF A FOAMING MACHINE

Huang Ber-Fong, 10-4/F, No. 1, Fu Hsing South Rd., Sec.1, Taipei, Taiwan

Filed Sep. 10, 1984, Ser. No. 649,015

Int. Cl.⁴ B01F *15/02*

U.S. Cl. 366—193 **3 Claims**



1. A lower cover device for a foaming machine which includes an agitator barrel having an open bottom, comprising:

a base plate having an aperture therein attached to the bottom of said agitator barrel, said base plate being provided on bottom edges thereof with a pair of opposed inwardly facing L-shaped support rails and a cross plate therebetween at one end;

a control gate supported between said support rails for longitudinal horizontal motion thereon; and

driving means for said control gate comprising a connecting block pivotally attached to one end thereof, a generally vertical connecting rod pivotally connected to said connecting block and to a fixed member adjacent said agitator barrel, and a substantially vertical driving cylinder similarly connected to said connecting block and said fixed member and operable to move said control gate forward on said support rail to cover said aperture and to move said support gate backward on said support rails to open said aperture at the bottom of said agitator barrel.

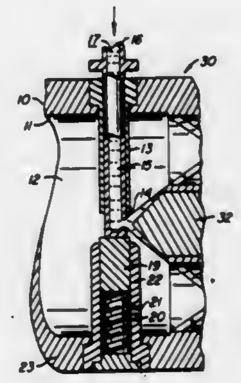
4,616,937
INTERMITTENT MIXING APPARATUS

L. Tony King, Long Beach, Calif., assignor to Komax Systems, Inc., Long Beach, Calif.

Filed Apr. 16, 1985, Ser. No. 723,832

Int. Cl.⁴ B01F *5/06, 15/02*

U.S. Cl. 366—336 **15 Claims**



1. A material mixing apparatus for the mixing of two or more fluids comprising:

A. a substantially tubular conduit for the passage of a first fluid;
B. a casing passing through said tubular conduit and eminating substantially radially toward the center of the conduit;
C. a quill which is slideably located within said casing, said quill being substantially hollow for the passage of a second fluid through said quill which is further characterized as possessing a discharge port for discharging said second fluid into a stream of said first fluid when the quill is radially extended within said casing, but which is blocked by the casing, when the quill is not fully extended; and
D. mixing means located downstream of the discharge port of the quill for mixing said first and second fluids.

4,616,938
APPARATUS FOR MEASURING THERMAL AND OTHER QUANTITIES OF SUBSTANCES

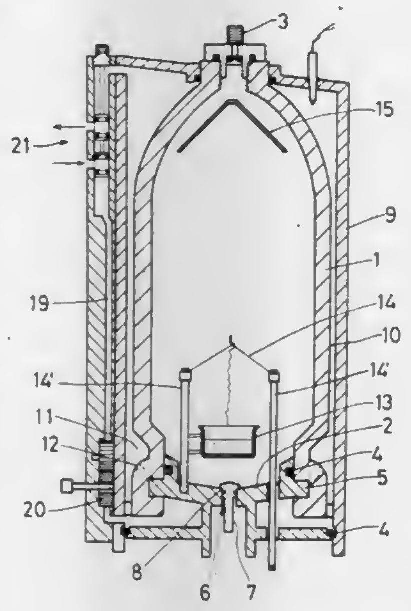
John A. Bonnard, Johannesburg, South Africa, assignor to Leco Corporation, St. Joseph, Mich.

Filed Jan. 6, 1984, Ser. No. 568,688

Claims priority, application South Africa, Jan. 10, 1983, 83/0122

Int. Cl.⁴ G01K *17/00, 25/30*

U.S. Cl. 374—38 **9 Claims**



1. Apparatus for measuring thermal quantities of combustible substances comprising a support structure to which a pressure vessel is mounted in use, the pressure vessel having a closure cap associated therewith which together form a combustion chamber, adapted to receive a sample of the combustivle substance therein, an ignitor element adapted to fire the substance in use, a feed conduit adapted to supply a combustion supportive to the pressure vessel in use, temperature measuring equipment being associated with the pressure vessel and temperature loss control means surrounding at least the major portion of the vessel the temperature of the pressure vessel and temperature loss control means each being controlable to give similar initial temperature for a plurality of tests; and

an atomic radiation source and co-operant reading equipment associated therewith through which a sulphur absorbing liquid, located in the pressure vessel during combustion, is passed after combustion has occured in use, said reading equipment adapted to indicate the sulphur content of the sulphur absorbing liquid when the liquid is exposed to the radiation source in use.

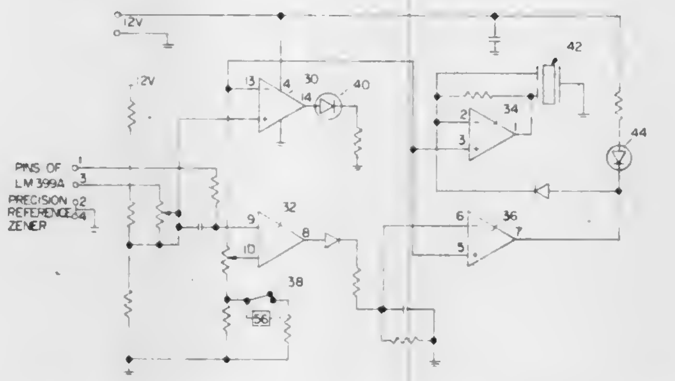
4,616,939
APPARATUS FOR TESTING DIAMONDS

Meir Gitlis, Moshav Bnei Atarot, Israel

Filed May 15, 1984, Ser. No. 610,353

Int. Cl.⁴ G01N *25/18*

U.S. Cl. 374—44 **5 Claims**



1. Apparatus for testing diamonds for genuineness by sensing the thermal conductivity of a substance tested comprising:
a housing;
a probe tip mounted in said housing and formed of a conductive material;
a voltage stabilizer located in said housing remote from said probe tip and coupled to the probe tip by a conductor, said voltage stabilizer being operative to provide an output voltage which varies as a function of the temperature of the conductive probe tip;
indicating apparatus operative to provide a sensible output indication of genuineness of said diamonds in response to the output voltage from the voltage stabilizer; and
means for sensing the pressure of the probe tip on the substance being tested and apparatus for calibrating the sensed conductivity of the substance being tested in accordance with the sensed pressure.

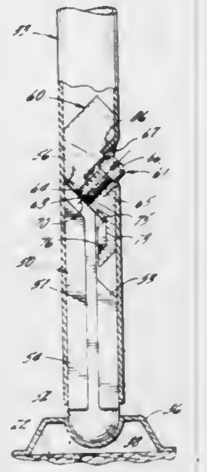
4,616,940
VERTICALLY ADJUSTABLE ROTATABLE SHELF ASSEMBLY

William DeBruyn, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.

Filed Mar. 18, 1985, Ser. No. 713,278

Int. Cl.⁴ F16C *23/02;* **A47B** *81/00;* **A47F** *3/10*

U.S. Cl. 384—248 **10 Claims**



1. A rotatable post assembly comprising upper and lower opposing bearing members, an elongated post extending vertically between said bearing members and having an upper end portion rotatably supported by said upper bearing member, the lower end portion of said post being tubular, a slide having upper and lower end portions and telescoped into the lower end portion of the post, a bearing element on the lower end portion of said slide and located below the lower end portion

of said post to engage said lower bearing member and rotatably support the lower end portion of the post, a downwardly inclined surface formed on the upper end portion of said slide, a threaded hole, and a screw having a shank extending through one side of said post and threaded into said hole, the axis of said screw being inclined at an acute angle relative to the longitudinal axis of said post and being disposed substantially perpendicular to said inclined surface, the inner end of said screw slidably engaging said inclined surface whereby tightening of said screw forces said slide downwardly relative to said post while loosening of said screw permits said slide to move upwardly relative to said post.

4,616,941
THERMAL DOT TYPE PRINTING APPARATUS

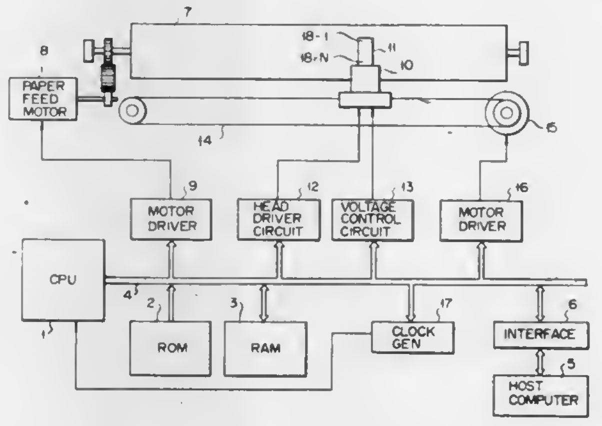
Junshiro Nagai, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1985, Ser. No. 712,393

Claims priority, application Japan, Mar. 26, 1984, 59-57759

Int. Cl.⁴ B41J *3/12, 3/20*

U.S. Cl. 400—120 **18 Claims**



1. A thermal dot type printing apparatus, comprising:
a thermal head having N heating elements arranged in a line;
transfer means for moving said thermal head in a printing direction;
head driver means for allowing current to selectively flow through said heating elements in accordance with N-bit dot data to establish a printing cycle in which dots corresponding to the selected heating elements in said line are printed;
means for setting a predetermined fixed unit time during which time a certain number of said printing cycles are effected;
counting means for counting in a first counting direction the total number of said heating elements energized by said head driver means during said fixed unit time; and
control means for sequentially supplying a plurality of N-bit dot data constituting character data to be printed to said head driver means, and for supplying a control signal in accordance with count data determined by said counting means to said head driver means, so that current supplied by said driver means upon each said printing cycle to said heating elements is set in accordance with a change in the total number of said heating elements which have been energized in said fixed unit time.

4,616,942
RIBBON CASSETTE WITH RE-INKING MECHANISM

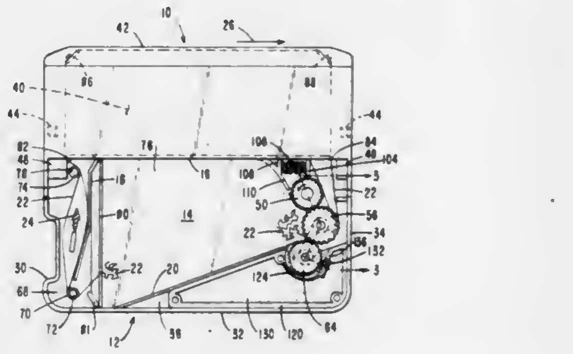
Hideo Nagasawa, Oisomachi; Masao Suzuki, Yokohama, and Tsutomu Hamano, Odawara, all of Japan, assignors to NCR Corporation, Dayton, Ohio

Filed Feb. 28, 1984, Ser. No. 584,378

Claims priority, application Japan, Aug. 22, 1983, 58-151738

Int. Cl.⁴ B41J *32/02*

U.S. Cl. 400—196.1 **12 Claims**



1. Re-inking means for a ribbon in a cassette comprising:
ink supply including a first ink carrying porous element of one density and a second ink carrying porous element of a greater density in contact with the first ink carrying porous element for transferring ink therefrom to the second ink carrying porous element,
roller means comprising a drive roller and a driven roller engageable for driving said ribbon for use in printing operations, and an
ink transfer roller engageable by said ribbon and in contact with the second ink carrying porous element of the ink supply means and driven by said driven roller of the ribbon driving roller means, said ink transfer roller having a plurality of uneven portions on the periphery thereof for carrying ink from the second ink carrying porous element of the ink supply means to the ribbon upon rotation of the driven roller of the ribbon driving roller means and of the ink transfer roller with the ribbon therebetween.

4,616,943
APPARATUS FOR PREVENTING THE RISE OF AN INK RIBBON

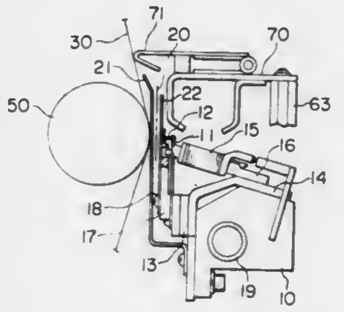
Yoshikane Matsumoto, and Toshio Hiki, both of Ibaraki, Japan, assignors to Hitachi Koki Company, Limited, Tokyo, Japan

Filed Mar. 9, 1984, Ser. No. 587,786

Claims priority, application Japan, Mar. 11, 1983, 58-41149; Nov. 5, 1983, 58-208077

Int. Cl.⁴ B41J *35/26*

U.S. Cl. 400—247 **10 Claims**



1. In an apparatus for preventing the rise of an ink ribbon in a dot-line printer including a reciprocably driven hammer unit carrying a plurality of dot printing hammers spaced laterally apart from each other along the direction of a line to be printed, said ink ribbon being in the form of a tape and positioned to travel in said direction in front of said hammer unit, and a main ribbon separator disposed between said ribbon and

a paper to be printed, the improvement comprising a front yoke in the form of a plate defining a front portion of said hammer unit for guiding the travel of said ink ribbon past said printing hammers, and an auxiliary ribbon separator in the form of a plate attached to at least one end of said front yoke wherein said auxiliary ribbon separator extends beyond a corner of an upper end of said front yoke and covers the corner of said front yoke at its upper end to prevent said ribbon from contacting said corner and being caught thereon in the event that said ribbon is vertically displaced.

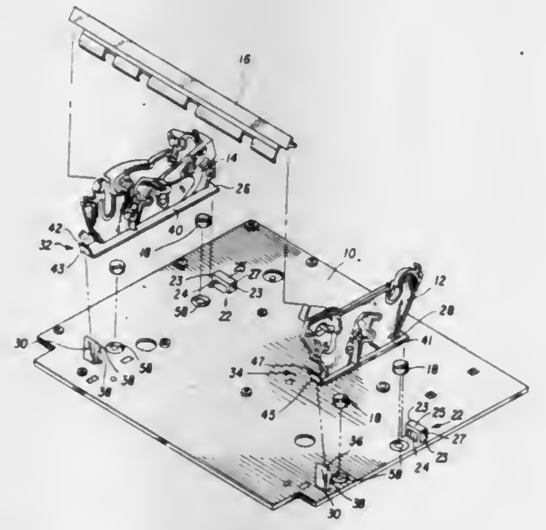
4,616,944
PRINTER FRAME ASSEMBLY AND METHOD OF ASSEMBLY

Matthew J. Galatha, Charlotte; David V. Iorio, Harrisburg, and Carl W. Robinson, Charlotte, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 11, 1984, Ser. No. 619,228

Int. Cl.⁴ B41J *29/02*

U.S. Cl. 400—692 6 Claims



1. A printer frame assembly comprising:
a base member having first and second flexure latches;
said flexure latches each having a locking surface included therein;
first and second side frame members each having a front end and a rear end including locking surfaces at the front end of each said side frame member for engaging said locking surfaces of said flexure latches to latch and secure said side frame members to said base members;
resilient location urging means positioned between said base member and each of said side frame members, urging and maintaining each of said front locking surfaces into secure engagement with said locking surfaces of said flexure latches;
first and second locating receptacles, having at least a top wall and rear wall, each one adapted to receive, position and secure the rear end of each of said side frame members;
said flexure latches and said front lock means of said side members, each including complementary angled surfaces which allow said side frame members to be press fit into the position of secure engagement with said base member by restricting movement of said side frame members by the co-action between said locating receptacles and said flexure latches;
the distance from the rear end of each of said side frame members to the extremity of said angled surface of said respective side frame member being greater than the distance between the rear wall of said locating receptacle and the locking surface of said flexure latch, creating a front to back flexural force between each said flexure latch and the respective front end of said side frame member, urging and maintaining each said side frame member against the rear wall of the respective said locating receptacle, increasing the rigidity and precise alignment of the printer frame.

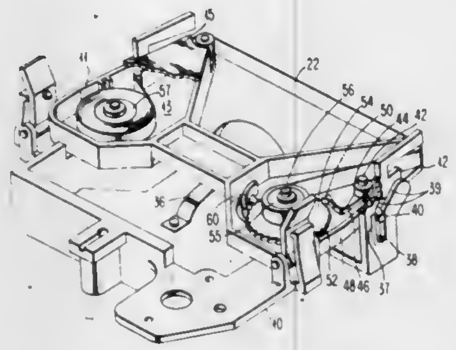
4,616,945
CORRECTION FEED MECHANISM IN A CORRECTION TAPE CARTRIDGE

Steven R. Komplin, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 31, 1985, Ser. No. 696,689

Int. Cl.⁴ B41J *29/36, 33/18*

U.S. Cl. 400—697.1 5 Claims



1. A tape cartridge for a typewriter using a print ribbon cartridge and including means for mounting the tape cartridge with said ribbon cartridge, said typewriter including a means for carrying a ribbon feed means and ribbon and tape cartridges thereon, including means for pivoting said ribbon cartridge and said tape cartridge to present ribbon and tape at a point for printing, said tape cartridge comprising in combination:
means defining an upper and lower surface spaced apart to define a chamber therebetween to embrace a supply spool and takeup spool and tape between said upper and lower surfaces; a tape supply and a tape takeup spool in said chamber; means for permitting said tape to leave said tape cartridge immediate said supply and said takeup spools for presenting said tape to a print point for utilization; tape drive means coupled to said tape and associated with said takeup spool to effect tape movement between said supply and said takeup spools; and cam follower means projecting outwardly from said chamber and from said correction tape drive means for engagement with a cam on said means for carrying so that upon pivoting of said correction cartridge from at least the level of presentation of said tape to said print point to a lower position, said cam follower means follows said cam to effect tape feed.

4,616,946
PRINTING DEVICE HAVING EXTERNAL DATA INPUT

Mitsuru Murata, Shizuoka; Toyohiro Kobayashi, Yaizu; Shoji Mochizuki, and Masamichi Kawashima, both of Shizuoka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 11, 1984, Ser. No. 680,499

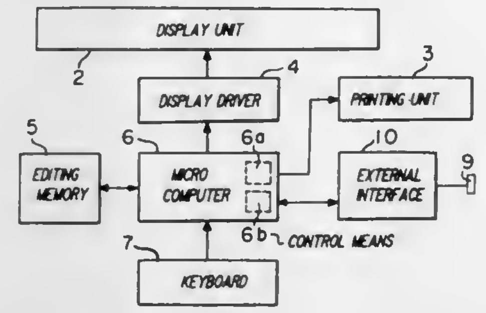
Claims priority, application Japan, Apr. 27, 1984, 59-85519; Jun. 1, 1984, 59-112791

Int. Cl.⁴ B41J *5/30, 3/42*

U.S. Cl. 400—704 8 Claims

1. A printing device functioning as both a typewriter and a printer, comprising:
a printing device body;
manual print data input means on said body;
memory means in said body;
printing means on said body;
microcomputer control means in said body and operatively connected to said data input means, said memory means and said printing means for controlling the operation thereof;
an external data connector at an outer surface of said body

and operatively connected to said microcomputer control means;
checking operation control means in said microprocessor control means and operatively connected to said external data connector for processing checking program data inputted from said external data connector;



an external interface between said external data connector and said microcomputer control mens; and
discriminating means in said microprocessor control means for discriminating whether external data from said external data connector is checking program data.

4,616,947
SLIDE TYPE COSMETIC CONTAINER WITH COMPOUND SCREW

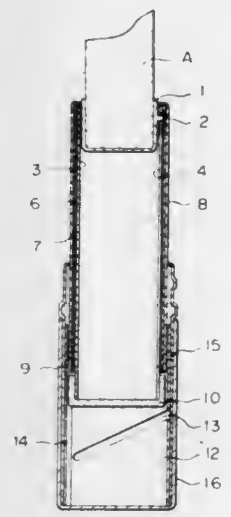
Hisao Iwamoto; Hiroyuki Kimura, both of Odawara, and Yoichi Iwamoto, Funabashi, all of Japan, assignors to Kanebo Limited, Tokyo, Japan

Filed Aug. 24, 1984, Ser. No. 643,987

Claims priority, application Japan, Aug. 25, 1983, 58-131852[U]

Int. Cl.⁴ A45D *40/06, 40/04*

U.S. Cl. 401—69 6 Claims



1. A slide type cosmetic stick vessel comprising a middle saucer for holding a cosmetic stick, which has an engaging projection formed on the outer wall thereof, a body cylinder having a longitudinal guide groove through which the engaging projection slides, a threaded cylinder fitted on the periphery of the body cylinder, said threaded cylinder having a right-hand flight groove with which the engaging projection is engaged, a cover cylinder in which the threaded cylinder is inserted and secured, said cover cylinder having a second engaging projection formed on the outer wall of the lower portion thereof, a slide cylinder secured to the outer wall of the lower end of the body cylinder, said slide cylinder having a rotation-stopping piece formed on the outer wall thereof, an insert cylinder fitted to the periphery of the lower portion of the cover cylinder, said insert cylinder having a left-hand flight groove with which the second engaging projection is engaged and a longitudinal engaging groove with which the rotation-stopping piece is slidably engaged, and a middle cylinder in which the insert cylinder is inserted and secured, wherein the middle saucer and the slide cylinder are slidable in the longitudinal direction.

4,616,948
HYDRAULIC FRICTIONAL COUPLING

Stewart D. Jelfs, 3 Northwick Rd., Worchester, England

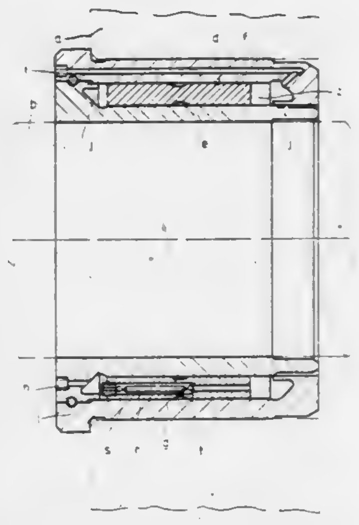
PCT No. PCT/GB84/00148, § 371 Date Jan. 4, 1985, § 102(e) Date Jan. 4, 1985, PCT Pub. No. WO84/04367, PCT Pub. Date Nov. 8, 1984

PCT Filed May 2, 1984, Ser. No. 690,485

Claims priority, application United Kingdom, May 5, 1983, 83 12373

Int. Cl.⁴ F16B *2/04*

U.S. Cl. 403—5 7 Claims



1. A coupling for frictionally joining and locking two components for simultaneous angular and axial movement, comprising:
first and second concentric annular members connected by liquid-tight seals;
at least one annular chamber defined by corresponding surfaces of said annular members;
at least one captive annular piston housed within said chamber, said chamber and said piston having matching axially extending, conically tapered surfaces;
injection means for selectively supplying hydraulic fluid under pressure to opposite ends of said piston and selectively causing radial expansion and contraction of said chamber by axial displacement of said piston.

4,616,949
STEERING KNUCKLE FOR A VELOCIPEDE

Andrew Kellner, 92 Cardigan Street, Stanmore, New South Wales, 2048, Australia

Filed Sep. 25, 1984, Ser. No. 654,160

Claims priority, application Australia, Dec. 13, 1983, PG2825

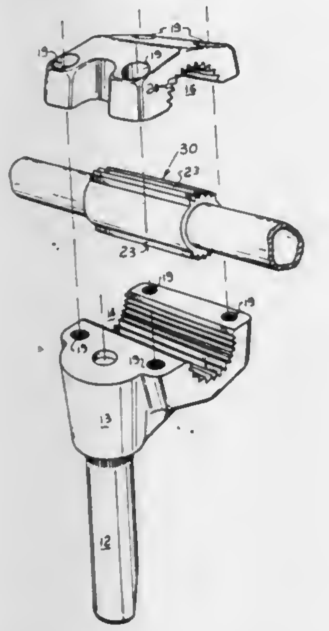
Int. Cl.⁴ F16B *7/10, 11/00*

U.S. Cl. 403—104 7 Claims

1. A combination handle bar assembly for a velocipede and a knuckle joint for securing a handle bar of said assembly to a steering shaft of the velocipede, said assembly comprising a tubular handle bar having a generally longitudinally extending central portion with surface deformations, said deformations extending inwardly of the handle bar, said combination further comprising:
a. a connection sleeve extending longitudinally around said handle bar so as to surround said central portion, said sleeve being formed of plastic material molded about said handle bar so as to extend into said deformations and so as to comprise means for preventing rotation of the sleeve about the handle bar, said sleeve having longitudinally extending ribs which extend generally radially relative to said handle bar;

b. a first knuckle part to be fixed to said steering shaft, said first knuckle part having a recess;

c. a second knuckle part having a recess, said second knuckle part being adapted to be fixed to said first knuckle part so that the recesses of said knuckle parts cooperate to provide a passage within which said handle bar and said sleeve are located, at least one of said knuckle parts having

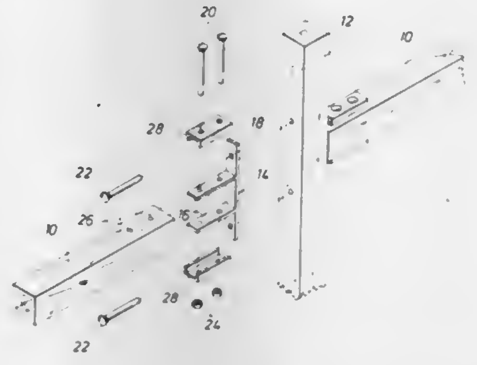


a plurality of longitudinally extending channels which receive said ribs to prevent rotation of said sleeve, and said handle bar fixed thereto, about the longitudinal axes of said sleeve and said handle bar relative to said knuckle parts; and

d. means for clamping said knuckle parts together so that said handle bar and said sleeve are clampingly fixed between said knuckle parts.

4,616,950
TIMBER JOINING DEVICES

Tom C. Morris, 10416 Wood Dale, Dallas, Tex. 75228
Filed Jan. 31, 1984, Ser. No. 575,690
Int. Cl.⁴ F16B *7/04, 39/10*
U.S. Cl. 403—231 **18 Claims**



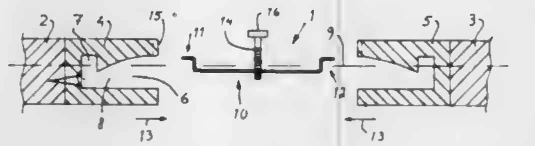
1. Means for joining the end of a timber having a longitudinal axis to at least one second member, comprising:

a support frame having two support arms which are adapted to lie along opposite sides of said timber and generally along said timber longitudinal axis, said arms adapted to be fastened to said timber with at least one support fastener, at least one frame end fastened to said two support arms and adapted to be fastened to said at least one second member, and

a shallow U-shaped channel positioned around each support arm and having an open side and a back side, said open side providing a trough which is slightly deeper than the thickness of the surrounded support arm and the trough generally abutting the edges of the surrounded support arm, each channel adapted to be fastened to said timber with said at least one support fastener with its open side toward said timber.

4,616,951
COUPLING

Pentti I. Maatela, Kungsgatan 4, S-223 50 Lund, Sweden
PCT No. PCT/SE82/00435, § 371 Date Aug. 19, 1983, § 102(e) Date Aug. 19, 1983, PCT Pub. No. WO83/02297, PCT Pub. Date Jul. 7, 1983
PCT Filed Dec. 21, 1982, Ser. No. 532,024
Claims priority, application Sweden, Dec. 21, 1981, 8107657
Int. Cl.⁴ F16B *2/24*
U.S. Cl. 403—290 **4 Claims**



1. Coupling for interconnecting two elements along a connection line comprising a spring member adapted to engage a profile member of each element, characterized in that

a. each profile member (**4, 5**) is attached to or is an integral portion of the corresponding element (**2, 3**);

b. each profile member has at least one substantially L-shaped opening or recess (**6**), each of said recesses having a first leg portion (**7**) which extends perpendicular to the connection line (**9**) and a second leg portion coincident with the connecting line (**9**);

c. the spring member (**10**) is hat-shaped, each edge portion of which includes a first portion (**17**) extending substantially perpendicular to the base surface (**19**) of the spring member and a second portion (**18**) extending substantially parallel to but offset in relation to the base surface;

d. the spring member further comprising a biasing member (**14**) adjacent its middle portion adapted to bend the base surface of the spring member;

e. the first and second portions (**17, 18**) of the edge of the spring member being bent relative to the base surface to be received in the first leg portion (**7**) of the L-shaped opening of the profile member, whereby the outer edge of the second portion (**18**) of the spring member is firmly pressed against a surface (**21**) of the first leg portion of the profile member at the tightening of the biasing member.

4,616,952
SHAFT COUPLING LOCKABLE IN THE RELEASED POSITION

Wilhelm Schott, Hennef/Sieg, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar/Rhld., Fed. Rep. of Germany
Filed Jan. 6, 1986, Ser. No. 816,459
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1985, 3501262
Int. Cl.⁴ F16B *7/00*
U.S. Cl. 403—316 **2 Claims**

1. A shaft coupling lockable in a released position for releasably coupling two shaft members particularly for connecting an agricultural implement with a tractor, comprising:

a coupling sleeve having radial openings therein and an attachment side;

a power takeoff shaft having an annular groove therein adapted to be connected with said coupling sleeve from said attachment side;

a plurality of locking bodies guided in said radial openings of said coupling sleeve engaging within said annular groove to axially retain said coupling sleeve and said power takeoff shaft connected;

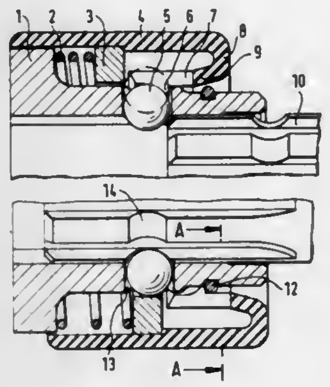
a lock ring axially movable on said coupling sleeve between a locking position holding said locking bodies in engagement within said annular groove and a released position enabling said coupling sleeve to be released from said power takeoff shaft;

spring means urging said lock ring toward said locking position;

a gripping sleeve axially fixed with said lock ring but rotatable relative thereto extending about said coupling sleeve;

a radially inwardly extending projection on said gripping sleeve located on an end thereof facing said attachment side of said coupling sleeve;

an annular part on said coupling sleeve extending from said projection axially inwardly of said gripping sleeve;



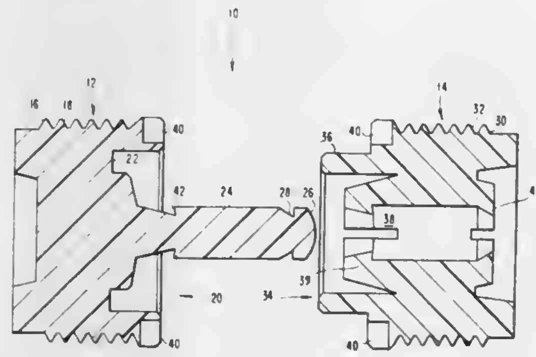
a radially inwardly directed hooked projection provided at an inner end of said annular part; and

a plurality of longitudinally extending slots uniformly circumferentially distributed on said annular part dividing said annular part and said hooked projection thereon into a plurality of individual radially inwardly extending locking brackets, each having a circumferential width which is smaller than the circumferential size of said radial openings;

the quantity of said locking brackets being divisible by the quantity of said radial openings.

4,616,953
KNOCK DOWN PIVOT FASTENER

Daniel Gomes, P.O. Box 117, Worcester, N.Y. 12197
Filed Sep. 27, 1985, Ser. No. 781,030
Int. Cl.⁴ B25G *3/00;* **F16D** *1/00*
U.S. Cl. 403—407.1 **20 Claims**



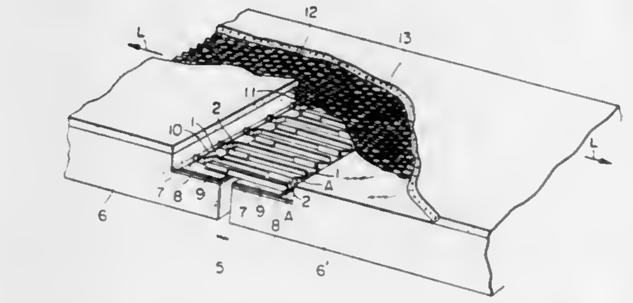
1. A pivot fastener useful in coupling a first part to a second part, comprising:

a first bushing member having an outer surface with means for securing said first bushing member in fixed relationship to a first part, said first bushing member also having a mating face including a circumferential locking sleeve and an axially extending bearing post member with a bearing surface and a first circumferential retaining flange; and,

a second bushing member having an outer surface with means for securing said second bushing member in fixed relationship to a second part, said second bushing member also having a mating face including a circumferential locking collar sized to fit and engage within the locking sleeve and an axially-extending opening for receiving the bearing end of the bearing post member therethrough, the opening having a mating bearing surface and a reduced diameter portion for engaging the first retaining flange in a snap-fit relationship for preventing separation of said first and second bushing members when the bearing post member is received therein and the locking collar is positioned within the locking sleeve while also permitting relative rotation therebetween.

4,616,954
CONTINUOUS PAVEMENT PROCESS FOR A BRIDGE SURFACE EXPANSION JOINT

Kazumitsu Taga, Kawasaki, Japan, assignor to Japan Constec Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 30, 1984, Ser. No. 677,679
Claims priority, application Japan, Jul. 30, 1984, 59-157677
Int. Cl.⁴ E01C *11/02*
U.S. Cl. 404—74 **4 Claims**



1. A process for constructing a continuous pavement on a bridge surface, comprising the steps of:

arraying a pluality of bridging metals so that U-shaped members thereof are positioned with bent pieces thereof alternately overlapping in a hollow space provided between adjacent floor slabs of a bridge;

securing fixedly base end portions of alternate ones of the arrayed bridging metals to a corresponding one of the adjacent floor slabs;

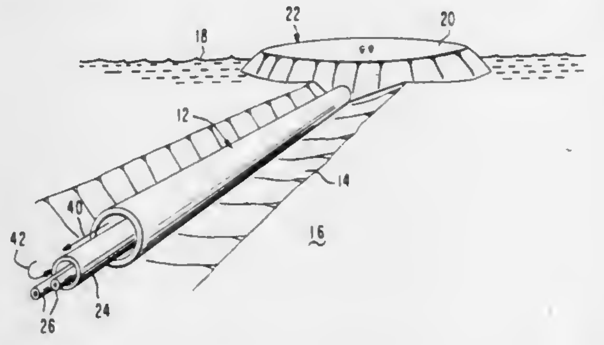
filling the hollow space with an asphalt mixture; and

depositing subsequently a continuous asphalt mixture surface layer over the asphalt mixture and over the floor slabs;

whereby the floor slabs are freely slidable toward and away from each other under the continuous asphalt mixture surface layer.

4,616,955
METHOD AND APPARATUS FOR ENCASING PIPELINE OR CABLE

Norman R. Wallace, Walnut Creek, and Edgerton G. Jones, San Francisco, both of Calif., assignors to Bechtel International Corporation, San Francisco, Calif.
Filed Oct. 18, 1984, Ser. No. 661,855
Int. Cl.⁴ F16L *1/00*
U.S. Cl. 405—158 **17 Claims**



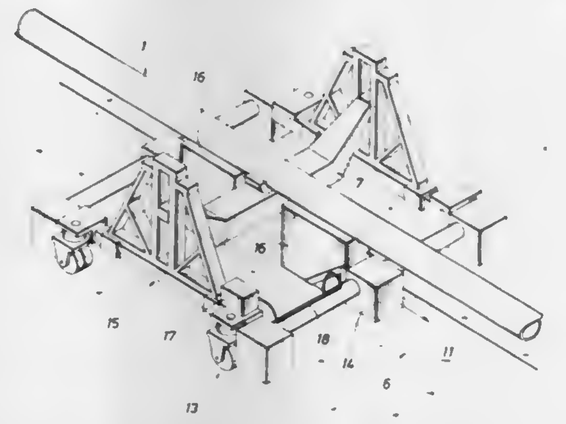
1. A method for encasing an elongated pipe member in a tubular support comprising:

laying the support on a surface;

filling the support with a liquid;

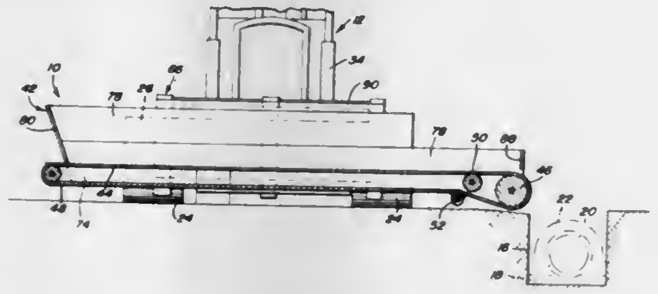
- selecting the diameter and wall thickness of the pipe member so that said pipe member has a buoyancy substantially neutral with respect to the liquid; and
- floating the pipe member into the support from one end of the support.

4,616,956
PIPELINE LAUNCHING MODULE
Dean P. Hemphill, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Filed Jun. 8, 1984, Ser. No. 618,298
Int. Cl.⁴ F16L *1/04*
U.S. Cl. 405—158 **10 Claims**



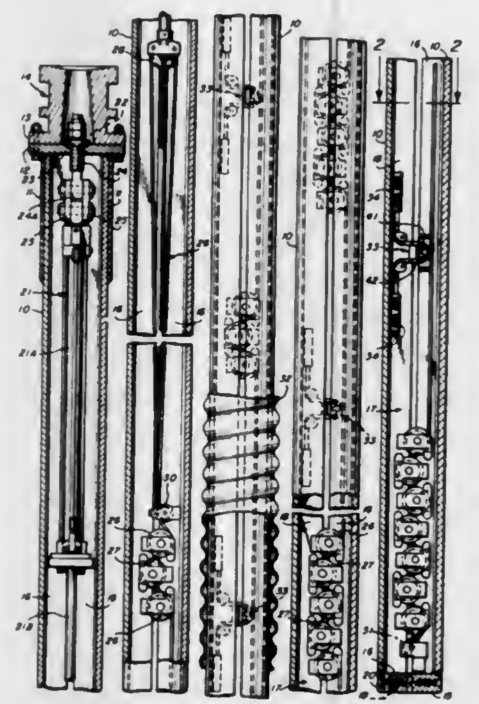
1. A method for deploying an object through an ice slot into underlying water, comprising:
- supporting the object with at least one module which straddles the ice slot;
- reducing the loading on the sides of the ice slot by deploying flotation from the module through the ice slot and into the water; and
- providing auxiliary reserve buoyancy flotation, substantially submersible only during a failure of the ice surrounding the ice slot and functionable to float the module.

4,616,957
PIPELINE PADDING MACHINE
Larry N. Burrows, Rte. 7, Box 1542-C, and Truman L. Gregory, Box 6605, both of Odessa, Tex. 79762
Filed Jun. 8, 1984, Ser. No. 619,311
Int. Cl.⁴ E02F *5/22;* **F16L** *1/02, 57/00*
U.S. Cl. 405—179 **2 Claims**



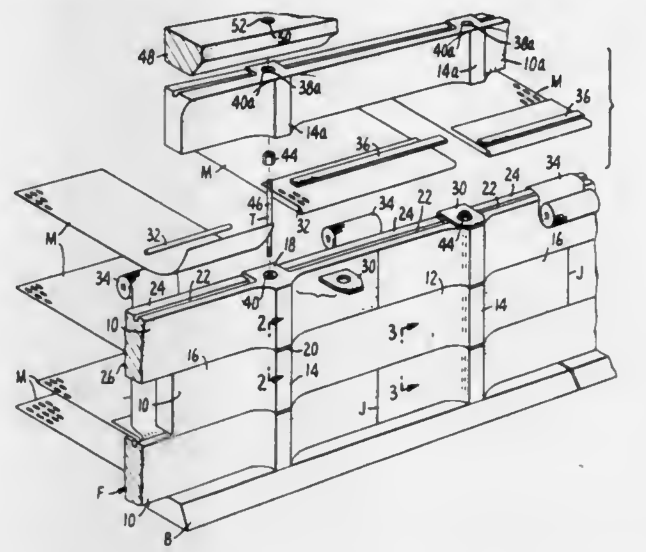
1. A machine for transfering padding material from a dump truck body into a pipe line ditch comprising an elongated, horizontally disposed, upwardly opening chute for receiving padding material from the dump truck body, an endless, imperforate, flexible conveyor belt forming the bottom of said cute, said chute including an end wall spaced a predetermined distance above the belt to form a slot-like outlet above the belt, a pair of end rollers supporting said belt for discharge of padding material into a ditch with the thickness of the padding material being discharged determined by the space between the end wall and the conveyor belt and remaining substantially constant as padding material is discharged into the ditch, means driving one of said end rollers, means mounting the chute, belt and rollers from a vehicle such that as the vehicle travels parallel to a pipeline ditch, padding material will be discharged into the ditch, said means supporting the chute, belt and rollers from a vehicle includes a supporting frame structure of inverted U-shaped configuration for vertically positioning on a bulldozer blade attached to the vehicle without modification of the bulldozer blade and without manipulation of fastening devices, said chute including an upwardly inclined rear wall being inclined toward the frame structures, an upwardly inclined front wall of less height that the rear wall thereby enabling the rear end of a dump truck body to be positioned over the front wall of the chute for discharging padding material into the chute without contacting the front wall.

4,616,958
RETRACTION ASSEMBLIES FOR EXPANSIBLE MANDRELS
Nicholas H. Werthessen, Cranston, R.I., assignor to Fru-Con Construction Corporation, Ballwin, Mo.
Filed Nov. 13, 1984, Ser. No. 670,915
Int. Cl.⁴ E02B *17/00*
U.S. Cl. 405—246 **12 Claims**



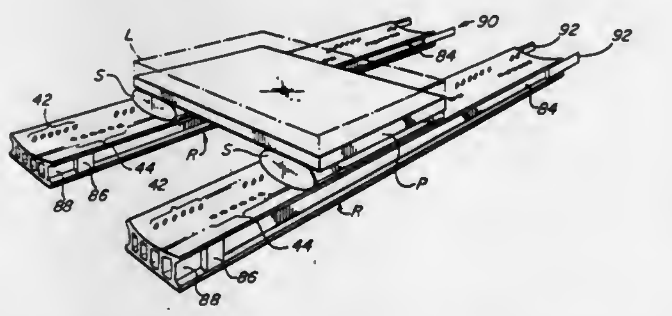
1. An expansible mandrel for use in driving or withdrawing tubular piles and the like, said mandrel comprising two sections, head structure joining the upper ends of said sections, said sections shaped and dimensioned for movement towards and away from each other between pile-entering and pile-gripping relationships, fluid pressure operated means within said mandrel operable to apply expanding force against said sections in a plurality of zones spaced lengthwise of the mandrel thereby to effect said pile-gripping relationship, and resilient means yieldably opposing expanding forces and operable to reestablish said pile-entering relationship when said fluid pressure operated means is not in service, said resilient means including a series of assemblies spaced lengthwise of said mandrel, each assembly between an adjacent pair of zones, each assembly including a coil spring extending lengthwise of one section, means connected to said one section and backing one end of said spring, anchoring means spaced from said backing means lengthwise of said one section and connected to said one section, a pair of guides between said backing and anchoring means, said guides connected to said one section and spaced lengthwise from each other, a retraction cleat connected to said other mandrel section opposite the space between said guides and a connection between the other end of said spring and said anchoring means and including a flexible portion in trained engagement with said guides and said cleat and holding said spring compressed.

4,616,959
SEAWALL USING EARTH REINFORCING MATS
William K. Hilfiker, Eureka, Calif., assignor to Hilfiker Pipe Co., Eureka, Calif.
Filed Mar. 25, 1985, Ser. No. 715,929
Int. Cl.⁴ E02D *5/00, 29/02*
U.S. Cl. 405—286 **7 Claims**



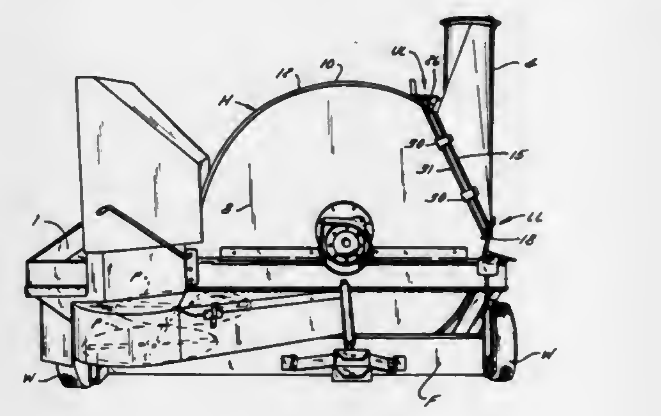
1. A wall for retaining and protecting the face of an earthen formation, said wall comprising: paired face panels stacked upon one another at the face of the formation, said paired panels having back surfaces in apposition to the formation, mutually engageable stacking columns at spaced locations along the length thereof, and surfaces opposed to one another intermediate said columns; a longitudinally extending groove formed in the opposed surface of at least one of said paired panels in spaced relationship to the back surface thereof; a recessed step formed in the opposed surface of at least one of said paired panels, said step being uninterrupted and co-extensive with said groove, said step extending to the back surface of the panel within which it is formed and communicating with and having a depth less than the groove; a soil reinforcing mat embedded within the formation, said mat having a distal portion extending over the recessed step and secured to an enlarged anchor captured between said groove and the opposed surface of the panel in opposition thereto; and seal means within the step engaged with the mat to restrict the intrusion of water through the wall and into the formation.

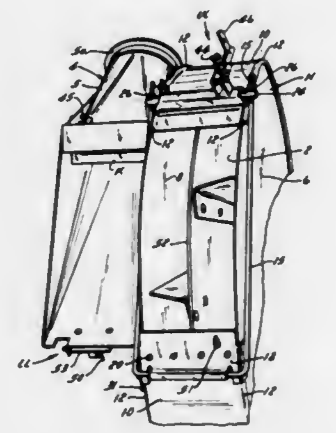
4,616,960
AIR CONVEYOR COMPONENTS
Herbert E. Gladish, Ottawa, Canada, assignor to E. B. Eddy Forest Products Ltd., Ottawa, Canada
Filed Oct. 20, 1983, Ser. No. 543,976
Claims priority, application Canada, Jun. 30, 1983, 431,658
Int. Cl.⁴ B65G *51/03*
U.S. Cl. 406—88 **18 Claims**



1. An improved rail for use in mono- or multi-rail fluid-pressure supported article transportation systems comprising a shallowly transversely concave upper wall member, a pair of generally vertical, longitudinally extending side walls, each wall being inset from a corresponding edge of said upper wall member, a generally planar lower wall member extending transversely outwardly beyond each side wall, partition wall means extending between said upper and lower wall members so as to define at least two longitudinally extending ports within said rail, a plurality of nozzles communicating through the upper wall member with said ports, the nozzles being longitudinally aligned in groups such that there is a space between longitudinally adjacent groups for each of said ports and such that each group associated with one port is positioned generally laterally opposite a space between adjacent groups associated with the other of said ports, each nozzle being angled with respect to a longitudinally extending plane which is tangent to the outer curved surface of the upper wall member where the axis of the nozzle intersects the outer surface, the nozzles of each group being directed generally towards the edge of said rail closest thereto.

4,616,961
FORAGE BLOWER HAVING A REMOVABLE OUTLET TRANSITION MEMBER
Donald E. Burrough, West Bend, and Kim P. Viesselmann, Grafton, both of Wis., assignors to Gehl Company, West Bend, Wis.
Filed Jul. 5, 1984, Ser. No. 627,786
Int. Cl.⁴ B65G *53/58*
U.S. Cl. 406—99 **12 Claims**





1. A forage blower having a vertical positioned blower housing of generally circular shape when viewed in elevation and which has a blower outlet opening adjacent its upper portion, said forage blower also having a blower outlet transition member having one position wherein it is extending generally tangentially upwardly from and in communication with said blower outlet opening, said housing comprising;
- a pair of generally circular and laterally spaced apart side sheets, an annular peripheral rim sheet mounted around the periphery of said side sheets and having spaced apart opposed ends located adjacent to said blower outlet opening and defining the peripheral limits of said blower outlet opening,
- clamping means connected between said spaced apart ends of said rim sheet for clamping said rim sheet around said

side sheets, said adjustable clamping means comprising at least one rod positioned along one of said side sheets and arranged at an inclined angle from the vertical to define a pivot axis, and hinge means connected between said rod and said blower outlet transition member for enabling swingable positioning of said blower outlet transition member between said one position and another position along one of said side sheets about said pivot axis whereby said blower outlet transition member can be swung laterally to one side of said housing to expose said blower outlet opening for access to the interior of said housing.

4,616,962
CUTTER INSERT

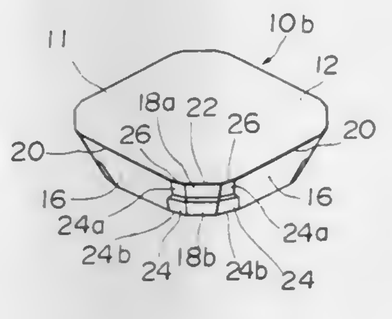
Hiroyuki Ushijima, Yokohama; Hiroshi Shimomura, and Masaaki Nakayama, both of Tokyo, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1985, Ser. No. 724,665

Claims priority, application Japan, Apr. 28, 1984, 59-63810[U]

Int. Cl.⁴ B23B *27/22;* **B26D** *1/00;* **B23C** *5/20*

U.S. Cl. 407—113 **4 Claims**



1. An indexable cutter insert for a rotary cutter comprising a generally polygonal plate defined by a front face, a rear face and a plurality of side faces, the corner portions of said plate where adjacent side faces intersect one another being removed to provide respective corner faces, said plate having a plurality of main cutting edges each defined by said front face and a respective one of said side faces and a plurality of auxiliary cutting edges each defined by said front face and a respective one of said corner faces, each side face seving as a relief surface of a respective one of said main cutting edges, a forward portion of each corner face remote from said rear face serving as a relief surface of a respective one of said auxiliary cutting edges, a rearward portion of each corner face remote from said front face being offset inwardly from said forward portion to provide a clearance surface, each corner face having a connective surface interconnecting said forward and rearward portions and sloping inwardly from said forward portion toward said rearward portion, and said clearance surface extending from said rear face to a plane generally centrally of the thickness of said plate.

4,616,963
CUTTING TIP FOR CUTTING-TOOLS

Guy Habert, Every, France, and Harald Kraft, Uhingen, Fed. Rep. of Germany, assignors to Feldmuhle Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

PCT No. PCT/DE82/00145, § 371 Date Feb. 24, 1983, § 102(e) Date Feb. 24, 1983, PCT Pub. No. WO83/00109, PCT Pub. Date Jan. 20, 1983

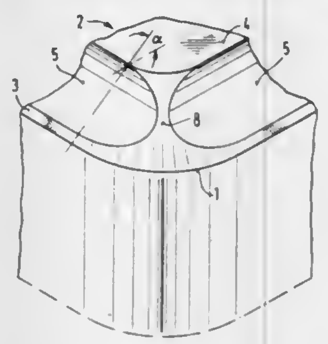
PCT Filed Jul. 9, 1982, Ser. No. 474,573

Claims priority, application France, Jul. 10, 1981, 81 13690

Int. Cl.⁴ B23B *27/22;* **B26D** *1/00*

U.S. Cl. 407—114 **10 Claims**

1. In a cutting tip for cutting tools having top and bearing surfaces, and side surfaces extending between said top and bearing surfaces, and having an encircling cutting edge defined by a bevel and a shaping stage for the chip, the improvement which comprises the bevel (3) running at an angle (α) of from 15 to ±degrees with respect to the top (**4**) or bearing surface and having a width of from 0.05 to 0.4 mm, wherein said bevel (**3**) intersects said said surface and is sloped so that said bevel (**3**) is inclined upwardly from the point of intersection with said side surface toward said top surface (**4**) and having next adjacent to this bevel, a channel (**5**) which intersects said bevel (**3**) and has a cross-section in the form of a segment of a circle, the longest chord (**6**) of which runs at an angle (β) of from 15 to 35 degrees with respect to the top (**4**) or bearing surface, wherein said chord (**6**) is sloped so that said chord (**6**) is inclined upwardly from the point of intersection with said bevel (**3**) toward said top surface (**4**).



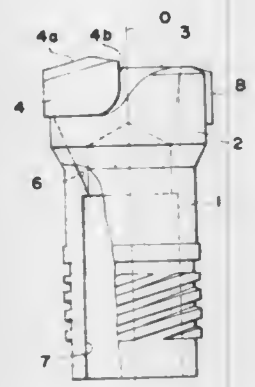
4,616,964
CARBIDE DRILL

Takuji Nomura, 12-64, Takakuracho, Nishinomiya, Hyogo, Japan

Filed Jun. 13, 1983, Ser. No. 503,481

Int. Cl.⁴ B23B *51/02*

U.S. Cl. 408—144 **5 Claims**



1. A carbide drill comprising: means forming a nonmachining zone at one end thereof about the axis of rotation including at least one tip mounted radially along a radial line from the axis of rotation with a clearance and with the cutting edge of the tip offset forward of the radial line such that the distance from the axis of rotation to the cutting edge is greater than the distance from the axis of rotation to the end face of the tip and at least one arris on the end face of the tip facing the nonmachining zone to form a noncutting edge thereon.

4,616,965
INDEXABLE SHELL CUTTER

Russell W. Anderson, Milwaukie, and Michael J. Held, Portland, both of Oreg., assignors to Manufacturers Tool Service, Inc., Portland, Oreg.

Filed Feb. 27, 1984, Ser. No. 583,712

Int. Cl.⁴ B23B *27/10*

U.S. Cl. 408—204 **4 Claims**

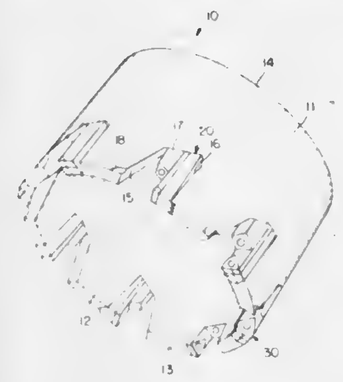
1. A rotary cutting tool comprising:

(a) a cylindrical cutting head having a circular cutting face;

(b) a plurality of axial recesses formed in the outer periphery of said cutting head and extending rearwardly from said cutting face, said recesses being equidistantly spaced around the periphery of said cutting face, each of said recesses being formed by a first surface, a second surface spaced from said first surface a predetermined distance, and a base surface extending between said first and second surfaces at an acute angle to said second surface, said second surface being substantially perpendicular to the plane of the cutting face and V-shaped in cross-section;

(c) a cartridge releasably secured in each of said recesses, each said cartridge having a V-shaped base in mating relationship with the second surface of each of said recesses, an upper face opposite said base, an inner end matingly engaging the base surface of said recess, and an outer end opposite to said inner end; and

(d) a replaceable cutter insert having three cutting edges, each in the shape of an elongated V, indexably secured to the outer end of each of said cartridges with the outer face of said insert being substantially perpendicular to the plane passing through the cutting face of said cutting head, a first of said cutting edges extending beyond the outer end of said cartridge a distance sufficient to engage a workpiece, the outer end of said cartridge being similar in shape to said cutting edges.



4,616,966
METHOD FOR CHAMFERING

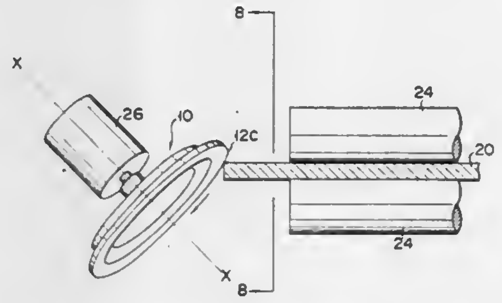
Iwane Ohyama, Kamakura, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation-in-part of Ser. No. 370,101, Apr. 20, 1982, abandoned, which is a continuation of Ser. No. 163,477, Jun. 27, 1980, abandoned. This application Oct. 11, 1983, Ser. No. 540,686

Claims priority, application Japan, Jul. 3, 1979, 54-83465; Apr. 30, 1980, 55-57504

Int. Cl.⁴ B23C *3/12*

U.S. Cl. 409—132 **2 Claims**



1. A method of chamfering an edge of a plate-like workpiece, especially a workpiece made of a silicon steel plate, comprising the steps of:

providing a rotating circular cutter having a ring-shaped cutting edge portion formed along a periphery of a holder therefor, the cutting edge portion having an edge tip defining a circle, said edge tip having a rake angle within the range of 0 to −1.0 degrees and a relief angle whch has a zero or positive value;

orienting the cutter to the workpiece so that the edge of the workpiece to be chamfered engages the edge tip at only one portion of the circle as the workpiece moves with respect to the cutter to engage various portions of the edge to be chamfered, this step of orienting including establishing positional relationships such that:

(a) the angle formed between an upper surface of the workpiece and a working plane of the cutter, which plane includes a circle defined by the edge top of the cutting edge portion of the cutter, falls within the range of 0° to 45°,

(b) the plane including the upper surface of the workpiece crosses at two points with said circle defined by the edge top of the cutting edge portion of the cutter,

(c) the working plane of the cutter is inclined relative to the edge of the workpiece to be chamfered such that the working plane crosses with the edge of the workpiece at only the front portion of the cutter working plane in a moving direction of the workpiece so as to allow the edge of the workpiece to be chamfered only at the single cross point thereby formed, and

(d) rotation of the circular cutter is permitted such that, for a projection of the cutter onto the upper surface of the workpiece, the edge tip of the cutting edge portion of the cutter is moved at the cross point from an overlapping region between the projection of the cutting and the workpiece to a non-overlapping region thereof;

rotating the cutter; and

moving the workpiece in a direction of a sense opposite to that of movement of the cutting edge portion of the cutter at the cross point so that successive portions of the edge to be chamfered engage the cross point thereby chamfering the edge at the cross point.

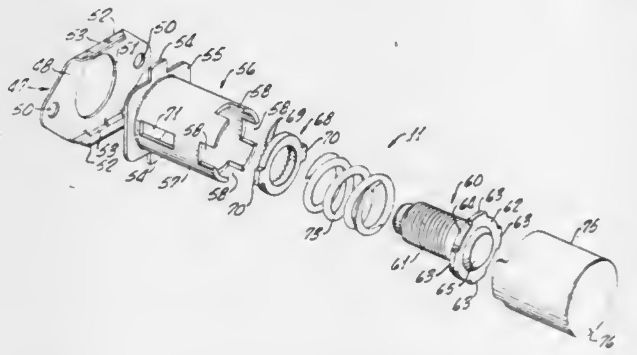
4,616,967
PANEL FASTENER

Jorge W. Molina, Torrance, Calif., assignor to Deutsch Fastener Corp., El Segundo, Calif.

Filed Aug. 29, 1983, Ser. No. 527,229

Int. Cl.⁴ F16B *39/00, 41/00*

U.S. Cl. 411—105 **3 Claims**



1. A fastener comprising nut means for attachment to a first workpiece, and stud means for attachment to a second workpiece for mating with said nut means for holding said first and second workpieces together, said stud means including

a housing having a tubular portion, an open end, an end opposite said open end, and a base at said open end, said tubular portion further including a pair of slots, means engaging said base for holding said housing to a workpiece with freedom for limited lateral floating movement while precluding substantial rotation of said housing relative to such a workpiece,

a stud having a head at one end and a threaded shank projecting from said head,

said stud being received in said housing with said shank extending toward said open end thereof,

said housing and said stud having interengaged means for holding said stud in said housing,

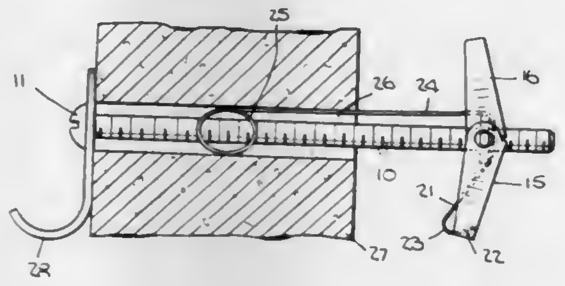
a washer around said shank,

said washer and said tubular portion of said shank having interengaged means for preventing substantial rotation of said washer relative to said housing while permitting

limited axial movement of said washer relative to said housing,
said washer having teeth thereon facing said open end of said housing,
a compression spring biasing said washer outwardly toward said open end,
said nut means having teeth on the outer end thereof for engagement with said teeth of said washer for providing a resistance to said rotational movement between said nut means and said washer, and
a cover member,
said cover member including an end wall and a tubular wall,
said end wall being positioned over said opposite end of said housing and said tubular wall receiving said tubular portion of said housing,
said tubular wall of said cover member having an inwardly delected dimple received in one of said slots in said tubular portion of said housing for thereby holding said cover member to said housing.

4,616,968
NON-ROTATING TOGGLE BOLT ASSEMBLY

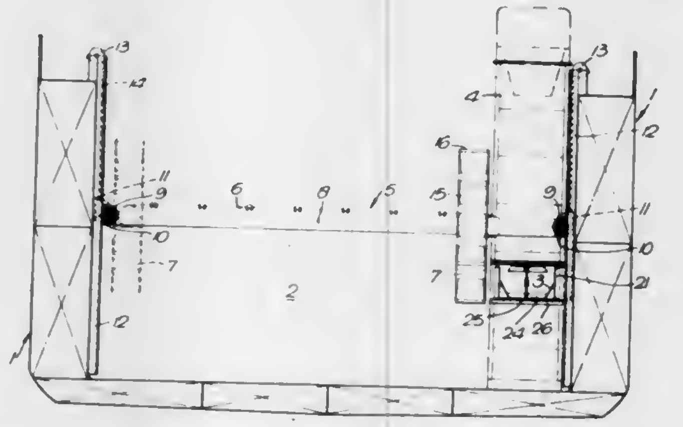
Louis N. Giannuzzi, 4 Shelter Dr., Cos Cob, Conn. 06807
Filed Jul. 27, 1984, Ser. No. 635,068
Int. Cl.⁴ F16B *21/00*
U.S. Cl. 411—342 **9 Claims**



1. A non-rotating toggle bolt assembly for supporting a fixture or other object against the outer surface of a hollow wall, said assembly comprising:
A. a screw having a head engageable by a screw driver or other tool to effect turning, and a threaded shank whose length exceeds the thickness of the wall for which it is intended;
B. a nut threadably received on the shank and provided with oppositely-extending lugs forming trunnions;
C. wings pivotally supported on said trunnions and spring-biased to normally maintain the wings in an outstretched state, said wings having an opening therein to admit the shank, said wings in the course of installation folding in toward the shank to permit passage of the assembly in a hole drilled in said wall, the wings when emerging from the hole resuming their outstretched state; and
D. locking means to prevent rotation of the outstretched wings, whereby when said screw is turned, the nut and the wings pivoted on said trunnions will then advance along the shank toward the inner surface of the wall to engage said inner surface, said locking means being constituted by a locking member coupled to said nut and the wings pivoted on said trunnions and provided with a long tail which terminates in a restraining element, the length of the long tail substantially exceeding the length of the folded-in wings and being such that in the course of installation when the wings are folded in to pass through the hole, the long tail also passes therethrough but the restraining element does not emerge from the hole when the wings after emerging from the hole resume their outstretched state and the head of the screw then lies against the fixture on the outer surface of the wall whereby the restraining element restrains the long tail, thereby preventing rotation of the nut and the wings pivoted on the trunnions, said locking means being formed of resilient metal wire.

4,616,969
EMPTYING DEVICE FOR BULK MATERIAL

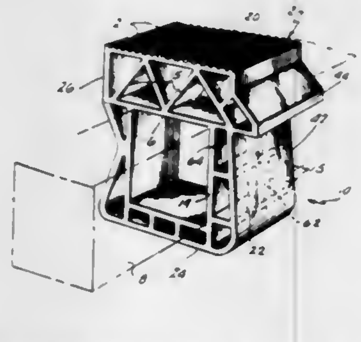
Kaare Haahjem, Haahjem A/S, P.O. Box 25, N-6040 Vigra, Norway
Filed Oct. 5, 1984, Ser. No. 658,384
Claims priority, application Norway, Oct. 26, 1983, 833913
Int. Cl.⁴ B65G *65/38*
U.S. Cl. 414—144 **6 Claims**



1. An emptying device for bulk material in cargo or storage room, comprising:
a first horizontal conveyor;
means for raising and lowering said first conveyor along a side of the room, said first conveyor being adapted to move said bulk material in the direction of a lifting conveyor;
a second horizontal conveyor adapted to transport bulk material on the top side thereof towards said first horizontal conveyor, said second conveyor being movable along the latter;
said first horizontal conveyor including means for digging room for said first conveyor in the bulk material as it is lowered; and
said second horizontal conveyor comprising a belt conveyor and at least one excavating wheel rotatable about said belt,
wherein said first horizontal conveyor comprises a longitudinal chute having movable catchers, and wherein said digging means comprieses scrapers which are movable along the bottom side of the chute.

4,616,970
TOW BAR BLOCK AND TOW BAR ASSEMBLY

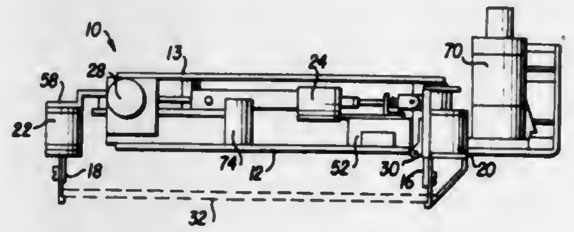
James L. Lewis, Lake Orion, Mich., assignor to Arthur J. Bott, Grand Rapids, Mich., a part interest
Filed Oct. 12, 1984, Ser. No. 660,067
Int. Cl.⁴ B60P *3/06*
U.S. Cl. 414—563 **62 Claims**



1. A tow bar block for supporting a vehicle on a tow bar by engaging support surfaces on said vehicle, said tow bar block comprising:
a central opening therethrough for receiving a tow bar;
a plurality of faces spaced from said central opening and being oriented outwardly therefrom, at least two of said faces having differing configurations adapted to receive differing shapes of support surfaces on different vehicles, whereby a tow bar can be positioned within said opening in said tow bar block and can be employed to tow a vehicle with said block supporting said vehicle, one of said configured faces engaging a support surface on said vehicle; said faces are integrally formed with one another and said faces extend peripheraly around said central support.

4,616,971
ROBOTIC HAND AND METHOD FOR MANIPULATING PRINTED CIRCUIT BOARDS

John L. Matrone, Schenectady, N.Y., assignor to Fairchild Camera and Instrument Corp.
Filed Oct. 11, 1983, Ser. No. 540,415
Int. Cl.⁴ B25J *15/10*
U.S. Cl. 414—730 **19 Claims**

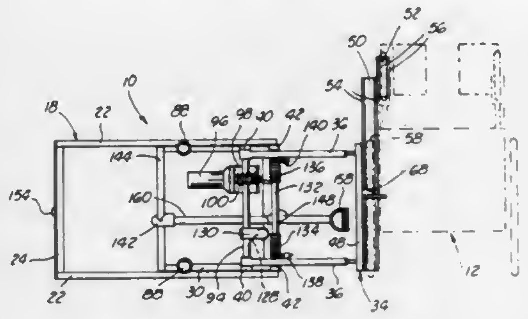


1. A robot hand for use in individually picking up, transporting and releasing a variety of loaded circuit boards without impinging upon the circuitry, components and connectors on the boards, each board having first and second opposing edges, comprising:
a palm having a wrist connection site for connection with a wrist of a robot;
a first pincer unit depending from the palm for engaging a first edge of a circuit board;
second and third pincer units, depending from the palm for engaging a second opposing edge of the board, said second and third pincer units lying along a predetermined reference line with which said second edge of the board is aligned by said pincer units;
means for adjusting the relative positions of said second and third pincer along said reference line so that said second and third pincer units selectively engage clear spots along said second edge of the board;
each pincer unit being adapted to pinch and hold its corresponding edge of the circuit board by means of a thumb and finger set, each set defining a pinching gap and each set being operable between a pinching state in which the gap is relatively closed and an open state in which the gap is relatively open, and the configuration of the pincer units and their pinching gaps being such as to hold a board between the units in a spaced-apart relationship with respect to the palm.

4,616,972
APPARATUS FOR LOADING A WHEELCHAIR OR SIMILAR OBJECT

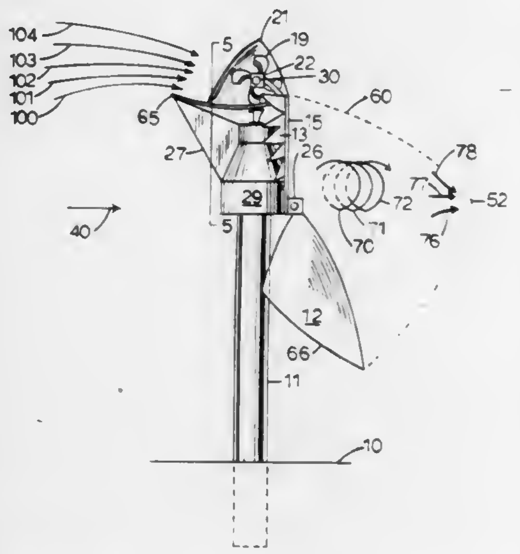
Robert E. McFarland, 8301 NW. 39th Expressway, Bethany, Okla. 73008
Division of Ser. No. 565,164, Dec. 23, 1983, Pat. No. 4,573,854. This application Oct. 30, 1985, Ser. No. 792,875
Int. Cl.⁴ B60R *7/00*
U.S. Cl. 414—749 **13 Claims**

1. In a loading apparatus having a generally horizontally extending chassis defining a plurality of guide tracks, and a carriage having guide rollers guided in rolling contact with each of said tracks, such that said carriage may be alternately rolled from a latched forward position to a latched rearward position on said chassis, the improvement comprising:
a forward latch whereby said carriage is latched to prevent further forward or rearward motion of said carriage on said chassis when said carriage is rolled to said forward position;
a rearward latch whereby said carriage is latched to prevent further rearward or forward motion of said carriage on said chassis when said carriage is rolled to said rearward position; and
unlatching means adjacent said forward and rearward latches and attached to said carriage, said unlatching means having a handle whereby, when said carriage is in said latched forward position, moving said handle in one direction will unlatch said forward latch and, upon further movement in said one direction, will cause said carriage to roll in a rearward direction, and, when said carriage is in said latched rearward position, moving said handle in a second direction will unlatch said rearward latch and, upon further movement in said second direction, will cause said carriage to roll in a forward direction.



4,616,973
WIND DRIVEN TURBINE

Nicholas Souchik, Jr., Little Gloucester Rd., Apt. S 37, Blackwood, N.J. 08012
Filed Dec. 31, 1984, Ser. No. 687,778
Int. Cl.⁴ F03D *3/04*
U.S. Cl. 415—2 R **8 Claims**



1. In combination:
a pylon support structure provided with means to elevate to minimize ground drag effects in a moving stream, a platform mounted on said support structure provided with means to rotate in any moving stream direction, a frame mounted on said platform provided with means to extend horizontally to the ground from the vertical axis of said pylon support structure,
a shaft elevated horizontal to the ground and perpendicular to the moving stream provided with means to rotate around said shaft axis,
a multiple number of turbines rigidly mounted on said shaft provided with blades with means to transfer kinetic energy of a moving stream to rotational mechanical energy of said shaft,
a rotational mechanical energy utilization device such as a

generator provided with means to do useful work, a power transmission provided with means to transfer power from said shaft to said utilization device and means to change the rotational speed of said shaft to match the rotational speed of said utilization device,

an augmenter rigidly mounted on said frame upstream of said turbines provided with a continuous surface to divert the moving stream and provided with a right circular cone conic section curved leading edge with said curved edge major axis bisects said continuous surface and is oriented perpendicular to the midpoint of said shaft with said leading edge upstream of said edge geometric focus with said focus elevated below said turbines and said major axis angle to the moving stream fixed,

an augmenter rigidly mounted below and downstream of said turbines provided with a continuous surface to divert the moving stream provided with a right circular cone conic section curved trailing edge oriented with curved trailing edge bisecting said surface with a major axis oriented perpendicular to the midpoint of said shaft with said trailing edge geometric focus below said turbines and at a fixed angle to the moving stream,

said augmenter trailing edge is provided with means to add angular momentum to the moving stream oriented with clockwise circulations produced in the portion of the stream passing over the right said trailing edge of said augmenter when viewed from an upstream position and counterclockwise circulations produced in the portion of the stream passing over the left said trailing edge of said augmenter when viewed from an upstream position,

an augmenter mounted by hinge means to said rotational platform downstream of the midpoint of said shaft provided with a continuous surface and a right circular cone conic section curved trailing edge oriented with said curved trailing edge major axis bisecting said surface and oriented perpendicular to the midpoint of said shaft with said trailing edge downstream and below said platform.

4,616,974

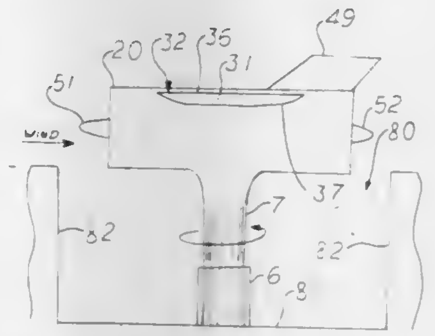
WIND DRIVEN POWER GENERATING APPARATUS

Walter Andruszkiw, 31415 Mound Rd., Warren, Mich. 48092, and Roman Andrushkiw, 42400 Malbeck, Sterling Heights, Mich. 48077

Filed Jul. 19, 1985, Ser. No. 756,599

Int. Cl.⁴ F03D *7/04*

U.S. Cl. 415—4 **6 Claims**



1. A vertically adjustable wind driven power generating apparatus comprised of, in combination, a well in which is vertically movably mounted a wind driven power generating apparatus comprised of:

(i) a wind driven power generating means comprised of a tubular housing having rotatably mounted therein a horizontally extending shaft having a centrally disposed bevel gear fixedly attached thereto and a plurality of helical vanes disposed longitudinally on both sides of said bevel gear;

(ii) means for vertical movement of said tubular housing within said well comprised of (a) a hollow vertical support column having a circular cross section and having one end thereof attached to the bottom of said tubular housing and (b) a vertically extending hollow tubular member having a hollow interior fixedly mounted at its bottom end in the floor of said well and being open at its other end, said tubular member adapted to telescopically receive said vertical support column in its open end;

(iii) vertical movement control means comprised of (a) downward movement control means comprising an inverted wing system generating inverse-lift mounted on said tubular housing, and (b) upward movement control means comprising a cylinder having an axially movable piston therein, said piston defining an enclosed cavity within said cylinder which contains a compressible gas and a second cavity containing a hydraulic fluid and being in communication with the hollow interior of said vertically extending tubular member; and

(iv) power transmission means comprising a vertically extending power transmitting shaft rotatably mounted in said hollow vertical support column, said power transmitting shaft having a top end extending into said tubular housing and having fixedly mounted at said top end a bevel gear which is in meshed contact with said bevel gear of said horizontally extending shaft disposed in said tubular housing and a bottom end which is connected to and drives a power generator.

4,616,975

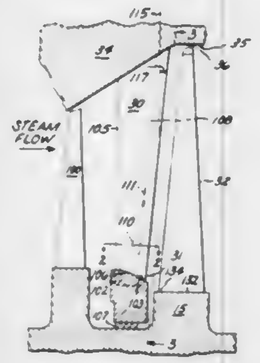
DIAPHRAGM FOR A STEAM TURBINE

Dan Duncan, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 30, 1984, Ser. No. 635,948

Int. Cl.⁴ T01D *5/10*

U.S. Cl. 415—181 **11 Claims**



1. A diaphragm of an axial flow turbine, said turbine including a rotor and energy extracting means coupled to said rotor for converting at least a portion of energy available from an elastic fluid into mechanical energy, said diaphragm for circumferential disposition around the rotor for directing said elastic fluid into said energy extracting means, comprising:

a plurality of spaced apart nozzle partitions forming a respective plurality of channels therebetween; and

an inner member for fixedly securing said plurality of nozzle partitions, each of said plurality of nozzle partitions having a root portion proximate the inner member and including a leading edge and a trailing edge and disposed to include both an axial lean and a tangential lean of the trailing edge, each of said axial lean and said tangential lean with respect to a radial reference from the axis of rotation of the rotor, said inner member including a greater outward radial extent proximate the leading edge of the nozzle partitions than the outward radial extent proximate the trailing edge of the nozzle partitions;

each of said plurality of nozzle partitions spaced from an adjacent nozzle partition such that the channel therebetween includes a minimum throat and a trailing edge throat, wherein the minimum throat is disposed between the leading edge of the nozzle partition and the trailing edge throat at the root of the nozzle partition and the minimum throat is disposed monotonically more proximate the trailing edge throat of the nozzle partition at increasing radial distance from the root of said nozzle

partition, whereby the margins of the channel define a converging-diverging passageway at least over a portion of the radial extent of the channel.

4,616,976

COOLED VANE OR BLADE FOR A GAS TURBINE ENGINE

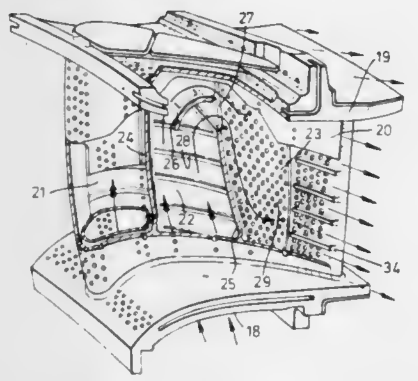
Barry W. Lings, Spondon, and John H. Nicholson, Mickleover, both of England, assignors to Rolls-Royce plc, London, England

Filed Jun. 28, 1982, Ser. No. 397,412

Claims priority, application United Kingdom, Jul. 7, 1981, 8120939

Int. Cl.⁴ B63H *1/14*

U.S. Cl. 416—97 R **5 Claims**



1. A cooled vane or aerofoil for a gas turbine engine comprising:

an aerofoil with a leading edge and a trailing edge and having a hollow interior defined by a concave pressure flank and an opposed unapertured convex suction flank;

partition means extending spanwise in said hollow interior of said aerofoil and dividing a trailing edge compartment from a remainder of said hollow interior;

means for supplying cooling air to said trailing edge compartment, said means including at least one aperture;

a thin perforated impingement plate extending spanwise and chordwise in said trailing edge compartment, said impingement plate being spaced from an inner surface of said unapertured convex suction flank and from an inner surface of said concave pressure flank;

means for loosely holding said perforated impingement plate in position when said vane is inoperative, said means including spanwise spaced and chordwise extending ribs in said trailing edge compartment, said ribs projecting from said inner surface of said unapertured convex suction flank, a plurality of discrete projections in said trailing edge compartment, said discrete projections extending from said inner surface of said concave pressure flank, a spanwise extending sealing rib positioned adjacent said partition means and a further spanwise extending rib positioned adjacent said trailing edge;

an array of film cooling holes in said concave flank providing communication between said trailing edge compartment and an exterior of said aerofoil;

and at least one air ejection hole in said trailing edge of said aerofoil and communicating with a space defined between said inner surface of said suction flank and said impingement plate.

4,616,977

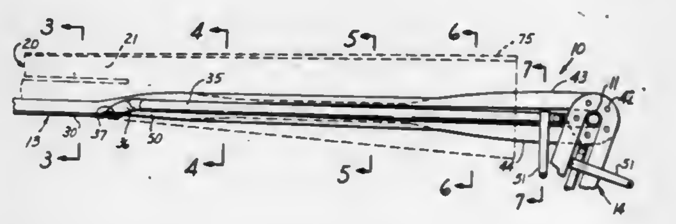
HUBLESS, HINGELESS AND BEARINGLESS HELICOPTER ROTOR SYSTEM

Buford J. Schramm, 1330 E. Fremont Dr., Tempe, Ariz. 85281

Continuation-in-part of Ser. No. 340,774, Jan. 19, 1982, Pat. No. 4,403,918, which is a continuation-in-part of Ser. No. 26,653, Apr. 23, 1979, Pat. No. 4,316,700. This application Sep. 7, 1983, Ser. No. 529,942

Int. Cl.⁴ B64C *27/38*

U.S. Cl. 416—138 **19 Claims**



1. A helicopter rotor system comprising:

a rotary mast having an upright axis;

three or more rotor blades mounted to said rotary mast to be turned by said mast, each said blade having a respective longitudinal axis directed away from said mast, all of said rotor blades being substantially identical to one another, and being angularly spaced apart around said mast, each said blade comprising a skin forming an airfoil and an internal region, a counterweight rod and a spar extending longitudinally inside said region, said spar comprising a bundle of aligned fibers which, inside said region are bonded to each other, to said skin, and to said counterweight rod, said bundle being doubled and divided so as to form inboard of said skin a pair of U-shaped bight portions, each with a bend and a pair of arms, said arms being stiffly flexible, said fibers inside said region constituting continuations of the fibers in said bight portions, said fibers in bight portions being bonded together, whereby the total cross-section area of said fibers is substantially constant from the inboard end of said arms through the major portion of the length of the spar;

attachment means attaching each of said bight portions to said mast at locations spaced apart from one another and substantially spaced from the center of said shaft, both on the same side of the center of the mast;

a longitudinally-extending torque tube rigidly attached to said counterweight rod at a first end of each said torque tube, and a first bearing member adjacent to the other end of said torque tube, said torque tube having an axis; and

a second bearing member mounted to said attachment means and to said first bearing member, whereby said torque tube is rotatable around its own axis, and can move in any angular direction away from said longitudinal axis around the center of said second bearing means, whereby to enable lead/lag, feathering and flapping movements.

4,616,978

FLUID SUPPLY SURGE CONTROL SYSTEM

Ronald R. Matheson, Utica, and Daniel E. Hucul, Bloomfield Hills, both of Mich., assignors to Auto/Con, Roseville, Mich.

Filed Feb. 11, 1985, Ser. No. 700,494

Int. Cl.⁴ F04B *49/02, 49/08;* **B67D** *5/00*

U.S. Cl. 417—2 **38 Claims**

1. A fluid supply system for controlling the pressure of fluid delivered from a fluid reservoir, comprising:

means for pumping the fluid from the reservoir,

a manifold,

pump outlet means communicating said pumping means with said manifold,

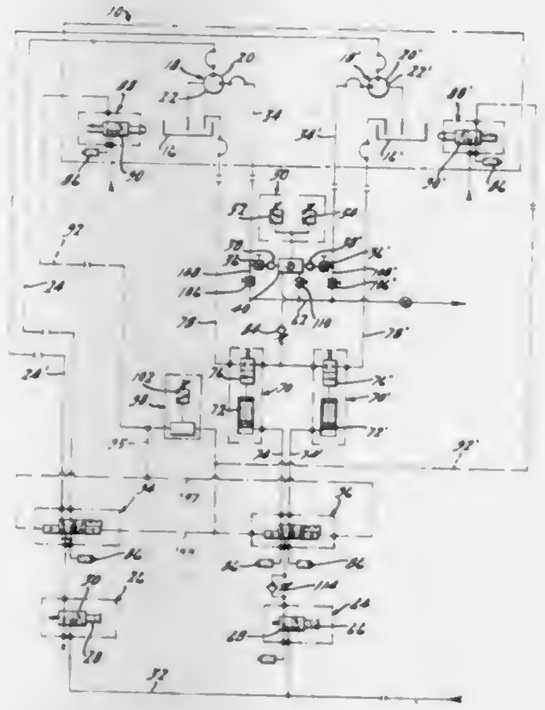
outlet means communicating with said manifold for discharging the fluid,

vent return means communicating said manifold with the reservoir for returning the fluid from said manifold to the reservoir,

high pressure sensing means communicating with said manifold, said high pressure sensing means having a sensing threshold,

low pressure sensing means communicating with said manifold, said low pressure sensing means having a sensing threshold which is less than said sensing threshold of said high pressure sensing means,

control means for said pumping means for energizing said pumping means in response to said low pressure sensing means when the pressure of the fluid in said manifold falls below said low pressure sensing means threshold, whereby the pressure of said fluid in said manifold is increased to above said low pressure sensing means threshold, and



vent control means for closing said vent return means and opening said vent return means in response to said high pressure sensing means when the pressure of the fluid in said manifold exceeds said high pressure sensing means threshold, whereby the pressure of said fluid in said manifold is decreased to below said high pressure sensing means threshold wherein when the pressure sensed in said manifold is between said high and low pressure sensing means thresholds, said pumping means is deenergized and said vent return means is closed.

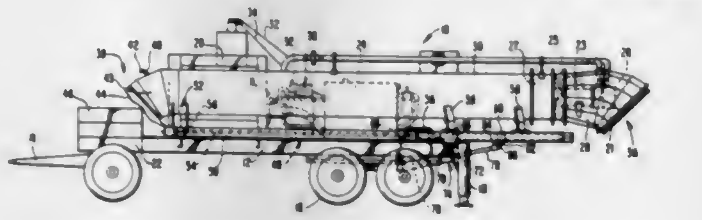
4,616,979
MOBILE PUMP SYSTEM

Maurice A. Hynes, Fort Lauderdale, and Roger L. Freeman, Lauderhill, both of Fla., assignors to Atlantic Hydrodynamics, Inc., Fort Lauderdale, Fla.

Filed Jun. 29, 1983, Ser. No. 509,020

Int. Cl.⁴ F04B *17/06, 35/06*

U.S. Cl. 417—231 **14 Claims**



1. A mobile pump system comprising:

a self-contained power source;

hydraulic fluid supply means powered by said power source for supplying pressurized hydraulic fluid to the pump system;

a hydraulic motor;

a hydraulically-driven submersible pump driven by said hydraulic motor;

a rigid discharge tube having an intake end and a discharge end, said hydraulic pump and said hydraulic motor located within said discharge tube near the intake end of said discharge tube;

a hydraulically-actuated, linearly extensible, multi-angular extension means fixed to said discharge tube for linearly extending and retracting said discharge tube at various angles with respect to a horizontal plane;

a single pivot assembly fixed to said hydraulically-actuated linearly extensible extension means for pivoting said discharge tube and said extension means, said single pivot assembly comprising a pivot bracket fixed to said extension means, said pivot bracket having a pivot point located below the horizontal plane of said extension means;

hydraulically driven pivot actuating means fixed to said hydraulically-actuated, linearly extensible, multi-angular extension means for pivoting said discharge tube and said extension means about said pivot point, said pivot actuating means comprising a hydraulically extensible pivot arm, flexibly coupled to said extension means so that as said pivot arm is actuated said extension means and said rigid discharge tube are pivoted about said pivot point;

control means for independently controlling and maintaining the supply of hydraulic fluid in the pump system; and

transport means for transporting the pump system from one position to another position.

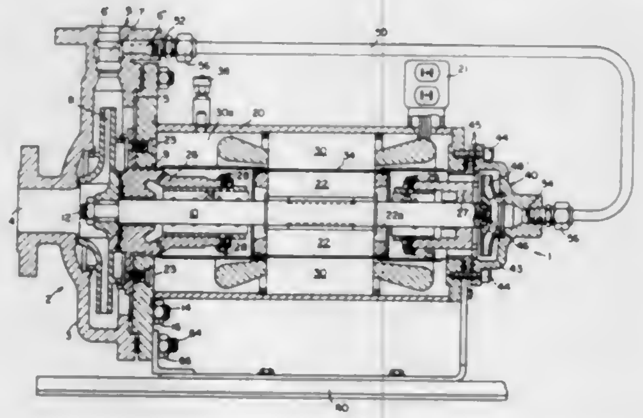
4,616,980
CANNED MOTOR PUMPS PRESSURIZED RECIRCULATION SYSTEM

Richard G. Carpenter, Doylestown, Pa., assignor to Crane Co., New York, N.Y.

Continuation of Ser. No. 558,602, Dec. 6, 1983, abandoned. This application Jun. 10, 1985, Ser. No. 745,811

Int. Cl.⁴ F04B *17/00*

U.S. Cl. 417—357 **5 Claims**



1. A canned motor pump pressurized recirculation system which uses an enclosed motor pump, comprising:

A. a main unit, including:

a main pump;

an auxiliary pump comprising a casing and an impeller disposed therein;

motor means positioned between said main pump and said auxiliary pump for driving and for fluidly connecting said main pump and said auxiliary pump, said motor means including a rotor, a shaft associated with said rotor, a stator which surrounds said rotor, a sleeve positioned between said rotor and said stator, and means providing a flow passage from said auxiliary pump to a high pressure portion of said main pump through said sleeve; and

B. A recirculation line positioned externally of said main unit and being connected between said main pump and said auxiliary pump, said recirculation line being adapted to pass fluid from said main pump unobstructedly to said

auxiliary pump from which the fluid will be passed through said motor means to the high pressure portion of said main pump;

said auxiliary pump casing and impeller being removably secured to one end of said motor means with said impeller disposed externally of said sleeve.

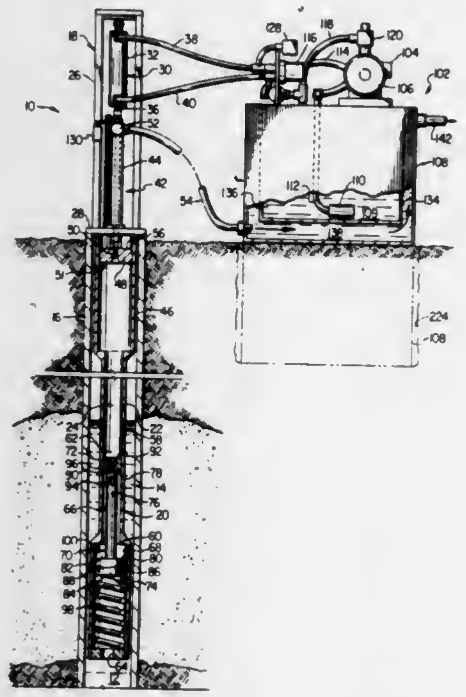
4,616,981
PUMPING APPARATUS WITH A DOWN-HALE SPRING LOADED PISTON ACTUATED BY FLUID PRESSURE

Eugene D. Simmons, 1108 N. Pennsylvania; Graham C. Thomson, III, 1502 N. Ohio, and Richard J. Reynaud, 1502 N. Ohio, all of Roswell, N. Mex. 88201

Filed Oct. 19, 1984, Ser. No. 662,963

Int. Cl.⁴ F04B *47/08*

U.S. Cl. 417—378 **11 Claims**



1. A pumping apparatus for pumping a fluid from a reservoir to a collection location, tubing interconnecting the reservoir and collection location, comprising:

a reservoir unit including:

(a) a housing secured to said tubing, the interior of the housing being a fluid communication with the passage in the tubing, the interior of the housing defining a top cylinder and a bottom cylinder, the cross section of the bottom cylinder being larger than the cross section of the top cylinder;

(b) a piston assembly including a top piston having an outer face and an inner face for sliding sealed motion along the top cylinder of the housing, a bottom piston having an outer face and an inner face for sliding sealed motion along the bottom cylinder of the housing and a member interconnecting the top and bottom pistons so that the top and bottom pistons move jointly, the inner face of the top and bottom pistons and housing defining a storage chamber therebetween, the outer face of the top piston being exposed to fluid in the passage of the tubing, the outer face of the bottom piston being exposed to fluid in the reservoir through an opening formed in the housing permitting fluid from the reservoir to enter the interior of the housing, the piston assembly being movable relative the housing from a rest position to increase the volume of the storage chamber;

(c) spring means acting between the housing and piston assembly for urging the piston assembly to the rest position, movement of the piston assembly from the rest position causing potential energy to be stored within said spring means to increase the force exerted by said spring means on the piston assembly to move the piston assembly to the rest position;

(d) first check valve means for permitting flow of fluid from the reservoir to the storage chamber when the storage chamber fluid pressure is less than the reservoir fluid pressure and preventing reverse flow;

(e) second check valve means for permitting flow of fluid from the storage chamber to the passage in the tubing when the storage chamber of fluid pressure exceeds the fluid pressure in the passage in the tubing and preventing reverse flow; and

a pumping unit positioned along the tubing remote from the reservoir unit comprising:

(a) a pulser piston having a first face;

(b) structure defining a pulser piston cylinder, the pulser piston for sliding sealed motion along the pulser piston cylinder, the structure being secured to the tubing so that the first face of the pulser piston is in fluid communication with the fluid in the passage in the tubing;

(c) a valve positioned in the tubing operable between closed and open positions, the valve in the closed position stopping flow through the passage in the tubing and in the open position allowing flow through the passage in the tubing;

(d) pumping means for moving the pulser piston in a first direction relative to the pulser piston cylinder with the valve closed to pressurize the fluid in the passage in the tubing between the valve and reservoir unit to a predetermined pressure, the predetermined pressure acting against the outer face of the top piston to move the piston assembly away from the rest position, the volume of the storage chamber increasing with fluid from the reservoir passing through the first check valve means to the storage chamber, the movement of the piston assembly from the rest position storing potential energy in the spring means, said pumping means further for permitting the pulser piston to move in the opposite direction relative the pulser piston cylinder with the valve opened, the spring means urging the piston assembly to the rest position, causing the storage chamber to reduce in volume and pump fluid from the storage chamber through the second check valve means and valve to the collection location.

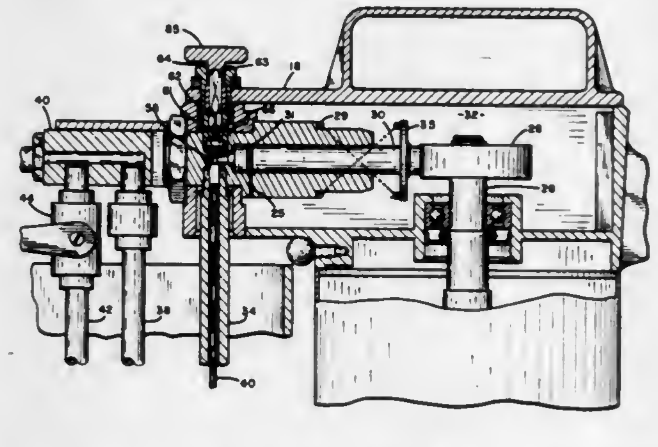
4,616,982
SUBMERSIBLE HIGH PRESSURE PUMP

Vernon K. Quarve, Minneapolis, Minn., assignor to Graco Inc., Minneapolis, Minn.

Filed Oct. 17, 1984, Ser. No. 661,944

Int. Cl.⁴ F04B *43/06*

U.S. Cl. 417—383 **13 Claims**



1. A submersible high pressure pump and hydraulic pump driving system, comprising:

(a) a submersible pump head including an interior volume separated into two chambers by a diaphragm membrane, one of said chambers being a liquid pumping chamber and the other chamber being an oil chamber, and including inlet and outlet check valves in said liquid pumping chamber;

(b) a reciprocable piston and cylinder assembly, including an oil pumping chamber, said cylinder opening into said oil pumping chamber; said reciprocable piston and cylinder assembly being elevated above and spaced apart from said submersible pump head;

(c) an elongated tube connected between said oil pumping chamber and said oil chamber; whereby said pump head may be immersed in liquid and said piston and cylinder assembly may be spaced away from immersion in liquid; and

(d) an incompressible solid in said tube, said solid sized to occupy substantially the entire volume of a predetermined length of said tube, said length being determined by subtracting from the total length of said tube the length of a volume of oil in said tube corresponding to the volumetric displacement of said reciprocable piston, while permitting free reciprocating motion of said solid in said tube; said oil pumping chamber, said elongated tube and said oil chamber being filled with oil.

4,616,983

PISTON OR PLUNGER PUMP

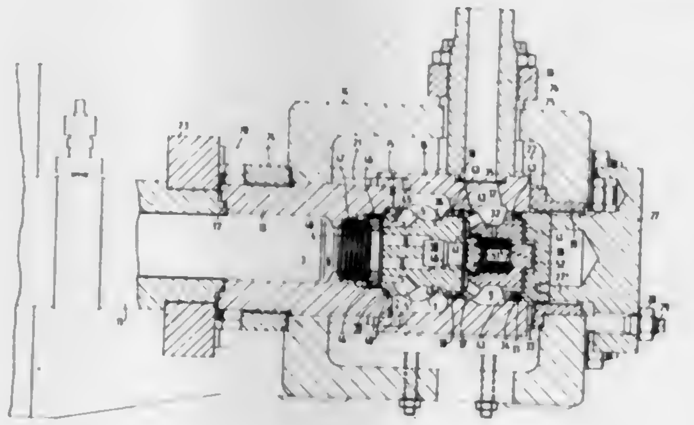
Nabil Hanafi, Bad Urach, Fed. Rep. of Germany, assignor to Uraca Pumpenfabrik GmbH & Co. KG, Bad Urach, Fed. Rep. of Germany

Filed Feb. 1, 1985, Ser. No. 697,348

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1984, 3404520

Int. Cl.⁴ F04B *21/02;* **F16J** *10/02*

U.S. Cl. 417—571 **13 Claims**



1. A plunger pump, comprising at least one plunger; a cylinder part coaxial thereto and accommodating a working chamber for the plunger; a cylinder head which has a cylindrical pressure chamber filled with a pump medium and which is coaxially disposed relative to the plunger and is connected to a pressure line; a central valve housing which has end faces and is axially positioned between the working chamber of the plunger and the pressure chamber, said valve housing being sealed relative to the cylinder part and also the cylinder head by means of seals and having seats; a suction valve and a discharge valve arranged at said end faces on said seats, said valve housing having at least one axial passage controlled by the discharge valve and a suction passage extending from a peripheral surface of the valve housing to a suction valve side end surface thereof and controlled by the suction valve, the central valve housing being inserted through an end face opening formed in an end face of the cylinder head remote from the plunger into the cylinder head; a base part which closes said opening and secures said valve housing, said valve housing being sealed relative to the cylinder part and the cylinder head by the base part which axially clamps the central valve housing against the cylinder part; a piston-like part which has two end faces and is inserted into the pressure chamber and which is acted on at its two end faces by the pressure of the pump medium in the pressure chamber; said end faces having similar cross-section whereby fluid forces acting on said end faces cancel each other to a large degree; and base part pressing ring seals, which are arranged between the piston-like part and the base part and also the central valve housing in peripheral grooves formed between the respective parts to transmit axial clamping forces radially outwardly against a wall of the pressure chamber while deforming said seals.

4,616,984

SLIDING-VANE ROTARY COMPRESSOR WITH SPECIFIC CYLINDER BORE PROFILE

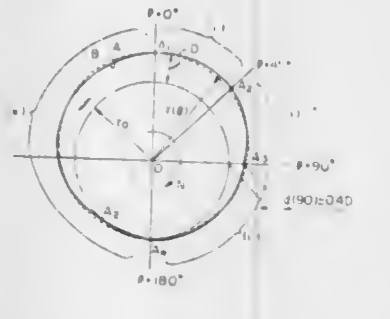
Mitsuo Inagaki, Okazaki; Kenji Takeda, Nukata; Shigeki Iwanami; Hideaki Sasaya, both of Okazaki, and Eiichi Nagasaku, Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan

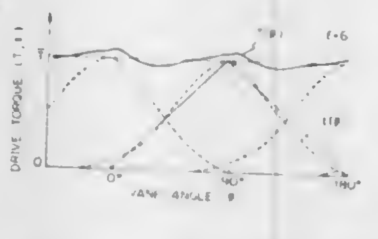
Filed Mar. 14, 1985, Ser. No. 711,839

Claims priority, application Japan, Mar. 14, 1984, 59-47178

Int. Cl.⁴ F04C *18/00*

U.S. Cl. 418—150 **5 Claims**





1. In a sliding-vane rotary compressor including a vaned rotor and a pump cylinder having a cylinder bore, said compressor comprising four slidable vanes spaced apart from each other at an equal angular distance, said compressor having a single pumping chamber defined by said rotor and said pump cylinder, said vanes engaging the wall of said cylinder bore during rotation of said rotor to form cycles of intake, compression and delivery strokes for said vanes, the improvements wherein said cylinder bore has such a profile that the individual torque applied to an individual vane during each cycle of compression and delivery strokes of said vane varies along a torque curve which approximates an isosceles triangle, the lower side of which corresponds to a range of rotational angle of approximately 180°.

4,616,985

VANE TYPE COMPRESSOR HAVING AN IMPROVED ROTATABLE SLEEVE

Toshihiko Hattori; Yuji Akagi, and Hideo Kohara, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 30, 1984, Ser. No. 595,493

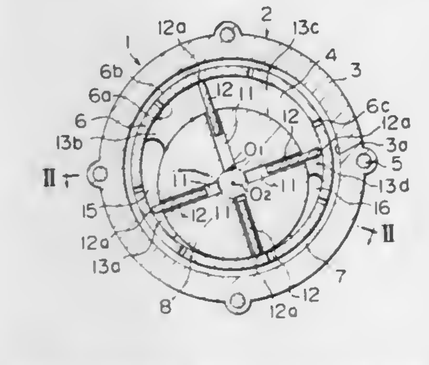
Claims priority, application Japan, Mar. 31, 1983, 58-57619

Int. Cl.⁴ F04C *29/00*

U.S. Cl. 418—173 **7 Claims**

1. A vane type rotary compressor comprising a housing having a cylindrical inner wall surface, a rotatable sleeve having outer and inner surfaces and disposed in the housing for rotation about a first longitudinal axis, a rotor disposed in the sleeve for rotation about a second longitudinal axis which is offset from the first longitudinal axis, a plurality of vanes carried by the rotor to extend in radial directions and maintained in contact with the inner surface of the sleeve to divide the interior of the sleeve into a plurality of working chambers, the rotatable sleeve being made of an Si-Al type alloy containing 12 to 25% by weight of Si, said sleeve being age hardened so that Si particles are distributed substantially uniformly therein,

said sleeve having an anodic oxidation coating of 100 to 300 microns thickness on at least the outer surface thereof and a



coating of wear resistant resin overlying the anodic oxidation coating formed on the outer surface thereof.

4,616,986

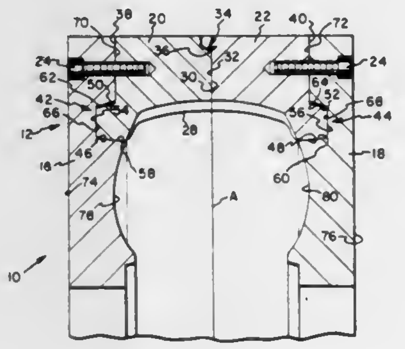
LIGHT WEIGHT TIRE MOLD FOR TWO PIECE TREAD RING

Howard L. Hill, Keyser, W. Va., and Gary L. Gillum, Cumberland, Md., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 19, 1984, Ser. No. 662,654

Int. Cl.⁴ B29C *33/00*

U.S. Cl. 425—32 **9 Claims**



1. A two piece tire vulcanizing press mold for use in a tire press, said mold having sidewall rings each having means for molding a tire sidewall and having a thickness to withstand the press pressure and a split tread ring with a tread pattern inside thereof, at least one part of said tread ring being a single piece and extending from an outside diameter of the mold to the innermost inside diameter of the mold tread pattern, at least one sidewall ring engageably mating with, and extending along an outer face of said at least one half tread ring which alone forms the parting line for the mold.

4,616,987

INTERNAL BORE IMPRESSION TOOL

Charles L. Boyers, Carmel, and John W. Finlayson, Ventura, both of Calif., assignors to Vetco Offshore Industries, Inc., Ventura, Calif.

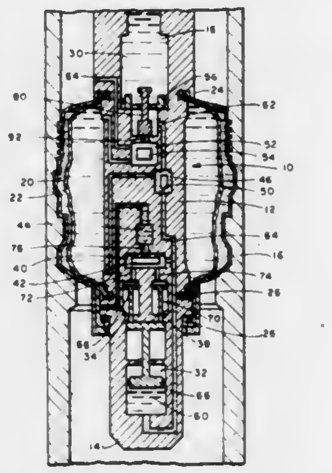
Filed Jun. 17, 1985, Ser. No. 745,053

Int. Cl.⁴ B29C *3/00;* **B30B** *5/02*

U.S. Cl. 425—89 **14 Claims**

1. A tool for taking the impression of an area of the internal bore of a tubular member or of a joint between tubular members joined together comprising,

- a body member of a diameter to enter the bore,
- a pair of resilient membranes each surrounding the outer periphery of said body member,
- means in said body member for directing a casting compound between said membranes and for inflating and expanding said membranes into engagement with said bore, and



- means for deflating said expanded membranes to allow said tool to be withdrawn from said bore.

4,616,988

MOULDING MACHINE FOR THE PRODUCTION OF CACIOCAVALLO AND SIMILAR CHEESES

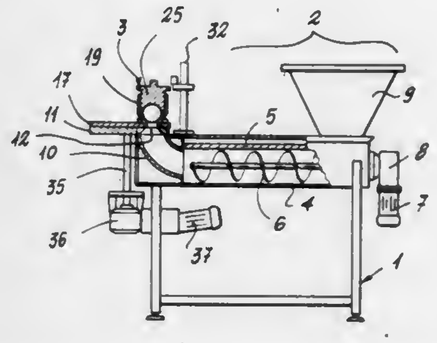
Gabriele Muzzarelli, Via Marzabotto, 116, 41100 Modena, Italy

Filed Feb. 15, 1985, Ser. No. 701,984

Claims priority, application Italy, Feb. 29, 1984, 21050/84[U]

Int. Cl.⁴ B29C *33/34, 39/04, 43/04*

U.S. Cl. 425—150 **17 Claims**



1. A moulding machine for the production of caciocavallo, provola, scamorza and similar plastic curd cheeses, comprising a thrust section for the plastic curd, and an actual moulding section fed by the thrust section and comprising:

(a) a fixed plate provided with apertures for receiving the plastic curd supplied by the thrust section; and

(b) a stepwise-rotating plate provided with a series of moulds which have an inlet alignable with said aperture and are removably connected to the rotating plate in order to allow extraction of the moulded whole cheese,

each said mould having an internal cavity of cross-sectional area in a plane transverse to the direction of plastic curd flow at all times greater than cross-sectional area of said aperture.

4,616,989
APPARATUS FOR THE INCORPORATION OF GLASS FIBERS INTO THERMOPLASTIC SYNTHETIC RESINS

Heinz Mewes, Troisdorf-Spich; Wilhelm Nachtigall, Troisdorf-Eschmar; Michael Wienand, deceased, late of Siegburg; by Anneliese Wienand, legal representative; by Hans-Jürg W. Wienand, heir, both of Siegburg; by Michael Wienand, heir, Krefeld; by Rudolf J. Wienand, heir; by Karl F. Wienand, heir, both of Siegburg, and by Elisabeth H. M. Wienand, heir, Krefeld, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

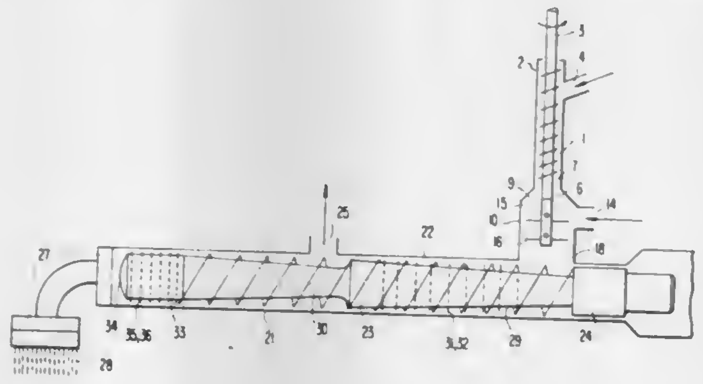
Continuation of Ser. No. 877,805, Feb. 15, 1978, abandoned.

This application Aug. 27, 1982, Ser. No. 411,998

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1977, 2706755

Int. Cl.⁴ B29B *7/14, 7/18*

U.S. Cl. 425—203 **19 Claims**



1. An apparatus for incorporating glass fibers into a molten thermoplastic synthetic resin which comprises a two-stage degasifying screw-type extruder having an inlet for entry of a premix of preheated glass fiber and molten thermoplastic synthetic resin and an extrusion die at an outlet end thereof for extruding a mixture of said glass fibers and said molten thermoplastic synthetic resin, means for preheating glass fibers to a temperature from 60° to 120° C. below the melting point of the thermoplastic synthetic resin up to the melting point of the synthetic resin, a melt extruder for extruding molten thermoplastic synthetic resin, a premixing chamber provided with one inlet port for entry of the preheated glass fibers, with another inlet port for separate entry of the molten thermoplastic synthetic resin and with an outlet port for discharging a premix of glass fibers and molten thermoplastic synthetic resin, and feeding means for introducing the preheated glass fibers in metered amounts into the inlet port of said premixing chamber; said outlet port of said premixing chamber being directly connected to said inlet of the degasifying extruder to discharge the premix of glass fibers and molten thermoplastic synthetic resin directly into said degasifying screw-type extruder.

4,616,990
VARIABLE PISTON ARRANGMENT FOR ROLL AND BREAD DIVIDING AND SHAPING MACHINE

Walter Kopp, Carteret, N.J., assignor to Adam Equipment Corp., Eatontown, N.J.

Filed Apr. 10, 1985, Ser. No. 721,874

Int. Cl.⁴ A21C *5/02*

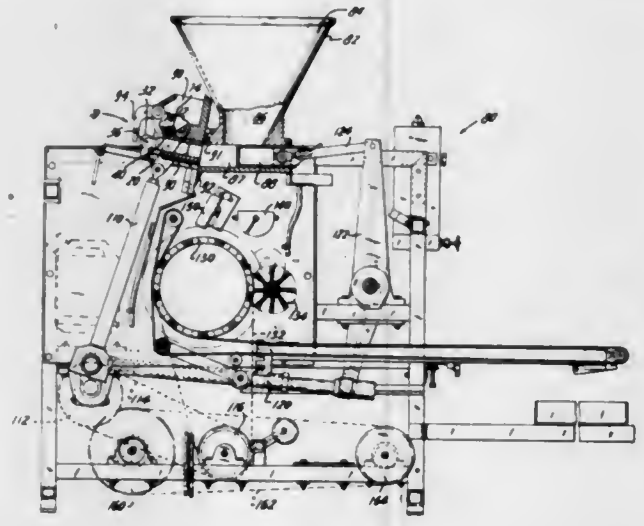
U.S. Cl. 425—239 **16 Claims**

1. A variable housing-piston arrangement especially adapted for use in conjunction with a roll and bread dividing and shaping machine comprising, in combination,

a piston-housing including an open internal area adapted to receive baking dough, said piston-housing itself being adapted to function as a piston within a separate open internal area of a separate housing adapted to receive dough, and said piston-housing being adapted to receive at least one separate and independently operable piston within said open internal area of said piston-housing;

at least one separate piston disposed in said open internal area of said piston-housing, said separate piston being adapted to be fixed in position within said piston-housing or be made to move, independently of said piston-housing, within said internal area of said piston-housing, and

piston control means for independently controlling operation and movement of said separate piston within said internal area of said piston-housing, and controlling movement of said piston-housing itself, whereby fixing the position of said piston-housing and withdrawal of a portion of said separate pistons, by means of said piston control means and dough entering said internal area of said piston-housing, a predetermined distance out from said internal area of said piston-housing leaves a predetermined vacated area in said piston-housing for received baking dough, which area conforms in size and shape to the desired size and shape of the roll or bread to be baked, and withdrawal of said piston-housing and said separate piston as a single unit from said separate open internal area of said separate housing, by means of said piston control means, leaves a predetermined vacated area in said separate housing for receiving baking dough which area conforms in size and shape to the desired size and shape of the roll or bread to be baked.



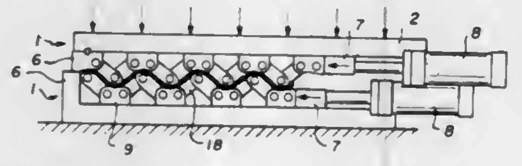
4,616,991
APPARATUS FOR THE MANUFACTURE OF A CORRUGATED WAFER BOARD PANEL

Lars Bach, and Eduard Stark, both of Edmonton, Canada, assignors to Her Majesty the Queen in right of the Province of Alberta as represented by the Minister of Energy and Natural Resources, Edmonton, Canada

Filed Aug. 15, 1985, Ser. No. 765,840

Int. Cl.⁴ B29C *53/24*

U.S. Cl. 425—396 **4 Claims**



1. A platen assembly, for use in forming corrugated wafer board panels, comprising:

support means forming a planar support surface;

parallel, spaced apart, elongate end members forming inner working faces that are generally perpendicular to the support surface, at least one of said end members being movable toward the other along the support surface while remaining parallel thereto;

a plurality of elongate bracing elements positioned on the support surface in spaced relationship, between the end members, said bracing elements being slidable along the surface in parallel relationship;

link means, pivotally interconnecting each pair of adjacent bracing elements, for providing in conjunction with said bracing elements a broad substantially non-porous platen surface whose configuration can be mechanically converted between a substantially planar form and a corrugated form; and

means for moving the end members together and apart to convert the link means between the corrugated and planar forms.

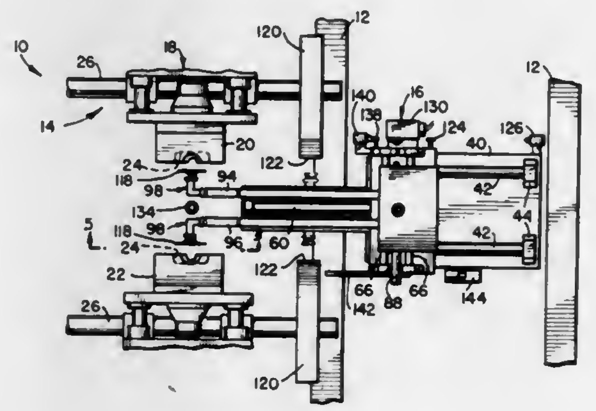
4,616,992
SHUTTLE-TYPE BLOW MOLDING MACHINE WITH IN-MOLD LABELING

Paul M. Oles, York, Pa., assignor to Y Technipak Corp., York, Pa.

Filed Jun. 12, 1985, Ser. No. 743,948

Int. Cl.⁴ B29C *59/02*

U.S. Cl. 425—503 **11 Claims**



1. A label transfer assembly adapted to place labels in label discharge locations at the bottoms of recesses in open mold halves of a blow molding machine, the assembly including a label transfer carriage, first guide means supporting the label transfer carriage for forward and back movement along a first path toward and away from the label discharge locations, first drive means for moving the label transfer carriage forward and back along the first path, a pair of slide bodies, second guide means supporting the slide bodies on the label transfer carriage for movement back and forth along a second path extending transverse to said first path, a mechanical drive connection directly joining the slide bodies comprising a shaft rotatably mounted on the label transfer carriage between the slide bodies, a double ended pivot arm centrally mounted on the shaft with the ends of the arm extending towards the slide bodies, and a pair of follower and groove connections each joining one end of the pivot arm to one of the slide bodies so that the arm directly joins the slide bodies to form a direct drive between the slide bodies, said connections being located at laterally offset locations with respect to said second path such that movement of one slide body in either direction along said second path is transmitted through the connections and arm to the other slide body reversed in direction to move the other slide body along the second path in an opposite direction, second drive means for simultaneously moving said slide bodies along said second path in opposite directions between closed and opened positions, label transfer heads mounted on the slide bodies and a pair of label magazines on the assembly, the magazines including means for supplying labels at opposed spaced label pickup locations whereby the first drive means moves the label transfer carriage back and forth between locations where the label transfer heads are adjacent the pickup locations and the label discharge locations and the second drive means moves the slide bodies between closed and open positions and the label pickup heads are moved from retracted positions to positions adjacent the label pickup and label discharge locations, dependent upon the position of the label transfer carriage.

4,616,993
LIQUID FUEL COMBUSTION APPARATUS

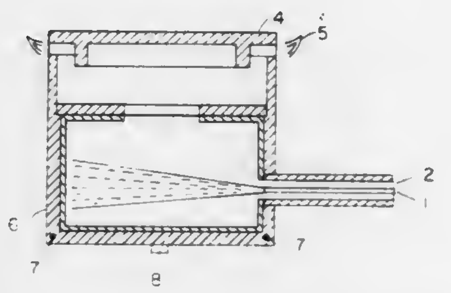
Tadashi Hikino, Ikoma, and Kunihiro Turuda, Kashihara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jul. 3, 1984, Ser. No. 627,726

Claims priority, application Japan, Jul. 7, 1983, 58-123828; Jul. 7, 1983, 58-123829; Jul. 26, 1983, 58-136992

Int. Cl.⁴ F23N *1/00;* **F23D** *11/44*

U.S. Cl. 431—41 **18 Claims**



1. A liquid fuel combustion apparatus, comprising:

a circular vaporizer which includes a burner head, for burning a mixed gas of fuel and air, disposed on a circular metal vessel, said circular metal vessel having an interior defined by at least an inner wall;

an electric sheath heater embedded in said circular metal vessel, for supplying heat to said circular metal vessel in addition to heat feedback by thermal conduction from said burner head to maintain said circular metal vessel at a temperature for boiling a liquid fuel film;

a thermometer attached to said circular metal vessel;

an air inlet and a liquid fuel inlet being in fluid communication with said interior of said circular metal vessel; and

means for reducing accumulation of tar which results from boiling a liquid fuel film in said circular metal vessel, said means being a film coated on at least part of said inner wall, said film consisting essentially of 15.0 to 50.0 wt.% high-thermal conductive and high-emissive material, 0.1 to 15.0 wt.% catalyst for decomposing organic materials and 40.0 to 80.0 wt.% binder.

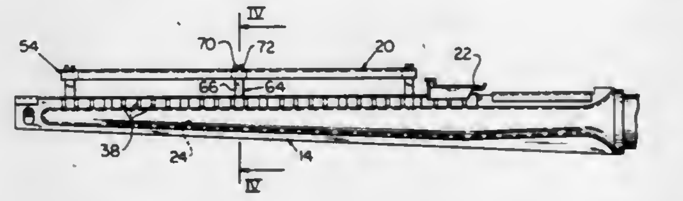
4,616,994
GAS BURNER WITH MEANS FOR REDUCING NO_x EMISSIONS

Ronald S. Tomlinson, Antioch Township, Davidson County, Tenn., assignor to Heil-Quaker Corporation, Benton Harbor, Mich.

Filed Oct. 5, 1984, Ser. No. 658,204

Int. Cl.⁴ F23D *14/12*

U.S. Cl. 431—347 **17 Claims**



1. In a gas burner having a plurality of serially arranged burner ports for producing a gas flame which extends along at least a portion of the length of the burner, said flame having an inner, high temperature region and an outer region of lower temperature, means for reducing NO_x emissions during operation of said burner comprising:

a metal insert extending along and proximate to at least a portion of said serially arranged burner ports, said insert disposed within said lower temperature region of said gas flame directly adjacent said higher temperature region of said flame; and

support means extending from said insert into at least one of said burner ports, said support means being slightly smaller in cross section than said burner port so as to be movably retained within said burner port to permit slight longitudinal movement of said insert in response to thermal expansion and contraction of said insert relative to said burner as an incident of operation of said burner.

4,616,995
TUNNEL DRYER FOR BRICKS AND LIKE OBJECTS

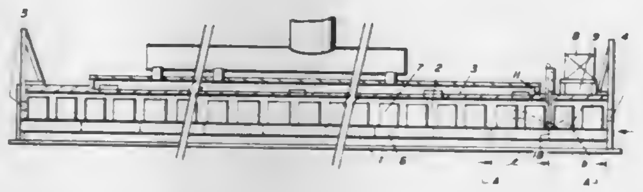
Hans Lingl, Jr., Neu-Ulm, Fed. Rep. of Germany, assignor to Lingl Corporation, Paris, Tenn.

Filed Jun. 28, 1985, Ser. No. 749,755

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1984, 3425523

Int. Cl.⁴ F27D *3/00;* **F27B** *9/26, 7/00*

U.S. Cl. 432—9 **10 Claims**



9. A method for drying unfired objects in a dryer of the type having a tunnel defining a drying spaced in which the unfired objects are to be located and through which heated gases flow, said method comprising the steps of:

providing a continuous flow of heated gases in said drying space;

positioning a vertically adjustable partition downwardly within said tunnel at an intermediate portion of said gas flow to force the gases downwardly and under said vertically adjustable partition; and

exhausting said continuous flow of heated gases from said drying space.

4,616,996
NON-OXIDIZING ATMOSPHERE FIRING FURNACE FOR CERAMIC ARTICLES

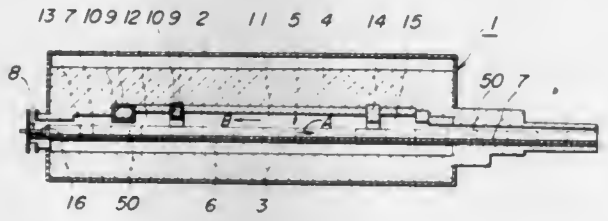
Takehiro Kajihara, Komaki, and Mitsugu Suzuki,. Yokkaichi, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Aug. 19, 1985, Ser. No. 766,719

Claims priority, application Japan, Aug. 31, 1984, 59-133255[U]

Int. Cl.⁴ F27B *5/04, 7/00, 5/16;* **F27D** *23/00*

U.S. Cl. 432—148 **18 Claims**



1. A non-oxidizing atmosphere firing furnace for firing ceramic articles, comprising a furnace chamber filled with a non-oxidizing gas, a conveyor mechanism provided on a floor portion of the furnace chamber, said conveyor mechanism moving the ceramic articles opposite to a direction in which the non-oxidizing gas flows through the furnace chamber; and at least one partition wall having at least its surface composed of molybdenum, said partition wall being provided on a ceiling portion of the furnace chamber to define a low temperature zone on the inlet side for the ceramic articles and a high temperature zone.

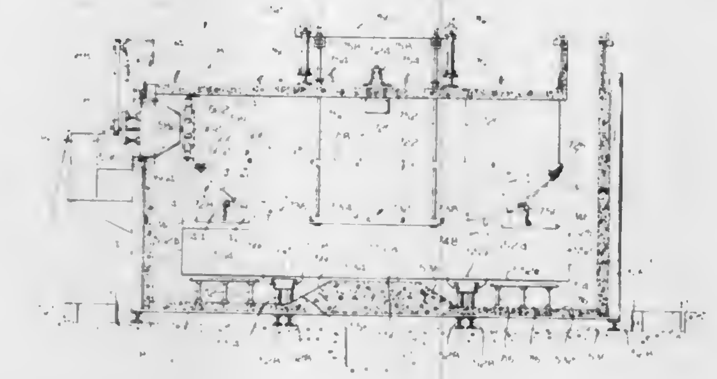
4,616,997
INGOT PUSHER FURNACE

Robert H. Ross, Meadville, Pa., assignor to Seco/Warwick Corporation, Meadville, Pa.

Continuation-in-part of Ser. No. 770,438, Aug. 29, 1985, Pat. No. 4,585,412, which is a continuation-in-part of Ser. No. 585,324, Mar. 1, 1984, Pat. No. 4,540,363. This application Jan. 23, 1986, Ser. No. 821,826

Int. Cl.⁴ F27B *9/00;* **F27D** *7/04*

U.S. Cl. 432—148 **9 Claims**



1. An ingot pusher furnace for heating an ingot comprising:

an enclosure having a base, a plurality of vertical side walls connected to said base and a top wall;

means for heating said enclosure by heating a gaseous medium therein;

means for moving said gaseous medium within said enclosure;

a fixed baffle assembly suspended from said top wall, said baffle assembly including a horizontal top baffle plate and a bottom baffle sheet disposed below said top plate, said bottom baffle sheet including a center portion and a pair of first and second upwardly sloping end portions connected to said center portion, said center portion being positioned substantially parallel to an upper surface of a center portion of the ingot;

a first deflection baffle being rotatably supported at its one end by a pipe to said baffle assembly adjacent the first sloping end portion;

a second deflection baffle being rotatably supported at its one end by a pipe to said baffle assembly adjacent the second sloping end portion;

linkage means connected to the other ends of said first and said deflection baffles for moving said first and second deflection baffles between a horizontal position parallel to the upper surface of the ingot and an acute angle position relative to the horizontal position; and

whereby when the gaseous medium is forced between the upper surface of the ingot and the deflection baffles its velocity is increased from the ends of the ingot to the center of the ingot so as to provide uniform heat transfer throughout the ingot.

4,616,998
FACE BOW AND METHOD OF USE IN ORTHODONTIC PROCEDURES

Brian W. Wong, 215 Red Rock Way #J106, San Francisco, Calif. 94131

Filed Sep. 12, 1984, Ser. No. 650,283

Int. Cl.⁴ A61C *19/04*

U.S. Cl. 433—73 **10 Claims**

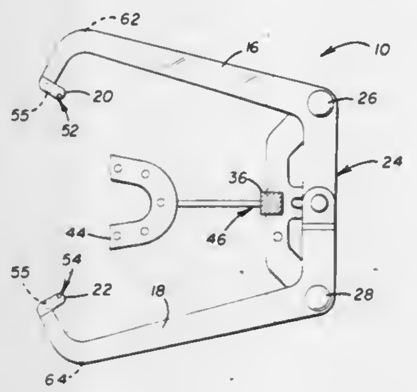
1. A method for accurately obtaining gnathological relationship data from a patient, the steps comprising:

forming a radiolucent face bow having lateral arm pieces formed from radioluscent material selected for permitting anatomical features of the patient to be clearly viewed in a cephalometric head film;

positioning a radiopaque marker on said radioluscent face bow in a position to enable accurate detection of said marker in a cephalometric head film;

mounting said radioluscent face bow upon the patient's head in a predetermined position relative to selected external anatomical features of the patient;

obtaining one or more dentition impressions of the patient by means of the radioluscent face bow; and



producing a cephalometric head film of the patient with the radioluscent face bow in place on the patient in order to enable accurate correlation between anatomical features of the patient and said radiopaque marker on said radioluscent face bow.

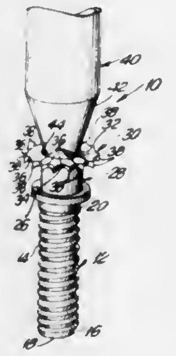
4,616,999
BONDING DENTAL PIN

Bernard Weissman, New York, N.Y., assignor to IPCO Corporation, White Plains, N.Y.

Filed Jun. 7, 1985, Ser. No. 742,429

Int. Cl.⁴ A61C *5/04*

U.S. Cl. 433—225 **23 Claims**



1. A bonding dental pin for aiding in retention of a thin layer of bonding material onto a tooth structure, comprising:

an elongated body member;

a lower body portion of said body member including anchoring means for securing said lower body portion into the tooth structure;

said body member including a neck portion for embedding in the bonding material;

a radially projecting stop flange interposed between said lower body portion and said neck portion for limiting insertion depth of said body portion into the tooth structure;

a radially projecting head portion flange disposed at an upper end of said neck portion and longitudinally spaced from said stop flange for embedding in the bonding material;

retention means for securing an upper body portion of said body member within the bonding material; and

said retention means including providing said head portion flange with an inwardly directed concave lower surface and said stop flange with an inwardly directed concave upper surface, said concave lower and upper surfaces confronting each other to define a pocket therebetween for receiving the bonding material therein.

4,617,000
MOORING BUOY WITH INDIVIDUALLY FLOATABLE MAIN BODY AND TURNTABLE

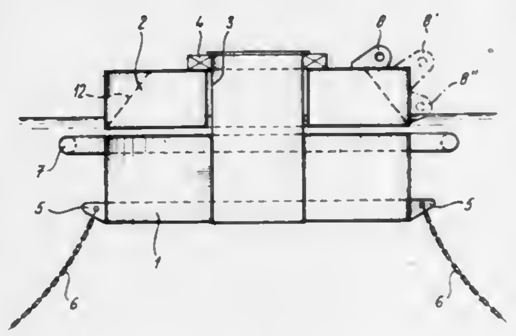
Michel Girardot, and Leendert Poldervaart, both of La Turbie, France, assignors to Single Buoy Moorings, Inc., Marly, Switzerland

Continuation of Ser. No. 534,199, Sep. 21, 1983, abandoned. This application Jun. 13, 1985, Ser. No. 744,882

Claims priority, application Netherlands, Jun. 21, 1983, 8302203

Int. Cl.⁴ B63B *22/02*

U.S. Cl. 441—3 **5 Claims**



1. A buoy exhibiting increased stability and simplified serviceability and comprising a main body having sufficient buoyancy to float individually and provided with means for the attachment of anchoring chains, a central sleeve extending upwardly from said main body, and a turntable having sufficient buoyancy to float individually from said main body and rotatably supported on said central sleeve by means of a single axial radial bearing positioned between the turntable and the central sleeve, wherein said bearing is located only at the upper end of said sleeve and above the water level with an inner ring of said bearing being secured to the central sleeve and an outer ring of said bearing being secured to said turntable.

4,617,001
ELEMENTS OF A CONSTRUCTION OR ASSEMBLY SET, AND ACCESSORIES

Eric W. Parein, Faiderstraat 79, Elsene, Belgium (B-1050)

PCT No. PCT/BE82/00012, § 371 Date Jan. 12, 1983, § 102(e) Date Jan. 12, 1983, PCT Pub. No. WO82/04196, PCT Pub. Date Dec. 9, 1982

PCT Filed May 27, 1982, Ser. No. 459,572

Claims priority, application Belgium, Jun. 2, 1981, BE 204.966; Sep. 30, 1981, BE 206.117

Int. Cl.⁴ A63H *33/08*

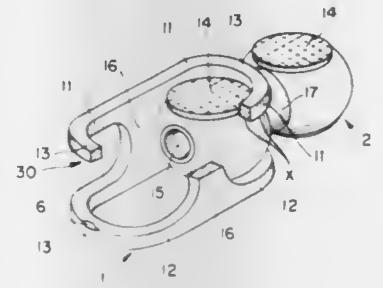
U.S. Cl. 446—102 **25 Claims**

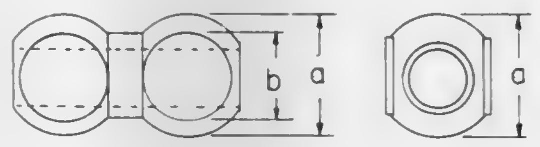
1. A detachable link type of device which comprises:

a first link having opposite end portions connected by a first intermediate portion and a second link having opposite end portions connected by a second intermediate portion,

one end portion of the first link having a spherical surface portion and the first intermediate portion being in the form of a cylinder joined to said one end portion to define a cylindrical, annular surface immediately adjacent said one end portion;

one end portion of said second link being adapted to receive and capture said one end portion of the first link in snap-fit relation, said one end portion of the second link including a pair of generally U-shaped and parallel arms extending from said second intermediate portion and which are spaced apart a distance less than the diameter of said spherical surface portion to define a slot therebetween, each of said arms including a bight, said slot being of a width substantially equal to the diameter of said cylinder and said arms being resiliently deformable to spread apart and pass said spherical surface portion therebetween and then snap back toward said cylinder to capture said spherical surface portion of the first link, said slot extending from said intermediate portion on one side of said second link to the intermediate portion on the other side of said second link and being of substantially uniform width, the ends of said slot at said intermediate portion being arcuate to define first seat portions for line contact with said part-spherical portion, the inner sides of the bights of said arms defining second seat portions for line contact with said part-spherical portion and said first and second seat portions being located with respect to each other so as to capture and hold said part-spherical portion while said cylindrical portion is disposed within said slot.





4,617,002
WIRELESS CONTROLLABLE CAR WITH A WINCH MECHANISM

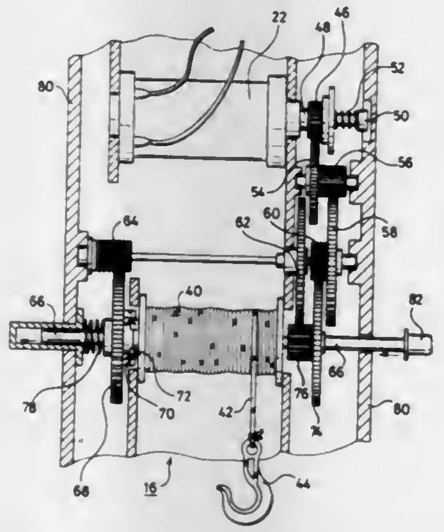
Zenichi Ishimoto, and Tadashi Konno, both of Tokyo, Japan, assignors to Nikko Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 657,874, Oct. 4, 1984, abandoned. This application Nov. 22, 1985, Ser. No. 800,375

Claims priority, application Japan, Apr. 13, 1984, 59-53454[U]

Int. Cl.⁴ A63H *17/14, 30/04*

U.S. Cl. 446—427 **1 Claim**



1. A wireless-controllable toy car with a winch mechanism, comprising driving wheels and a winch mechanism, an electric motor for driving and controlling the wheels, another electric motor for operating the winch mechanism, a single two-position changeover switch for switching a power circuit for the electric motors thereby selectively to actuate one or the other of the electric motors, the electric motor for controlling the operation of the winch mechanism having an output shaft, reduction gearing connecting said output shaft to a winch drum of said winch mechanism, idling means between said output shaft and said reduction gearing for preventing overload of the winch mechanism electric motor upon stopping of the winch drum at the end of a winding cycle of the winch mechanism, said idling means comprising a gear idly mounted on said output shaft between two fixed rings, and resilient means acting against one of said fixed rings and pressing said gear against the other of said fixed rings, the reduction gearing including a winch drum shaft on which said winch drum is supported, a reduction gear fixedly secured to said winch drum shaft, said drum having a face adjacent said reduction gear, meshing elements on said reduction gear and said face that engage with each other in the direction of rotation of the winch drum to drive the winch drum in rotation, the winch drum shaft being mounted for slidable movement axially within the winch drum, and means for sliding the shaft axially to disengage said meshing elements from each other thereby to disengage the reduction gear from the winch drum to permit free withdrawal of a filament wound on the winch drum, and means resiliently urging the winch drum shaft in a direction to engage said meshing elements.

4,617,003
ADJUSTABLE FRICTION CLUTCH ASSEMBLY

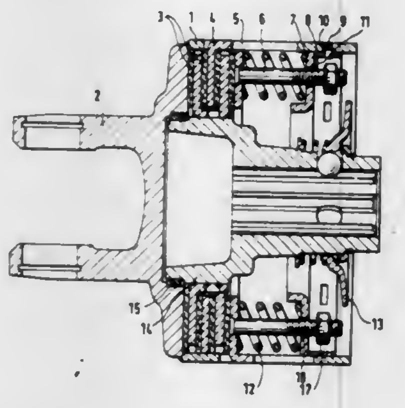
Helmut Bober, Neunkirchen; Theo Buthe, Lohmar; Karl Coenen, Hennef; Norbert Fartmann, Siegburg; Klaus Herbertz, Lohmar; Heinz Koch, Hennef; Horst Kretschmer, Colonge; Clemens Nienhaus, Lohmar; Peter Schardt, Neunkirchen; Jürgen Schibrowski, Lohmar, and Willi Schmandt, Siegburg, all of Fed. Rep. of Germany, assignors to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed May 20, 1985, Ser. No. 735,838

Claims priority, application Fed. Rep. of Germany, May 18, 1984, 3418558

Int. Cl.⁴ F16D *7/02*

U.S. Cl. 464—48 **3 Claims**



1. An adjustable friction clutch assembly, especially suitable for use in drive lines for connecting an agricultural implement with a power takeoff shaft of a tractor, comprising:

- a clutch hub consisting of a first clutch part;
- a dish-shaped clutch housing consisting of a second clutch part;
- a pressure plate;
- a friction assembly for placing said first and second clutch parts in torque transmitting engagement, said friction assembly comprising intermediate plates arranged between said clutch parts for being alternately nonrotatingly connected to one of said clutch parts and annular friction linings provided between said intermediate plates;
- axially acting pressure springs having one end acting on said friction assembly and an opposite end held in said pressure plate;
- a supporting ring operating to support said pressure plate against said clutch housing;

- radially outwardly extending cams provided on said supporting ring axially offset from the center thereof; and
- two rows of apertures provided on a cylindrical face of said clutch housing within which said outwardly extending cams engage, said two rows of apertures being axially offset and offset relative to the angle of rotation and corresponding to said cams of said supporting ring;
- said axially offset cams being selectively engageable with said axially offset apertures to enable adjustment of the spring force of said clutch assembly.

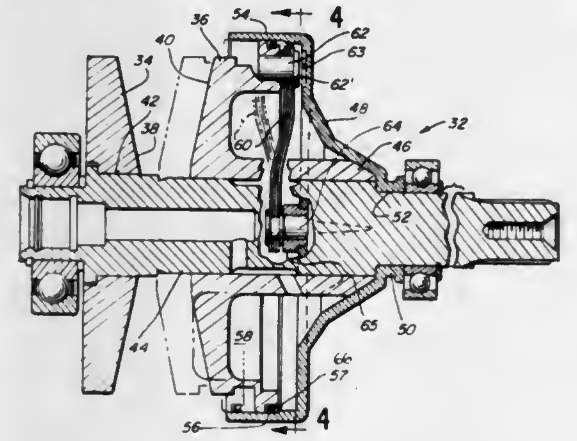
4,617,004
PULLEY STRAP DRIVE

Philip J. Mott, Des Plaines, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 13, 1984, Ser. No. 650,022

Int. Cl.⁴ F16H *55/56*

U.S. Cl. 474—8 **5 Claims**



1. A pulley especially adapted for use in a variable pulley transmission and comprising first and second generally conical flanges mounted on a rotatable shaft and defining a generally V-shaped space therebetween, said first flange being directly and drivingly connected to said shaft for rotation therewith, said second flange being journalled for axial reciprocation on said shaft and free of direct driving connection therewith, said second flange being axially movable along said shaft relative to said first flange, a drive member concentric with and directly drivingly connected to said shaft, and a flexible strap connected to said drive member and said second flange and positioned to pivot about axes generally parallel to the axis of said shaft, said strap drivingly connecting said drive member and said second flange while permitting the axial movement of said second flange relative to said first flange, said strap lying in a generally radial plane so as to flex upon axial movement of said second flange.

4,617,005
SPEED CHANGE PULLEY WITH DIAPHRAGM SPRING AND OIL SPRING

Michel Jaccod, Champigny-sur-Marne, and Jacques T. de Briel, Levallois Perret, both of France, assignors to Valeo, Paris, France

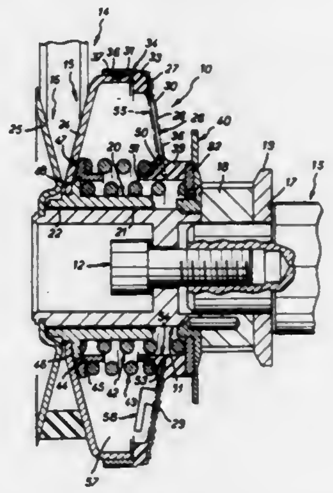
Filed Apr. 3, 1985, Ser. No. 719,488

Claims priority, application France, Apr. 6, 1984, 8405518

Int. Cl.⁴ F16H *11/06*

U.S. Cl. 474—14 **18 Claims**

1. A speed change pulley comprising a hub, two annular pulley sides disposed around the hub and facing each other, one of said pulley sides being mounted for axial movement on said hub against the bias of axially acting resilient means including a diaphragm spring, said diaphragm spring including a peripheral portion rockably axially bearing against said one pulley side, and a central portion having a plurality of radial fingers separated by slots, said central portion rockably axially bearing against an abutment member fixed axially relative to said hub, said axially acting resilient means further comprising an additional coil spring disposed around the hub and bearing against a shoulder fixed axially relative to the movable pulley side and bearing said diaphragm spring, and a spacer of elastic material being axially interposed between said coil spring and said diaphragm spring.



4,617,006
FRONT DERAILLEUR FOR A BICYCLE

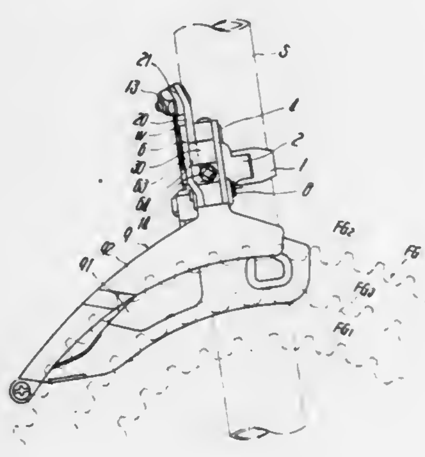
Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Oct. 30, 1984, Ser. No. 666,323

Claims priority, application Japan, Nov. 4, 1983, 58-171426[U]

Int. Cl.⁴ F16H *11/08, 11/00, 7/22*

U.S. Cl. 474—80 **7 Claims**



1. A front derailleur for a bicycle which is operated by a control wire to switch a driving chain from one front chain gear to another at a multistage front chain gear assembly, said front derailleur comprising:

- a chain guide,
- a moving means for allowing said chain guide to move axially of said multistage front chain gear assembly,
- a swinging member which has first and second end portions, said first end portion comprising a support portion for supporting one of said control wire and an outer sheath for guiding said control wire, said swinging member being pivotally supported at an intermediate portion thereof located between said first and second end portions to said moving means, and .
- an adjusting means disposed between said second end of said swinging member and said moving means, said adjusting means for adjusting a position of said swinging member with respect to said moving means to adjust a position of said chain guide with respect to each of said front chain gears.

4,617,007

BELT CONSTRUCTION FOR A CONTINUOUSLY VARIABLE TRANSMISSION, TRANSVERSE BELT ELEMENT THEREFOR AND METHODS OF MAKING THE SAME

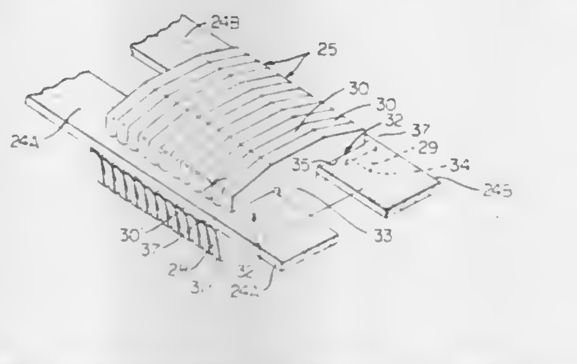
Joseph P. Miranti, Jr., Porter Township, Christian County; Larry R. Oliver, and Clyde O. Johnson, both of Springfield, all of Mo., assignors to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 501,357, Jun. 6, 1983, Pat. No. 4,533,342. This application Mar. 20, 1985, Ser. No. 713,943

The portion of the term of this patent subsequent to Aug. 6, 2002, has been disclaimed.

Int. Cl.⁴ F16G *5/00, 5/12*

U.S. Cl. 474—201 **18 Claims**



1. In a belt construction for a continuously variable transmission, said belt construction comprising an endless flexible band means, and a plurality of belt elements carried by said band means in sliding relation therewith, each belt element having slot means receiving said band means therein and having opposed faces disposed in compressed relation against adjacent faces of adjacent belt elements, each belt element having opposed sides for respectively engaging pulley faces of said transmission, said slot means for each belt element defining a pair of slots respectively interrupting said opposed sides thereof and being spaced from each other by a central stem portion of said element, said pair of slots for each element receiving parts of said band means therein and respectively defining a pair of shoulders engaging said parts of said band means, each shoulder of each belt element having an arcuate transverse crown surface provided with opposed ends and an apex intermediate those opposed ends that engages its respective part of said band means, the improvement wherein said apex of each transverse crown surface of its respective belt element is offset relative to the center point thereof that is between its respective opposed ends to tend to bias its respective part of said band means toward its respective central stem rather than toward its respective side and wherein each belt element is formed substantially solely from a high performance polymeric material that has high heat resistance, high compressive modulus, high toughness and high strength.

10. In a method of making a belt construction for a continuously variable transmission, said method comprising the steps of forming an endless flexible band means, forming a plurality of belt elements, and causing said belt elements to be carried by said band means in sliding relation therewith, said step of forming said belt elements causing each belt element to have slot means receiving said band means therein, each belt element to have opposed faces disposed in compressed relation against adjacent faces of adjacent belt elements, each belt element to have opposed sides for respectively engaging pulley faces of said transmission, each belt element to have said slot means thereof defining a pair of slots respectively interrupting said opposed sides thereof and being spaced from each other by a central stem portion of said element, each belt element to have said pair of slots thereof receiving parts of said band means therein and respectively defining a pair of shoulders engaging said parts of said band means, and each belt element to have each shoulder thereof having an arcuate transverse crown surface provided with opposed end and an apex intermediate those opposed ends that engages its respective part of said band means, the improvement comprising the steps of forming said apex of each transverse crown surface of its respective belt element to be offset relative to the center point thereof that is between its respective opposed ends to tend to bias its respective part of said band means toward its respective central stem rather than toward its respective side, and forming each belt element substantially solely from a high performance polymeric material that has high heat resistance, high compressive modulus, high toughness and high strength.

4,617,008

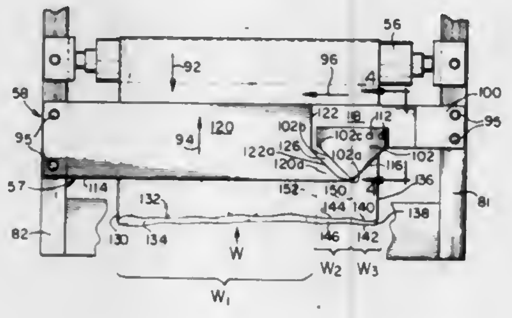
METHOD AND APPARATUS FOR FORMING HEMS IN SUPERPOSED PLIABLE PANELS

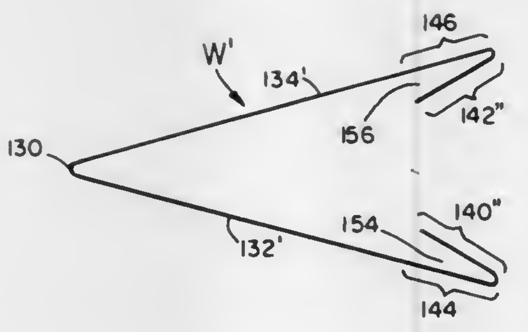
Dana M. Boyd, Rushville, and Franz Bustin, Rochester, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 20, 1984, Ser. No. 652,255

Int. Cl.⁴ B31B *1/36*

U.S. Cl. 493—248 **17 Claims**





14. A method of forming a pair of inwardly turned hems in a pair of superposed continuous panels of pliable material comprising the steps of:
turning intermediate, longitudinal superposed portions of said pair of superposed panels adjoining superposed longitudinal side edge portions of the panels along one side of the panels from a first fed direction to a second taken-up direction;
turning said superposed longitudinal side edge portions of the panels from said first, fed direction to a direction transverse to said taken-up direction towards said turned intermediate portions; and
turning each of said free edge portions of each panel against the intermediate portion of the same panel to form a hem.

4,617,009

METHOD AND APPARATUS FOR CENTRIFUGAL BATCH SEPARATION OF BLOOD

L. Erik Öhlin, Stocksund; H. Peter Unger, Stockholm, and J. Eric Westberg, Lidingö, all of Sweden, assignors to Serotek-nik HG, Stocksund, Sweden

PCT No. PCT/SE83/00413, § 371 Date Jul. 26, 1984, § 102(e) Date Jul. 26, 1984, PCT Pub. No. WO84/02091, PCT Pub. Date Jun. 7, 1984

PCT Filed Nov. 28, 1983, Ser. No. 637,046

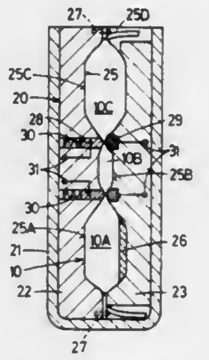
Claims priority, application Sweden, Nov. 26, 1982, 8206767

Int. Cl.⁴ B04B *5/02*

U.S. Cl. 494—21 **29 Claims**

1. A method for centrifugal batch separation of blood into fractions of different densities, comprising;

(a) confining a quantity of blood in an elongated closed container having walls of flexible sheet material;
(b) placing the container with the blood therein in a rigid casing;
(c) by means of constriction means within the casing causing the container to be divided into a plurality of sections by forming a container constriction in the opposite container walls extending across the width of the container, one of said sections being an end section for receiving the fraction of the highest density and having a volume determined by the shape and dimensions of the casing; said container constriction forming a flow passage between said sections;



(d) placing the casing with the container in an eccentric position in a centrifuge and centrifuging it with the end of the container remote from said end section in a radially inner position and said end section in a radially outer position to cause stratification of the blood into said fractions with the interface of adjoining fractions oriented transversely of the longitudinal direction of the container; and
(e) isolating the fractions from each other within the container by pinching the container along said container constriction to close said flow passage without substantially changing the shape of the container.

4,617,010

APPARATUS FOR THE PARTIAL DEHYDRATION OF SLUDGE IN THE CENTRIFUGE FIELD OF A SOLID JACKET CENTRIFUGE

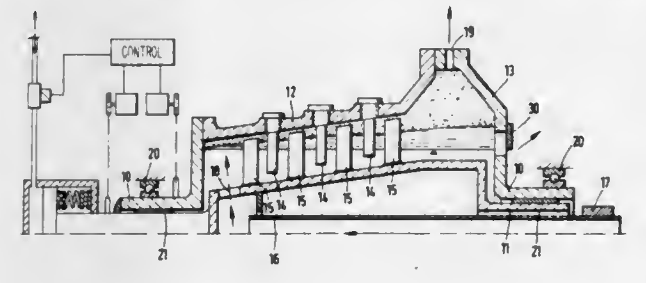
Wolfgang Epper, Bergheim, and Johannes Florenz, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed May 24, 1984, Ser. No. 614,106

Claims priority, application Fed. Rep. of Germany, May 24, 1983, 3318793

Int. Cl.⁴ B04B *3/00, 11/00*

U.S. Cl. 494—52 **14 Claims**



1. An apparatus for dewatering sludge in the centrifugal field of a solid jacket centrifuge comprising:
a centerfuge drum,
agitator elements situated within said centrifuge drum, said agitator elements including impelling means thereon,
means for causing relative movement between some of said agitator elements and others of said agitator elements in a direction parallel to the rotational axis of said centrifuge,
means for adjusting the amount of said relative movement between said agitator elements,
means for adjusting the rotational speed of said agitator elements, and
means for adjusting the angle of incidence of some of said agitator elements.

4,617,011

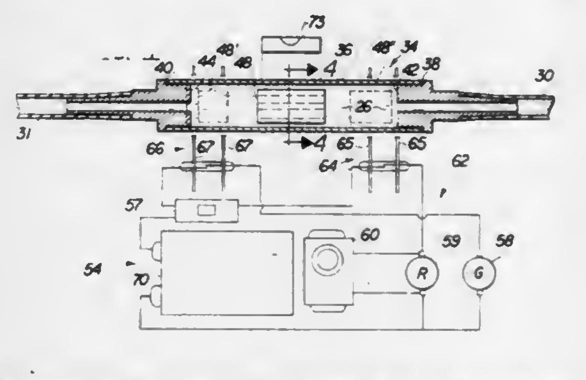
INTESTINAL IRRIGATION SYSTEM WITH FLOW INDICATOR

Ingrid B. Bloxom, Jr., P.O. Box 205, Islemorada, Fla. 33036

Continuation-in-part of Ser. No. 556,036, Nov. 29, 1983, Pat. No. 4,518,382. This application Apr. 2, 1985, Ser. No. 719,175

Int. Cl.⁴ A61M *1/00*

U.S. Cl. 604—27 **18 Claims**



1. An apparatus for controlled intestinal irrigation and monitoring comprising:
(a) a container means for supply and storage of irrigating fluid,
(b) introduction means positionable adjacent to and in fluid delivering relation with an entrance to an intestine being irrigated for introducing liquid thereto,
(c) conduit means disposed in interconnecting and fluid communicating relation between said container means and said introduction means for defining a path of liquid flow therebetween,
(d) flow regulating means connected to said conduit means and structured and disposed to stop and control liquid flow from said container means to said introduction means, whereby flow of irrigating fluids to the intestine is selectively stopped by said flow regulating means upon an indication of peristaltic action of the intestine by a flow indicator,
(e) a flow indicator means including a flow channel for indicating direction of fluid flow within said conduit means, said flow channel connected to said conduit means between said container means and said introduction means, said flow channel structured to accommodate liquid flow therethrough from said container means to the intestine and reversely from the intestine into said flow indicator means,
(f) said flow indicator means including an indicator element movably disposed therein and within liquid flow passing therethrough,
(g) said flow channel comprising opposite ends each of which including an element seat disposed for abutting engagement with said indicator element and comprising a flow through construction to maintain said indicator element out of fluid sealing engagement therewith,
(h) said indicator element means cooperatively structured and disposed relative to said flow channel for responsive longitudinal displacement therein based on peristaltic action of the intestine during flow of liquid through said flow indicator means to the intestine,
(i) a monitoring means for determining direction of fluid flow through said flow channel into and out of said introduction means and including an indicator sensing means mounted adjacent said flow channel and structured for sensing the position of said indicator element within said flow channel,
(j) said sensing means further structured and disposed for electrical interconnection of a power supply to an indicator assembly and actuation of said indicator assembly

dependent upon said positioning of said indicator element within said flow channel relative to said sensing means,

(k) said indicator element including activating means thereon bring structured for activation of said indicator sensing means when in proximity thereof,

(l) whereby flow of irrigating liquid to the intestine is selectively stopped by said flow regulating means upon the development of peristaltic action of the intestine indicated by travel and positioning of said indicator element based on direction of fluid flow through said flow channel in a direction from said introduction means.

4,617,012

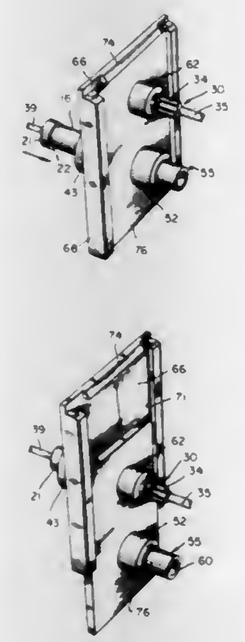
STERILE CONNECTOR WITH MOVABLE CONNECTION MEMBER

Vincent L. Vaillancourt, Livingston, N.J., assignor to Manresa, Inc., Hillsdale, N.J.

Filed Oct. 29, 1985, Ser. No. 792,460

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—29 **42 Claims**



1. A connector apparatus having a retaining and guiding means which provides a movable transfer and alignment device adapted to receive and retain a separable connected fluid conductor having effluent and influent connector halves and, when said connection is brought to said transfer and alignment device, said effluent and influent connector halves are manipulated to effect separation, after which transfer is made and a positioning is effected to bring the effluent connector half into alignment with a new influent connector half and, with manipulation, the effluent and influent connector halves are connected to provide a fluid-tight conducting path, this connector transfer and alignment device including:

(a) first and second movable members arrayed in substantially a face-to-face relationship and adapted for movement from one determined position to another selected position;

(b) means for retaining said first and second movable members in said arrayed relationship during use;

(c) a guideway in said first movable member, said guideway sized and adapted to receive and slideably retain a body portion of the effluent connector half;

(d) a first guideway in said second movable member, said guideway sized and adapted to receive and rotatably and slideably retain a body portion of an influent connector half;

(e) a second guideway in said second movable member, this guideway sized and contoured to receive a rotatable sleeve member, said sleeve member being of a tubular configuration and having a stop flange to limit longitudinal movement, the sleeve member having an interior sized and adapted to receive and retain a body of an influent connector half, and

(f) stop means which provide two movement limits which determine said one determined position and said other selected position; whereby, in the first determined position the connected effluent and influent connector halves may be separated by manipulation and, while the halves are separated, the first and second movable members may be moved to the other selected position to align the first guideway of the second movable member, with a new influent connector therein, with the guideway in the first movable member and, through manipulation, connection of the now aligned connector halves may be achieved to establish a fluid flow path, and second movable members are moved so that the second guideway and sleeve containing an influent connector half are moved from in way of the now-separated effluent connector half in the guideway of the first movable member and this effluent connector half is repositioned so that said effluent connector half is aligned with the second guideway in the second movable member and the influent connector therein whereat, through manipulation, connection of the halves of the connector is achieved to establish a fluid flow path.

4,617,013

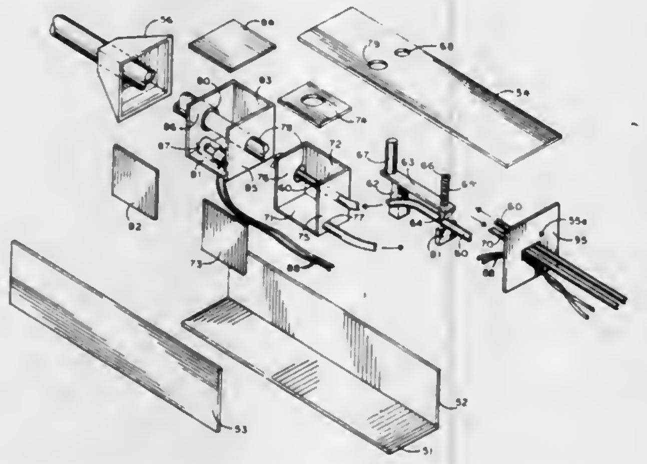
METHOD AND APPARATUS FOR SURGICAL IRRIGATION, ASPIRATION AND ILLUMINATION

John J. E. Betz, Reno, Nev., assignor to Timron Instruments, Incorporated, San Diego, Calif.

Continuation of Ser. No. 475,042, Mar. 14, 1983, abandoned. This application Jan. 8, 1985, Ser. No. 689,511

Int. Cl.⁴ A61M *7/00*

U.S. Cl. 604—39 **21 Claims**



1. A device for probing a surgical incision which can be held in and operated by one hand and which is adapted to provide light and irrigating fluid to a surgical incision and to aspirate fluid therefrom comprising:

a. an elongated probe member having at or near the distal end thereof

i. a vacuum means for aspirating fluids from the surgical incision,

ii. a fluid supply means for providing irrigating fluid to the surgical incision, and

iii. a light means to illuminate the surgical incision; and

b. a housing member connected to the proximal end of the probe member capable of being held in the hand and provided with control means which can be operated by the hand holding the device during the use thereof, said housing having

i. a conduit means in fluid communication between a vacuum source and the vacuum means in the probe member, and

ii. a conduit means in fluid communication between a fluid source and the fluid supply means in the probe member;

said probe member being hollow and wherein said light means includes an annular light conducting element disposed in said probe member; and wherein

said vacuum means includes a first tube disposed in said probe member within said annular light conducting element for providing a vacuum at the distal end of said probe member; and wherein

said fluid supply means includes a second tube disposed in said probe member within said annular light conducting element for supplying irrigating fluid at the distal end of said probe member.

4,617,014

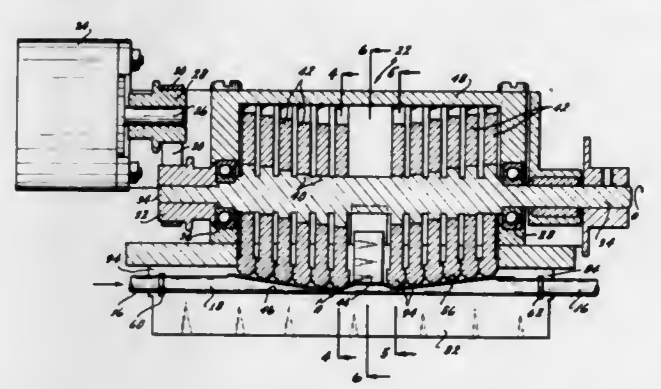
DUAL MODE I. V. INFUSION DEVICE

Raymond E. Cannon, Poway, and Ted C. Bloomquist, San Diego, both of Calif., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 26, 1985, Ser. No. 801,987

Int. Cl.⁴ A61M *31/00*

U.S. Cl. 604—67 **20 Claims**



1. A device for infusing I.V. medical fluids from a fluid source to a patient through an I.V. tubing having a compressible pumping section, which device comprises:

a case;

means for holding a portion of said compressible pumping section on said case;

peristaltic means mounted on said case and operatively engaged with said tube to sequentially squeeze said pumping section and produce at least one moving zone of occlusion along said pumping section for infusing fluids to the patient;

a gauge fixedly mounted on said case and operatively coupled with said pumping section, at a predetermined location thereon, for sensing fluid pressure in said pumping section at said location at a first time when said I.V. tube downstream from said location is patent and at a second time when said I.V. tube upstream from said location is patent;

means to determine a pressure differential between said first time and said second time; and

means to alarm and cease operation of said device when said pressure differential attains a predetermined value.

4,617,015

VISUAL PRESSURE INDICATOR FOR ENDOTRACHEAL CUFF

Carl L. Foltz, North Largo, Fla., assignor to Halkey-Roberts Corporation, St. Petersburg, Fla.

Filed Aug. 10, 1984, Ser. No. 640,074

Int. Cl.⁴ A61M *25/00*

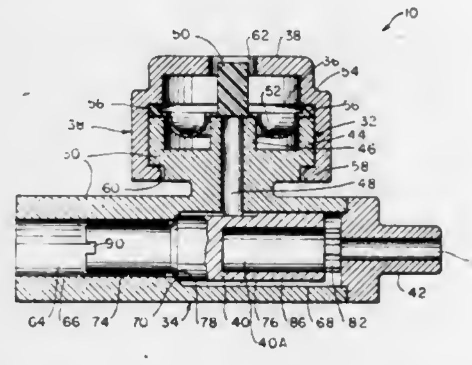
U.S. Cl. 604—100 **5 Claims**

1. An indicator for use in connection with an endotracheal tube having a cuff inflatable via a cuff tube, comprising in combination:

a rigid body including a diaphragm receiving portion;

a flexible diaphragm, said flexible diaphragm including an annular bellow integrally formed therewith to enhance the degree of movement of said stem upon flexing of said diaphragm;

means for sealingly positioning said flexible diaphragm within said diaphragm receiving portion to define an air space, said means including a cap positioned over said diaphragm and over at least a portion of said diaphragm receiving portion, said cap including an opening aligned with said stem to permit said stem to protrude therefrom upon flexing of said diaphragm;



means for connecting said air space in fluid communication with said cuff tube whereby said diaphragm flexes proportionally in response to pressure existing in the cuff tube and, correspondingly, in the cuff; and

said diaphragm including a stem positioned to visually indicate the relative degree of pressure in the cuff tube.

4,617,016

INJECTION DEVICE

Anders Blomberg, P1 6238 Höglanda, S-434 00 Kungsbacka, Sweden

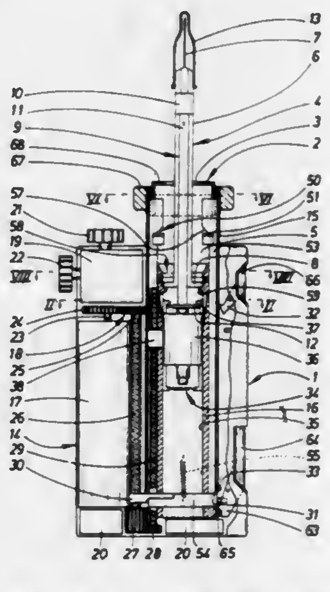
PCT No. PCT/SE82/00423, § 371 Date Jul. 19, 1983, § 102(e) Date Jul. 19, 1983, PCT Pub. No. WO83/02062, PCT Pub. Date Jun. 23, 1983

PCT Filed Dec. 13, 1982, Ser. No. 518,805

Claims priority, application Sweden, Dec. 14, 1981, 81074585

Int. Cl.⁴ A61M *5/20*

U.S. Cl. 604—155 **7 Claims**



1. An injection device for medicine, comprising: an outer part forming a housing, and an inner part reciprocably supported in said outer part, said inner part having an opening and a cavity in communication with said opening; and an injection syringe having a barrel part having a first end and a second end, a syringe needle at said first end and a flange at said second end, a plunger part in said barrel part and having a plunger displaceably mounted in said barrel part for sucking medicine into said barrel portion and for injecting medicine from said barrel part, said injection syringe extending through said opening at least partly into said cavity, said inner part having a holding device for the barrel part, said holding device having means movable between a releasing position in which said barrel part is reciprocable in said cavity and a holding

position, in which said barrel part is held against movement in said inner part, said inner part also having a displacement device operatively connected to said plunger part and movable relative to said holding device in two directions relative to the barrel part, between a fore and a rear displacement position, said displacement device having gripping means movable between a releasing position and a gripping position and operable to release said plunger part in said fore displacement position of said displacement device and to grip the plunger part in other positions of the plunger part, said inner part being movable in said outer part between a rear position in which said syringe needle is positioned inside said opening and a fore position in which the syringe needle is outside said opening for insertion into body tissue, said injection device including a bottle holder positioned at said opening for positioning at least one medicine bottle for loading of said syringe, during which the syringe needle is inserted into a medicine bottle in said bottle holder and a predetermined amount of medicine is sucked into the barrel part, said injection device including an electric motor positioned in said outer part, an electronic control device in said outer part and operatively connected to said motor, and a transmission connecting said electric motor to said displacement device for effecting said displacement movements of said plunger part in a sequence determined by said control device, for loading the injection syringe and for injecting medicine into the body tissue.

4,617,017

PERSONAL CATHETER LEG STRAP

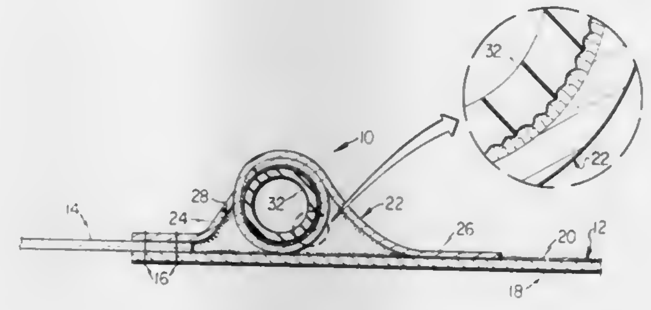
Vance M. Hubbard, Euless, and Welton K. Brunson, Bedford, both of Tex., assignors to Tencol, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 479,671, Mar. 28, 1983, Pat. No. 4,571,245. This application Sep. 18, 1985, Ser. No. 777,542

The portion of the term of this patent subsequent to Feb. 18, 2003, has been disclaimed.

Int. Cl.⁴ A61M *25/02*

U.S. Cl. 604—179 **4 Claims**



1. Apparatus for securing any one of a plurality of differently sized catheter tubes to a portion of the anatomy of a patient adjacent a catheter insertion point, comprising:

a strap for wrapping about the desired portion of the anatomy of the patient, said strap having a first elastic portion for stretching and a second portion having a layer of fibrous material disposed on one side for receiving a Velcro-type attaching layer, said first and second portions each having an end joined to each other at a junction, said first and second portions each having a free end;

a strip of Velcro-type material attached to the free end of said first portion for mating with the free end of said second portion on said layer of fibrous material to form an attachment theretbetween;

a securing band attached at said junction having Velcro-type protruding members disposed on one side thereof, said securing band including a first portion having a circular orifice disposed therethrough adjacent the attached end and

a second portion integrally attached to said first portion proximate the orifice, the width of said second portion being less than the width of said first portion and being less than the diameter of said orifice through the entire length of said second portion;

said securing band operable to wrap around any one of a plurality of differently sized catheter tubes one revolution for insertion of said second portion through said orifice and further wrap around said one of said catheter tubes about one-half revolution for attachment of said protruding members to the fibrous material on the surface of said strap at any of a plurality of locations such that said one of said catheter tubes is secured against the surface of said strap vertically and laterally by said securing band providing a downward force on the catheter tube directed toward the strap , means for preventing axial and rotational movement of said tube formed on said one side of said securing band.

4,617,018

IRRIGATING CANNULA FOR EXTRACTING LENS NUCLEUS FOR USE IN EXTRACAPSULAR CATARACT EXTRACTION

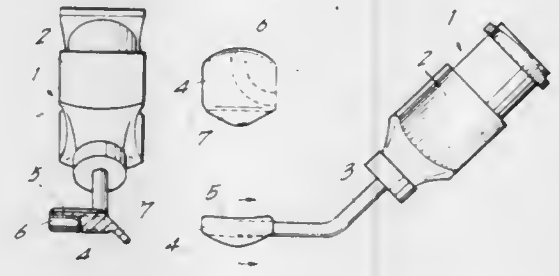
Okihiro Nishi, 3377, Oaza Hoshida, Katano-shi, Osaka, Japan

Filed Apr. 23, 1984, Ser. No. 602,843

Claims priority, application Japan, Nov. 18, 1983, 58-218377

Int. Cl.⁴ A61M *5/325, 25/00*

U.S. Cl. 604—264 **6 Claims**



1. An irrigating cannula for extracting a lens nucleus in an extracapsular cataract extraction while providing a flow of irrigating liquid, said cannula comprising;

(a) a connector having a bore extending centrally therethrough;

(b) a small-diameter tube, the small-diameter tube having a bore extending therethrough, the tube having a proximal end secured to the connector and in fluid communication with the connector, the small-diameter tube having a distal end extending outwardly from the connector;

(c) an insertion piece attached to the distal end of the tube, the insertion piece extending both forwardly and laterally from the tube, to form a planar surface;

(d) the insertion piece having a base end attached to the small-diameter tube, a front end comprising a forward surface, a lateral side surface located between the front end and the base end, and an upper planar surface extending between the base end and the front end of the insertion piece;

(e) a bore within the insertion piece, the insertion piece bore extending from the base end of the insertion piece and in fluid communication with the bore of the small-diameter tube, the insertion piece bore having a lateral outlet on the lateral side surface of the insertion piece;

(f) a restraining piece provided at the base end of the insertion piece, the restraining piece projecting at an angle in the range of between 180 and 270 degrees to the planar upper surface of the insertion piece;

(g) the restraining piece serving to limit the extent to which the insertion piece is inserted beneath the nucleus and to apply a slight pressure on the sclera for easy delivery of the lens nucleus.

4,617,019

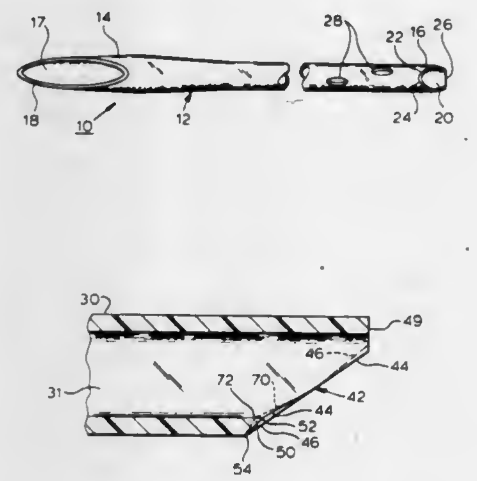
CATHETER

David C. Fecht, Manchester, and Thomas W. Davison, Chesterfield, both of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Filed Sep. 28, 1984, Ser. No. 655,853

Int. Cl.⁴ A61M *25/00*

U.S. Cl. 604—280 **17 Claims**



1. In a method of making a catheter, the steps of severing resilient flexible tubing including cutting the tubing generally in a plane at an angle to the longitudinal axis of the tubing to effect a distal end wall having a distal tip, a proximal wall portion, and a pair of opposed sidewalls connecting the distal tip with the proximal wall portion, and such that the proximal wall portion protrudes distally beyond the dista end of the tubing when the opposed end walls are pinched together adjacent the proximal end wall portion, and the tubing being in a substantially unflattened state at the cutting site when said step of severing is initiated, displacing a sufficient part of the proximal wall portion to substantially prevent the proximal wall portion from protruding distally beyond the distal end of the tubing when the sidewalls are pinched together adjacent the proximal end wall portion.

4,617,020

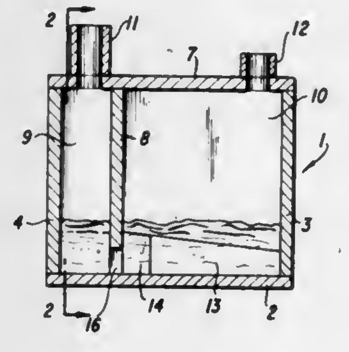
AIR LEAK DETECTOR AND COUNTER FOR DRAINAGE DEVICE

Robert J. Kurtz, New York, N.Y., assignor to BioResearch Inc., Farmingdale, N.Y.

Filed Oct. 18, 1984, Ser. No. 662,498

Int. Cl.⁴ A61M *1/00*

U.S. Cl. 604—321 **8 Claims**



1. In a drainage device having a collection chamber for collecting fluids from a body cavity of a patient, means to drain fluid from a body, a bubble counter including detector means for detecting the passage of gas bubbles through fluid within the drainage device and means operatively connected to said detector means for measuring the time interval between bubbles.

4,617,021

ABSORBENT SURGICAL DRESSING, AND PROCESS FOR MANUFACTURING SAME

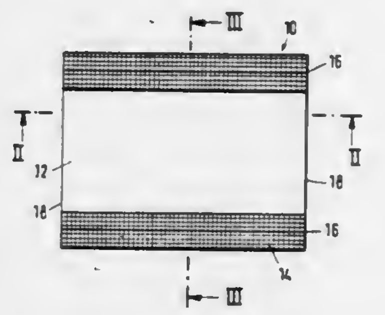
Helmut Leuprecht, Vienna, Austria, assignor to Rauscher & Co. Verbandstoff- und Wattefabriken, Vienna, Austria

Filed Nov. 8, 1984, Ser. No. 669,477

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1983, 3340530

Int. Cl.⁴ A61F *13/16, 13/18, 13/20*

U.S. Cl. 604—365 **5 Claims**



1. An absorbent surgical dressing comprising an absorbent pad disposed internally in an envelope which at least at the wound side has a non-sticking lattice structure, the absorbent pad being capable of slight movement within the interior of said envelope.

4,617,022

DISPOSABLE HYGIENIC ARTICLE WITH REMOVABLE BELT

Raymond Pigneul, Durrenentzen; Dominique Pannier, and Benoit Tresca, both of Colmar, all of France, assignors to Beghin-Say S.A., Thumeries, France

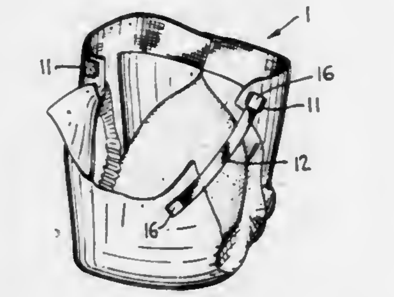
PCT No. PCT/FR85/00014, § 371 Date Sep. 25, 1985, § 102(e) Date Sep. 25, 1985, PCT Pub. No. WO85/03205, PCT Pub. Date Aug. 1, 1985

PCT Filed Jan. 25, 1985, Ser. No. 784,689

Claims priority, application France, Jan. 27, 1984, 84 01333; May 18, 1984, 84 07713; Nov. 6, 1984, 84 16844

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—391 **22 Claims**



1. A disposable hygienic article (**1**) consisting:

(a) of an absorbent pad (**5**) of substantially rectangular shape comprising two trunk areas (**2**) and (**4**) and a between-legs area (**3**) covered on its external face by a sheet (**6**) impermeable to liquids, such as a sheet of polyethylene, and on its internal face by a sheet (**8**) permeable to liquids at least in the central area (**9**), these two sheets being partially or completely bonded to one another along their longitudinal edges, a first attachment element (**11, 11'**) being fixed near each longitudinal edge on the external face of a trunk area (**4**)

(b) and a means of attachment associated removably, consisting of a belt (**12**) provided at each end with a complementary second means of attachment (**16, 16'**) of the first attachment element (**11, 11'**)

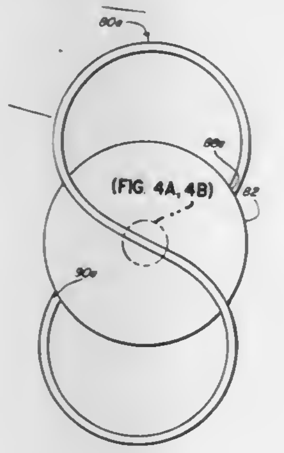
characterized in that the other external area (**4**) and/or at least one area (**13**) of the belt coming into contact with this external trunk area is constituted in a manner such as to have a sufficient coefficient of friction such that when the article is in position it is maintained on the one hand by the cooperation of the first attachment elements and, on the other, by the friction of one on the other of the trunk area (4) and of said belt area (13).

4,617,023
INTRAOCULAR LENSES WITH OPENABLE HAPTIC LOOPS

Gholam A. Peyman, 535 N. Michigan Ave., Apt. 3001, Chicago, Ill. 60611

Filed May 2, 1983, Ser. No. 490,858
Int. Cl.⁴ A61F *2/16*

U.S. Cl. 623—6 **2 Claims**



2. Intraocular lens for insertion inside the eye of a mammal comprising:

central lenticular means for refracting light entering the eye through the cornea before the light passes to the retina; and,

resilient haptic means for stabilizing and holding in place in the eye said central lenticular means having first and second ends of said resilient haptic means fixedly attached to said central lenticular means and generally forming a "figure-eight" configuration over said central lenticular means whereby said resilient haptic means can be severed generally over the center of said central lenticular means.

4,617,024
AUDITORY OSSICLE PROSTHESIS AND PROCESS FOR ITS MANUFACTURE

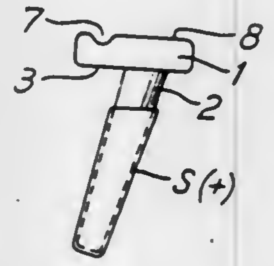
Heinz Broemer, Wetzlar-Hermannstein; Klaüs Deutscher, Wetzlar; Henning Franek, Braunfels-Tiefenbach, and Ralf Reck, Mainz-Bretzenheim, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Nov. 28, 1983, Ser. No. 555,347

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3211209

Int. Cl.⁴ A61F *2/18*

U.S. Cl. 623—10 **13 Claims**



1. An auditory ossicle prosthesis, comprising: a generally planar plate; a shaft attached eccentrically to the underside of said plate; and a groove provided in the top side of the plate, wherein the plate and attached shaft have a mirror symmetrical configuration with respect to at least one symmetry plane perpendicular to the plane of the plate and passing through the shaft; the shaft is attached so that its contact surface with the plate is located on the symmetry plane of the plate, but is removed by at least one-half of the diameter of the shaft from the boundary area of the plate; the groove is arranged on the top side of the plate in its front half and is aligned perpendicular to the symmetry plane of the prosthesis; and wherein at least one of said plate and said shaft is comprised of a bioactive material and the prosthesis comprising at least one partial area of said bioactive material which has been selectively rendered bioinactive and which comprises an insoluble bioinert material for preventing ion exchange in vivo between the bioactive material and body fluids.

CHEMICAL

4,617,025
ESTER-CONTAINING HALOPOLYALKYLENES

Michael I. Naiman, St. Louis, and John A. Schield, Chesterfield, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Continuation of Ser. No. 626,831, Jul. 2, 1984, Pat. No. 4,536,191, and a continuation-in-part of Ser. No. 432,494, Oct. 4, 1982, abandoned, which is a continuation-in-part of Ser. No. 356,994, Mar. 11, 1982, Pat. No. 4,471,098. This application Apr. 22, 1985, Ser. No. 725,702

The portion of the term of this patent subsequent to Aug. 20, 2002, has been disclaimed.

Int. Cl.⁴ C10L *1/20*

U.S. Cl. 44—62 **1 Claim**

1. A fuel oil containing an effective pour point depressing amount of ester-containing halopolyalkylene characterized by internal olefinic unsaturation, by being essentially free of cross-linking, by having a branch index of from about 2 to about 20 and wherein the percent of halogen replaced with ester groups can vary from about 1 to 100.

4,617,026
METHOD FOR IMPROVING THE FUEL ECONOMY OF AN INTERNAL COMBUSTION ENGINE USING FUEL HAVING HYDROXYL-CONTAINING ESTER ADDITIVE

Harold Shaub, Berkeley Heights, and Walter E. Waddey, Westfield, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 479,174, Mar. 28, 1983, abandoned. This application Aug. 15, 1984, Ser. No. 640,931

Int. Cl.⁴ C10L *1/18*

U.S. Cl. 44—70 **14 Claims**

1. A method of reducing fuel consumption in an automotive internal combustion engine, which comprises operating said engine on a hydrocarbon fuel consisting essentially of a major amount of a liquid hydrocarbon of the gasoline boiling range, antioxidant, detergent, and/or corrosion inhibitor additive and from about 0.001 to about 2% by weight, based on the total weight of the fuel, of an additive which is an ester of an unsaturated monocarboxylic acid having about 12 to about 30 carbon atoms and a glycol or trihydric alcohol, said glycol being an alkane diol or oxa-alkane diol with said alkane being a straight chain hydrocarbon of about 2 to about 5 carbon atoms and said trihydric alcohol having a straight chain hydrocarbon structure of about 3 to about 6 carbon atoms, said ester having at least one free hydroxyl group, whereby said fuel including the ester additive effectively reaches the upper cylinder of said engine and thereby reduces the fuel consumed in the operation thereof.

4,617,027
GASIFICATION PROCESS

Robert J. Lang, Baytown, Tex., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 861,825, Dec. 19, 1977, abandoned. This application Aug. 17, 1982, Ser. No. 408,990

Int. Cl.⁴ C10J *3/14*

U.S. Cl. 48—210 **1 Claim**

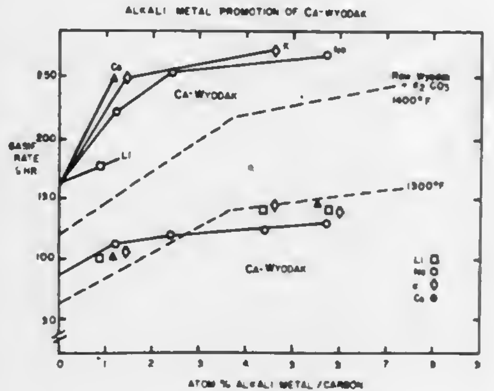
1. A process for gasifying coal to produce a fuel gas, which comprises:

(a) ion-exchanging from about 0.1 to about 10 atomic percent, based on carbon remaining in the char produced after said coal is pyrolyzed and devolatilized, of a Group II-A metal onto said coal by contact thereof with a solution of a Group II-A metal compound at a temperature within the range from about 20° F. to about 230° F.,

(b) separating the Group II-A ion-exchanged coal from said solution;

(c) admixing said Group II-A ion-exchanged coal with from about 0.1 to about 10 atomic percent, based on carbon remaining in the char produced after said coal is pyrolyzed and devolatilized, of a Group I-A metal compound; and then

(d) gasifying said treated coal at gasification conditions including a temperature within the range from about 750° F. to about 1850° F. in a gasification zone to produce fuel gas, wherein the Group II-A metal is calcium, the Group I-A metal compound is a sodium compound or a potassium compound, and the coal is an Arkansas lignite.

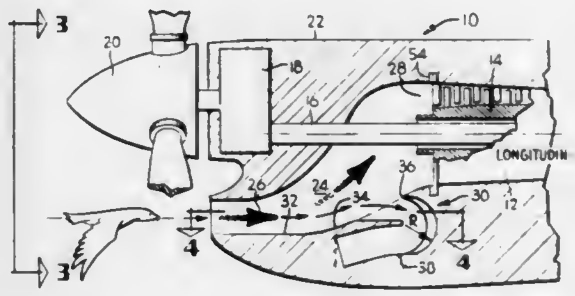


4,617,028
AIRCRAFT ENGINE AIR INTAKE INCLUDING A FOREIGN OBJECT SEPARATOR

Martin G. Ray, Marblehead, and Michael C. Harrold, Lanesville, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Nov. 3, 1983, Ser. No. 548,382
Int. Cl.⁴ B01D *45/16*

U.S. Cl. 55—1 **21 Claims**



1. For an aircraft engine, an air intake comprising:

an inlet duct having a first bend in a longitudinal plane defining a pressure side and being effective for channeling airflow to said engine, said inlet duct having a separator aperture disposed in said pressure side thereof; and

a receptacle extending from said inlet duct and being in flow communication with said separator aperture for receiving and capturing foreign objects which enter said inlet duct and pass through said separator aperture, said receptacle being substantially closed for preventing flow of said airflow therethrough and including a turning wall being substantially arcuate in a transverse plane and in said longitudinal plane to define a concave surface facing in an upstream direction, said transverse plane being disposed substantially perpendicularly to said longitudinal plane, for guiding foreign objects away from said separator aperture.

20. A method for separating foreign objects from airflow channeled to an aircraft engine comprising the steps of:

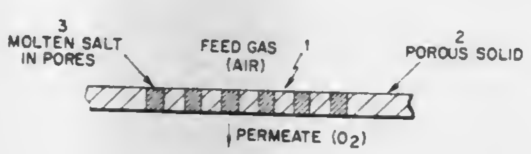
channeling substantially all incoming airflow to said engine through an unobstructed inlet duct having a bend in a longitudinal plane defining a pressure side; and

providing a substantially closed receptacle including a turning wall being substantially arcuate in a transverse plane and in said longitudinal plane to define a concave surface facing in an upstream direction, said transverse plane being disposed substantially perpendicularly to said longitudinal plane, for guiding foreign objects away from said separator aperture, and being in flow communication with a separator aperture disposed in said pressure side of said inlet duct for receiving foreign objects of higher inertia than said airflow which are unable to turn with said airflow channeled through said inlet duct.

4,617,029
METHOD FOR GAS SEPARATION

Guido P. Pez, Allentown, and Richard T. Carlin, Macungie, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

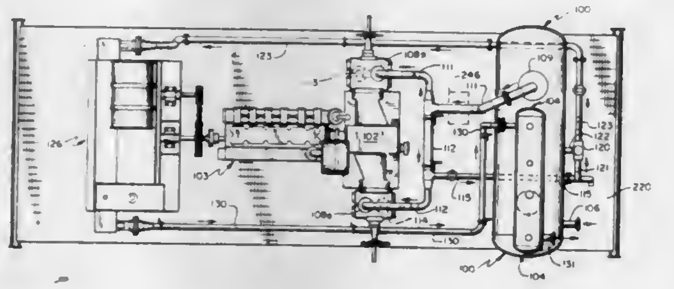
Filed Mar. 1, 1985, Ser. No. 707,298
Int. Cl.^{4} B01D *53/22*
U.S. Cl. 55—16 **28 Claims**



1. A process for separating a gas from at least one other gas in a mixture, comprising passing the mixture over a membrane selectively permeable to the gas being separated, which membrane comprises a thin, porous, inert support within the pores of which is immobilized an active material and the active material is a molten salt capable of undergoing one or more reversible oxidation-reduction reactions with the gas being separated.

4,617,030
METHODS AND APPARATUS FOR SEPARATING GASES AND LIQUIDS FROM NATURAL GAS WELLHEAD EFFLUENT

Rodney T. Heath, 109 W. 31st, Farmington, N. Mex. 87401
Continuation-in-part of Ser. No. 732,379, May 8, 1985, Pat. No. 4,579,565, which is a continuation-in-part of Ser. No. 537,298, Sep. 29, 1983, abandoned. This application Jan. 21, 1986, Ser. No. 821,026
Int. Cl.^{4} B01D *19/00, 53/14*
U.S. Cl. 55—20 **24 Claims**



1. A system for processing relatively low volume natural gas wellhead effluent to separate heavy end hydrocarbon and water constituents from light end hydrocarbon constituents and produce sales gas consisting primarily of light end hydrocarbon constituents for delivery to a sales gas pipe line and a liquid body of hydrocarbons consisting primarily of heavy end hydrocarbon constituents for delivery to storage tank means, the system comprising:

a three phase relatively low pressure primary separator means for receiving the wellhead effluent and for separating light end hydrocarbons from heavy end hydrocarbons and water and for producing at temperatures in excess of gas hydrate temperatures a relatively low pressure body of gaseous hydrocarbons consisting primarily of light end hydrocarbons and a first body of liquid hydrocarbons consisting primarily of heavy end hydrocarbon components and a second liquid body consisting primarily of water components;

compressor means connected to said primary separator means for receiving a stream of relatively low pressure gaseous hydrocarbons from said primary separator means and for compressing said stream of relatively low pressure gaseous hydrocarbons while increasing the temperature thereof to provide a stream of compressed heated gaseous hydrocarbons having a temperature and pressure substantially in excess of the temperature and pressure of the wellhead effluent entering said primary separator means and the temperature and pressure of sales gas in the sales gas pipe line;

heat exchanger means mounted in said primary separator means for receiving said stream of compressed heated gaseous hydrocarbons and transferring heat of compression from said compressed heated gaseous hydrocarbons to said body of liquid hydrocarbons in said primary separator means;

cooler means connected to said heat exchanger means for receiving said stream of compressed heated gaseous hydrocarbons from said heat exchanger means and for reducing the temperature of said stream of compressed heated gaseous hydrocarbons and for providing a stream of reduced temperature relatively high pressure compressed gaseous hydrocarbons having a pressure substantially in excess of the pressure of said body of gaseous hydrocarbons in said primary separator means and approximately equal to or in excess of the pressure of the sales gas in the sales gas pipe line;

two phase relatively high pressure secondary separator means connected to said cooler means for receiving said stream of reduced temperature relatively high pressure compressed gaseous hydrocarbons from said cooler means and for separating light end hydrocarbons from heavy end hydrocarbons and for providing a body of sales gas hydrocarbons having a pressure substantially equal to or in excess of the pressure of the sale gas in the sales gas pipe line and consisting substantially of only light end hydrocarbons and a second body of liquid hydrocarbons consisting substantially only of heavy end hydrocarbon components;

gas pipe line outlet means connected to said secondary separator means for connecting and delivering said body of sales gas hydrocarbons to a sales gas pipe line;

liquid hydrocarbon collection tank means associated with said secondary separator means for collecting said second body of liquid hydrocarbons and being connected to said primary separator means for delivery of said second body of liquid hydrocarbons to said primary separator means for recycling therein including reduction of pressure causing flashing of light end hydrocarbons contained in said second body of liquid hydrocarbons and addition of flashed light end hydrocarbons to said first body of gaseous hydrocarbons in said primary separation means; and

condensate storage tank means connected to said primary separator means for receiving liquid hydrocarbons from said primary separator means.

4,617,031
HYBRID DOUBLE HYDROCYCLONE-GRAVITY GAS/LIQUID SEPARATOR

Sung L. Suh, Orinda; Carter B. Reeds, Walnut Creek; Peter Van Scherpe, Foster City, and William H. Silcox, San Francisco, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Feb. 26, 1985, Ser. No. 705,813
Int. Cl.^{4} B01D *53/24*
U.S. Cl. 55—52 **12 Claims**

1. An apparatus for separation of a gas from a liquid in a multiphasic mixture, comprising:

an enclosing chamber having a generally cylindrical shape, and an axis through its center;

an outlet for allowing gas to leave the enclosing chamber;

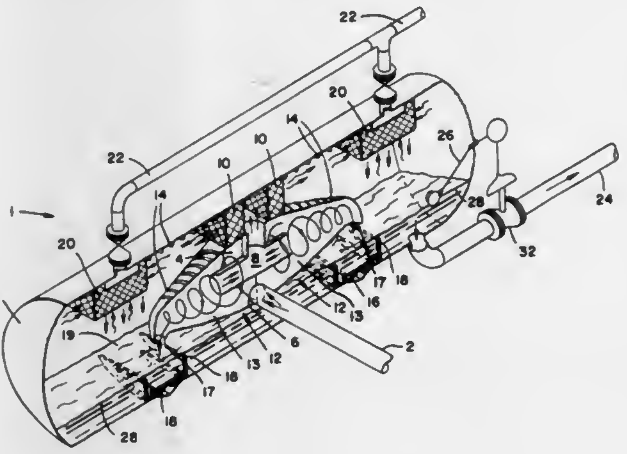
an outlet for allowing liquid to leave the enclosing chamber;

means to control the liquid outflow;

a generally smaller chamber within the enclosing chamber, constructed so that a space may be formed between both chambers; the smaller chamber having an inner surface the shape of two cones which are joined at their bases, the bases of the cones being a common base and the axis of the cones being parallel to the axis of the enclosing chamber, the smaller chamber located generally in the center of the axis of the enclosing chamber;

an inflow line for pressurized well production fluid, the inflow line having an outlet located on the involute inner surface of the smaller chamber where the bases of the cones are joined;

a blade means for splitting the flow of production fluid into a stream for each conical section, the blade means being located at the inflow outlet;



two liquid outlets for the smaller chamber, the outlets being located at the point of each cone and directed downwards to the bottom of the enclosing chamber; and

a gas outlet for the smaller chamber; so that pressurized well production may enter the smaller chamber through the inflow line and spin on the inner surface of the smaller chamber to initially separate a gas fraction from a substantially liquid fraction, whereby the residual, substantially liquid phase may have the majority of the remaining gas separated by gravity while in the space between the smaller chamber and the enclosing chamber

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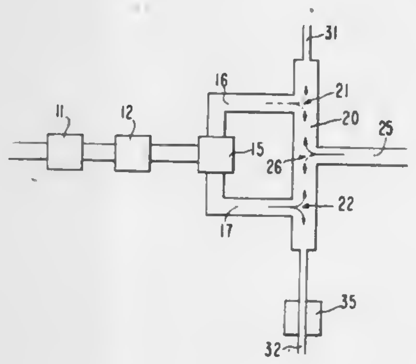
4,617,032
SAMPLE MODULATOR CELL FOR GAS CHROMATOGRAPHY

Gregory J. Wells, Suisun, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 548,816, Nov. 4, 1983, abandoned. This application Sep. 18, 1985, Ser. No. 777,569
Int. Cl.^{4} B01D *15/08;* **G01N** *31/08*
U.S. Cl. 55—67 **18 Claims**



1. A method of obtaining an improved response to noise ratio in a chromatographic analysis of a sample by means of a sample modulator, comprising the steps of:

introducing said sample into a duct having two channels leading to a single exit passageway connected to a detector, periodically alternately introducing a carrier gas into said duct through two carrier gas inlets, said carrier gas inlets being positioned such that said sample gas is alternately directed to said two channels,

said channels being of unequal length so that there is a phase shift of 180° at the frequency of said periodic alternations of said carrier gas flow in said two channels.

5. A sample modulator for gas chromatography comprising a duct forming a closed circuit, said duct comprising:

two carrier gas input ports through which a carrier gas is introduced into said duct;

a sample input port positioned between said carrier gas input ports, through which a sample gas is introduced into said duct;

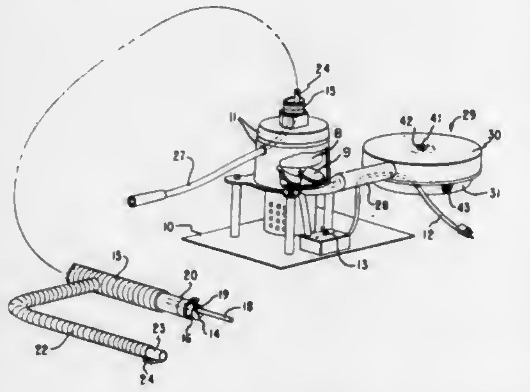
means for periodically switching a carrier gas input alternately between said carrier gas input ports;

a single exit port positioned between said carrier gas input ports through which all the carrier gas and all the sample gas entering the duct exits the duct, said exit port being removed from said sample input port, thereby defining two channels connecting said sample input port and said exit port.

4,617,033
ARC WELDING FILTER

Virgil G. Strang, P.O. Box 327, Ocheyedan, Iowa 51354

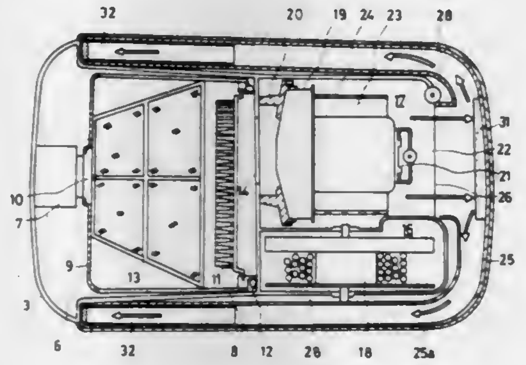
Filed Dec. 7, 1984, Ser. No. 679,474
Int. Cl.^{4} B03C *1/02*
U.S. Cl. 55—100 **6 Claims**



1. Means for cleaning the air round and the surface of a welding workpiece comprising a fan, housing means surrounding said fan and defining an inlet to said fan, flexible tubular means connected to said housing at said inlet for conducting air and entrained material to said inlet, electrical means located within said tubular means, said conducting means having one end adapted to be connected to a welding power supply, welding rod holding means located at the end of said tubular means opposite said fan inlet, said rod holding means being in electrical connection with said conducting means, said housing means also defining a discharge from said fan, filter means connected to said discharge to receive air from said fan and to filter said air, branch flexible tubular means leading away from said first named tubular means, and a nozzle on said branch tubular means opposite the juncture between the two tubular means, said tubular means being flexible so that said nozzle can be placed adjacent said rod holding means.

4,617,034
ELECTRIC CLEANER WITH MINIMUM NOISE

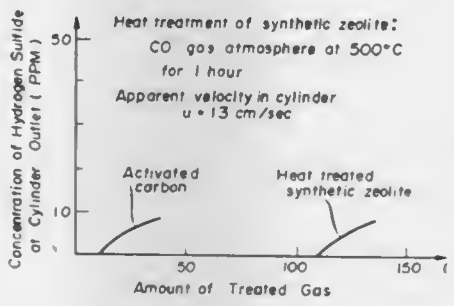
Katsuji Ikezaki, Sakai, and Kiyoshi Ishii, Nishinomiya, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 478,328, Mar. 24, 1983, Pat. No. 4,533,370. This application Jan. 31, 1985, Ser. No. 697,012
Claims priority, application Japan, Mar. 30, 1982, 57-53553; Apr. 8, 1982, 57-59436; Apr. 8, 1982, 57-59437; Apr. 8, 1982, 57-59438
The portion of the term of this patent subsequent to Aug. 6, 2002, has been disclaimed.
Int. Cl.⁴ B01D ***46/00***
U.S. Cl. 55—276 **10 Claims**



1. A cleaner comprising:
a housing;
an air blower within said housing for drawing air and accompanying particles into said housing, and filter means for removing particles from said air;
exhaust means for receiving air from said blower and for exhausting said air from said cleaner with a minimum of noise;
said exhaust means comprising an inlet portion adjacent one end of said housing for receiving said air from said blower, a plurality of outlet portions adjacent an opposite end of said housing for exhausting said air received by said inlet portion, and a plurality of air rectifying duct portions extending in a substantially linear manner for at least substantially the length of said housing from said inlet portion at said one end to said respective outlet portions at said opposite end, each air rectifying duct portion receiving a portion of said air received by said inlet portion of said exhaust means;
noise absorbing means within the inlet portion of said exhaust means where the air from the blower impinges against said exhaust means; and
noise shielding means across each outlet portion of the exhaust means.

4,617,035
GAS ADSORBENT AND PROCESS FOR PRODUCING SAME

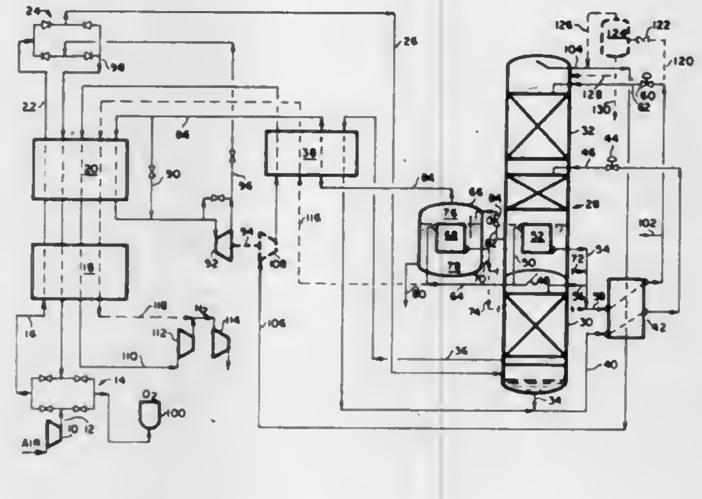
Akira Wakaizumi, Tokyo, and Hiroshi Kawakami, Yokohama, both of Japan, assignors to Nippon Sanso Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 28, 1984, Ser. No. 675,846
Int. Cl.⁴ B01D ***53/04***
U.S. Cl. 55—389 **3 Claims**



1. A gas adsorbent comprising either a zeolitic or silica-alumina adsorbent which has carbon particles ranging in size from about 0.01 to about 10 μm adhering on the surface and in pores thereof, said gas adsorbent being produced by heat-treating said adsorbent in a carbon-atom containing gas or a gaseous mixture consisting of a carbon-atom containing gas and an inorganic gas at a temperature of 100° C. to 700° C.

4,617,036
TONNAGE NITROGEN AIR SEPARATION WITH SIDE REBOILER CONDENSER

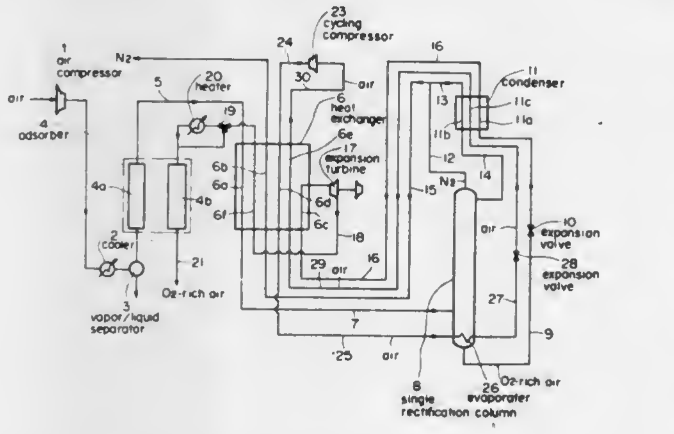
Shyam R. Suchdeo, Wescosville; Suresh U. Patel, Whitehall, and Christopher F. Harris, Old Zionsville, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Oct. 29, 1985, Ser. No. 792,423
Int. Cl.⁴ F25J ***3/00***
U.S. Cl. 62—11 **11 Claims**



1. A process for producing large quantities of nitrogen at relatively high pressure by the cryogenic separation of air in a two stage distillation column comprising the steps of:
(a) compressing a feed air stream to an elevated pressure and removing water and carbon dioxide from the compressed air;
(b) cooling the compressed air against rewarming process streams by indirect heat exchange;
(c) introducing at least a portion of the cooled air stream into the high pressure stage of said distillation column;
(d) removing a bottom stream from the high pressure stage of the distillation column, reducing its pressure and introducing it into the low pressure stage of the distillation column;
(e) removing a gaseous nitrogen stream from the top of the high pressure stage of the distillation column and condensing a portion of it against oxygen-enriched liquid in the bottom of the low pressure stage of the distillation column to produce a first liquid nitrogen stream;
(f) removing oxygen-enriched liquid from the bottom of the low pressure stage of the distillation column and reducing its pressure;
(g) condensing another portion of the gaseous nitrogen stream from the high pressure stage of step (e) against the oxygen-enriched liquid of step (f) to provide a gaseous oxygen-enriched stream and a second liquid nitrogen stream;
(h) returning a first portion of the first and/or second liquid nitrogen streams to the high pressure stage of the distillation column as reflux;
(i) reducing in pressure and introducing a second portion of the first and second liquid nitrogen streams to the low pressure stage of the distillation column as reflux;
(j) removing a gaseous nitrogen product from the low pressure stage of the distillation column, and
(k) rewarming the gaseous oxygen-enriched stream of step (g) and expanding it through an expansion turbine to produce refrigeration for the process by heat exchanging the expanded oxygen-enriched stream against process streams.

4,617,037
NITROGEN PRODUCTION METHOD

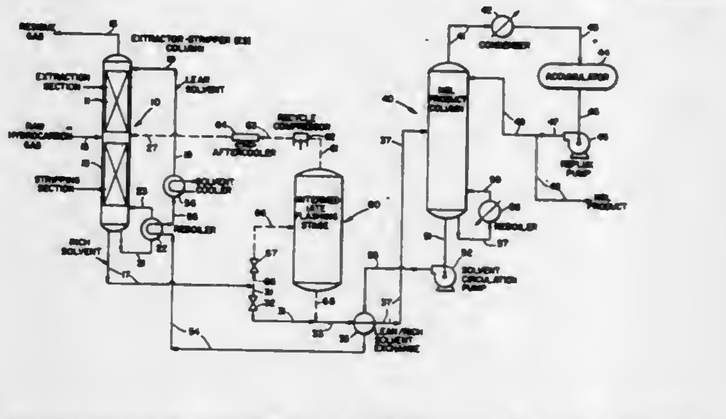
Hidetake Okada, Yokosuka, and Satoshi Urata, Ebina, both of Japan, assignors to Nippon Sanso Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 31, 1985, Ser. No. 793,156
Claims priority, application Japan, Nov. 2, 1984, 59-232126
Int. Cl.⁴ F25J ***3/00***
U.S. Cl. 62—11 **6 Claims**



1. A method for producing nitrogen wherein air is compressed, is removed of water and carbon contained therein, cooled to a temperature close to the liquefying point, is then fed into a rectifying column for rectification and from the overhead of said rectifying column high purity nitrogen is withdrawn; and wherein oxygen-enriched liquid air, fed from the bottom of said rectifying column, is expanded and fed into a condensation step whereafter said expanded oxygen-enriched liquid air is used as a source of reflux producing cold for said rectifying column and adiabatic expansion is effected on the evaporated gas to produce cold, so that heat exchange with raw air is conducted,
said method for producing nitrogen being provided with a closed cycle comprising the step of:
compressing a circulating gas;
cooling a compressed circulating gas by heat exchange with a circulating gas fed back into said compressing step;
vaporizing a bottom liquid in said rectifying column by supplying said cooled circulating gas into a reboiler at the bottom of said rectifying column to thereby liquefy the cooled circulating gas;
expanding said liquefied circulating gas;
thereafter feeding an expanded circulating gas into said condensation step to vaporize the same by heat exchange with said high purity nitrogen withdrawn from the rectifying column overhead;
thereafter feeding said vaporized circulating gas into said cooling step before the same is fed back into said compressing step, to heat the same by heat exchange with said compressed circulating gas; and returning said heated circulating gas into said compressing step for circulation.

4,617,038
PROCESS FOR USING PREFERENTIAL PHYSICAL SOLVENTS FOR SELECTIVE PROCESSING OF HYDROCARBON GAS STREAMS

Yuv R. Mehra, Odessa, Tex., assignor to El Paso Hydrocarbons Company, Odessa, Tex.
Continuation-in-part of Ser. No. 759,327, Jul. 26, 1985, which is a continuation-in-part of Ser. No. 758,351, Jul. 24, 1985, which is a continuation-in-part of Ser. No. 637,210, Aug. 3, 1984, Pat. No. 4,578,094, which is a continuation-in-part of Ser. No. 532,005, Sep. 14, 1983, Pat. No. 4,526,594, which is a continuation-in-part of Ser. No. 507,564, Jun. 24, 1983, Pat. No. 4,511,381, which is a continuation-in-part of Ser. No. 374,270, May 3, 1982, Pat. No. 4,421,535. This application Oct. 4, 1985, Ser. No. 784,566
Int. Cl.⁴ F25J ***3/00***
U.S. Cl. 62—17 **16 Claims**



1. In a process for the removal of hydrocarbon gas liquids, comprising hydrocarbons heavier than methane, from a hydrocarbon gas stream, wherein a need exists for recovering to any selected degree and at extremely high recoveries a selected hydrocarbon component and heavier hydrocarbons within the group consisting of ethane, propane, butane, and pentane without the need simultaneously to recover hydrocarbons lighter than said selected hydrocarbon component from said hydrocarbon gas stream,
the improvement of selectively extracting said hydrocarbon gas liquids from said hydrocarbon gas stream with a preferential physical solvent which provides selective capability for recovery according to said selected degree of (a) ethane in amounts ranging from 2-98%, (b) propane in amounts ranging from 2-99%, (c) butane in amounts ranging from 2-100%, or (d) pentanes and higher molecular weight hydrocarbons in amounts ranging up to 100% which comprises:
A. selectively extracting and stripping said hydrocarbon gas stream with said physical solvent to produce a residue hydrocarbon gas stream of pipeline specifications and a rich solvent stream containing ethane and heavier hydrocarbon components, said physical solvent being selective for ethane and heavier hydrocarbon components of the gas stream such that: (1) the relative volatility of methane over ethane is at least 5.0 and the hydrocarbon loading capacity, defined as solubility of ethane in solvent, is at least 0.25 standard cubic feet of ethane per gallon of solvent, or (2) the preferential factor determined by the multiplication of relative volatility of methane over ethane by the solubility of ethane in solvent, in standard cubic feet of ethane per gallon of solvent, of at least 1.25; and
B. distilling said rich solvent to produce said hydrocarbon gas liquids and said physical solvent.

4,617,039
SEPARATING HYDROCARBON GASES

Loren L. Buck, Tulsa, Okla., assignor to Pro-Quip Corporation, Tulsa, Okla.
Filed Nov. 19, 1984, Ser. No. 673,039
Int. Cl.⁴ F25J ***3/02***
U.S. Cl. 62—26 **11 Claims**

1. In a process for separating a hydrocarbon gas containing

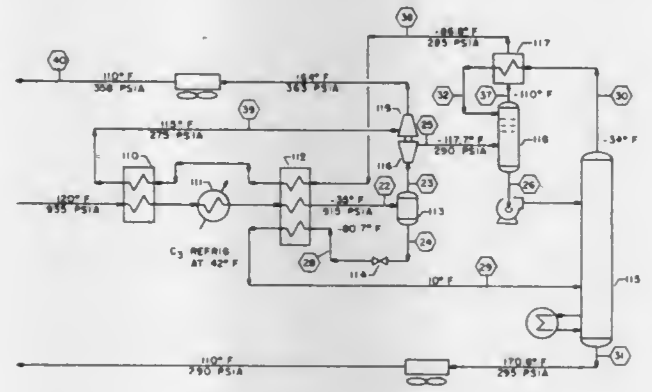
at least ethane and C_3 components into a fraction containing a predominant portion of the ethane and lighter components and a fraction containing a predominant portion of the C_3 and heavier components, in which process

- (a) the feed gas is treated in one or more heat exchangers, and expansion steps to provide at least one partly condensed hydrocarbon gas, providing thereby at least one first residue vapor and at least one C_3-containing liquid which liquid also contains lighter hydrocarbons; and
- (b) at least one of the C_3-containing liquids is directed into a distillation column wherein said liquid is separated into a second residue containing lighter hydrocarbons and a C_3-containing product;

the improvement comprising

- (1) cooling said second residue to partially condense it;
- (2) intimately contacting at least part of one of said first residue vapors with at least part of the liquid portion of the partially condensed second residue in at least one contacting stage and thereafter separating the vapors and liquids from said contacting stage;
- (3) supplying the liquids thereby recovered to the distillation column as a liquid feed thereto; and
- (4) directing the vapors thereby recovered into heat exchange relation with said second residue from the distillation column, thereby to supply the cooling of step (1), and thereafter discharging said residue gases.

7. In an apparatus for separating a hydrocarbon gas containing at least ethane and C_3 components into a fraction containing a predominant portion of ethane and lighter components and a fraction containing a predominant portion of the C_3 and heavier components in which apparatus



- (a) one or more heat exchange means and one or more expansion means are provided which are cooperatively connected to provide at least one partly condensed hydrocarbon gas, providing thereby at least one first residue vapor and at least one C_3-containing liquid which liquid also contains lighter hydrocarbons and
- (b) a distillation column connected to receive at least one of said C_3-containing liquids which is adapted to separate the C_3-containing liquids into a second residue containing lighter hydrocarbons and a C_3-containing product;

the improvement comprising

- (1) heat exchange means connected to said distillation column to receive said second residue and to partially condense it;
- (2) contacting and separating means connected to receive at least part of one of the first residue vapors and at least part of the liquid portion of the partially condensed second residue and to comingle said vapor and liquid in at least one contacting stage, which means include separation means for separating the vapor and liquid after contact in said stage;
- (3) said means (2) being further connected to supply the liquids separated therein to the distillation column as a liquid feed thereto, and
- (4) said means (2) also being connected to direct the vapors separated therein into heat exchange relation with said second residue from the distillation column in said heat exchange means (1).

4,617,040
HIGHLY PURE NITROGEN GAS PRODUCING APPARATUS

Akira Yoshino, Osaka, Japan, assignor to Daidousanso Co., Ltd., Osaka, Japan

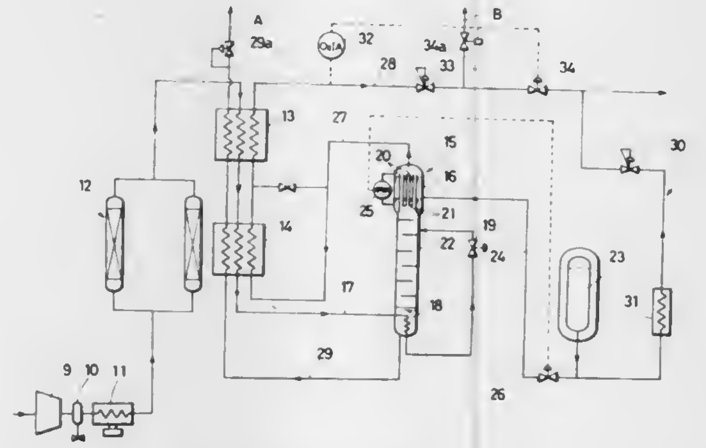
PCT No. PCT/JP84/00089, § 371 Date Nov. 6, 1984, § 102(e) Date Nov. 6, 1984, PCT Pub. No. WO84/03554, PCT Pub. Date Sep. 13, 1984

PCT Filed Mar. 7, 1984, Ser. No. 673,748

Claims priority, application Japan, Mar. 8, 1983, 58-38050; Jan. 11, 1984, 59-4123

Int. Cl.⁴ F25J ***3/04***

U.S. Cl. 62—37 **12 Claims**



1. In an apparatus comprising means designed for producing highly pure nitrogen gas from the rectification of air, for precluding the need for a subsequent high-temperature catalytic step and for precluding the need of purging large quantities of cooling nitrogen, the combination which comprises means effective to compress the air taken from the outside, a means to remove the carbon dioxide gas and water in the compressed air by the said air compression means, a means to store liquefied nitrogen supplied from the outside, a heat exchanger connected to cool down the compressed air passed through said removing means to ultra low temperature, a rectifying column connected to turn a part of the compressed air cooled by the heat exchanger to ultra low temperature into liquid and to keep only nitrogen in gas form, said rectifying column having evaporating means for converting said liquid nitrogen to gaseous nitrogen, a lead channel connected lead consistently the liquefied nitrogen in said liquefied nitrogen storage means into said evaporating means as a source of cooling for compressed air liquefication in place of cold generated from a gas expander, a means to control the feed rate of said liquefied nitrogen in order to maintain constant rectifying conditions in said rectifying column which is provided to said lead channel, and an outlet channel connected to combine and remove both of the gasified said liquid nitrogen after use as the cooling source and also the gasified nitrogen from the outside source, pass them through said heat exchanger and heat them by exchanging heat with said compressed air, as the product nitrogen gas.

4,617,041
METHOD FOR CONTINUOUSLY MANUFACTURING ELONGATED BODIES STARTING FROM UNMOLTEN SOLID STARTING MATERIAL

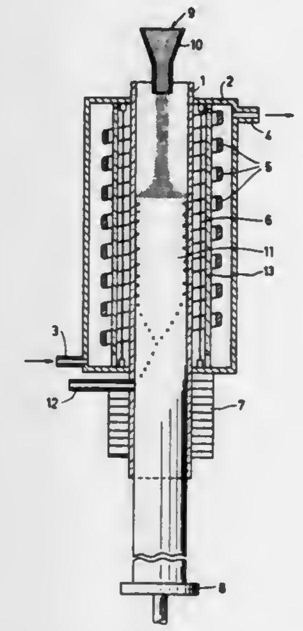
Wilhelmus C. P. M. Meerman, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 549,118, Nov. 7, 1983, Pat. No. 4,546,484. This application Jul. 16, 1985, Ser. No. 755,745

Claims priority, application Netherlands, Nov. 16, 1982, 8204438

Int. Cl.⁴ C03B ***37/02***

U.S. Cl. 65—2 **5 Claims**



1. A method for continuously manufacturing elongated bodies of glass comprising the steps of

- continuously supplying starting material to a melt of glass material present in an upper part of a vertically arranged tube, said tube having cooled walls,
- heating said melt in a heating zone by a high-frequency magnetic field,
- blowing dry gas into said melt from below said heating zone to mix and dry said melt,
- lowering said melt into a first zone of lower temperature to refine said melt by adjusting oxygen content,
- solidifying said melt in a subsequent lower zone of said tube below said first zone, and
- withdrawing solidified material of said melt from said tube at a speed corresponding to the rate of supplying said starting material.

4,617,042
METHOD FOR THE HEAT PROCESSING OF GLASS AND GLASS FORMING MATERIAL

David B. Stickler, Carlisle, Mass., assignor to Gas Research Institute, Chicago, Ill.

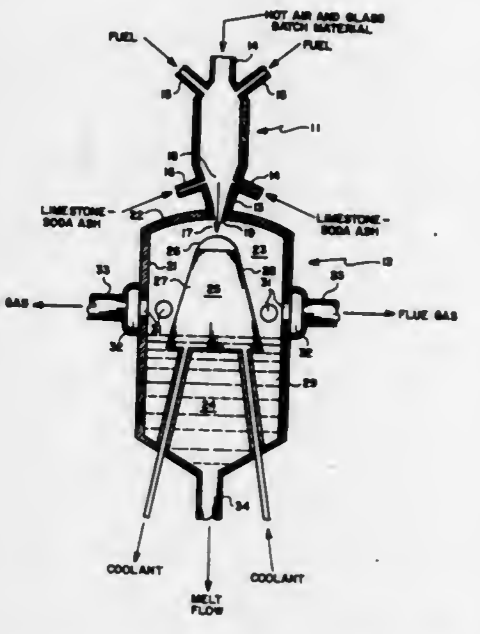
Filed Oct. 4, 1985, Ser. No. 783,964

Int. Cl.⁴ C03B ***5/16, 3/00***

U.S. Cl. 65—27 **17 Claims**

1. In the method of producing a glass product by heat processing glass batch material, the steps comprising:

- (a) generating a first hot gas stream having a peak temperature substantially greater than the melting temperature of the glass product;
- (b) entraining glass batch material in said first hot gas stream;
- (c) causing said first hot gas stream and entrained glass batch material to form a second stream having a first line of symmetry;
- (d) causing said second stream to be directed toward a first surface having a second line of symmetry substantially coincident with said first line of symmetry at a velocity and in a manner to form a gas flow field at about said first surface causing said entrained glass batch material to be separated from said second stream by contacting and being deposited on said first surface;
- (e) causing said deposited material to flow from said first surface over a second surface to a collection region as a viscous layer having an exposed surface; and
- (f) controlling the flow of said viscous layer and said second stream after leaving said first surface to cause gas entrapped or generated therein to immigrate to and leave the exposed surface of said viscous layer and simultaneously cause at least substantial reaction of glass batch materials comprising said viscous layer whereby mixing and glass forming reactions including the generation of gas in said viscous layer and elimination of gas therefrom substantially occur before reaching said collection zone.



4,617,043
METHOD OF DRIVING A GLASS TEMPERING SYSTEM AND A GLASS TEMPERING SYSTEM FOR CARRYING OUT THE METHOD

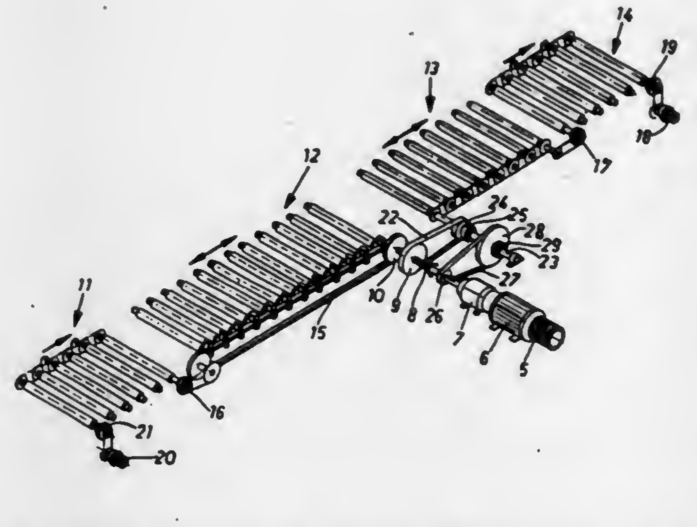
Pauli T. Reunamäki, Nattari, Finland, assignor to O/Y Kyro A/B, Finland

Filed Aug. 5, 1985, Ser. No. 762,449

Claims priority, application Finland, Oct. 3, 1984, 843880

Int. Cl.⁴ C03B ***27/04***

U.S. Cl. 65—29 **14 Claims**



1. A method of driving a horizontal glass tempering system, said system including a loading section, a heating furnace including a thermally insulated chamber with heating means therein, a quench and cooling section having cooling equipment therein including air blowers, an unloading section, conveyors in each section and in the furnace, each conveyor being comprised of horizontal rollers transverse to the glass carrying

direction, drive mechanisms for the conveyors, clutch mechanisms for driving separate conveyors in unison or separately; the glass tempering system oscillating the rollers of the furnace conveyor back and forth while heating the glass sheets to a tempering temperature and oscillating the quench and cooling section conveyor back and forth while effecting the quenching of glass sheets; the method comprising the steps of:

oscillating the furnace conveyor mechanically coupled together with the quench and cooling section conveyor while quenching a glass sheet load in the quench and cooling section with the furnace being in an unloaded condition to reestablish a thermal equilibrium in the furnace;

uncoupling the quench and cooling section conveyor from the furnace conveyor to stop the former conveyor after a glass sheet load in the quench and cooling section has been quenched with the temperature in the center of glass sheets of the load being lower than the strain point of this particular glass raw material forming the glass sheet load; and

subsequently moving a fresh glass sheet load to be heated into the furnace.

5. A glass tempering system, said system comprising:

a furnace loading section;

a heating furnace including a thermally insulated chamber fitted with heating means;

a quench and cooling section including cooling equipment fitted with air blowers;

an unloading section;

conveyors in each section and in the furnace, each conveyor being comprised of horizontal rollers transverse to the glass carrying direction;

clutch mechanisms for selectively connecting and driving the separate conveyors in unison or separately;

conveyor drive means, coupled with the furnace conveyor and the quench and cooling section conveyor, for driving each conveyor in a first operational cycle in an oscillating fashion and in a second operation cycle for effecting a long conveying stroke, said first operational cycle including first and second oscillation steps, said furnace conveyor and said quench and cooling section conveyor being coupled with each other by a mechanical coupling through a first clutch mechanism with a direct 1:1 transmission ratio during the first oscillation step for quenching of a glass sheet load in the quench and cooling section and for reestablishing a thermal equilibrium in the furnace with the furnace unloaded, said mechanical coupling being the same as the mechanical coupling used for effecting the long conveying stroke such that said conveyors of the furnace and the quench and cooling section oscillate at the same rate and the same stroke length in the first oscillation step, timing means for continuing the first oscillation step until the center of the glass sheets of the load is lower than the strain point of the particular glass sheet load, means for permitting movement of a glass sheet load on the loading section into the furnace after the first oscillation step, and in the second oscillation step, during which a glass sheet load passed into the furnace is oscillated in the furnace and a quenched glass sheet load is cooled to a suitable handling temperature, the quench and cooling section conveyor being mechanically coupled through another clutch mechanism with the furnace conveyor through a reduction gear having a transmission ratio of at least 10:1.

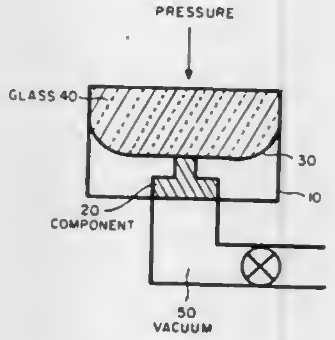
4,617,044

METHOD FOR FORMING GLASS-TO-METAL SEALS

Daniel P. Kramer, Dayton, and Richard T. Massey, Hamilton, both of Ohio, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 26, 1985, Ser. No. 769,210
Int. Cl.⁴ C03C *27/02*

U.S. Cl. 65—49 **4 Claims**



1. A method for forming a glass-to-metal seal, comprising the steps of:

(a) placing in a vacuum injection mold a formed metal part to be sealed;

(b) heating a glass having a melting point greater than the melting point of said metal to a temperature greater than said glass melting point, thus melting said glass;

(c) vacuum injecting said molten glass into said mold to effect the seal.

4,617,045

CONTROLLED PROCESS FOR MAKING A CHEMICALLY HOMOGENEOUS MELT FOR PRODUCING MINERAL WOOL INSULATION

Boris Bronshtein, 6702 N. Newgard, Chicago, Ill. 60626

Filed Apr. 5, 1985, Ser. No. 720,562
Int. Cl.⁴ C03B *5/16;* C03C *13/06*

U.S. Cl. 65—134 **5 Claims**

1. A controlled method for making a chemically homogeneous melt for producing mineral wool which comprises

(a) physically homogenizing a mixture of the following formula:

Ingredient	% By Weight
Bottom ash	5–30
Cement kiln dust	10–25
Mineral wool production waste	25–35
Slag (from steel making furnace)	7–24
Portland cement binder	3–6
the total weight equalling 100%	

(b) compacting said mixture into agglomerate pieces of predetermined size and shape to a density of 125 to 160 lbs./ft^3;

(c) melting said agglomerate in a cupola furnace;

(d) discharging the molten agglomerate into a receiver;

(e) passing hot combustion gases into said melt to chemically homogenize the melt and heat the melt to a predetermined temperature; and

(f) converting said melt into fibers.

5. A controlled method for making a chemically homogeneous melt for producing mineral wool which comprises

(a) physically homogenized a mixture of the following formula:

Ingredient	% By Weight
Bottom ash	5–30
Cement kiln dust	10–25
Mineral wool production waste	25–35
Slag (from steel-making furnace)	7–24
Binder	
Hydrated lime	3
Black liquor	5–6
Ground portion of said wool production waste (<50 microns)	5

(b) briquetting said mixture into agglomerate pieces of predetermined size and shape to a density of 125 to 160 lbs./ft^3;

(c) melting said agglomerate in a cupola furnace;

(d) discharging the molten agglomerate into a receiver;

(e) passing hot combustion gases into said melt to chemically homogenize the melt and the heat the melt to a predetermined temperature; and

(f) converting said melt into fibers.

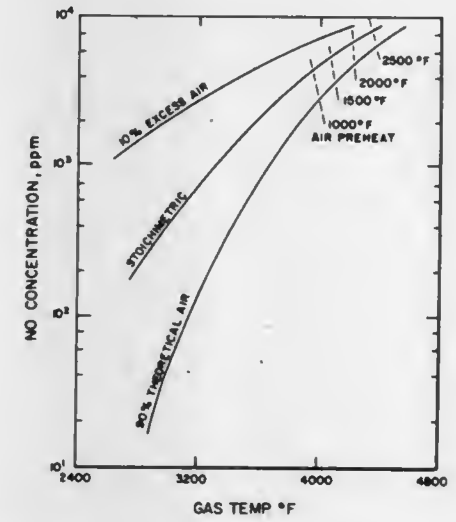
4,617,046

METHOD FOR THE HEAT PROCESSING OF GLASS AND GLASS FORMING MATERIAL

Finn A. Hals, Lexington, Mass., assignor to Gas Research Institute, Chicago, Ill.

Filed Oct. 4, 1985, Ser. No. 784,465
Int. Cl.⁴ C03B *5/10*

U.S. Cl. 65—134 **15 Claims**



1. In the method of controlling NO_x emissions from a combustion chamber for heat processing non-combustible particulate matter in which combustion of fuel produces products of combustion including NO_x compounds which is vented to the atmosphere, the steps comprising:

(a) introducing and burning in a combustion chamber a fuel and an oxidizer and producing therefrom products of combustion at a peak temperature greater than the temperature at which NO is formed and capable of forming a substantial amount of NO equilibrium concentration in said products of combustion at said peak temperature; and

(b) providing entraining and dispersing of noncombustible particulate matter to be heat processed in said products of combustion as a dispersed heat sink in a quantity to cool said products of combustion from its peak temperature at a rate sufficient to substantially kinetically limit the formation of NO in said products of combustion to a level which is a fraction of the said NO equilibrium concentration for said products of combustion at said peak temperature.

4,617,047

MUSHROOM SUPPLEMENT

Carl W. Bretzloff, deceased, late of Napoleon, Ohio (by Lillian Bretzloff, executrix), assignor to Campbell Soup Company, Camden, N.J.

Continuation-in-part of Ser. No. 402,314, Jul. 27, 1982, Pat. No. 4,534,781. This application Mar. 12, 1985, Ser. No. 711,006
Int. Cl.⁴ C05G *3/00*

U.S. Cl. 71—5 **8 Claims**

1. A method for enhancing the growth of mushroom mycelia in a compost bed comprising admixing into said compost, either at the time of spawning of the mycelia or up to the time of casing, an effective amount of a particulate nutrient supplement comprising the combination of a protein-containing nutrient and a mold inhibitory composition.

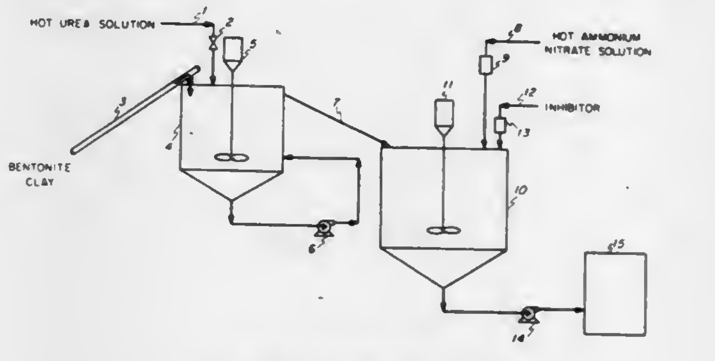
4,617,048

SODIUM BENTONITE-UAN SUSPENSION WITHOUT CHEMICAL DISPERSANTS

David G. Salladay, Decatur, and Donald L. Kachelman, Florence, both of Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Filed Aug. 26, 1985, Ser. No. 769,060
Int. Cl.⁴ C05C *9/00*

U.S. Cl. 71—30 **16 Claims**



MIX EQUIPMENT FOR UREA AMMONIUM NITRATE SUSPENSION WITH BENTONITE CLAY

10. A process for the direct production from urea solutions and bentonite clay of urea suspensions having excellent handling and storage characteristics including minimal extended time viscosity decreases, minimal extended time pourability decreases, and substantial freedom from post-production urea crystal growth, said urea-ammonium nitrate suspension being eminently suitable to production steps thereof at temperatures elevated as high as about 260° F., which process comprises the steps of:

(1) introducing into mixing means a stream of urea solution, said urea solution ranging from about 10 to about 88 weight percent urea and the temperature of said urea solution introduced into said mixing means ranging from about 32° to about 260° F.;

(2) introducing into said mixing means a stream of bentonite clay, said bentonite clay being sodium bentonite and being introduced into said mixing means in predetermined portions such that said bentonite clay comprises from about 0.5 to about 6.0 percent by weight of the combined urea solution bentonite composite;

(3) intimately mixing said streams of urea solution and bentonite clay in said mixing means to effect the homogeneous dispersion of said clay in said solution; and

(4) removing as product the resulting mixture of urea solution and bentonite clay as urea suspension;

said process characterized by the fact that the product produced therefrom has an initial viscosity ranging from about 100 cps to about 2000 cps at 70° F., has an initial pourability of at least about 95 percent by volume at 70° F., and after storage for a period of about one month exhibits decreases over said initial viscosity ranging from about 25 percent to 50 percent and decreases in pourability ranging from substantially no decreases thereof to about 3 percent.

4,617,049
METHOD FOR PROTECTING PLANT LIFE FROM ACIDIC ATMOSPHERIC POLLUTANTS

Albin D. Lengyel, 2417 E. Indian School Rd., Phoenix, Ariz. 85064

Filed Aug. 22, 1985, Ser. No. 768,062
Int. Cl.⁴ A01N *43/16*
U.S. Cl. 71—88 **1 Claim**

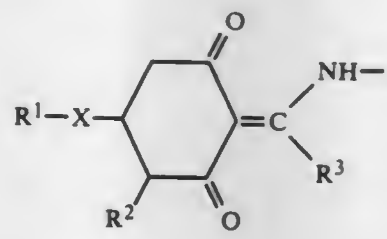
1. A method for treating a stand of coniferous trees growing by natural processes and exposed to an atmosphere containing inorganic nitric acid or nitrate compounds to improve the resistance of said trees to damage by acid rain, said method comprising the step of foliarly applying at least one sugar selected from the group consisting of monosaccharides and disaccharides to said coniferous trees naturally growing in said stand exposed to said atmosphere.

4,617,050
CYCLOHEXANE-1,3-DIONE DERIVATIVES

Dieter Jahn, Edingen-Neckarhausen; Rainer Becker, Bad Durkheim; Michael Keil, Ludwigshafen; Walter Himmele, Walldorf, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 496,644, May 20, 1983, abandoned. This application Jul. 2, 1985, Ser. No. 750,996
Claims priority, application Fed. Rep. of Germany, May 22, 1982, 3219315
Int. Cl.⁴ A01N *37/44, 35/06;* C07C *131/02, 131/10*
U.S. Cl. 71—98 **3 Claims**

1. A cyclohexane-1,3-dione derivative of the formula



I

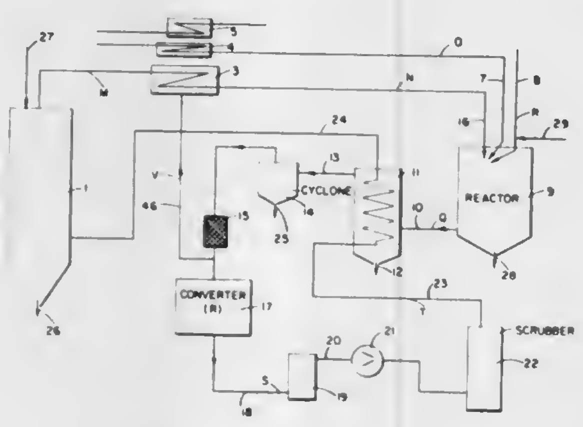
where R^1 is cycloalkyl of 3 to 12 carbon atoms which may or may not be olefinically mono-unsaturated, can be substituted by not more than 3 methyl or ethyl groups or by one vinyl, methylvinyl or allyl group, 1 or 2 chlorine atoms or one alkoxy group of 1 to 4 carbon atoms and can be bridged by an alkylene chain of not more than 4 carbon atoms, X is alkylene of 1 to 5 carbon atoms, which contains 1 or 2 heteroatoms selected from sulfur and oxygen, which may be mono-unsaturated and which may be substituted by 1 to 3 alkyl groups of 1 to 3 carbon atoms, R^2 is hydrogen or alkoxycarbonyl where alkoxy is of 1 to 2 carbon atoms, R^3 is alkyl of 1 to 4 carbon atoms, R^4 is alkyl of 1 to 3 carbon atoms, alkenyl of 3 or 4 carbon atoms, propargyl or haloalkenyl of 3 or 4 carbon atoms and 1 to 3 halogen atoms, or a salt thereof.

2. A herbicide containing conventional additives and, as active ingredient, from 0.5 to 90 wt% of a cyclohexane-1,3-dione derivative of the formula I as claimed in claim 1.

4,617,051
METHOD OF OPERATING A REACTOR FOR SYNTHESIS GAS PRODUCTION

Klaus Knop, Bottrop, and Peter Heinrich, Oberhausen, both of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 17, 1983, Ser. No. 505,330
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1982, 3223702
The portion of the term of this patent subsequent to Dec. 3, 2002, has been disclaimed.
Int. Cl.⁴ C22B *5/12;* C10J *3/46*
U.S. Cl. 75—91 **3 Claims**



1. A method of operating a synthesis gas reactor for producing synthesis gas comprising:

supplying carbon containing material, oxygen gas and recycled gas to the synthesis gas reactor for producing a hot raw reactor gas;
supplying the hot raw reactor gas to a waste heat exchanger to heat the waste heat exchanger and cool the raw reactor gas;
removing ash from the cool raw reactor gas to produce ash-free raw reactor gas;
supplying a portion of the free-ash raw reactor gas to a recycled gas heater for operating the recycled gas heater to heat recycled gas;
branching off another portion of the ash-free raw reactor gas from the portion which was passed to the recycled gas heater;
converting the other branched off portion of the ash-free raw reactor gas in a high temperature converter to form converted reactor gas;
compressing the converted reactor gas and supplying it to a scrubber to form cool reduction gas;
passing the cool reduction gas through the waste heat exchanger to form hot reduction gas;
supplying ore and the hot reduction gas to a reduction reactor to form a reduction product and to form said recycled gas for said synthesis gas reactor; and
passing the recycled gas through the recycled gas heater after the recycled gas leaves the reduction reactor and before the recycled gas is supplied to the synthesis gas reactor to heat the recycled gas.

4,617,052
PROCESS FOR PREPARING A MOTHER ALLOY FOR MAKING AMORPHOUS METAL

Tomoo Takenouchi; Yoshiaki Ichinomiya, and Yoshiyuki Iwanami, all of Hokkaido, Japan, assignors to The Japan Steel Works Ltd., Tokyo, Japan

Filed Aug. 30, 1985, Ser. No. 771,078
Claims priority, application Japan, Jan. 28, 1985, 60-12489
Int. Cl.⁴ C21C *33/00*
U.S. Cl. 420—117 **10 Claims**

1. A process for preparing a mother alloy for making a Fe-B-Si base amorphous metal, comprising the steps of:

providing a molten metal containing an iron source and ferrosilicon;
adding to the molten metal a mineral ore containing a boron oxide;
reducing a predetermined amount of the boron oxide in the molten metal by the reducing action of carbon or aluminum that is initially present in the metal or externally added together with the mineral ore, thereby dissolving said boron oxide as elemental boron in the molten metal;
removing the carbon or aluminum by supplying an oxidant; and
adjusting the contents of boron and silicon in the molten metal to be within a desired composition range.

4,617,053
METAL REINFORCED POROUS REFRACTORY HARD METAL BODIES

Louis A. Joó, Johnson City; Kenneth W. Tucker, Elizabethton, and Jay R. Shaner, Johnson City, all of Tenn., assignors to Great Lakes Carbon Corporation, Briarcliff Manor, N.Y.

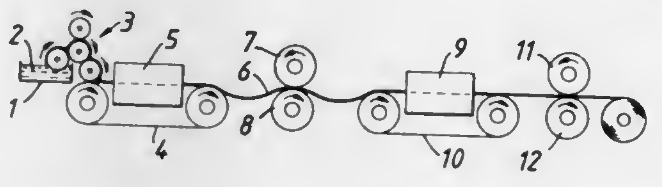
Filed Sep. 20, 1985, Ser. No. 778,456
Int. Cl.⁴ C22C *29/14*
U.S. Cl. 75—244 **2 Claims**

1. A refractory hard metal-metal article wherein the refractory hard metal is TiB_2 in which the TiB_2 is a porous solid with a continuous phase impregnated with a metal selected from the group consisting of iron, copper, aluminum and bronze.

4,617,054
PRODUCTION OF METAL STRIP

Roy Mathers, Clywd, Wales, assignor to Mixalloy Limited, Clywd, Wales

Filed Aug. 7, 1985, Ser. No. 763,543
Claims priority, application United Kingdom, Aug. 10, 1984, 8420327
Int. Cl.⁴ B22F *3/00*
U.S. Cl. 75—246 **9 Claims**



1. A process for producing strip from particulate metallic material which comprises forming a slurry comprising a suspension of particulate metallic material in a solution of water containing a film forming binder material, a ratio by weight of particulate metallic material to water of the slurry lying in a range of 3.4:1 and 4.2:1, depositing a coating of the slurry onto a support surface, removing the slurry coating after drying from the support surface in a form of a self-supporting green strip, and rolling the strip to effect compaction thereof.

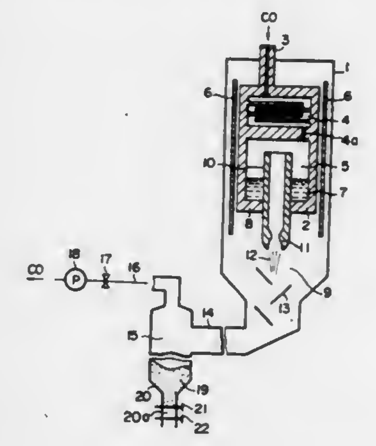
4,617,055
METAL CORED CERAMIC SURFACED FINE POWDER MATERIAL AND APPARATUS AND METHOD FOR MAKING IT

Hirohisa Miura; Hiroshi Satou; Toshio Natsume, and Hidenori Katagiri, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Division of Ser. No. 481,464, Apr. 1, 1983. This application Dec. 3, 1984, Ser. No. 677,469
Claims priority, application Japan, Apr. 2, 1982, 57-054873
Int. Cl.⁴ B22F *9/00*
U.S. Cl. 75—251 **10 Claims**

1. A ceramic-metallic composite fine powder material comprising: fine powder particles each having a metallic core and a ceramic surface layer which is a compound of the metal composing said core and another element, wherein the average value of the ratio of the thickness of the surface layer of a powder particle to the radius of the particle is substantially greater than 0.05, wherein said powder material is made by:

(a) mixing said metal in a gaseous form with said another element in the gaseous state, and



(b) passing the resulting mixture through a convergent-divergent nozzle, thereby rapidly cooling the mixture by adiabatic expansion.

4,617,056
THICK COATING COMPOSITIONS

Mark F. Mosser, Sellersville, and Bruce G. McMordie, Philadelphia, both of Pa., assignors to Sermatech International, Inc., Limerick, Pa.

Filed Dec. 29, 1983, Ser. No. 566,514
Int. Cl.⁴ C09D *5/00*
U.S. Cl. 106—1.12 **26 Claims**

1. A coating composition especially suitable for a machinable aluminum-filled thick coating possessing improved salt corrosion and oxidation resistance, which composition comprises a liquid binder which comprises phosphate ions and ions of the group of chromate or molybdate ions, and an atomized aluminum powder having a particle size distribution curve containing two peak frequencies which are attributable to the presence of a mixture of larger particle size powder having an average particle size greater than 15 μm in which the size distribution is such that at least about 5% by weight of the particles is retained on a 325 mesh screen and at most 50 weight percent of a mixture of smaller particle size powder, the two powders being in such ratio that the average particle size, medium equivalent spherical diameter ($\overline{ESD}$), of the smaller to the larger powder is less than 0.5.

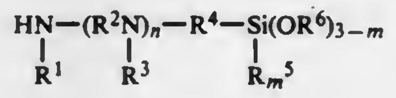
4,617,057
OIL AND WATER REPELLENT COATING COMPOSITIONS

Edwin P. Plueddemann, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jun. 4, 1985, Ser. No. 741,642
Int. Cl.⁴ C09K *3/18*
U.S. Cl. 106—2 **15 Claims**

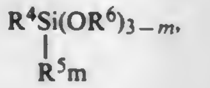
1. An oil and water repellent coating composition, comprising:

(a) a resin, selected from the group consisting of colloidal inorganic-based siloxane resin, poly(dialkylsiloxane)-monoorgano substituted silsesquioxane block copolymer, acrylic polymer and copolymer, ethylene-vinyl acetate latex and styrene-butadiene latex,
(b) an aminoorganosilane of the general formula



$$\underset{R^1}{HN}-(\underset{R^3}{R^2N})_n-R^4-\underset{R_m^5}{Si}(OR^6)_{3-m}$$

wherein R^1 is selected from the group consisting of hydrogen, alkyl of one to four carbon atoms or


$$R^4Si(OR^6)_{3-m},\quad \text{with } R^5m \text{ on } R^4Si$$

R^2 is an alkylene group of two to four carbon atoms, R^3 is hydrogen or alkyl of one to four carbon atoms, R^4 is an alkylene group of three to four carbon atoms, R^5 and R^6 are alkyl groups of one to four carbon atoms each, n is zero to four and m is zero or one; and

(c) a perfluorinated organic compound of the general formula:

R_fY

wherein R_f is a perfluoroalkyl group of four to 18 carbon atoms and Y is selected from the group consisting of —COOH, —COOR, wherein R is alkyl, alkoxyalkyl or hydroxyalkyl of one to eight carbon atoms;

wherein the combined amount of the aminoorganosilane and the perfluorinated organic compound comprises between about 0.1 and about 10 percent by weight of said resin and the molar ratio of the perfluorinated organic compound to the sum of primary and secondary amine group(s) in the aminoorganosilane is fixed between about 0.33 and about 1.0.

4,617,058
PROCESS FOR PRODUCING BLACKBOARD CRAYON

Seung J. Lee, 86-3, Hyomok-dong, Dong-ku, Daegu 635, Rep. of Korea

Filed Sep. 10, 1985, Ser. No. 776,166

Claims priority, application Rep. of Korea, Jan. 12, 1984, 1984-165

Int. Cl.⁴ C09D *13/60*

U.S. Cl. 106—19 **9 Claims**

1. Process for producing blackboard crayon comprising the first step wherein the first coagulant is made from the mixture of paraffin, hardened oil, surface active agent and 3% glycerine solution, or the second coagulant from the mixture of beef tallow or palm oil, sodium hydroxide, magnesium oxide, surface active agent and water, and the second step wherein one of the first or the second coagulant or mixture of the two coagulants is, immediately after being made, mixed with the crayon material which is the mixture of calcium carbonate, titanium oxide and zinc oxide, and a solvent in order to be extrusion-molded as crayons.

4,617,059
DEMOLITION AGENT FOR BRITTLE MATERIALS

Yukinori Yamazaki, Tokyo, Japan, assignor to Nihon Cement Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 556,032, Nov. 29, 1983, abandoned. This application Apr. 11, 1985, Ser. No. 722,197

Int. Cl.⁴ B02C *19/00*

U.S. Cl. 106—118 **2 Claims**

1. A demolition agent for brittle materials which is prepared by pulverizing a mixture containing limestone and phosphorus components together with SiO_2, Al_2O_3 and Fe_2O_3, calcining said mixture, and pulverizing resulting quick lime clinker, said demolition agent consisting of 0.5 to 10% by weight of phosphorous components in terms of P_2O_5, up to 4% SiO_2, up to 2% Al_2O_3, up to 2% Fe_2O_3, balance lime.

4,617,060
SILICA CATALYST SUPPORTS

John A. Dreibelbis, Wattsburg, Pa., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Continuation of Ser. No. 603,283, Apr. 23, 1984, abandoned, which is a continuation of Ser. No. 383,616, Jun. 1, 1982, abandoned, which is a continuation of Ser. No. 82,530, Oct. 9, 1979, abandoned. This application Jul. 19, 1985, Ser. No. 756,580

Int. Cl.⁴ C08L *1/08;* **C11C** *1/04;* **C11D** *13/00*

U.S. Cl. 106—193 R **14 Claims**

1. A method for the manufacture of silica catalyst supports comprising the steps of mixing precipitated amorphous silica powder having an average particle size in the range consisting essentially of about 10 to 50 millimicrons with a binder for said silica powder; forming the mixture of silica powder and binder into macrosized bodies suitable for use as a catalyst support; and calcining the said bodies of silica powder and binder.

4,617,061
MIXED PHASES HAVING THE COMPOSITION $BI_{2-x}CR_xO_3$

Peter Köhler, Krefeld; Peter Ringe, Bergisch-Gladbach, and Heinrich Heine, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 511,040, Jul. 5, 1983, Pat. No. 4,529,448. This application Dec. 18, 1984, Ser. No. 682,974

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1982, 3226891; Apr. 30, 1983, 3315849

Int. Cl.⁴ C04B *14/30;* **C01G** *37/14*

U.S. Cl. 106—302 **2 Claims**

1. A bismuth oxide-chromium oxide mixed phase pigment having a specific surface from about 1 to 10 m^2/g and the composition $Bi_{2-x}Cr_xO_3$ wherein x is from about 0.05 to 0.5.

4,617,062
ROOFING ASPHALT COMPOSITIONS CONTAINING HYDROCRACKED PITCH

Marc-Andre Poirier, Ottawa, Canada, assignor to Her Majesty in right of Canada as represented by the Minister of Energy, Mines and Resources, Ottawa, Canada

Filed May 14, 1985, Ser. No. 733,781

Int. Cl.⁴ C08L *95/00*

U.S. Cl. 106—273 R **8 Claims**

1. A roofing grade asphalt composition comprising a blend of:

(a) a processed residue boiling above 524° C. and obtained from high pitch conversion hydrocracking of hydrocarbon oils and

(b) as a diluent therefor a vacuum residuum having a penetration at 25° C. of 60–400.

4,617,063
CLEANING SILVER

Brian V. Morris, Britannic House, 28 St. Peters Road, Bournemouth, United Kingdom

Filed Mar. 11, 1985, Ser. No. 710,028

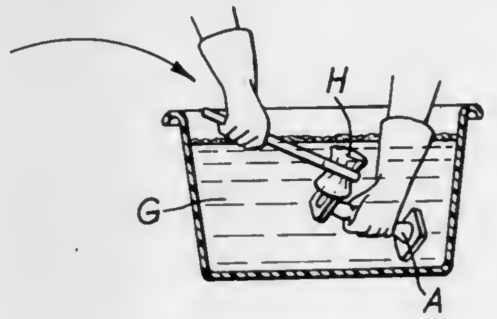
Claims priority, application United Kingdom, Dec. 4, 1984, 8430594

Int. Cl.⁴ B08B *7/00*

U.S. Cl. 134—6 **9 Claims**

1. A method cleaning a silver article comprising placing at least one piece of perforate aluminium in a container having a non-metallic inner surface; adding hot water sufficient to cover the article to be cleaned; adding to the water an amount of sodium carbonate effective to clean the article; immersing the article in the water containing the sodium carbonate in contact with the aluminium for a brief period; removing the article from the container; and rinsing the article.

9. A method of cleaning a silver article comprising placing a thin sheet of aluminium with a regular pattern of holes in a container having a non-metallic inner surface; adding hot water sufficient to cover the article to be cleaned; adding to the water about a dessertspoonful of household washing soda for each quart of water; immersing the article in the water in contact with the aluminium for a brief period; gently scrubbing off long-ingrained tarnish while the article is immersed; removing the article from the container; rinsing the article in hot soapy water; rinsing the article with clear water; and, finally, polishing the article with a soft clean cloth to give a bright finish.



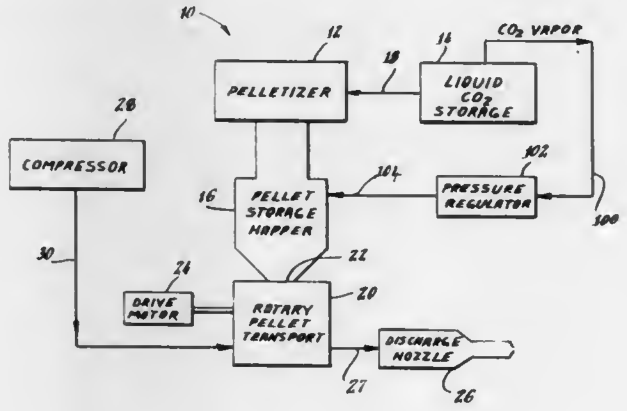
4,617,064
CLEANING METHOD AND APPARATUS

David E. Moore, Loveland, Ohio, assignor to Cryoblast, Inc., West Haven, Conn.

Filed Jul. 31, 1984, Ser. No. 636,372

Int. Cl.⁴ B08B *7/00*

U.S. Cl. 134—7 **26 Claims**



1. An improved particle-blast, cleaning apparatus comprising:

(a) a source of sublimeable pellets;

(b) housing means having pellet receiving and discharge stations;

(c) a rotary transport means having a plurality of cavities for receiving said pellets at said receiving station and transporting said pellets to said discharge station;

(d) means for providing gravity flow of said pellets to a cavity of said rotary transport means at said receiving station;

(e) a discharge nozzle; and,

(f) means for supplying a transport gas at high pressure to said discharge station for conveying said pellets from said discharge station to said discharge nozzle.

21. An improved method for transporting sublimeable pellets in a pellet blast cleaning apparatus comprising the steps of:

(a) rotating a body having a plurality of pellet transport cavities therein between a receiving station and a discharge station;

(b) providing a gravity feed of sublimeable pellets from a supply hopper to a cavity at said receiving station;

(c) rotating said body for transporting said pellets to said discharge station;

(d) flowing a transport gas at high pressure through said cavity at said transport station for discharging said pellets from said cavity; and

(e) conveying said pellets to a discharge nozzle.

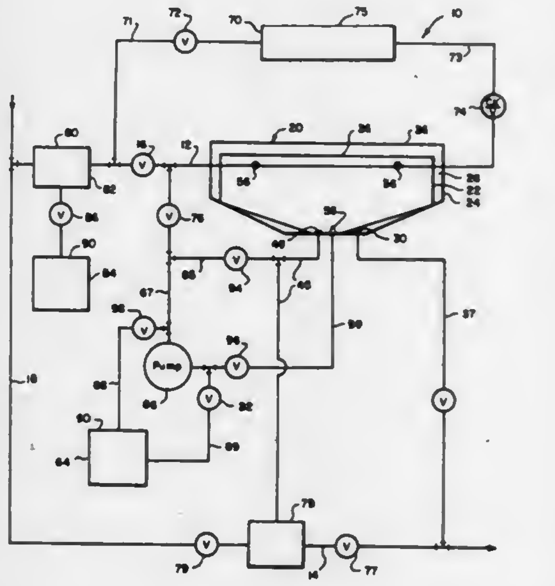
4,617,065
METHOD FOR LIQUID DISINFECTING AND STERILE RINSING

Craig S. Sundheimer, Salt Lake City, Utah, assignor to American Sterilizer Company, Erie, Pa.

Division of Ser. No. 683,814, Dec. 20, 1984. This application Jan. 21, 1986, Ser. No. 820,346

Int. Cl.⁴ B08B *3/04*

U.S. Cl. 134—25.4 **5 Claims**



1. A method for disinfecting articles and the exterior and interior surfaces of the vessel in which the articles are disposed in an apparatus for use with a conventional supply of fluid, where the apparatus has an outer vessel and an inner vessel so disposed within the outer vessel that an outer chamber is defined therebetween, the method comprising:

placing the articles in the inner vessel of an apparatus having an inner vessel so disposed within an outer vessel that an outer chamber is defined therebetween;

washing the articles;

draining the inner vessel;

so applying a disinfectant to the articles that the disinfectant fills the inner vessel and flows through an interface between the inner vessel and a cover on the inner vessel to so fill the outer chamber that the inner vessel is submerged for a period of time sufficient to disinfect the articles, the inner vessel and the cover;

draining the inner vessel and the outer chamber;

spraying sterile fluid onto the articles;

so filling the inner vessel with sterile fluid that the articles are substantially submerged and the sterile fluid flows through the interface and over the exterior surface of the cover, establishing a direction of flow for preventing the entrance of contaminants into the inner vessel and rinsing the exterior surfaces of the cover, for a period of time sufficient to soak the articles;

agitating the sterile fluid within the inner vessel; and

draining the inner vessel and the outer chamber.

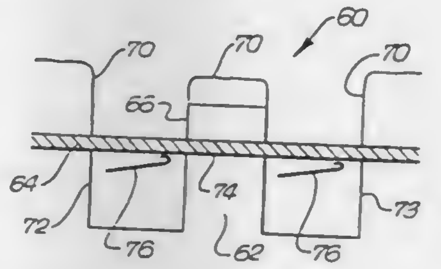
4,617,066
PROCESS OF MAKING SEMICONDUCTORS HAVING SHALLOW, HYPERABRUPT DOPED REGIONS BY IMPLANTATION AND TWO STEP ANNEALING

Prahalad K. Vasudev, Santa Monica, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 26, 1984, Ser. No. 674,623

Int. Cl.⁴ H01L *21/263, 21/225*

U.S. Cl. 148—1.5 **20 Claims**



1. A process for preparing a shallow, hyperabrupt interface between an undoped layer and a layer doped with a rapidly diffusing, activated species, in a crystalline near-surface layer of a base crystal, comprising the steps of:
- amorphizing the near-surface layer of the base crystal to produce an amorphized layer of the underlying base crystal;
- implanting a steep retrograde distribution of a rapidly diffusing implanted species into the amorphized layer, the retrograde distribution residing substantially entirely within the amorphized region, said step of implanting to occur at a temperature of the base crystal whereat the implanted species is essentially diffusionally immobile in the amorphized layer;
- annealing the base crystal at a first annealing temperature sufficiently high to achieve solid phase epitaxial growth in the amorphized layer on the crystalline portion of the base crystal, whereby the amorphized layer is recrystallized, the first annealing temperature being sufficiently low that the implanted species is substantially diffusionally immobile in the recrystallizing layer; and
- annealing the base crystal at a second annealing temperature greater than the first annealing temperature, for a time sufficient to activate the implanted species but not to permit large scale diffusion of the implanted species, thereby producing a shallow, hyperabrupt interface in the crystalline near-surface region of the base crystal.

4,617,067
PROCESS FOR THE PRODUCTION OF SEMI-FINISHED ARTICLES OF HARD STEELS USING A CONTINUOUS CASTING OPERATION

André Gueussier, Paris, France, assignor to Vallourec, Paris, France

Filed Aug. 6, 1981, Ser. No. 290,529

Int. Cl.⁴ C21D *8/00*

U.S. Cl. 148—2 **11 Claims**

1. In a process for producing a semi-finished article from a blank of hard steel having a carbon content greater than about 0.75% wherein the blank is produced by a continuous casting process including a step of secondary cooling the continuous casting by subjecting the casting to a coolant distributed over the first half of the metallurgical casting height followed by cutting the casting to form the blank, the improvement comprising the steps of:
- (a) subjecting the blank within about 1 minute to about 3 minutes after cutting from the casting to reheating to impart thereto a surface temperature which is between about θs less 80° C. and about θs less 110° C.;
- (b) maintaining said reheating of (a) for a period of from about 10 minutes to about 30 minutes;
- (c) transforming said reheated blank of (b) while in the hot condition by working to elongate the blank by a factor of at least 2; and
- (d) maintaining the surface temperature of the blank throughout the transformation step higher than about θs less 140° C.

4,617,068
COMPOSITION AND PROCESS FOR TREATMENT OF FERROUS SUBSTRATES

Peter F. King, Farmington Hills, Mich., assignor to Parker Chemical Company, Madison Heights, Mich.

Division of Ser. No. 611,663, May 15, 1984, Pat. No. 4,496,404. This application Jan. 11, 1985, Ser. No. 690,782

Int. Cl.⁴ C23D *22/34*

U.S. Cl. 148—6.14 R **4 Claims**

1. An aqueous acidic concentrate suitable for treating ferrous surfaces to inhibit surface corrosion thereof containing about 0.1 to about 5 g/l fluoride and aluminum in a weight ratio of aluminum to fluoride of at least 0.5:1.0.

4,617,069
METHOD FOR IMPROVING THE IMMUNITY TO TEMPERATURE CHANGES OF CAST IRON CONTAINING LAMELLAR GRAPHITE

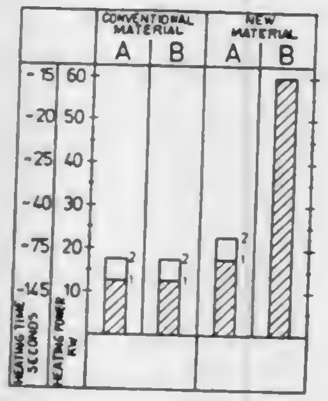
Klaüs Hornüng, Stein a. Rhein; Anton Alt, Schaffhausen, both of Switzerland; Günter Schulte, Velbert, Fed. Rep. of Germany, and Fritz Mahnig, Schaffhausen, Switzerland, assignors to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Mar. 13, 1984, Ser. No. 589,127

Claims priority, application Switzerland, Mar. 14, 1983, 1373/83

Int. Cl.⁴ C22C *37/00*

U.S. Cl. 148—138 **5 Claims**



1. A method of manufacturing a gray cast iron for a motor car part having improved immunity to temperature changes, consisting essentially of comprising annealing for up to three hours at 650° C. to 720° C. a cast iron which contains lamellar graphite, a grain structure of about 100% pearlite, and about 3.2% C, about 2.2% Si, about 0.056% P and about 0.3 to 0.5% by weight of at least one member of the group consisting of Cr and Mo and the remainder being Fe and whose saturation degree S is adjusted at <1 in accordance with formula $S=(\%C/4.3)-\frac{1}{3}(\%Si+\%P)$.

4,617,070
METHOD OF MAKING WEAR-RESISTANT CYLINDER, OR CYLINDER LINER SURFACES

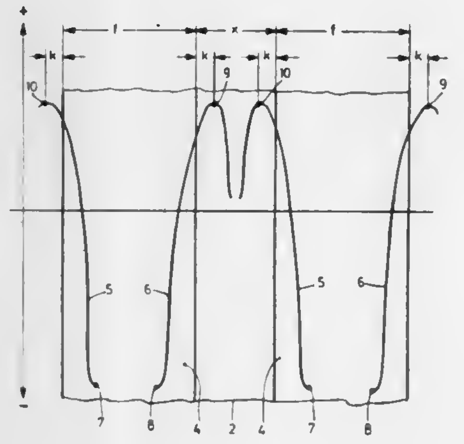
Welf Amende, Munich; Wolfram Lausch, Augsburg, and Hartwin Zechmeister, Munich, all of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Dec. 3, 1984, Ser. No. 677,172

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1983, 3343783

Int. Cl.⁴ C21D *1/06*

U.S. Cl. 148—152 **5 Claims**



1. Method of improve the wear resistance of running surfaces of cylinders or cylinder liners, made of cast iron, for an internal combustion engine, in which the cylinder bore is machined to a diameter which is slightly less than the desired final diameter and the cylinder bore wall is subsequently hardened by impinging a laser beam thereon,

wherein
- an absorption substance is applied to the surface of the cylinder bore which has the characteristic of lowering the reflection of laser light to provide for absorption of energy furnished by the laser beam, and the cylinder bore wall is hardened by impinging the laser beam on the cylinder bore and relatively moving the laser beam and the bore wall in a track pattern to obtain hardened tracks (**4**) in which the edge zones will have martensitic structure and, after hardening, the wall of the cylinder bore is honed to the final desired diameter,

wherein
- the step of hardening the cylinder bore wall by the laser beams is carried out by guiding the laser beam in hardening tracks (**4**) extending parallel to each other along the wall (**2**) of the cylinder or the cylinder liner, and at an inclination with an acute angle (α) with respect to the axis of the cylinder (**3**),
- said laser beam causing internal tension stresses to arise adjacent the hardening tracks within the material of the cylinder bore proximate to the cylinder bore walls;
- and wherein the hardening tracks (**4**) are applied to leave a spacing or gap X between the edges of the two adjacent hardening tracks (**4**), which spacing is so dimensioned that the maxima (**9, 10**) of internal tension stresses occurring in the cylinder walls cannot overlap, said maxima of tension stresses being spaced by a distance L from the respective edges of the adjacent hardening tracks (**4**), and wherein X is greater than 2 k.

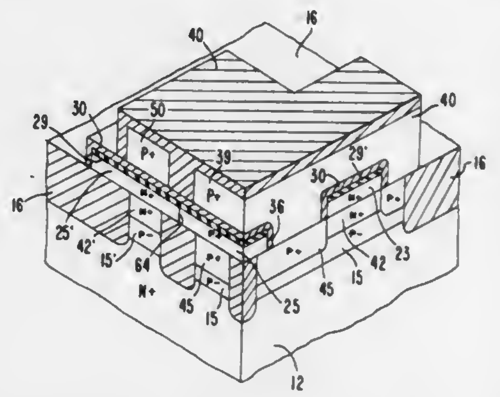
4,617,071
METHOD OF FABRICATING ELECTRICALLY CONNECTED REGIONS OF OPPOSITE CONDUCTIVITY TYPE IN A SEMICONDUCTOR STRUCTURE

Madhukar B. Vora, Los Gatos, Calif., assignor to Fairchild Semiconductor Corporation, Cupertino, Calif.

Filed Oct. 27, 1981, Ser. No. 315,553

Int. Cl.⁴ H01L *21/441, 21/385*

U.S. Cl. 148—188 **14 Claims**



1. A method of fabricating electrically connected regions of opposite conductivity type in a substrate comprising:
- depositing a layer of semiconductor material on the substrate, a first portion of the layer being first conductivity type, and a second portion of the layer being opposite conductivity type;
- depositing a layer of electrically conductive material over the layer of semiconductor material; and
- diffusing some of the first conductivity-type impurity and some of the opposite conductivity type impurity from the layer of semiconductor material into the substrate to thereby create electrically connected regions of opposite conductivity in the substrate.

4,617,072
METHOD FOR PRODUCING A COMPOSITE CERAMIC BODY

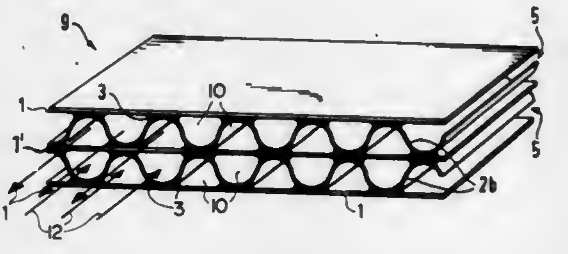
Herbert Merz, Munich, Fed. Rep. of Germany, assignor to MTU Motoren-und Turbinen-Union Muenchen GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 23, 1984, Ser. No. 633,870

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1983, 3327659

Int. Cl.⁴ B32B *31/26*

U.S. Cl. 156—89 **14 Claims**



1. A method for manufacturing a ceramic body for use under thermal stress operating conditions, comprising the following steps:
- (a) providing a first plane film made of a matrix material holding a carbon material content within the range of 50% to 80% by weight of said matrix material, said first plane film being in a still deformable state,
- (b) providing a second profiled film also made of material including a carbon material content within said range, said second profiled film also being in a deformable state,
- (c) arranging said first plane film on one side of said second

profiled film to form hollow spaces between said first and second films,

(d) bonding said first and second films to each other at bonding locations where said first and second films contact each other to form an intermediate member in which said hollow spaces are located between adjacent bonding locations,

(e) shaping said intermediate member into a desired final shape,

(f) curing the final shape,

(g) heating the final shape in an enclosed heater to a temperature within the range of 600° C. to 1000° C. while excluding air from said heater, said temperature being sufficient for coking or carbonizing said carbon material to provide a carbonized final form,

(h) exposing said carbonized final form to a silicon containing substance, which upon further heating will be decomposed to leave elementary silicon metal,

(i) and then further heating said carbonized final form including said silicon material to a temperature in the range of 1350° C. to 1800° C. sufficient to react the carbon material and the silicon metal to product silicon carbide (SiC) as an integral component of said ceramic body.

4,617,073

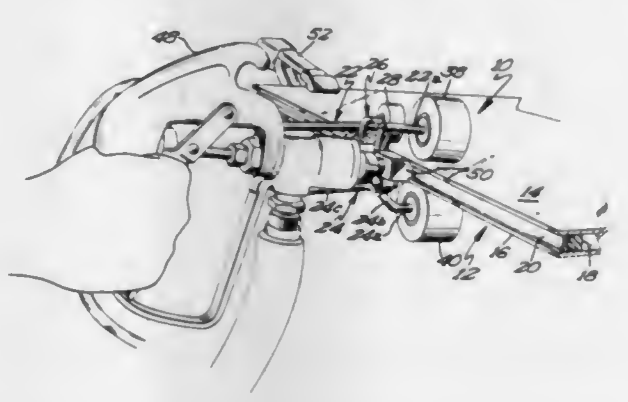
MOVEABLE CLAMP AND EDGE SEALING METHOD EMPLOYING SAME

Russell L. Scott, 1055 93rd Ave. N.W., Coon Rapids, Minn. 55433

Filed Sep. 12, 1985, Ser. No. 775,373

Int. Cl.⁴ B32B *17/00, 31/00*

U.S. Cl. 156—107 **22 Claims**



1. Method of fabricating insulating glass comprising the steps of:

(a) providing a first sheet of glass having a first surface, an outside surface, and perimeter edges;

(b) providing a second sheet of glass having a first surface, an outside surface, and perimeter edges;

(c) providing a spacer;

(d) stacking the first and second sheets of glass with the spacer sandwiched between the first surfaces of the first and second sheets of glass;

(e) placing clamping forces on opposite perimeter edges of the stacked glass sheets and adjacent a perimeter edge of the stacked glass sheets to be sealed;

(f) providing a moveable clamp for placing a clamping force on the stacked glass sheets adjacent to the perimeter edge to be sealed;

(g) providing an applicator of a member for sealing the perimeter edges of the stacked glass sheets in a liquid form, with the liquid sealing member being delivered by a nozzle; and

(h) moving the nozzle along the perimeter edge of the stacked glass sheets to be sealed and simultaneously delivering liquid sealing member between the perimeter edges of the stacked glass sheets to be sealed and pushing the moveable clamp along the perimeter edge of the stacked glass sheets to be sealed for preventing movement of the spacer between the first and second glass sheets during the application of the liquid sealing member between the first and second glass sheets.

4,617,074

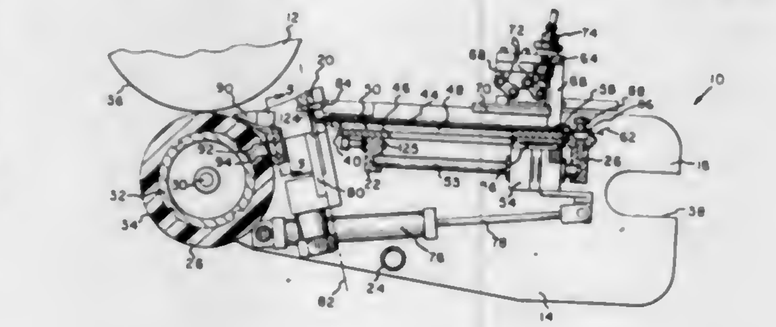
APPARATUS AND METHOD FOR FEEDING STRIP MATERIAL FOR APPLICATION TO A DRUM

Steven J. Portalupi, Akron, and Robert S. Riggs, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 520,487, Aug. 4, 1983, abandoned. This application Mar. 14, 1985, Ser. No. 711,652

Int. Cl.⁴ B29D *30/30*

U.S. Cl. 156—130 **6 Claims**



1. A method of feeding a strip of flexible material for application to a drum surface with an applicator roll rotatably mounted on an applier frame comprising:

(a) supporting said strip on a shuttle finger with a tongue portion of said strip adjacent an end of a shuttle casing;

(b) slidably moving said shuttle casing with said shuttle finger relative to said applier frame from a first position spaced from said applicator roll to a second position in close proximity to said applicator roll; and then

(c) slidably moving said shuttle finger relative to said shuttle casing from said second position toward said applicator roll to a third position to extend said tongue portion of said strip beyond said shuttle casing and onto said applicator roll.

4,617,075

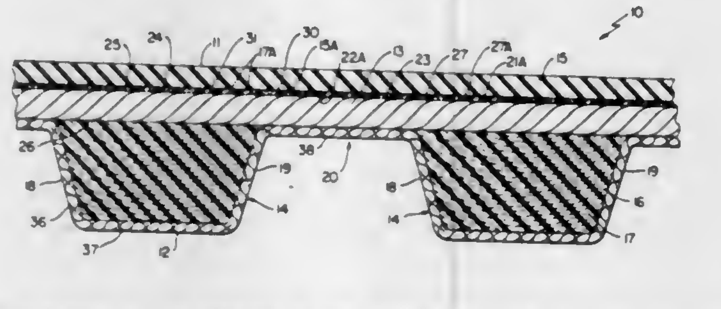
METHOD OF MAKING A BELT

Robert E. Wetzel, and Richard L. Marsh, both of Springfield, Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Oct. 9, 1984, Ser. No. 658,832

Int. Cl.⁴ B29H *7/22;* **F16G** *1/00*

U.S. Cl. 156—137 **11 Claims**



1. In a method of making a belt construction having opposed sides and comprising a plurality of teeth defining one of said opposed sides of said belt construction and being mainly formed of a first polymeric material that has reinforcing fibers therein, each tooth having opposed sides that are disposed in spaced relation to adjacent sides of adjacent teeth, said belt construction having a land area between adjacent teeth, and a backing member defining the other of said opposed sides of said belt construction, said backing member being mainly formed from a second polymeric material that is initially separate from said material of said teeth, said method comprising the steps of providing a grooved drum, disposing said first polymeric material in a non-cured form thereof about said drum and then subjecting said drum with said first material thereon to heat and pressure to cause said first material to be forced toward said drum and exude into said grooves to at least partially form said teeth, the improvement comprising the steps of then substantially immediately force cooling said first material and said drum to a certain temperature to stop the curing of said first material so that said first material is generally in a less cured condition thereof than a cured condition thereof if said drum with said first material thereon had been permitted to cool to said certain temperature at a normal rate by being disposed in substantially static air of substantially normal room temperature, then disposing said second material in a non-cured form thereof about said first material on said drum, and then subjecting said drum with said first and second materials thereon to heat and pressure to cause said first and second materials to be forced toward said drum to complete any remaining unfinished portion of said teeth and be cured together to form said belt construction.

4,617,076

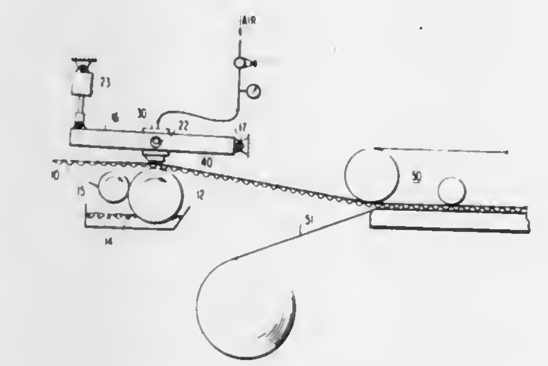
GLUE APPLICATOR FOR SINGLE-FACED CORRUGATED WEB

Thomas B. Jones, Jr., Etowah, Tenn., and Willem A. Nikkel, Covington, Va., assignors to Westvaco Corporation, New York, N.Y.

Filed Sep. 17, 1984, Ser. No. 651,580

Int. Cl.⁴ B32B *31/12, 31/20*

U.S. Cl. 156—205 **4 Claims**



1. In combination with an apparatus for continuously applying a second facing web to an exposed face plane of corrugated flute tips forming a continuously produced line of single-faced, corrugated paperboard, a glue station having an adhesive applicator roll for applying adhesive to said exposed, corrugated flute tips, said glue station including backing force means for exerting a force bias on said single-faced production line to press said exposed flute tips against said adhesive applicator roll, said backing force means comprising pivoting arm means having a pivot end and a distally separated loading end, said pivot end being secured for pivotal freedom about an axis transverse of said production line, said loading end being secured to load maintenance means for supporting a substantially constant loading force at said loading end and air bearing means secured to said pivoting arm means between ends for transverse span of said production line for sustaining a substantially uniform pressure distribution of said force bias across the width of said single-faced production line.

4,617,077

BLOW MOLDING PROCESS

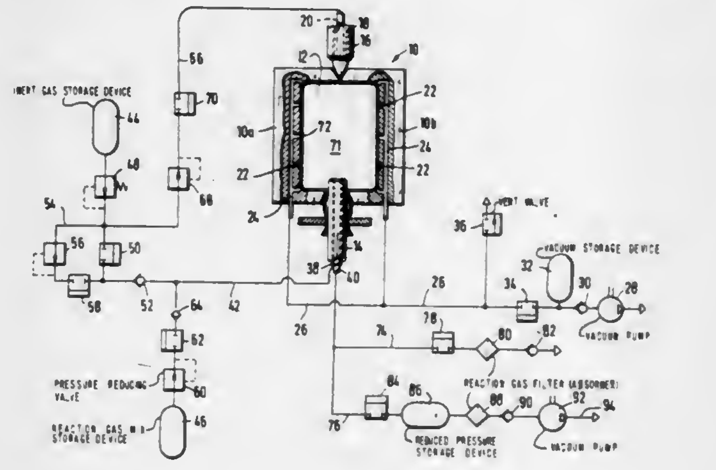
Peter Giese; Rainer Holzmann; Hans-Joachim Schwochert, all of Bonn, and Alfred Thomas, Dambroich, all of Fed. Rep. of Germany, assignors to Kautex-Werke Reinold Hagen AG, Bonn, Fed. Rep. of Germany

Filed Sep. 27, 1985, Ser. No. 781,435

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1984, 3435592

Int. Cl.⁴ B29C *49/46, 49/20*

U.S. Cl. 156—245 **15 Claims**



1. A process for the production of hollow bodies of thermoplastic material by blow molding comprising: forming a preform; initially expanding the preform within a blowing mold using an inert gas under high pressure thereby to cause the preform to bear completely against the inside surface of the blowing mold; reducing the internal pressure in the hollow body; treating the inside wall surface of the resulting hollow body within the blowing mold by introducing a reaction gas into the interior of the hollow body under a pressure which is substantially lower than the pressure used for intially expanding the preform, said reaction gas reacting with the plastic forming the inside wall surface of said hollow body thereby to render same at least substantially impervious; and after the necessary reaction time replacing the reaction gas by a flushing and cooling gas for substantially removing reaction gas constituents within the hollow body and for cooling thereof.

4,617,078

METHOD FOR SURFACE PRIMING IN ADHESIVE BONDING

Masaharu Takahashi, Gunma; Yuji Tokushige, Tokyo, and Kunio Itoh, Gunma, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 4, 1985, Ser. No. 697,792

Claims priority, application Japan, Feb. 6, 1984, 59-19774

Int. Cl.⁴ C09J *5/02*

U.S. Cl. 156—307.5 **2 Claims**

1. A method for surface priming in adhesively bonding a silicone rubber composition to the surface of a substrate which comprises treating the surface of the substrate with an organosilicon polymer having a silazane linkage in the molecule and represented by the average unit formula

$$R_aSiX_{(4-a)/2}$$

in which R is a hydrogen atom or a monovalent hydrocarbon group, not all of the atoms and groups denoted by R in a molecule being hydrogen atoms, X is a divalent atom or group selectd from the class consisting of an oxygen atom, an imino group, alkylene groups having 1 to 6 carbon atoms and a phenlyene group and a is a positive number in the range from 0.2 to 1.8, at least one of the atoms and groups denoted by R in a molecule being an aliphatically unsaturated hydrocarbon group and at least 10% by moles of the atoms and groups denoted by X in a molecule being imino groups, and then contacting the treated surface with an unvulcanized silicone rubber composition and subjecting the composite thus formed to conditions to cure the composition.

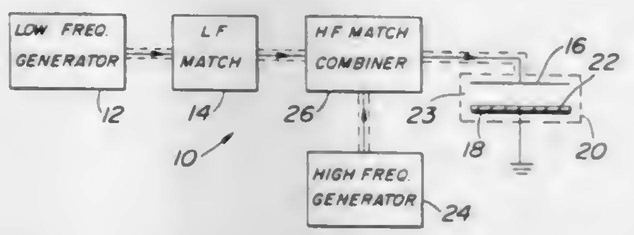
4,617,079
PLASMA ETCHING SYSTEM

David H. Tracy, Norwalk, and Brian G. Balistee, Bridgeport, both of Conn., assignors to The Perkin Elmer Corporation, Norwalk, Conn.

Filed Apr. 12, 1985, Ser. No. 722,623

Int. Cl.⁴ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00;* **C23F** *1/02*

U.S. Cl. 156—345 **8 Claims**



1. In combination with a plasma etching process including a planar reactor for producing plasma gas therein and a pair of electrodes with one of the electrodes disposed to receive thereon a wafer to be etched,

a source of power connected across said pair of electrodes comprising:

(a) a source of relatively low radio frequency signals having a predetermined output power for providing the main source of energy for etching said wafer;

(b) a source of relatively high radio frequency signals having a predetermined output power substantially lower than said source of said relatively low radio frequency signals;

(c) a combining circuit;

(d) means for applying said low radio frequency signals and said high radio frequency signals to said combining circuit; and

(e) means for applying the combined high and low radio frequency signals from combining circuit across said pair of electrodes.

4,617,080
FILM LAMINATING APPARATUS

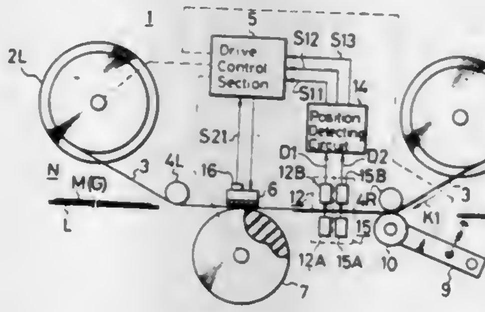
Youichi Kobayashi, Saitama, and Susumu Murakami, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 6, 1984, Ser. No. 679,051

Claims priority, application Japan, Dec. 9, 1983, 58-190968[U]

Int. Cl.⁴ G05G *15/00*

U.S. Cl. 156—359 **9 Claims**



1. A film laminating apparatus in which a plurality of thermal-activation film layers are sequentially and detachably arranged with a predetermined spacing therebetween in a film web for delivery to a thermal transfer station along with a paper element, for transferring a film layer to respective ones of said paper element, said transfer station including a flat heater element connected for energization and a pressure roller operable for movement against and away from said heater element, said heater element and said pressure roller being arranged to receive said film web and said paper element therebetween, and said apparatus comprising:

optical position indicating means having an optical transmissivity different from an optical transmissivity of said film web and being arranged adjacent to a head and of each of said thermal-activation film layers;

optical position detecting means arranged at a predetermined spaced-apart location relative to said thermal transfer station for producing output signals indicating respective positions of siad film layers; and

controller means receiving said output signals from said optical position detecting means for operating said thermal transfer station and said transport mechanism in response thereto, whereby said film layers are thermally transferred to said paper element.

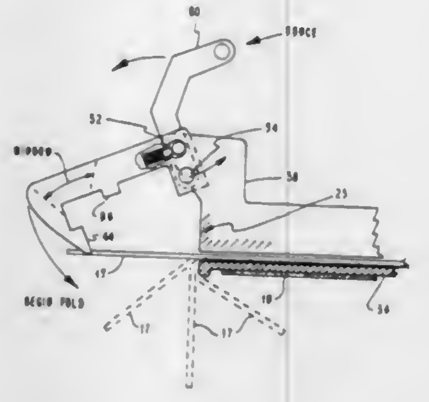
4,617,081
SIDE FLAP FOLD APPARATUS FOR A DISK ENVELOPE

Charles D. Bleau, 4374 NW. Fifth Ave., Boca Raton, Fla. 33431; Andrew Gasper, Jr., 3710 Kings Way, Boca Raton, Fla. 33434; Julius J. Perlini, 2591 SW. 11th St., Boynton Beach, Fla. 33435, and Alfred A. Stricker, 1903 Bay Dr., Pompano Beach, Fla. 33062

Filed Feb. 4, 1985, Ser. No. 698,212

Int. Cl.⁴ B65C *1/00;* **B29C** *53/00*

U.S. Cl. 156—443 **12 Claims**



1. Apparatus for forming side flap folds in an envelope for a flexible disk from a flexible plastic prepunched blank having two connected sections one of which has side flaps extending from opposite side edges thereof comprising:

a frame;

a plate held by said frame and having an outwardly facing surface;

a mandrel having the flexible plastic blank folded about an end thereof so that said side flaps of the blank extend beyond the side edges of said mandrel;

said mandrel holding the plastic blank half having the flaps extending therefrom against the bottom surface of said plate;

a raised edge portion pxtending along the side edges of said mandrel on the outward facing surface thereof and having a predetermined height, width and a curved surface thereon;

a pair of folding blades each folding a flap around the adjacent side edge of said mandrel;

a pair of means located within said frame to guide said associated folding blade in an arcuate path to fold said associated flap around the adjacent edge of said mandrel;

drive means for rotating said folding blades about said pivot means in opposite directions;

stop means for stopping said folding blades arcuate path movement;

upward motion means associated with each of said pivot means and operable subsequent to said pivot means and said stop means operation in response to said drive means to cause compression of said flaps by said folding blades beyond said raised edge portions providing an overfold zone adjacent said raised edge portions;

radiant heating means operable to anneal each of said folds relieving any stresses therein; and

guiding means for directing said radiant heat to said folds and shielding non-folded areas from the heat.

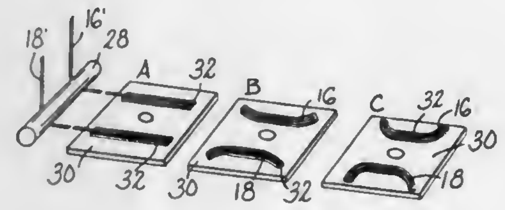
4,617,082
METHOD AND APPARATUS FOR APPLYING DISCRETE STRIPS TO A WEB OF MATERIAL

Daniel J. Oshefsky; Paul A. Gavronski; Robert E. Vogt, and Gregory J. Rajala, all of Winnebago County, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 673,064, Nov. 19, 1984, Pat. No. 4,578,133. This application Jan. 6, 1986, Ser. No. 816,487

Int. Cl.⁴ B65C *9/06;* **B32B** *31/00;* **B29B** *1/00;* **A23G** *1/20*

U.S. Cl. 156—447 **15 Claims**



1. Apparatus for applying discrete strips of a first material in a predetermined pattern to a web of second material comprises:

one or more transfer members carrying one of more flexible strip supports thereon;

supply means for supplying one or more discrete strips of the first material to the transfer members and adhering the discrete strips to the flexible strip supports;

adjusting means for changing the configuration of the flexible strip supports while the supplied strips of first material are adhered thereto, thereby correspondingly changing the configuration of the supplied strips; and

means to move the one or more transfer members and the web of second material into transfer contact with each other to transfer the discrete strips of first material from the strip supports to the web of second material.

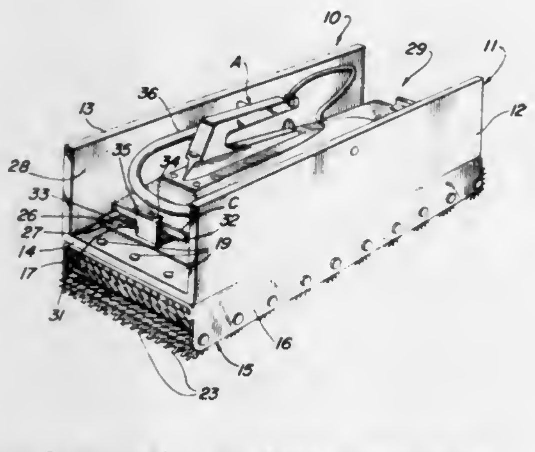
4,617,083
CARPET SEAMING TOOL

Raymond D. Yrizarris, 2931 E. 65th St., Long Beach, Calif. 90805

Filed Aug. 6, 1985, Ser. No. 762,926

Int. Cl.⁴ B30B *3/00*

U.S. Cl. 156—545 **10 Claims**



1. A tool for installing carpeting comprising:

(a) an elongated trough-like enclosure member having an elongated rectangular base of substantially uniform, U-shaped, transverse cross-sectional shape, elongated rectangular front and rear walls disposed perpendicularly upwards from the front and rear long edges, respectively of said base, and rectangular side openings,

(b) an elongated channel section of substantially uniform, inverted U-shaped, transverse cross-sectional shape having an elongated rectangular base of substantially the same size and shape as said enclosure member base, and elongated front and rear walls disposed perpendicularly downwards from the front and rear long edges, respectively, of said channel section, said channel section being fastened to said enclosure member base with the upper surface of said channel section in adjacent, parallel, concentric alignment with the lower surface of said enclosure base,

(c) a plurality of elongated cylindrical axles parallel to each other and to said channel base disposed underneath said channel section perpendicularly to said front and rear walls of said channel section and fastened thereto, and

(d) a plurality of circular discs, each said disc having spike-like members projecting radially outwards from the hub of said disc at regular polar angles, said discs being rotatably mounted on each said axle at regular intervals spanning substantially the distance between said front and rear walls of said channel section.

4,617,084
PROCESS FOR THE PRODUCTION OF METALLIC OR SEMIMETALLIC SHAPED ELEMENTS

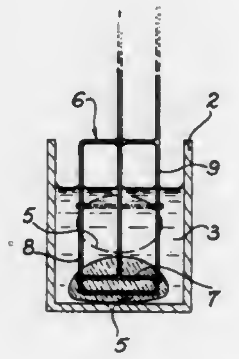
Claude Potard, St. Egreve, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 20, 1984, Ser. No. 632,799

Claims priority, application France, Jul. 29, 1983, 83 12548

Int. Cl.⁴ C30B *27/02*

U.S. Cl. 156—607 **9 Claims**



1. A process for the preparation of a shaped element composed of metallic or semimetallic material, comprising the steps of:

(a) placing the metallic or semimetallic material in a refractory confinement crucible, and bringing the metallic or semimetallic material to a molten state;

(b) placing a molten coating bath in said crucible, said coating bath being composed of a substance that is inert with respect to the metallic or semimetallic material, having a melting temperature below that of the metallic or semimetallic material, and having a density close to that of the metallic or semimetallic material at its melting point;

(c) introducing into the metallic or semimetallic material a frame, said frame being composed of a refractory material and having a thickness for wetting greater relative to the metallic or semimetallic material than relative to the molten coating bath and said frame defining an element area;

(d) producing a shaped element of the metallic or semimetallic material on the frame, said shaped element corresponding to the shape of said element area and being produced by slow displacement of all or part of the frame and solidification of the metallic or semimetallic material by cooling in the liquid coating bath; and

(e) removing the frame having the solidified shaped element from the bath.

4,617,085

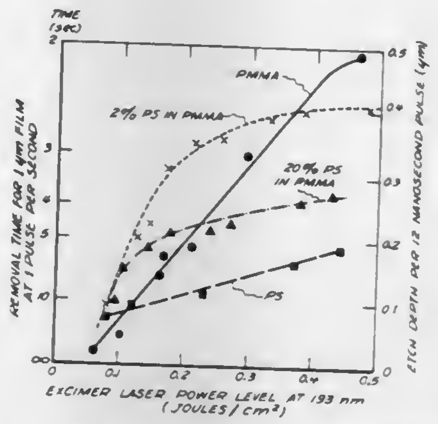
PROCESS FOR REMOVING ORGANIC MATERIAL IN A PATTERNED MANNER FROM AN ORGANIC FILM

Herbert S. Cole, Jr.; Yung S. Liu, and Herbert R. Philipp, all of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 3, 1985, Ser. No. 771,956

Int. Cl.^{4} B44C *1/22;* **B29C** *17/08;* **C03C** *15/00, 25/06*

U.S. Cl. 156—643 **7 Claims**



1. A process for effecting the removal of organic material in a patterned manner from organic polymeric film by irradiating such organic polymeric film with ultraviolet light having sufficient power density to produce ablative photodecomposition, which comprises the improvement of using in such patterned organic material removal process, organic polymeric film which is a member selected from the class consisting of

(A) a blend of aliphatic organic polymer and aromatic organic material selected from the class consisting of aromatic organic polymer and aromatic organic monomer having from about 1% to about 20% by weight of the blend of such aromatic organic material, and

(B) organic polymer consisting essentially of from about 50% to 99% of aliphatic organic units chemically combined with from about 1% to 50% of aromatic organic units,

whereby the removal rate of such patterned organic material from such organic polymeric film under such irradiating conditions is substantially enhanced.

4,617,086

RAPID ETCHING METHOD FOR SILICON BY SF_6 GAS

Tung J. Chuang, Los Gatos; Frances A. Houle, Fremont, and Kurt E. Petersen, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 19, 1982, Ser. No. 360,027

Int. Cl.^{4} B44C *1/22;* **C03C** *15/00, 20/00;* **C23F** *1/00;* **H01L** *21/306*

U.S. Cl. 156—643 **8 Claims**

1. A method of etching silicon comprising the steps of

providing an atmosphere of sulfur hexafluoride about said silicon, and

directing a continuous laser beam having a wavelength of about 0.6 or less microns at said silicon whereby said silicon absorbs light from said beam and is etched at a rate of the order of 45 microns per second.

4,617,087

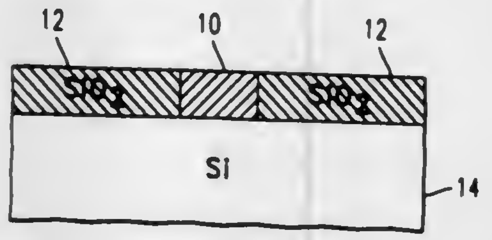
METHOD FOR DIFFERENTIAL SELECTIVE DEPOSITION OF METAL FOR FABRICATING METAL CONTACTS IN INTEGRATED SEMICONDUCTOR CIRCUITS

Subramanian S. Iyer, and Rajiv V. Joshi, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 27, 1985, Ser. No. 780,871

Int. Cl.^{4} C23F *1/02;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—643 **5 Claims**



1. A method for the selective deposition of a metal onto a silicon substrate, having an apertured silicon dioxide mask layer thereon and located in a deposition chamber comprising the steps of:

the step of introducing a metal source gas into said chamber for reaction with said silicon substrate wherein said metal from said source gas substitutes for said silicon on said substrate surface to form a deposited metal layer in said apertures in said silicon dioxide layer on said silicon substrate,

the step of introducing hydrogen into said chamber with said metal source gas wherein said hydrogen reacts with said metal source gas to form a further deposition of said metal on said substrate surfaces including said previously deposited layer and said silicon dioxide layer,

the step of introducing an etching gas into said chamber and activating the etching gas in said chamber for etching said metal being further deposited, said further deposition of said metal onto said previously coated metal layer surfaces being at a greater rate than said deposition onto said silicon dioxide layer surfaces such that said etching process selectively maintains said silicon surfaces free of metal while further metal deposition occurs on said previously coated metal layer surfaces.

4,617,088

THERMAL HEAD PRODUCING PROCESS

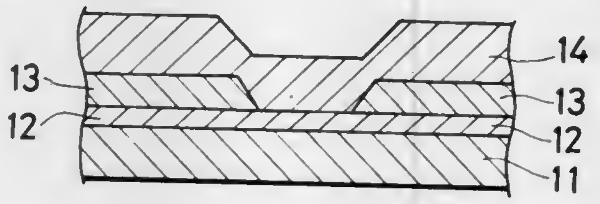
Yasuo Nishiguchi, and Keijiro Minami, both of Kagoshima, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Division of Ser. No. 620,067, Jun. 13, 1984, Pat. No. 4,595,822. This application Oct. 15, 1985, Ser. No. 787,726

Claims priority, application Japan, Jun. 14, 1983, 58-106918

Int. Cl.^{4} C23F *1/02;* **B44C** *1/22*

U.S. Cl. 156—656 **7 Claims**



1. A process for producing a thermal head comprising the steps of:

preparing an electrically insulative substrate;

forming a resistive film comprising $TiO_x(0<x<2)$ on the electrically insulative substrate; and forming an electrode on the resistive film.

4,617,089

APPARATUS FOR DISCHARGING HIGH VISCOSITY MEDIA IN CHEMICAL ENGINEERING

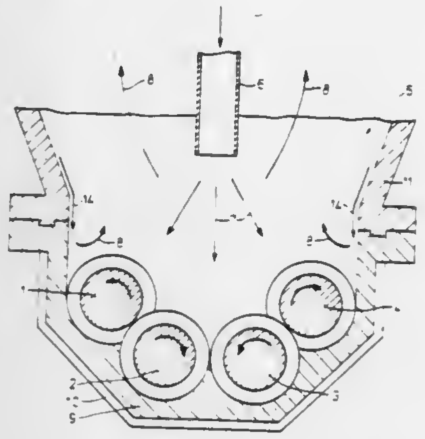
Martin Ullrich; Manfred Hederich, and Frank Wingler, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 483,546, Apr. 11, 1983, abandoned. This application Mar. 19, 1985, Ser. No. 713,615

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1982, 3215273

Int. Cl.^{4} B01D *1/00;* **B29B** *7/48*

U.S. Cl. 159—43.1 **7 Claims**



1. An apparatus for collecting and discharging high viscosity strands comprising a multi-shaft screw pump including a collection tank, a group of at least four screw shafts arranged at the bottom of the collection tank in generally parallel relationship to one another, a circumferential portion of the shafts being confined by the collection tank with the remaining circumferential portion of the shafts freely exposed to open space within the tank, two adjacent shafts of the group at the bottom of the collection tank forming an inner central shaft pair with at least one shaft on each side thereof engaging one of the shaft pair, the central shaft pair extending axially beyond the collection tank into a downstream pressure build-up zone including discharge means, the pressure build-up zone having walls closely surrounding the axially extended central shaft pair, the diameter and the distance between the two central shafts arranged so that they do not intermesh in the collection tank, the axially extended central shafts having a greater diameter in the pressure build-up zone for engaging with each other, and means to rotate each shaft of the group in an opposite direction relative to an adjacent shaft in the group.

4,617,090

PROCESS FOR PRODUCING PERACIDS FROM ALIPHATIC HYDROXY CARBOXYLIC ACIDS

Helena L. Chum, Arvada; Matthew A. Ratcliff, and Peter D. Palasz, both of Lakewood, all of Colo., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 20, 1984, Ser. No. 684,099

Int. Cl.^{4} D21C *9/16*

U.S. Cl. 162—16 **6 Claims**

1. In a wood pulp processing system of the type producing both pulp and a stream of lactic acid-containing black liquor solution, the processor for production of peracid bleaching agents from hydroxy acid contained in the black liquor solution, comprising:

adjusting the pH of said black liquor solution to the range of about 8–9 by exposing the solution to CO_2 carbon dioxide to form an alkaline precipitate;

separating solids from the black liquor solution to produce a residual solution containing lower aliphatic hydroxy acids selected from the group consisting of lactic acid, glycolic acid, 2-hydroxybutanoic acid, xyloisosaccharinic acid, and glucoisosaccharinic acid;

decarboxylating said lower aliphatic hydroxy acids to corresponding gaseous aliphatic aldehydes by admixing a powdered semiconductor with said residual solution to form a slurry, said semiconductor being selected from the group consisting of doped n-TiO_2, both platinized and unplatinized, n-WO_3, a-Fe_2O_3 and other insoluble semiconductors having bandgaps equal to or higher than a-Fe_2O_3, and then irradiating said slurry by a means for causing photoelectro-chemical reaction at the site of the semiconductor material resulting in decarboxylation of the carboxylic acid and produuction of CO_2 and corresponding aldehydes;

removing said gaseous aldehydes from the residual solution by sweeping gas flow as soon as they are generated to prevent further oxidation to carboxylic acids;

reacting said gaseous aldehydes with oxygen to form corresponding peracids; and

applying said peracids as bleaching agents to said pulp produced in the pulp processing system.

4,617,091

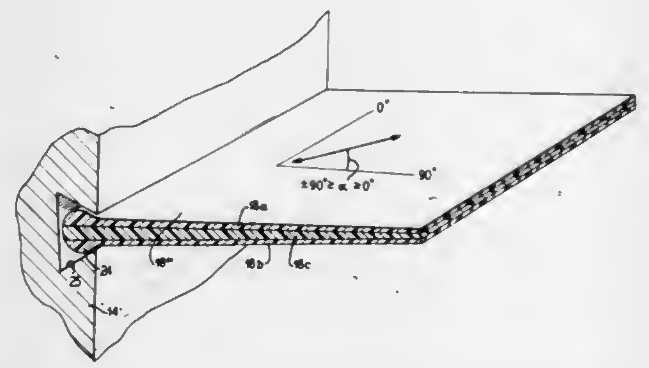
HEADBOX TRAILING ELEMENT

José J. A. Rodal, Rockton, Ill., and James L. Ewald, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Continuation of Ser. No. 555,158, Nov. 25, 1983, abandoned. This application Sep. 11, 1985, Ser. No. 774,862

Int. Cl.^{4} D21F *1/06, 1/02*

U.S. Cl. 162—343 **23 Claims**



1. In a headbox for delivering stock to a forming surface, the headbox having a slice chamber and a slice opening, the improvement compsrising:

a trailing element having planar stock-contacting surfaces extending continuously from side-to-side and from an upstream and to a downstream end of the element, said element positioned in the slice chamber for stock flow induced movement;

said element extending transversely of said headbox and consisting of material giving said element greater structural stiffness in the cross-machine direction than in the machine direction so that the element resists deflection in the cross-machine direction by transient pressure variations and offers low resistance to deformation in the fluid flow stream for balancing pressure forces on opposite sides of the element; and

means anchoring said elements in the slice chamber at an upstream portion with the downstream portion unattached and constructed to be self-positionable so as to be responsive to forces exerted thereon by the stock flowing over the surface of the element.

4,617,092

PROCESS FOR CONTROLLING A DISTILLATION COLUMN

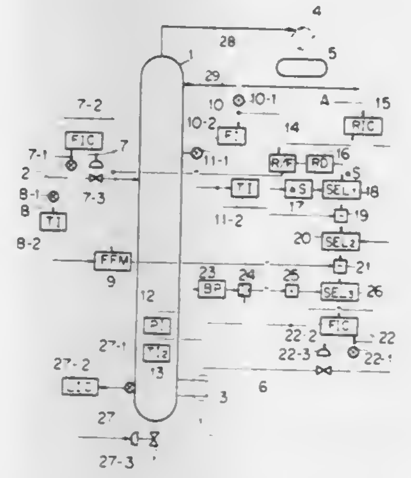
Teruaki Hiramatsu, Omiya, Japan, assignor to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Aug. 9, 1984, Ser. No. 655,192

Claims priority, application Japan, Aug. 9, 1983, 58-144483

Int. Cl.⁴ B01D *3/42*

U.S. Cl. 203—1 **1 Claim**



1. A process for controlling a distillation column, which includes heating a feed liquid supplied thereto by steam, comprising the steps of:

(a) comparing a bottom temperature of the column with a calculated boiling point temperature of the bottom liquid and increasing the steam flow rate when the bottom temperature is lower than the calculated boiling point temperature, until the bottom temperature is greater than the calculated boiling point temperature; then

(b) while maintaining the bottom temperature greater than the calculated boiling point, adjusting the temperature at an intermediate tray of the column to within a predetermined temperature range by adjusting the steam flow rate; then

(c) while maintaining the predetermined temperature range, adjusting a ratio of the reflux flow rate to feed flow rate to within a predetermined ratio range by adjusting the steam flow rate; and then

(d) maintaining the predetermined temperature range and predetermined ratio range by adjusting the steam flow rate.

4,617,093

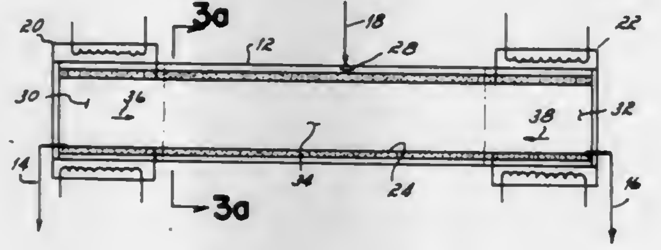
METHOD AND APPARATUS FOR SEPARATING COMPONENTS OF A MIXTURE

Sun-Tak Hwang, Cincinnati, Ohio, assignor to University of Cincinnati, Cincinnati, Ohio

Filed Feb. 8, 1984, Ser. No. 578,087

Int. Cl.⁴ B01D *3/04, 15/00*

U.S. Cl. 203—100 **14 Claims**



2. A method of distillation for continuously separating a more volatile component from a less volatile component of a mixture, comprising the steps of:

continuously introducing said mixture into a heat pipe structure having capillary means capable of inducing a capillary flow of components in condensed phase independently of gravity;

producing a temperature differential in said heat pipe structure forming a zone of higher temperature, a zone of lower temperature and an adiabatic zone between said zones of higher and lower temperature;

inducing by said temperature differential a countercurrent movement of said components within said heat pipe structure, said more volatile component in vapor phase moving toward said zone of lower temperature, and said less volatile component in condensed phase moving along said capillary means toward said zone of higher temperature;

establishing a steady state of operation wherein said mixture is continuously introduced into said heat pipe structure at said adiabatic zone, and wherein said more volatile component collects in concentrated form at said zone of lower temperature, and said less volatile component collects in concentrated form at said zone of higher temperature; and

continuously removing said components from said heat pipe structure.

4. Distillation apparatus for continuously separating one component of a mixture from another component comprising:

a heat pipe structure;

means for continuously introducing said mixture into said heat pipe structure;

means disposed within said heat pipe structure capable of inducing a capillary flow of liquid therealong independently of gravity;

means for heating one zone of said heat pipe structure;

means mounted exteriorly of said heat pipe structure for cooling another zone of said heat pipe structure;

one of said components being vaporized at said heated zone of said heat pipe structure and migrating in vapor form toward said cooler zone of said heat pipe structure;

the other of said components being condensed at said cooler zone of said heat pipe structure and migrating in liquid form along said means for inducing capillary flow toward said heated zone of said heat pipe structure; and

means for continuously removing said one component from said heated zone of said heat pipe structure, and for continuously removing said other component from said cooler zone of said heat pipe structure.

4,617,094

METHOD OF MANUFACTURING SOLID STATE COLOR FILTER DEVICE USES CO-ELECTRODEPOSITION

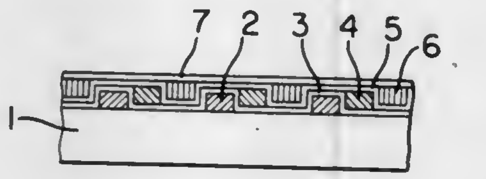
Hitoshi Kamamori; Mitsuru Suginoya; Koji Iwasa; Yutaka Sano, and Yumiko Terada, all of Tokyo, Japan, assignors to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed Jul. 24, 1984, Ser. No. 633,864

Claims priority, application Japan, Aug. 4, 1983, 58-142882

Int. Cl.⁴ C25D *13/02, 13/06*

U.S. Cl. 204—18.1 **11 Claims**



1. A method of manufacturing a color filter comprising the steps of: providing a substrate; forming plural transparent electroconductive layers spaced apart and insulated from one another on the substrate; forming on the substrate a layer of light-absorbent material in the spaces between the spaced-apart electroconductive layers; and forming a colored layer on the electroconductive layers by co-electrodepositing a coloring material and polymer on the electroconductive layers.

4,617,095

ELECTROLYTIC POST TREATMENT OF CHROMIUM SUBSTRATES

Thaddeus W. Tomaszewski, Dearborn, Mich., assignor to OMI International Corporation, Warren, Mich.

Filed Jun. 24, 1985, Ser. No. 747,599

Int. Cl.⁴ C25D *11/36, 11/38*

U.S. Cl. 204—41 **12 Claims**

1. A process for improving the corrosion resistance of a chromium-plated substrate which comprises the steps of contacting the chromium substrate with an aqueous solution which consists essentially of a solution soluble hexavalent chromium compound selected from the group consisting of chromate, in an amount of about 2.5 grams per liter up to its limit of solubility in the solution, dichromate, in an amount of about 4.5 grams per liter up to its limit of solubility in the solution and mixtures thereof, phosphate ions in an amount of about 2.5 grams per liter up to the limit of solubility in the solution, metal ions selected from the group consisting of nickel ions, cobalt ions, and mixture thereof present in an amount of 0 to about 2 grams per liter, hydrogen ions in amount to provide a pH of about 2.5 to about 10 and a buffering agent in amount at least sufficient to maintain the pH within the desired range up to about 60 grams per liter; cathodically electrifying the substrate at a cathode current density below that at which metallic chromium is deposited on the substrate to effect current to pass through the solution between an anode and the substrate for a period of at least five seconds to deposit on the substrate a protective film of the desired thickness.

12. The process as defined in claim **1** in which the chromium plated substrate comprises a substrate having a chromium plate electrodeposited from a trivalent chromium electrolyte overlying an underlying nickel plating.

4,617,096

BATH AND PROCESS FOR THE ELECTROLYTIC DEPOSITION OF GOLD-INDIUM ALLOYS

Werner Kuhn, Rodenbach, and Wolfgang Zilske, Hanau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 28, 1986, Ser. No. 823,293

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1985, 3505473

Int. Cl.⁴ C25D *3/62*

U.S. Cl. 204—44.3 **18 Claims**

1. A bath suitable for the electrolytic deposition of a gold-indium alloy coating at a pH below 3 consisting essentially of water, 1 to 20 g/l gold in the form of at least one member of the group consisting of alkali and ammonium tetracyanoaurates (III), 0.5 to 50 g/l indium in the form of a water soluble indium salt, in acid, a buffer or conducting salt and 0.5 to 10 mg/l of at least one member of the group consisting of selenium and tellurium, in the form of selenious acid, telluric acid, an alkali selenite or an alkali tellurite.

4,617,097

PROCESS AND ELECTROLYTE FOR ELECTROPLATING TIN, LEAD OR TIN-LEAD ALLOYS

Fred I. Nobel, Sands Point; Barnet D. Ostrow, Roslyn, and David N. Schram, Freeport, all of N.Y., assignors to LeaRonal, Inc., Freeport, N.Y.

Continuation-in-part of Ser. No. 564,516, Dec. 22, 1983, Pat. No. 4,599,149, which is a continuation-in-part of Ser. No. 301,390, Sep. 11, 1981, abandoned. This application Sep. 20, 1985, Ser. No. 778,353

The portion of the term of this patent subsequent to Jan. 21, 2003, has been disclaimed.

Int. Cl.⁴ C25D *3/32, 3/36, 3/56, 3/60*

U.S. Cl. 204—44.4 **20 Claims**

9. An electrolyte for electroplating tin, lead, or tin-lead alloys which comprises:

a soluble divalent tin compound, a soluble divalent lead compound, or both;

a soluble alkyl or alkylol sulfonic acid in an amount sufficient to provide a solution having a pH less than about 3;

a sufficient amount of a solution soluble alkylene oxide condensate compound having at least about 8 moles of alkylene oxide to provide an electrolyte having a cloud point above about 90° F.; and

a soluble bismuth compound in a sufficient amount to extend the current density range for electroplating or the brightness of the resultant electrodeposits.

19. An electrolyte for electroplating tin, lead, or tin-lead alloys which comprises:

a soluble divalent tin compound, a soluble divalent lead compound, or both;

a soluble alkyl or alkylol sulfonic acid in an amount sufficient to provide a solution having a pH less than about 3;

a sufficient amount of a solution soluble alkylene oxide condensate compound having at least about 8 moles of alkylene oxide to provide an electrolyte having a cloud point above about 90° F.;

an aromatic aldehyde in a sufficient amount to improve the brightness of the deposit produced by electroplating; and

acetaldehyde in a sufficient amount to extend the high current density range for producing bright deposits.

4,617,098

CONTINUOUS ELECTROLYSIS OF LITHIUM CHLORIDE INTO LITHIUM METAL

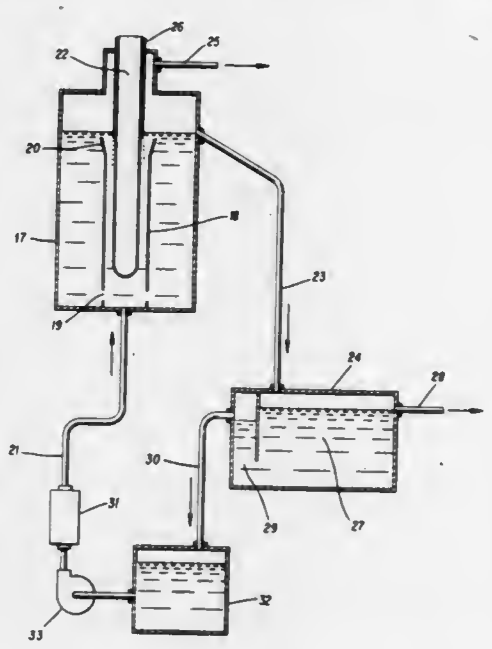
Jean-Michel Verdier, Paris; Serge Jacubert, Viroflay; Jean Grosbois, L'Isle, and Jean-Yves Dumousseau, Paris, all of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Continuation-in-part of Ser. No. 749,113, Jun. 26, 1985, abandoned, which is a continuation of Ser. No. 527,849, Aug. 30, 1983, abandoned, and a continuation-in-part of Ser. No. 705,016, Feb. 25, 1985, abandoned. This application Oct. 16, 1985, Ser. No. 788,170

Claims priority, application France, Aug. 31, 1982, 82 14865; Feb. 24, 1984, 84 02840

Int. Cl.⁴ C25C *3/02, 7/08*

U.S. Cl. 204—68 **41 Claims**



1. A process for the continuous preparation of predetermined amount of lithium metal, comprising (i) in an electrolytic cell, continuously electrolyzing a mixture of molten salts which comprises lithium chloride, which mixture comprises the medium of electrolysis, such medium of electrolysis being in natural circulation within an interspace defined between the electrodes of the cell, said interspace being devoid of physical barrier between said electrodes, and said natural circulation maintaining product lithium metal so formed in admixture with

the mixture of molten salts (ii) continuously withdrawing from said cell an admixture of product lithium metal with the mixture of molten salts, and (iii) continuously discharging undiluted chlorine gas therefrom.

2. The process as defined by claim 1, further comprising the step of (iv) separating the admixture of product lithium metal with the mixture of molten salts as withdrawn from the electrolyte cell in step (ii) into product lithium metal and mixture of molten salts.

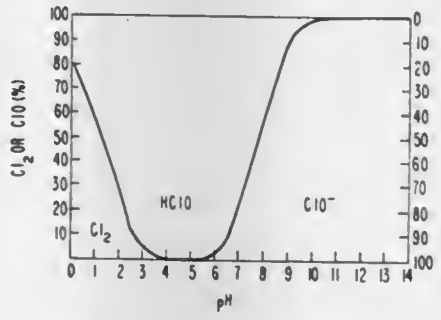
4,617,099
ELECTROCHEMICAL BLEACHING OF WOOD PULPS

Gerhart Schwab, Chillicothe; Mei-Tsu Lee, Whitehall, and James W. Bentley, Waverly, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Dec. 23, 1985, Ser. No. 812,142

Int. Cl.⁴ C25F *5/00*

U.S. Cl. 204—133 **18 Claims**



1. A process for electrochemically bleaching pulp which comprises:

dispersing a pulp in a solution of sodium chloride to provide a first pulp slurry;

subjecting said pulp slurry to electrolysis at a pH in the range of about 0 to 2.0;

filtering said pulp slurry to remove said pulp;

dispersing said pulp in a second solution of sodium chloride to provide a second pulp slurry;

subjecting said second pulp slurry to electrolysis at a pH greater than 8.0; and

recovering said pulp.

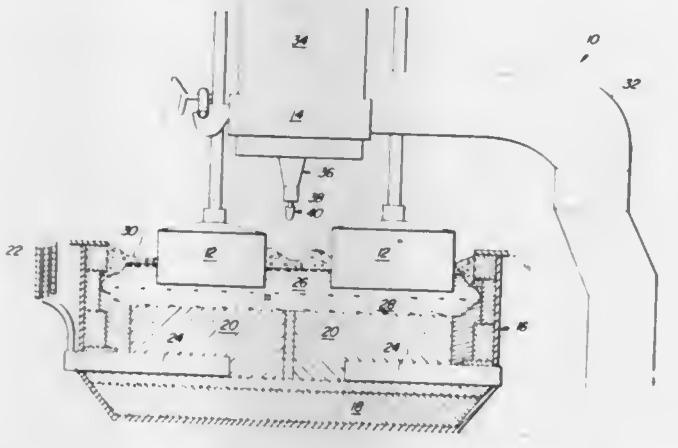
4,617,100
NON-CONDUCTIVE PLUGGER FOOT

Michael J. Boughton, Newburgh, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 7, 1985, Ser. No. 784,725

Int. Cl.⁴ C25C *3/14;* C21B *7/12;* C21C *5/42*

U.S. Cl. 204—245 **19 Claims**



5. A non-conductive plugger foot for breaking through a solidified crust of electrolyte on an electrolytic reduction cell, said plugger foot comprising a hollow shell closed at one end and connected at an opposite end to an air actuated apparatus, said shell containing an alumina based, non-conductive refractory material having an electrical resistance of at least 100,000 ohms.

4,617,101
ALKALI METAL CHLORIDE ELECTROLYZING CELL

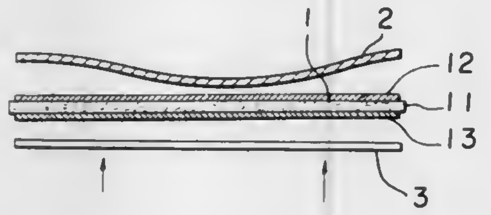
Kimihiko Sato; Yasuo Sajima; Makoto Nakao, and Junjiro Iwamoto, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Nov. 12, 1981, Ser. No. 320,436

Claims priority, application Japan, Nov. 15, 1980, 55-160116; Nov. 15, 1980, 55-160117

Int. Cl.⁴ C25B *9/00, 11/03, 11/20*

U.S. Cl. 204—252 **8 Claims**



1. An alkali metal chloride-electrolyzing cell which comprises a cation-exchange membrane disposed between an anode and a cathode, characterized in that said cathode-exchange membrane has on at least one side thereof a gas- and liquid-permeable, porous layer which is non-conductive, and at least one of an anode and a cathode is a voided flexible electrode having more rigidity than that of said cation-exchange membrane and in electrical contact with a conductive support member, and said flexible electrode is designed to be forcibly deformed thereby closely contacting said cation-exchange membrane with the surface of each of said electrodes.

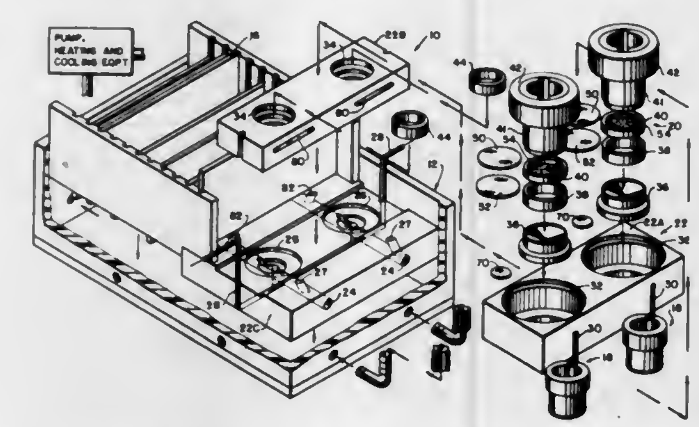
4,617,102
PROCESS AND APPARATUS FOR PURIFYING AND CONCENTRATING DNA FROM CRUDE MIXTURES CONTAINING DNA

Graham J. Tomblin, Tappan; Karen B. Wexler, Harrison; John P. Ford, Tappan, and Stuart G. Fischer, New York, all of N.Y., assignors to Lifecodes Corp., Elmsford, N.Y.

Filed Mar. 21, 1985, Ser. No. 714,376

Int. Cl.⁴ G01N *27/28*

U.S. Cl. 204—299 R **14 Claims**



1. Apparatus for purifying and concentrating DNA from a crude mixture containing the DNA comprising:

a container providing a reservoir of electrophoresis buffer solution;

a gel matrix immersed in said electrophoresis buffer solution;

a collection chamber in said container;

means for applying an electric field to said gel matrix;

means for disposing said crude mixture in contact with the gel matrix such that the crude mixture is drawn into the gel matrix, responsive to said electric field;

means for selectively removing, due to their relatively low molecular weight, all the constituent molecules of the crude mixture, except for the DNA, from said gel matrix responsive to said electric field, including means for sweeping away said constituent molecules by flow of said electrophoresis buffer solution between the bottom of the gel matrix and the collection chamber; and

means for removing from the gel matrix, responsive to said electric field, the DNA still remaining therein such that the DNA is collected in said collection chamber, including means operative when removing the DNA for preventing said flow of said electrophoresis buffer solution, thereby to avoid sweeping away the DNA.

4,617,103
ELECTROPHORETIC SEPARATOR

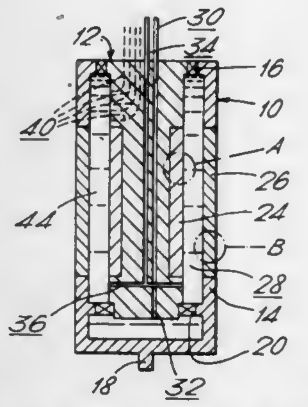
Peter C. Lovegrove, Didcot, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Feb. 20, 1985, Ser. No. 703,475

Claims priority, application United Kingdom, Mar. 2, 1984, 8405601

Int. Cl.⁴ G01N *27/28*

U.S. Cl. 204—300 R **11 Claims**



1. A continuous flow electrophoretic separator comprising a cylindrical stator, a concentric tubular rotor defining an annular chamber between the stator and the rotor, an electrode system incorporated in the stator, an electrode system incorporated into the rotor, means for causing a carrier liquid to flow through the chamber, and an inlet means in the stator for injecting a migrant material into the carrier liquid, wherein one of the electrode systems comprises a tubular semi-permeable membrane supported by a cylindrical support tube of a rigid plastics material, the inner and outer curved surfaces of the support tube defining grooves of sufficient depth to provide fluid communication between the inner surface and the outer surface of the support tube.

4,617,104
CELL UNIT FOR OBSERVING ELECTROPHORESIS

Yoshio Kawai, Musashino; Kiyoshi Kitagawa, Komae; Kazue Endo, Kashiwa, and Chikau Onodera, Urawa, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1983, Ser. No. 563,249

Claims priority, application Japan, Dec. 29, 1982, 57-234554

Int. Cl.⁴ B01D *13/02*

U.S. Cl. 204—301 **9 Claims**

1. A cell unit for observing an electrophoresis comprising:

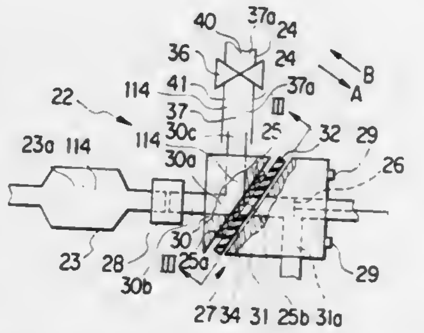
measurement cell for accommodating a liquid specimen therein;

a pair of conduit means for introducing and discharging the liquid specimen into and from the measurement cell therethrough, both of the pair of the conduit means having portions made of flexible tubes;

a pair of valve means, each valve means being adapted to close a respective one of the pair of conduit means, and both of the pair of the valve means associated with both of the conduit means being in the form of pinch valves adapted to be able to pinch the flexible tubes;

a pair of housing means for accommodating a pair of electrodes therein, the pair of electrodes being adapted to produce an electric potential gradient in the liquid specimen within the measurement cell; and

a pair of diaphragm means, each being disposed at a position between the measurement cell and a respective one of the pair of housing means so as to separate a space in the measurement cell from a space in the respective one of the housing means, both of the pair of diaphragm means being disposed displaceably so as to absorb a fluctuation of a pressure of the liquid specimen in a space defined by the pair of diaphragm means and valve means, each of the diaphragm means being supported liquid-tightly at a peripheral portion thereof, the central portion of each diaphragm means being displaceable in a direction perpendicular to a plane of said each diaphragm means with respect to the peripheral portion of said each diaphragm, and at least one of the diaphragm means being supported linearly movably as a whole.



4,617,105
COAL LIQUEFACTION PROCESS USING PRETREATMENT WITH A BINARY SOLVENT MIXTURE

Robert N. Miller, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 26, 1985, Ser. No. 780,506

Int. Cl.⁴ C10G *1/00, 1/06*

U.S. Cl. 208—412 **17 Claims**

1. In a process for solvent refining of coal at an elevated temperature and pressure in the presence of hydrogen and a hydrogen donor solvent to produce liquid hydrocarbons and normally solid solvent-refined coal, the improvement comprising extracting a coal feed with a binary mixture of an aromatic hydrocarbon of up to 9 carbon atoms and an alkanol of up to 6 carbon atoms at a temperature below about 300° C., before solvent refining the coal.

4,617,106
CATALYSTS FOR COAL LIQUEFACTION PROCESSES

Diwakar Garg, Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 26, 1985, Ser. No. 780,507

Int. Cl.⁴ C10G *1/06*

U.S. Cl. 208—418 **30 Claims**

1. In a process for catalytic solvent refining of coal at a temperature above 400° C. in the presence of hydrogen and a hydrogen donor solvent, the improvement comprising using as catalyst a combination consisting essentially of:

(a) copper or a compound thereof, and

(b) a Group VI or non-ferrous Group VIII metal, or a compound of either.

4,617,107
PROCESS FOR THE RECOVERY OF OIL FROM SHALE

John Mandelson, Paddington; David J. McCarthy, Glen Waverley; Oto Sitnai, Mount Waverley, and Alan B. Whitehead, East Brighton, all of Australia, assignors to Comonwealth Scientific and Industrial Research Organization and CSR Limited, Australia

PCT No. PCT/AU82/00162, § 371 Date Aug. 24, 1983, § 102(e) Date Aug. 24, 1983, PCT Pub. No. WO83/02283, PCT Pub. Date Jul. 7, 1983

PCT Filed Sep. 30, 1982, Ser. No. 531,891
Claims priority, application Australia, Dec. 24, 1981, PF2083
Int. Cl.^{4} C10G *1/00*
U.S. Cl. 208—427 **20 Claims**

1. A continuous process for the recovery of hydrocarbon values from oil shale with the simultaneous recovery of energy from by-product streams, comprising the steps of:

(a) retorting said shale by intimately mixing particulate oil shale with a process derived hot particulate heat carrier ash containing free lime in the form of calcium oxide or hydrated calcium oxide to produce additional heat, to clean the product gases, and to convert the reacted gases to solid phases;

the temperatures and relative ratios of the shale, the heat carrier ash, and purge gas upon introduction into the retorting zone being selected so that the outlet temperature of the mixture of solids upon retorting is within the range of conventional retorting temperatures;

(b) separating the mixture of spent shale and heat carrier solids from the product gases and vapours containing the desired hydrocarbon values;

(c) producing the heat carrier ash having a calcium oxide content and a temperature required for use in the retorting zone, said heat carrier ash being produced in a combustion zone by:

(i) burning the carbonaceous residues or solids from the retorting zone in admixture with controlled quantities of extraneously added solids and gases containing free lime,

(ii) controlling the average residence times of the phases while also maintaining the combustion temperature within a range which allows for sulphur capture, or

(iii) employing a combination of (i) and (ii);

(d) separating a portion of the coarser hot shale ash from the solids leaving the combustion zone and recirculating this hot stream of solids to the retorting zone as the heat carrier; and

(e) recovering the sensible and chemical heat from the waste solids and the sensible heat from the gases leaving the combustion zone;

wherein the purge gas for retorting contains steam, and in which a substantial part of the heat required for retorting is supplied by reaction of the steam with the lime contained in the heat carrier solids, while maintaining the retorting temperature at a level below 520° C. and the partial pressure of steam in the range of 0.1-1.0 bar.

4,617,108
PROCESS FOR CRACKING WITH SILICA-ALUMINA

Yen-Shin Shyr, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 20, 1985, Ser. No. 736,183
Int. Cl.^{4} C10G *11/04, 47/12*
U.S. Cl. 208—111 **6 Claims**

1. A process for cracking a hydrocarbon containing feed stream comprising the step of contacting said feed stream with a silica-alumina catalyst composition under such conditions as to produce hydrocarbon products having lower boiling ranges than said feed stream, wherein said silica-alumina composition is prepared by a method comprising the steps of

(A) mixing a first aqueous solution containing an aluminum salt and an ammonium salt of an acid having a pKa of less than 2 with a second aqueous solution containing an alkali metal silicate, wherein the mol ratio of the alkali metal silicate to the aluminum salt is in the range of from about 2:1 to about 20:1 and the amount of the ammonium salt in said first solution is such that a coprecipitated silica-alumina hydrogel is formed after said mixing;

(B) separating the coprecipitated silica-alumina hydrogel from the mixture of said two solutions;

(C) calcining said hydrogel under such conditions as will result in the formation of an acidic silica-alumina.

4,617,109
COMBUSTION AIR PREHEATING

Thomas A. Wells, Houston, and William C. Petterson, Missouri City, both of Tex., assignors to The M. W. Kellogg Company, Houston, Tex.

Filed Dec. 23, 1985, Ser. No. 812,546
Int. Cl.^{4} C10G *9/20;* **C07C** *4/04*
U.S. Cl. 208—130 **6 Claims**

1. In a process for steam cracking hydrocarbons to cracked gases in a tubular furnace heated by burning a mixture of fuel and combustion air and subsequently quenching the cracked gases wherein waste heat is recovered in the form of high pressure steam and wherein the combustion air is preheated prior to introduction into the furnace, the improvement which comprises:

(a) superheating the high pressure steam and expanding at least a portion of the superheated high pressure steam through a first turbine to produce shaft work and superheated medium pressure steam at a temperature between 260° and 465° C.;

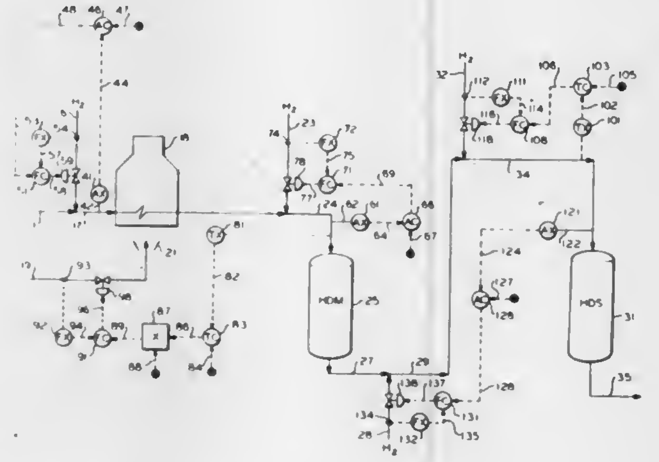
(b) expanding at least a portion of the superheated medium pressure steam through a second turbine to produce shaft work and low pressure steam at a temperature between 120° and 325° C.; and

(c) preheating the combustion air by indirect heat exchange with at least a portion of the superheated medium pressure steam and at least a portion of the low pressure steam.

4,617,110
CONTROL OF A HYDROFINING PROCESS FOR HYDROCARBON-CONTAINING FEED STREAMS WHICH PROCESS EMPLOYS A HYDRODEMETALLIZATION REACTOR IN SERIES WITH A HYDRODESULFURIZATION REACTOR

Antonio R. Hinojos, and Bertram T. Bone, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 11, 1984, Ser. No. 619,253
Int. Cl.^{4} C10G *45/02*
U.S. Cl. 208—211 **29 Claims**



1. Apparatus comprising:

a hydrodemetallization reactor;

means for providing a hydrocarbon-containing feed stream which also contains metals, sulfur and free hydrogen to said hydrodemetallization reactor;

a hydrodesulfurization reactor;

means for withdrawing the reaction effluent from said hydrodemetallization reactor;

means for combining a quench hydrogen stream with the effluent withdrawn from said hydrodemetallization reactor;

means for providing the effluent withdrawn from said hydrodemetallization reactor combined with said quench hydrogen stream as a feed to said hydrodesulfurization reactor;

means for establishing a first signal representative of the actual temperature of the feed provided to said hydrodesulfurization reactor;

means for establishing a second signal representative of the desired temperature of the feed provided to said hydrodesulfurization reactor;

means for comparing said first signal and said second signal and for establishing a third signal which is responsive to the difference between said first signal and said second signal and scaling said third signal so as to be representative of the flow rate of said quench hydrogen required to maintain the actual temperature of the feed provided to said hydrodesulfurization reactor substantially equal to the desired temperature represented by said second signal; and

means for manipulating the flow rate of said quench hydrogen stream in response to said third signal so as to manipulate the rate at which said quench hydrogen stream is combined with the effluent withdrawn from said hydrodemetallization reactor and to maintain the actual temperature for the feed provided to said hydrodesulfurization reactor substantially equal to the desired temperature represented by said second signal.

4,617,111
METHOD FOR THE SEPARATION OF A MIXTURE OF POLYVINYL CHLORIDE AND POLYETHYLENE TEREPHTALATE

Michael J. Grimm, Maumee, and Trannie R. Sehlmeyer, Toledo, both of Ohio, assignors to Plastic Recycling Foundation, Inc., Washington, D.C.

Filed Jul. 26, 1985, Ser. No. 759,217
Int. Cl.^{4} B03B *1/00*
U.S. Cl. 209—4 **13 Claims**

1. A method for the separation of a mixture of polyvinyl chloride particles and polyethylene terephtalate which comprises the steps of:

(a) applying a solution composed of a solvent of polyvinyl chloride having a density of less than 0.95 grams/cc and water to flakes of polyvinyl chloride and polyethylene terephtalate;

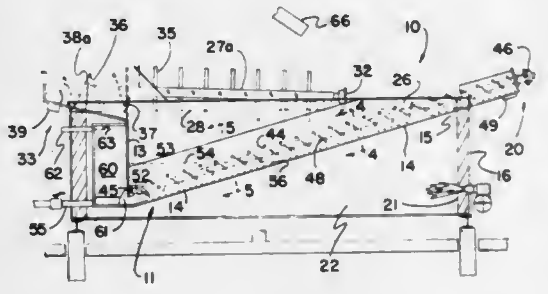
(b) conditioning said flakes of polyvinyl chloride and polyethylene terephtalate in said solution of solvent and water for a predetermined period of time whereby said flakes of polyvinyl chloride absorb the solvent contained in said solution of solvent and water while said flakes of polyethylene terephtalate do not absorb said solvent changing the density of said flakes of polyvinyl chloride so that they have less density than do said flakes of polyethylene terephtalate;

(c) separating said flakes of polyvinyl chloride from said flakes of polyethylene terephtalate.

4,617,112
THERMAL GRAVITY CLASSIFYING APPARATUS AND METHOD

Michael E. Stout; Bobbie Peacock, and Jarl Lindroos, all of Peachtree City, Ga., assignors to M.A. Industries, Inc., Peachtree City, Ga.

Filed Oct. 31, 1984, Ser. No. 666,709
Int. Cl.^{4} B03B *5/30, 5/36;* **C22B** *7/00, 7/04*
U.S. Cl. 209—11 **13 Claims**



1. The method of selective separation of constituent metals from a scrap mixture containing different kinds of metals, comprising the steps of:

providing a first molten metal in a container;

providing a second molten metal in said container, the specific gravity of said second metal being less than that of the first metal so that the second molten metal forms an upper layer floating on the first molten metal,

said first and second molten metals respectively being first and second metals of the constituent metals being separated from the scrap mixture;

heating the first and second molten metals to a selected temperature above the melting points of said first and second metals, and above the melting point of some but not all of the metals to be separated;

placing the mixture of scrap metals into the upper layer of molten metal, whereby the metal constituents having melting points below said selected temperature are melted and the other metal constituents remain solid;

said melted metal constituents gravitating to join either said upper or lower layer of molten metal, depending on the specific gravity of the melted metal constituents, and thus the first and second constituents become separated from the scrap mixture;

removing the metallic solids floating on the surface of said upper layer, said floating metallic solids having a specific gravity less than the specific gravity of the second metal and thus becoming a third constituent separated from the scrap mixture; and

removing the metallic solids which sink at least to the lower layer of molten metal, said sinking solids having a specific gravity greater than the specific gravity of the second metal and thus becoming a fourth constituent separated from the scrap mixture; and

withdrawing the melted metal constituents from one or more of the first and second molten metal layers from time to time, as the molten metal constituents add to said layers.

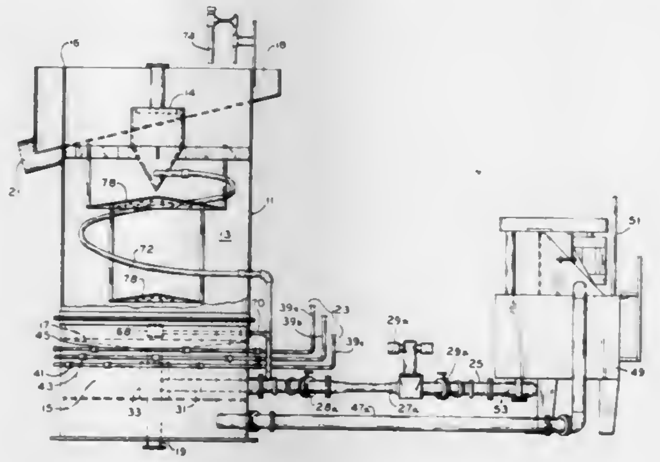
4,617,113
FLOTATION SEPARATING SYSTEM

John A. Christophersen; Fred J. Marquardt, both of Fort Wayne, Ind., and Donald E. Zipperian, Tucson, Ariz., assignors to Deister Concentrator Company, Inc., Fort Wayne, Ind.

Filed Dec. 18, 1984, Ser. No. 683,008
Int. Cl.^{4} B03D *1/14*
U.S. Cl. 209—170 **3 Claims**

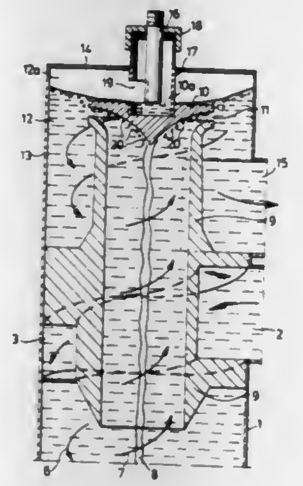
1. In a flotation separating system of the type used to enrich the concentration of certain specified types of particles within a particulate mixture by aerating a treated particle slurry inducing certain particle types to float to the top of a generally cylindrical flotation compartment adhering to small rising air bubbles while other particle types sink to the bottom of the

flotation compartment, an improved arrangement for introducing small air bubbles into the lowermost region of the flotation compartment comprising a bubble passing particle blocking barrier forming the bottom of the compartment, an aerated water distribution manifold of generally cylindrical configuration positioned below the barrier and generally coaxial with the flotation compartment, a water supply line intersecting the manifold generally tangentially, for conveying water to the manifold and including at least one aspirator for entraining air in water flowing in the supply line, water flow within the manifold following a generally helical pattern, and a plurality of distribution pipes extending generally tangentially from the manifold to distribute the aerated water in the region below the barrier said distribution pipes including short, medium and long sets of pipes with each set generally equiangularly spaced about the manifold, means for introducing additional water flowing toward the barrier comprising a plurality of inwardly extending water supply pipes, and descending particle diverting means positioned within the flotation compartment generally coaxially therewith for reducing directly downward particle motion centrally in the flotation compartment.



4,617,114
VORTEX CLEANER FOR CLEANING AND DEAERATING PAPER PULP SUSPENSIONS

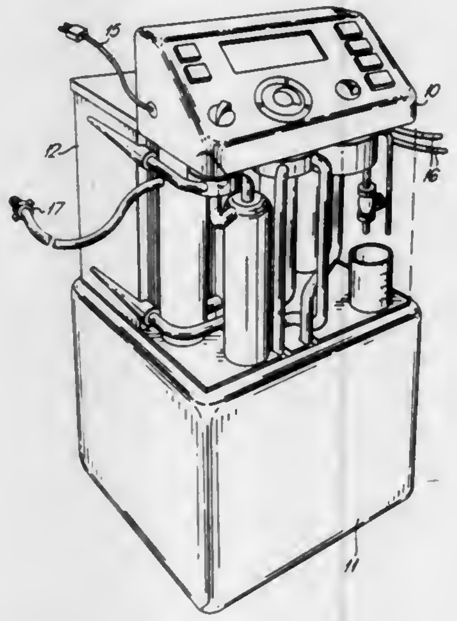
Karl A. Skardal, Bergstigen 21A, S-182 74 Stocksund, Sweden
Filed Feb. 25, 1985, Ser. No. 704,886
Claims priority, application Sweden, Mar. 7, 1984, 8401275
Int. Cl.⁴ B04C *3/00;* **B01D** *19/00*
U.S. Cl. 209—211 **5 Claims**



1. A vortex cleaner for fractionating a particle-liquid suspension, in particular a paper pulp suspension, comprising:
- an elongate, upstanding vortex chamber having a circular cross-section and narrowing downwardly from an upper, relatively wider end provided with an end wall to a lower, relatively narrow end,
- a substantially tangential suspension inlet to said vortex chamber at its upper wider end for a suspension to be treated,
- an outlet for a relatively heavier fraction at the lower narrower end of said vortex chamber,
- outlet means for a relatively lighter fraction including a vortex finder pipe with a diameter smaller than the diameter of said upper wider end of said vortex chamber, said vortex finder pipe extending coaxially through the upper end wall of said vortex chamber and having a lower portion projecting axially into the vortex chamber with its lower open end located lower than said suspension inlet and an upper portion projecting axially upwardly from said end wall with its upper open end located substantially above said end wall,
- an additional chamber located axially above the upper end wall of said vortex chamber and having a cylindrical peripheral wall coaxially surrounding the upper portion of said vortex finder pipe and extending axially above the upper end of the vortex finder pipe, a lower end wall coinciding with the upper end wall of the vortex chamber and an upper end wall located substantially above the upper end of the vortex finder pipe, so that said additional chamber encloses a space located above the upper end of the vortex finder pipe,
- an outlet opening for said relatively lighter fraction located in the cylindrical peripheral wall of said additional chamber substantially lower than the upper end of the vortex finder pipe,
- a disc-shaped flow-deflecting body located axially above, and slightly axially spaced from, the upper end of the vortex finder pipe so as define between itself and the upper end of the vortex finder pipe an annular gap forming a flow passage from said vortex finder pipe into said additional chamber, and
- an air venting tube extending into said additional chamber and having its inner open end located in said space enclosed by said additional chamber above said flow-deflecting body.

4,617,115
ARTIFICIAL KIDNEY WITH DISPOSABLE DIALYSIS LIQUID CIRCUIT

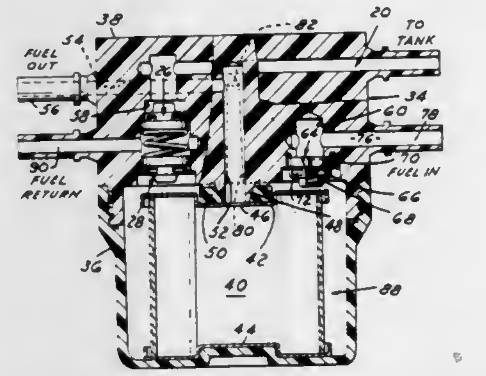
Georges Vantard, Gournay-sur-Marne, France, assignor to Hospal Industrie, Meyzieu, France
Continuation of Ser. No. 293,464, Aug. 17, 1981, abandoned. This application Jul. 27, 1983, Ser. No. 517,805
Claims priority, application France, Oct. 6, 1980, 80 21781
Int. Cl.⁴ B01D *13/00*
U.S. Cl. 210—90 **8 Claims**



1. In an artificial kidney comprising:
- (a) a haemodialyser divided up into first and second compartments by a membrane making it possible to treat blood by dialysis and by ultrafiltration whereby the blood passes through the first compartment and the dialysis liquid passes through the second compartment,
- (b) hydraulic circuit means for causing the treated blood to flow in the first compartment,
- (c) hydraulic circuit means for preparing the dialysis liquid, storing it and causing it to flow in the second compartment,
- (d) hydraulic circuit means for removing and measuring amounts of liquid equal to the desired amounts of ultrafiltrate, and
- (e) means for controlling and checking the means (b) and (c), the controling and checking means being re-usable and grouped together on a console capable of being connected to an electricity supply, the improvement wherein the circulation pump corresponding to said hydraulic circuit means (c) is disposed upstream of the dialyzer and an automatic regulation device maintains at any time within the dialyzer the pressure of the dialysis liquid between the atmospheric pressure and the blood pressure, and furthermore wherein the dialysis liquid hydraulic circuit means (c) and the liquid removing and measuring hydraulic circuit means (d) are designed, manufactured and assembled as a disposable items.

4,617,116
AUTOMOTIVE TYPE FUEL FEED SYSTEM

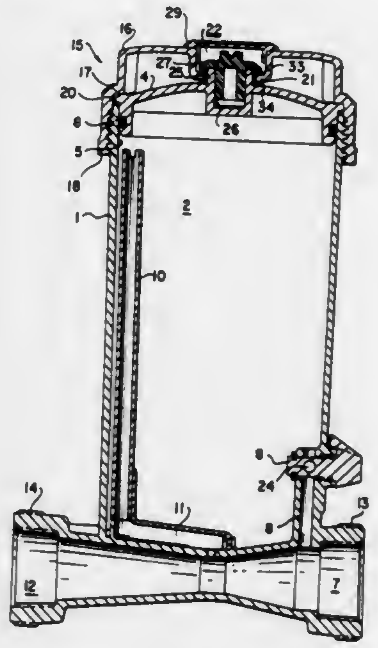
Wayne H. Seiler, Canton, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Continuation of Ser. No. 607,029, May 4, 1984, abandoned. This application Mar. 24, 1986, Ser. No. 843,925
Int. Cl.⁴ F02M *47/02*
U.S. Cl. 210—137 **2 Claims**



1. A fuel feed system for the fuel pump of an internal combustion engine including a fuel tank,
- a fuel reservoir having a fuel inlet line from the tank normally containing fuel at above atmospheric pressure level,
- a fuel outlet from the reservoir connected to the inlet suction side of the pump for supplying fuel thereto,
- a fuel flow return line normally containing fuel at a pressure level lower than that of the fuel in the reservoir inlet line having one end connected to the outlet side of the pump for evacuating excess fuel from the pump and having first and second branches at its opposite end connected in parallel flow relationship respectively to the reservoir and to the tank, and
- a plurality of fuel pressure relief type valve means in the return line branches to automatically control fuel flow therethrough including a first relief valve in the first return line branch connected to the reservoir operable to block communication of the fuel in the return line to the reservoir in response to a higher pressure of the fuel in the reservoir acting thereagainst on one side of the valve than the lower pressure of the return fuel on the other side of the valve, the valve opening upon a reversal of the pressure differential in response to air being present in the reservoir inlet line, and a second relief valve in the second return line branch connected to the tank openable upon a pressure level upstream of the latter valve greater than the pressure level in the tank to pass return line fuel directly to the tank, the second relief valve being closable upon the first relief valve opening in response to a drop in pressure in the reservoir inlet line to an atmospheric level,
- whereby operation of the pump with fuel under pressure in the reservoir inlet line maintains the reservoir supplied with a constant flow of fuel from the latter inlet line for flow through the outlet to the pump and directs the return flow therefrom through the return line directly to the tank bypassing the reservoir,
- while operation of the pump when the reservoir inlet line decays to a pressure level lower than the pressure level in the first return line branch causes a diversion of the return flow of fuel in the pump return line to the reservoir and therefrom through the outlet to the inlet of the pump concurrent with the blocking of the flow of return flow to the tank through the second branch thereby providing an uninterrupted supply of fuel at the same volume level to the pump during momentary exposure of the reservoir line to air as when the latter inlet line is at a pressure level higher than the pressure in the first return line branch.

4,617,117
HOUSING ASSEMBLY WITH REMOVABLE JACKED COVER

Robert Messinger, Cranford, and Samuel J. Tobias, Edison, both of N.J., assignors to Hayward Pool Products, Inc., Elizabeth, N.J.
Filed Jul. 20, 1984, Ser. No. 632,759
Int. Cl.⁴ B01D *27/08*
U.S. Cl. 210—198.1 **10 Claims**



1. A housing assembly for fluids having a cover removably attached to the housing in a manner that allows jacking of the cover into and away from sealing engagement with the housing, comprising, in combination, a housing; a fluid chamber in the housing; a fluid inlet and a fluid outlet in the housing in fluid flow connection with the fluid chamber; and a removable cover assembly closing off an open end of the fluid chamber and comprising a cover movable into and out from sealing engagement with the housing; a central boss extending outwardly from a central portion of the cover and having an external cylindrical wall defining a bearing surface; a jack ring removably attached to the housing and having a central aperture; the inner periphery of the aperture rotatably embracing the bearing surface of the external wall of the boss; flanged jack ring retaining means attached to the central boss and extending over the jack ring abutting the central aperture thereof and attaching the removable cover axially above and below at each side of the jack ring at the central aperture, attaching the removable cover for axial movement with the

jack ring, in a manner such that the jack ring engages the cover at a central portion adjacent the central aperture of the jack ring, and with axial movement thereof jacks the cover onto the housing into sealing engagement therewith by such engagement when the jack ring is being attached to the housing, and off from the housing out from sealing engagement therewith by engagement with the flanged jack ring retaining means and with a central portion of the jack ring adjacent the central aperture thereof when the jack ring is being removed from the housing, so that the removable cover is jacked onto the housing and off from the housing by the jack ring, for access to the fluid chamber within the housing.

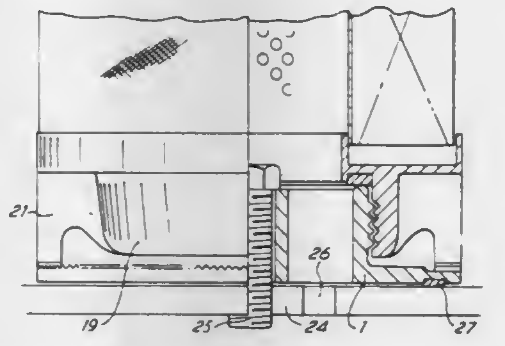
4,617,118
ASSEMBLIES OF CONJOINED PARTS

Michael F. Smart, Glamorgan, Scotland, assignor to Fram Industrial Ltd., Glamorgan, Scotland

Filed Mar. 25, 1985, Ser. No. 715,717

Int. Cl.⁴ B01D *29/28*

U.S. Cl. 210—232 **13 Claims**



1. An assembly of conjoined parts comprising a mounting part and a mountable part, said parts having complimentary means operable to conjoin them by relative rotation of the parts, wherein one of said parts is provided with at least one resiliently deflectble locating member engageable with a locating track of the other part to resist relative rotation and wherein said mountable part is part of a filter and a coalescer, and said mounting part is a base incorporating fluid flow passages therefrom.

4,617,119
BLOOD EXCHANGE APPARATUS

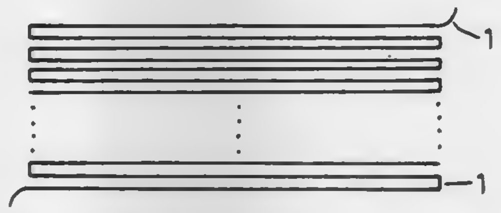
Bernd Mathieu, Spiesen, Fed. Rep. of Germany, assignor to Eduard Fresenius, Fed. Rep. of Germany

Filed Apr. 21, 1980, Ser. No. 142,417

Claims priority, application Fed. Rep. of Germany, May 5, 1979, 2918140

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 210—321.3 **7 Claims**



1. A blood exchange device for providing exchange between blood and an exchange liquid said device comprising:

a continuous web of exchange membrane arranged in an accordion fold to present a plurality of aligned membrane portions;

first and second sets of mask-like spacer means coated on at least one side of said web at spaced intervals along the web, said spacer means being located between alternate folds of the web and being aligned in the folds of said web for spacing said membrane portions, said spacer means having peripheral rim portions for sealing said membrane portions while providing central flow chambers along the surfaces of said membrane;

blood supply and discharge means extending through said rim portions of said spacer means;

channel means in said first set of spacer means for connecting said blood supply and discharge means to the flow chambers defined by said first set of spacer means for flowing blood through the device alone one sides of said membrane portions;

exchange liquid supply and discharge means extending through said rim portion of said spacer means; and

channel means in said second set of spacer means for connecting said exchange liquid supply and discharge means to the flow chambers defined by said second set of spacer means for flowing exchange liquid through the device along the other sides of said membrane portions.

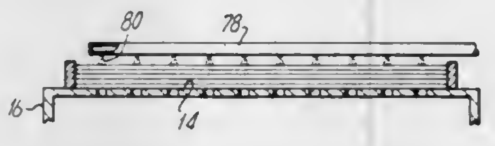
4,617,120
FILTER ELEMENT FOR FILTERING FLUIDS

Ytzhak Barzuza, Petach Tikva, and Boaz Lerner, Herzliya, both of Israel, assignors to Filtration Water Filters for Agriculture and Industry, Ltd., Tel Aviv, Israel

Continuation of Ser. No. 478,310, Mar. 24, 1983, abandoned. This application Oct. 21, 1985, Ser. No. 788,699

Int. Cl.⁴ B01D *29/38*

U.S. Cl. 210—409 **15 Claims**



1. A filter element for filtering a fluid, comprising at least one body member having openings providing access and egress for said fluid, and a plurality of fibers associated with said body each having an active length, said fibers being oriented substantially and uniformly in a given direction over at least a portion of their active lengths, along which portion at least, each of said fibers is disposed in close proximity to its adjacent fibers, forming a layer, and means for directing at least one fluid jet onto the active lengths of said fibers in a direction intersecting the plane of said layer, wherein said layer constituted by said plurality of fibers is substantially flat, and said fibers are taut.

4,617,121
IN-TANK PUMP FILTER FOR AUTOMOBILE FUEL TANK

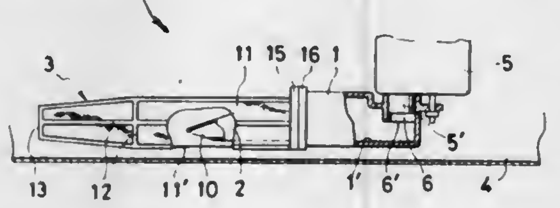
Naoshi Yokoyama, Nagoya, Japan, assignor to Nitco, Inc., Yokohama, Japan

Filed Sep. 4, 1985, Ser. No. 772,310

Claims priority, application Japan, Sep. 10, 1984, 59-136125

Int. Cl.⁴ B01D *35/02*

U.S. Cl. 210—416.4 **2 Claims**



1. A filter comprising:

means for enabling use in a fuel tank in combination with a vertically downwardly facing inlet of an in-tank pump of an automobile, including a flat hollow head member including on one end thereof a tubular attachment portion for connection to a vertically downwardly facing inlet of an in-tank pump and at the other end thereof a horizontal opening; a flat auxiliary tubular member including a flange with an engaging portion at one end thereof for engaging said head member around said horizontal opening, said auxiliary tubular member including at its other end a downwardly facing opening which opens below the level of a lower edge of the tubular attachment portion of the hollow head member; and a flat tubular filter member having a mesh surrounding the auxiliary tubular member and including a flange at one end thereof abutting said first mentioned flange, said second mentioned flange including an inset receiving a portion of said first mentioned flange of the auxiliary tubular member.

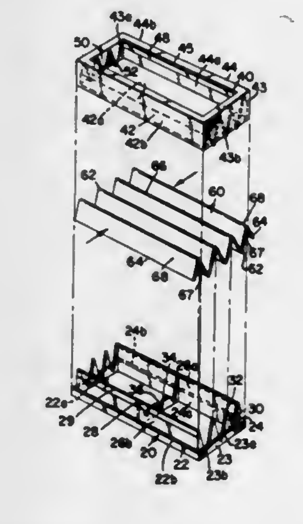
4,617,122
CRIMP SEAL PLEATED FILTER ASSEMBLY

Barbara L. Kruse, Minneapolis; Darrell D. Gronli, St. Louis Park, and Donald D. Gronholz, Bloomington, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Aug. 1, 1984, Ser. No. 636,578

Int. Cl.⁴ B01D *46/52*

U.S. Cl. 210—493.3 **7 Claims**



1. A crimp seal pleated filter assembly comprising:

(a) a base having a generally four-sided shape, said base including a front and a back and a pair of sides, said front, back and sides having interior and exterior surfaces, said sides including a plurality of projections adjacent to and inset from said interior surfaces of said sides and a pair of side wall blades adjacent to and inset from said interior surfaces of said front and said back, each of said projections extending outwardly and perpendicular to said sides and having an inner-end and a generally pointed outer-end, said side wall blades having an interior surface and an exterior surface and generally pointed outer edges, said side wall blades extending outwardly and perpendicular to said front and said back along the entire length of said interior surfaces of said front and said back;

(b) filter media having two sets of edges and a plurality of pleats, said pleats being laterally aligned with one set of edges and including end pleats having outboard ends flaps at said edges, said other set of edges forming outer ends of said pleats; and

(c) a frame having a generally four-sided shape, and having a front wall and a back wall and a pair of side walls each having interior and exterior surfaces, said side walls having a plurality of projections, extending outwardly along and adjacent to the interior surfaces of said side walls, said projections having inner ends and generally pointed outer ends, said front wall and said back wall having inwardly directed flanges adjacent to and perpendicular to said interior surfaces of said front and back walls, said flanges being contiguous with said inner ends of said projections of said side walls, said side walls interlockingly cooperating with said projections of said base to crimp seal said outer ends of said pleats between said projections of said base and said projections of said side walls, said interior surfaces of said side walls and said base encapsulating said outer ends, said interior surfaces of said front wall and back wall overlapping said side blades to crimp seal said end pleats between said outer edges of said side blades and said flanges, thereby encapsulating said outboard flaps between said exterior surfaces of said side blades and said interior surfaces of said front and back walls.

4,617,123
PROCESSES AND INSTALLATIONS FOR TREATING WASTE WATERS ISSUING FROM THE MANUFACTURE OF SAUERKRAUT

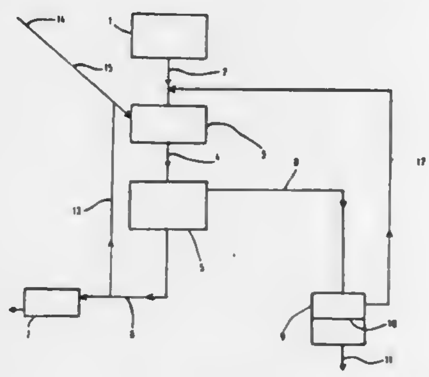
Charles Christ, 65 rue de Paris, 72160 Connerre, France

Filed Apr. 4, 1985, Ser. No. 719,806

Claims priority, application France, Apr. 11, 1984, 84 05741

Int. Cl.⁴ C02F *3/02, 3/34*

U.S. Cl. 210—611 **2 Claims**



1. A method of treating waste waters issuing from the manufacture of sauerkraut comprising the steps of:

introducing the waste water into a fermenter where it is biologically treated, under aerobic conditions with an inoculum of *Candida crusei* and/or *Candida utilis*, at a temperature of between 30° and 49° to form a precipitate and a floating liquid fraction;

separating the formed precipitate from the floating liquid fraction, drying the separated precipitate, and recovering therefrom a foodstuff complement;

treating the floating liquid fraction to reverse osmosis under a pressure higher than the osmotic pressure, using membranes, the cut-off threshold of which is lower than 100 Å,

separating the residue which forms about 10% of the liquid fraction and which remains upstream from the membrane, and returning at least a portion of this residue to the biological treatment step.

4,617,124
POLYMERIC MICROFIBROUS FILTER SHEET, PREPARATION AND USE

David B. Pall, Roslyn Estates; Peter J. Degen, Huntington, and Thomas C. Gsell, Levittown, all of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Filed Jul. 13, 1982, Ser. No. 397,762

Int. Cl.⁴ B01D *13/00*

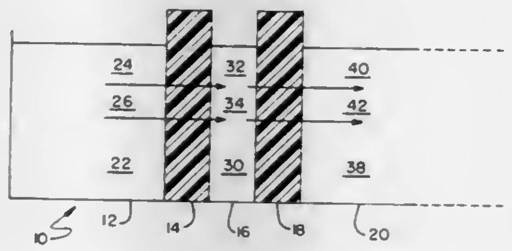
U.S. Cl. 210—638 **89 Claims**

61. A microfibrous, polymeric filter sheet comprised of a normally hydrophobic, microfibrous, polymeric web wherein the surfaces of the polymeric microfibers of said web are coated with a cured, precipitated, cationic, thermoset binder resin or polymer, said filter sheet characterized by being hydrophilic and having a positive zeta potential.

4,617,125
SEPARATIONS BY SUPPORTED LIQUID MEMBRANE CASCADES

Pier R. Danesi, Clarendon Hills, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 1, 1983, Ser. No. 528,510
Int. Cl.^{4} B01D *13/00*
U.S. Cl. 210—638 **17 Claims**



11. A method for selectively separating a first chemical species from a second chemical species, both species being contained in first aqueous electrolytic solution and having a common characteristic identified as a Type I or Type II composition with respect to the presence of absence of a positive ionic charge on said species, the method comprising the steps of:

providing a first supported liquid membrane containing a first extractant being capable of extracting the first and second chemical species into the first supported liquid membrane,

contacting the first membrane with the first aqueous electrolytic solution for a time sufficient to extract at least a portion of the first and second chemical species to form first and second extracted species,

providing a second aqueous electrolytic solution capable of stripping at least a portion of the first and second extracted species from the first membrane to form third and fourth chemical species being a Type II composition opposite to Type I composition,

contacting the second electrolytic solution with the first membrane to strip said extracted species and form said third and fourth chemical species of the Type II composition,

providing a second supported liquid membrane containing a second extractant being capable of extracting the third and fouth chemical species into the second supported membrane, one of the extractants being a cation exchanger and the other extractant being an anion exchanger or a neutral extractant, and

contacting the second membrane with the second aqueous electrolytic solution containing the third and fourth chemical species for a time sufficient to form third and fourth extracted species, at least one of the first and second extractants having greater selectivity towards the first or third chemical species to provide separation of the species, the contacting of the first and second species with the first and second membranes being carried out sequentially.

4,617,126
MEMBRANE SEPARATION OF HYDROCARBONS

Edward W. Funk, Highland Park; Sudhir S. Kulkarni, Hoffman Estates, and Y. Alice Chang, Des Plaines, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

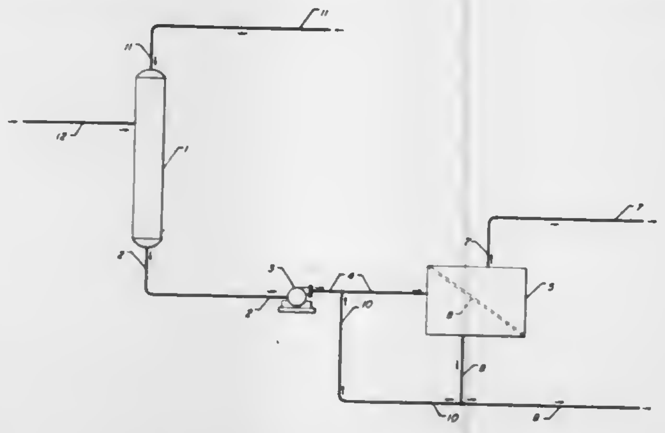
Filed Aug. 3, 1984, Ser. No. 637,638
Int. Cl.^{4} B01D *13/00*
U.S. Cl. 210—651 **15 Claims**

1. A process for the separation of a deasphalted crude oil and a light hydrocarbon solvent from a mixture thereof which comprises passing said mixture over a membrane comprising polysulfone at separation conditions whereby said light hydrocarbon solvent is recovered as the permeate and said deasphalted crude oil is recovered as the retentate.

4,617,127
PRODUCTION OF LOW ALCOHOLIC CONTENT BEVERAGES

William G. Light, San Diego, Calif., assignor to Allied Corporation, Morristown, N.J.

Filed May 20, 1985, Ser. No. 736,047
Int. Cl.^{4} B01D *13/00*
U.S. Cl. 210—651 **14 Claims**



1. A continuous feed and bleed process for the diminution of the alcoholic content of an alcoholic beverage which comprises passing a mixture of water and said beverage from a reservoir containing same across a semipermeable membrane, said membrane possessing a chloride ion rejection greater than 97% at 400 psi net pressure and displaying a permeation rate for alcohol that is dependent on net pressure for low net pressure and that is essentially independent of net pressure for high net pressure, at separation conditions including net pressure of from about 50 to about 250 psi to form a permeate comprising alcohol and water, and a retentate comprising said beverage containing a reduced alcoholic content, removing said permeate, recycling a portion of said retentate to admix with added fresh alcoholic beverage and water prior to contact with said semipermeable membrane to form a feed admixture, the portion of said retentate which is recycled comprising from about 80 to about 99% of said retentate, with the portion of the retentate which is not recycled being recovered as a product.

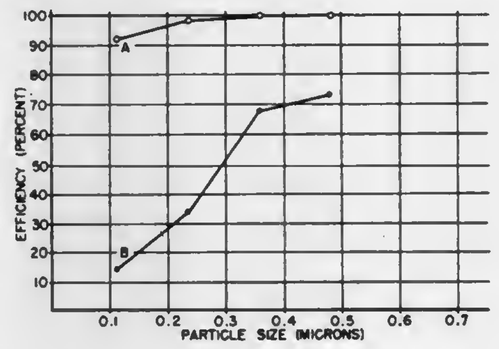
4,617,128
PARTICULATE FILTER AID, FILTER BED AND PROCESS

Eugene A. Ostreicher, Farmington, Conn., assignor to AMF Inc., White Plains, N.Y.

Continuation of Ser. No. 74,376, Sep. 10, 1979, Pat. No. 4,321,288, which is a continuation of Ser. No. 898,578, Dec. 23, 1977, abandoned, which is a continuation of Ser. No. 709,564, Jul. 28, 1976, abandoned, which is a continuation of Ser. No. 598,097, Jul. 22, 1975, Pat. No. 4,007,113, which is a continuation-in-part of Ser. No. 358,822, May 9, 1973, abandoned. This application Feb. 19, 1981, Ser. No. 235,872
The portion of the term of this patent subsequent to Feb. 8, 1994, has been disclaimed.
Int. Cl.^{4} B01D *15/04*
U.S. Cl. 210—679 **20 Claims**

14. A method for the removal of negatively charged submicron particulate contaminates from a fluid comprising passing

the contaminated fluid through a filter bed comprising particulate filter aid coated with a sufficient amount of melamine formaldehyde cationic colloid to render the anionic surface of the filter aid electro-positive.



4,617,129
SCALE INHIBITION

Michael J. Lees, Urmston, England, assignor to Ciba-Geigy, Ardsley, N.Y.

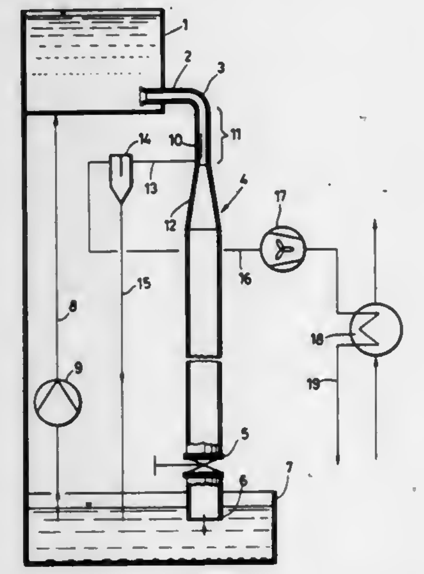
Filed Jul. 3, 1985, Ser. No. 751,647
Claims priority, application United Kingdom, Jul. 11, 1984, 8417645
Int. Cl.^{4} C02F *5/14*
U.S. Cl. 210—700 **3 Claims**

1. A method of inhibiting the precipitation of calcium carbonate from an aqeuous system, comprising adding to the aqueous system an effective precipitation inhibiting amount of bis(phosphonomethylene) aminomethylene carboxylic acid to inhibit said precipitation of said calcium carbonate.

4,617,130
PROCESS AND EQUIPMENT, IN PARTICULAR FOR THE CONDITIONING OF WASTE WATER SLUDGES

Helmut E. Siekmann, Hermannstrasse 3A, 1000 Berlin 37/Zehlendorf (West), Fed. Rep. of Germany; Jürgen Bässler, Dortmund, and Winfried Liebig, Iserlohn, both of Fed. Rep. of Germany, assignors to Uhde GmbH, Dortmund and Helmut E. Siekmann, Berlin, both of, Fed. Rep. of Germany

Filed Jul. 31, 1985, Ser. No. 761,079
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1984, 3428535
Int. Cl.^{4} B01D *17/06, 35/06*
U.S. Cl. 210—748 **12 Claims**



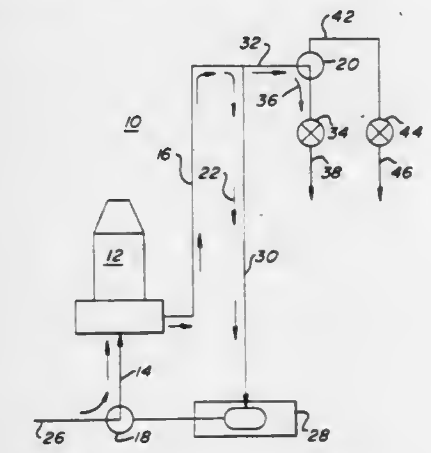
1. Process comprising: treating liquid-solid mixtures for effecting cavitation within the mixture to create impact condensation sufficient to destroy the cell-walls of all biological substances within the mixture by the steps of containing the material mixture in a high-level reservoir, withdrawing the material mixture from the reservoir and passing the mixture through at least one pipe bend having a generally horizontally extending first section extending from the reservoir and a generally vertically extending second section extending downwardly from the first section, providing a generally vertically oriented downwardly extending down pipe from the second section, and effecting a pressure reduction in the material flowing downwardly through the pipe bend into the down pipe for effecting impact condensation.

7. Equipment comprising: means for the treatment of liquid-solid mixture for effecting cavitation within the mixture to create impact condensation sufficient to destroy the cell-walls of all biological substances within the mixture wherein the improvement includes a high-level reservoir containing the material mixture to be treated, a generally horizontally arranged outlet nozzle from said reservoir, at least one pipe bend having a generally horizontally arranged first section connected to said outlet nozzle and a generally vertically arranged second section depending from said first section, a generally vertically arranged drop pipe connected to and extending downwardly from said second section of said pipe bend, a control valve located in said drop pipe adjacent the lower end thereof, and means at the juncture of said second section and said drop pipe for effecting a pressure drop in the material mixture flowing from the reservoir for creating impact condensation.

4,617,131
METHOD AND SYSTEM OF CLEANSING A FILTER BED

Kenneth A. Walker, Lutherville, Md., assignor to Environmental Elements Corp., Baltimore, Md.

Filed Jul. 29, 1985, Ser. No. 760,258
Int. Cl.^{4} B01D *41/02*
U.S. Cl. 210—794 **21 Claims**



1. A method of cleansing a filter bed having a backwash pump having an inlet line and an outlet line including the steps of:

(a) backwashing said filter bed for initially removing contaminants from said filter bed, said backwash pump drawing liquid from an effluent channel; and,

(b) purging said filter bed subsequent to said backwashing for removal of further contaminants from said filter bed, said step of purging said filter bed including the step of recirculating a first purging portion of liquid pumped by said backwash pump on said backwash pump outlet line through said backwash shoe for return to said backwash pump through said backwash pump inlet line.

4,617,132

METHOD OF ALTERING THE PERMEABILITY OF A HYDROCARBON-CONTAINING SUBTERRANEAN FORMATION

Dwyann Dalrymple, and Edward Vinson, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 1, 1985, Ser. No. 718,391

Int. Cl.^{4} C09K *3/00;* **E02D** *3/12*

U.S. Cl. 252—8.554 **20 Claims**

1. A method of reducing the permeability to water of a subterranean formation containing sandstone comprising the steps of:

(a) contacting said formation with an aqueous mixture containing a water-soluble anionic polymer having a molecular weight greater than 100,000 and which is substantially absent any cationic polymer capable of interaction with such anionic polymer; and

(b) contacting said water-soluble anionic polymer with a polymer stabilizing fluid comprising an aqueous solution of a water-soluble cationic polymer having a molecular weight greater than 1,000 which is substantially absent any anionic polymer capable of interaction with such cationic polymer.

4,617,133

FRICTION REDUCING, ANTIWEAR ADDITIVES

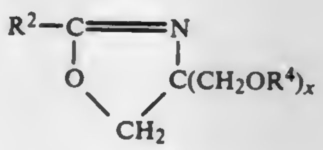
Andrew G. Horodysky, Cherry Hill, and Henry Ashjian, East Brunswick, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 9, 1984, Ser. No. 639,179

Int. Cl.^{4} C10M *1/44, 3/38, 5/24, 7/24*

U.S. Cl. 252—32.5 **7 Claims**

1. A lubricant composition comprising a major amount of an oil of lubricating viscosity of grease prepared therefrom and a minor amount of an additive compound effective for providing multifunctional friction reducing and antiwear properties to said composition consisting essentially of an oxazoline salt of a vicinal diol derived acid phosphate wherein said oxazoline salt is derived from an oxazoline having the following generalized structure



where R^2 is alkyl alkenyl, cycloalkyl, cycloalkenyl, aryl, alkaryl or aralkyl of from about 5 to about 29 carbon atoms and x is from 1 or 2, R^4 is hydrogen or acyl and when x is 2 one R^4 may be hydrogen and one R^4 may be acyl or both may be hydrogen or acyl.

4,617,134

METHOD AND LUBRICANT COMPOSITION FOR PROVIDING IMPROVED FRICTION REDUCTION

Harold Shaub, New Providence, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 205,314, Nov. 10, 1980, abandoned. This application May 10, 1982, Ser. No. 376,934

Int. Cl.^{4} C10M *105/08, 105/22*

U.S. Cl. 252—32.7 E **8 Claims**

1. In a method of reducing friction in an internal combustion engine comprising lubricating said engine using a lubricating oil composition containing an effective friction reducing amount of an additive which is an ester of a polycarboxylic acid with a glycol or glycerol and from about 0.1 to about 20 parts by weight, based on the weight of lubricating oil composition of an hydroxyl containing ashless dispersant having a high molecular weight aliphatic hydrocarbon oil solubilizing group attached thereto, the improvement comprising said dispersant containing from about 0.35 to about 1.8 millimoles of free hydroxyl groups per gram of dispersant.

4,617,135

PROCESS FOR THE PREPARATION OF OVERBASED MAGNESIUM SULFONATES

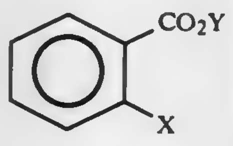
Ronald J. Muir, West Hill, Canada, assignor to Witco Corporation, New York, N.Y.

Filed Jun. 17, 1985, Ser. No. 745,237

Int. Cl.^{4} C10M *1/40, 3/34*

U.S. Cl. 252—33.2 **18 Claims**

1. A process for the preparation of overbased magnesium sulfonates comprising; mixing a sulfonic acid or salt thereof, a magnesium oxide, water, alkanol, and a combination of first and second promoters, wherein the first promoter is one selected from an oil soluble naphthenic acid and an oil soluble carboxylic acid or salt thereof; and a second promoter being one selected from:



(a)

wherein X is one of H, OH, NH_2, CO_2H, $OCOCH_3$ and SH, and Y is one of H, CH_3, CH_2CH_3, wherein the second promoter is less oil soluble than the first promoter; and (b) a water soluble C_1–C_6 carboxylic acid; heating the reactants; and passing an acidic material through the reactants to form the overbased magnesium sulfonate product.

4,617,136

DICOCOAMINE DERIVATIVES OF 2,5-DIMERCAPTO-1,3,4-THIADIAZOLE

Lester A. Doe, Jr., Newtown, Conn., assignor to R. T. Vanderbilt Company, Inc., Norwalk, Conn.

Filed Aug. 16, 1985, Ser. No. 766,382

Int. Cl.^{4} C10M *135/36;* **C07D** *285/12*

U.S. Cl. 252—47 **3 Claims**

2. A lubricating composition comprising a major part of oil of lubricating viscosity and a corrosion inhibiting amount of 5-dicocoaminomethylthio-2-(octyldithio)-1,3,4-thiadiazole.

3. A lubricating composition comprising a major part of oil of lubricating viscosity and a corrosion inhibiting amount of dicocoamine salt of 2-(octyldithio)-5-mercapto-1,3,4-thiadiazole.

4,617,137

GLYCIDOL MODIFIED SUCCINIMIDES

Frank Plavac, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 21, 1984, Ser. No. 673,962

Int. Cl.^{4} C10M *139/00, 133/44*

U.S. Cl. 252—49.6 **18 Claims**

1. A product produced by the process which comprises contacting at a temperature sufficient to cause reaction an alkenyl or alkyl succinimide containing at least one primary or secondary amine with glycidol wherein the charge mole ratio ranges from greater than 1 and up to 10 of glycidol to each of the basic nitrogens of the alkenyl or alkyl succinimide.

4,617,138

MODIFIED SUCCINIMIDES (II)

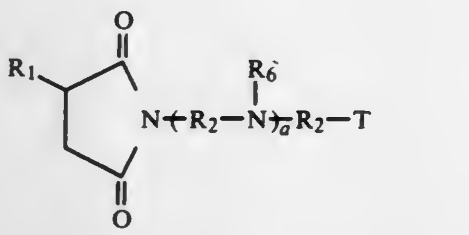
Robert H. Wollenberg, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 12, 1985, Ser. No. 722,882

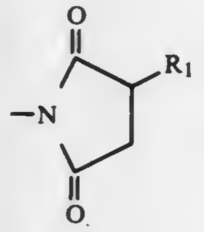
Int. Cl.^{4} C10M *105/50, 105/56*

U.S. Cl. 252—51.5 A **12 Claims**

7. A compound of the formula:



wherein R_1 is alkenyl or alkyl of from 10 to 300 carbon atoms; R_2 is alkylene of 2 to 10 carbon atoms; R_6 is hydrogen, lower alkyl of from 1 to 6 carbon atoms, and hydrocarbylcarbonylalkylene wherein said hydrocarbyl contains from 1 to 30 carbon atoms; said alkylene is a three of four carbon alkylene group or a three or four carbon alkylene group substituted with from 1 to 3 alkyl groups of from 1 to 2 carbon atoms each; a is an integer of from 1 to 6; and T is —$N(R_6)_2$, —NHR_6 and



wherein R_6 is as defined above and R_1 is alkenyl or alkyl of from 10 to 300 carbon atoms, with the proviso that the compound contains at least one R_6 which is hydrocarbylcarbonylalkylene.

8. A lubricating oil composition comprising an oil of lubricating viscosity and an amount effective to provide dispersancy of a compound as defined in claim 7.

4,617,139

DETERGENT COMPOSITIONS CONTAINING POLYMERS

Ian D. Robb, Hoylake, and Peter M. Duggleby, Irby, both of England, assignors to Lever Brothers Company, New York, N.Y.

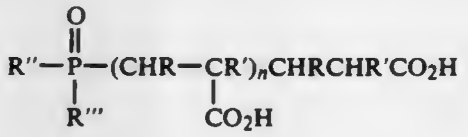
Filed Oct. 21, 1985, Ser. No. 789,588

Claims priority, application United Kingdom, Aug. 12, 1984, 8520184; Oct. 23, 1984, 8426737

Int. Cl.^{4} C11D *3/37*

U.S. Cl. 252—135 **7 Claims**

1. A detergent composition comprising from 3 to 50% by weight of a detergent-active compound selected from the group consisting of anionic, nonionic and cationic surfactants and mixtures thereof, from 0 to 60% by weight of a detergency builder and from 0.1 to 10% by weight of an anti-redeposition polymer, said polymer being one having the general formula:



$$R''-\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle R'''}{|}}{P}}-(CHR-\underset{\underset{\displaystyle CO_2H}{|}}{C}R')_nCHRCHR'CO_2H$$

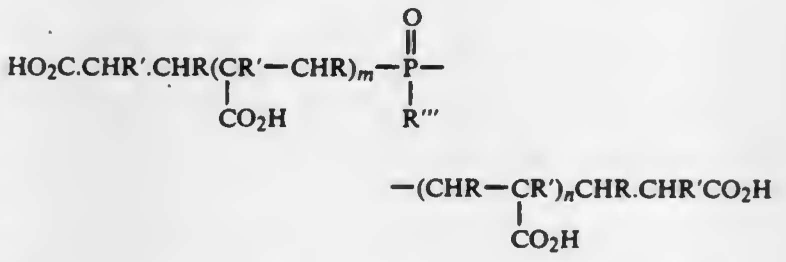
wherein

R is a group selected from hydrogen, a carboxyl radical, an anhydride formed from said carboxyl radical and from the carboxyl radical on the adjacent carbon atom in said formula, and combinations thereof;

R′ is a group selected from hydrogen, methyl or ethyl radical, and combinations thereof;

R″ is a group selected from hydrogen, straight- or branched-chain alkyl radical having from 1 to 18 carbon atoms, cycloalkyl radical having from 5–12 carbon atoms, an aryl radical, an alkaryl radical and a radical of the general formula OX, wherein X may be a hydrogen atom or a straight- or branched-chain alkyl radical having from 1 to 4 carbon atoms;

R‴ is a radical of the general formula OX, wherein X is defined as above; and n is an integer, but when R″ is hydrogen, then the polymer is a mixture of a polymer of the above formula and one of the general formula:



$$HO_2C.CHR'.CHR(\underset{\underset{\displaystyle CO_2H}{|}}{C}R'-CHR)_m-\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle R'''}{|}}{P}}-(CHR-\underset{\underset{\displaystyle CO_2H}{|}}{C}R')_nCHR.CHR'CO_2H$$

wherein R, R′ and R‴ have their previous significance, and m and n are integers, such as the ratio of the CHR—CR′(CO_2H) unit to the phosphorus atom is from 10:1 to 60:1.

4,617,140

BICYCLOHEXYL DERIVATIVES

Rudolf Eidenschink, and Joachim Krause, both of Dieburg, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 468,736, Feb. 22, 1983, abandoned. This application Jul. 29, 1985, Ser. No. 760,233

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1982, 3206269

Int. Cl.^{4} G02F *1/13;* **C09K** *3/34;* **C07C** *69/753, 69/757;* **C07D** *319/06*

U.S. Cl. 252—299.61 **21 Claims**

1. A bicyclohexyl derivative of the formula

R^1—Cy—Cy—X—y

wherein

X is —CO—O— or O—CO—,

Y is alkyl or perfluoroalkyl each of 1–8 C atoms, or —Ph—Dio—R^2,

Cy is 1,4-cyclohexylene,

Ph is 1,4-phenylene,

Dio is 1,3-dioxane-2,5-diyl and

R^1 and R^2 are each independently alkyl or alkoxy each of 1–8 C atoms.

4,617,141

TRANS-4-ALKYLOXYMETHYL-1-(4′-SUBSTITUTED BIPHENYLYL-4)CYCLOHEXANES

Hiromichi Inoue; Takashi Inukai; Yasuyuki Goto; Hideo Sato, and Masahiro Fukui, all of Kanagawaken, Japan, assignors to Chisso Corporation, Osaka, Japan

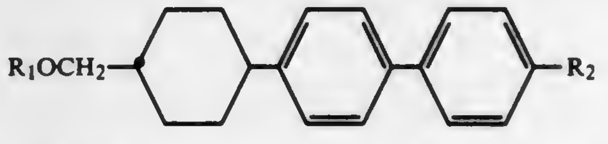
Division of Ser. No. 502,233, Jun. 8, 1983, Pat. No. 4,522,741. This application Mar. 18, 1985, Ser. No. 712,752

Claims priority, application Japan, Jun. 12, 1982, 57-101172

Int. Cl.^{4} C09K *3/34;* **G02F** *1/13;* **C07C** *43/168*

U.S. Cl. 252—299.63 **3 Claims**

1. A trans-4-alkyloxymethyl-1-(4′-substituted biphenylyl-4)cyclohexane expressed by the formula



wherein R_1 and R_2 each represent an alkyl group of 1 to 8 carbon atoms.

4,617,142

CYCLOHEXANECARBONYLIC ACID ETHYL ESTER DERIVATIVES

Shigeru Sugimori, Fujisawa, Japan, assignor to Chisso Corporation, Ohsaka, Japan

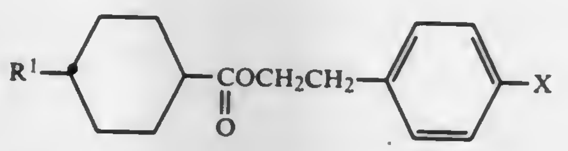
Filed Mar. 28, 1985, Ser. No. 717,040

Claims priority, application Japan, Apr. 10, 1984, 59-71595

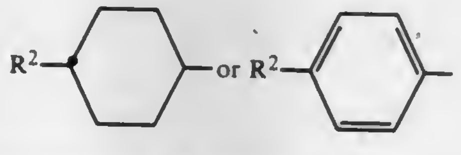
Int. Cl.^{4} C09K *3/34;* **G02F** *1/13;* **C07C** *69/74, 69/76*

U.S. Cl. 252—299.63 **2 Claims**

1. A trans-4-substituted-cyclohexanecarboxylic acid β-(4-halogenophenyl) ethyl ester derivative expressed by the general formula



wherein R^1 represents R^2,



wherein R^2 represents an alkyl group or an alkoxy group, each having 1 to 15 carbons and X represents F or Cl.

4,617,143

OXIDIZING POLYMERIZATION WITH ASF_5

Gerhard Kossmehl, Berlin, and Jürgen Hocker, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

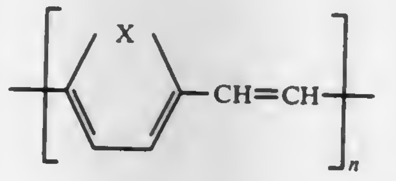
Division of Ser. No. 506,607, Jun. 22, 1983, abandoned. This application Feb. 7, 1985, Ser. No. 699,170

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1982, 3224159; Jun. 29, 1982, 3234160

Int. Cl.^{4} H01B *1/00*

U.S. Cl. 252—500 **2 Claims**

1. Doped products comprising polymers according to the formula:



wherein

X is O or S, and

n is an integer greater than 10,

which have been doped with a protonic acid, a Lewis acid or halogen.

4,617,144

ORGANOLEPTIC USES OF TERTIARY HYDROXYL CARBOXALDEHYDES

Futoshi Fujioka, Wanamassa; Richard M. Boden, Ocean, and William L. Schreiber, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

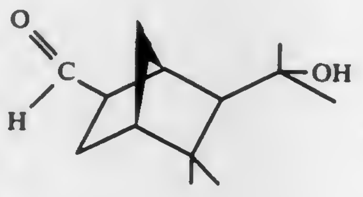
Division of Ser. No. 656,660, Oct. 1, 1984, Pat. No. 4,576,739, which is a division of Ser. No. 511,965, Jul. 8, 1983, Pat. No. 4,491,537. This application Aug. 23, 1985, Ser. No. 768,807

The portion of the term of this patent subsequent to Mar. 18, 2003, has been disclaimed.

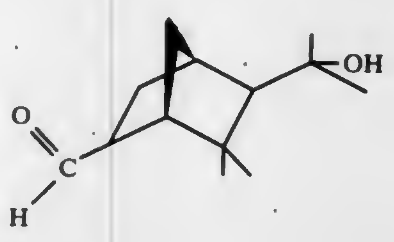
Int. Cl.^{4} A61K *7/46*

U.S. Cl. 252—522 A **3 Claims**

1. A process for augmenting or enhancing the aroma of a perfumed polymer comprising the step of adding to said perfumed polymer, an aroma augmenting or enhancing quantity of a mixture of compounds defined according to the structures:



and



4,617,145

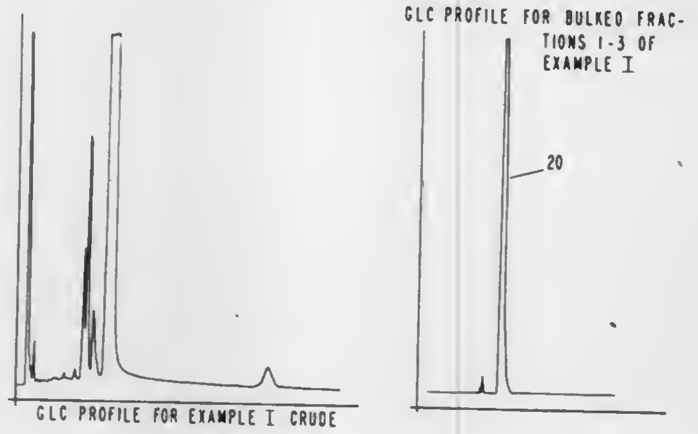
1-METHYL-2(2-METHYLBUTYL) CYCLOHEXANOL DERIVATIVES AND ORGANOLEPTIC USES THEREOF

William L. Schreiber, Jackson; Anubhav P. S. Narula, and Marie R. Hanna, both of Hazlet, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

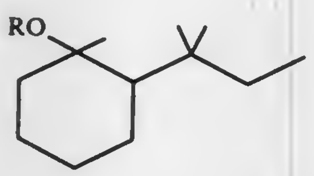
Filed Nov. 21, 1985, Ser. No. 800,429

Int. Cl.^{4} A61K *7/46;* **C11B** *9/00*

U.S. Cl. 252—522 R **14 Claims**



1. A 1-methyl-2(2-methylbutyl)cyclohexanol derivative defined according to the structure:



wherein R represents lithium, MgCl, MgBr, hydrogen or acetyl.

4,617,146

SUBSTITUTED BICYCLO[4.3.0]NON-1(6)-EN-8-YL METHYL KETONES AND FRAGRANCE AND FLAVOR COMPOSITIONS

Daniel Helmlinger, Gockhausen; Mario Pesaro, Zurich, both of Switzerland, and Michael Klaus, Weil am Rhein, Fed. Rep. of Germany, assignors to Givaudan Corporation, Clifton, N.J.

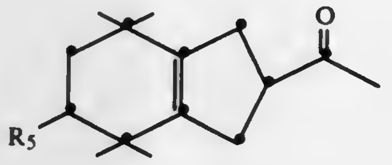
Filed Jan. 9, 1984, Ser. No. 569,019

Claims priority, application Switzerland, Jan. 13, 1983, 189/83

Int. Cl.^{4} A61K *7/46;* **A23L** *2/26;* **C07C** *49/105*

U.S. Cl. 252—522 R **9 Claims**

1. A fragrance composition comprising an olfactorily effective amount of a compound of the formula

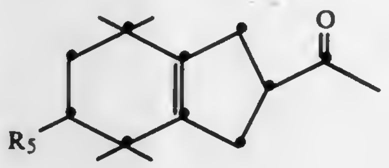


I

wherein:

R_5 represents hydrogen and methyl.

7. A compound of the formula



I

wherein

R_5 represents hydrogen or methyl.

4,617,147

PROCESS FOR PREPARATION OF SOLID PERFUMES

Ichiro Shibanai, 10-6-312, Akasaka 6-chome, Minato-ku, Tokyo 107, Japan

PCT No. PCT/JP85/00078, § 371 Date Oct. 17, 1985, § 102(e) Date Oct. 17, 1985, PCT Pub. No. WO85/03861, PCT Pub. Date Sep. 12, 1985

PCT Filed Feb. 22, 1985, Ser. No. 799,377

Claims priority, application Japan, Mar. 1, 1984, 59-37285

Int. Cl.^{4} A61K *7/46;* **C11B** *9/00*

U.S. Cl. 252—522 A **1 Claim**

1. A process for the preparation of solid perfumes, which comprises mixing a mixture formed by adding a perfume oil to an alcohol solution containing 1 to 5% of hydroxypropylcellulose with a saturated solution of dibenzylidenesorbitol in N-methyl-2-pyrrolidone to form a gel-like solid.

4,617,148

OPAQUE LIQUID HAND SOAP

Susan J. Shields, New Castle County, Del., assignor to Hercules Incorporated, Wilmington, Del.

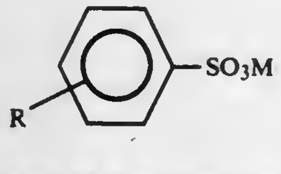
Continuation-in-part of Ser. No. 509,748, Jun. 30, 1983, abandoned. This application Jun. 6, 1984, Ser. No. 617,784

Int. Cl.^{4} C11D *1/12, 3/37, 17/08*

U.S. Cl. 252—547 **14 Claims**

1. A liquid soap composition consisting essentially of, in an aqueous medium, by weight of its principal ingredients,

(a) from about 40% to about 90% of an anionic surfactant detergent selected from the group consisting of (i) alkylbenzenesulfonates of the formula:



where R is dodecyl and M is sodium, calcium, triethanolammonium, and isopropylammonium; (ii) alpha-olefinsulfonates of the formula:

$R'CH{=}CHSO_3Na$

where R′ is 10–18 carbon atoms and mixtures thereof; and (iii) alkyl sulfates of the formula $R''OSO_3M'$ where R″ is lauroyl and M′ is sodium, potassium, ammonium, diethanolammonium, and triethanolammonium;

(b) from about 20% to about 50% of a primary lathering agent selected from the group consisting of (i) dialkyl sulfosuccinates of the formula $RO_2CCH_2CH(SO_3Na)$-CO_2R, where R is lauroyl or myristyl, (ii) N-acyl-sarcosinates of the formula $R'CON(CH_3)CH_2CO_2Na$, where R′CO— is lauroyl and cocoyl, (iii) sodium N-acyl-N-methyltaurates of the formula $R''CON(CH_3)CH_2CH_2SO_3Na$, where R″CO is acyl, (iv) sodium cocoylisothionate, (v) amidopropylbetaines of the formula $R'''CONHCH_2CH_2CH_2N^+(CH_3)_2CH_2CO_2^-$, where R‴CO is cocoyl and lauroyl, and (vi) mixtures thereof;

(c) from about 5% to about 30% of a nonionic surfactant opacifying agent;

(d) from about 0.5% to about 20% of a primary water-soluble polymer thickener selected from the group consisting of hydroxyethylcellulose and hydroxypropyl guar as its principal ingredients; wherein the total of (a), (b), (c), and (d) is 100% of the principal ingredients; and

(e) water from about 75% to about 85%.

4,617,149

GROWTH HORMONE RELEASE FACTOR ANALOGS

Richard D. DiMarchi, Carmel, and Carl J. Shaar, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 21, 1983, Ser. No. 534,518

Int. Cl.^{4} C07K *7/10*

U.S. Cl. 530—324 **6 Claims**

1. A compound having the formula H-Tyr-Ala-Asp-Ala-Ile-Phe-Thr-Asn-Ser-Tyr-Arg-Lys-Val-Leu-Gly-Gln-Leu-Ser-Ala-Arg-Lys-Leu-Leu-Gln-Asp-Ile-X-Ser-Arg-Gln-Gln-Gly-Glu-Ser-Asn-Gln-Glu-Arg-Gly-Ala-Arg-Ala-Arg-Leu-Y in which Y is OH or NH_2 and X is selected from the group consisting of Met(O), Met(S-Me), and Hse and pharmaceutically acceptable salts thereof.

4,617,150

β-LACTAMS

Christian N. Hubschwerlen, Durmenach, France, and Gérard Schmid, Kienberg, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

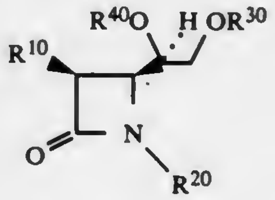
Division of Ser. No. 407,027, Aug. 11, 1982, Pat. No. 4,576,751. This application Aug. 26, 1985, Ser. No. 769,536

Claims priority, application Switzerland, Aug. 27, 1981, 5524/81; Jun. 25, 1982, 3925/82

Int. Cl.^{4} C07D *205/08, 403/04, 405/14, 405/04*

U.S. Cl. 540—364 **3 Claims**

1. A compound of the formula



Ie

wherein R^{10} is azido, phthalimido, amino or the group RO-CO—CH=C(CH_3)—NH or Z—NH—, R is lower alkyl, Z is t-butoxycarbonyl, trichloroethoxycarbonyl, benzyloxycarbonyl or benzhydryl, R^{20} is hydrogen or the group Z′-, Z′ is 2,4- or 3,4-di-(lower alkoxyl)-benzyl, di-(4-(lower alkoxyl)-phenyl)-methyl or 4-(lower alkoxy)-phenyl and R^{30} and R^{40} each are hydrogen, with the proviso that R^{10} is the group Z—NH— when R^{30} and R^{40} and/or R^{20} is hydrogen,

and the corresponding optical antipodes thereof.

4,617,151
2- OR 2,3-SUBSTITUTED 5,6,11,12-TETRATHIOTETRACENE AND 5,6,11,12-TETRASELENOTETRACENE

Carl W. Mayer, Riehen; Vratislav Kvita, Reinach, and Josef Pfeifer, Therwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

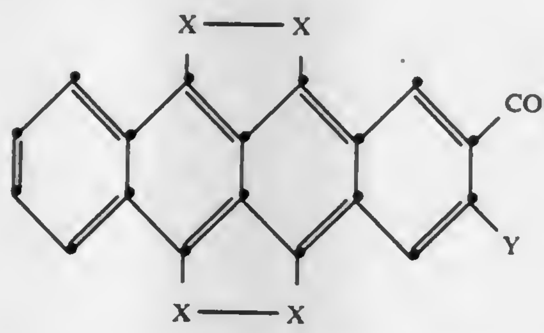
Filed Mar. 15, 1985, Ser. No. 712,291

Claims priority, application Switzerland, Mar. 23, 1984, 1468/84

Int. Cl.⁴ C07D *517/02, 517/12*

U.S. Cl. 540—1 **3 Claims**

1. 2-, or 2,3-substituted 5,6,11,12-tetrathiotetracene or -tetraselenotetracene of the formula I



(I)

in which X is S or Se and R is alkoxy having 1 to 12 C atoms, cycloalkoxy having 5 to 16 C atoms, ω-hydroxyalkoxy having 2 to 12 C atoms, aryloxy having 6 to 16 C atoms, aralkoxy having 7 to 12 C atoms —OH, $-NH_2$, —Cl, —Br or $-NR^1R^2$ in which R^1 is alkyl having 1 to 12 C atoms, cycloalkyl having 5 to 16 C atoms, ω-hydroxyalkyl having 2 to 12 C atoms, aryl having 6 to 16 C atoms or aralkyl having 7 to 16 C atoms and R^2 is a hydrogen atom or independently is defined in the same way as R^1, and Y is a hydrogen atom or a —COR group or Y and R together are —CO—O— or $-CO-NR^2$.

4,617,152
β-LACTAMS CONTAINING AN α-EXOCYCLIC DOUBLE BOND

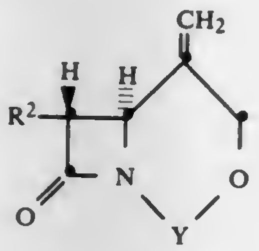
Burton G. Christensen, Cliffside Park; Lovji D. Cama, Cresskill, and Susan M. Schmitt, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 19, 1985, Ser. No. 703,056

Int. Cl.⁴ C07D *498/04;* **C07F** *7/10*

U.S. Cl. 540—200 **6 Claims**

1. A compound of the formula:



wherein R^2 is independently selected from hydrogen, linear or branched C_1–C_3 alkyl, which can be substituted with fluoro, hydroxy or protected hydroxy, and Y is a divalent bridging-protecting group, derived from a ketone, aldehyde or organosilicon compound, said group being stable to catalytic hydrogenation and removable by acid or base hydrolysis.

4,617,153
PERFLUOROCARBON POLYMER OXIDATION CATALYST AND PREPARATION OF CARBONYL COMPOUND

Hitosi Nozaki, Takatsuki, and Koichiro Oshima, Kyoto, both of Japan, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 700,655, Feb. 11, 1985. This application Sep. 17, 1985, Ser. No. 765,151

Claims priority, application Japan, Feb. 28, 1984, 59-35321

Int. Cl.⁴ C07C *51/285, 45/29*

U.S. Cl. 260—413 **1 Claim**

1. A method of oxidizing a primary alcohol to form an aldehyde or a carboxylic acid which comprises treating said alcohol with at least one oxidizing agent selected from the class consisting of tertiary butyl hydroperoxide, cumene hydroperoxide, benzoyl peroxide, and sodium bromate in the presence of a perfluorocarbon polymer consisting of a perfluorocarbon main chain and side chains containing terminal structural units of the formula

$$-CF_2SO_2X$$

wherein X is chromium (III) wherein the weight in grams of the perfluorocarbon polymer per one mole of $-CF_2SO_2X$ groups is between 900 and 3000, and wherein the polymer is present in catalytically effective amounts, for a time and temperature sufficient to produce said aldehyde or carboxylic acid.

4,617,154
CHEMICAL PROCESS INVOLVING ETHERS AND AMINES

Michael J. Green, Hedon, England, assignor to BP Chemicals Limited, London, England

Filed Sep. 4, 1984, Ser. No. 647,235

Claims priority, application United Kingdom, Sep. 7, 1983, 8323961

Int. Cl.⁴ C07C *121/38, 103/175, 103/178, 69/708*

U.S. Cl. 558—450 **11 Claims**

1. A process for the production of an ether which comprises reacting an olefin, capable of undergoing the Michael Reaction, and having at least one group selected from the group consisting of —COOR, —COR, $-CONR_2$ or —CN, where R is an alkyl or aryl group, bonded to an olefinically unsaturated carbon atom, with an alcohol in the presence of an effective amount of a catalyst characterised in that the catalyst is:

(a) a cyclic amidine, in which amidine group forms part of a fused ring system, or

(b)

(i) a Lewis base consisting essentially of an organic compound selected from polyamines, trialkylamines, alkylphosphines, polyphosphines, arylamines and aryl phosphines and

(ii) an epoxide.

4,617,155
NOVEL LYSINE SALT CRYSTALS AND PROCESS FOR PRODUCTION THEREOF

Kiyoshi Tanaka, Tokyo; Yoshihiro Koga, Saga; Masaru Saeki, Fujisawa; Tetsuya Kaneko, Kawasaki, and Tetsuya Kawakita, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Feb. 12, 1985, Ser. No. 701,372

Claims priority, application Japan, Feb. 13, 1984, 59-24876

Int. Cl.⁴ C07C *53/126, 101/24;* **A23J** *1/00*

U.S. Cl. 260—501.12 **3 Claims**

1. An equimolar salt of lysine and 2-hydroxy-4-methylthiobutyric acid.

4,617,156
2-HYDROXYMUCONIC SEMIALDEHYDE BISULFITE ADDUCT

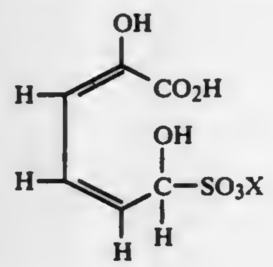
Scott Hagedorn, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Feb. 22, 1984, Ser. No. 582,237

Int. Cl.⁴ C07C *143/18*

U.S. Cl. 260—513 R **1 Claim**

1. A compound corresponding to the formula:



where X is an alkali metal cation.

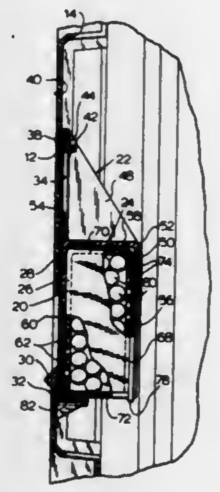
4,617,157
FRAGRANCE DISPENSER FOR ROOM AIR CONDITIONER

Ray J. Stein, Pigeon Township, County of Vanderburgh, and Raymond G. Simons, Knight Township, County of Vanderburgh, both of Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Apr. 22, 1985, Ser. No. 725,805

Int. Cl.⁴ A61L *9/12*

U.S. Cl. 261—96 **13 Claims**



1. In an appliance having a panel positioned in an air flow path, a fragrance dispenser comprising:

a cartridge mounting base secured to said panel;

a fragrance cartridge attachable to said base at a bottom end and having a front wall and a spaced rear wall connected by side walls forming an interior chargeable with fragrance pellets;

said cartridge having a plurality of dispensing holes through said front wall near said bottom end and a plurality of dispensing holes through said rear wall spaced away from said bottom end;

a reciprocal slide mounted on said panel to slide along an axis between an open position distant from said mounting base and a closed position closer to said mounting base;

said slide having a front wall and a spaced rear wall connected by side walls forming a cavity for receiving said cartridge,

said slide front wall selectively covering said openings in said cartridge front wall and said slide rear wall simultaneously selectively covering said openings in said cartridge rear wall as said slide is axially moved;

said slide rear wall being sufficiently short to provide clearance from said base when said slide is in said open position that exceeds the axial length of said fragrance cartridge so that the fragrance cartridge can be replaced or refilled.

4,617,158
PROCESS FOR TREATING A METAL OXIDE POWDER

Camille Braun, Saint Nizier du Moucherotte; Joël Danroc, Grenoble; Bernard Francois, Montbonnot, and Jean Michel, Biviers, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 12, 1983, Ser. No. 484,419

Int. Cl.⁴ G21F *9/16;* **B22F** *1/00, 3/12*

U.S. Cl. 264—0.5 **7 Claims**

1. A process for the treatment of a metal oxide powder with a view to its fritting, which comprises forming said metal oxide being chosen from the group including uranium dioxide, plutonium dioxide, and the mixed oxides UO_2-PUO_2, UO_2-ThO_2, ThO_2-PuO_2, UO_2-Gd_2O_3, UO_2-PuO_2-Eu_2O_3 and UO_2-PuO_2-Gd_2O_3 a hydrated oxide layer of the same metal on the surface of the particles of said powder prior to compression of said powder into pellets by treating the powder with an oxidizing agent, in the presence of water or water vapor, drying the thus treated powder to eliminate the excess water, bringing the thus treated powder into the form of cylindrical pellets by cold compression; and fritting the thus obtained crude pellets at a temperature of 1400° to 1800° C. under a reducing atmosphere.

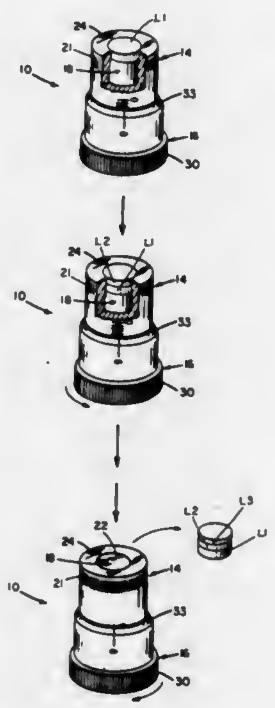
4,617,159
METHOD OF MOLDING A DENTAL SHADE SAMPLE

Lloyd L. Miller, 20 Beaver Rd., Weston, Mass. 02193

Filed Jul. 19, 1984, Ser. No. 632,400

Int. Cl.⁴ A61C *13/107, 13/09, 19/10*

U.S. Cl. 264—16 **3 Claims**



1. A method of preparing a dental shade sample comprising a plurality of layers, each of a known thickness, said method comprising:

(1) providing a dental shade sample mold for preparing a plug comprising:

a base,

a cylinder extending upwardly from said base,

a planar platform surface at the upper end of said cylinder, said cylinder being threaded in a region below said platform, and

a hollow annular housing defining an internal cylindrical surface sized and cooperatively threaded to engage said cylinder threads,

whereby the position of the housing relative to said cylinder establishes the depth of the cavity defined by said housing surface and said platform, and rotation of said housing relative to said cylinder moves the housing vertically with respect to the cylinder and causes said cavity depth to vary continuously by known amounts;

(2) positioning said housing and cylinder in a series of positions by causing relative rotation of said housing and cylinder, said cavity having a different, known depth at each said position;

(3) at each said position, inserting porcelain-forming material into said cavity and condensing said porcelain-forming material to fill the cavity with said material, whereby a porcelain-forming plug is formed comprising a plurality of layers each with a known thickness;

(4) removing said plug from said mold; and

(5) baking said plug.

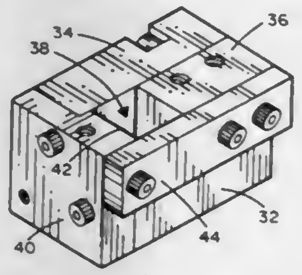
4,617,160
METHOD FOR FABRICATING MODULES COMPRISING UNIFORMLY STACKED, ALIGNED CIRCUIT-CARRYING LAYERS

Robert J. Belanger, Costa Mesa, and Alan G. Bisignano, Anaheim, both of Calif., assignors to Irvine Sensors Corporation, Costa Mesa, Calif.

Filed Nov. 23, 1984, Ser. No. 674,096

Int. Cl.⁴ H01L *21/70, 21/90*

U.S. Cl. 264—40.1 **14 Claims**



1. In the manufacturing of an electronic-circuitry-supporting stack of layers, each of which extends in a plane perpendicular to an access plane end at one end of the stack, and each of which provides a multiplicity of spaced electrical leads at the access plane, such leads being part of a two-dimensional planar array having its X-axis parallel to the layer planes and its Y-axis perpendicular to the layer planes, the method comprising:

forming a plurality of substrate layers each having circuitry thereon providing at the access plane end a multiplicity of separate electrical leads spaced along the X-axis of the array;

measuring the thickness of each layer;

determining an order, based at least partially on the layer thickness measurements, in which to stack the layers so as to place the access plane electrical leads at their desired locations in the Y-axis of the array;

fabricating a stack-confining structure which includes (a) lower and upper wall members having surfaces which will engage the lower and upper layers of the stack to determine the Y-axis dimension, and (b) a plurality of position reference elements perpendicular to said wall members adapted to determine the X-axis alignment of at least two sides of each of the layers;

wet stacking the layers in the predetermined order after applying substantially the same amount of a liquid adhesive material between each pair of adjacent layers;

placing the layers in the stack-confining structure supported on the lower wall member;

aligning the layers along the X-axis by engaging them against the position reference elements of the stack-confining structure;

using the upper and lower wall members of the stack-confining structure to exert pressure along the Y-axis causing the Y-axis dimension of the stack to correspond to the desired final dimension; and

subjecting the confined stack to heat in order to cause the liquid adhesive to secure the layers in an integrated stack.

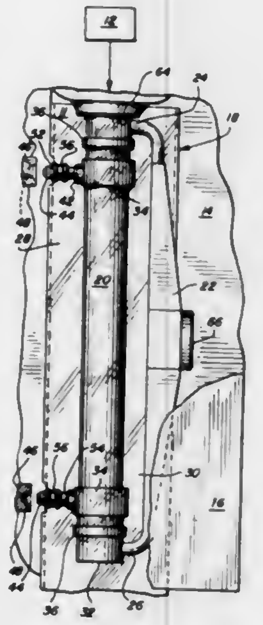
4,617,161
METHOD OF MANUFACTURE FOR A DIALYZER HAVING IMPROVED SIDE PORTS

Richard A. Rollins, Mundelein; Thomas J. Sluga, McHenry, and Henry Tobiasz, Arlington Heights, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Sep. 6, 1983, Ser. No. 529,467

Int. Cl.⁴ B22D *11/126*

U.S. Cl. 264—136 **9 Claims**



1. In a method for making a hollow fiber separation device, including the steps of: blow molding an integral structure which comprises at least one tubular housing portion and molding at least one laterally extending, closed-end side port adjacent an end of the tubular housing, the improvement comprising, in combination: the step of forming through the action of laterally advanceable and retractable die member means a seamless outer end portion on said laterally extending port by laterally advancing said die member means against the end of the blow molded side port while said side port is in moldable condition, to form adjacent the end of said side port an annular, outwardly extending seamless shoulder portion, and thereafter laterally retracting said die member means to permit removal of the housing from the blow mold.

4,617,162
FRICTION LININGS, IN PARTICULAR FOR CLUTCH FACINGS, AND METHOD FOR THEIR PRODUCTION

Wolff G. von Rex, and Hans Fetzer, both of Schwäbisch Hall, Fed. Rep. of Germany, assignors to Rex Patent Graf von Rex GmbH & Co KG, Schwäbisch Hall, Fed. Rep. of Germany

Filed Dec. 7, 1981, Ser. No. 328,098

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1980, 3046696

Int. Cl.⁴ B29C *47/00;* **C08J** *5/14*

U.S. Cl. 264—176 R **10 Claims**

1. Method for the production of friction linings, using asbestos-free fiber material, heat hardenable binding agents and a plastifying agent, said plastifying agent being selected from the group of substances imparting a flowing or pasty or plasticizing effect, so as to form from said aforementioned components a kneadable spreadable trowelable mass, by extruding the mass containing such components and hardening under heat and pressure, comprising the steps of:

providing a homogenized mixture of fibers, wetting agent, water and a plastifying agent in a fiber: water-mixture ratio from of about 1:3 to 1:7; introducing the heat-hardenable binding agent; extruding the so formed plastic mass so as to form a formed body; drying the formed body; and strengthening and hardening under heat and pressure.

4,617,163
PRODUCTION OF ION-EXCHANGE MEMBRANE

Peter J. Smith, Cheshire, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Nov. 27, 1984, Ser. No. 675,401

Claims priority, application United Kingdom, Nov. 29, 1983, 8331860

Int. Cl.⁴ C08J *5/22;* **B29C** *55/00, 55/12;* **B29D** *7/01*

U.S. Cl. 264—235.6 **17 Claims**

1. A method of increasing the surface area per unit weight of an ion-exchange membrane in which the membrane in the form of a sheet is expanded by dry stretching in order to effect the increase in surface area per unit weight and in which the membrane comprises an organic polymeric material having a plurality of fixed anionic groups associated with cations at least some of which comprise an organic group or a plurality of organic groups.

11. A method as claimed in claim 1 in which expansion is effected by stretching the membrane at elevated temperature.

15. A method as claimed in claim 1 in which the membrane is stretched biaxially.

4,617,164
PROCESS FOR STRETCHING POLYESTER FILMS

Tateo Kanesaki, Nagahama, and Shigeo Utsumi, Yokohama, all of Japan, assignors to Diafoil Company, Limited, Tokyo, Japan

Filed Jan. 16, 1984, Ser. No. 571,069

Claims priority, application Japan, Jan. 18, 1983, 58-6030

Int. Cl.⁴ B29C *55/14*

U.S. Cl. 264—235.8 **19 Claims**

1. A process for preparing a substantially flat polyester film which exhibits improved low friction characteristics comprising:

stretching an extruded, substantially unstretched and quenched raw polyester film, first, longitudinally so that an index of birefringence Δn of 0.015–0.055 is attained, stretching it further in the same direction at a temperature between 95° C. and 150° C. inclusive while preventing Δn value from exceeding 0.080, stretching the film transversely to 2.5–5 times its original width and further stretching the film in at least one of the longitudinal or transverse directions by at least 1.1 times.

4,617,165
MOLDED BRAKE PAD

Peter H. S. Tsang, 6624 Corral Ct., Union Lake, Mich. 48085; Joseph P. Coyle, 14415 12 Mile Rd., Warren, Mich. 48037, and Seong K. Rhee, 21222 Summerside La., Northville, Mich. 48167

Filed May 13, 1985, Ser. No. 733,332

Int. Cl.⁴ B29C *71/00;* **C03C** *17/00*

U.S. Cl. 264—236 **16 Claims**

1. A method of manufacturing a friction material for use in a brake comprising the steps of:

combining reinforcing fiber, friction modifiers, fillers and phenolic resin in a container to produce a mixture of materials;

adding liquid double salts of dibasic and monobasic phosphoric acid to said container to create a high viscosity in said mixture;

simultaneously adding a metallic oxide and a curing agent to said mixture;

filling molds with a fixed volume of said mixture, said mixture freely flowing into and completely filling said molds;

transporting said molds to a ventilated chamber;

maintaining said ventilated chamber at a temperature substantially equivalent to ambient temperature whereby said metallic oxide initially reacts with said liquid double salts of dibasic and monobasic phosphoric acid and to later allow said curing agent to react with and cure said phenolic resin, said reacted liquid double salts of dibasic and monobasic phosphoric acid and cured phenolic resin forming a two binder matrix which retains reinforcing fiber, friction modifiers, and fillers in a fixed position.

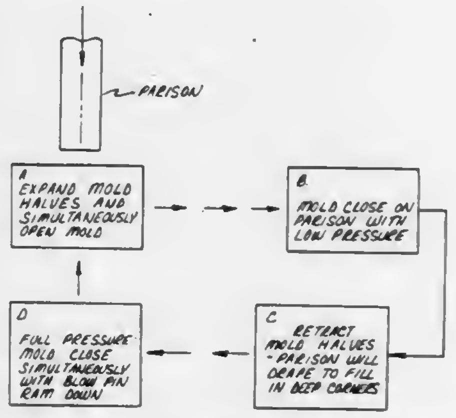
4,617,166
METHOD FOR BLOW MOLDING ARTICLES WITH DEEPLY RECESSED EDGES

Christopher Irwin, Adrian, and Richard M. Bowen, Addison, both of Mich., assignors to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Aug. 26, 1985, Ser. No. 769,540

Int. Cl.⁴ B29C *49/04, 49/56*

U.S. Cl. 264—531 **2 Claims**


PARISON
A
EXPAND MOLD HALVES AND SIMULTANEOUSLY OPEN MOLD
B
MOLD CLOSE ON PARISON WITH LOW PRESSURE
C
RETRACT MOLD HALVES - PARISON WILL DRAPE TO FILL IN DEEP CORNERS
D
FULL PRESSURE MOLD CLOSE SIMULTANEOUSLY WITH BLOW PIN RAM DOWN

1. The method for blow molding a hollow article having at least one recessed edge at the top or bottom ends thereof in a mold that can be opened and closed comprising the steps of:

a. extruding a vertically extending hollow parison,

b. first closing a mold on said parison so as to pinch the lower end closed and grip the upper end of the parison,

c. next moving the top and bottom ends of the mold toward each other so as to compress the parison and shorten the vertical height thereof and thereby position parts of the parison near the portion of the mold defining the at least one recessed edge,

d. then expanding the parison into conformity with the mold cavity including said mold portion defining said at least one recessed edge so as to form said hollow article,

e. then moving said top and bottom mold ends away from each other into clearance relation with the article, and

f. finally opening the molds.

4,617,167
UNDERWATER RADIATION DETECTOR

Lyle W. Kruse, and Richard P. McKnight, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 6, 1984, Ser. No. 586,620

Int. Cl.⁴ G21C *17/00*

U.S. Cl. 376—153 **9 Claims**

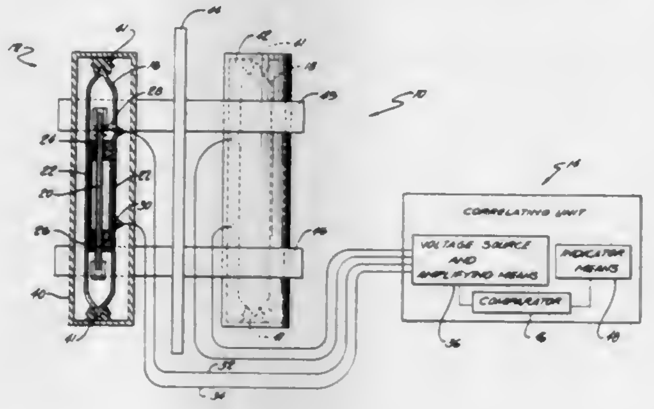
1. An apparatus for distinguishing between neutron and gamma radiation to detect the presence of spent reactor fuel comprising:

first sensing means for detecting gamma and beta radiation;

first shielding means shielding said first sensing means from a portion of impinging gamma radiation and activating under the influence of neutrons to emit beta radiation, whereby said first sensing means senses both gamma and beta radiation when the apparatus is in the presense of gamma radiation and neutrons;

second sensing means for detecting gamma radiation;

second shielding means, comprising a foil, for shielding said second sensing means from a portion of impinging gamma radiation and not activating under the influence of neutrons to emit beta radiation, whereby said second sensing means senses only gamma radiation when the apparatus is in the presence of gamma radiation and neutrons;



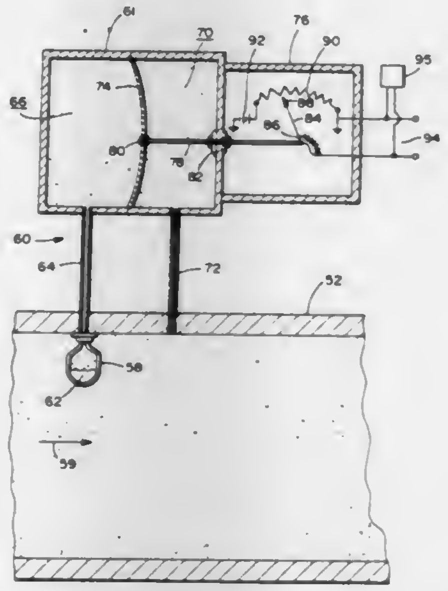
means for correlating the amount of radiation impinging on said first and second sensing means so as to distinguish between neutron and gamma radiation.

4,617,168
APPARATUS AND METHOD FOR REACTOR MONITORING

Ramachandran Muralidharan, and Atambir S. Rao, both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Apr. 18, 1984, Ser. No. 601,704
Int. Cl.⁴ G21C *17/00*

U.S. Cl. 376—247 **9 Claims**



1. Apparatus for monitoring the operation of a boiling water nuclear reactor contained within a vessel externally of the latter, said reactor including a steam line extending from the reactor vessel for continuously tapping said reactor steam; said monitoring apparatus comprising:

a fluid-holding closed system measuring device including, a comparator unit divided by a flexible diaphragm member into a sealed first chamber portion and a second chamber portion, a sensing bulb containing volatile liquid positioned within said steam line exposed to the steam contained therein and in fluid communication through a tube with the sealed first chamber portion of the comparator unit and forming a closed system therewith whereby pressure changes within the sensing bulb due to heat induced volatilization of its liquid contents are transferred through the closed system to the sealed first chamber portion of the comparator unit, said measuring device being adapted to develop an internal vapor pressure corresponding to the temperature of said tapped steam and being calibrated to provide a vapor pressure substantially equal to the tapped steam pressure under normal reactor operating conditions;

means for comparing said internal vapor pressure directly with said tapped steam pressure comprising the second chamber of the comparator unit having a fluid communication through a tube in direct open contact with the interior of the steam line whereby superheated steam conditions in said steam line thermally induce increased vapor pressure in the exposed sensing bulb of the closed system and in turn the sealed first chamber portion of the comparator unit to displace the flexible diaphragm member dividing the comparator into a sealed first chamber and second chamber, said dividing diaphragm member having an arm affixed thereto for transferring its deflecting movement;

and means responsive to said flexible diaphragm member and affixed arm movement of the comparing means for providing a signal corresponding to the differential between the directly compared pressures.

4,617,169
MEASUREMENT OF RADIONUCLIDES IN WASTE PACKAGES

Ronald L. Brodzinski; Richard W. Perkins; Henry G. Rieck, and Ned A. Wogman, all of Richland, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 12, 1984, Ser. No. 649,625
Int. Cl.⁴ G21C *17/00*

U.S. Cl. 376—257 **1 Claim**

1. A method for non-destructively assaying the radionuclide content of solid waste in a sealed container comprising:

(a) determining the type of reactor responsible for the generation of said waste;

(b) determining the degree of fuel enrichment of said reactor;

(c) determining the decay time of said waste since exposure in said reactor;

(d) measuring the gamma-ray spectrum of said waste;

(e) determining the matrix density of said waste from ratios of photopeak pairs from individual radioisotopes in said gamma-ray spectrum;

(f) determining the ^{54}Mn, ^{57}Co, ^{58}Co, ^{60}Co, ^{95}Zr, ^{106}Ru, ^{110m}Ag, ^{125}Sb, ^{134}Cs, ^{137}Cs, ^{140}Ba, ^{144}Ce, ^{152}Eu, and ^{154}Eu content in said waste from the intensities of photopeaks in the gamma-ray spectrum characteristic of each isotope and from said matrix density;

(g) determining the ^{90}Sr and ^{90}Y contents of said waste by subtracting the gamma-ray contribution of those isotopes determined in step (f) from said gamma-ray spectrum and attributing the difference to ^{90}Sr and ^{90}Y bremsstrahlung radiation;

(h) determining the ^{129}I and ^{99}Tc contents of said waste from said ^{137}Cs, ^{106}Ru, and ^{144}Ce contents;

(i) determining the ^{3}H, ^{14}C, ^{59}Ni, ^{63}Ni, and ^{94}Nb contents of said waste from said ^{60}Co and ^{54}Mn contents of said waste;

(j) determining burnup from the ratio between said ^{137}Cs content and said ^{134}Cs content and from said reactor type and said fuel enrichment and said decay time;

(k) measuring the total neutron flux and the coincidence neutron flux of said waste;

(l) determining neutron multiplicity from said coincidence neutron flux; and

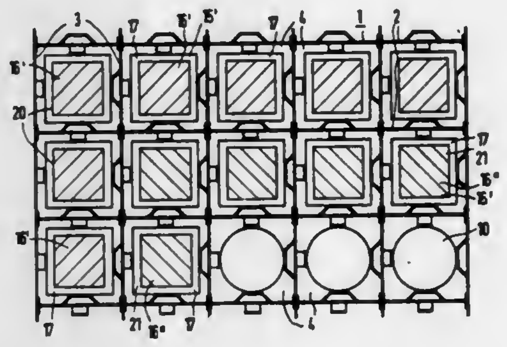
(m) determining the ^{238}Pu, ^{239}Pu, ^{240}Pu, ^{242}Pu, ^{241}Am, ^{243}Am, ^{242}Cm, and ^{244}Cm contents of said waste from said neutron flux, said neutron multiplicity, and said percent burnup.

4,617,170
ASSEMBLY FOR A CORE OF A NUCLEAR REACTOR

Peter Suchy, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Jan. 16, 1984, Ser. No. 570,830
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1983, 3301965
Int. Cl.⁴ G21C *3/34*

U.S. Cl. 376—438 **8 Claims**



1. Neutron shielding assembly of a reactor core assembled from nuclear reactor fuel assemblies and neutron shielding assemblies, comprising a square grid assembly formed of a multiplicity of spacers distributed over the length of the assemblies and structural elements interconnecting said spacers defining inner and outer rows, and respective rods orderly disposed in said square grid assembly and surrounded by said spacers, said rods of said nuclear reactor fuel assemblies being individual cylindrical fuel rods and said rods of said neutron shielding assemblies being metal rods with square cross sections, and said neutron shielding assemblies disposed at an edge of the reactor core having additional metal rods with square cross sections attenuating neutron radiation emanating from the periphery of the reactor core, the additional metal rods lying at least in one of said outer rows of the neutron shielding assembly.

4,617,171
DEVICE FOR FIXING A GUIDE TUBE IN A RECESS ON THE END FITTING OF A NUCLEAR REACTOR FUEL ASSEMBLY

Claude Feutrel, Vauhallan, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 23, 1983, Ser. No. 507,060
Claims priority, application France, Jul. 1, 1982, 82 11572
Int. Cl.⁴ G21C *3/32*

U.S. Cl. 376—446 **12 Claims**

1. A dismantlable fuel assembly for a nuclear reactor of the water cooled type, said fuel assembly comprising:

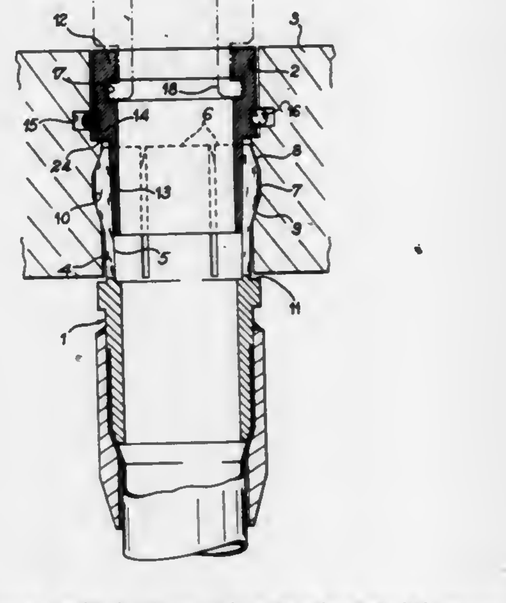
a guide tube;

an end piece having a bore for receiving said guide tube;

said guide tube having a ferrule-like end with an inner cylindrical wall, an outer cylindrical wall, and being slotted to define a plurality of flexible sectors;

said end piece bore and said guide tube end having respective matching internal and external configurations for fixing said bore and guide tube end against any relative axial movement when said configurations are engaged;

a cylindrical locking ring insertable by axial translation into said guide tube end and having a frustoconical external surface radially engaging said sectors for deforming said sectors of said ferrule-like end as said locking ring is inserted to urge said external configuration into engagement with said internal configuration by radial force only; and



means for restraining said locking ring against axial movement, said means for restraining permitting removal of said locking ring by application of axial extraction force.

4,617,172
ALUMINUM ALLOYS OF HIGH WEAR RESISTANCE AND GOOD ANTI-SEIZURE PROPERTY SUITABLE FOR USE AS BEARING METALS

Sanae Mori, Nagoya, Japan, assignor to Daido Metal Company Ltd., Nagoya, Japan

Continuation of Ser. No. 365,653, Apr. 5, 1982, abandoned. This application Oct. 15, 1984, Ser. No. 660,552
Claims priority, application Japan, Jul. 2, 1981, 56-103675
Int. Cl.⁴ C22C *21/14*

U.S. Cl. 420—530 **3 Claims**

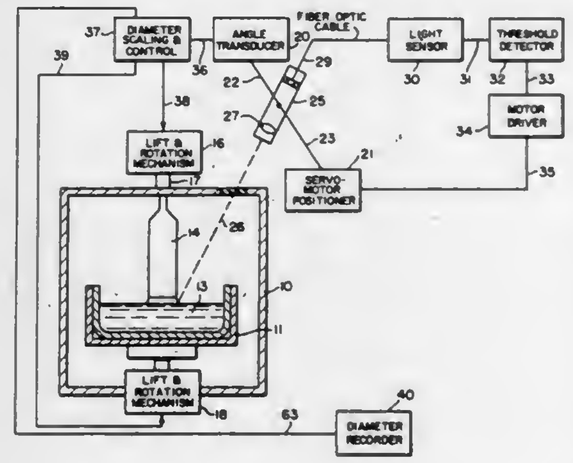
1. Aluminum base bearing alloy for use as bearing metals, consisting by weight of 3–40% Sn, 0.1–10% Pb, 0.1–3% Sb, 0.2–5% Cu, 0.1–3% Si, 0.01–3% V, 0–0.29% of at least one addition metal selected from the group consisting of Mn, Ti, Mg and Ni wherein the total amount of said additional metal and vanadium is from 0.01–3% and the balance Al and incidental impurities.

4,617,173
SYSTEM FOR CONTROLLING THE DIAMETER OF A CRYSTAL IN A CRYSTAL GROWING FURNACE

Henry C. Latka, Rochester, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Nov. 30, 1984, Ser. No. 676,694
Int. Cl.⁴ C30B *15/26*

U.S. Cl. 422—107 **3 Claims**



1. A system for controlling the diameter of a crystal in a

crystal growing furnace having an angle transducer connected to a crystal diameter scaling and control means which is in turn connected to rod and crucible lift and rotation mechanisms, a crucible containing a melt, and crystal diameter scaling and control means comprising;

- (a) transducer and servo motor means disposed above a furnace having respective shafts connected along a common axis on opposite sides of a longitunal light tube respectively wherein the light tube and transducer shaft can be angularly positioned by the shaft of the servo motor,
- (b) the light tube having a lens for focusing on a spot on a meniscus in the furnace and at times on the melt,
- (c) light sense detecting and tracking means for at times generating a servo motor control error signal to drive the servo motor to an angular position corresponding to growth in diameter of the meniscus by angularly tracking a spot of light on the meniscus, and
- (d) crystal diameter sensing means governed by a signal from the transducer indicative of the angular position of the light tube when tracking a light spot on the meniscus.

4,617,174

AUTOMATIC AUTONOMOUS APPARATUS FOR THE FAST PRODUCTION OF POLYURETHANE FOAM

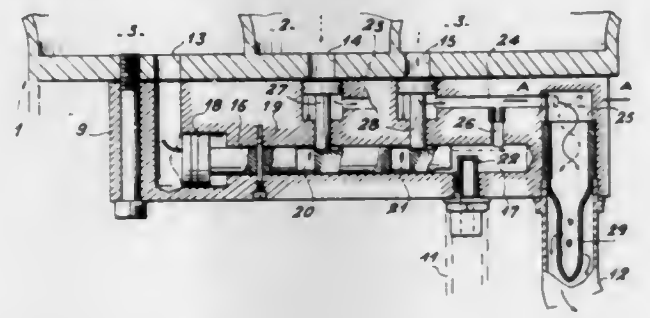
Bernard Bazelaire, Merignac, and Jean-Claude Clebant, Carbon-Blanc, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 20, 1985, Ser. No. 713,793

Claims priority, application France, Mar. 22, 1984, 84 04457

Int. Cl.⁴ B01J *14/00*

U.S. Cl. 422—133 **2 Claims**



1. An automatic, autonomous apparatus for the fast production of polyurethane foam comprising means defining a tight storage tank; means dividing said tank into distinctly separate compartments for respectively containing an isocyanate and a polyalcohol; solid propellant gas generation means located in an upper portion of said storage tank; outlet means located at a lower portion of said tank for each of said compartments; pressure threshold mixer means connected to said lower portion of said tank and having manometric trigger means slidably movable in a linear channel in said mixer means, calibrated shearable pin means and a mixing chamber with laterally disposed inlets; said manometric trigger means having a pressure threshold and being actuatable at a predetermined pressure to communicate said compartments via said outlet means with said mixing chamber; said laterally disposed inlets arranged to produce rotational flow in said mixing chamber; means defining and containing a source of neutral gas connected to and communicating with said mixer means to feed gas to one of said laterally disposed inlets upon actuation of said trigger means; rupture means associated with said gas generating means and said dividing means which when ruptured allows gas generated by said gas generating means to exert pressure on said isocyanate and said polyalcohol in said compartments which in turn exert pressure on said manometric trigger means; said manometric trigger means being maintained in a storage position by said calibrated shearable pins and an operating position when said calibrated shearable pins are broken by appearance of the pressure threshold from said isocyanate and polyalcohol.

4,617,175

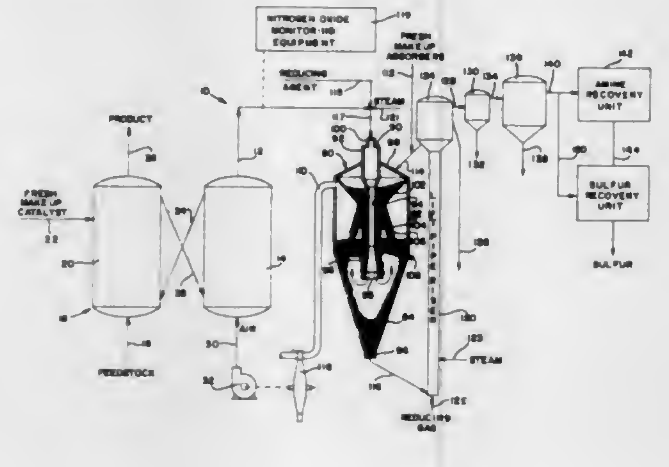
NITROGEN OXIDE, SULFUR OXIDE, AND PARTICULATE REMOVAL SYSTEM

Thomas W. Tolpin, Highland Park, and Richard A. Kretchmer, Clarendon Hills, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 13, 1984, Ser. No. 640,677

Int. Cl.⁴ B01D *50/00*

U.S. Cl. 422—171 **26 Claims**



1. A gas purification system, comprising: a substantially vertical vessel having a top portion, a bottom portion, an intermediate portion extending between and connecting said top and bottom portions, an absorber inlet connected to and communicating with said top portion for feeding a substantially nonmagnetic sulfur oxide-capturing and particulate-removing material generally downwardly into said vertical vessel, a bed of nonmagnetic sulfur oxide-capturing and particulate-removing material positioned in said lower portion for simulataneously removing a substantial portion of particulates and sulfur oxides from an influent gaseous stream in the absence of an induced electromagnetic field, an absorbent outlet extending downwardly from said bottom portion, a conduit providing a gas inlet line extending downwardly into said top portion, said conduit having a downwardly facing discharge mouth providing an outlet for feeding an influent gaseous stream containing particulates, nitrogen oxides and sulfur oxides, substantially downwardly into said bed of nonmagnetic sulfur oxide-capturing and particulate-removing material, a reducing agent gas injector providing a reducing gas inlet connected to and communicating with said conduit for feeding a nitrogen oxide-capturing reducing gas into said vertical vessel to substantially remove nitrogen oxides from said influent gaseous stream, a unitary common feed line extending between, connecting, and communicating with said reducing agent gas injector and said conduit and a gas outle connected to and communicating with one of said portions of said vertical vessel for discharging said gases from said vertical vessel;

- said bed of substantially nonmagnetic sulfur oxide-capturing and particulate-removing material selected from the group consisting essentially of nonmagnetic adsorbers and nonmagnetic adsorbers with at least one promoter thereon, said nonmagnetic adsorbers substantially commprising an oxide of at least one metal selected from the group consisting of aluminum, bismuth, manganese, yttrium, antimony, rare earth metals, Group 1a metals, and Group 2a metals, and said promoter comprising at least one member selected from the group consisting essentially of rare earth metals, Group 8 metals, chromium, vanadium, antimony, silver, rhenium, and combinations thereof; and
- said nitrogen oxide-capturing reducing gas selected from the group consisting of hydrogen, carbon monoxide, ammonia, light hydrocarbon gases, and combinations thereof.

4,617,176

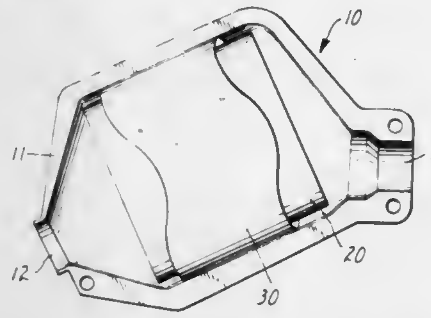
CATALYTIC CONVERTER FOR AUTOMOTIVE EXHAUST SYSTEM

Richard P. Merry, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 13, 1984, Ser. No. 650,167

Int. Cl.⁴ F01N *3/28*

U.S. Cl. 422—179 **6 Claims**



1. In a catalytic converter having a metallic casing, a unitary, solid ceramic catalytic element disposed within said casing, and resilient means disposed between said catalytic element and said metallic casing for positioning said catalytic element and for absorbing mechanical and thermal shock, the improvement comprising:

- said resilient means being a flexible intumescent planar sheet corrugated with a generally sinusoidal wave pattern along both its lengthwise edges, the corrugations being generally parallel and regular and comprised of substantially equal ridges and hollows having a perimeter to frequency ratio in a range of 2.44 to 4.88 and amplitude in a range of 12 to 50% of the width of said sheet.

4,617,177

SYSTEM FOR CONTINUOUS SOLID/LIQUID EXTRACTION

Heinz O. Schumacher, Höperfeld 26, Hamburg 80, Fed. Rep. of Germany (D-2050)

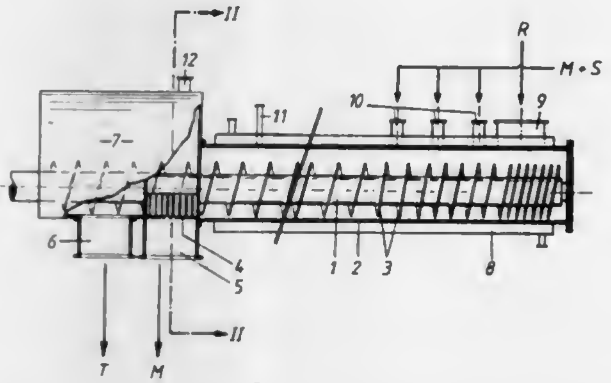
Filed Oct. 4, 1982, Ser. No. 432,776

Claims priority, application European Pat. Off., Oct. 12, 1981, 81108211.4

The portion of the term of this patent subsequent to Jun. 28, 2000, has been disclaimed.

Int. Cl.⁴ B01D *11/02;* B65G *33/14;* C11B *1/10*

U.S. Cl. 422—273 **13 Claims**



1. An extraction unit for the continuous extraction of raw material with solvent which comprises a substantially horizontally aligned conveyor screw having a first, upstream and a second, downstream end, a vessel containing said screw and having a bottom portion and an upper portion, solids inlet means in said vessel adjacent said first end of the screw to provide a feed point for extraction material, solids discharge means in said vessel adjacent said second end of the screw to provide a discharge point for extraction material, said screw having flights throughout said vessel of varying pitch or spacing wherein the flights have a smallest flight pitch adjacent the feed point and widen in the direction of the discharge point to have a greatest value at the discharge point and wherein a section of the bottom portion of the vessel upstream of the discharge point and adjacent thereto is of screen-like or perforated design to permit passage of liquid phase, liquid outlet means directly connected to said section, and wherein said vessel has at least one solvent inlet connection branch communicating with said screw downstream from the feed point and upstream from the discharge point.

4,617,178

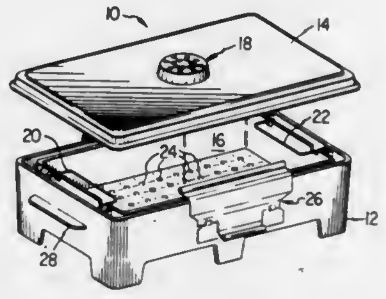
MEDICAL INSTRUMENT STERILIZATION CONTAINER

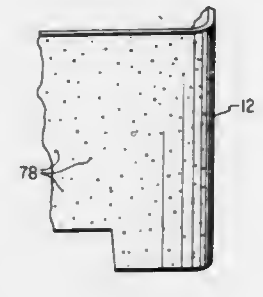
Robert L. Nichols, 808 Fort Worth, Jacksonville, Tex. 75766

Filed Nov. 5, 1984, Ser. No. 668,090

Int. Cl.⁴ A61L *2/00;* B65D *51/16*

U.S. Cl. 422—310 **8 Claims**





1. A medical instrument sterilization container comprising:
- an apertured housing having generally rigid sides dimensioned for receiving medical instruments for sterilization by gas or steam passing through said aperture;
- a removable lid for said housing for enabling access into said housing, for enabling insertion of medical instruments in said housing, and for sealing with said housing to maintain the sterility of the interior of said housing;
- said housing formed from a polymer of relatively low thermal conductivity material and mixed with a relatively high thermal conductivity material distributed substantially evenly and throughout the majority of said housing in order that said housing absorbs radiant heat and rapidly conducts the heat throughout the container to reduce the formation of condensate within said container.

8. A medical instrument sterilization container comprising:
- an apertured housing having generally rigid sides dimensioned for receiving medical instruments for sterilization by gas or stream passing through said aperture;
- a removable lid for said housing for enabling access into said housing, for enabling insertion of medical instruments in said housing, and for sealing with said housing to maintain the sterility of the interior of said housing;
- said housing formed from a polymer of relatively low thermal conductivity material and coated at least on the inside surface thereof with a relatively high thermal conductivity material distributed substantially evenly and throughout the majority of said housing in order that said housing

absorbs radiant heat and rapidly conducts the heat throughout the container to reduce the formation of condensate within said container.

4,617,179
PROCESS FOR EFFECTING SEEDING IN TWO PHASES FOR PRODUCING LARGE-GRAIN ALUMINA

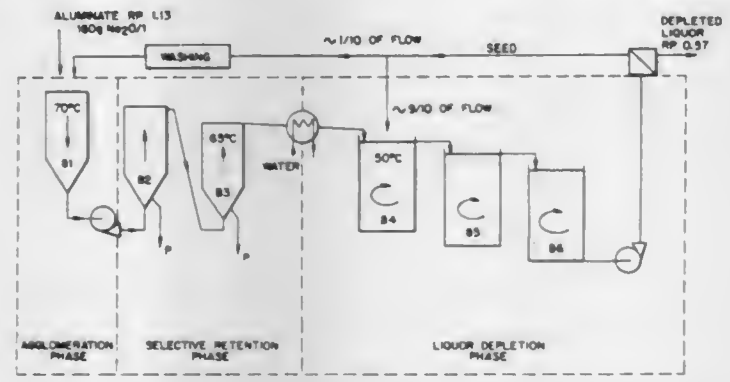
Maurice Veyrier, Aix en Provence, France, assignor to Aluminium Pechiney, Paris, France

Filed Nov. 19, 1985, Ser. No. 799,749

Claims priority, application France, Nov. 22, 1984, 84 18135

Int. Cl.^{4} C01F *7/02*

U.S. Cl. 423—121 **11 Claims**



1. A two phase seeding process for production of large grain, sandy coarse alumina having less than about 10% by weight of its grains of a size less than about 45 micrometers, by precipitation in a succession of tanks in cascade relationship of a supersaturated solution of sodium aluminate from the alkaline attack on bauxite in accordance with the Bayer process, comprising the steps of:

- (a) in a first, agglomeration stage, introducing supersaturated aluminate liquor into a first tank, said liquor having a content equivalent to 110 to 175 grams Na_2O per liter, at a temperature of 65° to 80° C., and seeding said liquor with washed aluminum trihydrate seed in an amount of 20 to 120 grams per liter of aluminate, with downward circulation of said liquor, but in the absence of agitation, to precipitate alumina;
- (b) in a second stage, transferring said liquor with precipitated alumina from the bottom of said first tank to at least one second tank, and selectively retaining the largest grains of alumina formed, so as to produce a content in said tank of dry matter of 300 to 800 grams per liter of suspension, then removing from said second tank said largest grains of alumina having a mean size of at least 50 to 60 micrometers, wherein the liquor in the upper part of said second tank rises at a rate of 0.5 to 3 meters per hour, and the mean residence time of said largest grains in said second tank is at least twice the residence time of said aluminate liquor;
- (c) in a third, liquor depletion stage, transferring said liquor to at least one further tank, and introducing into said liquor, alumina seeds in an amount of 400 to 800 grams per liter of suspension and 480 to 1200 grams per liter of liquor to further precipitate alumina from said liquor; and
- (d) at the end of said third stage, separating said aluminate liquor which is depleted, from alumina having very fine grains, at least 40% by weight of said grains having a size less than about 45 microns, recycling said liquor to the alkaline attack on bauxite in said Bayer process, recycling no more than about 10% by weight of said very fine grains as seeds in said first, agglomeration stage, and recycling the remainder of said very fine grains as seed in said liquor depletion stage.

4,617,180
PROCESS FOR PURIFYING FLUE GAS

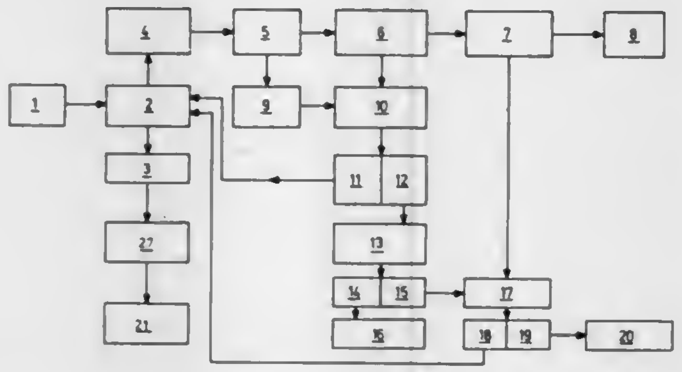
Hubert Vogg, Karlsruhe, Fed. Rep. of Germany, assignor to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Jun. 6, 1984, Ser. No. 617,941

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1983, 3320466; Jul. 5, 1983, 3324133

Int. Cl.^{4} B01D *53/00*

U.S. Cl. 423—240 **11 Claims**



1. An improved process for purifying flue gas from the combustion of waste materials and recovering slag and heavy metals in a compact and concentrated form, said flue gas comprising solid particulates of various compositions, polluting gases, water vapor and heavy metal vapors, wherein the majority of solid particulates are removed in a dry solids separation system and collected as flue ash, and wherein the remaining solid particulates and the polluting gases are removed by scrubbing, comprising the improvement of:

- a. condensing water vapor, HCl and heavy metal vapors from the flue gas after leaving the dry separation system in a condensation/scrubbing system which forms an acid condensate solution having a pH of 4 or less and which scrubs the remaining solid particulates from the flue gas;
- b. washing the flue gas previously rendered free of particulates, condensate and heavy metals in the condensing step with an alkali wash solution to remove polluting gases and thereby provide a flue gas purified of combustion waste materials;
- c. extracting at least 37.2 percent by weight of soluble heavy metals from the flue ash with the acid condensate solution from the condensing step to produce a purified flue ash;
- d. precipitating the soluble heavy metals extracted from the flue ash and the soluble heavy metals contained in the acid condensate solution by reaction thereof with a precipitation agent;
- e. separating out the precipitated heavy metals in a solid-liquid separation system, whereby the soluble heavy metals are recovered in a compact and concentrated form; and
- f. neutralizing the acid condensate solution after precipitation of heavy metals therefrom by combining it with the alkali wash solution.

4,617,181
SYNTHETIC DIAMOND HEAT SINK

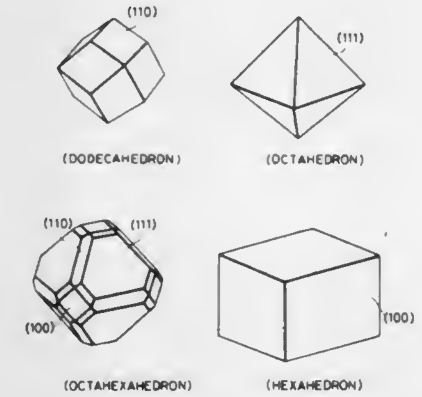
Shuji Yazu, and Shuichi Satoh, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 18, 1984, Ser. No. 621,768

Claims priority, application Japan, Jul. 1, 1983, 58-120475; Oct. 18, 1983, 58-195564

Int. Cl.^{4} C01B *31/06*

U.S. Cl. 423—446 **5 Claims**



1. A heat sink for an electronic device comprising a synthetic crystal of Type Ib diamond containing 5 to 100 ppm nitrogen and having thermal conductivities higher than 20 W/cm °C. at room temperature.

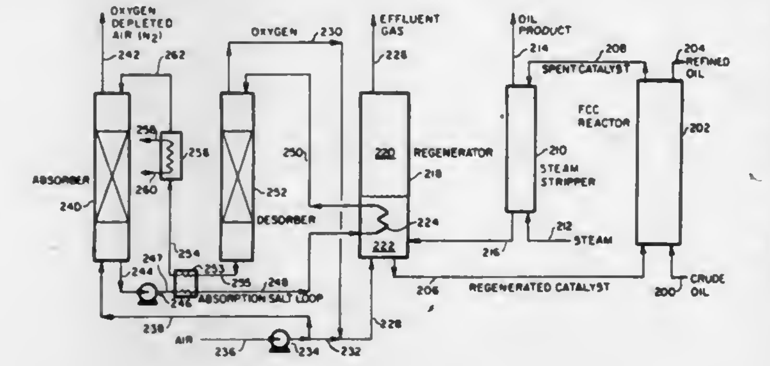
4,617,182
CASCADE HEAT RECOVERY WITH COPRODUCT GAS PRODUCTION

William R. Brown, Zionsville; Anthony A. Cassano, Allentown; Brian R. Dunbobbin, Allentown; Pradip Rao, Allentown, all of Pa., and Donald C. Erickson, Annapolis, Md., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Aug. 26, 1985, Ser. No. 769,230

Int. Cl.^{4} C01B *13/04*

U.S. Cl. 423—579 **23 Claims**



1. A method for separating oxygen from air by a reversible chemical absorption and desorption at high temperature and the recovery of heat from a combustion process by integrating the air separation in cascade heat exchange with the combustion process to produce oxygen from air and rejecting heat at a temperature of at least 700° F., comprising the steps of:

- (a) compressing air to an elevated temperature and pressure;
- (b) contacting at least a portion of the air, which has been preliminarily cleaned and dried, with a liquid chemical absorbent to chemically absorb at least a portion of the oxygen from said air;
- (c) heating the oxidized liquid chemical absorbent to a temperature of at least 900° F. by heat exchange of the absorbent with a combustion process which is supplied oxygen at a higher concentration than that of air that produces heat at or above 1000° F. to transfer said heat from the combustion process to the absorbent;
- (d) desorbing oxygen from said absorbent utilizing said heat of step (c) to produce an oxygen product and to regenerate the absorbent;
- (e) cooling the regenerated absorbent by heat exchange with a process stream to reject heat from the absorbent at a lower temperature level than the heat exchange of step (c) at a temperature level of at least 700° F. and to produce a high temperature process stream;
- (f) recycling the absorbent for further contact with air, and
- (g) utilizing at least a portion of the oxygen product in the combustion process of step (c).

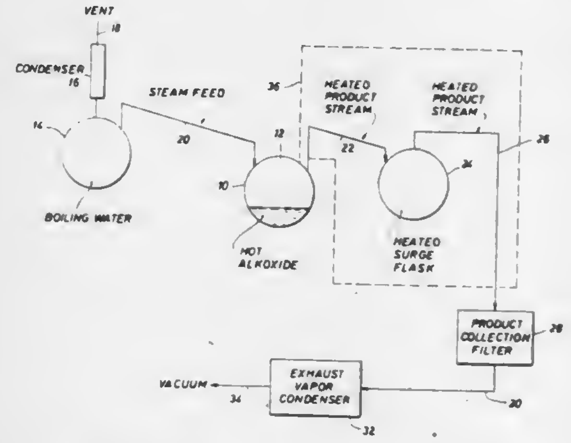
4,617,183
PRODUCTION AND RECOVERY OF ALUMINA FROM VAPOR PHASE HYDROLYSIS OF ALUMINUM TRIALKOXIDES

Duane J. Lewis, Ponca City, Okla., and William H. McNeese, Aberdeen, Miss., assignors to Vista Chemical Company, Houston, Tex.

Filed Aug. 30, 1985, Ser. No. 771,574

Int. Cl.^{4} C01F *7/02*

U.S. Cl. 423—630 **8 Claims**



1. An improved process for the production of alumina comprising heating a liquid aluminum trialkoxide to an elevated temperature below the boiling point of said alkoxide, introducing steam into the vapor phase above the surface of said heated alkoxide to effect at least partial hydrolysis of at least some of the alkoxide molecules at the surface of the heated alkoxide, flowing a mixture of steam and said at least partially hydrolyzed alkoxide through a heated reaction zone to effect complete hydrolysis of said alkoxide and form a product stream comprising alumina, excess steam and alcohol maintaining said product stream at a temperature sufficient to prevent condensation of said water and alcohol and recovering alumina produced by said hydrolysis of said alkoxide.

4,617,184
99M
TC-1,2-DIHYDROXY-1,2-BIS(DIHYDROXYPHOSPHINYL)ETHANE COMPLEX FOR SKELETON SCANNING

Alexandros K. Tsolis, 171 Old National Road, Arahovitika, Patra, and Spyridon C. Archimandritis, 17 Hydras Street, Amarousion Attikis 15122, Athens, both of Greece

Filed Nov. 29, 1984, Ser. No. 676,189

Int. Cl.^{4} C07F *13/00;* A61K *43/00;* A61N *5/12*

U.S. Cl. 424—1.1 **7 Claims**

1. A process for making a ^{99m}Tc-1,2-dihydroxy-1,2-bis(dihydroxyphosphinyl)ethane complex which is bone specific in vivo comprising the steps of:

- a. reducing a solution comprising at least 0.5 but less than 10 millicuries per milliliter of 99m- pertechnetate ion until more than 95 mol % of said 99m-pertechnetate ion has been reduced to a 99m-technetium species having an oxidation state greater than zero but less than +7; and
- b. reacting said 99m-technetium species with an excess of the complexing agent 1,2-dihydroxy-1,2-bis(dihydroxyphos-

phinyl)ethane, regardless of the stoichiometry of the resulting product, at a pH in the range of 5 to 7.

4,617,185
IMPROVED DEODORANT STICK

Dawn M. DiPietro, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jul. 13, 1984, Ser. No. 630,790
Int. Cl.⁴ A61K *17/32*
U.S. Cl. 424—65 **11 Claims**

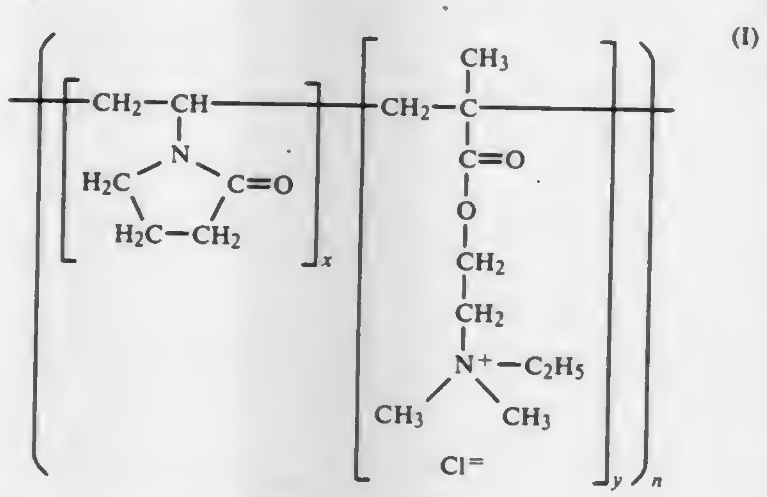
1. In an improved deodorant cosmetic gel stick composition comprising

(a) from about 6% to about 70% of an aliphatic polyhydric alcohol having 2 to 3 carbon atoms and from 2 to 3 hydroxyl group;
(b) from 3% to about 10% of a soap and
(c) from about 0.1% to about 1% of a deodorant material wherein the improvement comprises including from about 15% to about 40% of diisopropyl adipate to reduce hair pull, drag, smoothness during application and stickiness after application.

4,617,186
SUSTAINED RELEASE DRUG DELIVERY SYSTEM UTILIZING BIOADHESIVE POLYMERS

Doris Schäfer, and Rolf Schäfer, both of Arisdorf, Switzerland, assignors to Alcon Laboratories, Inc., Fort Worth, Tex.
Filed Dec. 28, 1984, Ser. No. 687,276
Int. Cl.⁴ A61K *31/74, 31/78*
U.S. Cl. 424—78 **12 Claims**

1. A sustained release drug delivery system suitable for ophthalmic use, comprising a cationic polymer of formula:



(I)

wherein: x, y and n are whole numbers such that the cationic polymer has a molecular weight of from about 50,000 to about 2,000,000; and a therapeutically effective amount of an anionic drug residue carried by said polymer.

4,617,187
THERAPEUTIC METHOD FOR TREATING RADIATION ULCERS

Shinichi Okuyama; Hitoshi Mishina, both of Miyagi; Kazumaro Furuse, Tokyo, and Isao Murotani, Kanagawa, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan
Filed Oct. 29, 1984, Ser. No. 666,099
Claims priority, application Japan, Nov. 8, 1983, 58-208395
Int. Cl.⁴ A61K *37/48, 31/12*
U.S. Cl. 424—94 **3 Claims**

1. In a therapeutic method for treating radiation ulcers, the improvement wherein ubidecarenone is cutaneously applied in an effective amount for treating radiation ulcers.

4,617,188
NATURAL INSECTICIDES EMPLOYING BORAX AND CAROB

Edward J. Page, Bergenfield, N.J., and James E. Rock, Norfolk, Va., assignors to O.U.T. Laboratories, Inc., Norfolk, Va.
Continuation-in-part of Ser. No. 543,905, Oct. 20, 1983, abandoned. This application Apr. 30, 1985, Ser. No. 727,630
Int. Cl.⁴ A01N *25/00, 59/14*
U.S. Cl. 424—148 **12 Claims**

1. An insecticide comprising an effective insecticidally amount of borax, as its active ingredient, and an effective amount of carob selected from the group consisting of superlight and light roast grade carob and mixtures therof, whereby the carob serves as an attractant.

4,617,189
USE OF SELENIUM-CONTAINING COMPOUNDS FOR NEGATING THE TOXIC EFFECTS OF PLATINUM COMPOUNDS USED IN CHEMOTHERAPY, AND A NOVEL SELENIUM-CONTAINING PLATINUM COMPOUND AND USE THEREOF AS AN ANTI-CANCER MEDICINE

Richard F. Stockel, 475 Rolling Hills Rd., Bridgewater, N.J. 08807, and Philip E. Dumas, 137 Louise Dr., Morrisville, Pa. 19067
Division of Ser. No. 484,874, Apr. 14, 1983, Pat. No. 4,556,571, which is a continuation-in-part of Ser. No. 312,300, Jan. 16, 1984, abandoned. This application May 23, 1985, Ser. No. 737,130
Int. Cl.⁴ A61K *33/04*
U.S. Cl. 424—162 **2 Claims**

1. A method of negating the toxic effects of platinum compounds, which comprises administering to a patient having a problem due to undergoing platinum therapy an effective amount of at least one selenium-containing compound selected from the group consisting of sodium selenite, sodium selenate, selenium yeast, an amino acid containing selenium, an amine containing selenium, a seleno carbohydrate and a seleno heterocyclic base,

said amino acid containing selenium being at least one member selected from the group consisting of selenomethionine, selenocysteine, Se-methylselenocysteine, selenohomomethionine, selenohomocystine and selenocystine,
said amine containing selenium being at least one member selected from the group consisting of β-seleno ethylamine, 2-phenylseleno-1,3-diaminopropane, 4-phenylselenomethylene-1,2-diaminobenzene, 2-seleno-1,3-diaminopropane and 4-phenylselenosemicarbazide,
said seleno carbohydrate being at least one member selected from the group consisting of 1-β-D-seleno-2,3,4,6-tetra-O-acetyl-D-glucopyranose, selenoglucopyranose, 1-β-D-seleno-2,3,4,6-tetra-O-acetyl-D-galactopyranose, 1-β-D-selenogalactopyranose, 1-α-D-seleno-2,3,4,6-tetra-O-acetyl-D-mannopyranose and 1-α-D-selenomannopyranose,
said seleno heterocyclic base being at least one member selected from the group consisting of 6-selenoguanine, 6-selenoguanosine, 5-selenocytosine, 5-selenocytidine, 6-selenopurine, 6-selenopurineriboside, 8-selenoguanine, 8-selenoguanosine, 8-selenoadenine and 8-selenoadenosine.

4,617,190
ENZYMATIC POWDER MILK

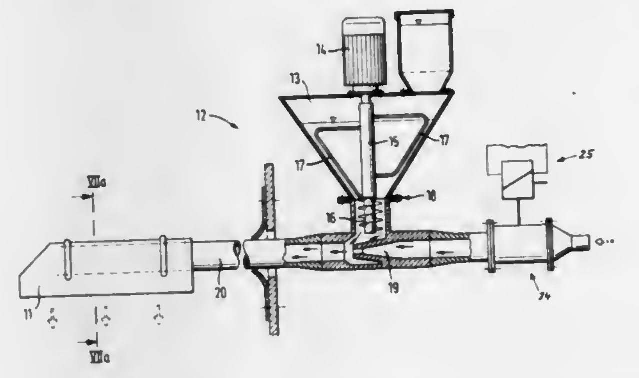
Robert E. Montgomery, Pacific Palisades, Calif., assignor to Laclede Professional Products, Inc., Gardena, Calif.
Filed Aug. 27, 1984, Ser. No. 644,395
Int. Cl.⁴ A23C *9/16*
U.S. Cl. 426—61 **21 Claims**

1. Aqueous reconstitutible, powder milk that incorporates an enzyme system for generating a bacteriostatic effect upon aqueous reconstitution, said enzyme system comprising, per gram of power milk:

(a) from about 0.5 to about 500 International Units of oxidoreductase enzyme that is hydro-interactable with and specific to oxidizable substrate in the powder milk for producing hydrogen peroxide, and
(b) from about 0.05 to about 5,000 International Units of peroxidatic peroxidase for interacting with said hydrogen peroxide and oxidizable anion from the powder milk to produce an oxidized anionic bacterial inhibitor in the reconstituted milk.

4,617,191
METHOD AND APPARATUS FOR COATING PARTICULATE MATERIALS WITH POWDERY MATERIALS

Reinhard Nowak, Binzen, Fed. Rep. of Germany, assignor to Glatt GmbH, Binzen, Fed. Rep. of Germany
Filed May 22, 1985, Ser. No. 736,672
Claims priority, application Fed. Rep. of Germany, May 22, 1984, 3418997
Int. Cl.⁴ A23C *9/00;* **B29C** *67/00;* **C05B** *19/00*
U.S. Cl. 426—294 **14 Claims**



1. A method for coating particulate materials with powdery materials, said method comprising:

(a) providing a rotary granulator having a substantially horizontal rotary disc and containing particulate solids deposited on the disc, the solids to be coated with a powdery material;
(b) rotating the rotary disc within the granulator to cause the particulate solids to rotate within the granulator and to undergo a spiral movement to form a helical bulge of material at the outer edge of the disc and an adjoining inner surface of the granulator;
(c) providing a nozzle having an inlet connected to a source of compressed air and an outlet that is positioned in a connecting pipe that extends into the granulator, the connecting pipe having an inlet adjacent to the nozzle to permit powdery material to be introduced to the connecting pipe and having an outlet that opens into the granulator;
(d) introducing a powdery substance into the granulator by passing a compressed air stream through the nozzle to draw the powdery material from a storage container that is in communication with the inlet to the connecting pipe to form a mixture of compressed air and the powdery substance; and
(e) spraying the mixture of compressed air and powdery substance onto the surface of the bulge of particulate material as it undergoes spiral movement, to coat the particulate material with the powdery substance.

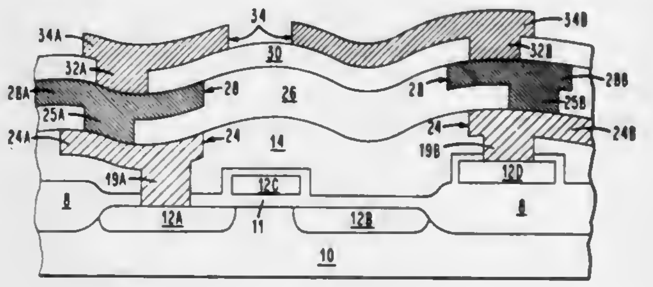
4,617,192
PROCESS FOR MAKING OPTICAL INP DEVICES

Aland K. Chin, Berkeley Heights; Shobha Singh, Summit; LeGrand G. V. Uitert, Morris Township, Morris County, and George J. Zydzik, Columbia, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Continuation of Ser. No. 451,789, Dec. 21, 1982, abandoned. This application Feb. 28, 1985, Ser. No. 707,173
Int. Cl.⁴ B05D *3/06, 5/06*
U.S. Cl. 427—42 **22 Claims**

1. A process for making an optical device comprising at least one semiconductor substrate with optical surface for the transmission of radiation, said optical surface at least partially coated with a coating consisting essentially of aluminum oxide put down by electron-beam deposition in a vacuum chamber, said vacuum chamber comprising semiconductor substrate with optical surface and source, characterized in that the electron-beam deposition is carried out with a pressure in the vacuum chamber of less than 10^{-3} Torr, the oxygen content of the gas in the vacuum chamber is greater than 30 percent by volume, and the concentration of oxygen near the semiconductor substrate with optical surface is at least a factor of 10 greater than near the electron-beam source and the source comprises single crystal aluminum oxide.

4,617,193
PLANAR INTERCONNECT FOR INTEGRATED CIRCUITS

Andrew L. Wu, Shrewsbury, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Jun. 16, 1983, Ser. No. 505,046
Int. Cl.⁴ B05D *3/06, 5/12;* **B44C** *1/22;* **G03C** *15/00*
U.S. Cl. 427—38 **9 Claims**



1. A method of forming a planar conductor-insulator layer on a surface of an integrated circuit chip comprising the steps of:

(a) forming an insulating layer on the surface of the integrated circuit chip,
(b) forming a recess in the insulating layer,
(c) depositing a layer of conductive material on the insulating layer to a thickness sufficient to fill the recess, thereby leaving a recess in the conductive layer,
(d) forming a mask by:
  (1) depositing a layer of masking material on top of the conductive layer such that the thickness of the layer of masking material in the region overlying the recess in the conductive layer is greater than in other regions of the masking layer, and
  (2) etching the layer of masking material to expose the top surface of the conductive layer in the regions outside the region overlying the recess in the conductive layer, such that masking material remains in the region overlying the recess in the conductive layer,
(e) etching the exposed surface of the conductive layer to remove the portion of the conductive layer in regions outside the region of the recess in the insulating layer, thereby to leave the recess in the insulating layer filled with conductive material.

4,617,194
RADIATION CURABLE ABRASION RESISTANT COATINGS FOR PLASTICS

Bruce D. Scott, and James W. Watkins, both of Louisville, Ky., assignors to Celanese Corporation, New York, N.Y.

Filed Sep. 3, 1985, Ser. No. 772,084

Int. Cl.^{4} B05D *3/06*

U.S. Cl. 427—54.1 **12 Claims**

1. A radiation curable coating composition comprising a blend of (A) an acrylic or methacrylic ester of an aliphatic polyol having at least 3 acryloyloxy or methacryloyloxy groups per molecule, and (B) an acrylic or methacrylic ester of a polyglycidyl ether of a bisphenol A-formaldehyde condensate having at least 4 acryloyloxy or methacryloyloxy groups per molecule, wherein (A) and (B) are in the weight ratio of about 30/70 to about 70/30.

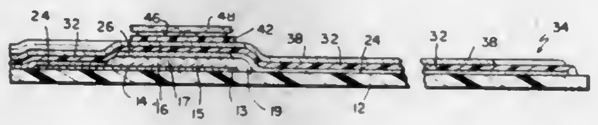
4,617,195
SHIELDED ELECTROLUMINESCENT LAMP

Richard W. Mental, Indianapolis, Ind., assignor to Microlite, Inc., Westfield, Ind.

Continuation-in-part of Ser. No. 593,578, Mar. 26, 1984. This application Aug. 27, 1984, Ser. No. 644,273

Int. Cl.^{4} B05D *5/12*

U.S. Cl. 427—66 **11 Claims**



1. The method of forming an electroluminescent device comprising the steps of:

(a) providing a substrate;

(b) depositing a first conductor on the substrate in a preselected pattern to form a first electrode;

(c) covering at least a first portion of the first conductor with a luminescent coating;

(d) depositing a pair of second conductors adjacent to each other, one of the pair of second conductors forming a second electrode and contacting only the luminescent coating and the substrate, the other of the pair of second conductors contacting only the first conductor and the substrate;

(e) depositing an insulative film so as to cover the pair of second conductors; and

(f) depositing a conductive shielding layer over the insulative film, the shielding layer including a terminal portion adapted to be connected to a suitable ground.

4,617,196
METHOD FOR TREATING CATHODE

Donald W. DuBois, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 10, 1985, Ser. No. 743,186

Int. Cl.^{4} B05D *5/12*

U.S. Cl. 427—123 **19 Claims**

1. In the process of preparing a porous nickel electrode comprising forming a layer of nickel and a sacrificial metal upon a metal substrate, selectively leaching sacrificial metal from the nickel-containing layer, thereby activating the nickel electrode, and treating the electrode to prevent pyrophoricity, the improvement wherein treatment of the electrode comprises maintaining a coating of an aqueous solution consisting essentially of about 4 to 50 weight percent alkali metal hydroxide on the leached nickel electrode while exposing the coated electrode to an oxygen-containing gas for a period of time sufficient to depyrophorize the nickel electrode.

4,617,197
PROCESS FOR IMPROVING THE WETTING CHARACTERISTICS OF THE SURFACE OF SHAPED PLASTICS ARTICLES FOR APPLICATIONS IN CHEMICAL ENGINEERING

Siegbert Rittner, Mörfelden-Walldorf; Eugen Morach, Liederbach; Hubert Schindler, Eppstein, and Peter John, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed May 24, 1985, Ser. No. 738,087

Claims priority, application Fed. Rep. of Germany, May 28, 1984, 3419856

Int. Cl.^{4} B05D *1/12*

U.S. Cl. 427—180 **5 Claims**

1. A process for improving the wetting characteristics of the surface of shaped plastics articles for chemical engineering applications by the application of a metal layer to the surface, which comprises first heating the surface of the shaped plastics article by means of a heating flame to a temperature 10° to 150° C. above the softening point of crystallite melting point of the polymer, and then applying onto the surface a pulverulent, metallic, spraying material having at a particle size of 1 to 600 μm and a temperature of 20° to 700° C. under a pressure of 0.1 to 4.0 bar.

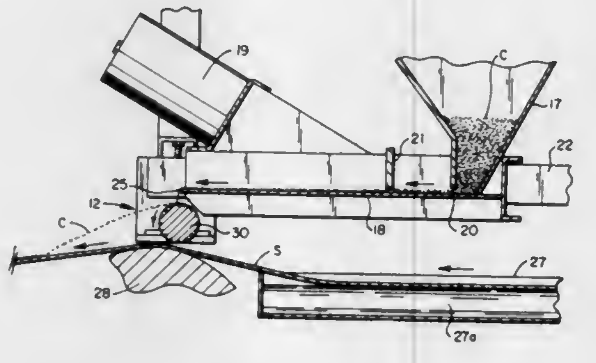
4,617,198
METHOD FOR MAKING ROOFING

John R. Overturf, Lancaster, Ohio, assignor to Transmet Corporation, Columbus, Ohio

Filed Sep. 23, 1985, Ser. No. 778,849

Int. Cl.^{4} B05D *1/12, 1/02*

U.S. Cl. 427—186 **14 Claims**



1. A method of producing roofing material which comprises providing a base strip which has an adhesive surface and directing flat metal chips of rectangular shape onto said surface to provide a flat protective layer of the chips on the adhesive surface,

moving the strip continuously beneath a rotating distributing roll and directing the chips continuously into contact with said roll prior to the time said chips are directed onto said surface, the roll being provided with grooves at angularly spaced positions around said roll to provide sides which engage the chips and fling them onto the adhesive surface of the strip to lay a uniform flat layer of the chips on the surface.

4,617,199
PROCESS FOR THE MANUFACTURING OF ADHESIVE TAPES

Graziano Galli, Formia; Lucio Penzo, Monza, and Felice Pina, Milan, all of Italy, assignors to Manuli Autoadesivi SpA, Cologno, Italy

Continuation of Ser. No. 576,707, Feb. 3, 1984, abandoned. This application Sep. 19, 1985, Ser. No. 777,573

Claims priority, application Italy, Feb. 23, 1983, 19710 A/83

Int. Cl.^{4} B05D *1/14*

U.S. Cl. 427—208 **5 Claims**

1. A process for making printable adhesive tape, said process comprising the steps of:

providing a backing of polypropylene or other olefinic copolymers, said backing having an adhesive side and a back side;

treating said backing to increase its surface tension;

coating said adhesive side with a priming layer and an adhesive layer;

coating said back side with a release lacquer, said release lacquer not requiring primer, and being compatible with printing inks, said release lacquer being selected from the group consisting of chlorinated polyolefins, ethylene-vinyl acetate copolymer, and acrylonitrile-stearyl acetate copolymer.

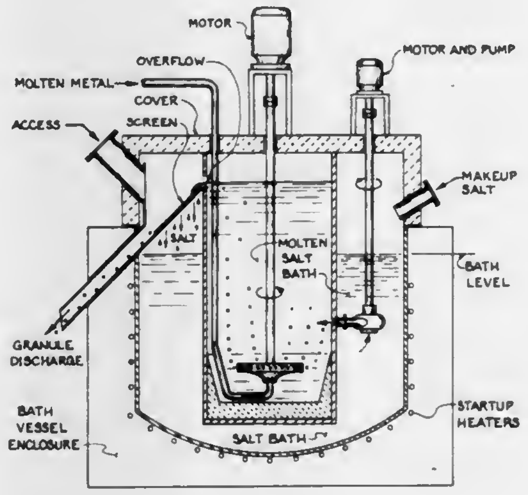
4,617,200
PROCESS FOR MAKING SALT COATED MAGNESIUM GRANULES

Hugh C. Behrens, Angleton, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 6, 1985, Ser. No. 741,783

Int. Cl.^{4} C22C *1/04;* **B22F** *9/08*

U.S. Cl. 427—216 **3 Claims**



1. A process for the production of substantially uniform granules of magnesium metal coated with a thin layer of a mixed salt composition which comprises:

forming a bath of a molten mixed salt of eutectic nature, which mixture has a freezing point at least 10° below the freezing point of magnesium;

introducing into said bath in a tangential manner a stream of molten magnesium at a rate and velocity to effect a shearing action on the magnesium as it enters the bath forming a globule;

maintaining the bath of a depth and a temperature such that the magnesium will solidify at its surface and rise upwardly through the bath;

withdrawing said bath and its attendant magnesium granules from the bath;

passing the said withdrawn molten salts containing solid magnesium granules over a screen thereby to separate salt coated granules from the molten bath;

returning the molten bath, after cooling, to the first step; and,

recovering said magnesium granules with a thin coat of salt thereon.

4,617,201
METHOD FOR PRODUCING A SYNTHETIC MATERIAL-CONTAINING POWDER

Erich Strommer, Schattendorf, Austria, assignor to Novophalt Societe Anonyme, Luxembourg, Luxembourg

Filed Aug. 9, 1985, Ser. No. 764,232

Int. Cl.^{4} C08L *95/00;* **C08J** *3/12;* **C04B** *31/40;* **E01C** *7/26*

U.S. Cl. 427—216 **20 Claims**

1. A method for producing a powder containing a finely distributed thermoplastic synthetic material which steps comprise introducing polyolefin into a non-aqueous carrier substance selected from the group consisting of bitumen, fats, paraffin and waxes at the melting temperature range of the synthetic material liquid and mixing the polyolefin and carrier to obtain a homogeneous mass; adding to said mass and distributing therein ground lime; and subsequently adding an aqueous slurry selected from the group consisting of red slurry which is a waste product in the production of aluminum, rock flours, flue dust and fuller's earth, to the mass, which is converted by the then-generated reaction between the lime and the aqueous slurry to a powder containing polyolefin.

4,617,202
DIFFUSION COATING MIXTURES

Alfonso L. Baldi, Wynnewood, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.

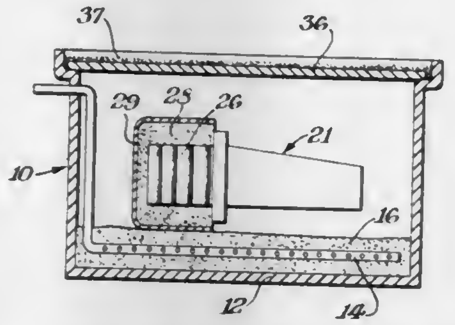
Continuation-in-part of Ser. No. 302,979, Sep. 17, 1981, Pat. No. 4,464,430, and a continuation-in-part of Ser. No. 242,350, Mar. 10, 1981, and a continuation-in-part of Ser. No. 230,333, Feb. 2, 1981, Pat. No. 4,347,267, and a continuation-in-part of Ser. No. 25,456, Mar. 30, 1979, and a continuation-in-part of Ser. No. 71,741, Aug. 30, 1979, abandoned, and a continuation-in-part of Ser. No. 851,504, Nov. 14, 1977, abandoned, and a continuation-in-part of Ser. No. 809,189, Jun. 23, 1977, Pat. No. 4,308,160, said Ser. No. 242,350, and Ser. No. 230,333, each is a continuation-in-part of Ser. No. 89,949, Oct. 31, 1979, abandoned, said Ser. No. 89,949, and Ser. No. 71,741, and Ser. No. 25,456, each is a continuation-in-part of Ser. No. 963,313, Nov. 27, 1978, abandoned, and a continuation-in-part of Ser. No. 752,855, Dec. 21, 1976, Pat. No. 4,208,435, said Ser. No. 851,504, and Ser. No. 809,189, each is a continuation-in-part of Ser. No. 752,855, Dec. 21, 1976, Pat. No. 4,208,435, and a continuation-in-part of Ser. No. 694,951, Jun. 11, 1976, abandoned, and a continuation-in-part of Ser. No. 614,834, Sep. 19, 1975, Pat. No. 4,141,760, which is a continuation-in-part of Ser. No. 466,908, May 3, 1974, Pat. No. 3,958,097, and a continuation-in-part of Ser. No. 404,665, Oct. 9, 1973, Pat. No. 3,948,689, said Ser. No. 404,665, and Ser. No. 357,616, each is a continuation-in-part of Ser. No. 254,403, May 18, 1972, Pat. No. 3,785,854, and a continuation-in-part of Ser. No. 90,682, Nov. 18, 1970, Pat. No. 3,764,371, and a continuation-in-part of Ser. No. 219,514, Jan. 20, 1972, Pat. No. 3,810,357, said Ser. No. 90,682, and Ser. No. 219,514, each is a continuation-in-part of Ser. No. 837,811, Jun. 30, 1969, abandoned. This application Oct. 9, 1981, Ser. No. 310,085

Int. Cl.^{4} C23C *11/00*

U.S. Cl. 427—253 **6 Claims**

1. A composition for masking against diffusion coating, the composition consisting essentially of a used diffusion-chromiz-

ing pack which before that use contained from about 0.6 to about 2% chromium, a nickel content from about $\frac{1}{2}$ to about 3 times the chromium content, and an aluminum content about 1/10 to about $\frac{1}{3}$ the chromium content.



4,617,203

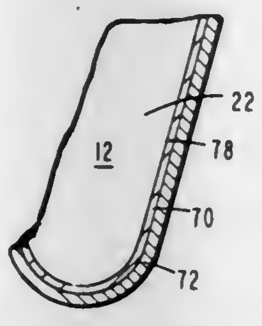
PREPARATION OF LIQUID METAL SOURCE STRUCTURES FOR USE IN ION BEAM EVAPORATION OF BORON-CONTAINING ALLOYS

Jerg B. Jergenson, Santa Barbara, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 8, 1985, Ser. No. 721,336

Int. Cl.^{4} B05D *3/02*

U.S. Cl. 427—294 **17 Claims**



1. A process for preparing a boronized ion source structure for use in ion beam evaporation of a boron-containing source alloy from an ion beam source, comprising the steps of:

furnishing an ion source structure substrate;

coating the ion source structure substrate with boron to form a substrate-boron couple at the surface of the substrate; and

heating the substrate boron couple in a vacuum or inert atmosphere to a temperature of at least the interface solidus temperature of the substrate-boron couple for less than about one minute thereby forming a liquid layer at the interface of the couple.

4,617,204

CHEMICAL SYNTHESIS OF THIN FILMS AND SUPPORTED CRYSTALS BY OXIDATION OF ZINTL ANIONS

Robert C. Haushalter, Clarendon Hills, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 455,614, Jan. 4, 1983, abandoned. This application Jun. 28, 1985, Ser. No. 750,067

Int. Cl.^{4} C23C *18/28, 18/16*

U.S. Cl. 427—304 **12 Claims**

1. A process for sensitizing a surface of a substrate comprising the steps of

selecting an organic, inorganic or metallic substrate composed predominantly of a supporting matrix reducibly by a polyatomic main group metal anion in a redox reaction by the transfer of electrons to the substrate,

forming a solution of a salt composed of alkali metal cations and polyatomic main group metal anions,

treating said surface with said solution to oxidize the main group metal anions, to reduce the substrate by the transfer of electrons thereto and the formation thereby of a negatively charged matrix, to transfer the alkali metal cations to the substrate, and to deposit the main group metal on the surface of the substrate to form a modified surface of the substrate, and

treating the modified surface with a solution of a salt of a transition metal cation to extract at least a portion of the alkali metal cations from the substrate and deposit the transition metal in elemental form on the modified surface.

4,617,205

FORMALDEHYDE-FREE AUTOCATALYTIC ELECTROLESS COPPER PLATING

Jeffrey Darken, Woking, England, assignor to OMI International Corporation, Warren, Mich.

Filed Dec. 17, 1985, Ser. No. 809,979

Claims priority, application United Kingdom, Dec. 21, 1984, 8432395; Dec. 21, 1984, 8432400

Int. Cl.^{4} C23C *3/02*

U.S. Cl. 427—305 **20 Claims**

1. In a composition for the electroless deposition of copper comprising in aqueous alkaline medium, a source of copper ions, an effective amount of a complexor to keep the copper ions in solution and a reducing agent; the improvement comprising, as said reducing agent, a source of glyoxylate ions, the amounts of complexor and glyoxylate being sufficient to allow copper deposition from the composition, with the proviso that, the complexor is capable of forming a complex with copper which is stronger than a copper-oxalate complex and when the complexor is tartrate, the molar ratio of tartrate to copper is at least 6:1.

4,617,206

METHOD OF MANUFACTURING A LAYER OF AN OXIDE OF AN ELEMENT FROM GROUP IVA

Jan Haisma; Petrus Heller; Johannes M. M. Pasmans, and Udo K. P. Biermann, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 30, 1984, Ser. No. 645,884

Claims priority, application Netherlands, Sep. 2, 1983, 8303059

Int. Cl.^{4} B05D *3/02*

U.S. Cl. 427—374.1 **2 Claims**

1. A method of manufacturing a member consisting of a substrate bearing a transparent layer of an oxide of an element from group IVa of the Periodic Table by providing the substrate with a film of a solution of a compound of the element which upon heating is converted into the relevant oxide, drying the film and heating the dried film so as to form the transparent layer of the oxide, wherein the substrate bearing the dried film is heated to a temperature above 700° C. at a rate of at least 30° C./sec in the range between 300° C. and the temperature above 700° C., is kept at the temperature above 700° C. for at least 45 seconds and is cooled to room temperature at a rate of at least 30° C./sec, at least in the range of the temperature above 700° C. and 300° C.

4,617,207

THERMOPLASTIC RESIN SHEET

Toru Ueki; Yoshiaki Fukuda; Katsuyuki Usami, and Kazuharu Kanasaki, all of Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Aug. 9, 1984, Ser. No. 639,030

Claims priority, application Japan, Aug. 15, 1983, 58-148140; Mar. 5, 1984, 59-40441; Mar. 13, 1984, 59-46524; Mar. 13, 1984, 59-46525; Mar. 13, 1984, 59-46526; Mar. 13, 1984, 59-46527; Mar. 13, 1984, 59-46528; Apr. 16, 1984, 59-74885; Apr. 16, 1984, 59-74886; Apr. 16, 1984, 59-74887

Int. Cl.^{4} C09K *19/00;* **B32B** *27/36, 27/08;* **B29D** *23/04*

U.S. Cl. 428—1 **15 Claims**

1. Thermoplastic resin sheet having a thermal shrinkage within ±0.3 percent and double refractive index of 8×10^{-5} or smaller, said thermoplastic resin sheet being produced by co-extruding a first thermoplastic resin and a second thermoplastic resin which is nonadhesive to said first thermoplastic resin, said first thermoplastic resin being a rigid polyvinyl chloride resin, polystyrene resin or methylpentene resin and said second thermoplastic resin being a low-density polyethylene resin, high-density polyethylene, polyproplylene resin, polystyrene resin or cellulose-base resin, into a three-layered sheet in which a core layer of said first thermoplastic resin is covered on both surfaces thereof with outer layers of the second thermoplastic resin, the proportion of the thickness of said first thermoplastic resin being controlled to below 90 percent of the total thickness of said co-extruded sheet, and by peeling the outer layers of said second thermoplastic resin off said co-extruded three-layered sheet to obtain a sheet of said first thermoplastic resin.

4,617,208

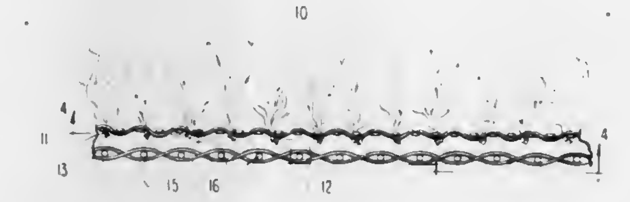
NON-DIRECTIONAL, SYNTHETIC, OUTDOOR CARPET

Roy A. Cadenhead, Sr., Calhoun, Ga., assignor to Modern Fibers, Inc., Calhoun, Ga.

Filed Jul. 19, 1983, Ser. No. 515,132

Int. Cl.^{4} A01N *3/00*

U.S. Cl. 428—17 **31 Claims**



1. A process of making a non-directional, synthetic outdoor carpet, comprising the steps of

(a) knitting a yarn composed of colored, continuous, polypropylene ribbon into a deknittable fabric, using knitting needles that are set a fixed distance apart,

(b) heating the fabric to a temperature at which the curves and bends generated in the yarn by its knitted configuration are established in the yarn's memory, said temperature being in the range of about 230° to 290° F.,

(c) cooling the fabric to about room temperature,

(d) deknitting the cooled fabric and rewinding the yarn under enough tension to restraighten it,

(e) tufting the yarn as facing yarn into a primary carpet backing material, forming a cut pile carpet having a pile height greater than the between-needles distance used in step (a) above,

(f) coating the underside of the carpet with a heat-settable adhesive that, when cured, will help anchor the tufts of yarn in the backing material, and

(g) heating the adhesive-coated carpet to a temperature at which the adhesive will set and the facing yarn will reconform to the bends and twists in its memory, yielding an outdoor carpet in which the facing yarns are curved and bent in all different directions, giving the carpet a non-directional texture.

4,617,209

MOLDED END CAP FOR EXTRUDED TRIMS

Albert G. Ives, Solon, Ohio, assignor to LOF Plastics Inc., Troy, Mich.

Filed Jan. 8, 1985, Ser. No. 689,792

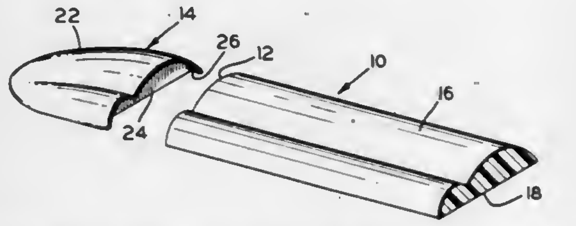
Int. Cl.^{4} B60R *13/04*

U.S. Cl. 428—31 **3 Claims**

1. A decorative trim strip attachable to an underlying surface of a substrate, comprising:

an elongate extrusion having at least one terminal end and including an upper longitudinally extending shaped surface, said upper shaped surface in cross-section having a flat bottom surface;

an end cap for attachment to the terminal end of said extrusion and constructed to accommodate both an undersized and oversized extrusion, said end cap including a body having a terminal end which is sized and shaped to conform to the size and shape of the terminal end of said extrusion, the terminal end of said end cap having a flexible skirt projecting from the upper edge thereof which extends over and contacts the upper shaped surface of said extrusion;



said flexible skirt being bent inwardly to conform to said undersized extrusion and being adapted to be flexibly deflected outwardly to conform to said oversized extrusion; and

means for securing said end cap and said extrusion to an underlying surface of a substrate wherein the skirt produces a smooth transition between said end cap and said extrusion.

4,617,210

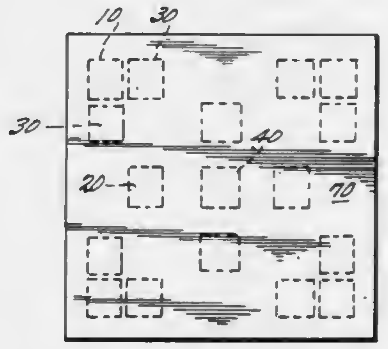
SELF STICKING CARPET TILES

Walter C. Zybko, Lexington, Va., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Mar. 15, 1985, Ser. No. 712,035

Int. Cl.^{4} B32B *7/14;* **D04H** *1/08*

U.S. Cl. 428—35 **16 Claims**



1. A tile system comprising a plurality of tiles having adhesive on the backs thereof for adhering said tiles to a surface, said adhesive being non-releasably applied to said backs, having release properties as to surfaces other than those covered with adhesive, and being arranged on said backs such that two of said plurality of tiles may be placed in back-to-back contact without having their respective adhesives touch, whereby said two tiles in back-to-back contact may be readily separated from one another.

4,617,211

METHOD AND APPARATUS FOR SKIVING AND HEMMING

Carl J. Fries, Jr., Holland, Pa., assignor to International Paper Company, New York, N.Y.

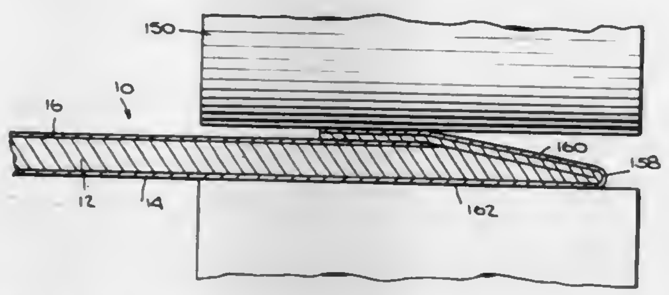
Division of Ser. No. 447,104, Dec. 6, 1982, Pat. No. 4,540,391. This application Jun. 17, 1985, Ser. No. 745,569

Int. Cl.^{4} B65D *5/40*

U.S. Cl. 428—35 **7 Claims**

1. A blank for a container, said blank comprising: first and second exterior heat sealable layers defining first and second surfaces of said blank and an intermediate layer; and at least one skived and hemmed edge portion having a first skived

region defining a sloped plane and a second skived region substantially parallel to said second surface disposed between said first skived region and the adjacent edge of said blank; said sloped plane and said first surface of said blank defining an angle of less than about 30°; said edge portion having a fold along a line between said first and second skived regions, said second skived region covering said first skived region, and a portion of said second skived region being heat sealed to said first heat sealable layer, thereby defining a folded-over portion, said folded-over portion having one surface at least a portion of which is substantially flush with said first surface of said blank and another surface which forms an oblique angle with said second surface of said blank.



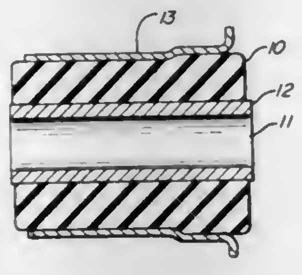
4,617,212
BUSHING

Tiong H. Kuan, Hudson, Ohio, assignor to GenCorp Inc., Akron, Ohio

Filed Mar. 1, 1985, Ser. No. 707,331

Int. Cl.⁴ C08K *3/04;* **C08L** *7/00, 9/00;* **F16F** *1/38*

U.S. Cl. 428—36 **7 Claims**



1. A low rate resilient bushing exhibiting improved fatigue life and having an annular molded carbon black reinforced conventionally sulfur vulcanized rubber compound insert in compressed relation between a substantially rigid cylindrical inner member and a substantially rigid cylindrical outer member wherein said rubber compound has been vulcanized with an activator system comprising zinc oxide and at least one soluble fatty acid material selected from the group consisting of zinc di(2-ethyl hexanoate), isostearic acid, oleic acid and a zinc-aluminum soap of tall oil fatty acid,

wherein the rubber of said compound is selected from the group consisting of natural rubber and high cis-polyisoprene rubber and mixtures of the same and

wherein said soluble fatty acid material is used in an amount of from 1.4 to 3.0 parts by weight per 100 parts by weight of said rubber (phr).

4,617,213
HYDRAULIC BRAKE HOSE

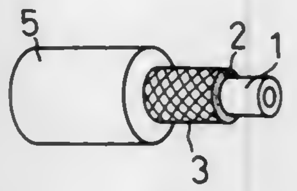
Tetsuji Asano, Inazawa; Keiichi Kodama, Nagoya, and Terumitsu Shigeki, Nishikasugai, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Apr. 9, 1985, Ser. No. 721,393

Claims priority, application Japan, Apr. 14, 1984, 59-75644; Jun. 30, 1984, 59-136393

Int. Cl.⁴ F16L *9/00, 11/00*

U.S. Cl. 428—36 **1 Claim**



1. A hydraulic brake hose comprising:

an inner tube made of polyamid synthetic resin;

an adhesive layer formed on the outer surface of said inner tube;

a reinforcing fiber layer made of fiber of high polymeric material and formed on the outer surface of said adhesive layer;

an outer tube made of rubber and formed on the outer surface of said reinforcing fiber layer; said inner tube having the modulus of elasticity of 7,000 to 15,000 kg/cm^2 and having an inner diameter of not less than 2.0 mm, an outer diameter of not more than 6.0 mm and a thickness of not less than 0.7 mm,

wherein the polyamid resin for making said inner tube is nylon, the high polymeric material for making said reinforcing fiber layer is selected from the group consisting of rayon, polyester, polyamid and polyvinyl alcohol, and the rubber for making said outer tube is chloroprene-rubber, and

wherein said adhesive layer is composed of an isocyanate adhesive layer formed on the outer surface of said inner tube and a chloroprene-rubber adhesive layer formed on the outer surface of said isocyanate adhesive layer, and the fiber for forming said reinforcing fiber layer is impregnated with resorcinol formaldehyde latex containing chloroprene-rubber.

4,617,214
STRIP OR SIMILAR ELEMENT FOR BEING ATTACHED TO AND COVERED BY A MOLDED ARTICLE AND METHOD

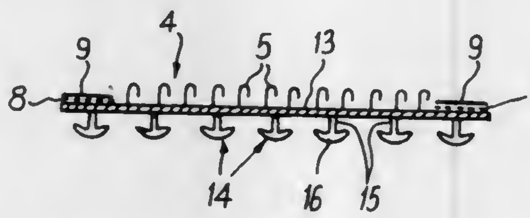
Patrick J. Billarant, Charlotte, N.C., assignor to Aplix S.A., Paris, France

Filed Oct. 5, 1984, Ser. No. 658,336

Claims priority, application France, Oct. 7, 1983, 83 16001

Int. Cl.⁴ A44B *21/00*

U.S. Cl. 428—40 **3 Claims**



1. A tape intended to be attached to a molded article, said tape comprising a sole having a gripping means on one side thereof together with two spaced-apart marginal areas devoid of said gripping means and adapted to be glued temporarily onto the internal face of a mold in which the molded article is to be formed, said tape also having a second face comprising on at least part of its width anchoring means projecting from said second face for anchoring said tape into the structure of the molded article, said anchoring means comprising a plurality of stems attached to and extending outwardly from said sole with at least some of said stems having enlarged, anchoring heads thereon, said gripping means and said anchoring means being integrally formed with said sole.

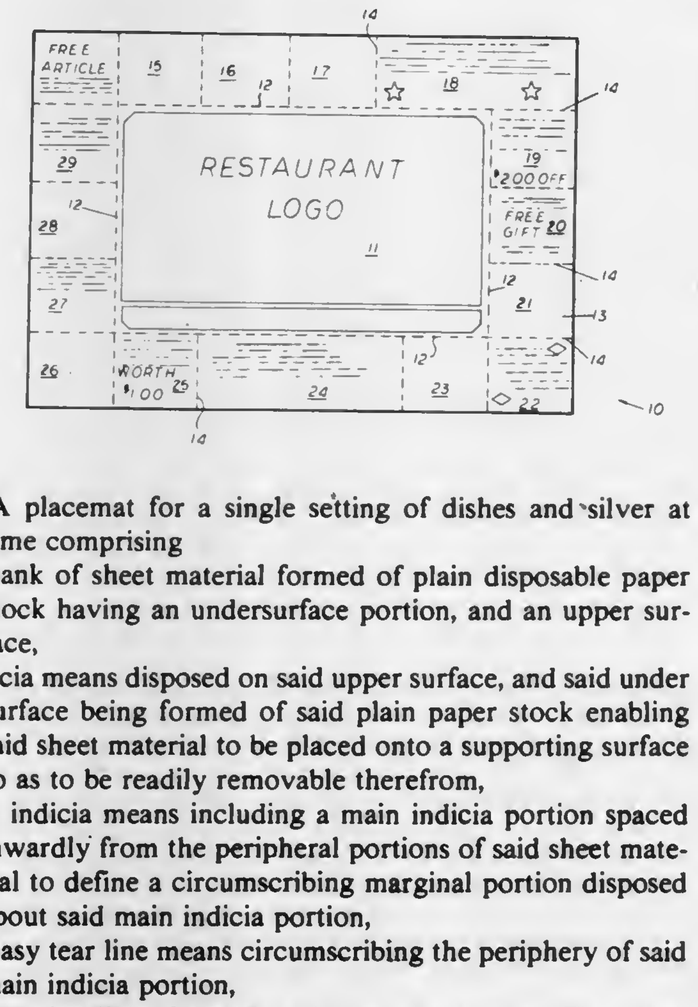
4,617,215
PLACE MAT

Barbara Telesco, P.O. Box 4035, Milford, Conn. 06460

Filed Dec. 5, 1984, Ser. No. 678,350

Int. Cl.⁴ B65D *3/02*

U.S. Cl. 428—43 **1 Claim**



1. A placemat for a single setting of dishes and silver at mealtime comprising

a blank of sheet material formed of plain disposable paper stock having an undersurface portion, and an upper surface,

indicia means disposed on said upper surface, and said under surface being formed of said plain paper stock enabling said sheet material to be placed onto a supporting surface so as to be readily removable therefrom,

said indicia means including a main indicia portion spaced inwardly from the peripheral portions of said sheet material to define a circumscribing marginal portion disposed about said main indicia portion,

an easy tear line means circumscribing the periphery of said main indicia portion,

and a plurality of spaced apart tear lines extending transversely of said marginal portion circumscribing said main indicia portion,

said plurality of spaced apart tear lines extending normal to and between said first mentioned tear line and the outer periphery of said sheet material,

said plurality of tear lines dividing said marginal portion into a single row of a plurality of serially connected contiguous separable and distinct portions, each of said separable and distinct portions having an edge portion coincidental with said outer peripheral portion of said sheet material whereby each of said separable and distinct portions can be readily separated from said blank of sheet material along the adjacent tear lines defining said separable and distinct portions without disturbing or separating any other of said separable marginal portions, and

secondary indicia means disposed on each of said separable and distinct marginal portions.

4,617,216
MULTI-LAYER IDENTIFICATION CARD

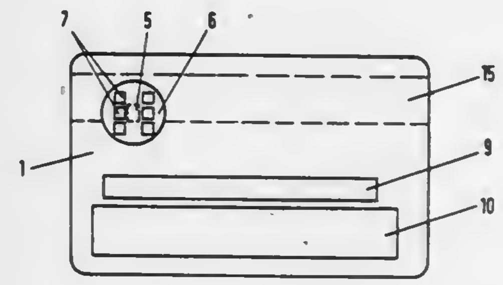
Yahya Haghiri-Tehrani, and Joachim Hoppe, both of Munich, Fed. Rep. of Germany, assignors to GAO Gesellschaft für Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 428,965, Sep. 30, 1982, abandoned, which is a division of Ser. No. 288,496, Jul. 30, 1981, Pat. No. 4,450,024. This application Aug. 19, 1985, Ser. No. 767,057

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1980, 3029939

Int. Cl.⁴ B60J *1/00*

U.S. Cl. 428—67 **7 Claims**



1. A multi-layer data card containing accessible, electronically encoded data comprising:

a card composite having an internal core layer (**11**, **23**, **36**) and at least one covering layer (**12**, **13**, **20**, **26**, **32**, **40**) laminated by means of heat and pressure on said core layer along one entire side thereof, said core layer having a recess;

a carrier element (**6**, **27**) having a data containing IC-module member (**5**), said carrier element being small relative to the size of the card and further containing access means (**7**) confined to said carrier element by which the data in said module member can be accessed, said carrier element being received within said recess and laminated into the card composite such that said covering layer is generally planar in the region of said carrier element; and

a material (**17**, **21/22**, **24/25**, **33/34**, **38/39**) completely surrounding said carrier element and completely occupying the portion of said recess not occupied by said carrier element, said surrounding material being different from the material of the core layer and having a softening point lower than that of said core layer, said surrounding material being soft and elastic under conditions of card manufacture and use for protecting said carrier element against mechanical stresses.

4,617,217
BEAM OR OTHER ELEMENT OF GREAT LENGTH OF A COMPOSITE MATERIAL POLYMERIZED UNDER HEAT AND PRESSURE

Jean A. Michaud-Soret, Paris, France, assignor to Society Nationale Industrielle Aerospatiale, France

Filed Sep. 17, 1984, Ser. No. 651,611

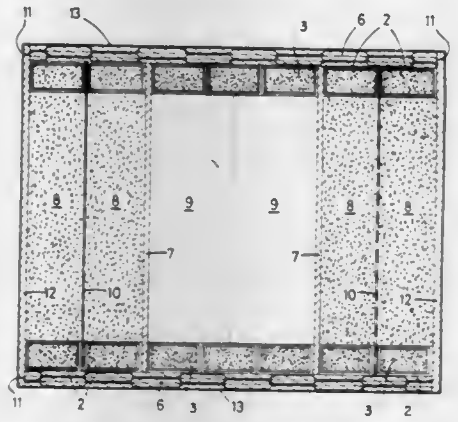
Claims priority, application France, Sep. 19, 1983, 83 14839

Int. Cl.⁴ B32B *3/12, 5/08, 5/14, 5/18*

U.S. Cl. 428—71 **20 Claims**

1. A beam of composite material comprising two outer longitudinally extending chords, webs which are parallel to one another, spaced apart and perpendicular to said chords and defining therebetween spaces, a core of a resin foam material filling said spaces, said webs interconnecting said two chords, said beam further comprising prefabricated box structures providing a connection between said chords and said core on each side of said webs, and thin metal bands disposed between

two thin sheets of resin-impregnated fibers constituting heating elements incorporated in said core in intermediate portions of said core and disposed substantially parallel to said webs and between said webs.



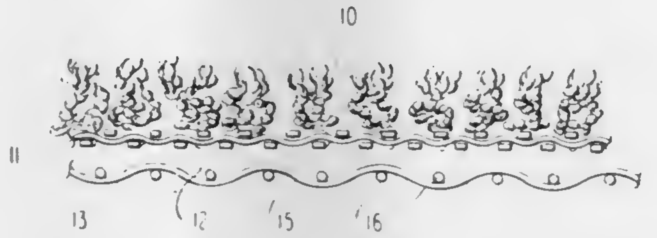
4,617,218
TIGHTLY CURLED, CUT PILE, TUFTED CARPET

Roy A. Cadenhead, Sr., Calhoun, Ga., assignor to Modern Fibers, Inc., Calhoun, Ga.

Continuation-in-part of Ser. No. 515,132, Jul. 19, 1983. This application Sep. 21, 1984, Ser. No. 653,079

Int. Cl.⁴ B32B *3/02*

U.S. Cl. 428—92 **28 Claims**



1. A process of making a non-directional, cut pile, tufted carpet having the tightly curled appearance of Persian lamb, comprising the steps of

(a) knitting a carpet facing yarn composed of continuous filaments or spun staple fibers of thermoplastic, synthetic resin into a deknittable fabric, said yarn having a denier of about 600 to 9,000, using knitting needles that are set a fixed distance apart, in the range of about ¼ inch to ¾ inch,
(b) heating the fabric to a temperature at which the curves and bends generated in the yarn by its knitted configuration are established in the yarn's memory,
(c) cooling the fabric to about room temperature,
(d) deknitting the cooled fabric and rewinding the unravelled yarn under enough tension to restraighten it, this step and said steps (a) through (c) being performed without dyeing the fabric,
(e) tufting the unravelled yarn as facing yarn into a primary carpet backing material, forming a cut pile carpet having a pile height greater than the between-needles distance used in step (a) above, and pile height being in the range of about ⅜ to ⅞ inch, this step and said step (d) being performed without fluffing the unravelled yarn,
(f) coating the underside of the carpet with a heat-settable adhesive that, when cured, will help anchor the tufts of yarn in the backing material, and
(g) heating the adhesive-coated carpet to a temperature at which the adhesive will set and the facing yarn will reconform to the bends and twists in its memory, thereby producing a finished carpet having the tightly curled appearance of Persian lamb.

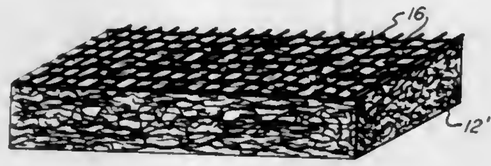
4,617,219
THREE DIMENSIONALLY REINFORCED FABRIC CONCRETE

Morris Schupack, 37 Split Rock Rd., South Norwalk, Conn. 06854

Filed Dec. 24, 1984, Ser. No. 685,481

Int. Cl.⁴ B32B *5/12*

U.S. Cl. 428—113 **22 Claims**



1. A three-dimensionally reinforced hydraulic cementitious structure comprising at least one layer of non-woven spatial fabric reinforcing material comprised of randomly oriented substantially continuous fibers, said material being encapsulated in the cementitious composition.

4,617,220
SEALING AND TRIMMING STRIPS

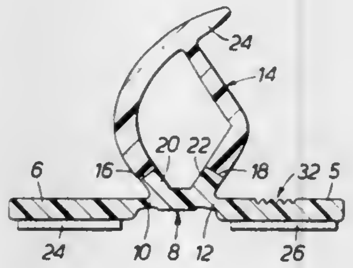
Helmut Ginster, Viersen, Fed. Rep. of Germany, assignor to Draftex Industries Limited, Edinburgh, Scotland

Filed Apr. 26, 1985, Ser. No. 727,527

Claims priority, application United Kingdom, Jun. 26, 1984, 8416259

Int. Cl.⁴ E06B *7/16*

U.S. Cl. 428—122 **6 Claims**



1. A sealing or trimming strip for mounting on a flange or the like running around an opening to be sealed or trimmed, comprising

a longitudinal trimming part having a first, longitudinal, base portion of relatively hard plastics or rubber material and second and third longitudinal portions also of relatively hard plastics or rubber material but relatively flexibly supported on the base portion along opposite longitudinally extending edges of the base portion, whereby the strip may be mounted on the said flange or the like by placing the first portion on the flange or the like and bending the said second and third portions with respect to the first portion so as to bring longitudinally extending surfaces of the second and third portions respectively into facing relationship with opposite longitudinally extending side surfaces of the flange or the like and so that the base portion and the second and third portions together define a channel-configuration extending longitudinally along the flange or the like, and

adhesive means on the said longitudinally extending surfaces of the second and third portions for adhesively securing the said longitudinally extending surfaces of the second and third portions to the side surfaces of the flange or the like, thereby attaching the strip to, and so that the said channel-configuration is in embracing relationship with, the flange or the like.

4,617,221
SHEET OF ROOFCOVERING MATERIAL AND METHOD TO APPLY THIS SHEET IN OR AS A ROOFCOVERING

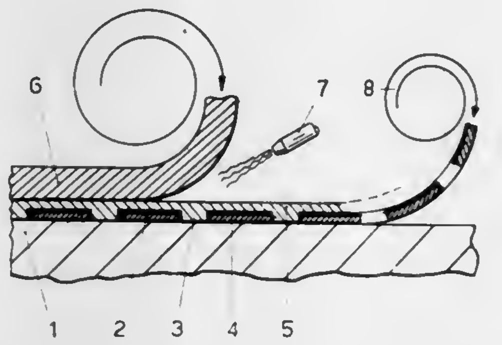
Lieuwe von der Chys, Schulstrasse 14, Bad-Hofgasstein, Austria

Filed Nov. 30, 1984, Ser. No. 677,133

Claims priority, application Switzerland, Dec. 2, 1983, 6470/83

Int. Cl.⁴ B32B *3/10, 17/06, 11/10*

U.S. Cl. 428—139 **6 Claims**



1. A sheet member, used as a roof-covering material comprising:

a first base layer having portions made of a porous material and having a plurality of apertures throughout disposed between said portions of porous material, said base layer having a lower and an upper surface, said lower surface to be applied on a roof;

a second layer of moisture-tight coating disposed over said upper surface of said porous portion of said base layer; and

a third layer of bituminous material disposed on the upper surface of said second layer, whereby said sheet member is adapted for attachment to the roof by heating said third layer of bituminous material while disposing it over said second layer to cause a flow of the molten bitumen from said third layer through said apertures in said base layer to firmly attach said sheet to the roof surface at the locations of said apertures, said flow of said bitumen being prevented from penetrating said porous material portion of said base layer by said second layer whereby the porous base layer allows escape of the vapor trapped under the sheet member to the surrounding and prevents formation of blisters in said sheet member.

4,617,222
PROCESS FOR OBTAINING AREAS OF DISTINCTIVE APPEARANCE ON SYNTHETIC COVERINGS AND THE PRODUCT DERIVED THEREFROM

Jean-Francois Courtoy, Wiltz, and Daniel Marchal, Esch sur Alzette, both of Luxembourg, assignors to Eurofloor S.A., Luxembourg, Luxembourg

Filed Apr. 25, 1984, Ser. No. 603,842

Claims priority, application Luxembourg, Apr. 25, 1983, 84766; Aug. 11, 1983, 84957

Int. Cl.⁴ B05D *3/06*

U.S. Cl. 428—142 **37 Claims**

1. A process of obtaining areas of distinctive appearance on a synthetic covering, the covering including a support layer, including the steps of:

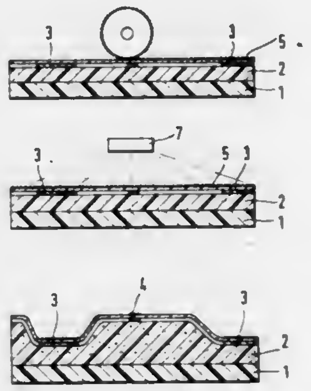
depositing at least a first polymeric coating having at least one radiation initiator therein onto a first selected area of said support layer;

depositing at least a second polymeric coating onto a second selected area of said support layer, at least a portion of said second polymeric coating comprising a crosslinkable monomer;

pre-gelling said deposited coatings;

mechanically graining selected areas of said deposited coatings to form a matted surface;

polymerizing said first polymeric coating via said radiation initiator wherein said first polymeric coating is fixed to said support layer, and wherein said matted surface on said first polymeric coating is fixed thereon; and



gelling said second polymeric coating to cause fluidization of said second polymeric coating thereby smoothing said matted surface thereon.

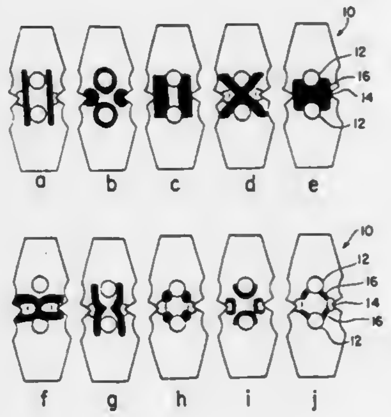
4,617,223
REINFORCED PAPERBOARD CARTONS AND METHOD FOR MAKING SAME

Donald F. Hiscock, Columbus; Joe A. Jacomet, Westerville, and Deborah H. Carter, Columbus, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Nov. 13, 1984, Ser. No. 670,415

Int. Cl.⁴ B32B *29/00;* **D06M** *13/34;* **B65D** *5/62*

U.S. Cl. 428—211 **16 Claims**



1. A reinforced paperboard carton blank comprising a paperboard blank having therein a pair of fingerholes, fold lines, and a series of openings for receiving a plurality of liquid containers, said blank being impregnated with a polyisocyanate in areas located to increase the tensile strength of said blank adjacent said fingerholes and/or openings such that said container does not readily break when liquid containers are carried therein, said polyisocyanate being a polyisocyanate which reacts with hydroxyl groups in said paperboard to form a cured polyurethane reinforcement.

4,617,224
THERMAL TRANSFER RECORDING MEDIUM

Yuji Hotta, Hachioji; Takao Abe, Tokyo; Fumio Ishii, Akishima; Shigehiro Kitamura, Hachioji; Kunihiro Koshizuka, Hino, and Masaki Nakamura, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 15, 1984, Ser. No. 661,069

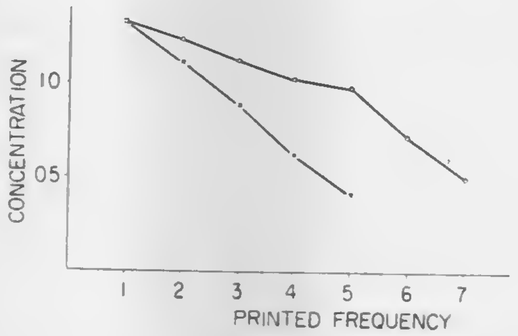
Claims priority, application Japan, Oct. 17, 1983, 58-192545

Int. Cl.⁴ B41M *5/26*

U.S. Cl. 428—212 **20 Claims**

1. A thermal transfer recording medium comprising a support, a first coloring agent layer containing a coloring agent and a resin having a softening point of 120° C. or more coated

on said support, and a second coloring agent layer containing a coloring agent and a heat-fusible substance having a melting point in the range of from 40° C. to 120° C. coated on said first layer, said coloring agents contained in said first and second layers having substantially isochromatic tone.



4,617,225
SHEET-LIKE REINFORCED MATERIAL

Peter Horn, Heidelberg; Edwin Baumann, Schifferstadt; Matthias Marx, Bad Duerkheim, and Peter Gerarts, Ostercappeln, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 24, 1985, Ser. No. 791,113

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1984, 3439461

Int. Cl.⁴ B32B *3/26, 5/18, 7/04, 27/04*

U.S. Cl. 428—215 6 Claims

1. A sheet-like reinforced material consisting of

A. a core layer comprising a sheet-like textile structure,

B. one or more surface layers comprising an open-cell aminoplast or phenoplast foam and

C. a plastic matrix which is composed of nylon polymerized under alkaline conditions and penetrates both the core layer and the surface layer or layers.

4,617,226
MAGNETIC RECORDING MEDIUM

Nobutaka Yamaguchi; Masahiro Utumi; Masaaki Fujiyama, and Takahito Miyoshi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 21, 1984, Ser. No. 642,911

Claims priority, application Japan, Aug. 22, 1983, 58-152963

Int. Cl.⁴ G11B *5/72*

U.S. Cl. 428—216 12 Claims

1. A magnetic recording medium comprising a nonmagnetic support, a magnetic recording layer containing ferromagnetic particles, and an intermediate layer provided therebetween, said intermediate layer containing an electroconductive polymer which is an ion-conductive high molecular electrolytic compound, a conjugated π electron electron-conductive high molecular compound, or a charge transfer high molecular complex compound, wherein said electroconductive polymer is present in said intermediate layer in an amount of about 30 wt% or more, based on the weight of the intermediate layer and wherein said magnetic recording layer has a surface electric resistance of less than about 1×10^9 Ω/sq.

4,617,227
ASPHALT ELASTOMERIC BLENDS

Ebon P. Weaver, Naugatuck, Conn., assignor to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Filed Mar. 12, 1985, Ser. No. 710,813

Int. Cl.⁴ C08L *95/00;* **B32B** *11/02*

U.S. Cl. 428—220 11 Claims

1. An elastomeric composition comprising

(a) asphalt;

(b) preferential plasticizer; and

(c) neutralized sulfonated polymer in a weight ratio of neutralized sulfonated polymer to asphalt of from about 30/70 to about 95/5.

4,617,228
PROCESS FOR PRODUCING ELECTRICALLY CONDUCTIVE COMPOSITES AND COMPOSITES PRODUCED THEREIN

Paul R. Newman, Newbury Park; Leslie F. Warren, Jr., Camarillo, and Edward F. Witucki, Van Nuys, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 4, 1984, Ser. No. 646,717

The portion of the term of this patent subsequent to Apr. 15, 2003, has been disclaimed.

Int. Cl.⁴ B05D *3/02, 5/12;* **B32B** *7/00, 5/14*

U.S. Cl. 428—265 37 Claims

1. A process for producing an electrically conductive composite which comprises the steps of

(a) contacting a dielectric porous substance with a liquid pyrrole,

(b) contacting said porous substance with a solution of a strong oxidant capable of oxidizing pyrrole to a pyrrole polymer, and

(c) oxidizing said pyrrole by said strong oxidant in the presence of a substantially non-nucleophilic anion, and precipitating a conductive pyrrole polymer in the pores of said substance.

31. An electrically conductive composite produced by the process of claim 1.

4,617,229
NON-WOVEN FABRIC, A BITUMINOUS WATER-PROOFING MEMBRANE BUILT UP ON IT, AND THE USE OF THE FABRIC AS A CARCASS IN SUCH A MEMBRANE

Leif Larsson, Falun, and Bengt Ekdahl, Höganäs, both of Sweden, assignors to AB Mataki, Höganäs and Storalene AB, Falun, both of, Sweden

Filed Dec. 7, 1984, Ser. No. 679,452

Claims priority, application Sweden, Dec. 9, 1983, 8306820

Int. Cl.⁴ D04H *1/08*

U.S. Cl. 428—284 25 Claims

10. Water-proofing membrane comprising a non-woven fabric coated with bitumen said fabric comprising fibers, a proportion of at least 75% by weight of the fiber quantity of the fabric comprising organic synthetic fibers and cellulose fibers, the organic synthetic fibers constituting at least 10% and at most 90% by weight of said fiber proportion, with the cellulose fibers constituting the remainder of said proportion, the fabric being coated with a binder compatible with bitumen in an amount of at least 10% of the fabric weight and the binder being selected to be thermally stable at least up to 160° C. and to limit the moisture transport ability of at least the cellulose fibers.

4,617,230
LATEX CONTAINING ODOR INHIBITOR

Pravinchandra K. Shah, Sheffield Lake, and George J. Antlfinger, Avon Lake, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 702,862, Feb. 20, 1985, abandoned, which is a continuation of Ser. No. 565,689, Dec. 27, 1983, abandoned. This application Jan. 21, 1986, Ser. No. 820,050

Int. Cl.⁴ D04H *1/58*

U.S. Cl. 428—288 36 Claims

1. Sterilized nonwoven fabric that has a reduced odor on sterilization comprising nonwoven fibers bonded with a saturated latex prepared by free radical initiation comprising a preponderance of a soft hydrophobic monomer having Tg in the range of about −80° C. to −20° C., a lesser amount of a hard hydrophobic monomer having Tg in the range of about +40° C. to +120° C., a small amount of an unsaturated carboxylic acid, a small amount of N-alkylol acrylamide or methacrylamide, and a sufficient amount of an emulsifier, said latex having admixed therein about 0.01 to 5 weight parts per 100 weight parts of latex solids of an odor inhibition agent selected from amine-type antioxidants and hindered phenols that have the function of reducing the odor that is generated on sterilization of the nonwoven fabric.

4,617,231
ELECTROCONDUCTIVE FILM AND PROCESS FOR PRODUCTION THEREOF

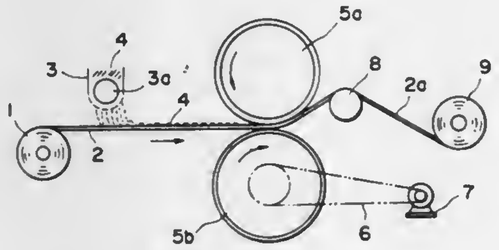
Akira Hamada; Hisao Takahashi, and Keiichi Ohira, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1985, Ser. No. 796,443

Claims priority, application Japan, Nov. 12, 1984, 59-236772

Int. Cl.⁴ B32B *5/06*

U.S. Cl. 428—297 14 Claims



1. An electroconductive film, comprising: a film of a thermoplastic resin, and an electroconductive fiber having an average diameter of 1 to 30 μm and an average length of 1 to 60 mm embedded in and substantially uniformly distributed over the extension of the thermoplastic resin film; said electroconductive film having a thickness of 20 to 200 μm, a specific gravity equal to or larger than that of the thermoplastic resin film, a surface resistivity of 10^0 to 10^5 Ω/□ on at least one surface thereof, a tear strength of 10 g or larger, and a transparency of 40% or above.

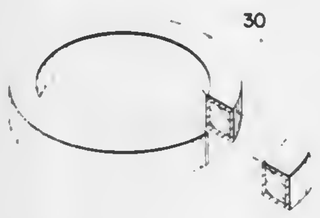
4,617,232
CORROSION AND WEAR RESISTANT GRAPHITE MATERIAL

Richard C. Chandler, Bedford Hts., and Lutfi H. Amra, Cleveland Hts., both of Ohio, assignors to Kennecott Corporation, Cleveland, Ohio

Filed Apr. 15, 1982, Ser. No. 368,700

Int. Cl.⁴ B32B *5/16, 9/00*

U.S. Cl. 428—328 4 Claims



1. An article for use in high temperature environments such as molten metal pumps, furnace liners, and the like, comprising:

(a) an internal composition consisting substantially of a carbonaceous material formed of molded or extruded graphite, particles of aluminum phosphate being distributed in the internal composition; and

(b) a surface composition highly resistant to oxidation and erosion consisting substantially of a layer of silicon carbide, particles of aluminum phosphate being distributed throughout the surface composition.

4,617,233
STRETCHED POLYETHYLENE FILAMENTS OF HIGH STRENGTH AND HIGH MODULUS, AND THEIR PRODUCTION

Toshihiko Ohta, Otsu; Fujio Okada, Shiga, and Kiyokazu Okumoto, Otsu, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed May 21, 1984, Ser. No. 612,240

Claims priority, application Japan, May 20, 1983, 58-89654

Int. Cl.⁴ D02G *3/00*

U.S. Cl. 428—364 2 Claims

1. Stretched polyethylene filaments of high strength and high modulus, characterized by being made of polyethylene of a weight average molecular weight of not less than 3×10^6, a strength of not less than 50 g/d, an initial modulus of not less than 1,500 g/d, and no observable long period spacing.

4,617,234
MAGNETIC RECORDING MEDIUM

Masashi Aonuma, and Yasuo Tamai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 20, 1984, Ser. No. 673,318

Claims priority, application Japan, Nov. 21, 1983, 58-219108

Int. Cl.⁴ G03C *7/24;* **G11B** *5/70;* **H01F** *10/02*

U.S. Cl. 428—328 12 Claims

1. An audio cassette tape magnetic recording medium used in the high position comprising a magnetic layer formed by applying a ferromagnetic metal powder together with a binder to a non-magnetic base, wherein said ferromagnetic metal powder has a saturation magnetization (σs) of 120 to 140 emu/g and a specific surface area measured by the BET method of 23 to 35 m^2/g, and said magnetic layer has a coercive force (Hc) of 670 to 770 oersteds (Oe) and a residual magnetic flux density (Br) of about 2000 to 3200 Gauss, wherein the ratio of the residual magnetic flux density to the coercive force is in a range of about 3 to 4.2.

4,617,235
ANTISTATIC SYNTHETIC FIBERS

Osami Shinonome; Takasi Ikeda; Yoshihiro Kanmuri, and Fumio Matuoka, all of Kyoto, Japan, assignors to Unitika Ltd., Hyogo, Japan

Filed May 23, 1984, Ser. No. 612,949

Claims priority, application Japan, May 23, 1983, 58-91223; Dec. 14, 1983, 58-236579

Int. Cl.⁴ D02G *3/00*

U.S. Cl. 428—374 9 Claims

1. Antistatic synthetic fibers composed of (A) a fiber-forming polyester and (B) a block copolyether ester synthesized from four components (i), (ii), (iii) and (iv), wherein component (i) is a poly alkylene oxide which is selected from the group consisting of polyethylene oxide, polypropylene oxide, polyethylene oxide-polypropylene oxide copolymer and ethylene oxide or propylene oxide adduct of a bisphenol compound; component (ii) is a dicarboxylic acid which is selected from the group consisting of adipic acid, sebacic acid, terephthalic acid, isophthalic acid and naphthalic acid; component (iii) is a diol which is selected from the group consisting of ethylene glycol, propylene glycol, diethylene glycol, 1,4-cyclohexanedimethanol and xylylene glycol; and component (iv) is 5-alkali metal sulfoisophthalic acid, the block copolyether ester (B) being incorporated in the polyester (A) substantially continuously along the fiber axis in the form of a plurality of spaced-apart bands, logitudinally intersecting the polyester (A) portion of the fibers, or a network formed of connecting fibrils of component (B).

4,617,236

ADDITIVES TO POLYESTER TIRE YARN OVERFINISH TO REDUCE DIP PENETRATION

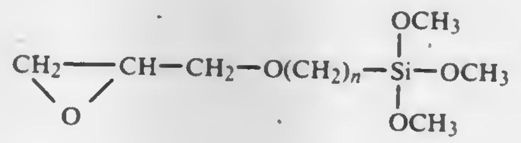
Robert M. Marshall, Chester, Va., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 21, 1985, Ser. No. 789,879

Int. Cl.⁴ B32B *25/00;* **D06M** *13/52*

U.S. Cl. 428—391 **17 Claims**

1. In a finish composition for polyester continuous filament yarn to be processed into tire cord, said composition comprising an aqueous emulsion of a lubricant selected from the group consisting of hexadecyl stearate, butyl stearate, natural or modified glycerides, and mineral oil; glycerol monooleate; decaglycerol tetraoleate; polyoxyethylene tall oil fatty acid; sulfonated glycerol trioleate; polyoxyethylene tallow amine; and 0–30 parts by weight of the non-aqueous portion of the emulsion of a silane having the structural formula



wherein n=2 to 5;

the improvement wherein said aqueous emulsion additionally comprises dispersed therein paraffin wax in an amount sufficient to impart reduced resorcinol-formaldehyde-latex wicking to said tire cord.

4,617,237

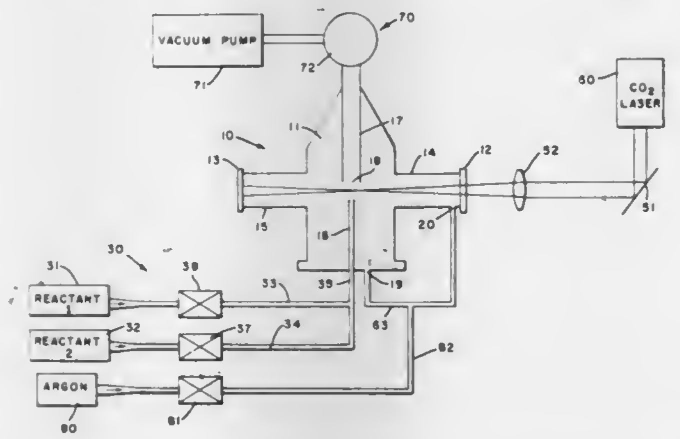
PRODUCTION OF CONDUCTIVE METAL SILICIDE FILMS FROM ULTRAFINE POWDERS

Arunava Gupta, Madison; Gary A. West, Dover, and James T. Yardley, Morristown, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 14, 1984, Ser. No. 609,628

Int. Cl.⁴ B05D *3/06, 5/12;* **B32B** *9/04, 19/00*

U.S. Cl. 428—446 **19 Claims**



18. The coated article comprising a substrate and a conductive film, said conductive film comprising polycrystalline metal silicide and free silicon in the range of about 5 to about 50 weight percent of said film and having a resistivity of less than about 100 μΩ-cm.

4,617,238

VINYLOXY-FUNCTIONAL ORGANOPOLYSILOXANE COMPOSITIONS

James V. Crivello, Saratoga, and Richard P. Eckberg, Roundlake, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 364,303, Apr. 1, 1982, abandoned. This application Aug. 7, 1985, Ser. No. 763,758

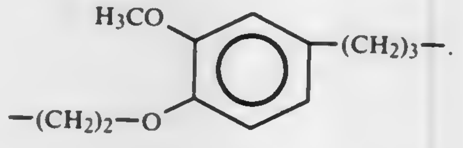
Int. Cl.⁴ B32B *9/06*

U.S. Cl. 428—452 **40 Claims**

1. An organopolysiloxane having at least 1 Si-bonded vinyloxy functional group of the formula:

$$H_2C+CH-O-G-$$

wherein G has the formula:



4,617,239

PAPER COATING AGENT

Hitoshi Maruyama; Koichi Kajitani, and Makoto Shiraishi, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Division of Ser. No. 429,231, Sep. 30, 1982, abandoned. This application Aug. 30, 1984, Ser. No. 645,708

Claims priority, application Japan, Oct. 5, 1981, 56-158974; Oct. 7, 1981, 56-160658; Mar. 23, 1982, 57-46676

Int. Cl.⁴ B32B *9/06*

U.S. Cl. 428—452 **14 Claims**

1. A method of coating paper to improve the surface strength and printability of the paper, comprising applying an effective amount of a silicon-containing modified polyvinyl alcohol to said paper in the form of an alkaline aqueous solution, wherein the silicon-containing modified polyvinyl alcohol is a water soluble product obtained by an alcoholysis of a copolymer of a vinyl ester and an olefinic unsaturated monomer containing silicon in the molecule.

4,617,240

COEXTRUDED FILM OF POLYPROPYLENE, POLYPROPYLENE BLEND, AND NYLON

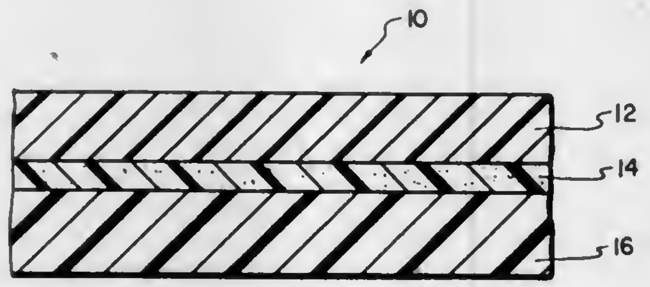
Duane A. Krueger, Neenah, and Thomas W. Odorzynski, Green Bay, both of Wis., assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 417,674, Sep. 13, 1982. This application Jul. 30, 1984, Ser. No. 635,631

The portion of the term of this patent subsequent to Sep. 30, 1999, has been disclaimed.

Int. Cl.⁴ B32B *27/34*

U.S. Cl. 428—476.1 **8 Claims**



1. A coextruded multiple layer plastic film, comprising:

(a) a layer of polypropylene;

(b) a layer of nylon; and

(c) between said nylon and polypropylene layers, a layer of a functionally adhesive blend of a copolymer of maleic anhydride grafted onto a polypropylene backbone and an ungrafted polypropylene, said graft copolymer containing from about 0.1% to 2.5% maleic anhydride based on the total weight of the graft copolymer, said graft copolymer comprising between about 5% and 30% by weight of the blend, and said ungrafted polypropylene comprising between about 70% to 95% by weight of the blend.

4,617,241

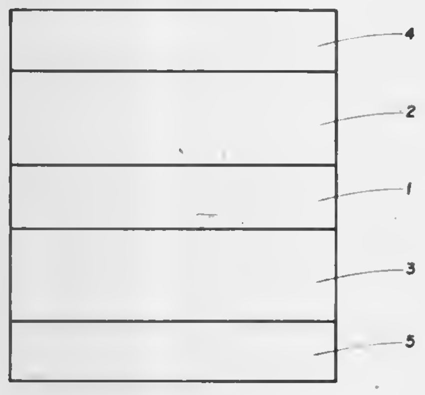
LINEAR POLYETHYLENE STRETCH/SHRINK FILMS

Walter B. Mueller, Inman, S.C., assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Filed Jan. 23, 1984, Ser. No. 573,077

Int. Cl.⁴ B32B *27/08*

U.S. Cl. 428—520 **6 Claims**



1. In a multilayer, thermoplastic packaging film having a layer of ethylene-vinyl acetate copolymer and a layer of linear low density polyethylene, the improvement wherein:

(a) said film comprises at least five layers;

(b) the material of the central or core layer is selected from the group consisting of:

(1) ethylene-vinyl acetate copolymers, and

(2) blends of ethylene-vinyl acetate copolymer with linear low density polyethylene;

(c) intermediate layers adjacent each side of the core layer, said intermediate layers consisting essentially a linear low density polyethylene;

(d) two surface layers consisting essentially of a copolymer of ethylene-vinyl-acetate;

(e) said film having a shrink tension at 205° F. in the transverse and longitudinal directions of approximately 400 p.s.i. or greater; and,

(f) said film having an elongation at break at 73° F. in both transverse and longitudinal directions of at least approximately 200%.

4,617,242

ORGANIC SILICONATE ADDITIVE FOR ALKALINE ZINC ELECTROCHEMICAL CELLS

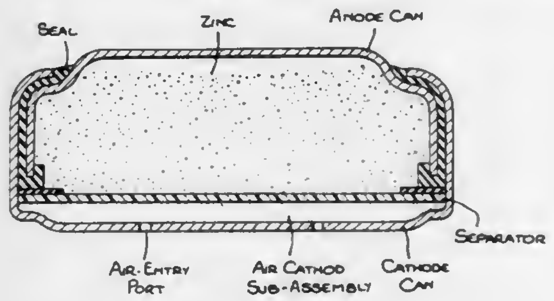
Robert B. Dopp, Madison, Wis., assignor to Rayovac Corporation, Madison, Wis.

Continuation of Ser. No. 543,429, Oct. 19, 1983, abandoned. This application Apr. 8, 1985, Ser. No. 721,136

Int. Cl.⁴ H01M *4/00*

U.S. Cl. 429—27 **27 Claims**

1. An alkaline electrochemical comprising an air cathode sub-assembly, with a means for supplying air to said cathode sub-assembly, a zinc anode an organic siliconate in contact with said anode, an electrolyte in contact with the zinc anode and a non-metallic separator between the cathode and the anode.



4,617,243

ELECTROCHEMICAL BATTERY

Takashi Nogami, Toyonaka, and Masayoshi Nawa, Minoo, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Jul. 12, 1982, Ser. No. 397,238

Claims priority, application Japan, Aug. 27, 1981, 56-134690

Int. Cl.⁴ H01M *6/14*

U.S. Cl. 429—194 **5 Claims**

1. An electrochemical cell capable of generating an electromotive force, comprising:

a cathode-type electrode;

an anode-type electrode; and

an organic solvent;

wherein said cathode-type electrode comprises a first activated elemental carbon part doped with a cationic electrolyte species, and said anode-type electrode comprises a second activated elemental carbon part doped with an anionic electrolyte species; said first and second carbon part having a specific surface area of 100–2,500 m^2/g; whereby by immersing said electrodes in the solvent, said dopants are dissolved out of said solvent.

4,617,244

ADDITIVE FOR ELECTROLYTE OF LEAD-ACID BATTERIES

Roland M. Greene, 3575 S. Main, Nibley, Utah 84321

Filed Jun. 24, 1985, Ser. No. 747,927

Int. Cl.⁴ H01M *6/04*

U.S. Cl. 429—203 **9 Claims**

1. A lead-acid storage battery containing as an electrolyte for each cell, an aqueous sulfuric acid solution containing an activating amount of an additive comprising a mixture of an iron chelate and a magnesium salt or chelate, the chelates for the iron and magnesium being formed from chelating agents which form 4 to 6 membered rings with the iron and magnesium and which contain a member of the group consisting of amine groups, phenol groups and aldehyde groups.

4,617,245

LIGHT RECEIVING MEMBER HAVING TAPERED REFLECTIVE SURFACES BETWEEN SUBSTRATE AND LIGHT RECEIVING LAYER

Shigemori Tanaka; Fumio Sumino; Keiji Kubo, all of Tokyo; Masafumi Hisamura; Hitoshi Toma, both of Kawasaki, and Naoto Fujimura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1985, Ser. No. 697,141

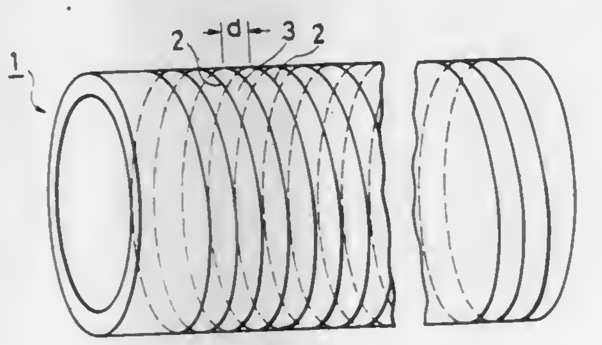
Claims priority, application Japan, Feb. 9, 1984, 59-22674

Int. Cl.⁴ G03G *15/00, 15/04*

U.S. Cl. 430—58 **37 Claims**

1. A light receiving member for image formation with incident light of wavelength λ provided with a coating layer containing a light receiving layer on a metallic cylindrical substrate, which comprises the coating layer having a regu-

larly changed thickness within the minute width of the coating layer, said substrate having tapered reflective surfaces of a



height of at least λ/2 formed vertically to the longitudinal direction of the metallic cylinder and said regularly changed thickness being formed by said tapered reflective surfaces.

4,617,246
PHOTOCONDUCTIVE MEMBER OF A GE-SI LAYER AND SI LAYER

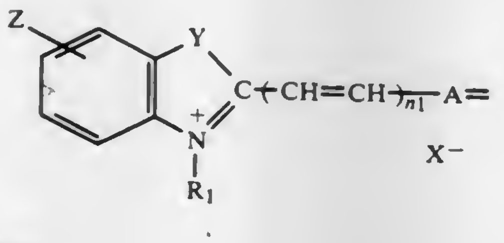
Kozo Arao, Yokohama, and Keishi Saitoh, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 31, 1983, Ser. No. 547,241
Claims priority, application Japan, Nov. 4, 1982, 57-194360; Nov. 5, 1982, 57-194354; Nov. 6, 1982, 57-195059; Nov. 8, 1982, 57-196398
Int. Cl.^{4} G03G *5/082*
U.S. Cl. 430—65 **40 Claims**

1. A photoconductive member comprising a support for photoconductive member and light receiving layer, said light receiving layer comprising a first layer region comprising an amorphous material containing $Ge_x\ Si_{1-x}$ $(0.95 < x \leqq 1)$ and atoms of at least one of hydrogen or halogen, and a second layer region exhibiting photoconductivity comprising an amorphous silicon material containing atoms of at least one of hydrogen or halogen; said two layer regions being provided in succession from the support side.

4,617,247
IMPROVED SENSITIZER DYES FOR POLYVINYLCARBAZOLE ELECTROPHOTOGRAPHIC COMPOSITIONS

Kiyosuke Suzuki, Saitama; Toshiaki Fukuma, Tokyo, and Tatsuru Sato, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan
PCT No. PCT/JP84/00256, § 371 Date Jan. 10, 1985, § 102(e) Date Jan. 10, 1985, PCT Pub. No. WO84/04825, PCT Pub. Date Dec. 6, 1984
PCT Filed May 21, 1984, Ser. No. 697,580
Claims priority, application Japan, May 24, 1983, 58-90963
Int. Cl.^{4} G03G *5/06*
U.S. Cl. 430—81 **16 Claims**

1. A photosensitive material for electrophotography comprising polyvinylcarbazole or a derivative thereof and a sensitizing dye, wherein said sensitizing dye is represented by the general formula



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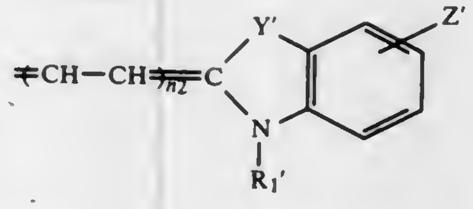
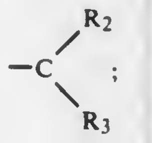
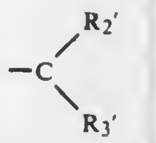


wherein Y represents S or

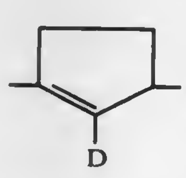


;

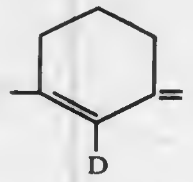
Y' represents S or



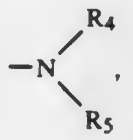
(wherein R_2, R_3, R_2' and R_3' each represents an alkyl group; said R_2 and R_3 together and said R_2' and R_3' together may form a ring); Z and Z' each represents a halogen atom, a nitro group, a cyano group, or an alkylsulfonyl group; R_1 and R_1' each represents a substituted or unsubstituted alkyl group; A is selected from —CH=CH—CH=,



, and



(wherein D represents a halogen atom or



,

wherein R_4 and R_5 each represents a substituted or unsubstituted alkyl or phenyl group); n_1 and n_2 each represents 0 or a natural number and $n_1 + n_2 \geqq 2$; and X^- represents an anion.

4,617,248
DOPED PHOTOCONDUCTIVE FILM INCLUDING SELENIUM AND TELLURIUM

Kenkichi Tanioka, Tokyo; Keiichi Shidara, Tama; Takao Kuriyama, Sagamihara; Yukio Takasaki, Kawasaki; Tadaaki Hirai, Koganei; Yasuhiko Nonaka, and Eisuke Inoue, both of Mobara, all of Japan, assignors to Nippon Hoso Kyokai and Hitachi, Ltd., both of Tokyo, Japan
Filed May 20, 1985, Ser. No. 736,149
Claims priority, application Japan, May 21, 1984, 59-100535
Int. Cl.^{4} G03G *5/08, 5/09*
U.S. Cl. 430—95 **13 Claims**

1. A photoconductive film mainly consisting of Se and sensitized by adding tellurium into a portion in the direction of thickness of the photoconductive film so as to form a Te-doped region, in which at least one selected from a group consisting of such oxides and fluorides that form negative space charges in selenium and such elements that belong to the group II, III or VII and form negative space charges in selenium is contained in either of at least a portion of the Te-doped region and at least a portion of the region adjacent to said Te-doped region, or in both of said portions, at an average weight % concentration of not smaller than 10 ppm and not larger than 1%, wherein a film thickness where such dopant that forms negative space charges in selenium is contained is selected to be not smaller than 20 Å and not larger than 90 Å.

4,617,249
DISPERSION POLYMERIZATION PROCESS FOR TONER COMPOSITIONS

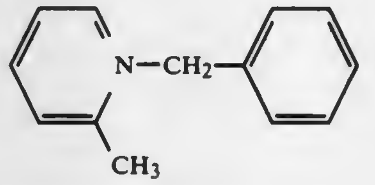
Christopher K. Ober, Oakville, and Kar P. Lok, Sarnia, both of Canada, assignors to Xerox Corporation, Stamford, Conn.
Filed Jul. 16, 1985, Ser. No. 755,391
Int. Cl.^{4} G03G *11/00, 9/08*
U.S. Cl. 430—137 **12 Claims**

1. An improved dispersion polymerization process for the preparation of polymer particles consisting essentially of (1) providing a solvent medium having dispersed therein steric stabilizers selected from the group consisting of hydroxy celluloses, poly(acrylic acid), poly(vinyl butyral), poly(vinyl pyridines), poly(vinyl pyrrolidone), and their copolymers, monomers, and initiator compounds; (2) subsequently adding thereto a crosslinking compound; (3) affecting polymerization of the resulting mixture by heating; and (4) thereafter separating the particles formed of a diameter of from about 5 to about 20 microns.

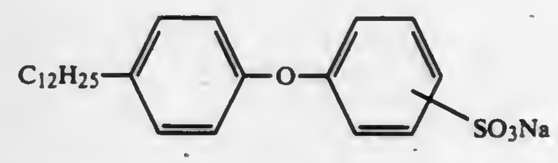
4,617,250
LIGHT-SENSITIVE DIAZO COMPOSITION WITH ACIDIC COMPOUNDS FOR USE WITH LITHOGRAPHIC PRINTING PLATES

Eiji Nakakita; Akinobu Koike; Toshiyuki Sekiya; Hiroshi Misu, and Nobuyuki Kita, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jun. 1, 1984, Ser. No. 616,040
Claims priority, application Japan, Jun. 1, 1983, 58-98684
Int. Cl.^{4} G03C *1/60, 1/54;* **G03F** *7/08*
U.S. Cl. 430—175 **4 Claims**

1. A lithographic printing plate comprising a light-sensitive composition on an aluminum support which has been pretreated to render its surface hydrophilic, wherein said light-sensitive composition comprises in admixture (1) a light-sensitive, organic solvent soluble and substantially water-insoluble diazo resin which is the reaction product of a water-soluble, light-sensitive condensate of an aromatic diazonium compound and a organic condensing agent with a halogenated Lewis acid or a salt thereof, (2) a substantially water-insoluble, film-forming organic high-molecular weight compound having an acid value of from 10 to 200, (3) a polynuclear aromatic sulfonic acid or a salt thereof, and (4) a salt-forming organic dye compound, wherein the amount of diazo resin ranges from 3 to 30 wt % and the amount of the high-molecular weight compound ranges from 97 to 70 wt %, based on the combined total weight thereof, wherein the amount of polynuclear aromatic sulfonic acid or a salt thereof ranges from 7 to 40 wt % based on the weight of the diazo resin, wherein the salt-forming organic dye compound is incorporated in the light-sensitive layer in an amount of from 5 to 100 wt % based on the weight of the diazo resin and wherein said polynuclear aromatic sulfonic acid or a salt thereof is selected from the group consisting of sodium t-butyl-naphthalenesulfonate, anthraquinone-2-sulfonic acid, sodium isopropylnaphthalenesulfonate,



salt of t-butylnaphthalene-sulfonic acid, 2-methoxy-4-hydroxy-5-benzoylbenzene sulfonate of ethyl violet, sodium anthraquinone-2-sulfonate,



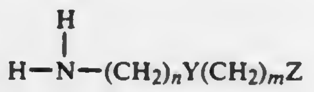
or arthraquinone-2-sulfonate salt of ethyl violet.

4,617,251
STRIPPING COMPOSITION AND METHOD OF USING THE SAME

Joseph J. Sizensky, Seekonk, Mass., assignor to Olin Hunt Specialty Products, Inc., Palisades Park, N.J.
Filed Apr. 11, 1985, Ser. No. 721,965
Int. Cl.^{4} C11D *7/32, 7/52;* **C23D** *17/00;* **G03C** *17/00*
U.S. Cl. 430—256 **11 Claims**

1. A method for removing a positive resist from a substrate, wherein said positive resist contains a novolak resin and a diazo ketone sensitizer and has been post-baked at a temperature of at least about 150°, comprising contacting said positive resist with a non-aqueous stripping composition which is essentially free of phenol compounds and halogenated hydrocarbon compounds and consisting essentially of:

(a) from about 2 percent to about 98 percent by weight of an amine compound selected from the group consisting of compounds having the formula:



$$H-\overset{\displaystyle H}{\overset{|}{N}}-(CH_2)_nY(CH_2)_mZ$$

wherein n and m are each independently an integer ranging from 1–5, inclusive; Y is either —O— or —NH—; and Z is —H, —OH or $—NH_2$; and mixtures thereof; and

(b) from about 98 to about 2 percent by weight of an organic polar solvent selected from the group consisting of N-methyl-2-pyrrolidinone, tetrahydrofurfuryl alcohol, isophorone, dimethyl sulfoxide, dimethyl adipate, dimethyl glutarate, sulfolane, γ-butyrolactone, N,N,-dimethylacetamide and mixtures thereof.

4,617,252
ANTIREFLECTIVE COATINGS FOR USE IN THE MANUFACTURE OF SEMI-CONDUCTOR DEVICES, METHODS AND SOLUTIONS FOR MAKING SUCH COATINGS, AND THE METHOD FOR USING SUCH COATINGS TO ABSORB LIGHT IN ULTRAVIOLET PHOTOLITHOGRAPHY PROCESSES

William F. Cordes, III, East Greenwich, and Alfred T. Jeffries, III, Providence, both of R.I., assignors to Philip A. Hunt Chemical Corporation, Palisades Park, N.J.
Continuation-in-part of Ser. No. 510,212, Jul. 1, 1983, abandoned. This application Jun. 12, 1984, Ser. No. 619,737
Int. Cl.^{4} G03C *1/84;* **G03F** *7/26*
U.S. Cl. 430—272 **11 Claims**

1. A method of reducing reflections during the exposure of a photoresist layer in a semi-conductor device comprising:

(a) applying an antireflective layer comprising a polyphenylquinoxaline and having a thickness of less than about 1.0 micron to a semi-conductor device comprising a silicon wafer having at least one semi-conductor element and a layer of a non-conductor on one of its surfaces;

(b) applying on top of the antireflective layer a photoresist layer comprising a material whose solubility characteristics in certain solvents is affected by exposure to ultraviolet radiation having a wavelength of from about 500 to about 350 nm, to obtain a semi-conductor device carrying an antireflective layer underneath a photoresist layer;

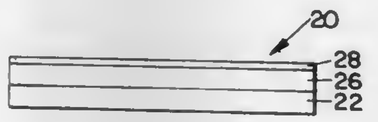
(c) selectively exposing a portion of the photoresist layer to ultraviolet light having a wavelength of from about 500 to about 350 nm, whereby at least a portion of the ultraviolet

light passes through the photoresist layer into the antireflective layer and is absorbed by the antireflective layer;
(d) developing the photoresist layer to remove a portion of the photoresist layer from the semi-conductor device and to uncover a portion of the polyphenylquinoxaline layer underlying the photoresist layer;
(e) removing the portion of the polyphenylquinoxaline layer left uncovered in step (d) to uncover a portion of the layer underlying the polyphenylquinoxaline layer;
(f) removing the portion of the layer underlying the polyphenylquinoxaline layer left uncovered in step (e); and
(g) removing the portion of the photoresist and polyphenylquinoxaline layers left remaining after step (f) above.

4,617,253
POLYMERIC PYRIDINIUM YLIDES AND PRODUCTS PREPARED FROM SAME

Lloyd D. Taylor, Lexington, Mass., and Michael K. Haubs, Bad Kreuznach, Fed. Rep. of Germany, assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 6, 1984, Ser. No. 617,726
Int. Cl.⁴ G03C *5/16;* B05D *3/06*
U.S. Cl. 430—323 **15 Claims**



1. A method for preparing an article carrying a layer of water-insoluble or hydrophobic protective polymer which comprises subjecting to actinic radiation, an article comprising a support carrying a layer of photosensitive polymeric pyridinium ylide, said article having between said support and said photosensitive polymeric pyridinium ylide, a layer of material etchable by physical or chemical means, said actinic radiation being sufficient to convert said polymeric ylide to a water-insoluble or hydrophobic N-acyl-diazepine protective polymer.

4. A method for forming a photoresist which comprises the steps of: selectively exposing to actinic radiation, a photosensitive article comprising a support carrying a layer of metal, and having over said metallic layer, a layer of photosensitive polymeric ylide, said selective exposure being effected by exposing predetermined areas of said photosensitive layer to said actinic radiation while shielding other predetermined areas of said photosensitive layer from exposure to said actinic radiation, said actinic radiation being sufficient to convert said photosensitive polymeric ylide in said areas of exposure to a water-insoluble or hydrophobic N-acyl-diazepine protective polymer; and removing said photosensitive polymeric ylide from said areas of non-exposure.

4,617,254
PROCESS FOR FORMING DETAILED IMAGES

Akihiro Kinoshita, Munakata; Yohichi Namariyama, Koga, and Hiromi Higashi, Zushi, all of Japan, assignors to Chisso Corporation, Ohsaka, Japan

Continuation of Ser. No. 548,626, Nov. 4, 1983, abandoned. This application Apr. 16, 1985, Ser. No. 723,009
Claims priority, application Japan, Nov. 4, 1982, 57-193642
Int. Cl.⁴ G03C *5/00*
U.S. Cl. 430—326 **20 Claims**

1. A process for forming detailed positive type images which comprises:
providing a base;
applying a resist solution to the base, said resist solution comprising an organic solvent and 1–15% by weight of at least one of a homopolymer of methyl vinyl ketone and a copolymer thereof with a comonomer selected from the group consisting of: vinyl acetate, acrylonitrile, styrene, α-methylstyrene, vinyltoluene, chlorostyrene, bromostyrene, nitrostyrene, cyanostyrene, methyl methacrylate, ethyl methacrylate, butyl methacrylate, ethyl acrylate and octyl acrylate, wherein the proportion of methyl vinyl ketone in the copolymer is at least 10% by mol, to form a coating on the base;
imagewise irradiating the coating with far-ultraviolet light; developing the resulting coating with a liquid solvent as a developer, said liquid selected from the group consisting of at least one cellosolve compound and at least one cellosolve compound mixed with a lower alcohol wherein the cellosolve compound is expressed by the formula

$R^4—O—CH_2CH_2OH$

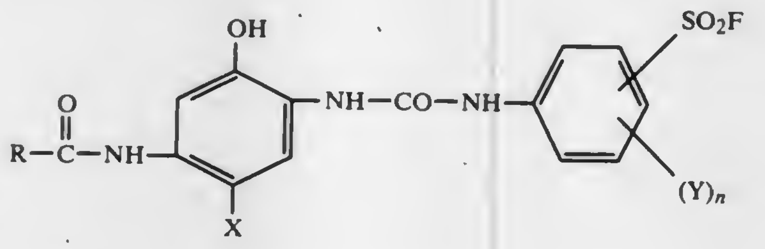
wherein
R^4 represents an alkyl group of 1 to 4 carbon atoms; and at leasst one of rinsing and washing the base after the developing.

4,617,255
COLOR COUPLER-CONTAINING PHOTOGRAPHIC MATERIAL

Erich Wolff, Solingen; Hans Langen, Bonn, and Rudolf Braden, Odenthal, all of Fed. Rep. of Germany, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 18, 1985, Ser. No. 798,911
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1984, 3443700
Int. Cl.⁴ G03C *1/40*
U.S. Cl. 430—553 **2 Claims**

1. Light-sensitive colour photographic recording material having at least one silver halide emulsion layer and, associated therewith, a non-diffusing phenolic cyan coupler having a 2-phenylureide group, characterised in that the cyan coupler has the following formula:



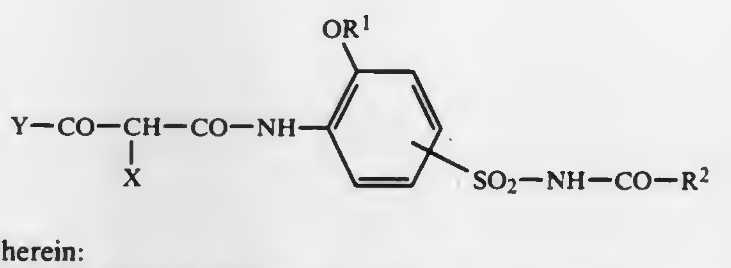
wherein:
R = a ballast group;
X = H or a leaving group which may be separated during colour coupling;
Y = halogen, alkyl, alkoxy, aryl or alkylthio;
n = 0 – 2; if n = 2, the radicals Y may be the same or different.

4,617,256
COLOR PHOTOGRAPHIC COLOR COUPLER-CONTAINING RECORDING MATERIAL

Friedrich-Wilhelm Kunitz, Leverkusen, and Karl-Wilhelm Schranz, Odenthal-Hahnenberg, both of Fed. Rep. of Germany, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 4, 1985, Ser. No. 794,705
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1984, 3441525
Int. Cl.⁴ G03C *1/40*
U.S. Cl. 430—557 **4 Claims**

1. A colour photographic recording material with at least one photosensitive silver halide emulsion layer and a non-diffusing α-acylacetanilide yellow coupler associated therewith the anilide group of which is substituted by an N-acylsulphamoyl group, characterised in that the yellow coupler corresponds to the following formula:



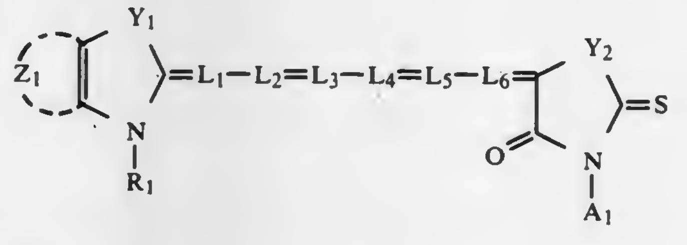
wherein:
Y represents an aliphatic or cycloaliphatic radical;
X represents a hydrogen atom or a group which can be split off during colour coupling;
R^1 represents an alkyl radical having from 12 to 20 carbon atoms; and
R^2 represents an alkyl radical having from 1 to 4 carbon atoms.

4,617,257
HEAT DEVELOPABLE LIGHT-SENSITIVE MATERIAL

Satoru Sawada, and Toshinao Ukai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

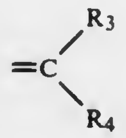
Filed Mar. 19, 1985, Ser. No. 713,721
Claims priority, application Japan, Mar. 19, 1984, 59-52774
Int. Cl.⁴ G03C *1/02*
U.S. Cl. 430—560 **7 Claims**

1. A heat developable light-sensitive material which is sufficiently stable to be stored for a long time at a predetermined sensitivity, comprising a light-sensitive silver halide spectrally sensitized with a dye represented by formula (I) or (II):



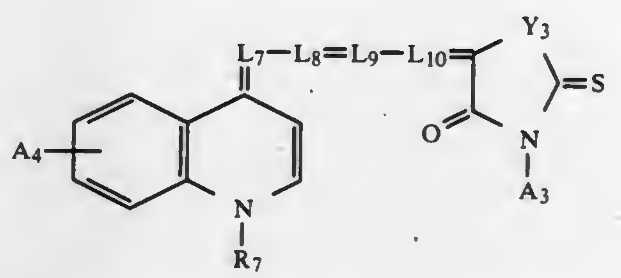
(I)

wherein
R_1 represents an alkyl group or a substituted alkyl group,
A_1 represents an alkyl group, a substituted alkyl group, a phenyl group, a substituted phenyl group, a pyridyl group, or a substituted pyridyl group,
Y_1 represents an oxygen atom, a sulfur atom, a selenium atom,



$$=C\begin{matrix}\diagup R_3\\ \diagdown R_4\end{matrix}$$

(wherein R_3 and R_4 each represents a methyl group or an ethyl group), $=N—R_5$ (wherein R_5 represents an alkyl group or a substituted alkyl group containing not more than 5 carbon atoms, or an allyl group), or $—CH{=}CH—$,
Y_2 represents an oxygen atom, a sulfur atom, or $=N—A_2$, (wherein A_2 represents an alkyl or substituted alkyl group containing not more than 5 carbon atoms, an allyl group, a phenyl group, a substituted phenyl group, a pyridyl group, or a substituted pyridyl group),
Z_1 represents atoms forming an unsubstituted or substituted benzene or naphthalene ring; and
L_1 through L_6 each represents a methine or substituted methine group, wherein L_2 and L_4 or L_4 and L_6 can bonded to each other to form a 5- or 6-membered ring;



(II)

wherein
Y_3, R_7, and A_3 represent the same atoms or groups as defined for Y_2, R_1, and A_1, respectively;
A_4 represents an alkyl group containing from 1 to 4 carbon atoms, a halogen atom, a phenyl group, a hydroxyl group, an alkoxy group containing from 1 to 4 carbon atoms, a carboxyl group, an alkoxycarbonyl group, an alkylsulfamoyl group, an alkylcarbamoyl group, an acyl group, a cyano group, a trifluoromethyl group, or a nitro group; and
L_7 through L_{10} each represents a methine or substituted methine group, wherein the substituent is an alkyl group, a substituted alkyl group, an aryl group, or an alkoxy group, wherein said material further comprises at least one of a compound being capable of releasing a mobile dye corresponding to or inversely corresponding to the reduction of silver halide to silver at elevated temperatures and an alkali or alkali precursor.

4,617,258
SILVER HALIDE PHOTOGRAPHIC MATERIAL

Hiroshi Menjo, Hachioji; Nobuo Sakamoto, Tsukui, and Yoshikazu Watanabe, Akishima, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 710,524, Mar. 12, 1985, abandoned, which is a continuation of Ser. No. 480,666, Mar. 31, 1983, abandoned. This application Mar. 25, 1986, Ser. No. 843,824
Claims priority, application Japan, Apr. 9, 1982, 57-59904
Int. Cl.⁴ G03C *1/06, 1/34*
U.S. Cl. 430—566 **12 Claims**

1. A silver halide photographic material containing 40–500 mg. per 100 g of silver, of a water-soluble compound comprising a metal selected from ruthenium, rhodium, palladium, osmium, iridium, and platinum and having a molecular weight of at least 100; and 1.2 to 120 mg of a black-and-white silver halide developing agent per 100 g of silver.

4,617,259
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Tadashi Ogawa; Satoshi Nagaoka, and Yuichi Ohashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 26, 1985, Ser. No. 780,497
Claims priority, application Japan, Sep. 26, 1984, 59-200997
Int. Cl.⁴ G03C *1/02, 1/06, 1/08, 1/46*
U.S. Cl. 430—569 **9 Claims**

1. A silver halide color photographic material comprising a support having coated thereon at least one silver halide emulsion layer containing a group of silver halide grains having a relation that the larger an amount of silver of a grain is, the larger an amount of a content of silver iodide therein is, at a correlative coefficient of not less than 0.7 between a silver halide crystal grain size and a silver iodide content therein.

4,617,260
RIA ASSAY FOR HBCAG

William J. McAleer, Ambler, and William J. Miller, North Wales, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 27, 1981, Ser. No. 238,780
Int. Cl.⁴ G01N *53/00, 33/545;* **C12Q** *1/70*
U.S. Cl. 435—5 **8 Claims**

1. A method for detecting HBcAg in a biological fluid which comprises:

contacting a plasma fraction having an amount of antibody which binds to HBcAg sufficient to permit detection of HBcAg in a biological fluid by immunoradiometric assay but having no detectible HBsAg with a suitable support under conditions sufficient to coat said support with said plasma fraction contacting said HBsAg-free plasma-fraction-coated support with a proteinaceous material under conditions such that substantially all areas of the support not coated with said HBsAg-free plasma fraction are coated with said proteinaceous material to minimize non-specific adsorption incubating said coated support with the biological fluid under conditions such that any HBcAg in said biological fluid binds to said support washing said coated support incubating said washed coated support with a radiolabelled plasma fraction, having an amount of antibody which binds to HBcAg sufficient to permit detection of HBcAg in a biological fluid by immunoradiometric assay but having no detectible HBsAg under conditions such that the radiolabelled plasma fraction binds to the washed support and measuring the radioactivity bound to the support.

4,617,261
PROCESS FOR LABELING NUCLEIC ACIDS AND HYBRIDIZATION PROBES

Edward L. Sheldon, III; Corey H. Levenson, both of Oakland; Kary B. Mullis, Kensington; Henry Rapoport, and Robert M. Watson, both of Berkeley, all of Calif., assignors to Cetus Corporation, Emeryville, Calif.

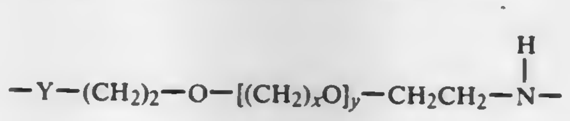
Continuation-in-part of Ser. No. 683,263, Dec. 18, 1984, which is a continuation-in-part of Ser. No. 591,811, Mar. 21, 1984. This application Oct. 25, 1985, Ser. No. 791,332
Int. Cl.⁴ C12Q *1/68;* **G01N** *33/48*
U.S. Cl. 435—6 **33 Claims**

1. A process for labeling a partially double-stranded nucleic acid which comprises the steps of:

(a) contacting the nucleic acid with one or more labeling compositions of the formula:

$[A—[B—L$

wherein A is an alkylating intercalation moiety, B is a divalent organic moiety having the formula:



$$—Y—(CH_2)_2—O—[(CH_2)_xO]_y—CH_2CH_2—\overset{\displaystyle H}{\overset{|}{N}}—$$

where Y is O, NH or N—CHO, x is a number from 1 to 4 and y is a number from 2 to 4, and L is a monovalent label moiety, wherein B is exclusive of any portion of the intercalation and label moieties, said contacting occurring so as to cause the alkylating intercalation moiety of the labeling composition to intercalate into the nucleic acid to form a complex; and

(b) activating the complex so as to induce the alkylating intercalation moiety to bond covalenty to at least one of the nucleic acid strands.

4,617,262
ASSAYING FOR CIRCULATING IMMUNE COMPLEXES WITH LABELED PROTEIN A

Peter E. Maxim, Downingtown, and Robert W. Veltri, West Chester, both of Pa., assignors to CooperBiomedical, Inc., Palo Alto, Calif.

Filed Jul. 22, 1983, Ser. No. 516,465
Int. Cl.⁴ G01N *33/53, 33/535, 33/539*
U.S. Cl. 435—7 **21 Claims**

1. A method for assaying circulating immune complexes in mammalian serum which comprises

(a) contacting said circulating immune complexes in solution in said serum with a staphylococcal protein-A(SPA) linked to a detectable label, whereby a CIC-protein-A-label complex is formed,

(b) selectively precipitating said CIC-SPA-label complex by contacting the complex with polyethylene glycol,

(c) separating said precipitated CIC-SPA-label complex from said serum,

(d) measuring the quantity of said label present in said precipitate, and

(e) comparing the measured quantity of the label with at least one standard prepared by subjecting a solution containing a known amount of CIC or functional equivalent material to the same assay.

4,617,263
METHOD FOR QUANTITATIVE DETERMINATION OF ACETYLPUTRESCINE IN A MIXTURE

Hideaki Yamada, Kyoto; Shogo Otsuji, Kagoshima; Kimiyasu Isobe, Konan; Kuniyoshi Matsunaga, Ichinomiya, and Tadahiko Inukai, Nagoya, all of Japan, assignors to Amano Seiyaku Kabushiki Kaisha, Achi, Japan

Division of Ser. No. 495,677, May 18, 1983, Pat. No. 4,550,078. This application Sep. 13, 1985, Ser. No. 776,162
Claims priority, application Japan, Sep. 14, 1982, 57-158848
Int. Cl.⁴ C12Q *1/26*
U.S. Cl. 435—25 **1 Claim**

1. A method for the quantitative determination of acetylputrescine in an aqueous mixture which comprises:

(a) subjecting the aqueous mixture to an enzymatic oxidative decomposition reaction with acetylputrescine oxidase to form hydrogen peroxide as a byproduct, and

(b) determining the amount of the hydrogen peroxide.

4,617,264
PRETREATMENT METHOD AND COMPOSITION

Gordon R. Whiteley, Palo Alto; Cynthia G. Pritchard, Mountain View, and Sharon S. Barrett, East Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Nov. 4, 1983, Ser. No. 549,522
Int. Cl.⁴ C12Q *1/04*
U.S. Cl. 435—34 **22 Claims**

1. A method for pretreating an organism suspected of being a material of interest in a specimen prior to performing an assay for a determination thereof, which comprises contacting a speciment suspected of containing an organism in an aqueous medium with a composition comprising (a) an enzyme capable of hydrolyzing bonds between N-acetylglucosamine an N-acetylmuramic acid and (b) a chelating agent for magnesium, in an amount and under conditions sufficient to produce a homogeneous suspension of the organism in the aqueous medium but insufficient to produce lysed cells or spheroplasts.

4,617,265
COLONY BLOT ASSAY FOR ENTEROTOXIGENIC BACTERIA

Johnny W. Peterson, Dickinson, Tex., assignor to Board of Regents, University of Texas System, Austin, Tex.

Filed Sep. 19, 1984, Ser. No. 652,369
Int. Cl.⁴ C12Q *1/10;* **G01N** *53/00*
U.S. Cl. 435—38 **16 Claims**

1. A process for detecting enterotoxigenic *Escherichia coli* which produces a toxin having cross-reactivity with antibody for *Vibrio cholerae* toxin in a biological sample comprising:

obtaining a biological sample;

inoculating a sterile plate comprising nutrient medium and agar with a portion of said biological sample;

incubating the inoculated plate to facilitate growth of bacterial colonies thereupon;

overlaying the bacterial colony-containing plate with a soft agar layer comprising bacterial lysing agents to produce overlaid lysed bacterial colonies;

contacting the soft agar layer with a removable sheet comprising a bound first animal antibody for cholera toxin;

removing and washing said sheet;

exposing said washed sheet to a second animal antibody for cholera toxin;

washing said exposed sheet

treating said washed exposed sheet with a third animal antibody against the second animal antibody, said third animal antibody being coupled to an enzyme capable of generating a chromophoric product;

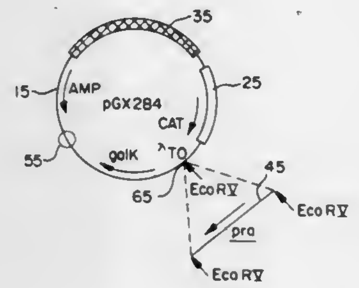
washing said treated sheet; and

developing the sheet by immersion with a substrate for the bound enzyme to produce chromophoric product.

4,617,266
PRODUCTION OF PROTEIN A

Stephen R. Fahnestock, Brookeville, Md., assignor to Genex Corporation, Gaithersburg, Md.

Filed Apr. 28, 1983, Ser. No. 489,326
Int. Cl.⁴ C12P *21/00;* **C12N** *15/00, 1/20, 1/00*
U.S. Cl. 435—68 **12 Claims**



1. A plasmid vector comprising a DNA sequence specifying Protein A; expression signals operably linked to said DNA sequence for directing expression of the Protein A DNA sequence in a Gram-positive microorganism of the species "*B. subtilis*"; a selectable phenotypic marker which is expressable in a Gram-positive microorganism of the species "*B. subtilis*"; and a region of sequence homology with a chromosome of a Gram-positive microorganism of the species "*B. substilis*", said region of sequence homology being capable of permitting integration of the Protein A DNA sequence into said chromosome.

4,617,267
PLASMID PCG1 FROM *CORYNEBACTERIUM GLUTAMICUM*

Ryoichi Katsumata, Machida, and Akira Furuya, Kawasaki, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 346,867, Feb. 8, 1982, abandoned. This application Jan. 25, 1984, Ser. No. 573,591
Claims priority, application Japan, Feb. 12, 1981, 56-18101
Int. Cl.⁴ C12P *19/34;* **C12N** *1/20, 1/00, 15/00*
U.S. Cl. 435—91 **6 Claims**

1. An isolated plasmid pCG1 characterized by a molecular weight of about 2 megadaltons and the following cleavage sites for restriction endonucleases:

Restriction enzyme	Number of cleavage sites
EcoRI	1
HindIII	2
HincII	2
BamHI	0
PstI	0
SalI	0
KpnI	0

4,617,268
PROCESS FOR THE PREPARATION OF ADENOSINE-5'-TRIPHOSPHATE BY FERMENTATION

Masayoshi Hatanaka, and Daizo Takeuchi, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 226,913, Jan. 21, 1981, abandoned. This application Nov. 14, 1983, Ser. No. 551,498
Int. Cl.⁴ C12P *19/32;* **C12N** *1/32*
U.S. Cl. 435—92 **10 Claims**

1. A process for making adenosine-5'-triphosphate comprising the steps of cultivating an adenosine-5'-triphosphate-producing bacterium selected from the group consisting of *Methylomonas methylovora, Pseudomonas insueta, Pseudomonas methanolica, Pseudomonas methanica, Protoaminobacter ruber, Protoaminobacter candidas, Achromobacter methanolophila* and *Bacillus cereus* in a culture medium free of added adenine and of any compound containing an adenine moiety containing as a substrate a substance selected from the group consisting of methanol, methane, methylamine, formaldehyde and formic acid, and an inorganic phosphate in an amount so that the concentration of phosphate (PO_4) is 4 to 35 g/liter, said substance being contained in said culture medium from the beginning of an throughout the cultivating step, thereby causing said bacterium to produce adenosine-5'-triphosphate, separating the proliferated bacteria from the culture medium and isolating the adenosine-5'triphosphate produced from the culture medium.

4,617,269
PROCESS FOR THE PREPARATION OF FRUCTOSYL DISACCHARIDES

Elner B. Rathbone, Wokingham; Andrew J. Hacking, and Peter S. J. Cheetham, both of Reading, all of England, assignors to Tate & Lyle Public Limited Company, England

Filed Jun. 21, 1984, Ser. No. 622,853
Claims priority, application United Kingdom, Jun. 21, 1983, 8316790
Int. Cl.⁴ C12P *19/18;* **C12N** *9/10;* **C12R** *1/125*
U.S. Cl. 435—97 **17 Claims**

7. An enzyme isolated from bacteria, which enzyme hydrolizes a donor fructosyl oligosaccharide or disaccharide containing an unsubstituted β-fructosyl ring attached to the anomeric carbon atom of an aldose by a (1→2) linkage and transfers the fructosyl moiety so released to an acceptor aldose to yield a fructosyl disaccharide as the main product, said enzyme being capable of forming 6-substituted sucrose derivatives as the

main product when the acceptor aldose is a 6-substituted glucose, said enzyme producing no significant amounts of alcohol precipitatable oligo- or polyfructoses in the absence of an aldose acceptor, said enzyme having a Km for sucrose of at least 0.1M in the absence of an aldose acceptor and being free from invertase activity, said enzyme being unaffected by the presence of surfactants, having an optimum activity at about 30° C. and being active for at least 20 minutes at up to 45° C.

4,617,270
ALCOHOL AND DISTILLERS GRAIN RECOVERY PROCESS

Clyde G. Anderson, 426 9th Dr., and Tomas E. Vara, P.O. Box 3128, both of Vero Beach, Fla. 32960

Filed May 13, 1983, Ser. No. 494,401

Int. Cl.^{4} C12P *7/06;* C12C *11/00*

U.S. Cl. 435—161 **28 Claims**

1. A process for producing an alcohol from a naturally occurring organic material comprising the steps of:

(a) forming a mixture of said organic material and hot water to form a mash thereof;
(b) steam cooking said mash in the presence of an enzyme to form an effluent of an aqueous liquor including starch and spent insoluble mash;
(c) flash cooling said effluent at a first pressure to form flash steam;
(d) increasing the pressure of said flash steam to form a higher pressure steam;
(e) saccharifying said effluent in the presence of an enzyme to convert said starch to a sugar;
(f) fermenting said effluent to form a vapor including carbon dioxide and an alcohol liquor including alcohol and water;
(g) separating the aqueous liquor containing said alcohol from said insoluble spent mash; and
(h) heat exchanging said higher pressure steam and said separated insoluble mash to at least effect a partial drying thereof.

4,617,271
PROCESS FOR PRODUCING IMMOBILIZED L-ASPARAGINASE PREPARATIONS FOR THE THERAPY OF LEUKEMIA

Masao Nambu, Yokohama, Japan, assignor to Nippon Oil Company, Limited, Tokyo, Japan

PCT No. PCT/JP83/00126, § 371 Date Dec. 16, 1983, § 102(e) Date Dec. 16, 1983, PCT Pub. No. WO83/03763, PCT Pub. Date Nov. 10, 1983

PCT Filed Apr. 21, 1983, Ser. No. 573,922

Claims priority, application Japan, Apr. 21, 1982, 57-65466

Int. Cl.^{4} C12N *11/04, 11/02, 11/08, 9/82*

U.S. Cl. 435—182 **7 Claims**

1. A process for producing immobilized L-asparaginase preparations for the therapy of leukemia which comprises pouring an aqueous solution containing 6% by weight or more of a polyvinyl alcohol with a degree of hydrolysis of 97 mol. % or higher and a degree of polymerization of 1,800 or more and an antileukemic asparaginase into a vessel of a desired shape and subjecting the solution to cooling and solidification at a temperature lower then −15° C., and then partially dehydrating the resulting solidified mass without thawing to a dehydration ratio of 5% by weight or more to obtain a desired gel.

4,617,272
ENZYME DRYING PROCESS

Marda K. Kirkwood, White Bear Lake, and Keith E. Olson, Apple Valley, both of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Filed Apr. 25, 1984, Ser. No. 603,711

Int. Cl.^{4} C12N *9/00*

U.S. Cl. 435—183 **14 Claims**

1. A process for removing the water from an enzyme-containing aqueous medium comprising:

forming a heated fluidized bed of inert particles by means of a gas stream wherein said fluidized bed is maintained at about 100°-180° F.
contacting said heated inert particles with a spray of an enzyme containing medium, wherein said medium is sprayed at a temperature at about 40°-100° F. resulting in the evaporation of the water and the deposition on said inert particles of a dry powder comprising said enzyme; and
separating said dry enzyme-containing powder from said particles.

4,617,273
ALPHA-ACETOLACTATE DECARBOXYLASE ENZYME AND PREPARATION THEREOF

Frank Olsen, Lyngby, and Knud Aunstrup, Fredensborg, both of Denmark, assignors to Novo Industri A/S, Denmark

Filed Jun. 1, 1984, Ser. No. 616,191

Claims priority, application Denmark, Jun. 3, 1983, 2524/83

Int. Cl.^{4} C12N *9/88;* C12R *1/08, 1/10*

U.S. Cl. 435—232 **5 Claims**

1. An alpha-acetolactate decarboxylase enzyme obtained by cultivation in a suitable nutrient medium of a Bacillus brevis strain or a Bacillus licheniformis strain productive of an alpha-acetolactate decarboxylase characterized by a half-life of at least about 11 days at 10° C. in beer.

4,617,274
BIOCHEMICAL CONVERSIONS BY YEAST FERMENTATION AT HIGH CELL DENSITIES

Eugene H. Wegner, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 316,164, Oct. 29, 1981, Pat. No. 4,414,329, which is a continuation-in-part of Ser. No. 110,457, Jan. 15, 1980, abandoned, which is a continuation-in-part of Ser. No. 29,418, Apr. 12, 1979, abandoned. This application Sep. 22, 1983, Ser. No. 534,848

The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.

Int. Cl.^{4} C12N *1/16, 1/32, 1/26, 1/28, 1/30, 1/14;* C12P *21/00;* C12R *1/84*

U.S. Cl. 435—255 **2 Claims**

1. A biologically pure yeast culture strain *Pichia pastoris* NRRL Y-11430.

4,617,275
REAGENT FOR BLOOD ANALYSIS

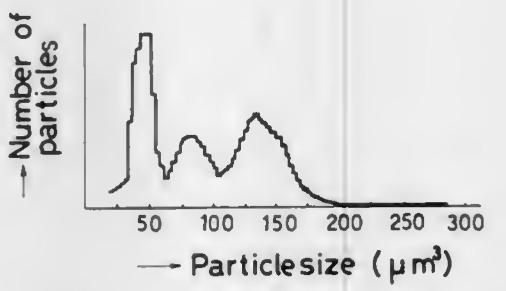
Noriaki Matsuda, Kakogawa, and Etsuro Shinkai, Akashi, both of Japan, assignors to Toa Medical Electronics Co., Ltd., Kobe, Japan

Filed Sep. 24, 1984, Ser. No. 653,861

Claims priority, application Japan, Sep. 29, 1983, 58-183995

Int. Cl.^{4} G01N *33/48*

U.S. Cl. 436—10 **4 Claims**



1. A reagent for preparing cells for blood analysis comprising, as a lysing reagent for leukocyte count measurement, dodecyltrimethylammonium chloride; citric acid; and at least one member selected from the group consisting of tetradecyltrimethylammonium bromide and hexadecyltrimethylammonium chloride.

4,617,276
NOVEL METHOD FOR QUANTITATING STRUCTURAL AND NON-STRUCTURAL CARBOHYDRATES IN FEEDSTUFFS

James E. Nocek, Lafayette, N.Y., assignor to Agway Inc., Dewitt, N.Y.

Division of Ser. No. 694,105, Jan. 23, 1985. This application Sep. 6, 1985, Ser. No. 773,054

Int. Cl.^{4} G01N *31/00*

U.S. Cl. 436—20 **7 Claims**

1. The method of determining the non-structural carbohydrate content of a feedstuff comprising:

(a) weighing first and second, essentially chemically identical samples of said feedstuff;
(b) determining the dry matter content of said first and second samples;
(c) determining by chemical analysis the respective percentages of said first sample dry matter constituted by crude protein, lipid and ash;
(d) separating said second sample into first and second parts, respectively comprising the parts which are soluble and insoluble in neutral detergent solution;
(e) weighing said second part to determine the percentage of said second sample dry matter constituted thereby;
(f) determining by chemical analysis the respective percentages of said second part of said second sample constituted by crude protein, lipid and ash;
(g) subtracting from the percentages of crude protein, lipid and ash determined for said first sample, each of the respective quantities of crude protein, lipid and ash determined for said second part of said second sample, to obtain three difference figures; and
(h) subtracting the sum of said three difference figures from said percentage of dry matter constituted by said second part of said second sample, and subtracting the result from 100, thereby providing a figure representing the percentage of said dry matter constituted by non-structural carbohydrates.

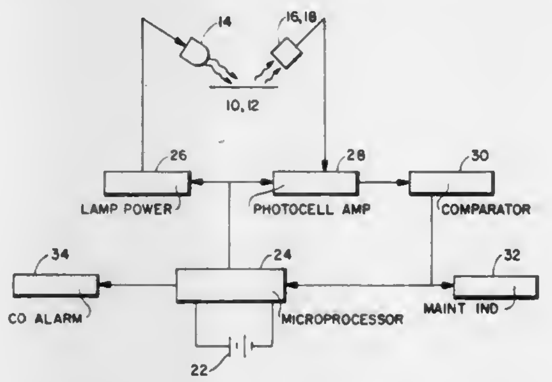
4,617,277
PROCESS AND APPARATUS FOR MONITORING AMBIENT CARBON MONOXIDE

Thomas L. Bohl, Madison, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 23, 1984, Ser. No. 592,510

Int. Cl.^{4} G01N *21/78, 31/22*

U.S. Cl. 436—34 **11 Claims**



10. A method for intermittently monitoring ambient carbon monoxide comprising the steps of providing a first element which changes color with exposure to carbon monoxide, periodically directing a beam of light against said first element, periodically measuring the intensity of light reflected from said first element, computing the rate of change of said light intensity measurements and varying the periodic measurement of the intensity of light in response to the rate of change of the light intensity measurement.

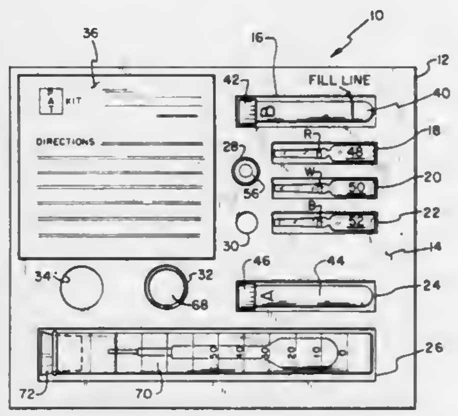
4,617,278
PETROLEUM ALCOHOL TEST KIT AND METHOD OF TESTING PETROLEUM FOR ALCOHOL CONTENT

Dennis A. Reed, Fort Wayne, Ind., assignor to Bert Keenan, Fort Wayne, Ind.

Filed Oct. 1, 1985, Ser. No. 782,997

Int. Cl.^{4} G01N *33/22*

U.S. Cl. 436—60 **18 Claims**



1. A test kit for on site testing of petroleum for alcohol content comprising:

a calibrated reaction cylinder;
a first tube of ethylene glycol and methyl violet color indicator, a second tube having an opening sealably closable by a lid means, and a first lid means for removably sealing said opening;
a first vial of 20% solution of morpholine in distilled water;
a second vial of 5% solution of sodium nitroprusside in distilled water;
a mixing cup for mixing the contents of said first and second vials to make an indicating fluid;
a second lid means for removably sealing said opening in said second tube, said second lid means including a fluid-absorbent paper or fabric adapted to be impregnated with the indicating fluid;
a third vial of potassium permanganate and sulfuric acid in distilled water; and
a carrier is adapted to receive and carry said first tube, said second tube with the first lid means attached, said first, second and third vials, said mixing cup, said second lid means, and said calibrated reaction cylinder.

14. A method for on site testing of petroleum for alcohol content comprising the steps of:

mixing a first sample of the petroleum with a first colorimetric reagent solution of ethylene glycol and methyl violet dye in a graduated cylinder;
positioning said graduated cylinder in a generally vertical position;
observing the mixed contents of said cylinder for the presence of a colored portion wherein the colored portion is indicative of the presence of ethyl alcohol or methyl alcohol alone or together in the petroleum;
measuring the height of said colored portion to determine the amount of alcohol in the petroleum sample;
mixing a 20% solution of morpholine in distilled water with a 5% solution of sodium nitroprusside in distilled water to form a second reagent colorimetrically and selectively responsive to the pressure of ethyl alcohol and non-responsive to the presence of formaldehyde;
impregnating a fabric with said second colorimetric reagent;
mixing a solution of potassium permanganate and sulfuric acid in distilled water with a second sample of petroleum;
contacting said fabric with vapors emitted by the mixture of said potassium permanganate-sulfuric acid solution and second sample of petroleum; and
observing the color of the colorimetric reagent, a color

change in response to the presence of ethyl alcohol and an absence of color change in response to the absence of ethyl alcohol in said second sample of petroleum.

4,617,279

CALCIUM PHOSPHATE TYPE CRYSTALLIZABLE GLASS

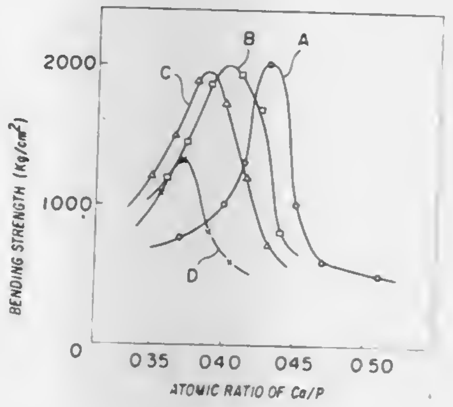
Tsuneo Manabe, Yokohama; Shigeyoshi Kobayashi, Kawasaki, and Hitoshi Kijimuta, Ebina, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Sep. 12, 1985, Ser. No. 775,355

Claims priority, application Japan, Sep. 14, 1984, 59-191437

Int. Cl.⁴ C03C *10/02, 3/17*

U.S. Cl. 501—10 **3 Claims**



1. Calcium phosphate crystallized glass for dental materials consisting essentially of from 41 to 49.5 mol % of CaO, from 50 to 58.5 mol % of P_2O_5 and from 0.5 and 5 mol % of Al_2O_3, and which has an atomic ratio of calcium to phosphorus (Ca/P) of from 0.35 to 0.45.

4,617,280

REFRACTORY LINING AND PROCESS FOR ITS MANUFACTURE

Paul L. Ivarsson, Höganäs; Ingvar G. A. Blom, Nyhamnsläge, and Lars G. Berg, Höganäs, all of Sweden, assignors to Höganäs AB, Höganäs, Sweden

Filed Oct. 9, 1984, Ser. No. 659,002

Int. Cl.⁴ C04B *38/02*

U.S. Cl. 501—84 **9 Claims**

1. A process for the manufacture of a refractory lining comprising foaming a silica-supplying material and a refractory matrix-forming material selected from magnesite and olivine in an aqueous environment to form a fine-blistered foam, and admixing in the resulting mixture a precipitating agent having the ability to provide for precipitation of silica, the silica being then precipitated to form a structure imparting strength and porosity to the material and imparting a volume weight to the material of from about 0.8 to about 1.2 g/cm³.

4,617,281

CATALYSIS USING SUPPORTED STRONG BASE CATALYSTS

Michael J. Green, Hedon, England, assignor to BP Chemicals Limited, London, England

Filed Jun. 4, 1985, Ser. No. 740,979

Claims priority, application United Kingdom, Jun. 9, 1984, 8414767

Int. Cl.⁴ B01J *31/06, 31/02*

U.S. Cl. 502—62 **17 Claims**

1. A catalyst composition suitable for use in reactions catalysed by a strong base, which catalyst comprises a reaction media insoluble amine or phosphine supported on a reaction media insoluble organic polymer or an inorganic oxide solid, said catalyst having been activated with an alkylene epoxide.

5. A catalyst as claimed in claim 1 characterised in that the inorganic oxide is selected from silica, alumina, a clay, a diatomaceous earth, a zeolite and an aluminosilicate.

4,617,282

MAGNETIZABLE ADSORBENTS

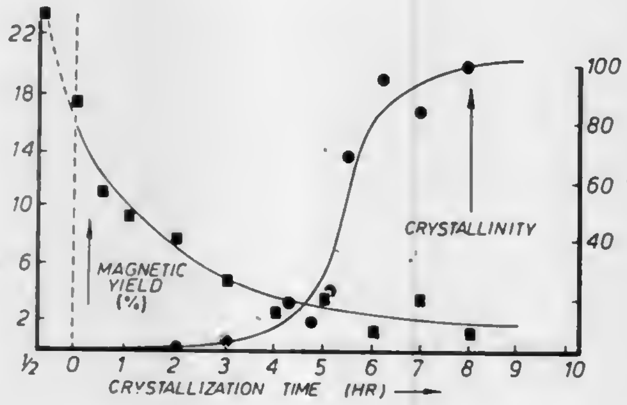
Dominicus J. M. van der Vleugel, Rosmalen; Klaas Hoving, Hellevoetsluis, both of Netherlands; Theodorus M. Wortel, Houston; Ronald E. Rosensweig, Summit, both of Tex., and Lovat V. C. Rees, Chiselhurst, United Kingdom, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 22, 1984, Ser. No. 623,728

Claims priority, application United Kingdom, Jun. 24, 1983, 8317228

Int. Cl.⁴ B01J *29/06*

U.S. Cl. 502—66 **16 Claims**



1. A process for the preparation of magnetizable zeolite composites, in which process discrete magnetizable particles having a maximum particle size of 500 μm are introduced into a reaction mixture for forming the zeolite prior to initiating crystallization by heating the reaction mixture and therefore heating the reaction mixture to the crystallization temperature and that zeolite is formed on the surface of the ferromagnetic particles.

4,617,283

CATALYST FOR CONVERTING SYNTHESIS GAS TO LIQUID MOTOR FUELS

Peter K. Coughlin, Yorktown Heights, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 27, 1984, Ser. No. 625,371

Int. Cl.⁴ B01J *29/02, 29/06*

U.S. Cl. 502—66 **13 Claims**

1. A synthesis gas conversion catalyst composition adapted for the enhanced conversion of synthesis gas comprising carbon monoxide and hydrogen to C+₅ hydrocarbon mixtures having enhanced suitability for use as liquid motor fuels comprising:

(a) a Fischer-Tropsch catalyst component comprising cobalt; and

(b) a gold metal component and present in an amount within the range of from about 0.1 to about 50 mole % based on the total amount of cobalt and gold in said composition, whereby the selectivity of cobalt for methane in said synthesis gas conversion is desirably lowered by said gold, increasing the selectivity of said cobalt to desired liquid hydrocarbon fuels.

4,617,284

CATALYST COMPONENT FOR POLYMERIZATION OF OLEFINS AND PROCESS FOR PRODUCTION THEREOF

Mitsuyuki Matsuura, Kameyama; Takashi Fujita, Yokkaichi, and Yoshio Sakamoto, Suzuka, all of Japan, assignors to Mitsubishi Petrochemical Company, Limited, Tokyo, Japan

Filed May 28, 1985, Ser. No. 738,190

Claims priority, application Japan, Jun. 4, 1984, 59-114184; Jul. 12, 1984, 59-143306

Int. Cl.⁴ C08F *4/64*

U.S. Cl. 502—111 **18 Claims**

6. A process for the preparation of a catalyst component for polymerization of olefins, which comprises contacting (A) a powdery halide of magnesium with (B) an alkoxy group-containing compound of a metal selected from metals of Groups I through IV of the Periodic Table to form a particulate solid contact reaction product, adding (C) an organic hydroxy compound selected from the group consisting of alkanols, silanols and phenols, in the form of fine droplets to the particulate solid contact reaction product for one second to five minutes to that only the surface of the solid product is treated with the organic hydroxy compound whereby the particles which remain substantially as they are adhere to each other at their surfaces into particles of a larger particle size to carry out a contact treatment, and contacting the resulting contact reaction product with (D) a liquid titanium halide to obtain a catalyst component in particulate form of an average particle size of 10 to 100 microns.

4,617,285

CATALYST COMPONENTS AND CATALYSTS FOR THE POLYMERIZATION OF OLEFINS

Enrico Albizzati, Arona, Italy, assignor to Montedison S.p.A., Milan, Italy

Filed Mar. 19, 1985, Ser. No. 713,600

Claims priority, application Italy, Mar. 20, 1984, 20138 A/84

Int. Cl.⁴ C08F *4/64*

U.S. Cl. 502—134 **6 Claims**

1. A catalyst component for the polymerization of olefins comprising a tetravalent Ti compound containing at least a halogen-Ti bond, supported on a Ti trichloride or Ti tribromide having an actual surface area of at least 50 m²/g, said Ti trichloride or Ti tribromide being obtained by reduction of $TiCl_4$ or $TiBr_4$ with a reducing agent other than Al or Al organic compounds.

2. A catalyst component according to claim 1, further comprising a Ti compound containing at least a halogen-Ti bond supported on a Mg dihalide the crystallites of which have a size below 300 Å.

4,617,286

CATALYST FOR POLYURETHANE HAVING DELAY PROPERTY

Shoji Arai; Yutaka Tamano, and Yukihiro Tsutsumi, all of Yamaguchi, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Filed Sep. 5, 1984, Ser. No. 647,399

Claims priority, application Japan, Sep. 8, 1983, 58-164187

Int. Cl.⁴ C08G *18/14, 18/18;* **B01J** *31/04*

U.S. Cl. 502—167 **10 Claims**

1. A catalyst for the foaming of polyurethanes, comprising: the combination of an organic carboxylic acid salt of a teritiary amine compound and 1-methyl-4-(2-dimethylaminoethyl)piperazine in 5-70% by weight of an organic solvent, wherein the amount of said 1-methyl-4-(2-dimethylaminoethyl)piperazine compound ranges from 0.01 to 10.0 times the molar amount of the tertiary amine component of said organic carboxylic acid salt.

2. The catalyst of claim 1, wherein said tertiary amine compound is selected from the group consisting of triethylenediamine, bis(2-dimethylaminoethyl)ether, dimethylcyclohexylamine, N,N,N′,N′-tetramethylhexamethylenediamine, N,N,N′,N″,N″-pentamethyldiethylenetriamine and N,N,N′,N″,N″-pentamethyldipropylenetriamine.

3. The catalyst of claim 2, wherein said tertiary amine compound is triethylenediamine, bis(2-dimethylaminoethyl)ether or N,N,N′,N″,N″-pentamethyldiethylenetriamine.

4,617,287

RUTHENIUM-COBALT CARBONYL CATALYSTS FOR THE DEALKOXYHYDROXYMETHYLATION OF ALDEHYDE ACETALS TO FORM GLYCOL ETHERS

James E. Lyons, Wallingford, Pa., assignor to Sun Refining and Marketing Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 622,815, Jun. 21, 1984, abandoned. This application Oct. 2, 1985, Ser. No. 782,806

Int. Cl.⁴ B01J *27/20, 31/20;* **C07C** *41/01*

U.S. Cl. 502—174 **6 Claims**

1. A catalyst composition prepared by precipitating a ruthenium and cobalt carbonyl complex from a reaction mixture formed by the dealkoxyhydroxymethylation of an aldehyde acetal with syngas in the presence of a catalyst comprising a mixture of $Co_2(CO)_8$ and $Ru_3(CO)_{12}$, after recovering the reaction product and allowing the remaining liquid medium to stand for a time sufficient to precipitate said catalyst complex having IR bands at 4.83μ, 4.92μ, and 4.98μ.

3. A catalyst composition prepared by precipitating a ruthenium and cobalt carbonyl complex from a reaction mixture formed by the dealkoxylhydroxymethylation of an aldehyde acetal with syngas in the presence of an inert organic solvent and a catalyst comprising a mixture of $Co_2(CO)_8$ and $Ru_3(CO)_{12}$, after recovering the reaction product and allowing the remaining liquid medium to stand for a time sufficient to precipitate said catalyst complex having IR bands at 4.83μ, 4.92μ, and 4.98μ or 4.83μ, 4.92μ, and 4.97μ.

5. A catalyst composition prepared by precipitating a ruthenium and cobalt carbonyl complex from a reaction mixture formed by the treatment of a mixture of $Co_2(CO)_8$ and $Ru_3(CO)_{12}$ in a chlorinated aromatic hydrocarbon with syngas at elevated temperature and pressure and allowing the reaction mixture to stand for a time sufficient to precipitate said catalyst complex having IR bands at 4.83μ, 4.92μ, and 4.98μ.

4,617,288

LOW NITROGEN IRON-CONTAINING FISCHER-TROPSCH CATALYST FOR CONVERSION OF SYNTHESIS GAS AND PROCESS FOR PREPARING THE CATALYST

Weldon K. Bell, Pennington; Werner O. Haag, Lawrenceville; Garry W. Kirker, Sewell, and Donald J. Klocke, Somerdale, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1984, Ser. No. 687,695

Int. Cl.⁴ B01J *23/72, 23/80, 23/85, 23/89*

U.S. Cl. 502—331 **16 Claims**

1. In a process for preparing an iron-containing Fischer-Tropsch catalyst by continuously precipitating an aqueous solution containing iron nitrate with aqueous amonia, to form a precipitate-containing product which is thereafter dried, the improvement whereby a catalyst containing less than 500 ppm nitrogen is produced which comprises maintaining a pH of about 6.5 to 6.9 and a temperature of about 70° to 100° C. during precipitation.

4,617,289

CATALYST FOR PURIFYING DIESEL ENGINE EXHAUST GASES

Koichi Saito, Osaka; Kenji Ueda, Osaka; Yasuo Ikeda, Himeji, and Tetsuji Ono, Amagasaki, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Aug. 6, 1985, Ser. No. 762,840

Claims priority, application Japan, Aug. 8, 1984, 59-164808; Sep. 7, 1984, 59-186578

Int. Cl.⁴ B01J *23/64*

U.S. Cl. 502—339 **6 Claims**

1. A catalyst for purifying a diesel engine exhaust gas, said catalyst comprising a refractory three-dimensional structure having a gas filter function, a porous inorganic carrier supported on it, and (a) vanadium oxide and (b) at least one metal selected from the group consisting of platinum, rhodium and palladium supported on the carrier, the amount of component (a) being in the range of 0.2 to 40.0 g as V_2O_5 per liter of said structure and the amount of component (b) being in the range of 0.1 to 4.0 g as metal per liter of said structure, wherein the mole ratio of component (a) to component (b) deposited as 1-90:1.

4,617,290

SYNERGISTINE DERIVATIVES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Jean-Pierre Corbet, Ecully; Claude Cotrel, Paris; Daniel Farge, Thiais, and Jean-Marc Paris, Vaires sur Marne, all of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

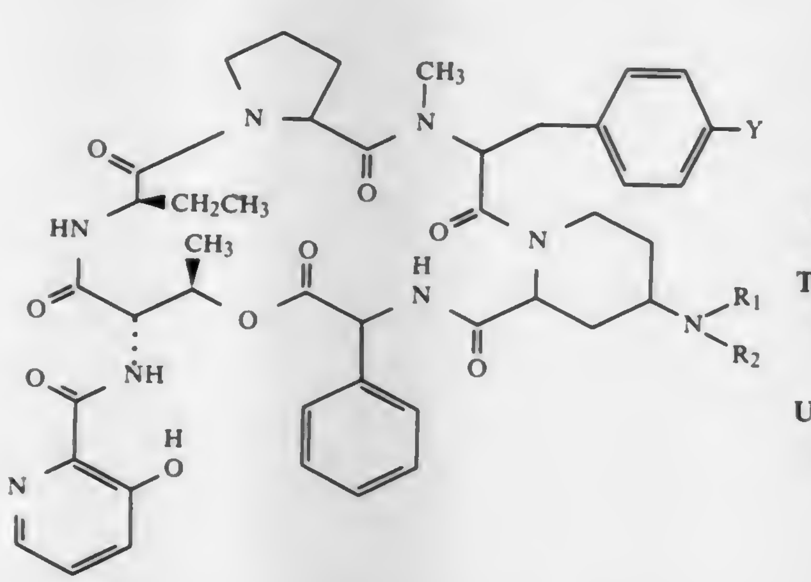
Filed Jul. 12, 1984, Ser. No. 630,245

Claims priority, application France, Jul. 13, 1983, 83 11704

Int. Cl.⁴ A61K *37/02;* **C07K** *5/12*

U.S. Cl. 514—11 **11 Claims**

1. A synergistine of the formula:



in which Y is hydrogen or dimethylamino; and

- (I) R_1 is hydrogen and R_2 is
  - (i) hydroxyl,
  - (ii) alkyl,
  - (iii) alkyl substituted by carboxyl, alkoxycarbonyl, hydroxyl, alkylamino, dialkylamino, or dialkylamino in which the alkyls form, with the nitrogen atom to which they are attached, a 4-membered to 7-membered heterocycle chosen from azetidinyl, pyrrolidinyl, piperidinyl, piperazinyl, N-alkylpiperazinyl and azepinyl, (iv) cycloalkyl of 3 to 7 carbon atoms, or (v) a saturated 4-membered to 7-membered heterocycle chosen from azetidinyl, pyrrolidinyl, piperidinyl and azepinyl, these heterocycles being unsubstituted or substituted on the nitrogen atom by alkyl; or
- (II) R_1 is formyl or alkylcarbonyl and R_2 is
  - (i) alkyl substituted by carboxyl,
  - (ii) alkylamino,
  - (iii) dialkylamino,
  - (iv) dialkylamino in which the alkyls form, with the nitrogen atom to which they are attached, a 4-membered to 7-membered heterocycle chosen from azetidinyl, pyrrolidinyl, piperidinyl, piperazinyl, N-alkylpiperazinyl and azepinyl, or
  - (v) a saturated 4-membered to 7-membered heterocycle chosen from azetidinyl, pyrrolidinyl, piperidinyl and azepinyl, these heterocycles being unsubstituted or substituted on the nitrogen atom by alkyl; or
- (III) R_1 and R_2, which are identical or different, are each alkyl which is unsubstituted or substituted by carboxyl, alkoxycarbonyl, hydroxyl, alkylamino, dialkylamino, or dialkylamino in which the alkyls form, with the nitrogen atom to which they are attached, a 4-membered to 7-membered heterocycle chosen from azetidinyl, pyrrolidinyl, piperidinyl, piperazinyl, N-alkylpiperazinyl and azepinyl, or
- (IV) R_1 and R_2 together form, with the nitrogen atom to which they are bonded, a 4-membered to 7-membered heterocycle chosen from azetidinyl, pyrrolidinyl, piperidinyl, morpholinyl, piperazinyl, and piperazinyl substituted by alkyl; all the aforesaid alkyl radicals and alkyl portions of radicals containing 1 to 5 carbon atoms each in a linear or branched chain; and its pharmaceutically acceptable salts.

4,617,291

ANGIOTENSIN-CONVERTING ENZYME INHIBITING DIPEPTIDE DERIVATIVES

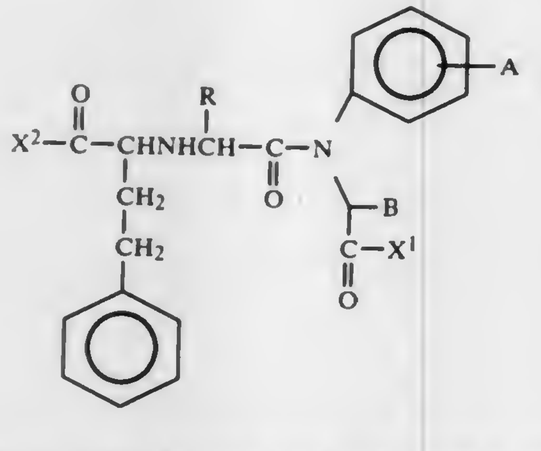
Tellis A. Martin, and Terence M. Dolak, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed May 14, 1982, Ser. No. 378,295

Int. Cl.⁴ A61K *37/43;* **C07K** *5/06;* **C07C** *101/44*

U.S. Cl. 514—19 **5 Claims**

1. A compound having formula I



I

and the non-toxic pharmaceutically acceptable salts thereof wherein

A is hydrogen;

B is hydrogen or lower alkyl;

R is hydrogen, lower alkyl, or phenyl-lower alkyl; and

X^1 and X^2 are independently selected from hydroxy or lower (C_1-C_4) alkoxy groups.

4,617,292

PHARMACEUTICAL COMPOSITIONS AND METHOD FOR INHIBITING HISTAMINE RELEASE TOCOPHERYL GLYCOSIDE

Toshio Satoh; Hideki Miyataka, both of Tokushima; Yukimitsu Masamoto, Shiga; Takashi Asai, Takatsuki; Kenji Hasegawa, Ibaraki, and Hisao Kakegawa, Tokushima, all of Japan, assignors to Sunstar Kabushiki Kaisha, Osaka, Japan

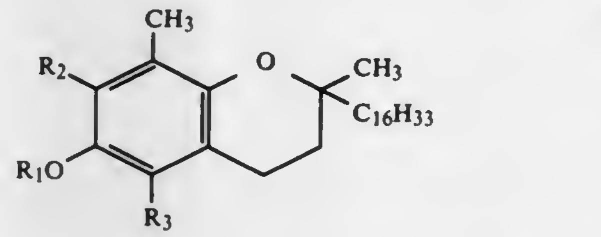
Filed Jul. 17, 1985, Ser. No. 755,777

Claims priority, application Japan, Jul. 21, 1984, 59-151895

Int. Cl.⁴ A61K *31/70;* **C07H** *15/26*

U.S. Cl. 514—27 **25 Claims**

1. A method for inhibiting histamine release which comprises orally or patenterally administering or topically applying an effective amount of a compound of the formula:



[I]

wherein R_1 is a residue of a sugar selected from the group consisting of glucose, galactose, cellobiose, mannose, maltose and lactose; R_2 and R_3 are the same or different and each is hydrogen or methyl, to an animal subject requiring said activity including human being.

4,617,293

FLAVONOID PHOSPHATE SALTS OF AMINOGLYCOSIDE ANTIBIOTICS

Helmut Wahlig, Darmstadt; Elvira Dingeldein, Dreieich; Richard Kirchlechner, Rott a. Inn; Dieter Orth, Darmstadt, and Werner Rogalski, Alsbach, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschraenkter Haftung, Darmstadt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 377,779, May 13, 1982, abandoned. This application May 23, 1984, Ser. No. 613,131

Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3118856; Feb. 25, 1982, 3206725

Int. Cl.⁴ A61K *31/71;* **C07H** *15/22*

U.S. Cl. 514—41 **12 Claims**

1. A flavonoid phosphate of an aminoglycoside antibiotic, or a mixture thereof.

11. A method of achieving an antibiotic effect in a patient comprising administering an antibiotically effective amount of a compound of claim **1** to the patient.

4,617,294

ANIMAL FEED SUPPLEMENT

Thomas G. Krivak, Akron, Ohio; Stanley A. Heimburger, Pittsburgh, Pa., and James T. Dew, Sulphur, La., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 22, 1985, Ser. No. 725,444

Int. Cl.⁴ A61K *9/16, 31/68, 31/455, 31/355*

U.S. Cl. 514—52 **7 Claims**

1. An animal feed supplement consisting essentially of free flowing, substantially dust-free, granular amorphous precipitated silica having at least one vitamin selected from the group consisting of Vitamins A, B_{12}, D, E, and niacin absorbed thereon in amounts of from about 0.02 to about 50 weight percent of vitamin, basis the amorphous precipitated silica, which amounts provide a nutritionally effective amount of said vitamin(s) when blended with animal feed, said precipitated silica having a density of at least 14 pounds per cubic foot, a principal particle size of between about 0.14 millimeters and about 0.84 millimeters, a surface area of from about 140 to 160 square meters per gram and an oil absorption of from about 160 to 220 milliliters per 100 grams, said precipitated silica yielding within the digestive tract of the animal ingesting the animal feed a nutritionally effective amount of vitamin(s) absorbed on said silica.

4,617,295

PESTICIDAL OXIME N-ALKYL-N-α-(ALKYLTHIO-PHOSPHOROTHIO)ACYL CARBAMATES

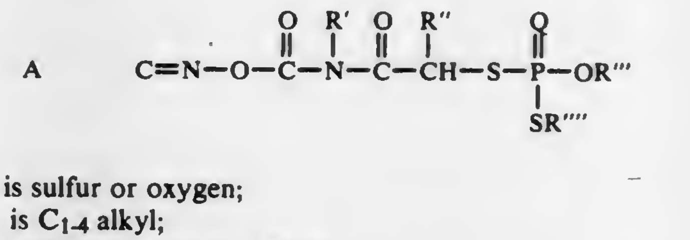
Themistocles D. J. D'Silva, Chapel Hill, N.C., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 509,451, Jun. 30, 1983, Pat. No. 4,568,671. This application Oct. 3, 1985, Ser. No. 783,534

Int. Cl.⁴ A01N *57/02;* **C07F** *9/165, 9/65*

U.S. Cl. 514—97 **10 Claims**

1. The compound represented by the structural formula:



$$A \quad C{=}N{-}O{-}\overset{\substack{O\\ \|}}{C}{-}\overset{\substack{R'\\ |}}{N}{-}\overset{\substack{O\\ \|}}{C}{-}\overset{\substack{R''\\ |}}{CH}{-}S{-}\underset{\substack{|\\ SR''''}}{\overset{\substack{Q\\ \|}}{P}}{-}OR'''$$

Q is sulfur or oxygen;

R' is $C_{1\text{-}4}$ alkyl;

R'' is hydrogen or $C_{1\text{-}4}$ alkyl;

R''' and R'''' are individually $C_{1\text{-}4}$ alkyl; and

A is a saturated or unsaturated, four or five membered divalent chain composed of carbon atoms and one or two atoms selected from the group comprised of oxygen, sulfur and nitrogen atoms, wherein the carbon and nitrogen atoms of said chain may be substituted with alkyl groups having not more than four carbon atoms.

9. A method for controlling insects or mites comprised of subjecting them to a pesticidally effective amount of the compound of claim **1**.

4,617,296

3-O-ACYLATED DERIVATIVES OF (+)-CYANIDAN-3-OL

Alban Albert, Avully; Pierre Courbat, Nyon, and André Welth, Prangins, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

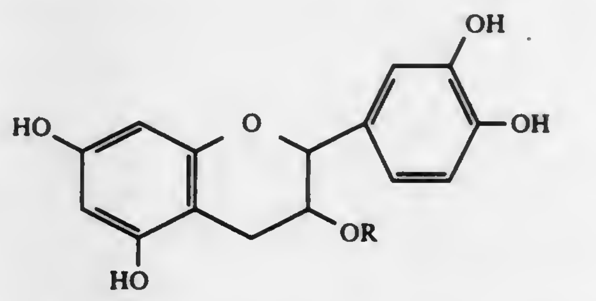
Continuation of Ser. No. 422,110, Sep. 23, 1982, abandoned, which is a division of Ser. No. 182,169, Aug. 28, 1980, abandoned, which is a division of Ser. No. 962,743, Nov. 21, 1978, Pat. No. 4,255,336. This application Jul. 2, 1984, Ser. No. 626,823

Claims priority, application Switzerland, Nov. 25, 1977, 14479/77; Mar. 17, 1978, 2937/78

Int. Cl.⁴ A61K *31/35;* **C07D** *311/62*

U.S. Cl. 514—100 **19 Claims**

1. An O-substituted derivative of (+)-cyanidan-3-ol of the formula I



(I)

in which R represents

an acyl radical of an alkanecarboxylic acid containing from 4 to 18 carbon atoms which is unsubstituted or substituted by one or more hydroxy, carboxy, (C_{1-5} alkoxy)carbonyl, C_{1-5} alkanoyl, amino, mono- or di(C_{1-4} alkyl)amino, chloro or fluoro;

cycloalkanecarboxylic acid having 3 to 6 ring carbon atoms which is unsubstituted or substituted by one, two or three, hydroxy, carboxy, C_{1-4} alkoxycarbonyl, amino, mono- or di-(C_{1-4} alkyl)amino, chloro or fluoro;

cycloalkanealkanoic acid, the aliphatic chain thereof having 2 to 4 carbon atoms and the ring having 5 to 6 carbon atom;

phenylalkanoic acid of which the aliphatic chain contains 1 to 4 carbon atoms and of which the phenyl nucleus is unsubstituted or substituted by one or two hydroxy, C_1–C_4 alkoxy, amino, carboxy, (C_1–C_4 alkoxy)carbonyl, C_1–C_4 alkanoyl, C_1–C_4 alkanoyloxy, chloro or fluoro;

nicotinic or isonicotinic acid;

(C_1–C_4 alkoxy)carbonyl;

(C_{1-4} alkyl)sulphonic acid, or phenylsulphonic acid unsubstituted or substituted by one or more C_{1-4} alkyl, C_{1-4} alkoxy or halo; carbamoyl which is unsubstituted or mono- or di-substituted by C_1–C_4 alkyl, or phenyl groups unsubstituted or substituted by hydroxy, methoxy, ethoxy, chloro or fluoro; or a phosphoric acid which is unsubstituted or substituted by dimethyl, diethyl, or monohydroxyphenyl; and pharmaceutically acceptable salts thereof.

3. A method for the prevention of hepatic necrosis, inhibition of lipoperoxidation and inhibition of collagen degradation which comprises administering to an animal an effective hepatic preventive, or liperoxidation or collagen degradation inhibitory, amount of a compound of claim 1.

4,617,297

METHOD OF TREATING DISEASE STATES BY THE ADMINISTRATION OF 1α,25,26-TRIHYDROXYCHOLECALCIFEROL

Alfred Boris, Parsippany; John J. Partridge, and Milan R. Uskokovic, both of Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 458,224, Jan. 14, 1983, abandoned, which is a continuation-in-part of Ser. No. 348,389, Feb. 12, 1982, abandoned. This application Apr. 3, 1984, Ser. No. 596,325

Int. Cl.⁴ A01N *45/00;* **A61K** *31/59*

U.S. Cl. 514—167 **12 Claims**

1. A method for the treatment of disease states characterized by higher than normal serum levels of endogenously produced 1α,25 dihydroxycholecalciferol which

comprises administering to a host suffering from said disease states an effective amount of the C-25 R or S epimer of 1α,25, 26 trihydroxycholecalciferol.

4,617,298

METHOD AND COMPOSITIONS FOR WEIGHT CONTROL

Nicholas S. Bodor; Kerry S. Estes, and James W. Simpkins, all of Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.

Filed Oct. 22, 1985, Ser. No. 790,159

Int. Cl.⁴ A61K *31/58*

U.S. Cl. 514—176 **27 Claims**

1. A method for mammalian weight control, said method comprising administering to a mammal in need of such treatment, an amount effective to reduce or maintain said mammal's weight of a compound of the formula

[E—DHC] (I)

or a non-toxic pharmaceutically acceptable salt thereof, wherein [E] is an estrogen and [DHC] is the reduced, biooxidizable, blood-brain barrier penetrating, lipoidal form of a dihydropyridine⇄pyridinium salt redox carrier.

4,617,299

METHOD FOR THE PREVENTION OF OCULAR HYPERTENSION, TREATMENT OF GLAUCOMA AND TREATMENT OF OCULAR HYPERTENSION

Paul A. Knepper, 175 E. Delaware St., Chicago, Ill. 60611

Continuation-in-part of Ser. No. 562,843, Dec. 19, 1983, abandoned. This application Oct. 22, 1984, Ser. No. 663,507

Int. Cl.⁴ A61K *31/56, 31/35*

U.S. Cl. 514—178 **28 Claims**

1. A method for reducing elevated intraocular pressure in an eye of a warm blooded animal that comprises contacting the eye repeatedly with a composition containing as an active ingredient an anabolic androgenic compound which is a member of the group consisting of 17-alpha-ethyl-19-nortestosterone, 17-hydroxy-7,17-dimethylandrost-4-en-3-one, 17-beta-hydroxy-16-methandrost-1,4-dien-3-one, 17-hydroxy-2-(hydroxymethylene)-17-methylandrosterone-3-one, dihydrotestosterone, and androsterone, and providing to the eye about 0.001 milligrams to about 10 milligrams of said compound per application.

4,617,300

2(N-HETEROCYCLYL) PENEMS

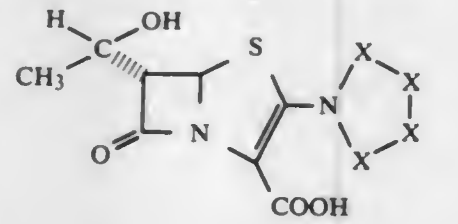
Viyyoor M. Girijavallabhan, Parsippany; Ashit K. Ganguly, Upper Montclair; Naginbhai Patel, Kearny, and Yi-Tsung Liu, Parsippany, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Sep. 21, 1984, Ser. No. 652,707

Int. Cl.⁴ C07D *499/00;* **A61K** *31/425*

U.S. Cl. 514—192 **34 Claims**

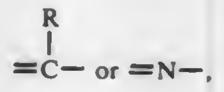
1. Compounds represented by the formula



I

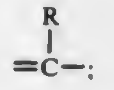
and pharmaceutically acceptable salts and pharmaceutically acceptable esters thereof in racemic or optically active form, wherein

each X independently is



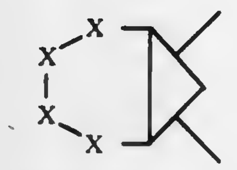
$$\begin{array}{c} R \\ | \\ =C- \end{array} \text{ or } =N-,$$

with the proviso that at least one X is



$$\begin{array}{c} R \\ | \\ =C- \end{array};$$

each R is independently selected from hydrogen, lower alkyl, hydroxy, amino lower alkyl, mono- and di-lower alkyl amino lower alkyl, hydroxy lower alkyl, carbamoyloxy lower alkyl, amino, mono- and di-lower alkyl amino, carboxy lower alkyl, carbamoyl lower alkyl, mono-and di-lower alkyl carbamoyl lower alkyl, cyano lower alkyl, halo lower alkyl, carboxy, cyano, hydroxyiminomethyl, sulfo lower alkyl, lower alkoxyiminomethyl, lower alkoxy, 1-(N,N-mono- or di-lower alkyl) hydrazino-2-ylidenyl methyl, carbamoyl amino, mono- and di-lower alkyl carbamoyl amino lower alkanoyloxy, carbamoyloxy, lower alkanoyl amino, lower alkanoyl amino lower alkyl, N-lower alkyl ureido, lower alkyl sulfonyl amino, sulfonic acid, nitro, and 2 adjacent R groups can be connected to form, fused to the five membered heterocyclic ring, a six membered heterocyclic ring of the formula



wherein X is as defined herein.

4,617,301

SULFOXIDE AND SULFONE DERIVATIVES OF BICYCLIC LACTAMS AS ANTIHYPERTENSIVES

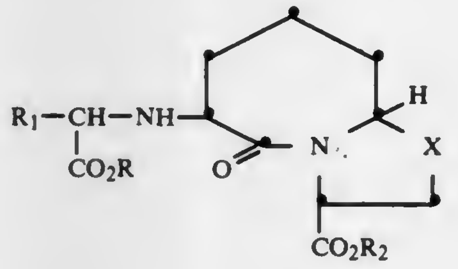
Arthur A. Patchett, Westfield, and Matthew J. Wyvratt, Jr., Mountainside, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 22, 1983, Ser. No. 506,925

Int. Cl.⁴ A61K *31/55;* **C07D** *513/04*

U.S. Cl. 514—214 **21 Claims**

1. A compound of the formula:



I

wherein:

X is SO or SO_2;

R and R_2 are independently hydrogen, loweralkyl, aryl, and aralkyl;

R_1 is hydrogen;

straight chain and branched alkyl of from 1 to 12 carbon atoms;

C_2–C_{12} straight chain and branched alkenyl and alkylnyl;

cycloalkyl of 3 to 10 carbon atoms;

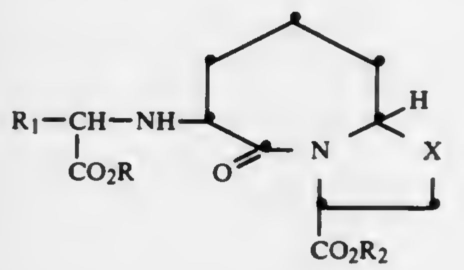
substituted lower alkyl wherein the substituent can be halo, hydroxy, carboxy, lower alkylthio, lower alkoxy, lower alkoxy carbonyl, lower aralkoxy carbonyl, amino, lower alkylamino, lower dialkylamino, acetylamino or benzoylamino;

substituted lower alkyl having the formula $R_A(CH_2)n$ —Q—$(CH_2)_m$ wherein n is 0–2, m is 1–3, R_A is aryl or heteroaryl optionally substituted by amino, lower dialkylamino, lower alkylamino, hydroxy, loweralkyl, amino lower alkyl, trihaloloweralkyl, cyano, nitro, sulfonamido, benzoyl, 1-naphthoyl, lower alkyl, halo, dihalo, and lower alkoxy, and Q is O, S, N—R_B, $CONR_C$, NR_CCO, CH═CH wherein R_B is hydrogen, lower alkyl, aryl, aralkyl, acetylamino, benzoylamino, benzoyl, or 1-naphthoyl, and R_C is hydrogen or lower alkyl; aryl;

substituted aryl wherein the substituent is lower alkyl, amino loweralkyl, loweralkoxy, aryloxy, benzoyl, 1-naphthoyl, hydroxy, halo, or dihalo; aralkyl or heteroaralkyl which include branched lower alkyl groups; substituted aralkyl or substituted heteroaralkyl which include branched lower alkyl groups wherein the lower alkyl groups can be substituted by amino, acetylamino, benzoylamino, or hydroxyl and the aryl and heteroaryl groups can be substituted by halo, dihalo, loweralkyl, hydroxy, loweralkoxy, aryloxy, benzoyl, 1-naphthoyl, arylthio, amino, amino lower alkyl, lower alkanoyl amino, aroylamino, lower dialkylamino, lower alkylamino, hydroxy, hydroxy loweralkyl, trihalo loweralkyl, nitro, cyano, or sulfonamido; and,

the pharmaceutically acceptable salts thereof wherein in said R, R_1 and R_2 groups, unless otherwise indicated, the aralkyl and heteroalkyl groups have from one to six carbon atoms in the alkyl portion thereof; aryl and the prefix "ar" have 5–6 ring atoms; and, heteroaryl is a member selected from the groups consisting of, indolyl, thienyl, imidazolyl, furyl, benzimidazoylyl, pyridyl, quinolinyl, isoquinolinyl, and benzothienyl.

17. A pharmaceutical composition useful in the treatment of hypertension which comprises a pharmaceutically acceptable carrier and a pharmaceutically effective amount of a compound of the formula:



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wherein:

X is SO or SO_2;

R and R_2 are independently hydrogen, loweralkyl, aryl, and aralkyl;

R_1 is hydrogen

straight chain and branched alkyl of from 1 to 12 carbon atoms;

C_2-C_{12} straight chain and branched alkenyl and alkylnyl;

cycloalkyl of 3 to 10 carbon atoms;

substituted lower alkyl wherein the substituent can be halo, hydroxy, carboxy, lower alkylthio, lower alkoxy, lower alkoxy carbonyl, lower aralkoxy carbonyl, amino, lower alkylamino, lower dialkylamino, acetylamino, or benzoylamino;

substituted lower alkyl having the formula $R_A(CH_2.)_n$—Q—$(CH_2)_m$ wherein n is 0–2, m is 1–3, R_A is aryl or heteroaryl optionally substituted by amino, lower dialkylamino, lower alkylamino, hydroxy, hydroxy loweralkyl, amino lower alkyl, trihalo loweralkyl, cyano, nitro, sulfonamido, benzoyl, 1-naphthoyl, lower alkyl, halo, dihalo, and lower alkoxy, and Q is O, S, N—R_B, $CONR_C$, NR_CCO, CH═CH whrein R_B is hydrogen, lower alkyl, aryl, aralkyl, acetylamino, benzoylamino, benzoyl, or 1-naphthoyl, and R_C is hydrogen or lower alkyl; aryl;

substituted aryl wherein the substituent is lower alkyl, amino loweralkyl, loweralkoxy, aryloxy, benzoyl, 1-naphthoyl, hydroxy, halo, or dihalo; aralkyl or heteroaralkyl which include branched lower alkyl groups;

substituted aralkyl or substituted heteroaralkyl which include branched lower alkyl groups wherein the lower alkyl groups can be substituted by amino, acetylamino, benzoylamino or hydroxyl and the aryl and heteroaryl groups can be substituted by halo, dihalo, loweralkyl, hydroxy, loweralkoxy, aryloxy, benzoyl, 1-naphthoyl, arylthio, amino, amino lower alkyl, lower alkanoyl amino, aroylamino, lower dialkylamino, lower alkylamino, hydroxy, hydroxy loweralkyl, trihalo loweralkyl, nitro, cyano, or sulfonamido; and,

the pharmaceutically acceptable salts thereof wherein in said R, R_1 and R_2 groups, unless otherwise indicated, the aralkyl and heteroaralkyl groups have from one to six carbon atoms in the alkyl portion thereof; aryl and the prefix "ar" have 5–6 ring atoms; and, heteroaryl is a member selected from the groups consisting of, indolyl, thienyl, imidazolyl, furyl, benizimidazolyl, pyridyl, quinolinyl, isoquinolinyl, and benzothienyl.

4,617,302

INOTROPIC AGENTS

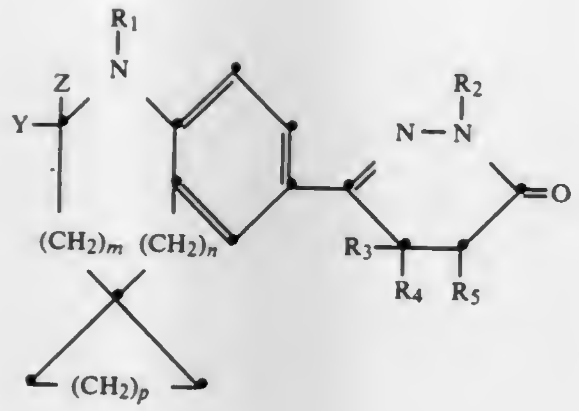
David W. Robertson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 15, 1984, Ser. No. 660,836

Int. Cl.⁴ C07D *401/10, 403/10;* **A61K** *31/50, 31/55*

U.S. Cl. 514—254 **20 Claims**

1. A compound of the formula



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wherein

Y and Z are each hydrogen, or when taken together are ═O;

R_1, R_2, R_3, R_4, and R_5 are independently hydrogen or C_1–C_4 alkyl, or R_5 and one of R_3 and R_4 taken together form a bond;

m and n are independently 0, 1 or 2, provided that (m+n) is no greater than 2; and

p is 0, 1 or 2, and pharmaceutically acceptable acid addition salts thereof.

9. A method of treating a mammal, including a human subject, suffering from or susceptible to heart failure, which comprises administering to said mammal an effective amount of a compound of claim 1.

4,617,303

7-AMINOAZOLO [1,5-a] PYRIMIDINES AND FUNGICIDES CONTAINING THESE

Karl Eicken, Wachenheim; Hermann Graf, Mutterstadt; Walter Gramlich, Edingen-Neckarhausen; Hubert Sauter, Mannheim; Costin Rentzea, Heidelberg; Ernst-Heinrich Pommer, Limburgerhof, and Eberhard Ammermann, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

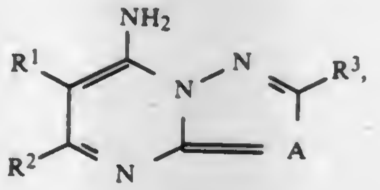
Filed Oct. 19, 1984, Ser. No. 662,592

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1983, 3338292

Int. Cl.⁴ C07D *487/04;* A01N *43/90*

U.S. Cl. 514—258 **7 Claims**

1.



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where

R^1 is a C_6–C_{18}-alkyl which is unsubstituted or a C_3–C_{18} alkyl which is mono substituted by a C_1–C_{18}-alkoxy or halogen and

R^2 and R^3 are each hydrogen or a C_1–C_4-alkyl, and

A is nitrogen or CR^4, where

R^4 is hydrogen, a C_1–C_4 alkyl or halogen.

4,617,304

PURINE DERIVATIVES

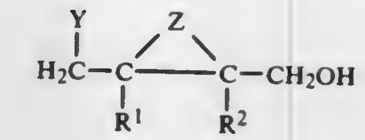
Wallace Ashton, Clark, N.J.; Edward Walton, Sun City West, Ariz., and Richard L. Tolman, Warren, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 10, 1984, Ser. No. 598,612

Int. Cl.⁴ C07D *473/18;* A61K *31/52*

U.S. Cl. 514—261 **8 Claims**

1. A compound of the formula



and the pharmaceutically acceptable salts thereof wherein Y is a purin-9-yl or a heterocyclic isostere of a purin-9-yl group; R^1 is selected from hydrogen and alkyl of 1 to 4 carbon atoms; R^2 is selected from hydrogen, alkyl of 1 to 4 carbon atoms, and $-CH_2OH$; and Z is $>CH_2$ or $>O$.

4,617,305

4-ALKYLINDOLONAPHTHYRIDINES AND THEIR THERAPEUTICAL APPLICATION

Jean A. A. J. Hannart, Dion-Valmont, Belgium, assignor to Omnichem, S.A., Belgium

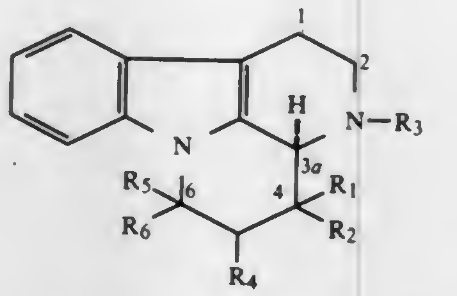
Filed Feb. 22, 1984, Ser. No. 582,314

Claims priority, application Luxembourg, Feb. 25, 1983, 84664

Int. Cl.⁴ C07D *471/16;* A61K *31/475*

U.S. Cl. 514—278 **13 Claims**

1. A 2,2,3,3a,4,5,6-hexahydro 1H indolo(3,2,1-de)(1,5)naphtyridine of formula



(I)

in the form of base or acid addition salt, wherein one of the groups R1 and R2 represents a C_{2-3} alkyl group and the other represents a hydrogen atom in the cis configuration relative to the 3a hydrogen or R1 and R2 represent each independently an alkyl group or, together, an alkanediyl group having from 4 to 6 carbon atoms,

R3 represents a lower alkyl group or a hydrogen atom and either

R_5 represents a lower carboalkoxy group or a hydrogen atom and R6 represents with R4 an additional carbon-carbon bond or

R4 represents a hydrogen atom and R6 and R5 represent together an oxygen atom or respectively a hydrogen atom and a hydroxyl group.

4,617,306

PHARMACEUTICAL PREPARATION COMPRISING CO-DERGOCRINE AND A CALCIUM ANTAGONIST

Dieter Welzel, and Hans Bühlmann, both of Nuremberg, Fed. Rep. of Germany, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 723,948, Apr. 16, 1985, abandoned, which is a continuation of Ser. No. 601,496, Apr. 18, 1984, abandoned. This application Sep. 13, 1985, Ser. No. 775,985

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1983, 3314607

Int. Cl.⁴ A61K *31/44*

U.S. Cl. 514—288 **16 Claims**

1. A method of treating hypertension comprising co-administering to a subject in need of such treatment:

(a) co-dergocrine or a pharmaceutically acceptable acid addition salt thereof; and

(b) as a calcium antagonist, 1,4-dihydro-2,6-dimethyl-4-(2-nitrophenyl)-3,5-pyridine-dicarboxylic acid dimethyl ester;

said components (a) and (b) being co-administered in a ratio of 1:2.5 to 1:25 p.p.w.

4,617,307

SUBSTITUTED IMIDAZO[1,5-A]PYRIDINE DERIVATIVES AS AROMATASE INHIBITORS

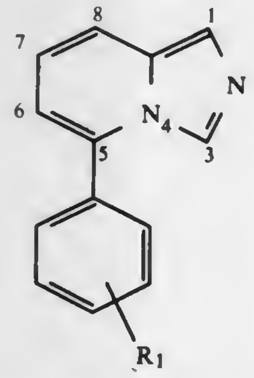
Leslie J. Browne, Morris Plains, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 20, 1984, Ser. No. 622,421

Int. Cl.⁴ A61K *31/44;* C07D *471/04*

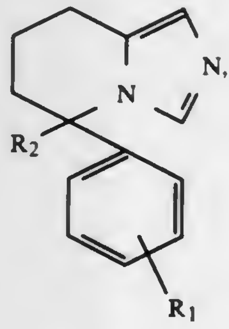
U.S. Cl. 514—300 **20 Claims**

1. A compound of the formula



(Ia)

wherein R_1 represents cyano, nitro or C_1–C_4-alkyl, or a 7,8-dihydro derivative thereof, or a 5,6,7,8-tetrahydro compound of the formula



(Ib)

wherein R_1 is cyano, nitro or C_1–C_4 alkyl; and R_2 is hydrogen, C_1–C_4-alkyl, phenyl-C_1–C_4-alkyl, halogen, C_1–C_4-alkoxy, C_1–C_4-alkylthio, phenyl-C_1–C_4-alkylthio, phenylthio, hydroxy or mercapto esterified by C_1–C_4-alkanoyl, carboxy-C_1–C_4-alkyl, C_1–C_4-alkoxycarbonyl-C_1–C_4-alkyl, or C_1–C_4-alkanoyl; or a pharmaceutically acceptable salt thereof.

6. An aromatase inhibiting pharmaceutical composition comprising an effective aromatase inhibiting amount of a compound of claim 1 of the formula Ia or Ib, or a pharmaceutically acceptable salt thereof; together with a pharmaceutically acceptable carrier or a mixture of pharmaceutically acceptable carriers.

4,617,308

7-SUBSTITUTED AMINO-1-ARYL-6,8-DIFLUORO-1,4-DIHYDRO-4-OXO-3-QUINOLINECARBOXYLIC ACIDS AND DERIVATIVES THEREOF AS ANTIBACTERIAL AGENTS

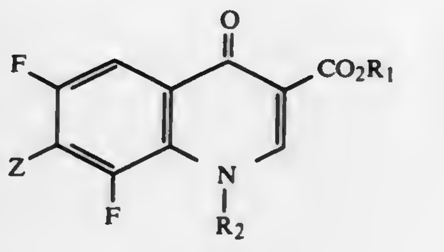
Thomas F. Mich, Ann Arbor, and John M. Domagala, Canton, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jan. 25, 1985, Ser. No. 695,145

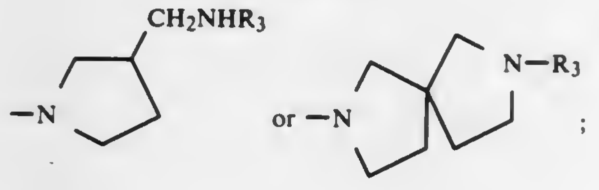
Int. Cl.⁴ A61K *31/97;* C07D *215/27*

U.S. Cl. 514—312 **12 Claims**

1. A compound of the formula



wherein Z is



wherein Z is

R_1 is hydrogen, alkyl having from one to six carbon atoms or a cation; R_2 is phenyl or phenyl substituted by halogen, alkyl, alkoxy, hydroxy, amino, monoalkylamino, dialkylamino or trifluoromethyl, 2-, 3-, or 4-pyridine, 2- or 3-thiophene, 2-imidazole, 2-oxazole or 2-thiazole; R_3 is hydrogen, alkyl having from one to four carbon atoms or cycloalkyl having three to six carbon atoms; or a pharmaceutically acceptable acid addition or base salt thereof.

4,617,309

SULFUR-CONTAINING INDOLE DERIVATIVES

Henning Böttcher, Darmstadt; Rudolf Gottschlich, Reinheim; Hans-Heinrich Hausberg, Ober-Ramstadt; Christoph Seyfried, Seeheim-Jugenheim, and Klaus-Otto Minck, Ober-Ramstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

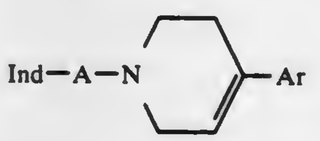
Filed Sep. 30, 1983, Ser. No. 537,621

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1982, 3236243

Int. Cl.⁴ C07D *401/12;* A61K *31/44*

U.S. Cl. 514—339 **21 Claims**

1. A sulfur-containing indole derivative of the formula



wherein

Ind is 3-indolyl or 3-indolyl substituted once or twice by alkyl, O-alkyl, S-alkyl, SO-alkyl, SO_2-alkyl, OH, F, Cl, Br, CF_3 or CN or by methylenedioxy;

A is $-(CH_2)_n-E-C_mH_{2m}-$ or $-(CH_2)_n-E-C_{m-1}H_{2m-2}CO-$;

n is 0 or 1;

m is 2, 3 or 4;

E is S, SO or SO_2;

and

Ar is phenyl or phenyl substituted once or twice by alkyl, O-alkyl, S-alkyl, SO-alkyl, SO_2-alkyl, OH, F, Cl, Br, CF_3 or CN or by methylenedioxy;

wherein each alkyl group is of 1–4C atoms;

or a physiologically acceptable acid addition salt thereof.

4,617,310
5-OXO-2-PYRROLIDINEPROPANOIC ACID DERIVATIVES AND USE AS COGNITION ACTIVATORS

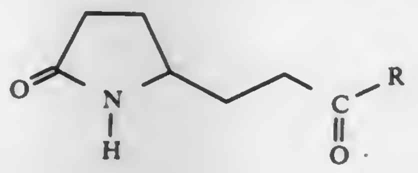
Donald E. Butler, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 476,524, Mar. 24, 1983, Pat. No. 4,559,358, which is a continuation-in-part of Ser. No. 381,662, May 24, 1982, abandoned. This application Aug. 15, 1985, Ser. No. 765,749

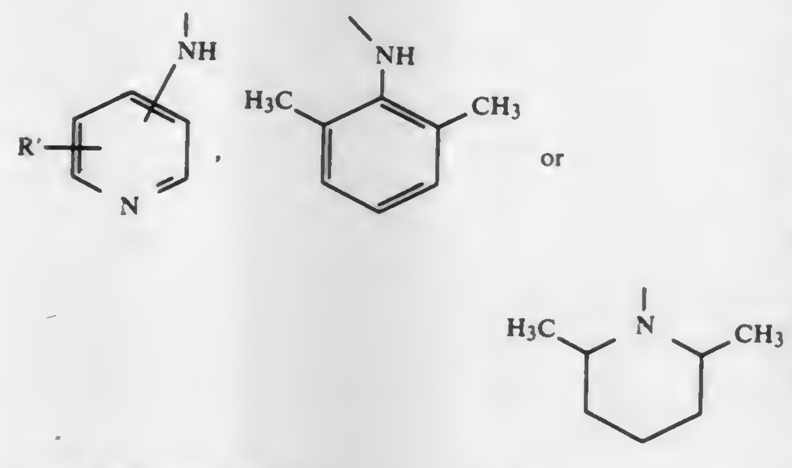
Int. Cl.⁴ C07D *401/06, 207/12;* **A61K** *31/40, 31/44, 31/445*

U.S. Cl. 514—343 **6 Claims**

1. A compound having the structural formula



wherein R is selected from



where R' is amino, alkylamino, or dialkylamino of from one to six carbon atoms.

5. A pharmaceutical composition comprising an electroconvulsive shock-induced amnesia reversing effective amount of a compound as defined by claim 1 in combination with a pharmaceutically acceptable carrier.

6. A method for reversing amnesia caused by electroconvulsive shock in a mammal in need of said treatment, which method comprises administering to said mammal the pharmaceutical composition defined in claim 5.

4,617,311
ANTIASTHMATIC METHOD

Peter P. K. Ho, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed May 17, 1985, Ser. No. 736,896

Int. Cl.⁴ A61K *31/44*

U.S. Cl. 514—353 **4 Claims**

1. A method of treating mammals suffering from or susceptible to asthma which comprises administering an effective amount of Pinacidil.

4,617,312
ALDOSE REDUCTASE INHIBITING 5-(2-ALKOXYPHENYL) THIAZOLIDINEDIONES

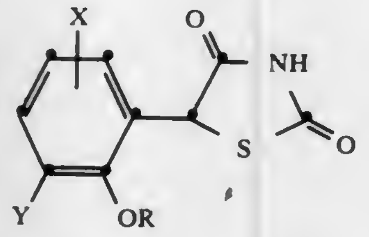
Rodney C. Schnur, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 458,684, Jan. 17, 1983, abandoned. This application Jan. 17, 1985, Ser. No. 692,252

Int. Cl.⁴ C07D *277/34;* **A61K** *31/425*

U.S. Cl. 514—369 **12 Claims**

1. A compound selected from the group consisting of aryl thiazolidinedione derivatives of the formula:



and the base salts thereof with pharmaceutically acceptable cations, wherein

R is alkyl having from one to four carbon atoms;

X is fluoro, chloro or bromo; and

Y is hydrogen, chloro, lower alkyl or lower alkoxy, provided that when Y is hydrogen then X is not 4-chloro.

4,617,313
ALPHA$_2$-ANTAGONISTIC 2-(4,5-DIHYDRO-1H-IMIDAZOL-2-YL)-PYRROLO[3,2,1-HI]INDOLES

Dennis Bigg, Jouy en Josas; Claude Morel, Magny-les-Hameaux, and Mireille Sevrin, Paris, all of France, assignors to Synthelabo, France

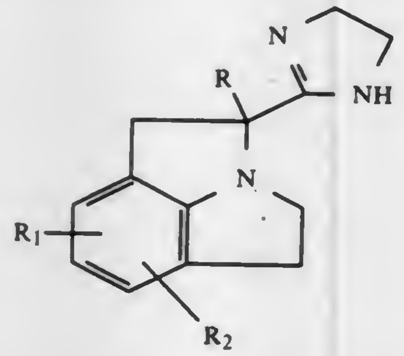
Continuation-in-part of Ser. No. 680,504, Dec. 11, 1984, abandoned. This application Aug. 28, 1985, Ser. No. 770,079

Claims priority, application France, Dec. 12, 1983, 83 19850; Sep. 27, 1984, 84 14839

Int. Cl.⁴ A61K *31/415;* **C07D** *487/06*

U.S. Cl. 514—402 **4 Claims**

1. A pyrrolo-3,2,1-hi]indole derivative, in the form of the racemate or an optically active isomer, of the formula (I)



(I)

in which R is hydrogen or a linear or branched C_{1-4} alkyl group, and R_1 and R_2 which may be the same or different, are hydrogen, halogen or C_{1-4} alkyl, or a pharmaceutically acceptable acid addition salt thereof.

4. A pharmaceutical composition useful as an α_2-antagonist which contains, as active ingredient, an α_2-antagonistically effective amount of a pyrrolo-indole derivative or salt as claimed in claim 1, in association with a pharmaceutically acceptable excipient.

4,617,314
BENZOFURAN- AND BENZOPYRAN-CARBOXAMIDE DERIVATIVES

Tetsuya Tahara, Nakatsu; Kiyoharu Hayano, Fukuoka; Michihide Setoguchi, Nakatsu, and Takemi Fukuda, Fukuoka, all of Japan, assignors to Yoshitomi Pharmaceutical Industries Ltd., Osaka, Japan

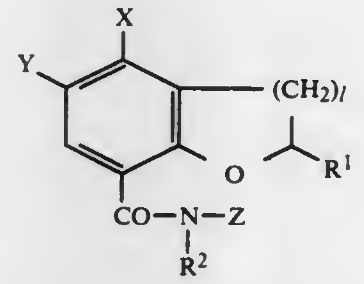
Filed Mar. 20, 1984, Ser. No. 591,363

Claims priority, application Japan, Apr. 8, 1983, 58-62554

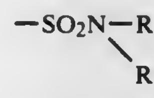
Int. Cl.⁴ A61K *31/34, 31/35;* **C07D** *405/12*

U.S. Cl. 514—422 **11 Claims**

1. Compounds of the formula:

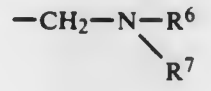


wherein l is 1 or 2; X is hydrogen atom, amino group or halogen atom; Y is $—S(O)_m—R^3$ wherein R^3 is lower alkyl group and m is 0, 1 or 2, or



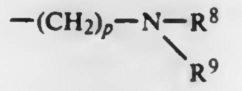
$-SO_2N\begin{smallmatrix}-R^4\\ \diagdown R^5\end{smallmatrix}$

wherein R^4 and R^5 are the same or different and each is hydrogen atom or lower alkyl group; R^1 is hydrogen atom, lower alkyl group, arylthiomethyl group, halogenomethyl group or



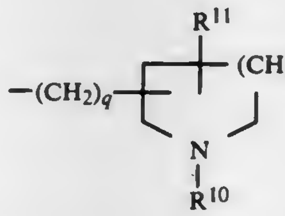
$-CH_2-N\begin{smallmatrix}-R^6\\ \diagdown R^7\end{smallmatrix}$

wherein R^6 and R^7 are the same or different and each is hydrogen atom or lower alkyl group or R^6 and R^7 form, together with the adjacent nitrogen atom, a heterocycle selected from the group consisting of pyrrolidine, piperidine and morpholine; R^2 is hydrogen atom or lower alkyl group; and Z is



$-(CH_2)_p-N\begin{smallmatrix}-R^8\\ \diagdown R^9\end{smallmatrix}$

wherein p is 2 or 3, R^8 and R^9 are the same or different and each is lower alkyl group or R^8 and R^9 form, together with the adjacent nitrogen atom, a heterocycle selected from the group consisting of pyrrolidine, piperidine and morpholine, or



wherein q is 0 or 1, n is 1 or 2, R^{10} is lower alkyl group, lower alkenyl group, lower alkynyl group, phenyl(lower)alkyl group or cycloalkyl group and R^{11} is hydrogen atom or lower alkyl group, physiologically acceptable salts thereof or optical isomers thereof.

4,617,315
PHARMACEUTICAL COMPOSITIONS HAVING IMMUNO-SUPPRESSIVE PROPERTIES

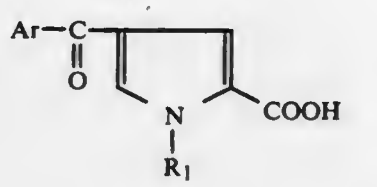
Pierre Bessin, Chilly Mazarin, and Jacqueline Bonnet, Paris, both of France, assignors to Albert Rolland, S.A., Paris, France

Filed May 24, 1985, Ser. No. 738,043

Int. Cl.⁴ A61K *31/40*

U.S. Cl. 514—427 **3 Claims**

1. A method of producing immuno-suppressive action which comprises administering to a subject in need of same a safe and effective amount of the active ingredient of least one compound of formula I



(I)

wherein Ar is a member selected from the group consisting of phenyl, halogenophenyl, naphthyl-1 and naphthyl-2 and R_1 is methyl or phenyl
or the pharmaceutically acceptable mineral or organic base addition salts thereof.

4,617,316
INSECTICIDAL HETEROARYL SUBSTITUTED PHENYL BENZOYLUREAS

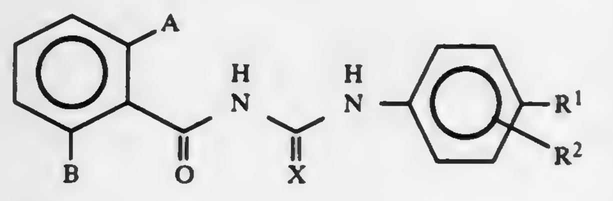
Ernest L. Plummer, Yardley, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 589,604, Mar. 14, 1984. This application Dec. 20, 1985, Ser. No. 811,208

Int. Cl.⁴ A01N *43/08, 43/10;* **C07D** *307/54, 333/24*

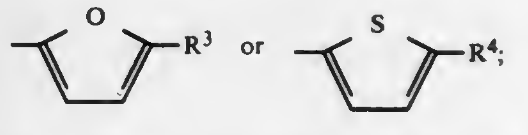
U.S. Cl. 514—438 **3 Claims**

1. A compound of the formula:



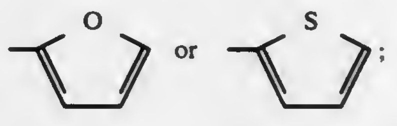
in which:

A. A is chloro, B is hydrogen, X is oxygen, and R^1 is



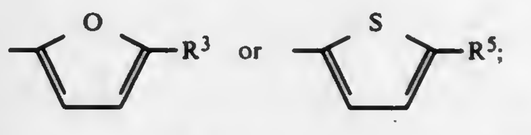
R^2 is in the 3-position and is chloro, cyano, alkyl of 1 or 2 carbon atoms, alkoxy of 1 or 2 carbon atoms, or is in the 3- and 5-positions and at each position is a halogen atom; R^3 is hydrogen or chloro; R^4 is hydrogen or methyl; or

B. A is chloro, B is hydrogen, X is sulfur, and R^1 is



R^2 is cyano, alkyl of 1 or 2 carbon atoms, alkoxy of 1 or 2 carbon atoms, or halomethyl; or

C. A and B are each fluoro, X is oxygen; and R^1 is



R^2 is in the 3-position and is hydrogen, halo, cyano, alkyl of 1 or 2 carbon atoms, alkoxy of 1 to 3 carbon atoms, halomethyl, halomethoxy, or is in the 3- and 5-positions and at each position is a halogen atom; R^3 is as defined above and R^5 is hydrogen, chloro, methyl, or trifluoromethyl.

4,617,317

METHOD OF TREATING ULCERATIVE COLITIS

Justin D. Bennet, 4803 Hart Dr., San Diego, Calif. 92116

Filed Oct. 31, 1984, Ser. No. 666,753

Int. Cl.⁴ A61K *31/355*

U.S. Cl. 514—458 **2 Claims**

1. A method of preventing and/or treating ulcerative colitis comprising administering to a patient 1.5-6 grms daily of alpha, beta, gamma or delta tocopherol quinone.

4,617,318

NON-IRRITATING PYRETHROID FORMULATIONS IN VEGETABLE OILS AND TALL OILS

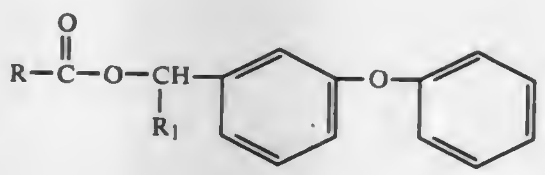
Abdel H. Marei, Mercerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sep. 25, 1981, Ser. No. 305,759

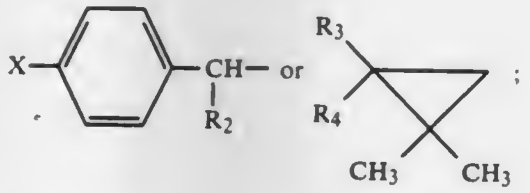
Int. Cl.⁴ A01N *37/34, 53/00, 37/10*

U.S. Cl. 514—520 **10 Claims**

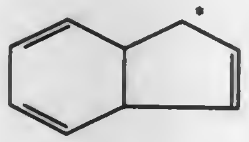
1. A low eye-irritating composition comprising about 5% to 45% by weight of a pesticidal compound of the following structural formula:



wherein R_1 is hydrogen or CN: R is

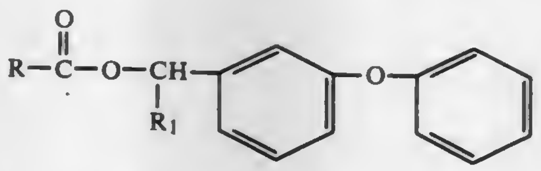


X is Cl, Br, CH_3—, CH_3O—, CF_3—, CF_3O— or F_2CHO; R_2 is C_1-C_4 alkyl; R_3 is H, Cl, Br or CH_3—; R_4 is Cl, Br, CH_3, $(Cl)_2$—C═CH— or $(Br)_2C$═CH—; and when R_3 and R_4 are taken together with the carbon atoms they are attached to, they represent the moiety

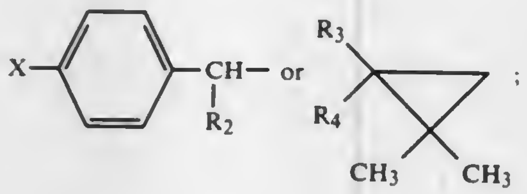


in which the carbon atom marked by an asterick is shared both by the moiety and the cyclopropane ring to which it is attached; and 2% to 10% by weight of the surfactant sorbitan monolaurate, sorbitan monooleate, or mixtures thereof, and a tall oil, in amounts sufficient to total the composition to 100%.

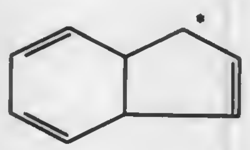
8. A method for the control of insects comprising applying to a locus in which insect control is desired about 0.15 to 37 l/ha, in the form of finely divided microns, of a low eye-irritating composition of about 5% to 45% by weight of a compound having the formula:



wherein R_1 is hydrogen or CN; R is



X is hydrogen, halogen, C_1-C_3 alkyl, C_1-C_3 alkoxy, CF_3, CF_3O— or F_2CHO; R_2 is C_1-C_4 alkyl; R_3 is hydrogen, halogen or C_1-C_2 alkyl; R_4 is halogen, C_1-C_2 alkyl or $(y)_2$═CH— and y is halogen, and when R_3 and R_4 are taken together with the carbon atoms they are attached to, they represent the moiety



in which the carbon atom marked with an asterisk is shared both by said moiety and the cyclopropane ring to which it is attached; 2% to 10% by weight of sorbitan monolaurate, sorbitan monooleate, or mixtures thereof, and 45% to 90% by weight of a tall oil.

4,617,319

METHOD OF TREATING MULTIPLE SCLEROSIS

Suresh S. Kerwar, Ossining; Adolph E. Sloboda, New City, and Susan C. Ridge, Valley Cottage, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 13, 1985, Ser. No. 744,370

Int. Cl.⁴ A61U *31/135*

U.S. Cl. 514—647 **8 Claims**

1. A method of treating neuroimmunologic diseases in a mammal which comprises administering parenterally to said mammal from about 0.25 to about 0.5 mg per kilogram of body weight per day of a compound selected from 1,4-dihydroxy-5,8-bis[[2-(2-hydroxethylamino)ethyl]amino]-anthraquinone and the pharmacologically acceptable acid addition salts thereof.

4,617,320

ENHANCED CONVERSION OF SYNGAS TO LIQUID MOTOR FUELS

Peter K. Coughlin, Yorktown Heights, and Jule A. Rabo, Armonk, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 625,373, Jun. 27, 1984, Pat. No. 4,556,645. This application Nov. 18, 1985, Ser. No. 799,022

Int. Cl.⁴ C07C *1/04*

U.S. Cl. 518—719 **37 Claims**

1. A process for the catalytic conversion of synthesis gas comprising carbon monoxide and hydrogen to $C_5{}^+$ hydrocarbon mixtures having enhanced suitability for use as liquid motor fuels comprising contacting said synthesis gas with a dual catalyst composition comprising a Fischer-Tropsch catalyst together with a co-catalyst/support component comprising a crystalline, microporous SAPO silicoaluminophosphate, non-zeolitic molecular sieve catalyst, the resulting hydrocarbon product containing more than about 10% of $C_5{}^+$ hydrocarbon molecules comprising C_5 up to about C_{22} material, said product having useful quality for liquid motor fuels, whereby synthesis gas can selectively be converted to hydrocarbons boiling in the gasoline and jet fuel and diesel oil boiling range.

4,617,321

SYNTHESIS OF HIGHLY CROSS-LINKED CATION-EXCHANGE POLYMERS FROM AN AQUEOUS SOLUTION

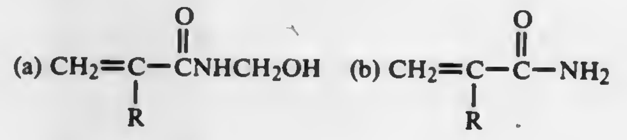
Russell J. MacDonald, Watertown, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

Filed Jul. 2, 1985, Ser. No. 751,710

Int. Cl.⁴ C08D *5/20;* **C08F** *212/30*

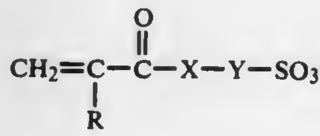
U.S. Cl. 521—38 **4 Claims**

1. The process for making a cation exchange polymer comprising in a single step, the simultaneous cross-linking and polymerization in the presence of a free radical initiator, a pair of monomers (a) and (b) of the formula:



$$\text{(a) } CH_2{=}\underset{\underset{R}{|}}{C}{-}\overset{\overset{O}{\|}}{C}NHCH_2OH \quad \text{(b) } CH_2{=}\underset{\underset{R}{|}}{C}{-}\overset{\overset{O}{\|}}{C}{-}NH_2$$

with an aliphatic sulfonic acid monomer of the formula:



$$CH_2{=}\underset{\underset{R}{|}}{C}{-}\overset{\overset{O}{\|}}{C}{-}X{-}Y{-}SO_3H$$

Where R represents CH or H; X represents NH or O and Y represents a straight-chain unit such as ethyl(—CH_2—CH_2—) or a branch-chain alkyl unit such as isobutyl (—$C(CH_3)_2C$-H_2—).

4,617,322

PRE-EXPANDED PARTICLE OF NON-CROSSLINKED LINEAR LOW DENSITY POLYETHYLENE

Kenichi Senda, Hirakata; Masao Ando, Toyonaka; Kyoichi Nakamura, Osaka, and Tatehiko Nishida, Ibaraki, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 584,859, Feb. 29, 1984, Pat. No. 4,540,718. This application Jun. 26, 1985, Ser. No. 748,803

Claims priority, application Japan, Apr. 5, 1983, 58-60591; Jan. 18, 1984, 59-7634

Int. Cl.⁴ C08J *9/18*

U.S. Cl. 521—60 **4 Claims**

1. A pre-expanded particle of non-crosslined linear low density ethylene copolymer which is a copolymer of ethylene and an α-olefin of C_4 to C_{20} and has a characteristic property that an inclination of metlt tension is not more than 1,500.

4,617,323

PREFOAMED PARTICLES OF CROSSLINKED PROPYLENE-TYPE RESIN AND MOLDED ARTICLE PREPARED THEREFROM

Hideki Kuwabara, Hadano; Yoshimi Sudo, Chigasaki, and Atusi Kitagawa, Fujisawa, all of Japan, assignors to Japan Styrene Paper Corporation, Tokyo, Japan

Filed Feb. 12, 1985, Ser. No. 700,895

Claims priority, application Japan, Feb. 13, 1984, 59-24607

Int. Cl.⁴ C08J *9/22*

U.S. Cl. 521—60 **4 Claims**

1. Prefoamed crosslinked propylene-type resin particles prepared by using as a base resin a propylene random copolymer composed of propylene and another olefin selected from the group consisting of ethylene, butene-1, pentene, hexene, octene and 4-methylpentene-1 and whose amount of heat of crystallization determined by a DSC method is 19 to 10 cal/g, said prefoamed particles having a gel fraction of 25 to 65%, said prefoamed particles also having an internal pressure decreasing speed coefficient, k, at 1 atmosphere which is represented by k≦0.3 (1/hr).

4,617,324

ACETYLENIC DI(T-AMYL PEROXIDE) CROSS-LINKING/BLOWING AGENTS FOR POLYETHYLENE

John R. Muenchow, Richmond; Lawrence A. Bock, Walnut Creek, and Roger N. Lewis, Martinez, all of Calif., assignors to U.S. Peroxygen Company, Richmond, Calif.

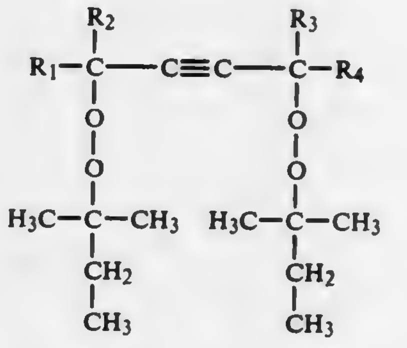
Filed Oct. 22, 1985, Ser. No. 790,285

Int. Cl.⁴ C08J *9/06*

U.S. Cl. 521—96 **19 Claims**

1. A method for making foamed, cross-linked polyethylene comprising:

mixing polyethylene with about 0.1-10% by weight of a cross-linking/blowing agent of the formula



wherein each of R_1, R_2, R_3, and R_4 is selected from straight and branched alkyl having from 1-4 carbon atoms; and

heating said mixture to a temperature sufficient to cross-link and foam said polyethylene under conditions which permit expansion of the polyethylene.

4,617,325

ORGANIC POLYMERS CONTAINING ANTISTATIC AGENTS COMPRISING THE POLYMER HAVING DISPERSED THEREIN A NON-VOLATILE IONIZABLE METAL SALT AND A PHOSPHATE ESTER

Thomas M. Knobel; Earl E. Kennedy, and Mary A. Walker, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 644,586, Aug. 27, 1984, abandoned. This application Jul. 2, 1985, Ser. No. 751,352

Int. Cl.⁴ C08G *18/14*

U.S. Cl. 521—105 **15 Claims**

1. An organic polymer composition comprising an organic polymer having dispersed therein

(a) an alkali metal tetraorganoboride and

(b) an enhancer compound comprising a phosphate ester which is compatible with said organic polymer and in which said alkali metal tetraorganoboride is soluble.

4,617,326

BACTERIA ADSORBING COMPOSITION

Sten G. Björnberg, Spanga; Wilhelm E. S. Hjertén, Upsala, and Torkel M. Wadström, Knivsta, all of Sweden, assignors to Landstingens Inkopscentral Lic Ekonomisk Forening, Solna, Sweden

Filed Mar. 14, 1985, Ser. No. 711,715

Claims priority, application Sweden, Mar. 14, 1984, 8401438

Int. Cl.⁴ A61F *15/00*

U.S. Cl. 523—111 **4 Claims**

1. A bacteria adsorbing composition in water-insoluble form which includes a first component comprising one or more liquid permeable layers of a powerfully hydrophobic, bacteria adsorbing, physiologically innocuous material comprising a woven or non-woven hydrophilic fabric, which has been rendered hydrophobic by chemical treatment with a compound containing hydrophobic groups, and a second component comprising one or more layers of a hydrophilic, liquid adsorbing, physiologically innocuous material, at least one layer of

hydrophilic material being located externally of at least part of the hydrophobic material as viewed from the surface to be treated.

4,617,327

INORGANIC-ORGANIC FILLERS FOR POLYMERIZABLE COMPOSITIONS

Wolfgang Podszun, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 671,373, Nov. 14, 1984, abandoned. This application Oct. 10, 1985, Ser. No. 786,256

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1983, 3341888

Int. Cl.^{4} C08F *2/44;* **C08K** *9/10, 9/06;* **A61K** *6/08*

U.S. Cl. 523—116 **12 Claims**

1. A filler for a polymerizable composition comprising an inorganic core of particles with a particle size of 10 to 500 nm, a first shell of vinylsilane and a second shell of a (meth)acrylate polymer.

4,617,328

BIOCIDAL AGENTS FOR USE IN PLASTICS, POLYMERS AND CELLULOSIC MATERIALS

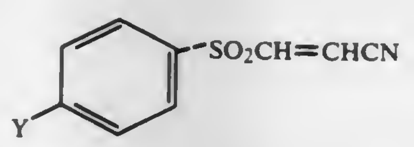
Sophia Y. Liu, Fremont, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 641,622, Aug. 17, 1984, abandoned, which is a continuation of Ser. No. 221,120, Dec. 29, 1980, abandoned. This application Nov. 1, 1985, Ser. No. 793,877

Int. Cl.^{4} C08K *5/41*

U.S. Cl. 523—122 **19 Claims**

1. A plastic or film composition other than a paint comprising a polymer and further comprising a microbiocidally effective amount of a compound having the formula



in which Y is hydrogen, halogen or methyl.

4,617,329

PIGMENTED THERMOPLASTIC RESINS

Richard H. Weese, Washington Crossing, Pa.; Evan H. Crook, Cherry Hill, N.J., and Susan M. Liwak, Langhorne, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 594,161, Mar. 30, 1984, abandoned, which is a continuation-in-part of Ser. No. 513,741, Jul. 22, 1983, abandoned. This application Sep. 5, 1985, Ser. No. 762,236

Int. Cl.^{4} C08L *67/02, 69/00*

U.S. Cl. 523—201 **44 Claims**

1. A pigmented polymer blend comprising from about 60 parts to about 99.9 by weight of a pigmented, non-transparent, non-translucent thermoplastic resin wherein there is present from about 0.1 part by weight to about 30 parts by weight of pigment, per 100 parts of resin, said thermoplastic resin being selected from the class consisting of polyesters, polycarbonates and mixtures thereof, and from 0.1 part to about 40 parts of a sequentially produced multi-stage polymer comprising;

(a) A polymer core of at least about 10 parts, based on the weight of the multi-stage polymer, said core being polymerized from a styrenic monomer or a mixture of a styrenic monomer and a second monomer which is a non-styrenic monovinylidene comonomer and wherein there is at least about 50 percent by weight of said styrenic monomer in said core said core being crosslinked;

(b) A second stage comprising a polymeric soft stage polymerized from an alkyl acrylate monomer or a mixture of an alkyl acrylate and up to 50 percent of a non-crosslinking vinylidene comonomer, said soft stage being crosslinked and graftlinked; and

(c) A rigid thermoplastic outer stage polymerized from at least one monovinylidene monomer.

4,617,330

EPOXY RESIN COMPOSITION FOR CAST MOLDING

Cao M. Thai; Takayuki Oguni, both of Yokohama; Kazuhiko Kurematsu, Atsugi, and Tsuguo Kato, Fujisawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 28, 1985, Ser. No. 717,111

Claims priority, application Japan, Mar. 30, 1984, 59-61211; Sep. 28, 1984, 59-201964

Int. Cl.^{4} C08K *7/10, 7/14;* **C08L** *63/00*

U.S. Cl. 523—220 **9 Claims**

1. An epoxy resin composition for cast molding comprising:

(A) an epoxy resin;

(B) a curing agent;

(C) cut fibers which are 3 to 20 μm in diameter and 3 to 1500 μm in length;

(D) inorganic powder comprised of particles such that 90% by weight or more of the particles have particle sizes of 10 μm or less and 50% by weight or more of the particles have particle sizes of 5 μm or less,

the total amount of the components (C) and (D) formulated being 40 to 225 parts by volume per 100 parts by volume of the total amount of the components (A) and (B) formulated, such that said resin composition has a viscosity which is sufficiently low to be suitable for cast molding.

4,617,331

WATER-DISPERSIBLE POLYMERS CONTAINING METAL CHELATING GROUPS

William G. Boberski, Gibsonia; Richard M. Nugent, Allison Park, and Jeffrey G. Koren, Butler, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 542,880, Oct. 17, 1983, abandoned. This application Jul. 1, 1985, Ser. No. 750,840

Int. Cl.^{4} C09D *5/44, 3/58, 3/64, 3/72*

U.S. Cl. 523—420 **14 Claims**

1. A non-gelled aqueous composition comprising:

(A) a polymer containing a plurality of amino groups, and

(B) a water-solubilizing group containing a metal compound.

4,617,332

PHASE CHANGE COMPOSITIONS

Ival O. Salyer, Dayton, and Charles W. Griffen, Mason, both of Ohio, assignors to University of Dayton, Dayton, Ohio

Filed Aug. 31, 1984, Ser. No. 646,402

Int. Cl.^{4} C08K *3/10, 3/20*

U.S. Cl. 524—4 **10 Claims**

1. A composition useful in thermal energy storage comprising a cementitious matrix material selected from the group consisting of hydraulic cement, gypsum, lime, and plaster of paris; and plurality of pellets or granules containing a crystalline straight chain alkyl hydrocarbon or a mixture of crystalline, straight chain, alkyl hydrocarbons, said hydrocarbon(s) having at least 14 carbon atoms and a heat of fusion greater than 30 cal/g., and said pellet or granule being formed by a process consisting essentially of dissolving or dispersing said alkyl hydrocarbon(s) in a polymer and grinding or cutting said polymer, said polymer being sufficiently compatible with said alkyl hydrocarbon such that said alkyl hydrocarbon can be dissolved or dispersed in said polymer.

4,617,333

STABILIZED POLYOLEFINIC COMPOSITIONS AND STABILIZER COMPOUNDS SUITABLE TO THAT PURPOSE

Silvestro Costanzi, S. Giuliano; Enrico Traverso, Monza; Roberto Podestà , Albisola Sup.; Damiano Gussoni, Milan, and Carlo Busetto, S. Donato, all of Italy, assignors to Enichem Sintesi, S.p.A., Palermo, Italy

Filed Mar. 8, 1985, Ser. No. 709,546

Claims priority, application Italy, Mar. 12, 1984, 20007 A/84

Int. Cl.^{4} C08K *5/34*

U.S. Cl. 524—96 **4 Claims**

1. A stabilized polyolefinic composition consisting essentially of a polyolefin and a stabilizing amount of 3,3,5,5-tetramethyl-morpholine-2-methylene-thioglycolate stearyl ester.

4,617,334

STABILIZER COMPOSITIONS FOR PVC

Thomas G. Kugele; Keith A. Mesch, and Karl R. Wursthorn, all of Cincinnati, Ohio, assignors to Morton Thiokol, Inc., Chicago, Ill.

Continuation of Ser. No. 406,586, Aug. 9, 1982, abandoned. This application Sep. 24, 1984, Ser. No. 654,580

Int. Cl.^{4} C08K *5/36, 5/37, 5/56, 5/58*

U.S. Cl. 524—177 **8 Claims**

1. A composition for stabilizing halogen-containing organic polymers against the deteriorative effects of heat comprising, in amounts such that the resulting stabilizer is synergistically active:

A. an organic antimony compound or mixture of organic antimony compounds having at least one antimony atom and at least one antimony to sulfur to carbon linkage wherein the sulfur to carbon part of each antimony to sulfur to carbon linkage is derived from the group consisting of mercaptides, mercapto acids, mercaptoesters or mercaptoalkyl esters of carboxylic acids and combinations thereof;

B. an organic mercaptan-containing compound or mixture of organic mercaptan containing compounds selected from the group consisting of hydrocarbyl mercaptan, mercaptoesters, mercaptoalcohols, mercapto acids and mercaptoalkyl esters of carboxylic acids; and

C. a metal mercaptoalcohol or mixture of metal mercaptoalcohols having at least one non-benzylic tin or antimony atom having bonded directly thereto at least one mercaptoalcohol group through the sulfur of said mercaptoalcohol group.

7. A polymer composition comprising a halogen-containing organic polymer normally susceptible to heat induced deterioration, and an effective amount of the stabilizer composition according to claim 1.

4,617,335

METHOD FOR IMPROVING MOLD RELEASABILITY OF A POLYMERIC MATERIAL

Fumio Okada; Toshio Oba; Morizo Nakazato, and Kenichi Isobe, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 23, 1985, Ser. No. 758,149

Claims priority, application Japan, Jul. 24, 1984, 59-153555

Int. Cl.^{4} C08K *5/24*

U.S. Cl. 524—265 **8 Claims**

1. A method for improving the mold releaseability of a polymeric material from a metal mold in which the polymeric material has been molded which comprises admixing the polymeric material with an organopolysiloxane having, in a molecule, at least one group of the general formula

$$—C_xH_{2x}—O—R,$$

in which R is a monovalent hydrocarbon group having 8 to 30 carbon atoms and containing no terminal unsaturation and x is zero or a positive integer not exceeding 4, bonded to the silicon atom.

4,617,336

ACYLATED CALIXARENE STABILIZERS

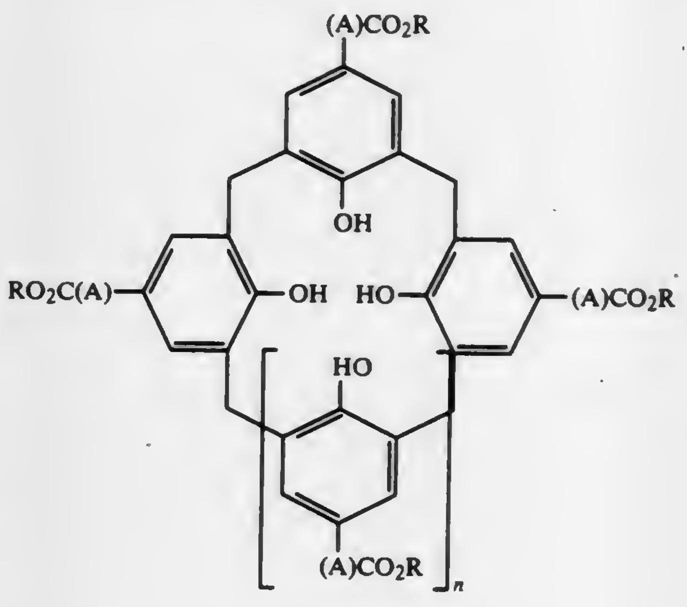
Stephen D. Pastor, Yonkers, N.Y., and Paul Odorisio, Palisades Park, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 22, 1985, Ser. No. 800,842

Int. Cl.^{4} C07C *69/76;* **C08K** *5/10*

U.S. Cl. 524—291 **15 Claims**

1. A compound of the formula



wherein

A is a direct bond or is alkylene of 1 to 2 carbon atoms;

R, when A is a direct bond, is alkyl of 4 to 30 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl or phenyl substituted by alkyl of 1 to 18 carbon atoms;

R, when A is alkylene, is alkyl of 1 to 30 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl or phenyl substituted by alkyl of 1 to 18 carbon atoms; and

n is 1–7.

11. A composition of matter comprising an organic material subject to oxidative, thermal and actinic degradation stabilized with an effective stabilizing amount of a compound of claim 1.

4,617,337

NOVEL POLYMER COMPOSITIONS BASED ON SULFONATED IONOMERS AND AMINE CONTAINING POLYMERS

Robert D. Lundberg, Bridgewater; Dennis G. Peiffer, East Brunswick, and Robert R. Phillips, Spring Lk Heights, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 663,123, Oct. 22, 1984, Pat. No. 4,552,916, which is a continuation of Ser. No. 547,911, Nov. 2, 1983, Pat. No. 4,480,063. This application Nov. 19, 1984, Ser. No. 673,005

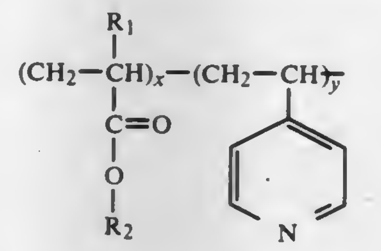
The portion of the term of this patent subsequent to Nov. 12, 2002, has been disclaimed.

Int. Cl.^{4} C08K *5/05, 5/01;* **C08L** *91/00, 39/04*

U.S. Cl. 524—399 **25 Claims**

1. A composition comprising interacting a blend of a neutralized sulfonated polymer containing from about 4 meq. of metal sulfonate per 100 g. of polymer up to 200 meq. per 100 g. of polymer, said sulfonate polymer being at least 95% neutralized, complexed with a second polymer containing basic nitrogen atoms incorporated, pyridine copolymerized or grafted thereon, said polymer containing basic nitrogen from about 4 meq. up to 500 meq. per 100 g. of polymer, wherein the molar ratio of metal sulfonate groups to that of basic nitrogen atoms

varies from about 0.03 to about 30; wherein said polymer containing basic nitrogen groups have the formula:



wherein R_1 is hydrogen or an alkyl group having about 1 to about 8 carbon atoms, R_2 is an alkyl group having about 2 to about 18 carbon atoms, x is about 50 to about 99.8 wt. %, and y is about 0.2 to about 50 wt. %.

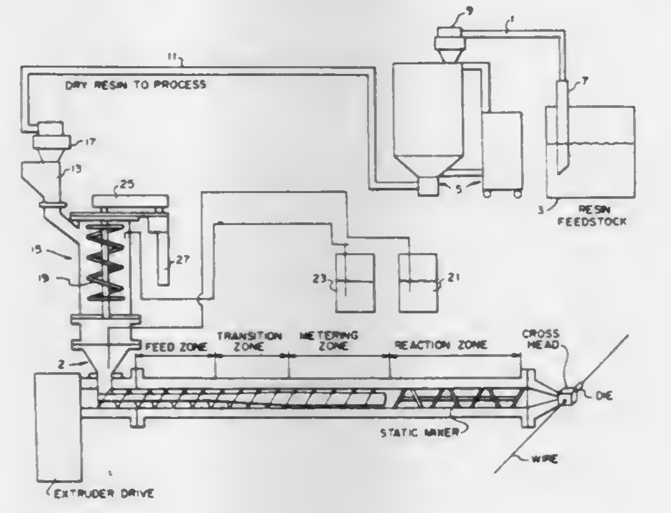
4,617,338
COMPOSITIONS BASED ON ALKYLENE-ALKYL ACRYLATE COPOLYMERS AND SILANOL CONDENSATION CATALYSTS

Michael J. Keogh, Bridgewater; Scott L. Wallace, Hillsborough, and Geoffrey D. Brown, Bridgewater, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 498,341, Jun. 1, 1983, Pat. No. 4,489,029. This application Sep. 27, 1984, Ser. No. 654,967

Int. Cl.⁴ C08L *23/08*

U.S. Cl. 524—437 **9 Claims**



1. A composition of matter consisting essentially of an ethylene-ethyl acrylate copolymer and dibutyltin dilaurate in an amount of about 0.001 to about 0.5 percent by weight based on the weight of said copolymer.

4,617,339
LACQUER, PROCESS FOR LACQUERING THEREWITH, AND ARTICLES LACQUERED THEREWITH

Johan P. Rocholl, Zwijndrecht, and Hendrikus De Jong, Maasdam, both of Netherlands, assignors to Hunter Douglas International N.V., Willmstad, Netherlands

Division of Ser. No. 345,727, Feb. 4, 1982, Pat. No. 4,457,965. This application May 10, 1984, Ser. No. 608,901

Int. Cl.⁴ C08K *7/02;* **C08L** *33/08, 67/00, 77/00*

U.S. Cl. 524—514 **6 Claims**

1. A stoving lacquer including volatile and non-volatile ingredients capable of being stoved at stoving times extending between 15 seconds and 30 minutes at stoving temperatures up to 300° C., said lacquer comprising:

(a) a binder of an organic resinous material, and

(b) finely divided high molecular weight, inert, non-elastomeric, high wear-resistant polyamide or polyimide thermoplastic particles having a softening point of at least 180° C. but below the stoving temperature of the said binder, said particles comprising 10–40% by volume of the non-volatile ingredients and having a diameter of 2–100 microns, the major proportion of particles having a diameter of 40 microns or less; said particles being dispersed in the lacquer to have portions thereof which partially protrude from the outermost layer of the lacquer to provide a wear-resistant surface when applied to an article and to soften and become rounded through partial melting with the majority of the particles still including portions protruding partially from said outermost layer when said layer is subjected to said stoving times and temperatures.

4,617,340
SILICONE-CONTAINING FABRIC TREATMENT AGENT

Masaki Tanaka, and Hiroshi Ohashi, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 4, 1985, Ser. No. 740,983

Claims priority, application Japan, Jun. 6, 1984, 59-115809

Int. Cl.⁴ C08L *83/00*

U.S. Cl. 524—588 **7 Claims**

1. A fabric treatment agent which comprises, as the principal ingredient, a copolymer which is the polymerization product of three types of moieties including:

(a) a diorganopolysiloxane in a liquid form represented by the general formula

$$X—R^1—SiR^2{}_2—O)_nSiR^2{}_2—R^1—X,$$

in which R^1 is a divalent organic group, R^2 is a substituted or unsubstituted monovalent hydrocarbon group having from 1 to 20 carbon atoms, X is an active hydrogen-containing functional group selected from the class consisting of a hydroxy group —OH, mercapto group —SH, carboxyl group —COOH and amino group $—NH_2$ and n is a positive integer not smaller than 10;

(b) a polyol compound having polyoxyalkylene linkages in an amount from 1 to 10 moles per moles of the moiety (a) above; and

(c) a diisocyanate compound in such an amount that the molar ratio —NCO/H of the isocyanate groups —NCO in the diisocyanate com-pound to the overall hydrogen atoms of the functional groups X in the moiety (a) and the hydroxy groups in the moiety (b) is in the range from 0.05 to 1.

4,617,341
POLYURETHANE LATEX SIZING AGENTS FOR THE PAPER INDUSTRY AND THEIR METHOD OF MANUFACTURE

Antoine Laine, Paris, and Claude Senez, Gouvieux, both of France, assignors to Atochem, France

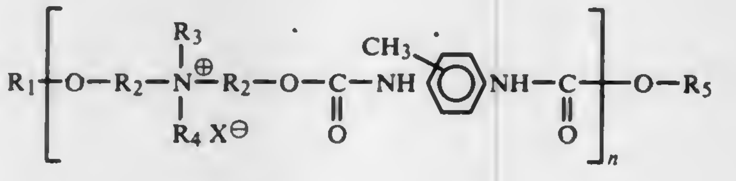
Filed May 20, 1985, Ser. No. 735,844

Claims priority, application France, Jun. 5, 1984, 84 08792

Int. Cl.⁴ C08L *75/04*

U.S. Cl. 524—591 **11 Claims**

1. A sizing agent comprising an oligourethane latex; said urethane having the formula:



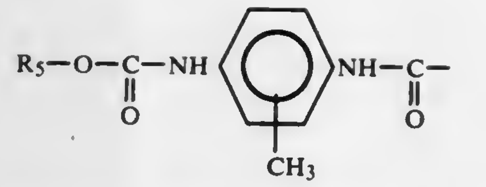
in which

R_2 is an alkylene radical containing a C_2-C_6 radical or a polyoxyalkylenic radical of a degree of polycondensation of 1 to 4,

R_3 is an alkyl radical containing at least 7 carbon atoms, and R_4 and X represent the remainder of the quaternizing agent R_4X

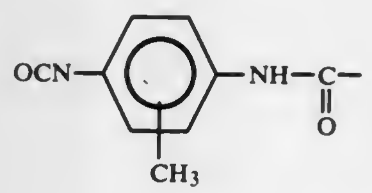
with

(a) R_1 representing

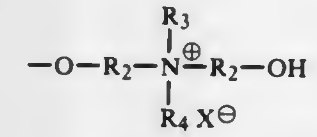


R_5 being an aliphatic radical containing C_4 as a maximum and n varying from 1 to 3; or

(b) R_1 representing



R_5 being



$$—O—R_2—\overset{R_3}{\underset{R_4X^{\ominus}}{N^{\oplus}}}—R_2—OH$$

in which R_2, R_3, R_4 and X having the preceding definitions and n varying from 2 to 6.

4,617,342
CRYSTALLINE COPOLYAMIDE FROM TEREPHTHALIC ACID, ISOPHTHALIC ACID AND C_6 DIAMINES

Wassily Poppe, Lombard; Yu-Tsai Chen, Glen Ellyn, and Edward E. Paschke, Wheaton, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 601,863, Apr. 19, 1984, abandoned, which is a continuation-in-part of Ser. No. 466,901, Feb. 16, 1982, abandoned. This application May 16, 1985, Ser. No. 735,072

Int. Cl.⁴ C08G *69/26;* **C08L** *77/06*

U.S. Cl. 524—606 **8 Claims**

1. A crystalline polyamide resin having improved tensile strength formed from dicarboxylic acid compounds and diamines wherein said dicarboxylic acid compounds comprise compounds of terephthalic acid (TA) and isophthalic acid (IA) in a molar ratio TA:IA of at least 80:20 to about 99:1 and wherein said diamines comprise hexamethylene diamine (HMDA) and trimethylhexamethylene diamine (TMHMDA) in a molar ratio HMDA:TMHMDA of about 98:2 to about 60:40.

4,617,343
LAMINATING ADHESIVES CONTAINING POLYMERIZED SURFACTANT

James L. Walker, Whitehouse Station, and Mourad T. Mitry, Flemington, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Apr. 23, 1984, Ser. No. 602,789

Int. Cl.⁴ C08F *28/02;* **C08K** *3/18, 5/05*

U.S. Cl. 524—817 **11 Claims**

1. A pressure sensitive laminating adhesive polymer emulsion having a glass transition temperature of from −60° to −20° C., the emulsion polymer consisting essentially of:

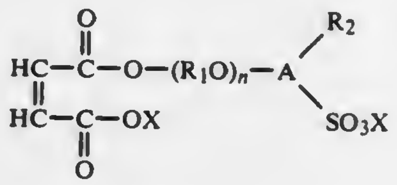
(a) at least 70% by weight of the polymer of an acrylic or methacrylic acid ester containing 4 to 12 carbon atoms or mixture of such esters;

(b) from 15 to 20% of the polymer of a water miscible vinyl ester of an aliphatic carboxylic acid containing 1 to 13 carbon atoms;

(c) from 2 to 10% of the polymer of a monoethylenically unsaturated mono- or di-carboxylic acid containing 2 to 5 carbon atoms or the hydroxyalkyl (C_2–C_4) esters thereof;

(d) from 0.75 to 10% of the polymer of a polymerizable surfactant selected from the class consisting of:

(i) ring sulfonated maleate half esters of an alkoxylated alkyl arylol having the formula:



where

R_1 is selected from the group consising of ethylene, propylene, and mixtures thereof,

R_2 is selected from the group consisting of hydrogen and alkyl groups each of which contains from 5 through 18 carbon atoms each,

A is selected from the group consisting of phenyl nuclei or phenyl nuclei and naphthyl nuclei or naphthyl nuclei,

X is selected from the group consisting of hydrogen, alkali, metals, ammonium, lower monoalkyl amines lower dialkyl amines, lower trialkyl amines, lower monoalkanol amines, lower dialkanol amines, lower trialkanol amines, heterocyclic amines, phosphates, and mixtures thereof, and

n is a number of from about 2 through 50 inclusive, provided that, when R_2 is hydrogen $(R_1O)_n$ has at least one of the following structures:

$—(PO)_p—(EO)_q—'$

$—(PO)_p—(EO)_q—(PO)_r—(EO)_s—'$ and

$—(PO)_p—(EO)_q—(PO)_r—(EO)_s—(PO)_t—(EO)_u$

wherein

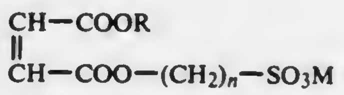
p, r, and t, when present, are each an independently selected number of from about 3 through 9 inclusive;

q, s, and u, when present, are each an independently selected number of from about 1 through 4 inclusive, and when the associated (EO) entity is a terminated block, q, s, and u can each be an independently selected positive number of from 1 to 20,

P is propylene, and

E is ethylene;

(ii) compounds of the formula:



$$\begin{array}{l} CH—COOR \\ \| \\ CH—COO—(CH_2)_n—SO_3M \end{array}$$

wherein

R is alkyl of 6 to 22 carbon atoms, M is H, Li, Na, K or NH_4 and n is an integer 2 to 4; and

(iii) polymerizable (allyl) sulfosuccinates;

(e) from 0 to 19% of the polymer of a half ester or salt of a dicarboxylic acid containing 2 to 8 carbon atoms in the ester portion thereof, wherein the total of components (c) and (e) are less than 20% by weight of the total polymer; and

(f) from 0 to 20% of other copolymerizable monomers. wherein the adhesive polymer emulsion is characterized by its ability to be diluted with at least 15 parts alcohol per 100 parts wet emulsion.

10. The laminating adhesive emulsion polymer of claim **1** wherein the polymerizable surfactant is a polymerizable allyl sulfosuccinate.

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ALKYL PHOSPHONATE ESTER-MODIFIED ORGANOPOLYSILOXANE LATEX AND A METHOD FOR THE PREPARATION THEREOF

Masaki Tanaka, and Hiroshi Ohashi, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Filed May 8, 1985, Ser. No. 732,239
Claims priority, application Japan, May 22, 1984, 59-103383
Int. Cl.⁴ C08L *83/00*
U.S. Cl. 524—837 **4 Claims**

1. A method for the preparation of an organopolysiloxane latex which comprises:

emulsion-polymerizing (a) 100 parts by weight of an organosilicon compound represented by the general formula

$$R_a{}^1R_b{}^2SiO_{(4-a-b)/2}'$$

in which R^1 is a group selected from the class consisting of substituted and unsubstituted monovalent hydrocarbon groups having from 1 to 20 carbon atoms, R^2 is an alkoxy group or a hydroxy group, each of the groups denoted by R^1 or R^2 in a molecule being independet from the others, a is a positive number not exceeding 3 and b is zero or a positive number not exceeding 3 with the proviso that a+b is in the range from 1 to 4 inclusive, and (b) from 0.1 to 30 parts by weight of a phosphonate ester-modified alkoxy silane represented by the general formula

$$(R^3O)_{3-c}R^3{}_cSi-R^4-PO(OR^3)_2,$$

in which R^3 is a substituted or unsubstituted monovalent hydrocarbon group having from 1 to 20 carbon atoms, each of the groups denoted by R^3 in a molecule being independent from the others, R^4 is a divalent hydrocarbon group having from 1 to 8 carbon atoms and c is zero, 1 or 2, in an aqueous medium containing (c) a surface active agent selected from the class consisting of the sulfonic acid type having the structural formula

$$R^5-C_6H_4-SO_3H,$$

in which R^5 is a monovalent aliphatic hydrocarbon group having at least 6 carbon atoms, and the sulfate ester type having the formula

$$R^6OSO_3H,$$

in which R^6 is a monovalent organic group having at least 6 carbon atoms.

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POLYMER MIXTURE WHICH COMPRISES AN AROMATIC POLYCARBONATE RESIN AND AN IMPACT STRENGTH-IMPROVING AGENT

Willem L. Sederel, TD Roosendaal, Netherlands, assignor to General Electric Company, Mt. Vernon, Ind.
Filed Jul. 31, 1985, Ser. No. 760,886
Claims priority, application Netherlands, Aug. 20, 1984, 8402555
Int. Cl.⁴ C08L *69/00*
U.S. Cl. 525—67 **4 Claims**

1. A polymer mixture which comprises an aromatic polycarbonate resin and an impact strength-improving agent, characterized in that the polymer mixture comprises the following constituents:

(a) 86–99% by weight of an aromatic polycarbonate resin;

(b) 0.5–4% by weight of one or more partially hydrogenated block copolymers consisting of at least two terminal polymer blocks A of a monoalkenyl-arylene having an average molecular weight of 5,000–125,000 and at least one intermediate polymer block B of a conjugated diene having an average molecular weight of 10,000–300,000, the terminal polymer blocks A forming 8–55% by weight of the block copolymer, while not more than 25% by weight of the aromatic double bonds of the polymer blocks A and at least 80% of the aliphatic double bonds of the polymer blocks B have been reduced by hydrogenation, and

(c) 0.5–10% by weight of one or more graft copolymers having an elastomeric core built up for more than 50% by weight from a polymerized diene, optionally a second phase built up from a polymerized vinyl monomer grafted on the core and having an enveloping phase (shell) built up from the polymerized product of one or more monomers selected from the group consisting of a C_1–C_6 alkyl acrylate, a C_1–C_6 alkyl methacrylate, acrylic acid, methacrylic acid and a mixture of one or more of the said monomers optionally with a cross-linking agent, which enveloping phase is grafted on the core and on the second phase optionally present, the quantities of a, b and c being calculated with respect to the overall quantity of a+b+c.

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POLYPHENYLENE ETHER RESIN COMPOSITION

Nobuharu Sonoda, Osaka, Japan, assignor to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan
Continuation-in-part of Ser. No. 694,367, Jan. 24, 1985, abandoned. This application Jan. 13, 1986, Ser. No. 818,073
Claims priority, application Japan, Jan. 24, 1984, 59-10614
Int. Cl.⁴ C08L *61/04*
U.S. Cl. 525—68 **9 Claims**

1. A polyphenylene ether resin composition comprising:

(A) 10 to 90 parts by weight of polyphenylene ether resin which is selected from the group consisting of phenylene ether homopolymer and phenylene ether copolymer,

(b) 5 to 88 parts by weight of polystyrene resin which is selected from the group consisting of polystyrene, rubber-modified polystyrene, styrene-butadiene copolymer, styrene/butadiene/acrylonitrile copolymer, styrene/α-methylstyrene copolymer, poly-α-methylstyrene, and rubber-modified styrene/α-methylstryene copolymer, and

(C) 1 to 25 parts by weight of an alkyl acrylate core-shell graft copolymer which comprises a core and a shell further comprising an intermediate layer and an outermost layer,

(1) 50 to 75% by weight of said core comprising a cross-linked elastic copolymer obtained by emulsion-polymerizing a monomer mixture containing 70 to 95% by weight of an alkyl acrylate having 2 to 12 carbon atoms in the alkyl group thereof and 30 to 5% by weight of butadiene in the presence of 0.01 to 3% by weight of a crosslinking agent based upon the amount of the monomer mixture,

(2) 45 to 10% by weight of said intermediate layer comprising a cross-linked polymer obtained by graft-polymerizing on the core (1) a monomer mixture containing 50 to 80% by weight of styrene and 50 to 20% by weight of methyl methacrylate in the presence of 0.01 to 2% by weight of a cross-linking agent based upon the amount of the monomer mixture, and

(3) 5 to 25% by weight of said outermost layer cormprising a cross-linked polymer obtained by graft-polymerizing on the intermediate layer (2) methyl methacrylate in the presence of 0.01 to 2% by weight of a crosslinking agent based upon the amount of methyl methacrylate,

wherein the sum of the components (A), (B) and (C) is 100 parts by weight.

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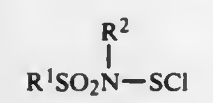
SULFUR CURABLE SILICONE RUBBER

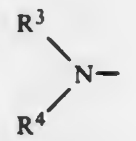
Richard M. D'Sidocky, Ravenna, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sep. 9, 1985, Ser. No. 773,767
Int. Cl.⁴ C08F *8/00*
U.S. Cl. 525—105 **23 Claims**

1. A sulfur curable silicone rubber which is comprised of the reaction product of (1) a silicone rubber which contains pendent vinyl groups and (2) an N-chlorothio-sulfonamide having the formula



$$R^1SO_2\overset{\overset{R^2}{|}}{N}-SCl$$

where R^1 and R^2 are selected from the group consisting of alkyl radicals having 1–20 carbon atoms, aralkyl radicals having 7–20 carbon atoms, alkaryl radicals having from 7–20 carbon atoms, and haloaryl radicals having 6–10 carbon atoms and where R^1 is also selected from radicals having the formula



where R^3 and R^4 are individually selected from said alkyl, aralkyl, and haloaryl radicals and where R^3 and R^4 can be joined together to represent $-CH_2-_n$ radicals where n is an integer of 4 to 7.

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CROSSLINKABLE COMPOSITION COMPRISING MODIFIED AMINOEPOXY RESINS-II

Ray A. Dickie, Birmingham, and Saiyed B. A. Qaderi, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 10, 1984, Ser. No. 679,962
Int. Cl.⁴ C08L *63/10*
U.S. Cl. 525—112 **36 Claims**

1. A crosslinkable composition of matter comprising first and second resins,

said first resin being substantially gel-free diene functional aminoepoxy resin of number average molecular weight (Mn) about 1000–18,000, comprising the reaction product of diepoxide reactant with first reactant comprising amine functional conjugated diene chain extending reactant selected from the group consisting of di-secondary amine functional bis-diene, mono-primary amine functional diene, and a mixture of any of them,

said second resin being substantially gel-free blocked dieneophile functional aminoepoxy resin, other than said diene functional aminoepoxy resin, of number average molecular weight (Mn) about 1000–18,000, comprising the reaction product of diepoxide reactant with second reactant comprising amine functional blocked dieneophile chain extending reactant selected from the group consisting of di-secondary amine functional bis-blocked dieneophile, mono-primary amine functional blocked dieneophile, and a mixture of any of them,

at least one of said first reactant and said second reactant further comprising modifying agent comprising hydroxy functional secondary amine, and at least one of said first reactant and said second reactant further comprising second modifying agent selected from the group consisting of secondary amine terminated butadiene acrylonitrile copolymer resin, carboxy terminated butadiene acrylonitrile copolymer resin, and any mixture thereof, said second modifying agent having number average molecular weight about 1400–4400 and amine or carboxy, respectively, equivalent weight of about 700–2200.

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URETHANE RESIN COMPOSITIONS

Kohji Nasu, Nishinomiya, and Ichiro Minato, Kobe, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed Oct. 28, 1985, Ser. No. 792,491
Claims priority, application Japan, Nov. 2, 1984, 59-232161
Int. Cl.⁴ C08G *18/62*
U.S. Cl. 525—123 **7 Claims**

1. A urethane resin composition which comprises (i) a polyisocyanate component having 20/80 to 80/20 of a weight ratio on a solid basis of an α,α,α',α'-tetramethyl-xylylene diisocyanate derivative to a hexamethylene diisocyanate derivative and (ii) an acrylic polyol.

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FLUORINE-CONTAINING RESIN COMPOSITION FOR OPTICAL USE

Kazuhiko Maeda, and Akira Kawada, both of Tokyo, Japan, assignors to Central Glass Company, Limited, Ube, Japan
Filed Feb. 5, 1986, Ser. No. 826,373
Claims priority, application Japan, Feb. 20, 1985, 60-30621
Int. Cl.⁴ C08L *27/16, 33/04*
U.S. Cl. 525—153 **11 Claims**

1. A resin composition suitable for optical uses, consisting essentially of a blend of an acrylic ester polymer with a copolymer of vinylidene fluoride and hexafluoroacetone.

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MELT EXTRUDABLE COMPOSITION OF PERFLUOROCARBON POLYMERS

Thomas A. Heckel, Jr., Hockessin, Del., and Felice J. Rizzo, Mt. Pleasant, S.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 19, 1985, Ser. No. 811,109
Int. Cl.⁴ C08L *27/12, 23/16, 27/18*
U.S. Cl. 525—199 **6 Claims**

1. A melt extrudable thermoplastic perfluorocarbon polymer having a melt viscosity of between 1×10^2 and 1×10^6 Pa.s containing up to about 1 percent by weight of a hydrocarbon polymer, said hydrocarbon polymer being present in an amount which results in an increased extrusion rate before electrical flows are observed, as compared to the same perfluorocarbon polymer not containing any hydrocarbon polymer.

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ETHYLENE POLYMER COMPOSITION FOR BLOW MOLDING

Matthew A. Page; William J. Libbey, and Allan J. Lundeen, all of Ponca City, Okla., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 508,696, Jun. 28, 1983, Pat. No. 4,525,322. This application May 30, 1985, Ser. No. 739,417
Int. Cl.⁴ C08L *23/06*
U.S. Cl. 525—240 **11 Claims**

1. A polyethylene resin composition comprising high molecular weight, medium molecular weight and low molecular weight fractions, which are selected from the group consisting of homopolymers of ethylene and copolymers of ethylene and/or olefins having three to twelve carbons, wherein;

(A) the molecular weight of the high molecular weight component (H-MW) ranges from 590,000 to 860,000 and comprises 12 to 25 percent by weight of the total resin;

(B) the molecular weight of the medium molecular weight component (M-MW) ranges from about 75,000 to about 600,000 and comprises 5 to 83 percent by weight of the total resin;

(C) the molecular weight of the low molecular weight component (L-MW) ranges from about 10,000 to about 100,000 and comprises 5 to 83 percent by weight of the total resin; and wherein the ratio of H-MW/M-MW$\geqq$1.7

and the ratio of M-MW/L-MW≧1.7, wherein the density of the total resin ranges from 0.940 to 0.970 and the melt index at a 2.16 kilogram load ranges from about 0.01 to about 2.0.

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ELECTRICALLY CONDUCTIVE POLYMER BLEND

Ronald E. Myers, Strongsville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Oct. 7, 1985, Ser. No. 784,905

Int. Cl.⁴ C08L *27/06, 65/00, 75/04*

U.S. Cl. 525—245 **14 Claims**

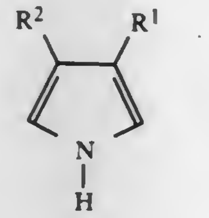
1. A process for preparing an electrically conductive polyblend of a polypyrrole or substituted polypyrrole and a thermoformable, normally insulating matrix polymer, comprising,

(a) forming a solution of said matrix polymer in a liquid solvent in which the matrix polymer is substantially soluble, and,

(b) forming a poly(2,5-pyrrole) in situ in said solution by contacting

(i) a finely divided anhydrous polymerization initiator selected from the group consisting of halides of a Group VIII metal selected from iron, cobalt and nickel, with

(ii) an anhydrous essentially pure liquid pyrrole monomer in a ratio of initiator to pyrrole monomer in the range of from about 0.1 to about 1, optionally in solution with the matrix polymer, at a temperature in the range from above the freezing point of said solution of matrix polymer to below its boiling point, so as to form said poly(2,5-pyrrole) which contains an ion selected from the group consisting of said Group VIII metal, halogen, and combinations thereof as charged species, said monomer having the structure



wherein,

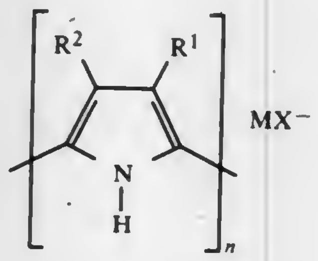
R^1 is selected from the group consisting of hydrogen, alkyl having from 1 to about 6 carbon atoms, cycloalkyl having from 3 to about 7 ring carbon atoms one or more of which may be substituted, alkoxyalkyl having from 3 to about 24 carbon atoms, and benzyl which may optionally be ring-substituted with halogen or lower alkyl having from 1 to about 6 carbon atoms;

R^2 is selected from the group consisting of hydrogen, hydroxyphenyl which may be ring-substituted, and an acyclic ether selected from the group consisting of (i) alkoxy represented by $—OR^3$, wherein R^3 represents alkyl having from 1 to about 12 carbon atoms, alkoxyalkyl having from 2 to about 24 carbon atoms, phenyl which may be substituted, benzyl or substituted benzyl, heteroaryl or substituted heteroaryl; (ii) polyalkoxy represented by the structure $CH_3—[OCH_2CH_2]_{n'}—$ wherein n′ is an integer in the range from 1 to about 20; and (iii) $R^4—O—R^4$ wherein either R^4 or R^5 is a linking group selected from phenyl and benzyl, each of which may be substituted, alkyl having from 1 to 24 carbon atoms, and cycloalkyl having from 3 to about 7 ring carbon atoms one or more of which may be substituted; and,

R^1 may be substituted with R^2, and if so substituted, each R^2 substituent may be the same or different;

whereby said polyblend formed consists essentially of a PP/subs PP phase homogeneously blended with said matrix polymer phase, said polyblend having a conductivity in the range from 10^{-3} to about 150 S/cm.

14. A conductive porous membrane consisting essentially of a polyblend of (i) a thermoformable, normally insulating matrix (polymer) and (ii) a polypyrrole or substituted polypyrrole substantially homogeneously distributed within said matrix polymer, said polypyrrole or substituted polypyrrole containing an ion selected from the group consisting of said Group VIII metal, halogen, and combinations thereof as charged species, said polypyrrole or substituted polypyrrole having the structure



wherein,

n is an integer in the range from 2 to about 100, and more preferably in the range from about 5 to about 20;

M represents a Group VIII metal selected from the group consisting of iron, nickel, and cobalt;

X represents chlorine, fluorine or bromine;

R^1 is selected from the group consisting of hydrogen, alkyl having from 1 to about 6 carbon atoms, cycloalkyl having from 3 to about 7 ring carbon atoms one or more of which may be substituted, alkoxyalkyl having from 3 to about 24 carbon atoms, and benzyl which may optionally be ring-substituted with halogen or lower alkyl having from 1 to about 6 carbon atoms;

R^2 is selected from the group consisting of hydrogen, hydroxyphenyl which may be ring-substituted, and an acyclic ether selected from the group consisting of (i) alkoxy represented by $—OR^3$, wherein R^3 represents alkyl having from 1 to about 12 carbon atoms, alkoxyalkyl having from 2 to about 24 carbon atoms, phenyl which may be substituted, benzyl or substituted benzyl, heteroaryl or substituted heteroaryl; (ii) polyalkoxy represented by the structure $CH_3—[OCH_2CH_2]_{n'}—$ wherein n′ is an integer in the range from 1 to about 20; and (iii) $R^4—O—R^4$ wherein either R^4 or R^5 is a linking group selected from phenyl and benzyl, each of which may be substituted, alkyl having from 1 to 24 carbon atoms, and cycloalkyl having from 3 to about 7 ring carbon atoms one or more of which may be substituted; and,

R^1 may be substituted with R^2, and if so substituted, each R^2 substituent may be the same or different;

whereby said membrane has a conductivity in the range from 10^{-3} to about 150 S/cm.

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ADHESIVE COMPOSITIONS WITH THERMOREVERSIBLE CROSSLINKING AND USES THEREFOR

Daniel Augustin, Bernay, France; Christian Leriche, Tokyo, Japan, and Pierre Poisson, Bernay, France, assignors to Atochem, France

Filed Jan. 24, 1985, Ser. No. 694,223

Claims priority, application France, Jan. 31, 1984, 84 01436

Int. Cl.⁴ C08F *265/02*

U.S. Cl. 525—301 **10 Claims**

1. An adhesive composition with thermoreversible crosslinking prepared by the reaction of the vinyl ether functions of a divinyl ether having the formula $CH_2{=}CH—O—R—O—CH{=}CH_2$, wherein R is aliphatic, aromatic or cycloaliphatic, with the carboxyl functions of polymer produced by the polymerization of an olefin with an ethylenically unsaturated monocarboxylic acid, the quantity of the divinyl ether being from 0.1 to 5 percent by weight and the quantity of polymer being from 99.9 to 95 percent by weight.

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CROSS-LINKED NYLON BLOCK COPOLYMERS

James D. Gabbert, Wilbraham, Mass., and Ross M. Hedrick, St. Louis, Mo., assignors to DSM RIM Nylon VOF, Maastricht, Netherlands

Continuation-in-part of Ser. No. 623,257, Jun. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 560,714, Dec. 12, 1983, abandoned. This application Nov. 13, 1984, Ser. No. 670,188

Int. Cl.⁴ C08L *67/00;* **C08F** *283/04*

U.S. Cl. 525—420 **42 Claims**

1. A polymer prepared by reaction of at least one acyl lactam functionalized material and at least 0.02 equivalent of at least one polyfunctional amine wherein the acyl lactam functionalized material is derived from an elastomeric polymer having a molecular weight between about 200 and about 15,000, wherein the acyl lactam group is a C_3 to C_{14} lactam derivative of a carboxylic acid, a sulfonic acid, a phospho-acid or a thiocarboxyl derivative of a carboxylic acid and wherein the amine has a molecular weight of at least 60 and its polyfunctionality is provided by at least 2 primary or secondary amine groups.

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TEMPERATURE SENSITIVE POLYMER COMPOSITIONS

Tomiharu Hosaka, Kyoto; Yoshio Kishimoto, and Wataru Shimotsuma, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jun. 13, 1985, Ser. No. 744,196

Claims priority, application Japan, Jun. 15, 1984, 59-123046; Jun. 15, 1984, 59-123047; Oct. 19, 1984, 59-219503

Int. Cl.⁴ C08L *77/12*

U.S. Cl. 525—429 **18 Claims**

1. A temperature sensitive polymer composition comprising a polymer matrix which contains at least 20 wt % of a modified polyamide resin having N-alkyl-substituted amido units or ether-amido units, and a phenolic compound/aldehyde polycondensate dispersed in said polymer matrix in an amount of from 5 to 30 parts by weight per 100 parts by weight of said polymer matrix.

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PROCESS FOR REDUCING THE CONTENT OF CHLORINE IN GLYCIDYL COMPOUNDS

Kemal D. Pallie, Choëx, and Gerald Dessauges, Montreux, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 16, 1985, Ser. No. 776,319

Claims priority, application Switzerland, Sep. 24, 1984, 4556/84

Int. Cl.⁴ C08G *59/14*

U.S. Cl. 525—506 **11 Claims**

1. A process for reducing the content of chlorine in a glycidyl compound in which the glycidyl groups are bonded to ether-oxygen, N or S atoms, which comprises reacting the glycidyl compound, dissolved in a halogen-free inert organic solvent, with a tin hydride of the formula I or II

$$R_3SnH \qquad (I)$$

or

$$R_2SnH_2 \qquad (II)$$

in which each radical R independently of one another is alkyl with 1 to 4 C atoms or phenyl, at least 1 equivalent of the tin hydride of the formula I or II being employed per equivalent of chlorine present, in the presence of a catalytic amount of an initiator which forms free radicals, and then isolating the glycidyl compound from the reaction solution.

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PROCESS FOR THE PRODUCTION OF HIGH MOLECULAR WEIGHT THERMOPLASTIC RESINS

Herbert Eichenauer, Dormagen, and Karl-Heinz Ott, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 30, 1985, Ser. No. 739,280

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1984, 3421354

Int. Cl.⁴ C08F *2/26*

U.S. Cl. 526—81 **2 Claims**

1. A process for the production of high molecular weight uncross-linked vinyl polymers by emulsion polymerization, consisting essentially of,

(a) from 1 to 20 parts, by weight, of vinyl monomer selected from styrene, α-methyl styrene, p-methyl styrene, vinyl toluene, (meth) acrylonitrile, methyl (meth) acrylate, vinyl acetate, N-phenyl maleic imide or a mixture thereof;

(b) from 0.1 to 3.0 parts, by weight, of a mono- or di-ol of a C_8–C_{22} aliphatic hydrocarbon compound; and

(c) from 80 to 400 parts, by weight, of water;

(d) from 0.05 to 0.5 parts, by weight, of a water soluble initiator or initiator system at a temperature of from 50° to 65° C. to form a reaction mixture;

and, in process step (b), which is carried out after a reaction time of from 5 minutes to 1 hour at that temperature separately adding to the reaction mixture,

(e) from 80 to 99 parts, by weight, of vinyl monomer or monomer mixture; and

(f) from 0.1 to 3.0 parts, by weight, of an anionic emulsifier in the form of an aqueous solution; and reacting over a period of from 1 to 10 hours until polymerization is completed.

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HIGH MOLECULAR WEIGHT POLYACRYLAMIDE SYNTHESIS

Robert A. Smith, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 649,622, Sep. 12, 1984, abandoned. This application Nov. 15, 1985, Ser. No. 798,545

Int. Cl.⁴ C08F *4/40*

U.S. Cl. 526—93 **20 Claims**

1. A process for the homopolymerization of acrylamide and for the copolymerization of acrylamide with vinyl monomers to produce ultra-high molecular weight water soluble polymers comprising initiating said homopolymerization or said copolymerization with a ferrous/hydroperoxide redox initiator system and carrying out said homopolymerization or said copolymerization in an aqueous reaction medium at a temperature of from about −20° C. to about 40° C.; wherein the ultra-high molecular weight polymer produced has a weight average molecular weight of greater than about 40,000,000.

4,617,360

PROCESS FOR THE POLYMERIZATION OF α-OLEFINS

Charles Bienfait, Keerbergen, Belgium, assignor to Solvay & Cie., Brussels, Belgium

Continuation of Ser. No. 911,814, Jun. 2, 1978, abandoned. This application Jun. 25, 1982, Ser. No. 392,135

Claims priority, application Luxembourg, Jun. 6, 1977, 77489

Int. Cl.⁴ C08F *4/02, 10/00*

U.S. Cl. 526—114 **26 Claims**

1. In a process for the polymerization of ethylene which is carried out in the presence of an organoaluminum compound and a solid catalyst complex prepared by reacting together:

(1) at least one compound (M) selected from organic oxygen-containing magnesium compounds which only contain metal/oxygen/organic radical bonds,

(2) at least one compound (T) selected from organic oxygen-containing titanium compounds having the general formula $(TiO_x(OR)_{4-2x})_n$ in which R represents an organic

radical, x is a number such that $0 \leqq x \leqq 1.5$ and n is an integer, and

(3) at least one aluminum halide (A), said aluminum halide (A) being employed at the end of the preparation, the improvement wherein the aluminum halide is an organoaluminum chloride of the general formula AlR_nCl_{3-n} in which R is an isobutyl radical and n is 1.

4,617,361

PROCESS AND CATALYST FOR OLEFIN POLYMERIZATION

Joel L. Martin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 264,513, May 18, 1981, Pat. No. 4,384,982. This application Feb. 3, 1983, Ser. No. 463,172

Int. Cl.⁴ C08F *4/02, 10/00*

U.S. Cl. 526—114 **14 Claims**

1. A process for the polymerization of alpha-olefins monomers comprising contacting said monomers under polymerization conditions with a catalyst system comprising (A) a catalyst prepared by

(1) reacting at least one metal halide selected from the halides of scandium, yttrium, and rare earth metals having atomic numbers in the range of 57 to 71 with at least one transition metal compound in which the transition metal is titanium and in which the transition metal is bonded to at least one atom selected from the group consisting of oxygen, nitrogen, and sulfur, and said oxygen, nitrogen, and sulfur atoms are in turn bonded to a carbon-containing radical, then

(2) reacting the product of (1) with an organometallic compound comprising an organoaluminum compound, and then

(3) treating the resulting solid with a halide ion exchanging source comprising at least one of the group consisting of halides of titanium, and (B) a cocatalyst comprising organometallic compounds of metals of Groups IA, IIA, IIB, and IIIA.

4,617,362

INVERSE EMULSION POLYMERS WITH IMPROVED INCORPORATION OF DIALLYLDIMETHYLAMMONIUM CHLORIDE

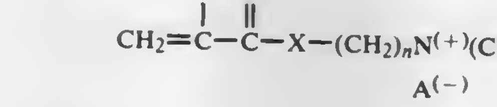
Larry W. Becker, and Eric H. Larson, both of Marcellus, N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 687,700, Dec. 31, 1984, abandoned. This application May 16, 1985, Ser. No. 734,436

Int. Cl.⁴ C08F *2/32*

U.S. Cl. 526—209 **7 Claims**

1. A process for enhancing the incorporation of diallyldimethylammonium chloride into an acrylamide polymer, said process comprising forming a polymerizable mixture in an aqueous system of diallyldimethylammonium chloride and acrylamide in the presence of emulsifiers, introducing into the polymerizable mixture a polymerizable promoter monomer having a higher reactivity with acrylamide than diallyldimethylammonium chloride, and polymerizing said promoter containing polymerizable mixture, said polymerizable promoter monomer being present in an amount sufficient to provide improved incorporation of diallyldimethylammonium chloride into the acrylamide polymer and being



$$CH_2{=}\overset{R}{\overset{|}{C}}-\overset{O}{\overset{\|}{C}}-X-(CH_2)_nN^{(+)}(CH_3)_3 \quad A^{(-)}$$

wherein

R is —H or CH_3;

X is —O—, or —NH—;

n has a value of 2–4; and

A is an ion selected from the group consisting of Cl^-, $CH_3SO_4^-$ HSO_4^- and NO_3^-.

4,617,363

ω-PERFLUOROALKYL-α-OLEFIN POLYMERS

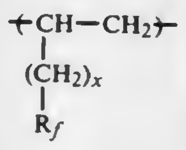
Aaron C. L. Su, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 28, 1985, Ser. No. 707,013

Int. Cl.⁴ C08F *14/18*

U.S. Cl. 526—253 **3 Claims**

1. A polymer containing recurring units of the structure



$$\left(\underset{\underset{R_f}{|}}{\underset{(CH_2)_x}{\underset{|}{CH}}}-CH_2\right)$$

wherein x is a cardinal number of from 2 to 8, and R_f is perfluoroalkyl of 2–10 carbon atoms.

4,617,364

WET ADHESION PROMOTERS FOR EMULSION POLYMERS

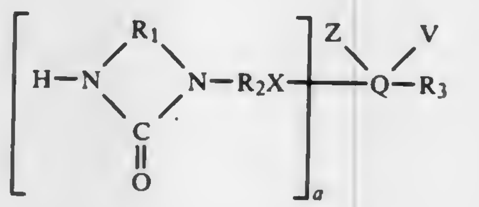
Kazys Sekmakas, Palatine, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Dec. 9, 1982, Ser. No. 448,254

Int. Cl.⁴ C07D *209/56, 239/03, 403/00;* **C08F** *218/14*

U.S. Cl. 526—263 **13 Claims**

1. A monoethylenically unsaturated copolymerizable monomer having the formula



in which

R_1 is alkylene having 2 to 3 carbon atoms;

R_2 is alkylene having 2 to 10 carbon atoms;

X is a radical selected from NH—, S—, and O— which initially carried Z;

Z is an isocyanate-reactive hydrogen atom initially carried by R_2X;

a is an integer from 1 to 5 to consume all the isocyanate groups on the polyisocyanate noted hereinafter other than the one consumed by R_3;

Q is an organic aliphatic or aromatic polyisocyanate carrying a+1 isocyanate groups;

V is an isocyanate-reactive hydrogen atom initially carried by R_3;

R_3 is the residue of a monohydroxy C_1–C_{12} alkyl maleate or fumarate which is connected to Q via its hydroxy group; and

X and R_3 are connected to Q via the isocyanate groups therein and Z and V are carried by the nitrogen atoms in said isocyanate groups.

9. A copolymer consisting essentially of copolymerized monoethylenically unsaturated monomers including from 0.1% to 10% of the monomer recited in claim 1.

4,617,365

ETHYLENE COPOLYMER

Akiyoshi Oonishi; Shuhei Doi, and Takeo Shimada, all of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

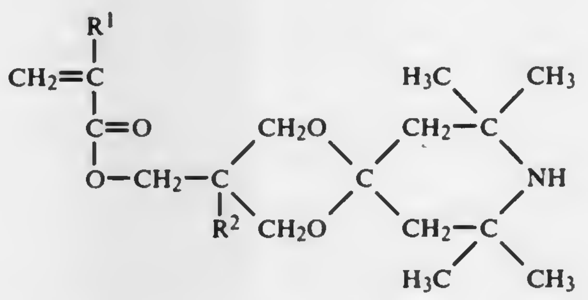
Filed Oct. 1, 1985, Ser. No. 782,564

Claims priority, application Japan, Oct. 1, 1984, 59-206101

Int. Cl.⁴ C08F *210/02*

U.S. Cl. 526—265 **2 Claims**

1. An ethylene copolymer comprising ethylene and a compound of formula (I)



(I)

wherein R^1 represents a hydrogen atom or a methyl group, and R^2 represents a methyl group or an ethyl group, the content of the compound of formula (I) being from 0.005 to less than 10 mole %, and the copolymer being a random copolymer prepared by radical polymerization of ethylene and the compound of formula (I).

4,617,366

PROCESS FOR MANUFACTURING ETHYLENE TERPOLYMERS AND ETHYLENE COPOLYMERS

Pierre Gloriod, Lillebonne; Joel Audureau, Noeux les Mines, and Maurice Pellegrini, Lievin, all of France, assignors to Societe Chimique Des Charbonnages, S.A., France

Filed Aug. 22, 1985, Ser. No. 768,443

Claims priority, application France, Aug. 23, 1984, 84 13137

Int. Cl.⁴ C08F *2/34*

U.S. Cl. 526—272 **10 Claims**

1. A process for the manufacture of radical ethylene terpolymers comprising 50 to 99.2% by weight of moieties derived from ethylene, 0.5 to 40% by weight of moieties derived from an alkyl (meth)acrylate and 0.3 to 10% by weight of moieties derived from maleic anhydride by copolymerizing, in the presence of at least one free-radical initiator, a mixture of ethylene, an alkyl (meth)acrylate and maleic anhydride, in a device comprising a primary compressor, the delivery pressure of which is between 200 and 300 bars, connected to a secondary compressor which is connected directly to a polymerization reactor, fresh ethylene being fed at the intake of the said primary compressor and said copolymerization being carried out in the said polymerization reactor under a pressure of between 1,000 and 2,500 bars and at a temperature of between 140° and 280° C., wherein at least one of the alkyl (meth)acrylate and maleic anhydride is fed directly into the said polymerization reactor.

4,617,367

METHYL METHACRYLATE SYRUP COMPOSITION

Katsushi Watanabe, Kamakura; Takafumi Kageyama; Taisaku Kano, both of Yokohama; Koichi Hirai, Hatano, and Yoshinobu Ichihara, Mobara, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Nov. 28, 1984, Ser. No. 675,568

Int. Cl.⁴ C08F *220/14*

U.S. Cl. 526—273 **6 Claims**

1. A methyl methacrylate syrup composition comprising an intimate mixture of 1–99 parts by weight of a first polymer-in-monomer syrup (A) and 99–1 parts by weight of a second polymer-in-monomer syrup which can be either (B_1) or (B_2), the sum of said first syrup (A) and said second syrup (B_1) or (B_2) being 100 parts by weight, wherein said syrups (A), (B_1) and (B_2) are as folows:

(A) a polymer-in-monomer syrup obtained by copolymerizing to a polymerization degree of 10–60% a mixture which comprises (a) 5–95 wt. % of methyl methacrylate monomer, (b) 95–1 wt. % of one or more monomers having reactivity with glycidyl groups, containing at least one ethylenically-unsaturated bond, being co-polymerizable with methyl methacrylate, and selected from the group consisting of:

(i) carboxyl-containing monomers, said carboxyl-containing monomers themselves being selected from the group consisting of methacrylic acid, maleic anhydride, maleic acid, fumaric acid and acrylic acid;

(ii) hydroxyl-containing alkyl (meth)acrylate monomers;

(iii) phosphorous- or phosphoric-containing acrylic ester monomers; and

(iv) amino-containing monomers, said amino-containing monomers themselves being selected from the group consisting of N-methyl-aminoethyl methacrylate, 4-N-methyl-aminocyclohexyl methacrylate, N,N-dimethylaminoethyl methacrylate, methacrylic amide, crotonic amide, vinyl amine, N-ethylvinyl amine, allyl amine, diallyl amine, N-methylallyl amine, N-methylaminoethyl acrylate, 4-N-methyl-aminocyclohexyl acrylate, N,N-dimethylaminoethyl acrylate and acrylic amide; and

(c) 0–94 wt. % of one or more monomers not having reactivity with glycidyl groups, containing at least one ethylenically-unsaturated bond, being copolymerizable with methyl methacrylate and selected from the group consisting of (meth)acrylates, styrene and styrene derivatives, the sum of said monomers (a), (b) and (c) being 100 wt. %;

(B_1) a polymer-in-monomer syrup obtained by copolymerizing to a polymerization degree of 10–60% a mixture which comprises (d) 3–97 wt.% of one or more monomers containing at least one glycidyl group and at least one ethylenically-unsaturated bond, being copolymerizable with methyl methacrylate and selected from the group consisting of glycidyl (meth)acrylates, beta-methylglycidyl (meth)acrylates, N-glycidyl (meth)acrylic amides, (meth)acrylic acid addition products of an epoxy resin composed of a polyhydric phenol and an epihalohydrin and allyl glycidyl ether and (e) 97–3 wt. % of one or more monomers selected from the group consisting of methyl methacrylate and the monomers defined in sub-paragraph (c) above, the sum of said monomers (d) and (e) being 100 wt. %;

(B_2) a polymer-in-monomer syrup containing (f) 5–95 wt. % of a copolymer obtained by copolymerizing 3–97 wt. % of one or more monomers containing at least one glycidyl group and selected from the group consisting of glycidyl (meth)acrylates, beta-methylglycidyl (meth)acrylates and allyl glycidyl ether and 97–3 wt. % of one or more other copolymerizable monomers selected from the group consisting of (meth)acrylates, fumarates, maleates, styrene, alpha-methylstyrene, (meth)acrylic amide and (meth)acrylonitrile, having a number average molecular weight of 1,500–50,000 and containing a glycidyl group, in (g) 95–5 wt. % of one or more monomers selected from the group consisting of methyl methacrylate and the monomers defined in sub-paragraph (c) above.

4,617,368

PROCESS FOR THE PRODUCTION OF COLORLESS AROMATIC POLYESTER AND POLYESTER CARBONATES

Dieter Freitag; Ludwig Bottenbruch, both of Krefeld, and Uwe Hucks, Alpen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 10, 1984, Ser. No. 680,158

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1983, 3346946

Int. Cl.⁴ C08G *8/02*

U.S. Cl. 528—126 **7 Claims**

1. A process for the production of colourless, heatstable and hydrolysis-stable, pure aromatic polyesters and polyester carbonates which comprises interfacial polycondensation of an aromatic dicarboxylic acid dichloride and a diphenolate, and additionally phosgene to produce polyester carbonates, wherein the dicarboxylic acid dichloride is obtained by chlorination from the dimethyl ester of the corresponding acid, and a tertiary cycloaliphatic amine is used as a catalyst.

4,617,369

POLYESTER POLYMERS OF 3-HYDROXY-4'-(4-HYDROXYPHENYL)BENZOPHENONE OR 3,4'-DIHYDROXYBENZOPHENONE AND DICARBOXYLIC ACIDS

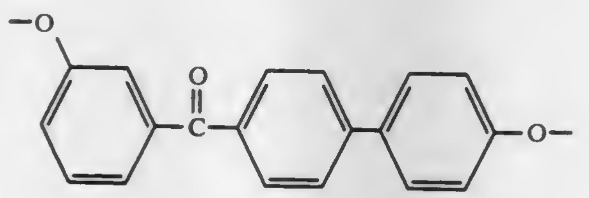
Gia Huynh-Ba, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 4, 1985, Ser. No. 772,619

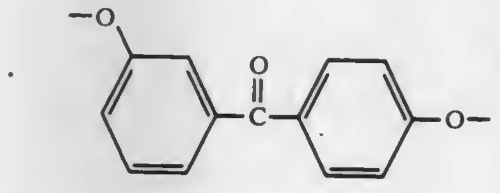
Int. Cl.⁴ C08G *8/02*

U.S. Cl. 528—128 **108 Claims**

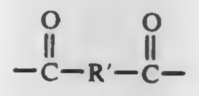
1. A melt anisotropic polyester having an inherent viscosity of at least 0.5 as measured from a 0.5 g solution of polymer in 100 ml of an equal volume mixture of p-chlorophenol and 1,2-dichloroethane, and a heat of fusion of less than 1.5 joule per gram consisting essentially of at least 10 mole percent glycol derived repeating units of the structure



or

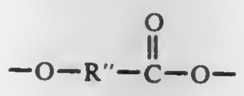


and the remainder, repeating glycol derived units of the structure —O—R—O— where —R— is an arylene group containing 6–14 carbon atoms, and diacid derived repeating units of the structure



$$-\overset{\overset{O}{\|}}{C}-R'-\overset{\overset{O}{\|}}{C}-$$

where —R'— is an alkylene group containing 4 to 14 carbon atoms or an arylene group consisting 6 to 14 carbon atoms and monoacid-monohydroxy derived repeating units of the structure



$$-O-R''-\overset{\overset{O}{\|}}{C}-O-$$

where —R''— is an arylene containing 6 to 14 carbon atoms.

4,617,370

THERMOTROPIC LIQUID CRYSTALLINE POLYMERS

Robert W. Lenz, Amherst, Mass., and Dean T. Behm, Yorktown Heights, N.Y., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 30, 1986, Ser. No. 824,386

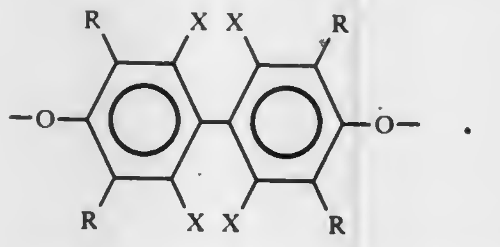
Int. Cl.⁴ C08G *63/60*

U.S. Cl. 528—191 **20 Claims**

1. A thermotropic polymer capable of forming an anisotropic melt, the polymer comprising at least one recurring unit selected from each of the following groups:

(a) a remnant of at least one aromatic dicarboxylic acid;

(b) aromatic dioxy moieties of the formula:



wherein each R independently is phenyl or lower alkyl or lower alkoxy of up to about four carbon atoms, and each X independently is a moiety which will electrophilically substitute into the position depicted for X in the formula, with the proviso that at least one X is not H; and

(c) a remnant of at least one hydroxyaromatic carboxylic acid;

the units being selected such that the polymer has a melting point of from about 250° C. to about 400° C.

4,617,371

NOVEL POLYMERIC LIQUID CRYSTALS AND METHODS FOR THEIR PREPARATION

Alexandre Blumstein, 2 Regina Dr., Chelmsford, Mass. 01824, and Jawed Asrar, Lowell, Mass., assignors to Alexandre Blumstein, Chelmsford, Mass.

Filed Nov. 29, 1982, Ser. No. 445,081

Int. Cl.⁴ C09K *19/52;* **G02F** *1/13;* **C08G** *63/16*

U.S. Cl. 528—194 **2 Claims**

1. A cholesteric polymeric liquid crystalline compound comprising a linear polyester which is produced by condensing in substantially equimolar proportions 4, 4'-dihydroxy-2, 2'-dimethylazoybenzene with a mixture of trans-traumatoyl chloride and (+) 3-methyladipoylchloride.

4,617,372

PROCESS FOR PRODUCING POLYPHENYLENE ETHER

Kazunori Yano; Teruhisa Goto, and Katsuhiro Abe, all of Mie, Japan, assignors to Mitsubishi Petrochemical Co, Ltd., Tokyo, Japan

Filed Nov. 20, 1985, Ser. No. 800,033

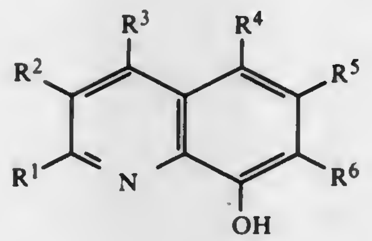
Int. Cl.⁴ C08G *65/44*

U.S. Cl. 528—216 **15 Claims**

1. A process for producing a polyphenylene ether by oxidative polymerization of phenols in the presence of a catalyst, wherein said catalyst comprises an effective amount of each of:

(a) a divalent manganese salt selected from the group consisting of manganese (II) chloride, manganese (II) bromide, manganese (II) iodide, manganese (II) carbonate, manganese (II) acetate, manganese (II) nitrate, manganese (II) phosphate and hydrated compounds of the same;

(b) an oxine compound having the formula:



wherein R¹, R², R³, R⁴, R⁵ and R⁶ each is a hydrogen atom, an alkyl group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, a halogen atom, a hydroxyl group, a nitro group or an amino group;

(c) an alkanolamine having the formula:

$H_{3-n}N(R^7OH)_n$

wherein R⁷ is an alkylene group having 1 to 4 carbon atoms, and n is an integer of 1 to 3; and

(d) an alkaline compound selected from the group consisting of sodium hydroxide, potassium hydroxide and sodium methoxide.

4,617,373

CONDENSATION POLYMERS AND PRODUCTS THEREFROM

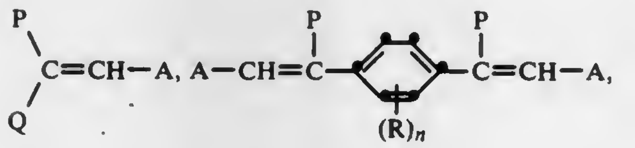
Wayne P. Pruett; Richard H. S. Wang, both of Kingsport; Samuel D. Hilbert, Jonesborough, and Max A. Weaver, Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

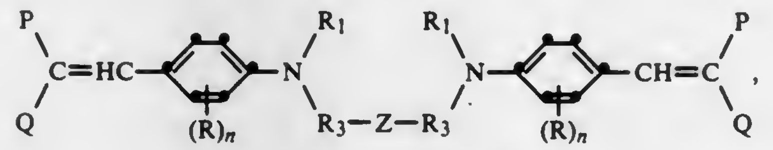
Continuation-in-part of Ser. No. 702,106, Feb. 15, 1985. This application Jan. 28, 1986, Ser. No. 823,424

Int. Cl.⁴ C08G *63/44, 69/44, 73/16*

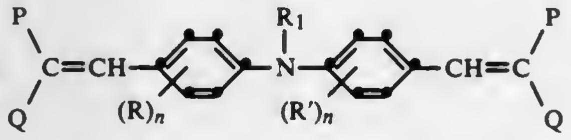
U.S. Cl. 528—288 **20 Claims**

1. A composition comprising molding or fiber grade condensation polymer having copolymerized therein a total of from 1.0 to about 5,000 ppm of at least one reactive compound selected from those of the formulae

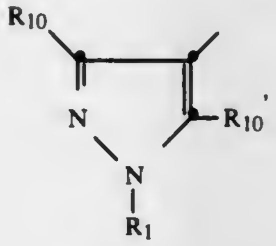




and



wherein each A is selected from the following radicals:



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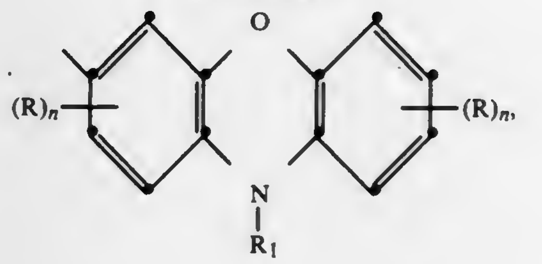

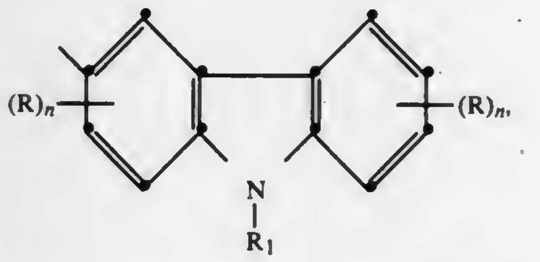

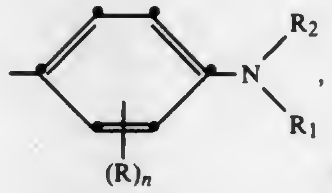

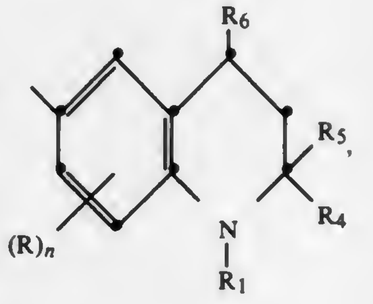

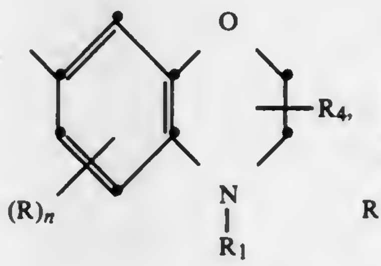

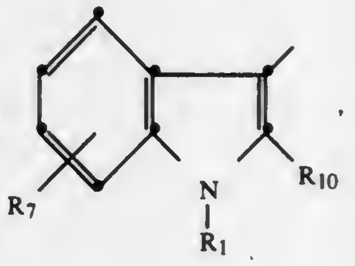

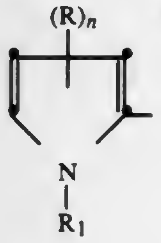

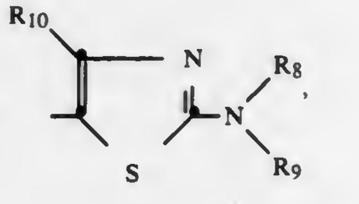

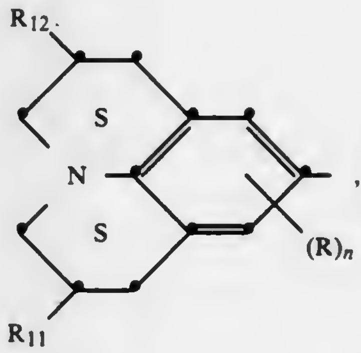

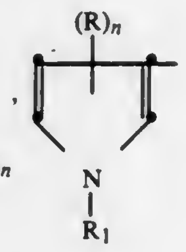

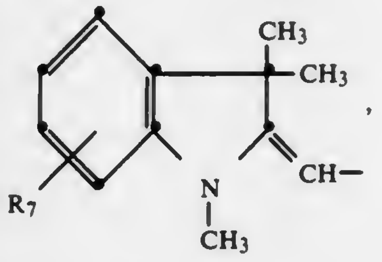

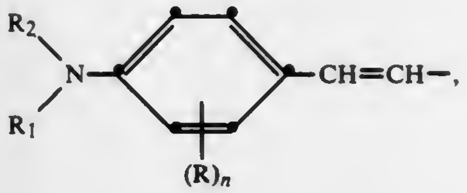

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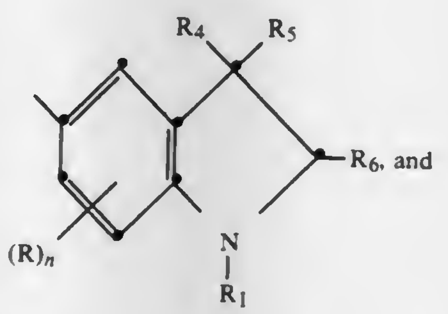
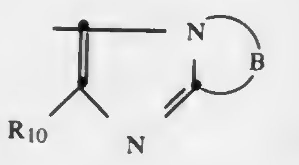
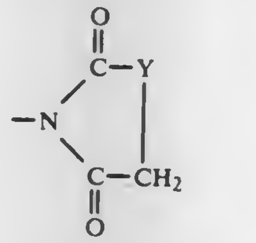




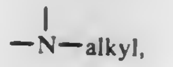
wherein:

R and R′ are selected from hydrogen, fluorine, chlorine, bromine, alkyl, alkoxy, phenyl, phenoxy, alkylthio, and arylthio; n is 0, 1, 2;

R_1 and R_2 are selected from hydrogen; cycloalkyl; cycloalkyl substituted with one or two of alkyl, —OH, alkoxy, halogen, or hydroxy substituted alkyl; phenyl; phenyl substituted with alkyl, alkoxy, halogen, alkanoylamino, carboxy, cyano, or alkoxycarbonyl; straight or branched lower alkenyl; straight or branched alkyl of 1-8 carbons and such alkyl substituted with the following: hydroxy; halogen; cyano; succinimido; hydroxysuccinimido; acyloxysuccinimido; glutarimido; phenylcarbamoyloxy; phthalimido; 4-carboxyphthalimido; phthalimidino; 2-pyrrolidono; cyclohexyl; phenyl; phenyl substituted with alkyl, alkoxy, halogen, hydroxy alkanoylamino, carboxy, cyano, or alkoxycarbonyl; alkylsulfamoyl; vinylsulfonyl; acrylamido; sulfamyl; benzoylsulfonicimido; alkylsulfonamido; phenylsulfonamido; alkoxycarbonylamino; alkylcarbamoyloxy; alkoxycarbonyl; alkoxycarbonyloxy; alkenylcarbonylamino; groups of the formula

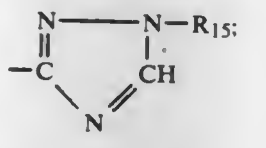


wherein Y is —NH—,

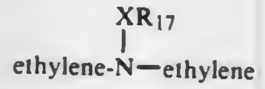


$$-\overset{|}{N}-\text{alkyl},$$

—O—, —S—, or $—CH_2O—$; $—S—R_{14}$; $SO_2CH_2CH_2SR_{14}$; wherein R_{14} is alkyl, phenyl, phenyl substituted with halogen, alkyl, alkoxy, alkanoylamino, cyano, or alkoxycarbonyl; pyridyl; pyrimidinyl; benzoxazolyl; benzimidazolyl; benzothiazolyl; radicals of the formulae



$—OXR_{16}$; $—NHXR_{16}$; $—X—R_{16}$; $—CONR_{15}R_{15}$; and $—SO_2NR_{15}R_{15}$; wherein R_{15} is selected from H, aryl, alkyl, and alkyl substituted with halogen, —OH, phenoxy, aryl, —CN, cycloalkyl, alkylsulfonyl, alkylthio, alkanoyloxy, or alkoxy; X is —CO—, —COO—, or $—SO_2—$; R_{16} is selected from alkyl and alkyl substituted with halogen, hydroxy, phenoxy, aryl, cyano, cycloalkyl, alkylsulfonyl, alkylthio, alkanoyloxy, and alkoxy; and when X is —CO—, R_{16} also can be hydrogen, amino, alkenyl, alkylamino, dialkylamino, arylamino, aryl, or furyl; alkoxy; alkoxy substituted with hydroxy, cyano, alkanoyloxy, or alkoxy; phenoxy; phenoxy substituted with one or more of alkyl, carboxy, alkoxy, carbalkoxy, or halogen; R_1 and R_2 can be a single combined group such as pentamethylene, tetramethylene, ethyleneoxyethylene, ethylene sulfonylethylene, or

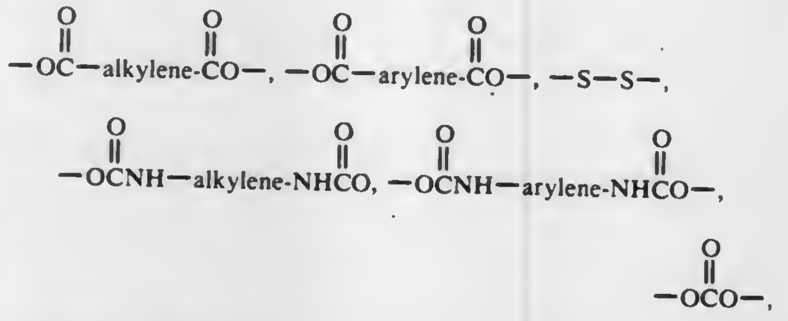


$$\text{ethylene-}\overset{\overset{XR_{17}}{|}}{N}-\text{ethylene}$$

which, with the nitrogen to which it is attached, forms a ring; R_{17} is alkyl, aryl, or cycloalkyl;

R_3 is alkylene, arylene, aralkylene, alkyleneoxy, or alkyleneoxyalkylene;

Z is a direct single bond, OCO, O, S, SO_2, $R_{17}SO_2N=$,



$$-O\overset{O}{\overset{\|}{C}}-\text{alkylene-}\overset{O}{\overset{\|}{C}}O-,\ -O\overset{O}{\overset{\|}{C}}-\text{arylene-}\overset{O}{\overset{\|}{C}}O-,\ -S-S-,$$

$$-O\overset{O}{\overset{\|}{C}}NH-\text{alkylene-}NH\overset{O}{\overset{\|}{C}}O,\ -O\overset{O}{\overset{\|}{C}}NH-\text{arylene-}NH\overset{O}{\overset{\|}{C}}O-,$$

$$-O\overset{O}{\overset{\|}{C}}O-,$$

arylene, or alkylene;

R_4, R_5, and R_6 are each selected from hydrogen and alkyl;

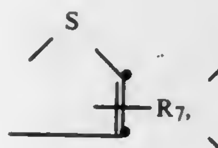
R_7 is carboxy, carbalkoxy, or $(R)_n$;

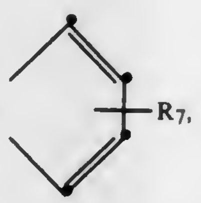
R_{10} is hydrogen, alkyl, and aryl;

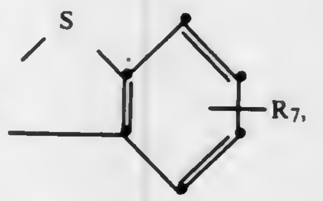
R_8 and R_9 are each selected from hydrogen and substituted or unsubstituted alkyl, aryl, or cycloalkyl;

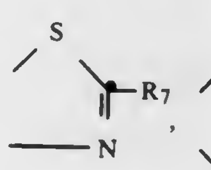
R_{11} and R_{12} are each selected from hydrogen, alkyl, hydroxyl, or acyloxy;

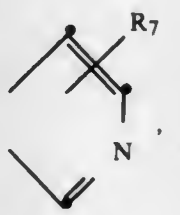
B represents the atoms necessary to complete a five or six membered ring and is selected from

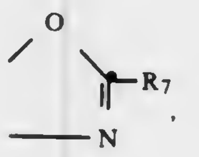


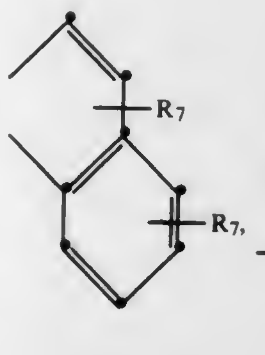


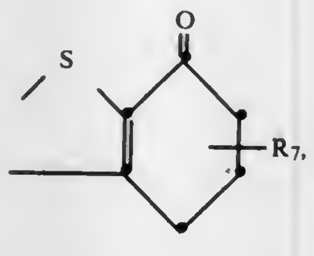


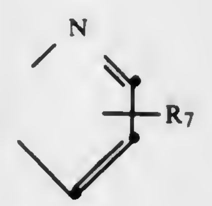












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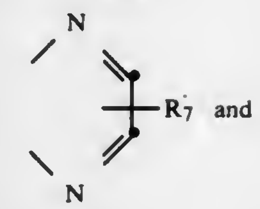
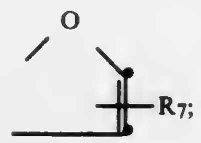
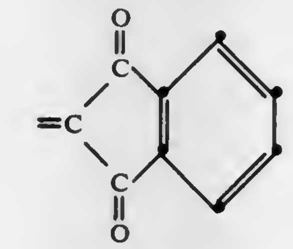


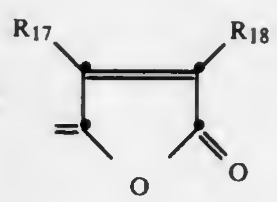
and



each P and Q are selected from cyano, carbalkoxy, carbaryloxy, carbaralkyloxy, carbamyl, carboxy, N-alkylcarbamyl, N-alkyl-N-arylcarbamyl, N,N-dialkylcarbamyl, N-arylcarbamyl, N-cyclohexylcarbamyl, aryl, 2-benzoxazolyl, 2-benzothiazolyl, 2-benzimidazolyl, 1,3,4-thiadiazol-2-yl, 1,3,4-oxadiazol-2-yl, SO_2 alkyl, SO_2 aryl, and acyl, or P and Q may be combined as



or



wherein R_{17} is defined above and R_{18} is CN, COOH, CO_2 alkyl, carbamyl, or N-alkylcarbamyl;

wherein at least one of A, P, and Q for each dye molecule must be or bear a condensable group selected from carboxy, carbalkoxy, carbaryloxy, N-alkylcarbamyloxy, acyloxy, chlorocarbonyl, carbamyloxy, $N\text{-(alkyl)}_2$carbamyloxy, amino, alkylamino, hydroxyl, N-phenylcarbamyloxy, cyclohexanoyloxy, and carbocyclohexyloxy; and

wherein in the above definitions, each alkyl, aryl, or cycloalkyl moiety or portion of a group or radical may be substituted where appropriate with hydroxyl, acyloxy, alkyl, cyano, alkoxycarbonyl, halogen, alkoxy, or aryl, aryloxy, or cycloalkyl; said compounds having one or more methine units, absorbing in the range of from about 350 nm to about 650 nm, are nonextractable from said polymer and are stable under the polymer processing conditions.

4,617,374

UV-ABSORBING CONDENSATION POLYMERIC COMPOSITIONS AND PRODUCTS THEREFROM

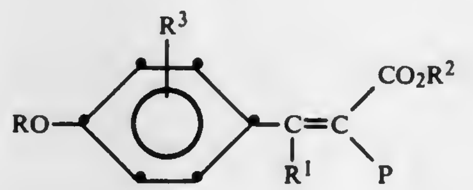
Wayne P. Pruett; Richard H. S. Wang, both of Kingsport; Samuel D. Hilbert, Jonesborough, and Max A. Weaver, Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 702,106, Feb. 15, 1985. This application Jan. 28, 1986, Ser. No. 823,425

Int. Cl.⁴ C08G *63/44, 69/44, 73/16*

U.S. Cl. 528—288 **10 Claims**

1. A polyester composition having a maximum light absorbance within the range of from about 320 nm to about 380 nm and having reacted therein a total of from about 1.0 to about 5,000 parts by weight per million parts by weight of polyester of at least one UV-absorbing compound of the formula



which is nonextractable from the polyester and stable under the polyester processing conditions, wherein:

R is hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, cycloalkyl, substituted cycloalkyl, or alkenyl;

R^1 is hydrogen, or alkyl, aryl, or cycloalkyl, all of which may be substituted;

R^2 is hydrogen or any radical which does not interfere with condensation with the polyester;

R^3 is hydrogen or 1-3 substituents selected from alkyl, substituted alkyl, alkoxy, substituted alkoxy, and halogen; and

P is cyano or a group selected from carbamyl, aryl, alkylsulfonyl, arylsulfonyl, heterocyclic, alkanoyl or aroyl, all of which groups may be substituted.

4,617,375

POLYAMIDE, FROM CONDENSED CYCLIC DICARBOXYLIC ACID AND BRANCHED CHAIN DIAMINE

Josef Pfeifer, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

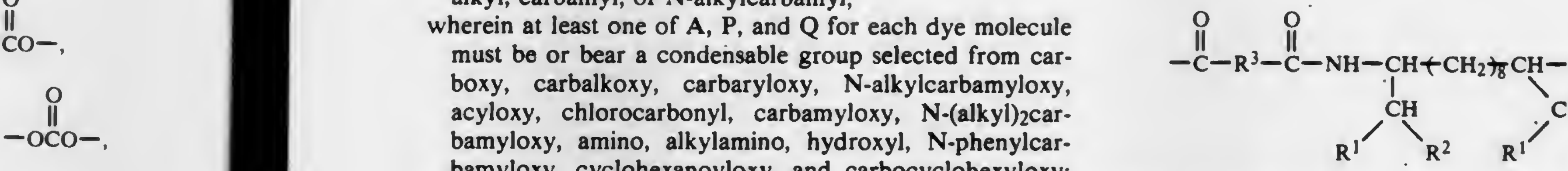
Filed Jul. 16, 1985, Ser. No. 755,382

Claims priority, application Switzerland, Jul. 24, 1984, 3576/84

Int. Cl.⁴ C08G *69/26*

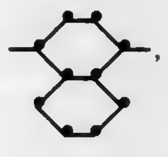
U.S. Cl. 528—344 **6 Claims**

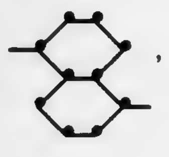
1. A polyamide, formed from at least one dicarboxylic acid and diamine, having a reduced solution viscosity of at least 0.3 dl/g, measured on a 0.5% solution in m-cresol at 25° C., and having 100 mol %, relative to the polyamide, of recurring structural elements of formula I

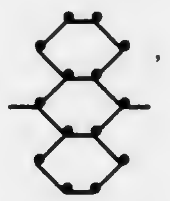


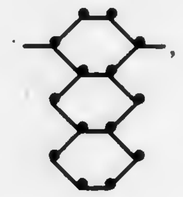
$$-\overset{O}{\overset{\|}{C}}-R^3-\overset{O}{\overset{\|}{C}}-NH-\underset{\substack{|\\ CH\\ R^1\quad R^2}}{CH}\left(CH_2\right)_8\underset{\substack{\backslash\\ CH\\ R^1\quad R^2}}{CH}-NH- \qquad (I)$$

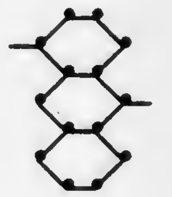
wherein R^1 is alkyl having 1 to 4 C atoms, and R^2 is alkyl having 1 to 8 C atoms, or R^1 and R^2 together are tri-, tetra- or pentamethylene, R^3 is a radical of the formulae











the six-membered rings being aliphatic or aromatic hydrocarbon radicals.

4,617,376

PROCESS FOR RECOVERING GLUCAGON FROM PANCREAS GLANDS

David G. Maskalick, Indianapolis, and Marie T. Anderson, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 750,636, Jul. 1, 1985, abandoned. This application Feb. 24, 1986, Ser. No. 833,310

Int. Cl.⁴ C07K *7/34*

U.S. Cl. 530—308 **21 Claims**

1. Process for the purification of glucagon from a glucagon salt cake containing pancreas gland-sourced glucagon, which comprises

(1) dissolving said glucagon salt cake in an aqueous medium containing a water-miscible organic solvent;

(2) contacting the glucagon salt cake solution with a hydro-

phobic adsorption support at a pH less than about 4 or greater than about 7.5 and at conditions under which the glucagon is adsorbed on said hydrophobic adsorption support;

(3) eluting glucagon from said hydrophobic adsorption support with an aqueous solution containing a water-miscible organic solvent to obtain a first glucagon-containing solution;

(4) contacting a solution containing glucagon eluted from said hydrophobic adsorption support, said solution having a pH of from about 7.5 to about 10.5, with an anion exchange support at conditions under which the glucagon is adsorbed on said anion exchange support;

(5) eluting glucagon from said anion exchange support to obtain a second glucagon-containing solution; and

(6) recovering glucagon having increased purity.

4,617,377

SYNERGISTINE DERIVATIVES AND THEIR PREPARATION

Jean-Pierre Corbet, Ecully; Claude Cotrel, Paris; Daniel Farge, Thiais, and Jean-Marc Paris, Vaires sur Marne, all of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

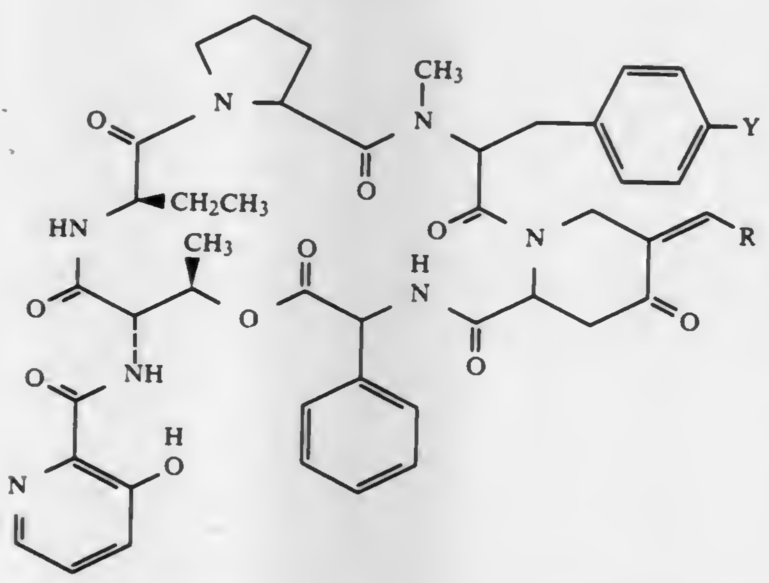
Filed Jul. 12, 1984, Ser. No. 630,256

Claims priority, application France, Jul. 13, 1983, 83 11706

Int. Cl.^{4} C07K ***5/12***

U.S. Cl. 530—317 **7 Claims**

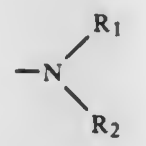
1. A synergistine of the formula:



in which Y represents hydrogen or dimethylamino, and R represents:

(a) hydrogen or hydroxyl;

(b) a radical of the formula:



$$-N\begin{matrix}R_1\\R_2\end{matrix}$$

in which R_1 and R_2, which are identical or different, each represent

(i) hydrogen;

(ii) phenyl or pyridyl each of which is unsubstituted or substituted by a dialkylamino radical of which the alkyl part has 1 to 4 carbon atoms in a linear or branched chain,

(iii) alkyl of 1 to 10 carbon atoms in a linear or branched chain, which is unsubstituted or substituted by hydroxyl, mercapto, carboxyl, pyridyl or anilino or substituted by alkylamino or dialkylamino of which at least one alkyl is itself substituted by hydroxyl, mercapto, carboxyl or anilino,

(iv) alkenyl of 3 or 4 carbon atoms or

(v) alkynyl of 3 to 4 carbon atoms, or alternatively

(vi) R_1 and R_2 together form, with the nitrogen atom to which they are bonded, a 5-membered or 6-membered heterocyclic ring, which is unsubstituted or substituted by an alkyl radical, or

(c) a halogen atom, a trimethylsilyloxy or dialkylphosphoryloxy radical or a radical of the formula:

$—OSO_2R_3$

or $—OCOR_4$

in which R_3 is alkyl, trifluoromethyl or trichloromethyl or phenyl unsubstituted or substituted by halogen or by alkyl or nitro, and R_4 is defined in the same way as R_3 or represents alkylcarbonylmethyl, 2-alkylcarbonylethyl, alkoxycarbonylmethyl, 2-alkoxycarbonylethyl or alkoxy, the abovementioned alkyl portions or radicals being linear or branched unless stated otherwise and containing 1 to 4 carbon atoms each, in its isomeric forms where such exist and mixtures thereof, and also its addition salts with acids, its metal salts and its addition salts with nitrogen bases, when they exist.

4,617,378

PURIFICATION OF BIOLOGICALLY ACTIVE HUMAN IMMUNE INTERFERON

Menachem Rubinstein, Givat Shmuel; Jossef Friedlander, Bat Yam, and Dina Fischer, Ramat Gan, all of Israel, assignors to Yeda Research and Development Co., Ltd., Rehovot, Israel

Filed Jan. 18, 1984, Ser. No. 571,735

Claims priority, application Israel, Feb. 13, 1983, 67896

Int. Cl.^{4} C07K ***15/26, 3/28;*** **A61K** ***45/02;*** **C12P** ***21/00***

U.S. Cl. 530—351 **14 Claims**

1. A process for isolating a biologically active human interferon gamma protein species, without contamination or inactivation by sodium dodecyl sulfate, said species being selected from the group consisting of the 21k and 26k subtypes, which comprises in combination:

(a) contacting impure interferon gamma containing at least one of said subtypes with a controlled pore glass absorbent, and eluting said interferon, obtaining said interferon in selected fractions as an eluate of enhances purity;

(b) concentrating the eluate of step (a) by ultrafiltration on a membrane, the fraction retained on said membrane being interferon of further enhanced purity; and

(c) passing the retained fractions of step (b) at least once through a cation-exchange matrix, and eluting at least one fraction containing said human biologically active interferon gamma protein species essentially free of non-interferon proteins, and also essentially free of other species of human interferon gamma.

4,617,379

HIGH TITER CYTOMEGALOVIRUS IMMUNE SERUM GLOBULIN

Milton B. Dobkin, Lafayette, and Robert E. Louie, Berkeley, both of Calif., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jun. 14, 1983, Ser. No. 504,105

Int. Cl.^{4} A61K ***39/00***

U.S. Cl. 530—388 **10 Claims**

1. A method for preparing a human immune serum globulin having a titer of antibody to cytomegalovirus in the range of about 1:150,000–1:1,225,000 determined by an enzyme-linked immunosorbent assay which comprises

(a) screening plasma from donors who have not been vaccinated with a cytomegalovirus vaccine for a titer of antibody to cytomegalovirus of at least about 1:60,000 determined by an enzyme-linked immunosorbent assay,

(b) pooling plasma donations of said titer of antibody to cytomegalovirus, and

(c) preparing an immune serum globulin from said pooled plasma.

7. A human immune serum globulin produced by the method of claim 1 having a titer of antibody to cytomegalovirus of about 1:150,000–1:1,225,000 determined by an enzyme-linked immunosorbent assay, said immune serum globulin being effective to treat cytomegalovirus infections.

4,617,380

PROCESS FOR THE PREPARATION OF CONCENTRATED STABLE LIQUID DYE SOLUTIONS OF CI DIRECT YELLOW 11 UTILIZING AN EXTENDED SURFACE SILICA FILTER AID DURING A DESALTING PROCEDURE

James W. Hinson, Jackson, and Jo A. Cleverdon, Mobile, both of Ala., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 11, 1984, Ser. No. 649,343

Int. Cl.^{4} C09B ***27/00, 46/00;*** **D06P** ***1/90***

U.S. Cl. 534—576 **8 Claims**

1. A process for the preparation of a liquid dyestuff of CI Direct Yellow 11 (Paper Yellow 11) in stable form, from the tetrasodium complex of this stilbeneazo(xy) base-catalyzed condensation of 4-nitrotoluene-2-sulfonic acid using as the starting material, the reaction mass, the wet cake or the dried technical grade of the condensed tetrasodium complex which comprises the steps of forming an aqueous suspension of said starting material; admixing to said suspension an extended surface filter aid; acidifying said suspension with a strong inorganic acid to a pH in the range of from about 2.5 to about 1.5; to form the free acid complex of said Direct Yellow 11; filtering said suspension through a filter, pre-coated with said extended surface filter aid, wherein said filtrate is the aqueous component of said suspension and said filter cake comprises the absorbed free acid form of the stilbeneazo(xy) dye complex; washing said filter cake with water until free from the sodium salt of said inorganic acid; slurrying the washed filter cake with an alkanolamine/water mixture in an amount sufficient to provide an aqueous phase in the pH range 6.5 to 7.5 to convert said free acid complex in said slurry to the soluble liquid alkanolamine stilbeneazo(xy) complex; filtering the slurry and collecting the filtrate; concentrating the filtrate by removal of sufficient water to provide a stable liquid dyestuff of proper tinctorial strength.

4,617,381

PROCESS FOR THE PREPARATION OF CONCENTRATED STABLE LIQUID DYE SOLUTIONS OF CI DIRECT YELLOW 11 UTILIZING AN ALKANOL/WATER SOLVENT IN A DESALTING PROCEDURE

James W. Hinson, Jackson, and Jo A. Cleverdon, Mobile, both of Ala., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 11, 1984, Ser. No. 649,342

Int. Cl.^{4} C09B ***27/00, 46/00;*** **D06P** ***1/90***

U.S. Cl. 534—576 **9 Claims**

1. A process for the preparation of a liquid dyestuff of CI Direct Yellow 11 (Paper Yellow 11) in stable form, from the tetrasodium complex of this stilbeneazo(xy) condensation of 4-nitrotoluene-2-sulfonic acid, using as starting material the reaction mass, wet cake or the dried technical grade of the condensed tetrasodium complex which comprises the steps of suspending the starting material in an alkanol/water medium, said alkanol being methanol or ethanol; acidifying said suspension to a pH below about 2.5 with a strong inorganic acid; heating said suspension at reflux to form the acid state of said stilbeneazo(xy) complex; neutralizing the resultant heated mixture with an alkanolamine base to a pH above 6.3 to form a solution of the resulting stilbeneazo(xy) complex and a precipitate of the sodium salt from the alkanol/water solution of the Direct Yellow 11—alkanolamine complex and then concentrating the liquid in solution by distilling off the alkanol.

4,617,382

8-HYDROXYQUINOLINE SULFONIC ACID-AZO CHROMIUM COMPLEXES

Gerhard Back, Lörrach, Fed. Rep. of Germany; Fabio Beffa, Riehen, and Arthur Bühler, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

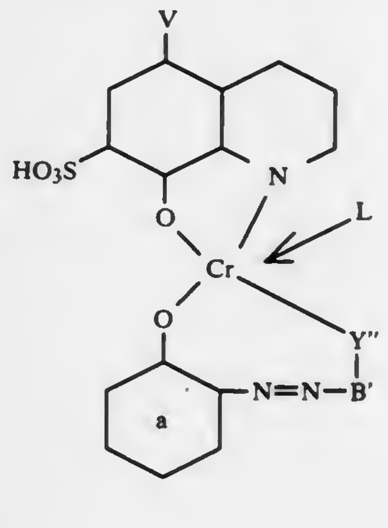
Continuation of Ser. No. 325,455, Nov. 27, 1981, abandoned, which is a continuation of Ser. No. 858,996, Dec. 9, 1977, abandoned, which is a continuation of Ser. No. 804,845, Jun. 8, 1977, abandoned, which is a continuation of Ser. No. 584,807, Jun. 9, 1975, abandoned. This application Apr. 13, 1983, Ser. No. 484,736

Claims priority, application Switzerland, Jul. 5, 1974, 9307/74

Int. Cl.^{4} C09B ***45/06, 45/16, 55/00;*** **D06P** ***3/02***

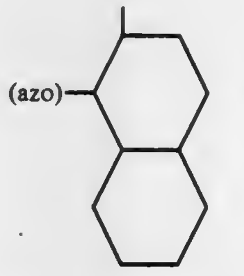
U.S. Cl. 534—693 **2 Claims**

1. A chromium complex dye of the formula

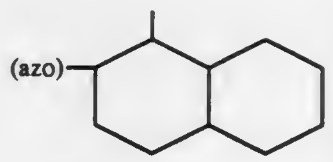


wherein

B' is



or



L is H_2O, ammonia, ethanol or ethanolamine;

V is hydrogen or chloro;

Y'' is —O—, —NH— or —N(lower alkyl)—; and the phenyl ring a is substituted by one or two of nitro, chloro, methyl, methoxy, sulfonamido, N-methylsulfonamido or methylsulfonyl.

4,617,383

METHOD FOR DEGUMMING AND BLEACHING DECORTICATED PLANT BAST FIBER

Michael C. Jaskowski, Pittsburgh, Pa., assignor to Helmic, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 668,294, Nov. 5, 1984, Pat. No. 4,568,739, which is a continuation-in-part of Ser. No. 554,256, Nov. 22, 1983, Pat. No. 4,481,355. This application Jan. 30, 1986, Ser. No. 824,204

Int. Cl.^{4} C13L ***1/00;*** **D21C** ***3/00;*** **D01C** ***1/04***

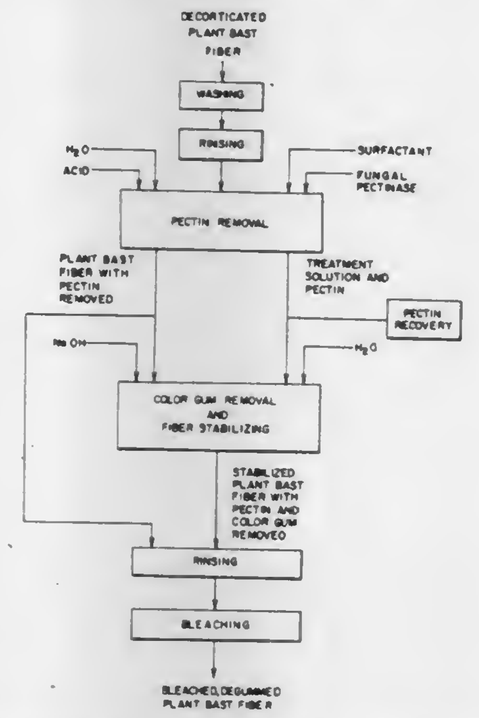
U.S. Cl. 536—2 **10 Claims**

1. A method for degumming decorticated plant bast fiber to remove pectin-containing material and coloring gum therefrom comprising the steps of,

treating the plant bast fiber with an aqueous, acidic treatment solution of fungal pectinase for a period of time between about 10 to 20 minutes to degum the plant bast fiber and remove the pectin from the plant bast fiber, maintaining said acid treatment solution at an elevated temperature and at a pH of between 2.0 and 3.5,

thereafter treating the plant bast fiber with the pectin removed therefrom with an aqueous basic treatment solution for a period of time between 15 to 60 minutes to remove the coloring gum adhering to the plant bast fiber, and

maintaining said aqueous basic treatment solution at an elevated temperature and at a pH of about 11.


DECORTICATED PLANT BAST FIBER
WASHING
RINSING
H2O
ACID
SURFACTANT
FUNGAL PECTINASE
PECTIN REMOVAL
PLANT BAST FIBER WITH PECTIN REMOVED
TREATMENT SOLUTION AND PECTIN
PECTIN RECOVERY
NaOH
H2O
COLOR GUM REMOVAL AND FIBER STABILIZING
STABILIZED PLANT BAST FIBER WITH PECTIN AND COLOR GUM REMOVED
RINSING
BLEACHING
BLEACHED, DEGUMMED PLANT BAST FIBER

4,617,384
ADAPTOR MOLECULES FOR DNA AND THEIR APPLICATION TO SYNTHESIS OF GENE-DERIVED PRODUCTS

Saran A. Narang, Ottawa, Canada, and Ray J. Wu, Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation of Ser. No. 129,880, Mar. 27, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 426,457

Int. Cl.⁴ C07H *21/04;* **C12N** *15/00*

U.S. Cl. 536—27 **16 Claims**

1. Synthetic adaptor oligodeoxynucleotide molecules, for facilitating insertion of DNA information sequences into a cloning vehicle, and transcription and translation of said sequences in a host cell; each adaptor consisting of from about 8 to 20 nucleotide base pairs or incomplete pairs in their structure and consisting essentially of:

(a) a recognition site for a restriction endonuclease, and

(b) a signal for protein synthesis, selected from a start signal and a stop signal, said start signal being downstream of said recognition site and said stop signal being upstream of said recognition site; said signal being at an end of the adaptor molecule.

4,617,385
QUATERNARY AMMONIUM SALTS OF CARBOXYMETHYLCELLULOSE

Hajime Namikoshi, and Takeo Ohmiya, both of Himeji, Japan, assignors to Daicel Chemical Industries Ltd., Osaka, Japan

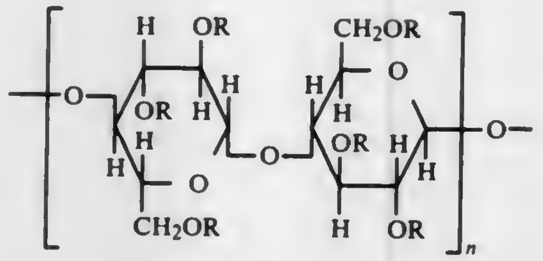
Filed Jun. 25, 1985, Ser. No. 748,775

Claims priority, application Japan, Jul. 3, 1984, 59-138697

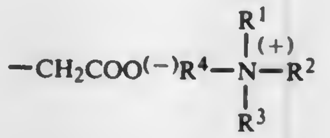
Int. Cl.⁴ C08B *15/06, 11/00*

U.S. Cl. 536—98 **10 Claims**

1. A quaternary ammonium salt of carboxymethylcellulose having the formula:



wherein R is a hydrogen atom or a quaternary ammonio carboxymethyl group, and n is an integer from 10 to 1000, provided that a degree of substitution by carboxymethyl group per anhydrous glucose unit in said carboxymethylcellulose is 1.5 or more and the quaternary ammonio carboxymethyl group has the subformula:



$$-CH_2COO^{(-)}R^4-\overset{R^1}{\underset{R^3}{\overset{|(+)}{N}}}-R^2$$

where

(i) R^1–R^4 are each a C_{1-20} straight chained or branched and saturated or unsaturated aliphatic hydrocarbon group,

(ii) three of R^1–R^4 are each said hydrocarbon group, and the remaining one is an aralkyl group or trialkylammoniumalkyl group,

(iii) two of R^1–R^4 are said hydrocarbon group and the remaining two are an aralkyl group and mono- or dialkylphenoxyalkyleneoxy alkyl group, or

(iv) one or two of R^1–R^4 are said hydrocarbon group and the remaining two or three form a ring together with an adjacent nitrogen atom.

4,617,386
PROCESS FOR THE PRODUCTION OF ^{18}F-2-DEOXY-2-FLUORO-D-GLUCOSE

David R. Elmaleh, Brookline, Mass.; Shlomo Levy, Jerusalem, Israel; Chyng-Yann Shiue, East Setauket, and Alfred P. Wolf, Setauket, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

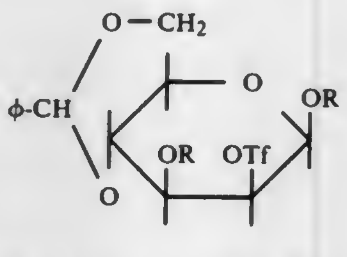
Filed Apr. 25, 1983, Ser. No. 488,311

Int. Cl.⁴ C07H *1/00*

U.S. Cl. 536—122 **5 Claims**

1. A process for the production of ^{18}F-2-deoxy-2-fluoro-D-glucose which comprises the steps of:

(a) producing a compound of the formula:



where R is methyl, ethyl or propyl and Tf is trifluoromethanesulfonyl by reaction of the corresponding methyl, ethyl or propyl compounds with trifluoromethanesulfonyl anhydride at 0° C. to 30° C. in an inert organic solvent in the presence of a nitrogenous organic base which is soluble in the solvent;

(b) reacting the resulting compound with a fluorinating agent which is $[^{18}F]CsHF_2$ or $[^{18}F]RbF$ in an inert organic solvent with heating at 100° C. to 150° C.; and

(c) hydrolyzing the resulting compounds to remove the alkyl groups with BBr_3, BCl_3 or concentrated hydrochloric acid.

4,617,387
BISMORPHOLINES AND A PROCESS FOR THEIR PREPARATION

Peter Haas, Haan; James M. Barnes, Wermelskirchen, and Wilhelm Goyert, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

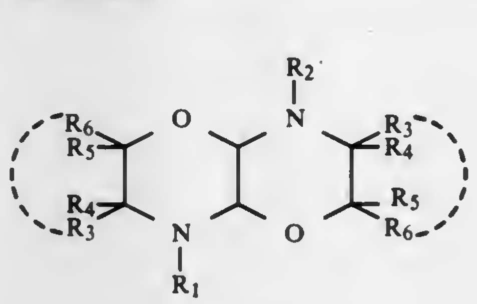
Filed Aug. 15, 1984, Ser. No. 640,907

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1983, 3331436

Int. Cl.⁴ C07D *265/28*

U.S. Cl. 544—74 **7 Claims**

1. A 2,3,2′,3′-bis-morpholine derivative compound corresponding to the formula:



I

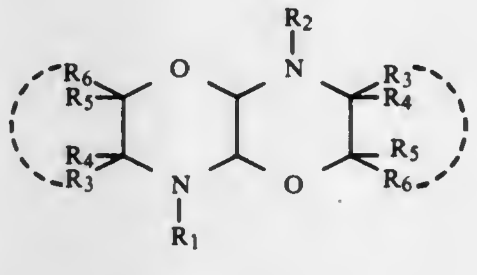
wherein

R_1 and R_2 may be identical or different and represent methyl or cyclohexyl, the groups

R_3 and R_6 form a cyclohexane group, while R_4 and R_5 represent hydrogen and

wherein the cycloalkyl groups may optionally contain inert substituents comprising a member selected from the group consisting of C_1–C_7-alkyl, chlorine and bromine.

2. A 2,3,2′,3′-bis-morpholine derivative compound corresponding to the formula

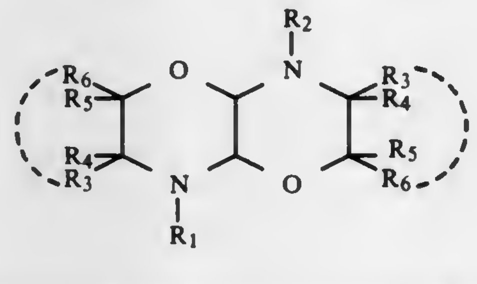


wherein

R_1 and R_2 represent cyclohexyl and

R_3, R_4, R_5 and R_6 represent hydrogen.

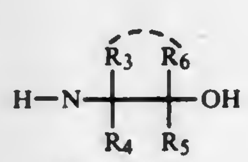
3. A process for the preparation of a 2,3,2′,3′-bis-morpholine derivative compound according to the formula



which consists of reacting at a temperature of about 40°–100° C. in aqueous solution or a solvent containing water

(a) glyoxal with

(b) an N-mono-substituted amino alcohol corresponding to the formula



$R_{1,2}$

wherein

R_1 and R_2 may be identical or different and represent methyl or cyclohexyl and

R_3, R_4, R_5 and R_6 represent hydrogen or the groups R_3 and R_6 form a cyclohexane group while R_4 and R_5 represent hydrogen and wherein the cycloalkyl groups may optionally contain inert substituents comprising a member selected from the group consisting of C_1–C_7-alkyl, chlorine and bromine.

4,617,388
HERBICIDAL SULFONAMIDES

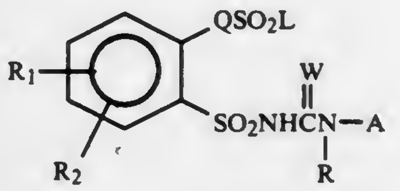
James J. Reap, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 697,375, Feb. 1, 1985, Pat. No. 4,576,633, which is a division of Ser. No. 477,969, Mar. 23, 1983, Pat. No. 4,515,624. This application Dec. 30, 1985, Ser. No. 814,405

Int. Cl.⁴ C07D *491/048, 491/052, 401/12, 413/12*

U.S. Cl. 544—116 **1 Claim**

1. A compound having the formula



wherein

W is O or S;

R is H or CH_3;

Q is O or NR_3;

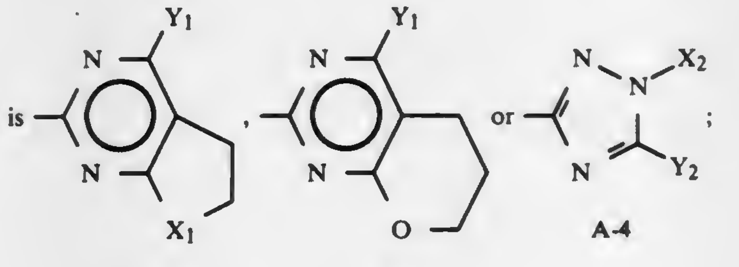
L is NR_5R_6 or $N(OCH_3)CH_3$;

R_1 is H, F, Cl, Br, CH_3, OCH_3, CF_3 or NO_2;

R_2 is H or Cl;

R_3 is H or C_1–C_3 alkyl;

R_5 and R_6 are independently C_1–C_3 alkyl, or R_5 and R_6 may be taken together to be $-(CH_2)_4-$, $-(CH_2)_5-$ or $-(CH_2)_2O(CH_2)_2-$;



A-2 A-3 A-4

X_1 is O or CH_2;

Y_1 is H, CH_3, OCH_3 or Cl;

X_2 is CH_3, CH_2CH_3 or CH_2CF_3;

Y_2 is CH_3, OCH_3 or SCH_3;

provided that when W is S, then R is H; and their agriculturally suitable salts.

4,617,389
MITOMYCIN ANALOGS

William A. Remers, Tucson, Ariz., assignor to University Patents, Inc., Westport, Conn.

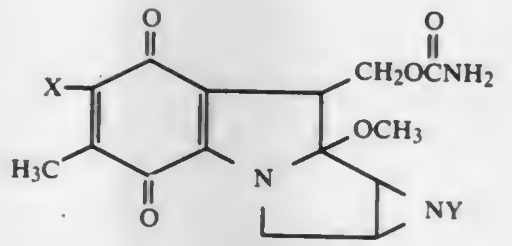
Continuation of Ser. No. 264,187, May 15, 1981, abandoned. This application Dec. 15, 1983, Ser. No. 561,787

The portion of the term of this patent subsequent to May 19, 1998, has been disclaimed.

Int. Cl.⁴ C07D *487/04;* **A61K** *31/40*

U.S. Cl. 544—142 **10 Claims**

1. A compound of the formula,



wherein Y is hydrogen or lower alkyl and X is a carboxamido or mercapto or methylenedioxy substituted anilino.

4,617,390

S-TRIAZINE DERIVATIVES

Udo Hoppe, Hamburg; Karl Seib, Weinheim; Paul Naegele, Neuhofen, and Roland Martin, Kaiserslautern, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

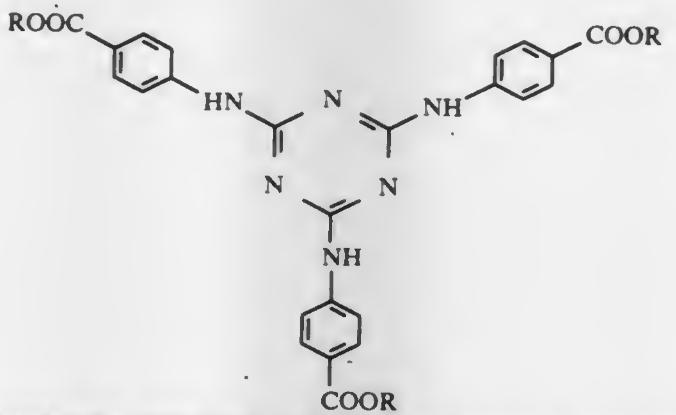
Continuation of Ser. No. 467,745, Feb. 18, 1983, abandoned. This application Jun. 4, 1985, Ser. No. 741,194

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1982, 3206398

Int. Cl.⁴ C07D *251/70*

U.S. Cl. 544—197 **3 Claims**

1. A compound of the formula I:



I

wherein the individual radicals R are identical and are each C_6–C_{12} alkyl, or a polyoxyethylene radical which contains 1 to 6 ethylene oxide units and whose terminal OH group is methylated.

4,617,391

TRIOLS FROM BICYCLIC AMIDE ACETALS

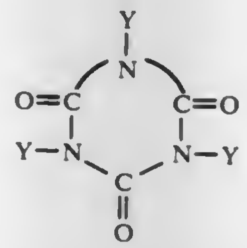
Anil Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Sep. 5, 1985, Ser. No. 772,822

Int. Cl.⁴ C07D *251/34*

U.S. Cl. 544—222 **4 Claims**

1. The Triol having the structure



wherein Y represents $CH_2CH_2N(COR)CH_2CH(R')OH$ wherein R represents hydrogen, an alkyl group having from 1 to 20 carbon atoms, an aryl group having from 6 to 12 carbon atoms or an alkaryl group having from 7 to 20 carbon atoms and R′ represents hydrogen, an alkyl group having from 1 to 15 carbon atoms, an aryl group having from 6 to 12 carbon atoms, an alkaryl group having from 7 to 15 carbon atoms, an alkyl ether group having from 1 to 20 carbon atoms or an aryl ether group having from 6 to 20 carbon atoms.

4,617,392

4-ALKYL-5,6-METHYLENEDIOXY-2-1[H]-QUINAZOLINONES USEFUL AS CARDIOTONIC AGENTS

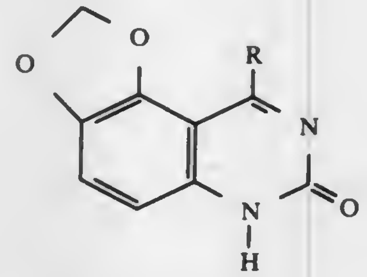
Victor T. Bandurco, Bridgewater, N.J.; Stanley C. Bell, Narberth, Pa.; Donald W. Combs, Piscataway, and Robert Falotico, Belle Mead, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Sep. 29, 1983, Ser. No. 537,228

Int. Cl.⁴ C07D *487/00;* **A61K** *31/505*

U.S. Cl. 544—250 **4 Claims**

1. A compound of the formula:



wherein R is hydrogen or lower alkyl.

4,617,393

5-SUBSTITUTED-6-AMINOPYRIMIDINES, COMPOSITION AND USES AS CARDIOTONIC AGENTS FOR INCREASING CARDIAC CONTRACTILITY

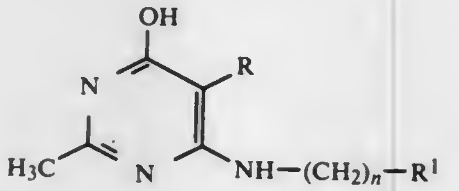
Jehan F. Bagli, Princeton, N.J., and Steven M. Peseckis, Levittown, Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Jul. 19, 1985, Ser. No. 757,214

Int. Cl.⁴ C07D *239/02;* **A61K** *31/505*

U.S. Cl. 544—319 **23 Claims**

1. A compound of the formula (I)



(I)

wherein R is halogen or lower alkyl having 1 to 3 carbon atoms; R^1 is hydrogen, hydroxy, cyclopropyl, pyridinyl, 1-methyl-1H-pyrrol-2-yl, 2-furanyl, phenyl; and n is an integer from 1 to 3, and the pharmaceutically acceptable addition salts thereof.

23. A method for increasing cardiac contractility in a mammal which comprises administering to the mammal an effective cardiotonic amount of a compound of formula I or a therapeutically acceptable addition salt thereof.

4,617,394

4-METHYL-5-(UNSUBSTITUTED AND SUBSTITUTED PHENOXY)-2,6-DIMETHOXY-8-(AMINOALKYLAMINO) QUINOLINES

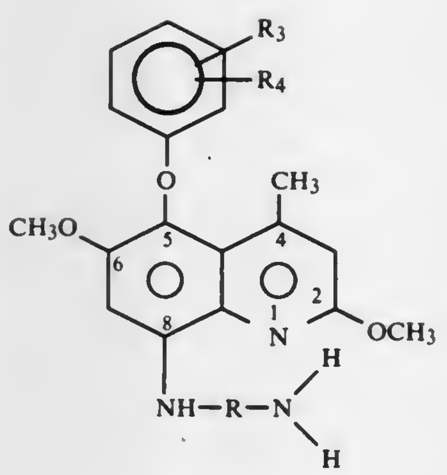
Peter Blumbergs, Royal Oak, Mich., and Maurice P. LaMontagne, Overland Park, Kans., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 15, 1985, Ser. No. 787,143

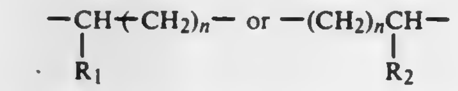
Int. Cl.⁴ C07D *215/22;* **A61K** *31/47*

U.S. Cl. 546—157 **5 Claims**

1. A compound of the formula:



wherein R is an alkylene group which is



$$-\underset{R_1}{\underset{|}{CH}}\!\leftarrow\!CH_2)_n- \text{ or } -(CH_2)_n\underset{R_2}{\underset{|}{CH}}-$$

wherein n is 3 or 4, wherein R_1 and R_2 are methyl or ethyl, wherein R_3 and R_4 are hydrogen, chloro, bromo, fluoro, trifluoromethyl or methoxy groups and wherein the compound is a free amine or a pharmaceutically acceptable acid amine salt.

4,617,395

PREPARATION OF QUINOLINES

Toni Dockner, Meckenheim; Helmut Hagen, Frankenthal, and Herbert Krug, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 15, 1984, Ser. No. 660,956

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1983, 3337569

Int. Cl.⁴ C07D *215/02, 215/12, 215/18, 215/20*

U.S. Cl. 546—178 **4 Claims**

1. In a process for the preparation of quinoline or a substituted quinoline by reacting aniline or a substituent aniline with an α,β-mono-unsaturated aldehyde or an acetal thereof in the presence of an acid, the improvement which comprises: reacting the aniline with the unsaturated aldehyde or acetal thereof at a temperature of from 80° to 250° C. in the presence of a mineral oil having a boiling point above 150° C., said mineral oil being selected from the group consisting of gas oil, vacuum gas oil, heavy fuel oil, technical white oil, molten paraffin wax and an aromatic hydrocarbon oil, said reaction further taking place in the presence of from 0.1 to 20% by weight of an organic acid catalyst based on the weight of the mineral oil.

4,617,396

PROCESS FOR THE PREPARATION OF DERIVATIVES OF PIPERIDINE

Charles M. Leir, New Richmond, Wis., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Continuation of Ser. No. 269,068, Jun. 2, 1981, abandoned, which is a continuation of Ser. No. 162,312, Jun. 23, 1980, abandoned, which is a continuation of Ser. No. 21,332, Mar. 19, 1979, abandoned. This application Sep. 4, 1985, Ser. No. 772,474

Int. Cl.⁴ C07D *211/26*

U.S. Cl. 546—233 **4 Claims**

1. A method of preparing a 2,5-bis(2,2,2-trifluoroethoxy)-N-(2-piperidylmethyl)-benzamide which comprises:

(a) contacting 1,4-dibromobenzene with an alkali metal 2,2,2-trifluoroethoxide in the presence of cuprous or cupric ion and in a strongly polar solvent comprising 2,2,2-trifluoroethanol whereby 1,4-bis(2,2,2-trifluoroethoxy)-benzene is formed;

(b) in the presence of a Lewis acid catalyst, treating said 1,4-bis(2,2,2-trifluoroethoxy)benzene with an acetylation agent under conditions to create 2,5-bis(2,2,2-trifluoroethoxy)acetophenone:

(c) replacing the methyl moiety of the acetophenone function of said 2,5-bis(2,2,2-trifluoroethoxy)acetophenone to yield 2,5-bis(2,2,2-trifluoroethoxy)benzoic acid;

(d) treating said 2,5-bis(2,2,2-trifluoroethoxy)benzoic acid with an inorganic chloride to provide 2,5-bis(2,2,2-trifluoroethoxy)benzoic acid chloride;

(e) contacting the resultant 2,5-bis(2,2,2-trifluoroethoxy)benzoic acid chloride with 2-aminomethylpyridine, whereby there is formed 2,5-bis(2,2,2-trifluoroethoxy)-N-(2-pyridylmethyl)benzamide;

(f) treating said 2,5-bis(2,2,2-trifluoroethoxy)-N-(2-pyridylmethyl)benzamide with an agent capable of hydrogenation of the aromatic bond in the heterocyclic ring, whereby there is formed a 2,5-bis(2,2,2-trifluoroethoxy)-N-(2-piperidylmethyl)benzamide.

4,617,397

2-CHLORO OR BROMO-6-C_1C_3-ALKYLAMINO-PYRIDINE INTERMEDIATES

Kenji Tsuzuki, Shinnanyo, and Hideo Morinaka, Utsunomiya, both of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

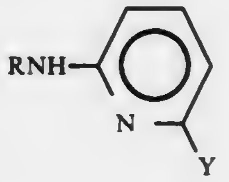
Division of Ser. No. 497,408, May 23, 1983, Pat. No. 4,560,762. This application Jun. 21, 1985, Ser. No. 747,298

Claims priority, application Japan, May 27, 1982, 57-88828; May 27, 1982, 57-88829; Jul. 7, 1982, 57-116888; Jul. 9, 1982, 57-118619; Jul. 9, 1982, 57-118620

Int. Cl.⁴ C07D *213/74*

U.S. Cl. 546—304 **2 Claims**

1. A 2-alkylaminopyridine derivative of the formula



wherein
R is C_1–C_3 alkyl, and
Y is a halogen atom.

4,617,398

PHOSPHOAZIRIDINE COMPOUNDS USEFUL FOR TREATMENT OF TUMORS

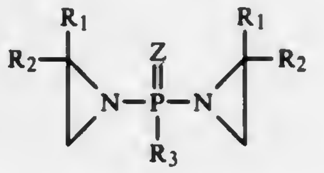
Thomas J. Bardos, Snyder, and Michael E. Perlman, Amherst, both of N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Apr. 12, 1982, Ser. No. 367,338

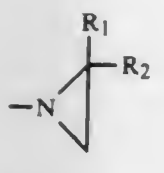
Int. Cl.⁴ C07D *403/02, 403/14;* **A61K** *31/395*

U.S. Cl. 548—112 **8 Claims**

1. A compound of the formula:



wherein Z is oxygen or sulfur, R_1 is hydrogen or methyl; R_2 is methyl or nitrophenyl; R_3 is



or lower alkoxy or lower alkoxy substituted by nitro-1-imidazoyl, quinone, or nitrophenyl or R_3 is —$NHCOOR_4$ wherein R_4 is lower alkyl substituted by nitrophenyl, nitro-1-imidazoyl or quinone; with the proviso that the compound must have at least one nitrophenyl, nitro-1-imidazoyl or quinone and when R_4 is nitrophenyl substituted methyl, the nitrophenyl is O-nitrophenyl.

4,617,399

2-AMINOBENZOTHIAZOLE 6-CARBONYL CHLORIDE HYDROCHLORIDE

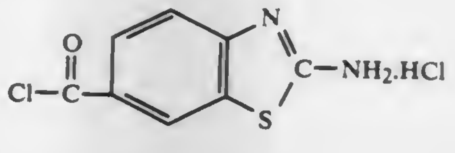
Husam A. A. Rasoul, Racine, Wis., assignor to Celanese Corporation, New York, N.Y.

Filed Apr. 1, 1985, Ser. No. 718,681

Int. Cl.⁴ C07D *277/60, 277/62;* **C08G** *69/12*

U.S. Cl. 548—152 **1 Claim**

1. 2-Aminobenzothiazole-6-carbonyl chloride hydrochloride corresponding to the structural formula:



4,617,400

PROCESS FOR PREPARING CYCLIC UREA DERIVATIVES

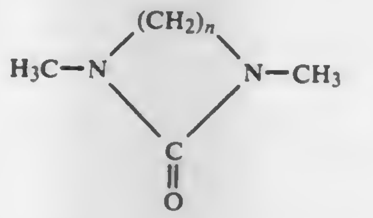
Kazuhisa Ito, Fujimi, and Yoshio Fukuda, Kawagoe, both of Japan, assignors to Kawaken Fine Chemicals Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1985, Ser. No. 774,986

Int. Cl.⁴ C07D *233/32*

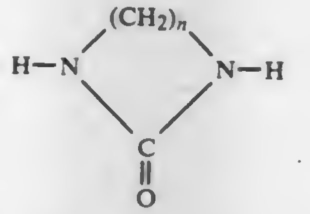
U.S. Cl. 548—317 **8 Claims**

1. A process for preparing a cyclic N,N'-dimethyl urea derivative of formula I,



(I)

in which n is 2 or 3, by reacting a cyclic urea compound of formula II,



(II)

in which n is as defined above, with formaldehyde, in a medium, in the presence of hydrogen and a hydrogenation catalyst, characterized in that said reaction is carried out in the presence of at least one member selected from the group consisting of solid acids obtained by calcining sulfuric acid or its ammonium salt and aluminum oxide and by calcining sulfuric acid or its ammonium salt, phosphoric acid or its ammonium salt and aluminum oxide.

4,617,401

8-SUBSTITUTED PYRROLIZIDINE AND QUATERNARY AMMONIUM SALTS THEREOF

Seiji Miyano; Kunihiro Sumoto, both of Fukuoka; Minoru Morita, Osaka, and Fumio Sato, Kyoto, all of Japan, assignors to Suntory Ltd., Osaka, Japan

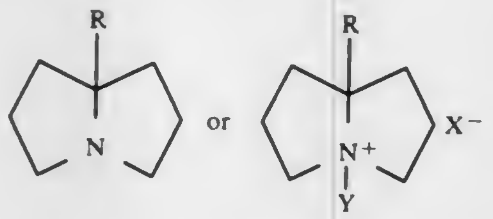
Continuation of Ser. No. 376,240, May 7, 1982, abandoned, which is a continuation-in-part of Ser. No. 258,479, Apr. 28, 1981, abandoned. This application Jan. 27, 1984, Ser. No. 574,932

Claims priority, application Japan, May 7, 1980, 55-61095

Int. Cl.⁴ C07D *209/52*

U.S. Cl. 548—453 **7 Claims**

1. An 8-substituted pyrrolizidine and a quaternary ammonium salt thereof of the formula:



wherein R is an alkyl group containing C_4–C_{10} atoms, aralkyl or aryl group containing up to C_{10} atoms; a lower alkoxycarbonyl or a lower alkoxycarbonylmethyl group; a lower alkyl carboxyl group amidated with pyridinylamine, aniline, cyclohexylamine, phenylbenzylamine or methoxyphenylbenzylamine; a lower hydroxyalkyl group which has one or two phenyl, a trihalomethylphenyl or a halophenyl group; a lower alkyl group which has a hydroxyl group esterified with acetic, benzoic, cinnamic, xanthene-carboxylic or methoxybenzoic acid, or etherified with a C_2–C_{13} alcohol; a lower alkyl group having a lower alkylamino, guanidino, benzylamino, hydroxybenzylamino, methoxybenzylamino, aminobenzylamino, acetamino, benzoylamino, hydroxybenzoylamino, methoxybenzoylamino, pyridinylamino, aminobenzoylamino, N,N-dimethylamino, 2-(N,N-dimethylamino), N-methyl-N-benzylamino, N-benzyl-N-methoxy-phenylamino, N-benzyl-N-phenylamino, 2-(N-benzoyl-N-phenylamino), N-(2'-pyridinyl)-N-acetylamino or N-(2'-pyridinyl)-N-benzoylamino group; or a lower alkyl group bearing benzoyl, methoxybenzoyl, methylbenzoyl, halobenzoyl or trifluoromethylbenzoyl group; Y stands for a group quaternizing the nitrogen of the pyrrolizidine nucleus, and which is lower alkyl, phenacyl, phenyl-substituted phenacyl, or lower alkyl substituted with halogen, phenyl, phenacyl or phenylphenacyl group and X stands for halogen.

4,617,402

NOVEL XANTHENE COMPOUNDS AND THEIR PHOTOGRAPHIC USE

Alan L. Borror, Lexington; Louis Cincotta, Andover, and John W. Lee, Jr., Harvard, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

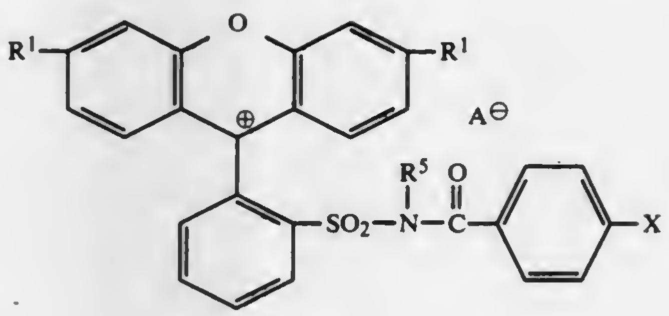
Division of Ser. No. 454,092, Dec. 28, 1982, Pat. No. 4,416,971. This application Sep. 1, 1983, Ser. No. 528,454

The portion of the term of this patent subsequent to Mar. 24, 1998, has been disclaimed.

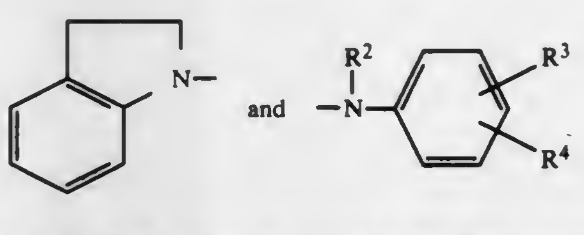
Int. Cl.⁴ C07D *405/14, 311/82*

U.S. Cl. 548—455 **14 Claims**

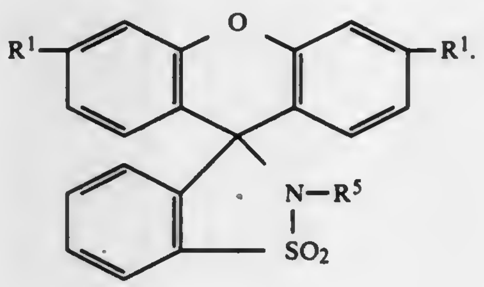
1. A compound having the formula



wherein each R^1 is the same and is selected from



R^2 is alkyl, R^3 is an electron-withdrawing group positioned ortho, meta or para to said N atom, R^4 is hydrogen, alkyl or an electron-withdrawing group positioned ortho, meta or para to said N atom; R^5 is alkyl; X is an electron-withdrawing group or an electron-donating group; and A is an anion, said compound at an alkaline pH undergoing a hydrolysis reaction to give a colorless compound of the formula



4,617,403

PROCESS FOR PREPARING A PIGMENT BASED ON 4,4',7,7'-TETRACHLOROTHIOINDIGO

Ernst Spietschka, Idstein, and Manfred Urban, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 5, 1984, Ser. No. 627,770

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1983, 3324879

Int. Cl.⁴ C07D *333/64, 409/04*

U.S. Cl. 549—56 **5 Claims**

1. A process for preparing a strong, non-flocking and rheologically excellent 4,4',7,7'-tetrachlorothioindigo pigment in high yields and high purity, which comprises

(a) reacting 2,5-dichlorophenylthioglycoloyl chloride with Friedel-Crafts catalysts in inorganic acyl halides of medium oxidation state as diluent pt temperatures of −20° to +50° C. to 4,7-dichloro-3-oxythionaphthene,

(b) oxidizing the resulting 4,7-dichloro-3-oxythionaphthene in a conventional manner to crude 4,4',7,7'-tetrachlorothioindigo, and

(c) treating the crude 4,4',7,7'-tetrachlorothioindigo obtained in moist form with an aromatic solvent at 80° to 180° C. in the presence of an aqueous alkali solution and a surface-active compound.

4,617,404

PROCESS FOR PREPARING STABILIZERS CONTAINING SULFUR AND A HINDERED PHENOL GROUP

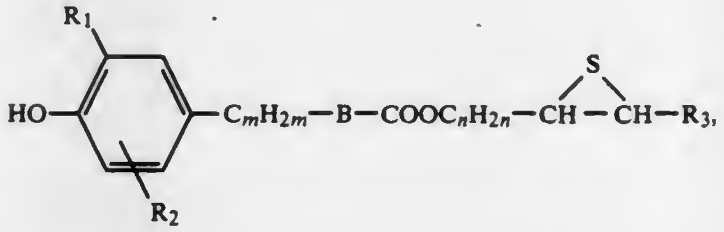
David H. Steinberg, New York, and Frank Cortolano, Valhalla, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 9, 1985, Ser. No. 773,723

Int. Cl.⁴ C07D *327/02;* **C10G** *7/02*

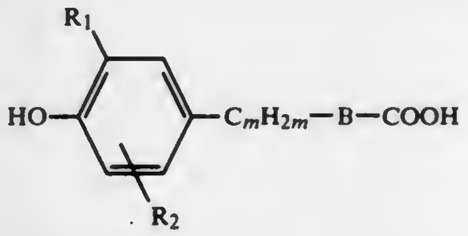
U.S. Cl. 549—90 **12 Claims**

1. A process for the production of compounds having the formula I



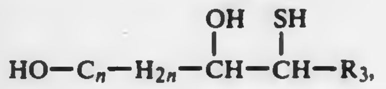
(I)

in which R_1 and R_2, independently, denote alkyl with 1 to 6 carbon atoms, cycloalkyl with 5 to 8 carbon atoms, allyl, methallyl, aralkyl with 5 to 9 carbon atoms, phenyl, 1- or 2-naphthyl or alkaryl with 7 to 9 carbon atoms, R_2 moreover also denotes hydrogen, R_3 denotes hydrogen, alkyl with 1 to 6 carbon atoms, unsubstituted phenyl or phenyl substituted by chlorine, methyl or chlorine and methyl, B is a hetero atom, the group —OC(O)—, —OC(O)—CH_2CH_2—, or a direct bond, m is an integer from 0 to 6, and n is an integer from 1 to 6, which comprises reacting a compound of the formula II



(II)

with a thioglycerol of the formula III



$$HO-C_n-H_{2n}-\underset{|}{\overset{OH}{CH}}-\overset{SH}{CH}-R_3,\qquad (III)$$

wherein R_1, R_2, R_3, B, m and n are as defined above, in the presence of a catalytic amount of an acid.

4,617,405

PREPARATION OF ALPHA, BETA-UNSATURATED CARBONYL COMPOUNDS

Donald E. Kiely, Birmingham, Ala., and Martin Seldman, Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Sep. 25, 1984, Ser. No. 654,811

Int. Cl.⁴ C07D *307/60;* **C07C** *35/06*

U.S. Cl. 549—262 **8 Claims**

1. A process for preparing alpha, beta-unsaturated carbonyl compounds which comprises:

(a) reacting an acid anhydride selected from the group consisting of glutaric anhydride and 3-methylglutaric anhydride with a beta-hydroxy carbonyl compound having the following chemical formula:

R_2COH—CHR—CRO or R_2COH—CHR—CN

where each R is any substituent group, in the presence of a catalytically effective amount of an acid catalyst to form an ester;

(b) reacting the ester in the presence of a catalytically effec-

tive amount of a base catalyst to form an alpha, beta-unsaturated carbonyl compound and a carboxylic acid;
(c) separating the alpha, beta-unsaturated carbonyl compound and the carboxylic acid;
(d) heating the carboxylic acid at a temperature of about 100° to 250° C. and at a pressure less than about 50 mm mercury to form the corresponding acid anhydride and water; and
(e) isolating and recycling the acid anhydride.

4,617,406

PURIFICATION OF TOCOPHEROLS

Stephen M. Willging, Minneapolis, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Feb. 11, 1985, Ser. No. 700,416

Int. Cl.⁴ C07D *311/72*

U.S. Cl. 549—413 **8 Claims**

1. A process for the purification of tocopherol comprising:
(a) reacting the tocopherol in a tocopherol-containing feed material with a member selected from the group consisting of: boric acid, an alkoxy boroxine, an alkoxy borate, a phenoxyboroxine, and a phenoxyborate to form a borate tocopherol ester;
(b) distilling the product of (a) to leave the borate tocopherol esters in the residue;
(c) releasing the tocopherol from the borate tocopherol ester left after distillation by reacting the borate tocopherol ester with a member selected from the group consisting of: water, methanol and ethanol to form the tocopherol and a boron compound;
(d) removing the boron compound formed by the reaction of the water, methanol and ethanol in step (c), and then
(e) recovering the released tocopherol after step (d).

4,617,407

LEUKOTRIENE ANTAGONISTS

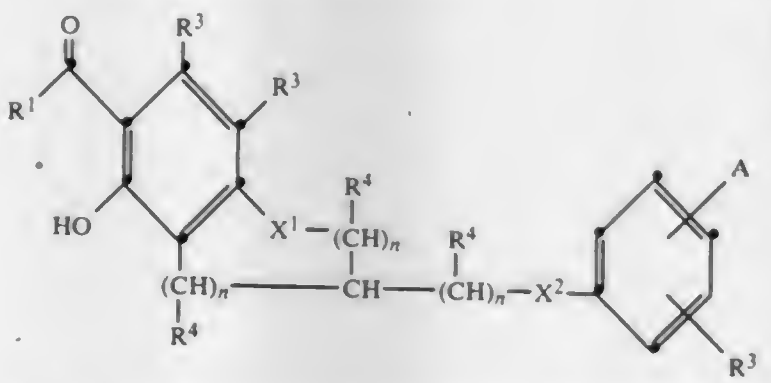
Robert N. Young, Senneville, and Joshua Rokach, Laval, both of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

Filed Aug. 30, 1984, Ser. No. 645,595

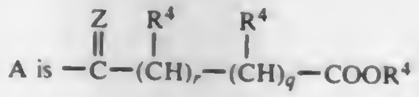
Int. Cl.⁴ C07D *307/88, 311/04*

U.S. Cl. 549—462 **3 Claims**

1. Compounds having the formula:



and the pharmaceutically-acceptable salts and acid addition salts thereof, wherein:
each n is independently 0 or 1;
X^1 is O;
X^2 is O or S;



$$A\ \text{is}\ -\overset{\overset{Z}{\|}}{C}-\overset{\overset{R^4}{|}}{(CH)_r}-\overset{\overset{R^4}{|}}{(CH)_q}-COOR^4$$

wherein
Z is O or H/H;
r and q are each independently 0 to 2;
R^1 is alkyl of 1 to 6 carbon atoms which may be straight chain or branched;
each R^3 is independently H or alkyl of 1 to 6 carbon atoms which may be straight chain or branched; and
each R^4 is independently H or alkyl of 1 to 6 carbon atoms which may be straight chain or branched.

4,617,408

MODIFIED TITANIUM (IV) ACETYLACETONATES

Heinz Nestler, Troisdorf-Eschmar, and Dieter Barfurth, Troisdorf-Spich, both of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

Filed Mar. 18, 1985, Ser. No. 713,302

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1984, 3424189; Jul. 23, 1984, 3427064

Int. Cl.⁴ C07F *7/28*

U.S. Cl. 556—40 **10 Claims**

1. A dialkoxy titanium(IV) acetylacetonate chelate containing 0.05 to 0.75 moles of a malonic acid dialkyl ester moiety per gram-atom of titanium, the malonic acid dialkyl ester moiety being of the formulas ROOC—CR'R'—COOR, or $(ROOC)_2C{=}CH{-}OR$ wherein R represents alike or different alkyl moieties of 1 to 4 carbon atoms, and R' represents H or R.

4,617,409

AMINOMETHYLTRIORGANOTIN COMPOUNDS, PREFERABLY α-MONO OR DISUBSTITUTED; AND THE METHOD OF PREPARATION

Bernard Elissando; Michel Pereyre, both of Talence, and Jean-Paul Quintard, Gradignan, all of France, assignors to Centre National de la Recherche Scientifique, France

Filed Jun. 29, 1984, Ser. No. 626,158

Int. Cl.⁴ C07F *7/22*

U.S. Cl. 556—87 **14 Claims**

1. Aminomethyltriorganotin compounds selected from the group consisting of mono and disubstituted in position α, having the following chemical formula:

$$R_3Sn—CR^1R^2NR^3R^4$$

wherein R^1, R^2 each independently represents hydrogen with the proviso that at least one of R^1, R^2 is other than hydrogen; R, R^1, R^2, R^3, R^4 each independently represents any organic radical, saturated or unsaturated, aliphatic or alicyclic, having from 1 to 20 carbon atoms; or any two radicals taken together can form a ring which is saturated or unsaturated.

4,617,410

PROCESS FOR THE PRODUCTION OF PURE CIS-PLATINUM-(II)-IDIAMMINE DICHLORIDE

Bernhard Lippert, Garching, and Gabriele Raudaschl, Bayerisch Gmain, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 13, 1984, Ser. No. 579,646

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1983, 3305248

Int. Cl.⁴ C07F *15/00*

U.S. Cl. 556—137 **16 Claims**

1. A process for the production of pure cis-platinum-(II)-diammine dichloride comprising reacting impure cis-platinum-(II)-diammine dihydrochloride with N,N-dimethylformamide to form an adduct of the cis-platinum(II) and the N,N-dimethylformamide of the formula $Pt(NH_3)_2Cl_2.C_3H_7NO$, precipitating the adduct and subsequently removing the N,N-dimethylformamide to recover purified cis-platinum-(II)-diammine dichloride.

4,617,411

3-OXAPROSTAGLANDINS

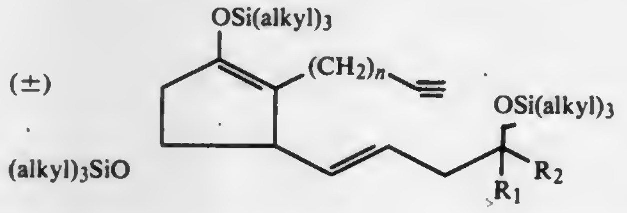
Paul W. Collins, Deerfield, and Richard M. Weier, Lake Bluff, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Division of Ser. No. 558,471, Dec. 6, 1983, Pat. No. 4,529,812. This application Mar. 25, 1985, Ser. No. 715,445

Int. Cl.⁴ C07F *7/18*

U.S. Cl. 556—443 **2 Claims**

1. An Intermediate compound of the formula:



wherein n is an integer of from 1 to 6 inclusive, wherein R_1 is:
(a) hydrogen;
(b) alkyl of 1 to 6 carbon atoms, inclusive;
(c) trifluoromethyl;
(d) trichloromethyl;
(e) alkenyl; or
(f) alkynyl;
wherein R_2 is straight chain alkyl of 1 to 6 carbon atoms inclusive.

4,617,412

TRANSETHERIFICATION PROCESS

Michael J. Green, Hull, and Gerhard A. Kleiner, London, both of England, assignors to BP Chemicals Limited, London, England

Filed Jan. 29, 1985, Ser. No. 696,031

Claims priority, application United Kingdom, Feb. 4, 1984, 8402996; Apr. 5, 1984, 8408805

Int. Cl.⁴ C07F *7/08, 7/18*

U.S. Cl. 556—446 **22 Claims**

1. A process for the transetherification of silyl ethers characterised in that a silyl ether and a hydroxyl containing compound are reacted together in the presence of a Lewis base containg catalyst,
wherein said catalyst is selected from the group consisting of
(1) an amidine, or a guanidine,
(2) a Lewis base in the presence of an epoxide, and
(3) a trivalent organophosphorus compound in the presence of an activated alkene or alkyne.

4,617,413

PENTACOORDINATE SILICON COMPLEXES, THE PROCESS FOR THEIR PREPARATION AND THEIR APPLICATION TO THE PREPARATION OF ORGANOSILANES

Robert J. Corriu; Geneviève E. Cerveau, both of Montpellier; Claude G. Chuit, Palavas les Flots, and Catherine Reye, Montpellier, all of France, assignors to Centre National de la Recherche Scientifique, Paris, France

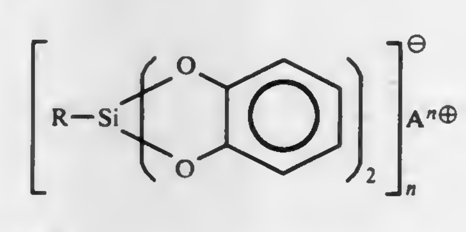
Filed Dec. 24, 1985, Ser. No. 813,740

Claims priority, application France, Dec. 27, 1984, 84 19885

Int. Cl.⁴ C07F *7/08, 7/18*

U.S. Cl. 556—464 **13 Claims**

1. A pentacoordinate silicon complex which corresponds to the general formula I:



(I)

in which:
R denotes an alkyl, alkenyl, alkynyl, aryl, aralkyl, aralkenyl, aralkynyl or alkylaryl radical in which the aliphatic fragments are linear, branched or cyclic and contain from 1 to 20 carbon atoms,
A represents an alkali metal or alkaline earth metal, with the proviso however that A represents neither sodium nor potassium when R is a phenyl radical, and
n=1 or 2.

4,617,414

PROCESS FOR THE PREPARATION OF PHOSPHATE SURFACTANTS

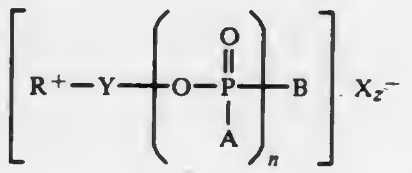
Elvin R. Lukenbach, Somerset, and Richard R. Tenore, Martinsville, both of N.J., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Filed Sep. 10, 1984, Ser. No. 649,031

Int. Cl.⁴ C07F *9/08;* **C11C** *3/00*

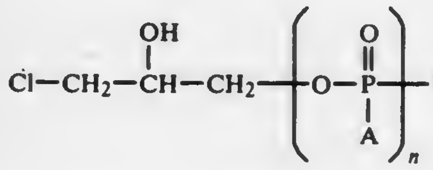
U.S. Cl. 558—87 **4 Claims**

1. In a process for the preparation of phosphate compounds of the formula



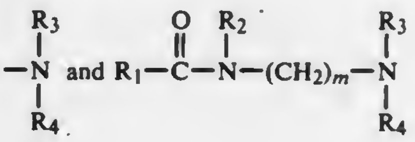
$$\left[R^+-Y-\left(O-\overset{\overset{O}{\|}}{\underset{\underset{A}{|}}{P}}\right)_n-B\right]X_z^-$$

comprising the steps of
(1) reacting an inorganic phosphate salt with epichlorohydrin to obtain a phosphate ester of the formula



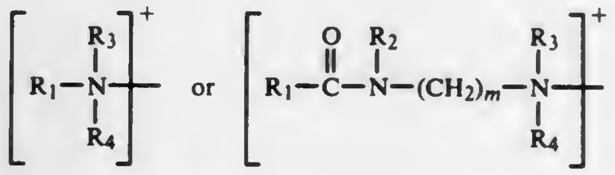
$$Cl-CH_2-\overset{\overset{OH}{|}}{CH}-CH_2-\left(O-\overset{\overset{O}{\|}}{\underset{\underset{A}{|}}{P}}\right)_n-B$$

(2) reacting the phosphate ester with a substituted amine selected from the group consisting of



$$R_1-\overset{\overset{R_3}{|}}{\underset{\underset{R_4}{|}}{N}}\ \text{and}\ R_1-\overset{\overset{O}{\|}}{C}-\overset{\overset{R_2}{|}}{N}-(CH_2)_m-\overset{\overset{R_3}{|}}{\underset{\underset{R_4}{|}}{N}}$$

wherein
A is selected from O—, OM and O—Y—R^+;
B is selected from O—, OM and H;
X is an anion;
n is an integer of 1 or 2;
z is an integer from 0 to 3 as required for charge balance;
m is an integer of from 2 to 12;
Y is alkylene or substituted alkylene;
M is hydrogen, an organic radical selected from alkyl or hydroxyalkyl of up to 6 carbon atoms, polyhydroxyalkyl of up to 10 carbon atoms, glyceryl, cycloalkyl of up to 6 carbon atoms, aryl or arylalkyl of up to 10 carbon atoms, or a salt radical;
R is an amine or an amidoamine moiety of the formula



$$\left[R_1-\overset{\overset{R_3}{|}}{\underset{\underset{R_4}{|}}{N}}-\right]^+\ \text{or}\ \left[R_1-\overset{\overset{O}{\|}}{C}-\overset{\overset{R_2}{|}}{N}-(CH_2)_m-\overset{\overset{R_3}{|}}{\underset{\underset{R_4}{|}}{N}}-\right]^+$$

R_1 is an alkyl, alkenyl, alkoxy, or hydroxyalkyl of from 5 to 22 l **carbon atoms each, or aryl or alkaryl of up to** 20 carbon atoms;

R_2 is hydrogen or alkyl, hydroxyalkyl or alkenyl of up to 6 carbon atoms each or cycloalkyl of up to 6 carbon atoms, or polyoxyalkylene of up to 10 carbon atoms;

R_3 and R_4 are the same or different and are selected from alkyl, hydroxyalkyl, carboxyalkyl of up to 6 carbon atoms in each alkyl moiety, and polyoxyalkylene of up to 10 carbon atoms; and in addition, R_3 and R_4 taken together with the nitrogen to which they are attached, may represent an N-heterocycle, in which the Y radical is bonded to a ring atom of said N-heterocycle other than the nitrogen of the R moiety;

and wherein the improvement comprises carrying out step (1) of the process at a pH of from about 5.4 to 7.0.

4,617,415
α-SUBSTITUTED N-PHOSPHONOMETHYLIMINODIACETIC ACID

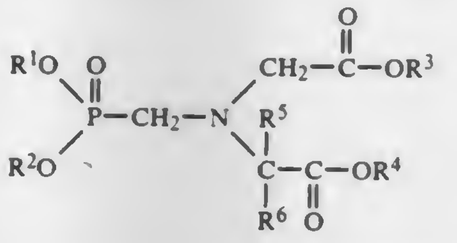
Terry M. Balthazor, University City, and Mitchell J. Pulwer, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 557,727, Dec. 2, 1983. This application Jun. 10, 1985, Ser. No. 743,213

Int. Cl.^{4} C07F *9/40*

U.S. Cl. 558—169 **2 Claims**

1. A compound corresponding to the formula



where R^1, R^2, R^3, and R^4 are independently selected from the group consisting of hydrogen, lower alkyl, aryl, and a salt-forming cation, and R^5 and R^6 are independently selected from the group consisting of hydrogen, alkyl, aryl, substituted alkyl, and substituted aryl, not more than one of R^5 and R^6 being hydrogen.

4,617,416
PROCESS FOR THE PREPARATION OF THIOCARBAMATES

Renato Ugo, Milan; Stefano Campolmi, Novara, and Vittorio Carletti, Meda, all of Italy, assignors to Montedison S.p.A., Milan, Italy

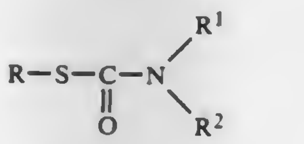
Filed Mar. 19, 1985, Ser. No. 713,603

Claims priority, application Italy, Mar. 22, 1984, 20174 A/84

Int. Cl.^{4} C07C *155/02*

U.S. Cl. 558—242 **6 Claims**

1. A process for the preparation of thiocarbamates having general formula:



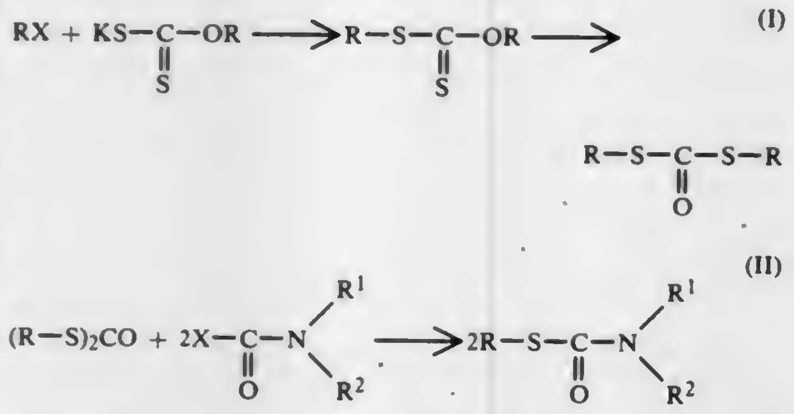
$$R-S-\underset{\underset{O}{\|}}{C}-N\begin{matrix}R^1\\R^2\end{matrix} \qquad (A)$$

wherein:

R represents an alkyl C_1–C_4 optionally substituted with one or more halogen atoms, an alkenyl C_2–C_4 optionally substituted with one or more halogen atoms, a phenyl optionally substituted with one or more halogen atoms, a benzyl optionally substituted on the phenyl ring with one or more halogen atoms;

R^1 and R^2, equal or different from one another, represent an alkyl C_1–C_4; a cycloalkyl,

according to the following reactions (I) and (II):



$$RX + KS-\underset{\underset{S}{\|}}{C}-OR \longrightarrow R-S-\underset{\underset{S}{\|}}{C}-OR \longrightarrow R-S-\underset{\underset{O}{\|}}{C}-S-R \qquad (I)$$

$$(R-S)_2CO + 2X-\underset{\underset{O}{\|}}{C}-N\begin{matrix}R^1\\R^2\end{matrix} \longrightarrow 2R-S-\underset{\underset{O}{\|}}{C}-N\begin{matrix}R^1\\R^2\end{matrix} \qquad (II)$$

wherein X is a halogen; R, R^1 and R^2 have the same meanings as in general formula (A), reactions (I) and (II) being carried out in sequence without isolation of intermediate products, in alkaline aqueous-organic medium, in the presence of a phase transfer catalyst with xanthogenate/catalyst molar ratios of 20:1 to 10:1 and alkaline base/xanthogenate molar ratios of 4:1 to 10:1.

4,617,417
ALKYL 2-CARBOALKOXY-3,4-DIALKOXYBENZENECARBAMATES AND PROCESS FOR THEIR PREPARATION

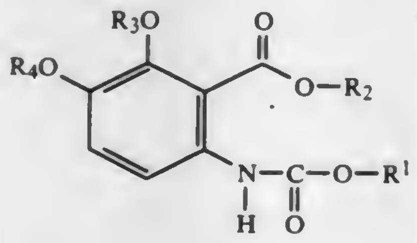
Richard A. Conley, Annandale, and Donald L. Barton, Frenchtown, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Jul. 29, 1985, Ser. No. 759,975

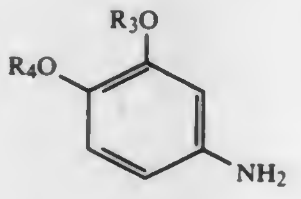
Int. Cl.^{4} C07C *125/065*

U.S. Cl. 560—29 **12 Claims**

1. A process for preparing a compound of the formula



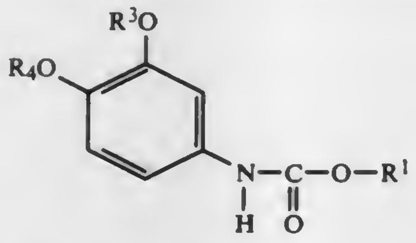
which comprises reacting a compound of the formula



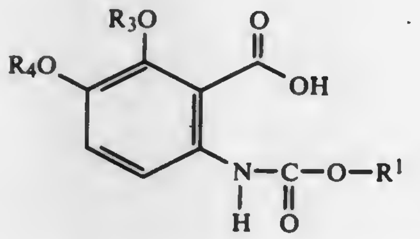
with an alkyl carbonate of the formula

R_1OCOR_5

to form a 3,4-dialkoxybenzenecarbamate of the formula

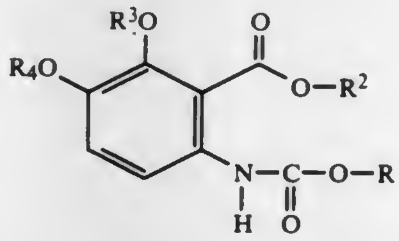


reacting the carbamate with an organolithium reagent and then reacting the product formed with carbon dioxide to form an acid of the formula



and reacting the acid with an esterifying agent, wherein R, R_1, R_2, R_3 and R_4 are lower alkyl and R_5 is chloro, bromo, OR or OCOOR wherein R is lower alkyl.

6. A compound of the formula



wherein R_3 and R_4 are lower alkyl; R_1 is straight or branched chain lower alkyl; and R_2 is hydrogen or lower alkyl.

4,617,418
POLYALKYLENE POLYAMINES VIA VAPOR PHASE REACTION

Michael E. Ford, Center Valley, and Thomas A. Johnson, Orefield, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 26, 1984, Ser. No. 674,611

The portion of the term of this patent subsequent to Jul. 31, 2001, has been disclaimed.

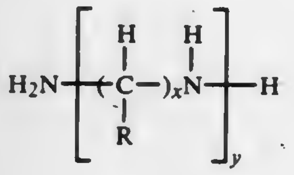
Int. Cl.^{4} C07C *85/06*

U.S. Cl. 564—479 **29 Claims**

1. In a process for preparing a noncyclic polyalkylene polyamine which comprises contacting:

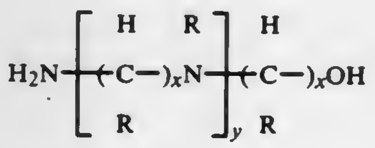
(a) ammonia,

(b) an alkyleneamine compound having two primary amino groups of the general formula:



$$H_2N-\left[\left(\overset{H}{\underset{R}{C}}-\right)_x\overset{H}{N}\right]_y-H$$

wherein R is hydrogen or a lower alkyl (C_1–C_4) radical, x is a number from 2 to about 6, and y is a number from 1 to about 4, and (C) an alkanolamine compound having primary or secondary hydroxyl groups of the general formula:



$$H_2N-\left[\left(\overset{H}{\underset{R}{C}}-\right)_x\overset{R}{N}\right]_y-\left(\overset{H}{\underset{R}{C}}-\right)_xOH$$

wherein R is hydrogen or a lower alkyl (C_1–C_4) radical, x is a number from 2 to about 6, and y is a number from 0 to about 3; in the presence of an effective amount of an acidic catalyst and at a reaction temperature and reaction pressure sufficient to effect reaction between the ammonia, alkanolamine compound, and the alkyleneamine compound, the improvement for effecting said reaction under vapor phase conditions while maintaining high selectivity which comprises:

establishing a reaction zone containing a catalytic bed comprising a solid phase acidic catalyst;

contacting said bed with reactant ammonia, alkanolamine compound and alkyleneamine, and

maintaining sufficient ammonia in the reaction zone such that the dew point temperature of the reactor contents is below the reaction temperature at reaction pressure.

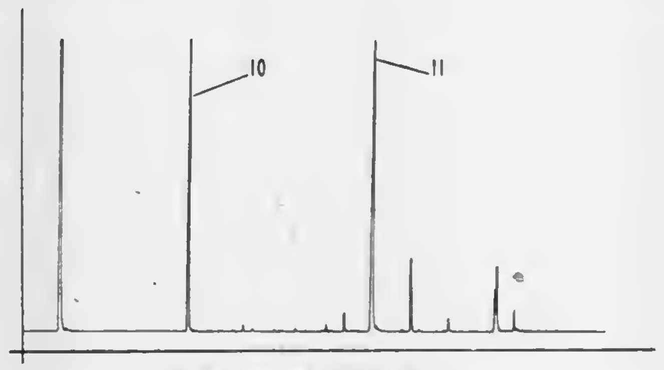
4,617,419
PROCESS FOR PREPARING NATURAL BENZALDEHYDE AND ACETALDEHYDE, NATURAL BENZALDEHYDE AND ACETALDEHYDE COMPOSITIONS, PRODUCTS PRODUCED THEREBY AND ORGANOLEPTIC UTILITIES THEREFOR

Charles Wiener, Middletown, and Alan O. Pittet, Atlantic Highlands, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Sep. 26, 1985, Ser. No. 780,298

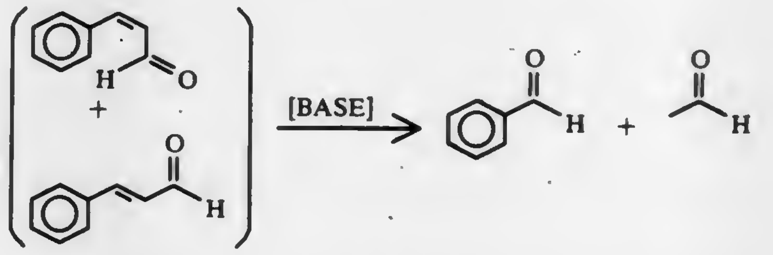
Int. Cl.^{4} C07C *45/72*

U.S. Cl. 568—464 **8 Claims**



GC-IR SPECTRUM FOR EXAMPLE I

1. A process for preparing a composition of matter containing a substantial quantity of a natural benzaldehyde and/or acetaldehyde comprising the step of carrying out a retro-aldol reaction on naturally occurring cinnamaldehyde in the presence of base and an inert solvent and in the absence of any other reagents according to the reaction:



the reaction being carried out at from about 0.2 up to about 10 atmospheres; at a temperature of from about 40° C. up to about 150° C. and for a period of time of from about 5 hours up to 80 hours; the base being selected from the group consisting of sodium carbonate, sodium bicarbonate, potassium carbonate, potassium bicarbonate, lithium carbonate, lithium bicarbonate, proline, choline, magnesium hydroxide, calcium hydroxide, magnesium carbonate, calcium carbonate and mixtures of lecithin and base; the inert solvent being a C_1–C_5 lower alkanol or water.

4,617,420

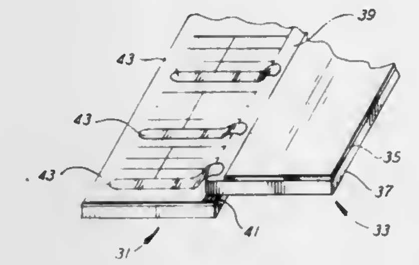
FLEXIBLE, INTERCONNECTED ARRAY OF AMORPHOUS SEMICONDUCTOR PHOTOVOLTAIC CELLS

David A. Dilts, Gates Mills, and Timothy W. Brauneck, Thompson, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jun. 28, 1985, Ser. No. 749,832

Int. Cl.^{4} H01L *25/02, 31/18*

U.S. Cl. 136—244 **13 Claims**



1. A flexible interconnected array of solar cells, comprising at least two strips of photoelectric cells, each of said strips having a width and a length, said length being longer than said width, and including an electrically conductive substrate for forming one electrode of said array, said substrate having opposed top and bottom surfaces, a photoresponsive semiconductor body disposed on one surface of said substrate, and a transparent conductive coating disposed on said semiconductor body opposite said substrate, a portion of the bottom surface of the substrate of one strip overlapping a portion of the coating on an adjacent, overlapped strip along the lengths of said overlapping and overlapped strips, said strips being flexibly joined in their mutually overlapping portions by a length of a flexible plastic adhered to the bottom surface of the substrate of said overlapping strip and to the coating of said adjacent overlapped strip, and wherein said substrate of said overlapping strip is free of said semiconductor body along the margin of its length overlapping said adjacent overlapped strip and at least one conducting stripe is disposed on said coating of said overlapped strip along its width, continuously extending to and contacting said margin of said overlapping strip to interconnect said strips electrically.

4,617,421

PHOTOVOLTAIC CELL HAVING INCREASED ACTIVE AREA AND METHOD FOR PRODUCING SAME

Prem Nath, Rochester; Masatsugu Izu, Birmingham; Herbert C. Ovshinsky, Oak Park, and Avtar Singh, Detroit, all of Mich., assignors to Sovonics Solar Systems, Troy, Mich.

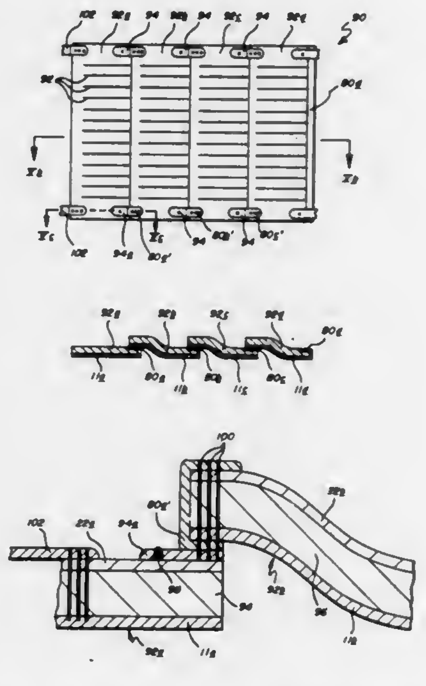
Filed Apr. 1, 1985, Ser. No. 718,970

Int. Cl.^{4} H01L *25/02, 31/18*

U.S. Cl. 136—244 **28 Claims**

1. An improved large area, flexible photovoltaic device, said device comprised of a plurality of electrically interconnected smaller area photovoltaic cells, each of said smaller cells including:

- a flexible substrate member having at least one electrically conductive base electrode region thereupon, a semiconductor body disposed upon said substrate in electrical communication with said base electrode region, and at least one relatively transparent top electrode member disposed upon the semiconductor body, said base electrode region, said semiconductor body and said top electrode member cooperating to provide at least one photovoltaic region in each of said smaller area cells for absorbing incident light and generating electrical current in response thereto;
- said smaller area cells including a discrete, elongated electrically conductive bus bar disposed proximate substantially the entire length of a first edge thereof, in electrical communication with said top electrode member, for conveying said electrical current to at least one collection point proximate at least a second edge thereof;
- said smaller area cells disposed in overlapping relationship so that the bus bar of at least one of said cells is disposed beneath the substrate of an adjacent cell; said device further including means for electrically interconnecting the bus bar of one cell with one of the electrodes of the adjacent cell at said at least one collection point only, whereby said cells are electrically interconnected, the surface of the large area photovoltaic device available for the generation of electrical current is maximized and flexibility of the device in the direction transverse to said elongated, electrically conductive bus bars is retained.



4,617,422

ELECTRIC CABLES AND COMPOSITIONS FOR USE IN THEM

John M. R. Hagger, Twickenham, Great Britain, assignor to BICC Public Limited Company, London, England

Division of Ser. No. 504,318, Jun. 14, 1983, abandoned, which is a continuation-in-part of Ser. No. 335,074, Dec. 28, 1981, abandoned. This application Dec. 3, 1984, Ser. No. 676,612

Claims priority, application United Kingdom, Jan. 30, 1981, 8012849

Int. Cl.^{4} H02G *15/20*

U.S. Cl. 174—23 C **10 Claims**

1. A fully-filled telecommuncation cable comprising a plurality of metallic conductors each coated with cellular insulation and a sheath enclosing said conductors and containing a filling medium comprising (by weight):

- (a) 70–98% of a hydrocarbon base comprising:
  - (i) a first component which is selected from the group consisting of mineral oils, petroleum jellies and mixtures of mineral oil with wax;
  - (ii) a second component which is soluble in the first component and which comprises at least one hydrocarbon whose molecules are substantially incapable of diffusing into polyethylene, polypropylene and other cellular insulating material at temperatures of up to 80° C., its number average molecular weight being low enough and its quantity sufficient to establish an osmotic pressure relative to that of the first component as solvent, which is effective to inhibit migration of said first component into cells of said cellular insulation;
- (b) 1–15% of a block copolymer which comprises a main polymer chain made up of repeating units of at least two kinds covalently bonded together, said repeating units being non-randomly distributed along the length of said chain in such a way as to divide said chain into at least one

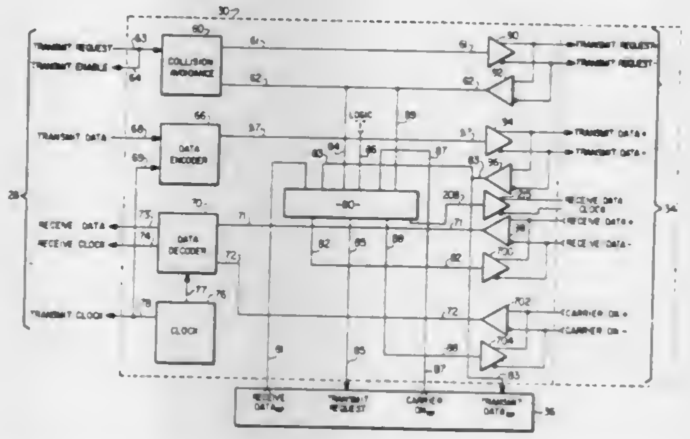
block tending to confer solubility in the base and at least one block tending to inhibit such solubility, the proportions of the blocks being such that the polymer forms a gel with the base; and

(c) 1–15% of a hydrocarbon material that is miscible with said base and said block copolymer above 135° C. but forms solid dispersed particles at a temperature not lower than 65° C.

4,617,423
DATA COMMUNICATION SYSTEM

James W. Dickerson, Plano, and William N. Smith, III, Carrollton, both of Tex., assignors to AGILE Systems, Carrollton, Tex.

Filed Sep. 4, 1984, Ser. No. 646,741
Int. Cl.⁴ H04L *15/00*
U.S. Cl. 178—2 R **12 Claims**



1. A network multiple physical layer interface connected to a communcations network of a first physical layer type and a second physical layer type, each layer type including a send channel and a receive channel, said interface comprising:

- a first circuit means for receiving data from said first physical layer send channel and receive channel and simultaneously transmitting said data to said second physical layer send channel and received channel respectively;
- a second circuit means for receiving data from said second physical layer send channel and receive channel and simultaneously transmitting said data on said first physical layer send channel and receive channel respectively;
- a third circuit means for receiving data from one of the send channels and transmitting the data to one of the receive channels;
- means for transmitting and receiving data from, said first physical layer send channel and receive channel and simultaneously transmitting and receiving data through a MODEM to said second physical layer send channel and receive channel; and
- a data terminal and a network collision avoidance means operatively connected to the data terminal for preventing transmission of data from said data terminal when information traffic is present on the first and second physical layers.

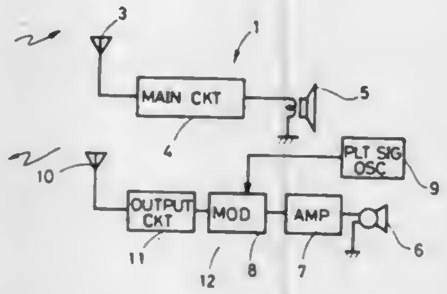
4,617,424
SYSTEM FOR PREVENTING STEALING OF LINE IN RADIOTELEPHONY

Nobuhiro Tatsuta, Gunma, Japan, assignor to Sanyo Electric Co., Ltd. and Tokyo Sanyo Electric Co., Ltd., both of, Japan

Filed May 9, 1984, Ser. No. 608,464
Claims priority, application Japan, May 30, 1983, 58-96500
Int. Cl.⁴ H01Q *7/04*
U.S. Cl. 179—2 EA **14 Claims**

1. A system for preventing stealing of the line in radiotelephony having a master telephone set and a subsidiary telephone set making reception and transmission of radio signals therebetween, said master telephone set being connected to a telephone line in response to a pilot signal from said subsidiary telephone set, wherein

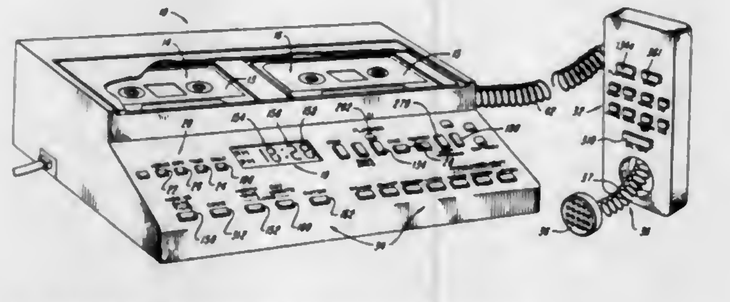
- said subsidiary telephone set comprises:
- pilot signal generating means for generating a first pilot signal having a first frequency and a second pilot signal having a second frequency, said second pilot signal following said first pilot signal; and
- transmitting means for modulating a carrier wave signal by at least said first and second pilot signals and transmitting the modulated signal to said master telephone set; and
- said master telephone set comprises:



- receiving means for receiving and demodulating at least said first and second pilot signals from said subsidiary telephone set;
- pilot signal detecting means connected to said receiving means for detecting whether said first pilot signal and said second pilot signal are successively received; and
- connecting means coupled to said pilot signal detecting means for connecting said receiving means to said telephone line in response to detection by said pilot signal detecting means of said successive reception of said first pilot signal and said second pilot signal.

4,617,425
TELEPHONE ANSWERING DEVICE

Keiichi Nakamura, Tama, and Hideyuki Horiuchi, Tokyo, both of Japan, assignors to Tandy Corporation, Fort Worth, Tex.
Division of Ser. No. 324,154, Nov. 23, 1981, Pat. No. 4,469,919.
This application Aug. 24, 1984, Ser. No. 632,484
Claims priority, application Japan, Feb. 20, 1981, 56-23928; Feb. 20, 1981, 56-23929; Feb. 20, 1981, 56-23930; Feb. 20, 1981, 56-23931; Mar. 23, 1981, 56-41893; Mar. 23, 1981, 56-41894; Mar. 31, 1981, 56-47688
Int. Cl.⁴ H04M *1/64*
U.S. Cl. 179—6.11 **12 Claims**

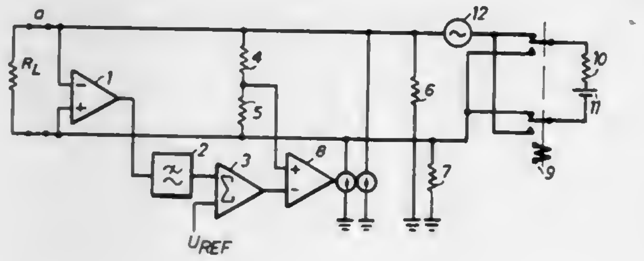


1. A telephone answering system comprising:

- a telephone answering device for answering a telephone, said answering device having a plurality of function means for performing a plurality of functions of the answering device and processor means for controlling the plurality of function means;
- a remote control unit for use with a telephone for controlling the operation of the telephone answering device from a remote location, said remote control unit having a plurality of user manipulable input switches, each of which corresponds to a particular function of the answering device, means responsive to a closed function switch for generating a multi-bit digital code corresponding uniquely to said closed function switch, means for generating at least one tone having a single frequency, means responsive to said digital code for encoding each bit of said code with said tone to produce a sequential time series of tone signals, and means responsive to said tone signals for transmitting said time series of tone signals over a telephone line to the answering device;
- said answering device processor means further having means responsive to said time series of tone signals for demodulating said series of tone signals to reproduce said digital code signal from the remote control unit to determine the particular remote control function switch that was closed and controlling the particular function means in accordance with the reproduced digital signal.

4,617,426
METHOD FOR CURRENT SUPPLY TO A SUBSCRIBER TELEPHONE FROM A TELEPHONE EXCHANGE

Jan H. Johansson, Bålsta, and Nils J. Sundvall, Lidingö, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
PCT No. PCT/SE83/00242, § 371 Date Mar. 6, 1984, § 102(e) Date Mar. 6, 1984, PCT Pub. No. WO84/00459, PCT Pub. Date Feb. 2, 1984
PCT Filed Jun. 14, 1983, Ser. No. 598,322
Claims priority, application Sweden, Jul. 6, 1982, 8204185
Int. Cl.⁴ H04M *19/00*
U.S. Cl. 179—16 AA **2 Claims**



1. In a telephone system wherein current is fed from a voltage source in a telephone exchange to first and second terminals of a subscriber line circuit with a load, the method of maintaining the potential of the first terminal at a constant mean value simultaneously as the potential of the second terminal is given a mean value which is dependent on the load comprising the steps of sensing the potential differences across the terminals, low-pass filtering the sensed potential difference to obtain a low-pass filter voltage, adding a reference voltage to said filtered voltage to obtain a reference value, said reference voltage being a measure of the constant mean value of said first terminal, generating another voltage related to the potentials of both terminals to form an actual value, generating a control voltage related to said reference and actual values, and current tapping in the same phase from both of said terminals in accordance with the amplitude of said control voltage.

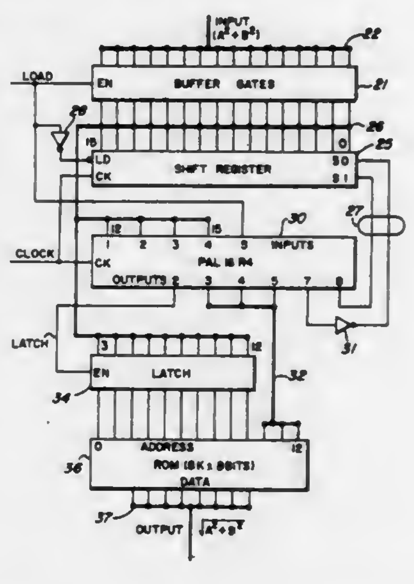
4,617,427
SQUARE ROOT CIRCUIT

Mathew P. Vea, Pittsburgh, Pa., and Vinita Gupta, Menlo Park, Calif., assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 13, 1985, Ser. No. 701,288
Int. Cl.⁴ H04M *1/50;* **G06F** *15/31*
U.S. Cl. 179—84 VF **6 Claims**

1. A number conversion circuit which includes a look-up means for providing an output number representing a predetermined function of an input binary number having n bits, the number conversion circuit comprising:

- a shift register for capturing the n bits of the input binary number at corresponding ones of n register stages, the shift register being controllable to serially shift the bits of the captured binary number in directions of greater and lesser significance to provide a registered binary number;
- logic means being connected to control the shift register in response to the content thereof such that:
- (a) in a first case wherein any of m most significant stages is asserted, the binary number is shifted in the direction of lesser significance until each of the m most significant stages is unasserted; and
- (b) in a second case wherein none of m+1 most significant stages is asserted, the binary number is shifted in the direction of greater significance until the $(n-m-1)^{th}$ most significant stage becomes asserted or until a predetermined limit number of shifts has occurred,

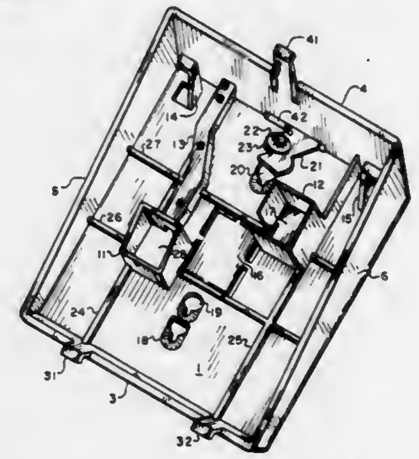


- the logic means also being for providing a plural bit shift record in coincidence with the registered binary number;
- the look-up means including an address port being connected to the shift register and to the logic means for being addressed by the plural bit shift record in combination with the binary number as it is ultimately registered in three stages of the shift register being bounded by and including the $(n-m-1)^{th}$ most significant stage and the least significant stage corresponding to the predetermined limit number,
- whereby the address applied at the address port consists of fewer than said n bits.

4,617,428
TELEPHONE BASE ADAPTED TO FACILITATE BOTH DESK AND WALL MOUNTING OF TELEPHONE INSTRUMENT

Babulal V. Gala, and Gerald B. McGough, both of Huntsville, Ala., assignors to GTE Communication Systems Corp., Northlake, Ill.

Filed Oct. 10, 1984, Ser. No. 659,398
Int. Cl.⁴ H04M *1/02*
U.S. Cl. 179—100 C **15 Claims**

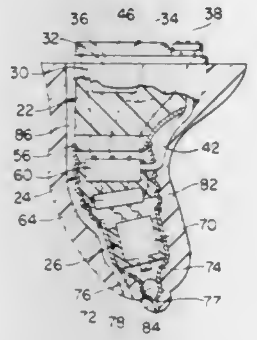


1. In combination a telephone instrument unit adapted to be

positioned in a horizontal first mode and alternatively positioned in a vertical second mode, said unit including a line cord plug receiving jack and at least a first and a second connector receiving means mounted in a bottom portion of said unit, a line cord including a plug mounted on both ends thereof and an adaptor unit connectible to said bottom portion, said adapter unit comprising: first and second end walls parallel to each other; a first connector included in said first end wall, in said horizontal first mode engaging said first connector receiving means and alternatively in said vertical second mode engaging said second connector receiving means; a second connector included in said second end wall, in said horizontal first mode engaging said second connector receiving means and alternatively in said vertical second mode engaging said first connector receiving means; a first and a second side wall each parallel to each other and each perpendicular to said end walls; and a bottom connected to said end walls and to said side walls and including therein at least a first passageway providing manual access to said line cord plug receiving jack; said bottom also including stud receiving means adapted to engage studs associated with a wall telephone mounting jack whereby said adaptor unit and said telephone unit connectible thereto may be positioned adjacent to said wall mounted jack in a vertical position when said connectors are engaged in said vertical second mode; said bottom further including a second passageway providing manual access to said line cord plug receiving jack when said telephone is mounted in said second vertical mode; said first passageway providing manual access to said line cord plug receiving jack when said instrument is mounted to said adaptor unit in said horizontal first mode; and said adaptor unit bottom still further including therein a plurality of removable sections.

4,617,429
HEARING AID

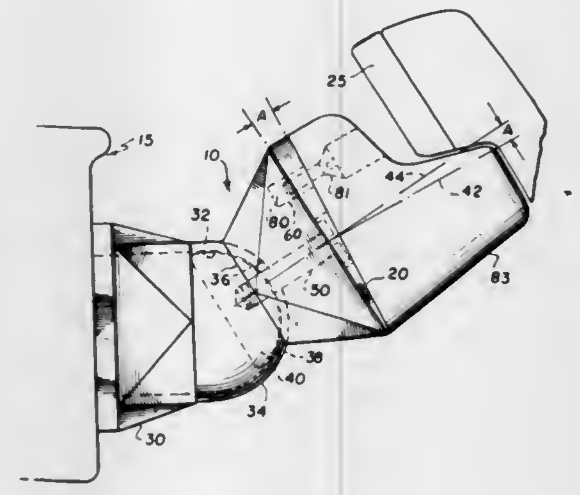
Gaspare Bellafiore, 58 Stevens Rd., Cranston, R.I. 02910
Filed Feb. 4, 1985, Ser. No. 698,072
Int. Cl.⁴ H04R *25/02;* **B29C** *33/40*
U.S. Cl. 179—107 E **7 Claims**



1. A hearing aid for insertion into the auditory canal of a user and having a plurality of components mounted therein, said hearing aid further comprising an outer shell that defines a plug that has an exterior configuration that has been preshaped to snugly fit into the auditory canal of the user's ear, an assembly including an outer member, an intermediate member and an innter member in which said components are mounted, said outer, intermediate, and inner members being pre-assembled together prior to being fixed in said shell and being interfitted together such that the connecting portions of the members are initially pivotally movable relative to each other to pre-shape the assembly into a configuration that generally corresponds to the configuration of the auditory canal of the user, and said outer shell being formed around said preshaped assembly to embed said assembly therein.

4,617,430
SWIVEL MOUNT

David V. Bryant, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.
Filed Apr. 19, 1984, Ser. No. 601,931
Int. Cl.⁴ H04M *1/04, 1/12;* **A47F** *5/08*
U.S. Cl. 179—146 R **7 Claims**



1. A swivel mount, comprising:

three separate elements including (1) a base element having a projecting convex spherical surface and a mating concentric interior spherical cavity with an aperture extending therethrough to said projecting convex spherical surface, (2) a mounting element having a concave spherical depression surface matching said projecting convex spherical surface of the base element and (3) a spherical element matingly housed within said interior spherical cavity of the base element;

means, passing through said aperture in said base element, (1) for engaging said mounting element and said spherical element and (2) for permitting selective movements of said mounting element toward said spherical element to thereby selectively secure said three elements into a selected orientation with respect to each other;

said mounting element including mounting holes therein for attaching a device thereto; and

said mounting element and said spherical element being movable in tandem relative to said base element when engaged though not secured by said means.

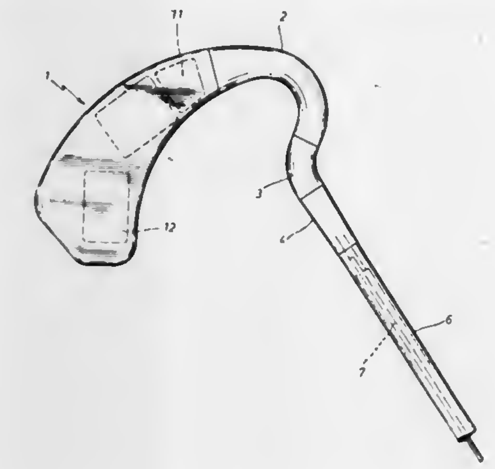
4,617,431
VOICE TUBE ASSEMBLIES FOR POST-AURICLE HEADSETS

Charles G. Scott, and Robert L. Harris, both of Aptos, Calif., assignors to Plantronics, Inc., Santa Cruz, Calif.
Filed Dec. 2, 1983, Ser. No. 557,432
Int. Cl.⁴ H04M *1/05*
U.S. Cl. 179—156 A **5 Claims**

1. A voice tube assembly for a communications headset including a post-auricle capsule, comprising

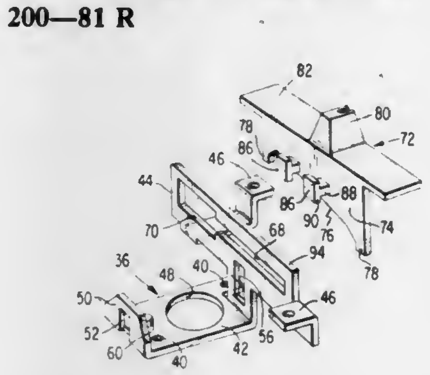
(a) a first curved, relatively rigid tubing section, adapted for connection and rotation relative to said post-auricle capsule;

(b) a second curved, relatively rigid tubing section rotatably connected to said first tubing section; said first tubing section being adapted to hang over a wearer's ear and said first and second tubing sections being adjustable to substantially conform to a wearer's head and ear and adapted to convey voice signals into said capsule.



4,617,432
ADJUSTABLE PRESSURE RESPONSIVE SWITCH ASSEMBLY

Tore B. Hanssen, and Abed G. Kahale, both of Hoffman Estates, Ill., assignors to Controls Company of America, Schiller Park, Ill.
Filed May 3, 1985, Ser. No. 730,010
Int. Cl.⁴ H01H *35/34*
U.S. Cl. 200—81 R **3 Claims**



1. An adjustable pressure responsive switch assembly comprising:

a pressure actuated switch mechanism;

an adjustable element in said switch mechanism for effectively varying the relative pressure at which said switch mechanism will actuate;

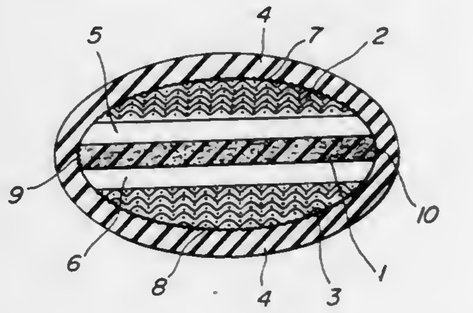
bracket structure supporting said switch mechanism, said bracket structure including a planar piece having an elongated open slot therein;

a unitary slider member including cam means for engaging with and effecting movement of said adjustable element to vary the adjustment of said switch mechanism as said slider member is moved, said slider member being formed with stop means at each end of said cam means for engaging said adjustable element at the extremes of the normal range of travel of said cam means with respect to said adjustable member so as to prevent travel of said slider member beyond the normal range when the assembly is complete; and

means mounting said unitary slider member on said bracket structure including means projecting through said slot and attached to said slider member, said projecting means being formed as a unitary part of said slider member and including a stem portion and an enlarged head portion, said slot having an enlarged region through which said head portion is inserted, said enlarged region being outside the normal range of travel of said projecting means along said slot.

4,617,433
PRESSURE-SENSITIVE CONDUCTIVE STRIP SWITCH ASSEMBLY AND A METHOD OF MANUFACTURING THE SAME

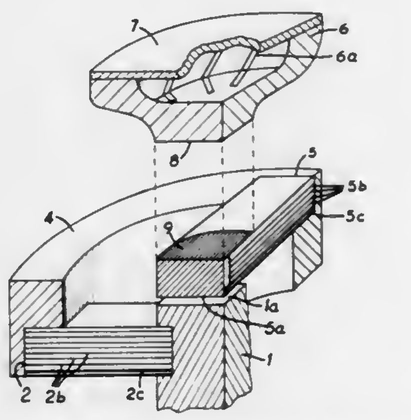
Kyofu Hoshikawa; Seishiro Ishiwatari, and Mitsuru Tanahashi, all of Tokyo, Japan, assignors to Bridgestone Corporation and Shinmei Rubber Ind., Co., Ltd., both of, Japan
Filed Jun. 20, 1985, Ser. No. 746,691
Claims priority, application Japan, Jun. 25, 1984, 59-129172
Int. Cl.⁴ H01H *3/16*
U.S. Cl. 200—86 R **2 Claims**



1. A pressure-sensitive conductive strip switch assembly comprising a strip-like pressure-sensitive conductive rubber based on silicone containing metal powder therein, a pair of strip-like plain woven metal wire cloths sandwiching the conductive rubber therebetween through space portions, and a rubber sheath covering them and made of heat-resistant silicone rubber, both side ends of the conductive rubber being welded to the inner wall of the rubber sheath, and only the outside of each of the metal wire cloths being edged into the inner wall of the rubber sheath.

4,617,434
CONTACT ARRANGEMENT FOR A VACUUM INTERRUPTER

Karl Zückler, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany
Filed Aug. 30, 1984, Ser. No. 646,435
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1983, 3332092
Int. Cl.⁴ H01H *33/66*
U.S. Cl. 200—144 B **12 Claims**



1. A contact arrangement for a vacuum switch having an open and a closed position with two contact assemblies fixed to two contact rods moveable relative to one another to effect said open and closed positions, comprising:

at least one support arm as part of each said contact assembly, solidly connected on one end to its respective contact rod;

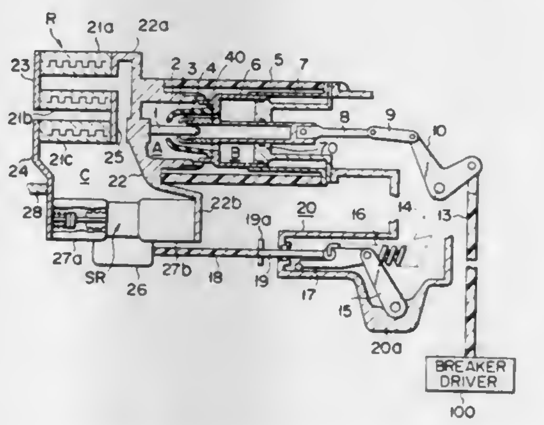
a contact jacket as part of each said contact assembly solidly connected to another end of its respective, at least one, support arm, each said contact jacket partially surrounding an end of each respective contact rod;

a contact arm as part of each said contact assembly solidly

connected at one end to its respective contact jacket, each said contact arm having an inner contact surface for electrically connecting with its respective contact rod end when in the closed position;
a contact body as part of each said contact assembly solidly connecting on an outer surface to each respective contact arm, each said contact body electrically connecting with the other contact body when said contact arrangement is in the closed position; and
each said support arm and each said contact arm having a high electrical conductivity and a high mechanical elasticity; said high mechanical elasticities of said support arms and said contact arms act as spring tensions during a change from the closed position to the open position causing each said contact rod end to separate from its respective contact arm, inner contact surface while the spring tensions keep the contact bodies together until subsequently the contact bodies move to the open position.

4,617,435
HYBRID CIRCUIT BREAKER

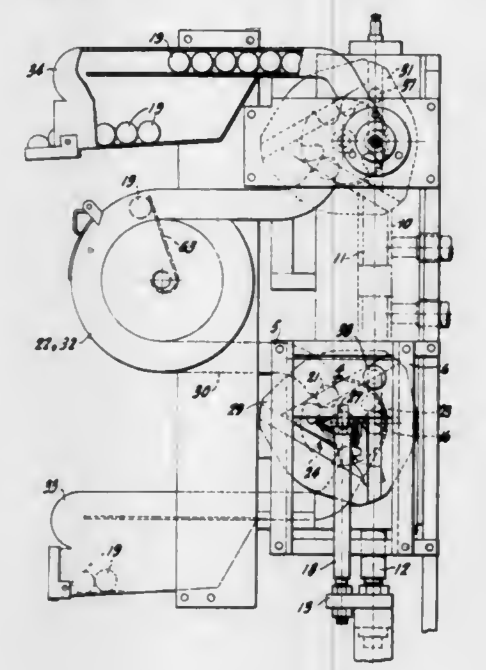
Yutaka Kawasaki, Miura, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jul. 11, 1985, Ser. No. 753,777
Claims priority, application Japan, Aug. 28, 1984, 59-178643
Int. Cl.⁴ H01H *33/16*
U.S. Cl. 200—144 AP 9 Claims



1. A hybrid circuit breaker for interrupting a circuit current of an electric power system, comprising:
resistor means for damping or suppressing an overvoltage generated at said electric power system when said circuit current is interrupted;
first interrupter means for commutating said circuit current to said resistor means so that a resistor current corresponding to said circuit current flows through said resistor means;
second interrupter means coupled to said resistor means and to said first interrupter means for cutting-off said resistor current;
first actuation means for actuating said first interrupter means so that said circuit current is commutated to obtain said resistor current, wherein energy used for the action of said first actuation means is precharged before starting the interruption of said circuit current; and
second actuation means for actuating said second interrupter means so that said resistor current is cut off at or after the start of the commutation of said circuit current, wherein energy used for the action of said second actuation means is delivered from a breaker driver which is adapted to said hybrid circuit breaker.

4,617,436
ACTUATOR FOR AN ELECTRICAL CIRCUIT INTERRUPTER

Ronald W. Crookston, Trafford, and Hayes O. Dakin, Jr., North Huntingdon, both of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.
Filed Oct. 26, 1984, Ser. No. 664,989
Int. Cl.⁴ H01H *33/28*
U.S. Cl. 200—148 R 16 Claims



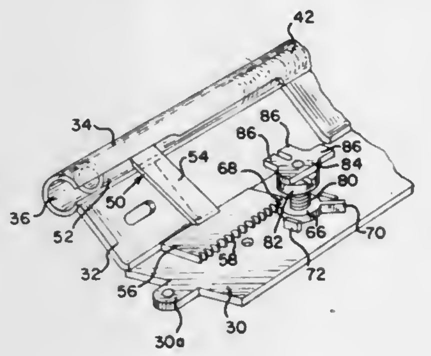
1. An actuator for an electrical circuit interrupter utilizing power units which when actuated generate a flow of high pressure gas for actuating the interrupter comprising:
a storage magazine for storing and supplying a plurality of said gas generating power units, each of such units having an exit port controllably providing said high pressure gas flow therefrom;
a power cylinder connected to said interrupter and having an input port responsive to said high pressure gas flow for actuating said interrupter;
transfer means including a rotatable turret head located in physical proximity to said input port of said power cylinder for receiving said power units supplied by said storage magazine, successively juxtaposing one at a time the exit ports of such received power units with said input port, and for ejecting such power units after being actuated to generate said flow of high pressure gas.

4,617,437
IGNITION SWITCH WITH SELF-ADJUSTING HEADLAMP DIMMER

Daniel J. DuRocher, Nauvoo, Ill., assignor to Methode Electronics, Inc., Chicago, Ill.
Filed Jun. 8, 1984, Ser. No. 618,525
Int. Cl.⁴ H01H *3/40*
U.S. Cl. 200—153 P 4 Claims

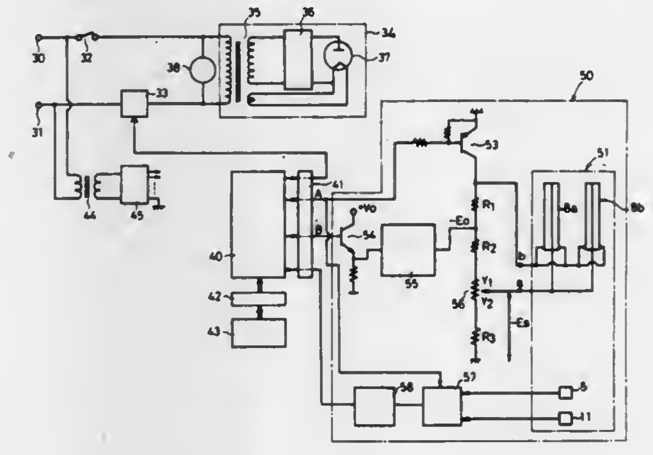
1. A combined automotive ignition switch and self-adjusting automotive dimmer switch, said dimmer switch being of the type having a rotatable contact member with a plurality of contact portions which engage corresponding contacts to effect a switching function, the improvement comprising, in combination, an automotive ignition switch assembly, a self-adjusting dimmer switch mechanism mounted directly on said ignition switch assembly so both are installed in a single operation, said self-adjusting dimmer switch mechanism including a rotatably mounted shaft connected at one end to said rotatable contact member for rotating the latter, gear segment means connected to the opposite end of said shaft for conjoint rotation therewith, dimmer switch actuator means, an arm extending radially from said dimmer switch actuator means, rack means connected to said arm for linear movement conjointly

with said dimmer switch actuator means, said rack means being engaged with said gear segment means to rotate the latter upon linear movement of said rack means in either of two opposite directions, said gear segment means being rotatable by said rack means until said gear segment means reaches a predetermined position where said rack means is engaged with a last tooth at an end of said gear segment means, and spring means operative when said gear segment means is in said predetermined position for biasing said gear segment means in a direction opposite to the direction it is urged by said rack means as the latter completes its linear travel whereby upon actuation of said dimmer switch actuator means said rack means is moved linearly thereby rotating said gear segment means to said predetermined position where it remains biased by said spring means until said rack means ratchets past to complete its linear travel and then reverses direction at which time said gear segment means is rotated in the opposite direction and is in a predetermined relationship with said rack means.



4,617,438
APPARATUS WITH AN INFRARED RAY DETECTING TEMPERATURE SENSOR

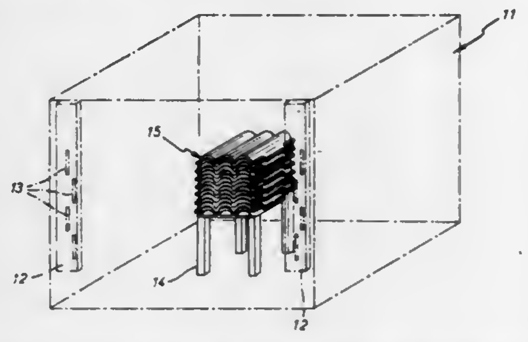
Takeshi Nakata, Shiga, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Dec. 28, 1984, Ser. No. 687,387
Claims priority, application Japan, Jan. 6, 1984, 59-947
Int. Cl.⁴ H05B *6/68;* G01J *1/00*
U.S. Cl. 219—10.55 B 20 Claims



1. In a microwave oven including a microwave oscillator circuit, and microprocessor means responsive to an output signal from an infrared ray detecting apparatus, for controlling the output power of said microwave oscillator circuit, wherein said infrared ray detecting appparatus comprises:
an infrared ray detecting element;
optical chopper means for making an infrared ray to be measured intermittently incident on said infrared ray detecting element, said optical chopper having at least one bimorph element and a shutter portion mounted to said bimorph element, said shutter portion performing a chopper action in response to displacement of said bimorph element;
driving means including generator means for generating a driving signal having a substantially square wave shape, wave shaping means for forming a rounded leading edge in said driving signal generated by said generator means, for substantially preventing the production of mechanical noise by said bimorph, and coupling means for coupling said driving signal with a rounded leading edge to said bimorph element for driving said optical chopper;
said generator means of said driving means including a source of direct current voltage, and DC-DC converter means connected to said source of direct current voltage for producing said driving signal; and
means responsive to an output signal from said infrared ray detecting element, for producing said output signal of said infrared ray detecting apparatus.

4,617,439
PROCESS FOR HEATING A SUBSTANCE, FOR PURPOSES OF VULCANIZATION OR POLYMERIZATION

Christian Lespinats, Paris, and Michel Minet, Ezanville, both of France, assignors to Valeo, Paris, France
Filed Oct. 1, 1985, Ser. No. 782,453
Claims priority, application France, Oct. 2, 1984, 84 15106
Int. Cl.⁴ H05B *6/80*
U.S. Cl. 219—10.55 M 8 Claims



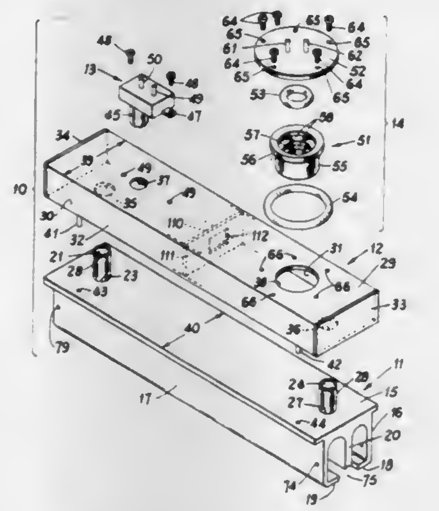
1. Process for vulcanizing or polymerizing a non electrically conducting substance comprising the steps of:
sandwiching a layer of the substance between and in intimate touching mating relation with two separate plates of a good electrically conductive metal to form an assembly;
disposing the assembly in a cavity defined by walls at a positive predetermined minimum spacing from the walls of the cavity; and
exposing the assembly to electromagnetic radiation within the decimeter wavelength band at a predetermined power level and for a predetermined time so as to obtain polymerization or vulcanization of the substance.

4,617,440
MICROWAVE HEATING DEVICE

Paul W. Gics, 92 Merriman Rd., Sewickley Hights, Pa. 15143
Filed Nov. 7, 1985, Ser. No. 795,788
Int. Cl.⁴ H05B *6/70*
U.S. Cl. 219—10.55 A 15 Claims

1. A microwave heater assembly, in combination comprising:
elongate waveguide means defining a waveguide cavity therein, said elongate waveguide means having a first and a second antenna receiving holes extending into said waveguide cavity, and having a dummy load receiving hole extending into said waveguide cavity;
elongate resnator means mounted in elongate juxtaposition to said waveguide means, said resonator means having an elongate center wall member with a resonator antenna means projecting through said first antenna receiving hole and within said waveguide cavity;
microwave energy source means mounted to said waveguide means and having a transmitting antenna means projecting through said second antenna receiving hole and within said waveguide cavity; and dummy load means

mounted to said waveguide means and having a fluid container member projecting through said dummy load receiving hole and within said waveguide cavity, said



fluid container member having a fluid receiving cavity defined by a plurality of internal wall surface portions with at least one of said internal wall surface portions having a predetermined slope.

4,617,441
TEMPERATURE CONTROLLED INDUCTION HEATING AND COOKING APPARATUS

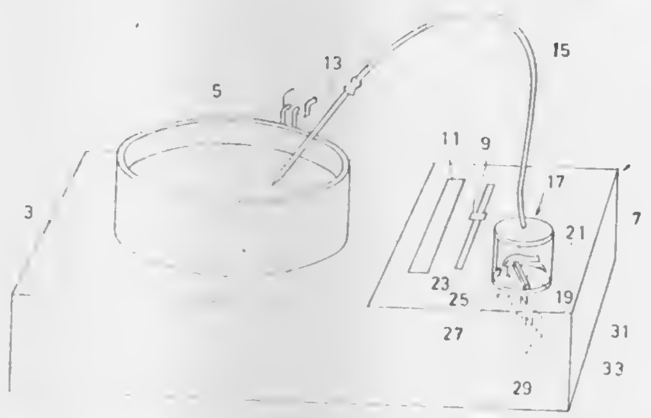
Satoshi Koide, Osaka, and Kiyoshi Hiejima, Shiga, both of, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jun. 22, 1984, Ser. No. 623,788

Claims priority, application Japan, Jul. 8, 1983, 58-106963[U]; Nov. 17, 1983, 58-178183[U]; Apr. 9, 1984, 59-51556[U]

Int. Cl.⁴ H05B *6/06*

U.S. Cl. 219—10.77 **18 Claims**



1. An induction heating cooking apparatus, comprising:
a first power supply for supplying DC voltage,
an inverter which contains an induction coil and is energized by said first power supply,
a cooker main unit for housing said induction coil therein,
a light transmitting part formed in a portion of said cooker main unit,
a connector attached to said cooker main unit in a freely attachable/detachable manner,
a probe containing a thermo-sensitive device and being connected to said connector,
a light emitting device being installed in said connector of said probe for emitting a light signal in response to an output of said thermo-sensitive device, the light signal from said light emitting device being led into said cooker main unit through said light transmitting part,
a light receiving device being installed in said cooker main unit for receiving said light signal,
control means for controlling said inverter in response to an output of said light receiving device, and
change over means responsive to (1) the attachment of said connector to said cooker main unit for permitting light to travel through said light transmitting part, and to (2) the detachment of said connector from said cooker main unit for blocking light from traveling through said light transmitting part to said light receiving device.

4,617,442
INDUCTION HEATING APPARATUS WITH CONTROLLED SWITCHING DEVICE FOR IMPROVED EFFICIENCY

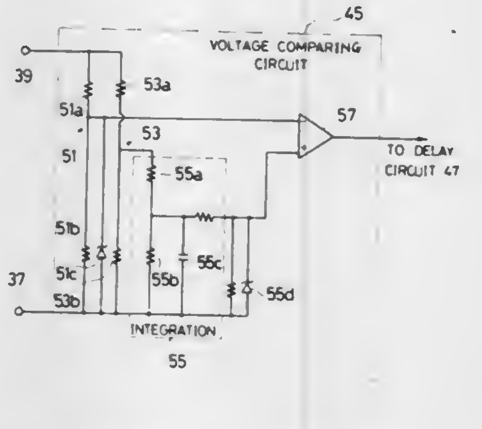
Tadao Okuda, Shiga, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Nov. 16, 1984, Ser. No. 672,386

Claims priority, application Japan, Dec. 14, 1983, 58-236582

Int. Cl.⁴ H05B *6/06*

U.S. Cl. 219—10.77 **6 Claims**



1. An induction heating apparatus comprising:
a heating coil,
a source of dc voltage having positive and negative voltage terminals, said positive terminal being connected to one end of said heating coil,
a switching device which is connected between another end of said heating coil and said negative terminal of said source of dc voltage, for controlling a current flowing through said heating coil,
a voltage sensing means for sensing a voltage across terminals of said switching device,
an integrating means for integrating said voltage across said terminals of said switching device sensed by said voltage sensing means,
a comparing means for comparing said voltage across said terminals of said switching device with said integrated voltage, and
a control means for controlling said switching device based on an output of said comparing means.

4,617,443
EDM APPARATUS PULSE GENERATOR

Roland Martin, Valleiry, France, assignor to Charmilles Technologies, S.A., Geneva, Switzerland

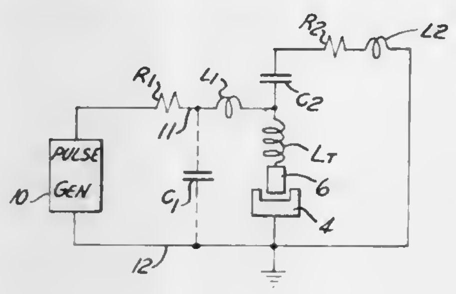
Continuation of Ser. No. 520,694, Aug. 5, 1983, abandoned. This application Mar. 25, 1985, Ser. No. 715,537

Claims priority, application Switzerland, Aug. 6, 1982, 4742/82

Int. Cl.⁴ B23P *1/02*

U.S. Cl. 219—69 C **11 Claims**

1. In an EDM apparatus wherein a workpiece is machined by electro-erosive electrical discharges by means of an electrode tool, said apparatus comprising an electrical pulse generator connected across the workpiece and the electrode tool by electrical conductors for applying voltage pulses of predetermined waveform across a machining zone between the electrode tool and the workpiece for causing machining electrical dischargess across said machining zone, wherein said apparatus comprises a frame structure, a machining head mounted on said frame structure, an electrode tool holder mounted on said machining head, said electrode tool being attached to said tool holder and said electrode tool holder being electrically insulated from said machining head whereby a parasitical capacitance is formed between said electrode tool holder and said machining head, said pulse generator, electrical conductors, workpiece, machining zone and electrode tool defining a workpiece machining circuit, and said parasitical capacitance being charged by said voltage pulses applied across said machining zone prior to said electrical discharges occurring across said machining zone and discharged through a circuit



disposed in parallel with said machining circuit and comprising said apparatus frame structure, said machining head, said electrode tool holder, said electrode tool, said machining zone and said workpiece, an improvement comprising an inductance inserted anywhere in the charge and discharge parallel circuit of said parasitical capacitance which comprises said apparatus frame structure, said machining head, said electrode tool holder, said electrode tool, said machining zone and said workpiece only during finish machining of said workpiece by electrical discharges of low energy.

4,617,444
BURNER FOR WIG WELDING

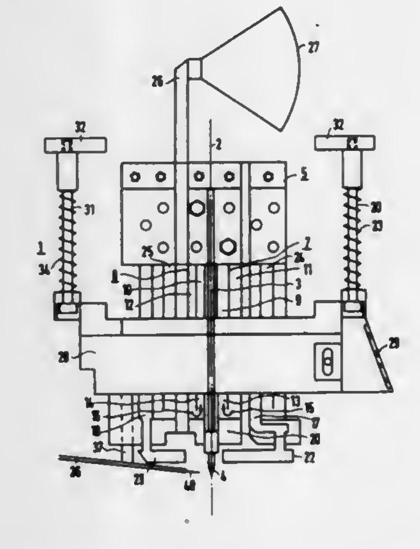
Gerhard Engelhard, Erlangen; Dieter Pellkofer, Herzogenaurach; Jürgen Böhm, and Siegfried Förner, both of Erlangen, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim/Ruhr, Fed. Rep. of Germany

Filed Apr. 1, 1985, Ser. No. 718,066

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1984, 3413102

Int. Cl.⁴ B23K *9/16*

U.S. Cl. 219—75 **7 Claims**



1. Burner for WIG-welding a welding seam having a rod-shaped tungsten electrode with an electrode tip facing the welding seam, a coolant line connected to the electrode, and a welding wire guide and a protective-gas feed formed with outlet openings directed towards the seam to be welded, comprising U-shaped coolant channels of copper connected to the tungsten electrode on opposite sides thereof and extending close to the electrode tip, the tungsten electrode being 2 to 4 mm thick, and said coolant channels being disposed in a common plane with the tungsten electrode at a location of the burner which is only 5 mm wide, the electrode tip projecting through an heat resistant insulating cap engaging over ends of said coolant channels facing towards the electrode tip, said coolant channels having a region extending out of said insulating cap and covered with an heat resistant electrically insulating varnish, the protective-gas feed comprising protective-gas feed lines insulatingly fastened to a side of said coolant channels facing away from the tungsten electrode.

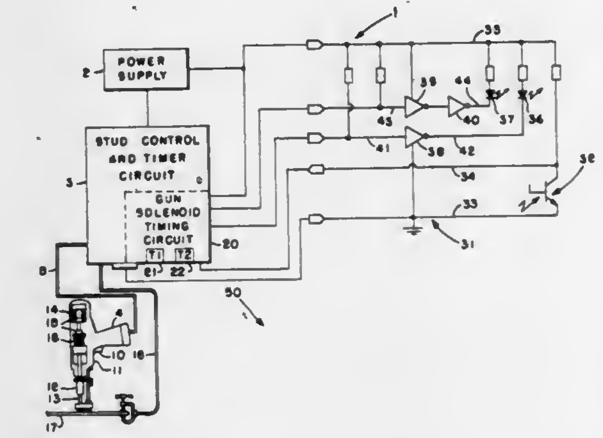
4,617,445
CONTROL CIRCUIT AND METHOD FOR STUD WELDING GUN LIFTING SOLENOID

Richard G. Shaw, and Theodore J. Fahrer, both of Dayton, Ohio, assignors to Erico International Corporation, Solon, Ohio

Filed Sep. 17, 1984, Ser. No. 651,460

Int. Cl.⁴ B23K *9/20*

U.S. Cl. 219—98 **20 Claims**



18. A circuit for controlling operation of a stud welding gun lifting solenoid, comprising
input circuit means for supplying electrical power having a cyclically varying characteristic and
power control means, a for controlling the coupling of such electrical power to such gun lifting solenoid, providin relatively high power during lifting mode and relatively lower power during maintenance mode, including
timing circuit means including alternate time constants for determining when in a cycle of such electrical power such coupling is effected,
time changing means for changing the operation of said timing circuit means to change the time when in a cycle of such electrical power such coupling is to be effected including means for selecting one time constant during lifting mode and another time constant during holding mode, and
a phase modulation power control comprising a triggerable switch for controlling the delivery of power to such lifting solenoid and a relaxation oscillator for providing gating signals to the triggerable switch
said phase modulation power control being operable to effect relatively high power input to such gun lifting solenoid during lifting operation and subsequently a relatively lower power to such gun lifting solenoid during holding condition.

4,617,446
WELDING FIXTURE FOR ROTARY CONE ROCK BITS WITH BELLEVILLE SEALS

George F. Anderson, Garden Grove, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Oct. 9, 1984, Ser. No. 659,113

Int. Cl.⁴ B23K *15/00, 26/00*

U.S. Cl. 219—121 LC **6 Claims**

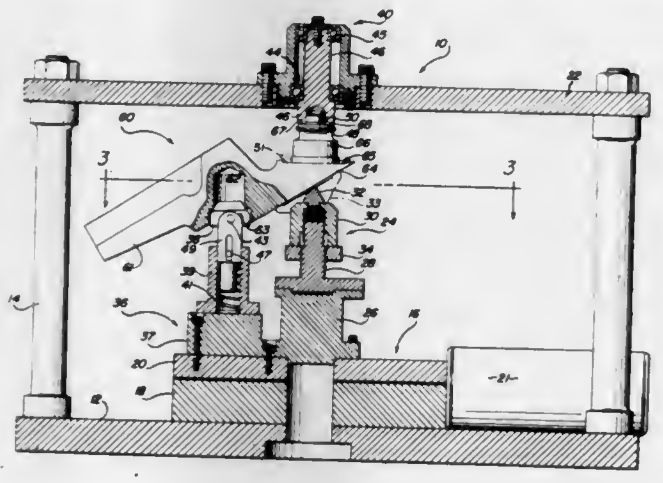
1. A welding fixture to weld a metal static portion of a belleville seal to a journal bearing, said journal bearing extend-

ing from a leg of a sealed bearing rotary cone rock bit, said welding fixture comprising:

a frame, said frame consisting of a base portion and a parallel spaced-apart top portion, said top portion being supported by support means interposed between said base portion and said top portion, said means to support said top portion is at least four posts connected between said base portion and said top portion,

a rotary table connected to said base portion, said rotary table having means to support said leg of said rock bit, said means to support said leg of said rock bit is a centrally positioned pintle mechanism mounted to said rotary table, said mechanism having engagement means at a first end that engage a shirttail portion formed by said leg of said rock bit, said first end being substantially aligned with an axis of said journal bearing of said rock bit, said engagement means within said pintle mechanism is a threadable pin that is threadably rotated outwardly to engage said shirttail portion of said rock bit leg,

said rotary table having means to rotate said leg of said rock bit, said means to rotate said leg is a leg rotation mechanism adapted to engage a lube reservoir chamber formed in a leg backface of said rock bit leg, a head portion of said leg rotation mechanism has engagement means within said leg rotation mechanism to engage said head within an opening to said reservoir chamber formed by said leg to rotate said rock bit leg during said welding operations, said engagement means within said leg rotation mechanism to engage said head within said reservoir opening is a coil spring,



means for rotating said rotary table, said means for rotating said rotary table is an electric motor, said electric motor is a variable speed electric motor having means associated therewith to vary the rotational speed of said rotary table during welding operations,

means connected to said top portion for engaging said journal bearing, said means securely supports said journal bearing about its axis of rotation when said rotary table rotates said leg, said means is a collet adapted to be engaged with an axially aligned spindle bearing formed by and extending from an end of said journal bearing, said collet further engages a thrust face formed by said journal bearing, said thrust face is transverse to an axis of said journal bearing, said collet is rotatively mounted within a collet retention means mounted to said top portion, said collet assures secure rotational alignment of said journal bearing of said rock bit leg during said welding operation, and

an opening formed in said top portion, said opening is positioned adjacent said means for engaging said journal bearing, said opening permits a welding process to direct a beam of energy to an intersection formed between said metal static portion of said belleville seal and said seal and said journal to metallurgically bond said seal to said leg when said rotary table rotates said leg while said welding process is in operation.

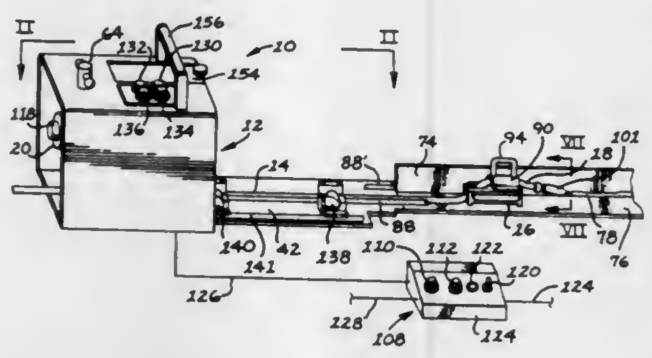
4,617,447
DRIVE ASSEMBLY FOR DRAWING A MOVABLE WELDING CARRIAGE AND METHOD OF WELDING

William T. O'Donohue, Shorewood, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Mar. 1, 1985, Ser. No. 707,356

Int. Cl.⁴ B23K *9/12*

U.S. Cl. 219—124.31 **11 Claims**



1. A drive assembly for moving a welding nozzle along a predetermined path, said welding nozzle being connected at one end to a welding cable which has an outer surface and an internally positioned electrical conductor extending between a source of electrical current and the nozzle assembly, said drive assembly comprising:

a motor,

a driven shaft operatively connected to the motor,

means for selectively interrupting and restoring the flow of current from said source to said nozzle assembly in response to angular rotation of the drive shaft,

a welding cable engaging mechanism operatively driven by the motor and having peripheral surface complementary to the outer surface of said welding cable,

means for operatively controlling and selectively varying the speed of said welding cable engaging mechanism during a welding operation, and

means for urging the welding cable into pressure contact with the peripheral surface of said welding cable engaging mechanism.

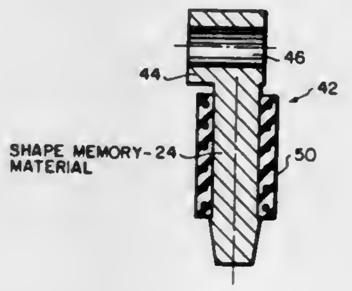
4,617,448
ELECTRICALLY RELEASABLE LOCKING DEVICE

Michael P. Goldowsky, Valhalla, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Dec. 18, 1984, Ser. No. 682,977

Int. Cl.⁴ H05B *3/58;* **F16B** *2/02;* **B23P** *11/02*

U.S. Cl. 219—200 **13 Claims**



1. An electrically releasable locking arrangement, comprising:

a frame,

a member mounted to be movable with respect to said frame, and having an abutment surface, and

means, including a locking surface, engaging said frame for releasably pressing the locking surface against the abutment surface, arranged such as to prevent relative movement of said member with respect to the frame,

characterized in that said means comprises:

a locking element made of a shape memory material having a given shape transition temperature higher than a selected temperature at which the arrangement is to remain locked, deformed below said given temperature from a first shape to a second shape in which the locking element presses the locking surface against said abutment surface so as to lock the member against relative movement with respect to the frame; said element being so arranged with respect to the frame and the member that, when the element is in said first shape, said locking surface is spaced from said abutment surface such that the member is free to move with respect to the frame, and

means for heating said element to raise the temperature of the element above the transition temperature,

whereby upon activating said means for heating, the element will undergo transition from the second shape to the first shape and will release the member.

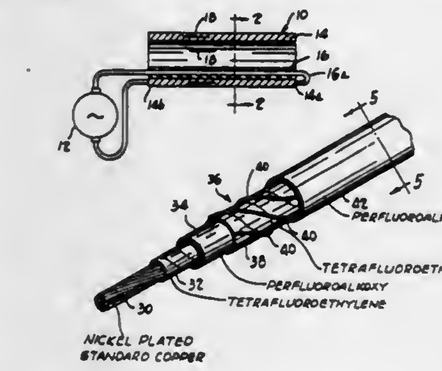
4,617,449
HEATING DEVICE FOR UTILIZING THE SKIN EFFECT OF ALTERNATING CURRENT

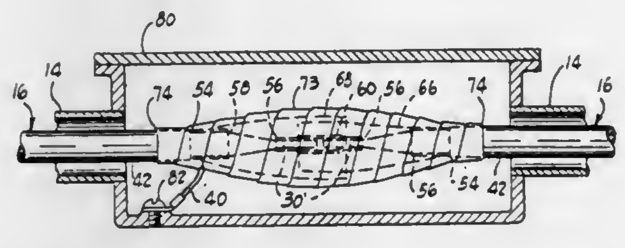
Harold B. Weitzel, Strongsville, and David G. Parman, Medina, both of Ohio, assignors to Ricwil, Incorporated, Brecksville, Ohio

Division of Ser. No. 563,165, Dec. 19, 1983, Pat. No. 4,532,375, which is a division of Ser. No. 313,937, Oct. 22, 1981, Pat. No. 4,436,565. This application May 9, 1985, Ser. No. 732,074

Int. Cl.⁴ H05B *3/00;* **H02G** *15/10*

U.S. Cl. 219—301 **4 Claims**





4. A heating device for maintaining a pipe line or the like, at an elevated temperature utilizing the skin effect of alternating current, comprising:

(a) a ferromagnetic tube in heat transfer relation with a pipe line to be heated;

(b) at least two lengths of power cable serially disposed in said ferromagnetic tube, each cable length having a feed end and a terminal end and at least one cable length being capable of operating continuously with an applied voltage of at least 5 kv and at a continuous operating temperature of at least 210° C., said one cable length comprising:

(i) a centrally located conductor surrounded by a layer of semiconductor material;

(ii) a primary insulation layer surrounding said semiconductor layer;

(iii) a shield layer surrounding said primary insulation; and,

(iv) an outer insulation jacket surrounding said shield layer;

(c) a cable splice joining said lengths of power cable, comprising:

(i) a conductor juncture, mechanically joining the conductor ends of the feed end of one length of power cable to the terminating end of the other length of power cable;

(ii) a layer of semiconductor material surrounding said conductor junction, formed by spirally wrapping carbonized, tetrafluoroethylene tape around said joined conductors;

(iii) a predetermined thickness of primary insulation surrounding said semiconductor layer, said predetermined thickness formed by spirally wrapping and heat fusing a plurality of layers of tetrafluoroethylene tape, each layer being less than said predetermined thickness such that a substantially void free insulation thickness is achieved which is at least as thick as the primary insulation thickness of said cables;

(iv) a discontinuous shield layer formed by spirally wrapped, semiconducting tape extending from the ends of each cable including portions in overlying, concentric relation;

(v) insulation insulating said overlying portions from each other;

(vi) means electrically communicating the shield layer of one of said lengths of cable to said ferromagnetic tube;

(vii) a layer of insulation surrounding said cable splice, extending between the ends of said lengths of said cable and formed by spirally wrapping and heat fusing tetrafluoroethylene tape such that said layer is substantially void free and is at least as thick as the outer insulation jacket of said cables.

4,617,450
PROCESS FOR MANUFACTURE OF A VACUUM-MOULDED ELECTRICAL HEATING UNIT

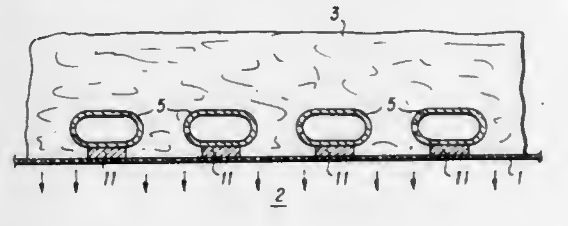
Josef Boes, Weilrod, and Leo Saris, Nauheim, both of Fed. Rep. of Germany, assignors to Bulten-Kanthal GmbH, Morfelden-Walldorf, Fed. Rep. of Germany

Filed Mar. 22, 1983, Ser. No. 477,725

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1982, 3233181

Int. Cl.⁴ H05B *3/26*

U.S. Cl. 219—345 **6 Claims**



1. A vacuum-moulding process for manufacturing an electrical heating unit, in which process a resistance heating coil is placed on a sieve-like tray, in a frame above a suction box, and a slip is introduced into the frame, this slip being composed of a slurry of ceramic fibers, a binder and water, such that upon the application of suction the ceramic fiber layer builds up under the action of the suction, this layer being cured, and containing the resistance heating coil as an embedded heating element, wherein those portions of the surface of the sieve-like tray which lie beneath the resistance heating coil are designed to be impervious to, and are narrower than, one of the group of maximum diameter and width of the heating coil in a plane parallel with the sieve-like tray, whereby the space inside the heating coil remains substantially free of fiber material during the vacuum moulding operation.

4,617,451
INDUCTANCE SENSOR

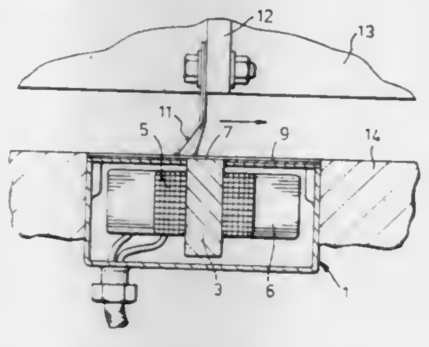
Stanley Gibson, Bangor; Colin Tindall, Ballynahinch, and John Graham, Ballyclare, all of Northern Ireland, assignors to Davidson & Company Limited, Belfast, Northern Ireland

Filed Aug. 1, 1984, Ser. No. 636,573

Claims priority, application United Kingdom, Aug. 3, 1983, 8320962

Int. Cl.⁴ H05B *1/02*

U.S. Cl. 219—490 **11 Claims**



1. A regenerative air pre-heater comprising:

a rotary matrix (**13**);

a non-rotary axially adjustable member (**14**) with said rotary matrix (**13**) and axially adjustable member (**14**) presenting opposing spaced apart faces with a plurality of elongate sealing strips (**11**) carried on said rotary matrix (**13**) and arranged to sweep past a sealing surface of said axially adjustable member (**14**) as said matrix (**13**) rotates;

an inductive sensor (**1**) for sensing axial spacing of said matrix (**13**) and axially adjustable member (**14**) having a U-shaped core with parallel legs including a first leg (**3**) and a second leg (**4**), a first coil (**5**) on said first leg (**3**) and a second coil (**6**) on said second leg (**4**), each of said coils having a plurality of turns with a number of turns in one of said coils being different from a number of turns in the other of said coils;

means for mounting said sensor (**1**) on said axially adjustable member (**14**) with said first and second legs aligned with a dimension extending between said legs being generally parallel to the direction of elongation of said strips (**11**) as said strips pass said sensor (**1**) opposing said legs;

whereby said strips sweeping past said sensor have an inductive effect indicative of spacing between said strips and said sensor which effect may be measured and used to control axial spacing of said matrix and axially adjustable member.

4,617,452
RICE COOKER

Yoshiyuki Miwa, Aichi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 5, 1984, Ser. No. 678,799

Claims priority, application Japan, Dec. 13, 1983, 58-191853[U]; Jan. 12, 1984, 59-1730[U]; Jan. 13, 1984, 59-3673[U]; Jan. 13, 1984, 59-3674[U]; Jan. 13, 1984, 59-3675[U]; Jan. 23, 1984, 59-7901[U]

Int. Cl.⁴ H05B *3/42*

U.S. Cl. 219—441 **17 Claims**

1. A rice cooker comprising:

a body having an upper opening;

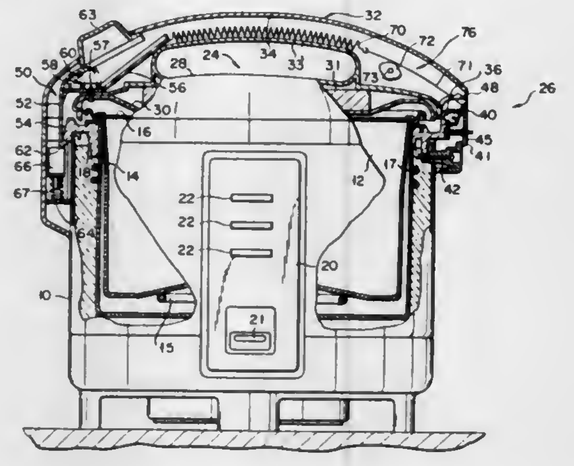
a pot for containing therein water and rice to be cooked, the pot being configured so that it can be placed in the body and taken out of the body through the upper opening, the body being configured so as to hold the pot;

means for heating the pot and any water and rice contained therein, so as to cook the rice;

a lid for opening and closing the upper opening;

support means for swingably supporting the lid relative to the body, said lid having a grip portion extending along the upper surface of the lid from that portion of the lid which is adjacent to the support means to that portion thereof which is opposite to the support means;

a lock mechanism for locking the lid to close the upper opening;



an elongate urging member arranged along the grip portion, one end thereof being connected to the body adjacent to the support means, the other end thereof being connected to the lid, to urge the lid in the direction of opening the lid.

4,617,453
THYRISTOR CONTROLLED POWER SOURCE FOR GRADUALLY DECREASING LOADS

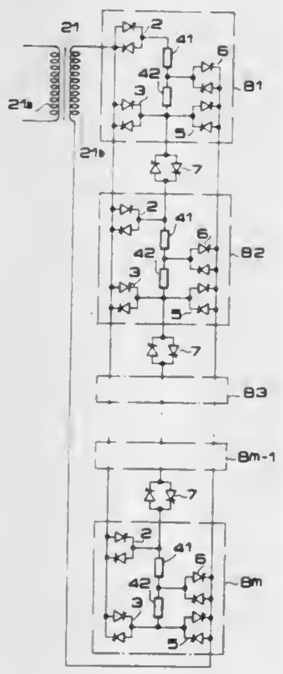
Seiichi Kumon, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Kobe, Japan

Filed Apr. 15, 1985, Ser. No. 723,284

Claims priority, application Japan, May 22, 1984, 59-101760

Int. Cl.⁴ H05B *1/02*

U.S. Cl. 219—501 **2 Claims**



1. A heating power source device of the type which includes a heating power source unit connected to a secondary winding of a power source transformer, said heating power source unit comprising:

first and second loads each having first and second ends and having such an electric characteristic that said first and second loads have a high electric resistance at the beginning of energization thereof by said power source transformer and the electric resistance becomes lower as the energization time proceeds, the first end of said second load being connected to the second end of said first load; and

four thyristor units each including a pair of thyristors connected in anti-parallel relationship to each other;

a first one of said thyristor units being connected between a first end of said secondary winding of said transformer and the first end of said first load, a second one of said thyristor units being connected between the first end of said secondary winding and a second end of said second load, a third one of said thyristor units being connected between a second end of said secondary winding said the node between said first and second loads, and the remaining fourth one of said thyristor units being connected between the second end of said secondary winding and the second end of said second load;

said thyristor units being individually controlled to be turned on and off so as to connect said first and second loads in parallel relationship to each other at the beginning of energization and then to connect said first and second loads in serial relationship to each other when an electric current to said loads is increased to a predetermined level whereby fluctuation of the electric current to said loads can be minimized over an entire period of energization of said loads.

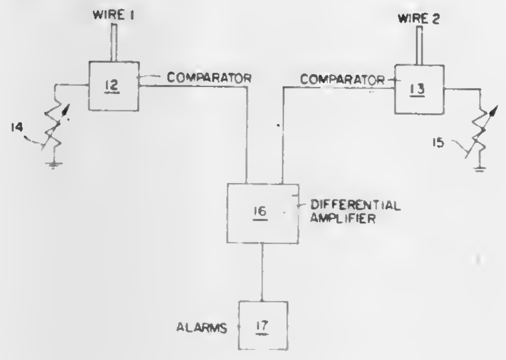
4,617,454
THERMAL-SENSITIVE INSULATING COMPOSITION AND METHOD, AND ARTICLE AND APPARATUS INCORPORATING SAME

Milton S. Greenhalgh, Fairfield, Conn., assignor to General Electric Company, Bridgeport, Conn.

Filed Nov. 3, 1983, Ser. No. 548,376

Int. Cl.⁴ H05B *1/02*

U.S. Cl. 219—505 **11 Claims**



1. The method of producing an insulated electrical conductor having special utility in overheat detection applications, which comprises the step of contacting and thereby covering at least a portion of the length of a metal wire with thermal-sensitive polymeric material which is relatively insensitive to atmospheric moisture fluctuations and is resistant to stress cracking and to corrosion, said polymeric material being selected from the group consisting of (1) a thermosetting acrylonitrile-butadiene rubber containing at least one percent by weight of acrylonitrile, and (2) thermoplastic blends of a polyvinyl chloride and an acrylonitrile-butadiene rubber containing at least one percent of acrylonitrile, in which thermosetting rubber (1) after curing and thermoplastic bland (2) contain substantially no free sulphur.

4,617,455
ELECTRICAL HEATING CARTRIDGE

Eugen Schwarzkopf, Lüdenscheid, Fed. Rep. of Germany, assignor to Hotset Heizpatronen und Zubehor GmbH, Lüdenscheid, Fed. Rep. of Germany

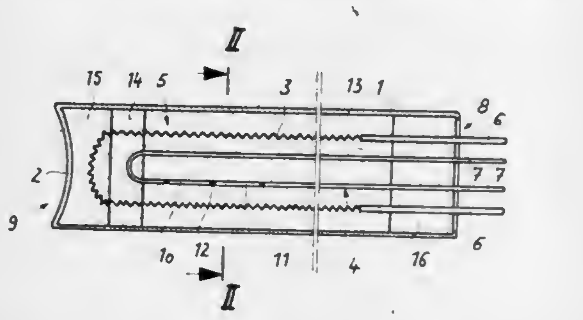
Filed Sep. 10, 1985, Ser. No. 774,462

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1984, 3443306

Int. Cl.⁴ H05B *3/06;* **H01C** *1/028*

U.S. Cl. 219—523 **6 Claims**

1. In an electrical heating cartridge comprising a jacket in which at least one electrical heating coil and a thermocouple element are positioned, said electrical heating coil and said thermocouple element being imbedded in a packed insulating material with clearance from each other and from said jacket in said electrical heating cartridge, wherein the electrical lead conductors of said electrical heating coil and of said thermocouple element are fed out of a first end piece of said electrical heating cartridge, wherein further said electrical heating coils has a first strand beginning at said first end piece and being guided toward a second end piece on the end of said electrical heating cartridge opposite to said first end piece and a second strand connected to said first strand and guided back to said first end piece, the improvement wherein said electrical heating coils is directed toward said second end piece and extended over and beyond said thermocouple element until adjacent said end piece.



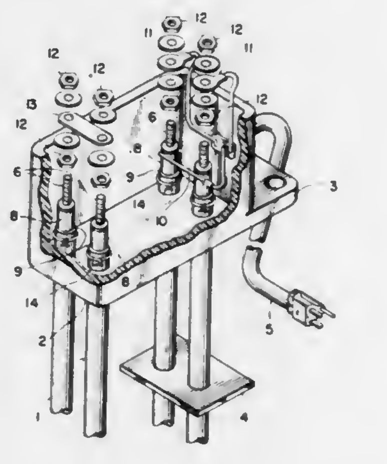
4,617,456
LONG LIFE CORROSION PROOF ELECTROPLATING IMMERSION HEATER

Tom Richards, Mentor, and Raymond S. Lokar, Cleveland, both of Ohio, assignors to Process Technology, Inc., Mentor, Ohio

Filed Sep. 18, 1984, Ser. No. 651,856

Int. Cl.⁴ H05B *3/78, 3/48*

U.S. Cl. 219—523 **10 Claims**



1. A flexible heating assembly for immersion heating of a liquid in a container, said assembly comprising:

a heating tube having

(a) a heating element being formed of bare wire having a high electrical resistance,

(b) a heat conductive, non-electrically conductive ceramic insulator surrounding said heating element,

(c) a thin-walled metallic tubing surrounding said ceramic insulator, and

(d) an outer tubular casing formed of resilient electrical insulating material having a low surface coefficient of friction and a high resistance to heat and attacks by acid and alkaline solutions or vapors, said outer tubular casing being in direct contact with said thin-walled metallic tubing; and

an associated non-corrosive junction box located without the liquid to be heated, the ends of said heating tube terminating within said junction box and having power supply means connected to said heating element and a grounding means connected to said metallic tubing within said junction box,

clamping means surrounding each end of said outer tubular casing within said junction box, said clamping means applying a compressive force continuously around said outer tubular casing so as to prevent any corrosive liquid or vapors from penetrating between said outer tubular casing and said clamping means,

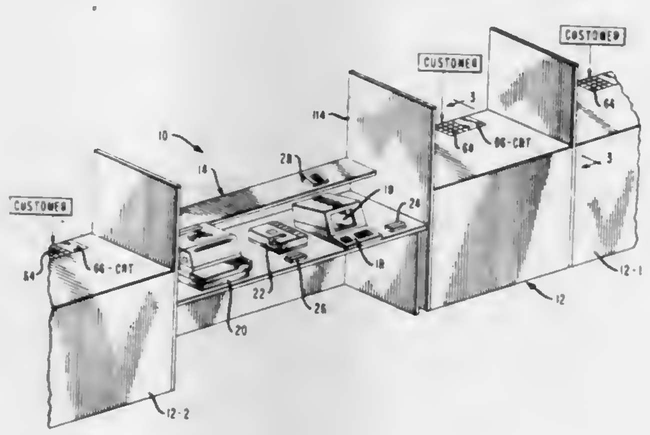
and the remaining interior of the junction box being filled with a potting material which covers all electrical connections, the ends of the outer tubular casing and clamping means, said clamping means being receptive to the potting material so that a gas-tight seal is effected between the outer surface of the clamping means and the potting material.

4,617,457
TELLER-ASSISTED, CUSTOMER-OPERATED ATM DOCUMENT CASHING SYSTEM

Robert H. Granzow, Miamisburg, and Kimbrough I. Myers, Kettering, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 19, 1983, Ser. No. 562,786
Int. Cl.⁴ G06F *15/30*

U.S. Cl. 235—379 **14 Claims**



1. A document cashing system comprising:

storage means for storing data associated with users of said system;

a machine for performing financial transactions including the dispensing of cash;

said machine comprising:

means for identifying a user of said machine;

means for entering data including the monetary amount about a document to be processed;

means for receiving a document to be processed;

means for generating image data of the front and back of said document; and

means for moving said document received by said receiving means in said machine and also in operative relationship with said image data generating means;

said system further comprising:

evaluating means to enable a teller in said system to evaluate said document and said user, said evaluating means including a display and a keyboard including function keys; and

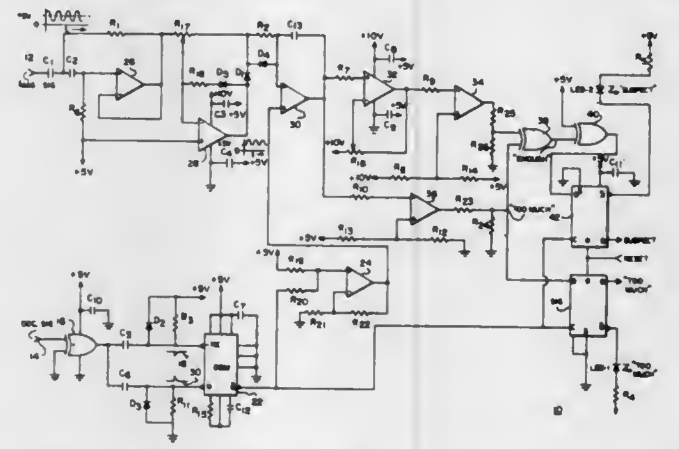
means for coupling said storage means, said machine, and said evaluating means to enable data associated with said user to be displayed on said display, said coupling means also coupling said image data generating means with said display to enable said image data to be displayed at said display; said dispensing of cash from said machine being initiated in response to an actuation of a selected one of said function keys by said teller.

4,617,458
COUNTERFEIT DETECTION CIRCUIT

David R. Bryce, Morrisville, Pa., assignor to Brandt, Inc., Bensalem, Pa.

Filed Feb. 11, 1985, Ser. No. 700,048
Int. Cl.⁴ G06K *7/08*

U.S. Cl. 235—449 **12 Claims**



1. Apparatus for evaluating paper currency for genuineness, said paper currency moving one bill at a time at spaced intervals along a feed path and being passed through a magnetic field while moving along said feed path, said apparatus comprising:

sensing means adjacent the feed path for detecting the presence of particles on the bill affected by said magnetic field for generating a detection signal due the presence of the aforementioned particles;

filter means for passing only those frequencies of the detection signal above a predetermined frequency value;

means for rectifying the signal outputted by said filter means;

bill detection means arranged along the feed path for sensing the presence of a bill to generate a bill presence signal have a first state representing the presence of a bill adjacent to the bill detection sensor and having a second state representing the absence of a bill adjacent to bill detection sensors;

means responsive to the bill presence signal for generating a reference signal having a first constant level responsive to the presence of the first state and a second constant level responsive to the presence of the second state of said bill presence signal;

means for integrating the rectified signal developed at the output of said rectifying means;

means for comparing the integrated signal against said reference level signal to develop a ramp signal which deviates from the level of the reference level signal as a function of the amount of magnetic flux detected during the detection interval; and

first means for comparing the ramp signal against a fixed threshold when the bill presence signal changes from said first to said second state for generating a suspect signal when the total value of magnetic flux detected is less than the amount normally encountered for a genuine bill.

4,617,459
AUTOMATIC FOCUSING DEVICE WITH LOW LIGHT CONTRAST INHIBITING MEANS

Akira Akashi, and Masanori Yamada, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1983, Ser. No. 558,776
Claims priority, application Japan, Jun. 12, 1982, 57-213716
Int. Cl.⁴ G01J *1/20*

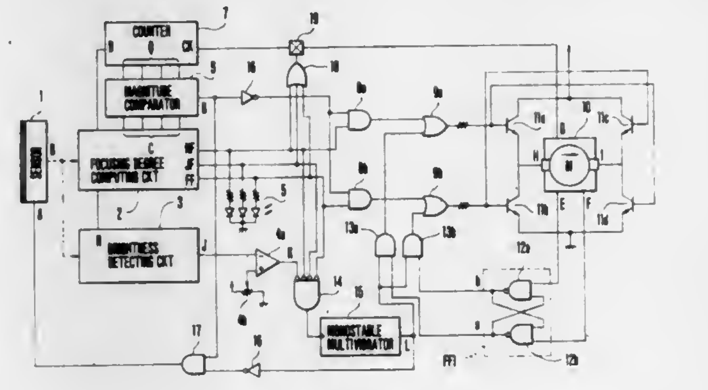
U.S. Cl. 250—201 **4 Claims**

1. An automatic focusing device having a detecting circuit for detecting an object by a sensor so as to calculate information concerning the amount of movement of a lens to an in-focus position on the basis of an output of the sensor and for detecting whether contrast of the object is low or not, and having a driving circuit for driving the lens in response to the information calculated by the detecting circuit so as to carry out the focusing operation, said device comprising:

(a) a control circuit for inhibiting the response of the driving circuit to the information when the detecting circuit detects that the contrast is low and for producing a driving signal for driving the lens irrespective of the information so as to operate the driving circuit by the signal;

(b) a detecting circuit for detecting a brightness level of the object; and

(c) an inhibiting circuit for inhibiting the operation of the driving circuit when the detecting circuit detects that the brightness level is below a predetermined value.

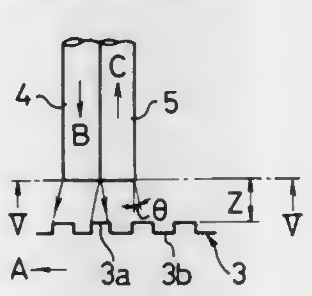


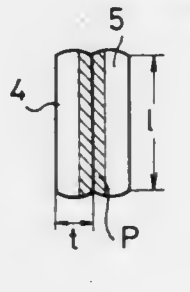
4,617,460
OPTICAL FIBER SENSOR HAVING SHAPED ENDS

Ichiro Tokunaga; Hiroshi Matsunaga, and Yoji Shimojima, all of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Apr. 13, 1984, Ser. No. 599,944
Claims priority, application Japan, Apr. 13, 1983, 58-63746
Int. Cl.⁴ H01J *5/10*

U.S. Cl. 250—227 **4 Claims**





1. In an optical fiber sensor comprising an optical fiber coupled with a light emission element and another optical fiber coupled with a light receiving element, end portions of the optical fibers being arranged side by side and joined together in contact along side surfaces thereof, and disposed in opposition to a slit member to be detected so that the arranged direction of the two optical fibers is aligned with a shifting direction of the slit member; the improvement wherein said end portions of the optical fibers are flattened in cross-section joined together within said cross-section.

4,617,461
FLUORESCENT OPTICAL SWITCH AND KEYBOARD APPARATUS

Wunnava V. Subbarao, Miami, Fla., and Richard I. Ely, Flemington, N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Apr. 25, 1984, Ser. No. 603,876
Int. Cl.⁴ G01D *5/34*

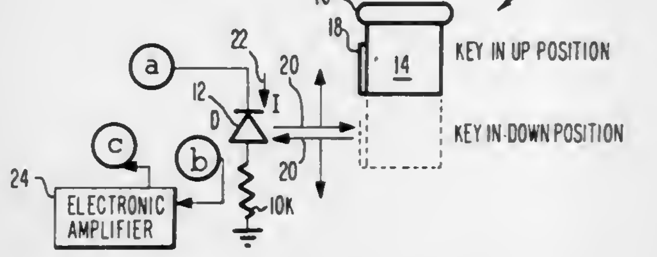
U.S. Cl. 250—229 **7 Claims**

1. Fluorescent optical switch and keyboard apparatus comprising:

photo-optical means adapted to operate in a light emitting, a light receiving and a passive mode,

fluorescent means disposed adjacent to said photo-optical means and capable of movement from a light blocking to a light passing position, and

circuit means interconnected to said photo-optical means for energizing said photo-optical means to a level causing said photo-optical means to emit light for impingement upon said fluorescent means when said fluorescent means is disposed in a light fluorescent position, said circuit means thereafter biasing said photo-optical means so as to cause said photo-optical means to act as a light receptor and to generate an electrical signal output indicating the actuation of the device.

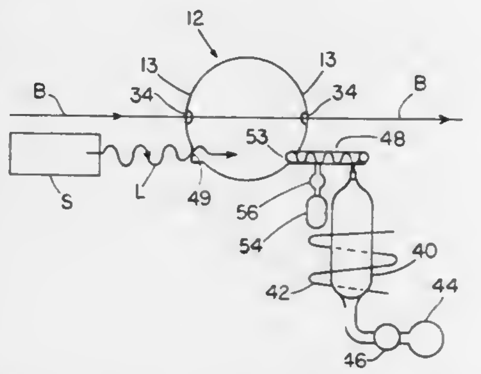


4,617,462
POLARIZED INTERNAL TARGET APPARATUS

Roy J. Holt, Downers Grove, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 10, 1984, Ser. No. 659,587
Int. Cl.⁴ H01S *1/00, 9/00;* H05H *3/02*

U.S. Cl. 250—251 **2 Claims**



1. A polarized internal target apparatus, comprising the combination of structural means having diametrically opposite openings for the passage of a particle beam and otherwise defining a cell region, means for forming a mixture of target gas and alkali gas atoms at a ratio of the order of about 20–200:1 and introducing the mixture to the cell region, means for passing a high intensity polarized light source into the mixture to polarize the alkali atoms, the polarized alkali metal gas atoms in collisions with the target gas atoms causing polarization of the target gas atoms, and means for subjecting the target cell to a magnetic field of the order of 3–50 gauss, the target gas atoms being hydrogen or deuterium and the alkali atoms being sodium or potassium.

4,617,463
SEGMENTED OPTICAL SYSTEM FOR AN ALARM SYSTEM

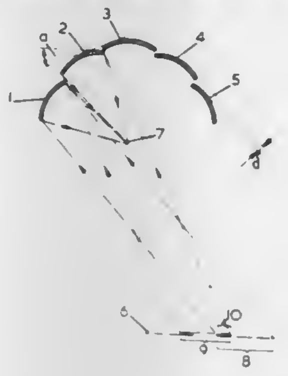
Allen D. Muirhead, Rossendale, England, assignor to Monicell Limited, Lancashire, England

Filed Dec. 12, 1984, Ser. No. 681,514
Claims priority, application United Kingdom, Dec. 15, 1983, 8333400
Int. Cl.⁴ G01J *1/00*

U.S. Cl. 250—342 **4 Claims**

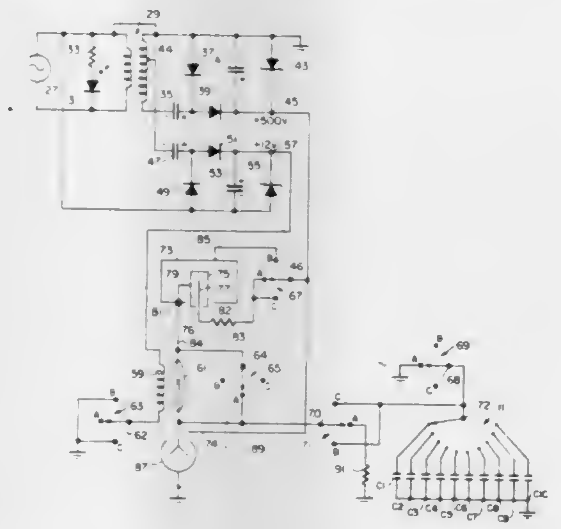
1. A segmented optical system for an alarm system, compris-

ing a plurality of optical elements each of which is arranged to direct radiation from a predetermined direction towards a common focal point whereby each optical element defines a respective discrete field of view to an observer at the focal point, wherein adjacent fields of view overlap so that an object moving from within one field of view towards an adjacent field of view enters an area which is common to the said one and the adjacent fields of view.



4,617,464
SAMPLING AND RECORDING DOSE RATE METER
Stanley Kronenberg, Skillman, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

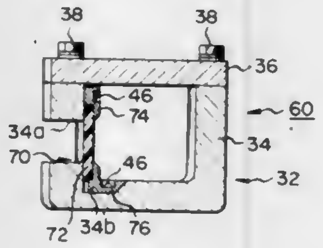
Filed Apr. 6, 1984, Ser. No. 597,305
Int. Cl.⁴ H01J ***39/29***
U.S. Cl. 250—377 **7 Claims**



1. A handheld dosimeter for civil defense use comprising:
a hand-cranked generator;
radiation detector means including a first Geiger-Mueller tube detector and a second ion tube detector;
first switching means for selectively connecting the output of said generator to one of said first and second detectors;
timing circuit means energized by said generator for providing a precise predetermined sampling interval;
an electrometer connected to said timing circuit means;
second switching means for selectively connecting the output of said first and second detectors to said electrometer and timing circuit means to selectively energize said electrometer;
a plurality of storage capacitors selectively coupled in parallel with said electrometer for receiving the charge accumulated thereon and selecting the sensitivity ranges of said detectors; and
means for compensating for the internal discharge of said storage capacitors through said electrometer including a wire connected to said high voltage circuit and extending to the vicinity of said electrometer;
said dosimeter having three modes of operation, the first mode being a charge and continuous counting mode in which the output of said Geiger-Mueller tube is continuously applied via said second switching means to said electrometer, the second mode being a high sensitivity dose rate measuring mode in which the output of said Geiger-Mueller tube is applied via said second switching means to said electrometer and to said plurality of storage capacitors, and the third mode being a low sensitivity dose rate measuring mode in which the output of said ion chamber is applied via said second switching means to said electrometer and to said plurality of storage capacitors.

4,617,465
RADIATION DETECTOR VESSEL
Yuzo Yoshida, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

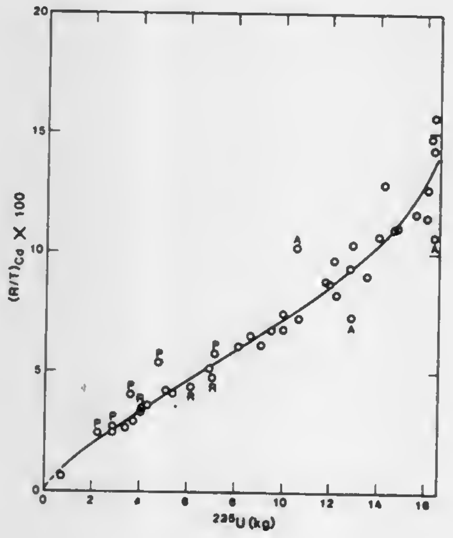
Filed May 16, 1984, Ser. No. 610,695
Claims priority, application Japan, May 23, 1983, 58-89195
Int. Cl.⁴ G01T ***1/185***
U.S. Cl. 250—385 **7 Claims**



1. A radiation detector vessel enclosing a plurality of radiation detecting elements that convert the intensity of radiation into an electric signal, comprising:
an elongated housing curved along the longitudinal direction thereof in which a gas is sealed, said housing including a vessel member having an opening of sufficient size to allow loading of the radiation detecting elements into said vessel member and a cover member covering said opening of said vessel member, said vessel member further including a bottom interior face, a side wall on the side of the center of curvature, a cut in said side wall extending along the longitudinal direction of said housing, and an egagement groove in said bottom face adjacent said side wall, said engagement groove extending in the longitudinal direction of said housing and having a bottom face, a first side face adjacent said side wall, and a second side face spaced from said side wall, wherein said second side face inclines away from said side wall;
a radiation window through which radiation is led into said housing, said radiation window including a window member formed of carbon fiber reinforced plastic and curved in conformity with an inside face of said side wall to cover said cut, said window member being pressed against said inside face of said side wall by the pressure of the gas sealed in said housing;
reinforcing means connected to said inside face of said side wall of said housing for holding said window member between said reinforcing means and said inside face of said side wall of said housing, said reinforcing means including a reinforcing member having an engagement portion extending in the longitudinal direction of said housing and fitting into said engagement groove, said engagement portion having an inclined face slidably contacting said second side face of said engagement groove; and
means for urging said engagement portion of said reinforcing member toward said bottom face of said engagement groove to slide said engagement portion along said second side face of said engagement groove toward said side wall to press said window member against said inside face of said side wall of said housing.

4,617,466
DIRECT FISSILE ASSAY OF ENRICHED URANIUM USING RANDOM SELF-INTERROGATION AND NEUTRON COINCIDENCE RESPONSE
Howard O. Menlove, and James E. Stewart, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 4, 1985, Ser. No. 697,989
Int. Cl.⁴ G01T ***3/00***
U.S. Cl. 250—390 **8 Claims**



1. An apparatus for determining the quantity of fissile nuclides contained in a sample having substantially one type of fissile nuclide in the presence of nuclides which spontaneously generate alpha particles and nuclides which interact with alpha particles to produce neutrons, by random self-interrogation and neutron coincidence response, said apparatus comprising in combination:

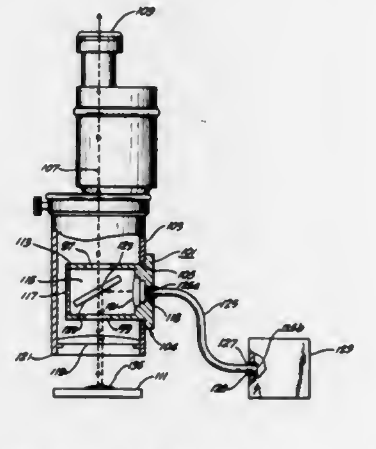
a. a plurality of neutron detectors disposed in a substantially cylindrical manner around the cylindrical sample under investigation so that a fraction of neutrons escaping from the cylindrical sample as a result of fission processes in the fissile nuclides, (α,n) processes in other nuclides, and from less important sources of neutrons are received and detected by said plurality of neutron detectors so as to produce signals which represent individual neutrons having been detected;

b. means for receiving said signals produced from said plurality of neutron detectors and for recording the total number of neutrons exiting the sample and reaching said plurality of neutron detectors and the total number of neutrons reaching said plurality of neutron detectors in coincidence with a chosen time interval said means being used to provide the ratio of the number of neutrons reaching said plurality of neutron detectors in coincidence within the chosen time interval to the total number of neutrons reaching said plurality of neutron detectors, wherein said ratio is related substantially to the quantity of fissile material present in the sample under investigation.

4,617,467
APPARATUS FOR CHARACTERIZING KEROGENS
Joseph T. Senftle, and Stephen R. Larter, both of Lake Elsinore, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Nov. 16, 1984, Ser. No. 672,395
Int. Cl.⁴ G01N ***21/64***
U.S. Cl. 250—461.1 **9 Claims**

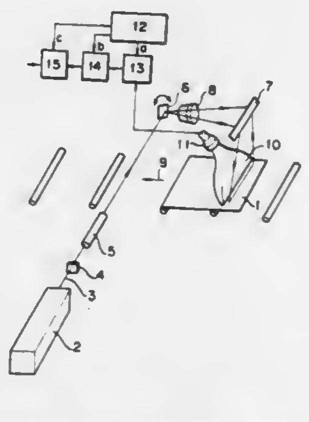
1. An illuminator adapted to be coupled to a microscope to provide radiation in the ultraviolet region which comprises:
(a) a housing having an internal passage way, in optical communication with two windows defined by said housing, said housing being adapted to couple to a microscope body with said windows aligned with the optical axis of the microscope,
(b) a mirror located within and extending substantially completely across said internal passageway and adapted to reflect ultraviolet radiation at a first wavelength and transmit radiation at a longer wavelength than said first wavelength, said mirror being positioned to intersect said optical axis of the microscope at an angle of about forty five degrees,



(c) a fiber optic cable having a first end coupled with said housing and a second end adapted to receive ultraviolet radiation, said fiber optic cable being adapted to introduce ultraviolet radiation into said internal passageway for downward deflection by said mirror along said optical axis of the microscope, and
(d) a source of ultraviolet radiation comprising a laser adapted to illuminate said second end of said fiber optic cable.

4,617,468
STIMULABLE PHOSPHOR SHEET WITH HYDROPHILIC SURFACE
Hisashi Shiraishi, Minami-ashigara; Hisatoyo Kato, and Junji Miyahara, both of Kaisei, all of Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Feb. 23, 1984, Ser. No. 582,767
Claims priority, application Japan, Feb. 24, 1983, 58-30605
Int. Cl.⁴ G01T ***1/10***
U.S. Cl. 250—484.1 **6 Claims**



1. A stimulable phosphor sheet which comprises:
a plastic substrate;
a phosphor layer being provided on the substrate and comprising a stimulable phosphor dispersed in a binder; and
a plastic protective layer provided on the phosphor layer, said protective layer having a hydrophilically-processed surface to receive superposition of a hydrophilic material thereon.

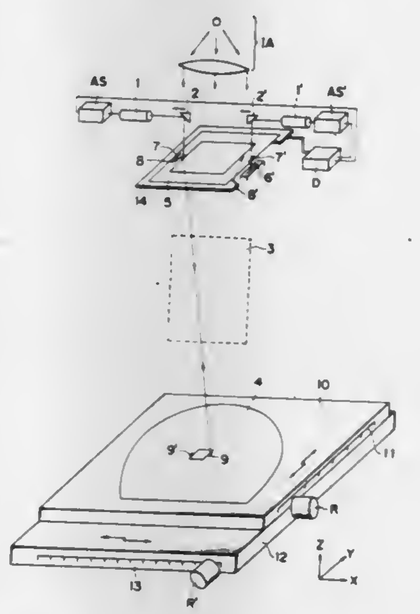
4,617,469
EXPOSURE APPARATUS WITH DETECTING MEANS INSERTABLE INTO AN EXPOSURE PATH
Kazuo Takahashi, Kawasaki; Hiroshi Sato, Tokyo, and Masao Kosugi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1983, Ser. No. 552,313

Claims priority, application Japan, Nov. 26, 1982, 57-207207

Int. Cl.⁴ G01N *21/86*

U.S. Cl. 250—548 **19 Claims**



1. An alignment apparatus for aligning an original and a photosensitive member, said apparatus comprising:

means for exposing the photosensitive member to an image of the original through an exposure optical path extending between the original and the photosensitive member;

first detecting means mounted for insertion into and retraction from the exposure optical path, said first detecting means being capable of detecting positional deviation between the original and the photosensitive member when inserted in the exposure optical path;

second detecting means disposed out of the exposure optical path to detect a change in the position of at least one of the original and the photosensitive member and for producing an output representing said change in position; and

means for correcting positional deviation between the original and the photosensitive member in accordance with the positional deviation detected by said first detecting means, said correcting means confirming the correction of the positional deviation on the basis of the output of said second detecting means.

4,617,470
METHOD AND APPARATUS FOR DETECTING THE LEADING EDGE OF A SHEET TO BE SCANNED
Kazuo Horikawa, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 408,049, Aug. 13, 1982. This application Jan. 18, 1985, Ser. No. 692,761

Claims priority, application Japan, Aug. 19, 1981, 56-129809

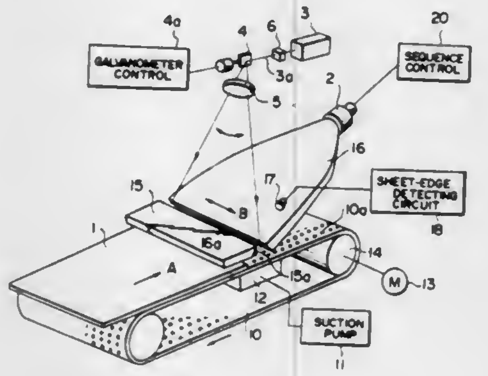
Int. Cl.⁴ G01V *9/04*

U.S. Cl. 250—561 **7 Claims**

1. A method of detecting the leading edge of a sheetlike object to be scanned in an image scan system wherein main scanning of the sheet-like object is performed by making a beam of light oscillate back and forth in a first direction with the aid of optical deflection means, disposing said sheet-like object in a plane containing said first direction and sub-scanning of the sheet-like object is performed by moving the sheet like object within said plane in the direction perpendicular to said first direction, the method comprising:

oscillating a light beam back and forth in said first direction, the method comprising:

moving the sheet-like object in the sub-scanning direction toward the oscillating light beam;



detecting the reflection of said beam of light from the leading edge of said sheet-like object, thereby detecting the leading edge of the sheet.

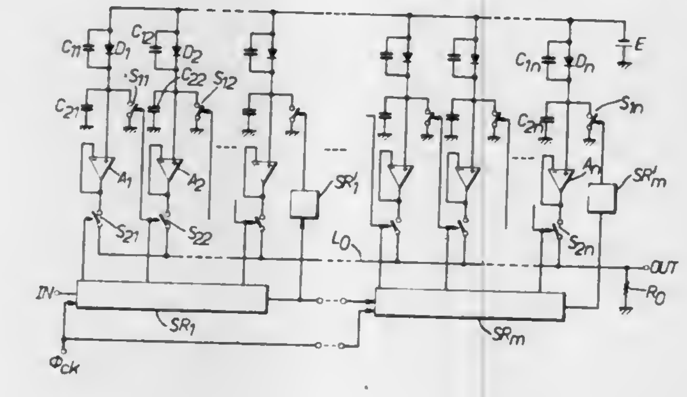
4,617,471
IMAGE SENSING DEVICE
Kouhei Suzuki, Yokohama; Tamio Saito, Oume, and Ken-ichi Mori, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 14, 1984, Ser. No. 681,657

Claims priority, application Japan, Dec. 27, 1983, 58-246375; Mar. 31, 1984, 59-63525

Int. Cl.⁴ H01J *40/14*

U.S. Cl. 250—578 **13 Claims**



1. An image sensing device comprising:

a substrate;

a plurality of photovoltaic conversion elements formed as an array on said substrate for converting incident light from an image plane to be read into electrical signals, each said photovoltaic conversion element having opposed electrodes and a photovoltaic conversion layer therebetween;

means for reading said electrical signals converted by said photovoltaic conversion elements;

a plurality of conductive strips defining wiring patterns formed on said substrate, each conductive strip having a first end connected to one of said electrodes of said photovoltaic conversion elements and a second end connected to said reading means; and

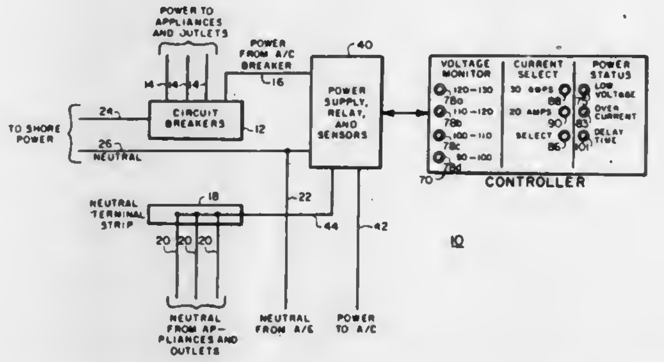
each said conductive strip being dimensioned in relation to the respective electrode connected thereto such that each conductive strip and its respective electrode define a substantially equal value of capacitance.

4,617,472
RECREATIONAL VEHICLE POWER CONTROL SYSTEM
William H. Slavik, Palos Hillls, Ill., assignor to Nuvatec, Inc., Downers Grove, Ill.

Division of Ser. No. 515,350, Jul. 19, 1983, Pat. No. 4,499,385. This application Nov. 30, 1984, Ser. No. 676,570

Int. Cl.⁴ H02J *3/14*

U.S. Cl. 307—10 R **12 Claims**



1. A power control system for a recreational vehicle comprising means for receiving electrical current from a source of power, a major electrically powered appliance, a plurality of additional electrically powered appliances, and means for connecting the major appliance and the additional appliances to the receiving means such that electrical current characterized by a power voltage is supplied to the major appliance and the additional appliances, said power control system comprising:

means for automatically disconnecting the major appliance from the receiving means without disconnecting the additional appliances from the receiving means when the power voltage falls below a selected value;

means for automatically reconnecting the major appliance to the receiving means after the power voltage returns to an operating range; and

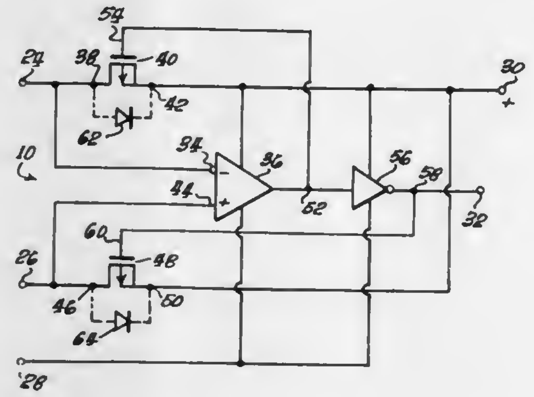
means, included in the connecting means, for continuously connecting the additional appliances to the receiving means during operation of the disconnecting means and the reconnecting means.

4,617,473
CMOS BACKUP POWER SWITCHING CIRCUIT
David Bingham, San Jose, Calif., assignor to Intersil, Inc., Cupertino, Calif.

Filed Jan. 3, 1984, Ser. No. 567,577

Int. Cl.⁴ H02J *9/06*

U.S. Cl. 307—66 **5 Claims**



4. A backup power switching circuit comprising:

first and second transistors, each of said transistors including a control electrode, an output electrode, an input electrode, and a substrate;

a reference terminal, adapted to provide a reference potential;

a differential voltage comparator including an inverting input, a non-inverting input, and an output coupled to the control input of said first transistor;

a voltage inverter having an input coupled to the output of the comparator, and an output coupled to the control input of the second transistor;

a first input terminal, coupled to the input electrode of said first transistor and to the inverting input of said comparator;

a second input terminal, coupled to the input electrode of said second transistor and to the non-inverting input of said comparator; and

an output terminal coupled to the output electrodes of said first and second transistors;

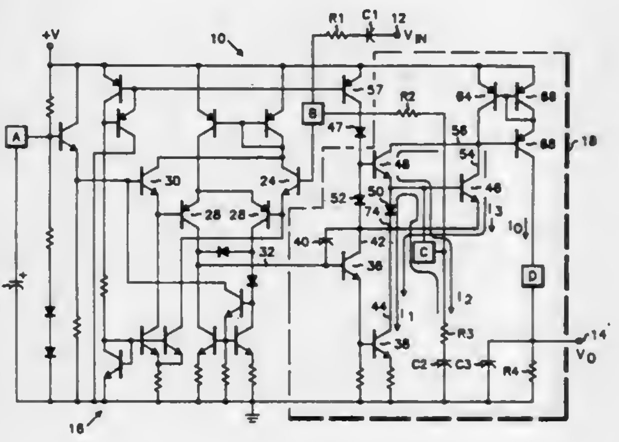
wherein, in dependence on the relative magnitudes of the potentials applied to said first and second input terminals, said first or second transistor is driven into conduction to couple the input terminal having the greater magnitude to said output terminal.

4,617,474
SIGNAL DETECTOR
Barry L. Jason, 325 Warbler Dr., Bedford, Tex. 76021

Filed Jun. 27, 1984, Ser. No. 625,471

Int. Cl.⁴ H03K *5/00;* H03D *1/00*

U.S. Cl. 307—262 **11 Claims**



1. An AC signal detector, comprising:

an amplifier having an input for receiving signals which undergo positive and negative excursions, and having an output;

a first transistor coupled to the output of the amplifier and responsive to an output signal excursion of a first polarity for developing an increasing level of current and responsive to a signal excursion of the opposite polarity for developing a decreasing level of current;

second and third transistors coupled to an output terminal of the first transistor for conducting on opposite polarities of the input signal, said second transistor being responsive to an increasing level of current in the first transistor for developing a first intermediate current, and said third transistor being responsive to a decreasing level of current in the first transistor for developing a second intermediate current having the same polarity as the first intermediate current; and

means for receiving the first and second intermediate currents and outputting said intermediate currents to a load.

4,617,475
WIRED LOGIC VOTING CIRCUIT
Robert M. Reinschmidt, San Jose, Calif., assignor to Trilogy Computer Development Partners, Ltd., Cupertino, Calif.

Filed Mar. 30, 1984, Ser. No. 595,086

Int. Cl.⁴ H03K *19/23, 19/086;* G06F *11/16, 11/26*

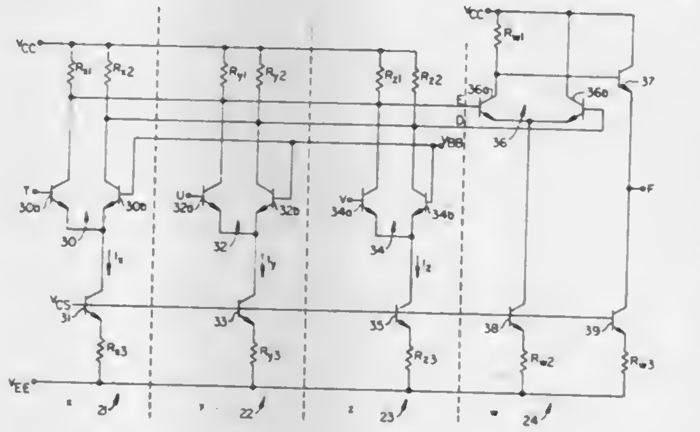
U.S. Cl. 307—441 **4 Claims**

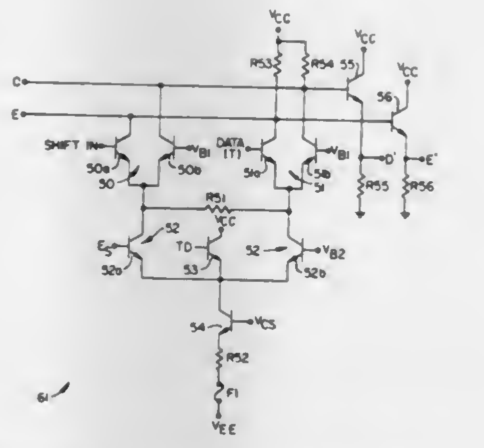
1. A wired logic voting circuit providing an output which follows the majority of input logic levels according to the formula:

$$F=AB+AC+BC$$

where F is the output of the function described and A, B, and C are the voting input signals, comprising:

a plurality of differential input logic elements, each of said elements comprising a differential transistor pair, the base of a first transistor of said transistor pair providing a voting input, the base of the second transistor of said transistor pair coupled to a reference level signal, the emitters of said transistor pair coupled together at a current sink, the collector of the first transistor of said transistor pair coupled through a resistor to a voltage source to provide a first logic level signal, the collector of the second transistor of said transistor pair coupled through a resistor to said voltage source to provide a second, opposite logic level signal, the collectors of the first transistors for all of said differential transistor pairs being wired together at a first signal node, the collectors of the second transistors for all of said differential transistor pairs being wired together at a second signal node;





an output differential transistor pair, including a first transistor having a base coupled to said first signal node and including a second transistor having a base coupled to said second signal node, the emitters of said output differential transistor pair being coupled together at a current sink, the collector of said first transistor of said output differential transistor pair being coupled through a resistor to a voltage source to provide an actuating output logic level signal, the collector of said second transistor of said output differential transistor pair being coupled to said voltage source, wherein a signal level at one signal node is never equal to a signal level at the other signal node and wherein the polarity of signal level difference between the two signal nodes indicates the majority state of the input logic signals; and

a diagnositic circuit, coupled between the emitters of said logic element transistor pair and said current sink, for locating and isolating defective logic element transistor pairs.

4,617,476

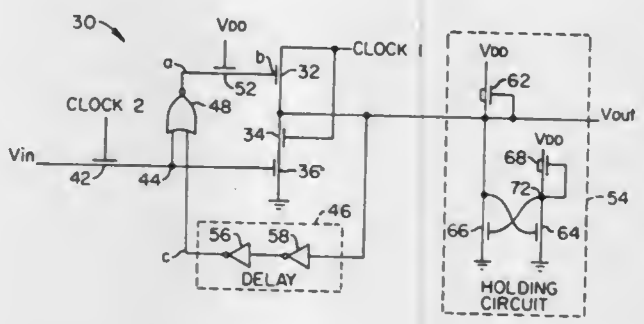
HIGH SPEED CLOCKED, LATCHED, AND BOOTSTRAPPED BUFFER

Monte J. Dalrymple, Fremont, Calif., assignor to Zilog, Inc., Campbell, Calif.

Filed Oct. 16, 1984, Ser. No. 661,345

Int. Cl.^{4} H03K *19/096, 19/017*

U.S. Cl. 307—443 **5 Claims**



1. A buffer circuit for deriving, from an input signal, an output signal which is substantially synchronous with at least some of the changes in state of a first clock signal and wherein a change in logic state of the input signal causes a corresponding change in logic state of the output signal, said buffer circuit comprising:

a first transistor whose main current path is connected between the first clock and the circuit output, so that the first clock drives the output directly;

a second and a third transistor whose main current paths are connected in series between the circuit output and ground for pulling the output low, the first clock signal being applied to the gate of the second transistor;

a fourth transistor whose main current path is connected between the input and the gate of the third transistor;

a second clock for applying a second clock signal to the gate of the fourth transistor, so that the input signal is sampled within a time window determined by the second clock signal, and so that the sampled input signal is applied to the gate of the fourth transistor;

a delay means for delaying the output signal;

a NOR-gate receiving at its inputs the sampled input signal and the delayed output signal;

a fifth transistor whose gate is supplied with a first DC voltage and whose main current path is connected between the output of the NOR-gate and the gate of the first transistor for boosting the voltage at the gate of the first transistor so that the delay between the rise times of the first clock and changes in the state of the output signals is reduced, and wherein the delayed output signal is delayed by the delay means by such time that the output signal is allowed to rise to substantially its maximum value before such rise causes the first transistor to be turned off; and

means coupled to the circuit output for holding the value of the output signal when the first transistor is turned off and when the second or third transistors is turned off.

4,617,477

SYMMETRICAL OUTPUT COMPLEMENTARY BUFFER

Michael V. DePaolis, Jr., Center Valley, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 21, 1985, Ser. No. 736,554

Int. Cl.^{4} H03K *19/094, 19/20, 17/693, 3/86*

U.S. Cl. 307—443 **10 Claims**

1. Circuitry comprising:

first, second, third, fourth, fifth, and sixth transistors T21, T22, T23, T24, T27, and T28, respectively, each having a control electrode and first and second output electrodes;

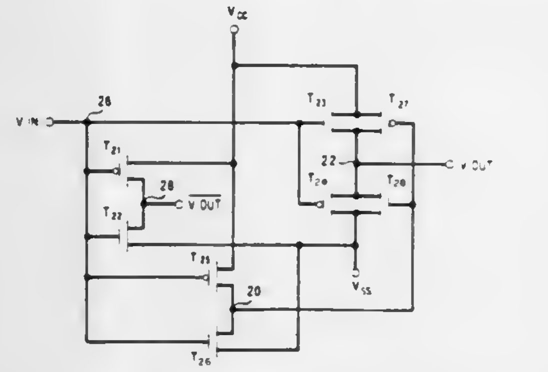
T21, T24, and T27 being of a first conductivity type, and T22, T23 and T28 being of the opposite conductivity type;

the control electrodes of T21, T22, T23 and T24 being coupled together to a circuitry input node;

the second output electrode of T21 being coupled to the second output electrode of T22 and to a first circuitry output node;

the control electrodes of T27 and T28 being coupled to an intermediate node which is characterized to be at a potential level that is the inverse of the level applied to the circuitry input node;

the first output electrodes of T23 and T24 being coupled to the second output electrodes of T27 and T28 and to a second circuitry output node;



the first output electrodes of T21 and T27, and the second output electrode of T23, being adapted to be coupled to a first potential source; and

the first output electrodes of T22 and T28, and the second output electrode of T24, being adapted to be coupled to a second potential source which has a different potential level than the first potential source.

4,617,478

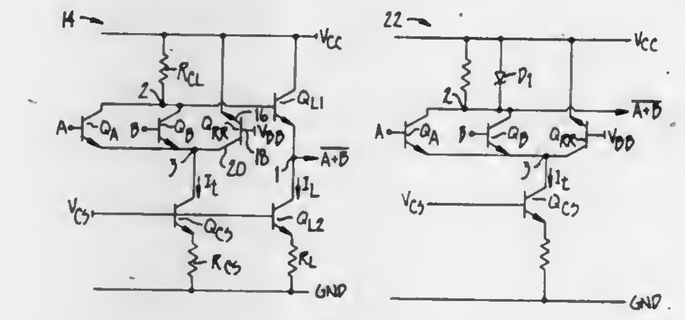
EMITTER COUPLED LOGIC HAVING ENHANCED SPEED CHARACTERISTIC FOR TURN-ON AND TURN-OFF

Hemmige D. Varadarajan, 1768 Lark La., Sunnyvale, Calif. 94087

Filed Sep. 7, 1983, Ser. No. 530,176

Int. Cl.^{4} H03K *19/013, 19/086, 19/082, 19/092*

U.S. Cl. 307—455 **4 Claims**



1. A device for switching current, comprising:

a common node connected to receive the current;

an output node connectable to provide an output;

a least one input transistor having a collector connected to said output node, an emitter connected to said common node, and a base connected to receive at least one input signal; and

reference means connected to said common node for supplying a switching bias at said common node, including means for filtering high frequency voltage change at said common node, wherein said filtering means includes a transistor having a base connected to a bias voltage, an emitter connected to a supply voltage and a collector connected to said common node.

4,617,479

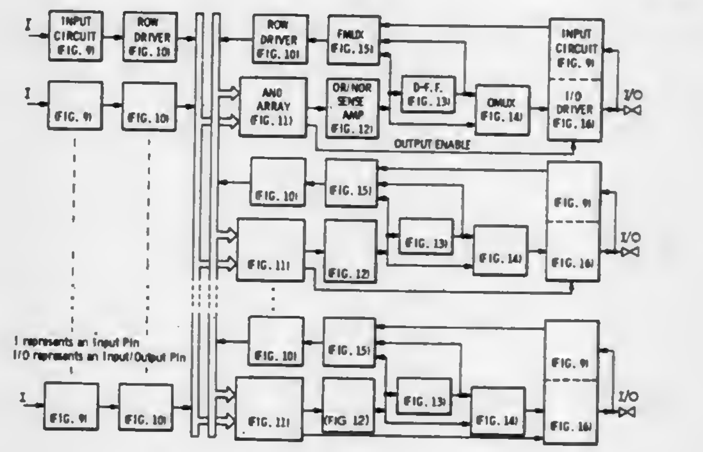
PROGRAMMABLE LOGIC ARRAY DEVICE USING EPROM TECHNOLOGY

Robert F. Hartmann, San Jose; Sau-Ching Wong, Hillsborough; Yiu-Fai Chan, Saratoga, and Jung-Hsing Ou, Sunnyvale, all of Calif., assignors to Altera Corporation, Santa Clara, Calif.

Filed May 3, 1984, Ser. No. 607,018

Int. Cl.^{4} G06F *7/00;* **H03K** *19/177, 19/20, 19/094*

U.S. Cl. 307—465 **27 Claims**



1. A programmable logic array device comprising:

means forming a first programmable AND array having a plurality of memory cells arranged in addressable rows and columns and which can be individually programmed to contain logic data;

first input circuit means for receiving a first input signal and for developing a first buffered signal corresponding thereto;

first row driver means responsive to said first bufferred signal and operative to interrogate a particular row of said memory cells and to cause said first AND array to output signals corresponding to the data contained therein;

first sensing means for sensing the signals output by said first AND array and for developing a corresponding first data signal which is the logicial OR of the signals output by said first AND array;

first signal storage means for receiving and temporily storing said first data signal;

first output terminal means; and

first switching means responsive to a control signal and operative to couple either said first data signal or a data signal temporarily stored in said first signal storage means to said first output terminal means.

4,617,480

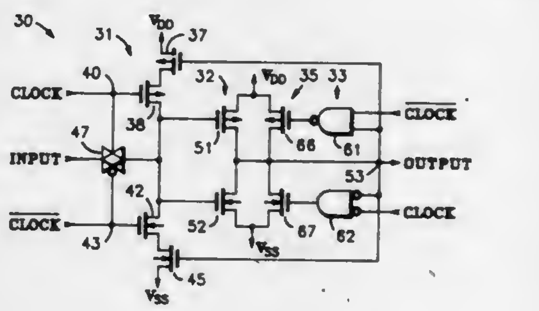
HIGH SPEED DATA SYNCHRONIZER WHICH MINIMIZES CIRCUITRY

Kenneth K. Au, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 22, 1984, Ser. No. 663,517

Int. Cl.^{4} H03K *5/135*

U.S. Cl. 307—480 **12 Claims**



1. A high speed data synchronizer circuit for synchronizing an asynchronous input signal with a synchronous clock signal, comprising:

first logic means for receiving the clock signal and a complement thereof and selectively receiving the input signal and buffering the input signal to provide a first control signal;

second logic means coupled to the first logic means, for providing a buffered output signal at an output terminal in response to the first control signal;

third logic means coupled to the output terminal, to the clock signal and to a complement thereof, for providing second and third control signals in response to both the output and clock signals; and

fourth logic means coupled to the output terminal, for further amplifying the output signal in response to said second and third control signals.

4,617,481

AMPLIFIER CIRCUIT FREE FROM LEAKAGE BETWEEN INPUT AND OUTPUT PORTS

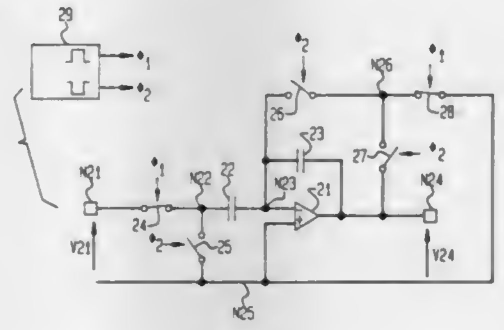
Shinji Masuda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 26, 1983, Ser. No. 545,692

Claims priority, application Japan, Oct. 29, 1982, 57-190201

Int. Cl.^{4} G06G *7/10;* **H03F** *1/02;* **H03B** *1/00*

U.S. Cl. 307—491 **9 Claims**



1. A circuit comprising:

an input terminal receiving an input signal;

a reference potential terminal;

an output terminal for receiving an output signal;

an operational amplifier having an inverting input port connected to said input termihal, a non-inverting input port connected to said reference potential terminal, and an output port connected to said output terminal;

a first switch connected between said inverting input port and a first connection node;

a second switch connected between said first connection node and said output terminal;

a third switch connected between said first connection node and said reference potential terminal; and

a means for controlling said first, second, and third switches, said switch controlling means operatively closing said first and second switches simultaneously and operatively closing said third switch when said first and second switches are opened so that the potential difference between said first connection node and said inverting port is reduced when said first and second switches are open to prevent leakage current from flowing between said inverting input port and said output port of said operational amplifier.

4,617,482

COMPLEMENTARY TYPE MOS FIELD-EFFECT TRANSISTOR CIRCUIT PROVIDED WITH A GATE PROTECTION STRUCTURE OF SMALL TIME CONSTANT

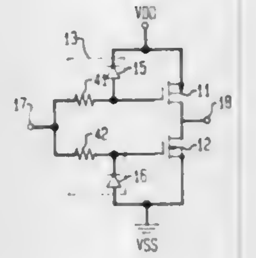
Kohei Matsuda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 11, 1984, Ser. No. 659,789

Claims priority, application Japan, Oct. 12, 1983, 58-157615[U]

Int. Cl.^{4} H03K *17/687;* **H02H** *3/20, 9/00;* **H01L** *27/02*

U.S. Cl. 307—579 **10 Claims**



8. A complementary transistor circuit comprising:

an input terminal receiving an input signal;

a first power source terminal supplying a high voltage;

a second power source terminal supplying a low voltage;

a first insulated gate field effect transistor of one conductivity type;

a second insulated gate field effect transistor of the other conductivity type connected in series with said first transistor between said first and second power source terminals;

a first protection circuit between said input terminal and a gate of said first transistor, said first protection circuit including a first diode connected between said gate of said first transistor and said first power source terminal and a first resistor having one end connected directly to said gate of said first transistor and the other end connected directly to said input terminal; and

a second protection circuit between said input terminal and a gate of said second transistor, said second protection circuit being formed separately from said first protection circuit except for the common connection with said input terminal and including a second diode connected between said gate of said second transistor and said second power source terminal and a second resistor having one end directly connected to said gate of said second transistor and the other end connected directly to said input terminal.

4,617,483

ELECTROTHERMODYNAMIC POWER CONVERTER WITH CONVERGING FLOWS

Alvin M. Marks, 359R Main St., c/o Ardi, Athol, Mass. 01331

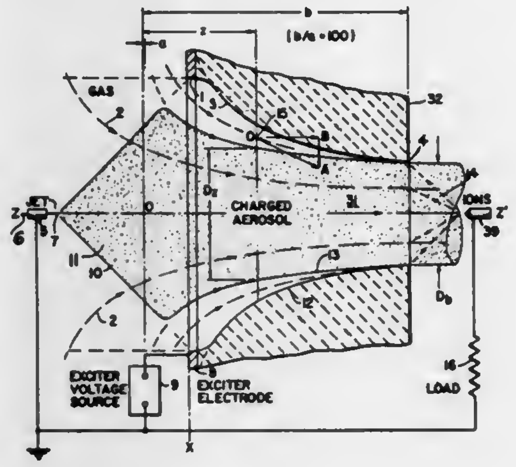
Filed Jan. 27, 1984, Ser. No. 574,374

Int. Cl.^{4} H02N *1/00*

U.S. Cl. 310—10 **18 Claims**

1. In an electrothermodynamic generator for the substantially isothermal conversion of the internal heat power of a flowing gas charged aerosol to electric power, a source of gas, said gas entering said generator at a temperature T_1 and pressure ρ_1 a gas source, a duct connected to said gas source, said duct having a flow axis in the Z direction, said duct converging from an entrance diameter D_a at $Z=a$ to an exit orifice in said duct having a diameter D_b at $Z=b$, a source of conductive liquid at a pressure and temperature exceeding that of the said gas, a minor orifice for said liquid located on said axis upstream from said duct entrance, said conductive liquid issuing as a jet from said minor orifice, an exciter electrode located at the said duct entrance, an exciter electric potential source, said potential source being connected across said conductive liquid and

said exciter electrode to cause a charged aerosol droplets to form from said liquid jet between said minor orifice and said exciter electrode, a discharge electrode located downstream from the said exit orifice, which injects ions of opposite sign into said charged aerosol, the heat content of said charged aerosol droplets being at least equal to the heat content of the gas in which it is contained, constituting an internal heat source to maintain the charged aerosol gas at nearly constant temperature, said converging duct causing the velocity and kinetic power of said gas-charged aerosol to increase as it moves along the flow axis from $Z=a$ to $Z=b$; said gas decreasing in pressure from ρ_1 at $Z=a$ to ρ_2 at $Z=b$, the ratio of temperature decrease ΔT to the absolute temperature T_1 being less than about 0.1, whereby the charged aerosol gas almost isothermally converts its heat power to electric power, said kinetic power being a small fraction of said electric power; a load resistor, said load resistor being connected between said discharge electrode and said conductive liquid source, said electric power being delivered to said load.



4,617,484

ELECTRIC MOTOR WITH A TORSIONALLY FLEXIBLE ROTOR MOUNT

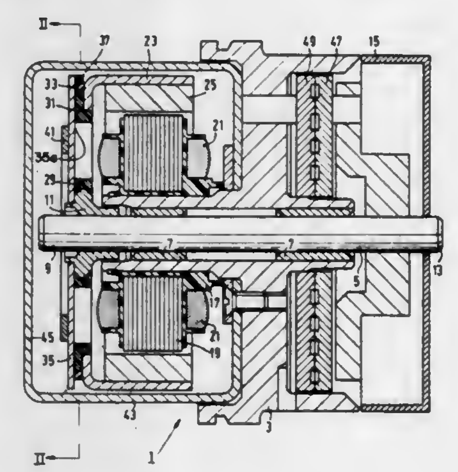
Johannes C. M. Buijsen, Dordrecht, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 25, 1985, Ser. No. 694,714

Claims priority, application Netherlands, Feb. 2, 1984, 8400311

Int. Cl.^{4} H02K *5/24*

U.S. Cl. 310—51 **11 Claims**



1. An electric motor comprising a stator, a motor shaft having a hub, a rotor assembly mounted about said shaft, and a plurality of radially extending torsionally flexible spokes interconnecting said hub and said rotor assembly,

characterized by comprising a rigid plate extending radially from and rigidly secured to the hub, and having a surface which extends adjacent to and facing the rotor assembly, and

a vibration-damping element clamped between the plate and the rotor assembly.

4,617,485

ROTOR OF ALTERNATOR MOUNTED ON VEHICLE

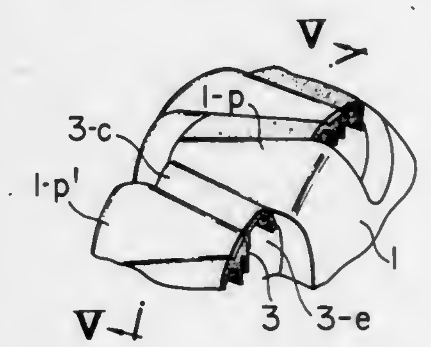
Shigenobu Nakamura, Chiryu; Takayasu Nimura, Nagoya, and Toshiaki Hotta, Oobu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 18, 1984, Ser. No. 682,851

Claims priority, application Japan, Dec. 19, 1983, 58-237871; Jan. 6, 1984, 59-946

Int. Cl.^{4} H02K *1/32*

U.S. Cl. 310—65 **7 Claims**



1. In a vehicle-mounted alternator having a rotor including a pair of Randel-type pole cores having mutually meshing claws and an exciting coil provided at the inner side of said pole cores, and a stator having teeth extending radially inwardly to oppose said rotor,

an improved rotor construction comprising: spacers made of a non-magnetic material and disposed between adjacent pole core claws of said pole cores in such a manner as to provide, together with said claws, a substantially smooth cylindrical outer peripheral surface for a portion of said rotor facing said teeth of said stator which prevents the flow of air radially between said claws of said portion and also provide a space constituting a passage for cooling air axially between the inner sides of said spacers and the outer peripheral surface of said exciting coil.

4,617,486

MINIATURE D.C. MOTOR WITH IMPROVED TERMINAL PLATE AND BRUSHES

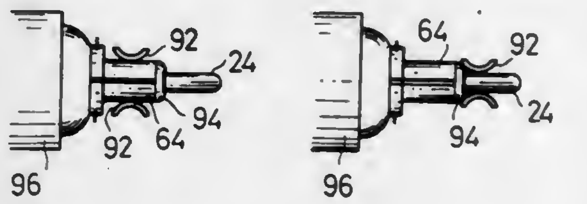
Tetsuro Miyauchi, and Koji Niino, both of Miyazaki, Japan, assignors to S. M. C. Co., Ltd., Osaka, Japan

Filed Apr. 19, 1985, Ser. No. 725,207

Claims priority, application Japan, Apr. 19, 1984, 59-56673[U]; Apr. 19, 1984, 59-56674[U]

Int. Cl.^{4} H02K *13/00*

U.S. Cl. 310—233 **20 Claims**



1. A miniature D.C. motor comprising:

a housing for receiving a motor body therein;

a permanent magnet mounted in said housing;

a rotor having a rotor shaft with a longitudinal axis rotatably mounted in said housing adjacent said permanent magnet;

a brush base adapted to the detachable fitted with respect to said housing;

a pair of brushes with support connections to said brush base arranged in said brush base, said brushes each including a contact section which has a convexly curved surface;

detachable connections means adapted to carry out the

detachable fitting between said housing and said brush base; and
a commutator having an outer end formed into a truncated conical shape so as to be pressedly interposed between said convexly curved surfaces of said brushes, said brushes extending across said commutator with said support connection overlapping each other to provide a resilient contact with said curved surfaces of said brushes and said commutator.

4,617,487

PIEZOELECTRIC ELASTIC SURFACE WAVE ELEMENT WITH FILM OF TANTALUM PENTOXIDE OR SILICON NITRIDE

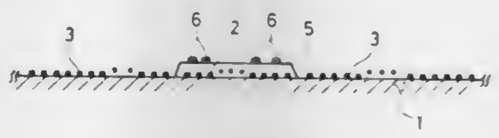
Takehiko Sone; Takehiro Takoshima, and Yoshimi Kamijyo, all of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Sep. 23, 1985, Ser. No. 779,223

Claims priority, application Japan, Sep. 22, 1984, 59-199019; Oct. 8, 1984, 59-211148

Int. Cl.^{4} H01L *41/08*

U.S. Cl. 310—313 D **2 Claims**



1. An elastic surface wave element having a grille-shaped electrode formed on a piezzoelectric substrate, which is characterized by covering said grille-shaped electrode portion with an insulating film of tantalum pentoxide.

4,617,488

COMPOSITE PIEZOELECTRIC VIBRATOR WITH TRAPEZOIDAL CROSS SECTION

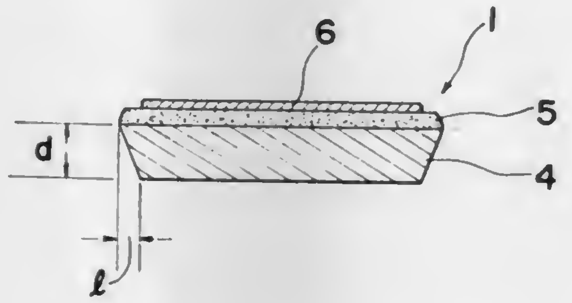
Takeshi Nakamura, Uji, and Ikuo Matsumoto, Nagaokakyo, both of Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Aug. 1, 1985, Ser. No. 761,395

Claims priority, application Japan, Aug. 10, 1984, 59-168677

Int. Cl.^{4} H01L *41/08*

U.S. Cl. 310—321 **2 Claims**



1. In a piezoelectric vibrator capable of vibrating in an expansion mode of vibration comprising a piezoelectric vibrating element, composed of a vibrateable substrate, made of a constant elastic metal, a thin film of piezoelectric material and an exciting electrode layer, the improvement wherein the substrate has a generally trapezoidal cross-sectional representation, as viewed in a direction perpendicular to the direction of propagation of vibrations, with one of the opposite surfaces thereof adjacent the thin film being greater than the other of said opposite surfaces.

4,617,489

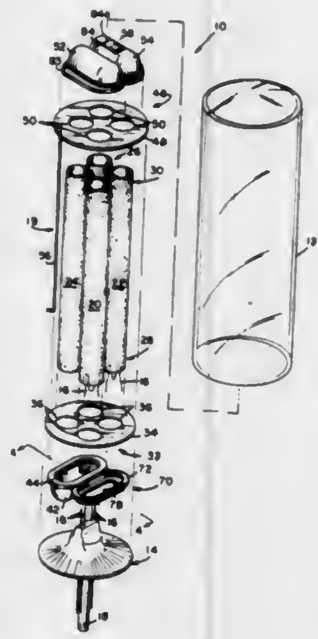
COMPACT FLUORESCENT LAMP HAVING INTERNAL THERMALLY ACTUABLE MEANS

Harold L. Hough, Beverly, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Mar. 21, 1984, Ser. No. 591,744

Int. Cl.^{4} H01J *7/26, 61/52, 63/02*

U.S. Cl. 313—13 **1 Claim**



1. In a fluorescent lamp having an hermetically sealed outer envelope containing an arc generating and sustaining medium; and assembly positioned within said envelope, said assembly comprising a plurality of elongated glass tubes each having first and second ends, said tubes being coated on their interior surface with a phosphor, all of said interior surfaces being open to said medium; at least one arc directing means operatively associated with said first ends of said tubes and including an arc director, said arc director forming a part of the arc path through said tubes; an electrode at either end of said arc path; and means for making electrical connection to said electrodes, said arc directing means comprising a relatively thick, rigid, electrically conductive base member having a plurality of apertures therein, some of the apertures including means formed to receive said electrodes and other of said apertures including means formed to receive the first ends of said tubes that do not contain electrodes; and arc director being associated with said other apertures, the improvement comprising: thermally actuable means associated with said assembly operable to open communications with the interior of said tubes upon application of heat thereto; and operable to form an arc tight seal with the interior of the tubes upon removal of heat therefrom, said thermally actuable means comprising an exhaust port formed in said base member in communication with said arc director and a thermostatic blade associated with said exhaust port and operable to open upon the application of heat.

4,617,490

CATHODE RAY TUBE DEVICE WITH IMPROVED COLOR FILTERING SYSTEM

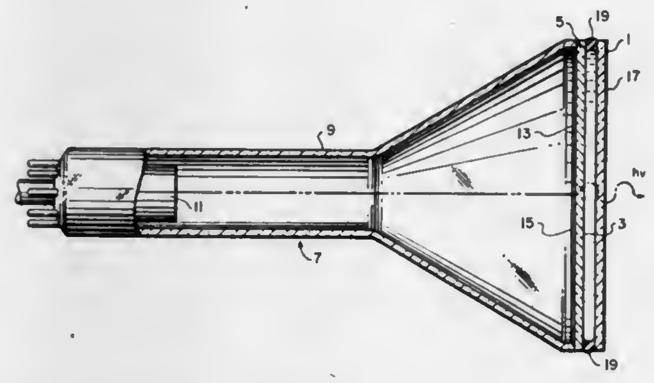
Brian J. Fitzpatrick, Ossining, and Phyllis M. Harnack, Hastings-on-Hudson, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Dec. 7, 1984, Ser. No. 679,191

Int. Cl.^{4} H01J *31/00, 5/16*

U.S. Cl. 313—478 **11 Claims**

1. A cathode-ray tube device for generating a bright light spot comprising:
a cathode-ray tube including an evacuated envelope, means located within said envelope to generate an electron beam, a phosphor capable of emitting visible light radiation when excited by electrons, positioned within said envelope and in the path of said electron beam, and a transparent face plate forming part of said envelope and situated in the path of said visible light radiation and, positioned outside of the outer surface of said face plate and in the path of said visible light radiation, a light beam filtering means comprising, in a container which at least in the path of said light radiation, is transparent to said radiation and which comprises as a visible light radiation exit member a glass end plate, a light filtering solution containing in addition to light filtering ingredients, as index of refraction raising ingredients, a compound selected from the group consisting of cinnamic alcohol and cinnamaldehyde and mixtures thereof in an amount sufficient to form a concentrated solution thereof.



4,617,491

FLUORESCENT DISPLAY DEVICE WITH INTERLEAVED ANODE AND CONTROL ELECTRODE SEGMENTS

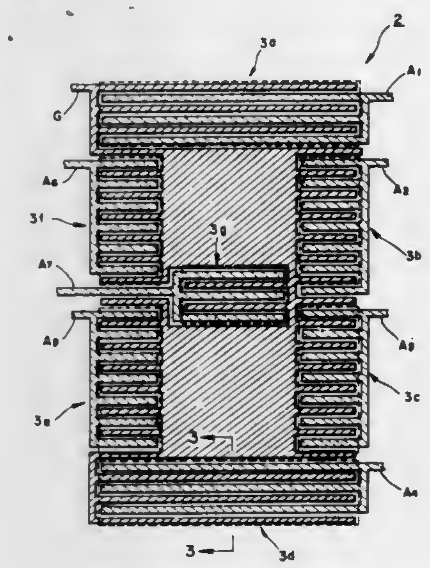
Takao Kishino; Ikuo Marushima, and Nobumitsu Kanetsuna, all of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed Jul. 13, 1983, Ser. No. 513,389

Claims priority, application Japan, Jul. 16, 1982, 57-124873; Jul. 27, 1982, 57-114270[U]; Aug. 17, 1982, 57-142258

Int. Cl.^{4} H01J *31/15*

U.S. Cl. 313—497 **4 Claims**



1. A fluorescent display device comprising:
a substrate;
at least one display section formed on said substrate, said display section consisting of a plurality of segments; and
a cathode spaced from said segments;
means for maintaining an evacuated space between said cathode and said segments and for permitting external viewing of said segments;
said segments each comprising anode electrodes and control electrodes alternately arranged in a pectinate configuration with interleaved portions on one surface of said substrate and with an insulating space being interposed therebetween;
said anode electrodes each having a phosphor layer deposited on the surface thereof opposite to said cathode;
said control electrodes each having a phosphor layer deposited on the surface thereof opposite to said cathode;
wherein all of said anode electrodes are connected together to an external terminal in every segment and all of said control electrodes are connected together to an external terminal in every display section.

4,617,492

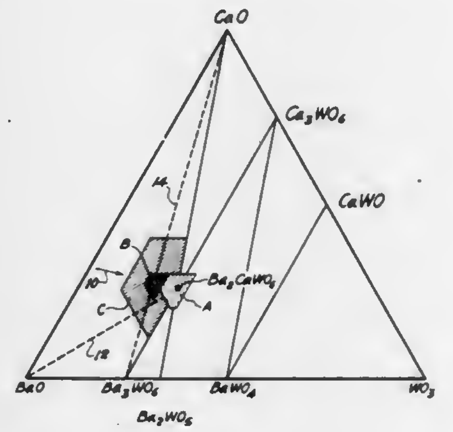
HIGH PRESSURE SODIUM LAMP HAVING IMPROVED PRESSURE STABILITY

Krishan L. Luthra, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 4, 1985, Ser. No. 698,512

Int. Cl.^{4} H01J *17/04;* **H01B** *1/06*

U.S. Cl. 313—630 **6 Claims**



1. As an electron emission mix for a sodium vapor lamp the composition corresponding to points within the shaped areas B and C of the triaxial plot of FIG. 3 multiphase compositions derived from CaO, BaO and WO_3.

4,617,493

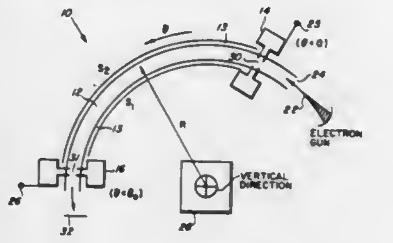
COLLECTIVE INTERACTION KLYSTRON

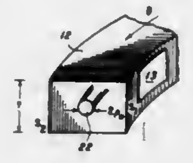
Yue-Ying Lau, Silver Spring, Md., assignor to United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 28, 1985, Ser. No. 695,327

Int. Cl.^{4} H01J *25/02*

U.S. Cl. 315—5 **20 Claims**





1. A klystron comprising:
a curved drift tube which is curved sufficiently to induce the negative mass effect; said drift tube having a center of curvature, an arc length, an input end and an output end;
at least one input cavity located at the input end of said drift tube;
an output cavity located at the output end of said drift tube; and
means for having electrons which enter said drift tube follow a curved path defined by the shape of the drift tube.

15. A method for increasing the strength of an RF signal comprising the steps of:
- aiming an electron beam into an input end of a klystron which has a curved drift tube with a center of curvature and an arc length, and a curve following means which causes the electron beam to follow a path defined by the shape of the curved drift tube;
- inputing an RF signal into the klystron through an input cavity of the klystron so the electron beam is modulated by the input cavity as it passes through a gap in the input cavity; and
- producing an output RF signal proportional to but stronger in amplitude than the inputed RF signal by means of an output cavity that resonates in response to a first or fundemental harmonic of the modulated electron beam as the electron beam passes through a gap in the output cavity.

4,617,494
ELECTRON GUN FOR A LINEAR ACCELERATOR AND ACCELERATING STRUCTURE INCORPORATING SUCH A GUN

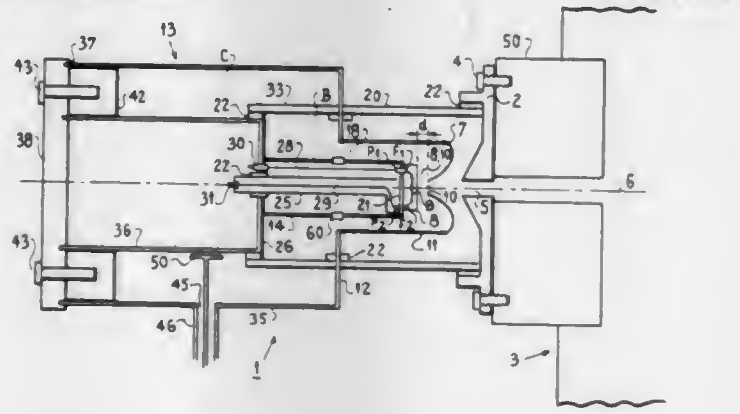
Hubert P. Leboutet, St. Cloud, and Jeanne J. Aucouturier, L'Hay-Les-Roses, both of France, assignors to CGR-MEV, Buc, France

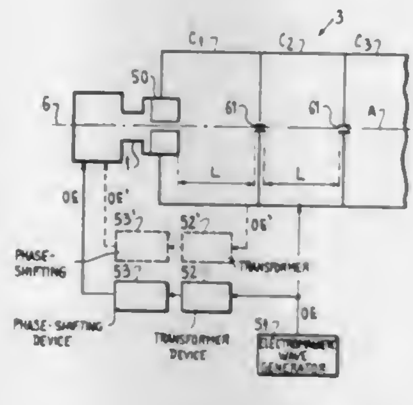
Filed Dec. 16, 1983, Ser. No. 562,442

Claims priority, application France, Dec. 21, 1982, 82 21399

Int. Cl.⁴ H01J *25/10*

U.S. Cl. 315—5.41 **6 Claims**





1. A linear accelerator device comprising an electron gun, an accelerating structure, and means for providing an electromagnetic wave; said gun comprising a cathode able to generate an electronic current, a grid able to control said current, and anode perforated by a hole centered around an axis along which are emitted electrons, a cavity resonator closed on a cathode-grid space, said cavity resonator containing an electromagnetic coupling member connectd to a transmission line and making it possible to inject an electromagnetic wave of frequency F into said cavity resonator in order to resonate the latter and excite the cathode-grid space so as to determine between the grid and the cathode, an alternating potential difference of frequency F by which is modulated the electronic current; said accelerating structure comprising at least one accelerating cavity connected to said electron gun for receiving therefrom said electron current, means for injecting into said accelerating cavity an electromagnetic wave at said frequency F, said frequency F being the same as the frequency F injected into said cavity resonator of said electron gun and phase shifting means for controlling the phase of the electromagnetic wave injected into the cavity resonator of the electron gun and the electromagnetic wave injected into the accelerating cavity of the accelerating structure; whereby the electrons from the gun are emitted in pulses or clusters which coincide in said accelerating cavity with an accelerating half-period of said electromagnetic wave for accelerating said electrons.

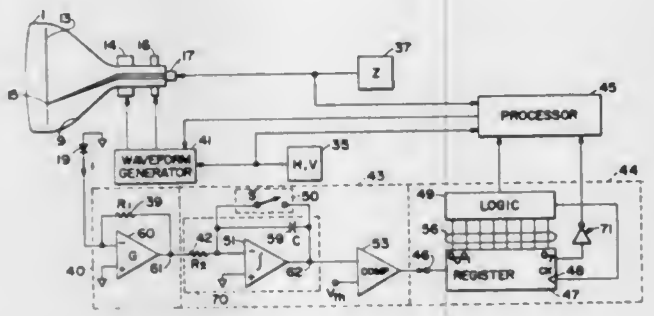
4,617,495
AUTOCONVERGENCE OF A CATHODE RAY TUBE USING A SEMICONDUCTOR DETECTOR

Robert G. Culter, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 24, 1984, Ser. No. 685,420

Int. Cl.⁴ H01J *31/26*

U.S. Cl. 315—10 **23 Claims**



1. A cathode ray tube calibration system comprising:
- a cathode ray tube having:
  - a display screen;
  - electron gun means for producing an electron beam directed toward said display screen;
  - feedback means having an active surface disposed proximately to said display screen at a preselected location such that said electron beam can be directed to strike at least a portion of said active surface, for providing a feedback signal which is related to the area of said portion that is struck;
- detector means for detecting said feedback signal and for providing a second signal in response thereto which is a function of said area of said portion that is struck;
- converter means for integrating said second signal and for issuing a digital signal in response thereto;
- control means for directing said electron beam to strike a sequence of portions of said active surface thereby evoking a sequence of said feedback signals, a sequence of said second signals, and a sequence of said digital signals, and for determining a location of said feedback means based on said sequence of digital signals.

4,617,496
WARM-UP CIRCUIT WITH TIMED SHUT-OFF OF THE WARM-UP CURRENT

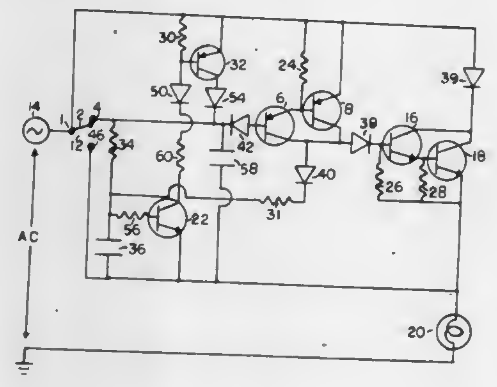
Arthur J. Samodovitz, One Lakeshore Dr. #A-4, Farmington, Conn. 06032

Continuation of Ser. No. 615,289, May 30, 1984, abandoned, which is a continuation-in-part of Ser. No. 583,350, Aug. 18, 1983, abandoned, and a continuation-in-part of Ser. No. 268,724, Jun. 1, 1981, abandoned. This application Jul. 25, 1985, Ser. No. 758,589

Int. Cl.⁴ H05B *39/02*

U.S. Cl. 315—208 **33 Claims**

1. A warm-up and switch circuit comprising:
- a double throw switch having an off throw contact and an on throw contact;
- means responsive to the position of the switch for delivering a warm-up current from a power source to a load when the switch is in transition, the average power delivered to said load by said warm-up current being substantially less than the average power which could be drawn by said load during the same interval if said load was instead connected by a short circuit directly to said power source;



- means for short circuiting said power supply to said load via said on throw contact when the switch is on; and
- means for terminating said warm-up current after it has significantly warmed-up said load and said switch is still in transition.

4,617,497
SPINNING OR TWISTING MACHINE CONTROL SYSTEM

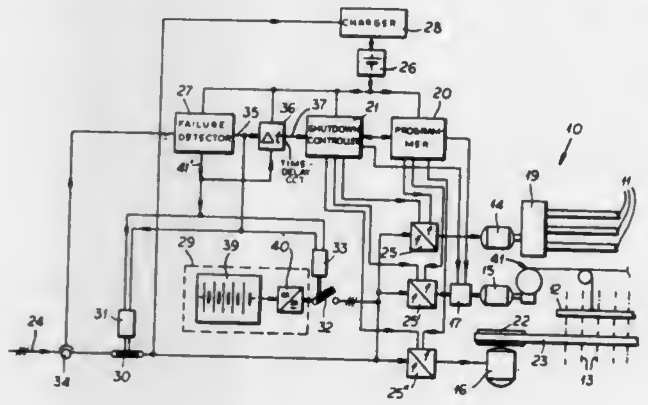
Horst Wolf, Albershausen, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Fed. Rep. of Germany

Filed Apr. 1, 1985, Ser. No. 718,163

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1984, 3412060

Int. Cl.⁴ H02P *5/46*

U.S. Cl. 318—78 **16 Claims**



1. In a spinning or twisting machine having at least two motors required to drive respective loads with a predetermined speed ratio and energized by a line-current source, the improvement which comprises:
- an emergency power supply comprising at least one battery; and
- a circuit means operable upon an unforeseeable failure of said line-current source by said emergency power supply to effect a preprogrammed controlled shutdown of one of said motors while energizing at least the other of said motors by said emergency power supply, and maintaining said ratio at least until the speeds of said motors have fallen to a level at which substantial yarn breakage is precluded.

4,617,498
CONTROL DEVICE FOR SYNCHRONIZING A PLURALITY OF DRIVING UNITS

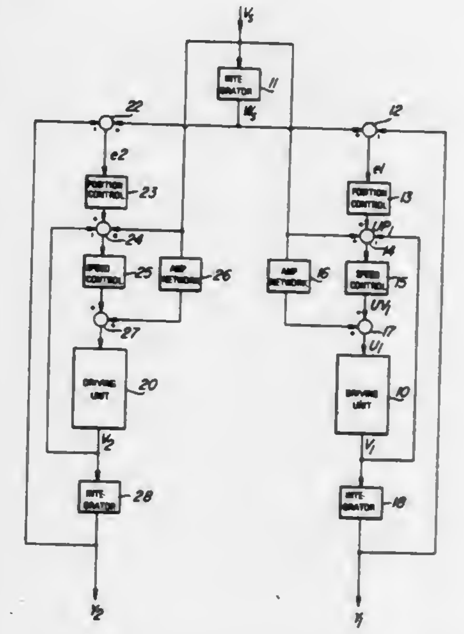
Martin Ruppert, Duisburg, Fed. Rep. of Germany, assignor to BSO Steuerungstechnik GmbH, Sulzbach, Fed. Rep. of Germany

Filed Mar. 22, 1985, Ser. No. 715,087

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1984, 3411651

Int. Cl.⁴ H02P *5/46*

U.S. Cl. 318—85 **6 Claims**



1. A control device for synchronizing a plurality of driving units such as a plurality of hydraulic cylinders, each driving unit being actuated by an actuating means such as by a proportional valve, comprising
- (a) an integrating means receiving a time-variable, desired speed signal for producing a desired position signal, said integrating means being common for all of said driving units, and further comprising for each individual driving unit,
- (b) a comparing means for comparing said desired position signal and an actual position signal from the correlatdd unit for generating a first error signal,
- (c) a positional control means receiving said first error signal and generating a control signal,
- (d) an amplifying network receiving said desired speed signal and generating an amplified signal compensating for a time delay caused by a transient response of the correlated unit including the correlated actuating means and
- (e) an adding means receiving and summing said amplified signal and said control signal for producing a second error signal fed to said actuating means.

4,617,499
BRUSHLESS MOTOR

Masami Yuasa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 21, 1985, Ser. No. 800,293

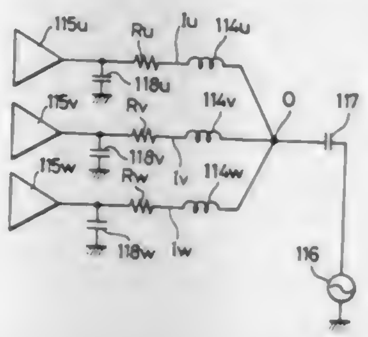
Claims priority, application Japan, Nov. 29, 1984, 59-252181

Int. Cl.⁴ H02K *29/00*

U.S. Cl. 318—254 **7 Claims**

1. A brushless motor comprising:
- a magnet having a plurality of pole faces;
- a plurality of conductors mounted adjacent to said pole faces;
- a plurality of phase coils connected together at a neutral point, one of said magnet and said phase coils being included in a movable motor element and the other being included in a stationary motor element; and
- a high-frequency signal source for supplying a high-fre-

quency signal to said neutral point, whereby changes in eddy current loss and thus the position of said movable

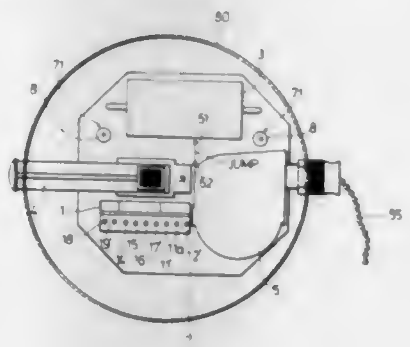


motor element with respect to said stationary motor element are detected.

4,617,500
WIRING CONSTRUCTION OF A CONTROL SWITCH CONTROLLING A CEILING FAN

Dick Y. Hsu, 60 Liao Chung E. 12th St, Pei Tun District, Taichung, Taiwan

Filed Jul. 22, 1985, Ser. No. 757,254
Int. Cl.⁴ H02P *7/40*; H05K *1/18*
U.S. Cl. 318—305 **3 Claims**



1. A wiring construction of a control switch controlling a ceiling fan, said control switch being manually operated by a cord hanging from said control switch, said wiring construction comprising:

- connecting means having two power source contacts and three connective contacts arranged systematically on a printed circuit board with its three connective contacts connected to a first end and a second end of a first winding of the drive motor driving said ceiling fan and to a tapping of the winding respectively;
- a condenser connected to one of said power source contacts, and to said first end of said first winding respectively through said connecting means; and
- a speed selecting switch acutated by said cord, and connected to said second end of the first winding, to said tapping, and to the other power source contact respectively through said connecting means, for selecting different turns of said first winding to couple to the power source, so that the ceiling fan can rotate at different speeds.

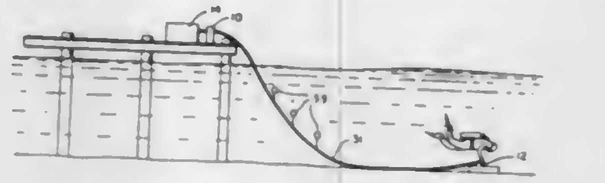
4,617,501
CONTROL AND SAFETY SYSTEM FOR ELECTRICALLY POWERED SUBMERSIBLE TOOLS AND LIGHTS

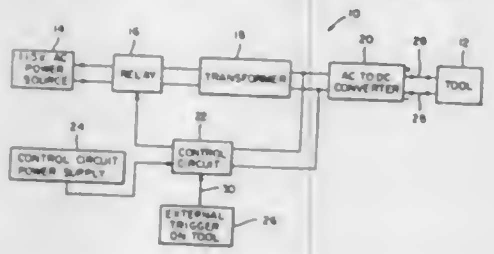
Franklin W. Smith, King County, Wash., assignor to John D. Gieser and Douglas Foreman, both of Bellevue, Wash.

Filed Sep. 19, 1985, Ser. No. 777,845
Int. Cl.⁴ H02H *3/20*
U.S. Cl. 318—459 **25 Claims**

1. A control system for electrically powering from an external alternating-current power source, a hand-operated, submersible light or tool activated by a control switch, comprising:

- power switching means selectively controllable responsive to the control switch of the light or tool for connecting and disconnecting the external alternating-current power source to and from the system;
- transformer means connected to said power switching means for transforming the alternating current power of the source to a desired lower voltage level;
- conductive means for supplying the power to the tool; and
- control means for sensing the voltage level of the transformed alternating-current power, and in response to the sensed voltage level increasing above a predetermined level, for controlling said power switching means to disconnect the external alternating-current power source from the system, whereby the lower voltage alternating-current output of said transformer means is monitored and used to control the application of the higher voltage alternating-current to the system to prevent overvoltages on the output of said transformer means and thus the light or tool.

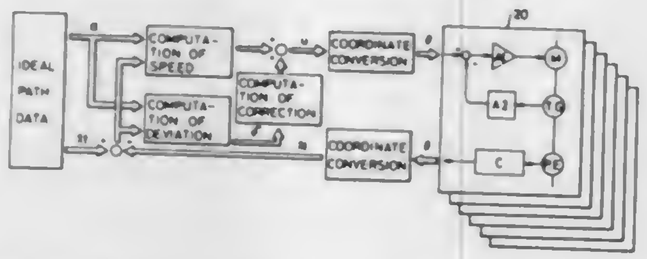




4,617,502
METHOD AND APPARATUS FOR CONTROLLING A ROBOT HAND ALONG A PREDETERMINED PATH

Shiyuki Sakaue, Yokohama; Koichi Sugimoto, Hiratsuka, and Shinichi Arai, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 22, 1984, Ser. No. 623,455
Claims priority, application Japan, Jun. 30, 1983, 58-116995; Jan. 25, 1984, 59-10038
Int. Cl.⁴ G05B *19/42*
U.S. Cl. 318—568 **35 Claims**



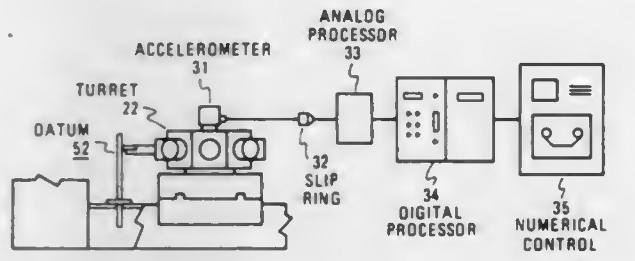
1. A method of controlling a robot hand along a predetermined path at a predetermined speed, comprising the steps of:

- obtaining positional information and speed information of the robot hand during sampling operations as the hand endeavors to traverse the predetermined path;
- determining a command speed value of the robot hand on the basis of the positional information and the speed information; and
- using the command speed value to control a drive system of the robot hand to correct positional deviation of the robot hand from the predetermined path and speed deviation of the robot hand from the predetermined speed.

4,617,503
ACTIVE DATUM FOR COORDINATE REFERENCE IN A NUMERICALLY CONTROLLED MACHINE TOOL

Richard K. Davis, Charlottesville, Va.; Clayton R. Roberts, Syracuse, and Stephen W. Tehon, Clay, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Nov. 26, 1985, Ser. No. 801,823
Int. Cl.⁴ G05B *19/24*
U.S. Cl. 318—572 **14 Claims**



1. In an apparatus for precisely locating the cutting surface of a positionable cutter in relation to the coordinate reference system of a machine tool, the combination comprising

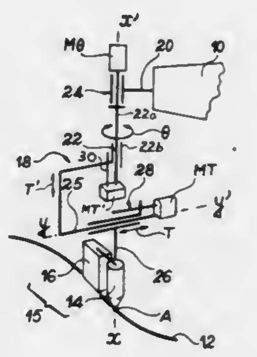
A. an active datum having a vibratory planar reference surface at a known position in relation to said coordinate reference system, said vibration ocurring at ultrasonic frequencies with displacements that are small in relation to the desired positional accuracy, said datum comprising
  (1) an elongated first member, a lateral surface portion thereof providing said vibratory planar reference surface, said member being extensionally vibratory in a desired mode established along the longitudinal axis thereof with an antinodal region at either end and at least one nodal region at an intermediate position along said longitudinal axis, Poisson coupling causing a significant vibratory surface motion orthogonal to said longitudinal axis, one or both of said motions being present throughout said lateral surface portion
  (2) a support for attaching said first member at the nodal region of said desired mode to favor said mode with minimum energy transmission of said extensional component via said support to said machine tool, said support being sufficiently compliant to surface motion orthogonal to said longitudinal axis to permit vibrations in said desired mode and relatively rigid with respect to flexural motion to maintain accuracy of said lateral surface portion in relation to said support and to suppress flexural vibrations, said support being attached to said machine tool so that said vibratory planar reference surface is at a stable position in relation to said coordinate reference system, and
  (3) electromechanical transducer means applied to said elongated member for exciting vibration in said desired mode and
B. an acoustic accelerometer sensor acoustically coupled to said cutter for producing an electrical output signal in response to said vibrations when said cutter contacts said planar reference surface to indicate contact and thereby the cutter position in said coordinate reference system, said acoustic sensor being substantially uncoupled acoustically from said datum in the absence of such contact.

4,617,504
POSITIONING DEVICE

Jean-Marie Détriché, Montesson, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 22, 1984, Ser. No. 663,403
Claims priority, application France, Oct. 20, 1983, 83 16701
Int. Cl.⁴ G05B *19/33*; B23K *19/12*
U.S. Cl. 318—576 **6 Claims**

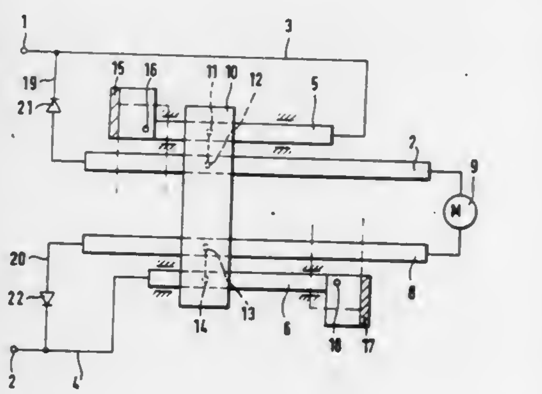
1. A device for positioning a tool incorporating a tool holder for fixing said tool to the end of a carrier able to move in accordance with a stored path for carrying out, on the basis of the detection of a true path to be followed by the tool, tool path corrections with respect to the stored path, said tool holder supporting a position detector displaced in the direction of the stored path relative to an active centre of the tool via means for displacing the detector in a direction permitting a setting thereof on the true path, a first feedback or control circuit being associated with the position detector and controlling said means for displacing the detector, wherein the device also comprises an orientation detector, the detectors being rigidly fixed to the tool in order to form a working head therewith, said means for displacing the detector being translation means for displacing the working head in a direction orthogonal to the plane passing through the ends of the detector and through the active centre of the tool, rotation means being provided for rotating the working head and the translation means about an axis contained in the plane and passing through the active centre of the tool, a second feedback or control circuit being associated with the orientation detector and controlling said rotation means.



4,617,505
VOLTAGE SUPPLY

Andreas Sausner, Frankfurt am Main, and Gerhard Ruschek, Hattersheim, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 12, 1985, Ser. No. 722,958
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1984, 3414211
Int. Cl.⁴ G05G *5/00*
U.S. Cl. 318—626 **4 Claims**



1. A voltage supply for a servomotor which is operative between limit stops and moves a member toward at least one stop, the supply having a wiper with two wiper contacts which slide on two spaced-apart conductive elements which serve as two electrically conductive paths, the two conductive paths being connected to a source of voltage and supplying the servomotor with voltage, and wherein at least one wiper contact of the wiper is displaceable beyond at least one end of one of the conductive paths in order to disconnect the servomotor, the improvement wherein

- at least one of said conductive paths is displaceable in a longitudinal direction and has a driver mounted thereon, said wiper urging said driver to drive the conductive path as soon as the wiper contact is outside of the conductive path.

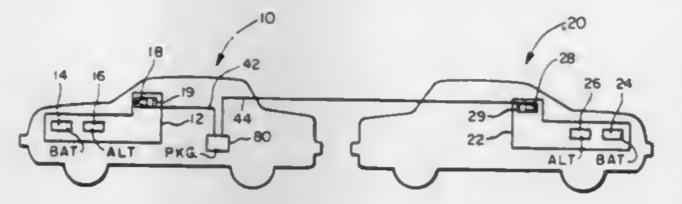
4,617,506
BATTERY CHARGING APPARATUS AND METHODS

Jon R. Bogie, Evanston, and Edward A. Quillen, St. Charles, both of Ill., assignors to Wiltronix Corporation, Evanston, Ill.

Filed Aug. 31, 1984, Ser. No. 646,571

Int. Cl.⁴ H01R *11/00;* H02J *7/00;* G01N *27/42*

U.S. Cl. 320—2 11 Claims



1. A method for determining whether a battery in a first vehicle is charged from the electrical system of a second vehicle comprising the steps of:

providing electronic means having inputs adapted to be coupled to said battery and said electrical system, respectively, circuit means coupled to said inputs, and an array of illuminatable display means, coupled to said circuit means, the number of said display means in said array that are illuminated being indicative of the extent to which said battery has been charged;

coupling said electrical system to one of said inputs and coupling said battery to another of said inputs; and

periodically interrogating said electronic means by momentarily isolating said electrical system from said circuit means to ascertain the number of said display means in said array that are illuminated.

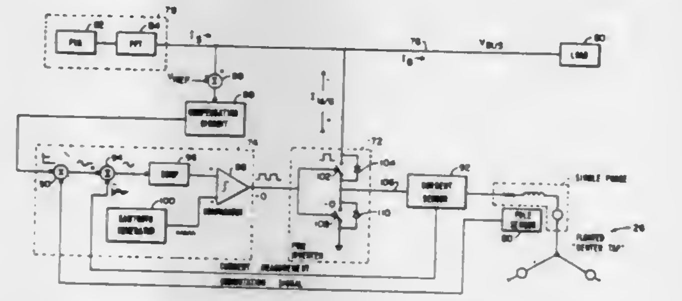
4,617,507
SELF-REGULATING ENERGY STORAGE SYSTEM

David B. Eisenhaure, Hull; James R. Downer, Cambridge; Tim E. Bliamptis, Lexington; George A. Oberbeck, East Walpole, all of Mass., and Susan D. Hendrie, Milan, Italy, assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Dec. 19, 1984, Ser. No. 683,373

Int. Cl.⁴ H02K *7/02*

U.S. Cl. 322—4 5 Claims



1. A self-regulating energy storage system comprising:

an a.c. motor/generator including a rotor;

a flywheel attached to said motor/generator;

means for monitoring the position of the motor/generator rotor;

means for resolving current to and from said motor/generator;

a pulse width modulated bidirectional inverter interconnecting said motor/generator with a power supply bus having a voltage to be regulated;

a summing circuit for determining differences between a reference voltage and the voltage on the power supply bus to be regulated; and

a pulse width modulation switch control responsive to said summing circuit, to said means for monitoring, and to said means for resolving, for actuating said inverter to increase pulse width as function of increase in the difference between the reference voltage and the voltage on the bus and to increase current to said motor/generator when the bus voltage exceeds the reference voltage and to increase current from said motor/generator when the reference voltage exceeds the bus voltage.

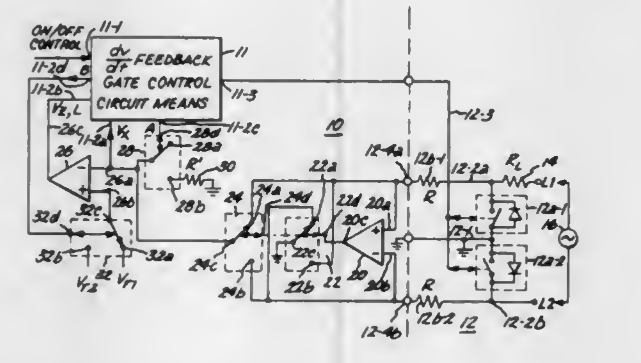
4,617,508
REVERSE PHASE-CONTROL APPARATUS FOR MULTIPLEXING INTERCONNECTIONS BETWEEN POWER SWITCHING AND CONTROL CIRCUIT MODULES

Milton D. Bloomer, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 2, 1984, Ser. No. 667,926

Int. Cl.⁴ G05F *1/445*

U.S. Cl. 323—237 21 Claims



1. Multiplexing apparatus for interconnecting a power switching module, having at least one switching device controlled into a saturated conductive condition responsive to a conduction control signal and connected to a load for controlling a flow of current therethrough from an AC source, with a control circuit means for providing said control signal to said switching module only if an auxiliary "on" control signal is provided, including:

first and second multiplexing apparatus terminals;

first and second substantially resistive elements, each connected between a different one of said first and second apparatus terminals and a different one of first and second opposed ends of the load-source series circuit;

first means, including: a first comparator having first and second inputs each connected to a different one of said first and second apparatus terminals, and an output providing a signal at one of first and second conditions responsive to one of said inputs being at a potential greater than the potential at the other input; and a pair of switch means, each having a common terminal controlled responsive to the first comparator output first and second conditions into connection between a different one of first and second selectable terminals; the first selectable terminal of a first one of said pair of switch means and the second selectable terminal of a second one of the pair of switch means being connected together in parallel to one of said first and second apparatus terminals, the second selectable terminal of said first switch means and the first selectable terminal of said second switch means being connected in parallel to the other of said apparatus terminals, the common terminal of one of said pair of switch means being connected to a circuit common potential, and the common terminal of the other of said pair of switch means multiplexing both half-cycles of the AC signal waveform, between said first and second apparatus terminals, as a first signal with a common preselected polarity;

means, responsive to the respective first and second conditions of a first logic signal, for providing a respective one of a first reference potential having the preselected polarity and a substantially zero magnitude and a second reference potential having the preselected polarity and a non-zero magnitude selected to be not greater than a saturation voltage of said switching module;

second means for providing a zero-crossing turn-on drive signal to said control circuit means at a first condition whenever said first signal is at a magnitude less than the substantially zero magnitude of the first reference potential, to cause said control circuit means to provide said control signal during each of the source signal waveform half-cycles responsive to the presence of both said zero-crossing signal and said auxiliary "on" signal; and

third means, cooperating with at least said resistive elements and said first means, for monitoring the conduction condition of said at least one switching device to cause said control circuit means to remove said conduction control signal if said at least one switching device leaves the saturated conduction condition.

4,617,509
VOLTAGE REGULATOR FOR A MICROCOMPUTER SYSTEM

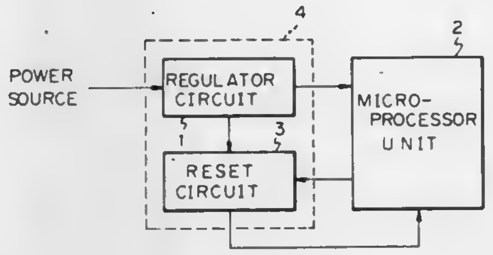
Naoki Tomisawa, Isesaki, Japan, assignor to Japan Electronic Control Systems Company Limited, Japan

Continuation-in-part of Ser. No. 399,694, Jul. 19, 1982, abandoned. This application May 2, 1984, Ser. No. 607,395

Claims priority, application Japan, Jul. 21, 1981, 56-114293

Int. Cl.⁴ G05F *5/00*

U.S. Cl. 323—303 3 Claims



1. A voltage regulator for a microprocessor unit comprising:

a regulator means for receiving an input voltage from a power supply and in response supplying a regulated voltage to the microprocessor unit which produces run signals at a regular rate during executing program steps normally, said regulated voltage having a particular rise time following turn on of the power supply; and

a reset means for applying a reset signal to the microprocessor unit upon receipt of a power supply current and if the frequency of said run signal is out of a normal range, said reset means receiving a voltage from said regulator means and producing the reset signal having a duration sufficiently longer than a period in which the regulated voltage applied to the microprocessor unit is raised to a steady state level after turn on of the power supply.

4,617,510
TESTING INSTALLATION FOR ELECTRIC CIRCUITS OF A MOTOR VEHICLE

Axel Deicke, Baldham, and Michael Tigges, Freising, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke AG, Fed. Rep. of Germany

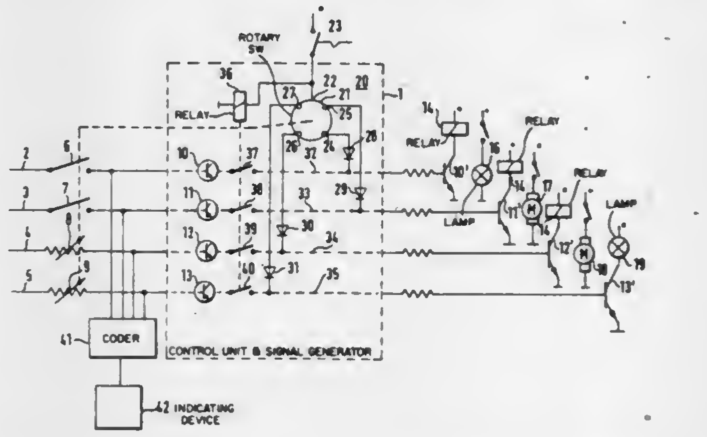
Filed Oct. 5, 1983, Ser. No. 538,802

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1982, 3237164

Int. Cl.⁴ G01R *31/02*

U.S. Cl. 324—51 11 Claims

1. A test installation for testing different load means of electric circuits of a motor vehicle comprising a control unit for receiving input signals and for producing test signals, said control unit including converter means for converting said input signals into output signals for switching said different load means and generator means (20) including interrupting means (36) for interrupting said input signals and for producing test signals independently of the input signals and at least similar to the output signals and for cyclically supplying said test signals to the load means when interrupting said input signals.



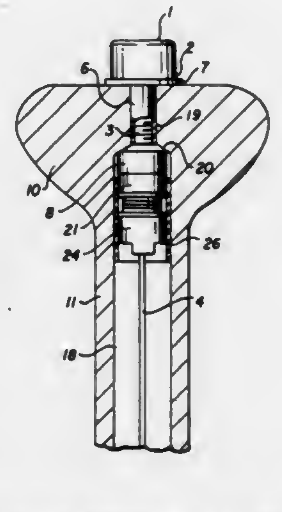
4,617,511
ELECTRODE PROBE ASSEMBLY FOR GLASS LINED METAL VESSELS

Myles A. Shaftel, Rochester, N.Y., assignor to Kennecott Corporation, Cleveland, Ohio

Continuation of Ser. No. 644,133, Aug. 23, 1984, abandoned, which is a continuation of Ser. No. 387,915, Jun. 14, 1982, abandoned, which is a continuation of Ser. No. 135,671, Mar. 31, 1980, abandoned. This application Aug. 8, 1985, Ser. No. 764,505

Int. Cl.⁴ G01R *31/12, 27/02;* G01N *27/28*

U.S. Cl. 324—54 5 Claims



1. An electrode probe assembly for use with a metal vessel having a glass lined inner wall surface, comprising:

(a) an electrode formed from a blind metal nut, platinum plated, and having an internal screw threaded aperture extending into but not through said nut;

(b) a lip member extending from the periphery of said nut and from that face of said nut into which said aperture extends, forming a cup of the combination of said nut and said lip member;

(c) an elongated threaded metal stud having a first end threaded into said internal screw thread of said aperture; said stud being adapted to extend through a bore in a mounting member for said electrode probe assembly;

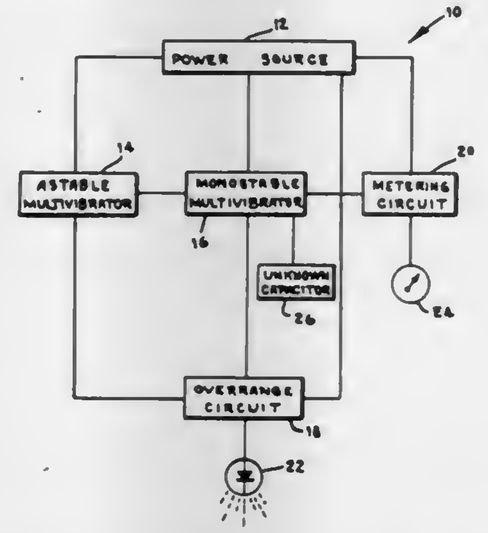
(d) an insulating gasket disposed around said stud, adapted to be positioned between said lip member and an adjacent surface of said mounting member;

(e) a hub means disposed around said stud, having a butress surface adapted to butress against an opposed surface of said mounting member, said opposed surface which is located remote from said adjacent surface of said mounting member;

(f) insulation washer means, disposed around said stud, posi-

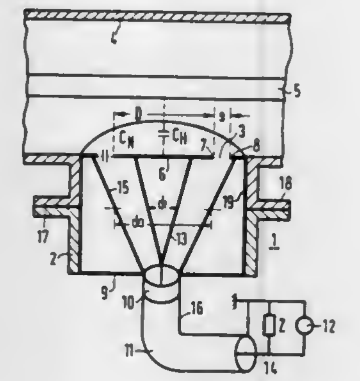
tioned against said hub means and located remote from said butress surface of said hub means, adapted to electrically insulate and separate said hub means from;
(g) resilient biasing means, disposed around said stud, adapted to continuously exert pressure linearly along the axis of said stud to force said hub means along said axis of said stud towards said insulating gasket and said nut and to urge said lip member towards said insulating gasket when said electrode probe assembly is mounted in said mounting member;
(h) insulating tube means disposed around said stud, adapted to electrically insulate and separate said stud from said mounting member, said hub means, said insulation washer means and said resilient biasing means;
(i) insulating sleeve means, disposed around said resilient biasing means, adapted to electrically insulate and separate said resilient biasing means from said mounting member; and
(j) means, mounted to the second end of said stud, for electrically connecting said stud to an electrical circuit.

4,617,512
CAPACITANCE MEASURING DEVICE INCLUDING AN OVERRANGE CIRCUIT
Joseph L. Horner, 76 Brattle St., Cambridge, Mass. 02138
Filed Jul. 5, 1983, Ser. No. 511,076
Int. Cl.⁴ G01R *27/26*
U.S. Cl. 324—60 CD **7 Claims**



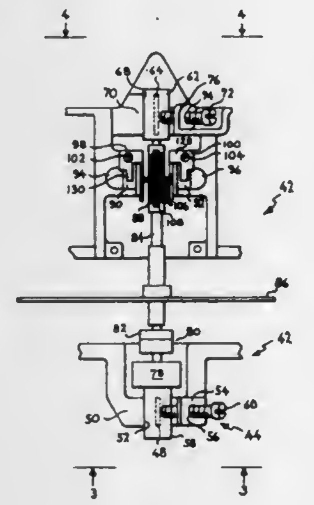
1. A capacitance measuring device for determining the capacitance value of an unknown capacitor, said capacitance measuring device comprising:
means for generating a repetitive series of evenly spaced pulses;
means, having said unknown capacitor electrically connected thereto, for receiving said repetitive pulses, each of said pulses initiating a voltage output from said pulse receiving means, said voltage output from said pulse receiving means remaining in a high state for a length of time linearly proportional to said capacitance value of said unknown capacitor, and thereafter said voltage output reverting to a low state and remaining at said low state for the length of time it takes said pulse receiving means to receive the next one of said repetitive pulses;
metering means for receiving said output voltage from said pulse receiving means and averaging said high and low states of said voltage output, said metering means having a preselected full scale range, said metering means providing a first average voltage reading indicative of said capacitance value of said unknown capacitor when the length of time of said voltage output from said pulse receiving means is equal to or less than the length of time between said evenly spaced pulses, said metering means providing a second average voltage reading indicative of said capacitance value of said unknown capacitor when the length of time of said voltage output from said pulse receiving means is greater than the length of time between said evenly spaced pulses, both said first average voltage reading and said second average voltage reading falling within said full scale range of said metering means, said first average voltage reading being a true indication of said capacitance value of said unknown capacitor, and said second average voltage reading being a false indication of said capacitance value of said unknown capacitor; and said pulse generating means and said pulse receiving means including means for varying said preselected full scale range of said metering means; and
means operably connected between said pulse receiving means and said metering means for distinguishing between said first average voltage reading and said second average voltage reading and providing a signal when said second average voltage reading is present, and said means for providing a signal when said second average voltage reading is present including a plurality of NAND gates, a diode connected to one of said plurality of NAND gates, a transistor connected to said diode, a capacitor connected between said diode and said transistor, a resistor connected to said transistor and a light emitting diode connected to said resistor;
whereby said false indication for capacitance value can be disregarded.

4,617,513
MEASUREMENT DEVICE FOR USE IN HIGH-VOLTAGE GAS-INSULATED SWITCH GEAR
Hans-Jüergen Reinhardt, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany
Filed Jul. 24, 1984, Ser. No. 633,829
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1983, 3327917
Int. Cl.⁴ H01H *9/50;* H01G *1/00*
U.S. Cl. 324—126 **8 Claims**



1. A measurement device for use in high-voltage, compressed gas-insulated switchgear, the device being of a type in which a capacitive voltage divider is formed by a high-voltage capacitor and a low-voltage capacitor,
the high voltage capacitor being formed by an inner conductor mounted with insulation in a metal capsule filled with compressed gas and an electrode mounted with insulation in an opening in the capsule and
the low-voltage capacitor being formed by said electrode and an edge of said opening,
the device being connectable with display/measurement apparatus by a coaxial measuring cable with a characteristic impedance, the device comprising:
a dish-shaped electrode located flush in said opening;
a terminal element having a fastening flange by which it is attached to the capsule and containing the electrode and said edge, the terminal element being a supporting component and further comprising a hollow conical outer connecting element extending to said edge and an inner conical connecting element extending to the electrode, said connecting elements being coaxial and having a constant ratio d_a/d_i where d_a is a diameter of the outer connecting element and d_i is a corresponding diameter of the inner connecting element, whereby said connecting elements have said characteristic impedance of the coaxial measuring cable.

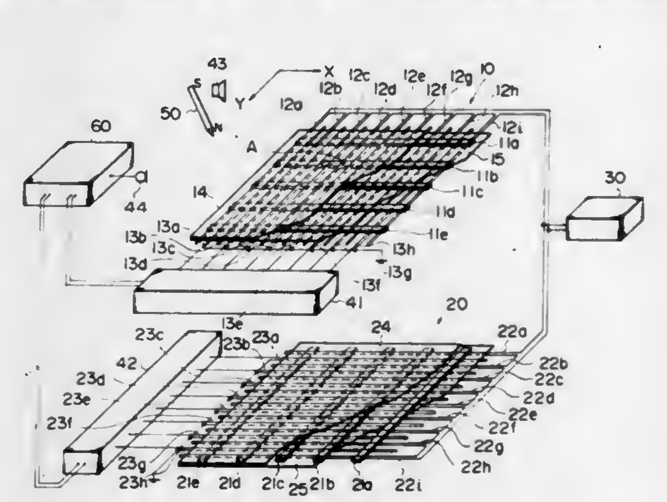
4,617,514
DISK AND GEAR MOUNTING IN ELECTRIC WATTHOUR METER
Donald F. Bullock, Somersworth; Austin F. Wilson, Rochester; Marshall A. Lemay, Hampton Falls, and David B. Miles, Dover, all of N.H., assignors to General Electric Company, Somersworth, N.H.
Filed Mar. 14, 1985, Ser. No. 711,642
Int. Cl.⁴ G01R *11/02;* F16C *23/02, 27/02*
U.S. Cl. 324—137 **7 Claims**



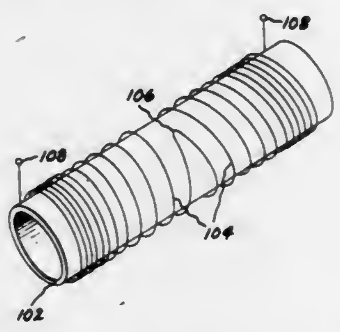
1. A system for mounting rotatable elements in an electric watthour meter comprising:
a watthour meter frame;
a first horizontal machined surface and a first vertical machined surface at a first end of said frame;
a first disk bearing;
a first cylindrical surface on said first disk bearing;
first means for urging said first cylindrical surface into rigid contact with said first horizontal machined surface and said first vertical machined surface whereby said first disk bearing is positioned and secured thereby;
a second horizontal machined surface and a second vertical machined surface at a second end of said frame;
a second disk bearing;
a second cylindrical surface on said second disk bearing;
second means for urging said second cylindrical surface into rigid contact with said second horizontal machined surface and said second vertical machined surface whereby said second disk bearing is positioned and secured thereby;
a disk shaft rotatably supported by said first and second disk bearings; and
means in said watthour meter frame for permitting machining of said first and second horizontal machined surfaces and said first and second vertical machined surfaces without requiring rotation of said watthour meter frame, whereby improved positioning accuracy of said first and second disk bearings is achieved.

4,617,515
POSITION DETECTING APPARATUS
Yoshinori Taguchi, and Tsuguya Yamanami, both of Ageo, Japan, assignors to Wacom Co., Ltd., Japan
Filed Feb. 22, 1985, Ser. No. 704,223
Claims priority, application Japan, Feb. 22, 1984, 59-32244; Feb. 23, 1984, 59-33083
Int. Cl.⁴ G01B *7/14*
U.S. Cl. 324—207 **6 Claims**

2. A position detecting apparatus comprising: an X-direction position detecting section having a plurality of elongated magnetic bodies arranged substantially in parallel, and a plurality of exciting lines and detecting lines which are arranged alternately such as to orthogonally cross said elongated magnetic bodies; a Y-direction position detecting section having a construction similar to that of said X-direction position detecting section and superposed thereto; a driving current source adapted to apply A.C. currents of a predetermined frequency to the exciting lines in said X- and Y-direction position detecting sections; a position appointing magnetism generator adapted for applying local magnetic bias to said magnetic bodies of said X- and Y-direction position detecting sections; X- and Y-direction signal selecting means connected to said detecting lines of said X- and Y-direction position detecting sections; and a processing means for computing the coordinate position appointed by said position appointing magnetism generator from the induced voltage derived from said X- and Y-direction signal selecting means.



4,617,516
AXIAL MAGNETIC FIELD GRADIENT COIL SUITABLE FOR USE WITH NMR APPARATUS
John F. Schenck, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Sep. 6, 1983, Ser. No. 529,431
Int. Cl.⁴ G01R *33/08*
U.S. Cl. 324—318 **13 Claims**



1. A cylindrical coil for providing a magnetic field gradient varying substantially linearly in a direction parallel to the axis of said coil within the interior volume thereof, said coil comprising;
a non-magnetic cylindrical coil support structure having an open bore forming said interior volume, and
a single electrically conductive cylindrical winding having a plurality of connected turns disposed on the surface of said coil support structure, said winding turns being electrically spaced from each other and symmetrically disposed about, and with the winding direction thereof being reversed at, the center of said cylindrical coil support structure with the axial density of said winding turns being at a minimum at the center of the length of said coil and linearly increasing from the center to each axial end of said coil; said winding turns forming, in the interior volume and responsive to the value of a current I caused to

flow in a single common direction therethrough, an axial magnetic field with the desired substantially linearly varying gradient.

4,617,517

DETERMINATION OF WATER SATURATION IN EARTH FORMATIONS INDEPENDENT OF LITHOLOGY

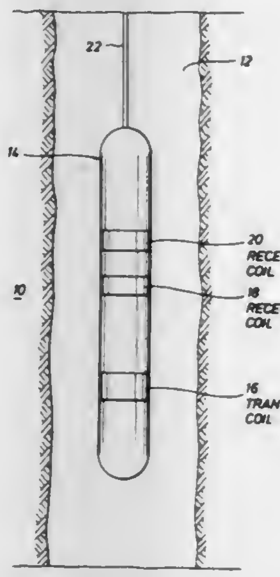
Walter H. Fertl, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 340,911, Jan. 20, 1982, Pat. No. 4,494,071. This application Jun. 11, 1984, Ser. No. 619,088

The portion of the term of this patent subsequent to Jan. 15, 2002, has been disclaimed.

Int. Cl.⁴ G01V *3/12, 3/30;* **E21G** *49/00*

U.S. Cl. 324—338 **9 Claims**



1. A method for determining the water saturation of subsurface earth formations traversed by a borehole, substantially independent of salinity contrasts and lithology comprising steps of:

traversing a borehole with a logging instrument to obtain first measurements functionally related to the electric permittivity of the formations surrounding said borehole, wherein said electric permittivity is functionally related to the reservoir porosity, water filled porosity, hydrocarbon filled porosity and rock matrix;

injecting into said formations an oil miscible solution to displace substantially all the residual fluids contained in said measured formations;

injecting into said formations a sufficient amount of water to render said measured formations substantially one hundred percent water saturated;

traversing said borehole with a logging instrument to obtain second measurements functionally related to the electric permittivity of said measured formations, wherein said electric permittivity is functionally related to the reservoir porosity, water filled porosity and rock matrix; and

combining said first and said second measurements to determine the water saturation for said measured formations substantially independent of salinity contrasts and lithology.

4,617,518

METHOD AND APPARATUS FOR OFFSHORE ELECTROMAGNETIC SOUNDING UTILIZING WAVELENGTH EFFECTS TO DETERMINE OPTIMUM SOURCE AND DETECTOR POSITIONS

Leonard J. Srnka, Houston, Tex., assignor to Exxon Production Research Co., Houston, Tex.

Filed Nov. 21, 1983, Ser. No. 554,032

Int. Cl.⁴ G01V *3/06, 3/15*

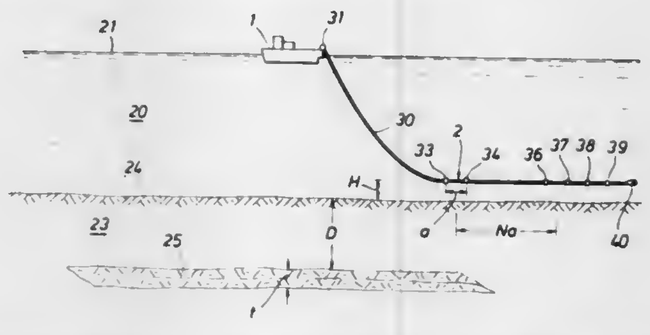
U.S. Cl. 324—365 **15 Claims**

1. A method for surveying and characterizing a region of an earth formation beneath a body of water having a surface and a floor, said region extending to a first depth below the floor, comprising the stpps of:

positioning an electric dipole current source, including a pair of source electrodes separated by a first distance, substantially parallel to the surface of the body of water and separated from the floor by a second distance, the second distance being less than approximately one-fourth of the distance between the surface and the floor;

causing alternating electric current to flow in the source, said current including a first sinusoidal component having a selected frequency;

measuring a current characteristic of said current;



contemporaneously positioning at least one electric dipole detector, including a pair of detector electrodes separated by a third distance substantially equal to said first distance, substantially collinear with the current source and spaced from the current source by a fourth distance, where said fourth distance is approximately equal to an integral multiple of the wavelength of electromagnetic radiation having said selected frequency in the body of water;

measuring a characteristic of the potential difference between the pair of detector electrodes; and

determining a characteristic of the complex mutual impedance of the current source and the at least one dipole detector from said current characteristic and said potential difference characteristic.

4,617,519

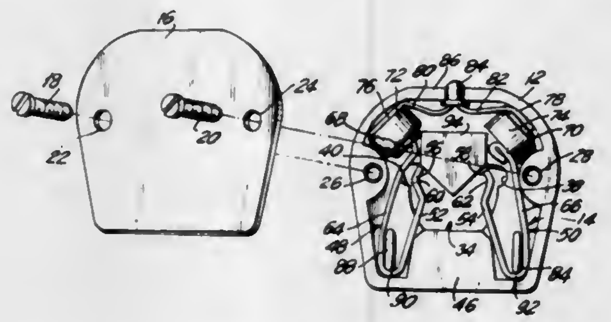
TESTING DEVICE FOR A FLUORESCENT LAMP AND LAMP HOLDER

Eric Rosenthal, 66-22 Fleet St., Forest Hills, N.Y. 11375

Filed Oct. 26, 1983, Ser. No. 545,526

Int. Cl.⁴ G01R *31/02*

U.S. Cl. 324—414 **11 Claims**



1. A fluorescent lamp testing device comprising:

a portable housing having a flat front wall and an end wall adjacent to said front wall;

an opening provided in said side end wall and extending into said front wall as a Y-shaped cutout to define an entry port in said end wall connected to bifurcated open first and second paths in said front wall, ends of said first and second paths being remote from said entry port and providing first and second receptacles, respectively, for receiving therein a pair of tube pins disposed at one end of a fluorescent lamp;

said first and second receptacles being spaced apart a greater distance than transverse spacing across said entry port so that the pair of tube pins are passed one at a time through said entry port with one tube pin being inserted into said first receptacle and the other tube pin being rotated and inserted into said second receptacle to position the end of the fluorescent lamp in a facing arrangement with said front wall;

a pair of spaced apart first and second contact members disposed in said housing, said first and second contact members including cantilevered first and second arms of springy material respectively;

each of said first and second arms terminating in a bent finger to respectively provide first and second receiving seats facing each other, said first and second receiving seats being positioned inwardly of said first and second receptacles to respectively receive and contact the tube pins when inserted in said first and second receptacles and positioned between said first and second receiving seats;

said first and second receiving seats being biased towards each other to provide a retaining force therebetween for holding and retaining the tube pins when inserted between said first and second receiving seats;

a source of energy in said housing being coupled to said first and second contact members; and

indicator means provided on said housing and connected in a series circuit arrangement with said first and second contact members and said source of energy so that insertion of the tube pins into said first and second receptacles to respectively contact said first and second receiving seats completes a circuit to energize said indicator means when the tube pins are electrically internally connected together thereby verifying operability of the inserted one end of the fluorescent lamp.

4,617,520

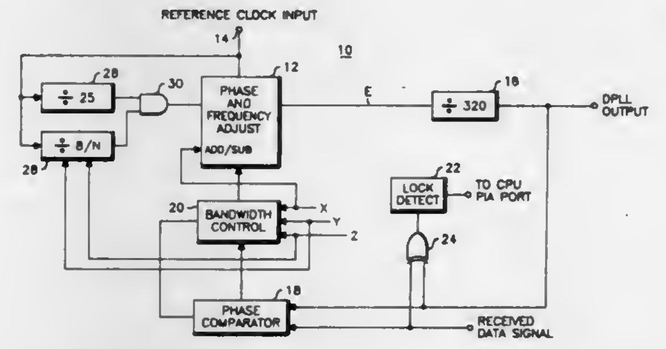
DIGITAL LOCK DETECTOR FOR A PHASE-LOCKED LOOP

Stephen N. Levine, Chicago, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 3, 1984, Ser. No. 567,714

Int. Cl.⁴ H03D *13/00;* **H03K** *9/06;* **H03L** *7/00*

U.S. Cl. 328—133 **5 Claims**



1. A lock detector for use in a phase-locked loop having an input signal and an output signal having a plurality of half cycles, for producing a lock detector output signal in response to the relative phase of said phase locked-loop input and output signals, comprising:

input means for inputting said phase-locked loop input and output signals;

comparing means coupled to said input means for generating an out-of-phase signal upon said phase-locked loop input and output signals being out-of-phase;

clock means for generating high frequency clock pulses;

gating means coupled to said clock means and said comparing means for gating said high frequency clock pulses to generate clock pulses whenever said out-of-phase signal indicates said phase-locked loop input and output signals are out-of-phase;

first divider means coupled to said gating means for accmulating said gated clock pulses, wherein said first divider accumulates gated clock pulses over a relatively short period;

second divider means coupled to said first divider means wherein said second divider accumulates overflow pulses output from said first divider wherein said overflow pulses output from said first divider comprise long period out-of-lock pulses which indicate that said phase-locked loop is out of lock, and are accumulated by said second divider over a relatively long period and each of said first and second divider means being reset periodically, but at different rates respectively; and

lock indicator means coupled to said second divider means for indicating a locked condition in the event said second divider has not accumulated a predetermined number of long period out-of-lock pulses wherein said lock indicator means requires several consecutive long period out-of-lock cycles before using set to indicate an out-of-lock condition.

4,617,521

SAMPLE AND HOLD DEMODULATOR WITH FEEDBACK FOR REDUCED RIFFLE

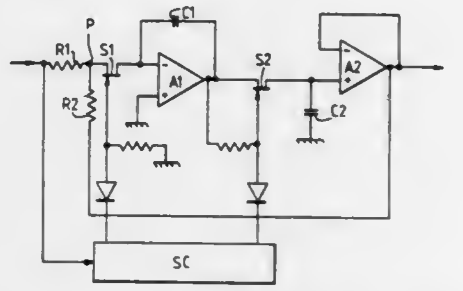
Ronald W. Fox, Edinburgh, Scotland, assignor to Ferranti plc, Cheshire, England

Filed Jun. 4, 1985, Ser. No. 741,263

Claims priority, application United Kingdom, Jun. 22, 1984, 8416017

Int. Cl.⁴ H03D *3/18*

U.S. Cl. 329—50 **6 Claims**



1. A demodulator circuit which includes an integrator having an input connected through a first switch to a summing point to which may be applied a modulated carrier signal, a sample-and-hold circuit comprising a second switch operable at the carrier signal frequency in antiphase with the first switch to connect an output of the integrator to a holding capacitor connected to an input of an operational amplifier having 100% negative feedback, and a feedback connection between the output of the sample-and-hold circuit and the summing point.

4,617,522

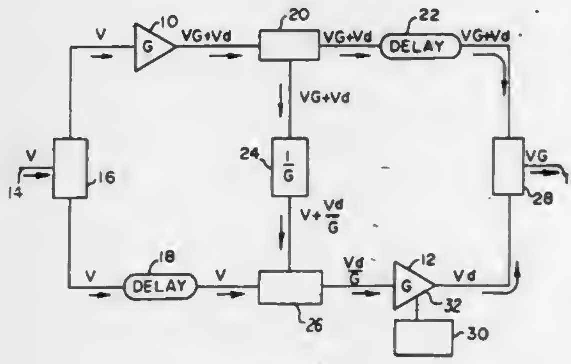
TEMPERATURE REGULATED FEEDFORWARD AMPLIFIER

Victor F. Tarbutton; J. Edwin Mitchell, and Robert M. Blumenkranz, all of Brea, Calif., assignors to General Instrument Corporation, New York, N.Y.

Filed Mar. 20, 1984, Ser. No. 591,438

Int. Cl.⁴ H03F *1/30*

U.S. Cl. 330—149 **14 Claims**



12. A broad bandwidth, open loop temperature stabilized

feedforward amplifier for use in cable communications systems requiring repeated amplification stages including:

means for receiving a broad bandwidth signal;

main amplifier means electrically attached to the receiving means for amplifying the broad bandwidth signal with uniform gain over the bandwidth and a given temperature to provide an amplified signal, said amplified signal having a distortion component;

error signal means, coupled to said means for receiving and said main amplifier means, for providing an attenuated error signal proportional to said distortion component but having attenuated magnitude and inverted phase relative to said distortion component;

error amplifier means electrically coupled to said error signal means for amplifying the attenuated error signal with uniform gain over the bandwidth at a given temperature;

a power supply electrically connected to and supplying power to the error amplifier means; and

means for regulating the output power of the power supply in response to changes in the ambient temperature to maintain the gain of the error amplifier means relatively uniform over the bandwidth and over a range of temperatures.

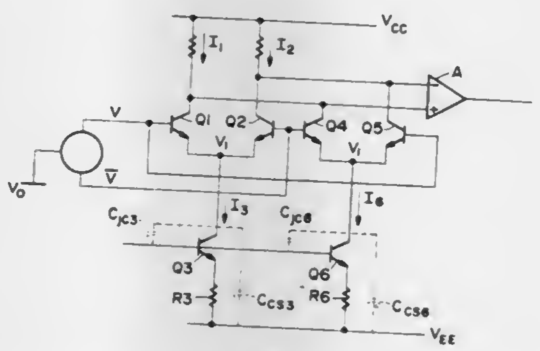
4,617,523
DIFFERENTIAL PAIR WITH COMPENSATION FOR EFFECTS OF PARASITIC CAPACITANCE

Stewart S. Taylor, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 8, 1985, Ser. No. 763,729

Int. Cl.⁴ H03F *3/45*

U.S. Cl. 330—261 **7 Claims**



1. An electronic circuit comprising six transistors each having a control electrode and first and second controlled current electrodes, a first and a second transistor being connected as a first differential pair with their control electrodes connected to input terminals of the circuit, the first controlled current electrode of each of the first and second transistors connected to a first reference potential level and the second controlled current electrodes to the two transistors connected together, a third transistor being connected as a current source drawing a first constant current and having its first controlled current electrode connected to the second controlled current electrodes of the first and second transistors and its second controlled current electrode connected to a second reference potential level, a fourth and a fifth transistor being connected as a second differential pair with their first controlled current electrodes connected to the first controlled current electrodes of the first and second transistors respectively, the control electrodes of the fourth and fifth transistors connected to the control electrodes of the second and first transistors respectively and the second controlled current electrodes of the fourth and fifth transistors connected together, and the sixth transistor being connected as a current source drawing a second constant current, substantially smaller than the first constant current, and having its first controlled current electrode connected to the second controlled current electrodes of the fourth and fifth transistors and its second controlled current electrode connected to the second reference potential level.

4,617,524
INTEGRATED AMPLIFIER CIRCUIT HAVING RC NETWORK TO SUPPRESS OSCILLATION

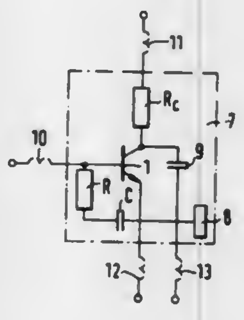
Walter Beckenbach, and Heinz Rinderle, both of Heilbronn, Fed. Rep. of Germany, assignors to Telefunken Electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Jul. 11, 1984, Ser. No. 629,620

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1983, 3326958

Int. Cl.⁴ H03F *3/04*

U.S. Cl. 330—307 **30 Claims**



1. An integrated amplifier circuit comprising: a semiconductor substrate; and amplifier transistor having an emitter zone, a base zone, and a collector zone fabricated on the substrate; and an RC network fabricated on the substrate to suppress undesired self-excited oscillations, the RC network being connected between the base zone of the amplifier transistor and the substrate.

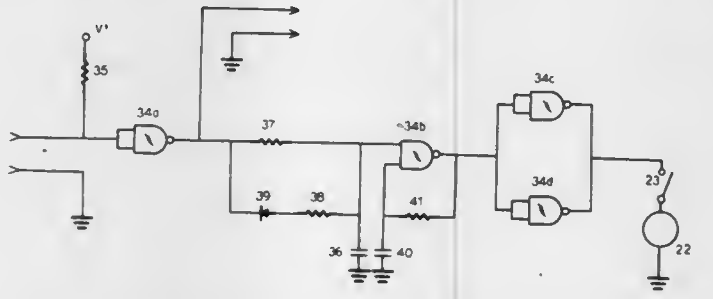
4,617,525
SLEEP POSTURE MONITOR AND ALARM SYSTEM

Stephen R. Lloyd, 5642 N. Bernard, Chicago, Ill. 60659

Filed Jan. 30, 1984, Ser. No. 574,969

Int. Cl.⁴ G08B *21/00*

U.S. Cl. 340—573 **17 Claims**



1. A device for monitoring the sleep posture of a sleeping person comprising:

(a) a sensor to generate a detect signal in response to the sleeping person's adopting a particular sleep posture, said detect signal being terminated upon termination of the person's adopting said particular sleep posture;

(b) means for monitoring the detect signal for diagnostic purposes;

(c) a time-delay circuit coupled to said sensor, for generating an enable signal upon completion of a timing cycle in response to the detect signal, wherein the timing cycle is terminated without generating an enable signal upon interruption of the detect signal prior to completion of the timing cycle, wherein the time-delay circuit is constructed so as to terminate a timing cycle upon interruption of the detect signal if the duration of the interruption is greater than a maximum allowed duration and to continue the timing cycle upon interruption of the detect signal if the interruption is of a shorter duration; and

(d) means for monitoring the enable signal, wherein the enable signal is terminated upon termination of the detect signal.

4,617,526
SYNC RESPONSIVE CLOCK GENERATOR FOR DIGITAL DEMODULATORS

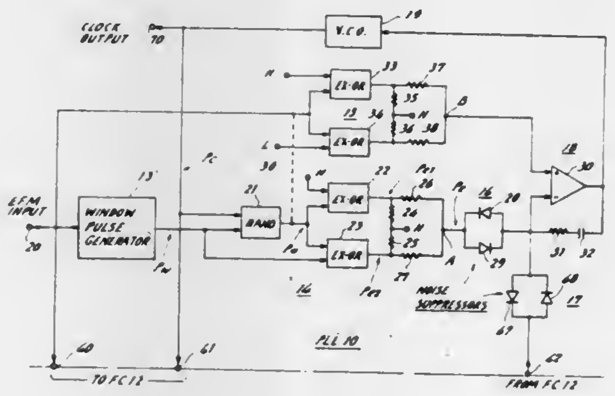
Kazuo Hikawa, Tokyo; Kazuya Toyomaki, Zama, and Hiroyuki Yamazaki, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

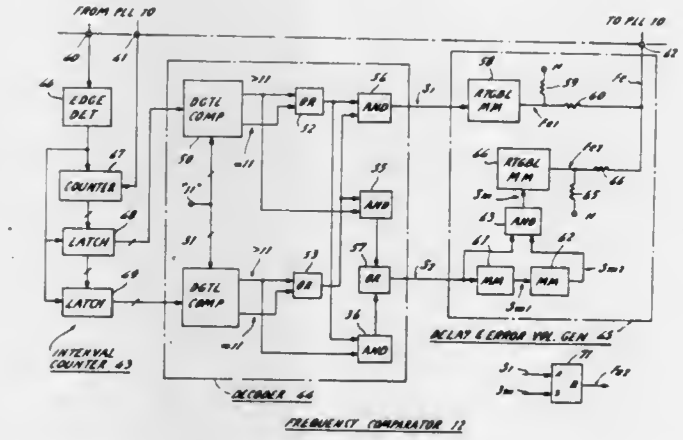
Filed Mar. 25, 1985, Ser. No. 715,246

Claims priority, application Japan, Mar. 26, 1984, 59-57580

Int. Cl.⁴ H03L *7/16, 7/20*

U.S. Cl. 331—1 A **26 Claims**





1. A clock generator adapted to receive a digital bit stream having data bits and a synchronization code between prescribed numbers of the data bits, comprising:

a voltage-controlled oscillator for generating clock pulses having a frequency and a phase which are variable in response to an input signal applied thereto;

means responsive to said digital bit stream for generating a window pulse having a pulse duration smaller than the pulse spacing of said clock pulses in response to a predetermined transition binary "1"s and binary "0"s in said bit stream;

a phase comparator responsive to said window and clock pulses for generating a phase control signal representing the difference in phase between said window pulse and said clock pulse;

a frequency comparator responsive to said bit stream and said clock pulses for detecting said synchronization code and detecting the clock pulses present during the period of the detected synchronization code and generating a frequency control signal having an amplitude variable as a function of the number of the detected clock pulses; and

means for combining said phase control signal and said frequency control signal and applying the combined signals to said voltage-controlled oscillator as said input signal.

4,617,527
PU LOCK ACQUISITION WITH SCAN RESTART UPON FALSE LOCK

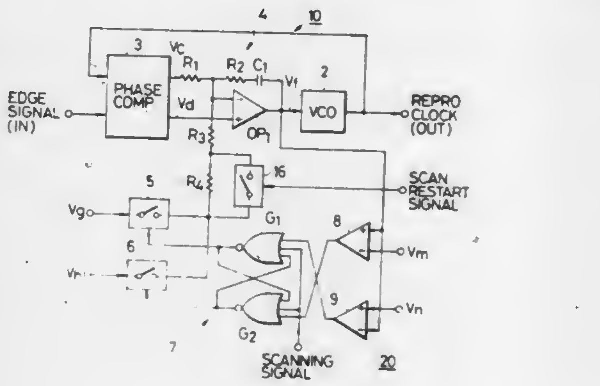
Ryuichi Naitoh, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 507,640, Jun. 27, 1983, abandoned. This application Jun. 13, 1985, Ser. No. 744,649

Claims priority, application Japan, Jun. 25, 1982, 57-109338

Int. Cl.⁴ H03L *7/06*

U.S. Cl. 331—4 **8 Claims**



1. A pull-in control apparatus for phase locked loop circuits in which the input signal includes a spurious component in addition to a true frequency component to be locked, comprising:

scanning means for generating a scanning control voltage in response to a scanning restart pulse;

a voltage controlled oscillator in said phase locked loop circuit, a control input thereof receiving said scanning control voltage;

lock detecting means for detecting the fact that said phase locked loop circuit has locked to said true frequency component, and for generating a lock detection signal;

scanning restart means for periodically applying said scanning restart pulse to said scanning means when said lock detection signal is not generated within a preselected period of time and for stopping the application of said scanning restart pulse to said phase locked loop circuit in response to the generation of said lock detection signal.

4,617,528
COMPACT COMBINER FOR USE WITH SEMICONDUCTOR DEVICES IN THE MICROWAVE FREQUENCY RANGE

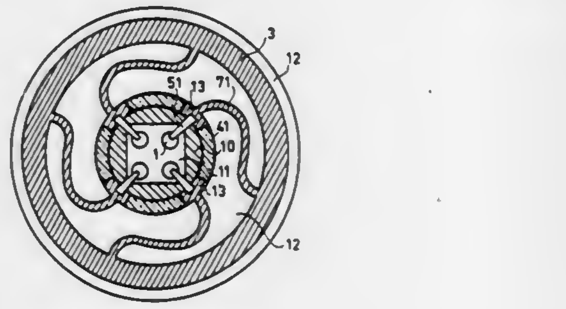
Alain Bert, Gif sur Yvette, and Narguise Mamodaly, Paris, both of France, assignors to Thomson CSF, Paris, France

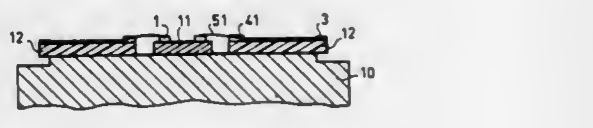
Filed Sep. 27, 1983, Ser. No. 536,393

Claims priority, application France, Sep. 28, 1982, 82 16296

Int. Cl.⁴ H01B *1/00;* **H01P** *5/12*

U.S. Cl. 331—56 **14 Claims**



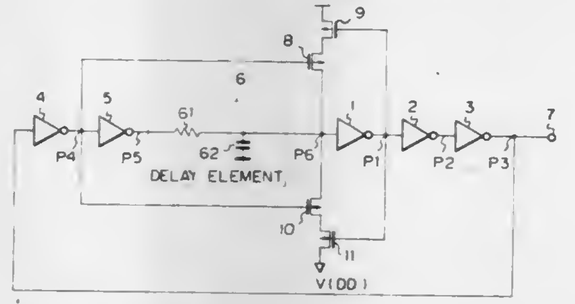


11. A compact combiner, comprising:

a metallic support member;

an annular dielectric substrate with a hole in the middle, mounted on said support member;
a plurality of semiconductor devices mounted within said hole;
a ring-shaped metallic output element mounted on the periphery of said dielectric substrate; and
a plurality of curvelinear-microstrip lines mounted on said dielectric substrate, each said microstrip line having a length and a width and a first end which is coupled to a respective one of said semiconductor devices and a second end which is coupled to said output element,
wherein said dielectric substrate has a dielectric constant ϵ which is selected so as to reduce the length of each said microstrip line.

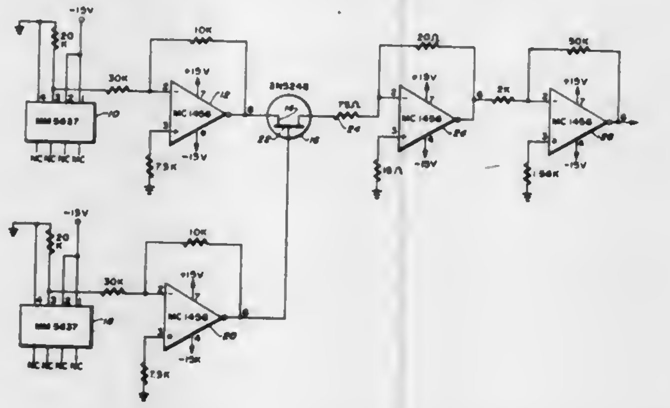
4,617,529
RING OSCILLATOR WITH DELAY ELEMENT AND POTENTIAL PULLING CIRCUIT
Atsushi Suzuki, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Aug. 16, 1985, Ser. No. 766,308
Claims priority, application Japan, Aug. 23, 1984, 59-175390
Int. Cl.⁴ H03B *5/00;* H03L *1/02*
U.S. Cl. 331—57 **8 Claims**



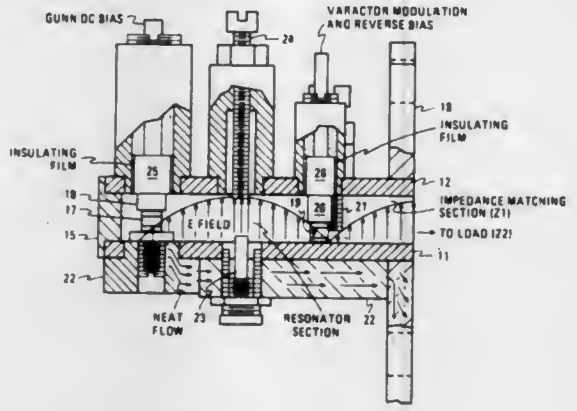
1. An oscillator circuit comprising:
an odd number of inverters connected in cascade to form a loop;
a delay element inserted between adjacent inverters; and
a pulling circuit for pulling up the potential of the output terminal of said delay element during a predetermined period after the potential of said output terminal becomes higher than the threshold voltage of said inverter connected to the output terminal of said delay element and/or for pulling down the potential of said output terminal during a predetermined period after the potential of said output terminal becomes lower than said threshold voltage.

4,617,530
PSEUDO-RANDOM NOISE GENERATOR
James R. Young, Palo Alto, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 17, 1985, Ser. No. 745,155
Int. Cl.⁴ H03B *29/00;* G08B *3/00*
U.S. Cl. 331—78 **8 Claims**

1. An improved psuedo-random noise generator comprising:
a first random pulse generator for generating random pulses that are repeated at a first time interval,
a second random pulse genrator for generating random pulses that are repeated at a time interval that is different from said first time interval, and
circuit means coupled to said first and second pulse generators for ANDing the outputs of said pulse generators to produce a noise signal having a long repetition period that repeats at least every minute.



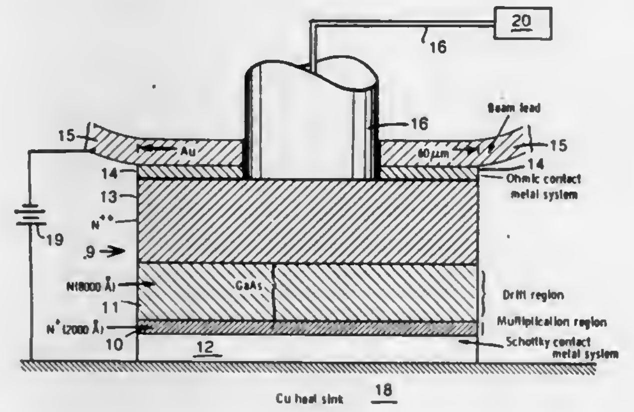
4,617,531
DIRECTLY MODULATED MICROWAVE OSCILLATOR HAVING ADJUSTABLE LOAD COUPLING
Daniel P. Bowlds, Hawesville, and Edward B. Foster, Owensboro, both of Ky., assignors to General Electric Company, Syracuse, N.Y.
Filed Sep. 13, 1985, Ser. No. 775,926
Int. Cl.⁴ H03B *5/08*
U.S. Cl. 331—96 **5 Claims**



1. A microwave source comprising
A. a rectangular waveguide with a shorting wall at one end, the side walls, floor, and ceiling extending toward an opening at the other end thereof at a first characteristic impedance Z_1,
said waveguide being effectively divided into a resonator section extending from said one end for an electrical length of 180 degrees, and an adjustable load matching section extending from said resonator section to said opening at said other end, said matching section having an electrical length variable through 90 degrees for adjustably coupling energy from said resonator section via said opening to a waveguide load having a second characteristic impedance Z_2, differing from Z_1,
B. a negative resistance device and a first coupling post connected in series between said floor and ceiling of said resonator section, positioned near said shorted end to complete an H field coupling loop to sustain oscillations within said resonator section,
C. a varactor diode and a second coupling post connected in series between the floor and ceiling of said waveguide, and a third post, adjustably extending between the floor and ceiling of said waveguide at a position more remote than said second post from said end wall for forming a low impedance between the ceiling and floor of said waveguide which defines the boundary between said resonator section and said matching section,
said series connected varactor diode and second post and

said third post being spaced to provide an H field coupling loop near the outer boundary of said resonator section for achieving varactor tuning sensitivity,
the adjustment of said third post controlling the electrical length of said impedance matching section and thereby providing said adjustable coupling.

4,617,532
OPTICALLY STABILIZED SEMICONDUCTOR MICROWAVE DIODES
Wenpeng Chen, Silver Spring, and Norman E. Byer, Columbia, both of Md., assignors to Martin Marietta Corporation, Bethesda, Md.
Filed Apr. 30, 1984, Ser. No. 605,723
Int. Cl.⁴ H01L *31/00*
U.S. Cl. 331—107 R **3 Claims**

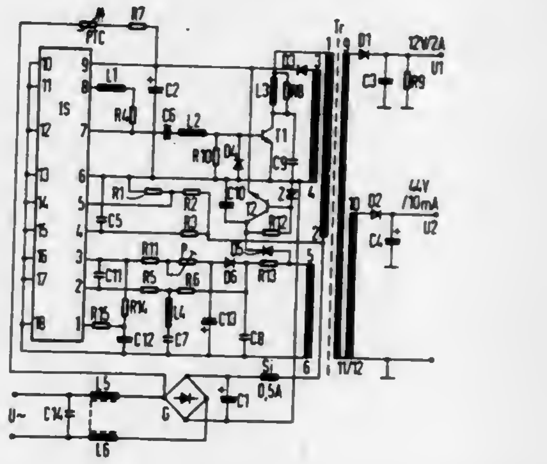


1. A system providing an optically phase-locked semiconductor device comprising:
(a) a plurality of layers of the same semiconductor material, including an active and a non-active region, doped with different concentrations of impurities and wherein said active region comprises a layer or layers doped with lower concentrations of impurities than said non-active region;
(b) means to generate modulated light having an energy level below the absorption edge of said non-active region but above the absorption edge of said active region; and
(c) means to couple said light to a face of a layer of said non-active region.

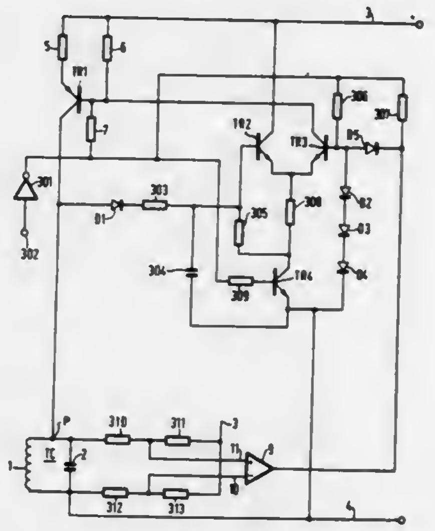
4,617,533
CIRCUIT ARRANGEMENT FOR A BLOCKING OSCILLATOR SWITCHING POWER UNIT
Ernst Paulik, Hilgertshausen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Feb. 14, 1985, Ser. No. 701,391
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1984, 3405833
Int. Cl.⁴ H03K *3/16*
U.S. Cl. 331—113 A **4 Claims**

1. In a circuit arrangement for a blocking oscillator switching power unit of the type in which a transformer includes at least three windings on its primary side and at least one winding on its secondary side, in which a switching transistor circuit is operated to periodically apply a rectified and smooth input voltage to a first of the primary side windings, in which a drive circuit is connected to and operates to drive the switching transistor circuit and receives a rectified and smoothed supply voltage via a second winding at the primary side during the blocking phase and receives a test voltage from one end of a third winding at the primary side during the flow phase, whereby the drive circuit can register the zero-axis crossings of the test voltage, and in which the drive circuit includes a supply input connected to one end of the second winding via a diode and to an a.c. voltage input of an input voltage rectifier via a resistor, the improvement comprising:

a further diode connected to one end of the third winding, and a further switching transistor, said further switching transistor including a controlled-conduction path connected between said further diode and the supply input of the drive circuit, and a base, and a Zener diode connecting said base to the other end of the second winding and operable during a start-up time to switch the output of the voltage rectifier to the supply input of the drive circuit until said Zener diode causes said further switching transistor to switch off.



4,617,534
HIGH-SPEED SWITCHED OSCILLATOR
Graham D. Lill, Engadine, Australia, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 15, 1985, Ser. No. 712,576
Claims priority, application Australia, Mar. 23, 1984, PG4217
Int. Cl.⁴ H03L *5/00*
U.S. Cl. 331—117 R **15 Claims**



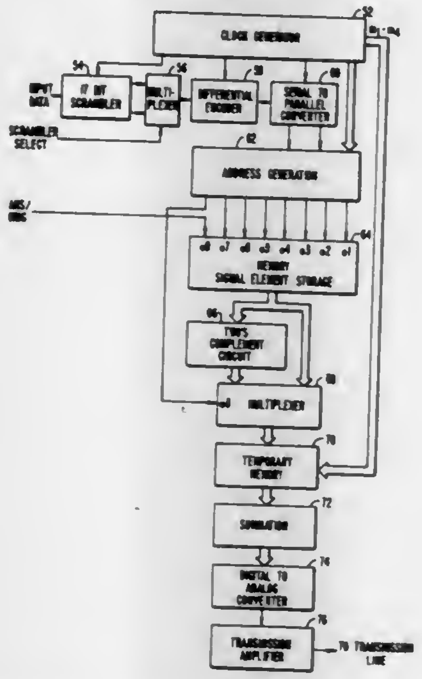
1. An oscillator comprising;
a supply source of substantially constant current including a control element by which the current magnitude may be controlled, a tuned resonant circuit, switching means for changing the operating mode of the oscillator from a standby mode to an oscillatory mode and vice versa by switching the control element from one operating condition to another so that, during the standby mode, a charging current is supplied from the current source to an inductance of the resonant circuit, and upon transition from the standby mode to the oscillatory mode the charging current supply is interrupted, a control loop coupled between the resonant circuit and the control element for supplying a control voltage to the control element which is dependent upon the voltage across the resonant circuit whereby, during the oscillatory mode, a pulse of current is supplied from the current source to the resonant circuit on

alternate half-cycles of an oscillatory voltage developed across the resonant circuit.

4,617,535
PSK DIGITAL ECHO MODULATOR WITH REDUCED MEMORY CAPACITY REQUIRED

M. Tarik Unerdem, Sunnyvale, Calif., assignor to Exar Corporation, Sunnyvale, Calif.

Filed Jun. 12, 1985, Ser. No. 744,168
Int. Cl.^{4} H03C *3/00*
U.S. Cl. 332—16 R **16 Claims**



1. In a modulator for producing a composite transmission signal corresponding to a plurality of overlapping signal elements, each signal element corresponding to an element of data, and having a permanent memory for storing a multiplicity of digital representations of instantaneous values of amplitudes of each said signal element at a plurality of positions corresponding to sampling time intervals along said signal elements, the improvement comprising;

temporary memory means for storing a selected plurality of said multiplicity of digital representations of instantaneous signal element values, each of said selected plurality corresponding to a separate one of said signal elements during a single sampling time interval; and

means for adding said selected plurality of values from said temporary memory to produce a digital representation of the instantaneous value of said composite signal in a single add operation during said single sampling time interval.

4,617,536
AMPLITUDE MODULATION APPARATUS AND METHOD

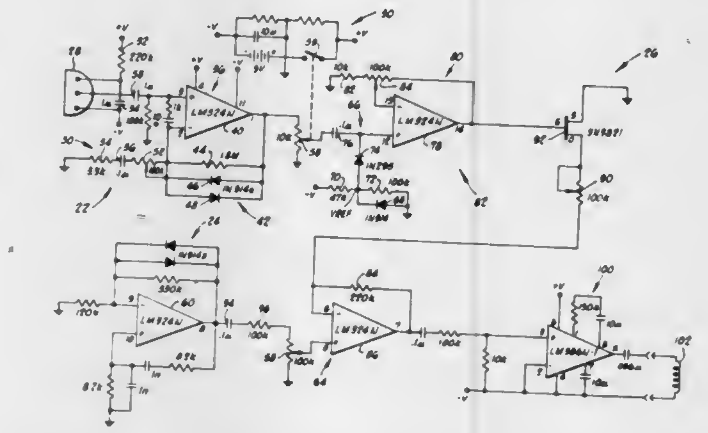
Gordon L. Richard, Minco, Okla., assignor to Baptist Medical Center of Oklahoma, Inc., Oklahoma City, Okla.

Division of Ser. No. 444,460, Nov. 24, 1982, Pat. No. 4,499,339. This application Jun. 15, 1984, Ser. No. 621,181
Int. Cl.^{4} H03C *1/08;* H04R *25/00*
U.S. Cl. 332—37 D **15 Claims**

1. In an amplitude modulation apparatus of the type wherein a modulating signal having a peak-to-peak value is used for modulating a carrier signal having a quiescent peak-to-peak value, the improvement comprising modulation means for providing a modulated signal having peak-to-peak values within a range, and only within said range, between a value substantially equal to said quiescent peak-to-peak value and a value which is a multiple of said quiescent peak-to-peak value, said multiple being determined by said modulating signal peak-to-peak value, said modulating signal having magnitude excursions in two directions between upper peak values and lower peak values; and said modulation means including:

signal conditioning means for shifting said modulating signal by a variable amount so that said magnitude excursions in one of said two directions never exceed a predetermined value; and

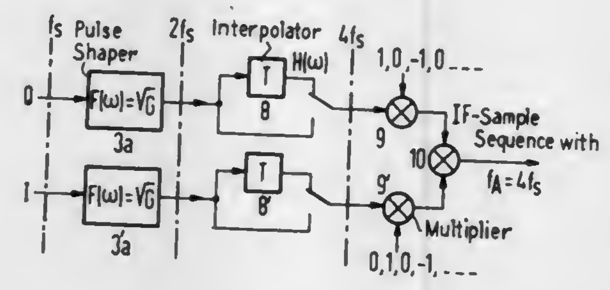
carrier signal modulator means, responsive to said signal conditioning means, for multiplying the magnitude of said carrier signal by variable multiplication factors.



4,617,537
METHOD FOR DIGITAL QUADRATURE AMPLITUDE MODULATION

Josef A. Nossek, Iffeldorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 30, 1984, Ser. No. 595,527
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1983, 3314603
Int. Cl.^{4} H03C *1/00;* H03D *1/00*
U.S. Cl. 332—48 **1 Claim**



1. A method for clocked digital amplitude modulation, wherein signal sampling sequences are available from two carrier oscillations which are at 90° phase positions relative to one another and at a predetermined sampling frequency, comprising the steps of:

producing the carrier oscillations at one-fourth of the predetermined sampling frequency;

setting the phase positions relative to the sampling times such that every second sample of both carrier oscillations is alternately zero so that respectively one of the two carrier oscillations is zero at every clock time;

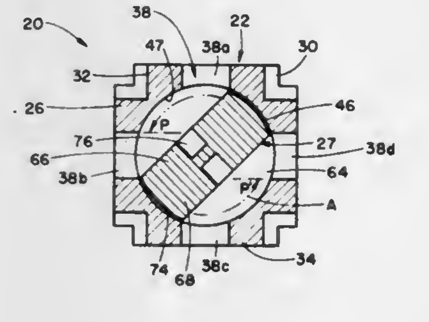
reversing the operational sign of every second sample to provide two sampling sequences at half the sampling frequency; and

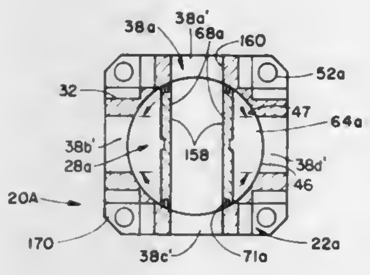
interleaving the two sampling sequences to provide quadrature amplitude modulation offset by one sampling.

4,617,538
MICROWAVE WAVEGUIDE SWITCH ASSEMBLY

Victor H. Nelson, 10 Redwood Dr., Dix Hills, N.Y. 11746

Continuation-in-part of Ser. No. 464,689, Feb. 7, 1983. This application Jun. 21, 1984, Ser. No. 623,151
Int. Cl.^{4} H01P *1/10, 5/12*
U.S. Cl. 333—106 **4 Claims**





1. A microwave waveguide switch assembly operable in at least two positions, comprising:

a hollow housing having a cylindrical hollow chamber therein;

a rotor axially rotatable in said chamber;

said housing having four sides disposed at right angles to each other, with a rectangular opening in each of said sides communicating with said chamber for passing microwaves therethrough;

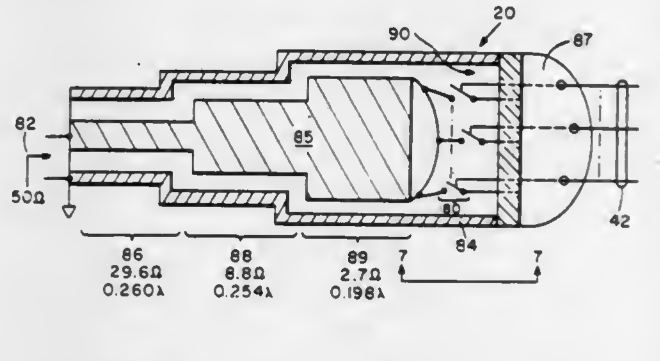
each of said openings having the same length and width and each of said openings being equally spaced circumferentially of said chamber;

said rotor having a pair of axially spaced cylindrical end plates integrally formed with a wall means thereinbetween extending axially of said chamber, said end plates extending perpendicular to the axis of rotation of said rotor to open two separate passages for passing microwaves through said housing between adjacent pairs of said openings, each of said separate passages being formed by said cylindrical end plates and said wall means of said rotor and by said walls of said chamber when said rotor is disposed in one of two positions, and two other separate passages for passing microwaves through said housing between two other adjacent pairs of said openings each of said other separate passages being formed by said cylindrical end plates and said wall means of said rotor and said walls of said chamber when said rotor is disposed in the other one of said two positions; the diameters of said end plates and width of said wall means being substantially equal to the diameter of said chamber to prevent leakage of microwaves out of said chamber beyond said end plates axially of said housing and rotor, and to prevent leakage of microwaves between said passages in said housing in each of said positions of said rotor, and to provide a rotor path presenting less discontinuities to the propagation of microwaves.

4,617,539
REFLECTIVE PHASE SHIFTER

Richard L. O'Shea, Holliston, Mass., and Philip R. Merrill, Nashua, N.H., assignors to Raytheon Company, Lexington, Mass.

Filed May 13, 1985, Ser. No. 733,350
Int. Cl.^{4} H01P *1/185*
U.S. Cl. 333—164 **14 Claims**



1. A phase shifter wherein radio frequency energy is fed into an input/output port of such phase shifter and then coupled from such phase shifter at the input/output port, such phase shifter providing one of a plurality of predetermined phase shift between the fed energy and the coupled energy selectively in accordance with a control signal, such phase shifter comprising:

a coaxial transmission line having a uniform inner conductor and an outer conductor, a first end of the uniform inner conductor and a first end of the outer conductor providing the input/output port of the phase shifter;

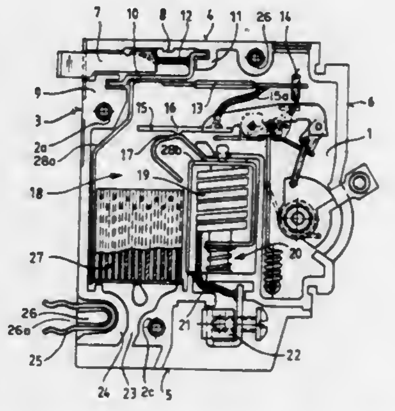
a conductor connected to the second end of the outer conductor, such conductor being dielectrically spaced from a second end of the uniform inner conductor; and

a plurality of switch means, disposed between different portions of the second end of the uniform inner conductor and the conductor in response to a control signal, for electrically connecting a selected one or ones of said different portions of the second end of the uniform inner conductor directly to the conductor while unselected ones of said different portions of the second end of the uniform inner conductor remain dielectrically spaced from said conductor.

4,617,540
AUTOMATIC SWITCH, RAIL-MOUNTED

Joseph Westermeyer, Nuremberg, Fed. Rep. of Germany, assignor to Sursum Elektrizitatsgesellschaft Leyhausen GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Oct. 23, 1984, Ser. No. 664,010
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1983, 3339401
Int. Cl.^{4} H01H *75/12, 73/48*
U.S. Cl. 335—35 **5 Claims**



1. An automatic switch for mounting on rails, comprising:

a hand lever disposed on the front side of a housing and a rail-mounting device on the rear side;

said rail-mounting device comprising a two-armed plug contact disposed on the upper transverse side and a second holding organ, also two-armed, which is attachable by clip or catch means and is disposed on the lower transverse side at a distance from said plug contact;

wherewith the lower housing part forms an arc chamber which accomodates deionization plates near the lower transverse side and accommodates a switch contact above said plates, and the forward housing part accomodates an impact-armature trigger near the lower transverse side, and accomodates a switch mechanism and a bimetallic trigger above said impact-armature trigger, wherewith said bimetallic trigger is affixed to a metallic support strip, one end of which extends into a recess in a thickened region of the wall of the rear side;

wherewith the plug contact is comprised of an electrical connection to the bimetallic trigger, and a screw clamp provided on the lower transverse side forms an electrical connection to the impact-armature trigger;

wherewith the switch contact is formed by a stationary contact element electrically connected to the impact-armature trigger, along with a movable contact element associated with the switch mechanism and electrically connected to the bimetallic trigger, wherewith the switch mechanism is comprised of a pivotably mounted switch arm which pivotably bears the movable contact element and also pivotably bears a pawl, one end of said pawl detaining a blocking lever when the switch contact is in the closed position and the other end of said pawl being pivotably connected to an intermediate pivoted connecting piece the other end of which intermediate piece is pivotably connected to the inner end of the hand lever;

wherewith the lever holding organ is disposed at the altitude of the screw clamp and surrounds an elongated appendage of the housing, wherewith an eye including a hole for insertion of a bolt or other shaft-like fastener therebetween is disposed between the lower holding organ and the screw clamp;

wherewith the opposite end of the support strip of the bimetallic trigger engages in a recess in continuation of the side wall of the upper side and is connected to the plug contact by means of a stranded wire;

and wherewith, when the switch contact is in the closed position, the grip member of the hand lever is oriented upward, in a direction toward the upper transverse side, the location of engagement of the intermediate pivoted connected piece with the hand lever is disposed on the side of the axle, which side is farther from the front side, and the detaining end of the pawl is closer to said front side than the articulation end of said pawl.

4,617,541

ELECTROMAGNETIC STARTER FOR REVERSIBLE MOTOR

Chiu-Hsiung Chuang, Taipei, Taiwan, assignor to Pen-Ho Huang, Taipei, Taiwan and Gordon Kuo-Chon Chang, New York, N.Y., a part interest to each

Filed Sep. 16, 1985, Ser. No. 776,640

Int. Cl.⁴ H01H *63/02, 67/02*

U.S. Cl. 335—133 **5 Claims**

1. A starter for a reversible motor comprising:

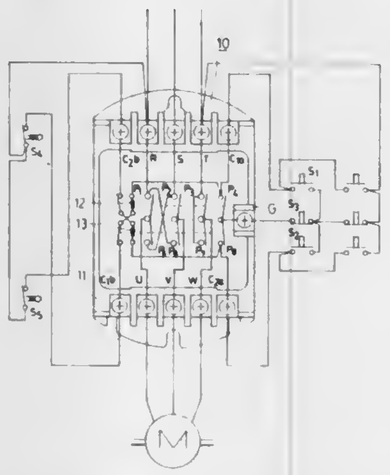
an outer casing for the installation of a plurality of operating members;

a movable member having numerous sets of movable contacts attached on one surface thereof;

a fixed member having a cavity formed therein for securing a plurality of sets of fixed electric contacts corresponding to said sets of movable contacts of said movable member;

means for positioning said movable member with respect to said fixed member so that corresponding contacts are normally in an open position and also act as a fulcrum of the movement of the movable member, said positioning means comprising a plurality of pins protruding from one surface of the movable member and corresponding pins being located in said fixed member and bias springs being sleeved onto and between said pins;

a plurality of flexible conduction plates connected to said fixed contacts in said fixed member to form an appropriate power feeding circuitry; and



a pair of electromagnets each having at least a movable iron core portion which is linked to one end of said movable member, thereby when one of the electromagnets is actuated, one of said sets of movable contacts and fixed contacts arranged to come in contact, correspondingly closing one of a forward rotation and reverse rotation circuit for a reversible motor.

4,617,542

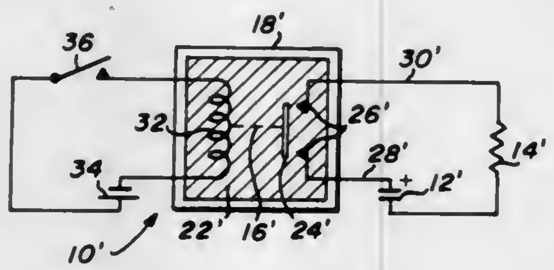
HIGH VOLTAGE SWITCHING DEVICE

Erno B. Lutz, Sunnyvale; Bruce A. Weber, San Jose, and Jerry Markle, Mountain View, all of Calif., assignors to IMCS Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 542,583, Oct. 17, 1983. This application Aug. 2, 1984, Ser. No. 637,030

Int. Cl.⁴ H01H *1/00*

U.S. Cl. 335—196 **10 Claims**



1. A method of improving the switching performance of a pair of switch contacts, the method comprising in combination the steps of at least partially enclosing the pair of contacts and filling the enclosure at least to the point where the pair of contacts are immersed in a solution at least a portion of which comprises: a totally fluorinated hydrocarbon having an average molecular weight of 650.

4,617,543

COIL BOBBIN

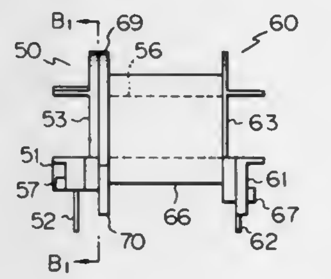
Yoshiaki Akachi; Yasuo Kyoso, and Takeo Matsumaru, all of Chiba, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jan. 24, 1985, Ser. No. 694,427

Claims priority, application Japan, Jan. 26, 1984, 59-10025[U]; Jan. 26, 1984, 59-10026[U]; Feb. 28, 1984, 59-28614[U]

Int. Cl.⁴ H01F *15/10, 27/30*

U.S. Cl. 336—192 **1 Claim**



1. A coil bobbin comprising

an outer bobbin having a first hollow member having a first flange located around one end thereof, said first flange having a first terminal plate with a plurality of first terminal pins and first grooves for accommodating lead wires, said first member having a second flange located around the other end thereof, and

an inner bobbin having a second hollow member having a third flange located around one end thereof, said third flange having a second terminal plate with a plurality of second terminal pins and second grooves for accommodating lead wires, said coil bobbin beng assembled by inserting said second hollow member into said first hollow member so that said first and second terminal plates are parallel with each other characterized in that

said second flange has a cover portion having an outside face that butts with an inside face of said second terminal plate and covers opening ends of said second grooves on said inside face, said cover portion extending beyond said second terminal plate, the bottom surface of said cover portion being flat and forming a continuous bottom surface so that said bottom surface butts uniformly on a surface of a printed circuit board when the assembled coil bobbin is mounted on said printed circuit board, wherein said cover portion elongates the creeping distance between a coil on said outer bobbin and said lead wires extended from a coil on said inner bobbin to said second terminal pins and said cover supports said assembled coil bobbin.

4,617,544

HIGH VOLTAGE, HIGH RUPTURE CAPACITY FUSE

Dietrich Mooz, Krefeld, and Rolf Dirks, Willich, both of Fed. Rep. of Germany, assignors to Felten & Guilleaume Energietechnik GmbH, Cologne, Fed. Rep. of Germany

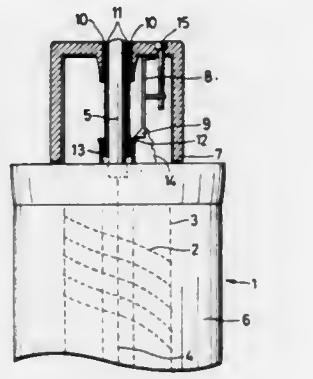
Filed Mar. 18, 1985, Ser. No. 713,273

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1984, 3409957

Int. Cl.⁴ H01H *37/00, 85/00, 71/20*

U.S. Cl. 337—3 **7 Claims**

1. A high voltage, high rupture capacity fuse comprising a main fusible conductor for interrupting a short-circuit current in an outer circuit, an auxiliary fusible conductor for releasing a spring biased impact pin, an insulating body surrounding the two fusible conductors and being hermetically closed at two opposite sides thereof by conductive caps, the caps acting as contact terminals for the two fusible conductors, at least one cap having an outlet opening opposite said impact pin, a tripping sleeve arranged in said outlet opening and surrounding said impact pin to guide the same through said outlet opening, a bimetal release arranged in said one cap and being electrically connected to said fusible conductors, said bimetal release including a pawl normally engaging said sleeve, and spring means biasing said tripping sleeve against said pawl so as to eject said tripping sleeve through said outlet opening against a load interrupter when an overcurrent activates said bimetal release and said pawl disengages said sleeve.



4,617,545

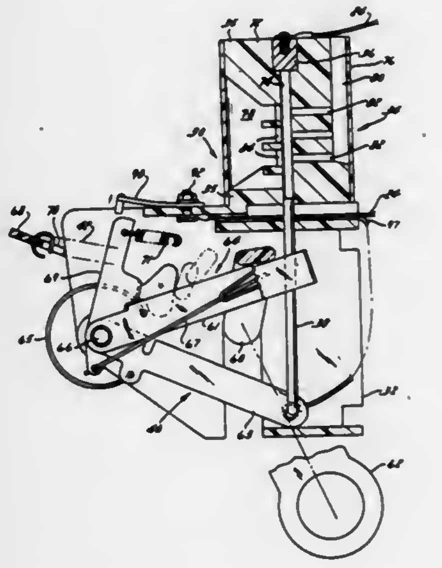
SUBMERSIBLE PRIMARY CIRCUIT BREAKER

Edwin A. Link, Waukesha, Wis., assignor to RTE Corporation, Waukesha, Wis.

Division of Ser. No. 412,602, Aug. 30, 1982, Pat. No. 4,521,823. This application Mar. 20, 1985, Ser. No. 699,734

Int. Cl.⁴ H01H *71/16*

U.S. Cl. 337—74 **4 Claims**



1. In a transformer primary circuit breaker comprising a frame, a current interruption assembly mounted on said frame and including a fixed contact and a second rod contact moveable through said interruption assembly into engagement with said fixed contact, said current interruption assembly comprising a housing including a core of arc quenching material having a bore therein, a sleeve enclosing said core to define a pressure chamber and an exhaust passage therein, said core including a number of openings transverse to said bore connecting said pressure chamber to said exhaust passage to provide a cross blast flow of arc quenching fluids from said pressure chamber across said bore to said exhaust passage, said fixed contact being located at one end of said bore and said rod contact being moveable through said bore into engagement with said fixed contact, a trip-free mechanism for moving said rod contact through said current interruption assembly into engagement with said fixed contact and a latch means operably connected to said trip-free mechanism to hold said rod contact in contact with said fixed contact, said latch means including a trip mechanism responsive to predetermined electrical or thermal conditions to release said latch mechanism and open said circuit breaker, whereby the arc in the bore will be extinguished by the flow of arc quenching fluid across the bore.

4,617,546

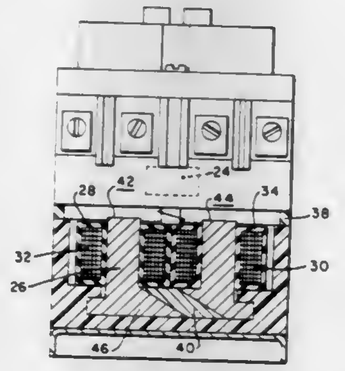
ELECTRICAL CONTROL APPARATUS WITH ELECTROMAGNETIC LATCH

Walter J. Kellogg, Black Mountain; Birch L. DeVault, Arden, and Kenneth L. Paape, Asheville, all of N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 5, 1984, Ser. No. 657,924

Int. Cl.⁴ H01H *9/20*

U.S. Cl. 337—170 **3 Claims**



1. An electric control apparatus comprising:
(a) an insulating housing;
(b) pairs of separable contacts within the housing;
(c) means within the housing for moving the contacts between open and closed positions and comprising an electromagnetic control mechanism including a magnetic armature, a U-shaped core, and a coil;
(d) the magnetic U-shaped core including spaced legs and a yoke;
(e) a permanent magnet within the yoke extending across and through the cross-section of the yoke and having corresponding abutting interfaces;
(f) the magnet being inclined at an acute angle to the longitudinal axis of the yoke and the interfaces having a greater area than the cross-sectional area of a plane extending perpendicular to the longitudinal axis of the yoke; and
(g) the magnet consisting of a ceramic base material.

4,617,547

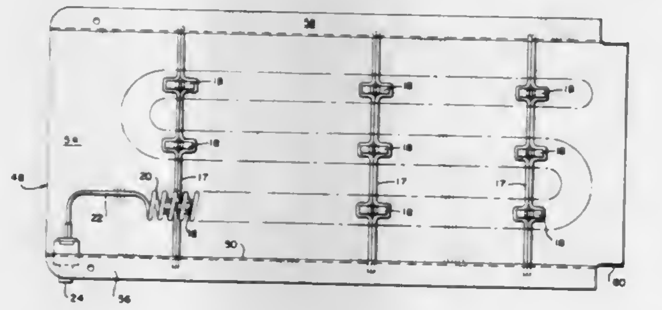
HEATER ASSEMBLY

H. Keith Howard; Jimmy L. Sherrill, both of Cookeville, and Robert L. Kirby, Sparta, all of Tenn., assignors to Tutco, Inc., Cookeville, Tenn.

Filed Apr. 20, 1984, Ser. No. 602,434

Int. Cl.⁴ H01C *1/01*

U.S. Cl. 338—317 **17 Claims**



1. A heater assembly comprising a housing for channeling air flow and having opposed sidewalls,
a helically coiled heater element,
insulator means for engaging said heater element at a plurality of spaced locations,
a plurality of holding means for holding a plurality of said insulator means, each of said holding means having opposed ends, each of said ends is engaged with a respective one of said opposed sidewalls, wherein said sidewalls comprise means to receive said ends of said holding means, said plurality of holding means being spaced along said housing whereby said heater element, said insulators, and said holding means are supported only by said housing.

4,617,548

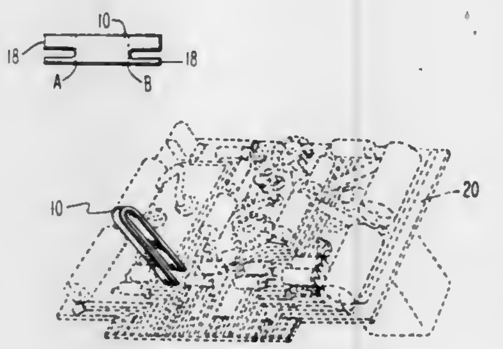
CURRENT SENSING RESISTANCE APPARATUS

Paul K. Buchwald, Jr., Margate, Fla., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 7, 1985, Ser. No. 689,219

Int. Cl.⁴ H01C *1/14*

U.S. Cl. 338—325 **1 Claim**



1. Current sensing resistance apparatus comprising:
a thin conductive ribbon having a length greater than its width and comprises of resistance grade conductive material,
said ribbon terminating at each opposite end in a longitudinal bifurcation forming individual pairs of input-output terminals respectively, wherein one terminal of each pair of terminals being disproportinately larger than the other terminal of each pair, and
said ribbon being formed into parallel portions effective to permit said terminals to be interconnected into associated operative electrical circuitry with which the device is utilized.

4,617,549

MONOLITHICALLY INTEGRABLE MOS-COMPARATOR CIRCUIT

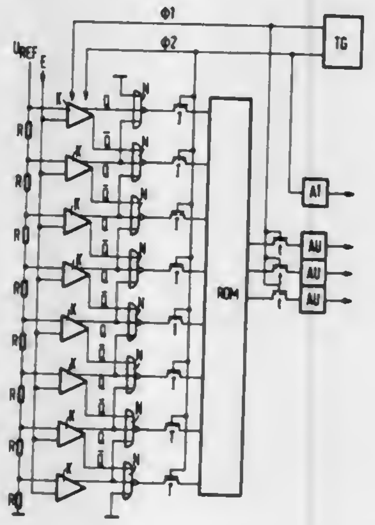
Robert Reiner, Lynn East, South Africa, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Division of Ser. No. 396,142, Jul. 7, 1982, Pat. No. 4,532,438. This application Jun. 17, 1985, Ser. No. 745,693

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1981, 3130391

Int. Cl.⁴ H03M *1/36*

U.S. Cl. 340—347 AD **3 Claims**



1. Integrated semiconductor circuit for an analog-to-digital converter according to the parallel method, comprising a multiplicity of identical comparators, each of said comparators

having a reference input, a signal input, first and second signal outputs, and means for transmitting a first clock signal controlling said first signal output and for transmitting a second clock signal controlling said second signal output, a multiplicity of NOR gates respectively having first, second and third inputs and an output, said comparators being addressable in a staggered manner at the reference inputs thereof by a respective reference voltage and at the signal inputs thereof jointly by a signal to be evaluated, each of said comparators, respectively, being connected by the respective first signal output thereof to said first input of a respective one of said NOR gates forming with the respective comparator, a weighting stage, said respective comparator being further connected by said respective first signal output thereof to the second input of another of said NOR gates associated with another of said comparators addressable by a next higher reference voltage, the respective comparator being also connected by the respective second signal output thereof to the third input of a further one of said NOR gates associated with yet another of said comparators addressable by a next lower reference voltage, a read-only memory having a multiplicity of inputs, the respective outputs of said NOR gates being connected via respective transfer transistors to said inputs, respectively, of said read-only memory, said transfer transistors in totality being connected to said signal transmitting means and being controlled by said first clock signal serving for controlling said first signal outputs of said comparators.

4,617,550

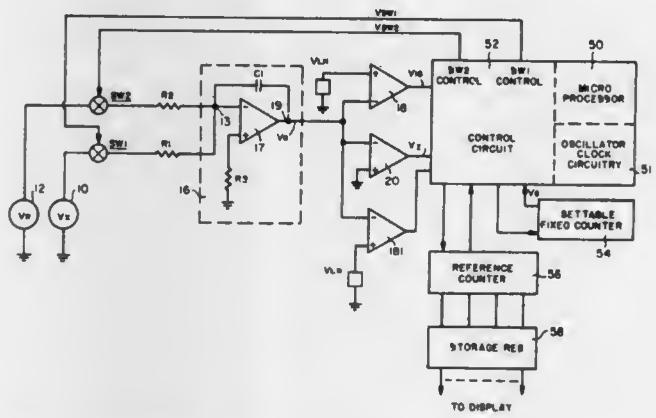
ANALOG-TO-DIGITAL CONVERTERS WITH VIRTUAL INTEGRATION

Mandel Glincman, Hillsborough Township, Somerset County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 24, 1984, Ser. No. 613,415

Int. Cl.⁴ H03M *1/06*

U.S. Cl. 340—347 AD **10 Claims**



1. The combination comprising:
an integrator having an input, an output, and first and second power terminals for the application thereto of first and second voltages, respectively, the voltage at the output of said integrator being capable of swinging, at most, between said first and second voltages;
a first input terminal for the application thereto of an input signal;
a second input terminal for the application thereto of a reference voltage;
a first resistor connected between said integrator input and a first node;
a second resistor connected between said integrator input and a second node; and
controllable means coupled between said first and second input terminals and said first and second nodes for:
(a) selectively applying an input signal of unknown amplitude to the input of said integrator for a sampling interval of fixed duration (T_S), said input signal capable of producing a voltage at the output of said integrator which increases during said interval T_S from a threshold level to a value which could exceed one of said first and second voltages; and
(b) selectively applying a reference potential of known amplitude and of a polarity opposite to that of said input signal to said integrator input; said controllable means coupling said input signal via said first resistor for one time period, which is approximately one-half of T_S, and via said second resistor for another time period, which is approximately one-half of T_S; and said controllable means coupling said reference potential via that one of said first and second resistors not being used to couple said input signal;
means responsive to the amplitude of the voltage at the output of said integrator, for sensing when the voltage at said output reaches a predetermined limit during said sampling interval T_S and then enabling said controllable means for causing the application of said reference potential, simultaneously with the application of said input signal, until said output voltage decreases below said predetermined limit; and
means for enabling said controllable means following the termination of said sampling interval, for applying said reference potential, until the output of said integrator is restored to said threshold level.

4,617,551

DIGITAL-TO-ANALOG CONVERTER WITH POTENTIAL SEPARATION

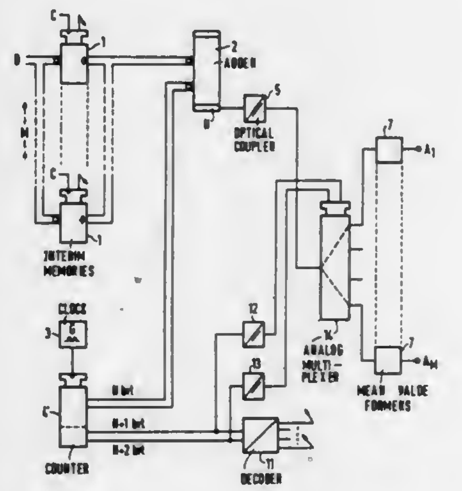
Paul A. Ophoff, Worth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 23, 1983, Ser. No. 535,073

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1982, 3235741

Int. Cl.⁴ H03K *13/02*

U.S. Cl. 340—347 DA **2 Claims**



2. A digital-to-analog converter for converting digital data on M data channels, comprising:
(a) M interim memories with tri-state or open collector outputs each having parallel storage locations for N bits;
(b) a free-running counter with at least N+1 bit outputs;
(c) an N-bit full adder with a carry output, having as inputs the outputs of said memories and the first N bit outputs of said counter;
(d) a first optical coupler having its input coupled to the carry output of said full adder;
(e) a second optical coupler having as an input the (N+1)th bit output of said counter;
(f) an analog multiplexer having as a data signal input the output of said first optical coupler and as a control input the output of said second optical coupler;
(g) a plurality of M mean value formers coupled to the outputs of said multiplexer; and
(h) a decoder having as an input the output of said second

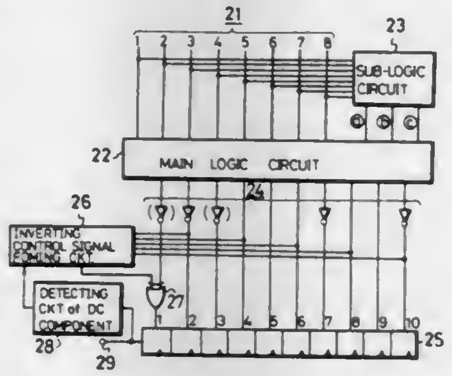
optical coupler and providing enable inputs to said memories.

4,617,552

METHOD AND APPARATUS FOR CONVERTING A DIGITAL DATA

Yuichi Kojima, and Shinichi Fukuda, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 27, 1984, Ser. No. 644,445
Claims priority, application Japan, Aug. 29, 1983, 58-157643
Int. Cl.⁴ H03M *7/00*
U.S. Cl. 340—347 DD **8 Claims**



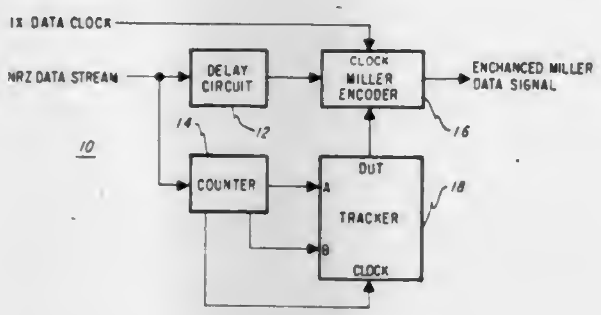
1. A method for converting digital data into an NRZI-coded digital signal, the method comprising steps of:
first detecting if the value of every even numbered bit of said digital data is digital zero;
second detecting if two bits of said detected even numbered bits having digital zero value and a preceding odd numbered bit have a DC component;
producing a detecting signal according to the result of said second detecting; and
converting said digital data into said NRZI-coded digital signal by using said detecting signal, thereby tending to minimize said DC component.

4,617,553

ENHANCED MILLER CODE

Mark A. Webster, and Richard D. Roberts, both of Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Aug. 12, 1985, Ser. No. 764,681
Int. Cl.⁴ H03M *5/14*
U.S. Cl. 340—347 DD **7 Claims**



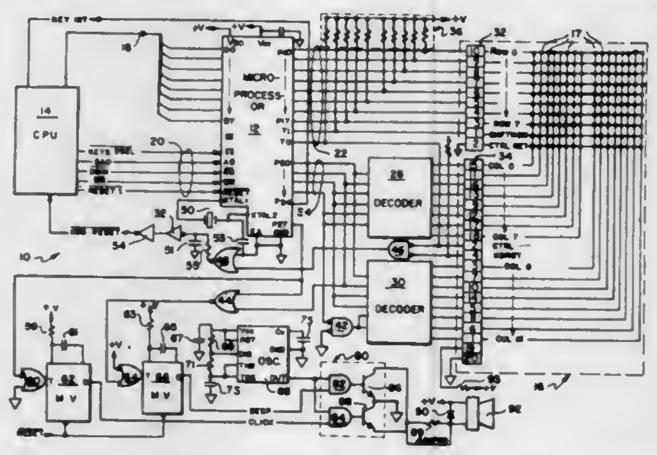
1. A method for encoding digital data represented by a stream of data bits to produce an encoded signal, wherein the stream of data bits includes logical-one data bits and logical-zero data bits which are encoded as signal level transitions or the absence thereof in consecutive bit cells each associated with a respective one of the data bits in the stream of data bits, said method comprising the steps of:
(a) segregating the stream of data bits into a plurality of consecutive blocks, wherein the beginning of each block is delineated by a signal level transition from one type of data bit to the other
(b) determining the number of logical-one data bits in each block;
(c) determining the number of logical-zero data bits in each block;
(d) in response to steps (b) and (c), encoding each block so that there is substantially zero dc content in the encoded signal.

4,617,554

KEYBOARD SCANNING

Charles A. Krause, Stevensville, Mich., and Randy J. Vander Heyden, Garland, Tex., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Aug. 26, 1983, Ser. No. 527,131
Int. Cl.⁴ G11C *19/00*
U.S. Cl. 340—365 E **11 Claims**



7. A system for detecting the simultaneous engagement of more than one key in a matrix-type keyboard having a plurality of selectively engageable keys representing a plurality of alphanumeric characters and operating modes, wherein said keyboard provides an output signal representing the selection of a given key, said system comprising:
signal generating means coupled to said keyboard for generating first and second pluralities of scan signals for sequentially scanning said keyboard;
signal processing means coupled to said keyboard for simultaneously receiving first and second output signals from said keyboard representing the selection of first and second alphanumeric character keys engaged at the same time, wherein said first key is selected first;
memory means coupled to said signal processing means and including first and second memory locations for storing said first and second output signals, wherein said first output signal is initially stored in said first memory location and is subsequently stored in said second memory location following the detection and storage of said second output signal in said first memory location;
key detection means coupled to said keyboard for detecting the deselection of said first or second keys;
means for detecting the engagement of an operating mode key following the engagement of said second key; and
data transfer means coupled to said key detection means and said memory means and responsive to the deselection of said first key for transferring said second output signal to said first memory location following the deselection of said first key, wherein a third output signal representing the engagement of a third alphanumeric character key generated in response to a third plurality of scan signals provided by said signal generating means to said keyboard is stored in said first memory location.

4,617,555

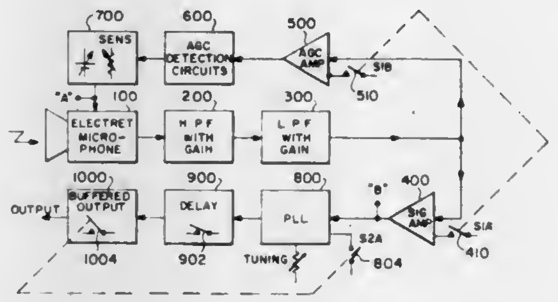
RECEIVER FOR AUDIBLE ALARM

Arthur E. Sheiman, Northvale, N.J., assignor to Data Distribution Devices, Inc., Closter, N.J.

Filed Apr. 17, 1985, Ser. No. 724,024
Int. Cl.⁴ G08B *1/00;* G10K *11/00*
U.S. Cl. 340—531 **9 Claims**

1. Apparatus to detect sonic signals within a predetermined

range of frequencies comprising an electret microphone with integral FET impedance converter for receiving the sonic signal, band-pass filter means connected to the output of said electret microphone, AGC means connected to the output of said filter means and producing an AGC bias voltage which is applied to the FET to control the sensitivity of said electret microphone, and means connected to the output of said filter means for producing a defined response to the presence of the sonic signal.

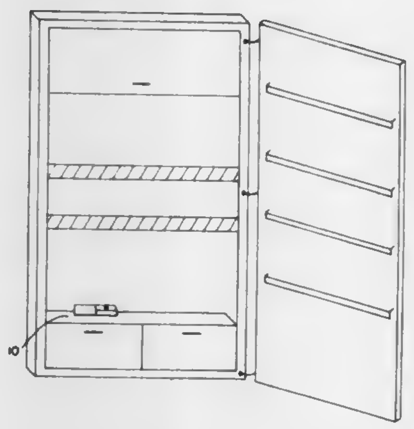


4,617,556

PHOTOSENSITIVE SOUND GENERATOR

Luis A. Rivera, and Patricia A. Rivera, both of 1278 Cambridge Ave., Plainfield, N.J. 07061

Filed Jul. 10, 1984, Ser. No. 629,452
Int. Cl.⁴ G08B *13/08, 13/18*
U.S. Cl. 340—546 **7 Claims**



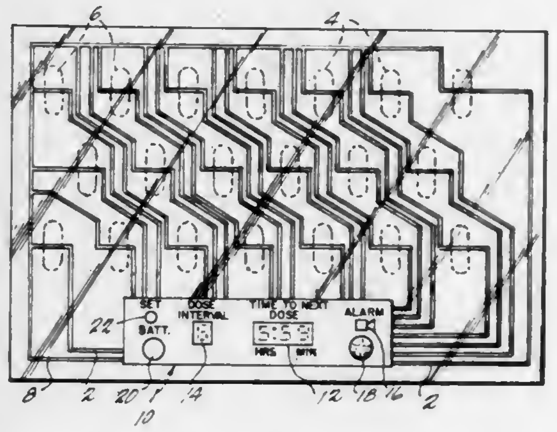
1. A self-contained photosensitive sound generator for use as an aid to behavior modification programs meeting the need to eliminate habitual and compulsive over-consumption of food stored in a darkened enclosure, such as a refrigerator or food storage container, comprising:
(a) a housing adapted to contain a photosensitive cell, a sound transducer and an energy source for said cell and transducer;
(b) a sound transducer in said housing;
(c) a photoelectric cell in electrical communication to said energy source responsive to light when said enclosure is opened for the purpose of taking food, said photoelectric cell immediately energizing said sound transducer when activated by light to thereby cause a low audible signal alerting the person opening the enclosure to light that the opening behavior is to be stopped;
(d) an energy source in said housing;
(e) moisture protecting means surrounding said housing to protect said cell, said sound transducer and said energy source from moisture and cold temperature; and an optical aperture in said housing located directly in front of said photosensitive cell which permits and directs the light entering the enclosure against said cell to energize the same.

4,617,557

MEDICATION COMPLIANCE AID FOR UNIT DOSE PACKAGING

Richard E. Gordon, Gales Ferry, Conn., assignor to National Patent Development Corporation, New York, N.Y.

Filed Nov. 8, 1984, Ser. No. 669,815
Int. Cl.⁴ G08B *7/00;* B65D *83/04*
U.S. Cl. 340—568 **9 Claims**



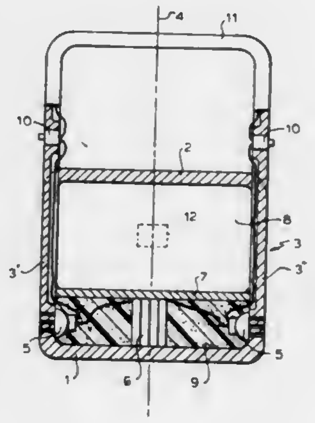
1. A medication dispenser, comprising:
multi-compartment container means for housing an individual dose of medicine in each compartment, and for permitting random access to said compartments and dispensing of their contents;
timer means for timing a desired time period between dispensing of said doses of medicine, and generating a signal at the end of said desired time period;
alarm means for sounding an alarm in response to said signal from said timer means; and
scanning and memory means for scanning said compartments and recording whether said individual doses of medicine have been dispensed:
said dispenser further including setting means for setting said desired time period for said timer means, thereby establishing a dosage interval;
safety means to prevent unauthorized or accidental control of said setting means;
said safety means being engaged by the installation of a battery in said medication dispenser.

4,617,558

CONTAINER FOR SMALL CONSUMER ITEMS, SUCH AS HANDBAG, POUCH, PURSE, BOX OR THE LIKE, PROVIDED WITH ALARM

Abram Gin, 99-40 63 Rd., Rego Park, N.Y. 11374

Filed Dec. 19, 1983, Ser. No. 563,187
Int. Cl.⁴ G08B *13/02*
U.S. Cl. 340—574 **5 Claims**



1. A container for small consumer items, such as a handbag, a pouch, a purse, a box or the like, comprising:
a body part forming a first compartment for accommodating

small consumer items, and a second compartment separated from said first compartment by a partition, said body part having two opposite sides and a holding handle extending from one of said sides to the other of said sides;

a sound generating device arranged in said second compartment and operative for generating an alarming sound;

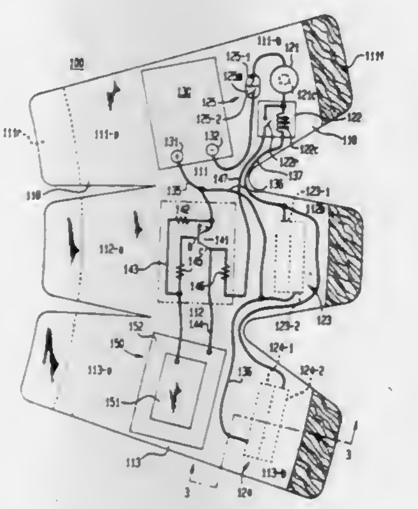
an autonomous electric current source arranged in said second compartment and supplying electric current to said sound generating device for generating the alarming sound by the latter; and

switch means arranged to be actuated by a user so that when the user manually acts upon said switch means said electric current source is turned on and thereby said sound generating device generates the alarming sound, said switch means including two switching elements, each located on a respective one of said sides of said body so that when the user holds said holding handle with his or her one hand, the user can reach with his or her other hand a respective one of said switching elements regardless whether he or she is left-handed or right-handed.

4,617,559

OPERATOR ALARM SYSTEM

Allan Slansky, 913 Charlotte Rd., Plainfield, N.J. 07060
Continuation-in-part of Ser. No. 379,439, May 18, 1982, abandoned. This application Aug. 31, 1984, Ser. No. 646,635
Int. Cl.⁴ G08B *21/00*
U.S. Cl. 340—576 **12 Claims**



1. An alarm system for warning of reduced alertness on the part of an operator of a machine, the alarm system being of the type which is installed on a control member of the machine, the control member being displaceable over a substantially predeterminable displacement path in response to manipulation by the operator whereby the machine is controlled in response to the displacement, the alarm system having at least one electrode for receiving energy, the alarm system further comprising:

electrically actuatable alarm means for producing an alarm indication in response to receiving energy conducted thereto from the electrode;

first interruptor means having conductive and non-conductive states for controlling said conduction of said energy to said electrically actuatable alarm means;

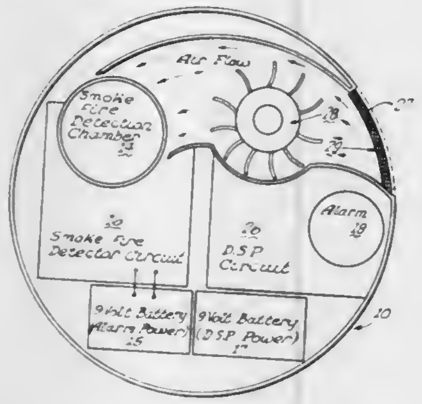
a manipulatable element responsive to the operator for controlling said first interruptor means, whereby said conductive and non-conductive states of said first interruptor means are selectable in response to a manipulation condition of the operator, said manipulation condition being in response to the alertness of the operator; and

second interruptor means electrically interposed between the electrode and said electrically actuatable alarm means, said second interruptor means having conductive and non-conductive states which are selectable in response to the location of the control member along the predetermined displacement path for controlling conduction of said energy to said electrically actuatable alarm means in response to the displacement of the control member.

4,617,560

SMOKE OR FIRE DETECTOR

Robin P. E. Gutmann, 3051 Grant St., Hollywood, Fla. 33020
Filed Dec. 31, 1984, Ser. No. 688,007
Int. Cl.⁴ G08B *17/10*
U.S. Cl. 340—628 **7 Claims**


Air Flow
Smoke Fire Detection Chamber
18
Smoke Fire Detector Circuit
26 DSP Circuit
Alarm
9 Volt Battery (Alarm Power) 25
9 Volt Battery (DSP Power) 17
10

1. A discriminative smoke or fire detector for preventing false alarms caused by transient smoke or fire in the ambient environment, said detector including a smoke or fire detector sensing system with a sensing means in a sensing chamber for producing a first signal indicative of a detected transient smoke or fire condition and an alarm signal means operably connected to said detector sensing system for providing an alarm signal, comprising:

an air moving means for conveying air through said chamber for purging transient smoke or fire in the ambient environment from said chamber;

an air moving control means connected to said air moving means for controlling operation of said air moving means;

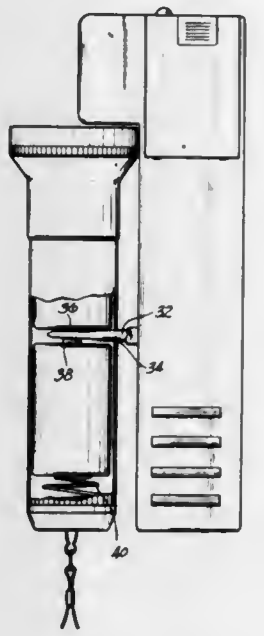
switching control means for cyclically effecting operation of said air moving means and operation of said alarm signal means, said switching control means including a first means responsive to the presence of smoke or fire for providing a first signal for generating electric current to said air moving control means, and a second means for activating said air moving means for conveying air through said chamber for purging said chamber of said transient smoke or fire thereby requiring a second signal for generating an electric current for activating said alarm signal means, said switching control means responsive to the presence of additional smoke or fire in said purged chamber for generating an electric current for providing a second signal for activating said alarm signal means.

4,617,561

EMERGENCY LIGHT AND SMOKE ALARM SYSTEM

Kenneth A. Brown, West Simsbury, Conn., assignor to Second Chance Systems, Inc., North Haven, Conn.
Filed Mar. 11, 1985, Ser. No. 710,554
Int. Cl.⁴ G08B *17/10*
U.S. Cl. 340—628 **5 Claims**

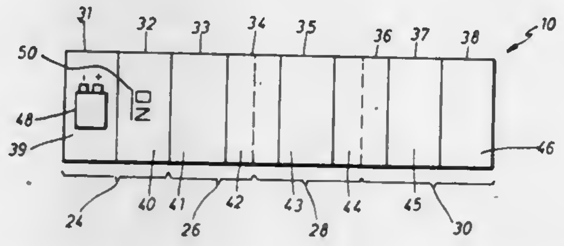
1. A portable emergency light and smoke alarm system comprising a portable housing having a mounting bracket; a smoke detector mounted in said housing for sensing the presence of smoke; audible alarm means mounted in said housing and operably connected to said smoke detector for sounding an audible signal upon the sensing of smoke by said smoke detector; light means mounted in said housing and operably connected to said smoke detector for producing a visual signal upon the sensing of smoke by said smoke detector; DC power means mounted in said housing; circuit means connected to said smoke detector, said audible alarm means, said light means and said DC power means for activating said smoke detector, said audible alarm means and said light means by said DC power means upon the sensing of smoke by said smoke detector; and a flashlight mounted on said bracket of said housing, said flashlight having a DC power source for activating said flashlight wherein said bracket includes means for deactivating said DC power source of said flashlight so as to maintain said flashlight in the off position when said flashlight is mounted on said bracket and wherein said DC power source is activated automatically upon removal of said flashlight from said bracket so as to activate said flashlight.



4,617,562

MULTICOLORED LIQUID CRYSTAL DISPLAY

Dell E. Klotz, 10323 Kirkhill Dr., Houston, Tex. 77089
Filed Apr. 11, 1983, Ser. No. 483,729
Int. Cl.⁴ G09G *3/20*
U.S. Cl. 340—753 **27 Claims**

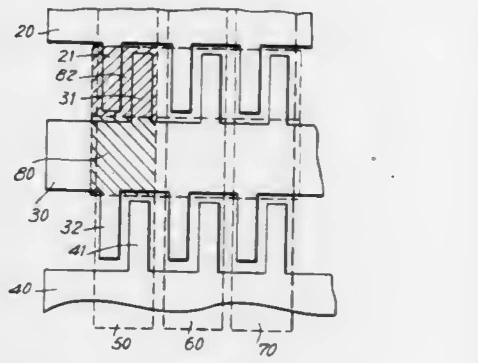


1. A display for an intensity level measuring device of the general type in which the intensity level is converted by an electronic circuit into a corresponding voltage level, the display comprising a multicolored liquid crystal display, the liquid crystal display comprising a plurality of shutters, each shutter defining a display window, at least some of the display windows when activated being of a different preselected color or colors from some other activated windows, each shutter being activatable by electronic circuitry responsive to a unique minimum voltage level generated by the electronic circuit, the preselected color or colors of each window remaining unchanged at a voltage level above its minimum unique voltage level whereby the display indicates an intensity level according to the colored display window corresponding to the activated shutter.

4,617,563

LIQUID CRYSTAL DISPLAY DEVICE

Hitoshi Fujiwara, and Yoshikiyo Futagawa, both of Shiojiri, Japan, assignors to Seiko Epson Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 27, 1983, Ser. No. 565,545
Claims priority, application Japan, Dec. 28, 1982, 57-234278
Int. Cl.⁴ G09G *3/36*
U.S. Cl. 340—784 **22 Claims**



1. A liquid crystal display device comprising:

a first transparent substrate having thereon a plurality of first main electrodes and a plurality of first auxiliary electrodes each extending from one of said first main electrodes;

a second transparent substrate positioned in spaced relationship to the first transparent substrate and having thereon a plurality of second main electrodes in facing relation to said first main electrodes and said first auxiliary electrodes, so that the second main electrodes have mutually confronting portions with the first main electrodes defining main pixels therebetween, and with the first auxiliary electrodes defining auxiliary pixels therebetween;

a liquid crystal composition maintained between said first and second transparent substrates; and

driving means for applying driving signals to the first and second main electrodes;

whereby the application of driving signals to the first and second main electrodes and the presence of the liquid crystal composition between the first substrate and the second substrate in the regions of the main pixels and the auxiliary pixels allows an image display in the main pixel and auxiliary pixel regions.

4,617,564

GRAPHIC DISPLAY SYSTEM WITH DISPLAY LINE SCAN BASED OTHER THAN POWER OF 2 REFRESH MEMORY BASED ON POWER OF 2

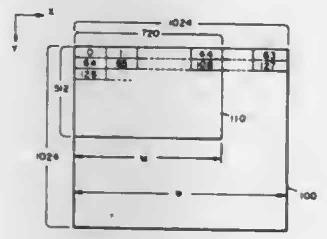
Yoshikazu Yoshioka, Kamakura, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 17, 1983, Ser. No. 542,327
Claims priority, application Japan, Feb. 24, 1983, 58-28635
Int. Cl.⁴ G09G *1/02*
U.S. Cl. 340—798 **2 Claims**

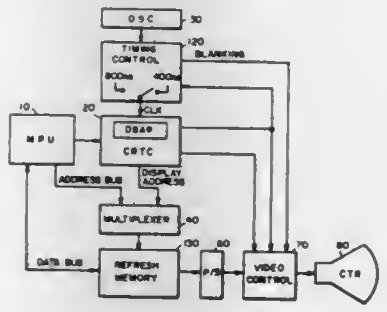
1. A graphic display system for utilizing a raster line scanning display device having a number of line segments M in each line scan based on an integer selected exclusively from integers not generated by powers of 2 and normally requiring complex address calculations when sequentially accessing information from an associated refresh memory and further having a retrace time period at the end of each line scan, said system comprising:

a refresh memory having N memory blocks for each line scan of said display device wherein N is an integer greater than M, selected from integers generated by powers of 2, said memory blocks being assigned sequential addresses and each memory block storing video data for one of said line segments of said display device;

means for accessing M memory blocks from said refresh memory and supplying the information stored therein to said display device during a display time interval corresponding to each line scan period of said display device and accessing (N−M) memory blocks during the remaining time of each line scan period not including the retrace time period; and

timing control means including clock means and counter means for accessing said memory blocks at a first clock frequency during the display time interval of each line scan and for detecting the completion of accessing of M memory blocks during the display time interval of each line scan period of said display device and said timing control means being further responsive to said detection of the completion of accessing to initiate access of memory blocks at a second clock frequency that is substantially higher than said first clock frequency and to inhibit displaying of said display device while said (N−M) memory blocks are accessed during the remaining time of each line scan period.

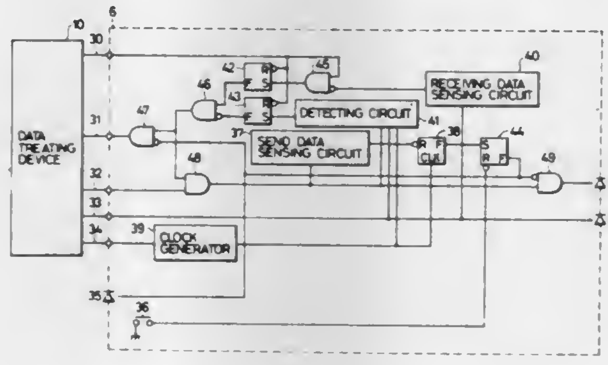




4,617,565
METHOD AND DEVICE FOR DATA COMMUNICATION

Yukio Nakata, Kawasaki; Kaoru Suda, Kitaadachi; Osamu Shiotsu, Asaka, and Motoyoshi Morito, Iruma, all of Japan, assignors to Yagi Antenna Co., Ltd. and Hitachi, Ltd., both of Tokyo, Japan

Filed Oct. 3, 1983, Ser. No. 538,509
Claims priority, application Japan, Oct. 8, 1982, 57-176298
Int. Cl.⁴ H04Q *9/00;* **H04B** *9/00*
U.S. Cl. 340—825.5 **3 Claims**



1. A data communication method for use in a data communication system including a transmission line, and a plurality of stations each having a data device for treating data and a transceiver, whereby data communication is conducted through said transmission line between said stations under control of said stations,

wherein the improvement resides in that each transceiver executes the following steps;

(a) a first step of receiving a request-to-send signal from said data device;

(b) a second step of sending a clear-to-send signal to said data device in response to said request-to-send signal unless a data signal from any other station is being received by said transceiver;

(c) a third step of sending the data from said data device to said transmission line during the time said clear-to-send signal is being sent to said data device;

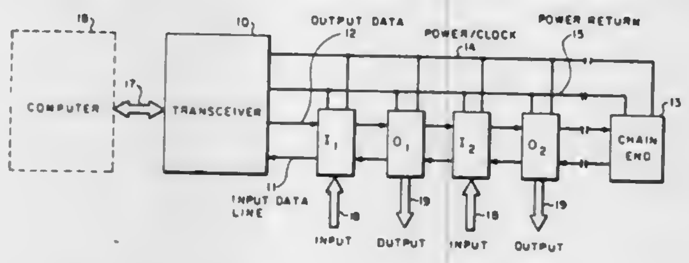
(d) a fourth step of measuring the duration of said data sending; and

(e) a fifth step of inhibiting the sending of said data over said transmission line and the sending of said clear-to-send signal to said data device simultaneously when the length of said data sending exceeds a predetermined time length.

4,617,566
ADDRESSABLE-PORT, DAISY CHAIN TELEMETRY SYSTEM WITH SELF-TEST CAPABILITY

Anthony E. Diamond, San Diego, Calif., assignor to Teleplex Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 561,567, Dec. 15, 1983. This application Jun. 21, 1984, Ser. No. 622,984
Int. Cl.⁴ G08C *15/00*
U.S. Cl. 340—870.11 **16 Claims**



1. A telemetry system for transferring pulsed input data signals in series from a daisy chain of input data ports to a receiver, said system comprising

a daisy chain of input data ports;

a clock signal generator for generating a pulsed clock signal having periodically alternating first and second states;

a clock line connected to the input data ports for carrying the clock signal pulses from the clock signal generator to the input data ports for timing the operation of the data ports;

a control signal generator for generating control signal pulses during the first-state intervals of the pulsed clock signal; and

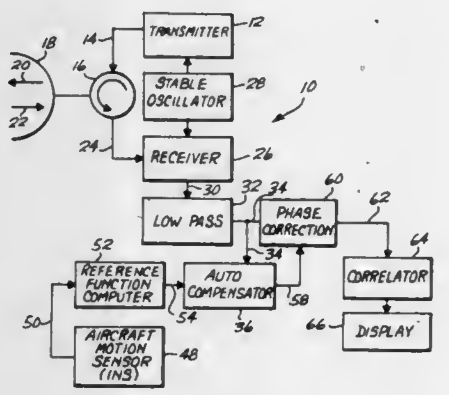
an input data line serially-connecting the input data ports to the control signal generator and to said receiver for carrying the control signal pulses from the control signal generator to the data ports and a serial block of data pulses from the respective input data ports to the receiver;

wherein each input data port includes a data register for registering an input data signal related to that input data port and for serially transferring the input data signal pulses related to that input data port from the data register onto the input data line during the second-state intervals of the pulsed clock signal, means for demultiplexing data signal pulses and control signal pulses received over the input data line from other input data ports and the control signal generator, and means for multiplexing all of the input data signal pulses and control signal pulses onto the input data line in their respective clock signal state intervals for transmission to the receiver and other input data ports connected in series between that input data port and the receiver.

4,617,567
AUTOMATIC MOTION COMPENSATION FOR RESIDUAL MOTION IN A SYNTHETIC APERTURE RADAR SYSTEM

Yuen-Kwok Chan, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 28, 1984, Ser. No. 656,143
Int. Cl.⁴ G01S *13/90*
U.S. Cl. 342—25 **4 Claims**



1. In a SAR system that receives reflections of radar signals from a target region, wherein such signals are combined with position signals from a motion sensor indicating antenna position, with the reflected signals and the position signals being integrated into range lines that may be combined to form a radar image, and wherein there may be residual motion between the antenna and the motion sensor, a method of correcting the position signals from the motion sensor to compensate for antenna residual motion that may cause phase corruption in the radar image, the method comprising:

a. transforming a received radar signal into a range line having a plurality of azimuth positions, and transforming said received signal into a frequency spectrum indicating the reflectivity of point reflectors at said azimuth positions, wherein one point reflector is located at each azimuth position, and wherein each point reflector is represented by a complex number having a certain magnitude and phase angle;

b. Sampling the range line for a symmetric triplet of three sequential point reflectors positioned at a distance from each other corresponding to a frequency, wherein said frequency corresponds to a mode of residual vibration of the antenna, and wherein said triplet includes a first point reflector, a second point reflector, and a third point reflector, all of which are represented by complex numbers, with said second point reflector being centrally positioned between said first and third point reflectors, and wherein such sampling includes calculating a first ratio of the complex number indicating reflectively of the first point reflector to the complex number indicating reflectivity of the second point reflector, and calculating a second ratio of the complex number indicating reflectivity of the third point reflector to the complex number indicating reflectivity of the second point reflector;

c. Comparing the difference between one of said ratios calculated in step (b) above, and the negative of the complex conjugate of the other of said ratios calculated in step (b), wherein if said difference is below a preselected threshold value, then said three point reflectors are considered to be a symmetric triplet;

d. Averaging the one of said ratios calculated in step (b) with the negative of the complex conjugate of the other of said ratios if said three point reflectors are considered to be a symmetric triplet;

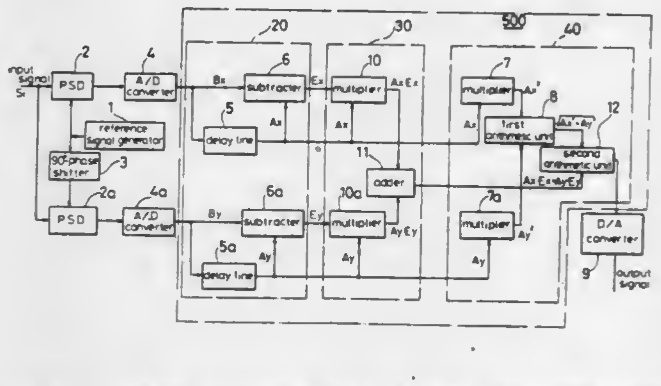
e. Calculating the amplitude and phase angle of the antenna residual motion from the averaged ratios in step (d) above, and generating an antenna residual motion signal therefrom; and

f. Combining the residual motion signal generated in step (e) above with the position signals from the motion sensor, to correct for antenna residual motion between the motion sensor and the antenna.

4,617,568
MTI RADAR

Norio Mutoh, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1984, Ser. No. 620,029
Claims priority, application Japan, Jun. 16, 1983, 58-109586
Int. Cl.⁴ G01S *13/52*
U.S. Cl. 342—160 **5 Claims**



1. An MTI radar provided with a MTI processor which comprises:

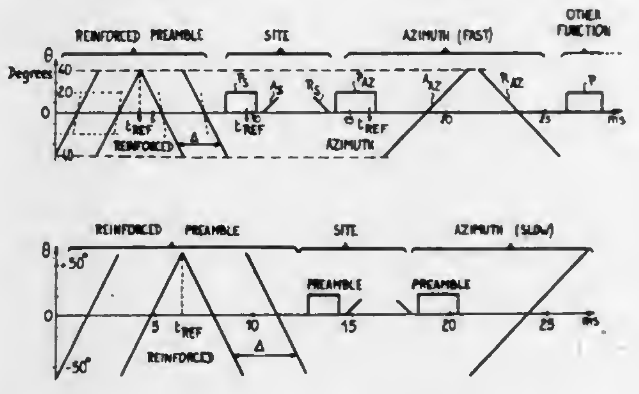
a single erasing means for erasing a vector signal received from a stationary target among a plurality of pre-erasing vector signals that include reflected waves received both from a moving and a stationary target producing a post-single erasing vector signal; and

arithmetic means for removing any other variations than variations from the moving target by calculating the inner product of the post-single-erasing vector signal and one of the pre-erasing vector signals.

4,617,569
PROCESS FOR INCREASING THE RANGE AND PARTICULARLY THE PROTECTION AGAINST JAMMING OF AN MLS LANDING SYSTEM AND MEANS FOR PERFORMING THIS PROCESS

Bruno Letoquart, Paris, France, assignor to Thomson-CSF, France

Filed Jun. 19, 1984, Ser. No. 622,341
Claims priority, application France, Jun. 21, 1983, 8310239
Int. Cl.⁴ G01S *1/18*
U.S. Cl. 342—412 **15 Claims**



1. A process for increasing the range of an MLS for assisting the landing of an aircraft, the process including a plurality of successive steps f6r transmitting an MLS function, the MLS function including information for assisting the aircraft to land, the process comprising:

transmitting at least once a supplementary reinforced preamble, the reinforced preamble having at least two outward scans and one return scan or at least one outward scan and two return scans;

identifying the time interval between two scans of the same type, the time interval being representative of identification data for at least the first function following the reinforced preamble; and

identifying the center instant of a scan sequence of the reinforced preamble, the scan sequence having an outward scan followed by a return scan, wherein the center instant is representative of the time reference data for at least the first function following the reinforced preamble.

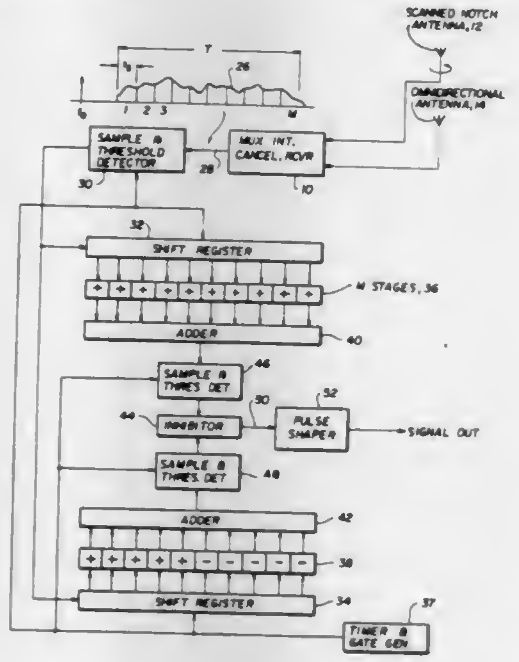
4,617,570
INTERFERENCE CANCELLING RECEIVER HAVING HIGH ANGULAR RESOLUTION INTERCEPT OF TRANSMITTED RADIATORS

Frank S. Gutleber, 24 Carriage House La., Little Silver, N.J. 07739

Filed Aug. 26, 1983, Ser. No. 526,848

Int. Cl.⁴ G01S *5/02*

U.S. Cl. 342—429 **13 Claims**



1. Receiver apparatus in a multiple access signal communications system including one or more transmitters, comprising in combination:

first antenna means having an omnidirectional antenna beam pattern;

second antenna means having a generally omnidirectional antenna pattern with a single notched portion;

means for scanning said second antenna means to position said notched portion in the direction of said one or more transmitters;

means, responsive to RF signals received by said first and second antenna means, for determining the center of a transmitted radiation pattern from said one or more transmitters for providing an indication of the bearing of said transmitters relative to said receiver apparatus including means for generating a difference RF signal between said RF signals received by said first and second antenna means, means responsive to said difference RF signal for providing a video signal therefrom, means for splitting said video signal into a plurality of pulse signal samples of substantially equal pulse width; and

means for determining the pulse signal sample substantially at the mid-point of said plurality of signal samples which thereby indicates the direction of the said transmitted radiation including first means for storing said plurality of pulse signal samples in a predetermined signal state, second means for storing said plurality of pulse signal samples and inverting the signal state of one half of said signal samples to a state opposite from said predetermined signal state, and means for determining the occurrence of the inverted one half signal samples stored in said second means relative to the plurality of pulse signal samples stored in said first means, said occurrence providing an indication of the boresight axis of said transmitted radiation pattern.

4,617,571
TUNED BAND-SWITCHING LOOP ANTENNA

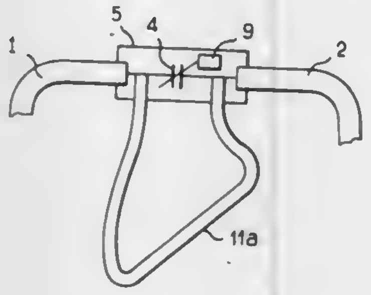
Jean Choquer, Gif sur Yvette, and Thierry Gartner, Briis Sous Forges, both of France, assignors to Societe Technique d'Applicatioon et de Recherche Electronique, France

Filed Apr. 24, 1984, Ser. No. 603,472

Claims priority, application France, Apr. 27, 1983, 83 06948

Int. Cl.⁴ H01Q *11/12*

U.S. Cl. 343—744 **3 Claims**



1. A loop antenna comprising:

two arms extending in a first vertical plane and interconnected at their top ends to form a loop by a variable capacitor;

feeding and coupling means to make said loop radiate electromagnetic energy;

an inductor connected in parallel with said variable capacitor, said inductor being formed by a two-wire line having an open end which can be short circuited; and

switching means for selectively short circuiting said open end of said two-wire line.

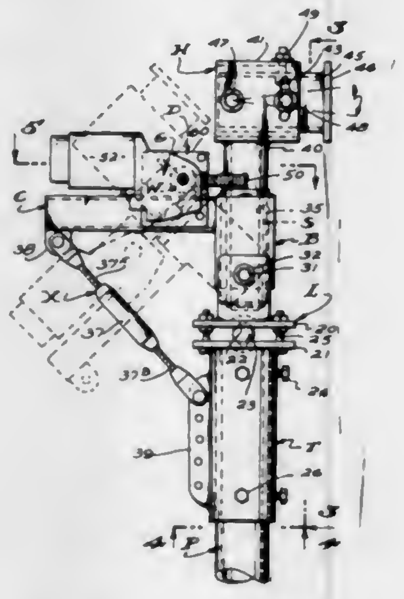
4,617,572
TELEVISION DISH ANTENNA MOUNTING STRUCTURE

Albert Hugo, P.O. Box 87 6325 Carpinteria Ave., Carpinteria, Calif. 93013

Filed Aug. 14, 1984, Ser. No. 640,620

Int. Cl.⁴ H01Q *3/08*

U.S. Cl. 343—765 **11 Claims**



1. A mounting structure for a television dish antenna comprising an elongate substantially vertical post with a lower end in fixed position relative to the earth and defining a vertical first axis; a levelling structure comprising a lower part secured in set position on an upper portion of said post, an upper part, a central pivot bearing part between said upper and lower parts and first screw means engaged with and between said upper and lower parts to pivot and set said upper part horizontal; an elongate body with an upper outer end and a lower inner end positioned above said levelling structure and defining a longitudinal second axis, coupling means projecting up from said upper part and pivotally mounting said lower end of said body to said upper part about a horizontal third axis, an elongate lever arm projects radially from the upper portion of said body at one side thereof, an elongate axially extensible strut is connected with and extends between said arm and said levelling structure to pivot and set said body about said third axis, a head structure including an elongate shaft part with inner and outer ends concentric with and projecting axially from the upper end of said body for rotation about said second axis, drive means to rotate said shaft relative to the body about said second axis including a driven gear on said shaft, a drive gear rotatably carried by said body and engaging said driven gear and a reversible drive unit carried by the body driving said drive gear, an elongate first carrier part with inner and outer ends at the outer end of said shaft with its longitudinal axis normal to said second axis, a second elongate carrier part with inner and outer end portions extending longitudinally of said first carrier part with its outer end portion projecting from the outer end of said first carrier part, pivot means pivotally connecting the inner end portion of said second carrier part to the inner end portion of the first carrier part for pivotal movement about a horizontal fourth axis spaced above and parallel with said third horizontal axis, a dish antenna mounting plate at the outer end of said second carrier part and second screw means engaged with and between said first and second carrier parts to pivot said second carrier part vertically about said fourth axis.

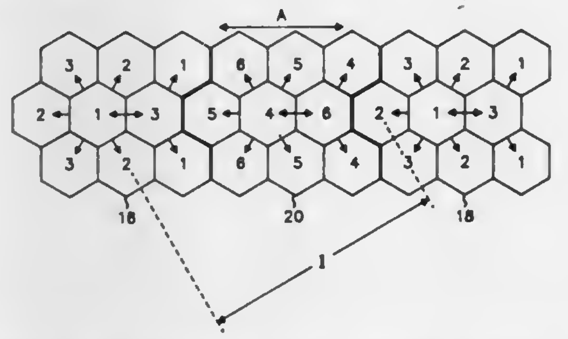
4,617,573
METHOD FOR OBTAINING A LINEAR CELLULAR ARRAY EMPLOYING COSINE-SQUARED ANTENNA PATTERNS

Allen L. Davidson, Crystal Lake, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 19, 1984, Ser. No. 683,837

Int. Cl.⁴ H01Q *21/06*

U.S. Cl. 343—844 **9 Claims**



1. A method for obtaining a linear cellular pattern, over a geographic area, with optimum frequency reuse and minimum co-channel interference, comprising the steps of:

establishing a first, second and third cell module each having a triad of geometrically shaped cells tangentially spaced at substantially 120° about a center cell, each cell having a directional antenna located on the cell perimeter positioned adjacent to said center cell such that at least said antennas of said triad radiate outwardly at approximately 120° from each other;

establishing a first cell cluster by combining said first, second and third cell modules such that said triads of said first and second cell modules are conterminously interleaved and said center cells are merged into a common center cell, and said triad of said third cell module is conterminously interleaved with said first and second cell modules such that one cell of said third triad is merged with said common center cell of said first and second cell modules, and said center cell of said third cell module is merged with one cell of either said first or second cell module such that said cell cluster has a substantially longitudinal semblance;

assigning said first, second and third cell modules a first, second or third frequency;

positioning said first cell cluster in a geographic area such that said first cell cluster is aligned with the linear direction of the geographic area to be covered.

4,617,574
INK-JET PRINT HEAD ASSEMBLY

Jean-Claude Millet, and Jean-Louis Reynaud, both of Bourg les Valence, France, assignors to Imaje S.A., Les Valence, France

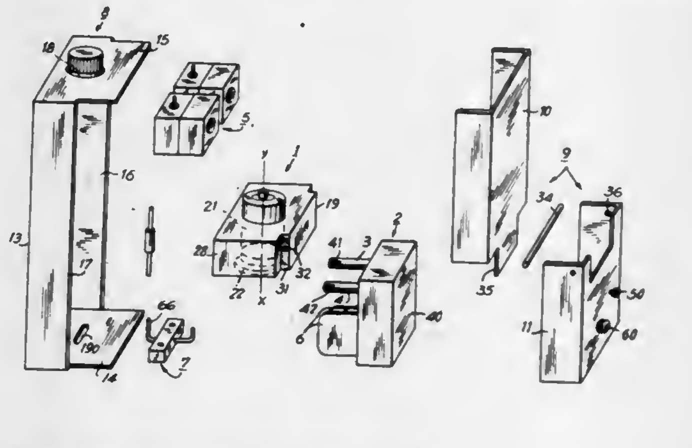
PCT No. PCT/FR84/00041, § 371 Date Oct. 23, 1984, § 102(e) Date Oct. 23, 1984, PCT Pub. No. WO84/03474, PCT Pub. Date Sep. 13, 1984

PCT Filed Feb. 28, 1984, Ser. No. 676,195

Claims priority, application France, Mar. 7, 1983, 83 03975

Int. Cl.⁴ G01D *15/18*

U.S. Cl. 346—75 **10 Claims**



1. An ink jet printing head comprising:

a casing having an end wall, top and bottom walls and opposite facing side walls;

a cover for said casing having a stationery upper section and a movable lower section;

a modulator element rigidly fixed to said casing for pinching off and severing a jet of ink, said modulator element having a base with a bore therethrough, a modulator body carried within said bore, and a modulator plate supported by said modulator body;

rotational adjusting means for adjusting the angular position of said modulator body within said base and translational adjusting means for adjusting the axial position of said modulator body within said base;

means carried by said modulator plate of said modulator element for ejecting a stream of calibrated ink drops;

an electrode holder element securely attached to said movable lower section of said cover, said electrode holder element having means for applying an electrostatic charge to said ink drops and means for electrostatically deflecting said ink drops when said cover is adsembled with said casing;

a dump and recovery tube attached to the bottom wall of said casing for collecting and recirculating unused ink drops; and an aperture in said lower wall of said casing through which said stream of calibrated ink drops flow toward a surface to be printed.

4,617,575
THERMAL HEAD

Moriaki Fuyama; Katsumi Tamura, both of Hitachi; Isao Funyu, Takahagi; Isao Nunokawa, Hitachi; Masanobu Hanazono, Mito, and Shigetoshi Hirastuka, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 30, 1985, Ser. No. 760,623

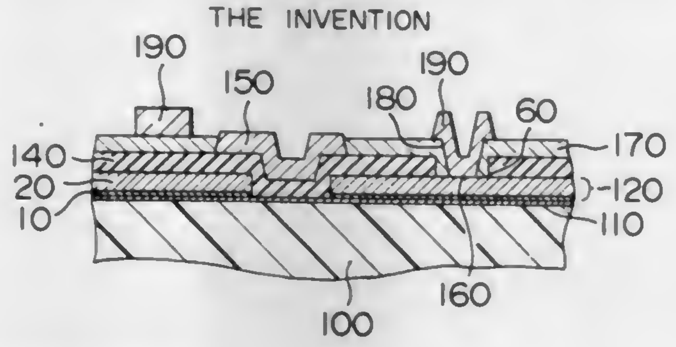
Claims priority, application Japan, Jul. 30, 1984, 59-160003

Int. Cl.⁴ G01D *15/10*

U.S. Cl. 346—76 PH **22 Claims**

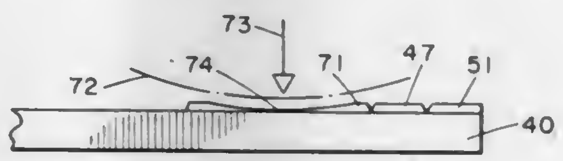
1. A thermal head, which comprises an electrically insulating substrate, a glaze layer laid thereon, a heating resistor layer

laid on the glaze layer, a plurality of first layer conductors laid on the heating resistor layer and provided at predetermined distances, a protective film laid on the heating resistor layer, and a plurality of second layer conductors counterposed to the first layer conductors and laid on the first layer conductors through an interlayer insulating film, the interlayer insulating layer being in a two-layer structure of an inorganic insulating material layer and an organic insulating material layer, the organic insulating material layer being positioned on the second layer conductor side.



4,617,576
THERMAL PRINTHEAD STRUCTURE

Charles R. Moeller, Carlsbad, Calif., assignor to International Totalizator Systems, Inc., San Diego, Calif.
Filed Nov. 26, 1984, Ser. No. 674,776
Int. Cl.⁴ G01D *15/10*
U.S. Cl. 346—76 PH **13 Claims**

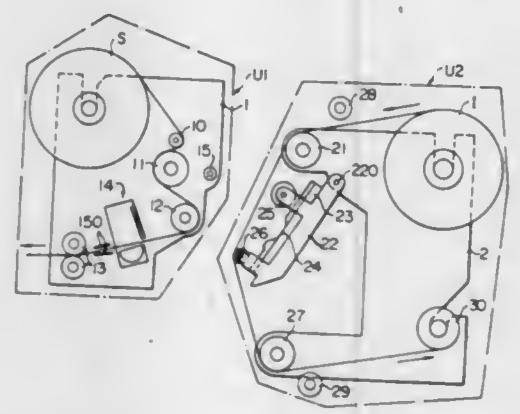


1. A thermal printhead structure which comprises:
a substrate;
a print element deposited on the substrate;
a means for impacting a material for printing, such as a ticket, against said printhead; and
a wear-resistant layer means deposited on the substrate immediately adjacent to but not on the print element, for receiving the impact of said material for printing and for resisting printhead abrasion caused by said material for printing and abrasive material contacting the printhead
wherein said means for impacting is offset from the print element such that the impact is received mainly on the wear-resistant layer means and immediately adjacent to but not on the print element.

4,617,577
THERMAL-IMAGE-TRANSFER RECORDING APPARATUS

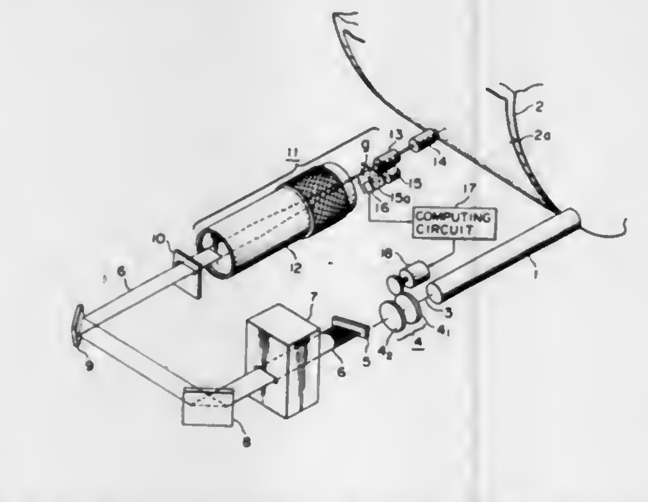
Keiji Takahashi, Kanagawa, and Sakae Fujimoto, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Japan
Filed Sep. 15, 1983, Ser. No. 532,734
Claims priority, application Japan, Sep. 16, 1982, 57-140421[U]; Sep. 17, 1982, 57-161909; Sep. 27, 1982, 57-145916[U]
Int. Cl.⁴ G01D *15/10*
U.S. Cl. 346—76 PH **15 Claims**

1. A thermal-image-transfer recording apparatus having a recording head responsive to information-dependent signals applied thereto for fusing with heat a thermally fusible ink layer on a base of an ink sheet in the selected pattern of an image and transferring the image of fused ink to a recording sheet superimposed on the ink sheet while the sheets are fed along across the recording head, thereby producing the image dependent on the signals on the recording sheet, said recording apparatus comprising:
(a) a first unit having a passage of travel of the recording sheet;
(b) a second unit having a passage of travel of the ink sheet, one of said first and second units having the recording head and the other unit having a platen roller;
(c) a locking mechanism for actuating said first and second units into and out of engagement with each other; and
(d) a positioning mechanism for positioning said recording head and said platen roller with respect to each other when the image is recorded on the recording sheet with the first and second units engaging with each other, said recording head and said platen roller jointly defining a recording zone, said platen roller being rotatable to feed the ink and recording sheets through said recording zone;
wherein said first unit is fixed and said second unit is movable with respect to said first unit into and out of engagement with the latter; and
wherein said locking mechanism comprises a rail guide mechanism for moving said second unit therealong, a lever pivotably mounted on said second unit, a locking member mounted on said seocnd unit in coaxial relation to said lever, and a pin mounter on said first unit for releasably engaging said locking member.



4,617,578
MULTI-BEAM ZOOM AND FOCUSING LENS SCAN PITCH-ADJUSTING RECORDER

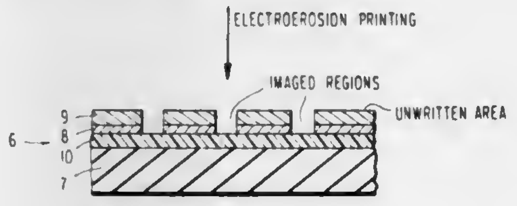
Yasutada Nezu; Yutaka Tamura; Yuuzi Mizuno; Hiroshi Iwamoto; Akihiro Yokota, all of Kyoto, and Kiyoshi Maeda, Osaka, all of Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan
Filed Feb. 7, 1985, Ser. No. 699,159
Claims priority, application Japan, Feb. 15, 1984, 59-25155; Feb. 17, 1984, 59-27339
Int. Cl.⁴ G01D *9/42;* **G02B** *27/17;* **B41B** *13/00;* **H04N** *1/40*
U.S. Cl. 346—108 **10 Claims**



1. A method for exposing a photographic film by a plurality of modulated laser beams in a scanning image reproduction system, characterized by comprising the following steps of:
modulating a plurality of parallel laser beams independently basing on picture image signals;
converting said plurality of modulated laser beams to a plurality of laser beams each pitch between which is compressed by a beam compressing optical system comprising two lenses which hold convergent points of said laser beams in common; and
focussing said compressed laser beams as a plurality of lines of light points having a predetermined interval between each of them on the surface of recording material placed in the vicinity of the focussing point of said focussing lens.

4,617,579
HYDROPHILIC PROTECTIVE COATINGS FOR ELECTROEROSION PRINTING

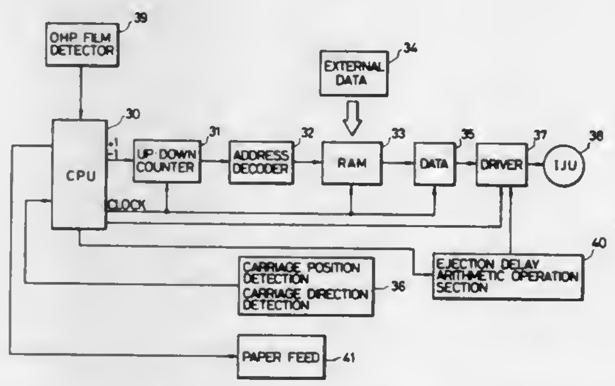
Krishna G. Sachdev, Wappingers Falls; Ali Afzali-Ardakani, Katonah; Keith S. Pennington, Somers, and Mitchell S. Cohen, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 5, 1984, Ser. No. 597,148
Int. Cl.⁴ G01D *15/06*
U.S. Cl. 346—135.1 **24 Claims**



1. Electroerosion recording material comprising:
a non-conductive support member, a thin conductive member on said support member, said conductive member being evaporable in response to being heated in an electroerosion recording process, and an overlayer of protective lubricant composition on the stylus-contacting surface of said material, said lubricant composition comprising conductive particles of high lubricity dispersed in a hydrophilic cross-linked polymeric binder, the ratio of binder to lubricant particles in said overlayer being sufficient substantially to prevent flake-off during handling and use of said material.

4,617,580
APPARATUS FOR RECORDING ON DIFFERENT TYPES OF MEDIUMS

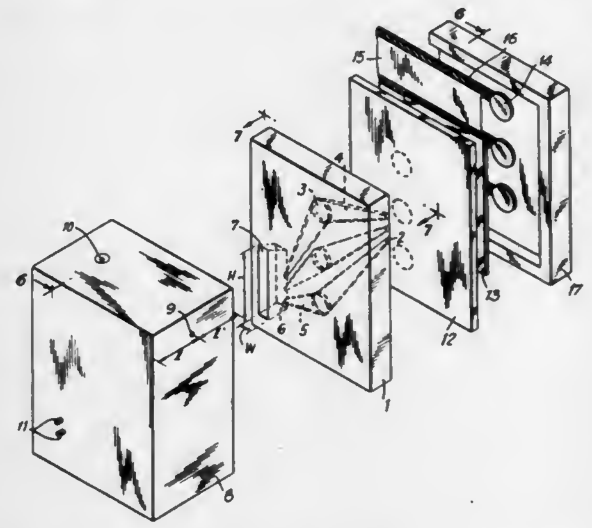
Akira Miyakawa, Tanashi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 15, 1984, Ser. No. 641,022
Claims priority, application Japan, Aug. 26, 1983, 58-155000; Aug. 26, 1983, 58-155001; Aug. 26, 1983, 58-155002
Int. Cl.⁴ G01D *18/00, 15/18*
U.S. Cl. 346—136 **10 Claims**



1. A recording apparatus comprising:
recording means for recording an image by attaching dots of a recording material onto a recording medium in accordance with data;
determining means for determining a type of the recording medium; and
control means for controlling a density of the image recorded by said recording means in accordance with a determination result of said determining means in such a manner that a plurality of dots are attached onto a particular type of recording medium for individual pixels in the image and the plurality of dots are shifted by a predetermined amount to permit superposed printing.

4,617,581
INK JET PRINTER OF THE INK-ON-DEMAND TYPE

Haruhiko Koto; Junichi Okada; Hiroshi Ishii, and Kenji Sawada, all of Shiojiri, Japan, assignors to Epson Corporation, Tokyo, Japan
Division of Ser. No. 541,628, Oct. 13, 1983, abandoned. This application Aug. 12, 1985, Ser. No. 764,814
Claims priority, application Japan, Oct. 14, 1982, 57-180176; Dec. 7, 1982, 57-215263; Jan. 17, 1983, 58-5501; Jul. 12, 1983, 58-126668; Jul. 20, 1983, 58-132162; Aug. 23, 1983, 58-153660
Int. Cl.⁴ G01D *15/16*
U.S. Cl. 346—140 R **6 Claims**



1. An ink-on-demand type ink jet printer comprising:
a printer head, said printer head including a substrate having a substantially planar surface and an opposing substantially planar surface and a vibratory plate having a cooperating substantially planar surface, the planar surfaces cooperating to define at least one nozzle, pressure chamber and ink supply passage therebetween;
an ink container integrally joined to said printer head, said ink container having a vent hole in an upper portion thereof;
means for pressuring the ink in said pressure chamber; and
means for preventing air bubbles from entering said ink supply passage;
wherein the opposing substantially planar surface of said substrate defines a wall of said ink container.

4,617,582
HEAT-SENSITIVE RECORDING SHEET

Masahiro Mlyauchi, and Masahiro Higuchi, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 494,312, May 13, 1983. This application Jun. 19, 1984, Ser. No. 622,246

Claims priority, application Japan, May 14, 1982, 57-82131; Jun. 1, 1982, 57-92154

The portion of the term of this patent subsequent to May 6, 2003, has been disclaimed.

Int. Cl.⁴ B41M *5/18*

U.S. Cl. 346—208 **24 Claims**

1. A heat-sensitive recording sheet having a heat-sensitive coating layer comprising a colorless to light-colored dye precursor as color former and a color developer which causes said dye precursor to develop a color by reacting with said dye precursor when heated, characterized in that benzyl p-hydroxybenzoate is used as said color developer and said heat-sensitive coating layer further comprises a terephthalic acid ester having a melting point of 60° C. or higher and a fatty acid amide or derivative thereof having a melting point of 60° C. or higher.

4,617,583
GATE TURN-OFF THYRISTOR

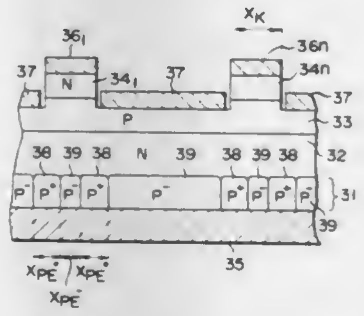
Takashi Shinohe, Kawasaki, and Masayuki Asaka, Miura, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 14, 1984, Ser. No. 671,197

Claims priority, application Japan, Mar. 9, 1984, 59-44123

Int. Cl.⁴ H01L *29/74*

U.S. Cl. 357—38 **8 Claims**



1. A gate turn-off thyristor comprising:

a first emitter layer of a first conductivity type which mainly consists of a low impurity concentration region;

a first base layer of a second conductivity type formed on said first emitter layer;

a second base layer of said first conductivity type formed on said first base layer;

a second emitter layer of said second donductivity type formed on said second base layer and divided into a plurality of emitter strips having a nearly rectangular shape, said nearly rectangularly shaped emitter strips being arranged in a circle such that the lengthwise direction of each rectangularly shaped emitter strip coincides with the radial direction of the circle;

an anode electrode formed on said first emitter layer;

cathode electrodes formed on said emitter strips of said second emitter layer;

a gate electrode formed on said second base layer except on portions of said second base layer that form said PN junctions with said emitter strips; and

a plurality of high impurity concentration regions of said first conductivity type and of a substantially uniform width formed in said first emitter layer, said high impurity concentration regions being formed such that boundary lines of a projection of said rectangularly shaped emitter strips on said first emitter layer, which boundary lines extend in the lengthwise directions of said emitter strips, are located within at least one of said high impurity concentration regions of said first emitter layer and substantially surround a low impurity concentration region in said first emitter layer that is located just below one of said emitter strips.

4,617,584
RESIN ENCAPSULATION TYPE SEMICONDUCTOR DEVICE

Hirotoshi Ikeya, Yokosuka, and Akiko Hatanaka, Sendai, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 28, 1983, Ser. No. 479,481

Int. Cl.⁴ H01L *23/30*

U.S. Cl. 357—72 **13 Claims**

1. A resin encapsulation type semiconductor device provided with a semiconductor element and a resinous encapsulator covering over said semiconductor element, said resinous encapsulator comprising a cured product epoxy resin composition comprising:

(a) a novolac type epoxy resin having an epoxy equivalent of 170 to 300;

(b) a novolac type phenol resin;

(c) an organic phosphine compound; and

(d) an organic phosphorus acid compound in an amount of 0.001 to 10% by weight based on the total amount of the epoxy resin and the phenol resin.

4,617,585
PLASTIC ENCLOSING DEVICE

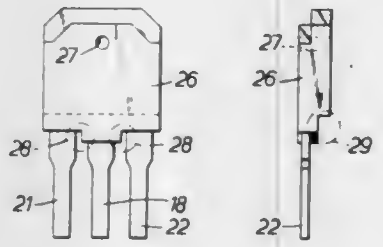
Mitsuru Yasui, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 499,785, May 31, 1983, abandoned. This application Dec. 24, 1985, Ser. No. 814,171

Claims priority, application Japan, May 31, 1982, 57-91174

Int. Cl.⁴ H01L *23/12, 23/30, 23/34, 23/12*

U.S. Cl. 357—72 **8 Claims**



1. A plastic enclosing device installed on an external plate comprising:

an element usable as a circuit element and having a plurality of terminals;

a plurality of leads connected with said terminals of said element; and

a plastic enclosure enclosing the element and a part of said leads, and having at least one main surface which is contacted with the external plate, and at least one side surface from which the leads extend outwardly, wherein a first step portion of said enclosure is formed at an intersection of the at least one main surface and the at least one side surface at a position between said plurality of leads and said external plate in order to increase a surface distance therebetween, and a second step portion of said enclosure is formed on the at least one side surface at a position between the leads.

4,617,586
HIGH-FREQUENCY CIRCUIT COMPRISING AN INTEGRATED CAPACITOR

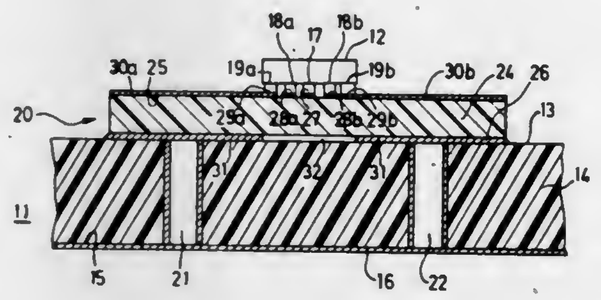
Bernard Cuvilliers, Herblay, and Philippe Jourdain, Evreux, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,280

Claims priority, application France, Mar. 31, 1982, 82 05551

Int. Cl.⁴ H01L *23/14, 23/48, 25/08, 25/12*

U.S. Cl. 357—80 **5 Claims**



1. A high frequency circuit arrangement comprising a semiconductor circuit element having a plurality of terminals secured to an insulative substrate having opposing first and second surfaces bearing conductive means for interconnecting circuit elements, characterized in that said circuit arrangement comprises:

a. a first conductive layer on the first surface of the substrate;

b. a second conductive layer on the second surface of the substrate, said second conductive layer forming a ground plane;

c. a conductively-coated wall defining a hole through the substrate extending between the first and second surfaces, said wall electrically connecting the first and second conductive layers;

d. a semiconductor-mounting dielectric plate having opposing first and second surfaces, said plate being secured to the substrate with its second surface physically contacting the first conductive layer and with its first surface bearing:

1. a third conductive layer overlying at least part of the first conductive layer; and

2. a plurality of conductive elements positioned to make electrical connection with respective ones of the terminals on the semiconductor circuit element, at least one of said conductive elements being electrically connected to the third conductive layer;

said first and third conductive layers forming with the dielectric plate an integrated capacitor for cooperating with the conductively-coated wall and with the at least one conductive element to AC couple the respective terminal of the semiconductor element to the ground plane.

4,617,587
RECOVERY SYSTEM FOR A CONTROL LOOP

Robert L. Shanley, II, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

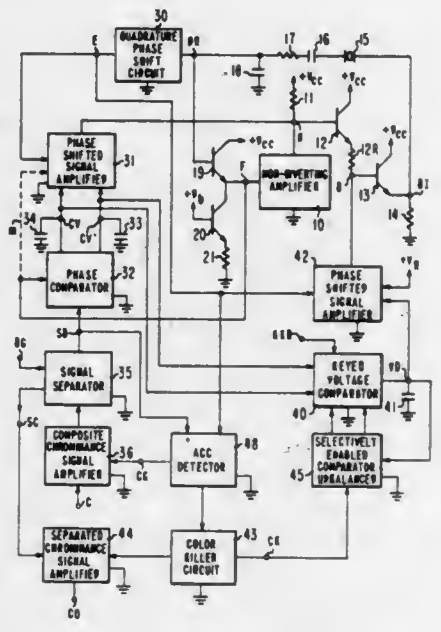
Filed Nov. 30, 1984, Ser. No. 676,944

Int. Cl.⁴ H04N *9/44*

U.S. Cl. 358—17 **6 Claims**

1. In a control loop including a keyed voltage comparator developing a control voltage output within a predetermined range of amplitudes, said control voltage being subject to utilization in establishing a desired condition of operation of electrical apparatus, wherein an unbalance of voltages of one sense at respective input terminals of said voltage comparator introduces a shift of said control voltage output in the direction of a first edge of said predetermined range whereas an unbalance of voltages at said input terminals of the opposite sense introduces a shift of said control voltage output in the direction of the second edge of said range; said control loop being undesirably subject to a failure mode in which the control voltage output may be driven to one of said edges of said predetermined range without establishing said desired condition of operation; a system for achieving a recovery from said failure mode comprising:

a latching circuit subject to latched operation in a first mode upon sensing of arrival of said control voltage output at said first range edge without establishment of said desired condition of operation, and subject to latched operation in a second mode upon sensing of arrival of said control voltage output at said second range edge without establishment of said desired condition of operation; and


30
QUADRATURE PHASE SHIFT CIRCUIT
E
17
16
15
18
+Vcc
+Vcc
11
PHASE SHIFTED SIGNAL AMPLIFIER
31
12
12R
+Vcc
19
F
NON-INVERTING AMPLIFIER
13
14
10
34
CV
CV'
33
20
21
PHASE COMPARATOR
32
42
PHASE SHIFTED SIGNAL AMPLIFIER
SIGNAL SEPARATOR
35
KEYED VOLTAGE COMPARATOR
41
40
SC
COMPOSITE CHROMINANCE SIGNAL AMPLIFIER
36
CC
ACC DETECTOR
SELECTIVELY ENABLED COMPARATOR UNBALANCER
45
C
SEPARATED CHROMINANCE SIGNAL AMPLIFIER
44
COLOR KILLER CIRCUIT
43
CK
CO

means for coupling said latching circuit to said voltage comparator in such manner that an unbalance of said one sense is established at said input terminals of said voltage comparator when said latching circuit is subject to operation in said second mode, whereas an unbalance of said opposite sense is established at said input terminals when said latching circuit is subject to operation in said first mode; and

wherein said latching circuit is subject to disabling upon establishment of said desired condition of operation.

4,617,588
FEEDBACK TYPE COMB FILTER

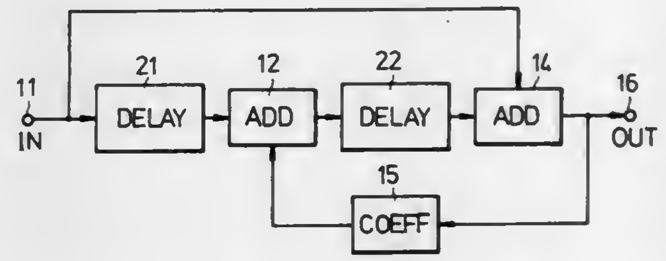
Hasatoshi Fukuda, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 26, 1984, Ser. No. 674,544

Claims priority, application Japan, Nov. 26, 1983, 58-222709

Int. Cl.⁴ H04N *9/78*

U.S. Cl. 358—31 **5 Claims**



1. A feedback type comb filter comprising:

a first delay circuit supplied with an input signal which is applied to an input terminal, for delaying the input signal by a predetermined delay time τ_1;

a first adding circuit supplied with an output signal of said first delay circuit;

a second delay circuit supplied with an output signal of said first adding circuit, for delaying the output signal of said first adding circuit by a predetermined delay time T_H;

a second adding circuit supplied with an output signal of said second delay circuit and the input signal which is applied to said input terminal and is passed through a signal path having a delay time τ_3, for adding the two signals supplied thereto, an output signal of said second adding circuit being obtained through an output terminal as an output signal of said comb filter; and

a feedback path including a coefficient multiplier for multiplying a coefficient k to the output signal of said second adding circuit, said feedback path having a delay time τ_2 and supplying the output signal of said second adding circuit to said first adding circuit through said coefficient multiplier,

said first adding circuit adding the output signal of said first delay circuit and the signal from said feedback path, and supplying the output signal thereof to said second delay circuit,

said delay time τ_1 of said first delay circuit being equal to a sum of the delay time τ_2 of said feedback path and the delay time τ_3 of said signal path,

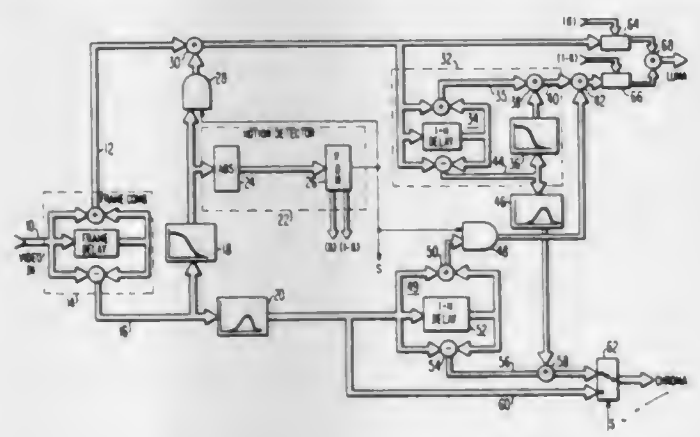
said delay time T_H of said second delay circuit being equal to a value which is smaller than a predetermined time T_P by said delay time τ_2 of said feedback path, said predetermined time T_P corresponding to a frequency interval between center frequencies of two adjacent pass bands in a comb filter characteristic of said comb filter.

4,617,589
ADAPTIVE FRAME COMB FILTER SYSTEM
Hermann J. Weckenbrock, Bordentown, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 17, 1984, Ser. No. 682,765

Int. Cl.⁴ H04N *9/64*

U.S. Cl. 358—31 **11 Claims**



1. An adaptive frame comb filter system for comb filtering video signals, comprising:

a source of video signals;

a frame comb filter coupled to said source for generating at a first output port, a first output signal corresponding to the sum of non-delayed and frame delayed signals, and generating at a second output port a second output signal corresponding to the difference of non-delayed and frame delayed signals;

means coupled to the second output port for extracting relatively low frequency interframe motion-induced signals and relatively high frequency interframe motion-induced signals;

means responsive to said relatively low frequency interframe motion-induced signals for generating a control signal on the occurrence of such signals;

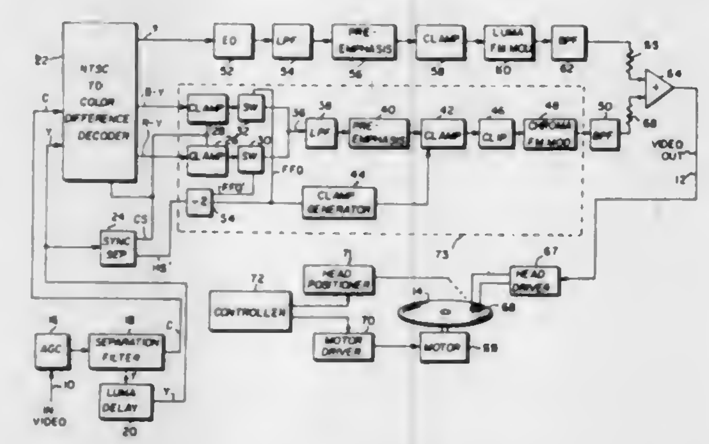
means including means for combining said relatively low frequency and relatively high frequency interframe motion-induced signals with said first output signal to produce a substantially motion-corrected first output signal and including means responsive to said control signal for selectively coupling at least said relatively high frequency interframe motion-induced signals to said combining means only when said relatively low frequency motion-induced signals occur.

4,617,590
CLAMPING CIRCUIT FOR VIDEO SIGNALS
Lynn D. Dann, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 4, 1985, Ser. No. 697,660

Int. Cl.⁴ H04N *9/72*

U.S. Cl. 358—34 **5 Claims**



1. A video circuit for processing color signals in a line sequential video system, said circuit comprising:

means for generating a pair of color video signals;

means for setting the dc voltage level of one color signal relative to the other color signal such that an offst voltage exists between them;

means for combining said offset color video signals into a line sequential signal;

means for ac coupling said line sequential signal between stages of the circuit whereby its dc level is lost; and

means for reestablishing a dc voltage level for said line sequential signal by clamping one of said color video signals to a predetermined dc level thereby utilizing the offset voltage between it and the other color video signal to set the other color video signal to another predetermined dc level.

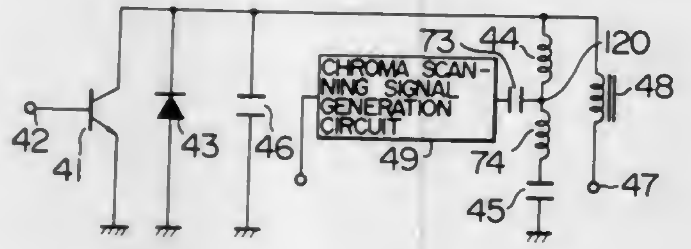
4,617,591
CHROMA SCANNING CIRCUIT FOR USE IN BEAM INDEX TYPE COLOR PICTURE REPRODUCING APPARATUS
Fumio Inoue, Yokohama; Masahiro Eto, Fujisawa, and Takashi Kubota, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 4, 1985, Ser. No. 689,005

Claims priority, application Japan, Jan. 9, 1984, 59-896

Int. Cl.⁴ H04N *9/24*

U.S. Cl. 358—67 **15 Claims**



1. A chroma scanning circuit used in a beam index type color picture reproducing apparatus having a deflection circuit provided with a horizontal output transistor, a horizontal deflection coil connected to an output of said horizontal output transistor, and a resonance capacitor connected to an output of said horizontal output transistor, and having an index tube in which a single electron beam is deflected by a horizontal deflection magnetic field generated by said deflection circuit, said chroma scanning circuit comprising:

an inductance element connected in series to said horizontal deflection circuit;

an impedance element connected at its one end to a junction between said horizontal deflection coil and said inductance element; and

a chroma scanning signal generating means connected to the other end of said impedance element and for generating a chroma scanning signal.

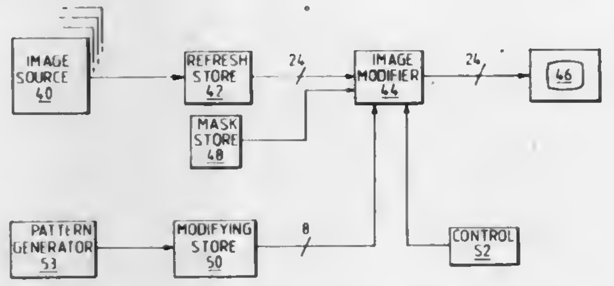
4,617,592
VIDEO RETOUCHING SYSTEM
Lindsay W. MacDonald, Irvine, Calif., assignor to Crosfield Electronics Limited, London, England

Filed Mar. 8, 1983, Ser. No. 473,400

Claims priority, application United Kingdom, Mar. 11, 1982, 8207152

Int. Cl.⁴ H04N *1/40*

U.S. Cl. 358—80 **5 Claims**



1. A video image modifying system comprising:

a first store for signals representing image pixel values;

a second store for signals for the same image pixels;

a display monitor responsive to pixel signals and providing a corresponding display;

a modifying store for multi-bit pixel values, each such pixel value corresponding to an image pixel;

display modifying means for receiving signals from the modifying store and for receiving and combining pixel signals from the first and second stores and applying the resultant pixel signals to the display monitor; and

control means having an output connected to the display modifying means and establishing a combining function determining the response of the display-modifying means to the values from the modifying store;

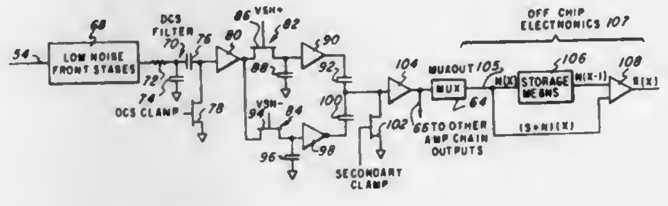
wherein the display modifying means, operates to provide display control pixel signals which result from functionally combining the corresponding pixel values from the first and second stores under the control of the modifying value from the modifying store and the combining function established by the control means.

4,617,593
VISIBLE AND NEAR INFRARED IMAGING SYSTEM
Dana Dudley, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 7, 1984, Ser. No. 638,832

Int. Cl.⁴ H04N *7/18, 5/33*

U.S. Cl. 358—113 **11 Claims**



1. An imaging system comprising:

(a) an optical system for focusing energy emanating from a scene;

(b) a detector means in the optical path of the optical system for receiving the focused energy and producing substantially noise free electrical signals representative of the scene, the detector means including a plurality of detector elements arranged in rows and columns, each element having a solid state switch and a temperature sensitive capacitor operatively connected to the switch, said switch for selectively charging the capacitors; and

(c) a plurality of amplifier chain circuit means operatively connected to the columns of detector elements for reducing substantially the reset noise of the detector means in the electrical signals.

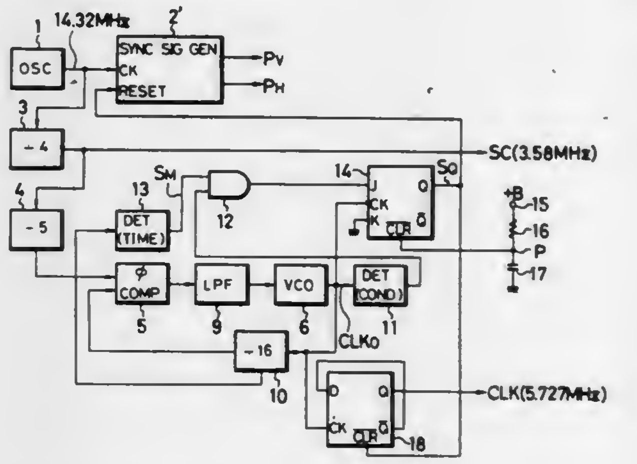
4,617,594
SIGNAL GENERATOR CIRCUIT
Koichi Katagiri, Tokyo; Yoshihiro Hanamoto, Hyogo; Satoru Maeda, Kanagawa, and Ikuo Taniguchi, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Corp. and Sony Corporation, both of Tokyo, Japan

Filed Apr. 12, 1985, Ser. No. 722,355

Claims priority, application Japan, Apr. 13, 1984, 59-74365

Int. Cl.⁴ H04N *5/06*

U.S. Cl. 358—150 **7 Claims**



1. A signal generator circuit comprising:

reference signal oscillator means for producing a reference signal having a series of rising edges;

means responsive to said reference signal for generating a horizontal synchronization signal synchronized with said reference signal;

frequency-dividing means responsive to said reference signal for producing a color sub-carrier signal having a series of rising edges;

a phase-locked loop circuit responsive to said sub-carrier signal and including a voltage-controlled oscillator, said voltage-controlled oscillator producing an output signal having a series of rising edges, at least one rising edge of said sub-carrier signal coinciding with a rising edge of said signal from said voltage-controlled oscillator, said output signal from said voltage-controlled oscillator being synchronized with said sub-carrier signal;

means for detecting a time at which a rising edge of said sub-carrier signal coincides with a rising edge of said output signal of said voltage-controlled oscillator;

means for generating a clock signal synchronized with said output signal of said voltage-controlled oscillator and having a series of falling edges;

means for generating power supply voltage, said power supply voltage having a rising edge upon application to said signal generator circuit; and

means for detecting said rising edge of said power supply voltage;

said horizontal synchronization signal generating means and said clock signal generating means being controlled by said time detecting means and said rising edge detecting means so as to ensure that the rising edge of said horizontal synchronization signal avoids coincidence with a rising edge of said clock signal.

4,617,595

PROCESS AND APPARATUS FOR ANALYZING A PHOTOSENSITIVE DEVICE HAVING AN INTERLINE-TRANSFER STRUCTURE

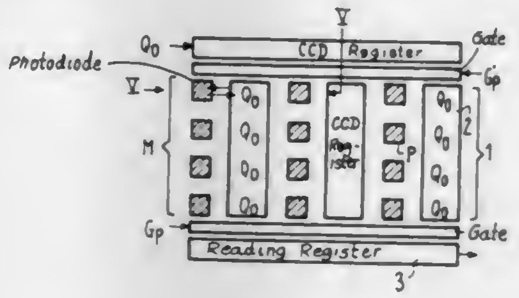
Jean-Luc Berger, Grenoble, France, assignor to Thomson-CSF, Paris, France

Filed Oct. 12, 1984, Ser. No. 660,443

Claims priority, application France, Oct. 21, 1983, 83 16792

Int. Cl.⁴ H04N *3/14*

U.S. Cl. 358—213 **7 Claims**



2. A process for analyzing a light sensitive device having an interline transfer structure, this device comprising a photosensitive matrix of N columns of M photosensitive points receiving signal charges, each photosensitive point of a single column being connected to a stage of a charge transfer shift register that transfers signal charges from the photosensitive points towards a reading register, perpendicular to the shift registers, said process comprising the following steps:

injecting a drive charge into each stage of the shift registers, during a preceding reading time;

transferring the drive charge from the shift registers to the photosensitive points where said charge is superimposed on the signal charges;

transferring charges constituted by the signal charge plus the drive charge from the photosensitive points to the shift registers to be read in a conventional manner.

4,617,596

IMAGE PROCESSING APPARATUS

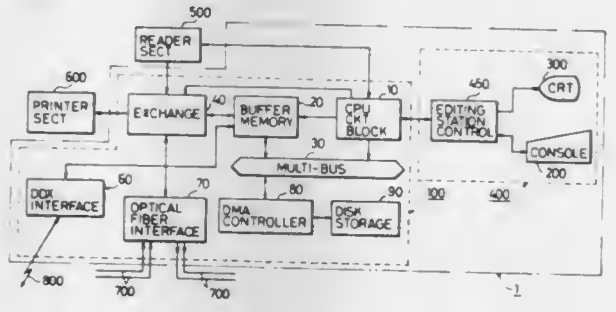
Tadashi Yoshida, Tokyo; Katsuichi Shimizu, Kunitachi; Shinobu Arimoto; Katsuyoshi Maeshima, both of Tokyo; Nao Nagashima, Yokohama, and Asao Watanabe, Higashi Kurume, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1983, Ser. No. 537,120

Claims priority, application Japan, Oct. 5, 1982, 57-173869

Int. Cl.⁴ H04N *1/40*

U.S. Cl. 358—280 **33 Claims**



1. An image processing apparatus comprising:

input means for entering image information;

means for setting a processing procedure for processing the image information entered from said input means, said processing procedure including specific data rewritable in the form of numerical data;

memory means for storing the processing procedure set by said setting means;

means for rewriting the specific data including the processing procedure stored in said memory means in the form of numerical data suitable for a desired image processing; and

means for processing the image information entered from said input means in accordance with the processing procedure including the numerical data rewritten by said rewriting means.

4,617,597

COMPATIBLE COLOR TELEVISION WITH REGENERABLE SIGNALS

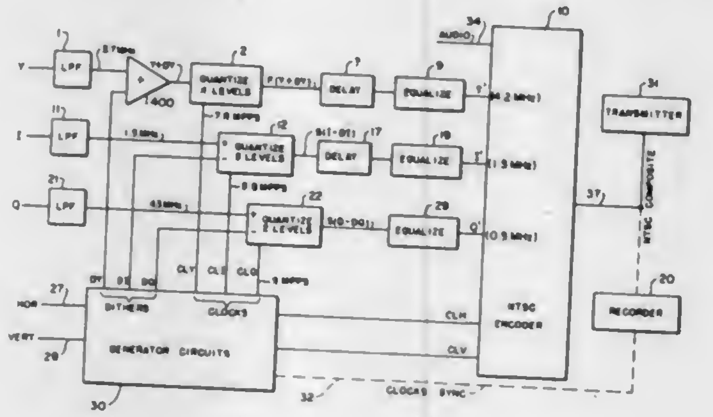
Bernard Lippel, West Long Branch, N.J., assignor to Quanticon Inc., West Long Branch, N.J.

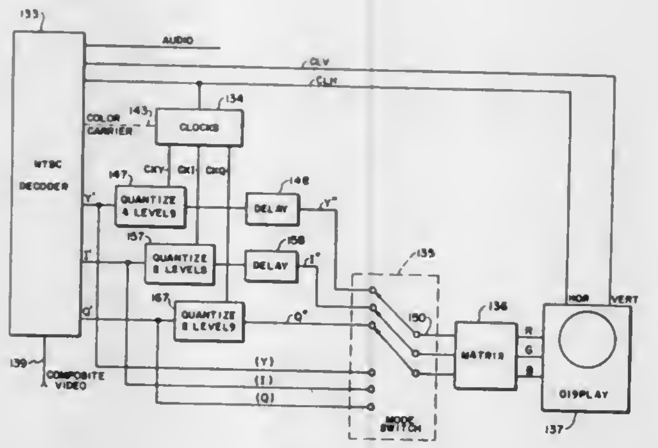
Division of Ser. No. 354,138, Mar. 5, 1982, Pat. No. 4,568,966, which is a continuation-in-part of Ser. No. 224,679, Jan. 13, 1981, Pat. No. 4,460,924, Continuation of Ser. No. 897,860, Apr. 19, 1978, Pat. No. 4,275,411. This application Oct. 4, 1985, Ser. No. 784,850

The portion of the term of this patent subsequent to Jul. 17, 2001, has been disclaimed.

Int. Cl.⁴ H04N *11/14*

U.S. Cl. 358—310 **24 Claims**





1. Signalling apparatus generating a regenerable composite signal sufficient for a colored television picture and interchangeable with another composite signal for display of said colored picture on a television receiver;

said another composite signal comprising a set of analog video signals, each characterized by samples allowed any amplitude in a range of amplitudes;

said apparatus comprising:

means for obtaining a set of signals equivalent to the set of analog video signals of said another composite signal;

dither-quantizing means modifying said equivalent set by combining a signal with dither and by quantizing samples of the combined signal according to plural discrete values of amplitude; and

encoder means for incorporating the modified set of signals into a composite signal compatible with said television receiver.

18. An improved video record storing color television information and interchangeable with another record for playing on a reproducer;

said another record storing said television information encoded in terms of a first composite signal comprising a set of analog video components, each said component confined to a band of frequencies and corresponding to samples having a continuous range of possible amplitudes;

said improved record storing said television information encoded in terms of a regenerable composite signal comprising video components, including at least one component having substantially the same bandwidth as a corresponding component of said first composite signal but corresponding to samples quantized according to more than one quantum level of amplitude;

said reproducer detecting and processing said another and said regenerable composite signals in the same manner to display the recorded television information.

4,617,598

ROTARY HEAD MAGNETIC RECORDER/REPRODUCER

Keiichirou Tsuruoka, and Ryo Minohara, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

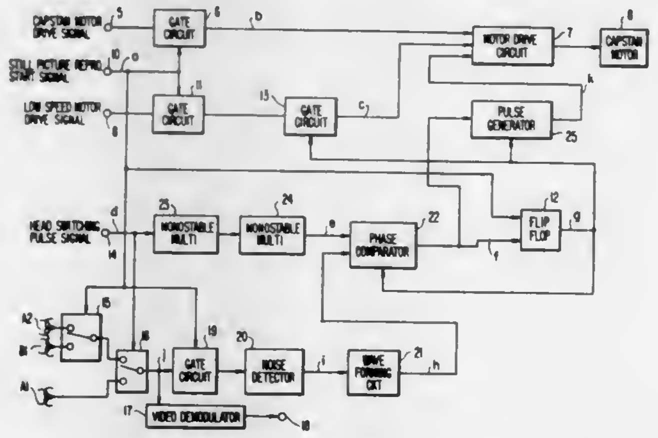
PCT No. PCT/JP83/00160, § 371 Date Jan. 25, 1984, § 102(e) Date Jan. 25, 1984, PCT Pub. No. WO83/04360, PCT Pub. Date Dec. 8, 1983

PCT Filed May 25, 1983, Ser. No. 588,864

Claims priority, application Japan, May 25, 1983, 57/89026

Int. Cl.⁴ H04N *5/782*

U.S. Cl. 360—10.3 **7 Claims**



1. A rotary head type magnetic recording and reproducing apparatus for recording and reproducing a video signal sequentially on a magnetic tape driven by a capstan by alternately using two rotary heads provided on a rotating body, said two heads having head gap angles which are slightly different from each other and which carry out azimuth recording such that each field of a frequency modulated video signal is reproduced by following a record locus which is oblique to the length of the magnetic tape, said apparatus comprising:

(a) a means for driving said magnetic tape at a speed which is lower than the tape speed used in a recording mode when said apparatus is reproducing still pictures;

(b) at least one additional rotary magnetic head for reproducing still pictures, provided on said rotating body, and having a head gap angle which is the same as that of one of said two rotary magnetic heads, said apparatus reproducing one recording track repeatedly by using two of said rotary magnetic heads having a same head gap angle when said magnetic tape is moving slowly and stopped;

(c) a means for detecting a noise generation section within reproduced signals of at least one magnetic head;

(d) a means for comparing the phase difference between the signal of said means for detecting and a pulse signal synchronized with the rotational phase of said rotating body when an output of said means for detecting occurs within a predetermined rotational phase position of said rotating body;

(e) a means for stopping the travel of said magnetic tape after driving a specified length of said magnetic tape responding to the output of said means for comparing when said tape is moving slowly by said means for driving.

4,617,599

PCM SIGNAL RECORDING/REPRODUCING APPARATUS

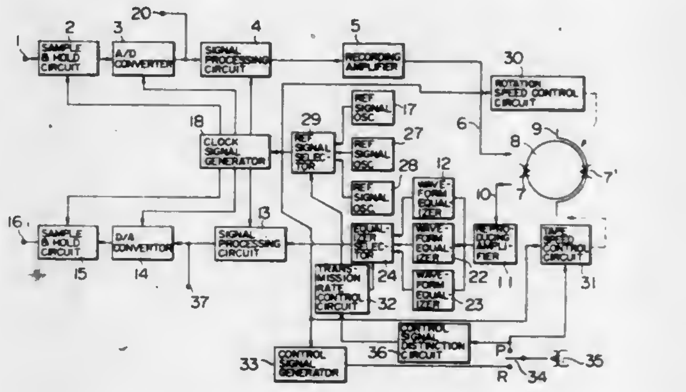
Takaharu Noguchi; Masaharu Kobayashi; Takao Arai, and Toshifumi Shibuya, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 15, 1984, Ser. No. 620,893

Claims priority, application Japan, Jun. 15, 1983, 58-105880; Jun. 15, 1983, 58-105882; Jun. 17, 1983, 58-107699; Sep. 14, 1983, 58-168154

Int. Cl.⁴ G11B *5/00, 5/09*

U.S. Cl. 360—32 **10 Claims**



1. A recording/reproducing apparatus in which an analogue signal is sampled at a selected sampling frequency, converted into a PCM signal by digitizing the samples in accordance with a predetermined quantization bit number, and recording said PCM signal on a moving recording medium and reproducing said PCM signal therefrom by means of a recording head, comprising:

means for generating a clock signal having a frequency which can be varied selectively in accordance with said selected sampling frequency and quantization bit number at which the analogue signal is converted to a PCM signal;

means for processing the digital signal to be recorded and reproduced by using said clock signal; and

means for controlling the relative speed of the recording head and the recording medium in dependence on said selected sampling frequency and said predetermined quantization bit number.

4,617,600

MAGNETIC HEAD HAVING A THIN STRIP OF MAGNETORESISTIVE MATERIAL AS A READING ELEMENT

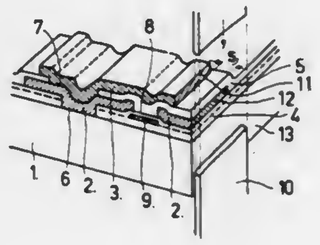
Gerardus H. J. Somers, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 26, 1984, Ser. No. 593,073

Claims priority, application Netherlands, Apr. 5, 1983, 8301188

Int. Cl.⁴ G11B *5/30*

U.S. Cl. 360—113 **3 Claims**



1. In a magnetoresistive head for reading analog information

on a track of a recording medium wherein the head is comprised of a magnetic yoke having first and second outer arms and a central arm between said outer arms, the pole faces of the central and first outer arm being in a common plane, whereby the recording medium is adapted to be moved adjacent said yoke in a direction parallel to said common plane, and a strip of magnetoresistive material is coupled to said yoke at a position spaced from said plane, whereby said strip defines a reading element, the improvement wherein said second outer arm has a pole face spaced from said plane to define a gap between said plane and the pole face of said second outer arm, said arms being separated in part by non-magnetic layers, the pole face of said second outer arm being at a greater distance from said recording medium than the pole faces of said first outer and central arms, whereby magnetic flux arising from information on said recording medium at a first frequency is dissipated in said gap to a greater extent than magnetic flux arising from information on said recording medium at a second higher frequency to thereby reduce magnetic flux coupled to said strip at said first frequency.

4,617,601

MAGNETO-OPTICAL RECORDING MEDIUM HAVING RECORDING GUIDE TRACKS

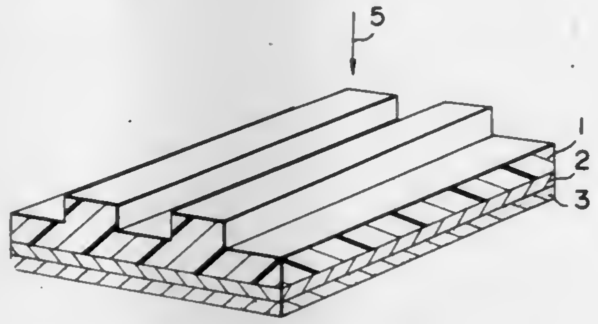
Motoharu Tanaka, Numazu, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed May 3, 1983, Ser. No. 491,141

Claims priority, application Japan, Jun. 18, 1982, 57-103937

Int. Cl.⁴ G11B *7/26, 5/82*

U.S. Cl. 360—131 **13 Claims**



1. A magneto-optical recording medium, comprising:

a monolithic, light-transparent, planar, non-metallic, recording medium base having a flat surface on one side thereof and having a dentate surface on the opposite side thereof, said dentate surface defining a grooved guide track and teeth between adjacent groove portions of said grooved guide track, the entirety of said recording medium base, including said teeth, being made of a single light-transparent non-magnetic material;

a vertically anisotropic magnetic film layer coated directly on said flat surface and being disposed on the opposite side of said base from said dentate surface, said magnetic film layer being magnetizable anisotropically in a direction normal to said flat surface of said base, said magnetic film layer having a mirror surface in contact with said flat surface of said base and being effective to reflect a laser beam that is directed through said base from said opposite side thereof and against said mirror surface,

the thickness of said base being less at said grooved guide track than at said teeth so that the reflectance of said base is different at said grooved guide track and at said teeth, respectively whereby tracking is performed by detecting said difference in reflectance.

4,617,602

PROTECTIVE PLUG FOR DISTRIBUTOR STRIPS

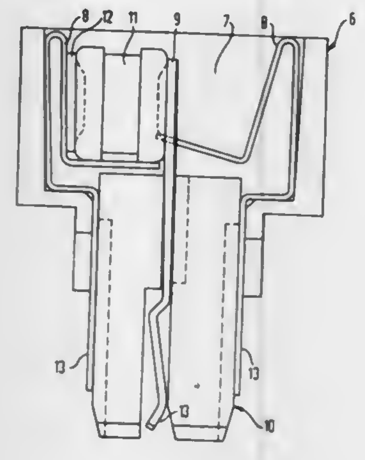
Franz Dolansky, Munich, and Ewald Steiner, Berg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 3, 1985, Ser. No. 719,330

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1984, 3412452

Int. Cl.⁴ H02H *9/06*

U.S. Cl. 361—119 **4 Claims**



1. A protective element system, comprising:

a distributor strip having

- a plurality of double terminal post means for connection of electrical conductors arranged in two rows;
- upwardly open receptacle chamber means between the two rows in an upper portion of the distributor strip;
- contact springs connected to the respective double terminal post means at outer sides of the receptacle chamber means; and
- portions of a grounding rail projecting into the receptacle chamber means between the contact springs opposite one another in the chamber means;

a protective element having

- a lower part designed as a plug means for insertion into the receptacle chamber means of the distributor strips;
- an upwardly open receptacle chamber means provided in the protective element for accommodating surge arresters at an upper part thereof;
- one-piece contact springs each having first portions opposite one another at sides of the receptacle chamber means and second portions extending to the plug means, and a one-piece grounding rail having a first portion projecting into the receptacle chamber means between the contact springs and a second portion projecting into the plug means;

the second portion of each of the contact springs and the second portion of the grounding rail directly abutting the contact springs and the grounding rail respectively of the receptacle chamber means of the distributor strip in which the protective element is plugged; and

the first portion of each of the contact springs in the receptacle chamber means of the protective element having an integral free leg portion bent at approximately a right-angle with respect to remaining portions of the contact spring and situated adjacent a floor of the chamber means, a leading edge of the free leg being pressed in spring-like fashion against the grounding rail when a surge arrester is not present, and a length of the free leg being dimensioned such that after insertion of a surge arrester with an associated solder spacer, a spacing between said leading edge and the grounding rail is smaller than a thickness of the solder spacer.

4,617,603

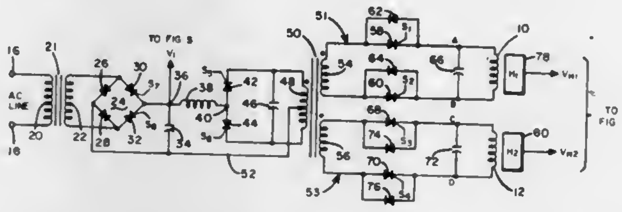
DEGAUSSING SYSTEM FOR BULK DEMAGNETIZATION OF PREVIOUSLY MAGNETIZED MATERIALS

Ronald R. Johnson, Shorewood, and Randall K. Rieckenberg, Minneapolis, both of Minn., assignors to IXI Laboratories, Inc., Shorewood, Minn.

Filed Feb. 27, 1985, Ser. No. 706,134

Int. Cl.⁴ H01F *13/00*

U.S. Cl. 361—149 **7 Claims**



1. Apparatus for demagnetizing items exhibiting a remanent magnetic field comprising:

(a) a hollow chamber made from a non-ferromagnetic material that is substantially transparent to magnetic fields, said chamber being surrounded at least over a part of its surface by first and second coils, said first and second coils being orthogonally disposed relative to one another and each forming a part of first and second resonant tank circuits;

(b) a source of current pulses for stimulating said tank circuits;

(c) controllable switching means coupled between said first and second resonant tank circuits and said source of current pulses; and

(d) microprocessor means coupled to said controllable switching means for rendering said switching means conductive and nonconductive at preprogrammed times to maintain a predetermined phase relationship between the magnetic fields produced by currents flowing through said first and second coils.

4,617,604

METHOD FOR DRIVING A RELAY

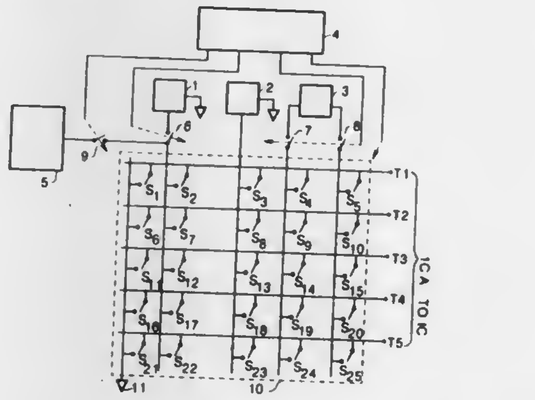
Yoh Narimatsu, Koganei, and Minoru Niizaki, Hachioji, both of Japan, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 7, 1985, Ser. No. 689,358

Claims priority, application Japan, Jan. 27, 1984, 59-13970

Int. Cl.⁴ H01H *47/00*

U.S. Cl. 361—160 **3 Claims**



1. A method for driving a relay comprising the steps of, driving the relay in dry switching mode for general measurement, driving the relay intermittently in wet switching mode in order to clean relay contact areas.

4,617,605

CARRIER ELEMENT FOR AN IC MODULE

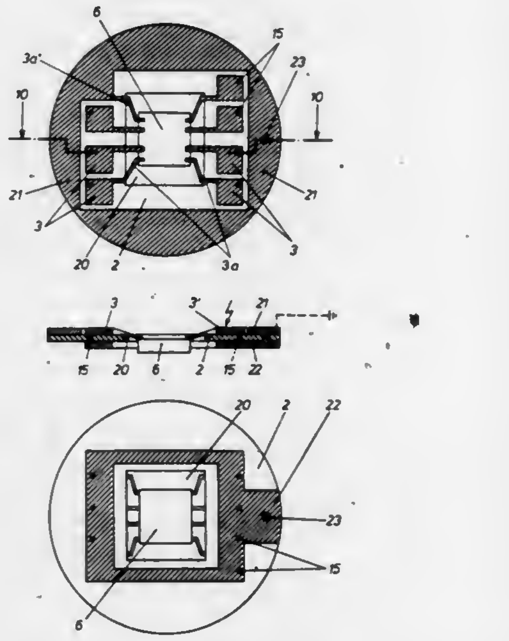
Werner Obrecht, Wielenbach; Yahya Haghiri-Tehrani, and Joachim Hoppe, both of Munich, all of Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 396,488, Jul. 8, 1982, abandoned. This application Apr. 24, 1985, Ser. No. 726,818

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1981, 3130324

Int. Cl.⁴ H05K *1/18*

U.S. Cl. 361—220 **3 Claims**



1. In a card having an embedded integrated circuit (IC) module electrically connected by a plurality of leads to individual galvanic contact pads exposed to the surface of the card for communicating with said module, the improvement comprising an electrically conductive ring surrounding the contact pads and being electrically separated from said contact pads, and means on said ring associated with each pad for defining a local gap across which static charges can flow from the contact pad to the conductive ring, the electrically conductive ring and the gaps being covered by an electrically insulating card layer that effects exposure of the pads.

4,617,606

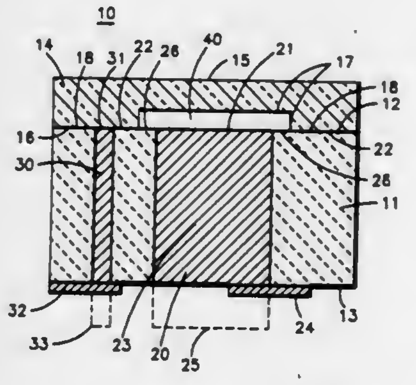
CAPACITIVE PRESSURE TRANSDUCER

Peter J. Shak, and Roland K. Ho, both of Hoffman Estates, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 31, 1985, Ser. No. 696,933

Int. Cl.⁴ G01L *9/12*

U.S. Cl. 361—283 **16 Claims**



1. A capacitive pressure transducer comprising:

a nonconductive base having external top and other surfaces,

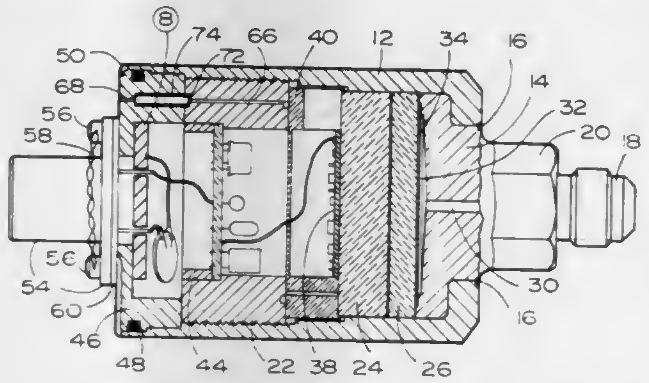
a conductive first capacitive electrode bonded to said base

and having a top external surface forming part of said base external top surface, the first electrode top external surface effectively substantially surrounded by nonconductive coplanar portions of said base top surface, and
diaphragm means having top and bottom surfaces with said diaphragm bottom surface joined to said base top surface, a recessed portion of said diaphragm bottom surface spaced apart from and facing said first capacitive electrode top external surface and forming a second capacitive electrode movable with respect to said first electrode in response to sensed pressure variations, coplanar nonrecessed portions of said diaphragm bottom surface peripheral to said recessed portion being bonded to said nonconductive coplanar portions of said base top surface,
said first electrode comprising a preformed metallic component embedded in said base, said first electrode top external surface being coplanar with said base top surface nonconductive coplanar portions, and said first electrode having a conductive projecting portion, effectively integral with said first electrode top external surface, embedded in said base and effectively extending from said first electrode top external surface through said base to at least said base other surface.

4,617,607

HIGH PRESSURE CAPACITIVE TRANSDUCER

Kyong Park, Chatsworth, and Hung-Chih Chen, Cerritos, both of Calif., assignors to Kavlico Corporation, Chatsworth, Calif.
Filed Dec. 10, 1985, Ser. No. 807,258
Int. Cl.⁴ G01L *9/12*
U.S. Cl. 361—283 **18 Claims**

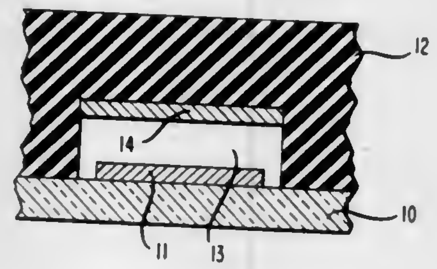


1. A simple and reliable high pressure transducer comprising:
a capacitive pressure transducer made of two closely spaced insulating plates of low mechanical hysteresis material, said plates each having a layer of conductive material on their opposed faces forming electrodes which are spaced slightly apart from one-another, and at least one of said plates being a diaphragm which is flexible under high pressure to deflect toward the other plate and change the capacitance between said electrodes;
a high pressure fitting for mounting and enclosing said capacitive transducer, said high pressure fitting including a coupling for connecting to a source of high pressure fluid, and a high pressure chamber having an extent comparable to that of the insulating diaphragm;
a thin flexible metal diaphragm bonded to said fitting and sealing said high pressure chamber and blocking high pressure fluid from said transducer; and
means for mounting said transducer within said fitting with the insulating diaphragm in firm engagement with said flexible sheet metal diaphragm, whereby, when the high pressure applied to said coupling changes, the deflection of said sheet metal member and insulating diaphragm change correspondingly, and the resultant changed output capacitance of the transducer indicates the new pressure level.

4,617,608

VARIABLE GAP DEVICE AND METHOD OF MANUFACTURE

Greg E. Blonder, Maplewood; Angelo A. Lamola, Warren, and Robert A. Lieberman, New Providence, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Continuation-in-part of Ser. No. 687,192, Dec. 28, 1984, abandoned. This application Jun. 13, 1985, Ser. No. 744,382
Int. Cl.⁴ H01G *5/18, 7/00;* **G01L** *9/00*
U.S. Cl. 361—291 **29 Claims**

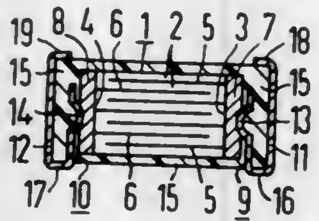


19. A variable capacitance device comprising:
a first body including a first electrode formed on one surface thereof, said electrode comprising two interdigitated electrode portions which are capacitively coupled together;
a second body mounted over the first body, the said second body including a cavity formed therein which is positioned over said first electrode and which has a surface opposite the said electrode;
at least one of said bodies being flexible so that the body can be deformed and the gap between the said surface of the cavity and the electrode portions can be varied while the gap in the undeformed state is no greater than 30 μm.

4,617,609

ELECTRIC CAPACITOR IN THE FORM OF A CHIP COMPONENT AND METHOD FOR MANUFACTURING SAME

Ferdinand Utner, Regensburg, and Herbert Bolz, Wiernsheim-Serres, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Mar. 4, 1985, Ser. No. 707,591
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1984, 3412492
Int. Cl.⁴ H01G *1/14, 4/10, 7/00*
U.S. Cl. 361—310 **15 Claims**

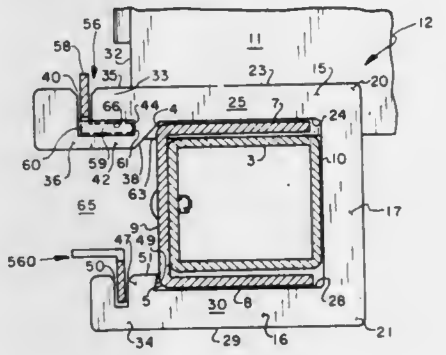


1. A capacitor chip adapted for attachment to a printed circuit board by soldering using solder flux and a subsequent cleaning agent comprising:
a capacitor member having at least one metal layer electrically connected to a metal plating at one end face of said capacitor member and at least one other metal layer electrically connected to a metal plating at an opposite end face of said capacitor member, said metal layers having plastic dielectric material therebetween;
two metal bands having interior portions respectively electrically connected to said platings forming current leads for said capacitor chip;
an encapsulation envelope consisting of high temperature resistant plastic impervious to molten solder, said solder flux and said cleaning agent surrounding said capacitor member and said interior portions of said bands;
said bands each having respective exterior portions bent around and conforming to a portion of the exterior surface of said encapsulation envelope and forming a plurality of soldering surfaces for said capacitor chip, and each band having a narrowed neck disposed between said interior and exterior portions for substantially thermally isolating said interior portion and said capacitor member from heat generated during soldering of said exterior portion; and
adhesion promotor disposed between each of said metal layer and said metal plating and those portions of said metal band and said encapsulation envelope in contact therewith.

4,617,610

PRINTED WIRING BOARD RETAINER

Milan Zrnich, Bensenville, Ill., assignor to GTE Communication Systems Corp., Northlake, Ill.
Filed Nov. 12, 1985, Ser. No. 797,099
Int. Cl.⁴ H05K *7/14*
U.S. Cl. 361—415 **14 Claims**



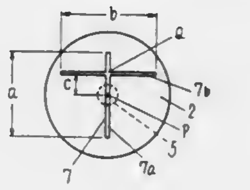
1. A retainer in combination with a plurality of printed wiring boards mounted a file including an open front face through which a plurality of printed wiring boards are inserted, said file including at least a first and a second support arm, a front support bar connected between a front end of each of said support arms and engaging a lower edge of each of said printed wiring boards to support said boards, said retainer comprising:
a plurality of clips clipped to said support bar at predetermined positions therealong;
an upper arm included in each of said clips, said arm including an extension extending forward of a front edge of each of said printed wiring boards;
a retainer slot formed in each of said upper arms; and
a retainer bar of rigid construction positioned within said retainer slots, said bar positioned above said printed wiring board lower edges and adjacent said printed wiring board front edges, whereby to prevent movement of said printed wiring boards out of said file.

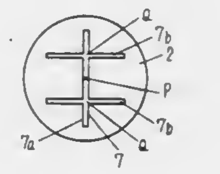
4,617,611

ELECTROLYTIC CAPACITOR

Kengi Miura, Kyoto, and Norikazu Iida, Uji, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
PCT No. PCT/JP83/00327, § 371 Date Jun. 4, 1982, § 102(e) Date Jun. 4, 1984, PCT Pub. No. WO84/01468, PCT Pub. Date Apr. 12, 1984
PCT Filed Oct. 3, 1983, Ser. No. 618,400
Claims priority, application Japan, Oct. 4, 1982, 57-174349
Int. Cl.⁴ H01G *9/00*
U.S. Cl. 361—433 **4 Claims**

1. An electrolytic capacitor containing a capacitor element in a case, wherein a safety vent is constituted by providing on a bottom face of said case a first narrow straight groove which passes through the center of said bottom face of said case and a second said first narrow groove between the ends thereof at



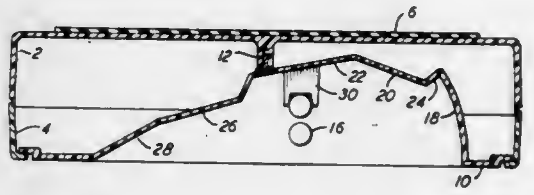


a crossing point outside a winding center part of said capacitor element and is longer than said first narrow groove.

4,617,612

HIGH EFFICIENCY TASK LIGHTING FIXTURE

John C. Pritchett, 4777 Enders Rd., Manlius, N.Y. 13104
Filed Jan. 22, 1985, Ser. No. 693,355
Int. Cl.⁴ F21M *3/20;* **F21V** *7/14*
U.S. Cl. 362—33 **4 Claims**



1. An adjustable lamp fixture comprising a housing having a top wall and a bottom wall parallel to said top wall, said bottom wall having a circular opening therein;
a light concentrating, asymmetric open reflector having a circular flange thereon adapted for mating engagement with said bottom wall for rotatably mounting said reflector in said bottom wall to allow rotational adjustment of said reflector relative to said housing about an axis perpendicular to said bottom wall while maintaining said flange parallel to said bottom wall; and,
socket means adapted for receiving an elongated lamp for mounting said lamp in a position such that the longitudinal axis of the lamp is parallel with the bottom wall of said housing.

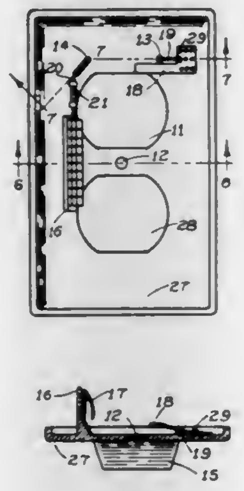
4,617,613

ILLUMINATED ELECTRICAL OUTLET COVER PLATE

Keith Q. Rice, 27025 W. 55th S. Rte. 1, Viola, Kans. 67149
Filed Jan. 22, 1985, Ser. No. 693,528
Int. Cl.⁴ F21V *33/00*
U.S. Cl. 362—95 **2 Claims**

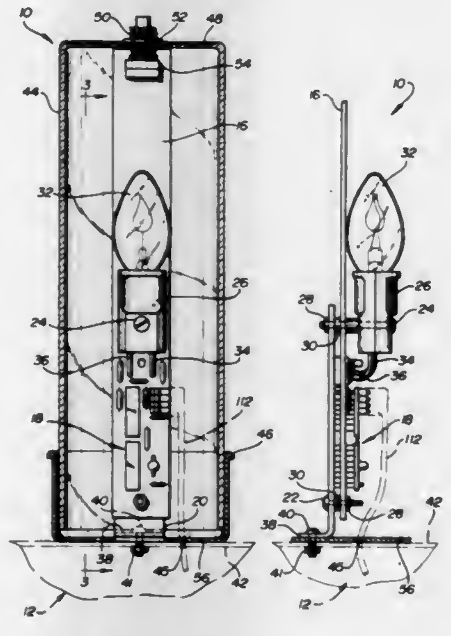
1. An illuminated cover plate for replacing a non-illuminated cover plate of an electrical outlet, said outlet having at least one electrical outlet device with at least one feed terminal screw head and a grounded support bracket, comprising a body portion molded from a dielectrical plastic material having; openings formed for receiving a portion of the electrical outlet device, one or more tentacular electrical conductors with spring properties mounted on an insulator on the back of the cover plate, the tentacular electrical conductors located and designed in such a manner as to make proper automatic electrical contact with at least one feed terminal screw head on the electrical outlet device when installed on the outlet with the same attachment means used for the non-illuminated cover plate, one or more tantacular electrical conductors with spring properties mounted on the back of the cover plate and located and designed in such a manner as to make proper automatic

electrical contact with the grounded electrical outlet support bracket when installed on the outlet with the same attachment means used for the non-illuminated cover plate, an illuminating device on the cover plate connected by an appropriate electric circuit to the feed and ground pick-up tentacular electrical conductors.



4,617,614
ELECTRIC LIGHT FIXTURE

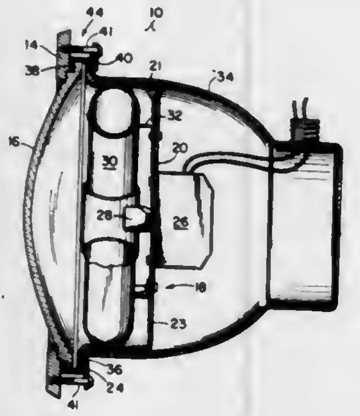
Gabor Lederer, 92 Kansas St., Hackensack, N.J. 07601
Filed Sep. 16, 1985, Ser. No. 776,384
Int. Cl.⁴ F21P *1/02;* **F21V** *35/00*
U.S. Ci. 362—212 **11 Claims**



1. An electric light fixture comprising:
(a) a circuit board of planar, elongated configuration;
(b) a programmable electronic timer circuit supported on said circuit board and connected to a source of electric power;
(c) a light bulb receptacle for receiving an electric programmable light bulb and electrically connected to the electronic timer circuit; and
(d) a bracket of planar, elongated configuration and of lesser length than the circuit board and disposed in close spaced planar parallelism with the circuit board for supporting the circuit board and light bulb receptacle as a unitary structure.

4,617,615
POOL LIGHT

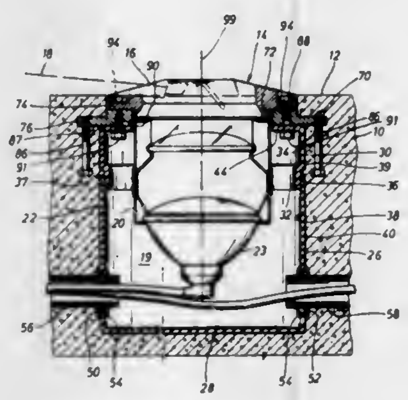
James Eychaner, 68-030 Estio Rd., Cathedral City, Calif. 92234
Continuation of Ser. No. 503,613, Jun. 13, 1983, abandoned. This application Dec. 7, 1984, Ser. No. 682,561
Int. Cl.⁴ F21S *5/00*
U.S. Cl. 362—216 **6 Claims**



1. An improved pool light housing assembly comprising:
a pool light housing mounted within a pool having a generally cylindrical configuration;
a fixture having a generally dish-shaped configuration sized to be received within said housing mounted within a pool;
a fluorescent light bulb disposed within said fixture;
an electrical ballast mounted to said fixture and adapted to be connected to an electrical power. source;
means for securing said fluorescent light bulb to said fixture;
a lens sized to extend about said fixture;
means extending about said lens for sealing said lens to said housing; and
a flange formed on said fixture adapted to cooperate with said sealing means to seal said fixture to said housing.

4,617,616
AIRPORT RUNWAY LIGHT HOUSING AND METHOD OF INSTALLATION

Gaylord E. Juell, 762 East St., North, Suffield, Conn. 06078, and Robert E. Lambert, 26 Oakwood St., Enfield, Conn. 06082
Filed Aug. 28, 1985, Ser. No. 770,536
Int. Cl.⁴ F21V *29/00*
U.S. Cl. 362—267 **15 Claims**

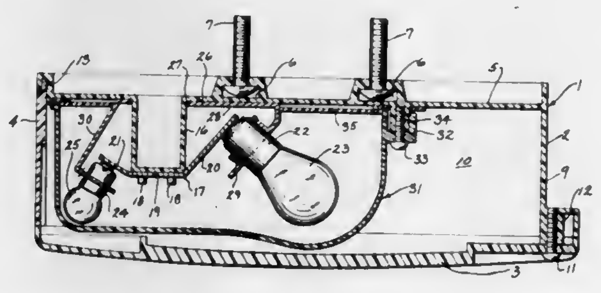


1. A housing for enclosing at least a portion of an aircraft guidance light fixture whereby said light fixture may be disposed in a predetermined position relative to the surface of a runway structure and oriented in a predetermined direction for guidance of aircraft relative to said runway structure, said housing comprising a generally cylindrical canister having a bottom wall and a top wall including an annular rim defining an opening into an interior space of said housing, said housing including a first section having a generally cylindrical side wall having an inner surface of a first diameter; and

a second section of said housing having a generally cylindrical side wall having an outer surface of a second diameter and configured in such a way that said housing may be cut to separate said first section from said second section to shorten the distance between said bottom wall and said annular rim and whereby said first and second sections may be reassembled with the side wall of one of said sections being telescoped within the side wall of the other of said sections so that the overall height of said housing may be predetermined and the two sections may be rotated relative to each other to orient said light fixture in a predetermined direction.

4,617,617
SUBMERSIBLE TAIL LIGHT ASSEMBLY

Alton J. Cunningham, Slinger, and Brian A. Hanson, Allenton, both of Wis., assignors to Wesbar Corporation, West Bend, Wis.
Filed May 6, 1985, Ser. No. 731,047
Int. Cl.⁴ F21V *29/00*
U.S. Cl. 362—267 **12 Claims**



1. A submersible tail light assembly for a boat trailer, comprising an outer housing having a wall and an open end, a lens to enclose the open end, a transparent capsule disposed in the housing and having an open end facing said wall, sealing means for sealing the open end of said capsule to said wall, a bulb socket disposed within the capsule, a light bulb mounted in the socket, passage means providing communication between the lower portion of the interior of said capsule and the exterior, and electrical leads connected to said bulb socket for supplying electrical power to said bulb, submerging the light assembly in water causing said water to enter the capsule through said passage means to entrap air in the upper end of the capsule and prevent the water from rising to the level of said socket and bulb.

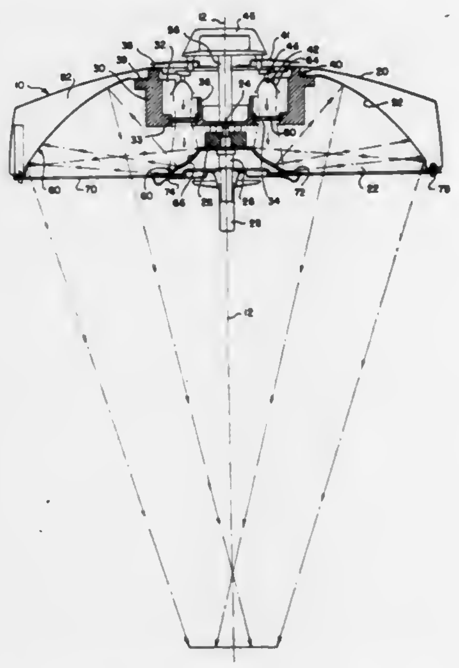
4,617,618
HEADLAMP REFLECTORS FOR AUTOMOBILE VEHICLES MANUFACTURED BY INJECTION MOLDING ACCORDING TO THE COINJECTION PROCESS USING POLY(ALKYLENE TEREPHTHALATE)

Antoine Baciu, Anbevoye, France; Hans Jadamus, and Josef Bittscheidt, both of Marl, Fed. Rep. of Germany, assignors to Cibie Projecteurs, France and Chemische Werke Huls Aktiengesellschaft, Fed. Rep. of Germany
Filed Mar. 2, 1984, Ser. No. 585,786
Claims priority, application France, Mar. 7, 1983, 83 03684
Int. Cl.⁴ F21V *7/00*
U.S. Cl. 362—341 **4 Claims**

1. Headlamp reflector for an automobile vehicle manufactured by injection molding by the process of coinjection of polyalkylene terephthalate with a viscosity number of between 60 and 180 cm^3/g, in which the core comprises from 15 to 75% by weight of hematite, at least 75% of the hematite having a particle size less than 70 μm.

4,617,619
REFLECTOR FOR MULTIPLE SOURCE LIGHTING FIXTURE

Joel C. Gehly, McKean, Pa., assignor to American Sterilizer Company, Erie, Pa.
Filed Oct. 2, 1985, Ser. No. 783,379
Int. Cl.⁴ A61G *13/00;* **F21V** *33/00*
U.S. Cl. 362—804 **11 Claims**



1. In a lighting fixture having a plurality of light source means for emitting light rays and at least one reflector, said one reflector superposing said plurality of light source means in a partially circumscribing radially spaced relationship about the axis of symmetry of said lighting fixture to receive light rays and to project light rays, an improvement comprising:
a second reflector in axial alignment with the axis of symmetry of said lighting fixture, said second reflector being positioned beneath said plurality of light source means and being superposed and partially circumscribed by said one reflector;
said second reflector having a plurality of distinct surface sections, each said surface section being associated with a different one of said light source means for receiving light rays emitted from the one said light source means with which said surface section is associated and projecting light rays onto said one reflector, each said surface section having at least two radially adjacent portions, one said portion having a surface finished for diffusing the light rays projected therefrom and the other said portion having a surface finished for intensifying the light rays projected therefrom; and
said second reflector being mounted for rotation about the axis of symmetry of said lighting fixture to selectively position either said diffusing portion or said intensifying portion of said surface sections beneath each said light source means to permit selective adjustment of the pattern and intensity of light rays projected from said lighting fixture.

4,617,620
DC TO DC CONVERTER WITH SELF-STARTING FLYBACK OSCILLATOR

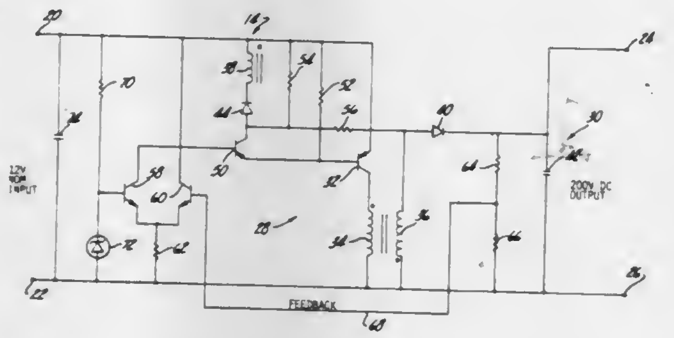
Donald Speranza, Canton, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Jun. 14, 1982, Ser. No. 388,350
Int. Cl.⁴ H02M *3/338*
U.S. Cl. 363—19 **6 Claims**

1. A DC to DC converter circuit for producing a regulated DC output voltage from an unregulated supply comprising:
a flyback oscillator including a transistor having an output

circuit connectable across the unregulated supply to periodically conduct current therefrom;

output circuit means;

transformer means for coupling the output circuit of said oscillator transistor to the output circuit means for receiving and storing eletrical energy therefrom during the interval between said conductivity periods and in amounts which vary with the conductivity period of the oscillator transistor, said transformer means comprising a primary winding in series with the output circuit of the oscillator transistor and a secondary winding in said output circuit means, said primary and secondary windings being magnetically linked;



a variable impedance control transistor connected to the input circuit of the oscillator transistor to vary the conductivity period thereof;

means for establishing a reference voltage;

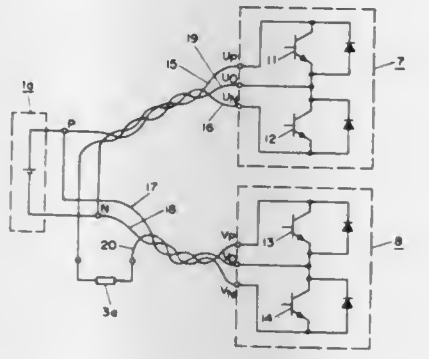
comparator means connected between the output circuit means, the reference means, and the input circuit of the control transistor to vary the conductivity period according to the energy stored in the output circuit means; and

feedback means connected in series with the secondary winding and the output circuit of the control transistor to provide, when connected across said supply, a starting current path for said oscillator transistor.

4,617,621
INVERTERS WITH REDUCED DISTRIBUTED INDUCTANCE

Kazuo Kuroki, Tokyo, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Feb. 4, 1985, Ser. No. 697,779
Int. Cl.⁴ H02M *7/00;* H02H *7/122*
U.S. Cl. 363—71 **2 Claims**

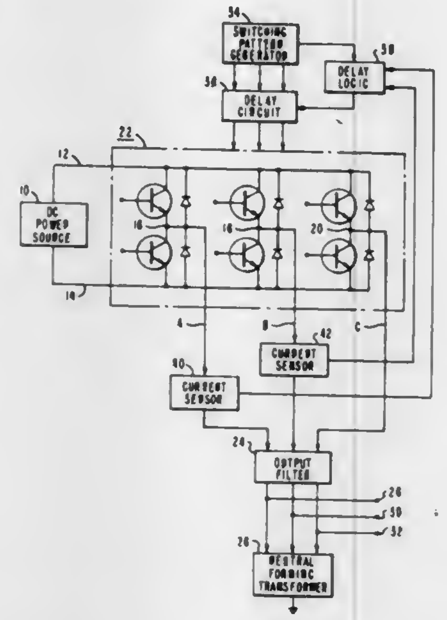


1. An inverter comprising DC power source means, load means, a plurality of inverter units arranged to operate on a phase basis, first conductor means including a pair of conductors for connecting each phase inverter unit to the power source means, and second conductor means including a conductor for connecting each phase inverter unit to the load means, wherein the conductors of the first and second conductor means for each inverter unit are arranged in close proximity from the inverter unit to a location adjacent to the power source means or the load means.

4,617,622
SWITCHING TIME CORRECTION CIRCUIT FOR ELECTRONIC INVERTERS

David A. Fox, Lima, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 27, 1985, Ser. No. 749,359
Int. Cl.⁴ H02P *13/20*
U.S. Cl. 363—98 **10 Claims**



1. A switching time correction circuit comprising:

a switching circuit for alternately switching a power pole between first and second voltage levels, said switching circuit being responsive to a reference signal having a plurality of voltage transition points;

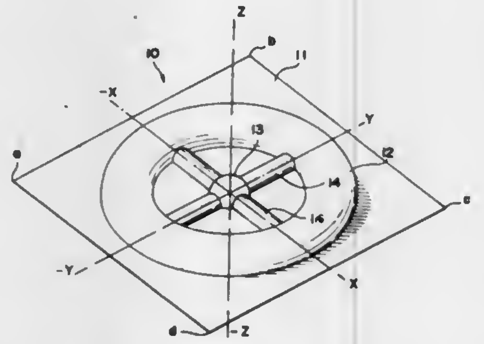
means for delaying the application of said reference signal transition points to said switching circuit, by a predetermined delay time; and

means for reducing said delay time for transition points in said reference signal which correspond to negative power transitions in said switching circuit, wherein the amount of delay time reduction is proportional to the output current of said switching circuit.

4,617,623
CNC PROCESS FOR DISPLACING A MOVABLE MEMBER ALONG A PATH ON A 3D SURFACE

Kiyoshi Inoue, Tokyo, and Jinzo Yabe, Yokohama, both of Japan, assignors to Inoue-Japax Research Incorporated, Kanagawa, Japan

Continuation of Ser. No. 434,336, Oct. 14, 1982, abandoned.
This application Jun. 7, 1985, Ser. No. 742,366
Claims priority, application Japan, Oct. 16, 1981, 56-166159
Int. Cl.⁴ G06F *15/00*
U.S. Cl. 364—167 **8 Claims**



1. A computerized numerical control process for displacing a member along a path on a predetermined intricate surface in a predetermined three-dimensional coordinate system, said process comprising the steps of:

(a) manually dividing said intricate surface into a plurality of elementary characteristic regions each of which is individually definable as one of preselected different geometrical categories among curves of first order, curves of second order, surfaces of first order for intricate surfaces so divisible and surfaces of second order for intricate surfaces so divisible and is expressable by an equation specific to each such region;

(b) establishing a general equation for each of said preselected geometrical categories and storing the established general equations in memory means for a computer;

(c) inputting into said computer data required to adapt each of said stored general equations to a corresponding one of said characteristic regions in said predetermined three-dimensional coordinate system, thereby reducing it to said specific equation;

(d) establishing a sequence of incremental two-dimensional positions in said three-dimensional coordinate system which positions are defined by predetermined first and second coordinates thereof;

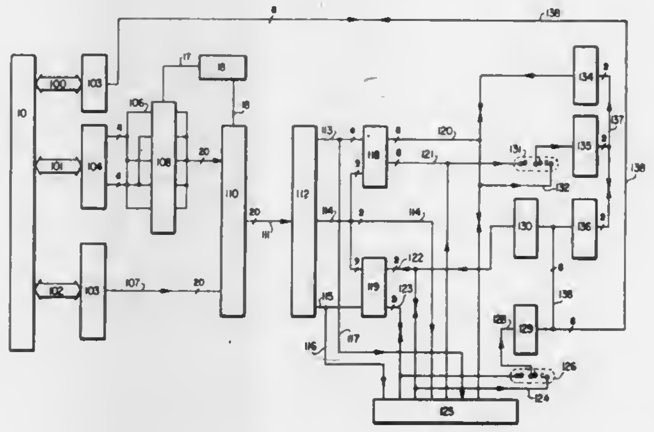
(e) successively inputting into said computer the coordinates of said sequentially incremental two-dimensional positions to compute, for each incremental position along a path lying on said surface, the value of a third coordinate in said coordinate system from said specific equations and said inputted first and second coordinates, thereby determining said path three-dimensionally; and

(f) displacing said member along the so determined path.

4,617,624
MULTIPLE CONFIGURATION MEMORY CIRCUIT

James B. Goodman, 9600 Golf Lakes Trail, Apt. 2010, Dallas, Tex. 75231

Filed Apr. 16, 1984, Ser. No. 600,371
Int. Cl.⁴ G06F *12/00, 13/00*
U.S. Cl. 364—200 **16 Claims**



1. A memory apparatus for connection to a central processing unit and to an information bus for transfer of data, addresses and control signals, said memory apparatus comprising:

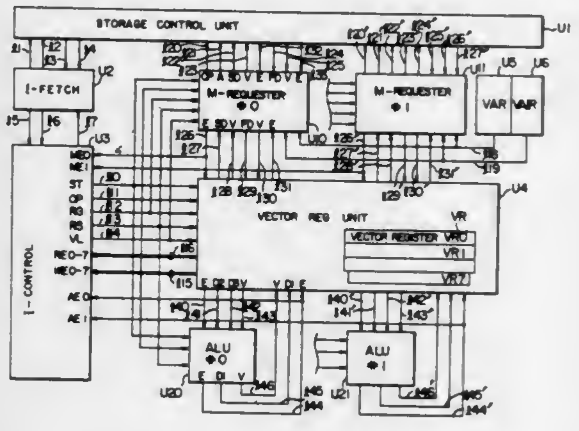
a memory circuit for retaining a plurality of data words, each data word having a unique address within an address space; and

control means connected to said bus for obtaining one data word from or providing one data word to said memory circuit in response to an address within a first set of addresses and in response to a first set of control signals, and for obtaining at least one data word from or providing at least one data word to said memory circuit in response to a second set of control signals and in response to an address within a second set of addresses, said second set being the address space except for the first set of addresses.

4,617,625
VECTOR PROCESSOR

Shigeo Nagashima, Hachioji; Hitoshi Abe, and Yasuhiko Hatakeyama, both of Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 27, 1982, Ser. No. 453,094
Claims priority, application Japan, Dec. 28, 1981, 56-210392
Int. Cl.⁴ G06F *7/48*
U.S. Cl. 364—200 **79 Claims**



1. A vector data processor comprising:

a main storage;

vector storage means connected to receive vector elements from said main storage and including a plurality of storage area for holding a plurality of vector elements, each storage area being selected by an instruction, being capable of holding a number of vector elements and being capable of reading and writing in parallel;

a plurality of resource means connected to said storage means each for sequentially receiving vector elements from said vector storage means and/or for sequentially providing vector elements to said vector storage means, including, as one of said plurality of resource means, at least one operation means connected to said vector storage means for performing an operation on inputs provided sequentially to said operation means from said vector storage means in such a manner as to provide sequential outputs corresponding to the results of said operation to said vector storage means;

instruction means connected to said main storage for decoding instructions fetched from said main storage, for selecting one of said plurality of resource means required by each instruction and for indicating the start of execution for the decoded instructions, said instruction means including means for indicating, irrespective of execution start indication timing of a previously-execution-started first instruction, the execution start of a second instruction which selects the same storage area of said vector storage means for reading of vector elements therefrom as one selected by said first instruction for writing of vector elements therein;

control means connected to said instruction means and said plurality of resource means and responsive to indication of start of execution of a decoded instruction for sequentially reading vector elements out of one of the storage areas of said vector storage means selected by said decoded instruction to provide the read out vector elemtns to one of said plurality of resource means selected for said decoded instruction to be received thereby and/or for sequentially writing vector elements provided from the resource means selected for the decoded instruction into one of the storage areas of said vector storage means selected by said decoded instruction, said control means being capable of responding to the indication of start of execution of the second instruction given by said instruction means before completion of writing of vector elements provided from the first resource means selected for the first instruction into said same selected storage area performed in response to the indication of start of execution of the first instruction, and being capable of starting the sequential reading of the written vector elements out of said same selected storage area from before all the vector elements are written by controlling a read operation of each vector element depending upon whether or not each vector element is already written when each vector element is to be read next, to sequentially provide the read out vector elements to a second one of said plurality of resource means selected for said second instruction.

4,617,626

CHARGE CONTROL MICROCOMPUTER DEVICE FOR VEHICLES

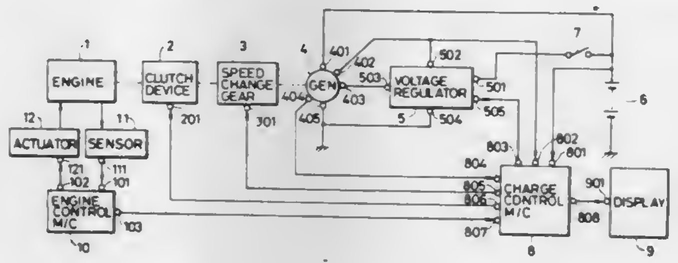
Mitsuharu Morishita, and Shinichi Kouge, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1983, Ser. No. 496,034

Claims priority, application Japan, May 19, 1982, 57-86061

Int. Cl.^{4} H02J *7/14;* **G06F** *15/56*

U.S. Cl. 364—424 **4 Claims**



1. A charge control microcomputer device for a vehicle, comprising:

speed changing means for transmitting the output torque of an engine, said speed changing means including slip clutch means having an output with a variable slippage amount with respect to its input and controlled in accordance with an operating instruction, said speed changing means further including a speed change gear for changing the rotational speed input thereto at an output thereof, said speed change gear receiving the output of said slip clutch means;

a charging generator driven by the output of said speed change gear;

a battery charged by an output voltage of said charging generator;

a voltage regulator for controlling the output voltage of said charging generator to a predetermined value;

an engine controlling microcomputer for receiving data from said engine, to control said engine, said engine data comprising at least an engine speed signal;

a charge control microcomputer for processing engine data from said engine controlling microcomputer and charge system data including terminal voltage data from said battery and generated voltage data from said changing generator, to provide a reference voltage from said voltage regulator, for detecting charging system faults according to said charge system data, and for processing an engine speed signal to apply said operating instruction to said speed changing means, so that said charging generator is driven with a predetermined range of revolutions per minute at all times; and

a display unit for displaying detection data, including fault detection data, from said charge control microcomputer.

4,617,627

METHOD FOR AUTOMATIC OPERATION OF A VEHICLE

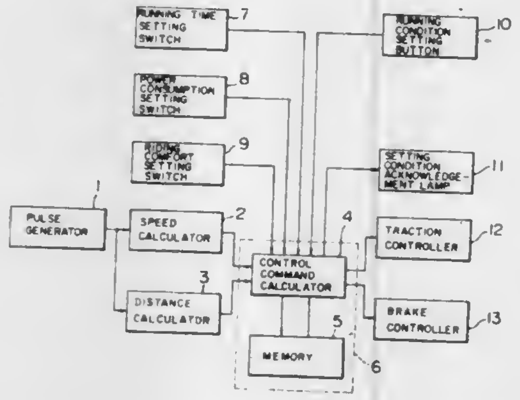
Seiji Yasunobu, Yokohama; Shoji Miyamoto, Kawasaki, and Hirokazu Ihara, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 13, 1984, Ser. No. 570,500

Claims priority, application Japan, Jan. 17, 1983, 58-5641; Jun. 9, 1983, 58-103487

Int. Cl.^{4} G06F *15/48;* **B60L** *15/20*

U.S. Cl. 364—426 **25 Claims**


RUNNING TIME SETTING SWITCH
POWER CONSUMPTION SETTING SWITCH
RIDING COMFORT SETTING SWITCH
RUNNING CONDITION SETTING BUTTON
SETTING CONDITION ACKNOWLEDGE-MENT LAMP
PULSE GENERATOR
SPEED CALCULATOR
DISTANCE CALCULATOR
CONTROL COMMAND CALCULATOR
TRACTION CONTROLLER
BRAKE CONTROLLER
MEMORY
1
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3
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12
13

1. A method for automatic operation of a vehicle in which a vehicle is automatically controlled in accordance with control commands for operating a traction controller and a brake controller of the vehicle in order to run with required speed patterns through a plurality of regions into which a distance between two stations is divided, comprising the steps of:

preparing a table representative of a relation between a plurality of region control patterns for vehicle control, each of which designates control commands which are applied to the respective regions, and a plurality of performance index patterns relating to a plurality of predetermined performance indices reflecting the result of running of the vehicle when the vehicle is controlled in accordance with said region control patterns;

designating a performance index pattern for running of the vehicle from one station to the next station before the vehicle departs from the one station;

determining a region control pattern corresponding to said designated performance index pattern on the basis of said table; and

applying the control commands in accordance with said determined region control pattern to the vehicle speed control to run the vehicle.

4,617,628

EXPANDABLE ELECTROSTATIC ENGINE DIAGNOSTICS CLASSIFIER

Philip E. Zwicke, South Glastonbury; David M. Rosenbush, Granby, both of Conn., and Robert P. Couch, Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1982, Ser. No. 453,963

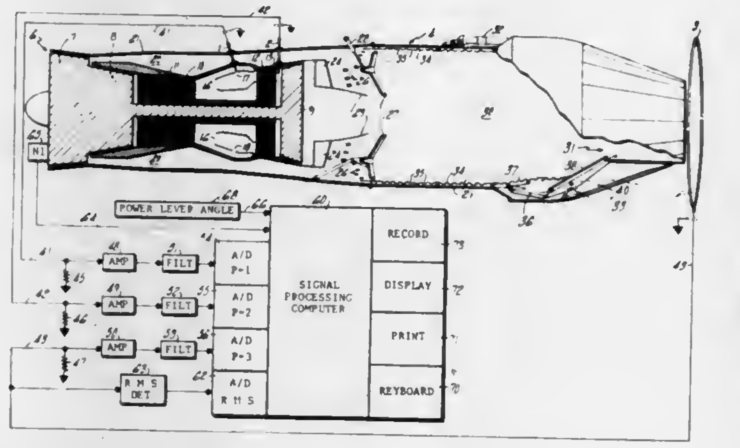
Int. Cl.^{4} G01M *15/00*

U.S. Cl. 364—431.02 **2 Claims**

1. Electrostatic diagnostic apparatus for distincly correlating different events occurring in an operating gas turbine engine, comprising:

electrostatic signal means, including a probe to be disposed in the gas stream of an engine, for providing, when said probe is disposed in the gas stream of an operating engine, a probe signal having a waveshape defined by amplitude variations thereof across a time interval of a given duration in response to electrostatic charge flowing in the gas stream in the vicinity of said probe; and

signal processing means connected for response to said electrostatic signal means, for selectively providing a particular engine event identifying signal selected, in response to said amplitude variations across said time interval, from among a plurality of identifying signals in dependence on the waveshape of said probe signal having characteristics correlated to an engine event corresponding to said selected identfying signal, and for selectively providing a particular unidentified category signal in dependence on the waveshape of said probe signal having characteristics correlated to an unidentified engine event.



4,617,629

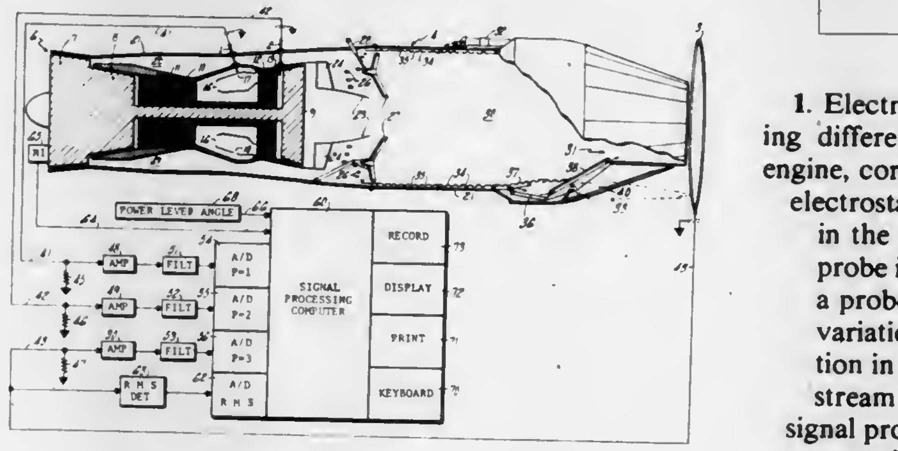
EXPANDED CLASSIFICATION SAMPLE IN ELECTROSTATIC ENGINE DIAGNOSTICS

Robert P. Couch, Palm Beach Gardens, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1982, Ser. No. 453,967

Int. Cl.^{4} G01M *15/00*

U.S. Cl. 364—431.02 **4 Claims**



1. Electrostatic diagnostic apparatus for distinctly correlating different events occurring in an operating gas turbine engine, comprising:

elecgrostatic signal means, including a probe to be disposed in the gas stream of an engine, for providing, when said probe is disposed in the gas stream of an operating engine, a probe signal having a waveshape defined by amplitude variations thereof across a time interval of a given duration in response to electrostatic charge flowing in the gas stream in the vicinity of said probe;

an analog to digital converter connected for response to said electrostatic signal means; and

signal processing means connected to said analog to digital converter

(a) for causing said analog to digital converter to sample the probe signal provided by said electrostatic signal means in a manner to provide a record of digital signals indicative of the amplitude variations of said probe signal defining the waveshape thereof,

(b) for storing, in response to the amplitude of one of said digital signals being in excess of a threshold magnitude, a record comprising a contiguous sequence of said digital signals sufficient to define the waveshape of said probe signal, repetiively, to provide a first classification group consisting of a given number, M, of records, and

(c) for selectively providing for each of said records, a particular engine event identifying signal selected, in response to variations in amplitude of the digital signals in said record, from among a plurality of identifying signals in dependence upon the waveshape of signals represented by each of said records having characteristics correlated to an engine event corresponding to said particular identifying signal.

4,617,630

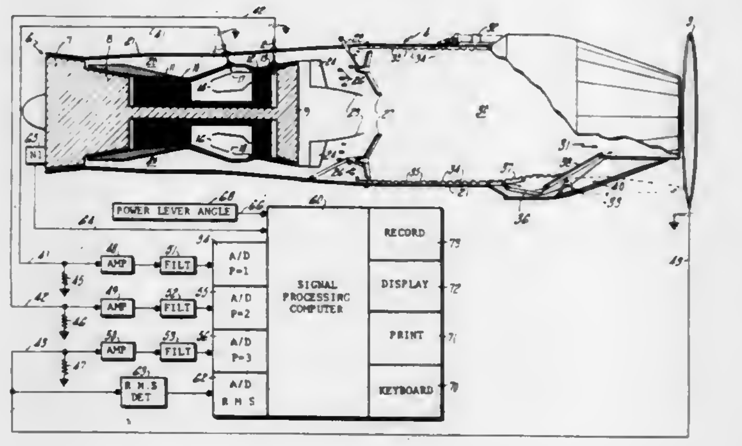
SYSTEM FAULT DISCRIMINATING ELECTROSTATIC ENGINE DIAGNOSTICS

Philip E. Zwicke, South Glastonbury; David M. Rosenbush, Granby, both of Conn., and Robert P. Couch, Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1982, Ser. No. 454,111

Int. Cl.^{4} G01M *15/00*

U.S. Cl. 364—431.02 **3 Claims**



1. Electrostatic diagnostic apparatus for distinctly correlating different events occurring in an operating gas turbine engine, comprising:

electrostatic signal means, including a probe to be disposed in the gas stream of an engine, for providing, when said probe is disposed in the gas stream of an operating engine, a probe signal having a waveshape defined by amplitude variations thereof across a time interval of a given duration in response to electrostatic charge flowing in the gas stream in the vicinity of said probe; and

signal processing means connected for response to said electrostatic signal means, for selectively providing a particular engine event identifying signal selected, in response to said amplitude variations across said time interval, from among a plurality of identifying signals in dependence on the waveshape of said probe signal having characteristics correlated to an engine event corresponding to said selected identifying signal, and for providing a diagnostic apparatus fault identifying signal in response to said amplitude variations across said time interval in dependence on the waveshape of said probe signal having characteristics correlated to a faulty condition in said electrostatic signal means.

4,617,631

EXTERNALLY DISCRIMINATED/CORRELATED ELECTROSTATIC ENGINE DIAGNOSTICS

David M. Rosenbush, Granby; Philip E. Zwicke, South Glastonbury, both of Conn., and Robert P. Couch, Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1982, Ser. No. 454,114

Int. Cl.^{4} G01M *15/00*

U.S. Cl. 364—431.02 **4 Claims**

1. Electrostatic diagnostic apparatus for distinctly correlat-

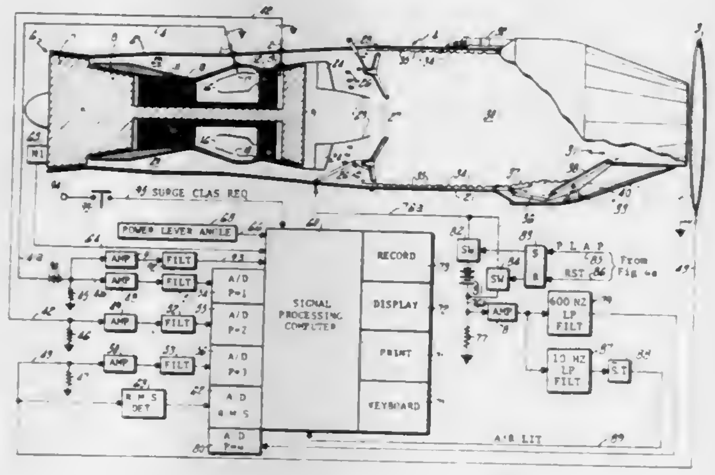
ing different events occurring in an operating gas turbine engine, comprising:

electrostatic signal means, including a probe to be disposed in the gas stream of an engine, for providing, when said probe is disposed in the gas stream of an operating engine, a probe signal having a waveshape defined by amplitude variations thereof across a time interval of a given duration in response to electrostatic charge flowing in the gas stream in the vicinity of said probe;

means connected for response to an operating condition of said engine to provide a condition signal indicative thereof;

signal processing means connected for response to said electrostatic signal means,

(a) for selectively providing a particular engine event identifying signal selected, in response to said amplitude variations across said time interval, from among a plurality of identifying signals related to a corresponding plurality of engine events, in dependence on the waveshape of said probe signal having characteristics correlated to an engine event corresponding to said selected identifying signal,



(b) for providing a discrete signal indicative of a specific engine event in response to said condition signal, said specific engine event being included among said plurality of engine events along with said particular engine event,

(c) for providing a category signal indicative of an engine event identified by both said particular identifying signal and said discrete signal, and

(d) for alternatively providing a different category signal in the case that said particular engine event identifying signal is not correlated to the engine event identified by said discrete signal.

4,617,632
WAVEFORM DISCRIMINATED ELECTROSTATIC ENGINE DIAGNOSTICS

Philip E. Zwicke, South Glastonbury; David M. Rosenbush, Granby, both of Conn., and Robert P. Couch, Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1982, Ser. No. 454,124

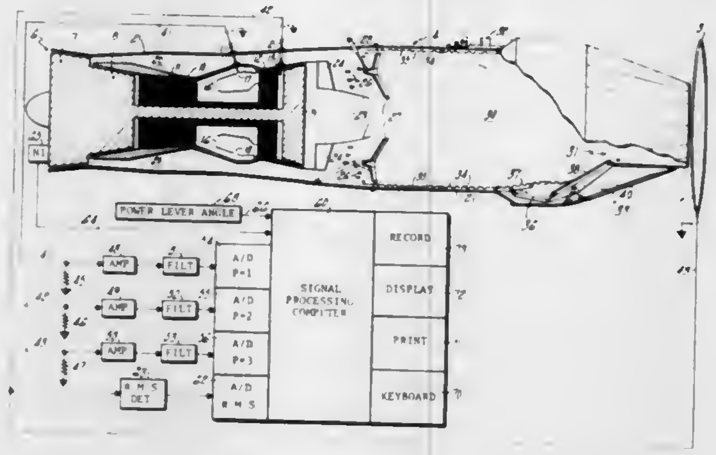
Int. Cl.⁴ G01M *15/00*

U.S. Cl. 364—431.02 **4 Claims**

1. Electrostatic diagnostic apparatus for distinctly correlating different events occurring in an operating gas turbine engine, comprising:

electrostatic signal means, including a probe to be disposed in the gas stream of an engine, for providing, when said probe is disposed in the gas stream of an operating engine, a probe signal having a waveshape defined by amplitude variations thereof across a time interval of a given duration in response to electrostatic charge flowing in the gas stream in the vicinity of said probe; and

signal processing means connected for response to said electrostatic signal means, for selectively providing a particular engine event identifying signal selected, in response to said amplitude variations across said time interval, from among a plurality of identifying signals in dependence on the waveshape of said probe signal having characteristics correlated to an engine event corresponding to said particular identifying signal.



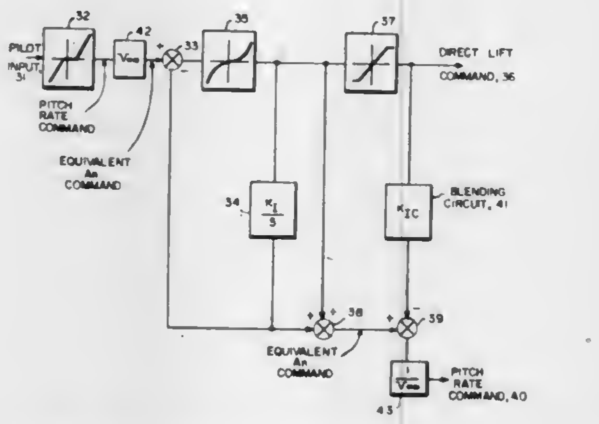
4,617,633
DIRECT LIFT COMMAND BLENDING

Jack D. McAllister, Fort Worth, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 29, 1984, Ser. No. 614,904

Int. Cl.⁴ B64C *15/00*

U.S. Cl. 364—434 **5 Claims**



1. An aircraft flight control corcuit receiving a system command signal and generating direct lift and longitudinal command signals, said flight control circuit comprising:

a direct lift command signal circuit receiving said system command signal and developing a direct lift command signal as a function thereof,

subtraction means differencing said system command signal and said direct lift command signal to provide a longitudinal command signal,

and a blending circuit, said blending circuit constraining said longitudinal comman signal as a function of said direct lift command signal.

4,617,634
ARTIFICIAL SATELLITE ATTITUDE CONTROL SYSTEM

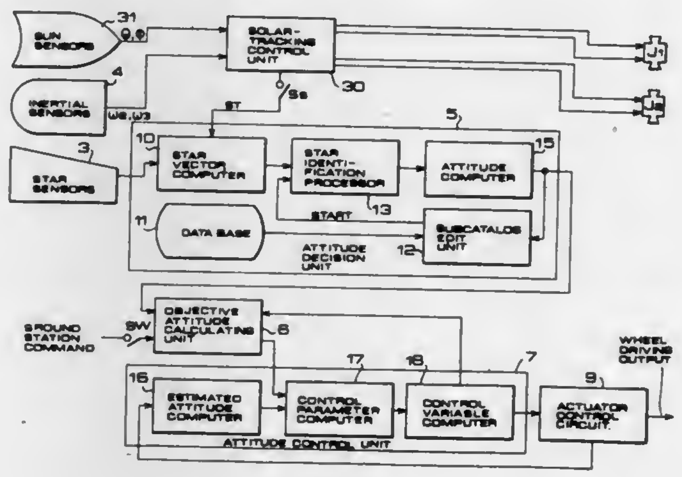
Kiichiro Izumida, and Ritaroh Kasai, both of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1984, Ser. No. 606,660

Claims priority, application Japan, Jun. 28, 1983, 58-116372; Jun. 30, 1983, 58-118708

Int. Cl.⁴ B64G *1/36, 1/28*

U.S. Cl. 364—455 **7 Claims**



1. A system for controlling an artificial attitude of a satellite and changing rate thereof on the basis of detected signals from inertial sensors for detecting angular velocities of rotation of the satellite about the body axes thereof and star sensors for detecting incident light from fixed stars so as to coincide with an objective attitude, comprising:

a first means for deciding the present attitude of the satellite with respect to said body axes on the basis of said signals from said sensors to provide positional information for indicating present position of the satellite;

a second means for deciding an objective attitude of the satellite to be established, on the basis of orbit information received from a ground station and said positional information to provide an objective attitude information indicating the objective attitude;

a third means for calculating required operation values for controlling the attitude on the basis of said objective attitude information, said values being fed to actuators for controlling the attitude of the satellite;

said first means including:

means to calculate a unit vector representing the direction of an observed fixed star on the body coordinate of the satellite, on the basis of the detected signals from said star sensors;

memory means for storing an initial estimated attitude information of the satellite and catalog information representing the spatial coordinates of fixed stars;

edit means for reading the attitude information and catalog information from the memory means to edit a catalog of stars expected to be observed within the ranges of the field of view of the star sensors;

means for identifying a catalog star corresponding to the observed fixed star, on the basis of said unit vector and said catalog; and

means for calculating the present attitude of the satellite on the basis of said catalog star from said identifying means and the detected signals from the inertial sensor to provide the information of the present attitude of the satellite.

4,617,635
NUMERICAL CONTROL MACHINING SYSTEM

Yutaka Shimizu, Aichi, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

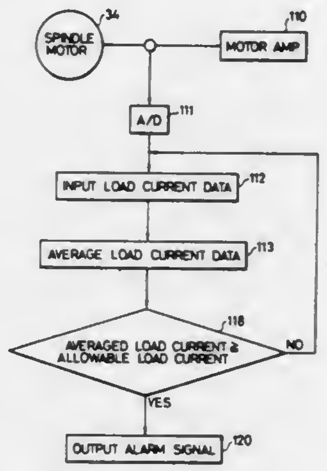
PCT No. PCT/JP83/00010, § 371 Date Dec. 19, 1983, § 102(e) Date Sep. 9, 1983, PCT Pub. No. WO83/02416, PCT Pub. Date Jul. 21, 1983

PCT Filed Jan. 11, 1983, Ser. No. 537,455

Claims priority, application Japan, Jan. 12, 1982, 57-3149; Jan. 12, 1982, 57-3150; Jan. 20, 1982, 57-7232; Dec. 2, 1982, 57-211975

Int. Cl.⁴ G05B *19/00*

U.S. Cl. 364—474 **21 Claims**



1. A numerical control machining system of the type including a spindle motor for rotating the spindle of a machining apparatus to which a tool is connected, a feed motor means for moving the table of said machining apparatus to which a workpiece is fixedly secured, and a numerical control device for controlling the speed of rotation of said spindle motor and the feed speed of said table, so that said workpiece is machined with said tool, characterized in that:

said system further comprises detection means for detecting a machining load current of said spindle motor and sampling means for sampling said load current thus detected periodically at predetermined time intervals to provide an input to said numerical control device, and

said numerical control device comprises means for averaging a predetermined number of load current data to obtain a load output of said spindle motor, means for comparing said load output with an allowable load output of said spindle motor which has been calculated in advance, and control means for controlling the feed speed of said feed motor means in accordance with said comparison.

4,617,636
PROTECTION OF ELECTRICAL POWER SUPPLY SYSTEMS

Allan T. Johns, Corsham, and Michael A. Martin, Bradford-on-Avon, both of England, assignors to National Research Development Corporation, London, England

Filed Mar. 2, 1983, Ser. No. 471,333

Claims priority, application United Kingdom, Mar. 3, 1982, 8206253

Int. Cl.⁴ G01R *31/08, 27/08;* **H02H** *3/42*

U.S. Cl. 364—482 **5 Claims**

1. Apparatus for detecting the occurrence of a fault in a section of an electrical power supply system comprising:

means for measuring the values of the voltage and current at a predetermined location to develop measured voltage and current representations,

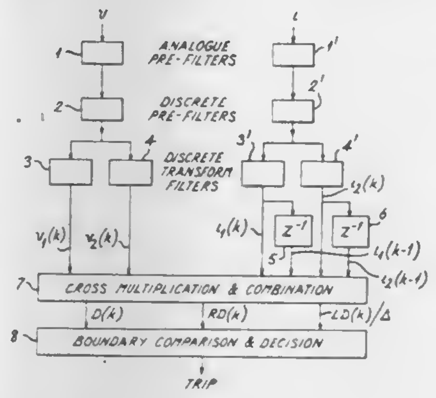
means for filtering out high frequency components in the measured voltage and current representations,

means for calculating an approximation to the Fourier transform of a moving window of the filtered voltage representation over a predetermined interval of time and at a predetermined frequency, said Fourier transform of the voltage representation being modified by a continuous phase change at the said frequency,

means for calculating an approximation to the Fourier transform of a moving window of the filtered current representation over the said time interval and at the said frequency, said Fourier transform of the current representation being modified by a continuous phase change at the said frequency,

means for calculating the impedance of said section from said modified Fourier transforms of the voltage and current representations, and

means for generating a trip signal when the value of said calculated impedance indicates a fault.



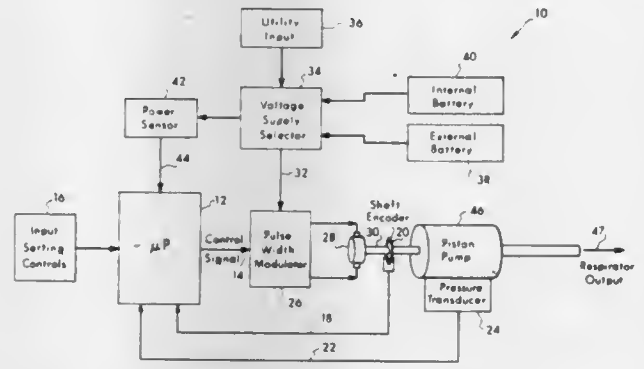
4,617,637
SERVO CONTROL SYSTEM FOR A RECIPROCATING PISTON RESPIRATOR

Raymond D. Chu, Boulder; Anthony C. Rubner, Arvada, and Michael W. Fellinger, Boulder, all of Colo., assignors to Lifecare Services, Inc., Boulder, Colo.

Filed Jul. 9, 1985, Ser. No. 753,275

Int. Cl.⁴ G06F *15/20;* **F04B** *35/04;* **A61M** *16/00*

U.S. Cl. 364—505 **11 Claims**



1. A system for generating predetermined flow characteristics in a reciprocating piston respirator by controlling movement of a piston comprising:

detector means for generating a detected position signal indicative of a current actual position of said piston in said reciprocating piston respirator;

analysis means for using nonlinear, predictive servo control techniques employing said detected position signal to generate a control signal representative of a force sufficient to move said piston in said reciprocating piston respirator to a stored next position to produce said predetermined flow characteristics comprising:

logic means for using said nonlinear, predictive servo control techniques for performing time domain analysis of fictional, pressure and inertial factors affecting movement of said piston to predict said force required to move said piston to said next position through the use of program control means for generating position data representative of a plurality of position values which said piston must assume at a plurality of substantially equally spaced segment times to produce said predetermined flow characteristics;

means for generating said force sufficient to move said piston in said reciprocating piston respirator in response to said control signal comprising:

pulse-width modulation means for producing a digital representation of a required power signal which is substantially proportional to said force;

direction selection means for producing a digital direction signal which substantially represents a direction of motor rotation;

buffer means for converting said digital representation of said required power signal and said digital direction signal into a polarized electrical power signal which is substantially proportional to said force;

motor means for converting said polarized electrical power signal into rotational power; and,

piston displacement means for converting said rotational power into lateral movement of said piston.

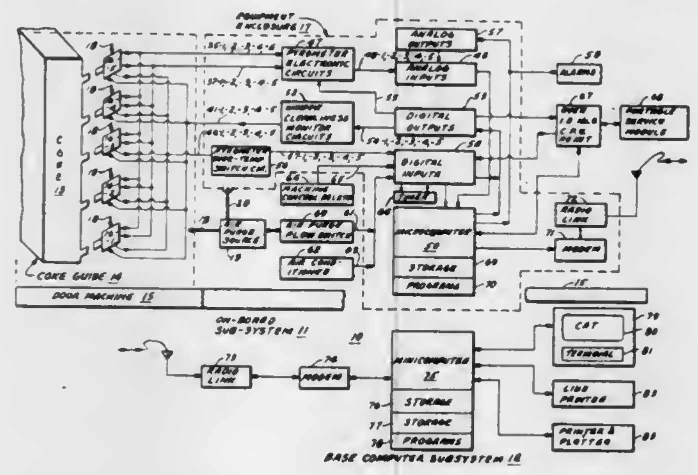
4,617,638
METHOD AND SYSTEM FOR DETERMINING MASS TEMPERATURE IN A HOSTILE ENVIRONMENT

Richard H. Krause, Lansdale; Thomas J. Pfeiffer, and Vincent V. Horvath, both of Bethlehem, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 328,775, Dec. 8, 1981, abandoned. This application Jun. 1, 1984, Ser. No. 616,520

Int. Cl.⁴ H03K *13/02;* **G01K** *7/12*

U.S. Cl. 364—557 **10 Claims**



1. A system for determining temperature as an irradiant mass movable through process means located in a hostile environment, comprising:

(a) means for measuring irradiant mass temperature with a sensor aimed at said mass through a sighting window and adjacent sighting space and producing a mass temperature signal, said signal varying proportional to mass temperature and an optical error caused by environmental matter affecting the sighting window and possibly said space;

(b) means for monitoring sighting window and space for cleanliness with a monitor light source which passes monitor light through the sighting space and window and into the sensor;

(c) means for generating a monitor light control signal to turn said light on and off respectively before mass movement starts through the process means:

(d) computer means for detecting the optical error portion of the mass temperature signal by comparing actual sensor response to the monitor light source with the signal obtained from said light source for a clean window:

(e) computer means for processing the detected optical error data to obtain and store a correction factor based on first and second sensor measurements made in response to the monitor on-off control signal, respectively, said correction factor used to produce a corrected mass temperature data;

(f) means for generating a digital timing signal related to mass movement; and

(g) means for displaying in synchronization with the digital timing signal a sequence of the first sensor temperature data uncorrected, followed by the second and subsequent sensor temperature data as corrected mass temperature measured during mass movement.

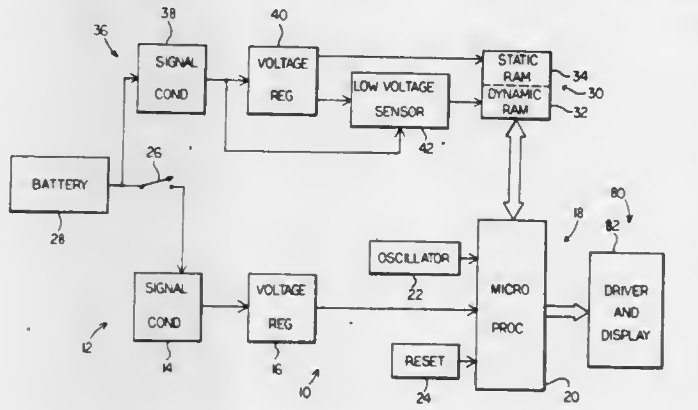
4,617,639
HOUR METER APPARATUS AND METHOD

John C. Paine, Chardon, Ohio, assignor to Caterpillar Industrial Inc., Mentor, Ohio

Filed Aug. 8, 1984, Ser. No. 638,913

Int. Cl.⁴ G06F *15/20;* **G08B** *19/00;* **B60Q** *1/00*

U.S. Cl. 364—569 **14 Claims**



1. Apparatus for measuring, storing and displaying the accumulated period of time an intermittent operating condition of a vehicle exists, comprising:

means for detecting said intermittent operating condition and producing a control signal in response to said detected condition;

oscillator means for producing a predetermined clock frequency signal;

a dynamic memory device having a plurality of addressable memory locations;

a non-volatile memory device having a plurality of addressable memory locations;

a plurality of time interval registers; and,

processor means for receiving said control signal and said clock frequency signal, controllably modifying predetermined ones of said plurality of time interval registers in response to receiving both said control signal and a predetermined number of cycles of said clock frequency signal, storing a representation of the contents of said time interval registers in said dynamic memory device in response to each modification of a first predetermined one of said time interval registers, and transferring the contents of said dynamic memory device to said non-volatile memory device in response to each modification of a second predetermined one of said time interval registers.

4,617,640
PORTABLE AUTOMATIC NC PROGRAMMING DEVICE

Hajimu Kishi, Hino; Tadayoshi Onuki, Sagamihara, and Mitsuo Kurakake, Hino, all of Japan, assignors to Fanuc Ltd., Tokyo, Japan

Filed Mar. 24, 1983, Ser. No. 478,225

Claims priority, application Japan, Mar. 24, 1982, 57-45530

Int. Cl.⁴ G06F *9/00*

U.S. Cl. 364—708 **1 Claim**

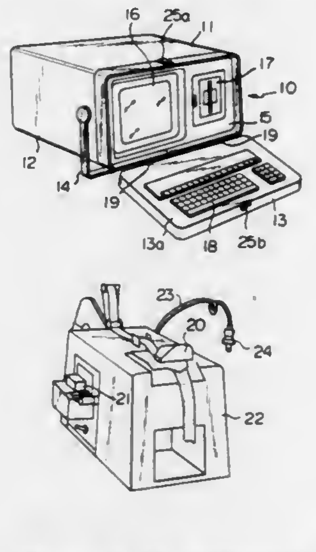
1. A portable programming device comprising:

a box like casing including a body having an open side, a lid element hinged along one of its side edges to said body along a side edge of said open side to cover said open side when said lid element is hinged clowed and to expose said open side when said lid element is hinged open, and a carrying handle attached to said body, said body of said box like casing being substantially formed in the shape of a rectangular parallelpiped and said lid element being formed in the shape of a rectangular plate;

a graphic display unit encased in said body on said open side and exposed for display when said lid element is hinged open;

a floppy deck encased in said body juxtaposed side by side within said rectangular parallelpiped box with said graphic display unit; and

a keyboard panel arranged inside of said lid element;



said device being ready for programming when said lid element is hinged open on said body;

said carrying handle being pivotally attached at its opposite ends to opposite sides of said body adjacent to said open side and said lid element;

said handle, when said lid element is hinged open on said body and said device is ready for programming, supporting said open side of said body with said graphic display unit and said floppy deck tipped backward, and said open lid element with said keyboard panel arranged inside thereof tipped forward, from said hinge of said lid element to said rectangular parallelpiped box.

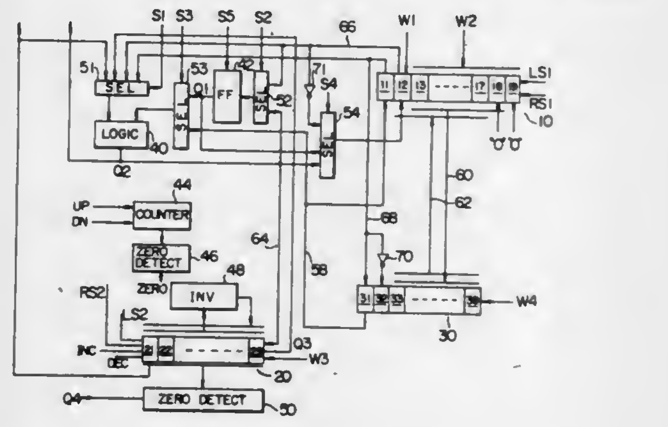
4,617,641
OPERATION UNIT FOR FLOATING POINT DATA HAVING A VARIABLE LENGTH EXPONENT PART

Hozumi Hamada, Chofu, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 19, 1983, Ser. No. 543,426

Int. Cl.⁴ G06F *7/48, 5/00*

U.S. Cl. 364—748 **15 Claims**



7. An operation unit for floating point data comprised of a variable-length exponent part indicative of an exponent of a number and a variable-length mantissa part indicative of a mantissa of the number, the exponent part including a preceding first bit portion of all "1" or all "0" and a succeeding

second bit portion indicative of a value of the exponent of the number, the bit length of the preceding first bit portion depending upon a value of the exponent of the number, the bit length of the succeeding second bit portion depending upon the bit length of the preceding first bit portion, comprising:

first means for responding to all 1 or all 0 included in the preceding first bit portion of the exponent part of the floating point data and for separating the succeeding second bit portion of exponent part and the mantissa part based upon the bit length of the all 1 or all 0 part of the preceding first bit portion; and

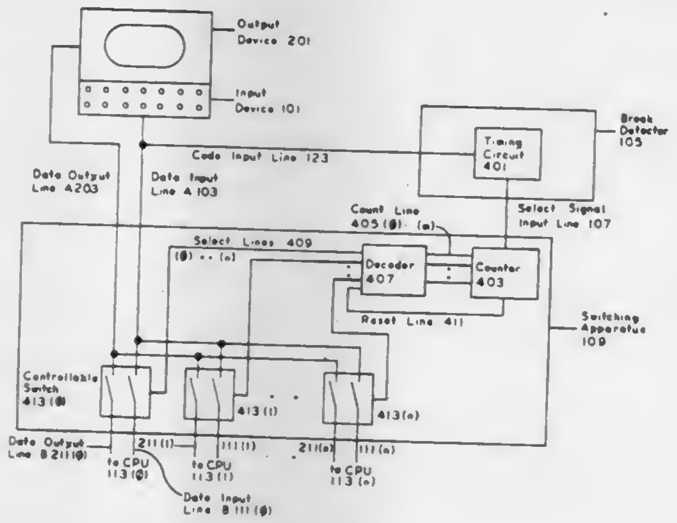
second means connected to said first means for performing an arithmetic operation on the separated succeeding second bit portion of the exponent part and the separated mantissa part.

4,617,642

SELECT SWITCH RESPONSIVE TO A BREAK CODE

Jeffrey S. Clark, Raleigh, N.C., assignor to Data General Corporation, Westboro, Mass.

Filed May 6, 1982, Ser. No. 375,245
Int. Cl.^{4} G06F *7/00;* H04Q *9/00*
U.S. Cl. 364—900 **4 Claims**



1. In electrical apparatus including

(1) a first component having means for generating digital codes, said digital codes consisting of sequences of states including a first state and a second state and including
  (a) transmission codes having a uniform length and consisting of at least one first state and at least one second state, and
  (b) break codes consisting only of said second state and having a length equal to said uniform length, and
(2) a plurality of other components,

selection means responsive to said break codes for electrically connecting said first component with a selected one of said plurality of other components, said selection means comprising:

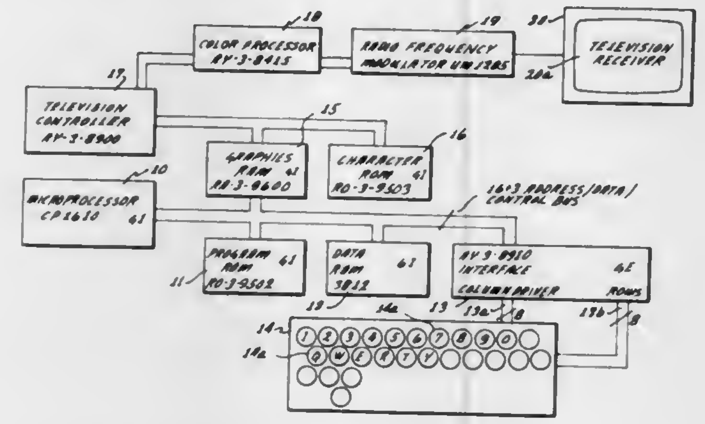
(1) means, connected to said means for generating digital codes, for detecting said break codes in said digital codes, said break code detection means including means for determining the length of each said sequence of consecutive second states and means for generating a select signal on each occurrence of a sequence of said second states which is at least equal to said uniform length; and
(2) switching means responsive to said select signal for electrically connecting said first component with a selected one of said other components, said switching means including:
  (a) a plurality of controllable switching means, each one of said plurality of controllable switching means being associated with and connected to a corresponding component of said plurality of other components,
  (b) a plurality of select lines, each one of said select lines being associated with and connected to a corresponding one of said controllable switch means,
  (c) resettable counting means connected to said break code detector, to a reset line, and to a plurality of count lines, said resettable counting means including means for incrementing an encoded value in response to said select signal, means for outputting said encoded value on said plurality of count lines, and means for responding to one said reset signal by resetting said encoded value to a preset value, and
  (d) decoding means connected to said plurality of count lines, to said plurality of select lines, and to said reset line and responsive to said encoded value, said decoding means including means for providing a signal to the one select line corresponding to said encoded value, means for removing the signal from the one select line corresponding to the previous encoded value, and means for providing said reset signal on said reset line when said encoded value exceeds a present value.

4,617,643

SYNTAX ERROR CORRECTION METHOD AND APPARATUS

Anita H. Klock, Lawndale, and Jan B. Chodak, Rancho Palos Verdes, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 29, 1982, Ser. No. 437,787
Int. Cl.^{4} G06F *11/32*
U.S. Cl. 364—900 **8 Claims**



1. For use in a digital computer in which a series of programming statements are processed, and in which the structure of programming statements must conform to a predetermined set of syntax criteria to permit processing, a method of syntax examination and correction comprising the steps of:

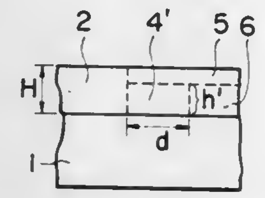
compiling a programming statement in response to user input;
displaying said programming statement;
examining the structure of said statement in accordance with a predetermined set of syntax rules;
displaying selected color indicia of each character within said statement which is in accordance with said predetermined set of syntax rules;
determining whether any characters remain to which color indicia have not been assigned;
examining the color indicia bearing characters alone in accordance with said set of syntax rules and designating said statement as acceptable or unacceptable, and, if designated acceptable, entering an altered programming statement thereof into the program formed solely of color indicia bearing characters.

4,617,644

HIGH-DENSITY MAGNETIC BUBBLE MEMORY DEVICE

Minoru Hiroshima; Shinzo Matsumoto; Mitsuru Sekino, and Yoshinori Taniguchi, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1984, Ser. No. 590,869
Claims priority, application Japan, Mar. 22, 1983, 58-45936
Int. Cl.^{4} G11C *19/08*
U.S. Cl. 365—36 **11 Claims**



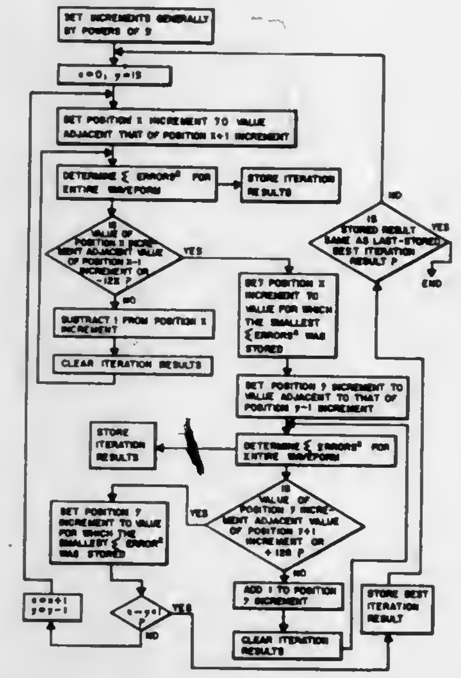
1. A magnetic bubble memory device comprising a substrate, a magnetic layer which has a thickness H including an ion implanted layer at the surface thereof and in which magnetic bubbles having a diameter d not larger than 2 μm can be sustained, and a propagation pattern for propagating the magnetic bubbles in said magnetic layer, a relation of $H/d \leqq 0.8$ being satisfied.

4,617,645

COMPACTION METHOD FOR WAVEFORM STORAGE

Richard P. Sprague, Westminster, Calif., assignor to First Byte, Long Beach, Calif.

Filed Sep. 10, 1984, Ser. No. 649,227
Int. Cl.^{4} G11C *13/00, 27/00*
U.S. Cl. 365—45 **10 Claims**


SET INCREMENTS GENERALLY BY POWERS OF 2
x=0, y=15
SET POSITION x INCREMENT TO VALUE ADJACENT THAT OF POSITION x+1 INCREMENT
DETERMINE Σ ERRORS² FOR ENTIRE WAVEFORM
STORE ITERATION RESULTS
YES
NO
SUBTRACT 1 FROM POSITION x INCREMENT
CLEAR ITERATION RESULTS
SET POSITION x INCREMENT TO VALUE FOR WHICH THE SMALLEST Σ ERRORS² WAS STORED
IS STORED RESULT SAME AS LAST-STORED BEST ITERATION RESULT ?
YES
NO
END
SET POSITION y INCREMENT TO VALUE ADJACENT TO THAT OF POSITION y−1 INCREMENT
STORE ITERATION RESULTS
DETERMINE Σ ERRORS² FOR ENTIRE WAVEFORM
SET POSITION y INCREMENT TO VALUE FOR WHICH THE SMALLEST Σ ERROR² WAS STORED
YES
NO
ADD 1 TO POSITION y INCREMENT
CLEAR ITERATION RESULTS
STORE BEST ITERATION RESULT
x=x+1 y=y−1
YES
NO

1. A method of compactly storing and retrieving a waveform, comprising the steps of:

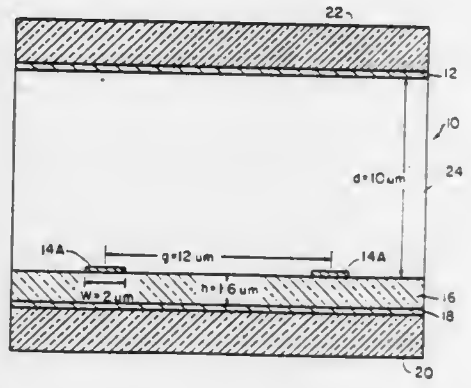
(a) establishing a table containing a relatively small number of predetermined increments;
(b) storing a series of addresses, each address identifying one of said increments in said table;
(c) successively producing a series of samples representing generally the value of said waveform at time-spaced intervals, each of said samples corresponding to one of said addresses;
(d) predicting the value of each new sample to be produced, said predicted value being a fixed function of the values of at least a current and a previous sample;
(e) incrementing said predicted value by the increment identified by said address for said new sample, to produce a sample value at least approximating the actual value of said waveform at the sampling point; and
(f) reconstituting said waveform from said approximating samples.

4,617,646

ELECTRIC FIELD GRADIENT EXCITED LIQUID CRYSTAL CELL HAVING BISTABILITY

Kei-Hsiung Yang, Somers, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1984, Ser. No. 626,161
Int. Cl.^{4} G11C *13/04*
U.S. Cl. 365—108 **11 Claims**



1. A liquid crystal bistable storage device comprising:

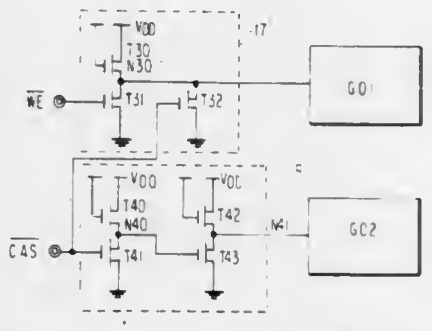
(a) a layer of liquid crystal material having at least two stable states, one of which is defined as an ordered state, the other as a disordered or scattered state;
(b) at least three separated electrodes;
  (1) a first electrode of which provides a ground plane;
  (2) a second electrode in a mesh-like arrangement;
  (3) a third electrode in spaced relationship with said second electrode;
(c) means for selectively applying varying potential levels to each of said second and third electrodes to produce distinct electric field configurations within said layer of liquid crystal material such that said stable states of said liquid crystal layer are changed from ordered to disordered.

4,617,647

MEMORY CIRCUIT

Katsuji Hoshi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 14, 1983, Ser. No. 561,371
Claims priority, application Japan, Dec. 14, 1982, 57-218683
Int. Cl.^{4} G11C *7/00*
U.S. Cl. 365—189 **8 Claims**



7. A memory circuit comprising, a plurality of memory cells, a column address strobe terminal for directly receiving a column address strobe signal which is externally generated outside the memory circuit, first means responsive to said column address strobe signal for operatively making said memory cells in an accessed state, a write control terminal for directly receiving a write control signal which is externally generated

outside the memory circuit, and second means for operatively performing a write operation to the selected memory cell under the accessed state of said memory cells, said second means including a logic gate having a first input terminal directly connected to said column address strobe terminal and a second input terminal connected to said write control terminal, said logic gate generating a write execution signal for achieving a write operation only when both of said column address strobe signal and said write control signal are present.

4,617,648
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

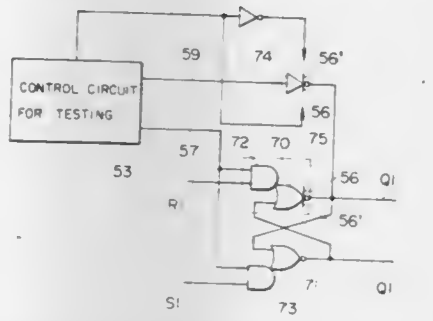
Shigeo Kuboki, Nakaminato; Hideo Maejima, and Ikuro Masuda, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 8, 1984, Ser. No. 669,348

Claims priority, application Japan, Nov. 10, 1983, 58/211355

Int. Cl.⁴ G11C *13/00*

U.S. Cl. 365—189 **7 Claims**



1. A semiconductor integrated circuit device provided with a flip-flop circuit including gates which are connected to each other so as to form a closed loop, said device comprising:
- first means for generating a first write timing signal, a second write timing signal, a diagnosis control signal and diagnostic data which are all concerned with said flip-flop circuit, when said semiconductor integrated circuit device is diagnosed to detect a fault therein;
- second means connected to the output side of said flip-flop circuit for making and breaking the closed loop of said gates in accordance with said first write timing signal;
- third means connected to the output side of said flip-flop circuit for supplying said diagnostic data to said flip-flop circuit in accordance with the second write timing signal; and
- fourth means connected to the input side of said flip-flop circuit for blocking a signal applied to the input side of said flip-flop circuit, in accordance with said diagnosis control signal.

4,617,649
ERASABLE FPLA

Mikio Kyomasu; Toshiyuki Araki, both of Toyono; Shinobu Fukunaga, Kawanishi, and Masahiro Shindo, Toyonaka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

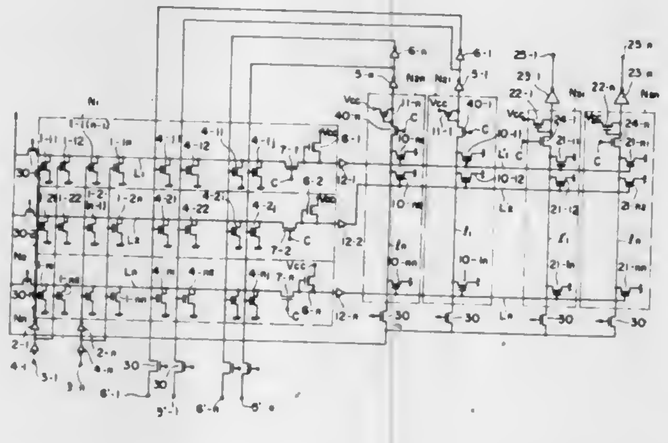
Continuation of Ser. No. 442,167, Nov. 16, 1982, Pat. No. 4,503,520. This application Jan. 7, 1985, Ser. No. 689,703

Claims priority, application Japan, Nov. 17, 1981, 56-185037

Int. Cl.⁴ G11C *13/00*

U.S. Cl. 365—189 **34 Claims**

1. A programmable logic array in which a desired logic function may be erasably programmed comprising:
- a plurality of input terminals;
- an AND plane including a plurality of AND gates each of which is operatively connected to receive a signal from the corresponding one of said plurality of input terminals; and
- an OR plane including a plurality of OR gates each of which is operatively connected to receive a signal from the corresponding one of said plurality of AND gates in said AND plane and to supply a logic output, wherein at least one of said AND and OR planes includes:
- a matrix of conductors including first and second conductors which run in different directions thereby defining intersections therebetween and which are electrically isolated from one another; and



- a plurality of reprogrammable memory elements each disposed at each of the intersections between said first and second conductors, each of said reprogrammable memory elements having a first electrode connected to the corresponding one of said first conductors, a second electrode connected to the corresponding one of said second conductors and a third electrode connected to a reference voltage.

4,617,650
MEMORY MODULE FOR A PROGRAMMABLE ELECTRONIC DEVICE

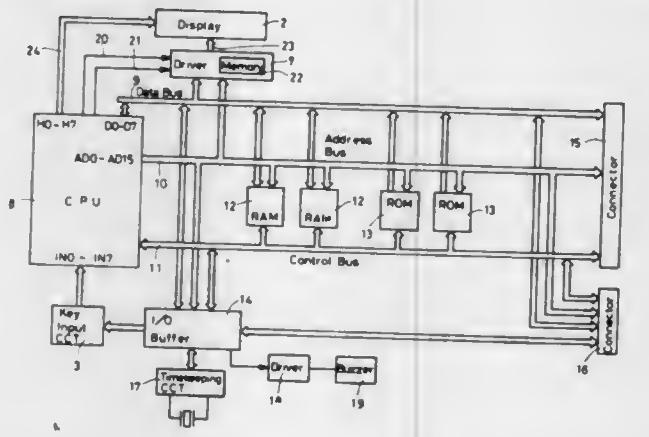
Masuaki Morino, Soraku, and Yuji Takada, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 1, 1983, Ser. No. 519,148

Claims priority, application Japan, Aug. 3, 1982, 57-135960

Int. Cl.⁴ G11C *13/00*

U.S. Cl. 365—195 **5 Claims**



1. A memory module connectable to a programmable electronic device comprising:
- input means for introducing information into said device;
- means for developing a write command;
- memory means, responsive to the write command developed by said means for developing, for storing said information introduced by said input means therein, said memory means including a plurality of independently addressable read/write memory areas;
- inhibit means, disposed between said means for developing and said memory means, for inhibiting the application of said write command to selected ones of said plurality of independently addressable read/write memory areas, which form less than all of said plurality of memory areas to thereby prevent undesired damage to the contents of these inhibited memory areas.

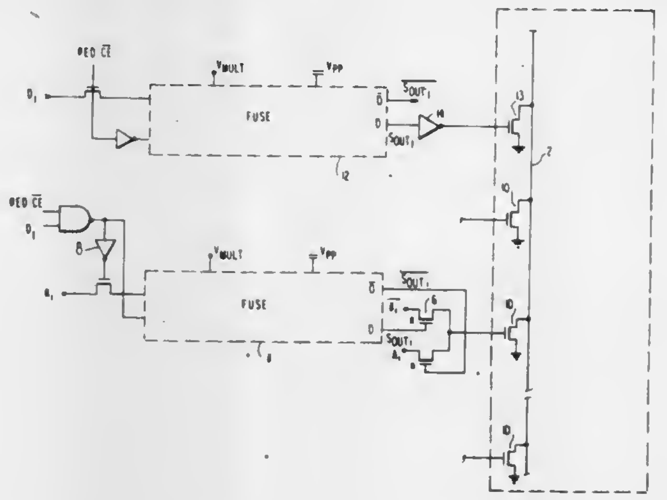
4,617,651
REDUNDANCY CIRCUIT FOR USE IN A SEMICONDUCTOR MEMORY ARRAY

William W. Ip, San Jose, and Gust Perlegos, Fremont, both of Calif., assignors to Seeq Technology, Inc., San Jose, Calif.

Filed Feb. 22, 1984, Ser. No. 582,438

Int. Cl.⁴ G11C *11/40*

U.S. Cl. 365—200 **9 Claims**



1. A circuit for use with a semiconductor memory divided into primary and redundant arrays, which circuit is capable of being programmed to enable a redundant word line in the redundant array whenever a predetermined address bit having a value associated with a faulty word line in the primary array is input to the semiconductor memory, the value of the address bit assuming one of two complementary states depending upon the address location of the faulty word line in the primary array, said circuit comprising:
- enabling means connected to the redundant word line for receiving a first enabling signal having first and second complementary values which correspond to the first and second complementary states of the predetermined address bit associated with the faulty word line and for receiving a second enabling signal having first and second complementary values inverted relative to said complementary values of said first enabling signal, said enabling means operating to enable the redundant word line when said first value of said first enabling signal is received by said enabling means, said enabling means also operating to enable the redundant word line when said second value of said second enabling signal is received by said enabling means;
- output means connected to receive an output signal and a complementary output signal for supplying said enabling means with said first enabling signal in response to said output and complementary output signals having a first pair of complementary output values and for supplying said enabling means with said second enabling signal in response to said output and complementary output signals having a second pair of complementary output values inverted relative to said first pair of complementary output values; and
- programmable means for supplying said output means with said output and complementary output signals, said programmable means including a single fuse element which assumes one of two fuse states depending upon the state of the predetermined address bit associated with the faulty word line, said first fuse state of said single fuse element causing said programmable means to generate said first pair of complementary output values for said output and complementary output signals, said second fuse state of said single fuse element causing said programmable means to generate said second pair of complementary output values for said output and complementary output signals.

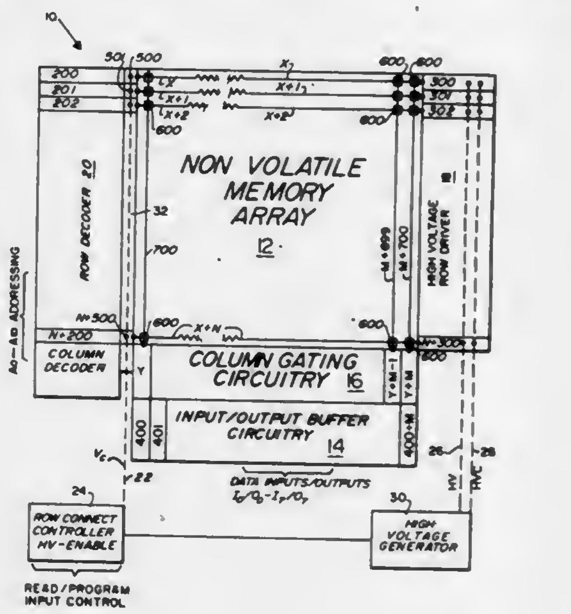
4,617,652
INTEGRATED HIGH VOLTAGE DISTRIBUTION AND CONTROL SYSTEMS

Richard T. Simko, Los Altos, Calif., assignor to Xicor, Inc., Milpitas, Calif.

Continuation-in-part of Ser. No. 367,264, Apr. 12, 1982, Pat. No. 4,520,461, which is a continuation-in-part of Ser. No. 230,683, Feb. 2, 1981, Pat. No. 4,486,769, which is a continuation-in-part of Ser. No. 6,026, Jan. 24, 1979, Pat. No. 4,314,265, and a continuation-in-part of Ser. No. 6,030, Jan. 24, 1979, Pat. No. 4,274,012. This application Jun. 6, 1983, Ser. No. 501,277

Int. Cl.⁴ G11C *11/40*

U.S. Cl. 365—203 **7 Claims**


10
501
500
600
600
200
201
202
300
301
302
NON VOLATILE MEMORY ARRAY
12
ROW DECODER 20
32
700
N+200
COLUMN DECODER
COLUMN GATING CIRCUITRY 16
INPUT/OUTPUT BUFFER CIRCUITRY
14
DATA INPUTS/OUTPUTS
24
22
30
26
28
ROW CONNECT CONTROLLER HV-ENABLE
HIGH VOLTAGE GENERATOR
READ/PROGRAM INPUT CONTROL

1. In an integrated circuit nonvolative memory device comprising an array of nonvolatile addressable memory elements connected to row and column address lines, row decoder circuitry for applying a predetermined logic level potential to a selected row line of the memory array and column circuitry for I/0 addressing of a selected column address line, the improvement comprising:
- coupling/decoupling means for electrically isolating a selected row line at said predetermined potential from the row decoder circuitry, said means including first and second transistors each having a source, drain and gate, the drain of said second transistor being connected to the row line, the source of said first transistor being connected to the row decoder circuitry, the source of said second transistor and the drain of said first transistor being connected together, means connected to the gate of said first transistor for selectively causing said first transistor to be in a non-conductive state so as to isolate said selected row line from said row decoder circuitry, and means connected to the gate of said second transistor for maintaining said second transistor in a conductive state; and
- low power high voltage charging means for charging the selected, isolated row line at said predetermined potential to a higher potential while preventing charging of unselected row lines to such higher potential, said means including a third transistor for controlling the application of said higher potential to said isolated row line and a fourth transistor for regulating the condition of said third transistor as a function of the potential of said isolated row line.

4,617,653
SEMICONDUCTOR MEMORY DEVICE UTILIZING MULTI-STAGE DECODING

Yasuro Matsuzaki, Tama; Toshitaka Fukushima, Yokohama, and Kouji Ueno, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 28, 1983, Ser. No. 566,323

Claims priority, application Japan, Dec. 29, 1982, 57-233906

Int. Cl.⁴ G11C *8/00, 11/36*

U.S. Cl. 365—230 **16 Claims**

1. A semiconductor memory device operatively connected to receive address signals, comprising:

a plurality of memory cells arranged in a matrix having columns and rows; and

decoder means, operatively connected to said plurality of memory cells, for selecting one row of said matrix in response to the address signals, said decoder means comprising:

a first-stage decoder having a plurality of first-stage decoding elements having output terminals, said first-stage decoder operatively connected to receive predetermined ones of the address signals; and

a second-stage decoder having a plurality of second-stage decoder circuit groups each including a plurality of second-stage decoding elements having output terminals, each of said second-stage decoder circuit groups operatively connected to said corresponding first-stage decoding elements, said second-stage decoder receiving further address signals in addition to said predetermined ones of the address signals connected to said first-stage decoder.

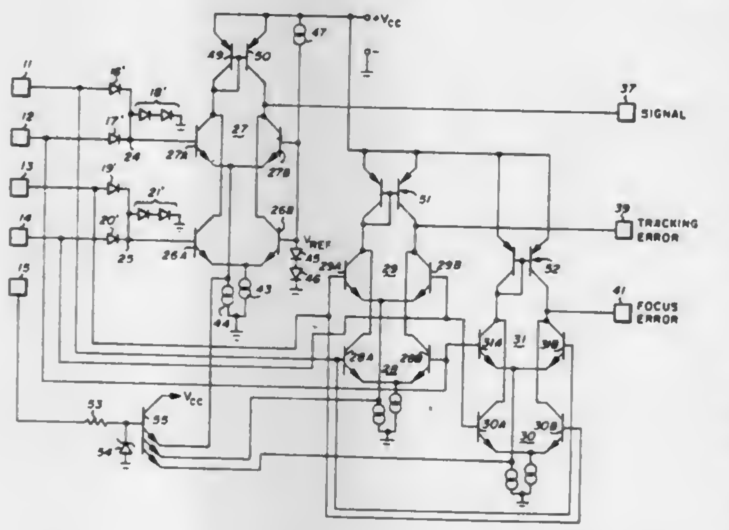
4,617,654
MATRIX CIRCUIT FOR OPTICAL DISC SYSTEMS

William H. Gross, Sunnyvale, Calif., and Toyojiro Naokawa, Tsurugashimamachi, Japan, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 12, 1984, Ser. No. 619,965

Int. Cl.⁴ G11B *7/13*

U.S. Cl. 369—46 **5 Claims**



1. An integrated circuit for combining the photocurrents produced by a four quadrant photodetector array in a single beam optical disc system or by a six photodetector array in a three-beam optical disc system to produce signal, tracking error, and focus error outputs, said circuit comprising:

first, second, third and fourth input terminals for receiving photocurrents from a photodetector array;

a fifth input terminal for receiving a logic signal determined by which of the two systems is employed;

conductive means connected to each of said first, second, third and fourth terminals for conducting said photocurrents to a common circuit point, said conductive means being connected in a branching configuration whereby said photocurrents in said input terminals can be combined in pairs;

three pairs of op amps having differential input terminals coupled to respond to said photocurrents in said first, second, third and fourth input terminals with the output terminals of each pair being coupled together in a summer to produce one of said outputs; and

means responsive to the logic signal on said fifth input terminal for turning one op amp in each of said three pairs on and off.

4,617,655
HOLDER FOR A RIGID INFORMATION DISC AND LOADING-SYSTEM COMPRISING A LOADING MECHANISM ADAPTED TO COOPERATE WITH SUCH A HOLDER

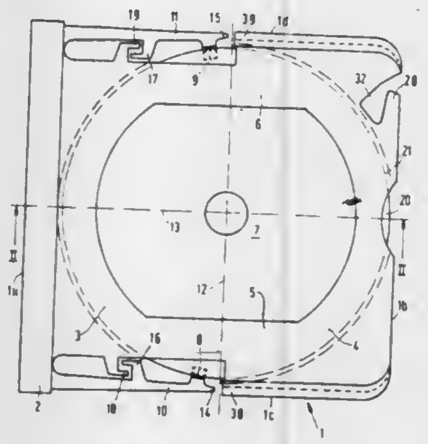
Ghislanus M. A. M. Aldenhoven, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 15, 1985, Ser. No. 734,378

Claims priority, application Netherlands, May 25, 1984, 8401672

Int. Cl.⁴ B65D *85/02;* **G11B** *23/02*

U.S. Cl. 369—291 **24 Claims**



1. A holder for a rigid information disc, including a rectangular frame which includes a first disc-supporting section situated near a first peripheral side of the frame and a second disc-supporting section adjoining a second peripheral side located opposite the first peripheral side, which frame carries movable clamping means for retaining the information disc on the frame and is at least in part resiliently deflectable and returns from a deflected position to a flat position, characterized in that the first and the second disc-supporting sections are interconnected by at least one deflectable and resilient connecting element which cooperates with the frame in its deflected position, in which position the first and second peripheral sides extend at least substantially parallel to one another, and further characterized in that the clamping means comprise actuating portions and said clamping means are situated near said connecting element, and in the deflected position of the frame said clamping means release the information disc only after said actuating portions have been actuated.

4,617,656
INFORMATION TRANSMISSION SYSTEM WITH MODEMS COUPLED TO A COMMON COMMUNICATION MEDIUM

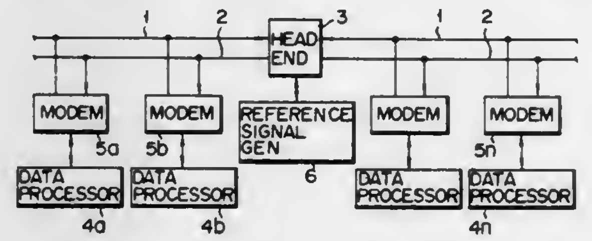
Hiroshi Kobayashi; Tsuguhiro Hirose, both of Tokyo, and Hideaki Haruyama, Fujisawa, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 563,241, Dec. 19, 1983, abandoned. This application Jan. 2, 1986, Ser. No. 814,598

Claims priority, application Japan, Dec. 22, 1982, 225216/82

Int. Cl.⁴ H04J *1/02, 3/12*

U.S. Cl. 370—74 **30 Claims**



1. An information transmission system comprising:

a communication line having a transmission path and a reception path and means for coupling information signals present on said transmission path to said reception path at a predetermined point of said line;

a plurality of information processing devices;

a plurality of modems for coupling said information processing devices to said communication line at arbitrary points thereof and for permitting transmission and reception of information signals among said information processing devices through said communication line, each modem including a transmitting amplifier to transmit an information signal from a corresponding information processing device to said transmission path of said communication line and a receiving amplifier to receive an information signal transmitted to said transmission path by any of said modems through said predetermined coupling point of said transmission and reception paths and said reception path;

a pilot signal providing means for sending out to said communication line a pilot signal of a predetermined reference level which is capable of being received by said receiving amplifier of each of said modems; and

each of said modems further including:

reception level detecting means coupled to said receiving amplifier for detecting the reception level of a signal received through said reception path; and

gain adjusting means responsive to said reception level detecting means for adjusting the gain of said transmitting amplifier such that the reception level of a transmission signal, which is transmitted to said transmission path by said transmitting amplifier and received by said receiving amplifier through said predetermined coupling point of said transmission and reception paths and through said reception path, becomes substantially equal to the reception level of the pilot signal received by said receiving amplifier.

4,617,657
TRANSMITTING SEQUENCE NUMBERS OF INFORMATION IN A PACKET DATA TRANSMISSION SYSTEM

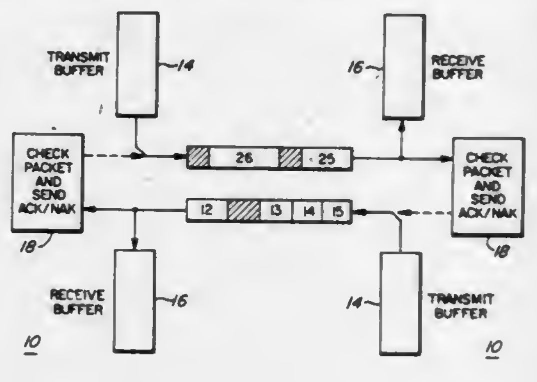
David S. Drynan, and David M. Baker, both of Ottawa, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Dec. 31, 1984, Ser. No. 688,110

Int. Cl.⁴ H04Q *11/04*

U.S. Cl. 370—60 **37 Claims**

1. A method of transmitting sequence numbers of information packets in a packet data transmission system, each information packet comprising a control field and an information field, the control field of each information packet including a sequence number of the information packet, comprising the steps of selectively transmitting in said information packet the sequence number of an information packet received in an opposite direction of transmission thereby to acknowledge correct receipt of the received information packet, and transmitting in the control field of each information packet a bit whose state indicates the presence or absence in the information packet of the sequence number of a received information packet being acknowledged.



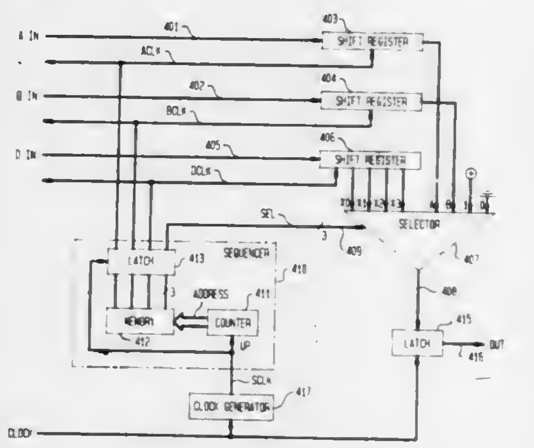
4,617,658
FRAME ARRANGEMENT FOR MULTIPLEXING A PLURALITY OF SUBCHANNELS ONTO A FIXED RATE CHANNEL

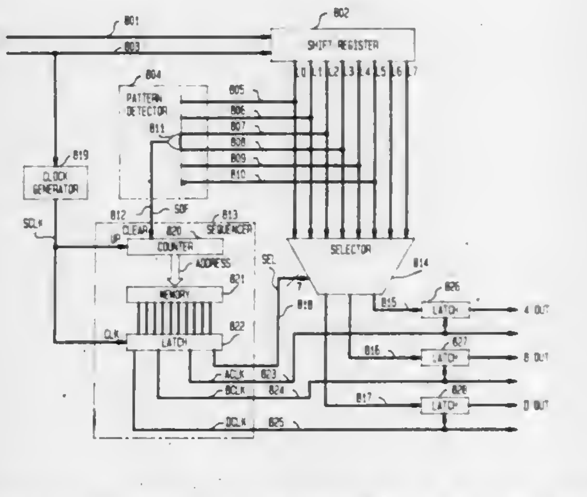
Stephen M. Walters, Holmdel, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Apr. 17, 1985, Ser. No. 724,199

Int. Cl.⁴ H04J *3/16, 3/00, 3/12*

U.S. Cl. 370—84 **10 Claims**





1. A method for multiplexing a plurality of digital subchannels onto a fixed rate digital channel by forming successive frames of bits comprising the steps of:

forming said frames so that each frame consists of j i-tuples of bits, i being mathematically predetermined as a function of the rates of each of said digital subchannels and the rate of said fixed rate digital channel, setting in each frame each bit in one of said j i-tuples to one predetermined binary digit,

setting in each frame one fixed bit at one end of each of the other j−1 i-tuples to a predetermined binary digit opposite to the digit set as each bit of said one i-tuple, and

distributing in each frame in a predetermined pattern in the remaining (i−1)(j−1) bit positions an integral number of bits from each of said subchannels.

4,617,659

FRAME ALIGNER FOR USE IN TELECOMMUNICATIONS SYSTEMS

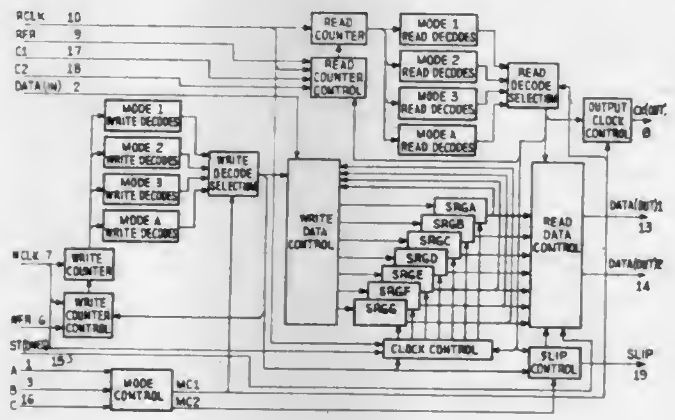
Geoffrey Chopping, Wimborne; Ian J. Lawrie, Poole, and Milan Z. Maric, Wimborne, all of England, assignors to The Plessey Company plc, Ilford, England

Filed Nov. 8, 1984, Ser. No. 669,358

Claims priority, application United Kingdom, Dec. 13, 1983, 8333214

Int. Cl.^{4} H04J *3/06;* **H04L** *7/00, 25/36, 25/40*

U.S. Cl. 370—100 **4 Claims**



1. A frame aligner for use in a time division multiplex communication system of the synchronous network type in which a digital data bit stream is transmitted over a data highway interconnecting a first communication exchange and a second communication exchange, each exchange incorporating its own individually operating clock arrangement for defining a time division frame, the frame aligner comprising: seven quarter frame shift register sections, each section being independently accessible for read and write operations; a read select counter arranged to select the shift register section from which the next quarter frame of data is to be read; a write select counter arranged to select the shift register section into which the next quarter frame of data received on the data highway is to be fed; a slip mechanism which monitors the clock incoming from the first exchange and the clock of the second exchange, and controls the read select counter in order that the read select and write select counters do not concurrently select the same shift register section; a control means for selecting one of a plurality of modes of operation in which the aligner is to operate, the mode of operation selected enabling frame alignment either (1)between two separate and equal number channel digital p.c.m. systems or (2) between two separate and differing number channel digital p.c.m. systems; a phase locked loop for generating a 1544 Kilo Hertz clock which is derived from an exchange 2048 Kilo Hertz clock: and three controls paths which are associated with said control means for application of one of a plurality of mode of operation control-codes to select the mode of operation in which the aligner is to operate;

wherein any one of four modes of operation is selected by the application of any one of four separate and different three-bit mode of operation selection codes to the three mode of operation control-paths;

wherein in the first mode of operation, the aligner frame aligns between a received p.c.m. line signal at a data rate of 2048 Kilo bits per second and a p.c.m. exchange data rate of 2048 Kilo bits per second where the frame synchronisation rate is 8 Kilo Hertz;

wherein the second mode of operation, the aligner frame aligns and frequency changes between a received p.c.m. line signal at a data rate of 1544 Kilo bits/second and a p.c.m. exchange data rate of 2048 bits/second where the frame synchronisation rate is 8 Hertz;

wherein the third mode of operation, the aligner effects conversion from an exchange data rate of 2048 Kilo bits per second to a line data rate of 1544 Kilo bits per second using the phase locked loop; and

wherein in the fourth mode of operation, the aligner operates as in the first mode of operation, and is controlled to ensure alignment with minimum delay where no significant jitter or wander is expected.

4,617,660

FAULTY-MEMORY PROCESSING METHOD AND APPARATUS

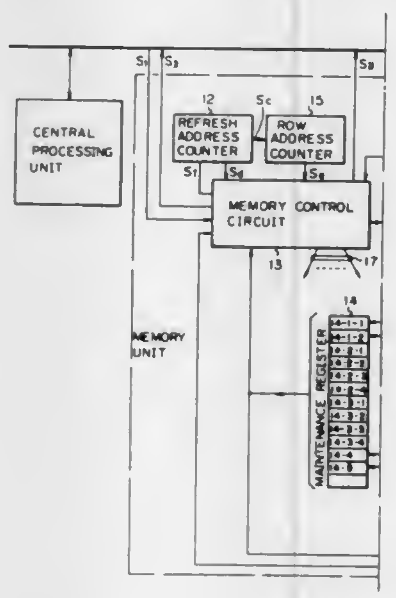
Yasuhiko Sakamoto, Fujisawa, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

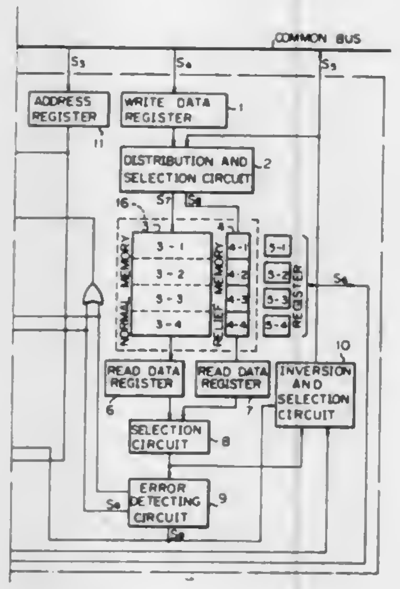
Filed Mar. 8, 1984, Ser. No. 587,518

Claims priority, application Japan, Mar. 10, 1983, 58-039674

Int. Cl.^{4} G06F *11/10;* **G11C** *29/00*

U.S. Cl. 371—13 **15 Claims**





1. A faulty memory processing method in a data processing system including memory means having a normal memory with a plurality of cells for storing information, a relief memory, and error correction means for detecting and correcting an error in information read out from at least one cell in said normal memory, said data processing system executing a time-sharing data process with time period breaks, said faulty-memory processing method comprising the steps of:

detecting a hard error which may exist in at least one cell in said normal memory, said detection being carried out using said error correction means;

correcting, using said error correction means, an error in information read out from a detected harderror cell of the normal memory;

transcribing information including the corrected information with respect to the detected hard-error cell of the normal memory into the relief memory, said correcting and transcribing steps being executed during the time period breaks in said time-sharing data process; and

processing in a normal mode where data read out from the memory means are immediately utilized without waiting for the detection and correction performed by the error

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4,617,661

ELECTRONIC COPYING MACHINE

Kenji Futaki, Kawasaki, and Hitoshi Dekura, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

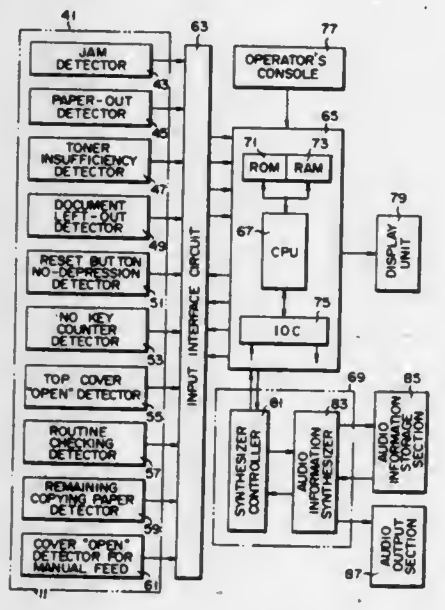
Division of Ser. No. 363,387, Mar. 29, 1982, Pat. No. 4,500,971. This application Nov. 7, 1984, Ser. No. 669,229

Claims priority, application Japan, Mar. 31, 1981, 56-48073

The portion of the term of this patent subsequent to Feb. 19, 2002, has been disclaimed.

Int. Cl.^{4} G01R *31/28*

U.S. Cl. 371—20 **1 Claim**


41
JAM DETECTOR
43
PAPER-OUT DETECTOR
45
TONER INSUFFICIENCY DETECTOR
47
DOCUMENT LEFT-OUT DETECTOR
49
RESET BUTTON NO-DEPRESSION DETECTOR
51
NO KEY COUNTER DETECTOR
53
TOP COVER "OPEN" DETECTOR
55
ROUTINE CHECKING DETECTOR
57
REMAINING COPYING PAPER DETECTOR
59
COVER "OPEN" DETECTOR FOR MANUAL FEED
61
11
63
INPUT INTERFACE CIRCUIT
77
OPERATOR'S CONSOLE
65
71
73
ROM
RAM
67
CPU
75
IOC
79
DISPLAY UNIT
69
81
83
85
SYNTHESIZER CONTROLLER
AUDIO INFORMATION SYNTHESIZER
AUDIO INFORMATION STORAGE SECTION
AUDIO OUTPUT SECTION
87

1. An electronic copying machine comprising:

a copying machine main body;

fault detecting means for detecting at least one fault in the operation of said copying machine main body, each said fault being correctable by a sequence of manual operations;

operation detecting means for detecting the occurrence of each of said manual operations;

information storage means for storing instructions for said manual operations;

output means for outputting any of said instructions stored in said information storage means; and

control means for: (1) causing said output means to output one of said instructions related to the first manual operation in said sequence to correct one of said faults detected by said fault detecting means, (2) causing said output means to output one of said instructions related to the next manual operation in said sequence to correct said detected fault when said operation detecting means detects the occurrence of said manual operation previously instructed by output of said output means, and (3) repeating said function (2) until instructions for all of said manual operations necessary to correct said detected fault have been outputted by said output means.

4,617,662

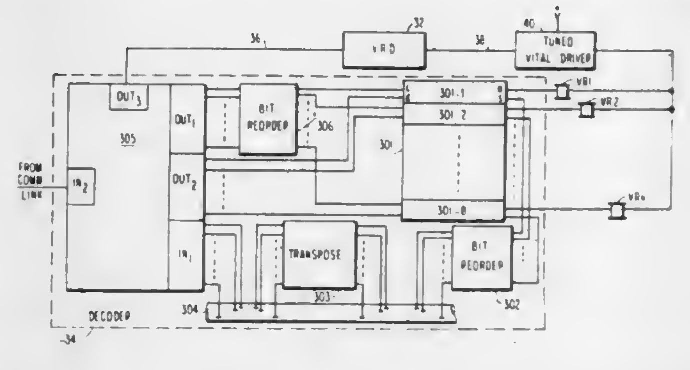
VITAL MESSAGE SYSTEM WITH UNIQUE FUNCTION IDENTIFICATION

John H. Auer, Jr., Fairport; Henry C. Sibley, Adams Basin, and Leslie C. Stewart, Rochester, all of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Dec. 12, 1983, Ser. No. 560,669

Int. Cl.^{4} G06F *11/08*

U.S. Cl. 371—25 **27 Claims**



6. A system for sensing the binary condition of plural input lines comprising:

(a) a plurality of sense circuits, equal in number to the number of input lines, each sense circuit including an input terminal connected to a corresponding input line, a drive terminal, a sense output terminal, means for producing, at said sense output terminal a signal related to a signal at said drive terminal if said input line is in one binary condition and for otherwise producing a null sense output regardless of the drive input,

(b) a multi-conductor bus with at least a separate conductor for each input line in a group of input lines,

(c) first connector means for connecting conductors of said bus to different drive terminals of said sense circuits and second conductor means for connecting conductors of said bus to different sense output terminals of said sense circuits,

(d) transposing means for transposing a time sequence of bit parallel, word serial, words on said bus to place a time sequence of bit serial, word parallel words on said bus,

(e) processor means for writing a time sequence of vital and direct test words to aid bus and for controlling said transposing means to operate only in response to said vital test words, and including means responsive to resulting vital state and direct state words to determine the state of said group of input lines.

4,617,663

INTERFACE TESTING OF SOFTWARE SYSTEMS

Carole J. Lake, Freehold; James J. Shanley, Middletown, and Steven M. Silverstein, Red Bank, all of N.J., assignors to AT&T Information Systems Inc., Holmdel, N.J.

Continuation of Ser. No. 484,465, Apr. 13, 1983, abandoned. This application Oct. 7, 1985, Ser. No. 785,029

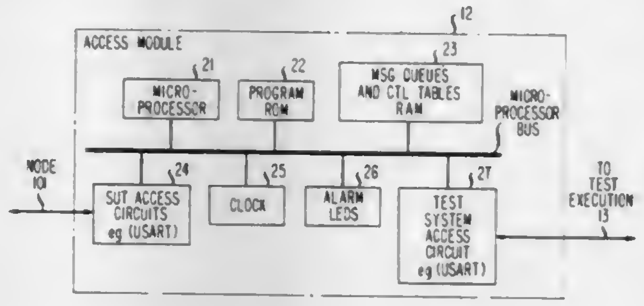
Int. Cl.^{4} G06F *11/00*

U.S. Cl. 371—25 **15 Claims**

1. A test device for use in conjunction with a system having a plurality of operations occurring within said system, said system having at least one interface point through which system messages pass, said system messages being either messages representative of operations occurring within said system or messages for controlling operations to be performed within said system, said test device comprising,

means for obtaining a plurality of scripts, each script associated with a particular test sequence and having a plurality of language statements pertaining to said test sequences, each said script also containing language statements pertaining to the results which are expected as a consequence of test sequences applied to a particular system,

means including a data base unique to a particular system under test and responsive to said means for obtaining for converting said language statements of an obtained script into a plurality of messages tailored to said particular system, certain of said messages for application to said system under test via said interface point to simulate certain system operations, and certain of said messages for comparison with messages received via said interface point as a result of said simulation messages being applied to said interface point, and



means responsive to messages received from said interface point as a consequence of messages communicated at said interface point of said system under test for comparing said received messages with said script comparison messages to provide an indication as to the proper functioning of said system under test.

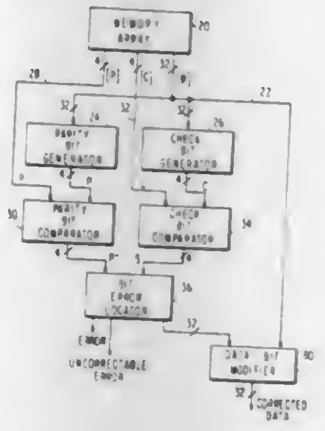
4,617,664
ERROR CORRECTION FOR MULTIPLE BIT OUTPUT CHIPS

Frederick J. Aichelmann, Jr., Hopewell Jct., and Lawrence K. Lange, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1984, Ser. No. 626,276

Int. Cl.⁴ G06F *11/10*

U.S. Cl. 371—38 **11 Claims**



1. A method of error correcting a data word consisting of a plurality of subwords, each subword consisting of a plurality of bits, comprising the steps of:

computing a first set of parity bits, a parity bit being computed from each subword of an original data word;

computing a first set of check bits from said original data word according to an error correction code;

computing a second set of parity bits, a parity bit of said second set being computed from each subword of a data word derived from said original data word, said derived data word consisting of a plurality of subwords, each subword consisting of a plurality of bits;

differencing the corresponding bits of said first and second sets of parity bits to produce a set of parity bit error signals, parity bit error signals not having a predetermined value indicating non-equality between said original data word and said derived data word;

computing a second set of check bits from said derived data word according to said error correction code;

differencing the corresponding bits of said first and second sets of check bits to produce a set of syndrome bits; and

computing from said set of parity bit error signals and said set of syndrome bits according to said error correction code the bit locations in which said original data word differs from said derived data word.

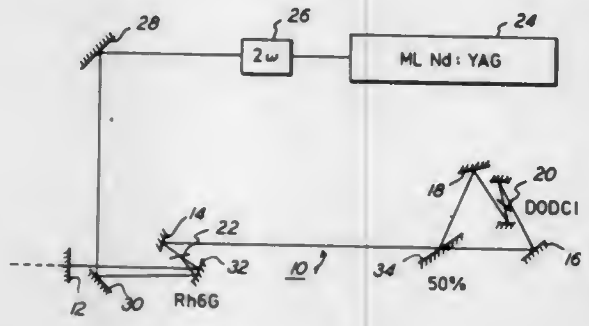
4,617,665
DYE LASER

Gerard Mourou, Rochester, N.Y.; Theodore B. Norris, Huntington, Pa., and Theodore Sizer, II, Rochester, N.Y., assignors to University of Rochester, Rochester, N.Y.

Filed Jun. 8, 1984, Ser. No. 618,715

Int. Cl.⁴ H01S *3/098*

U.S. Cl. 372—18 **14 Claims**



1. A CPM dye laser system which generates laser pulses and having a laser cavity, comprising: an anti-resonant ring in said cavity defining a 100% reflector at one end of said laser cavity, and means including a CW pumped mode-locked laser for pumping a laser dye gain medium with pump pulses synchronous with the laser pulses generated in said cavity, the length of said cavity defined between said ring and another reflector at the end of said cavity opposite to said one end said length being adjustable so that synchronous pumping occurs.

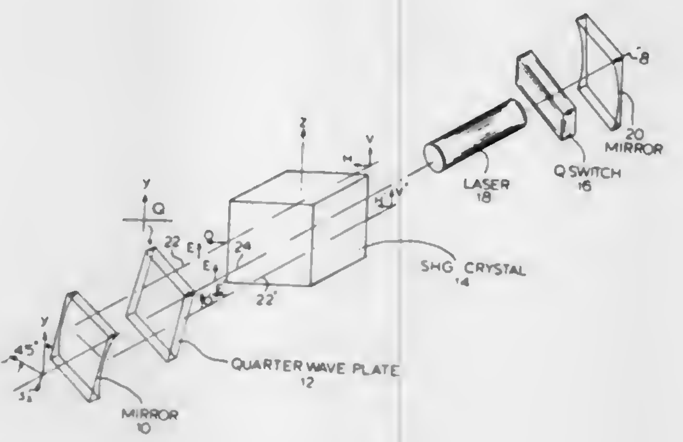
4,617,666
FREQUENCY DOUBLING A LASER BEAM BY USING INTRACAVITY TYPE II PHASE MATCHING

Kuo-Ching Liu, Setauket, N.Y., assignor to Quantronix Corporation, Smithtown, N.Y.

Continuation-in-part of Ser. No. 724,089, Apr. 17, 1985. This application Oct. 29, 1985, Ser. No. 792,477

Int. Cl.⁴ H01S *3/10*

U.S. Cl. 372—22 **9 Claims**



1. A frequency doubled laser comprising:

a first mirror;

a multimode laser active medium for generating a fundamental beam at a preselected frequency, said beam having a random polarization as a result of said active medium not being naturally birefringent, which polarization can be resolved into two coplanar orthogonal components;

a crystal with its optic axis parallel to one of said components having an ordinary and an extraordinary axis oriented along said orthogonal rays to generate a second harmonic beam in response to said orthogonal components, said crystal further generating a differential phase delay between said orthogonal rays;

means for interchanging upon first passage through said means, reflection from the second mirror and return passage through said means the respective orientations of said orthogonal rays to eliminate by return passage through said SHG crystal said differential delay;

a second mirror, said first mirror and second mirror being arranged to form an optical cavity for said laser active medium, crystal and interchanging means.

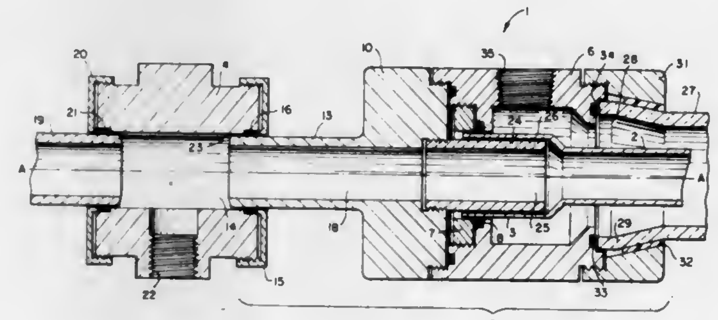
4,617,667
GAS LASER TUBE ASSEMBLY

Wayne M. Penn, Cartersville, Ga., assignor to P.R.C., Ltd., Landing, N.J.

Filed Oct. 28, 1983, Ser. No. 546,741

Int. Cl.⁴ H01S *3/02*

U.S. Cl. 372—35 **31 Claims**



1. A gas laser tube assembly comprising an elongated gas laser plasma tube, a fitting member for connection to the end of said elongated gas laser plasma tube, said fitting member being positioned adjacent one end of said elongated gas laser plasma tube and spaced from said tube end along the longitudinal axis of said plasma tube, and releasable connection means extending between and releasably connected with said one end of said plasma tube and said fitting member spaced along the longitudinal axis from said plasma tube, one of said connection means and said fitting member having a bore and the other having an elongated projection extending a substantial distance along the longitudinal axis of said tube and telescopically arranged within said bore so that said fitting member and said connection means can be moved with respect to one another in either direction along the longitudinal axis of said plasma tube at least upon release of said connection means thereby facilitating removal and installation of said plasma tube from said assembly.

4,617,668
CO₂ TEA LASER

Robert I. Rudko, Holliston, and James W. Barnie, Stoughton, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 394,583, Jul. 2, 1982. This application May 7, 1985, Ser. No. 731,619

Int. Cl.⁴ H01S *3/22*

U.S. Cl. 372—59 **10 Claims**

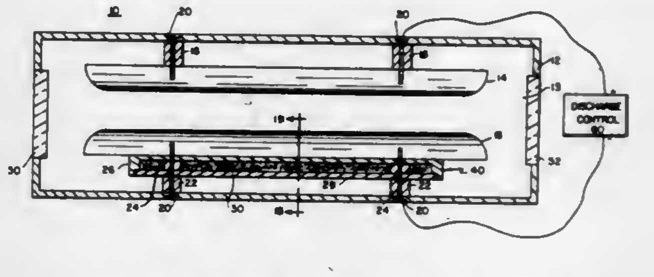
1. In combination:

an active fluid gain medium;

a sealed resonant cavity surrounding said active fluid gain medium;

a catalyst disposed within said seal resonant cavity; and

means for protecting said catalyst from electric field and shock waves present in said sealed resonant cavity, said protecting means comprising a conductive container, the catalyst being disposed therein, said conductive container having a portion of a surface thereof permeably to said active fluid gain medium and impervious to said catalyst.



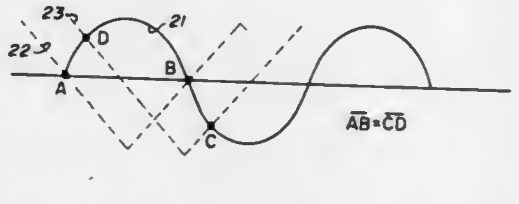
4,617,669
METHOD AND APPARATUS FOR PUMPING LASANT SLABS

Kelin J. Kuhn, Mountain View, Calif., assignor to Board of Trustees, Leland Stanford, Jr. University, Stanford, Calif.

Filed Dec. 3, 1983, Ser. No. 557,203

Int. Cl.⁴ H01S *3/091*

U.S. Cl. 372—70 **14 Claims**



1. In a method for optically pumping a slab of lasant material of the type having a pair of spaced apart broad side faces and a pair of spaced apart narrow side faces, the steps of:

internally reflecting a laser beam of coherent radiation within the slab back-and-forth in a zig-zag path between and intersecting with the broad side faces as the coherent beam travels in a lengthwise direction within the slab falling in a mid-plane between the broad faces,

directing optical pumping radiation through at least one of said broad faces of said lasant slab for inverting the population densities of lasant energy levels within said lasant slab for transferring power into the laser beam;

the intensity of said pumping radiation, as directed into said lasant slab, being spatially periodic taken in the lengthwise direction of the travel of the laser beam within the slab and having an attendant spatially periodic temperature maxima profile within the lasant slab taken in the lengthwise direction of travel of the laser beam within the laser slab; and

positioning the periodicity of the thermal maxima profile relative to the periodicity of the zig-zag laser beam path such that each ray within the laser beam has generally the same zig-zag path length over the same length of the lengthwise path length of the laser beam within the slab.

4,617,670
AERODYNAMIC WINDOWS FOR HIGH POWER LASERS

Alan S. Kaye, Wantage, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Mar. 11, 1985, Ser. No. 710,064

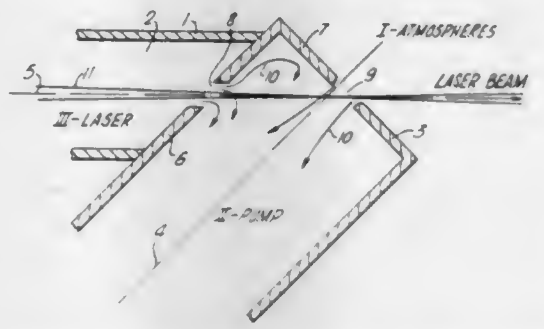
Claims priority, application United Kingdom, Mar. 26, 1984, 8407754

Int. Cl.⁴ H01S *3/08*

U.S. Cl. 372—104 **4 Claims**

1. An aerodynamic window for a gas laser, comprising a chamber positioned at one end of a structure forming part of a laser cavity in which lasing action can take place, the chamber having first and second apertures aligned with the optical axis of the laser cavity and the longitudinal axis of the chamber at an acute angle to the optical axis of the laser optical cavity, and

for permitting the chamber to be continuously evacuated such that an intermediate pressure is established in said chamber relative to a lower pressure in said laser cavity and a higher pressure outside of said chamber, wherein the chamber is of uniform cross-section and the apertures are situated in a side wall and an end wall of said chamber, respectively thereby providing an aerodynamic window.



4,617,671

ARRANGEMENT FOR PRODUCING METALS, SUCH AS MOLTEN PIG IRON, STEEL PRE-MATERIAL AND FERROALLOYS

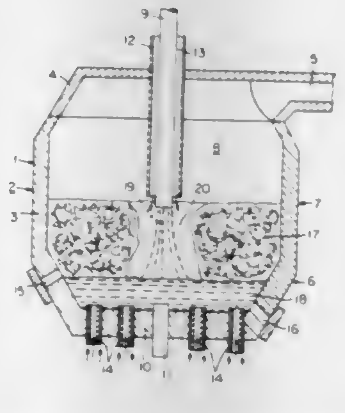
Walter Lugscheider, Linz; Paul Müllner; Wilhelm Schiffer, both of Traun, and Alois Leutgöb, Steyr, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Division of Ser. No. 558,034, Dec. 5, 1983, Pat. No. 4,533,385. This application Jan. 30, 1985, Ser. No. 696,357

Claims priority, application Austria, Dec. 7, 1982, 4445/82

Int. Cl.^{4} H05B *7/00*

U.S. Cl. 373—22 **3 Claims**



1. In an arrangement for producing metals, such as molten pig iron, steel pre-material and ferroalloys, of metal-oxide-containing raw material by melting said raw material and of the type including a refractorily lined metallurgical vessel having a vessel bottom and accommodating said raw material, a plasma burner directed from top to bottom and forming a plasma jet for melting said raw material, and a counter electrode arranged in said vessel bottom, the improvement which comprises a jacket peripherally surrounding said plasma burner so as to form a supply space peripherally surrounding said plasma burner and adapted to top-charge said raw material having fine-particle form into said metallurgical vessel in a flow parallel to said plasma jet so as to surround it peripherally, and nozzles provided in said vessel bottom to supply oxygen-containing gas and carbon into said metallurgical vessel so as to form foamed slag surrounding said plasma jet over its total height and peripherally surrounding said flow of fine-particle raw material.

4,617,672

ELECTRIC FURNACE ARRANGEMENT

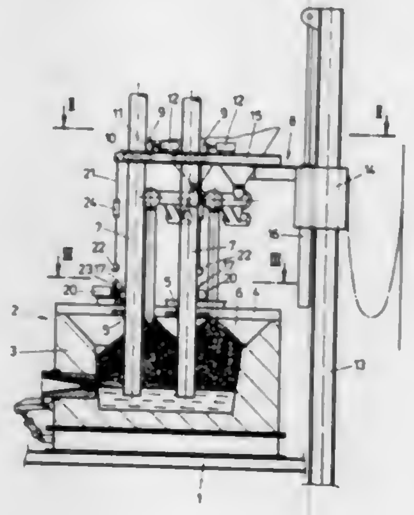
Bernhard Enkner; Leopold Amon, both of Linz; Alfred Kübelböck, Zwettl/Rodl; Wolfgang Trimmel, Leoben; Paul Nalepka, Niklasdorf; Leopold Schropp, Linz; Helmut Schwaighofer, Neumarkt; Reinhard Pum, Linz; Manfred Traxler, Hart, and Franz Tasch, Bad Mitterndorf, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Sep. 13, 1985, Ser. No. 775,538

Claims priority, application Austria, Sep. 18, 1984, 2963/84

Int. Cl.^{4} H05B *7/00*

U.S. Cl. 373—79 **4 Claims**



1. In an electric furnace arrangement of the type including a furnace vessel, a liftable and lowerable lid having at least one aperture and adapted to cover said furnace vessel, at least one electrode adapted to penetrate through the aperture in said lid into said furnace vessel, a liftable and lowerable supporting construction extending above said electric furnace and adapted to carry said electrode, and first clamping means adapted to fasten said electrode to said supporting construction, the improvement comprising second clamping means for said electrode arranged adjacent said aperture in said lid, at least one coupling element arranged on said supporting construction and at least one countercoupling element fastened to said lid, said coupling element being adapted to be brought into and out of engagement with said countercoupling element, to permit lifting of said lid.

4,617,673

ELECTRIC ARC FURNACE HAVING A SPACE PROVIDED ON ONE SIDE OF THE FURNACE VESSEL FOR ACCOMMODATING CHARGING MATERIAL

Gerhard Fuchs, Kehl-Bodersweier, and Joachim Ehle, Lautenbach, both of Fed. Rep. of Germany, assignors to Fuchs Systemtechnik GmbH, Fed. Rep. of Germany

Filed May 29, 1985, Ser. No. 738,965

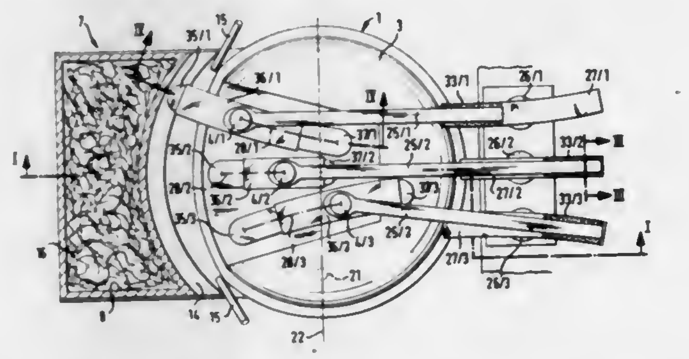
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1984, 3421485

Int. Cl.^{4} H05B *7/10, 7/00*

U.S. Cl. 373—80 **17 Claims**

1. An electric arc furnace comprising a furnace vessel (**2**), means defining a space (**8**) for accommodating charging material provided on one side of said furnace vessel and connected to the interior (**11**) of said furnace vessel, a cover (**3**) for closing said furnace vessel, electrode-passing means (**38/1**) located in said cover, at least one arc electrode (**4/1, 4/2, 4/3**) having one end thereof able to protrude via said electrode-passing means into the interior (**11**) of said furnace vessel, an electrode carrier arm (**25/1; 25/2, 25/3; 51/1, 51/2, 51/3**) having holding means, the other end of said arc electrode being clamped into said holding means, said space (**8**) being disposed at least partially in the area of radiation of the arc of said at least one arc electrode, and electrode left mechanism (**26/1, 26/2, 26/3**), said electrode

carrier arm being connected to said electrode lift mechanism, characterized in that said electrode carrier arm is connected to said electrode lift mechanism by way of a horizontal guide means (**27/1, 27/2, 27/3; 52/1, 52/2, 52/3**) and is reciprocable along the guide means by a drive means which is operative in two directions, whereby the arc electrode and the furnace vessel are displaceable relative to each other in such a way that the arc electrode can be put into a central position in the furnace vessel or a position adjacent the charging material accommodating space (**8**), and said electrode-passing means comprises means for passing said arc electrode therethrough provided in the central region of the cover and means for passing said arc electrode therethrough provided at a location in the cover which is adjacent to the charging material accommodating space.



4,617,674

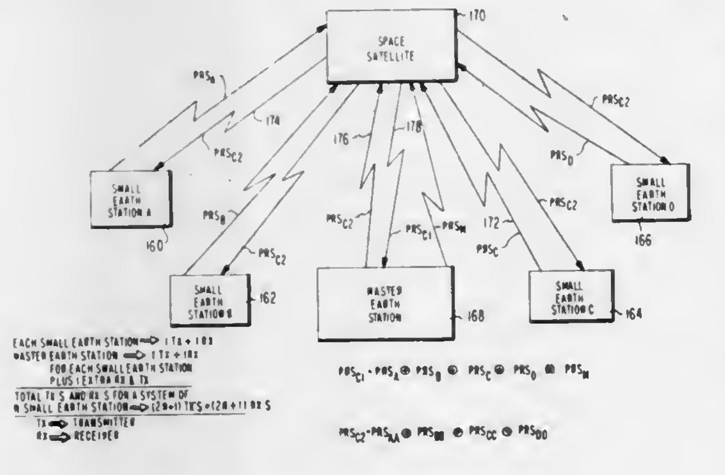
SYNCHRONIZING SYSTEM FOR SPREAD SPECTRUM TRANSMISSIONS BETWEEN SMALL EARTH STATIONS BY SATELLITE VIA AN INTERMEDIATE HOP TO A LARGE EARTH STATION

Visvaldis Mangulis, E. Brunswick, and Leonard N. Schiff, Lawrenceville, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jul. 14, 1983, Ser. No. 513,737

Int. Cl.^{4} H04J *3/06*

U.S. Cl. 375—1 **6 Claims**


SPACE SATELLITE
170
SMALL EARTH STATION A
160
SMALL EARTH STATION B
162
MASTER EARTH STATION
168
SMALL EARTH STATION C
164
SMALL EARTH STATION D
166
172
174
176
178
EACH SMALL EARTH STATION → 1 TX + 1 RX
MASTER EARTH STATION → 1 TX + 1 RX FOR EACH SMALL EARTH STATION PLUS 1 EXTRA RX & TX
TOTAL TX'S AND RX'S FOR A SYSTEM OF N SMALL EARTH STATION → (2N+1) TX'S + (2N+1) RX'S
TX → TRANSMITTER
RX → RECEIVER

3. A communication network comprising:

a satellite;

a master earth station (MES);

a plurality of small earth stations (SES) each comprising logic for generating and transmitting in a first transmission hop to said MES via said satellite a stream of pseudo random sequence (PRS) signals PRS_{SES} having a repetition rate B_{SES} and each consisting of a plurality of chips occurring at a chip rate C_{SES}, and arranged in patterns unique to said each SES, and with each PRS signal representing a bit and further with said streams of PRS signals each having periodic pause periods therein consisting of a predetermined number of bit periods for receiving and carrying error correction command (ECC) signals;

said MES comprising:

means for generating, transmitting and then receiving back from said satellite a PRS signal PRS_M having a chip and bit clock rate C_M and B_M, respectively;

said MES further comprising means for receiving said PRS signals (PRS_{SES}) and for generating an ECC signal in response to the phase difference between C_M and the C_{SES} of each SES and the phase difference between B_M and the B_{SES} of each SES indicating the amount and direction of such phase differences;

said MES further comprising logic for detecting and identifying the occurrence of the periodic pause period of each SES and for inserting in such pause periods the ECC signal required for the SES to which the transmissions from said each SES are addressed; and

each of said SESs being responsive to an ECC addressed thereto to correct the phases of the C_{SES} and the B_{SES} of the PRS_{SES} unique thereto so that said C_{SES} and said B_{SES} are synchronized with C_M and B_M, as returned from the satellite, at the MES.

4,617,675

DIGITAL PWMED PULSE GENERATOR

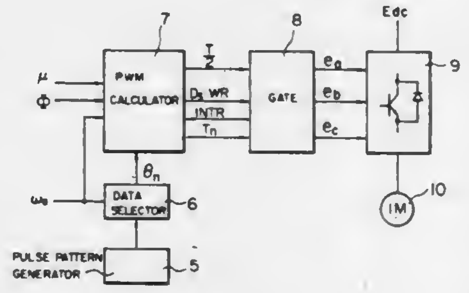
Tadashi Ashikaga; Yoshihide Kamanaka, both of Tokyo, and Keiko Fushimi, Yokohama, all of Japan, assignors to Kabushiki Kaisha Meidensha, Japan

Filed Mar. 8, 1985, Ser. No. 709,580

Claims priority, application Japan, Mar. 8, 1984, 59-44380; Mar. 8, 1984, 59-44382

Int. Cl.^{4} H03K *7/08;* H02M *7/217;* H02P *5/06*

U.S. Cl. 375—22 **9 Claims**



1. A digital PWMed pulse generator for generating a pulse-width-modulated pulse synchronizing with a sine wave, which comprises:

(a) means for generating plural series of digital pattern data determined by pulse-width-modulating a sine wave having a basic frequency and a basic amplitude in dependence upon a triangular carrier wave having a frequency integer times higher than that of the sine wave and an amplitude equal to that of the sine wave, the pattern data being classified into each series by the number of triangles included within a half cycle of the sine wave;

(b) means for selecting an appropriate series of digital pattern data classified by the number of triangles in response to an angular frequency command; and

(c) means for calculating other pattern data corresponding to another sine wave signal having an amplitude smaller than that of the selected pattern data in response to a voltage control ratio command; and

(d) means for generating a pulse-width-modulated pulse on the basis of the calculated pattern data.

4,617,676

PREDICTIVE COMMUNICATION SYSTEM FILTERING ARRANGEMENT

Nuggehally S. Jayant, Short Hills, N.J., and Venkatasubbarao Ramamoorthy, Linköping, Sweden, assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 4, 1984, Ser. No. 646,971

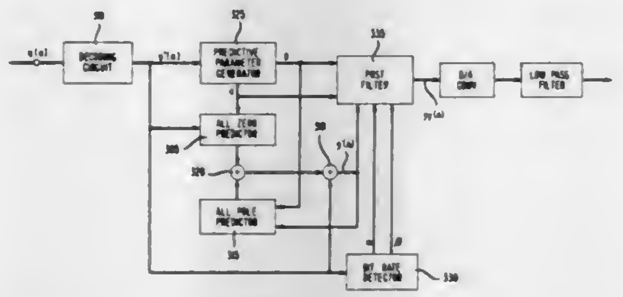
Int. Cl.^{4} G10L *9/14;* H04B *14/06*

U.S. Cl. 375—27 **23 Claims**

14. In a digital communication system comprising a predic-

tive decoder including means for receiving digitally coded signals, means responsive to said received digital coded signals for generating a predictively decoded signal, zero and pole predictive parameter signals, and a signal representative of the communication system bit rate, a method for modifying the predictively decoded signal comprising the steps of:

generating zero predictive filter control signals and pole predictive filter control signals responsive to the communication system bit rate:



combining said zero predictive filter control signals with said zero predictive parameter signals to form a set of zero predictive spectral shaping parameter signals;

combining said pole predictive filter control signals with said pole predictive parameter signals to form a set of pole predictive spectral shaping parameter signals; and

modifying the frequency spectrum of the predictively coded signals responsive to said zero predictive spectral shaping parameter signals and said pole predictive spectral shaping parameter signals.

4,617,677

DATA SIGNAL READING DEVICE

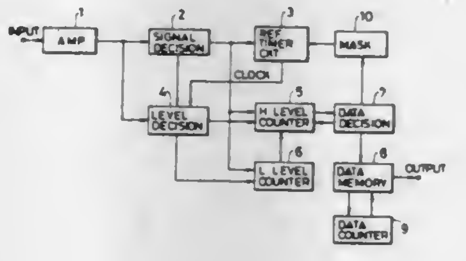
Toshihiko Chiba, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

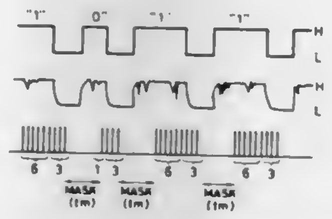
Filed Jan. 30, 1985, Ser. No. 696,554

Claims priority, application Japan, Jan. 31, 1984, 59-11967[U]

Int. Cl.⁴ H04L *1/00*

U.S. Cl. 375—94 **2 Claims**





1. A data signal reading device for reading an input signal in which data signal segments representing "1" and "0" are determined separately according to two different durations of one of two different levels and a predetermined duration of the other level is provided between said data signal segments representing "1" and "0", comprising:

level decision means for subjecting an input signal to level decision while sampling said input signal with a clock pulse having a predetermined period to provide decision outputs;

a first counter for counting a number of times of occurrence of said one level in response to said decision outputs;

a second counter for counting a number of times of occurrence of said other level in response to said decision outputs;

means for initializing said second counter when it is determined that said decision output is of said one level;

means for for suspending the counting operations of said first and second counters for a period of time slightly longer than the shorter of said two different durations when the content of said second counter reaches a predetermined value; and

data decision means for determining data signal segments "1" and "0" in said input signal according to the content of said first counter obtained when the content of said second counter reaches said predetermined value.

4,617,678

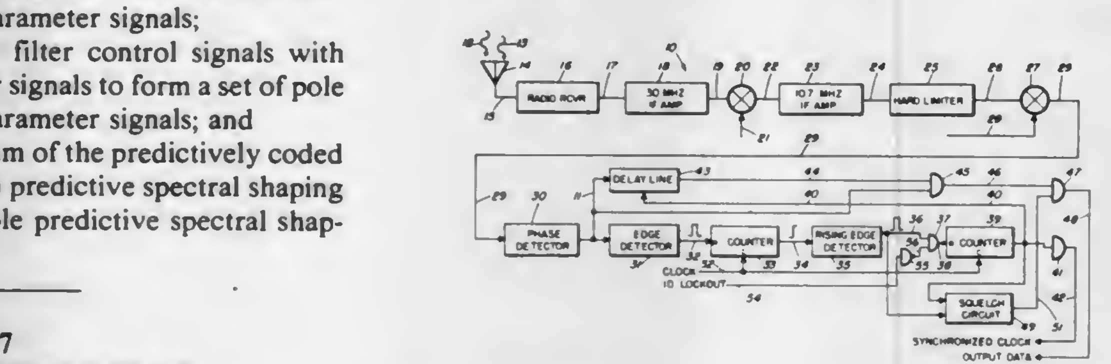
APPARATUS FOR DETECTING AND RECOVERING BINARY DATA FROM AN INPUT SIGNAL

Walter L. Devensky, and Carlos M. Dube, both of Boca Raton, Fla., assignors to Allied Corporation, Morristown, N.J.

Filed Jul. 27, 1984, Ser. No. 635,372

Int. Cl.⁴ H04B *1/10;* **H04L** *7/02*

U.S. Cl. 375—102 **20 Claims**



14. A method for recovering binary data from an input signal wherein each bit of said data has a predetermined time interval and wherein first and second voltage levels represent a 1 and 0 of said data respectively comprising the steps of:

(1) deriving a synchronized clock from said data synchronized with respect to said predetermined time intervals, said deriving step further including subsequent steps (a)-(e)

(a) detecting transitions in said input signal between said first and second voltage levels and generating an output signal in response to said detected transitions,

(b) counting a clock signal with a first counter having a clock input, a reset input and an output, resetting said first counter after it counts up to a first predetermined value,

(c) resetting said first counter at times a transition is detected,

(d) counting a clock signal with a second counter having a clock input, a reset input and an output and resetting itself after it counts up to a second predetermined value,

(e) resetting said second counter at times said first counter reaches a third predetermined value, said output of said second counter providing said synchronized clock,

(2) generating binary data from said input signal with the output of said second counter, and

(3) inhibiting said generated binary data as a function of the outputs of said first and second counters indicative of a nonsynchronized clock.

20. A method for deriving a synchronized clock from an input signal containing binary data wherein each bit of said data has a predetermined time interval and wherein first and second voltage levels represent a 1 or 0 of said data respectively comprising the steps of:

detecting transitions in said input signal between said first and second voltage levels and generating an output signal in response to said detected transitions,

counting a clock signal having a predetermined frequency with a first counter having a clock input, a rest input and an output, resetting said first counter after it counts up to a first predetermined value,

resetting said first counter at times a transition is detected,

counting a clock signal having a predetermined frequency with a second counter having a clock input, a reset input and an output and resetting itself after it counts up to a second predetermined value, and

resetting said second counter at times said first counter reaches a third predetermined value, said output of said second counter providing said synchronized clock.

4,617,679

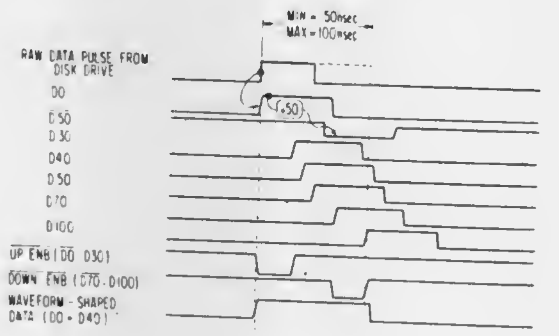
DIGITAL PHASE LOCK LOOP CIRCUIT

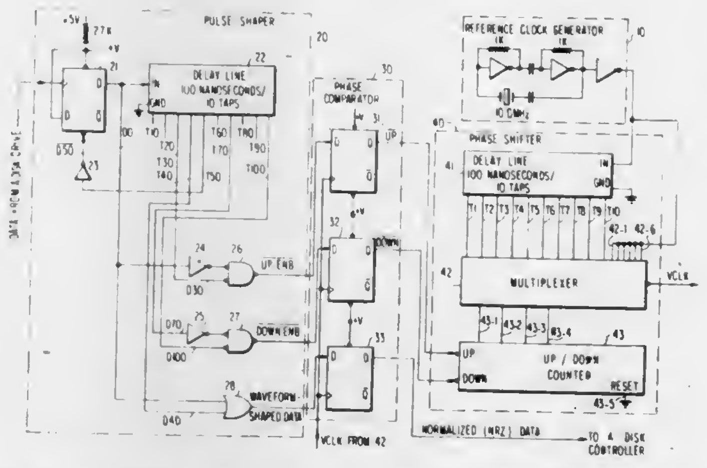
Phillip L. Brooks, Northborough, Mass., assignor to NEC Electronics U.S.A., Inc., San Mateo, Calif.

Filed Sep. 20, 1983, Ser. No. 534,058

Int. Cl.⁴ H03L *7/08*

U.S. Cl. 375—119 **11 Claims**





1. A circuit for producing a sampling clock signal for sampling an input data pulse signal, comprising:

a reference clock pulse generator generating a reference clock pulse signal;

first means responsive to a phase control signal for producing a phase-shifted reference clock signal from said reference clock pulse signal to obtain a sampling clock signal;

second means responsive to an input data pulse signal for producing a first comparison signal only during a first interval within each one bit period of said input data pulse signal;

third means responsive to said input data pulse signal for producing a second comparison signal only during a second interval within each one bit period of said input data pulse signal, said first and second intervals being shorter than said one bit period of said input data pulse signal and separated from each other to leave a third interval therebetween;

a phase comparator for comparing said sampling clock signal with said first and second comparison signals and producing a first error signal when said sampling clock signal occurs during said first interval and a second error signal when said sampling clock signal occurs during said second interval, said phase comparator producing no error signal when said sampling clock occurs during said third interval; and

fourth means responsive to said first and second error signals for producing said phase control signal, whereby a predetermined phase relationship is maintained between said sampling clock signal and said input data pulse signal.

4,617,680

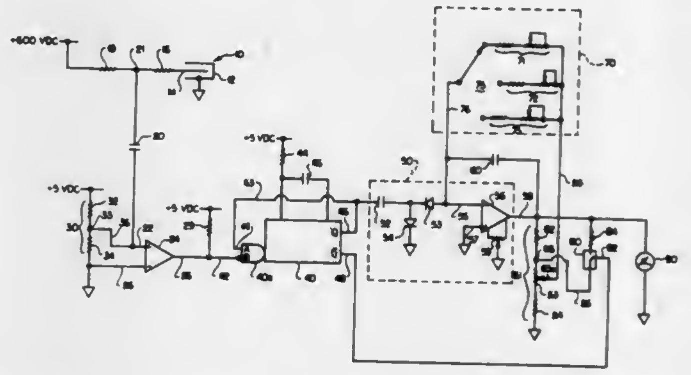
DEAD TIME COMPENSATION CIRCUIT FOR RADIATION DETECTOR

Joseph G. Johnston, Newbury, Ohio, assignor to Bicron Corporation, Newbury, Ohio

Filed Dec. 22, 1983, Ser. No. 564,298

Int. Cl.⁴ G01T *1/18;* **G06M** *11/00*

U.S. Cl. 377—10 **8 Claims**



1. In a rate meter type random event counter circuit having a dead time characteristic wherein two or more successive random events during a predetermined period of time erroneously generate an event count signal indicative of only a single count, the occurrence of such erroneous single count signals increasing as the frequency of the random events increases, the random event counter circuit including active circuit element means having an input responding to event count signals including as a portion thereof said erroneous single count signals, and an output providing a signal having a value intended to indicate the actual rate of the random events, a dead time compensation circuit comprising:

means for detecting the frequency of said event count signals; and

means responsive to the detecting means for non-linearly modifying a transfer function of the active circuit element means as a direct function of the frequency of the event count signals so that the said value of the output signal from the circuit element means increases and decreases in substantially linear proportion to the actual number of random events per unit of time regardless of the proportion of said event count signals constituted by said erroneous single count signals.

4,617,681

BISTABLE ALIGNER CARTRIDGE FOOT

Carlo LaFiandra, New Canaan, and Justin Kreuzer, Trumbull, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 1, 1984, Ser. No. 605,941

Int. Cl.⁴ G21K *5/00;* **A61B** *6/08*

U.S. Cl. 378—34 **4 Claims**

1. In an x-ray lithographic system comprising:

a plurality of work stations each having substantially identical kinematic mounts;

a cartridge movably located on support means;

means for mounting a wafer and a mask on said cartridge;

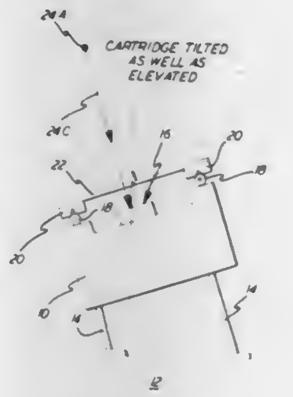
means for moving said cartridge between said stations;

means for moving said cartridge to a kinematic mount;

an improvement comprising:

a bistable foot operable in a first linear elevational mode and in a second angular compliance mode to bring said cartridge into contact with said kinematic mounts;

said bistable foot comprising a first piston means for elevating said cartridge with respect to said support means and a second piston means operable between a first mode



wherein said cartridge is rigidly connected to said support means and a second mode wherein said cartridge is flexibly connected to said support means.

4,617,682
METHOD AND APPARATUS FOR AUTOMATIC QUANTITATIVE MEASUREMENT OF TEXTURES BY IMAGE ANALYSIS

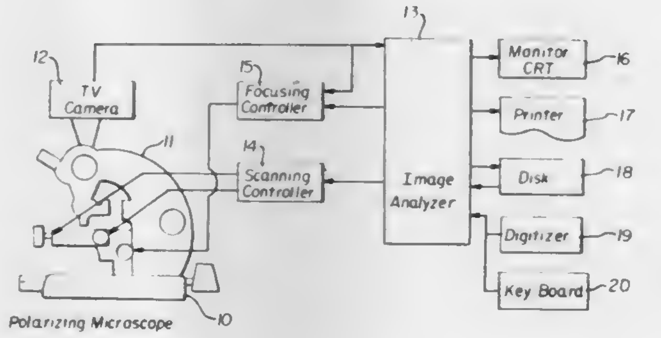
Makihiko Mori, Kitakatsuragigun; Kazuo Nakamura, Habikinoshi; Kanichiro Tanabe, Sagamiharashi, and Atsushi Kimura, Urawashi, all of Japan, assignors to Osaka Gas Company Limited and Nireco Corporation, both of, Japan

Filed Mar. 25, 1985, Ser. No. 715,876

Claims priority, application Japan, Mar. 27, 1984, 59-57393

Int. Cl.⁴ G06K *9/00;* **H04N** *7/18*

U.S. Cl. 382—28 **22 Claims**



1. A method of automatic quantitative measurement of textures by image analysis for measuring textures of a material containing various optical anisotropic textures, comprising the steps of;

(a) picking up a microscopic texture image of the material by a TV camera,

(b) dividing the texture image picked up by the TV camera into a plurality of pixels arranged vertically and horizontally, brightness of the pixels being classified into a plurality of stages to be stored in a frame memory as gray levels of the pixels,

(c) selecting a portion of the image stored in the frame memory to be a base area,

(d) selecting at least one reference area on the stored image, said reference area being equal in shape to the base area and displaced from the base area in an optional direction,

(e) obtaining gray level variations of the reference area with respect to the base area, and

(f) identifying the textures based on a correlation between the textures to be measured and the gray level variations concerning the textures.

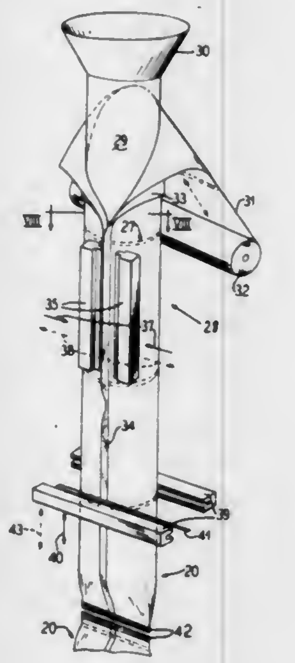
4,617,683
RECLOSABLE BAG, MATERIAL, AND METHOD OF AND MEANS FOR MAKING SAME

Paul B. Christoff, Lisle, Ill., assignor to Minigrip, Inc., Orangeburg, N.Y.

Filed Jan. 30, 1984, Ser. No. 574,878

Int. Cl.⁴ B65D *33/16*

U.S. Cl. 383—63 **11 Claims**



1. A reclosable bag having a body with top and bottom ends and confronting walls, and comprising:

said walls formed from web material having a longitudinal formation axis extending between said top and bottom ends of the bag body, and the material joined to itself at a joint extending between said top and bottom ends and along one side of the body;

and a continuous one-piece extruded resiliently flexible plastic profiled reclosable fastener strip extending across said joint and secured to both of said walls at one end of the bag body; and extending lengthwise across said longitudinal formation axis of said web material;

said reclosable fastener strip being folded upon itself at said joint and having integral therewith interlockable resiliently flexible profiles which are aligned and releasably interlockable with one another in the folded strip.

DESIGN PATENTS

GRANTED OCT. 14, 1986

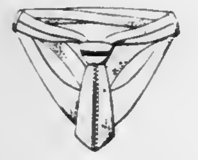
ERRATA

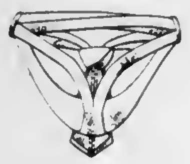
For CLASS	See PATENT NO.
D08–381	286,156
D03–101	186,171

DESIGNS

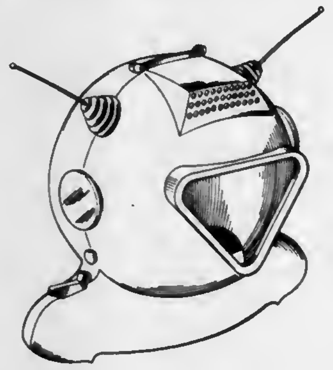
OCTOBER 14, 1986

286,100
WRAP-AROUND PANTY OR SIMILAR ARTICLE
Susan A. Sawicki, 8347 Ranchito Ave., Panorama City, Calif. 91402
Filed Aug. 29, 1983, Ser. No. 527,421
Term of patent 14 years
U.S. Cl. D2—42

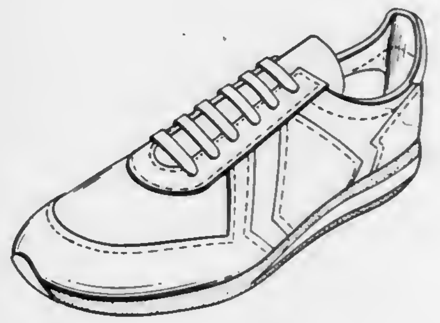




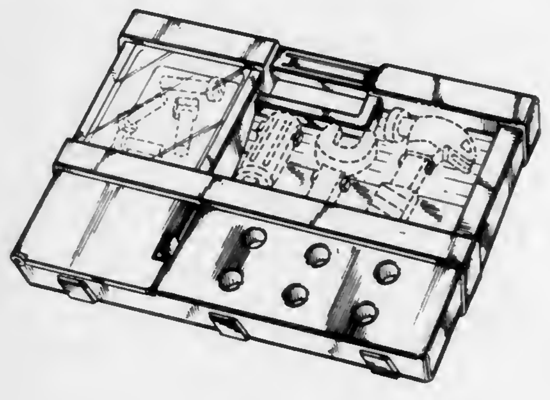
286,101
SPACEMAN'S HELMET
Ronald J. Woodleigh, Castle Hill, Australia, assignor to Sunlea Developments Pty Ltd and Arthur Edward Pty. Ltd., both of Newcastle, Australia
Filed Feb. 21, 1984, Ser. No. 581,655
Term of patent 14 years
U.S. Cl. D29—15



286,102
SHOE
Ralph L. Lowe, Jr., Pearland, Tex., assignor to Aspri Sports, Inc., Pearland, Tex.
Filed Apr. 17, 1984, Ser. No. 601,239
Term of patent 14 years
U.S. Cl. D2—309



286,103
TOOLBOX/WORKSHOP
Martin Blumenthal, 99 Longview Ave., Chatham, N.J. 07928
Filed Sep. 19, 1983, Ser. No. 533,369
Term of patent 14 years
U.S. Cl. D3—73



286,104

COMBINED TABLE AND PLURAL SEAT UNIT

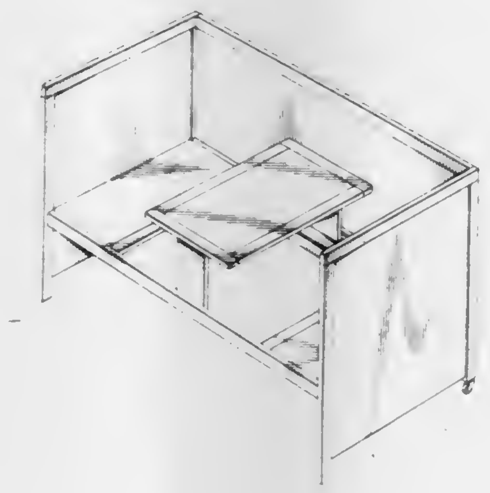
Brian B. Trainis, Fulwood House, Durford Wood, Hampshire GU31 5AL, England, and Dragoslava Punisi , Oktobar, Yugoslavia, assignors to Brian Bernard Trainis, England

Filed Apr. 26, 1984, Ser. No. 603,932

Claims priority, application United Kingdom, Nov. 28, 1983, 1016576

Term of patent 14 years

U.S. Cl. D6—337



286,105

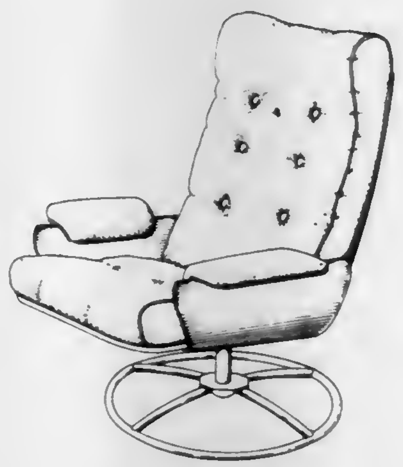
ADJUSTABLE ARMCHAIR

Paul R. Goldman, Andover, Mass., assignor to Plycraft Inc., Lawrence, Mass.

Filed Mar. 19, 1984, Ser. No. 590,983

Term of patent 14 years

U.S. Cl. D6—365



286,106

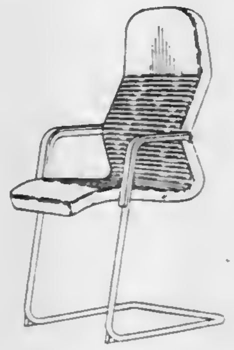
ARM-CHAIR

Klaus Franck, Hanover, and Werner Sauer, Wennigsen, both of Fed. Rep. of Germany, assignors to Wilkhahn Wilkening & Hahne GmbH & Co., Fed. Rep. of Germany

Continuation-in-part of Ser. No. 313,330, Oct. 20, 1981. This application Nov. 4, 1983, Ser. No. 548,822

Term of patent 14 years

U.S. Cl. D6—372



286,107

SUPPORT FOR FLOWER POTS

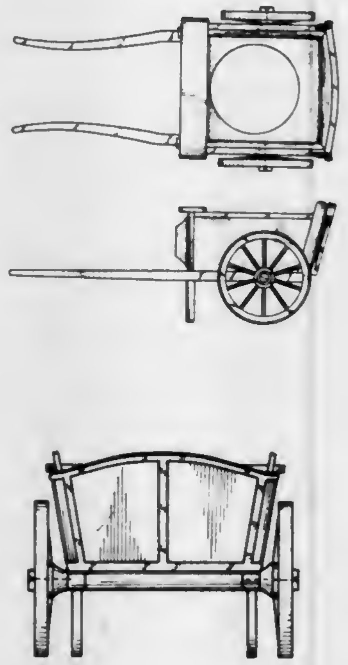
Gerardus F. Mens, Von Bonninghausenlaan 4, 2161 Et Lisse, Netherlands

Filed Feb. 7, 1985, Ser. No. 699,250

Claims priority, application Hague, Aug. 20, 1984, DM00410G

Term of patent 14 years

U.S. Cl. D6—404



286,108

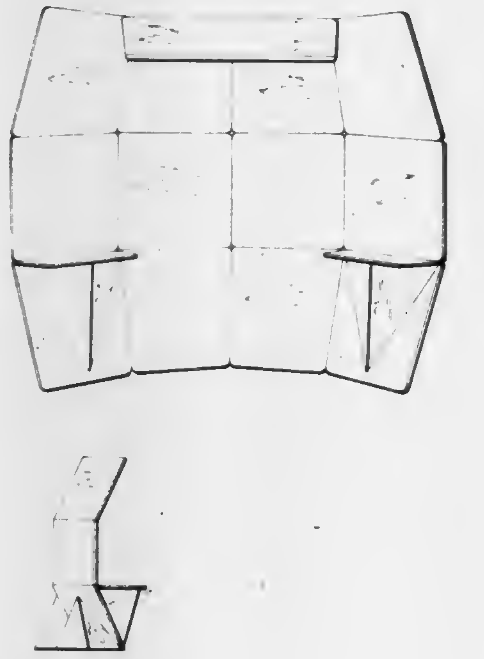
DISPLAY STAND

Albert W. Hanlon, Treasure Island, Fla., assignor to Folio Inc., Worcester, Mass.

Filed May 25, 1984, Ser. No. 614,057

Term of patent 14 years

U.S. Cl. D6—449



286,109

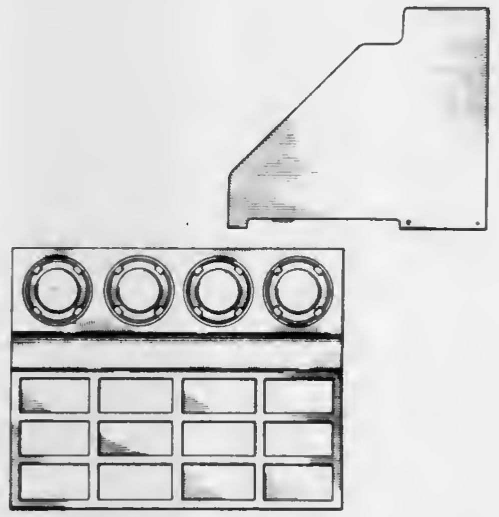
DISPENSER FOR CUPS AND PACKAGED MATERIALS

Richard M. Cosby, La Canada, and David A. Lindsey, Garden Grove, both of Calif., assignors to Coffee Enterprises, Inc., Paramount, Calif.

Filed May 3, 1984, Ser. No. 606,615

Term of patent 14 years

U.S. Cl. D6—469



286,110

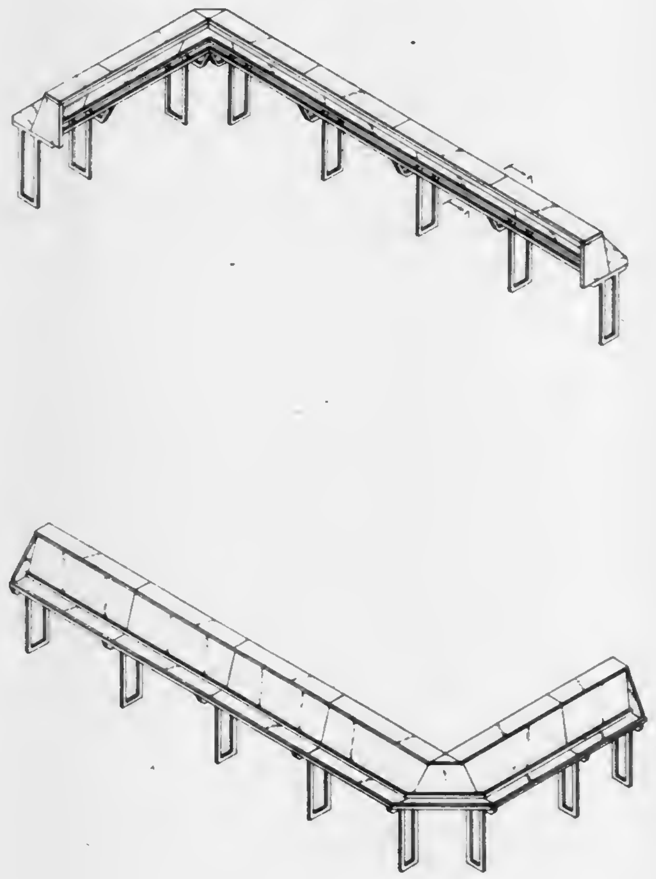
COUNTER DISPLAY UNIT

Thomas Carvel, Chauncey, N.Y., assignor to Carvel Corporation, Chauncy, N.Y.

Filed Dec. 29, 1982, Ser. No. 454,296

Term of patent 14 years

U.S. Cl. D6—471



286,111

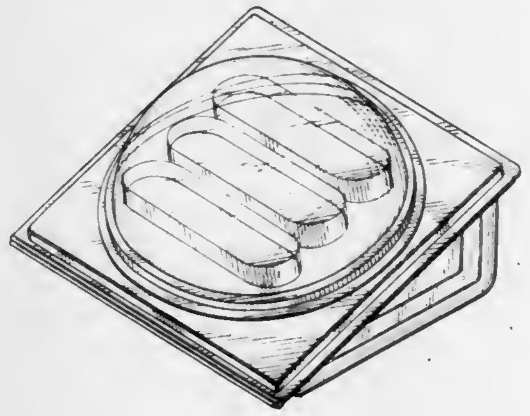
COMBINED DISPLAY AND STORAGE CASE FOR PENS AND THE LIKE

William C. Perchak, Chicago, Ill., assignor to Plastofilm Industries, Inc., Wheaton, Ill.

Filed Feb. 13, 1984, Ser. No. 579,373

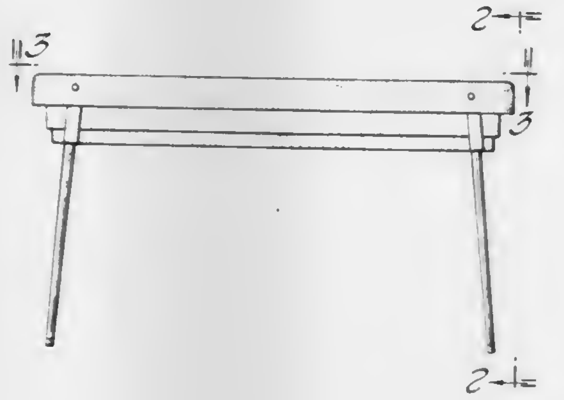
Term of patent 14 years

U.S. Cl. D6—472



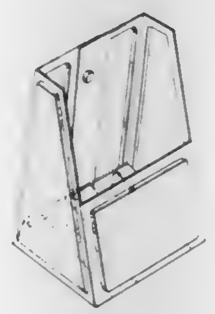
286,112
FOLDING, REFRIGERATED SERVING TABLE

Jesse K. Simmons, 4030 Sleeth Rd., Milford, Mich. 48042
Filed Mar. 5, 1984, Ser. No. 586,081
Term of patent 14 years
U.S. Cl. D6—475



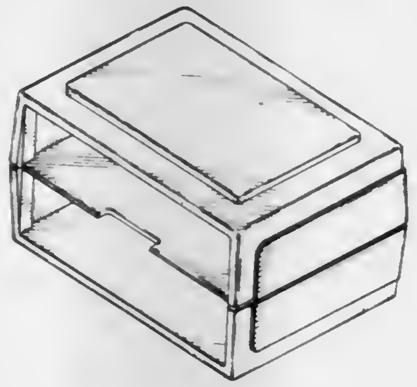
286,113
HOLDER FOR PAMPHLETS OR THE LIKE

Lewis L. Albery, Dolton, Ill., assignor to The Cooperative Marketing Co., Elk Grove Village, Ill.
Filed Apr. 12, 1984, Ser. No. 599,708
Term of patent 14 years
U.S. Cl. D6—475



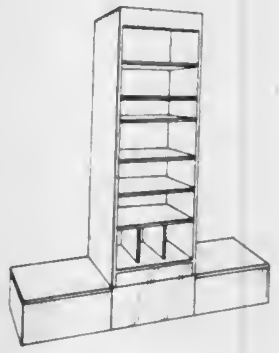
286,114
DIRECTORY SHELF

James M. Bosland, Wayne, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed May 10, 1984, Ser. No. 608,732
Term of patent 14 years
U.S. Cl. D6—477



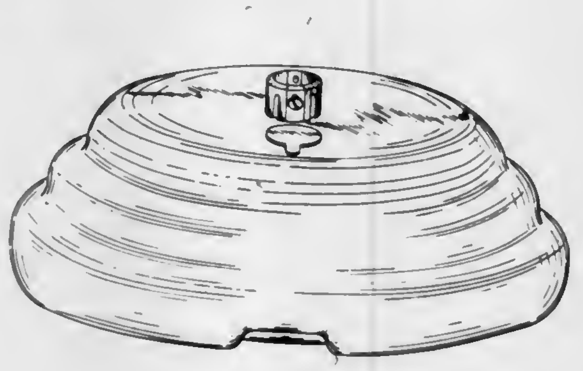
286,115
SHELF UNIT

Paul R. Evans, New Hope, Pa., assignor to Design Institute America, Inc., Montpelier, Ohio
Filed Apr. 10, 1984, Ser. No. 598,823
Term of patent 14 years
U.S. Cl. D6—478



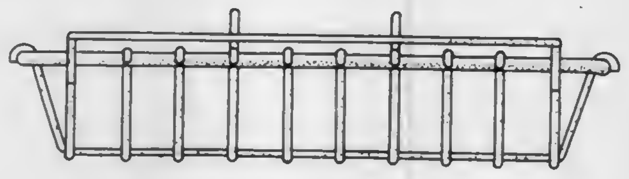
286,116
BASE FOR A GARDEN UMBRELLA

Joseph F. Tegze, Totowa, N.J., assignor to Finkel Outdoor Products, Inc., New York, N.Y.
Filed Jan. 16, 1984, Ser. No. 571,110
Term of patent 14 years
U.S. Cl. D6—495



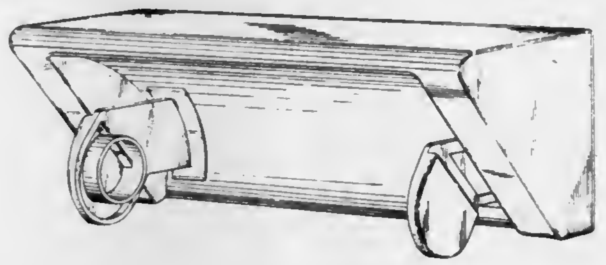
286,117
DETACHABLE TRAY

Richard C. Wellington, Woodcliff Lake, N.J., assignor to Wellington Home Products, Paterson, N.J.
Division of Ser. No. 544,220, Oct. 21, 1983. This application Sep. 13, 1985, Ser. No. 775,721
Term of patent 14 years
U.S. Cl. D6—500



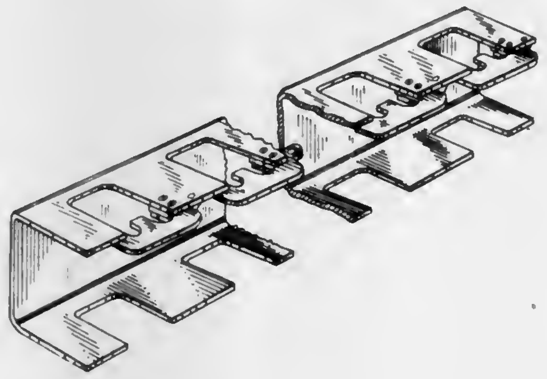
286,118
COMBINED PAPER TOWEL HOLDER AND SHELF

Bruno Gecchelin, Milan, Italy, assignor to Fratelli Guzzini S.p.A., Recanati, Italy
Filed Jun. 26, 1984, Ser. No. 624,764
Claims priority, application Italy, Dec. 29, 1983, 24058B/83
Term of patent 14 years
U.S. Cl. D6—519



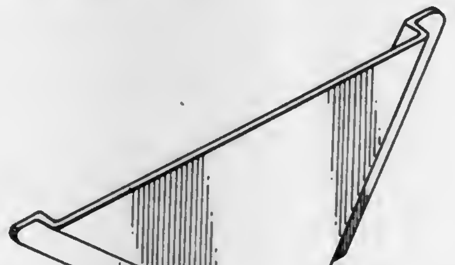
286,119
SKI RACK

Harold Enquist, 540 E. Kings Road, North Vancouver, British Columbia, Canada (V7N 1J3)
Filed Jul. 30, 1984, Ser. No. 635,724
Term of patent 14 years
U.S. Cl. D6—552



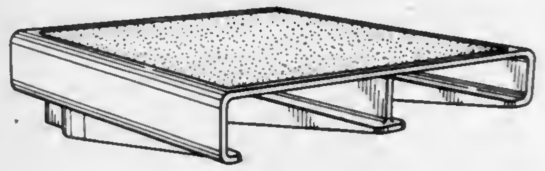
286,120
STORAGE RACK FOR FLOPPY DISKS

Michael J. Szablak, and Glen E. Tomblin, both of Winchester, Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Jan. 16, 1984, Ser. No. 570,896
Term of patent 14 years
U.S. Cl. D6—553



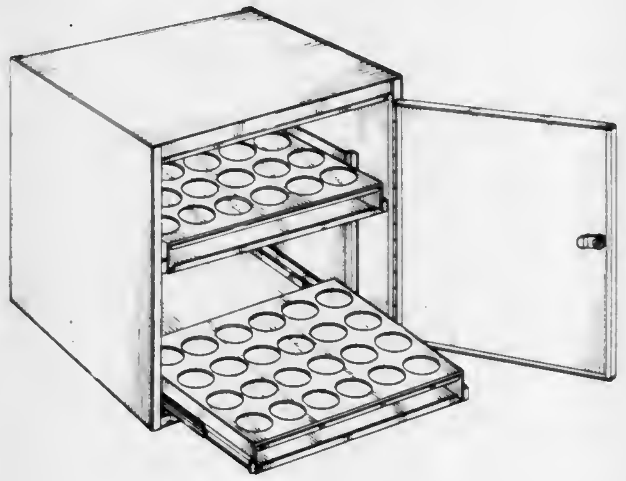
286,121
RACK FOR STORAGE CONTAINERS

Martin J. Wolff, No. Providence, R.I., assignor to Dart Industries Inc, Northbrook, Ill.
Filed Jan. 6, 1984, Ser. No. 568,670
Term of patent 14 years
U.S. Cl. D6—553



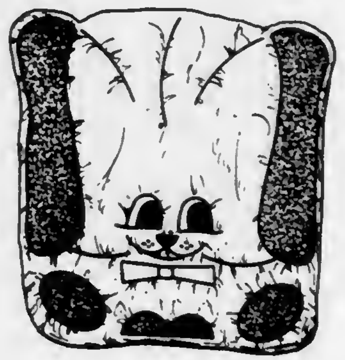
286,122
AEROSOL CAN DISPLAY CABINET

Bernard J. Golias, Parma Heights, Ohio, assignor to Metal Fabricating Corporation, Cleveland, Ohio
Filed Apr. 27, 1984, Ser. No. 604,928
Term of patent 14 years
U.S. Cl. D6—559

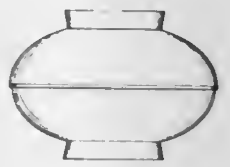


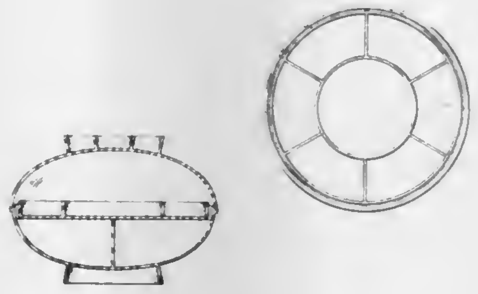
286,123
RUG OR SIMILAR ARTICLE

Michael W. Thomas, and Patricia J. Thomas, both of 23 Blaxland Avenue, Two Rocks, Western Australia, Australia
Filed Jul. 15, 1983, Ser. No. 514,333
Term of patent 14 years
U.S. Cl. D6—589

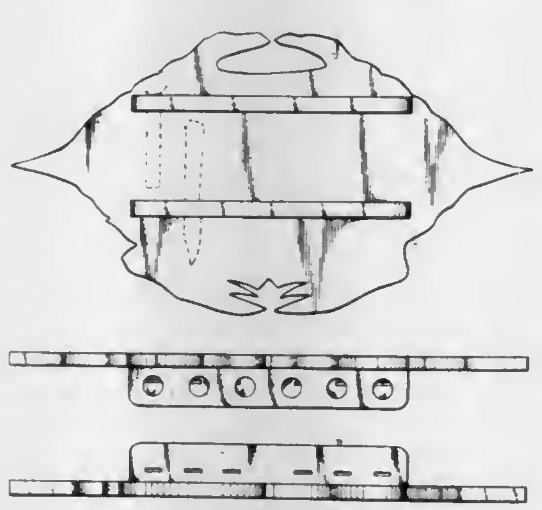


286,124
LAZY SUSAN WITH REFRIGERATED COMPARTMENT
Lavell D. Dempsey, 270 Donella Dr., San Antonio, Tex. 78232
Filed Jul. 9, 1984, Ser. No. 629,078
Term of patent 14 years
U.S. Cl. D7—2

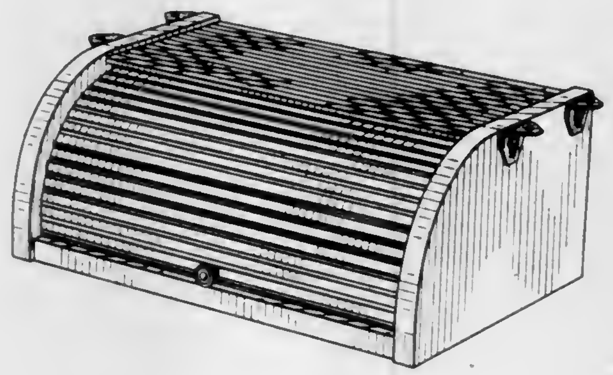




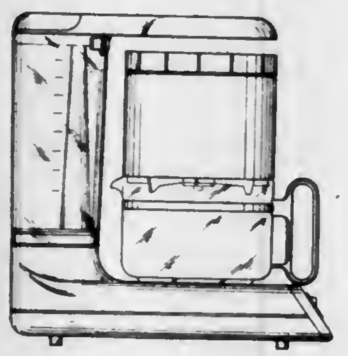
286,125
RACK FOR CRAB UTENSILS
John I. Simpson, Jr. deceased, late of Owings, Md., and by Mary E. Simpson, executrix, P.O. Box 257, Owings, Md. 20736
Filed Jul. 13, 1984, Ser. No. 630,881
Term of patent 14 years
U.S. Cl. D7—74

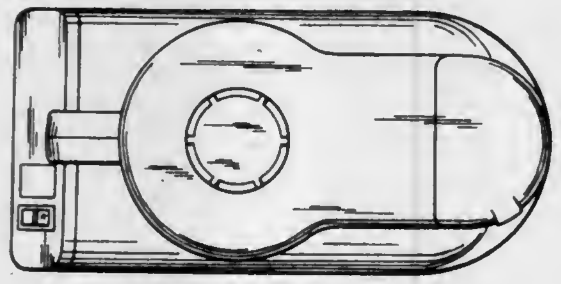


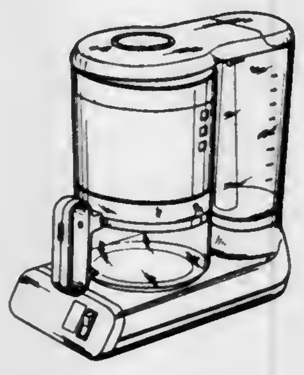
286,126
BREAD BOX
Paul J. Driscoll, Springfield, Mo., assignor to W. R. Vermillion Co., Inc., Springfield, Mo.
Filed Nov. 16, 1984, Ser. No. 671,945
Term of patent 14 years
U.S. Cl. D7—82



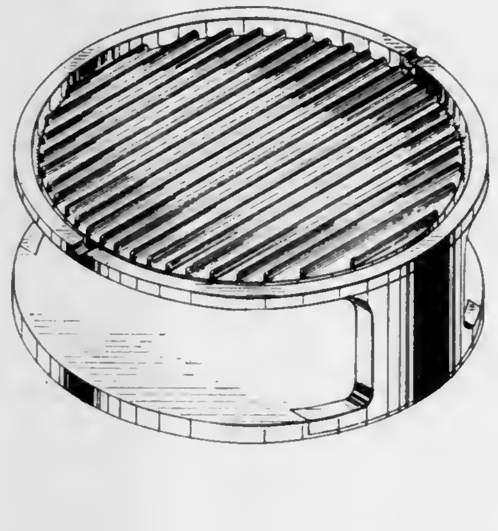
286,127
ELECTRIC COFFEE-MAKER
Roger Sastre, Dijon, France, assignor to SEB, Selongey, France
Filed Feb. 14, 1984, Ser. No. 580,547
Claims priority, application France, Aug. 18, 1983, 833067
Term of patent 14 years
U.S. Cl. D7—309



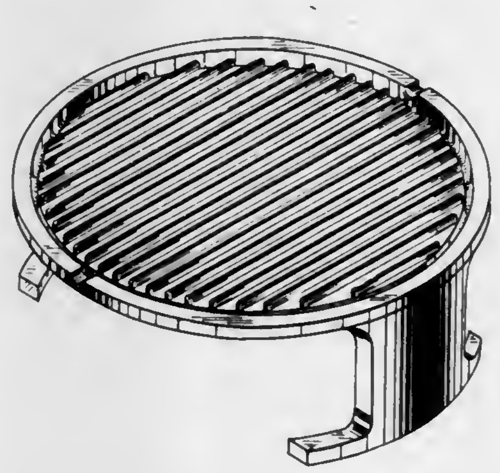




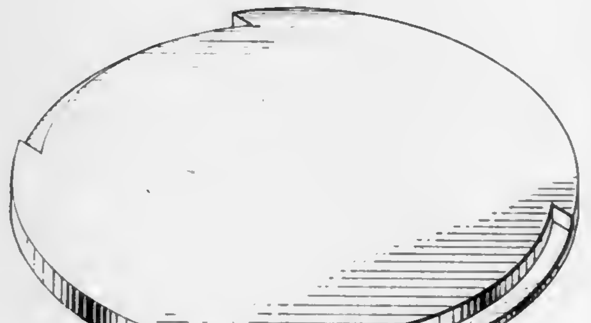
286,128
COMBINED ROASTING RACK AND TURNTABLE FOR MICROWAVE OVEN
Robert F. Bowen, Burlington, Mass.; Walter B. Herbst, Evanston, and Thomas E. Salisbury, Highland Park, both of Ill., assignors to Raytheon Company, Lexington, Mass.
Filed May 17, 1984, Ser. No. 611,229
Term of patent 14 years
U.S. Cl. D7—351



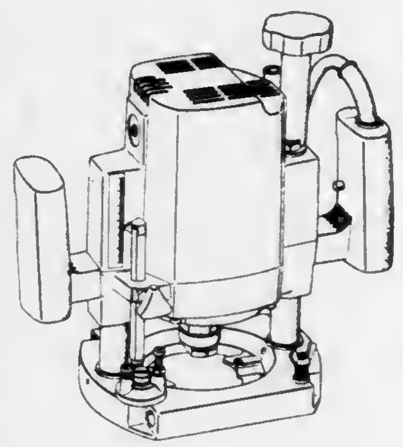
286,129
MICROWAVE ROASTING RACK OR THE LIKE
Robert F. Bowen, Burlington, Mass.; Walter B. Herbst, Evanston, and Thomas E. Salisbury, Highland Park, both of Ill., assignors to Raytheon Company, Lexington, Mass.
Filed May 17, 1984, Ser. No. 611,230
Term of patent 14 years
U.S. Cl. D7—351



286,130
TURNTABLE FOR MICROWAVE OVEN
Robert F. Bowen, Burlington, Mass.; Walter B. Herbst, Evanston, and Thomas E. Salisbury, Highland Park, both of Ill., assignors to Raytheon Company, Lexington, Mass.
Filed May 17, 1984, Ser. No. 611,231
Term of patent 14 years
U.S. Cl. D7—351



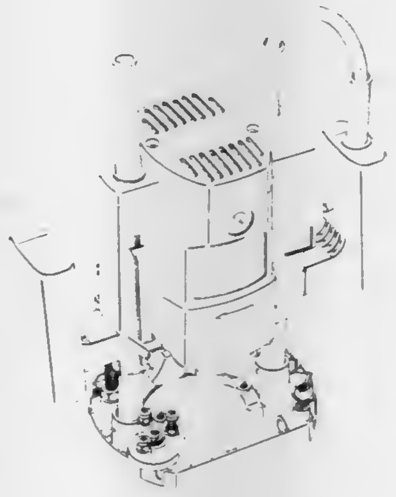
286,131
ROUTER
Etsushi Yamamoto, Fuchu, Japan, assignor to Ryobi Limited, Fuchu, Japan
Filed May 3, 1984, Ser. No. 606,767
Claims priority, application Japan, Nov. 25, 1983, 58-51380
Term of patent 14 years
U.S. Cl. D8—67



286,132

ROUTER

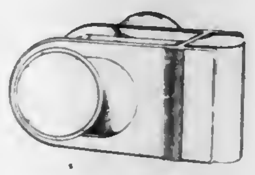
Etsushi Yamamoto, Fuchu, Japan, assignor to Ryobi Limited, Fuchu, Japan
Filed May 3, 1984, Ser. No. 606,768
Claims priority, application Japan, Nov. 25, 1983, 58-51381
Term of patent 14 years
U.S. Cl. D8—67

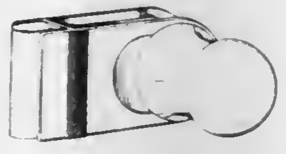


286,133

LAVATORY CUBICLE DOOR SLIDING BOLT

Ian H. Dryburgh, London, and Peter N. G. Murdoch, Milland, both of England, assignors to Venesta International Components Limited, Erith, England
Filed Nov. 20, 1984, Ser. No. 673,361
Claims priority, application United Kingdom, May 30, 1984, 841019981
Term of patent 14 years
U.S. Cl. D8—341

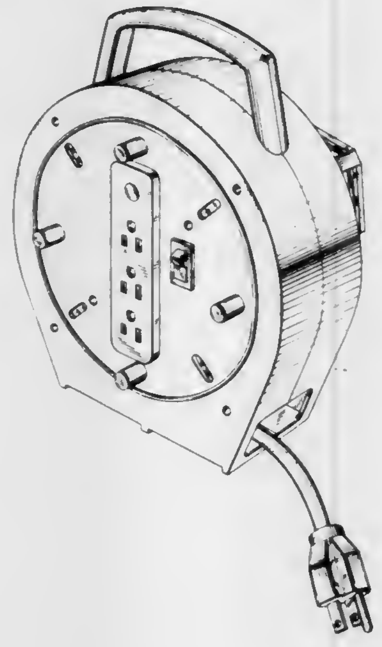




286,134

CORD REEL WITH INTEGRAL LIGHT

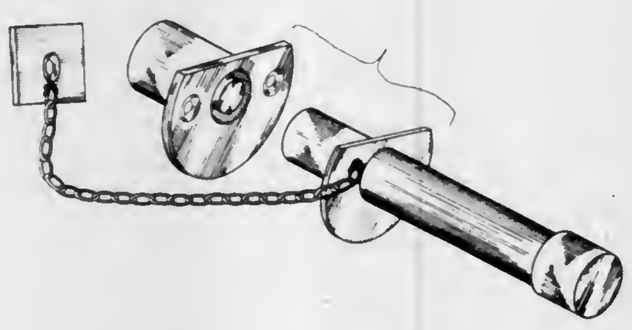
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed Oct. 25, 1983, Ser. No. 543,816
Term of patent 14 years
U.S. Cl. D8—358



286,135

COMBINED DOOR STOP AND RECEPTACLE UNIT

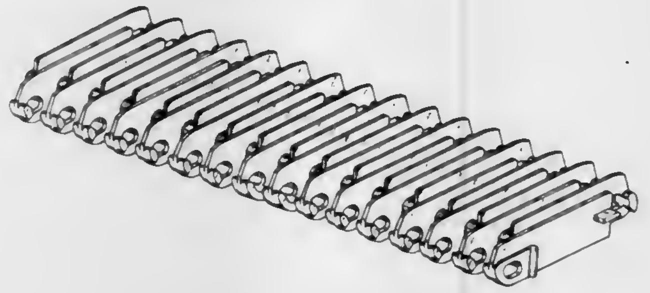
John W. Looney, 228 Finley Dr., Decatur, Ala. 35601
Continuation-in-part of Ser. No. 491,371, May 3, 1983. This application Sep. 17, 1984, Ser. No. 651,287
Term of patent 14 years
U.S. Cl. D8—402



286,136

CHAIN LINK

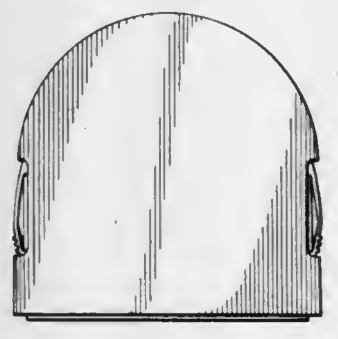
Roger H. Schroeder, Hartland, and Wasyly G. Hodlewsky, Greendale, both of Wis., assignors to Rexnord Inc., Brookfield, Wis.
Filed Feb. 9, 1984, Ser. No. 578,341
Term of patent 14 years
U.S. Cl. D8—499



286,137

COMBINED PILL DISPENSER AND COVER

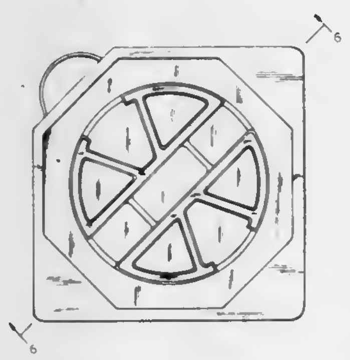
Charles M. Huck, Pottersville, N.J.; Edward J. Johnson, Furlong, Pa., and Jeremiah A. Lott, Westfield, N.J., assignors to Pfizer Inc., New York, N.Y.
Filed Apr. 5, 1984, Ser. No. 596,884
Term of patent 14 years
U.S. Cl. D9—339



286,138

TRAY FOR A GARDEN WATERING SET

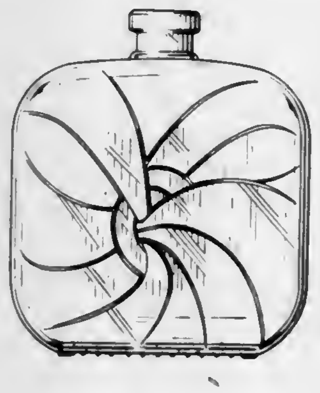
Jack L. Lemkin, Cincinnati; Eugene A. Zilber, and Carl A. Peterson, both of Columbus, all of Ohio, assignors to The O.M. Scott & Sons Company, Marysville, Ohio
Filed Apr. 8, 1983, Ser. No. 483,151
Term of patent 14 years
U.S. Cl. D9—341



286,139

PERFUME BOTTLE

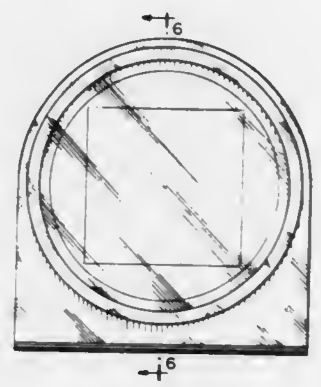
J. Michael O'Reilly, Brooklyn, N.Y., assignor to Revlon, Inc., New York, N.Y.
Filed May 17, 1984, Ser. No. 611,259
Term of patent 14 years
U.S. Cl. D9—370



286,140

BLISTER PACKAGE FOR A SQUARE REEL

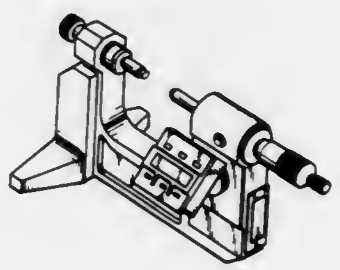
George E. Kodousek, Milwaukee, and Lawrence S. Greco, Mequon, both of Wis., assignors to North American Philips Corporation, New York, N.Y.
Filed Nov. 3, 1983, Ser. No. 548,393
Term of patent 14 years
U.S. Cl. D9—418



286,141

MICROMETER

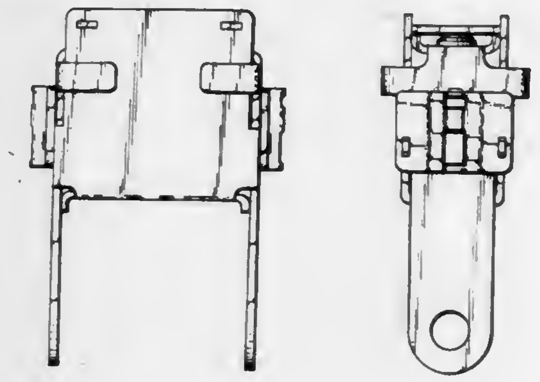
Tamenori Shirai, Kure, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan
Filed Jan. 10, 1984, Ser. No. 569,631
Term of patent 14 years
U.S. Cl. D10—73



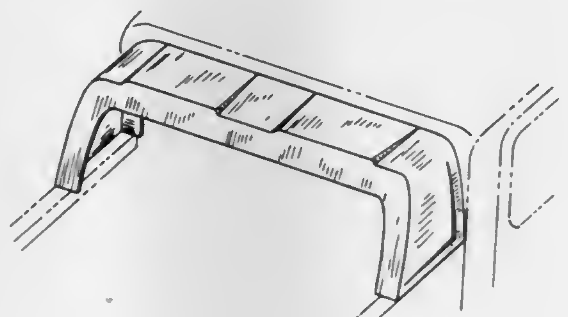
286,142

TENSION INDICATOR FOR STRAP TENSIONERS

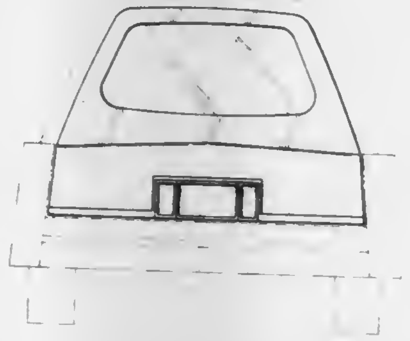
Peter Földi, Forsheda, and Hans Carselid, Anderstorp, both of Sweden, assignors to Broderna Holmbergs Fabriks AB, Anderstorp, Sweden
Filed Dec. 13, 1983, Ser. No. 560,824
Claims priority, application Sweden, Jun. 13, 1983, 831609
Term of patent 14 years
U.S. Cl. D10—83



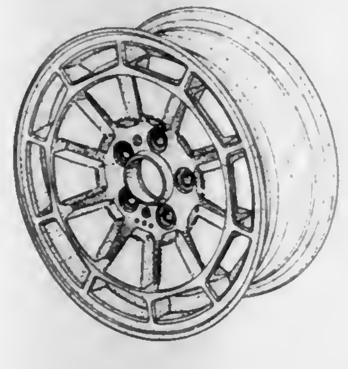
286,143
AIR SPOILER FOR PICKUP TRUCKS
James R. Lund, Minneapolis, Minn., assignor to Lund Industries, Inc., Minneapolis, Minn.
Filed Sep. 2, 1983, Ser. No. 528,803
Term of patent 14 years
U.S. Cl. D12—181



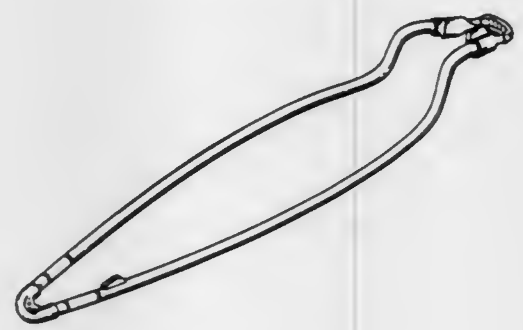
286,144
TWO PIECE DOOR UNIT FOR A VEHICLE
William N. Breece, 8 Ridge Drive Lake, Dallas, Tex. 75065
Filed Jan. 26, 1984, Ser. No. 574,068
Term of patent 14 years
U.S. Cl. D12—196



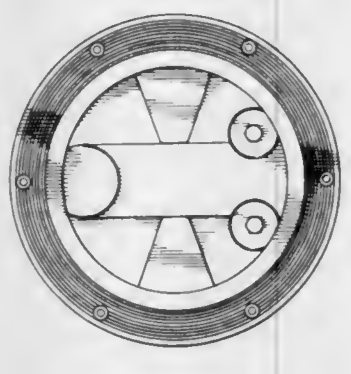
286,145
WHEEL
Ulf A. Sandberg, Kungsbacka, Sweden, assignor to Aktiebolaget Volvo, Goteborg, Sweden
Filed Jun. 19, 1984, Ser. No. 622,283
Term of patent 14 years
U.S. Cl. D12—211



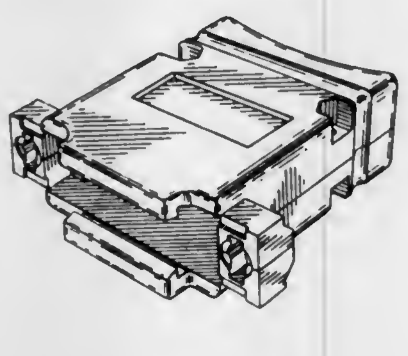
286,146
SAILBOARD BOOM
Graeme S. Attey, 61 Thelma Street, Como 6152, Western Australia, Australia
Filed Aug. 13, 1984, Ser. No. 640,101
Claims priority, application Australia, Feb. 14, 1984, 6514/84
Term of patent 14 years
U.S. Cl. D12—317



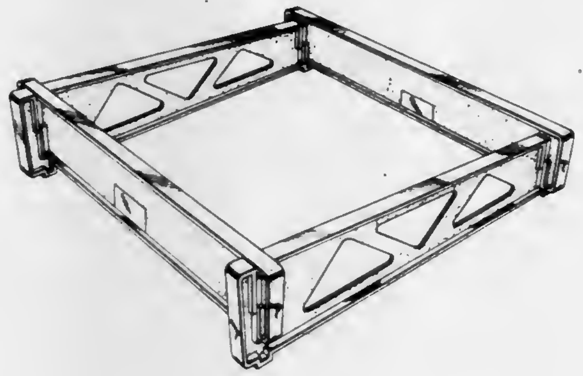
286,147
DECK PLATE
John A. Carlson, 1630 W. Cowles, Long Beach, Calif. 90813
Filed Feb. 13, 1984, Ser. No. 579,354
Term of patent 14 years
U.S. Cl. D12—317



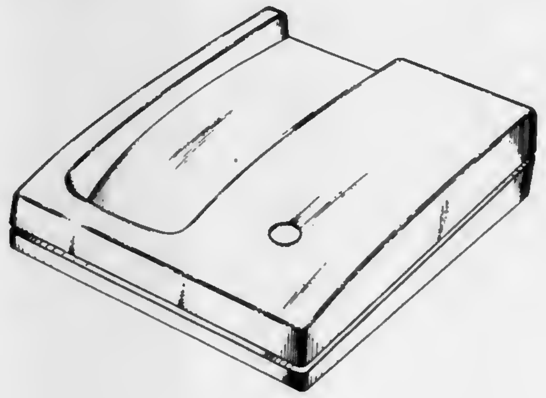
286,148
ELECTRICAL CONNECTOR COVER
Robert G. Dickie, Keswick, Canada, assignor to Northern Technologies Ltd., Markham, Canada
Filed Jan. 30, 1984, Ser. No. 575,214
Term of patent 14 years
U.S. Cl. D13—24



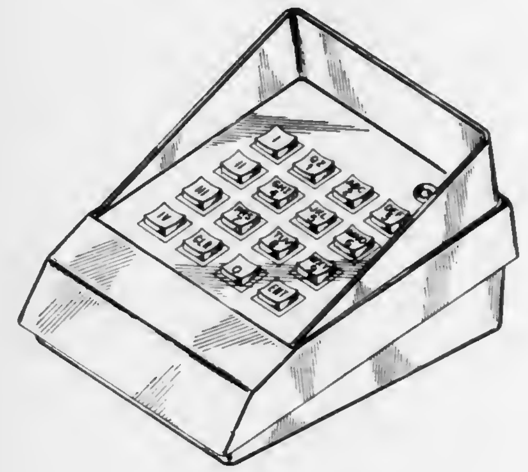
286,149
SPEAKER STAND
Robert Tucker, 2428 Canyon Dr., Hollywood, Calif. 90068
Filed May 24, 1984, Ser. No. 613,406
Term of patent 14 years
U.S. Cl. D14—38

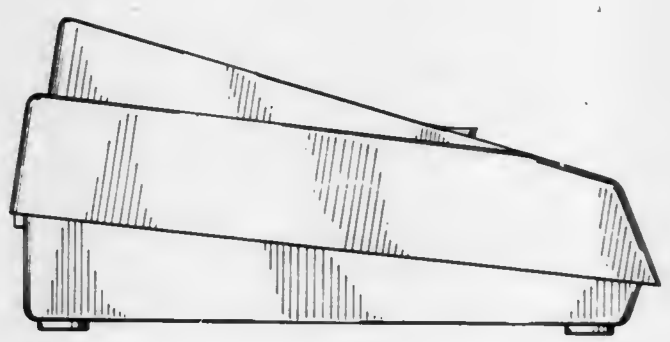


286,150
TELEPHONE INSTRUMENT BASE
Kenneth R. Cooke, New York, and Vito L. Porcelli, Ossining, both of N.Y., assignors to AT&T Technologies, Inc., New York, N.Y.
Division of Ser. No. 570,944, Jan. 16, 1984, Pat. No. Des. 271,571. This application Aug. 10, 1984, Ser. No. 702,970
Term of patent 14 years
U.S. Cl. D14—60

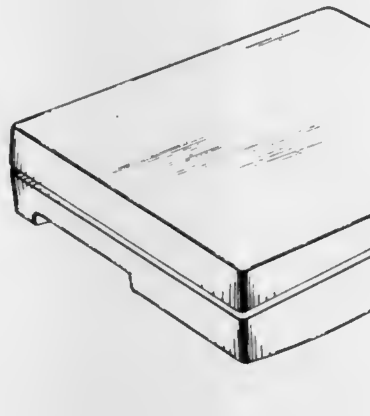


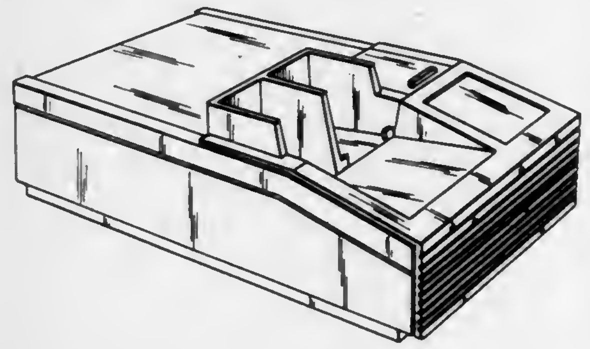
286,151
TELEPHONE SYSTEM KEYPAD ATTACHMENT STAND OR SIMILAR ARTICLE
Jeffrey A. Skigen, Vienna, and James C. P. Lum, Herndon, both of Va., assignors to GTE Telenet Communications Corporation, Reston, Va.
Filed Nov. 30, 1984, Ser. No. 677,008
Term of patent 14 years
U.S. Cl. D14—60





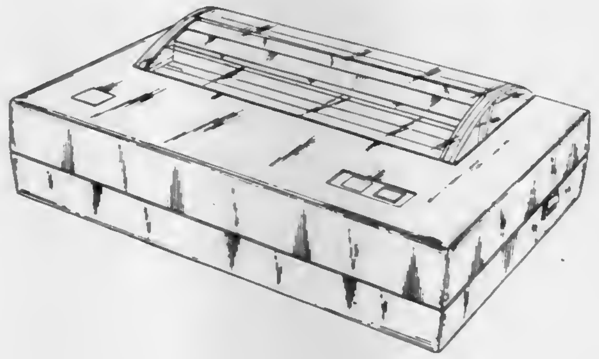
286,152
MICRO-FLOPPY DISK COPIER MACHINE
James A. Norton, Orange; Brent W. Murray, El Toro, and Charles M. Smith, Manhattan Beach, all of Calif., assignors to Media Systems Technology, Inc., Irvine, Calif.
Filed Nov. 25, 1983, Ser. No. 554,956
Term of patent 14 years
U.S. Cl. D14—107





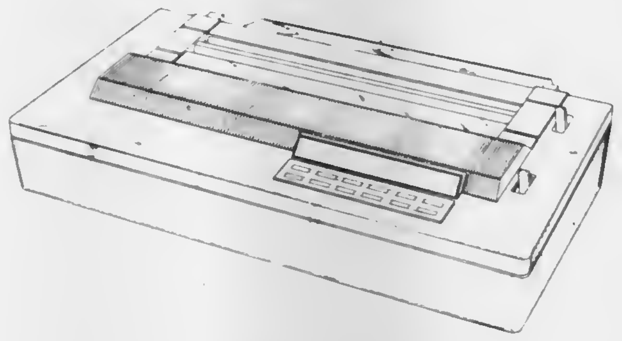
286,153
PRINTER

Myron F. Davis, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 7, 1983, Ser. No. 529,903
Term of patent 14 years
U.S. Cl. D14—111



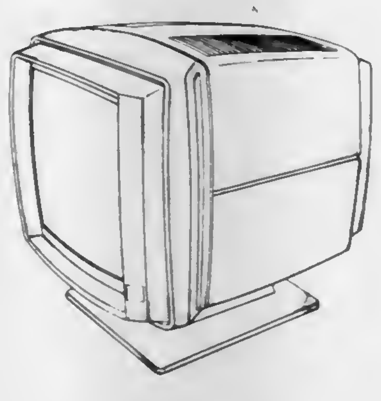
286,154
PRINTER CONSOLE

William G. Moggridge; Stephen R. Hobson, both of Palo Alto; Eric E. May, Los Altos, and Michael T. Sherick, Thousand Oaks, all of Calif., assignors to Advanced Matrix Technology, Inc., Newbury Park, Calif.
Filed Jan. 23, 1984, Ser. No. 572,811
Term of patent 14 years
U.S. Cl. D14—111



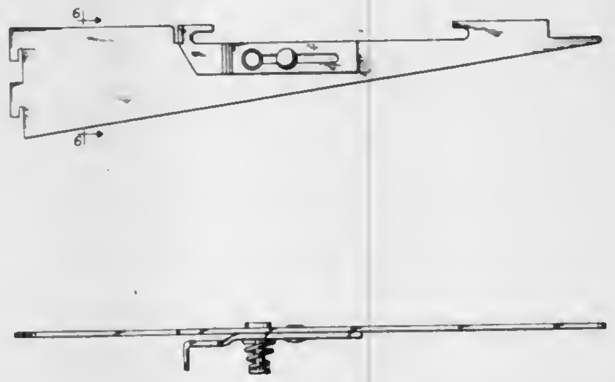
286,155
VIDEO DISPLAY TERMINAL

Can I. Gundogan, Boston, Mass., assignor to Data General Corporation, Westboro, Mass.
Filed Jul. 18, 1983, Ser. No. 514,747
Term of patent 14 years
U.S. Cl. D14—113



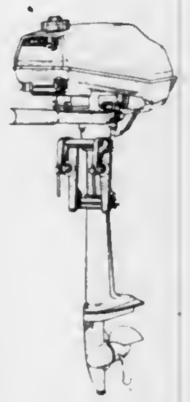
286,156
ADJUSTABLE SHELVING BRACKET

Arthur R. Mastrodicasa, 5 Elmcrest Cir., Walpole, Mass. 02081
Filed Mar. 26, 1984, Ser. No. 593,664
Term of patent 14 years
U.S. Cl. D8—381



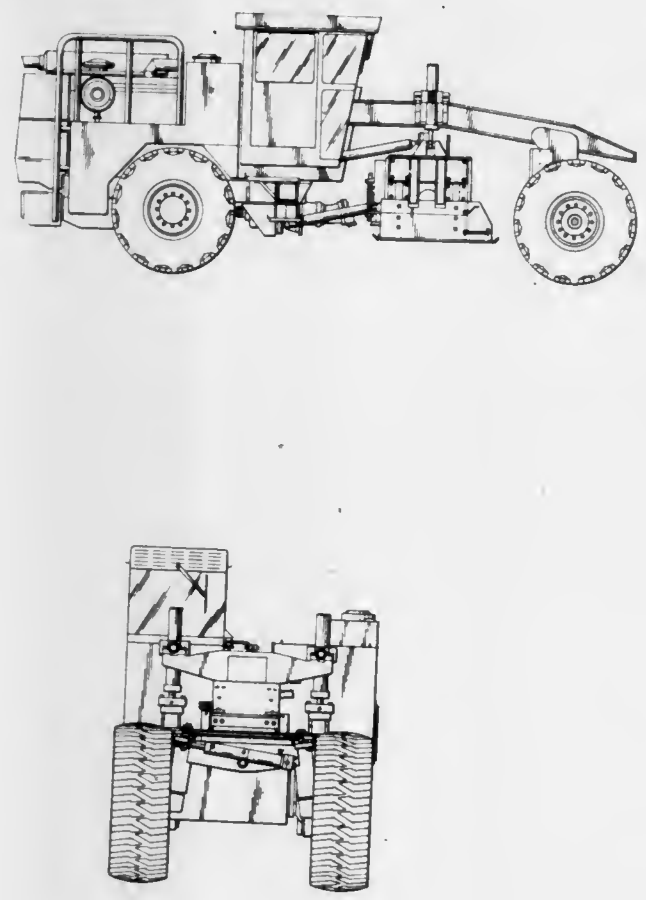
286,157
OUTBOARD ENGINE

Yoshio Mikado, Saitama; Jun Ito, and Masayuki Ohsumi, both of Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 30, 1984, Ser. No. 595,152
Term of patent 14 years
U.S. Cl. D15—4



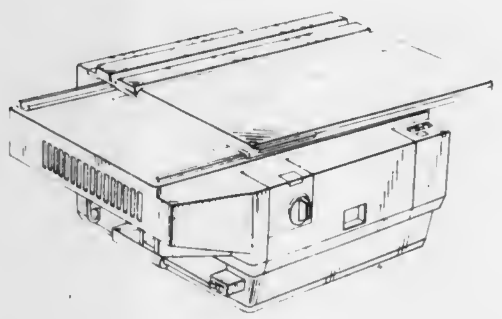
286,158
ROAD PLANER

Donald C. Baldwin, Galion; Robert E. Loy, Bucyrus, both of Ohio, and Paul E. Willis, Orrstown, Pa., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed Aug. 3, 1983, Ser. No. 519,808
Term of patent 14 years
U.S. Cl. D15—23



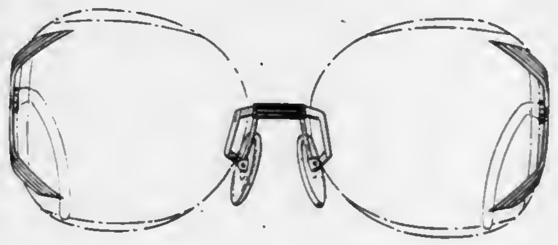
286,159
ELECTROPHOTOGRAPHIC COPIER

Nobuo Masaki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 2, 1984, Ser. No. 626,988
Claims priority, application Japan, Jan. 7, 1984, 59-126
Term of patent 14 years
U.S. Cl. D16—31



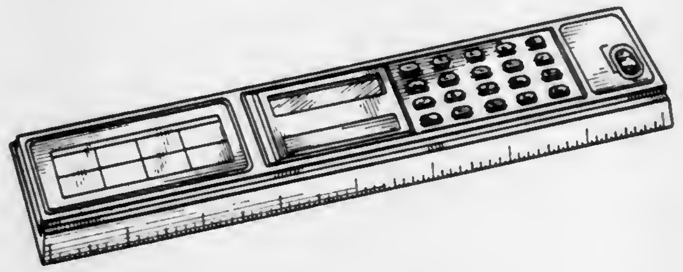
286,160
EYEGLASS FRAME

Ulrich J. Haas, Vienna, Austria, assignor to Optyl Eyewear Fashion International Corporation, Norwood, N.J.
Filed Jul. 30, 1984, Ser. No. 635,666
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1984, 11 AR 896/84
Term of patent 14 years
U.S. Cl. D16—117



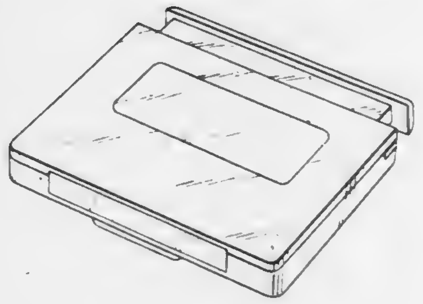
286,161
COMBINED RULER, CALCULATOR AND CLOCK

Chambers Wong, Kowloon, Japan, assignor to Far East United Electronics Limited, Kowloon, Hong Kong
Filed Apr. 10, 1984, Ser. No. 598,834
Claims priority, application United Kingdom, Oct. 12, 1983, 1015630
Term of patent 14 years
U.S. Cl. D18—2



286,162
TYPE STYLE CARTRIDGE FOR TYPEWRITER

Richard Nibley, and Noriaki Haranishi, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 18, 1984, Ser. No. 683,216
Claims priority, application Japan, Jul. 6, 1984, 59-28032
Term of patent 14 years
U.S. Cl. D18—12



286,163

PEN

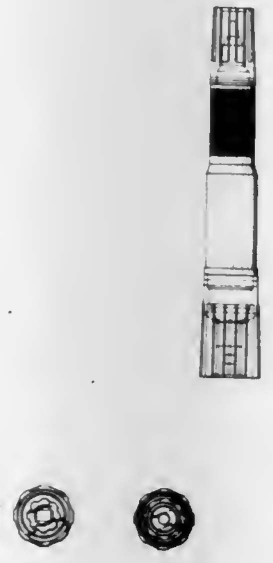
Koichi Shintani, Tokyo, Japan, assignor to Colleen Pencil Co., Ltd., Tokyo, Japan

Filed Jan. 10, 1983, Ser. No. 456,760

Claims priority, application Japan, Dec. 3, 1982, 57-54091

Term of patent 14 years

U.S. Cl. D19—43



286,164

WRITING PEN

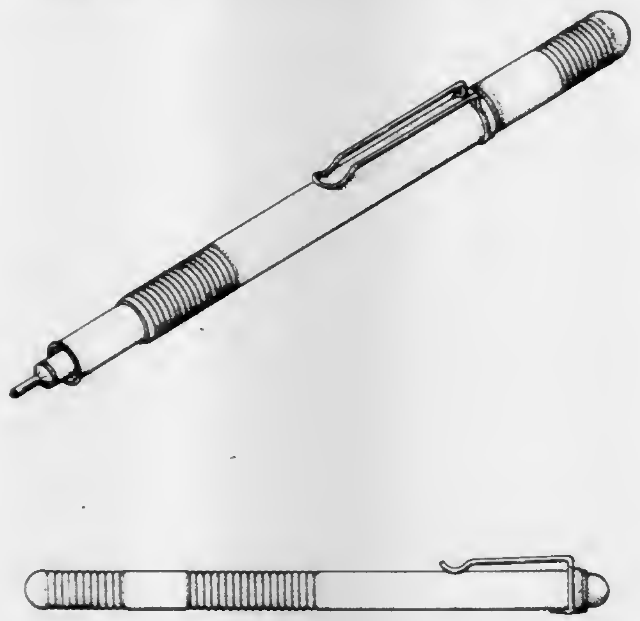
Bernhard H. Tinz, Stuttgart, Fed. Rep. of Germany, assignor to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Filed Jun. 19, 1984, Ser. No. 622,318

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1983, 66 MR 11758

Term of patent 14 years

U.S. Cl. D19—48



286,165

DESK TIDY

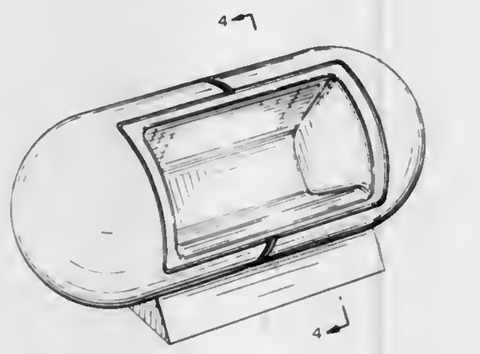
James Rooney, Luton, England, assignor to Alternate Resources Limited, Bedfordshire, England

Filed Mar. 12, 1984, Ser. No. 588,554

Claims priority, application United Kingdom, Sep. 15, 1983, 1015115

Term of patent 14 years

U.S. Cl. D19—75



286,166

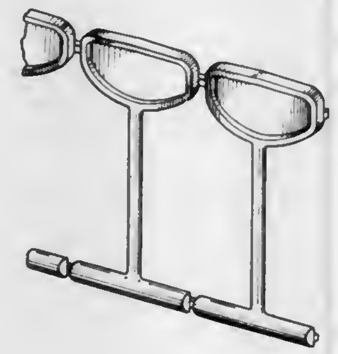
PRICE TAG LABEL STRIP

David B. Russell, Southborough, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Jul. 30, 1982, Ser. No. 403,881

Term of patent 14 years

U.S. Cl. D20—22



286,167

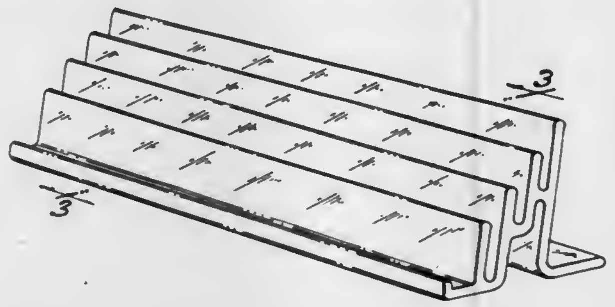
TIERED CARD HOLDER

Morris Greitzer, 3057 Earlmar Dr., Los Angeles, Calif. 90064

Filed Aug. 30, 1984, Ser. No. 645,785

Term of patent 14 years

U.S. Cl. D21—54



286,168

TOY CONSTRUCTION PIECE

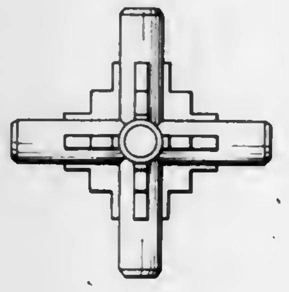
Giuseppe Mazzoleni, Valle S. Bartolomeo, Italy, assignor to Creative S.r.l., Italy

Filed May 25, 1984, Ser. No. 613,990

Claims priority, application Italy, Dec. 1, 1983, 54003/83[U]

Term of patent 14 years

U.S. Cl. D21—108



286,169

RECONFIGURABLE TOY VEHICLE

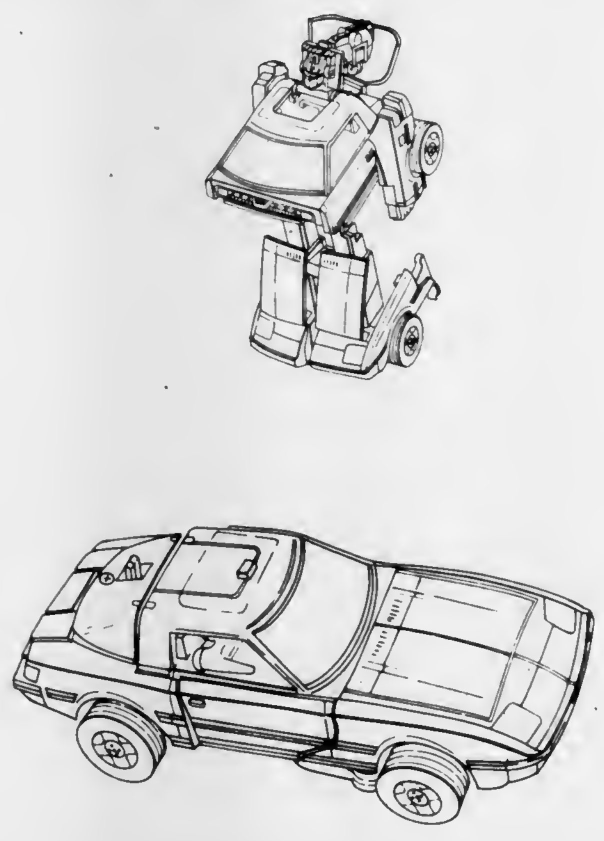
Kouzin Ohno, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed May 30, 1984, Ser. No. 616,595

Claims priority, application Japan, Dec. 30, 1983, 58-57471

Term of patent 14 years

U.S. Cl. D21—136



286,170

EXERCISER

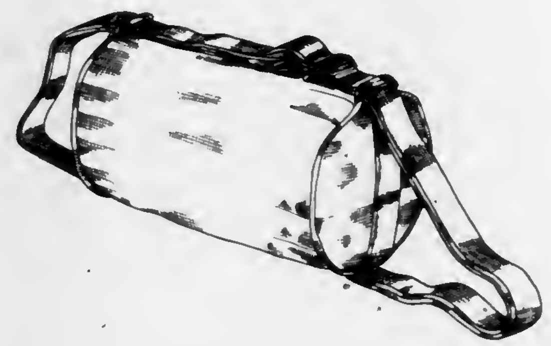
Jacqueline P. Colleuil, 7, Boulevard Joseph Garnier, 06100 Nice, France

Filed Mar. 21, 1984, Ser. No. 591,690

Claims priority, application Hague, Nov. 2, 1983, DM/003048

Term of patent 14 years

U.S. Cl. D21—191



286,171

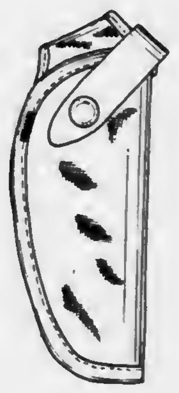
FABRIC HOLSTER

Richard D. E. Nichols, Fallbrook, Calif., assignor to Bianchi International, Temecula, Calif.

Filed Jan. 30, 1984, Ser. No. 575,308

Term of patent 14 years

U.S. Cl. D3—101



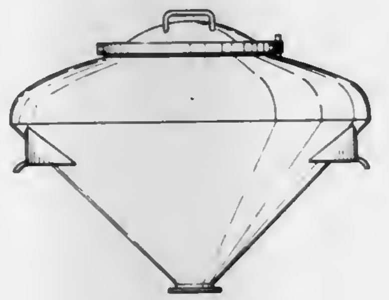
286,172
TANK FOR PHARMACEUTICAL MANUFACTURING PROCESSING

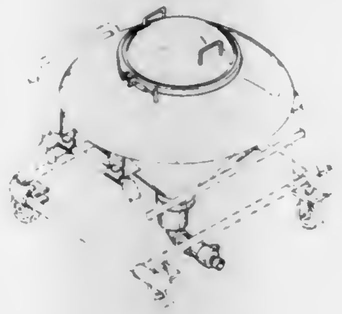
Yorinobu Takino, Osaka, Japan, assignor to Matsui Manufacturing Co., Limited, Osaka, Japan

Filed Sep. 13, 1983, Ser. No. 531,769

Term of patent 14 years

U.S. Cl. D23—2





286,173
PANEL FOR A SHOWER PARTITION

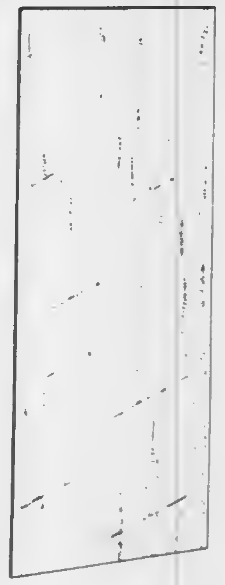
Heinz G. Baus, Wartbodenstr. 35, CH 3626 Hünibach/Thun, Switzerland

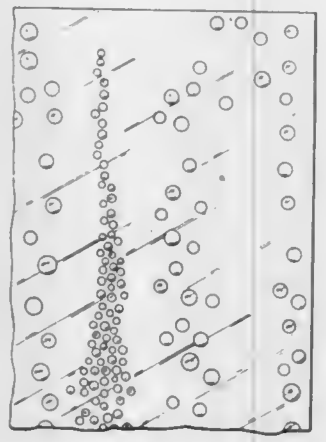
Filed Mar. 26, 1982, Ser. No. 362,127

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1981, URA 1011/81

Term of patent 14 years

U.S. Cl. D23—64





286,174
OIL-FIRED SPACE HEATER OR SIMILAR ARTICLE

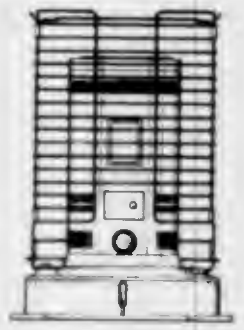
Kazuharu Nakamura, Nagoya, Japan, assignor to Toyotomi Kogyo Co., Ltd., Aichi, Japan

Filed Jul. 19, 1984, Ser. No. 632,305

Claims priority, application Japan, Jan. 24, 1984, 59-2118

Term of patent 14 years

U.S. Cl. D23—122



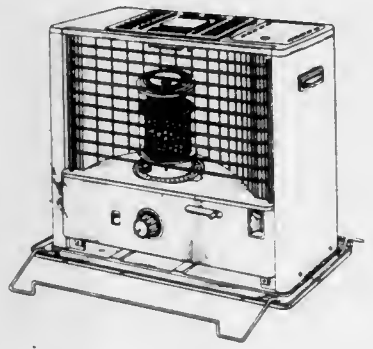
286,175
OIL STOVE

Kunio Takahashi, Kamo, Japan, assignor to Uchida Manufacturing Co. Ltd., Nugata, Japan

Filed Feb. 25, 1983, Ser. No. 469,910

Term of patent 14 years

U.S. Cl. D23—122



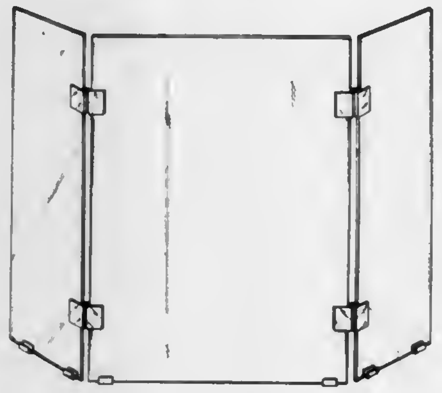
286,176
FIREPLACE SCREEN

Joseph J. Catania, Cheshire; Angelo Gaudino, Wallingford; Russell DeTuzzi, Huntington, and Maxwell Gardner, Wallingford, all of Conn., assignors to Century Fireplace Furnishings, Inc., Wallingford, Conn.

Filed Jun. 11, 1984, Ser. No. 619,050

Term of patent 14 years

U.S. Cl. D23—138.3



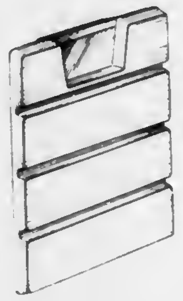
286,177
CABINET DOOR

Robert Case, Chicago, Ill.; Arden Jenkins; Randall N. Bartlett, both of Bay Minette, Ala., and Ernest Patrick, Mobile, Ala., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jul. 18, 1983, Ser. No. 515,003

Term of patent 14 years

U.S. Cl. D24—5



286,178
ALEMBIC

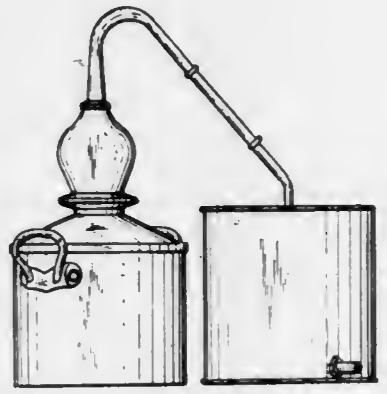
Robert Geissmann, 153 rue de l'Universite, 75007 Paris, France

Filed Mar. 3, 1983, Ser. No. 471,796

Claims priority, application France, Oct. 15, 1982, 82 3540

Term of patent 14 years

U.S. Cl. D24—8



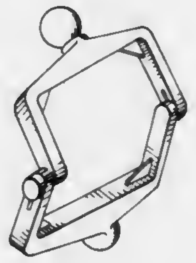
286,179
DENTAL ARTICULATOR WITH A BALL MOUNTING

Ronald E. Huffman, Tucson, Ariz., assignor to Kv33 Corporation, Tucson, Ariz.

Filed Mar. 14, 1983, Ser. No. 475,135

Term of patent 14 years

U.S. Cl. D24—10



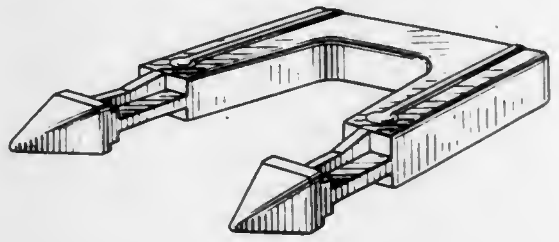
286,180
SURGICAL FASTENER

Herbert W. Korthoff, Wilton, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 16, 1984, Ser. No. 662,972

Term of patent 14 years

U.S. Cl. D24—27



286,181

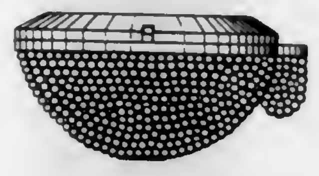
ACETABULAR CUP ASSEMBLY PROSTHESIS

Robert V. Kenna, Hackensack, N.J., assignor to Pfizer Hospital Products Group, Inc., New York, N.Y.

Filed Aug. 26, 1983, Ser. No. 526,729

Term of patent 14 years

U.S. Cl. D24—33



286,182

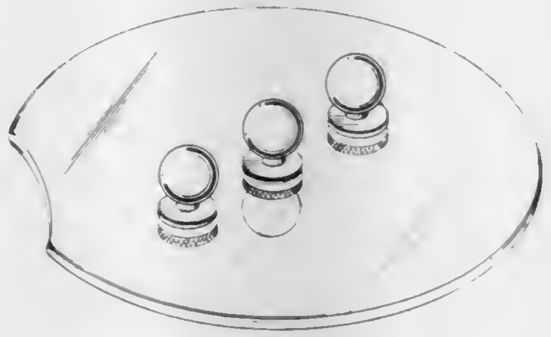
COMBINED MASSAGE AND ACUPRESSURE DISC

Robert S. Hilman, Jl. Krekot Dalam/Krekot Bunder 4, Proyek "Jaya Molek" H-17, Jakarta, Indonesia

Filed Feb. 1, 1984, Ser. No. 575,777

Term of patent 14 years

U.S. Cl. D24—36



286,183

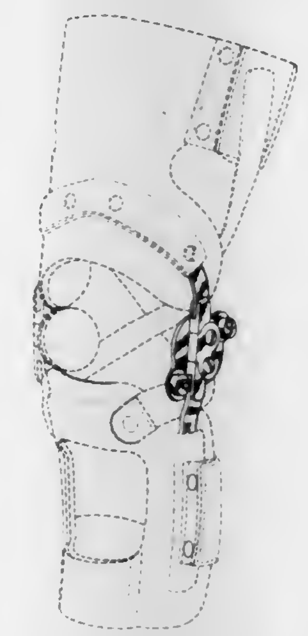
ADJUSTABLE JOINT FOR A KNEE BRACE

Darryl L. Womack, Lakewood; Ralph B. Noell, Denver, and Larry R. Bradshaw, Arvada, all of Colo., assignors to Scott Orthopedics, Inc., Denver, Colo.

Filed Jun. 4, 1984, Ser. No. 616,978

Term of patent 14 years

U.S. Cl. D24—64



286,184

FRAME HEAD EXTRUSION

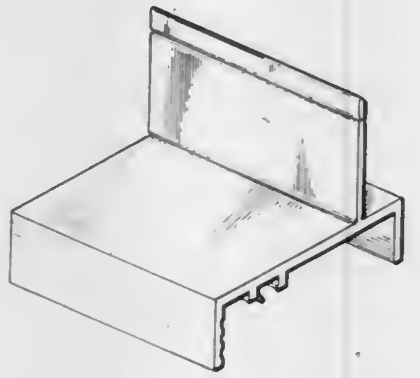
Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Nov. 30, 1983, Ser. No. 556,361

The portion of the term of this patent subsequent to Oct. 14, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—74



286,185

FRAME SILL EXTRUSION

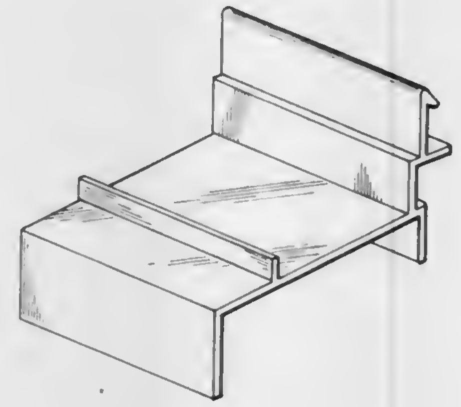
Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Nov. 30, 1983, Ser. No. 556,363

The portion of the term of this patent subsequent to Oct. 14, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—74



286,186

MEETING RAIL EXTRUSION

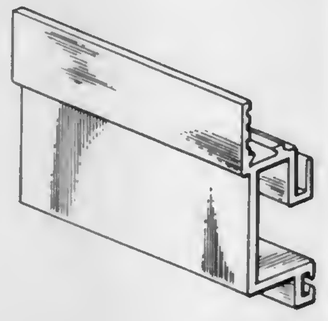
Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Nov. 30, 1983, Ser. No. 556,365

The portion of the term of this patent subsequent to Oct. 14, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—74



286,187

MEETING RAIL EXTRUSION

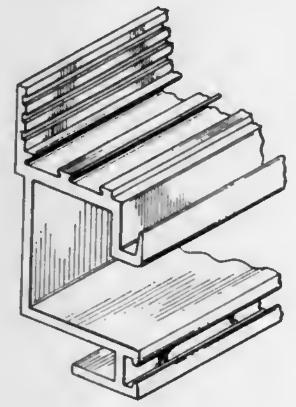
Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Apr. 5, 1985, Ser. No. 720,616

The portion of the term of this patent subsequent to Oct. 14, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—74



286,188

FRAME JAMB EXTRUSION

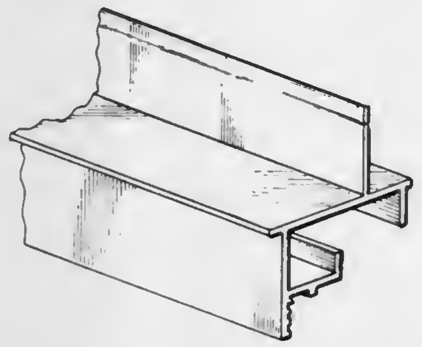
Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Apr. 5, 1985, Ser. No. 720,618

The portion of the term of this patent subsequent to Oct. 14, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—74



286,189

FRAME SILL EXTRUSION

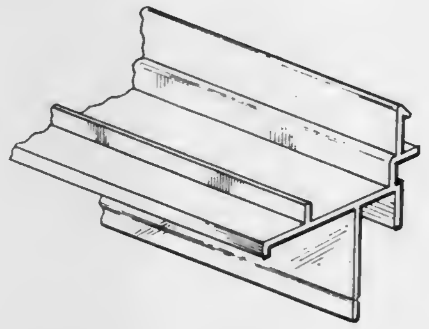
Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Apr. 5, 1985, Ser. No. 720,621

The portion of the term of this patent subsequent to Oct. 14, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—74



286,190

FRAME JAMB EXTRUSION

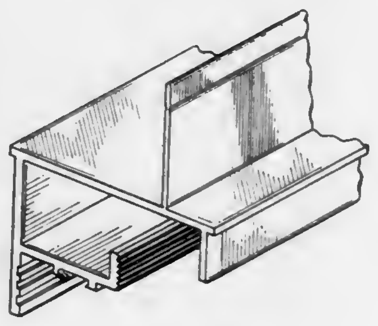
Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Apr. 5, 1985, Ser. No. 720,622

The portion of the term of this patent subsequent to Oct. 14, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—74



286,191

FRAME HEAD-FIN EXTRUSION

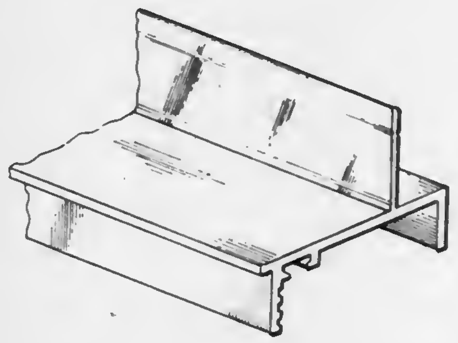
Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Apr. 11, 1985, Ser. No. 721,884

The portion of the term of this patent subsequent to Oct. 14, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—74



286,192

FIXED JAMB

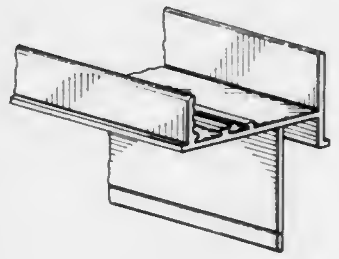
Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Aug. 2, 1985, Ser. No. 761,815

The portion of the term of this patent subsequent to Oct. 7, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—74



286,193
FRAME INSERT - HEAD

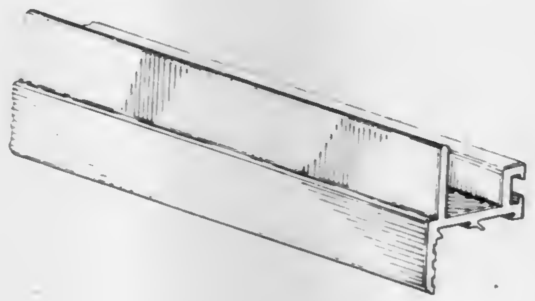
Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Aug. 2, 1985, Ser. No. 761,816

The portion of the term of this patent subsequent to Oct. 14, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—74



286,194
VENT HEAD AND SILL

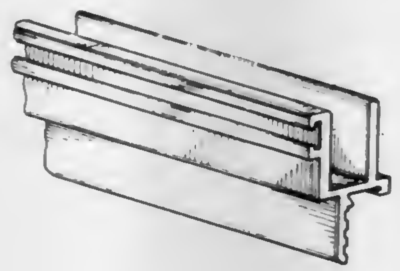
Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Aug. 2, 1985, Ser. No. 761,819

The portion of the term of this patent subsequent to Oct. 7, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—74



286,195
FRAME INSERT SILL

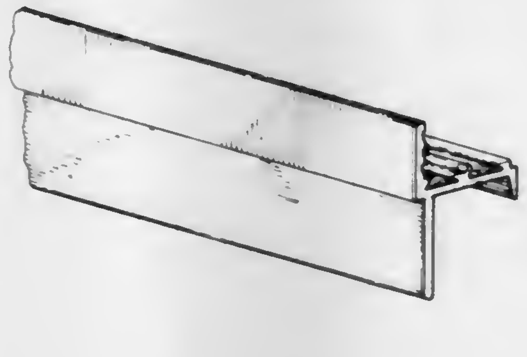
Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Aug. 2, 1985, Ser. No. 761,821

The portion of the term of this patent subsequent to Oct. 14, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—74



286,196
FRAME HEAD

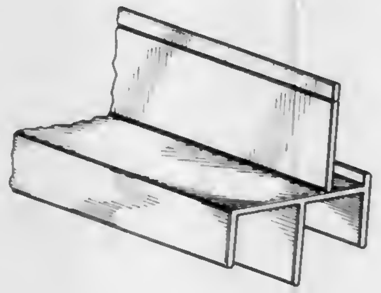
Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Aug. 2, 1985, Ser. No. 761,849

The portion of the term of this patent subsequent to Oct. 7, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—74



286,197
LATCH JAMB

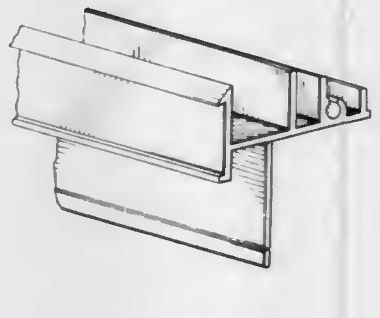
Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Aug. 2, 1985, Ser. No. 761,850

The portion of the term of this patent subsequent to Oct. 14, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—74



286,198
VENT LATCH JAMB

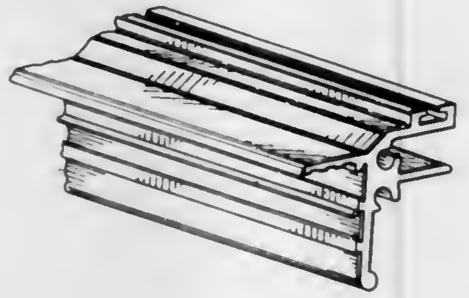
Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Aug. 2, 1985, Ser. No. 761,767

The portion of the term of this patent subsequent to Oct. 14, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—74



286,199
FRAME SILL STANDARD

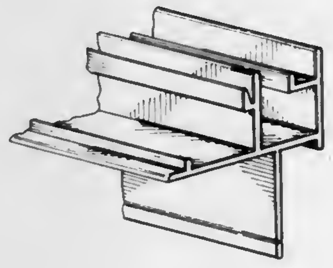
Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Aug. 2, 1985, Ser. No. 761,768

The portion of the term of this patent subsequent to Oct. 14, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—74



286,200
FRAME LATCH JAMB

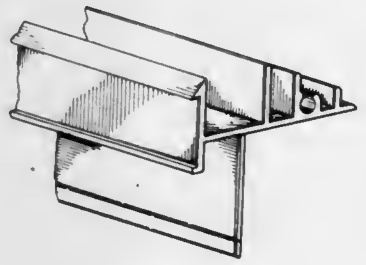
Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Aug. 2, 1985, Ser. No. 761,769

The portion of the term of this patent subsequent to Oct. 14, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—74



286,201
FRAME SILL

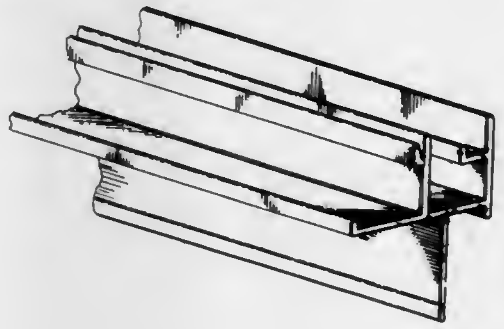
Joseph C. Bancroft, 812 Sweetwater Club Blvd., Longwood, Fla. 32779

Filed Aug. 2, 1985, Ser. No. 761,877

The portion of the term of this patent subsequent to Oct. 14, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—74



286,202
COMBINED SPOTLIGHT AND RADIO

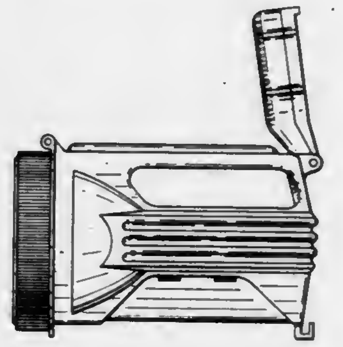
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong

Filed Jul. 11, 1984, Ser. No. 629,796

Claims priority, application United Kingdom, Jan. 19, 1984, 1017422

Term of patent 14 years

U.S. Cl. D26—38



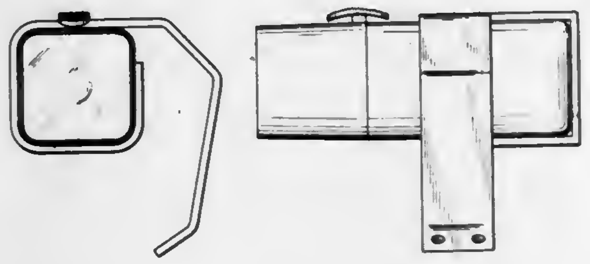
286,203
COMBINED HEAD LAMP AND MOUNTING BRACKET FOR FIREMAN'S HELMET

Stephen A. Crane; Howard A. Crane; Douglas A. Crane, and Timothy J. Crane, all of Monroe County, N.Y., assignors to Crane Manufacturing & Plastics Corp., Fairport, N.Y.

Filed Apr. 6, 1983, Ser. No. 482,402

Term of patent 14 years

U.S. Cl. D26—39



286,204
LANTERN

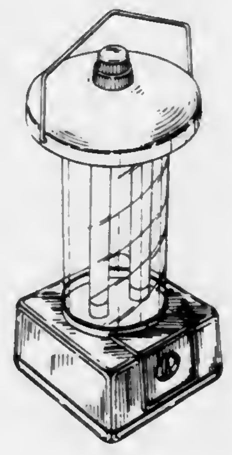
Tit-Wing Poon, Hong Kong, Hong Kong, assignor to Flying Dragon Metal Products Factory, Chaiwan, Hong Kong

Filed Jan. 14, 1983, Ser. No. 504,194

The portion of the term of this patent subsequent to Sep. 23, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D26—42



286,205

LIGHTING FIXTURE

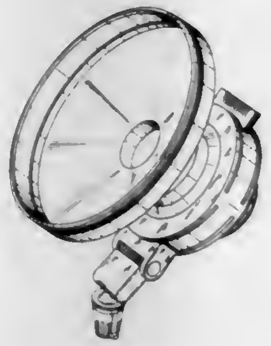
Michael T. Jankowski, Leek, and Hans T. Meelen, Geldrop, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 11, 1984, Ser. No. 609,245

Claims priority, application Benelux, Nov. 17, 1983, 58433-03

Term of patent 14 years

U.S. Cl. D26—65



286,206

LIGHTING FIXTURE

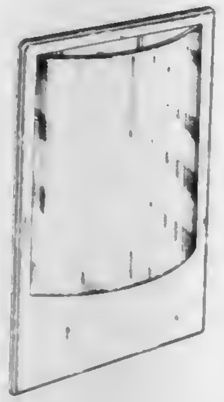
Stefanus F. W. Joosten, and Evert Oosterheerd, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 13, 1984, Ser. No. 579,638

Claims priority, application Benelux, Aug. 25, 1983, 58173-04

Term of patent 14 years

U.S. Cl. D26—85



286,207

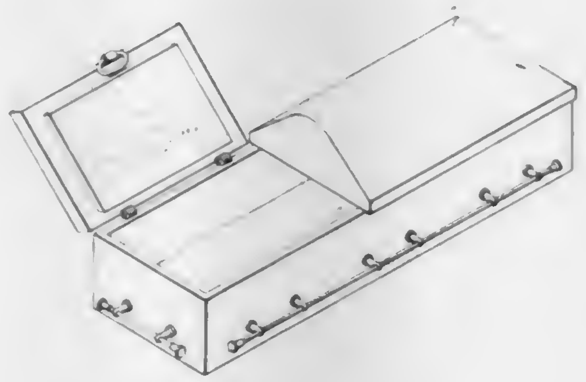
MINIATURE COFFIN CIGARETTE CASE

Joe E. Colliver, Rte. #3, Box 12B, Cleveland, Okla. 74020

Filed Feb. 13, 1984, Ser. No. 579,498

Term of patent 14 years

U.S. Cl. D27—50



286,208

PHARMACEUTICAL TABLET

Geoffrey D. Tovey, Harpenden, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

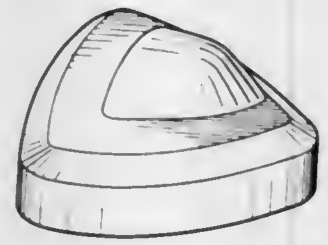
Filed Dec. 28, 1984, Ser. No. 687,316

Claims priority, application United Kingdom, Jul. 2, 1984, 1020678

The portion of the term of this patent subsequent to Oct. 7, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D28—2



286,209

HAIR-DRYER

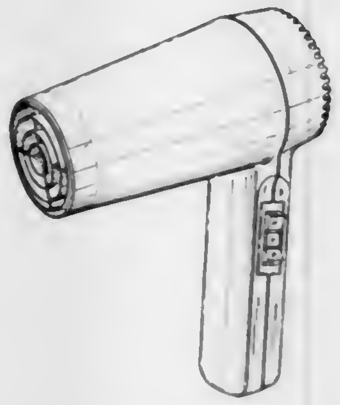
Murray I. C. Camens, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 2, 1984, Ser. No. 626,955

Claims priority, application United Kingdom, Jan. 25, 1984, 1017516

Term of patent 14 years

U.S. Cl. D28—13



286,210

ELECTRIC SHAVER

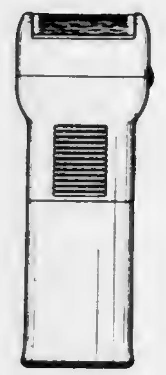
Noboru Abe, Suita, Japan, and Florian Seiffert, Wiesbaden, Fed. Rep. of Germany, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

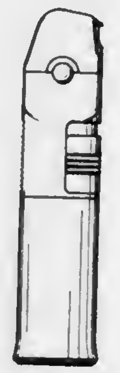
Filed Jul. 5, 1984, Ser. No. 627,671

Claims priority, application Japan, Jan. 20, 1984, 59-1693

Term of patent 14 years

U.S. Cl. D28—49





286,211

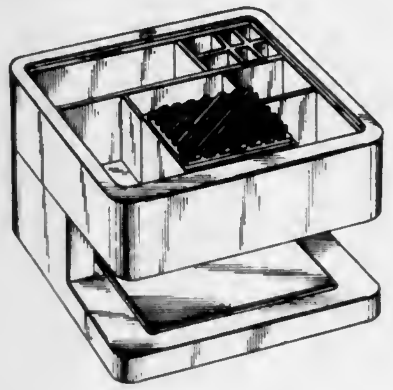
NAIL DRYER AND ORGANIZER

Benson Zinbarg, Stamford; Barbara A. Fortin, Norwalk, and Paul F. Siegel, Ridgefield, all of Conn., assignors to Sun Hill Industries, Inc., Stamford, Conn.

Filed Oct. 31, 1984, Ser. No. 666,894

Term of patent 14 years

U.S. Cl. D28—58



286,212

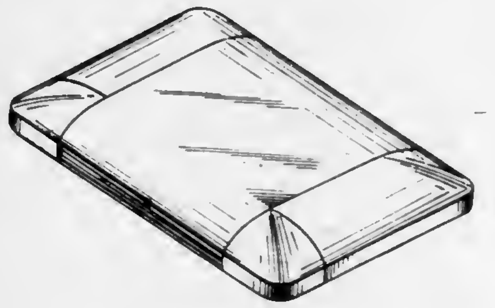
MULTICOMPARTMENT COMPACT

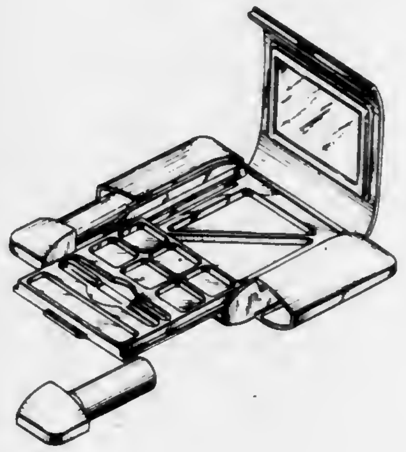
Ugo Campello; Enrico Racca, both of Miami, Fla.; Pierluigi Sosta, and Deris Baggiolini, both of Concesio, Italy, assignors to New High Glass, Miami, Fla.

Filed Nov. 14, 1984, Ser. No. 671,472

Term of patent 14 years

U.S. Cl. D28—83





286,213

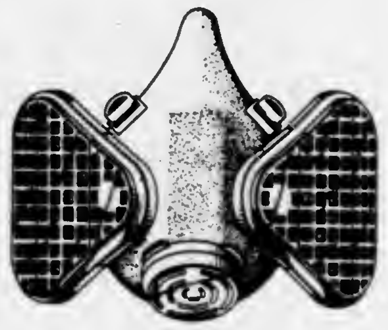
DUAL FILTER RESPIRATOR

Richard D. Maryyanek, 711 Highland Ct., Northbridge, Mass. 01534 and Joseph Z. Zdrok, 24 Tower St., Webster, Mass. 01570

Continuation-in-part of Ser. No. 439,948, Nov. 8, 1982. This application May 11, 1983, Ser. No. 493,649

Term of patent 14 years

U.S. Cl. D29—7



286,214
IRON

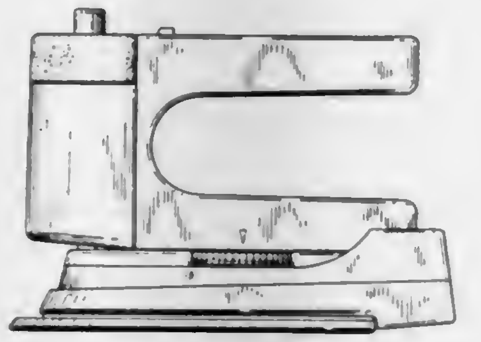
Bing Y. Chan, Kowloon, Hong Kong, assignor to Goodway Electrical Co., Ltd., Kowloon, Hong Kong

Filed Sep. 13, 1984, Ser. No. 650,065

Claims priority, application United Kingdom, Mar. 13, 1984, 1018473

Term of patent 14 years

U.S. Cl. D32—69



286,215
STEAM IRON

Robert Pataki, Clayton, Australia, assignor to Chiaphua Industries, Kowloon, Hong Kong

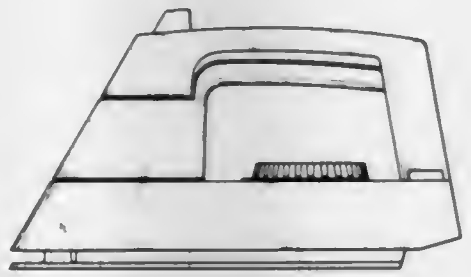
Filed May 7, 1984, Ser. No. 607,475

Claims priority, application United Kingdom, Jan. 20, 1984, 1017485

The portion of the term of this patent subsequent to Oct. 14, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D32—70



286,216
STEAM IRON

Robert Pataki, Clayton, Australia, assignor to Chiaphua Industries, Ltd., Kowloon, Hong Kong

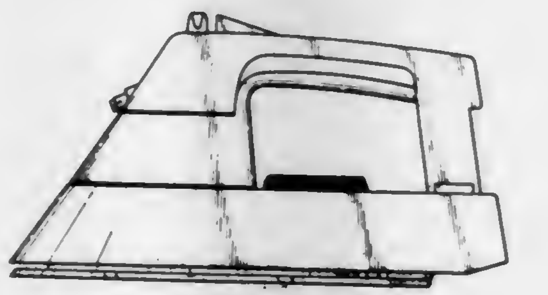
Filed May 7, 1984, Ser. No. 607,489

Claims priority, application United Kingdom, Jan. 20, 1984, 1017484

The portion of the term of this patent subsequent to Oct. 14, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D32—70



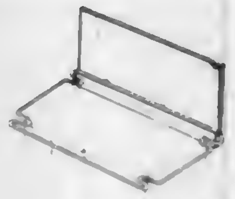
286,217
REFUSE BAG HOLDER

Robert G. Waun, Rte. 1, US 31 S., and Cathie Terrill, 113½ Eaton, both of Charlevoix, Mich. 49720

Filed Sep. 24, 1984, Ser. No. 653,580

Term of patent 14 years

U.S. Cl. D34—6



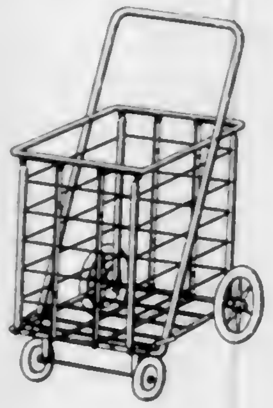
286,218
SHOPPING CART

Yechiel Friedman, 1331 48th St., Brooklyn, N.Y. 11219

Filed Oct. 1, 1984, Ser. No. 656,738

Term of patent 14 years

U.S. Cl. D34—17



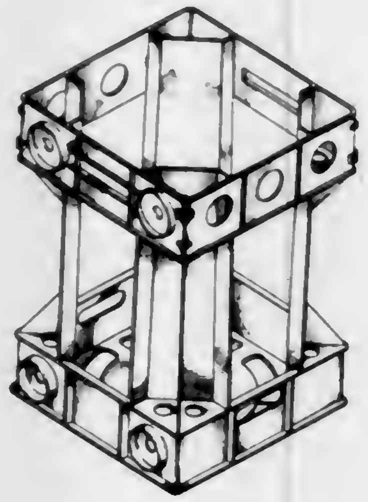
286,219
BOTTLE CASE

Carl E. Frahm, 1428 Oak Meadow Rd., Arcadia, Calif. 91006

Filed Dec. 5, 1983, Ser. No. 557,849

Term of patent years

U.S. Cl. D34—43



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF OCTOBER, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. Ahlstrom Corporation: *See—*
  - Engstrom, Folke; Hakulin, Bertel K.; and Ruottu, Seppo K., 4,616,576, Cl. 110-345.000.
- A. E. Staley Manufacturing Company: *See—*
  - Kiely, Donald E.; and Seidman, Martin, 4,617,405, Cl. 549-262.000.
- AAA Steel and Enterprises Corp.: *See—*
  - Gross, Sol N., 4,616,417, Cl. 30-134.000.
- AB Mataki: *See—*
  - Larsson, Leif; and Ekdahl, Bengt, 4,617,229, Cl. 428-284.000.
- AB Volvo: *See—*
  - Kronogard, Sven-Olof; Kronogard, Clas-Olof; and Kronogard, Hakan, 4,616,482, Cl. 60-624.000.
- Abbott, Eion A. Pop-up sprinkler. 4,616,780, Cl. 239-113.000.
- Abe, Hitoshi: *See—*
  - Nagashima, Shigeo; Abe, Hitoshi; and Hatakeyama, Yasuhiko, 4,617,625, Cl. 364-200.000.
- Abe, Katsuhiro: *See—*
  - Yano, Kazunori; Goto, Teruhisa; and Abe, Katsuhiro, 4,617,372, Cl. 528-216.000.
- Abe, Kunihiro, to Fuji Jukogyo Kabushiki Kaisha. System for regulating the idle speed of an internal combustion engine. 4,616,614, Cl. 123-339.000.
- Abe, Takao: *See—*
  - Hotta, Yuji; Abe, Takao; Ishii, Fumio; Kitamura, Shigehiro; Koshizuka, Kunihiro; and Nakamura, Masaki, 4,617,224, Cl. 428-212.000.
- Abendroth, Carl W. Fastener for flooring systems. 4,616,462, Cl. 52-509.000.
- ABG Semca: *See—*
  - Soum, Jacques; and Malabre, Christian, 4,616,388, Cl. 29-149.50S.
- Abo, Keiju: *See—*
  - Tanaka, Yoshikazu; Kumura, Haruyoshi; Abo, Keiju; Yamamuro, Sigeaki; and Hirano, Hiroyuki, 4,616,530, Cl. 74-851.000.
- Abrams, Jack Z.; and Sherwin, Robert M., to Empire State Electric Energy Research Corp. (ESEERCO). Process for treating combustion systems with pressure-hydrated dolomitic lime. 4,616,574, Cl. 110-343.000.
- Adam Equipment Corp.: *See—*
  - Kopp, Walter, 4,616,990, Cl. 425-239.000.
- Adams, Norman R.; and Gifford, Charles A., to Cooper Tire & Rubber Company. Two-way selector valve for a vehicle seat inflation device. 4,616,676, Cl. 137-636.400.
- Adams, Truman W., to Anchors, Inc. Anchor retrieval mechanism. 4,616,589, Cl. 114-210.000.
- Adley, James M.; and Chang, Phillip, to International Business Machines Corporation. Non-contact developer seal. 4,616,919, Cl. 355-3.0DD.
- Adolfsson, Roger, to Cederroths AB. Means for wall boards. 4,616,755, Cl. 211-89.000.
- Adolph Coors Company: *See—*
  - Vischer, Peter, 4,616,818, Cl. 271-113.000.
- Advanced Cardiovascular Systems, Inc.: *See—*
  - Samson, Wilfred J.; and Frisbie, Jeffrey S., 4,616,653, Cl. 128-344.000.
  - Simpson, John B., 4,616,652, Cl. 128-344.000.
- Advanced Micro Devices, Inc.: *See—*
  - Brown, Candice H., 4,616,406, Cl. 29-588.000.
  - Wang, Scott W.; Thomas, Mammen; and Ko, Wen C., 4,616,404, Cl. 29-576.00B.
- AE PLC: *See—*
  - Slee, Roger H., 4,616,389, Cl. 29-156.40R.
- AEPLC: *See—*
  - Baker, John C., 4,616,884, Cl. 384-7.000.
- Aesculap-Werke Aktiengesellschaft: *See—*
  - Caspar, Wolfhard; Lutze, Theodor; and Schwarz, Theodor, 4,616,635, Cl. 128-20.000.
- Afzali-Ardakani, Ali: *See—*
  - Sachdev, Krishna G.; Afzali-Ardakani, Ali; Pennington, Keith S.; and Cohen, Mitchell S., 4,617,579, Cl. 346-135.100.
- Agfa Gevaert Aktiengesellschaft: *See—*
  - Kunitz, Friedrich-Wilhelm; and Schranz, Karl-Wilhelm, 4,617,256, Cl. 430-557.000.
  - Wolff, Erich; Langen, Hans; and Braden, Rudolf, 4,617,255, Cl. 430-553.000.
- Agfa-Gevaert N.V.: *See—*
  - Boeve, Gerard J.; and De Cock, Etienne M., 4,616,821, Cl. 271-213.000.
  - Buelens, Edward; and Goossens, Carolus C., 4,616,914, Cl. 354-277.000.
- AGILE Systems: *See—*
  - Dickerson, James W.; and Smith, William N., III, 4,617,423, Cl. 178-2.00R.
- Agos, Angel, to Aryho, S.A. Simple or rotating traversers for vertical window blinds. 4,616,688, Cl. 160-176.00R.
- Agway Inc.: *See—*
  - Nocek, James E., 4,617,276, Cl. 436-20.000.
- Aichelmann, Frederick J., Jr.; and Lange, Lawrence K., to International Business Machines Corporation. Error correction for multiple bit output chips. 4,617,664, Cl. 371-38.000.
- Aihara, Yoshihiko: *See—*
  - Someya, Hiromi; Aihara, Yoshihiko; Suzuki, Nobuyuki; and Mizogui, Toyokazu, 4,616,916, Cl. 354-442.000.
- Air Products and Chemicals, Inc.: *See—*
  - Brown, William R.; Cassano, Anthony A.; Dunbobbin, Brian R.; Rao, Pradip; and Erickson, Donald C., 4,617,182, Cl. 423-579.000.
  - Ford, Michael E.; and Johnson, Thomas A., 4,617,418, Cl. 564-479.000.
  - Garg, Diwakar, 4,617,106, Cl. 208-418.000.
  - Miller, Robert N., 4,617,105, Cl. 208-412.000.
  - Pez, Guido P.; and Carlin, Richard T., 4,617,029, Cl. 55-16.000.
  - Suchdeo, Shyam R.; Patel, Suresh U.; and Harris, Christopher F., 4,617,036, Cl. 62-11.000.
- Aisin Seiki Kabushiki Kaisha: *See—*
  - Kodama, Hisashi; and Ono, Takuro, 4,616,607, Cl. 123-90.460.
  - Ogasawara, Tsunehiko; Arakawa, Yoshichika; Sumiya, Koji; and Sakaguchi, Yoshikazu, 4,616,531, Cl. 74-866.000.
- Aisin Warner Kabushiki Kaisha: *See—*
  - Ogasawara, Tsunehiko; Arakawa, Yoshichika; Sumiya, Koji; and Sakaguchi, Yoshikazu, 4,616,531, Cl. 74-866.000.
- Ajinomoto Co., Inc.: *See—*
  - Tanaka, Kiyoshi; Koga, Yoshihiro; Saeki, Masaru; Kaneko, Tetsuya; and Kawakita, Tetsuya, 4,617,155, Cl. 260-501.120.
- Akachi, Yoshiaki; Kyoso, Yasuo; and Matsumaru, Takeo, to TDK Corporation. Coil bobbin. 4,617,543, Cl. 336-192.000.
- Akagi, Yuji: *See—*
  - Hattori, Toshihiko; Akagi, Yuji; and Kohara, Hideo, 4,616,985, Cl. 418-173.000.
- Akashi, Akira; and Yamada, Masanori, to Canon Kabushiki Kaisha. Automatic focusing device with low light contrast inhibiting means. 4,617,459, Cl. 250-201.000.
- Akashi, Teruo; Ito, Hiroshi; and Yamada, Shigemichi, to Toyota Jidosha Kabushiki Kaisha. Transmission control method providing overlapped engagement of power transmission systems. 4,616,521, Cl. 74-335.000.
- Akatsu, Yohsuke: *See—*
  - Sugasawa, Fukashi; Kuroki, Junsuke; and Akatsu, Yohsuke, 4,616,848, Cl. 280-707.000.
- Akira, Takashima; Kobayashi, Masahiko; Nasu, Hitoo; Okida, Yoshishiro; and Tsuji, Kazuhiko, to Kubota, Ltd. Earth moving vehicle. 4,616,872, Cl. 296-190.000.
- Albert, Alban; Courbat, Pierre; and Weith, Andre , to Ciba-Geigy Corporation. 3-O-acylated derivatives of (+)-cyanidan-3-ol. 4,617,296, Cl. 514-100.000.
- Albert Rolland, S.A.: *See—*
  - Bessin, Pierre; and Bonnet, Jacqueline, 4,617,315, Cl. 514-427.000.
- Albertini, Rocco D.; Clements, Ralph E.; and Grzeczkowski, Thomas V., to Baldt Incorporated. Acoustical mooring release system. 4,616,590, Cl. 114-230.000.
- Albizzati, Enrico, to Montedison S.p.A. Catalyst components and catalysts for the polymerization of olefins. 4,617,285, Cl. 502-134.000.
- Alcala, Robert, to American Hospital Supply Corporation. Disposable shoe cover. 4,616,429, Cl. 36-7.200.
- Alcon Laboratories, Inc.: *See—*
  - Schafer, Doris; and Schafer, Rolf, 4,617,186, Cl. 424-78.000.
- Aldenhoven, Ghislanus M. A. M., to U.S. Philips Corporation. Holder for a rigid information disc and loading-system comprising a loading mechanism adapted to cooperate with such a holder. 4,617,655, Cl. 369-291.000.
- Alexander, Frederick D., to Ekco Products, Inc. Disposable cooking pan. 4,616,762, Cl. 220-74.000.
- Alexoff, Randall L., to George A. Mitchell Company. Method for producing tubing of varying wall thickness. 4,616,500, Cl. 72-283.000.
- Alfred Teves GmbH: *See—*
  - Kircher, Dieter; von Gruenberg, Hubertus; Blum, Klaus D.; and Becker, Peter, 4,616,727, Cl. 180-142.000.
- Allied Corporation: *See—*
  - Becker, Larry W.; and Larson, Eric H., 4,617,362, Cl. 526-209.000.
  - Devensky, Walter L.; and Dube, Carlos M., 4,617,678, Cl. 375-102.000.
  - Gupta, Arunava; West, Gary A.; and Yardley, James T., 4,617,237, Cl. 428-446.000.
  - Light, William G., 4,617,127, Cl. 210-651.000.
  - Marshall, Robert M., 4,617,236, Cl. 428-391.000.

- Allied Steel & Tractor Products, Inc.: *See—*
  - Bouplon, Edward J., 4,616,716, Cl. 173-49.000.
- Alloy Surfaces Company, Inc.: *See—*
  - Baldi, Alfonso L., 4,617,202, Cl. 427-253.000.
- Alps Electric Co., Ltd.: *See—*
  - Sone, Takehiko; Takoshima, Takehiro; and Kamijyo, Yoshimi, 4,617,487, Cl. 310-313.00D.
  - Tokunaga, Ichiro; Matsunaga, Hiroshi; and Shimojima, Yoji, 4,617,460, Cl. 250-227.000.
- Alt, Anton: *See—*
  - Hornung, Klaus; Alt, Anton; Schulte, Gunter; and Mahnig, Fritz, 4,617,069, Cl. 148-138.000.
- Altera Corporation: *See—*
  - Hartmann, Robert F.; Wong, Sau-Ching; Chan, Yiu-Fai; and Ou, Jung-Hsing, 4,617,479, Cl. 307-465.000.
- Aluminium Pechiney: *See—*
  - Veyrier, Maurice, 4,617,179, Cl. 423-121.000.
- Aluminum Company of America: *See—*
  - Boughton, Michael J., 4,617,100, Cl. 204-245.000.
- Amano Seiyaku Kabushiki Kaisha: *See—*
  - Yamada, Hideaki; Otsuji, Shogo; Isobe, Kimiyasu; Matsunaga, Kuniyoshi; and Inukai, Tadahiko, 4,617,263, Cl. 435-25.000.
- AMCO Manufacturing Corporation: *See—*
  - Heideman, Robert C., 4,616,771, Cl. 224-321.000.
- Amende, Welf; Lausch, Wolfram; and Zechmeister, Hartwin, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Method of making wear-resistant cylinder, or cylinder liner surfaces. 4,617,070, Cl. 148-152.000.
- American Brands, Inc.: *See—*
  - Chumney, Richard D., Jr., 4,616,664, Cl. 131-336.000.
- American Can Company: *See—*
  - Krueger, Duane A.; and Odorzynski, Thomas W., 4,617,240, Cl. 428-476.100.
- American Cyanamid Company: *See—*
  - Kerwar, Suresh S.; Sloboda, Adolph E.; and Ridge, Susan C., 4,617,319, Cl. 514-647.000.
  - Marei, Abdel H., 4,617,318, Cl. 514-520.000.
- American Home Products Corporation: *See—*
  - Bagli, Jehan F.; and Peseckis, Steven M., 4,617,393, Cl. 544-319.000.
- American Hospital Supply Corporation: *See—*
  - Alcala, Robert, 4,616,429, Cl. 36-7.200.
- American Sterilizer Company: *See—*
  - Gehly, Joel C., 4,617,619, Cl. 362-804.000.
  - Mechlenburg, Douglas M., 4,616,501, Cl. 73-24.000.
  - Sundheimer, Craig S., 4,617,065, Cl. 134-25.400.
- Amerock Corporation: *See—*
  - DeBruyn, William, 4,616,940, Cl. 384-248.000.
- AMF Inc.: *See—*
  - Ostreicher, Eugene A., 4,617,128, Cl. 210-679.000.
- Ammermann, Eberhard: *See—*
  - Eicken, Karl; Graf, Hermann; Gramlich, Walter; Sauter, Hubert; Rentzea, Costin; Pommer, Ernst-Heinrich; and Ammermann, Eberhard, 4,617,303, Cl. 514-258.000.
- Amoco Corporation: *See—*
  - Poppe, Wassily; Chen, Yu-Tsai; and Paschke, Edward E., 4,617,342, Cl. 524-606.000.
- Amon, Leopold: *See—*
  - Enkner, Bernhard; Amon, Leopold; Kubelbock, Alfred; Trimmel, Wolfgang; Nalepka, Paul; Schropp, Leopold; Schwaighofer, Helmut; Pum, Reinhard; Traxler, Manfred; and Tasch, Franz, 4,617,672, Cl. 373-79.000.
- AMP Incorporated: *See—*
  - Dola, Frank P., 4,616,897, Cl. 339-122.00R.
  - Feldman, Steven, 4,616,893, Cl. 339-14.00R.
- Amra, Lutfi H.: *See—*
  - Chandler, Richard C.; and Amra, Lutfi H., 4,617,232, Cl. 428-328.000.
- Amrhein, Reinhard, to Mannesmann Rexroth GmbH. Solenoid-actuated directional control valve. 4,616,675, Cl. 137-625.650.
- Analysts, Inc.: *See—*
  - Plungis, Donald W.; Seymour, Charles S.; and Higgins, William, 4,616,503, Cl. 73-55.000.
- Anchors, Inc.: *See—*
  - Adams, Truman W., 4,616,589, Cl. 114-210.000.
- Anderson, Arndt S. Guitar composed of high strength-to-weight ratio material. 4,616,548, Cl. 84-1.160.
- Anderson, Clyde G.; and Vara, Tomas E. Alcohol and distillers grain recovery process. 4,617,270, Cl. 435-161.000.
- Anderson, George F., to Smith International, Inc. Welding fixture for rotary cone rock bits with belleville seals. 4,617,446, Cl. 219-121.0LC.
- Anderson, Marie T.: *See—*
  - Maskalick, David G.; and Anderson, Marie T., 4,617,376, Cl. 530-308.000.
- Anderson, Melvin J. Aerobic exercise machine. 4,616,825, Cl. 272-134.000.
- Anderson, Russell W.; and Held, Michael J., to Manufacturers Tool Service, Inc. Indexable shell cutter. 4,616,965, Cl. 408-204.000.
- Ando, Masao: *See—*
  - Senda, Kenichi; Ando, Masao; Nakamura, Kyoichi; and Nishida, Tatehiko, 4,617,322, Cl. 521-60.000.
- Andre, Thierry: *See—*
  - Melchior, Jean; Andre, Thierry; and Dourille, Alain, 4,616,481, Cl. 60-606.000.
- Andrushkiw, Roman: *See—*
  - Andruszkiw, Walter; and Andrushkiw, Roman, 4,616,974, Cl. 415-4.000.
- Andruszkiw, Walter; and Andrushkiw, Roman. Wind driven power generating apparatus. 4,616,974, Cl. 415-4.000.
- Antlfinger, George J.: *See—*
  - Shah, Pravinchandra K.; and Antlfinger, George J., 4,617,230, Cl. 428-288.000.
- Aoki, Iwao: *See—*
  - Araki, Tokio; and Aoki, Iwao, 4,616,443, Cl. 49-252.000.
- Aonuma, Masashi; and Tamai, Yasuo, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,617,234, Cl. 428-328.000.
- Aoyagi, Hirofumi: *See—*
  - Nagai, Kazutoshi; and Aoyagi, Hirofumi, 4,616,368, Cl. 4-420.200.
- Aplix S.A.: *See—*
  - Billarant, Patrick J., 4,617,214, Cl. 428-40.000.
- Aprica Kassai Kabushikikaisha: *See—*
  - Kassai, Kenzou, 4,616,371, Cl. 5-99.00A.
  - Kassai, Kenzou, 4,616,844, Cl. 280-650.000.
- Arai, Shinichi: *See—*
  - Sakaue, Shiyuki; Sugimoto, Koichi; and Arai, Shinichi, 4,617,502, Cl. 318-568.000.
- Arai, Shoji; Tamano, Yutaka; and Tsutsumi, Yukihiro, to Toyo Soda Manufacturing Co., Ltd. Catalyst for polyurethane having delay property. 4,617,286, Cl. 502-167.000.
- Arai, Takao: *See—*
  - Noguchi, Takaharu; Kobayashi, Masaharu; Arai, Takao; and Shibuya, Toshifumi, 4,617,599, Cl. 360-32.000.
- Arakawa, Satoshi, to Fuji Photo Optical Co., Ltd. Endoscope with an obtusely angled connecting section. 4,616,630, Cl. 128-4.000.
- Arakawa, Shunsuke; and Suzuki, Hiroya, to Hitachi Metals, Ltd. Magnetic direction sensor. 4,616,424, Cl. 33-361.000.
- Arakawa, Yoshichika: *See—*
  - Ogasawara, Tsunehiko; Arakawa, Yoshichika; Sumiya, Koji; and Sakaguchi, Yoshikazu, 4,616,531, Cl. 74-866.000.
- Araki, Tokio; and Aoki, Iwao, to Sankyo Aluminium Industry Company Limited. Reversible window structure. 4,616,443, Cl. 49-252.000.
- Araki, Toshiyuki: *See—*
  - Kyomasu, Mikio; Araki, Toshiyuki; Fukunaga, Shinobu; and Shindo, Masahiro, 4,617,649, Cl. 365-189.000.
- Arao, Kozo; and Saitoh, Keishi, to Canon Kabushiki Kaisha. Photoconductive member of a Ge-Si layer and Si layer. 4,617,246, Cl. 430-65.000.
- Arbed S.A.: *See—*
  - Schleich, Jean-Baptiste; Lahoda, Erwin; and Lickes, Jean-Paul, 4,616,464, Cl. 52-723.000.
- Archimandritis, Spyridon C.: *See—*
  - Tsolis, Alexandros K.; and Archimandritis, Spyridon C., 4,617,184, Cl. 424-1.100.
- Argant, Yves: *See—*
  - Lacroix, Roger; and Argant, Yves, 4,616,550, Cl. 84-173.000.
- Arimoto, Shinobu: *See—*
  - Yoshida, Tadashi; Shimizu, Katsuichi; Arimoto, Shinobu; Maeshima, Katsuyoshi; Nagashima, Nao; and Watanabe, Asao, 4,617,596, Cl. 358-280.000.
- Artiano, Adrian, to Beloit Corporation. Method of and apparatus for debarking wood chips. 4,616,785, Cl. 241-26.000.
- Aryho, S.A.: *See—*
  - Agos, Angel, 4,616,688, Cl. 160-176.00R.
- Asahi Glass Company Ltd.: *See—*
  - Manabe, Tsuneo; Kobayashi, Shigeyoshi; and Kijimuta, Hitoshi, 4,617,279, Cl. 501-10.000.
  - Sato, Kimihiko; Sajima, Yasuo; Nakao, Makoto; and Iwamoto, Junjiro, 4,617,101, Cl. 204-252.000.
- Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
  - Nagashima, Hironobu; and Koyama, Hiroshi, 4,616,636, Cl. 128-23.000.
- Asahi Yukizai Kogyo Co., Ltd.: *See—*
  - Sano, Nichiro; and Ogawa, Hirotoshi, 4,616,804, Cl. 251-267.000.
- Asai, Takashi: *See—*
  - Satoh, Toshio; Miyataka, Hideki; Masamoto, Yukimitsu; Asai, Takashi; Hasegawa, Kenji; and Kakegawa, Hisao, 4,617,292, Cl. 514-27.000.
- Asaka, Masayuki: *See—*
  - Shinohe, Takashi; and Asaka, Masayuki, 4,617,583, Cl. 357-38.000.
- Asano, Tetsuji; Kodama, Keiichi; and Shigeki, Terumitsu, to Toyoda Gosei Co., Ltd. Hydraulic brake hose. 4,617,213, Cl. 428-36.000.
- Ashikaga, Tadashi; Kamanaka, Yoshihide; and Fushimi, Keiko, to Kabushiki Kaisha Meidensha. Digital PWMed pulse generator. 4,617,675, Cl. 375-22.000.
- Ashjian, Henry: *See—*
  - Horodysky, Andrew G.; and Ashjian, Henry, 4,617,133, Cl. 252-32.500.
- Ashland Oil, Inc.: *See—*
  - Goel, Anil, 4,617,391, Cl. 544-222.000.
- Ashton, Wallace; Walton, Edward; and Tolman, Richard L., to Merck & Co., Inc. Purine derivatives. 4,617,304, Cl. 514-261.000.
- Aslan, Ozay, to Cochrane-Dunlop Limited. Pegboard hangers. 4,616,753, Cl. 211-57.100.
- Asrar, Jawed: *See—*
  - Blumstein, Alexandre; and Asrar, Jawed, 4,617,371, Cl. 528-194.000.
- ASV Corporation: *See—*
  - Lemke, Gary, 4,616,724, Cl. 180-6.480.

- AT&T Bell Laboratories: *See—*
  - Blonder, Greg E.; Lamola, Angelo A.; and Lieberman, Robert A., 4,617,608, Cl. 361-291.000.
  - Chin, Aland K.; Singh, Shobha; Uitert, LeGrand G. V.; and Zydzik, George J., 4,617,192, Cl. 427-42.000.
  - DePaolis, Michael V., Jr., 4,617,477, Cl. 307-443.000.
  - Jayant, Nuggehally S.; and Ramamoorthy, Venkatasubbarao, 4,617,676, Cl. 375-27.000.
  - MacChesney, John B.; Simpson, Jay R.; and Walker, Kenneth L., 4,616,901, Cl. 350-96.340.
  - Prezas, Dimitrios P.; and Zimmerman, Gustavus H., III, 4,616,659, Cl. 128-706.000.
- AT&T Information Systems Inc.: *See—*
  - Lake, Carole J.; Shanley, James J.; and Silverstein, Steven M., 4,617,663, Cl. 371-25.000.
- AT&T Technologies, Inc.: *See—*
  - Cushman, Robert H., 4,616,414, Cl. 29-835.000.
- Atlantic Hydrodynamics, Inc.: *See—*
  - Hynes, Maurice A.; and Freeman, Roger L., 4,616,979, Cl. 417-231.000.
- Atochem: *See—*
  - Augustin, Daniel; Leriche, Christian; and Poisson, Pierre, 4,617,354, Cl. 525-301.000.
  - Laine, Antoine; and Senez, Claude, 4,617,341, Cl. 524-591.000.
- Au, Kenneth K., to Motorola, Inc. High speed data synchronizer which minimizes circuitry. 4,617,480, Cl. 307-480.000.
- Aucouturier, Jeanne J.: *See—*
  - Leboutet, Hubert P.; and Aucouturier, Jeanne J., 4,617,494, Cl. 315-5.410.
- Audureau, Joel: *See—*
  - Gloriod, Pierre; Audureau, Joel; and Pellegrini, Maurice, 4,617,366, Cl. 526-272.000.
- Auer, John H., Jr.; Sibley, Henry C.; and Stewart, Leslie C., to General Signal Corporation. Vital message system with unique function identification. 4,617,662, Cl. 371-25.000.
- Augat Inc.: *See—*
  - Stokoe, Philip T.; Cleaver, Glenn N.; and Boulais, Dennis R., 4,616,410, Cl. 29-743.000.
- Augustin, Daniel; Leriche, Christian; and Poisson, Pierre, to Atochem. Adhesive compositions with thermoreversible crosslinking and uses therefor. 4,617,354, Cl. 525-301.000.
- Aunstrup, Knud: *See—*
  - Olsen, Frank; and Aunstrup, Knud, 4,617,273, Cl. 435-232.000.
- Aurki, S. Coop. Ltda.: *See—*
  - Rementeria, Manuel B., 4,616,507, Cl. 73-431.000.
- Austin, Billy W.: *See—*
  - Owensby, Joseph E.; Dobbins, Frederick A.; and Austin, Billy W., 4,616,472, Cl. 53-459.000.
- Auto/Con: *See—*
  - Matheson, Ronald R.; and Hucul, Daniel E., 4,616,978, Cl. 417-2.000.
- Autoflug GmbH: *See—*
  - Sedlmayr, Gerhard, 4,616,850, Cl. 280-808.000.
- AWB, Inc.: *See—*
  - Axford, Robert A.; Wood, Edgar C., Jr.; and Brandana, Herbert F., 4,616,537, Cl. 82-5.000.
- Axford, Robert A.; Wood, Edgar C., Jr.; and Brandana, Herbert F., to AWB, Inc. Pipe connection. 4,616,537, Cl. 82-5.000.
- B. F. Goodrich Company, The: *See—*
  - Myers, Ronald E., 4,617,353, Cl. 525-245.000.
  - Shah, Pravinchandra K.; and Antlfinger, George J., 4,617,230, Cl. 428-288.000.
- Babcock-Hitachi Kabushiki Kaisha: *See—*
  - Kotaka, Ikuo, 4,616,697, Cl. 165-104.140.
- Babcock & Wilcox Company, The: *See—*
  - Beauregard, Richard J.; and Boyd, John B., 4,616,393, Cl. 29-423.000.
  - Bohl, Thomas L., 4,617,277, Cl. 436-34.000.
- Babisch, Guenter: *See—*
  - Strehler, Richard; and Babisch, Guenter, 4,616,730, Cl. 180-253.000.
- Bacchelli, Luciano. Field producing instrument for the electrotherapeutic self-treatment of pain and insomnia. 4,616,654, Cl. 128-391.000.
- Bach, Lars; and Stark, Eduard, to Her Majesty the Queen in right of the Province of Alberta as represented by the Minister of Energy and Natural Resources. Apparatus for the manufacture of a corrugated wafer board panel. 4,616,991, Cl. 425-396.000.
- Baciu, Antoine; Jadamus, Hans; and Bittscheidt, Josef, to Cibie Projecteurs; and Chemische Werke Huls Aktiengesellschaft. Headlamp reflectors for automobile vehicles manufactured by injection molding according to the coinjection process using poly(alkylene terephthalate). 4,617,618, Cl. 362-341.000.
- Back, Gerhard; Beffa, Fabio; and Buhler, Arthur, to Ciba-Geigy Corporation. 8-hydroxyquinoline sulfonic acid-azo chromium complexes. 4,617,382, Cl. 534-693.000.
- Bagli, Jehan F.; and Peseckis, Steven M., to American Home Products Corporation. 5-substituted-6-aminopyrimidines, composition and uses as cardiotonic agents for increasing cardiac contractility. 4,617,393, Cl. 544-319.000.
- Baker, David M.: *See—*
  - Drynan, David S.; and Baker, David M., 4,617,657, Cl. 370-60.000.
- Baker, John C., to AEPLC. Structural bearings. 4,616,884, Cl. 384-7.000.
- Baker Oil Tools, Inc.: *See—*
  - Stout, Gregg W.; and Myers, William D., Jr., 4,616,701, Cl. 166-55.100.
- Baker, Robert G., to Nordson Corporation. Electrical connector for hot melt hose unit and gun. 4,616,894, Cl. 339-15.000.
- Baldi, Alfonso L., to Alloy Surfaces Company, Inc. Diffusion coating mixtures. 4,617,202, Cl. 427-253.000.
- Baldt-Incorporated: *See—*
  - Albertini, Rocco D.; Clements, Ralph E.; and Grzeczkowski, Thomas V., 4,616,590, Cl. 114-230.000.
- Balistee, Brian G.: *See—*
  - Tracy, David H.; and Balistee, Brian G., 4,617,079, Cl. 156-345.000.
- Ball, Lewis C.; and Delia, Anthony F., to Total Air, Inc. Gaseous fluid distribution devices. 4,616,558, Cl. 98-40.110.
- Ballachey, John M.; Jankowski, Leon V.; Johnson, C. W.; Ward, George S.; and Ward, John R., to Suncor Inc. Slant service rig. 4,616,454, Cl. 52-115.000.
- Balthazor, Terry M.; and Pulwer, Mitchell J., to Monsanto Company. α-Substituted N-phosphonomethyliminodiacetic acid. 4,617,415, Cl. 558-169.000.
- Bandurco, Victor T.; Bell, Stanley C.; Combs, Donald W.; and Falotico, Robert, to Ortho Pharmaceutical Corporation. 4-alkyl-5,6-methylenedioxy-2-1[H]-quinazolinones useful as cardiotonic agents. 4,617,392, Cl. 544-250.000.
- Baptist Medical Center of Oklahoma, Inc.: *See—*
  - Richard, Gordon L., 4,617,536, Cl. 332-37.00D.
- Bardoll, Meinrad, to Dr.Ing. h.c.F. Porsche Aktiengesellschaft. 4/3-directional control valve. 4,616,674, Cl. 137-596.180.
- Bardos, Thomas J.; and Perlman, Michael E., to Research Foundation of State University of New York, The. Phosphoaziridine compounds useful for treatment of tumors. 4,617,398, Cl. 548-112.000.
- Barfield, J. David. Key combination lock. 4,616,492, Cl. 70-284.000.
- Barfurth, Dieter: *See—*
  - Nestler, Heinz; and Barfurth, Dieter, 4,617,408, Cl. 556-40.000.
- Barker, Brian: *See—*
  - Brain, Michael; Wade, Richard D.; and Barker, Brian, 4,616,467, Cl. 53-134.000.
- Barlow, Raymond S., to Pure Air Inc. Variable air diffuser. 4,616,559, Cl. 98-40.110.
- Barnes, James M.: *See—*
  - Haas, Peter; Barnes, James M.; and Goyert, Wilhelm, 4,617,387, Cl. 544-74.000.
- Barnie, James W.: *See—*
  - Rudko, Robert I.; and Barnie, James W., 4,617,668, Cl. 372-59.000.
- Barrett, Sharon S.: *See—*
  - Whiteley, Gordon R.; Pritchard, Cynthia G.; and Barrett, Sharon S., 4,617,264, Cl. 435-34.000.
- Barton, Donald L.: *See—*
  - Conley, Richard A.; and Barton, Donald L., 4,617,417, Cl. 560-29.000.
- Barzuza, Ytzhak; and Lerner, Boaz, to Filtration Water Filters for Agriculture and Industry, Ltd. Filter element for filtering fluids. 4,617,120, Cl. 210-409.000.
- BASF Aktiengesellschaft: *See—*
  - Dockner, Toni; Hagen, Helmut; and Krug, Herbert, 4,617,395, Cl. 546-178.000.
  - Eicken, Karl; Graf, Hermann; Gramlich, Walter; Sauter, Hubert; Rentzea, Costin; Pommer, Ernst-Heinrich; and Ammermann, Eberhard, 4,617,303, Cl. 514-258.000.
  - Hoppe, Udo; Seib, Karl; Naegele, Paul; and Martin, Roland, 4,617,390, Cl. 544-197.000.
  - Horn, Peter; Baumann, Edwin; Marx, Matthias; and Gerarts, Peter, 4,617,225, Cl. 428-215.000.
  - Jahn, Dieter; Becker, Rainer; Keil, Michael; Himmele, Walter; and Wuerzer, Bruno, 4,617,050, Cl. 71-98.000.
- Bassler, Jurgen: *See—*
  - Siekmann, Helmut E.; Bassler, Jurgen; and Liebig, Winfried, 4,617,130, Cl. 210-748.000.
- Battiston, Joseph, to Tubular Fabricators, Industry, Inc. Invalid device having interlocking telescoping members. 4,616,668, Cl. 135-75.000.
- Baumann, Edwin: *See—*
  - Horn, Peter; Baumann, Edwin; Marx, Matthias; and Gerarts, Peter, 4,617,225, Cl. 428-215.000.
- Baumeler, Markus, to Sulzer Brothers Limited. Pneumatic servomotor. 4,616,477, Cl. 60-415.000.
- Bausch & Lomb Incorporated: *See—*
  - Esmay, Edward N., 4,616,517, Cl. 74-10.450.
- Baxter Travenol Laboratories, Inc.: *See—*
  - Kersten, Jean; and Mathias, Jean M., 4,616,760, Cl. 215-232.000.
  - Rollins, Richard A.; Sluga, Thomas J.; and Tobiasz, Henry, 4,617,161, Cl. 264-136.000.
  - Tseng, Charles C.; and Lynn, Kenneth, 4,616,802, Cl. 251-7.000.
- Bayer Aktiengesellschaft: *See—*
  - Eichenauer, Herbert; and Ott, Karl-Heinz, 4,617,358, Cl. 526-81.000.
  - Freitag, Dieter; Bottenbruch, Ludwig; and Hucks, Uwe, 4,617,368, Cl. 528-126.000.
  - Haas, Peter; Barnes, James M.; and Goyert, Wilhelm, 4,617,387, Cl. 544-74.000.
  - Kohler, Peter; Ringe, Peter; and Heine, Heinrich, 4,617,061, Cl. 106-302.000.
  - Kossmehl, Gerhard; and Hocker, Jurgen, 4,617,143, Cl. 252-500.000.
  - Podszun, Wolfgang, 4,617,327, Cl. 523-116.000.
  - Ullrich, Martin; Hederich, Manfred; and Wingler, Frank, 4,617,089, Cl. 159-43.100.
- Bayerische Motoren Werke AG: *See—*
  - Deicke, Axel; and Tigges, Michael, 4,617,510, Cl. 324-51.000.

Bazelaire, Bernard; and Clebant, Jean-Claude, to Commissariat a l'Energie Atomique. Automatic autonomous apparatus for the fast production of polyurethane foam. 4,617,174, Cl. 422-133.000.

Beacon, George: *See—*

Blumenthal, Scott; and Beacon, George, 4,616,776, Cl. 232-4.00R.

Beauregard, Richard J.; and Boyd, John B., to Babcock & Wilcox Company, The. Apparatus and method for rolling a metal matrix composite plate or sheet. 4,616,393, Cl. 29-423.000.

Beaussant, Raymond, to Intertechnique. Compensated valve for breathing system. 4,616,646, Cl. 128-205.240.

Bechtel International Corporation: *See—*

Wallace, Norman R.; and Jones, Edgerton G., 4,616,955, Cl. 405-158.000.

Beck, James P.: *See—*

Himmelstein, Sydney; Tveter, Richard S.; and Beck, James P., 4,616,512, Cl. 73-862.360.

Beckenbach, Walter; and Rinderle, Heinz, to Telefunken Electronic GmbH. Integrated amplifier circuit having RC network to suppress oscillation. 4,617,524, Cl. 330-307.000.

Becker, Larry W.; and Larson, Eric H., to Allied Corporation. Inverse emulsion polymers with improved incorporation of diallyldimethylammonium chloride. 4,617,362, Cl. 526-209.000.

Becker, Peter: *See—*

Kircher, Dieter; von Gruenberg, Hubertus; Blum, Klaus D.; and Becker, Peter, 4,616,727, Cl. 180-142.000.

Becker, Rainer: *See—*

Jahn, Dieter; Becker, Rainer; Keil, Michael; Himmele, Walter; and Wuerzer, Bruno, 4,617,050, Cl. 71-98.000.

Becton, Dickinson and Company: *See—*

Burns, James A., 4,616,649, Cl. 128-314.000.

Beffa, Fabio: *See—*

Back, Gerhard; Beffa, Fabio; and Buhler, Arthur, 4,617,382, Cl. 534-693.000.

Beghin-Say S.A.: *See—*

Pigneul, Raymond; Pannier, Dominique; and Tresca, Benoit, 4,617,022, Cl. 604-391.000.

Behm, Dean T.: *See—*

Lenz, Robert W.; and Behm, Dean T., 4,617,370, Cl. 528-191.000.

Behrens, Hugh C., to Dow Chemical Company, The. Process for making salt coated magnesium granules. 4,617,200, Cl. 427-216.000.

Belanger, Robert J.; and Bisignano, Alan G., to Irvine Sensors Corporation. Method for fabricating modules comprising uniformly stacked, aligned circuit-carrying layers. 4,617,160, Cl. 264-40.100.

Beler-Dowiday GmbH Werkzeug-Union: *See—*

Knebel, Fritz; and Dassel, Rudolf, 4,616,536, Cl. 81-128.000.

Bell Communications Research, Inc.: *See—*

Walters, Stephen M., 4,617,658, Cl. 370-84.000.

Bell, Stanley C.: *See—*

Bandurco, Victor T.; Bell, Stanley C.; Combs, Donald W.; and Falotico, Robert, 4,617,392, Cl. 544-250.000.

Bell, Weldon K.; Haag, Werner O.; Kirker, Garry W.; and Klocke, Donald J., to Mobil Oil Corporation. Low nitrogen iron-containing Fischer-Tropsch catalyst for conversion of synthesis gas and process for preparing the catalyst. 4,617,288, Cl. 502-331.000.

Bellafiore, Gaspare. Hearing aid. 4,617,429, Cl. 179-107.00E.

Beloit Corporation: *See—*

Artiano, Adrian, 4,616,785, Cl. 241-26.000.

Rodal, Jose J. A.; and Ewald, James L., 4,617,091, Cl. 162-343.000.

Belouet, Christian, to Compagnie Generale d'Electricite; and Societe Nationale Elf Aquitaine. Device for depositing a layer of silicon on a carbon tape. 4,616,595, Cl. 118-405.000.

Beltran, Delfin J. Excess tubing retainer for a fluid or gas delivery system. 4,616,790, Cl. 242-85.100.

Bender, Larry J. Nursing bottle holder. 4,616,795, Cl. 248-103.000.

Bennet, Justin D. Method of treating ulcerative colitis. 4,617,317, Cl. 514-458.000.

Bentley, James W.: *See—*

Schwab, Gerhart; Lee, Mei-Tsu; and Bentley, James W., 4,617,099, Cl. 204-133.000.

Benton, Jerry A. Pipe thread protector. 4,616,679, Cl. 138-96.00T

Ber-Fong, Huang. Construction of a foaming machine. 4,616,936, Cl. 366-193.000.

Berfield, Robert C.; and Crevling, Robert, to Shop-Vac Corporation. Means for mounting floor pickup nozzle to dolly for vacuum cleaner. 4,616,378, Cl. 15-353.000.

Berg, Lars G.: *See—*

Ivarsson, Paul L.; Blom, Ingvar G. A.; and Berg, Lars G., 4,617,280, Cl. 501-84.000.

Berger, Jean-Luc, to Thomson-CSF. Process and apparatus for analyzing a photosensitive device having an interline-transfer structure. 4,617,595, Cl. 358-213.000.

Bergland, James H. Playing ball. 4,616,827, Cl. 273-58.00A.

Bernelin, Bernard; and de Salaberry, Bernard, to Ste. Francaise d'Equipements pour la Navigation Aerienne. Compact, integral, 6-mirror, triaxial, laser rate gyro. 4,616,929, Cl. 356-350.000.

Bert, Alain; and Mamodaly, Narguise, to Thomson CSF. Compact combiner for use with semiconductor devices in the microwave frequency range. 4,617,528, Cl. 331-56.000.

Berta, Dominic A., to Hercules Incorporated. Tire containing improved liner. 4,616,686, Cl. 152-510.000.

Berta, Dominic A., to Hercules Incorporated. Tire containing improved liner. 4,616,687, Cl. 152-510.000.

Berthiller, Franz. Biomass incinerator. 4,616,572, Cl. 110-254.000.

Bessin, Pierre; and Bonnet, Jacqueline, to Albert Rolland, S.A. Pharmaceutical compositions having immuno-suppressive properties. 4,617,315, Cl. 514-427.000.

Best Lock Corporation: *See—*

Best, Walter E.; and Foshee, William R., 4,616,394, Cl. 29-436.000.

Best, Walter E.; and Foshee, William R., to Best Lock Corporation. Method of lock capping. 4,616,394, Cl. 29-436.000.

Bethlehem Steel Corporation: *See—*

Krause, Richard H.; Pfeiffer, Thomas J.; and Horvath, Vincent V., 4,617,638, Cl. 364-557.000.

Bethmann, Karl W.: *See—*

Montier, Patrick; Sauvestre, Jean-Claude; Bethmann, Karl W.; Bisping, Bernhard; and Wallow, Peter, 4,616,569, Cl. 102-517.000.

Romer, Rudolf; Bethmann, Karl W.; Jaeneke, Christian; and Moll, Manfred, 4,616,567, Cl. 102-489.000.

Betz, John J. E., to Timron Instruments, Incorporated. Method and apparatus for surgical irrigation, aspiration and illumination. 4,617,013, Cl. 604-39.000.

Beutel, Achim, to Weissenfeld-Richters, H. Seal ring with tippably supported guide ring. 4,616,837, Cl. 277-153.000.

Bevilacqua, Bruce W.; Klug, Ralph W.; Carlsen, David C.; and Dinucci, Dennis J., to Westinghouse Electric Corp. Multi-spindle rotopeening apparatus. 4,616,498, Cl. 72-53.000.

BICC Public Limited Company: *See—*

Hagger, John M. R., 4,617,422, Cl. 174-23.00C.

Bicron Corporation: *See—*

Johnston, Joseph G., 4,617,680, Cl. 377-10.000.

Bidoia, Vincenzo, to Nordica S.p.A. Compact size actuating knob for adjusting and closure devices, particularly in ski boots. 4,616,524, Cl. 74-553.000.

Bienfait, Charles, to Solvay & Cie. Process for the polymerization of α-olefins. 4,617,360, Cl. 526-114.000.

Biermann, Udo K. P.: *See—*

Haisma, Jan; Heller, Petrus; Pasmans, Johannes M. M.; and Biermann, Udo K. P., 4,617,206, Cl. 427-374.100.

Bigg, Dennis; Morel, Claude; and Sevrin, Mireille, to Synthelabo. Alpha$_2$-antagonistic 2-(4,5-dihydro-1H-imidazol-2-yl)-pyrrolo[3,2,1-hi]indoles. 4,617,313, Cl. 514-402.000.

Billarant, Patrick J., to Aplix S.A. Strip or similar element for being attached to and covered by a molded article and method. 4,617,214, Cl. 428-40.000.

Billet, Rene , to Valeo. Clutch cover assembly. 4,616,741, Cl. 192-70.180.

Bingham, David, to Intersil, Inc. CMOS backup power switching circuit. 4,617,473, Cl. 307-66.000.

BioResearch Inc.: *See—*

Kurtz, Robert J., 4,617,020, Cl. 604-321.000.

Bisignano, Alan G.: *See—*

Belanger, Robert J.; and Bisignano, Alan G., 4,617,160, Cl. 264-40.100.

Bisping, Bernhard: *See—*

Montier, Patrick; Sauvestre, Jean-Claude; Bethmann, Karl W.; Bisping, Bernhard; and Wallow, Peter, 4,616,569, Cl. 102-517.000.

Bittscheidt, Josef: *See—*

Baciu, Antoine; Jadamus, Hans; and Bittscheidt, Josef, 4,617,618, Cl. 362-341.000.

Bjornberg, Sten G.; Hjerten, Wilhelm E. S.; and Wadstrom, Torkel M., to Landstingens Inkopscentral Lic Ekonomisk Forening. Bacteria adsorbing composition. 4,617,326, Cl. 523-111.000.

BKW Handels-und Vertriebsgesellschaft: *See—*

Kirsten, Walter, 4,616,787, Cl. 241-275.000.

Bleau, Charles D.; Gasper, Andrew, Jr.; Perlini, Julius J.; and Stricker, Alfred A. Side flap fold apparatus for a disk envelope. 4,617,081, Cl. 156-443.000.

Blesinger, James E.: *See—*

Slaats, Mathew A.; and Blesinger, James E., 4,616,877, Cl. 297-353.000.

Bliamptis, Tim E.: *See—*

Eisenhaure, David B.; Downer, James R.; Bliamptis, Tim E.; Oberbeck, George A.; and Hendrie, Susan D., 4,617,507, Cl. 322-4.000.

Blocher, Eberhard; Grob, Ferdinand; Schmidt, Peter-Jurgen; and Wahl, Josef, to Robert Bosch GmbH. Apparatus for metering an air-fuel mixture to an internal combustion engine. 4,616,618, Cl. 123-478.000.

Blom, Ingvar G. A.: *See—*

Ivarsson, Paul L.; Blom, Ingvar G. A.; and Berg, Lars G., 4,617,280, Cl. 501-84.000.

Blomberg, Anders. Injection device. 4,617,016, Cl. 604-155.000.

Blonder, Greg E.; Lamola, Angelo A.; and Lieberman, Robert A., to AT&T Bell Laboratories. Variable gap device and method of manufacture. 4,617,608, Cl. 361-291.000.

Bloomer, Milton D., to General Electric Company. Reverse phase-control apparatus for multiplexing interconnections between power switching and control circuit modules. 4,617,508, Cl. 323-237.000.

Bloomquist, Ted C.: *See—*

Cannon, Raymond E.; and Bloomquist, Ted C., 4,617,014, Cl. 604-67.000.

Bloxom, Ingrid B., Jr. Intestinal irrigation system with flow indicator. 4,617,011, Cl. 604-27.000.

Blum, Klaus D.: *See—*

Kircher, Dieter; von Gruenberg, Hubertus; Blum, Klaus D.; and Becker, Peter, 4,616,727, Cl. 180-142.000.

Blumbergs, Peter; and LaMontagne, Maurice P., to United States of America, Army. 4-methyl-5-(unsubstituted and substituted phenoxy)-2,6-dimethoxy-8-(aminoalkylamino) quinolines. 4,617,394, Cl. 546-157.000.

Blumenkranz, Robert M.: *See—*

Tarbutton, Victor F.; Mitchell, J. Edwin; and Blumenkranz, Robert M., 4,617,522, Cl. 330-149.000.

Blumenthal, Scott; and Beacon, George. Receptacle attached to a parking meter for collection of monies on a mass location basis as donations for charitable purposes. 4,616,776, Cl. 232-4.00R.

Blumstein, Alexandre; and Asrar, Jawed, to Blumstein, Alexandre. Novel polymeric liquid crystals and methods for their preparation. 4,617,371, Cl. 528-194.000.

Board of Regents, University of Texas System: *See—*

Peterson, Johnny W., 4,617,265, Cl. 435-38.000.

Board of Trustees, Leland Stanford, Jr. University: *See—*

Kuhn, Kelin J., 4,617,669, Cl. 372-70.000.

Bober, Helmut; Buthe, Theo; Coenen, Karl; Fartmann, Norbert; Herbertz, Klaus; Koch, Heinz; Kretschmer, Horst; Nienhaus, Clemens; Schardt, Peter; Schibrowski, Jurgen; and Schmandt, Willi, to Jean Walterscheid GmbH. Adjustable friction clutch assembly. 4,617,003, Cl. 464-48.000.

Boberski, William G.; Nugent, Richard M.; and Koren, Jeffrey G., to PPG Industries, Inc. Water-dispersible polymers containing metal chelating groups. 4,617,331, Cl. 523-420.000.

Bock, Lawrence A.: *See—*

Muenchow, John R.; Bock, Lawrence A.; and Lewis, Roger N., 4,617,324, Cl. 521-96.000.

Boden, Richard M.: *See—*

Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,617,144, Cl. 252-522.00A.

Bodor, Nicholas S.; Estes, Kerry S.; and Simpkins, James W., to University of Florida. Method and compositions for weight control. 4,617,298, Cl. 514-176.000.

Boeing Company, The: *See—*

Chan, Yuen-Kwok, 4,617,567, Cl. 342-25.000.

Boes, Josef; and Saris, Leo, to Bulten-Kanthal GmbH. Process for manufacture of a vacuum-moulded electrical heating unit. 4,617,450, Cl. 219-345.000.

Boeve, Gerard J.; and De Cock, Etienne M., to Agfa-Gevaert N.V. Sheet imaging apparatus. 4,616,821, Cl. 271-213.000.

Bogie, Jon R.; and Quillen, Edward A., to Wiltronix Corporation. Battery charging apparatus and methods. 4,617,506, Cl. 320-2.000.

Bohl, Thomas L., to Babcock & Wilcox Company, The. Process and apparatus for monitoring ambient carbon monoxide. 4,617,277, Cl. 436-34.000.

Bohm, Jurgen: *See—*

Engelhard, Gerhard; Pellkofer, Dieter; Bohm, Jurgen; and Forner, Siegfried, 4,617,444, Cl. 219-75.000.

Bolz, Herbert: *See—*

Utner, Ferdinand; and Bolz, Herbert, 4,617,609, Cl. 361-310.000.

Bondar, Jerry. Replacement faucet handle kit. 4,616,673, Cl. 137-315.000.

Bone, Bertram T., Jr.: *See—*

Hinojos, Antonio R.; and Bone, Bertram T., Jr., 4,617,110, Cl. 208-211.000.

Bonnard, John A., to Leco Corporation. Apparatus for measuring thermal and other quantities of substances. 4,616,938, Cl. 374-38.000.

Bonnet, Jacqueline: *See—*

Bessin, Pierre; and Bonnet, Jacqueline, 4,617,315, Cl. 514-427.000.

Booher, Howard. Dump trailer with quiet cushions. 4,616,879, Cl. 298-10.000.

Bookvich, Steven. Nada drum and assembly. 4,616,551, Cl. 84-411.00A.

Borg-Warner Corporation: *See—*

Mott, Philip J., 4,617,004, Cl. 474-8.000.

Boris, Alfred; Partridge, John J.; and Uskokovic, Milan R., to Hoffmann-La Roche Inc. Method of treating disease states by the administration of 1α,25,26-trihydroxycholecalciferol. 4,617,297, Cl. 514-167.000.

Borror, Alan L.; Cincotta, Louis; and Lee, John W., Jr., to Polaroid Corporation. Novel xanthene compounds and their photographic use. 4,617,402, Cl. 548-455.000.

Bott, Arthur J.: *See—*

Lewis, James L., 4,616,970, Cl. 414-563.000.

Bottcher, Henning; Gottschlich, Rudolf; Hausberg, Hans-Heinrich; Seyfried, Christoph; and Minck, Klaus-Otto, to Merck Patent Gesellschaft mit beschrankter Haftung. Sulfur-containing indole derivatives. 4,617,309, Cl. 514-339.000.

Bottenbruch, Ludwig: *See—*

Freitag, Dieter; Bottenbruch, Ludwig; and Hucks, Uwe, 4,617,368, Cl. 528-126.000.

Boughton, Michael J., to Aluminum Company of America. Non-conductive plugger foot. 4,617,100, Cl. 204-245.000.

Boulais, Dennis R.: *See—*

Stokoe, Philip T.; Cleaver, Glenn N.; and Boulais, Dennis R., 4,616,410, Cl. 29-743.000.

Bouplon, Edward J., to Allied Steel & Tractor Products, Inc. Synchronous vibratory impact hammer. 4,616,716, Cl. 173-49.000.

Bowen, Richard M.: *See—*

Irwin, Christopher; and Bowen, Richard M., 4,617,166, Cl. 264-531.000.

Bowlds, Daniel P.; and Foster, Edward B., to General Electric Company. Directly modulated microwave oscillator having adjustable load coupling. 4,617,531, Cl. 331-96.000.

Boyd, Dana M.; and Bustin, Franz, to Mobil Oil Corporation. Method and apparatus for forming hems in superposed pliable panels. 4,617,008, Cl. 493-248.000.

Boyd, John B.: *See—*

Beauregard, Richard J.; and Boyd, John B., 4,616,393, Cl. 29-423.000.

Boyers, Charles L.; and Finlayson, John W., to Vetco Offshore Industries, Inc. Internal bore impression tool. 4,616,987, Cl. 425-89.000.

BP Chemicals Limited: *See—*

Green, Michael J., 4,617,154, Cl. 558-450.000.

Green, Michael J., 4,617,281, Cl. 502-62.000.

Green, Michael J.; and Kleiner, Gerhard A., 4,617,412, Cl. 556-446.000.

Braden, Rudolf: *See—*

Wolff, Erich; Langen, Hans; and Braden, Rudolf, 4,617,255, Cl. 430-553.000.

Brain, Michael; Wade, Richard D.; and Barker, Brian. Machine for inserting tabs in container packs. 4,616,467, Cl. 53-134.000.

Brandana, Herbert F.: *See—*

Axford, Robert A.; Wood, Edgar C., Jr.; and Brandana, Herbert F., 4,616,537, Cl. 82-5.000.

Brandt, Inc.: *See—*

Bryce, David R., 4,617,458, Cl. 235-449.000.

Braun, Camille; Danroc, Joel; Francois, Bernard; and Michel, Jean, to Commissariat a l'Energie Atomique. Process for treating a metal oxide powder. 4,617,158, Cl. 264-0.500.

Brauneck, Timothy W.: *See—*

Dilts, David A.; and Brauneck, Timothy W., 4,617,420, Cl. 136-244.000.

Bretzloff, Carl W., deceased (by Bretzloff, Lillian, executrix), to Campbell Soup Company. Mushroom supplement. 4,617,047, Cl. 71-5.000.

Bretzloff, Lillian, executrix: *See—*

Bretzloff, Carl W., deceased, 4,617,047, Cl. 71-5.000.

Breyer, Randall E.: *See—*

Hanaway, Roger D.; and Breyer, Randall E., 4,616,661, Cl. 130-27.0JT.

Bridgestone Corporation: *See—*

Hoshikawa, Kyofu; Ishiwatari, Seishiro; and Tanahashi, Mitsuru, 4,617,433, Cl. 200-86.00R.

Briggs, Cyril F. Golf club carrier and holder. 4,616,749, Cl. 206-315.200.

Brock, J. Donald. Drum mix asphalt plant with knock-out box and separate coater. 4,616,934, Cl. 366-4.000.

Brodzinski, Ronald L.; Perkins, Richard W.; Rieck, Henry G.; and Wogman, Ned A., to United States of America, Energy. Measurement of radionuclides in waste packages. 4,617,169, Cl. 376-257.000.

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Keogh, Michael J.; Wallace, Scott L.; and Brown, Geoffrey D., 4,617,338, Cl. 524-437.000.

Brown, Kenneth A., to Second Chance Systems, Inc. Emergency light and smoke alarm system. 4,617,561, Cl. 340-628.000.

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Hards, John E., 4,616,542, Cl. 83-155.000.

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Buck, Loren L., to Pro-Quip Corporation. Separating hydrocarbon gases. 4,617,039, Cl. 62-26.000.

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  - Heinzl, Burno; Frowein, Herbert; Stiegler, Hartmut; Wurz, Joachim; Schmidt, Horst; Huttel, Willi; and Schmitz, Karl-Heinz, 4,616,754, Cl. 211-71.000.
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- Bueno, Alfredo, to Dynapac AB. Brake arrangement for hydraulically powered vehicles. 4,616,882, Cl. 303-68.000.
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  - Back, Gerhard; Beffa, Fabio; and Buhler, Arthur, 4,617,382, Cl. 534-693.000.
- Buhlmann, Hans: *See—*
  - Welzel, Dieter; and Buhlmann, Hans, 4,617,306, Cl. 514-288.000.
- Buijsen, Johannes C. M., to U.S. Philips Corporation. Electric motor with a torsionally flexible rotor mount. 4,617,484, Cl. 310-51.000.
- Bullock, Donald F.; Wilson, Austin F.; Lemay, Marshall A.; and Miles, David B., to General Electric Company. Disk and gear mounting in electric watthour meter. 4,617,514, Cl. 324-137.000.
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  - Boes, Josef; and Saris, Leo, 4,617,450, Cl. 219-345.000.
- Buma, Shuuichi, to Toyota Jidosha Kabushiki Kaisha. Air suspension. 4,616,811, Cl. 267-35.000.
- Bunch, Richard P.; and Smith, Lloyd S., to Converse Inc. Shoe upper with lateral fastening arrangement. 4,616,432, Cl. 36-50.000.
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  - Zybko, Walter C., 4,617,210, Cl. 428-35.000.
- Burniski, Edward W.; and Jannuzzi, Michael A. Easy clean pet litter box. 4,616,598, Cl. 119-1.000.
- Burns, James A., to Becton, Dickinson and Company. Lancet. 4,616,649, Cl. 128-314.000.
- Burns, Stanley G., to Iowa State University Research Foundation. Moisture measurement apparatus and method. 4,616,425, Cl. 34-13.800.
- Burrough, Donald E.; and Viesselmann, Kim P., to Gehl Company. Forage blower having a removable outlet transition member. 4,616,961, Cl. 406-99.000.
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  - Buchwald, Paul K., Jr., 4,617,548, Cl. 338-325.000.
  - Subbarao, Wunnava V.; and Ely, Richard I., 4,617,461, Cl. 250-229.000.
- Burrows, Larry N.; and Gregory, Truman L. Pipeline padding machine. 4,616,957, Cl. 405-179.000.
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  - Costanzi, Silvestro; Traverso, Enrico; Podesta , Roberto; Gussoni, Damiano; and Busetto, Carlo, 4,617,333, Cl. 524-96.000.
- Bush, Bruce A.: *See—*
  - Washer, Stone P.; and Bush, Bruce A., 4,616,669, Cl. 137-1.000.
- Bustin, Franz: *See—*
  - Boyd, Dana M.; and Bustin, Franz, 4,617,008, Cl. 493-248.000.
- Buthe, Theo: *See—*
  - Bober, Helmut; Buthe, Theo; Coenen, Karl; Fartmann, Norbert; Herbertz, Klaus; Koch, Heinz; Kretschmer, Horst; Nienhaus, Clemens; Schardt, Peter; Schibrowski, Jurgen; and Schmandt, Willi, 4,617,003, Cl. 464-48.000.
- Butler, Donald E., to Warner-Lambert Company. 5-oxo-2-pyrrolidinepropanoic acid derivatives and use as cognition activators. 4,617,310, Cl. 514-343.000.
- Byer, Norman E.: *See—*
  - Chen, Wenpeng; and Byer, Norman E., 4,617,532, Cl. 331-107.00R.
- Byers, Stuart D.; and Clark, John F., to Crophandling Systems Limited. Storage vessel and method of assembly. 4,616,465, Cl. 52-748.000.
- C. A. Weidmuller GmbH & Co.: *See—*
  - Wiener, Hans; and Undin, Hans, 4,616,533, Cl. 81-9.410.
- Cabaud, Aime . Method of applying contacts to circuit support. 4,616,416, Cl. 29-884.000.
- Caddick, Mary J. Water craft and method for removing weeds and pollutants from navigable waters. 4,616,588, Cl. 114-162.000.
- Cadenhead, Roy A., Sr., to Modern Fibers, Inc. Non-directional, synthetic, outdoor carpet. 4,617,208, Cl. 428-17.000.
- Cadenhead, Roy A., Sr., to Modern Fibers, Inc. Tightly curled, cut pile, tufted carpet. 4,617,218, Cl. 428-92.000.
- Cairns, James L., to Lockheed-Corporation. Coaxial underwater electro-optical connector. 4,616,900, Cl. 350-96.200.
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  - Lowell, Ross; Seligman, Marvin; and Calamai, Edward, 4,616,384, Cl. 24-335.000.
- Cama, Lovji D.: *See—*
  - Christensen, Burton G.; Cama, Lovji D.; and Schmitt, Susan M., 4,617,152, Cl. 540-200.000.
- Camco, Incorporated: *See—*
  - Johnston, Russell A., 4,616,704, Cl. 166-242.000.
- Campbell, Bonnie J.: *See—*
  - Cunningham, James L.; and Campbell, Bonnie J., 4,616,391, Cl. 29-157.3AH.
- Campbell Soup Company: *See—*
  - Bretzloff, Carl W., deceased, 4,617,047, Cl. 71-5.000.
- Campolmi, Stefano: *See—*
  - Ugo, Renato; Campolmi, Stefano; and Carletti, Vittorio, 4,617,416, Cl. 558-242.000.
- Canada, Her Majesty the Queen in right of, as represented by the Minister of Energy, Mines & Resources: *See—*
  - Poirier, Marc-Andre, 4,617,062, Cl. 106-273.00R.
- Canadian Patents and Development Limited: *See—*
  - Brundrett, Ewart; and Brundrett, Laurence, 4,616,696, Cl. 165-54.000.
- Cannon, Raymond E.; and Bloomquist, Ted C., to Warner-Lambert Company. Dual mode I. V. infusion device. 4,617,014, Cl. 604-67.000.
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  - Akashi, Akira; and Yamada, Masanori, 4,617,459, Cl. 250-201.000.
  - Arao, Kozo; and Saitoh, Keishi, 4,617,246, Cl. 430-65.000.
  - Miyakawa, Akira, 4,617,580, Cl. 346-136.000.
  - Sakurai, Masaaki, 4,616,917, Cl. 355-3.0FU.
  - Someya, Hiromi; Aihara, Yoshihiko; Suzuki, Nobuyuki; and Mizogui, Toyokazu, 4,616,916, Cl. 354-442.000.
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  - Takahashi, Kazuo; Sato, Hiroshi; and Kosugi, Masao, 4,617,469, Cl. 250-548.000.
  - Tanaka, Shigemori; Sumino, Fumio; Kubo, Keiji; Hisamura, Masafumi; Toma, Hitoshi; and Fujimura, Naoto, 4,617,245, Cl. 430-58.000.
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  - Trubiano, Antoine, 4,616,839, Cl. 280-33.99R.
- Carl Hurth Maschinen und Zahnradfabrik GmbH & Co.: *See—*
  - Strehler, Richard; and Babisch, Guenter, 4,616,730, Cl. 180-253.000.
- Carletti, Vittorio: *See—*
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- Carlin, Richard T.: *See—*
  - Pez, Guido P.; and Carlin, Richard T., 4,617,029, Cl. 55-16.000.
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  - Bevilacqua, Bruce W.; Klug, Ralph W.; Carlsen, David C.; and Dinucci, Dennis J., 4,616,498, Cl. 72-53.000.
- Carpenter, Richard G., to Crane Co. Canned motor pumps pressurized recirculation system. 4,616,980, Cl. 417-357.000.
- Carrier Corporation: *See—*
  - Leonard, Gary S., 4,616,483, Cl. 62-115.000.
- Carter, Deborah H.: *See—*
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- Cash, David J., to Talman Home Federal Savings and Loan Association of Illinois, The. Money debit card application form and method of processing same. 4,616,852, Cl. 282-27.00R.
- Caspar, Peter: *See—*
  - Ehrlinger, Friedrich; Katzorek, Karl-Hermann; Dziuba, Peter; Veser, Karl; and Caspar, Peter, 4,616,520, Cl. 74-325.000.
- Caspar, Wolfhard; Lutze, Theodor; and Schwarz, Theodor, to Aesculap-Werke Aktiengesellschaft. Surgical instrument for the splaying of wound edges. 4,616,635, Cl. 128-20.000.
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  - Knell, Harvey A.; and Rumble, Lloyd B., 4,616,433, Cl. 37-141.00T.
  - O'Donohue, William T., 4,617,447, Cl. 219-124.310.
  - Staniak, Waldema A.; Samuelson, Robert E.; and Moncelle, Michael E., 4,616,616, Cl. 123-357.000.
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  - Paine, John C., 4,617,639, Cl. 364-569.000.
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  - Steinkuhl, Allan R.; and Cayton, Steven D., 4,616,671, Cl. 137-101.000.
- Cebulla, Norbert: *See—*
  - Riba, Gunther; and Cebulla, Norbert, 4,616,434, Cl. 38-140.000.
- Cederroths AB: *See—*
  - Adolfsson, Roger, 4,616,755, Cl. 211-89.000.
- Celanese Corporation: *See—*
  - Hagedorn, Scott, 4,617,156, Cl. 260-513.00R.
  - Rasoul, Husam A. A., 4,617,399, Cl. 548-152.000.
  - Scott, Bruce D.; and Watkins, James W., 4,617,194, Cl. 427-54.100.
- Central Glass Company, Limited: *See—*
  - Maeda, Kazuhiko; and Kawada, Akira, 4,617,350, Cl. 525-153.000.
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  - Corriu, Robert J.; Cerveau, Genevieve E.; Chuit, Claude G.; and Reye, Catherine, 4,617,413, Cl. 556-464.000.
  - Elissando, Bernard; Pereyre, Michel; and Quintard, Jean-Paul, 4,617,409, Cl. 556-87.000.
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  - Sheldon, Edward L., III; Levenson, Corey H.; Mullis, Kary B.; Rapoport, Henry; and Watson, Robert M., 4,617,261, Cl. 435-6.000.
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  - Leboutet, Hubert P.; and Aucouturier, Jeanne J., 4,617,494, Cl. 315-5.410.
- Chan, Yiu-Fai: *See—*
  - Hartmann, Robert F.; Wong, Sau-Ching; Chan, Yiu-Fai; and Ou, Jung-Hsing, 4,617,479, Cl. 307-465.000.
- Chan, Yuen-Kwok, to Boeing Company, The. Automatic motion compensation for residual motion in a synthetic aperture radar system. 4,617,567, Cl. 342-25.000.
- Chandler, Richard C.; and Amra, Lutfi H., to Kennecott Corporation. Corrosion and wear resistant graphite material. 4,617,232, Cl. 428-328.000.
- Chang, Gordon Kuo-Chon: *See—*
  - Chuang, Chiu-Hsiung, 4,617,541, Cl. 335-133.000.
- Chang, Phillip: *See—*
  - Adley, James M.; and Chang, Phillip, 4,616,919, Cl. 355-3.0DD.
- Chang, Y. Alice: *See—*
  - Funk, Edward W.; Kulkarni, Sudhir S.; and Chang, Y. Alice, 4,617,126, Cl. 210-651.000.
- Charbonnages de France: *See—*
  - Large, Jean F., 4,616,426, Cl. 34-57.00A.
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  - Eisenhaure, David B.; Downer, James R.; Bliamptis, Tim E.; Oberbeck, George A.; and Hendrie, Susan D., 4,617,507, Cl. 322-4.000.
- Charmilles Technologies, S.A.: *See—*
  - Martin, Roland, 4,617,443, Cl. 219-69.00C.
- Cheetham, Peter S. J.: *See—*
  - Rathbone, Elner B.; Hacking, Andrew J.; and Cheetham, Peter S. J., 4,617,269, Cl. 435-97.000.
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  - Baciu, Antoine; Jadamus, Hans; and Bittscheidt, Josef, 4,617,618, Cl. 362-341.000.
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  - Park, Kyong; and Chen, Hung-Chih, 4,617,607, Cl. 361-283.000.
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- Chen, Yu-Tsai: *See—*
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- Cheng, Tsung-Hua. Molding jack base. 4,616,807, Cl. 254-93.00H.
- Chevron Research Company: *See—*
  - Plavac, Frank, 4,617,137, Cl. 252-49.600.
  - Suh, Sung L.; Reeds, Carter B.; Van Scherpe, Peter; and Silcox, William H., 4,617,031, Cl. 55-52.000.
  - Wollenberg, Robert H., 4,617,138, Cl. 252-51.50A.
- Chiavon, Ezio R. Tamper-proof threaded fastenings. 4,616,535, Cl. 81-121.100.
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  - Drygalski, Gordon T.; Otto, Dennis L.; and Ross, Donald K., 4,616,836, Cl. 277-152.000.
- Chin, Aland K.; Singh, Shobha; Uitert, LeGrand G. V.; and Zydzik, George J., to AT&T Bell Laboratories. Process for making optical INP devices. 4,617,192, Cl. 427-42.000.
- Chirom-Werke GmbH: *See—*
  - Rutschle, Eugen; Haninger, Rudolf; and Winkler, Hans-Henning, 4,616,398, Cl. 29-568.000.
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  - Inoue, Hiromichi; Inukai, Takashi; Goto, Yasuyuki; Sato, Hideo; and Fukui, Masahiro, 4,617,141, Cl. 252-299.630.
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- Choquer, Jean; and Gartner, Thierry, to Societe Technique d'Applicatioon et de Recherche Electronique. Tuned band-switching loop antenna. 4,617,571, Cl. 343-744.000.
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- Christoff, Paul B., to Minigrip, Inc. Reclosable bag, material, and method of and means for making same. 4,617,683, Cl. 383-63.000.
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  - White, George E.; and Heckel, Dennis C., 4,616,522, Cl. 74-492.000.
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- Chuit, Claude G.: *See—*
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- Chum, Helena L.; Ratcliff, Matthew A.; and Palasz, Peter D., to United States of America, Energy. Process for producing peracids from aliphatic hydroxy carboxylic acids. 4,617,090, Cl. 162-16.000.
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  - Lees, Michael J., 4,617,129, Cl. 210-700.000.
- Ciba-Geigy Corporation: *See—*
  - Albert, Alban; Courbat, Pierre; and Weith, Andre , 4,617,296, Cl. 514-100.000.
  - Back, Gerhard; Beffa, Fabio; and Buhler, Arthur, 4,617,382, Cl. 534-693.000.
  - Browne, Leslie J., 4,617,307, Cl. 514-300.000.
  - Hinson, James W.; and Cleverdon, Jo A., 4,617,380, Cl. 534-576.000.
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  - Mayer, Carl W.; Kvita, Vratislav; and Pfeifer, Josef, 4,617,151, Cl. 540-1.000.
  - Pallie, Kemal D.; and Dessauges, Gerald, 4,617,357, Cl. 525-506.000.
  - Pastor, Stephen D.; and Odorisio, Paul, 4,617,336, Cl. 524-291.000.
  - Pfeifer, Josef, 4,617,375, Cl. 528-344.000.
  - Steinberg, David H.; and Cortolano, Frank, 4,617,404, Cl. 549-90.000.
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  - Baciu, Antoine; Jadamus, Hans; and Bittscheidt, Josef, 4,617,618, Cl. 362-341.000.
- Cincotta, Louis: *See—*
  - Borror, Alan L.; Cincotta, Louis; and Lee, John W., Jr., 4,617,402, Cl. 548-455.000.
- Clark, Jeffrey S., to Data General Corporation. Select switch responsive to a break code. 4,617,642, Cl. 364-900.000.
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- Cleaver, Glenn N.: *See—*
  - Stokoe, Philip T.; Cleaver, Glenn N.; and Boulais, Dennis R., 4,616,410, Cl. 29-743.000.
- Clebant, Jean-Claude: *See—*
  - Bazelaire, Bernard; and Clebant, Jean-Claude, 4,617,174, Cl. 422-133.000.
- Clegg, John E. Ultraviolet beam concentrator. 4,616,904, Cl. 350-432.000.
- Clegg, John E. Louvered convergent conical lens. 4,616,905, Cl. 350-432.000.
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  - Albertini, Rocco D.; Clements, Ralph E.; and Grzeczkowski, Thomas V., 4,616,590, Cl. 114-230.000.
- Cleverdon, Jo A.: *See—*
  - Hinson, James W.; and Cleverdon, Jo A., 4,617,380, Cl. 534-576.000.
  - Hinson, James W.; and Cleverdon, Jo A., 4,617,381, Cl. 534-576.000.
- Coal Industry (Patents) Limited: *See—*
  - Gibson, Harold; Lynch, Gordon; Mark, David; and Vincent, James H., 4,616,513, Cl. 73-863.230.
- Cochrane-Dunlop Limited: *See—*
  - Aslan, Ozay, 4,616,753, Cl. 211-57.100.
- Coenen, Karl: *See—*
  - Bober, Helmut; Buthe, Theo; Coenen, Karl; Fartmann, Norbert; Herbertz, Klaus; Koch, Heinz; Kretschmer, Horst; Nienhaus, Clemens; Schardt, Peter; Schibrowski, Jurgen; and Schmandt, Willi, 4,617,003, Cl. 464-48.000.
- Cohen, Mitchell S.: *See—*
  - Sachdev, Krishna G.; Afzali-Ardakani, Ali; Pennington, Keith S.; and Cohen, Mitchell S., 4,617,579, Cl. 346-135.100.
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  - Milliman, Keith, 4,616,622, Cl. 124-73.000.
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  - Bandurco, Victor T.; Bell, Stanley C.; Combs, Donald W.; and Falotico, Robert, 4,617,392, Cl. 544-250.000.
- Comdisco Resources, Inc.: *See—*
  - Hanson, Merle E.; Titchener, Paul F.; and Hamberlin, Clifford W., 4,616,702, Cl. 166-65.100.
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  - Bazelaire, Bernard; and Clebant, Jean-Claude, 4,617,174, Cl. 422-133.000.
  - Braun, Camille; Danroc, Joel; Francois, Bernard; and Michel, Jean, 4,617,158, Cl. 264-0.500.
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  - Feutrel, Claude, 4,617,171, Cl. 376-446.000.
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  - Mandelson, John; McCarthy, David J.; Sitnai, Oto; and Whitehead, Alan B., 4,617,107, Cl. 208-427.000.
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  - Krechel, Joseph L.; and Purvis, Michael J., 4,616,677, Cl. 137-881.000.
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  - Byers, Stuart D.; and Clark, John F., 4,616,465, Cl. 52-748.000.
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  - MacDonald, Lindsay W., 4,617,592, Cl. 358-80.000.
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  - Hodges, Paul L.; and Duerr, David R., 4,616,473, Cl. 53-520.000.
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  - Miranti, Joseph P., Jr.; Oliver, Larry R.; and Johnson, Clyde O., 4,617,007, Cl. 474-201.000.
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- Deicke, Axel; and Tigges, Michael, to Bayerische Motoren Werke AG. Testing installation for electric circuits of a motor vehicle. 4,617,510, Cl. 324-51.000.
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  - Christophersen, John A.; Marquardt, Fred J.; and Zipperian, Donald E., 4,617,113, Cl. 209-170.000.
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  - Rocholl, Johan P.; and De Jong, Hendrikus, 4,617,339, Cl. 524-514.000.
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- Dube, Carlos M.: *See—*
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  - Shaw, Richard G.; and Fahrer, Theodore J., 4,617,445, Cl. 219-98.000.
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  - Golden, Donald M., 4,616,651, Cl. 128-325.000.
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  - Srnka, Leonard J., 4,617,518, Cl. 324-365.000.
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- First National Bank of Boston, The: *See—*
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- Fischer, Stuart G.: *See—*
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- Foltz, Carl L., to Halkey-Roberts Corporation. Visual pressure indicator for endotracheal cuff. 4,617,015, Cl. 604-100.000.
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  - Seiler, Wayne H., 4,617,116, Cl. 210-137.000.
  - Ward, Marcus J. S., 4,616,862, Cl. 292-201.000.
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- Fuji Kogyo Co., Ltd.: *See—*
  - Ohmura, Ryuichi, 4,616,438, Cl. 43-24.000.
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  - Aonuma, Masashi; and Tamai, Yasuo, 4,617,234, Cl. 428-328.000.
  - Horikawa, Kazuo, 4,617,470, Cl. 250-561.000.
  - Nakakita, Eiji; Koike, Akinobu; Sekiya, Toshiyuki; Misu, Hiroshi; and Kita, Nobuyuki, 4,617,250, Cl. 430-175.000.
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  - Sawada, Satoru; and Ukai, Toshinao, 4,617,257, Cl. 430-560.000.
  - Shiraishi, Hisashi; Kato, Hisatoyo; and Miyahara, Junji, 4,617,468, Cl. 250-484.100.
  - Yamaguchi, Nobutaka; Utumi, Masahiro; Fujiyama, Masaaki; and Miyoshi, Takahito, 4,617,226, Cl. 428-216.000.
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  - Arakawa, Satoshi, 4,616,630, Cl. 128-4.000.
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  - Takahashi, Keiji; and Fujimoto, Sakae, 4,617,577, Cl. 346-76.0PH.
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- Fujita, Takashi: *See—*
  - Matsuura, Mitsuyuki; Fujita, Takashi; and Sakamoto, Yoshio, 4,617,284, Cl. 502-111.000.
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  - Matsuzaki, Yasuro; Fukushima, Toshitaka; and Ueno, Kouji, 4,617,653, Cl. 365-230.000.
  - Sakamoto, Yasuhiko, 4,617,660, Cl. 371-13.000.
  - Suzuki, Atsushi, 4,617,529, Cl. 331-57.000.
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  - Furuya, Kunitaka; Inagaki, Hiromi; Koga, Kiyoshi; Yorita, Masaru; Fukatsu, Tsunehiko; and Matsuura, Kazuo, 4,616,846, Cl. 280-673.000.
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  - Obrecht, Werner; Haghiri-Tehrani, Yahya; and Hoppe, Joachim, 4,617,605, Cl. 361-220.000.
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  - Choquer, Jean; and Gartner, Thierry, 4,617,571, Cl. 343-744.000.
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  - Stickler, David B., 4,617,042, Cl. 65-27.000.
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  - King, Michael C., 4,616,908, Cl. 350-576.000.
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  - Pietsch, Helge; Rink, Manfred; and Suss, Christian, 4,616,874, Cl. 297-321.000.
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  - Burrough, Donald E.; and Viesselmann, Kim P., 4,616,961, Cl. 406-99.000.
- Gehly, Joel C., to American Sterilizer Company. Reflector for multiple source lighting fixture. 4,617,619, Cl. 362-804.000.
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  - Tomm, Dagwin; Kolb, Dieter; Gehrig, Siegmund; and Meyer, Alfred, 4,616,744, Cl. 192-109.00R.
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  - Bloomer, Milton D., 4,617,508, Cl. 323-237.000.
  - Bowlds, Daniel P.; and Foster, Edward B., 4,617,531, Cl. 331-96.000.
  - Bryant, David V., 4,617,430, Cl. 179-146.00R.
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  - Crivello, James V.; and Eckberg, Richard P., 4,617,238, Cl. 428-452.000.
  - Davis, Richard K.; Roberts, Clayton R.; and Tehon, Stephen W., 4,617,503, Cl. 318-572.000.
  - Duncan, Dan, 4,616,975, Cl. 415-181.000.
  - Greenhalgh, Milton S., 4,617,454, Cl. 219-505.000.
  - Luthra, Krishan L., 4,617,492, Cl. 313-630.000.
  - Muralidharan, Ramachandran; and Rao, Atambir S., 4,617,168, Cl. 376-247.000.
  - Ray, Martin G.; and Harrold, Michael C., 4,617,028, Cl. 55-1.000.
  - Schenck, John F., 4,617,516, Cl. 324-318.000.
  - Sederel, Willem L., 4,617,345, Cl. 525-67.000.
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- General Motor Corporation: *See—*
  - Schweitzer, David C., 4,616,906, Cl. 350-486.000.
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  - Frey, Mark W.; King, Dallas E.; and Staker, William C., 4,616,527, Cl. 74-625.000.
  - Schmidt, Michael R., 4,616,672, Cl. 137-107.000.
  - Voss, Karl D., 4,616,691, Cl. 164-255.000.
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  - Auer, John H., Jr.; Sibley, Henry C.; and Stewart, Leslie C., 4,617,662, Cl. 371-25.000.
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  - Fahnestock, Stephen R., 4,617,266, Cl. 435-68.000.
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  - Jorn, Alfred, 4,616,508, Cl. 73-823.000.
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  - Alexoff, Randall L., 4,616,500, Cl. 72-283.000.
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  - Quinlan, Robert L., Jr.; and Lauro, Charles W., 4,616,824, Cl. 272-86.000.
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  - Adams, Norman R.; and Gifford, Charles A., 4,616,676, Cl. 137-636.400.
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- Ginster, Helmut, to Draftex Industries Limited. Sealing and trimming strips. 4,617,220, Cl. 428-122.000.
- Giocastro, James. Vented heading for window unit. 4,616,561, Cl. 98-97.000.
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Goel, Anil, to Ashland Oil, Inc. Triols from bicyclic amide acetals. 4,617,391, Cl. 544-222.000.
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Gala, Babulal V.; and McGough, Gerald B., 4,617,428, Cl. 179-100.00C.
Zrnich, Milan, 4,617,610, Cl. 361-415.000.
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Nagasawa, Hideo; Suzuki, Masao; and Hamano, Tsutomu, 4,616,942, Cl. 400-196.100.
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Hards, John E., to Brunette Machine Works, Ltd. Flying bucksaw apparatus. 4,616,542, Cl. 83-155.000.
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Douglas, Jack E., 4,616,864, Cl. 292-336.300.
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Hartness, Robert G. Apparatus for aligning and feeding articles upright on an article loading machine. 4,616,745, Cl. 198-442.000.
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Harvey, Vernon B. W. Irrigation or other machine having a rotatable drum carrying a hose or other flexible element wound thereon. 4,616,791, Cl. 242-86.200.
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  - Smeenge, Paul A.; Wilson, Harold R.; and Nelsen, Randy P., 4,616,798, Cl. 248-281.100.
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  - Makio, Tatsumi; Hayakawa, Kazumasa; and Sakaguchi, Genta, 4,616,819, Cl. 271-122.000.
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  - Moore, Alan R.; and Januszewski, Nicholas M., 4,616,580, Cl. 111-7.000.
- Haygood, Lawton C., to Lawton Haygood Corporation. Forced draft stove. 4,616,627, Cl. 126-77.000.
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  - Messinger, Robert; and Tobias, Samuel J., 4,617,117, Cl. 210-198.100.
- Heath, Rodney T. Methods and apparatus for separating gases and liquids from natural gas wellhead effluent. 4,617,030, Cl. 55-20.000.
- Heckel, Dennis C.: *See—*
  - White, George E.; and Heckel, Dennis C., 4,616,522, Cl. 74-492.000.
- Heckel, Thomas A., Jr.; and Rizzo, Felice J., to Du Pont de Nemours, E. I., and Company. Melt extrudable composition of perfluorocarbon polymers. 4,617,351, Cl. 525-199.000.
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  - Ullrich, Martin; Hederich, Manfred; and Wingler, Frank, 4,617,089, Cl. 159-43.100.
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- Heideman, Robert C., to AMCO Manufacturing Corporation. Modular luggage rack with accessories. 4,616,771, Cl. 224-321.000.
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  - Tomlinson, Ronald S., 4,616,994, Cl. 431-347.000.
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- Heine, Heinrich: *See—*
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- Heinemann, Fritz, to ZF-Herion Systemtechnik GmbH. Strain-wave transmission with tubular strain wheel. 4,616,529, Cl. 74-640.000.
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  - Knop, Klaus; and Heinrich, Peter, 4,617,051, Cl. 75-91.000.
- Heinzl, Burno; Frowein, Herbert; Stiegler, Hartmut; Wurz, Joachim; Schmidt, Horst; Huttel, Willi; and Schmitz, Karl-Heinz, to Buderus Aktiengesellschaft. Manufacture of tray holder from single molded article. 4,616,754, Cl. 211-71.000.
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  - Haisma, Jan; Heller, Petrus; Pasmans, Johannes M. M.; and Biermann, Udo K. P., 4,617,206, Cl. 427-374.100.
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  - Jaskowski, Michael C., 4,617,383, Cl. 536-2.000.
- Helmlinger, Daniel; Pesaro, Mario; and Klaus, Michael, to Givaudan Corporation. Substituted bicyclo[4.3.0]non-1(6)-en-8-yl methyl ketones and fragrance and flavor compositions. 4,617,146, Cl. 252-522.00R.
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  - Eisenhaure, David B.; Downer, James R.; Bliamptis, Tim E.; Oberbeck, George A.; and Hendrie, Susan D., 4,617,507, Cl. 322-4.000.
- Henkel Corporation: *See—*
  - Willging, Stephen M., 4,617,406, Cl. 549-413.000.
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- Herbertz, Klaus: *See—*
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  - Berta, Dominic A., 4,616,686, Cl. 152-510.000.
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  - Shields, Susan J., 4,617,148, Cl. 252-547.000.
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- Hewison, George D., to ITW Limited. Fastening assembly. 4,616,455, Cl. 52-127.120.
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  - Lloyd, William J., 4,616,408, Cl. 29-611.000.
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  - Kinoshita, Akihiro; Namariyama, Yohichi; and Higashi, Hiromi, 4,617,254, Cl. 430-326.000.
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  - Plungis, Donald W.; Seymour, Charles S.; and Higgins, William, 4,616,503, Cl. 73-55.000.
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  - Miyauchi, Masahiro; and Higuchi, Masahiro, 4,617,582, Cl. 346-208.000.
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  - Pruett, Wayne P.; Wang, Richard H. S.; Hilbert, Samuel D.; and Weaver, Max A., 4,617,373, Cl. 528-288.000.
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  - Hilfiker, William K., 4,616,959, Cl. 405-286.000.
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- Hinojos, Antonio R.; and Bone, Bertram T., Jr., to Phillips Petroleum Company. Control of a hydrofining process for hydrocarbon-containing feed streams which process employs a hydrodemetallization reactor in series with a hydrodesulfurization reactor. 4,617,110, Cl. 208-211.000.
- Hinson, James W.; and Cleverdon, Jo A., to Ciba-Geigy Corporation. Process for the preparation of concentrated stable liquid dye solutions of CI Direct Yellow 11 utilizing an extended surface silica filter aid during a desalting procedure. 4,617,380, Cl. 534-576.000.
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- Hiramatsu, Teruaki, to Nippon Zeon Co. Ltd. Process for controlling a distillation column. 4,617,092, Cl. 203-1.000.
- Hiramoto, Nobuo: *See—*
  - Taguchi, Takafumi; Nakano, Masahiro; Hiramoto, Nobuo; and Tominaga, Hideki, 4,616,599, Cl. 123-41.100.
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  - Fuyama, Moriaki; Tamura, Katsumi; Funyu, Isao; Nunokawa, Isao; Hanazono, Masanobu; and Hirastuka, Shigetoshi, 4,617,575, Cl. 346-76.0PH.
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- Hisamura, Masafumi: *See—*
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  - Fuyama, Moriaki; Tamura, Katsumi; Funyu, Isao; Nunokawa, Isao; Hanazono, Masanobu; and Hirastuka, Shigetoshi, 4,617,575, Cl. 346-76.0PH.
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  - Hiroshima, Minoru; Matsumoto, Shinzo; Sekino, Mitsuru; and Taniguchi, Yoshinori, 4,617,644, Cl. 365-36.000.
  - Inoue, Fumio; Eto, Masahiro; and Kubota, Takashi, 4,617,591, Cl. 358-67.000.
  - Kuboki, Shigeo; Maejima, Hideo; and Masuda, Ikuro, 4,617,648, Cl. 365-189.000.
  - Kuroiwa, Hiroshi; and Oyama, Yoshishige, 4,616,621, Cl. 123-585.000.
  - Nagashima, Shigeo; Abe, Hitoshi; and Hatakeyama, Yasuhiko, 4,617,625, Cl. 364-200.000.
  - Nakata, Yukio; Suda, Kaoru; Shiotsu, Osamu; and Morito, Motoyoshi, 4,617,565, Cl. 340-825.500.
  - Noguchi, Takaharu; Kobayashi, Masaharu; Arai, Takao; and Shibuya, Toshifumi, 4,617,599, Cl. 360-32.000.
  - Sakaue, Shiyuki; Sugimoto, Koichi; and Arai, Shinichi, 4,617,502, Cl. 318-568.000.
  - Tanioka, Kenkichi; Shidara, Keiichi; Kuriyama, Takao; Takasaki, Yukio; Hirai, Tadaaki; Nonaka, Yasuhiko; and Inoue, Eisuke, 4,617,248, Cl. 430-95.000.
  - Yasunobu, Seiji; Miyamoto, Shoji; and Ihara, Hirokazu, 4,617,627, Cl. 364-426.000.
  - Yasuoka, Hideki, 4,616,405, Cl. 29-578.000.
- Hitachi Metals, Ltd.: *See—*
  - Arakawa, Shunsuke; and Suzuki, Hiroya, 4,616,424, Cl. 33-361.000.
- Hitachi Zosen Corporation: *See—*
  - Yasuda, Kenji, 4,616,692, Cl. 165-1.000.
- Hjerten, Wilhelm E. S.: *See—*
  - Bjornberg, Sten G.; Hjerten, Wilhelm E. S.; and Wadstrom, Torkel M., 4,617,326, Cl. 523-111.000.
- Ho, Peter P. K., to Eli Lilly and Company. Antiasthmatic method. 4,617,311, Cl. 514-353.000.
- Ho, Roland K.: *See—*
  - Shak, Peter J.; and Ho, Roland K., 4,617,606, Cl. 361-283.000.
- Hobson, Willis S., to Seymour Manufacturing Company. Three axis corner bracket. 4,616,757, Cl. 211-189.000.
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  - Kossmehl, Gerhard; and Hocker, Jurgen, 4,617,143, Cl. 252-500.000.
- Hodges, Paul L.; and Duerr, David R., to Data Conversion Inc. Apparatus to place microfilm frames in jackets. 4,616,473, Cl. 53-520.000.
- Hoechst Aktiengesellschaft: *See—*
  - Reuter, Klaus, 4,616,923, Cl. 355-14.00E.
  - Rittner, Siegbert; Morach, Eugen; Schindler, Hubert; and John, Peter, 4,617,197, Cl. 427-180.000.
  - Spietschka, Ernst; and Urban, Manfred, 4,617,403, Cl. 549-56.000.
- Hoffgen, Hans. Gas bubble brick for metallurgical vessels. 4,616,809, Cl. 266-220.000.
- Hoffmann, Gottfried: *See—*
  - Hartmann, Werner; Hoffmann, Gottfried; and Reuland, Joachim, 4,616,662, Cl. 131-84.100.
- Hoffmann-La Roche Inc.: *See—*
  - Boris, Alfred; Partridge, John J.; and Uskokovic, Milan R., 4,617,297, Cl. 514-167.000.
  - Hubschwerlen, Christian N.; and Schmid, Gerard, 4,617,150, Cl. 540-364.000.
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  - Ivarsson, Paul L.; Blom, Ingvar G. A.; and Berg, Lars G., 4,617,280, Cl. 501-84.000.
- Hokuto MFG, Co., Ltd.: *See—*
  - Hoshi, Mitsuo, 4,616,678, Cl. 137-888.000.
- Holley, Kenneth: *See—*
  - Marietta, Charles F.; and Holley, Kenneth, 4,616,782, Cl. 239-752.000.
- Holt, Roy J., to United States of America, Energy. Polarized internal target apparatus. 4,617,462, Cl. 250-251.000.
- Holtz, Gilbert J. Readily assembled two-shelf cart. 4,616,756, Cl. 211-181.000.
- Holzmann, Rainer: *See—*
  - Giese, Peter; Holzmann, Rainer; Schwochert, Hans-Joachim; and Thomas, Alfred, 4,617,077, Cl. 156-245.000.
- Honda Giken Kogyo Kabushiki Kaisha: *See—*
  - Furuya, Kunitaka; Inagaki, Hiromi; Koga, Kiyoshi; Yorita, Masaru; Fukatsu, Tsunehiko; and Matsuura, Kazuo, 4,616,846, Cl. 280-673.000.
  - Ishida, Atsushi, 4,616,610, Cl. 123-196.00A.
  - Matsumoto, Yoshiyuki; and Maru, Hideki, 4,616,849, Cl. 280-724.000.
  - Shiga, Mitsuo, 4,616,608, Cl. 123-192.00B.
  - Suzuki, Toshifumi; Kawano, Toshio; Setoguchi, Ryoichi; Ishida, Toshio; and Mikami, Seiiti, 4,616,411, Cl. 29-822.000.
- Hoover Universal, Inc.: *See—*
  - Irwin, Christopher; and Bowen, Richard M., 4,617,166, Cl. 264-531.000.
- Hoppe, Joachim: *See—*
  - Haghiri-Tehrani, Yahya; and Hoppe, Joachim, 4,617,216, Cl. 428-67.000.
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- Hoppe, Udo; Seib, Karl; Naegele, Paul; and Martin, Roland, to BASF Aktiengesellschaft. S-triazine derivatives. 4,617,390, Cl. 544-197.000.
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- Horikawa, Youichi, to Yoshida Kogyo K. K. Method of cutting slide fastener chain. 4,616,539, Cl. 83-42.000.
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  - Nakamura, Keiichi; and Horiuchi, Hideyuki, 4,617,425, Cl. 179-6.110.
- Horn, Peter; Baumann, Edwin; Marx, Matthias; and Gerarts, Peter, to BASF Aktiengesellschaft. Sheet-like reinforced material. 4,617,225, Cl. 428-215.000.
- Horner, Joseph L. Capacitance measuring device including an overrange circuit. 4,617,512, Cl. 324-60.0CD.
- Hornung, Klaus; Alt, Anton; Schulte, Gunter; and Mahnig, Fritz, to Georg Fischer Aktiengesellschaft. Method for improving the immunity to temperature changes of cast iron containing lamellar graphite. 4,617,069, Cl. 148-138.000.
- Horodysky, Andrew G.; and Ashjian, Henry, to Mobil Oil Corporation. Friction reducing, antiwear additives. 4,617,133, Cl. 252-32.500.
- Horvath, Vincent V.: *See—*
  - Krause, Richard H.; Pfeiffer, Thomas J.; and Horvath, Vincent V., 4,617,638, Cl. 364-557.000.
- Hosaka, Tomiharu; Kishimoto, Yoshio; and Shimotsuma, Wataru, to Matsushita Electric Industrial Co., Ltd. Temperature sensitive polymer compositions. 4,617,356, Cl. 525-429.000.
- Hoshi, Katsuji, to NEC Corporation. Memory circuit. 4,617,647, Cl. 365-189.000.
- Hoshi, Mitsuo, to Hokuto MFG, Co., Ltd. Means for preventing water hammer in fluid-feeding system. 4,616,678, Cl. 137-888.000.
- Hoshikawa, Kyofu; Ishiwatari, Seishiro; and Tanahashi, Mitsuru, to Bridgestone Corporation; and Shinmei Rubber Ind., Co., Ltd. Pressure-sensitive conductive strip switch assembly and a method of manufacturing the same. 4,617,433, Cl. 200-86.00R.
- Hospal Industrie: *See—*
  - Vantard, Georges, 4,617,115, Cl. 210-90.000.
- Hospital for Sick Children, The: *See—*
  - Harwood-Nash, Derek C.; Fitz, Charles R.; Zouch, Edward T.; and Smith, John M., 4,616,814, Cl. 269-328.000.
- Hotset Heizpatronen und Zubehor GmbH: *See—*
  - Schwarzkopf, Eugen, 4,617,455, Cl. 219-523.000.
- Hotta, Toshiaki: *See—*
  - Nakamura, Shigenobu; Nimura, Takayasu; and Hotta, Toshiaki, 4,617,485, Cl. 310-65.000.
- Hotta, Yuji; Abe, Takao; Ishii, Fumio; Kitamura, Shigehiro; Koshizuka, Kunihiro; and Nakamura, Masaki, to Konishiroku Photo Industry Co., Ltd. Thermal transfer recording medium. 4,617,224, Cl. 428-212.000.
- Hough, Harold L., to GTE Products Corporation. Compact fluorescent lamp having internal thermally actuable means. 4,617,489, Cl. 313-13.000.
- Houle, Frances A.: *See—*
  - Chuang, Tung J.; Houle, Frances A.; and Petersen, Kurt E., 4,617,086, Cl. 156-643.000.
- Hoving, Klaas: *See—*
  - van der Vleugel, Dominicus J. M.; Hoving, Klaas; Wortel, Theodorus M.; Rosensweig, Ronald E.; and Rees, Lovat V. C., 4,617,282, Cl. 502-66.000.
- Howard, H. Keith; Sherrill, Jimmy L.; and Kirby, Robert L., to Tutco, Inc. Heater assembly. 4,617,547, Cl. 338-317.000.
- Hsieh, Shih-yung. Fireproof cabinet system for electronic equipment. 4,616,694, Cl. 165-47.000.
- Hsu, Dick Y. Wiring construction of a control switch controlling a ceiling fan. 4,617,500, Cl. 318-305.000.
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  - Chuang, Chiu-Hsiung, 4,617,541, Cl. 335-133.000.
- Hubbard, Vance M.; and Brunson, Welton K., to Tencol, Inc. Personal catheter leg strap. 4,617,017, Cl. 604-179.000.
- Huber, Rudolph A.: *See—*
  - Mancini, George M.; and Huber, Rudolph A., 4,616,547, Cl. 84-1.030.
- Huber, William C. Orthopedic belt with leg supports. 4,616,639, Cl. 128-99.000.
- Hubschwerlen, Christian N.; and Schmid, Gerard, to Hoffmann-La Roche Inc. β-lactams. 4,617,150, Cl. 540-364.000.
- Hucks, Uwe: *See—*
  - Freitag, Dieter; Bottenbruch, Ludwig; and Hucks, Uwe, 4,617,368, Cl. 528-126.000.
- Hucul, Daniel E.: *See—*
  - Matheson, Ronald R.; and Hucul, Daniel E., 4,616,978, Cl. 417-2.000.
- Hudgens, Rick D.: *See—*
  - Macksey, Harry M.; and Hudgens, Rick D., 4,616,400, Cl. 29-571.000.

- Huemer, Franz X. Arrangement for the supervision of weft threads on a circular loom. 4,616,681, Cl. 139-371.000.
- Huffaker, Roger W.; and Stanton, Paul N., to Exxon Production Research Co. Apparatus for performing subsea through-the-flowline operations. 4,616,706, Cl. 166-341.000.
- Hughes Aircraft Company: *See—*
  - Helber, Carlyle L., Jr.; and Ludwig, Frank A., 4,616,596, Cl. 118-603.000.
  - Jergenson, Jerg B., 4,617,203, Cl. 427-294.000.
  - Vasudev, Prahalad K., 4,617,066, Cl. 148-1.500.
- Hughes Tool Company: *See—*
  - Gambertoglio, Louis M., 4,616,718, Cl. 175-4.540.
  - Woodman, Daniel C.; and Neely, Stephen A., 4,616,857, Cl. 285-140.000.
- Hugo, Albert. Television dish antenna mounting structure. 4,617,572, Cl. 343-765.000.
- Hunter Douglas International N.V.: *See—*
  - Rocholl, Johan P.; and De Jong, Hendrikus, 4,617,339, Cl. 524-514.000.
- Huttel, Willi: *See—*
  - Heinzl, Burno; Frowein, Herbert; Stiegler, Hartmut; Wurz, Joachim; Schmidt, Horst; Huttel, Willi; and Schmitz, Karl-Heinz, 4,616,754, Cl. 211-71.000.
- Huynh-Ba, Gia, to Du Pont de Nemours, E. I., and Company. Polyester polymers of 3-hydroxy-4′-(4-hydroxyphenyl)benzophenone or 3,4′-dihydroxybenzophenone and dicarboxylic acids. 4,617,369, Cl. 528-128.000.
- Hwang, Sun-Tak, to University of Cincinnati. Method and apparatus for separating components of a mixture. 4,617,093, Cl. 203-100.000.
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  - Wood, John R.; Siska, Margaret M.; and Raymond, Patrick A., 4,616,700, Cl. 166-250.000.
- Hynes, Maurice A.; and Freeman, Roger L., to Atlantic Hydrodynamics, Inc. Mobile pump system. 4,616,979, Cl. 417-231.000.
- Ichihara, Yoshinobu: *See—*
  - Watanabe, Katsushi; Kageyama, Takafumi; Kano, Taisaku; Hirai, Koichi; and Ichihara, Yoshinobu, 4,617,367, Cl. 526-273.000.
- Ichinomiya, Yoshiaki: *See—*
  - Takenouchi, Tomoo; Ichinomiya, Yoshiaki; and Iwanami, Yoshiyuki, 4,617,052, Cl. 420-117.000.
- Ihara, Hirokazu: *See—*
  - Yasunobu, Seiji; Miyamoto, Shoji; and Ihara, Hirokazu, 4,617,627, Cl. 364-426.000.
- Iida, Norikazu: *See—*
  - Miura, Kengi; and Iida, Norikazu, 4,617,611, Cl. 361-433.000.
- Ikeda, Takasi: *See—*
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- Ikeda, Yasuo: *See—*
  - Saito, Koichi; Ueda, Kenji; Ikeda, Yasuo; and Ono, Tetsuji, 4,617,289, Cl. 502-339.000.
- Ikeya, Hirotoshi; and Hatanaka, Akiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Resin encapsulation type semiconductor device. 4,617,584, Cl. 357-72.000.
- Ikezaki, Katsuji; and Ishii, Kiyoshi, to Sharp Kabushiki Kaisha. Electric cleaner with minimum noise. 4,617,034, Cl. 55-276.000.
- Iliou, Louis; and Gotkovsky, Bruno, to Thomson-CSF. Process for manufacturing printed circuits with an individual rigid conductive metallic support. 4,616,413, Cl. 29-832.000.
- Imaje S.A.: *See—*
  - Millet, Jean-Claude; and Reynaud, Jean-Louis, 4,617,574, Cl. 346-75.000.
- IMCS Corporation: *See—*
  - Lutz, Erno B.; Weber, Bruce A.; and Markle, Jerry, 4,617,542, Cl. 335-196.000.
- Imperial Chemical Industries PLC: *See—*
  - Smith, Peter J., 4,617,163, Cl. 264-235.600.
- Inagaki, Hiromi: *See—*
  - Furuya, Kunitaka; Inagaki, Hiromi; Koga, Kiyoshi; Yorita, Masaru; Fukatsu, Tsunehiko; and Matsuura, Kazuo, 4,616,846, Cl. 280-673.000.
- Inagaki, Mitsuo; Takeda, Kenji; Iwanami, Shigeki; Sasaya, Hideaki; and Nagasaku, Eiichi, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Sliding-vane rotary compressor with specific cylinder bore profile. 4,616,984, Cl. 418-150.000.
- Industrial Innovations, Inc.: *See—*
  - Urbani, William G., 4,616,377, Cl. 15-302.000.
- Industrial Sheet Metal & Mechanical Corporation: *See—*
  - Fisher, Gary H.; and Padgett, H. Pat, 4,616,777, Cl. 236-44.00C.
- Ing Ludwig Pietzsch GmbH & Co.: *See—*
  - Pietzsch, Ludwig; Overlach, Knud; and Gassner, Siegfried, 4,616,723, Cl. 177-211.000.
- Inogon Licens AB: *See—*
  - Forsen, Ivan, 4,616,421, Cl. 33-233.000.
- Inoue, Eisuke: *See—*
  - Tanioka, Kenkichi; Shidara, Keiichi; Kuriyama, Takao; Takasaki, Yukio; Hirai, Tadaaki; Nonaka, Yasuhiko; and Inoue, Eisuke, 4,617,248, Cl. 430-95.000.
- Inoue, Fumio; Eto, Masahiro; and Kubota, Takashi, to Hitachi, Ltd. Chroma scanning circuit for use in beam index type color picture reproducing apparatus. 4,617,591, Cl. 358-67.000.
- Inoue, Hiromichi; Inukai, Takashi; Goto, Yasuyuki; Sato, Hideo; and Fukui, Masahiro, to Chisso Corporation. Trans-4-alkyloxymethyl-1-(4′-substituted biphenylyl-4)cyclohexanes. 4,617,141, Cl. 252-299.630.
- Inoue-Japax Research Incorporated: *See—*
  - Inoue, Kiyoshi, 4,616,796, Cl. 248-206.500.
  - Inoue, Kiyoshi; and Yabe, Jinzo, 4,617,623, Cl. 364-167.000.
- Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Magnetic retainer assembly. 4,616,796, Cl. 248-206.500.
- Inoue, Kiyoshi; and Yabe, Jinzo, to Inoue-Japax Research Incorporated. CNC process for displacing a movable member along a path on a 3D surface. 4,617,623, Cl. 364-167.000.
- Institut Francais du Petrole: *See—*
  - Laurent, Jean; and Fabre, Andre , 4,616,703, Cl. 166-66.400.
- Institute po Metaloznanie i Technologia na Metalite: *See—*
  - Nikolov, Ivan D., deceased; Dimova, Vassilka P., heir; Dimov, Dobromir I., heir; Dimov, Petar I., heir; Marinov, Marin I.; Peytchev, Ivan M.; Rashev, Tzolo V.; and Tchorbov, Iliya G., 4,616,808, Cl. 266-207.000.
- International Business Machines Corporation: *See—*
  - Adley, James M.; and Chang, Phillip, 4,616,919, Cl. 355-3.0DD.
  - Aichelmann, Frederick J., Jr.; and Lange, Lawrence K., 4,617,664, Cl. 371-38.000.
  - Chuang, Tung J.; Houle, Frances A.; and Petersen, Kurt E., 4,617,086, Cl. 156-643.000.
  - Galatha, Matthew J.; Iorio, David V.; and Robinson, Carl W., 4,616,944, Cl. 400-692.000.
  - Iyer, Subramanian S.; and Joshi, Rajiv V., 4,617,087, Cl. 156-643.000.
  - Komplin, Steven R., 4,616,945, Cl. 400-697.100.
  - Sachdev, Krishna G.; Afzali-Ardakani, Ali; Pennington, Keith S.; and Cohen, Mitchell S., 4,617,579, Cl. 346-135.100.
  - Yang, Kei-Hsiung, 4,617,646, Cl. 365-108.000.
  - Yoshioka, Yoshikazu, 4,617,564, Cl. 340-798.000.
- International Flavors & Fragrances Inc.: *See—*
  - Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,617,144, Cl. 252-522.00A.
  - Schreiber, William L.; Narula, Anubhav P. S.; and Hanna, Marie R., 4,617,145, Cl. 252-522.00R.
  - Wiener, Charles; and Pittet, Alan O., 4,617,419, Cl. 568-464.000.
- International Paper Company: *See—*
  - Fries, Carl J., Jr., 4,617,211, Cl. 428-35.000.
- International Totalizator Systems, Inc.: *See—*
  - Moeller, Charles R., 4,617,576, Cl. 346-76.0PH.
- Intersil, Inc.: *See—*
  - Bingham, David, 4,617,473, Cl. 307-66.000.
- Intertechnique: *See—*
  - Beaussant, Raymond, 4,616,646, Cl. 128-205.240.
- Inukai, Tadahiko: *See—*
  - Yamada, Hideaki; Otsuji, Shogo; Isobe, Kimiyasu; Matsunaga, Kuniyoshi; and Inukai, Tadahiko, 4,617,263, Cl. 435-25.000.
- Inukai, Takashi: *See—*
  - Inoue, Hiromichi; Inukai, Takashi; Goto, Yasuyuki; Sato, Hideo; and Fukui, Masahiro, 4,617,141, Cl. 252-299.630.
- Ionics, Incorporated: *See—*
  - MacDonald, Russell J., 4,617,321, Cl. 521-38.000.
- Iorio, David V.: *See—*
  - Galatha, Matthew J.; Iorio, David V.; and Robinson, Carl W., 4,616,944, Cl. 400-692.000.
- Iowa State University Research Foundation: *See—*
  - Burns, Stanley G., 4,616,425, Cl. 34-13.800.
- Ip, William W.; and Perlegos, Gust, to Seeq Technology, Inc. Redundancy circuit for use in a semiconductor memory array. 4,617,651, Cl. 365-200.000.
- IPCO Corporation: *See—*
  - Weissman, Bernard, 4,616,999, Cl. 433-225.000.
- Irie, Masao: *See—*
  - Tamaki, Akinobu; Kimura, Ken; Kawakami, Takeshi; and Irie, Masao, 4,616,407, Cl. 29-596.000.
- Irvine Sensors Corporation: *See—*
  - Belanger, Robert J.; and Bisignano, Alan G., 4,617,160, Cl. 264-40.100.
- Irwin, Christopher; and Bowen, Richard M., to Hoover Universal, Inc. Method for blow molding articles with deeply recessed edges. 4,617,166, Cl. 264-531.000.
- Ishida, Atsushi, to Honda Giken Kogyo Kabushiki Kaisha. Lubricating apparatus in internal combustion engine. 4,616,610, Cl. 123-196.00A.
- Ishida, Toshio: *See—*
  - Suzuki, Toshifumi; Kawano, Toshio; Setoguchi, Ryoichi; Ishida, Toshio; and Mikami, Seiiti, 4,616,411, Cl. 29-822.000.
- Ishii, Fumio: *See—*
  - Hotta, Yuji; Abe, Takao; Ishii, Fumio; Kitamura, Shigehiro; Koshizuka, Kunihiro; and Nakamura, Masaki, 4,617,224, Cl. 428-212.000.
- Ishii, Hiroshi: *See—*
  - Koto, Haruhiko; Okada, Junichi; Ishii, Hiroshi; and Sawada, Kenji, 4,617,581, Cl. 346-140.00R.
- Ishii, Kiyoshi: *See—*
  - Ikezaki, Katsuji; and Ishii, Kiyoshi, 4,617,034, Cl. 55-276.000.
- Ishii, Toshiaki, to Mitsubishi Denki Kabushiki Kaisha. Method and apparatus for reducing gear backlash impacts in an elevator system. 4,616,733, Cl. 187-29.00R.
- Ishii, Toshimasa: *See—*
  - Yoshizaki, Tsutomu; and Ishii, Toshimasa, 4,616,895, Cl. 339-17.0CF.
- Ishimoto, Zenichi; and Konno, Tadashi, to Nikko Co., Ltd. Wireless controllable car with a winch mechanism. 4,617,002, Cl. 446-427.000.
- Ishiwatari, Seishiro: *See—*
  - Hoshikawa, Kyofu; Ishiwatari, Seishiro; and Tanahashi, Mitsuru, 4,617,433, Cl. 200-86.00R.

- Isobe, Kenichi: *See—*
  - Okada, Fumio; Oba, Toshio; Nakazato, Morizo; and Isobe, Kenichi, 4,617,335, Cl. 524-265.000.
- Isobe, Kimiyasu: *See—*
  - Yamada, Hideaki; Otsuji, Shogo; Isobe, Kimiyasu; Matsunaga, Kuniyoshi; and Inukai, Tadahiko, 4,617,263, Cl. 435-25.000.
- Itho, Joji, to Toyota Jidosha Kabushiki Kaisha. Painting booth. 4,616,594, Cl. 118-326.000.
- Ito, Hiroshi: *See—*
  - Akashi, Teruo; Ito, Hiroshi; and Yamada, Shigemichi, 4,616,521, Cl. 74-335.000.
- Ito, Kazuhisa; and Fukuda, Yoshio, to Kawaken Fine Chemicals Co., Ltd. Process for preparing cyclic urea derivatives. 4,617,400, Cl. 548-317.000.
- Itoh, Kunio: *See—*
  - Takahashi, Masaharu; Tokushige, Yuji; and Itoh, Kunio, 4,617,078, Cl. 156-307.500.
- Itoigawa, Masakatsu; and Nishijima, Masaru, to Sharp Kabushiki Kaisha. Copying machine having an endless photoreceptor belt. 4,616,920, Cl. 355-3.0BE.
- ITW Limited: *See—*
  - Hewison, George D., 4,616,455, Cl. 52-127.120.
- Ivanov, Borislav; and Ivanova, Raina. Stator-Rotor piston internal combustion engine. 4,616,604, Cl. 123-55.0AA.
- Ivanova, Raina: *See—*
  - Ivanov, Borislav; and Ivanova, Raina, 4,616,604, Cl. 123-55.0AA.
- Ivarsson, Paul L.; Blom, Ingvar G. A.; and Berg, Lars G., to Hoganas AB. Refractory lining and process for its manufacture. 4,617,280, Cl. 501-84.000.
- Ives, Albert G., to LOF Plastics Inc. Molded end cap for extruded trims. 4,617,209, Cl. 428-31.000.
- Iwaki, Yuichi: *See—*
  - Kawamura, Kaoru; and Iwaki, Yuichi, 4,616,593, Cl. 118-303.000.
- Iwamoto, Hiroshi: *See—*
  - Nezu, Yasutada; Tamura, Yutaka; Mizuno, Yuuzi; Iwamoto, Hiroshi; Yokota, Akihiro; and Maeda, Kiyoshi, 4,617,578, Cl. 346-108.000.
- Iwamoto, Hisao; Kimura, Hiroyuki; and Iwamoto, Yoichi, to Kanebo Limited. Slide type cosmetic container with compound screw. 4,616,947, Cl. 401-69.000.
- Iwamoto, Junjiro: *See—*
  - Sato, Kimihiko; Sajima, Yasuo; Nakao, Makoto; and Iwamoto, Junjiro, 4,617,101, Cl. 204-252.000.
- Iwamoto, Yoichi: *See—*
  - Iwamoto, Hisao; Kimura, Hiroyuki; and Iwamoto, Yoichi, 4,616,947, Cl. 401-69.000.
- Iwanami, Shigeki: *See—*
  - Inagaki, Mitsuo; Takeda, Kenji; Iwanami, Shigeki; Sasaya, Hideaki; and Nagasaku, Eiichi, 4,616,984, Cl. 418-150.000.
- Iwanami, Yoshiyuki: *See—*
  - Takenouchi, Tomoo; Ichinomiya, Yoshiaki; and Iwanami, Yoshiyuki, 4,617,052, Cl. 420-117.000.
- Iwasa, Koji: *See—*
  - Kamamori, Hitoshi; Suginoya, Mitsuru; Iwasa, Koji; Sano, Yutaka; and Terada, Yumiko, 4,617,094, Cl. 204-18.100.
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  - Johnson, Ronald R.; and Rieckenberg, Randall K., 4,617,603, Cl. 361-149.000.
- Iyer, Subramanian S.; and Joshi, Rajiv V., to International Business Machines Corporation. Method for differential selective deposition of metal for fabricating metal contacts in integrated semiconductor circuits. 4,617,087, Cl. 156-643.000.
- Izu, Masatsugu: *See—*
  - Nath, Prem; Izu, Masatsugu; Ovshinsky, Herbert C.; and Singh, Avtar, 4,617,421, Cl. 136-244.000.
- Izumida, Kiichiro; and Kasai, Ritaroh, to Mitsubishi Denki Kabushiki Kaisha. Artificial satellite attitude control system. 4,617,634, Cl. 364-455.000.
- J. & K. Shephard Design Pty Limited: *See—*
  - Shephard, Kevin E., 4,616,423, Cl. 33-355.00R.
- Jaccod, Michel; and de Briel, Jacques T., to Valeo. Speed change pulley with diaphragm spring and oil spring. 4,617,005, Cl. 474-14.000.
- Jackson, Joseph F.; and Waite, Ralph A., to Pratt Burnerd International Limited. Work holding devices. 4,616,838, Cl. 279-4.000.
- Jacomet, Joe A.: *See—*
  - Hiscock, Donald F.; Jacomet, Joe A.; and Carter, Deborah H., 4,617,223, Cl. 428-211.000.
- Jacubert, Serge: *See—*
  - Verdier, Jean-Michel; Jacubert, Serge; Grosbois, Jean; and Dumousseau, Jean-Yves, 4,617,098, Cl. 204-68.000.
- Jadamus, Hans: *See—*
  - Baciu, Antoine; Jadamus, Hans; and Bittscheidt, Josef, 4,617,618, Cl. 362-341.000.
- Jaeneke, Christian: *See—*
  - Romer, Rudolf; Bethmann, Karl W.; Jaeneke, Christian; and Moll, Manfred, 4,616,567, Cl. 102-489.000.
- Jahn, Dieter; Becker, Rainer; Keil, Michael; Himmele, Walter; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Cyclohexane-1,3-dione derivatives. 4,617,050, Cl. 71-98.000.
- Jane, Phillip A., to Perkins Engines Group Limited. Internal combustion engine piston. 4,616,612, Cl. 123-276.000.
- Jang, Chan-Hwei. Jazz drumhead. 4,616,552, Cl. 84-414.000.
- Jankowski, Leon V.: *See—*
  - Ballachey, John M.; Jankowski, Leon V.; Johnson, C. W.; Ward, George S.; and Ward, John R., 4,616,454, Cl. 52-115.000.
- Jannuzzi, Michael A.: *See—*
  - Burniski, Edward W.; and Jannuzzi, Michael A., 4,616,598, Cl. 119-1.000.
- Jantzen, Eric. Storage cabinet with multiple storage compartments. 4,616,891, Cl. 312-328.000.
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  - Moore, Alan R.; and Januszewski, Nicholas M., 4,616,580, Cl. 111-7.000.
- Japan Constec Kabushiki Kaisha: *See—*
  - Taga, Kazumitsu, 4,616,954, Cl. 404-74.000.
- Japan Electronic Control Systems Company Limited: *See—*
  - Tomisawa, Naoki, 4,617,509, Cl. 323-303.000.
- Japan Steel Works Ltd., The: *See—*
  - Takenouchi, Tomoo; Ichinomiya, Yoshiaki; and Iwanami, Yoshiyuki, 4,617,052, Cl. 420-117.000.
- Japan Styrene Paper Corporation: *See—*
  - Kuwabara, Hideki; Sudo, Yoshimi; and Kitagawa, Atusi, 4,617,323, Cl. 521-60.000.
- Japan Tobacco & Salt Public Corporation, The: *See—*
  - Nagata, Tomizou, 4,616,475, Cl. 53-575.000.
- Jaskowski, Michael C., to Helmic, Inc. Method for degumming and bleaching decorticated plant bast fiber. 4,617,383, Cl. 536-2.000.
- Jason, Barry L. Signal detector. 4,617,474, Cl. 307-262.000.
- Jayant, Nuggehally S.; and Ramamoorthy, Venkatasubbarao, to AT&T Bell Laboratories. Predictive communication system filtering arrangement. 4,617,676, Cl. 375-27.000.
- Jean, Joseph A., Jr.; and Laurence, Lynne. Headband with detachable lenses. 4,616,367, Cl. 2-452.000.
- Jean Walterscheid GmbH: *See—*
  - Bober, Helmut; Buthe, Theo; Coenen, Karl; Fartmann, Norbert; Herbertz, Klaus; Koch, Heinz; Kretschmer, Horst; Nienhaus, Clemens; Schardt, Peter; Schibrowski, Jurgen; and Schmandt, Willi, 4,617,003, Cl. 464-48.000.
  - Schott, Wilhelm, 4,616,952, Cl. 403-316.000.
- Jefatura de Ingenieros del Ejercito: *See—*
  - Perez, Juan J. B., 4,616,373, Cl. 14-72.500.
- Jeffries, Alfred T., III: *See—*
  - Cordes, William F., III; and Jeffries, Alfred T., III, 4,617,252, Cl. 430-272.000.
- Jelfs, Stewart D. Hydraulic frictional coupling. 4,616,948, Cl. 403-5.000.
- Jenoptik Jena G.m.b.H.: *See—*
  - Zeth, Ulrich; Rempke, Wilfried; and Voigt, Klaus-Ditmar, 4,616,911, Cl. 354-66.000.
- Jensen, Falle. Rotatable hydrostatic transmission. 4,616,478, Cl. 60-487.000.
- Jergenson, Jerg B., to Hughes Aircraft Company. Preparation of liquid metal source structures for use in ion beam evaporation of boron-containing alloys. 4,617,203, Cl. 427-294.000.
- Jervis B. Webb Company: *See—*
  - Dehne, Clarence A., 4,616,570, Cl. 104-172.00B.
- Jetco, Inc.: *See—*
  - Davis, Bill G., 4,616,806, Cl. 251-63.400.
- Jewell, Everett: *See—*
  - Sheppard, Isaac, Jr.; Jewell, Everett; Levitz, Steven E.; and Taylor, Rudolph T., 4,616,453, Cl. 52-93.000.
- Jidoshi Kiki Co., Ltd.: *See—*
  - Suzuki, Yoshio; and Ohe, Takeshi, 4,616,728, Cl. 180-142.000.
- Johansson, Jan: *See—*
  - Cewers, Goeran; Johansson, Jan; and Olsson, Sven-Gunnar, 4,616,801, Cl. 251-6.000.
- Johansson, Jan H.; and Sundvall, Nils J., to Telefonaktiebolaget LM Ericsson. Method for current supply to a subscriber telephone from a telephone exchange. 4,617,426, Cl. 179-16.0AA.
- Johansson, Sixten, to VOLVO BM AB. Device for turning an articulated motor vehicle. 4,616,726, Cl. 180-135.000.
- John, Peter: *See—*
  - Rittner, Siegbert; Morach, Eugen; Schindler, Hubert; and John, Peter, 4,617,197, Cl. 427-180.000.
- Johns, Allan T.; and Martin, Michael A., to National Research Development Corporation. Protection of electrical power supply systems. 4,617,636, Cl. 364-482.000.
- Johns, David L., to Suncoast Medical Manufacturing, Inc. Variable alternating current output nerve locator/stimulator. 4,616,660, Cl. 128-741.000.
- Johns, Thelma D. Quilting tool. 4,616,770, Cl. 223-101.000.
- Johnsen, Andreas O., to Rohm GmbH. Apparatus for the photographic recording of plate thermography. 4,616,912, Cl. 354-80.000.
- Johnson, C. W.: *See—*
  - Ballachey, John M.; Jankowski, Leon V.; Johnson, C. W.; Ward, George S.; and Ward, John R., 4,616,454, Cl. 52-115.000.
- Johnson, Clyde O.: *See—*
  - Miranti, Joseph P., Jr.; Oliver, Larry R.; and Johnson, Clyde O., 4,617,007, Cl. 474-201.000.
- Johnson, John D. System and method of controlling and preventing the spread of forest fires. 4,616,711, Cl. 169-45.000.
- Johnson & Johnson Baby Products Company: *See—*
  - Lukenbach, Elvin R.; and Tenore, Richard R., 4,617,414, Cl. 558-87.000.
- Johnson & Johnson Products, Inc.: *See—*
  - Saferstein, Lowell; Lindquist, Julius A.; and Wolf, Stephen J., 4,616,644, Cl. 128-156.000.
- Johnson, Marvin M.: *See—*
  - Shyr, Yen-Shin; and Johnson, Marvin M., 4,617,108, Cl. 208-111.000.

Johnson, Neil H.: *See—*
Giaier, Thomas A.; Johnson, Neil H.; Reschly, David C.; Knox, Harold L.; and Spurlock, Kim E., 4,616,573, Cl. 110-327.000.
Johnson, Ronald R.; and Rieckenberg, Randall K., to IXI Laboratories, Inc. Degaussing system for bulk demagnetization of previously magnetized materials. 4,617,603, Cl. 361-149.000.
Johnson, Thomas A.: *See—*
Ford, Michael E.; and Johnson, Thomas A., 4,617,418, Cl. 564-479.000.
Johnston, Joseph G., to Bicron Corporation. Dead time compensation circuit for radiation detector. 4,617,680, Cl. 377-10.000.
Johnston, Mark E.: *See—*
Tullis, Barclay J.; Parikh, Mihir; Thrasher, David L.; and Johnston, Mark E., 4,616,683, Cl. 141-98.000.
Johnston, Russell A., to Camco, Incorporated. Control line protector for use on a well tubular member. 4,616,704, Cl. 166-242.000.
Jones, Edgerton G.: *See—*
Wallace, Norman R.; and Jones, Edgerton G., 4,616,955, Cl. 405-158.000.
Jones, Stephen D. Bicycle brake cable coupling means. 4,616,523, Cl. 74-501.000.
Jones, Thomas B., Jr.; and Nikkel, Willem A., to Westvaco Corporation. Glue applicator for single-faced corrugated web. 4,617,076, Cl. 156-205.000.
Jones, W. Kinzy: *See—*
Weinberg, Alvin H.; and Jones, W. Kinzy, 4,616,655, Cl. 128-419.00P.
Joo, Louis A.; Tucker, Kenneth W.; and Shaner, Jay R., to Great Lakes Carbon Corporation. Metal reinforced porous refractory hard metal bodies. 4,617,053, Cl. 75-244.000.
Jorgensen, Ray G. Row finder. 4,616,712, Cl. 172-6.000.
Jorn, Alfred, to Georg Fischer Aktiengesellschaft. Method and apparatus for producing a test piece of molding compound useful in measuring properties thereof. 4,616,508, Cl. 73-823.000.
Joshi, Rajiv V.: *See—*
Iyer, Subramanian S.; and Joshi, Rajiv V., 4,617,087, Cl. 156-643.000.
Jourdain, Philippe: *See—*
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Jouwsma, Wijbren, to Bronkhorst High-Tech B.V. Fluid flow measuring device. 4,616,505, Cl. 73-204.000.
Joy Manufacturing Company: *See—*
McDaniel, Donald E., 4,616,725, Cl. 180-89.130.
Juell, Gaylord E.; and Lambert, Robert E. Airport runway light housing and method of installation. 4,617,616, Cl. 362-267.000.
Jung, Ha Y. Disposable ear protector. 4,616,643, Cl. 128-151.000.
Kaali, Steven; Schwolsky, Peter M.; and Porter, Joseph W., to Kaali, Steven; and Schwolsky, Peter M. Birth control method and device employing electric forces. 4,616,640, Cl. 128-130.000.
Kabushiki Kaisha Kato Kogei: *See—*
Kato, Niro, 4,616,544, Cl. 83-413.000.
Kabushiki Kaisha Medos Kenkyusho: *See—*
Takahashi, Nagashige, 4,616,631, Cl. 128-6.000.
Kabushiki Kaisha Meidensha: *See—*
Ashikaga, Tadashi; Kamanaka, Yoshihide; and Fushimi, Keiko, 4,617,675, Cl. 375-22.000.
Kabushiki Kaisha Sankyo Seiki Seisakusho: *See—*
Orii, Makoto, 4,616,737, Cl. 188-184.000.
Kabushiki Kaisha Toshiba: *See—*
Futaki, Kenji; and Dekura, Hitoshi, 4,617,661, Cl. 371-20.000.
Kawasaki, Yutaka, 4,617,435, Cl. 200-144.0AP.
Kohyama, Mitsuaki; and Shimazaki, Takashi, 4,616,918, Cl. 355-3.0DD.
Miwa, Yoshiyuki, 4,617,452, Cl. 219-441.000.
Mori, Seiichi, 4,616,402, Cl. 29-571.000.
Shinohe, Takashi; and Asaka, Masayuki, 4,617,583, Cl. 357-38.000.
Suzuki, Kouhei; Saito, Tamio; and Mori, Ken-ichi, 4,617,471, Cl. 250-578.000.
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Thai, Cao M.; Oguni, Takayuki; Kurematsu, Kazuhiko; and Kato, Tsuguo, 4,617,330, Cl. 523-220.000.
Utoh, Yoshihiro; Shibata, Shinichi; and Kitahara, Hiroyuki, 4,616,764, Cl. 220-306.000.
Yamauchi, Masahide; and Hirose, Minoru, 4,616,817, Cl. 271-9.000.
Yoshida, Yuzo, 4,617,465, Cl. 250-385.000.
Kachelman, Donald L.: *See—*
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Kachi, Tadakatsu: *See—*
Takahashi, Kenzo; Kumazaki, Nobuo; Yokoya, Hisao; Nakamura, Hironobu; and Kachi, Tadakatsu, 4,616,695, Cl. 165-54.000.
Kaganowicz, Grzegorz, to RCA Corporation. Apparatus for making a plasma coating. 4,616,597, Cl. 118-723.000.
Kagemann, Heinz. Suspended ceiling. 4,616,463, Cl. 52-665.000.
Kageyama, Takafumi: *See—*
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Kahale, Abed G.: *See—*
Hanssen, Tore B.; and Kahale, Abed G., 4,617,432, Cl. 200-81.00R.
Kajihara, Takehiro; and Suzuki, Mitsugu, to NGK Insulators, Ltd. Non-oxidizing atmosphere firing furnace for ceramic articles. 4,616,996, Cl. 432-148.000.
Kajitani, Koichi: *See—*
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Kakegawa, Hisao: *See—*
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Kamamori, Hitoshi; Suginoya, Mitsuru; Iwasa, Koji; Sano, Yutaka; and Terada, Yumiko, to Seiko Instruments & Electronics Ltd. Method of manufacturing solid state color filter device uses co-electrodeposition. 4,617,094, Cl. 204-18.100.
Kamanaka, Yoshihide: *See—*
Ashikaga, Tadashi; Kamanaka, Yoshihide; and Fushimi, Keiko, 4,617,675, Cl. 375-22.000.
Kamijyo, Yoshimi: *See—*
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Kamimura, Kuniaki: *See—*
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Kanai, Masatatsu: *See—*
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Kanai, Seita; and Hirochika, Takashi, to Mazda Motor Corporation. Suspension system for vehicle. 4,616,847, Cl. 280-707.000.
Kanai, Shigeru: *See—*
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Kanasaki, Kazuharu: *See—*
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Kanebo Limited: *See—*
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Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
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Kaneko, Tetsuya: *See—*
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Kanesaki, Tateo; and Utsumi, Shigeo, to Diafoil Company, Limited. Process for stretching polyester films. 4,617,164, Cl. 264-235.800.
Kanetsuna, Nobumitsu: *See—*
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Kano, Taisaku: *See—*
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Karcher, Ralph E., Jr.; and Greene, Blandford W., to USM Corporation. Receiving belt blowback arrangement. 4,616,592, Cl. 118-202.000.
Karras, James: *See—*
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Kasai, Yasuhiro, to Yamaha Hatsudoki Kabushiki Kaisha. Transmission chain adjuster for motorcycles. 4,616,729, Cl. 180-231.000.
Kassai, Kenzou, to Aprica Kassai Kabushikikaisha. Bed for baby carriages. 4,616,371, Cl. 5-99.00A.
Kassai, Kenzou, to Aprica Kassai Kabushikikaisha. Mechanism for locking opened state of baby carriage. 4,616,844, Cl. 280-650.000.
Katagiri, Hidenori: *See—*
Miura, Hirohisa; Satou, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, 4,617,055, Cl. 75-251.000.
Katagiri, Koichi; Hanamoto, Yoshihiro; Maeda, Satoru; and Taniguchi, Ikuo, to Nippon Telegraph and Telephone Corp.; and Sony Corporation. Signal generator circuit. 4,617,594, Cl. 358-150.000.
Kato, Hisatoyo: *See—*
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Kato, Niro, to Kabushiki Kaisha Kato Kogei. Cutting machine for preparing models for spectacle lenses. 4,616,544, Cl. 83-413.000.
Kato, Tsuguo: *See—*
Thai, Cao M.; Oguni, Takayuki; Kurematsu, Kazuhiko; and Kato, Tsuguo, 4,617,330, Cl. 523-220.000.
Katoh, Tutomu, to Sharp Kabushiki Kaisha. Hinge structure with torsion bar for electrophotographic copying machine. 4,616,765, Cl. 220-335.000.
Katou, Kazuo; Mizugami, Susumu; Tabuchi, Mamoru; Nakamura, Masayuki; Kobayashi, Toshiyuki; and Ritoh, Naotake, to Kawasaki Steel Corporation; and Mitsubishi Denki Kabushiki Kaisha. Cutter for a welding apparatus. 4,616,545, Cl. 83-558.000.
Katsumata, Ryoichi; and Furuya, Akira, to Kyowa Hakko Kogyo Co., Ltd. Plasmid pCG1 from *Corynebacterium glutamicum*. 4,617,267, Cl. 435-91.000.
Katzorek, Karl-Hermann: *See—*
Ehrlinger, Friedrich; Katzorek, Karl-Hermann; Dziuba, Peter; Veser, Karl; and Caspar, Peter, 4,616,520, Cl. 74-325.000.
Kautex-Werke Reinold Hagen AG: *See—*
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Kavlico Corporation: *See—*
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Kawada, Akira: *See—*
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Kawaguchi, Hiroyuki; Saito, Hideyuki; and Yasuhara, Seishi, to Nissan Motor Company, Limited. Method and system for controlling idling speed for a Diesel engine. 4,616,615, Cl. 123-339.000.
Kawai, Yoshio; Kitagawa, Kiyoshi; Endo, Kazue; and Onodera, Chikau, to Kureha Kagaku Kogyo Kabushiki Kaisha. Cell unit for observing electrophoresis. 4,617,104, Cl. 204-301.000.
Kawakami, Hiroshi: *See—*
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Kawakami, Takeshi: *See—*
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Kawaken Fine Chemicals Co., Ltd.: *See—*
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Kawakita, Tetsuya: *See—*
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Kawamura, Kaoru; and Iwaki, Yuichi, to Yoshida Kogyo K. K. Paint supply apparatus for rotary painting machine. 4,616,593, Cl. 118-303.000.
Kawamura, Masaharu: *See—*
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Kawamura, Masanori: *See—*
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Kawasaki Steel Corporation: *See—*
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Kawasaki, Yutaka, to Kabushiki Kaisha Toshiba. Hybrid circuit breaker. 4,617,435, Cl. 200-144.0AP.
Kawashima, Masamichi: *See—*
Murata, Mitsuru; Kobayashi, Toyohiro; Mochizuki, Shoji; and Kawashima, Masamichi, 4,616,946, Cl. 400-704.000.
Kaye, Alan S., to United Kingdom Atomic Energy Authority. Aerodynamic windows for high power lasers. 4,617,670, Cl. 372-104.000.
Keenan, Anthony F.: *See—*
Keenan, Phillip R.; and Keenan, Anthony F., 4,616,370, Cl. 5-2.00R.
Keenan, Bert: *See—*
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Keenan, Phillip R.; and Keenan, Anthony F. Furniture. 4,616,370, Cl. 5-2.00R.
Keil, Michael: *See—*
Jahn, Dieter; Becker, Rainer; Keil, Michael; Himmele, Walter; and Wuerzer, Bruno, 4,617,050, Cl. 71-98.000.
Kellner, Andrew. Steering knuckle for a velocipede. 4,616,949, Cl. 403-104.000.
Kellogg, Walter J.; DeVault, Birch L.; and Paape, Kenneth L., to Westinghouse Electric Corp. Electrical control apparatus with electromagnetic latch. 4,617,546, Cl. 337-170.000.
KemStone Manufacturing, Inc.: *See—*
Yoder, Andrew H.; and Rhodes, Richard A., 4,616,457, Cl. 52-218.000.
Kennecott Corporation: *See—*
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Shaftel, Myles A., 4,617,511, Cl. 324-54.000.
Kennedy, Earl E.: *See—*
Knobel, Thomas M.; Kennedy, Earl E.; and Walker, Mary A., 4,617,325, Cl. 521-105.000.
Keogh, Michael J.; Wallace, Scott L.; and Brown, Geoffrey D., to Union Carbide Corporation. Compositions based on alkylene-alkyl acrylate copolymers and silanol condensation catalysts. 4,617,338, Cl. 524-437.000.
Kerivan, Leo J., to Precision Handling Devices Inc. Forms feeding apparatus. 4,616,773, Cl. 225-99.000.
Kernforschungszentrum Karlsruhe GmbH: *See—*
Vogg, Hubert, 4,617,180, Cl. 423-240.000.
Kersten, Jean; and Mathias, Jean M., to Baxter Travenol Laboratories, Inc. Port and closure assembly for a container. 4,616,760, Cl. 215-232.000.
Kerwar, Suresh S.; Sloboda, Adolph E.; and Ridge, Susan C., to American Cyanamid Company. Method of treating multiple sclerosis. 4,617,319, Cl. 514-647.000.
Keystone International, Inc.: *See—*
Schils, Petrus J. R., 4,616,803, Cl. 251-14.000.
Kidde, Inc.: *See—*
Leavitt, George E.; and LoStracco, Felice, 4,616,928, Cl. 356-338.000.
Kiely, Donald E.; and Seidman, Martin, to A. E. Staley Manufacturing Company. Preparation of alpha, beta-unsaturated carbonyl compounds. 4,617,405, Cl. 549-262.000.
Kijimuta, Hitoshi: *See—*
Manabe, Tsuneo; Kobayashi, Shigeyoshi; and Kijimuta, Hitoshi, 4,617,279, Cl. 501-10.000.
Kimball International, Inc.: *See—*
Slaats, Mathew A.; and Blesinger, James E., 4,616,877, Cl. 297-353.000.
Kimberly-Clark Corporation: *See—*
Martin, Jeffrey A.; and Pomeroy, Philip S., 4,616,642, Cl. 128-132.00D.
Oshefsky, Daniel J.; Gavronski, Paul A.; Vogt, Robert E.; and Rajala, Gregory J., 4,617,082, Cl. 156-447.000.
Kimura, Atsushi: *See—*
Mori, Makihiko; Nakamura, Kazuo; Tanabe, Kanichiro; and Kimura, Atsushi, 4,617,682, Cl. 382-28.000.
Kimura, Hiroshi; Hisajima, Masahiko; Shibata, Kiyoshi; and Morimoto, Kiyoshi, to Mita Kogyo Kabushiki Kaisha. Cleaning device for use with transfer type electrostatic copying machines. 4,616,924, Cl. 355-15.000.
Kimura, Hiroyuki: *See—*
Iwamoto, Hisao; Kimura, Hiroyuki; and Iwamoto, Yoichi, 4,616,947, Cl. 401-69.000.
Kimura, Ken: *See—*
Tamaki, Akinobu; Kimura, Ken; Kawakami, Takeshi; and Irie, Masao, 4,616,407, Cl. 29-596.000.
King, Dallas E.: *See—*
Frey, Mark W.; King, Dallas E.; and Staker, William C., 4,616,527, Cl. 74-625.000.
King, Herbert R., to Milliken Research Corporation. Air comb arrangement for jet dyeing machine. 4,616,794, Cl. 248-67.500.
King, L. Tony, to Komax Systems, Inc. Intermittent mixing apparatus. 4,616,937, Cl. 366-336.000.
King, Michael C., to GCA Corporation. Microlithographic system. 4,616,908, Cl. 350-576.000.
King, Peter F., to Parker Chemical Company. Composition and process for treatment of ferrous substrates. 4,617,068, Cl. 148-6.14R.
Kinoshita, Akihiro; Namariyama, Yohichi; and Higashi, Hiromi, to Chisso Corporation. Process for forming detailed images. 4,617,254, Cl. 430-326.000.
Kirby, Robert L.: *See—*
Howard, H. Keith; Sherrill, Jimmy L.; and Kirby, Robert L., 4,617,547, Cl. 338-317.000.
Kircher, Dieter; von Gruenberg, Hubertus; Blum, Klaus D.; and Becker, Peter, to Alfred Teves GmbH. Hydraulic steering force booster. 4,616,727, Cl. 180-142.000.
Kirchlechner, Richard: *See—*
Wahlig, Helmut; Dingeldein, Elvira; Kirchlechner, Richard; Orth, Dieter; and Rogalski, Werner, 4,617,293, Cl. 514-41.000.
Kirker, Garry W.: *See—*
Bell, Weldon K.; Haag, Werner O.; Kirker, Garry W.; and Klocke, Donald J., 4,617,288, Cl. 502-331.000.
Kirkwood, Marda K.; and Olson, Keith E., to Economics Laboratory, Inc. Enzyme drying process. 4,617,272, Cl. 435-183.000.
Kirsten, Walter, to BKW Handels-und Vertriebsgesellschaft. Portable projection apparatus. 4,616,787, Cl. 241-275.000.
Kishi, Hajimu; Onuki, Tadayoshi; and Kurakake, Mitsuo, to Fanuc Ltd. Portable automatic NC programming device. 4,617,640, Cl. 364-708.000.
Kishimoto, Yoshio: *See—*
Hosaka, Tomiharu; Kishimoto, Yoshio; and Shimotsuma, Wataru, 4,617,356, Cl. 525-429.000.
Kishino, Takao; Marushima, Ikuo; and Kanetsuna, Nobumitsu, to Futaba Denshi Kogyo K.K. Fluorescent display device with interleaved anode and control electrode segments. 4,617,491, Cl. 313-497.000.
Kita, Nobuyuki: *See—*
Nakakita, Eiji; Koike, Akinobu; Sekiya, Toshiyuki; Misu, Hiroshi; and Kita, Nobuyuki, 4,617,250, Cl. 430-175.000.
Kitagawa, Atusi: *See—*
Kuwabara, Hideki; Sudo, Yoshimi; and Kitagawa, Atusi, 4,617,323, Cl. 521-60.000.
Kitagawa, Kiyoshi: *See—*
Kawai, Yoshio; Kitagawa, Kiyoshi; Endo, Kazue; and Onodera, Chikau, 4,617,104, Cl. 204-301.000.
Kitahara, Hiroyuki: *See—*
Utoh, Yoshihiro; Shibata, Shinichi; and Kitahara, Hiroyuki, 4,616,764, Cl. 220-306.000.
Kitamura, Shigehiro: *See—*
Hotta, Yuji; Abe, Takao; Ishii, Fumio; Kitamura, Shigehiro; Koshizuka, Kunihiro; and Nakamura, Masaki, 4,617,224, Cl. 428-212.000.
Kitanaka, Katsumi. Divided-bucket type rotary excavator. 4,616,720, Cl. 175-267.000.
Klaren, Dick G., to Esmil BV. Heat exchanger for liquid/liquid heat exchanger. 4,616,698, Cl. 165-104.160.
Klaus, Michael: *See—*
Helmlinger, Daniel; Pesaro, Mario; and Klaus, Michael, 4,617,146, Cl. 252-522.00R.
Klein, Robert E. Visual indicator on soft contact lenses. 4,616,910, Cl. 351-162.000.
Kleiner, Gerhard A.: *See—*
Green, Michael J.; and Kleiner, Gerhard A., 4,617,412, Cl. 556-446.000.
Kline, Herbert E. Two-cycle engine with improved scavenging. 4,616,605, Cl. 123-65.0VD.
Klock, Anita H.; and Chodak, Jan B., to Mattel, Inc. Syntax error correction method and apparatus. 4,617,643, Cl. 364-900.000.

Klocke, Donald J.: *See—*

Bell, Weldon K.; Haag, Werner O.; Kirker, Garry W.; and Klocke, Donald J., 4,617,288, Cl. 502-331.000.

Klockner-Humboldt-Deutz AG: *See—*

Epper, Wolfgang; and Florenz, Johannes, 4,617,010, Cl. 494-52.000.

Klotz, Dell E. Multicolored liquid crystal display. 4,617,562, Cl. 340-753.000.

Klug, Ralph W.: *See—*

Bevilacqua, Bruce W.; Klug, Ralph W.; Carlsen, David C.; and Dinucci, Dennis J., 4,616,498, Cl. 72-53.000.

Knebel, Fritz; and Dassel, Rudolf, to Beler-Dowiday GmbH Werkzeug-Union. Wrench. 4,616,536, Cl. 81-128.000.

Knell, Harvey A.; and Rumble, Lloyd B., to Caterpillar Inc. Ripping bucket arrangement. 4,616,433, Cl. 37-141.00T.

Knepper, Paul A. Method for the prevention of ocular hypertension, treatment of glaucoma and treatment of ocular hypertension. 4,617,299, Cl. 514-178.000.

Knobel, Thomas M.; Kennedy, Earl E.; and Walker, Mary A., to Dow Chemical Company, The. Organic polymers containing antistatic agents comprising the polymer having dispersed therein a non-volatile ionizable metal salt and a phosphate ester. 4,617,325, Cl. 521-105.000.

Knop, Klaus; and Heinrich, Peter, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Method of operating a reactor for synthesis gas production. 4,617,051, Cl. 75-91.000.

Knox, Harold L.: *See—*

Giaier, Thomas A.; Johnson, Neil H.; Reschly, David C.; Knox, Harold L.; and Spurlock, Kim E., 4,616,573, Cl. 110-327.000.

Ko, Wen C.: *See—*

Wang, Scott W.; Thomas, Mammen; and Ko, Wen C., 4,616,404, Cl. 29-576.00B.

Kobayashi, Hiroshi; Hirose, Tsuguhiro; and Haruyama, Hideaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Information transmission system with modems coupled to a common communication medium. 4,617,656, Cl. 370-74.000.

Kobayashi, Masaharu: *See—*

Noguchi, Takaharu; Kobayashi, Masaharu; Arai, Takao; and Shibuya, Toshifumi, 4,617,599, Cl. 360-32.000.

Kobayashi, Masahiko: *See—*

Akira, Takashima; Kobayashi, Masahiko; Nasu, Hitoo; Okida, Yoshishiro; and Tsuji, Kazuhiko, 4,616,872, Cl. 296-190.000.

Kobayashi, Ryuichi: *See—*

Suzuki, Masayuki; Fukahori, Hidehiko; Kawamura, Masaharu; Harada, Yoshihito; Kobayashi, Ryuichi; and Ohara, Tsunemasa, 4,616,913, Cl. 354-173.100.

Kobayashi, Shigeyoshi: *See—*

Manabe, Tsuneo; Kobayashi, Shigeyoshi; and Kijimuta, Hitoshi, 4,617,279, Cl. 501-10.000.

Kobayashi, Toshiyuki: *See—*

Katou, Kazuo; Mizugami, Susumu; Tabuchi, Mamoru; Nakamura, Masayuki; Kobayashi, Toshiyuki; and Ritoh, Naotake, 4,616,545, Cl. 83-558.000.

Kobayashi, Toyohiro: *See—*

Murata, Mitsuru; Kobayashi, Toyohiro; Mochizuki, Shoji; and Kawashima, Masamichi, 4,616,946, Cl. 400-704.000.

Kobayashi, Youichi; and Murakami, Susumu, to Sony Corporation. Film laminating apparatus. 4,617,080, Cl. 156-359.000.

Koch, Dieter: *See—*

Reichl, Bernhard; Maurath, Rudolf; Koch, Dieter; and Hametner, Gerhard, 4,616,841, Cl. 280-432.000.

Koch, Heinz: *See—*

Bober, Helmut; Buthe, Theo; Coenen, Karl; Fartmann, Norbert; Herbertz, Klaus; Koch, Heinz; Kretschmer, Horst; Nienhaus, Clemens; Schardt, Peter; Schibrowski, Jurgen; and Schmandt, Willi, 4,617,003, Cl. 464-48.000.

Kochs Adler, AG: *See—*

Scholl, Hans, 4,616,586, Cl. 112-320.000.

Kodama, Hisashi; and Ono, Takuro, to Aisin Seiki Kabushiki Kaisha. Valve driving device for internal combustion engine. 4,616,607, Cl. 123-90.460.

Kodama, Keiichi: *See—*

Asano, Tetsuji; Kodama, Keiichi; and Shigeki, Terumitsu, 4,617,213, Cl. 428-36.000.

Koga, Kiyoshi: *See—*

Furuya, Kunitaka; Inagaki, Hiromi; Koga, Kiyoshi; Yorita, Masaru; Fukatsu, Tsunehiko; and Matsuura, Kazuo, 4,616,846, Cl. 280-673.000.

Koga, Takanori: *See—*

Nozaki, Yasuo; Oishi, Yoshikazu; and Koga, Takanori, 4,616,880, Cl. 299-39.000.

Koga, Yoshihiro: *See—*

Tanaka, Kiyoshi; Koga, Yoshihiro; Saeki, Masaru; Kaneko, Tetsuya; and Kawakita, Tetsuya, 4,617,155, Cl. 260-501.120.

Kohama, Tokio: *See—*

Saito, Kimitaka; Kohama, Tokio; Egami, Tsuneyuki; Saito, Tsutomu; Takahashi, Hiroshi; and Sato, Kunihiko, 4,616,619, Cl. 123-489.000.

Kohara, Hideo: *See—*

Hattori, Toshihiko; Akagi, Yuji; and Kohara, Hideo, 4,616,985, Cl. 418-173.000.

Kohler, Peter; Ringe, Peter; and Heine, Heinrich, to Bayer Aktiengesellschaft. Mixed phases having the composition $Bi_{2-x}Cr_xO_3$. 4,617,061, Cl. 106-302.000.

Kohyama, Mitsuaki; and Shimazaki, Takashi, to Kabushiki Kaisha Toshiba. Developing apparatus. 4,616,918, Cl. 355-3.0DD.

Koide, Satoshi; and Hiejima, Kiyoshi, to Sanyo Electric Co., Ltd. Temperature controlled induction heating and cooking apparatus. 4,617,441, Cl. 219-10.770.

Koike, Akinobu: *See—*

Nakakita, Eiji; Koike, Akinobu; Sekiya, Toshiyuki; Misu, Hiroshi; and Kita, Nobuyuki, 4,617,250, Cl. 430-175.000.

Kojima, Yuichi; and Fukuda, Shinichi, to Sony Corporation. Method and apparatus for converting a digital data. 4,617,552, Cl. 340-347.0DD.

Kolb, Dieter: *See—*

Tomm, Dagwin; Kolb, Dieter; Gehrig, Siegmund; and Meyer, Alfred, 4,616,744, Cl. 192-109.00R.

Komax Systems, Inc.: *See—*

King, L. Tony, 4,616,937, Cl. 366-336.000.

Komiya, Yoshiyuki, to Nippon Thompson Co., Ltd. Dust-free rolling-contact bearing assembly. 4,616,885, Cl. 384-15.000.

Komplin, Steven R., to International Business Machines Corporation. Correction feed mechanism in a correction tape cartridge. 4,616,945, Cl. 400-697.100.

Kondo, Tadashi: *See—*

Morisawa, Kunio; and Kondo, Tadashi, 4,616,526, Cl. 74-606.00R.

Konishiroku Photo Industry Co., Ltd.: *See—*

Hotta, Yuji; Abe, Takao; Ishii, Fumio; Kitamura, Shigehiro; Koshizuka, Kunihiro; and Nakamura, Masaki, 4,617,224, Cl. 428-212.000.

Menjo, Hiroshi; Sakamoto, Nobuo; and Watanabe, Yoshikazu, 4,617,258, Cl. 430-566.000.

Konno, Tadashi: *See—*

Ishimoto, Zenichi; and Konno, Tadashi, 4,617,002, Cl. 446-427.000.

Kopp, Walter, to Adam Equipment Corp. Variable piston arrangment for roll and bread dividing and shaping machine. 4,616,990, Cl. 425-239.000.

Koren, Jeffrey G.: *See—*

Boberski, William G.; Nugent, Richard M.; and Koren, Jeffrey G., 4,617,331, Cl. 523-420.000.

Koshizuka, Kunihiro: *See—*

Hotta, Yuji; Abe, Takao; Ishii, Fumio; Kitamura, Shigehiro; Koshizuka, Kunihiro; and Nakamura, Masaki, 4,617,224, Cl. 428-212.000.

Kossmehl, Gerhard; and Hocker, Jurgen, to Bayer Aktiengesellschaft. Oxidizing polymerization with AsF_5. 4,617,143, Cl. 252-500.000.

Kosugi, Masao: *See—*

Takahashi, Kazuo; Sato, Hiroshi; and Kosugi, Masao, 4,617,469, Cl. 250-548.000.

Kotaka, Ikuo, to Babcock-Hitachi Kabushiki Kaisha. Heat exchanger. 4,616,697, Cl. 165-104.140.

Kotera, Yoshikazu, to Mitsubishi Denki Kabushiki Kaisha. Method of and apparatus for controlling load distribution for a continuous rolling mill. 4,616,494, Cl. 72-8.000.

Koto, Haruhiko; Okada, Junichi; Ishii, Hiroshi; and Sawada, Kenji, to Epson Corporation. Ink jet printer of the ink-on-demand type. 4,617,581, Cl. 346-140.00R.

Kouge, Shinichi: *See—*

Morishita, Mitsuharu; and Kouge, Shinichi, 4,617,626, Cl. 364-424.000.

Kowalyshen, Henry W., to S&C Electric Company. Nozzle and retaining arrangement. 4,616,856, Cl. 285-92.000.

Koyama, Hiroshi: *See—*

Nagashima, Hironobu; and Koyama, Hiroshi, 4,616,636, Cl. 128-23.000.

Kraft, Harald: *See—*

Habert, Guy; and Kraft, Harald, 4,616,963, Cl. 407-114.000.

Kraftwerk Union Aktiengesellschaft: *See—*

Engelhard, Gerhard; Pellkofer, Dieter; Bohm, Jurgen; and Forner, Siegfried, 4,617,444, Cl. 219-75.000.

Suchy, Peter, 4,617,170, Cl. 376-438.000.

Kramer, Daniel P.; and Massey, Richard T., to United States of America, Energy. Method for forming glass-to-metal seals. 4,617,044, Cl. 65-49.000.

Krause, Charles A.; and Vander Heyden, Randy J., to Zenith Electronics Corporation. Keyboard scanning. 4,617,554, Cl. 340-365.00E.

Krause, Joachim: *See—*

Eidenschink, Rudolf; and Krause, Joachim, 4,617,140, Cl. 252-299.610.

Krause, Richard H.; Pfeiffer, Thomas J.; and Horvath, Vincent V., to Bethlehem Steel Corporation. Method and system for determining mass temperature in a hostile environment. 4,617,638, Cl. 364-557.000.

Krauss, Ernst: *See—*

Haas, Rudiger; Krauss, Ernst; and Walter, Herbert, 4,616,447, Cl. 51-59.0SS.

Krechel, Joseph L.; and Purvis, Michael J., to Control Devices, Incorporated. Manifold fitting for a compressed air tank. 4,616,677, Cl. 137-881.000.

Kretchmer, Richard A.: *See—*

Tolpin, Thomas W.; and Kretchmer, Richard A., 4,617,175, Cl. 422-171.000.

Kretschmer, Horst: *See—*

Bober, Helmut; Buthe, Theo; Coenen, Karl; Fartmann, Norbert; Herbertz, Klaus; Koch, Heinz; Kretschmer, Horst; Nienhaus, Clemens; Schardt, Peter; Schibrowski, Jurgen; and Schmandt, Willi, 4,617,003, Cl. 464-48.000.

Kreuzer, Justin: *See—*

LaFiandra, Carlo; and Kreuzer, Justin, 4,617,681, Cl. 378-34.000.

Krivak, Thomas G.; Heimburger, Stanley A.; and Dew, James T., to PPG Industries, Inc. Animal feed supplement. 4,617,294, Cl. 514-52.000.

Kronenberg, Stanley, to United States of America, Army. Sampling and recording dose rate meter. 4,617,464, Cl. 250-377.000.

Kronogard, Clas-Olof: *See—*

Kronogard, Sven-Olof; Kronogard, Clas-Olof; and Kronogard, Hakan, 4,616,482, Cl. 60-624.000.

Kronogard, Hakan: *See—*

Kronogard, Sven-Olof; Kronogard, Clas-Olof; and Kronogard, Hakan, 4,616,482, Cl. 60-624.000.

Kronogard, Sven-Olof; Kronogard, Clas-Olof; and Kronogard, Hakan, to AB Volvo. Turbocharging device for an internal combustion engine. 4,616,482, Cl. 60-624.000.

Krueger, Duane A.; and Odorzynski, Thomas W., to American Can Company. Coextruded film of polypropylene, polypropylene blend, and nylon. 4,617,240, Cl. 428-476.100.

Krug, Herbert: *See—*

Dockner, Toni; Hagen, Helmut; and Krug, Herbert, 4,617,395, Cl. 546-178.000.

Krupp Polysius AG: *See—*

Schulte, Hans-Gerd, 4,616,575, Cl. 110-345.000.

Kruse, Barbara L.; Gronli, Darrell D.; and Gronholz, Donald D., to Donaldson Company, Inc. Crimp seal pleated filter assembly. 4,617,122, Cl. 210-493.300.

Kruse, Lyle W.; and McKnight, Richard P., to United States of America, Energy. Underwater radiation detector. 4,617,167, Cl. 376-153.000.

Kuan, Tiong H., to GenCorp Inc. Bushing. 4,617,212, Cl. 428-36.000.

Kubelbock, Alfred: *See—*

Enkner, Bernhard; Amon, Leopold; Kubelbock, Alfred; Trimmel, Wolfgang; Nalepka, Paul; Schropp, Leopold; Schwaighofer, Helmut; Pum, Reinhard; Traxler, Manfred; and Tasch, Franz, 4,617,672, Cl. 373-79.000.

Kubis, Heribert; and Winter, Josef, to M.A.N. Nutzfahrzeuge GmbH. Cylinder liner for a multi-cylinder internal combustion engine and an engine block therefor. 4,616,603, Cl. 123-41.840.

Kubo, Akio. Measuring device for a figure. 4,616,419, Cl. 33-122.000.

Kubo, Keiji: *See—*

Tanaka, Shigemori; Sumino, Fumio; Kubo, Keiji; Hisamura, Masafumi; Toma, Hitoshi; and Fujimura, Naoto, 4,617,245, Cl. 430-58.000.

Kuboki, Shigeo; Maejima, Hideo; and Masuda, Ikuro, to Hitachi, Ltd. Semiconductor integrated circuit device. 4,617,648, Cl. 365-189.000.

Kubota, Ltd.: *See—*

Akira, Takashima; Kobayashi, Masahiko; Nasu, Hitoo; Okida, Yoshishiro; and Tsuji, Kazuhiko, 4,616,872, Cl. 296-190.000.

Kubota, Takashi: *See—*

Inoue, Fumio; Eto, Masahiro; and Kubota, Takashi, 4,617,591, Cl. 358-67.000.

Kubozuka, Takao: *See—*

Hirano, Yoshinori; and Kubozuka, Takao, 4,616,602, Cl. 123-41.270.

Kuechler, Irvin R. Ventilation system for pizza ovens. 4,616,562, Cl. 98-115.100.

Kugele, Thomas G.; Mesch, Keith A.; and Wursthorn, Karl R., to Morton Thiokol, Inc. Stabilizer compositions for PVC. 4,617,334, Cl. 524-177.000.

Kuhn, Kelin J., to Board of Trustees, Leland Stanford, Jr. University. Method and apparatus for pumping lasant slabs. 4,617,669, Cl. 372-70.000.

Kuhn, Werner; and Zilske, Wolfgang, to Degussa Aktiengesellschaft. Bath and process for the electrolytic deposition of gold-indium alloys. 4,617,096, Cl. 204-44.300.

Kulkarni, Sudhir S.: *See—*

Funk, Edward W.; Kulkarni, Sudhir S.; and Chang, Y. Alice, 4,617,126, Cl. 210-651.000.

Kumazaki, Nobuo: *See—*

Takahashi, Kenzo; Kumazaki, Nobuo; Yokoya, Hisao; Nakamura, Hironobu; and Kachi, Tadakatsu, 4,616,695, Cl. 165-54.000.

Kumon, Seiichi, to Mitsubishi Denki Kabushiki Kaisha. Thyristor controlled power source for gradually decreasing loads. 4,617,453, Cl. 219-501.000.

Kumura, Haruyoshi: *See—*

Tanaka, Yoshikazu; Kumura, Haruyoshi; Abo, Keiju; Yamamuro, Sigeaki; and Hirano, Hiroyuki, 4,616,530, Cl. 74-851.000.

Kunitz, Friedrich-Wilhelm; and Schranz, Karl-Wilhelm, to Agfa Gevaert Aktiengesellschaft. Color photographic color coupler-containing recording material. 4,617,256, Cl. 430-557.000.

Kurakake, Mitsuo: *See—*

Kishi, Hajimu; Onuki, Tadayoshi; and Kurakake, Mitsuo, 4,617,640, Cl. 364-708.000.

Kuraray Co., Ltd.: *See—*

Maruyama, Hitoshi; Kajitani, Koichi; and Shiraishi, Makoto, 4,617,239, Cl. 428-452.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*

Hamada, Akira; Takahashi, Hisao; and Ohira, Keiichi, 4,617,231, Cl. 428-297.000.

Hatanaka, Masayoshi; and Takeuchi, Daizo, 4,617,268, Cl. 435-92.000.

Kawai, Yoshio; Kitagawa, Kiyoshi; Endo, Kazue; and Onodera, Chikau, 4,617,104, Cl. 204-301.000.

Kurematsu, Kazuhiko: *See—*

Thai, Cao M.; Oguni, Takayuki; Kurematsu, Kazuhiko; and Kato, Tsuguo, 4,617,330, Cl. 523-220.000.

Kuriyama, Takao: *See—*

Tanioka, Kenkichi; Shidara, Keiichi; Kuriyama, Takao; Takasaki, Yukio; Hirai, Tadaaki; Nonaka, Yasuhiko; and Inoue, Eisuke, 4,617,248, Cl. 430-95.000.

Kuroiwa, Hiroshi; and Oyama, Yoshishige, to Hitachi, Ltd. Method of air-fuel ratio control of internal combustion engines of automobiles. 4,616,621, Cl. 123-585.000.

Kuroki, Junsuke: *See—*

Sugasawa, Fukashi; Kuroki, Junsuke; and Akatsu, Yohsuke, 4,616,848, Cl. 280-707.000.

Kuroki, Kazuo, to Fuji Electric Co., Ltd. Inverters with reduced distributed inductance. 4,617,621, Cl. 363-71.000.

Kurosaki, Mutsuo, to Nifco, Inc. Lock device. 4,616,861, Cl. 292-6.000.

Kurtz, Robert J., to BioResearch Inc. Air leak detector and counter for drainage device. 4,617,020, Cl. 604-321.000.

Kuwabara, Hideki; Sudo, Yoshimi; and Kitagawa, Atusi, to Japan Styrene Paper Corporation. Prefoamed particles of crosslinked propylene-type resin and molded article prepared therefrom. 4,617,323, Cl. 521-60.000.

Kvita, Vratislav: *See—*

Mayer, Carl W.; Kvita, Vratislav; and Pfeifer, Josef, 4,617,151, Cl. 540-1.000.

Kwan Soon, Jung K. Table cooker with ventilator. 4,616,626, Cl. 126-39.00K.

Kyocera Corporation: *See—*

Nishiguchi, Yasuo; and Minami, Keijiro, 4,617,088, Cl. 156-656.000.

Kyomasu, Mikio; Araki, Toshiyuki; Fukunaga, Shinobu; and Shindo, Masahiro, to Ricoh Company, Ltd. Erasable FPLA. 4,617,649, Cl. 365-189.000.

Kyoso, Yasuo: *See—*

Akachi, Yoshiaki; Kyoso, Yasuo; and Matsumaru, Takeo, 4,617,543, Cl. 336-192.000.

Kyowa Hakko Kogyo Co., Ltd.: *See—*

Katsumata, Ryoichi; and Furuya, Akira, 4,617,267, Cl. 435-91.000.

Kysor Industrial Corporation: *See—*

Mehdi, Syed A.; Zieske, William E.; and Ward, David R., 4,616,484, Cl. 62-180.000.

La Telemecanique Electrique: *See—*

Martin, Gabriel R. J.; and Riquier, Jean-Marie J. G., 4,616,896, Cl. 339-17.00C.

Laclede Professional Products, Inc.: *See—*

Montgomery, Robert E., 4,617,190, Cl. 426-61.000.

Lacroix, Roger; and Argant, Yves. String support and neck device for stringed instrument. 4,616,550, Cl. 84-173.000.

Ladney, Michael, Jr.: *See—*

Loren, Norman S.; and Gordon, William E., 4,616,866, Cl. 293-120.000.

LaFiandra, Carlo; and Kreuzer, Justin, to Perkin-Elmer Corporation, The. Bistable aligner cartridge foot. 4,617,681, Cl. 378-34.000.

LaFrance Corporation: *See—*

Perfect, Alan J., 4,616,435, Cl. 40-6.000.

Lahoda, Erwin: *See—*

Schleich, Jean-Baptiste; Lahoda, Erwin; and Lickes, Jean-Paul, 4,616,464, Cl. 52-723.000.

Lai, Pepper Y., to Draper Corporation. Catch-cord drawing device for looms. 4,616,680, Cl. 139-304.000.

Laine, Antoine; and Senez, Claude, to Atochem. Polyurethane latex sizing agents for the paper industry and their method of manufacture. 4,617,341, Cl. 524-591.000.

Lake, Carole J.; Shanley, James J.; and Silverstein, Steven M., to AT&T Information Systems Inc. Interface testing of software systems. 4,617,663, Cl. 371-25.000.

Lambert, Robert E.: *See—*

Juell, Gaylord E.; and Lambert, Robert E., 4,617,616, Cl. 362-267.000.

Lamola, Angelo A.: *See—*

Blonder, Greg E.; Lamola, Angelo A.; and Lieberman, Robert A., 4,617,608, Cl. 361-291.000.

LaMontagne, Maurice P.: *See—*

Blumbergs, Peter; and LaMontagne, Maurice P., 4,617,394, Cl. 546-157.000.

Lan, Wei-Hsin. Music playing device. 4,616,549, Cl. 84-94.00R.

Landrum, Hollis T.: *See—*

Landrum, Van O.; and Landrum, Hollis T., 4,616,854, Cl. 283-74.000.

Landrum, Van O.; and Landrum, Hollis T. Insurance form indicia system. 4,616,854, Cl. 283-74.000.

Landstingens Inkopscentral Lic Ekonomisk Forening: *See—*

Bjornberg, Sten G.; Hjerten, Wilhelm E. S.; and Wadstrom, Torkel M., 4,617,326, Cl. 523-111.000.

Lang, Robert J., to Exxon Research and Engineering Co. Gasification process. 4,617,027, Cl. 48-210.000.

Lange, Gerd, to Glaser, Willy. Panel section interconnecting member and a shelf structure using a plurality of the panel section interconnecting members. 4,616,571, Cl. 108-111.000.

Lange, Lawrence K.: *See—*

Aichelmann, Frederick J., Jr.; and Lange, Lawrence K., 4,617,664, Cl. 371-38.000.

Langen, Hans: *See—*

Wolff, Erich; Langen, Hans; and Braden, Rudolf, 4,617,255, Cl. 430-553.000.

Langner, Carl G., to Shell Oil Company. Riser braking clamp apparatus. 4,616,707, Cl. 166-345.000.

Large, Jean F., to Charbonnages de France. Valve for the pneumatic distribution of fluidizable material. 4,616,426, Cl. 34-57.00A.

Larson, Eric H.: *See—*

Becker, Larry W.; and Larson, Eric H., 4,617,362, Cl. 526-209.000.

Larsson, Leif; and Ekdahl, Bengt, to AB Mataki; and Storalene AB. Non-woven fabric, a bituminous water-proofing membrane built up on it, and the use of the fabric as a carcass in such a membrane. 4,617,229, Cl. 428-284.000.

Larter, Stephen R.: *See—*

Senftle, Joseph T.; and Larter, Stephen R., 4,617,467, Cl. 250-461.100.

Latka, Henry C., to General Signal Corporation. System for controlling the diameter of a crystal in a crystal growing furnace. 4,617,173, Cl. 422-107.000.

Lau, Yue-Ying, to United States of America, Navy. Collective interaction klystron. 4,617,493, Cl. 315-5.000.

Laurence, Lynne: *See—*

Jean, Joseph A., Jr.; and Laurence, Lynne, 4,616,367, Cl. 2-452.000.

Laurent, Jean; and Fabre, Andre , to Institut Francais du Petrole. Device for anchoring a probe in a well, by opening mobile arms. 4,616,703, Cl. 166-66.400.

Lauro, Charles W.: *See—*

Quinlan, Robert L., Jr.; and Lauro, Charles W., 4,616,824, Cl. 272-86.000.

Lausch, Wolfram: *See—*

Amende, Welf; Lausch, Wolfram; and Zechmeister, Hartwin, 4,617,070, Cl. 148-152.000.

Lawrie, Ian J.: *See—*

Chopping, Geoffrey; Lawrie, Ian J.; and Maric, Milan Z., 4,617,659, Cl. 370-100.000.

Lawton Haygood Corporation: *See—*

Haygood, Lawton C., 4,616,627, Cl. 126-77.000.

LeaRonal, Inc.: *See—*

Nobel, Fred I.; Ostrow, Barnet D.; and Schram, David N., 4,617,097, Cl. 204-44.400.

Leavitt, George E.; and LoStracco, Felice, to Kidde, Inc. Photoelectric smoke detector with adjustable background signal. 4,616,928, Cl. 356-338.000.

Leboutet, Hubert P.; and Aucouturier, Jeanne J., to CGR-MEV. Electron gun for a linear accelerator and accelerating structure incorporating such a gun. 4,617,494, Cl. 315-5.410.

Leco Corporation: *See—*

Bonnard, John A., 4,616,938, Cl. 374-38.000.

Lederer, Gabor. Electric light fixture. 4,617,614, Cl. 362-212.000.

Lee, James M. Podded cleat horseshoe. 4,616,709, Cl. 168-13.000.

Lee, John W., Jr.: *See—*

Borror, Alan L.; Cincotta, Louis; and Lee, John W., Jr., 4,617,402, Cl. 548-455.000.

Lee, Jong J. Automatic fish hook. 4,616,439, Cl. 43-36.000.

Lee, Mei-Tsu: *See—*

Schwab, Gerhart; Lee, Mei-Tsu; and Bentley, James W., 4,617,099, Cl. 204-133.000.

Lee, Seung J. Process for producing blackboard crayon. 4,617,058, Cl. 106-19.000.

Lees, Michael J., to Ciba-Geigy. Scale inhibition. 4,617,129, Cl. 210-700.000.

Leger, Claude, to Dispovet. Protective slipper adaptable to different sizes. 4,616,428, Cl. 36-7.10R.

Legrand, Maurice: *See—*

Echevin, Michel; Piegay, Yves; and Legrand, Maurice, 4,616,842, Cl. 280-602.000.

Leir, Charles M., to Riker Laboratories, Inc. Process for the preparation of derivatives of piperidine. 4,617,396, Cl. 546-233.000.

Lemay, Marshall A.: *See—*

Bullock, Donald F.; Wilson, Austin F.; Lemay, Marshall A.; and Miles, David B., 4,617,514, Cl. 324-137.000.

Lemerre, Guy. Prefabricated constructions and their components. 4,616,452, Cl. 52-71.000.

Lemke, Gary, to ASV Corporation. Steering mechanism for all season vehicle. 4,616,724, Cl. 180-6.480.

Lengyel, Albin D. Method for protecting plant life from acidic atmospheric pollutants. 4,617,049, Cl. 71-88.000.

Lenz, Robert W.; and Behm, Dean T., to Dow Chemical Company, The. Thermotropic liquid crystalline polymers.. 4,617,370, Cl. 528-191.000.

Lenzner, Phillip M. Plant support. 4,616,442, Cl. 47-45.000.

Leonard, Gary S., to Carrier Corporation. Diffuser wall control. 4,616,483, Cl. 62-115.000.

Leriche, Christian: *See—*

Augustin, Daniel; Leriche, Christian; and Poisson, Pierre, 4,617,354, Cl. 525-301.000.

Lerner, Boaz: *See—*

Barzuza, Ytzhak; and Lerner, Boaz, 4,617,120, Cl. 210-409.000.

Leschke, Harald: *See—*

Sacco, Bruno; Tomforde, Johann; Paschke, Joachim; and Leschke, Harald, 4,616,869, Cl. 296-1.00S.

Lespinats, Christian; and Minet, Michel, to Valeo. Process for heating a substance, for purposes of vulcanization or polymerization. 4,617,439, Cl. 219-10.55M.

L'Etat Francais represente par le Delegue General pour l'Armement Bureau des Brevets et Inventions: *See—*

Montier, Patrick; Sauvestre, Jean-Claude; Bethmann, Karl W.; Bisping, Bernhard; and Wallow, Peter, 4,616,569, Cl. 102-517.000.

Letoquart, Bruno, to Thomson-CSF. Process for increasing the range and particularly the protection against jamming of an MLS landing system and means for performing this process. 4,617,569, Cl. 342-412.000.

Leuprecht, Helmut, to Rauscher & Co. Verbandstoff- und Wattefabriken. Absorbent surgical dressing, and process for manufacturing same. 4,617,021, Cl. 604-365.000.

Leutgob, Alois: *See—*

Lugscheider, Walter; Mullner, Paul; Schiffer, Wilhelm; and Leutgob, Alois, 4,617,671, Cl. 373-22.000.

Levenson, Corey H.: *See—*

Sheldon, Edward L., III; Levenson, Corey H.; Mullis, Kary B.; Rapoport, Henry; and Watson, Robert M., 4,617,261, Cl. 435-6.000.

Leveque, Jean-Luc M.; and Gras, Gilbert J., to L'Oreal. Process and apparatus for making a numerical determination of the color, or of a change in color, of an object. 4,616,933, Cl. 356-416.000.

Lever Brothers Company: *See—*

Robb, Ian D.; and Duggleby, Peter M., 4,617,139, Cl. 252-135.000.

Levine, Stephen N., to Motorola, Inc. Digital lock detector for a phase-locked loop. 4,617,520, Cl. 328-133.000.

Levitz, Steven E.: *See—*

Sheppard, Isaac, Jr.; Jewell, Everett; Levitz, Steven E.; and Taylor, Rudolph T., 4,616,453, Cl. 52-93.000.

Levy, Shlomo: *See—*

Elmaleh, David R.; Levy, Shlomo; Shiue, Chyng-Yann; and Wolf, Alfred P., 4,617,386, Cl. 536-122.000.

Lewis, Adam J.: *See—*

Schulte, Eric F.; and Lewis, Adam J., 4,616,403, Cl. 29-572.000.

Lewis, Duane J.; and McNeese, William H., to Vista Chemical Company. Production and recovery of alumina from vapor phase hydrolysis of aluminum trialkoxides. 4,617,183, Cl. 423-630.000.

Lewis, James L., to Bott, Arthur J., a part interest. Tow bar block and tow bar assembly. 4,616,970, Cl. 414-563.000.

Lewis, Roger N.: *See—*

Muenchow, John R.; Bock, Lawrence A.; and Lewis, Roger N., 4,617,324, Cl. 521-96.000.

Libbey, William J.: *See—*

Page, Matthew A.; Libbey, William J.; and Lundeen, Allan J., 4,617,352, Cl. 525-240.000.

Lickes, Jean-Paul: *See—*

Schleich, Jean-Baptiste; Lahoda, Erwin; and Lickes, Jean-Paul, 4,616,464, Cl. 52-723.000.

Lieberman, Robert A.: *See—*

Blonder, Greg E.; Lamola, Angelo A.; and Lieberman, Robert A., 4,617,608, Cl. 361-291.000.

Liebig, Winfried: *See—*

Siekmann, Helmut E.; Bassler, Jurgen; and Liebig, Winfried, 4,617,130, Cl. 210-748.000.

Lifecare Services, Inc.: *See—*

Chu, Raymond D.; Rubner, Anthony C.; and Fellinger, Michael W., 4,617,637, Cl. 364-505.000.

Lifecodes Corp.: *See—*

Tomblin, Graham J.; Wexler, Karen B.; Ford, John P.; and Fischer, Stuart G., 4,617,102, Cl. 204-299.00R.

Light, William G., to Allied Corporation. Production of low alcoholic content beverages. 4,617,127, Cl. 210-651.000.

Lill, Graham D., to U.S. Philips Corporation. High-speed switched oscillator. 4,617,534, Cl. 331-117.00R.

Linco Holland Engineering B.V.: *See—*

Tieleman, Rudolf J., 4,616,380, Cl. 17-11.000.

Lindquist, Julius A.: *See—*

Saferstein, Lowell; Lindquist, Julius A.; and Wolf, Stephen J., 4,616,644, Cl. 128-156.000.

Lindroos, Jarl: *See—*

Stout, Michael E.; Peacock, Bobbie; and Lindroos, Jarl, 4,617,112, Cl. 209-11.000.

Lingl Corporation: *See—*

Lingl, Hans, Jr., 4,616,995, Cl. 432-9.000.

Lingl, Hans, Jr., to Lingl Corporation. Tunnel dryer for bricks and like objects. 4,616,995, Cl. 432-9.000.

Lingner & Fischer GmbH: *See—*

Flier, Gustav, 4,616,768, Cl. 222-92.000.

Lings, Barry W.; and Nicholson, John H., to Rolls-Royce plc. Cooled vane or blade for a gas turbine engine. 4,616,976, Cl. 416-97.00R.

Link, Edwin A., to RTE Corporation. Submersible primary circuit breaker. 4,617,545, Cl. 337-74.000.

Lio, Kuei M. Concealed pull handle. 4,616,379, Cl. 16-115.000.

Lippel, Bernard, to Quanticon Inc. Compatible color television with regenerable signals. 4,617,597, Cl. 358-310.000.

Lippert, Bernhard; and Raudaschl, Gabriele, to Degussa Aktiengesellschaft. Process for the production of pure cis-platinum-(II)-idiammine dichloride. 4,617,410, Cl. 556-137.000.

Lisec, Peter. Apparatus for removing strips from compartments. 4,616,746, Cl. 198-463.300.

Lister, Robert W. Soil perforator. 4,616,714, Cl. 172-21.000.

Litton Systems, Inc.: *See—*

Martin, Graham J., 4,616,930, Cl. 356-350.000.

Liu, Kuo-Ching, to Quantronix Corporation. Frequency doubling a laser beam by using intracavity type II phase matching. 4,617,666, Cl. 372-22.000.

Liu, Sophia Y., to Stauffer Chemical Company. Biocidal agents for use in plastics, polymers and cellulosic materials. 4,617,328, Cl. 523-122.000.

Liu, Yi-Tsung: *See—*

Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Patel, Naginbhai; and Liu, Yi-Tsung, 4,617,300, Cl. 514-192.000.

Liu, Yung S.: *See—*

Cole, Herbert S., Jr.; Liu, Yung S.; and Philipp, Herbert R., 4,617,085, Cl. 156-643.000.

Liwak, Susan M.: *See—*

Weese, Richard H.; Crook, Evan H.; and Liwak, Susan M., 4,617,329, Cl. 523-201.000.

Lloyd, Stephen R. Sleep posture monitor and alarm system. 4,617,525, Cl. 340-573.000.

Lloyd, William J., to Hewlett-Packard Company. Inversely processed resistance heater. 4,616,408, Cl. 29-611.000.

Lockheed Corporation: *See—*

Cairns, James L., 4,616,900, Cl. 350-96.200.

Gray, Robert M., 4,616,499, Cl. 72-56.000.

LOF Plastics Inc.: *See—*

Ives, Albert G., 4,617,209, Cl. 428-31.000.

Lok, Kar P.: *See—*

Ober, Christopher K.; and Lok, Kar P., 4,617,249, Cl. 430-137.000.

Lokar, Raymond S.: *See—*

Richards, Tom; and Lokar, Raymond S., 4,617,456, Cl. 219-523.000.

L'Oreal: *See—*

Leveque, Jean-Luc M.; and Gras, Gilbert J., 4,616,933, Cl. 356-416.000.

Loren, Norman S.; and Gordon, William E., to Ladney, Michael, Jr. Vehicle bumper. 4,616,866, Cl. 293-120.000.

Lorenzen, Heinz-Christen; Heitmann, Uwe; and Steiniger, Wolfgang, to Hauni-Werke Korber & Co. KG. Method and apparatus for forming a homogeneous mass of comminuted smokable material. 4,616,663, Cl. 131-109.300.

Losenno, Luigi G. Hair treatment solution collector. 4,616,666, Cl. 132-9.000.

LoStracco, Felice: *See—*

Leavitt, George E.; and LoStracco, Felice, 4,616,928, Cl. 356-338.000.

Louie, Robert E.: *See—*

Dobkin, Milton B.; and Louie, Robert E., 4,617,379, Cl. 530-388.000.

Lovegrove, Peter C., to United Kingdom Atomic Energy Authority. Electrophoretic separator. 4,617,103, Cl. 204-300.00R.

Lowel-Light Manufacturing, Inc.: *See—*

Lowell, Ross; Seligman, Marvin; and Calamai, Edward, 4,616,384, Cl. 24-335.000.

Lowell, Ross; Seligman, Marvin; and Calamai, Edward, to Lowel-Light Manufacturing, Inc. Flag frame and clamp. 4,616,384, Cl. 24-335.000.

Lucas Industries Public Limited Company: *See—*

Gaskell, David J., 4,616,781, Cl. 239-124.000.

Ludwig, Frank A.: *See—*

Helber, Carlyle L., Jr.; and Ludwig, Frank A., 4,616,596, Cl. 118-603.000.

Luetzow, Edwin J., to Tel Tec Inc. Flexible wire cable and process of making same. 4,616,717, Cl. 174-117.00F.

Lugscheider, Walter; Mullner, Paul; Schiffer, Wilhelm; and Leutgob, Alois, to Voest-Alpine Aktiengesellschaft. Arrangement for producing metals, such as molten pig iron, steel pre-material and ferroalloys. 4,617,671, Cl. 373-22.000.

Lukenbach, Elvin R.; and Tenore, Richard R., to Johnson & Johnson Baby Products Company. Process for the preparation of phosphate surfactants. 4,617,414, Cl. 558-87.000.

Lundberg, Robert D.; Peiffer, Dennis G.; and Phillips, Robert R., to Exxon Research and Engineering Co. Novel polymer compositions based on sulfonated ionomers and amine containing polymers. 4,617,337, Cl. 524-399.000.

Lundeen, Allan J.: *See—*

Page, Matthew A.; Libbey, William J.; and Lundeen, Allan J., 4,617,352, Cl. 525-240.000.

Luschnig, Franz: *See—*

Freisinger, Henry; Luschnig, Franz; Stritzl, Karl; and Zotter, Johann, 4,616,843, Cl. 280-618.000.

Luthra, Krishan L., to General Electric Company. High pressure sodium lamp having improved pressure stability. 4,617,492, Cl. 313-630.000.

Lutz, Erno B.; Weber, Bruce A.; and Markle, Jerry, to IMCS Corporation. High voltage switching device. 4,617,542, Cl. 335-196.000.

Lutze, Theodor: *See—*

Caspar, Wolfhard; Lutze, Theodor; and Schwarz, Theodor, 4,616,635, Cl. 128-20.000.

Lynch, Gordon: *See—*

Gibson, Harold; Lynch, Gordon; Mark, David; and Vincent, James H., 4,616,513, Cl. 73-863.230.

Lynn, Kenneth: *See—*

Tseng, Charles C.; and Lynn, Kenneth, 4,616,802, Cl. 251-7.000.

Lyons, James E., to Sun Refining and Marketing Company. Ruthenium-cobalt carbonyl catalysts for the dealkoxyhydroxymethylation of aldehyde acetals to form glycol ethers. 4,617,287, Cl. 502-174.000.

Lyons, Shirley. Wrap. 4,616,365, Cl. 2-69.000.

M.A. Industries, Inc.: *See—*

Stout, Michael E.; Peacock, Bobbie; and Lindroos, Jarl, 4,617,112, Cl. 209-11.000.

M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*

Amende, Welf; Lausch, Wolfram; and Zechmeister, Hartwin, 4,617,070, Cl. 148-152.000.

Knop, Klaus; and Heinrich, Peter, 4,617,051, Cl. 75-91.000.

M.A.N. Nutzfahrzeuge GmbH: *See—*

Kubis, Heribert; and Winter, Josef, 4,616,603, Cl. 123-41.840.

M. W. Kellogg Company, The: *See—*

Wells, Thomas A.; and Petterson, William C., 4,617,109, Cl. 208-130.000.

Ma, Thomas T., to Ford Motor Company. Internal combustion engine and cam drive mechanism therefor. 4,616,606, Cl. 123-90.170.

Maatela, Pentti I. Coupling. 4,616,951, Cl. 403-290.000.

MacChesney, John B.; Simpson, Jay R.; and Walker, Kenneth L., to AT&T Bell Laboratories. Doped optical fiber. 4,616,901, Cl. 350-96.340.

MacCracken, Calvin D. Superdensity assembly method and system for plastic heat exchanger resists large buoyancy forces and provides fast melt down in phase change thermal storage. 4,616,390, Cl. 29-157.30R.

MacDonald, Lindsay W., to Crosfield Electronics Limited. Video retouching system. 4,617,592, Cl. 358-80.000.

MacDonald, Russell J., to Ionics, Incorporated. Synthesis of highly cross-linked cation-exchange polymers from an aqueous solution. 4,617,321, Cl. 521-38.000.

Mackle, Michael T., to Wormald International, Limited. Security lock assembly. 4,616,865, Cl. 292-341.160.

Macksey, Harry M.; and Hudgens, Rick D., to Texas Instruments Incorporated. Process for fabricating a double recess channel field effect transistor. 4,616,400, Cl. 29-571.000.

Maeda, Kazuhiko; and Kawada, Akira, to Central Glass Company, Limited. Fluorine-containing resin composition for optical use. 4,617,350, Cl. 525-153.000.

Maeda, Kiyoshi: *See—*

Nezu, Yasutada; Tamura, Yutaka; Mizuno, Yuuzi; Iwamoto, Hiroshi; Yokota, Akihiro; and Maeda, Kiyoshi, 4,617,578, Cl. 346-108.000.

Maeda, Satoru: *See—*

Katagiri, Koichi; Hanamoto, Yoshihiro; Maeda, Satoru; and Taniguchi, Ikuo, 4,617,594, Cl. 358-150.000.

Maejima, Hideo: *See—*

Kuboki, Shigeo; Maejima, Hideo; and Masuda, Ikuro, 4,617,648, Cl. 365-189.000.

Maeshima, Katsuyoshi: *See—*

Yoshida, Tadashi; Shimizu, Katsuichi; Arimoto, Shinobu; Maeshima, Katsuyoshi; Nagashima, Nao; and Watanabe, Asao, 4,617,596, Cl. 358-280.000.

Mafell-Saschinenfabrik Rudolf Mey GmbH & Co. KG: *See—*

Haas, Rudiger; Krauss, Ernst; and Walter, Herbert, 4,616,447, Cl. 51-59.0SS.

Magnussen, Haakon T., Jr.; and Ruskewicz, Stephen J., to Rainin Instrument Co., Inc. Replaceable tip assembly for pipette. 4,616,514, Cl. 73-864.140.

Mahler, Darrell. Liquid-dispensing container assembly. 4,616,759, Cl. 215-228.000.

Mahnig, Fritz: *See—*

Hornung, Klaus; Alt, Anton; Schulte, Gunter; and Mahnig, Fritz, 4,617,069, Cl. 148-138.000.

Makio, Tatsumi; Hayakawa, Kazumasa; and Sakaguchi, Genta, to Minolta Camera Kabushiki Kaisha. Paper sheet feeding arrangement. 4,616,819, Cl. 271-122.000.

Malabre, Christian: *See—*

Soum, Jacques; and Malabre, Christian, 4,616,388, Cl. 29-149.50S.

Malinski, Richard F.; and Sikorcin, John, to Vapor Corporation. Valve actuator with continuous manual override. 4,616,528, Cl. 74-626.000.

Mallinckrodt, Inc.: *See—*

Dreibelbis, John A., 4,617,060, Cl. 106-193.00R.

Mamodaly, Narguise: *See—*

Bert, Alain; and Mamodaly, Narguise, 4,617,528, Cl. 331-56.000.

Manabe, Tsuneo; Kobayashi, Shigeyoshi; and Kijimuta, Hitoshi, to Asahi Glass Company Ltd. Calcium phosphate type crystallizable glass. 4,617,279, Cl. 501-10.000.

Manchester R & D Partnership: *See—*

Fergason, James L., 4,616,903, Cl. 350-334.000.

Mancini, George M.; and Huber, Rudolph A., to Matth. Hohner AG. Improviser circuit and technique for electronic musical instrument. 4,616,547, Cl. 84-1.030.

Mandelson, John; McCarthy, David J.; Sitnai, Oto; and Whitehead, Alan B., to Comonwealth Scientific and Industrial Research Organization and CSR Limited. Process for the recovery of oil from shale. 4,617,107, Cl. 208-427.000.

Mangulis, Visvaldis; and Schiff, Leonard N., to RCA Corporation. Synchronizing system for spread spectrum transmissions between small earth stations by satellite via an intermediate hop to a large earth station. 4,617,674, Cl. 375-1.000.

Mann, Philip, to Tuffy Books, Inc. Book structure. 4,616,851, Cl. 281-15.00R.

Mannesmann Rexroth GmbH: *See—*

Amrhein, Reinhard, 4,616,675, Cl. 137-625.650.

Manresa, Inc.: *See—*

Vaillancourt, Vincent L., 4,617,012, Cl. 604-29.000.

Manufacturers Tool Service, Inc.: *See—*

Anderson, Russell W.; and Held, Michael J., 4,616,965, Cl. 408-204.000.

Manuli Autoadesivi SpA: *See—*

Galli, Graziano; Penzo, Lucio; and Pina, Felice, 4,617,199, Cl. 427-208.000.

Marcandalli, Ulderico, to Rockwell-Rimoldi S.p.A. Device providing for three sewing machine needle strokes. 4,616,585, Cl. 112-221.000.

Marchal, Daniel: *See—*

Courtoy, Jean-Francois; and Marchal, Daniel, 4,617,222, Cl. 428-142.000.

Marei, Abdel H., to American Cyanamid Company. Non-irritating pyrethroid formulations in vegetable oils and tall oils. 4,617,318, Cl. 514-520.000.

Mareydt, Ray G. Carrier rack and stanchion. 4,616,772, Cl. 224-326.000.

- Maric, Milan Z.: *See—*
  - Chopping, Geoffrey; Lawrie, Ian J.; and Maric, Milan Z., 4,617,659, Cl. 370-100.000.
- Marietta, Charles F.; and Holley, Kenneth, to Nordson Corporation. Spray gun carriage assembly having inertial damping and a variable stroke. 4,616,782, Cl. 239-752.000.
- Marinov, Marin I.: *See—*
  - Nikolov, Ivan D., deceased; Dimova, Vassilka P., heir; Dimov, Dobromir I., heir; Dimov, Petar I., heir; Marinov, Marin I.; Peytchev, Ivan M.; Rashev, Tzolo V.; and Tchorbov, Iliya G., 4,616,808, Cl. 266-207.000.
- Mark, David: *See—*
  - Gibson, Harold; Lynch, Gordon; Mark, David; and Vincent, James H., 4,616,513, Cl. 73-863.230.
- Markle, Jerry: *See—*
  - Lutz, Erno B.; Weber, Bruce A.; and Markle, Jerry, 4,617,542, Cl. 335-196.000.
- Marks, Alvin M. Electrothermodynamic power converter with converging flows. 4,617,483, Cl. 310-10.000.
- Marquardt, Fred J.: *See—*
  - Christophersen, John A.; Marquardt, Fred J.; and Zipperian, Donald E., 4,617,113, Cl. 209-170.000.
- Marsh, Richard L.: *See—*
  - Wetzel, Robert E.; and Marsh, Richard L., 4,617,075, Cl. 156-137.000.
- Marshall, Robert M., to Allied Corporation. Additives to polyester tire yarn overfinish to reduce dip penetration. 4,617,236, Cl. 428-391.000.
- Martin, Gabriel R. J.; and Riquier, Jean-Marie J. G., to La Telemecanique Electrique. Connecting terminal for printed circuit board. 4,616,896, Cl. 339-17.00C.
- Martin, Graham J., to Litton Systems, Inc. Optically biased twin ring laser gyroscope. 4,616,930, Cl. 356-350.000.
- Martin, Jeffrey A.; and Pomeroy, Philip S., to Kimberly-Clark Corporation. Surgical drape for caesarean section. 4,616,642, Cl. 128-132.00D.
- Martin, Joel L., to Phillips Petroleum Company. Process and catalyst for olefin polymerization. 4,617,361, Cl. 526-114.000.
- Martin Marietta Corporation: *See—*
  - Chen, Wenpeng; and Byer, Norman E., 4,617,532, Cl. 331-107.00R.
- Martin, Michael: *See—*
  - Pedersen, Vernon G.; and Martin, Michael, 4,616,645, Cl. 128-204.260.
- Martin, Michael A.: *See—*
  - Johns, Allan T.; and Martin, Michael A., 4,617,636, Cl. 364-482.000.
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  - Matsumoto, Yoshiyuki; and Maru, Hideki, 4,616,849, Cl. 280-724.000.
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- Matrone, John L., to Fairchild Camera and Instrument Corp. Robotic hand and method for manipulating printed circuit boards. 4,616,971, Cl. 414-730.000.
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  - Akachi, Yoshiaki; Kyoso, Yasuo; and Matsumaru, Takeo, 4,617,543, Cl. 336-192.000.
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  - Nakamura, Takeshi; and Matsumoto, Ikuo, 4,617,488, Cl. 310-321.000.
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  - Yamada, Hideaki; Otsuji, Shogo; Isobe, Kimiyasu; Matsunaga, Kuniyoshi; and Inukai, Tadahiko, 4,617,263, Cl. 435-25.000.
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  - Hikino, Tadashi; and Turuda, Kunihiro, 4,616,993, Cl. 431-41.000.
  - Hosaka, Tomiharu; Kishimoto, Yoshio; and Shimotsuma, Wataru, 4,617,356, Cl. 525-429.000.
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  - Tsuruoka, Keiichirou; and Minohara, Ryo, 4,617,598, Cl. 360-10.300.
- Matsushita, Takashi, to Sanden Corporation. Spring coupling for an electromagnetic clutch. 4,616,742, Cl. 192-84.00C.
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  - Klock, Anita H.; and Chodak, Jan B., 4,617,643, Cl. 364-900.000.
- Matth. Hohner AG: *See—*
  - Mancini, George M.; and Huber, Rudolph A., 4,616,547, Cl. 84-1.030.
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  - Hattori, Toshihiko; Akagi, Yuji; and Kohara, Hideo, 4,616,985, Cl. 418-173.000.
  - Kanai, Seita; and Hirochika, Takashi, 4,616,847, Cl. 280-707.000.
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- McDaniel, Donald E., to Joy Manufacturing Company. Suspension system for operator's compartment. 4,616,725, Cl. 180-89.130.

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  - Grote, Michael G., 4,616,699, Cl. 165-104.260.
- McFalls, Bob L.; and Tighe, William R., to Ferro Manufacturing Corporation. Adjustable seat construction. 4,616,875, Cl. 297-325.000.
- McFarland, Robert E. Apparatus for loading a wheelchair or similar object. 4,616,972, Cl. 414-749.000.
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  - Green, David T.; McGarry, Richard A.; and Smith, Graham, 4,616,650, Cl. 128-325.000.
- McGough, Gerald B.: *See—*
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- McNeese, William H.: *See—*
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- McNeil Corporation: *See—*
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- McQuiggin, John, to E.T.F. Enterprises, Inc. Method of making an article of footwear. 4,616,430, Cl. 36-14.000.
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  - Hiscock, Donald F.; Jacomet, Joe A.; and Carter, Deborah H., 4,617,223, Cl. 428-211.000.
  - Schwab, Gerhart; Lee, Mei-Tsu; and Bentley, James W., 4,617,099, Cl. 204-133.000.
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  - Van Woensel, Dirk; and Van Woensel, Ilja, 4,616,382, Cl. 17-73.000.
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- Mental, Richard W., to Microlite, Inc. Shielded electroluminescent lamp. 4,617,195, Cl. 427-66.000.
- Menzel, Stanley W. O., to Rib Loc Hong Kong Limited. Helically-formed pipe winding machine. 4,616,495, Cl. 72-49.000.
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  - Ashton, Wallace; Walton, Edward; and Tolman, Richard L., 4,617,304, Cl. 514-261.000.
  - Christensen, Burton G.; Cama, Lovji D.; and Schmitt, Susan M., 4,617,152, Cl. 540-200.000.
  - McAleer, William J.; and Miller, William J., 4,617,260, Cl. 435-5.000.
  - Patchett, Arthur A.; and Wyvratt, Matthew J., Jr., 4,617,301, Cl. 514-214.000.
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  - Young, Robert N.; and Rokach, Joshua, 4,617,407, Cl. 549-462.000.
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  - Eidenschink, Rudolf; and Krause, Joachim, 4,617,140, Cl. 252-299.610.
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- Merry, Richard P., to Minnesota Mining and Manufacturing Company. Catalytic converter for automotive exhaust system. 4,617,176, Cl. 422-179.000.
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  - Mental, Richard W., 4,617,195, Cl. 427-66.000.
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  - Dobkin, Milton B.; and Louie, Robert E., 4,617,379, Cl. 530-388.000.
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- Millroy, John P. Fishing lure. 4,616,440, Cl. 43-42.120.
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- Minato, Ichiro: *See—*
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  - Lespinats, Christian; and Minet, Michel, 4,617,439, Cl. 219-10.55M.
- Minigrip, Inc.: *See—*
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- Kimura, Hiroshi; Hisajima, Masahiko; Shibata, Kiyoshi; and Morimoto, Kiyoshi, 4,616,924, Cl. 355-15.000.

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- Tarbutton, Victor F.; Mitchell, J. Edwin; and Blumenkranz, Robert M., 4,617,522, Cl. 330-149.000.

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- Walker, James L.; and Mitry, Mourad T., 4,617,343, Cl. 524-817.000.

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- Shimizu, Yutaka, 4,617,635, Cl. 364-474.000.

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- Ishii, Toshiaki, 4,616,733, Cl. 187-29.00R.
- Izumida, Kiichiro; and Kasai, Ritaroh, 4,617,634, Cl. 364-455.000.
- Katou, Kazuo; Mizugami, Susumu; Tabuchi, Mamoru; Nakamura, Masayuki; Kobayashi, Toshiyuki; and Ritoh, Naotake, 4,616,545, Cl. 83-558.000.
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- Sonoda, Nobuharu, 4,617,346, Cl. 525-68.000.

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- Ushijima, Hiroyuki; Shimomura, Hiroshi; and Nakayama, Masaaki, 4,616,962, Cl. 407-113.000.

Mitsubishi Paper Mills, Ltd.: *See—*
- Miyauchi, Masahiro; and Higuchi, Masahiro, 4,617,582, Cl. 346-208.000.

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- Matsuura, Mitsuyuki; Fujita, Takashi; and Sakamoto, Yoshio, 4,617,284, Cl. 502-111.000.
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- Yano, Kazunori; Goto, Teruhisa; and Abe, Katsuhiro, 4,617,372, Cl. 528-216.000.

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- Ueki, Toru; Fukuda, Yoshiaki; Usami, Katsuyuki; and Kanasaki, Kazuharu, 4,617,207, Cl. 428-1.000.
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- Ootsuka, Yoshinori; Hattori, Tadashi; Ozaki, Tadashi; and Miura, Kazuhiko, 4,616,502, Cl. 73-35.000.

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- Mathers, Roy, 4,617,054, Cl. 75-246.000.

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- Shiraishi, Hisashi; Kato, Hisatoyo; and Miyahara, Junji, 4,617,468, Cl. 250-484.100.

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Miyauchi, Tetsuro; and Niino, Koji, to S. M. C. Co., Ltd. Miniature D.C. motor with improved terminal plate and brushes. 4,617,486, Cl. 310-233.000.

Miyoshi, Takahito: *See—*
- Yamaguchi, Nobutaka; Utumi, Masahiro; Fujiyama, Masaaki; and Miyoshi, Takahito, 4,617,226, Cl. 428-216.000.

Mizogui, Toyokazu: *See—*
- Someya, Hiromi; Aihara, Yoshihiko; Suzuki, Nobuyuki; and Mizogui, Toyokazu, 4,616,916, Cl. 354-442.000.

Mizugami, Susumu: *See—*
- Katou, Kazuo; Mizugami, Susumu; Tabuchi, Mamoru; Nakamura, Masayuki; Kobayashi, Toshiyuki; and Ritoh, Naotake, 4,616,545, Cl. 83-558.000.

Mizuno, Yuuzi: *See—*
- Nezu, Yasutada; Tamura, Yutaka; Mizuno, Yuuzi; Iwamoto, Hiroshi; Yokota, Akihiro; and Maeda, Kiyoshi, 4,617,578, Cl. 346-108.000.

Mizutani, Isao: *See—*
- Takeuchi, Tsunezo; and Mizutani, Isao, 4,616,427, Cl. 34-92.000.

MM Systems Corporation: *See—*
- Nicholas, John D., 4,616,460, Cl. 52-396.000.

Mobil Oil Corporation: *See—*
- Bell, Weldon K.; Haag, Werner O.; Kirker, Garry W.; and Klocke, Donald J., 4,617,288, Cl. 502-331.000.
- Boyd, Dana M.; and Bustin, Franz, 4,617,008, Cl. 493-248.000.
- Horodysky, Andrew G.; and Ashjian, Henry, 4,617,133, Cl. 252-32.500.

Mochizuki, Shoji: *See—*
- Murata, Mitsuru; Kobayashi, Toyohiro; Mochizuki, Shoji; and Kawashima, Masamichi, 4,616,946, Cl. 400-704.000.

Modern Fibers, Inc.: *See—*
- Cadenhead, Roy A., Sr., 4,617,208, Cl. 428-17.000.
- Cadenhead, Roy A., Sr., 4,617,218, Cl. 428-92.000.

Moeller, Charles R., to International Totalizator Systems, Inc. Thermal printhead structure. 4,617,576, Cl. 346-76.0PH.

Molina, Jorge W., to Deutsch Fastener Corp. Panel fastener. 4,616,967, Cl. 411-105.000.

Moll, Manfred: *See—*
- Romer, Rudolf; Bethmann, Karl W.; Jaeneke, Christian; and Moll, Manfred, 4,616,567, Cl. 102-489.000.

Moncelle, Michael E.: *See—*
- Staniak, Waldema A.; Samuelson, Robert E.; and Moncelle, Michael E., 4,616,616, Cl. 123-357.000.

Monicell Limited: *See—*
- Muirhead, Allen D., 4,617,463, Cl. 250-342.000.

Monsanto Company: *See—*
- Balthazor, Terry M.; and Pulwer, Mitchell J., 4,617,415, Cl. 558-169.000.

Montedison S.p.A.: *See—*
- Albizzati, Enrico, 4,617,285, Cl. 502-134.000.
- Ugo, Renato; Campolmi, Stefano; and Carletti, Vittorio, 4,617,416, Cl. 558-242.000.

Montgomery, Robert E., to Laclede Professional Products, Inc. Enzymatic powder milk. 4,617,190, Cl. 426-61.000.

Montier, Patrick; Sauvestre, Jean-Claude; Bethmann, Karl W.; Bisping, Bernhard; and Wallow, Peter, to Rheinmetall GmbH; and L'Etat Francais represente par le Delegue General pour l'Armement Bureau des Brevets et Inventions. Armor penetrating projectile. 4,616,569, Cl. 102-517.000.

Moore, Alan R.; and Januszewski, Nicholas M., to Hayes-Albion Corporation. Anhydrous knife. 4,616,580, Cl. 111-7.000.

Moore, Arnold R. Rolling hoop game. 4,616,830, Cl. 273-126.00R.

Moore, David E., to Cryoblast, Inc. Cleaning method and apparatus. 4,617,064, Cl. 134-7.000.

Moore, James O., to Moore Products Company. Fluid velocity measuring method and apparatus. 4,616,510, Cl. 73-861.270.

Moore, John S., to Electro-Biology, Inc. Coil construction for electromagnetic treatment of an afflicted body region. 4,616,629, Cl. 128-1.500.

Moore Products Company: *See—*
- Moore, James O., 4,616,510, Cl. 73-861.270.

Moore, Steve R.: *See—*
- Farese, Virgil A.; Grover, Fred C.; Moore, Steve R.; and Gilfillan, Robert W., 4,616,395, Cl. 29-460.000.

Mooz, Dietrich; and Dirks, Rolf, to Felten & Guilleaume Energietechnik GmbH. High voltage, high rupture capacity fuse. 4,617,544, Cl. 337-3.000.

Morach, Eugen: *See—*
- Rittner, Siegbert; Morach, Eugen; Schindler, Hubert; and John, Peter, 4,617,197, Cl. 427-180.000.

Moran, Michael J., to USM Corporation. Weighing apparatus with compartmentalized weighing bucket. 4,616,722, Cl. 177-99.000.

Morel, Claude: *See—*
- Bigg, Dennis; Morel, Claude; and Sevrin, Mireille, 4,617,313, Cl. 514-402.000.

Morhard, Alfred. Method and apparatus for making tubes formed with holes in their peripheral wall. 4,616,540, Cl. 83-54.000.

Mori, Ken-ichi: *See—*
- Suzuki, Kouhei; Saito, Tamio; and Mori, Ken-ichi, 4,617,471, Cl. 250-578.000.

Mori, Makihiko; Nakamura, Kazuo; Tanabe, Kanichiro; and Kimura, Atsushi, to Osaka Gas Company Limited; and Nireco Corporation. Method and apparatus for automatic quantitative measurement of textures by image analysis. 4,617,682, Cl. 382-28.000.

Mori, Sanae, to Daido Metal Company Ltd. Aluminum alloys of high wear resistance and good anti-seizure property suitable for use as bearing metals. 4,617,172, Cl. 420-530.000.

Mori, Seiichi, to Kabushiki Kaisha Toshiba. Method of manufacturing a semiconductor device with a stacked-gate-electrode structure. 4,616,402, Cl. 29-571.000.

Morimoto, Kiyoshi: *See—*
- Kimura, Hiroshi; Hisajima, Masahiko; Shibata, Kiyoshi; and Morimoto, Kiyoshi, 4,616,924, Cl. 355-15.000.

Morinaka, Hideo: *See—*
- Tsuzuki, Kenji; and Morinaka, Hideo, 4,617,397, Cl. 546-304.000.

Morino, Masuaki; and Takada, Yuji, to Sharp Kabushiki Kaisha. Memory module for a programmable electronic device. 4,617,650, Cl. 365-195.000.

Morisawa, Kunio; and Kondo, Tadashi, to Toyota Jidosha Kabushiki Kaisha. Transmission device housing construction with shaft lubricating oil shield cover generating lubricant pool. 4,616,526, Cl. 74-606.00R.

Morishita, Mitsuharu; and Kouge, Shinichi, to Mitsubishi Denki Kabushiki Kaisha. Charge control microcomputer device for vehicles. 4,617,626, Cl. 364-424.000.

Morita, Minoru: *See—*
- Miyano, Seiji; Sumoto, Kunihiro; Morita, Minoru; and Sato, Fumio, 4,617,401, Cl. 548-453.000.

Morito, Motoyoshi: *See—*
- Nakata, Yukio; Suda, Kaoru; Shiotsu, Osamu; and Morito, Motoyoshi, 4,617,565, Cl. 340-825.500.

Morley, Edmond; DiLorenzo, Neil; and Karras, James, to Wrap & Roll, Inc. Mobile film wrapping apparatus. 4,616,474, Cl. 53-556.000.

Morris, Brian V. Cleaning silver. 4,617,063, Cl. 134-6.000.

Morris, Tom C. Timber joining devices. 4,616,950, Cl. 403-231.000.

Morton Thiokol, Inc.: *See—*
- Kugele, Thomas G.; Mesch, Keith A.; and Wursthorn, Karl R., 4,617,334, Cl. 524-177.000.

Mosser, Mark F.; and McMordie, Bruce G., to Sermatech International, Inc. Thick coating compositions. 4,617,056, Cl. 106-1.120.

Motorola, Inc.: *See—*
- Au, Kenneth K., 4,617,480, Cl. 307-480.000.
- Davidson, Allen L., 4,617,573, Cl. 343-844.000.
- Levine, Stephen N., 4,617,520, Cl. 328-133.000.
- Shak, Peter J.; and Ho, Roland K., 4,617,606, Cl. 361-283.000.

Mott, Philip J., to Borg-Warner Corporation. Pulley strap drive. 4,617,004, Cl. 474-8.000.

Mourou, Gerard; Norris, Theodore B.; and Sizer, Theodore, II, to University of Rochester. Dye laser. 4,617,665, Cl. 372-18.000.

MSK-verpackungs-Systeme Gesellschaft mit beschrankter Haftung: *See—*
- Hannen, Reiner W., 4,616,471, Cl. 53-442.000.

MTU Motoren- und Turbinen-Union Friedrichshafen GmbH: *See—*
- Deutschmann, Herbert; and Wolters, Gerd-Michael, 4,616,480, Cl. 60-600.000.

MTU Motoren-und Turbinen-Union Muenchen GmbH: *See—*
- Merz, Herbert, 4,617,072, Cl. 156-89.000.

Muehlhausen, Robert A.: *See—*
- Sobieski, James F.; and Muehlhausen, Robert A., 4,616,922, Cl. 355-14.00R.

Mueller, George B. Placket. 4,616,366, Cl. 2-115.000.

Mueller, Guenter W.: *See—*
- Overcash, Donald A.; Hall, Lloyd E.; and Mueller, Guenter W., 4,616,504, Cl. 73-118.100.

Mueller, Walter B., to W. R. Grace & Co., Cryovac Div. Linear polyethylene stretch/shrink films. 4,617,241, Cl. 428-520.000.

Muenchow, John R.; Bock, Lawrence A.; and Lewis, Roger N., to U.S. Peroxygen Company. Acetylenic di(t-amyl peroxide) cross-linking/-blowing agents for polyethylene. 4,617,324, Cl. 521-96.000.

Muir, Ronald J., to Witco Corporation. Process for the preparation of overbased magnesium sulfonates. 4,617,135, Cl. 252-33.200.

Muirhead, Allen D., to Monicell Limited. Segmented optical system for an alarm system. 4,617,463, Cl. 250-342.000.

Muller, Egbert; Grauel, Ingolf; and Stumpe, Werner, to Robert Bosch GmbH. Tractor-trailer brake system including a trailer brake control valve. 4,616,881, Cl. 303-7.000.

Mullis, Kary B.: *See—*
- Sheldon, Edward L., III; Levenson, Corey H.; Mullis, Kary B.; Rapoport, Henry; and Watson, Robert M., 4,617,261, Cl. 435-6.000.

Mullner, Paul: *See—*
- Lugscheider, Walter; Mullner, Paul; Schiffer, Wilhelm; and Leutgob, Alois, 4,617,671, Cl. 373-22.000.

Munch, Otto; and Schibli, Thomas. Oil circulation circuit for internal combustion engine, and method of circulating lubricating oil. 4,616,609, Cl. 123-196.0AB.

Munoz, Miguel A. Harvesting/packing system. 4,616,468, Cl. 53-391.000.

Murakami, Susumu: *See—*
- Kobayashi, Youichi; and Murakami, Susumu, 4,617,080, Cl. 156-359.000.

Muralidharan, Ramachandran; and Rao, Atambir S., to General Electric Company. Apparatus and method for reactor monitoring. 4,617,168, Cl. 376-247.000.

Muranaka, Shiaru: *See—*
- Tanaka, Hideo; and Muranaka, Shiaru, 4,616,466, Cl. 53-75.000.

Murata Kikai Kabushiki Kaisha: *See—*
- Matsui, Isamu; Uchida, Hiroshi; Nakanishi, Kazuo; and Shimano, Akira, 4,616,789, Cl. 242-35.50R.

Murata Manufacturing Co., Ltd.: *See—*
- Nakamura, Takeshi; and Matsumoto, Ikuo, 4,617,488, Cl. 310-321.000.

Murata, Mitsuru; Kobayashi, Toyohiro; Mochizuki, Shoji; and Kawashima, Masamichi, to Mitsubishi Denki Kabushiki Kaisha. Printing device having external data input. 4,616,946, Cl. 400-704.000.

Murotani, Isao: *See—*
- Okuyama, Shinichi; Mishina, Hitoshi; Furuse, Kazumaro; and Murotani, Isao, 4,617,187, Cl. 424-94.000.

Mutoh, Norio, to Mitsubishi Denki Kabushiki Kaisha. MTI Radar. 4,617,568, Cl. 342-160.000.

Muzzarelli, Gabriele. Moulding machine for the production of caciocavallo and similar cheeses. 4,616,988, Cl. 425-150.000.

Myers, Kimbrough I.: *See—*
- Granzow, Robert H.; and Myers, Kimbrough I., 4,617,457, Cl. 235-379.000.

Myers, Ronald E., to B. F. Goodrich Company, The. Electrically conductive polymer blend. 4,617,353, Cl. 525-245.000.

Myers, William D., Jr.: *See—*
- Stout, Gregg W.; and Myers, William D., Jr., 4,616,701, Cl. 166-55.100.

Nachtigall, Wilhelm: *See—*
- Mewes, Heinz; Nachtigall, Wilhelm; Wienand, Michael, deceased; Wienand, Anneliese, legal representative; Wienand, Hans-Jurg W., heir; Wienand, Michael, heir; Wienand, Rudolf J., heir; Wienand, Karl F., heir; and Wienand, Elisabeth H. M., heir, 4,616,989, Cl. 425-203.000.

Naegele, Paul: *See—*
- Hoppe, Udo; Seib, Karl; Naegele, Paul; and Martin, Roland, 4,617,390, Cl. 544-197.000.

Nagai, Junshiro, to Tokyo Electric Co., Ltd. Thermal dot type printing apparatus. 4,616,941, Cl. 400-120.000.

Nagai, Kazutoshi; and Aoyagi, Hirofumi, to Matsushita Electric Industrial Co., Ltd. Sanitary cleaning apparatus. 4,616,368, Cl. 4-420.200.

Nagai, Kiyoshi. Composite filter, observation system and filamentary display device. 4,616,902, Cl. 350-316.000.

Nagano, Masashi, to Shimano Industrial Company Limited. Front derailleur for a bicycle. 4,617,006, Cl. 474-80.000.

Nagaoka, Satoshi: *See—*
- Ogawa, Tadashi; Nagaoka, Satoshi; and Ohashi, Yuichi, 4,617,259, Cl. 430-569.000.

Nagasaku, Eiichi: *See—*
- Inagaki, Mitsuo; Takeda, Kenji; Iwanami, Shigeki; Sasaya, Hideaki; and Nagasaku, Eiichi, 4,616,984, Cl. 418-150.000.

Nagasawa, Hideo; Suzuki, Masao; and Hamano, Tsutomu, to NCR Corporation. Ribbon cassette with re-inking mechanism. 4,616,942, Cl. 400-196.100.

Nagashima, Hironobu; and Koyama, Hiroshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Light emission switching circuit for larynx stroboscope. 4,616,636, Cl. 128-23.000.

Nagashima, Nao: *See—*
- Yoshida, Tadashi; Shimizu, Katsuichi; Arimoto, Shinobu; Maeshima, Katsuyoshi; Nagashima, Nao; and Watanabe, Asao, 4,617,596, Cl. 358-280.000.

Nagashima, Shigeo; Abe, Hitoshi; and Hatakeyama, Yasuhiko, to Hitachi, Ltd. Vector processor. 4,617,625, Cl. 364-200.000.

Nagata, Tetsuya, to Seiko Seiki Kabushiki Kaisha. Automatic work loading device for use in grinding machine. 4,616,448, Cl. 51-215.00H.

Nagata, Tomizou, to Japan Tobacco & Salt Public Corporation, The. Package forming apparatus. 4,616,475, Cl. 53-575.000.

Naiman, Michael I.; and Schield, John A., to Petrolite Corporation. Ester-containing halopolyalkylenes. 4,617,025, Cl. 44-62.000.

Naitoh, Ryuichi, to Pioneer Electronic Corporation. PU lock acquisition with scan restart upon false lock. 4,617,527, Cl. 331-4.000.

Nakakita, Eiji; Koike, Akinobu; Sekiya, Toshiyuki; Misu, Hiroshi; and Kita, Nobuyuki, to Fuji Photo Film Co., Ltd. Light-sensitive diazo composition with acidic compounds for use with lithographic printing plates. 4,617,250, Cl. 430-175.000.

Nakamura, Hironobu: *See—*
- Takahashi, Kenzo; Kumazaki, Nobuo; Yokoya, Hisao; Nakamura, Hironobu; and Kachi, Tadakatsu, 4,616,695, Cl. 165-54.000.

Nakamura, Kazuo: *See—*
- Mori, Makihiko; Nakamura, Kazuo; Tanabe, Kanichiro; and Kimura, Atsushi, 4,617,682, Cl. 382-28.000.

Nakamura, Keiichi; and Horiuchi, Hideyuki, to Tandy Corporation. Telephone answering device. 4,617,425, Cl. 179-6.110.

Nakamura, Konji. Method of forming re-sealable dispenser-container. 4,616,470, Cl. 53-412.000.

Nakamura, Kyoichi: *See—*
- Senda, Kenichi; Ando, Masao; Nakamura, Kyoichi; and Nishida, Tatehiko, 4,617,322, Cl. 521-60.000.

Nakamura, Masakazu, to Enshu Kogaku Seiki Company Limited. Zooming mechanism for compact binoculars. 4,616,907, Cl. 350-552.000.

Nakamura, Masaki: *See—*
- Hotta, Yuji; Abe, Takao; Ishii, Fumio; Kitamura, Shigehiro; Koshizuka, Kunihiro; and Nakamura, Masaki, 4,617,224, Cl. 428-212.000.

Nakamura, Masayuki: *See—*
- Katou, Kazuo; Mizugami, Susumu; Tabuchi, Mamoru; Nakamura, Masayuki; Kobayashi, Toshiyuki; and Ritoh, Naotake, 4,616,545, Cl. 83-558.000.

Nakamura, Shigenobu; Nimura, Takayasu; and Hotta, Toshiaki, to Nippondenso Co., Ltd. Rotor of alternator mounted on vehicle. 4,617,485, Cl. 310-65.000.

Nakamura, Takeshi; and Matsumoto, Ikuo, to Murata Manufacturing Co., Ltd. Composite piezoelectric vibrator with trapezoidal cross section. 4,617,488, Cl. 310-321.000.

Nakanishi, Kazuo: *See—*
- Matsui, Isamu; Uchida, Hiroshi; Nakanishi, Kazuo; and Shimano, Akira, 4,616,789, Cl. 242-35.50R.

- Nakano, Masahiro: *See—*
  - Taguchi, Takafumi; Nakano, Masahiro; Hiramoto, Nobuo; and Tominaga, Hideki, 4,616,599, Cl. 123-41.100.
- Nakao, Makoto: *See—*
  - Sato, Kimihiko; Sajima, Yasuo; Nakao, Makoto; and Iwamoto, Junjiro, 4,617,101, Cl. 204-252.000.
- Nakata, Takeshi, to Sanyo Electric Co., Ltd. Apparatus with an infrared ray detecting temperature sensor. 4,617,438, Cl. 219-10.55B.
- Nakata, Yukio; Suda, Kaoru; Shiotsu, Osamu; and Morito, Motoyoshi, to Yagi Antenna Co., Ltd.; and Hitachi, Ltd. Method and device for data communication. 4,617,565, Cl. 340-825.500.
- Nakayama, Masaaki: *See—*
  - Ushijima, Hiroyuki; Shimomura, Hiroshi; and Nakayama, Masaaki, 4,616,962, Cl. 407-113.000.
- Nakazato, Morizo: *See—*
  - Okada, Fumio; Oba, Toshio; Nakazato, Morizo; and Isobe, Kenichi, 4,617,335, Cl. 524-265.000.
- Nalepka, Paul: *See—*
  - Enkner, Bernhard; Amon, Leopold; Kubelbock, Alfred; Trimmel, Wolfgang; Nalepka, Paul; Schropp, Leopold; Schwaighofer, Helmut; Pum, Reinhard; Traxler, Manfred; and Tasch, Franz, 4,617,672, Cl. 373-79.000.
- Namariyama, Yohichi: *See—*
  - Kinoshita, Akihiro; Namariyama, Yohichi; and Higashi, Hiromi, 4,617,254, Cl. 430-326.000.
- Nambū, Masao, to Nippon Oil Company, Limited. Process for producing immobilized L-asparaginase preparations for the therapy of leukemia. 4,617,271, Cl. 435-182.000.
- Namikoshi, Hajime; and Ohmiya, Takeo, to Daicel Chemical Industries Ltd. Quaternary ammonium salts of carboxymethylcellulose. 4,617,385, Cl. 536-98.000.
- Naokawa, Toyojiro: *See—*
  - Gross, William H.; and Naokawa, Toyojiro, 4,617,654, Cl. 369-46.000.
- Narang, Saran A.; and Wu, Ray J., to Cornell Research Foundation, Inc. Adaptor molecules for DNA and their application to synthesis of gene-derived products. 4,617,384, Cl. 536-27.000.
- Narimatsu, Yoh; and Niizaki, Minoru, to Hewlett-Packard Company. Method for driving a relay. 4,617,604, Cl. 361-160.000.
- Narula, Anubhav P. S.: *See—*
  - Schreiber, William L.; Narula, Anubhav P. S.; and Hanna, Marie R., 4,617,145, Cl. 252-522.00R.
- Nasu, Hitoo: *See—*
  - Akira, Takashima; Kobayashi, Masahiko; Nasu, Hitoo; Okida, Yoshishiro; and Tsuji, Kazuhiko, 4,616,872, Cl. 296-190.000.
- Nasu, Kohji; and Minato, Ichiro, to Takeda Chemical Industries, Ltd. Urethane resin compositions. 4,617,349, Cl. 525-123.000.
- Nath, Prem; Izu, Masatsugu; Ovshinsky, Herbert C.; and Singh, Avtar, to Sovonics Solar Systems. Photovoltaic cell having increased active area and method for producing same. 4,617,421, Cl. 136-244.000.
- National Patent Development Corporation: *See—*
  - Gordon, Richard E., 4,617,557, Cl. 340-568.000.
- National Research Development Corporation: *See—*
  - Johns, Allan T.; and Martin, Michael A., 4,617,636, Cl. 364-482.000.
- National Semiconductor Corporation: *See—*
  - Gross, William H.; and Naokawa, Toyojiro, 4,617,654, Cl. 369-46.000.
- National Starch and Chemical Corporation: *See—*
  - Walker, James L.; and Mitry, Mourad T., 4,617,343, Cl. 524-817.000.
- Natsume, Toshio: *See—*
  - Miura, Hirohisa; Satou, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, 4,617,055, Cl. 75-251.000.
- Nawa, Masayoshi: *See—*
  - Nogami, Takashi; and Nawa, Masayoshi, 4,617,243, Cl. 429-194.000.
- NCR Corporation: *See—*
  - Granzow, Robert H.; and Myers, Kimbrough I., 4,617,457, Cl. 235-379.000.
  - Nagasawa, Hideo; Suzuki, Masao; and Hamano, Tsutomu, 4,616,942, Cl. 400-196.100.
- NEC Corporation: *See—*
  - Hoshi, Katsuji, 4,617,647, Cl. 365-189.000.
  - Masuda, Shinji, 4,617,481, Cl. 307-491.000.
  - Matsuda, Kohei, 4,617,482, Cl. 307-579.000.
  - Ooka, Hideyuki, 4,616,399, Cl. 29-571.000.
- NEC Electronics U.S.A., Inc.: *See—*
  - Brooks, Phillip L., 4,617,679, Cl. 375-119.000.
- Neely, Stephen A.: *See—*
  - Woodman, Daniel C.; and Neely, Stephen A., 4,616,857, Cl. 285-140.000.
- Nelsen, Randy P.: *See—*
  - Smeenge, Paul A.; Wilson, Harold R.; and Nelsen, Randy P., 4,616,798, Cl. 248-281.100.
- Nelson, Victor H. Microwave waveguide switch assembly. 4,617,538, Cl. 333-106.000.
- Nestler, Heinz; and Barfurth, Dieter, to Dynamit Nobel AG. Modified titanium (IV) acetylacetonates. 4,617,408, Cl. 556-40.000.
- Newman, Paul R.; Warren, Leslie F., Jr.; and Witucki, Edward F., to Rockwell International Corporation. Process for producing electrically conductive composites and composites produced therein. 4,617,228, Cl. 428-265.000.
- Newsome, Joe B.: *See—*
  - Shouse, George K., 4,616,450, Cl. 52-12.000.
- Nezu, Yasutada; Tamura, Yutaka; Mizuno, Yuuzi; Iwamoto, Hiroshi; Yokota, Akihiro; and Maeda, Kiyoshi, to Dainippon Screen Mfg. Co., Ltd. Multi-beam zoom and focusing lens scan pitch-adjusting recorder. 4,617,578, Cl. 346-108.000.
- NGK Insulators, Ltd.: *See—*
  - Kajihara, Takehiro; and Suzuki, Mitsugu, 4,616,996, Cl. 432-148.000.
  - Ogawa, Yutaka; Ogasawara, Takayuki; and Hanzawa, Shigeru, 4,616,611, Cl. 123-270.000.
  - Takeuchi, Tsunezo; and Mizutani, Isao, 4,616,427, Cl. 34-92.000.
- Nicholas, John D., to MM Systems Corporation. Elastomeric glands. 4,616,460, Cl. 52-396.000.
- Nichols, Robert L. Medical instrument sterilization container. 4,617,178, Cl. 422-310.000.
- Nicholson, James E.; and Gatturna, Roland F. Self-actuating breast lesion probe and method of using. 4,616,656, Cl. 128-630.000.
- Nicholson, John H.: *See—*
  - Lings, Barry W.; and Nicholson, John H., 4,616,976, Cl. 416-97.00R.
- Nienhaus, Clemens: *See—*
  - Bober, Helmut; Buthe, Theo; Coenen, Karl; Fartmann, Norbert; Herbertz, Klaus; Koch, Heinz; Kretschmer, Horst; Nienhaus, Clemens; Schardt, Peter; Schibrowski, Jurgen; and Schmandt, Willi, 4,617,003, Cl. 464-48.000.
- Nifco, Inc.: *See—*
  - Kurosaki, Mutsuo, 4,616,861, Cl. 292-6.000.
- Nihon Cement Co., Ltd.: *See—*
  - Yamazaki, Yukinori, 4,617,059, Cl. 106-118.000.
- Nihon Technical Kabushiki Kaisha: *See—*
  - Ohashi, Tamaki, 4,616,516, Cl. 74-10.330.
- Niigata Engineering Co., Ltd.: *See—*
  - Yasukawa, Hiroshi, 4,616,397, Cl. 29-568.000.
- Niino, Koji: *See—*
  - Miyauchi, Tetsuro; and Niino, Koji, 4,617,486, Cl. 310-233.000.
- Niizaki, Minoru: *See—*
  - Narimatsu, Yoh; and Niizaki, Minoru, 4,617,604, Cl. 361-160.000.
- Nikkel, Willem A.: *See—*
  - Jones, Thomas B., Jr.; and Nikkel, Willem A., 4,617,076, Cl. 156-205.000.
- Nikko Co., Ltd.: *See—*
  - Ishimoto, Zenichi; and Konno, Tadashi, 4,617,002, Cl. 446-427.000.
- Nikolov, Ivan D., deceased; by Dimova, Vassilka P., heir; Dimov, Dobromir I., heir; Dimov, Petar I., heir; Marinov, Marin I.; Peytchev, Ivan M.; Rashev, Tzolo V.; and Tchorbov, Iliya G., to Institute po Metaloznanie i Technologia na Metalite. Apparatus for the treatment and casting of metals and alloys in a closed space. 4,616,808, Cl. 266-207.000.
- Nimura, Takayasu: *See—*
  - Nakamura, Shigenobu; Nimura, Takayasu; and Hotta, Toshiaki, 4,617,485, Cl. 310-65.000.
- Nippon Acchakutansi Seizo Kabushiki Kaisha: *See—*
  - Matsui, Minoru, 4,616,396, Cl. 29-566.100.
- Nippon Gakki Seizo Kabushiki Kaisha: *See—*
  - Uchiyama, Yasuji; and Suzuki, Hideo, 4,616,546, Cl. 84-1.010.
- Nippon Hoso Kyokai: *See—*
  - Tanioka, Kenkichi; Shidara, Keiichi; Kuriyama, Takao; Takasaki, Yukio; Hirai, Tadaaki; Nonaka, Yasuhiko; and Inoue, Eisuke, 4,617,248, Cl. 430-95.000.
- Nippon Oil Company, Limited: *See—*
  - Nambu, Masao, 4,617,271, Cl. 435-182.000.
- Nippon Sanso Kabushiki Kaisha: *See—*
  - Okada, Hidetake; and Urata, Satoshi, 4,617,037, Cl. 62-11.000.
  - Wakaizumi, Akira; and Kawakami, Hiroshi, 4,617,035, Cl. 55-389.000.
- Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See—*
  - Saito, Koichi; Ueda, Kenji; Ikeda, Yasuo; and Ono, Tetsuji, 4,617,289, Cl. 502-339.000.
- Nippon Soken, Inc.: *See—*
  - Inagaki, Mitsuo; Takeda, Kenji; Iwanami, Shigeki; Sasaya, Hideaki; and Nagasaku, Eiichi, 4,616,984, Cl. 418-150.000.
  - Ootsuka, Yoshinori; Hattori, Tadashi; Ozaki, Tadashi; and Miura, Kazuhiko, 4,616,502, Cl. 73-35.000.
  - Saito, Kimitaka; Kohama, Tokio; Egami, Tsuneyuki; Saito, Tsutomu; Takahashi, Hiroshi; and Sato, Kunihiko, 4,616,619, Cl. 123-489.000.
- Nippon Telegraph and Telephone Corp.: *See—*
  - Katagiri, Koichi; Hanamoto, Yoshihiro; Maeda, Satoru; and Taniguchi, Ikuo, 4,617,594, Cl. 358-150.000.
- Nippon Thompson Co., Ltd.: *See—*
  - Komiya, Yoshiyuki, 4,616,885, Cl. 384-15.000.
- Nippon Zeon Co. Ltd.: *See—*
  - Hiramatsu, Teruaki, 4,617,092, Cl. 203-1.000.
- Nippondenso Co., Ltd.: *See—*
  - Inagaki, Mitsuo; Takeda, Kenji; Iwanami, Shigeki; Sasaya, Hideaki; and Nagasaku, Eiichi, 4,616,984, Cl. 418-150.000.
  - Nakamura, Shigenobu; Nimura, Takayasu; and Hotta, Toshiaki, 4,617,485, Cl. 310-65.000.
- Nireco Corporation: *See—*
  - Mori, Makihiko; Nakamura, Kazuo; Tanabe, Kanichiro; and Kimura, Atsushi, 4,617,682, Cl. 382-28.000.
- Nishi, Okihiro. Irrigating cannula for extracting lens nucleus for use in extracapsular cataract extraction. 4,617,018, Cl. 604-264.000.
- Nishida, Tatehiko: *See—*
  - Senda, Kenichi; Ando, Masao; Nakamura, Kyoichi; and Nishida, Tatehiko, 4,617,322, Cl. 521-60.000.
- Nishiguchi, Yasuo; and Minami, Keijiro, to Kyocera Corporation. Thermal head producing process. 4,617,088, Cl. 156-656.000.

- Nishijima, Masaru: *See—*
  - Itoigawa, Masakatsu; and Nishijima, Masaru, 4,616,920, Cl. 355-3.0BE.
- Nissan Motor Co., Ltd.: *See—*
  - Hayashi, Yoshimasa, 4,616,601, Cl. 123-41.210.
  - Hirano, Yoshinori, 4,616,600, Cl. 123-41.210.
  - Hirano, Yoshinori; and Kubozuka, Takao, 4,616,602, Cl. 123-41.270.
  - Kawaguchi, Hiroyuki; Saito, Hideyuki; and Yasuhara, Seishi, 4,616,615, Cl. 123-339.000.
  - Sugasawa, Fukashi; Kuroki, Junsuke; and Akatsu, Yohsuke, 4,616,848, Cl. 280-707.000.
  - Tanaka, Yoshikazu; Kumura, Haruyoshi; Abo, Keiju; Yamamuro, Sigeaki; and Hirano, Hiroyuki, 4,616,530, Cl. 74-851.000.
- Nitco, Inc.: *See—*
  - Yokoyama, Naoshi, 4,617,121, Cl. 210-416.400.
- Nixon, Charles E. Fast-moving eyelet guide for a group of braidable strands in a braiding machine. 4,616,553, Cl. 87-48.000.
- Nobel, Fred I.; Ostrow, Barnet D.; and Schram, David N., to LeaRonal, Inc. Process and electrolyte for electroplating tin, lead or tin-lead alloys. 4,617,097, Cl. 204-44.400.
- Nocek, James E., to Agway Inc. Novel method for quantitating structural and non-structural carbohydrates in feedstuffs. 4,617,276, Cl. 436-20.000.
- Nogami, Takashi; and Nawa, Masayoshi, to Kao Soap Co., Ltd. Electrochemical battery. 4,617,243, Cl. 429-194.000.
- Noguchi, Takaharu; Kobayashi, Masaharu; Arai, Takao; and Shibuya, Toshifumi, to Hitachi, Ltd. PCM signal recording/reproducing apparatus. 4,617,599, Cl. 360-32.000.
- Nolan, James F., to Owens-Illinois, Inc. Vacuum indicating thermoplastic closure. 4,616,761, Cl. 215-271.000.
- Nomura, Takuji. Carbide drill. 4,616,964, Cl. 408-144.000.
- Nonaka, Yasuhiko: *See—*
  - Tanioka, Kenkichi; Shidara, Keiichi; Kuriyama, Takao; Takasaki, Yukio; Hirai, Tadaaki; Nonaka, Yasuhiko; and Inoue, Eisuke, 4,617,248, Cl. 430-95.000.
- Nordica S.p.A.: *See—*
  - Bidoia, Vincenzo, 4,616,524, Cl. 74-553.000.
- Nordson Corporation: *See—*
  - Baker, Robert G., 4,616,894, Cl. 339-15.000.
  - Marietta, Charles F.; and Holley, Kenneth, 4,616,782, Cl. 239-752.000.
- Norris, Philip R., to Polaroid Corporation. Immersion type film processing apparatus. 4,616,915, Cl. 354-320.000.
- Norris, Theodore B.: *See—*
  - Mourou, Gerard; Norris, Theodore B.; and Sizer, Theodore, II, 4,617,665, Cl. 372-18.000.
- North American Philips Corporation: *See—*
  - Fitzpatrick, Brian J.; and Harnack, Phyllis M., 4,617,490, Cl. 313-478.000.
  - Goldowsky, Michael P., 4,617,448, Cl. 219-200.000.
- Northern Telecom Limited: *See—*
  - Drynan, David S.; and Baker, David M., 4,617,657, Cl. 370-60.000.
  - Vea, Mathew P.; and Gupta, Vinita, 4,617,427, Cl. 179-84.0VF.
- Nossek, Josef A., to Siemens Aktiengesellschaft. Method for digital quadrature amplitude modulation. 4,617,537, Cl. 332-48.000.
- Nouwen, Bart. Container for the storage of photographic films and the like. 4,616,750, Cl. 206-316.000.
- Novo Industri A/S: *See—*
  - Olsen, Frank; and Aunstrup, Knud, 4,617,273, Cl. 435-232.000.
- Novogrodsky, William. Microfloss toothbrush. 4,616,374, Cl. 15-167.00R.
- Novophalt Societe Anonyme: *See—*
  - Strommer, Erich, 4,617,201, Cl. 427-216.000.
- Nowak, Reinhard, to Glatt GmbH. Method and apparatus for coating particulate materials with powdery materials. 4,617,191, Cl. 426-294.000.
- Nozaki, Hitosi; and Oshima, Koichiro, to Du Pont de Nemours, E. I., and Company. Perfluorocarbon polymer oxidation catalyst and preparation of carbonyl compound. 4,617,153, Cl. 260-413.000.
- Nozaki, Yasuo; Oishi, Yoshikazu; and Koga, Takanori, to Kawasaki Jukogyo Kabushiki Kaisha. Continuous excavating machine. 4,616,880, Cl. 299-39.000.
- Nugent, Richard M.: *See—*
  - Boberski, William G.; Nugent, Richard M.; and Koren, Jeffrey G., 4,617,331, Cl. 523-420.000.
- Nukushina, Masanori: *See—*
  - Takano, Kunio; and Nukushina, Masanori, 4,616,583, Cl. 112-121.120.
- Nunokawa, Isao: *See—*
  - Fuyama, Moriaki; Tamura, Katsumi; Funyu, Isao; Nunokawa, Isao; Hanazono, Masanobu; and Hirastuka, Shigetoshi, 4,617,575, Cl. 346-76.0PH.
- Nusser, Hermann, to Robert Bosch GmbH. Sliding-link mechanism. 4,616,518, Cl. 74-96.000.
- Nuvatec, Inc.: *See—*
  - Slavik, William H., 4,617,472, Cl. 307-10.00R.
- O & S Manufacturing Company: *See—*
  - Smith, Joseph E., Jr., 4,616,387, Cl. 29-149.50B.
- O.U.T. Laboratories, Inc.: *See—*
  - Page, Edward J.; and Rock, James E., 4,617,188, Cl. 424-148.000.
- O/Y Kyro A/B: *See—*
  - Reunamaki, Pauli T., 4,617,043, Cl. 65-29.000.
- Oba, Toshio: *See—*
  - Okada, Fumio; Oba, Toshio; Nakazato, Morizo; and Isobe, Kenichi, 4,617,335, Cl. 524-265.000.
- Ober, Christopher K.; and Lok, Kar P., to Xerox Corporation. Dispersion polymerization process for toner compositions. 4,617,249, Cl. 430-137.000.
- Oberbeck, George A.: *See—*
  - Eisenhaure, David B.; Downer, James R.; Bliamptis, Tim E.; Oberbeck, George A.; and Hendrie, Susan D., 4,617,507, Cl. 322-4.000.
- Obrecht, Werner; Haghiri-Tehrani, Yahya; and Hoppe, Joachim, to GAO Gesellschaft fur Automation und Organisation. Carrier element for an IC module. 4,617,605, Cl. 361-220.000.
- O'Donohue, William T., to Caterpillar Inc. Drive assembly for drawing a movable welding carriage and method of welding. 4,617,447, Cl. 219-124.310.
- Odorisio, Paul: *See—*
  - Pastor, Stephen D.; and Odorisio, Paul, 4,617,336, Cl. 524-291.000.
- Odorzynski, Thomas W.: *See—*
  - Krueger, Duane A.; and Odorzynski, Thomas W., 4,617,240, Cl. 428-476.100.
- Ogasawara, Takayuki: *See—*
  - Ogawa, Yutaka; Ogasawara, Takayuki; and Hanzawa, Shigeru, 4,616,611, Cl. 123-270.000.
- Ogasawara, Tsunehiko; Arakawa, Yoshichika; Sumiya, Koji; and Sakaguchi, Yoshikazu, to Aisin Seiki Kabushiki Kaisha; and Aisin Warner Kabushiki Kaisha. Hydraulic and electronic control system for an automatic transmission. 4,616,531, Cl. 74-866.000.
- Ogawa, Hirotoshi: *See—*
  - Sano, Nichiro; and Ogawa, Hirotoshi, 4,616,804, Cl. 251-267.000.
- Ogawa, Tadashi; Nagaoka, Satoshi; and Ohashi, Yuichi, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. 4,617,259, Cl. 430-569.000.
- Ogawa, Yutaka; Ogasawara, Takayuki; and Hanzawa, Shigeru, to NGK Insulators, Ltd.; and Mazda Motor Corporation. Precombustion chamber construction of internal combustion engine. 4,616,611, Cl. 123-270.000.
- Oguni, Takayuki: *See—*
  - Thai, Cao M.; Oguni, Takayuki; Kurematsu, Kazuhiko; and Kato, Tsuguo, 4,617,330, Cl. 523-220.000.
- O'Hara, John J. Measuring scoop. 4,616,867, Cl. 294-55.000.
- Ohara, Tsunemasa: *See—*
  - Suzuki, Masayuki; Fukahori, Hidehiko; Kawamura, Masaharu; Harada, Yoshihito; Kobayashi, Ryuichi; and Ohara, Tsunemasa, 4,616,913, Cl. 354-173.100.
- Ohashi, Hiroshi: *See—*
  - Tanaka, Masaki; and Ohashi, Hiroshi, 4,617,340, Cl. 524-588.000.
  - Tanaka, Masaki; and Ohashi, Hiroshi, 4,617,344, Cl. 524-837.000.
- Ohashi, Kazuo. Apparatus for retaining cooling pipes for an ice rink. 4,616,486, Cl. 62-235.000.
- Ohashi, Tamaki, to Nihon Technical Kabushiki Kaisha. Push-button tuner. 4,616,516, Cl. 74-10.330.
- Ohashi, Yuichi: *See—*
  - Ogawa, Tadashi; Nagaoka, Satoshi; and Ohashi, Yuichi, 4,617,259, Cl. 430-569.000.
- Ohe, Takeshi: *See—*
  - Suzuki, Yoshio; and Ohe, Takeshi, 4,616,728, Cl. 180-142.000.
- Ohira, Keiichi: *See—*
  - Hamada, Akira; Takahashi, Hisao; and Ohira, Keiichi, 4,617,231, Cl. 428-297.000.
- Ohkawachi, Michihiro: *See—*
  - Miyauchi, Otohiko; Ohkawachi, Michihiro; and Yotsuyanagi, Junji, 4,616,766, Cl. 220-450.000.
- Ohlin, L. Erik; Unger, H. Peter; and Westberg, J. Eric, to Seroteknik HG. Method and apparatus for centrifugal batch separation of blood. 4,617,009, Cl. 494-21.000.
- Ohmiya, Takeo: *See—*
  - Namikoshi, Hajime; and Ohmiya, Takeo, 4,617,385, Cl. 536-98.000.
- Ohmura, Ryuichi, to Fuji Kogyo Co., Ltd. Line guide for fishing rod. 4,616,438, Cl. 43-24.000.
- Ohta, Toshihiko; Okada, Fujio; and Okumoto, Kiyokazu, to Toyo Boseki Kabushiki Kaisha. Stretched polyethylene filaments of high strength and high modulus, and their production. 4,617,233, Cl. 428-364.000.
- Ohyama, Iwane, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for chamfering. 4,616,966, Cl. 409-132.000.
- Oishi, Yoshikazu: *See—*
  - Nozaki, Yasuo; Oishi, Yoshikazu; and Koga, Takanori, 4,616,880, Cl. 299-39.000.
- Okada, Fujio: *See—*
  - Ohta, Toshihiko; Okada, Fujio; and Okumoto, Kiyokazu, 4,617,233, Cl. 428-364.000.
- Okada, Fumio; Oba, Toshio; Nakazato, Morizo; and Isobe, Kenichi, to Shin-Etsu Chemical Co., Ltd. Method for improving mold releasability of a polymeric material. 4,617,335, Cl. 524-265.000.
- Okada, Hidetake; and Urata, Satoshi, to Nippon Sanso Kabushiki Kaisha. Nitrogen production method. 4,617,037, Cl. 62-11.000.
- Okada, Junichi: *See—*
  - Koto, Haruhiko; Okada, Junichi; Ishii, Hiroshi; and Sawada, Kenji, 4,617,581, Cl. 346-140.00R.
- Okamoto, Kiyohide; and Okita, Ryosuke, to Mitsubishi Denki Kabushiki Kaisha. Magnetic particle type electromagnetic coupling apparatus. 4,616,740, Cl. 192-21.500.
- Okamoto, Yuji, to Toyota Jidosha Kabushiki Kaisha. Construction of door glass runs in motor vehicle. 4,616,446, Cl. 49-441.000.
- Okida, Yoshishiro: *See—*
  - Akira, Takashima; Kobayashi, Masahiko; Nasu, Hitoo; Okida, Yoshishiro; and Tsuji, Kazuhiko, 4,616,872, Cl. 296-190.000.

- Okita, Ryosuke: *See—*
  - Okamoto, Kiyohide; and Okita, Ryosuke, 4,616,740, Cl. 192-21.500.
- Okuda, Tadao, to Sanyo Electric Co., Ltd. Induction heating apparatus with controlled switching device for improved efficiency. 4,617,442, Cl. 219-10.770.
- Okuda, Toshio, to 'Totes', Incorporated. Handle with carrying strap. 4,616,868, Cl. 294-137.000.
- Okumoto, Kiyokazu: *See—*
  - Ohta, Toshihiko; Okada, Fujio; and Okumoto, Kiyokazu, 4,617,233, Cl. 428-364.000.
- Okuyama, Shinichi; Mishina, Hitoshi; Furuse, Kazumaro; and Murotani, Isao, to Eisai Co., Ltd. Therapeutic method for treating radiation ulcers. 4,617,187, Cl. 424-94.000.
- Oles, Paul M., to Y Technipak Corp. Shuttle-type blow molding machine with in-mold labeling. 4,616,992, Cl. 425-503.000.
- Olin Hunt Specialty Products, Inc.: *See—*
  - Sizensky, Joseph J., 4,617,251, Cl. 430-256.000.
- Oliver, Larry R.: *See—*
  - Miranti, Joseph P., Jr.; Oliver, Larry R.; and Johnson, Clyde O., 4,617,007, Cl, 474-201.000.
- Olsen, Frank; and Aunstrup, Knud, to Novo Industri A/S. Alpha-acetolactate decarboxylase enzyme and preparation thereof. 4,617,273, Cl. 435-232.000.
- Olson, Keith E.: *See—*
  - Kirkwood, Marda K.; and Olson, Keith E., 4,617,272, Cl. 435-183.000.
- Olsson, Sven-Gunnar: *See—*
  - Cewers, Goeran; Johansson, Jan; and Olsson, Sven-Gunnar, 4,616,801, Cl. 251-6.000.
- OMI International Corporation: *See—*
  - Darken, Jeffrey, 4,617,205, Cl. 427-305.000.
  - Tomaszewski, Thaddeus W., 4,617,095, Cl. 204-41.000.
- Omnichem, S.A.: *See—*
  - Hannart, Jean A. A. J., 4,617,305, Cl. 514-278.000.
- Oneyama, Naotake; and Yoshikawa, Akihisa, to Shokestu Kinzoku Kogyo Kabushiki Kaisha. Cylinder driving apparatus. 4,616,476, Cl. 60-414.000.
- Ono, Kenji: *See—*
  - Watanabe, Hiroyuki; Hamada, Eiichi; Hayashi, Motomu; and Ono, Kenji, 4,616,445, Cl. 49-374.000.
- Ono, Takuro: *See—*
  - Kodama, Hisashi; and Ono, Takuro, 4,616,607, Cl. 123-90.460.
- Ono, Tetsuji: *See—*
  - Saito, Koichi; Ueda, Kenji; Ikeda, Yasuo; and Ono, Tetsuji, 4,617,289, Cl. 502-339.000.
- Onodera, Chikau: *See—*
  - Kawai, Yoshio; Kitagawa, Kiyoshi; Endo, Kazue; and Onodera, Chikau, 4,617,104, Cl. 204-301.000.
- Onuki, Tadayoshi: *See—*
  - Kishi, Hajimu; Onuki, Tadayoshi; and Kurakake, Mitsuo, 4,617,640, Cl. 364-708.000.
- Ooka, Hideyuki, to NEC Corporation. Method of manufacturing an insulated gate field effect transistor. 4,616,399, Cl. 29-571.000.
- Oonishi, Akiyoshi; Doi, Shuhei; and Shimada, Takeo, to Mitsubishi Petrochemical Co., Ltd. Ethylene copolymer. 4,617,365, Cl. 526-265.000.
- Ootsuka, Yoshinori; Hattori, Tadashi; Ozaki, Tadashi; and Miura, Kazuhiko, to Nippon Soken, Inc. Knocking detection system for internal combustion engine. 4,616,502, Cl. 73-35.000.
- Ophoff, Paul A., to Siemens Aktiengesellschaft. Digital-to-analog converter with potential separation. 4,617,551, Cl. 340-347.0DA.
- Orgeron, Orey C. Escape device for use in high-rise structures. 4,616,735, Cl. 182-238.000.
- Orii, Makoto, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Buffer device. 4,616,737, Cl. 188-184.000.
- Orth, Dieter: *See—*
  - Wahlig, Helmut; Dingeldein, Elvira; Kirchlechner, Richard; Orth, Dieter; and Rogalski, Werner, 4,617,293, Cl. 514-41.000.
- Ortho Pharmaceutical Corporation: *See—*
  - Bandurco, Victor T.; Bell, Stanley C.; Combs, Donald W.; and Falotico, Robert, 4,617,392, Cl. 544-250.000.
  - Conley, Richard A.; and Barton, Donald L., 4,617,417, Cl. 560-29.000.
- Osaka Gas Company Limited: *See—*
  - Mori, Makihiko; Nakamura, Kazuo; Tanabe, Kanichiro; and Kimura, Atsushi, 4,617,682, Cl. 382-28.000.
- O'Shea, Richard L.; and Merrill, Philip R., to Raytheon Company. Reflective phase shifter. 4,617,539, Cl. 333-164.000.
- Oshefsky, Daniel J.; Gavronski, Paul A.; Vogt, Robert E.; and Rajala, Gregory J., to Kimberly-Clark Corporation. Method and apparatus for applying discrete strips to a web of material. 4,617,082, Cl. 156-447.000.
- Oshima, Koichiro: *See—*
  - Nozaki, Hitosi; and Oshima, Koichiro, 4,617,153, Cl. 260-413.000.
- Ostreicher, Eugene A., to AMF Inc. Particulate filter aid, filter bed and process. 4,617,128, Cl. 210-679.000.
- Ostrow, Barnet D.: *See—*
  - Nobel, Fred I.; Ostrow, Barnet D.; and Schram, David N., 4,617,097, Cl. 204-44.400.
- Otsuji, Shogo: *See—*
  - Yamada, Hideaki; Otsuji, Shogo; Isobe, Kimiyasu; Matsunaga, Kuniyoshi; and Inukai, Tadahiko, 4,617,263, Cl. 435-25.000.
- Ott, Karl-Heinz: *See—*
  - Eichenauer, Herbert; and Ott, Karl-Heinz, 4,617,358, Cl. 526-81.000.
- Otto, Dennis L.: *See—*
  - Drygalski, Gordon T.; Otto, Dennis L.; and Ross, Donald K., 4,616,836, Cl. 277-152.000.
- Ou, Jung-Hsing: *See—*
  - Hartmann, Robert F.; Wong, Sau-Ching; Chan, Yiu-Fai; and Ou, Jung-Hsing, 4,617,479, Cl. 307-465.000.
- Oudman, Dirk J., to Wigboma B.V. Adjustable work top. 4,616,887, Cl. 312-140.100.
- Outillages Scientifiques et de Laboratoires O.S.L. S.A.: *See—*
  - Simonetti, Jean-Pierre, 4,616,775, Cl. 228-37.000.
- Overcash, Donald A.; Hall, Lloyd E.; and Mueller, Guenter W., to Duncan Electronics. Throttle position sensor. 4,616,504, Cl. 73-118.100.
- Overlach, Knud: *See—*
  - Pietzsch, Ludwig; Overlach, Knud; and Gassner, Siegfried, 4,616,723, Cl. 177-211.000.
- Overturf, John R., to Transmet Corporation. Method for making roofing. 4,617,198, Cl. 427-186.000.
- Ovshinsky, Herbert C.: *See—*
  - Nath, Prem; Izu, Masatsugu; Ovshinsky, Herbert C.; and Singh, Avtar, 4,617,421, Cl. 136-244.000.
- Owens-Illinois, Inc.: *See—*
  - Nolan, James F., 4,616,761, Cl. 215-271.000.
- Owensby, Joseph E.; Dobbins, Frederick A.; and Austin, Billy W., to W. R. Grace & Co., Cryovac Div. Method and apparatus for loading side-seal bags. 4,616,472, Cl. 53-459.000.
- Oyama, Yoshishige: *See—*
  - Kuroiwa, Hiroshi; and Oyama, Yoshishige, 4,616,621, Cl. 123-585.000.
- Ozaki, Tadashi: *See—*
  - Ootsuka, Yoshinori; Hattori, Tadashi; Ozaki, Tadashi; and Miura, Kazuhiko, 4,616,502, Cl. 73-35.000.
- P.R.C., Ltd.: *See—*
  - Penn, Wayne M., 4,617,667, Cl. 372-35.000.
- Paape, Kenneth L.: *See—*
  - Kellogg, Walter J.; DeVault, Birch L.; and Paape, Kenneth L., 4,617,546, Cl. 337-170.000.
- Padgett, H. Pat: *See—*
  - Fisher, Gary H.; and Padgett, H. Pat, 4,616,777, Cl. 236-44.00C.
- Page, Edward J.; and Rock, James E., to O.U.T. Laboratories, Inc. Natural insecticides employing borax and carob. 4,617,188, Cl. 424-148.000.
- Page, Matthew A.; Libbey, William J.; and Lundeen, Allan J., to Du Pont de Nemours, E. I., and Company. Ethylene polymer composition for blow molding. 4,617,352, Cl. 525-240.000.
- Paine, John C., to Caterpillar Industrial Inc. Hour meter apparatus and method. 4,617,639, Cl. 364-569.000.
- Palasz, Peter D.: *See—*
  - Chum, Helena L.; Ratcliff, Matthew A.; and Palasz, Peter D., 4,617,090, Cl. 162-16.000.
- Pall Corporation: *See—*
  - Pall, David B.; Degen, Peter J.; and Gsell, Thomas C., 4,617,124, Cl. 210-638.000.
- Pall, David B.; Degen, Peter J.; and Gsell, Thomas C., to Pall Corporation. Polymeric microfibrous filter sheet, preparation and use. 4,617,124, Cl. 210-638.000.
- Pallie, Kemal D.; and Dessauges, Gerald, to Ciba-Geigy Corporation. Process for reducing the content of chlorine in glycidyl compounds. 4,617,357, Cl. 525-506.000.
- Pannier, Dominique: *See—*
  - Pigneul, Raymond; Pannier, Dominique; and Tresca, Benoit, 4,617,022, Cl. 604-391.000.
- Paoluccio, John A. Air mixing device and method for preventing insects from finding human beings. 4,616,557, Cl. 98-31.500.
- Paoluccio, John A. Contamination control apparatus. 4,616,620, Cl. 123-573.000.
- Parein, Eric W. Elements of a construction or assembly set, and accessories. 4,617,001, Cl. 446-102.000.
- Paretskoi, Mikko, to Turvaura OY. Means for cleaning a blade of a window glass wiper of a vehicle. 4,616,376, Cl. 15-250.00R.
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  - Tullis, Barclay J.; Parikh, Mihir; Thrasher, David L.; and Johnston, Mark E., 4,616,683, Cl. 141-98.000.
- Paris, Jean-Marc: *See—*
  - Corbet, Jean-Pierre; Cotrel, Claude; Farge, Daniel; and Paris, Jean-Marc, 4,617,290, Cl. 514-11.000.
  - Corbet, Jean-Pierre; Cotrel, Claude; Farge, Daniel; and Paris, Jean-Marc, 4,617,377, Cl. 530-317.000.
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  - Park, Sea C.; and Park, In Pio, 4,616,534, Cl. 81-99.000.
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- Park, Sea C.; and Park, In Pio. Closed end wrench. 4,616,534, Cl. 81-99.000.
- Parker Chemical Company: *See—*
  - King, Peter F., 4,617,068, Cl. 148-6.14R.
- Parker, Gregory H. Insulated window cover apparatus. 4,616,456, Cl. 52-202.000.
- Parker Hannifin Corporation: *See—*
  - Simmons, Harold C.; and Harding, Curtis F., 4,616,784, Cl. 239-404.000.
- Parker, Richard J., to Rolls-Royce plc. Method of observing change in a shape. 4,616,932, Cl. 356-376.000.
- Parker, Robert F. Portable grill. 4,616,624, Cl. 126-9.00R.

- Parman, David G.: *See—*
  - Weitzel, Harold B.; and Parman, David G., 4,617,449, Cl. 219-301.000.
- Parmelee Industries, Inc.: *See—*
  - McCreadie, John B., 4,616,647, Cl. 128-206.190.
- Partridge, John J.: *See—*
  - Boris, Alfred; Partridge, John J.; and Uskokovic, Milan R., 4,617,297, Cl. 514-167.000.
- Paschke, Edward E.: *See—*
  - Poppe, Wassily; Chen, Yu-Tsai; and Paschke, Edward E., 4,617,342, Cl. 524-606.000.
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  - Sacco, Bruno; Tomforde, Johann; Paschke, Joachim; and Leschke, Harald, 4,616,869, Cl. 296-1.00S.
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  - Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Patel, Naginbhai; and Liu, Yi-Tsung, 4,617,300, Cl. 514-192.000.
- Patel, Suresh U.: *See—*
  - Suchdeo, Shyam R.; Patel, Suresh U.; and Harris, Christopher F., 4,617,036, Cl. 62-11.000.
- Paulik, Ernst, to Siemens Aktiengesellschaft. Circuit arrangement for a blocking oscillator switching power unit. 4,617,533, Cl. 331-113.00A.
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  - Stout, Michael E.; Peacock, Bobbie; and Lindroos, Jarl, 4,617,112, Cl. 209-11.000.
- Pedersen, Vernon G.; and Martin, Michael, to Dacor Corporation. Diving regulator with anti free-flow vane. 4,616,645, Cl. 128-204.260.
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- Pellegrini, Maurice: *See—*
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- Pellkofer, Dieter: *See—*
  - Engelhard, Gerhard; Pellkofer, Dieter; Bohm, Jurgen; and Forner, Siegfried, 4,617,444, Cl. 219-75.000.
- Penn, Wayne M., to P.R.C., Ltd. Gas laser tube assembly. 4,617,667, Cl. 372-35.000.
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  - Sachdev, Krishna G.; Afzali-Ardakani, Ali; Pennington, Keith S.; and Cohen, Mitchell S., 4,617,579, Cl. 346-135.100.
- Pensavecchia, Anita. Food server aid. 4,616,853, Cl. 283-60.00A.
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- Perez, Juan J. B., to Jefatura de Ingenieros del Ejercito. Loading and unloading ramp unit for railway convoy train. 4,616,373, Cl. 14-72.500.
- Perfect, Alan J., to LaFrance Corporation. Identification card holder. 4,616,435, Cl. 40-6.000.
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- Perkin-Elmer Corporation, The: *See—*
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  - Tracy, David H.; and Balistee, Brian G., 4,617,079, Cl. 156-345.000.
- Perkins Engines Group Limited: *See—*
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- Perkins, Richard W.: *See—*
  - Brodzinski, Ronald L.; Perkins, Richard W.; Rieck, Henry G.; and Wogman, Ned A., 4,617,169, Cl. 376-257.000.
- Perlegos, Gust: *See—*
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- Perlini, Julius J.: *See—*
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- Perlman, Michael E.: *See—*
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  - Helmlinger, Daniel; Pesaro, Mario; and Klaus, Michael, 4,617,146, Cl. 252-522.00R.
- Peseckis, Steven M.: *See—*
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- Peterman, Robert J., to Spacesaver Corporation. Safety brake for mobile storage apparatus. 4,616,888, Cl. 312-201.000.
- Peterman, Robert J., to Spacesaver Corporation. Anti-roll brake for mobile storage system. 4,616,889, Cl. 312-201.000.
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- Petterson, William C.: *See—*
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- Pettibone, Craig R., to Specialty Products, Inc. Toe adjustment apparatus. 4,616,845, Cl. 280-661.000.
- Pettit, Thomas L. Snap-in window boot for truck-camper combinations and the like. 4,616,871, Cl. 296-166.000.
- Peyman, Gholam A. Intraocular lenses with openable haptic loops. 4,617,023, Cl. 623-6.000.
- Peytchev, Ivan M.: *See—*
  - Nikolov, Ivan D., deceased; Dimova, Vassilka P., heir; Dimov, Dobromir I., heir; Dimov, Petar I., heir; Marinov, Marin I.; Peytchev, Ivan M.; Rashev, Tzolo V.; and Tchorbov, Iliya G., 4,616,808, Cl. 266-207.000.
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- Pfeifer, Josef: *See—*
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- Phillips Petroleum Company: *See—*
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  - Shyr, Yen-Shin; and Johnson, Marvin M., 4,617,108, Cl. 208-111.000.
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  - Wegner, Eugene H., 4,617,274, Cl. 435-255.000.
- Phillips, Robert R.: *See—*
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- Phillips, Steven D.; Reece, Jeffrey M.; and Wyatt, Philip J., to Wyatt Technology Corporation. Sample cell for light scattering measurements. 4,616,927, Cl. 356-338.000.
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- Pietsch, Helge; Rink, Manfred; and Suss, Christian, to Gebr. Isringhausen. Vehicle seat assembly. 4,616,874, Cl. 297-321.000.
- Pietzsch, Ludwig; Overlach, Knud; and Gassner, Siegfried, to Ing Ludwig Pietzsch GmbH & Co. Wheel load indicator. 4,616,723, Cl. 177-211.000.
- Pigneul, Raymond; Pannier, Dominique; and Tresca, Benoit, to Beghin-Say S.A. Disposable hygienic article with removable belt. 4,617,022, Cl. 604-391.000.
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- Pioneer Electronic Corporation: *See—*
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- Plastic Recycling Foundation, Inc.: *See—*
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- Plavac, Frank, to Chevron Research Company. Glycidol modified succinimides. 4,617,137, Cl. 252-49.600.
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- Plueddemann, Edwin P., to Dow Corning Corporation. Oil and water repellent coating compositions. 4,617,057, Cl. 106-2.000.
- Plummer, Ernest L., to FMC Corporation. Insecticidal heteroaryl substituted phenyl benzoylureas. 4,617,316, Cl. 514-438.000.
- Plungis, Donald W.; Seymour, Charles S.; and Higgins, William, to Analysts, Inc. Timer trigger for capillary tube viscometer and method of measuring oil properties. 4,616,503, Cl. 73-55.000.
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  - Costanzi, Silvestro; Traverso, Enrico; Podesta , Roberto; Gussoni, Damiano; and Busetto, Carlo, 4,617,333, Cl. 524-96.000.
- Podszun, Wolfgang, to Bayer Aktiengesellschaft. Inorganic-organic fillers for polymerizable compositions. 4,617,327, Cl. 523-116.000.
- Poirier, Marc-Andre, to Canada, Her Majesty the Queen in right of, as represented by the Minister of Energy, Mines & Resources. Roofing asphalt compositions containing hydrocracked pitch. 4,617,062, Cl. 106-273.00R.
- Poisson, Pierre: *See—*
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- Polaroid Corporation: *See—*
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  - Hicks, John W., Jr., 4,616,898, Cl. 350-96.150.
  - Norris, Philip R., 4,616,915, Cl. 354-320.000.
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- Pomeroy, Philip S.: *See—*
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  - Eicken, Karl; Graf, Hermann; Gramlich, Walter; Sauter, Hubert; Rentzea, Costin; Pommer, Ernst-Heinrich; and Ammermann, Eberhard, 4,617,303, Cl. 514-258.000.
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- Potard, Claude, to Commissariat a l'Energie Atomique. Process for the production of metallic or semimetallic shaped elements. 4,617,084, Cl. 156-607.000.
- Pottle, Winston G.: *See—*
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- PPG Industries, Inc.: *See—*
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  - DuBois, Donald W., 4,617,196, Cl. 427-123.000.
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- Pratt Burnerd International Limited: *See—*
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- Precision Handling Devices Inc.: *See—*
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- Precision Surgical Instruments, Inc.: *See—*
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- Pritchett, John C. High efficiency task lighting fixture. 4,617,612, Cl. 362-33.000.
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- Process Technology, Inc.: *See—*
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- Pum, Reinhard: *See—*
  - Enkner, Bernhard; Amon, Leopold; Kubelbock, Alfred; Trimmel, Wolfgang; Nalepka, Paul; Schropp, Leopold; Schwaighofer, Helmut; Pum, Reinhard; Traxler, Manfred; and Tasch, Franz, 4,617,672, Cl. 373-79.000.
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- Pure Air Inc.: *See—*
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- Rajala, Gregory J.: *See—*
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- Ramamoorthy, Venkatasubbarao: *See—*
  - Jayant, Nuggehally S.; and Ramamoorthy, Venkatasubbarao, 4,617,676, Cl. 375-27.000.
- Ranco Electronics Division: *See—*
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- Rao, Atambir S.: *See—*
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- Rao, Pradip: *See—*
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- Rasoul, Husam A. A., to Celanese Corporation. 2-aminobenzothiazole 6-carbonyl chloride hydrochloride. 4,617,399, Cl. 548-152.000.
- Ratcliff, Matthew A.: *See—*
  - Chum, Helena L.; Ratcliff, Matthew A.; and Palasz, Peter D., 4,617,090, Cl. 162-16.000.
- Ratelband, Johannes B. Fire-guard. 4,616,628, Cl. 126-121.000.
- Rathbone, Elner B.; Hacking, Andrew J.; and Cheetham, Peter S. J., to Tate & Lyle Public Limited Company. Process for the preparation of fructosyl disaccharides. 4,617,269, Cl. 435-97.000.
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- Rayovac Corporation: *See—*
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- Raytheon Company: *See—*
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- RCA Corporation: *See—*
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  - Kaganowicz, Grzegorz, 4,616,597, Cl. 118-723.000.
  - Mangulis, Visvaldis; and Schiff, Leonard N., 4,617,674, Cl. 375-1.000.
  - Shanley, Robert L., II, 4,617,587, Cl. 358-17.000.
  - Weckenbrock, Hermann J., 4,617,589, Cl. 358-31.000.
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- Rebentisch, Hugo E., to GTE Products Corporation. Automatic recovery swing sign structure. 4,616,799, Cl. 248-289.300.

- Reck, Ralf: *See—*
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- Reece, Jeffrey M.: *See—*
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- Reed, Dennis A., to Keenan, Bert. Petroleum alcohol test kit and method of testing petroleum for alcohol content. 4,617,278, Cl. 436-60.000.
- Reeds, Carter B.: *See—*
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- Rees, Lovat V. C.: *See—*
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  - Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Patel, Naginbhai; and Liu, Yi-Tsung, 4,617,300, Cl. 514-192.000.
- Schibli, Thomas: *See—*
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- Schiff, Leonard N.: *See—*
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- Schiffer, Wilhelm: *See—*
  - Lugscheider, Walter; Mullner, Paul; Schiffer, Wilhelm; and Leutgob, Alois, 4,617,671, Cl. 373-22.000.
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  - Hubschwerlen, Christian N.; and Schmid, Gerard, 4,617,150, Cl. 540-364.000.
- Schmid, Hans, to Megomat AG. Apparatus for cutting and preparing cables. 4,616,386, Cl. 29-33.00M.
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- Schmidt, Michael R., to General Motors Corporation. Pressure relief and drain valve. 4,616,672, Cl. 137-107.000.
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  - Christensen, Burton G.; Cama, Lovji D.; and Schmitt, Susan M., 4,617,152, Cl. 540-200.000.
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- Schnur, Rodney C., to Pfizer Inc. Aldose reductase inhibiting 5-(2-alkoxyphenyl) thiazolidinediones. 4,617,312, Cl. 514-369.000.
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- Schott, Wilhelm, to Jean Walterscheid GmbH. Shaft coupling lockable in the released position. 4,616,952, Cl. 403-316.000.
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  - Nobel, Fred I.; Ostrow, Barnet D.; and Schram, David N., 4,617,097, Cl. 204-44.400.
- Schramm, Buford J. Hubless, hingeless and bearingless helicopter rotor system. 4,616,977, Cl. 416-138.000.
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- Schreiber, William L.: *See—*
  - Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,617,144, Cl. 252-522.00A.
- Schroeder, Jon M. Method for bonding electrical leads to electronic devices. 4,616,412, Cl. 29-827.000.
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- Schulte, Hans-Gerd, to Krupp Polysius AG. Method and apparatus for the heat treatment of fine-grained material. 4,616,575, Cl. 110-345.000.
- Schumacher, Heinz O. System for continuous solid/liquid extraction. 4,617,177, Cl. 422-273.000.
- Schupack, Morris. Three dimensionally reinforced fabric concrete. 4,617,219, Cl. 428-113.000.
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- Schwarz, Theodor: *See—*
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- Schwarzkopf, Eugen, to Hotset Heizpatronen und Zubehor GmbH. Electrical heating cartridge. 4,617,455, Cl. 219-523.000.
- Schweitzer, David C., to General Motor Corporation. Adjustment mechanism. 4,616,906, Cl. 350-486.000.
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  - Giese, Peter; Holzmann, Rainer; Schwochert, Hans-Joachim; and Thomas, Alfred, 4,617,077, Cl. 156-245.000.
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- Scott, Russell L. Moveable clamp and edge sealing method employing same. 4,617,073, Cl. 156-107.000.
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  - Ross, Robert H., 4,616,997, Cl. 432-148.000.
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  - Brown, Kenneth A., 4,617,561, Cl. 340-628.000.
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- Sedlmayr, Gerhard, to Autoflug GmbH. Automatic height adjustment device. 4,616,850, Cl. 280-808.000.
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- Seib, Karl: *See—*
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- Seido, Mitsuro. Tissue paper box. 4,616,767, Cl. 221-58.000.
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- Seiko Instruments & Electronics Ltd.: *See—*
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- Seiler, Wayne H., to Ford Motor Company. Automotive type fuel feed system. 4,617,116, Cl. 210-137.000.
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  - Hiroshima, Minoru; Matsumoto, Shinzo; Sekino, Mitsuru; and Taniguchi, Yoshinori, 4,617,644, Cl. 365-36.000.
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- Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Wet adhesion promoters for emulsion polymers. 4,617,364, Cl. 526-263.000.
- Seligman, Marvin: *See—*
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- Senez, Claude: *See—*
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- Senkingwerk GmbH: *See—*
  - Stoll, Karl-Heinz, 4,616,372, Cl. 8-158.000.
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- Serge, Ladriere. Projectiles intended to be fired by a fire-arm. 4,616,568, Cl. 102-501.000.
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  - Mosser, Mark F.; and McMordie, Bruce G., 4,617,056, Cl. 106-1.120.
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  - Ohlin, L. Erik; Unger, H. Peter; and Westberg, J. Eric, 4,617,009, Cl. 494-21.000.
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  - DiMarchi, Richard D.; and Shaar, Carl J., 4,617,149, Cl. 530-324.000.
- Shaftel, Myles A., to Kennecott Corporation. Electrode probe assembly for glass lined metal vessels. 4,617,511, Cl. 324-54.000.
- Shah, Pravinchandra K.; and Antlfinger, George J., to B. F. Goodrich Company, The. Latex containing odor inhibitor. 4,617,230, Cl. 428-288.000.
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  - Joo, Louis A.; Tucker, Kenneth W.; and Shaner, Jay R., 4,617,053, Cl. 75-244.000.
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- Shanley, Robert L., II, to RCA Corporation. Recovery system for a control loop. 4,617,587, Cl. 358-17.000.
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  - Ikezaki, Katsuji; and Ishii, Kiyoshi, 4,617,034, Cl. 55-276.000.
  - Itoigawa, Masakatsu; and Nishijima, Masaru, 4,616,920, Cl. 355-3.0BE.
  - Katoh, Tutomu, 4,616,765, Cl. 220-335.000.
  - Morino, Masuaki; and Takada, Yuji, 4,617,650, Cl. 365-195.000.
- Shattuck, Thomas G. Blade adjustment device for sod cutting machine. 4,616,713, Cl. 172-19.000.
- Shaub, Harold; and Waddey, Walter E., to Exxon Research and Engineering Company. Method for improving the fuel economy of an internal combustion engine using fuel having hydroxyl-containing ester additive. 4,617,026, Cl. 44-70.000.
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- Shaw, Richard G.; and Fahrer, Theodore J., to Erico International Corporation. Control circuit and method for stud welding gun lifting solenoid. 4,617,445, Cl. 219-98.000.
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  - da Mota, Augusto L. C., 4,616,708, Cl. 166-355.000.
  - Hemphill, Dean P., 4,616,956, Cl. 405-158.000.
  - Langner, Carl G., 4,616,707, Cl. 166-345.000.
  - Stegemeier, George L.; Van Meurs, Peter; and Van Egmond, Cor F. H., 4,616,705, Cl. 166-250.000.
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- Sheppard, Isaac, Jr.; Jewell, Everett; Levitz, Steven E.; and Taylor, Rudolph T. Light gauge steel building system. 4,616,453, Cl. 52-93.000.
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  - Utoh, Yoshihiro; Shibata, Shinichi; and Kitahara, Hiroyuki, 4,616,764, Cl. 220-306.000.
- Shibuya Kogyo Co., Ltd.: *See—*
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- Shields, Susan J., to Hercules Incorporated. Opaque liquid hand soap. 4,617,148, Cl. 252-547.000.
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- Shimano Industrial Company Limited: *See—*
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  - Tanaka, Masaki; and Ohashi, Hiroshi, 4,617,340, Cl. 524-588.000.
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- Shinmei Rubber Ind., Co., Ltd.: *See—*
  - Hoshikawa, Kyofu; Ishiwatari, Seishiro; and Tanahashi, Mitsuru, 4,617,433, Cl. 200-86.00R.
- Shinohe, Takashi; and Asaka, Masayuki, to Kabushiki Kaisha Toshiba. Gate turn-off thyristor. 4,617,583, Cl. 357-38.000.
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- Shollenbarger, David W.: *See—*
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  - Berfield, Robert C.; and Crevling, Robert, 4,616,378, Cl. 15-353.000.
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- Shurtliff, Norval E. Damped boring bar and tool holder. 4,616,738, Cl. 188-380.000.
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  - Cewers, Goeran; Johansson, Jan; and Olsson, Sven-Gunnar, 4,616,801, Cl. 251-6.000.
  - Dolansky, Franz; and Steiner, Ewald, 4,617,602, Cl. 361-119.000.
  - Nossek, Josef A., 4,617,537, Cl. 332-48.000.
  - Ophoff, Paul A., 4,617,551, Cl. 340-347.0DA.
  - Paulik, Ernst, 4,617,533, Cl. 331-113.00A.
  - Reiner, Robert, 4,617,549, Cl. 340-347.0AD.
  - Reinhardt, Hans-Juergen, 4,617,513, Cl. 324-126.000.
  - Utner, Ferdinand; and Bolz, Herbert, 4,617,609, Cl. 361-310.000.
  - Zuckler, Karl, 4,617,434, Cl. 200-144.00B.
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- Sikorcin, John: *See—*
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- Silcox, William H.: *See—*
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- Silverstein, Steven M.: *See—*
  - Lake, Carole J.; Shanley, James J.; and Silverstein, Steven M., 4,617,663, Cl. 371-25.000.
- Simko, Richard T., to Xicor, Inc. Integrated high voltage distribution and control systems. 4,617,652, Cl. 365-203.000.
- Simmons, Eugene D.; Thomson, Graham C., III; and Reynaud, Richard J. Pumping apparatus with a down-hale spring loaded piston actuated by fluid pressure. 4,616,981, Cl. 417-378.000.
- Simmons, Harold C.; and Harding, Curtis F., to Parker Hannifin Corporation. Slurry atomizer. 4,616,784, Cl. 239-404.000.
- Simonetti, Jean-Pierre, to Outillages Scientifiques et de Laboratoires O.S.L. S.A. Translatable soldering machine. 4,616,775, Cl. 228-37.000.
- Simons, Raymond G.: *See—*
  - Stein, Ray J.; and Simons, Raymond G., 4,617,157, Cl. 261-96.000.
- Simpkins, James W.: *See—*
  - Bodor, Nicholas S.; Estes, Kerry S.; and Simpkins, James W., 4,617,298, Cl. 514-176.000.
- Simpson, Jay R.: *See—*
  - MacChesney, John B.; Simpson, Jay R.; and Walker, Kenneth L., 4,616,901, Cl. 350-96.340.
- Simpson, John B., to Devices for Vascular Intervention. Device facilitating the exchange of dilatation catheters during an angioplasty procedure. 4,616,648, Cl. 128-303.00R.
- Simpson, John B., to Advanced Cardiovascular Systems, Inc. Dilatation catheter positioning apparatus. 4,616,652, Cl. 128-344.000.
- Singer Company, The: *See—*
  - Vartoukian, Artin G.; and Haggerty, Robert P., 4,616,584, Cl. 112-121.150.
- Singh, Avtar: *See—*
  - Nath, Prem; Izu, Masatsugu; Ovshinsky, Herbert C.; and Singh, Avtar, 4,617,421, Cl. 136-244.000.
- Singh, Shobha: *See—*
  - Chin, Aland K.; Singh, Shobha; Uitert, LeGrand G. V.; and Zydzik, George J., 4,617,192, Cl. 427-42.000.
- Single Buoy Moorings, Inc.: *See—*
  - Girardot, Michel; and Poldervaart, Leendert, 4,617,000, Cl. 441-3.000.
- Sinkkila, Aarre. Forest mattock with braked rotation system. 4,616,715, Cl. 172-61.000.
- Siska, Margaret M.: *See—*
  - Wood, John R.; Siska, Margaret M.; and Raymond, Patrick A., 4,616,700, Cl. 166-250.000.
- Sitnai, Oto: *See—*
  - Mandelson, John; McCarthy, David J.; Sitnai, Oto; and Whitehead, Alan B., 4,617,107, Cl. 208-427.000.
- Sizensky, Joseph J., to Olin Hunt Specialty Products, Inc. Stripping composition and method of using the same. 4,617,251, Cl. 430-256.000.
- Sizer, Theodore, II: *See—*
  - Mourou, Gerard; Norris, Theodore B.; and Sizer, Theodore, II, 4,617,665, Cl. 372-18.000.
- Skalleberg, Oystein, to Skaltek AB. Method for producing a package. 4,616,469, Cl. 53-410.000.
- Skaltek AB: *See—*
  - Skalleberg, Oystein, 4,616,469, Cl. 53-410.000.
- Skardal, Karl A. Vortex cleaner for cleaning and deaerating paper pulp suspensions. 4,617,114, Cl. 209-211.000.
- Skis Rossignol S.A.-Club Rossignol S.A.: *See—*
  - Echevin, Michel; Piegay, Yves; and Legrand, Maurice, 4,616,842, Cl. 280-602.000.
- Slaats, Mathew A.; and Blesinger, James E., to Kimball International, Inc. Chair with back height adjustment. 4,616,877, Cl. 297-353.000.
- Slansky, Allan. Operator alarm system. 4,617,559, Cl. 340-576.000.
- Slavik, William H., to Nuvatec, Inc. Recreational vehicle power control system. 4,617,472, Cl. 307-10.00R.
- Slee, Roger H., to AE PLC. Manufacture of camshafts. 4,616,389, Cl. 29-156.40R.
- Sloboda, Adolph E.: *See—*
  - Kerwar, Suresh S.; Sloboda, Adolph E.; and Ridge, Susan C., 4,617,319, Cl. 514-647.000.
- Sluga, Thomas J.: *See—*
  - Rollins, Richard A.; Sluga, Thomas J.; and Tobiasz, Henry, 4,617,161, Cl. 264-136.000.
- Smack, Melvin F., Sr.; and Semien, Garland J., Jr., to World Inventions. Apparatus for simulating running games. 4,616,829, Cl. 273-86.00B.
- Smart, Michael F., to Fram Industrial Ltd. Assemblies of conjoined parts. 4,617,118, Cl. 210-232.000.

Smeenge, Paul A.; Wilson, Harold R.; and Nelsen, Randy P., to Haworth, Inc. Adjustable support for CRT·keyboard. 4,616,798, Cl. 248-281.100.
Smith, Franklin W., to Gieser, John D.; and Foreman, Douglas. Control and safety system for electrically powered submersible tools and lights. 4,617,501, Cl. 318-459.000.
Smith, Graham: *See—*
  Green, David T.; McGarry, Richard A.; and Smith, Graham, 4,616,650, Cl. 128-325.000.
Smith International, Inc.: *See—*
  Anderson, George F., 4,617,446, Cl. 219-121.0LC.
  Furse, John H., 4,616,721, Cl. 175-320.000.
Smith, John M.: *See—*
  Harwood-Nash, Derek C.; Fitz, Charles R.; Zouch, Edward T.; and Smith, John M., 4,616,814, Cl. 269-328.000.
Smith, Joseph E., Jr., to O & S Manufacturing Company. Method of manufacturing spherical and cylindrical bearings. 4,616,387, Cl. 29-149.50B.
Smith, Lloyd S.: *See—*
  Bunch, Richard P.; and Smith, Lloyd S., 4,616,432, Cl. 36-50.000.
Smith, Peter J., to Imperial Chemical Industries PLC. Production of ion-exchange membrane. 4,617,163, Cl. 264-235.600.
Smith, Robert A., to Goodyear Tire & Rubber Company, The. High molecular weight polyacrylamide synthesis. 4,617,359, Cl. 526-93.000.
Smith, William N., III: *See—*
  Dickerson, James W.; and Smith, William N., III, 4,617,423, Cl. 178-2.00R.
Snouse, Thomas W.: *See—*
  Faria, Carl R.; and Snouse, Thomas W., 4,616,860, Cl. 285-336.000.
Snyder, David A., to Westinghouse Electric Corp. Bladder mandrel for hydraulic expansions of tubes and sleeves. 4,616,392, Cl. 29-283.500.
Sobieski, James F.; and Muehlhausen, Robert A., to Minnesota Mining and Manufacturing Company. Electrophotographic copying apparatus and process. 4,616,922, Cl. 355-14.00R.
Societe Chimique Des Charbonnages, S.A.: *See—*
  Gloriod, Pierre; Audureau, Joel; and Pellegrini, Maurice, 4,617,366, Cl. 526-272.000.
Societe Francaise d'Electrometallurgie-SOFREM: *See—*
  Demange, Michel; and Septier, Louis, 4,616,690, Cl. 164-128.000.
Societe Nationale Elf Aquitaine: *See—*
  Belouet, Christian, 4,616,595, Cl. 118-405.000.
Societe Nationale Industrielle Aerospatiale: *See—*
  Serrano, Jean-Pierre; and Feuillerat, Jean, 4,616,779, Cl. 239-79.000.
Societe Technique d'Applicatioon et de Recherche Electronique: *See—*
  Choquer, Jean; and Gartner, Thierry, 4,617,571, Cl. 343-744.000.
Society Nationale Industrielle Aerospatiale: *See—*
  Michaud-Soret, Jean A., 4,617,217, Cl. 428-71.000.
Solt, Wayne J. Apparatus for injecting liquid manure into the ground. 4,616,579, Cl. 111-7.000.
Solvay & Cie.: *See—*
  Bienfait, Charles, 4,617,360, Cl. 526-114.000.
Somers, Gerardus H. J., to U.S. Philips Corporation. Magnetic head having a thin strip of magnetoresistive material as a reading element. 4,617,600, Cl. 360-113.000.
Someya, Hiromi; Aihara, Yoshihiko; Suzuki, Nobuyuki; and Mizogui, Toyokazu, to Canon Kabushiki Kaisha. Exposure control mode selecting device for camera. 4,616,916, Cl. 354-442.000.
Sommer Co.: *See—*
  Sommer, Gordon M., 4,616,739, Cl. 192-18.00A.
Sommer, Gordon M., to Sommer Co. Inching drive. 4,616,739, Cl. 192-18.00A.
Sone, Takehiko; Takoshima, Takehiro; and Kamijyo, Yoshimi, to Alps Electric Co., Ltd. Piezoelectric elastic surface wave element with film of tantalum pentoxide or silicon nitride. 4,617,487, Cl. 310-313.00D.
Sonoda, Nobuharu, to Mitsubishi Gas Chemical Company, Inc. Polyphenylene ether resin composition. 4,617,346, Cl. 525-68.000.
Sony Corporation: *See—*
  Katagiri, Koichi; Hanamoto, Yoshihiro; Maeda, Satoru; and Taniguchi, Ikuo, 4,617,594, Cl. 358-150.000.
  Kobayashi, Youichi; and Murakami, Susumu, 4,617,080, Cl. 156-359.000.
  Kojima, Yuichi; and Fukuda, Shinichi, 4,617,552, Cl. 340-347.0DD.
  Suzuki, Kiyosuke; Fukuma, Toshiaki; and Sato, Tatsuru, 4,617,247, Cl. 430-81.000.
  Yuasa, Masami, 4,617,499, Cl. 318-254.000.
Souchik, Nicholas, Jr. Wind driven turbine. 4,616,973, Cl. 415-2.00R.
Soucy, Francis L.: *See—*
  Matson, Gary R.; Pottle, Winston G.; and Soucy, Francis L., 4,616,921, Cl. 355-5.000.
Soum, Jacques; and Malabre, Christian, to ABG Semca. Process for producing a hydrodynamic bearing having internal foil cartridge. 4,616,388, Cl. 29-149.50S.
Sovonics Solar Systems: *See—*
  Nath, Prem; Izu, Masatsugu; Ovshinsky, Herbert C.; and Singh, Avtar, 4,617,421, Cl. 136-244.000.
Spacesaver Corporation: *See—*
  Peterman, Robert J., 4,616,888, Cl. 312-201.000.
  Peterman, Robert J., 4,616,889, Cl. 312-201.000.
Specialty Products, Inc.: *See—*
  Pettibone, Craig R., 4,616,845, Cl. 280-661.000.
Speranza, Donald, to Eaton Corporation. DC to DC converter with self-starting flyback oscillator. 4,617,620, Cl. 363-19.000.
Spietschka, Ernst; and Urban, Manfred, to Hoechst Aktiengesellschaft. Process for preparing a pigment based on 4,4′,7,7′-tetrachlorothioindigo. 4,617,403, Cl. 549-56.000.
Spink, Thomas E.; and Rushing, Frank C., to Westinghouse Electric Corp. Extendable tube for vertically delivered weapons. 4,616,554, Cl. 89-1.806.
Sprague, Richard P., to First Byte. Compaction method for waveform storage. 4,617,645, Cl. 365-45.000.
Spurlock, Kim E.: *See—*
  Giaier, Thomas A.; Johnson, Neil H.; Reschly, David C.; Knox, Harold L.; and Spurlock, Kim E., 4,616,573, Cl. 110-327.000.
Srnka, Leonard J., to Exxon Production Research Co. Method and apparatus for offshore electromagnetic sounding utilizing wavelength effects to determine optimum source and detector positions. 4,617,518, Cl. 324-365.000.
Staker, William C.: *See—*
  Frey, Mark W.; King, Dallas E.; and Staker, William C., 4,616,527, Cl. 74-625.000.
Standard Oil Company, The: *See—*
  Dilts, David A.; and Brauneck, Timothy W., 4,617,420, Cl. 136-244.000.
Standard Oil Company (Indiana): *See—*
  Tolpin, Thomas W.; and Kretchmer, Richard A., 4,617,175, Cl. 422-171.000.
Staniak, Waldema A.; Samuelson, Robert E.; and Moncelle, Michael E., to Caterpillar Inc. Fuel control system. 4,616,616, Cl. 123-357.000.
Stanton, Paul N.: *See—*
  Huffaker, Roger W.; and Stanton, Paul N., 4,616,706, Cl. 166-341.000.
Stark, Eduard: *See—*
  Bach, Lars; and Stark, Eduard, 4,616,991, Cl. 425-396.000.
Stauber, Hans-Ulrich, to Ferag AG. Apparatus for superposing flexible flat structures, especially sheets and signatures, and method of using such apparatus. 4,616,816, Cl. 270-58.000.
Stauffer Chemical Company: *See—*
  Liu, Sophia Y., 4,617,328, Cl. 523-122.000.
Ste. Francaise d'Equipements pour la Navigation Aerienne: *See—*
  Bernelin, Bernard; and de Salaberry, Bernard, 4,616,929, Cl. 356-350.000.
Stegemeier, George L.; Van Meurs, Peter; and Van Egmond, Cor F. H., to Shell Oil Company. Mini-well temperature profiling process. 4,616,705, Cl. 166-250.000.
Steigler, Pamela S.: *See—*
  Steigler, Thomas F.; and Steigler, Pamela S., 4,616,769, Cl. 223-46.000.
Steigler, Thomas F.; and Steigler, Pamela S. Doll hair maker and method of use. 4,616,769, Cl. 223-46.000.
Stein, Ray J.; and Simons, Raymond G., to Whirlpool Corporation. Fragrance dispenser for room air conditioner. 4,617,157, Cl. 261-96.000.
Steinberg, David H.; and Cortolano, Frank, to Ciba-Geigy Corporation. Process for preparing stabilizers containing sulfur and a hindered phenol group. 4,617,404, Cl. 549-90.000.
Steiner, Ewald: *See—*
  Dolansky, Franz; and Steiner, Ewald, 4,617,602, Cl. 361-119.000.
Steiniger, Wolfgang: *See—*
  Lorenzen, Heinz-Christen; Heitmann, Uwe; and Steiniger, Wolfgang, 4,616,663, Cl. 131-109.300.
Steinkuhl, Allan R.; and Cayton, Steven D., to TRW Inc. Valve with flow force compensator. 4,616,671, Cl. 137-101.000.
Stetter GmbH: *See—*
  Riker, Rudolf, 4,616,786, Cl. 241-35.000.
Stewart, James E.: *See—*
  Menlove, Howard O.; and Stewart, James E., 4,617,466, Cl. 250-390.000.
Stewart, Leslie C.: *See—*
  Auer, John H., Jr.; Sibley, Henry C.; and Stewart, Leslie C., 4,617,662, Cl. 371-25.000.
Stickler, David B., to Gas Research Institute. Method for the heat processing of glass and glass forming material. 4,617,042, Cl. 65-27.000.
Stiegler, Hartmut: *See—*
  Heinzl, Burno; Frowein, Herbert; Stiegler, Hartmut; Wurz, Joachim; Schmidt, Horst; Huttel, Willi; and Schmitz, Karl-Heinz, 4,616,754, Cl. 211-71.000.
Stockel, Richard F.; and Dumas, Philip E. Use of selenium-containing compounds for negating the toxic effects of platinum compounds used in chemotherapy, and a novel selenium-containing platinum compound and use thereof as an anti-cancer medicine. 4,617,189, Cl. 424-162.000.
Stokoe, Philip T.; Cleaver, Glenn N.; and Boulais, Dennis R., to Augat Inc. High speed lead socket assembly machine. 4,616,410, Cl. 29-743.000.
Stoll, Karl-Heinz, to Senkingwerk GmbH. Method of operating counter flow cycling washing machine. 4,616,372, Cl. 8-158.000.
Stoller, Milton, to First National Bank of Boston, The. Diaphanoscopy apparatus. 4,616,657, Cl. 128-664.000.
Storalene AB: *See—*
  Larsson, Leif; and Ekdahl, Bengt, 4,617,229, Cl. 428-284.000.
Stout, Gregg W.; and Myers, William D., Jr., to Baker Oil Tools, Inc. Well perforating apparatus including an underbalancing valve. 4,616,701, Cl. 166-55.100.
Stout, Michael E.; Peacock, Bobbie; and Lindroos, Jarl, to M.A. Industries, Inc. Thermal gravity classifying apparatus and method. 4,617,112, Cl. 209-11.000.
Strang, Virgil G. Arc welding filter. 4,617,033, Cl. 55-100.000.

Strehler, Richard; and Babisch, Guenter, to Carl Hurth Maschinen und Zahnradfabrik GmbH & Co. Control chain connection. 4,616,730, Cl. 180-253.000.
Stricker, Alfred A.: *See—*
  Bleau, Charles D.; Gasper, Andrew, Jr.; Perlini, Julius J.; and Stricker, Alfred A., 4,617,081, Cl. 156-443.000.
Stritzl, Karl: *See—*
  Freisinger, Henry; Luschnig, Franz; Stritzl, Karl; and Zotter, Johann, 4,616,843, Cl. 280-618.000.
Strommer, Erich, to Novophalt Societe Anonyme. Method for producing a synthetic material-containing powder. 4,617,201, Cl. 427-216.000.
Studer, Urs-Peter, to Zumbach Electronic AG. Process and device for the contact free determination of the movement of an object. 4,616,931, Cl. 356-373.000.
Stumpe, Werner: *See—*
  Muller, Egbert; Grauel, Ingolf; and Stumpe, Werner, 4,616,881, Cl. 303-7.000.
Su, Aaron C. L., to Du Pont de Nemours, E. I., and Company. ω-perfluoroalkyl-α-olefin polymers. 4,617,363, Cl. 526-253.000.
Subbarao, Wunnava V.; and Ely, Richard I., to Burroughs Corporation. Fluorescent optical switch and keyboard apparatus. 4,617,461, Cl. 250-229.000.
Suchdeo, Shyam R.; Patel, Suresh U.; and Harris, Christopher F., to Air Products and Chemicals, Inc. Tonnage nitrogen air separation with side reboiler condenser. 4,617,036, Cl. 62-11.000.
Suchy, Peter, to Kraftwerk Union Aktiengesellschaft. Assembly for a core of a nuclear reactor. 4,617,170, Cl. 376-438.000.
Suda, Kaoru: *See—*
  Nakata, Yukio; Suda, Kaoru; Shiotsu, Osamu; and Morito, Motoyoshi, 4,617,565, Cl. 340-825.500.
Sudo, Yoshimi: *See—*
  Kuwabara, Hideki; Sudo, Yoshimi; and Kitagawa, Atusi, 4,617,323, Cl. 521-60.000.
Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG: *See—*
  Dietzsch, Kurt; and Witzel, Karlheinz, 4,616,693, Cl. 165-41.000.
Sugasawa, Fukashi; Kuroki, Junsuke; and Akatsu, Yohsuke, to Nissan Motor Company, Limited. Automotive suspension control system with vehicle speed-dependent damping characteristics. 4,616,848, Cl. 280-707.000.
Sugimori, Shigeru, to Chisso Corporation. Cyclohexanecarbonylic acid ethyl ester derivatives. 4,617,142, Cl. 252-299.630.
Sugimoto, Koichi: *See—*
  Sakaue, Shiyuki; Sugimoto, Koichi; and Arai, Shinichi, 4,617,502, Cl. 318-568.000.
Suginoya, Mitsuru: *See—*
  Kamamori, Hitoshi; Suginoya, Mitsuru; Iwasa, Koji; Sano, Yutaka; and Terada, Yumiko, 4,617,094, Cl. 204-18.100.
Suh, Sung L.; Reeds, Carter B.; Van Scherpe, Peter; and Silcox, William H., to Chevron Research Company. Hybrid double hydrocyclone-gravity gas/liquid separator. 4,617,031, Cl. 55-52.000.
Sulzer Brothers Limited: *See—*
  Baumeler, Markus, 4,616,477, Cl. 60-415.000.
Sumal, Jaihind S., to Robert Bosch GmbH. Apparatus for measuring the mass of a flowing medium and method for producing an apparatus for measuring the mass of a flowing medium. 4,616,506, Cl. 73-204.000.
Sumino, Fumio: *See—*
  Tanaka, Shigemori; Sumino, Fumio; Kubo, Keiji; Hisamura, Masafumi; Toma, Hitoshi; and Fujimura, Naoto, 4,617,245, Cl. 430-58.000.
Sumitomo Electric Industries, Ltd.: *See—*
  Yazu, Shuji; and Satoh, Shuichi, 4,617,181, Cl. 423-446.000.
Sumiya, Koji: *See—*
  Ogasawara, Tsunehiko; Arakawa, Yoshichika; Sumiya, Koji; and Sakaguchi, Yoshikazu, 4,616,531, Cl. 74-866.000.
Sumoto, Kunihiro: *See—*
  Miyano, Seiji; Sumoto, Kunihiro; Morita, Minoru; and Sato, Fumio, 4,617,401, Cl. 548-453.000.
Sun Refining and Marketing Company: *See—*
  Lyons, James E., 4,617,287, Cl. 502-174.000.
Suncoast Medical Manufacturing, Inc.: *See—*
  Johns, David L., 4,616,660, Cl. 128-741.000.
Suncor Inc.: *See—*
  Ballachey, John M.; Jankowski, Leon V.; Johnson, C. W.; Ward, George S.; and Ward, John R., 4,616,454, Cl. 52-115.000.
Sundheimer, Craig S., to American Sterilizer Company. Method for liquid disinfecting and sterile rinsing. 4,617,065, Cl. 134-25.400.
Sundvall, Nils J.: *See—*
  Johansson, Jan H.; and Sundvall, Nils J., 4,617,426, Cl. 179-16.0AA.
Sunstar Kabushiki Kaisha: *See—*
  Satoh, Toshio; Miyataka, Hideki; Masamoto, Yukimitsu; Asai, Takashi; Hasegawa, Kenji; and Kakegawa, Hisao, 4,617,292, Cl. 514-27.000.
Suntory Ltd.: *See—*
  Miyano, Seiji; Sumoto, Kunihiro; Morita, Minoru; and Sato, Fumio, 4,617,401, Cl. 548-453.000.
Sursum Elektrizitatsgesellschaft Leyhausen GmbH & Co.: *See—*
  Westermeyer, Joseph, 4,617,540, Cl. 335-35.000.
Suss, Christian: *See—*
  Pietsch, Helge; Rink, Manfred; and Suss, Christian, 4,616,874, Cl. 297-321.000.
Suzuki, Atsushi, to Fujitsu Limited. Ring oscillator with delay element and potential pulling circuit. 4,617,529, Cl. 331-57.000.
Suzuki, Hideo: *See—*
  Uchiyama, Yasuji; and Suzuki, Hideo, 4,616,546, Cl. 84-1.010.
Suzuki, Hiroshi; Kanai, Masatatsu; Saitoh, Seishiro; and Kanai, Shigeru, to Tachikawa Spring Co., Ltd. Rotation adjusting apparatus. 4,616,876, Cl. 297-328.000.
Suzuki, Hiroya: *See—*
  Arakawa, Shunsuke; and Suzuki, Hiroya, 4,616,424, Cl. 33-361.000.
Suzuki, Kiyosuke; Fukuma, Toshiaki; and Sato, Tatsuru, to Sony Corporation. Improved sensitizer dyes for polyvinylcarbazole electrophotographic compositions. 4,617,247, Cl. 430-81.000.
Suzuki, Kouhei; Saito, Tamio; and Mori, Ken-ichi, to Kabushiki Kaisha Toshiba. Image sensing device. 4,617,471, Cl. 250-578.000.
Suzuki, Masao: *See—*
  Nagasawa, Hideo; Suzuki, Masao; and Hamano, Tsutomu, 4,616,942, Cl. 400-196.100.
Suzuki, Masayuki; Fukahori, Hidehiko; Kawamura, Masaharu; Harada, Yoshihito; Kobayashi, Ryuichi; and Ohara, Tsunemasa, to Canon Kabushiki Kaisha. Camera. 4,616,913, Cl. 354-173.100.
Suzuki, Mitsugu: *See—*
  Kajihara, Takehiro; and Suzuki, Mitsugu, 4,616,996, Cl. 432-148.000.
Suzuki, Nobuyuki: *See—*
  Someya, Hiromi; Aihara, Yoshihiko; Suzuki, Nobuyuki; and Mizogui, Toyokazu, 4,616,916, Cl. 354-442.000.
Suzuki, Toshifumi; Kawano, Toshio; Setoguchi, Ryoichi; Ishida, Toshio; and Mikami, Seiiti, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for fastening a door to a vehicle. 4,616,411, Cl. 29-822.000.
Suzuki, Yoshio; and Ohe, Takeshi, to Jidoshi Kiki Co., Ltd. Power steering device. 4,616,728, Cl. 180-142.000.
Syntex (U.S.A.) Inc.: *See—*
  Whiteley, Gordon R.; Pritchard, Cynthia G.; and Barrett, Sharon S., 4,617,264, Cl. 435-34.000.
Synthelabo: *See—*
  Bigg, Dennis; Morel, Claude; and Sevrin, Mireille, 4,617,313, Cl. 514-402.000.
Tabuchi, Mamoru: *See—*
  Katou, Kazuo; Mizugami, Susumu; Tabuchi, Mamoru; Nakamura, Masayuki; Kobayashi, Toshiyuki; and Ritoh, Naotake, 4,616,545, Cl. 83-558.000.
Tachikawa Spring Co., Ltd.: *See—*
  Suzuki, Hiroshi; Kanai, Masatatsu; Saitoh, Seishiro; and Kanai, Shigeru, 4,616,876, Cl. 297-328.000.
Taga, Kazumitsu, to Japan Constec Kabushiki Kaisha. Continuous pavement process for a bridge surface expansion joint. 4,616,954, Cl. 404-74.000.
Taguchi, Takafumi; Nakano, Masahiro; Hiramoto, Nobuo; and Tominaga, Hideki, to Mazda Motor Corporation. Cooling arrangement for water-cooled internal combustion engine. 4,616,599, Cl. 123-41.100.
Taguchi, Yoshinori; and Yamanami, Tsuguya, to Wacom Co., Ltd. Position detecting apparatus. 4,617,515, Cl. 324-207.000.
Tahara, Tetsuya; Hayano, Kiyoharu; Setoguchi, Michihide; and Fukuda, Takemi, to Yoshitomi Pharmaceutical Industries Ltd. Benzofuran- and benzopyran-carboxamide derivatives. 4,617,314, Cl. 514-422.000.
Takada, Yuji: *See—*
  Morino, Masuaki; and Takada, Yuji, 4,617,650, Cl. 365-195.000.
Takahashi, Hiroshi: *See—*
  Saito, Kimitaka; Kohama, Tokio; Egami, Tsuneyuki; Saito, Tsutomu; Takahashi, Hiroshi; and Sato, Kunihiko, 4,616,619, Cl. 123-489.000.
Takahashi, Hisao: *See—*
  Hamada, Akira; Takahashi, Hisao; and Ohira, Keiichi, 4,617,231, Cl. 428-297.000.
Takahashi, Kazuo; Sato, Hiroshi; and Kosugi, Masao, to Canon Kabushiki Kaisha. Exposure apparatus with detecting means insertable into an exposure path. 4,617,469, Cl. 250-548.000.
Takahashi, Keiji; and Fujimoto, Sakae, to Ricoh Company, Ltd. Thermal-image-transfer recording apparatus. 4,617,577, Cl. 346-76.0PH.
Takahashi, Kenzo; Kumazaki, Nobuo; Yokoya, Hisao; Nakamura, Hironobu; and Kachi, Tadakatsu, to Mitsubishi Denki Kabushiki Kaisha. Heat exchanger. 4,616,695, Cl. 165-54.000.
Takahashi, Masaharu; Tokushige, Yuji; and Itoh, Kunio, to Shin-Etsu Chemical Co., Ltd. Method for surface priming in adhesive bonding. 4,617,078, Cl. 156-307.500.
Takahashi, Nagashige, to Kabushiki Kaisha Medos Kenkyusho. Flexible pipe assembly for endoscope. 4,616,631, Cl. 128-6.000.
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  - Cash, David J., 4,616,852, Cl. 282-27.00R.
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  - Rathbone, Elner B.; Hacking, Andrew J.; and Cheetham, Peter S. J., 4,617,269, Cl. 435-97.000.
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- Taylor, Daniel E. Radio controlled gate opener. 4,616,444, Cl. 49-347.000.
- Taylor, Lloyd D.; and Haubs, Michael K., to Polaroid Corporation. Polymeric pyridinium ylides and products prepared from same. 4,617,253, Cl. 430-323.000.
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  - Sheppard, Isaac, Jr.; Jewell, Everett; Levitz, Steven E.; and Taylor, Rudolph T., 4,616,453, Cl. 52-93.000.
- Taylor, Stewart S., to Tektronix, Inc. Differential pair with compensation for effects of parasitic capacitance. 4,617,523, Cl. 330-261.000.
- Tchorbov, Iliya G.: *See—*
  - Nikolov, Ivan D., deceased; Dimova, Vassilka P., heir; Dimov, Dobromir I., heir; Dimov, Petar I., heir; Marinov, Marin I.; Peytchev, Ivan M.; Rashev, Tzolo V.; and Tchorbov, Iliya G., 4,616,808, Cl. 266-207.000.
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  - Akachi, Yoshiaki; Kyoso, Yasuo; and Matsumaru, Takeo, 4,617,543, Cl. 336-192.000.
- Teeple, Edward. Surgical shield. 4,616,641, Cl. 128-132.00R.
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  - Davis, Richard K.; Roberts, Clayton R.; and Tehon, Stephen W., 4,617,503, Cl. 318-572.000.
- Tektronix, Inc.: *See—*
  - Culter, Robert G., 4,617,495, Cl. 315-10.000.
  - Taylor, Stewart S., 4,617,523, Cl. 330-261.000.
- Tel Tec Inc.: *See—*
  - Luetzow, Edwin J., 4,616,717, Cl. 174-117.00F.
- Telefonaktiebolaget LM Ericsson: *See—*
  - Johansson, Jan H.; and Sundvall, Nils J., 4,617,426, Cl. 179-16.0AA.
- Telefunken Electronic GmbH: *See—*
  - Beckenbach, Walter; and Rinderle, Heinz, 4,617,524, Cl. 330-307.000.
- Teleplex Corporation: *See—*
  - Diamond, Anthony E., 4,617,566, Cl. 340-870.110.
- Telesco, Barbara. Place mat. 4,617,215, Cl. 428-43.000.
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  - Hubbard, Vance M.; and Brunson, Welton K., 4,617,017, Cl. 604-179.000.
- Tennessee Valley Authority: *See—*
  - Salladay, David G.; and Kachelman, Donald L., 4,617,048, Cl. 71-30.000.
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  - Lukenbach, Elvin R.; and Tenore, Richard R., 4,617,414, Cl. 558-87.000.
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  - Kamamori, Hitoshi; Suginoya, Mitsuru; Iwasa, Koji; Sano, Yutaka; and Terada, Yumiko, 4,617,094, Cl. 204-18.100.
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- Testerman, Ronald D. Lottery device. 4,616,831, Cl. 273-144.00B.
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  - Macksey, Harry M.; and Hudgens, Rick D., 4,616,400, Cl. 29-571.000.
  - Schulte, Eric F.; and Lewis, Adam J., 4,616,403, Cl. 29-572.000.
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  - Faria, Carl R.; and Snouse, Thomas W., 4,616,860, Cl. 285-336.000.
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  - Havemann, Robert K., 4,616,743, Cl. 192-105.0BA.
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  - Caspari, Richard B.; Whipple, Terry L.; and Thimsen, James A., 4,616,637, Cl. 128-84.00R.
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  - Giese, Peter; Holzmann, Rainer; Schwochert, Hans-Joachim; and Thomas, Alfred, 4,617,077, Cl. 156-245.000.
- Thomas, Edna H.: *See—*
  - Thomas, Warren R.; and Thomas, Edna H., 4,616,748, Cl. 206-214.000.
- Thomas, Mammen: *See—*
  - Wang, Scott W.; Thomas, Mammen; and Ko, Wen C., 4,616,404, Cl. 29-576.00B.
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- Thomson-CSF: *See—*
  - Berger, Jean-Luc, 4,617,595, Cl. 358-213.000.
  - Bert, Alain; and Mamodaly, Narguise, 4,617,528, Cl. 331-56.000.
  - Iliou, Louis; and Gotkovsky, Bruno, 4,616,413, Cl. 29-832.000.
  - Letoquart, Bruno, 4,617,569, Cl. 342-412.000.
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  - Simmons, Eugene D.; Thomson, Graham C., III; and Reynaud, Richard J., 4,616,981, Cl. 417-378.000.
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  - Tullis, Barclay J.; Parikh, Mihir; Thrasher, David L.; and Johnston, Mark E., 4,616,683, Cl. 141-98.000.
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  - Deicke, Axel; and Tigges, Michael, 4,617,510, Cl. 324-51.000.
- Tighe, William R.: *See—*
  - McFalls, Bob L.; and Tighe, William R., 4,616,875, Cl. 297-325.000.
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- Tincati, Franco, to SARCMI S.p.A. Automatic bottling machine bottle holder. 4,616,684, Cl. 141-114.000.
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  - Gibson, Stanley; Tindall, Colin; and Graham, John, 4,617,451, Cl. 219-490.000.
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  - Hanson, Merle E.; Titchener, Paul F.; and Hamberlin, Clifford W., 4,616,702, Cl. 166-65.100.

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  - Freisinger, Henry; Luschnig, Franz; Stritzl, Karl; and Zotter, Johann, 4,616,843, Cl. 280-618.000.
- Toa Medical Electronics Co., Ltd.: *See—*
  - Matsuda, Noriaki; and Shinkai, Etsuro, 4,617,275, Cl. 436-10.000.
- Tobias, Samuel J.: *See—*
  - Messinger, Robert; and Tobias, Samuel J., 4,617,117, Cl. 210-198.100.
- Tobiasz, Henry: *See—*
  - Rollins, Richard A.; Sluga, Thomas J.; and Tobiasz, Henry, 4,617,161, Cl. 264-136.000.
- Tokunaga, Ichiro; Matsunaga, Hiroshi; and Shimojima, Yoji, to Alps Electric Co., Ltd. Optical fiber sensor having shaped ends. 4,617,460, Cl. 250-227.000.
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  - Nagai, Junshiro, 4,616,941, Cl. 400-120.000.
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  - Takano, Kunio; and Nukushina, Masanori, 4,616,583, Cl. 112-121.120.
- Tokyo Sanyo Electric Co., Ltd.: *See—*
  - Tatsuta, Nobuhiro, 4,617,424, Cl. 179-2.0EA.
- Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
  - Ikeya, Hirotoshi; and Hatanaka, Akiko, 4,617,584, Cl. 357-72.000.
  - Kobayashi, Hiroshi; Hirose, Tsuguhiro; and Haruyama, Hideaki, 4,617,656, Cl. 370-74.000.
  - Ohyama, Iwane, 4,616,966, Cl. 409-132.000.
  - Yasui, Mitsuru, 4,617,585, Cl. 357-72.000.
- Tolman, Richard L.: *See—*
  - Ashton, Wallace; Walton, Edward; and Tolman, Richard L., 4,617,304, Cl. 514-261.000.
- Tolpin, Thomas W.; and Kretchmer, Richard A., to Standard Oil Company (Indiana). Nitrogen oxide, sulfur oxide, and particulate removal system. 4,617,175, Cl. 422-171.000.
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- Tomaszewski, Thaddeus W., to OMI International Corporation. Electrolytic post treatment of chromium substrates. 4,617,095, Cl. 204-41.000.
- Tomblin, Graham J.; Wexler, Karen B.; Ford, John P.; and Fischer, Stuart G., to Lifecodes Corp. Process and apparatus for purifying and concentrating DNA from crude mixtures containing DNA. 4,617,102, Cl. 204-299.00R.
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  - Sacco, Bruno; Tomforde, Johann; Paschke, Joachim; and Leschke, Harald, 4,616,869, Cl. 296-1.00S.
- Tominaga, Hideki: *See—*
  - Taguchi, Takafumi; Nakano, Masahiro; Hiramoto, Nobuo; and Tominaga, Hideki, 4,616,599, Cl. 123-41.100.
- Tomisawa, Naoki, to Japan Electronic Control Systems Company Limited. Voltage regulator for a microcomputer system. 4,617,509, Cl. 323-303.000.
- Tomlinson, Ronald S., to Heil-Quaker Corporation. Gas burner with means for reducing NO_x emissions. 4,616,994, Cl. 431-347.000.
- Tomm, Dagwin; Kolb, Dieter; Gehrig, Siegmund; and Meyer, Alfred, to Fichtel & Sachs AG. Friction clutch unit with a stop element for limiting presser plate travel. 4,616,744, Cl. 192-109.00R.
- Toohey, Kevin I., to F.F. Seeley Nominees Pty. Ltd. Grille control. 4,616,563, Cl. 98-40.300.
- Tornero, Lino E. Hydropneumatic spring cylinder and method of filling the same. 4,616,812, Cl. 267-131.000.
- Total Air, Inc.: *See—*
  - Ball, Lewis C.; and Delia, Anthony F., 4,616,558, Cl. 98-40.110.
- 'Totes', Incorporated: *See—*
  - Okuda, Toshio, 4,616,868, Cl. 294-137.000.
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  - Ohta, Toshihiko; Okada, Fujio; and Okumoto, Kiyokazu, 4,617,233, Cl. 428-364.000.
- Toyo Soda Manufacturing Co., Ltd.: *See—*
  - Arai, Shoji; Tamano, Yutaka; and Tsutsumi, Yukihiro, 4,617,286, Cl. 502-167.000.
  - Tsuzuki, Kenji; and Morinaka, Hideo, 4,617,397, Cl. 546-304.000.
- Toyoda Gosei Co., Ltd.: *See—*
  - Asano, Tetsuji; Kodama, Keiichi; and Shigeki, Terumitsu, 4,617,213, Cl. 428-36.000.
- Toyomaki, Kazuya: *See—*
  - Hikawa, Kazuo; Toyomaki, Kazuya; and Yamazaki, Hiroyuki, 4,617,526, Cl. 331-1.00A.
- Toyota Jidosha Kabushiki Kaisha: *See—*
  - Akashi, Teruo; Ito, Hiroshi; and Yamada, Shigemichi, 4,616,521, Cl. 74-335.000.
  - Buma, Shuuichi, 4,616,811, Cl. 267-35.000.
  - Itho, Joji, 4,616,594, Cl. 118-326.000.
  - Miura, Hirohisa; Satou, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, 4,617,055, Cl. 75-251.000.
  - Morisawa, Kunio; and Kondo, Tadashi, 4,616,526, Cl. 74-606.00R.
  - Okamoto, Yuji, 4,616,446, Cl. 49-441.000.
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  - Sakai, Takahiro; and Minemoto, Isamu, 4,616,532, Cl. 74-869.000.
  - Watanabe, Hiroyuki; Hamada, Eiichi; Hayashi, Motomu; and Ono, Kenji, 4,616,445, Cl. 49-374.000.
- Tracy, David H.; and Balistee, Brian G., to Perkin Elmer Corporation, The. Plasma etching system. 4,617,079, Cl. 156-345.000.
- Transmet Corporation: *See—*
  - Overturf, John R., 4,617,198, Cl. 427-186.000.
- Traverso, Enrico: *See—*
  - Costanzi, Silvestro; Traverso, Enrico; Podesta , Roberto; Gussoni, Damiano; and Busetto, Carlo, 4,617,333, Cl. 524-96.000.
- Traxler, Manfred: *See—*
  - Enkner, Bernhard; Amon, Leopold; Kubelbock, Alfred; Trimmel, Wolfgang; Nalepka, Paul; Schropp, Leopold; Schwaighofer, Helmut; Pum, Reinhard; Traxler, Manfred; and Tasch, Franz, 4,617,672, Cl. 373-79.000.
- Trefts, George M. Golf ball and tee setting apparatus. 4,616,826, Cl. 273-32.500.
- Tremonti, Ronald R.: *See—*
  - Gindy, Sherif S.; and Tremonti, Ronald R., 4,616,511, Cl. 73-862.040.
- Tresca, Benoit: *See—*
  - Pigneul, Raymond; Pannier, Dominique; and Tresca, Benoit, 4,617,022, Cl. 604-391.000.
- Trilogy Computer Development Partners, Ltd.: *See—*
  - Reinschmidt, Robert M., 4,617,475, Cl. 307-441.000.
- Trimmel, Wolfgang: *See—*
  - Enkner, Bernhard; Amon, Leopold; Kubelbock, Alfred; Trimmel, Wolfgang; Nalepka, Paul; Schropp, Leopold; Schwaighofer, Helmut; Pum, Reinhard; Traxler, Manfred; and Tasch, Franz, 4,617,672, Cl. 373-79.000.
- Trotter, George H. Arrow tip. 4,616,835, Cl. 273-421.000.
- Trubiano, Antoine, to Cari-All Inc. Shopping cart having solid flat vertical container basket walls. 4,616,839, Cl. 280-33.99R.
- Trulaske, Frank R.: *See—*
  - Trulaske, James A.; and Trulaske, Frank R., 4,616,822, Cl. 272-69.000.
- Trulaske, James A.; and Trulaske, Frank R. Exercise treadmill. 4,616,822, Cl. 272-69.000.
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  - Steinkuhl, Allan R.; and Cayton, Steven D., 4,616,671, Cl. 137-101.000.
- TRW Repa GmbH: *See—*
  - Fohl, Artur, 4,616,878, Cl. 297-483.000.
- Tsang, Peter H. S.; Coyle, Joseph P.; and Rhee, Seong K. Molded brake pad. 4,617,165, Cl. 264-236.000.
- Tseng, Charles C.; and Lynn, Kenneth, to Baxter Travenol Laboratories, Inc. Tubing occluder. 4,616,802, Cl. 251-7.000.
- Tsolis, Alexandros K.; and Archimandritis, Spyridon C. 99m Tc-1,2-dihydroxy-1,2-bis(dihydroxyphosphinyl)ethane complex for skeleton scanning. 4,617,184, Cl. 424-1.100.
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  - Akira, Takashima; Kobayashi, Masahiko; Nasu, Hitoo; Okida, Yoshishiro; and Tsuji, Kazuhiko, 4,616,872, Cl. 296-190.000.
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- Tsutsumi, Yukihiro: *See—*
  - Arai, Shoji; Tamano, Yutaka; and Tsutsumi, Yukihiro, 4,617,286, Cl. 502-167.000.
- Tsuzuki, Kenji; and Morinaka, Hideo, to Toyo Soda Manufacturing Co., Ltd. 2-chloro or bromo-6-C_1C_3-alkylamino-pyridine intermediates. 4,617,397, Cl. 546-304.000.
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  - Battiston, Joseph, 4,616,668, Cl. 135-75.000.
- Tucker, Kenneth W.: *See—*
  - Joo, Louis A.; Tucker, Kenneth W.; and Shaner, Jay R., 4,617,053, Cl. 75-244.000.
- Tuffy Books, Inc.: *See—*
  - Mann, Philip, 4,616,851, Cl. 281-15.00R.
- Tullis, Barclay J.; Parikh, Mihir; Thrasher, David L.; and Johnston, Mark E., to Hewlett-Packard Company. Particle-free dockable interface for integrated circuit processing. 4,616,683, Cl. 141-98.000.
- Tunks, M. Larry. Crank and braking mechanism for fishing reels. 4,616,792, Cl. 242-218.000.
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  - Hikino, Tadashi; and Turuda, Kunihiro, 4,616,993, Cl. 431-41.000.
- Turvaura OY: *See—*
  - Paretskoi, Mikko, 4,616,376, Cl. 15-250.00R.
- Tutco, Inc.: *See—*
  - Howard, H. Keith; Sherrill, Jimmy L.; and Kirby, Robert L., 4,617,547, Cl. 338-317.000.
- Tveter, Richard S.: *See—*
  - Himmelstein, Sydney; Tveter, Richard S.; and Beck, James P., 4,616,512, Cl. 73-862.360.
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  - Matsui, Isamu; Uchida, Hiroshi; Nakanishi, Kazuo; and Shimano, Akira, 4,616,789, Cl. 242-35.50R.
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  - Saito, Koichi; Ueda, Kenji; Ikeda, Yasuo; and Ono, Tetsuji, 4,617,289, Cl. 502-339.000.

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- Ugo, Renato; Campolmi, Stefano; and Carletti, Vittorio, to Montedison S.p.A. Process for the preparation of thiocarbamates. 4,617,416, Cl. 558-242.000.
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- Weith, Andre : *See—*
  - Albert, Alban; Courbat, Pierre; and Weith, Andre , 4,617,296, Cl. 514-100.000.
- Weitzel, Harold B.; and Parman, David G., to Ricwil, Incorporated. Heating device for utilizing the skin effect of alternating current. 4,617,449, Cl. 219-301.000.
- Wells, Gregory J., to Varian Associates, Inc. Sample modulator cell for gas chromatography. 4,617,032, Cl. 55-67.000.
- Wells, Thomas A.; and Petterson, William C., to M. W. Kellogg Company, The. Combustion air preheating. 4,617,109, Cl. 208-130.000.
- Welzel, Dieter; and Buhlmann, Hans, to Sandoz Ltd. Pharmaceutical preparation comprising co-dergocrine and a calcium antagonist. 4,617,306, Cl. 514-288.000.
- Wendt, Alan C., to United States Gypsum Company. Wall panel attachment hook. 4,616,461, Cl. 52-481.000.
- Werthessen, Nicholas H., to Fru-Con Construction Corporation. Retraction assemblies for expansible mandrels. 4,616,958, Cl. 405-246.000.
- Wesbar Corporation: *See—*
  - Cunningham, Alton J.; and Hanson, Brian A., 4,617,617, Cl. 362-267.000.
- West, Gary A.: *See—*
  - Gupta, Arunava; West, Gary A.; and Yardley, James T., 4,617,237, Cl. 428-446.000.
- Westberg, J. Eric: *See—*
  - Ohlin, L. Erik; Unger, H. Peter; and Westberg, J. Eric, 4,617,009, Cl. 494-21.000.
- Westermeyer, Joseph, to Sursum Elektrizitatsgesellschaft Leyhausen GmbH & Co. Automatic switch, rail-mounted. 4,617,540, Cl. 335-35.000.
- Westinghouse Electric Corp.: *See—*
  - Bevilacqua, Bruce W.; Klug, Ralph W.; Carlsen, David C.; and Dinucci, Dennis J., 4,616,498, Cl. 72-53.000.
  - Fox, David A., 4,617,622, Cl. 363-98.000.
  - Harman, Douglas G.; Veronesi, Luciano; and Wowczuk, Andrew, 4,616,497, Cl. 72-53.000.
  - Hawkins, Phillip J., 4,616,496, Cl. 72-53.000.
  - Kellogg, Walter J.; DeVault, Birch L.; and Paape, Kenneth L., 4,617,546, Cl. 337-170.000.
  - Snyder, David A., 4,616,392, Cl. 29-283.500.
  - Spink, Thomas E.; and Rushing, Frank C., 4,616,554, Cl. 89-1.806.
- Westvaco Corporation: *See—*
  - Forbes, Hampton E., Jr., 4,616,751, Cl. 206-485.000.
  - Jones, Thomas B., Jr.; and Nikkel, Willem A., 4,617,076, Cl. 156-205.000.
- Wetzel, Robert E.; and Marsh, Richard L., to Dayco Corporation. Method of making a belt. 4,617,075, Cl. 156-137.000.
- Wexler, Karen B.: *See—*
  - Tomblin, Graham J.; Wexler, Karen B.; Ford, John P.; and Fischer, Stuart G., 4,617,102, Cl. 204-299.00R.
- Wheeler, Harold E., to Wheeler Tool Company. Rotary synchronous cross drilling attachment. 4,616,385, Cl. 29-27.00C.
- Wheeler Tool Company: *See—*
  - Wheeler, Harold E., 4,616,385, Cl. 29-27.00C.
- Whipple, Terry L.: *See—*
  - Caspari, Richard B.; Whipple, Terry L.; and Thimsen, James A., 4,616,637, Cl. 128-84.00R.
- Whirlpool Corporation: *See—*
  - Stein, Ray J.; and Simons, Raymond G., 4,617,157, Cl. 261-96.000.
- White, George E.; and Heckel, Dennis C., to Chrysler Corporation. Steering column energy absorbing release bushing and deforming bracket. 4,616,522, Cl. 74-492.000.
- Whitehead, Alan B.: *See—*
  - Mandelson, John; McCarthy, David J.; Sitnai, Oto; and Whitehead, Alan B., 4,617,107, Cl. 208-427.000.
- Whiteley, Gordon R.; Pritchard, Cynthia G.; and Barrett, Sharon S., to Syntex (U.S.A.) Inc. Pretreatment method and composition. 4,617,264, Cl. 435-34.000.
- Wico Corporation: *See—*
  - Geller, David A., 4,616,833, Cl. 273-313.000.
- Wienand, Anneliese, legal representative: *See—*
  - Mewes, Heinz; Nachtigall, Wilhelm; Wienand, Michael, deceased; Wienand, Anneliese, legal representative; Wienand, Hans-Jurg W., heir; Wienand, Michael, heir; Wienand, Rudolf J., heir; Wienand, Karl F., heir; and Wienand, Elisabeth H. M., heir, 4,616,989, Cl. 425-203.000.
- Wienand, Elisabeth H. M., heir: *See—*
  - Mewes, Heinz; Nachtigall, Wilhelm; Wienand, Michael, deceased; Wienand, Anneliese, legal representative; Wienand, Hans-Jurg W., heir; Wienand, Michael, heir; Wienand, Rudolf J., heir; Wienand, Karl F., heir; and Wienand, Elisabeth H. M., heir, 4,616,989, Cl. 425-203.000.
- Wienand, Hans-Jurg W., heir: *See—*
  - Mewes, Heinz; Nachtigall, Wilhelm; Wienand, Michael, deceased; Wienand, Anneliese, legal representative; Wienand, Hans-Jurg W., heir; Wienand, Michael, heir; Wienand, Rudolf J., heir; Wienand, Karl F., heir; and Wienand, Elisabeth H. M., heir, 4,616,989, Cl. 425-203.000.
- Wienand, Karl F., heir: *See—*
  - Mewes, Heinz; Nachtigall, Wilhelm; Wienand, Michael, deceased; Wienand, Anneliese, legal representative; Wienand, Hans-Jurg W., heir; Wienand, Michael, heir; Wienand, Rudolf J., heir; Wienand, Karl F., heir; and Wienand, Elisabeth H. M., heir, 4,616,989, Cl. 425-203.000.
- Wienand, Michael, deceased: *See—*
  - Mewes, Heinz; Nachtigall, Wilhelm; Wienand, Michael, deceased; Wienand, Anneliese, legal representative; Wienand, Hans-Jurg W., heir; Wienand, Michael, heir; Wienand, Rudolf J., heir; Wienand, Karl F., heir; and Wienand, Elisabeth H. M., heir, 4,616,989, Cl. 425-203.000.
- Wienand, Michael, heir: *See—*
  - Mewes, Heinz; Nachtigall, Wilhelm; Wienand, Michael, deceased; Wienand, Anneliese, legal representative; Wienand, Hans-Jurg W., heir; Wienand, Michael, heir; Wienand, Rudolf J., heir; Wienand, Karl F., heir; and Wienand, Elisabeth H. M., heir, 4,616,989, Cl. 425-203.000.
- Wienand, Rudolf J., heir: *See—*
  - Mewes, Heinz; Nachtigall, Wilhelm; Wienand, Michael, deceased; Wienand, Anneliese, legal representative; Wienand, Hans-Jurg W., heir; Wienand, Michael, heir; Wienand, Rudolf J., heir; Wienand, Karl F., heir; and Wienand, Elisabeth H. M., heir, 4,616,989, Cl. 425-203.000.
- Wiener, Charles; and Pittet, Alan O., to International Flavors & Fragrances Inc. Process for preparing natural benzaldehyde and acetaldehyde, natural benzaldehyde and acetaldehyde compositions, products produced thereby and organoleptic utilities therefor. 4,617,419, Cl. 568-464.000.
- Wiener, Hans; and Undin, Hans, to C. A. Weidmuller GmbH & Co. Stripping device for coaxial cables. 4,616,533, Cl. 81-9.410.
- Wigboma B.V.: *See—*
  - Oudman, Dirk J., 4,616,887, Cl. 312-140.100.
- Wigoda, Luis. Lock for retractor apparatus. 4,616,632, Cl. 128-20.000.
- Willging, Stephen M., to Henkel Corporation. Purification of tocopherols. 4,617,406, Cl. 549-413.000.
- Williams, Paul D. Interchangeable sight mount for bows. 4,616,623, Cl. 124-87.000.

- Wilson, Austin F.: *See—*
  - Bullock, Donald F.; Wilson, Austin F.; Lemay, Marshall A.; and Miles, David B., 4,617,514, Cl. 324-137.000.
- Wilson, Harold R.: *See—*
  - Smeenge, Paul A.; Wilson, Harold R.; and Nelsen, Randy P., 4,616,798, Cl. 248-281.100.
- Wiltronix Corporation: *See—*
  - Bogie, Jon R.; and Quillen, Edward A., 4,617,506, Cl. 320-2.000.
- Wingler, Frank: *See—*
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- Winkler, Hans-Henning: *See—*
  - Rutschle, Eugen; Haninger, Rudolf; and Winkler, Hans-Henning, 4,616,398, Cl. 29-568.000.
- Winter, Josef: *See—*
  - Kubis, Heribert; and Winter, Josef, 4,616,603, Cl. 123-41.840.
- Witco Corporation: *See—*
  - Muir, Ronald J., 4,617,135, Cl. 252-33.200.
- Witucki, Edward F.: *See—*
  - Newman, Paul R.; Warren, Leslie F., Jr.; and Witucki, Edward F., 4,617,228, Cl. 428-265.000.
- Witzel, Karlheinz: *See—*
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- Wogman, Ned A.: *See—*
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- Wolf, Alfred P.: *See—*
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- Wolf, Horst, to Zinser Textilmaschinen GmbH. Spinning or twisting machine control system. 4,617,497, Cl. 318-78.000.
- Wolf, Stephen J.: *See—*
  - Saferstein, Lowell; Lindquist, Julius A.; and Wolf, Stephen J., 4,616,644, Cl. 128-156.000.
- Wolff, Erich; Langen, Hans; and Braden, Rudolf, to Agfa Gevaert Aktiengesellschaft. Color coupler-containing photographic material. 4,617,255, Cl. 430-553.000.
- Wollenberg, Robert H., to Chevron Research Company. Modified succinimides (II). 4,617,138, Cl. 252-51.50A.
- Wolters, Gerd-Michael: *See—*
  - Deutschmann, Herbert; and Wolters, Gerd-Michael, 4,616,480, Cl. 60-600.000.
- Wolverine Tube, Inc.: *See—*
  - Cunningham, James L.; and Campbell, Bonnie J., 4,616,391, Cl. 29-157.3AH.
- Wong, Brian W. Face bow and method of use in orthodontic procedures. 4,616,998, Cl. 433-73.000.
- Wong, Sau-Ching: *See—*
  - Hartmann, Robert F.; Wong, Sau-Ching; Chan, Yiu-Fai; and Ou, Jung-Hsing, 4,617,479, Cl. 307-465.000.
- Wood, Edgar C., Jr.: *See—*
  - Axford, Robert A.; Wood, Edgar C., Jr.; and Brandana, Herbert F., 4,616,537, Cl. 82-5.000.
- Wood, John R.; Siska, Margaret M.; and Raymond, Patrick A., to Hydril Company. Automatic well test system and method. 4,616,700, Cl. 166-250.000.
- Wood, Robert F.; and Vanderveer, William R., to Fabcon, Inc. Stock washer. 4,616,489, Cl. 68-200.000.
- Woodman, Daniel C.; and Neely, Stephen A., to Hughes Tool Company. Bi-directional self-retaining cylindrical surface seal. 4,616,857, Cl. 285-140.000.
- World Inventions: *See—*
  - Smack, Melvin F., Sr.; and Semien, Garland J., Jr., 4,616,829, Cl. 273-86.00B.
- Wormald International, Limited: *See—*
  - Mackle, Michael T., 4,616,865, Cl. 292-341.160.
- Wortel, Theodorus M.: *See—*
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- Wowczuk, Andrew: *See—*
  - Harman, Douglas G.; Veronesi, Luciano; and Wowczuk, Andrew, 4,616,497, Cl. 72-53.000.
- Wrap & Roll, Inc.: *See—*
  - Morley, Edmond; DiLorenzo, Neil; and Karras, James, 4,616,474, Cl. 53-556.000.
- Wu, Andrew L., to Digital Equipment Corporation. Planar interconnect for integrated circuits. 4,617,193, Cl. 427-38.000.
- Wu, Ray J.: *See—*
  - Narang, Saran A.; and Wu, Ray J., 4,617,384, Cl. 536-27.000.
- Wuerzer, Bruno: *See—*
  - Jahn, Dieter; Becker, Rainer; Keil, Michael; Himmele, Walter; and Wuerzer, Bruno, 4,617,050, Cl. 71-98.000.
- Wursthorn, Karl R.: *See—*
  - Kugele, Thomas G.; Mesch, Keith A.; and Wursthorn, Karl R., 4,617,334, Cl. 524-177.000.
- Wurz, Joachim: *See—*
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- Wyatt, Philip J.: *See—*
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- Wyatt Technology Corporation: *See—*
  - Phillips, Steven D.; Reece, Jeffrey M.; and Wyatt, Philip J., 4,616,927, Cl. 356-338.000.
- Wyvratt, Matthew J., Jr.: *See—*
  - Patchett, Arthur A.; and Wyvratt, Matthew J., Jr., 4,617,301, Cl. 514-214.000.
- Xerox Corporation: *See—*
  - Ober, Christopher K.; and Lok, Kar P., 4,617,249, Cl. 430-137.000.
- Xicor, Inc.: *See—*
  - Simko, Richard T., 4,617,652, Cl. 365-203.000.
- Y Technipak Corp.: *See—*
  - Oles, Paul M., 4,616,992, Cl. 425-503.000.
- Yabe, Jinzo: *See—*
  - Inoue, Kiyoshi; and Yabe, Jinzo, 4,617,623, Cl. 364-167.000.
- Yagi Antenna Co., Ltd.: *See—*
  - Nakata, Yukio; Suda, Kaoru; Shiotsu, Osamu; and Morito, Motoyoshi, 4,617,565, Cl. 340-825.500.
- Yamada, Hideaki; Otsuji, Shogo; Isobe, Kimiyasu; Matsunaga, Kuniyoshi; and Inukai, Tadahiko, to Amano Seiyaku Kabushiki Kaisha. Method for quantitative determination of acetylputrescine in a mixture. 4,617,263, Cl. 435-25.000.
- Yamada, Masanori: *See—*
  - Akashi, Akira; and Yamada, Masanori, 4,617,459, Cl. 250-201.000.
- Yamada, Shigemichi: *See—*
  - Akashi, Teruo; Ito, Hiroshi; and Yamada, Shigemichi, 4,616,521, Cl. 74-335.000.
- Yamaguchi, Nobutaka; Utumi, Masahiro; Fujiyama, Masaaki; and Miyoshi, Takahito, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,617,226, Cl. 428-216.000.
- Yamaha Hatsudoki Kabushiki Kaisha: *See—*
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- Yamamuro, Sigeaki: *See—*
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- Yamanami, Tsuguya: *See—*
  - Taguchi, Yoshinori; and Yamanami, Tsuguya, 4,617,515, Cl. 324-207.000.
- Yamauchi, Masahide; and Hirose, Minoru, to Kabushiki Kaisha Toshiba. Paper sheet dispensing apparatus. 4,616,817, Cl. 271-9.000.
- Yamazaki, Hiroyuki: *See—*
  - Hikawa, Kazuo; Toyomaki, Kazuya; and Yamazaki, Hiroyuki, 4,617,526, Cl. 331-1.00A.
- Yamazaki, Yukinori, to Nihon Cement Co., Ltd. Demolition agent for brittle materials. 4,617,059, Cl. 106-118.000.
- Yang, Kei-Hsiung, to International Business Machines Corporation. Electric field gradient excited liquid crystal cell having bistability. 4,617,646, Cl. 365-108.000.
- Yang, Tai-Her. Exercise bicycle with inclined seats for two people. 4,616,823, Cl. 272-73.000.
- Yano, Kazunori; Goto, Teruhisa; and Abe, Katsuhiro, to Mitsubishi Petrochemical Co, Ltd. Process for producing polyphenylene ether. 4,617,372, Cl. 528-216.000.
- Yardley, James T.: *See—*
  - Gupta, Arunava; West, Gary A.; and Yardley, James T., 4,617,237, Cl. 428-446.000.
- Yasuda, Kenji, to Hitachi Zosen Corporation. Method of recovering heat of reaction. 4,616,692, Cl. 165-1.000.
- Yasuda, Yasuo, to Plus Corporation. Stapler. 4,616,774, Cl. 227-113.000.
- Yasuhara, Seishi: *See—*
  - Kawaguchi, Hiroyuki; Saito, Hideyuki; and Yasuhara, Seishi, 4,616,615, Cl. 123-339.000.
- Yasui, Mitsuru, to Tokyo Shibaura Denki Kabushiki Kaisha. Plastic enclosing device. 4,617,585, Cl. 357-72.000.
- Yasukawa, Hiroshi, to Niigata Engineering Co., Ltd. Magazine for replaceable tools and operation method of indexing tools using the magazine. 4,616,397, Cl. 29-568.000.
- Yasunobu, Seiji; Miyamoto, Shoji; and Ihara, Hirokazu, to Hitachi, Ltd. Method for automatic operation of a vehicle. 4,617,627, Cl. 364-426.000.
- Yasuoka, Hideki, to Hitachi, Ltd. Semiconductor device and manufacturing method thereof. 4,616,405, Cl. 29-578.000.
- Yates, Donald N., Jr., to Halliburton Company. Secondary high explosive booster, and method of making and method of using same. 4,616,566, Cl. 102-318.000.
- Yazu, Shuji; and Satoh, Shuichi, to Sumitomo Electric Industries, Ltd. Synthetic diamond heat sink. 4,617,181, Cl. 423-446.000.
- Yeda Research and Development Co., Ltd.: *See—*
  - Rubinstein, Menachem; Friedlander, Jossef; and Fischer, Dina, 4,617,378, Cl. 530-351.000.
- Yoder, Andrew H.; and Rhodes, Richard A., to KemStone Manufacturing, Inc. Enhanced safety flue construction. 4,616,457, Cl. 52-218.000.
- Yokota, Akihiro: *See—*
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- Yokoyama, Naoshi, to Nitco, Inc. In-tank pump filter for automobile fuel tank. 4,617,121, Cl. 210-416.400.
- Yorita, Masaru: *See—*
  - Furuya, Kunitaka; Inagaki, Hiromi; Koga, Kiyoshi; Yorita, Masaru; Fukatsu, Tsunehiko; and Matsuura, Kazuo, 4,616,846, Cl. 280-673.000.
- Yoshida Kogyo K. K.: *See—*
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  - Kawamura, Kaoru; and Iwaki, Yuichi, 4,616,593, Cl. 118-303.000.

- Yoshida, Tadashi; Shimizu, Katsuichi; Arimoto, Shinobu; Maeshima, Katsuyoshi; Nagashima, Nao; and Watanabe, Asao, to Canon Kabushiki Kaisha. Image processing apparatus. 4,617,596, Cl. 358-280.000.
- Yoshida, Tokuichiro. Magnetically operated power transmission apparatus. 4,616,519, Cl. 74-191.000.
- Yoshida, Yuzo, to Kabushiki Kaisha Toshiba. Radiation detector vessel. 4,617,465, Cl. 250-385.000.
- Yoshikawa, Akihisa: *See—*
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- Yoshino, Akira, to Daidousanso Co., Ltd. Highly pure nitrogen gas producing apparatus. 4,617,040, Cl. 62-37.000.
- Yoshioka, Yoshikazu, to International Business Machines Corporation. Graphic display system with display line scan based other than power of 2 refresh memory based on power of 2. 4,617,564, Cl. 340-798.000.
- Yoshitomi Pharmaceutical Industries, Ltd.: *See—*
  - Tahara, Tetsuya; Hayano, Kiyoharu; Setoguchi, Michihide; and Fukuda, Takemi, 4,617,314, Cl. 514-422.000.
- Yoshizaki, Tsutomu; and Ishii, Toshimasa, to Fujitsu Limited. Integrated circuit socket. 4,616,895, Cl. 339-17.0CF.
- Yotsuyanagi, Junji: *See—*
  - Miyauchi, Otohiko; Ohkawachi, Michihiro; and Yotsuyanagi, Junji, 4,616,766, Cl. 220-450.000.
- Young, James R., to United States of America, Navy. Pseudo-random noise generator. 4,617,530, Cl. 331-78.000.
- Young, Robert N.; and Rokach, Joshua, to Merck Frosst Canada, Inc. Leukotriene antagonists. 4,617,407, Cl. 549-462.000.
- Yrizarris, Raymond D. Carpet seaming tool. 4,617,083, Cl. 156-545.000.
- Yuasa, Masami, to Sony Corporation. Brushless motor. 4,617,499, Cl. 318-254.000.
- YWHC, Inc.: *See—*
  - Thieme, Horst R., 4,616,778, Cl. 236-58.000.
- Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See—*
  - Ehrlinger, Friedrich; Katzorek, Karl-Hermann; Dziuba, Peter; Veser, Karl; and Caspar, Peter, 4,616,520, Cl. 74-325.000.
- Zechmeister, Hartwin: *See—*
  - Amende, Welf; Lausch, Wolfram; and Zechmeister, Hartwin, 4,617,070, Cl. 148-152.000.
- Zenith Electronics Corporation: *See—*
  - Krause, Charles A.; and Vander Heyden, Randy J., 4,617,554, Cl. 340-365.00E.
- Zeth, Ulrich; Rempke, Wilfried; and Voigt, Klaus-Ditmar, to Jenoptik Jena G.m.b.H. Method for a non-retarded shutter release of rotary shutters in photogrammetric aerial cameras. 4,616,911, Cl. 354-66.000.
- ZF-Herion Systemtechnik GmbH: *See—*
  - Heinemann, Fritz, 4,616,529, Cl. 74-640.000.
- Zieske, William E.: *See—*
  - Mehdi, Syed A.; Zieske, William E.; and Ward, David R., 4,616,484, Cl. 62-180.000.
- Zilog, Inc.: *See—*
  - Dalrymple, Monte J., 4,617,476, Cl. 307-443.000.
- Zilske, Wolfgang: *See—*
  - Kuhn, Werner; and Zilske, Wolfgang, 4,617,096, Cl. 204-44.300.
- Zimmerman, Gustavus H., III: *See—*
  - Prezas, Dimitrios P.; and Zimmerman, Gustavus H., III, 4,616,659, Cl. 128-706.000.
- Zimmerman, Marlin. Hair piece storage and carrying case. 4,616,747, Cl. 206-8.000.
- Zimmermann, Anso, to Rotpunkt Dr. Anso Zimmermann. Insulating container, in particular insulating bottle. 4,616,758, Cl. 215-13.00R.
- Zinser Textilmaschinen GmbH: *See—*
  - Wolf, Horst, 4,617,497, Cl. 318-78.000.
- Zipperian, Donald E.: *See—*
  - Christophersen, John A.; Marquardt, Fred J.; and Zipperian, Donald E., 4,617,113, Cl. 209-170.000.
- Zotter, Johann: *See—*
  - Freisinger, Henry; Luschnig, Franz; Stritzl, Karl; and Zotter, Johann, 4,616,843, Cl. 280-618.000.
- Zouch, Edward T.: *See—*
  - Harwood-Nash, Derek C.; Fitz, Charles R.; Zouch, Edward T.; and Smith, John M., 4,616,814, Cl. 269-328.000.
- Zrnich, Milan, to GTE Communication Systems Corp. Printed wiring board retainer. 4,617,610, Cl. 361-415.000.
- Zuckler, Karl, to Siemens Aktiengesellschaft. Contact arrangement for a vacuum interrupter. 4,617,434, Cl. 200-144.00B.
- Zumbach Electronic AG: *See—*
  - Studer, Urs-Peter, 4,616,931, Cl. 356-373.000.
- Zwicke, Philip E.; Rosenbush, David M.; and Couch, Robert P., to United Technologies Corporation. Expandable electrostatic engine diagnostics classifier. 4,617,628, Cl. 364-431.020.
- Zwicke, Philip E.; Rosenbush, David M.; and Couch, Robert P., to United Technologies Corporation. System fault discriminating electrostatic engine diagnostics. 4,617,630, Cl. 364-431.020.
- Zwicke, Philip E.; Rosenbush, David M.; and Couch, Robert P., to United Technologies Corporation. Waveform discriminated electrostatic engine diagnostics. 4,617,632, Cl. 364-431.020.
- Zwicke, Philip E.: *See—*
  - Rosenbush, David M.; Zwicke, Philip E.; and Couch, Robert P., 4,617,631, Cl. 364-431.020.
- Zybko, Walter C., to Burlington Industries, Inc. Self sticking carpet tiles. 4,617,210, Cl. 428-35.000.
- Zydzik, George J.: *See—*
  - Chin, Aland K.; Singh, Shobha; Uitert, LeGrand G. V.; and Zydzik, George J., 4,617,192, Cl. 427-42.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF OCTOBER, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Applications Mechaniques et Robinetterie Industrielle (AMRI S.A.): *See—*
  - Bonafous, Maurice, Re. 32,264, Cl. 277-163.000.
- Bonafous, Maurice, to Applications Mechaniques et Robinetterie Industrielle (AMRI S.A.). Double toric sealing ring. Re. 32,264, Cl. 277-163.000.
- Lummus Crest, Inc.: *See—*
  - Unger, Harold; Sze, Morgan C.; and Van Dreisen, Roger P., Re. 32,265, Cl. 208-59.000.
- Sze, Morgan C.: *See—*
  - Unger, Harold; Sze, Morgan C.; and Van Dreisen, Roger P., Re. 32,265, Cl. 208-59.000.
- Unger, Harold; Sze, Morgan C.; and Van Dreisen, Roger P., to Lummus Crest, Inc. Hydrogenation of high boiling hydrocarbons. Re. 32,265, Cl. 208-59.000.
- Van Dreisen, Roger P.: *See—*
  - Unger, Harold; Sze, Morgan C.; and Van Dreisen, Roger P., Re. 32,265, Cl. 208-59.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

- Bachler, Werner; Forth, Hans-Joachim; and Frank, Rudiger, to Leybold-Heraeus GmbH & Co. KG. Cryopump having improved heat radiation shielding. B1 4,121,430, 10-14-86, Cl. 62-55.500.
- Biox Technology, Inc.: *See—*
  - Wilber, Scott A., B1 4,407,290, Cl. 128-633.000.
- Forth, Hans-Joachim: *See—*
  - Bachler, Werner; Forth, Hans-Joachim; and Frank, Rudiger, B1 4,121,430, Cl. 62-55.500.
- Frank, Rudiger: *See—*
  - Bachler, Werner; Forth, Hans-Joachim; and Frank, Rudiger, B1 4,121,430, Cl. 62-55.500.
- Leybold-Heraeus GmbH & Co. KG: *See—*
  - Bachler, Werner; Forth, Hans-Joachim; and Frank, Rudiger, B1 4,121,430, Cl. 62-55.500.
- Lloyd, Lawrence L. Mower cutting unit. B1 4,494,365, 10-14-86, Cl. 56-256.000.
- Maurer, Donald D.; and Sorenson, Paul D., to Medtronic, Inc. Electrical stimulation system. B1 4,019,518, 10-14-86, Cl. 128-419.00R.
- Medtronic, Inc.: *See—*
  - Maurer, Donald D.; and Sorenson, Paul D., B1 4,019,518, Cl. 128-419.00R.
- Muncie Power Products, Inc.: *See—*
  - Schlosser, Paul W., B1 3,449,911, Cl. 60-453.000.
- Rodgers, Henry W. Rotating circular airfoil. B1 4,104,822, 10-14-86, Cl. 446-48.000.
- Schlosser, Paul W., to Muncie Power Products, Inc. Power transfer system. B1 3,449,911, 10-14-86, Cl. 60-453.000.
- Sorenson, Paul D.: *See—*
  - Maurer, Donald D.; and Sorenson, Paul D., B1 4,019,518, Cl. 128-419.00R.
- Wilber, Scott A., to Biox Technology, Inc. Blood constituent measuring device and method. B1 4,407,290, 10-14-86, Cl. 128-633.000.

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- Abe, Noboru; and Seiffert, Florian, to Matsushita Electric Works, Ltd. Electric shaver. 286,210, 10-14-86, Cl. D28-49.000.
- Advanced Matrix Technology, Inc.: *See—*
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- Aktiebolaget Volvo: *See—*
  - Sandberg, Ulf A., 286,145, Cl. D12-211.000.
- Albery, Lewis L., to Cooperative Marketing Co., The. Holder for pamphlets or the like. 286,113, 10-14-86, Cl. D6-475.000.
- Alternate Resources Limited: *See—*
  - Rooney, James, 286,165, Cl. D19-75.000.
- Arthur Edward Pty. Ltd.: *See—*
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- Aspri Sports, Inc.: *See—*
  - Lowe, Ralph L., Jr., 286,102, Cl. D2-309.000.
- AT&T Technologies, Inc.: *See—*
  - Cooke, Kenneth R.; and Porcelli, Vito L., 286,150, Cl. D14-60.000.
- Attey, Graeme S. Sailboard boom. 286,146, 10-14-86, Cl. D12-317.000.
- Baggiolini, Deris: *See—*
  - Campello, Ugo; Racca, Enrico; Sosta, Pierluigi; and Baggiolini, Deris, 286,212, Cl. D28-83.000.
- Baldwin, Donald C.; Loy, Robert E.; and Willis, Paul E., to Dresser Industries, Inc. Road planer. 286,158, 10-14-86, Cl. D15-23.000.
- Bancroft, Joseph C. Frame head extrusion. 286,184, 10-14-86, Cl. D25-74.000.
- Bancroft, Joseph C. Frame sill extrusion. 286,185, 10-14-86, Cl. D25-74.000.
- Bancroft, Joseph C. Meeting rail extrusion. 286,186, 10-14-86, Cl. D25-74.000.
- Bancroft, Joseph C. Meeting rail extrusion. 286,187, 10-14-86, Cl. D25-74.000.
- Bancroft, Joseph C. Frame jamb extrusion. 286,188, 10-14-86, Cl. D25-74.000.
- Bancroft, Joseph C. Frame sill extrusion. 286,189, 10-14-86, Cl. D25-74.000.
- Bancroft, Joseph C. Frame jamb extrusion. 286,190, 10-14-86, Cl. D25-74.000.
- Bancroft, Joseph C. Frame head-fin extrusion. 286,191, 10-14-86, Cl. D25-74.000.
- Bancroft, Joseph C. Fixed jamb. 286,192, 10-14-86, Cl. D25-74.000.
- Bancroft, Joseph C. Frame insert - head. 286,193, 10-14-86, Cl. D25-74.000.
- Bancroft, Joseph C. Vent head and sill. 286,194, 10-14-86, Cl. D25-74.000.
- Bancroft, Joseph C. Frame insert sill. 286,195, 10-14-86, Cl. D25-74.000.
- Bancroft, Joseph C. Frame head. 286,196, 10-14-86, Cl. D25-74.000.
- Bancroft, Joseph C. Latch jamb. 286,197, 10-14-86, Cl. D25-74.000.
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- Bancroft, Joseph C. Frame sill standard. 286,199, 10-14-86, Cl. D25-74.000.
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- Bartlett, Randall N.: *See—*
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- Baus, Heinz G. Panel for a shower partition. 286,173, 10-14-86, Cl. D23-64.000.
- Bianchi International: *See—*
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- Blumenthal, Martin. Toolbox/workshop. 286,103, 10-14-86, Cl. D3-73.000.

- Bosland, James M., to Ketcham & McDougall, Inc. Directory shelf. 286,114, 10-14-86, Cl. D6-477.000.
- Bowen, Robert F.; Herbst, Walter B.; and Salisbury, Thomas E., to Raytheon Company. Combined roasting rack and turntable for microwave oven. 286,128, 10-14-86, Cl. D7-351.000.
- Bowen, Robert F.; Herbst, Walter B.; and Salisbury, Thomas E., to Raytheon Company. Microwave roasting rack or the like. 286,129, 10-14-86, Cl. D7-351.000.
- Bowen, Robert F.; Herbst, Walter B.; and Salisbury, Thomas E., to Raytheon Company. Turntable for microwave oven. 286,130, 10-14-86, Cl. D7-351.000.
- Bradshaw, Larry R.: *See—*
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- Breece, William N. Two piece door unit for a vehicle. 286,144, 10-14-86, Cl. D12-196.000.
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- Cable Electric Products, Inc.: *See—*
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- Camens, Murray I. C., to U.S. Philips Corporation. Hair-dryer. 286,209, 10-14-86, Cl. D28-13.000.
- Campello, Ugo; Racca, Enrico; Sosta, Pierluigi; and Baggiolini, Deris, to New High Glass. Multicompartment compact. 286,212, 10-14-86, Cl. D28-83.000.
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  - Nibley, Richard; and Haranishi, Noriaki, 286,162, Cl. D18-12.000.
- Carlson, John A. Deck plate. 286,147, 10-14-86, Cl. D12-317.000.
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- Carvel, Thomas, to Carvel Corporation. Counter display unit. 286,110, 10-14-86, Cl. D6-471.000.
- Case, Robert; Jenkins, Arden; Bartlett, Randall N.; and Patrick, Ernest, to Syntex (U.S.A.) Inc. Cabinet door. 286,177, 10-14-86, Cl. D24-5.000.
- Catania, Joseph J.; Gaudino, Angelo; DeTuzzi, Russell; and Gardner, Maxwell, to Century Fireplace Furnishings, Inc. Fireplace screen. 286,176, 10-14-86, Cl. D23-138.300.
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- Coffee Enterprises, Inc.: *See—*
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- Colliver, Joe E. Miniature coffin cigarette case. 286,207, 10-14-86, Cl. D27-50.000.
- Cooke, Kenneth R.; and Porcelli, Vito L., to AT&T Technologies, Inc. Telephone instrument base. 286,150, 10-14-86, Cl. D14-60.000.
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- Crane, Douglas A.: *See—*
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- Davis, Myron F., to International Business Machines Corporation. Printer. 286,153, 10-14-86, Cl. D14-111.000.
- Dempsey, Lavell D. Lazy susan with refrigerated compartment. 286,124, 10-14-86, Cl. D7-2.000.
- Dennison Manufacturing Company: *See—*
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- DeTuzzi, Russell: *See—*
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- Dryburgh, Ian H.; and Murdoch, Peter N. G., to Venesta International Components Limited. Lavatory cubicle door sliding bolt. 286,133, 10-14-86, Cl. D8-341.000.
- Enquist, Harold. Ski rack. 286,119, 10-14-86, Cl. D6-552.000.
- Evans, Paul R., to Design Institute America, Inc. Shelf unit. 286,115, 10-14-86, Cl. D6-478.000.
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- Flying Dragon Metal Products Factory: *See—*
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- Foldi, Peter; and Carselid, Hans, to Broderna Holmbergs Fabriks AB. Tension indicator for strap tensioners. 286,142, 10-14-86, Cl. D10-83.000.
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- Franck, Klaus; and Sauer, Werner, to Wilkhahn Wilkening & Hahne GmbH & Co. Arm-chair. 286,106, 10-14-86, Cl. D6-372.000.
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- Gaudino, Angelo: *See—*
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- Gecchelin, Bruno, to Fratelli Guzzini S.p.A. Combined paper towel holder and shelf. 286,118, 10-14-86, Cl. D6-519.000.
- Geissmann, Robert. Alembic. 286,178, 10-14-86, Cl. D24-8.000.
- Goldman, Paul R., to Plycraft Inc. Adjustable armchair. 286,105, 10-14-86, Cl. D6-365.000.
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- Huck, Charles M.; Johnson, Edward J.; and Lott, Jeremiah A., to Pfizer Inc. Combined pill dispenser and cover. 286,137, 10-14-86, Cl. D9-339.000.
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CLASSIFICATION OF PATENTS

ISSUED OCTOBER 14, 1986

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864.31	4,616,515
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558	4,616,545
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33.02	4,616,555
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206.19	4,616,647
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351	4,616,665
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881	4,616,677
888	4,616,678
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304	4,616,680
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98	4,616,683
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18 A	4,616,739
21.5	4,616,740
70.18	4,616,741
84 C	4,616,742
105 BA	4,616,743
109 R	4,616,744
CLASS 198	
442	4,616,745
463.3	4,616,746
CLASS 200	
81 R	4,617,432
86 R	4,617,433
144 AP	4,617,435
144 B	4,617,434
148 R	4,617,436
153 P	4,617,437
CLASS 203	
1	4,617,092
100	4,617,093
CLASS 204	
18.1	4,617,094
41	4,617,095
44.3	4,617,096
44.4	4,617,097
68	4,617,098
133	4,617,099
245	4,617,100
252	4,617,101
299 R	4,617,102
300 R	4,617,103
301	4,617,104
CLASS 206	
8	4,616,747
214	4,616,748
315.2	4,616,749
316	4,616,750
485	4,616,751
533	4,616,752
CLASS 208	
59	Re.32,265
111	4,617,108
130	4,617,109
211	4,617,110
412	4,617,105
418	4,617,106
427	4,617,107
CLASS 209	
4	4,617,111
11	4,617,112
170	4,617,113
211	4,617,114
CLASS 210	
90	4,617,115
137	4,617,116
198.1	4,617,117
232	4,617,118
321.3	4,617,119
409	4,617,120
416.4	4,617,121
493.3	4,617,122
611	4,617,123
638	4,617,124
	4,617,125
651	4,617,126
	4,617,127
679	4,617,128
700	4,617,129
748	4,617,130
794	4,617,131
CLASS 211	
57.1	4,616,753
71	4,616,754
89	4,616,755
181	4,616,756
189	4,616,757
CLASS 215	
13 R	4,616,758
228	4,616,759
232	4,616,760
271	4,616,761
CLASS 219	
10.55 A	4,617,440
10.55 B	4,617,438
10.55 M	4,617,439
10.77	4,617,441
	4,617,442
69 C	4,617,443
75	4,617,444
98	4,617,445
121 LC	4,617,446
124.31	4,617,447
200	4,617,448
301	4,617,449
345	4,617,450
441	4,617,452
490	4,617,451
501	4,617,453
505	4,617,454
523	4,617,455
	4,617,456
CLASS 220	
74	4,616,762
270	4,616,763
306	4,616,764
335	4,616,765
450	4,616,766
CLASS 221	
58	4,616,767
CLASS 222	
92	4,616,768
CLASS 223	
46	4,616,769
101	4,616,770
CLASS 224	
321	4,616,771
326	4,616,772
CLASS 225	
99	4,616,773
CLASS 227	
113	4,616,774
CLASS 228	
37	4,616,775
CLASS 232	
4 R	4,616,776
CLASS 235	
379	4,617,457
449	4,617,458
CLASS 236	
44 C	4,616,777
58	4,616,778
CLASS 239	
79	4,616,779
113	4,616,780
124	4,616,781
216	4,616,783
404	4,616,784
752	4,616,782
CLASS 241	
26	4,616,785
35	4,616,786
275	4,616,787
CLASS 242	
7.03	4,616,788
35.5 R	4,616,789
85.1	4,616,790
86.2	4,616,791
218	4,616,792
CLASS 244	
137 A	4,616,793
CLASS 248	
67.5	4,616,794
103	4,616,795
206.5	4,616,796
230	4,616,797
281.1	4,616,798
289.3	4,616,799
CLASS 249	
4	4,616,800
CLASS 250	
201	4,617,459
227	4,617,460
229	4,617,461
251	4,617,462
342	4,617,463
377	4,617,464
385	4,617,465
390	4,617,466
461.1	4,617,467
484.1	4,617,468
548	4,617,469
561	4,617,470
578	4,617,471
CLASS 251	
6	4,616,801
7	4,616,802
14	4,616,803
63.4	4,616,806
267	4,616,804
297	4,616,805
CLASS 252	
8.554	4,617,132
32.5	4,617,133
32.7 E	4,617,134
33.2	4,617,135
47	4,617,136
49.6	4,617,137
51.5 A	4,617,138
135	4,617,139
299.61	4,617,140
299.63	4,617,141
	4,617,142
500	4,617,143
522 A	4,617,144
	4,617,147
522 R	4,617,145
	4,617,146
547	4,617,148
CLASS 254	
93 H	4,616,807
CLASS 260	
413	4,617,153
501.12	4,617,155
513 R	4,617,156
CLASS 261	
96	4,617,157
CLASS 264	
0.5	4,617,158
16	4,617,159
40.1	4,617,160
136	4,617,161
176 R	4,617,162
235.6	4,617,163
235.8	4,617,164
236	4,617,165
531	4,617,166
CLASS 266	
207	4,616,808
220	4,616,809
CLASS 267	
8 R	4,616,810
35	4,616,811
131	4,616,812
CLASS 269	
328	4,616,813
	4,616,814
CLASS 270	
45	4,616,815
58	4,616,816
CLASS 271	
9	4,616,817
113	4,616,818
122	4,616,819
189	4,616,820
213	4,616,821
CLASS 272	
69	4,616,822
73	4,616,823
86	4,616,824
134	4,616,825
CLASS 273	
32.5	4,616,826
58 A	4,616,827
61 R	4,616,828
86 B	4,616,829
126 R	4,616,830
144 B	4,616,831
238	4,616,832
313	4,616,833
411	4,616,834
421	4,616,835
CLASS 277	
152	4,616,836
153	4,616,837
163	Re.32,264
CLASS 279	
4	4,616,838
CLASS 280	
33.99 R	4,616,839
234	4,616,840
432	4,616,841
602	4,616,842
618	4,616,843
650	4,616,844
661	4,616,845
673	4,616,846
707	4,616,847
	4,616,848
724	4,616,849
808	4,616,850
CLASS 281	
15 R	4,616,851
CLASS 282	
27 R	4,616,852
CLASS 283	
60 A	4,616,853
74	4,616,854
CLASS 285	
24	4,616,855
92	4,616,856
140	4,616,857
235	4,616,858
317	4,616,859
336	4,616,860
CLASS 292	
6	4,616,861
201	4,616,862
302	4,616,863
336.3	4,616,864
341.16	4,616,865
CLASS 293	
120	4,616,866
CLASS 294	
55	4,616,867
137	4,616,868
CLASS 296	
1 S	4,616,869
21	4,616,870
166	4,616,871
190	4,616,872
CLASS 297	
272	4,616,873
321	4,616,874
325	4,616,875
328	4,616,876
353	4,616,877
483	4,616,878
CLASS 298	
10	4,616,879
CLASS 299	
39	4,616,880
CLASS 303	
7	4,616,881
68	4,616,882
CLASS 305	
40	4,616,883
CLASS 307	
10 R	4,617,472
66	4,617,473
262	4,617,474
441	4,617,475
443	4,617,476
	4,617,477
455	4,617,478
465	4,617,479
480	4,617,480
491	4,617,481
579	4,617,482
CLASS 310	
10	4,617,483
51	4,617,484
65	4,617,485
233	4,617,486
313 D	4,617,487
321	4,617,488
CLASS 312	
140.1	4,616,887
201	4,616,888
	4,616,889
257 R	4,616,890
328	4,616,891
330 R	4,616,892
CLASS 313	
13	4,617,489
478	4,617,490
497	4,617,491
630	4,617,492
CLASS 315	
5	4,617,493
5.41	4,617,494
10	4,617,495
208	4,617,496
CLASS 318	
78	4,617,497
85	4,617,498
254	4,617,499
305	4,617,500
459	4,617,501
568	4,617,502
572	4,617,503
576	4,617,504
626	4,617,505
CLASS 320	
2	4,617,506
CLASS 322	
4	4,617,507
CLASS 323	
237	4,617,508
303	4,617,509
CLASS 324	
51	4,617,510
54	4,617,511
60 CD	4,617,512
126	4,617,513
137	4,617,514
207	4,617,515
318	4,617,516
338	4,617,517
365	4,617,518
414	4,617,519
CLASS 328	
133	4,617,520
CLASS 329	
50	4,617,521
CLASS 330	
149	4,617,522
261	4,617,523
307	4,617,524
CLASS 331	
1 A	4,617,526
4	4,617,527
56	4,617,528
57	4,617,529
78	4,617,530
96	4,617,531
107 R	4,617,532
113 A	4,617,533
117 R	4,617,534
CLASS 332	
16 R	4,617,535
37 D	4,617,536
48	4,617,537
CLASS 333	
106	4,617,538
164	4,617,539
CLASS 335	
35	4,617,540
133	4,617,541
196	4,617,542
CLASS 336	
192	4,617,543
CLASS 337	
3	4,617,544
74	4,617,545
170	4,617,546
CLASS 338	
317	4,617,547
325	4,617,548
CLASS 339	
14 R	4,616,893
15	4,616,894
17 C	4,616,896
17 CF	4,616,895
122 R	4,616,897
CLASS 340	
347 AD	4,617,549
	4,617,550
347 DA	4,617,551
347 DD	4,617,552
	4,617,553
365 E	4,617,554
531	4,617,555
546	4,617,556
568	4,617,557
573	4,617,525
574	4,617,558
576	4,617,559
628	4,617,560
	4,617,561
753	4,617,562
784	4,617,563
798	4,617,564
825.5	4,617,565
870.11	4,617,566
CLASS 342	
25	4,617,567
160	4,617,568
412	4,617,569
429	4,617,570
CLASS 343	
744	4,617,571
765	4,617,572
844	4,617,573
CLASS 346	
75	4,617,574
76 PH	4,617,575
	4,617,576
	4,617,577
108	4,617,578
135.1	4,617,579
136	4,617,580
140 R	4,617,581
208	4,617,582
CLASS 350	
96.15	4,616,898
96.18	4,616,899
96.20	4,616,900
96.34	4,616,901
316	4,616,902
334	4,616,903
432	4,616,904
	4,616,905
486	4,616,906
552	4,616,907
576	4,616,908
613	4,616,909
CLASS 351	
162	4,616,910
CLASS 354	
66	4,616,911
80	4,616,912

173.1	4,616,913
277	4,616,914
320	4,616,915
442	4,616,916
CLASS 355	
3 BE	4,616,920
3 DD	4,616,918
	4,616,919
3 FU	4,616,917
5	4,616,921
14 E	4,616,923
14 R	4,616,922
15	4,616,924
44	4,616,925
45	4,616,926
CLASS 356	
338	4,616,927
	4,616,928
350	4,616,929
	4,616,930
373	4,616,931
376	4,616,932
416	4,616,933
CLASS 357	
38	4,617,583
72	4,617,584
	4,617,585
80	4,617,586
CLASS 358	
17	4,617,587
31	4,617,588
	4,617,589
34	4,617,590
67	4,617,591
80	4,617,592
113	4,617,593
150	4,617,594
213	4,617,595
280	4,617,596
310	4,617,597
CLASS 360	
10.3	4,617,598
32	4,617,599
113	4,617,600
131	4,617,601
CLASS 361	
119	4,617,602
149	4,617,603
160	4,617,604
220	4,617,605
283	4,617,606
	4,617,607
291	4,617,608
310	4,617,609
415	4,617,610
433	4,617,611
CLASS 362	
33	4,617,612
95	4,617,613
212	4,617,614
216	4,617,615
267	4,617,616
	4,617,617
341	4,617,618
804	4,617,619
CLASS 363	
19	4,617,620
71	4,617,621
98	4,617,622
CLASS 364	
167	4,617,623
200	4,617,624
	4,617,625
424	4,617,626
426	4,617,627
431.02	4,617,628
	4,617,629
	4,617,630
	4,617,631
	4,617,632
434	4,617,633
455	4,617,634
474	4,617,635
482	4,617,636
505	4,617,637
557	4,617,638
569	4,617,639
708	4,617,640
748	4,617,641
900	4,617,642
	4,617,643
CLASS 365	
36	4,617,644
45	4,617,645
108	4,617,646
189	4,617,647
	4,617,648
	4,617,649
195	4,617,650
200	4,617,651
203	4,617,652
230	4,617,653
CLASS 366	
4	4,616,934
165	4,616,935
193	4,616,936
336	4,616,937
CLASS 369	
46	4,617,654
291	4,617,655
CLASS 370	
60	4,617,657
74	4,617,656
84	4,617,658
100	4,617,659
CLASS 371	
13	4,617,660
20	4,617,661
25	4,617,662
	4,617,663
38	4,617,664
CLASS 372	
18	4,617,665
22	4,617,666
35	4,617,667
59	4,617,668
70	4,617,669
104	4,617,670
CLASS 373	
22	4,617,671
79	4,617,672
80	4,617,673
CLASS 374	
38	4,616,938
44	4,616,939
CLASS 375	
1	4,617,674
22	4,617,675
27	4,617,676
94	4,617,677
102	4,617,678
119	4,617,679
CLASS 376	
153	4,617,167
247	4,617,168
257	4,617,169
438	4,617,170
446	4,617,171
CLASS 377	
10	4,617,680
CLASS 378	
34	4,617,681
CLASS 382	
28	4,617,682
CLASS 383	
63	4,617,683
CLASS 384	
7	4,616,884
15	4,616,885
45	4,616,886
248	4,616,940
CLASS 400	
120	4,616,941
196.1	4,616,942
247	4,616,943
692	4,616,944
697.1	4,616,945
704	4,616,946
CLASS 401	
69	4,616,947
CLASS 403	
5	4,616,948
104	4,616,949
231	4,616,950
290	4,616,951
316	4,616,952
407.1	4,616,953
CLASS 404	
74	4,616,954
CLASS 405	
158	4,616,955
	4,616,956
179	4,616,957
246	4,616,958
286	4,616,959
CLASS 406	
88	4,616,960
99	4,616,961
CLASS 407	
113	4,616,962
114	4,616,963
CLASS 408	
144	4,616,964
204	4,616,965
CLASS 409	
132	4,616,966
CLASS 411	
105	4,616,967
342	4,616,968
CLASS 414	
144	4,616,969
563	4,616,970
730	4,616,971
749	4,616,972
CLASS 415	
2 R	4,616,973
4	4,616,974
181	4,616,975
CLASS 416	
97 R	4,616,976
138	4,616,977
CLASS 417	
2	4,616,978
231	4,616,979
357	4,616,980
378	4,616,981
383	4,616,982
571	4,616,983
CLASS 418	
150	4,616,984
173	4,616,985
CLASS 420	
117	4,617,052
530	4,617,172
CLASS 422	
107	4,617,173
133	4,617,174
171	4,617,175
179	4,617,176
273	4,617,177
310	4,617,178
CLASS 423	
121	4,617,179
240	4,617,180
446	4,617,181
579	4,617,182
630	4,617,183
CLASS 424	
1.1	4,617,184
65	4,617,185
78	4,617,186
94	4,617,187
148	4,617,188
162	4,617,189
CLASS 425	
32	4,616,986
89	4,616,987
150	4,616,988
203	4,616,989
239	4,616,990
396	4,616,991
503	4,616,992
CLASS 426	
61	4,617,190
294	4,617,191
CLASS 427	
38	4,617,193
42	4,617,192
54.1	4,617,194
66	4,617,195
123	4,617,196
180	4,617,197
186	4,617,198
208	4,617,199
216	4,617,200
	4,617,201
253	4,617,202
294	4,617,203
304	4,617,204
305	4,617,205
374.1	4,617,206
CLASS 428	
1	4,617,207
17	4,617,208
31	4,617,209
35	4,617,210
	4,617,211
36	4,617,212
	4,617,213
40	4,617,214
43	4,617,215
67	4,617,216
71	4,617,217
92	4,617,218
113	4,617,219
122	4,617,220
139	4,617,221
142	4,617,222
211	4,617,223
212	4,617,224
215	4,617,225
216	4,617,226
220	4,617,227
265	4,617,228
284	4,617,229
288	4,617,230
297	4,617,231
328	4,617,232
	4,617,234
364	4,617,233
374	4,617,235
391	4,617,236
446	4,617,237
452	4,617,238
	4,617,239
476.1	4,617,240
520	4,617,241
CLASS 429	
27	4,617,242
194	4,617,243
203	4,617,244
CLASS 430	
58	4,617,245
65	4,617,246
81	4,617,247
95	4,617,248
137	4,617,249
175	4,617,250
256	4,617,251
272	4,617,252
323	4,617,253
326	4,617,254
553	4,617,255
557	4,617,256
560	4,617,257
566	4,617,258
569	4,617,259
CLASS 431	
41	4,616,993
347	4,616,994
CLASS 432	
9	4,616,995
148	4,616,996
	4,616,997
CLASS 433	
73	4,616,998
225	4,616,999
CLASS 435	
5	4,617,260
6	4,617,261
7	4,617,262
25	4,617,263
34	4,617,264
38	4,617,265
68	4,617,266
91	4,617,267
92	4,617,268
97	4,617,269
161	4,617,270
182	4,617,271
183	4,617,272
232	4,617,273
255	4,617,274
CLASS 436	
10	4,617,275
20	4,617,276
34	4,617,277
60	4,617,278
CLASS 441	
3	4,617,000
CLASS 446	
48	B1 4,104,822
102	4,617,001
427	4,617,002
CLASS 464	
48	4,617,003
CLASS 474	
8	4,617,004
14	4,617,005
80	4,617,006
201	4,617,007
CLASS 493	
248	4,617,008
CLASS 494	
21	4,617,009
52	4,617,010
CLASS 501	
10	4,617,279
84	4,617,280
CLASS 502	
62	4,617,281
66	4,617,282
	4,617,283
111	4,617,284
134	4,617,285
167	4,617,286
174	4,617,287
331	4,617,288
339	4,617,289
CLASS 514	
11	4,617,290
19	4,617,291
27	4,617,292
41	4,617,293
52	4,617,294
97	4,617,295
100	4,617,296
167	4,617,297
176	4,617,298
178	4,617,299
192	4,617,300
214	4,617,301
254	4,617,302
258	4,617,303
261	4,617,304
278	4,617,305
288	4,617,306
300	4,617,307
312	4,617,308
339	4,617,309
343	4,617,310
353	4,617,311
369	4,617,312
402	4,617,313
422	4,617,314
427	4,617,315
438	4,617,316
458	4,617,317
520	4,617,318
647	4,617,319
CLASS 518	
719	4,617,320
CLASS 521	
38	4,617,321
60	4,617,322
	4,617,323
96	4,617,324
105	4,617,325
CLASS 523	
111	4,617,326
116	4,617,327
122	4,617,328
201	4,617,329
220	4,617,330
420	4,617,331
CLASS 524	
4	4,617,332
96	4,617,333
177	4,617,334
265	4,617,335
291	4,617,336
399	4,617,337
437	4,617,338
514	4,617,339
588	4,617,340
591	4,617,341
606	4,617,342
817	4,617,343
837	4,617,344
CLASS 525	
67	4,617,345
68	4,617,346
105	4,617,347
112	4,617,348
123	4,617,349
153	4,617,350
199	4,617,351
240	4,617,352
245	4,617,353
301	4,617,354
420	4,617,355
429	4,617,356
506	4,617,357
CLASS 526	
81	4,617,358
93	4,617,359
114	4,617,360
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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

October 21, 1986 Volume 1071 Number 3

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

Note that the amount of the international search fee for the European Patent Office and the amounts of the International PCT fees will change effective June 1, 1986. For information on these fee changes see the notice appearing in the *Official Gazette* at 1065 O.G. 41 on Apr. 29, 1986.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before Nov. 1, 1986	930.00
if paid on or after Nov. 1, 1986	1015.00
International fees	
Basic fee (first 30 pages):	
if paid before Nov. 1, 1986	375.00
if paid on or after Nov. 1, 1986	430.00
Basic Supplemental fee (for each page over 30):	
if paid before Nov. 1, 1986	7.00
if paid on or after Nov. 1, 1986	8.00
Designation fee for the first 10 national or regional offices:	
if paid before Nov. 1, 1986	90.00
if paid on or after Nov. 1, 1986	105.00
Designation fee for 11th and subsequent designations	No charge

Sept. 30, 1986.

DONALD J. QUIGG,
Assistant Secretary and
Commissioner of Patents
and Trademarks.

Patent Cooperation Treaty (PCT) Update

Change in International fees effective Nov. 1, 1986.

The International Bureau of the World Intellectual Property Organization has informed the U.S. Patent and Trademark Office that, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss Franc and the German Mark, the dollar amount of the International Fees for PCT applications filed in the United States Receiving Office and for having an international search report prepared by the European Patent Office will increase effective Nov. 1, 1986.

Effective Nov. 1, 1986 the amount of the International Fees for PCT applications filed in the United States Receiving Office will be:

Basic Fee (first 30 pages)	$430.00
Basic Supplemental Fee (each page over 30)	8.00
Designation Fee (per country or region up to ten)	105.00
Designation Fee (for 11th and subsequent countries or regions)	No Charge

Effective Nov. 1, 1986 the amount of the search fee for an international application by the European Patent Office as an International Searching Authority will be $1015.

Sept. 30, 1986.

DONALD J. QUIGG,
Assistant Secretary and
Commissioner of Patents
and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Oct. 18, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,409,689 through 4,411,022
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . $ 225.00
By other than a small entity . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . $ 55.00
By other than a small entity . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED AUGUST 3, 1986, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,342,155	06/257,663	8/3/82
4,342,161	06/241,814	8/3/82
4,342,171	06/266,278	8/3/82
4,342,202	06/247,236	8/3/82
4,342,224	06/253,459	8/3/82
4,342,295	06/246,390	8/3/82
4,342,296	06/246,400	8/3/82
4,342,297	06/246,656	8/3/82
4,342,311	06/248,483	8/3/82
4,342,312	06/248,868	8/3/82
4,342,389	06/235,908	8/3/82
4,342,410	06/241,446	8/3/82
4,342,416	06/225,308	8/3/82
4,342,553	06/306,824	8/3/82
4,342,582	06/300,313	8/3/82
4,342,591	06/258,306	8/3/82
4,342,611	06/226,501	8/3/82
4,342,614	06/240,210	8/3/82
4,342,624	06/290,763	8/3/82
4,342,627	06/254,740	8/3/82
4,342,632	06/259,873	8/3/82
4,342,660	06/272,946	8/3/82
4,342,661	06/269,811	8/3/82
4,342,688	06/244,910	8/3/82
4,342,696	06/277,176	8/3/82
4,342,710	06/243,421	8/3/82
4,342,714	06/249,430	8/3/82
4,342,734	06/284,848	8/3/82
4,342,754	06/242,711	8/3/82
4,342,838	06/242,638	8/3/82
4,342,867	06/245,412	8/3/82
4,343,000	06/251,617	8/3/82
4,343,019	06/225,772	8/3/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,208,462, Re. S.N. 903,305, Filed Sept. 3, 1986, Cl. 428/265, LAMINATED STRUCTURE COMPRISING A LAYER OF FLUORINATED PLYMER, Rene Dauphin, et al., Owner of Record: *Solvay and Cie, Brussels, Belgium,* Attorney or Agent: George H. Spencer, Ex. Gp.: 125

4,368,941, Re. S.N. 888,315, Filed July 22, 1986, Cl. 339/183, ELECTRICAL JACK FRAMES, Ronald G. Martin, Owner of Record: *ADC Telecommunications, Inc., Minneapolis, Minn.,* Attorney or Agent: Curtis G. Hamre, et al., Ex. Gp.: 322

4,467,219, Re. S.N. 898,312, Filed Aug. 20, 1986, Cl. 307/10R, VARIABLE TIME DELAY APPARATUS FOR CONTROLLING THE START OF A VEHICLE, Dennis Reid, Owner of Record: *Inventor,* Attorney or Agent: Karl A. Limbach, et al., Ex. Gp.: 216

4,468,105, Re. S.N. 900,322, Filed Aug. 25, 1986, Cl. 353/66, OPAQUE PROJECTOR, John R. Montgomery, Owner of Record: *Constanting Systems, Inc., Chicago, Ill.,* Attorney or Agent: James P. Hume, et al., Ex. Gp.: 246

4,468,359, Re. S.N. 900,618, Filed Aug. 26, 1986, Cl. 264/82, FOUNDRY MOULDS AND CORES, Peter H. R. B. Lemon, et al., Owner of Record: *Borden (UK) Ltd., Southampton, England,* Attorney or Agent: Frank E. Robbins, et al., Ex. Gp.: 151

4,500,083, Re. S.N. 898,359, Filed Aug. 20, 1986, Cl. 270/54, COLLATING AND BINDING SYSTEM AND METHOD WITH POSTAGE INDICATION, Did-Bun Wong, Owner of Record: *R. R. Donnelley and Sons Co., Chicago, Ill.,* Attorney or Agent: Bradford Wiles, et al., Ex. Gp.: 337

4,513,632, Re. S.N. 903,268, Filed Sept. 3, 1986, Cl. 74/484R, MOUNTING BRACKET FOR A STEERING COLUMN CONTROL STALK, Jack E. Swoveland, Owner of Record: *Dana Corp., Toledo, Ohio,* Attorney or Agent: Vincent L. Barker, et al., Ex. Gp.: 352

4,546,234, Re. S.N. 896,104, Filed Aug. 13, 1986, Cl. 219/137PS, OUTPUT CONTROL OF SHORT CIRCUIT WELDING POWER SOURCE, Takaaki Ogasawara, et al., Owner of Record: *Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan,* Attorney or Agent: Norman F. Oblon, et al., Ex. Gp.: 216

4,547,240, Re. S.N. 902,174, Filed Aug. 29, 1986, Cl. 156/85, METHOD OF PREFABRICATING AN ELECTRICAL CONNECTOR, James A. Zilligen, et al., Owner of Record: *FTZ Industries, Inc., Simpsonville, S.C.,* Attorney or Agent: John B. Hardaway, III., et al., Ex. Gp.: 138

4,569,780, Re. S.N. 901,240, Filed Aug. 27, 1986, Cl. 252/90, CAST DETERGENT-CONTAINING ARTICLE AND METHOD OF MAKING AND USING, Peter J. Fernholz, et al., Owner of Record: *Economics Laboratory, Inc., St. Paul, Minn.*, Attorney or Agent: John D. Gould, et al., Ex. Gp.: 157

4,569,781, Re. S.N. 901,250, Filed Aug. 27, 1986, Cl. 252/92, CAST DETERGENT-CONTAINING ARTICLE AND METHOD OF USING, Peter J. Fernholz, et al., Owner of Record: *Economics Laboratory, Inc., St. Paul, Minn.*, Attorney or Agent: John D. Gould, et al., Ex. Gp.: 157

4,580,320, Re. S.N. 897,173, Filed Aug. 15, 1986, Cl. 24/113, BUTTON HAVING PLASTIC RESIN HEAD, Akihiko Takata, Owner of Record: *Scovill Japan Kubushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Ronald L. Panitch, et al., Ex. Gp.: 357

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,520,747, Reexam. No. 90/001,082, Requested: Sept. 5, 1986, Cl. 156/153, METHOD OF MAKING STRUCTURAL MEMBERS OF LAYERS OF CORROSION RESISTANT COATING AND FIBROUS MATERIAL, Robert S. McGaughey, Owner of Record: *McCreary Tire & Rubber Co., Indiana, Pa.*, Attorney or Agent: Buell, Ziesenheim, et al., Ex. Gp.: 130, Requester: SW Industries, Inc., Providence, R.I.

3,846,710, Reexam. No. 90/001,080, Requested: Sept. 8, 1986, Cl. 330/11, DC RESTORATION AMPLIFIER WITH AUTOMATIC ZERO OFFSET ADJUSTMENT, Ronald H. Chapman, Owner of Record: *Motorola, Inc., Schaumberg, Ill.*, Attorney or Agent: Steven C. Parmelee, Ex. Gp.: 250, Requester: Owner

3,995,018, Reexam. No. 90/001,075, Requested: Aug. 27, 1986, Cl. 424/1.1, METHOD OF BINDING IMMUNOGLOBULIN EMPLOYING A POLYPEPTIDE FROM MICROORGANISMS, John Axel Sjoquist, Owner of Record: *Pharmacia Aktlebolag, Uppsala, Sweden*, Attorney or Agent: Fred Philpitt, Ex. Gp.: 120, Requester: Townsend & Townsend, San Francisco, Calif.

3,995,610, Reexam. No. 90/001,074, Requested: Aug. 25, 1986, Cl. 123/192, FOUR CYCLE STRAIGHT-TYPE ENGINE WITH SECONDARY BALANCER SYSTEMS, Malcom Moore, et al., Owner of Record: *Mitsubishi Jidosha Kogyo Kaisha, Tokyo, Japan*, Attorney or Agent: Sughrue, Mion, et al., Ex. Gp.: 340, Requester: DR Ing h.c.F., Porshe AG, Postfach 1140, Porschestrasse D, Weissach, Germany

4,048,654, Reexam. No. 90/001,081, Requested: Sept. 10, 1986, Cl. 358/144, STEREOPHONIC TELEVISION SOUND TRANSMISSION SYSTEM, Carl R. Wegner, Owner of Record: *Telesonics, Inc., Chicago, Ill.*, Attorney or Agent: Lockwood, Alex, et al., Ex. Gp.: 230, Requester: RCA Corp., Princeton, N.J.

4,062,141, Reexam. No. 90/001,077, Requested: Aug. 28, 1986, Cl. 43/3, DECOY, Jelmer B. Shjeflo, Owner of Record: *Jelmer Shjeflo, Bismark, N.D.*, Attorney or Agent: Robert E. Kleve, Ex. Gp.: 320, Requester: CBK, Ltd., Union City, Tenn.

4,138,543, Reexam. No. 90/001,079, Requested: Sept. 4, 1986, Cl. 528/14, POLYMERIZATION OF ORGANOPOLYSILOXANES, Michel Bargain, et al., Owner of Record: *Rhone-Poulenc Specialites Chemiques, Courbevoil, France*, Attorney or Agent: Bacon & Thomas, Ex. Gp.: 150, Requester: James V. Costigan, New York, N.Y.

4,457,847, Reexam. No. 90/001,084, Requested: Sept. 9, 1986, Cl. 210/698, CARBOXYLATE POLYMERS FOR INTERNAL SCALE CONTROL AGENTS IN BOILER SYSTEMS, Walter F. Lorenc, et al., Owner of Record: *Nalco Chemical Co., Naperville, Ill.*, Attorney or Agent: Willian, Brinks, et al., Ex. Gp.: 130, Requester: Owner

4,507,019, Reexam. No. 90/001,085, Requested: Sept. 11, 1986, Cl. 405/154, METHOD AND APPARATUS FOR REPLACING BURIED PIPE, Allen E. Thompson, Owner of Record: *Expand-A-Line, Inc., Pasadena, Tex.*, Attorney or Agent: Gunn, Lee, et al., Ex. Gp.: 350, Requester: Larson & Taylor, Arlington, Va.

4,532,947, Reexam. No. 90/001,076, Requested: Aug. 25, 1986, Cl. 131/331, FILTER FOR REDUCING THE TOXIC EFFECTS OF CIGARETTE TOBACCO SMOKE, Jane R. Caseley, Owner of Record: *Windleshaw Enterprises Ltd., East Sussex, England*, Attorney or Agent: John T. Miller, Ex. Gp.: 110, Requester: Owner

4,572,253, Reexam. No. 90/001,078, Requested: Sept. 3, 1986, Cl. 141/95, AUTOMATIC LEVEL SENSING SYSTEM, M. Zane & Diane Farmer, Owner of Record: *Inventors, Ashburnham, Mass.*, Attorney or Agent: Joseph S. Iandiorio, Ex. Gp.: 240, Requester: The Coca-Cola Co., Atlanta, Ga.

4,578,768, Reexam. No. 90/001,083, Requested: Sept. 5, 1986, Cl. 364/560, COMPUTER AIDED COORDINATE DIGITIZING SYSTEM, Marsh V. Racine, Owner of Record: *Inventor, San Diego, Calif.*, Attorney or Agent: Brown, Martin, et al., Ex. Gp.: 230, Requester: Owner

Erratum

"All reference to Patent No. 4,613,189 to William J. Barr of Gibson Island, Md., for VALVE ASSEMBLY FOR USE IN BRAKE PRESSURE CONTROL UNIT, appearing in the Official Gazette of Sept. 23, 1986, should be deleted since no patent was granted."

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. These persons have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before Nov. 21, 1986:

Asquith, Anthony, 1100 Commerce St. N., 50 Queen St., Kitchener, Canada N2H 6M1
Barlow, James E., 14509 Clark St., Crown Point, Ind. 46307
Bentley, Diane R., 590 Fulton Ave., #4A, Hempstead, N.Y. 11550
Black, Joseph R., Jr., 4640 Wendler Blvd., Gahanna, Ohio 43230

Bradley, Raymond H., 850 Regal, Houston, Tex. 77034
Carroll, John A., 7119 Vantage Dr., Alexandria, Va. 22306
Carson, James W., 133 Richmond St. W., Toronto, Ont., Canada M5H 2L7
Faraci, C. Joseph, 6100B Essex House Sq., Alexandria, Va. 22310
Foulke, Cynthia Lee, 4326 N. Pershing Dr., #3, Arlington, Va. 22203
Gerber, Joseph E., 925 Carro Dr., #3, Sacramento, Calif. 95825
Glastetter, Calvin E., 2322 Bainter La., Peoria, Ill. 61515
Graham, Mark S., 401 Gallaher View Rd., #424, Knoxville, Tenn. 37919
Hendricksen, Mark W., 4408 Woodruff Rd., Spokane, Wash. 99206
Hey, David A., 1400 S. Joyce St., #A1602, Arlington, Va. 22202
Johnson, Beverly K., 1836 Metzerott Rd., #708, Adelphi, Md. 20783
LaCava, Michael A., 46 E. Hillsdale Blvd., San Mateo, Calif. 94403
Lauro, Peter C., 182 Thunder Cir., Bensalem, Pa. 19020
Maag, Gregory L., 3426 Esterbrook, Houston, Tex. 77082
McGruder, David J., Suite 700, The National Bldg., 130 Slater St., Ottawa, Canada K1P 6E2
McKenna, Michael R., 1122 W. Morse, Chicago, Ill. 60626
McLain, Janice M., 5970 Lakebluff Dr., #102, Tinley Park, Ill. 60477
Morris, Terry B., 2808 Hunterwood Dr., S.E., Decatur, Ala. 35603
Napoli, James J., 2442 Brumley, Flossmoor, Ill. 60422
Neblett, Adonis A., 925 E. 8th Ave., #120, Denver, Colo. 90218
Nusbaum, Mark E., 8002 Treasure Tree Ct., Springfield, Va. 22153
Pearson, Louise S., 535 N. Michigan Ave., #32, Chicago, Ill. 60611
Prlina, Julie M., 4511 Normandy–2, Dallas, Tex. 75205
Roberts, Elbert L., 13103 Brittany Dr., Silver Spring, Md. 20904
Shaw, Dennis, 2228 Stockton Loop, Kirtland AFB, N. Mex. 87118
Sweeney, Charles V., 53282 Bonvale Dr., South Bend, Ind. 46635
Wong, Harry, Jr., 115 23rd Rd. S., Arlington, Va. 22202
Yaeger, Daniel A., 1391 Devils Back Bone Rd., Cincinnati, Ohio 45238

CAMERON WEIFFENBACH,
Sept. 24, 1986. *Director, Office of Enrollment and Discipline.*

Department of Commerce
Patent and Trademark Office
37 CFR Part 1
[Docket No. 50103-6060]

Arbitration of Patent Interference Cases

Agency: Patent and Trademark Office, Commerce.
Action: Notice of proposed rulemaking.
Summary: Section 105 of the Patent Law Amendments Act of 1984, Pub. L. 98–622, provides for arbitration of patent interference cases. In this document, the Patent and Trademark Office is publishing a proposed regulation to implement the arbitration provision.
Date: Comments and suggestions should be received by Nov. 14, 1986. No hearing will be held.
Address: Address written comments to Box Interference, Commissioner of Patents and Trademarks, Washington, D.C. 20231.
For Further Information Contact: Ian A. Calvert or Michael Sofocleous by telephone at (703) 557–4000 or by mail marked to the attention of either and addressed to Box Interference, Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: Section 105 of the Patent Law Amendments Act of 1984, enacted on Nov. 8, 1984, provides for the arbitration of patent interference cases. Section 105, codified as 35 U.S.C. 135(d), provides:

> Parties to a patent interference, within such time as may be specified by the Commissioner by regulation, may determine such contest or any aspect thereof by arbitration. Such arbitration shall be governed by the provisions of title 9 to the extent such title is not inconsistent with this section. The parties shall give notice of any arbitration award to the Commissioner, and such award shall, as between the parties to the arbitration, be dispositive of the issues to which it relates. The arbitration award shall be unenforceable until such notice is given. Nothing in this subsection shall preclude the Commissioner from determining patentability of the invention involved in the interference.

The Patent and Trademark Office (PTO) conducts interference proceedings to determine any question of patentability and priority of invention between two or more parties claiming the same patentable invention. An interference may be declared between two or more pending applications naming different inventors when, in the opinion of an examiner, the applications contain claims for the same patentable invention. An interference may be declared between one or more pending applications and one or more unexpired patents naming different inventors when, in the opinion of an examiner, any application and any unexpired patent contain claims for the same patentable invention. Patent interference cases can be quite expensive. Arbitration may prove useful to minimize expenses in interference cases. The proposed arbitration rule, if adopted, would apply to all pending interferences.

The PTO published an advance notice of rulemaking in the **Federal Register** of Jan. 16, 1985. (50 FR 2294 through 2296). The notice was also published in the *Official Gazette* on Feb. 12, 1985. 1051 *Official Gazette* 9–10; 1051 TMOG 10–11. The notice also appeared in the Bureau of National Affairs' Patent, Trademark & Copyright Journal, Vol. 29, pp. 310 [Jan. 24, 1985], hereinafter "BNA." Five written comments were received in response to the advance notice. The comments are analyzed herein. The five comments are available for public inspection in Rm. 10C01, Crystal Gateway II, 1225 Jefferson Davis Hwy., Arlington, Va.

Guidelines for Arbitration

From the tenor of the comments, it is apparent that the commentors desire guidance from the PTO concerning its policy with respect to the arbitration of patentability issues and extensions of time for arbitration.

Under proposed §1.690 the arbitrator could determine issues of patentability as between the parties but a determination that the subject matter is patentable would not be binding upon the PTO. If the arbitrator's award holds that a party's claims corresponding to the count are unpatentable over prior art or under 35 U.S.C. 112, that determination would be binding on that party vis-a-vis the party's opponent and would result in a judgment adverse to that party. The judgment, however, would not discharge the duty that each party has under 37 CFR 1.56 to bring to the attention of the examiner in charge of its respective application any prior art and/or reason relied upon by the arbitrator in the determination of unpatentability.

It is the longstanding practice of the PTO to favor the settlement of interferences and the PTO looks with favor on all proper efforts in that direction as being conducive to the termination of the proceeding. See 4 Rivise and Caesar, *Interference Law and Practice*, section 861, pp. 2956 (Michie Co. 1948) and the Commissioner's Notice of Nov. 9, 1976, titled, "Extensions of Time and Filing of Papers in Interferences," 953 *Official Gazette* 2 (Dec. 7, 1976). In this regard, the notice states that:

> . . . stipulations or motions for extensions of time under 37 CFR 1.245 will not henceforth be approved or granted, respectively, unless accompanied by a detailed showing of facts sufficient to establish that the action for which the extension is sought could not have been or cannot be taken or completed during the time previously set therefor, and that the entire extension appears necessary for the taking or completion of that action. Since the Office favors the amicable settlement of interferences, the foregoing requirement will be liberally applied in the case of a first request for extension of time for the purpose of negotiating settlement.

Consequently, the examiner-in-chief could give favorable consideration to a motion for an extension of time for purposes of settlement; however, a further motion for an extension for that purpose would not be granted unless it is accompanied by a schedule of specific dates showing that the parties will make a good faith effort to promptly terminate the proceeding. If preliminary motions under 37 CFR 1.633 have not been filed, the examiner-in-chief would not normally extend the time for their filing merely for purposes of settlement. In these circumstances, the examiner-in-chief would require that the preliminary motions be filed or that their filing be waived.

If the proceeding is in the testimony stage, the examiner-in-chief could grant the parties' motion to extend all the unexpired testimony times to close concurrently on the date the record is due provided they file a stipulation that any evidence to be submitted will be in one of the forms specified in 37 CFR 1.672(e)and (f), i.e., affidavit testimony or a stipulation either as to what a particular witness would testify to if called or the facts in the case of any party.

Analogously, the aforesaid practice would apply to arbitration. Parties who intend to arbitrate an interference would be required to notify the examiner-in-chief in writing of their intention to arbitrate and file a copy of the arbitration agreement within 20 days of its execution. Pursuant to 35 U.S.C. 135(c) an agreement to arbitrate is considered to be one "made in connection with and in contemplation of the termination of the interference" and therefore would have to be in writing and a copy would have to be filed in the PTO. The notification would be made in a separate paper. Merely incorporating the notification in the settlement agreement under 35 U.S.C. 135(c) would not be sufficient to comply with proposed §1.690(a). The parties also would be required to adhere to a time schedule approved by the examiner-in-chief such that the interference proceeding can be expeditiously resolved so as to prevent the unnecessary postponement of the beginning of the running of the term of any patent resulting from an application involved in the interference. *Pritchard* v. *Loughlin*, 361 F.2d 483, 149 USPQ 841 (CCPA 1966).

If the parties desire to arbitrate an interference prior to the close of the motions period, the examiner-in-chief would not normally grant an extension of time for that purpose. The parties would be required to file their preliminary motions under 37 CFR 1.633. After the motions are filed, the examiner-in-chief could grant an extension only upon compliance with 37 CFR 1.645 which requires a showing of "good cause." Such a "good cause" showing would normally include a schedule, agreed to by the parties, setting forth, *inter alia*, the dates for (1) executing the arbitration agreement, (2) determining priority and (3) terminating the interference.

The arbitration agreement should include the following provisions:

(1) The name of the arbitrator or a date certain (not more than 30 days after the execution of the agreement) for his or her selection.

(2) The issues to be decided by the arbitrator.

(3) That the arbitrator's award is binding on the parties and that the Board can enter a judgment based thereon.

A copy of the arbitration award must be filed within 20 days from the date of the award or by the date set by the examiner-in-chief.

If the proceeding is in the testimony stage and the parties desire to arbitrate, the examiner-in-chief could grant a reasonable extension for that purpose. A motion for a further extension for that purpose would not be granted unless it is accompanied by a schedule, agreed to by the parties, setting forth, *inter alia*, the dates for (1) executing the arbitration agreement, (2) determining priority, and (3) terminating the interferences. If the parties were to submit the required schedule, a motion for a further extension could be granted. If the parties file a copy of the arbitration agreement and they agree that any evidence submitted in the proceeding will be in one of the forms specified by 37 CFR 1.672(e) of (f), the examiner-in-chief could give favorable consideration to the parties' motion that all the unexpired times be extended to close concurrently on the date the record is due. By that date, the parties would be required to file the arbitrator's award and their records, if necessary for the resolution of any issue not decided by the arbitrator. If the award is not dispositive of all the issues in the interference, the examiner-in-chief would set brief times so that the parties could explain their evidence relating to any issues which the arbitrator did not, or was unable to, decide. For example, the award might be dispositive of the issue of priority between the parties and leave for the Board's determination the question of substituting a new count raised in a preliminary motion under 37 CFR 1.633.

The arbitration award, filed by the parties, would be in the nature of a final decision and must include the following:

(1) The style (e.g., *Jones* v. *Smith*), the number of the interference and the names of the real parties in interest.

(2) The subject matter in issue, i.e., the counts and a table of counts, if necessary, indicating the relationship of the parties' claims corresponding to each count and those claims not corresponding thereto.

(3) The issues for decision before the arbitrator.

(4) The arbitrator's decision. The decision may also include a statement of the grounds and reasoning in support thereof.

(5) A summary, if appropriate, indicating, inter alia, that judgment should be awarded to one of the parties.

Any party to the arbitration can attack the award only in the manner provided by 9 U.S.C. 10 and 11.

9 U.S.C. 10 reads as follows:

> In either of the following cases the United States court in and for the district wherein the award was made may make an order vacating the award upon the application of any party to the arbitration—
>
> (a) Where the award was procured by corruption, fraud, or undue means.
>
> (b) Where there was evident partiality or corruption in the arbitrators, or either of them.
>
> (c) Where the arbitrators were guilty of misconduct in refusing to postpone the hearing, upon sufficient cause shown, or in refusing to hear evidence pertinent and material to the controversy; or of any other misbehavior by which the rights of any party have been prejudiced.
>
> (d) Where the arbitrators exceeded their powers, or so imperfectly executed them that a mutual, final, and definite award upon the subject matter submitted was not made .
>
> (e) Where an award is vacated and the time within which the agreement required the award to be made has not expired the court may, in its discretion, direct a rehearing by the arbitrators.

9 U.S.C 11 reads as follows:

> In either of the following cases the United States court in and for the district wherein the award was made may make an order modifying or correcting the award upon the application of any party to the arbitration—
>
> (a) Where there was an evident material miscalculation of figures or an evident material mistake in the description of any person, thing, or property referred to in the award.
>
> (b) Where the arbitrators have awarded upon a matter not submitted to them, unless it is a matter not affecting the merits of the decision upon the matter submitted.
>
> (c) Where the award is imperfect in matter of form not affecting the merits of the controversy.
>
> The order may modify and correct the award, so as to effect the intent thereof and promote justice between the parties.

See, for example, *Fairchild & Co., Inc.* v. *Richmond, F. & .P. R. Co.*, 516 F.Supp. 1305 (D.D.C. 1981). If such an attack were to be made by one of the parties while the interference is pending before the Board, the Board would not stay the interference. Rather, the Board would issue its judgment in accordance with the award. So long as the award is in compliance with proposed § 1.690, it would carry the presumption that the arbitrator acted correctly in making his decision and accordingly, the party designated by the award as the prevailing party would be entitled *prima facie* to a judgment in its favor. If the dissatisfied party brings an action in an appropriate United States district court and if the court vacates, modifies or corrects the award, the Board would take action consistent with the court's findings. No action would like in the PTO to vacate or correct an arbitration award, unless all parties agreed in writing.

The following examples illustrate the proposed practice of the PTO concerning arbitration.

Example 1

Arbitration Practice—Preliminary State

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. The parties decide to arbitrate the interference in accordance with proposed § 1.690 and file a motion for an extension of time so that they can "freely" arbitrate the interference, but do not file a waiver of their right to file motions.

The examiner-in-chief would deny the motion because the parties' intention to arbitrate, in and of itself, does not constitute a showing of "good cause" within the meaning of 37 CFR 1.645(a). Even if the parties file an agreement to arbitrate, the PTO would not grant any extension of time to permit the parties to "freely" arbitrate an interference prior to the expiration of the time for filing preliminary motions.

Example 2

Arbitration Practice—Testimony Stage

An interference is delcared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633. The parties file preliminary motions; the examiner-in-chief renders a decision thereon and sets the testimony times. The parties file a notice of intent to arbitrate the interference under proposed §1.690(a) and a motion for a one month extension of the testimony times. The examiner-in-chief could grant the motion, but would indicate that if the parties file another motion for an extension for that purpose, the motion must be accompanied by a schedule, agreed to by the parties, setting forth the dates for (1) executing the arbitration agreement, (2) determining priority and (3) terminating the interference.

The parties file a motion for an additional one month extension of time to permit the parties to arbitrate the interference. Accompanying the motion is a proposed schedule of times and a copy of the arbitration agreement which provides, inter alia, (i) the name of the arbitrator or a date certain for his selection, (ii) that the arbitrator's award will be binding on the parties, (iii) the issues to be decided by the arbitrator and (iv) that the award will be filed by the date the record is due. The parties also indicate that the evidence to be filed in the proceeding will be in one of the forms specified by 37 CFR 1.672(e) of (f). The examiner-in-chief could grant the motion and indicate that he will give favorable consideration to a motion to extend all the unexpired times to close concurrently on the date the record is due should the parties request such.

On the date for filing the record, the parties file the arbitrator's award and their evidentiary records, if necessary. The award states (i) the style and number of the interference and the real parties in interest, (ii) the subject matter in issue and the parties' claims which correspond thereto and which do not correspond thereto, (iii) the issues for decision before the arbitrator, (iv) the arbitrator's decision (which may include a statement of the grounds and reasoning in support thereof) and (v) that judgment should be awarded to one of the parties. The examiner-in-chief examines the award to ensure that it complies with proposed §1.690 and is dispositive of the issues in the interference which can be decided by the arbitrator. If the award is otherwise acceptable, the Board would issue a judgment based on the award. If the award is not dispositive of all the issues in the interference, the examiner-in-chief would determine how the interference will proceed.

Example 3

Arbitration Practice—Award Decides Interference-in-Fact Issue and Junior Party Takes No Testimony

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. The junior party files a motion for judgment under 37 CFR 1.633(b) on the ground that there is no interference-in-fact between his claims corresponding to the count and his opponent's claims corresponding thereto. The examiner-in-chief denies the motion, examines the preliminary statements and sets the testimony times.

During the testimony period, the parties decide to arbitrate the interference, notify the examiner-in-chief of their intent to arbitrate and file an arbitration agreement which is approved by the examiner-in-chief. On the date for filing the record, the junior party files the award together with a motion requesting that the interference be terminated in view of the award. He does not file a record. In his award the arbitrator holds that no interference-in-fact exists between the parties' claims corresponding to the count.

The motion would be denied because the award decides a matter of patentability which would not result in a judgment adverse to one of the parties. Consequently, the junior party would be placed under an order to show cause why judgment under 37 CFR 1.652 should not be entered against him for his failure to file an evidentiary record by the time set therefor. In response to the order, the junior party requests final hearing to review the examiner-in-chief's denial of the motion for judgment and a testimony period to show no interference-in-fact. The examiner-in-chief would grant the junior party's request to the extent that final hearing is set and would deny the request for testimony because the junior party already had the opportunity to take testimony on the matter.

Example 4

Arbitration Practice—Cannot Decide Patentability

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR

1.633 and preliminary statements. The junior party files a motion for judgment under 37 CFR 1.633(a) on the ground that the claims corresponding to the count are unpatentable over prior art. In his decision on motions, the examiner-in-chief grants the motion and places both parties under an order pursuant to 37 CFR 1.640(d)(1) to show cause why judgment should not be entered against them as to the count. In response to the order, the senior party files a paper in accordance with 37 CFR 1.640(e) purportedly showing good cause why judgment should not be entered in accordance with the order and a motion requesting permission to arbitrate the patentability issue. The examiner-in-chief would deny the motion. The arbitrator is without authority to establish vis-a-vis the public that the subject matter of the count is patentable. Thus, the arbitration will serve no useful purpose. The Board would consider the senior party's paper and enter an appropriate order.

Example 5

Arbitration Practice—Award After Decision on Motions

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. The junior party files a motion for judgment under 37 CFR 1.633(a) on the ground that the claims corresponding to counts 1 and 2 are unpatentable over prior art. In his decision on motions, the examiner-in-chief grants the motion with respect to count 1, denies the motion with respect to count 2 and places both parties under an order pursuant to 37 CFR 1.640(d)(1) to show cause why judgment should not be entered against them as to count 1. The senior party files a paper in accordance with 37 CFR 1.640(e); the junior party, a response thereto. The Board considers the paper and the response thereto and based on the record enters judgment adverse to both parties as to count 1. Thereafter, the examiner-in-chief examines the preliminary statements and sets dates for taking testimony and filing the record.

During the testimony period, the parties decide to arbitrate the interference, notify the examiner-in-chief of their intent to arbitrate and file an arbitration agreement which is approved by the examiner-in-chief. In his award, the arbitrator decides that judgment should be awarded to the junior party. On the date for filing the record, both parties file the award together with a motion requesting that the interference be terminated in view of the award. No record is filed.

The motion would be granted and accordingly it would be held that the senior party is not entitled to a patent containing his claims corresponding to count 2.

Example 6

Arbitration Practice—Award Decides Patentability

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. No motions for judgment under 37 CFR 1.633 are filed and after the examination of the preliminary statements, the examiner-in-chief sets the testimony times.

During the testimony period, the parties decide to arbitrate the interference, notify the examiner-in-chief of their intent to arbitrate and file an arbitration agreement which is approved by the examiner-in-chief. In his award, the arbitrator finds (1) that the evidence is insufficient to establish a prior public use bar under 35 U.S.C. 102(b) against the junior party, (2) that the claims of the junior party corresponding to the count are patentable under 35 U.S.C. 103 over the prior art cited by the senior party to the junior party, and (3) that judgment on priority should be awarded to junior party. On the date for filing the record, the parties file their records and the award together with a motion requesting that the interference be terminated in view of the award.

The motion would be granted and accordingly it would be held that the senior party is not entitled to a patent containing his claims corresponding to the count. After the termination of the proceeding, each party has the duty under 37 CFR 1.56 to bring before the primary examiner the evidence concerning the purported public use bar and the prior art cited by the senior party and/or considered by the arbitrator.

Example 7

Arbitration Practice—Award Grants Priority to Junior Party Contingent Upon Granting of Preliminary Motion Under 1.633(c)

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. The junior party files a motion under 37 CFR 1.633(c)(1) to substitute another count. The examiner-in-chief denies the motion, examines the preliminary statements and sets the testimony times.

During the testimony period, the parties decide to arbitrate the interference, notify the examiner-in-chief of their intention to arbitrate and enter into an arbitration agreement which is approved by the examiner-in-chief. The agreement provides that any evidence to be submitted by the parties will be in the form of a stipulation under 37 CFR 1.672(e) and (f). The parties file a motion requesting that all the unexpired testimony times be extended to close concurrently on the date the record is due. The motion would be granted.

On the date for filing the record, the junior party files his record and the award. The award states, inter alia, that if the Board at final hearing should grant the junior party's motion under 37 CFR 1.633(c)(1) to substitute a new count, judgment should be awarded to the junior party based on the evidence. Otherwise, the award states that judgment should be awarded to the senior party.

The examiner-in-chief sets the brief times and after the filing thereof the interference would be set for final hearing so that the Board can review the examiner-in-chief's denial of the junior party's motion under 37 CFR 1.633(c) and issue an appropriate judgment based on the award.

Example 8

Arbitration Practice —Award Attacked

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. No preliminary motions are filed. The examiner-in-chief examines the preliminary statements and sets the testimony times.

During the testimony period, the parties decide to arbitrate the interference, notify the examiner-in-chief of their intention to arbitrate and file an arbitration agreement which is approved by the examiner-in-chief.

On the date for filing the record, both parties file their records. The junior party files the award which states that judgment should be awarded to him and a motion for judgment based on that award. The senior party files an opposition to the motion for judgment on the grounds (i) that the award contains errors of law, (ii) that the award was procured by "corruption, fraud or undue means" in violation of 9 U.S.C. 10(a), and (iii) that the arbitrator exhibited "evident partiality" in violation of 9 U.S.C. 10(b) and was "guilty of misconduct . . . in refusing to hear evidence pertinent and material" to the interference, citing 9 U.S.C. 10(c).

The Board would grant the judgment based on the award, holding that the senior party is not entitled to a

patent containing his claims corresponding to the count. So long as the award is in compliance with the provisions of proposed §1.690, it would carry a presumption that the arbitrator acted properly in all respects. Consequently, before the PTO the award is binding upon the parties and the junior party is *prima facie* entitled to a judgment in its favor. Thus, no action lies in the PTO as regards the matter raised by the senior party. The senior party's action lies in an appropriate United States district court and the PTO would take any action consistent with the court's decision.

Example 9

Arbitration Practice—Award Cannot Modify Board's Final Decision

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. No motions are filed. The examiner-in-chief examines the preliminary statements and sets the testimony times.

During the testimony period, the parties decide to arbitrate the interference and enter into an arbitration agreement. Neither party notifies the examiner-in-chief of their intent to arbitrate nor do they file a copy of the agreement in the interference. Both parties timely file their records and briefs. Both waive oral agrument. The Board enters a final decision after consideration of the evidence in favor of the senior party.

The junior party requests reconsideration of the Board's final decision, submits a copy of the arbitration award and moves that the Board set aside its final decision and enter judgment in his favor based on the award. In support of its request, the junior party cites 9 U.S.C. 9, which provides that "any party to the arbitration may apply to the court so specified for an order confirming the award" and 35 U.S.C. 135(d) which provides that title 9 applies to interference arbitrations.

The Board would deny the motion to set aside. The parties did not comply with proposed §1.690(a), e.g., notify the examiner-in-chief in writing of their intention to arbitrate and file a copy of the arbitration agreement within twenty (20) days of its execution. The denial of the motion is an appropriate sanction under 37 CFR 1.616. Such action by the Board is considered consistent with long-standing interference practice. Cf. *Humphrey* v. *Fickert*, 1904 Dec. Comm'r. Pat. 447 (Comm'r. 1904) wherein the Board, after it had considered the evidence, refused to set aside its award of priority to Fickert and act upon the Fickert's concession of priority in favor of Humphrey, the losing party.

Example 10

Arbitration Award Filed With Record—No Notice to Examiner-in-Chief

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. No motions are filed. The examiner-in-chief examines the preliminary statements and sets the testimony times.

During the testimony period, the parties decide to arbitrate the interference and enter into an arbitration agreement. Neither party notifies the examiner-in-chief of the agreement. The junior party timely files its record together with a copy of the arbitration award and a motion for judgment based on the award.

The motion would be denied. Under the provisions of 37 CFR 1.616, the examiner-in-chief places both parties under an order to show cause why judgment should not be rendered against them for their failure to comply with proposed §1.690(a), i.e., failing to notify him of their intent to arbitrate and file a copy of the arbitration agreement.

Analysis of Comments

One commentor suggests that the parties should be able to arbitrate at any stage of the proceeding, including immediately after the declaration of the interference. Another commentor suggests that arbitration should not be instituted until after the motion period when the issues have been finally determined. The parties can begin arbitration at any stage of the interference; however, no extension of the time for filing preliminary motions will be granted for the purpose of arbitration. See Example 1. No change is necessary to the rule proposed in the advance notice.

One commentor suggests that the PTO should become involved in the selection of the arbitrator by maintaining a roster of arbitrators. This suggestion is not being adopted because the selection of an arbitrator is a matter for the parties.

One commentor notes that the American Arbitration Association (AAA) has developed rules for handling patent matters and requests that the PTO "give notice that following AAA rules is prima facie acceptable, as to the procedure used." In the PTO's view, the parties can stipulate the use of any procedure for resolving the arbitration.

One commentor suggests that the arbitrator should be able to "certify questions to the Board." The statute, 35 U.S.C. 135(d), and proposed §1.690 provide that the parties may determine the interference or "any aspect thereof by arbitration." If the parties elect to arbitrate, the arbitrator must decide the interference. He cannot "certify" questions to the Board since "certification" would defeat the purpose of arbitration.

One commentor suggests that

> [The] arbitrator should have subpoena power or discovery authority to protect his own reputation in the event (a) a party is withholding information or (b) the parties are colluding in withholding information from the arbitrator.

While the arbitration proceeding is pending before him, the arbitrator has the authority under 9 U.S.C. 7 to

> summon in writing any person to attent . . . as a witness and in a proper case to bring with him . . . any book, record, document or paper which may be deemed material in the case.

If any person so summoned refuses or neglects to obey the summons, the arbitrator or a party may petition an appropriate United States district court pursuant to 9 U.S.C. 7 to compel the attendance of the person or to punish the person for contempt.

With respect to proposed §1.690(a), one commentor urges that the subparagraph be changed by deleting "or any aspects thereof" so that the arbitrator can determine priority in its totality. The commentor believes that the retention of this language would tend to cause undue delays, thus requiring the examiner-in-chief to exert strong control in maintaining the schedule for an interference. The suggestion is not being adopted because the statute 35 U.S.C. 135(d), provides:

> Parties to a patent interference . . . may determine such contents *or any aspect thereof* by arbitration. [Emphasis added.]

To adopt this suggestion would constitute taking from interference parties a right conferred on them by statute.

With respect to proposed §1.690(a), one commentor suggests that a provision be added to the proposed rule requiring "advance notice to the examiner-in-chief of a proposed arbitration and specifying the issues to be arbitrated." This suggestion is being adopted and accordingly the following two sentences are added to proposed§1.690(a):

> The parties must notify the Board in writing of their intention to arbitrate and specify the issues to be arbitrated. A copy of an agreement to arbitrate must be in writing and filed within twenty (20) days after its execution.

These two sentences require that the notification of intent to arbitrate must be in writing and should be presented in a separate paper, directed to the examiner-in-chief's attention and that the agreement to arbitrate must be in writing and be filed within twenty (20) days after its execution.

With respect to proposed §1.690(b), one commentor states:

> Proposed sub-section (b) states that "(b) An interference or any aspect thereof shall be arbitrated within such time as may be authorized on a case by case basis by an examiner-in-chief." Since this is indefinite, it would in actual practice require obtaining advance approval from the examiner-in-chief in every case before even initiating arbitration efforts. Since this provision provides no guidance to the examiner-in-chief it could also lead to arbitrarily restrictive decisions. That seems contrary to the intent of the statute, which is to broadly provide a generally available resolution of disputes by the parties outside of the PTO. Furthermore, this provision even seems inconsistent with the practice until now under interference rule 272(c) [37 CFR 1.272(c) (1984)] which already allowed the parties, without advance approval by anyone, to stipulate to dispositive facts at any time during the testimony period or before the record was due. Yet an arbitration may well constitute or provide such stipulations. As with stipulations under 272(c), since any arbitration decisions are to the direct benefit of the PTO in reducing issues which must otherwise be decided by the Board at final hearing, there is no logical reason to restrict the availability of arbitration at any time before the filing of final briefs with the Board. It is respectively submitted that, pursuant to the intent of the statute, it is really not the appropriate business of the PTO as to when the parties conduct arbitration as long as it does not interfere with the orderly operation of interferences or cause the Board to unnecessarily decide an issue which is being arbitrated. The purpose of this statute is to provide maximum flexibility to the parties, free of regulatory constraints, and that is what the enabling regulations for the statute should provide.
>
> Accordingly, it is suggested that this proposed subsection (b) be changed to: — any arbitration shall be completed and noticed by the time set for the filing of final briefs.—

These comments, which are essentially directed to the guidelines for arbitration, the authority of the examiner-in-chief vis-a-vis the rights of the parties to "freely" arbitrate and an apparent inconsistency between the old practice and the new practice, have been carefully considered. In addition, the commentor suggests that proposed §1.690(b) be changed to state that the arbitration be completed and noticed by the time set for the filing of final briefs.

The arbitration guidelines are sufficiently discussed in the section, "Guidelines For Arbitration," *supra*, and will not be discussed below.

With respect to the authority of the examiner-in-chief and the rights of the parties, advance approval by the examiner-in-chief is required for the parties to arbitrate in order to prevent unnecessary work in the PTO. The parties must file their preliminary motions by the time set therefor and any arbitration must conform with the time schedule approved by the examiner-in-chief. If the parties are unable to meet the time schedule, they may file a motion for extension of time pursuant to the provisions of 37 CFR 1.645(a). Pursuant to 37 CFR 1.610(c), the examiner-in-chief must exercise control over the interference such that its pendency does not normally exceed two years. Consequently, the parties must notify the Board of their intention to arbitrate and file a copy of the arbitration agreement. When the award is filed, the examiner-in-chief must review the award to determine whether it is dispositive of all the issues in the interference. If the award is not, the examiner-in-chief must determine how the interference should proceed.

With respect to the assertion concerning an apparent inconsistency between proposed §1.690(b) and §1.672(e) and (f), the counterpart of §1.272(c), the guidelines show that none exists.The parties to an interference can agree to file stipulated evidence with respect to any issue whether or not it is decided by arbitration.

The suggestion that proposed §1.690(b) be changed is not being adopted in view of the language in proposed § 1.690(c), infra.

Three commentors request that the arbitration award be made binding on the parties in order to save expense and reduce the pendency time of the interference proceeding. It is urged that if the arbitration is not binding, the arbitration would "serve as a rehearsal for the usual interference procedure." This suggestion is being adopted and proposed §1.690(c) is being changed to require that the parties who desire to arbitrate must enter into a binding arbitration agreement.

One commentor suggests that if the arbitration is binding, then the reasons and conclusions need not be given but if the arbitration is not binding, then the reasons and conclusions for the award should be given so as to aid settlement. Another commentor concerned with possible "colusion" between the parties and the arbitrator and suggest that a "sufficient record" be created for the PTO and "interested third parties." These suggestions are being adapted in part. While the PTO would prefer that the award include a statement of the grounds and reasoning in support thereof, it is left to the discretion of the parties as to whether the award will contain such a statement. With respect to possible "collusion," the attorneys for the parties are subject to the Patent and Trademark Code of Professional Office Responsibility, 37 CFR 10.20 to 10.112, and any violation thereof can be brought to the attention of Director of Enrollment and Discipline. Accordingly, proposed §1.690(c) is being changed to state that the award may also include a statement of the grounds and reasoning in support thereof.

Two commentors suggest that proposed §1.690(c) be changed to read that the arbitration award should be filed on or prior to the date set for the filing of final briefs so that the PTO need not decide an interference which has already been resolved by the parties. This suggestion is being adopted to the extent that proposed §1.690(c) is being changed to require that the parties must file a copy of the arbitration award within twenty (20) days from the date of the award unless otherwise ordered by the examiner-in-chief.

One commentor requests that a "reasonable grace period" be provided for filing an inadvertently unfiled award. Proposed §1.690(c) has been changed to read that the parties must file the award within twenty (20) days from the date of the award unless otherwise ordered by the examiner-in-chief. If the award is not filed, the examiner-in-chief may issue appropriate sanctions under 37 CFR 1.616. Accordingly, this suggestion is not being adopted.

In view of the foregoing discussion, proposed §1.690(c) has been modified to read as follows:

> An arbitration award will be given no consideration unless it is binding on the parties, is in writing and states in a clear and definite manner (1) the issue or issues arbitrated and (2) the disposition of each issue. The award may also include a statement of the grounds and reasoning in support thereof. Unless otherwise ordered by an examiner-in-chief, the parties shall give notice to the Board of an arbitration award by filing within twenty (20) days from the date of the award a copy of the award signed by the arbitrator or arbitrators. When an award is timely filed, the award shall, as to the parties to the arbitration, be dispositive of the issue or issues to which it relates.

Two commentors urge that patentability questions should not be arbitrated in view of the public interest.

One would go further and amend subparagraph (d) to read that unless ordered by an examiner-in-chief, an arbitration award shall not decide a preliminary motion for judgement under §§1.633(a) or 1.633(b), a preliminary motion to redefine the interfering subject matter under §1.633(c), a preliminary motion to substitute a different application under §1.633(d) or a motion to declare an additional interference under §1.633(e). These suggestions are not being adopted. Subparagraph (d) makes clear that an arbitration award shall not preclude the Office from determining patentability of any invention in the interference. An arbitration award can decide a question of patentability which is binding on that party vis-a-vis his opponent and will result in a judgement adverse to that party. After the termination of the interference each party has the duty under 37 CFR 1.56 to bring to the attention of the examiner in charge of its application any evidence of unpatentability brought before or considered by the arbitrator. Consequently, the adoption of these suggestions could unduly restrict the parties' use of arbitration and prevent an arbitrator from deciding a proper matter of patentability.

Other Considerations

This rule does not have a significant impact on the quality of the human environment or the conservation of natural resources.

The rule is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the proposed rule will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96–354) because arbitration is intended to minimize expenses in interference cases.

The Patent and Trademark Office has determined that this rule is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The rule will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq., since no record keeping or reporting requirements within the coverage of the Act are placed upon the public.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delations, Conflicts of interest, Courts, Inventions and patents, Lawyers.

For the reasons set out in the preamble and under the authority given to the Commissioner of Patents and Trademarks by 35 U.S:C. 6 and 135, Part 1 of Title 37 CFR is proposed to be amended as follows:

PART 1–RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6 unless otherwise noted.

2. New section 1.690 is proposed to be added to read as follows:

§1.690 Arbitration of Interferences.

(a) Parties to a patent interference may determine the interference or any aspect thereof by arbitration. Such arbitration shall be governed by the provisions of Title 9, United States Code. The parties must notify the Board in writing of their intention to arbitrate. An agreement to arbitrate must be in writing, specify the issues to be arbitrated, the name of the arbitrator or a date not more than 30 days after the execution of the agreement for the selection of the arbitrator, and provide that the arbitrator's award shall be binding on the parties and that judgement thereon can be entered by the Board. A copy of the agreement must be filed within twenty (20) days after its execution. The parties shall be solely responsible for the selection of the arbitrator and the rules for conducting proceedings before the arbitrator. Issues not disposed of by arbitration will be resolved in accordance with the procedures established in 37 CFR, Subpart E of Part 1, as determined by the examiner-in-chief.

(b) An interference or any aspect thereof shall be arbitrated within such time as may be authorized on a case-by-case basis by an examiner-in-chief.

(c) An arbitration award will be given no consideration unless it is binding on the parties, is in writing and states in a clear and definite manner (1) the issue or issues arbitrated and (2) the disposition of each issue. The award may also include a statement of the grounds and reasoning in support thereof. Unless otherwise ordered by an examiner-in-chief, the parties shall give notice to the Board of an arbitration award by filing within twenty (20) days from the date of the award a copy of the award signed by the arbitrator or arbitrators. When an award is timely filed, the award shall, as to the parties to the arbitration, be dispositive of the issue or issues to which it relates.

(d) An arbitration award shall not preclude the Office from determining patentability of any invention involved in the interference.

DONALD J. QUIGG,
Apr. 7, 1986
Assistant Secretary and
Commissioner of Patents
and Trademarks.

[FR Doc. 86-20629 Filed 9-9-86; 8:45 am]

BILLING CODE 3510-16-M

Office of Patents and Trademarks
Revision of the Scope of the Secrecy Order for Defense Agency Use

The Patent and Trademark Office (PTO) is revising the scope and format of the Secrecy Orders issued under the Invention Secrecy Act of 1951, 35 U.S.C. 181 et seq., 37 CFR Part 5. The present forms of Secrecy Orders are very restrictively worded to control disclosure or use of an invention under Secrecy Order. The PTO previously would only authorize disclosure or use of a Secrecy Order invention by the grant of a special permit. Permits authorize limited disclosure and permissible use of the invention depending upon the nature of the technical data and national security controls. To receive a permit, a patent applicant had to petition the Commissioner, or the defense agency sponsoring the Secrecy Order would issue or could have sua sponte issued a permit with the Order.

The revised Secrecy Orders will permit disclosure and use consistent with the national security controls needed on the technical data in a patent application. The features of existing permits are incorporated into the Orders which will eliminate the need, in many cases, for the applicant to separately petition for a permit to authorize various degrees of disclosure or use.

These revisions to the scope and format of a Secrecy Order are intended to place essentially the same national security controls on the technical data in patent applications as those on other types of technical data. With respect to publication or disclosure of information which would, in the opinion of the sponsoring Agency, be detrimental to the national security, the revised Secrecy Orders will be consistent with existing national security and export control procedures. The revised Secrecy Orders will also clarify the procedures for handling and custody of applications subject to a Secrecy Order.

The three new Secrecy Order formats to be used by the defense agencies of the Department of Defense are as follows:

(1) Secrecy Order and Permit for Foreign Filing in Certain Countries

This Secrecy Order will be used for those patent applications that contain technical data whose export is controlled by the guidelines contained in DOD Directive 5230.25, dated Nov. 6, 1984, (codified as 32 CFR Part 250) which relates to export control under 10 U.S.C. 140(c) and the Militarily Critical Technologies List (MCTL). See 50 U.S.C. App. 2404(d).

This Secrecy Order is intended to permit widest utilization of the technical data while still controlling any publication or disclosure which would result in an unlawful exportation. This type of Secrecy Order sets forth the applicable export controls for technical data in either the Commodity Control List (CCL) 15 CFR Parts 379, 399.1 or the Munitions List of the International Traffic in Arms Regulation (ITAR), 22 CFR Part 121.

The countries where corresponding patent applications may be filed will be identified in the Order. The Order specially authorizes use of the invention for legitimate business purposes. The definition of this term in the Order is identical to that found in DOD Directive 5230.25, 32 CFR Part 250. The level of security control requires that the subject matter must be safeguarded under conditions that provide adequate protection and prevent access by unauthorized persons. Additional modifications or permits to the Secrecy Order under 37 CFR 5.1 et seq. will only be needed where the level of disclosure is beyond that specified in the Order.

Following is a sample copy of this type of Secrecy Order.

Serial No.:
Filed:
Applicant:
Title:
Sponsoring Agency & Address:

ECCN[1] Reference

Goods Accompanied by Sophisticated Know-How
Keystone Equipment or Materials

ITAR[2] Reference

Goods Accompanied by Sophisticated Know-How

Secrecy Order and Permit for Foreign Filing in Certain Countries

(Title 35, United States Code, Sections 181–188 (1952))

NOTICE: To the applicant(s) above named; his, her, or their heirs; and any and all of the assignees, licensees, attorneys and agents, hereinafter designated principals:

You are hereby notified that the above-identified patent application has been found to contain subject matter which discloses critical technology with military or space application. The unauthorized disclosure of such subject matter would be detrimental to the national security, and you are ordered to keep the subject matter secret (as required by 35 U.S.C. 181) and you are further ordered NOT TO PUBLISH OR DISCLOSE the subject matter to any person except as specifically authorized herein.

Any other patent application already filed or hereafter filed in the U.S. or any foreign country which contains any significant part of the subject matter of the above-identified application falls within the scope of this Order. If such other patent application is not under Secrecy Order imposed by the U.S. Patent and Trademark Office, it and the common subject matter need to be brought to the attention of the Director, Group 220, Attn: Licensing and Review, U.S. Patent and Trademark Office, Washington, D.C. 20231 as soon as possible.

Publication or disclosure of the subject matter of the above-identified patent application, except as authorized herein or subsequently by the Commissioner of Patents and Trademarks, may subject the person publishing or disclosing the subject matter to the penalties of 35 U.S.C. 182, 185 and 186 (1952).

The principals may disclose, for legitimate business purposes,[3] the subject matter of the above-identified application to a U.S. citizen or to a person who is both admitted lawfully into the United States for permanent residence and is located in the United States provided the U.S. citizen or person is furnished with a copy of this Secrecy Order and is informed that this Secrecy Order is applicable to the subject matter disclosed.

Legitimate business purposes include both selling or producing products for the commercial domestic marketplace or for the commercial foreign marketplace, providing that any required expert license is obtained. Legitimate business purposes also include selling or otherwise disclosing technical data to foreign contractors or governments overseas after receiving the required export license or approval by the U.S. Government.

The principals shall notify the Commissioner of Patents and Trademarks if a validated license is obtained from the Office of Export Administration or a license is obtained from the Director, Office of Munitions Control under regulations governing the export of technical data (15 CFR 379 of the Export Administration Regulations or 22 CFR 125 of the International Traffic in Arms Regulations).

The subject matter of the above-identified application has been determined not to be encompassed by E.O. 10865, entitled "Safeguarding of Classified Information Within Industry" or E.O. 12356, entitled "National Security Information" and thus is not subject to the "Industrial Security Manual for Safeguarding Classified Information." However, since the disclosure of the subject matter would be detrimental to the national security, the subject matter must be safeguarded under conditions that will provide adequate protection and prevent access by unauthorized persons. When copies of the subject matter are no longer needed, they should be destroyed by any method that will prevent disclosure of the contents or reconstruction of the document.

The principals are permitted, subject to the conditions stated hereinafter, to file and prosecute a corresponding application for patent in each of the following countries: Australia, Belgium, Canada, Denmark, France, Federal Republic of Germany, Greece, Italy, Luxembourg, Netherlands, Norway, Portugal, Sweden, Turkey and the United Kingdom. The papers for each foreign application and its prosecution shall be transmitted to the sponsoring agency, identified herein, for forwarding through diplomatic channels for filing in the foreign country either directly by the principals or through the principals' foreign patent attorney or agent if authorized by the foreign government. Correspondence exclusively relating to payments of taxes and fees need not be sent provided that such correspondence contains no information pertaining to the subject matter of the above-identified application.

International reciprocal agreements providing for the filing of patent applications under a Secrecy Order in the above-identified countries require the principals to furnish to the sponsoring agency identified herein (in addition to the papers to be filed in the foreign patent office) a copy of the specification (including any drawings annexed thereto, any resume and the claims included in the patent application) filed in the patent office of the foreign country. This copy will be furnished to the appropriate defense agency of the foreign government *for information only* and without prejudice to any rights of the principals. The filing date and serial number of the patent application should also be furnished to the sponsoring agency.

The principals shall request the foreign patent office to place in secrecy the foreign patent applications corresponding to the above-identified application and shall furnish a copy of this Secrecy Order and permit with the first papers to be filed in the foreign patent office.

The foreign government may require a waiver in writing of any claim to compensation for loss or damage due solely to the imposition of secrecy on the invention. Belgium, France, the Federal Republic of Germany, the Netherlands, Turkey and the United Kingdom normally require such a waiver in writing.

This Order should not be construed in any way to mean that the Government has adopted or contemplates adoption of the invention disclosed in this application and it is not any indication of the value of such invention.

Director, Special Laws Administration.

(2) Secrecy Order and Permit for Disclosing Classified Information

This Secrecy Order will be used for those patent applications which contain technical data that is either classified under Executive Order 12356, National Security Information, 47 FR 14874, Aug. 6, 1982, or properly classifiable under a security guideline where the patent application owner has a current DOD Security Agreement, DOD form 441. This Agreement requires the protection of classified technical data as prescribed in the Industrial Security Manual (ISM), DOD 5220.22–M.

The intent of this Secrecy Order is to treat classified technical data in a patent application in the same manner as any other classified material under the Industrial Security Manual (ISM). Accordingly, this Secrecy Order will include a notification of the classification level of the technical data in the application, and provided a level of protection at that classification level. The Order will apply to owners of patent applications who have a current DOD Security agreement (DD Form 441) under the ISM. Additional modifications or permits to the Secrecy Order under 37 CFR 5.1 et seq. will only be needed where the level of disclosure is beyond that specified in the order.

The following is a copy of this second type of Secrecy Order:

Serial No:
Filed:
Applicant:
Title:
To be protected at Classification Level of:
  Top Secret, Secret, Confidential, or Special Instructions
Sponsoring Agency & Address:

Secrecy Order and Permit for Disclosing Classified Information

(Title 35, United States Code, sections 181–188 (1952))

NOTICE: To the applicant(s) above named, his, her, or their heirs; and any and all of the assignees, licensees, attorneys and agents, hereinafter designated principals:

Your are hereby notified that the above-identified patent application has been found to contain subject matter which discloses classifiable information. The unauthorized disclosure of such matter would be detrimental to the national security, and you are ordered to keep the subject matter secret (as required by 35 U.S.C. 181) and you are further ordered NOT TO PUBLISH OR DISCLOSE the subject matter to any person except as specifically authorized herein.

Any other patent application already filed or hereafter filed in the U.S. or any foreign country which contains any significant part of the subject matter of the above-identified patent application falls within the scope of this Order. If such other patent application is not under a Secrecy Order imposed by the U.S. Patent and Trademark Office, it and the common subject matter need to be brought to the attention of the Director, Group 220, Attn: Licensing and Review, U.S. Patent and Trademark Office, Washington, D.C. 20231 as soon as possible.

Publication or disclosure of the subject matter of the above-identified patent application, except as authorized herein or subsequently by the Commissioner of Patent and Trademarks, may subject the person publishing or disclosing the subject matter to the penalties of 35 U.S.C. 182, and 186 (1951).

The subject matter of the above-identified application has been determined to be encompassed by E.O. 19865, entitled "Safeguarding of Classified Information Within Industry" or E.O. 12356, entitled "National Security Information" and thus is subject to the "Industrial Security Manual for Safeguarding Classified Information."

The principals shall protect the subject matter as required by the Industrial Security Manual for Safeguarding Classified Information and may disclose the subject matter of the above-identified application to other persons having the requisite clearance on a "need-to-know basis" *provided* the person to whom the subject matter is disclosed is furnished with a copy of this Secrecy Order and is informed that this Secrecy Order is applicable to the subject matter disclosed. The declassification, in whole or in part, of the subject matter of the above-identified application does not modify this Secrecy Order. The requirements of this Secrecy Order remain in effect until the Secrecy Order is rescinded or modified by the Commissioner of Patent and Trademarks. The fact that the subject matter as a whole is declassified should be brought to the attention of the sponsoring agency.

This permission to disclose does not authorize the disclosure of the subject matter of the above-identified application through (1) the filing of any foreign application without specific permission of the Patent and Trademark Office, or (2) the export of any item or data without any export license which may be required.

This order should not be construed in any way to mean that the Government has adopted or contemplates adoption of the invention disclosed in this application and it is not any indication of the value of such invention.

Director, Special Laws Administration.

(3) Secrecy Order

This Secrecy Order will be used for those patent applications that contain properly classifiable technical data under a security guideline where the patent application owner does not have a DOD Security Agreement under the ISM.

This Secrecy Order is substantially the same as the Secrecy Order in use up to now, and will be used where the other types of Orders do not apply. This Order may be issued by direction of agencies other than the Department of Defense. Unless issued with the initial Order, modifications to the Secrecy Order and/or permits under 37 CFR 5.1 et seq. will be needed for additional disclosure.

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[1] Export Control commodity Number (ECCN) on the Commodity Control List (Supplement No. 1 to 15 CFR 399.1).

[2] International Traffic in Arms Regulation (ITAR), 22 CFR 120–130.

[3] The term legitimate business purposes is to be interpreted consistent with DOD Directive 5230.25 entitled "Withholding of Unclassified Technical Data From Public Disclosure," issued by the Secretary of Defense on Nov. 6, 1984, 32 CFR Part 250, 49FR 484040 (Dec. 10, 1984).

The following is a copy of this third type of Secrecy Order:

Serial No:
Filed:
Application:
Title:
Sponsoring Agency & Address:

Secrecy Order

(Title 35, United States Code, sections 181–188 (1952))

NOTICE: To the applicant(s) above named; his, her or their heirs; and any and all of the assignees, licensees, attorneys and agents, hereinafter designated principals:

You are hereby notified that the above-identified patent application has been found to contain subject matter the unauthorized disclosure of which would be detrimental to the national security, and you areordered to keep the subject matter secret (as required by 35 U.S.C. 181) and you are further ordered NOT TO PUBLISH OR DISCLOSE the subject matter to any person except as specifically authorized by the Commissioner of Patents and Trademarks.

Any other patent application already filed or hereafter filed in the U.S. or any foreign country which contains any significant part of the subject matter of the above-identified patent application falls within the scope of this Order. If such other patent application is not under a Secrecy Order imposed by the U.S. Patent and Trademark office, it and the common subject matter need to be brought to the attention of the Director, Group 220, Attn: Licensing and Review, U.S. Patent and Trademark Office, Washington, D.C. 20231 as soon as possible.

Publication or disclosure of the subject matter of the above-identified patent application, except as authorized herein or subsequently by the Commissioner of Patents and Trademarks, may subject the person publishing or disclosing the subject matter to the penalties of 35 U.S.C. 182, 185 and 186 (1952).

Since the disclosure of the subject matter of the above-identified application would be detrimental to the national security, the subject matter must be safeguarded under conditions that will provide adequate protection and prevent access by unauthorized persons. When copies of the subject matter are no longer needed, they should be destroyed by any method that will prevent disclosure of the contents or reconstruction of the document.

This order should not be construed in any way to mean that the Government has adopted or contemplates adoption of the invention disclosed in this application and it is not any indication of the value of such invention.

Director, Special Laws Administration.

Each Secrecy Order forbids the publication or disclosure of the invention except as specially authorized. By revising these Secrecy Orders to conform with existing export and classification authority, the burden on patent applicants to seek additional permits for disclosure and/or foreign filing under 37 CFR Part 5 will be reduced. The new Secrecy Orders reflect the level of secrecy required by law and regulation for various technologies and will place National Security and export controls on the patent application in harmony with other applicable export and classification controls. Also, this change will reduce the risk of disclosure of the subject matter of the invention by providing greater guidance on the safeguarding of the subject matter invention.

Information regarding the new Secrecy Orders may be obtained by calling Mr. Kenneth L. Cage, Director, Special Laws Administration Group, at (703) 557-2877 or by mail directed to Mr. Kenneth L. Cage, Director, Special Laws Administration, Group 220, Washington, D.C. 20231.

Sept. 9, 1986.

DONALD W. PETERSON,
Deputy Commissioner of Patents and Trademarks.

[FR Doc. 86-21023 Filed 9-16-86; 8:45 am]

BILLING CODE 3510-16-M

PATENT NOTICES

Certificates of Correction for the Week of Oct. 21, 1986

PP. 5,762
PP. 5,763
PP. 5,766
Re. 32,137
D. 278,615
D. 281,777
4,091,164
4,275,957
4,377,504
4,424,820
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4,601,172
4,601,364
4,601,857
4,601,934
4,604,070
4,604,316
4,604,408

Disclaimers

4,229,791.—*John V. Levy,* Palo Alto, Calif.; *David Rodgers,* Acton; *Robert E. Stewart,* Stow; *David Potter,* Pepperell and *Richard J. Casabona,* Stow, all of Mass. DISTRIBUTED ARBITRATION CIRCUITRY FOR DATA PROCESSING SYSTEM. Patent dated Oct. 21, 1980. Disclaimer filed July 24, 1986, by the assignee, *Digital Equipment Corp.*

Hereby enters this disclaimer to claims 1-5, 8-12, 14 and 15 of said patent.

4,295,497.—*Wilbur E. Tolliver,* Holland, Mich. VARIEGATED STIRRUP MAT. Patent dated Oct. 20, 1981. Disclaimer filed May 9, 1986, by the *inventor.*

Hereby enters this disclaimer to claims 1, 3, 5, 9, 12 and 13 of said patent.

4,330,296.—*Chandra P. Jain,* Placentia, and *Frank R. Shu,* Anaheim, Calif. ALBUMIN REAGENT AND ASSAY. Patent dated May 18, 1982. Disclaimer filed Aug. 21, 1986, by the assignee, *Beckman Instruments, Inc.*

The term of this patent subsequent to June 26, 1986, has been disclaimed.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

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	Miami-Dade Public Library	(305) 375-2665
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Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
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*Collection organized by subject matter

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF September 13, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	5-21-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-24-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-01-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-08-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	10-09-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	4-11-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	4-25-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	11-09-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	7-17-84
DESIGN, GROUP 290—K. L. CAGE, Director	4-02-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	2-19-85
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	12-24-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	5-21-84
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	2-25-85
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	3-03-86

Expiration of patents: The patents within the range of numbers indicated below expire during September 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,464,063 to 3,470,563, inclusive
Plant Patents	Numbers 2,918 to 2,926 inclusive

REISSUES

OCTOBER 21, 1986

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

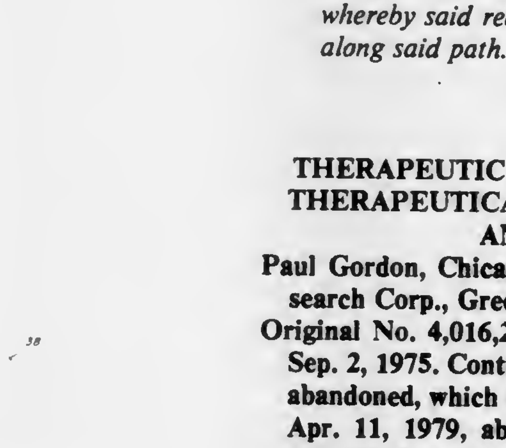
Re. 32,266
LAWN EDGER

Lloyd H. Tuggle, Shreveport; Ronald C. Loyd, Keithville, and Lee R. Walker, Shreveport, all of La., assignors to Emerson Electric Co., St. Louis, Mo.

Original No. 4,364,435, dated Dec. 21, 1982, Ser. No. 218,560, Dec. 22, 1980. Continuation-in-part of Ser. No. 51,950, Jun. 25, 1979, Pat. No. 4,286,675. Application for reissue Dec. 21, 1984, Ser. No. 684,666

Int. Cl. A01G *3/06;* **A01B** *45/04*

U.S. Cl. 172—15 **26 Claims**



22. A portable power operated implement comprising:

- *a tubular elongated support;*
- *a power unit including a prime mover mounted on one end of said support;*
- *a cutter head including a drive mechanism disposed at the opposite end of said support and drivably connected to a substantially vertically disposed rotary cutting blade;*
- *drive shaft means extending within said support for drivingly interconnecting said power unit and said drive mechanism; and*
- *adjustable surface engaging roller means mounted on said implement in the vicinity of said opposite support end at a location removed from the rotational path of said blade, said roller means being adapted by a surface engagement to partially support said implement to control the cutting depth of said blade.*

Re. 32,267
PROCESS FOR DRILLING UNDERGROUND ARCUATE PATHS AND INSTALLING PRODUCTION CASINGS, CONDUITS, OR FLOW PIPES THEREIN

Martin D. Cherrington, Fair Oaks, Calif., assignor to Reading & Bates Construction Co., Tulsa, Okla.

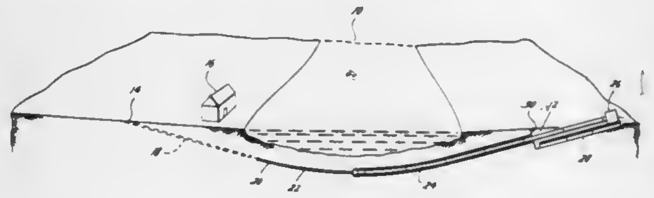
Original No. 4,319,648, dated Mar. 16, 1982, Ser. No. 77,960, Sep. 24, 1979. Application for reissue Apr. 9, 1984, Ser. No. 598,189

Int. Cl.⁴ E21B *7/06, 10/26*

U.S. Cl. 175—53 **30 Claims**

75. A method for placing a casing along an underground inverted arcuate path comprising

- *placing the casing on rollers located above and behind the point where said casing enters said path;*
- *placing a pipe having two ends along an underground inverted arcuate path, until said pipe completely occupies said path; thereafter attaching reaming apparatus to one end of said pipe;*
- *attaching one end of said casing to said reaming apparatus in following relationship to said reaming apparatus; and*



- *drawing said pipe along said path without rotating said casing, whereby said reaming apparatus and said casing are drawn along said path.*

Re. 32,268
THERAPEUTIC COMPOSITION AND METHOD OF THERAPEUTICALLY TREATING WARM BLOODED ANIMALS THEREWITH

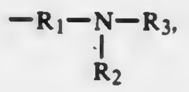
Paul Gordon, Chicago, Ill., assignor to Strategic Medical Research Corp., Greenwich, Conn.

Original No. 4,016,261, dated Apr. 5, 1977, Ser. No. 609,723, Sep. 2, 1975. Continuation of Ser. No. 224,438, Jan. 12, 1981, abandoned, which is a continuation-in-part of Ser. No. 29,040, Apr. 11, 1979, abandoned, which is a division of Ser. No. 337,134, Mar. 1, 1973, Pat. No. 3,939,145. Application for reissue Mar. 18, 1983, Ser. No. 474,734

Int. Cl.⁴ A61K *31/70*

U.S. Cl. 514—25 **43 Claims**

1. A [novel] therapeutic composition comprising a pharmaceutically acceptable carrier containing a therapeutically effective amount *for treating a warm blooded animal* of at least one [substance] *compound* selected from the group consisting of ethereally monosubstituted monosaccharides having the formula S-O-Y, and therapeutically effective and pharmaceutically acceptable organic acid and [inoragnic] *inorganic* acid salts thereof, wherein S is the residue of a [monosaccharide selected from the group consisting of pentoses, hexoses and heptoses] *hexose* and Y is selected from the group consisting of [cyclic monovalent nitrogen containing organic radicals] *piperidyl and pyrrolidyl radicals* and monovalent organic radicals having the general formula



$$-R_1-\underset{\displaystyle R_2}{\underset{|}{N}}-R_3,$$

wherein R_1 is a divalent organic radical having a [linear] carbon chain length of about [1-7] *1-4* carbon atoms and R_2 and R_3 are selected from the group consisting of [—H, —OH, —SH, halogen] *hydrogen* and monovalent organic radicals having a [linear] carbon chain length of about [1-7] *1-4* carbon atoms.

16. A [novel] therapeutic composition in accordance with claim **14** wherein Y is selected from the group consisting of
(n-propylamino),
(N′,N′-dimethylamino-n-propyl),
(N′,N′-dimethylaminoisopropyl),
(N-methyl piperidyl),
(N′,N′-dimethylaminoethyl),
(N′,N′-diethylaminoethyl), and
(2′,N′,N′-trimethylamino-n-propyl).

PLANT PATENTS

GRANTED OCTOBER 21, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,791
ROSE PLANT/VAR. MORQUAKE
Ralph S. Moore, Visalia, Calif., assignor to Sequoia Nursery, Visalia, Calif.
Filed Nov. 5, 1984, Ser. No. 668,251
Int. Cl.⁴ A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, upright, much branched habit, substantially as illustrated and described, characterized by buds and flowers having many petals (45 or more) and uniquely striped in shades of red and yellow, and further characterized by a plant of compact well rounded shape, vigorous, with the main stems and shoots being moderately thorny, the said plant being easy to propagate from cuttings or by budding, with an abundance of small semi-glossy foliage and an abundance of flowers borne singly or several to the stem in loose clusters.

5,792
LILY PLANT NAMED ORANGE PIXIE
Edward A. McRae, Boring, Oreg., assignor to Melridge Inc., Sandy, Oreg.
Filed Oct. 9, 1984, Ser. No. 659,238
Int. Cl.⁴ A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of hybrid Asiatic lily, substantially as herein shown and described, characterized by its single stem of reddish color, its abundant deep green foliage, and the brilliant orange color of the tepals when the flower is in bloom.

5,793
CARNATION NAMED LONSIMOX
Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de la Londe, La Londe, France
Filed Nov. 8, 1984, Ser. No. 669,384
Int. Cl.⁴ A01H *5/00*
U.S. Cl. Plt.—82 **1 Claim**

1. A new spray carnation cultivar, substantially as herein shown and described, characterized by the cyclamen red color of its medium sized flowers which are produced profusely during each of the recurrent blooming seasons; and by its vigorous growth habit which is resistant to *Fusarium oxysporum.*

PATENTS

GRANTED OCT. 21, 1986

ERRATA

For CLASS	See PATENT NO.
417–065	4,617,755
374–208	4,618,274
405–150	4,618,298
558–234	4,618,461

PATENTS

GRANTED OCTOBER 21, 1986

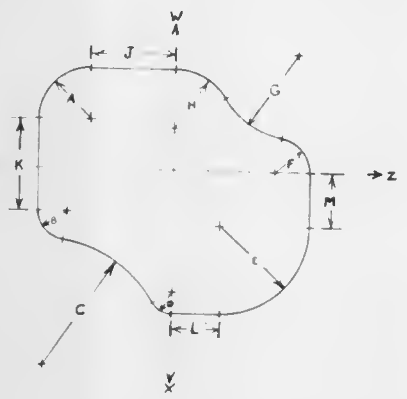
GENERAL AND MECHANICAL

4,617,684
PROTECTIVE PALM-PAD

Paul G. Green, P.O. Box 9554, Phoenix, Ariz. 85068, and Gregory C. Gayne, 4929 W. Hatcher Rd., Glendale, Ariz. 85302

Filed Sep. 16, 1981, Ser. No. 302,508
Int. Cl.⁴ A41D *13/00*

U.S. Cl. 2—20 **6 Claims**



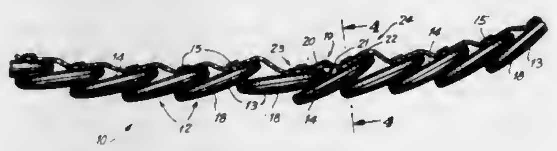
1. A protective palm pad for the purpose already described comprising: an oddly configured pad of two flexible components, having a leather facing and a backing of shock absorbent material, and two loops for securing the protective palm pad to the user's hand, and said leather facing exposed and worn in contact with the inside of the user's baseball mitt or glove, and said shock absorbent material backing pad worn in contact with the user's palm, and said two loops, one worn at the base of the user's forefinger and the larger one worn extended about the back of the user's hand, said loops positioning and securing the protective palm pad to the user's hand.

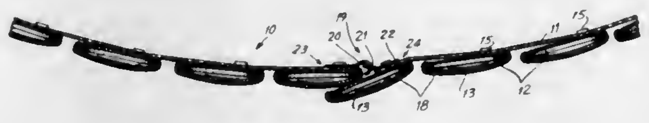
4,617,685
ORNAMENTAL BELT

Stanley Grandis, Forest Hills, N.Y., assignor to S. G. D' or Industries, Inc., Long Island City, N.Y.

Filed Apr. 8, 1985, Ser. No. 721,337
Int. Cl.⁴ A41F *9/02*

U.S. Cl. 2—338 **4 Claims**





1. An ornamental belt to be worn about the waist, comprising an elongated elasticized fabric band that is expandable from an unexpanded position to a fully explanded position, in order to accommodate different waist sizes; a plurality of disc-like ornaments disposed about said fabric band in seriatim, each ornament having a curved outer surface and a substantially flat inner surface, said ornaments each overlapping, and being overlapped by adjacent ornaments when said band is in said unexpanded position, said ornaments lying flat upon said band in a spaced-apart relationship with respect to each other when said band is in said fully expanded position;

a pair of tabs disposed on said flat inner surface of each ornament, each pair of tabs hooking over opposite edges of said elasticized fabric band and providing that each ornament be contiguously affixed to said band in a flat spaced-apart relationship with respect to each other in said fully expanded position; and

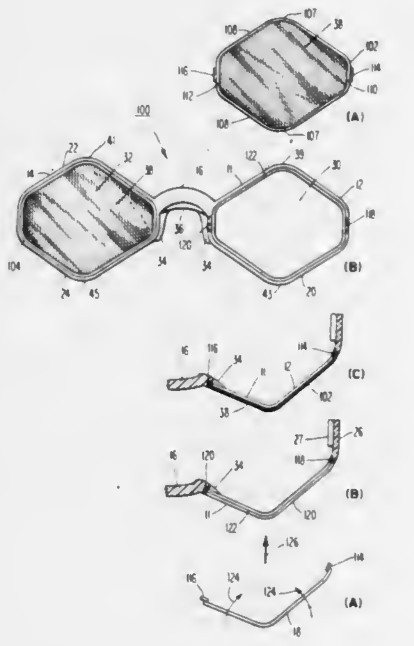
a buckle device for buckling said band about said waist, comprising male and female clasp elements, said male clasp element affixed to one distal end of said band and said female clasp element affixed to an opposite distal end of said band, said male and female clasp elements engaging with each other to buckle said band about said waist.

4,617,686
PROTECTIVE EYEWEAR

Arthur G. Nahas, 593 Shore Rd., Somers Point, N.J. 08244

Filed Mar. 27, 1984, Ser. No. 593,732
Int. Cl.⁴ A61F *9/02*

U.S. Cl. 2—433 **31 Claims**



1. Protective eyewear adapted for fitting onto a facial region of a wearer's head, said eyewear comprising:

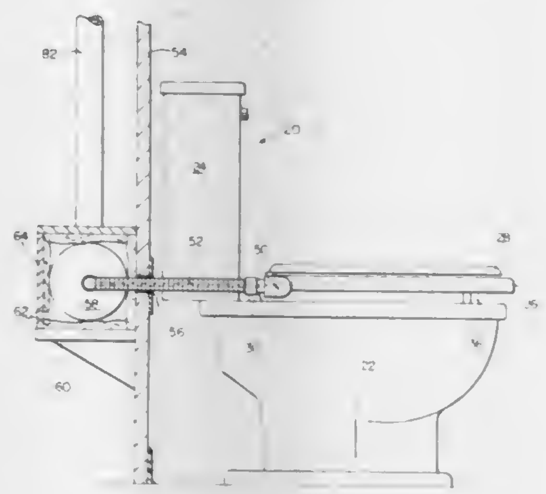
(a) frame means including first and second frame portions having a nose piece connected therebetween, each frame portion having an upper segment and a lower segment defining a viewing aperture therebetween, said upper segment being upwardly inclined from horizontal by a predetermined amount along straight lines that extend from the side of the frame and from the nose piece to form an apex portion which outwardly extends from said facial region, said lines extending away from the wearer's facial region as they approach the apex portion, and said lower segment being downwardly inclined from horizontal by a predetermined amount to form an apex portion which outwardly extends from said facial region; and

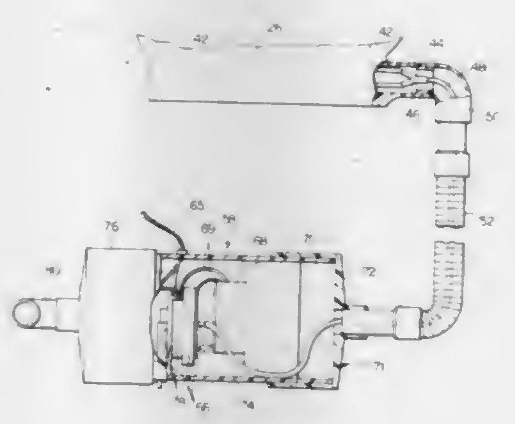
(b) at least two substantially straight filament members vertically extending under tension cross each said viewing aperture, said filament members having a predetermined diameter and a predetermined spacing therebetween.

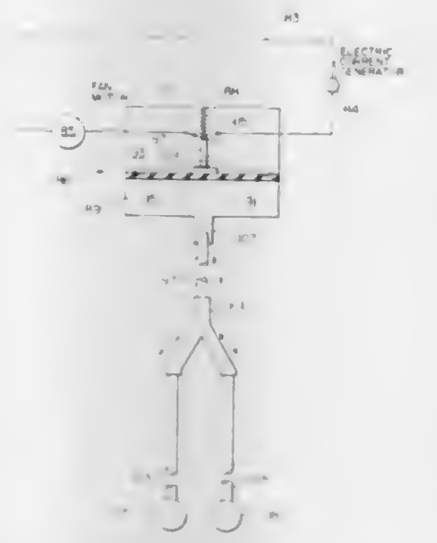
4,617,687

VENTILATED TOILET

Julian A. Wadsworth, R.R. 2, Box 84, Laurel Hill, Fla. 32567
Filed Sep. 24, 1984, Ser. No. 653,596
Int. Cl.⁴ E03D *9/04*
U.S. Cl. 4—213 **30 Claims**







1. A ventilated toilet comprising:

(a) a toilet comprising a toilet bowl and a toilet seat, the toilet seat being mounted on the toilet above the toilet bowl;

(b) an electric exhaust fan assembly comprising an exhaust fan, an electric motor for driving the exhaust fan, and electric lead means for connecting the exhaust fan assembly to a source of electricity;

(c) a source of electricity for operating the said electric exhaust fan assembly, the said electric lead means being connected to said source of electricty to thereby provide an electric circuit and power for operating the said electric exhaust fan assembly including the said electric motor and thereby driving the exhaust fan;

(d) switching means for activating and deactivating said electric exhaust fan assembly comprising a switch positioned in said electric circuit which is normally biased to the open circuit position by biasing means which applies force thereto;

(e) means for operating said switching means whereby the said switch is moved from the normally open circuit position to the closed circuit position and thereafter allowed to return to the normally open circuit position, said operating means comprising first conduit means for carrying fluid under pressure, fluid pressurizing means for intermittently forcing fluid into said first conduit means, and means for applying force against said switch in a direction to overcome the force applied by said biasing means in response to fluid being forced under pressure into said first conduit means by said fulid pressurizing means whereby sufficient force is exerted against said switch to overcome the bias to the open circuit position and to thereby move the said switch to the closed circuit position and operate the said electric exhaust fan assembly, said means for applying pressure against the switch being rendered ineffective when the fluid pressurizing means is likewise rendered ineffective intermittently, said fluid pressurizing means including a plurality of spaced fluid pressurizing elements, said plurality of spaced fluid pressurizing elements collectively co-operating to intermittently force a variable volume of pressurized fluid into said first condiut means in response to the amount of pressure applied thereto during normal use of the toilet, said variable volume of pressurized fluid varying directly with the amount of said applied pressure and being at least sufficient to operate said switching means during normal use of the toilet, and siad plurality of fluid pressurizing elements being capable of collectively co-operating to intermittently force a substantially greater volume of pressurized fluid into said first conduit means than is normally required to operate said switching means upon the application of sufficient pressure thereto; and

(f) second conduit means for withdrawing gases from the interior of a toilet bowl and discharging the exhausted gases at a location remote therefrom, said second conduit means including a first end portion thereof in communication with the gases in the interior of the toilet bowl through which the said gases may be exhausted from the toilet bowl by the said electric exhaust fan assembly, and the said second conduit means also including a conduit portion in communication with the said electric exhaust fan assembly at a point remote from the first end portion whereby when the said switch is in the closed circuit position the electric exhaust fan assembly is activated and gases are exhausted from the toilet bowl, passed through the first end portion of the said second conduit means to the electric exhaust fan assembly and then discharges at a location remote from the toilet bowl.

4,617,688

TOILET HAVING ADJUSTABLE WATER-SPRAY NOZZLES

Dai-Ming Kuo, P. O. Box 10160, Taipei, Taiwan
Filed Sep. 25, 1985, Ser. No. 779,833
Int. Cl.⁴ A47K *3/20*
U.S. Cl. 4—420.2 **1 Claim**

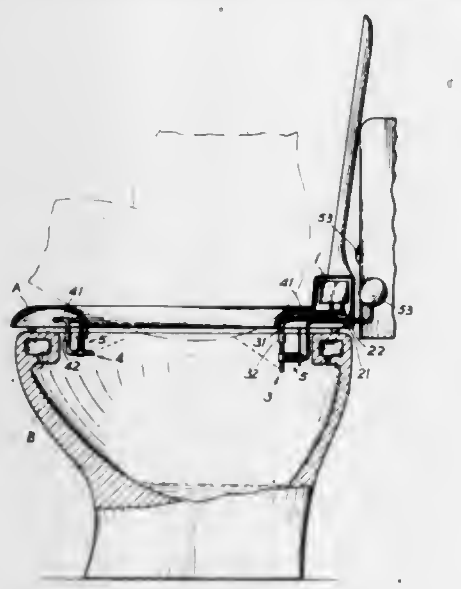
1. A toilet having a seat and adjustable water-spray nozzles comprising:

a warm water source;

two valves respectively controlling two branch water conduits directing water from said water source to a rear-side nozzle and a front side-nozzle said rear-side nozzle adapted for spraying the human anus, and having a flexible portion on said conduit and a water-spray hole with a fixed spraying angle in said conduit;

said front-side nozzle adapted for spraying the human genitals and having a flexible portion on said conduit and a water-spray hole with fixed spraying angle in said conduit;

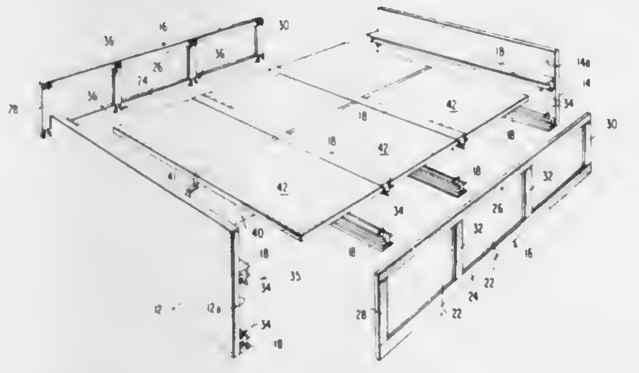
a spraying-angle adjuster including a bellows having means for connecting to any one of said nozzles, an air tube fluidically connected with said bellows and secured to said toilet seat by a bracket, and a hollow ball fluidically connected with said air tube, whereby when said ball is depressed said bellows will expand and cause movement of said nozzle about said flexible portion of said water conduit to optionally adjust the water-spraying angle of said nozzle for thoroughly cleaning either the human anus or genitals portions.



4,617,689

BED FRAME AND RELEASABLE COUPLING EMPLOYED THEREIN

Maynard A. Nelson, Bethel, Vt., and Kelly C. Gloger, Meriden, N.H., assignors to GN Alternatives, Bethel, Vt.
Filed Nov. 1, 1984, Ser. No. 667,302
Int. Cl.⁴ A47C *19/00, 19/22;* **B25G** *3/18*
U.S. Cl. 5—400 **9 Claims**



1. A knockdown bed comprising:

opposed, longitudinally separated bed end boards,

laterally opposed bed sideboards,

a plurality of extruded U-shaped channel members at a length approximate the length of said end boards,

each of said U-shaped channel members fixedly mounting at opposite ends a detachable coupling latch assembly within said U-shaped channel members,

receiver assemblies sized and configured to fit within the ends of said U-shaped channel members fixedly mounted to at least the top of said sideboards at longitudinally spaced positions at uniform height from the bottom of the sideboards and forming at least one upper row of said receiver assemblies on each sideboard with said receiver assemblies of said rows being in diametrically opposite alignment,

one of said channel members being fixed along one side thereof to the respective facing sides of each of said bed end boards, at a vertical height corresponding to the position of the receiver assemblies on the bed sideboards;

said latch assemblies at said channel members each including means for direct self-coupling to diametrically opposite receiver assemblies on opposed sideboards respectively,

said channel members including means on each side thereof, defining open slots to each side thereof such that the open slots of adjacent channel member's face each other, and

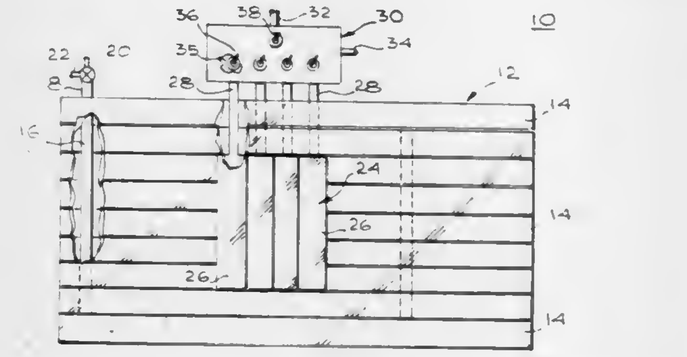
thin rectangular panels slidably inserted within facing slots of said channel members;

whereby, said thin rectangular panels and said channel members form a planar box spring and mattress support across the top of the bed longitudinally from one end bed end board to the other and laterally from one bed sideboard to the other and define a relatively rigid bed frame.

4,617,690

INFLATABLE BED PATIENT MATTRESS

Alfred H. Grebe, Richmond, Va., assignor to Whittaker Corporation, Los Angeles, Calif.
Filed Jan. 7, 1985, Ser. No. 689,268
Int. Cl.⁴ A61G *7/04;* **A47C** *27/10*
U.S. Cl. 5—453 **3 Claims**



1. An improved inflatable bed patient mattress, said mattress comprising, in combination:

(a) a hollow elongated air-inflated mattress body, at least the main portion of which is inflatable and deflatable as a single unit to a uniform pressure;

(b) a selectively air-inflatable patient support component disposed generally central of, totally surrounded by said mattress body and connected thereto, said support component being disposed at a location and being in a size to underlie those portions of a patient's body, when lying on said mattress body, which extend from about the lumbar spinal region to the upper thigh region; said patient support component including a plurality of individually air inflatable cells; and,

(c) support component inflation means individually connected to each of said cells for both manually controlling selective powered air inflation and deflation of said cells to individual pressures and for automatic cycling of powered inflation and deflation of said cells to individual pressures to facilitate patient body support and minimize development of decubitis ulcers.

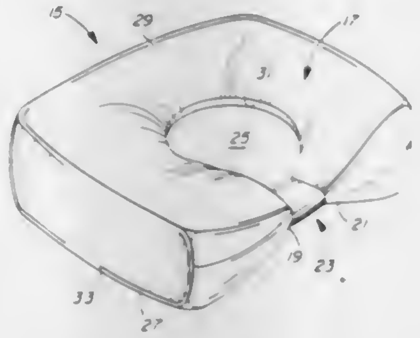
4,617,691

SUPPORT PILLOW

Martha S. Monti, and Gilbert L. Monti, both of P.O. Box 9428, Phoenix, Ariz. 85068
Continuation of Ser. No. 487,989, Apr. 25, 1983, abandoned.
This application Jun. 19, 1985, Ser. No. 746,451
Int. Cl.⁴ A47G *9/00;* **A61H** *1/02*
U.S. Cl. 5—434 **1 Claim**

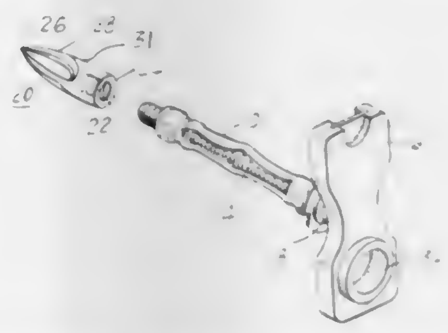
1. A pillow adapted to encircle a user's neck while resting on the user's shoulders, said pillow comprising an elongated segment with a substantially homogeneous filling forming a pillow of generally rectangular shape in top plan view, with a circular opening therein, and including an inner vertical surface having a first generally constant thickness, for fitting substantially around the user's neck and an outer peripheral vertical edge surface having a second generally constant thickness, said outer peripheral edge surface being spaced substantially laterally apart from said inner surface and said second thickness being substantially greater than said first thickness for provid-

ing a wedge shaped support pillow that provides improved lateral support around the user's neck and head; and tear fastener means located at the end portions of the elongated segment forming said pillow, said fastener means adapted to selectively adjust the fastened positions to insure user comfort and adapted to produce a tighter fit if greater head support is desired, said pillow providing increased support for the back of user's neck whenever said tear fastener means is positioned in front of the user and under his chin and said pillow providing increased support for the user's chin and head whenever said tear fastener means is positioned in the back of the user's neck.



4,617,692
TOOL FOR DRILLING AND SECURING SCREW ANCHOR TO A WALL

Michael E. Bond, Topton, and Robert S. Noll, Reading, both of Pa., assignors to Emhart Corporation, Farmington, Conn.
Filed Dec. 30, 1983, Ser. No. 567,255
Int. Cl.⁴ B26B *11/00;* F16B *13/04*
U.S. Cl. 7—158 **5 Claims**



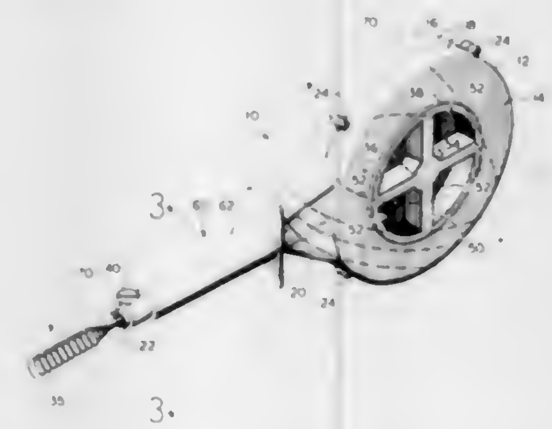
1. A tool for preparing a hole in a wall for receipt of a screw anchor that is to be secured to the wall by the same tool, said tool comprising:

a handle with a threaded stem extending therefrom, said threaded stem having a length sufficient to allow a screw anchor to be threadably mounted thereon whereby at least two threads of the threaded stem are exposed beyond the end of the thus mounted screw anchor; and

an integrally formed drill tip having a point and a tapered drilling length extending back from said point, said integrally formed drill tip furthermore having a tapped hole extending along the central axis of the drill tip, said tapped hole having threads therein which match the exposed threads on said threaded stem, said tapped hole furthermore being of sufficient depth so as to allow said drill tip to abut the end of a screw anchor threadably mounted on said threaded stem when said drill tip is threaded onto the exposed threads of said threaded stem, the abutment only being maintained when the drill tip is rotated in a drilling direction so as to drill a hole into a wall structure so as to form a hole for the screw anchor.

4,617,693
DRAIN PIPE CLEANING TOOL

Marjorie A. Meyer, 19711 NE. 21 Ct., North Miami Beach, Fla. 33179, and John D. Moore, 2685 NE. 188 St., North Miami Beach, Fla. 33180
Continuation-in-part of Ser. No. 637,805, Aug. 6, 1984, abandoned. This application Oct. 3, 1985, Ser. No. 783,510
Int. Cl.⁴ B08B *9/02*
U.S. Cl. 15—104.3 SN **18 Claims**



1. A drain cleaning assembly of the type including a coil structure extendable axially along a length of the drain being cleaned and rotatable therein, said assembly comprising:

(a) a housing comprising an at least partially hollow interior and including two spaced apart lateral faces disposed in substantially parallel relation to one another and a continuous substantially cylindrical peripheral surface connected between said lateral faces and defining a peripheral boundary thereof,

(b) an elongated barrel structure mounted on said housing and secured to and extending outwardly from said peripheral surface in a direction substantially parallel to said lateral faces,

(c) a drum mounted on said housing interior and being rotatable about its own central axis and including a support surface formed about an outer periphery of said drum,

(d) said drum having at least one end portion thereof being physically accessible on one of said lateral faces, said end portion rotatable with a remaining portion of said drum, whereby rotation of said end portion causes rotation of said drum,

(e) a cleaning cable having an elongated configuration and formed of flexible material having one end secured on the interior of said housing, said cable movable between a stored position and an operable position,

(f) said stored position defined by said cable being wound on said drum about said support surface on said housing interior, and said operable position being defined by a length of said cable adjacent a free end thereof extending outwardly from a free end of said barrel structure,

(g) handle means for holding said assembly and being connected to said housing and structured to allow relative movement between said housing and said handle means,

(h) said cable rotatable along its length upon rotation of said housing relative to said handle means and movable between said stored and said operable positions upon rotation of said drum relative to said housing.

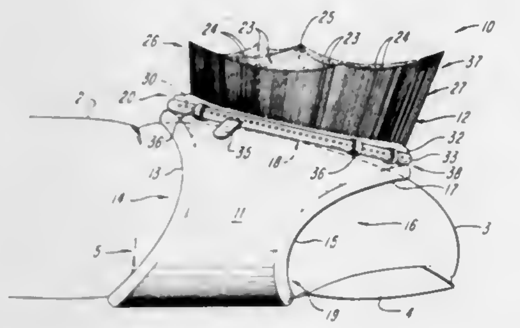
4,617,694
FINGER-MOUNTED DEVICE FOR CLEANING TEETH

Jacques Bori, Watertown, Mass., assignor to Team, Inc., Newton, Mass.
Filed Sep. 21, 1984, Ser. No. 652,844
Int. Cl.⁴ A46B *9/04*
U.S. Cl. 15—167 R **11 Claims**

1. An improved finger-mounted device for cleaning teeth of the type having holder means for engaging a single finger and

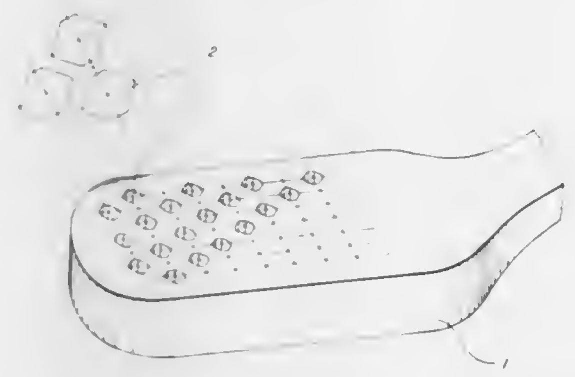
teeth cleaning means mounted on said holder means, wherein the improvement comprises:

said holder means being tubular and capable of enclosing a single finger, and said teeth cleaning means having a cleaning surface comprising a plurality of concave surfaces joined along raised inner edges and bounded by raised outer edges, each of said concave surfaces being adapted to clean a complementary shaped convex tooth surface and at least pairs of said raised outer edges meeting at raised points located at spaced intervals along the perimeter of said cleaning surface and being adapted to clean the tooth edges.



4,617,695
TOOTHBRUSH

Walter Amos, Wiesbaden, and Horst Klein, Kelkheim-Fischbach, both of Fed. Rep. of Germany, assignors to Blendax-Werke R. Schneider GmbH & Co., Mainz, Fed. Rep. of Germany
Filed Feb. 7, 1985, Ser. No. 699,341
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1984, 3404150
Int. Cl.⁴ A46B *9/04*
U.S. Cl. 15—195 **2 Claims**



1. A toothbrush having a brush handle and a brush head with a flat surface area, said brush head being provided with a plurality of openings to receive bristle bundles therein, the improvement comprising:

a plurality of openings each in the shape of a hexagon having parallel elongated sides and rounded opposing ends;

said plurality of openings further being of a substantially uniform depth for receiving said bristle bundles.

4,617,696
SCRAPER AND SCRUBBER FOR FRUITS, VEGETABLES AND THE HUMAN BODY

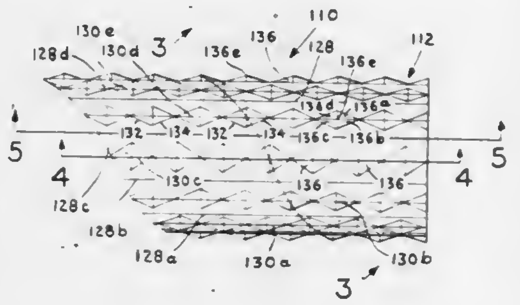
Frank Meta, P.O. Box 116, Irvington, N.J. 07111
Continuation-in-part of Ser. No. 723,299, Apr. 15, 1985, which is a continuation-in-part of Ser. No. 519,104, Aug. 1, 1983, abandoned. This application Jul. 19, 1985, Ser. No. 757,042
Int. Cl.⁴ A61H *37/00;* A23N *7/00*
U.S. Cl. 15—236 R **8 Claims**

1. A scraper and scrubber, comprising:

an elongated cylindrical body having an outer surface;

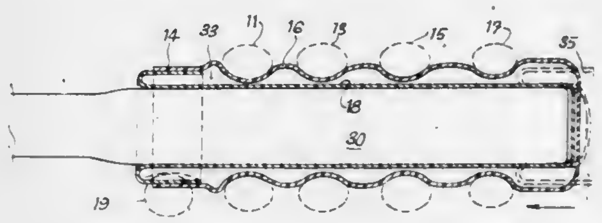
a plurality of parallel, circumferentially spaced channels having a first depth extending in the longitudinal direction on said outer surface to form a plurality of parallel, circumferentially spaced ridges extending in the longitudinal direction on said outer surface between adjacent channels;

a plurality of substantially V-shaped helical grooves having a second, smaller depth extending at an acute angle to said channels and intersecting said ridges to form sharp, substantially pyramid shaped structures on said ridges, said substantially pyramid shaped structures situated on each ridge being offset with respect to said substantially pyramid shaped structures situated on adjacent ridges.



4,617,697
MOLDABLE HANDLE ADAPTER

Constant V. David, 4952 Field St., San Diego, Calif. 92110
Filed Aug. 1, 1985, Ser. No. 761,352
Int. Cl.⁴ A63B *49/00, 53/14;* B25G *1/10*
U.S. Cl. 16—110 R **8 Claims**



1. In combination,

a handle; and

an adapter surrounding a portion of the handle and configured to fit a user's grip, including a pair of elongate pouches each having a flexible deformable wall defining a closed end and an open end, means for joining the open ends of the pouches in overlapping relationship, one of the pouches being folded inside the other one of the pouches, the inside pouch being in intimate contact with the handle portion and there being defined an internal volume between the walls of the pouches which surrounds the handle portion, the volume being filled with a material which was initially moldable by gripping the outside pouch and which thereafter hardened to provide the adapter with a plurality of deformations for receiving the fingers and thumb of the user's hand.

4,617,698
SPRING-BIASED HINGE ASSEMBLY FOR SPECTACLES

Günther Drlik, Pforzheim, Fed. Rep. of Germany, assignor to Obe-Werk Ohnmacht & Baumgartner GmbH & Co. K.G., Ispringen, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 478,709, Mar. 25, 1983, abandoned. This application May 28, 1985, Ser. No. 738,495
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1982, 3213174; Dec. 10, 1982, 3245797
Int. Cl.⁴ G02C *5/16, 5/22*
U.S. Cl. 16—228 **7 Claims**

1. A hinge assembly for a pair of spectacles, comprising:

a mid-portion-side hinge element having a portion attachable to said spectacles, said hinge element having a pair of spaced-apart hinge eyes;

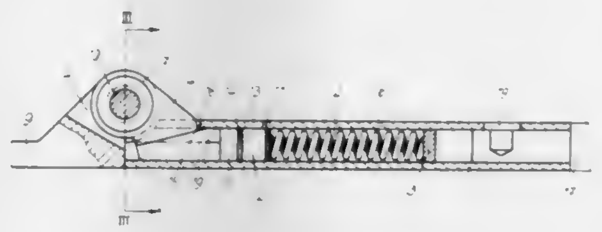
a flat tubular element having a longitudinal cavity provided with an open end;

a tongue slidably supported in said cavity, said tongue having an end extending out of said cavity and terminating in a bow-side hinge element having a hinge eye, said tongue having an internal slot extending longitudinally across a pair of wall surfaces;

means for pivotally interconnecting said bow-side and mid-portion-side hinge elements together;

cam means adjoining the open end of said flat tubular element;

cam means associated with at least one of said hinge elements;



a spring disposed in said slot for opposing the movement of said tongue out of said cavity;

a spring abutment extending transversely through said slot in said tongue and positioned in said slot;

a pin extending through said spring abutment, said bow-side hinge element and one end of said flat tubular element defining a mounting tunnel to accommodate the movement of said bow-side hinge element; and

means on said flat tubular element for immobilizing said pin in a predetermined position on said flat tubular element, whereby, when said spring is placed during assembly under compression, said spring will force the cam means on said flat tubular element against the cam means on at least one of said hinge elements.

4,617,699
HINGE STRUCTURE FOR A SUN VISOR OR THE LIKE WHICH FEATURES A SINGLE STORAGE POSITION SNAP ACTION FUNCTION

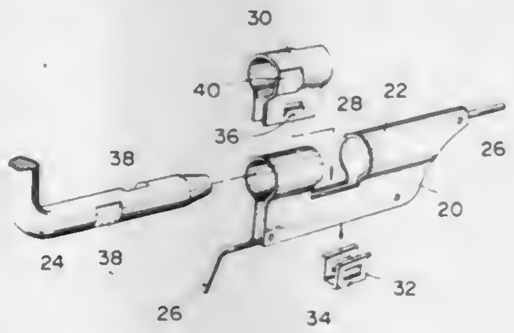
Haruo Nakamura, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama and Kasai Kogyo Co., Ltd., Tokyo, both of, Japan

Filed Jun. 15, 1982, Ser. No. 388,608

Claims priority, application Japan, Jun. 19, 1981, 56-90579[U]

Int. Cl.⁴ E05D ***11/08***

U.S. Cl. 16—262 **4 Claims**



1. A hinge, comprising:

a shaft having a generally circular cross-section;

a member rotatably supported on said shaft;

indentations defining first and second flat surfaces on said shaft formed along chords of said circular cross-section, said first and second flat surfaces being formed on said shaft at longitudinally staggered positions and on opposite sides of said shaft; and

spring means connected to said member for engaging said shaft and for resisting rotation of said member about said shaft, said spring means having resilient first and second flat portions positioned on opposite sides at staggered positions along said spring means for engaging said first and second flat surfaces, respectively, when said member assumes a predetermined angular position with respect to said shaft.

4,617,700
PROCESS AND APPARATUS FOR THE HYGIENIC EXTRACTION AND COLLECTION OF ANIMAL BLOOD FIT AND UNFIT FOR HUMAN CONSUMPTION

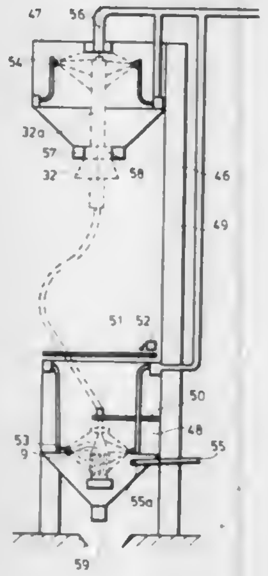
Géza Bátorfalvi, Budapest; Tibor Lendvai, Baja; Antal Rádai, Baja; Gáborné Pongrác, Baja; Miklós Szabó, and Jenö Szilárdi, both of Budapest, all of Hungary, assignors to Országos Husipari Kutatóintézet, Budapest and Bácskai Husipari Közös Vállalat, Baja, both of, Hungary

Filed Feb. 24, 1984, Ser. No. 583,506

Claims priority, application Hungary, Mar. 14, 1983, 853/83

Int. Cl.⁴ A22B ***3/00***

U.S. Cl. 17—45 **8 Claims**



1. An apparatus for the hygienic extraction and separate collection of animal blood which is fit and unfit for consumption, comprising: an intermittently rotatable turntable for moving tanks into an extracting position, first and second draining positions and a washing position; numbering means for identifying each carcass and its blood; a hollow knife with a ribbed stabbing part made of a single piece; a plurality of tanks uniformly spaced along its periphery of the turntable with each having a hose cock on a lower part for draining and couplings on an upper part for the input of blood, a vacuum and an anticoagulant; a hose connecting the knife to the coupling of a tank on the extracting position; a storage system for blood fit for consumption connectable to the hose cock on the bottom of a tank in the first draining position on the turntable; a collecting system for blood unfit for consumption connectable to the hose cock on the bottom of a tank in the second draining position; a tank-washing unit arranged above a tank in the washing position; a knife washing apparatus for washing and disinfecting the hollow knife and hose; and an animal hygienic control body for opening the hose cock of a tank of the first draining position if the numbered carcasses corresponding to the blood in the tank are healthy.

4,617,701
METHOD OF DISPENSING A DEFORMABLE AND FLOWABLE FILLING MATERIAL

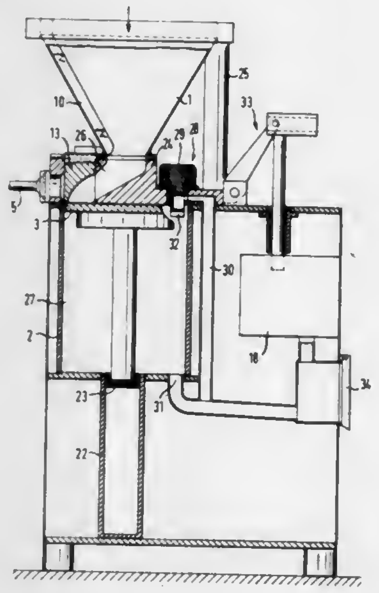
Albert Frey, Herbrechtingen, Fed. Rep. of Germany, assignor to Firma Heinrich Frey, Herbrechtingen, Fed. Rep. of Germany

Filed May 24, 1984, Ser. No. 613,909

Claims priority, application Fed. Rep. of Germany, May 26, 1983, 3319139; Feb. 23, 1984, 3406605

Int. Cl.⁴ A22C ***11/06***

U.S. Cl. 17—45 **8 Claims**



1. In a method of dispensing a deformable and flowable filling material, in particular sausage meat, wherein the filling material is first introduced into a filling funnel, and the filling material is then transferred into a filling cylinder at a reduced pressure, and the connection between the funnel and the inner chamber of the cylinder is then interrupted, and wherein the filling material is then exposed to increased pressure by reducing the size of a dispensing cylinder and is expelled in defined manner via a dispensing tube, the improvement wherein the transfer of the filling material from the filling funnel into the filling cylinder is effected by a predetermined pressure difference between the chamber of the filling funnel and the chamber of the filling cylinder and wherein prior to said transfer a predetermined reduced pressure is provided in the chamber of the filling funnel and the filling material is transferred while reduced pressure prevails in the chamber of the filling funnel during stirring thereof to move the filling material towards the center of the filling funnel during the transfer of the filling material from the filling funnel into the filling cylinder.

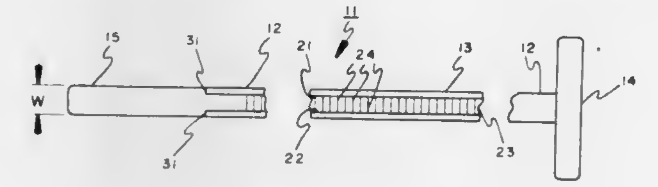
4,617,702
TIE MOUNT

Paul W. Diederich, Jr., 633 Hunters Trail, Glendora, Calif. 91740

Filed Jan. 22, 1985, Ser. No. 693,098

Int. Cl.⁴ B65D ***63/10***

U.S. Cl. 24—16 PB **3 Claims**



1. A tie mount adapted for use with a slidable, apertured disk retainer comprising in combination:

(a) an elongated, semi-rigid shaft member having a central, U-shaped cross-sectional portion;

(b) a disk-shaped head member integrally formed at one end of said elongated shaft member, said disk-shaped head member lying in a plane substantially perpendicular to the longitudinal axis of said elongated shaft member;

(c) a thin, rectangular tip portion integrally formed at the other end of said elongated shaft member, the central U-shaped cross-sectional portion of said elongated shaft member being situated between said disk-shaped head member and said thin, rectangular tip portion, the central U-shaped cross-sectional portion having upwardly extending side walls and a bottom trough;

(d) a longitudinally extending array of transvese serrated teeth integrally formed upon the bottom trough of and extending between the side walls of the central, U-shaped cross-sectional portion, the tips of said longitudinally extending array of teeth projecting upward from the bottom trough and terminating at a position approximately midway up the side walls of the central, U-shaped cross-sectional portion; and

(e) stop means situated at the junction of said thin, rectangular tip portion and the central, U-shaped cross-sectional portion of said elongated shaft member, said stop means being defined as a plane substantially perpendicular to the longitudinal axis of said elongated shaft member as formed by the end of the upwardly extending side walls of the central, U-shaped cross-sectional portion.

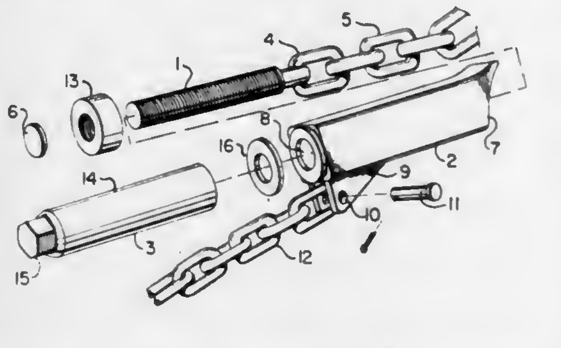
4,617,703
DEVICE FOR TIGHTENING CHAINS AND THE LIKE

Richard J. Schaeffer, 10981 Westview Pl., Delta, British Columbia, Canada (V4E 2L9)

Filed Oct. 11, 1984, Ser. No. 659,969

Int. Cl.⁴ B25G ***3/00***

U.S. Cl. 24—68 CT **7 Claims**



1. A device for tightening chains, straps, ropes or cable comprising:

(a) an elongated, threaded element adapted to be secured at one end thereof to a first end of a chain, strap, rope or cable;

(b) a hollow sleeve element open at one end and having at the opposite end an aperture adapted to allow the passage of said elongated threaded element, wherein said sleeve element is configured to prevent rotation of said chain, strap, rope or cable;

(c) means for securing said sleeve element to a second end of a chain, strap, rope or cable; and

(d) a hollow, tubular member adapted at a first end thereof to threadably receive said threaded element and bear against the exterior of said second end of said sleeve element whereby rotation of said means for threadably receiving causes said threaded element to be drawn through said opening in said sleeve element thereby tightening said chain or chains, strap or straps, rope or ropes, or, cable or cables, and wherein said tubular member further comprises means for applying a tool at a second end thereof in order to rotate said tubular member.

4,617,704
SWIVEL SNAP HOOK OF SYNTHETIC RESIN

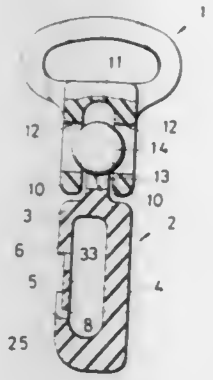
Kazumi Kasai, Namerikawa, Japan, assignor to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1985, Ser. No. 722,476

Claims priority, application Japan, Apr. 12, 1984, 59-54032[U]

Int. Cl.⁴ A44B *13/02*

U.S. Cl. 24—236 **12 Claims**



1. A swivel snap hook of synthetic resin, comprising:
(a) an eye member; and
(b) a unitary hook member pivotally connected to said eye member, said hook member having a base, a hook body extending from one side of said base, and a planar closure tongue extending freely from said one side of said base so as to normally substantially close said hook body, said closure tongue being resiliently deformable to open said hook body, said closure tongue lying in the general plane of a free end portion of said hook body and having a first end surface which, as said closure tongue is in a free form, faces a second end surface of said hook body in a non-engaging closely spaced relation.

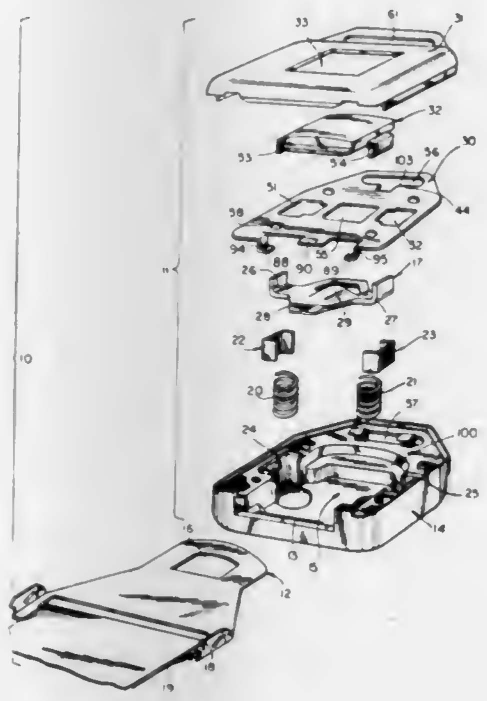
4,617,705
CHILD BELT BUCKLE

James R. Anthony, and Allan R. Lortz, both of Carmel, Ind., assignors to Indiana Mills & Manufacturing, Inc., Carmel, Ind.

Filed Aug. 5, 1985, Ser. No. 762,451

Int. Cl.⁴ A44B *11/26*

U.S. Cl. 24—642 **24 Claims**



1. A buckle comprising:
a reinforcement plate having a longitudinal axis extending through a longitudinal plane and further having legs with distal ends;
a main body having said plate mounted thereto and including stop surfaces receiving said distal ends and the load therefrom while limiting relative movement between said plate and main body, said main body includes yieldable means integral therewith for engaging said plate, said yieldable means being moveable to allow said plate to be inserted in said main body and then moveable back holding said plate therein;
a latch positioned in said main body and held captive therein by said plate, said latch moveable between a latch position and an unlatched position;
spring means contacting said latch to move said latch back and forth between said latch position and said unlatched position;
operator means operable to move said latch to said unlatched position; and
a cover mounted to said main body and cooperatively forming a mouth therewith, said plate extending across and atop said mouth adjacent said cover which encloses said latch, said spring means and said plate, said cover including securing means extending between said plate and said main body securing said cover to said main body.

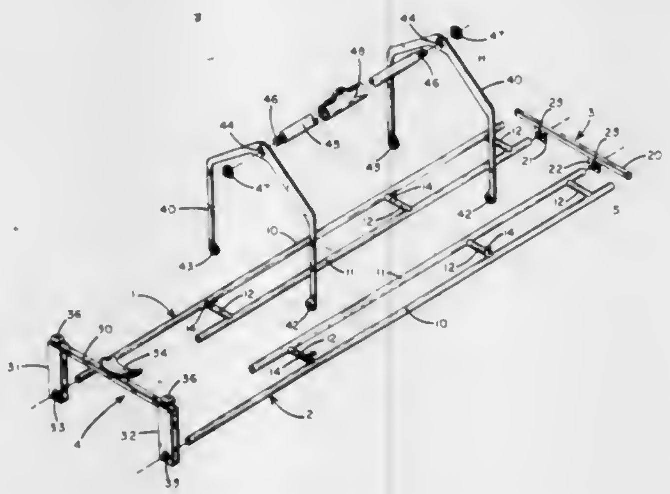
4,617,706
DEVICE FOR MANIPULATING CADAVERS

Wallace Waletzko, Box 180, Avon, Minn. 56310

Filed Jul. 29, 1985, Ser. No. 759,863

Int. Cl.⁴ A61G *1/00, 7/10, 19/00*

U.S. Cl. 27—28 **3 Claims**



1. An apparatus for manipulating cadavers including support means for supporting the cadaver during movement and manipulation and harness means which cooperate with said support means wherein said support means include:
(a) a first side rail assembly for supporting from beneath one side of said cadaver said side rail assembly being comprised of an outside longitudinal bar and a shorter inside longitudinal bar joined together by a plurality of support bars;
(b) a second side rail assembly for supporting from beneath the other side of said cadaver, said second side rail assembly also being comprised of an outside longitudinal bar and a shorter inside longitudinal bar joined together by a plurality of support bars;
(c) a foot rail assembly for supporting the feet of the cadaver comprised of a bar, said bar being long enough for its bottom to engage the outside longitudinal bars of the first and second side rail assemblies, and having a first projection extending therefrom associated with the inside longitudinal bar of the first side rail assembly and a second projection extending therefrom associated with the inside longitudinal bar of the second side rail assembly, each such projection having an annular bore slidably receiving and retaining in assembled relation one end of the inside longitudinal bar of the side rail assembly associated therewith;
(d) a head rail assembly comprised of a bar having cup means associated therewith for supporting the cadaver's head, a first projection extending therefrom associated with the first side rail assembly and the second projection extending therefrom associated with the second side rail assembly, each such projection having an annular bore for slidably receiving and retaining in assembled relation the other end of the outside longitudinal bar of the side rail assembly associated therewith; and
(e) means for locking said head rail assembly in place with respect to said side rail assemblies.

4,617,707
METHOD FOR THE MANUFACTURE OF AN ULTRASONICS ANTENNA ARRAY

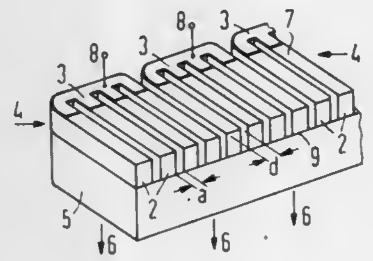
Jutta Mohaupt, Munich; Karl Lubitz, Ottobrunn; Manfred Schnoeller, Haimhausen, and Wolfram Wersing, Kirchheim, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 9, 1985, Ser. No. 773,877

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1984, 3435569

Int. Cl.⁴ H01L *41/22*

U.S. Cl. 29—25.35 **8 Claims**



1. A method for the manufacture of an ultrasonic antenna array composed of a juxtaposed arrangement of piezoceramic transducer elements comprising:
providing a laminate of alternating layers of unsintered ceramic and spacing layers, said spacing layers being composed of a filler material which is heat fugitive at the sintering temperature of said ceramic, said spacing material also including refractory grains distributed therein of a size which corresponds to the spacing desired between the ceramic layers,
sintering said laminate to thereby liberate said filler material and leave voids between said refractory grains,
impregnating the resulting laminate with a polymerizable resin to bond the sintered ceramic layers together, and
separating the resulting laminate into individual transducer elements.

4,617,708
COMPONENT MODULE FOR PIGGYBACK MOUNTING ON A CIRCUIT PACKAGE HAVING DUAL-IN-LINE LEADS, AND METHODS OF FABRICATING SAME

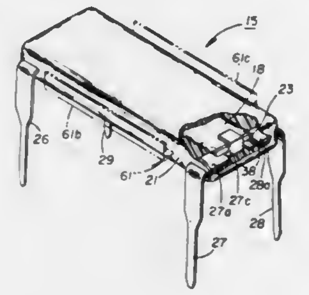
William J. Fanning, Glen Ellyn, Ill., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

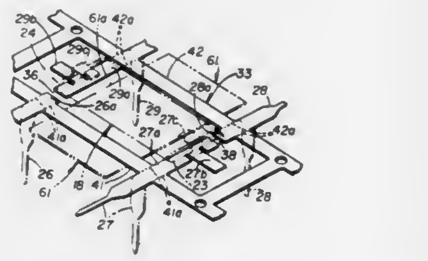
Division of Ser. No. 452,662, Dec. 23, 1982, Pat. No. 4,521,828. This application Apr. 2, 1985, Ser. No. 704,700

Int. Cl.⁴ H01G *7/00*

U.S. Cl. 29—25.42 **4 Claims**

1. A method of fabricating a component module for piggyback mounting on, and interconnection with, an integrated circuit package of the type having dual-in-line leads, said method comprising the steps of:
partially blanking at least first and second oppositely directed and longitudinally spaced terminals out of an elongated strip stock carrier, each of said terminals including a first outwardly disposed leg portion, a second inwardly disposed leg portion, and at least a third leg portion that extends perpendicularly to said second leg portion;
forming the third leg portion of each of said terminals into a contact member for electrically engaging opposite end electrodes of a component and for providing temporary support for such a component;
positioning the body portion of the component between the second leg portions of said terminals such that said component is supported by, and its opposite end electrodes are respectively biased against, the contact members of said terminals;
completely serving said first and second terminals from said strip stock carrier, while clamping at least the outermost ends of the first leg portions of said terminals such that they remain in a common plane;





encapsulating said component, including its electrodes and said terminal contact members, within a molded housing with at least a major part of the second leg portion of each terminal embedded in said housing; and
bending the first leg portions of said terminals downwardly from respective regions adjacent to two diagonally disposed corners of said housing, the resulting spacing between the first leg portions of said first and second terminals being selected so that said terminals will respectively contact selected correspondingly disposed leads of an associated integrated circuit package, having dual-in-line leads, when said fabricated component module is subsequently piggyback-mounted thereon.

4,617,709
SEGMENTAL SHELL FOR A COAL CRUSHER ROLL INCLUDING SPECIALIZED REMOVAL MEANS

Theodore F. Gundlach, Belleville, Ill., assignor to T. J. Gundlach Machine Company, Belleville, Ill.

Filed Mar. 5, 1984, Ser. No. 586,571

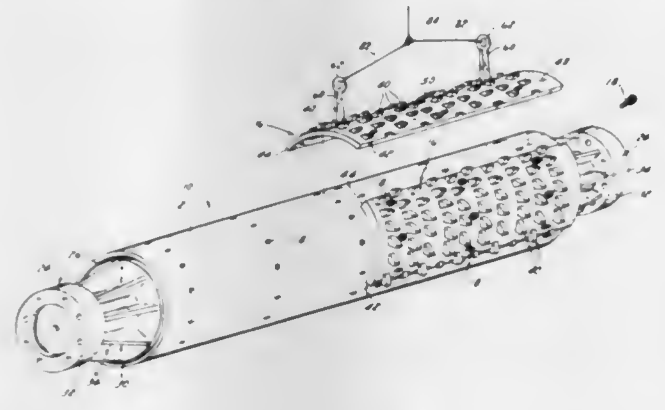
Int. Cl.⁴ B21B *27/00*

U.S. Cl. 29—124 **10 Claims**

1. In a coal crusher having a cylindrical back-up roll having two ends, an outside face, a longitudinal axis, and a hub mounted in each end of said back-up roll; a combination of a plurality of removable toothed segments mounted to said outside face of said roll and hook means including a tang for removing said segments from said roll comprising
a plurality of metal segments, each of said segments in the form of a sector of a tube, said segment having an inside face and an outside face and an outside peripheral edge, said edge including upper and lower axially extending edges, and two circumferential edges, the inside face of said segment having a radius of curvature substantially equal to the radius of curvature of the outside face of said

back-up roll and having a plurality of counterbored holes therein for receiving headed bolts which are threaded into tapped holes in said back-up roll to secure said segments to said back-up roll, each of said counterbored holes having a seat to receive said heads of said bolts;

said members designed to be mounted to said back-up roll in a plurality of circumferentially arranged, axially extending, adjacent rows on said outside surface of said roll;



a rabbet at the opening of at least two of said holes on the inside face of said segment, each of said rabbets having an upper surface and formed by a counterbore, said counterbore forming a shoulder which can be engaged by said tang of said hook means; and

said hook means designed to be releasably inserted into said rabbetized holes so that when a lifting force is exerted on said hook means, said hook means becomes locked into said rabbet to permit the safe removal and replacement of said member on said back-up roll.

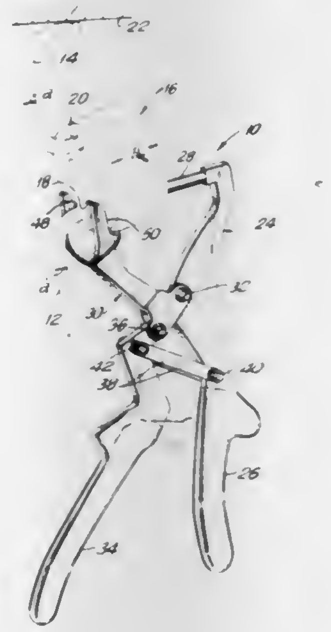
4,617,710
INSULATOR REMOVAL TOOL

Ernest J. Kotnik, Northwood, Ohio, assignor to AP Industries, Inc., Toledo, Ohio

Filed May 29, 1985, Ser. No. 738,767

Int. Cl.⁴ B25B *27/00*

U.S. Cl. 29—268 **10 Claims**



1. A tool for forcing an enlarged head of a vehicular exhaust system mounting stud from a vehicular exhaust system rubber insulator, said tool comprising:

en elongated driver having a driving shaft at one end thereof; and

an elongated support having opposed ends, one said end of said support being pivotally mounted to said driver at a location thereon spaced from the driving shaft such that the other said end of said support is rotatable toward and away from the driving shaft, the other end of said support including a pair of spaced apart arms, each said arm defining a first supporting surface and a pair of spaced apart second supporting surfaces, said supporting surfaces being on the sides of said arms nearest the driving shaft, the first supporting surface of each said arm being disposed intermediate the spaced apart second supporting surfaces thereof, said first supporting surfaces lying in a first plane and said second supporting surfaces lying in a second plane angularly aligned with respect to the first plane, said first and second supporting surfaces being aligned such that when said support is rotated away from said driving shaft the first surfaces of said arms are approximately perpendicular to said driving shaft and such that when said support is rotated toward the driving shaft the second surfaces of said supporting arms are generally perpendicular to said driving shaft.

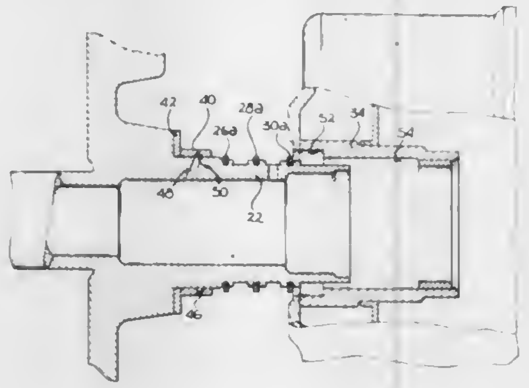
4,617,711
METHOD AND APPARATUS FOR REPAIRING AUTOMATIC TRANSMISSIONS

William D. McMinn, 42215 52nd St. W., Quartz Hill, Calif. 93534

Filed Sep. 26, 1983, Ser. No. 535,590

Int. Cl.⁴ B23P *7/00;* B60K *17/00*

U.S. Cl. 29—402.08 **14 Claims**



1. In the repair of an automotive transmission having a direct clutch assembly supported at the front thereof by a front direct clutch bushing pressed into the front of the direct clutch housing and riding on a journal on the pump cover shaft, the pump cover shaft having a plurality of plastic seal rings in spaced apart grooves in the shaft for sealing engagement with an inside diameter of the direct clutch housing hub, the inside diameter of the direct clutch housing hub being sufficiently larger than the front direct clutch bushing so as to preclude the reliable passage of metal seal rings therethrough without cracking, breaking or permanently bending the same, the steps of

(a) removing the front direct clutch bushing from the front of the direct clutch housing;

(b) removing the plastic seal rings from the pump cover shaft;

(c) installing a replacement bushing on the journal on the pump cover shaft to at least in part act as a journal bearing in cooperation with the front of the direct clutch housing from which the front direct clutch bushing was removed;

(d) installing metal seal rings in the grooves in the pump cover shaft; and

(e) assembling the direct clutch housing onto the pump cover shaft.

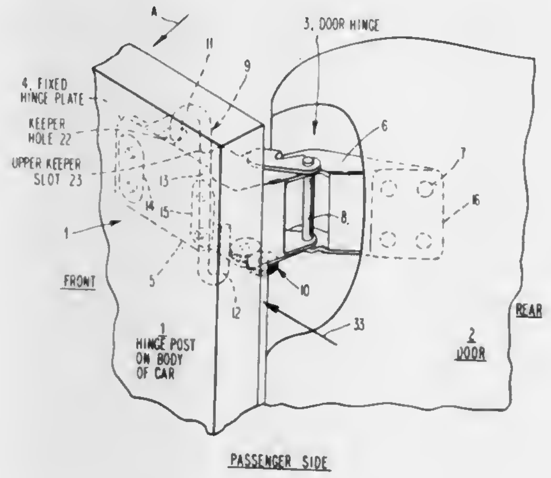
4,617,712
METHOD FOR REPLACING CORVETTE DOOR HINGE SPRING

James T. Streett, Pottstown, Pa., assignor to Street Specialty Products Inc, Pottstown, Pa.

Filed May 2, 1983, Ser. No. 490,433

Int. Cl.⁴ B23P *7/00, 7/04*

U.S. Cl. 29—402.08 **4 Claims**



1. The method of replacing a broken door hinge spring on a Corvette motor car:

providing a Corvette motor car having a body and a door and a door hinge including a fixed hinge plate mounted on the car body, a moveable hinge plate mounted on the car door with the hinge plates being connected by a pivot pin, a broken hinge spring on the fixed hinge plate, cam means on the moveable hinge plate, the fixed hinge plate having upper and lower flanges with the upper flange having a keeper hole and an upper keeper slot and with the lower flange having a lower keeper slot in vertical alignment with the upper keeper slot and the lower flange also having a rear keeper slot the outboard end of which is off-set inwardly from the upper and lower keeper slots;

removing said broken spring;

providing a cam follower spring having an upper bent section, a lower bent section and a mid-section therebetween together with a keeper slot in the upper bent section;

placing the door in an open position;

with the upper bent section facing the front of the car, manipulating the spring to insert the upper bent section into the keeper hole and into the upper keeper slot and to insert the mid-section into the lower keeper slot;

inserting a tool inside the lower bent section and rotating the tool toward the center of the car to twist the midsection and cause said tip to be vertically aligned with the rear keeper slot;

while holding the tool so that the tip remains in said aligned condition, tapping the lower bent section with a hammer to cause the spring to move vertically until the tip is received within the rear keeper slot and the keeper slot in the upper bent section receives the side of the keeper hole and the lower bent section is positioned to engage the cam means when the tool is released; and

releasing and removing said tool.

4,617,713
NURSERY POT CUTTING TOOL

David E. Pomerenke, Shakopee, Minn., assignor to Creative Landscape Service, Inc., Shakopee, Minn.

Filed Jul. 15, 1985, Ser. No. 754,758

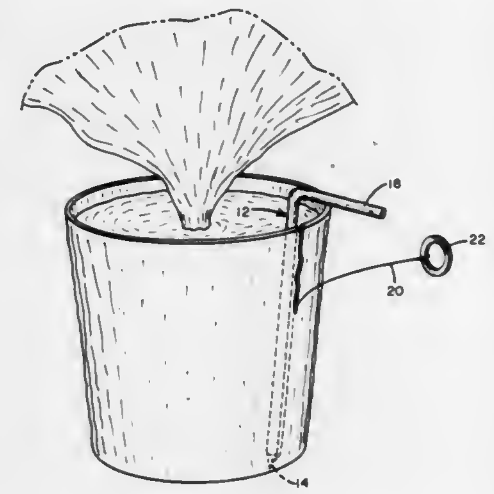
Int. Cl.⁴ B23P *19/02*

U.S. Cl. 29—426.4 **1 Claim**

1. The method of removing a temporary fiber growing pot from nursery stock prior to planting, comprising:

(a) inserting an elongated, rigid rod having a flexible strand secured to the lower end thereof downward into the soil next to the sidewall of said pot;

(b) pulling outward and downward on said strand while



holding said rod in position with sufficient force to cause said strand to cut through said sidewall; and

(c) spreading and removing the cut pot from around the root ball of said nursery stock.

4,617,714
PROCESS AND APPARATUS FOR FINISHING A GUIDE ROLLER

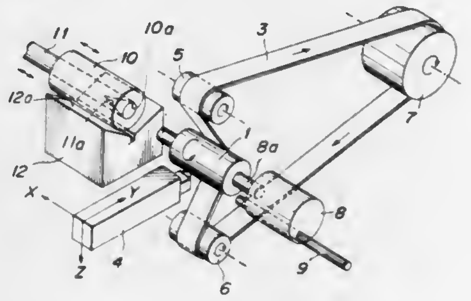
Takuaki Kori, Kanagawa; Hirotaka Ozawa, and Shiro Sugawara, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 6, 1985, Ser. No. 741,796

Claims priority, application Japan, Jun. 14, 1984, 59-127704

Int. Cl.⁴ B23P *19/00;* B21D *53/00;* B21B *27/00;* B23B *3/00*

U.S. Cl. 29—434 **13 Claims**



1. A process for finishing a guide roller comprising the steps of:

forming a pre-assembly of a guide roller and a bearing;

rotatably supporting said pre-assembly;

driving said pre-assembly to rotate about a stationary axis by means of a driving belt; and

machining the outer surface of said pre-assembly to a predetermined radius by means of a machining bit in contact with said assembly at a point diametrically opposite to the point of contact between said belt and said assembly.

9. An apparatus for finishing the surface of a guide roller having a central bore accommodating at least one element chosen from the group comprising bearings and lubricating elements, comprising:

a shaft passing through the guide roller and through bearings received within the central bore of the guide roller;

a drive belt in frictional engagement with the guide roller at a known belt pressure;

means driving said drive belt to rotate, thereby driving the guide roller to rotate about said shaft; and

a cutting bit for machining the surface of the guide roller to a desired radius, said cutting bit being brought into contact with the surface of the guide roller at a given bit pressure less than said belt pressure and at a point diametrically opposite the point of contact between said belt and the guide roller.

4,617,715

METHOD FOR PRELIMINARY ANCHORING OF A WIRE ROPE BOLT

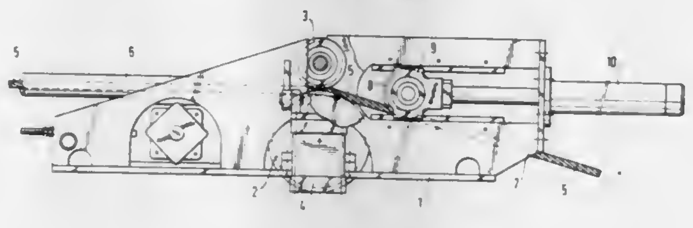
Pauli A. T. Koistinen, and Risto J. Hämäläinen, both of Joensuu, Finland, assignors to OY Tampella AB, Tampere, Finland

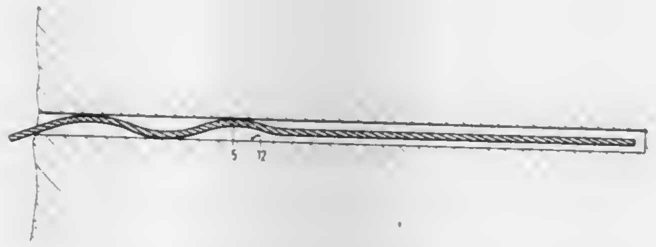
Filed Jul. 21, 1983, Ser. No. 515,592

Claims priority, application Finland, Aug. 3, 1982, 822707

Int. Cl.^{4} B23P *19/04*

U.S. Cl. 29—456 **7 Claims**





1. A method of preliminarily anchoring a plural strand metal wire rope bolt in a bore prior to and to facilitate permanent anchoring comprising in a continuous operation the steps of:

(a) feeding and permanently deforming the wire rope to be anchored by bending the same to form at least one arched portion therein; and

(b) progressively feeding the arched portion into the bore so that the arched portion of the wire rope frictionally presses against the wall of the bore.

4,617,716

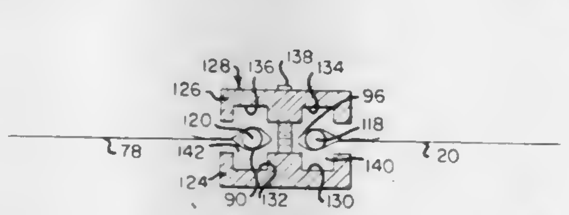
METHOD OF JOINING EDGES OF TWO ELONGATED WEBS

Khin M. Lay, Gardena; Stephen E. Palguta, Redondo Beach; Ramon B. Fernandez, Torrance, and Santiago C. Cabalquinto, Lawndale, all of Calif., assignors to Hitco, Newport Beach, Calif.

Division of Ser. No. 483,922, Apr. 11, 1983, Pat. No. 4,501,037. This application Nov. 13, 1984, Ser. No. 670,565

Int. Cl.^{4} B23P *19/00*

U.S. Cl. 29—526 R **3 Claims**



3. A method of joining the edges of two elongated webs comprising the steps of:

forming a loop along the edge of each of the webs;

inserting a different one of a pair of elongated elements into the loop formed in the edge of each of the webs;

providing an elongated splice bar comprised of opposite halves forming at least one slot therebetween along the length thereof; and

inserting the edges of the webs including the elongated elements inserted therein into the at least one slot formed between the opposite halves of the splice bar;

the step of forming a loop along the edge of each of the webs including the steps of:

applying at least one length of tape to the edge of each of the webs;

stitching the taped edge of each of the webs along the length thereof; and

folding the taped edge of each of the webs over on itself to form an elongated element-receiving loop along the edge of the web.

4,617,717

COMPOSITE MEMBER COMPRISING METALLIC SHEET BENT TO BE ARCUATE IN SECTION AND RIGID SYNTHETIC RESIN COATING

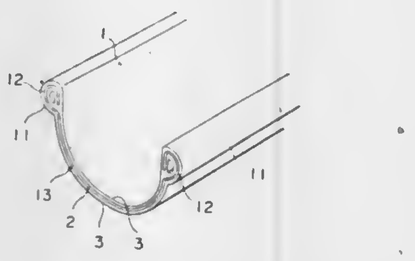
Hideomi Yamamoto; Haruzo Watanabe, both of Shiga; Hidehiko Kishie, Shijonawate, and Toshio Nishihara, Shiga, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Continuation of Ser. No. 479,652, Mar. 28, 1983, abandoned. This application Jul. 29, 1985, Ser. No. 759,914

Claims priority, application Japan, Mar. 31, 1981, 56-48768

Int. Cl.^{4} B22D *11/126*

U.S. Cl. 29—527.4 **3 Claims**



1. A method for manufacturing a composite member comprising a metallic sheet bent to be arcuate in a transverse section having a rigid synthetic layer formed on said metallic sheet, comprising the steps of:

providing a metallic sheet of a specific length in a flat state,

bending said metallic sheet at a plurality of positions forming a plurality of small arcuate sectional protuberences extending in a longitudinal direction and distributed only a width direction, each of said small arcuate sectional proturberences having a separate center of curvature being curved to a first center of curvature;

bending in-between portions between said respective adjacent small arcuate sectional protuberences to form inbetween arcuate curved portions in said longitudinal direction and distributed in a width direction to be arcuate in a transverse section, each of said in-between arcuate curve portions having a separate center of curvature being curved to a second center of curvature;

bending said metallic sheet as formed with said plurality of small arcuate sectional protuberences and said in-between curved portions to be arcuate in transverse section with respect to a third center of curvature, said third center of curvature and each of said first centers of curvature being positioned on the same side with respect to said metallic sheet while said second center of curvature is located on a side opposite to that of said first and third centers of curvature with respect to said metallic sheet; and

coating a rigid synthetic resin layer over both main surfaces of said bent metallic sheet, said composite member being formed in a length substantially the same as the length of said metallic sheet, said plurality of small arcuate sectional protuberences being formed as protuberences extending continuously throughout the length of said metallic sheet.

4,617,718

METHOD IN THE MANUFACTURE OF TARTAR REMOVING DENTAL INSTRUMENTS

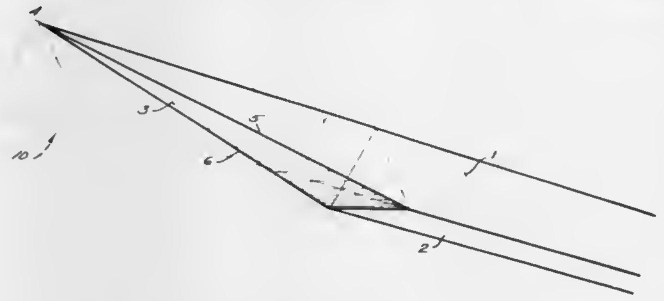
Eilert Andersson, Vikmanshyttan, Sweden, assignor to Dentalvarutjanst AB, Orebro, Sweden

Filed Aug. 7, 1984, Ser. No. 638,368

Claims priority, application Sweden, Aug. 16, 1983, 8304420

Int. Cl.^{4} B23P *13/04;* **A61C** *17/00*

U.S. Cl. 29—558 **11 Claims**



1. A method of manufacturing a tartar removing dental instrument, comprising the steps of:

(a) selecting a profiled blank having a substantially constant triangular cross-section formed by three lateral faces, each of which are unground and having a first end;

(b) grinding the blank solely along one of the lateral faces to effect the removal of material, the grinding being practiced to increase the removal of material toward the first end of said one lateral face being ground; and

(c) continuing grinding to produce an instrument having a triangular cross-section tapering toward a tip formed at the first end, at least two of the three edges along the lateral faces of the instrument adjacent thereto being ground to form cutting edges.

4,617,719

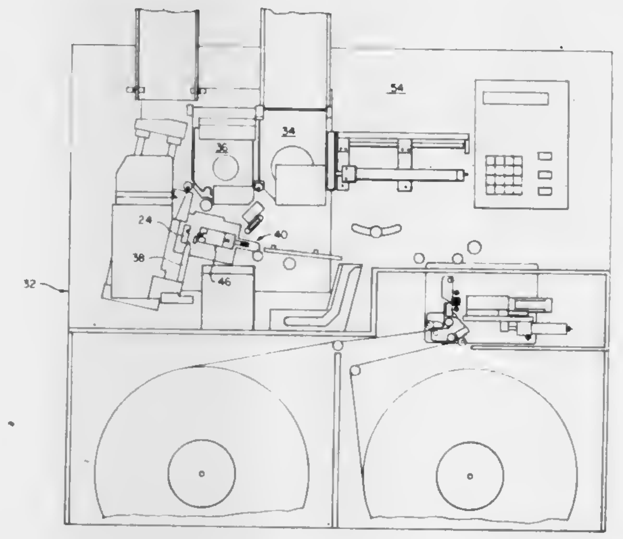
TAPE STAKING AND CONTROL APPARATUS

George M. Woodley, Shrewsbury, Mass., assignor to King Instrument Corporation, Westboro, Mass.

Filed Oct. 15, 1985, Ser. No. 787,779

Int. Cl.^{4} B23P *19/00*

U.S. Cl. 29—564.6 **31 Claims**



1. A mechanism for staking a leader block to the end of a tape that has been wound into a cartridge, said staking mechanism comprising:

leader block holding means for holding in a predetermined position a leader block that has a groove for receiving both the end of a tape and a staking rod for staking said tape end to said leader block;

a staking head comprising a staking block having a transversely-extending passageway for receiving a staking rod and a longitudinally-extending slot that intersects said passageway and terminates in a staking rod ejection opening at one end of said staking head, means closing off one end of said passageway, and rod moving means for shifting a staking rod in said passageway stepwise (a) first into said slot and (b) then out of said ejection opening into the said groove of a leader block;

means mounting said staking head for reciprocal movement along a selected axis toward and away from a leader block held by said leader block holding means; and

selectively operable means for sequentially (a) operating said rod moving means so as to cause said rod moving means to shift a staking rod from said passageway into said slot, (b) moving said staking head along said selected axis from a first position in which said one end of said staking head is spaced from a leader block held in said predetermined position to a second position in which said one end of said staking head is engaged with a leader block held in said predetermined position, (c) operating said rod moving means so as to cause said rod moving means to eject said staking rod from said slot through said staking rod ejection opening and forcing it into the said groove of a leader block held in said predetermined position, (d) operating said rod moving means so as to retract it away from said rod ejection opening while holding said staking head engaged with a leader block, and (e) subsequently moving said staking head along said axis from said second position back to said first position.

4,617,720

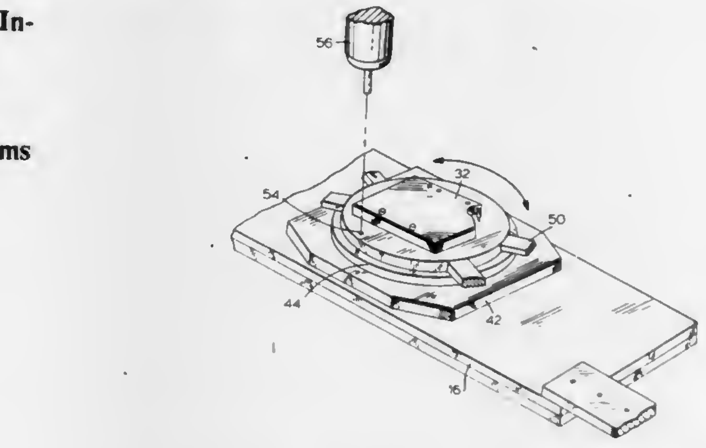
AUTOMATED MACHINE TOOL HAVING A ROTARY INDEXING FIXTURE

Kenneth J. Palfery, Toronto; Donald R. Puckering, Georgetown; Angel Kocev, Toronto, and Kenrick B. Maharaj, Brampton, all of Canada, assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 14, 1984, Ser. No. 681,793

Int. Cl.^{4} B23Q *3/157*

U.S. Cl. 29—568 **2 Claims**



1. An automated machine tool having a rotary indexing table, comprising:

(a) a frame;

(b) a movable worktable means connected to the frame for supporting a workpiece and movable longitudinally an latitudinally to position a workpiece at a desired point in a horizontal plane;

(c) a rotatable spindle means for supporting and rotating a cutting tool at a predetermined speed rate, and mounted on a drive head connected to a vertical quill of the frame for vertical movement thereon to machine the workpiece;

(d) a tool changing means connected to the frame for storing tools and exchanging the tool supported in the rotatable spindle means with one of a multitude of different tools stored therein;

(e) an indexing tool configured to be supported by the rotatable spindle means;

(f) a rotatable indexing table for supporting the workpiece mounted on the movable worktable means having an aperture therein for receiving the indexing tool supported in the rotatable spindle means and causing rotation of the workpiece 360° degrees in response to the longitudinal and latitudinal movements of the movable worktable means; and

(g) a programmable control means disposed to control the movable worktable means, the rotatable spindle means, the tool changing means, and the rotary indexing table for automatically rotating the workpiece on the rotary indexing table for machining.

4,617,721
JAW CHANGING APPARATUS

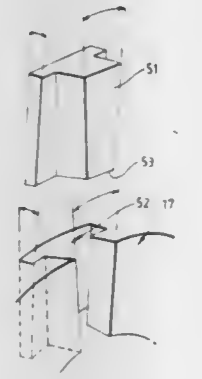
Joseph F. Jackson, Halifax, England, assignor to Pratt Burnerd International Limited, Halifax, England

Filed Oct. 12, 1984, Ser. No. 660,235

Claims priority, application United Kingdom, Oct. 12, 1983, 8327294

Int. Cl.⁴ B23Q *3/155*

U.S. Cl. 29—568 **22 Claims**



1. A changeable chuck jaw assembly for changing a jaw of a generally cylindrical chuck of a machine tool, said chuck having a chuck body, comprising the chuck body, a tapered jaw-way in the chuck body having a jaw mouth opening to the front of the chuck body and a recess behind and wider than the mouth, said jaw-way also having an entry mouth, with the jaw-way widest at the entry mouth, and a tapered jaw means for cooperating with the tapered jaw-way to enter the jaw-way even if not aligned with a preselected working position of the jaw means and to be guided to the preselected working position after entry into the entry mouth, said jaw-way and said jaw means each having a width and a depth which increase in the radially outward direction, said jaw means mounted for sliding radial working movement in the jaw-way.

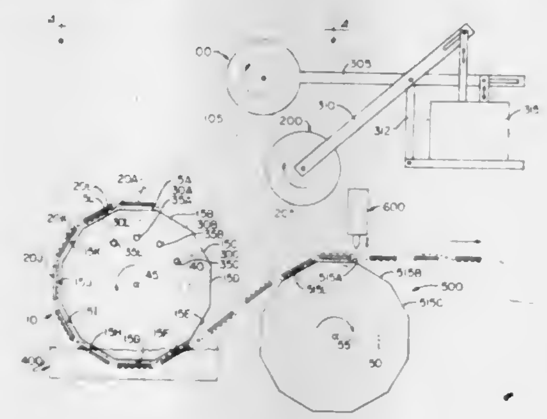
4,617,722
METHOD FOR ELECTRICALLY INTERCONNECTING SOLAR CELLS

John G. Willis, Chelmsford, Mass., assignor to Mobil Solar Energy Corporation, Waltham, Mass.

Filed Dec. 4, 1984, Ser. No. 677,877

Int. Cl.⁴ H01L *31/18, 25/02*

U.S. Cl. 29—572 **16 Claims**



1. A method for electrically interconnecting a plurality of photovoltaic solar cells in series, said solar cells each having a top surface characterized by a top grid electrode and a bottom surface characterized by a bottom electrode;

said method involving the use of a rotatable multi-faced drum, and first and second movable bus supply spools supporting first and second continuous electrically conductive bus strips, respectively;

said drum being adapted for (1) releasably holding a solar cell on each of its faces, and (2) rotation on its axis in an indexing mode so that it advances intermittently in a selected direction one face at a time, whereby at the conclusion of each indexing motion one face of said drum is always disposed in a predetermined loading position in which it extends in a first selected plane and an adjacent face of said drum is always disposed in a predetermined post-loading position in which it extends in a second selected plane disposed at an angle to said first selected plane, said first and second bus supply spools each being adapted to be moved between a first position wherein the associated bus strip extends substantially flush with the drum face which currently occupies said drum's post-loading position, and a second position wherein the associated bus strip extends substantially flush with the drum face which currently occupies said drum's loading position;

said method comprising the steps of:

(1) positioning said first bus supply spool in its said first position with said first bus strip extending around said drum and substantially flush with the drum face occupying said post-loading position, and positioning said second bus spool in its said second position with said second bus strip extending around said drum and substantially flush with the drum face occupying said loading position;

(2) positioning a first solar cell on the drum face occupying said loading position so that said first solar cell extends over and engages said second bus strip, with the bottom electrode of said first solar cell overlying and contacting said second bus strip;

(3) indexing said drum forward one face so that said drum face carrying said first solar cell is advanced to said post-loading position, whereby said first bus strip is caused to extend across and overlie the top grid electrode of said first solar cell while said second bus strip remains in contact with the bottom electrode of said first solar cell;

(4) shifting said first bus spool from its first position to its second position and shifting said second bus spool from its second position to its first position, so that said second bus strip extends flush with the drum face which is in said post-loading position and said first bus strip extends flush with the drum face which is in said loading position;

(5) positioning a second solar cell on the drum face which is in said loading position so that the bottom electrode of said second solar cell overlies and engages said first bus strip;

(6) indexing said drum forward one face so that the drum face carrying said second solar cell is advanced to said post-loading position, whereby said second bus strip is caused to overlie and engage the top grid electrode of said second solar cell even as said first bus strip remains in contact with the bottom electrode of said second solar cell;

(7) shifting said first bus spool from its second position back to its first position, and shifting said second bus spool from its first position back to its second position, so that said first bus strip extends flush to the drum face which currently occupies said post-loading position, and said second bus strip extends flush to the drum face which currently occupies said loading position; and

(8) thereafter securely attaching said first and second bus strips to the adjacent engaged electrodes of said first and second solar cells.

4,617,723
METHOD AND DEVICE FOR CREATING AN ACTIVATABLE CONDUCTING LINK IN A SEMICONDUCTOR DEVICE

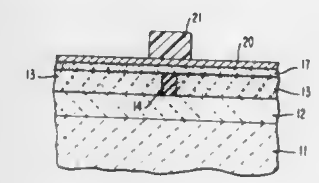
Ryoichi Mukai, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

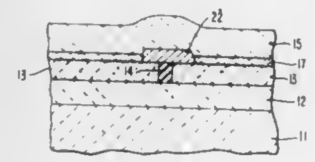
Filed Dec. 28, 1983, Ser. No. 566,411

Claims priority, application Japan, Dec. 28, 1982, 57-230100

Int. Cl.⁴ H01L *21/263, 21/26*

U.S. Cl. 29—576 B **22 Claims**





1. A method of creating and activating a conducting link selectively activatable in combination with a plurality of conducting paths in a specified portion of a semiconductor circuit between the conducting paths formed in the same level and electrically insulated from each other, said method comprising the steps of:

(a) forming a first insulating layer of silicon covering the specified portion between the conducting paths to be linked;

(b) forming a metal film on the insulating layer over the specificed portion in contact with the insulating layer and creating an activatable conducting link between the conducting paths;

(c) forming a second insulating layer over the first insulating layer and the metal film; and

(d) activating the activatable conducting link, when activation is required, by heating the metal film and the corresponding portion of said insulating layer in contact with the metal film, by irradiation through the second insulating layer using an energy beam, to convert the metal film and the portion of the insulating layer in contact with the metal film into a metal silicide layer making the activatable conducting link conductive.

4,617,724
PROCESS FOR FABRICATING HETEROJUNCTION BIPOLAR TRANSISTOR WITH LOW BASE RESISTANCE

Naoki Yokoyama, and Toshio Ohshima, both of Atsugi, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 620,091, Jun. 13, 1984, abandoned. This application Sep. 30, 1985, Ser. No. 781,787

Claims priority, application Japan, Jun. 30, 1983, 58-119097; Nov. 19, 1984, 59-242414

Int. Cl.⁴ H01L *21/265*

U.S. Cl. 29—576 B **74 Claims**

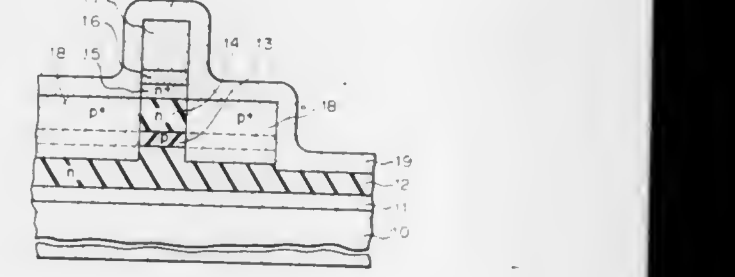
1. A process for fabricating a heterojunction bipolar transistor, comprising the steps of:

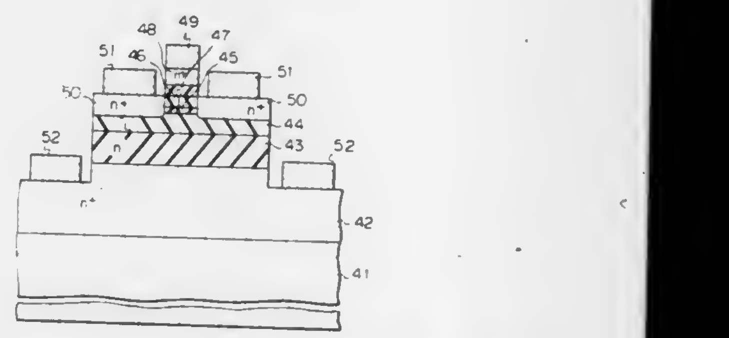
forming a collector layer on a substrate;

forming a base layer on the collector layer;

forming an emitter layer on the base layer, the emitter layer forming a heterojunction with the base layer and having a larger bandgap than that of the base layer;

forming an emitter electrode on part of the emitter layer;





carrying out doping of dopants into part of the emitter layer and the base layer, using the emitter layer as a mask, so as to form a base contact region in alignment with an edge of the emitter electrode and reaching the base layer; and

forming a base electrode on said base contact region.

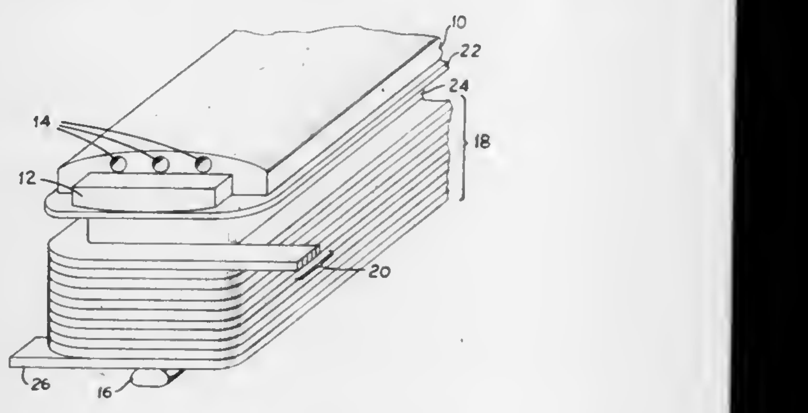
4,617,725
METHOD OF MAKING MULTIPLE-ELEMENT STRAP WINDING FOR ROTOR POLE

Warren G. Holter, Bradenton, Fla., and Lawrence V. Van Laanen, West Allis, Wis., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed Oct. 1, 1984, Ser. No. 656,351

Int. Cl.⁴ H02K *15/095*

U.S. Cl. 29—598 **2 Claims**



1. The method of producing a winding for large AC salient pole dynamoelectric machines, comprising the steps of

providing a pole formed of a magnetic material;

surrounding the body of said pole with flexible pole insulation material;

disposing a collar formed of substantially rigid insulating material over said pole and an adjacent head portion;

providing a plurality of insulated conductors arranged side by side to form an array having a lateral dimension equal to the sum of the diameters of all of the conductors in the array, each of said conductors having a width to height ratio of at least 4:3 and being provided with a resilient varnish insulation thereon said width being measured in the same direction as said lateral dimension;

securing one end of said conductor array adjacent said pole body;

applying a curable resinous material to said array;

rotating said pole about an axis generally perpendicular to the lateral dimension of said array to cause said array to be wrapped around said pole body edgewise to form a single layer of edgewise wound array turns about said body;

curing said resinous material; and

brazing together the ends of the conductors in said array to form a single-layer winding about said pole body.

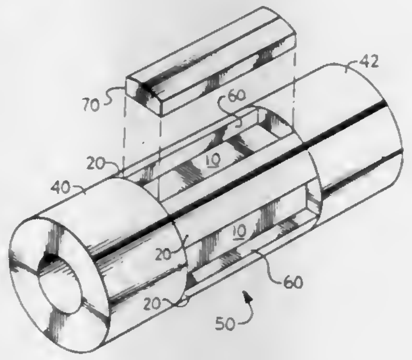
4,617,726
MAXIMUM STIFFNESS PERMANENT MAGNET ROTOR AND CONSTRUCTION METHOD

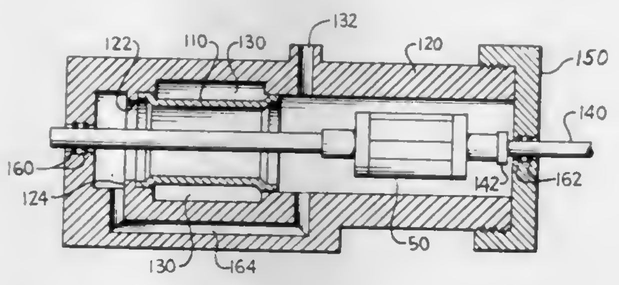
Joseph Denk, Manhattan Beach, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 6, 1984, Ser. No. 678,740

Int. Cl.⁴ H02K *15/02*

U.S. Cl. 29—598 **27 Claims**





20. A permanent magnet rotor, comprising:

an inner cylinder of magnetizable material;

a hollow outer cylinder of non-magnetizable material surrounding and bonded to said inner cylinder, thereby forming an assembly;

a plurality of permanent magnets mounted in pockets machined into and through said outer cylinder, said magnets being in contact with said inner cylinder;

a first end piece of non-magnetizable material bonded to one end of said assembly;

a second end piece of non-magnetizable material bonded to the other end of said assembly; and

a sleeve of non-magnetizable material installed over said magnets and the portions of said outer cylinder therebetween.

4,617,727
ELECTRODE COMB AND METHOD AND DEVICE FOR MANUFACTURING

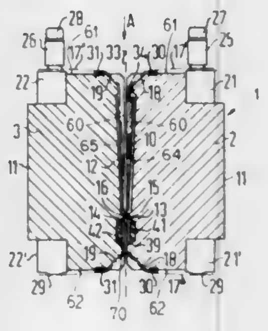
Martin Pointner, Kirchseon, and Rüdiger Sommer, Raisdorf, both of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Division of Ser. No. 488,380, Apr. 25, 1983, Pat. No. 4,540,151. This application May 3, 1985, Ser. No. 729,967

Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217290

Int. Cl.⁴ H01R *43/00*

U.S. Cl. 29—825 **3 Claims**



1. A method of forming an electrode comb having two rows of needle-shaped recording electrodes connected to two circuit boards and embedded in a one-piece molded body of resin having a rib with a recording edge along one edge of the body with the recording electrodes extending to a surface of said recording edge, said method comprising the steps of providing a mold comprising two symmetrically constructed halves with a rectangular cross-section, each half having a first face with a flat planar surface, a second face opposite the first face having a first recess for receiving a circuit board with conductor paths, a second recess separated from the first recess by a support surface, third and fourth faces extending between the first and second faces, each of the said third and fourth faces having a recess adjacent the first face, and said third face having means for clamping the wires to said surface; assembling the halves with the first surfaces engaging each other to form a parting plane of a winding core with the second face facing in an opposite direction; assembling a circuit board in each of said first recesses; winding a wire around the core with equal spacing and pitch between turns; clamping the wound wire to each of the halves; electrically connecting each of the turns to its respective circuit board; severing the wire turns in two places adjacent the parting plane; disassembling the two halves and rotating at least one of the two halves 180° to the other half to reassemble the halves with the second faces adjacent each other to form a casting mold with a first mold cavity formed by the first recesses containing the circuit boards and a second mold cavity being formed by the second recesses with the rows of wires extending therethrough and offset from each other; injecting a resin into each of said mold cavities; and subsequent to the hardening of said resin, trimming the exposed wires extending from each cavity to form the electrode comb having a rib with the recording edge formed by the resin in the second cavity.

4,617,728
METHOD AND DEVICE FOR MOUNTING ELECTRONIC COMPONENTS ON A PRINTED CIRCUIT CARD

Axel Andersen, Solvcenget, and Klaus Bondergaard, Gentofte, both of Denmark, assignors to Sincotron APS, Denmark

Filed Jun. 11, 1984, Ser. No. 619,201

Claims priority, application Sweden, Jun. 13, 1983, 8303330

Int. Cl.⁴ H05K *3/30*; B23P *19/00*

U.S. Cl. 29—836 **8 Claims**

1. A method for mounting electronic components without connector pins and having a dimension in one axial direction larger than in a second axial direction onto a substrate having adhesive thereon at mounting sites for said components, said method comprising the steps of:

providing storage tray means for storing said components prior to mounting said components onto said substrate, a surface of said storage tray means having grooves therein adapted to receive said components in a predetermined orientation, said grooves being narrower in width than the larger axial dimension of said components;

sliding said components across the surface of said storage tray means in a direction transverse to said grooves, whereby said components are received in and oriented in said grooves;

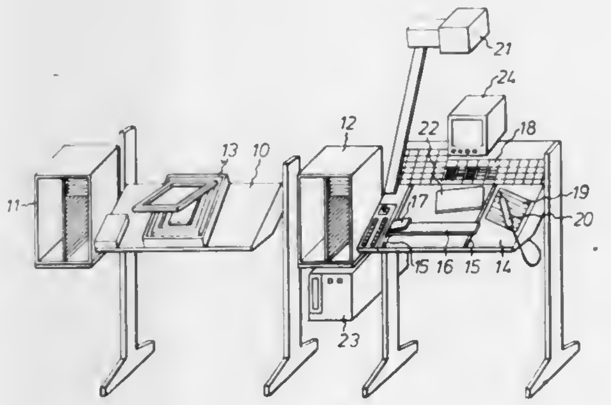
providing a suction means having sufficient suction force to lift said components;

removing said oriented components from said storage tray means by said suction means and transferring said components to said adhesive on said substrate; and

said suction force produced by said suction means being less than are attractive force of said adhesive on said substrate.

2. An apparatus for mounting electronic components without connector pins and having a first dimension in one axial direction larger than a second dimension in a second axial direction onto a substrate having adhesive thereon at predetermined mounting sites for said components, said apparatus comprising:

table means for supporting said substrate thereon;



tray means adjacent the table means for holding said components, said tray means being pivotable relative to the table means about an axis of rotation and having a surface with grooves therein parallel to said axis of rotation, said grooves being narrower in width than said first dimension and larger than said second dimension and being adapted to receive said components in alignment with the grooves;

suction means operatively associated with said table means for lifting said components from said tray means and transferring the components to the substrate, the suction means being movable between the tray means and the table means;

indicator means operatively associated with the table means and the tray means, the indicator means being operable to indicate a corresponding pair of said grooves and said mounting sites, whereby components are identified to be lifted from said tray means to specific identified mounting sites on said substrate; and,

driving means operatively associated with said tray means for pivoting said tray means about said axis of rotation, whereby pivoting said tray means about said axis of rotation causes said components on said tray means to slide across said tray means in a direction transverse to said grooves, the components being received in the grooves.

4,617,729
PROCESS FOR MANUFACTURING MINIATURIZED ELECTRONIC POWER CIRCUITS

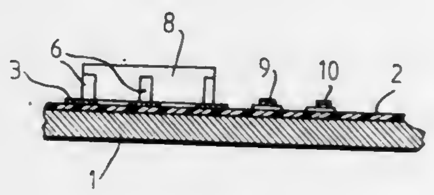
Jean Celnik, Paris, France, assignor to Automobiles Citroen, Neuilly Sur Seine and Automobiles Peugeot, Paris, both of, France

Filed Feb. 27, 1985, Ser. No. 705,987

Claims priority, application France, Feb. 28, 1984, 84 03485

Int. Cl.⁴ H05K *3/34*

U.S. Cl. 29—840 **7 Claims**



1. A process for manufacturing a miniaturized electronic power circuit including power elements and other components soldered to a conducting network with the interposition of an insulator between said network and a heat conducting plate forming a heat sink, comprising the steps of:

(a) coating a plastic film on one side with a highly conductive metal layer to form a laminate foil therewith;

(b) bonding said laminate foil to said plate on an opposite uncoated side of said plastic film to form a substrate consisting of said foil and said plate;

(c) forming said conducting network from said metal layer;

(d) depositing soldering paste at selected locations of said network;

(e) placing said components flatly on the foil of said substrate with terminals thereof in registration with certain of said locations;

(f) placing said power elements flatly on the foil of said substrate with bodies of said power elements in registration with other of said locations and terminals of said power elements in registration with said certain of said locations;

(g) hard soldering said components and said power elements at said locations in a vapor phase to said network; and

(h) placing the resulting circuit in a sealed case.

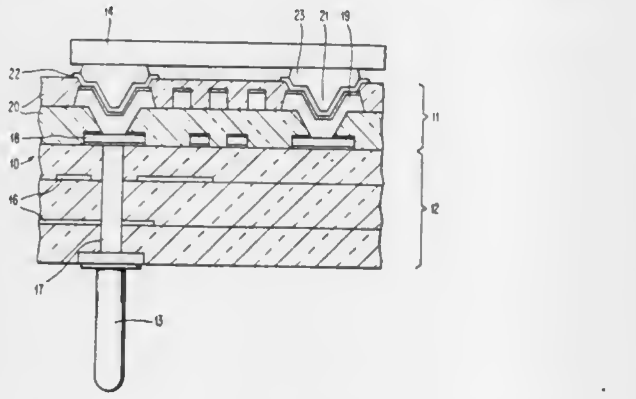
4,617,730
METHOD OF FABRICATING A CHIP INTERPOSER

Pieter Geldermans, and Gangadhara S. Mathad, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 13, 1984, Ser. No. 639,988

Int. Cl.⁴ H01R *4/00*

U.S. Cl. 29—843 **29 Claims**



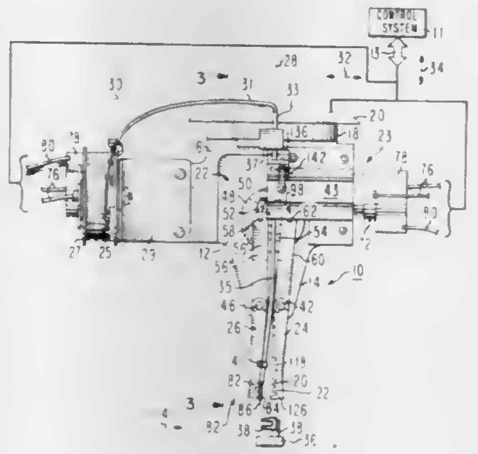
1. A method of fabricating an interposer for connecting a plurality of semiconductor chips to a substrate, comprising, in sequence, the steps of:

providing an insulating support having a thin film fine line metallization formed on its top surface before the top

surface is interrupted by holes interfering with fine line photolithography,
depositing a layer of masking material adhering well to the support onto the bottom side of said support,
removing said masking material according to a desired pattern, so as to expose areas of the support where via holes are to be formed,
etching the exposed areas of the support until reaching said metallization, whereby via holes are created through the suppport,
depositing an interconnecting metallurgy on the backside of the support including the interior of said via holes, whereby an electrical connection is made between said thin film fine line metallization on the top side and the bottom side of said support, and
forming a contact pad around each via hole.

4,617,731
INSULATION DISPLACEMENT TERMINAL WIRE INSERTION TOOL AND METHOD

Ross M. Carrell, Cinnaminson, N.J., and George J. Whitley, Philadelphia, Pa., assignors to RCA Corporation, Princeton, N.J.
Filed Sep. 23, 1985, Ser. No. 779,100
Int. Cl.⁴ H01R ***43/04;*** **B23P** ***19/02***
U.S. Cl. 29—861 **20 Claims**

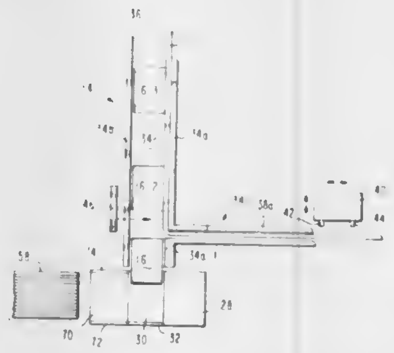


1. A wire insertion tool for inserting a wire into electrical engagement with an insulation displacement terminal (IDT) on a substrate, said terminal including a set of spaced tines extending in a given direction for receiving at one end thereof said inserted wire and further including tine support structure at the other end thereof for securing said tines to a post extending approximately normal to said direction, said tool comprising:
a support adapted to be attached to an automatic insertion tool head which locates and moves the tool relative to said IDT;
a first element movably secured to the support having an open state and a terminal support state, said element having a groove therein adapted for receiving and mating with said tine support structure in said support state, said groove and support structure being dimensioned such that said receiving tends to align said tines relative to said groove;
a second element movably secured to the support having an open state, a closed state and a wire insertion state between its open and closed states, said second element including a wire insertion member adapted to mate with said tines in said insertion state for pushing said wire into said electrical engagement with said aligned tines;
wire feed means secured to the support for feeding said wire between and aligned with said groove and said insertion member; and
actuating means coupled to the support and the first and second elements for initially causing said first element to move from its open state to its support state to seat and align said tine support structure in said groove and thereby align said tines relative to said second element, and then for causing said second element to enter said insertion state to push said wire toward the first element and into said engagement with said tines while said first element supports said tines at said tine support structure with negligible reaction forces on said tool head and on said substrate.

17. A method for attaching a wire to an insulation displacement terminal (IDT) having a set of tines open at one end to receive a wire to be attached thereto, a support structure at the other end of said set, and a post for attaching said tines substantially parallel to a substrate so the inserted wire is normal to the substrate, said method comprising:
(a) supporting said terminal at said support structure;
(b) pushing a first portion of said wire into engagement with said tines in a direction toward said supported support structure and parallel to the substrate;
(c) releasing the support structure and pushed portion;
(d) aligning a second wire portion of said wire with a second terminal;
(e) repeating the steps a–c; and then:
(f) severing the wire from the last-attached terminal.

4,617,732
METHOD FOR TERMINATION OF FLAT CABLE

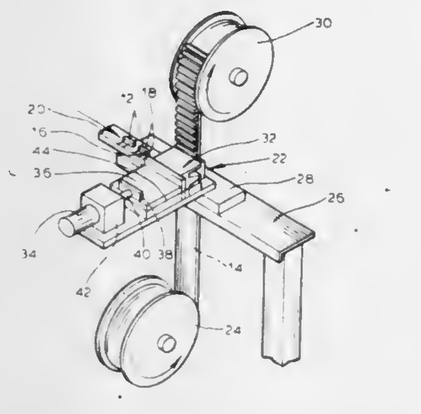
William R. Beck, Warren, N.J.; William Jahn, Iowa City, Iowa; Steven R. Koltenback, Doylestown, Pa.; Robert M. Scharf, Bedminster, and Ronald Schwab, Budd Lake, both of N.J., assignors to Thomas & Betts Corporation, Raritan, N.J.
Filed Dec. 31, 1984, Ser. No. 687,622
Int. Cl.⁴ H01R ***43/04***
U.S. Cl. 29—866 **23 Claims**



1. A method for mass termination of elongate flat multiconductor cable by use of elongate connectors having a body supporting insulation-displacing contacts arranged in at least one longitudinal row therein and a cover movably supported over said body, comprising the
(a) releasably assembling individual such connectors to a substrate;
(b) defining a cable mass termination station;
(c) advancing said substrate along a preselected path to dispose an individual such connector at said cable mass termination station;
(d) advancing said cable along the cable longitudinal axis to said cable mass termination station and into overlying registry with said insulation-displacing contacts of said individual connector between said cover and said body; and
(e) moving said cable relative to said insulation-displacing contacts and effecting electrical engagement of said cable conductors individually with said insulation-displacing contacts.

4,617,733
PROCESS OF MANUFACTURING A FLEXIBLE SUBSTRATE ASSEMBLY

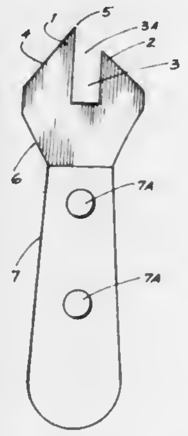
Thor Olson, Wheaton, Ill., assignor to Molex Incorporated, Lisle, Ill.
Division of Ser. No. 597,637, Apr. 6, 1984. This application Dec. 27, 1985, Ser. No. 791,471
Int. Cl.⁴ H01R ***43/16***
U.S. Cl. 29—874 **38 Claims**



1. A method of manufacturing a flexible substrate assembly, said assembly including a plurality of solid members, each solid member having a plurality of spaced apart rigid pin-like projections extending therefrom, mounted on a flexible support substrate, said method comprising the steps of:
(a) disposing a portion of said substrate in a generally flat configuration at a work station;
(b) disposing one of said solid members in juxtaposition to said flat substrate portion at said work station such that the projections of said solid member exend toward said substrate;
(c) moving said solid member with respect to said flat substrate portion at the work station so that said projections penetrate the substrate to removably mount said solid member therein;
(d) moving said substrate so that said mounted solid member is moved away from said work station and another flat substrate portion is provided thereat;
(e) disposing another solid member at said work station as set forth in step (b) above;
(f) moving said another solid member with respect to said another flat substrate portion as set forth in step (c) above;
(g) repeating steps (d), (e) and (f) until a desired number of solid members have been mounted on said substrate.

4,617,734
OYSTER OPENER

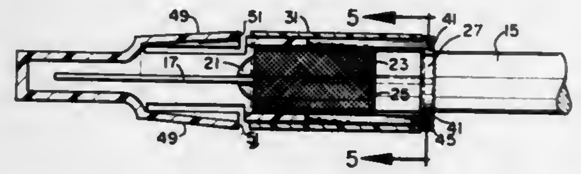
Brian Parkinson, 10 Euroka Street, West Wollongong, New South Wales, Australia (2500)
Filed Jun. 11, 1984, Ser. No. 618,980
Int. Cl.⁴ A47J ***13/00, 43/26***
U.S. Cl. 30—120.1 **2 Claims**



1 A utensil for opening oyster or clam shells or the like comprising a jaw defined by first and second blade-like projections.
said first projection being of greater length than said second projection for insertion between the closed edges of said shells, and further adapted to subsequently grip one of the opened shells and enable its removal by a twisting or leveraged action of the utensil; the outer edge of said first projection being angled to provide a wedge-shaped profile slanted downwardly to terminate in a point a short distance below the level of said second projection; said outer edge further containing an upstanding flange disposed at right angles thereto and sloping toward said point;
said second projection being adapted to engage the outer surface of said shells to thereby prevent the excessive penetration of said first projection and avoid mutilation of the meat within said shells;
the sides of said jaw converging slightly toward the open end thereof; said jaw being secured to a handle contoured to fit a user's hand with the user's thumb abutting the outer face of said flange and the user's forefinger resting against the upper surface of said second projection; the outer edges of said first and second projections leading back towards said handle being angled inwardly to provide a means of guarding against the user's hand inadvertently slipping onto the surfaces of said projections; and
wherein said point and the internal perimeter of said jaw are slightly rounded to provide a more finished appearance to said first and second projections and to avoid any unnecessary sharp edges.

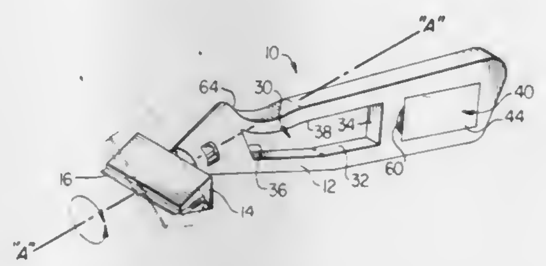
4,617,735
SAFETY CAP

Sidney Silverstein, Flushing, N.Y., assignor to Hunt X-ACTO, Inc., Philadelphia, Pa.
Filed Oct. 21, 1985, Ser. No. 789,711
Int. Cl.⁴ B26B ***29/02***
U.S. Cl. 30—151 **8 Claims**



1. A safety cap assembly for a craft knife having a blade and a handle comprising
a cap housing having a front end portion and a rear end portion with an opening at the end of the front end portion for receiving the knife blade,
attaching means on the front end portion of the housing for attaching it to the knife handle,
sleeve means mounted on the housing adapted for sliding back and forth between the front end and the rear end portions of the housing for closing the attaching means in attaching position when the sleeve means is at the front end portion of the housing and for opening the attaching means when the sleeve means is at the rear end portion,
stop means at the ends of the housing for preventing the sleeve means from slipping off the housing,
and safety-locking means on the housing for releasably locking the sleeve means in position on the front end portion when the sleeve means is closing the attaching means whereby to prevent the cap assembly from opening and being pulled off the knife accidentally.

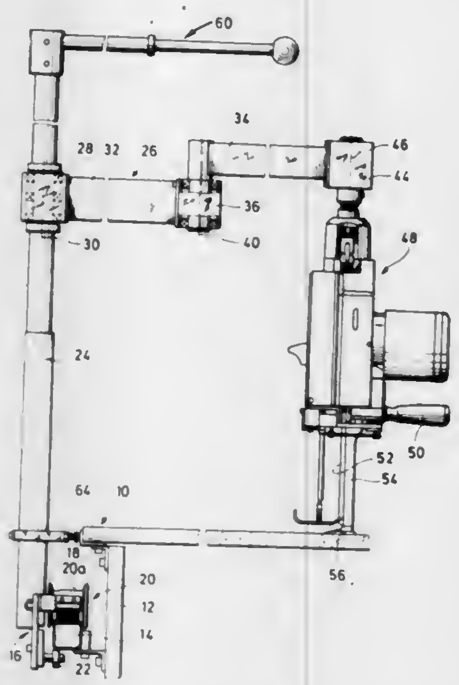
4,617,736
SWIVEL HEADED SCRAPING DEVICE
Mark W. McCrary, Rte. 3, Box 25, Waxahachie, Tex. 75165
Filed Aug. 2, 1984, Ser. No. 637,038
Int. Cl.^{4} B26B *3/00*
U.S. Cl. 30—169 **1 Claim**



1. A handheld scraping device comprising a handle, barrel neck, head, razor blade and razor housing;
  said handle being large enough to be held in a human hand, having a cutout portion, and containing said razor housing sized to receive at least one razor blade;
  said barrel head being attached to said head having a collar to abut said handle, a first flange finger and a second flange finger to nonremovably engage with said handle said barrel neck allowing said head to freely rotate about an A—A passing through said handle's elongate axis B—B at an angle less than about 30°, but greater than about 5°;
  said head having a gap and chamber means to frictionally engage said razor blade so that said blade lies in a plane containing said axis of rotation A—A, and allowing the cutting edge of said razor blade to project beyond the outer edge of the head;
  said handle, head, and barrel neck made of polypropylene; and
  said razor housing having room for five razor blades, having a cover which is removably engaged with said housing, and having a notch to allow the user to remove said cover with his finger tip.

4,617,737
MACHINE FOR CUTTING OUT FLAT MATERIAL
Rolf Jung, Waiblingen, Fed. Rep. of Germany, assignor to Krauss u. Reichert GmbH & Co. KG, Fellbach, Fed. Rep. of Germany
Filed Mar. 29, 1985, Ser. No. 717,627
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1984, 3414123
Int. Cl.^{4} B26D *1/06;* **D06H** *7/24*
U.S. Cl. 30—273 **7 Claims**

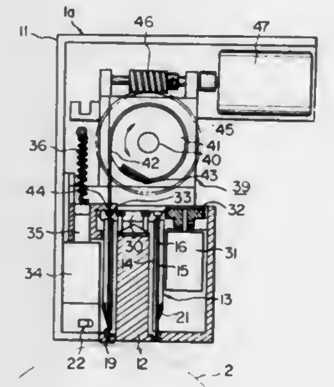
1. A machine for cutting flat material, comprising a support having an upper surface for supporting such flat material to be cut; guide means mounted on said support and extending along one side thereof; a carriage supported by said guide means for movement along said one side of said support; a tiltable upright mounted on said carriage; a beam supported by said tiltable upright extending over the upper surface of said support; said beam having at least an inner and an outer beam section; said inner beam section being pivotally mounted at one end along a first pivot axis to said tiltable upright; a first bearing for pivotally mounting said inner beam section on said tiltable upright; a second bearing for pivotally connecting ends of the outer beam section and the inner beam section along a second pivot axis; cutting means pivotally mounted on a distal end portion of said outer beam section; a third bearing for pivotally mounting said cutting means on the distal end portion of said outer beam section along a third pivot axis; said cutting means having a foot for resting on the upper surface of said support; said first, second and third pivot axes being substantially vertically disposed to said support upper surface when said foot contacts said upper surface; said carriage having mounting means for mounting said carriage on said guide means and for cooperative engagement with the guide means in such manner that said upright is tiltable about a tilt axis parallel to said support upper surface.



4,617,738
SURGICAL BLADE HANDLE
Bernard F. Kopacz, Little Falls, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Apr. 25, 1984, Ser. No. 603,856
Int. Cl.^{4} A61B *17/36*
U.S. Cl. 30—339 **13 Claims**

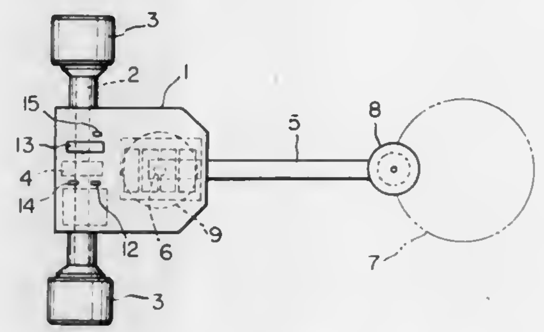
1. A handle and surgical blade assembly wherein the surgical blade is removably engaged with the handle comprising: a substantially planar surgical blade having a slot with a relatively wide proximal portion and a relatively narrow distal portion and a transition portion therebetween;
  a handle including a rearward end to be held by the user and a forward end;
  an elongate tang at said forward end having a proximal end, a distal end and an elongate boss projecting outwardly from a side of said tang adjacent to said distal end, said boss being narrower in width than the width of said wide proximal portion of said surgical blade slot;
  said tang including a pair of opposed longitudinal grooves originating at said distal end and terminating in said proximal end, said grooves running substantially along the interface of said tang and said boss, said grooves being wider than the thickness of said surgical blade in an area adjacent to said surgical blade slot, said grooves adapted to receive the narrow distal portion of said surgical blade slot;
  said tang including a relief recess projecting into said boss to a depth at least as deep as that portion of said boss extending outwardly from said grooves away from said tang, said recess thereby dividing said boss into a forward boss portion and a rearward boss portion, said recess being positioned so that the distance between the distal end of said forward boss portion and the distal end of said rearward boss portion is less than the length of said narrow distal portion of said surgical blade slot; and
  said surgical blade being engaged with said handle so that said narrow distal portion of said slot is engaged by said forward boss portion and said rearward boss portion and also is engaged in said longitudinal grooves and said boss is protruding through said slot.

4,617,739
LEAD DEVICE FOR DRAWING MACHINE
Akio Kubo, 655 Yamanouchi, Kamakura shi Kanagawaken, Japan
Filed Jan. 10, 1985, Ser. No. 690,793
Claims priority, application Japan, Jan. 12, 1984, 59-3220[U]; Jan. 12, 1984, 59-3221[U]; Jan. 12, 1984, 59-3222[U]; Jan. 12, 1984, 59-3223[U]; Jan. 27, 1984, 59-13795
Int. Cl.^{4} G01D *15/24*
U.S. Cl. 33—18.1 **13 Claims**



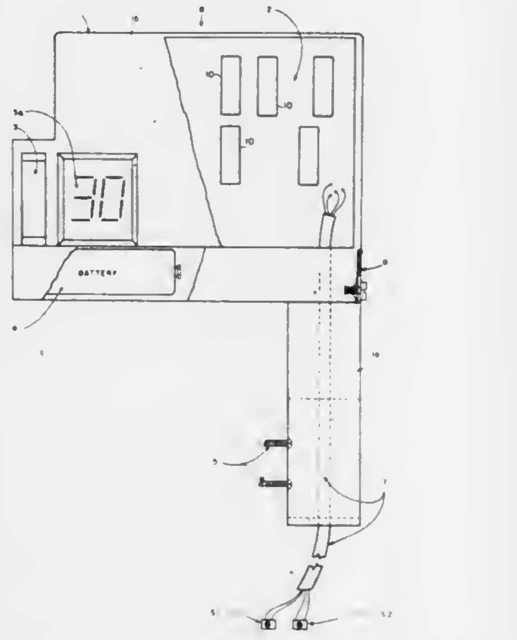
1. A lead feed device for a drawing machine in which a turret drum is rotatably and slidably mounted on a shaft mounted on a bottom plate and lead bars are inserted in longitudinal recesses in said turret drum, a lead bar pressing device provided above said turret drum, said lead bar pressing device comprising a rotatable disc on which a wire for pressing said lead bar is wound, one end of said wire abutting against one end of said lead bar in said turret drum.

4,617,740
MEASURING DEVICE FOR A FIGURE
Kobayashi Mikio, 3-14-20 Sakura, Satagaya, Tokyo, Japan
Filed Jun. 24, 1985, Ser. No. 748,308
Claims priority, application Japan, Jun. 22, 1984, 59-129550; Jul. 30, 1984, 59-160962; Jan. 29, 1985, 60-11452[U]
Int. Cl.^{4} G01B *5/26, 7/32*
U.S. Cl. 33—122 **10 Claims**



1. A measuring device for a figure comprising; a carriage supported by a pair of wide width wheels so as to reciprocally move along a straight line; a carriage pulse generator for producing a series of pulses whose number is proportional to the rotation angle of said wheels; a measuring lever rotatable supported on said carriage about a vertical shaft; tracing means on the end of said measuring lever; a measuring lever pulse generator for producing a series of pulses whose number is proportional to the rotation angle of the said measuring lever; a sine angle signal generator and cosine angle signal generator for generating signals from signals received from said measuring lever pulse generator; and calculating means for calculating coordinate, length and area from said sine and cosine signals and signals from said measuring lever pulse generator.

4,617,741
ELECTRONIC RANGEFINDER FOR ARCHERY
Marvin L. Bordeaux, and Dennis R. Ward, both of Rte. 3 Box 2, Willcox, Ariz. 85643
Filed Dec. 17, 1984, Ser. No. 682,544
Int. Cl.^{4} F41G *1/00*
U.S. Cl. 33—228 **11 Claims**



1. A rangefinding apparatus for attachment to a bow, comprising in combination:
  (a) a transparent viewing window through which a target having a first preselected size can be viewed by an archer aiming the bow in a drawn configuration at the target;
  (b) first display means for selectively displaying an upper target bracketing line and a lower target bracketing line in the transparent viewing window, the lower bracketing line being below and spaced from the upper target bracketing line, the location of the lower target bracketing line being selected for the first preselected size target;
  (c) second display means for displaying a digital number corresponding to a distance between the upper target bracketing line and the first lower target bracketing line, and hence to the distance from the rangefinding apparatus to the target;
  (d) upper bracketing line control means for effectively moving the upper target bracketing line in response to a control switch actuated by a finger of the archer's hand gripping a handle of the bow to cause the upper target bracketing line to visually bracket an upper portion of the target as seen through the transparent viewing window by the eye of the archer when the bow is aimed so that the lower target bracketing line appears to bracket a lower portion of the target; and
  (e) digital display control means responsive to the control switch for causing the second display means to automatically display a digital number corresponding to the position of the displayed upper target bracketing line and hence to the distance from the rangefinding apparatus to the target.

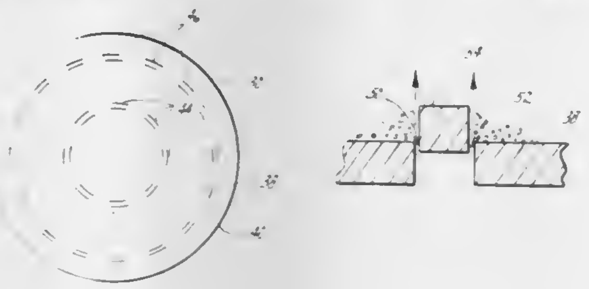
4,617,742
HEAT TREAT APPARATUS

Roger L. Brummel, South Lyon, Mich., assignor to Fluidtherm Corporation, South Lyon, Mich.

Continuation-in-part of Ser. No. 574,891, Jan. 30, 1984, abandoned. This application Mar. 20, 1985, Ser. No. 713,864

Int. Cl.⁴ F26B *17/10*

U.S. Cl. 34—57 A **6 Claims**



2. A removable diffuser for heat treating apparatus, comprising:

a tank defining a gas chamber, and having an inlet for receiving a gas, and a planar top diffuser wall forming a base for a bed of finely divided particles, the top diffuser wall having a pattern of slits for the passage of the gas, each slit being disposed adjacent a bulge in the wall formed perpendicular to the plane of the wall, and defining an opening sufficiently large to pass the gas from the gas chamber into the bed of particles in a direction generally perpendicular to the diffuser wall, but small enough to prevent the particles from passing through the slits into the gas chamber.

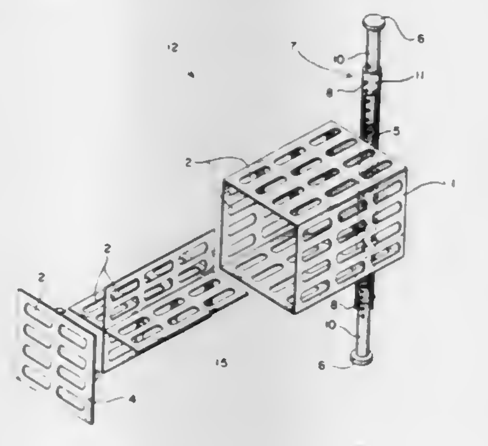
4,617,743
DRYER INSERT, HOLDER, CONTAINER

Richard Barnard, 2330 Olive Ave., Fremont, Calif. 94538

Filed Jan. 28, 1985, Ser. No. 695,843

Int. Cl.⁴ F26B *11/04*

U.S. Cl. 34—109 **1 Claim**



1. An article holding container for insertion into a rotary drum dryer comprising:

- a. compartment means to hold articles of clothing or any other article desired;
- b. divider insert means to separate said compartment means into multiple chambers;
- c. perforations in said compartment means and said divider means;
- d. door, snap on type, for closing said compartment means;
- e. expandable rod means to secure said article holding container to interior of said dryer;
- f. spring means that will allow said expandable rod means to expand or contract;
- g. skid resistant means at end of said expandable rod means that will secure said expandable rod means to interior of said dryer;
- h. expandable rod lock means which will lock said expandable rod means in the expanded or contracted position.

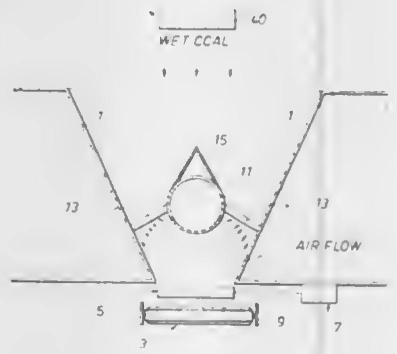
4,617,744
ELONGATED SLOT DRYER FOR WET PARTICULATE MATERIAL

Mark A. Siddoway, Houston; James A. Salter, Katy, and Robert P. Deschner, Sugarland, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 24, 1985, Ser. No. 813,325

Int. Cl.⁴ F26B *17/12, 11/12;* C10L *5/00;* C21D *9/70*

U.S. Cl. 34—168 **33 Claims**



1. A slot dryer for drying solid particulate material having two side members and therebetween a wet solid particulate material inlet at the top and a relatively dry solid particulate material outlet at the bottom; wherein said wet solid particulate materials enters said slot dryer and passes downward through said slot dryer to egress in a relatively dry state through said bottom outlet; wherein said bottom outlet is defined by (1) a pair of non-connecting walls, one wall situated at an acute angle with respect to a horizontal plane extending perpendicular from said outlet flow and one wall situated at an obtuse angle with respect to said horizontal plane and (2) a pair of connecting walls of shorter height than either of said pair of non-connecting walls, said intersection of connecting walls forming a Λ-shape situated between said non-connecting walls; a shaking means to cause turbulence in said wet solid particulate material and to aid in the passage of said wet solid particulate material from the inlet of said slot dryer to the outlet of said slot dryer; wherein said relatively-dry solid particulate material outlet has an aperture formed between the pair of non-connecting walls and two connecting walls in the Λ-shape; and one or more elongated hollow conduits located transverse to the vertical axis of said slot dryer and relatively parallel to said bottom outlet, said conduit having operative means therein for passage of a drying fluid therethrough, said elongated hollow conduit being in communication with a drying fluid access means and being supported by support means in communication with said slot dryer, wherein said apertures in said elongated hollow conduit are situated only in not more than the lower one half of said elongated hollow conduit closest to the direction of said relatively dry solid particulate outlet at the bottom of said slot dryer to provide passage of said drying fluid in a direction down and outward with respect to the flow path of particulate material to insure first cocurrent and second countercurrent contact of said descending wet particulate material with said drying fluid.

4,617,745
AIR SHOE

Vijay K. Batra, 4 Daybreak, Turkey Hill Village, Wayland, Mass. 01778

Continuation-in-part of Ser. No. 523,265, Aug. 15, 1983, abandoned. This application Mar. 8, 1985, Ser. No. 709,863

Int. Cl.⁴ A43B *7/06*

U.S. Cl. 36—3 B **6 Claims**

1. In an air shoe having a shoe upper and a sole body joined to the upper,

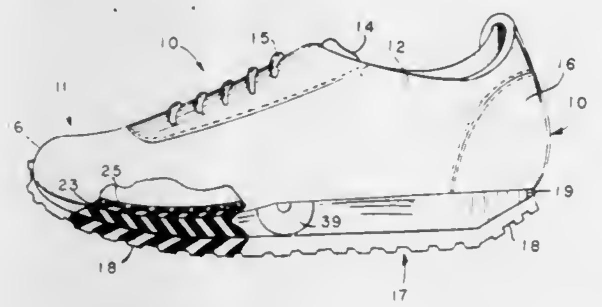
a bottom surface on said sole body having a predetermined tread design on said surface,

an upper surface on said sole body,

a ventilation channel network on the upper surface of said sole body consisting of

a plurality of longitudinal channels in said sole body contiguous with and opening at said upper surface extending from a position within the heel portion of said sole body to a position within the ball portion of said sole body and extending a substantial distance into the ball portion of said sole body,

a multiplicity of lateral channels in said sole body contiguous with and opening at said upper surface and crossing said longitudinal channels to divide said upper surface into a multiplicity of individual sections, each section at least partially surrounded by channels, at least one of said lateral channels being in said heel portion, a plurality of said channels being in the ball portion and at least one of said channels being in the instep portion of said sole body, to form an intercommunicating network of channels as an air passage to the various longitudinal and lateral channels across substantially the full area of said sole, including both said heel portion and substantially the full area of said ball portion and to provide massagic action to a wearer's foot as the foot presses on and releases pressure from said sole body,



the channel at said instep portion leading from said intercommunicating channel network and terminating in an enlarged mouth at said instep location,

said network of channels being protected against lateral exits and entrances for air flow between said instep portion and a location fully within said ball portion of said sole body, whereby air from said instep portion of said sole body is conveyed into said ball portion as said wearer of said shoe exercises.

said mouth having a bottom surface declining downwardly from said channel to an open end at the edge of said sole.

4,617,746
KICKING SHOE

Mark Hannah, 206 Cedar Ave., Hinton, W. Va. 25951

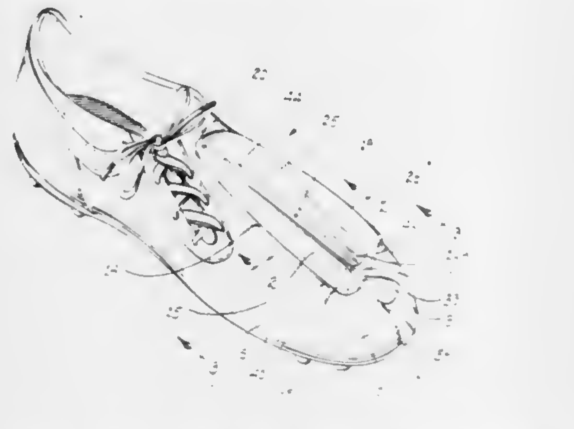
Filed Aug. 12, 1985, Ser. No. 764,402

Int. Cl.⁴ A43B *5/00, 5/02*

U.S. Cl. 36—133 **22 Claims**

1. An improved kicking shoe for use in a game which permits a game player to kick a ball, comprising:

a pad means which is positioned on the front portion of said shoe for integrally coupling thereabove, said pad means upwardly protrudes to an integral apex substantially in line with a center-line longitudinally extending along said shoe, said pad means integrally having: (a) an inclined precipice at a first end portion having an upper edge downwardly sloping from said integral apex to the middle portion of said shoe, (b) a side planar portion angularly opposed to said first end portion, (c) a side surface extending downward to wrap around a kicking side of said shoe, said side surface has a lesser downward slope than said planar portion slope, and (d) a front planar portion having a maximum protruding height at said integral apex and gradually decreasing therefrom when extending downwardly towards the bottom of said shoe; and



a sheath housing means integrally joined on said front portion of said shoe for overlapping the top portion of said pad means.

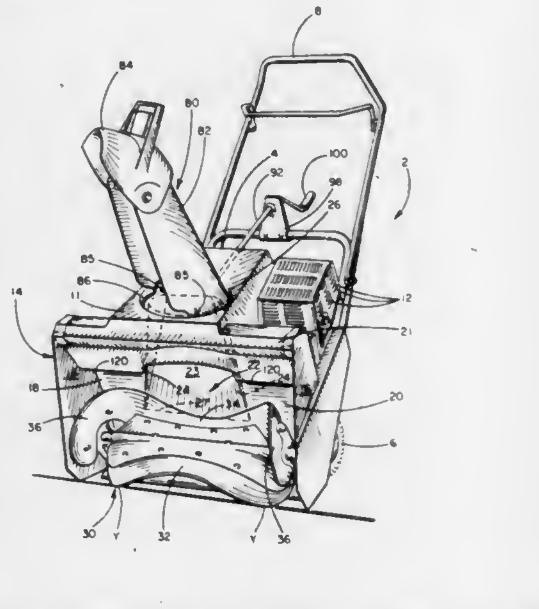
4,617,747
SINGLE STAGE SNOWTHROWER

Richard A. Thorud, Bloomington, and Donald M. White, III, Chanhassen, both of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed Sep. 12, 1985, Ser. No. 775,288

Int. Cl.⁴ E01H *5/09*

U.S. Cl. 37—244 **27 Claims**



1. An improved single stage snowthrower of the type having a housing that includes a generally open front portion defined by spaced side walls connected together by a rear wall; a rotatable snowthrowing impeller extending between the side walls and located in front of the rear wall; and engine means carried by the housing for rotating the impeller; and wherein the improvement comprises:

an impeller having at least one outwardly extending paddle for picking up and throwing snow, wherein the paddle comprises:

(a) a central snowthrowing section which extends over at least the middle one-half of the entire paddle's length, wherein the central section is curved forwardly from the midpoint to each side thereof to be generally concave such that snow is thrown in a stream that tapers inwardly as it rises from the central section;

(b) two end sections located on each side of the central section which fill out the remaining length of the paddle, wherein each end section comprises a relatively small portion of one turn of a helical auger having a relatively small pitch in relation to the paddle's length; and

(c) wherein the central snowthrowing section faces forwardly with respect to a radial line extending from the axis of rotation of the central section, wherein the amount of the forward facing is from 5° and 20° at the midpoint of the central section and is approximately 0° at each side of the central section.

4,617,748
LABEL FOR EGG TRAYS AND THE LIKE

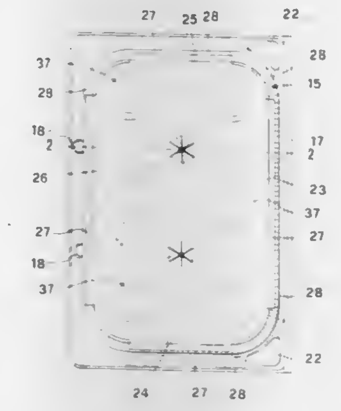
Pietro Padovani, Verona, Italy, assignor to I.S.A.P. Spa (Industrie Specializzate Articoli Plastici), Parona, Italy

Filed Feb. 28, 1985, Ser. No. 707,023

Claims priority, application Italy, Mar. 1, 1984, 84915 A/84

Int. Cl.⁴ G09F *3/00*

U.S. Cl. 40—312 **16 Claims**



1. In combination a container for eggs and the like and a label therefor, the container being made from sheets of synthetic thermoplastics material and comprising an upper portion having a top and sidewalls and a lower portion connected thereto by a rib along which the upper portion can be moved between an open and closed position and secured to the lower portion by means of pressure fastenings, in which the top of the upper portion is provided with inwardly projecting hollow projections with conical sections and recesses; the label being made of cardboard or the like and applied to the upper portion, the label comprising a central rectangular body with side edges and rounded corners, a substantially rectangular extension along at least one of the side edges of the central body which is folded to cover at least in part one of the side walls of the upper portion, and means produced by throughcuts corresponding to the projections enabling a plurality of open containers to be stacked.

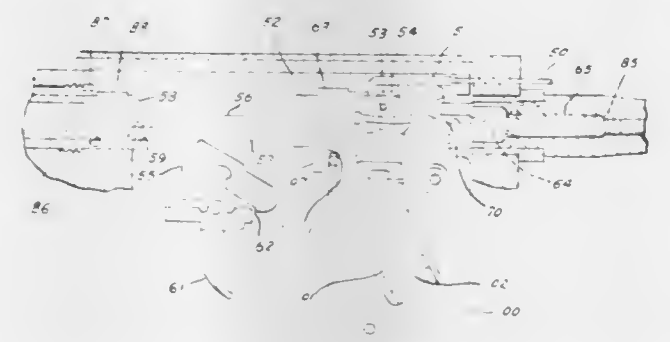
4,617,749
.22 CALIBER RIMFIRE ADAPTER SYSTEM FOR M16 TYPE RIFLE

Julius V. Jurek, 2046A Corsair Dr., Bethel Manor, Langley AFB, Va. 23665

Continuation of Ser. No. 720,468, Sep. 3, 1976, abandoned. This application Oct. 7, 1977, Ser. No. 840,470

Int. Cl.⁴ F41C *11/00*

U.S. Cl. 42—16 **15 Claims**



1. An adapter system for converting a rifle normally utilizing high power rifle cartridges of a given projectile caliber to a rifle utilizing low power cartridges of the same projectile caliber, the said rifle having a high power cartridge chamber; a gas tube; a receiver having a lower receiver extension socket, a magazine latch, and a bolt catch; the said adapter system comprising:

a. A low power cartridge bolt and chamber adapter assembly insertable in the said rifle receiver and high power cartridge chamber, the said bolt and chamber adapter assembly having a rear retainer, guide rails with the said bolt slidably positioned thereon, a cartridge rim receiving face on the said bolt, and the said chamber attached in flexible relationship to the said guide rails;

b. a forward locator pivotably attached in spring loaded relationship to the said rear retainer of the said adapter assembly cooperating with the said rifle lower extension socket to maintain the said chamber adapter seated in the said rifle high power cartridge chamber;

c. a gas diverter attached to the said adapter bolt cooperating with the said rifle gas tube for diverting powder gases and residue outside the said receiver;

d. means for providing a sealing relationship between the said projectile of the said low power cartridge and the said adapter chamber;

e. a cartridge case rim retainer having an undercut recess positioned on the said adapter bolt face;

f. an adapter magazine for feeding the said low power cartridges into the receiver, removably attachable to the said rifle receiver by the said magazine latch, the said magazine adapter having a follower spring and a lifter spring; and

g. means for coupling the said follower spring to the said lifter spring only when the said adapter magazine is empty of cartridges, the said means cooperating with the said rifle bolt catch to hold the said adapter bolt in the open position after firing the last cartridge from the said adapter magazine.

4,617,750
ANNULARLY SYMMETRICAL MULTIPLE FIRE WEAPON

Jacob W. Garehime, Jr., 1700 Griffith Ave., Las Vegas, Nev. 89104

Continuation of Ser. No. 940,653, Sep. 8, 1978, abandoned, which is a division of Ser. No. 490,053, Jul. 19, 1974, Pat. No. 4,112,818, which is a continuation of Ser. No. 254,541, May 18, 1972, abandoned. This application Feb. 26, 1980, Ser. No. 124,747

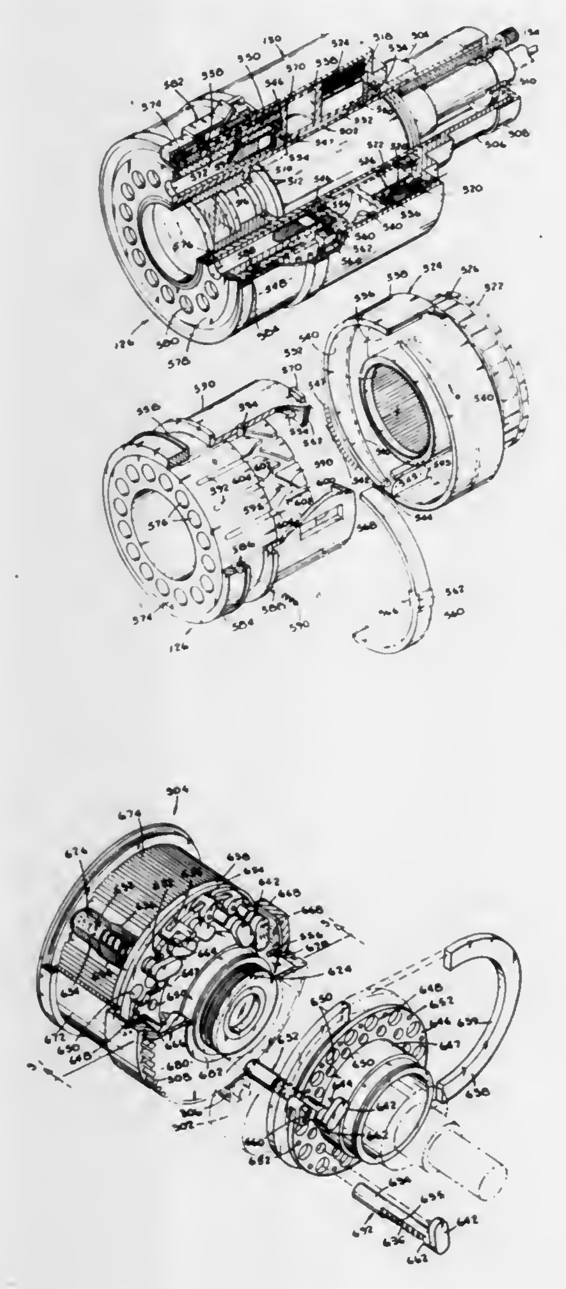
Int. Cl.⁴ F41F *13/04*

U.S. Cl. 42—65 **4 Claims**

1. A generally annularly symmetrical multiple fire weapon which comprises unitary tubular barrel means having a series of annularly arranged, regularly spaced firing bores and respective cartridge chambers therein; tubular body means connected to said barrel means, firing pin means supported in said body means for axial firing movement relative to said barrel means, firing pin release means comprising rotatable ring means engaged with said firing pin means and incrementally rotatably shiftable in firing pin release increments to sequentially fire at least one of said bores at a time, and drive means operatively connected to said firing pin release means to incrementally rotatably shift said firing pin release means,

said firing pin means comprising a series of annularly arranged, regularly spaced firing pin members generally aligned with the respective bores, said firing pin members being released in rotational sequence to produce a generally helix firing pattern,

said weapon also comprising a series of annularly arranged, regularly spaced firing pin trip blocks engaged with the respective firing pin members to hold the firing pin members in their cocked positions, said rotatable ring means having tripped means thereon sequentially engageable with said trip blocks to release the firing pin members in rotational sequence.



4,617,751
FISHING TACKLE WITH A FIBER OPTIC LIGHT GUIDE AS THE FISHING LINE

Hakan Johansson, 159 Vintervägen, S-722 31 Västerås, Sweden

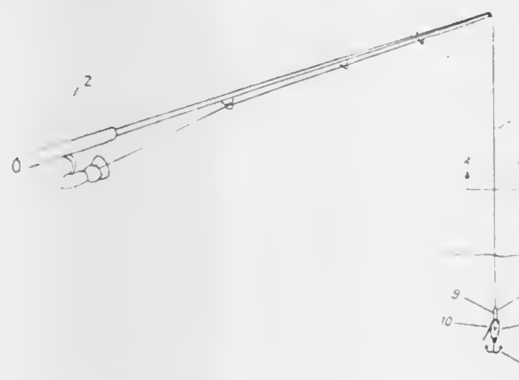
PCT No. PCT/SE84/00063, § 371 Date Oct. 18, 1984, § 102(e) Date Oct. 18, 1984, PCT Pub. No. WO84/03198, PCT Pub. Date Aug. 30, 1984

PCT Filed Feb. 23, 1984, Ser. No. 667,490

Claims priority, application Sweden, Feb. 25, 1983, 8301056

Int. Cl.⁴ A01K *85/01, 91/00*

U.S. Cl. 43—17.5 **10 Claims**



1. A fishing tackle for catching fish, comprising a hand tool, a fishing line connected to the hand tool and a bait including an arresting member and connected to the fishing line, the fishing line comprising a least one light guide in the form of an optic connection between the hand tool and the bait for transmitting light to the bait to light up the same and comprising a core and a cladding, the core having a higher refractive index than the cladding, means for introducing light from a light source into the light guide at the hand tool, and coupling means connecting the light guide to the bait, the bait being capable of emitting light transmitted thereto from said light source via the light guide, said coupling means comprising at least two portions separable from each other, one portion being rigidly connected to the light guide and a second portion being rigidly connected to the bait.

7. A fishing tackle for catching fish, comprising a hand tool, a fishing line connected to the hand tool and a bait including an arresting member and connected to the fishing line, the fishing line comprising at least one light guide in the form of an optic connection between the hand tool and the bait for transmitting light to the bait to light up the same and comprising a core and a cladding, the core having a higher refractive index than the cladding, means for introducing light from a light source into the light guide at the hand tool, and coupling means connecting the light guide to the bait, the bait being capable of emitting light transmitted thereto from said light source via the light guide, said bait comprises at least one energy transformer including a photo-diode, for transforming light energy to electric energy, and at least one electric energy storage circuit comprising at least one capacitor.

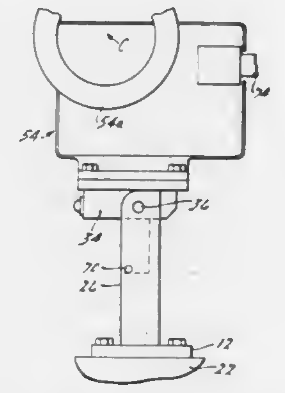
4,617,752
DOWNRIGGER MOUNTING

Alex Seres, Frankfort, Mich., assignor to Incoe Corporation, Troy, Mich.

Filed Mar. 20, 1985, Ser. No. 713,917

Int. Cl.⁴ A01K *89/00*

U.S. Cl. 43—27.4 **8 Claims**



1. In a downrigger fishing apparatus of the type having separate reels for carrying a fishing line and a weighted-line respectively, the weighted-line reel having an axis of rotation.

mounting means for the reel that carries the weighted-line, said mounting means including

a standard adapted to be mounted at a convenient location on a boat, said standard having a stop, and locating means;

a post pivotally attached to said standard for pivotal movement between operative and inoperative positions, said pivotal movement being about an axis parallel to said weighted-line reel axis and provided with a spring loaded detent, and a mounting plate for the weighted line reel, said detent and said plate being mutually cooperative with said stop in a predetermined operative position of said post to hold the latter securely but releasably in said operative position, and said plate being additionally coactive with said locating means in a predetermined operative position of said post to dispose said post in said predetermined inoperative position.

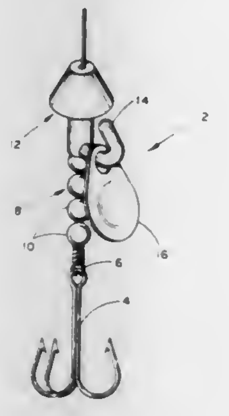
4,617,753
SPINNER BAIT COMPONENT SYSTEM

Gregory L. Pauley, P.O. Box 123, 208 Sioux St., Fort Peck, Mont. 59223, and Wayne V. Zahn, Minot, N. Dak., assignors to Gregory L. Pauley, Fort Peck, Mont.

Filed Feb. 8, 1985, Ser. No. 699,575

Int. Cl.⁴ A01K *85/00*

U.S. Cl. 43—42.19 **12 Claims**



1. Fishing lure apparatus comprising:

a body member having forward and aft portions and a bore extending lengthwise therethrough, wherein said forward portion extends conically rearward to a surface of largest diameter and from which surface a cylindrical aft portion of smaller diameter extends and wherein said aft portion includes an integral arm projecting outwardly therefrom and such that a distal end thereof lies rearward in spaced apart relation to he forward portion's surface of largest diameter, said arm being deflectable to permit the securing of a fishing accessory thereover.

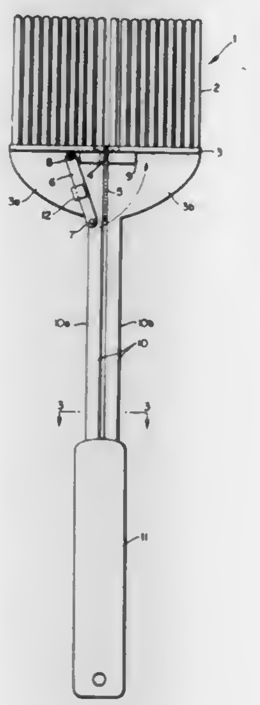
4,617,754
ARTICULATED FLY SWATTER

Steve Miley, P.O. Box 6653, Mesa, Ariz. 85206

Filed May 13, 1985, Ser. No. 732,853

Int. Cl.⁴ A01M *3/02*

U.S. Cl. 43—137 **8 Claims**



1. A fly or insect swatter comprising:
handle means for holding the swatter,
flail means secured to said handle means for killing flies and insects,
said flail means comprising a plurality of spaced bristles arranged in a plane and connected to a flange means,
said flange means comprising two flange portions, and
pivot means interconnecting said flange portions for pivoting said flange portions, one relative to the other to assume a 90° degree configuration,
whereby the swatter can be used to kill flies or insects in corners.

4,617,755
APPARATUS FOR PLANT CULTIVATION

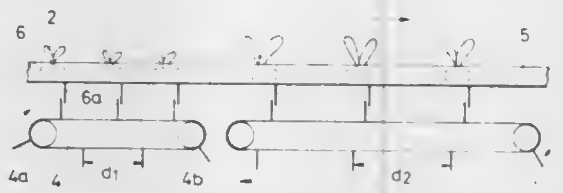
Akira Ikeda; Shigeki Nakayama; Toshitsugu Ishii, and Isao Itakura, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 26, 1984, Ser. No. 665,231

Claims priority, application Japan, Oct. 28, 1983, 58-203307; Oct. 28, 1983, 58-203315

Int. Cl.⁴ A01G *31/02*

U.S. Cl. 47—65 **5 Claims**



1. A plant cultivating apparatus, comprising; a plurality of jigs, each for supporting a plant; a plurality of radially extending guide rails, each for movably supporting a predetermined number of said jigs; and a plurality of transporting means provided for each of said guide rails, said transporting means for each said guide rail being arranged in series along said guide rail, said transporting means moving relative to said guide rails, each said transporting means including a plurality of equidistantly arranged dogs said dogs engaging with and moving said jigs in a first direction along said guide rail, with a distance between adjacent ones of said dogs on one of said transporting means being identical to that of any other one of said transporting means arranged at a corresponding position along said guide rails, said distance being stepwisely increased with the distance from a starting end of said rail, with successive serial transporting means.

4,617,756
SWINGABLE SLIDING DOOR FOR A MOTOR VEHICLE UTILIZING A SWING ARM MOUNTED ON THE BODY OF THE CAR

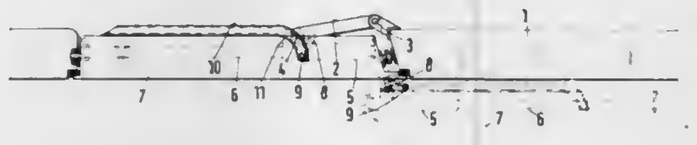
Dietmar Dilcher, Vellmar, Fed. Rep. of Germany, assignor to Gebr. Bode & Co. GmbH, Kassel, Fed. Rep. of Germany

Filed Mar. 26, 1985, Ser. No. 716,049

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1984, 3411073

Int. Cl.⁴ E05D *15/10*

U.S. Cl. 49—212 **13 Claims**



1. A swingable sliding door for a motor vehicle comprising a door panel movable between open and closed positions for a door opening in a vehicle body, a swing arm pivotably connected to the vehicle body, a carriage pivotably connected to said swing arm, an elongated support on said door panel, said carriage being slidably mounted on said support for undergoing slidable movement thereon as said door panel travels between said open and closed positions, said carriage comprising a sleeve, said elongated support comprising a bar slidably supporting said sleeve, and guide means connected to the door panel and to said swing arm for guiding the movement of the door panel between said open and closed positions, said guide means being constructed so as not to bear any weight of the door, said carriage providing a support and guide function for the door panel such that the weight of the door panel is transmitted substantially from said bar through said sleeve to the swing arm.

4,617,757
SLIDING DOOR OPENING-CLOSING MECHANISM

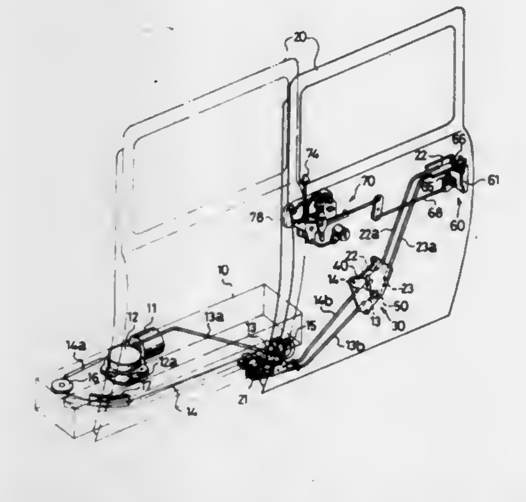
Tsutomu Kagiyama; Fumio Kobayashi; Jun Yamagishi, all of Kanagawa, and Hiromitsu Nishikawa, Yokohama, all of Japan, assignors to Ohi Seisakusho Co., Ltd., Yokohama, Japan

Filed Oct. 31, 1985, Ser. No. 793,218

Claims priority, application Japan, Nov. 2, 1984, 59-231851; Nov. 2, 1984, 59-231852

Int. Cl.⁴ E05F *15/00*

U.S. Cl. 49—280 **12 Claims**



1. An apparatus for opening and closing a sliding door mounted to a vehicle body, comprising a motor means fixedly mounted to said vehicle body for outputing power to move said sliding door, a linkage means secured to said sliding door for receiving said power from said motor, a door lock means having a latch means for completely closing said sliding door, said door lock means for receiving part of said power from said motor through said linkage means to lock and unlock said latch means, a first pair of cable means for transmitting said power from said motor to said linkage means, a second pair of cable means in correspondence with said first pair of cable means for transmitting said part of said power from said motor through said linkage means to said door lock means, and said linkage means being adapted to transmit said part of said power from said motor from each of said first pair of cable means to the corresponding one of said second pair of cable means and to take up slack in each of said first and second pairs of cables means when loosened.

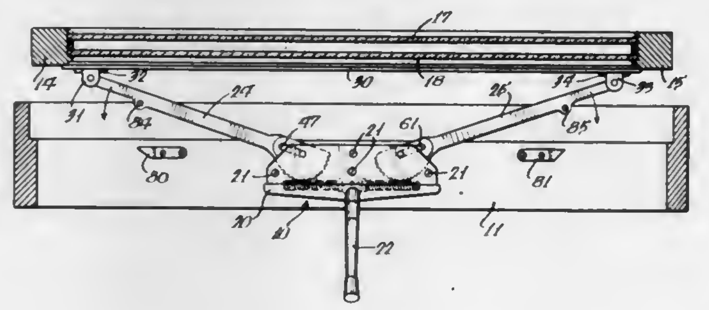
4,617,758
SELF-LOCKING WINDOW OPERATOR

Gregory J. Vetter, Owatonna, Minn., assignor to Truth Inc., Owatonna, Minn.

Filed Jan. 23, 1984, Ser. No. 572,827

Int. Cl.⁴ E05F *11/00*

U.S. Cl. 49—324 **12 Claims**



1. A window operator for positioning a window sash relative to a window frame comprising, gear drive mechanism mountable on said window frame, an arm connected between said gear drive mechanism and said window sash and having rotational movement for moving the window sash and linear movement when the window sash is closed, and coacting locking means including a member on said arm and a member mountable on said window frame which are moved into locking relation by said linear movement of said arm.

4,617,759
PROFILE OF PLASTIC MATERIAL FOR REFRIGERATOR CABINETS

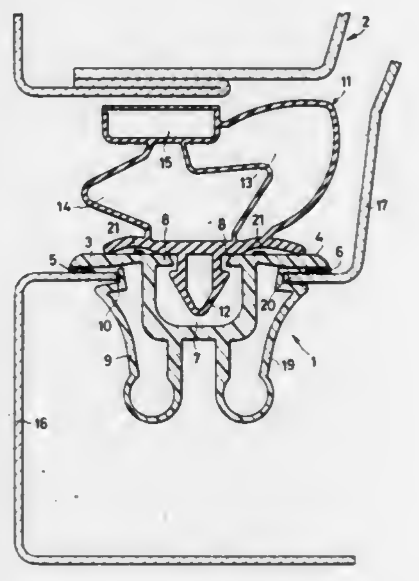
Bruno Pasqualini, Varese, and Adriano Merla, Angera, both of Italy, assignors to Pantasote Inc., Greenwich, Conn.

Filed Dec. 17, 1984, Ser. No. 682,099

Claims priority, application Italy, Dec. 23, 1983, 24029/83[U]; Dec. 23, 1983, 24030/83[U]

Int. Cl.⁴ E06B *7/16*

U.S. Cl. 49—487 **10 Claims**



1. In a profile of plastic material for coupling the door shell and counterdoor of refrigerator and similar cabinets, comprising a bellows gasket portion which provides a tight seal between the door and the cabinet, the improvement wherein the profile and the gasket portion are integral and form only one piece produced by co-extrusion of two materials having a different rigidity such as to permit a ready detachment of the gasket portion, which is less rigid than the profile, from the profile along the region of their connection, under an appropriate manual or mechanical force, and wherein said profile has on its side facing the cabinet a pair of lateral ribs between which a groove is defined, suitable for receiving a substituting bellows gasket portion, and on its side facing the door at least one elastically yielding flange means, acting as a spring, for press (snap) coupling the door shell and the counterdoor in cooperation with said lateral ribs, said ribs operatively self-positioning relatively to the door shell and the counterdoor.

4,617,760
TABLE RECIPROCATING APPARATUS

Tetsuya Nagata, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Chiba, Japan

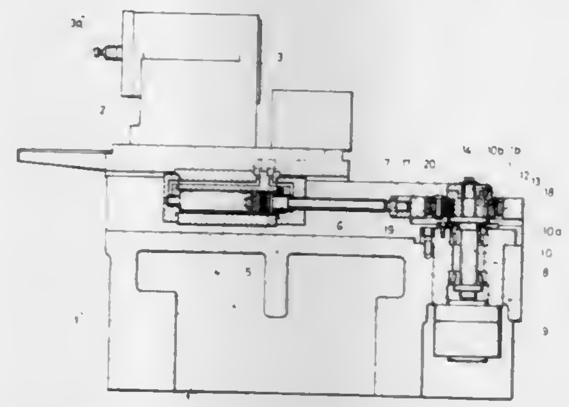
Filed Feb. 22, 1985, Ser. No. 704,383

Claims priority, application Japan, Feb. 24, 1984, 59-25391[U]

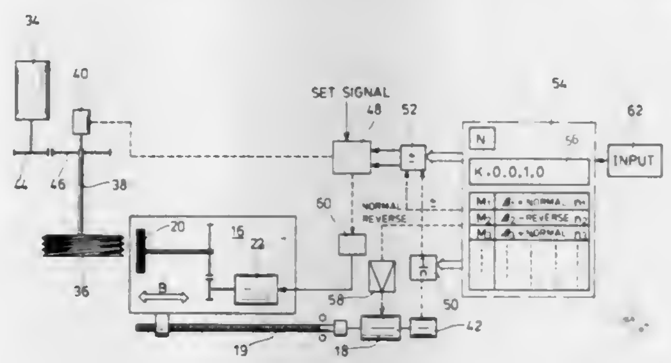
Int. Cl.⁴ B24B *9/00*

U.S. Cl. 51—34 C **5 Claims**

1. A table-reciprocating apparatus comprising, in combination with a table disposed on a base for reciprocating movement in relation to the base: a shaft axially attached to said table; and a ring-like sliding member attached to the other end of the shaft for imparting reciprocating movement thereto and thereby to the table, said ring-like sliding member having interior surfaces defining an interior space, a drive shaft, and a cam assembly disposed between the drive shaft and the sliding member for controlling the reciprocating movement of said member, said cam assembly comprising an inner cam axially connected to the drive shaft, and an outer cam disposed in the interior space of said ring-like sliding member in co-planar relationship, first bearing means interposed between the inner cam and the outer cam to transmit movement therebetween and second bearing means providing contact between the outer cam and the interior surfaces of the sliding member.

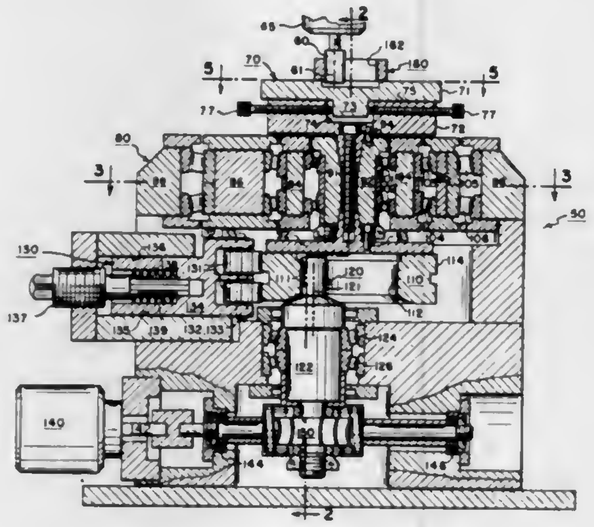


4,617,761
HELICAL GEAR GRINDING MACHINE
Satoshi Miyatake, Kawagoe; Mitsuo Abe, Kiyose, and Masao Kume, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 8, 1984, Ser. No. 638,682
Claims priority, application Japan, Aug. 9, 1983, 58-146023
Int. Cl.⁴ B24B *19/00*
U.S. Cl. 51—95 GH **11 Claims**



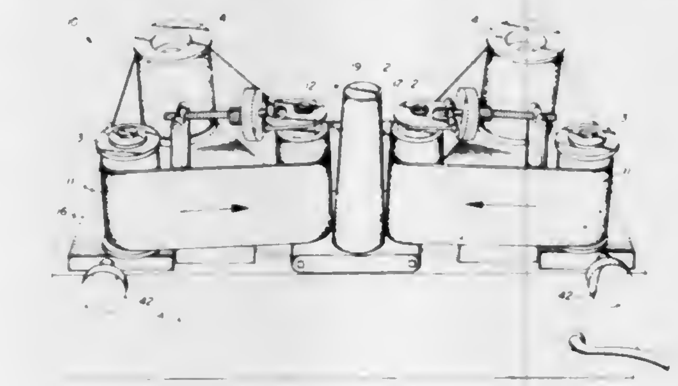
1. A helical gear grinding machine comprising:
(a) a first rotational drive source for rotating a grinding wheel;
(b) a first pulse generator operatively coupled to the grinding wheel;
(c) a second rotational drive source for rotating a helical gear in mesh with the grinding wheel;
(d) a third rotational drive source for displacing the helical gear with respect to the grinding wheel;
(e) a second pulse generator operatively coupled to said third rotational drive source for generating pulses dependent on the number of r.p.m. of said third rotational drive source; and
(f) memory means for storing division data of the helical gear wherein outputs of said memory means and outputs of said first pulse generator are added and subtracted to control the rotation of said second rotational drive source with pulses generated by said first pulse generator in grinding the helical gear with the grinding wheel.

4,617,762
CAM CONTROLLED MACHINE FOR FORMING NON-STANDARD SURFACES
Carl Hoglund, 58 Johnson Dr., Murray Hill, N.J. 07971
Filed Jul. 18, 1983, Ser. No. 514,512
Int. Cl.⁴ B24B *17/02*
U.S. Cl. 51—101 R **7 Claims**



1. In a grinding machine comprising a grinding tool, a worktable on which a workpiece may be mounted for grinding, and a cam and a cam driver means for driving said worktable repeatedly through a path defined by said cam, apparatus for supporting said worktable comprising:
a spindle connected to said cam and said worktable, said spindle and the worktable connected thereto being moved repeatedly through said path by action of said cam and cam driver means, and
first, second and third annular support means that are nested together with the spindle inside the first support means, the first support means inside the second and the second support means inside the third,
said spindle and said first and second support means being mounted for rotation about a spindle axis, a first axis and a second axis of rotation, respectively, said spindle axis, first axis, and second axis being parallel to one another and spaced apart from each other, said first and second support means rotating with respect to each other about said first and second axes of rotation, respectively, as a result of translational motion imparted to said spindle by action of said cam and cam driver means.

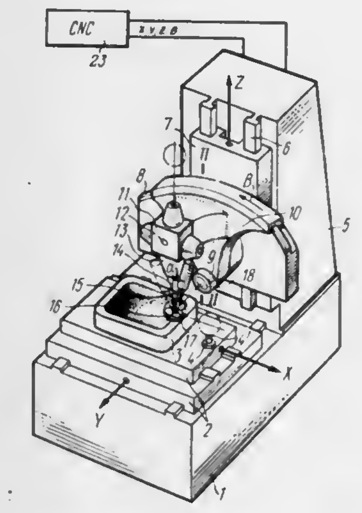
4,617,763
BELT DRIVEN KNIFE SHARPENER
Theodore L. Edling, 4333 Willow Rd., Bethel Island, Calif. 94511
Filed Jul. 19, 1984, Ser. No. 632,376
Int. Cl.⁴ B24B *21/00*
U.S. Cl. 51—135 R **5 Claims**



1. A knife sharpener, comprising:
a base;

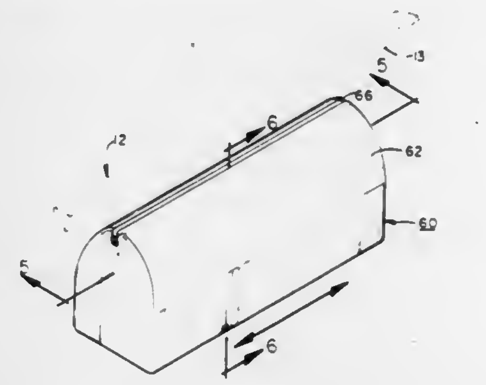
a pair of grinding belts and at least two rollers supporting each of the grinding belts, the rollers supported on the base for rotation about vertical axes;
motor means connected to the base and driving one of the rollers on each grinding belt such that the belts rotate in opposite directions;
one roller of each belt being a support roller for knife sharpening, the two support rollers being spaced apart with a guide roller between them, the guide roller being rotationally supported on the base on a vertical axis and closely adjacent to the grinding belt at each support roller to define a narrow crevice means on each side of the guide roller for receiving a knife blade in generally horizontal orientation perpendicular to the axes of rotation of the guide roller and the support roller and twisted about a longitudinal axis of the blade to engage an upper edge of the knife blade against the guide roller and force the cutting edge of the blade against the belt; and
each support roller and the guide roller including resilient cushioning sleeve means for enabling local deformation of one support roller and the guide roller by a knife blade twisted therebetween, to permit a manually adjustable degree of twisting of the knife blade and to control the degree of twisting of the knife blade in the crevice so that the depth of grinding of the cutting edge is controlled by the amount of twisting force applied to the blade as the blade is pulled horizontally through the crevice.

4,617,764
NC VERTICAL SPINDLE JIG GRINDER
Judel S. Reibakh, Moscow, U.S.S.R., assignor to Experimentalny Nauchno-Issledovatelsky Institut Metallorezhuschikh Stankov, Moscow, U.S.S.R.
Filed May 23, 1985, Ser. No. 737,190
Int. Cl.⁴ B24B *53/14*
U.S. Cl. 51—165.71 **4 Claims**



1. A numerically controlled substantially upright spindle jig grinder arrangement, comprising
a bed;
a compound table carrying a workpiece traversable on said bed in a substantially horizontal plane along at least two axes independent from each other;
a column rigidly attached to the bed, said column having at least one first guide means positioned in a substantially upright direction;
slide means movable along said first guide means in the direction of a third axis;
said slide means having at least one second guide means having arc-shaped configuration;
said slide means having a lay-shaft;
base means movable on said second guide means relative to an axis of said lay-shaft along an arc shaped coordinate axis;
receiving means positioned on said base means indexable about an axis of said receiving means;
said receiving means having at least two wheelheads,
longitudinal axes of said wheelheads laying in planes substantially perpendicular to the plane of the axis of said receiving means
a wheel spindle of each said wheelheads has an axis interposed at a predetermined angle to the axis of the wheelhead; said wheel spindle rotating during machining of the workpiece about the longitudinal axis of said wheelhead;
a spherical abrasive tool positioned on said wheel spindle; a geometrical center of said spherical abrasive tool lying on the geometrical axis of rotation of said base means; the grinding allowance being removed from the workpiece when the spherical abrasive tool rotates about the axis of said wheel spindle;
a wheel dresser located on said compound table; said wheel dresser traversing together with said compound table relative to said base means to a position at which said wheel dresser is situated on the line of intersection of a vertical plane passing through the lay-shaft axis with the horizontal surface of said compound table when the spherical abrasive tool is being formed and dressed;
forming and dressing of the surface of the spherical abrasive tool occur when said slide means traverses rotation of said spherical abrasive tool and oscillations of said base means moves through a preset angle depending on the shape and dimensions of a spherical layer of the abrasive tool; and
numerically controlled system electrically connected to said jig grinder arrangement.

4,617,765
WIPER BLADE EDGER
Robert M. Weiler, Feasterville, Pa., assignor to Joe O'Donnell, Philadelphia, Pa., a part interest
Continuation-in-part of Ser. No. 297,425, Aug. 26, 1981, abandoned. This application Nov. 29, 1983, Ser. No. 556,179
Int. Cl.⁴ B24D *15/02*
U.S. Cl. 51—205 WG **3 Claims**



1. An edger for manually refurbishing a wiper blade of elastomeric material, the wiper blade having a cross-section of decreasing width toward a working edge, the blade adapted to be wiped transversely over a surface, the edger comprising:
an elongated housing to be grasped by a user, the housing being at least partly hollow and having an external portion with at least one groove along its entire length, the groove having rigid, non-abrasive side walls, the groove having a width substantially the same as the working edge of said blade;
the housing having an internal portion received within the external portion, the internal portion having a surface disposed immediately below the groove, the internal portion being dimensioned to fit tightly into the external portion through a transverse opening extending along the external portion at a side of the housing opposite the groove;
an abrasive member disposed in the housing below the groove, the abrasive member being wider than the groove

and fixed in place on said surface disposed immediately below the groove, the abrasive member extending along the length of the housing, the abrasive member being aligned to remove material transverse and perpendicular to the blade as the edger is passed along the working edge, the groove maintaining a blade position perpendicular to the groove,; and,

the external portion and the internal portion both being substantially U-shaped in cross-section, each U-shaped portion having legs and a base, the base of the internal portion being flattened and supporting the abrasive member immediately below the groove, the external portion having interengaging press-fit means for engaging the internal portion, the groove being formed along the length of the base of the external portion and the abrasive member being affixed between the base of the internal portion and the base of the external portion, the external portion being engaged by ends of opposite legs of the U-shaped internal portion, the ends of the legs being frictionally disposed against inward sides of the U-shaped portion.

4,617,766

GRINDING WHEEL FOR FLAT PLATES

Shinji Sekiya, Tokyo, and Takatoshi Ono, Nagareyama, both of Japan, assignors to Disco Co., Ltd., Tokyo, Japan

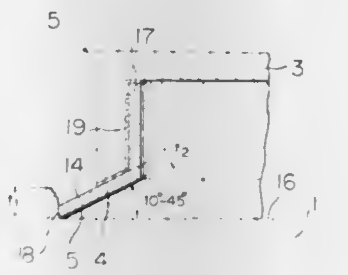
Continuation of Ser. No. 523,825, Aug. 15, 1983, Pat. No. 4,545,154, which is a continuation of Ser. No. 212,305, Dec. 3, 1980, Pat. No. 4,411,107. This application Jun. 26, 1985, Ser. No. 749,043

Claims priority, application Japan, Feb. 1, 1980, 55-10888; Feb. 1, 1980, 55-10889

The portion of the term of this patent subsequent to Oct. 25, 2000, has been disclaimed.

Int. Cl.⁴ B24D *5/00*

U.S. Cl. 51—209 R **7 Claims**



1. A grinding wheel comprising a cup and at least one grindstone provided at an open end of said cup, said grindstone having means for grinding a flat surface of a hard and brittle workpiece in a cutting manner, said means being an annular grinding portion which protrudes radially outwardly from the open end of said cup with inclination relative to the central axis of said cup, a substantial fraction of the width of said grindstone being cantilevered out from said cup, such that the radially inner and outer portions of the width of said grindstone are respectively backed by and free of backing by said cup, means for simultaneously minimizing risk of breakage of the grinding portion and overheating of said hard and brittle material being ground, said means comprising (1) a grindstone composition of electrodeposited super hard abrasive grains with at least said radially outer portion of the width of said grindstone not including any substrate or other backing and (2) a grinding portion thickness in the range of 0.1 to about 0.5 mm, whereby said grinding portion is sufficiently thin to grind the flat surface in a cutting manner efficiently and accurately.

4,617,767

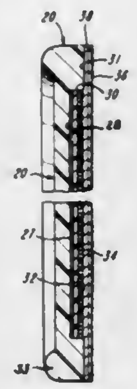
SANDING, BUFFING AND POLISHING TOOL AND PARTS THEREOF

Frank F. Ali, 2855 Locke Dr., Beavercreek, Ohio 45324

Filed Jan. 14, 1985, Ser. No. 691,018

Int. Cl.⁴ B24D *17/00*

U.S. Cl. 51—358 **9 Claims**



2. Apparatus for use in providing a sanding, buffing and polishing tool comprising a disc forming a back-up pad for abrasively surfaced sheet material the outermost face of which presents a sanding, buffing and/or polishing surface, said disc having a front face and a rear face, said front face having the major extent of its surface recessed relative to a relatively narrow bounding outer peripheral portion thereof to define therein a central cavity having a base which is surfaced by material including outwardly directed hook formations projected to a location immediately of a plane defined by said relatively narrow bounding outer peripheral surface portion of said front face of said disc.

4,617,768

POLESHAPED SUPPORTING MEMBER, AND BASE STRUCTURE FOR ATTACHMENT OF SAME

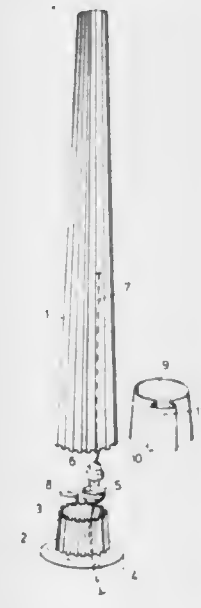
Sven Runo V. Gebelius, Box 15008, Bromma, Sweden (S-161 15)

PCT No. PCT/SE83/00376, § 371 Date Jun. 20, 1985, § 102(e) Date Jun. 20, 1985, PCT Pub. No. WO85/01977, PCT Pub. Date May 9, 1985

PCT Filed Nov. 1, 1983, Ser. No. 755,334

Int. Cl.⁴ E04H *12/08*

U.S. Cl. 52—40 **10 Claims**



1. A support structure comprising:

a poleshaped member having a tubular cross-section, said poleshaped member having an inner surface and an outer surface;

said poleshaped member having a conically reduced cross-section in direction from a ground plane;

a base structure;

an attachment member adapted to be detachably secured to said poleshaped member;

said attachment member having an external shape substantially corresponding to said inner surface of said poleshaped member;

at least one clamping member surrounding said poleshaped member adapted to press a portion of said poleshaped memeber surrounding said attachment memeber into a frictional contact position against said attachment member;

a first electrical connection member disposed adjacent to an upper plane of said attachment member, said first electrical connection member being joined to an electric feed cable; a second electrical connecting member being disposed to a larger end portion of said poleshaped member, and being joined to a cable;

said cable being disposed within said poleshaped member;

said first and second connecting members being electrically interconnectable to supply voltage to an electric fitting suspended by said poleshaped member.

4,617,769

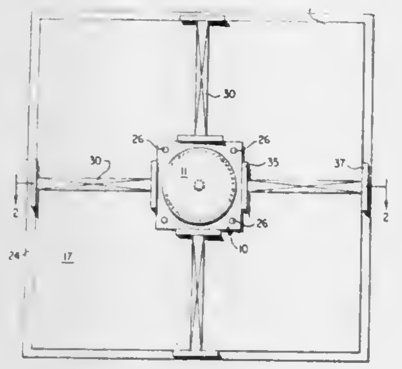
ASEISMIC BEARING FOR BRIDGE STRUCTURES

Edward R. Fyfe, 3058 Eva Drive, Burlington, Ontario, Canada; William M. Slater, 21 Garfield Ave., Toronto, Ontario, Canada (M4T 1E6), and Ronald J. Watson, 199 Sherbrooke, Williamsville, N.Y. 14221

Filed Feb. 24, 1984, Ser. No. 583,542

Int. Cl.⁴ E02D *27/34*

U.S. Cl. 52—167 **11 Claims**



1. An aseismic bridge bearing comprising:

a first plate, a second plate, a resilient member sandwiched between the first and second plates to permit vertical and horizontal movement between the first and second plates, and a locating pin between the resilient member and one of the first and second plates;

an aseismic couple plate secured by first anchor pins to one of a bridge pier and a bridge deck, the first plate being secured to the other of the bridge pier and bridge deck and the second plate being adjacent and parallel to the couple plate; and

a fuse pin between the second plate and the couple plate such that during normal operating conditions movement between the bridge deck and bridge pier will be accommodated by the resilient member; however, during seismic activity excessive horizontal displacement will cause rupturing of the fuse pin and permit sliding to occur between the second plate and the couple plate.

4,617,770

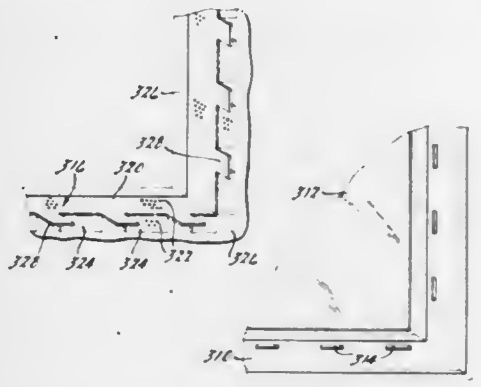
NAILERLESS ROOF EDGE, FRAMING STRUCTURE AND BUILDING PANEL MOUNTING ASSEMBLY

John B. Hickman, Asheville, N.C., assignor to W. P. Hickman Co., Asheville, N.C.

Continuation-in-part of Ser. No. 534,268, Sep. 22, 1983, Pat. No. 4,472,913, which is a continuation of Ser. No. 191,714, Sep. 28, 1980, abandoned. This application Sep. 25, 1984, Ser. No. 654,647

Int. Cl.⁴ E06B *2/04;* E04B *5/52*

U.S. Cl. 52—214 **17 Claims**



1. In a kit for an assembly for mounting a framing member to a building at an opening through a surface of the building, the building surface generally defining an outwardly facing plane, comprising:

a tab strip member having an attachment portion for securing to said building adjacent said opening and having tab means integral with said attachment portion;

said tab means extending outwardly from and orthogonally to the plane of said building surface when said tab strip member is secured to said building;

a frame member having integrally formed slot means for receiving said tab means by sliding said frame member in a direction orthogonal to the plane of said building until a portion of said tab means protrudes through said slot means;

said frame member being supported by said tab means when slidably received by said tab means and said tab means being permanently bendable to prevent removal of said frame member; and

cover member attachable to an outwardly exposed portion of said frame member for concealing said protruding portion of said tab means.

4,617,771

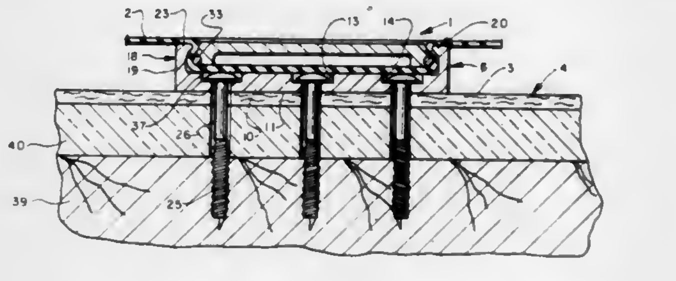
MECHANICAL FASTENER FOR ROOFING MEMBRANE AND METHOD OF APPLYING SAME

Walter Tomaszewski, Canton, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 26, 1985, Ser. No. 780,862

Int. Cl.⁴ E04D *5/14*

U.S. Cl. 52—410 **18 Claims**



1. A mechanical fastener securing a flexible elastomeric sheet to the upper surface of a roof, said fastener including:

(a) a rigid housing secured to the upper surface of the roof and underlying the elastomeric sheet, said housing having an upstanding annular-shaped boss with an annular-shaped ledge formed integrally with and extending radially inwardly from said boss to form an undercut circular recess;

(b) fastening means securing the housing to the upper surface of the roof;

(c) a separate elastic ring split at one location on its circumference mounted within the annular-shaped boss of the housing clamping the elastomeric sheet against the housing in the undercut circular recess between the elastic ring and ledge; and

(d) a locking cap mounted on the housing by a snap-fit engagement, said cap having an annular-shaped side wall, with an undercut recess formed in an outer surface of said wall, said recess having a diameter at least equal to or greater than the unstressed diameter of the elastic ring, said cap side wall being inserted within the annular-shaped wall of the housing and engaging the elastic ring within the undercut recess of the cap, thus maintaining said ring in clamping engagement with the elastomeric sheet and within the undercut circular recess of the housing.

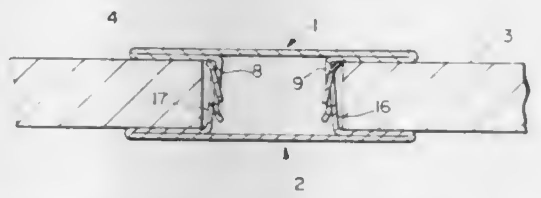
4,617,772
WALL PANEL JOINER

George Hassell, Coral Springs, Fla., assignor to Jamestown Metal Marine Sales Inc., Boca Raton, Fla.

Filed Jun. 12, 1984, Ser. No. 619,983

Int. Cl.⁴ E04C *1/34*

U.S. Cl. 52—461 **5 Claims**



1. A clamping means for securing two wallboards together to form part of a wall, said clamping means comprising a pair of clamping elements including

a first clamping element having a first flat face and a pair of first spaced flanges extending at right angles to said first flat face, said first flanges being disposed in spaced relation to the longitudinal edges of said first flat face,

a second clamping element having a second flat face and a pair of second spaced flanges extending at right angles to said second flat face, said second flanges being disposed in spaced relation to the longitudinal edges of said second flat face, the distance between each second flange and the adjacent longitudinal edge of said second flat face being slightly greater than the distance between each first flange and the adjacent longitudinal edge of said first flat face so that the flanges of the second clamping member fit within the flanges of the first clamping member with the flanges on said first and second clamping members being in face to face contact with each other,

and means for locking said clamping elements together and permitting release of such elements only by longitudinal sliding movement of one element with respect to the other element,

said locking means comprising slots on the flanges of one of said clamping elements and tabs extending from the flanges of the other of said clamping elements, said tabs being disposed within said slots when said clamping elements are locked together so that one edge of each of the slots is disposed between the inner face of each of the tabs and the surface of the flange of said other clamping element, the peripheral surface of said tabs being disposed at an angle to provide cam means to permit small longitudinal movement of said clamping elements to release the interlocked clamping elements.

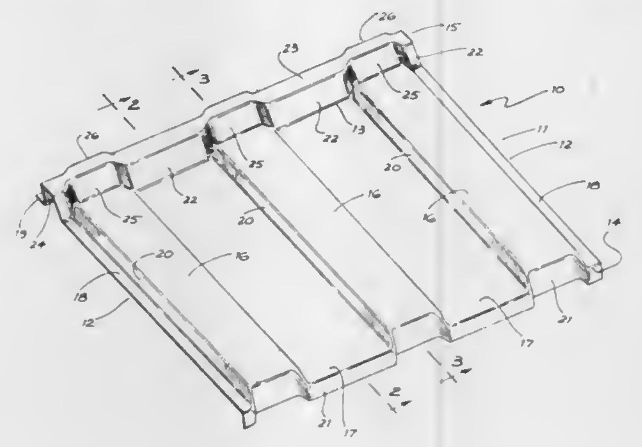
4,617,773
CLADDING ELEMENT

Kevin A. R. Studwell, Sunnybank, Australia, assignor to Australian Design Marketing Pty. Ltd., Sunnybank, Australia

Continuation-in-part of Ser. No. 566,326, Dec. 28, 1983, abandoned. This application Mar. 6, 1986, Ser. No. 836,981

Int. Cl.⁴ E04D *1/00*

U.S. Cl. 52—537 **10 Claims**



1. A sheet metal cladding element which is intended in use to span and to be secured to at least two structural members of a building, the cladding element comprising:

a panel portion having opposed side edges and opposed top and bottom edges extending in a lateral direction between the side edges,

an inverted channel-shaped ridge extending along the top edge of the panel portion and formed integrally with the panel portion, the ridge being connectable to the building structural members by fasteners and, when so connected, functioning to tie the members together, and the ridge including an inner wall which forms an upwardly projecting extension of the panel portion,

a plurality of upwardly projecting, inverted channel-shaped ribs formed in the panel portion and extending along the panel portion from the inner wall of the ridge in a direction toward the bottom edge of the panel portion,

a series of recesses formed in the inner wall of the ridge, the recesses serving to enhance the structural integrity of the cladding element and providing for merging of the ribs with the inner wall of the ridge,

each recess being in alignment with a respective one of the ribs, having a width equal to that of the rib and defining a cavity into which the associated rib extends, and

a downwardly projecting lip formed at and extending along the bottom edge of the panel portion,

the cladding element being arranged to locate in overlapping relationship with adjacent cladding elements, with a rib of one element being nested below a rib of a laterally adjacent element and with the lip at the bottom edge of one element extending over the ridge at the top edge of another of the elements.

4,617,774
BUILDING PANEL

Raymond H. Pittman, Batavia, and William J. Schultz, St. Charles, both of Ill., assignors to Masonite Corporation, Chicago, Ill.

Filed Jul. 11, 1984, Ser. No. 629,625

Int. Cl.⁴ E04D *1/00*

U.S. Cl. 52—521 **14 Claims**

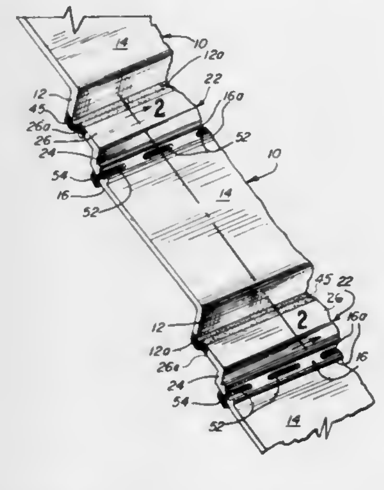
1. A building panel for exterior and interior wall and roof surfaces comprising:

an elongated body formed of relatively thins, hardboard material, having upper and lower edges, a molded outer face adapted for exposure to the weather, and a back face opposite said outer face and having contour generally matching that of said outer face;

said body including a lower edge portion extending along a lower edge of said panel integrally joining an intermediate facia portion spaced outwardly of said lower edge;

an elongated fastener receiving strip integrally joining an upper edge of said intermediate facia portion and including a plurality of longitudinally spaced apart, integrally molded, fastener receiving depressions projecting inwardly from the intersecting surface of said outer face immediately adjacent an edge of said depressions, each of said depressions having an inwardly sloping wall surface with a depth greater than the nominal thickness of said panel between said outer face and said back face, said depressions aligned in a row on said strip between said upper and lower edge of said panel, said strip having a machined back surface comprising a portion of said panel back face formed by machining after said depressions have been formed in said panel, said machined back surface having a generally planar face intersecting said sloping wall surface of each depression thereby forming an open slot for receiving a fastener extending completely through said panel between said outer and back faces thereof; and

an upper edge portion joining an upper edge of said fastener receiving strip adapted to underlie a lower edge portion of a panel laid up in a next higher course.



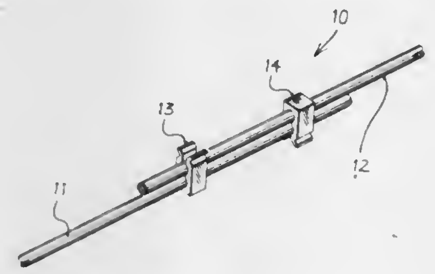
4,617,775
EXTENSIBLE REINFORCING BAR ASSEMBLY AND CLIP

John Padrun, 22800 Hutchinson Rd., Los Gatos, Calif. 95030

Filed Sep. 4, 1984, Ser. No. 647,045

Int. Cl.⁴ E04C *5/20*

U.S. Cl. 52—684 **2 Claims**



1. An extensible reinforcing bar assembly for use in reinforcing concrete comprising first and second cylindrical reinforcing bars, a plurality of clips retaining said bars in parallel relation, one end portion of said first bar lying alongside a length of the other said bar intermediate the ends thereof so as to combine the overall length of both bars in extensible relation therebetween, said clips including a U-shaped plastic unit formed to be forced onto said first and second said bars, said unit including a force-receiving web at one end, said web carrying elongate confronting spaced apart side panels, said panels having first and second pairs of relieved surface portions disposed in confronting relation to form first and second seats for holding said bars tightly and independently therebetween, the confronting surfaces of each of said seats including portions disposed to underlie an associated one of said bars seated therein, said confronting surfaces being disposed to substantially meet at the free end of said panels when no bar is seated in said clip, said side panels having limited resilience serving to tightly engage the sides of said bars therebetween while permitting said bars to be longitudinally adjusted to provide the desired combined length of said assembly, the exterior region laterally to the sides of said clips being free of protuberances therefrom.

4,617,776
BUILDING ELEMENT HAVING SPACED LONGITUDINAL MEMBERS WITH EACH MEMBER HAVING A DIFFERENT MOISTURE CONTENT

Ulf Bergström, Bromölla, Sweden, assignor to Armerad Betong Vagforbattringar AB, Stockholm, Sweden

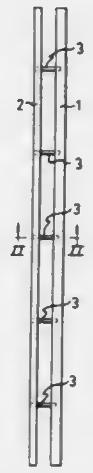
PCT No. PCT/SE82/00126, § 371 Date Dec. 17, 1982, § 102(e) Date Dec. 17, 1982, PCT Pub. No. WO82/03646, PCT Pub. Date Oct. 28, 1982

PCT Filed Apr. 22, 1982, Ser. No. 456,080

Claims priority, application Sweden, Apr. 23, 1981, 8102568

Int. Cl.⁴ E04C *3/30, 3/36*

U.S. Cl. 52—690 **5 Claims**



1. A prefabricated building element comprising

two substantially parallel, spaced longitudinal members; and

at least one spacer and connecting means disposed between and connected to the longitudinal members;

wherein at least said longitudinal members of said prefabricated element, in order to compensate for expected climatic differences at opposite sides of the building element in the position of use in a building structure, are comprised of hygroscopic material,

wherein each of said members has a moisture content that is different from moisture content of the other member in said element at the time of production,

and wherein the moisture contents of the members are in a moisture ratio, said moisture ratio being the expected moisture ratio between the members when the building element is exposed to two different climatic conditions in the position of use in the building structure.

4,617,777

DOUBLE-WALLED PANELS WITH END CLOSURE

Gunnar J. Fonne, Eidanger; Finn Daae-Johansen, Tjodalyng; Per Thoresen, and Stein-Arne Nilsen, both of Oslo, all of Norway, assignors to Vefi A/S, Larvik, Norway

PCT No. PCT/NO83/00047, § 371 Date Jul. 3, 1984, § 102(e) Date Jul. 3, 1984, PCT Pub. No. WO84/01687, PCT Pub. Date May 10, 1984

PCT Filed Nov. 4, 1983, Ser. No. 629,550

Claims priority, application Norway, Nov. 4, 1982, 823664

Int. Cl.⁴ E04C *2/54*

U.S. Cl. 52—802 **2 Claims**

1. A double-walled panel formed of transparent synthetic material and for use in greenhouses and for similar purposes, said panel comprising:

a pair of sheets of transparent synthetic material, each said sheet having opposite ends;

a plurality of parallel ribs of transparent synthetic material positioned between said pair of sheets and defining therewith a plurality of longitudinal channels extending between opposite ends of said panel; and

said ends of said sheets at each said panel end extending beyond respective ends of said ribs and being joined to form a flange extending transversely of said channels and closing said panel end, with said rib ends spaced from said closed panel end and thereby defining holes connecting adjacent ends of all of said channels.

4,617,778

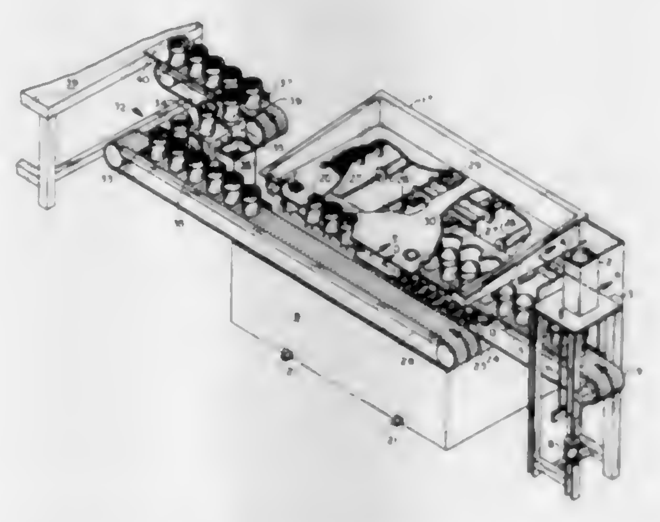
APPARATUS TO FACILITATE HAND PACKING OF CONTAINERS

Kent G. Blackman, Sycamore, Ill., assignor to The Suter Company, Inc., Sycamore, Ill.

Filed Dec. 19, 1985, Ser. No. 810,773

Int. Cl.⁴ B65B *67/02*

U.S. Cl. 53—391 **15 Claims**



1. Apparatus to facilitate the manual filling of a plurality of containers with a product, said apparatus comprising:

a continuously operating in-feed conveyor;

a container dispenser station periodically operated to dispense containers onto said in-feed conveyor;

a plurality of transfer rails positioned adjacent to said in-feed conveyor;

operating means;

at least one shuttle bar operated in response to an initial manual operation of said operating means to move a first plurality of said containers from said in-feed conveyor onto said transfer rails;

a filler plate, including a plurality of openings therein, said plate supporting a quantity of said product;

said openings in said plate being positioned over said transfer railings and over said containers thereon;

at least one clamp saddle initially positioned below said transfer rails and operated in response to said initial manual operation of said operating means to move said plurality of containers on said transfer rails, off of said rails and upward against said filler plate;

whereby said product can be manually introduced from said plate into said plurality of containers and said containers are filled.

4,617,779

METHOD AND AN ARRANGEMENT FOR THE MANUFACTURE OF PACKING CONTAINERS

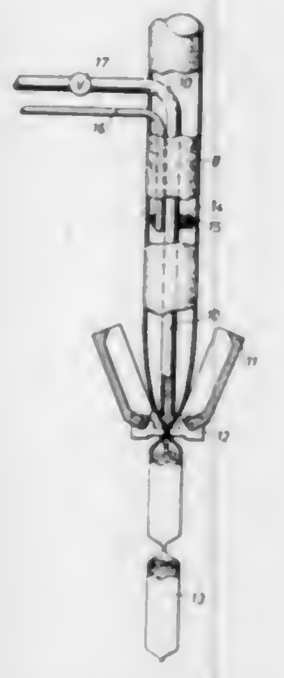
Jan Nygren, Lund, and Anders Hilmersson, Helsingborg, both of Sweden, assignors to Tetra Pak International AB, Lund, Sweden

Filed Sep. 9, 1983, Ser. No. 530,604

Claims priority, application Sweden, Sep. 27, 1982, 8205494

Int. Cl.⁴ B65B *31/00*

U.S. Cl. 53—433 **11 Claims**



1. A method for manufacturing and filling packing containers comprising the steps of:

advancing a continuous web of packing material in a predetermined direction;

forming said web into a tube and sealing said web longitudinally at a first location while said web advances;

conducting a liquid material through a fill pipe from above said first location;

continuously conducting gas through a gas pipe from above said first location;

sealing the tube at a zone transverse to said predetermined direction, the zone constituting a bottom of a packing container;

establishing a greater gas pressure inside said tube between said first location and said zone from gas conducted through said gas pipe;

feeding said liquid material to be packaged into the tube to a predetermined level;

applying forming jaws against the exterior of said tube after said liquid material to be packaged is fed into the tube to produce flattened sides of a predetermined shape of a packing container;

sealing said portion of said tube at a zone transverse to said predetermined direction and above the level of contents.

7. An apparatus for manufacturing and filling packing containers comprising:

means for advancing a continuous web of packing material in a downward vertical direction;

forming means for forming said web into a tube;

seam sealing means for sealing together the longitudinal edges of said web at a first location while said tube advances;

bottom sealing means for sealing said tube at a first transverse zone thereof so as to form a bottom of a packing container, said first location being spaced vertically above said first transverse zone;

a first feed pipe for feeding a liquid to be packaged into said tube, said first feed pipe extending vertically from a location above said first location;

seal means between said first location and said transverse zone for providing a seal between the interior tube wall and said first feed pipe;

a second feed pipe for continuously supplying a pressurized gas to the interior of said tube, said second feed pipe extending vertically from a location above said seal means and through said seal means;

shaping means for shaping said tube below said first location into a packing container of desired shape while the interior of the tube is pressurized and filled with the material to be packaged; and

top sealing means for sealing said tube at a second transverse zone spaced above said first transverse zone, whereby the shape of said tube is maintained by the gas pressure during operation of said shaping means.

4,617,780

METHOD AND APPARATUS FOR WRAPPING CIGARETTE PACKETS IN FILM BLANKS

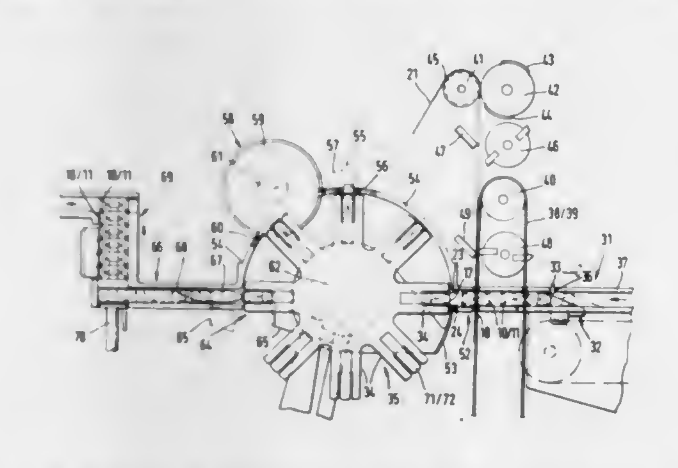
Heinz Focke, and Kurt Liedtke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Aug. 29, 1984, Ser. No. 645,187

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1983, 3332950

Int. Cl.⁴ B65B *11/00*

U.S. Cl. 53—466 **5 Claims**



1. A method of wrapping packets (10, 11) in blanks which are first folded in a U-shape around the packets and thereafter completely folded around the packets to encase them in the blanks, each of said packets having front and rear faces (12, 13,) a pair of lateral end faces (14, 15) and a pair of longitudinal faces (16, 17), comprising the steps of:

simultaneously forwardly moving along a first path at least two packets lying adjacent to each other with a preselected space therebetween such that a lateral end face of one packet is spaced, in a direction perpendicular to said first path, from a lateral end face of an adjacent packet;

feeding, along a path in a plane perpendicular to said first path and to a position intersecting said first path, a common, overall blank (18) of sufficient size to wrap at least two adJacent packets;

moving said at least two adjacent packets against said blank to cause folding of said blank around said at least two adjacent packets such that the blank has a U-shaped portion extending in a first direction parallel to the lengths of the longitudinal faces of adjacent packets and across said space, and in a second direction rearwardly over and beyond the front and rear faces of adjacent packets to form upper and lower tube flap portions (23, 24);

prior to said last moving step, forming a preliminary cut (29) in the portion of the blank covering the space between two adjacent packets to define the edges of future inner lateral end flap portions (27) facing said space;

moving said common blank against stationary fingers to fold said inner lateral end flap portions (27) and outer lateral end flap portions (28) against said laterla end faces (14, 15), respectively;

then connecting said upper and lower tube flap portions together to form a tubular shaped blank; and

then, cutting along said preliminary cut (29) in the remaining portion of the blank (18) covering the space between two adjacent packets to sever said common blank (18) and to form first and second tubular shaped blank sections surrounding respective packets, and then folding remaining longitudinal and lateral end flap portions (25, 26, 30) of the blank against the respective lateral end faces of each of said respective packets.

4,617,781

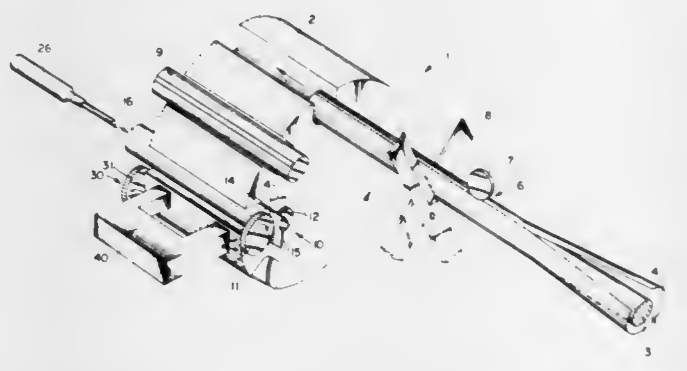
POLYPROPYLENE WRAP END SEALS AND PROCESS FOR MAKING SAME

Willard A. Ingersoll, Wyoming; Robert C. Norquest, Dover, and Richard A. Weber, Smyrna, all of Del., assignors to International Playtex, Inc., Stamford, Conn.

Filed Dec. 12, 1984, Ser. No. 680,698

Int. Cl.⁴ B65B *7/06, 51/16, 7/18*

U.S. Cl. 53—477 **17 Claims**



1. A process for sealing an end of a voided polypropylene film wrap comprising the steps of:

(a) inserting said end of said polypropylene wrap between a 50 pitch knurl wheel and a 50 pitch idler wheel;

(b) pressing at least one of said knurl and idler wheels against said polypropylene wrap and said other wheel so as to effect a mechanically crimped seal; and

(c) heating said knurl wheel prior to and during said pressing step (b) to a temperature from 110° F. to 140° F. in order to increase the flexibility of said polypropylene wrap but not form a heat seal.

4,617,782

METHOD FOR WRAPPING BATCHES OF STACKED PRODUCTS SO AS TO FORM SEALED PACKETS

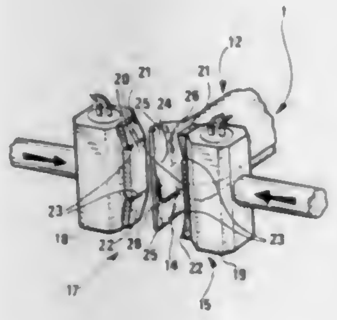
Riccardo Mattei, and Roberto Natali, both of Bologna, Italy, assignors to G. D. Società per Azioni, Bologna, Italy

Filed Jun. 8, 1984, Ser. No. 618,947

Claims priority, application Italy, Jun. 14, 1983, 3460 A/83

Int. Cl.⁴ B65B *7/08. 11/32*

U.S. Cl. 53—479 **1 Claim**



1. Method for wrapping a batch of stacked products so as to form a sealed packet, the steps comprising:

folding a sheet of heat-sealing wrapping material, of a length greater than that of the batch and a width greater than the periphery of the batch, in U fashion around the batch to leave two juxtaposed borders of the sheet extending the length, and beyond the ends, of the batch;

welding, one to the other, the two borders of the sheet so as to provide a longitudinal sealing rib and to form the sheet into a tube having ends protruding beyond the ends of the batch;

flattening the ends of the tube;

sealing at least part of each of the flattened ends by moving together opposing heating jaws each having a central part separated by gaps from two lateral parts and welding the flattened ends corresponding to said central and lateral parts while leaving weakened folding lines sealed to a lesser extent corresponding to said gaps to define a sealed central part and two sealed lateral flaps at each end; and

folding the central part against the corresponding end of the batch and then folding the flaps along said weakened fold lines against the folded central part.

4,617,783

COMPRESSION DRUM FOR CIGARETTES

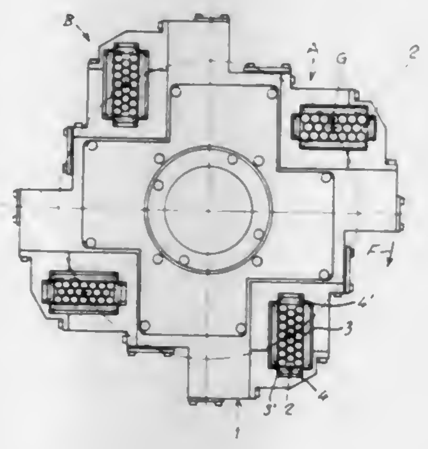
Renato Manservisi, Bologna, Italy, assignor to SASIB S.p.A., Bologna, Italy

Filed Jul. 11, 1985, Ser. No. 754,451

Claims priority, application Italy, Jul. 18, 1984, 12566 A/84

Int. Cl.⁴ B65B *13/20*

U.S. Cl. 53—529 **8 Claims**



1. A rotatable compression drum for orderly groups of cigarettes in automatic cigarette-packing machines, comprising:

a compression pocket having a substantially rectangular cross-section and including a pair of longer sidewalls that are disposed opposite each other and that correspond to the longer sides of the rectangular cross-section of the pocket and a pair of shorter sidewalls that are disposed opposite each other and that correspond to the shorter sides of the rectangular cross-section of the pocket, at least one longer sidewall and at least one shorter sidewall being separate from each other and the remaining sidewalls and being independently movable toward and away from the respective opposite sidewalls; and

actuating means operatively connected to said at least one longer sidewall and at least one shorter sidewall for permitting the cross-section of the pocket to be modified between a maximum expansion condition, wherein an orderly group of cigarettes to be packed is introduced into the pocket, and a maximum compression condition, wherein the group of cigarettes received in the pocket is compressed, said actuating means causing one pair of opposite sidewalls to approach each other and thereafter causing the other pair of opposite sidewalls to approach each other, wherein for each pair of opposite sidewalls said actuating means includes a respective cam follower that is movably mounted in the drum and that is operatively connected to at least one of the respective opposite sidewalls, and a respective fixed cam that is co-axial with the drum and that cooperates with the respective cam follower, wherein one cam follower is disposed upstream of the pocket and the other cam follower is disposed downstream of the pocket with respect to the direction of rotation of the drum, and wherein the cam followers are slidably but not rotatably mounted in the drum substantially radially thereto and are perpendicular to each other and the respective pair of opposite sidewalls.

4,617,784

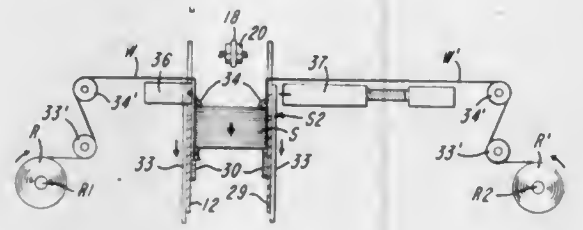
APPARATUS FOR STACKING AND BANDING TAGS

Roman M. Golicz, Clinton; Dana W. Seniff, Guilford, both of Conn.; Ronald L. Fogle, Lebanon, and Orville C. Huggins, Dayton, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation of Ser. No. 568,555, Jan. 5, 1984, abandoned. This application Dec. 23, 1985, Ser. No. 815,182

Int. Cl.⁴ B65B *9/02, 35/50*

U.S. Cl. 53—540 **1 Claim**



1. Apparatus for banding tags, comprising: means for conveying tags serially to a stacking station, the conveying means including a conveyor for moving the tags in a first direction, means for interrupting the movement of the tags as they arrive at the stacking station to provide a tag stack, means providing a path for the first web of banding material to the stacking station, means providing a path for a second web of banding material to the stacking station, means including a transferring member for simultaneously moving the entire tag stack in a second direction across the paths of said first and second webs to a banding station to thereby wrap said stack with said webs, means for attaching the first band to the second band at spaced locations to provide a band about the stack to keep the tags stacked, wherein the band attaching means includes a stationary jaw and a movable jaw cooperable with the stationary jaw, at least one of the jaws having means for heat sealing and weakening the first and second webs between a series of tag stacks, means for moving the transferring member and thereby the stack from a first position in said stacking station to a second position in said banding station including a first single revolution clutch and means for moving the movable jaw from a first nonsealing position to a second sealing position in sealing cooperation with said stationary jaw including a second single-revolution clutch, wherein the moving means includes a 2-to-1 speed reducer coupling the first single-revolution clutch and the transferring member and a 2-to-1 speed reducer coupling the second single-revolution clutch and the jaw, and separate means for actuating said first and second clutches so that one actuation of the first single-revolution clutch moves the transferring member from its first position to its second position and another actuation of the first single-revolution clutch moves the transferring member from its second position to its first position and so that one actuation of the second single-revolution clutch moves the movable jaw from its first position to its second position and another acutation of the second single-revolution clutch moves the movable jaw from its second position to its first position.

4,617,785

PACKAGING APPARATUS

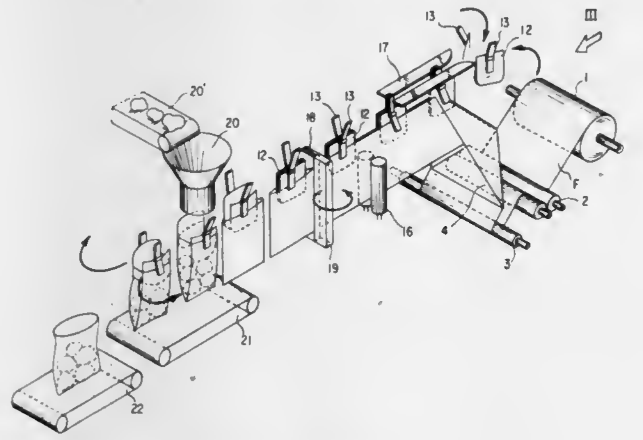
Hajime Chikatani, Hachioji, and Sanji Kawakami, Kodaira, both of Japan, assignors to Kabushiki Kaisha Daisei Kikai, Tokyo, Japan

Filed May 24, 1982, Ser. No. 381,307

Claims priority, application Japan, May 23, 1981, 56-78307

Int. Cl.⁴ B65B *43/04, 43/34*

U.S. Cl. 53—562 **8 Claims**



1. A packaging apparatus comprising:

means for positioning sheet materials next to one another to form at least two facing sheets;

means for bonding portions of said at least two facing sheets;

means for cutting said bonded sheets to form bags;

bag opening means comprising bag opening members, at least one of said bag opening members being mounted for movement between said at least two facing sheets prior to said bonding step;

means associated with said bag opening members for further separating said at least two facing sheets and fully opening said bags after said bonding step; and

movable endless chains for movably supporting each of said bag opening members for movement between said at least two facing sheets prior to said bonding step.

4,617,786

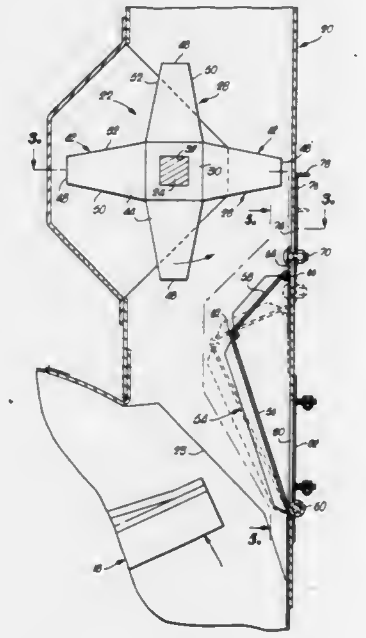
FORAGE HARVESTER HAVING SUPPLEMENTAL CROP DISINTEGRATING MEANS

Ferol S. Fell, Newton, and Howard J. Ratzlaff, Hesston, both of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Aug. 15, 1984, Ser. No. 641,049

Int. Cl.⁴ A01D *45/02*

U.S. Cl. 56—13.4 **5 Claims**



1. In an implement for harvesting forage of the kind having kernels, the combination of:

means for cutting the standing forage;

means for chopping the cut forage;

an elongated, generally upright chute disposed to receive the chopped forage at the lower end of the chute for continuous projection of the forage in a stream with substantial velocity along the chute and discharge at the upper end of the latter;

a rotor in said chute for cracking said kernels as the chopped forage is projected through the chute,

said rotor including:

an elongated shaft,

means supporting the shaft for rotation about its longitudinal axis, and

a plurality of cracking elements carried by the shaft for rotation therewith,

said elements being spaced apart along the shaft,

each element having a number of elongated plates spaced circumferentially of the rotor and extending radially outwardly from the shaft,

each plate having a pair of opposed, flat faces, and a relatively thin, kernel-engaging, leading edge with respect to the overall length of the rotor,

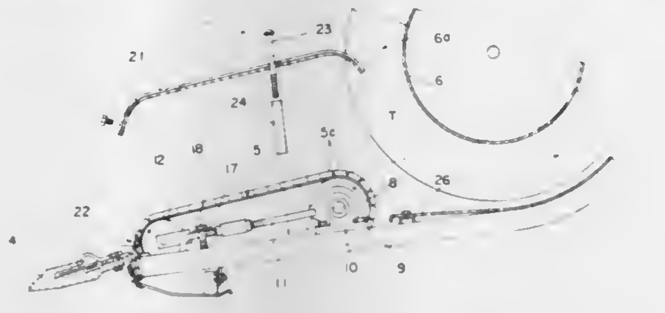
each plate terminating in an elongated outer end remote from the shaft; and

means for spinning said rotor at a speed substantially in excess of the velocity of the stream prior to reaching the rotor,

said chute being provided with deflecting means therein between said lower end of the chute and the rotor, said deflecting means being movable to and from a position diverting the stream laterally of the chute.

4,617,787
COMBINE HARVESTER MACHINE

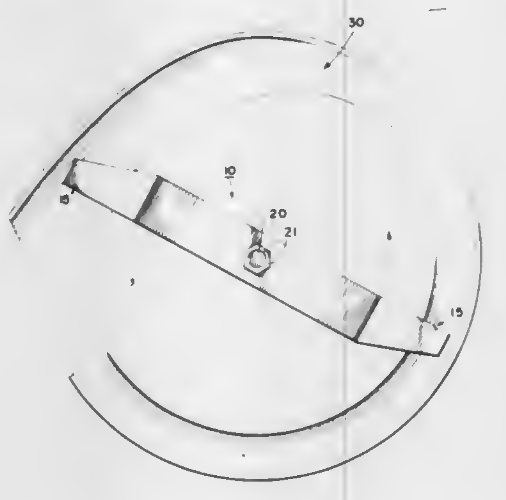
Jutaro Eguchi; Tetsuichi Odahara, and Junzo Sukenari, all of Sakai, Japan, assignors to Kubota, Ltd., Osaka, Japan
Continuation of Ser. No. 547,823, Nov. 2, 1983, abandoned. This application Oct. 4, 1985, Ser. No. 785,022
Claims priority, application Japan, Sep. 9, 1983, 58-167240
Int. Cl.⁴ A01D *41/12*
U.S. Cl. 56—14.6 **3 Claims**



1. A combine harvester machine, comprising
a machine body having harvester frames and side plates,
a reel connected to the machine body for raking grain stalks toward the machine body,
cutting means connected to the harvester frames and located under the reel, said cutting means cutting grain stalks raked by said reel,
a drum having augers at an outer periphery thereof and rotationally connected to the machine body to transfer grain stalks rearwardly of the machine body,
front conveyor means connected to the harvester frames between the cutting means and the drum to transfer the grain stalks cut by the cutting means to the drum, said front conveyor means including a plurality of conveyors arranged side by side between the side plates of the machine body, each conveyor including:
a rear rotary member rotationally connected to the frames and adapted to be rotated by power means,
rod-shaped members each having front and rear ends and a turnbuckle between the front and rear ends so that the length of the rod-shaped member is adjusted by the turnbuckle, each rod-shaped member being pivotally connected to side of the rear rotary member at the rear end thereof,
a front rotary member rotationally connected to the front ends of the rod-shaped members, and
a conveyor belt situated between the front and rear rotary members, an imaginary surface extending through an upper surface of the conveyor belt, when the conveyor is operated for transfer of the grain stalks, passing substantially adjacent to a lower periphery of the drum to smoothly transfer the grain stalks to the drum, each conveyor being independently pivotable relative to the rear rotary member to facilitate maintenance of each conveyor,
covers situated along upper side portions of the conveyor belts to completely cover spaces between the conveyor belt and adjacent structure, each cover including a first bolt for connecting a front portion of the cover to the frame, a second bolt with a head, said second bolt passing through a rear portion of the cover and connected to the frame, and a cylindrical member situated around the second bolt so that the cover is securely retained between an upper portion of the cylindrical member and the head of the second bolt, and
stop members and third bolts, said third bolt passing through the stop member and being detachably connected to the frame so that the stop member engages the rod-shaped member to prevent the rod-shaped member from swinging upwardly when the machine is operated, and each conveyor is independently turned upwardly relative to the rear rotary member for maintenance thereof when the stop member is removed from the frame by detaching the third bolt.

4,617,788
LAWN MOWER LEAF MULCHING BLADE AND METHOD

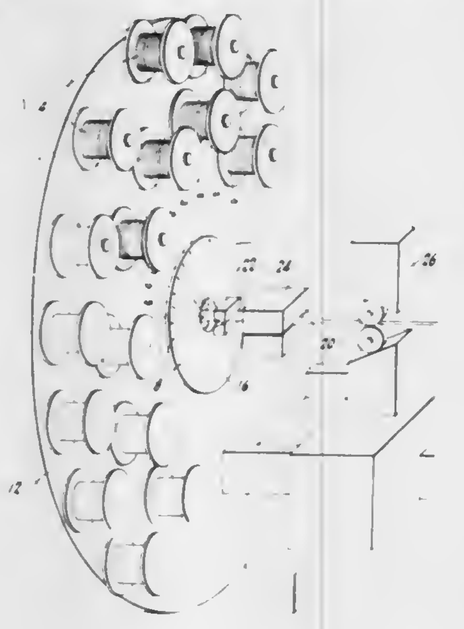
Verne D. Sebastian, 4908 Kingswood Dr., Greensboro, N.C. 27410
Filed May 22, 1985, Ser. No. 736,669
Int. Cl.⁴ A01D *55/18*
U.S. Cl. 56—295 **6 Claims**



1. A lawn mower blade for a rotary lawn mower comprising: a unitary longitudinal member, said member having a pair of cutting edges thereon, said cutting edges on opposite sides of said longitudinal member, said longitudinal member defining a mounting aperture, said aperture positioned between said cutting edges, each of said cutting edges having a notch consisting of one v-shaped notch, said notch defining a space shaped substantially as an equilateral triangle, and said notches positioned approximately ½ inch from each tip of said longitudinal member.

4,617,789
APPARATUS AND METHOD FOR FABRICATING MULTI-STRAND SUPERCONDUCTING CABLE

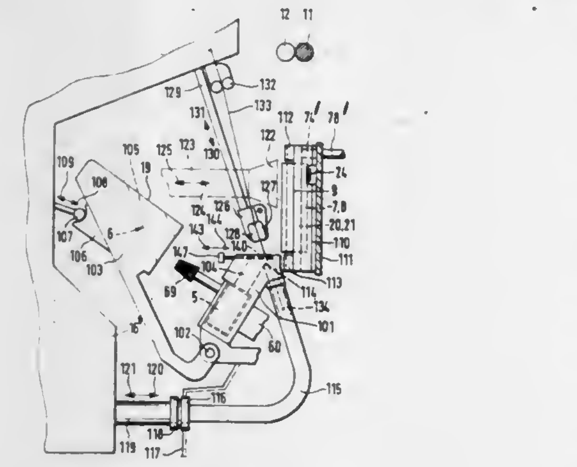
Albert R. Borden, El Cerrito, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Apr. 1, 1985, Ser. No. 718,397
Int. Cl.⁴ D02G *3/36;* D07B *1/06;* H01L *39/24*
U.S. Cl. 57—6 **14 Claims**



1. A method of fabricating a multi-strand cable comprising the steps of:
providing a tapered mandrel which is elongate along a direction transverse to the direction of taper and has a hollow core with a longitudinal wedge-shaped channel extending therethrough.
winding a plurality of wire strands around said mandrel diagonally with respect to said transverse direction,
inserting wedge-shaped pieces, articulately coupled together in spaced relationship by a superconducting ribbon means, sequentially through said channel of said mandrel, and
drawing said wedge-shaped pieces and said plurality of wire strands to form a cable having said wedge-shaped pieces located within said wire strands when said wire strands are drawn from said tapered mandrel.

4,617,790
PROCESS AND APPARATUS FOR PIECING A YARN AT A SPINNING UNIT OF AN OPEN-END FRICTION SPINNING MACHINE

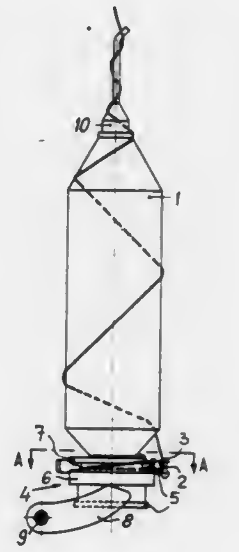
Fritz Stahlecker, Bad Überkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker and Fritz Stahlecker, both of Bad Überkingen, Fed. Rep. of Germany
Filed Nov. 26, 1984, Ser. No. 675,009
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1983, 3342472
Int. Cl.⁴ D01H *15/00, 7/892*
U.S. Cl. 57—263 **44 Claims**



1. A process for piecing yarn on an open-end friction spinning machine of the type having at least one spinning unit with:
a pair of friction rollers arranged adjacent one another to form a wedge-shaped yarn forming gap,
friction roller driving means for driving the friction rollers in the same rotational direction during spinning operations,
fiber opening means for separation fibers to be supplied to the yarn forming gap, said fiber opening means including a rotatably drivable opening roller means,
sliver feeding means for feeding sliver to the fiber opening means, said sliver feeding means including a drivable sliver feeding roller means,
primary suction means for applying suction forces to the yarn forming gap,
and yarn winding means for winding the spun yarn on a spool, said process comprising:
returning a yarn end to the yarn forming gap to form a yarn piecing with, fibers supplied to the yarn-forming gap,
feeding sliver to the opening means,
removing from the spinning unit fibers opened up during feeding of the sliver preceding the actual piecing process,
feeding fibers to the yarn-forming gap to form a yarn piecing with the yarn end,
and withdrawing the yarn end with the yarn piecing connected therewith,
whereby a predetermined constant supply of fibers are fed to the yarn forming gap for the piecing process by supplying a predetermined constant characteristic sliver end to the opening roller means for each piecing process.

4,617,791
APPARATUS FOR MONITORING AND RESTARTING THE CUT YARN DURING THE REPLACEMENT OF FULL BOBBINS ON THE SPINDLES OF A CONTINUOUS SPINNING MACHINE

Pierre Lousberg, Stembert, Belgium, assignor to Societe Anonyme des Ateliers Houget Duesberg Bosson, Belgium
Filed Oct. 4, 1984, Ser. No. 657,629
Claims priority, application Belgium, Oct. 5, 1983, 211650
Int. Cl.⁴ D01H *1/38, 1/40*
U.S. Cl. 57—299 **5 Claims**



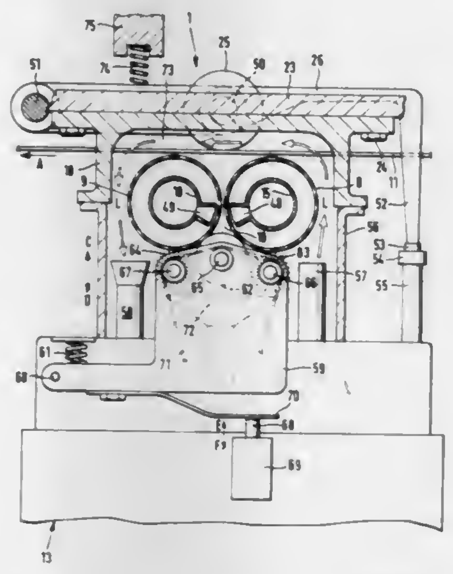
1. In a continous spinning machine, an apparatus for monitoring and restarting a cut yarn when a full bobbin is replaced by an empty tube comprising an underwinding device for winding the last yarn turns on the full bobbin and around said device with the aid of a traveller, said underwinding device comprising an inner ring and an outer ring, the outer ring being slidable on the inner ring, each ring being provided with at least one knife blade, said blades being arranged vertically in such manner whereby upon sliding of said outer ring upon said inner ring said blades can bome into contact with said last yarn wound around said underwinding device and cut them, and means for positively retaining the yarn end origniating from the traveller to allow starting of the next winding operation.

4,617,792
AIR FLOW CONTROL ARRANGEMENT FOR AN OPEN-END FRICTION SPINNING MACHINE

Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker and Fritz Stahlecker, both of, Fed. Rep. of Germany
Filed Dec. 3, 1984, Ser. No. 677,367
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1983, 3343762
The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.
Int. Cl.⁴ D01H *7/885, 11/00*
U.S. Cl. 57—401 **23 Claims**

1. An open-end friction spinning machine having at least one spinning unit containing:
two friction rollers that are arranged next to one another to form a wedge-shaped yarn forming gap serving as a yarn forming zone,

a housing side means disposed adjacent the friction rollers at the side thereof opposite the yarn-forming gap,



and periodically switchable means for producing an air flow between the housing side means and the friction rollers.

4,617,793

EXHAUST-GAS PARTICLE TREATING DEVICE FOR INTERNAL COMBUSTION ENGINE

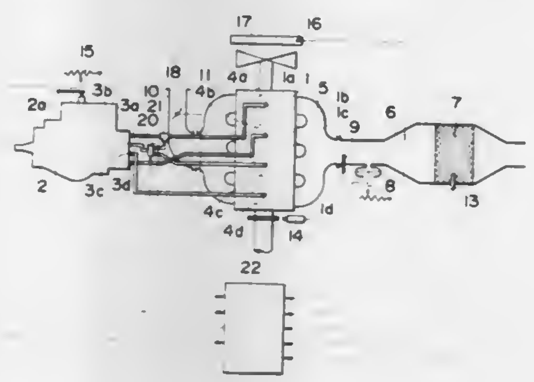
Shoichi Suzuki, and Keiichi Yamada, both of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1984, Ser. No. 578,759

Claims priority, application Japan, Feb. 23, 1983, 58-25585[U]

Int. Cl.⁴ F01N *3/02*

U.S. Cl. 60—285 **4 Claims**



1. An exhaust gas particle treating device for an internal combustion engine having fuel injection nozzles and fuel supply pipes connected thereto, and an exhaust gas system having a filter for collection of exhaust gas particles therein, which filter is to be regenerated by burning the exhaust gas particles collected on the filter, said device comprising:

a changeover valve which connects at least two of the fuel supply pipes and having means for adjusting the flowrate of fuel from one of said injection pipes to the other;

means for detecting engine conditions indicating the necessity for regenerating the filter;

a control circuit means connected to said engine condition detecting means and to said changeover valve for moving said changeover valve in response to detection of engine conditions indicating the necessity for regenerating the filter; and

means for detecting the amount of displacement of said changeover valve connected to said control circuit means for causing said control circuit means to stop moving said changeover valve when a position thereof is reached for causing the desired amount of flow through said changeover valve.

4,617,794

EXHAUST GAS PURIFYING METHOD AND APPARATUS FOR INTERNAL COMBUSTION ENGINES

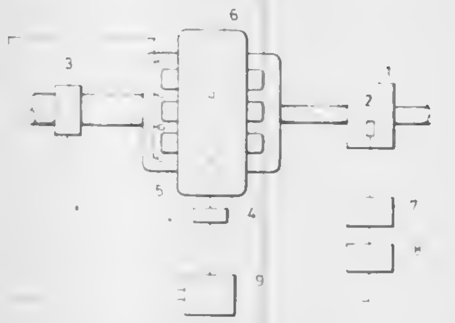
Yoshiyasu Fujitani; Hideaki Muraki; Koji Yokota, all of Nagoya; Hideo Sobukawa, and Shinichi Matsunaga, both of Aichi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Jun. 3, 1985, Ser. No. 740,427

Claims priority, application Japan, Jun. 6, 1984, 59-116102

Int. Cl.⁴ F01N *3/20*

U.S. Cl. 60—274 **14 Claims**



1. An exhaust gas purifying method for an internal combustion engine comprising:

detecting the temperature of an exhaust gas purifying catalyst disposed in an exhaust system of said internal combustion engine by a temperature sensor;

converting a signal from said temperature sensor to a first electric signal by a signal converter;

oscillating a second electric signal having a frequency and an amplitude and a predetermined frequency and amplitude range, said predetermined frequency and amplitude range being predetermined based upon the kind of said catalyst used, the frequency and amplitude of said second signal being adjusted within said predetermined range by an oscillator in accordance with said first electric signal from said signal converter; and

varying an actual air-fuel ratio toward the higher air-fuel ratio side and the lower air-fuel ratio side with respect to the theoretical air-fuel ratio, based on said second electric signal from said oscillator.

4,617,795

EXHAUST GAS PIPE FOR INTERNAL-COMBUSTION ENGINES HAVING A RECEIVING OPENING FOR A HEATED PROBE FOR DETERMINING THE OXYGEN CONTENT OF THE EXHAUST GASES

Jörg Abthoff, Pluederhausen; Hans-Dieter Schuster, Schorndorf; Gunter Loose, Remseck, and Günther Ebinger, Heiningen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Mar. 13, 1985, Ser. No. 711,253

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1984, 3409045

Int. Cl.⁴ G01N *27/26*

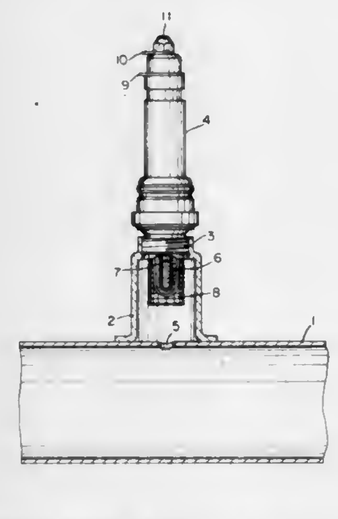
U.S. Cl. 60—276 **7 Claims**

1. A system for measuring the amount of oxygen in exhaust gas emitted by an internal combustion engine and flowing through an exhaust pipe, the system comprising:

sidewall aperture means in said exhaust pipe for accommodating a portion of exhaust gas to be monitored;

sensing probe housing means including housing wall means defining a probe accommodating chamber bounded by inner surfaces of said housing wall means, said sensing probe housing means being located entirely outside of said exhaust pipe such that only said inner surfaces of said housing wall means are impinged by any exhaust gas, said exhaust gas impinging on said inner surfaces being said portion of exhaust gas to be monitored, with outer surfaces of said sensor probe housing means being free of impingement by any exhaust gas; and

probe means for determining the oxygen content of engine exhaust gases, with at least a portion of said probe means positioned in said probe accommodating chamber which senses the oxygen content in said portion of exhaust gas,



said probe means being free of any impingement by any exhaust gas except by said portion to be monitored disposed in said probe accommodating chamber.

4,617,796

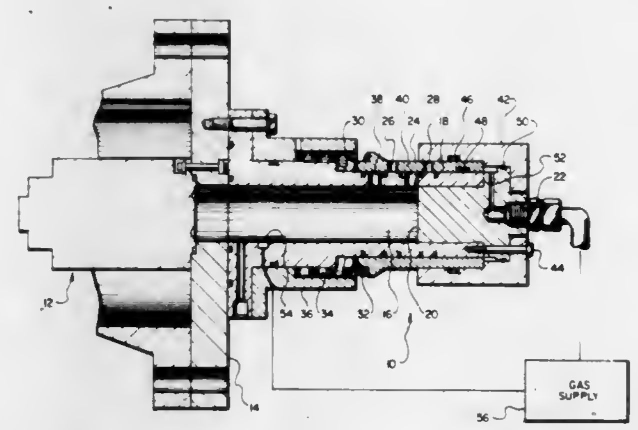
SLEEVE VALVE FOR A PULSED GAS GENERATOR

Janet S. Knapp, Simi Valley, Calif., and Jerry L. Hillman, Langlois, Oreg., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 18, 1985, Ser. No: 713,209

Int. Cl.⁴ F02K *7/06*

U.S. Cl. 60—39.79 **6 Claims**



1. In combination with a rocket-engine gas generator in an aqueous environment,

a sleeve valve formed with a chamber wall and an end plug which define an internal chamber, the chamber being coupled to receive the output of the gas generator, the chamber wall having at least one port therethrough, a movable sleeve fitting around the outside of said chamber wall and having at least one port therethrough, and a force/balance bias means for maintaining the position of the sleeve so that its port is not axially aligned with the chamber-wall port whereby the latter is closed prior to the valve being activated;

pressure sensor means in the internal chamber for sensing the gas pressure therein; and

gas source means coupled to receive the output signal of the pressure sensor and to supply pressurized gas to the sleeve valve to move the sleeve axially against the force of the bias means so that the sleeve port aligns with the chamber-wall port to allow rapid discharge of the gas within the internal chamber when the internal chamber pressure and volume reaches a predetermined level.

4,617,797

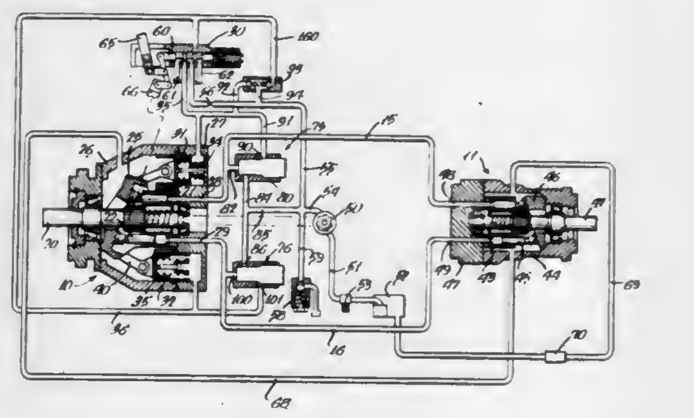
MULTI-FUNCTION VALVE

Keith R. Williams, Nevada, Iowa, assignor to Sundstrand Corporation, Rockford, Ill.

Filed May 9, 1984, Ser. No. 610,085

Int. Cl.⁴ F16D *31/02*

U.S. Cl. 60—444 **15 Claims**



1. A hydrostatic transmission having a pair of hydraulic displacement units connected in a closed loop circuit and with one of the units having variable displacement comprising, pressure limiter means including a pressure limiter valve member and reponsive to a predetermined pressure in the closed loop circuit for reducing the displacement of the variable displacement unit, means including a relief valve member providing high pressure relief for said closed loop circuit at a pressure in said closed loop circuit which exceeds said predetermined pressure, said valve members being structurally related to required operation of said pressure limiter valve member before said relief valve member can operate, a calve body mounting said valve members and having an inlet port connected to said closed loop circuit and a pair of outlet ports, said pressure limiter valve member functioning as a pilot valve for said relief valve member and having a closed position against pressure at the inlet port to block the inlet port from one of the outlet ports, said relief valve member having a closed position against pressure at the inlet port to block the inlet port from the other of said outlet ports, a first heavy spring urging the pressure limiter valve closed, a second light spring urging the relief valve member closed, passage means exposing the pressure limiter valve member to the pressure at the inlet port whereby said predeterminded pressure overcomes the force of the first heavy spring to open the pressure limiter valve member and including an orifice to establish a flow-induced pressure differential across the relief valve member when the pressure limiter valve member opens whereby said relief valve member opens when the flow-induced pressure differential exceeds the force of said second light spring, and means to neutralized the pressure limiter valve member whereby said flow-induced pressure differential can operate said relief valve member without said predetermined pressure existing in said closed circuit.

4,617,798

HYDROSTATIC DRIVE SYSTEMS

Alfred Krusche, Johannesberg, and Walter Kropp, Sulzbach am Main, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Apr. 3, 1984, Ser. No. 596,293

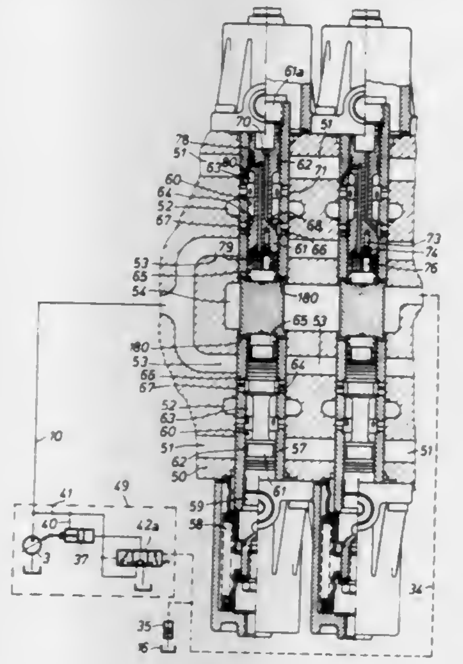
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1983, 3313450

Int. Cl.⁴ F16D *31/02*

U.S. Cl. 60;450 **8 Claims**

1. In a hydrostatic drive system having an adjustable pump, an adjusting element on said pump, a pump servo piston connected to and capable of moving said adjusting element, said servo piston being movable in a cylinder, a main feed line from said pump, a plurality of consumers of pressure fluid, a branch feed line connecting each said consumer to said main feed line, a return line from each consumer to a reservoir, a switching

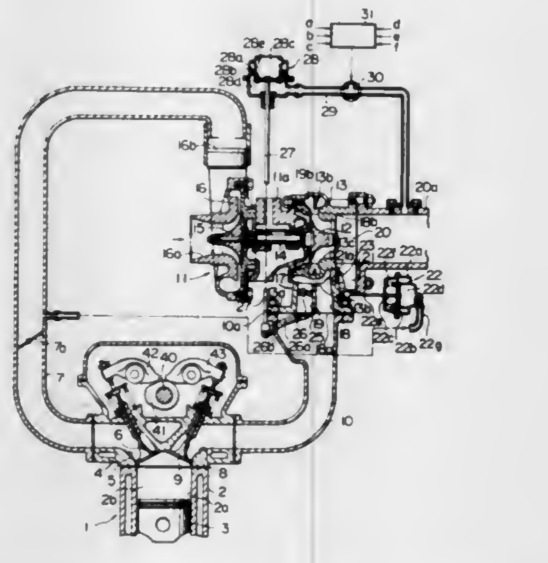
means in each branch line, a pair of adjustable parallel connected restrictors in each branch line, an adjusting element in each of said parallel connected restrictors loaded on one side with the pressure in said branch feed line and on the other with a control pressure and a spring, the control pressure being identical on all parallel connected restrictors, a separate branch control line delivering said control pressure to each parallel connected restrictor from a common control pressure line, check valve means opening toward the common control line in each branch control pressure line, an adjustable measuring restrictor in each branch line leading to a consumer and a control pressure line connected to said branch line between said adjustable measuring restrictor and the consumer, the improvement comprising said switching means including a valve housing having a plurality of longitudinal bores corresponding to the number of consumers, a main spool movable in each said bore, said main spool being hollow at each end, an inlet port in said housing connected to the main feed line and to each bore, an outlet connected to said control pressure means and each bore adjacent the inlet connection with the bore, secondary valve spools in each of the hollow ends of said main spool, spring means acting on each spool to urge the spools towards the ends of said main spool, and a plurality of radial passages spaced lengthwise on the main spool communicating with said hollow ends and forming with the secondary spools said parallel connected restrictors, an inlet chamber in the housing communicating with said bore intermediate its ends and communicating between said bore and the feed line, an exhaust chamber at each end of the housing communicating with the bore and said reservoir, a work chamber at each end of the housing intermediate the inlet and exhaust chambers and connected to the consumers of pressure fluid, a spring means in each of said hollow ends acting on said secondary spools to urge them towards the two ends of said spool, the plurality of spaced radial passages in said main spool communicating with said hollow ends, said radial passages being spaced so that in a working postion they communicate between and variably restrict flow between the work chambers and one of the inlet chambers in one position and the exhaust chambers in a second position, and wherein in each work position the radial passages in the main spool and the sensing grooves and passages in the secondary spools are arranged so that when the main spool is moved to connect the inlet chamber with a work chamber the end of the secondary piston on the end through which such connection is made opposite the spring is connected with a radial passage acting as a measuring restrictor and the end of the secondary spool loaded by the spring is connected through a radial passage in the main spool through a sensing passage in the secondary spool and the other secondary spool on the end of the main spool connecting the opposite work chamber and the exhaust chamber, the spring end of the secondary spool connects the opposite work chamber through the sensing groove at that end and a sensing passage with the end of the secondary spool opposite the spring to move the secondary spool against the spring to connect the work chamber and exhaust chamber, and wherein the side of the secondary spool loaded with the pressure spring can also be connected through a check valve with the work chamber connected with the consumer.



4,617,799
PLURAL TURBINE INLET PASSAGE TURBO-SUPERCHARGER WITH INLET PASSAGE SHUT-OFF VALVE

Tomoo Todokoro; Haruo Okimoto, and Ikuo Matsuda, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Dec. 14, 1984, Ser. No. 681,829
Claims priority, application Japan, Dec. 16, 1983, 58-238398
Int. Cl.⁴ F02B *37/12;* **F01D** *17/14, 17/18*
U.S. Cl. 60—602 **9 Claims**



1. A turbo-supercharger for an engine comprising a supercharging compressor located in an intake system of the engine and a turbine located in an exhaust system of the engine, said turbine including a turbine casing having a substantially planar surface which is connected with an exhaust passage of the engine and a turbine rotor rotatably mounted in said turbine casing and connected with the compressor, said turbine casing including exhaust gas inlet passage means for directing exhaust gas flow from the exhaust passage to the turbine rotor, said inlet passage means including mutually separated parallel first and second inlet passages, said first and second inlet passages being opened to said exhaust passage respectively through first and second inlet ports formed in said mating surface and surrounded by said exhaust passage, a shut-off valve provided in said exhaust passage and having a valve member adapted to be seated on said planar surface around said second inlet port to totally close the second inlet port.

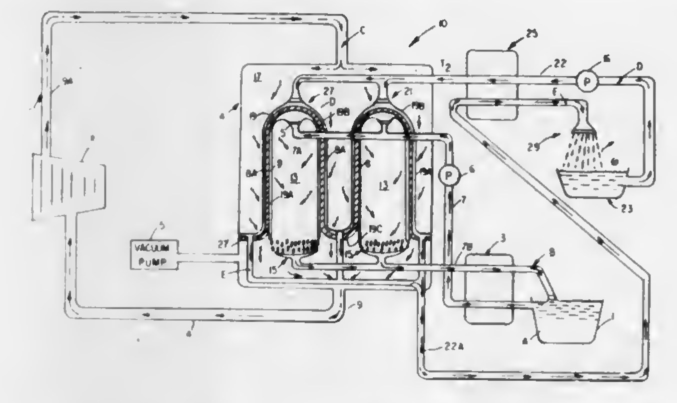
4,617,800
APPARATUS FOR PRODUCING POWER USING CONCENTRATED BRINE

Gad Assaf, Rehovot, Israel, assignor to Geophysical Engineering Company, Seattle, Wash.

Filed Apr. 4, 1985, Ser. No. 719,870
Int. Cl.⁴ F01K *19/10*
U.S. Cl. 60—689 **16 Claims**

1. A power generating plant comprising:
(a) a source of liquid working fluid;
(b) a heat exchanger having an evaporator side for converting liquid working fluid from said source into vaporized working fluid;
(c) turbine means responsive to said vaporized working fluid

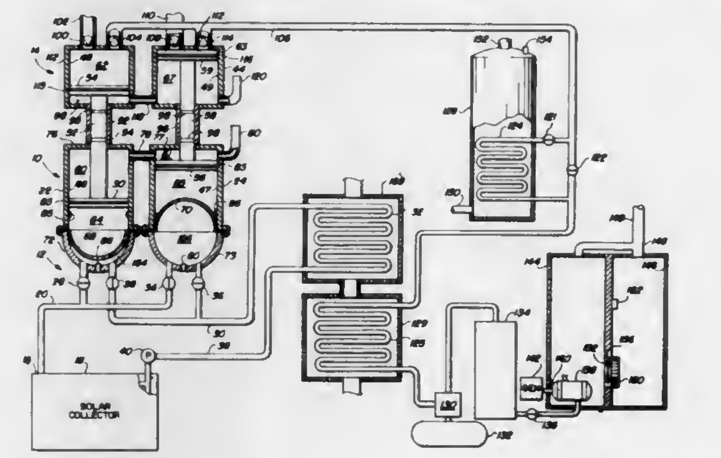
for producing work and heat depleted vaporized working fluid;
(d) said heat exchanger having a condenser side for receiving said heat depleted working fluid;
(e) a source of concentrated brine;
(f) means to exchange brine between the brine source and said condenser side for contacting brine with said heat depleted vaporized working fluid thereby condensing the latter and heating and diluting the contacted brine;
(g) means for effecting the transfer of heat in said contacted brine in said condenser side to liquid working fluid in said evaporator side; and
(h) means for concentrating exchanged brine.



4,617,801
THERMALLY POWERED ENGINE

Robert W. Clark, Jr., 2232 W. Joan de Arc Ave., Phoenix, Ariz. 85029

Filed Dec. 2, 1985, Ser. No. 803,549
Int. Cl.⁴ F25B *1/00*
U.S. Cl. 62—116 **20 Claims**

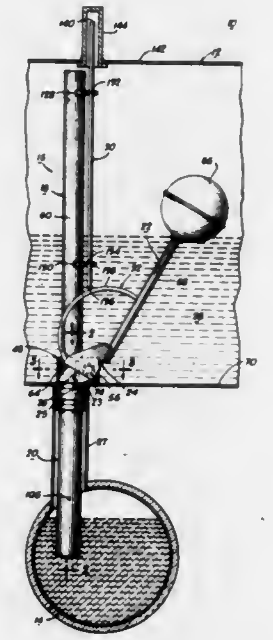


14. An engine comprising:
a plurality of pairs of power cylinders, each power cylinder defining a closed interior space, and each cylinder having a first and a second end;
a piston reciprocally mounted within the interior space of each power cylinder of each pair of power cylinder and dividing the enclosed space within each power cylinder into two portions, a first portion and a second portion;
a piston rod connected to the piston of each power cylinder and projecting through the first end of each power cylinder;
a flexible diaphragm mounted in the second portion of each power cylinder the space enclosed between the flexible diaphragm and the second end of each power cylinder defining a power chamber having a maximum and a minimum volume;
a fluid substantially filling the first portions of each pair of power cylinders;
means interconnecting the first portions of each pair of power cylinder so that said fluid can flow between the two first portions of each of said power cylinders;
a given volume of said fluid being positioned in the second portion of each power cylinder between the piston and the flexible diaphragm;
a heat transfer loop including a working fluid, an evaporator, a heat sink, and the power chambers of each of the pairs of power cylinders, and valve means for regulating the flow of working fluid through the power chambers of each of the pairs pairs of power cylinders;
control means for controlling the valve means so that the motion of the pistons of each pair of powered cylinder is substantially 180° out of phase with the other piston of the pair;
means for causing the working fliud flowing out of the power chambers of a first pair of power cylinders to flow into the power chambers of a next succeeding pair of power cylinders, said working fluid flowing through the pairs of power cylinders serially with the working fluid from the last pair of power cylinders flowing into the condenser of the heat transfer loop; and
means for converting motion of the piston rods of the pairs of power cylinders to useful work.

4,617,802
FREEZER APPARATUS

Armin Fiedler, Chicago, Ill., assignor to International Freezer Corporation, Chicago, Ill.

Filed Apr. 18, 1985, Ser. No. 724,659
Int. Cl.⁴ A23G *9/20*
U.S. Cl. 62—125 **46 Claims**



1. Freezer apparatus for dispensing ice cream or other food ice materials comprising a food mix container supported above a freezer chamber for retaining a level of food mix; a freezer chamber operable to dispense frozen or partially frozen food materials to a consumer; channel means for providing a fluid connection between the food mix container and the freezer chamber, said channel means having an open lower end extending below a level of food mix in the freezer chamber and including a planar exterior surface surrounding a food mix inlet port portion from the planar surface extending to within the channel and defined by walls of the planar surface, said inlet port disposed within a lower portion of the food mix container for admitting a predetermined constant flow rate of food mix from said food mix container through said port and into the freezer chamber, said channel means including an open upper end extending above a level of food mix in the food mix container for receiving air from above the food mix and directing said air, together with said food mix flowing through said port, into the freezer chamber, said air and food mix flowing into the freezer chamber automatically, in replacement amounts, when food mix is dispensed to said consumer from the freezer chamber, as a result of pressure balancing between the food mix container and the freezer chamber; a float means disposed

within the food mix container including a buoyant float member adapted to extend above an upper surface of the food mix within the food mix container and an integral elongated float arm extending downwardly from the float member within the food mix toward a floor of the food mix container; a port-sealing plate having a planar port-sealing surface connected to the float arm and pivotally mounted in sealing engagement with the food mix inlet port such that a change in level of food mix in the food mix container causes the port-sealing plate to pivot with respect to the port as an included angle between the elongated float arm and the floor of the food mix container changes with the change in food mix level thereby changing a port area sealed by said port-sealing plate to maintain a constant flow of food mix into said freezer chamber as the food mix level changes in the food mix container, said channel means including two sealingly interconnectable channel portions comprising an upper mixing conduit disposed within the food mix container and a freezer chamber feed conduit having an upper enlarged portion disposed within the food mix container for interconnection to the mixing conduit, and an integral freezer feed conduit extending downwardly from the enlarged portion to form a continuous conduit from said mixing conduit to said freezer chamber.

4,617,803
TEMPERATURE RESPONSIVE CONTROL UNITS

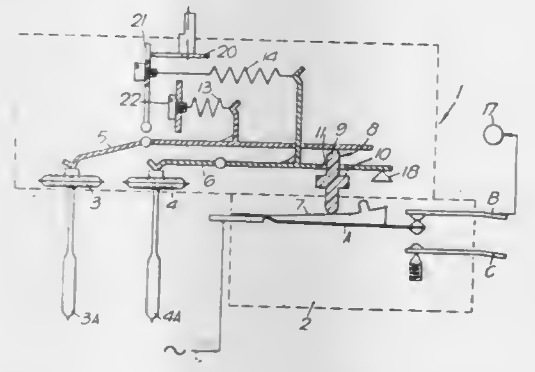
Guglielmo Rossi, Linkenheim/Hochstetten, Fed. Rep. of Germany, assignor to Ranco Incorporated, Dublin, Ohio

Filed Oct. 5, 1983, Ser. No. 539,123

Claims priority, application United Kingdom, Feb. 5, 1982, 8203376; Apr. 23, 1982, 8211801

Int. Cl.⁴ F25B *41/00*

U.S. Cl. 62—209 **11 Claims**



1. A temperature responsive control unit comprising a first temperature sensing element comprising a bellows system responsive to the temperature of heating or cooling means and a second temperature sensing element comprising a bellows system responsive to an ambient temperature which results from the action of the heating or cooling means a common switch device which is operable in one sense by the first temperature sensing element and in the opposite sense by the second temperature sensing element, said bellows system cooperating with respective operating levers characterised in that the operating lever of the first temperature sensing element acts on an operating element of the switch device through a displaceable member which has a shoulder against which the operating lever of the second temperature sensing element acts, the movement of the latter operating lever in engagement with said shoulder being limited by a stop which effectively prevents operation of the switch in the said one sense by the second temperature sensing element.

4,617,804
REFRIGERANT FLOW CONTROL DEVICE

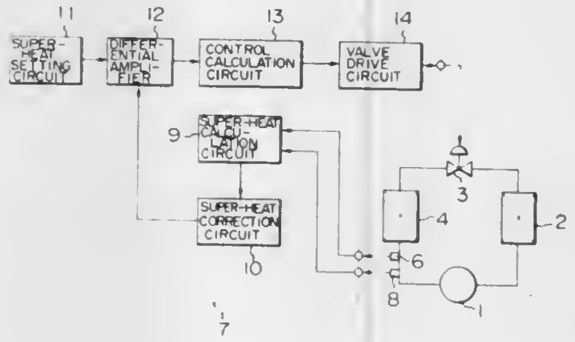
Toshihiko Fukushima, Ibaraki; Seigo Miyamoto, Katsuta; Kosaku Sayo, Katsuta, and Kenji Emi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 23, 1986, Ser. No. 824,552

Claims priority, application Japan, Jan. 30, 1985, 60-14183

Int. Cl.⁴ F25B *41/00*

U.S. Cl. 62—212 **6 Claims**


11
12
13
14
SUPER-HEAT SETTING CIRCUIT
DIFFER-ENTIAL AMPLI-FIER
CONTROL CALCULATION CIRCUIT
VALVE DRIVE CIRCUIT
9
SUPER-HEAT CALCU-LATION CIRCUIT
SUPER-HEAT CORRECTION CIRCUIT
10
3
4
2
6
8
1
7

1. A refrigerant flow control device for used with a refrigerator cycle comprising a compressor, a condenser for condensing refrigerant, an evaporator for evaporating the refrigerant and an expansion valve, the opening of which can be electrically adjusted for controlling the flow rate of the refrigerant, said control device comprising:

means for detecting the super-heat degree of the refrigerant at an outlet of the evaporator;

a control circuit for producing a control signal representing a difference between said detected super-heat degree and a preset super-heat degree, and including means for correcting said detected super-heat degree before producing said control signal, when said detected super-heat degree is zero, to a corrected super-heat degree having a negative value, so that said control signal represents a difference between the negative super-heat degree and the preset super-heat degree; and

valve driving means connected to receive said control signal for controlling the opening of said expansion valve so as to maintain the super-heat degree of the refrigerant at the outlet of said evaporator at said preset super-heat degree.

4,617,805
AIR CONDITIONER SYSTEM FOR BUILDING

Akio Ikemura, Kurobe, and Minoru Kajiki, Toyama, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Oct. 24, 1985, Ser. No. 790,948

Claims priority, application Japan, Nov. 13, 1984, 59-172041[U]

Int. Cl.⁴ F25D *23/12*

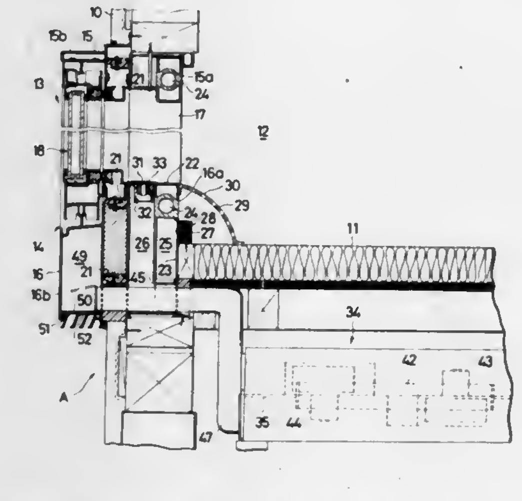
U.S. Cl. 62—259.1 **8 Claims**

1. An air conditioner system in a building having a wall and a floor defining surfaces of a house interior space, comprising:

(a) a heat exchanger unit disposed below the floor and having a heat exchange element disposed therein, a room air intake chamber, a room air discharge chamber communicating with said room air intake chamber through said heat exchange element, a fresh air intake chamber and a fresh air discharge chamber communicating with said fresh air intake chamber through said heat exchange element;

(b) a window disposed in the wall and including a rectangular window frame assembly having a substantially hollow sill, said sill having an internal conduit for the passage of a heat transferring medium and a pair of juxtaposed internal air passages extending along said conduit, and further having a side wall and a top wall both facing the house interior space, said side wall having at least one air inlet for communicating between one of said air passages and the house interior space, said top wall having at least one air outlet for communicating between the other air passage and the house interior space; and

(c) a first duct communicating through said one air passage with said room air intake chamber, a second duct communicating through said other air passage with said fresh air discharge chamber, a third duct communicating through said room air discharge chamber with the outside air, and a fourth duct communicating through said fresh air intake chamber with the outside air.



4,617,806
LIQUID LEVEL CONTROL APPARATUS

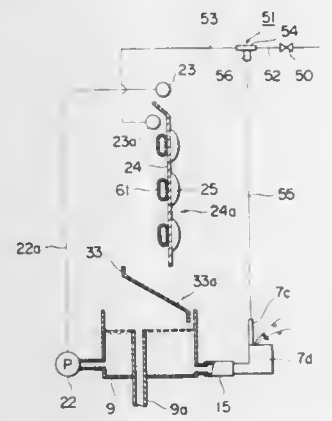
Tadashi Sakai, and Nobutaka Naruse, both of Toyoake, Japan, assignors to Hoshizaki Electric Co., Ltd., Toyoake, Japan

Filed Aug. 26, 1985, Ser. No. 769,332

Claims priority, application Japan, Sep. 5, 1984, 59-184517; Sep. 5, 1984, 59-184518; Jun. 20, 1985, 60-132932

Int. Cl.⁴ F25C *1/12*; F16K *31/18*

U.S. Cl. 62—347 **6 Claims**



1. A liquid level control apparatus, comprising:

a tank for holding liquid;

a hollow case in fluid communication with said tank, said hollow case having an opening at a lower end thereof, and a chamber for trapping air, said chamber being in fluid communication with said opening;

a float disposed in said hollow case and guided for vertical movement in response to changing liquid levels in said tank;

guide means disposed in said chamber for guiding said float in said vertical direction;

connection means between said tank and said hollow case for flow of liquid therebetween;

an upstanding tubular member having a lower end in fluid communication with said chamber, said lower end being at a position higher than the uppermost point of said connection means, thus defining a level of liquid within said hollow case at which said chamber is hermetically sealed and thereby preventing said guide means from being immersed in said liquid, irrespective of the level of said liquid in said tank or in said hollow case;

a liquid supply valve; and

a conduit connected between said upstanding tubular member and said liquid supply valve to supply liquid to said hollow case and cause liquid to flow from said hollow case towards said tank to thereby prevent accumulation of impurities in said hollow case.

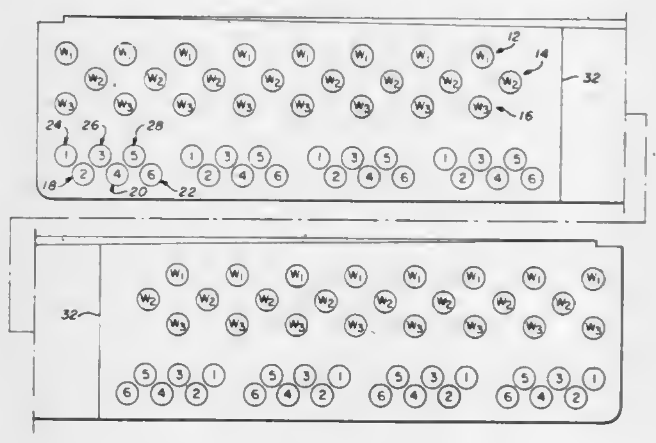
4,617,807
INVOLUTE COIL COLD PLATE

James D. Pritchett, Plano, and James D. Cutbush, San Antonio, both of Tex., assignors to Booth, Inc., Dallas, Tex.

Filed Jul. 8, 1985, Ser. No. 752,556

Int. Cl.⁴ B67D *5/62*

U.S. Cl. 62—399 **10 Claims**



1. A cold plate for cooling liquids, comprising:

a plurality of involute coils formed of tubing, the tubing of each coil having an inlet and an outlet for permitting a liquid to flow through the tubing, each of said involute coils lying in a horizontal plane with the involute coils being stacked vertically with a space between each adjacent coil; and

a thermally conductive material encasing the coils for conducting thermal energy from the liquid in the coils to cool the liquid, the thermally conductive material having an upper surface being generally horizontal for contact with ice to cool the liquids within the involute coils, the involute coils providing for relatively uniform heat transfer through the thermally conductive material.

4,617,808
OIL SEPARATION SYSTEM USING SUPERHEAT

Thomas C. Edwards, 1426 Gleneagles Way, Rockledge, Fla. 32955

Filed Dec. 13, 1985, Ser. No. 808,650

Int. Cl.⁴ F25B *43/02*

U.S. Cl. 62—472 **5 Claims**

1. A combination superheater and oil separator for a refrigeration system having a source of heated medium and a source of non-superheated refrigerant gas-oil mixture comprising:

a sealed casing;

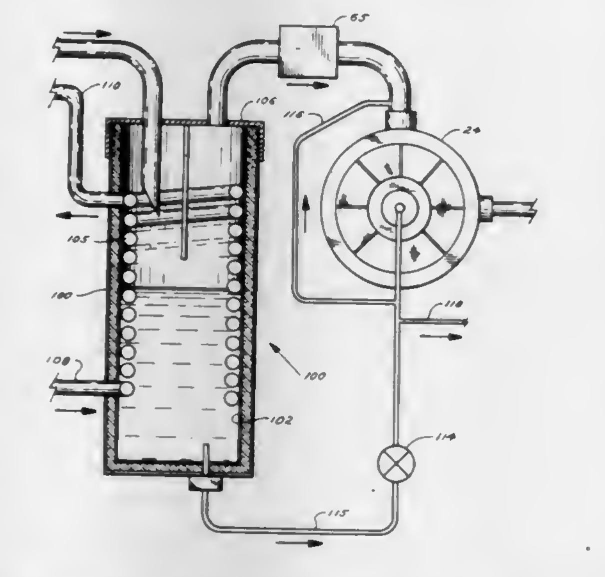
a heat transfer unit within said casing having a heat transfer surface;

means on said casing for connecting the interior of said casing to receive said mixture from said source thereof;

means for connecting said heat source to supply heated medium at a temperature and heat transfer rate through said heat transfer surface to boil-off refrigerant gas from said mixture and produce superheated refrigerant gas;

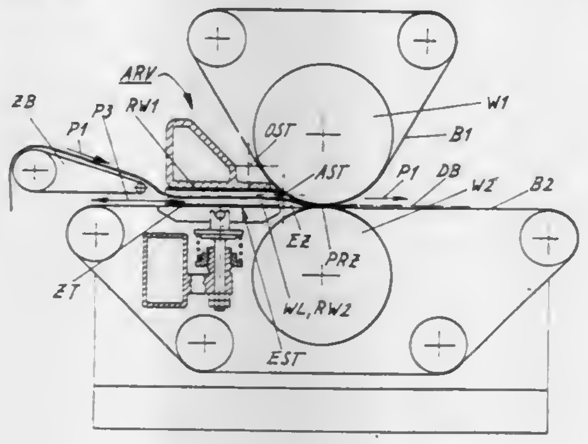
means on said casing for connecting the interior of said casing to deliver superheated refrigerant gas boiled off from said mixture in the interior of said casing;

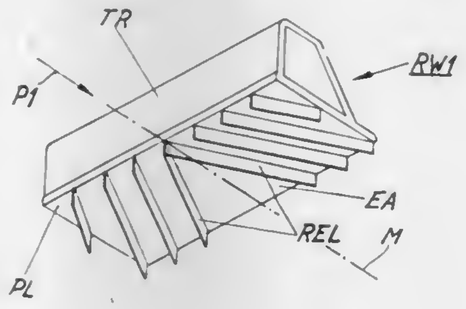
means on said casing below a predetermined level for connecting the interior of said casing to deliver oil remaining from the boil-off of super-heated refrigerant vapor from said mixture.



4,617,809
FLOW PRESS, ESPECIALLY FLOW SAMMYING MACHINE, FOR THE PRODUCTION AND PROCESSING OF LEATHER

Flekac Frantisek, Graf-Staufenberg-Ring 102, D-6380 Bad Homburg vor der Höhe, Fed. Rep. of Germany
PCT No. PCT/DE82/00212, § 371 Date Jul. 13, 1983, § 102(e) Date Jul. 13, 1983, PCT Pub. No. WO83/01786, PCT Pub. Date May 26, 1983
PCT Filed Nov. 15, 1982, Ser. No. 517,519
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1981, 3145359
Int. Cl.⁴ C14B *1/08, 1/04*
U.S. Cl. 69—44 **8 Claims**

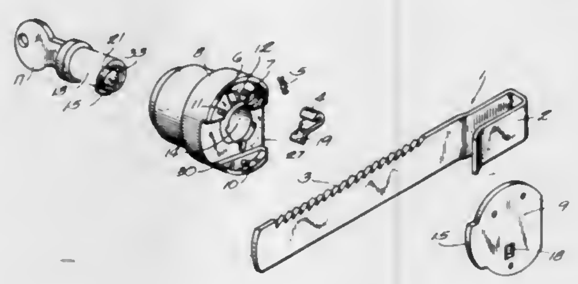




1. Apparatus for treating leather, comprising at least one opposed pair of rolls between which the leather to be treated is guided, means for moving the leather along a flow path from a location spaced apart from said rolls to said rolls, stretching means for stretching the leather prior to its being guided between said rolls and comprising a first stretching tool disposed on one surface side of the leather and operable to stretchably engage the leather at a location in the entrance wedge of said rolls at a distance from said rolls whereby the stretched leather does not contract prior to entering between said rolls, and a feed table for feeding the leather to the rolls, said feed table being movable between a first preparation and arranging position spaced apart from said rolls in a direction opposite the flow path of the leather and a second entrance position in the entrance wedge of said rolls, said feed table having support means for said first stretching tool and disposed on the opposite surface side of the leather from said first stretching tool.

4,617,810
SLIDING GLASS DOOR LOCK

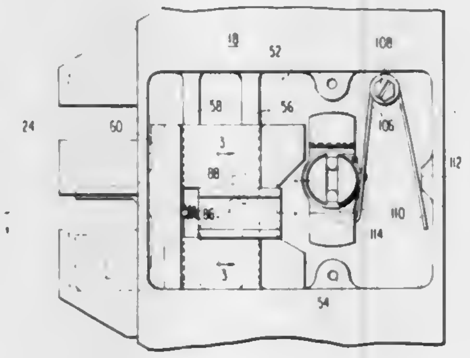
Aaron M. Fish, Cote St. Luc; Adamo M. D'Intino, Riviere-des-Prairies; Frank G. Moessner, Pointe Claire, and Stanley S. Mazoff, Dollard-des-Ormeaux, all of Canada, assignors to Ilxo Unican Corp., Rocky Mount, N.C.
Filed Aug. 5, 1985, Ser. No. 762,553
Int. Cl.⁴ E05B *73/00*
U.S. Cl. 70—14 **12 Claims**



1. A sliding door locking means comprising: a locking bar forming a hook for clamping the edge of a first door, a housing forming a cross passage receiving said bar, a locking mechanism including a key cylinder received in said housing, said key cylinder including a retainer for holding said key cylinder in said housing, said housing forming an abutment at the edge of the second door, said locking mechanism locking the end of said locking bar when said bar is received in said cross passage of /in/ said housing, said housing defining a wall normally adjacent to said first door when the doors are locked, means defining an access window in said wall, said housing defining an access passage between said window and said retainer for releasing and replacement of /a/ said key cylinder in said lock mechanism when said locking mechanism is unlocked, said bar covering said window when it is received in said cross passage and preventing access to said retainer.

4,617,811
MECHANISM FOR OPERATING A DROP-BOLT DOOR LOCK

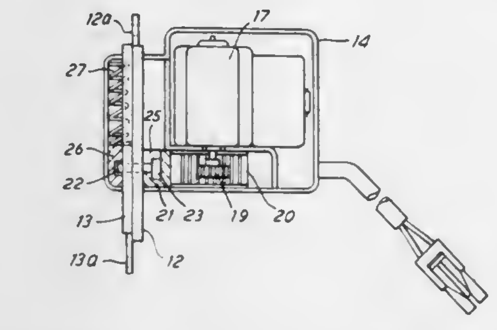
Stevie C. Roop, Dugspur, Va., assignor to Medeco Security Locks, Inc., Salem, Va.
Filed Aug. 3, 1984, Ser. No. 637,589
Int. Cl.⁴ E05B *63/12*
U.S. Cl. 70—131 **5 Claims**



1. A high-security, defeat-resistant vertical drop-bolt lock operating assembly, the assembly being of the type including a vertical drop-bolt member, an operating mechanism for operating the bolt member and a housing for the operating mechanism, the improvements comprising:
(a) guide rail means extending vertically within the housing,
(b) means on the bolt member cooperating with the guide rail means so that the bolt member is slidable vertically on the guide rail means,
(c) an actuator member carried by the bolt member and slidable vertically with the bolt, the actuator member also slidable transversely and horizontally within the bolt member,
(d) locking means cooperating between the actuator member and the guide rail means to stop vertical movement of the bolt member and the actuator member in either direction unless the actuator member is moved horizontally and transversely with regard to the movement of the bolt,
(e) cam means contacting the actuator member for moving the actuator member horizontally transversely of the bolt member movement and for sliding the bolt from locking to unlocking position and vice versa.

4,617,812
AUTOMOBILE DOOR LOCKING SYSTEMS

Peter G. Rogers, Redditch, England, assignor to Security & Auto Electrical Designs Ltd., Redditch, England
Filed Oct. 31, 1984, Ser. No. 666,745
Claims priority, application United Kingdom, Nov. 10, 1983, 8330006
Int. Cl.⁴ B60R *25/02*
U.S. Cl. 70—218 **9 Claims**

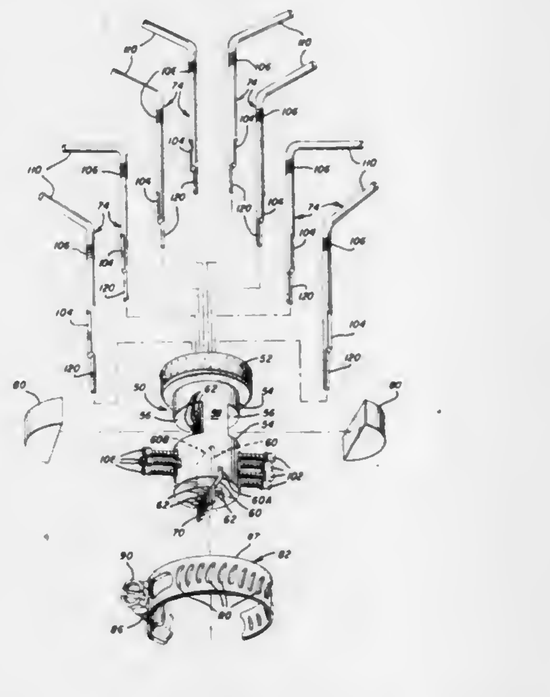


1. An automobile door locking system comprising mechanical means for connecting a door handle of a door to a door latch of the door, said mechanical means comprising separable parts, and electrically operated means for connecting said separable parts together, said electrically operated means including a locking member movable into engagement with said parts to cause them to move as a unit in a common direction whereby the latch can be released by operation of the door handle and movable out of engagement with said parts whereupon said parts are disconnected from each other whereupon the latch can no longer be operated by actuation of the handle.

4,617,813
LOCK-PICKING TOOL AND METHOD OF USE THEREOF

Walter S. Christopher, Park Ridge; Robert T. Kriskovich, Roselle, and Robert L. Steinbach, Glendale Heights, all of Ill., assignors to Chicago Lock Co., Chicago, Ill.
Filed Jul. 29, 1982, Ser. No. 403,094
Int. Cl.⁴ E05B *19/20*
U.S. Cl. 70—394 **17 Claims**

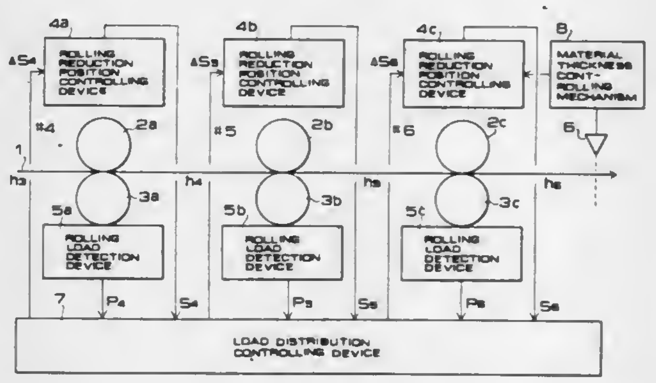
1. In a lock-picking tool of the type having manually manipulable holder means, tumbler probes supported on said holder means and extending in the direction of a longitudinal axis of the holder means and being reciprocable in said direction, and setscrews threadedly engaging said holder means for clamping said tumbler probes to prevent such reciprocation relative to said holder means, the improvement which comprises:
means providing a diametral opening in a forward end of said holder means;
generally planar core means received within said diametral opening and projecting forwardly therefrom for transmitting torque from said holder means to the cylinder of a lock which is to be picked; and



means providing a plurality if longituidnal probe-receiving bores in said foward end and arranged in a planar transverse row with one side of each bore communicating with said diametral opening so that one side of the probe received in the bore extends into the diametral opening.

4,617,814
PROCESS FOR CONTROLLING LOAD DISTRIBUTION IN CONTINUOUS ROLLING MILL

Yoshikazu Kotera, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 15, 1985, Ser. No. 734,113
Claims priority, application Japan, May 16, 1984, 59-99852
Int. Cl.⁴ B21B *37/12*
U.S. Cl. 72—8 **4 Claims**


4a
4b
4c
8
ΔS4
ΔS5
ΔS6
ROLLING REDUCTION POSITION CONTROLLING DEVICE
ROLLING REDUCTION POSITION CONTROLLING DEVICE
ROLLING REDUCTION POSITION CONTROLLING DEVICE
MATERIAL THICKNESS CONT-ROLLING MECHANISM
2a
2b
2c
3a
3b
3c
5a
5b
5c
ROLLING LOAD DETECTION DEVICE
ROLLING LOAD DETECTION DEVICE
ROLLING LOAD DETECTION DEVICE
7
LOAD DISTRIBUTION CONTROLLING DEVICE

1. A process for controlling load distribution in a continuous rolling mill having a plurality of rolling stands rolling a material, comprising the steps of:
detecting an initial rolling load and an initial rolling reduction position of each rolling stand,
calculating a load distribution error when a ratio of detected loads of the most downstream rolling stand and the second most downstream rolling stand differ substantially from a predetermined ratio,
computing rolling reduction correction values for the most and second most downstream rolling stands in response to the calculation of a load distribution error such that the thickness of the material on the exit side of the most down-

stream rolling stand remains unchanged and such that the ratio of rolling loads of the most and second most downstream rolling stands is equal to the predetermined ratio when the rolling stands are corrected in accordance with the rolling reduction correction values,

said computing being performed using the calculated load distribution error together with (1) previously calculated correction coefficient values corresponding to similar mill operating conditions or (2) selected mill operating parameters when there is an absence of previously learned correction coefficient values corresponding to similar mill operating conditions,

correcting the rolling reduction positions of the most and the second most downstream rolling stands in accordance with the computed rolling reduction correctional values, and

calculating correction coefficient values from the load distribution error and the amount of correction of the most downstream rolling stands when said computing is performed using the selected mill operating parameters so that said computing can be subsequently performed using the calculated position correction coefficient values when the mill has similar operating conditions.

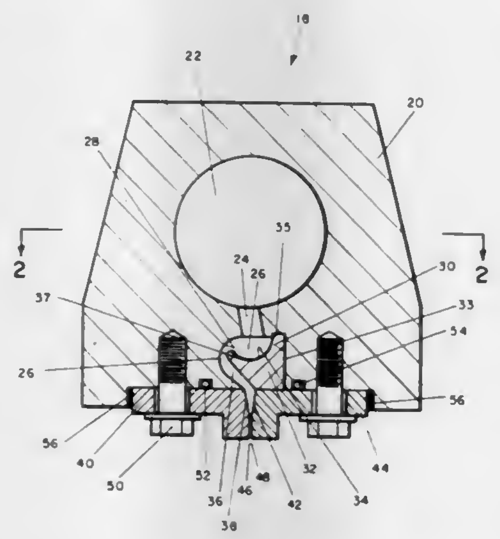
4,617,815
APPARATUS FOR DESCALING HOT STRIP IN A ROLLING MILL

Joseph I. Greenberger, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Dec. 24, 1984, Ser. No. 685,817

Int. Cl.⁴ B21B *45/08, 45/02*

U.S. Cl. 72—39 **9 Claims**



1. In an apparatus for applying a continuous wall of relatively high pressure volume of liquid to a surface of an elongated workpiece of hot metal passing above or below and adjacent to said apparatus to substantially and uniformly remove oxide scales from said surface where there is relative movement between said workpiece and said apparatus, comprising:

header means spaced from said surface and arranged to extend transversely across said workpiece,

said header means comprising:

nozzle means carried by said header means having an elongated exit opening extending parallel to said header for directing said high pressure volume continuous wall of liquid onto said surface of said workpiece,

channel means extending through said header means in said transverse direction for receiving pressurized liquid, and

liquid diffusion and pressure equalizing means in said header means communicating with said channel means, comprising

a series of parallel liquid passages each with a discharge opening formed in a common portion of said channel means and having a pressure equalizing effect on said liquid,

chamber means constructed and arranged to have an enlarged area relative to each adjacent said discharge opening formed by said passages for receiving said flow of liquid from said passages, said enlarged area having a back portion,

said passages being directed toward said back portion of said enlarged area to direct said flow in a first direction in said chamber means thereby effecting a further pressure equalization of said flow,

liquid directing means received in said enlarged area of said chamber means for directing said flow of liquid in a subsequent second direction substantially different from said first direction to further effect a pressure equalization of said flow, and

said liquid directing means forming a restriction area with said enlarged area for influencing the flow of liquid after passing in said second direction and for directing said liquid from said enlarged area into said nozzle means,

said channel means, said chamber means, and said elongated exit opening of said nozzle means being in substantial alignment relative to each other,

said nozzle means in conjunction with said treatment of the liquid in said chamber means causing said liquid passing through said nozzle means to form a rectangular, continuous field of pressurized liquid sufficient to create a high energy impact force within the rectangular field for said substantial and uniform removal of oxide scale from said surface of said workpiece.

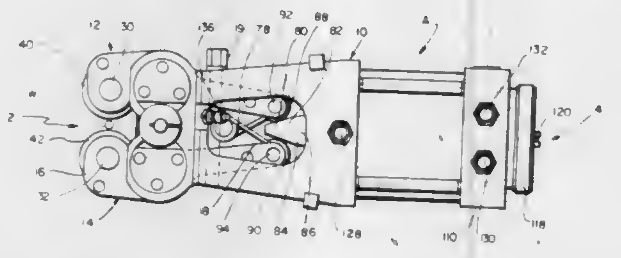
4,617,816
THREAD ROLLING ATTACHMENT

Robert J. Brinkman, Rush, N.Y., assignor to C. J. Winter Machine Works, Rochester, N.Y.

Filed Feb. 5, 1985, Ser. No. 698,540

Int. Cl.⁴ B21H *3/04*

U.S. Cl. 72—104 **10 Claims**



1. An outboard thread rolling attachment for an automatic screw machine for rolling a pattern on a workpiece comprising:

(a) a roll arm yoke having two, spaced, parallel arms, one of which is split into two sections,

(b) a pair of roll arms pivotally supported intermediate their ends on a pair of spaced, generally parallel fulcrum pins which extend transversely between the arms of said yoke,

(c) each of said roll arms having an inner end and an outer end,

(d) each of said outer ends of said roll arms having a shaft rotatably mounted thereon,

(e) a thread roll fixed on each of said shafts adjacent one end thereof,

(f) said rolls being diametrically opposed to each other relative to the axis of rotation of a workpiece placed therebetween,

(g) each of said shafts having gear means interconnecting one shaft with the other shaft,

(h) a fluid pressure cylinder means including reciprocable piston means, and wedge means operatively connected to said piston means for reciprocation thereby, and being in contact with and operable on and between the inner ends of said roll arms,

(i) said piston means including means for adjusting the travel of said wedge means,

(k) means mounting opposite ends of said fulcrum pins in the arms of said yoke for limited universal movement relative thereto, and

(l) taper adjusting means interconnecting said two sections of said one arm of said yoke and adjustable to tilt the axes of said fulcrum pins relative to one another.

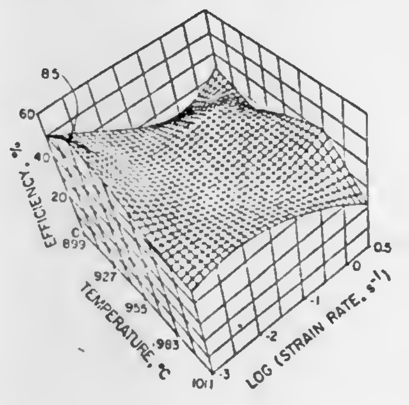
4,617,817
OPTIMIZING HOT WORKABILITY AND CONTROLLING MICROSTRUCTURES IN DIFFICULT TO PROCESS HIGH STRENGTH AND HIGH TEMPERATURE MATERIALS

Harold L. Gegel, Kettering; James C. Malas, Dayton; Yellapregada V. R. K. Prasad, Fairborn; Sokka M. Doraivelu, Beavercreek; Douglas R. Barker, Centerville; James T. Morgan, Jr., Huber Heights, and Kristine A. Lark, Enon, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 6, 1985, Ser. No. 698,728

Int. Cl.⁴ B21J *5/00*

U.S. Cl. 72—364 **40 Claims**



1. A method of fabricating an article from a metallic material, comprising the steps of:

a. generating flow stress data as a function of strain rate and temperature on samples of said material at predetermined strain within predetermined ranges of temperature and strain rate;

b. determining from said data the strain rate sensitivity and defining power dissipation efficiency as a function of temperature and strain rate for said material within said ranges of temperature and strain rate;

c. selecting values of strain rate and corresponding temperature for a selected value of said power dissipation efficiency; and

d. hot forming said material at said selected strain rate and temperature values to a predetermined shape for said article.

4,617,818
STRUCTURAL METAL SHEET AND METHOD FOR FORMING THE SAME

Kazusige Fukuyori, Kudamatsu, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 5, 1983, Ser. No. 520,850

Claims priority, application Japan, Aug. 16, 1982, 57-141111

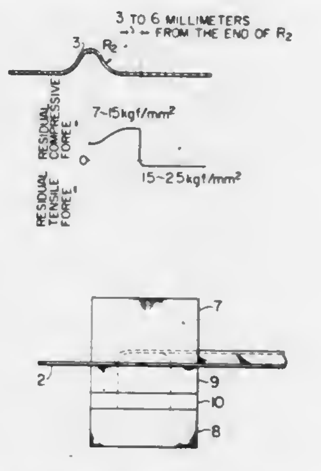
Int. Cl.⁴ B21D *17/02*

U.S. Cl. 72—379 **3 Claims**

1. A method for forming a structural metal sheet provided with both a bead portion in which residual compressive stress exists and a flat portion in which residual tensile stress exists, comprising the steps of:

plastically working a sheet material for forming said bead portion,

applying to said bead portion a compressive stress several times as large as the yield point or proof stress of the sheet material so that the residual compressive stress occurs in


3 TO 6 MILLIMETERS FROM THE END OF R₂
3
R₂
RESIDUAL COMPRESSIVE FORCE
7~15kgf/mm²
0
15~25kgf/mm²
RESIDUAL TENSILE FORCE
7
2
9
10
8

the bead portion after removing the application of the compressive stress.

4,617,819
WIRE CUTTING AND FORMING MACHINE WITH BALANCED MASSES

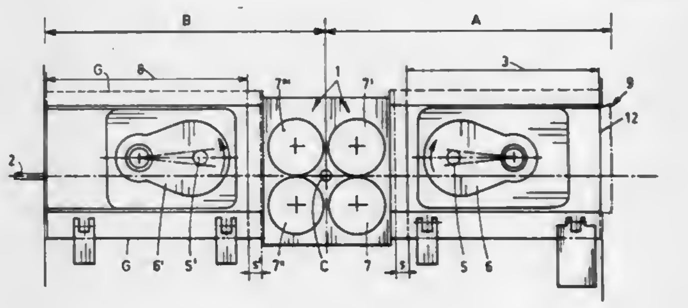
Albino Castiglioni, Via Losanna 12, 6900 Lugano, Switzerland

Filed Aug. 21, 1984, Ser. No. 642,769

Claims priority, application Switzerland, Aug. 23, 1983, 4587/83

Int. Cl.⁴ B21D *7/06*

U.S. Cl. 72—407 **4 Claims**



1. In a machine for the continuous cutting and cold pressing of material supplied in the form of wire, the machine having a plurality of wire feed rolls for intermittently feeding wire toward a cutting and cold pressing station, a cold pressing punch holder slidably mounted on the machine, and means for reciprocating the punch holder in a direction toward and away from the wire feed rolls and parallel to the direction of advance of the wire; the improvement comprising a body of substantially the same mass as the punch holder, said feed rolls being disposed between said body and said punch holder, said body being mounted on the machine for sliding movement toward and away from the feed rolls in a direction parallel to the direction of movement of the wire, and means for reciprocating said body equal distances as, but in opposite directions from, said punch holder, said body and said punch holder being disposed at all times equal distances from said wire feed rolls.

4,617,820
LEVEL CALIBRATING DEVICE

Richard D. Hammond, 2308 Concord, Las Cruces, N. Mex. 88001

Filed Aug. 6, 1985, Ser. No. 763,055

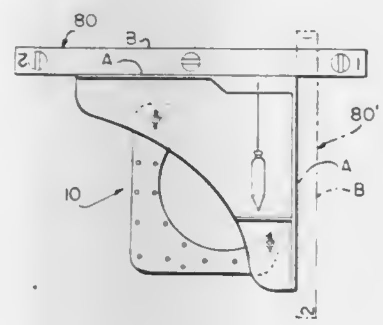
Int. Cl.⁴ G01C *25/00*

U.S. Cl. 73—1 E **10 Claims**

1. A level checking device to determine the accuracy of a hand held level, comprising:

a main body portion having two planar surfaces which are normal to one another, one of said surfaces establishing a horizontal reference and the other of said surfaces establishing a vertical reference;

a mounting bracket connected to said main body and adapted for connection to a solid support structure;



means for adjusting the orientation of said main body relative to said mounting bracket in order to adjust said main surfaces to act as horizontal and vertical references, respectively; and

means connected to said main body to indicate when said surfaces are horizontal and vertical, respectively.

4,617,821
GAS DETECTING DEVICE

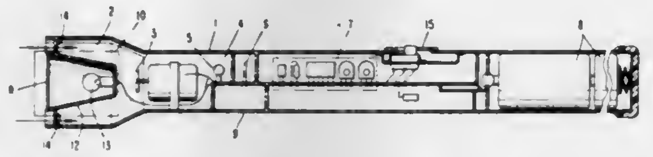
Meiso Yokoyama; Makoto Takahashi; Tsunehiko Nishiwaki, and Makoto Imai, all of Nagaoka, Japan, assignors to Nippon Seiki Co., Ltd., Niigata, Japan

Filed Feb. 13, 1985, Ser. No. 701,217

Claims priority, application Japan, Feb. 24, 1984, 59-26233[U]; Feb. 25, 1984, 59-26566[U]; Mar. 24, 1984, 59-42476[U]

Int. Cl.⁴ G01N *31/00*

U.S. Cl. 73—23 **5 Claims**



1. In a gas detecting device including a cylindrical member formed with an inlet opening through which exhalation gas of a person to be tested for alcohol level enters said cylindrical member, and an air blower for drawing the exhalation gas towards a gas detecting element contained in said cylindrical member and connected to a power source, the improvement which comprises an illuminating section located inside said cylindrical member and connected to said power source for providing illumination forwardly of said inlet opening of said cylindrical member, wherein said illuminating section includes a light source, a substantially conical reflecting plate for reflecting light from said light source, said reflecting plate having a forward opening through which light passes from the light source to illuminate the mouth of a person for measurement of exhalation gas with said gas detecting device spaced from the person in alignment with the mouth of said person by means of light from said light source.

4,617,822
TELL-TALE WEAR MONITOR FOR PIPES HAVING WEAR RESISTANT INNER LININGS

Thomas E. Davis, Anderson, Ind., assignor to Cerline Ceramic Corporation, Anderson, Ind.

Filed Aug. 20, 1985, Ser. No. 767,520

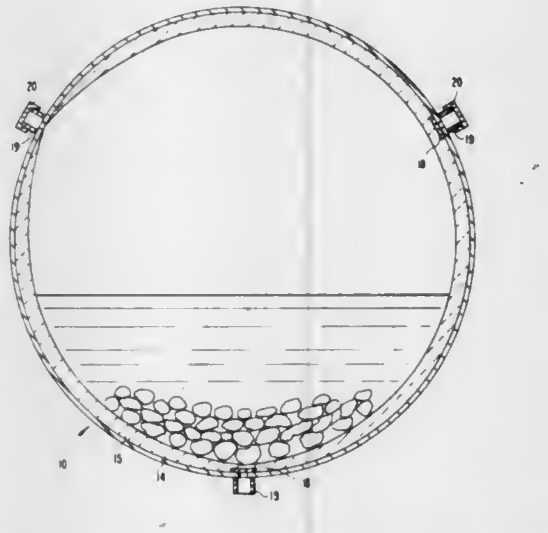
Int. Cl.⁴ F16L *55/00*

U.S. Cl. 73—40.5 R **18 Claims**

1. An apparatus, comprising:

a pipe section for conveying of highly abrasive materials from one location to another, said pipe section having an outer shell and an inner lining, said inner lining made of a material which, relative to said outer shell, is more resistant to wear from abrasive contact with the material conveyed within said pipe section, said outer shell defining a hole therethrough extending between said inner lining and the exterior of said outer shell; and

a plug member positioned between said inner lining and outer shell and covering the inside facing opening of said



hole, said inner lining formed around said plug member and having a thickness which is reduced in the area of said hole by said plug member, said plug member made of a material which, relative to said inner lining material, is readily worn away by abrasive contact with the material conveyed within said pipe section, whereby, when said plug member is worn through, fluid flow is permitted through said hole.

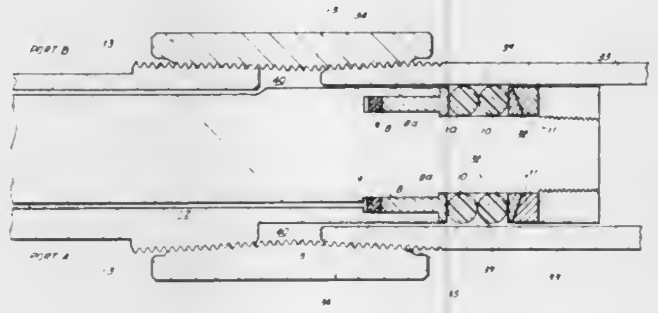
4,617,823
HYDRO PRESSURE THREAD TESTER

Richard J. Lazes, 2748 Orchid St., New Orleans, La. 70119

Filed Feb. 4, 1985, Ser. No. 698,030

Int. Cl.⁴ G01M *3/28*

U.S. Cl. 73—46 **7 Claims**



1. An apparatus for hydrostatically testing the pipe threads on an end of a length of pipe onto which a coupling is threadably adapted comprising: a cylindrical body member that is inserted inside said end of said pipe and having provided therein a hydraulically activated pressure resistant first sealing means that contact a plurality of second sealing means arranged annularly of said cylindrical body member between a flanged portion of said first sealing means and the first end portion of said cylindrical body member, whereby said second annular sealing means are forced outwardly and into contact with the inner surface of said pipe being tested, thereby sealing off the interior of said pipe so as to isolate a test fluid introduced under pressure to the area surrounding the connection between said pipe and said cylindrical body member, a cylindrical nipple-like third pressure resistant sealing means arranged at the opposite end of said cylindrical body member that threadably engages the exposed interior threads of said coupling, and a fluid passageway provided in said cylindricaal body member for introducing said testing fluid under pressure into said annulus created between said hydraulically activated first sealing means and said cylindrical nipple-like third sealing means.

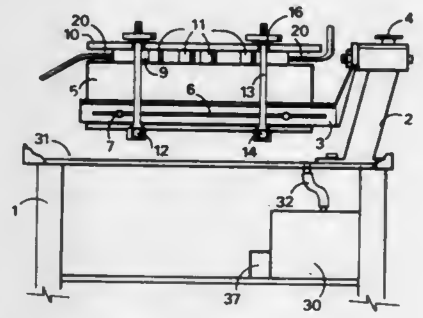
4,617,824
CYLINDER HEAD PRESSURE TESTING APPARATUS

Laurence P. Cybulski, and Robert R. McGlogan, both of Kitchener, Canada, assignors to R.R. McGlogan Equipment Ltd., Kitchener, Canada

Filed Jun. 21, 1985, Ser. No. 747,808

Int. Cl.⁴ G01M *15/00*

U.S. Cl. 73—49.7 **2 Claims**



1. Apparatus for pressure testing of a cylinder head for leak detection, comprising:

air pressure supply means for connection to an air pressure source;

liquid supply means, including a pump;

a diversion valve connected to said air pressure supply means and said pump for receiving air from said air pressure supply means and liquid from said pump, and an outlet from said diversion valve for supplying air pressure or liquid as selected;

cylinder head inlet means sealingly connected for communication between said diversion valve outlet and a water passage port in said cylinder head;

an outlet valve;

cylinder head outlet means sealingly connected for communication between said outlet valve and another water passage port in said cylinder head; and

plug means for sealing all other water passage ports in said cylinder head;

whereby said cylinder head may be filled with liquid or air and then pressurized by air by operating said diversion valve and said outlet valve to fill said cylinder head and thence pressurize said cylinder head by supplying pressurized air through said diversion valve with said outlet valve closed;

said plug means for sealing said water passage ports comprising:

a clamping plate for disposition parallel to the machined surface of the cylinder head;

at least two crossbar members for disposition across the side of the cylinder head opposite the clamping plate;

for each end of each crossbar member, a clamping member connected to said crossbar member for projection upwardly beyond said clamping plate;

a clamping screw threaded onto the end of each clamping member beyond said clamping plate for clamping said plate towards said crossbar members;

whereby sealing plugs may be positioned for compression between said machined surface of said cylinder head and said clamping plate for sealing said water passage ports.

4,617,825
WELL LOGGING ANALYSIS METHODS FOR USE IN COMPLEX LITHOLOGY RESERVOIRS

Naum Ruhovets, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Sep. 12, 1985, Ser. No. 775,294

Int. Cl.⁴ G01V *5/00*

U.S. Cl. 73—152 **3 Claims**

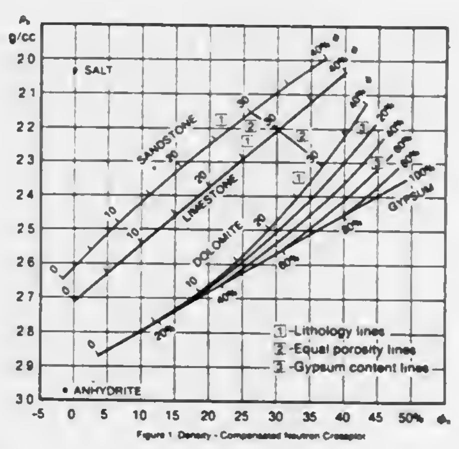


Figure 1 Density - Compensated Neutron Crossplot

1. A machine implemented iterative method of well log analysis to determine the volumes of anhydrite (or gypsum) in three mineral combination lithology utilizing well log measurements of gamma-gamma density, neutron and acoustic properties of earth formations in the vicinity of a well borehole comprising the steps of:

(a) obtaining a gamma-gamma density versus neutron porosity crossplot from the respective logs at a corresponding depth in the well borehole;

(b) determining ρ_{map} (the average density of rock matrix) and Δt_{map} (the average matrix acoustic travel time) by solving said crossplot for a two mineral lithology;

using the ρ_{map} and Δt_{map}, then determining the volume of anhydrite (or gypsum) present from the relationship given by

$$(\rho_{map}(1-Va)+\rho_a\cdot V_a-\rho_b)/(\rho_{map}-\rho_{ef})=[\Delta t-(\Delta t_{map})(1-V_a)+\Delta t_a\cdot V_a)]/(\Delta t_f-\Delta t_{map})$$

where V_a is the volume of anhydrite in the formation; ρ_a is the density of anhydrite; ρ_b is the bulk density from the density log response; ρ_{ef} is the electron density of the formation fluid; Δt is the acoustic travel time from the acoustic log response; Δt_a is the acoustic travel time of anhydrite; and Δt_f is the acoustic travel time in the formation fluid;

(c) using the V_a just computed, recompute the two mineral lithology volume for V_l (volume of limestone) from the relationship

$$V_l=V_{l'}(1-V_a),$$

and;

repeating steps (b) and (c) using new values of ρ_{map} and Δt_{map} in an interative manner until the corrected values of V_a do not vary from repetition to repetition by more than a predetermined amount, thereby arriving at a value of V_a.

4,617,826
TEST SYSTEM FOR AIR DATA SENSOR

Floyd W. Hagen, Eden Prairie, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

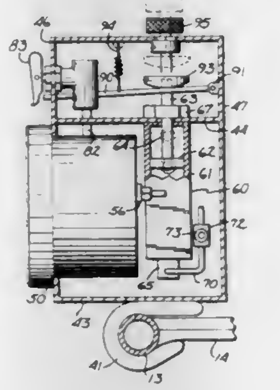
Filed Mar. 30, 1984, Ser. No. 595,244

Int. Cl.⁴ G01L *27/00, 7/00*

U.S. Cl. 73—182 **2 Claims**

1. A test system adapted to be used with a cylindrical probe having pressure sensing port means therein for sensing fluid pressures with ports being provided for sensing static pressure

and ports being provided for sensing positive pressures, said test system including a housing, said housing being mounted on said probe to be tested, a cylinder and piston assembly mounted in said housing and having a piston rod extending to the exterior of said housing, a screw threadably mounted on said housing engaging said piston rod and threadable to move said piston rod in one direction relative to the cylinder, said piston thereby generating a positive pressure on one side of the piston, on the interior of said cylinder and a negative pressure on an opposite side thereof, connection means for separately connecting the interior portions of said cylinder on opposite sides of said piston at one side to a static pressure port and at the other side to a positive pressure port of the probe to be tested, respectively, bleed valve means in the means for connecting for bleeding each of the means for connecting to atmosphere, means independent of the screw for moving said piston rod in reverse direction from its movement caused by threading screw; and a pressure sensing indicator comprising an air speed indicator coupled for sensing differentials in pressure between the respective connection means for connecting the cylinder portion on opposite sides of the piston.



4,617,827
FLOWMETER SYSTEM

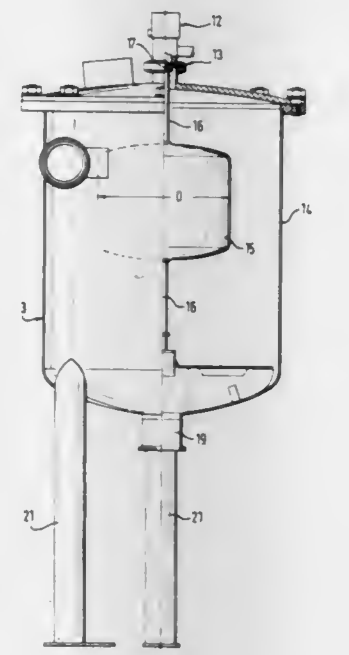
Helmut Grönke, Nordstemmen, Fed. Rep. of Germany, assignor to Diesel GmbH & Company, Hildesheim-Bavenstedt, Fed. Rep. of Germany

Filed Feb. 26, 1985, Ser. No. 705,641

Claims priority, application Fed. Rep. of Germany, May 18, 1984, 3418446

Int. Cl.⁴ G01F *15/08*

U.S. Cl. 73—200 **1 Claim**



1. In a flowmeter system for receiving liquids from stationary reservoirs onto tanker vehicles having a self-priming displacement pump followed by a deaerator, wherein a venting valve has an aperture with a given inside diameter mounted above a float having a given outside diameter acting on said valve, the deaerator being followed by a flowmeter which in turn is followed by a check valve, the improvement comprising:

said given inside diameter (**18**) of said venting valve (**13**) and said given outside diameter (D) of said float (**15**) in said deaerator (**3**), are related according to the following formula:

$$d^2/D^2=p/78$$

wherein

d=said inside diameter of said aperture of said venting valve;

D=said outside diameter of said float;

p=pressure in bars generated in said deaerator by said displacement pump with pure air conveyance.

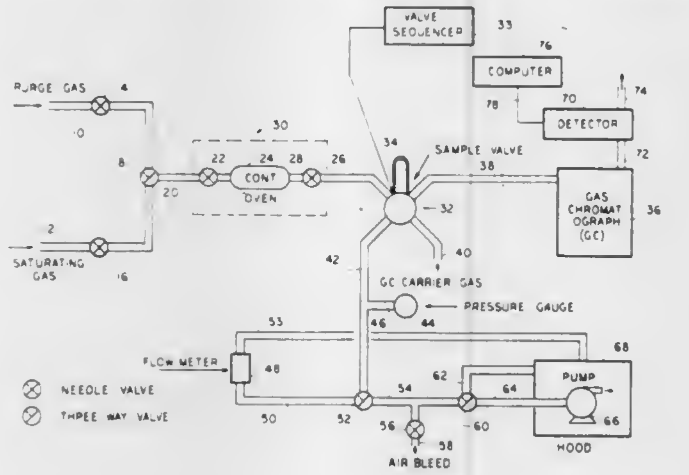
4,617,828
METHOD AND APPARATUS FOR DETERMINING THE SOLUBILITY OF VOLATILE MATERIALS IN NON-VOLATILE MATERIALS

Stephen R. Ellebracht, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 29, 1985, Ser. No. 717,401

Int. Cl.⁴ G01N *7/00*

U.S. Cl. 73—866 **11 Claims**



1. A method of measuring the solubility of volatile materials in non-volatile materials at specified temperature and pressure conditions, said method being comprised of the steps of:

a. placing a sample of substantially solid non-volatile material inside a container which has sufficient volume to allow gases to flow through the container while contacting the non-volatile material and which has a gas inlet and a gas outlet by which gas can, respectively, flow into and out of the container;

b. flowing a gaseous saturating stream of a volatile material through the container in a manner so as to contact and be sorbed by the non-volatile material for a time sufficient for the non-volatile material to become virtually saturated with volatile material while maintaining the temperature and pressure of all material within the container at predetermined constant conditions;

c. stopping the flow of the saturating stream of volatile material;

d. flowing a purge gas through the container at a sufficiently high flow rate to substantially purge the container of its non-sorbed volatile materials but in a sufficiently short time so as not to appreciably reduce the amount of volatile materials sorbed by the non-volatile material, said purge gas being one which does not contain any of the volatile materials of the saturating stream in any significant amount as well as being one which is not reactive in any significant amount with the volatile or non-volatile materials under the conditions used in this method;

e. continuously flowing a desorbing gas stream which has the same properties as those defined for the purge gas in step (d) above through the container in a manner and for a sufficient time so that the gas of the stream contacts the non-volatile material for a time sufficiently long so that substantially all of the volatile materials previously sorbed by the non-volatile material are desorbed from the non-volatile material into the flowing desorbing gas stream, said desorbing gas stream flow being maintained at a known flow rate so that the effect of its flow rate can be accounted for and disregarded in determining the amount of volatile material transferred to it from the non-volatile material per unit of time in the following steps;

1. periodically taking incremental samples of known volumes from the desorbing gas stream flowing from the container;
2. flowing these known volume samples on through a gas chromatograph which has a detector which is sensitive to the volatile material but which is not significantly sensitive to the desorbing gas;
3. selecting enough sample data points from sub-step (1) above of the amount of volatile material present in each periodic desorbing gas sample to establish an integrable graphical curve, whether actual or present only in representative form within a computer, the ordinate of which curve representing the total time over which the samples were taken from the desorbing gas and the coordinates of the curve representing the amount of volatile material present in the incremental samples periodically taken from the desorbing gas stream;
4. integrating the curve to give the total amount of volatile material contained within the non-volatile material; and
5. dividing the amount of volatile material calculated in sub-step (4) above by the amount of non-volatile material to obtain the solubility of the volatile material in the non-volatile material at the specified temperature and pressure conditions.

4,617,829
DEVICE FOR MEASURING CLAMPING OF GRIPS NOTABLY OF A DETACHABLE GONDOLA LIFT OR CHAIR LIFT

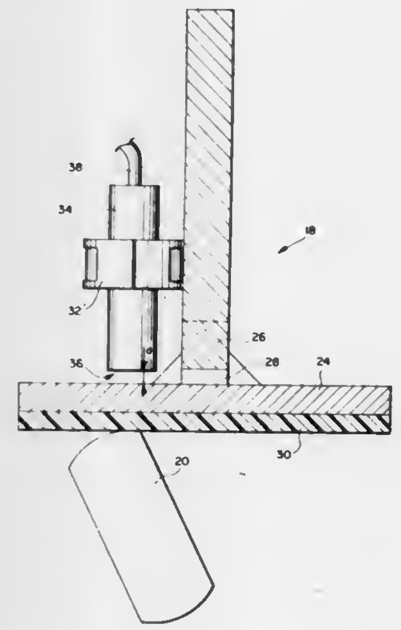
Serge Tarassoff, Seyssinet, France, assignor to Pomagalski S.A., Fontaine, France

Filed Oct. 1, 1985, Ser. No. 782,303

Claims priority, application France, Oct. 15, 1984, 84 15868

Int. Cl.⁴ G01P *1/00*

U.S. Cl. 73—865.8 **9 Claims**



1. An aerial ropeway transport installation, notably a detachable chair lift or gondola lift, having grips coupling the chairs or cars to a rope, each grip having a spring urging the grip into a closing position clamping on the rope and an operating lever acting against the force of the spring to open the grip detaching it from the rope in the stations in a detachment section and commanding closing of the grip in an attachment section, said installation comprising in one of said sections a grip clamping measurement device made of a ramp actuating said operating lever when the grip passes said section and a detector of the deformation of said ramp having a part with a certain flexibility, said detector being a proximity detector disposed facing said part to measure the amplitude of the deformation of said part when the grip passes due to the action of the force exerted by said operating lever on the ramp.

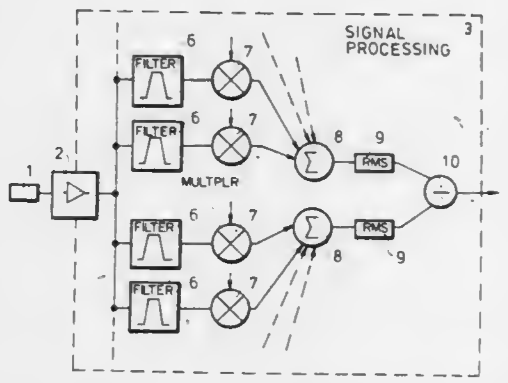
4,617,830
METHOD AND APPARATUS FOR CHECKING HETEROGENEOUS TRANSFORMATION PROCESS OF DIFFUSING KINETICS IN TURBULENT LIQUID FLOW

Gábor Pál, Hómezó u.64, 1221 Budapest; Gábor Endröczi, Veres Pálné u. 14, 1053 Budapest; György Hollós, Frankel Leo u.23, 1023 Budapest; Gábor Nagy, Árpád u. 64; Gábor Szönyi, Stadion u. 23, both of 3534 Miskolc; Bódi László , Gyula u. 38, 3532 Miskolc, and Zoltán Balázs, Kóris Kálmán u. 17, 3530 Miskolc, all of Hungary

Filed May 7, 1985, Ser. No. 731,212

Int. Cl.⁴ G01N *29/00*

U.S. Cl. 73—590 **9 Claims**



1. A method of checking a heterogeneous transformation process of diffusion kinetics taking place in a turbulent flow of a liquid, comprising the steps of detecting a vibration process of acoustic frequency caused by oscillations of bubbles present in said turbulent flow of liquid, producing an electric signal reflecting the spectral composition of said detected signal, and forming therefrom a measure signal reflecting the relative instantaneous value of the turbulent diffusion coefficient of said flowing liquid, for indirect real-time checking said transformation.

4,617,831
PUSH BUTTON TYPE TUNER

Tamaki Ohashi, Tokyo; Tsunefusa Suzuki, Wanabishi; Kaoru Nakada, Saitama; Nobuya Hoshi, Tokyo; Hisao Fujimura, Kanagawa, and Hiromitu Ui, Tokyo, all of Japan, assignors to Nihon Technical Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 21, 1984, Ser. No. 642,953

Int. Cl.⁴ H03J *5/12*

U.S. Cl. 74—10.33 **16 Claims**

1. In a push button type tuner including supporting means, tuning means mounted on said supporting means to generate a tuned frequency and being movable to a position corresponding to the tuned frequency, and a plurality of presettable channel selecting mechanisms for selectively displacing the tuning means to the position corresponding to a frequency specified for each of said channel selecting mechanisms, the improvement comprising:

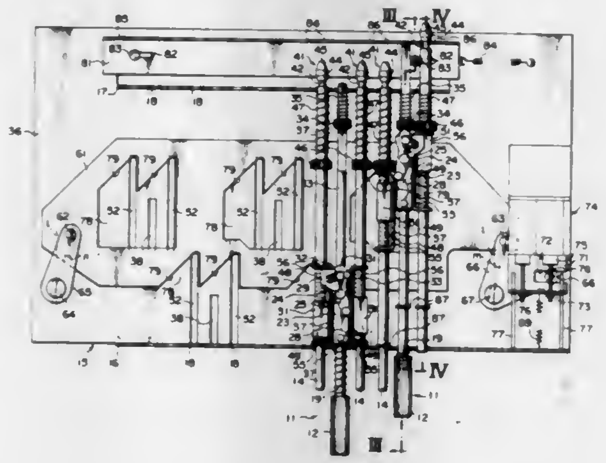
each of the channel selecting mechanisms comprising a rotatable actuating member displaceable between a fore inoperative position and a rear operative position relative to the supporting means, said actuating member being normally urged toward the fore inoperative position and including a main rotatable portion and a push button which serves as a rotary knob, said push button being fixedly secured to the foremost end of the actuating member,

the actuating member coacting with a pair of rotatable channel selecting members which are displaceable between the fore inoperative position and the rear operative position, said channel selecting members being so mounted on the supporting means that they are normally urged toward the fore inoperative position and each of the channel selecting members having a follower rotatable portion selectively engageable with the main rotatable portion to rotate with the latter, each of the channel selecting members having a longitudinally extending threaded portion on which is threadably mounted a channel selecting dog, said channel selecting dog being displaceable in the forward and rearward directions as the channel selecting member rotates,

an engagement mechanism mounted on the actuating member so as to effect engagement of the actuating member with the channel selecting members so that the latter are alternately displaced toward the rear operative position of the actuating member at every time when a cycle of forward and rearward movements of the actuating member between the fore inoperative position and the rear operative position is achieved,

the tuning means including an actuating plate engageable with the channel selecting dog on the channel selecting member which is located at the rear operative position to enable the tuning means to be adjusted by the actuating plate, and,

the tuner further including a locking member having means for allowing rotation of the main rotatable portion to be transmitted to the follower rotatable portion when one of the channel selecting members is located at the rear operative position and to unlock the one channel selecting member which has assumed the rear operative position from the locked state when the other channel selecting member reaches the rear operative position.



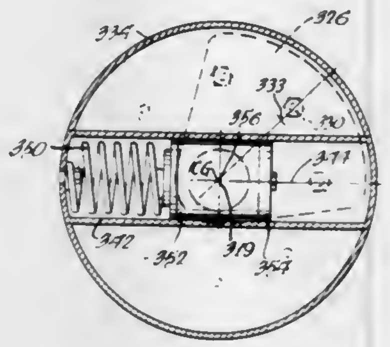
4,617,832
VIBRATORY APPARATUS HAVING VARIABLE LEAD ANGLE AND FORCE

Albert Musschoot, Barrington, Ill., assignor to General Kinematics, Barrington, Ill.

Continuation-in-part of Ser. No. 420,602, Sep. 20, 1982, Pat. No. 4,495,826, which is a continuation-in-part of Ser. No. 250,112, Apr. 2, 1981, abandoned. This application Mar. 12, 1984, Ser. No. 588,305

Int. Cl.⁴ F16H *33/10*

U.S. Cl. 74—87 **5 Claims**



1. Apparatus for varying the lead angle and the amount of a vibratory force generated by a rotating mass comprising a rotatably mounted shaft, means for rotating the shaft, a device mounted on the shaft, a fixed weight, means mounting the fixed weight on the device for rotation with the shaft, an elongate cylinder on the device and having an elongate axis passing through the axis of rotation of the shaft at right angles to said axis of rotation, said fixed weight having a center of gravity radially of the axis of the shaft with a line connecting said axis of the shaft and the center of gravity establishing a base line, said base line and said elongate axis defining an angle therebetween that is greater than 0° and less than 180°, a movable weight mounted for axial movement in the cylinder, a tension and compression spring in the cylinder for urging the movable weight radially outboard of the axis of rotation of the shaft, said spring having its one end attached to the cylinder and its other end attached to the movable weight, said weight being movable upon compression of the spring to one side of the shaft axis and upon tensioning of the spring to the other side of the shaft axis and means operable to move the movable weight inboard toward said shaft or outboard away from said shaft whereby the lead angle of the vibratory force will be along the resultant between the base line and the elongate axis in noncoincidence with the elongate axis of the cylinder and in an amount determined by the relative locations of the fixed weight and the movable weight.

4,617,833
HIGH PRECISION ADJUSTER

Kenneth F. Hall, and George Chambers, both of Martock, England, assignors to Martock Design Limited, Martock, England

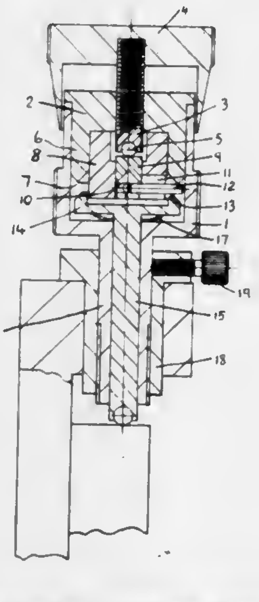
Filed Sep. 10, 1984, Ser. No. 648,499

Claims priority, application United Kingdom, Jan. 7, 1984, 8400352

Int. Cl.⁴ F16H *21/44*

U.S. Cl. 74—110 **10 Claims**

1. A high precision linear motion adjuster comprising: a body having an axis, a primary motion member having a screw-threaded portion in threaded engagement with said body, said member having a thrust-imparting spigot coaxial with said axis and with the threaded portion, an output member slidable in said body, and an intermediate lever system located within said body and positioned between said spigot and output member, said lever system including at least one substantially straight lever extending transversely of said axis, said lever pivotable about a fulcrum carried by said body and effective to translate through radially fixed pivots a relatively large movement of the primary motion member into a relatively small movement of the output member.



4,617,834
PREFORMED INTEGRAL COATING, PARTICULARLY FOR MOTORVEHICLE GEAR SHIFT LEVERS

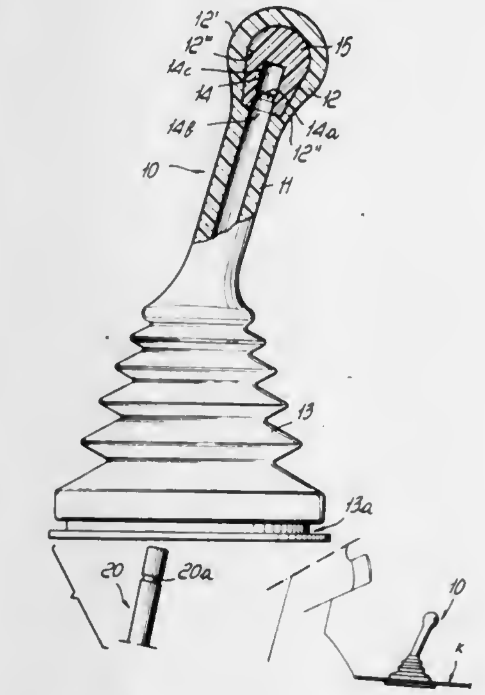
Giovanni Foggini, Corso Matteotti, 23, Torino, Italy

Continuation of Ser. No. 360,040, Mar. 19, 1982, abandoned. This application Feb. 19, 1985, Ser. No. 703,163

Claims priority, application Italy, Apr. 1, 1981, 53070/81[U]

Int. Cl.⁴ G05G *1/06;* **B60K** *20/00*

U.S. Cl. 74—523 **1 Claim**



1. Pre-formed sheath-like structure, particularly for motor vehicle gear shift levers of the type having a hand actuated rod member with a rod diameter and a rod member axis, said sheath-like structure comprising a one piece coating member portion of soft polymeric material and a core member portion of hard polymeric material,

said one piece coating member protion having an axis coinciding in use with said rod member axis, an upper portion defining a knob grip formation of generally bell-like shape coaxial with said rod member axis and having a rounded top and downwardly frustoconically converging mantle formation and a hollow seat therein, said seat having a shape corresponding to said bell-like shape and being coaxial therewith, the axial extension of said seat being greater than any transverse extension thereof,

said one piece coating member portion having further an intermediate sleeve portion departing from said converging mantle formation, as an integral undivided part thereof, said intermediate sleeve portion having a constant thickness and defining internally a cylindrical hollow space having a diameter corresponding to the diameter of said gear shift lever rod member,

a lower bellows-like portion departing from said intermediate sleeve portion as an integral undivided part thereof, said bellows-like portion having a wall thickness smaller than said constant thickness of said intermediate sleve portion and a downwardly diverging frustoconical shape, said bellows-like portion having further an annular lower groove formation concentric therewith in proximity of a lower edge of said bellows-like portion and for engagement in use with an edge of an opening of a console of the motor vehicle,

said core member portion of hard polymeric material being embedded in said hollow seat and counter-shaped to said seat and structurally in co-molded relationship with said one piece coating member portion thereby to strengthen the connection between said core member portion of hard polymeric material and said one piece coating member portion of soft polymeric material, said core member portion having a cylindrical cavity coaxial with said one piece coating member portion axis, said cavity having a diameter corresponding to said rod member diameter and an axial extension substantially greater than said rod diameter, said cylindrical cavity having an open end at a zone where said intermediate sleeve portion departs from said frustoconically converging mantle and an opposite dead end at a section where said rounded top passes into said frustoconically converging mantle, said cylindrical cavity having further an inwardly protruding concentrically arranged

annular ridge having a diameter smaller than the diameter of said cylindrical cavity, said cylindrical cavity being coaxial with said cylindrical hollow space, thereby said cylindrical cavity and said cylindrical hollow space constituting a continuation of each other for receiving therein in use said rod member in fitting engagement therewith, said annular ridge being arranged to be received in a fitting relationship therewith into a circumferential groove provided near a free end of said rod member.

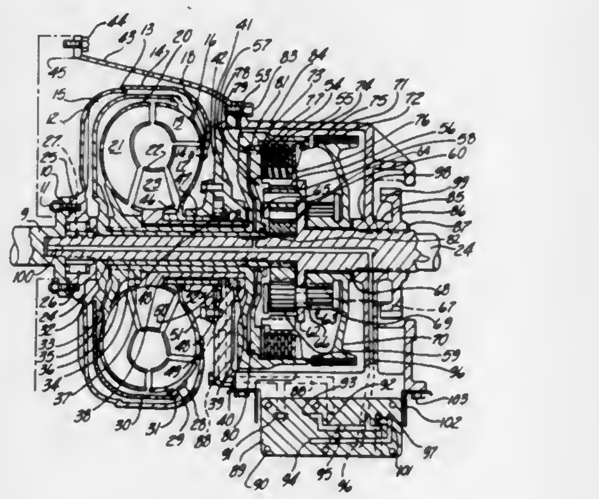
4,617,835
TRANSMISSION

Herbert K. Baker, deceased, late of Oak Park, and by Harriett V. Baker, heir, 24481 Republic, Oak Park, both of Mich. 48237

Continuation of Ser. No. 253,038, Apr. 10, 1981, abandoned. This application Jul. 16, 1984, Ser. No. 631,445

Int. Cl.⁴ F16H *47/04*

U.S. Cl. 74—677 **5 Claims**



1. In combination:
a housing,

an input drive shaft extending into the housing,
an output shaft extending outwardly from the housing,
a hydraulic converter assembly comprising a first stage annular vaned impeller coupled to said input shaft, a second stage annular vaned impeller arranged to receive fluid from the first impeller, a vaned turbine arranged to receive fluid from the second impeller, a vaned reaction member arranged to receive fluid from the turbine, and a one-way brake coupled to said vaned reaction member which enables free wheeling of the reaction member in only one direction,
an infinitely variable gear arrangement comprising a feedback sun gear drivingly connected to said second impeller, a ring gear, means for drivingly connecting said ring gear to said turbine, a carrier connected to said output shaft, at least one pair of intermeshed pinions rotatably mounted to the carrier, one of said pinions being meshed with the sun gear and the other pinion meshed with the ring gear, and
wherein said sun gear rotatably drives said second stage impeller at a speed greater than the first stage impeller so that, at a predetermined fluid clutching match point, the discharge fluid velocity from the turbine substantially equals the inner fluid velocity of the first state impeller,
selectively operable clutch means movable between an engaged position and a disengaged position for drivingly connecting said turbine to said ring gear only when said clutch means is in said engaged position,
wherein said clutch means further comprises a plurality of enmeshed clutch plates and means to compress said clutch plates together,
wherein said compressing means further comprises a fluid operated piston movable between a first and a second position wherein said first position said clutch means is in said disengaged position and wherein in said second position said clutch means is in said engaged position,
wherein said transmission is used in conjunction with a vehicle having a throttle, said throttle being movable between an idle position and a depressed position and furher comprising a hydraulic system means responsive to the movement of the throttle away from said idle position for actuating said piston so that said piston moves from said first and to said second position.

4,617,836

TRANSMISSION SYSTEMS FOR TRACKED VEHICLES

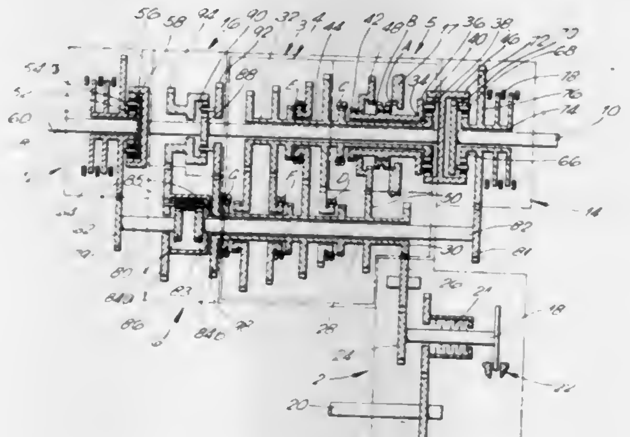
David A. Baldwin, Woking, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jul. 11, 1984, Ser. No. 629,972

Claims priority, application United Kingdom, Jul. 12, 1983, 8318862

Int. Cl.^{4} F16H *37/06*

U.S. Cl. 74—682 **3 Claims**



1. A transmission system having
a rotatable power input member;
a change-speed gear unit coupled to the power input member;
a gear unit output member rotatably drivable by the gear unit;
a steering differential having a rotatable steering input member coupled to the power input member and having a first and a second rotatable steering output member arranged so that the sum of their rotational speeds is proportional to the rotational speed of the steering input member;
a first and a second drive differential coupled to the gear unit output member and the first and second steering output member, respectively, and having a first and a second rotatable output member, respectively, the first and second drive differentials being configured such that the rotational speed of the first and second output members is equal to a linear combination of the rotational speeds of the gear unit output member and of the first and second steering output member, respectively;
a first and a second steering brake associated with the respective steering output members; and
a modifying differential coupled to the gear unit output member, the power input member and the steering input member;
the modifying differential being arranged so that the rotational speed of the steering input member is equal to a multiple of the rotational speed of the power input member less a multiple of the rotational speed of the gear unit output member when a forward gear ratio is engaged.

4,617,837

SPEED CHANGE DEVICE FOR MEDICAL HANDPIECE

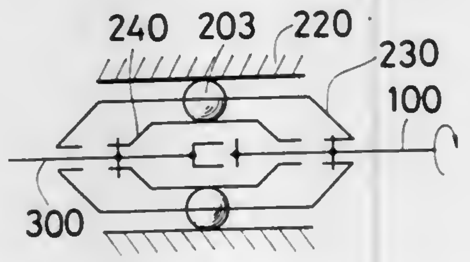
Kenzo Kataoka, Otsu, and Hiroo Watanabe, Kyoto, both of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Feb. 13, 1985, Ser. No. 701,086

Claims priority, application Japan, Feb. 18, 1984, 59-29244

Int. Cl.^{4} F16H *57/10*

U.S. Cl. 74—785 **2 Claims**



1. A speed change device for a medical handpiece arranged such that first and second rotary shafts are connectably carried by bearings and freely rotatably in a case of a handpiece and are connected for transmission of torque at the same, faster or slower speed as the first rotary shaft, said speed change device being characterized in that:
it comprises on and between said first and second rotary shafts in said case a planetary torque transmission mechanism, which enables transmission of torque of said first rotary shaft on the driving side to said second rotary shaft on the driven side at the same, faster or slower speed as the first rotary shaft, said planetary torque transmission mechanism is of the ball planetary type and comprises an outer race freely slidable axially, a ball retainer retaining a ball free to roll and in rolling contact with a peripheral groove inside said race and inner race whose outer peripheral groove corresponds to said peripheral groove of said outer race;
on the outer periphery of said case a manipulating means for selecting either the same, faster or slower speed as the first rotary shaft whereby through manipulation of said manipulating means said first and second rotary shafts are connected directly, connected by said planetary torque transmission mechanism or shifted for disconnecting said first and second rotary shafts so that said first and second rotary shafts are then connected indirectly through said planetary torque transmission mechanism; and
said first and second rotary shafts are provided with first and second engaging sleeves fitted respectively thereover, said first and second engaging sleeves being mutually engageable at face-to-face ends, peripherally rotatable together with said first and second rotary shafts and slidable in an axial direction via slots, pin means respectively fitted in said slots, and first and second springs for urging said first and second sleeves into engagement.

4,617,838

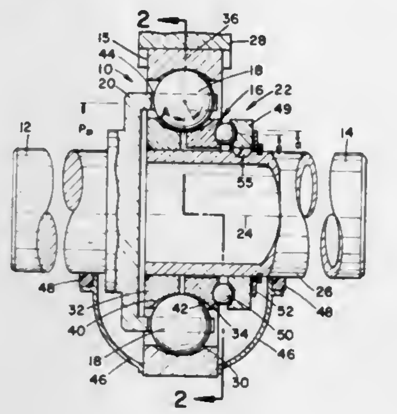
VARIABLE PRELOAD BALL DRIVE

William J. Anderson, North Olmsted, Ohio, assignor to Nastec, Inc., Cleveland, Ohio

Filed Apr. 6, 1984, Ser. No. 597,609

Int. Cl.^{4} F16H *13/06*

U.S. Cl. 74—798 **8 Claims**



1. A fixed ratio ball drive having first and second relatively rotatable shafts, each shaft operating as either an input or output shaft, a pair of concentric annular race members, one of said race members being fixed against rotation and defining a unitary, axially undivided raceway, the other of said race members defining a spaced facing raceway, a plurality of torque balls retained in said raceways, a drive member connected to said first shaft having means circumferentially spacing and drivingly engaging said torque balls, both of said raceways having a radius of curvature greater than said torque ball radius, said other race member consisting of first and second race rings relatively axially movable along said second shaft to compressively radially engage the torque balls at a predetermined substantially fixed contact angle, the first race ring being fixedly rotatably connected to said second shaft, the second race ring being rotatable with and axially slidable relative to said second shaft;
a preload ring carried and driven by said second shaft, said preload ring being axially spaced from and axially shiftable relative to said second race ring;
a circumferentially spaced series of circumferentially extending opposed ramp surfaces formed in opposed axial surfaces of said rings, said ramp surface being inclined at a predetermined angle relative to the radial plane of said rings;
preload balls retained between said opposed ramp surfaces establishing rolling axial driving engagement between said rings between said ramp surfaces;
spring means operative between said preload ring and said second shaft exerting an axial force on said second race ring through said preload ring and preload balls toward siad first race ring to create a frictional force between said raceways and said torque balls just sufficient to transmit minimum expected torque demands on said drive;
said predetermined angle of inclination being related to said preload balls such that an applied greater than minimum torque demand on said drive, when transmitted to said preload ring as driven by said second shaft, results in rolling movement of said preload balls between said ramp surfaces; and,
said rolling movement of said preload balls providing an additional axial force in proportion to said applied torque which, with said spring force, provides a combined axial force to increase the friction between said torque balls and said raceways to a level which is sufficient to maintain rolling driving engagement therebetween at said substantially fixed contact angle.

4,617,839

ASYMMETRIC PLANETARY GEAR ASSEMBLY

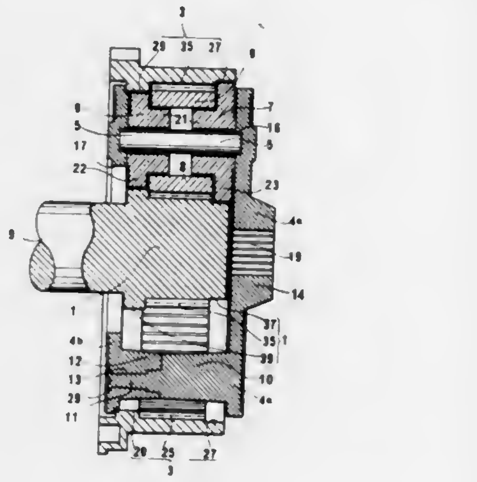
Hideyasu Matoba, Osaka, Japan, assignor to Matex Co., Ltd., Osaka, Japan

Filed Jun. 21, 1985, Ser. No. 747,172

Claims priority, application Japan, Jul. 19, 1984, 59-150145

Int. Cl.^{4} F16H *1/28, 3/44*

U.S. Cl. 74—801 **7 Claims**

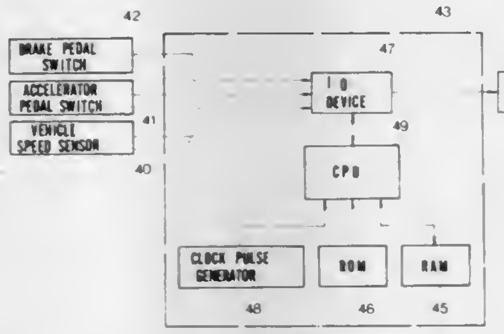


1. An asymmetric planetary gear assembly comprising a sun gear (1), three or four planetary gears (2) for engaging with the sun gear (1), an outer inner-toothed gear (3) engaging with the planetary gears (2) and a rotary carrier (4) supporting planetary shafts (5) piercing the planetary gears (2), characterized in that the planetary gear (2) consists of a planetary gear ring (8), a first planetary disc (6) having a smaller disc part (22) smaller than the tooth-root circle of planetary gear and an inner cylindrical part (21) sustaining the planetary gear ring (8) and a second planetary disc (7) having a bigger disc part (23) bigger than the tooth-edge circle of planetary gear and an inner cylindrical part (21) sustaining the planetary gear ring (8), the outer inner-toothed gear consists of a gear part (25) engaging with the planetary gear ring (8), a smaller cylindrical part (26) which is smaller than the tooth-edge circle of outer inner-toothed gear and contacts with the smaller disc part (22) of the first planetary disc (6), and a bigger cylindrical part (27) which is bigger than the tooth-root circle of outer inner-toothed gear and contacts with the bigger disc part (23) of the second planetary disc (7), and the sun gear (1) consists of a sun gear part (35) engaging with the planetary gear ring (8), a smaller column part (37) which is smaller than the tooth-root circle of sun gear and contacts with and rolls on the bigger disc part (23) of the second planetary disc (7) and a bigger column part (36) which is bigger than the tooth-edge circle of sun gear and contacts with and rolls on the smaller disc part (22) of the first planetary disc (6).

4,617,840
SYSTEM FOR CONTROLLING A POWER TRANSMISSION OF A FOUR-WHEEL DRIVE VEHICLE

Toru Yamakawa; Fujio Makita, both of Hachioji; Mitsuo Umezawa, and Ryuzo Sakakiyama, both of Tokyo, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1983, Ser. No. 561,717
Claims priority, application Japan, Dec. 15, 1982, 57-219630
Int. Cl.⁴ B60K ***41/02***
U.S. Cl. 74—865 **11 Claims**



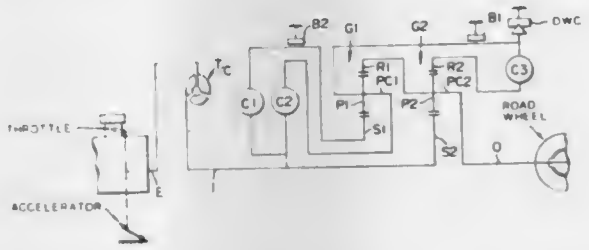
1. A system for controlling power transmission of a four-wheel drive vehicle powered by an engine comprising:

a transmission for transmitting power of said engine to main wheels of the vehicle;
a clutch for selectively transmitting said power to auxiliary wheels of the vehicle;
first sensing means for sensing the speed of the vehicle and for producing a signal dependent of the speed;
means responsive to the signal from said first sensing means for detecting the deceleration of said vehicle and for producing an output signal when the deceleration exceeds a predetermined value; and
switch means responsive to said output signal for engaging said clutch, whereby the four-wheel driving power transmission is established.

4,617,841
HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION WITH SHOCKLESS 4-2 SHIFTING

Kazuhiko Sugano, Zama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 17, 1984, Ser. No. 581,508
Claims priority, application Japan, Feb. 28, 1983, 58-30691
Int. Cl.⁴ B60K ***41/08;*** **F16H** ***57/10***
U.S. Cl. 74—869 **4 Claims**



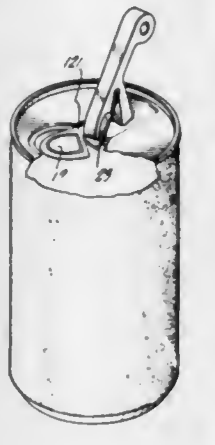
1. A hydraulic control system for an automatic transmission which is shiftable into a nth speed ratio, a n+1th speed ratio and a n+2th speed ratio, the automatic transmission including a first friction unit and a second friction unit, the first friction unit being engaged and the second friction unit being released during operation with the nth speed ratio, the first and second friction units being engaged during operation with the n+1th speed ratio, the first friction unit being released and the second friction unit being engaged during operation with the n+2th speed ratio,

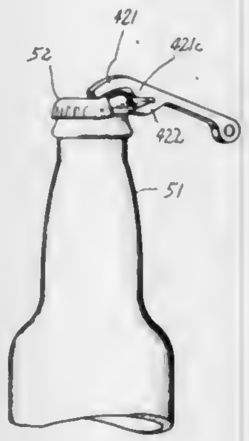
the hydraulic control system comprising:
means for generating an actuating fluid pressure;
a first shift valve having a downshift position thereof and an upshift position thereof, said first shift valve assuming the downshift position thereof during operation with the nth speed ratio, said first shift valve assuming the upshift position thereof during operation with the n+1th speed ratio and the n+2th speed ratio;
a second shift valve having a downshift position thereof and an upshift position thereof, said second shift valve assuming the downshift position thereof during operation with the nth speed ratio and the n+1th speed ratio, said second shift valve assuming the upshift position thereof during operation with the n+2th speed ratio;
said second shift valve having a first port and a second port, said first port being allowed to communicate with said second port when said second shift valve assumes the downshift position thereof, said first port communicating with the first friction unit, said second port communicating with said actuating fluid pressure generating means;
means for generating a signal fluid pressure; and
a changeover valve means communicating with said first port and responsive to a fluid pressure in said first port for supplying said signal fluid pressure to urge said first shift valve toward the downshift position thereof when the fluid pressure in said first port rises above a predetermined value.

4,617,842
COMBINATION CAN OPENER

James C. H. Yang, 23328 Dorset Pl., Harbor City, Calif. 90710

Filed Nov. 5, 1984, Ser. No. 668,309
Int. Cl.⁴ B67B ***7/44***
U.S. Cl. 81—3.09 **5 Claims**





1. A combination cap and can opener suitable for opening a capped bottle and for opening a press-off easy-open can having a can cap (11) with a can seal (12) which can be split off from the can cap (11), the can also having a tab (21) connected to the can cap (11), the tab (21) having a lip (22) and a front end (23), the lip (22) being capable of being forced upward so that the front end (23) of the tab (21) pushes down on the can seal (12) to split off the can seal (12) and force the can seal (12) inside of the can, the opener also being suitable for wrenching off a bottle cap (52) from a bottle (51),

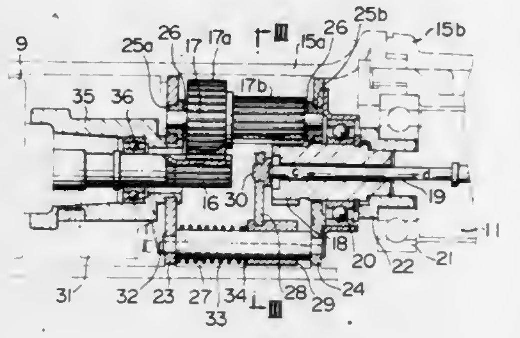
the opener comprising a gripper (41) having a front section (44) and a tail end (43), the front section comprising:
(a) a forwardly projecting lance (422) having an upper edge (423) and a bottom edge (424), the two edges meeting to form an acute angle at an end edge (422*c*);
(b) an arched jaw (421) extending above and forwardly of the lance (422), the jaw (421) having a base portion (421*a*) and a front tip portion (421*b*), the front tip portion (421*b*) arching forwardly and downwardly toward the lance (422);
(c) a projection (421*c*) on the base portion (421*a*) of the jaw (421);
(d) a fillister (422*b*) between the projection (421*c*) and the lance (422), the fillister (422*b*) being sized and shaped for catching the lip (22) of the tab (21) of a press-off easy-open can,
wherein the thickness of the end edge (422*c*) of the lance (422) is less than about half of the thickness of the lip (22) of the tab (21) so that the lance (422) can be inserted beneath the tab (21) for pushing the lip (22) of the tab (21) upwardly, and
wherein the distance between the fillister (422*b*) and the front tip portion (421*b*) of the jaw (421) is slightly less than the length of the tab (21) and the length of the jaw (421) is sufficiently short such that when the lip (22) of the tab (21) is caught in the fillister (422*b*) and the tail end (43) of the gripper (41) is lifted, the front tip portion (421*b*) presses down to force the can seal to split off rapidly from the can without the jaw (421) reaching inside of the can; and
(e) means for wrenching off a bottle cap (52) from a capped bottle (51), the wrenching means being formed by the jaw (421) and the lance (422), the front tip portion (421*b*) of the jaw (421) projecting forwardly of the lance (422) a sufficient amount and curving downwardly toward the lance (422) a sufficient amount that when the lance (422) is under a bottle cap (52) on a bottle (51), the front tip portion (421*b*) of the jaw (421) is on top of the bottle cap (52), the projection (421*c*) not interfering with the lance (422) being placed under the bottle cap (52).

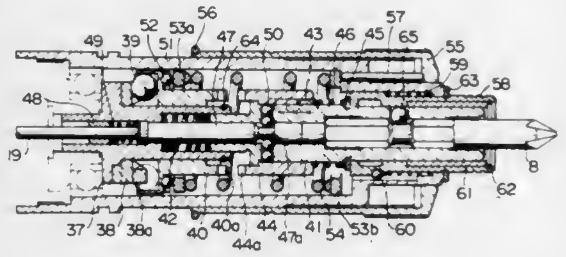
4,617,843
ELECTRICALLY-OPERATED DRIVER

Yoshikazu Nishida, Hirakata, and Isamu Hashimoto, Katano, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 12, 1985, Ser. No. 796,764
Claims priority, application Japan, Nov. 16, 1984, 59-242836
Int. Cl.⁴ B25B ***17/00***
U.S. Cl. 81—57.11 **5 Claims**

1. A push-start type electrically-operated driver comprising:
a motor;
a reduction gearing for said motor;
a clutch for transmitting drive force from said motor off and on;
a bit adapted to engage a screw, nut and the like for transmitting a torque thereto;
a switch for turning on and off said motor; and
a cover for enclosing all the parts of the electrically-operated driver, said motor being turned on as a pressure is applied to said bit to cause a switch rod to move and actuate said switch;
characterized in that:
said reduction gearing comprises a plurality of spur gears, said spur gears each being rotatable about a center axis thereof but prevented from moving in an orbit;
said switch is located close to said reduction gearing; and
switch operating means is incorporated in said reduction gearing, said switch operating means being operative to actuate said switch upon said bit moving in an axial direction.

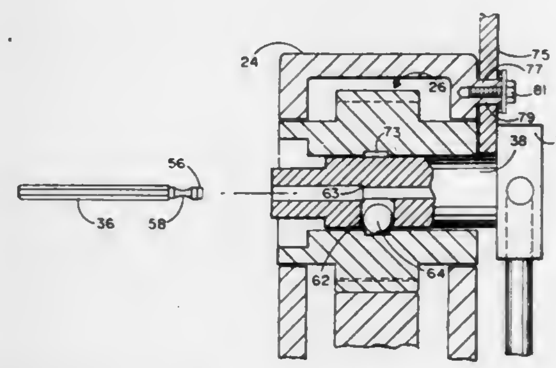




4,617,844
REMOVABLE KEY FOR WRENCHING TOOL

Ronald W. Batten, Torrance, Calif., assignor to VSI Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 514,783, Jul. 18, 1983, Pat. No. 4,538,483. This application Feb. 19, 1985, Ser. No. 702,959
Int. Cl.⁴ B25B ***13/48, 15/00***
U.S. Cl. 81—436 **14 Claims**



1. An elongated key for removable engagement in a tool having a tool subassembly of an outer member and an elongated key holder slidably received therein, a ball detent keyway formed by a receiving bore in said key holder and a detent ball receptacle intersecting said receiving bore with a detent ball seated in said receptacle and a ball recess in said outer member, said elongated key comprising:

a main shaft portion having a non-circular cross section to index in said receiving bore,
a work end with a torque transmitting head;
an opposite end from said work end having a reduced thickness whereby said key may be canted in said receiving bore and having a sufficient length to engage said ball in its canted position; and
a transverse groove between said opposite end and said main shaft portion; whereby said key, when inserted into said receiving bore, is operative to slide said holder to a position permitting said ball to be received in said ball recess of said outer member and permit passage of said opposite end past said ball, by the application of an axial force to the key.

4,617,845
METHOD AND APPARATUS FOR WORKING PERIPHERAL WALL OF HEMISPHERICAL SHELL

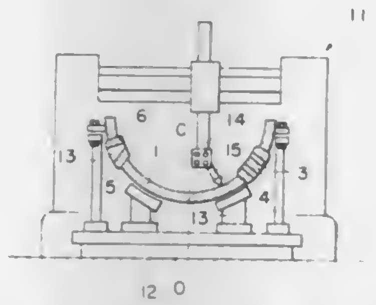
Ryoichiro Sasano; Tsutomu Toyohara, and Toshimichi Takigawa, all of Kobe, Japan, assignors to Mitsubishi Jukogio Kabushiki Kaisha, Japan

Filed Mar. 26, 1984, Ser. No. 593,628

Claims priority, application Japan, Mar. 29, 1983, 58-51574

Int. Cl.⁴ B23B ***1/00, 3/28, 5/40***

U.S. Cl. 82—1 C **3 Claims**



1. A method of working the surface of a hemispherical shell having a center of curvature and a central axis of symmetry passing through the center of curvature, with at least one surface projection having a selected configuration and being spaced from said central axis, said surface of said hemispherical shell having rotationally symmetrical portions lying on a side of said projection adjacent said central axis and on a side of said projection spaced away from said central axis, comprising:

rotating said hemispherical shell about said central axis;

working said rotationally symmetrical portions of said surface to render said rotationally symmetrical portions spherical;

said hemispherical shell having an intermediate surface portion lying on said surface of said hemispherical shell at a location spaced from said central axis an equal amount as said at least one surface projection;

holding said hemisperical shell fixed and, with said hemispherical shell fixed, moving a working tool over the surface configuration of said at least one surface projection for working said surface projection;

providing a cylindrical model ring which is fixed with respect to said hemispherical shell and which has a proximity switch activating area having a selected configuration which corresponds to an image projection of the selected configuration of said at least one surface projection;

providing a contactless proximity switch which is operatively connected to a working tool for retracting the working tool away from the surface of the atmospherical shell when the contactless proximity switch passes said proximity switch activating area;

working said intermediate portion of said hemispherical shell while said hemispherical shell is rotated about its central axis using said working tool in engagement with said intermediate surface portion, said contactless proximity switch moving around said cylindrical model ring with rotation of said hemispherical shell;

retracting said working tool away from said surface of said hemispherical shell when said at least one surface projection passes as said hemispherical shell rotates; by a sufficient amount to avoid contact between said working tool and said surface projection, retracting of said working tool taking place by the passage of said proximity switch over said proximity switch activating area; and

moving said working tool back into engagement with said intermediate surface portion after said at least one surface projection passes, movement of said working tool taking place after said proximity switch passes aid proximity switch activating area.

4,617,846
INTERCHANGEABLE TOOL HEAD FOR A NC MACHINE

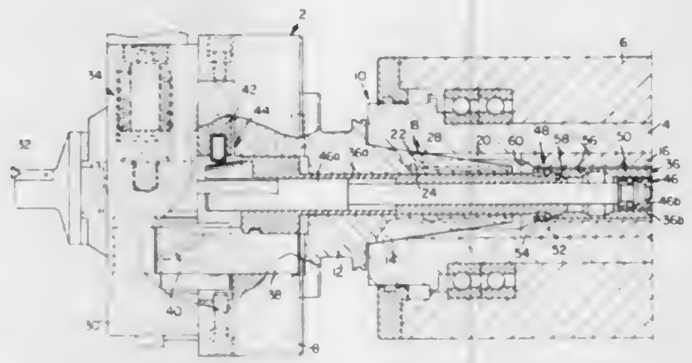
Wilfried Horsch, Obrigheim, Fed. Rep. of Germany, assignor to GTE Valeron Corporation, Troy, Mich.

Filed Feb. 19, 1985, Ser. No. 703,068

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1984, 3406490

Int. Cl.⁴ B23B ***41/04***

U.S. Cl. 82—1.2 **7 Claims**



1. A tool head for a rotating of a nc machine, comprising a surface slide serving as a tool holder, which surface slide is mounted in the tool head and is displaceable in a radial direction with respect to the spindle axis by means of an axially displaceable separable control rod concentrically disposed in the work spindle, and a clamping device for clamping the tool head to the work spindle of the nc machine, the improvement wherein said tool head includes a clamping device having a cone shaped end adapted to be inserted in a matingly shaped conical bore of the work spindle whereby said tool head is adapted to be interchangeable with respect to said work spindle, said work spindle having an axially displaceable tie rod disposed therein and concentrically surround the control rod, a releasable clutch operably associated with the separable control rod comprises ball locking means adapted to be released and locked by axial relative movements between said tie rod and said control rod and adapted to be moved into and out of engagement by axial relative movements whereby said clamping device is automatically releasable and the control is automatically separable by said releasable clutch to interchange the tool head, said control rod being operatively connected to said surface slide by inclined teeth, a stop member is adjustable in a radial direction by a second separable control rod which is disposed within said first control rod and automatically separable by a second releasable clutch.

4,617,847
BAR PULLER

Kurt Schaldach, 5826 Kings Hwy., Parma Heights, Ohio 44130

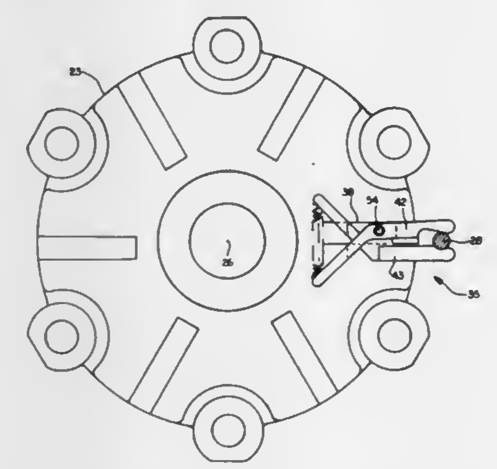
Filed Dec. 10, 1984, Ser. No. 679,692

Int. Cl.⁴ B23B ***13/12***

U.S. Cl. 82—2.5 **7 Claims**

1. A bar puller for use on a chuck type bar stock machine which has a rotatable, multi tool position turret capable of moving in directions parallel to and laterally relative to the axis of the chuck or bar stock being handled by the machine including in combination a mounting block adapted to be fixedly secured in a given tool position of the turret, first and second jaw members each having first and second end portions and an intermediate portion, said first end portions of said jaw members extending generally parallel and coextensively and having facing surfaces upon which are formed stock engaging surfaces, pivot means pivotally connecting said first and second jaw members at said intermediate portions to said mounting block, to enable said first and second jaw members to move between open and closed positions, said jaw members crossing each other at said intermediate portions and said second end portions diverging from each other as said second end portions

extend from said intermediate portions, and tension spring means extending between said second end portions of said jaw members constantly urging said jaw members to closed positions.



4,617,848
TURRET HEAD FOR A LATHE AND A TOOL HOLDER SUITABLE FOR USE THEREWITH

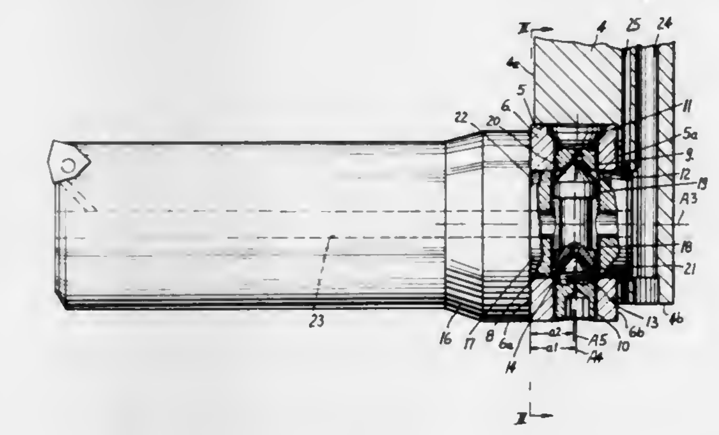
Otto Eckle, Loechgau, and Helmut Veigel, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Komet Stahlhalter- und Werkzeugfabrik Robert Bruning, GmbH, Besigheim, Fed. Rep. of Germany

Filed Aug. 20, 1985, Ser. No. 767,461

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1984, 8427440[U]

Int. Cl.⁴ B23B ***29/24***

U.S. Cl. 82—36 A **7 Claims**



1. In a turret head for a lathe and a tool holder for use therewith, including a substantially cylindrical rotary disk which is rotatable about its axis and has a plurality of tool holder shank-receiving bores formed close to its periphery, these shank-receiving bores being circumferentially spaced apart and extending parallel to the axis of the rotary disk and each of them being surrounded by an end surface disposed at right angles to the axis of the rotary disk and having an associated clamping element which extends into it and is movable radially with respect to the axis of the rotary disk, and also including tool holders each having a cylindrical shank which fits accurately in the shank-receiving bore, a concentric annular surface of the tool holder surrounding each shank and extending at right angles to the axis of the same, and clamping means on the shank cooperating with the clamping element in such a manner that the annular surface of the tool holder can be pressed against the end surface surrounding the corresponding shank-receiving bore when the clamping element is moved radially, the improvement comprising wherein the rotary disk **(4)** has a cylindrical insert-receiving recess **(5)** disposed concentrically with each shank-receiving bore **(8)**, wherein for each insert-receiving recess **(5)** there is provided an insert disk **(6)** which is removably insertable therein and concentrically within which is located the respective shank-receiving bore **(8)**, wherein each insert disk **(6)** has in the region of the shank-receiving bore **(8)** two diametrically opposite, radially extending screw-threaded bores **(9, 10)**, an inner clamping screw **(11)** with a conical recess **(12)** being screwed into one of the screw-threaded bores **(9)** which is located more inwardly in relation to the axis **(A2)** of the rotary disk **(4)** and an outer clamping screw **(13)** with a conical end part **(14)** being screwed into the other screw-threaded bore **(10)** which is located more outwardly in relation to the said axis, wherein the shank **(17)** of each tool holder has a transverse bore **(18)** with a clamping bolt **(19)** arranged for radial sliding movement therein and provided at one of its ends with a conical end part **(20)** which cooperates with the conical recess **(12)** in the inner clamping screw **(11)** and is provided at its other end with a conical recess **(21)** which is arranged to cooperate with the conical end part **(14)** of the outer clamping screw **(13)** and wherein the distance **(a1)** of the axis **(A4)** of the screw-threaded bores **(9, 10)** from the end surface **(6*a*)** of the insert disk **(6)** is somewhat greater than the distance **(a2)** of the axis **(A5)** of the transverse bore **(18)** from the annular surface **(22)**, so that, when the outer clamping screw **(13)** is tightened, it acts against the clamping bolt **(19)** in a direction to cause pressure of the annular surface **(22)** and the end surface **(6*a*)** of the insert disk against each other.

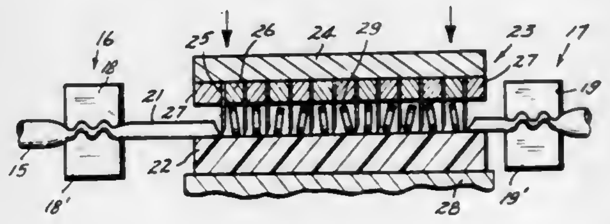
4,617,849
WASHER CUTTING PROCEDURE

James T. Ligon, 800 S. Main, Almont, Mich. 48003

Filed Jun. 22, 1984, Ser. No. 623,170

Int. Cl.⁴ B26D ***7/14***

U.S. Cl. 83—18 **6 Claims**



3. A process for manufacture of high precision annular washers from elastomeric tubing comprising the steps of:

holding a piece of elastomeric tubing at one end against longitudinal stressing;

pulling said tubing to elongate said tubing in the direction of its longitudinal axis; and

cutting said tubing to form annular segments by means of plural spaced-apart blades by a relative movement of said blades transversely through the longitudinal axis of said tube and thereby separating and shrinking said annular segments thus severed to their non-stressed thickness condition as annular washers.

4,617,850
MACHINE FOR THE TREATMENT WEB MATERIAL

Thomas D. Bishop, Knowle, England, assignor to DEC (Realisations) Limited, Birmingham, England

Division of Ser. No. 190,521, Mar. 17, 1980, Pat. No. 4,360,354.

This application Aug. 2, 1982, Ser. No. 404,526

Claims priority, application United Kingdom, Jul. 17, 1978, 30101/78; Jul. 18, 1978, 30251/78

The portion of the term of this patent subsequent to Nov. 23, 1999, has been disclaimed.

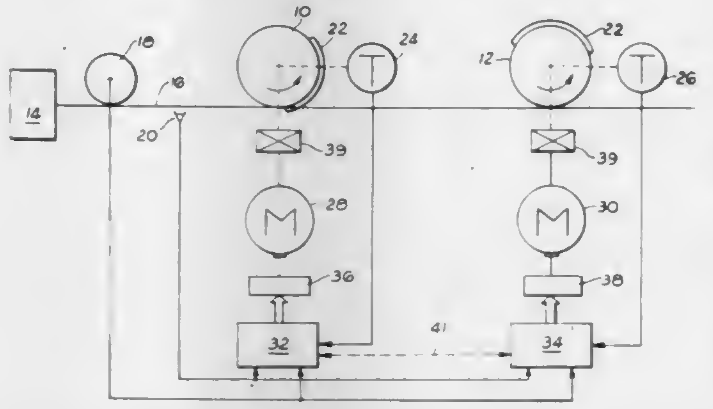
Int. Cl.⁴ B31B ***1/16***

U.S. Cl. 83—324 **3 Claims**

1. A machine for treating continuous web to produce a series of longitudinally successive blanks, comprising at least two sets of treatment rolls each including a forme-carrying roll for cooperation with the web, and means for feeding the web at a substantially constant speed successively through the nips of said roll sets, wherein the improvement comprises:

(a) a variable speed electrical motor connected to drive each forme-carrying roll through a constant speed transmission,

(b) sensor means associated with each forme-carrying roll for providing electrical signals representing the instantaneous roll speed and the location of a datum position on the roll, and



(c) a programmable computer, responsive to said electrical signals from said sensor means, which controls the speed of each variable speed electrical motor to drive the connected forme-carrying roll at a constant speed while the forme engages the web and at a programmed varying speed during the remainder of each revolution of the roll to maintain close spacing of the successive blanks produced by the forme-carrying rolls.

4,617,851

HYBRID ELECTRONIC MUSICAL INSTRUMENT

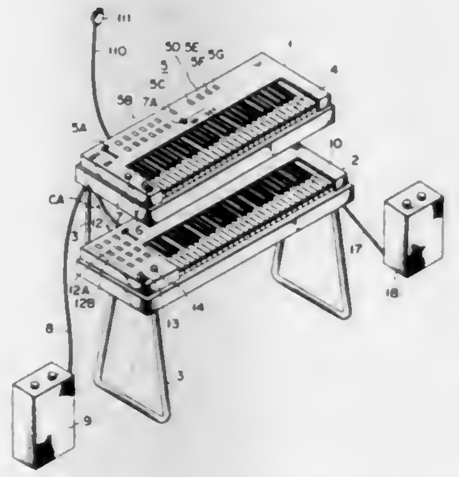
Kunio Sato, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1984, Ser. No. 605,688

Claims priority, application Japan, May 10, 1983, 58-80046; May 10, 1983, 58-80047; Jun. 3, 1983, 58-98036; Jun. 3, 1983, 58-83842[U]

Int. Cl.⁴ G10H *1/02, 7/00*

U.S. Cl. 84—1.19 **9 Claims**



1. A hybrid electronic musical instrument comprising:

a plurality of electronic musical instruments;

means for connecting together said plurality of electronic musical instruments; and

control means for making the tuning states of at least two of said connected-together electronic musical instruments different from each other;

said control means being included in at least one of said connected-together electronic musical instruments; and

said control means including means for controlling a tuning setting operation for setting the tuning frequency of each of said connected-together electronic musical instruments, said tuning setting operation being executed such that the tuning frequencies of at least two of said connected-together electronic musical instruments are different from each other;

said control means further including means for setting said tuning states in response to the operation of a particular switch including a power source connection switch.

4,617,852

MILITARY EQUIPMENT COMPRISING A TURRET HAVING A MAIN EXTERNAL WEAPON

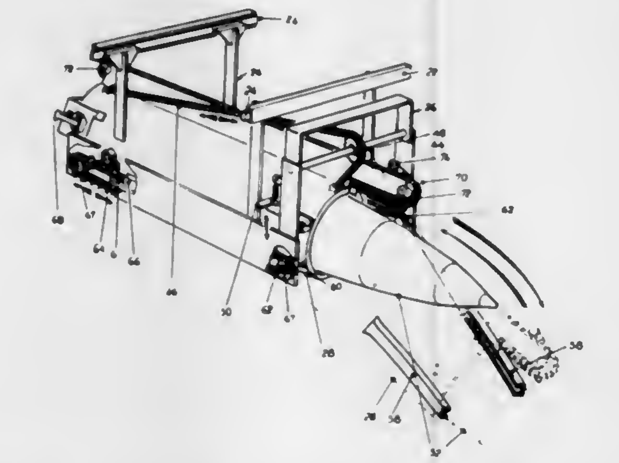
Jean-Philippe P. B. Allais, Le Havre, and Francis J. M. G. Trémouilles, Merignac, both of France, assignors to Hispano-Suiza, Saint-Cloud, France

Filed May 8, 1984, Ser. No. 608,488

Claims priority, application France, May 9, 1983, 83 08013

Int. Cl.⁴ F41F *9/06, 21/14;* **F41H** *5/20*

U.S. Cl. 89—36.13 **13 Claims**



1. Military equipment comprising: a turret mounted on a mount for rotation about a substantially vertical axis; a pair of side members secured to said turret and projecting upwardly therefrom; bearing means carried by said side members and defining an elevation axis transverse to said vertical axis; a main gun of a caliber greater than that suitable for belt feed of ammunition and located out of and above said turret, carried by said bearing means and provided with a separate shield fast with said gun, said bearing means cooperating with the shield of the gun to define a protected passage; and a gun loading system, at least a portion of which is located in said protected passage, arranged to carry one round of ammunition at a time from a predetermined location and to insert said round into a firing chamber of said gun, said loading system being arranged to accomodate the variations in elevation, wherein said gun loading system constitutes a unitary assembly located within said separate shield and comprises a frame constructed and arranged to be secured to said separate shield, a slideway carried by said frame, a carriage supporting a craddle arranged to receive one round of ammunition at a time and slidably received on said slideway for movement between an axial position where said craddle supported by the carriage is aligned with said gun and a position lateral to said gun, means for moving said craddle parallel to said gun between a rear position for transport by the carriage and a front position accessible from inside the turret for placing one round of ammunition therein, and wherein said means for moving said craddle are arranged to subject said craddle to a swinging movement about a horizontal axis transverse to the axis of said gun when moving said craddle from said rear position where an axis of said craddle is parallel to said gun and a front position where said axis of said craddle has a forward slope, whereby placing of one round of ammunition is rendered easier.

4,617,853

AXIAL PISTON MACHINE OF THE SKEW AXIS TYPE WITH TWO INDEPENDENT WORKING STREAMS

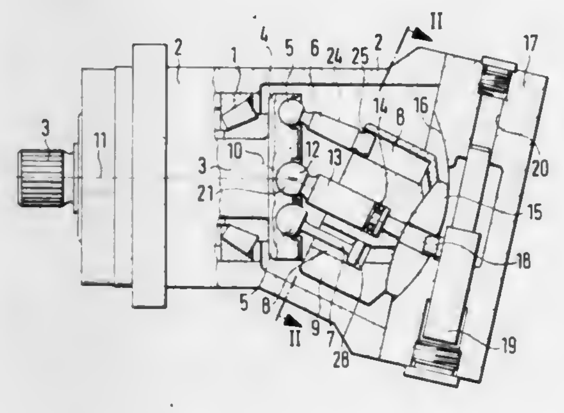
Ludwig Wagenseil, Vöhringen, and Walter Merkle, Nersingen, both of Fed. Rep. of Germany, assignors to Hydromatik, Elchingen, Fed. Rep. of Germany

Continuation of Ser. No. 652,215, Sep. 19, 1984, abandoned. This application Jan. 24, 1986, Ser. No. 823,811

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1983, 3333812

Int. Cl.⁴ F01B *13/04;* **F04B** *1/30*

U.S. Cl. 91—505 **11 Claims**



1. A variable capacity axial piston machine of the skew axis type, comprising:

a housing;

a drive shaft extending into the housing and supported therein for rotation about a first axis;

a drive plate connected to the drive shaft for rotation therewith;

a cylinder drum supported in the housing for rotation about a second axis, and forming first and second groups of bores, a selected one of the groups of bores being arranged in an outer circle, the other core of the groups of bores being arranged in a concentric, inner circle;

a face valve body engaging the cylinder drum and having first control slot means to conduct a first fluid stream into and out from the first group of bores, and second control slot means to conduct a second fluid stream into and out from the second group of bores;

a first group of pistons pivotally connected to the drive plate for rotation therewith, and extending into the first group of bores;

a second group of pistons pivotally connected to the drive plate for rotation therewith, and extending into the second group of bores;

wherein the first group of pistons connect the cylinder drum to the drive plate for rotation therewith, and substantially all of the rotary force transmitted to the cylinder drum is transmitted thereto by only the first group of pistons; and

adjusting means connected to the face valve body to move the face valve body and the cylinder drum to adjust the angle between the first and second axes over a continuously variable range of angles and to thereby adjust the capacity of the machine.

4,617,854

MULTIPLE CONSUMER HYDRAULIC MECHANISMS

Walter Kropp, Aschaffenburg, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

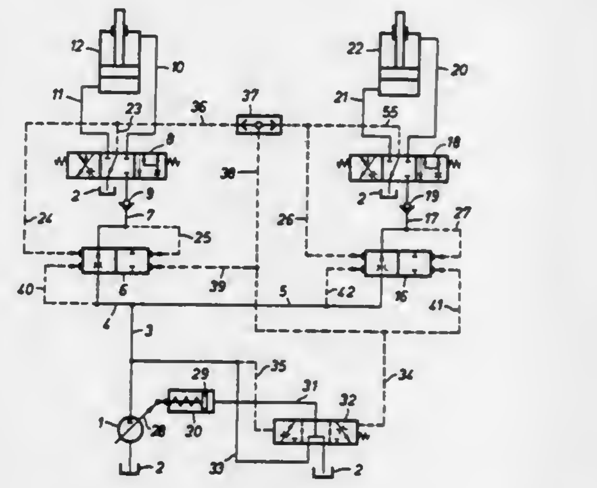
Filed Jun. 4, 1984, Ser. No. 617,113

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1983, 3321483

Int. Cl.⁴ F15B *13/06, 11/20*

U.S. Cl. 91—517 **3 Claims**

1. In a hydraulic device with a pump and with at least two hydraulic-energy consumers acted upon by the pump, where an arbitrarily actuatable multiway control valve that throttles in the intermediate positions is located in front of each consumer and an additional hydraulically controlled valve is located in the line between the pump and this multiway control valve, the control pressure chamber of this additional valve, which loads in the closing direction, being acted upon by the pressure in front of the multiway control valve and its control pressure chamber, which loads in the opening direction, being acted upon by the pressure of the assigned consumer, the improvement comprising said additional multiway valve having two additional control pressure chambers, of which the additional control pressure chamber loading in the closing direction is acted upon by the pressure of the consumer loaded with the highest pressure and the additional control pressure chamber loading in the opening direction is loaded with the pressure in the delivery line of the pump.



4,617,855

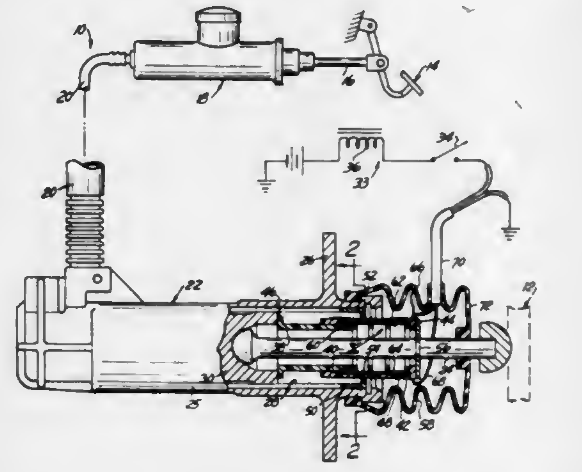
HYDRAULIC SLAVE CYLINDER SWITCH

David L. Wrobleski, Fraser; David K. Mienko, Clawson, and Keith V. Leigh-Monstevens, Troy, all of Mich., assignors to Automotive Products plc, Warwickshire, England

Filed Aug. 15, 1984, Ser. No. 641,055

Int. Cl.⁴ F01B *31/12*

U.S. Cl. 92—5 R **32 Claims**



1. In combination with a hydraulic cylinder having a linearly displaceable member, an electrical switch extending into said cylinder and operable by said member during displacement of said member for a home position to an operative position said electrical switch having stationary contact means and movable contact means displaceable by said member when displaced from said home position wherein said movable contact means is displaced to said operative position causing engagement of said movable contact means with said stationary contact means, and automatic adjustment means for adjusting the position of said stationary contact means by said member upon return of said member to said home position.

17. In combination with a hydraulic cylinder having a linearly displaceable member, an electrical switch into said cylin-

der and operable by said member during displacement of said member from a home position to an operative position, said electrical switch having stationary contact means and movable contact means displaceable by said member when displaced from said home position wherein said movable contact means is displaced to said operative position causing engagement of said movable contact means with said stationary contact means, and automatic adjustment means for adjusting the position of said stationary contact means by said member upon said member reaching said operative position.

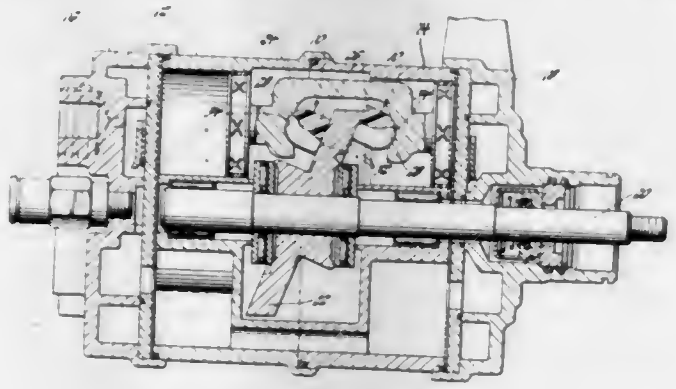
4,617,856
SWASH PLATE COMPRESSOR HAVING INTEGRAL SHOE AND BALL

Gary T. Miller, Amherst, N.Y.; Ronald E. Marker, New Lebanon, Ohio, and Richard L. Marker, Lockport, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 13, 1986, Ser. No. 818,014

Int. Cl.⁴ F04B *1/16;* **F01B** *3/02;* **F16C** *5/00*

U.S. Cl. 92—71 **2 Claims**



1. A swash plate compressor having a piston driven by a swash plate through a ball and shoe arrangement characterized by the ball and shoe arrangement comprising a plastic cylindrical body having a flat surface at one end that is slidably engaged by one side of the swash plate and further having a semi-spherical surface at an opposite end that is received under preload in a semi-spherical socket in the piston, said body being made of plastic having a coefficient of thermal expansion greater than and a coefficient of friction less than steel and brass and further having a compliance while being resistant to permanent deformation such that at assembly the pre-load forces the semi-spherical end to tightly seat in the socket.

4,617,857
SEALING ARRANGEMENT FOR A LONGITUDINALLY-SLOTTED PRESSURE CYLINDER CLOSED ON THE ENDS

Heinrich Kedzierski, Wennigsen, Fed. Rep. of Germany, assignor to WABCO Westinghouse Steuerungstechnik GmbH, Hanover, Fed. Rep. of Germany

Filed Oct. 17, 1984, Ser. No. 661,555

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1983, 3338305

Int. Cl.⁴ F01B *29/00, 11/02;* **F16J** *15/18*

U.S. Cl. 92—88 **16 Claims**

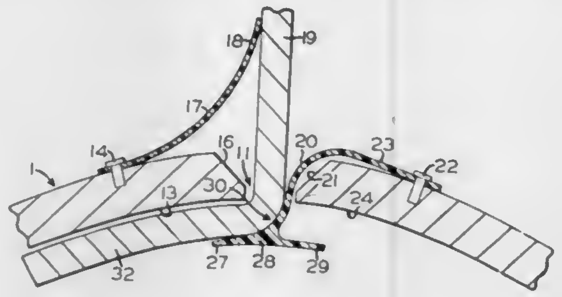
1. A fluid-pressure-operated, longitudinally-slotted pressure cylinder closed on both ends, comprising:

(a) a cylinder housing having a longitudinal slot formed along at least a portion of the length of said cylinder housing and a chamber formed within said cylinder housing;

(b) a piston member movable within said chamber under the influence of pressurized fluid;

(c) a drive member eccentrically attached to said piston, said driver member having an outer portion extending outward through said longitudinal slot and an inner portion disposed within said chamber and on which said piston attaches; and

(d) flexible sealing means disposed over said longitudinal slot for sealing said chamber and preventing pressurized fluid from escaping through said longitudinal slot as said piston and said driver member travel along said longitudinal slot, said flexible sealing means being at least partially attached externally on said cylinder housing on one side of said longitudinal slot, said flexible sealing means having an S-shaped sealing portion extending through said longitudinal slot and a flat sealing portion which seats over a portion of said longitudinal slot and said driver member.



4,617,858
PNEUMATIC BOOSTER

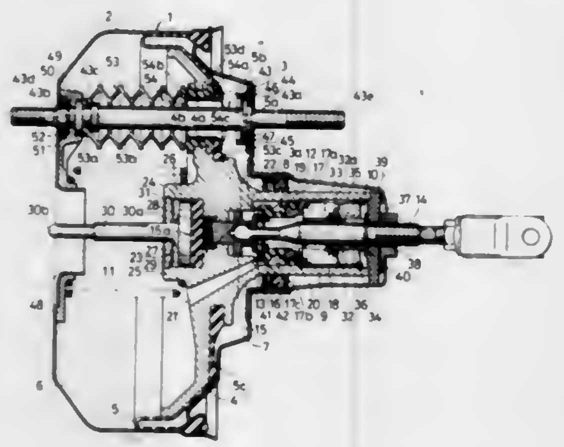
Nobuaki Hachiro, Ueda, Japan, assignor to Nisshin Kogyo Kabushiki Kaisha, Japan

Filed Sep. 16, 1981, Ser. No. 302,857

Claims priority, application Japan, Sep. 26, 1980, 55-134046

Int. Cl.⁴ F01B *19/00*

U.S. Cl. 92—98 D **9 Claims**



1. A servo mechanism comprising a pressure housing having a front and a rear, a piston movably mounted in the housing, a diaphragm co-operating with the piston and housing to define within the housing a first pressure chamber at the front of the piston and a second pressure chamber at the rear of the piston, a tie rod extending through the front of the housing, the piston, the diaphragm, and the rear of the housing, successively, and a boot in the form of a bellows surrounding the tie rod within the first chamber in a substantially fluid-tight manner, on end of the boot being secured to the front end of the tie rod, and the other end of the boot secured in position to the piston wherein said other end of the boot is secured in position by means of a cylindrical member which engages within the boot and co-operates with at least one of the piston and the diaphragm such that the passage of the tie rod through the piston and the diaphragm are kept airtight, wherein said cylindrical member has a first cylindrical portion which serves to clamp said other end of the boot between said first portion and the inner periphery of a hole in the piston, and a second radially extending end portion which engages the diaphragm around a hole therein, such that the boot and diaphragm are clamped tightly together.

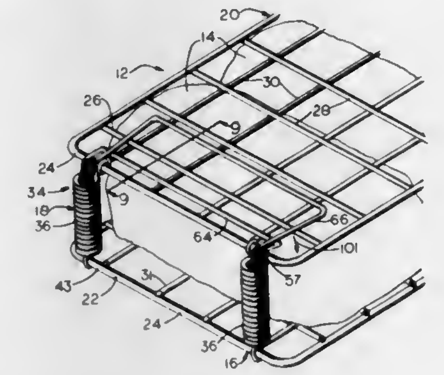
4,617,859
MEAT PRODUCT PRESS APPARATUS

Albert D. Nichols, 1505 East Graber, and Raymond C. Nichols, 1201 Luther, both of Wichita, Kans. 67216

Filed Jul. 8, 1985, Ser. No. 752,533

Int. Cl.⁴ A47J *43/18*

U.S. Cl. 99—351 **12 Claims**



1. A meat product press apparatus operable to receive, hold and compress a food product therein for a cooking and/or smoking food process, comprising

(a) a lower press assembly providing a support member extending in a generally common plane;

(b) a top press assembly providing a support assembly extending in a generally common plane;

(c) a main clamp assembly to releasably interconnect said top press assembly to said lower press assembly to clamp the meat product therebetween;

(d) said main clamp assembly including an initial bias lock assembly to connect adjacent end portions of said lower press assembly and said top press assembly and a pressure bias lock assembly to connect other adjacent ends of said lower press assembly and said top press assembly;

(e) said initial bias lock assembly includes bias members and a cam lock member operable in one position to release downward movement of said top press assembly and operable in second position to provide a downward clamping action against the meat product held between said lower and top press assemblies.

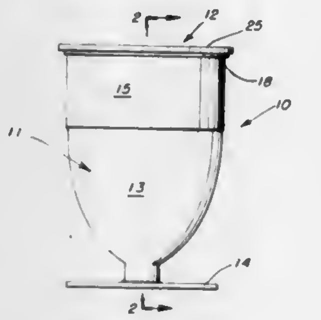
4,617,860
EGG COOKING DEVICE

Michael A. Blaylock, Rte. 1, Prim Springs, Tenn. 38476

Filed Nov. 4, 1985, Ser. No. 794,719

Int. Cl.⁴ A47J *29/06*

U.S. Cl. 99—415 **6 Claims**



1. An egg cooking device comprising:

(a) a receptacle for receiving an egg without its shell comprising a lower cup-shaped member generally having the shape of half of an egg and an upper cylindrical skirt member having an open top,

(b) a cap member comprising a dome and a cylindrical guide wall surrounding the dome,

(c) said guide wall being slideably receivable coaxially within said skirt member in a closed position in which said dome opposes said cup-shaped member,

(d) a pedestal on said receptacle for supporting said receptacle in an upright position, and

(e) an air vent through said dome.

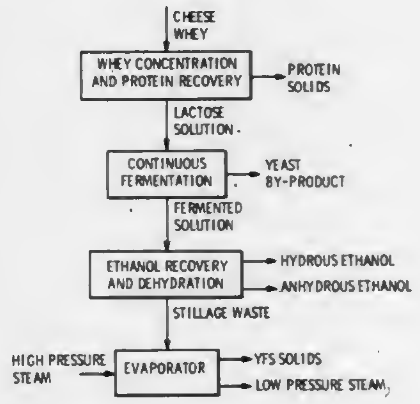
4,617,861
WHEY TREATMENT APPARATUS

Gordon M. Armstrong, Scotts Valley, Calif., assignor to Fermentation Engineering, Inc., Manteca, Calif.

Filed Oct. 7, 1982, Ser. No. 433,239

Int. Cl.⁴ A23C *21/00*

U.S. Cl. 99—453 **5 Claims**



1. A cheese whey treating system comprising

(a) a whey protein concentrator having an outlet for removing water from whey,

(b) a whey protein precipitator communicating with the outlet of the whey protein concentrator and comprising a steam injector means for mixing the concentrated whey solution with steam, the whey protein precipitator having an outlet,

(c) a whey protein separator communicating with the outlet of the whey protein precipitator for separating precipitated protein solids from liquid, the liquid being a lactose solution, the whey protein separator having a lactose solution outlet,

(d) a fermentation means communicating with the lactose solution outlet, for converting lactose in the lactose solution to ethanol, the fermentation means having a fermented

(e) distillation means communicating with the fermented product outlet for separating ethanol from the fermented product, the distillation means having a distillate outlet and a stillage outlet,

(f) dehydrator means communicating with the distillate outlet for removing water remaining in the distillate, and

(g) evaporator means communicating with the stillage outlet for concentrating the stillage to yield a yeast with fermentation solubles concentrate.

4,617,862
PORTABLE BIN TRANSFER SYSTEM

Donald W. Van Doorn; James B. Hawkins; Francis W. Carpenter, III; Wilbur G. Hudson; Tommy W. Webb, and William D. Beeland, all of Columbus, Ga., assignors to Lummus Industries, Inc., Columbus, Ga.

Filed Oct. 17, 1985, Ser. No. 788,623

Int. Cl.⁴ B30B *15/30*

U.S. Cl. 100—53 **18 Claims**

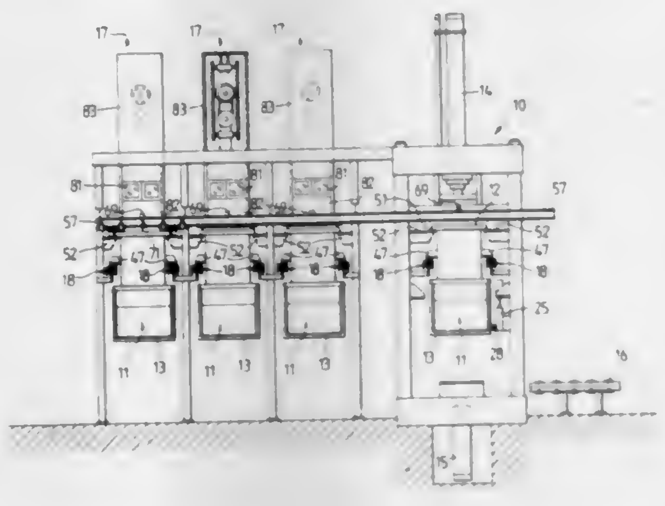
1. Apparatus for a system for compacting fibers and the like from a plurality of sources having a plurality of fiber filling stations and a single compression station located along a common center line, comprising:

(a) a plurality of portable fiber receiving bins including at least one bin for each filling station with each bin being open at the top thereof for receiving fibers;

(b) dedicated transport means for moving full bins along a first line parallel to said center line;

(c) second dedicated transport means for moving empty bins along a second line parallel to said center line with said center line being intermediate said first and second line;

(d) shuttle means located at each filling station and said compression station for moving said bins selectively to and from said first parallel line and said second parallel line and for positioning said bins selectively within said compression station and said filling station; and



(e) control means for directing the movement of said transport and shuttle means.

4,617,863
PLATE AND DIAPHRAGM ASSEMBLY FOR A FILTER PRESS

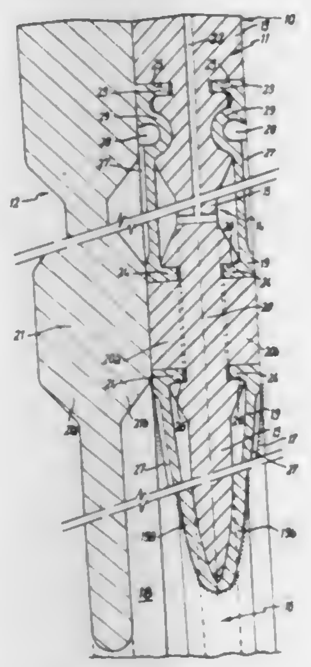
Jack Kenyon, The Well, Mill Lane, Goostrey, Cheshire, United Kingdom (CW4 8PN)

Continuation of Ser. No. 439,025, Nov. 4, 1982, abandoned. This application Mar. 28, 1984, Ser. No. 594,198

Claims priority, application United Kingdom, Nov. 7, 1981, 8133646

Int. Cl.⁴ B01D *25/12*

U.S. Cl. 100—194 **15 Claims**



1. A filter plate and diaphragm assembly for use in a filter press wherein a plurality of plates are disposed in face-to-face relationship and clamped together to form a stack and a clamping force is applied by a clamping means, the stack having a plate structure which includes either a plate structure wherein all of the plates are filter plate and diaphragm assemblies arranged in registry in face-to-face relationship, or a plate structure wherein a first plurality of plates are filter plate and diaphragm assemblies and a second plurality of plates are plain plates without diaphragms, and the filter plate and diaphragm assemblies and the plain plates are arranged alternately in face-to-face relationship and in registry, said filter plate and diaphragm assembly comprising:

a filter plate having a cross section and having a major axis and a minor axis perpendicular to said major axis, the cross section of the plate having a length extending along the major axis and a thickness extending along the minor axis, said plate including a central portion having first and second side faces and which central portion, in use, is in facing relationship with an adjacent plate having first and second side faces and with a filter cake cavity defined between a pair of adjacent plates in a stack of plates, a peripheral portion surrounding said central portion and including a pair of oppositely facing sides which in use are in facing abutting relationship with a peripheral portion of a next-adjacent plate in a stack, and a feed aperture extending from said first side face to said second side face of said central portion to define a flow passage for a slurry which is to be filtered;

a resilient diaphragm which is a sheet of fluid-impervious, resilient material positioned to overlie said central portion of said filter plate between said feed aperture and said peripheral portion on at least one side face of said filter plate, said sheet having an outer periphery and an inner periphery and having an inner surface and an outer surface;

wherein said filter plate has a continuous, inwardly extending recess not extending completely through said thickness of said filter plate at a junction between said peripheral portion and said central portion, said recess having a cross section in the direction of the minor axis of said plate, and wherein said diaphragm has at said outer periphery a lip which extends laterally outwardly from the inner surface of said sheet of resilient material and which when in use extends inward toward the major axis of said filter plate and in a direction substantially parallel to the minor axis of said filter plate, said lip having a cross section corresponding to the cross section of said recess for sealing engagement therewith, said lip extending into said recess to define a continuous seal between said filter plate and said diaphragm, the seal spaced outwardly of said feed aperture in the direction of the major axis of said filter plate and surrounding said feed aperture and spaced inwardly of an outermost edge of said peripheral portion of the filter plate in the direction of the major axis of said filter plate, the outer surface of said sheet adjacent said lip spaced outwardly from said filter plate major axis a distance sufficient to abut a surface carried by a next adjacent plate of said stack; and

wherein said lip is maintained in sealing engagement with said recess when in use by a minor fraction of a plate clamping force provided by a plate clamping means, the minor fraction of the clamping force being applied to said lip by a part of a next adjacent plate of said stack, and a major fraction of the clamping force acting to clamp together adjacent plates at peripheral portions of said plates outside the outer periphery of the diaphragm.

4,617,864
CYLINDER WITH INTERNAL HEAT EXCHANGE COILS TO HANDLE CONTINUOUS WEBS

Arnold Niedermaier, Beidersheim, and Peter Maier, Worms, both of Fed. Rep. of Germany, assignors to Albert-Frankenthal AG, Frankenthal, Fed. Rep. of Germany

Filed Sep. 10, 1985, Ser. No. 774,350

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1984, 3439090

Int. Cl.⁴ B41F *5/04;* **F28D** *11/02*

U.S. Cl. 101—219 **11 Claims**

1. A cylinder for handling continuous lengths of web material comprising a tubular casing,

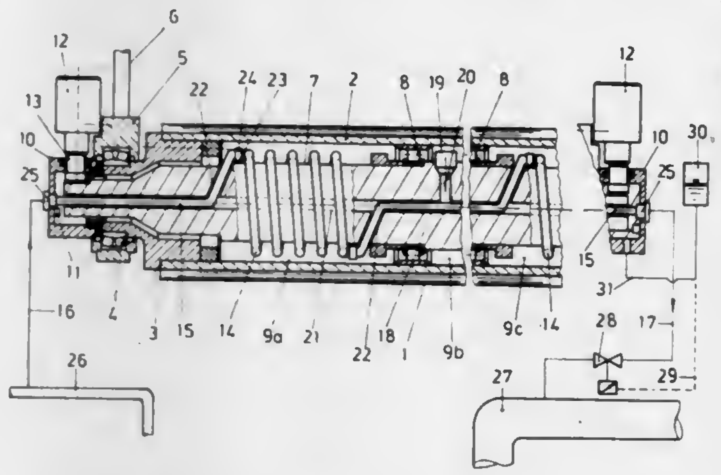
bearers at ends of such casing for supporting same rotatably,

a spindle arranged to be stationary in relation to rotation of said casing and having an external diameter less than the diameter of an inner face of said tubular casing, said spindle extending continuously through said casing from end to end thereof,

a support bearing means which is symmetrical in relation to the middle of the cylinder and coaxial to said cylinder, said bearing means bridging over an annular space existing between said casing and said spindle,

oil at least partly filling said annular space,

two to five heat exchangers placed in said annular space and surrounding said spindle, said heat exchangers being connected with each other fluidwise by means of a connection duct running through a recess in the spindle and bridging over the support bearing means,



mounts fixed to said spindle for locating said heat exchangers thereon, and

connection ducts for coolant, at least partly in the form of lengths of flexible hose placed in recesses in said spindle, said coolant connection ducts being adapted to join said heat exchangers with an external coolant supply and return duct.

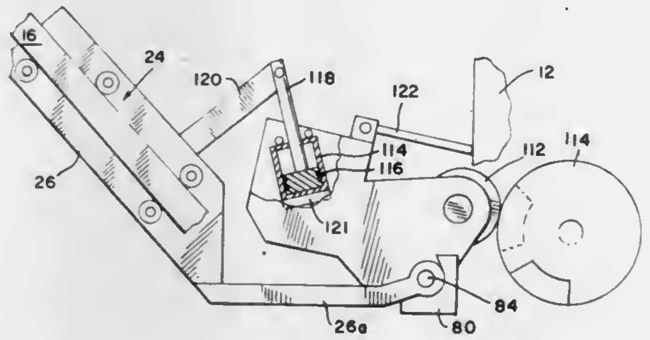
4,617,865
LIQUID COATER FOR A PRINTING PRESS WITH MOVEABLE INKING ROLLER AND TRAY

Thomas G. Switall, Wheeling, Ill., assignor to Ryco Graphic Manufacturing, Inc., Wheeling, Ill.

Filed Aug. 7, 1985, Ser. No. 763,274

Int. Cl.⁴ B41F *31/00*

U.S. Cl. 101—350 **17 Claims**



1. In a printing press having a recessed printing press cylinder, a coater for applying a liquid coating material to the printing press cylinder, said coater comprising a frame, a tray mounted on said frame for holding a supply of coating material, roller means carried by said frame for transferring coating material from said tray to the printing press cylinder, track means attached to the printing press and extending from adjacent said printing press cylinder to a point remote from said printing press cylinder, frame moving means for moving said frame and said tray and roller means carried thereby along a first path defined by said track means into and out of position adjacent said printing press cylinder, and tray and roller moving means for moving said roller means along a second path which differs from and intersects said first path into and out of position for engagement with the printing press cylinder after said frame has been moved to its position adjacent said cylinder, whereby liquid coating material may be picked up from said tray and applied to said printing press cylinder by said roller means.

4,617,866
PYROTECHNIC OR EXPLOSIVE DEVICE

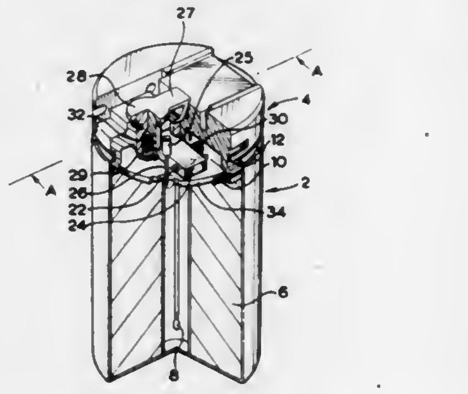
Geoffrey M. Simpson, Bulwell, United Kingdom, assignor to Haley & Weller Limited, Derbyshire, United Kingdom

Filed May 16, 1984, Ser. No. 610,706

Claims priority, application United Kingdom, May 18, 1983, 8313572; European Pat. Off., May 9, 1984, 84303116.2

Int. Cl.⁴ F42C *19/06, 11/06*

U.S. Cl. 102—262 **4 Claims**



1. An explosive device including an outer casing containing an explosive charge, an electrical firing circuit and an electrical firing element connected to said electrical firing circuit and positioned to ignite said explosive charge,

an electrical energy storage battery positioned within said outer casing,

electrical switch means positioned within said outer casing for, in a first normal position, isolating said electrical energy storage battery from said electrical firing circuit and, in a second activated position, connecting said electrical energy storage battery to said electrical firing circuit,

a manually engageable operating level for controlling the position of said electrical switch means, pin means for retaining said operating lever in a first position in which said electrical switch means is maintained in its first normal position,

spring means for biasing said operating lever to move said operating lever to a second position on removal of said retaining pin means and manual release of said operating lever, in which second position the switch means is switched to its second activated position to fire said explosive charge.

4,617,867
TROLLEY BRACKET

Ingemar Arneteg, Vretstorp, Sweden, assignor to Stellana Plast AB, Sweden

Filed Nov. 9, 1984, Ser. No. 670,028

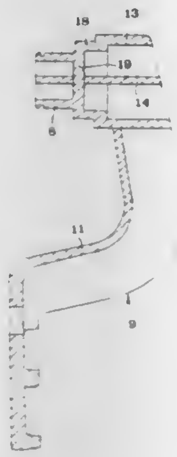
Claims priority, application Sweden, Nov. 25, 1983, 8306515

Int. Cl.⁴ B61B *3/00;* **A47H** *13/10*

U.S. Cl. 105—154 **5 Claims**

1. A trolley bracket with at least one element which comprises a pivot for receiving a wheel movable along a guide and rotatable by means of a bearing and a member hanging down from the pivot and having means for connecting the element to an object to be supported by the bracket, wherein the pivot and the hanging member are formed as an integral piece from plastic, the pivot being in the form of a first cylindrical shell having an outer diameter which substantially corresponds to the inner diameter of the bearing of the wheel, such that the

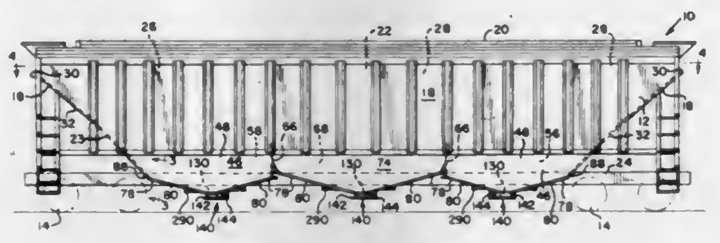
bearing can be directly applied to the pivot, and wherein the hanging member comprises a substantially L-shaped structural wall whose outer side is provided with a plurality of longitudinal stiffening ribs which, at the top, merge into a second cylindrical shell located at the side of the structural wall opposite to the first-mentioned pivot-forming shell, said structural wall, said stiffening ribs and said two cylindrical shells having substantially the same wall thickness.

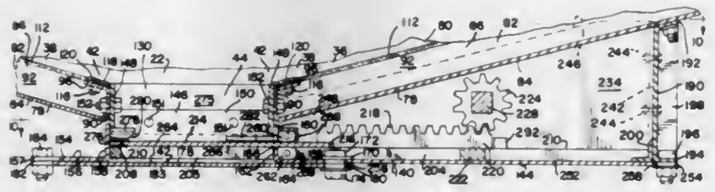


4,617,868
RAILROAD HOPPER CAR WITH SELF-CONTAINED DISCHARGE SYSTEM

Merle D. Wahlstrom, South Holland, and Brian T. Votaw, Aurora, both of Ill., assignors to Miner Enterprises, Inc., Geneva, Ill.

Filed Dec. 10, 1984, Ser. No. 680,196
Int. Cl.⁴ B61D *7/20, 7/22*
U.S. Cl. 105— **3 Claims**





1. A railroad hopper car having self-contained means to enhance an unloading of commodity shipped in said car with said means providing resistance to an intermingling of said commodity with outside contaminants during shipment and unloading, said means including a slide gate discharge assembly comprising:

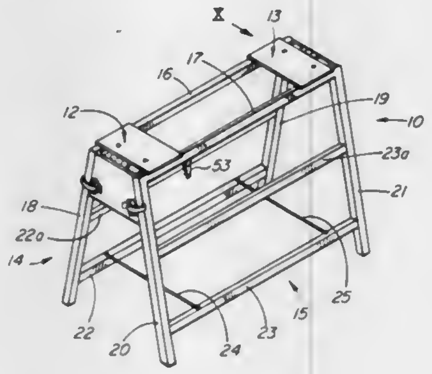
chute portion connectable to conveyor ends in a body of said car to define in part a chute outlet, said chute portion including spaced apart side frame angles connecting with end plates, an inner and outer frame angle connecting with said end plates to pivotally hold a first sanitary plate rotatable to cover or uncover a lower end of a passageway through said chute portion and a moveable door plate carried by slide bars attached to said side and outer end frame angles to form a further selective closure of said passageway; and

a drive portion connecting with said chute portion, said drive portion having an inner end wall plate prepared to connect with said conveyor, a pair of spaced apart slide bars attached to said end wall plate and positioned to align with said chute portion slide bars to receive said door plate upon retraction by operative means, said operative means having a rack attached to said door plate and extending into said drive portion, said door plate to be carried on a support bar attached to said slide bars whereby said rack is contained within the drive portion irrespective of the position of said door plate, a pinion gear in operative engagement with said rack with said pinion affixed to a shaft having ends journaled in side cover plates, said side cover plates connecting with said drive portion end wall plate, a handle attached to an end of said shaft exterior of said side cover plate for selective rotation of said shaft and affixed pinion to move said rack and attached door cover plate, upper, lower and side seals carried in said drive portion to continuously engage an upper and lower surface and sides of said door plate to isolate said drive portion from said chute portion whereby no commodity can seep therebetween, a drive portion sanitary plate pivotally carried by said inner end wall plate and side cover plates, said drive portion cooperates with the bottom wall of the conveyor body to form an enclosure whereby said door plate is not subject to environmental contaminants when said door plate is within said drive portion, wherein retraction of said door plate and selective positioning of said first sanitary plate opens said passageway for ready unloading of said commodity with said commodity maintained separate and apart from said assembly drive portion in part of by said seals.

4,617,869
FOLDING TABLE, WORKBENCH OR THE LIKE

Ernest A. Denomey, 390 Lalonde Street, Belle River, Ontario, Canada (M0R 1A0)

Filed Dec. 6, 1983, Ser. No. 558,483
Claims priority, application Canada, Jun. 23, 1983, 431035
Int. Cl.⁴ A47B *3/00, 83/02*
U.S. Cl. 108—132 **8 Claims**



1. A folding table, workbench or the like comprising in combination:

(a) a bearing section adapted to form, in an unfolded state, a normally horizontal top section of the table;

(b) a pair of leg members, each leg member comprising a generally straight beam section and two leg sections, one of said leg sections being arranged at each end of the respective beam section, said leg sections being integral with and at an angle to the respective beam sections, whereby each beam section and the leg sections integral therewith form a generally U-shaped configuration;

(c) first hinge means hingedly connecting the beam section of one of said leg members to said bearing section for pivotal movement about a first hinge axis generally parallel with the beam section of said one of said leg members;

(d) second hinge means hingedly connecting the beam section of the other one of said leg members to said bearing section for pivotal movement about a second hinge axis generally parallel with the beam section of the other one of said leg members and with said first hinge axis;

(e) a pair of brace members, each of said brace members including a base portion adjacent said bearing section and two opposed side portions, each side portion defining an outwardly facing, generally planar edge section;

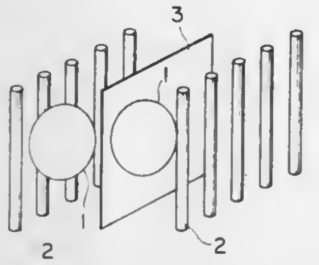
(f) third hinge means for connecting said brace member base portions with said bearing sections, respectively, for pivotal movement about third hinge axes disposed transversely to said first and second hinge axes and generally coplanar with said bearing section; and

(g) a pair of releasable clamping devices connected with opposite sides of each of said brace members, said clamping devices including a clamping portion engaging the outer edge of said leg sections and operable to hold said leg sections against the adjacent edge section of said brace member side portions, respectively, to rigidly secure said leg members relative to said brace members and said bearing section to improve the stability of the table in the unfolded condition.

4,617,870
METHOD OF ACCELERATING RADIATIVE TRANSFER

Masahiro Hirano, Tokyo, and Toshio Miyauchi, Yokohama, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Apr. 23, 1985, Ser. No. 726,094
Claims priority, application Japan, Apr. 27, 1984, 59-83965
Int. Cl.⁴ F23M *8/00*
U.S. Cl. 110—323 **12 Claims**



1. A method of accelerating radiative transfer, characterized in that a radiation acceleration plate is interposed between heat absorption pipe trains or planes disposed opposite to each other and heated by radiation of gases having a high temperature in a radiation portion of a furnace so that the pipes or planes are heated by radiation of the acceleration plate and radiation of the gases.

4,617,871
STEERABLE WIND-POWERED VEHICLE

Chi L. Yau, 64 Main Street, Frodsham, Cheshire, England
Continuation of Ser. No. 587,561, Mar. 8, 1984, abandoned. This application Sep. 12, 1985, Ser. No. 774,876
Claims priority, application United Kingdom, Mar. 8, 1983, 8306282
Int. Cl.⁴ B63H *9/00*
U.S. Cl. 114—39 **22 Claims**

1. A steerable wind-powered vehicle, which comprises:

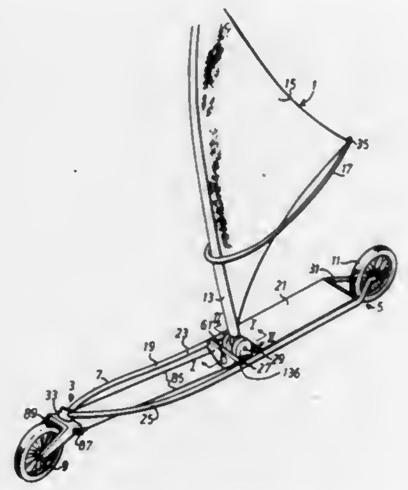
(a) an elongate base having a longitudinal axis;

(b) first and second carrier means selected from the group consisting of wheels, skis, skates and hydrofoils, said first carrier means being located at one end of said base and the second carrier means being located at the other end of said base to support said base,

wherein a point of the first carrier means and a point of the second carrier means are substantially collinear with the axis of the base, at least one of said carrier means being arranged to be steerable;

(c) a mast carrying a sail;

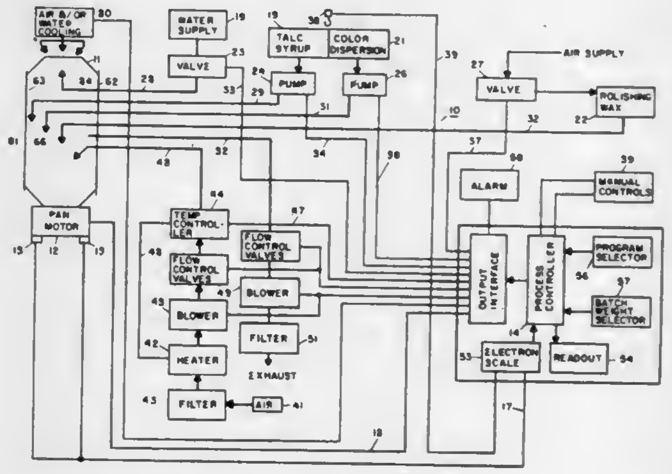
(d) means pivotally mounting said mast on said base; and



(e) a mechanism responsive to lateral pivotal movement of said mast relative to said base for controlling directional movement of said steerable carrier means.

4,617,872
COATING PROCESS AND APPARATUS

Guido W. Melliger, 9 Great Meadow La., E. Hanover, N.J. 07936, assignor to Guido W. Melliger, E. Hanover, N.J.
Division of Ser. No. 613,962, Apr. 24, 1984, abandoned, which is a division of Ser. No. 489,044, Apr. 27, 1983, abandoned, which is a division of Ser. No. 304,100, Sep. 21, 1981, Pat. No. 4,407,844, which is a division of Ser. No. 140,469, Apr. 17, 1980, Pat. No. 4,310,562, which is a division of Ser. No. 934,519, Aug. 17, 1978, abandoned, which is a division of Ser. No. 777,468, Mar. 14, 1977, Pat. No. 4,133,290, which is a continuation-in-part of Ser. No. 672,766, Apr. 1, 1976, abandoned. This application Aug. 5, 1985, Ser. No. 762,577
Int. Cl.⁴ A23G *3/20*
U.S. Cl. 118—19 **4 Claims**



1. In an apparatus for coating solid pharmaceutical dosage forms having coating means in association with a container means which is in rotatable communication with a rotating means, the improvement which comprises means for applying a fine mist of water to the interior of the coating pan wall.

4,617,873
BIRD CAGE WITH FOLD-DOWN TOP

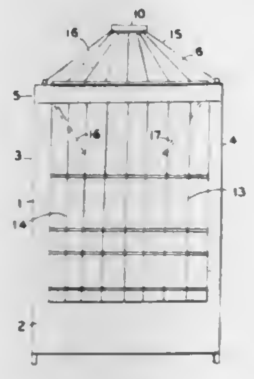
George C. Kelmetis, 173 Marine St., Farmingdale, N.Y. 11735

Filed May 13, 1985, Ser. No. 733,103
Int. Cl.⁴ A01K *31/08*
U.S. Cl. 119—17 **2 Claims**

1. A cage having a rectangular bottom member and four side members affixed to the bottom member,

four flat top members each having a truncated triangular shape each top member being pivotally connected to said top frame, a top frame,

and means connected to the truncated triangular members to hold them in place when they are rotated up



whereby the top panels can be folded down against the inside of the side panels topermit easy cleaning of the cage.

4,617,874
DEVICE FOR THE CONSERVATION AND THE TIME-DISTRIBUTION OF FOOD FOR ANIMALS

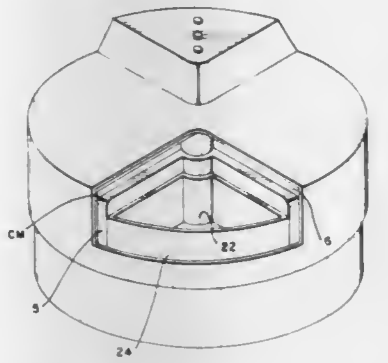
Alessandro Zammarano, Via delle Fornaci, 29, 00165 Roma, Italy

Filed Feb. 27, 1985, Ser. No. 706,217

Claims priority, application Italy, Feb. 28, 1984, 47770 A/84

Int. Cl.⁴ A01K *5/02*

U.S. Cl. 119—51.12 **7 Claims**



1. A device for preserving animal food and distributing the food to an animal according to a preselected schedule, said device comprising:

a housing having an enclosed area for preserving the food therein, said housing having a feeding opening which provides an exposed area that occupies only a portion of the area within said housing and that provides access to the food;

a support member rotatably mounted in said housing, said support member carrying a plurality of open bins for containing the food and including a plurality of partitions formed of thermal insulative material;

sealing means operable between said housing and said support member, said sealing means and said thermally insulative partitions being operable to isolate the bins from each other and to isolate said enclosed area from said exposed area;

refrigerating means for regulating the temperature of said enclosed area, said refrigerating means including a compressor, and a thermostat for controlling said refrigerating means;

means for rotating said support member within said housing, said rotating means rotating said support member to move said bins into communication with the feeding opening;

means for heating a said bin located in said exposed area; and

control means for controlling said rotating means, said control means including a timer for actuating said rotating means to rotate each of said bins having food into communication with said feeding opening in accordance with said preselected schedule.

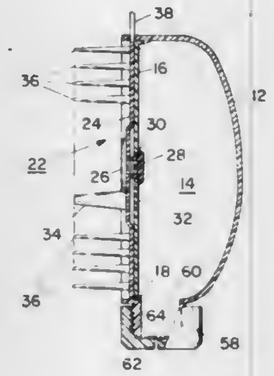
4,617,875
GROOMING AND TREATMENT APPLICATOR

Linda L. Holland, 1319 Nonchalant Dr., Simi Valley, Calif. 93065

Filed Jun. 18, 1985, Ser. No. 746,183

Int. Cl.⁴ A01K *13/00;* **A45D** *24/22*

U.S. Cl. 119—85 **17 Claims**



1. A versatile combined grooming and treatment applicator assembly comprising:

a circular housing for containing liquid or powder, said housing including a flat circular face with a peripheral lip and a plurality of spaced openings extending therethrough;

a plurality of applicator face plate units, each having outwardly extending means for engaging the skin or hair of a body, said face plates units having nozzles extending to the extremity of said outwardly extending means and overlying said spaced openings;

means for shutting off said nozzles and sealing said openings by rotating said face plate units;

means for removably and rotatably securing said faceplate units to said flat circular face within said lip;

means for securing a strap to said housing for extending around the back of a person's hand; and

means for filling said housing with fluid or powder for application to the skin or hair of a body.

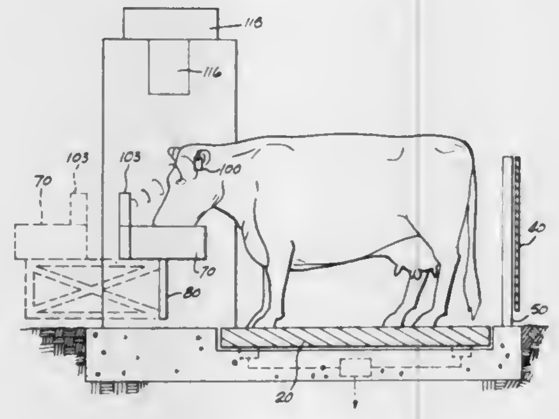
4,617,876
ANIMAL IDENTIFICATION AND CONTROL SYSTEM

Norman J. Hayes, 36 Rd. 2 ABN, Cody, Wyo. 82414

Filed Nov. 28, 1984, Ser. No. 675,991

Int. Cl.⁴ A01K *29/00, 1/02*

U.S. Cl. 119—155 **32 Claims**



9. Apparatus for sorting of selected animals from a group of animals comprising:

stall means having an entrance gate and an exit gate for temporarily confining each of the animals on a one at a time basis;

means in said stall means for determining a current physical characteristic, such as weight of the animal, of each confined animal during the temporary confinement of that animal and for generating a data signal representative of the physical characteristic;

data comparing means for receiving the data signal and for comparing the current physical characteristic of the animal with pre-established data relating to the determined current physical characteristic and for generating gate control signals; and

control means for receiving the gate control signals and for selectively actuating said entrance gate and said exit gate for selectively segregating the animal from the other animals by release of a selected animal from the temporary confinement in the stall means only through the exit gate in response to control signals generated by said data comparing means.

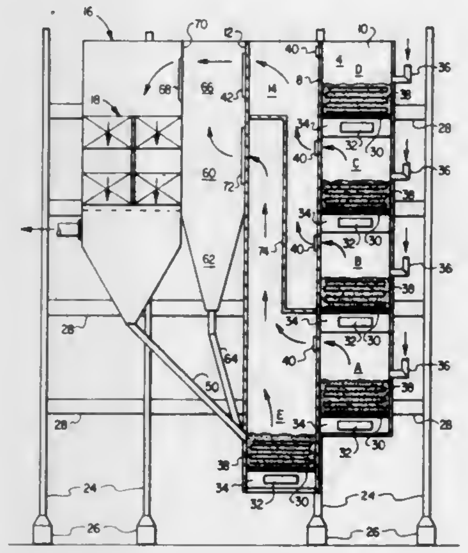
4,617,877
FLUIDIZED BED STEAM GENERATOR AND METHOD OF GENERATING STEAM WITH FLYASH RECYCLE

Robert L. Gamble, Wayne, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jul. 15, 1985, Ser. No. 754,782

Int. Cl.⁴ F22B *1/00*

U.S. Cl. 122—4 D **19 Claims**



1. A steam generator comprising a furnace section, means defining a plurality of vertically spaced fluidized beds in said furnace section, one boundary wall of said furnace section having openings therein for permitting the discharge of effluent gases from said fluidized beds, means including said one boundary wall for defining a heat recovery enclosure adjacent said furnace section for receiving said effluent gases, means defining a fluidized bed in said heat recovery enclosure, housing means disposed adjacent said heat recovery enclosure for receiving the effluent gases from said heat recovery enclosure, means in said housing means for removing heat from said gases, a cyclone separator disposed in said housing, a multi-cyclone device disposed in said housing adjacent said cyclone separator, means for selectively directing said effluent gases to said cyclone separator and to said multi-cyclone device for separating the entrained solid particles from said gases and means for injecting the separated solid particles into the fluidized bed in said heat recovery enclosure.

4,617,878
PROCESS AND DEVICE FOR RECOVERY OF THERMAL ENERGY IN A STEAM GENERATING SYSTEM

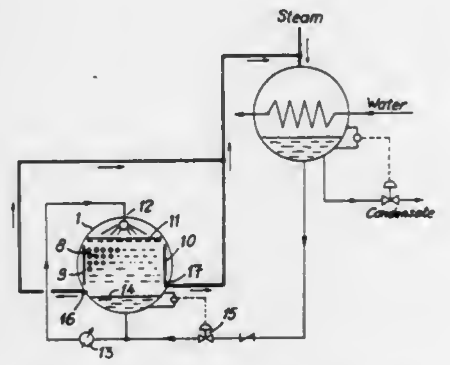
André J. Paquet, Brussels, Belgium, assignor to Engetra S.A., Fribourg, Switzerland

Filed Jul. 22, 1985, Ser. No. 757,623

Claims priority, application European Pat. Off., Jan. 16, 1985, 85870007.3

Int. Cl.⁴ F22D *1/40*

U.S. Cl. 122—422 **18 Claims**



1. In a power generating system comprising (1) a water cycle in which steam expansion condensate from the expansion of steam in a turbine is recovered and heated, prior to recycling to a steam generator, with steam extracted from the steam expansion, and (2) a flue gas cycle in which flue gas from the steam generator is recycled to preheat the air used to support combustion in the steam generator, the process for recovering additional thermal energy from the flue gas cycle which comprises using the flue gas discharged from the preheater to heat the steam expansion condensate in the water cycle and extract heat from the flue gas by passing it in heat exchange with the steam heater condensate resulting from the heating of the steam expansion condensate with expansion steam, the resultant stream being recycled to said heaters to heat said steam expansion condensate.

4,617,879
FUEL AND OIL MIXTURE PRODUCING DEVICE FOR TWO-CYCLE ENGINES

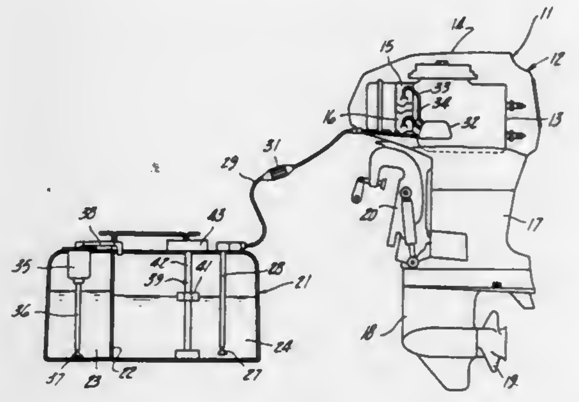
Atsushi Mori, Iwata, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 15, 1984, Ser. No. 660,747

Claims priority, application Japan, Oct. 24, 1983, 58-197660

Int. Cl.⁴ F02B *33/04*

U.S. Cl. 123—73 AD **9 Claims**



1. A fuel/lubricant supply system for a two-cycle engine or the like comprising a fuel reservoir, a lubricant reservoir, measuring means for measuring the amount of fuel supplied to said fuel reservoir, and metering means for transferring an amount of lubricant from said lubricant reservoir to said fuel reservoir in proportion to the amount of fuel added to the fuel reservoir as measured by said measuring means.

4,617,880

VALVE ACTUATING APPARATUS FOR OPTIONALLY RESTING THE OPERATION OF A VALVE IN INTERNAL COMBUSTION ENGINE

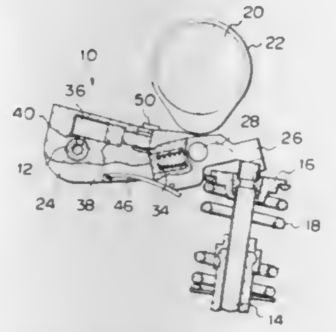
Kouji Yoshizaki, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Sep. 26, 1985, Ser. No. 780,436

Claims priority, application Japan, Dec. 25, 1984, 59-195441

Int. Cl.⁴ F02D *13/06*

U.S. Cl. 123—90.16 **7 Claims**



1. A valve actuating apparatus for optionally resting the operation of a valve in an internal combustion engine having a swing rocker arm which is pivoted at one end to a rocker arm shaft and at the other end bears against a valve stem of the valve, and a rotatable cam which bears against the rocker arm at an intermediate portion thereof to swing the latter about the rocker arm shaft, said apparatus being applied to said rocker arm which comprises:

a first arm having one end pivoted to said rocker arm shaft and the other end extending toward said valve stem;

a second arm having one end bearing against a valve stem and the other end extending toward said rocker arm shaft;

a connecting pin carried by said two arms and extending in parallel to said rocker arm shaft for rotatably interconnecting the respective other ends of said two arms;

a locking pin carried by one of said two arms and engageable with the other of said two arms to selectively interconnect said two arms, whereby said two arms are brought into a generally straight integral swing rocker arm position to operate the valve by following the cam when said locking pin interconnects said two arms, and said two arms are foldable at said connecting pin by following the cam to rest the operation of the valve when said locking pin releases said two arms; and

a stopper means to restrict the returning position of said two arms when folded toward the cam.

4,617,881

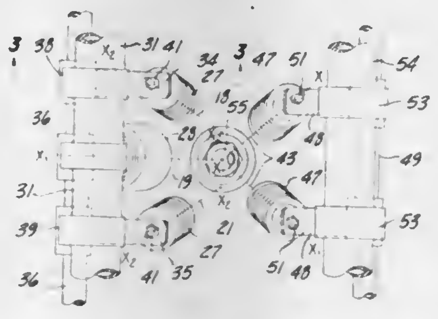
ACTUATING MECHANISM FOR MULTIPLE VALVE INTERNAL COMBUSTION ENGINE

Kazuo Aoi, Hamamatsu, and Naoki Tsuchida, Iwata, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Mar. 29, 1985, Ser. No. 717,832

Int. Cl.⁴ F01L *1/26*

U.S. Cl. 123—90.27 **15 Claims**



1. A valve train for an internal combustion engine having a cylinder bore having a bore axis, a first poppet valve supported for reciprocation along a valve axis defined by its stem, a second poppet valve supported for reciprocation about a valve axis defined by its stem, a camshaft supported for rotation about a rotational axis intersected by said first poppet valve stem axis and extending parallel to a plane containing said bore axis, cam means on said camshaft for opening directly said first valve, a rocker arm supported for pivotal movement, cam means on said camshaft for pivoting said rocker arm, and means on said rocker arm operative to actuate said second valve upon pivotal movement of said rocker arm, said valve axes lying on the same side of said plane as said rotational axis.

4,617,882

APPARATUS FOR DRIVING CAMSHAFTS IN AN INTERNAL COMBUSTION ENGINE

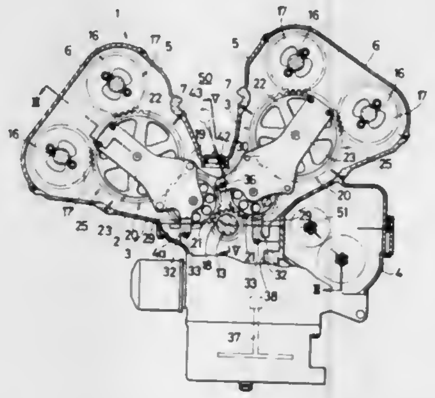
Yutaka Matsumoto, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 9, 1984, Ser. No. 587,787

Claims priority, application Japan, Mar. 11, 1983, 58-39128

Int. Cl.⁴ F01L *1/02*

U.S. Cl. 123—90.31 **7 Claims**



1. A camshaft driving apparatus for a multicylinder internal combustion engine, comprising at least one cam gear mounted on at least one camshaft rotatably supported by an engine body, a timing gear mounted on a crankshaft rotatably supported by said engine body, and a gear train having at least two intermediate gears cooperatively engaged for cooperatively engine said timing gear with said cam gear therethrough, said at least two intermediate gears being rotatably mounted to holding means to thereby form an independent unit before mounting the intermediate gears to said engine body, and said independent unit being fixedly mounted to said engine body by clamping said holding means to said engine body by bolts and other clamping members wherein said independent unit is mounted to said engine body so as to be detachable therefrom and said engine body includes an opening provided between adjacent cylinders of sufficient dimensions to allow said independent unit to pass therethrough so that it can be fixedly mounted to said engine body.

4,617,883

PIVOT MEMBERS FOR A CAM FOLLOWER OF VALVE MECHANISM FOR INTERNAL COMBUSTION ENGINE

Takahiro Okuyama, Tokyo; Susumu Toki, Kawagoe, and Masahito Ishihara, Kani, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Toyko and Tokai TRW & Co., Ltd., Kasugai, both of, Japan

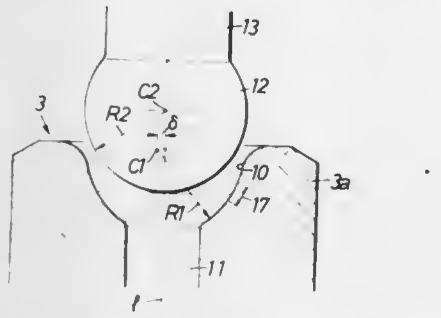
Filed Sep. 27, 1985, Ser. No. 780,771

Claims priority, application Japan, Sep. 28, 1984, 59-203737

Int. Cl.⁴ F01L *1/46*

U.S. Cl. 123—90.44 **4 Claims**

1. In a valve mechanism for an internal combustion engine of the type in which a semi-spherical recess is formed on either one of a pivot member disposed on an engine main body and a base end of a cam follower interposed between a cam and a valve of the engine and a spherical fitting portion to fit to said semi-spherical recess is disposed at the other of said pivot member and the base end of said cam follower, the improvement wherein a curved surface of said semi-spherical recess is defined such that a center of curvature of said semi-spherical recess in a longitudinal section including a center line of said semi-spherical recess deviates from said center line, and a radius of curvature of said recess is greater than a radius of curvature of said spherical fitting portion.



4,617,884

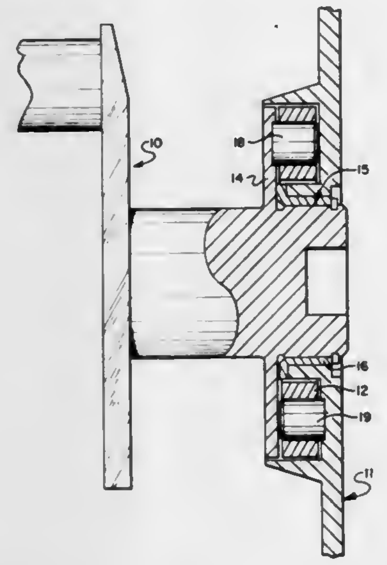
TORSIONAL VIBRATION ISOLATOR AND METHOD

Charles A. Allen, Rte. 4, Box 332 G, Shelby, N.C. 28150, and Van D. Durrett, Shelby, N.C., assignors to Charles A. Allen, Spartanburg, S.C.

Filed Jul. 27, 1984, Ser. No. 635,044

Int. Cl.⁴ F16D *3/78*

U.S. Cl. 123—192 R **6 Claims**



1. In a multicylinder internal combustion engine having a rotatable crankshaft and a rotatable flywheel which together define an inertial system rotating about a predetermined axis of rotation, an improvement which facilitates avoiding destructive effects on the crankshaft of stress induced by torsional vibration and comprising an elastomeric annulus coupling means operatively interposed between the crankshaft and flywheel for coupling the crankshaft and flywheel together for rotation of the flywheel with the crankshaft, said coupling means having a torsional spring rate of less than 20,000 in-lb/radian effective to permit substantial angular displacement between the flywheel and the crankshaft for isolating the rotating inertia of the flywheel from the rotating inertia of the crankshaft after engine startup for purposes of avoiding dampening while preventing torsional vibration from being transferred between the flywheel and the crankshaft.

4,617,885

BALANCER DEVICE FOR INTERNAL COMBUSTION ENGINES

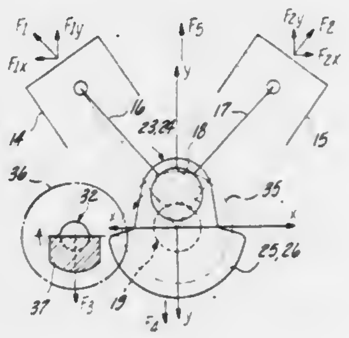
Nobuaki Oshiro, Hamamatsu, and Yorio Futakuchi, Shizuoka, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed May 27, 1982, Ser. No. 382,428

Claims priority, application Japan, May 29, 1981, 56-82982

Int. Cl.⁴ F02B *75/06*

U.S. Cl. 123—192 B **6 Claims**



1. In an internal combustion engine having at least two cylinders arranged in the shape of a "V" at an included angle other than 90°, pistons in said cylinders, a crankshaft supported for rotation, and connecting rods connecting each of said pistons with said crankshaft, said connecting rods being offset in the axial direction of said crankshaft, the improvement comprising a balancer device comprising only one shaft member supported for rotation about an axis parallel to the axis of rotation of said crankshaft, means for driving said shaft member at the same speed as said crankshaft but in the opposite direction; a first weight on said shaft member for balancing at least a portion of the force of first order which is generated by the reciprocal movements of said pistons; and further weights formed on said shaft member for eliminating the force couple generated from the axial offset of said connecting rods.

4,617,886

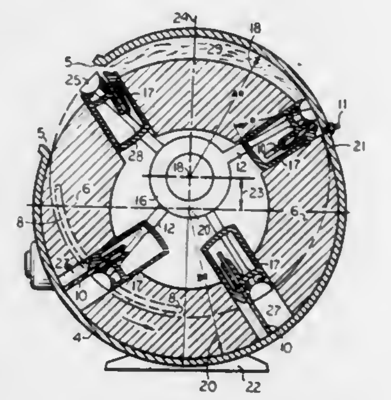
ROTARY ENGINE

Stanley R. Mach, 1201 NW. 87th Way, Pembroke Pines, Fla. 33024

Filed Feb. 19, 1985, Ser. No. 703,138

Int. Cl.⁴ F02B *53/00*

U.S. Cl. 123—223 **1 Claim**



1. In a rotary combustion engine having

(i) a circular rotor disposed within a rotor chamber of a rotary engine housing, said rotor chamber formed of two sections of overlapping circles having different radii and centers, one of said circular sections having essentially the same radius and center as that of the rotor and the other of said circular sections having a center axis which is offset from the center axis of the rotor,

(ii) a plurality of reciprocating pistons radially positioned within cylinders which extend from the periphery of the surface of the rotor, and

(iii) a plurality of connecting rods each of which being connected to a piston on one end thereof and to a crank shaft of the engine on the other end thereof, the crankshaft being concentric with other of said circular sections, the improvement comprising: a rotor having plurality combustion chambers which

radially extend from the surface of the rotor inward toward said centrally located crank shaft, each of said combustion chambers being at least partially divided by a portion of the rotor which extends inward from the rotor surface into the combustion chamber, thereby partially partitioning the combustion chamber into a forward compartment and a rearward compartment;

a plurality of pistons adapted for reciprocal motion within said combustion chambers, each of said pistons being further adapted for reciprocal movement within both the forward and rearward compartments of the combustion chamber and provided with means for cooperative engagement to a connecting rod; and

a plurality of connecting rods, each of which being adapted for engaging said pistons and thereby providing reciprocal movement thereof within the combustion chamber, each of said connecting rods extending from its point of engagement of the piston, through the top of the piston and into the forward compartment of the combustion chamber, the portion of said connecting rod extending above the top of the piston being adapted to sealingly engage the surface of the other of said circular sections of said rotor chamber so as to form a gas tight seal therebetween prior to ignition of an air fuel mixture in the rearward compartment of the combustion chamber.

4,617,887

PISTON FOR INTERNAL COMBUSTION ENGINE

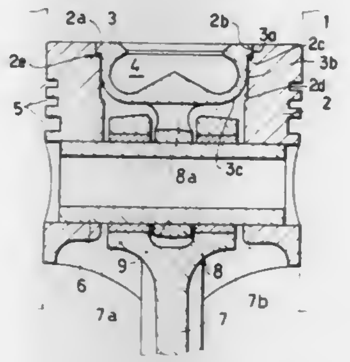
Hidenobu Nagase, Wako, and Atsushi Umemoto, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1985, Ser. No. 718,050

Claims priority, application Japan, Mar. 31, 1984, 59-63995

Int. Cl.⁴ F02F *3/26*

U.S. Cl. 123—279 **1 Claim**



1. A piston for an internal combustion engine comprising:

(a) a piston main body made of a first material and having an opening in a top surface thereof, said opening having an upper large diameter portion and a lower small diameter portion with a shoulder defined therebetween;

(b) a cavity forming member having a combustion chamber cavity formed in a top surface thereof and being made of a second material having a different thermal expansion coefficient than said first material, the diameter of said cavity forming member being less than the diameter of said piston main body, said cavity forming member being mounted in said opening of said piston main body; said cavity forming member including a flange at a top portion thereof having an outer circumferential surface in slidable contact with an inner circumferential surface of said large diameter opening portion, a tubular casing having an outer circumferential surface in slidable contact with an inner circumferential surface of said small diameter opening portion only along a portion positioned above a bottom surface of said cavity, a lower surface of said flange and an upper surface of said shoulder defining a gap therebetween, a bottom wall portion located below said outer circumferential surface of said tubular casing, said bottom wall portion being free from contact with said piston main body, a top surface in alignment with said top surface of said piston main body, and a leg portion extending from said bottom wall portion and having an opening therein;

(c) a connecting rod including coupling means having two diverging portions, each portion having an opening therein, a part of said leg portion of said cavity forming member being positioned between said two diverging portions of said connecting rod; and

(d) a piston pin mounted in said piston main body and extending through said openings in said two diverging portions of said connecting rod and said opening in said leg portion of said cavity forming member.

4,617,888

PISTONS FOR INTERNAL COMBUSTION ENGINES

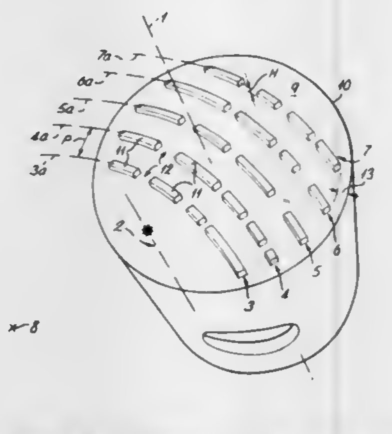
John C. Dent, Loughborough, England, assignor to National Research Development Corporation, London, England

Filed Dec. 19, 1984, Ser. No. 883,510

Claims priority, application United Kingdom, Dec. 21, 1983, 8334101

Int. Cl.⁴ F02F *3/24*

U.S. Cl. 123—307 **13 Claims**



1. A piston for use in a cylinder of an internal combustion engine of the class including those engines in which a flame is originated at a point by spark ignition and those in which it is originated by compression ignition, said piston having a piston crown surface and presenting a piston axis along which it is arranged to execute reciprocatory movement, and said cylinder presenting an ignition axis including an imaginary line parallel to said piston axis and passing through the point of said origin of said flame, and comprising:

a piston crown containing said piston crown surface;

a succession of concentric arcuately-aligned obstacles of increasing radius, formed on said piston crown to promote turbulence in an unburned charge as said flame meets the obstacles in succession as it spreads from its point of said origin, each said arcuately-aligned obstacle being radially spaced from one another and in the form of a structure standing proud of said piston crown;

each said structure being interrupted along an arc having a single radius of curvature by which it is aligned, so as to present alternate solid elements and gaps.

4,617,889

IDLE SPEED CONTROL DEVICE

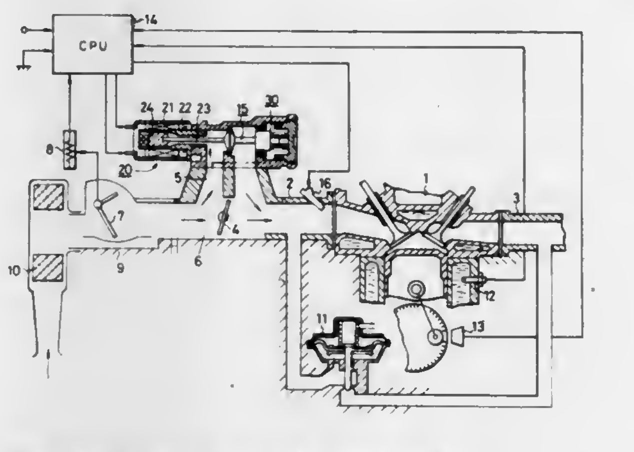
Torazo Nishimiya, Mito; Tomoo Ito, Katsuta, and Takashi Iseyama, Minori, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 10, 1985, Ser. No. 721,767

Claims priority, application Japan, Apr. 11, 1984, 59-70872; Sep. 4, 1984, 59-186161

Int. Cl.⁴ F02M *3/00*

U.S. Cl. 123—339 **8 Claims**



1. An idle speed control device comprising:

an electromagnetic driving portion having a coil, and a core and a plunger disposed in the coil, said electromagnetic driving portion being adapted to convert an electric input supplied thereto into a mechanical output, the electric input having been delivered to the coil from a processing unit which is designed to perform necessary computation upon receipt of signals from at least a water temperature sensor and a crank angle sensor; and

a flow rate controlling portion disposed in a bypass passage formed in a throttle chamber to bypass a throttle valve, said flow rate controlling portion including a body defining a passage for the fluid to be controlled, a seat formed in an intermediate portion of the passage, a first valve for metering driven by the plunger of said electromagnetic driving portion through a rod to be brought into and out of contact with the seat, a sleeve disposed in the body, and a second valve for compensating connected through a rod to the downstream side of said first valve to produce a vacuum force which acts in the opposite direction to the vacuum force produced on said first valve thereby to absorb any fluctuation in the intake pressure in cooperation with said first valve, said second valve configured to produce a pressure differential force different from a pressure differential force produced by said first valve, wherein an outer peripheral surface of said second valve is a straight cylindrical portion, an inner peripheral surface of said sleeve is a straight cylindrical portion, said second valve is received in said sleeve to form a predetermined clearance between the outer peripheral surface of said sleeve and the inner peripheral surface of said second valve, and said predetermined clearance serves only to transmit the pressure and not allow the fluid to flow therethrough.

4,617,890

APPARATUS FOR CONTROLLING IDLING SPEED IN INTERNAL COMBUSTION ENGINE HAVING TWO BYPASS AIR PASSAGES

Nobuyuki Kobayashi, and Toshimitsu Ito, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jun. 26, 1985, Ser. No. 749,089

Claims priority, application Japan, Jun. 26, 1984, 59-129976

Int. Cl.⁴ F02D *41/16*; F02M *23/06*

U.S. Cl. 123—339 **8 Claims**

1. An apparatus for controlling the idling speed in an internal combustion engine, comprising:

an intake air passage;

a throttle valve, positioned within said intake air passage, for adjusting the amount of intake air flowing through said intake air passage;

first and second bypass air passages, linked to said intake air passage at points upstream and downstream of said throttle valve, thus bypassing said throttle valve;

a first means for determining whether or not the engine speed is larger than a first value;

a second means for determining whether or not the engine speed is smaller than a second value, said second value being smaller than said first value;

means for closing said first bypass air passage when the engine speed is larger than said first value;

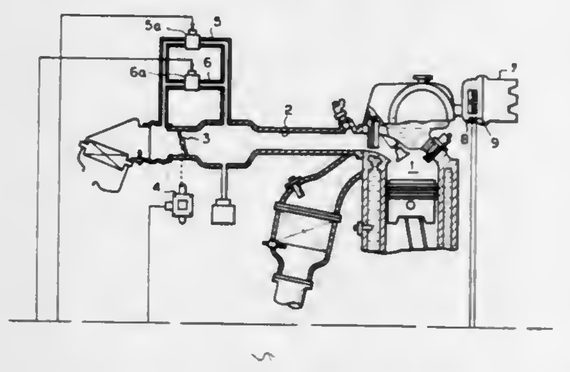
means for opening said first bypass air passage when the engine speed is smaller than said second value;

means for determining whether an electrical load is in an ON state or in an OFF state;

means for opening and closing said second bypass air passage in accordance with the determination of whether said electrical load is in the ON and OFF state, respectively;

a timer means for measuring a predetermined time period after said electrical load is changed from the ON state to the OFF state;

means for inhibiting the operation of said bypass air passage closing means when said electrical load is in the ON state, or when said timer means measures said predetermined time period.



4,617,891

SECONDARY AIR SUPPLY FOR INTERNAL COMBUSTION ENGINE

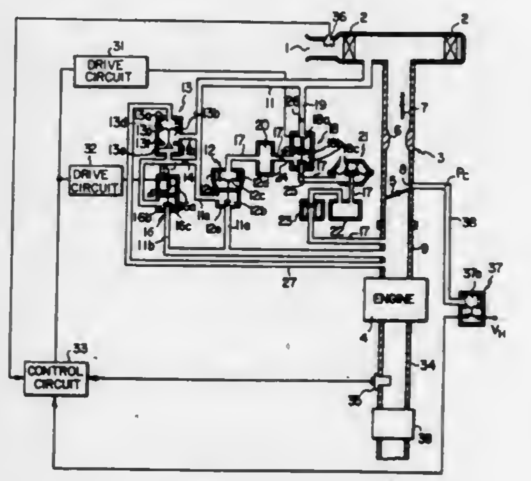
Eiji Kishida, Tokyo, and Shumpei Hasegawa, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 4, 1984, Ser. No. 647,113

Claims priority, application Japan, Sep. 3, 1983, 58-162443

Int. Cl.⁴ F02M *23/04*

U.S. Cl. 123—344 **7 Claims**



1. A secondary air intake system for an internal combustion

engine having a primary air intake with a throttle valve and an exhaust system comprising: means for determining an air-fuel ratio of the engine, first and second secondary air passages communicating with the downstream of the throttle valve of a carburetor; a first vacuum operated air control valve positioned in said first secondary air passage for changing the effective area of said first secondary air passage in accordance with the vacuum in a first vacuum receiving chamber; an electrically operated air control valve positioned in said second secondary air passage for opening and closing said second secondary air passage in accordance with said determined air-fuel ratio; a second vacuum operated air control valve positioned in said second secondary air passage for changing the effective area of said second secondary air passage in accordance with the vacuum in a second vacuum receiving chamber communicating with the downstream of said throttle valve; and vacuum control means for applying a control vacuum to said first vacuum receiving chamber so that the effective area of said first secondary air passage may be gradually increased or decreased in accordance with said determined air-fuel ratio.

4,617,892

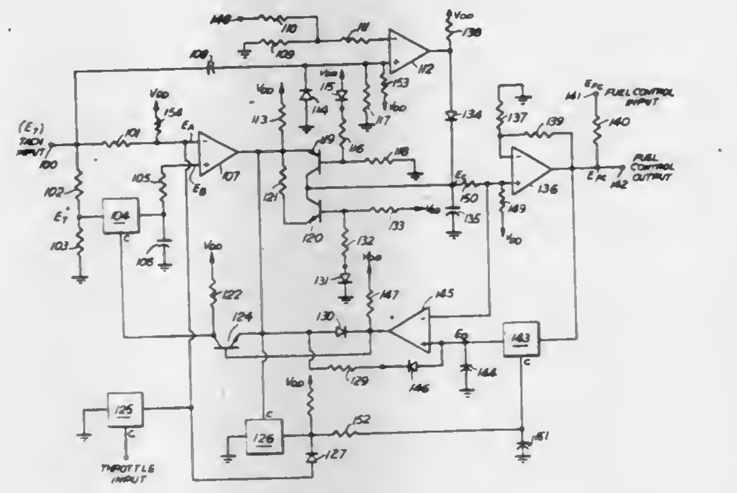
FUEL-OPTIMIZING ELECTRONIC CONTROL CIRCUIT FOR A FUEL-INJECTED MARINE ENGINE OR THE LIKE

Richard E. Staerzl, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 622,386, Jun. 20, 1984, abandoned, which is a continuation of Ser. No. 327,166, Dec. 2, 1981, abandoned. This application Nov. 29, 1984, Ser. No. 676,217

Int. Cl.^{4} G05D *13/62;* F02D *41/00*

U.S. Cl. 123—352 **10 Claims**



1. A fuel control system for providing maximum fuel economy over a wide range of engine throttle conditions of an internal combustion marine engine, comprising:

storage means for storing a fuel control signal whose magnitude is related to the operating r.p.m. of the internal combustion engine;

means for reducing the magnitude of said stored fuel control signal in response to achieving a steady state of the operating r.p.m. of the internal combustion engine;

fuel control means for controlling fuel flow to the internal combustion engine in response to the instantaneous reducing magnitude of said stored fuel control signal whereby the fuel/air ratio of the internal combustion engine is reduced as the magnitude of said stored fuel control signal is reduced;

first comparative means for comparing a steady state r.p.m.-representative signal representing said steady state operating r.p.m. of the internal combustion engine with an actual operating r.p.m. signal representing the reducing actual operating r.p.m. of the internal combustion engine; and

means responsive to said first comparative means for causing an increase in said magnitude of said stored fuel control signal in said storage means when said actual operating-r.p.m. signal falls below said steady state r.p.m. signal by a predetermined amount.

4,617,893

SPEED LIMITING SYSTEM FOR A MOTOR VEHICLE INCLUDING A SWITCH AND A METHOD FOR POSITIONING THE SWITCH

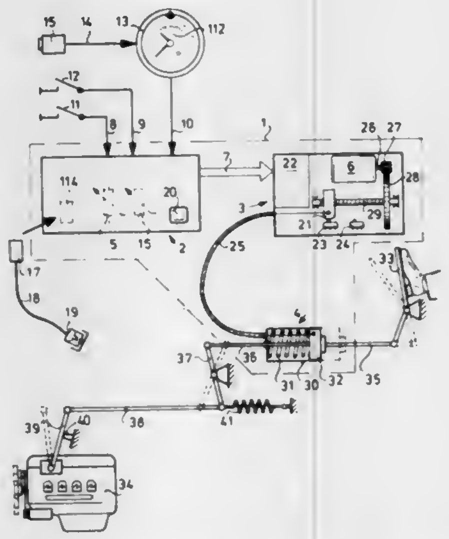
Bernd Donner, Uhldingen-Mühlhofen; Hartmut Schultze, and Lutz Jähnig, both of Villingen-Schwenningen, all of Fed. Rep. of Germany, assignors to Mannesmann Kienzle GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Jul. 24, 1985, Ser. No. 758,498

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1984, 3427329

Int. Cl.^{4} E02D *41/14*

U.S. Cl. 123—361 **7 Claims**



1. A method for positioning a switch of a speed limiting device in a vehicle; wherein

a vehicle includes a vehicle engine, a fuel dosing apparatus for said engine, a gas pedal, a gear connection between said gas pedal and said fuel dosing apparatus and a clutch arrangement connected in said gear connection; and wherein

said speed limiting device includes a servo motor which is switched off by said switch, a servo component through which said speed limiting device actuates said clutch arrangement, a push switch, a rate of rotation indicator and a lock for said switch;

said method comprising the steps of:

starting said vehicle engine;

depressing said gas pedal to its fully accelerating position and holding said gas pedal in said fully accelerating position while simultaneously adjusting said servo component in the sense of a throttling of said vehicle engine by means of controlling said servo motor by operation of said push switch and observing said rate of rotation indicator;

cutting off a stroke of said servo component corresponding to a predetermined lower boundary of the rate of revolution of said vehicle engine; and

releasing said lock of said switch taken along by said servo component by means of reversing the rotational direction of said servo motor.

2. A speed limiting device for a vehicle including a switch which is positioned for controlling said speed limiting device; wherein said vehicle includes a vehicle engine, a fuel dosing apparatus for said engine, a gas pedal, a gear connection between said gas pedal and said fuel dosing apparatus and a clutch arrangement connected in said gear connection; wherein said speed limiting device includes a servo motor which is switched off by said switch, a servo component through which said speed limiting device actuates said clutch arrangement, a push switch, a rate of rotation indicator and a lock for said switch, and wherein after starting of said engine and depressing said gas pedal to its fully accelerated position and holding said gas pedal in the fully accelerating position, said servo component may be simultaneously adjusted in the sense of throttling said vehicle engine by means of controlling said servo motor by operation of said push switch while observing said rate of rotation indicator, with said servo component having a stroke which may be cut off corresponding to a predetermined lower boundary rate of rotation of said vehicle engine with release of said lock of said switch being taken along by said servo component by means of reversing the rotational direction of said servo motor, said speed limiting device further comprising a slide upon which said switch is arranged, said slide being displaceably supported parallel to a threaded spindle driven by said servo motor and carrying said servo component, said locking means being assigned to said slide, said speed limiting device further comprising a switch-over contact bank which is connected in series with said switch and is arranged on said slide such that during the positioning of said switch, said servo component acts on said slide in such a way that said switch is actuated, with a circuit of said switch being provided which is interrupted by means of said switch-over contact bank with said locking means being ineffective.

4,617,894

GOVERNOR MECHANISM COUNTERBALANCE FOR A FUEL INJECTED INTERNAL COMBUSTION ENGINE OF A VEHICLE

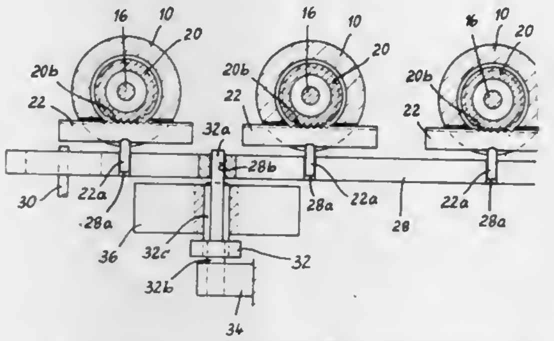
Guenter Kampichler, Ruhstorf, Fed. Rep. of Germany, assignor to Motorenfabrik Hatz GmbH & Co. KG, Ruhstorf, Fed. Rep. of Germany

Filed May 1, 1985, Ser. No. 729,380

Claims priority, application Fed. Rep. of Germany, May 3, 1984, 3416355

Int. Cl.^{4} F02M *39/00*

U.S. Cl. 123—372 **10 Claims**



1. A fuel injected internal combustion engine which is capable of driving a device such as a vehicle, said engine and device being susceptible to sudden undersirable acceleration or deceleration, comprising injection pumps having fuel quantity control members which are operatively coupled to an activator which facilitates simultaneous common control thereof by an operator; wherein at least one balancing mass is positively operatively coupled to said activator, said balancing mass preventing or compensating for undersired forces which tend to move said control members and said actuator and which are produced as a result of sudden acceleration or deceleration of the device; and wherein said balancing mass includes a slidable balancing member supported for movement parallel to the direction of movement of said activator and slidable in a direction opposite to the direction of movement of said activator.

4,617,895

ANTI-KNOCKING CONTROL IN INTERNAL COMBUSTION ENGINE

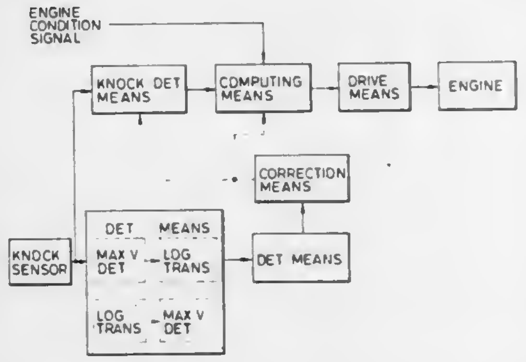
Koji Sakakibara, Hekinan; Hiroshi Haraguchi, and Hideki Yukumoto, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 17, 1985, Ser. No. 735,108

Claims priority, application Japan, May 17, 1984, 59-99898; Dec. 13, 1984, 59-264256; Mar. 4, 1985, 60-43223

Int. Cl.^{4} F02P *5/15*

U.S. Cl. 123—425 **30 Claims**



1. Apparatus for controlling knocking in an internal combustion engine, comprising:

(a) a knock sensor for generating a signal in response to the vibrations in said engine;

(b) means for determining the presence of knocking by comparing said knock sensor signal with a reference;

(c) means for controlling said engine to prevent said knocking in accordance with the determination;

(d) means for measuring a maximum value of said knock sensor signal generated within a predetermined engine rotational angle at an interval thereby obtaining a plurality of maximum values;

(e) means for determining a pattern of distribution of a plurality of logarithmic values corresponding to said plurality of maximum values; and

(f) means for correcting said reference in accordance with said distribution pattern.

4,617,896

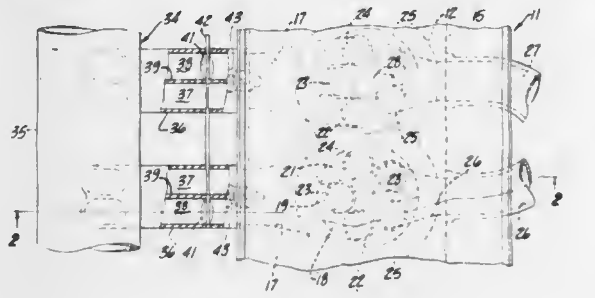
INTERNAL COMBUSTION ENGINE HAVING THREE INTAKE VALVES PER CYLINDER

Masaaki Yoshikawa, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Mar. 14, 1985, Ser. No. 711,979

Int. Cl.^{4} F02B *15/00*

U.S. Cl. 123—432 **12 Claims**



1. An internal combustion engine having a combustion chamber, a plurality of intake passages having independent portions and terminating at at least three intake ports for delivering a charge to said combustion chamber, at least three intake valves in said combustion chamber for controlling the flow through respective of said intake ports to said combustion chamber, and throttle valve means in said independent portions for controlling the flow through at least one of said intake passages independently of the flow through another of said intake passages.

4,617,897

INTAKE SYSTEM FOR INTERNAL COMBUSTION ENGINES

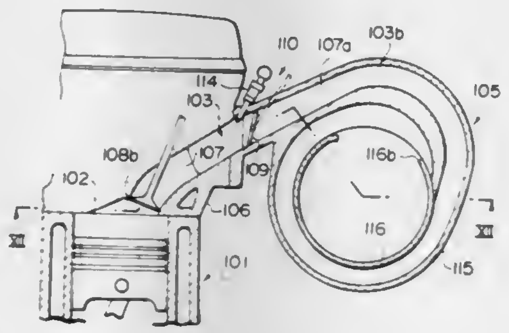
Junzo Sasaki; Mitsuo Hitomi, and Ueda Kazuhiko, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Japan

Filed Jan. 22, 1985, Ser. No. 693,297

Claims priority, application Japan, Jan. 23, 1984, 59-10646; Jan. 23, 1984, 59-10647; Jan. 23, 1984, 59-10648; Jan. 30, 1984, 59-14901

Int. Cl.⁴ F02B *15/00*

U.S. Cl. 123—432 27 Claims



1. An intake system for internal combustion engines comprising a first intake passage extending between a combustion chamber of an engine and a surge tank, a second intake passage extending substantially in parallel to the first intake passage and connecting the combustion chamber with the tank, said second intake passage having a relatively short effective length, cross-sectional area changing means having a valve provided in the second intake passage, said valve having a close position at which said second intake passage is substantially closed and an open position, length changing means for changing the effective length between the combustion chamber and the tank in the first intake passage thereby altering the effective length of said first intake passage to a long state and to a short state, means for operating said cross-sectional area changing means adapted to shift said valve from the close position to the open position and means for operating said length changing means adapted to alter the effective length of said first intake passage from the long state to the short state, said means for operating said cross-sectional area changing means and said means for operating said length changing means being adapted to be actuated independently of each other according to the engine speed so as to form the following three conditions at different speeda:

- (i) a first condition in which said first intake passage is in the long state, said valve is at the close position, and said combustion chamber is communicated with said tank through said first intake passage in the long state;
- (ii) a second condition in which only one of said means for operating said cross-sectional area changing means and said means for operating said length changing means is actuated, said condition being formed during a higher engine speed operation than that of the first condition; and
- (iii) a third condition in which both said means for operating said cross-sectional area changing means and said means for operating said length changing means are actuated, said first intake passage is in the short state, and said valve is at the open position, said condition being formed during a higher engine speed operation than that of the second condition; thereby changing the natural frequency of the intake system according to the engine speed to obtain an inertia supercharging effect at various engine speeds.

4,617,898

FUEL DELIVERY TO INTERNAL COMBUSTION ENGINES

Robert J. Gayler, Mersham, England, assignor to Piper FM Limited, Ashford, England

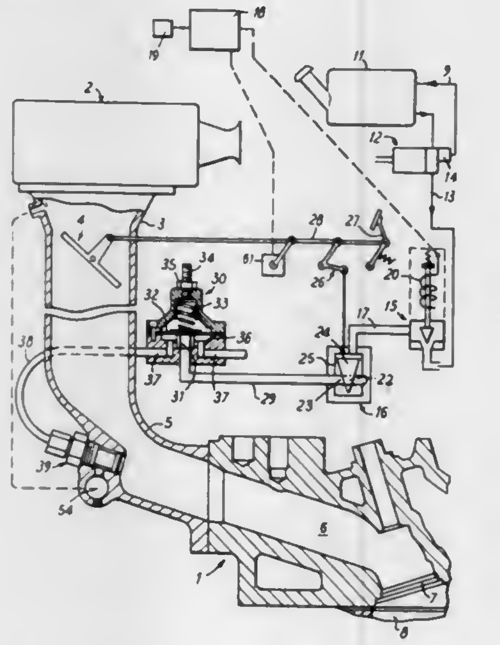
PCT No. PCT/GB82/00199, § 371 Date Mar. 3, 1983, § 102(e) Date Mar. 3, 1983, PCT Pub. No. WO83/00191, PCT Pub. Date Jan. 20, 1983

PCT Filed Jul. 7, 1982, Ser. No. 486,288

Claims priority, application United Kingdom, Jul. 7, 1981, 8120988; Sep. 8, 1981, 8127132; Oct. 29, 1981, 8132624

Int. Cl.⁴ F02M *41/04*

U.S. Cl. 123—460 8 Claims



1. Apparatus for supplying fuel to an internal combustion engine, having an air intake duct for said engine, a variable air throttle valve in said duct, and at least one nozzle for delivering fuel to said intake duct, said apparatus comprising

- (a) a source of fuel,
- (b) means defining a flow path for fuel from said source to said nozzle,
- (c) a metering valve in said flow path and having a variable constriction providing a variable flow resistance in said path,
- (d) link means linking said metering valve to said throttle valve to reduce said flow resistance of said metering valve with increasing opening of said throttle valve, said link means determining a specific value of said constriction for each position of said throttle,
- (e) an electrically operated on/off valve in said flow path,
- (f) an accumulator in said flow path downstream of said metering valve and said on/off valve,
- (g) control means for said on/off valve, said control means including a memory in which are stored values for the on time of said on/off valve in relation to predetermined values including engine speed and throttle opening,
- (h) an engine tachometer connected to said control means, and
- (i) a throttle opening transducer connected to said control means.

4,617,899

FUEL INJECTION CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE

Tetsuo Nakajima, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 30, 1985, Ser. No. 728,979

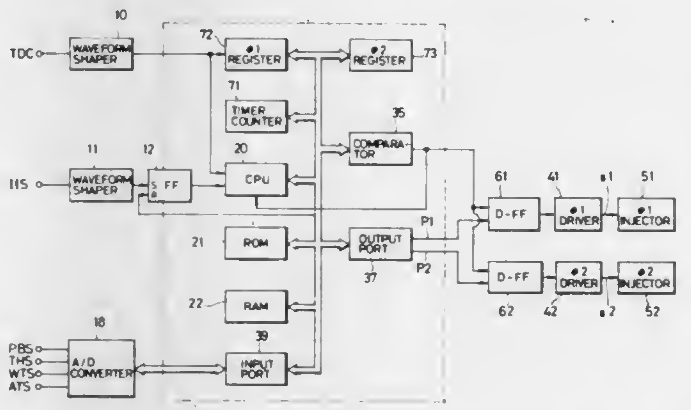
Claims priority, application Japan, Jun. 4, 1984, 59-113094

Int. Cl.⁴ F02D *41/34*

U.S. Cl. 123—487 4 Claims

1. A fuel injection control device for an internal combustion engine, comprising means for generating a basic fuel injection time signal based on at least one signal selected from among a signal representing the revolution number of an engine, a PB sensor signal, and a throttle signal, means for generating an actual fuel injection time signal by compensating said basic fuel injection time signal based on at least one signal selected from among an engine temperature signal and an intake air temperature signal, and means for controlling durations of keeping open the valves of injectors, provided for the separate cylinders of the internal combustion engine, based on said actual fuel injection time signal thereby controlling the amounts of fuel injected into said separate cylinders, which device is further provided with

- means for detecting a top dead center signal and an injection discriminating signal,
- means for computing a signal representing a revolution number of the engine based on said top dead center signal,
- a timer counter for constantly taking count of clock pulses,



- a register adapted to permit setting therein of a first present value produced, upon occurrence of a top dead center signal, by addition of a count value existing then in said timer counter to a value corresponding to an expected delay time and, subsequent to occurrence of an injection start signal, to permit setting therein of a second preset value produced by addition of said actual fuel injection time signal to said first preset value,
- a comparator adatped to feed out an injection start signal when a count value in said timer counter is equalized with said first preset value in said register and feed out an injection stop signal when said count value in said timer counter is equalized with said second preset value in said register, and
- means for selecting and designating an injector for receiving said injection start and injection stop signals based on said injection discriminating signal and said top dead center signal.

4,617,900

AIR-FUEL RATIO CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE HAVING A CONTROL CHARACTERISTIC VARYING WITH THE ENGINE LOAD

Hideo Kobayashi, Kawagoe, and Eiji Kishida, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

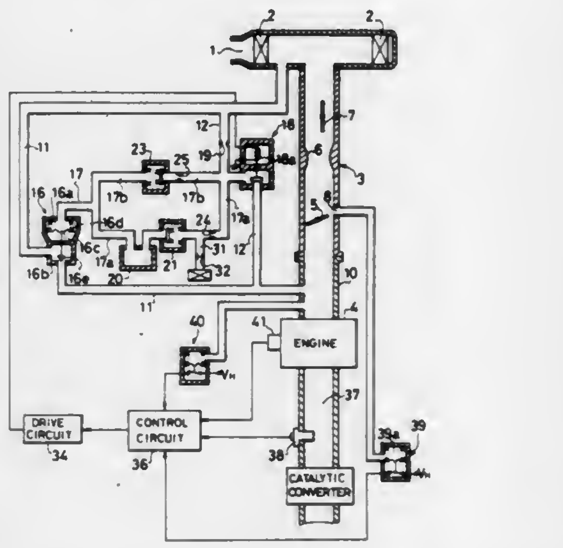
Filed Feb. 7, 1985, Ser. No. 699,281

Claims priority, application Japan, Feb. 15, 1984, 59-027930

Int. Cl.⁴ F02M *23/04*

U.S. Cl. 123—489 5 Claims

1. In an air-fuel ratio control system for an internal combustion engine, said system operates to shift the air-fuel ratio to a rich side with respect to a stoichiometric value when an engine load is high, said system including an oxygen sensor provided in an exhaust system of the engine, a comparing means for comparing a level of an output signal of said oxygen sensor with a first reference level corresponding to the stoichimetric value of the air-fuel ratio, and an air-fuel ratio control means for controlling an air-fuel ratio of a mixture to be supplied to the engine in accordance with a result of a comparison process of said comparing means, wherein the improvement comprises a detection means for detecting a high load operation of the engine, and said comparing means comparing the level of the output signal of the oxygen sensor with a second reference level corresponding to an air-fuel ratio value on the leaner side of said stoichimetric value.



4,617,901

AIR-FUEL RATIO FEEDBACK CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES

Yutaka Otobe, and Akihiro Yamato, both of Shiki, Japan, assignors to Honda Giken Kogyo K.K., Tokyo, Japan

Filed Dec. 21, 1984, Ser. No. 684,495

Claims priority, application Japan, Dec. 23, 1983, 58-243491

Int. Cl.⁴ F02M *51/00*

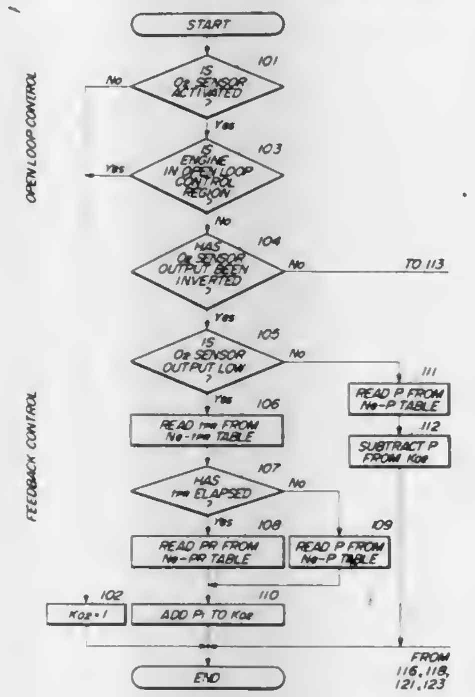
U.S. Cl. 123—489 9 Claims

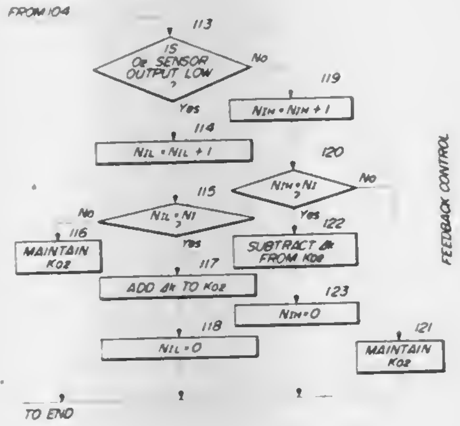
1. A method of controlling the air-fuel ratio of an air-fuel mixture being supplied to an internal combustion engine equipped with an exhaust system in a feedback manner responsive to output from ingredient concentration detecting means arranged in said exhaust system for detecting the concentration of an ingredient contained in exhaust gases from said engine to produce as said output a normally fluctuating output signal indicative of the exhaust gas ingredient concentration, the method including:

- comparing the value of said output signal from said ingredient concentration detecting means with a predetermined reference value,
- detecting from the result of said comparison a first change in the air-fuel ratio of said mixture supplied to said engine from a value richer than a predetermined value to a value leaner than said predetermined value, and a second change in the air-fuel ratio of said mixture from a value leaner than said predetermined value to a value richer than said predetermined value,
- correcting the value of an air-fuel ratio control signal by varying said air-fuel ratio control signal value by a first predetermined correction value in response to a detected one of said first and second changes, and
- controlling the air-fuel ratio of said mixture in response to the value of said air-fuel ratio control signal thus corrected, to thereby effect said feedback control of the air-fuel ratio,

the method comprising the step of:

- (a) applying a second predetermined correction value which is different from the first predetermined correction value, in lieu of said first predetermined correction value, to said correction of said air-fuel ratio control signal in response to a selected one of said first and second changes, with a cycle a predetermined number of times as large as the fluctuation cycle of said output signal; and





(b) controlling the air-fuel ratio of said air-fuel mixture by the use of the value of said air-fuel ratio control signal thus corrected, to thereby effect said feedback control.

4,617,902

APPARATUS FOR CONTROLLING FUEL INJECTION TIMING OF FUEL INJECTION APPARATUS

Yutaka Hirano; Kazuo Inoue, both of Higashimatsuyama, and Seishi Yasuhara, Yokohama, all of Japan, assignors to Diesel Kiki Co., Ltd., Japan

Filed Dec. 10, 1984, Ser. No. 679,802

Claims priority, application Japan, Dec. 9, 1983, 58-231564

Int. Cl.⁴ F02D *41/14*

U.S. Cl. 123—501 **12 Claims**

1. An apparatus for controlling the fuel injection timing of a fuel injection device for an internal combustion engine having a sensor for producing an electric signal indicating the fuel injection timing in response to the fuel pressure at the time of fuel supply, an adjusting means for adjusting the fuel injection timing of a fuel injection pump and a first output means responsive to at least the electric signal for generating a control signal applied to the adjusting means in order to carry out feedback control of the fuel injection timing, said apparatus comprising:

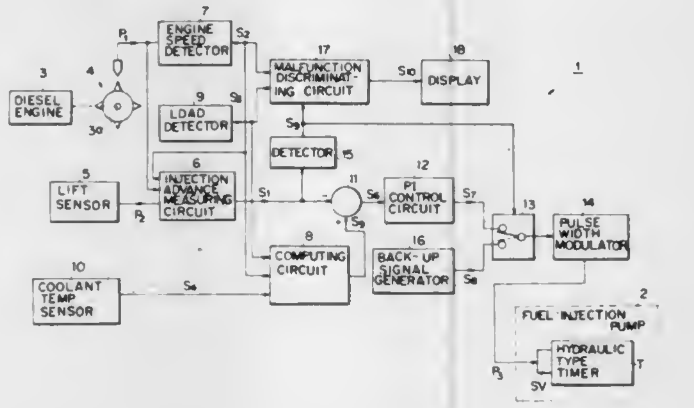
a first means for generating a first signal relating to the rotational speed of the internal combustion engine to which fuel is supplied from the fuel injection pump;

a second means for generating a second signal relating to the load on the internal combustion engine;

a detecting means for detecting whether or not the electric signal is being produced by the sensor;

a discriminating means responsive to the first and second signals and the output signals from the detecting means for discriminating whether or not the sensor is functioning properly;

a second output means for generating a back-up control signal for controlling the fuel injection timing by open-loop control;



a switch-over means for providing the back-up control signal to the adjusting means in place of the control signal in order to switch over the fuel injection timing control mode from feed-back control based on the control signal to open-loop control based on the back-up control signal when the detecting means detects that no electric signal is being generated by the sensor; and

means for giving an indication when a sensor malfunction has been discriminated by the discriminating means.

4,617,903

DIESEL ENGINE WITH INJECTION PUMP COORDINATED TO EACH CYLINDER

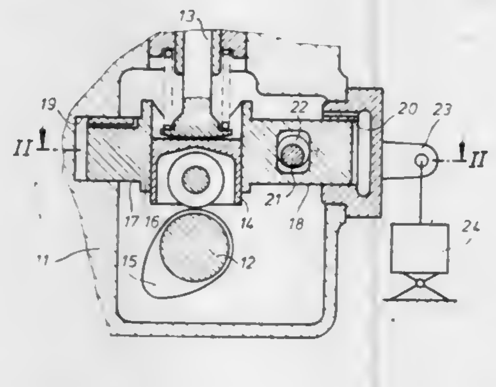
Hans-Jörg Heberle, Bodman-Ludwigshafen, and Wolfgang Rudert, Langenargen, both of Fed. Rep. of Germany, assignors to MTU Motoren und Turbinen-Union Friedrichshafen GmbH, Fed. Rep. of Germany

Filed Feb. 11, 1985, Ser. No. 700,178

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1984, 3425522

Int. Cl.⁴ F02M *59/20*

U.S. Cl. 123—501 **21 Claims**



1. A diesel engine, comprising an injection pump means coordinated to each cylinder, each injection pump means including a pump piston operable to be actuated by a cam by way of a roller tappet means, the roller tappet means being arranged in a tappet guide means, and adjusting means for displacing the tappet guide means in a plane which is substantially transverse to both the axis of rotation of the cam means and the longitudinal axis of the pump piston, each roller tappet means being arranged in an individual tappet guide means, each tappet guide means including two guide pins, the guide pins being axially displaceably supported in corresponding openings of a surrounding housing means, and the common axis of the guide pins being arranged substantially at right angle to the axis of rotation of the cam means.

4,617,904

AIR/FUEL INDUCTION SYSTEM FOR A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

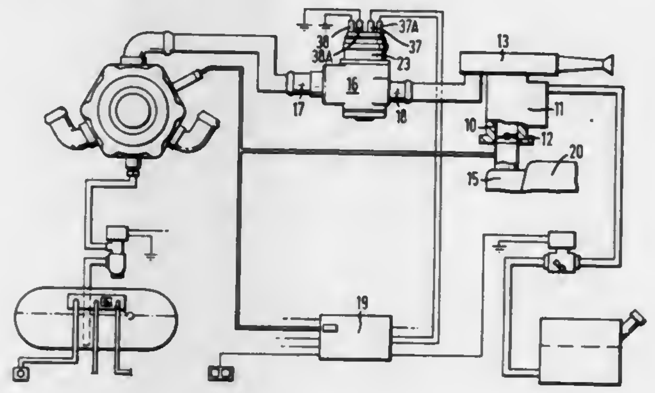
Brian C. Pagdin, Dunstable, England, assignor to Solex (U.K.) Limited, United Kingdom

Filed Nov. 28, 1983, Ser. No. 555,481

Claims priority, application United Kingdom, Dec. 1, 1982, 8234310; Dec. 13, 1982, 8235448

Int. Cl.⁴ F02M *39/00*

U.S. Cl. 123—525 **12 Claims**



1. An air/fuel induction system for a multi-cylinder internal combustion engine comprising an air/fuel induction passage, a driver-operable throttle valve in the induction passage for controlling flow of air/fuel mixture to cylinders of the engine and a gaseous fuel system comprising a plurality of on/off injection valves each operable to control gaseous fuel flow from a common inlet chamber to a common outlet chamber by opening and shutting a respective orifice located between said inlet chamber and outlet chamber, the quantity of gaseous fuel injected by each valve being determined by the frequency of opening and the duration of each opening of the orifice, gaseous fuel supply means operable to supply gaseous fuel to said common inlet chamber, said common inlet chamber being immediately adjacent to and extending between said plurality of injection valves for selective communication with said common outlet chamber, and electrical control means responsive to certain operating conditions of the engine and operable to control operation of said on/off injection valves in accordance with those conditions so that they are operated sequentially and in synchronism with operation of the engine whenever the engine is running under its own power whereby each of said on/off injection valves emits a metered, pulsed output of gaseous fuel which is presented to a stream of air flowing through the induction passage through said common outlet chamber into which all said on/off injection valves are adapted to inject their metered, pulsed output of gaseous fuel directly, a conduit being provided by which said common outlet chamber is in conduit communication with said air/fuel induction passage whereby the separate metered, pulsed outputs of gaseous fuel injected directly into said common outlet chamber sequentially by said plurality of on/off injection valves are collected in said common outlet chamber and fed to said air/fuel induction passage by said conduit as a single substantially continuous supply of gaseous fuel.

4,617,905

ELECTRONIC IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

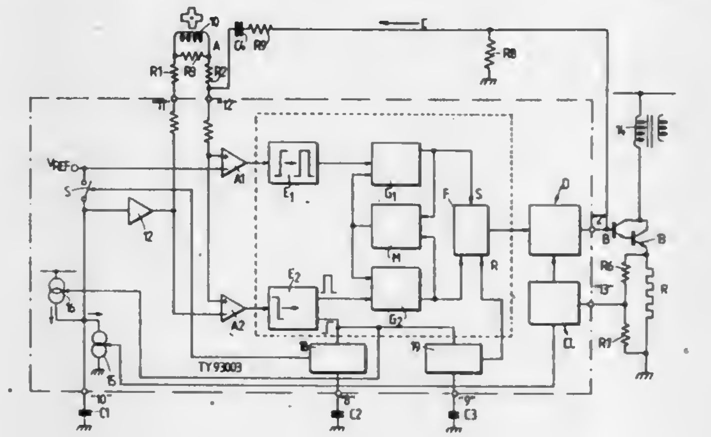
William F. Hill, Stafford, England, assignor to Lucas Electrical Electronics and Systems Ltd., Birmingham, England

Filed Mar. 19, 1985, Ser. No. 713,605

Claims priority, application United Kingdom, Mar. 28, 1984, 8408029; Dec. 14, 1984, 8431630

Int. Cl.⁴ F02P *1/00*

U.S. Cl. 123—614 **3 Claims**



1. An internal combustion engine mechanically timed electronic ignition system comprising a variable reluctance transducer driven by the engine and including a winding which produces an output waveform having zero crossings coinciding with the desired instants of ignition sparks and a control circuit including a pair of input terminals for controlling current flow in an ignition coil, circuit means for connecting said winding to said input terminals, said control circuit comprising bias voltage generating means, first and second comparators connected to said bias voltage generating means and to said circuit means such that the first comparator compares the sum of the bias voltage and the voltage at said terminals with a reference value and the second comparator compares the voltage at said terminals with a threshold value, switch means which is triggered on by the first comparator to commence coil current flow when the combination of the bias voltage generated by said bias voltage generating means and the voltage at said terminals traverses said reference value in one direction and which is triggered off by the second comparator to interrupt current flow in the coil when the voltage at said terminals traverses said threshold value in the opposite direction, said bias voltage generating means forming part of a closed loop dwell control which is operated at higher running speeds of the engine, but disabled at lower engine speeds, and a minimum coil off timer circuit operating when the switch is triggered off, with the improvement that the control circuit includes (a) means for turning on the switch means if the output of the first comparator is already in the state to which it is driven following traversal past said reference voltage in said one direction at the expiry of the minimum coil-off timer period (b) means for preventing initiation of the timer period by the first comparator if the switch means is already on, and (c) means for preventing initiation of the timer period by the second comparator if the switch means is already off.

4,617,906

DWELL CONTROL FOR AN I.C. ENGINE SPARK IGNITION SYSTEM

William F. Hill, Stafford, England, assignor to Lucas Industries, Public Limited Company, Birmingham, England

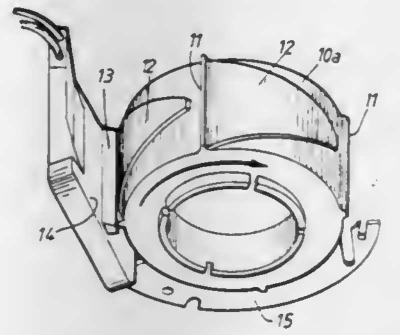
Filed Mar. 22, 1984, Ser. No. 592,439

Claims priority, application United Kingdom, Apr. 5, 1983, 8309134

Int. Cl.⁴ F02P *3/04*

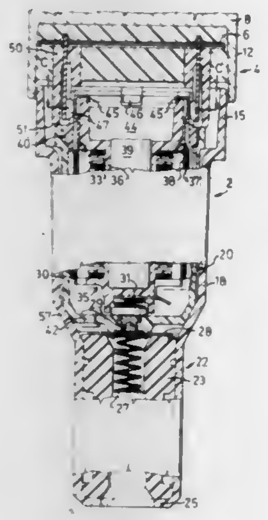
U.S. Cl. 123—617 **15 Claims**

1. An internal combustion engine spark ignition control comprising a variable reluctance transducer driven by the engine and providing an output having zero transitions coinciding with the desired instants of ignition, an integrating circuit to which the transducer output is connected, means for applying a variable preconditioning bias to the output of said integrating circuit, an ignition coil drive circuit connected to said integrating circuit and operating to commence coil current flow when and because the integrating circuit goes into a saturated condition at an instant dependent on said variable bias means and to interrupt coil current flow to produce a spark when said integrating circuit comes out of said saturated condition on reversal of the polarity of the transducer output and means sensitive to the time fraction in each cycle during which the coil current is adequate to produce a spark to the ignition cycle duration, to control said variable bias means to cause said fraction to take up a desired value.



4,617,907
IGNITION UNIT IN THE IGNITION SYSTEM OF AN INTERNAL COMBUSTION ENGINE

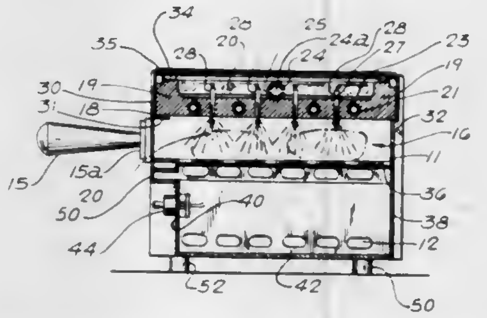
Sven H. Johansson, and Jan G. Nytomt, both of Amal, Sweden, assignors to Saab-Scania Aktiebolag, Sodertalje, Sweden
PCT No. PCT/SE84/00243, § 371 Date Apr. 2, 1985, § 102(e) Date Apr. 2, 1985, PCT Pub. No. WO85/00930, PCT Pub. Date Feb. 28, 1985
PCT Filed Jun. 28, 1984, Ser. No. 719,272
Claims priority, application Sweden, Aug. 5, 1983, 8304283
Int. Cl.⁴ F02P *3/02*
U.S. Cl. 123—647 **8 Claims**



1. An ignition unit included in the ignition system of an internal combustion engine and including a plurality of finger-like connection pieces (2) extending from a common upper part (4) in the ignition unit and connectible to a corresponding number of spark plugs in the engine, said upper part including components included in a high-tension block, each connection piece (2) including an ignition element (20) with an ignition coil for generating ignition voltage, as well as a connection device (22) for connecting and for transmitting high-tension current to the engine spark plugs, characterized in that each ignition element (20) in the ignition unit has cable-free electrical connection both to contact means (47) in the upper part (4) and to contact means (27) in its connection device (22).

4,617,908
TOP-FIRING FOOD STEAMER

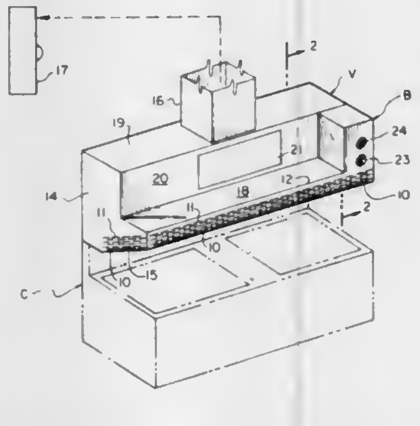
Dye O. Miller, Barrington; August J. Antunes, Oak Brook; Jerome Antunes, Clarendon Hills, and Ronald Godsen, Lombard, all of Ill., assignors to A. J. Antunes & Co., Addison, Ill.
Filed Aug. 12, 1985, Ser. No. 699,760
Int. Cl.⁴ A21B *1/08*
U.S. Cl. 126—20 **23 Claims**



1. A top firing steam heating apparatus for heating foods or the like, comprising:
a housing;
a platen mounted on the housing to define a steam generating chamber between the platen and top of the housing;
means for heating the platen;
a food steaming chamber located beneath the steam generating chamber;
water inlet means for introducing water from a source thereof onto the heated platen to generate steam in the steam chamber;
aperture means extending through the heated platen to cause the steam generated within the steam generating chamber to be directed downwardly to impinge the top of food products placed in the food steaming chamber there below; and
a raised perimeter about the aperture means extending upwardly from the surface of the platen to permit the flow of steam downwardly from the steam generating chamber while preventing unvaporized water from reaching the food steaming chamber.

4,617,909
METHOD OF AND DEVICE FOR PREVENTING SMOKE CURLING FROM UNDERNEATH THE HOOD OF A GREASE EXTRACTION VENTILATOR

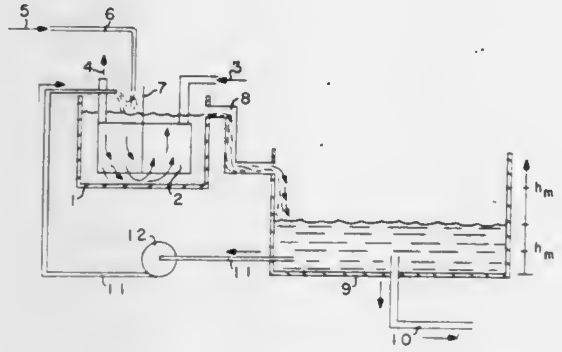
Victor D. Molitor, 2829 S. Santa Fe Dr., Englewood, Colo. 80110
Filed May 6, 1985, Ser. No. 730,600
Int. Cl.⁴ F24C *15/20*
U.S. Cl. 126—299 R **22 Claims**



1. A method of preventing smoke curling from beneath a hood of a grease extraction ventilator installed in a room above cooking equipment and having depending walls including a front wall and end walls essentially surrounding an enclosure into which pass heated air and products of cooking, then through means for removing water, grease and other products of cooking, to an exhaust duct to which suction is applied, comprising:
providing a series of apertures in at least the lower portion of said front wall from adjacent the lower edge thereof for a predetermined distance upwardly, said apertures being comparatively small and relatively closely spaced, whereby room air passes through said apertures into said enclosure.

4,617,910
APPARATUS AND METHOD FOR PRODUCING AND STORING HEATED LIQUID

Benoît Fardeau, Pierrefitte, France, assignor to GAZ de France, France
Filed Apr. 4, 1985, Ser. No. 719,804
Claims priority, application France, Apr. 5, 1984, 8405394
Int. Cl.⁴ F24H *1/00*
U.S. Cl. 126—362 **11 Claims**

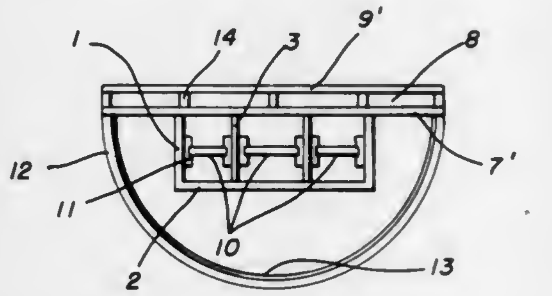


1. Apparatus for heating a liquid, comprising
a first tank for receiving the liquid to be heated,
heating means for heating the liquid in said first tank, said heating means situated within said first tank to be at least partially immersed in the liquid to be heated therewithin,
inlet means for introducing liquid from an external source into said first tank,
a second tank of larger volume than said first tank and communicating with the same, said second tank serving as a reservoir for the liquid heated in said first tank,
outlet means located near the bottom of said second tank for removing the heated liquid from the same, and means for varying the level of the liquid within said second tank comprising recirculating means for recirculating liquid from said second tank to said first tank;
whereby hot liquid at a substantially uniform temperature can be substantially instantaneously supplied.

8. Method for heating a liquid and storing the same, comprising the steps of
conveying the liquid to be heated into a first tank up to a level at least partially immersing heating means within the first tank,
heating the liquid within the first tank by the heating means at least partially immersed in the liquid,
conveying by overflowing the heated liquid from the first tank to a second tank of larger volume than said first tank serving as a reservoir for the heated liquid,
recirculating the heated liquid from said second tank to said first tank as required to maintain said heated liquid in said second tank at a desired temperature,
removing the heated liquid from the vicinity of a bottom of the second tank, when required,
introducing liquid from an external source into said first tank to replace the removed heated liquid as required, and
varying the level of liquid within said second tank,
whereby hot liquid at a substantially uniform temperature can be substantially instantaneously supplied.

4,617,911
SOLAR HEATER

Rafael Adler, Derech Petah Tikva St., 7 Tel-Aviv, Israel
Continuation-in-part of Ser. No. 243,202, Mar. 12, 1981, abandoned. This application May 4, 1984, Ser. No. 607,269
Claims priority, application Israel, Mar. 20, 1980, 59675
Int. Cl.⁴ F24J *2/10*
U.S. Cl. 126—438 **21 Claims**



1. A solar heater for directly heating a fluid supply thereto comprising:
a first transparent plate and a bottom plate being spaced apart at a predetermined distance and operatively connected by a plurality of partitions extending therebetween, side frame walls operatively connected to said first transparent plate and bottom plate, thereby forming a fluid flow space bounded by said side frame walls, said bottom plate and said first transparent plate, said partition plates for connecting said plates and providing a fluid flow path within said fluid flow space,
a fluid inlet operatively connected to said fluid flow space;
a fluid outlet operatively connected to said fluid flow space;
blackened plate means extending between said partitions or between said partitions and said side frame walls;
a concave member having a reflective material disposed on an inner surface thereof, said first transparent plate being positioned on said concave member to form a closed container between said inner surface of said concave member and the lower surface of said transparent plate; and
said first transparent plate, bottom plate, side frame walls and partitions being comprised of transparent material for permitting fluid in said fluid flow space to be directly heated by rays of the sun passing through said plates, side frame walls and partitions.

4,617,912
INCUBATOR

Christian Beer, Boniswil; Robert Riedweg, Luzern, and Klaus Schlensog, Cham, all of Switzerland, assignors to Ameda AG, Zug, Switzerland
Filed May 9, 1985, Ser. No. 732,291
Claims priority, application Switzerland, May 18, 1984, 2453/84
Int. Cl.⁴ A61G *11/00*
U.S. Cl. 128—1 B **10 Claims**

1. An incubator for neonatology comprising
a chamber substantially enclosed by
  a transparent top casing having two longitudinal side walls and two transverse end walls in a substantially rectangular arrangement and a bottom shell for supporting said top casing comprising a generally rectangular recess having a bottom face and two longitudinal sides;
heating and aerating means, and
air distribution means for passing a stream of heated air through said chamber;
  said top casing covering a substantially reactangular area of said bottom shell and said area having a length and a width;
  said chamber including a pair of superimposed substantially rectangular trays;

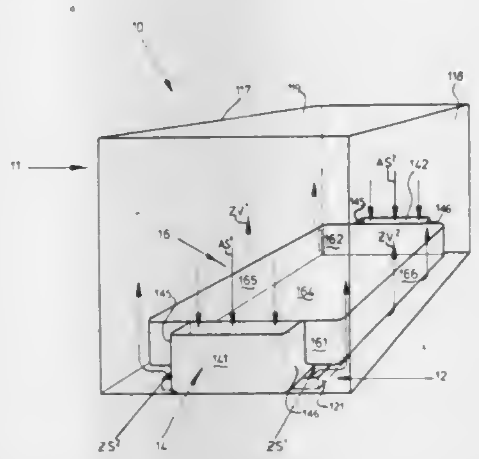
each of said trays having two longitudinal walls, two transverse end walls, and a bottom wall;

said trays being arranged with their bottom walls in a generally parallel and distanced relation when in normal operating condition; the lower of said trays having substantially the same length as said rectangular bottom shell area and a width smaller than said rectangular bottom shell area;

the upper of said trays being shorter and wider than said lower tray but having a width smaller than said rectangular bottom shell area;

a first air-conducting space formed between said bottom face of said recess and said bottom wall of said lower tray, and

a second air-conducting space formed between said bottom wall of said lower tray and said bottom wall of said upper tray;



a pair of air-passing longitudinal gaps formed between said lower tray and said longitudinal sides of said recess, each of said longitudinal gaps communicating with said first air-conducting space and extending over a predominant portion, at least, of said length of said rectangular bottom shell area at each of said side walls of said lower tray;

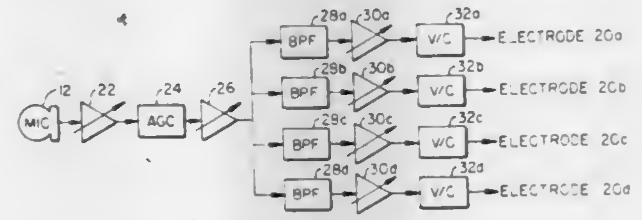
and a pair of transverse air-passing gaps formed between said end walls of said upper tray and said lower tray, each of said transverse gaps communicating with said second air-conducting space and extending over a major portion, at least, of said width of said rectangular bottom shell area;

said aerating means comprising a blower having a suction end and a blowing end,

said blowing end being connected with one of said air-conducting spaces and said suction and being connected with the other of said air-conducting spaces.

4,617,913
ARTIFICIAL HEARING DEVICE AND METHOD

Donald K. Eddington, Belmont, Mass., assignor to The University of Utah, Salt Lake City, Utah
Filed Oct. 24, 1984, Ser. No. 664,163
Int. Cl.⁴ H04R *23/00*
U.S. Cl. 128—1 R **19 Claims**



1. A multichannel hearing device of the type which amplifies electrical signals which are representative of sounds and supplies said signals to the auditory nerve of a user through a plurality of electrodes implanted in the cochlea, wherein the improvement comprises

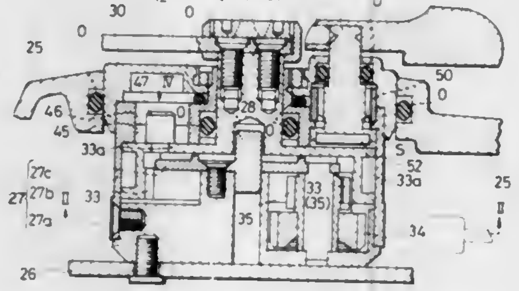
bandpass filter means for separating said electrical signals into a plurality of frequency component signals having different frequency ranges within the audio spectrum, each of the ranges having a predetermined center frequency,

voltage source to current source converter means connected to the bandpass filter means for separately converting said signals to electric currents representative of the frequency component signals of the original sounds, and for supplying the electric currents to separate ones of the implanted electrodes,

emphasis means connected in series with the bandpass filter means and the voltage source to current source converter means for causing the amplitudes of said frequency component signals, beyond what is necessary to produce a predetermined threshold response in the user, to increase at a predetermined number of dB per octave from the lowest center frequency to the highest center frequency of the component signals.

4,617,914
END CURVING DEVICE FOR ENDOSCOPE

Hirohisa Ueda, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 12, 1985, Ser. No. 743,730
Int. Cl.⁴ A61B *1/00*
U.S. Cl. 128—4 **9 Claims**



1. An end curving device for an endoscope in which at least one pair of operating wires are connected to a curving section provided at a front end of an inserting section adapted to be inserted into a human body, and an operating lever in an operating section is operated to push and pull said pair of operating wires to curve said curving section, wherein the improvement comprises:

an internal gear integrally formed on a shaft of said operating lever and rotatably supported in said operating section;

a first pinion;

a pair of racks coupled to respective ones of said pair of operating wires and engaged with said first pinion; and

a second pinion integral with said first pinion and engaged with said internal gear.

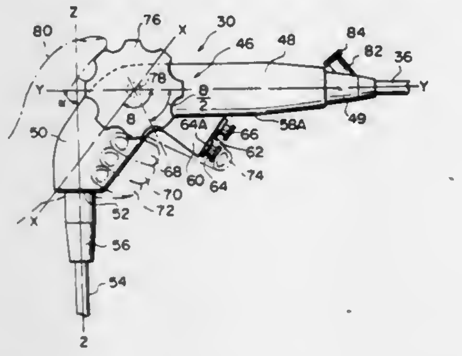
4,617,915
CONSTRUCTION OF MANUAL CONTROL SECTION OF ENDOSCOPE

Satoshi Arakawa, Oomiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Japan
Filed Apr. 23, 1985, Ser. No. 726,398
Claims priority, application Japan, Apr. 24, 1984, 59-60513[U]; Apr. 24, 1984, 59-60514[U]; Apr. 24, 1984, 59-60515[U]; Apr. 24, 1984, 59-60516[U]
Int. Cl.⁴ A61B *1/00*
U.S. Cl. 128—4 **4 Claims**

1. An endoscope adapted to be held by an operator, comprising:

an insertion section having foreward and rearward ends, said foreward end including a solid state imaging device for sensing an image;

a connector section connected to said rearward end of said insertion section along a common axis with said rearward end;

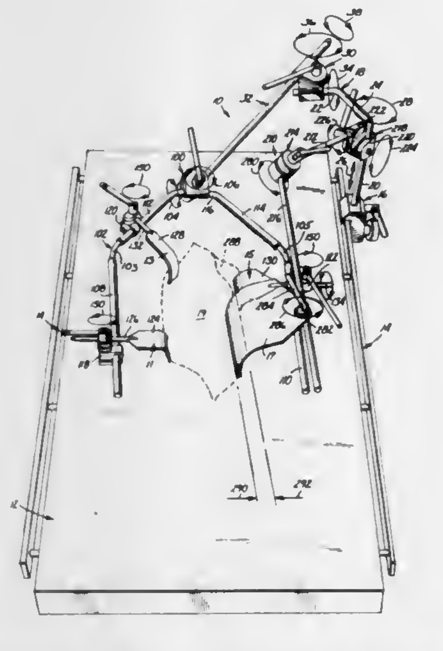


a grip section connected to said connector section and arranged along an axis which is inclined with respect to said common axis of of said connector section and said insertion section by an angle θ, wherein θ is between 90° and 180°, said grip section and said connector section defining a pistol-shaped member having a rearward face, said rearward face being oriented closest to the operator when said endoscope is in use; and

transmission means and push-button control means connected to said endoscope, said transmission means and push-button control means being located such that said rearward face of said endoscope is unobstructed.

4,617,916
RETRACTOR APPARATUS

Bruce A. LeVahn, New Brighton, and Robert E. Olson, Roseville, both of Minn., assignors to Minnesota Scientific, Inc., Minneapolis, Minn.
Filed Nov. 8, 1984, Ser. No. 669,362
Int. Cl.⁴ A61B *17/02*
U.S. Cl. 128—20 **24 Claims**



1. A retractor apparatus for attachment to a rail of a surgical table for attaching retractors thereto to hold back tissue proximate an incision in a body, the apparatus comprising:

a first rigid support rod having a lower section and an upper section;

first clamping means for clamping the lower section of the first support rod to the surgical table and permitting movement about the lower sections's axis and movement along the lower section's axis;

a second rigid support rod having a first end portion and a second end portion;

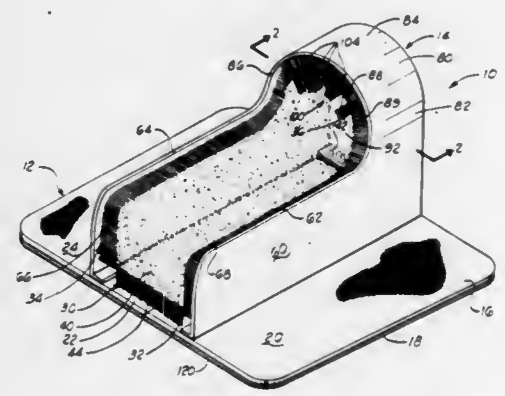
second clamping means for clamping and connecting the first end portion of the second rod with the upper section of the first support rod, said second clamping means having means for permitting movement about an axis of the upper section of the first support rod and about an axis of the first end portion of the second support rod and having means for permitting pivotal movement between the second rod and the first rod about an axis extending through said second clamping means;

a third rigid support rod for attaching a retractor thereto and having first and second leg portions extending along opposite sides of the incision; and

third clamping means for clamping and connecting the second end portion of the second rod with the third rigid support rod, said third clamping means permits movement about the axis of the second end portion of the second rod and permitting movement about an axis of the third rigid support rod.

4,617,917
FOOT HYGIENE DEVICE

Griffith C. Miller, Norman, Okla., assignor to Dr. Miller's Health Care Products, Inc., Norman, Okla.
Filed Jan. 9, 1984, Ser. No. 569,495
Int. Cl.⁴ A46B *5/00;* **A61H** *7/00*
U.S. Cl. 128—62 R **10 Claims**



10. A foot hygiene device comprising:

a base plate having a first portion, a medial portion and a second portion, the first and second portions being of sufficient dimension to enable a person's foot to be placed thereon;

stabilizing means secured to a lower surface of the base plate for releaseably securing the base plate on a supporting surface; and,

a brush assembly supported by the medial portion of the base plate, said brush assembly having a foot receiving passageway formed therein such that upon positioning one foot in the foot receiving passageway, while securing the base plate by placement of the other foot on one of the first and second portions of the base plate, and thereafter moving the one foot in a to and fro direction within the foot receiving passageway said brush assembly selectively contacts at least one of the ventral surfaces one of the lateral surfaces, and the dorsal surface of the foot disposed within the foot receiving passageway in a scrubbing action to clean said selected surfaces of the foot, said brush assembly comprising:

a ventral brush supported by the medial portion of the base plate, said ventral brush having a plurality of upstanding filament tufts for applying a scrubbing force to the ventral surface of the foot upon movement of the foot in a to and fro direction within the foot receiving passageway so that the ventral portion of the foot scrubbingly contacts the ventral brush;

a pair of spatially disposed lateral brushes supported by the base plate so that one of the lateral brushes is disposed substantially adjacent one side of the ventral brush and the other of the lateral brushes is disposed substantially ajdacent an opposite side of the ventral brush, each of the lateral brushes extending upwardly from the base plate and having a plurality of lateral filament tufts disposed in a facing relationship and substantially normally disposed to the upstanding filament tufts of the ventral brush, the lateral filament tufts applying a scrubbing force to at least one of the lateral surfaces of the foot upon movement of the foot in the to and fro direction within the foot receiving passageway such that at least one of the lateral surfaces of the foot scrubbingly contacts the adjacently disposed lateral brush; and,

a dorsal brush supported by a distal end portion of the lateral brushes so as to be positioned a selected distance from the ventral brush and defines the foot receiving passageway, said dorsal brush having a plurality of downwardly extending dorsal filament tufts, the dorsal filament tufts applying a scrubbing force to a dorsal surface of the foot upon movement of the foot in the to and fro direction within the foot receiving passageway such that the dorsal surface of the foot contacts the dorsal filament tufts of the dorsal brush, said dorsal brush comprising:

  a bridge member having a first end, a medial portion and a second end, the first end supported by one of the lateral brushes and the second end supported by the other of the lateral brushes so that the medial portion forms an arch over one end portion of the ventral brush, the medial portion of the bridge member having a plurality of mutually spaced apertures formed on a lower side; and,

  a plurality of synthetic filaments extending from a prefused homogeneous mass of filament mateial, each of said prefused masses received in one of the apertures in the bridge member and conforming to the geometric confines of said apertures to hold said dorsal filament tufts to the bridge member; and digital brush means supported by the bridge member for cleaning the digits of the foot as the foot is moved in a to and fro direction, the digital brush means extending downwardly and having a length greater than the dorsal filament tufts of the bridge member.

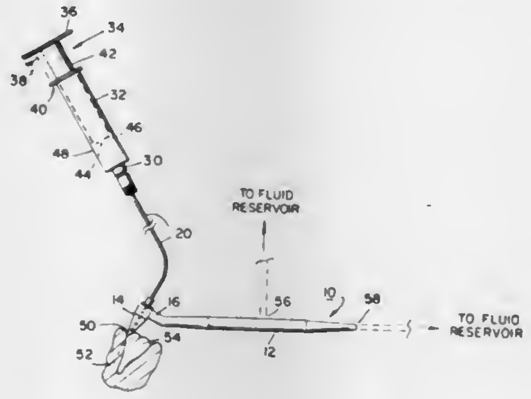
4,617,918
DEVICE FOR COMBINED THERAPEUTIC AND STIMULATIVE TREATMENT OF THE GUMS

John J. Donohue, Neshanic, N.J.; William J. Dunn, Libertyville, Ill., and Kedar N. Rustogi, Kendall Park, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 392,975, Jun. 28, 1982, abandoned. This application Oct. 3, 1984, Ser. No. 657,287

Int. Cl.⁴ A61H *9/00*

U.S. Cl. 128—66 **3 Claims**



1. A device for the combined therapeutic and stimulative treatment of the gums comprising an elongated handle member terminating proximally in a flexible tip portion provided with an aperture for the discharge of fluid at low pressure and configured to expedite probing contact of the tip portion with gingival sulcus, a fluid reservoir with a portion thereof movable along the longitudinal axis of the reservoir by an applied force and physically separate from the handle comprising a pressurized or pressurizable unit whose flow rate is controllable to deliver a fluid at a low pressure, and conduit means connecting the tip portion with the fluid reservoir to communicate the fluid from the reservoir to the tip portion.

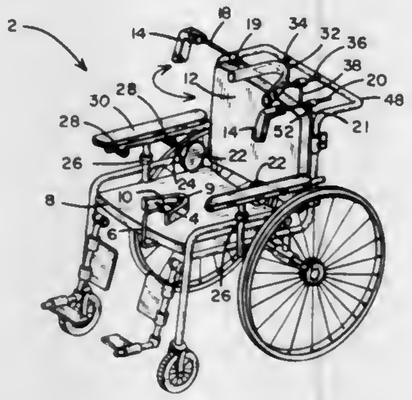
4,617,919
WHEELCHAIR WITH POSTURE SUPPORTS

Robert B. Suhre, Lakeville, Minn., assignor to Theradyne Corporation, Lakeville, Minn.

Filed Sep. 6, 1983, Ser. No. 529,517

Int. Cl.⁴ A61F *5/02*

U.S. Cl. 128—78 **13 Claims**



1. Posture support apparatus comprising in combination:

a wheelchair in which an individual can be seated having a frame, a seat, a back, and two arms;

a plurality of adjustable support means attached to the chair for therapeutically supporting said individual in a select posture, an adjustment means associated with each support means for adjusting the position and angular orientation of its associated support means with respect to said wheelchair, moving means for moving at least one of said support means with respect to said wheelchair and independently of its associated adjustment means, to facilitate seating or unseating of the individual in the chair without disturbing the setting of said associated adjustment means; and

wherein one of said adjustable support means includes a leg support means for separating the thighs of the individual.

4,617,920
DEVICE FOR FACILITATING THE PRACTICE OF DOWNHILL SKIING

Charles Carsalade, 118 rue Crozet Boussingault, 42100 Saint-.Etienne, France

Filed Feb. 4, 1985, Ser. No. 697,791

Claims priority, application France, Feb. 10, 1984, 84 02542

Int. Cl.⁴ A61F *3/00;* A41D *13/00*

U.S. Cl. 128—80 C **8 Claims**

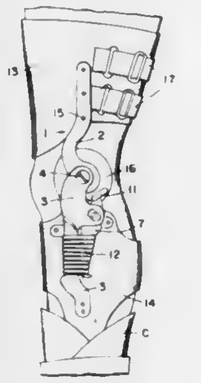
1. A device for facilitating downhill skiing practice, including a knee bandage comprising:

an upper curved and profiled plate, the upper plate being attachable around a user's thigh;

a lower curved and profiled plate attachable around the user's lower leg, the lower plate being partly securable by a part of a shoe of the user;

two opposite and parallel arms extending downwardly from the upper plate, the arms extending from the upper plate being profiled and articulated on a shaft on either side of the user's knee, and two further opposite and parallel arms extending upwardly from the lower plate, the arms extending from the lower plate being profiled and articulated on the shaft with the arms of the upper plate;

elastic components biasing the upper and lower plates articulated on the shaft, the elastic components being tensioned to oppose flexing of the upper and lower plates up to a certain flexion angle; and,



means including a manual releasing component operative to fully suppress biasing of the upper and lower plates and relieve the tensioning.

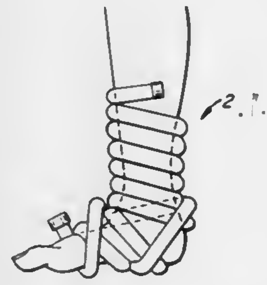
4,617,921
THERMALLY ACTUATED IMMOBILIZING STRUCTURE

C. Oliver Seeler, P.O. Box 246, Albion, Calif. 95410

Filed Jan. 25, 1985, Ser. No. 694,877

Int. Cl.⁴ A61F *5/04*

U.S. Cl. 128—89 R **27 Claims**



27. A thermally actuated immobilizing structure comprising:

a strand ensemble including elongate, generally parallel, closely grouped strands; and

a thermoplastic material interspersed among the strands, said strands and said thermoplastic material adapted to permit relatively unhindered relative movement among the strands when said thermoplastic material is flowable and to substantially inhibit relative movement among the strands when said thermoplastic material is solid to lock the strands in place.

4,617,922
COMPRESSION SCREW ASSEMBLY

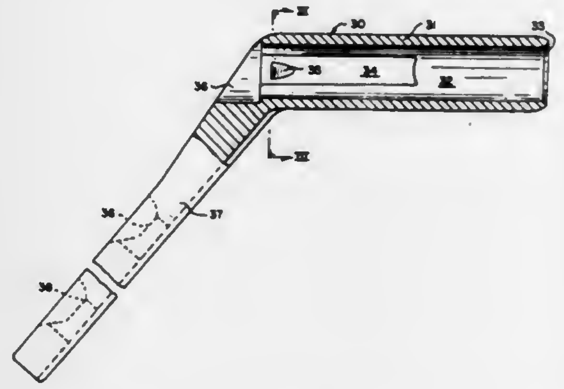
Calvin Griggs, Memphis, Tenn., assignor to Richards Medical Company, Memphis, Tenn.

Division of Ser. No. 340,093, Jan. 18, 1982, Pat. No. 4,530,355. This application Nov. 28, 1984, Ser. No. 675,933

Int. Cl.⁴ A61F *5/04*

U.S. Cl. 128—92 YS **3 Claims**

1. A compression plate for a compression screw assembly comprising a hollow barrel member having a first engaging means formed therein, said first engaging means adapted to coact with a complementary engaging means formed on the outer surface of a lag screw for receiving the lag screw in at least one fixed orientation and said first engaging means and said complementary engaging means being proportioned relative to each other to accept therebetween a means for being optionally insertable into said barrel member in order to selectively prevent axial rotation of the lag screw with respect to said barrel member, said barrel member having a second engaging means formed therein for coacting with said optionally insertable means.



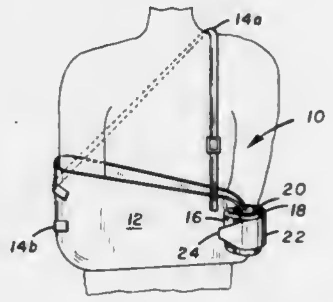
4,617,923
SLING

Michael Coleman, 6666 Security Blvd., Baltimore, Md. 21207

Filed Jan. 24, 1985, Ser. No. 694,349

Int. Cl.⁴ A61F *5/40*

U.S. Cl. 128—94 **5 Claims**



1. An arm sling having a pocket portion in which a patient's arm is supported, a supporting means; and

a grasping means which is grasped by a patient's hand to maintain the muscles of the hand and prevent contracture thereof, grasping means comprising a grasping tube about which said patient's hand fits, said sling having a hole at a sling distal end through which fingers of the patient's hand pass, said sling hole and said grasping tube being arranged to interlock, said grasping tube being hollow so that a portion of said sling adjacent to said sling hole, is within said hollow of said grasping tube, said sling including a securing means which holds said patient's fingers about said grasping tube.

4,617,924
METHOD AND APPARATUS FOR ARTIFICIAL RESPIRATION AND THE MEASUREMENT OF BREATHING GAS VALUES

Ulrich Heim, Reinfeld, and Peter Gebhardt, Stockelsdorf, both of Fed. Rep. of Germany, assignors to Drägerwerk AG, Fed. Rep. of Germany

Filed Jan. 18, 1985, Ser. No. 693,016

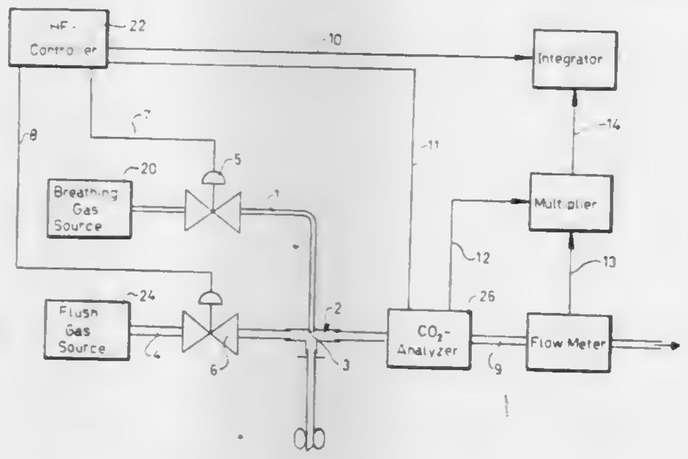
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1984, 3401841

Int. Cl.⁴ A61M *16/00*

U.S. Cl. 128—204.23 **10 Claims**

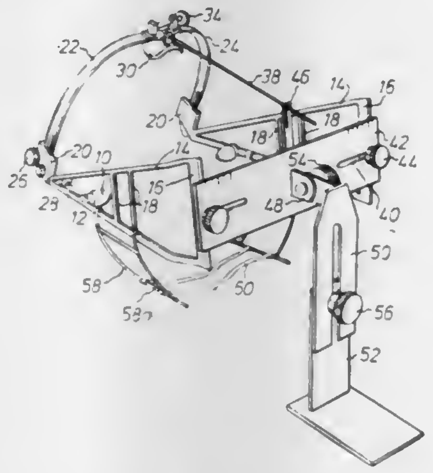
1. A ventilating system comprising a breathing gas source for supplying a flow of breathing gas, a breathing gas supply line having one end connected to said breathing gas source and having an opposite end with a jet nozzle, a breathing gas supply device having one end connected to said opposite end of said breathing gas supply line for receiving the flow of breathing gas over said jet nozzle, a flushing gas line connected into

said breathing gas supply device, an always open outlet line connected into said breathing gas supply device, said breathing gas supply device having an end for connection to a patient, a breathing gas valve in said breathing gas line for regulating the breathing gas flow to said breathing gas supply device, a flush gas valve in said flushing gas line for regulating the flow of flushing gas to said breathing gas supply device and to said outlet line, and control means connected to said breathing gas valve and said flushing gas valve for providing the flow of breathing gas through said breathing gas valve in high frequency pulses for a predetermined period and said flushing gas through said flushing gas valve for a predetermined period and providing a measuring interval in which said breathing gas valve and said flushing gas valve are closed, and measuring means connected to said outlet for measuring breathing gas values during the measuring interval.



4,617,925
ADAPTER FOR DEFINITION OF THE POSITION OF BRAIN STRUCTURES

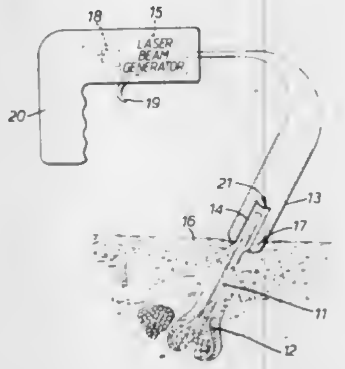
Lauri V. Laitinen, Nydalavägen 59, S-902 34 Umeå, Sweden
Filed Sep. 28, 1984, Ser. No. 655,671
Int. Cl.⁴ A61B *17/00*
U.S. Cl. 128—303 B **12 Claims**



1. Adapter for definition of the position of brain structures on a patient's head by means of spatial coordinates in computerized tomography and NMR examination and transferring the coordinates to a stereotactic apparatus, said adapter including ear supports (**10**) carried by a first arm (**12**) and a further support (**30**) for reproducible fixation of the adapter to the patient's head, with two side frame parts adapted to be fitted on either side of the patient's head, wherein the adapter includes a second arm (**14**) extending angularly to said first arm (**12**) and forming together with the first arm (**12**) and a further, third arm (**16**) a triangular side frame structure (**12, 14, 16**), the side frame parts on either side of the patient's head being interconnected by means of connecting means (**22, 24, 42**) which carry the further support (**30**) and a laterality indicator means (**38, 58*a***) consisting of an anterior laterality indicator (**38**) and two posterior laterality indicators (**58*a***) for definition of a reference plane through the midline of the adapter.

4,617,926
DEPILATION DEVICE AND METHOD

A. Gunilla Sutton, 19, Tregunter Road, London SW10, United Kingdom
Filed Jan. 30, 1984, Ser. No. 574,922
Int. Cl.⁴ A61N *5/00*
U.S. Cl. 128—303.1 **12 Claims**

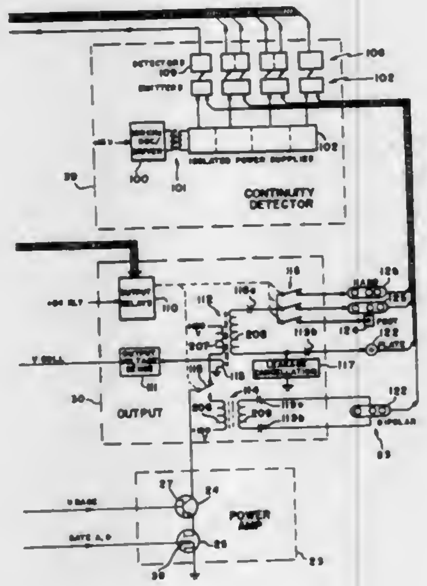


1. A depilation device comprising a probe having an optic fiber with a bore in the tip of the fiber, said bore being of a size for accommodating a hair therein so that energy transmitted through the optic fiber will impinge directly on the hair.

11. A method of destroying an unwanted mammalian hair by applying a pulse of light energy by means of an optic fiber into the end of the hair, along the hair and hence into the hair follicle to destroy the follicle.

4,617,927
ELECTROSURGICAL UNIT

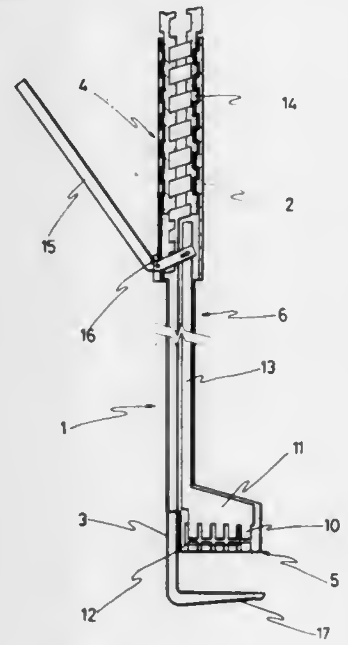
Michael R. Manes, Littleton, Colo., assignor to Aspen Laboratories, Inc., Englewood, Colo.
Filed Feb. 29, 1984, Ser. No. 584,959
Int. Cl.⁴ A61B *17/39*
U.S. Cl. 128—303.14 **4 Claims**

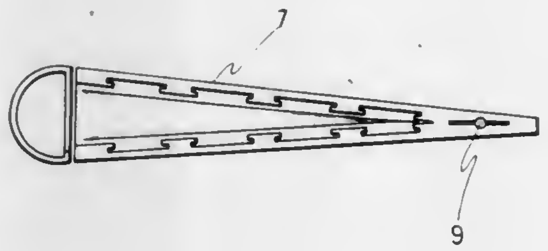


1. An electrosurgical unit comprising:
a. a direct current power source;
b. a means for amplifying connected to said power source, said means comprising:
first and second semiconductor devices each having an input, an output, and a control terminal for controlling the electrical flow through the device, said semiconductor devices connected in series with each other and in series with the load of said means for amplifying; a first voltage control means for applying a control voltage to said control terminal of said first semiconductor device, said first voltage control means including a means for varying the control voltage over a range corresponding to at least a plurality of conducting states of said first semiconductor device, and said first voltage control means including a feed forward gain compensator to substantially maintain the control voltage for said first voltage control means constant for one of said plurality of conducting states in response to variations in the output of said direct current power source, said first semiconductor device comprising a bipolar transistor and said second semiconductor device comprising a field effect transistor; and
a second voltage control means for applying a control voltage to said control terminal of said second semiconductor device; and
c. a means for electrically connecting said means for amplifying to electrosurgical electrodes.

4,617,928
SURGICAL INSTRUMENT FOR PRACTICING MECHANICAL SUTURES AND BIOPSIES

José-María P. Alfranca, Santa Teresa, 29-35, esc. 1º-6º A, 50006 Saragossa, Spain
Filed Sep. 17, 1984, Ser. No. 651,610
Int. Cl.⁴ A61B *17/11, 17/32, 17/04*
U.S. Cl. 128—305 **7 Claims**

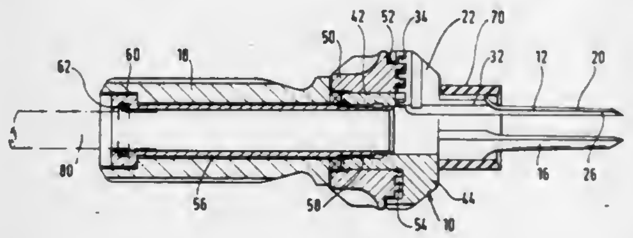




1. A surgical instrument for placing suture staples and performing biopsies, comprising:
a fixed leg having an upper body and a lower body connected to said upper body, said upper body defining a channel and said lower body comprising a fixed frame, said frame having a lower triangular face and positioning means for arranging a plurality of suture staples in a V-shaped configuration adjacent said face, said triangular face including openings for staples in said positioning means;
a movable leg slidably engaged in said channel and having a triangular anvil movable toward and away from said triangular face of said fixed frame, said anvil having an upper triangular surface for interaction with and the closing of staples from said frame, and a blunt end;
slide means in said upper body between said fixed leg and said movable leg for sliding said movable leg with respect to said fixed leg;
a staple pusher movably mounted in said lower body of said fixed leg for pushing staples out of said positioning means into engagement with said triangular surface of said anvil;
release means engaged with said fixed leg and connected to said staple pusher for moving said staple pusher; and
a V-shaped cutting blade conencted to and movable with said staple pusher beyond said face of said frame for cutting tissue between said frame face and said anvil surface, said openings for staples in said face of said frame being disposed outwardly of said V-shaped blade, said blade having two conveying blade portions converging to an apex where said blade portions meet, said blade portions having bases opposite from said apex which are spaced from each other, whereby an open cut is formed by said blade.

4,617,929
SURGICAL APPLIANCE AND A METHOD FOR INTRODUCING DRAINAGE TUBING INTO CAVITIES

Steven S. Gill, 17A Hampstead Hill Gardens, Hampstead, London NW3, England
Filed Jun. 18, 1984, Ser. No. 621,521
Claims priority, application United Kingdom, Jun. 18, 1983, 8316640
Int. Cl.⁴ A61F *17/32*
U.S. Cl. 128—305.3 **7 Claims**



1. A surgical appliance capable of being temporarily placed in a body for assisting in the passage of a tube through a puncture formed in the skin of the body, contraction of the skin around the tube, once the appliance is removed, assisting in holding the tube in place, said surgical appliance comprising: a trochar having a proximal end, a distal end and being divided into a plurality of separate components; at least one tooth on the proximal end of each of said components; a rotary actuator for said plurality of trochar components, said actuator having a central channel therethrough, a spiral formation on said actuator cooperating with said teeth on said trochar components so that rotation of said actuator about the longitudinal axis of said trochar produces parallel radial motion of each of said trochar components having at least one tooth thereon with respect to each other from a closed position in which such components lie substantially parallel and adjacent to each other thereby to form a composite trochar to an open position wherein such components are substantially axially parallel with each other and separated radially to create a trochar central channel through said trochar components, said trochar central channel formed within said trochar components forming a continuation of said first named central channel through said actuator to provide channel means within said appliance through which a tube can be positioned with one end thereof extending into the puncture, and said appliance being capable of being removed from around the tube to leave only the tube in place within the puncture formed in the skin, contraction of the skin adjacent the puncture around the tube upon removal of said appliance assisting in holding the tube in place.

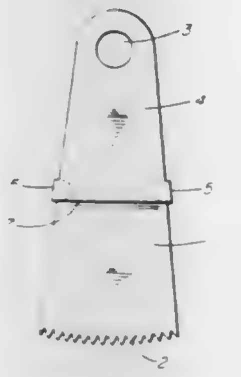
4,617,930
BLADE STIFFENER

Gerald A. B. Saunders, Sydenham, Canada, assignor to Queen's University at Kingston, Kingston, Canada

Filed May 16, 1984, Ser. No. 607,008

Int. Cl.⁴ A61B *17/14*

U.S. Cl. 128—317 **1 Claim**



1. A stiffener for use in overlying abutting relationship with an orthopaedic saw blade having a cutting edge at one longitudinal end thereof and hole means adjacent the other longitudinal end thereof adapted to releasably secure said blade to a saw power unit; said stiffener comprising a longitudinal planar element adapted to extend in overlying planar relationship with said saw blade from said other end thereof to a point intermediate said other end and said cutting edge, and including hole means at one end thereof adapted to releasably secure said stiffener to said saw power unit at one end thereof and clip means at the other end thereof to releasably engage said stiffener with said saw blade at said intermediate point.

4,617,931
ULTRASONIC PULSE APPARATUS FOR DESTROYING CALCULUSES

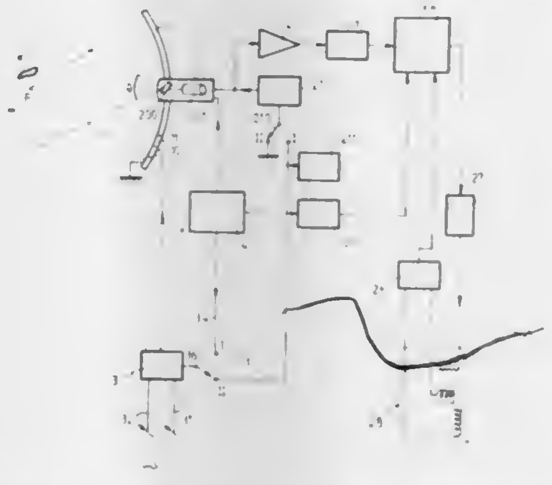
Jacques Dory, 991, rue des Molveaux, 77450 Coupvray Esblay, France

Filed Nov. 26, 1984, Ser. No. 674,889

Claims priority, application France, Dec. 14, 1983, 83 20041

Int. Cl.⁴ A61B *17/00*

U.S. Cl. 128—328 **7 Claims**



1. A lithotrite for contact free pulsed wave disintegration of calculi, said lithotrite comprising:

(i) high power ultrasonic pulse generator means;

(ii) piezoelectric transducer means having a spherical transmissive surface portion, in contact with a water-containing enclosure and adapted to focus the disintegrating waves at a focal spot substantially located at the center of the said spherical surface, said center being located out of said water-containing enclosure;

(iii) means connecting the said pulse generator means to said piezoelectric transducer means;

(iv) image forming means for displaying an image of the said calculus and a representation of the position of the said focal spot; and

(v) means for displacing the said piezoelectric transducer means to bring the said image and the said representation into coincidence.

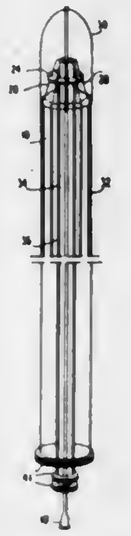
4,617,932
DEVICE AND METHOD FOR PERFORMING AN INTRALUMINAL ABDOMINAL AORTIC ANEURYSM REPAIR

Elliot Kornberg, Suite 416, Cape Royal Bldg., 1980 N. Atlantic Ave., Cocoa Beach, Fla. 32931

Division of Ser. No. 603,800, Apr. 25, 1984, Pat. No. 4,562,596. This application Sep. 3, 1985, Ser. No. 771,913

Int. Cl.⁴ A61B *17/04;* **A61F** *2/06*

U.S. Cl. 128—334 R **8 Claims**



1. A device for inserting a graft into an artery which allows the graft to be positioned and securely attached inside the abdominal aorta proximally to the aneurysm and thus excluding the aneurysm from the circulation comprising a plurality of nested tubes, said tubes each having an upper end and a lower end, one of said tubes designated a first tube being provided at its upper end with means for guiding and positioning arm means, said arm means being movably attached to the upper end of another of said tubes being located inside said first tube extending somewhat above said first and outer tube, the lower ends of said tubes being adaptable for fastening means, the end of the inside tube extending below the end of the outer tube.

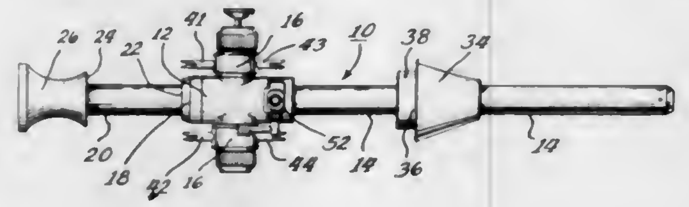
4,617,933
LAPAROSCOPE CANNULA WITH IMPROVED SUTURE RECEIVING MEANS

Harrith M. Hasson, 345 Fullerton Pky., Chicago, Ill. 60614

Filed Feb. 19, 1980, Ser. No. 122,240

Int. Cl.⁴ A61M *25/00*

U.S. Cl. 128—348.1 **2 Claims**



1. A laparoscope cannula comprising a proximal shaft portion forming an inlet to receive a blunt obturator and a laparoscope, a distal shaft portion for insertion into the abdominal cavity of a patient, gas valve means coupling the proximal shaft portion and the distal shaft portion, an adjustable sleeve positioned on the distal shaft portion, and rigid means carried by the cannula for receiving a suture to maintain the cannula in place with respect to the patient's abdomen; characterized in that the suture-receiving means comprises first, second, third and fourth rigid members extending from the cannula, with each of said four rigid members defining a slot which opens to the outside and tapers inwardly toward the cannula, each of said rigid members being fixed at one end thereof to the cannula and being adapted to grasp sutures between opposed walls defining the respective slot, said second and fourth rigid members extending from the cannula on an opposite side from said first and third rigid members, with the four rigid members being symmetrical with respect to the distal shaft portion, said third rigid member being positioned coaxial with said first rigid member and said fourth rigid member being positioned coaxial with said second rigid member, said rigid members extending parallel to the axis of the cannula.

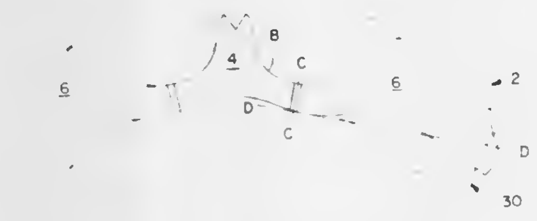
4,617,934
BRASSIERE FRAME

William C. Hittel, New Hyde Park, N.Y., assignor to International Playtex, Inc., Stamford, Conn.

Filed Jul. 25, 1985, Ser. No. 759,024

Int. Cl.⁴ A41C *3/00, 1/14*

U.S. Cl. 128—425 **11 Claims**



1. A brassiere frame for use in conjunction with a pair of breastcup supports, comprising:

a front portion;

a pair of side panels, each of said pair of side panels made of a substantially elastic material, and each of said pair of side panels having a lower marginal edge and being of a particular pitch, whereby the lower marginal edge is basically on the diaphragm line of the body of a wearer when said brassiere frame is on the body of the wearer;

a pair of breast cups, each of said pair of breast cups adjacent and connect to said front portion and a different one of said pair of side panels, each of said pair of breast cups having an almost perfect U shape configuration,

wherein said brassiere frame provides for anchoring of breast supporting forces at the base of said pair of breast cups, and for substantially one directional transmission of the non-breast supporting forces in said brassiere frame.

4,617,935
MEDICAL ELECTRODE

James V. Cartmell; Michael J. Allaire, both of Dayton, and Michael L. Wolf, West Milton, all of Ohio, assignors to NDM Corporation, Dayton, Ohio

Filed Mar. 12, 1985, Ser. No. 710,994

Int. Cl.⁴ A61B *5/04*

U.S. Cl. 128—641 **25 Claims**

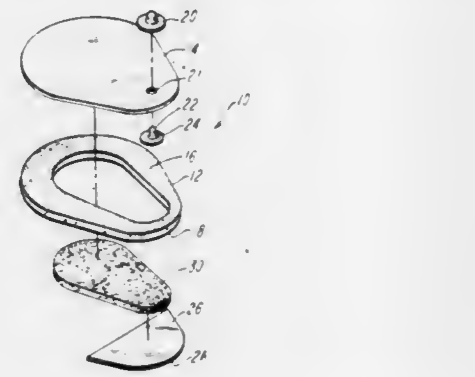
1. A medical electrode comprising:

electrically insulating means forming a tray having a cavity, said tray forming means comprising a cover member forming the base of said tray, and a frame connected to said cover member and forming a sidewall around said cavity;

conductor means supported by said cover member having one portion located within one portion of said tray and another portion projecting outwardly of said cover member for transmitting signals between the skin of a patient and peripheral equipment, said conductor means extending only into said one portion of said tray and not into the remainder of said tray; an electrolyte gel matrix filling said cavity and having one portion engaging and covering said one portion of said conductor;

electrically insulating platform means connected to said frame and spanning across a first part of said gel matrix including said one portion of said electrolyte gel matrix covering said conductor means for providing a barrier that covers and thereby shields said one portion of said gel matrix from either chemical or physical interaction with the skin of a patient to which the electrode may be applied, said first part of said gel matrix comprising less than the entire said matrix, and said gel matrix having a second part exposed by said tray and said platform means for engagement with the skin of a patient; and

adhesive means for adhering said platform means and said frame to the skin of a patient with said second part of said electrolyte gel matrix engaging the skin.



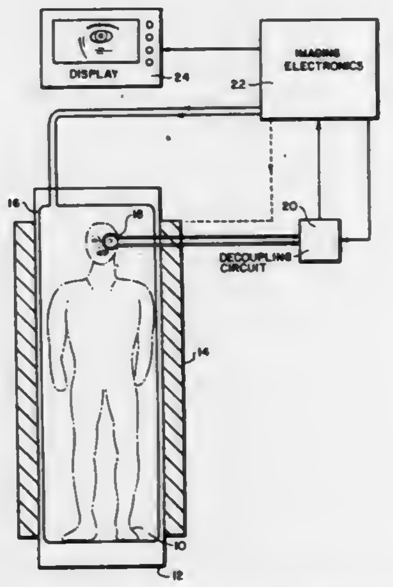
4,617,936
FLEXIBLE SURFACE COIL FOR MAGNETIC RESONANCE IMAGING

John A. Malko, Dunwoody, Ga., assignor to North American Philips Corporation, New York, N.Y.

Filed Aug. 8, 1985, Ser. No. 763,724

Int. Cl.⁴ A61B *5/05*

U.S. Cl. 128—653 **7 Claims**



1. In magnetic resonance imaging apparatus of the type which includes: magnet means for generating a homogeneous magnetic field and one or more gradient magnetic fields within an examination space: exciting means for generating an alternating magnetic field within the examination space; and surface coils means disposed within the examination space and adapted for placement on the surface of a body undergoing examination for detecting magnetic resonance signals which originate within a localized volume in the body, the improvement wherein:

the surface coil means comprises one or more turns of a flexible, electrically-insulating tube and an electrically-conductive liquid disposed within and filling said tube.

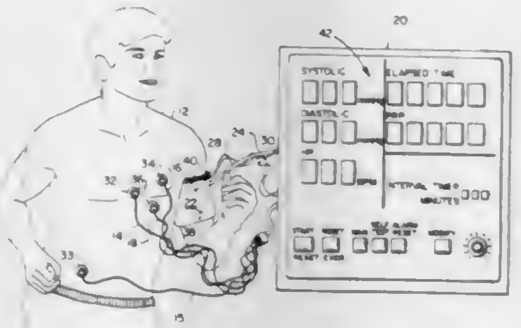
4,617,937
BLOOD PRESSURE MONITORING SYSTEM

Harry H. Peel; John S. Brisco; Mark E. Moczygemba; Robert L. Neatherlin, and Brenda A. Sargent, all of San Antonio, Tex., assignors to Nippon Colin, Komaki, Japan

Continuation of Ser. No. 702,226, Feb. 21, 1985, abandoned. This application Sep. 20, 1985, Ser. No. 778,290

Int. Cl.^{4} A61B *5/02*

U.S. Cl. 128—680 **34 Claims**



1. A blood pressure monitoring system for measuring blood pressure during stress testing or other physical activity, said blood pressure monitoring system comprising:
an inflatable cuff adapted to encircle a patient's arm;
means for inflating and deflating said inflatable cuff within a selected range of pressures;
pressure transducer means responsive to cuff pressure and having an output signal indicative thereof;
audio transducer means for detecting pulse sounds at said inflatable cuff;
a plurality of electrocardiographic leads, each coupling an electrocardiographic signal from said patient; and
controller means comprising:
trigger signal generation means coupled to said plurality of electrocardiographic leads for periodically measuring the amount of noise present on each of said plurality of electrocardiographic leads and for selecting a particular lead having the least amount of noise to be utilized as a trigger signal; and
measurement means for obtaining a measure of systolic and diastolic blood pressure from said pulse sounds at selected cuff pressures in response to said trigger signal.

4,617,938
METHOD AND SYSTEM FOR DISTINGUISHING R-WAVE ELECTROCARDIOGRAPH SIGNALS FOR SYNCHRONIZING PURPOSES

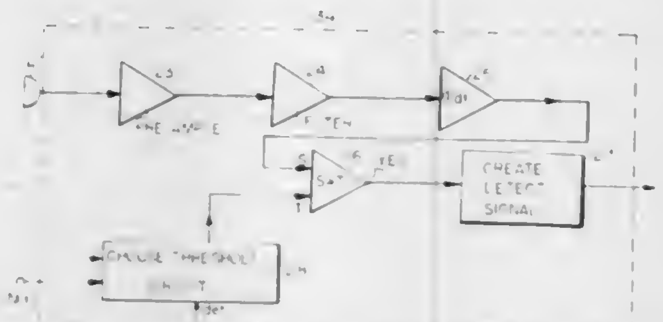
Yair Shimoni, c/o Elscint Ltd., P.O. B. 5258; Amir Gilad, 42 Sederot Hatzvi, and Alex Shapira, c/o Elscint Ltd., P.O. B. 5258, all of Haifa, Israel

Filed Dec. 26, 1984, Ser. No. 686,389

Int. Cl.^{4} A61B *5/04*

U.S. Cl. 128—708 **16 Claims**

1. A system for distinguishing R-waves in electrocardiograph (ECG) signals, said system comprising:
(a) a plurality of leads inputting at least two individual ECG signals from the same patient;
(b) single channel detector means for detecting suspected R-waves in each of said at least two individual ECG signals; said single channel detector means compirsing:
(1) means for determining the negative slopes of said ECG signals;
(2) choose threshold means using the determined slopes for providing variable threshold signals individual to each of said at least two ECG signals;
(3) means for comparing the determined slopes of the ECG signals to said provided threshold signals; and
(4) means responsive to said determined slopes being more negative than said provided threshold signals for generating a "det" signal indicating a suspected R-wave;



(c) means for determining the simultaneous receipt of said "det" signals from each of said single channel detector means; and
(d) means operated responsive to the simultaneous receipt of the "det" signals for recognizing the suspected R-wave signals as actual R-wave signals and generating a signal indicating the detection of actual R-wave signals.

4,617,939
TOMOGRAPHY

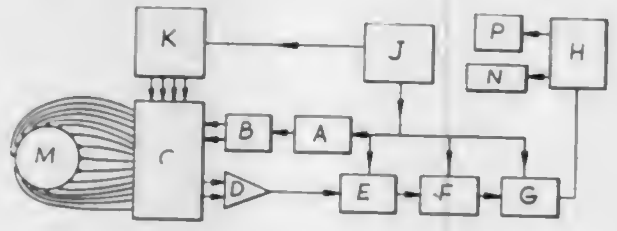
Brian H. Brown; David C. Barber, and Ian L. Freeston, all of Sheffield, England, assignors to The University of Sheffield, Sheffield, England

Continuation of Ser. No. 489,415, Apr. 28, 1983. This application Jun. 14, 1985, Ser. No. 745,291

Claims priority, application United Kingdom, Apr. 30, 1982, 8212676; Jun. 14, 1984, 8415236

Int. Cl.^{4} A61B *5/05*

U.S. Cl. 128—734 **11 Claims**



1. A method for the construction of tomographic images of a body comprising placing a plurality of electrodes adjacent the skin at spaced intervals on the body, causing currents to flow in the body by applying an electrical potential between pairs of electrodes in turn, and measuring potentials between other pairs of electrodes, calculating potentials for each electrode pair on an assumption that the body consists of one uniform medium, plotting isopotentials corresponding to the calculated potentials to create an assumed image of the body, obtaining a ratio between the measured potential and the calculated potential for each electrode pair, and modifying the assumed image by back projecting respective ratios for each electrode pair along the plotted isopotentials and thereby increasing impedance along each plotted isopotential in proportion to a ratio greater than unity or decreasing the impedance in proportion to a ratio less than unity.

4,617,940
BRONCHOSCOPIC NEEDLE ASSEMBLY

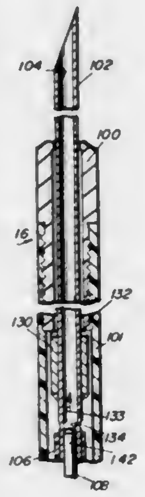
Ko Pen Wang, 813 Jamieson Rd., Lutherville, Md. 21093

Division of Ser. No. 438,245, Nov. 1, 1982, which is a continuation-in-part of Ser. No. 260,602, May 6, 1981, abandoned. This application Mar. 8, 1985, Ser. No. 709,648

Int. Cl.^{4} A61B *10/00*

U.S. Cl. 128—753 **6 Claims**

1. A completely flexible bronchoscopic needle assembly for use with a flexible bronchoscope to obtain biopsy tissue samples from a patient, said assembly comprising:
an elongated flexible outer catheter having proximal and distal ends and defining an outer catheter cavity therebetween;
a hard tip including means for rigidly fixing said tip to said outer catheter distal end and means defining a bearing surface on the proximal end of said tip;
a hollow needle slideably and coaxially receivable in said tip and reciprocably moveable therein between a retracted position whereby said needle is retractably housed within said catheter to prevent inadvertent damage to said bronchoscope or said patient thereby and an extended position



whereby said needle is extended beyond the distal surface of said tip to permit the taking of biopsy tissue samples, said needle at its distal end defining a sharp edge for penetrating body tissue;
means connected to said needle for permitting reciprocal movement thereof between said retracted and extended positions;
limit means rigidly associated with said needle for contacting said bearing surface of said tip for establishing the extreme limit of said extended position; and
biasing means biasing said limit means into contacting relationship with said bearing surface to prevent retractable movement of said needle when in said extended position.

4,617,941
BLOOD COLLECTOR

Toshiji Ichikawa, Chofu, and Atsushi Shimizu, Tokyo, both of Japan, assignors to Terumo, Tokyo, Japan

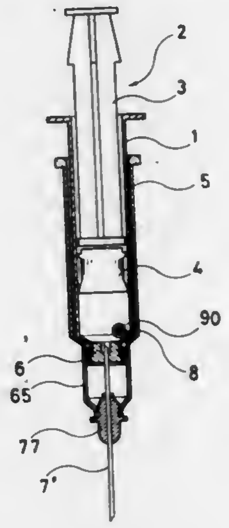
Continuation-in-part of Ser. No. 613,746, May 23, 1984, abandoned, which is a continuation of Ser. No. 370,921, Apr. 22, 1982, abandoned. This application Aug. 6, 1984, Ser. No. 637,858

Claims priority, application Japan, May 20, 1981, 56-76311

Int. Cl.^{4} A61B *5/14*

U.S. Cl. 128—765 **9 Claims**

1. A blood collector comprising:
a blood collection container in the form of a tubular body defining a blood collection space, said tubular body having a forward end adapted for drawing blood therethrough into said collection container and having an open rear end;
a closure unit movably mounted to said collection container for closing said rear end of said collection container and having a portion which contacts with blood collected in said collection container, said closure unit being adapted to apply a positive pressure of at least 3.1 kg/cm^2 to blood in said collection container when moved toward the tubular body forward end and a negative pressure of at least 1.3 kg/cm^2 to blood in said collection container when moved toward the tubular body rear end; and
valve means coupled to at least that portion of the closure unit which contacts with blood collected in said collection container, said valve means including:
a passage for passing air from said blood collection space to the exterior of said collection container; and
a filter cooperatively associated with said passage for allowing passage of air through said passage when blood is flowing into said collection container and for blocking said passage to both air and liquid so as to cut off communication of air and blood between said blood collection space and the exterior of said collection container when said collection container is filled with blood and said blood contacts said filter, said filter occupying the entire cross-section off at least part of said passage;
said filter comprising a sintered porous body of polyethylene having a starch-acrylonitrile graft copolymer incorporated therein, said polymeric material of said filter substantially instantaneously swelling upon contact with water of said blood to grow or expand in volume through absorption of the water content of said blood in



contact therewith so as to block the pores of said sintered body to block passage of both air and blood through said filter to thereby seal off and said passage and to prevent flow of both blood and air to and from said blood collection space through said passage, said sintered body providing a predetermined mechanical strength to said filter sufficient to withstand said positive and negative pressures applied by said closure unit, and said sintered body remaining substantially the same size even after said contact with said water of said blood and said swelling of said polymeric material; and
said polymeric material of said filter being sufficiently swellable upon contact with said water of said blood for not only preventing blood leakage under a positive pressure of up to about 3.1 kg/cm^2 applied by said closur unit toward the tubular body forward end, but also preventing air entry into the blood collection space under a negative pressure of up to about 1.3 kg/cm^2 applied by said closure unit toward the tubular body rear end.

4,617,942
CHAFF SPREADING APPARATUS

David L. Garner, Rte. 2, P.O. Box 516, Rupert, Id. 83350

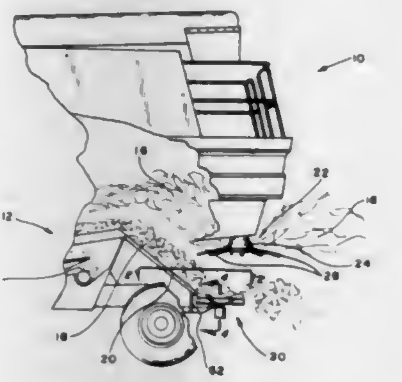
Filed Jan. 24, 1985, Ser. No. 694,621

Int. Cl.^{4} A01F *29/02*

U.S. Cl. 130—27 R **7 Claims**

1. Apparatus for chopping and spreading straw and chaff, said apparatus adapted to be mounted to a combine harvestor threshing machine having
a straw and chaff exit chute; and
straw distributing means positioned adjacent said chute for distributing straw and chaff exiting said chute,
said apparatus comprising:

(a) at least one rotatable slightly dish-shaped wheel positioned for rotation adjacent and generally below said straw distributing means and generally below said exit chute, said wheel having a concave surface and a convex surface, and including a disk concentrically mounted to said wheel convex surface;



(b) a variable speed motor for driving said rotatable wheel; and

(c) at least one pair of blades mounted on said wheel concave surface generally transverse to the axis of rotation of said rotatable wheel, said blades being diagonally opposed from one another.

4,617,943
CIGARETTE MANUFACTURING MACHINE

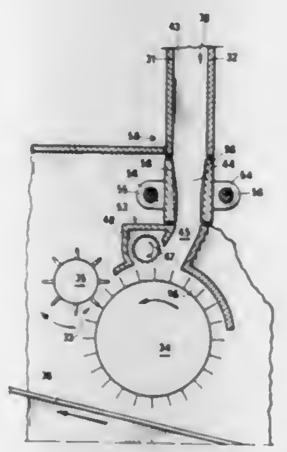
Riccardo Mattei, Bologna, Italy, assignor to G.D Societa' per Azioni, Bologna, Italy

Filed May 6, 1985, Ser. No. 730,990

Claims priority, application Italy, May 18, 1984, 3469 A/84

Int. Cl.⁴ A24C *5/02*

U.S. Cl. 131—109.3 **8 Claims**



1. Cigarette manufacturing machine (**1**) comprising a shredded tobacco distributor (**2**), in turn, comprising a drop-down duct (**30**) for the said tobacco, means (**23**) for feeding the said tobacco into an inlet on the said duct (**30**), and means for withdrawing the said tobacco from an outlet on the said duct (**30**), characterised by the fact that the said duct (**30**) presents an intermediate portion (**44**) tapered towards the said outlet and comprising at least one flat wall (**49** or **57** or **59,60**) oscillating crosswise in its plane in relation to the travelling direction of the said tobacco in the said duct (**30**).

4,617,944
SAFETY CIGARETTE HOLDER IN A STACKABLE ASHTRAY

Istvan Gasparics, 622 W. Pender St., Vancouver, British Columbia, Canada, V6B 1V8

Filed Jul. 23, 1984, Ser. No. 633,491

Int. Cl.⁴ A24F *19/14*

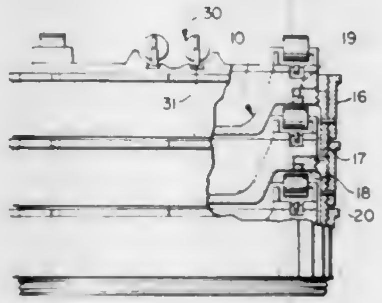
U.S. Cl. 131—235.1 **3 Claims**

1. The combination of an ashtray and a device for holding a cigarette on an ashtray, said device comprising two opposing, parallel, cylindrical cigarette-securing elements, the opposed surfaces of said cigarette-securing elements being spaced apart a distance less than the diameter of a cigarette, each said cigarette-securing element comprising:

(a) a supporting frame having a vertical member extending upwardly from and secured on said ashtray and a horizontal member extending from said vertical member;

(b) each said cylindrical element being a hollow cylinder of non-flammable material; and

(c) a means for supporting said cylinder substantially concentrically about said horizontal member comprising a piece of elastic material mounted within said hollow cylinder and mounted on said horizontal member, wherein at least two portions of said piece of elastic material bear against the interior surface of said hollow cylinder;



whereby when a cigarette is aligned horizontally and parallel to said cigarette-securing elements and is pressed between said hollow cylinders, said hollow cylinders bear against the sides of said cigarette and are displaced outwardly, deforming said elastic pieces, until the widest part of said cigarette passes below the narrowest point between said hollow cylinders, and said elastic pieces cause said hollow cylinders to return inwardly and bear downwardly on said cigarette, thereby securing said cigarette on said ashtray.

4,617,945
PROCESS FOR FLAVORING TOBACCO

Cornelis Vos, and Jan Brasser, both of Huizen, Netherlands, assignors to Naarden International N.V., Naarden-Bussum, Netherlands

Filed Jun. 24, 1983, Ser. No. 507,787

Claims priority, application Netherlands, Oct. 14, 1982, 8203963

Int. Cl.⁴ A24B *15/00*

U.S. Cl. 131—310 **16 Claims**

1. A process for flavoring dry cut tobacco by means of at least one micro-encapsulated flavor, comprising the steps of separately mixing the tobacco with the micro-encapsulated flavor and with an aqueous adhesive solution in an amount sufficient to provide adhesion of the micro-encapsulated flavor to the tobacco and containing such quantity of water that said quantity may at least be substantially absorbed by the tobacco, and continuing the mixing operation till a free-flowing mixture is obtained.

4,617,946
TOBACCO SMOKE MOUTHPIECE AND METHOD OF MAKING SAME

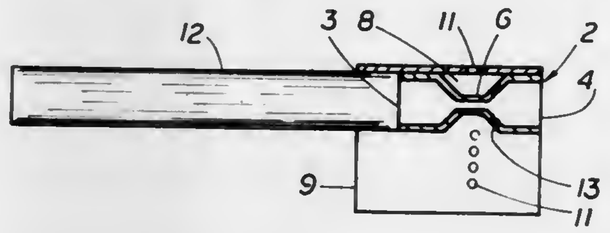
Charles H. Keith, Charlotte, N.C., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Nov. 9, 1984, Ser. No. 670,109

Int. Cl.⁴ A24B *3/04*

U.S. Cl. 131—336 **10 Claims**

1. An improved tobacco smoke mouthpiece comprising: a longitudinally extending assembly of structurally sturdy forming material shaped and disposed to include spaced, opposed, axially aligned open-ended tobacco smoke inlet and outlet chambers and at least on mixing chamber disposed therebetween with said opposed inlet and outlet chambers being communicably connected to each other through axially disposed capillary passage means; an enveloping tipping material surrounding said chambers; and aperture means in said tipping material and said chamber forming material to allow ready passage of smoke diluting air through said tipping material into said mixing chamber and through at least one of said opposed communicably connected chambers.



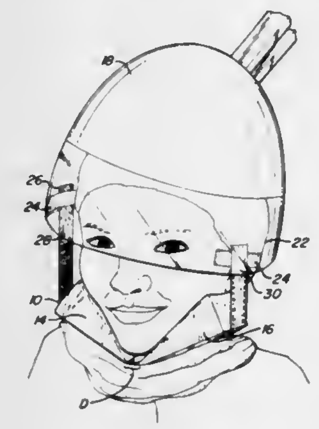
4,617,947
CHIN SUPPORT BELT

Mary A. Clarke, 28887 Ave 15 1/2, Madera, Calif. 93638

Filed Sep. 12, 1984, Ser. No. 650,281

Int. Cl.⁴ A45D *44/00*

U.S. Cl. 132—1 R **9 Claims**



1. An apparatus for supporting the chin of a subject of the type to be suspended from a unit located above the subject's chin, said apparatus comprising:

an elongated member comprised of a substantially flexible material having a pair of spaced apart tapered protrusions, each of said protrusions having a narrow end and a wide end and arranged along said elongated member such that the narrow ends are proximal to one another and separated by a distance substantially corresponding to the width of the subject's chin; and

means for suspending said elongated member from the unit.

4,617,948
MAKE-UP UNIT, FOR EYELASHES IN PARTICULAR

Jean-Louis H. Guéret, Paris, France, assignor to L'Oreal, Paris, France

Filed Jul. 6, 1983, Ser. No. 511,202

Claims priority, application France, Jul. 7, 1982, 8211922; Jun. 27, 1983, 8310565

Int. Cl.⁴ A45D *40/30*

U.S. Cl. 132—88.5 **7 Claims**

1. A make-up unit comprising

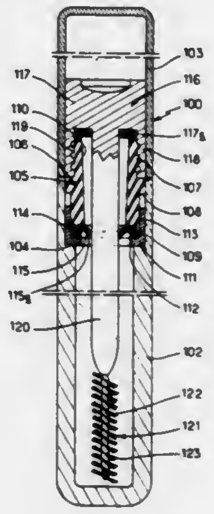
(a) a reservoir for a fluid or pasty make-up product, said reservoir comprising a container having an inner wall and a step formed integrally on said inner wall with a retainer ring seated on said step, said retainer ring having a wall portion engaging the inner wall of said container, said inner wall above said step having a thickness smaller than the thickness of the remainder of said inner wall;

(b) a detachable cap fitted on said reservoir;

(c) a stem integral with said cap and disposed substantially along the axis of said cap and projecting in relation to the said cap;

(d) a brush carried by the step in the extension of the stem, said brush comprising an axial core formed from a metal wire folded back on itself, the resulting doubled wire being twisted so as to provide a helical arrangement of substantially radial bristles, the diameter of said brush being about 3 mm, said metal wire having a diameter of from about 0.40 mm to about 0.45 mm and said stem having a diameter of about 3 mm; and

(e) a wiper device having a lip bounding a substantially circular opening to receive said brush as it is inserted into said reservoir, the diameter of said opening being from about 1.5 mm to about 2.1 mm, said wiper device being disposed between the reservoir and a wiper holder fixed to said reservoir, said wiper holder engaging a portion of said retainer ring and having an insertion duct having an upwardly flaring frustoconical shape whose longitudinal axis is substantially identical with the axis of said circular opening through which said brush penetrates during insertion into said reservoir, the diameter of said insertion duct in the zone adjacent to said wiper device being from about 3.2 mm to about 4 mm, said wiper device being made of an elastomeric material and having said lip pliable and elastically deformable to define said circular opening with an external diameter which is clearly smaller than the outer diameter of said brush and is slightly greater than the diameter of the core of said brush.



4,617,949
SCALP APPLICATOR

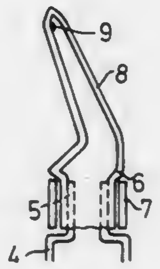
Ernest Hofmann-Igl, Kampen auf Sylt, Fed. Rep. of Germany, assignor to Basotherm GmbH, Biberach an der Riss, Fed. Rep. of Germany

Continuation of Ser. No. 344,555, Feb. 1, 1982, abandoned. This application Oct. 11, 1984, Ser. No. 659,653

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1981, 3105802

Int. Cl.⁴ A45D *40/30*

U.S. Cl. 132—88.5 **5 Claims**



2. A scalp applicator means for applying liquid to the scalp comprising a hollow body and an applicator means, wherein

said applicator means comprises two forked prongs having at least at their ends a cross-section comprising a square with rounded edges, each of which prongs has at its end at least one outlet or spray opening; the outlets or spray openings on each prong are positioned laterally on the sides of the prongs away from each other and are arranged in an edge of each prong near the scalp on a diagonal basis in the rounded portion of the edge; and the prongs terminate in a flat surface in order to form skids, whereby the location of the openings precludes clogging of the openings by flakes of skin from the scalp.

4,617,950

GINGIVAL RETRACTION CORD WITH WET, DRIP-FREE ASTRINGENT

Don D. Porteous, Los Angeles, and Paul M. Wittrock, Van Nuys, both of Calif., assignors to Van R Dental Products, Inc., Los Angeles, Calif.

Filed Apr. 22, 1985, Ser. No. 725,489

Int. Cl.^{4} A61C *15/00*

U.S. Cl. 132—91 **34 Claims**

1. Drip-free, astringent gingival retraction cord providing immediately available astringent effect in the sulcus without requirement of solvation by sulcus liquids, the cord comprising a suitably dimensioned cord structure, and a bodied astringent salt solution atop the cord structure.

4,617,951

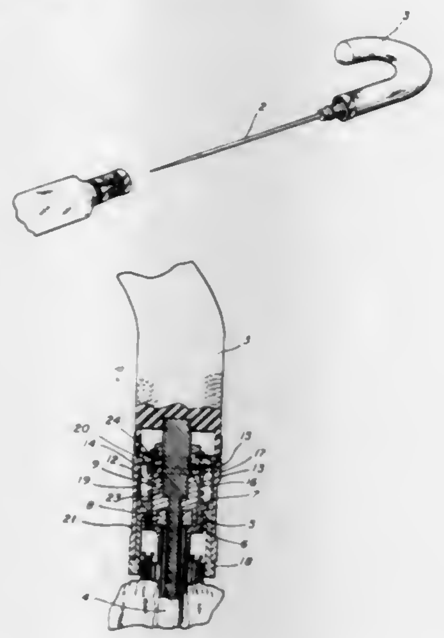
WEAPON CONCEALMENT AND LOCKING MEANS

William C. Adams, Lithonia, and William J. Taylor, Decatur, both of Ga., assignors to Atlanta Cutlery Corporation, Conyers, Ga.

Filed Aug. 12, 1985, Ser. No. 764,387

Int. Cl.^{4} A45B *3/14, 9/02, 23/00*

U.S. Cl. 135—66 **8 Claims**



1. Weapon concealment and locking means comprising an elongated tube, a weapon disposed in said elongated tube a ferrule affixed to one end of said elongated tube, said ferrule comprising a first locking means, said first locking means being spring biased and comprising at least one pin receiving slot formed in said ferrule, said spring biased locking means further comprising a pin disposed in said slot, an abutment surface formed on said ferrule and being spaced from said slot and disposed perpendicular to the axis of said elongated tube, a spring disposed in enveloping relationship around said ferrule and between said abutment surface and said pin, a washer disposed between said pin and the adjacent end of said spring, a sleeve coaxially disposed with respect to said elongated tube and in substantially enveloping relationship with respect to said ferrule and said spring, a collar formed on the upper edge of said sleeve and extending inwardly therefrom, the lower surface of said collar being in face contacting relation with respect to the upper surface of said washer during compression of said spring, and a second locking means being formed on said weapon and being adapted to cooperate with said first locking means for releasably retaining said weapon within said elongated tube.

4,617,952

SWITCHING VALVE AND AN ELECTRO-PNEUMATIC PRESSURE CONVERTER UTILIZING THE SAME

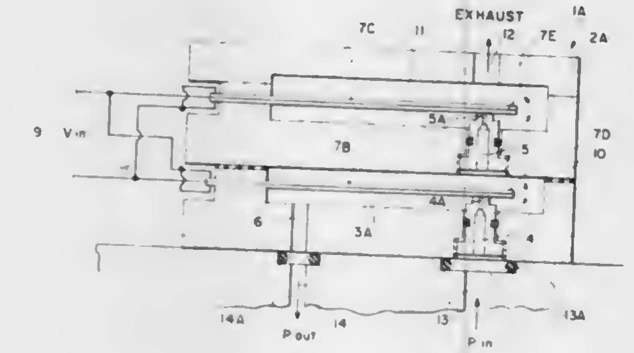
Masatoshi Fujiwara, Yokosuka, and Masato Kuroda, Fujisawa, both of Japan, assignors to Yamatake-Honeywell Co. Limited, Tokyo, Japan

Filed Jul. 18, 1985, Ser. No. 756,198

Claims priority, application Japan, Jul. 31, 1984, 59-116031[U]; May 10, 1985, 60-98063

Int. Cl.^{4} F16K *31/02*

U.S. Cl. 137—85 **5 Claims**



1. An electric-pressure converter comprising
a sealed chamber,
a switching valve having at least one plate-shaped electric current deformable element mean having at least one free end which is supported in said sealed chamber,
at least two pressure injection nozzles arranged to be opened or closed due to a position of said free end of said element means, and
an output passage communicating outwardly from said sealed chamber,
means for converting the air pressure signal routed from said output passage into a regulated air pressure signal,
a pressure sensor for converting the pressure signal from said means for converting into an electrical signal,
pulse-width modulating means for providing a pulse-width modulating signal which corresponds to the deviation between the electrical signal from said pressure sensor and
an external electric reference signal for energizing said plate-shaped electric current deformable element means in said switching valve.

4,617,953

FLUID FLOW CONTROL SYSTEM

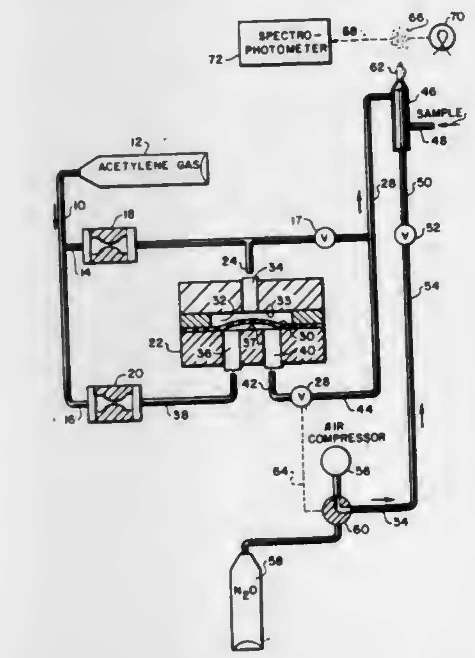
Michael W. Kendall-Tobias, 3 Greenfield Ave., Danbury, Conn. 06810

Filed Nov. 13, 1984, Ser. No. 670,714

Int. Cl.^{4} F16K *7/12*

U.S. Cl. 137—110 **11 Claims**

1. A fluid flow control system comprising a common source connection for a fluid under pressure, a master fluid flow path connected to receive fluid from said common source connection, at least one slave fluid flow path connected to receive fluid from said common source connection, a first valve means connected in said master path for controlling the rate of fluid flow therein, means operable to maintain the rate of fluid flow in said slave path at a predetermined relationship to the rate of flow in said master path comprising a first orifice device connected in said master path between said common source connection and said first valve means, said slave path including a pressure responsive fluid flow modulating means connected in series therein and having a control connection to said master path between said first orifice device and said first valve means, a second orifice device connected in said slave path between said common source connection and said flow modulating means, said first and second orifice devices each being operable to provide pressure drops in response to fluid flow as measures of fluid flow through said master and slave paths respectively, said flow modulating means being operable in response to the fluid pressure in said master path as reduced by said first orifice device as detected through said control connection and operable in response to the fluid pressure in said slave path as reduced by said second orifice device to control the fluid flow through said slave path and the resultant pressure drop through said second orifice device to maintain a predetermined relationship of the fluid flow through said slave path to the fluid flow through said master path by maintenance of a predetermined relationship between the fluid pressures in said master and slave paths as detected at said modulating valve;



- said flow modulating means being operable to maintain a predetermined relationship between said master and slave path fluid pressures which consists of a substantially constant ratio between said pressures, the constant ratio being one to one;
- said first and second orifice devices having substantially equal sized orifices to provide for substantially equal pressure drops in response to equal fluid flows;
- the downstream end of said master path beyond said first valve means being connected in common to the downstream end of said slave path beyond said flow modulating means to a common delivery connection, and a second valve means connected in said slave path which is operable to shut off all flow from said slave path when slave path flow is not required.

4,617,954

VALVE ASSEMBLIES

Nigel J. Petts, Chorley, and John Marsh, Penwortham, both of England, assignors to Dobson Park Industries Plc., Nottingham, England

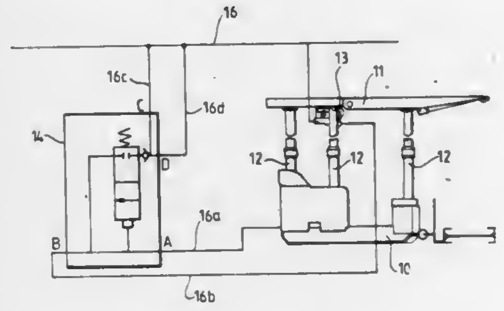
Filed Mar. 13, 1984, Ser. No. 589,488

Claims priority, application United Kingdom, Mar. 26, 1983, 8308382

Int. Cl.^{4} F15B *13/042*

U.S. Cl. 137—110 **14 Claims**

1. A valve assembly for use with a hydraulic mine roof support, said valve assembly comprising a generally rectangular valve body, said valve body including:
first and second side faces, and first and second ends;
a main supply passage extending through said valve body in a straight line from said first end of said valve body to said second end of said valve body, parallel to said first and second side faces;
an outlet end of said main supply passage, said outlet end being connected in use to a hydraulic mine roof support.
an inlet end of said main supply passage, said inlet end being connected in use to a main control valve for supplying hydraulic fluid under pressure to said hydraulic mine roof support;
a bypass supply passage having an inlet portion extending parallel to said main supply passage, said inlet portion being connected in use to a source of hydraulic fluid under pressure, and an outlet portion extending at right angles to said inlet portion, connecting said inlet portion to said main supply passage intermediate the ends thereof;
a non-return valve contained in said inlet portion of said bypass supply passage;



a bore extending from said first side face of said valve body, parallel to said outlet portion of said bypass supply passage, intersecting said inlet portion of said bypass supply passage and communicating with said main supply passage;
pressure sensitive valve means mounted in said bore and defining a valve chamber positioned where said bore intersects said inlet portion of said bypass supply passage;
a pressure sensitive valve member working in said valve chamber having a face exposed to the pressure in said main supply passage, so that when the pressure in the main supply passage rises above a pre-determined limit, the pressure acting on said face moves said valve member in said valve chamber, connecting said inlet portion of said bypass supply passage to said outlet portion of said supply passage, to permit hydraulic fluid under pressure to flow through said pressure sensitive valve means to said main supply passage.

4,617,955

STOP OR SWITCH VALVE FOR FLUIDS

Oluf Melgaard, Odder, Denmark, assignor to BM Digiflow A/S, Odder, Denmark

PCT No. PCT/DK83/00111, § 371 Date Jul. 30, 1984, § 102(e) Date Jul. 30, 1984, PCT Pub. No. WO84/02168, PCT Pub. Date Jun. 7, 1984

PCT Filed Nov. 28, 1983, Ser. No. 638,486

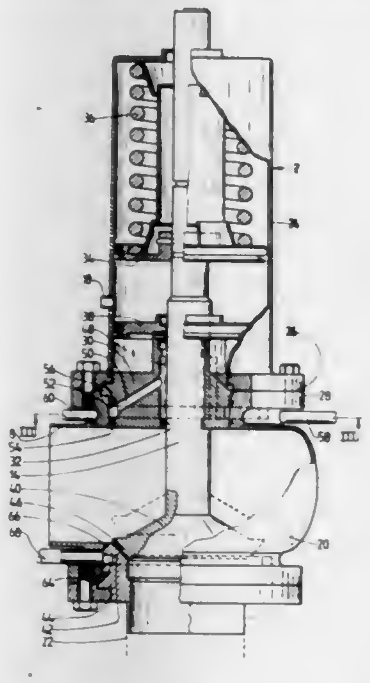
Claims priority, application Denmark, Nov. 29, 1982, 5294/82

Int. Cl.^{4} B08B *9/02;* **F16K** *51/00, 1/44*

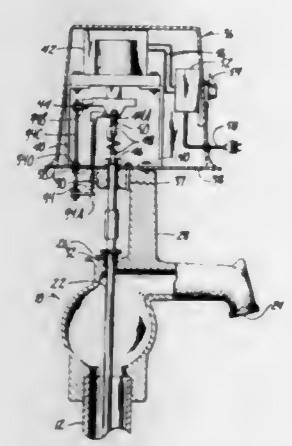
U.S. Cl. 137—240 **8 Claims**

1. A stop or switch valve for fluids, the valve comprising a valve chamber including an inlet, outlet or throughlet chamber having in a wall portion thereof, a valve seat opening communicating with a branch conduit, and a valve head for opening and closing said valve seat opening by a respective displacement movement away from or towards the valve seat opening, the valve head being connected with a guiding or driving rod member axially reciprocated through a sealing opening in an opposite wall portion of said valve chamber, such that the rod member traverses the valve chamber and is thus exposed to the fluid therein, characterized in that a stationary bushing is arranged for closing and sealing said chamber and surrounds the rod member, the stationary bushing having an interior annular recess opening inwardly towards an outer surface of the rod member and communicating with channel means for supplying

the recess with a medium such as a cleansing or sterilizing medium for cleaning the outer surface of the rod member in all positions of the valve head to prevent the fluid in said chamber from becoming contaminated as a result of the rod member reciprocating back and forth into said chamber, said annular recess having an axial length at least roughly corresponding to the valve head displacement between open and closed positions thereof.



4,617,956
CONTROL MEANS FOR GROUND HYDRANTS
Otto H. Sievers, 811 E. Milwaukee, Storm Lake, Iowa 50588
Continuation-in-part of Ser. No. 531,480, Sep. 12, 1983, abandoned. This application Dec. 31, 1985, Ser. No. 815,379
Int. Cl.⁴ F16K *31/02;* **E03B** *9/04*
U.S. Cl. 137—272 **3 Claims**



1. In combination with a freezeless ground hydrant having an elongated vertical housing, a valve means at the bottom of said housing adapted to be in communication with a source of water under pressure, a drain means adjacent said valve means so that water in said hydrant above said valve means will drain from said housing when said valve means is in a closed position, the bottom of said housing normally dwelling in the ground below the frost level, and the upper end of said housing dwelling above the ground level, a water exit port at the upper end of said housing in communication with said valve means to permit the flow of water through and from said hydrant when said valve means is open, an actuating rod attached to said valve means and extending upwardly through said housing to the upper end thereof, the invention comprising,

an electrical solenoid means on the upper end of said housing adapted to be connected to a source of electrical energy, said solenoid means having a moveable plunger,

linkage means connecting said moveable plunger and said actuating rod to raise said actuating rod to open said valve means when said solenoid means is electrically energized,

an electrical timer being electrically imposed between said solenoid means and said source of electrical energy so that said solenoid means can be periodically and intermittently energized,

a spring means having upper and lower ends with its upper end being directly secured to said plunger; said spring means extending downwardly from said plunger in a direction parallel to said actuating rod and moveably extending through said housing with the lower end thereof dwelling outside said housing.

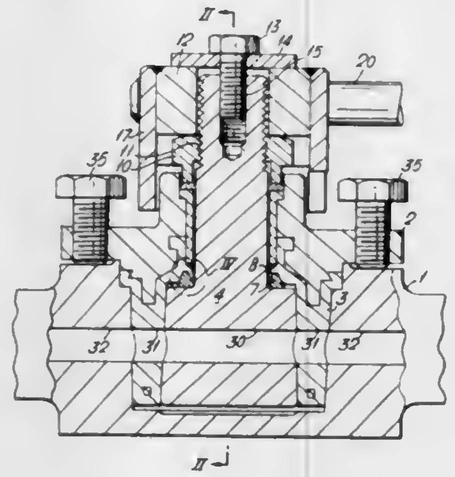
a threaded rod adjustably mounted on said housing and being positioned adjacent to and parallel to said spring means, said threaded rod having upper and lower ends,

a horizontal bar adjustably secured to the lower end of said threaded rod and moveably along the axis of said threaded rod,

the lower end of said spring means being directly connected to said horizontal bar to permit a variable tension in the spring means upon the adjustment of said horizontal bar, and

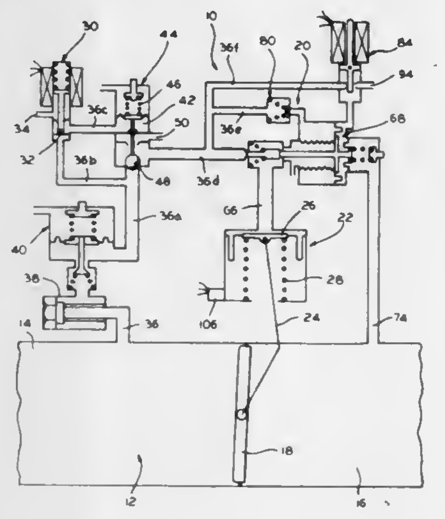
said spring means adapted to lower said actuating rod to close said valve means when said solenoid means is not electrically energized.

4,617,957
ROTARY PLUG VALVE
Michael J. Sandling, Barnstaple, England, assignor to Xomox Corporation, Cincinnati, Ohio
Filed Jul. 25, 1983, Ser. No. 516,977
Int. Cl.⁴ F16K *43/00, 29/00*
U.S. Cl. 137—315 **13 Claims**



9. In a rotary plug valve comprising a housing having a body provided with an inlet port and an outlet port respectively for the inlet and outlet of fluid and defining therein a frusto-conical chamber having a tapered side wall through which said ports communicate; a liner within said chamber, said liner being formed of compressible material, said liner having apertures therethrough aligned with said ports; a frusto-conical plug sealingly received within said liner and having a flow passage therethrough; and means for rotati,ng said plug from exteriorly of said housing between a valve-open position and a valve-closed position in which, respectively, said passage provides communication between said apertures aligned with said ports and said plug blocks said communication; the improvement wherein said frusto-conical plug has a tapered side wall which is tapered in a direction opposite to the direction of taper of said tapered side wall of said chamber, means is provided for moving said plug axially relative to said body to control the degree of compression of said liner between said tapered side wall of said plug and said tapered side wall of said chamber, said housing comprises a removable cover portion having an opening therethrough, said plug has an extension portion extending through said opening and comprises said means for rotating said plug, an annular space is provided between said plug extension portion and said cover portion, an abutment is provided on said housing cover portion, a thrust ring is received within said annular space, and said means for moving said plug axially comprises a nut threaded to said plug extension and engageable via said thrust ring with said abutment, whereby upon rotation of said nut, said thrust ring is forced against said abutment drawing said plug linearly to thereby compress said liner.

4,617,958
CONTROL VALVE
William E. Seidel, Rockford; Albert L. Markunas, Roscoe, and Thomas A. Nelson, Rockford, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.
Filed Jul. 25, 1985, Ser. No. 758,760
Int. Cl.⁴ G05D *16/00*
U.S. Cl. 137—492.5 **20 Claims**



1. A control valve for supplying a fluid under pressure to a fluid operated system, comprising:

a fluid passageway including an inlet communicating with a source of said fluid and an outlet communicating with said system;

valve means disposed in said fluid passageway between said inlet and outlet, said valve means being movable between open and closed positions, said valve means being in a closed position prior to start-up of said system;

a pilot operated valve member responsive to fluid pressure on said inlet and outlet sides of said valve means; and

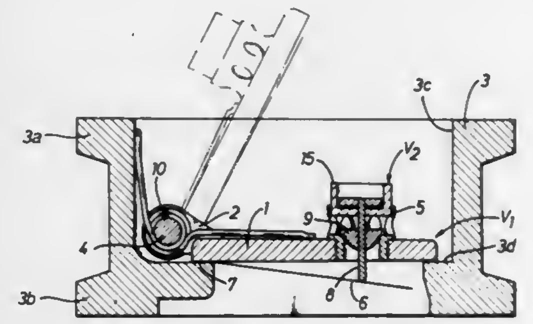
actuator means adapted for communication with said fluid passageway on said inlet side of said valve means through said pilot operated valve member, said actuator means being operable to move said valve means between said closed position and said open position, said actuator means moving said valve means dependent upon said fluid pressure on said inlet and outlet sides of said valve means;

said pilot operated valve member including means for limiting the rate of increase in fluid pressure toward an operating pressue on said outlet side of said valve means during start-up of said system, means for adjusting said pressure on said outlet side of said valve means to change the speed of said system during operation thereof, and means for limiting said fluid pressure on said outlet side of said valve means to said operating pressure during operation of said system;

said pilot operated valve member including an axially movable poppet, said fluid pressure on said inlet side of said valve means biasing said poppet from a closed position to an open position, said pilot operated valve member also including a diaphragm assembly axially spaced from said poppet;

said diaphragm assembly including at least one chamber in communication with said fluid pressure on said outlet side of said valve means, said chamber being arranged such that said fluid pressure on said outlet side of said valve means biases said poppet toward said closed position, said diaphragm assembly and chamber comprising at least a portion of said pressure limiting means.

4,617,959
CHECK VALVE ASSEMBLY FOR PIPELINE SYSTEM
Yutaka Yamada, 42, 2-chome, Komenoza-cho, Tsushima-shi, Aichi-ken, Japan, assignor to Nippondenso Co., Ltd., Kariya and Yutaka Yamada, Tsushima, both of, Japan
Filed Oct. 4, 1985, Ser. No. 783,993
Int. Cl.⁴ F16K *15/03*
U.S. Cl. 137—512.1 **4 Claims**



1. A check valve assembly of the quick shutoff type equipped with an auxiliary valve of the slow closure type,

wherein said check valve assembly comprises a valve housing formed therein with a primary cylindrical bore; a primary valve plate arranged within said valve housing to open and close said primary cylindrical bore; and a swingable pressure receiving plate secured at one end thereof to said primary valve plate to be applied with a hydraulic pressure at the upstream of said primary valve plate; and

wherein said auxiliary valve comprises a cylindrical valve casing mounted on a portion of said primary valve plate to be located at the downstream of said primary valve plate, said valve casing being formed therein with a secondary cylindrical bore and formed at the peripheral wall thereof with a radial port which is arranged at the downstream of said primary valve plate to permit the flow of hydraulic fluid passing therethrough; a cup-shaped cylinder coupled with one end of said valve casing; a piston slidably disposed within said cup-shaped cylinder to form a chamber in said cylinder; flow restriction means arranged to provide a fluid communication between said chamber and the interior of said valve casing; a valve element slidably disposed within said valve casing to control the quantity of hydraulic fluid flowing through said secondary cylindrical bore and said radial port; and a valve rod arranged to interconnect said piston and said valve element and being engaged at one end thereof with said pressure receiving plate.

4,617,960
VERIFICATION OF A SURFACE CONTROLLED SUBSURFACE ACTUATING DEVICE
Henry S. More, Los Altos, Calif., assignor to Develco, Inc., Sunnyvale, Calif.
Filed May 3, 1985, Ser. No. 730,705
Int. Cl.⁴ F16K *37/00*
U.S. Cl. 137—554 **9 Claims**

1. A subsurface actuator verification system, comprising:

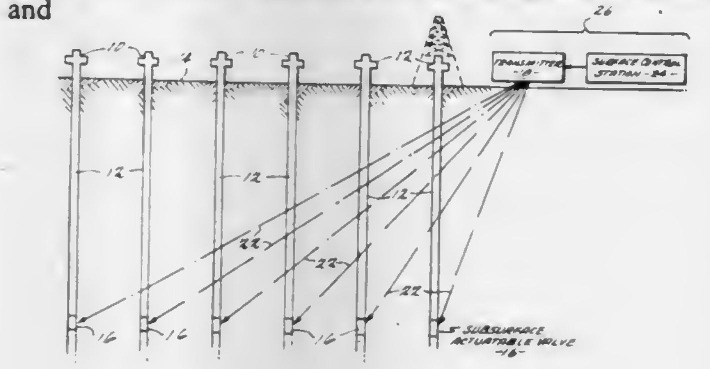
an actuating device adapted for subsurface installation;

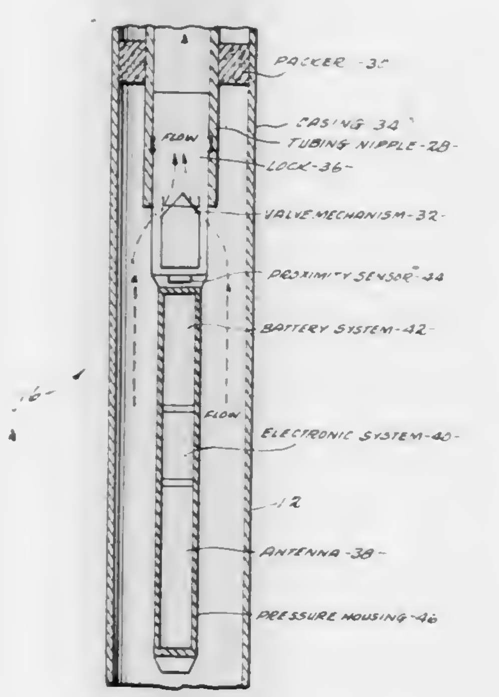
means for transmitting a signal from the earth's surface for controlling an operational state of said device when it is installed subsurface;

means, adapted to be installed proximate said device, for receiving said signal transmitted from the earth's surface and controlling an operational state of said subsurface-installed device in accordance therewith;

means for detecting an actual operational state of said device and generating state data indicative thereof;

means, in proximity to said device, for storing said state data; and





means for reading out said data from said storing means upon removal of said device from its subsurface installation enabling a comparison of data from said storage means with information indicative of said signal previously transmitted from the earth's surface.

4,617,961
PILOT-OPERATED SOLENOID VALVE APPARATUS

Wolfgang Lichtenberg, Hanover, Fed. Rep. of Germany, assignor to WABCO Westinghouse Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Dec. 7, 1984, Ser. No. 679,338

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1983, 3345697

Int. Cl.^{4} F15B *13/043*

U.S. Cl. 137—596.16 **11 Claims**

1. A fluid-pressure-operated, pilot-controlled solenoid valve apparatus for regulating the flow of fluid pressure in a fluid pressure consumer, said solenoid valve apparatus comprising:

(a) a valve housing having formed therein an entrance chamber and an exit chamber in fluid communication with an outlet port;

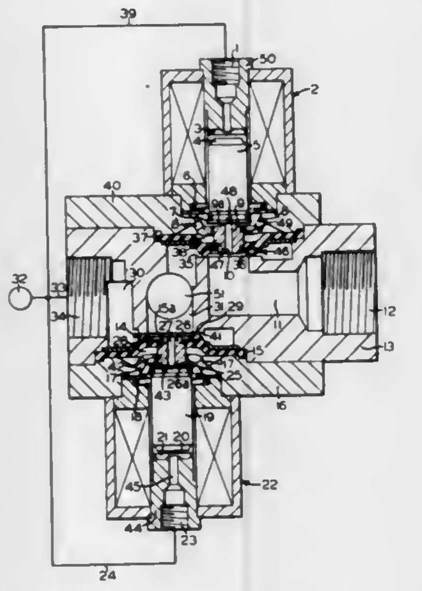
(b) inlet valve means disposed within said valve housing intermediate said entrance chamber and said exit chamber for allowing fluid pressure to flow from said entrance chamber to said exit chamber when in an open condition, said inlet valve means including a diaphragm element movable between such open condition and a closed condition;

(c) an annular sysmmetric body disposed on said diaphram element having a longitudinal bore formed therein;

(d) an inlet control valve having a lower valve seat formed by a portion of said annular sysmmetric body and a control valve body which, when in contact with said lower valve seat, blocks said longitudinal bore and closes said inlet control valve;

(e) a control chamber formed in said valve housing adjacent one side of said diaphram element, said control chamber being in fluid communication with said exit chamber when said inlet control valve is in an opened condition;

(f) pilot valve means disposed in said valve housing adjacent said inlet control valve for opening said inlet control valve when selcctively activated, said pilot valve means including a spring-biased pilot valve body which is urged toward said control chamber when said pilot valve means is deactivated thereby closing said inlet control valve, said control valve body and said pilot valve body being formed on opposite ends of a valve anchor member in such a manner that said inlet control valve and said pilot valve means are simultaneously operated to alternate open and closed positions thereby, such open position of said pilot valve means being effective such that, fluid pressure substantially equivalent in pressure value to that present in said entrance chamber, flows around said valve anchor member and into said control chamber; and



(g) a discharge chamber formed in said valve housing adjacent said exit chamber and an outlet valve means formed in said valve housing intermediate said exit chamber and said discharge chamber for exhausting, when in an open condition, fluid pressure present in said exit chamber, said outlet valve means including a second diaphragm element movable between an open and a closed position.

4,617,962
HYDRAULIC DEVICE

Rudolf Brunner, Baldham, Fed. Rep. of Germany, assignor to Heilmeier & Weinlein Fabrik fur Oel-Hydraulik GmbH & Co., KG, Munich, Fed. Rep. of Germany

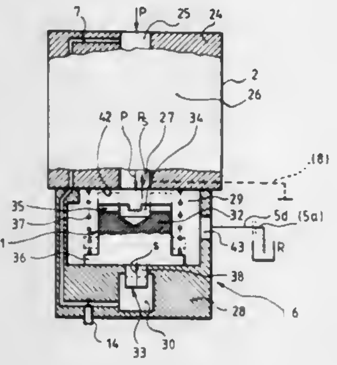
Filed Sep. 12, 1984, Ser. No. 649,684

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1983, 3333967

Int. Cl.^{4} F15B *21/04;* **F16K** *47/02*

U.S. Cl. 137—613 **18 Claims**

1. A hydraulic device comprising at least one adjustable working control or regulating member (**2**) which is arranged between a high pressure source (**P**) and an outflow path (**43**) and is movable into at least one position in which a jet is formed via a passage intersecting said outflow path, characterized in that at least one jet disturbing means (**6**) having a jet disturbing element (**31**) is arranged adjacent the intersection of said passage and said outflow path, said jet disturbing element being movable between a ready position free of the intersection into a disturbing position at the intersection of said passage and said outflow path, means biasing said element to its ready position so that said passage is normally undisturbed by the influence of said element, said jet disturbing element having a jet disturbing face (**32**) being movable with the jet disturbing element into the jet, means for applying an adjusting force to the element to displace the element from ready position which displacement in distance depends on and varies with the pressure of said high pressure source, means constantly maintaining an open connection between said passage and said outflow path regardless of the distance the adjusting force displaces the element from its ready position, biasing means returning said element to said ready position as soon as the pressure from said high pressure source approximately has dropped to the pressure in said outflow path , and further characterized in that in said outflow path (R) behind said jet disturbing means (**6**) at least one further similar jet disturbing means (**6′, 6″, 6‴**) is arranged, the jet disturbing element thereof being adjustable from its ready position in dependence of the pressure before the preceding jet disturbing means (**6, 6′, 6″**).



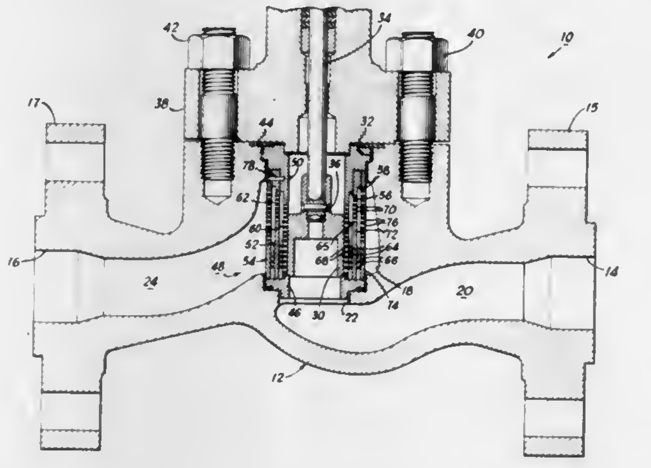
4,617,963
CONTROL VALVE WITH ANTICAVITATION TRIM

James A. Stares, Norton, Mass., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Continuation of Ser. No. 507,064, Jun. 23, 1983, abandoned. This application Jul. 18, 1985, Ser. No. 756,567

Int. Cl.^{4} F16K *47/08;* **F15D** *1/00*

U.S. Cl. 137—625.3 **17 Claims**



1. A valve comprising:
a. a valve body with a fluid inlet and a fluid outlet,
b. a valve seat ring positioned in said valve body between said fluid inlet and said fluid outlet,
c. a valve plug reciprocally mounted in said valve body and engaging said valve seat ring in a valve closed mode,
d. a first cage member positioned in said valve body having two ends, a plurality of apertures, and a plurality of radially extending fins disposed over only one end of said first cage,
e. a second cage member positioned in said valve body adjacent said first cage member and having two ends, a plurality of apertures adjacent only each end of said second cage member, and a plurality of radially extending fins over only one portion of the length of said second cage member,
f. a third cage member positioned in said valve body adjacent said second cage member and having two ends, and a plurality of apertures adjacent only one end of said third cage member, and
g. said cage members being positioned in said valve body to define substantially continuous axial, circumferential and radial flow passages between adjacent cage members which flow passages vary with the position of said plug from its closed mode.

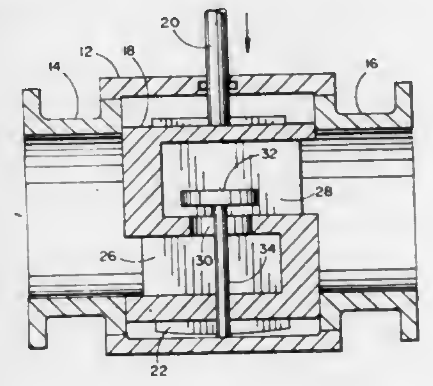
4,617,964
TIGHT SHUT-OFF VALVE WITH FLOW CONTROL

Gordon M. Smith, La Habra Heights, Calif., assignor to Johnston Pump/General Valve, Inc., Glendora, Calif.

Filed Oct. 28, 1985, Ser. No. 791,748

Int. Cl.^{4} F16K *5/10*

U.S. Cl. 137—625.3 **6 Claims**



1. A seat and reseat valve of the type including a valve body having a rotatable plug for aligning a flow passge in the plug with an inlet and outlet when the valve is opened and for blocking the inlet and outlet with retractable slips connected to the plug when the valve is closed; the valve comprising:
an inlet channel and an outlet channel in said plug, said channels being separated by a flow control passage; and
a flow control element fixed relative to said valve body and positioned adjacent said flow control passage whereby to control flow through said valve in response to movement of said plug.

4,617,965
CONTROL INSERT FOR SANITARY MIXER VALVES

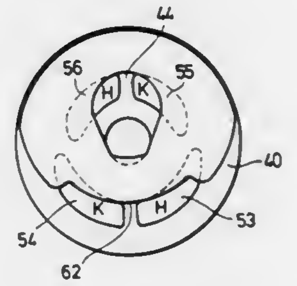
Werner Lorch, Schramberg, Fed. Rep. of Germany, assignor to Hans Grohe GmbH & Co. KG, Fed. Rep. of Germany

Filed May 6, 1985, Ser. No. 730,804

Claims priority, application Fed. Rep. of Germany, May 23, 1984, 3419208

Int. Cl.^{4} F16K *11/078*

U.S. Cl. 137—625.17 **19 Claims**



19. A sanitary mixer valve with a fixed control surface connectable to water inlet ports of the valve, the fixed control surface having at least one opening zone for cold water and at least one opening zone for hot water, a control surface movable with respect to said fixed control surface with two degrees

of freedom, a mixer lever attached to the movable control surface for controlling quantity and mixing ratio between the opening zones and at least one out port as a function of position, and wherein:

the fixed and movable control surfaces define at least two separable mechanically coupled controlled mixing flow paths.

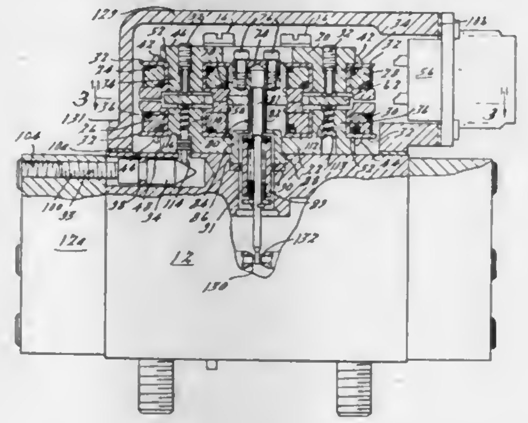
4,617,966
ELECTROMAGNETIC POSITIONER FOR A SERVOVALVE OR THE LIKE

Robert D. Nicholson, Birmingham, Mich., assignor to Bardle Servovalve Co., Birmingham, Mich.

Division of Ser. No. 557,360, Dec. 1, 1983, Pat. No. 4,560,969. This application Jul. 15, 1985, Ser. No. 755,154

Int. Cl.⁴ F15B *13/043*

U.S. Cl. 137—625.62 **3 Claims**



1. An electromagnetic positioner and pilot valve assembly, said positioner having electromagnetic means selectively energizable in response to an incoming signal, a magnetizable armature pivotally movable in response to an incoming signal to a position corresponding to the direction and strength of said signal,

and a drive arm pivotally movable about a horizontal axis in response to and in correspondence with movement of said armature,

said pilot valve assembly including a valve body and movable hydraulic flow control means mounted therein responsive to movement of said drive arm to mimic movement thereof and assume under null conditions a position in which said rate and direction of flow of hydraulic fluid is coincident with the position assumed by said armature in response to a said incoming signal, and null adjusting means positioned in part in said valve body and in part within said positioner, and operable to adjust the position of said armature to increase or decrease said flow rate and bring it into coincidence with the direction and strength of said signal, said null adjusting means includes a driving element movably mounted within the valve body, a driven element movably mounted in the positioner, said driven element comprising a push-rod which is unsupported within said positioner body except when engaged by said driving element and means including an element projectable into holding engagement with said push-rod prior to assembly of the positioner and valve bodies for preventing escape of said push-rod until said assembly has been completed.

4,617,967
TWO-STAGE HYDRAULIC VALVES

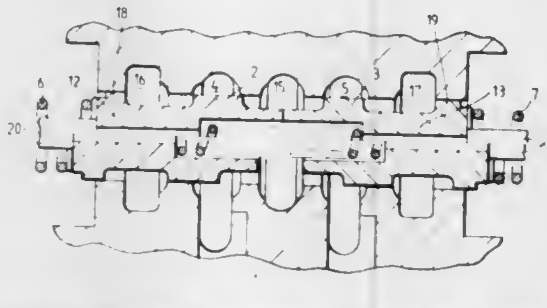
John I. Read, Chichester, and Raymond T. Roderick, Portsmouth, both of England, assignors to Vickers, Incorporated, Troy, Mich.

Filed Dec. 13, 1983, Ser. No. 561,031

Claims priority, application United Kingdom, Dec. 13, 1982, 8235516

Int. Cl.⁴ F15B *13/043*

U.S. Cl. 137—625.64 **4 Claims**



1. Electrically operated two-stage hydraulic spool valve comprising a main stage having a main spool, centring springs acting on said main spool, a pilot stage having a pilot spool, and at least one solenoid acting on an end of said pilot spool to control the operating position of the latter, said pilot stage comprising a tank port, two supply ports and two service ports, said tank port being disposed between said service ports and said service ports being disposed between said supply ports, said pilot spool comprising two parts, a spring interposed between said parts and urging said two parts apart in a direction axially of said pilot spool so that on deenergisation of the solenoid, said parts of said pilot spool separate under the action of said spring to provide an interconnection between said pilot service ports and said tank port.

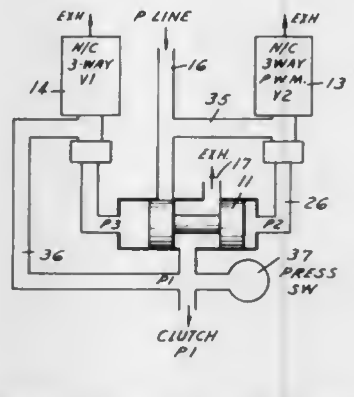
4,617,968
ELECTROHYDRAULIC CONTROL OF A SPOOL VALVE FOR ENERGIZING A HEAVY DUTY AUTOMATIC TRANSMISSION CLUTCH

John Hendrixon, Shelby, Mich., assignor to Sealed Power Corporation, Muskegon, Mich.

Filed Apr. 4, 1985, Ser. No. 719,898

Int. Cl.⁴ F15B *13/043*

U.S. Cl. 137—625.64 **6 Claims**



1. An electrohydraulic control system comprising

a spool valve including a body having a bore,

a spool positioned in the bore for reciprocating movement within the bore,

said valve body having an inlet, an outlet and an exhaust port intersecting said bore,

said spool being operable to selectively control the flow of fluid from said inlet to said exhaust, and said outlet,

an electrohydraulic three-way normally closed pulse width modulated valve having an inlet communicating with the inlet to said valve body and an outlet communicating with one end of said spool,

an electrohydraulic three-way normally closed ON/OFF valve having an inlet communicating with the outlet of said body and an outlet communicating with the other end of said spool.

4,617,969
ACTUATING DEVICE FOR TWO MUTUALLY DEPENDENTLY ACTUABLE VALVES

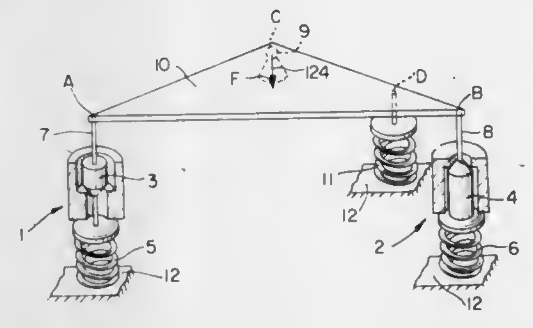
Günter Weiger, Esslingen; Dieter Dörrie, Plochingen, and Paul Schwerdt, Freudenstadt, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 26, 1984, Ser. No. 675,003

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1983, 3342951

Int. Cl.⁴ F15B *13/044*

U.S. Cl. 137—627.5 **4 Claims**



1. An apparatus for actuating a pair of valves in sequence, the apparatus comprising:

a housing,

a first and second valve mounted in the housing for movement in relation thereto, the first valve including a first tappet and a first spring means for yieldably biasing the first valve toward a normal position, the second valve including a second tappet and a second spring means for yieldably biasing the second valve toward a normal position,

an actuating member,

means for mounting the actuating member within the housing to selectably engage the first tappet, the second tappet, and a bearing point member fixed to the housing to lie on a line other than a line joining the two valve tappets,

an actuator spring means for yieldably biasing the actuating member toward a normal position, the actuator spring means being situated intermediate a portion of the housing and the actuating element and in proximity to the second tappet, and having a spring force greater than the certain spring forces of each of the first and second spring means, and

an adjusting member for tilting the actuating member to sequentially actuate the first and second valves, the actuating member being tiltable during a first adjustment stroke counter to the force of the first valve spring about a first axis of rotation (C-D) defined by the bearing point (C) fixed to the housing and by the compression spring in order to actuate the first valve and move the first tappet to a selected position, the actuating member being tiltable during a second adjustment stroke counter to the force of the compression spring about a second axis of rotation (C-A) defined by the bearing point fixed to the housing and by the moved first tappet in order to actuate the second valve.

4,617,970
FLUIDIC SENSOR OF OBJECTS

Ferdo A. Sivov, Sofia, Bulgaria, assignor to Institute po Mebeli I Obzavejdane, Sofia, Bulgaria

Filed Apr. 26, 1985, Ser. No. 727,863

Int. Cl.⁴ F15C *4/00, 3/00*

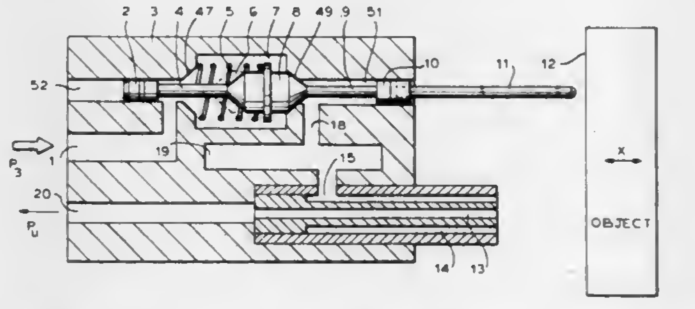
U.S. Cl. 137—805 **4 Claims**

1. A fluidic sensor of objects comprising a body in which there are mounted an emitting nozzle, connected to a feeding chamber; said feeding chamber being connected to a feeding conduit; and

an intake nozzle, coaxially disposed in the area defined by the emitting nozzle and connected to an outlet conduit; wherein between the inlet conduit and the feeding chamber there is, shaped in the body, an additional chamber with conical ends, inside which additional chamber there is disposed a movable valve body with conical seats shaped on opposite ends; said valve body connected to a switching sensor movably mounted in the body;

a front guide conduit and a rear guide conduit extending from the conical ends of the additional chamber;

a front guide movably disposed within said front guide conduit;



and a rear guide movably disposed within said rear guide conduit;

each of said guides being connected to said valve body by means of an axle;

said axles, guides, and valve body being provided with a common longitudinal conduit;

said switching sensor being rigidly fastened to said front guide by means of a threaded joint, and said switching sensor being provided with a similar common longitudinal conduit which is closed in its front end by a sealing screw;

said common longitudinal conduit arranged such that when said valve body is in the rear most position said common longitudinal conduit is operatively connected with said inlet conduit; the rear end of said valve body being supported by a spring.

4,617,971
LOOM CONTROL SYSTEM

Jerker Hellstroem, Nol, Sweden, assignor to Aktiebolaget IRO, Ulricehamn and Aros Electronics AB, Askim, both of, Sweden

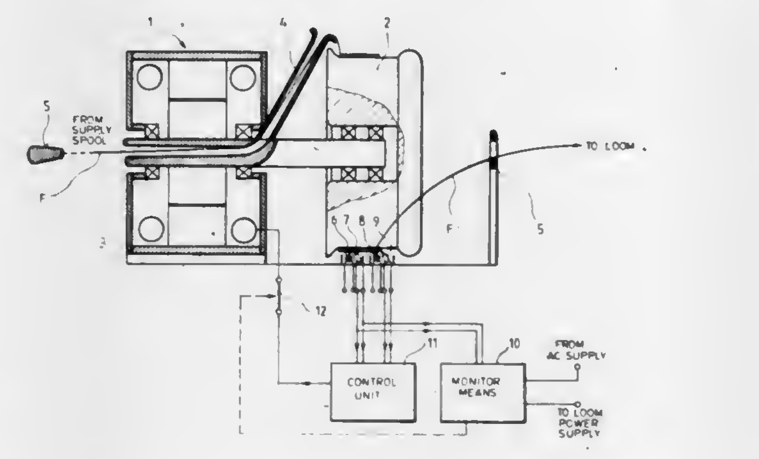
PCT No. PCT/EP83/00121, § 371 Date Jan. 10, 1984, § 102(e) Date Jan. 10, 1984, PCT Pub. No. WO83/04056, PCT Pub. Date Nov. 24, 1983

PCT Filed May 11, 1983, Ser. No. 588,866

Claims priority, application Sweden, May 12, 1982, 8202991

Int. Cl.⁴ D03D *51/34, 47/36;* **B65H** *51/20*

U.S. Cl. 139—370.2 **6 Claims**



1. A loom control system operable to stop a loom in the presence of a yarn breakage, said loom including a feeding device having a yarn storage drum for temporarily storing the

yarn, and yarn store sensor means for sensing the quantity of yarn stored on said drum of said feeding device and for transmitting an electric sensor signal representing the quantity of yarn stored on said drum to said feeding device to control the operation of said feeding device and to thereby control the quantity of yarn stored on said drum, said loom control system including monitor means for detecting a yarn breakage and for stopping the loom in the event of a yarn breakage, wherein the improvement comprises said monitor means being electrically connected to said yarn store sensor means for receiving said sensor signal therefrom, and said monitor means being responsive to said sensor signal representing the quantity of yarn stored on said drum for detecting a yarn breakage and said monitor means generating a stop signal for the loom in response to detection of a yarn breakage.

4,617,972

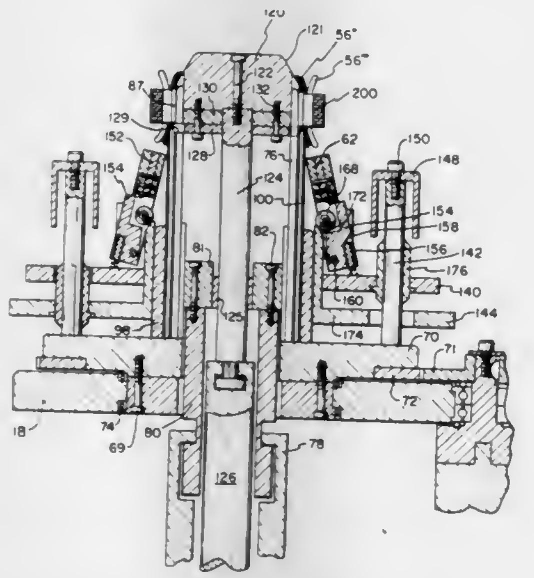
METHOD AND APPARATUS FOR WINDING AND INSERTING COILS IN A DYNAMOELECTRIC MACHINE STATOR CORE

Robert G. Walker, Ossian, Ind., assignor to Industra Products Co. Inc., Fort Wayne, Ind.

Filed Jun. 20, 1985, Ser. No. 747,125

Int. Cl.⁴ H02K *15/06*

U.S. Cl. 140—92.1 **37 Claims**



1. Apparatus for winding and inserting coils in the slots of a stator core comprising:

coil winding tooling including a coil winding form, means for winding coils on said winding form, and a coil form stripper for stripping said coils from said form;

coil placer means including a plurality of blades, said placer means being relatively rotatable with respect to said winding tooling;

coil retainer means disposed radially outside said blades for receiving a coil from said coil winding form and for retaining said coil thereon during relative rotation of said placer means with respect to said winding tooling; and

stripper means operatively associated with said blades for stripping said coils from said blades and for inserting said coils into the slots of a stator core.

4,617,973

SELTZER FILLING APPARATUS AND PROCESS

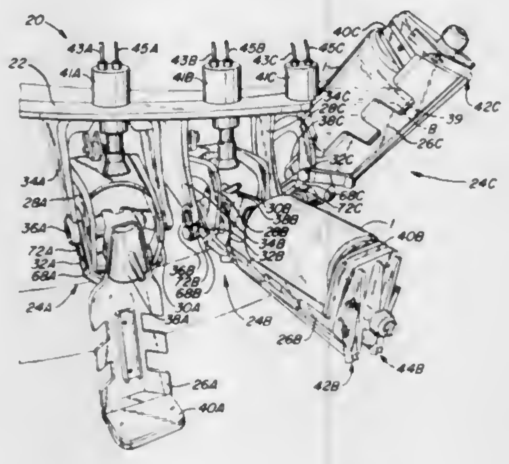
Richard J. Hagan, 444 Laurel St., San Carlos, Calif. 94070, and Dennis A. Lempert, 11642 Dawson Dr., Los Altos Hills, Calif. 94022

Filed Feb. 20, 1985, Ser. No. 704,763

Int. Cl.⁴ B65B *3/04*

U.S. Cl. 141—2 **24 Claims**

22. A process for filling a syphon package having a necked opening and a normally closed valve in the necked opening with a liquid, which comprises positioning said syphon package proximate to a head configured to engage the necked opening, the head including a means for applying a valve opening force to the valve in the necked opening, orienting the syphon package so that the necked opening faces downward, urging the syphon package into engagement with the head, activating the valve opening force applying means to open the valve, supplying the liquid through the head, the valve and the syphon of the package to the syphon package, closing the valve, and allowing the filled syphon package to move out of engagement with the head.



4,617,974

APPARATUS FOR PACKAGING TOBACCO PORTIONS

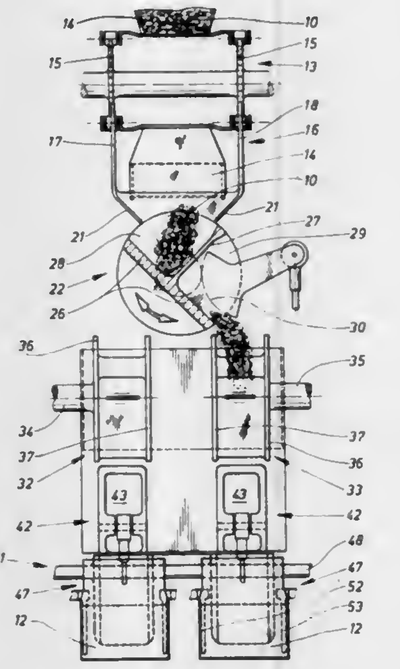
Heinz Focke, and Oskar Balmer, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co., (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Feb. 11, 1985, Ser. No. 700,163

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1984, 3409263

Int. Cl.⁴ B65B *1/04*

U.S. Cl. 141—239 **6 Claims**



1. Apparatus for packaging measured portions of fibrous material into bags, comprising:

a packaging machine including a packaging turret having a plurality of pockets (46) each containing a bag to be filled with one of said measured portions; a conveyor for sequentially feeding said measured portions to said packaging machine;

star feeder means containing a plurality of pairs of cells, each cell sized to temporarily store a measured portion of said material;

means for causing at least two measured portions of said material to be simultaneously transferred from two cells of one of said pairs of cells to two of said bags;

distributor means (22), arranged upstream of said star feeder means in the direction of material flow through said packaging apparatus, for sequentially transferring one measured portion and then another to said one of said pairs of cells, said distributor means comprising at least two portion chambers (28, 29), each of said portion chambers being positionable to receive a measured portion of said material from said conveyor; said portion chambers being arranged such that when one of said at least two portion chambers is positioned to receive a measured portion of said material from said conveyor, the other of said at least two portion chambers is positioned to discharge a measured portion stored therein to a cell of a cell pair and when the other of said at least two portion chambers is positioned to receive a measured portion from said conveyor, the one of said portion chambers is positioned to discharge a measured portion stored therein to the other cell of said cell pair; and

means for reciprocally moving said at least two portion chambers between a measured portion receiving position and a measured portion discharge position.

4,617,975

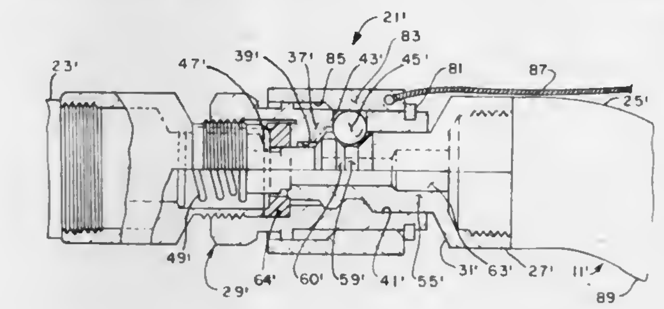
TENSION ACTUATED UNCOUPLER

Charles Rabushka, 436 Shadowridge Ct., St. Louis, Mo. 63011, and Layton J. Reprogle, 4430 Eminence, Berkeley, Mo. 63134

Continuation of Ser. No. 672,391, Nov. 16, 1984, abandoned, which is a division of Ser. No. 401,083, Jul. 23, 1982, abandoned. This application Sep. 20, 1985, Ser. No. 778,604

Int. Cl.⁴ F16L *37/28*

U.S. Cl. 141—311 R **3 Claims**



2. In a fuel dispensing system including a fuel storage tank, a fuel dispensing station stationarily mounted on a foundation, a fuel supply line between said tank and said dispensing station, and a pump for delivering fuel via said fuel supply line from said tank to said dispensing station, the latter including a line therewithin connected to said fuel supply line and a flexible dispensing line having a free end and having a selectively operable nozzle on its free end for controlling the delivery of fuel into the fuel tank of a vehicle, wherein the improvement comprises: a tension actuated uncoupler installed in said flexible line for permitting the flow of fuel therethrough when coupled and for uncoupling at least a portion of said flexible line from another portion thereof in the event a tension load above a predetermined limit is applied to said flexible line thereby to minimize damage to said dispensing station, said uncoupler comprising a female fitting secured to one of said flexible line portions and a male fitting secured to the other portion of said flexible line, means carried by one of said fittings engageable with the other of said fittings when said male and female fittings are coupled together with the male fitting received within the female fitting for positively securing said fittings together in sealed, coupled relation and, upon the application of said tension load above said predetermined limit being applied to said flexible line, for shearing thereby to permit the uncoupling of said fittings from one another and to break said flexible line and to minimize damage to said dispensing station.

4,617,976

TIRE FOR USE IN RUNNING ON SOFT GROUND AND EXCELLENT IN GROUND-CONTACTING PROPERTY

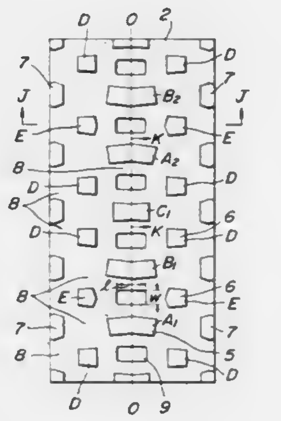
Junichi Kawajiri, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Jun. 19, 1984, Ser. No. 622,335

Claims priority, application Japan, Sep. 20, 1983, 58-172069

Int. Cl.⁴ B60C *11/11*

U.S. Cl. 152—209 R **1 Claim**



1. A tire for use in running on the soft ground, comprising; a pair of sidewalls, a tread portion toroidally connected with both of the sidewalls and a carcass reinforcing the entire tire, said tread portion being provided with a plurality of rows of projecting blocks consisting of a hard tread rubber, which are isolated from one another by wide traverse grooves and longitudinal grooves, such that the total ground-contacting area of the blocks or lugs to the total area of the tread is in a range of 15 to 30%, said blocks composed of a central block row in the central portion of the tread, a pair of shoulder block rows in the shoulder portions of the tread and a pair of intermediate block rows between said central and said shoulder block rows each extending in the longitudinal direction of the tire, wherein the intermediate blocks are located so that the traverse grooves between central blocks serve as longitudinal grooves between said intermediate blocks, and the bottoms of traverse grooves in the central block row being provided recess-like dimples having a width (w) of 40 to 70% of the width of the longitudinally adjacent block a length (l) of said recess-like dimples being not shorter than one-half of the length of the traverse adjacent block for facilitating the flexural deformation of the tread and a maximum depth of said recess-like dimples is 7 to 15% of the height of the adjacent block, and wherein the rubber of the tread including the blocks is made of a rubber of Shore A hardness of 65°-85° and a 300% modulus of elasticity of 80 kg/cm²-300 kg/cm².

4,617,977

CERAMIC CASTING MOULD AND A METHOD FOR ITS MANUFACTURE

David Mills, Bristol, England, assignor to Rolls-Royce Limited, London, England

Filed Jun. 30, 1983, Ser. No. 509,812

Claims priority, application United Kingdom, Jul. 3, 1982, 8219293

Int. Cl.⁴ B22C *9/00, 9/04*

U.S. Cl. 164—30 **15 Claims**

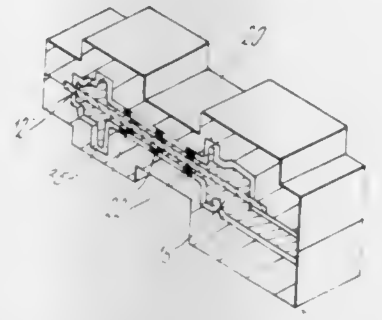
1. A method of making a seamless ceramic casting mould with a thin outer wall comprising the steps of:

making a first die, at least a part of which defines the shape of an article to be cast,

providing within the die one or more high temperature disposable supports which support the thin outer mould wall during the firing process but which are disposable at a temperature at which the thin outer mould wall has acquired self-supporting strength,

filling the die with a disposable pattern material whereby the supports become embedded in the pattern material, and allowing the pattern material to set,

removing the disposable pattern from the first die and inserting it into a second die, the inner surface of which is dimensioned to conform generally with the outer surface of at least the article-defining part of the pattern and to define a space therewith which conforms to the required thickness of the outer wall of the mould,



providing supports between the pattern and the die which are made from a ceramic material,

injecting a ceramic material under pressure into the space and allowing it to set to form the outer wall of the ceramic casting mould, the inner surface of such outer wall defining the outer surface of the article to be cast,

removing the disposable pattern from within the mould and firing the mould.

4,617,978

METHODS FOR THE COMPACTION OF FOUNDRY MOLDING MATERIAL

Norbert Damm, Karlsdorf-Neuthard, Fed. Rep of Germany, assignor to BMD Badische Maschinenfabrik Durlach GmbH, Karlsruhe, Fed. Rep. of Germany

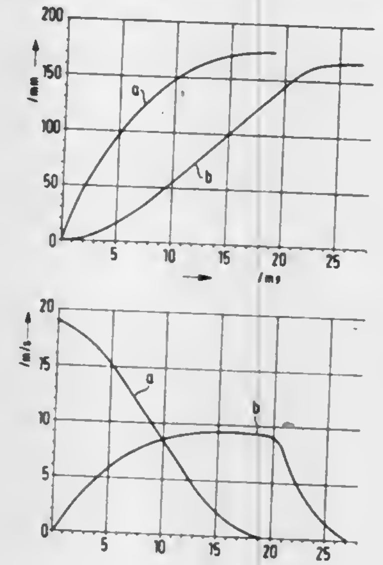
Filed Feb. 25, 1985, Ser. No. 704,774

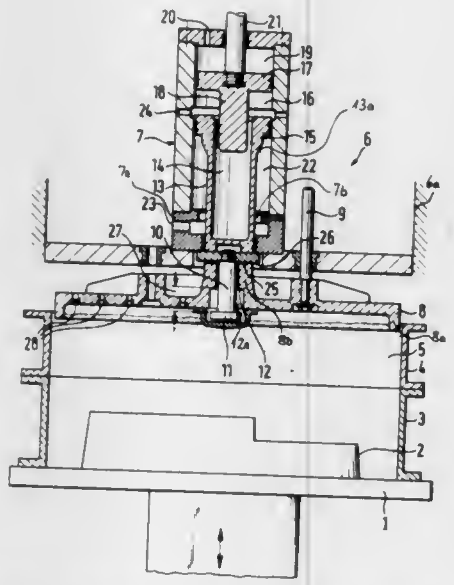
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1984, 3406466

Int. Cl.⁴ B22D *15/00*

U.S. Cl. 164—37 **11 Claims**

1. A method of compacting foundry mold making material by the compression stroke of a pressing plate, said pressing plate being moved at a speed of up to 20 meters per second, said method comprising the steps of placing said pressing plate directly against a surface of such material, accelerating the pressing plate in an initial phase of said stroke, said initial phase lasting for up to 50% of the total compression stroke duration, such acceleration being progressive and bringing the pressing plate up to the maximum speed in said stroke, moving said pressing plate in a subsequent second phase of said stroke at a generally constant speed and then decelerating said pressing plate in a subsequent terminal phase of said stroke, said terminal phase lasting for 30% at the most of the total stroke duration.





4,617,979

METHOD FOR MANUFACTURE OF CAST ARTICLES OF FIBER-REINFORCED ALUMINUM COMPOSITE

Nobuyuki Suzuki, Shizuoka; Kenichi Tanaka, Tokyo, and Masanao Yamanashi, Shimizu, all of Japan, assignors to Nikkei Kako Kabushiki Kaisha and Nippon Light Metal Company Limited, both of Tokyo, Japan

Filed Jul. 15, 1985, Ser. No. 755,148

Claims priority, application Japan, Jul. 19, 1984, 59-148646; May 27, 1985, 60-112082

Int. Cl.⁴ B22D *23/00, 19/14*

U.S. Cl. 164—97 **7 Claims**

1. A method for the manufacture of cast articles of a fiber-reinforced aluminum composite, comprising the steps of mixing under pressure with an aluminum melt an inorganic fibrous reinforcement material prepared in advance in the form of a multiplicity of doughy pills thereby producing a composite melt and casting said composite melt in a desired shape either directly or after solidification and remelting.

4,617,980

CATERPILLAR TYPE MOLD HAVING MOLD LINKS WITH CHAMFERED EDGES

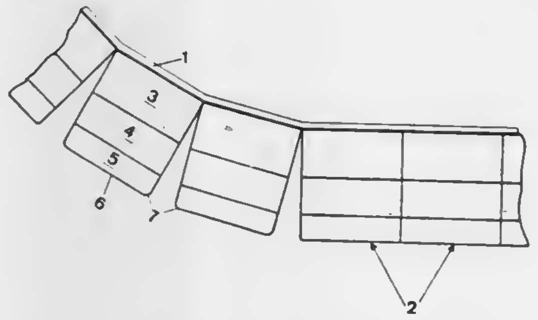
Urs Bänninger, Wollerau, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jun. 6, 1985, Ser. No. 741,691

Claims priority, application Switzerland, Jun. 15, 1984, 2906/84

Int. Cl.⁴ B22D *11/06*

U.S. Cl. 164—430 **6 Claims**



1. A caterpillar type mold for a casting machine for continuously casting metal strip which comprises a belt, a plurality of mold links attached to said belt, each of said mold links comprising a plate forming a work face of the mold, said plate having edges thereof adjacent said work face, wherein at least one of the said edges of the plate is a chamfered edge towards the mold work face that can expand when heated to provide a work face without projections between adjacent mold links which transfer to the cast strip and thereby produce a cast strip surface without flaws.

4,617,981

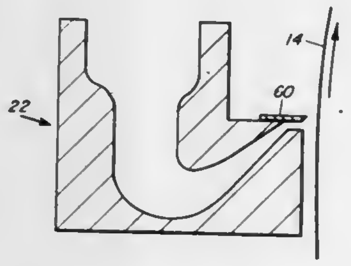
METHOD AND APPARATUS FOR STRIP CASTING

Robert E. Maringer, Worthington, Ohio, assignor to Battelle Development Corporation, Columbus, Ohio

Filed May 9, 1980, Ser. No. 148,359

Int. Cl.⁴ B22D *11/10, 11/18*

U.S. Cl. 164—453 **22 Claims**



1. A method for continuously casting strip material onto a casting surface moving past a nozzle in a molten metal holding tundish comprising the steps of:

pouring molten metal into the tundish at a rate sufficient to establish a metallostatic head pressure of at least one-quarter pound per square inch at the nozzle within one second after pouring is initiated,

pouring additional molten metal into the tundish to effectuate an average rate of pressure change at the nozzle of at least one-quarter psi per second until the operating nozzle pressure of at least one-half pound per square inch is attained, and

pouring additional molten metal into the tundish at a rate sufficient to maintain a substantially constant operating pressure at the nozzle through the casting operation.

4,617,982

METHOD OF AND APPARATUS FOR CONTINUOUSLY MANUFACTURING METAL PRODUCTS

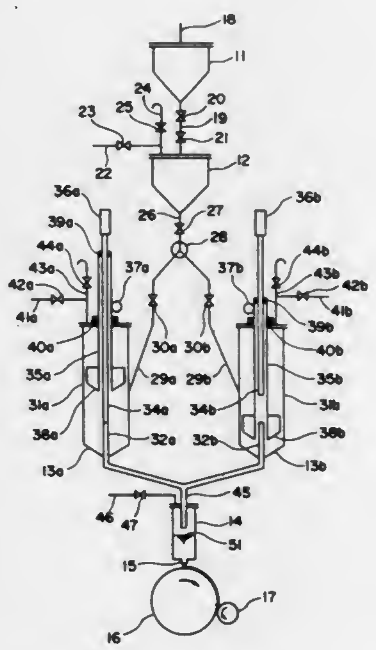
Akira Tanimura, Kyoto; Hisayasu Tsubata, Uji, and Shoji Tamamura, Nara, all of Japan, assignors to Unitika Ltd., Osaka, Japan

Filed Jul. 11, 1984, Ser. No. 629,613

Claims priority, application Japan, Jul. 18, 1983, 58-131177

Int. Cl.⁴ B22D *11/06, 11/10*

U.S. Cl. 164—463 **13 Claims**



1. A process for manufacturing a metal product comprising the steps of supplying material for the product from pressure hopper means to each of a plurality of melting furnaces one after another in a predetermined amount each time, replacing the interior atmosphere of each melting furnace by an inert gas at a predetermined pressure, thereafter heating the material in the melting furnaces to form a molten metal, supplying the resulting molten metal from one of the melting furnaces after another to a discharge container having a discharge nozzle and made to have an inert gas atmosphere at substantially the same pressure as the pressure within the melting furnace from which the molten metal is being supplied, and continuously discharging the molten metal through the discharge nozzle against a rapid quenching device, the supplying of the molten metal to the discharge container from each melting furnace being conducted in a manner such that the surface of the molten metal within the discharge container is maintained at a substantially constant level except when the discharge of the molten metal against the rapid quenching device is initiated.

5. An apparatus for manufacturing a metal product comprising pressure hopper means for receiving material for the product successively in a predetermined amount each time, a plurality of melting furnaces each adapted to receive the predetermined amount of material from the pressure hopper means in turn for heating the material to form a molten metal, a discharge container for receiving the resulting molten metal from one of the melting furnaces after another and continuously discharging the molten metal through a discharge nozzle, a rapid quenching device for solidifying the discharged molten metal from the nozzle by rapid quenching, means for supplying the molten metal within each melting furnace to the discharge container in a manner such that the surface of the molten metal within the discharge container is maintained at a substantially constant level except when the discharge of the molten metal against the rapid quenching device is initiated, and means for supplying an inert gas to at least the melting furnaces and the discharge container in a manner such that the pressure within the discharge container is substantially the same as the pressure within the melting furnace from which the molten metal is being supplied.

4,617,983
METHOD AND APPARATUS FOR CONTINUOUSLY MANUFACTURING METAL FILAMENTS

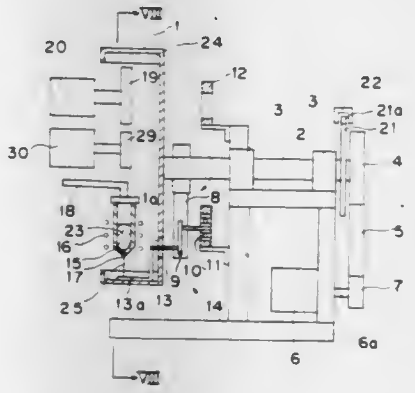
Hisayasu Tsubata, Uji; Shoji Tamamura, Nara, and Akira Tanimura, Kyoto, all of Japan, assignors to Unitika Ltd., Japan

Filed May 16, 1985, Ser. No. 734,789

Claims priority, application Japan, May 21, 1984, 59-103315

Int. Cl.⁴ B22D *11/06*

U.S. Cl. 164—463 12 Claims



1. A method of continuously manufacturing a metal filament wherein a cooling liquid layer is formed by centrifugal force on the inner periphery of a rotary drum in rotation, and wherein molten metal is streamed as a jet toward the cooling liquid layer so that it is quenched to solidify into a metal filament, the metal filament thus obtained being wound on a winder provided outside the rotary drum, characterized in that the method comprises, prior to the metal filament being wound on the winder,

(a) positioning the front end portion of the metal filament on a pickup which rotates synchronously with the rotary drum and which, while in said synchronous rotation, is radially displaceable by cam means between a first radial position in the cooling liquid layer and a second radial position nearer to the rotation axis of the rotating drum than the first radial position,

(b) attracting the front end portion of the metal filament by attracting and holding means when the pickup reaches the second radial position, and

(c) causing the attracting and holding means to draw in and hold a following portion of the metal filament subsequently paid out from the rotary drum.

4,617,984
METHOD OF INDIRECT LIQUID-PHASE HEAT TRANSFER

Ronald H. Harding, Westport, Conn., and George E. Totten, West Haverstraw, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 28, 1985, Ser. No. 749,772

Int. Cl.⁴ F28F *23/00;* C09K *5/00*

U.S. Cl. 165—1 13 Claims

8. A method of liquid phase heat transfer which comprises continuously circulating between a heat generating and a heat using source a composition comprising (a) a substantially anhydrous polymer of the formula:

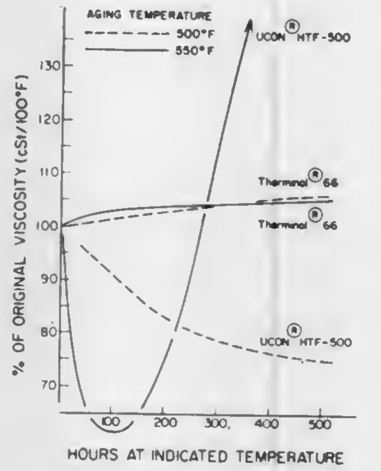
$$\mathrm{RO}\!\left[(\mathrm{CH}_2)_x\mathrm{O}\right]_y\mathrm{R}'$$

wherein

R and R′ are independently hydrogen or a C_1 to C_4 aliphatic alkyl;

x is an integer having a value of 3 or 4; and

y is a sufficiently large integer to provide the polymer with a molecular weight of from about 300 to about 1,000, and (b) a sufficient amount of at least one stabilizer to provide (i) a viscosity loss or (ii) a viscosity gain of less than about 30%, after approximately 500 hours of continuous use at a temperature of about 550° F. as per the Thermal Stability Test.



4,617,985
HEAT PIPE STABILIZED SPECIMEN CONTAINER

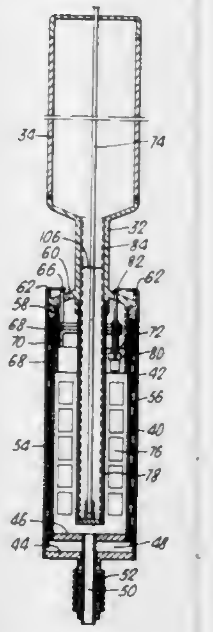
Geoffrey W. Triggs; Richard J. Lightowlers, both of Warrington; Derek Robinson, Preston, and Graham Rice, Wokingham, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 27, 1985, Ser. No. 769,745

Claims priority, application United Kingdom, Sep. 11, 1984, 8422852

Int. Cl.⁴ G05D *23/00;* F28D *15/00*

U.S. Cl. 165—32 9 Claims



1. A specimen container for immersion in the liquid metal coolant of a liquid metal cooled nuclear reactor, said container incorporating a centrally located heat pipe around which there is an annular space for reception of specimens, the container further being provided with inlet means for admitting the liquid metal coolant into the lower end thereof and restricted outlet means through which liquid metal coolant can flow out of the container while leaving a space at the upper end of the container, which space is filled with low thermal conductivity gas, the container being of double walled construction along its length and at its lower end with low thermal conductivity gas filling the interspaces between the walls, the heat pipe enclosing a gas which is not condensable in use of the container as well as a vaporizable substance such as sodium, the heat pipe including an evaporation section which is in heat exchange with the specimen receiving space of the container, a condenser section which is in heat exchange with liquid metal coolant flowing externally of the container and is separated from the evaporation section by an adiabatic section, and a gas

buffer section, and the arrangement being such that the rate of evaporation of said substance determines the volume occupied by the gas which, in turn, governs the volume available within the condensation section.

4,617,986
AIR CONDITIONING ARRANGEMENT FOR AUTOMOTIVE VEHICLE OR THE LIKE

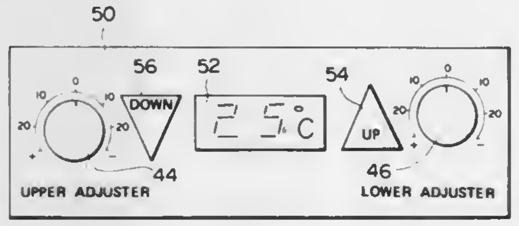
Shinma Kobayashi, and Shunsuke Kajita, both of Hiratsuka, Japan, assignors to Nissan Shatai Company, Limited, Hiratsuka, Japan

Filed Aug. 30, 1983, Ser. No. 527,784

Claims priority, application Japan, Aug. 31, 1982, 57-150143

Int. Cl.⁴ B60H *3/00*

U.S. Cl. 165—42 18 Claims



1. An air conditioning unit for conditioning air in an enclosed space having an upper region and a lower region, comprising:

a duct arrangement for separately discharging air into said upper region and said lower region;

a heat exchanging arrangement associated with said duct for varying the temperature of the air in said duct;

a temperature setting means for setting a desired temperature in said enclosed space;

a sensor arrangement including a device for sensing the temperature of the air in said upper region and the temperature of the air in the lower region and for outputting an indication thereof;

a temperature control device associated with said duct arrangement for selectively varying the temperature of the air discharged into said upper region and for selectively varying the temperature of air discharged into said lower region; and

a required deviation setting means for manually setting a first required deviation which is representative of a desired deviation from a first target temperature derived from said desired temperature and about which the temperature of air to be discharged into one of said upper and lower regions is adjusted; and

a control circuit responsive to an input indicative of said desired temperature from said temperature setting means, and to an input indicative of said first required deviation from said required deviation setting means and to the output of said sensor arrangement for controlling said temperature control device for adjusting the temperature of air to be discharged towards the upper and lower regions separately from each other, said control circuit deriving said first target temperature and said second target temperature about which the temperature of air to be discharged into said lower region is adjusted, said first and second target temperatures being derived with respect to said desired temperature, and said first target temperature and second target temperature being mutually independently variable.

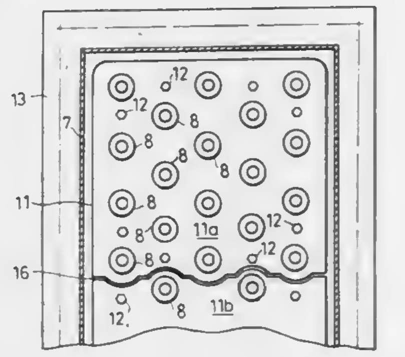
4,617,987
APPARATUS FOR CLEANING HEAT EXCHANGER TUBES

Masakazu Fujimoto, and Naoyuki Inoue, both of Tokyo, Japan, assignors to Ebara Corporation, Japan

Division of Ser. No. 678,780, Dec. 6, 1984, Pat. No. 4,583,586. This application Jan. 6, 1986, Ser. No. 816,627

Int. Cl.⁴ F28G *1/12, 15/02*

U.S. Cl. 165—95 4 Claims



1. Apparatus for cleaning inner surfaces of heat exchanger tubes of a heat exchanger, wherein said heat exchanger includes a bundle of elongate heat exchanger tubes having opposite ends mounted to respective partition plates and communicating with respective forward and rearward heat exchanger fluid enclosures, each end of each of said heat exchanger tubes being provided with a chamber for capturing a tube cleaning element adapted to move in opposite directions through said tube upon reversing the direction of flow of heat exchanger fluid therethrough so that said inner surface of said tube is cleaned by the moving tube cleaning element, the improvement comprising:

said chambers being detachably mounted to respective ends of said tubes by mounting means including holder plate means having openings formed therethrough at locations corresponding to the locations of said tube ends mounted to a respective partition plate, and means for mounting said holder plate means to said partition plate,

each chamber including an integral flange portion formed at one end thereof, said flange portion being held between said partition plate and said holder plate means, and

said holder plate means being separated into at least two holder plate members.

4,617,988
SOOT BLOWER FOR THE REMOVAL OF DEPOSITS FROM SURFACES OF HEAT EXCHANGERS OR THE LIKE

Klaus Köhnen, Mülheim; Hans Niermann, and Norbert Ullrich, both of Essen, all of Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 594,772

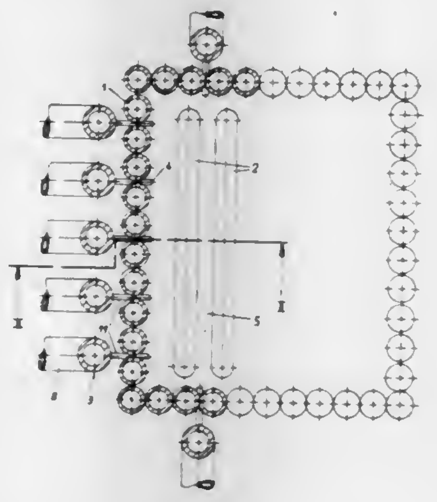
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1983, 3312599

Int. Cl.⁴ F28G *1/16*

U.S. Cl. 165—95 16 Claims

1. A soot blower for the removal of deposits from walls of tubes positioned in an interior of a heat-exchanger, reaction vessel or the like, comprising means for feeding a blowing medium into said interior, said blower being integrated with

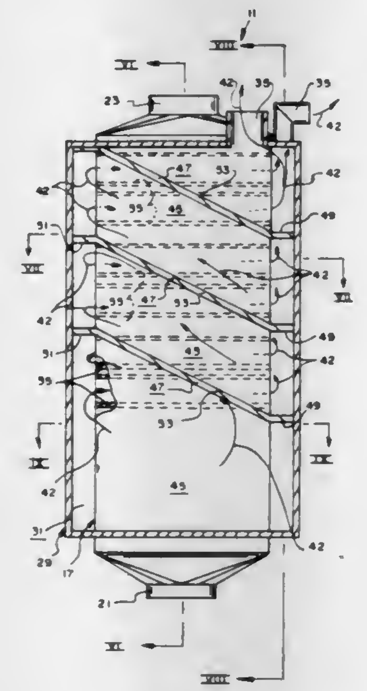
said heat exchanger, said feeding means including a plurality of feeding pipes each having a nozzle tube directed into said



interior and terminated with a nozzle open into the interior so as to direct and blow said blowing medium over said walls.

4,617,989
EXHAUST FLUE HEAT EXCHANGE DEVICE

Bobby G. Seat, 3794 Miami, Memphis, Tenn. 38111
Filed Mar. 22, 1985, Ser. No. 714,945
Int. Cl.⁴ F28F *9/22*
U.S. Cl. 165—145 **9 Claims**



1. A heat exchange device interposed in an exhaust flue for extracting heat from a first medium passing through said flue and transferring that heat to a second medium, said device comprising:

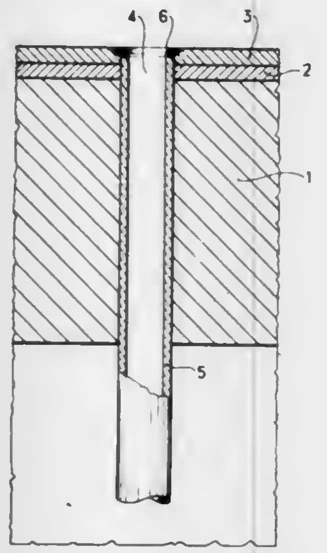
(a) a first chamber having an inlet and an outlet coupled to said flue for allowing said first medium to pass therethrough;

(b) a second chamber having an inlet and an outlet for allowing said second medium to pass therethrough, said second chamber having a common boundary with at least a portion of said first chamber; and

(c) guide means for causing said second medium to move between said inlet and outlet of said second chamber and over said common boundary between said first and second chambers, said guide means including baffle means for dividing the interior of said second chamber into at least a first subchamber and a second subchamber and including pipe means having at least one pipe member extending from said first subchamber of said second chamber through the interior of said first chamber and to said second subchamber of said second chamber for allowing said second medium to pass therethrough, said pipe means providing the only pathway for allowing the passage of said second medium between said subchambers said baffle means including at least one incline portion for causing said second medium to move along an incline relative to the longitudinal axis of said first chamber.

4,617,990
ASSEMBLY OF FERRITIC STAINLESS STEEL TUBES ON A CARBON STEEL TUBE-PLATE

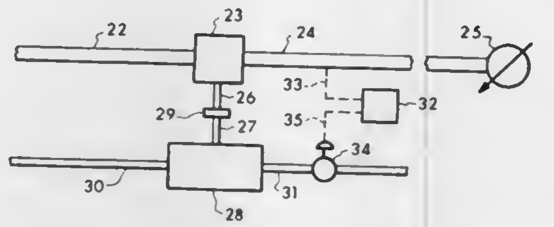
Marc Franzolini, Chevry II; Edmond Maria, Asnieres; Alain Vanderschaeghe, Roubaix, and Jean Bezier, Croix, all of France, assignors to Stein Industrie, Velizy Villacoublay, France
Filed Jul. 5, 1984, Ser. No. 628,081
Claims priority, application France, Jul. 6, 1983, 83 11262
Int. Cl.⁴ F28F *9/18*
U.S. Cl. 165—173 **2 Claims**



1. In a welded assembly of tubes of low carbon ferritic stainless steel having 17 to 18.5% by weight chromium projecting through holes within a tube-plate of carbon steel, the improvement wherein said tube-plate includes at least one overlay of low carbon non-alloyed steel on the surface of the tube-plate opposite the plurality of tubes, of given thickness, and the ends of the tubes being located at an intermediate level of the overlay and weld beads between the ends of the tubes and the overlay.

4,617,991
POLYMER FLOW CONTROL APPARATUS

Wayne E. Luetzelschwab, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio
Continuation of Ser. No. 515,416, Jul. 20, 1983, Pat. No. 4,535,844. This application Jun. 18, 1985, Ser. No. 746,219
The portion of the term of this patent subsequent to Aug. 20, 2002, has been disclaimed.
Int. Cl.⁴ E21B *43/22, 47/00*
U.S. Cl. 166—53 **6 Claims**



1. A system located at ground level for preparing an aqueous solution of a partially hydrolyzed polyacrylamide and injecting the solution into an input well of an oil-bearing subterranean formation, said system including polymerization apparatus, hydrolyzation apparatus and dilution apparatus, said system further including flow control apparatus located downstream from the dilution apparatus of the system and upstream with relation to the input well of the oil-bearing subterranean formation for controlling the flow of the aqueous solution of the partially hydrolyzed polyacrylamide through a conduit while preventing or substantially minimizing degradation of the partially hydrolyzed polyacrylamide in solution, said flow control apparatus comprising:

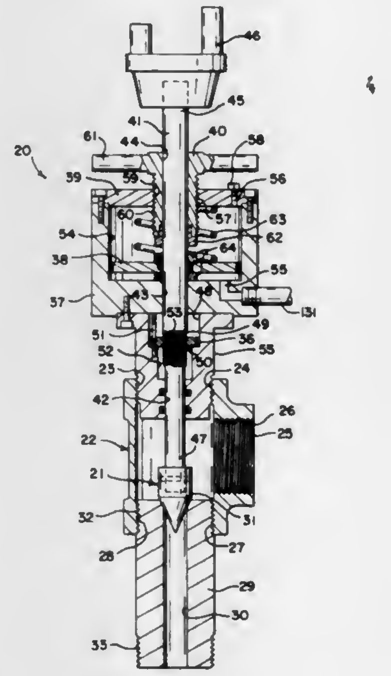
a hydraulic motor having an inlet in fluid communication with the dilution apparatus of the system, an outlet in fluid communication with the input well of the oil-bearing subterranean formation and a drive means adapted to be contacted by the aqueous solution of the partially hydrolyzed polyacrylamide as it enters the inlet of the hydraulic motor, said drive means acting to bring about a pressure drop in the solution as it passes across the hydraulic motor;

output means engaged to the drive means of the hydraulic motor and movable in response to the movement of the drive means caused by said solution; and

a variable load means driven by said output means and in communication with a regulator means for selectively regulating the rate at which the drive means of the hydraulic pump is caused to move by said solution, the selected flow rate being such that no, or minimal degradation, of the polyacrylamide will occur as said solution undergoes a drop in pressure as it passes across the hydraulic motor.

4,617,992
SYSTEM AND CHOKE VALVE ACTUATOR MECHANISM FOR OPERATING A PLUNGER LIFT WELL

Thomas E. Abel, 1183 MacIntosh Dr., Dellroy, Ohio 44620
Filed May 3, 1985, Ser. No. 730,049
Int. Cl.⁴ E21B *34/02;* **F16K** *31/122*
U.S. Cl. 166—95 **4 Claims**



1. An actuator mechanism for selective positioning of a choke valve element relative to a valve seat within a piping flow tee for regulating the flow of gas and oil from a producing wellhead, said flow tee having an opening to receive and connect said actuator mechanism, an inlet opening for conducting gas and oil toward said choke valve seat and an outlet opening for conducting gas and oil beyond said choke valve seat:

said actuator mechanism comprising a closed body member with a base end adapted for connection with said flow tee opening, a control shaft positioning collar housed within said body member, a cylinder member connected to the upper end of said body member, a control piston housed within said cylinder member, a cap member connected to the upper end of said cylinder member, a control piston stop sleeve carried by said cap member and an elongated control shaft;

said control shaft extending coaxially through said body member, said control shaft positioning collar, said cylinder member, said control piston, said cylinder cap member and said stop sleeve;

said body member, said cylinder member and said stop sleeve each having a small diameter axial bore for rotatable and slidable mounting of said control shaft;

said control shaft having an upper end projecting above said stop sleeve and adapted for carrying a handwheel thereon and a lower end projecting below said body member and into said flow tee and adapted for carrying said choke valve element thereon;

said body member upper end having a larger diameter chamber bore extending radially above said axial bore therein for nonrotatable mounting and seating of said control shaft positioning collar;

said cylinder member having a larger diameter piston bore extending radially above said axial bore therein for movable mounting of said control piston and a control fluid supply conduit extending from the external surface of said cylinder member and into the lower face of said piston bore;

said cylinder cap member having an axial bore therein adapted for rotatable and manually adjustable mounting of said stop sleeve coaxially around the section of said control shaft within said cylinder member;

said control shaft being connected to said control piston within said cylinder piston bore and raisable toward said cylinder cap member in response to the pressure of a control fluid introduced into said piston bore through said cylinder fluid supply conduit, and against a compression means seated around said stop sleeve between said cap member and said control piston;

said control shaft having a section within said body member adapted for rotatable engagement with said control shaft positioning collar.

4,617,993
CARBON DIOXIDE STIMULATED OIL RECOVERY PROCESS

Alfred Brown, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.
Filed Sep. 3, 1985, Ser. No. 772,108
Int. Cl.⁴ E21B *43/00*
U.S. Cl. 166—250 **11 Claims**

1. A method for recovering petroleum from a subterranean petroleum-containing formation penetrated by at least one well in fluid communication with the formation, by a cyclic carbon dioxide injection procedure comprising injecting carbon dioxide into the well followed by a soak period, followed by a production phase wherein oil is recovered from the formation via the well, wherein the improvement comprises

introducing a predetermined quantity of hydrocarbon which is liquid at the temperature of the formation into the formation immediately after introducing the carbon dioxide slug and before the soak and production steps, to dissolve high molecular weight fraction of the crude oil left in the flow channels of the formation, and recovering the solvent and high molecular weight fractions from the formation in the production phase via the well.

4,617,994

DETERMINING RESIDUAL OIL SATURATION BY INJECTING CO_2 AND BASE GENERATING REACTANT

Edwin A. Richardson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 22, 1985, Ser. No. 800,852

Int. Cl.⁴ E21B *47/00*

U.S. Cl. 166—250 **5 Claims**

1. A process for determining the relative concentrations of substantially immobile oil phase fluid and relatively mobile water phase fluid within a subterranean reservoir formation comprising:

injecting fluid consisting essentially of an aqueous solution which at least soon after entering the reservoir formation contains at least a detectible concentration of dissolved CO_2 and a concentration of subsequently active pH increasing reactant material which at the temperature of the reservoir formation is sufficient to convert a significant proportion of the dissolved CO_2 to dissolved bicarbonate ion;

then injecting an aqueous solution which contains at least said concentration of dissolved CO_2 but is free of said reactant;

allowing the occurrence of said pH increasing reaction;

producing the injected fluid and measuring the variation with amount of fluid produced in the concentration of both dissolved CO_2 and dissolved bicarbonate ion; and

determining relative concentrations of said oil phase and water phase fluids indicated by the extent of chromatographic separation between the reduction in concentration of dissolved CO_2 and the increase in concentration of dissolved bicarbonate ion.

4,617,995

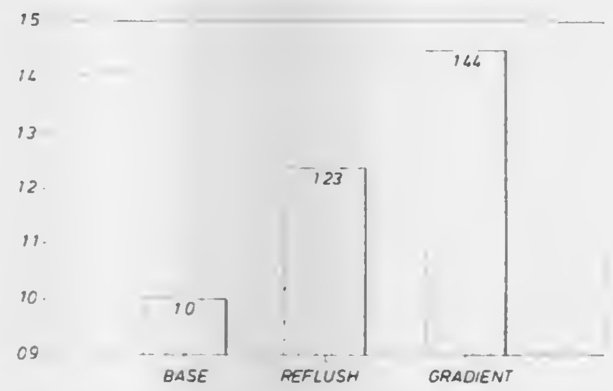
DUAL GRADIENT STEAM FOAM OIL DISPLACEMENT PROCESS

Hon Chung Lau, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 22, 1985, Ser. No. 768,010

Int. Cl.⁴ E21B *43/24, 43/22*

U.S. Cl. 166—272 **8 Claims**



1. In an oil displacement process in which oil is displaced by injecting pretreatment fluid, steam and steam-foaming surfactant into a reservoir in which surfactant transport is impeded by an ion-exchange of multivalent cations from the rocks, an improvement comprising:

injecting said pretreatment fluid in a volume totalling not more than about the volume of the pore space to be traversed in flowing from the injection location to the location within the reservoir into which the oil is to be displaced;

arranging the composition of said pretreatment fluid in correlations with the properties of the reservoir rocks so that the injected volume of the pretreatment fluid contains both (a) sufficient monovalent cations to ion-exchange with at least most of the multivalent cations on the reservoir rocks contacted by that fluid, and (b) enough steam-foaming surfactant to substantially satisfy the surfactant transport-impeding effects of the rocks contacted by the pretreatment fluid; and

injecting steam-foaming fluid, comprising steam, steam-foaming surfactant, and monovalent electrolyte, in which the proportions of the surfactant and electrolyte are each less than about half of those contained in the pretreatment fluid.

4,617,996

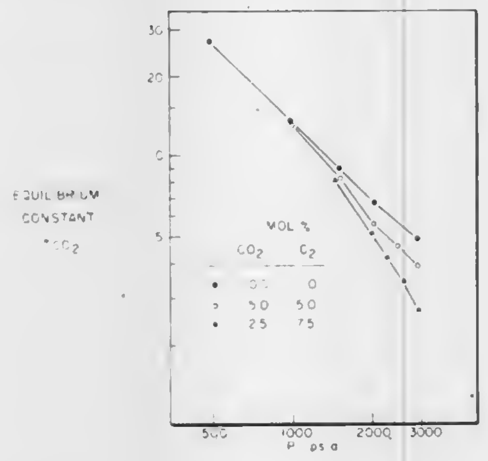
IMMISCIBLE OIL RECOVERY PROCESS

Winston R. Shu, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 704,232, Feb. 22, 1985. This application Apr. 22, 1985, Ser. No. 726,195

Int. Cl.⁴ E21B *43/22*

U.S. Cl. 166—273 **33 Claims**



1. A method for the recovery of oil from a subterranean, oil-bearing reservoir penetrated by an injection well and a production well extending from the surface of the earth into the reservoir, which method comprises:

(i) injecting into the reservoir through the injection well, a mixture of an oil-displacing fluid, which is essentially immiscible with the oil under the conditions prevailing in the reservoir, and up to 25 mole percent of a hydrocarbon additive thereby forming a mobile phase which substantially increases the limited solubility of the displacing fluid in the reservoir oil to reduce the viscosity of the reservoir oil; and

(ii) producing fluids including oil from the production well.

4,617,997

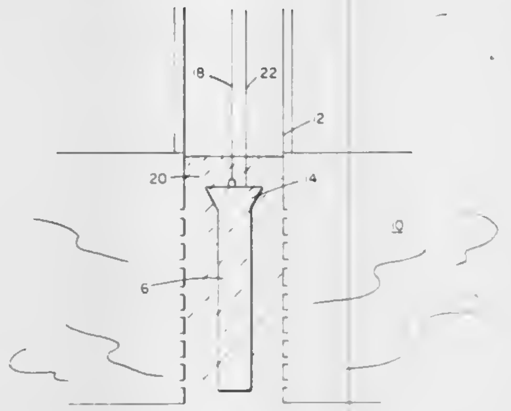
FOAM ENHANCEMENT OF CONTROLLED PULSE FRACTURING

Alfred R. Jennings, Jr., Plano, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 26, 1985, Ser. No. 769,226

Int. Cl.⁴ E21B *43/263*

U.S. Cl. 166—299 **24 Claims**



1. A method for fracturing a subterranean formation penetrated by at least one well which extends from the surface of the earth to the formation comprising:

(a) filling said well above the productive interval with a fluid containing a foaming agent sufficient to cause foam to be generated for entry into induced fractures;

(b) placing into said well within said fluid and near the productive interval a propellant means for fracturing said formation by a pressure loading rate sufficient to create multiple fractures and which upon ignition creates gases, heat, and a pressure loading rate sufficient to create multiple fractures and cause said foaming agent to foam;

(c) igniting said proepllant whereby said foaming agent foams and the foam enters into the multiple fractures created by said pressure loading rate; and

(d) maintaining the peak pressure load sufficiently above the in-situ stress pressure but below the rock yield stress for a time sufficient to allow foam generation, fluid penetration and extension of said fractures.

4,617,998

DRILLING RISER BRAKING APPARATUS AND METHOD

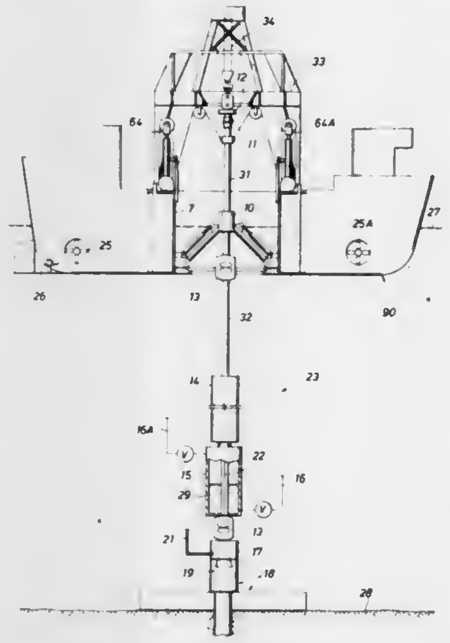
Carl G. Langner, Spring, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 8, 1985, Ser. No. 720,842

The portion of the term of this patent subsequent to Oct. 8, 2002, has been disclaimed.

Int. Cl.⁴ E21B *19/09*

U.S. Cl. 166—345 **37 Claims**



1. For use in a floating vessel having a substantially centrally-positioned vertical hull opening therethrough, said vessel being provided with well drilling equipment, including an elongated vertical riser provided with a riser brake contact area carried outwardly near the upper end thereof, said riser extending in tension down through said hull opening to a point adjacent the ocean floor, and motion-compensating and tensioning means carried by said vessel operatively connected to said riser for vertically supporting said riser during normal operations, the invention comprising riser braking means apparatus carried by said vessel substantially within the hull opening through the vessel, said braking means apparatus comprising:

brake element means carried by said vessel operatively engaged between said vessel and said riser brake contact area to arrest and prevent further movement of said riser upper end relative to said vessel; and

brake element means prime mover means operatively connected between said vessel and said brake element means, for moving said brake element means.

28. A method of arresting and preventing further movement of the elements forming the upper end of a riser relative to a floating vessel therethrough, said vessel being provided with well drilling equipment including a derrick with associated drill string lift equipment, an elongated vertical riser provided with a riser brake contact area carried outwardly near said riser upper end thereof, a wellhead connector carried at the lower end of said riser and secured to a wellhead assembly, and adjustable buoyancy means formed with the submerged portion of said riser, said riser extending in tension during normal operations down through said hull opening to a point adjacent said wellhead assembly located adjacent the ocean floor, said vessel carrying motion-compensating and tensioning means operatively connected to said riser upper elements for vertically supporting said riser during normal operations, and provided with riser braking means apparatus, said apparatus including at least one pair of brake elements carried by braking beams operatively connected to said vessel, said method comprising:

moving said brake elements toward said riser brake contact area;

engaging said brake elements with said riser brake contact area in order to dampen, arrest, and prevent further movement of said riser upper elements relative to said floating vessel; and

remotely disconnecting the wellhead connector at the lower end of said riser from said wellhead assembly.

4,617,999

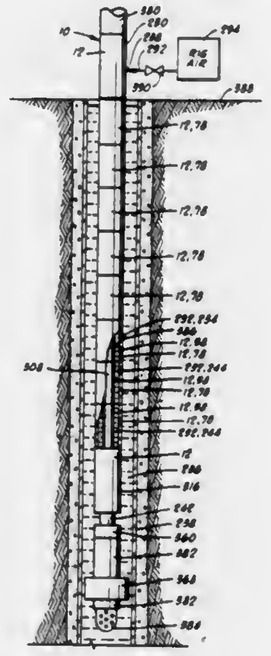
DOWNHOLE TOOL WITH COMPRESSION CHAMBER

Harold K. Beck, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Nov. 28, 1984, Ser. No. 676,138

Int. Cl.⁴ E21B *34/06*

U.S. Cl. 166—372 **32 Claims**



1. A downhole tool apparatus, comprising:

a housing, having a compression chamber defined therein, and having a fill passage means disposed through said housing for placing said compression chamber in open flow fluid communication with a well annulus exterior of said housing so that well fluid may flow into said compression chamber as said apparatus is lowered into a well;

an isolation valve means for selectively closing said fill passage means and for thereby trapping said well fluid in said compression chamber;

an operating element disposed in said housing;

an acutating piston means slidably disposed in said housing and operably associated with said operating element, said actuating piston means having a first side in fluid pressure communication with said compression chamber so that movement of said actuating piston means between first and second positions thereof relative to said housing decreases a volume of said compression chamber; and

an injection means for injecting pressurized gas into said compression chamber at a location within said compression chamber such that said injected gas will directly contact at a gas-well fluid interface an upper surface of well fluid that flows into said compression chamber

whereby a majority of a volume of said compression chamber is defined by a plurality of interconnected tubular outer housing sections and by a plurality of interconnected tubular inner housing sections, said majority of said volume of said compression chamber being a diametrically irregular annular space between said plurality of interconnected tubular outer housing sections and said plurality of interconnected tubular inner housing sections.

16. A method of operating a downhole tool, said method comprising the steps of:

(a) providing in said tool an operating element, an actuating piston operatively associated with said operating element, and a compression chamber defined within said tool and communicated with a first side of said actuating piston, wherein a majority of a total volume of said compression chamber is a diametrically irregular elongated annular space defined between a plurality of interconnected tubular outer housing sections and a plurality of interconnected tubular inner housing sections of said tool;

(b) lowering said tool, connected to a tubing string, to a desired location in a well;

(c) during said step (b), providing open flow fluid communication through a fill passage between said compression chamber and a well annulus defined between said tubing string and a well bore of said well;

(d) during said step (b), flowing well fluid through said fill passage into said compression chamber so that said well fluid directly contacts as a gas-well fluid interface, a volume of gas contained in said compression chamber; and

(e) during said step (d) moving said gas-well fluid interface upward past a plurality of diametrically irregular surfaces defining said diametrically irregular elongated annular space or said compression chamber.

4,618,000

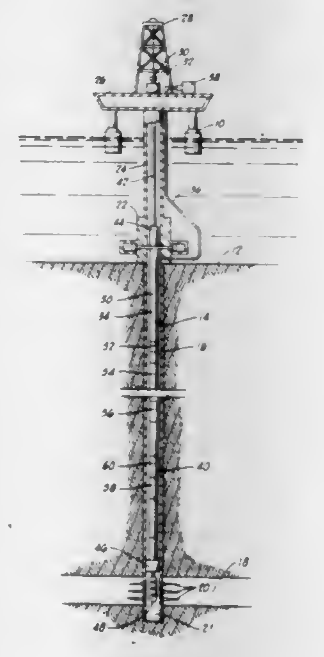
PUMP OPEN SAFETY VALVE AND METHOD OF USE

Wesley J. Burris, II, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Feb. 8, 1985, Ser. No. 699,962

Int. Cl.^{4} E21B *34/06*

U.S. Cl. 166—373 **20 Claims**



1. A downhole tool apparatus, comprising:

a housing having an upper end adapted to be connected to a tubing string, and having a housing bore adapted to be communicated with a tubing bore of said tubing string;

an operating element disposed in said housing; and

actuating means including a first pressure responsive actuating mandrel for inducing movement of said operating element from a first position to a second position in response to a pressure change in one of said tubing bore or a well annulus outside said housing with respect to a first reference pressure, and a second pressure responsive actuating mandrel for inducing movement of said operating element from a second position to a third position in response to a pressure change in the other of said tubing bore or said well annulus with respect to a second reference pressure, at least one of said first and second reference pressures being provided in a sealed zone within said downhole tool apparatus.

4,618,001

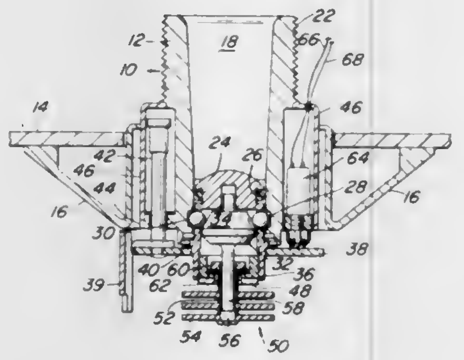
SPRINKLER HEAD WITH ELECTRICAL SENSOR

Brian T. Hoening, Sellersville, Pa., assignor to Central Sprinkler Corporation, Lansdale, Pa.

Filed Mar. 18, 1985, Ser. No. 713,529

Int. Cl.^{4} A62C *37/18, 37/24*

U.S. Cl. 169—23 **4 Claims**



1. A sprinkler head comprising a housing having a flow passage therethrough between an inlet and an outlet, a valve member closing said outlet, said valve member being supported by said housing and being movable to an open position, means for retaining the valve member in a closed position, a temperature responsive means for releasing said retaining means at a predetermined temperature so that the valve member may move to an open position, switch means on said housing for providing an electrical signal when said valve member has moved from its closed position towards its open position, an alarm responsive to said signal, and housing means for protecting said switch means from contact with a fire quenching liquid discharged from said outlet, said switch means including an actuator connected to a contact member of dielectric material, said housing means including a protective sleeve for said actuator, said sleeve surrounding said actuator and being connected to one end of said contact member, said contact member being in contact with an element attached to the valve member when the valve member is in its closed position, said element cooperating with said actuator to maintain the switch means in an open position so long as the valve member is in its closed position.

4,618,002

FIRE PROTECTION SPRINKLER HEAD

James W. Mears, Warwick, R.I., assignor to Grinnel Corporation, Providence, R.I.

Continuation of Ser. No. 589,224, Mar. 13, 1984, abandoned. This application Jan. 16, 1986, Ser. No. 820,877

Int. Cl.^{4} A62C *37/10*

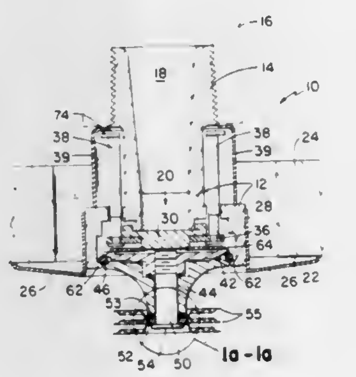
U.S. Cl. 169—37 **11 Claims**

1. In a fire protection sprinkler head of the automatic type comprising a body with means for connecting said head to a supply of fire retardant fluid, a passage through siad body for

said fluid, a closure means for sealing said passage, a latch means for retaining said closure means in a standby position wherein said passage is sealed by said closure means, and a thermally responsive means adapted to release said latch means from said standby position at a preset temperature to thereby release said closure means to allow flow of fluid from said passage,

the improvement wherein

said latch means comprises a catch in the form of a lip disposed generally radially inwardly from said body and having a surface sloped inwardly from said body toward said lip, a radially inwardly biased spring detent means, and first and second relatively separable, detent restraining elements, arranged on a common axis,



said restraining elements cooperatively defining a circumferential generally V-shaped groove sized and adapted to receive said spring detent means and being further adapted to mutually act to force said spring detent means radially outward into engagement with the inwardly sloped surface of said catch to secure and maintain said latch means in said standby position, and

said first restraining element being adapted to move along said axis relative to said second restraining element to deepen said groove when the thermally responsive means reaches said preset temperature to thereby permit and accommodate said spring detent means to relax radially inwardly along said inwardly sloped surface, toward said lip, and to disengage from said catch whereby said latch means is released from said standby position.

4,618,003

WEEDER-CULTIVATOR

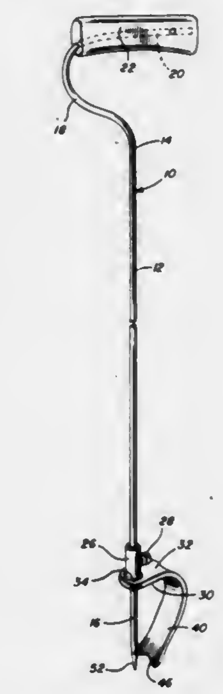
John L. Hostetter, Rte. 3, Box 385A, Mountain Home, Ark. 72653

Filed Mar. 5, 1985, Ser. No. 708,551

Int. Cl.^{4} A01B *1/16*

U.S. Cl. 172—25 **6 Claims**

1. A combined weeding and cultivator tool assembly including an elongated shank having a ground piercing lower end and an upper end including structure for applying rotary torque to said shank, the lower end of said shank supporting only a single elongated rigid strap-type blade therefrom including a generally horizontal elongated upper end portion having a first end thereof mounted on said shank above the lower terminal end thereof for rotation with said shank and with the other end of said upper end portion projecting outwardly from one side of said shank, curving downwardly and inwardly toward said shank and terminating downwardly in a generally straight and downwardly inwardly inclined lower end portion of said blade, the downwardly curving other end of said upper end portion being slightly twisted about its longitudinal axis to angularly offset said inclined lower end portion and position the lower terminal end of said lower end portion slightly outward of a second side of the lower end of said shank angularly displaced less than 90° from said first side, said lower terminal end of said blade including a sharpened endwise outwardly



facing transverse ground cutting edge facing in a direction generally paralleling a path tangent to said second side.

4,618,004

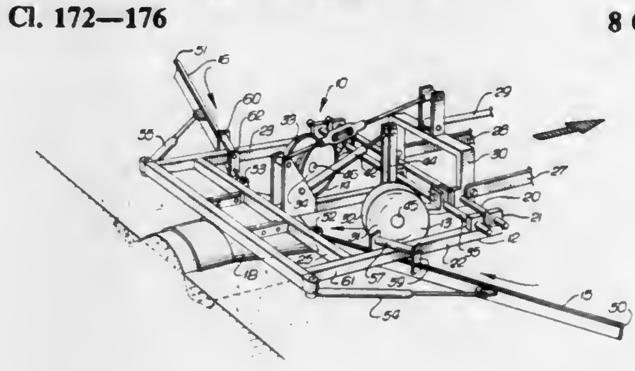
METHOD AND APPARATUS FOR BUILDING BORDERS

Cecil J. Howard, P.O. Box 294, Wasco, Calif. 93280

Filed Sep. 24, 1984, Ser. No. 653,095

Int. Cl.^{4} A01B *13/02*

U.S. Cl. 172—176 **8 Claims**



1. A device for building earthen ridges or borders on an agricultural field comprising:

a. a mobile supporting frame assembly;

b. a pair of opposing spaced apart disc plow assemblies supported from the frame assembly and adapted to cultivate parallel trenches in the agricultural field, to remove cultivated dirt from the parallel trenches and to deposit the removed dirt onto the ground between the trenches;

c. means to scrape dirt into the trenches from the agricultural field, blade means extending outwardly from the trenches to scrape dirt into the trenches from the agricultural field adjacent thereto, the lower edges of said blade means being at a higher level than the lower edges of the disc plow assemblies; and

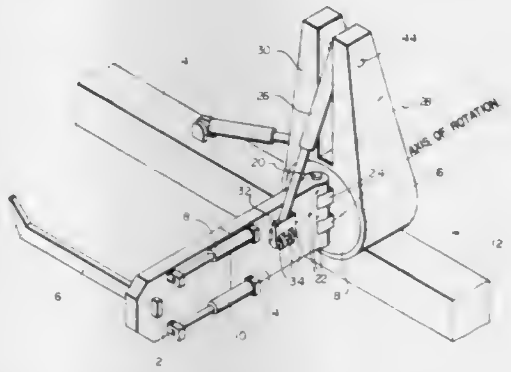
d. means to compress and shape the dirt deposited on the ground between the trenches to form the earthen borders or ridges.

4,618,005

ORIENTABLE RIPPER

Douglass G. Tower, 724 Somerset Ave., Princess Anne, Md. 21853

Filed Aug. 20, 1984, Ser. No. 641,997
Int. Cl.⁴ E02F *3/76, 5/30;* **A01B** *63/106, 63/118*
U.S. Cl. 172—459 **1 Claim**



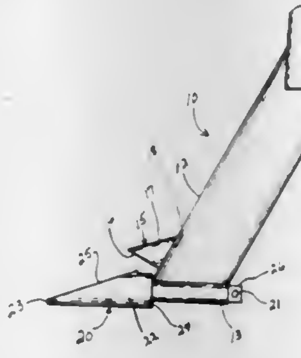
1. Apparatus comprising rotational tool mounting means for being attached to a vehicle, said rotational mounting means comprising a bearing housing, a rotatable journal received by said bearing housing for rotation about a first axis, and said bearing housing upstanding pillar means extending in a direction transverse to said first axis for supporting a first power means, second power means for rotating said journal, second arm means pivotally connected to said journal for rotation with respect to said journal about a second axis transverse to said first axis, first arm means pivotally connected to said second arm means for rotation about a third axis parallel to said second axis, ripper means secured to and extending transversely to said first arm means, third power means connected between said first and second arm means for controlling the angular relationship about said third axis, said first power means extending between said pillar means and a pivotal connector means on said first arm means, said pivotal connector means attaching said first power means to said second arm means and allowing relative pivotal movement between said first power means and said second arm means.

4,618,006

RIPPER IMPLEMENT

Keith J. Cosson, Grand Island, Nebr., assignor to C. C. Sales Corporation, Grand Island, Nebr.

Filed Jun. 1, 1984, Ser. No. 616,139
Int. Cl.⁴ A01B *13/08*
U.S. Cl. 172—699 **13 Claims**



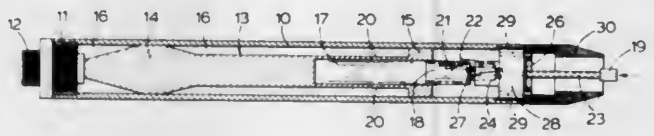
1. In an agricultural ripper tiller implement having a downwardly and forwardly depending shank and a shoe member slightly wider than said shank carried by the lower end of said shank, wherein the improvement comprises said shank having a leading edge, wherein a forwardly projecting soil fracturing member is secured to said leading edge of said shank spaced above said shoe member, wherein the lower edge of said soil fracturing member projects outwardly from said shank over the rearward end of said shoe member to present a downwardly facing surface capable of fracturing soil leaving said rearward end of said shoe member, and wherein said soil fracturing member is adapted to fracture soil ahead of said leading edge of said shank.

4,618,007

IMPACT-ACTION SELF-PROPELLED MECHANISM FOR DRIVING HOLES IN THE EARTH

Allan G. Kayes, Sittingbourne, England, assignor to Pneumatic Punchers Limited, Sittingbourne, England

Filed Apr. 2, 1985, Ser. No. 718,868
Int. Cl.⁴ E21B *7/26*
U.S. Cl. 175—19 **3 Claims**



1. A pneumatically operated impact-action self-propelled mechanism for driving holes in the earth comprising a cylindrical housing having a forward and a rear end and an anvil member located at the forward end; an impact piston reciprocal in the housing to deliver successive impacts to the anvil member and forming within the housing a forward chamber of variable volume; said impact piston having a rear space defined by a rearwardly extending side wall; a control assembly comprising a forwardly extending sleeve which is slidably received within the rear space of said impact piston to form a rear chamber of variable volume; a tube having connecting means for connection to a compressed air supply and a central passage connected to said sleeve for continuous supply of compressed air into said rear chamber and therefrom into said forward chamber through apertures in the side wall of the rear chamber of said impact piston; and means for lockably locating said sleeve longitudinally with respect to said apertures for providing forward or reverse movement of said mechanism, said control assembly further comprising a rearwardly extending cylindrical member connected to said sleeve and tube, said cylndrical member carrying a pin extending diametrically therefrom to engage in a generally Z-shaped slot formed in a further cylinder which partially surrounds said rearwardly extending cylindrical member and is located in a fixed position relative to the housing, the rearwardly extending cylindrical member being normally resiliently urged in a forward direction for providing forward motion of the mechanism, and being lockable by rotation of said tube in a rearward location relative thereto for providing rearward motion of the mechanism.

4,618,008

VERTICAL DRILLING METHOD AND APPARATUS

Martin D. Cherrington, 8600 Emperor Dr., Fair Oaks, Calif. 95628

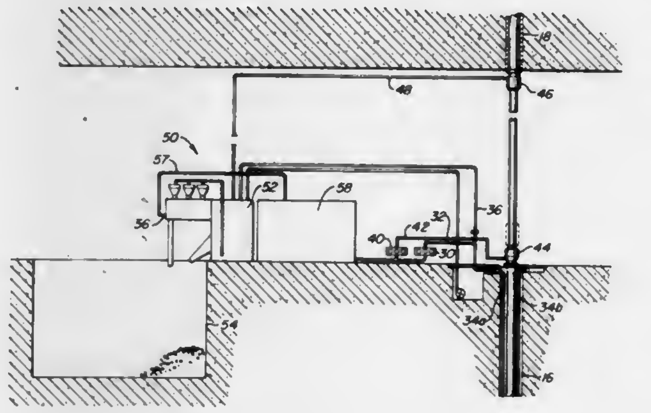
Filed Aug. 21, 1984, Ser. No. 642,864
Int. Cl.⁴ E21B *21/00, 4/00*
U.S. Cl. 175—65 **19 Claims**

1. A method for drilling a vertical hole from an underground chamber to the earth's surface comprising the steps of:

providing an underground chamber at a depth below the earth's surface;
providing an original hole from the surface to said chamber, through said chamber and below said chamber a distance at least equal to the depth of said chamber;
providing said original hole with a drill string to occupy the portion of the original hole below said chamber;
providing a rock cutting bit on the uppermost end of said drill string;
providing a means to lift said drill string from the portion of the original hole below said chamber to the portion of the original hole above said chamber;

providing a means to power said rock cutting bit; and
lifting said drill string and powering said rock cutting bit from the portion of said hole below said chamber to the portion of said hole above said chamber whereby said drill string drills along the path of said original hole above said chamber.

14. An apparatus for drilling a vertical hole comprising:
an underground chamber;
a vertical hole defined in the ground immediately above said chamber, through said chamber, and below said chamber a distance at least equal to the depth of said chamber;



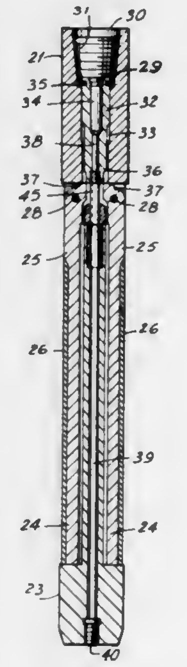
a drill string mounted in said vertical hole below said chamber;
a rock cutting bit disposed on the upper end of said drill string for confrontation to the portion of said hole above said chamber;
means for powering said rock cutting bit within said chamber; and,
means for raising said drill string while said means for powering said rock cutting bit powers said rock cutting bit to enable a hole to be drilled from the chamber to the surface.

4,618,009

REAMING TOOL

Thurman B. Carter, Tuttle; Carl D. Reynolds, Oklahoma City, both of Okla., and Larry R. Mundorf, Bakersfield, Calif., assignors to Homco International Inc., Houston, Tex.

Filed Aug. 8, 1984, Ser. No. 638,700
Int. Cl.⁴ E21B *9/26*
U.S. Cl. 175—267 **24 Claims**



1. An apparatus for reaming a hole drilled in the earth comprising:

(a) a rotatable tool body;
(b) a plurality of high strength elongated cutter arms having an upper end and a lower end, said cutter arms pivotably mounted on said rotable tool body at the upper end of each cutter arm and adapted to be removed outwardly and upwardly; and
(c) said cutter arms comprised of a high impact steel having a Rockwell C hardness of at least about 44 to 62 whereby said cutter arms fracture prior to undergoing a permanent deflection.

22. A method for reaming a hole drilled in the earth from a diameter of about the outside diameter of a reamer tool body having a diameter of up to seven inches to essentially a constant diameter of at least five times the diameter of said reamer tool body in an upwardly or downwardly direction comprising:

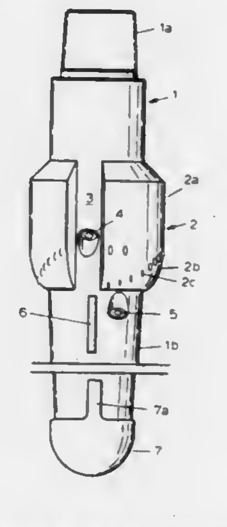
(a) lowering a reamer tool having a plurality of cutter arms having cutting surfaces on upper and lower surfaces of said cutter arms into a hole to the location where the diameter of said hole is to be expanded;
(b) flowing drilling fluid under pressure to said reamer tool whereby the cutter arms of said reamer tool extend outwardly;
(c) rotating said reamer tool whereby said cutter arms cut into a formation and continue to extend outwardly and upwardly;
(d) cease rotating said reamer tool when said cutter arms have extended to predetermined angle from the body of said reamer tool; and
(e) rotate said reamer tool while applying a downward force to cut the formation downwardly to essentially a constant diameter.

4,618,010

HOLE OPENER

Thomas E. Falgout, Sr., Lafayette, and John W. Hester, Houma, both of La., assignors to Team Engineering and Manufacturing, Inc., Youngsville, La.

Filed Feb. 18, 1986, Ser. No. 830,181
Int. Cl.⁴ E21B *7/28, 10/26, 10/56, 10/60*
U.S. Cl. 175—329 **11 Claims**



1. A well bore opener usable at the lower end of a drill string conducting a flow of fluid down through the bore, to increase the diameter on an existing pilot hole, apparatus comprising:

(a) an elongated body having an upper end adapted to threadedly engage the lower end of the drill string;
(b) a generally cylindrical region on said body and an extension tapering smaller to a rounded nose on the lower end, and a generally central fluid conducting channel extending from end to end;
(c) a stabilizer comprising a diametral enlargement of said body with an upper generally cylindrical region and a congreve form generally tangential with said cylindrical region and terminating on said body extension, said stabi-

lizer being divided into three stabilizer pads by grooves extending in a generally axial direction;

(d) an array of poly-crystalline diamond compact cutters affixed to said congreve stabilizer region and extending some radial distance from said congreve surface on each pad;

(e) a plurality of jet nozzles situated in holes extending from said body bore through the body wall located at least one in each of said grooves and directed outward and downward from the surface of said groove;

(f) a plurality of jet nozzles situated in holes extending through the wall of said body, at least one directed upward and outward to provide a fluid jet to impinge on each of said congreve form of said stabilizer pads;

(g) a plurality of vortex control blades extending radially outward from said body extension below said grooves, one blade being in general registry with each groove, said blades extending some distance in a generally axial direction relative to said body;

(h) a cutting structure comprising hard metal particles attached to said body extension rounded nose with braze metal; and

(i) a generally central jet nozzle terminating said body bore at the surface of said rounded nose.

4,618,011

COMBINATORIAL WEIGHING METHOD WITH PAIRS OF SCALES AND ZERO ADJUSTMENT

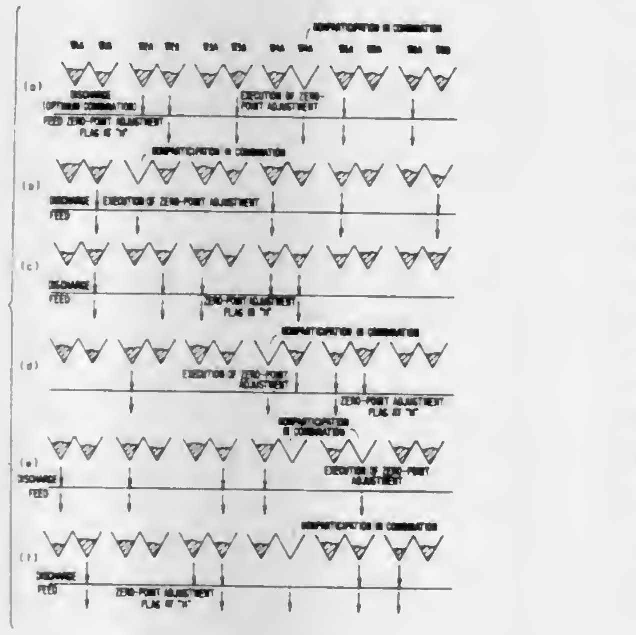
Takashi Sashiki, Nagaokakyo, and Yukio Nakagawa, Kyoto, both of Japan, assignors to Ishida Scales Mfg. Co., Ltd., Kyoto, Japan

Filed Apr. 5, 1985, Ser. No. 720,308

Claims priority, application Japan, Apr. 5, 1984, 59-68288; Apr. 5, 1984, 59-68289; Apr. 5, 1984, 59-68290

Int. Cl.⁴ G01G *19/22, 13/14*

U.S. Cl. 177—1 **18 Claims**



1. A combinatorial weighing method for a computerized weighing apparatus including a plurality of pairs of weighing machines for weighing articles supplied thereto and for providing weight value data, and a computation control unit for computing combinations of weight values on the basis of the respective weight value data of the weighing machines to select an optimum combination of the weighing machines, which gives a total combined weight value equal to or closest to a target weight value, and to control the discharge of the articles from the weighing machines corresponding to the optimum combination, said combinatorial weighing method comprising the steps of:

(a) selecting combination patterns which include only one of the two weighing machines in any one pair, and combination patterns which include both weighing machines of a pair for a single one of the pairs;

(b) computing the total combined weight values on the basis of the combination patterns selected in said step (a), and determining the optimum combination; and

(c) a subsequent combinatorial computation with the weighing machines except for at least one of the two weighing machines in a selected pair when both weighing machines are selected together in the optimum combination at said step (b), and executing a zero-point adjustment on the at least one excepted weighing machine.

4,618,012

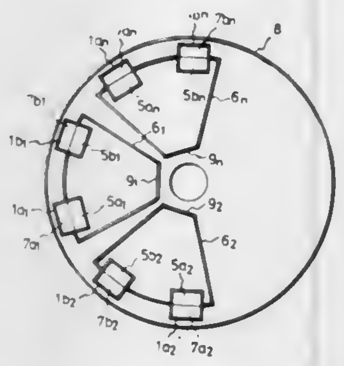
COMBINATION WEIGHING MACHINE

Shoji Yamano, Akashi; Yoshitaka Mikata, Himeji; Osamu Teramoto, Akashi, and Kazuhiro Nishide, Kobe, all of Japan, assignors to Yamato Scale Company, Limited, Japan

Filed Jan. 14, 1985, Ser. No. 691,388

Int. Cl.⁴ G01G *19/00, 19/22, 13/00*

U.S. Cl. 177—25 **7 Claims**



1. A combination weighing machine, comprising a plurality of weighing units each adapted for weighing product and producing a weight signal indicative of the weight thereof, a plurality of auxiliary holding hoppers for receiving and holding product weighed by said weighing units, a plurality of memories associated with respective holding hoppers for storing the weight signals corresponding to the contents of said hoppers, means for combining the weight signals from said weighing units and said memories to select a combination of weight signals whose sum satisfies a predetermined weight condition, means for unloading the weighing hoppers and/or holding hoppers corresponding to said selected weight signals, and transfer means responsive to the unloading of said holding hoppers for transferring thereto product from said weighing hoppers and for writing the weight signals of said product in the memories of respective holding hoppers; characterized in that each of said holding hoppers is adapted to receive and hold product from at least two weighing units, and said transfer means is responsive to the unloading of a holding hopper for transferring product thereto from either one of said two weighing units.

4,618,013

COMBINATION WEIGHING MACHINE WITH AUXILIARY WEIGHT HOPPER

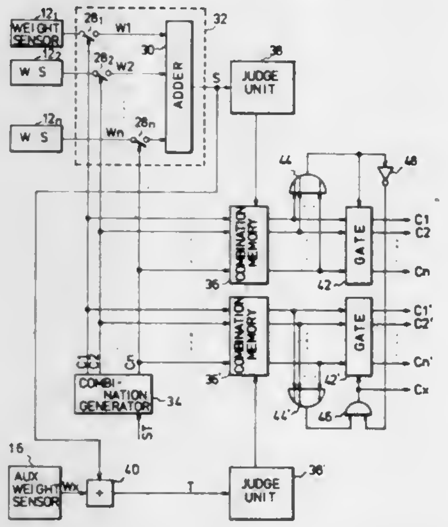
Shoji Yamano, Akashi; Yoshitaka Mikata, Himeji; Osamu Teramoto, Akashi, and Kazuhiro Nishide, Kobe, all of Japan, assignors to Yamato Scale Company, Limited, Japan

Filed Feb. 4, 1985, Ser. No. 698,087

Int. Cl.⁴ G01G *19/22, 13/02*

U.S. Cl. 177—25 **5 Claims**

1. A combination weighing machine, comprising a plurality of main weighing units, means for feeding a quantity of product to each main weighing unit, each main weighing unit being adapted for weighing said quantity of product to produce a main weight signal indicative of the weight of said product, means for generating combinations of said main weight signals to select a combination whose sum satisfies a predetermined weight condition, and means for unloading the main weighing units of said selected combination; characterized in that said machine further includes at least one auxiliary weighing unit, means for feeding to said auxiliary weighing unit a quantity of product smaller than said quantity fed to a main weighing unit, each auxiliary weighing unit being adapted for weighing said smaller quantity of product to produce an auxiliary weight signal indicative of the weight of said product, means for causing said auxiliary weight signal to participate in said combinations, but only when no combination satisfying said predetermined weight condition has been obtained from the combinations of said main weight signals, and means responsive to a combination satisfying said predetermined weight condition obtained from the combinations including said auxiliary weight signal for simultaneous unloading of said auxiliary weighing unit and the main weighing units of said selected combination.



4,618,014

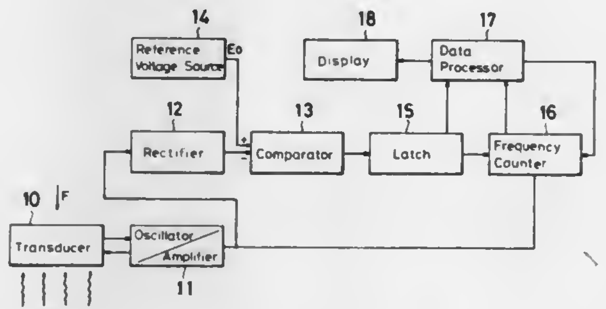
WEIGHT MEASURING APPARATUS OF VIBRATION TYPE

Masaaki Kobayashi, Tokyo, Japan, assignor to Shinko Denshi Company Limited, Tokyo, Japan

Filed Apr. 5, 1985, Ser. No. 720,317

Int. Cl.⁴ G01G *3/14, 23/10*

U.S. Cl. 177—210 FP **7 Claims**



1. An apparatus for measuring a weight comprising

a weight transducer of vibration type which vibrates at a frequency determined in accordance with a weight applied to the transducer to produce an oscillation signal having said frequency;

means for receiving the oscillation signal and detecting an abnormal change in the oscillation signal to produce an abnormal signal, said abnormal signal being generated when an amplitude of the oscillation signal is increased abnormally;

means for producing said abnormal signal comprising a rectifier for rectifying the oscillation signal to produce a rectified signal, a reference voltage source for generating a reference voltage, a comparator for comparing the rectified signal with the reference voltage and producing an output signal when the rectified signal is greater than the reference voltage and a latch circuit triggered by the output signal of the comparator to produce the abnormal signal; and

means for discarding the oscillation signal in response to the abnormal signal and deriving a measured weight only from the oscillation signal which is generated from the weight transducer in a normal condition.

4,618,015

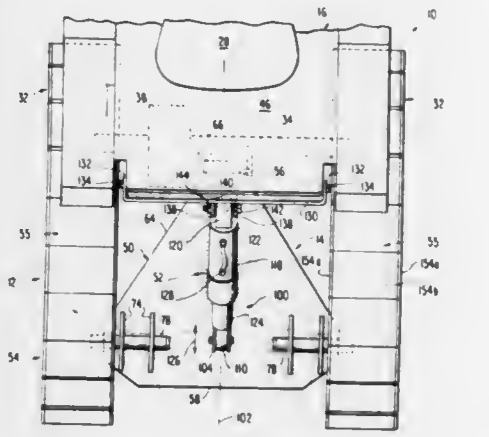
REAR SWING ARM ASSEMBLY FOR THREE OR FOUR WHEELED OFF-THE-ROAD VEHICLE TRACK CONVERSION UNIT

Michael Yochum, P.O. Box 3303, Homer, Ak. 99603

Filed Jun. 11, 1985, Ser. No. 743,726

Int. Cl.⁴ B62D *55/04*

U.S. Cl. 180—9.21 **7 Claims**



1. A unitary, platelike swing arm assembly for detachable mounting to the rear of a three or four wheeled off-the-road vehicle at its center, said assembly comprising:

a unitary platelike swing arm of generally triangular plan configuration, said swing arm having a front apex end and a rear base end,

means carried by said platelike swing arm at its front apex end for pivotably connecting the front apex end to the rear center of the vehicle for pivoting about a horizontal axis,

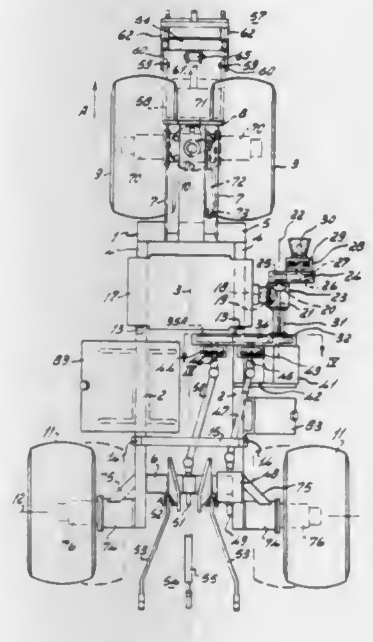
means fixedly mounting axle means to said platelike swing arm at said base end, to opposite sides thereof,

auxiliary wheels mounted for rotation about said axle means to opposite sides of said unitary platelike swing arm at positions for alignment with the vehicle rear wheels such that endless track means borne by the vehicle rear wheels and the auxiliary wheels in frictional engagement with the tread portions of the vehicle rear wheels and the auxiliary wheels provide added traction with the track means being driven by the vehicle rear wheels,

and said assembly further comprising a single pivot shock system constituting an air cylinder having one end pivotably mounted to the unitary, platelike swing arm at said base end and centrally between said auxiliary wheels, and means carried by said air cylinder for pivotably mounting the other end thereof to the vehicle chassis at its rear center and in line with the pivot connection at the front apex end of the platelike swing arm to the rear center of the vehicle chassis; such that by a simple two point mounting, the unitary platelike swing arm assembly may be attached and detached readily from the off-the-road vehicle.

4,618,016
MOTOR VEHICLE SUCH AS A TRACTOR

Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland
Filed Feb. 1, 1984, Ser. No. 576,019
Claims priority, application Netherlands, Feb. 7, 1983, 8300453
Int. Cl.⁴ B60K *25/08;* F16H *37/00*
U.S. Cl. 180—53.6 35 Claims



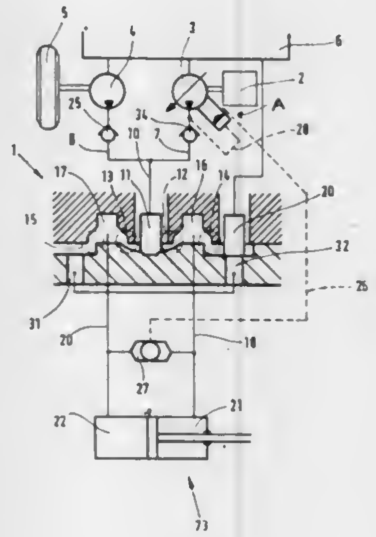
1. A motor vehicle comprising an engine, a frame which supports the engine, forward and rear ground wheels supporting said frame, at least one lifting device and a power take-off shaft which is drivable by the engine and which extends in the intended direction of normal operative travel of the vehicle and is disposed at one side of the vehicle, the power train between said engine and said shaft being disposed between said forward and rear ground wheels as seen from the side, and means for adjusting the lateral position of said power take-off shaft relative to its distance from the vehicle's longitudinal centerline, said power take-off shaft being arranged to extend beyond the vehicle's side so that auxiliary shafts from machines or implements attached to the vehicle and having a working width extending beyond the vehicle can be coupled with said power take-off shaft without being substantially misaligned with said power take-off shaft.

33. A motor vehicle comprising an engine supported by a frame, four ground wheels interconnected to and supporting said frame, a hydraulic pump driven by said engine, separate hydraulic motors driving at least two of said wheels, a hydraulic circuit from said pump to said motors, valve means in said hydraulic circuit controllable by the operator of the vehicle which is adapted to supply hydraulic fluid to each said motor for operating same selectively either in series to prevent wheel slippages under unfavorable soil conditions or in parallel for normal operations.

34. A motor vehicle comprising an engine supported by a frame, forward wheels and rear wheels interconnected to and supporting said frame, a power take-off shaft drivable by said engine extending from one side of the tractor between said forward and said rear wheels on that side, said power take-off shaft being adapted to drive implements connected to the vehicle and extending normally outboard relative to that side of the vehicle, a fuel tank for said engine supported by said frame on the other side of said tractor, said fuel tank being spaced outboard from the tractor's longitudinal centerline and entirely located on said other side which is opposite to said one side on which said power take-off shaft is located and which is between said forward and said rear wheels on such other side.

4,618,017
HYDRAULIC AUXILIARY POWER STEERING FOR MOTOR VEHICLES

Karl-Heinz Liebert, and Erwin Wiedemann, both of Schwäbisch Gmünd, Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany
PCT No. PCT/EP83/00301, § 371 Date Nov. 21, 1984, § 102(e) Date Nov. 21, 1984, PCT Pub. No. WO84/03674, PCT Pub. Date Sep. 27, 1984
PCT Filed Nov. 15, 1983, Ser. No. 676,394
Claims priority, application PCT Int'l Appl., Mar. 23, 1983, EP83/00088
Int. Cl.⁴ B62D *5/08*
U.S. Cl. 180—133 6 Claims



1. In a dual pump booster open circuit system having a double acting booster cylinder (**23**) with a pair of pressure chambers (**21, 22**) and comprising a vehicle driven pump (**4**) operating responsive to vehicle speed for providing pressure flow for booster steering; and an engine driven standby pump (**3**); including a manually operable steering control valve (**1**) through which discharge passes in neutral position to a sump: the improvement which comprises:

said engine driven pump being a variable displacement pump and having pressure operable actuating means (A) movable in opposite directions to vary output from zero output to a volume and pressure suitable for booster steering operation and return to zero output;

said control valve when in neutral position having a flow restriction means (**12, 13**) to effect a pilot pressure therethrough to said actuating means from the output of said vehicle driven pump;

hydraulic circuitry means conveying said pilot pressure to said actuating means for normally maintaining zero output of said variable displacement pump during or above a predetermined vehicle speed;

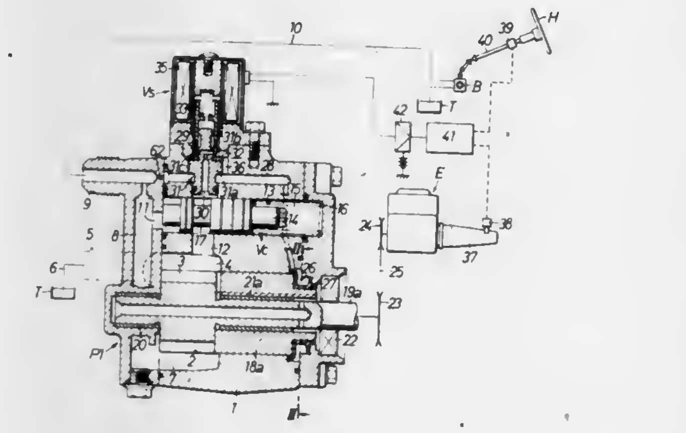
connection means (**28**) from said variable displacement pump to said actuating means for conveying pressure from said latter pump to said actuating means;

including a comparator valve (**27**) connected between the pressure chambers of a booster cylinder, said hydraulic circuitry means having connection means (**26**) to said actuating means effective to communicate pressure thereto from said comparator valve upon a rise or fall in pressure in either pressure chamber;

whereby a drop in pressure to said actuating means from either chamber causes said variable displacement pump to provide a booster steering output at vehicle speeds below said predetermined speed and whereby a rise in pressure to said actuating means from either pressure chamber restores zero output.

4,618,018
POWER STEERING DEVICE FOR VEHICLES

Yoshihiko Toshimitsu, Asaka; Tokuro Takaoka, Tokyo; Toshitake Kawai, Kawagoe, and Takashi Ishida, Kawaguchi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 21, 1985, Ser. No. 714,333
Claims priority, application Japan, Mar. 29, 1984, 59-61872
Int. Cl.⁴ B62D *5/06*
U.S. Cl. 180—142 5 Claims



1. A power steering device for supplementary power for the steering of vehicles, said power steering device comprising a hydraulic pump, said hydraulic pump including a pump casing, a rotary shaft having an axis, a pump chamber defined in said pump casing, and a suction port and a discharge port, wherein a pressure member is provided in said pump casing on at least one axial side of said rotary shaft and constitutes an inner side wall of said pump chamber, said pressure member being movable along the axis of said rotary shaft; a hydraulic chamber on a side of said pressure member opposite said pump chamber, said hydraulic chamber faces an end portion of said pressure member and communicates with said discharge port of said hydraulic pump; an electromagnetic change-over valve for interconnecting said hydraulic chamber and said suction port of said hydraulic pump; detector means for sensing at least one of the speed and the steering angle of said vehicle; and means interconnecting said detector means and said electromagnetic change-over valve for actuating said valve and interconnecting said hydraulic chamber and said suction port when said at least one of the speed and the steering angle detected by said detector means passes a limit predetermined to indicate that supplementary power for steering is not required.

4,618,019
MOTORCYCLE

Junji Ando, Tokyo, and Yoshihisa Hirose, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 17, 1985, Ser. No. 692,440
Claims priority, application Japan, Feb. 17, 1984, 59-28205; Feb. 17, 1984, 59-28206; Feb. 17, 1984, 59-28207; Feb. 17, 1984, 59-28208
Int. Cl.⁴ B62K *11/00*
U.S. Cl. 180—219 4 Claims

1. In a motorcycle equipped with an engine having a first built-in dynamo, said motorcycle including:

a second dynamo in addition to said first dynamo, said second dynamo being outside of said engine;

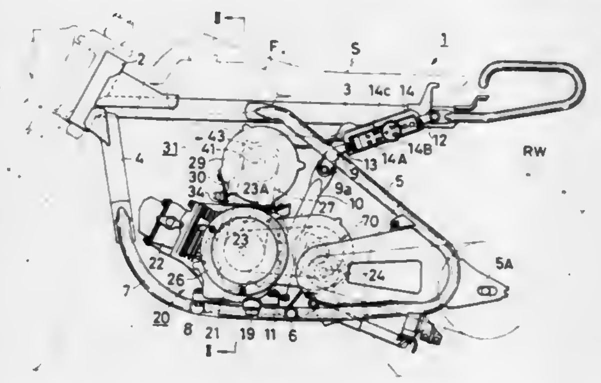
a driven shaft connected to a rotor shaft of said second dynamo;

a driven rotary member relatively rotatably mounted on said driven shaft;

a driving rotary member in said engine and adapted to drive said driven rotary member;

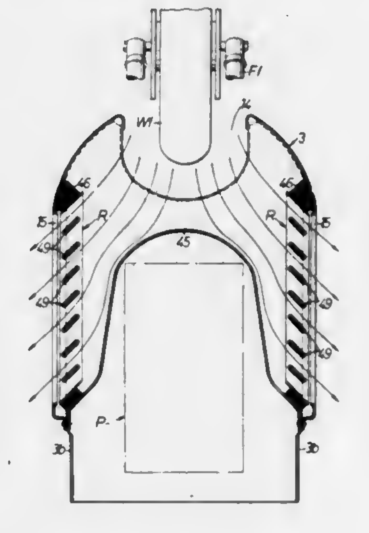
a connecting member mounted on said driven shaft in such a manner as to be slidable in the axial direction thereof and rotatable therewith, said connecting member being adapted to be engaged with and disengaged from said driven rotary member; and

an actuating member connected to said connecting member through a bearing, said actuating member being displaceable in the axial direction of said driven shaft but unrotatable, said connecting member being engaged with or disengaged from said driven rotary member in accordance with the displacement of said actuating member in said axial direction.



4,618,020
MOTORCYCLE

Azusa Noda, Tokyo, and Tadashi Kamiya, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 4, 1980, Ser. No. 156,857
Claims priority, application Japan, Jun. 6, 1979, 54-70784; Jun. 6, 1979, 54-70785
Int. Cl.⁴ B60K *11/02, 11/04, 11/08*
U.S. Cl. 180—229 3 Claims



1. A two-wheeled motorcycle comprising:
(a) a rear-wheel driving power unit arranged between the front and rear wheels of the vehicle;
(b) a cowling structure of thin sheet material covering said power unit and formed at the front thereof with an air inlet opening and including a right and a left side section, each formed therein with an air outlet opening in a side surface thereof;
(c) an air-flow dividing guide plate interconnecting said right and left side sections of said cowling structure, defining in the latter a bifurcated air passage duct extending between said air inlet opening and said air outlet openings; and
(d) a pair of right and left radiators connected with said power unit and arranged in the respective leg portions of said bifurcated air passage duct positioned in said air outlet openings in the opposite side surfaces of said cowling structure.

4,618,021

DRIVING GEAR FOR FRONT AND REAR WHEELS OF AUTOMOBILE

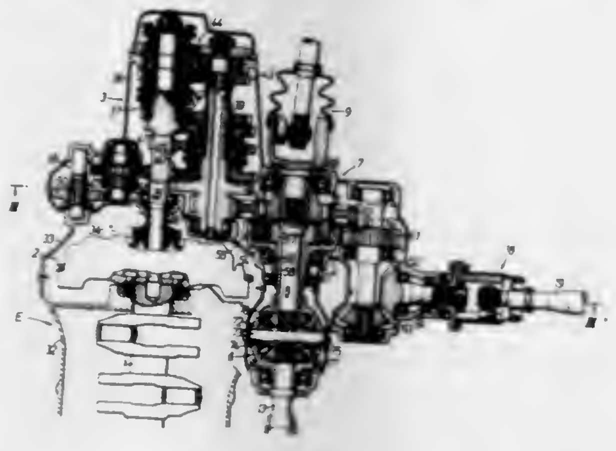
Noboru Ashikawa, Sayama, and Shunji Sakuma, Wako, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 6, 1984, Ser. No. 568,842

Claims priority, application Japan, Jan. 18, 1983, 58-6233

Int. Cl.⁴ B60K *17/344*

U.S. Cl. 180—248 **4 Claims**



1. A driving gear for front and rear wheels of an automobile, comprising an engine with a crank shaft disposed in a direction of width of a body of the automobile, a transmission supported on an engine case at one side axially of said crank shaft, a clutch provided between the engine and the transmission, a first differential gear of a planetary gear type coupled to the transmission via a reduction gear, a second differential gear of a bevel gear type transmission an output of the first differential gear to left and right front wheels of the automobile, a third differential gear transmitting an output of the first differential gear to left and right rear wheels of the automobile, wherein the first differential gear is disposed adjacent to said reduction gear and comprises a sun gear, a ring gear and a plurality of planet gears engaging with the sun and ring gears, said planet gears being pivoted directly on and driven by said reduction gear; the first and second differential gears are provided on opposite sides of a plane perpendicular to said crankshaft and including said clutch, said first and second differential gears also lying along a common axis parallel to said crank shaft; the sun gear and the ring gear are coupled individually to said front and rear wheels respectively.

4,618,022

POWER TRANSFER DEVICE FOR FOUR-WHEEL DRIVE VEHICLE

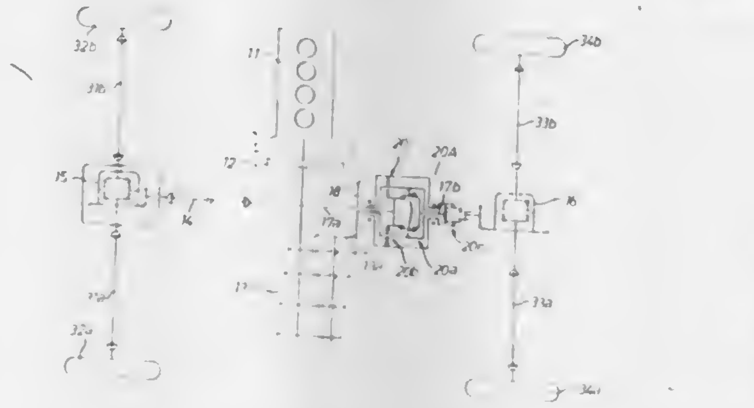
Hideyuki Hayashi, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jan. 14, 1986, Ser. No. 818,688

Claims priority, application Japan, Jan. 16, 1985, 60-5399

Int. Cl.⁴ B60K *5/04, 17/34*

U.S. Cl. 180—249 **7 Claims**



1. A power transfer device for a four-wheel drive vehicle having a transmission drivingly connected to a prime mover of the vehicle and having a set of front road wheels and a set of rear road wheels adapted to be driven from said transmission, said transfer device comprising:

a first differential of the bevel gear type including a differential case arranged to be applied with drive torque from said transmission, a pinion gear rotatably mounted within said differential case, and a pair of side gears rotatably mounted within said differential case and in mesh with said pinion gear;

a first output shaft connected to one of said side gears for driving the front or rear road wheels;

a second output shaft connected to the other side gear for driving the rear or front road wheels;

a second differential of the planetary gear type including a differential carrier formed to contain said differential case therein, a carrier rotatably mounted within said differential carrier and connected with said differential case for rotation therewith about a common axis, a sun gear integral with said side gear connected to the first output shaft, a planetary gear rotatably supported by said carrier and in mesh with said sun gear, a ring gear integral with the inner wall of said differential carrier and in mesh with said planetary gear, said carrier being drivingly connected to an output shaft of said transmission; and

a selector mechanism arranged to selectively provide a drive connection between said second output shaft and said rear or front road wheels or a drive connection between said differential carrier and said rear or front road wheels.

4,618,023

ARRANGEMENT IN A VEHICLE WITH A DRIVE UNIT MOUNTED IN A SUBFRAME

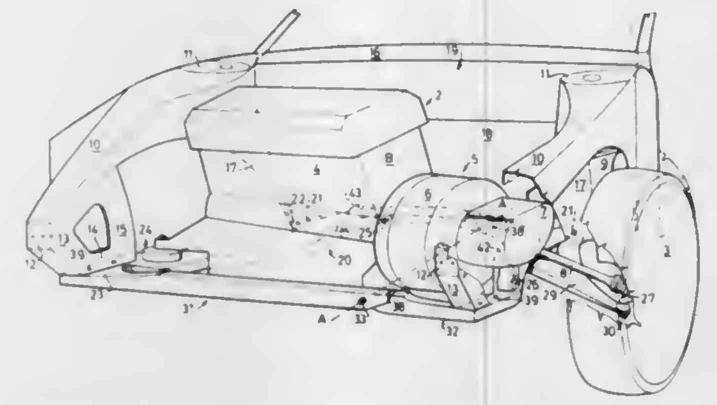
Stig I. Norlin, Kungshamn, Sweden, assignor to Saab-Scania Aktiebolag, Sodertalje, Sweden

Filed Dec. 6, 1984, Ser. No. 678,973

Claims priority, application Sweden, Dec. 8, 1983, 8306768

Int. Cl.⁴ B62D *21/00*

U.S. Cl. 180—312 **11 Claims**



1. Arrangement in a motor vehicle of the passenger car type having a drive unit mounted on a subframe, which subframe is removably attached to carrying parts in the vehicle via attachment elements, and which comprises a first and a second subframe part, characterized in that the subframe parts are articulated in relation to each other about at least two pivoting joints, said joints being separately positioned along a substantially horizontal axis, whereby said first subframe part can be caused to swing into a position allowing fitting and removal of parts of the drive unit.

4,618,024

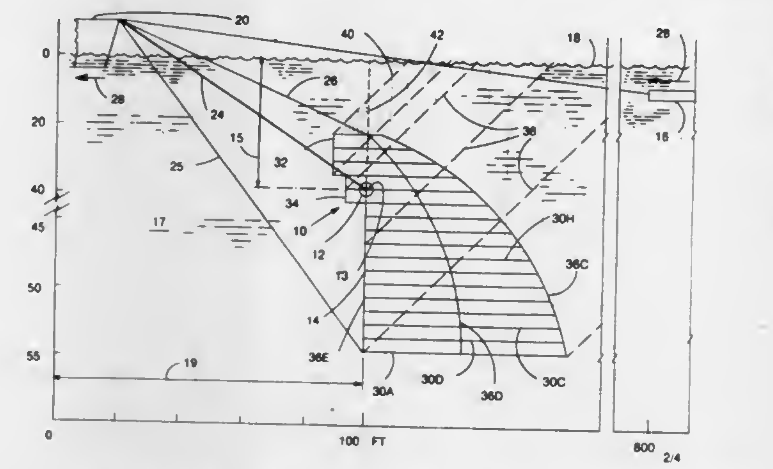
MOVING SEISMIC SOURCE SYSTEM FOR USE IN WATER-COVERED AREAS

Samuel N. Domenico, Tulsa, Okla., assignor to Amoco Corporation, Chicago, Ill.

Filed Feb. 28, 1983, Ser. No. 470,664

Int. Cl.⁴ G01V *1/04;* **H04R** *1/02*

U.S. Cl. 181—120 **4 Claims**



1. An apparatus which can easily be moved through water for both reflecting acoustic wave energy in a downward direction and attenuating upwardly and horizontally traveling acoustic wave energy produced by a seismic source used in a body of water wherein the seismic source and seismic sensor means are both moved substantially horizontally through a body of water comprising:

gas releasing means interposed in the water between the seismic source and the seismic sensor means and between the seismic source and the surface of the water for releasing gas bubbles into the water wherein gas releasing means comprises a plurality of coaxial concentric pipes arranged vertically with spaces between adjacent pipes in the shape of at least a radial sector of a paraboloid, with a vertical axis of the paraboloid through the seismic source, each of said pipes having a plurality of perforations; and

means to supply said pipes with pressurized gas.

4,618,025

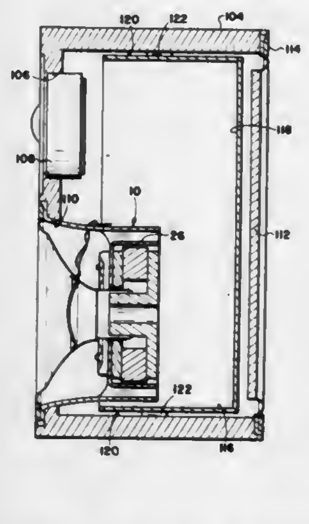
ACOUSTICAL DUCTING FOR SPEAKERS AND ENCLOSURES

Dan R. Sherman, 4235 S. Oswego, Tulsa, Okla. 74135

Filed Sep. 15, 1980, Ser. No. 187,510

Int. Cl.⁴ H05K *5/00*

U.S. Cl. 181—148 **5 Claims**



1. In an acoustical speaker having a movable diaphragm, an improvement comprising

a first cylindrical housing, a first end of which surrounds the diaphragm and which is of a predetermined length, the second end terminating rearwardly of the diaphragm, a second cylindrical housing disposed concentrically within the first cylindrical housing, a rear end of which is coterminous with the second end of the first cylindrical housing to form an annular duct of predetermined cross-sectional area less than that of the diaphragm for acoustically isolating the diaphragm, for dampening ringing of the diaphragm and for extending the frequency range of the speaker at low frequencies.

4,618,026

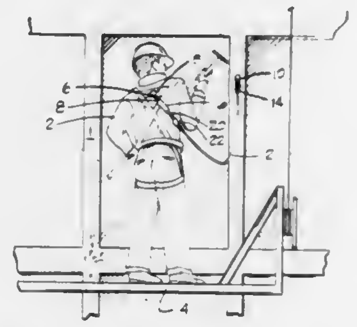
APPARATUS AND METHOD FOR PRODUCING A COUNTERACTING FORCE

Wayne L. Olson, Evergreen, Colo., assignor to Rose Manufacturing Company, Englewood, Colo.

Filed Sep. 27, 1985, Ser. No. 781,402

Int. Cl.⁴ A62B *35/00*

U.S. Cl. 182—4 **28 Claims**



1. Apparatus for applying a counteracting force comprising:

at least one elongated strip of webbing;

at least one portion of said at least one elongated strip of webbing folded over in superposed relationship to form first superposed sections;

means for securing said first superposed sections together in said superposed relationship;

means extending from one end of said first superposed sections for securing said one end to a first object;

at least one separating means located in said means extending from one end of said first superposed sections and positioned so that said separating means can pass between said first superposed sections;

means for securing said at least one separating means to a second object; and

means for producing a force causing relative movement between said first and second objects in a direction away from one of them, said force being of sufficient magnitude so that said first superposed sections will be pulled over said at least one separating means and said at least one separating means will pass between said superposed sections and separate successive parts of said securing means of said first superposed sections to form first separated superposed portions of said first superposed sections and to generate a counteracting force until said force causing the relative movement between said first and second objects has been overcome and said relative movement has been stopped.

4,618,027

FOLDING LADDER WITH THREE STILES

Giancarlo Piretti, Bologna, Italy, assignor to Castilia S.p.A., Italy

Filed Oct. 22, 1985, Ser. No. 790,016

Claims priority, application Italy, Jan. 14, 1985, 52842/85[U]

Int. Cl.⁴ E06C *1/383*

U.S. Cl. 182—35 **10 Claims**

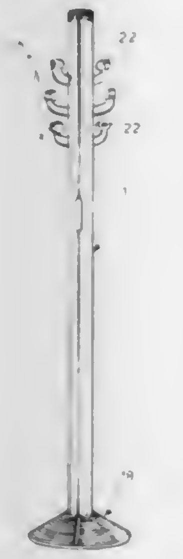
1. A ladder comprising:

a pair of main stiles;

a series of rungs with central hinges and ends articulated to the two main stiles, whereby the ladder can adopt a folded inoperative configuration in which the main stiles are alongside each other and an extended operative configuration in which the main stiles are spaced from each other, and

means for stopping the ladder in the extended operative configuration,

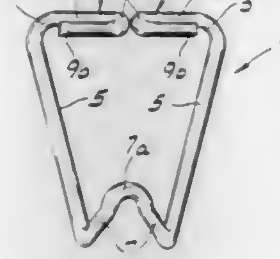
wherein the main stiles are articulated together at their upper ends about an axis and the ladder further includes a single



auxiliary stile articulated at its upper end to the two upper ends of the main stiles about an axis substantially perpendicular to the articulation axis of the two main stiles, the auxiliary stile being movable between a position alongside the two main stiles, corresponding to the folded inoperative condition of the ladder, and a position spaced from the main stiles, corresponding to the extended operative condition of the ladder.

4,618,028
TREE STEP

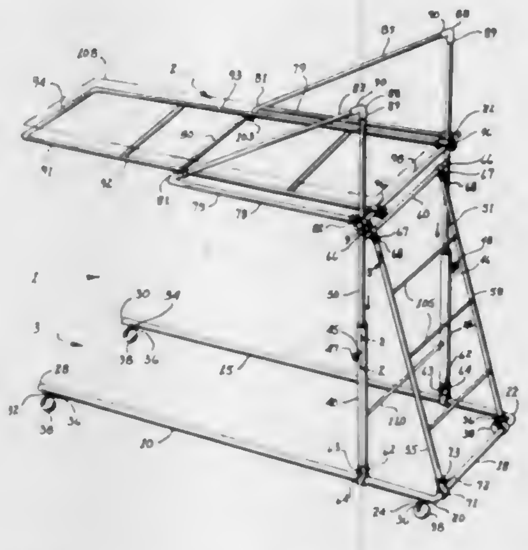
Jerry D. Dale, 48 N. Lincoln St., Cottage Hills, Ill. 62018
Filed Dec. 23, 1985, Ser. No. 812,825
Int. Cl.⁴ A63B *29/04;* A01M *31/00*
U.S. Cl. 182—92 **24 Claims**



1. A tree step comprising a frame and means for securing the frame to a tree, said means comprising a pair of hooks on the frame, each hook having a mouth for entry into a space bounded by the hook, and a line secured at one end to the frame having an intermediate reach adapted to encircle the tree and a free end reach adapted to be wound a plurality of times around the hooks, with each wind of line passing through the mouths of the hooks into said hook spaces, the mouth of at least one hook being sufficiently narrow to permit passage therethrough of only one diameter of line at a time whereby after said free end reach of line is wound around the hooks, said frame may be moved relative to the tree to effect passage of a portion of said intermediate reach of line through the mouth of said one hook to a position in said hook space blocking passage of said end reach back out through said mouth thereby to prevent the line from unwinding from the hooks.

4,618,029
ADJUSTABLE APPARATUS AND METHOD FOR ASSISTING IN MOTOR VEHICLE ENGINE REPAIR

Ron Lowry, 935 E. Vermont Ave., Phoenix, Ariz. 85016
Filed Jun. 3, 1985, Ser. No. 740,757
Int. Cl.⁴ B25H *5/00*
U.S. Cl. 182—116 **12 Claims**



1. An adjustable apparatus for aiding a motor vehicle engine repairman, comprising:

a lower support means for supporting said apparatus having a plurality of wheel means therebelow for allowing said lower support means to be easily moved underneath said motor vehicle;

an intermediate support means removably attached to said lower support means for adjusting said apparatus vertical position;

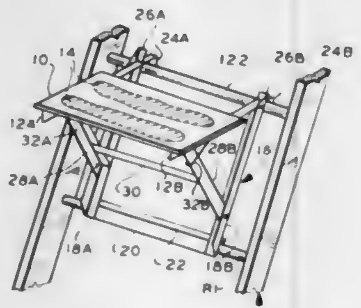
an upper support means removably attached to said intermediate support means and generally parallel to said lower support means for supporting said repairman in repairing said engine of said vehicle, said upper support generally comprising a u-shaped brace member and a mechanic support member removably attached to said intermediate support means;

at least a pair of angularly extending member means having a plurality of struts attached therebetween for allowing said repairman to ascent onto said upper support means, said angularly extending member means suitable for removably attaching to said lower and intermediate support means; and

a pad means removably mounted on said mechanic support member.

4,618,030
LADDER PLATFORM

Guy A. Campbell, 1326 S. Main St., Phillipsburg, N.J. 08886
Continuation-in-part of Ser. No. 456,582, Apr. 11, 1983, abandoned. This application Aug. 14, 1984, Ser. No. 641,343
Int. Cl.⁴ E06C *7/16*
U.S. Cl. 182—121 **9 Claims**



1. A platform for a ladder having rungs, comprising:

a frame arranged to detachably attach to an intermediate one of the rungs of said ladder;

a step means hingeably mounted to said frame for providing a footrest, said step means being sized to swing upwardly and allow a foothold between said step means and said frame, said foothold being supported by said intermediate one of said rungs; and

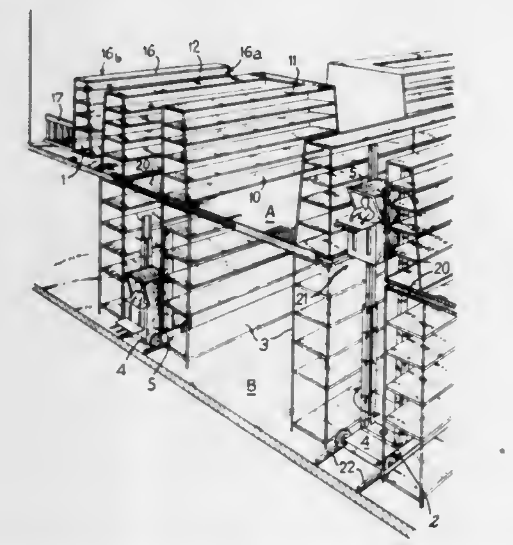
catch means coupled between said frame and said step means for preventing the step from folding downwardly against the frame and for allowing the step means to swing upwardly, said catch means including:

(a) at least one strut pivotally mounted to said frame and extending upwardly toward the underside of said step means for supporting it; and

holding means for urging said strut upwardly with said step means to allow said strut to fold against said ladder substantially parallel thereto.

4,618,031
INSTALLATION AND METHOD FOR SUPPLYING MERCHANDISE TO SALES DISPLAY STRUCTURES

Alain Belloche, 9, avenue du Mail, 35000 Rennes, France
Filed Dec. 28, 1984, Ser. No. 687,477
Claims priority, application France, Jan. 4, 1984, 84 00136
Int. Cl.⁴ A47F *10/02*
U.S. Cl. 186—52 **8 Claims**



1. An installation for a self-service shop, comprising at least one sales floor, at least one storage floor, said floors being disposed one above the other, display structures on said sales floor for displaying merchandise for sale, said display structures defining sale areas between them, and said display structures presenting front faces which are accessible for merchandise to be taken therefrom by customers in said sales areas and rear faces which are inaccessible from said sales areas, said structures being restockable through said rear faces, at least one of said floors presenting transfer openings juxtaposed with said rear faces, said installation including transfer means for transferring merchandise from said storage floor to said sales floor through said transfer opening, whereby said display structures may be restocked through said rear faces, wherein said transfer means comprises a platform and motive means for passing said platform through said transfer opening, retracting said platform back through said transfer opening and moving said platform horizontally from display structure to display structure.

4,618,032
TWO BELTED SUPERMARKET CHECKOUT SYSTEM

Robert M. Woolf, Cincinnati, Ohio, assignor to The Kroger Co., Cincinnati, Ohio
Filed Mar. 16, 1984, Ser. No. 590,165
Int. Cl.⁴ A47F *9/04*
U.S. Cl. 186—61 **17 Claims**

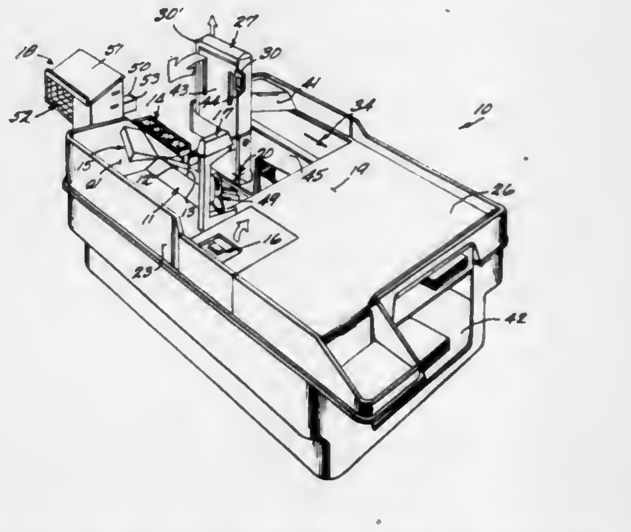
1. A supermarket-type checkout counter comprising:

indicia scanning means for scanning indicia disposed upon goods moved into operative association therewith, said scanning means mounted in a scanner module;

a keyboard;

a cash drawer;

means for defining a workplace at which an operator may be positioned to use said scanning means, keyboard, and cash drawer, said workplace defining means including conveyance means for facilitating conveyance of goods moved into operative association with the scanning means away from the scanning means, said conveyance means including first and second conveyance path means, the first path means disposed along a first side of said workplace and leading to a merchandise accumulation area, and the second conveyance path means comprising first and second moving conveyors disposed at an angle to one another for conveying merchandise along a second side opposite said first side, and behind said workplace and generally perpendicular to said second side and opposite said scanner module, said second path means also leading to said merchandise accumulation area;



a generally vertical wall portion mounted on the opposite side of said scanner module as an operator positioned in said workplace, said generally vertical wall portion including means defining an open area for receipt of a shopping cart so that items within the shopping cart are readily accessible to an operator standing in the workplace and reaching over the scanner module, and are movable downwardly over the scanner module; and

wherein said scanning means comprises a generally flat plate portion disposed in said scanner module, and wherein said scanner module comprises means for positioning said generally flat plate portion so that it makes an angle in the range of substantially 10°-40° with respect to the horizontal and is angled toward an operator positioned in the workplace, being higher away from said workplace than adjacent said workplace, for facilitating utilization of the scanning means by the operator.

4,618,033
WHEEL STOPPING DEVICE

Kenzou Kassai, Osaka, Japan, assignor to Aprica Kassai Kabushikikaisha, Osaka, Japan
Filed Nov. 27, 1985, Ser. No. 803,069
Claims priority, application Japan, Dec. 6, 1984, 59-258809
Int. Cl.⁴ B62B *9/08*
U.S. Cl. 188—20 **12 Claims**

1. A wheel stopping device wherein first and second wheel means (**8** and **9**) turnably installed at two different positions on a movable body through first and second wheel attaching members (**115** and **116**), respectively, and each having at least one wheel (**9, 10, 11, 12**) are formed with first and second ribs (**167** and **66, 67**), respectively, projecting from the lateral surfaces of the wheels, the arrangement being such that when first and second engaging members (**157** and **57**) respectively asso-

ciated with said first and second wheel means and installed for movement relative to said wheel attaching members engage said first and second ribs, respectively, the first and second wheel means are brought into a wheel stopped state, while when the first and second engaging members become incapable of engaging the first and second ribs, respectively, the first and second wheel means are brought into a wheel rotation permitted state, said wheel stopping device being characterized in that:

said first and second ribs project from portions of the radii of the respective wheels,

said first and second engaging members are respectively formed on the ends of first and second engaging levers (**117** and **17**) which are respectively installed in said first and second wheel attaching members so that they are turnable within a predetermined range, said first and second engaging members being movable only approximately radially of said wheels by the turning of said first and second engaging levers, said radial movement providing states for engagement with and disengagement from said ribs,

a return spring (**110**) is provided for urging said first engaging member (**157**) to be positioned at one end of its range of movement,

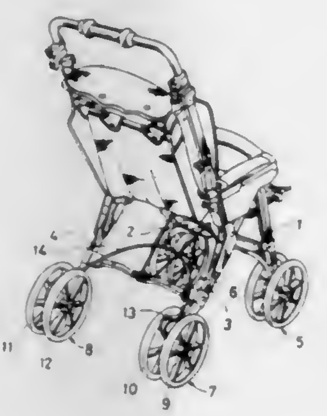
a wire (**49**) is connected to said first engaging member through a spring (**111**) which serves to accommodate excessive tension in said wire, in such a manner as to pull said first engaging member toward the other end of its range of movement against the resilience of said return spring,

an operating member (**13**) is attached to said second wheel attaching member (**15**) so that it is turnable within a predetermined range, said wire extending through a tube (**14**) which is fixed at its opposite ends to said first and second wheel attaching members, said wire being connected to said operating member,

a locking spring (**62**) is connected between said operating member and said second engaging lever (**17**), by the action of which locking spring said operating member and said second engaging lever are urged to turn in opposite directions across their dead position,

the turning of said operating member and said second engaging lever in one direction under the action of said locking spring is effected against the force of said return spring, while the turning thereof in the other direction is effected with the force of said return spring assisting in such turning, and

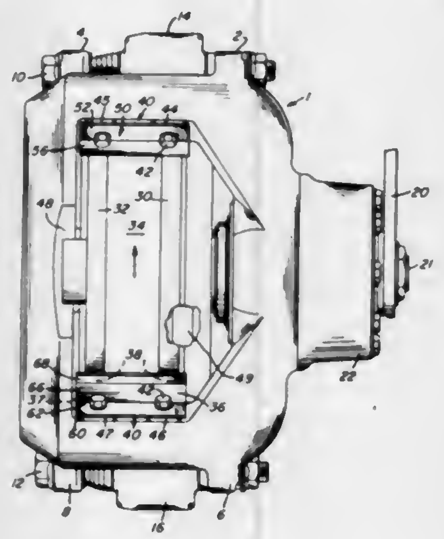
the relation between said engaging members and said ribs is so selected that the operations for said first engaging member to engage and disengage said first ribs (**66, 67**) are operatively associated with the operations for said second engaging member to engage and disengage said second ribs (**167**), respectively.



4,618,034
BRAKE SHOE RETENTION APPARATUS

James L. Weber, West Bloomfield, and Donald J. Davidson, Troy, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Mar. 18, 1985, Ser. No. 713,135
Int. Cl.⁴ F16D *65/02*
U.S. Cl. 188—73.36 **3 Claims**



1. Apparatus for mounting a pair of brake shoes in a disc brake assembly having a caliper slidably mounted to a support plate comprising,

ledge means in the caliper and its support plate for respectively supporting one of (a) said pair of brake shoes, threaded mounting holes in the caliper adjacent the ends of each said brake shoe for receiving mounting bolts,

the threaded holes in the caliper extending through plate mounting sufaces of the caliper which are at an angle to radially outer surfaces of the brake shoes adjacent said threaded holes,

hold down plates for extending across said radially outer surfaces of said brake shoes and across a rotor receiving area of the caliper, said hold down plates having elongated mounting portions with holes aligned with said threaded mounting holes in the caliper to receive said mounting bolts, said hold down plates having brake shoe contacting portions for contacting said radially outer surfaces of said brake shoes, said mounting portions and said contacting portions of said hold down plates are substantially longitudinally coextensive and angularly related to one another and wherein an angle between the mounting portions and the brake shoe contacting portions of each hold down plate is greater than a corresponding angle between the respective plate mounting surfaces of the caliper and the radially outer surfaces of said brake shoes which are contacted by the contacting portions of said hold down plate wherein bolts extending through the holes in the mounting portions of said hold down plates and into the threaded mounting holes in the caliper resiliently bend the contacting portions of said hold plates thereby resiliently urging said brake shoes into contact with said ledge means.

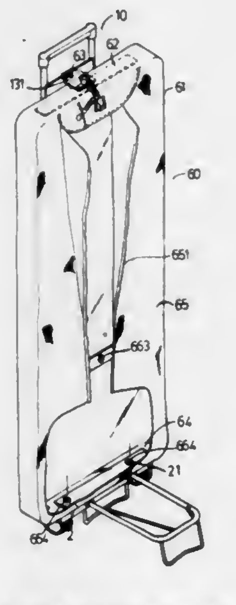
4,618,035
COLLAPSIBLE AND MOVABLE SUPPORT FOR WARDROBE

James Mao, 2nd Fl., No. 7-3, Jen-Ai Road, Sec. 3, Taipei, Taiwan

Filed Apr. 9, 1985, Ser. No. 721,440
Int. Cl.⁴ A45C *5/14;* **B62B** *1/12*
U.S. Cl. 190—18 A **1 Claim**

1. A collapsible and movable support for wardrobe comprising:

a main frame comprising a pair of frames parallel to each other, each of said frame consisting of a first, a second and a third hollow tubes, said third tube provided at the lower end with a first hole, a first spring-loaded ball received in said third tube capable of projecting from said first hole thereof, a first circular flange formed in the outer wall of said third tube slightly above said first hole thereof, said second tube furnished at the upper end with a second hole corresponding to said first hole and said first spring-loaded ball of said third tube, a second circular flange corresponding to said first circular flange being formed in the inner wall of said second tube slightly above said second hole thereof, said third tube with a smaller diameter and a shorter length in contrast to said second tube capable of being connected at the lower end to the upper end of said second tube, said second tube further provided at the lower end with a third hole, a second spring-loaded ball received in said second tube capable of projecting from said third hole thereof, a third circular flange formed in the outer wall of said second tube slightly above said third hole thereof, said first tube furnished at the upper end with a fourth hole corresponding to said third hole and said second spring-loaded ball of said second tube, a fourth circular flange corresponding to said third circular flange being formed in the inner wall of said first tube slightly above said fourth hole thereof, said second tube with a smaller diameter and a shorter length in contrast to said first tube capable of being connected at the lower end to the upper end of said first tube, said first tube further provided near said fourth hole thereof with a slot;



a first handle secured to the top ends of said third tubes of said frames;

a first transverse means provided at the central portion with a socket secured to the upper ends of said third tubes slightly below said first handle;

a supporting bar secured to the lower end of one of said first tubes and extending upwardly to a predetermined distance;

a second transverse means secured to both the upper end of said supporting bar and the upper end of the other one of said first tubes;

a fixing means comprising a plate member and a pair of sleeves formed at the both sides of said plate member, each of said sleeves provided at the margins of both ends with a first recess and a second recess respectively corresponding to said first and second spring-loaded balls and at the periphery with an aperture corresponding to said slot of said first tube, a screw capable of passing through said aperture and being inserted into said slot, said fixing means capable of being movably disposed on the intersections of said first and second tubes of said main frame and above said second transverse means thereof;

a bottom plate to which the lower ends of said first tubes are secured comprising a first fixing plate capable of being secured to the upper side of said bottom plate and a pair of wheels disposed on both sides of the underside of said bottom plate;

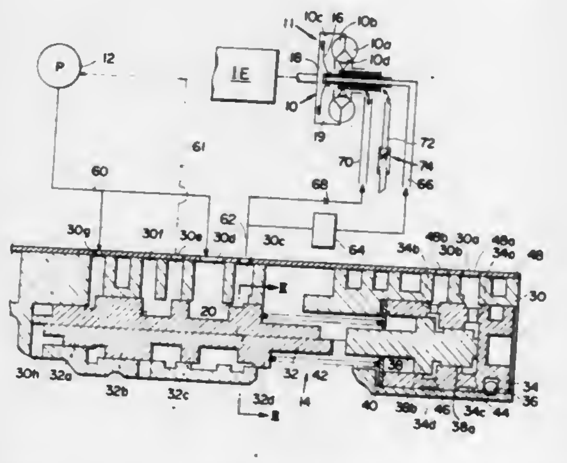
a supporting means pivotally connected to the rear side of said bottom plate and opposite to said wheels comprising a pair of parallel arms pivotally joined to the rear side of said bottom plate, a first leg fixedly secured to the rear side of the underside of said bottom plate and opposite to said wheels, a second leg pivotally connected to said arms and opposite to said first leg and a connecting bar connected between said first and second legs;

a wardrobe comprising a main body, a supporting plate disposed on the inner wall of the top of said main body, a hook member corresponding to said socket of said first transverse means of said main frame being secured to the top of said supporting plate, the bottom face of said main body provided with a plurality of fixing holes through which a plurality of corresponding fastening means may pass and the front cover thereof provided with at least one zipper to open or close said front cover and the rear face thereof furnished on the upper outer wall with a plurality of pockets and on the lower outer wall with a receiving pocket, a second handle disposed on the middle portion of the outer wall of said rear face, a second fixing plate disposed on the inner wall of said rear face and corresponding to said second transverse means of said main frame, said wardrobe capable of being secured to said main frame and said bottom plate.

4,618,036
HYDRAULIC CONTROL SYSTEM FOR LOCK-UP CLUTCH OF TORQUE CONVERTER

Yasufumi Ideta, Sagamihara, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 17, 1984, Ser. No. 641,586
Claims priority, application Japan, Oct. 14, 1983, 58-190879
Int. Cl.⁴ F16D *47/06*
U.S. Cl. 192—3.3 **5 Claims**



1. A hydraulic control system for an automatic transmission of an automotive vehicle having an engine, comprising:

a pump driven by the engine to discharge hydraulic fluid;

a torque converter including a torque converter cavity, an impeller, and a turbine which are disposed in said torque converter cavity,

the torque converter including a lock-up clutch which has a lock-up clutch piston movably disposed within said torque converter cavity to divide same into a lock-up release chamber and a working chamber in which said impeller and said turbine are disposed;

a line pressure regulator valve connected to said pump to regulate the hydraulic fluid discharged by said pump and generate a line pressure, said line pressure regulator valve having a port, said line pressure regulator valve including means for establishing a fluid communication path between said port and said pump when said line pressure is higher than a predetermined value to allow a portion of the hydraulic fluid discharged by said oil pump to flow to said port;

means communicating with said port for effecting fluid supply to said lock-up release chamber and said working chamber; and

means for establishing a restricted flow communication path between said port and said pump when said line pressure is less than said predetermined value.

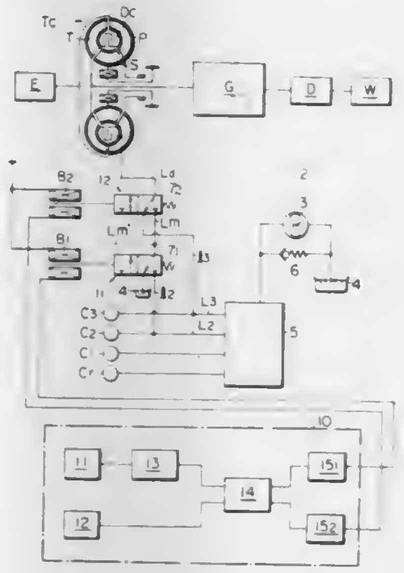
4,618,037
CONTROL DEVICE FOR DIRECT CLUTCH IN AUTOMATIC TRANSMISSION

Masao Nishikawa, Tokyo; Shinzo Sakai, Kamifukuoka, and Junichi Miyake, Hidaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 11, 1983, Ser. No. 512,891

Int. Cl.⁴ F16D *25/14, 33/00*

U.S. Cl. 192—3.3 **5 Claims**



1. In a vehicle having a vehicular automatic transmission including a fluid torque converter having a pump vane wheel and a turbine vane wheel, a source of working fluid pressure, a working fluid tank, an auxiliary transmission having plural stages of gear trains each having a different gear-to-gear speed ratio and being selectively connectable with an output side of said torque converter, a plurality of hydraulically-operated frictional engagement means each being selectively operable by application thereto of working fluid pressure supplied via corresponding one of a plurality of speed ratio-selecting working fluid passages for actuating a corresponding one of said plural stages of gear trains of said auxiliary transmission, and a hydraulically-operated direct clutch for selectively mechanically coupling together said pump vane wheel and said turbine vane wheel of said torque converter upon application to said direct clutch of working fluid pressure connected to said direct clutch;

a direct clutch control device for controlling engagement of said direct clutch and having a control valve mechanism connected for controlling the supplying of working fluid pressure via said direct clutch working fluid passage to said direct clutch, comprising:

a plurality of branch working fluid passages each connected at one end thereof so as to be in fluid communication with a mediate portion of a corresponding one of said speed ratio-selecting working fluid passages; and

switchable directional control valve means interposed between said plurality of branch working fluid passages and said direct clutch working fluid passages for permitting selective fluid communication between said direct clutch working fluid passages and respective ones of said plurality of branch working fluid passages, said switchable directional control valve means being switchable to respective positions for selectively fluidly communiating said direct clutch working fluid passages with respecive ones of said plurality of branch working fluid passages for supplying working fluid pressure from said respective ones of said branch working fluid passages to said direct clutch so as to engage said direct clutch, or with said working fluid tank for discharging working fluid from said direct clutch to said working fluid tank so as to disengage said direct clutch, said switchable directional control valve means comprising a plurality of directional control valves interconnected by intermediate working fluid passage means, at least one of said plurality of directional control valves being so adapted that upon application thereto of working fluid pressure via said intermediate passage means, said at least one directional control valve will operate to supply said applied working fluid pressure via said direct clutch working fluid passage to said direct clutch.

4,618,038
CONTROL APPARATUS OF AN AUTOMATIC TRANSMISSION WITH A LOCK-UP CLUTCH

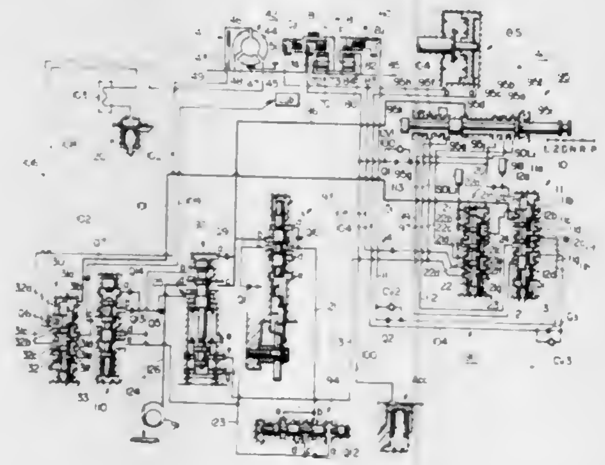
Tsunehiko Ogasawara, Kariya; Yoshichika Arakawa, Nagoya; Koji Sumiya, Nishio, and Yoshikazu Sakaguchi, Anjo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha and Aisin Warner Kabushiki Kaisha, both of Aichi, Japan

Filed Mar. 1, 1984, Ser. No. 585,127

Claims priority, application Japan, Mar. 31, 1983, 58-56440

Int. Cl.⁴ F16H *45/02;* **F16D** *33/16;* **B60K** *41/22*

U.S. Cl. 192—3.29 **7 Claims**



1. A control apparatus in an automatic transmission which defines four speed ranges and includes a fluid pressure source and a lock-up clutch which is lockable in response to a signal pressure to establish the fourth range, said lock-up clutch being lockable solely in the fourth range, said control apparatus comprising:

first and second solenoid valves,

first and second shift valves operably connected to said first and second solenoid valves, respectively, to be shifted thereby into opened and closed conditions,

separate fluid supply passages connecting said fluid pressure source to said first and second shift valves, respectively, and

an interconnecting passage interconnecting said first and second shift valves,

said first and second solenoid valves being independently actuatable such that said first and second shift valves together define four distinct states corresponding to said four ranges, respectively,

said second shift valve being hydraulically operably connected to said transmission in the third of said four states to shift said transmission from said second range to said third range while said first shift valve is hydraulically operably disconnected from said transmission,

said first and second shift valves being interconnected by said interconnecting passage to conduct a fluid flow therebetween in the fourth of said four states such that said first and second shift valves and said interconnecting passage define a signal pressure passage connected to said pressure source for conducting said signal pressure to establish said fourth range.

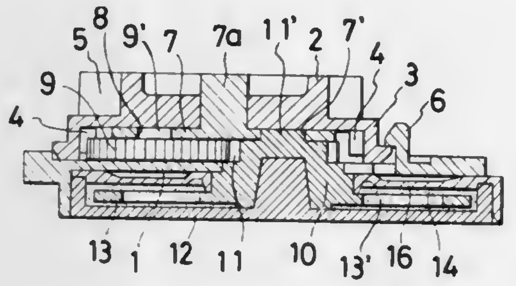
4,618,039
ONE-WAY CLUTCH

Nobuaki Omata, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Apr. 19, 1984, Ser. No. 601,900

Int. Cl.⁴ F16D *67/02*

U.S. Cl. 192—4 B **9 Claims**



1. A one-way clutch comprising in combination an inner toothed ring having inner teeth, a stationary panel rotatably supporting said inner toothed ring at one side thereof, an output toothed wheel having a shaft passing through a hole in said stationary panel and being pivotally attached to said stationary panel at a position at which said output toothed wheel is not allowed to come into contact with said inner toothed ring, and a planet gear constantly kept in mesh with said inner teeth and adapted to approach and come into engagement with said output toothed wheel, or depart from and break engagement with said output toothed wheel, depending on the direction of rotation of said inner toothed ring.

4,618,040
APPARATUS FOR MAINTAINING VEHICLE BRAKING FORCE

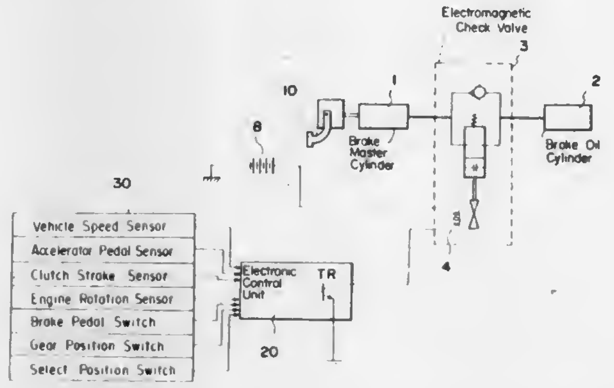
Minoru Honma, Atsugi; Toshihiro Hattori, Ayase; Hideo Saito, Hiratsuka, and Masaki Ishihara, Fujisawa, all of Japan, assignors to Isuzu Motors Limited, Tokyo, Japan

Filed Jun. 27, 1984, Ser. No. 625,010

Claims priority, application Japan, Jun. 29, 1983, 58-117483; Jun. 30, 1983, 58-118459

Int. Cl.⁴ B60K *41/28*

U.S. Cl. 192—0.09 **11 Claims**



1. An apparatus controlled by fluid pressure for maintaining a brake force applied to a vehicle, comprising:

valve means interposed between a master cylinder and a brake wheel cylinder, said valve means being capable of automatically supplying fluid from the master cylinder to the brake wheel cylinder and automatically stopping the supply of fluid from the brake wheel cylinder;

first sensing means for sensing when the vehicle has stopped based on the conditions that the vehicle speed is zero, an engine rpm is not zero, an amount of depression of an accelerator pedal is zero, and a brake pedal is actuated;

second sensing means for sensing when the vehicle begins travelling based on the conditions that a gear transmitting operation is completed, the engine rpm is not zero, the amount of depression of the accelerator pedal is not zero, and the clutch is half engaged; and

an electronic control means for closing said valve means to maintain the brake force applied to the vehicle when the vehicle has stopped, and for opening said valve means to release the brake force applied to the vehicle when the vehicle begins travelling.

4,618,041
LOCK-UP CONTROL SYSTEM FOR A TORQUE CONVERTER FOR AN AUTOMATIC TRANSMISSION

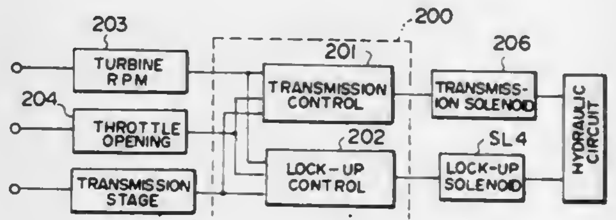
Kaoru Sotoyama; Shizuo Sumida, and Toshiyuki Kikuchi, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Japan

Filed May 24, 1984, Ser. No. 613,611

Claims priority, application Japan, May 27, 1983, 58-93423

Int. Cl.⁴ B60K *41/28*

U.S. Cl. 192—0.044 **9 Claims**



1. A torque converter lock-up control system for an automatic transmission comprising a torque converter having input and output shafts, the input shaft being connected to an output shaft of an engine; a multiple stage tramsmission gear mechanism connected to the output shaft of the torque converter; a lock-up means adapted to be selectively engaged and disengaged to change the power transmission path between the input and output shafts of the torque converter, the lock-up means being adapted to directly connect the input and output shafts of the torque converter when engaged; a lock-up driving means for controlling the lock-up means; a rotational speed sensor for detecting the rotational speed related to one of said input and output shafts of the torque converter and generating a rotational speed signal; an engine load sensor for detecting engine load and generating an engine load signal; lock-up determination means which generates a lock-up signal or a lock-up release signal according to whether or not the operating condition of the engine represented by the rotational speed signal and the engine load signal is in a lock-up zone which is defined by first to third relations, the first relation being preset from a relation which the rotational speed and the engine load are to have with each other when the torque ratio of the engine output torque to the torque converter output torque is substantially 1, the second relation being preset from a relation which the rotational speed and the engine load are to have with each other when the engine output is substantially zero, and the third relation being preset from a lower limit of the rotational speed at which lock-up can be permitted, the lower limit being shifted toward the lower speed side of said rotational speed as the transmission gear mechanism is shifted toward the higher speed stage, and the third relation being changed corresponding to the change in the lower limit of said rotational speed; and control means which generates a control signal for controlling said lock-up driving means to engage or disengage said lock-up means according to the signal generated from, the lock-up determination means.

4,618,042
CONTROL FOR AUTOMATIC TRANSMISSIONS

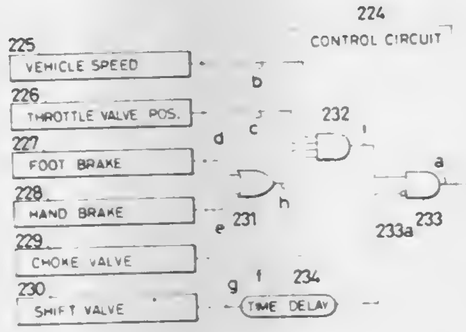
Koichi Yamamoto, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 30, 1984, Ser. No. 635,930

Claims priority, application Japan, Jul. 30, 1983, 58-119544[U]

Int. Cl.⁴ B60K *41/28;* **F16D** *25/061*

U.S. Cl. 192—0.044 **18 Claims**



1. A control system for vehicle automatic transmissions comprising hydraulic actuator means for engaging friction engaging means for establishing a driving gear train, hydraulic conduit means for supplying hydraulic pressure to said hydraulic actuator means, control valve means provided in said hydraulic conduit means to connect the actuator means alternately to hydraulic source means and drain conduit means, pressure reducing valve means provided in said drain conduit means for producing a pressure which is lower than a pressure for making the friction engaging means engage, vehicle speed detecting means for detecting vehicle speed and producing a low vehicle speed signal showing that the vehicle speed is below a predetermined value, position detecting means for detecting position of an engine power control member and producing a position signal when the control member is in a low engine output position smaller than a predetermined position, brake actuation means for producing a brake signal when vehicle brake means is in operation, range detecting means for detecting position of a manually operated shift lever and producing a running range signal when said shift lever is in a running range, valve actuating means for actuating said control valve means, control means for controlling operation of said valve actuating means, said control means being responsive to said low vehicle speed signal, said position signal, said brake signal, and said running range signal for producing a control signal to operate said valve actuating means for moving said control valve means so that the hydraulic actuator means is connected to the drain conduit means when all of said signals are received, said control means including time delay means for applying a time delay to said running range signal so that the control signal is produced after a predetermined delay time when the manual shift lever is moved to a running range.

4,618,043
METHOD FOR AUTOMATIC CONTROL OF A MOTOR VEHICLE CLUTCH

Toshihiro Hattori, Ayase; Masaki Ishihara, Fujisawa; Makoto Uriuhara, Yokohama; Hitoshi Kasai, and Yasuyoshi Asagi, both of Kawasaki, all of Japan, assignors to Isuzu Motors Limited, Tokyo and Fujitsu Limited, Kawasaki, both of, Japan

Filed Jun. 27, 1984, Ser. No. 625,203

Claims priority, application Japan, Jun. 29, 1983, 58-117227

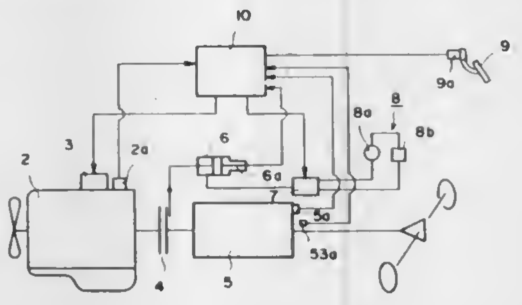
Int. Cl.⁴ B60K *41/02*

U.S. Cl. 192—0.052 **8 Claims**

1. A method of controlling the start of a vehicle equipped with an accelerator pedal sensor for sensing an amount of depression of an accelerator pedal, a throttle actuator for controlling an amount of fuel supplied to an engine, an engine rotation sensor for sensing rpm of the engine, a clutch actuator for controlling an amount of engagement of a clutch, a clutch position sensor for sensing the amount of engagement of the clutch, and an electronic control apparatus which receives detection signals from each of said sensors for controlling the throttle actuator and the clutch actuator based on the detection signals, said method comprising the steps of:

(a) sensing the amount of depression of the accelerator pedal by the accelerator pedal sensor;

(b) performing a comparison to determine whether the amount of accelerator pedal depression is greater than or less than a set value;



(c) selecting a very low speed control mode as a start control mode, when the amount of accelerator pedal depression sensed is less than said set value, wherein the clutch is controlled in half-clutch range; and

(d) selecting an ordinary start mode as a start control mode, when the amount of accelerator pedal depression sensed is greater than the set value, during which the clutch is controlled until fully engaged.

4,618,044
WHEEL HUB CLUTCH ASSEMBLY

Motoi Fujikawa, Anjo, and Tooru Kagata, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

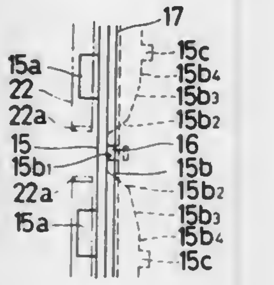
Filed Sep. 11, 1984, Ser. No. 649,375

Claims priority, application Japan, Sep. 26, 1983, 58-148392[U]

The portion of the term of this patent subsequent to Sep. 3, 2002, has been disclaimed.

Int. Cl.⁴ F16D *43/20*

U.S. Cl. 192—54 **5 Claims**



1. A wheel hub clutch assembly for effecting engagement between a drive axle and a wheel hub in response to rotation of said drive axle, comprising:

a cylindrical body with a first clutch element, the cylindrical body being secured to an outer end of said wheel hub;

a sleeve member fixedly mounted on an outer end of said drive axle for rotation therewith and located within said cylindrical body;

a clutch member with a second clutch element for engagement with said first clutch element, said clutch member being axially slidably mounted on said sleeve member for rotation therewith;

cam means operatively coupled with an outer end of a stationary axle tube for said drive axle and rotatable on said sleeve member, said cam means having at least two stages of cam face rise;

cam follower means axially slidably mounted on said sleeve member for rotation therewith, said cam follower means cooperable with said cam face rise of said cam means to be displaced toward said clutch member in response to rotation of said drive axle;

a connecting member engaged with said cam follower means and said clutch member, said connecting member permitting relative axial movement between said cam follower means and said clutch member,

a first spring arranged between said cam follower means and said clutch member for loading said cam follower means toward said cam means, said first spring being cooperable with said connecting member for loading said clutch member for movement away from engagement with said first clutch element; and

a second spring arranged in parallel with said first spring between said cam follower means and said clutch member for loading said clutch member for movement toward engagement with said first clutch element, said second spring being cooperable with said connecting member for resiliently providing an axial space between said cam follower means and said clutch member.

4,618,045
FLUID FRICTION CLUTCH

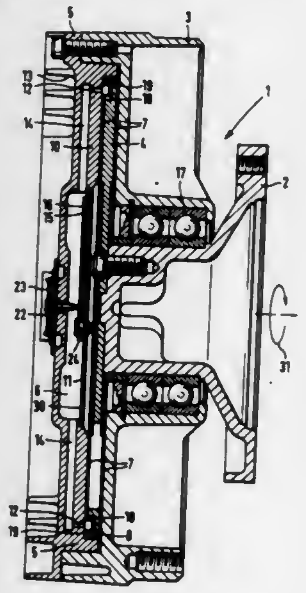
Werner Storz, Bennigen, Fed. Rep. of Germany, assignor to Sueddeutsche Kuehlerfabrik, Julius Fr. Behr GmbH & Co. KG, Fed. Rep. of Germany

Filed Jul. 24, 1984, Ser. No. 634,038

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1983, 8323498[U]

Int. Cl.⁴ F16D *31/00*

U.S. Cl. 192—58 B **16 Claims**



1. A fluid friction clutch having a working space and a storage space, separated by an intermediate wall in a housing for clutch fluid, said intermediate wall including a controllable inlet opening between said storage space and said working space through which said fluid passes, and further having a driven clutch disk rotatable within said working space; clutch fluid return bore means in said intermediate wall adjacent the outer circumference of said clutch disk for return guidance of said fluid to said storage space, and a plurality of non-controllable overflow openings in said intermediate wall, wherein said non-controllable openings are spaced from one another and evenly distributed in circumferential direction with respect to said intermediate wall to facilitate uniform wetting of the clutch disk, said non-controllable opeings being disposed radially inward of the fluid return bore means.

4,618,046
SHIFTING COUPLING

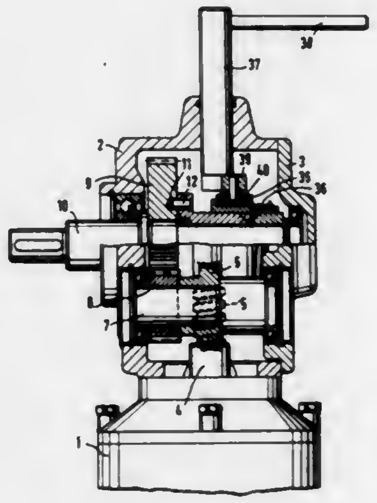
Heinrich Sassen, Rosengarten, Fed. Rep. of Germany, assignor to Zahnradfabrik Altona-Elbe Hans Meyer GmbH & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Jan. 30, 1985, Ser. No. 696,359

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1984, 3405038

Int. Cl.⁴ F16D *11/00, 23/14*

U.S. Cl. 192—67 P **7 Claims**



1. A positive-engagement shifting coupling, comprising:

an output shaft;

an output gear wheel, which is freely rotatably mounted on said output shaft and has at least one essentially axially parallel disposed recess;

a cylindrical sliding sleeve, which is mounted on said output shaft in such a way that it is non-rotatable relative thereto, yet can shift position on said output shaft in the axial direction thereof;

a compression spring for urging said sliding sleeve into a disengagement position of said coupling;

a coupling flange which is connected to said sliding sleeve, said coupling flange being provided with at least one essentially axially parallel disposed coupling projection which is adapted to be received in mating engagement with said at least one recess of said output gear wheel to effect said positive engagement when said coupling is in an engagement position;

a counter retaining sleeve, which is mounted on said output shaft in such a way that it is not axially displaceable relative thereto; each of said sliding sleeve and said retaining sleeve has an end which faces the other, and which are adapted in part to butt against one another when said coupling is in said disengagement position; said facing ends of said sleeves are also provided with respective conical surfaces which diverge outwardly, i.e. away from said output shaft, in opposite directions;

control balls, which are disposed between said conical surfaces of said sliding sleeve and said retaining sleeve, and which have a diameter of a magnitude such that in said engagement position of said coupling, with said sliding sleeve shifted as far as possible from said retaining sleeve, said control balls do not extend radially beyond the outer diameter of said sleeves, yet such that in said disengagement position of said coupling, with said sliding sleeve butting against said retaining sleeve, said control balls do extend radially beyond the outer diameter of said sleeves;

a control sleeve, which is mounted on said sliding sleeve in such a way as to be axially displaceable relative thereto, and which encircles both said sliding sleeve and said retaining sleeve; that portion of said control sleeve which is closer to said coupling flange of said sliding sleeves has a first inner diameter, and that portion of said control sleeve which is remote from said coupling flange has a second inner distance which is greater than said first inner diameter by an amount corresponding to the radial movement of said control balls between said engagement and disengagement positions; a conical transition surface, which is adapted to contact said control balls, is provided between said portion of said control sleeve with said first inner diameter, and said portion of said control sleeve with said second inner diameter;

a control ring, which is disposed on said control sleeve in such a way that it can be axially displaced within certain limits;

a second spring for urging said control ring into said disengagement position; and

a shifting mechanism for displacing said control ring against the force of said second spring for prestressing said control sleeve, and hence said control balls and said sliding sleeve with its coupling flange, in the engagement direction.

4,618,047
FRICTION CLUTCH WITH PIVOTABLE DIAPHRAGM SPRING ON THE CLUTCH COVER

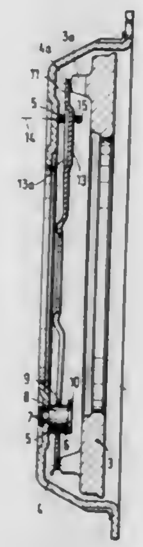
Peter Kinz, Baden-Baden, Fed. Rep. of Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Buhl, Fed. Rep. of Germany

Filed Jul. 26, 1984, Ser. No. 634,768

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1983, 3327432; Aug. 27, 1983, 3347801

Int. Cl.⁴ F16D *13/50*

U.S. Cl. 192—89 B **31 Claims**



1. A friction clutch, particularly for use in motor vehicles, comprising a diaphragm spring having a first side and a second side and including a circumferentially complete outer marginal portion and an annulus of prongs extending substantially radially inwardly from said marginal portion, said spring further having slots alternating with said prongs and at least some of said prongs having elongated reinforcing portions extending from said second side and radially outwardly beyond the neighboring slots; a cover adjacent to one side of said spring; a first ring-shaped seat provided on said cover adjacent to the first side of said spring in the region of said reinforcing portions; and a second ring-shaped seat provided on said cover adjacent to the second side of said spring opposite said first seat, so that said spring can pivot between said seats, said second seat having arcuate portions each bridging a different one of said reinforcing portions, said spring and said second seat defining clearances intermediate at least some of said arcuate portions of said second seat.

4,618,048
CLUTCH DISK ASSEMBLY

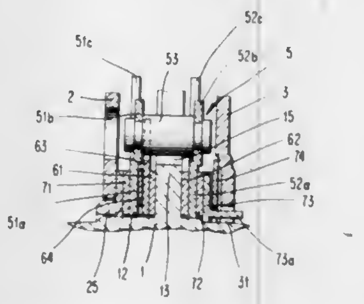
Kiyonori Kobayashi, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 23, 1983, Ser. No. 507,016

Claims priority, application Japan, Jun. 29, 1982, 57-112092; Jul. 31, 1982, 57-133868; Jul. 31, 1982, 57-133869

Int. Cl.⁴ F16D *3/14*

U.S. Cl. 192—106.2 **10 Claims**



1. A clutch disk assembly comprising a hub member adapted to be coupled to a transmission shaft, a flange member mounted on said hub member for corotation, a drive plate extending parallel to said flange member and rotatable relative to said hub member, a friction lining secured to a radially outward portion of said drive plate, a sub-plate extending parallel to said flange member and arranged axially spaced from said drive plate across said flange member for rotation with said drive plate, spring members mounted in windows defined in said sub-plate, said drive plate, and said flange member and arranged axially across said flange member, said drive plate, and said sub-plate for producing resistive forces against relative rotation of said flange member and said drive plate and said sub-plate, a control member positioned between said flange member and said drive plate and said sub-plate and disposed astride of said flange member through notches defined therein radially inwardly of said windows, said control member being engageable with said drive plate and said sub-plate and rotatable relative to said flange member in a first operative range of relative rotation of said flange member and said drive plate and said sub-plate, and being releasable from engagement with said drive plate and said sub-plate, engageable with said flange member, and rotatable relative to said drive plate and said sub-plate in a second operative range of said relative rotation, a first resistance means including first force exerting means arranged between said control member and said flange member for exerting an axial force that produces a frictional resistive force against relative rotation of said control member and said flange member, and a second resistance means including second force exerting means arranged between said control member and said drive plate and said sub-plate for exerting an axial force that produces a frictional resistive force against relative rotation of said control member and said drive plate and said sub-plate, said first resistance means being operative during said first operative range of relative rotation to create a first hysteresis and said second resistance means being operative during said second operative range of relative rotation to create a second hysteresis, said first resistance means being substantially inoperative in said second operative range, said control member having a rigidity selected to prevent said axial resistive forces exerted by said first and second force exerting means of said first and second resistance means from interfering with each other.

4,618,049
FRICTION PARTNERS FOR LUBRICATED FRICTION COUPLINGS

Hermann Pflaüm, Planegg, and Herbert Vojacek, Munich, both of Fed. Rep. of Germany, assignors to Feldmühle Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

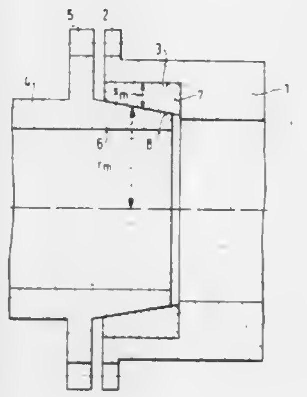
PCT No. PCT/DE82/00120, § 371 Date Feb. 3, 1983, § 102(e) Date Feb. 3, 1983, PCT Pub. No. WO82/04295, PCT Pub. Date Dec. 9, 1982

PCT Filed Jun. 4, 1982, Ser. No. 467,490

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1981, 3122522

Int. Cl.⁴ F16D *69/02*

U.S. Cl. 192—107 M **15 Claims**



1. In friction partners for wet lubricated friction couplings in which at least two surfaces are connected by frictional engagement, especially for synchronizing devices for positively-locking gear-shift couplings that consist of at least one synchronizing ring and an equalizing ring the improvement which comprises a first friction partner consisting of a first ceramic material and a second friction partner of a metallic or second ceramic material having a chemical composition different from that of the first friction partner, said first ceramic material being a dense sintered oxide ceramic having a surface which has a high proportion of pores.

4,618,050
DEVICE FOR LOCKING AND RELEASING OBJECTS INTENDED FOR PUBLIC USE, SUCH AS LUGGAGE CARTS

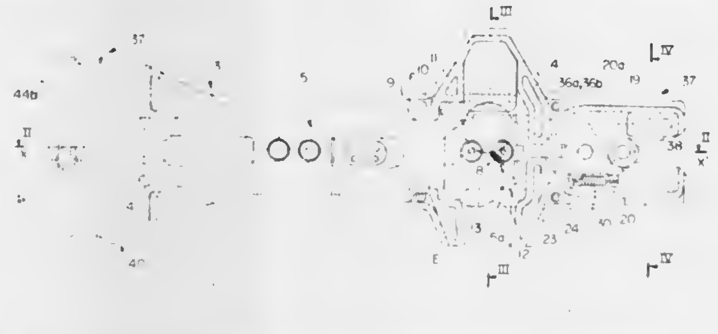
Henri-André Payraudeau, Draguignan, France, assignor to MORS, France

Continuation-in-part of Ser. No. 515,372, Jul. 18, 1983, Pat. No. 4,589,538. This application Oct. 4, 1984, Ser. No. 657,531

Claims priority, application France, Feb. 18, 1983, 83 02716; Apr. 26, 1983, 83 06857; Oct. 7, 1983, 83 16031

Int. Cl.⁴ G07F *7/00*

U.S. Cl. 194—212 **14 Claims**



1. A device for locking and releasing objects intended for public use, especially objects to be put at public disposal free of charge, such as luggage carts in a railway station or an airport or shopping carts in self-service stores, such objects capable of being taken directly from a common storage station and returned to the storage station, said device including a locking apparatus in the form of a casing and adapted to be affixed to a part of each object,

attaching means for affixing said locking apparatus to a part of each object,

a connecting lock having male and female means secured to respective longitudinal endmost portions of said casing forming said locking apparatus, for locking each object to an adjacent object or to a fixed point in compact storage position, and

a slit provided in said casing through which a coin or the like is introduced to allow unlocking of said locking apparatus and release of the object by exerting a pull thereon,

said locking apparatus being arranged to return the coin or the like when the object is returned to the storage station and is locked by said connecting lock to the adjacent object or to the fixed point,

wherein said female means is constituted by a clamp comprising two unsymmetrical jaws, and said male means is constituted by a connecting bar secured to the object or to the fixed point, and having a diameter perfectly calibrated so that said male means can fit in between said jaws,

wherein said connecting bar secured to the object comprises a first portion in the form of a hollow cylinder and a second portion forming a cylindrical shoulder integral with said first portion,

said portions are mounted on a support arbor removably secured to the endmost portion of said casing of said locking apparatus with the first hollow cylindrical portion having a diameter corresponding to said calibrated diameter to allow said cylindrical portion to fit into a first one of said jaws of the locking apparatus of an adjacent object, the second jaw being so shaped as to allow said second cylindrical shoulder, having a calibrated diameter, to bear thereon, the removal of said support arbor from the endmost portion of said casing permitting direct release of the adjacent object from said object, both forming part of a rank of objects locked to one another, in order to disrupt said rank.

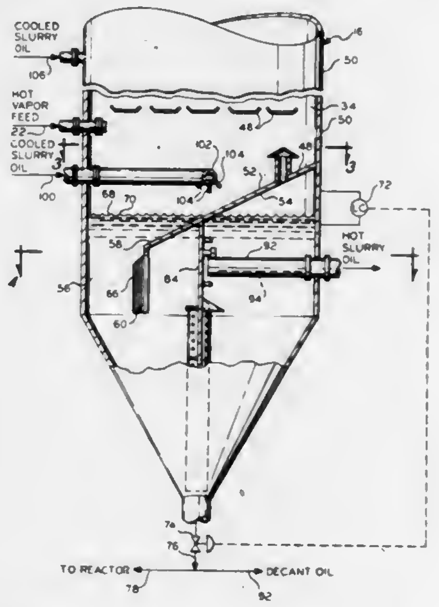
4,618,051
FRACTIONATION METHOD AND APPARATUS

Frank W. Skraba, Sweeny, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 575,112, Jan. 30, 1984. This application May 23, 1985, Ser. No. 737,117

Int. Cl.⁴ B01D *3/42*

U.S. Cl. 196—139 **6 Claims**



1. Apparatus suitable for use in the fractionation of a hot vaporous feed stream, comprising:

a vessel having an upper portion, a lower portion and a medial portion;

fractionation tray means in the medial portion of said vessel for separating fractions of a hot vaporous feed stream;

baffle means in the medial portion of said vessel intermediate said fractionation tray means and the lower portion of said vessel for directing the flow of liquid thereover;

inclined baffle plate means having an upper surface and a lower surface disposed in said vessel below the lowermost portion of said baffle means for directing the flow of liquid thereover;

vertical passage means in said vessel communicating with the lower portion of the upper surface of said inclined baffle plate means for directing the flow of liquid downwardly from said inclined baffle plate means;

first conduit means communicating with the interior of said vessel below said baffle means and above said inclined baffle plate means for introducing a hot vaporous feed stream into said vessel for fractionation thereof;

second conduit means communicating with the interior of said vessel below said inclined baffle plate means for withdrawing liquid from a body of liquid in the lower portion of said vessel;

cooler means interposed in said second conduit means for cooling withdrawn liquid passing through said second conduit means; and

third conduit means communicating between said second conduit means downstream of said cooler means and the interior of said vessel intermediate said first conduit means and the upper surface of said inclined baffle plate means for dispensing cooled liquid from said cooler means onto the upper surface of said inclined baffle plate means to cool hot liquid flowing downwardly over the upper surface of said inclined baffle plate means into the body of liquid in the lower portion of said vessel.

4,618,052

CONVEYING APPARATUS

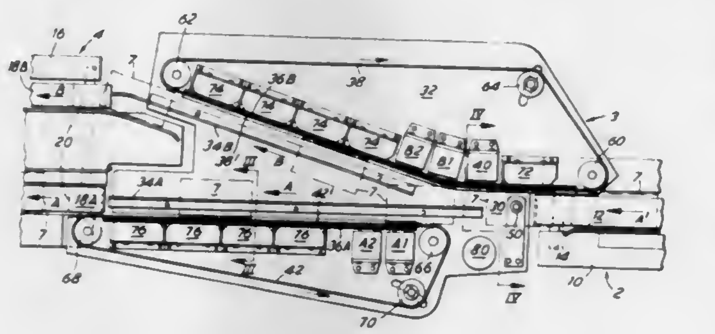
Roger G. Rickett, Turners Hill, and Eric Spooner, Crawley, both of United Kingdom, assignors to Metal Box Public Limited Company, United Kingdom

Continuation of Ser. No. 425,774, Sep. 28, 1982, abandoned. This application Jun. 10, 1985, Ser. No. 742,638

Claims priority, application United Kingdom, Jan. 29, 1982, 8202650

Int. Cl.⁴ B65G *47/26*

U.S. Cl. 198—370 **7 Claims**



1. Conveying apparatus for conveying a succession of generally cylindrical elongate articles of magnetizable material, axially end-to-end and each in a predetermined orientation about its axis, said apparatus having

a longitudinal means for guiding said cylindrical articles end-to-end and defining a single common path and a plurality of other paths forming a common junction region with the common path;

article-advancing means operatively associated with the various paths for positively driving the articles along said conveyor path, said common path and said other paths;

a controllable magnet means including a controllable master magnet at the junction region providing a magnetic field when activated, the master magnet defining a local region of influence on any said article in the junction region only;

said controllable magnet means further including at least one other controllable magnet located adjacent the entry to each said other path downstream of said master magnet and spaced from said master magnet in a position such that its local region of influence extends into the junction region;

non-changeable magnetic holding means disposed along substantially the whole length of the paths other than said controllable magnet means for exerting a generally radial force on said articles to maintain said articles in said end-to-end relationship guided by said guide means and to positively maintain each article in said predetermined rotational orientation relative to the axis of each article throughout its travel along at least said other paths through the apparatus; and

sequencing means synchronized with the article-advancing means for activating and de-activating said controllable master magnet and said at least one other controllable magnet;

whereby:

(i) energization of the master magnet (**40**) magnetically draws a first said article (y) to said article-advancing means for advancement by said advancing means into the junction region and positions it therein,

(ii) energization of a first of said other controllable magnets (A_1) draws the leading end of said first article (y) to said article advancing means for advancement by said advancing means into a first of said other paths (A) associated with said other controllable magnet, and de-energization of the master magnet (**40**) then controls the approach of the next following one (z) of said articles, and

(iii) when the rear end of said first article (y) has left the junction region, re-energization of the master magnet draws

the leading end of said next article (z) to said article advancing means for advancement by said advancing means into the junction region and positions it therein, and

(iv) energization of a second of said other controllable magnets (B_1) draws the leading end of said next article (z) to said article advancing means for advancement by said advancing means into a second of said other paths (B) associated with said second other controllable magnet.

4,618,053

MECHANISM FOR DELIVERING FASTENER ELEMENTS TO FASTENER-ASSEMBLING APPARATUS

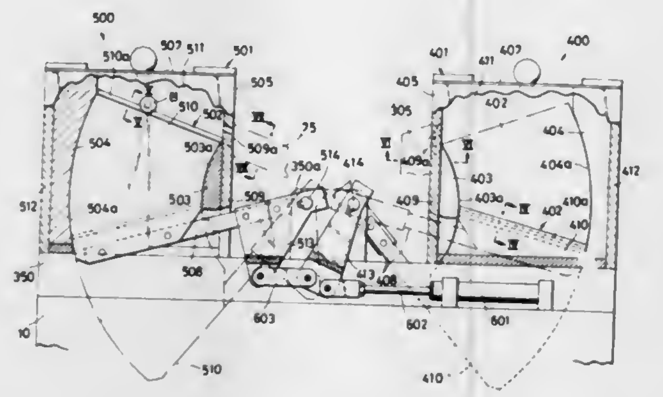
Yukio Taga, Uozu, Japan, assignor to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1984, Ser. No. 687,012

Claims priority, application Japan, Dec. 29, 1983, 58-200492

Int. Cl.⁴ B65G *47/24, 47/44*

U.S. Cl. 198—389 **2 Claims**



1. A mechanism for successively delivering two different kinds of fastener elements separately to a fastener-assembling apparatus, comprising:

(a) a base having an upwardly directed projection;

(b) a pair of first and second hoppers supported on said base for containing the two different kinds of fastener elements separately, said first and second hoppers being spaced apart from each other along said base with said projection thereof disposed centrally between said first and second hoppers, each of said first and second hoppers having at least one stationary vertical flat inside wall-surface, said first and second hoppers having in their upper portion a first opening, and a second opening, respectively;

(c) a pair of first and second levers pivotally mounted about fixed axis on said projection and interconnected at their free ends by a floating link;

(d) a fluid-actuated cylinder having a piston rod pivotally connected to the free end of said first lever for moving both said first and second levers in timed relation to each other in opposite directions;

(e) a first pick-up operatively connected to said first lever and responsive to pivotal movement thereof to vertically pivot for picking up certain fastener elements of one kind in said first hopper and then for discharging the picked-up fastener elements successively from said first opening;

(f) a second pick-up operatively connected to said second lever and responsive to pivotal movement thereof to vertically pivot for picking up certain fastener elements of the other kind in said second hopper and then for discharging the picked-up fastener elements successively from said second opening; and

(g) a pair of first and second chutes communicating with said first and second openings, respectively, for receiving therefrom the fastener elements of one kind and the fastener elements of the other kind and for delivering such two kinds of fastener elements separately to the fastener-assembling apparatus.

4,618,054

EQUIPMENT FOR FEEDING PACKAGING BLANKS TO A PACKAGING MACHINE

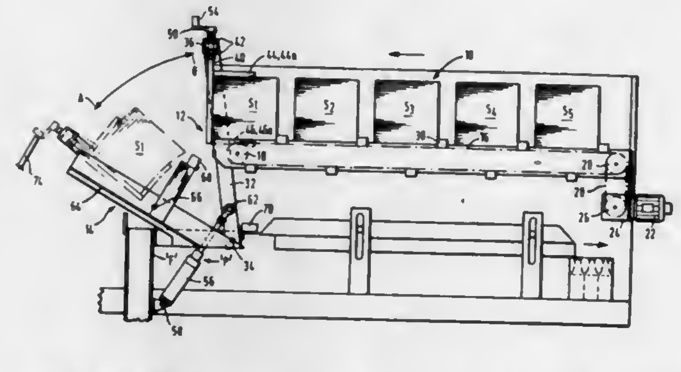
Rolf Muller, Konz, Fed. Rep. of Germany, assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 28, 1984, Ser. No. 675,503

Claims priority, application United Kingdom, Nov. 28, 1983, 8331710

Int. Cl.⁴ B65H *1/00*

U.S. Cl. 198—409 **4 Claims**



1. In a packaging machine of the type having a feed hopper for holding a supply of packaging blanks, the arrangement for automatically feeding stacks of such blanks to said feed hopper comprising a feed magazine for supporting and sequentially advancing a series of stacks of packaging blanks to a transfer position adjacent said feed hopper, a transfer mechanism for transferring the leading stack of blanks from said feed magazine to said feed hopper, and means for moving the next stack of blanks to said transfer position, said transfer mechanism comprising a pivotal arm (**32**) mounted for reciprocal movement between said feed magazine (**10**) and said feed hopper (**14**) and including blank support means (**44,46**; ***44a,46a***) arranged for receiving and supporting said leading stack of blanks and means for releasing the same when the pivotal arm arrives at the feed hopper to deposit said stack in said feed hopper, said blank support means comprising blank support arms for engaging respectively the uppermost and lowermost blank in said leading stack to be transferred, said means for releasing said stack including means for pivoting said blank support arms out of engagement with said uppermost and lowermost blanks when the stack is positioned in said feed hopper.

4,618,055

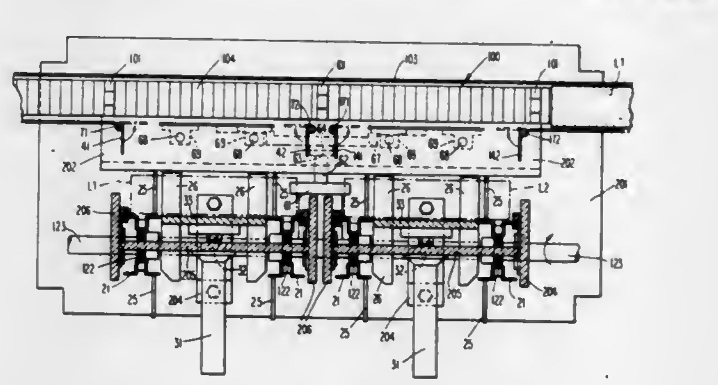
COLLATOR SECTION OF LASAGNA PACKER

Michele L. Porcelli, Palmyra, Pa., assignor to Hershey Foods Corporation, Hershey, Pa.

Filed Jan. 24, 1985, Ser. No. 694,511

Int. Cl.⁴ B65G *47/26*

U.S. Cl. 198—422 **16 Claims**



12. A collator for articles comprising:

a. an endless collator conveyor positioned for vertical travel, said collator conveyor comprising a succession of shelves for receiving and supporting articles delivered thereto;

b. a narrow belt bulk conveyor for transporting stacks of articles to a packaging station, said bulk conveyor having a front wall which has an opening for receiving stacks of articles;

c. retainer means positioned at said opening and movable between open and closed positions for retaining said stacks of articles on said narrower belt bulk conveyor when in closed positions, said front walls and said retainer means, when in the closed position, providing a boundary for articles on said narrow belt bulk conveyor;

d. push means for pushing articles off the shelves of said collator conveyor;

e. means for moving said push means forwardly to push articles off said collator conveyor shelves and into said opening of said bulk conveyor when said retainer means are in open positions; and

f. means for withdrawing said push means from its forward position.

4,618,056

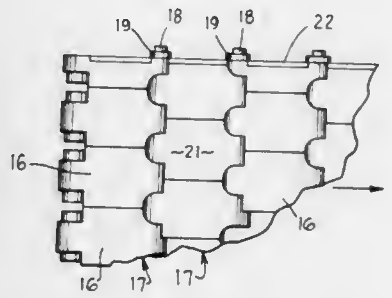
LINK CONVEYOR BELT FOR HEAT TREATING APPARATUS

Robert S. Cutshall, Kalamazoo, Mich., assignor to Omega Castings, Inc., Battle Creek, Mich.

Filed Mar. 23, 1984, Ser. No. 592,654

Int. Cl.⁴ B65G *17/06*

U.S. Cl. 198—853 **12 Claims**



1. A one-piece, cast metal link for a conveyor belt as used in heat treating furnaces and the like, comprising:

a central body portion defined by an elongated tubular body which has a closed tubular wall structure defining therein a hollow interior, said tubular wall structure including a substantially planar top wall, a pair of sidewardly spaced sidewalls which are fixed to and project downwardly from the top wall, and a bottom wall which extends between and is fixedly joined to the lower edges of the sidewalls, one of said walls having a small opening formed therethrough for communication with said hollow interior to permit flow of oxygen into said interior;

a first hinge portion fixedly joined to said tubular body at one end thereof, said first hinge portion including a substantially semi-cylindrical first end wall which fixedly extends between said top and bottom walls, said first end wall and said sidewalls cooperating to define a first substantially cylindrical opening which extends transversely of said link in substantially perpendicular relationship to the longitudinal direction thereof, said first opening having a longitudinal axis which extends substantially parallel with the upper surface of said top wall, said first opening being open at opposite ends thereof and accessible from opposite sides of said link, and the hollow interior of said tubular body being in open communication with a central part of said first opening;

a second hinge portion fixedly joined to said tubular body adjacent the other end thereof, said second hinge portion including a second substantially semi-cylindrical end wall which is fixedly joined between said top and bottom walls, said second end wall and said sidewalls cooperating to define a second substantially cylindrical opening which extends transversely of said link and defines a longitudinal axis which extends substantially parallel with the longitudinal axis of said first opening, said hollow interior of said tubular body being in open communication with a central part of said second opening:

said second hinge portion including a pair of cylindrical sleevelike trunnions coaxially aligned with said second opening and projecting outwardly from opposite sides of said tubular body, said trunnions having said second opening projecting outwardly therethrough, said trunnions at their inner ends being fixedly joined to said second end wall and the respectively adjacent sidewall, said trunnions defining thereon as outer cylindrical bearing surface having a diameter which approximates the diameter of said first opening; and

a pair of platelike, planar wings fixed to said top wall in substantially coplanar relationship therewith and projecting outwardly from opposite sides thereof beyond the respective sidewall, and said small opening being positioned below said wings.

4,618,057

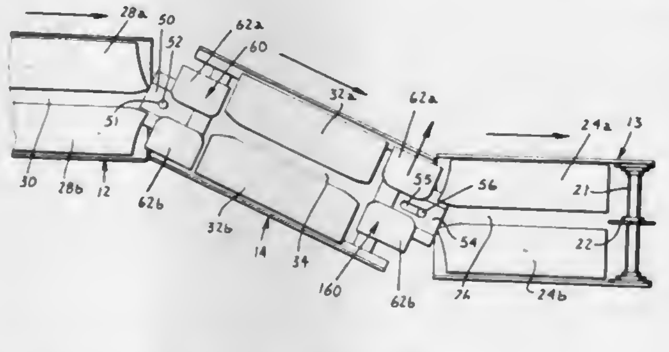
CHAIN-LINK BELT CONVEYOR WITH ADJUSTABLE PARALLEL OFFSET AND VARIABLE RADIUS GUIDE

M. Gene Howser, Cartersville, Ga., assignor to Production Systems, Inc., Marietta, Ga.

Filed Oct. 24, 1984, Ser. No. 664,228

Int. Cl.⁴ B65G *21/10*

U.S. Cl. 198—861.2 **7 Claims**



1. An articulated conveyor comprising:

a continuous loop belt;

a fixed first frame section and a second frame section operatively associated with said belt;

carrier means for supporting and moving only said second frame section for horizontal linear translational movement relative to said fixed first frame section, wherein said second frame section is mounted upon and supported by said carrier means for horizontal linear translational movement in a direction substantially perpendicular to the longitudinal axis of said second frame section, and wherein said carrier means is selectively operative to linearly translate said second frame section relative to said fixed first frame section in a direction substantially perpendicular to the longitudinal axis of said fixed first frame section such that said first and second frame sections are maintained substantially in parallel relation during said linear translational movement;

a third frame section joining said first and second frame sections, one end of said third frame section being pivotably mounted to one of said first or second frame sections, and the other end of said third frame section being pivotably and slidably mounted to the other of said first or second frame sections; and

means associated with said first, second, and third frame sections for guiding said continuous loop belt for travel over said frame sections;

wherein said continuous loop belt is constrained by said guide means for travel across the top of said first, second, and third frame sections and for return underneath said first, second, and third frame sections; and

whereby said second frame section can be linearly translationally moved upon said carrier means to provide for parallel offset of said second frame section with respect to said fixed first frame section, said first and second frame sections being maintained in substantially parallel relationship during said horizontal linear translational movement.

4,618,058

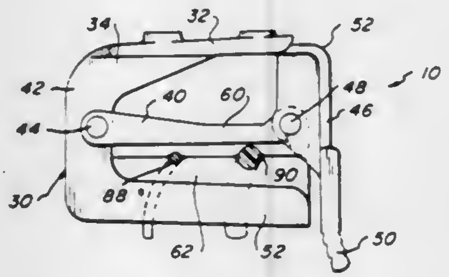
LOCKING TROLLEY FOR GARMENT BAG

James S. Gregg, and Lawrence R. Mobley, both of Aurora, Colo., assignors to Samsonite Corporation, Denver, Colo.

Filed Nov. 23, 1984, Ser. No. 673,353

Int. Cl.⁴ B65D *85/18*

U.S. Cl. 206—291 **26 Claims**



1. A locking trolley for suspending and retaining hooked ends of clothes hangers within the interior of a garment bag, comprising:

a substantially rigid frame member of generally C-shaped configuration having an upper horizontal portion, a back vertical portion extending downward from the rear of the upper horizontal portion, and a lower horizontal portion extending forward from the lower end of the back vertical portion, the upper and lower horizontal portions being vertically separated by a space open at the front of the C-shaped frame member and closed at the rear of the frame member by the back vertical portion;

a jaw member pivotably connected at a rear end thereof to the vertical portion of the frame member and extending forward through the space at a location between the upper and lower horizontal portions and terminating at a forward end thereof;

a gripping structure connected to the jaw member and facing the lower horizontal portion of the frame member;

a gripping structure connected to the lower horizontal portion of the frame member and facing the jaw member;

the gripping structures contacting and retaining the hooked ends of the hangers when in operative hanger-end gripping adjacency with one another upon a predetermined degree of pivoting movement of the jaw member toward the lower portion of the frame member;

the gripping structures separating to allow free movement of the hanger ends therebetween upon a predetermined degree of pivoting movement of the jaw member away from the lower portion of the frame member; and

a lever pivotably connected to the forward end of the jaw member, the lever having a lower end and an upper end extending in respectively opposite directions from the location at which the lever is pivotably connected to the jaw member, the lever pivoting between a first position in which its upper end extends into the space between the jaw member and the upper portion of the frame member and its lower end extends forward of the front end of the jaw member and a second position in which the lever generally extends across the space at the front of the C-shaped member, the upper end of the locking lever including means operatively contacting and moving along the upper portiOn of the frame member for pivoting the jaw member about its rear end into a generally aligned relation with the lower horizontal portion of the frame member in which the gripping structure on the jaw member is in hanger-end gripping adjacency with the gripping structure of the lower portion of the frame member as the lever is moved into the second position.

18. A locking trolley adapted to be operatively connected to the interior surface of a top side gusset of a garment bag, and operative for suspending the hooked ends of clothes hangers within the interior of a garment bag on a non-inclined gripping structure when the trolley is in an unlocked condition, and operative for retaining the hooked ends of hangers on the gripping structure when the trolley is in a locked condition, comprising:

a substantially rigid frame member of generally C-shaped configuration having an upper horizontal portion, a back vertical portion extending downward from the rear of the upper horizontal portion, and a lower horizontal portion extending forward from the lower end of the back vertical portion, the upper and lower horizontal portions being vertically separated by a space open at the front end of the C-shaped frame member and closed at the rear end of the C-shaped frame member by the back vertical portion;

means for connecting the frame member to the garment bag with the upper portion of the frame member positioned facing the top side gusset and the lower portion positioned below the upper portion;

a jaw member extending generally forward through the space defined by the C-shaped frame member;

a gripping structure connected to the lower portion of the frame member and facing the jaw member, the gripping structure extending in a generally non-inclined and horizontal manner to contact and suspend the hooked ends of the hangers when the trolley is in the unlocked condition and to contact and retain the hooked ends of the hangers when the trolley is in the locked condition;

means connecting the jaw member to the frame member and operative for moving the jaw member toward the lower horizontal portion of the frame member to position the hanger ends in gripping adjacency and retention with the gripping structure when the trolley is in the locked condition, and operative for moving the jaw member away from the lower horizontal portion of the frame member to release the hanger ends for free suspension on the gripping structure and to provide an access opening in the space between the gripping structure and the jaw member when the trolley is in the unlocked condition; and

selectively operable locking and unlocking means operatively connected between the jaw member and the frame member for maintaining the jaw member positioned toward the lower portion of the frame member to maintain the locked condition of the trolley and for releasing the jaw member for movement away from the gripping structure to achieve the unlocked condition of the trolley.

4,618,059

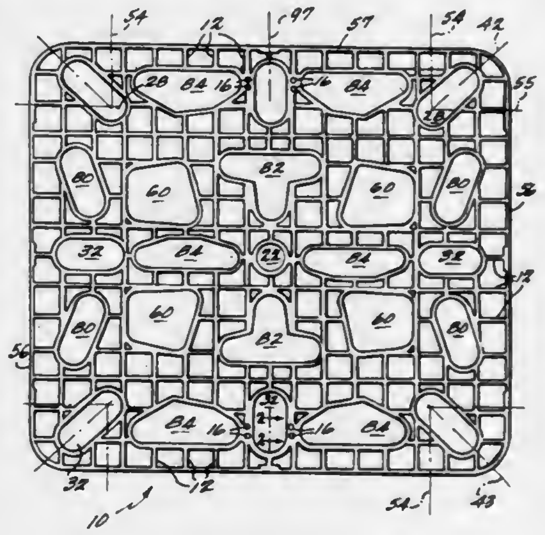
DIVIDER FOR SEPARATING STACKED ARTICLES

James A. Cochran, Burlington, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Mar. 17, 1983, Ser. No. 476,381

Int. Cl.⁴ B65D *85/676, 85/04, 21/02*

U.S. Cl. 206—392 **13 Claims**



1. A divider for separating stacked articles of the type having a support member with filamentary material wrapped on said support member defining a body thereof having opposite ends, said support member having opposite ends and said ends of said body of material being spaced respectively inwardly of said ends of said support member with said divider accommodating various predetermined diameters of said bodies, said divider comprising a substantially rigid planar member defining opposing pairs of exterior edges and including:

means defining an opening substantially centrally disposed in said member;

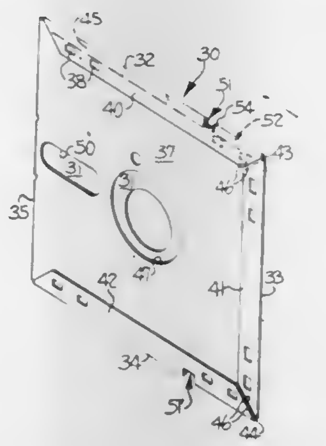
means defining a first grouping of first elongated apertures having opposing arcuate end surfaces, each of said first apertures being disposed near a respective corner of said member and inwardly angularly oriented towards said opening; and

means defining a second grouping of second elongated apertures having opposing arcuate end surfaces, each of said second apertures being disposed in said member substantially midway between respective pairs of said first apertures, the axis of elongation of said second apertures being in substantial alignment with one of the mutually perpendicular bisecting axes of said member;

said apertures extending completely through said rigid planar member so that, when a set of said support members having each a body having a selected diameter is loaded on said rigid member with the respective ends thereof inserted into selected said apertures, adjacent ones of said support members may be moved generally parallel to said planar rigid member to permit a maximum number of said support members to be loaded thereon, said maximum number being dependent on the diameters of said bodies.

4,618,060
FLOPPY DISC CASING WITH OPTIONAL WRITE-PROTECT CAPABILITY

Norman D. Tarter, Rte. 4, Box 456, Woodville, Miss. 39669
Filed Nov. 7, 1985, Ser. No. 796,080
Int. Cl.⁴ G11B *23/02;* B65D *85/57*
U.S. Cl. 206—444 **14 Claims**



1. A protective casing for holding a magnetic recording disc for a computer disc drive, and which is characterized by a write-to-disc function and an optional read-only/write-protect capability, said casing comprising,

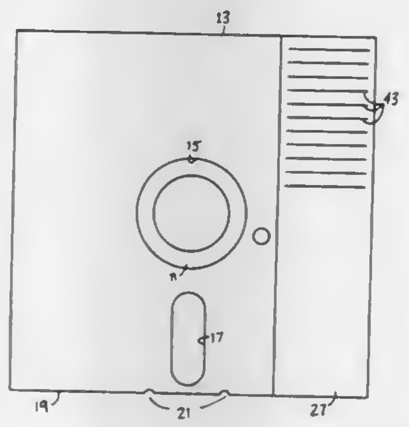
a thin, substantially flat envelope of rectangular outline and having four side edges, said envelope comprising front and back sheets and including a slot which extends along at least one of said side edges;

a notch formed in said one side edge of said envelope and communicating with said slot, with said notch defining opposite sides and a bottom side; and

a generally flat write-protect strip slideably positioned within said slot and having a lip extending outwardly perpendicularly from said strip within said notch for facilitating retention of said strip in said slot and sliding movement of said strip between respective write-to-disc and write-protect positions, with at least one of said positions being defined by placing said lip against a side of said notch.

4,618,061
DEVICE FOR PROTECTION OF DIGITAL DATA

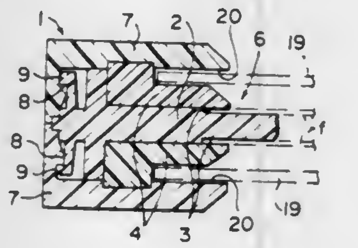
Viktor P. Rubenfeld, Manhattan Beach, Calif., assignor to SEQUENCE, Santa Monica, Calif.
Filed Oct. 12, 1984, Ser. No. 660,115
Int. Cl.⁴ B65D *85/30*
U.S. Cl. 206—444 **10 Claims**



1. In a combination for preventing alteration of electronic data stored on a floppy disk, said combination including a generally rectangular envelope containing said floppy disk and covering a substantial portion of the surface thereof, said envelope being provided with an opening traversable by a mechanical switch element in an electronic apparatus upon an insertion thereinto of said envelope and said floppy disk, said combination further including data protection means engageable with said envelope for covering said opening and preventing the traversal thereof by said mechanical switch element upon an insertion of said envelope and said floppy disk into said electronic apparatus, whereby said electronic apparatus is disabled from altering information electronically stored on said floppy disk, the improvement wherein the data protection means comprises an additional envelope into which the generally rectangular envelope with the floppy disk may be slidably inserted, said additional envelope having sufficiently large dimensions to cover the opening in said generally rectangular envelope upon the insertion thereof into said additional envelope, said additional envelope being removably securable to said generally rectangular envelope by a friction fit.

4,618,062
FILM HOLDER FOR CAMERAS

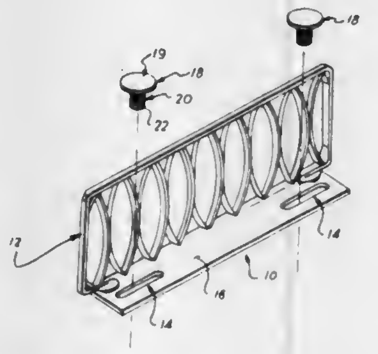
Kanji Tomidokoro, Tokyo, Japan, assignor to Komamura Photographic Co., Ltd., Tokyo, Japan
Filed Oct. 4, 1985, Ser. No. 784,470
Claims priority, application Japan, Oct. 4, 1984, 59-150289[U]
Int. Cl.⁴ B65D *85/67*
U.S. Cl. 206—455 **1 Claim**



1. A plastic film holder for camera including a inner frame defining a photo-sensitive plate insert slot between a partition plate, and outer frames each defining a dark slide insert groove between said inner frame, wherein a plurality of stopper springs are formed on the peripheral sides of a body comprised of said partition plate and said inner frame, and a plurality of hooks are formed on each said outer frames overlaid on said body to define the dark slide insert slot, said stopper springs and hooks being in the corresponding realtionship, respectivly, so that they are engaged with each other to lock said body and outer frames together in an overlaid relationship.

4,618,063
ADJUSTABLE SHELF PARTITION

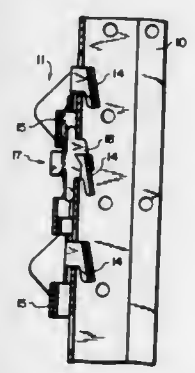
Walter M. Mendenhall, 512 Lillian Dr., Madeira Beach, Fla. 33738
Filed Sep. 19, 1983, Ser. No. 533,805
Int. Cl.⁴ A47F *5/00*
U.S. Cl. 211—184 **6 Claims**



1. A shelf partition for use with a shelf having parallel rows of perforations, each row of perforations including a plurality of perforations which are spaced apart by a predetermined distance, said shelf partition being positionable on said shelf for dividing said shelf into a pair of compartments; said shelf partition comprising an integral patition member consisting essentially of a base having a bottom surface adapted to rest on the shelf, a wall portion extending upward from said base, and a pair of longitudinally extending slots in said base; the length of each of said longitudinally extending slots in said base being greater than the spacing between adjacent rows of perforations in said shelf and being greater than the spacing between adjacent perforations in each of said rows, respective fastening means movable longitudinally in each of said slots and being adapted to couple the base to a perforation at any point along the longitudinal length of its respective slot, thereby allowing adjustment of the orientation of the partition relative to shelf and adjustment of the position at which the fastening means couples the partition to a perforation.

4,618,064
DEVICE FOR LOCKING A BEAM TO AN UPRIGHT, FOR EXAMPLE IN A PALLET RACK

Ake E. Viklund, Säffle, Sweden, assignor to Electrolux Constructor Aktiebolag, Saffle, Sweden
Filed Apr. 2, 1984, Ser. No. 595,602
Claims priority, application Sweden, Apr. 15, 1983, 8302115
Int. Cl.⁴ A47F *5/00*
U.S. Cl. 211—192 **7 Claims**



1. A device for locking a beam to an upright having spaced holes therein such as in a pallet rack, said beam being provided with at least one hook adapted to be inserted through any of said holes in the upright, and a spring-biased lock device having locking means which in a locking position is inserted in the free space above the hook in said hole, said lock device being provided with a member by which it can be moved manually against the action of a spring to an extracted position, so that a first surface of the lock device, at least initially during a lifting movement performed when the beam is to be removed, is in engagement with said upright thereby retaining the device in the extracted position, said first surface being so constructed to disengage from said upright during continued lifting movement of the beam whereby said lock device under the action of said spring snaps into a prestressed position from which it by means of the upright is moved to said locking position when the beam is fastened to said upright.

4,618,065
SANITARY WASH BOTTLE KIT TWO PART CLOSURE

Durward O. Guth, 551 Granville Ave., Hillside, Ill. 60162
Filed Sep. 19, 1985, Ser. No. 777,589
Int. Cl.⁴ B65D *39/16*
U.S. Cl. 215—3 **3 Claims**

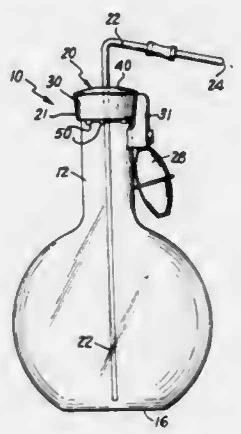
1. In a two-part stopper forming a wash bottle kit assembly adapted to introduce tubing extending to the bottom of the flask in which a pressurized liquid passes up the tubing within the flask and out of the outlet to the stopper outside of the flask;

an apertured outer stopper fitted with a counterbore, an inner groove for the lip of the flaks and with a depending leg lying below the top of the stopper and along the neck of the flask contoured to fit against the neck below the lip of the flask, the depending leg having a vertical passageway connected at one end to a pump and at the other end of the leg to a horizontal passageway into the flask;

and an inner stopper formed with a projecting flange fitting within the conterbore of the outer stopper and forming a common top surface, said inner stopper further having a central axial bore for receiving bent tubing extending through to the bottom of the flask to dispense liquid, that improvement comprising:

said inner stopper formed of a soft resilient elastomer material in which the top portion of the inner stopper is formed with a stepped outer flange extending into a recessed portion of the counterbore of the apertured outer stopper;

said inner stopper being further formed at its bottom portion with downwardly projecting lobes equally spaced around



the circular cross-section to provide at least five and not more than six soft yieldable compressible contact surfaces against the inner side walls of the flask and below the lip thereof;

said multiple lobes providing interlobar spaces for the free passage of pressurized air from the bulb through the dependent leg across the horizontal passageway and in the space between the inner stopper and the outer stopper and said inner stopper being provided with an axial bore having a diameter at the top and bottom of said stopper which is slightly larger than the diameter of the bent tubing introduced through said bore, said axial bore being widened below the top portion and above the bottom portion to be slightly wider in this middle portion thereby facilitating manipulation of the glass tubing while it is being pushed through the bore.

4,618,066
COMBINED INSULATED DRINKING MUG AND MEGAPHONE

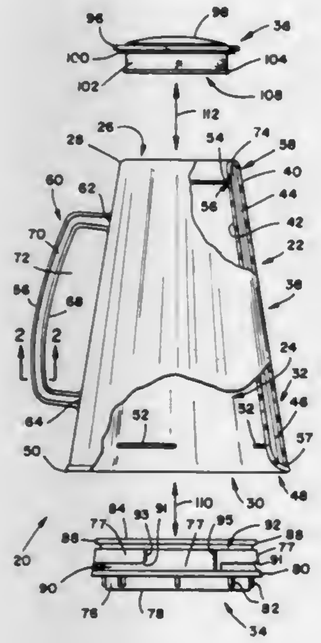
John G. Vail, Oakland, Calif., assignor to Mug-A-Phone, Inc., Daytona Beach, Fla.
Filed Aug. 20, 1984, Ser. No. 642,585
Int. Cl.⁴ A47J *41/00*
U.S. Cl. 215—12 R **2 Claims**

1. An apparatus for use as a liquid container in a closed mode and as a megaphone in an open mode, the apparatus comprising:

(a) a rigid, hollow, frusto-conical body formed by a pair of continuous walls joined together in spaced-apart relation to define therebetween a frusto-conical, annular resonating chamber and thermal insulating space extending over substantially the entire height of the body, the walls terminating in and defining an outlet opening at a bottom, large diameter end of the body and an open port at the top, small diameter end of the body, the walls being integrally joined together proximate the port by a circumferentially extending joint positioned in axially spaced relationship to the small diameter end with one of the walls extending between the inside and the outside of the body to provide a smooth, continuous wall portion at the port for engagement by the mouth of the user, and the walls being joined together proximate the outlet opening by a circumferentially extending joint maintaining the walls in spaced relationship substantially over the height of the body;

(b) sealing means formed for selective repeated mounting to and removal from the body in a position sealing the outlet, the sealing means being provided as an end closure mounted to the body by a bayonet coupling structure including mating cooperating sets of bayonet elements with one set of bayonet elements provided on the inside wall of the body proximate and axially inwardly of the outlet and of the body, and mating set of bayonet elements provided on the end closure, the bayonet structure locking the end closure to the body to render the body useful in a closed mode as a liquid container and releasing the end closure for removal from the body to open the body for use in an open mode as a megaphone and

a cap formed for selective repeated mounting to and removal from the body in a position closing the port, the cap and the port being matingly dimensioned to frictionally retain the cap mounted in the port.



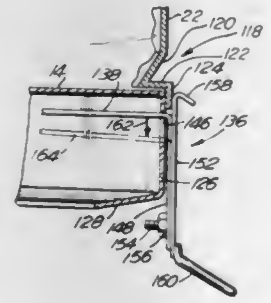
4,618,067
SURGICAL CASE CART

Robert J. Cohn, Dallas, Pa.; Frank C. Olsson, East Lyme, Conn.; James W. Holzman, New Tripoli, and Paul Santarelli, Hudson, both of Pa., assignors to Metropolitan Wire Corporation, Wilkes-Barre, Pa.

Division of Ser. No. 354,762, Mar. 4, 1982, Pat. No. 4,550,956. This application Feb. 11, 1985, Ser. No. 700,122

Int. Cl.⁴ B65D *6/34;* **E06B** *3/70, 7/00*

U.S. Cl. 220—1.5 4 Claims



1. A cart comprising:

an enclosed container having a top, a bottom and sides to provide an interior space within said container, and at least one door panel provided at least at a front portion of said container, said door panel being movable between open and closed positions;

said door panel having a single pan construction, and stiffening wires provided internally of said door panel for increased rigidity of said door panel;

said door panel comprising a planar sheet portion having a top, a bottom, and opposing sides, said bottom of said planar sheet portion above the bottom of the door panel, said bottom of said door panel being disposed adjacent to said container bottom when said door panel is in the closed position;

a U-shaped channel being provided about said top and opposing sides of said planar sheet portion, said channel including a flange section connected to said top and opposing sides of said planar sheet portion, said flange section being directed toward said interior space when said door panel is in the closed position, and a depending lip connected to said flange section, said depending lip being directed toward a central portion of said door panel;

each end of said wires being secured to said door panel within said channel;

stiffening means disposed along said bottom of said door panel for providing additional rigidity to said door panel, said stiffening means including a substantially V-shaped bend directed toward said interior space when said door panel is in the closed position, said V-shaped bend being integrally disposed along said bottom of said planar sheet portion in a one piece construction;

said V-shaped bend including a first bent section having an end portion unitarily connected to said bottom of said planar sheet portion and extending away from said bottom of said planar sheet portion in an inclined direction toward said interior space when said door panel is in the closed position, and a second bent section having an end portion unitarily connected to the other opposing end portion of said first bent section and extending away from said opposing portion of said first bent section in a direction away from said interior space and substantially parallel to said container bottom when said door panel is in the closed position, said second bent section overlying the container interior bottom surface in the closed position of said door panel; and

baffle means for preventing air flow into said container, said baffle means including a lip integrally connected to an opposing portion of said second bent section in a one piece construction and extending away from said opposing end portion of said second bent section in a substantially vertical direction away from and substantially parallel to said planar sheet portion, said lip of said baffle means overhanging an outer surface of said container bottom along said front surface in said closed position of said door panel.

4,618,068
METHOD AND APPARATUS FOR SHIPPING AND STORING CARGO

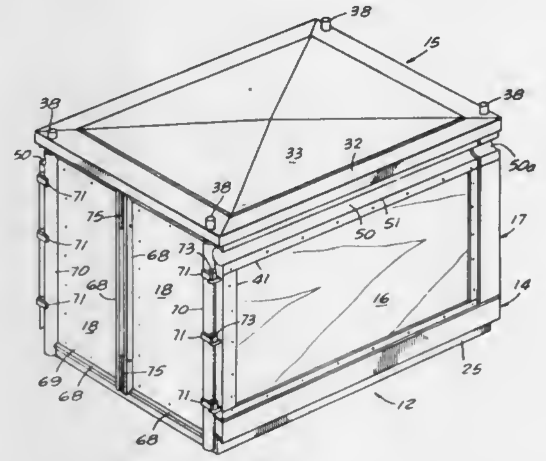
Raymond W. Born, 4211 W. First St., Space 121, Santa Ana, Calif. 92703

Filed Sep. 17, 1985, Ser. No. 777,012

Int. Cl.⁴ B65D *7/24*

U.S. Cl. 220—4 R 45 Claims

30. A cargo container comprising a four sided box having a top and a bottom and an opening across one end thereof; a pair of circular tubes extending along the opposite sides of said opening, a pair of doors for said opening hingedly supported for pivotal movement between a closed position generally inwardly of a plane common to the axes of said tubes and including pairs of hinge leaves one portion of which embraces a major exterior portion an adjacent one of said tubes and is fixed to said door panel and the other portion of which is fixed to said container on the opposite side of said tubes, said pairs of hinge leaves being separably interconnected by a hinge pin fixed to one of said hinge leaves; and means for locking said door panels closed.



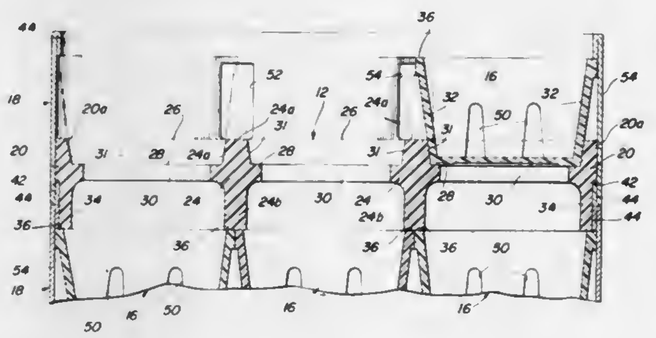
4,618,069
SHIPPING-AND-STORAGE CONTAINER

Paul Quong, 1914 Orangewood Ave., No. 102, Orange, Calif. 92668

Continuation-in-part of Ser. No. 591,854, Mar. 21, 1984, abandoned. This application Sep. 14, 1984, Ser. No. 650,272

Int. Cl.⁴ B65D *21/02, 1/36, 69/00, 25/04*

U.S. Cl. 220—23.4 42 Claims



1. A container in combination with removable baskets for shipping and storing fresh produce, wherein said combination comprises:

a basket-support tray having a substantially rectangular configuration;

a plurality of baskets adapted to receive said produce for shipping, storage, and display therein, and to be carried by said basket-support tray;

a plurality of open-ended receptacles having upper and lower open ends formed in said basket-support tray, said baskets being removably mounted in said open-ended receptacles;

a peripheral frame member mounted about the outer surface of said basket-support tray; and

means formed between said peripheral frame member and said basket-support tray for interlocking a multiplicity of containers in a stacked arrangement to prevent separation thereof during shipping and storage;

wherein said basket-support tray comprises:

an outer peripheral wall structure defined by four side wall members;

a plurality of integrally formed, longitudinally and transversely disposed, inner wall members;

all of said wall members defining said open-ended receptacles to receive and support said baskets therein, whereby the structural load of each superposed container is transferred through each of said wall members when said containers are stacked for shipping or storage.

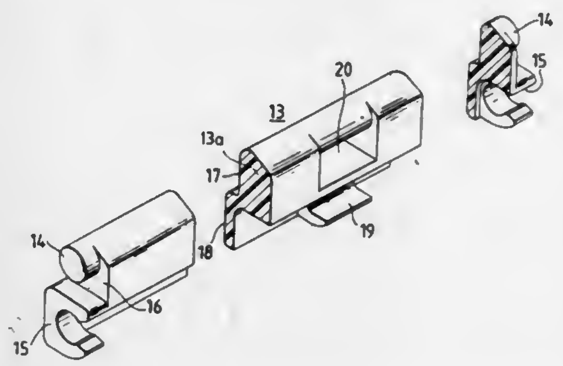
4,618,070
INJECTION MOULDED SHUTTER

Ralph E. Huckle, Chichester, England, assignor to De La Rue Systems Limited, Portsmouth, England

Filed Sep. 27, 1984, Ser. No. 655,505

Int. Cl.⁴ B65D *43/14;* **E06B** *9/14*

U.S. Cl. 220—350 6 Claims



1. A flexible shutter comprising a series of interconnected injection moulded plastic strips, each strip having at each end integral male and female connecting members, and are formed so as to permit joining the strips in series to form the shutter, said integral male connecting members comprising a cylindrical projection extending longitudinally from each end of said strip, and each of said integral female connecting members being positioned below each of said integral male connecting members and comprising a C-shape element that projects laterally of said strip so as to receive the cylindrical projection of the male connecting member of an adjacent strip, each strip also having along its entire length a recess portion and a corresponding overlapping portion positioned adjacent said recess portion, each recess portion being offset from the adjacent overlapping portion of said adjacent strip, whereby the corresponding overlapping portion of one strip is designed to be received within the recess portion of an adjacent strip, and each of said strips including intermediate its ends a tongue and groove positioned so that when the strips are joined in series with their respective ends substantially aligned to form the shutter, said tongue of one strip enters the groove of an adjacent strip so as to interlock the strips to prevent tampering and to allow flexibility of the strips, said tongue of each of said strips extending laterally of the strip in the same direction as said C-shape element projects and being positioned on said strip on an extension, said extension being the length of the strip and extending from said overlapping portion offset therefrom in substantially the same plane as the recess to thereby define said recess with said overlapping portion, being positioned on said corresponding overlapping portion aligned with the corresponding tongue on said strip and the adjacent strip.

4,618,071
VENTING DEVICE FOR AN ELECTRONICS HOUSING

Jacques Vincent, Cahors, France, assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 14, 1985, Ser. No. 798,203

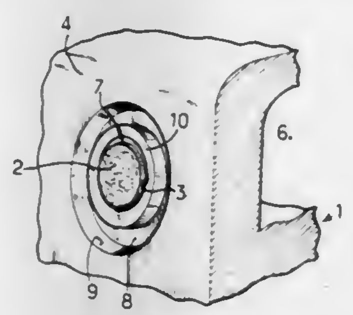
Claims priority, application France, Nov. 29, 1984, 84 18163

Int. Cl.⁴ B65D *51/16*

U.S. Cl. 220—371 8 Claims

1. Venting device for an electronics housing, including a passage provided through a wall of the housing, said passage

connecting the inside and the outside of the housing and a filter fitted into the said passage, and a peripheral liquid channeling groove provided in the outside surface of said wall and completely surrounding the opening of the said passage.



4,618,072
BILL PAYING MACHINE

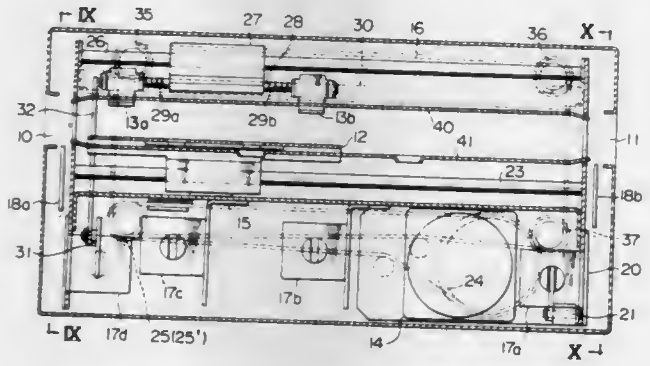
Eiichi Yoshikawa, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1984, Ser. No. 644,229

Claims priority, application Japan, Aug. 30, 1983, 58-158504; Aug. 31, 1983, 58-159970

Int. Cl.⁴ G07F *11/00, 11/16;* **B65H** *5/22;* **B65G** *57/00*

U.S. Cl. 221—2 **8 Claims**



1. A bill-paying machine adapted to be positioned between two operator positions situated on the right- and left-hand sides and used in common by two operators, comprising: two paying outlets arranged opposite each other at the right- and left-hand sides on the front portion of a housing constituting the external surface of said bill-paying machine, and having an opening in each of the right and left sides opposed to each other; a transport device for transporting a predetermined number of bills sent out from bill containers inside said housing on the basis of an instruction for payment issued by each operator; and a distributing device for receiving the bills transported by said transport device and moving the same in the right- and left-hand directions to the respective outlet, thereby to pay out the bills through one of said paying outlets, wherein said distributing device includes a receiving plate where bills sent out by said transport device are placed in face to face relationship in a horizontal plane, said receiving plate movable transversely between said paying outlets, holding means cooperable with said receiving plate for releasably holding bills on said receiving plate and movable therewith between said paying outlets, and release means for releasing said holding means.

4,618,073
CUP DISPENSING APPARATUS

William Bartfield, 15150 Dickens St., #304, Sherman Oaks, Calif. 91403, and Charles L. Ferguson, 779, Manchester, N.H. 03105

Filed Apr. 29, 1985, Ser. No. 728,523

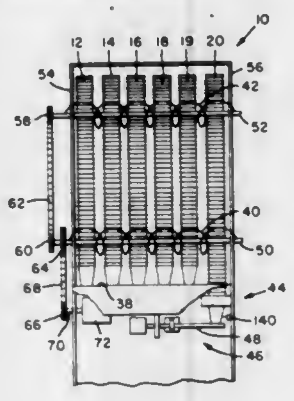
Int. Cl.⁴ G07F *11/12*

U.S. Cl. 221—11 **11 Claims**

1. A cup dispenser for containing and individually releasing cups for dispensing a product from a vending machine, said dispenser comprising:

a. housing means for housing a plurality of cups provided in nested relationship in plural tubular stacks, each of said cups having a base and including an outwardly extending rim at its upper edge, one of said stacks being a dispensing stack positioned at a dispensing column having a dispensing column opening, and the remaining stacks being supply stacks;

b. dispensing means for supporting said dispensing stack and for sequentially separating single cups from the bottom of said dispensing stack to permit each of the separated cups to drop from the dispensing means;



c. advancing means for selectively advancing at least one of said supply stacks to the dispensing column when the initial dispensing stack is exhausted; and

d. support means selectively interposable below said dispensing opening for receiving and supporting each said supply stack after it has been advanced to the dispensing column and the lowermost cups have fallen partially through said dispensing column opening, said support means operative to support the lowermost cup of the dispensing stack at its base so that its outwardly extending rim is above said dispensing means, whereby the impact of the falling dispensing stack as it falls into the dispensing column opening is borne by the base of the lowermost cup to thereby avoid damage to the rim of that cup.

4,618,074
COIN-OPERABLE MACHINE FOR DISPENSING COOLING ELEMENTS

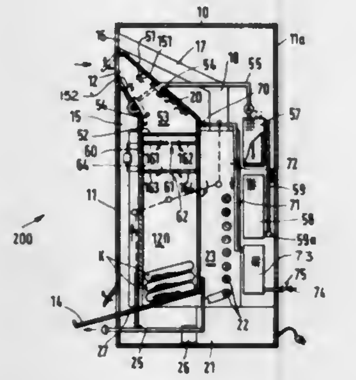
György Teglasy, Masenkamp 62, 2000 Hamburg 62, and Ludwig Galambos, Lawaetzweg 7, 2000 Hamburg, both of Fed. Rep. of Germany

Filed Oct. 11, 1984, Ser. No. 659,647

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1983, 8330770[U]; Jul. 27, 1984, 8422376[U]

Int. Cl.⁴ G07F *7/06, 9/10*

U.S. Cl. 221—15 **18 Claims**



1. A coin-operable machine for dispensing cooling elements, particularly for the use thereof in cooler bags and cooler boxes for keeping food fresh, and for keeping drinks cool, comprising in combination

a box-shaped casing, including

a refrigerating compartment for cooling a cooling element passing therethrough,

a front panel formed in an upper region thereof with an insertion slot adapted to receive a cooling element,

a guideway having a major portion thereof in an upright position, said major portion passing through said refrigerating compartment, the remaining portion of said guideway including a cooling element cleaning chamber,

inlet and discharge means for passing and discharging hot water or steam into and from said cooling element cleaning chamber, respectively, and openable guideway closing means for said major portion of said guideway, said remaining portion being separated from the major portion of said guideway by said guideway closing means and,

wherein said cleaning chamber has a cooling element discharge side,

said guideway closing means comprising a base plate for selectively opening and closing a bottom opening of said cleaning chamber formed near said cooling element discharge side, and

coin-controlled cooling-element retaining and delivery means formed with a cooling element removal slot communicating with a lower end of said major portion of said guideway, said retaining and delivery means being adapted to further cool and maintain the cooling element at a predetermined temperature, pending removal therefrom.

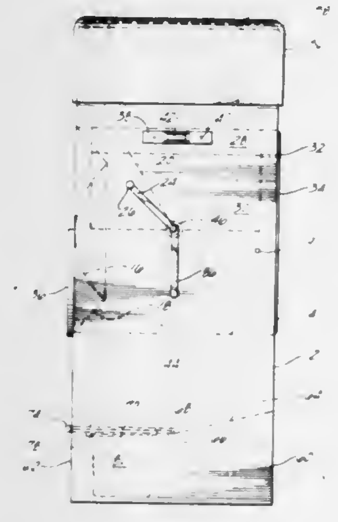
4,618,075
COMBINED STORAGE CONTAINER, SIFTER AND DISPENSER FOR FLOUR

Ernestine Hampton, 400 Mt. Washington, Los Angeles, Calif. 90065

Filed Feb. 9, 1984, Ser. No. 578,420

Int. Cl.⁴ B67D *5/58*

U.S. Cl. 222—189 **9 Claims**



1. An apparatus for storing, sifting and dispensing of flour comprising:

a flour storage container providing at opposed container ends thereof a first flour inlet and a first flour outlet;

means for sifting flour contained by the storage container and disposed between the first flour inlet and first flour outlet and providing at least a second flour inlet separate from the first flour inlet and a sifted flour outlet separate from said first flour outlet and opposed the second flour inlet; and

support means for said storage container, said support means rotatably supporting the storage container to enable, by rotation of said storage container, independent dispensing of flour from said first flour outlet or said sifted flour outlet by positioning said storage container for flour at a position where gravity will aid the discharge of flour through the first flour outlet or sifted flour through the sifted flour outlet.

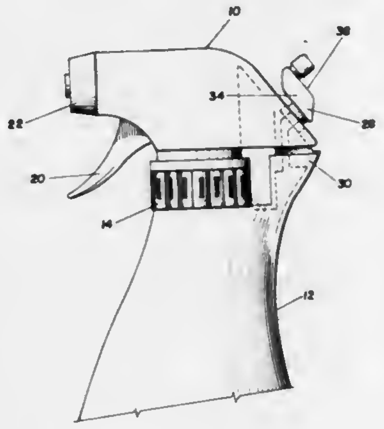
4,618,076
DUAL DISPENSING BOTTLE

Scott A. Silvenis, Mauldin, S.C., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 20, 1983, Ser. No. 515,714

Int. Cl.⁴ B05B *9/043;* **B65D** *17/28*

U.S. Cl. 222—331 **8 Claims**



1. A container comprising

a hollow body having a first upwardly extending neck and a second upwardly extending neck, said first upwardly extending neck being provided with coupling means for, and said container being adapted for, the connection thereto of a finger actuated pump and associated spray nozzle having mating coupling means,

a frangible twist-off closure for sealing said second upwardly extending neck and having an elongated body, said twist-off closure being formed as an integral part of the hollow body and continuous with said second neck, and joined to said second neck by a reduced thickness joining portion to facilitate separation thereof from said second neck by twisting, said twist-off closure further having a reclosure portion formed thereon, said reclosure portion being adapted to be pressed into the opening that is formed in said second upwardly extending neck by removal of said twist-off closure, and sized for reclosing the opening, when said twist-off closure has been twisted off said second upwardly extending neck, and means including the extent of elongation of said elongated body and the position of said frangible closure on said elongated body for providing leverage in twisting said frangible closure to effect rupture thereof; wherein said elongated body has a first side and a second side, said first side and said second side being disposed in opposing relation with respect to said elongated body, with said first side including a frangible seal for said second upwardly extending neck, and with said second side having said reclosure portion formed thereon; and wherein said frangible seal is positioned on said first side adjacent one end of said elongated body and said reclosure portion is positioned on said second side adjacent the other end of said elongated body whereby there is provided said leverage in twisting said twist-off closure of said second upwardly extending neck and in twisting said reclosure portion to facilitate the pressing thereof into the opening in the second upwardly extending neck.

4,618,077
LIQUID DISPENSING PUMP

Douglas F. Corsette, 6559 Firebrand St., Los Angeles, Calif. 90045

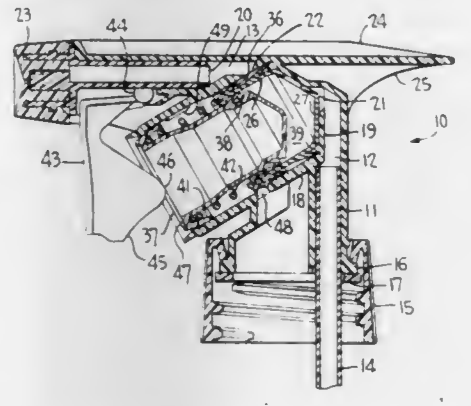
Filed Mar. 7, 1984, Ser. No. 587,070

Int. Cl.⁴ B67D *5/40*

U.S. Cl. 222—383 **27 Claims**

16. A liquid dispensing pump, comprising a pump body, a separate closure cap engaged with said pump body for mounting said pump body on a container of flowable product to be dispensed, said pump body including outwardly opening cylin-

der means having a bore of predetermined diameter and a counterbore of relative greater diameter, said cylinder means being disposed at an angle to the central axis of said closure cap, a pump piston reciprocable in said cylinder means, said piston having piston seal means in sliding sealing engagement with the wall of said bore and defining together therewith a variable volume pump chamber, said pump body having inlet and outlet means for delivering product into and out of said pump chamber, means for manually reciprocating said piston, said cylinder means including a vent port establishing communication between the interior of said counterbore and the interior of the container, said piston having an annular seal means in sliding sealing engagement with the wall of said counterbore for sealing off said vent port from the atmosphere in a non-pumping position, and means at said wall of said counterbore for disengaging said annular seal means from said wall of said counterbore to thereby establish in a pumping position a vent passage for venting the container through said vent port, said annular seal means being located outwardly of said disengaging means in said non-pumping position.



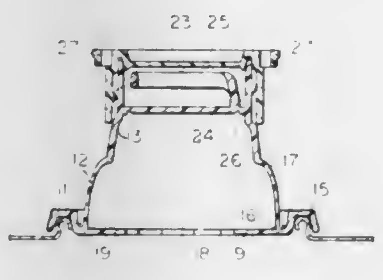
4,618,078
VENTED NESTABLE POURING SPOUT

Martin E. Hamman, and Gary M. Baughman, both of Auburn, Ind., assignors to Rieke Corporation, Auburn, Ind.

Continuation-in-part of Ser. No. 610,688, May 16, 1984, Pat. No. 4,555,048. This application Aug. 22, 1984, Ser. No. 643,070

Int. Cl.⁴ B67D *3/00*

U.S. Cl. 222—478 **17 Claims**



1. A pouring spout for use with a container, comprising:

a spout having means for alternately disposing said spout in a nested orientation or in an extended pouring orientation;

means for securing said pouring spout to said container; and

a plurality of ears moveably attached with respect to said spout, said ears extending inwardly within said spout and cooperating to define a central flow aperture for the outflow of liquid and a plurality of peripheral vent openings for the inflow of air, when, and only when, said spout is disposed in the extended pouring orientation.

4,618,079
REFRACTORY, HEAT-INSULATING SLABS

Andrew Barnes, Birmingham; Gary K. Elliott, Stourbridge; William MacFarlane, Birmingham, all of England, and Stephen T. Pheasant, Makati, Philippines, assignors to Foseco Trading A.G., Chur, Switzerland

Filed Nov. 8, 1983, Ser. No. 549,811

Claims priority, application United Kingdom, Dec. 1, 1982, 8234319

Int. Cl.⁴ C04B *35/04*

U.S. Cl. 222—591 **20 Claims**

1. A refractory, heat-insulating slab for use in the inner, expendable lining of a tundish comprising a slurry-formed facing (to face the molten metal in the tundish), comprising magnesium oxide having a hydration value of 1.7 or less, inorganic binder but substantially no organic matter, the said facing having a combined water content not exceeding 2% by weight at ambient temperature and a different backing comprising refractory filler and binder, the said backing having a permeability value of at least 10 AFS units, the facing and the backing having been joined together during formation of the facing or the backing.

4,618,080
GARMENT HANGER

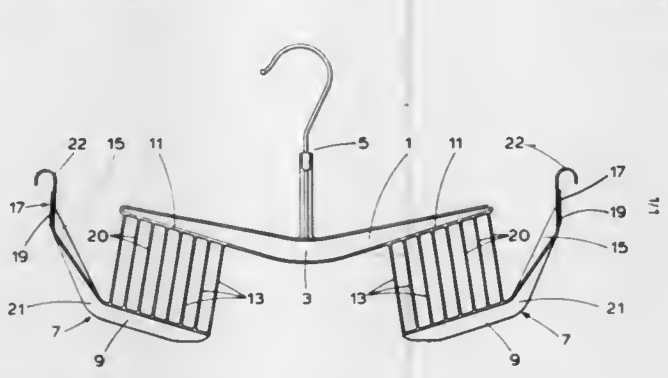
Peter Shalson, Radlett, United Kingdom, assignor to Braitrim (London) Limited, London, United Kingdom

Filed Oct. 17, 1984, Ser. No. 661,694

Claims priority, application United Kingdom, Oct. 17, 1983, 8327739

Int. Cl.⁴ A47G *25/30*

U.S. Cl. 223—95 **13 Claims**



1. A garment hanger comprising an elongate bar, a hook member interconnected with and arranged generally perpendicular to the bar, a pair of limbs with each limb located in the region of a respective end portion of the bar and being remotely spaced from the respective end portion by at least two elongate parallel links connected between each limb and the respective end portion of the bar such that each limb is separately movable in a direction parallel to the respective end portion of the bar, the at least two parallel links of each limb being hingedly secured to both said limb and respective end portion and being resilient to permit limited movement of the limbs towards each other, and garment gripping means located on each limb at the outermost end thereof to prevent slipping of a garment hung on the hanger.

4,618,081
APPARATUS FOR MOUNTING FLASHLIGHTS TO BICYCLES

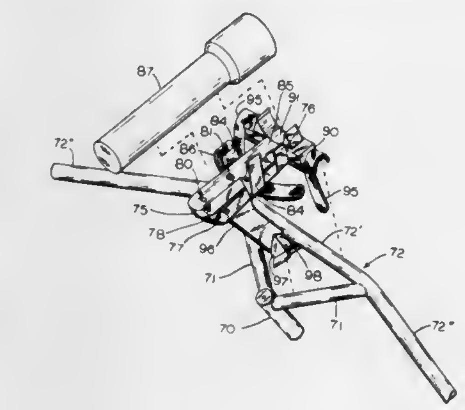
Mallory F. Miree, 3512 Springhill Rd., Birmingham, Ala. 35223

Continuation-in-part of Ser. No. 559,098, Dec. 7, 1983, Pat. No. 4,541,555. This application Sep. 13, 1985, Ser. No. 775,797

Int. Cl.⁴ F21V *33/00*

U.S. Cl. 224—41 **12 Claims**

1. A mount for mounting a flashlight to a bicycle of the type having a handlebar from which a pair of struts extend, and with the mount comprising a cradle having a concave upper surface in which a flashlight may be cradled, a forward crossarm extending laterally from a forward end of said cradle and which has a bottom surface shaped to be mated against the handlebar, a stanchion extending downwardly from a rear end of said cradle, a rear crossarm extending laterally from a lower end of said stanchion and which has ends shaped to be mated against the bicycle struts, and binding means for binding said forward crossbar to the handlebar and a flashlight to said cradle.



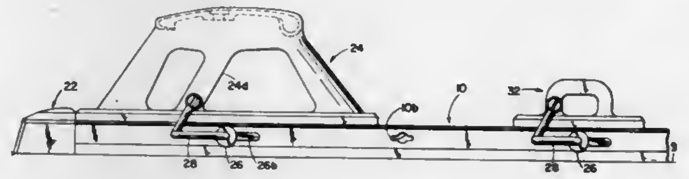
4,618,082
LUGGAGE RACK

James C. Bell, Stratford, Conn., assignor to Oliver Industries, Inc., Orange, Conn.

Filed May 24, 1985, Ser. No. 738,085

Int. Cl.⁴ B60P *9/04*

U.S. Cl. 224—321 **20 Claims**



1. A luggage rack for a vehicle surface comprising at least two upwardly open channel shaped slats adapted for attachment to such a surface in spaced parallel relationship to one another, each slat having a base and parallel side walls spaced laterally to define on elongaged channel of width (W), longitudinally extending inturned lips integrally connected to said side walls such that said lips define a top opening for the channel of smaller lateral dimension than the interior width (W) of the slat channel, stanchions slidably mounted in said slat channels, each stanchion having a base with a lower portion slidably received inside said channel and having grooves to receive said inturned lips, non-threaded fasteners for said stanchions, each stanchion fastener including a pin adapted for insertion axially into aligned openings in said channel side walls and in said stanchion base lower portion, and means carried by said stanchion fastener to selectively restrict said pin against axial movement out of said aligned openings to prevent slidable movement of said stanchion in its channel.

4,618,083
LADDER CLAMPING DEVICE FOR VEHICLE RACK

Kenneth F. Weger, Jr., Cary, Ill., assignor to Knaack Mfg. Co., Crystal Lake, Ill.

Continuation of Ser. No. 611,350, May 17, 1984, abandoned. This application Sep. 12, 1985, Ser. No. 775,505

Int. Cl.⁴ B60R *9/00*

U.S. Cl. 224—324 **8 Claims**

1. A rack which supports a ladder and which is mountable to a vehicle, said vehicle rack comprising:

first and second pairs of first and second corner positions;

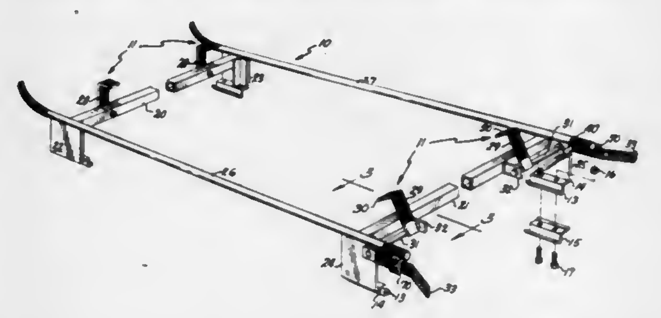
first and second transverse frame members extending bridgingly between the first and second corner positions of the first and second pairs of corner positions, respectively;

a first clamp mounted to the first frame member for engaging one rung of the ladder;

a rod rotatably mounted to at least one of the corner positions between which the second frame member extends, said rod extending from said one corner position parallel to the second frame member;

a second clamp mounted to the rod;

handle means rigidly connected to the rod for rotating the second clamp in a first direction into engagement with another rung of the ladder or in the opposite direction out of engagement with said another rung of the ladder;



a link proximate said one corner position and rigidly connected at a first linkage point to the rod and rotatable therewith; and

spring means pivotally mounted at a second linkage point to the link and at a third linkage point to said one corner position for biasing the link in the first rotational direction when the second linkage point lies on one side of a line between the first and third linkage points and for biasing the link in the opposite rotational direction when the second linkage point lies on the other side of the line between the first and third linkage points.

4,618,084
OPTICAL FIBRE CUTTING TOOL

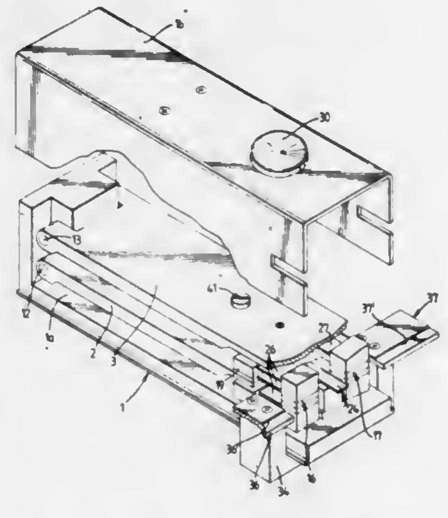
Patrick V. Andrews, Datchet, and Edward Z. Kaczmarski, London, both of England, assignors to BICC Public Limited Company, London, England

Filed Jun. 13, 1985, Ser. No. 744,386

Claims priority, application United Kingdom, Jun. 14, 1984, 8415167

Int. Cl.⁴ C03B *37/16*

U.S. Cl. 225—96 **11 Claims**

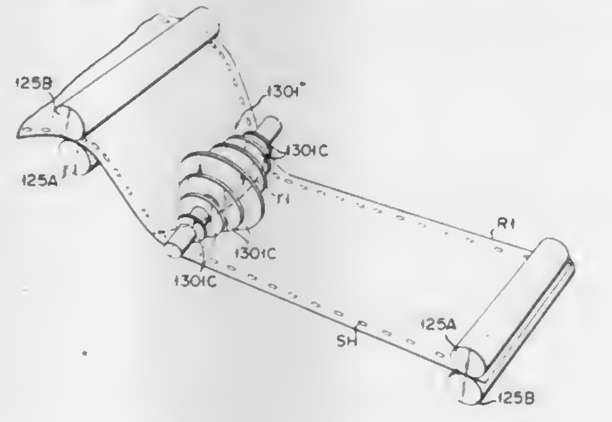


1. A hand tool for providing an optical fibre with an end face that is substantially flat and lies in a plane radial to the axis of the fibre, which hand tool comprises four elongate members extending side by side; the first of which elongate members is of substantially tubular form and surrounds the other three elongate members and has, mounted on the member near one of its ends, one jaw of each of two pairs of jaws transversely

spaced on opposite sides of the longitudinal axis of the member and, between said jaws, a table having a curved surface whose axes of curvature lie on a rectilinear axis extending lengthwise of the member; the second of which elongate members is pivotally connected to the tubular first member at its end remote from the table about an axis extending transversely of the members, is urged away from an internal surface of the tubular first member by spring means and carries, near its other end, the other jaw of each of said transversely spaced pairs of jaws, the jaws of one pair of the pairs of jaws being so resiliently mounted on the first and second members that, when the jaws move towards one another to grip an optical fibre between them, the parts of the jaws in contact with the fibre will tend to move away from the table and from the other pair of jaws to exert a tensile force on the fibre; the third of which elongate members is pivotally connected to the tubular first member at its end remote from the table about an axis extending transversely of the members, is urged away from the second member by said spring means and carries near its other end an elongate cutter having a cutting edge which is substantially normal to tangents of the curved surface of the table; and the fourth of which elongate members is pivotally connected at one of its ends to the tubular first member about an axis extending transversely of the members and is so shaped intermediate of its ends that, when it is caused to pivot towards the third and second members, an intermediate part of said fourth member bears against the third member to cause the second and third members to pivot against the action of said spring means and so cause the jaws of the pairs of jaws to grip an optical fibre positioned therebetween and to cause the cutting edge to contact and move transversely across the tensioned optical fibre to score the fibre to such an extent that the fibre breaks to form end faces of the fibre that are substantially flat and lie in planes radial to the axis of the fibre.

4,618,085
SHEET SEPARATING APPARATUS

Tokuji Kimura, and Toshio Urushihara, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Japan
Filed Jun. 29, 1984, Ser. No. 626,389
Claims priority, application Japan, Jun. 30, 1983, 58-119568
Int. Cl.⁴ B65H ***35/10***
U.S. Cl. 225—100 **1 Claim**



1. A sheet separating apparatus for separating a sheet, which is elongated in a longitudinal direction and includes a plurality of weakened lines each crossing the longitudinal direction of said sheet, into a plurality of relatively small pieces along said weakened lines, said apparatus comprising:

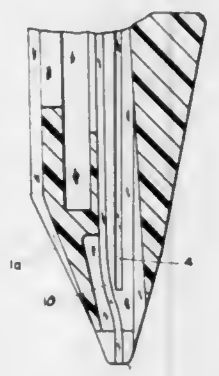
first tensioning means for applying tension to said sheet in said longitudinal direction thereof; and

second tensioning means for applying additional tension in said longitudinal direction which additional tension is non-uniform along successive weakened lines and which additional tension is applied while said sheet is being tensioned by said first tensioning means;

wherein said second tensioning means includes a roller located in a fixed position and having an axis extending across the width of said sheet, said roller including a plurality of disks space apart along said axis, said disks gradually decreasing in diameter from a central portion of said roller toward each end of said roller, the outer peripheries of said disks abutting against said sheet to apply non-uniform tension along the width of said sheet.

4,618,086
SKIN STAPLER

Lehmann K. Li, and Michael Marra, both of Fairfield, Conn., assignors to American Cyanamid Company, Stamford, Conn.
Filed Mar. 12, 1984, Ser. No. 588,415
Int. Cl.⁴ A01B ***17/00***
U.S. Cl. 227—19 **8 Claims**



1. In a surgical stapler having an anvil surface terminating in a flange, a staple feed track movably containing a plurality of staples and a staple forming track movably containing a forming blade, the improvement comprising the nondistal portion of said feed track being substantially parallel to said forming track and the distal portion of said feed track being in substantial alignment with the distal portion of said forming track

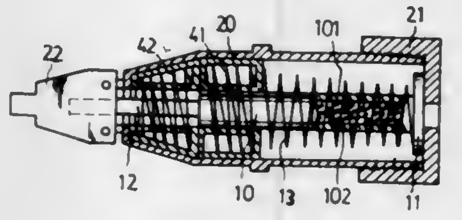
(A) in a point to crown configuration

(B) and the portion of said feed track between said distal and said nondistal portions being shaped

such that said plurality of staples in said feed track move continuously and uninterrupted to said anvil flange, the distal ends of said tracks being open in the same direction and the distal end of said feed track being between the anvil flange and the distal end of said forming track.

4,618,087
HIGH IMPACT FORCE STAPLING MACHINE WITH REBOUNDED IMPACT FORCE DAMPING

Wen T. Lai, No. 11, Ya Hsiu Rd., Ta Ya Hsiang, Taichung Hsien, Taiwan
Filed Jun. 12, 1985, Ser. No. 743,813
Int. Cl.⁴ B25C ***1/06, 5/15***
U.S. Cl. 227—131 **2 Claims**



1. An improved stapler with increased momentum for better hitting capability and better absorption of the rebound momentum comprising

a casing for the stapler;

a ram-driver combination mounted for reciprocal movement in said casing in a forward reciprocal movement followed by a rebounding reciprocal movement;

at least two electromagnetic coils coaxially aligned along an axis of the reciprocal movement of said ram-driver combination externally of said ram driver combination;

electrical circuit means connected to said coils to control current to said electromagnetic coils to produce a magnetic field with said coils and consecutively activate said coils to accelerate said ram-driver combination to obtain maximum hitting momentum at the end of the forward reciprocal movement of said ram-driver;

said ram-driver combination including a ram and a driver;

said ram including

a hollow round bar having a flange on one end;

said driver including

a flat impact rod integrally connected to a front end of said ram;

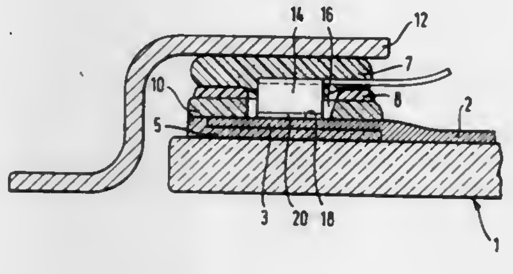
means to slow down said ram during the rebounding reciprocal movement by absorption of momentum including

heavy-weight metal particles of a predetermined amount confined inside said hollow round bar and adapted for forward movement with the forward reciprocal movement of said ram but lagging behind said movement of said ram by force of inertia and causing said ram on the rebounding reciprocal movement to move against the forward moving particles

whereby collisions of said particles will absorb the momentum of said ram-driver combination during the rebounding reciprocal movement.

4,618,088
PROCESS FOR SOLDERING A CURRENT CONNECTING ELEMENT AND A CURRENT FEED CONDUCTOR OF A HEATABLE GLASS PANE

Heinz Karla, Herzogenrath, Fed. Rep. of Germany, assignor to Saint Gobain Vitrage, Courbevoie, France
Filed Dec. 7, 1984, Ser. No. 679,170
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1983, 3344958
Int. Cl.⁴ B23K ***1/19, 1/20***
U.S. Cl. 228—124 **6 Claims**



1. A process for soldering a current connecting element to an enamel-like, electrically conducting layer burnt onto a surface of a glass pane, said electrically conducting layer being disposed on an enamel-like layer which is, in turn, located between the surface of the glass pane and the electrically conducting layer, said process characterized in treating the surface of the electrically conducting layer with a fluorine containing etching agent, said treatment being at the place provided for soldering, and soldering a foot of the current connecting element to said electrically conducting layer at said treated surface.

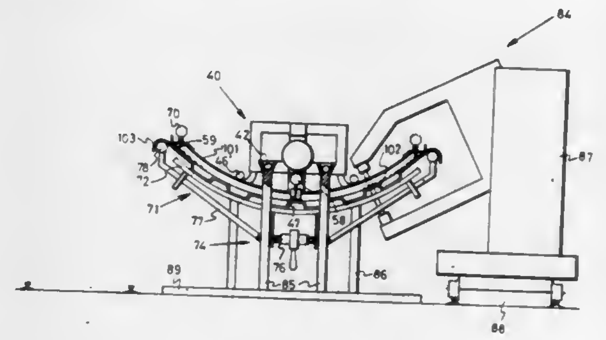
4,618,089
APPARATUS AND METHOD FOR ASSEMBLING A STRUCTURE COMPRISING FRAMES AND SHELL PLATES

Sadashi Hanada, Miki, and Akira Nakabayashi, Kobe, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan
Filed Aug. 28, 1984, Ser. No. 645,172
Claims priority, application Japan, Aug. 30, 1983, 58-158864
Int. Cl.⁴ B23K ***37/04***
U.S. Cl. 228—212 **2 Claims**

1. A method of assembling a structure consisting of a plurality of frames and at least one shell plate on said frames, comprising the steps of:

clamping the plurality of frames in given relative position to each other on a rigid clamping structure by releasable clamping means mounted on said clamping structure;

mounting the at least one shell plate in a predetermined form on a stand;



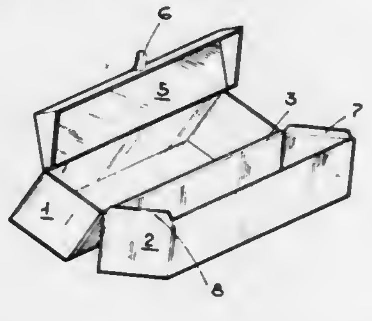
placing the assembled frames while clamped on said clamping structure on the at least one shell plate mounted on the stand so that said shell plate and said frames have a given relative position;

welding the frames while clamped on said clamping structure to the at least one shell plate mounted on the stand;

and releasing the clamping means and thereby the frames from the clamping structure.

4,618,090
ONE PIECE DOUBLE SHELL BOX WITH CLOSURE FASTENER

Giancarlo Cortellucci, Civitanova Marche, Italy, assignor to Studio Tecnico A.C. s.r.l., Italy
Filed Apr. 24, 1984, Ser. No. 603,354
Int. Cl.⁴ B65D ***6/00***
U.S. Cl. 229—45 R **2 Claims**



1. A one piece box which may be tipped back to open for packing industrial products, particularly footware, comprising,

first and second shells, each said shell having an open part with said two open parts facing each other when said shells are positioned to provide a closed box,

a base wall common to both said shells and having a median longitudinal axis,

means for joining said shells and for providing for rotation of said shells located along said median longitudinal axis of said base wall,

each said shell including an opposite wall parallel to said base wall, and having an edge parallel to said median longitudinal axis of said base wall,

a closure member pivotally joined to said first shell along said opposite wall edge,

said closure member having a wall surface and three side walls perpendicular to said wall surface and directed toward said second shell, and

said wall surface being sized to fit over said second shell opposite wall so that when said open parts are positioned to provide a closed box, said closure member provides means positioned to enclose said second shell opposite wall.

4,618,091

APPARATUS FOR CONTROLLING THE PASSAGE OF A LIQUID

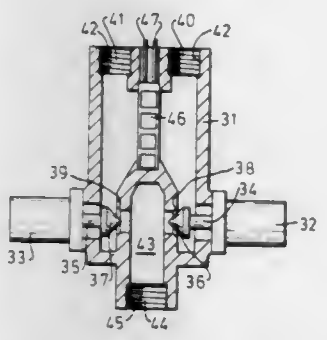
Guenter Buzzi, Schiltach, Fed. Rep. of Germany, assignor to Hans Grohe GmbH & Co. KG, Fed. Rep. of Germany

Filed Apr. 2, 1985, Ser. No. 718,872

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1984, 3414481

Int. Cl.⁴ G05D *23/13*

U.S. Cl. 236—12.12 **17 Claims**



1. A sanitary mixing valve for controlling the mixing ratio of liquids of differing temperatures and generating electrical power comprising:

a casing having two fluid inlet means and a fluid outlet means;

thermocouple means within said casing at least zonally separating the differing liquids in said casing;

at least one valve means having variable passages and arranged in said casing for controlling passage of said liquids in admixture through said outlet means, said valve means having an electrical valve drive associated therewith and operatively connected to said thermocouple means; and

an electronic control unit for producing signals for controlling the operation of said valve means, whereby flow of liquids of differing temperature through said casing causes the thermocouple to produce a voltage for activation of said electronic control unit.

4,618,092

REFRIGERANT FLOW RATE CONTROL DEVICE

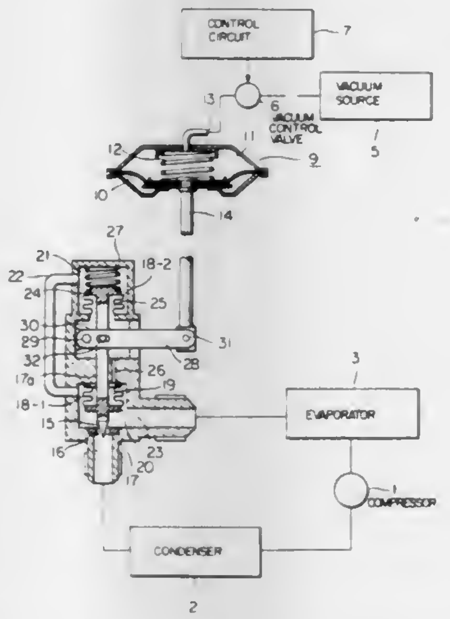
Toshihiko Fukushima, Ibaraki; Seigo Miyamoto, Takahagi; Masahiko Fujita, Ibaraki; Masanori Musoo, and Kosaku Sayo, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1984, Ser. No. 676,320

Claims priority, application Japan, Nov. 30, 1983, 58-224148

Int. Cl.⁴ G05D *27/00*

U.S. Cl. 236—92 B **2 Claims**



1. A refrigerant flow rate control device for effecting control of the flow rate of a refrigerant released from a condenser and for introducing said refrigerant to an evaporator while causing same to undergo adiabatic expansion, comprising:

means including an orifice for providing a passage for refrigerant to flow through;

a valve body extending into said passage downstream of said orifice and having one end positioned in proximity to said orifice and operative to change its position relative to the orifice to vary the cross-sectional area of said passage to control the stream of refrigerant flowing through said passage;

a valve drum for supporting said orifice and said valve body and having said passage extending therethrough;

seal means for sealing a portion of the valve drum through which the valve body extends;

a vacuum actuator mounted on said valve drum for controlling displacements of said valve body, said valve body extending through said vacuum actuator and being connected thereto so as to be actuated thereby;

a pressure chamber provided with seal means and located opposite said valve drum from said vacuum actuator and having positioned therein the opposite end of said valve body from the end operatively associated with said orifice; and

a communication passageway extending between said pressure chamber and a point in said passage downstream of said orifice for equalizing the fluid pressure applied to the downstream part of said passage through which the valve body extends and the fluid pressure in said pressure chamber.

4,618,093

RAIL INSULATION PADS

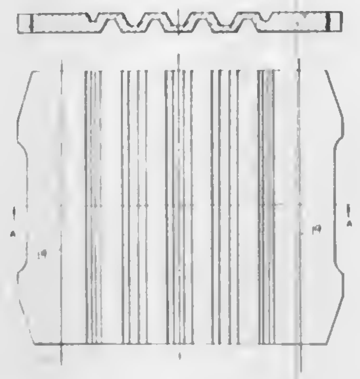
Hartley F. Young, West Melton, and John Collins, Ingle Farm, both of Australia, assignors to Ralph McKay Limited, Maidstone, Australia

Filed Jun. 20, 1984, Ser. No. 622,863

Claims priority, application Australia, Dec. 13, 1983, PG2833/83; Dec. 20, 1983, PG2923/83

Int. Cl.⁴ E01B *9/30, 21/04, 29/24*

U.S. Cl. 238—283 **12 Claims**



1. In a rail fastening system of the kind in which a rail is fastened to a rail tie by a rail seat comprising a rail pad between the tie and the rail; said rail having a longitudinal axis and a rail flange terminating in a field edge; a pair of rail clamp supports secured to said tie on either side of said rail and abutting said rail pad; rail clamp associated with each rail clamp support each clamp having a portion secured in said clamp support and a portion bearing down on said rail flange, and a clamp insulator lying on said rail flange to electrically insulate said rail flange from said rail clamp and said clamp support, the improvement comprising said rail pad being provided to electrically and dynamically insulate said rail tie from said rail which pad is composed of material having a spring rate sufficiently high to provide required load bearing capacity, said pad having field edge portions extending 20 mm inwardly from the field edge of the rail toward the longitudinal axis of the rail which are reduced in volume by less than 10% by the provision of grooves and recesses which remove material in either pad surface and said pad having a control portion between said field edge portions which is reduced in volume by at least 15% by the provision of grooves and recesses which remove material in either pad surface, said pad being composed of a resilient, flexible material having a hardness within the range 68 to 90 DURO-Hardness on the shore-A scale.

4,618,094

THRUST DEFLECTION

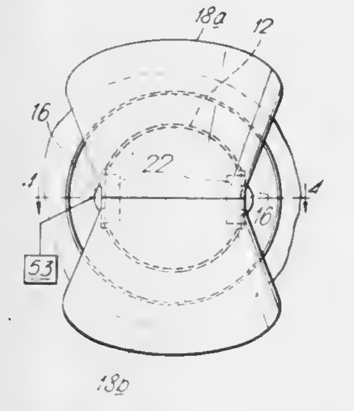
Charles R. Palmer, Nottingham, England, assignor to Rolls-Royce plc, London, England

Filed Jun. 26, 1984, Ser. No. 624,745

Claims priority, application United Kingdom, Jul. 5, 1983, 8318199

Int. Cl.⁴ B64C *9/38;* **F02K** *1/62*

U.S. Cl. 239—265.37 **6 Claims**



1. A gas turbine engine having a jet pipe of the constant outlet opening type with a a thrust deflector movably connected thereto comprising:

a pair of deflector doors which when inoperative are positioned opposite each other diametrically of the jet pipe and being movable through arcuate paths relative to the jet pipe to further positions in which they provide said thrust deflector, said doors in said inoperative position defining a frustum of a cone and in said operative position their downstream extremities abut to define a plane which contains their pivot axis and their combined shapes providing a profile which is narrower in the middle than at its extremities; and

a pair of flaps pivotally fixed to the downstream extremity of the jet pipe at positions opposite each other diametrically of the jet pipe for movement into and out of the efflux and the pivot axes of the flaps being normal to and intersecting said plane which contains the pivot axis of the deflector doors, means for normally maintaining said flaps pivoted out of the efflux and for moving said flaps into said efflux when said deflector doors are in the operative position, when moved into said efflux said flaps constricting the flow of said efflux into said deflectors.

4,618,095

ELECTROMAGNETIC UNIT FUEL INJECTOR WITH PORT ASSIST SPILLDOWN

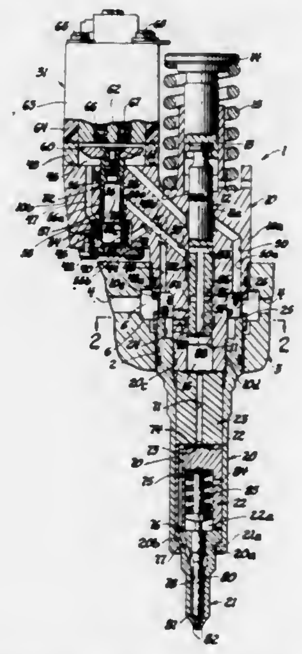
Gregg R. Spoolstra, Hudsonville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 2, 1985, Ser. No. 751,004

Int. Cl.⁴ F02M *47/00*

U.S. Cl. 239—90 **3 Claims**

1. In an electromagnetic unit fuel injector, for injecting fuel into the combustion chamber of an engine, the injector being of the type that includes a housing means having at one end thereof a cylinder with an externally actuated plunger reciprocable therein between a suction stroke and a pump stroke and defining with the cylinder a pump chamber open at one end and the housing means having a spray discharge means at its opposite end, a supply/drain passage means in said housing means with one end thereof in flow communication with said pump chamber and its opposite end being connectable to a source of fuel at a predetermined supply pressure with flow therethrough controlled by a solenoid actuated control valve means, a discharge passage means in said housing means effecting flow communication between said pump chamber and said spray discharge means and, a pressure actuated injector valve means operatively positioned in said housing means to control flow discharge from said spray discharge means, the improvement wherein: said housing means further includes a spill passage means therein having one end thereof in flow communication with said supply/drain passage means and having its other end defining a spill annulus means opening into said cylinder at a predetermined axial extent from the open end of said pump chamber and wherein said plunger is provided with a spill port means in flow communication at one end with said pump chamber and at its other end is adapted to come into flow communication with said spill annulus after a predetermined pump stroke of said plunger whereby said spill passage means and said spill port means will be operative to assist the solenoid actuated control valve means to effect the rapid spill of injection pressure at a predetermined injector output and engine operating speed above which fuel can no longer be effectively added to the combustion process in the combustion chamber.



4,618,096

WINDOW WASHER FOR VEHICLE

Yasuo Kondo; Masakane Watanabe, both of Okazaki, and Takao Oshiro, Toyoake, all of Japan, assignors to Nippon Soken, Inc., Nishio and Nippondenso Co., Ltd., Kariya, both of, Japan

Filed Oct. 1, 1984, Ser. No. 656,523

Claims priority, application Japan, Oct. 11, 1983, 58-189641

Int. Cl.⁴ B05B *1/08*

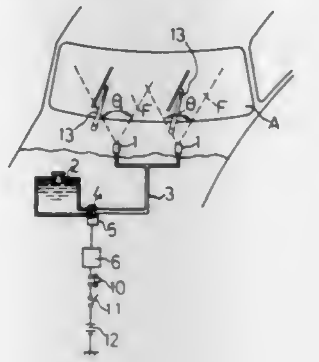
U.S. Cl. 239—101 **4 Claims**

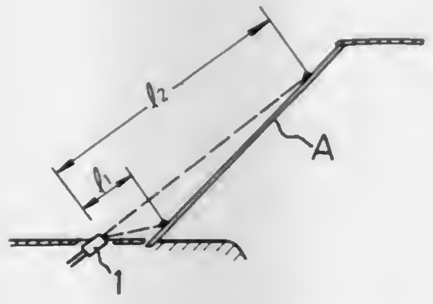
1. A window washer comprising:

a washer liquid jet nozzle comprising a fluidic oscillator provided on a vehicle body under a windshield glass for periodically deflecting the jetting direction of a washer liquid leftwards and rightwards;

a washer liquid supply passage connecting a washer liquid tank to said fluidic oscillator for supplying said washer liquid to said fluidic oscillator; and

pressure applying means provided in said washer liquid supply passage for periodically changing the pressure of said washer liquid supplied to said fluidic oscillator, said pressure applying means comprising a pump provided in said washer liquid supply passage for pumping said pressurized washer liquid; a driving motor for driving said





pump; and a motor control circuit for periodically changing a voltatge to be applied to said driving motor.

4,618,097
FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

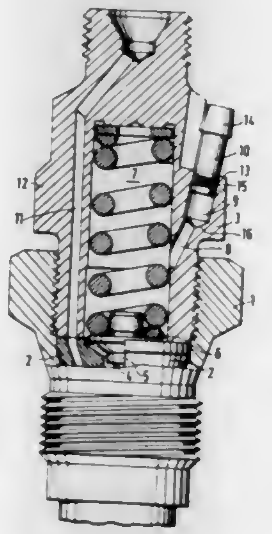
Karl Hofmann, Remseck; Walter Mladek, Stuttgart, and Bernhard Kaczynski, Waiblingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 27, 1980, Ser. No. 200,655

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1979, 2943745

Int. Cl.^{4} F02M *61/16*

U.S. Cl. 239—124 **3 Claims**



1. In a fuel injection nozzle for internal combustion engines having a nozzle holder provided with a pressure connection extending axially thereof, said nozzle holder further including a spring chamber and at least one leakage oil connection grommet communicating via first and second oil leakage bores with said spring chamber, said grommet disposed in said first oil leakage bore on a radial wall reinforcement of the nozzle holder embodied specifically by a wrench hexagon, the improvement wherein:

said nozzle holder further includes a jacket region which radially surrounds said spring chamber; and

said wrench hexagon and said jacket region includes said first and second leakage oil bores which are disposed in sequence and discharge directly into said spring chamber, said second oil leakage bore being of a smaller diameter and inclined more sharply than said first oil leakage bore toward said spring chamber, said second oil leakage bore arranged to branch off eccentrically from a base of said first bore, and

said first oil leakage bore has an inlet area arranged to receive said grommet and further that said grommet has a peripheral portion forming a knurled area and adapted to be grasped by said inlet area on insertion of said grommet into said inlet area.

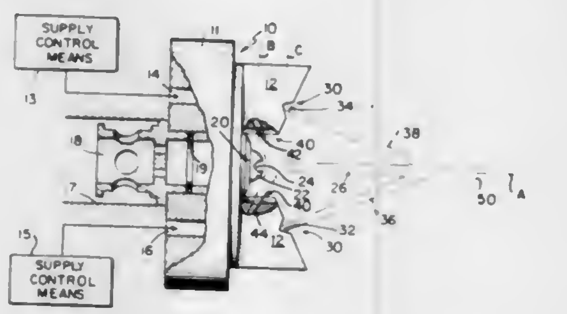
4,618,098
FIBERGLASS SPRAY NOZZLE

James E. Hedger, Jr., and Joseph G. Charette, both of Goshen, Ind., assignors to Graves Spray Supply, Inc., Goshen, Ind.

Filed Nov. 4, 1983, Ser. No. 548,632

Int. Cl.^{4} B05B *7/06*

U.S. Cl. 239—290 **19 Claims**



1. A fluid spray nozzle apparatus for use in airless, low pressure spraying of resin-catalyst mixtures to combine multiple intermixing fluid streams to form a continuous, substantially flat sheet fluid stream, comprising:

resin nozzle means for low pressure, airless spraying of resin fluid as a resin stream for external atomization, said resin nozzle means having an oval opening to initially flatten said resin stream;

catalyst nozzle means for spraying of catalyst as a catalyst stream for intersecting and intermixing with said resin stream;

control air nozzle means for directing control air flow to intersect said resin stream adjacent said resin nozzle means and upstream and spaced apart from said intersection of said catalyst stream with said resin stream such that said resin stream is further flattened by said control air and formed without tail or split flows; and

said catalyst stream intersects said resin stream downstream from said subsequent to the flattening of said stream by said oval opening and said control air, said flattening of said resin stream also serving to enhance said intermixing of said catalyst stream with said resin stream.

4,618,099
ELECTRIC SPRAY

Tadasu Nagao, and Shigeharu Sayama, both of Fukuoka, Japan, assignors to Kyushu Hitachi Maxell, Ltd., Fukuoka, Japan

Filed Jul. 11, 1985, Ser. No. 753,971

Claims priority, application Japan, Jul. 13, 1984, 59-106730[U]; Aug. 10, 1984, 59-123301[U]; Jan. 12, 1985, 60-3606

Int. Cl.^{4} B05B *9/043*

U.S. Cl. 239—332 **7 Claims**

1. An electric spray comprising:

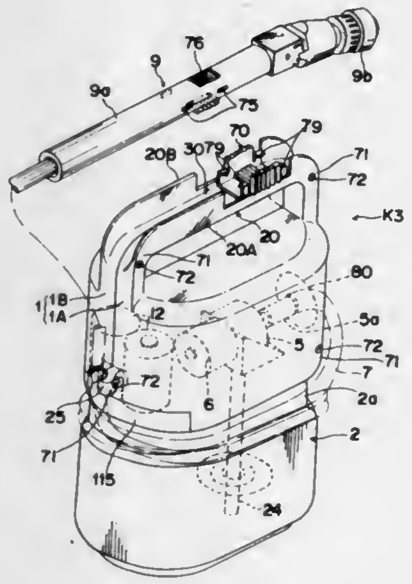
a spray casing which accommodates therein a pump and a motor for driving said pump and is provided with a grip;

said grip being formed with a recess extending in a longitudinal direction of said grip;

a tank which is mounted on said spray casing;

a nozzle member which is connected, through a tube, with a discharge portion of said pump so as to be detachably fitted into said recess; and

a slide switch for effecting on-off control of power supply to said motor, which is slidably mounted on said grip so as to be slid in the longitudinal direction of said grip;



said slide switch being formed with a hollow for receiving said nozzle member;

said slide switch, when said nozzle member has been received by said hollow, being at least partially exposed outwardly.

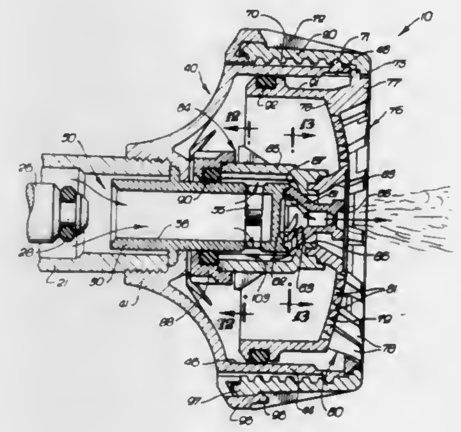
4,618,100
MULTIPLE PATTERN SPRAY NOZZLE

Glenn S. White, Canoga Park; Karl J. Mussler, Alta Loma, and Gary A. Van Exel, Fullerton, all of Calif., assignors to Rain Bird Consumer Products Mfg. Corp., Glendora, Calif.

Filed Nov. 27, 1984, Ser. No. 675,357

Int. Cl.^{4} B05B *7/02, 1/36*

U.S. Cl. 239—440 **36 Claims**



1. A multiple pattern spray nozzle for connection to a supply of water under pressure and adjustable to provide a plurality of different spray patterns, said spray nozzle comprising:

a generally hollow nozzle housing having a rearward end for receiving a flow of water, and generally open forward end, and an internal seal surface bounded on the forward end thereof by a recessed flow channel;

a stem unit within said nozzle housing including an elongated hollow stem having an open rearward end for receiving the water flow into said nozzle housing and at least one flow port for passage of water flow from said stem;

a preferate faceplate supported on said nozzle housing generally over the forward end thereof and having first and second nozzle outlets of different geometry formed therein;

an inner flow control member extending from said faceplate into said nozzle housing in a generally rearward direction in surrounding relation with said stem and cooperating therewith to define a first flow path therebetween and further cooperating with said nozzle housing to define a second flow path therebetween, said inner flow control member being in generally surrounding relation with said first nozzle outlet;

an inner seal means acting between said inner flow control member and said stem for coupling said stem flow port to said first water flow path for water discharge through said first nozzle outlet when said inner seal means is in a first position rearward relative to said stem flow port and for coupling said stem flow port to said second flow path for water discharge through said second nozzle outlet when said inner seal means is in a second position forward relative to said stem flow ports;

an outer flow control member extending from said face place into said nozzle housing in spaced relation therewith and in surrounding relation with said first and second nozzle outlets, said faceplate having a third nozzle outlet formed therein outside said outer flow control member, and outer seal means for sealing engagement between said outer flow control member and said nozzle housing seal surface when said inner seal means is in the first and second position; and

means for shifting said inner seal means between said first and second positions and for shifting said outer seal means to a forward position relative to said nozzle housing seal surface while said inner seal means is positioned forward relative to said stem flow port to permit water flow through said recessed flow chamber for discharge through said third nozzle outlet.

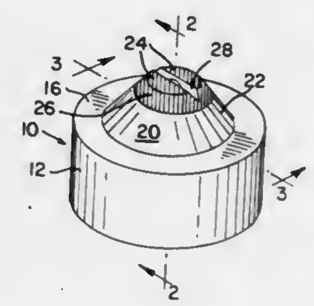
4,618,101
SPRAY NOZZLE

Richard G. Piggott, 936 Marshall Ave., Bellwood, Cook County, Ill. 60104

Filed Nov. 25, 1983, Ser. No. 554,779

Int. Cl.^{4} B05B *1/02*

U.S. Cl. 239—589 **6 Claims**



1. A spray nozzle tip assembly for spraying a fluid material from a spray gun onto an object, said nozzle tip being adapted to be received within a spray gun, comprising, a generally cylindrical body having a portion adapted to be received in position of use with respect to an associated spray gun, said nozzle tip body having an inlet end and outlet end and including an axial bore extending from said inlet end and terminating prior to said outlet end, said inlet end of said nozzle body being positioned in the gun to establish a fluid communication between said nozzle tip body and the spray gun; said nozzle tip body further including a nose portion which is generally tapered toward and terminates in an end face, said end face being located at said outlet end; said end face also having a transverse groove cut therein; said groove intersects said axial bore to form an outlet opening or orifice through which the fluid material from the spray gun will exit to contact the object to be sprayed; said orifice being recessed from said end face; said

nose portion including margin portions lying adjacent to and radially outwardly of said end face; said margin portions and said end face defining an external surface finish portion of said nozzle tip; and said external surface portion of said nozzle tip being highly polished to a non-adherent generally smooth surface of not more than a three micro-inch (RMS) surface roughness, said smooth surface being operative to substantially reduce or prevent the collection and resultant drying and build up of fluid material on said nozzle tip surface.

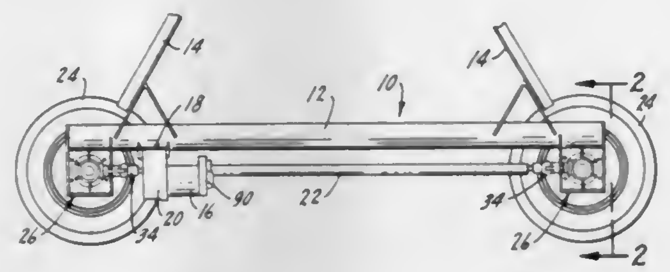
4,618,102
DRIVE FOR MOVABLE IRRIGATION SYSTEM AND THE LIKE

Charles H. Meis, Albion, and Duane B. Overvaag, Columbus, both of Nebr., assignors to Lindsay Manufacturing Company, Lindsay, Nebr.

Continuation-in-part of Ser. No. 588,376, Mar. 12, 1984, abandoned. This application Jun. 29, 1984, Ser. No. 626,546

Int. Cl.⁴ A01G *25/00*

U.S. Cl. 239—737 **13 Claims**



1. A support tower for use in a self-propelled irrigation system which includes an elongated water distribution pipe supported at intervals by movable towers, each tower including a generally upright, elongated frame with a ground engaging wheel on each end for movement over a field to be irrigated, a hub mounted on one end of the frame and extending laterally outwardly from one side thereof, a gear box separately mounted on the hub, the gear box including a housing with a rotatably mounted input shaft, a motor to rotate the input shaft, an output shaft extending from the housing along the housing axis through the hub, a wheel being mounted on the outer end of the output shaft, and a gear assembly in the housing disposed on the housing axis and interconnected between the input and output shafts to provide a decrease in speed of rotation and an increase in torque between the input and output shafts, the gear box being disconnectably mounted on the hub and separate from the connection of the hub to the frame so that the gear box may be removed for service and/or repair without the weight of the tower having to be taken off of the hub and wheel.

4,618,103
HOSPITAL WASTE DISPOSAL SYSTEM

Joseph H. Wilson; David N. Lasiter, both of Indianapolis, and Randall G. McKee, Yorktown, all of Ind., assignors to Medical Safetec, Inc., Indianapolis, Ind.

Filed Oct. 12, 1983, Ser. No. 541,140

Int. Cl.⁴ B02C *13/09, 9/04, 19/12;* **F24H** *1/00*

U.S. Cl. 241—41 **12 Claims**

1. A waste disposal system for treating and disposing of infectious waste articles in a substantially controlled closed and sealed aseptic circuit and for converting said infectious waste articles into a safely disposable noninfectious and non-toxic residue through the thorough disintegration and disinfection of such articles, said system comprising:

waste article feeding means for transferring said waste articles to waste article delivery means operably attached thereto,

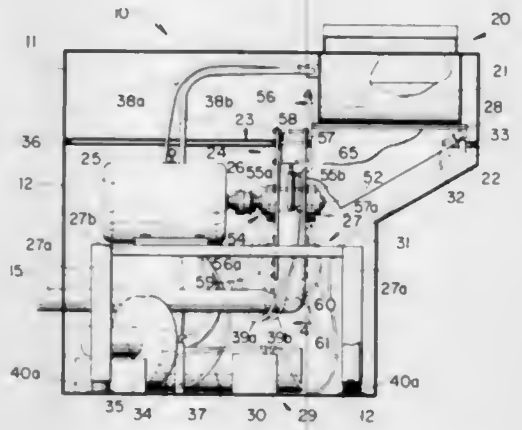
disintegrator means operably positioned to receive said waste articles from said waste article delivery means for disintegrating said waste articles into substantially small waste particulate for further treatment and disposal of same by said waste disposal system;

said disintegrator means comprising a rotary hammermill for violently disintegrating said waste articles at a substantially high speed, into a waste particulate-disinfectant solution:

said rotary hammermill means being powered by hammermill motor means operably coupled thereto;

disinfectant spray means operably positioned adjacent one or more of said waste article feeding means, said waste article delivery means and said disintegrator means for enveloping and impregnating said waste articles and said waste particulate in a bacteria killing disinfecting liquid solution,

liquid-solid particle separation means operably attached to said disintegrator means for separating, on a substantially continuous basis, said disintegrated particles of solid waste from said enveloping and impregnating disinfectant liquid;



said liquid-solid particle separation means including operable connections to liquid evacuation means and solid particulate evacuation means for continuous disposal of said disinfectant liquid and batch disposal of said solid waste particulate respectively; and

system vacuum means operably associated with said disposal system for creating a negative pressure within said system for effectively precluding the inadvertent release of bacteria and other contamination during the treatment and disposal of said waste articles by said system;

said system vacuum means cooperating with said liquid-solid particle separation means to exhaust any such bacteria or contaminant laden air emanating thereinto from said rotary hammermill means to in turn, exert a negative pressure on the substantially closed and sealed circuit created by said waste article feeding means, said waste article delivery means, and said disintegrator means leading into said liquid-solid particle separation means.

4,618,104
STRAND TRANSFER

Leslie J. Harris, Waterloo, Canada, assignor to Fiberglas Canada Inc., Toronto, Canada

Filed Dec. 4, 1985, Ser. No. 804,393

Claims priority, application Canada, Jul. 24, 1985, 487399

Int. Cl.⁴ B65H *54/02, 67/04*

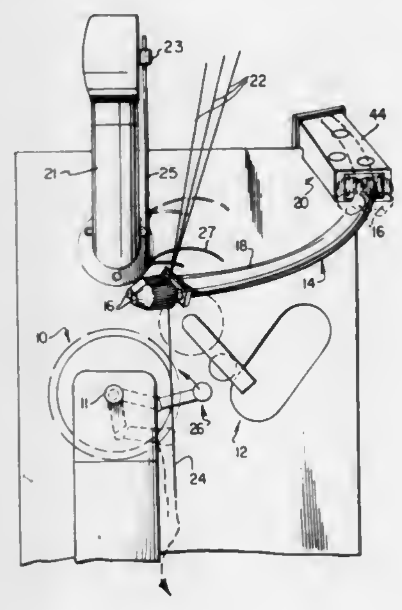
U.S. Cl. 242—18 G **16 Claims**

1. Strand transfer apparatus for supplying a strand to a winding collet of a strand winding machine, said strand transfer apparatus comprising:

a pair of pull rolls for receiving the strand therebetween;

first drive means for rotationally driving said pull rolls to advance the strand;

movable support means for carrying said pull rolls between a standby position in which said pull rolls are spaced from said winding collet to facilitate insertion of the strand between said pull rolls and a wind-on position in which said pull rolls guide said strand closer to said winding collet; and



second drive means for displacing said support means and therewith said pull rolls to and fro between said standby position and said wind-on position.

4,618,105
ROLLER WINDING MACHINE ATTACHING AND SERVING APPARATUS

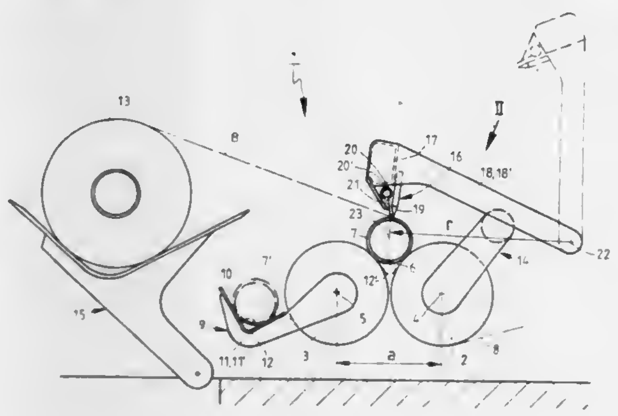
Friedrich Kuhn, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Aug. 3, 1984, Ser. No. 637,437

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1983, 3328516

Int. Cl.⁴ B65H *18/20, 19/26, 19/28*

U.S. Cl. 242—56 R **3 Claims**



1. A double support roller winding machine for winding material webs onto core tubes with different diameters to form wound rolls, said machine having at least two support rollers, a roller bed defined by said support rollers, loading means for inserting core tubes into said roller bed and unloading means for removing wound rolls from said roller bed, wherein the improvement comprises an attaching and severing means mounted for pivotal movement about a first axis from a rest position above said roller bed to a work position in engagement with the apex of the core tube in said roller bed, said attaching and severing means comprising means for attaching the web to the core tube in said roller bed and means for severing the fully wound roll ejected from said roller bed from the attached web start, said first pivot axis lying at a distance from and parallel to the axis of rotation of said support rollers whereby the path of travel of the attaching and severing means about said first pivot axis is such that the attaching and severing means engages each core tube inserted into said roller bed at the apex of the core tube irrespective of its diameter.

4,618,106
FISHING REEL WITH FRICTION AND MAGNETIC BRAKES

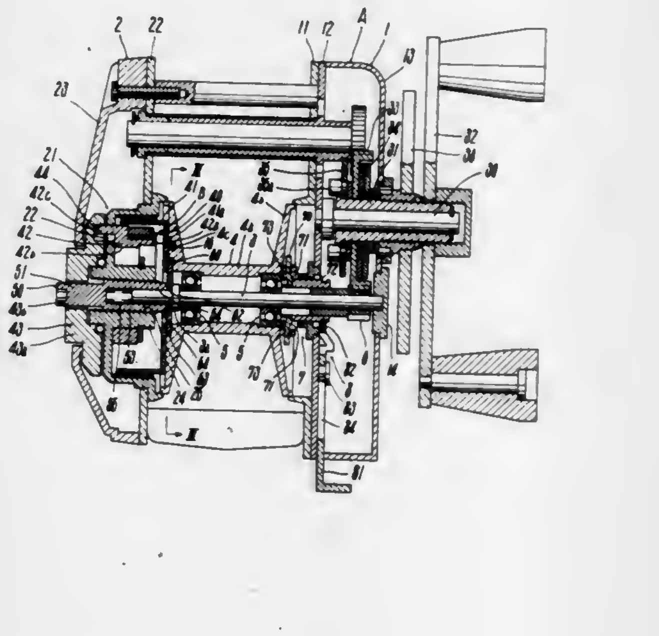
Hideo Noda, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Apr. 27, 1984, Ser. No. 604,595

Claims priority, application Japan, Apr. 27, 1983, 58-63332

Int. Cl.⁴ A01K *89/02*

U.S. Cl. 242—84.5 R **2 Claims**



1. A fishing reel comprising:

(a) first and second side frames,

(b) a spool shaft supported between said first and second side frames,

(c) a spool supported rotatably to said pool shaft by means of a pair of bearings, said first and second side frames being respectively positioned at opposite axial sides of said spool,

(d) a drive mechanism for driving said spool,

(e) a clutch for releasing said spool from said drive mechanism,

(f) cast-control means for controlling casting of said reel to set said spool in free rotation, said cast-control means comprising a cast-control member which is supported to said second side frame positioned at one axial side of said spool and substantially coaxial with said spool shaft, said cast-control member being movable axially of said spool and having an actuating portion extending outside said second side frame,

(g) a contact member held non-rotatably at an axial outer face of said spool such that said contact member does not rotate relative to said spool, said contact member having a substantially flat annular contact portion adjacent a radially central part of said spool and surrounding said spool shaft for contacting an end face of said cast-control member, said contact member being positioned so that when said cast-control member is moved axially with respect to said spool, said cast-control member contacts said contact member and applies a rotation-resisting force by means of said contact member to said spool with respect to free rotation thereof, said spool shaft including a receiving flange for receiving inward deformation of said contact member and said receiving flange being positioned on said spool shaft at a position outside said bearings which rotatably support said spool and between said contact member and a said bearing.

4,618,107

FISHING REEL

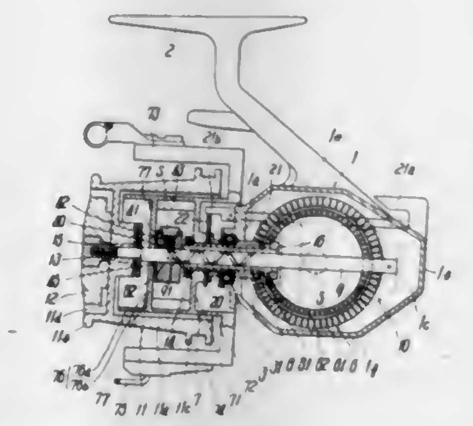
Hideki Nakajima, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Dec. 8, 1981, Ser. No. 328,691

Claims priority, application Japan, Dec. 16, 1980, 55-181277[U]; Dec. 16, 1980, 55-181278[U]

Int. Cl.⁴ H01K *89/01*

U.S. Cl. 242—84.21 R **7 Claims**



1. A fishing reel comprising a reel body having a front wall and side walls, a rotary frame disposed in front of the front wall of said reel body and having a first tubular shaft journalled to said reel body, a spool disposed in front of the front wall of said reel body and having at the center a spool shaft which passes through said first tubular shaft; a handle supported to one of said side walls at said reel body; a transmission mechanism for transmitting rotation of said handle to said rotary frame, said transmission mechanism including a master gear and first means for coupling said master gear to said first tubular shaft; and a reciprocation mechanism for moving said spool shaft in reciprocation longitudinally of said reel body; said rotary frame having a support plate, a cylindrical body, and a pair of support arms, said cylindrical body having therein an inner space; said reciprocation mechanism comprising a traverse groove provided at the outer periphery of said spool shaft and a second tubular shaft disposed between said spool shaft and first tubular shaft, and second means for coupling said second tubular shaft to said master gear, said first means for coupling said first tubular shaft to said master gear being separate from said second means for coupling said second tubular shaft to said master gear, said second tubular shaft having an edge extending outwardly from said front wall into said inner space, said edge being connected to an engaging member engageable with said traverse groove, said engaging member being disposed within said inner space, being fixed against axial movement along said spool shaft, and rotating together with said rotary frame upon rotation of said handle.

4,618,108

SAFETY BELT REEL-IN MECHANISM HAVING A TENSIONING ARRANGEMENT

Klaus Butenop, Herzhorn, and Doris Kröger, Elmshorn, both of Fed. Rep. of Germany, assignors to Autoflug GmbH, Rellingen, Fed. Rep. of Germany

Filed Feb. 28, 1985, Ser. No. 706,640

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1984, 3407378

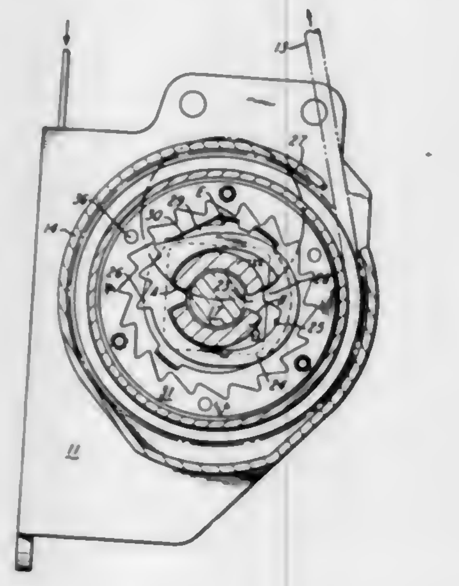
Int. Cl.⁴ B65H *75/48;* **B60R** *22/46*

U.S. Cl. 242—107 **16 Claims**

1. A safety belt reel-in mechanism having a tensioning arrangement, including a piston which is acted upon by pressure medium and which is disposed at a distance relative to the belt reeling-in shaft of said belt reel-in mechanism; when said tensioning arrangement is triggered, said piston being connected with said belt reeling-in shaft by means of a cable drive, which includes a cable pulley for receiving a drive cable which is connected to said piston and to said cable pulley;

the improvement in combination therewith comprising: said cable pulley being mounted on an extension of said belt reeling-in shaft, a spring-loaded locking member disposed on said cable pulley; said locking member having a central opening and being held on said cable pulley, in the direction of rotation of the latter, by means of a spring arm which is mounted on said cable pulley and engages the periphery of said locking member; and,

elements provided on said belt reeling-in shaft, with said locking member engaging said elements, when said tensioning arrangement is triggered, in order to operatively connect said cable pulley and said belt reeling-in shaft to effect tensioning of said safety belt; said last-mentioned connection being disconnected after termination of the tensioning arrangement-engagement so that thereafter said belt reeling-in shaft is freely rotatable relative to said cable pulley, and ring segments projecting from the plane of said cable pulley and having spaces disposed therebetween, said central opening extending around said ring segments.



4,618,109

WING TRAILING EDGE AIR DAMS

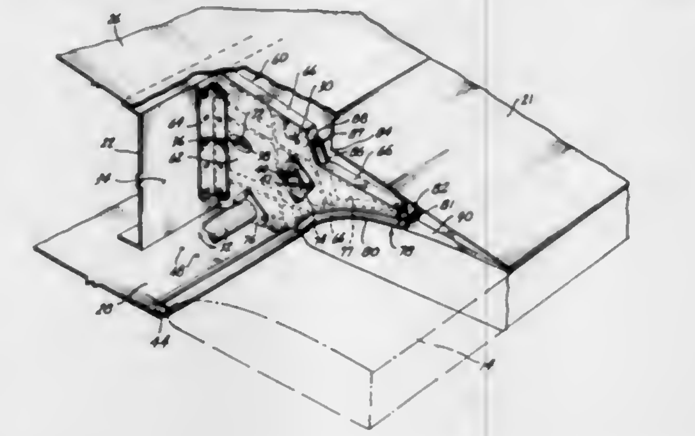
Paul F. Victor, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US82/01717, § 371 Date Dec. 6, 1982, § 102(e) Date Dec. 6, 1982, PCT Pub. No. WO84/02320, PCT Pub. Date Jun. 21, 1984

PCT Filed Dec. 6, 1982, Ser. No. 474,654

Int. Cl.⁴ B64C *3/00, 7/00*

U.S. Cl. 244—130 **10 Claims**



1. Air dam means disposed within the interior of the trailing edge portion of a wing, the wing including a fixed wing structure and movable rear flap extending rearwardly from the fixed wing structure, the fixed wing structure and the rear flap cooperatively defining an interior wing rear cavity extending spanwise along the wing, said air dam means comprising:

- a first dam in the form of a wall structure having a generally planar shape closely corresponding to the chordwise profile of the interior wing rear cavity, said wall structure stationarily attached to the fixed wing structure in a generally upright, planar position to extend generally transversely chordwise across the interior wing cavity formed by the fixed wing structure and the wing flap to define a rearward marginal edge portion contoured to generally correspond to the adjacent profile of the rear flap;
- sealing means mounted on said wall structure along said rearward marginal edge portion to seal against the rear flap; and,
- said wall structure and said sealing means cooperating to block substantially all air from flowing spanwise past air dam means between higher and lower relative pressure regions of the interior wing cavity.

4,618,110

QUICK RELEASE LOCK FOR A PARACHUTE

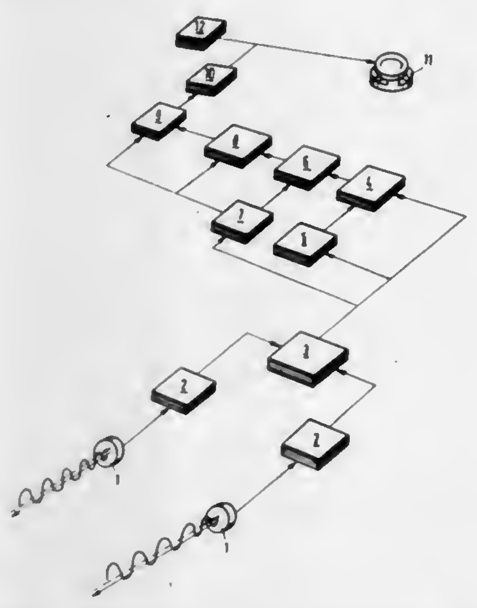
Herbert Just, Hohnstorf, and Holger Hansen, Hamburg, both of Fed. Rep. of Germany, assignors to Autoflug GmbH, Relligen, Fed. Rep. of Germany

Filed Nov. 20, 1984, Ser. No. 673,468

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1983, 3342092

Int. Cl.⁴ B64D *17/38*

U.S. Cl. 244—151 B **11 Claims**



1. Quick-release lock for a parachute for automatically releasing the parachute from the load carried by it, particularly a person, when the descent of the parachute is ended when reaching a surface, this lock comprising:

- a measuring device for continuously measuring the distance from the surface;
- comparing means connected to the measuring device for repeatedly comparing, during at least a part of the descent, the measured distances with an ordered set of predetermined values indicative of the actual distances from the surface which should be measured during this part of a normal descent; and
- triggering means connected to the comparing means for releasing the parachute from the load when the descent is ended only if the comparing means indicate that the measured distances agree with the predetermined values.

4,618,111

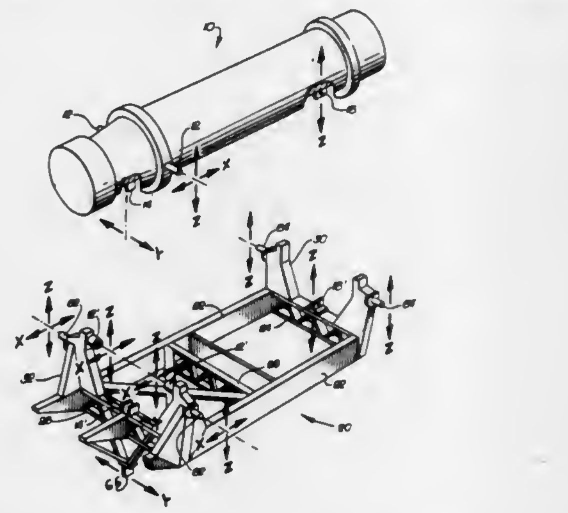
SPACECRAFT STRUCTURE FOR SUPPORTING AN OPTICAL BENCH

Duane D. Sherwood, and John J. Conway, both of Torrance, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed May 8, 1984, Ser. No. 608,331

Int. Cl.⁴ B64G *1/22*

U.S. Cl. 244—158 R **18 Claims**



1. A spacecraft suitable for supporting as a payload any of a variety of optical benches, the spacecraft having a longitudinal axis referred to as the x axis, a transverse axis referred to as the y axis, and a z axis orthogonal to the x and y axes, the spacecraft comprising:

- a rigid platform having two upstanding posts between which the payload is to be supported;
- a pair of trunnion supports mounted on the posts and providing coupling to the payload, to react to loads in x and z axes only; and
- a pair of keel supports mounted on the platform, and spaced apart along the x axis, to provide reaction to loads only in the y and z axes, respectively;
- whereby any deformtions to the spacecraft are not transferred to the payload, which is still supported by constraints in six degrees of freedom, and spacecraft subystems are mountable on the spacecraft and not the payload.

4,618,112

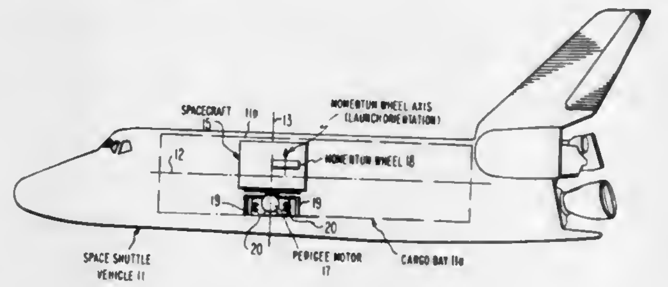
SPACECRAFT ANGULAR MOMENTUM STABILIZATION SYSTEM AND METHOD

John E. Keigler, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Apr. 15, 1983, Ser. No. 485,294

Int. Cl.⁴ B64G *1/10, 1/28*

U.S. Cl. 244—158 R **8 Claims**



1. A method for placing a spacecraft in orbit from the cargo bay of the space shuttle or orbiter type craft where the satellite is mounted in an ejection direction perpendicular to the longitudinal axis of the shuttle craft and where said spacecraft and a perigee motor are fixed to each other to form a spacecraft/perigee motor assembly comprising the steps of:

providing said spacecraft from a momentum wheel that has a spin axis in the launch direction;

spinning said momentum wheel so that the momentum vector is parallel to the ejection direction of the spacecraft's/-perigee motor assembly when said assembly is separated from the shuttle craft;

ejecting the non-spinning spacecraft/perigee motor assembly from said shuttle craft imparting a linear velocity to the assembly in said ejection direction while the inertial stability of the momentum wheel assures the orientation of said satellite/perigee motor assembly; and

after ejecting the spacecraft/perigee motor assembly from the shuttle craft reducing the spinning of said momentum wheel to zero whereby the resultant spacecraft/perigee assembly is spun up.

4,618,113

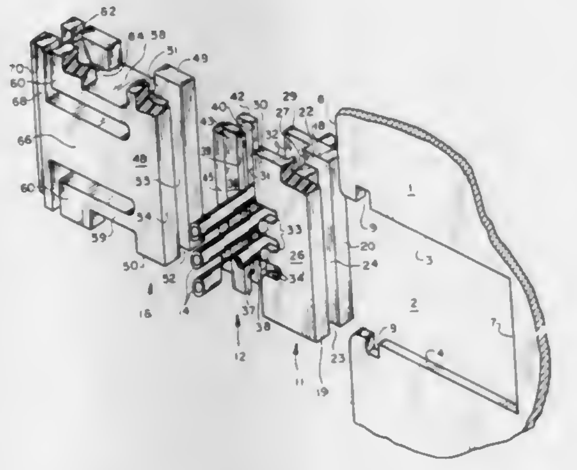
CABLE CLAMP

William A. Reimer, Wheaton, Ill., assignor to GTE Communication Systems Corp., Northlake, Ill.

Filed Sep. 13, 1985, Ser. No. 776,190

Int. Cl.^{4} F16L *5/00*

U.S. Cl. 248—56 **13 Claims**



1. A clamp for restraining thereat at least one cable passing through a planar surface near an edge thereof, said clamp comprising:

a slot extending inward of said planar surface from said planar surface edge, said slot including an inner edge and each of said first and said second parallel side edges orthogonal to said a slot inner edge;

at least one catch formed in each of said first and second slot side edges, said catches positioned opposite each other and at an identical fixed distance from said slot to said inner edge;

a clamping anvil positioned within said slot adjacent to said inner edge;

a clamping pad positioned within said slot adjacent to said anvil, said cable positioned between said pad and said anvil; and

a latch member including

a latch body positioned within said slot and against said clamping pad,

a pair of latch arms each of flexible construction, extending from said latch body adjacent and parallel to a respective one of said slot side edges and in a direction away from said slot inner edge, each latch arm including a distal end,

a latch finger extending from said latch arm distal end in a direction parallel to said slot inner edge and toward a respective one of said panel slot side edges, said fingers each engaging said respective panel slot side edge catches to lock said latch member within said slot and clamp said cable, and

a groove formed in each of said latch arms extending from said latch arm finger a fixed distance in a direction towards said latch body, said latch arm grooves each engaging a corresponding one of said lot side edges to guide and maintain said latch fingers within said slot catches, said latch member engaging said slot to exert a force on said pad thus to clamp said cable between said pad and said anvil.

4,618,114

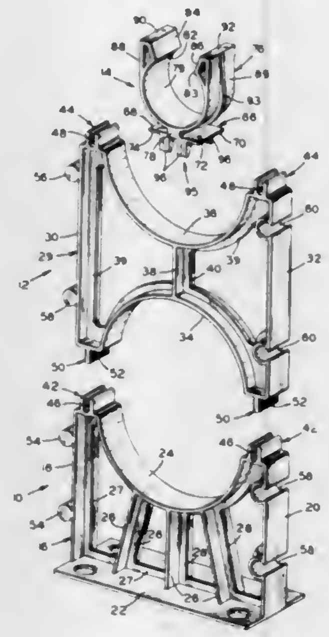
CONDUIT SPACER AND SUPPORT

James H. McFarland, Leonard, Mich., assignor to LOF Plastics Inc., Troy, Mich.

Continuation of Ser. No. 426,935, Sep. 29, 1982. This application Mar. 13, 1985, Ser. No. 709,999

Int. Cl.^{4} F16L *3/08*

U.S. Cl. 248—65 **5 Claims**



1. A conduit holder comprising: a generally planar base; a generally U-shaped body connected to said base and having an open end extending away from said base; the exterior surfaces of said U-shaped body curving away from said base on either side of the connection to said base so as to define a space between said base and exterior surfaces providing for deflection of the ends of said planar base toward said U-shaped body; said body having a interior diameter approximately equal to the outside diameter of a conduit to be supported thereby; the open end of said U-shaped body terminating in a pair of opposed portions, the spacing between which is less than the outside diameter of said conduit, said U-shaped body being made of a resilient material to permit spreading of said opposed portions for receipt of said conduit into said body; and means connected to said base and extending away from said U-shaped body detachably securing said holder to an arcuate side member, said base, said U-shaped body and said securing means comprising an integral one piece structure formed of a resilient plastic material and said securing means comprising at least one pair of spaced opposed legs extending from opposite sides of said base; said legs having opposed inner wall surfaces formed with inwardly directed shoulders adapted for snap-fitted engagement astride and under said arcuate side member; said base extending longitudinally beyond said legs with at least the ends of said base adapted for engagement with said arcuate member, the distance between the innermost reach of said inwardly directed, opposed shoulders being less than the width of said arcuate side member, and the distance between said shoulders and said base being substantially greater than the thickness of said arcuate side member so as to accommodate arcuate side members having different degrees of curvature.

4,618,115

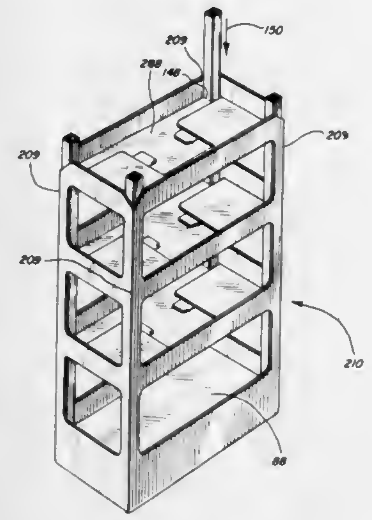
DISPLAY DEVICE MODULE WITH MULTIPLE SHELVES

Paul Belokin, Jr., P.O. Box 1907, Denton, Tex. 76201

Filed Oct. 1, 1984, Ser. No. 656,362

Int. Cl.^{4} A45D *19/04*

U.S. Cl. 248—174 **12 Claims**



1. A collapsible display device comprising:

a wall blank having substantially flat wall panels connected end to end foldably relative to each other to define a continuous wall structure,

said wall blank collapsible to a flattened state for storage and transportation and convertible to an expanded display state in which pairs of opposed, facing wall panels cooperatively bound a storage space;

first and second substantially flat flaps associated with each of the wall panels of one said wall panel pair;

means attaching each of the first and second flaps associated with each of the wall panels of the one wall panel pair foldably relative to its respective wall panel; and

means interconnecting the first and second flaps on one of the wall panels of the one wall panel pair with the first and second flaps on the other of the wall panels of the one wall panel pair so that the first and second flaps of the one wall panel pair are situated in overlying facial engagement with one another and define first and second spaced shelves within the storage space for placement of articles to be displayed.

4,618,116

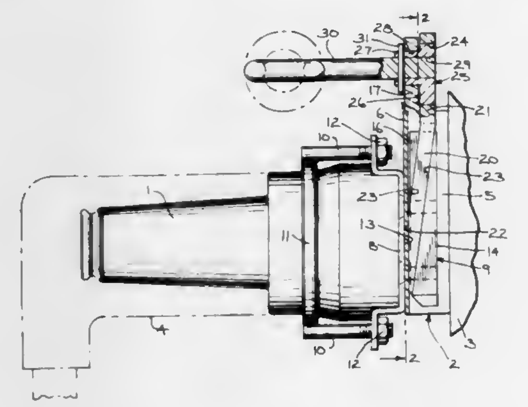
QUICK LATCH MOUNTING BRACKET

Allen L. Johnson, Mukwonago, Wis., assignor to RTE Corporation, Brookfield, Wis.

Filed Jun. 18, 1984, Ser. No. 621,452

Int. Cl.^{4} F16M *13/00*

U.S. Cl. 248—222.1 **20 Claims**



1. A quick latch mounting device for securing a standoff device to a standoff bracket, the combination comprising:

actuator means including an actuator member movable in a first plane;

a mounting member attachable to a standoff device and movable in a second plane transverse to said first plane between a first position clamped to a standoff bracket and a second position unclamped with respect to a standoff bracket; and

a clamping member operatively coupled to said actuator member and said mounting member and operable upon movement of said actuator member to translate the movement of said actuator member in said first plane into the movement of said mounting member in said second plane.

4,618,117

WALL MOUNT FOR AN ACCESSORY

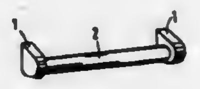
Helmut Gerbe, Iserlohn, Fed. Rep. of Germany, assignor to KEUCO Paul Keune GmbH & Co. KG, Hemer, Del.X

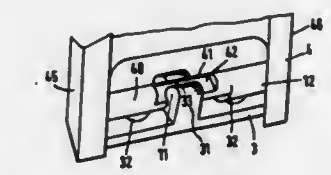
Filed Dec. 7, 1983, Ser. No. 559,177

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1983, 3323571

Int. Cl.^{4} F16B *7/00*

U.S. Cl. 248—222.1 **4 Claims**





1. A wall mount for an accessory, comprising

(a) a base plate;

(b) means for affixing said base plate to a wall surface;

(c) a cover extending over said base plate in an assembled state of the wall mount; said cover including a throughgoing opening forming a first bearing having a bearing axis; said cover including a second bearing in alignment with said first bearing; and

(d) clamping means for releasably tightening said cover to said base plate in the assembled state of said wall mount; said clamping means including

(1) a receiving part affixed to said base plate and having an inner cylindrical wall defining a cylindrical space; and

(2) a bolt having opposite first and second journal ends for being rotatably supported in said first and second bearings, respectively; said first and second journal ends having a common journal axis coinciding with said bearing axis; said bolt being rotatably supported in said first and second bearings and forming a unitary structure with said cover; said first journal end having a radial end face provided with a face portion shaped for engagement by a turning tool in the assembled state of the wall mount; said bolt having a length portion being eccentric with respect to said bearing axis; said receiving part having an elongated opening through which said length portion of said bolt is radially introducible into said cylindrical space upon placing said cover and said base plate into the assembled state; in said assembled state said bolt having a first angular position in

which said length portion of said bolt is clamped to said inner cylindrical wall whereby said cover is drawn against said base plate and a second angular position in which said length portion of said bolt is in a released condition with respect to said inner cylindrical wall.

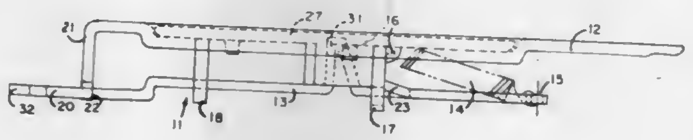
4,618,118
RELEASABLY LOCKING

Michael A. Nardella, Millbury, and Bernard T. Cournoyer, Holden, both of Mass., assignors to Barry Wright Corporation, Newton Lower Falls, Mass.

Filed Apr. 8, 1985, Ser. No. 720,839

Int. Cl.⁴ A47G *29/02*

U.S. Cl. 248—243 **8 Claims**



1. Apparatus for releasably locking comprising,
latch means for moving between locked and unlocked positions to selectively engage a mating aperture,
housing means including guide means for slidably supporting said latch means while allowing significant movement both along the length of said latch means and perpendicular to the plane thereof and having base means having a base panel generally parallel to the plane of said latch means with said base means for engagement with an end panel to be releasably locked by said apparatus,
said guide means allowing more movement along the length of than perpendicular to the plane of said latch means,
said housing means having travel limit means for limiting travel of said latch means along the length thereof,
said latch means having travel limit boss means for selective engagement with said travel means in a locked rearward position,
and spring means connected between said base means and said latch means located in the region between the plane of said latch means and said base panel for exerting a force on said latch means tending to urge said latch means both rearward along and sideward perpendicular to the latch means plane toward said base panel to keep said latch means travel limit boss means in engagement with said travel limit means when in said locked and unlocked positions.

4,618,119
ADJUSTABLE INCLINATION READING/WRITING BOARD

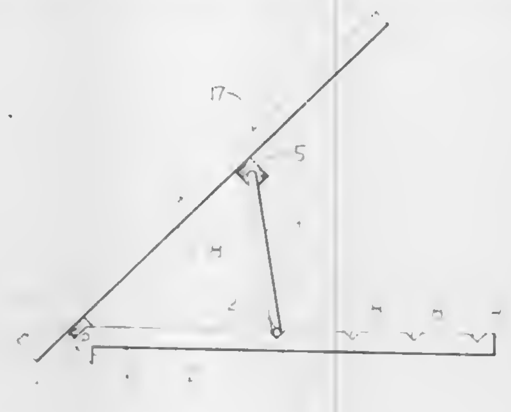
Roger A. Powell, 1589 Vernon Rd., Norristown, Pa. 19401

Filed Sep. 19, 1984, Ser. No. 652,292

Int. Cl.⁴ A47G *1/24;* A47B *97/08*

U.S. Cl. 248—456 **3 Claims**

1. A writing board of adjustable inclination to be used on a table top, comprising:
a. a planar member having: a front face; a bottom edge, perpendicular to said front face; a rear face, opposed to said front face; a first pivotal attachment means on said rear face, adjacent to said bottom edge, having an axis parallel to said bottom edge; a second pivotal attachment means on said rear face, having an axis parallel to said first pivotal attachment;
b. a plurality of base strip members having: a third pivotal attachment means at one end, coupled to said first pivotal attachment means on said planar member; a bottom face that contacts said table top, having a lip protruding downward, in proximity to said third pivotal attachment means, said lip contacting a vertical face of said table top; a top face, opposed to said bottom face, having multiple spaced engagement means;
c. a prop member coupled to said second pivotal attachment means on said planar member having means for engagement with said multiple spaced engagement means on said base strip members;
d. disengaging means for simultaneously disengaging all said engagement means between said prop member and said base strip members, whereby the inclination of said planar member may be changed; said disengaging means comprising an elongated member attached to said prop member at one end thereof opposite said second pivotal attachment means, an adjustment member having first and second ends and being mounted at said first end to a free end of said elongated member, said adjustment member having a fulcrum disposed thereon between said first and second ends for contacting said table top and having a manual operating surface at said second end.



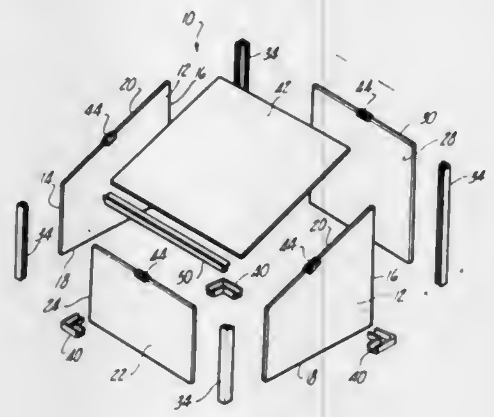
4,618,120
PORTABLE LECTERN

Jervis J. Wattles, 16231 W. 14 Mile Rd., Birmingham, Mich. 48009

Filed Feb. 25, 1985, Ser. No. 705,319

Int. Cl.⁴ A47F *5/16*

U.S. Cl. 248—460 **7 Claims**



1. A lectern which can be disassembled to component pieces for storage and transportation including: a pair of trapezoidal side panels having one of the nonparallel sides formed at a right angle to the parallel sides to act as a base portion for the lectern, a rectangular front panel having one set of sides approximately the same size as the shortest of the parallel sides of the trapezoidal side panels and a width equal to the desired width of the lectern, a back panel having a pair of sides approximately equal to the length of the longest side of the trapezoidal side panels and the second sides of the back panel being equal to the width of the lectern, a plurality of joining strips, the joining strips having a first set of parallel lips extending along the side of the panel, the lips being spaced and adapted to grip the edge of a panel, and a second set of parallel lips disposed at right angles to the first lips and adapted to extend along and grip the edge of a second panel juxtaposed the panel held by the first lips, a top panel disposed on a slanted plane formed by the upper edges of the assembled panels, and fastening means adapted to hold the top panel on the assembled base.

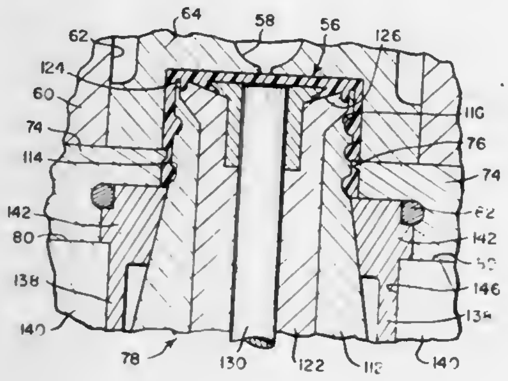
4,618,121
MOLD FOR FORMING PLASTIC CAP WITH PERFORATION ABOUT THE PERIPHERY OF THE SKIRT

Vincent N. Conti, West Hempstead, N.Y., assignor to American Safety Closure Corp., Farmingdale, N.Y.

Filed Aug. 15, 1984, Ser. No. 640,899

Int. Cl.⁴ B29C *45/26, 45/33, 45/44*

U.S. Cl. 249—59 **7 Claims**



1. A mold for forming a plastic cap having a side wall and a ring spaced from the side wall by means of circumferentially spaced annular recesses and connected to the side wall by frangible members, the mold comprising:
(a) a female member forming a socket and an orifice for conducting plastic material into the socket;
(b) a male member having at least two portions including a core assembly axially extending into the socket to form a mold cavity with the female member
(i) an inner portion of said male member adapted to be independently axially movable from its position forming a part of said mold cavity; and,
(ii) an outer portion of said male member being fixed in its position forming a part of said mold cavity;
(c) the female member including
(i) an upper assembly forming an upper portion of the socket, and
(ii) a lower assembly having a plurality of radially movable cam members forming a lower portion of the socket, the cam members having radial protrusions engaging circumferentially spaced sections of the core assembly of the male member to form the circumferentially spaced recesses in the cap.

4,618,122
CORE SEGMENT FOR CONCRETE FORMING APPARATUS

Richard Kraiss, Laichingen-Suppingen, Fed. Rep. of Germany, assignor to Georg Prinzing GmbH & Co. KG Betonformen- und Maschinenfabrik, Blaubeuren, Fed. Rep. of Germany

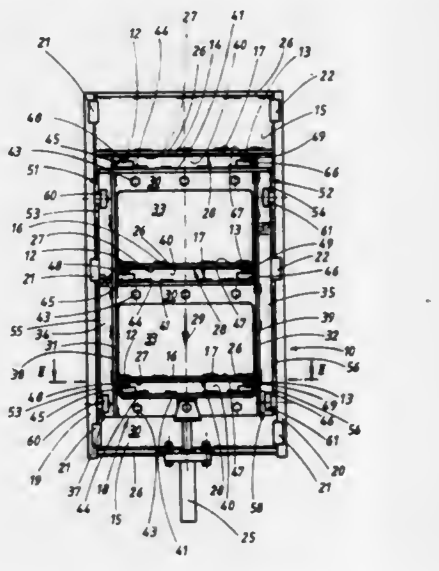
Filed Jan. 24, 1985, Ser. No. 694,641

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1984, 3422980

Int. Cl.⁴ B28B *7/30*

U.S. Cl. 249—94 **36 Claims**

1. A core segment for molding equipment used in forming concrete parts which are provided with at least one projecting element, particularly a climbing element, such as a climbing iron, stirrup or the like, which during a forming process is cemented from the inside into the concrete parts which are to be formed, the core segment comprising:
a wall portion having an inside face, a plurality of apertures having upper and lower edges and housings for supporting the projecting elements;
clamping means associated with said housings for clamping projecting elements;
a clamping drive associated with and engaging said clamping means;
reinforcing ribs provided on said inside face of said wall portion and extending inwardly from and transversely to said wall portion, said clamping means including associated clamping devices and a common clamping frame located on said wall portion, said housings for the projecting elements and said associated clamping devices being located on said common clamping frame, said clamping means further including guide means for said clamping frame so that, upon actuation of said clamping drive, said clamping frame being guided for movement between a release position and a closed position in a direction parallel with said wall portion, said wall portion having a shape, and said clamping means further including facing plates, one of said facing plates being provided for each of said aperture, disposed on said inside face of said wall portion and having a shape corresponding to the shape of said wall portion at least in the region of a respective aperture, each said facing plate having a surface area sufficiently large so that in said closed position of said clamping frame said facing plate entirely covers said aperture, sealing it off tightly, said facing plates each having a back, and a horizontal web to which said facing plates are fixed at said back, said clamping frame having a cross-strut and said horizontal web having a rear web fixed to said cross-strut at a distance from said facing plate.



4,618,123
VALVE SYSTEM FOR A HYDRAULICALLY CONTROLLED STARTING FRICTION CLUTCH

Manfred Bilharz, Bergheim; Peter Heider, Weilerswist; Hartmut Röper, Bochum; Martin Taal; Fritz Henken, both of Pulheim; Ernst Kohl, Cologne, and Dietmar Schubert, Hennef, all of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 11, 1985, Ser. No. 710,265

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1984, 3410512

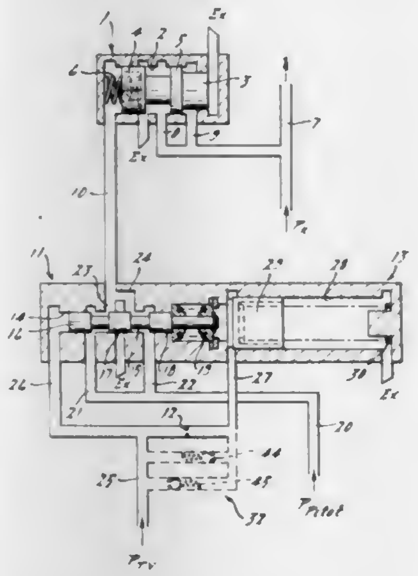
Int. Cl.⁴ F16D *25/14*

U.S. Cl. 251—28 **2 Claims**

1. In a fluid pressure operated clutch control circuit;
a pressure regulator valve having a pressure supply passage communicating with a fluid pressure clutch feed passage, said regulator valve having an exhaust port, a feed back pressure port and a pressure signal port, a regulator valve element and a spring acting on said valve element;
a shuttle valve, a clutch input speed pressure signal passage communicating with said shuttle valve, an output port for said shuttle valve communicating with said pressure signal port, said shuttle valve having opposed lands and adapted to shift from one position to another to establish and

interrupt communication with said clutch input speed pressure signal passage;

an input torque pressure signal passage communicating through branch passages with said opposed lands, one branch passage having a flow restricting orifice;

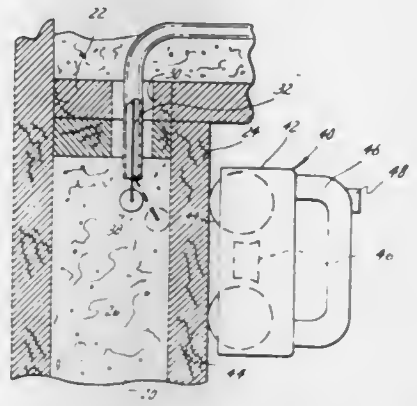


an accumulator having an expandable volume chamber communicating with the downstream side of said orifice and with the land of said shuttle valve that communicates with said one branch passage.

4,618,124

METHOD OF INSTALLING CONDUIT

Thomas Flowers, 1069 E. York, Flint, Mich. 48505
Division of Ser. No. 491,154, May 4, 1983, Pat. No. 4,527,775. This application May 6, 1985, Ser. No. 730,913
Int. Cl.⁴ E21C *29/16*
U.S. Cl. 254—134.3 FT **4 Claims**

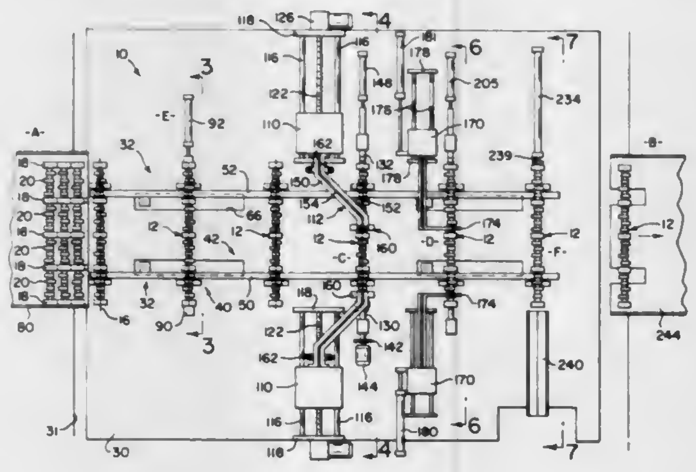


1. A method for installing conduit in a confined space behind a wall between points of access to the confined space which comprises: introducing into the confined space at one point of access, one end of a tape having a magnetically responsive roller means on said one end; said tape being coiled on a drum disposed exteriorly of the confined space near said one point of access, magnetically attracting said roller means toward said wall by an attracting magnet positioned on the side of said wall opposite the confined space; moving said magnet along said wall to another point of access and thereby, through the attractive force of said magnet on said roller means causing said roller means to roll on the surface of said wall which is on the interior of the confined space also drawing the tape through the confined space to said another point of access, said tape having sufficient length to extend between said two points of access; securing conduit to said one end of said tape at said another point of access; and turning said drum to withdraw said tape from the confined space via said one point of access, thereby to draw the conduit from said another point of access to said one point of access.

4,618,125

SYSTEM FOR HARDENING CAMSHAFTS

Norbert R. Balzer, Boaz, Ala., assignor to Tocco, Inc., Boaz, Ala.
Filed Aug. 26, 1985, Ser. No. 769,399
Int. Cl.⁴ C21D *9/30*
U.S. Cl. 266—90 **6 Claims**



1. An apparatus for hardening axially spaced cams of an elongated camshaft having an axis of rotation and a plurality of cams axially spaced along said axis and with the cam lobes of each cam having an axially outwardly projecting tip at a preselected circumferentially orientation, said apparatus comprising:

(a) a first induction heating coil having a generally circular inner surface and an electrically insulating gap at a selected location on said inner surface of said first heating coil;

(b) a second induction heating coil having a generally circular inner surface and an electrically insulating gap at selected location on said inner surface of said second heating coil;

(c) a first power supply for energizing said first heating coil;

(d) a second power supply for energizing said second heating coil;

(e) means for mounting said one of said camshafts with said axis extending through said first heating coil;

(f) means for causing relative movement of said one camshaft axially with respect to said first coil until one of said cams is within said first coil;

(g) means for circumferentially indexing said one camshaft with respect to said first coil until said tip of said axially aligned cam is adjacent said electrically insulating gap of said first coil;

(h) first energizing means for energizing said first coil by said first power supply while said cam of said one camshaft is in its circumferentially indexed position;

(i) means for quench hardening said cam of said one camshaft while said cam of said one camshaft is within said first heating coil;

(j) means for heating another cam of one of said camshafts said second heating coil by said second power supply before said cam of said one camshaft is quench hardened, including means for axially shifting said another cam into said second heating coil and second energizing means for energizing said second coil with said second power supply;

(k) means for quench hardening said another cam while said other cam is within said second heating coil;

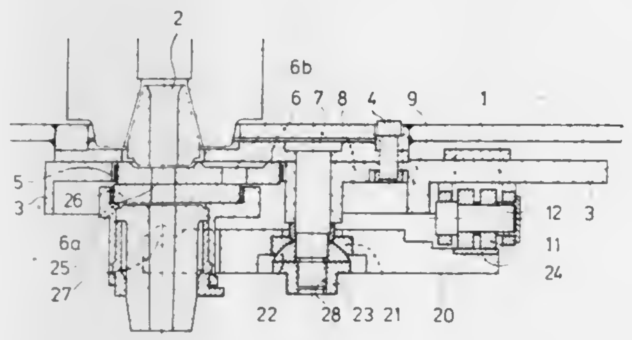
(l) means for then indexing a first subsequent unhardened cam axially into said first heating coil and a second subsequent unhardened cam into said second heating coil; and,

(m) means again actuating said first and second energizing means to heat said first and second subsequent cams with said first and second heating coils, respectivley.

4,618,126

SWIVELLING SLIDING CLOSURE UNIT

Bernhard Tinnes, Zollikerberg; Bernhard Knell, Thalwil, and Walter Vetterli, Winterthur, all of Switzerland, assignors to Metacon AG, Zurich, Switzerland
Filed Jun. 24, 1985, Ser. No. 748,043
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1984, 3423156
Int. Cl.⁴ B22D *41/08*
U.S. Cl. 266—271 **11 Claims**



1. A swivelling sliding closure unit for controlling the discharge of molten metal from a metallurgical vessel, said unit comprising:

a stationary refractory plate having a discharge opening;

a stationary housing to be fixed to the bottom of a metallurgical vessel and supporting said stationary refractory plate in a position with said discharge opening thereof in alignment with an outlet opening of the metallurgical vessel;

a swivel pin fixed to said stationary housing;

a swivel lever having first and second ends;

gimbal bearing means supporting said swivel lever at a portion thereof between said first and second ends to enable said swivel lever to universally rotate about said swivel pin;

a movable refractory plate having therethrough a discharge opening;

means at said first end of said swivel lever for supporting said movable refractory plate in position against said stationary refractory plate and for enabling said movable refractory plate to pivot with respect to said swivel lever about a pivot axis;

means for rotating said swivel lever about said swivel pin and thereby for sliding said movable refractory plate with respect to said stationary refractory plate between a first position whereat said discharge opening of said movable refractory plate is aligned with said discharge opening of said stationary refractory plate, a second position whereat said discharge openings are out of alignment, and a replacement third position;

a rolling element mounted on said stationary housing;

a raceway formed on said second end of said swivel lever and abutting said rolling element during rotation of said swivel lever about said swivel pin;

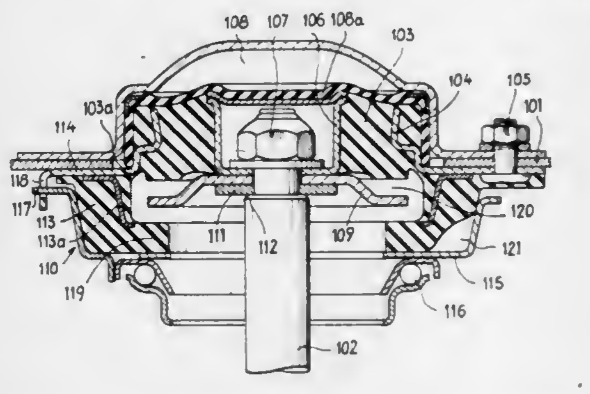
clamping means for removably mounting said swivel lever on said swivel pin and for urging said movable refractory plate toward said stationary refractory plate and said raceway toward said rolling element; and

bracket means, hingedly connected to said stationary housing and connectable to said swivel lever when said swivel lever is in said replacement third position, for, upon removal of said clamping means, swinging said swivel lever and said movable refractory plate away from said swivel pin and said stationary refractory plate to an open position enabling replacement of said refractory plates.

4,618,127

CONNECTING DEVICE BETWEEN THE STRUCTURE OF A VEHICLE AND A SUSPENSION STRUT

Robert Le Salver, Chanteloup les Vignes, and Dominique Poupard, Chaville, both of France, assignors to Automobiles Peugeot, Paris and Automobiles Citroen, Neuilly-sur-Seine, both of, France
Filed May 14, 1984, Ser. No. 609,880
Claims priority, application France, May 16, 1983, 83 08089; Nov. 23, 1983, 83 18657
Int. Cl.⁴ B60G *15/06;* **F16F** *9/54*
U.S. Cl. 267—8 R **15 Claims**

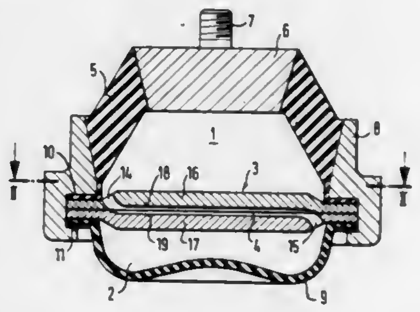


1. A connecting device combined with and interposed between a structure of a vehicle and an upper element of a suspension strut which upper element is movable substantially along an axis relative to said structure, said device comprising a flexible joint including two frames, one of which frames is fixed to said upper element of the suspension strut while another of said frames is fixed to said structure, a resiliently yieldable sleeve interposed between and fixed to said two frames, said two frames being such as to allow said yieldable sleeve to undergo solely shear stress upon said movement of said upper element relative to said structure, a support element fixed to said structure, and an abutment element fixed to said upper element and cooperative with said support element, said abutment element being fixed to said upper element of the suspension strut below said flexible joint in spaced relation to said yieldable sleeve axially of said upper element, and said support element being disposed below said abutment element in spaced relation to said abutment element axially of said upper element so as to limit the downward movement of said abutment element and said upper element after a free travel of said abutment element relative to said support element in normal operation of the device.

4,618,128

TWO-CHAMBER ENGINE BEARING WHICH HAS HYDRAULIC DAMPING

Volker Härtel, Germering, and Dieter Theisen, Unterschleissheim, both of Fed. Rep. of Germany, assignors to Metzeler Kautschuk GmbH, Munich, Fed. Rep. of Germany
Filed Oct. 11, 1984, Ser. No. 659,708
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1983, 3336966
Int. Cl.⁴ F16F *9/34*
U.S. Cl. 267—140.1 **11 Claims**



1. Two-chamber engine bearing with hydraulic damping,

comprising rubber-elastic peripheral walls, a rigid, elastically-mounted intermediate plate defining an upper liquid-filled chamber and a lower liquid-filled chamber along with said peripheral walls, said intermediate plate having a cavity formed therein interconnecting said chambers with a substantially rectangular longitudinal section in vicinity of the central plane thereof and a length and width being many times the height thereof, said intermediate plate having a first vertical passage formed therein at one end of said cavity leading from said cavity to said upper chamber and a second vertical passage formed therein at the other end of said cavity leading from said cavity to said lower chamber.

4,618,129
VIBRATION DAMPING ARRANGEMENT

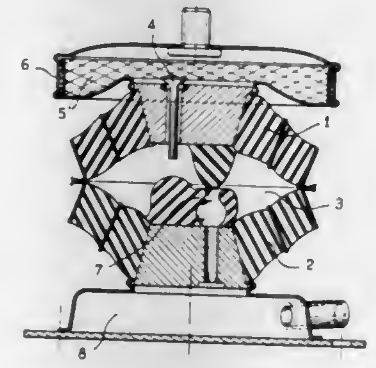
Jean-Pierre Bechu, Courbevoie, France, assignor to Caoutchouc Manufacture et Plastiques, Bezons, France

Filed Apr. 23, 1984, Ser. No. 603,150

Claims priority, application France, Apr. 22, 1983, 83 06612

Int. Cl.⁴ F16F *9/04*

U.S. Cl. 267—140.1 **7 Claims**



1. A mount means for damping vibrations of a load having a vacuum source, the mount means comprising: means for defining a variable volume chamber means, said means for defining being formed of a thick-rubber material bonded to rigid reinforcement members, said means for defining being adapted to elastically support a force greater than the force applied by gravity so as to support the load in a predetermined static position, means for communicating the variable volume chamber means with either the vacuum source through a limited volume chamber means or atmosphere through another limited volume chamber means defined in part by a porous membrane, said communicating means being adapted to control a moderate pressure so that a displacement of the load generates in the mount means accelerating forces counteracting said displacement, said accelerating forces being limited to a comfortable acceptable value of about 0.2 times a value of the weight of the load, wherein said limited acceleration forces are produced by an intermediate balance, through rapid communication between the variable volume chamber means and either one of the limited volume chamber means thereby said variable volume chamber means progressively reaches atmospheric pressure through said porous membrane after being previously subjected to a maximum value of the vacuum source.

4,618,130
RESILIENT BLOCK FOR ATTACHING THE UPPER END OF A FRONT SUSPENSION SHOCK ABSORBER TO A VEHICLE BODY

Bartolomeo Veglia, Turin, Italy, assignor to Riv-Skf Officine Di Villar Perosa S.p.A., Torino, Italy

Filed Jun. 11, 1984, Ser. No. 619,361

Claims priority, application Italy, Jun. 23, 1983, 53494/83[U]

Int. Cl.⁴ F16F *1/36*

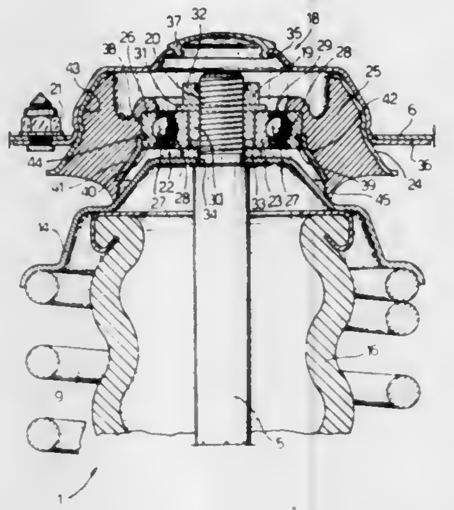
U.S. Cl. 267—153 **5 Claims**

1. A resilient block for the attachment of a shock absorber of a suspension of a vehicle to a body thereof, comprising:

a. a rolling bearing comprising: an inner ring operable to be fixed to one end of said shock absorber, a cylindrical outer ring shaped like said inner ring and having a cylindrical outer lateral surface, and rolling bodies interposed between the inner and outer rings;

b. a first frusto-conical sleeve operable to be fixed to said vehicle body;

c. a second frusto-conical sleeve coaxial with the first sleeve and with said rolling bearing, said cylindrical outer lateral surface of said outer ring of the bearing having attachment means rigidly connecting said outer ring to said second sleeve, said attachment means including an annular groove formed on said cylindrical outer surface of said outer ring, said second sleeve having a circular, radially-directed, inwardly folded rim engaging said annular groove; and



d. an elastomeric sleeve for resiliently joining said rolling bearing and said second sleeve to said first sleeve, respective conical inner and outer surfaces of said first and second sleeve, respectively, and said cylindrical outer lateral surface of said outer ring of the rolling bearing being directly and fixedly connected to said elastomeric sleeve to form with said outer ring, said first and second sleeves and said elastomeric sleeve, a single, substantially inseparable unit.

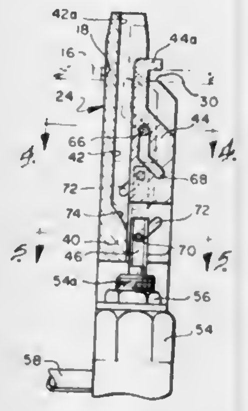
4,618,131
PC BOARD HOLD DOWN SYSTEM

Carl Campisi, Chicago, and Brian D. Kay, Arlington Heights, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed May 24, 1985, Ser. No. 738,137

Int. Cl.⁴ B23Q *3/08*

U.S. Cl. 269—32 **10 Claims**



1. For use in the assembly of a PC board positioned upon and displaced by a transport mechanism as electronic components are positioned upon the PC board in predetermined locations on a first side thereof, clamp means for engaging and maintaining the PC board securely in position in a flat configuration upon the transport mechanism comprising:

a housing positioned on a second side of the PC board in a first retracted position, said housing including a linear slot aligned along the length thereof;

displacement means coupled to said housing for moving said housing between the first retracted position and a second extended position wherein said housing is positioned immediately adjacent to the PC board and extends to the first side thereof;

an arm positioned within the slot in said housing and movable along a first axis therein between a first retracted configuration and a second extended configuration in said housing, said arm including a distal hook portion recessed within said slot when said arm is in the first retracted configuration and extending outward from said slot when said arm is in the second extended configuration; and

actuation means coupled to said arm for displacing said arm to said second extended configuration when said housing is in said second extended position whereupon the distal hook portion of said arm engages the PC board on the first side thereof and pulls the PC board tightly against the transport mechanism in securely maintaining the PC board in a flat configuration during the positioning of components thereon and for displacing said arm to said first retracted configuration following the positioning of components on the PC board, whereupon the distal hook portion of said arm disengages the PC board and said displacement means moves the housing to said first retracted position to permit the transport mechanism to displace the PC board from said clamp means.

4,618,132
REAR WINDOW LIGHT SCREEN PARTICULARLY FOR AN AUTOMOBILE

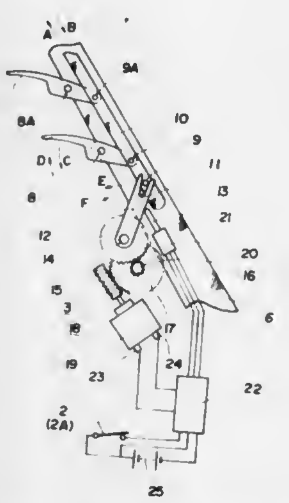
Ryoichi Kimura, Saitama; Kanji Nomura, Kawasaki; Kazumi Ubukata, Kawasaki, and Shinju Kasahara, Kawasaki, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Kawasaki, Japan

Filed May 24, 1984, Ser. No. 613,739

Claims priority, application Japan, May 31, 1983, 58-83789[U]

Int. Cl.⁴ B60J *3/02*

U.S. Cl. 296—97 J **8 Claims**



1. A light screen device for selectively blocking light from entering through a window of an automobile comprising:

a plurality of screen vanes adjacent the window; and

means for rotating said vanes between a light blocking position and a light admitting position said rotating means comprising driving means operated selectively to cause rotation of said vanes between said light blocking and light admitting positions in response to a first signal from a position detection means, said signal indicating a light blocking and light admitting position of said vanes, and in response to a second signal indicating an on or off state of automobile ignition said driving means rotating said vanes to light admitting position when said first signal indicates said vanes are in the light blocking position and when said second signal indicates the on state of the ignition and said driving means rotating said vanes to the light blocking position when said first signal indicates said vanes are in the light admitting position and when said second signal indicates off state of the ignition.

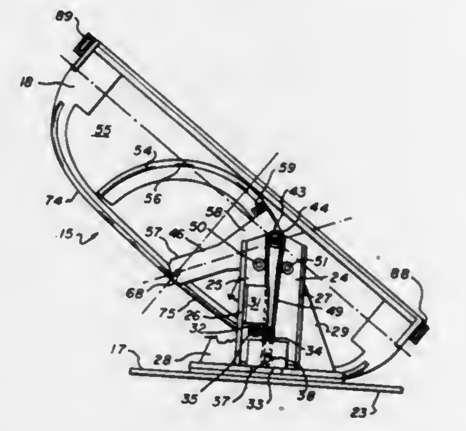
4,618,133
TABLE POSITIONER FOR RADIOGRAPHIC DEVICE

Bernard W. Siczek, Boulder, Colo., assignor to Fischer Imaging Corporation, Denver, Colo.

Filed Dec. 28, 1984, Ser. No. 687,437

Int. Cl.⁴ A61G *13/00*

U.S. Cl. 269—323 **17 Claims**



1. A system for positioning a table relative to a base, said system comprising actuating means connected with said base and including frame means having said table mounted thereon, said actuating means also including gear means connected with a drive mechanism and gear rack means mounted on said frame means and engaging said gear means, said gear rack means including a first gear rack having a first curvature and a second gear rack having a second curvature that is opposite to that of said first curvature, and said gear means including a first gear engagable with said first gear rack and a second gear engagable with said second gear rack so that said table is angularly displaceable in at least one direction from a horizontal position and with said actuating means causing displacement of said table by imparting a smooth translating motion to said table throughout said displacement.

4,618,134
AUTOMATIC PAPER SHEET SUPPLYING APPARATUS

Katsuhiko Kawaguchi, and Yoshiaki Ono, both of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1985, Ser. No. 704,867

Claims priority, application Japan, Feb. 29, 1984, 59-37589; Mar. 12, 1984, 59-46876

Int. Cl.⁴ B65H *5/00, 29/60*

U.S. Cl. 271—4 **15 Claims**

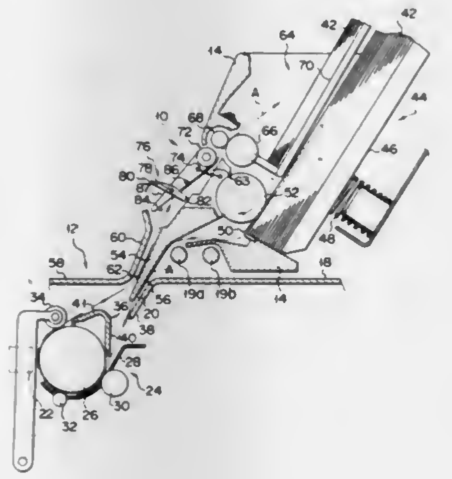
1. An automatic paper sheet supplying apparatus to be used in combination with a paper sheet processing apparatus having a sheet passage opening provided in a housing, paper sheet processing means for processing paper sheets and paper sheet guide means for guiding a paper sheet coming from said sheet passage opening and also guiding a processed paper sheet coming from said paper sheet processing means to said sheet passage opening, comprising:

sheet holding means for holding a plurality of paper sheets and feeding out said plurality of paper sheets one after another;

a first stationary guide member with an end portion extending into said sheet passage opening of said paper sheet processing apparatus, said first stationary guide member having a first guide surface for guiding a paper sheet coming from said holding means to said sheet guide means of said paper sheet processing apparatus and a second guide surface for guiding a processed paper sheet from said paper sheet guide means through said sheet passage opening to be discharged to the outside of said paper sheet processing apparatus and for also guiding a paper sheet, which is separate from the plurality of paper sheets held in said sheet holding means and is inserted into said sheet passage opening from the outside of said paper sheet processing apparatus to said sheet guide means to let the separate paper sheet be guided by said sheet guide means to said paper sheet processing means;

a second stationary guide member spaced from and facing said second guide surface of said first stationary guide member so as to define a passage between said second stationary guide member and said second guide surface of said first stationary guide member, said second stationary guide member guiding, in co-operation with said second guide surface of said first stationary guide member, a processed paper sheet discharged from said sheet passage opening and guiding said separate paper sheet inserted into said sheet passage opening;

an exit provided on an extension of said second guide surface of said first stationary guide member and discharging a processed paper sheet to the outside of said paper sheet processing apparatus;



a movable guide member provided adjacent to the inlet side of said exit and movable between an open position, at which said exit is open, and a closed position, at which said exit is closed, said movable guide member, when it is in said open position, being located on an extension of said second stationary guide member to guide a processed paper sheet discharged through said sheet passage opening and coming through said passage defined between said second guide surface of said first stationary guide member and said second stationary guide member to said exit; said movable guide member, when it is in said closed position, being located on the extension of said second guide surface of said first stationary guide member to guide said processed paper sheet coming through said passage defined between said second guide surface of said first stationary guide member and said second stationary guide member to the outside of said paper sheet processing apparatus and also guide said separate paper sheet from the outside into the space between said second guide surface of said first stationary guide member and said second stationary guide member; and

switch operation means for switching said movable guide member between said open position and closed position.

4,618,135
SHEET FEEDER PARTICULARLY FOR PRINTING PRESSES

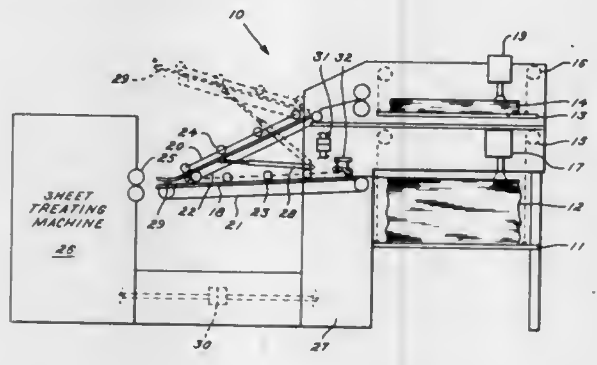
Harry Greiner, and Adolf Schwebel, both of Offenbach am Main, Fed. Rep. of Germany, assignors to MABEG Maschinenbau GmbH & Company, Fed. Rep. of Germany

Filed Jan. 18, 1985, Ser. No. 692,688

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1984, 3401724

Int. Cl.^{4} B65H *5/24*

U.S. Cl. 271—9 **19 Claims**



1. A sheet feeder for the individual feeding of sheets to a sheet treating machine having a first sheet pile carried by a main pile table, a first sheet separating means for selectively feeding the respective uppermost sheet of the first sheet pile to the sheet treating machine, a second sheet pile carried by an auxiliary pile table, a second sheet separating means for selectively feeding the respective upper sheets of the second sheet pile in place of the sheets of the first sheet pile to the sheet treating machine, wherein the improvement comprises means for feeding the sheets to the sheet treating machine from the main pile table and the auxiliary pile table in the same rhythm, whereby on change of sheet feed from one to the other sheet pile, the sheet stream from the sheet pile, from which the sheet feeding was taking place, is interrupted in such a way and the sheet flow from the other sheet pile is put into operation in such a way that the sheet feed to the sheet treating machine is without interruption, and wherein the sheet feed takes place with an underlapped sheet stream, wherein the first sheet of the lapped stream of sheets from the first sheet pile can be slid under the last sheet of the lapped sheet stream from the second sheet pile.

4,618,136
DEVICE FOR LOADING SIGNATURES FOR APPLICATION TO SIGNATURE LOCATING ASSEMBLIES IN BOOKBINDING APPARATUS

Giorgio Pessina, and Aldo Perobelli, both of Via Timavo, 32, 20037 Paderno Dugnano, Milano, Italy

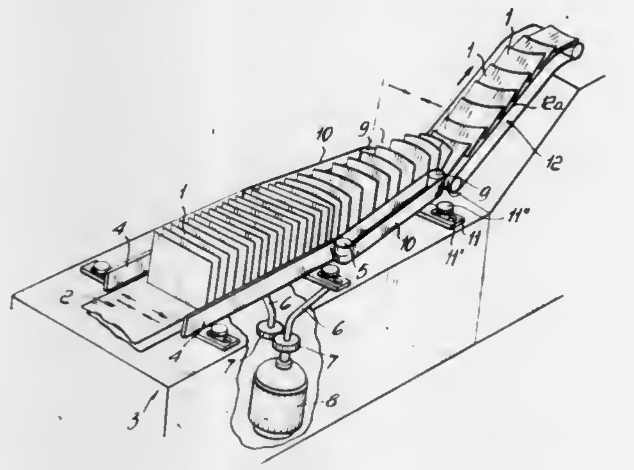
Filed Apr. 24, 1984, Ser. No. 603,437

Claims priority, application Italy, May 6, 1983, 21765 B/83

Int. Cl.^{4} B65H *1/30, 5/02*

U.S. Cl. 271—150 **5 Claims**

1. A signature loading device to be applied to signature loading apparatus for bookbinding machines comprising a conveyor belt for continuously feeding edge arranged signatures and provided with side guiding members for restraining and guiding said signatures, at the outlet end of said guiding members there being provided a narrowing width portion for bending said signatures with a convexity facing said signature feeding direction and for loading said signatures on a further upwardly slanted conveyor belt, said narrowing width portion engaging said signatures for a heigth substantially equal to that of said guiding members, said narrowing width portion consisting of a pair of endless driven opposite converging belts arranged as extensions of a respective said guiding member, each said converging belt extending between two vertical axis driving and driven rollers, the driven roller of said rollers being adjustably mounted on a respective slotted bracket member.



4,618,137
SHEET IMAGING APPARATUS

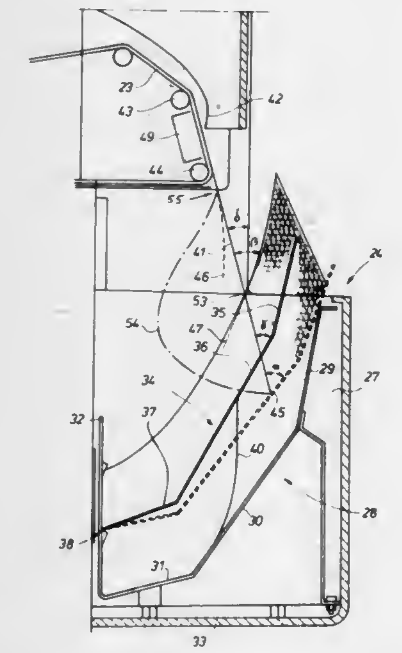
Gerard J. Boeve, Edegem, and Franciscus Vierveijzer, Mortsel, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Mar. 25, 1985, Ser. No. 715,939

Claims priority, application European Pat. Off., Mar. 30, 1984, 84200452.5

Int. Cl.^{4} B65H *31/10*

U.S. Cl. 271—219 **4 Claims**



1. In a sheet imaging apparatus wherein sheets are taken in succession from a supply stack of such sheets, passed through an imaging station wherein an image is formed on the sheets, then are directed in inverted order along a generally vertical path into a collecting tray which has a sheet supporting back plate that is disposed at an acute angle with respect to the generally vertical path of said sheet, whereby the first contact of the leading end of a discharged sheet with the stack of sheets in the collector tray, or with the sheet supporting plate in the case of the first sheet received in the tray, occurs at an acute angle, and the sheet supporting back plate of said collecting tray is rockably mounted near its lower end and spring biased generally upward so that, as the tray fills with sheets, the back plate sinks down and the size of the acute angle between the sheet path and backplate increases, the improvement comprising an upper part of said back plate disposed at a greater angle with respect to the lower part of the plate so that the sheets received on the plate are flexed upwardly at their upper portion relative to their lower portion, the thickness of the upper stack end increasing over that of the lower stack end with the number of sheets received in the tray as a consequence of the inclusion of air between the sheets, so that the angle of incidence ($\beta,\gamma,\beta',\gamma'$) of a delivered sheet on the stack of collected sheets remains almost constant during the filling of the tray with sheets.

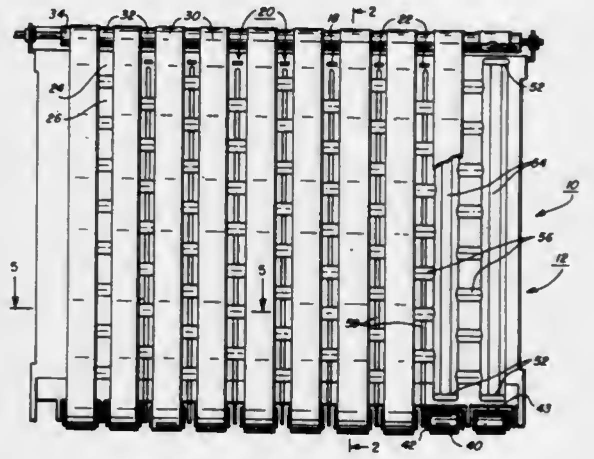
4,618,138
PLURAL BELT DOCUMENT FEEDER

Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 17, 1985, Ser. No. 788,376

Int. Cl.^{4} B65H *9/06, 29/24*

U.S. Cl. 271—245 **20 Claims**



1. In a document feeder for transporting document sheets over the platen of a copier, with a vacuum belt platen transport system, into registration means for stopping the document sheet at an imaging position on said platen, wherein the vacuum belt platen transport system comprises plural belts moving under a white backing surface overlying said platen, and includes a vacuum source with a vacuum plenum for applying a partial vacuum to a document sheet being transported by said moving belts, the improvement wherein:

said vacuum belt platen transport system belts are transparent or highly translucent thin, low-frictional, non-elastomeric, plastic belts,

said transparent or highly translucent belts being unapertured and said backing surface being unapertured in said imaging position, so that said vacuum belt transport system is effectively invisible through a document sheet to said copier,

said belts being spaced apart by defined gaps pneumatically connected by unapertured grooves in said unapertured backing surface with said vacuum source to apply vacuum forces to a document sheet through said gaps sufficient to provide transport of a document sheet with movement of said belts into said registration means, but with low enough said vacuum forces to allow slippage of a document sheet relative to said moving belts at said registration means.

4,618,139
EXERCISE MACHINE

Gary R. Haaheim, 112712 Hundertmark Rd., Chaska, Minn. 55318

Filed Dec. 21, 1984, Ser. No. 684,616

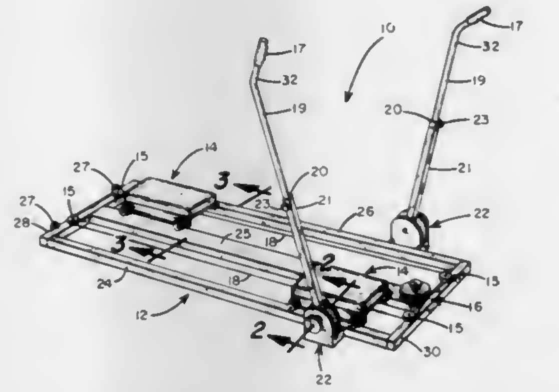
The portion of the term of this patent subsequent to Jul. 16, 2002, has been disclaimed.

Int. Cl.^{4} A63B *1/00, 69/18, 21/00*

U.S. Cl. 272—70 **20 Claims**

1. An exercise machine for providing simultaneous exercise of arms and legs against adjustable frictional resistances, comprising

- (a) a frame assembly having at least three parallel rails and having end members affixing said rails in spaced relationship;
- (b) a pair of wheeled trucks, each of said trucks mounted between two parallel rails with each wheel on a rail for free rolling thereon;
- (c) a plurality of rotatable pulleys attached to said frame assembly, each pulley being positioned proximate an end member, and a cable respectively attached to each of said trucks and guided by said pulleys;



- (d) a first frictional clutch assembly attached on said frame assembly and attached to respective ends of said cable; and
- (e) a pair of elongated handles, each pivotally mounted between a pair of plate members, at least one of said plate members being affixed to said frame assembly, and friction pads mounted intermediate said plate members and said handles, including means for selectively clamping said plate members against said friction pads and said handles.

4,618,140
PHYSICAL EXERCISING APPARATUS

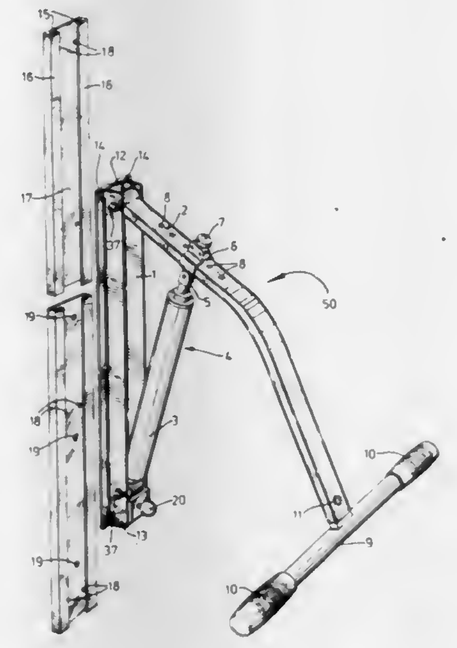
Peter L. Brown, 226 Springfield Road, Chelmsford, Essex, England

Filed Nov. 27, 1984, Ser. No. 675,343

Claims priority, application United Kingdom, Nov. 30, 1983, 8331900; Nov. 30, 1983, 8332027

Int. Cl.^{4} A63B *69/06*

U.S. Cl. 272—72 **15 Claims**



1. A convertible physical exercising apparatus comprising a first frame structure adapted to be mounted generally vertically; a second frame structure separate from said first frame structure and being randomly located relative to the first frame structure but always oriented substantially perpendicularly to said first frame structure; an assembly separate and independent of said first and second frame structures and having a carrier member, a single lever one end of which is pivotally mounted on the carrier member, a pair of oppositely extending user handles mounted on the other end of the lever and extending substantially transversely thereto, which handles are adapted to be grasped by the user to move the lever, and means on the carrier member engaging the single lever at a position intermediate its ends for resisting pivotal movement of the lever; and means for detachably securing said assembly in turn to said first and second frame structures in orientation substantially perpendicular one to the other whereby wall exercises can be performed when the assembly is secured to the first frame structure and other forms of exercises can be performed when the assembly is secured to the second frame structure.

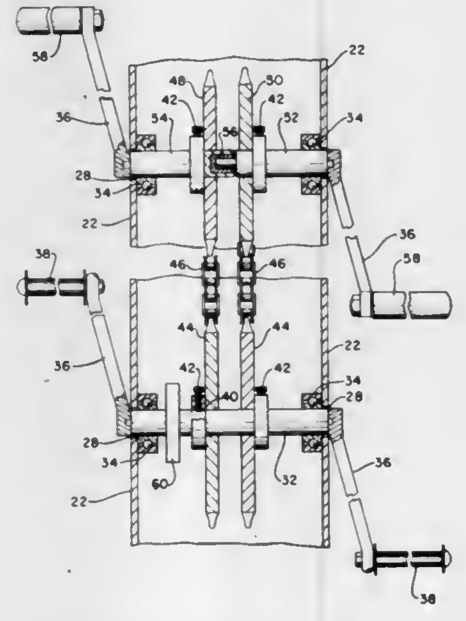
4,618,141
THERAPEUTIC EXERCISE DEVICE

Thomas Ashworth, Jr., 2145 Maplewood Rd., Stow, Ohio 44224

Filed Apr. 12, 1985, Ser. No. 722,603

Int. Cl.^{4} A63B *23/04*

U.S. Cl. 272—73 **4 Claims**



1. An exercise device of the type having
a base,
a raised seat connected to the base, and
a pair of hand cranks and a pair of foot cranks rotatably mounted on support means connected to the base, and comprising:
a shaft, a double sprocket mounted on said shaft, said foot cranks being operably connected to said shaft and fixed in their position relative to each other, a separate shaft for each handcrank, each carrying a single sprocket, said handcrank shaft sprockets being of different diameters; and
a drive means interconnecting each handcrank sprocket to one of the double sprockets said device producing equal angular velocity in each of the foot pedals, and different angular velocities in each of the handcranks, and said device having the capability of being pedalled in reverse.

4,618,142
JUMPROPE APPARATUS HAVING WEIGHTED BAR

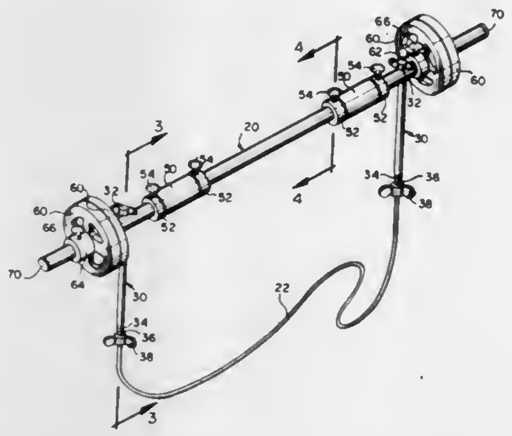
Tony Joseph, Jr., Johnstown, Pa., assignor to Jog & Lift Development Co., Johnstown, Pa.

Filed Jan. 22, 1985, Ser. No. 693,134

Int. Cl.^{4} A63B *5/20, 13/00*

U.S. Cl. 272—75 **14 Claims**

1. An exercise device, comprising:
a bar for grasping intermediate opposite ends thereof, the bar defining an axis;
hand grips including tubes rotatable around the bar and means for axially retaining the tubes on the bar;
a plurality of weights disposed at said opposite ends of the bar, and means for axially retaining the weights on the bar;
a pair of standoff rods, each attachable to the bar by one end and aligned perpendicular to the bar, parallel to one another and spaced from said opposite ends of the bar, the rods having compression fittings at free ends remote from the bar; and
a flexible line attaching said stand off rods, the flexible line being attached to said stand off rods at the compression fittings at the free ends thereof, whereby a user can exercise by simultaneously skipping the flexible line and manipulating the bar bearing said weights.



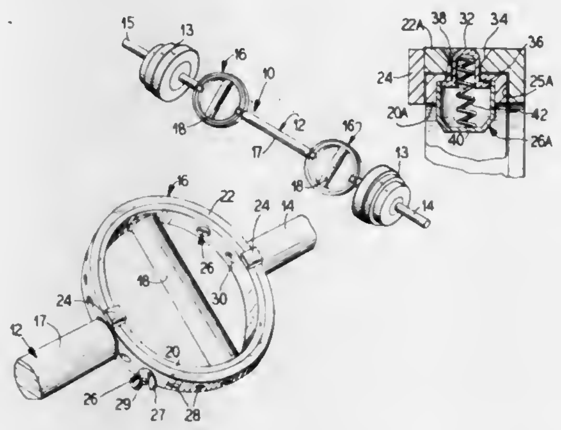
4,618,143
WEIGHT LIFTING BAR

Brian Twardosz, 12941 Exchange, Chicago, Ill. 60633

Filed Dec. 10, 1984, Ser. No. 679,869

Int. Cl.^{4} A63B *13/00*

U.S. Cl. 272—123 **4 Claims**



1. In a bar with a longitudinal axis having opposed end portions receiving selectively removable weights, a central portion and two spaced hand grip portions each inboard of said end portions and outboard of said central portion, said hand grip portion comprising:
an outer ring member secured on one peripheral side to said outer portion and on opposite peripheral side to said central portion;
said outer ring member having a plurality of spaced apertures therethrough around its periphery;
an inner ring member concentrically captured in said outer ring member and being free to rotate relative to said outer ring member;
said inner ring member having at least one aperture therethrough selectively alignable with said apertures in said outer ring;
a retaining means extendable through said aperture in said inner ring and said aligned aperture in said outer ring to selectively secure said two rings against relative rotation;
a cylindrical hand grip member extending across said inner ring and being secured thereto;
whereby, said hand grip member can be selectively rotated relative to said bar and retained in said selected position to permit various exercises to be performed without removal of said weights from said bar.

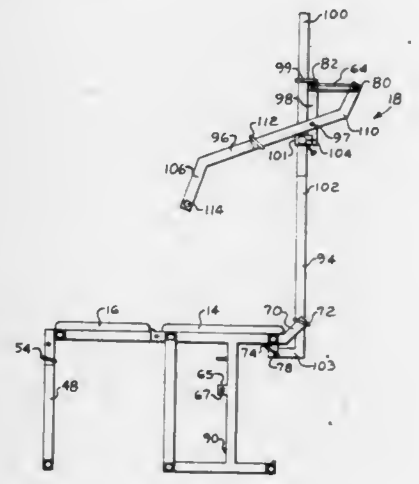
4,618,144
PORTABLE EXERCISE DEVICE

Christopher S. Gibson, 403 St. Ronan St., New Haven, Conn. 06511

Filed Nov. 9, 1984, Ser. No. 669,680

Int. Cl.^{4} A63B *21/00*

U.S. Cl. 272—134 **28 Claims**



1. A self-contained portable exercise device for performing upper and lower body exercises readily convertible into an interconnected compact hand transportable portable configuration comprising,
a freestanding support frame having a ground-engaging base and a substantially horizontally extending upper portion for mounting a horizontal seat member, said upper portion being spaced from said base so as to form a storage space therebetween, said support frame having opposed forward and rearward ends,
a horizontal seat member securely mounted to said upper portion of said support frame and having forward and rearward ends, said seat member being of sufficient length for sitting exercises and insufficient length for prone-supine bench exercises,
a bench extension member movably mounted to said support frame at said rearward end of said seat member for movement between a first position in horizontal alignment with said seat member to form an elongated bench with said seat member of sufficient length for prone-supine bench exercises and a second position extending adjacent said storage space for transport and storage,
means for securely supporting said bench member in said first position for bench exercises and for disposition within said storage space when said bench extension member is in said second position,
an upper body exercise assembly means for performing upper body exercises without weights,
support extension means for selective vertically adjustable mounting of said upper body exercise assembly means substantially above said seat member,
said support extension means being detachably mounted to said support frame so as to extend vertically upwardly therefrom and alternately detachably mountable to said support frame substantially within said storage space in the compact portable configuration,
said upper body exercise assembly means being detachably adjustably mountable to said support extension means

above said seat member for performing upper body exercises on said elongated bench and alternately detachably mountable to said support frame substantially within said storage space in the compact portable configuration,

a lower body exercise assembly means for performing lower body exercises without weights being detachably mountable to said support frame at said forward end of said seat member for performing lower body exercises and alternately detachably mountable to said support frame substantially within said storage space in the compact portable configuration, and

said upper body exercise assembly means, said support extension means and said lower body exercise assembly means being simultaneously mountable to said support frame substantially within said storage space when said bench extension member is in said second position to form the compact portable configuration for transport and storage.

16. A self-contained exercise device in a compact, hand-transportable configuration and readily assemblable for performing upper and lower body exercises comprising

a freestanding support frame having a substantially horizontally extending upper portion, an opposed spaced apart lower ground-engaging base, and opposed forward and rearward ends, said base and said upper portion forming a storage space therebetween,

a horizontal seat member securely mounted to said upper portion of said support frame and having forward and rearward ends, said seat member being of sufficient length for sitting exercises and insufficient length for prone-supine bench exercises,

said base and said upper portion with said seat member defining substantially the perimeter of said storage space with said seat member and said upper portion defining substantially the uppermost portion of said exercise device and said base defining substantially the lowermost portion of said exercise device,

a bench extension member mounted to said support frame so as to extend along the perimeter of said storage space, said bench extension member being mountable to said support frame at said rearward end of said seat member in horizontal alignment with said seat member to form an elongated bench with said seat member of sufficient length for prone-supine bench exercises,

an upper body exercise assembly means for performing upper body exercises without weights, said upper body exercise assembly means being positioned substantially within said storage space and detachably mounted to said support frame,

support extension means for selectively vertically adjustably mounting said upper body exercise assembly means substantially above said seat member, said support extension means being positioned substantially within said storage space and detachably mounted to said support frame,

said support extension means being alternately detachably mountable to said support frame so as to extend vertically upwardly therefrom and said upper body exercise assembly means being alternately detachably adjustably mountable to said support extension means so as to be disposed above said seat member for performing upper body exercises on said elongated bench, and

a lower body exercise assembly means for performing lower body exercises without weights, said lower body exercise assembly means being positioned substantially within said storage space and detachably mounted to said support frame, said lower body exercise assembly means being alternately detachably mountable to said support frame for performing lower body exercises.

4,618,145

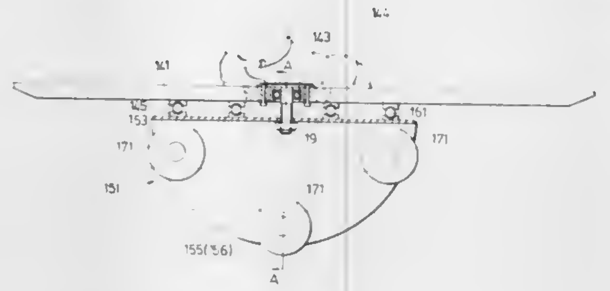
PHYSICAL TRAINING APPARATUS

Taichi Inada, 120-banchi, 1-chome, Niwai-chou, Sumiyoshi-ku, Osaka City, Japan

Filed Mar. 25, 1985, Ser. No. 715,968

Int. Cl.⁴ A63B *21/00*

U.S. Cl. 272—146 **6 Claims**



1. A physical training apparatus comprising:

a supporting frame including a pair of spaced-apart side supports;

a first member having two first ends thereof pivotably connected to said pair of side supports respectively;

a second member having two second ends pivotably connected to said first member; and

a foot plate mounted on said second member and provided with a bearing member at the center thereof, a pair of footholds, a bracket having opposite downwardly extending walls which are fastened with said foot plate, with a space left between said bracket and said foot plate, a plurality of rolling ball elements provided between said foot plate and said bracket, and a plurality of pulleys mounted inside of said downwardly extending walls to provide a foot plate which is slidably and rotatably engaged with said second member.

4,618,146

VIDEO GAME APPARATUS ALLOWING FOR A VARIATION IN PLAYING SEQUENCE

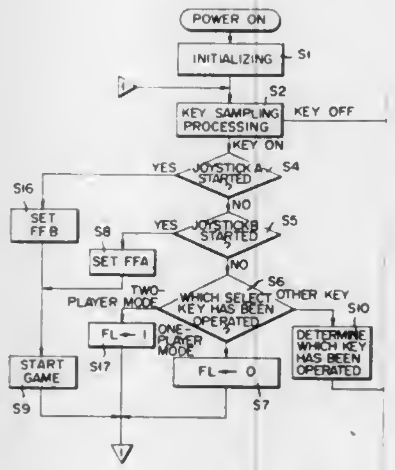
Junichi Yoshida, Tokyo, and Takashi Orimoto, Tokorozawa, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Aug. 23, 1984, Ser. No. 643,813

Claims priority, application Japan, Sep. 2, 1983, 58-161620

Int. Cl.⁴ A63F *9/22*

U.S. Cl. 273—1 E **5 Claims**



1. A video game apparatus, comprising:

a main frame for receiving operating inputs;

input means including first and second joysticks each having a start key;

mode specifying means for selectively specifying either one of a first mode in which a game is played by one player and a second mode in which the game is played by two players, wherein said mode specifying means includes a RAM containing an FL register for storing a flag corresponding to the specified mode;

control means adapted to be connected to said first joystick and said second joystick, respectively, for controlling the inputs to said main frame and including a first means to control the video game apparatus in its first mode so that only an output signal from the one of said first and second joysticks whose start key is first operated is input to said main frame,

and wherein said first and second joysticks are both capable of being operated in said first mode,

and second means to control the video game apparatus in its second mode so that an output signal of the one of said first and second joysticks whose start key is first operated is input to said main frame for starting the game and, during progression of the game, output signals from said first and said second joysticks are alternately input to said main frame;

game executing means coupled to said mode specifying means and to said control means to execute the game according to the specified mode and to supply control signals to said control means; and

display means coupled to said game executing means to display visually the results of the executed game.

4,618,147

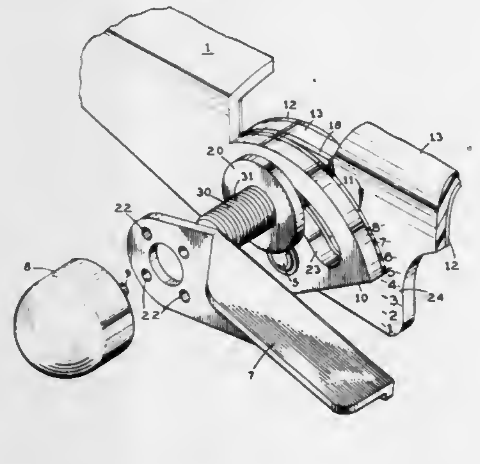
BOWLING GLOVE

Bruce Hurd, Ridgefield, Conn., and Robert Oda, Englewood Cliffs, N.J., assignors to AccuSwing, Incorporated, Easton, Conn.

Filed Jul. 2, 1985, Ser. No. 751,009

Int. Cl.⁴ A63B *71/02*

U.S. Cl. 273—54 B **2 Claims**



1. A wrist brace for a bowler, comprising:

a rigid support body for the back of the hand provided with a layer of resilient material between said support body and said bowler's hand;

a rigid support body for the forearm provided with a layer of resilient material between said support body and said bowler's forearm;

a hinge acting between said rigid support bodies;

said hinge further comprising adjustable locking means functioning to allow said bowler to lock said brace at various angles;

said adjustable locking means further comprising a calibrated angle indicating scale;

strap means to secure said support bodies firmly but removably against said bowler's hand and forearm;

said adjustable locking means further comprising a bolt on the thumb side of said wrist brace projecting through said rigid body supports for the back of the hand and forearm, and having a locking nut projecting outward from said wrist brace;

said locking nut further comprising an adjustable lever for tightening around said bolt, wherein said locking nut further comprises at least one stud slidingly engaged into various holes in said adjustable lever functioning to allow the adjustable lever to lock together said rigid body supports for the back of the hand and forearm; and

said calibrated angle indicating scale further comprising angle indicating lines marked onto said rigid support body for the forearm cooperating with a calibrated edge of said rigid support body for the back of the hand, wherein the bowler can easily see the wrist brace angle on the locking nut side while tightening said locking nut to the desired angle by means of said adjustable lever.

4,618,148

RACQUETBALL RACQUET WITH INCREASED HITTING AREA

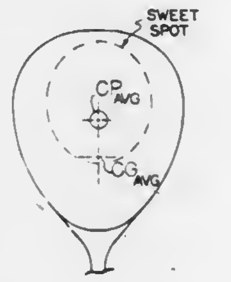
Raymond L. Mortvedt, Santee, and Steven M. Thompson, San Diego, both of Calif., assignors to Ektelon, San Diego, Calif.

Continuation of Ser. No. 560,538, Dec. 12, 1983, Pat. No. 4,531,738. This application Jul. 29, 1985, Ser. No. 760,337

The portion of the term of this patent subsequent to Jul. 30, 2002, has been disclaimed.

Int. Cl.⁴ A63B *49/12*

U.S. Cl. 273—73 C **5 Claims**



1. A racquetball racquet comprising a frame having a head connected to a handle grip so as to have an overall length of 19 to 22½ inches and a weight of 220 grams to 270 grams, said head having a strung surface of 75 to 100 square inches, the length of said strung surface in a direction along the longitudinal axis of the racquet being between 12 and 14¾ inches and between 53 and 68 percent of the length of the racquet, the sum total of the length of said frame plus the width of said strung surface being substantially greater than 27 inches, the center of gravity of the racquet being at a location within a range of ¾ inch toward the handle grip and ½ inch toward the head as measured from the longitudinal center point of the racquet, and the center of percussion average is spaced from the center of gravity toward the head a distance substantially greater than 3.6 inches.

4,618,149

GOLF CLUB HAVING INTERCHANGEABLE FACE PLATES

John M. Maxel, 38W580 W. Mary La., St. Charles, Ill. 60174

Filed Jun. 7, 1984, Ser. No. 618,245

Int. Cl.⁴ A63B *53/08, 53/06*

U.S. Cl. 273—79 **6 Claims**

1. A wood type golf club comprising:

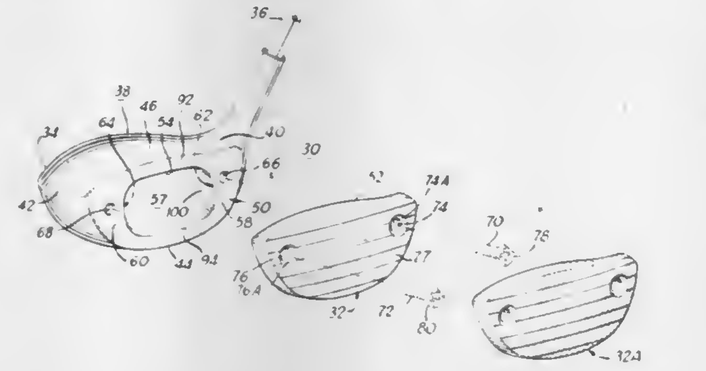
an elongated shaft; and

a metal club head secured to a lower end portion of said shaft,

said club head comprising an integrally molded body having a hollow interior with an opening outwardly onto a substantially planar front face; a plurality of interchangeable, ball engaging, metal face plates, each of said plates including a substantially planar back face having a surface and a peripheral edge matching the surface and the peripheral edge around said planar front face of said body; and a plurality of fasteners for securing a selected one of said face plates with its back face held tightly against said front face of said body to close said hollow opening of said club head in readiness for use,

each of said face plates having a ball engaging, outer face spaced apart from and opposite said back face, said outer face formed with a set of characteristics including a curved bulge from toe to heel, a curved roll from bottom to top and a degree of angular loft relative to a bottom edge, and at least one of said characteristics of one face plate being different than that of another face plate to impart a different path to a ball when struck thereby,

said club head body having spaced apart top and bottom walls extending rearwardly of said front face and a curved back wall spaced rearwardly of said front face integrally joining rearward portions of said top and bottom walls,



said body further including spaced apart toe and heel portions extending rearwardly of said front face and integrally joining opposite edge portions of said top and bottom wall and having rearward portions integrally joining upstanding opposite edge portions of said rear wall,

said top and bottom walls having a minimum wall thickness adjacent said rearward portion gradually tapering toward a maximum wall thickness at said front face above and below said hollow opening, said toe and heel portions increasing substantially in thickness from said rearward portions joining said rear wall to a maximum wall thickness at said front face which is substantially thicker than said maximum wall thickness of said top and bottom wall measured at a level on said toe and heel portions that is intermediate said top and bottom walls joined therewith.

4,618,150
GAME MACHINE WITH SELECTIVE STOP MEANS FOR MOVING DISPLAY

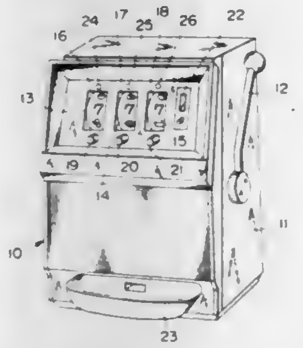
Yutaka Kimura, Tokyo, Japan, assignor to Kabushiki Kaisha Universal, Tochigi, Japan

Continuation of Ser. No. 485,048, Apr. 14, 1983, abandoned. This application Mar. 6, 1985, Ser. No. 709,344

Claims priority, application Japan, Apr. 14, 1982, 57-61000

Int. Cl.^{4} A63B *71/04*

U.S. Cl. 273—143 R **2 Claims**



1. In a game machine having player-actuated stop means for selectively stopping a plurality of sets of visible moving symbols, each set of symbols moving through a repeating cycle, said stop means comprising a stop button individual to each said set, the improvement comprising: means for detecting the position of each of said plurality of sets of visible moving symbols; and indicating means individual to each of said plurality of sets of visible moving symbols, said indicating means being responsive to said detecting means and operating once each said cycle to indicate to a player the proper time interval for stopping each of said plurality of sets of visible moving symbols so as to correspond to a winning position thereof.

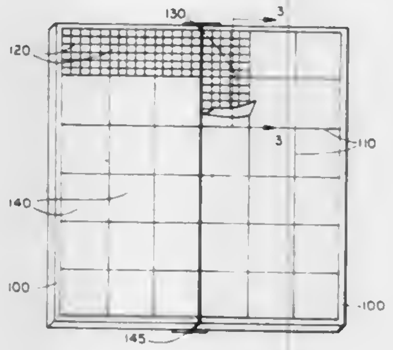
4,618,151
PEELABLY ADHESIVE GAME BOARD AND METHOD OF USE

Thomas A. Fadner, P. O. Box 3012, Oshkosh, Wis. 54903, and Nancy J. Linton, Apt. 3, 536 W. Division St., Villa Park, Ill. 60181

Filed May 14, 1984, Ser. No. 609,792

Int. Cl.^{4} A63F *3/06*

U.S. Cl. 273—148 A **4 Claims**



1. A game board for removably holding a plurality of game cards, comprising:

a plurality of board elements, foldable together, and printed to illustrate advantageous positioning of game cards on the upper surfaces of said elements;

a polymeric coating substantially coextensively applied to the printed surface of said elements;

said polymeric coating containing materials that adhesively coact indirectly with the game cards by interaction with a coacting material applied to the reverse side of the game cards, said coating also being cooperative towards application of a release agent to its surface; and

a sheet impregnated with said release agent and inserted between said board elements when they are being folded together to be stored replenishing said release agent on the surfaces of said board elements;

said adhesively coacting materials being selected to render the game cards peelably removable together with the adhesive that was coactively created, thereby rendering the surface of said board elements substantially unchanged from their original latently coactive adhesive condition and thereby providing multiple peelable affixation and reuse cycles of game cards to said board elements.

4,618,152
HONEYCOMB SEAL STRUCTURE

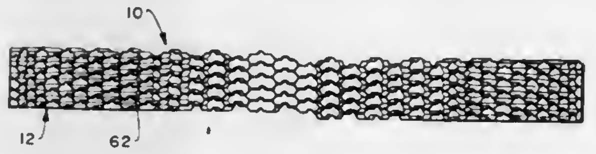
James R. Campbell, South Laguna, Calif., assignor to Thomas P. Mahoney, Balboa Island; Donald A. Ruston and Robert S. Barnes, both of Newport Beach, all of, Calif., part interest to each

Filed Jan. 13, 1983, Ser. No. 457,168

Int. Cl.^{4} F16J *15/40*

U.S. Cl. 277—53 **13 Claims**

1. In a seal for providing substantially cylindrical sealing surfaces, the combination of: a helically wound, sinuous strip whose alternate convolutions are vertically superimposed on one another; locating means on said convolutions for accurately registering said convolutions during the successive superimposition thereof; and securement means between said locating means to maintain said strip in a predetermined helical pattern.



4,618,153
ANNULAR REINFORCED WIPER FOR PISTON RODS

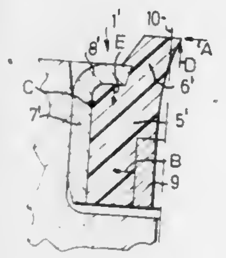
Rolf Nilsson, Eskilstuna, Sweden, assignor to Volvo BM AB, Eskilstuna, Sweden

Filed Nov. 26, 1984, Ser. No. 675,245

Claims priority, application Sweden, Dec. 1, 1983, 8306637

Int. Cl.^{4} F16J *15/32, 15/18*

U.S. Cl. 277—152 **9 Claims**



1. Annular wiper for rods intended for accommodation in a cylindrical wall opening, said opening having a cylindrical rod running therein, and comprising a reinforced ring made of an elastic, somewhat extendable material such as plastics or rubber and having a portion with an inner diameter which is slightly greater than the outer diameter of the rod, said portion being provided with a radially inwardly projecting lip with a somewhat smaller inner diameter than the outer diameter of the rod, and the reinforcement comprising a first annular portion arranged to absorb radially outwardly directed forces caused by the outwardly compressing action on the lip created by the rod, characterized in that said first portion is stiff and is disposed to serve the purpose of providing a torque centre line for the elastic ring, and in that a second annular portion is situated radially inside of said torque centre line and is arranged to absorb as a compressive force the radially inwardly directed force exerted by the elastic ring upon its turn around said torque centre line, the space between said torque centre line and the line of application of the inwardly directed force being to its greatest extent filled with the material of the elastic ring.

4,618,154
ANNULAR LIP TYPE SEALING RING WITH PRE-LOADED LIP PORTIONS

Merton L. Freudenthal, P.O. Box 1400, Gretna, La. 70053

Filed Jul. 31, 1985, Ser. No. 761,575

Int. Cl.^{4} F16J *15/18*

U.S. Cl. 277—205 **16 Claims**

1. An annular lip type sealing ring apparatus comprising:

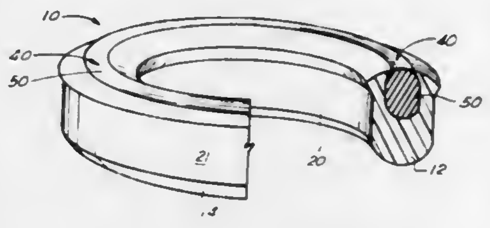
a. an annular body with U-shaped cross-section having a heel portion and two spaced apart lip portions that define a groove therebetween, the groove terminating at a closed end portion near the heel and at an opposite open end portion;

b. each lip portion having an outer free end with an outer arcuate curved surface;

c. at least one of the lip portions having respective inwardly and outwardly extending lateral projections;

d. the inwardly extending lateral projection including an inner curved surface;

e. means for preloading the lips with a load that biases the lips to spread apart prior to installation of the sealing ring in a packing space, comprising an elastomeric annular ring having a generally round cross-section before insertion into the groove and a cross-sectional diameter greater than the width of the groove so that the elastomeric annular ring defines an interference fit with the annular body when it is placed in the groove.



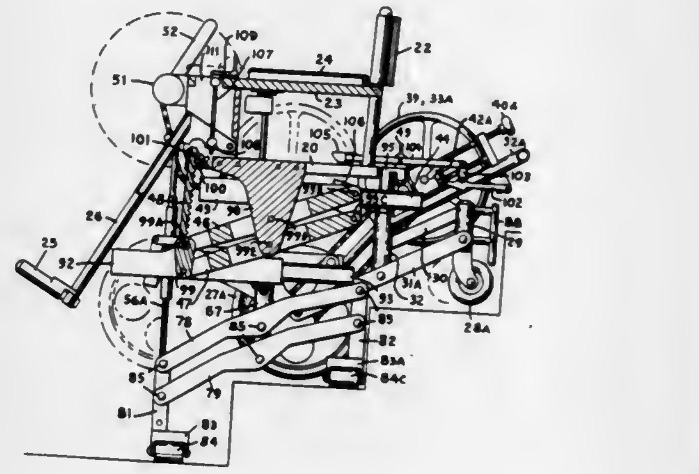
4,618,155
STAIR-CLIMBING WHEELCHAIR

Laurence I. Jayne, 510 Marshall St., Davenport, Wash. 99122

Filed Nov. 13, 1985, Ser. No. 797,436

Int. Cl.^{4} A61G *5/02*

U.S. Cl. 280—5.28 **15 Claims**



7. A stair-climbing wheelchair, comprising:

a chair assembly including a chair seat, a pair of elevating levers, one pair on each side of said chair, each comprising a pair of substantially horizontal, parallel lever members pinned at their midpoints to a post perpendicularly attached to said chair seat, whereby said post remains vertical and hence the chair level while the levers, in parallel, may pivot about the midpoint pins;

two pairs of linear bearings, each pair including one bearing on each side of said chair in horizontal alignment, each bearing including an outer race slide and an inner race slide, each outer race slide pinned to the ends of the elevating levers, said pairs of outer race slides on each side of the chair substantially in vertical alignment, pinned on the outer opposite sides and opposite ends of the elevating levers such that with respect to the chair center line, there is an outer first slide bearing and an inner second slide bearing whereby the outer and inner slides may be adjusted vertically with the slides always remaining substantially horizontal;

a wheel assembly including groups of wheels fore and aft with respect to said chair for supporting and transporting said chair, said wheels mounted on a frame pivotably attached to a vertical post member which is fixed to the horizontal inner slides of the first slide bearing, whereby the wheel groups may be articulated about said pivot and locked such that the chair is supported by said wheels, some in supporting contact with one tread or surface and some in supporting contact with another tread or surface at a different elevation;

an inner feet assembly including groups of feet supporting means fore and aft with respect to said chair for supporting said chair, said feet mounted on a frame means pivotably attached to a vertical post member which is fixed to the horizontal inner slide of the second slide bearing, whereby the feet group may be articulated in the vertical direction about said pivot and locked such that the chair is supported by said feet with some feet in supporting contact with one tread or surface and some in supporting contact with another tread or surface at a different elevation;

a means for adjusting the elevation of said outer races with respect to each other, whereby the wheels and feet may be adjusted, alternatively, between a chair-supporting position and a height greater than risers of the stairs to be climbed; and

locking means for both wheel and feet assemblies which lock the assemblies into a chair-supporting position with the chair level while the wheels or feet are articulated into supporting contact with the treads or surfaces at different elevations,

whereby climbing stairs is accomplished by a series of adjusting the feet to suport the chair, adjusting the wheels in elevation at least one-half stair riser in height, which also elevates said chair one-half as much, articulating the wheels such that a wheels group closest to the stairs clears the tread, sliding the wheels toward the stairs, whereby a supporting group of wheels rests on the tread of the first stair and another supporting wheel group remains on the level surface, locking said wheels and adjusting said wheels in elevation such that all wheels are in contact with treads and surfaces to support said chair, sliding said chair seat toward said stairs over said supporting wheels by means of both said first and second slide-bearing outer slides, wherein the sequence is repeated, alternatively adjusting the feet and wheels in elevation until the stairs are climbed.

4,618,156
VEHICLE HEIGHT CONTROL SYSTEM

Hideaki Kato, Nagoya, and Kaoru Oohashi, Okazaki, both of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Oct. 26, 1984, Ser. No. 665,067

Claims priority, application Japan, Oct. 27, 1983, 58-202433

Int. Cl.^{4} B60G *11/26*

U.S. Cl. 280—6 R **11 Claims**

1. A vehicle height control system comprising:

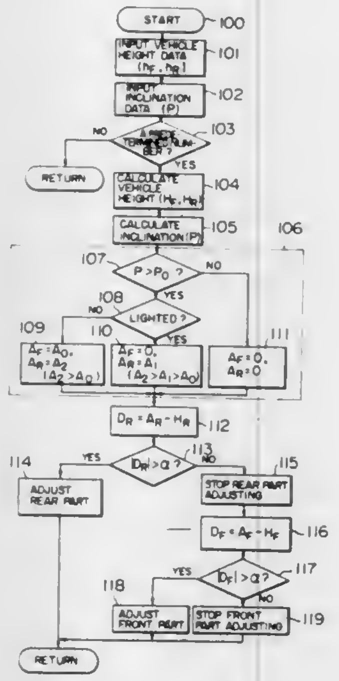
vehicle height adjust means responsive to a control signal applied thereto for adjusting respective heights of at least a front end and a rear end of a vehicle;

position signal generator means for generating actual position signals indicative of the heights of at least the front and rear ends of the vehicle;

inclination detect means for generating an inclination signal related to an inclination of a road surface on which the vehicle is running;

lighting detect means for detecting a lighting state of headlamps of the vehicle to generate a lighting signal indicative thereof;

command means for generating a first command signal which allows said vehicle height adjust means to raise the height of the rear end by a first predetermined amount relative to the height of the front end when said inclination signal indicates that the inclination of the running surface is ascending, and for generating a second command signal which allows said vehicle height adjust means to raise the height of the rear end by a second predetermined amount smaller than said first predetermined amount relative to the height of the front end when the inclination of the running surface is ascending and said lighting signal is indicating lighted lamps; and



control means for applying said control signal to said vehicle height adjust means to allow said adjust means to adjust a height difference between the front end and the rear end by comparing one of said first and second command signals with said actual position signals.

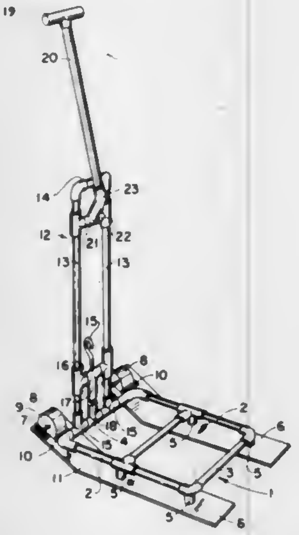
4,618,157
BEACH HAND CART

Sharon H. Resnick, 3912 Lake Front Cir. #102, Virginia Beach, Va. 23452

Filed Aug. 1, 1985, Ser. No. 761,436

Int. Cl.^{4} B62B *13/18*

U.S. Cl. 280—8 **9 Claims**



1. A manually operated hand cart comprising:

two or more skis;

each of said skis having a nominally smooth underside; the rear end of said underside of said ski being in a first plane; and

the front end of said underside of said ski being at an acute angle to said first plane;

one or more wheels;

each of said wheels being rotatably mounted onto said front end of said skis;

a base structure rigidly attached to the top of said skis;

said base structure having a front end and a rear end corresponding to said front end and said rear end of said skis, respectively;

a frame having a top end and a bottom end;

said frame being rotatably mounted to said front end of said base structure at said bottom end of said frame;

a handle means in communication with said top end of said frame by which handle means the hand cart may be pulled; and

locking means by which the position of said frame relative to said base structure may be temporarily fixed in the upright position.

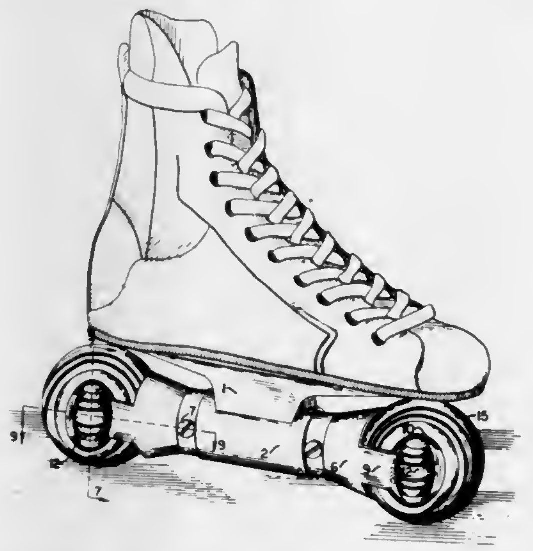
4,618,158
ROLLER SKATES FOR FIGURE SKATING

Janusz Liberkowski, 5884 Macadam Ct., San Jose, Calif. 95123

Filed Sep. 6, 1983, Ser. No. 529,372

Int. Cl.^{4} A63C *17/02*

U.S. Cl. 280—11.1 BR **12 Claims**



1. An improved roller skate comprising:

rigid foot plate means, said foot plate means being elongated and defining an axis;

housing means affixed to a first side of said foot plate means;

first and second carrier yoke means, said carrier yoke means each having two pair of outwardly extending generally parallel arms;

means supporting said carrier yoke from opposite ends of said housing means, said supporting means positioning said carrier yoke means so that the arms thereof extend in opposite directions and generally parallel to said foot plate means axis;

two pairs of first rollers, said rollers each having an axis of rotation and an outer surface which is convex with respect the axis of rotation;

first bearing means for rotatably supporting respective of said first rollers between the spaced arms of said pairs of arms of said carrier yoke means whereby a pair of said first rollers are supported with their axes of rotation substantially parallel from each of said carrier yoke means

a pair of second rollers, said second rollers each having an axis and an outer surface which is convex with respect to the axis of rotation thereof; and

second bearing means on each of said carrier yokes for rotatably supporting a respective one of said second rollers thereon, with the axes of rotation thereof lying substantially in respective of a pair of substantially parallel planes defined by the axes of rotation of said first rollers of each pair, said planes being substantially transverse to the axis of said foot plate means, the convex surfaces of said first rollers of each pair cooperating with the convex surface of one of said second rollers to define a skate wheel having a generally circular configuration when viewed in said planes.

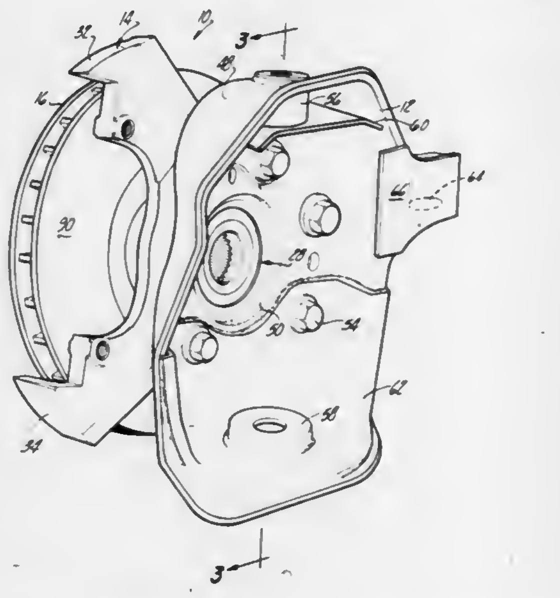
4,618,159
STEERING KNUCKLE ASSEMBLY

William L. Kozyra, Rochester; Andrew B. MacIsaac, Livonia, and Vincent J. Santoro, East Detroit, all of Mich., assignors to The Budd Company, Troy, Mich.

Filed Nov. 13, 1984, Ser. No. 670,983

Int. Cl.^{4} B62D *7/18*

U.S. Cl. 280—93 **30 Claims**



1. The steering knuckle assembly for a vehicle wherein said steering knuckle assembly is adapted for use with a driven wheel comprising:

a steering knuckle housing in the from of a generally concave shell, said shell having a generally flat major face and including peripheral edge flange portions extending generally transversely to the major face; and means formed in at least one of said flange portions providing a mounting location for suspension components of said vehicle;

an aperture formed in the major face of said shell through which said driven axle extends;

a bearing carrier member having a flange portion and a transversely extending internal bore, said bearing carrier member further includes a pair of integrally formed torque arms to which a brake caliper assembly can be mounted whereby said member serves as a torque plate thereof;

a hub having a radially extending flange and a generally radially extending flange portion having means therein for engaging said axle, and

bearing means mounted in said bearing carrier bore for providing rotatable engagement with said hub.

4,618,160
RECUMBENT VEHICLE

Lloyd McElfresh, 8706 Gross Point Rd., Skokie, Cook County, Ill. 60077

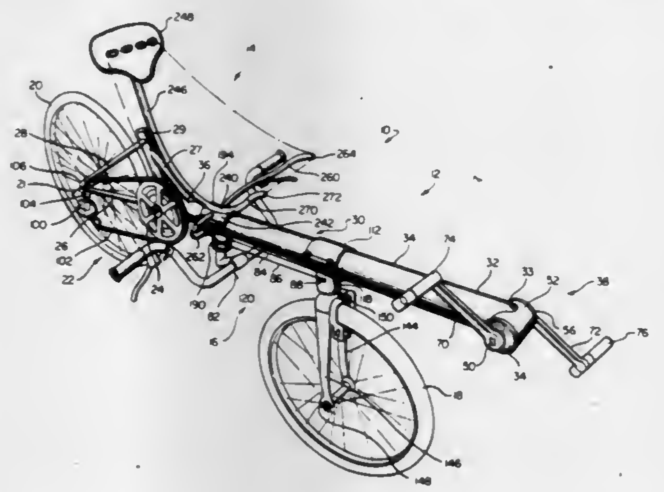
Filed Mar. 1, 1985, Ser. No. 707,453

Int. Cl.^{4} B62M *1/02;* B62K *3/00*

U.S. Cl. 280—281 LP **19 Claims**

1. In a vehicle adapted to be operated by a rider in a recumbent position, including a frame having a front portion and a rear portion, a crank assembly including foot pedals supported on the front portion of the frame, a front wheel support pivotably attached to the frame intermediate the front portion and the rear portion of the frame and rotatably supporting a front wheel, a rear wheel rotatably supported by the rear portion of the frame including a rear wheel axle rigidly supporting a rear wheel sprocket, a seat supported on the frame generally intermediate the front wheel support and the rear wheel, and a steering means including a handlebar pivotably supported on the frame generally adjacent the seat and interconnected with the front wheel support, the improvement wherein said frame comprises:

an elongated tubular support means having a front portion rotatably supporting said crank assembly, a center portion supporting said seat and a rear portion rotatably supporting said rear wheel, said elongate tubular support means being adapted to substantially entirely enclose within its interior a primary drive means comprising a crank sprocket means rigidly supported by said crank assembly and interconnected by a power transfer means to an inner drive sprocket means rigidly supported by a drive shaft means interconnected by a secondary drive means to said rear wheel, said primary drive means providing for transfer of power supplied from rotation of said crank assembly from said crank sprocket to said inner drive sprocket and to said secondary drive means and to said rear wheel.



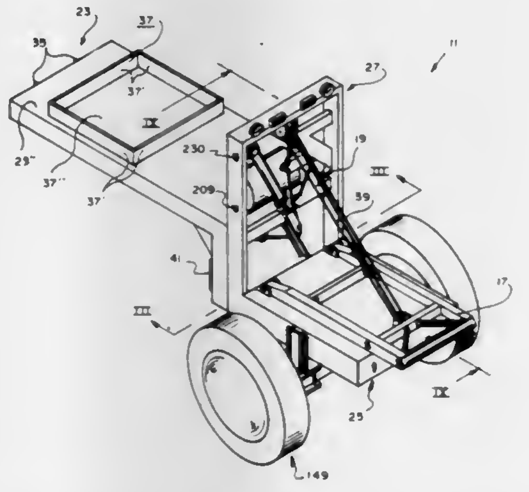
4,618,161
TOWING DEVICE

John M. McNeill, Memphis, Tenn., assignor to James K. McNeill, Senatobia, Miss.

Filed Jul. 12, 1985, Ser. No. 754,612

Int. Cl.⁴ B60P *3/12*

U.S. Cl. 280—402 **7 Claims**



1. A fifth wheel tractor-trailer towing apparatus adapted to be connected to a towing tractor for towing a disabled tractor-trailer, said apparatus comprising:

- (a) body means for being attached to the towing tractor; said body means having first and second ends and having an upwardly extending mast located between said first and second ends thereof; said mast having an upper end and a lower end;
- (b) arm means for movement between one or more raised positions and a lowered position, said arm means having a first end for being pivotally attached to said body means and having a second end; said first end of said arm means being pivotally attached to said body means substantially adjacent said lower end of said mast;
- (c) lifting means for moving said arm means between said raised and lowered positions, said lifting means including an elongated cable member for joining said body means and said arm means to one another in such a manner that adjustment of said cable member will cause said arm means to move between said raised and lowered positions, said lifting means including adjustment means for linearly adjusting the length of said cable member without causing said cable member to be wound up; said cable member extending between a point substantially adjacent said upper end of said mast and a point substantially adjacent said second end of said arm means; said adjustment means including piston means for engaging said cable member and movable between a contracted position in which said arm means is in said lowered position and an extended position in which said arm means is in said raised position; said piston means having a first end attached to said mast of said body means and having a second end for engaging said cable member; said adjustment means including a first sheave member attached to said arm means substantially adjacent said second end thereof, and including a second sheave member attached to said second end of said piston means; said cable member including a first end attached to said mast of said body means, including a first bight portion extending about said first sheave member, including a second bight portion extending about said second sheave member, and including a second end attached to said mast of said body means;
- (d) coupling means for coupling the front of the disabled tractor-trailer to said second end of said arm means and for causing the front of the disabled tractor-trailer to be raised when said second end of said arm member is moved to said raised position; and
- (e) wheel means for being mounted on said body means and for rollably supporting said body means.

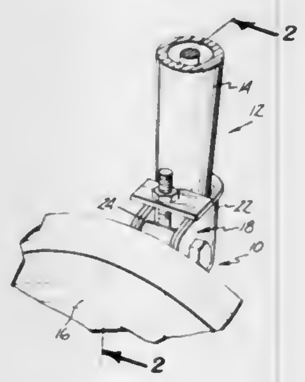
4,618,162
DEVICE AND METHOD FOR ADJUSTING CAMBER IN A STRUT-TYPE VEHICLE SUSPENSION

John Specktor, Golden Valley, and Gerald A. Specktor, St. Paul, both of Minn., assignors to Shim-A-Line, Inc., Minneapolis, Minn.

Filed Aug. 29, 1985, Ser. No. 770,744

Int. Cl.⁴ B62D *17/00*

U.S. Cl. 280—661 **12 Claims**



1. A device for adjusting camber of a wheel attached to a vehicle by a strut-type suspension having a strut member, the wheel supported by a wheel support member having first and second spaced-apart apertures, bracket means fixedly attaching the wheel support member to the strut member, the bracket means having two side portions extending on opposite sides of the wheel support member and each side portion having first and second apertures alignable with the first and second apertures of the wheel support member, respectively, and a first bolt extending through the first apertures of the wheel support member and the side portions of the bracket means, the device comprising:

- a wedge member having an angularly disposed edge surface extending between a first end portion and a second end portion narrower than the first end portion, the wedge member being positionable between the support member and the strut member;
- a second bolt having a shaft portion of a substantially smaller diameter than the second apertures of the wheel support member and the side portions of the bracket means insertable through the second apertures; and
- retaining and positioning means for retaining the wedge member in a fixed position between the support member and the strut member and for positioning the wedge member between the support member and the strut member to adjust camber.

4,618,163
AUTOMOTIVE CHASSIS

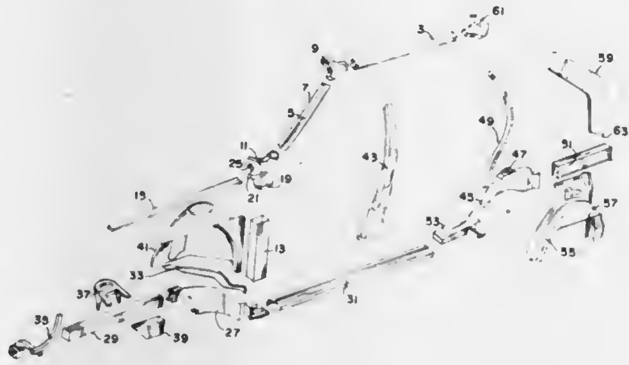
Franz Hasler, Am Hasel 3,, D-8071 Wettstetten; Ernst Mönch, Gaimersheimer Strasse 19, D-8070 Ingolstadt; Karl Reiter, Salvatorstrasse 16, D-8071 Wettstetten, and Heinrich Timm, Chemnitzerstr. 7, D-8070 Ingolstadt, all of Fed. Rep. of Germany

Filed Dec. 18, 1984, Ser. No. 682,934

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1983, 3346986

Int. Cl.⁴ B62D *27/04*

U.S. Cl. 280—785 **17 Claims**



1. An automotive chassis, comprising:

- a plurality of tubular members connected together to form a support structure, each tubular member comprising at least one axially extending integral portion of non-circular cross-section; and
- means for connecting said tubular members by at least partially internesting engagement with said axially extending non-circular portions and comprising a plurality of means for receiving said non-circular portions and complementing the cross-section thereof for internesting therewith.

4,618,164
SEATBELT ASSEMBLY

Nobuyuki Ryu, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Mar. 29, 1985, Ser. No. 717,870

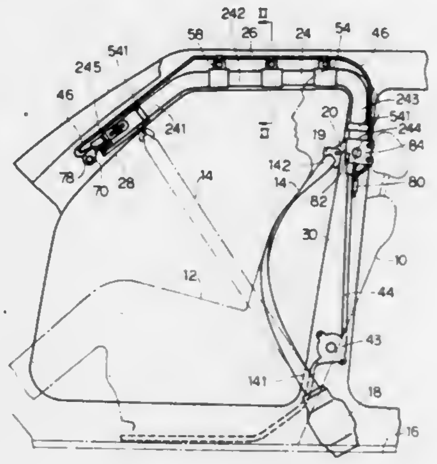
Claims priority, application Japan, Sep. 28, 1984, 59-146742[U]

Int. Cl.⁴ B60R *21/10*

U.S. Cl. 280—804 **24 Claims**

1. A seatbelt assembly for automatically fastening a restraining webbing around an occupant in a vehicle, comprising:

- a guide rail having a first and a second end and a longitudinal guide groove running therebetween;
- a slider which is displaceable along said longitudinal groove, said restraining webbing being fastened at one end thereof to said slider;
- a detecting means for detecting arrival of the slider at said end of said guide rail;
- a connecting wire connected to said detecting means; and
- a detecting means assembly located at said first end of the guide rail for holding said connecting wire, said detecting means assembly comprising an anchor bracket for fixing said detecting means assembly to said vehicle, a first flange connected to said anchor bracket, said first flange having a C-shaped cross section, said connecting wire bending around said C-shaped cross section and a second flange which is connected to said anchor bracket at a first end thereof, said second flange having a lateral plane which is substantially perpendicular to a longitudinal plane of said anchor bracket, said connecting wire contacting an upper surface of said second flange.



4,618,165
DEFLECTION DEVICE FOR SAFETY BELTS

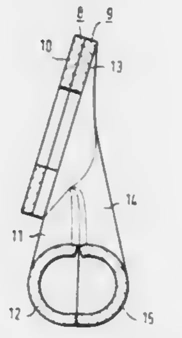
Helmut Seifert, and Karl Möndel, both of Schwäbisch Gmünd, Fed. Rep. of Germany, assignors to REPA Feinstanzwerk GmbH, Aldorf, Fed. Rep. of Germany

Division of Ser. No. 38,326, May 11, 1979, Pat. No. 4,508,286. This application Jan. 23, 1985, Ser. No. 693,730

Claims priority, application Fed. Rep. of Germany, May 12, 1978, 7814486

Int. Cl.⁴ B60R *22/00*

U.S. Cl. 280—808 **3 Claims**

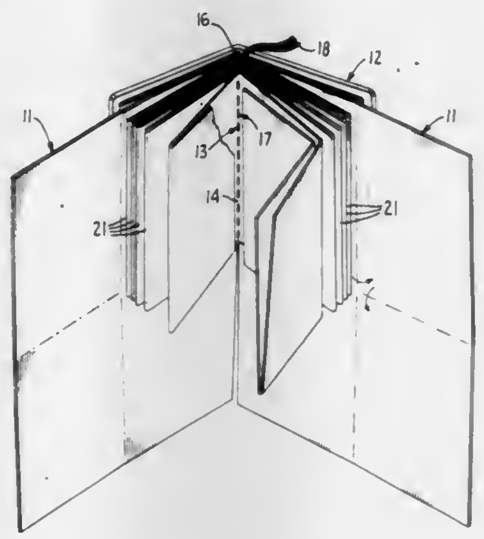


2. A deflection device around which a safety belt for a motor vehicle is turned, said deflection device including a first frame section having a first flat mounting portion with parallel major side surfaces, said first flat mounting portion having an opening therein, said first frame section having a first cross bar portion which is connected at its opposite ends to said first mounting portion and cooperates with said first mounting portion to define a first safety belt receiving opening, said first cross bar portion curving in a first direction from straight upper and lower edge portions and having a generally semicircular cross sectional configuration, a second frame section having a second flat mounting portion with parallel major side surfaces, said second flat mounting portion having an opening therein, said second frame section having a second cross bar portion which is connected at is opposite ends to said second mounting portion and cooperates with said second mounting portion to define a second safety belt receiving opening, said second cross bar portion curving in a second direction from straight upper and lower edge portions and having a generally semicircular cross sectional configuration, and fastener means for interconnecting said first and second frame sections with major side surfaces of said first and second mounting portions in flat abutting engagement and with the opening in the mounting

portion of said first frame section aligned with the opening in the mounting portion of said second frame section, said fastener means interconnecting said first and second frame sections with the upper and lower edge portions of the cross bar portions disposed in engagement to form a cross bar having a generally circular cross sectional configuration and with the first and second safety belt receiving openings in alignment.

4,618,166
NOTEBOOK CONSTRUCTION

Peter H. Y. Hsi, 615 Piikoi St., Suite 2001, Honolulu, Hi. 96814
Filed Sep. 20, 1984, Ser. No. 652,507
Int. Cl.⁴ B42D *1/00, 9/00*
U.S. Cl. 281—15 R **7 Claims**



1. A notebook comprising:

a plurality of rectangular superposed sheets of paper with each such sheet having a central fold and having additional symmetric folds such that each sheet is folded in eighths, thus dividing each sheet into eight generally equal sections;

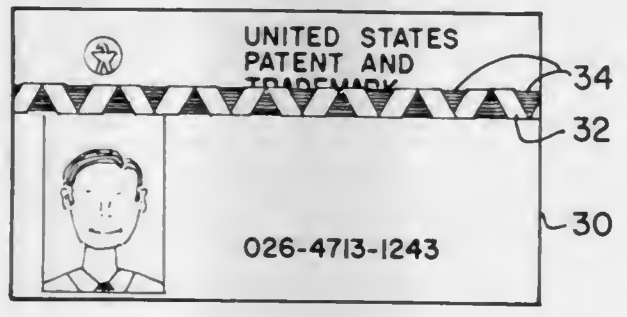
a cover folded in halves with each half approximately the length and width of each of said sheets when folded in eighths,

and means for securing said superposed sheets to each other and to said cover along one half of said central fold of said superposed sheets and the fold of said cover,

the other half of said central fold of said sheets being cut through such that each of said sheets is selectively foldable into eighths to be confined within said cover and selectively unfoldable to provide pages in even multiples of the length and width of said sheets when fully folded.

4,618,167
SECURITY FILAMENT FOR USE IN IDENTIFICATION CARDS

Edwin N. Whitehead, 6208 Tally Ho La., Alexandria, Va. 22307
Filed Feb. 9, 1984, Ser. No. 578,650
Int. Cl.⁴ B42D *15/00*
U.S. Cl. 283—75 **9 Claims**



1. A security identification card, comprising

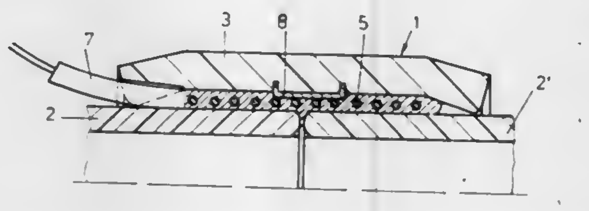
(a) an indicia bearing surface,

(b) a filament positioned on at least a portion of said surfce, said filament comprising a core of twisted unplasticized polyvinyl chloride microfilaments and metal foil spirally wrapped around said core to provide a substantially uniform spacing between the helicies of said spiral wrapping,

(c) a clear, transparent, polymeric cover where the heat and pressure of lamination flatten said foil, melt said core and form an integral body.

4,618,168
APPARATUS FOR THE HEAT-SEALING THERMOPLASTIC CONDUITS WITH A BRIDGING CONDUCTOR

Alfred Thalmann, Uhwiesen, and Ernesto Lehmann, Schaffhausen, both of Switzerland, assignors to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland
Filed Feb. 2, 1984, Ser. No. 576,333
Claims priority, application Switzerland, Feb. 4, 1983, 638/83
Int. Cl.⁴ F16L *47/02*
U.S. Cl. 285—21 **14 Claims**



1. An apparatus for heat-sealing thermoplastic conduits, comprising:

a coupling element;

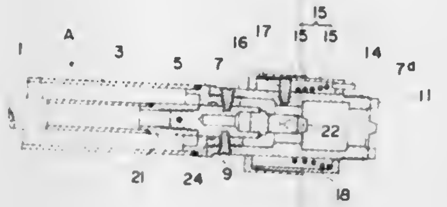
an electrically conductive heating element within said coupling element;

at least one bridging conductor adjacent said heating element, but spaced therefrom by insulation, said bridging conductor having a length substantially less than that of said heating element such that only a portion of said heating element is bridged by said bridging conductor upon displacement of said insulation; and

means for compressing said coupling element about the conduits.

4,618,169
CONNECTING MECHANISM FOR POLE MEMBERS

Seitaro Go, Tsuruga, Japan, assignor to Yugen Kaisha GO Chuzo Tekkosho, Fukui, Japan
Filed Dec. 16, 1982, Ser. No. 450,399
Claims priority, application Japan, Dec. 21, 1981, 56-206779
Int. Cl.⁴ F16L *19/00*
U.S. Cl. 285—86 **4 Claims**



1. A connecting mechanism for pole members comprising, a pole member (A) having a male screw (*7a*) on the periphery of an end thereof and a fittingly engaging portion (**11**) at the end face thereof,

another pole member (B) having a fittingly engaging portion (**12**) at an end face thereof to engage with the fittingly engaging portion (**11**) of the said pole member (A) in the rotation axis thereof,

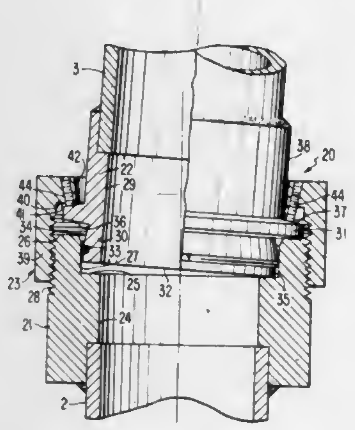
a threaded member (**10**) of tubular shape mounted on the said another pole member (B) to be rotatable and within a predetermined range movable in the axial direction thereof, the threaded member being provided with, on the inner wall thereof, a screw engagable with the said male screw (*7a*) of the said pole member (A) and a plurality of openings (**13**) at an end face thereof,

a tubular member (**15**) mounted on the end of the said pole member (A) to be rotatable and movable in the axial direction thereof within a predetermined range, said rotation and movement in the axial direction of the tubular member (**15**) being obtained by a projection (**16**) fixed to said pole member (A) and by a guide groove (**17**) formed with said tubular member (**15**), said tubular member being provided with at least a pin (**14**) engagable with the said openings (**13**),

a spring (**18**) urging the said tubular member (**15**) in the direction of engagement of the pin (**14**) and in the direction of tightening of the threaded member (**10**), whereby the said pole member (A) and the said another pole member (B) are fixedly connected by selectingly engaging the pin (**14**) with one of the openings (**13**) in the state that the tubular member (**15**) is rotated against the urging force of the spring (**18**), and further wherein said guide groove (**17**) comprises a cam face (**17***a*) formed to be capable of keeping the pin (**14**) in the disengaging position in which the pin is released from the opening (**13**) against the urging force of the spring (**18**) in the direction of engagement of the pin when the tubular member (**15**) is rotated maximally toward the returning direction of the spring (**18**), and a slanted cam face (**17***b*) formed to be capable of producing, by contacting the projection (**16**), a component force (F'2) in the direction of tightening of the threaded member (**10**) by the urging force (F2) of the tubular member (**15**) in the direction of engagement of the pin (**14**) when the pin (**14**) is selectively fittingly engaged when the opening (**13**) in the state that the tubular member (**15**) is rotated against the urging force of the spring (**18**).

4,618,170
COUPLED PIPES AND SEALED UNIONS THEREFOR

Francis B. Fishburne, 174 Weston Rd., Arden, N.C. 28704
Filed Nov. 26, 1985, Ser. No. 801,943
Int. Cl.⁴ F16J *15/00;* **F16L** *27/00*
U.S. Cl. 285—90 **3 Claims**



3. In a union for coupling a first tubular member to one end of a pipe when the other end of the pipe is offset from the longitudinal axis of the first tubular member, the combination of

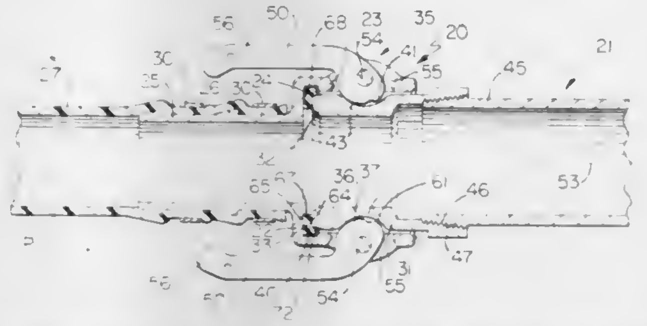
a rigid female member having
  a fluid-conducting bore,
  a transverse annular outwardly projecting shoulder at the end of the bore which is opposite the first tubular member when the female member is secured thereto, and
  a cylindrical sealing surface extending from said shoulder and coaxial with the bore, the sealing surface terminating at a transverse annular end face of the female member,
  the body of the female member being externally threaded adjacent said end face; and
a rigid male member having
  a fluid-conducting bore of substantially the same diameter as the bore of the female member,
  a nose portion dimensioned to be received within the space defined by the sealing surface of the female member and having an end face capable of engagement with said shoulder of the female member,
  a transverse annular outwardly projecting flange spaced from the end face of the nose portion by a distance such that, when the end face of the nose portion engages said shoulder of the female member, said flange is at least immediately adjacent to the end face of the female member,
  said nose portion further including
  a transverse annular outwardly opening groove,
  a sealing ring seated in said groove, and
  an outer surface portion extending from the groove to the flange and tapering at a small angle from a larger diameter at the groove to a smaller diameter at the flange,
  the outer surface portion of the nose portion between the groove and the end face of the nose portion being of such shape and dimensions as not to come into interfering contact with the sealing surface of the female member when the male member is tilted at a predetermined small angle relative to the axis of the female member;
a nut member comprising
  an internally threaded ring portion in threaded engagement with the externally threaded portion of the female member, and
  a transverse annular inwardly projecting flange spaced from the end face of the female member,
  the flange of the male member extending outwardly into the space between the flange of the nut member and the end face of the female member,
  the inwardly projecting flange of the nut member having a plurality of threaded through bores spaced apart circumferentially of the flange and directed toward the flange of the male member; and
a plurality of screw members engaged each in a different one of the threaded bores of the flange of the nut member and having their ends in engagement with the adjacent face of the flange of the male member;
the male member being tilted relative to the longitudinal axis of the female member at an angle not exceeding said predetermined angle,
  the angle of tilt of the male member and the space between the end face of the female member and the flange of the nut member being such that a first radial portion of the flange of the male member is in engagement with the end face of the female member, a second radial portion of the flange of the male member which is diametrically opposite said first radial portion is in engagement with the flange of the nut member, and a radial portion of the end face of the nose portion is in engagement with the shoulder of the female member.

4,618,171
QUICK CONNECT-DISCONNECT COUPLING

Richard L. Fahl, Cincinnati, Ohio, assignor to Dover Corporation, Cincinnati, Ohio
Filed Aug. 18, 1983, Ser. No. 524,739
Int. Cl.⁴ F16L *35/00*
U.S. Cl. 285—93 **20 Claims**

1. In a quick connect-disconnect coupling for fluid conduit means comprising, a coupler member adapted to be connected in said conduit means and having a first tubular outer end and a first sealing surface, an adapter member adapted to be connected in said conduit means and having a second tubular outer end and a second sealing surface, said second tubular end being

adapted to be received within said first tubular end, cam means for connecting and disconnecting said members comprising first cam means carried by said first tubular end and second cam means carried by said second tubular end, and seal means disposed between said sealing surfaces for providing a fluid-tight seal between said members with said first and second cam means connected and with said members in a first axial position thereof, said first and second cam means respectively having cam surfaces, one of said first and second cam means being movable relative to its respective tubular outer end in one direction of continuous opening movement thereof from a fully connected position of its said cam surface with said cam surface of the other of said first and second cam means with said members in said first axial position thereof to a fully disconnected position of said cam surfaces so that said members can be completely disconnected from each other, said cam surfaces of said first and second cam means acting against each other during disconnection of said members as said one cam means is being continuously moved through said opening movement thereof to provide an axial disconnecting movement of said members from said first axial position thereof until a particular second axial position thereof is reached at which second axial position the disconnecting movement of said members is reversed and becomes an incremental axial connecting movement for a predetermined increment to a third axial position of said members before allowing said members to be completely disconnected whereby in the event fluid under pressure is present in said conduit means having said members connected therein said incremental connecting movement of said members is subjected to resistance by said fluid under pressure, said resistance being transmitted through said members as an opposing force which serves to impede said incremental movement by resisting any opening force applied to said one cam means, said opposing force being detectable and once detected serves as a warning that the pressure of said fluid under pressure must be relieved before completely disconnecting said members, the improvement wherein said seal means provides said fluid-tight seal between said members during the entire time said members are being moved from said first axial position thereof to said third axial position thereof and thereby is adapted to transmit at least part of said opposing force to said members.



4,618,172
DUAL-WALL DRILL PIPE

Floyd W. Becker, R.R. 9, Site 1, Box 15, Calgary, Alberta, Canada
Continuation of Ser. No. 461,699, Sep. 10, 1982, Pat. No. 4,565,394. This application Aug. 1, 1985, Ser. No. 761,365
Claims priority, application Canada, Feb. 24, 1982, 396949
Int. Cl.⁴ F16L *21/00*
U.S. Cl. 285—141 **15 Claims**

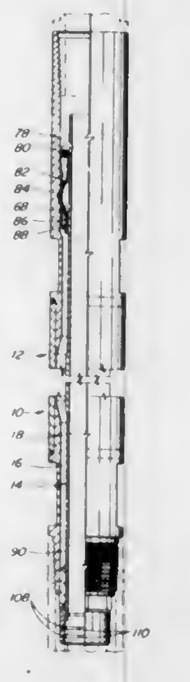
1. A dual-wall drill pipe section for a drill string, formed from a plurality of serially connected drill pipe sections, for use in drilling in earth formations, said drill pipe section comprising, in combination:

an outer pipe member having an internally threaded box end, an externally threaded pin end, internal shoulder means extending inwardly from the bore of said outer pipe member;

an inner pipe member adapted to be concentrically disposed within and telescoping moveable inwardly and outwardly of said outer pipe member, external shoulder means extending outwardly of the outer periphery of said inner pipe member and being engageable with said internal shoulder means for axially supporting said inner pipe member, against downward movement only, in said outer pipe member when said section is in an upright position whereby axial loads applied in a downward direction to said inner pipe member are transferred to said outer pipe member;

resilient detent means associated with said inner and outer pipe members for applying or biasing force urging said inner pipe member to a desired axial location within said outer pipe member while permitting relative axial displacement of said pipe members to move said external and internal shoulder means axially apart upon application of opposed axial forces to said members sufficient to overcome said biasing force

whereby axial loads applied in a downward direction to said outer pipe member are transmitted to said inner pipe member substantially only to the extent required to overcome said biasing force.



4,618,173
SWIVEL COUPLING ELEMENT

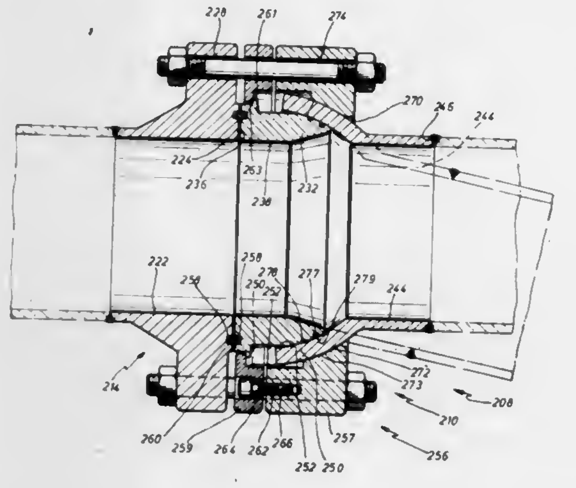
Emil E. Dopyera, and Jack E. Miller, both of Houston, Tex., assignors to Big-Inch Marine Systems, Inc., Houston, Tex.
Continuation of Ser. No. 271,114, Jun. 8, 1981, abandoned, which is a continuation-in-part of Ser. No. 196,527, Oct. 14, 1980, Pat. No. 4,381,871. This application Oct. 17, 1984, Ser. No. 661,875
The portion of the term of this patent subsequent to May 3, 2000, has been disclaimed.
Int. Cl.⁴ F16L *27/06*
U.S. Cl. 285—261 **55 Claims**

1. A swivel coupling element adapted to be coupled to a conventional or standard annular coupling flange which has a generally planar leading end defined by a leading end of an annular flange portion and by a seating face proximate the leading end, the annular flange portion having a plurality of circumferentially spaced stud holes for use in coupling the conventional or standard annular coupling flange to another annular coupling flange, the swivel coupling element comprising:

an annular mounting flange having a trailing end, having a leading end which defines a seating face for cooperating with the seating face of such a conventional or standard annular coupling flange, and having a segmental spherical surface which is on the trailing side of the leading end of the annular mounting flange;

(b) a tubular member having a trailing end for connection to a tubular element, and having a leading end having a segmental spherical surface which is complementary to the segmental spherical surface of the mounting flange to cooperate therewith; and

(c) an annular retainer flange which has a bore through which the trailing end of the tubular member extends, the bore having a minimum diameter which is smaller than the maximum diameter of the leading end of the tubular member, the annular retainer flange being connected to the mounting flange by connection means for preventing axial separation of the two flanges and thus form the assembled swivel coupling element in which the leading end of the tubular member is held captive between the annular retainer flange and the annular mounting flange while permitting pivotal displacement of the tubular member relatively to the annular mounting flange, and which, in its assembled condition, is adapted to be coupled to such a conventional annular coupling flange, the annular retainer flange having a plurality of circumferentially spaced stud holes which correspond with the stud holes of such a conventional or standard annular coupling flange for receiving bolts or studs for bolting the retainer flange of the assembled swivel coupling element onto such a conventional annular coupling flange to thereby generally seal the seating face of the annular mounting flange with a seating face of such a conventional annular coupling flange, and to thereby draw the annular retainer and mounting flanges towards each other into locking engagement with the leading end of the tubular member for fixing the tubular member relatively to the annular mounting flange and generally seating a portion of the segmental spherical surface of the tubular member against a portion of the segmental spherical surface of the mounting flange.



4,618,174
POWER OPERATED DOOR OPENER LOCK SYSTEM

James P. Duke, 3511 Tenaya, South Gate, Calif. 90280
Filed Dec. 19, 1983, Ser. No. 563,282
Int. Cl.⁴ E05C *19/10*
U.S. Cl. 292—135 **2 Claims**

1. A system for locking a power operated door comprising:

(a) an overhead, horizontally pivoted door mounted in a door frame;

(b) a power operated door opener arm for opening and closing said door;

(c) driving means connected to said door arm;

(d) power means connected to said driving means;

(e) latching means for locking said door in a closed position wherein said latching means is a self-locking latch, containing a latching dog, mounted between the header of said door and the header of said door frame and activated by said power operated door arm;

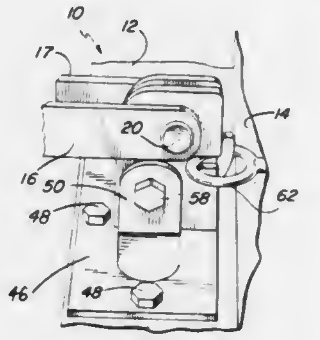
(f) a striker mounted on said door frame header adapted to engage and receive said latching dog and hold said door in a locked position;

(g) a mounting bracket to mount said latch to said door header;

(h) releasing means to disengage said latching dog;

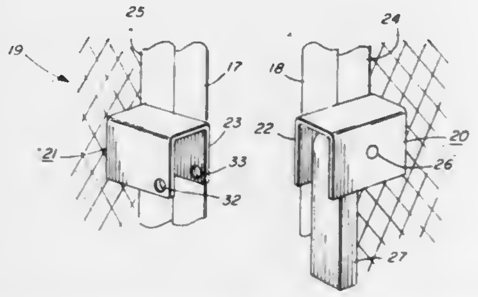
(i) first and second latch side plates with a fixed spacer fitted therebetween, and

(j) a hook member whose thickness is less than said spacer and pivotally attached to said side plates wherein said hook member will freely move and rotate about said pivot and engage said striker by gravity force.



4,618,175
FREEZE RESISTANT GATE LATCH

Robert W. Smith, Bloomington, Ill., assignor to General Telephone of Illinois, Bloomington, Ill.
Filed Jul. 3, 1985, Ser. No. 751,639
Int. Cl.⁴ E05C *3/04*
U.S. Cl. 292—205 **1 Claim**



1. A latch in combination with a first and a second gate, each of said gates having a pivot end and a free end, said latch comprised of:

(a) a pivot housing having a channel horizontally attached to the free end of said first gate, said channel having a top and two sides;

(b) a bar having a first end pivotally mounted in said pivot housing and arranged to hang vertically, and to rotate to a horizontal position; and

(c) a receiver housing having a channel horizontally attached to the free side of said second gate, said channel having a top and two sides;

said receiving housing arranged to be aligned with said pivot housing when said gates are in a closed position, said receiving housing for receiving part of said bar when said bar is in a horizontal position, and including means for accepting a lock or other means for holding said bar in a horizontal position.

4,618,176
WINDOW OPENER

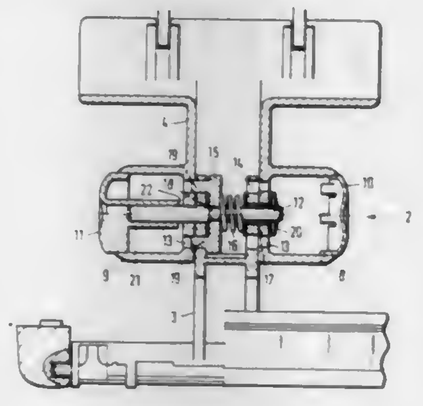
Rolf Farmont, Düsseldorf, Fed. Rep. of Germany, assignor to ASC Auto Spezial Carosserie Vertrieb GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Dec. 6, 1983, Ser. No. 558,640

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1982, 3246396; Jun. 4, 1983, 3320343

Int. Cl.⁴ E05C *17/34*

U.S. Cl. 292—263 15 Claims



1. In an opening device comprising a toggle lever joint comprising two levers which are attached at respective ends to an openable part and to a stationary part respectively and are permanently pivotally connected at other ends of the levers to each other forming a permanent single pivot, via a toggle joint having a detent mechanism and a pivot pin passing through the two levers, the detent mechanism comprising at least one detent disk mounted displaceably in an axial direction of the pivot pin and operatively disengagable from one of the levers against spring force and connected non-rotatably to the other of said levers, said detent disk having face surfaces and axially projecting detent elements distributed on one of the face surfaces, said detent elements cooperating with corresponding detent parts respectively of said one lever in respectively engaged conditions such that the openable part can be held fixed in various open positions relative to said stationary part, the improvement comprising

a grip receiving said detent mechanism and said pivot pin comprising two coaxial short grip arms which project laterally on both sides from said one lever in the axial direction of said pivot pin,

means comprising a push button for operatively disengaging said detent disk from said one lever by pushing said push button such that said detent elements disengage from said detent parts of said one lever, said push button being arranged axially displaceably in one of said grip arms for said pushing, and

said disengaging means further comprises said pivot pin, said pivot pin being axially displaceable in said grip, said pivot pin engaging at one end thereof said push button and at another portion thereof said detent disk,

said first-mentioned respective ends are freely pivotally connected to said stationary and openable parts respectively but axially immovable relative thereto,

said two levers have said detent parts forming a plurality of closed detent holes, said detent elements of said detent disk are in engagement in said engaged conditions with respective said detent holes in both of said two levers,

said levers are U-shaped and have U flanks on both sides of said detent disk, said detent holes are formed in said U flanks, and

said levers are axially immoveable at said toggle joint, said U-flanks of one of said levers overlying and abutting respective said U-flanks of said other lever and defining thereat coaxially aligned openings, said pivot pin extending axially displaceably but nonremovably through said aligned openings.

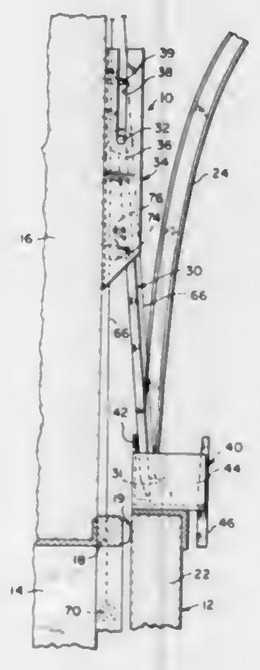
4,618,177
AUTOMATIC LATCHING MECHANISM FOR OVERHEAD DOORS

Robert F. Schultz, 134 Wedgewood Ave., Woodbridge, N.J. 07095

Filed Sep. 4, 1984, Ser. No. 646,524

Int. Cl.⁴ E05C *17/44;* E05D *15/06*

U.S. Cl. 292—338 12 Claims



1. A latching device for overhead-type doors which are mounted for movement between a closed position and a raised position with respect to a door opening defined by a frame, said latching device comprising:

a pivotable arm having a pivot end and an engagement end;

mounting means for mounting said pivot end of said arm above the door opening for pivoting movement about a substantially horizontal axis between a first position and a second position;

said engagement end of said arm being adapted to engage a first latch portion associated with said door when said door is in said closed position and said arm is in said first position, and adapted to engage a second latch portion associated with said door when said door is in said raised position and said arm is in an intermediate position between said first and second positions, said first latch portion comprising a first latch bracket adapted to be mounted to said door adjacent an upper portion of said door; and

the arrangement of said arm relative to said door being such that said door is prevented by said arm from moving into said raised position from said closed position unless said arm is first moved toward said second position out of engagement with said first latch bracket and such that said door is prevented by said arm from moving from said raised position to said closed position unless said arm is first moved from said intermediate position toward said second position out of engagement with said second latch portion, and said first latch bracket including a counterbalanced pin member for preventing accidental pivoting movement of said arm as a result of an attempt to move said door from said closed position toward said raised position, said pin member being operative to freely permit said engagement end of said arm to move in a first direction past said pin member into said first position and operative to prevent movement of said engagement end of said arm in a second direction from said first position toward said second position.

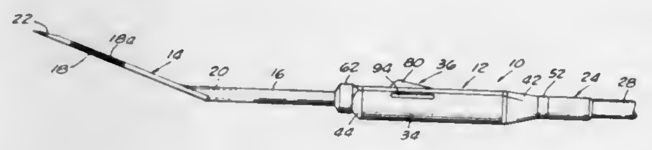
4,618,178
HAND HELD VACUUM ACTUATED PICKUP INSTRUMENT

Clifford L. Hutson, 1860 Idlewood Rd., Glendale, Calif. 91202, and Leonidas C. Miller, Monterey Park, Calif., assignors to Clifford L. Hutson, Glendale, Calif.

Filed Jun. 7, 1985, Ser. No. 742,472

Int. Cl.⁴ B25J *15/06*

U.S. Cl. 294—64.1 11 Claims



1. In a hand held vacuum actuated pickup instrument, the combination comprising:

an elongated body,

means arranged at one end of the body for receiving a vacuum pickup means, tail stock means arranged at an opposite end of the body for connection with a vacuum source, and

valve means arranged within the elongated body, the valve means further comprising

(a) a tubular element forming a passage extending axially through the body for communicating the pickup means with the tail stock means,

(b) a vent opening being formed by the tubular element, the vent opening being of elongated configuration to facilitate more rapid venting of the axial passage by the valve member,

(c) a spring-loaded valve member having a valve element overlying the vent opening, an exposed lever portion attached to one end of the valve element and fulcrum means providing for pivotal movement of the valve element by the lever portion, and

(d) means for applying the spring load on the valve member normally biasing the valve element into closed engagement with the vent opening for producing a vacuum condition in the pickup means, the valve member being operable by the lever portion for selectively exposing the vent opening and terminating the vacuum condition in the axially extending passage and in the pickup means.

4,618,179
METHOD OF UNLOADING A VESSEL BY MEANS OF A CRANE ARRANGED ON AN OFFSHORE PLATFORM AND A CRANE ADAPTED TO CARRY OUT THIS METHOD

Johannes J. Mampaeij, 98 Abeelstraat, 3329 AG Dordrecht, Netherlands

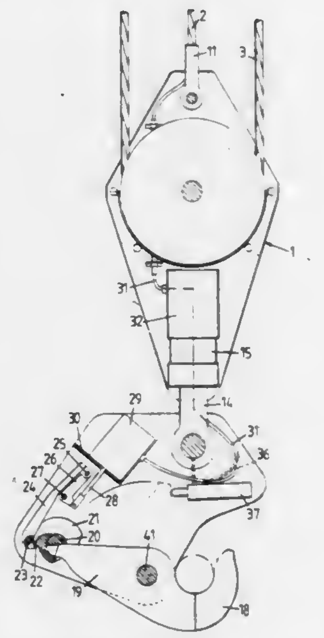
Filed Sep. 4, 1984, Ser. No. 646,528

Claims priority, application Netherlands, Feb. 14, 1984, 8400467

Int. Cl.⁴ B64D *17/38*

U.S. Cl. 294—82.31 4 Claims

1. In a crane for loading and unloading cargo, said crane including a cargo hook assembly comprising a block including cable pulleys rotatably carried by a pair of spaced parallel plates, a horizontally disposed bearing carried by said plates and disposed below said pulleys, a cargo hook structure including a vertically disposed shaft including means pivotally securing said shaft to said structure and extending upwardly through said bearing and affixed thereto to permit horizontal rotation of said structure, said structure further including a second pair of spaced parallel side plates, the lower portions of which are shaped to form a portion of a hook-like configuration, a hook portion pivotally mounted between the last said side plates at a point spaced inwardly from said hook-like configuration for movement about a horizontal axis from an outward load carrying position to an inward and downward load releasing position, an inwardly extending locking arm coupled to said hook portion and positioned between the last said side plates, releasable locking means between the last said side plates for holding said locking arm and hook portion in



said load carrying position, and remotely controlled means carried by said assembly for releasing said locking means to permit movement of said hook portion from said load carrying position to said load releasing position.

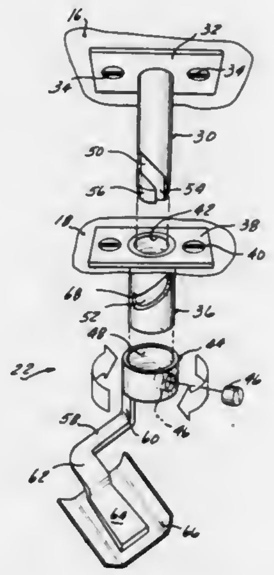
4,618,180
LATCHING MECHANISM FOR CONVERTIBLE TOP

Peter P. Muscat, 14980 Waterfall Rd., Northville, Mich. 48167

Filed Sep. 3, 1985, Ser. No. 772,126

Int. Cl.⁴ B60J *7/185*

U.S. Cl. 296—120 A 6 Claims



1. In an automobile convertible body having an enclosed passenger compartment including a convertible top frame with a transversely extending header member and a windshield frame including transversely extending windshield frame upper member overlain by said header member with said top frame in the raised position, adapted to be latched together, the improvement of a pair of laterally spaced latching mechanisms, each latching mechanism comprising:

an elongated post member fixedly mounted at one end to one of said top or windshield frame members:

a tubular socket fixedly mounted to the other of said top or windshield frame members, each located and adapted to slidably receive a respective post member upon raising movement of said top frame to cause said top and windshield frame members to overlie each other;

a cam ring, each slidably received over a respective socket to be rotatable thereon;

said post formed with a cam groove recessed into the surface thereof, progressing in axial and circumferential directions about the axis of said post;

said socket formed with a through slot also extending in axial and circumferential directions about the axis of said socket;

said groove and slot on said post and socket respectively having portions brought into axial alignment upon movement of said post into said socket, and each of said grooves and slots diverging axially from said aligned portions;

said post having an axially extending groove section extending from the free end of said post in circumferential alignment with said portion of said groove aligned axially with said portion of said slot;

said cam ring having a projection extending radially inward through said slot and into said groove upon movement of said post to be received within said socket;

lever means for enabling rotation of said cam ring, rotation of said cam ring of each of said pair of latching mechanism thereby moving said frame members so as to draw said top and windshield frame members together.

4,618,181
AUTOMOBILE ROOF STRUCTURE

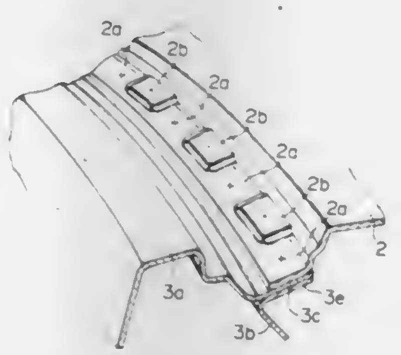
Makoto Tokuda, Hiroshima, and Takami Kimoto, Kure, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 7, 1985, Ser. No. 709,229

Claims priority, application Japan, Mar. 15, 1984, 59-37340[U]

Int. Cl.⁴ B62D *27/02, 25/07;* **B23K** *11/10*

U.S. Cl. 296—191 **6 Claims**



1. An automobile roof structure comprising a main roof panel having opposite side edge portions, a pair of auxiliary roof panel assemblies, each of the auxiliary roof panel assemblies extending along a side edge portion of the main roof panel, each side edge portion of the main roof panel being defined by a stepped down portion to form a groove at a junction between the main roof panel and an auxiliary roof panel, each of said auxiliary roof panel assemblies including an outer panel having a laterally inner flange and a laterally outer flange and an inner panel having a laterally inner flange and a laterally outer flange, the inner and outer flanges of said outer panel being welded to the inner and outer flanges, respectively, of said inner panel to form a structure of a closed cross-section, said main roof panel stepped down portions including a plurality of projections spaced apart from each other along a length of the side edge portion, said inner flanges of the outer and inner panels of the auxiliary roof panel assembly being welded together at portions where the projections of the main roof panel are located, said projections overlying and enclosing within the groove the inner flange weld portions, said side portion of the main roof panel being welded to the inner flange of the outer panel of the auxiliary roof panel assemblies at portions between said projections of the main roof panel.

4,618,182
SUN ROOF FOR A VEHICLE

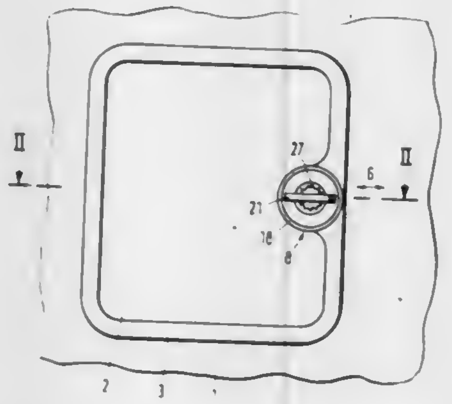
Rolf Farmont, Düsseldorf, Fed. Rep. of Germany, assignor to Farmont Produktion GmbH & Co. KG, Düsseldorf, Fed. Rep. of Germany

Filed Feb. 8, 1985, Ser. No. 699,651

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1984, 3404693; Jul. 7, 1984, 3425103

Int. Cl.⁴ B60J *7/08*

U.S. Cl. 296—223 **23 Claims**



1. A sun roof for a vehicle comprising a cover plate for closing an opening in the roof, the cover plate having front and rear edges and being pivotally secured to the roof at the front edge thereof, the rear edge of the cover plate being adapted to move vertically with respect to the roof plane, and an adjusting device mounted on the vehicle roof for moving the rear edge of the cover plate, the adjusting device comprising spring means extending between the vehicle roof and the cover plate for applying a spring force to the cover plate to urge the rear edge thereof vertically upwardly, flexible pulling means acting against the spring force and having one end attached to the cover plate in the zone of the rear edge of the cover plate, drive shaft means operatively connected with the other end of the flexible pulling means for moving the other end of the flexible pulling means to provide for movement of the rear edge of the cover plate, and locking means for locking the other end of the flexible pulling means in a predetermined position to thereby retain the cover plate from movement beyond a predetermined position.

4,618,183
MULTI-PURPOSE FURNITURE PIECE

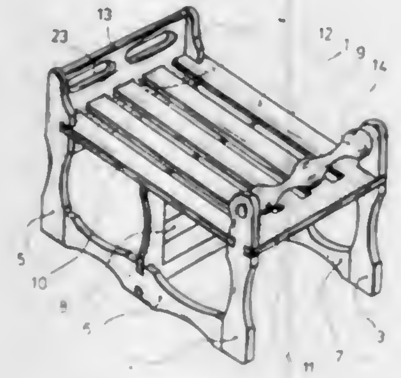
Karl-Heinz Bauer, Lerchenstrasse 9, D-8740 Bad Neustadt-/Saale, Fed. Rep. of Germany

Continuation of Ser. No. 502,669, Jun. 9, 1983. This application Dec. 30, 1985, Ser. No. 815,746

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1982, 3222497

Int. Cl.⁴ A47C *13/00;* **A47B** *85/00*

U.S. Cl. 297—2 **9 Claims**



1. In a multi-purpose furniture piece containing a rectangular seat plane having two longitudinal sides, two transverse sides and four legs extending at right angles to said seat plane, one of said legs being rigidly connected to each corner of said seat plane, at the intersection of a longitudinal side and a transverse side of said seat plane, the improvement which comprises:

(a) two longitudinal rungs, each of said rungs having its outer ends affixed to the free ends of two legs located on the same longitudinal side of said seat plane;

(b) a wall rigidly connected to said seat plane and to said rungs and extending parallel to said first and second transverse sides and vertically to said seat plane, said wall being located at a substantially equal distance from each of said transverse sides, said wall being adapted to serve as a first stepping surface when said furniture piece is oriented in a stepladder position, with two of said legs at an end of said seat plane are substantially horizontal and adjacent a floor surface; and

(c) an end plane located at and affixed to one of the transverse sides of said seat plane, said end plane having a smaller dimension parallel to said legs then the length of said legs, said end plane being adapted to serve as a second stepping surface at a height above said first stepping surface when said furniture piece is oriented in said stepladder position.

4,618,184
FOLDABLE CHAIR FRAME

Samuel E. Harvey, Coventry, England, assignor to Andrews Maclaren Limited, Northampton, England

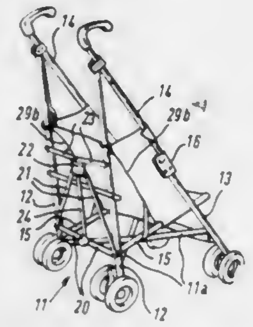
PCT No. PCT/GB83/00233, § 371 Date May 11, 1984, § 102(e) Date May 11, 1984, PCT Pub. No. WO84/01133, PCT Pub. Date Mar. 29, 1984

PCT Filed Sep. 21, 1983, Ser. No. 611,007

Claims priority, application United Kingdom, Sep. 23, 1982, 8227214

Int. Cl.⁴ B62B *7/14*

U.S. Cl. 297—19 **4 Claims**



1. A flexible chair frame, comprising: two back members and two upper brace members, each back member being connected to a corresponding upper brace member at a junction; a seat back movable between an upright position attached to the upper brace members and a lie-back position attached to the back members; and support means for facilitating movement of the seat back into and out of its upright and lie-back positions, the support means comprising two links respectively pivoted at their upper ends to the junctions between the two back members and the two upper brace members and at their lower ends, formed with resiliently deformable hooks which are permanently engageable with the seat back and releasably engageable with the back members and with the upper brace members so that the support means is releasably engageable with the upper brace members and back members of the frame when the seat back is in its upright and lie-back positions, respectively.

4,618,185
ERGONOMIC CHAIR

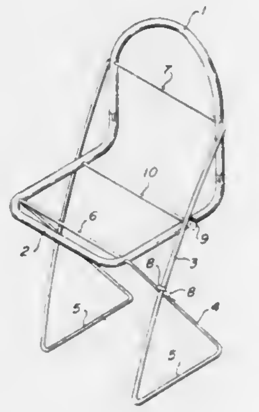
Yaacov Kaufman, 17 Alexander Yanai, Tel-Aviv, Israel

Filed Sep. 18, 1985, Ser. No. 777,263

Claims priority, application Israel, Sep. 19, 1984, 73031

Int. Cl.⁴ A47C *3/00*

U.S. Cl. 297—285 **10 Claims**



1. An ergonomic chair characterized in that it comprises:
a substantially rigid seat structure (2,2′),
a substantially rigid back structure (1,1′), articulated to the seat structure,
a base (5,5′) resting on the floor,
a legs structure comprising on each side a pair of crossing legs (3,3′,4,4′), one (4,4′) of which is articulated at the upper end to the front portion of the seat structure (2,2′), is provided with a slider (8,8′) for the other leg (3,3′) and is bound at the lower end to the base (5,5′), whereas the other leg (3,3′), which is elastically bending deformable, is articulated at the upper end to the back structure (1,1′), leans against a back stud (9,9′) applied to the seat structure (2,2′), engages with the slider (8,8′) foreseen in the other leg (4,4′) and is bound at the lower end to the base (5,5′).

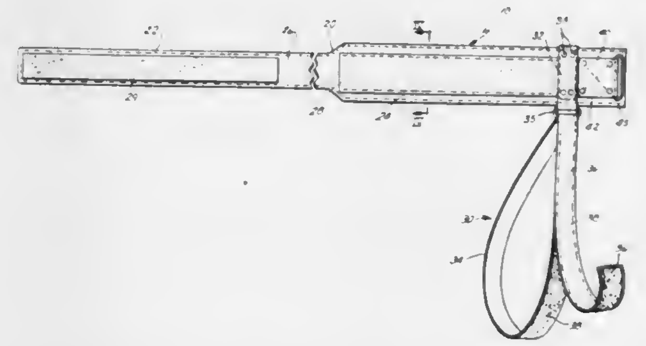
4,618,186
CHILD SAFETY RESTRAINT

Alfred B. Swanson, 2945 Bonnell SE., Grand Rapids, Mich. 49506

Filed Jan. 16, 1985, Ser. No. 691,840

Int. Cl.⁴ A47D *15/00*

U.S. Cl. 297—468 **1 Claim**



1. An adjustable child restraint, comprising:
a waistband having a wide portion of substantial width merging at one end into an elongated narrow portion of reduced width, said waistband being formed from two pieces of material laid one on top of the other and seamed together along the edges thereof;
an anchor strap attached to said wide portion of said waistband adjacent to a free end thereof;
a first D-ring secured to said anchor strap for receiving said narrow portion of said waistband after said wide portion is wrapped around a child's waist;
a first hook means and a first napped loop means attached to the outer surface of said waistband wherein said first hook

means is attached to the outer surface of one of said narrow and wide portions and said first napped loop means is attached to the outer surface of the other of said narrow and wide portions, whereby said waistband, after being wrapped around a child's waist, may be secured in place by threading said narrow portion through said first D-ring and doubling back said narrow portion over said wide portion so that said first hook and said first loop means on said portions can be engaged;

an elongated securing strap for looping around an anchoring object, said securing strap having an attached end, an attached portion, a free portion and a free end, wherein said attached end is attached to one surface of said wide portion near a lateral edge thereof adjacent said first D-ring; said attached portion extending across the outer surface of said wide portion and being doubled back through a second D-ring adjacent the opposite lateral edge of said wide portion, and then passed back over itself and folded over the first lateral edge and then across the opposite face of said wide portion;

said second ring being adapted to receive said free end of said strap after said free portion of said strap has been looped around an anchor object; and

a second hook means and a second napped loop means wherein said second hook means is attached to and extends along approximately half the length of said free portion of said securing strap and said second napped looped means is attached to and extends along the other half of the length of said free portion, whereby said securing strap is secured after being looped around an anchor object and passed behind and through said second D-ring by engagement with said second hook means on the one half of said free portion with said second napped loop means on the other half of said free portion.

4,618,187

WIRE WHEEL

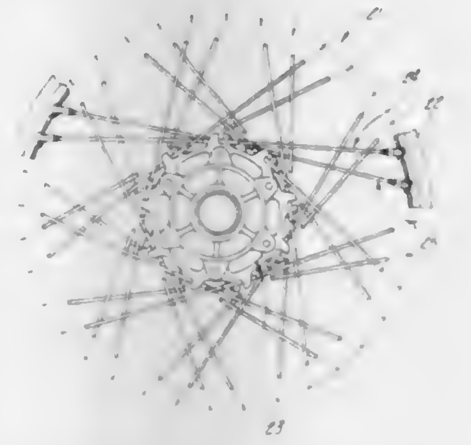
Masae Watanabe, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation-in-part of Ser. No. 571,912, Jan. 18, 1984, abandoned. This application Apr. 13, 1984, Ser. No. 600,130

Claims priority, application Japan, Apr. 15, 1983, 58-65712; Apr. 15, 1983, 58-65713; Apr. 15, 1983, 58-65714; Apr. 15, 1983, 58-65715; Apr. 15, 1983, 58-65716; Apr. 15, 1983, 58-65717; Apr. 15, 1983, 58-65718; Apr. 30, 1983, 58-76974

Int. Cl.^{4} B60B *1/04*

U.S. Cl. 301—56 **6 Claims**



1. A wire wheel having a hub portion, a rim portion, and a plurality of spokes interconnecting said hub and said rim portions, said spokes being arranged in pairs comprising a first end portion fixed at its outer end to said rim portion and a second end portion fixed at its outer end to said rim portion, an intermediate portion integrally connecting the inner ends of said end portions and lying at an angle to said end portions and affixed to said hub portion, the improvement comprising said intermediate spoke portion being connected to said spoke end portions by respective curved parts, said end portions each being disposed at an angular relation to the intermediate portion with the angle between each end portion and the intermediate portion being different from the other, the angle encompassed by said end portions being less than 180°, said hub portion having an opening receiving said spoke intermediate portion for affixing said spokes to said hub portion, said opening being formed with a diameter larger than the diameter of the spoke intermediate portion and being curved on its opposite faces at the same radius as the corresponding curved parts of the intermediate portion.

4,618,188

HYDRAULIC ANTI-SKID APPARATUS FOR AUTOMOTIVE VEHICLES

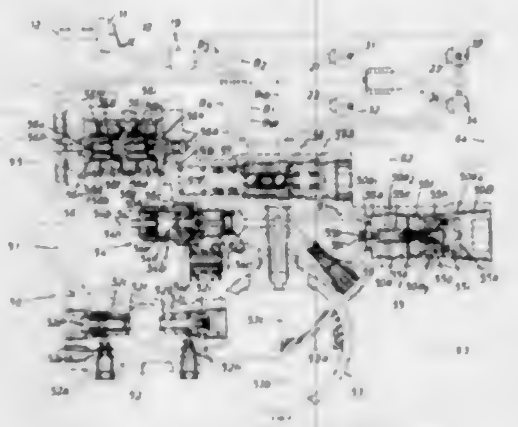
Takumi Nishimura, Chiryu, and Tadao Saito, Nagoya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Aug. 13, 1985, Ser. No. 765,124

Claims priority, application Japan, Aug. 13, 1984, 59-169073

Int. Cl.^{4} B60T *8/10*

U.S. Cl. 303—116 **8 Claims**



1. A hydraulic anti-skid apparatus for installation in a vehicle braking system between a master cylinder and a wheel brake cylinder, comprising:

a main body formed therein with a single cylinder the one end of which is closed by a closure member fixed thereto, said cylinder being provided with an inlet port for connection to said master cylinder and an outlet port for connection to said wheel brake cylinder;

a cut-off valve including a valve seat arranged within said cylinder to permit the flow of fluid between said inlet and outlet ports therethrough, and a valve element arranged to cooperate with said valve seat to block the flow of fluid from said inlet port to said outlet port when engaged with said valve seat;

a first piston axially slidably disposed within one end portion of said cylinder to be applied at one end thereof with a braking pressure from said master cylinder through said valve seat and at the other end thereof with a hydraulic power pressure from a power pressure source, said first piston being associated with said valve element to disengage said valve element from said valve seat while the hydraulic power pressure is applied thereto and to be displaced outwardly by the braking pressure when released from the hydraulic power pressure to effect engagement of said valve element with said valve seat and subsequently to increase a capacity downstream of said valve seat;

a bypass valve including first and second valve seats arranged within said cylinder coaxially with the valve seat of said cut-off valve and axially spaced to each other to form a valve chamber in open communication with said outlet port, said first valve seat forming a bypass passage between said inlet and outlet ports, and said second valve seat being in communication with the valve seat of said cut-off valve to permit therethrough the flow of fluid from the valve seat of said cut-off valve to said valve chamber, a second valve element contained within said valve chamber to permit the flow of fluid passing through said second valve seat when engaged with said first valve seat and to permit the flow of fluid passing through said bypass passage when engaged with said second valve seat, and a spring interposed between said valve element of said cut-off valve and said second valve element; and

a second piston axially slidably disposed within the other end portion of said cylinder to be applied at one end thereof with the braking pressure and at the other end thereof with the hydraulic power pressure, said second piston being associated with said second valve element to maintain engagement of said second valve element with said first valve seat against said spring while the hydraulic power pressure is applied thereto and to effect engagement of said second valve element with said second valve seat when released from the hydraulic power pressure.

4,618,189

VEHICLE HYDRAULIC BRAKING SYSTEM WITH ANTI-SKID PRESSURE CONTROL MEANS

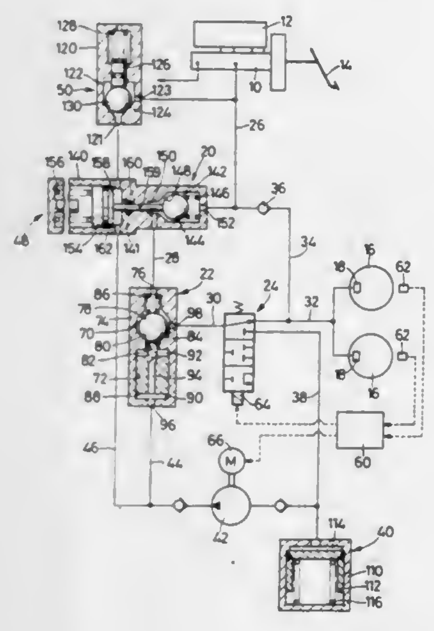
Nobuyasu Nakanishi, and Yoshihisa Nomura, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 9, 1985, Ser. No. 764,226

Claims priority, application Japan, Aug. 15, 1984, 59-170724

Int. Cl.^{4} B60T *8/08*

U.S. Cl. 303—116 **7 Claims**



1. A hydraulic braking system with anti-skid pressure control means for applying a brake to a drive wheel of an automotive vehicle, having (a) a master cylinder for generating a fluid pressure in response to an operation of a manually-operated member, (b) a brake having a brake cylinder actuated by the fluid pressure generated by the master cylinder, for restraining the rotation of a drive wheel of the vehicle, (c) a primary fluid passage connecting the master cylinder and the brake cylinder to feed a brake fluid from the master cylinder to the brake cylinder, (d) a solenoid valve disposed in the primary fluid passage and selectively placed in one of a first operating position for communication of the brake cylinder with the master cylinder, and a second operating position for communication of the brake cylinder with a reservoir, the solenoid valve being switched between the first and second operating positions under the control of a controller, to control a level of a braking pressure in the brake cylinder for preventing an excessive amount of slip of the drive wheel, (e) a pump for pumping the brake fluid from the reservoir and returning the pumped fluid via a pump passage to the primary fluid passage at a point thereof between the master cylinder and the solenoid valve, (f) a shut-off valve disposed in a portion of the primary fluid passage between the master cylinder and said point, the shut-off valve being closed to prevent a flow of the brake fluid therethrough in a direction from the pump toward the master cylinder when the pressure on one side of the shut-off valve on the side of the pump is higher than that on the other side on the side of the master cylinder, and (g) an accumulator disposed in a fluid passage connecting the pump and the solenoid valve, the accumulator having an accumulator housing, an accumulator piston slidably received in the accumulator housing, and biasing means for biasing the accumulator piston in one axial direction thereof, the accumulator piston cooperating with the accumulator housing to define a storage chamber of a variable volume in which the brake fluid is stored under a relatively high pressure, wherein the improvement comprises:

a check valve disposed in a portion of said primary fluid passage between said master cylinder and said shut-off valve, and adjacent to said accumulator, said check valve inhibiting a flow of the brake fluid therethrough in a first direction from said master cylinder toward said shut-off valve and allowing a flow of the brake fluid therethrough in a second direction opposite to said first direction, said check valve including a check valve seat and a check valve member adapted to be seated on said check valve seat; and

a valve-control mechanism disposed between said accumulator and said check valve for controlling said check valve, said valve-control mechanism holding said check valve member away from said check valve seat to allow the brake fluid to flow in said first direction while said accumulator piston is placed in its fully advanced position in which the volume of said storage chamber is minimum, said valve-control mechanism permitting said check valve member to be seated on said check valve seat after said accumulator piston has been retracted a small distance away from the fully advanced position.

4,618,190

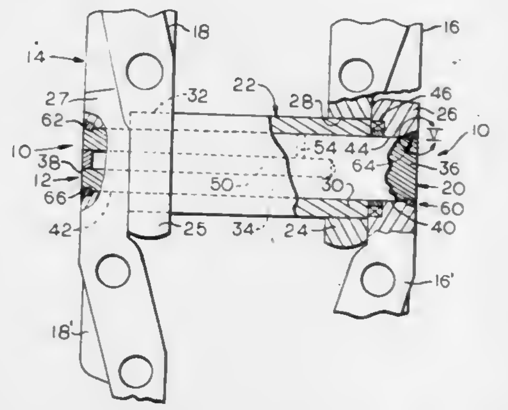
TRACK JOINT RETAINING APPARATUS

James A. Garman, Eureka, Ill.; Stephen D. Swift, Yacolt, Wash.; Richard E. Livesay, Peoria, and Arlyn J. Arians, Washburn, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation-in-part of Ser. No. 476,909, Mar. 18, 1983, abandoned. This application May 16, 1985, Ser. No. 734,526

Int. Cl.^{4} B62D *55/20*

U.S. Cl. 305—39 **40 Claims**



1. Apparatus for retaining a track joint, said track joint having a pin and a pair of links, each link having a bore and said pin having first and second end portions each mounted within a respective one of said link bores, comprising:

each of said pin end portions having a groove extending around at least a portion of the circumference of its end portion, each groove having a surface facing in a generally axially inward direction;

each bore of said links having an outwardly opening socket, each socket having a surface facing in a generally axially outward direction, said sockets and respective grooves being in registry with one another and cooperatively defining a respective one of a pair of retainer cavities; and

a formed-in-place retainer disposed and formed within and substantially conforming to the shape of each of said retainer cavities, each retainer having a shear strength sufficient to maintain its respective link against outward axial movement on said pin during operation of said track joint.

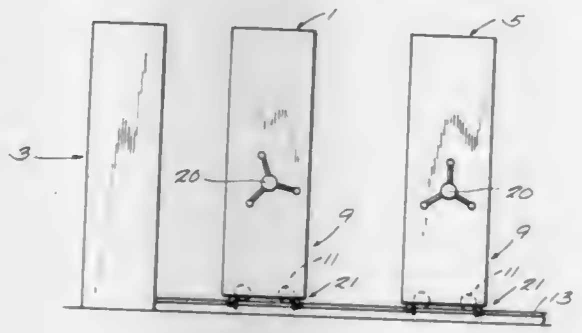
4,618,191
ANTI-TIP DEVICE

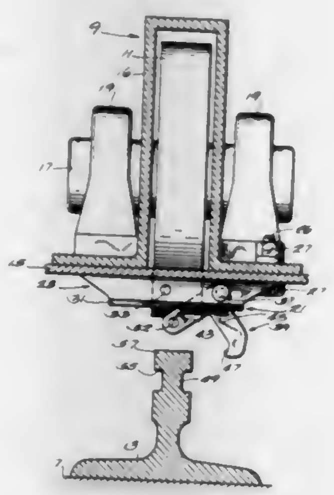
Robert J. Peterman, Hartland, Wis., assignor to Spacesaver Corporation, Fort Atkinson, Wis.

Filed Jan. 25, 1985, Ser. No. 694,847

Int. Cl.⁴ B61F *9/00;* **A47B** *53/00*

U.S. Cl. 312—201 **11 Claims**





3. In a mobile storage system having a carriage and a plurality of wheels mounted thereon for rolling the carriage longitudinally along a fixed path, at least one anti-tip device for preventing tipping of the carriage comprising:

a. a plurality of rails for supporting the carriage wheels, each rail defining a longitudinal groove having an undercut surface;

b. bracket means for mounting to the carriage and defining an aperture therethrough having a longitudinal axis parallel to the direction of carriage motion;

c. an anti-tip arm pivotally mounted to the bracket means for pivoting in a plane transverse to the direction of carriage motion along the rails, the anti-tip arm being formed with a first extension defining an aperture therethrough alignable with the aperture in the bracket means and a second extension defining a hook adapted to slide within the rail groove proximate the rail undercut surface when the arm and bracket means apertures are aligned; and

d. a locking pin selectively insertable through the aligned apertures in the bracket means and arm first extension to thereby render the anti-tip arm operative by preventing the arm from pivoting about the bracket means and removable from the arm and bracket means apertures to thereby render the anti-tip arm inoperative by permitting the arm to pivot relative to the bracket means,

so that when the anti-tip arm is in the operative mode a force tending to tip the carriage is resisted by the arm hook bearing against the rail undercut surface.

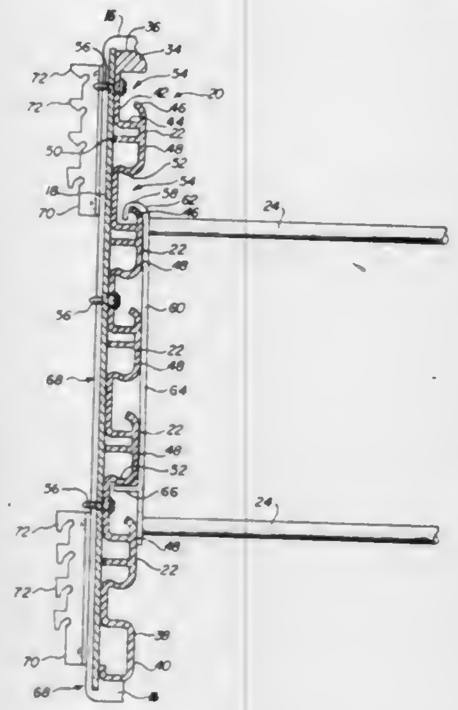
4,618,192
CABINET WITH HANGER RAILS

James O. Kelley, Spring Lake, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.

Filed Mar. 14, 1985, Ser. No. 711,975

Int. Cl.⁴ A47B *67/02*

U.S. Cl. 312—245 **14 Claims**



1. In a wall-mountable cabinet, the combination of a top wall, a bottom wall, two side walls and a back wall; at least one mounting bracket secured to the cabinet and having a plurality of rearwardly-projecting and downwardly-depending tabs adapted to engage slotted vertical standards mounted to the wall; and

a rail means secured to said back wall, comprising a plurality of vertically spaced, horizontal hanger rails spanning substantially the width and height of said back wall and for removably hanging work accessories;

whereby said work accessories can be hung at a variety of horizontal and vertical positions on said hanger rails and within said cabinet.

4,618,193
CABINET CONSTRUCTION FOR AN AUTOMATIC WASHER

Victor W. Cuthbert, and Joel M. Snider, both of Lincoln Township, Berrien County, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 7, 1983, Ser. No. 558,875

Int. Cl.⁴ A47B *47/03*

U.S. Cl. 312—264 **12 Claims**

11. A cubical cabinet for a domestic appliance, comprising: three side panels,

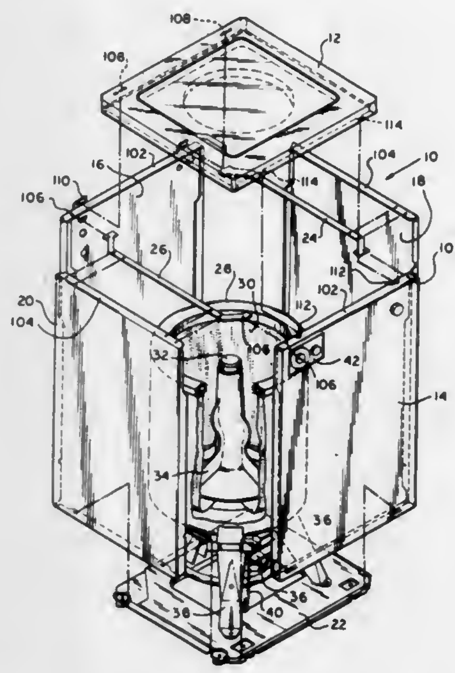
cooperating slot and tab means between a first of said panels and a second, adjacent panel to restrain said second panel from lateral and longitudinal movement only when said second panel is approximately perpendicular to said first panel,

cooperating slot and tab means between said first panel and a third adjacent panel which is opposite and parallel to said second panel to restrain said third panel from lateral and longitudinal movement only when said third panel is approximately perpendicular to said first panel,

said second and third panels each having a free end opposite said first panel,

restraining means selectively securable to said free end of said second and third panels to secure said second and third panels in fixed relationship,

a fourth panel adjacent and perpendicular to said second and third panels and opposite and parallel to said first panel, and



a latch means and cooperating slot and tab means between said fourth panel and said second and third panels to restrain said fourth panel from lateral and longitudinal movement.

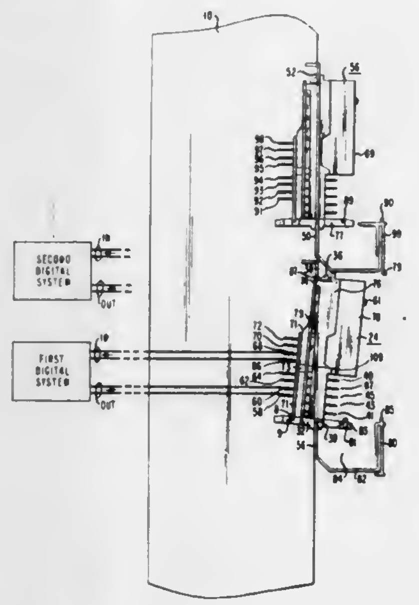
4,618,194
CONNECTING BLOCK FOR DIGITAL SYSTEM CROSS-CONNECT FRAME

Jerald J. Kwilos, Ironia, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 15, 1985, Ser. No. 755,152

Int. Cl.⁴ H04Q *1/14;* **H01R** *9/09, 25/00*

U.S. Cl. 339—14 R **11 Claims**



1. Apparatus for interconnecting first and second digital systems, said apparatus being housed in a frame comprising upper and lower crossarms, said apparatus comprising

a backplane having front and rear surfaces and housing a plurality of first terminals extending outwardly from said rear surface for terminating a plurality of circuits to and from said first and second digital systems,

a housing unit connected mechanically and electrically to said backplane said housing unit having a plurality of second terminals for interconnecting said first and second digital systems, said housing unit having front and rear surfaces, said second terminals extending forwardly from said front surface of said housing unit,

a resilient tang on the upper surface of said apparatus and adapted to be snapped removably into place in said upper crossarm within said frame for retaining said apparatus,

a pedestal comprising anterior and posterior projections and a central recess in an upper surface of said pedestal facing a lower end of said housing unit to mate with said housing unit, said pedestal further comprising a longitudinal recess in a lower surface of said pedestal adapted to mate with said lower crossarm of said frame for retaining said apparatus, and

a plurality of printed wiring boards within said apparatus for establishing an electrical path between said first terminals of said backplane and said second terminals on said front surface of said housing unit.

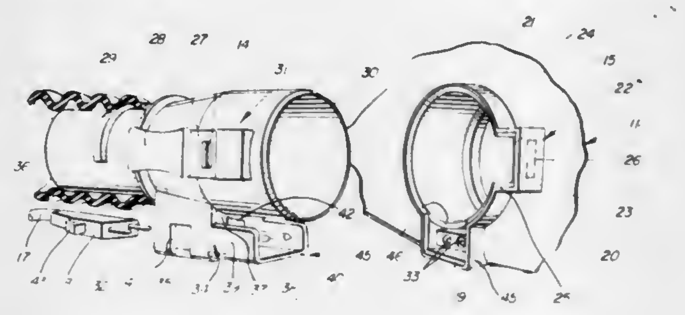
4,618,195
VACUUM CLEANER HOSE COUPLING

James W. Keane, Ramsey County, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jun. 3, 1985, Ser. No. 740,623

Int. Cl.⁴ H01R *13/73*

U.S. Cl. 339—16 R **18 Claims**



1. Structure for concurrently connecting an end of a vacuum cleaner hose to a suction inlet of a canister, and an electrical power cord carried exteriorly of the hose and having at one end a first electrical connector associated with the hose end to a complementary second electrical connector associated with the canister, the connecting structure comprising:

locking means formed integrally with said hose end for releasably locking said hose end to said suction inlet to provide an air flow communication therebetween; and

means formed integrally with said hose end for removably mounting said first electrical connector to said hose end to be accurately aligned and engaged with said second electrical connector as an incident of locking association of said locking means to said suction inlet.

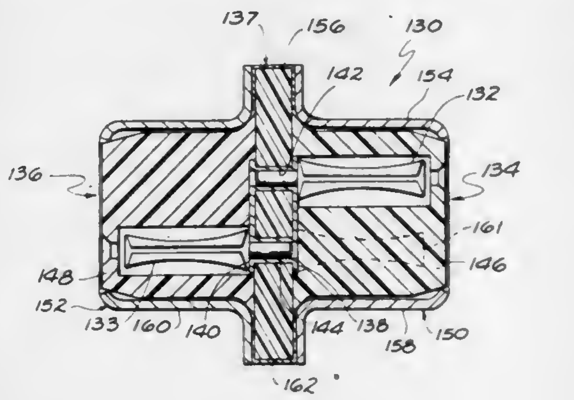
4,618,196
GENDER REVERSAL CONNECTOR

Steven Z. Muzslay, Huntington Beach, Calif., assignor to ITT Corporation, New York, N.Y.

Filed May 30, 1985, Ser. No. 739,398

Int. Cl.⁴ H01R *31/06*

U.S. Cl. 339—17 C **6 Claims**



1. A gender reversal connector comprising:

a plate of insulative material having first and second opposite faces, top and bottom edges, and opposite sides;

first and second rows of holes in said plate, each row of holes extending parallel to said edges with said first row closer to the top edge and the second row closer to the bottom edge, each hole being plated with conductive material;

a plurality of conductive traces, each connecting a hole in said first row to a hole in said second row;

a plurality of elongated contacts, each including an inner end lying in one of said holes and an outer end projecting away from a face of said plate, said contacts of each pair having inner ends lying in different holes whose platings are connected by a trace and with each contact of a pair extending away from a different face of the plate;

most of the contacts whose inner ends lie in a first row of holes positioned so every other contact extends from said first face of said plate and the contacts inbetween extend from said second face of said plate, and most of the contacts whose inner ends lie in said second row of holes are positioned so every other contact extends from said second face of said plate and the contacts inbetween extend from said first face of said plate, said contacts being so arranged that a first connector can be electrically joined to the rows of contacts at one face and another connector basically similar to the first connector but rotated substantially 180° thereto can be electrically joined to the rows of contacts at the other face.

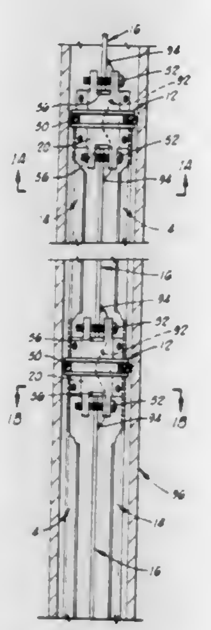
4,618,197
EXOSKELETAL PACKAGING SCHEME FOR CIRCUIT BOARDS

Billy W. White, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jun. 19, 1985, Ser. No. 747,077

Int. Cl.^{4} H05K *7/00*

U.S. Cl. 339—17 R **8 Claims**



1. An exoskeletal packaging arrangement for the disposition of instrument components in a tubular housing for deployment in a well bore, comprising:

two bulkhead means each including a truncated cylindrical body having a longitudinal bore therethrough and having on at least one end thereof a plurality of diametrically opposed flat surfaces laterally bounded by angularly disposed side surfaces having apertures therein;

at least two shell plates extending between said bulkhead means, said shell plates each comprising longitudinally extending major portions laterally bounded by substantially co-extensive edge portions angularly disposed thereto at substantially the same angles as said side surfaces are disposed with respect to said flat surfaces, said shell plates having apertures therethrough at each end thereof aligned with said side surface apertures, said bulkhead means further including fasteners extending through said shell plate apertures and into said side surface apertures; and

longitudinally extending board means having tab means at each end thereof supported by said bulkhead means.

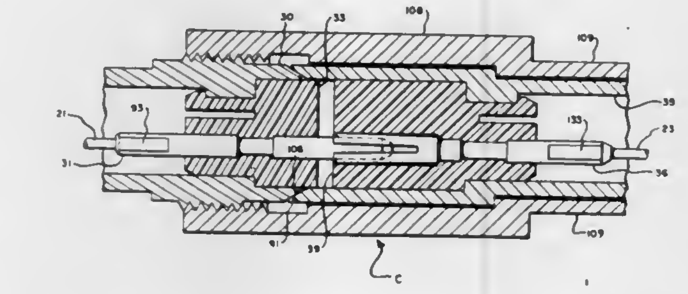
4,618,198
CONNECTOR FOR SEALINGLY JOINING THE ENDS OF A PAIR OF ELECTRICAL CABLES

Steven M. Dale, Williamsville; Richard A. Lyon, Buffalo, and David P. Schutram, West Seneca, all of N.Y., assignors to Conax Buffalo Corporation, Buffalo, N.Y.

Filed Mar. 29, 1984, Ser. No. 594,576

Int. Cl.^{4} H01R *13/506, 13/52*

U.S. Cl. 339—**60 M** **6 Claims**



1. A connector for sealingly joining the ends of a pair of electrical cables, each of said cables having at least one insulated conductor, comprising:

(a) a tubular metal male housing having inner and outer ends and encircling a marginal end portion of one of said cables,

(b) an externally-tapered surface on said inner end of said male housing,

(c) a tubular metal female housing having inner and outer ends and encircling a marginal end portion of the other of said cables,

(d) an internally-tapered surface on said inner end of said female housing and adapted to be contacted by said externally-tapered surface, the taper of said externally tapered surface being at a steeper angle than the taper of said internally tapered surface, and the quality of finish of such tapered surface having an RMS rating number no higher than 32,

(e) means arranged to draw said housings together and force said tapered surfaces into firm contact to provide a sealing metal-to-metal joint therebetween,

(f) a contact pin member insulatively mounted in one of said housings and electrically connected to the conductor in the cable associated with such housing,

(g) a socket member insulatively mounted in the other of said housings and electrically connected to the conductor in the cable associated with such housing and adapted to receive said pin member, and

(h) means sealing the outer end of each of said housings to its associated cables,

thereby to form a sealed chamber within said joined housings within which electrical contact may be made.

4,618,199
LOW INSERTION FORCE SOCKET

Wayne K. Pfaff, 1316 Savannah, Irving, Tex. 75062

Filed Aug. 30, 1985, Ser. No. 771,104

Int. Cl.^{4} H01R *13/635*

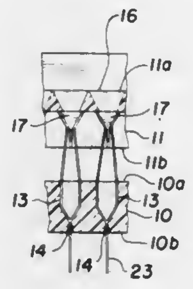
U.S. Cl. 339—74 R **10 Claims**

1. A receptacle for a device package having a plurality of pins extending substantially parallel with each other in a first direction from said package comprising:

(a) a plurality of substantially U-shaped pin connectors constructed of resilient electrically conductive material, each of said pin connectors having two opposed sides extending in a first general direction from the base of the U and a contact pin extending in substantially the opposite direction from the base of the U with the sides of the U converging toward each other near the ends thereof remote from the base of the U and at least the end of one side of each U-shaped pin connector diverging outwardly from the opposite side of the U-shaped pin connector to define a contact knee inward from the end of the pin connector remote from the base of the U;

(b) a substantially electrically insulating base member with first and second oppositely disposed major faces and a plurality of cavities in said first major face adapted to receive the bases of said U-shaped pin connectors and with apertures for receiving the contact pins so that the contact pins extend from said second major face of said base member; and

(c) a top plate member with first and second oppositely disposed major faces mounted with its second major face substantially parallel with and spaced from the first major face of said base member, said second major face of said top plate member having at least one cavity therein adapted to receive the ends of said sides of at least one pin connector, an aperture passing through said top plate member aligned and in register with said ends of said at least one pin connector, and wedge means disposed on at least one side of said cavity and arranged for insertion between the two opposed sides of said at least one pin connector to spread the sides of said at least one pin connector apart at the ends thereof remote from the base when said top plate member is moved toward said base member.



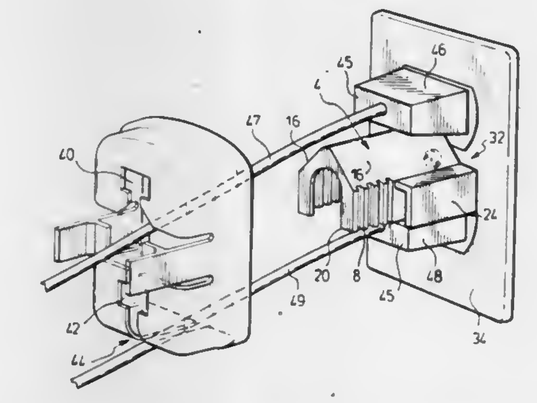
4,618,200
ELECTRICAL PLUG RESTRAINT SYSTEM

David Roberts, 36 Dixon Avenue, Toronto, Ontario, Canada M4L 1N3, and Clyde Hillier, 324 Connington, London, Ontario, Canada N6C 4C9

Filed Feb. 22, 1985, Ser. No. 705,113

Int. Cl.^{4} H01R *13/631*

U.S. Cl. 339—75 P **11 Claims**



1. An electrical outlet accessory for restricting removal of electrical plugs from electrical receptacles comprising a securing post adapted for securement to a duplex receptacle, and a cover releasably securable to said securing post, said cover including access means therein to allow selective placement of up to two electrical plugs essentially within said cover with the associated electrical cord thereof passing through electrical cord ports in the cover, said cover being selectively engageable with said post at various positions to accomodate electrical plugs of different configuration and selectively disengageable from said post to allow plug removal from an insertion into such receptacle and wherein said securing post includes a projection to the rear face thereof for insertion in one of the ground connectors of such duplex receptacle.

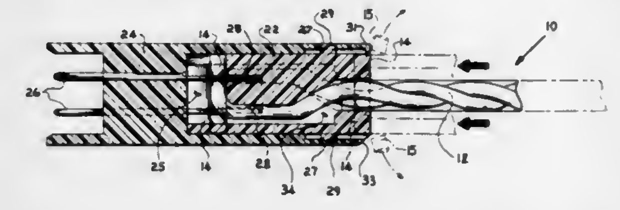
4,618,201
CONNECTOR FOR ESTABLISHING ELECTRICAL CONTACT WITH A HIGH COUNT TWISTED PAIR CABLE

Peter K. Townsend, Camp Hill, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 16, 1984, Ser. No. 631,383

Int. Cl.^{4} H01R *4/24*

U.S. Cl. 339—99 R **1 Claim**



1. A connector for establishing electrical contact with the conductors of a twisted pair cable comprising a receptable having a cavity with an opening into which a wiring block telescopes, said receptacle having a plurality of conductive insulation piercing devices fixed thereto extending into said cavity, said receptacle having a trailing edge formed into a plurality of scalloped cutting edges, said writing block having a leading edge, said conductor being inserted into said wiring block and extending above said leading edge, said leading edge of said wiring block intersecting with said scalloped edges to form a shearing edge as said wiring block is inserted into said cavity whereby the portion of said conductors above said leading edge are sheared off outside said connector.

4,618,202
CONNECTOR WITH STRAIN RELIEF

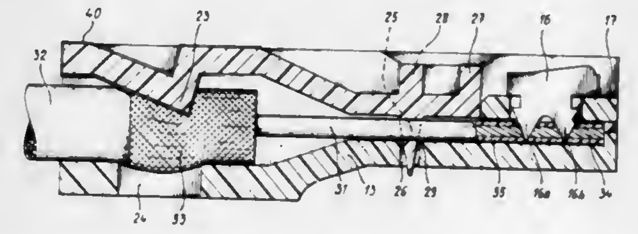
Hubertus B. Libregts, Vlijmen, and Cornelis G. J. van Nes, Oisterwijk, both of Netherlands, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 20, 1985, Ser. No. 778,246

Claims priority, application Netherlands, Sep. 27, 1984, 8402949

Int. Cl.^{4} H01R *4/24*

U.S. Cl. 339—99 R **6 Claims**



1. A connector intended for attachment to the end of a cable having one or more insulated conductors enclosed by a jacket, said connector comprising:

two housing parts which, when assembled, define a passage having a first section adapted to accept the end portion of the cable jacket and a second section adapted to accept the insulated conductors projecting from the jacket,

each housing part being provided at the first section of the passage with strain relief means intended to act on the cable jacket,

one of said housing parts being provided at the second section of the passage with a pierce contact for each conductor, each said pierce contact being movable from a first position in which the insulated conductors can be introduced unimpeded into the second section of the passage to a second position in which each conductor is at least partially pierced by its respective pierce contact,

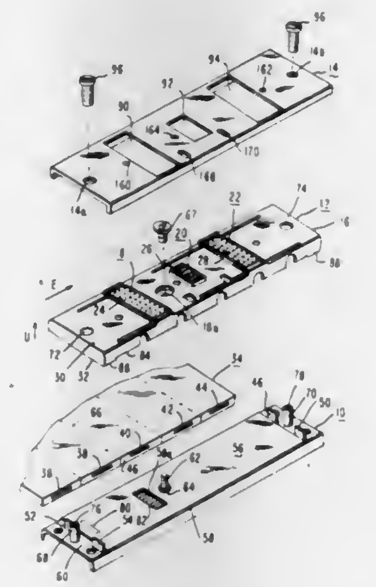
another of said housing parts being provided at the second section of the passage with cone-shaped teeth which, when the housing parts are assembled, project from the wall of the passage defined by said other housing part into the passage at right angles to the conductors and extend to the wall of the passage defined by said one housing part,

said projecting teeth defining apertures in the passage which are smaller than cross-sectional area of the insulated conductors so that the teeth grip the insulation surrounding the conductors, thereby providing strain relief for each insulated conductor.

4,618,203
ISOLATED GROUND DEVICE FOR FLAT UNDERCARPET CABLE

William S. Greenwood, Nutley, and Karl Weinmann, Watchung, both of N.J., assignors to Thomas & Betts Corporation, Raritan, N.J.

Filed Apr. 8, 1985, Ser. No. 720,648
Int. Cl.⁴ H01R *11/20*
U.S. Cl. 339—99 R **22 Claims**



1. An adapter for electrical connection to a flat multiconductor cable having a neutral conductor, a ground conductor, an isolated ground conductor and at least one live conductor, comprising:

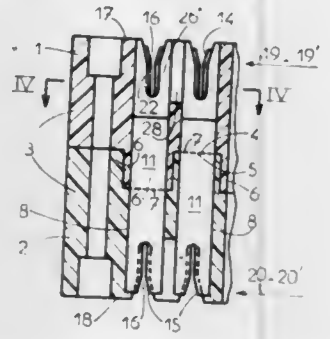
an insulative housing having a first surface and an opposite second surface, said second surface adapted to be placed in juxtaposition with said cable;

three electrical contacts in said housing, one contact for said neutral conductor, one contact for said isolated ground conductor and one contact for one live conductor, each contact having a terminal portion for connection thereto, said terminal portions being disposed at said first surface of said housing, said contacts each having an insulation displacement portion disposed at the second surface of said housing for registry and connection respectively with said neutral conductor, said isolated ground conductor and one live conductor, said insulation displacement portion of said contact for said isolated ground conductor being removably connected to said contact.

4,618,204
CONNECTION DEVICE

Yves Saligny, Cluses, France, assignor to Carpano & Pons, France

Filed Jun. 20, 1984, Ser. No. 622,388
Claims priority, application France, Dec. 5, 1980, 80 26161
Int. Cl.⁴ H01R *9/24*
U.S. Cl. 339—99 R **9 Claims**



9. A connection device, in particular for telecommunication lines, comprising:

an insulating casing formed in two detachably assembled parts, the parts being substantially identical in structure, each part including an outer longitudinal side and an open assembly side, and having on the open assembly side a plurality of alternating projecting portions and recessed portions in the form of castellations, the projecting portions of one part being aligned with the recessed portions of the other part to allow the parts to be matingly interconnected axially, each part having a passage formed in each of its projecting portions and recessed portions, the passages of the projecting portions and recessed portions of one part being aligned with the passages of corresponding mating projecting portions and recessed portions of the other part;

a plurality of elongated, two ended conductor elements, the conductor elements extending axially through the casing and being arranged in parallel rows of opposite pairs, each opposite pair of elements being received by the aligned passages of the corresponding mating projecting portions and recessed portions of the casing parts so that each castellation contains only one opposite pair of conductor elements, each element being split at its opposite ends to receive a line-wire and being retained axially between the casing parts, the split ends being recessed within the casing from the outer longitudinal sides of the casing parts, each casing part including bridges formed on its outer longitudinal side, the bridges partially overlying the conductor elements for retaining the conductor elements within the casing;

each casing part including driving slots formed on its outer longitudinal side, the driving slots being aligned with the split ends of corresponding conductor elements; and

each casing part including sockets formed in proximity to its outer longitudinal side, each socket of each part being dimensioned to receive a corresponding split end of a conductor element.

4,618,205
LIGHT FIXTURE

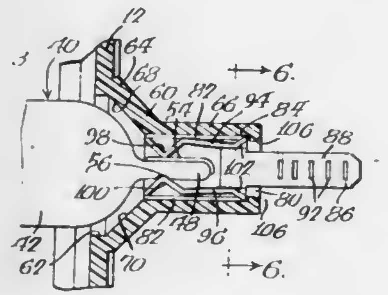
Jerry H. Freeman, Mt. Prospect, Ill., assignor to UNR, Inc., Chicago, Ill.

Continuation of Ser. No. 586,350, Mar. 5, 1984, abandoned. This application Nov. 21, 1985, Ser. No. 800,367
Int. Cl.⁴ H01R *13/432/13/11*
U.S. Cl. 339—125 L **6 Claims**

1. A light fixture for receiving a wedge base light bulb having a body portion, and a base portion including a central portion and a pair of spaced apart generally flat side sections on respective opposite sides of said central portion, with contact wires respectively associated with a surface of each side section, with each said side section having a transverse

recess formed therein, comprising: a generally flat base member having a front side and a rear side, said base member having a centrally disposed opening formed therein; a socket member connected with said base member at said centrally disposed opening and extending outwardly from said rear side of said base member, said socket member having a front section for receipt of a portion of said body portion of the bulb and a rear section for receiving said base portion of the bulb, said rear section having a pair of spaced apart channels integrally formed therein, and a central channel between said spaced apart channels shaped to receive a central portion of said light bulb base portion; and a connector pin means received and retained in each of said spaced apart channels for respectively receiving each of the side sections of said bulb so as to cooperate with said recess formed in each said side section and thereby retain said base portion of said bulb in a position within said socket member and to contact said contact wire associated with the corresponding side section,

each said connector pin means including a clip portion for receipt of said respective side section of the base portion and for contacting said contact wire associated therewith, and a lead wire receiving portion for attachment of an electrical lead wire thereto, each said clip portion comprising a pair of spaced apart and facing spring clip sections extending integrally from opposite edges of said lead wire receiving portion, each said clip section having a first end defining a V-shaped section, the apexes of said V-shaped sections extending toward each other so that one of said V-shaped sections of the clip portion of each connector pin means is received in the transverse recess of the respective side section of the light bulb base portion,



each of said spaced apart channels being formed with a pair of opposed longitudinally extending grooves integrally formed in said rear section of said socket member, with each of said grooves terminating a short distance from the rear end of said spaced apart channels to thereby define a first inwardly extending surface at the rear end of each said groove, said spaced apart channels each further being formed with a second inwardly extending surface,

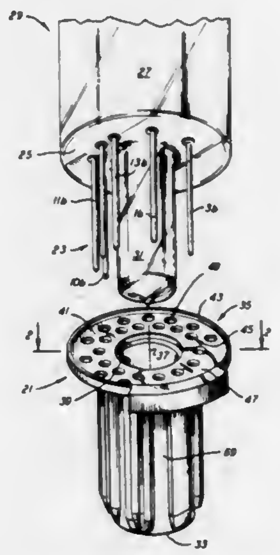
said clip portions of said connector pin means having a pair of spaced apart, outwardly extending inwardly resiliently deformable ear sections which respectively extend outwardly from second ends of said facing spring clip sections, said ear sections being respectively slidably received and retained within said grooves of each said channel by engagement of each said ear section with a respective one of said first inwardly extending surfaces,

each said connector pin means being formed with a ledge portion at the inner edge of said lead wire receiving portion which provides a third surface which is engageable with said second inwardly extending surface of the respective one of said spaced apart channels, whereby each said connector pin means is insertable into the respective one of said spaced apart channels from the rear of said socket member and retained in position therein with said connector pin means precluded from movement in one direction by contact between said ear sections and said first surfaces, and precluded from movement in the other direction by contact between said second and third surfaces, the clip sections of each said connector pin means being urged away from each other attendant to receipt of a respective one of said side sections of said bulb base portion therebetween.

4,618,206
CATHODE RAY TUBE BASE

Robert L. Donofrio, Elbridge, and Peter G. Puhak, Seneca Falls, both of N.Y., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Apr. 3, 1981, Ser. No. 250,999
Int. Cl.⁴ H01R *33/74*
U.S. Cl. 339—144 T **6 Claims**



1. An improvement in a cathode ray tube base of the type employing a substantially arcuate application of dielectric adhesive for effecting adherence of said base to the closure portion of a tube wherefrom a sealed exhaust tubulation and a circular array of surrounding connective pins extends in parallel relationship, said base having an axial crown portion dimensioned to spatially encompass said tubulation, said crown portion having an open end and a closed end, an annular flanged portion extending outwardly from the open end of the crown, said flanged portion having an interfacial surface circumferentially bounded by an upstanding perimetrical rim, said interfacial surface and rim adapted for seating with the peripheral region of said tube closure portion, said interfacial surface being demarcated by a circular array of spaced pin positioning stations oriented about and adjacent to said crown portion, the majority of said stations having apertures traversing said flanged portion to accommodate the mating pin arrangement extending from said closure portion, said interfacial surface having a discrete inwardly recessed region wherein at least one of said pin-receiving apertures is oriented, said region extending entirely across the surface from the rim to the crown, said base improvement comprising:

a plurality of spaced-apart indents in the interfacial surface of said flanged portion, said indents located between said perimetrical rim and said array of pin stations in the expanse thereof not occupied by said recessed region, said indents providing a plurality of adhesive anchoring positions for subsequently effecting improved adhesion of said base to said closure portion.

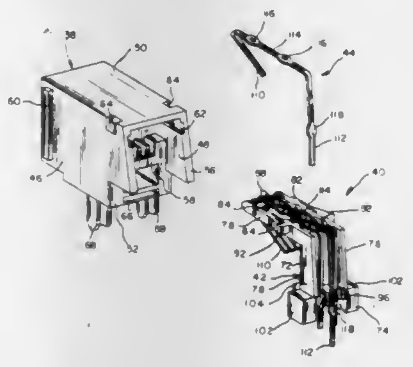
4,618,207
TWO PIECE MODULAR RECEPTACLE

Raymond A. Silbernagel, Naperville, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Jun. 5, 1985, Ser. No. 741,512
Int. Cl.⁴ H01R *13/506*
U.S. Cl. 339—176 M **12 Claims**

1. A two-piece modular phone jack assembly of the type having a plug-receiving socket formed therein defined by a plug-receiving opening, opposed top and bottom surfaces

joined by opposed side surfaces extending from said opening to join a back surface, said jack assembly including
  a connector housing having a forward end with the plugreceiving opening formed therein, two opposed side walls, the internal surfaces thereof defining said socket side surfaces, a top wall joining said side wals, a bottom wall joining said side walls, the internal surface of said bottom wall defining the bottom surface of said socket, and a rearward end with a rear opening formed therein,
  a carrier subassembly in said housing mounted through said rear opening, said carrier subassembly having a dielectric support member and a plurality of stamped, metallic elongated conductors mounted on said support member, each conductor including a contact portion at one end extending from said forward end diagonally into the socket, a lead portion at the other end, and an intermediate portion between said contact portion and lead portion, and
  means cooperating between said housing and subassembly to lock said subassembly to the housing,
the improvement in said carrier subassembly comprising:
  a body portion adjacent said housing sidewalls and top wall and including an internal forwardly facing surface defining the back surface of the socket and an external rearwardly facing surface;



  a base portion joining the bottom of the body portion having a contact-receiving structure with a plurality of rearwardly open slots formed therein for receiving and holding the conductor lead portions; and
  a generally horizontal conductor mounting portion joining and extending forwardly of said body portion having an internal bottom surface defining the top wall of the socket and an upwardly facing conductor supporting surface, said conductor mounting portion having a forward edge against which the contact portions of the conductors are bent into the socket and a rearward edge joined to the top of the body portion against which the lead portions of the conductors are bent toward said base portion, and further having a plurality of means upstanding from said upwardly facing surface between said edges for positioning and holding the intermediate portions of the conductors which extend generally along the length thereof;
whereby a continuously open conductor-receiving pathway is defined between a point within the socket along said upwardly facing conductor supporting surface and said rearwardly facing surface of said body portion and a point within said open slots in said base portion.

4,618,208

CIRCUIT TEST CLIP

Osamu Igarashi, Yokohama, Japan, assignor to Nikko Kogyo Kabushiki Kaisha, Tokyo, Japan

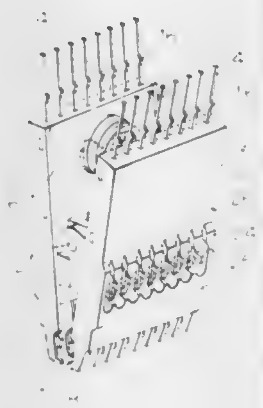
Filed Oct. 28, 1985, Ser. No. 791,762

Claims priority, application Japan, May 16, 1985, 60-71568[U]

Int. Cl.^{4} H01R *11/22*

U.S. Cl. 339—200 P **6 Claims**

1. Circuit test clip having a pair of oppositely disposed support members pivotally connected to one another by an orthogonally crossing pin, each of said support members having a plurality of conducting elements extending longitudinally from a front to rear end of said support members, said conducting elements being juxtaposed at an interval corresponding to that of arrangement of terminals to be tested, and resilient means coacting with said support members for resiliently urging both of the front ends of the support members toward one another, the improvement wherein:
  each of said support members is an assembly of an outer plate superposed on an inner plate which is shorter in length than the outer plate;
  the outer plate having in the area confronting the inner plate a plurality of longitudinal slots juxtaposed at said interval for accommodating each of said conducting elements in each slot;



  said outer and inner plates respectively having first and second projections extending in a direction in which one support member faces the other support member, each of said projections having holes for insertion of said pin, the inner plate having through-holes for insertion of said first projections on said outer plate;
  the holes in said first projections being aligned with those in said second projections when the inner plate is superposed on the outer plate; and
  the positions of the first and second projections on one of said support members being complementary with those of the first and second projections on the other support member.

4,618,209

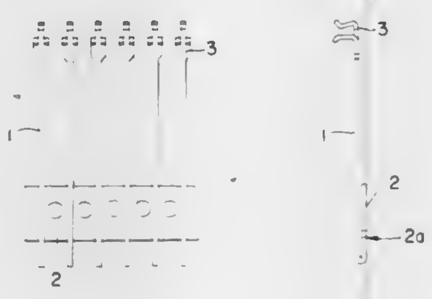
LEAD MEMBER AND METHOD OF FIXING THEREOF

Toshimitsu Sonobe, Tokyo, Japan, assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Oct. 19, 1984, Ser. No. 662,854

Int. Cl.^{4} H01R *13/10*

U.S. Cl. 339—258 R **10 Claims**



1. A lead member comprising:
plural leg pieces;
a removable interlink plate for holding said leg pieces spaced at a predetermined distance to interlink respective one ends of the leg pieces; and
terminal portions provided at the respective other ends of said leg pieces to attach to a PCB, a wire or the like;
each of said leg pieces being folded to overlap said interlink plate forming thereby a leg portion at the folded section, said leg portions defining a plurality of insertion ends arranged for secured insertion into openings of a PCB or the like while said interlink plate remains attached to said leg pieces.

4,618,210

OPTICAL SWITCH OF SWITCHED DIRECTIONAL COUPLER TYPE

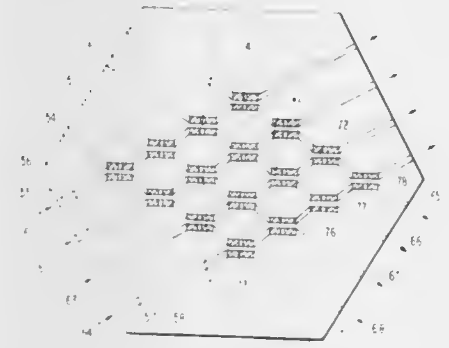
Michikazu Kondo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 9, 1983, Ser. No. 502,805

Claims priority, application Japan, Jun. 9, 1982, 57-98820; Sep. 7, 1982, 57-155456

Int. Cl.^{4} G02B *6/10*

U.S. Cl. 350—96.14 **8 Claims**



1. An optical switch having a number of switching elements for switching light beams to a plurality of optical waveguides constructed on a substrate, comprising:
  a first group of optical waveguides consisting of N (N is an integer not smaller than 2) optical waveguides having a refractive index greater than that of the substrate;
  a second group of optical waveguides consisting of M (M is an integer not smaller than 1) optical waveguides having a refractive index greater than that of the substrate;
  directional couplers of a first kind, each consisting of one of the optical waveguides of said first group and an adjoining waveguide in the same group; and
  directional couplers of a second kind, each consisting of the Nth optical waveguide of said first group and a first optical waveguide of said second group, each of said directional couplers of said second kind containing a pair of parallel optical waveguide sections of said Nth optical waveguide of said first group and said first optical waveguide of said second group, respectively, said pair of optical waveguide sections being closely arranged on a common plane of the substrate and extending a predetermined length, and a pair of control electrodes arranged close to said pair of optical waveguide sections, and
  means for switching each of said directional couplers between an incomplete coupling in which less than 20 percent couples from one optical waveguide to another optical waveguide and a complete coupling in which almost 100 percent couples from one optical waveguide to another optical waveguide, in response to a potential difference of either zero volts or another prescribed value between each pair of said control electrodes, for incomplete coupling and complete coupling, respectively.

4,618,211

OPTICAL FIBER TAP WITH ACTIVATABLE CHEMICAL SPECIES

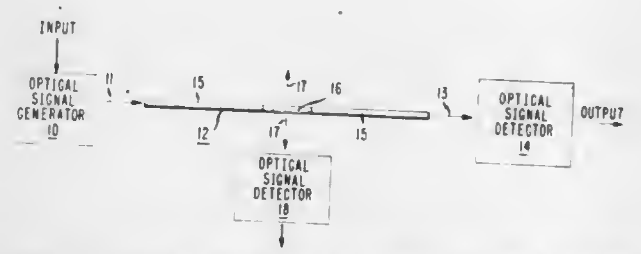
Paul A. Fleury, V, Basking Ridge, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 12, 1984, Ser. No. 588,223

Int. Cl.^{4} G02B *6/24*

U.S. Cl. 350—96.15 **13 Claims**

1. Communication system comprising
a. an optical fiber comprising a core and a clad and having an electromagnetic radiation absorption spectrum,
b. means for producing electromagnetic radiation of at least one given wavelength λ_o, the radiation to be referred to as "signal radiation", means for coupling at least part of the signal radiation into the fiber at a first fiber location, means for detecting signal radiation at a second fiber location spaced from the first fiber location, the signal radiation to be guided in the optical fiber from the first to the second fiber location,
c. means for causing emission of radiation from the fiber at a fiber region located between the first and the second fiber location, the means to be referred to as "emission means", the region of emission to be referred to as the "emission region", and


INPUT
OPTICAL SIGNAL GENERATOR 10
11
15
17
16
13
OPTICAL SIGNAL DETECTOR 14
OUTPUT
12
17
15
OPTICAL SIGNAL DETECTOR 18

d. means for detecting the radiation emitted from the emission region,

CHARACTERIZED IN THAT

e. the emission means can be placed at any point between the first and second fiber locations and comprise predisposed emission means, "predisposed emission means" being emission means that comprise a longitudinally substantially uniform distribution in the fiber of at least one activatable chemical species, incorporated into the fiber during manufacture of the fiber, the emission region formed by exposing a portion of the fiber to activating means.

4,618,212

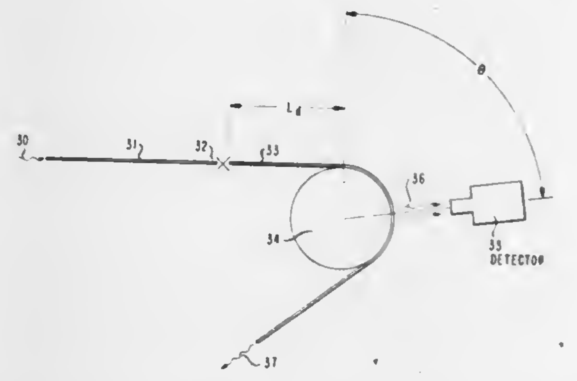
OPTICAL FIBER SPLICING USING LEAKY MODE DETECTOR

Paul D. Ludington, Norcross, and Ian A. White, Roswell, both of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 30, 1984, Ser. No. 615,283

Int. Cl.^{4} G02B *6/38, 6/00*

U.S. Cl. 350—96.21 **14 Claims**



1. Method for splicing a first optical fiber to a second optical fiber, the first and second optical fibers being single mode optical fibers at a predetermined wavelength, the first fiber having a first fiber splice end, the second fiber having a second fiber splice end and a second fiber far end, the method comprising
  (a) placing the first fiber splice end in proximity with the second fiber splice end,
  (b) directing electromagnetic radiation of the predetermined wavelength through at least a part of the first fiber such that substantially all of the radiation arriving at the first fiber splice end is fundamental mode radiation, with the arriving radiation being emitted from the first fiber splice end, with at least a part of the emitted radiation being coupled into the second fiber splice end,

(c) stripping radiation from the second fiber at a fiber region between the second fiber splice end and the far end,
(d) detecting at least a part of the stripped radiation with detection means having an output,
(e) adjusting the relative position of the fiber splice ends in response to the output of the detection means, and
(f) splicing the first fiber to the second fiber,
characterized in that
(g) the radiation stripped from the second fiber consists substantially of nonfundamental mode radiation.

4,618,213
GELATINOUS ELASTOMERIC OPTICAL LENS, LIGHT PIPE, COMPRISING A SPECIFIC BLOCK COPOLYMER AND AN OIL PLASTICIZER

John Y. Chen, Pacifica, Calif., assignor to Applied Elastomerics, Incorporated, Pacifica, Calif.

Continuation-in-part of Ser. No. 458,703, Jan. 17, 1983, abandoned, which is a continuation-in-part of Ser. No. 134,977, Mar. 28, 1980, Pat. No. 4,369,284, said Ser. No. 134,977, is a continuation-in-part of Ser. No. 916,731, Jan. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 815,315, Jul. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 778,343, Mar. 17, 1977, abandoned. This application Jan. 18, 1984, Ser. No. 572,172

The portion of the term of this patent subsequent to Jan. 18, 2000, has been disclaimed.

Int. Cl.⁴ C08K *5/01;* **G02B** *6/00, 5/04*

U.S. Cl. 350—96.34 **22 Claims**

1. A gelatinous elastomer composition consisting essentially of:
(a) 100 parts by weight of triblock copolymer of the general configuration poly(styrene-ethylene-butylene-styrene) wherein said styrene end block to ethylene and butylene center block ratio is within the range of from between 31:69 to 40:60;
(b) from about 300 to about 1,600 parts by weight of a plasticizing oil;
(c) said gelatinous elastomer composition having a gel rigidity of about 20 gram to about 700 gram Bloom.

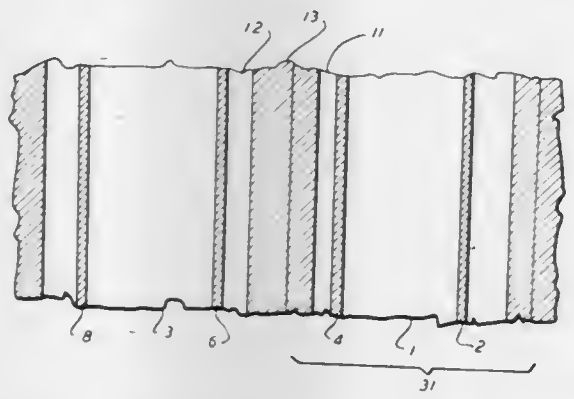
4,618,214
METHOD OF FABRICATING A CONTROLLED HARMONIC BINARY GRATING

Bruce A. Horwitz, Newton Centre, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Oct. 26, 1984, Ser. No. 665,255

Int. Cl.⁴ G02B *5/18*

U.S. Cl. 350—162.2 **19 Claims**



1. A method of fabricating a controlled harmonic binary grating having both binary magnitude and phase transmissions in which specified harmonics are modified by enhancement or suppression, comprising the steps of:
a. manifesting a plurality of binary pulse trains $P(X;A_1)$, $P(X;A_2)$, $P(X;A_3)$ . . . , which when summed, produce a series expansion having the form of equation (3) of the specification;
b. setting up a plurality of simultaneous equations by equating the bracketed portion of equation (3) of the specification to zero for each order n to be suppressed, and to a maximum for each order n to be enhanced;
c. solving for the parameters A_1, A_2, A_3 . . . including the constraint of equation (3);
d. establishing the pulse widths of said plurality of binary pulse trains in accordance with the solved parameters of step c;
e. summing said plurality of binary pulse trains resulting from performing step d to produce a transmission function of said binary grating;
f. utilizing said transmission function to construct said grating.

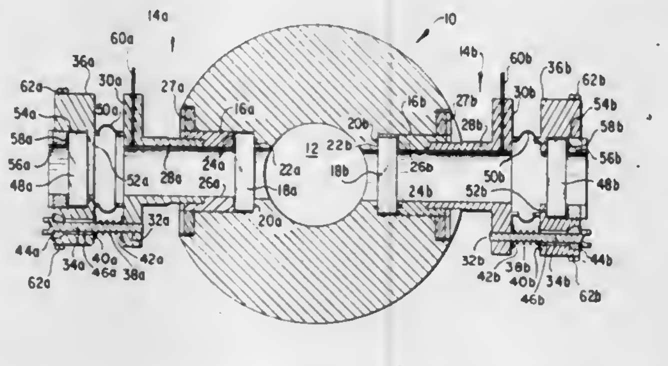
4,618,215
DOUBLE WINDOW VIEWING CHAMBER ASSEMBLY

Vernon W. Keller; Robert B. Owen; Bobby R. Elkins, and William T. White, all of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 2, 1985, Ser. No. 729,766

Int. Cl.⁴ G02B *7/00*

U.S. Cl: 350—319 **17 Claims**



1. In a viewing chamber apparatus having a chamber wall in which a coolant is circulated to provide cooling of the chamber, an optical viewing arrangement comprising first and second window assemblies respectively mounted in first and second opposed openings in the chamber wall such that said window assemblies are in optical alignment whereby a light beam can enter and exit from the chamber directly, said window assemblies each comprising inner and outer windows mounted in spaced relationship so as to define a volume therebetween, and flexible mounting means for the outer one of the windows for permitting adjustment of the positioning of said outer window whereby the inner and outer windows can be brought into optical alignment.

4,618,216
BACKLIGHTED LIQUID CRYSTAL DISPLAY USING LIGHT PASSAGE MEMBER FOR MORE NEARLY UNIFORM ILLUMINATION

Osamu Suzawa, Shiojiri, Japan, assignor to Seiko Epson Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 245,856, Mar. 20, 1981, Pat. No. 4,487,481. This application Dec. 10, 1984, Ser. No. 680,192

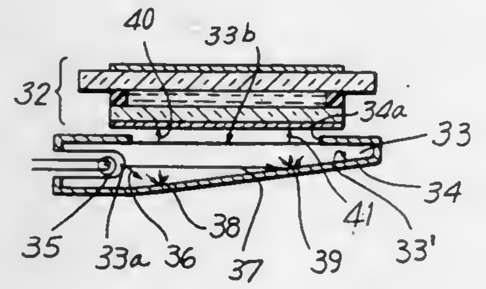
Claims priority, application Japan, Mar. 24, 1980, 55-38295[U]; Jun. 5, 1980, 55-75831; Jun. 26, 1980, 55-87056

Int. Cl.⁴ G02F *1/13*

U.S. Cl. 350—345 **28 Claims**

1. A liquid crystal display device comprising:
a liquid crystal display panel;
light source means for illuminating said liquid crystal display panel;
a light passage member of one of a transparent and a translucent material, said light passage member being disposed between said liquid crystal panel and said light source means; and

a light relecting member substantially surounding said light source means and said light passage member, said light reflecting member having an opening facing said liquid crystal display panel to expose a surface portion of said light passage member, said light passage member and light reflecting member being adapted to provide light more uniformly across said display panel at varying distances from said light source means with the length of a light path between said light source and said exposed surface portion being substantially uniform throughout said light passage member by reducing the distance between the reflecting member and the display panel as the distance from the light source means increases;
wherein the reflecting member is one of a metal plate, a metal film and a lamination sheet of aluminum and plastic adhered to surface portions of said light passage member other than said opening.



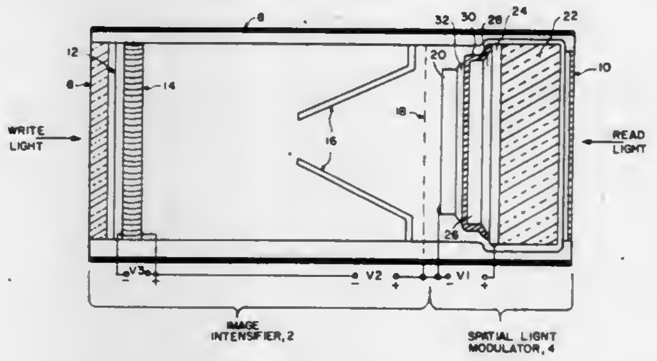
4,618,217
ELECTRON-BOMBARDED SILICON SPATIAL LIGHT MODULATOR

David Armitage, Los Altos, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 8, 1985, Ser. No. 689,681

Int. Cl.⁴ G02F *1/03;* **H01V** *31/50*

U.S. Cl. 350—355 **5 Claims**



1. An electron-bombarded silicon spatial light modulator comprising:
an evacuated chamber having an image intensifier and a spatial light modulator enclosed therein;
said image intensifier including
a photoemissive element for receiving a write illumination and emitting electrons representative of said write illumination, and
a microchannel plate multiplier receiving said electrons and providing an increased number of said electrons,
said spatial light modulator including
a silicon substrate having a first surface and an opposed second surface, said first surface of said silicon substrate having p-type material diffused therein to form a photodiode,
a dielectric mirror having a first surface and an opposed second surface, said first surface of said dielectric mirror being adjacent said second surface of said silicon substrate,
an electro-optic crystal having a first surface and an opposed second surface, said first surface of said electro-optic crystal being adjacent said second surface of said dielectric mirror,
a transparent electrode having a first surface and an opposed second surface, said first surface of said transparent electrode being adjacent said second surface of said electro-optical crystal, and
a transparent supporting substrate having a first surface and an opposed second surface, said first surface of said transparent supporting substrate being adjacent said second surface of said transparent electrode,
means for applying a first voltage between said p-type silicon material and said transparent electrode to reverse bias said photodiode; and
means for applying a second voltage between said microchannel plate multiplier and said p-type silicon material whereby said increased number of said electrons are accelerated towards said p-type silicon material to strike said p-type silicon material with sufficient energy to form electron-hole pair combinations within said silicon substrate.

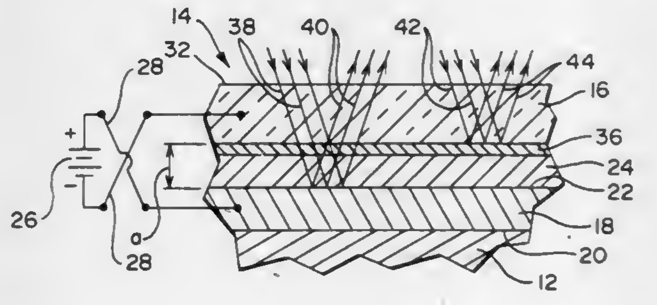
4,618,218
RADIATION MODULATING APPARATUS AND METHOD

Christopher G. Shaw, Redmond, and Ted J. Kramer, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 19, 1984, Ser. No. 602,140

Int. Cl.⁴ G02B *5/28*

U.S. Cl. 350—363 **20 Claims**



1. An apparatus to selectively modify emission or absorption of radiation within a predetermined wavelength range and also modify reflection of radiation within said predetermined wavelength range, said apparatus having a radiation emitting or receiving axis along which said apparatus is adapted to be oriented so that the axis is generally parallel to a major path component of the radiation, said apparatus having a front side and a rear side relative to said axis, with the front side adapted to be positioned to emit or initially receive the radiation, said apparatus comprising:
a. a front substantially transparent electrode having a front face and a rear face, and occupying a plane having a major alignment component substantially perpendicular to said radiation emitting or receiving axis;
b. a substantially transparent electrolyte positioned behind said front electrode and in electrolytic contact with the rear face of the front electrode;
c. a second electrode positioned to be in electrolytic contact with said electrolyte;
d. a selectively operable voltage source to impose a voltage between said electrode where the first electrode can be charged either negatively or positively relative to the second electrode to either deposit a partially reflective coating at the rear surface of the first electrode or remove said coating from the rear surface of said electrode;
e. said apparatus providing a substantially fully reflective

surface spaced behind the rear surface of the first electrode at a predetermined spacing distance along said radiation emitting/receiving axis, whereby with the coating deposited on the rear face of the first electrode, destructive optical interference minimizes surface reflectance of the reflective surface and thus maximizes surface emittance of said apparatus, and with said coating being removed from the rear face of the first electrode, the surface reflectance of the reflective surface is maximized and thus the surface emittance is minimized.

4,618,219

ZOOM LENS

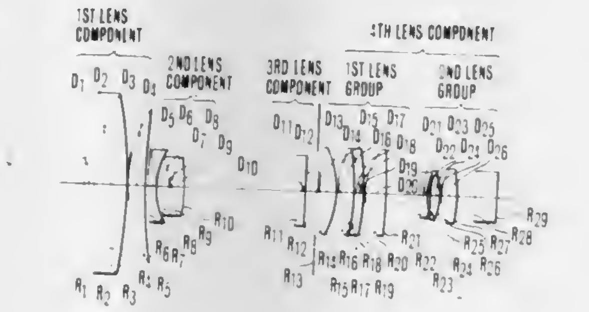
Muneharu Sugiura; Kazuo Fujibayashi, and Sadahiko Tsuji, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1984, Ser. No. 581,953

Claims priority, application Japan, Feb. 24, 1983, 58-29916

Int. Cl.⁴ G02B *15/14*

U.S. Cl. 350—427 **4 Claims**



1. A zoom lens comprising:
a first lens component having a positive refractive power for focusing the lens;
a second lens component on the image side of said first lens component and having a negative refractive power for varying the magnification power of the lens, said second lens component including, from front to rear, a negative meniscus-shaped lens having a strong refracting rear surface, and another negative meniscus-shaped lens having a strong refracting front surface and a cemented surface of forward convexity;
a third lens component on the image side of said second lens component and having a negative refractive power for compensating for the image shift resulting from the change of the magnification power; and
a fourth lens component on the image side of said third lens component and having a positive refractive power for forming an image of an object, a front group of said fourth lens component including, from front to rear, a bi-convex lens having a rear surface of strong curvature, another bi-convex lens having a front surface of strong curvature, a lens of negative power having a front surface of strong curvature and a lens of positive power having a front surface of strong curvature, and a second group of said fourth lens component including, from front to rear, a bi-concave lens having a surface of strong curvature, a bi-convex lens with a rear surface of strong curvature, and another bi-convex lens having a front surface of strong curvature.

4,618,220

TELEPHOTO ZOOM LENS

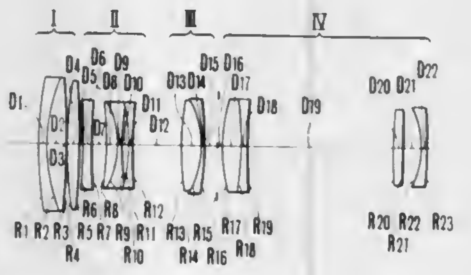
Masatake Kato, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 652,421, Sep. 19, 1984, abandoned, which is a continuation of Ser. No. 373,642, Apr. 30, 1982, abandoned. This application May 2, 1985, Ser. No. 729,890

Claims priority, application Japan, May 13, 1981, 56-70790

Int. Cl.⁴ G02B *15/00*

U.S. Cl. 350—427 **3 Claims**



1. A telephoto zoom lens comprising:
four lens groups, from front to rear, as follows:
the 1st lens group having a positive refractive power, the 2nd lens group having a negative refractive power, the 3rd lens group having a positive refractive power, and the 4th lens group having a positive refractive power;
said 1st, said 2nd and said 3rd lens groups forming a varifocal section, and when zooming from the wide angle side to the telephoto side, said 1st and said 2nd lens groups being moved axially in opposite directions in such a manner that the space between said 1st and 2nd lens groups gradually increases, thus effecting a change in image magnification, and said 3rd lens group reciprocates to compensate for the shift of an image plane resulting from the change of image magnification, and said 4th lens group being stationary; and satisfying the condition of

$$1.4<(f\text{I}+f\text{II}-e'_1)(1-1/Z)/\eta a<6.1$$

wherein fI denotes the focal length of the 1st lens group, fII the focal length of said 2nd lens group, e'_1 the interval between the principal planes of said 1st and said 2nd lens groups when in the shortest focal length position, and Z the zoom ratio;
said 1st lens group consisting, from the object side, of a cemented lens comprising a negative meniscus lens convex towards the object side of a positive lens, and a positive lens;
said 2nd lens group consisting of a negative lens, a cemented lens comprising a positive meniscus lens and a negative lens, and a negative lens; and
said 3rd lens group consisting of a cemented lens comprising a positive lens and a negative meniscus lens.

4,618,221

ADJUSTABLE RETICLE DEVICE

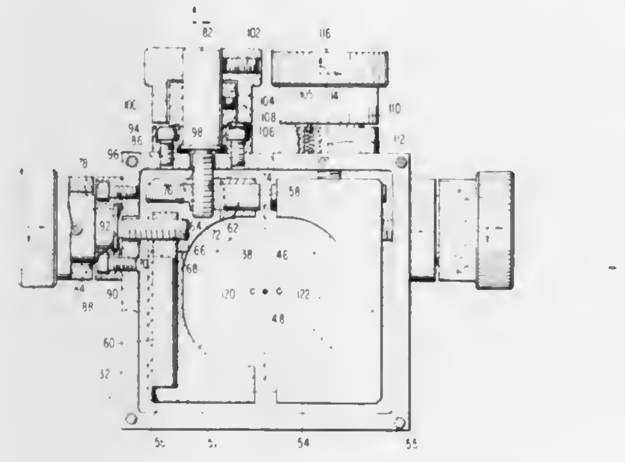
Richard L. Thomas, Rte. 3, Box 369, Wardensville, W. Va. 26851

Filed Oct. 27, 1982, Ser. No. 437,069

Int. Cl.⁴ G02B *23/00*

U.S. Cl. 350—566 **6 Claims**

5. A telescopic sight comprising a hollow cylindrical tube, objective lens means secured to one end of said tube, an additional lens means located within said tube to define a first focal plane adjacent one end of said tube intermediate said objective lens means and said additional lenses and a second optical plane adjacent the opposite end of said tube, an adjustable reticle device secured to said opposite end of said tube comprised of a fixed reticle means and two identical reticle means coplanar with said fixed reticle means and moveable independently of each other along two paths disposed at right angles to each other on opposite sides of said fixed reticle means and an eye piece having ocular lens means therein secured to said adjustable reticle device for focusing on said reticle means in said second focal plane.



4,618,222

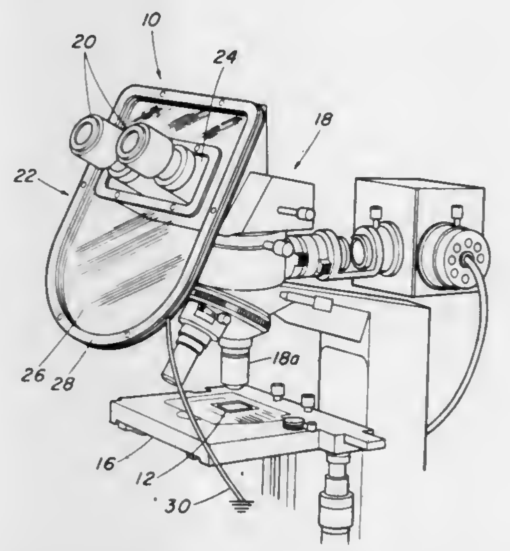
PROTECTIVE STRUCTURE AND METHOD FOR WORKING ON SENSITIVE ELECTRONIC DEVICES

Philip H. Eisenberg, Downey, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Aug. 27, 1984, Ser. No. 644,599

Int. Cl.⁴ G02B *21/00;* H05F *3/02*

U.S. Cl. 350—582 **5 Claims**



1. In a processing station for manufacturing contaminatable parts on the slide stage of a microscope by an operator viewing through the microscope viewing stage, the improvement comprising
a planar transparent cough shield mounted about said viewing stage, said shield extending laterally away from the microscope viewing stage in all directions in a plane generally normal to the viewing axis and oriented generally in a plane parallel to the face of the operator so that the operator may see through the cough shield for manipulating parts on the microscope slide stage,
said shield extending below the viewing stage a distance sufficient to intercept the breath or cough of the operator,
said shield being made of a self-supporting transparent layer, and
a continuous anti-static sheet including a thin conductive film supported by said transparent layer to form an anti-static barrier thereon, said film extending fully across the transparent layer and said film being thin enough to be usefully transparent,
means connecting the edges of said film to ground.

4,618,223

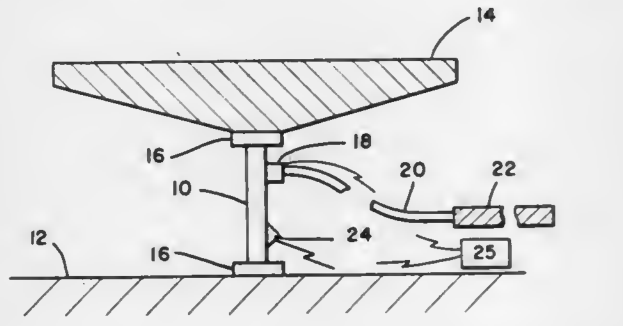
THERMOELECTRIC ACTUATOR FOR MIRROR ADJUSTMENT

Lawrence Fried, Palo Alto, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 29, 1983, Ser. No. 537,194

Int. Cl.⁴ G02B *7/18*

U.S. Cl. 350—611 **5 Claims**



1. A device for thermoelectrically adjusting a mirror in a plane normal to the mirror surface comprising:
(a) a support structure for said mirror;
(b) at least one generally tubular member having one end attached to a predetermined location on the underside of said mirror, said tubular member changing dimensionally with temperature such as to apply pressure to said location on said mirror;
(c) a pair of thermally isolating connectors operably connecting an end of said tubular member opposite said mirror to said support structure;
(d) a thermoelectric element mounted on said tubular member;
(e) a variable-conductance heat pipe operably connected between a heat sink/source and said thermoelectric element; and
(f) means for determining the temperature of said tubular member, said means for determining transmitting an output signal.

4,618,224

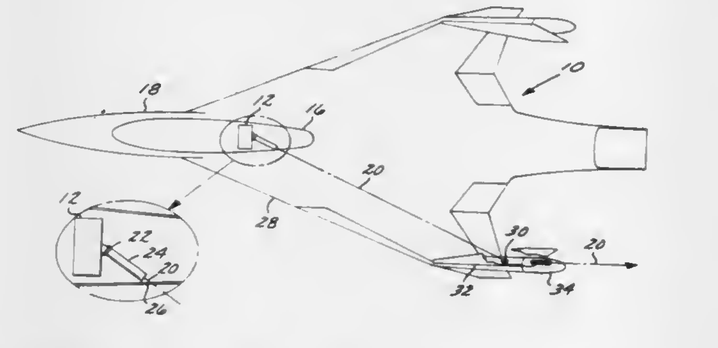
SYSTEM FOR TRANSMITTING A LASER BEAM FROM ONE LOCATION ON AN AIRCRAFT EXTERNALLY TO A REMOTE RECEIVER

Eugene A. Smith, Hawthorne, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Feb. 8, 1985, Ser. No. 699,704

Int. Cl.⁴ G02B *5/08, 5/10*

U.S. Cl. 350—618 **7 Claims**



1. An aircraft having a laser system associated therewith, the aircraft having a fuselage and wings comprising
a wing tip pod mounted to one of said wings,
a source of a laser beam mounted on the aircraft at a first location on the fuselage,
means for tansmitting said laser beam externally of the aircraft from said first location to the wing tip pod, said beam

being transmitted directly to said receiving means without interference with the structure of the aircraft,

receiving means located within said wing tip pod for receiving and redirecting said beam, and including

turret means rotatably mounted to the aft of said wing pod, and

an optical relay train for directing the received beam to said turret means.

4,618,225

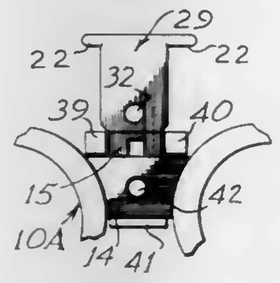
LENS HOLDER AND CARRIER FOR SAFETY MASKS

Sidney Shedrow, 202 E. Gaston St., Savannah, Ga. 31401

Continuation-in-part of Ser. No. 459,414, Jan. 20, 1983, Pat. No. 4,542,965. This application Sep. 19, 1985, Ser. No. 777,959

Int. Cl.⁴ G02C *7/08, 5/04, 5/02*

U.S. Cl. 351—57 **4 Claims**



1. A lens holding means for supporting a pair of lenses within a safety mask before the eyes of the wearer of said safety mask, said safety mask having a face plate, said lens holding means comprising a pair of lens holders, a bridge extending between said pair of lens holders and fixed to both lens holders of said pair of lens holders for supporting said lens holders with respect to each other in generally the same plane, said bridge being bendable for allowing said lens holders to lie in planes angularly related to each other for contouring said lens holding means to fit the face of said wearer and to fit within said safety mask, said bridge including carrying means for supporting said bridge from said face plate of said safety mask, said carrying means comprising a hinge fixed to the upper edge of said bridge, and a carrier fixed to said hinge, said hinge being bifurcated at said bridge for facilitating said bending of said bridge, said carrier including tabs extending laterally therefrom, said carrier defining a hole therein between said tabs and said hinge, and further including a bracket fixed to said face plate of said safety mask, said bracket including recesses for receiving said tabs such that said carrier is rotatable about said tabs, and a post extending from said bracket and receivable through said hole in said carrier on rotation of said carrier against said bracket.

4,618,226

SPRING MOUNT HINGE FOR EYEGLASSES BOWS

Rino Sartor, Montebelluna, and Giampietro Bottega, Segusino, both of Italy, assignors to Celes Optical S.r.l., Pederobba, Italy

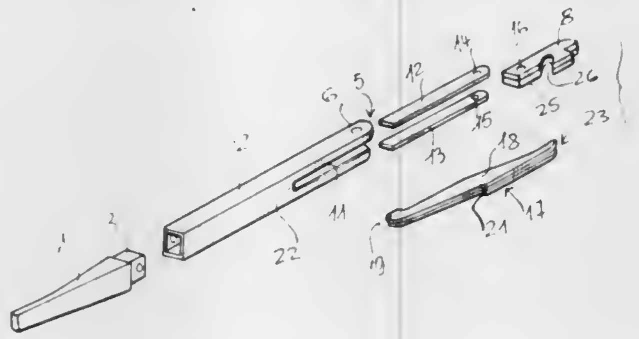
Filed Jan. 30, 1984, Ser. No. 575,641

Claims priority, application Italy, Feb. 4, 1983, 41521 A/83

Int. Cl.⁴ G02C *5/16*

U.S. Cl. 351—113 **10 Claims**

1. An elastic-hinge mounted temple for an eyeglass bow, comprising a head member rigid with a front portion of the eyeglass bow and a leg member pivoted to said head member, said leg member including a tubular portion accommodating therein a leaf spring with a substantially lozenge shape in the unbiased condition thereof, said leaf spring being secured to said leg member with a first end thereof, urging against said head member with a free end thereof, opposite to said first end, and selectively acting upon a part of said tubular portion with a middle portion thereof, said leaf spring middle portion operating as a pivot axis for said leaf spring free end during the pivotal movement of said leg member, said head member having a first engagement surface, a second engagement surface substantially transverse to said first engagement surface and a recess seat for said leaf spring free end, said first and second surfaces and said recess seat cooperating with said leaf spring free end to define an opened and a closed stable angular position of said leg member and an unstable elastic-return extra-opened position of said leg member wherein said leaf spring is elastically deformed with respect to said substantially lozenge shape.



4,618,227

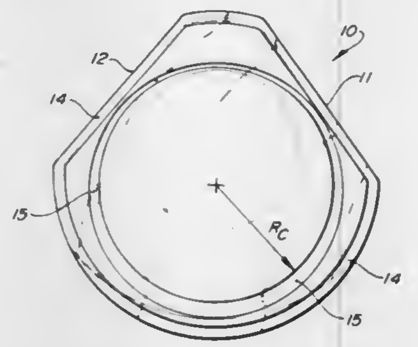
SOFT CONTACT LENS

Charles A. Bayshore, Orlando, Fla., assignor to Vistakon, Inc., Jacksonville, Fla.

Filed Oct. 7, 1983, Ser. No. 539,874

Int. Cl.⁴ G02C *7/04, 7/06*

U.S. Cl. 351—161 **14 Claims**



1. A soft contact lens comprising a prism lens body having a central vertical axis and a thickness which increases from a minimum to a maximum along said vertical axis to provide a base-down prism ballast, said lens body having a generally spherical, concave back surface adapted to fit the cornea of a human eye and a generally convex front surface, said lens body having a central optical zone and a peripheral border zone and a channel circumscribing said optical zone in at least one surface of said lens body, the depth of said channel increasing uniformly from a minimum at the apex of said prism ballast to a maximum at the base of said prism ballast.

4,618,228

BIFOCAL CONTACT LENS OF THE BIVISUAL TYPE

Heinz Baron, Frechen-Buschbell; Peter Hoefer, Aschaffenburg, and Herbert Schwind, Glattbach, all of Fed. Rep. of Germany, assignors to Titmus Eurocon Kontaktlinsen GmbH, Aschaffenburg, Fed. Rep. of Germany

Filed Dec. 9, 1983, Ser. No. 559,735

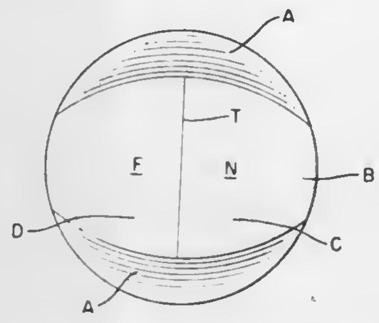
Int. Cl.⁴ G02C *7/04, 7/06*

U.S. Cl. 351—161 **4 Claims**

1. A bifocal contact lens of the bivisual (simultaneous-vision) type, comprising:

a reading-focusing lens part (N) and a distance-focusing lens part (F) of different refractive powers and a transitional area (T) therebetween, and

means for stabilizing of the lens on the eye in such a way that the transitional area (T) runs from the lower to the upper part of the lens with the reading-focusing lens part (N) located nasally and the distance-focusing lens part (F) located temporally when the lens is in situ.



4,618,229

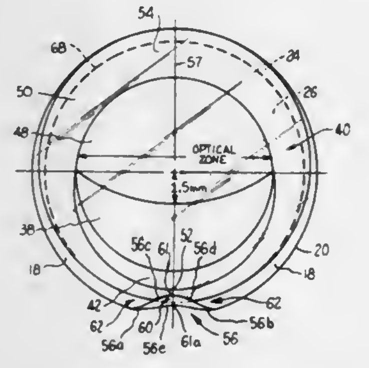
BIFOCAL CONTACT LENS

Benjamin L. Jacobstein, Coral Gables; Thomas J. Mestrits, Coconut Grove, and Murray Miller, Miami, all of Fla., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Jul. 22, 1983, Ser. No. 516,489

Int. Cl.⁴ G02C *7/04, 7/06*

U.S. Cl. 351—161 **9 Claims**



1. A prism ballasted contact lens comprising:

a posterior surface having a substantially circular boundary;

an anterior surface; and

a peripheral edge zone contiguous with said posterior and anterior surfaces, said peripheral edge zone being configured to define a stabilizing and vent zone in the prism ballast area, having two thickened stabilizing portions spaced from each other by a substantially flat vent surface which tapers from said anterior surface toward said posterior surface and which intersects said posterior surface along an arcuate line of curvature reverse to the curvature of the substantially circular boundary of the posterior surface, said vent surface partially releasing constrictive engagement between said lens and the eye, said stabilizing portions stabilizing said contact lens and preventing said lens from rotating on the eye of the wearer.

4,618,230

VISUAL STIMULATOR

John Ens, Burnaby; James A. McEwen, Richmond, and Craig W. Beattie, Burnaby, all of Canada, assignors to Vancouver General Hospital, Vancouver, Canada

Filed Jun. 24, 1982, Ser. No. 391,972

Int. Cl.⁴ A61B *3/10*

U.S. Cl. 351—221 **8 Claims**

1. A visual stimulator, comprising:

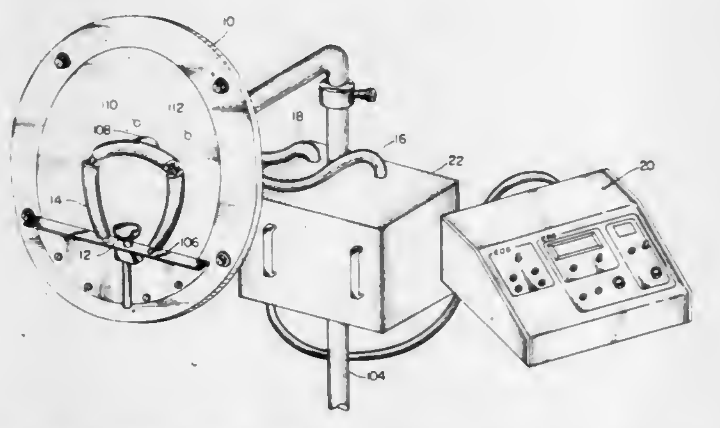
light directing means for directing light from a light source into a subject's eyes;

attenuator means for selectably attenuating said light source;

photo-detector means for producing a first output signal representative of the radiant energy directed onto the subject's eyes; and

signal processing means for receiving and processing said first output signal to derive therefrom further output signals representative of the radiometric or photometric characteristics of said radiant energy;

said attenuator means including:



(a) a first shutter leaf affixed to a first galvanometer shaft; and,

(b) a second shutter leaf affixed to a second galvanometer shaft;

wherein said shutter leaves are positioned for pivotal movement with said galvanometer shafts to attenuate light from said light source passing between said shutter leaves.

4,618,231

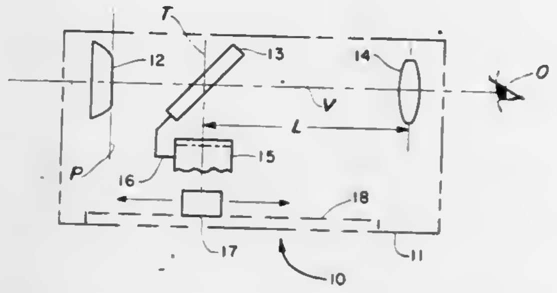
ACCOMMODATIVE AMPLITUDE AND SPEED MEASURING INSTRUMENT

Louis V. Genco, Enon, and Harry L. Task, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 22, 1984, Ser. No. 582,496

Int. Cl.⁴ A61B *3/02*

U.S. Cl. 351—237 **12 Claims**



1. An instrument for measuring the accommodative speed of the eye of a subject, comprising:

a. a first visual display in a preselected pattern, said first display disposed a predetermined distance from said subject for viewing along a first optical axis;

b. a second display in a preselected pattern disposed along a second optical axis intersecting said first axis;

c. at least one display of said first display and said second display comprising a pattern having a plurality of distinct and recognizable orientations with respect to the axis along which said at least one display is viewed;

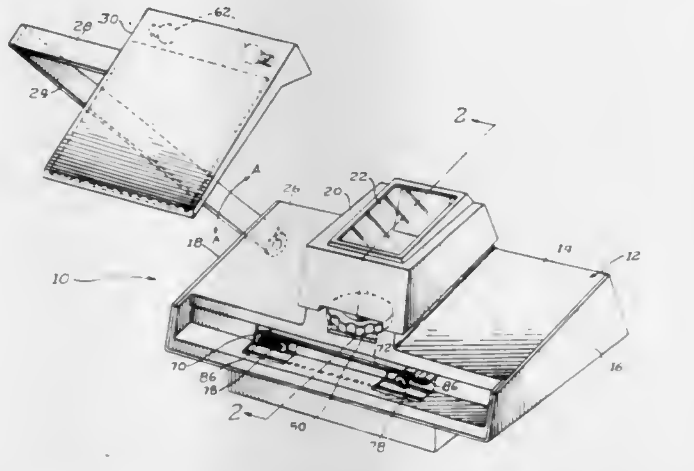
d. imaging means, intermediate said first display and said subject, for optically imaging said second display along said first axis and thereby superimposing the image of the pattern of said second display onto the image of the pattern of said first display for viewing by said subject along said first axis;

e. means, structurally interconnecting said second display and said imaging means, for selective positioning of said second display, and said imaging means along a direction

parallel to said first axis and between said first display and said subject;
- f. electronic means, operatively connected to said first display and said second display, for randomly and alternately generating the patterns thereof, and for randomly generating said at least one display in any one of said plurality of orientations;
- g. switching means operable by said subject and connected to said first display and said second display for selectively turning the displays on and off; and
- h. recording means, operatively connected to said switching means and said electronic means for recording the last displayed orientation and the interval of time the displays were on.

4,618,232
DESK TOP MICROFORM READER
Thomas R. Wells, Indian Creek, Ill., assignor to Bell & Howell Company

Filed Dec. 21, 1984, Ser. No. 685,086
Int. Cl.⁴ G03B *21/24*
U.S. Cl. 353—79 **5 Claims**

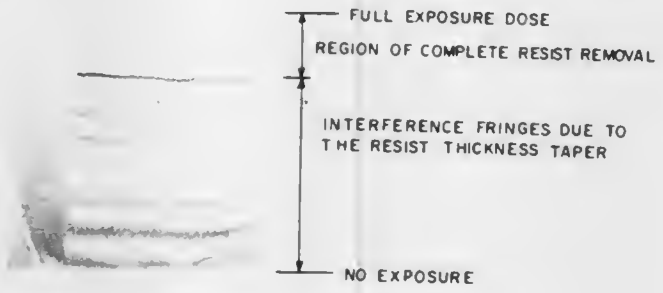


1. A desk top microform reader for use on a horizontal, planar surface comprising:

a housing structure, enclosing projection means and microform receiving means,
an L-shaped supporting arm having two ends, a vertically rising end mounted to one side of the housing structure, and a horizontally extending end attached to the vertically rising end and extending in the direction of the housing structure,
a hood connected to and supported by the horizontally extending end, the hood connected to the horizontally extending end by means of a pivot connection, the hood being selectively pivoted about an axis parallel to the vertically rising end to either of two positions, with one of the positions being an image projection position,
at least two abutment walls on the hood that contact the horizontally extending end at the two positions for accurately positioning the hood when it is pivoted from one position to the other,
reflecting means mounted on the hood in spaced relationship with respect to the horizontal, planar surface,
the microform receiving means comprising means to hold the microform in a flat, horizontal plane,
the projection means being optically coupled to the reflecting means when the hood is pivoted to the image projection position for projecting onto the horizontal flat planar surface an optical image corresponding to an image on a microform when the image is placed in the projection means, and
a substantially unenclosed, uninterrupted, optical image projection path extending from the projectiong means to the reflecting means and to the horizontal planar surface to project the image from a horizontally held microform onto a horizontal planar surface without the need of an enclosure to exclude ambient light.

4,618,233
SCANNING WEDGE METHOD FOR DETERMINING CHARACTERISTICS OF A PHOTORESIST
Walter G. Hertlein, Jona, Switzerland, assignor to Shipley Company Inc., Newton, Mass.

Filed May 20, 1985, Ser. No. 736,431
Int. Cl.⁴ G03B *41/00*
U.S. Cl. 354—20 **10 Claims**

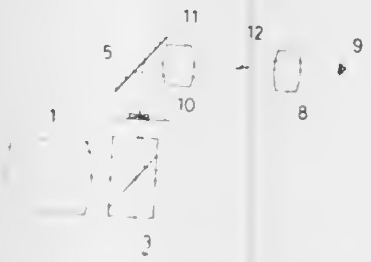

FULL EXPOSURE DOSE
REGION OF COMPLETE RESIST REMOVAL
INTERFERENCE FRINGES DUE TO THE RESIST THICKNESS TAPER
NO EXPOSURE

8. A photoresist test mask comprising:

an optically transparent substrate; and
a coating of a granular matter on the top surface of the substrate that linearly varies from no coating to an opaque coating.

4,618,234
FINDER OPTICAL SYSTEM FOR CAMERAS
Kazuo Ikari, Hachiouji, and Toru Fujii, Hino, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1985, Ser. No. 717,092
Claims priority, application Japan, Mar. 29, 1984, 59-61766
Int. Cl.⁴ G03B *13/08*
U.S. Cl. 354—225 **4 Claims**



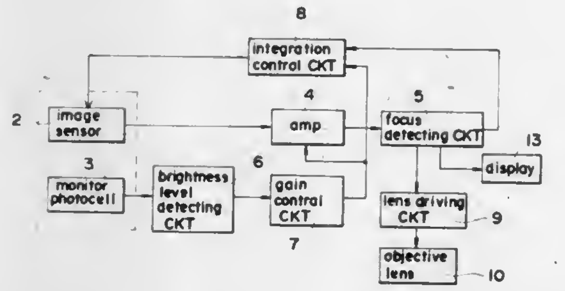
1. A finder optical system for cameras comprising a photographing lens, a half-mirror for dividing light having passed through said photographing lens into two, a screen on which an image of an object to be photographed is to be formed by light having passed through said photographing lens and reflected by said half-mirror and a relay lens for forming said image in a front side focal position of a magnifying lens, a relation of $0.2 \leqq f_{oc}/L \leqq 0.8$ being satisfied, where a focal length of the magnifying lens is represented by f_{oc} and distance from the screen to a front side principal point position of the magnifying lens is represented by L.

4,618,235
FOCUS DETECTING DEVICE FOR A CAMERA
Tokuji Ishida, and Masataka Hamada, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 12, 1985, Ser. No. 754,282
Claims priority, application Japan, Jul. 16, 1984, 59-148091
Int. Cl.⁴ G03B *3/00, 15/05*
U.S. Cl. 354—403 **16 Claims**

1. A focus detecting device for a camera which includes an objective lens, said device comprising:

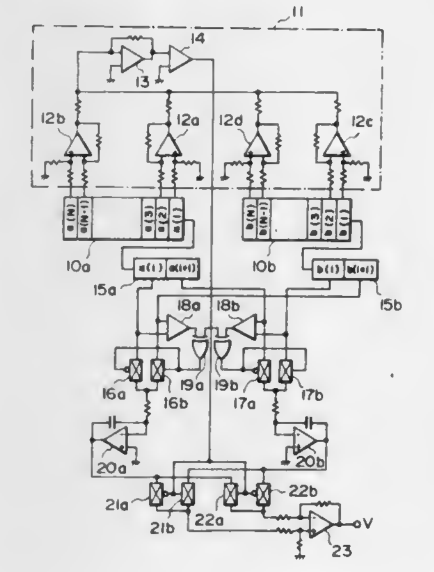
an image sensor for generating an image signal, said image sensor including photoelectric converter means for converting the intensity of light incident thereon into an amount of electric charge and charge intergration means for integrating the converted amount of charge;
a focus detection optical system for forming an image of an object on said image sensor;
integration control means for controlling integration time of said charge integration means to terminate an integration operation when the level of integrated charge reaches a given level within a first given time and terminate the integration operation upon lapse of the first given time when the level of the integrated charge doesn't reach the given level within the first given time;



amplifier means for amplifying the image signal of said image sensor by a given gain;
gain control means for controlling and determining the gain of said amplifier means in accordance with brightness of the object;
focus condition detecting means for detecting a focus condition of said objective lens in accordance with an amplified image signal from said amplifier means;
discrimination means for discriminating whether a focus condition detection is possible or not and generating a discrimination signal when the focus condition detection is impossible; and
changing means responsive to the discrimination signal for replacing the first given time by a second given time which is longer than the first given time.

4,618,236
FOCUS DETECTING APPARATUS
Akira Akashi; Akira Ishizaki; Akira Hiramatsu; Yasuo Suda, all of Yokohama, and Keiji Ohtaka, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1984, Ser. No. 667,818
Claims priority, application Japan, Nov. 8, 1983, 58-209535
Int. Cl.⁴ G03B *3/00;* G01J *1/36*
U.S. Cl. 354—406 **3 Claims**

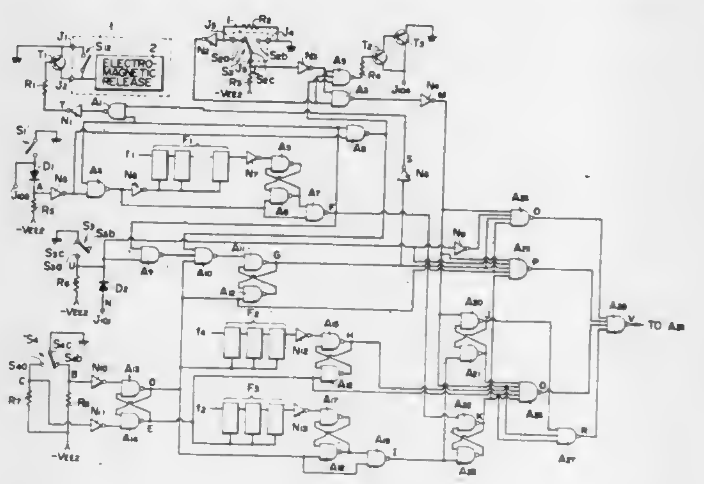


1. A focus detecting apparatus for detecting a focus state of an objective lens, comprising:

optical means for forming a plurality of images from an object;
sensing means comprising a plurality of photosensitive elements for sensing said images and producing output signals, relative positional relation of said images on said sensing means varying in accordance with the focus state of said objective lens;
discriminating means for discriminating the focus state of the objective lens on a basis of the outputs of said sensing means to detect the focus state of said objective lens, said discriminating means having two different processes for discriminating the focus state of said objective lens, one of said two processes being executed with signals, each of which is the smaller of the signals output from the two photosensitive elements which correspond to each other, and the other process being executed with signals, each of which is the larger of the signals output from the two photosensitive elements which correspond to each other; and
evaluation means for evaluating said images on the basis of the outputs from said sensing means to select a preferred process from said two processes thereby to control said discriminating means so as to effect discrimination of the focus state of the objective lens in accordance with the preferred process.

4,618,237
MOTOR DRIVE FOR CAMERA
Masahiro Kitagawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd, Tokyo, Japan

Continuation of Ser. No. 587,637, Mar. 8, 1984, abandoned. This application Jul. 29, 1985, Ser. No. 760,136
Claims priority, application Japan, Mar. 17, 1983, 58-44860
Int. Cl.⁴ G03B *7/00*
U.S. Cl. 354—412 **22 Claims**



1. A motor drive for mechanically transmitting the rotation of a motor to a camera to which the motor drive is releasably mounted in order to enable a shutter release operation of the camera shutter and/or a film winding operation within the camera; comprising:

means in said motor drive for producing a motor drive signal and an electromagnetic release signal substantially simultaneously in response to the operation of an operating member in said motor drive, both said motor drive signal and said electromagnetic signal being electrical signals;
means for transmitting the electromagnetic release signal from the motor drive to said camera which is of the electromagnetic release type and which includes a shutter release mechanism;
said shutter release mechanism including means responsive to said electromagnetic release signal for transmitting an exposure operation signal from said camera of the electromagnetic release type to the motor drive just prior to operation of the shutter, the exposure operation signal being produced by means for detecting the exposure oper-

ation, which means is located within said camera of the electromagnetic release type; means for preventing the rotation of the motor in response to the exposure operation signal during the exposure operation and means for energizing the motor when the exposure operation signal is absent and the motor drive signal is present.

4,618,238
CAMERA

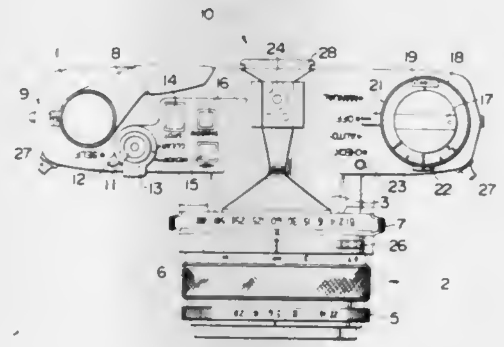
Yoshihisa Maitani; Katsuhiko Tsunefuji, and Masafumi Yamasaki, all of Hachioji, Japan, assignors to Olympus Optical, Co. Ltd., Tokyo, Japan

Division of Ser. No. 485,432, Apr. 15, 1983, Pat. No. 4,589,754. This application Oct. 12, 1984, Ser. No. 661,243

Claims priority, application Japan, Apr. 21, 1982, 57-65385

Int. Cl.^{4} G03B *7/08, 17/20*

U.S. Cl. 354—431 **13 Claims**



9. A camera including average photometric means and spotwise photometric means which can be selectively activated to permit a photographing operation in an average photometry mode and in a spotwise photometry mode; comprising:

- an operating member to change the photographing mode from the average mode to the spotwise mode; and
- means for automatically changing the photographing mode from the spotwise mode to the average mode in response to the completion of the photographing operation in the spotwise mode.

4,618,239
PHOTOGRAPHIC APPARATUS AND MEASUREMENT METHOD OF EXPOSURE CONDITIONS

Takashi Sakamoto, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

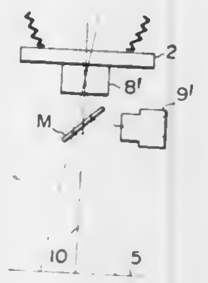
Filed Oct. 4, 1984, Ser. No. 657,751

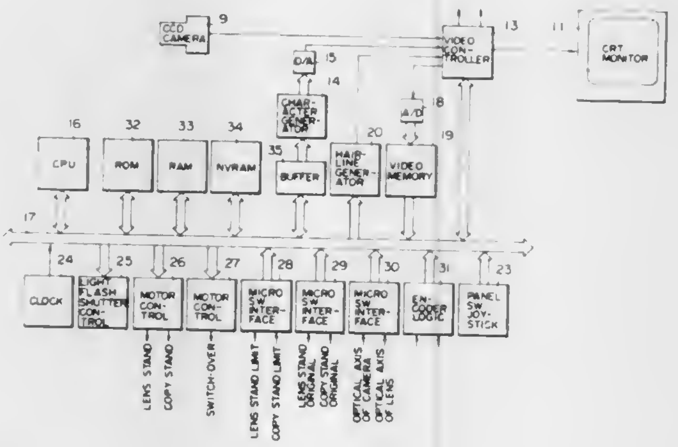
Claims priority, application Japan, Oct. 12, 1983, 58-189352

Int. Cl.^{4} G03B *7/099, 27/74*

U.S. Cl. 354—477 **3 Claims**

1. A photographic apparatus comprising a photographic camera including a camera lens defining an optical axis, a photoelectric camera having a light sensing means to sense light conditions of a subject to be photographed, and means to position the photoelectric camera sensing means at a location which is in effect on the optical axis of the camera lens when it is in its normal operating position, said sensing means location corresponding to the location of the lens relative to a subject to be photgraphed, wherein said apparatus further comprises a light sensor processing circuit capable of measuring illumance distribution of the surface of a subject, $\cos^4\theta$ law effects, variation in density of a image, and changes in intensity of light sources.





4,618,240
HEATING DEVICE HAVING A HEAT INSULATING ROLLER

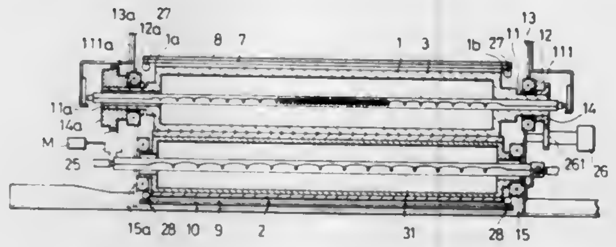
Masaaki Sakurai, Hanno, and Kazuo Kagiura, Iokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1983, Ser. No. 475,381

Claims priority, application Japan, Mar. 16, 1982, 57-42211; Mar. 17, 1982, 57-42409; Mar. 26, 1982, 57-49724; Sep. 9, 1982, 57-157084

Int. Cl.^{4} G03G *15/20*

U.S. Cl. 355—3 FU **61 Claims**



1. A heating device comprising:

- a heating roller for heat-treating an object to be heated;
- heat loss preventing means provided at end portions of said roller to prevent heat loss from the end portions of said roller resulting from conduction and having heat-resistant insulating members to keep said heating roller under a thermally floated condition;
- means for heating said roller, said heating means having a heating member whose heating generating value is larger in the middle portion of said roller than in the end portions of said roller with respect to the longitudinal direction of said roller;
- drive means for rotating said heating roller; and
- means for rotatably supporting said heating roller, and wherein said heat loss preventing means has an insulating member including a gear of insulating resin fitted to said roller at portion whereat said drive means acts on said roller, and an insulating member at a portion whereat said supporting means acts on the end portion of said roller.

4,618,241
APPARATUS, PROCESS FOR CHARGING TONER PARTICLES

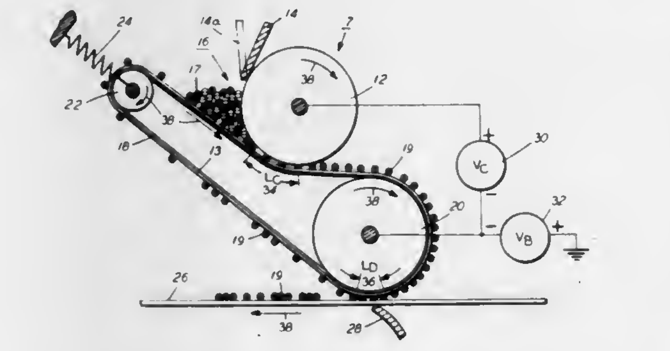
Dan A. Hays, Fairport, and William H. Wayman, Macedon, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 286,784, Jul. 27, 1981, Pat. No. 4,459,009. This application Mar. 12, 1984, Ser. No. 588,181

The portion of the term of this patent subsequent to Jul. 10, 2001, has been disclaimed.

Int. Cl.^{4} G03G *15/08*

U.S. Cl. 355—3 DD **66 Claims**



1. An apparatus for charging toner particles containing in operative relationship a rotating means for metering insulating toner particles and a deflected means for transporting and charging insulating toner particles, the means for metering, and the means for transporting being self-spaced by insulating toner particles situated therebetween, said means for metering and said means for transporting biased to a predetermined potential, and wherein the means for transporting contains a triboelectrically active coating thereon.

4,618,242
HEAT FIXING DEVICE FOR A COPYING MACHINE

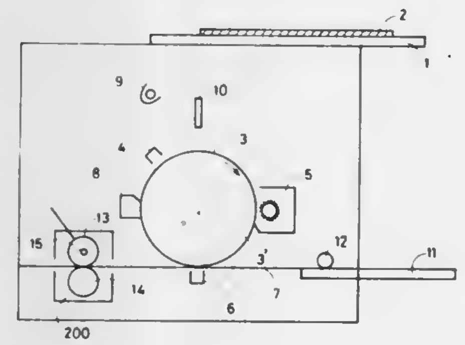
Toshio Yamagishi, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 4, 1984, Ser. No. 678,219

Claims priority, application Japan, Dec. 5, 1983, 58-230091; Dec. 9, 1983, 58-233262

Int. Cl.^{4} G03G *15/20*

U.S. Cl. 355—3 FU **14 Claims**



1. A heat fixing device comprising:

- fixing means for fixing particles onto a base material by heating;
- detecting means for detecting environmental conditions surrounding and/or applied to the fixing means; and
- control means responsive to the detecting means, for controlling the speed or number of the base material passing through the fixing means.

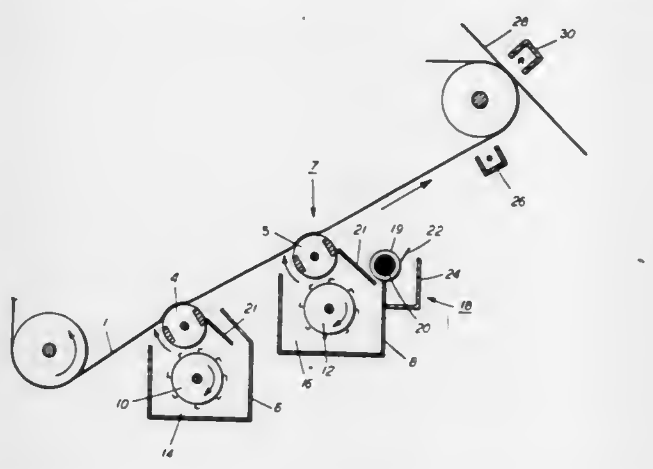
4,618,243
APPARATUS FOR COLOR DEVELOPMENT WITH A MAGNETIC SEPARATOR CONTAINING A STATIONARY SHELL WITH ROTATING MAGNETS

John F. Knapp, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 16, 1984, Ser. No. 672,002

Int. Cl.^{4} G03G *15/01, 15/08*

U.S. Cl. 355—4 **10 Claims**



1. An improved apparatus for causing the development of electrostatic latent images of an imaging member consisting essentially of providing a moving deflected flexible imaging member; a moving toner transporting means, a development zone situated between said members, with the distance between the flexible imaging member and the transporting member being from about 0.05 millimeters to about 1.5 millimeters, a first developer reservoir with magnetic developer particles, a second developer reservoir with colored developer particles, and a magnetic separator comprised of a stationary shell with rotating magnets therein.

4,618,244
IMAGE FORMING APPARATUS CAPABLE OF SELECTIVELY OPTICALLY SCANNING ONE OR MORE DOCUMENTS TO BE COPIED DURING ONE SCANNING OPERATION

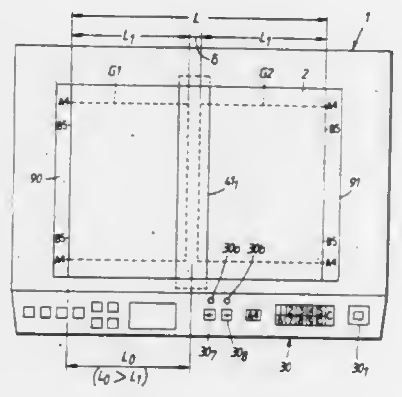
Junji Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 25, 1985, Ser. No. 758,700

Claims priority, application Japan, Sep. 5, 1984, 59-185722

Int. Cl.^{4} G03G *15/00*

U.S. Cl. 355—8 **7 Claims**



1. An image forming apparatus comprising:

- a document table having plural document holding areas capable of holding plural documents selectively placed on respective of said holding areas;
- optical scanning means movably provided along said document table to optically scan documents placed on selected of said holding areas;
- plural indicating means respectively corresponding to said

plural holding areas provided at the respective holding areas to indicate allowable copy ranges;

designating means for selecting any number of said plural holding areas to be scanned so that any documents placed on said plural holding areas in relation to said respective plural indicating means are scanned;

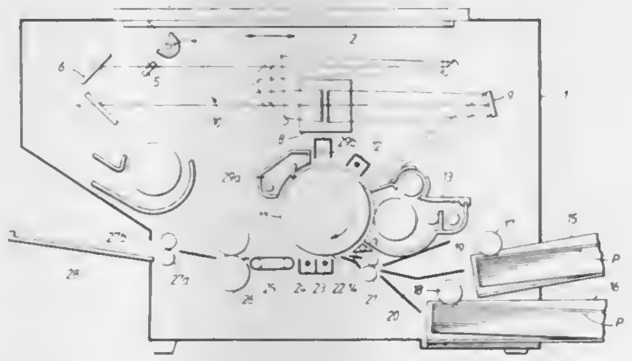
means for controlling the movement of said optical scanning means to optically scan only the holding areas selected by means of said designating means;

means for producing respective copies of each document placed on a selected holding area selectively scanned by said optical scanning means.

4,618,245
IMAGE FORMING APPARATUS AND ATTACHMENT WHICH TOGETHER ENTER AN ENERGY SAVING MODE

Yukihiro Fukushi, Kawasaki, and Hiroyuki Segawa, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 6, 1985, Ser. No. 730,634
Claims priority, application Japan, May 10, 1984, 59-93192
Int. Cl.⁴ G03G *15/20, 21/00*
U.S. Cl. 355—14 SH **12 Claims**



1. An image forming apparatus with an attachment comprising:

means for forming an image on a recording medium;

means for supplying a first level of electric power for energizing said image forming means for image forming operation;

means for reducing the electric power supplied to said image forming means by said supplying means to a second level lower than the first level so that less electric power is consumed than during said image forming operation;

means for generating a control signal in response to the reduction of electric power supplied to said image forming means; and

control means for maintaining the attachment in an inactive status in response to the control signal.

4,618,246
IMAGE FORMING DEVICE

Nao Nagashima, Tokyo; Koji Suzuki, Yokohama; Jyoji Nagahira, Tokyo; Kouki Kuroda, Yokohama, and Yoshiaki Takayanagi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

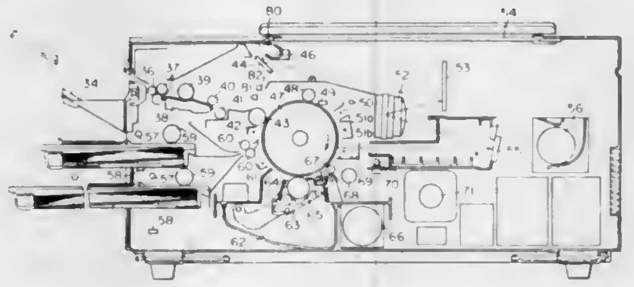
Continuation of Ser. No. 661,117, Oct. 15, 1984, Pat. No. 4,573,788, which is a continuation of Ser. No. 284,138, Jul. 16, 1981, abandoned. This application Nov. 6, 1985, Ser. No. 795,420
Claims priority, application Japan, Jul. 22, 1980, 55-100087; Jul. 23, 1980, 55-101657; Jul. 24, 1980, 55-101504
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—14 R **5 Claims**

1. An image forming apparatus comprising:

(a) image forming means for forming an image on a recording member, said image forming means including means for forming the image with different magnifications,

(b) a first control means for detecting an image formation condition and for controlling said image forming means based on the detected condition to form an adequate image, said first control means having a digital memory storing a plurality of control parameters for use in control of said image forming means, and

(c) a second control means for controlling said first control means to provide a different control condition for said image forming means in accordance with the magnification,

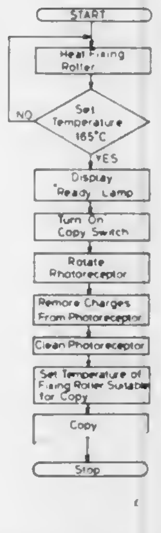


wherein said second control means selects a desired one among said plurality of control parameters in accordance with the magnification, and said first control means controls said image forming means in accordance with the detected image formation condition and the selected control parameter.

4,618,247
PHOTORECEPTOR PRE-INITIALIZING ELECTROPHOTOGRAPHIC COPYING MACHINE

Masaru Tsuji, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 6, 1984, Ser. No. 678,831
Claims priority, application Japan, Dec. 9, 1983, 58-233287
Int. Cl.⁴ G03G *15/20*
U.S. Cl. 355—14 FU **3 Claims**



1. A photoreceptor initialization device in an electrophotographic copying machine, said device comprising:

copy-image forming means for enabling said copying machine to perform a copying operation by providing a toner image onto a copy paper;

heat-fixing means for heat-fixing said toner image onto said copy paper in said copying operation;

means for heating said heat-fixing means to a predetermined toner fixing temperature;

detecting means for determining that said heat-fixing means is being heated prior to said heat-fixing means reaching said predetermined toner fixing temperature;

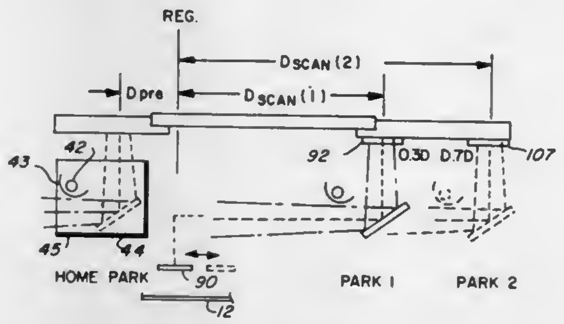
means for initializing the photoreceptor in response to said detecting means determining that said heat-fixing means is being heated;

said copy-image forming means for enabling said copying machine being activated subsequent to initializing the photoreceptor and prior to said heat-fixing means reaching said predetermined toner fixing temperature.

4,618,248
TEST PATCH GENERATION UTILIZING SYSTEM SCAN OPTICS

Wayne A. Buchar, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 18, 1985, Ser. No. 713,530
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—14 R **2 Claims**



1. In an electrophotographic printing machine wherein a document on a support platen is scanned and an image thereof is projected onto a photoreceptor surface, an optical illumination and scanning system adapted to operate in a first and second mode of operation, said system comprising:

means for moving an illumination and scan assembly mounted beneath said platen in a first, document copying, mode from a start of scan to an end of scan to the start of scan position whereby a latent image of the document is formed on the photoreceptor surface,

at least one density target strip affixed to the bottom surface of the platen at a location outside the end of scan position,

said moving means adapted to move said illumination and scan assembly, in a second, test, mode of operation, to a first position outside the start of scan position, said motion occurring coincident with the positioning of an opaque occluder in the optical path to form a dark decay test patch at the photoreceptor surface,

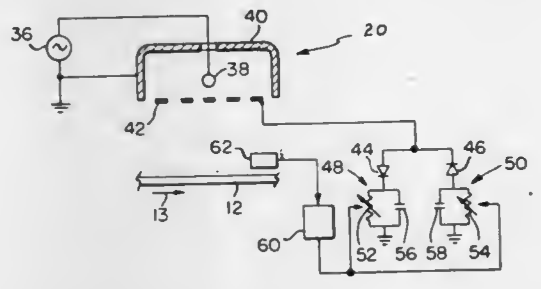
said moving means further adapted to move said illumination and scan assembly from said first position to a second position beneath said target strip, and

means for selectively and sequentially altering the illumination level directed to said target strip to thereby form test patches of varying density at the photoreceptor surface.

4,618,249
CORONA-CHARGING APPARATUS

James C. Minor, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 10, 1985, Ser. No. 742,828
Int. Cl.⁴ G03G *15/02*
U.S. Cl. 355—14 CH **4 Claims**



1. In a corona-charging apparatus for charging an insulating layer wherein the apparatus includes a conductive control grid, at least one corona-emitting electrode, and a power supply to the electrode, the improvement comprising:

a variable impedance;

circuit means, without an active power supply to the grid, for sinking current from the grid through said variable impedance;

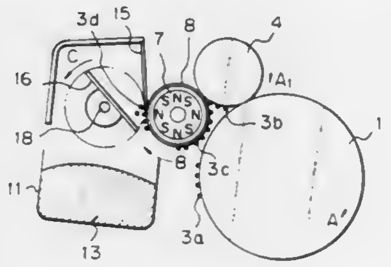
means for sensing the charge in the insulating layer; and

control means responsive to said sensing means for adjusting the value of said variable impedance to maintain said charge at a predetermined level.

4,618,250
PHOTOSENSITIVE DRUM CLEANING DEVICE IN ELECTROPHOTOGRAPHIC RECORDING SYSTEM

Matsusaburo Noguchi; Mikio Yamamoto, and Tetsuji Kojima, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jun. 10, 1985, Ser. No. 742,965
Claims priority, application Japan, Jun. 11, 1984, 59-118216
Int. Cl.⁴ G03G *21/00;* **A47L** *13/40;* **B60S** *1/28*
U.S. Cl. 355—15 **6 Claims**



1. A photosensitive drum cleaning device in an electrophotographic recording system, comprising:

a photosensitive drum for attracting magnetic toner to the peripheral surface thereof and transferring the magnetic toner to paper;

a cleaning roll contacting said drum for wiping excess magnetic toner off of said surface of said drum;

means, comprising a rotatable cylindrical device including a rotatable cylindrical permanent magnet, for carrying the toner wiped off of said surface of said drum on a peripheral surface of said cylindrical device under the magnetic forces of said permanent magnet;

a scraper making contact with said peripheral surface so as to block the toner carried on said peripheral surface; and

means for removing toner accumulated at a point of contact between said scraper and said peripheral surface, said removing means including a rotary blade formed of magnetic material, rotatable to pass sufficiently close to said point of contact between said peripheral surface and said scraper to scrape off the toner blocked by said scraper and carry away the toner with the toner held to said blade by magnetic attraction.

4,618,251
RECORDING APPARATUS

Hitoshi Yanagawa, Tokyo; Takeshi Nagasawa; Shunzo Inoue, both of Yokohama; Toshio Iwaya, Shiki, and Shinji Murata, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 421,736, Sep. 23, 1982, abandoned. This application Oct. 5, 1984, Ser. No. 658,072
Claims priority, application Japan, Oct. 5, 1981, 56-158482; Oct. 5, 1981, 56-158483; Oct. 5, 1981, 56-158484
Int. Cl.⁴ G03B *27/52*
U.S. Cl. 355—28 **1 Claim**

1. A recording apparatus for recording an image on an elongate web comprising:

exposure means for exposing an image on said web;

developing means for developing the exposed web;

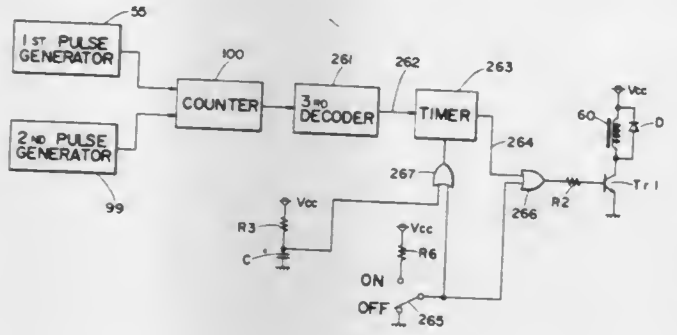
a web storage chamber disposed between said exposure means and said developing means for storing in loop form the web fed from said exposure means;

feeding means for feeding the web from said web storage chamber to said developing means;

operating means for initiating operation of said developing means;

timer means arranged for actuation when the amount of web in said web storage chamber has reached a predetermined amount so as to generate a timing signal a predetermined interval after actuation, wherein said timer means is reset to prevent generation of the timing signal if said operating means initiates opertion of said developing means before passage of the predetermined interval; and

control means for controlling said feeding means such that the web in said web storage chamber is fed to said developing means either in response to the initiation of operation of said developing means or in response to the timing signal.



4,618,252

COPYING MACHINE WITH A VARIABLE MAGNIFICATION DEVICE

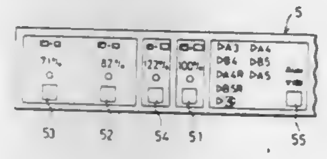
Masahiko Hisajima, Ikoma; Yutaka Shigemura, Takarazuka; Yoshinori Makiura, Tondabayashi, and Mitsuya Ishito, Sakai, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

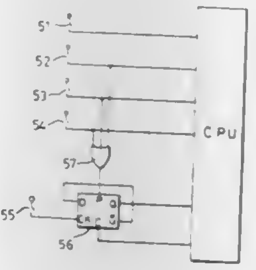
Filed Mar. 22, 1985, Ser. No. 714,745

Claims priority, application Japan, Mar. 27, 1984, 59-60241

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—55 **5 Claims**





1. A copying machine which has a variable magnification device and is operable in a variable magnification copying mode, comprising two paper cassettes mounted in a drawable manner in vertically spaced relation so that there is an upper cassette and a lower cassette, wherein a desired paper cassette can be selected by a select key for the paper cassette as the source of copying paper for the machine, characterized in that there are provided

a detection means for detecting when said variable magnification copying mode has been selected, said detection means being operable to provide a signal when said variable magnification copying mode has been selected, and,

a cassette selection means for selecting an upper paper cassettte as the source of the copying paper, said selection means being operable automatically to select the upper cassette in response to said signal from the detection means showing that the variable magnification copying mode has been selected.

4,618,253

FOCAL POSITION ADJUSTING DEVICE FOR SMALL VARIABLE-MAGNIFICATION TYPE COPYING MACHINE WITH ZOOM LENS

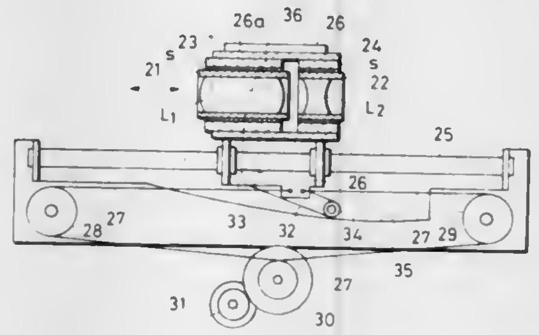
Yasunori Arai, Tokyo, Japan, assignor to Asahi Kogaku Kogyo K.K., Tokyo, Japan

Filed Mar. 27, 1985, Ser. No. 716,433

Claims priority, application Japan, Apr. 16, 1984, 59-76386

Int. Cl.⁴ G03B *27/34, 27/40, 27/70*

U.S. Cl. 355—57 **4 Claims**



1. A small zoom-lens operated variable-magnification type copying machine comprising: a reciprocating original holding stand; a first mirror for reflecting the image of an original on said stand; an second mirror for reflecting towards a photosensitive drum a light beam reflected from said first mirror, said first and second mirrors being arranged below said original holding stand; and a zoom lens disposed between said first and second mirrors, said zoom lens including at least two lens groups arranged along the optical axis; zooming means for moving said zoom lens to perform a zooming operation and position adjusting means for adjusting the positions, in the direction of the optical axis, of said at least two lens groups in said zoom lens during assembly of said copying machine independently of said zooming operation.

4,618,254

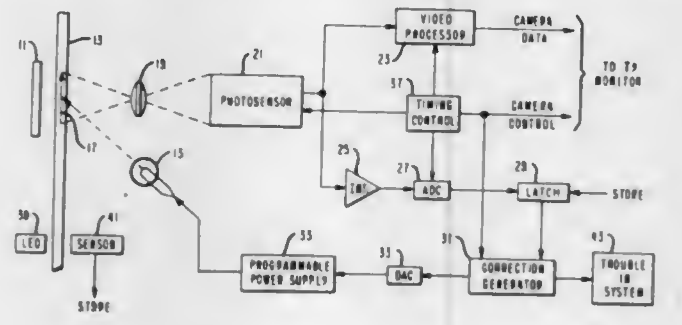
AUTOMATIC LIGHT CONTROL SYSTEM

Roger H. Therrien, Waterloo, and Maninderpal S. Chahal, Kitchener, both of Canada, assignors to NCR Canada Ltd, Mississauga, Canada

Filed Oct. 15, 1982, Ser. No. 435,014

Int. Cl.⁴ G03B *27/78*

U.S. Cl. 355—68 **2 Claims**



1. An automatic light intensity control system for a light source located adjacent a pathway along which an object having a light reflecting surface is moved, said system comprising:

a reference background located adjacent the pathway for reflecting light impinging thereon from the light source;

sensing means positioned adjacent the pathway and adapted to output a first control signal upon movement of an object along said pathway before it reaches said reference background;

a photsensor positioned adjacent said pathway,

a lens for focusing light reflected from said reference background or from the surface of said object onto said photosensor, said photosensor being responsive to this focused reflected light for producing an electrical signal which is proportional to the reflected light received from the reference background or the light reflecting surface of the object;

an integrator coupled to said photosensor for averaging the electrical signal received from said photosensor over a preselected period of time to develop a first analog signal;

an analog-to-digital converter coupled to said integrator for converting the first analog signal into a first digital signal;

a storage member coupled to said analog-to-digital converter and said sensor means, said storage member enabled by said first control signal to store the first digital signal outputted by said analog-to-digital converter thereby terminating the preselected period of time;

means coupled to said storage member for comparing the first digital signal with a digital reference signal to generate a second digital signal;

a digital-to-analog converter coupled to said comparing means for converting the second digital signal into a second analog signal;

and an analog programmable power supply coupled between said light source and the digital to analog converter for receiving such second analog signal enabling the power supply to change the voltage applied to the light source as a function of the amplitude of the second analog signal.

4,618,255

PROCESS CAMERA APPARATUS

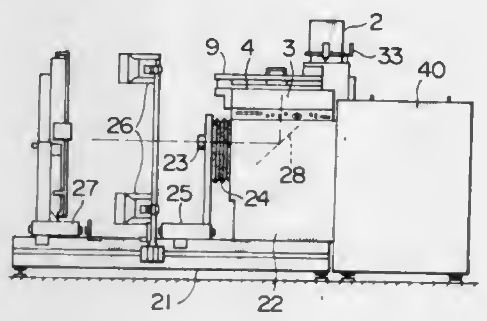
Eiji Miyasaka; Iwao Hirose, both of Hikone; Koji Yamashita, Omihachiman; Kenji Kawai, Hikone, and Eiji Kanada, Nagaokakyo, all of Japan, assignors to Dainippon Screen Mfg., Co., Ltd., Kyoto, Japan

Filed Jun. 17, 1985, Ser. No. 745,641

Claims priority, application Japan, Jun. 18, 1984, 59-126209; Jun. 18, 1984, 59-126210; Jun. 18, 1984, 59-91415[U]

Int. Cl.⁴ G03B *27/72*

U.S. Cl. 355—71 **10 Claims**



1. A process camera apparatus comprising:

a base;

a transparent platen provided on said base;

a light-shielding means covering the upper side of said transparent platen such as to form a light-shielded region on said transparent platen;

a screen means including a contact screen and a supporting means for supporting said contact screen, said screen means being withdrawably disposed on the portion of said transparent platen within said light-shielded region;

a conveyor means disposed adjacent one end of said base and adapted for conveying said photosensitive material into said light-shielded region; and

a light-shielded condition maintaining means adapted to maintain the light-shielded condition in said light-shielded region when said screen means is being taken out from said light-shielded region,

said light-shielding means including a light-shielding frame having a light-shielding cover sheet, said light-shielding frame being pivotable between an open position and a closing position in which said light-shielding frame covers the upper side of said platen such as to form said light-shielded region on said platen.

4,618,256

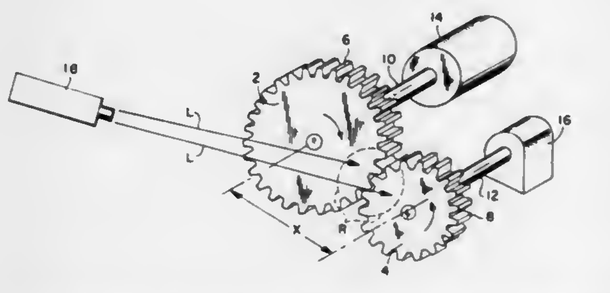
STROBOSCOPIC METHOD FOR DETERMINING GEAR MESH QUALITY

Mark E. Bartolomeo, Vernon, Conn., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 12, 1985, Ser. No. 722,477

Int. Cl.⁴ G01P *3/40;* **G03B** *1/00*

U.S. Cl. 356—23 **3 Claims**



1. A stroboscopic method of determining gear mesh quality, said method including the steps of:

(a) mounting at least two gears of a given type for rotation in meshed engagement between the respective teeth thereof predetermined to provide the degree of mesh engagement quality desired therefor for a predetermined rpm of said gears,

(b) providing means for rotating one of the gears of step (a) at the predetermined rpm,

(c) providing a stroboscope light source having an adjustable pulse rate for a light beam emitted therefrom,

(d) rotating the gear of step (b) at the predetermined rpm,

(e) adjusting the pulse rate of the light beam of step (c) to substantially match the gear rpm of step (d),

(f) directing the light beam of step (e) at a region encompassing the meshed engagement between the respective teeth of the gears of step (a) in a direction predetermined to establish a visible light refractance interference pattern for said gears depicting the standard of mesh engagement quality characteristic thereof,

(g) recording the standard pattern established in step (f),

(h) replacing at least one of the gears of step (a) with a gear of the same type,

(i) repeating steps (d) through (f) at the predetermined rpm and without changing the direction of the light beam to provide a light refractance interference pattern characteristic thereof,

(j) comparing the pattern of step (i) to the established standard pattern of step (g) to determine the gear mesh quality of the gears of step (h).

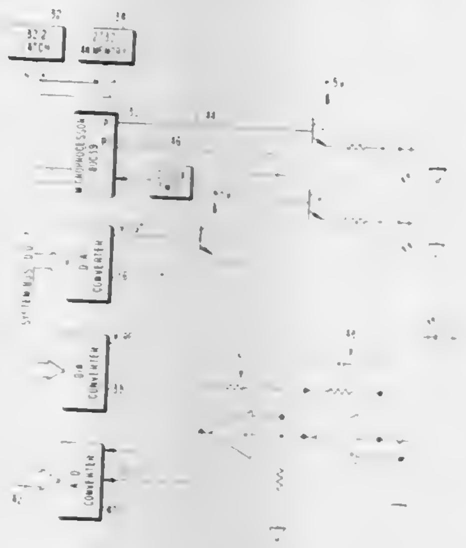
4,618,257
COLOR-SENSITIVE CURRENCY VERIFIER

Robert T. Bayne, Carmel, and James E. Heidelberger, Indianapolis, both of Ind., assignors to Standard Change-Makers, Inc., Indianapolis, Ind.

Filed Jan. 6, 1984, Ser. No. 568,586

Int. Cl.⁴ G01J *3/50;* **G06K** *5/00;* **G08B** *21/00*

U.S. Cl. 356—71 **20 Claims**



19. A color-sensitive currency verifier, comprising:
- (a) projecting means for sequentially projecting light of first and second wavelengths onto a test area of a specimen bill placed in said currency verifier for verification, said projecting means including means for projecting light of one of said wavelengths onto a predetermined reference area of the bill indicative of bill condition;
- (b) detection means coupled to said projecting means for detecting light received from said test area and said reference area, said detection means including
  - (1) means for generating a reference signal proportionate to the intensity of light received from said reference area; and
  - (2) means for generating first and second test signals respectively proportionate to the intensity of light of said first and second wavelengths received from said test area;
- (c) variable-gain means for generating first and second normalized signals respectively proportionate to said first and second test signals, said variable-gain means including a gain control input;
- (d) processing means for deriving a gain control signal from said reference signal, said processing means having an output coupled to said gain control input, whereby the gain of said variable-gain means is varied in response to the condition of the bill; and
- (e) means for determining the authenticity of the specimen bill based upon the difference between said first and second normalized signals.

4,618,258
METHOD FOR MEASURING LOOP COUPLING EFFICIENCY

John W. Hicks, Jr., Northboro, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 3, 1984, Ser. No. 637,478

Int. Cl.⁴ G01N *21/84*

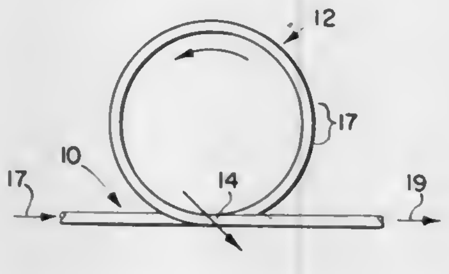
U.S. Cl. 356—73.1 **10 Claims**

1. A method for determining the light energy transfer characteristic of a selected optical path in a multipath optical fiber network in which the optical fibers include a light energy transmitting core and a cladding having an index of refraction less than that of the core, the network including an exit port and at least a pair of fibers coupled together such that light energy is fed from both said fibers to the exit port, said method comprising the steps of:

determining the characteristics of the light energy output at the exit port;

interrupting the transmission of light energy in the core of one of the selected optical fibers by effecting a change in the boundary conditions at least adjoining the core to cladding interface of one fiber sufficient to cause the light energy in the core to escape the core; and

redetermining the characteristics of the light energy output at the exit port and comparing the redetermined characteristics with the first-determined characteristics.



4,618,259
STAR AND SUN SENSOR FOR ATTITUDE AND POSITION CONTROL

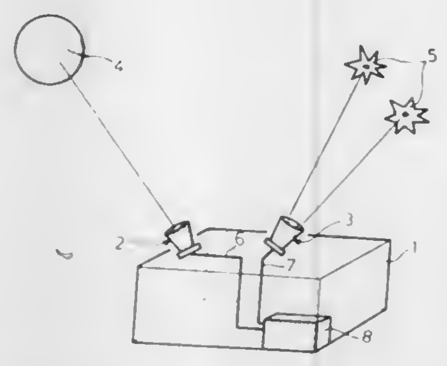
Reinhard Czichy, Ottobrunn, and Wilhelm Goeschel, Taufkirchen, both of Fed. Rep. of Germany, assignors to MBB GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 1, 1985, Ser. No. 718,358

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1984, 3412046

Int. Cl.⁴ G01B *11/26;* **G01C** *1/00;* **F41G** *1/38*

U.S. Cl. 356—152 **4 Claims**



1. A combined sun and star sensing system for attitude and position control of a space vehicle, comprising:

a star image sensor, including a first objective lens or lens system having a focal and image plane, there being a first detector array arranged in said image plane;

said objective or objective lens system being constructed for a well defined aberration so as to convert a point like object into a defined spot or area having a diameter larger than the diameter of an element of said first detector array;

a sun sensor including a second objective lens or lens system having an image and focal plane, there being a second detector array being arranged in the image plane of said second objective of the sun sensor;

said first and second detector arrays having similar and a similar number of detector elements;

a single evaluating electronic for detector array images; and

switching means for selectively connecting said first and said detector array to said evaluating electronic.

4,618,260
SLIT CHANGING DEVICE FOR MONOCHROMATOR

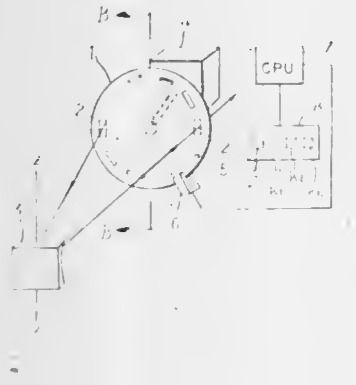
Kunihiko Okubo, Moriyama, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Oct. 28, 1983, Ser. No. 546,527

Claims priority, application Japan, Oct. 30, 1982, 57-191582

Int. Cl.⁴ G01J *3/18*

U.S. Cl. 356—331 **2 Claims**



1. A slit positioning system for a monochromator including a diffraction grating comprising:
- (a) slit disc means having a plurality of spaced pairs of slits, each pair including a light-incident slit for directing light onto said grating and a light-ejection slit for receiving light diffracted by said grating, the slits of each pair being of the same width and being diametrically disposed on the slit disc means, the slit widths of the respective pairs being different from each other, each slit pair having a slit number corresponding to a predetermined address on said slit disc means with respect to a positive direction of rotation of the slit disc means;
- (b) stop apertures provided in said slit disc means for each slit pair having aperture widths inversely proportional to the slit widths of the associated slit pairs;
- (c) means for directing light passing through the light-ejection slits back through the associated stop aperture;
- (d) photodetector means for measuring the intensity of light passed back through said stop aperture;
- (e) pulse motor means coupled to said slit disc means for rotating said slit disc means in either said positive direction or a negative direction to position a slit pair of a selected slit number into optical alignment with the diffraction grating;
- (f) means for determining the slit number of the present slit pair in optical alignment with the diffraction grating;
- (g) keyboard means for selecting a slit number of a new slit pair to be positioned by said pulse motor means in optical alignment with said diffraction grating;
- (h) means for comparing the new slit number with the present slit number and generating a positive drive signal when the new slit number is greater than the present slit number and a negative drive signal when the new slit number is smaller than the present slit number; and
- (i) control means for driving said pulse motor means in a positive direction in response to said positive drive signal and in a negative direction followed by said positive direction in response to said negative drive signal to position said new slit pair in optical alignment with said diffraction grating;

whereby the final direction of rotation which achieves the positioning of said new slit pair is always in said positive direction.

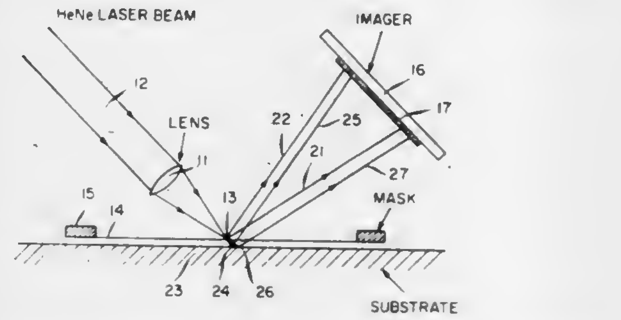
4,618,261
OPTICAL GAP MEASURING

Dale C. Flanders, Lexington, and Theodore M. Lyszczarz, Concord, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 16, 1984, Ser. No. 570,918

Int. Cl.⁴ G01B *9/02*

U.S. Cl. 356—357 **13 Claims**



1. Gap measuring apparatus for indicating the gap between a mask and substrate comprising,

said mask,

said substrate,

a source of collimated optical energy,

means for focusing said optical energy upon said mask and directing some of said optical energy through said mask upon said substrate,

imaging means for receiving said optical energy reflected from said mask and from said substrate through said mask, some of the focused energy being reflected from said mask and some from said substrate after passing through said mask to form an interference pattern on said imaging means of spatial frequency representative of the gap distance between said substrate and said mask.

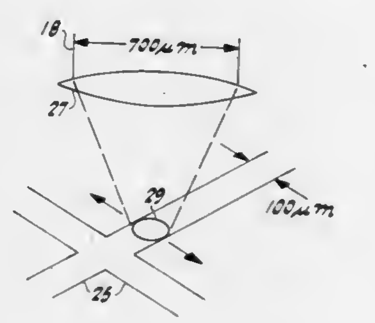
4,618,262
LASER INTERFEROMETER SYSTEM AND METHOD FOR MONITORING AND CONTROLLING IC PROCESSING

Dan Maydan, Los Altos Hills; Sasson Somekh, Redwood City, and Edward M. Kaczorowski, Santa Clara, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Apr. 13, 1984, Ser. No. 600,189

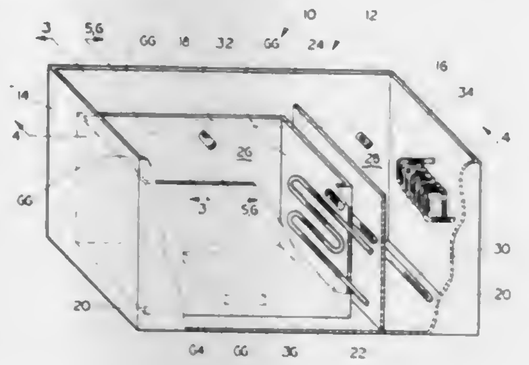
Int. Cl.⁴ G01B *11/02, 9/02*

U.S. Cl. 356—357 **25 Claims**



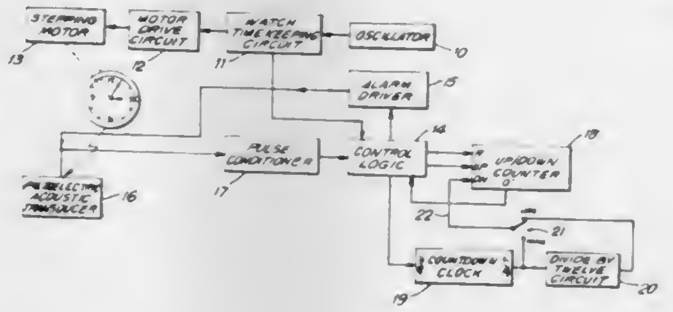
1. A process for monitoring the change in thickness of a layer of material being fabricated on a substrate as by one of etching, growth or deposition, based upon the change in thickness of the layer on a substrate scribe line or other selected feature, comprising focusing a laser beam to a beam spot on the substrate, the focused beam spot being of a small size selected based upon the size of the selected feature, for providing an enhanced signal-to-noise ratio; repetitively scanning the beam spot across the selected feature to generate an optical interference signal characteristic of the repetitive scanning and the thickness of the selected substrate feature; and converting the optical signal into a corresponding electrical signal adapted for monitoring the fabrication process.

4,618,263
SOUND SUPPRESSOR IN A LIQUID MEDIUM
James W. McCord, 9101 Northingham Pkwy., Louisville, Ky. 40222
Continuation-in-part of Ser. No. 421,077, Sep. 22, 1982, abandoned. This application Nov. 13, 1984, Ser. No. 670,865
Int. Cl.⁴ B01F ***11/02***
U.S. Cl. 366—127 **7 Claims**



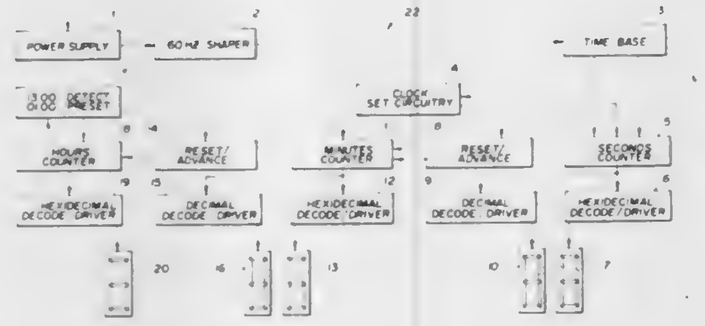
1. An apparatus for agitating a liquid comprising:
a housing defining at least one chamber for containing the liquid;
cavitation generating means disposed within said at least one chamber for agitating the liquid contained in said at least one chamber;
wave reflecting means disposed within said at least one chamber, said wave reflecting means including reflecting surface means located to reflect waves from generally the margin of said at least one chamber back into the body of the liquid contained in said at least one chamber to reinforce cavitation of the liquid in the chamber created by the cavitation generating means as the energy of the reflected waves is dissipated in the liquid;
sound suppressing, means disposed between said wave reflecting means and at least one wall of said at least one chamber to suppress or absorb the waves not reflected back into the liquid in the at least one chamber by the wave reflecting means.

4,618,264
ACOUSTIC ALARM SETTING DEVICE FOR A TIMEPIECE
Bruce H. Kamens, Thomaston, and George E. Ritter, Southbury, both of Conn., assignors to Timex Corporation, Waterbury, Conn.
Filed Sep. 25, 1985, Ser. No. 780,134
Int. Cl.⁴ H01H ***43/00;*** **G04C** ***9/08***
U.S. Cl. 368—74 **13 Claims**



1. In an electronic timepiece having a timekeeping ciruit providing timing pulses and display-actuating means moving at least one hand indicating passage of time, and having an alarm including a piezoelectric transducer and an alarm for producing an alarm sound, an improved alarm setting device comprising:
a rotatable ring mounted on said timepiece having an indicia for aligning with said hand in a first rotated position,
acoustic means associated with said ring producing a plurality of clicks of preselected acoustic level to said transducer when said ring is rotated to a second rotated position,
a pulse conditioning circuit connected to said transducer and providing a pulse for each click,
first counting means counting the number of pulses corresponding to the number of clicks between said first and second rotated positions, and
logic means connected to said timekeeping circuit and arranged to actuate said alarm after passage of an elapsed time which is proportional to the number of counted pulses.

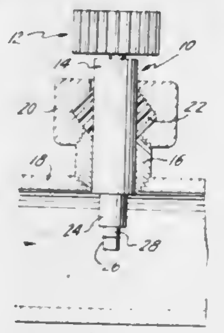
4,618,265
HEXIDECIMAL CLOCK, AND METHODS OF CONSTRUCTING AND UTILIZING SAME
Richard A. Wadowski, 33281 Karin Dr., Apt. 205, Sterling Heights, Mich. 48077
Filed Dec. 20, 1985, Ser. No. 811,728
Int. Cl.⁴ G04C ***19/00, 15/00***
U.S. Cl. 368—82 **21 Claims**



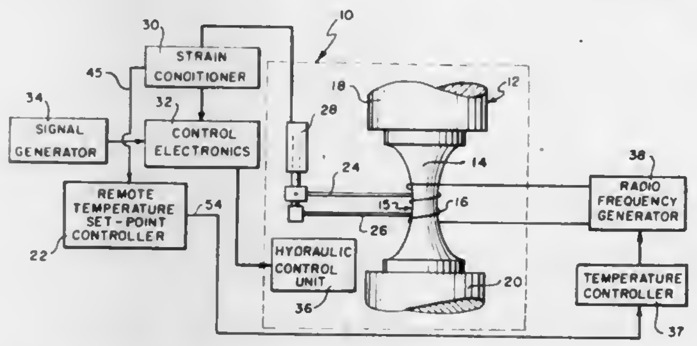
1. A hexidecimal time display apparatus, comprising:
a power supply;
first means for generating a timebase from said power supply operably connected thereto;
second means for detecting changes in time in seconds operably connected to said first means;
third means for counting seconds operably connected to said second means;
fourth means for counting minutes operably connected to said third means;
fifth means for counting hours operably connected to said fourth means;
sixth means for continuously resetting or advancing said third, fourth and fifth means a predetermined amount at a predetermined time operably connected thereto;
seventh means for converting the magnitude of said third, fourth and fifth means into at least three hexidecimal coded signals; and
a plurality of displays to show the hexidecimal signals of said seventh means.

4,618,266
MEASUREMENT OF ENERGY IN FLOWING FLUID
Murray F. Feller, Citrus County, Fla., assignor to Wilgood Corporation, Dunnellon, Fla.
Filed Jun. 3, 1983, Ser. No. 501,009
Int. Cl.⁴ G01K ***17/06***
U.S. Cl. 374—41 **26 Claims**

1. Apparatus for providing a measurement of the energy in steam or the like converted from liquid to vapor by heating and transmitted to a vapor-condensing load, said apparatus including:
i. a probe,
ii. a vapor-supply conduit for the load, and
iii. read-out means for providing a measure of the latent heat and other factors in be energy in the vapor flowing along the supply conduit,
said probe including a heat transmitter that is elongated and includes a portion protruding inward into the supply conduit, at least a segment of the length of the heat transmitter being a linear thermal impedance of high thermal conductivity, a sensing tip constituting part of said heat transmitter and limited to a small portion of the inward protruding portion thereof, the comparatively much larger remainder of said inward protruding portion of the heat transmitter being covered with thermal insulation, said sensing tip being spaced substantially from the inner surface of the supply conduit and being exposed to the vapor in said conduit, a heat absorber at the end of the heat transmitter remote from the sensing tip, said heat absorber having at least such capacity and the heat transmitter having such limited thermal impedance and the sensing tip having such limited exposed area in relation to one another as to maintain the temperature of the sensing tip well below the condensation point of the vapor at the maximum rate of energy transmission and flow of vapor to be monitored; and first and second temperature sensors spaced apart along said linear thermal impedance, said second sensor being farther than said first sensor from the sensing tip,
said sensros being connected to said read-out means for providing input representing the temperature difference between the sensors, and said read-out means being calibrated to provide a measure of energy trnasmission along the conduit.

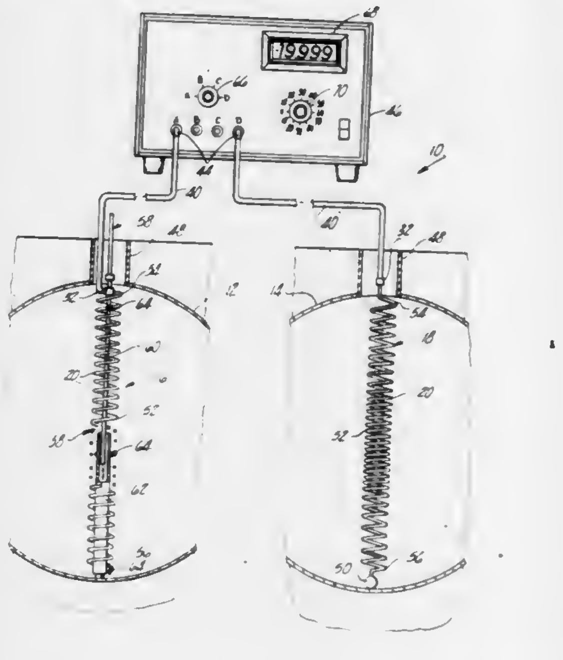


4,618,267
REMOTE TEMPERATURE-SET-POINT CONTROLLER
William F. Burke, Crest Hill, and Alan L. Winiecki, Downers Grove, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Oct. 17, 1984, Ser. No. 661,843
Int. Cl.⁴ G01N ***3/18***
U.S. Cl. 374—50 **10 Claims**



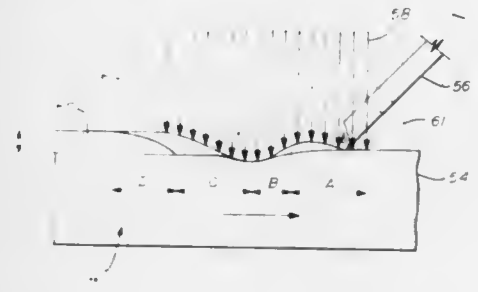
1. A temperature control system for an instrument for providing mechanical strain data in a fully reversed cycle test on a metallic sample with the strain results being minimum and maximum values, the system comprising
temperature means coupled to said sample for varying the temperature of the sample during the test including a set point means in a controlled device corresponding to a controlled temperature,
means coupled to said sample for determining the value of strain during the test and providing an output signal representative of strain, and
circuit means interconnected between the strain output and set point means for changing the set point linearly with changing values of strain output.

4,618,268
METHOD AND APPARATUS FOR SENSING AVERAGE TEMPERATURE
John A. Horner, 211 E. Grove St., Kawkawlin, Mich. 48631
Filed Jan. 9, 1985, Ser. No. 691,410
Int. Cl.⁴ G01K ***3/06***
U.S. Cl. 374—115 **16 Claims**



1. A temperature averaging sensor for measuring the average temperature of a fluid confined within a tank having a nonuniform depth-volume profile comprising, in combination: a length of wire with a known electrical resistance versus temperature characteristic; an extensible cylindrical, multiturn helical coil of plastic tubing in which said length of wire is contained; means for extending said coil to a predetermined length corresponding to the depth of fluid within said tank and means for arranging the spacing between coil turns so that the density of coil turns is commensurate with the depth-volume profile of the liquid in said tank; and an electrical connector connected to each end of said wire and adapted to be connected to a measuring circuit.

4,618,269
HARDENED BEARING SURFACE AND METHOD OF FORMING SAME
Robert P. Badrak, Missouri City, and Terry H. Mayo, Houston, both of Tex., assignors to Reed Tool Company, Houston, Tex.
Filed Sep. 18, 1985, Ser. No. 777,279
Int. Cl.⁴ F16C ***17/10***
U.S. Cl. 384—95 **9 Claims**



1. In a component for a rotary cutter rock bit having a base material formed of a low alloy low carbon steel base material with a Rockwell C hardness less than forty-five (45) and an annular bearing thereon;

a hardened alloyed bearing ring defining the outer surface of said bearing and having a thickness of between 0.005 inch and 0.125 inch;

said hardened alloy bearing ring being a composite mix of an alloy material and the adjacent steel base material of said component formed from a combination of melted alloy material and base material consisting of at least 10 percent of the base material and less than 90 percent of the alloy material for fusibly bonding the alloy and base materials, said hardened alloyed bearing ring having a Rockwell C hardness of at least forty-five (45).

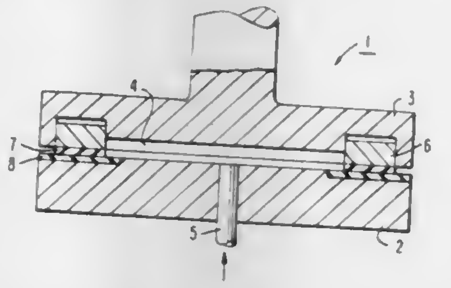
4,618,270
HYDROSTATIC BEARING STRUCTURE

Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed Mar. 4, 1985, Ser. No. 708,029

Int. Cl.^{4} F16C *17/00, 27/02*

U.S. Cl. 384—114 **10 Claims**



1. A hydrostatic bearing structure comprising two bearing members disposed so as to be movable relative to one another and having adjacent one another bearing surfaces adapted to accommodate therebetween a bearing fluid under pressure for supporting one of said members on the other, the bearing surface of at least one of said members being formed by a thin layer of an elastomeric material disposed on a substrate of a highly heat conductive material, said layer of elastomeric material having a thickness of not more than 1/32 inch for rapid travel of heat generated at said bearing surface area into said substrate.

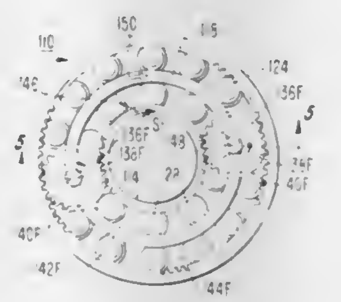
4,618,271
SERIAL BEARING ASSEMBLY

Paul Z. Li, Tallahassee, Fla., assignor to Florida State University, Tallahassee, Fla.

Filed Dec. 11, 1985, Ser. No. 807,659

Int. Cl.^{4} F16C *19/08*

U.S. Cl. 384—461 **30 Claims**



1. A serial bearing assembly comprising:

(a) a first member having a first bearing surface;

(b) a second member having a second-bearing surface, said first member being movable relative to said second member;

(c) an intermediate member movable relative to said first member and movable relative to said second member, said intermediate member having a first intermediate bearing surface facing said first bearing surface and a second intermediate bearing surface facing said second bearing surface;

(d) first bearing means between said first bearing surface and said first intermediate bearing surface to allow relative movement between said first bearing surface and said first intermediate bearing surface;

(e) second bearing means between said second bearing surface and said second intermediate bearing surface to allow relative movement between said second bearing surface and said second intermediate bearing surface; and

(f) speed distribution means connected to said first member, said second member, and said intermediate member and operable such that movement of said first member in a given direction at a given speed relative to said second member will drive said speed distribution means which causes said intermediate member to move in said given direction at a fraction of said given speed relative to said second member; and

wherein said speed distribution means includes a first wheel drivingly engaged to said first member and said second member and pivotably mounted to said intermediate member.

4,618,272
DEVICE FOR FIXING A THRUST BEARING

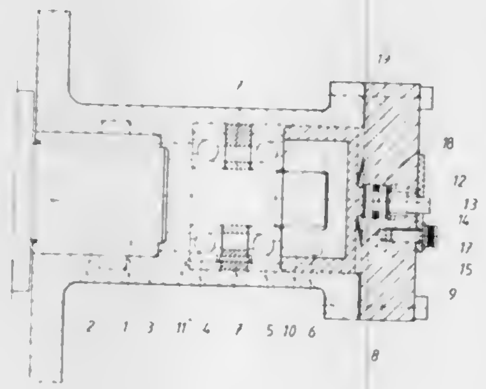
Paul Lindström, Norrköping, Sweden, assignor to Stal Refrigeration AB, Norrköping, Sweden

Continuation of Ser. No. 664,417, Oct. 24, 1984, abandoned. This application Jan. 16, 1986, Ser. No. 819,010

Claims priority, application Sweden, Oct. 26, 1983, 8305875

Int. Cl.^{4} F16C *23/06, 25/06;* **F16D** *3/00;* **F16B** *39/10*

U.S. Cl. 384—517 **7 Claims**



1. A machine which includes a rotatable shaft that has a roller bearing positioned around one end thereof, said rotatable shaft defining a central axis therethrough; a housing in which said roller bearing is rotatably positioned, said housing including a support surface against which said roller bearing can be positioned and an open end which lies along said central axis; a cover plate which is mounted on said housing to cover said open end thereof, said cover plate including a threaded hole which extends therethrough in parallel with said central axis; a generally cup-shaped spacing sleeve positioned within said housing between said cover plate and said roller bearing, said generally cup-shaped spacing sleeve having an open end which faces said roller bearing; a threaded fixing member which is engaged in said threaded hole in said cover plate and is capable of moving said generally cup-shaped spacing sleeve towards said roller bearing so as to restrict the movement of said roller bearing within said housing in parallel with said central axis, said threaded fixing member including an inner end which faces said generally cup-shaped spacing sleeve and an outer end which is located externally of said cover plate; and a resilient member located within said housing between said cover plate and said generally cup-shaped spacing sleeve to bias said generally cup-shaped spacing sleeve towards said roller bearing and thus move said roller bearing against said support surface yet allow movement of said roller bearing within said housing transversely to said central axis.

4,618,273
STEP BEARING FOR A SPINNING ROTOR SHAFT

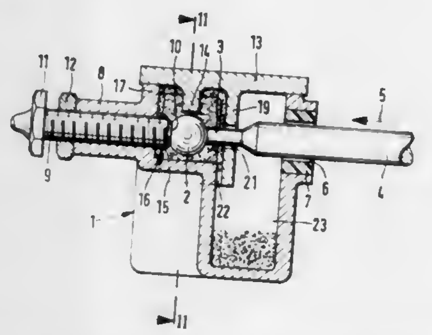
Dieter Götz, Geislingen, and Werner Zott, Donzdorf, both of Fed. Rep. of Germany, assignors to Fritz Stahlecker and Hans Stahlecker, both of, Fed. Rep. of Germany

Filed Nov. 12, 1985, Ser. No. 796,792

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1984, 3440950

Int. Cl.^{4} F16C *19/50*

U.S. Cl. 384—606 **26 Claims**



1. A step bearing for supporting a spinning rotor shaft comprising:

a bearing housing means for accommodating an end of a spinning rotor shaft;

a ball means guidable by a guide means and supporting an end of said shaft means, in said housing means;

lubricant supply means for continuously supplying lubricant to said ball means, including a container means for holding lubricant around the circumference of the ball means, wherein said ball means is disposed in said container means, said container means being trough-shaped and filled with lubricating grease.

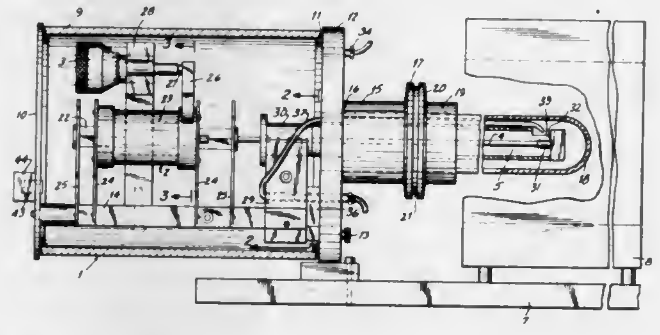
4,618,274
DILATOMETER HOUSING

Gerhard R. Clusener, 112 Reni Rd., Manhasset, N.Y. 11030

Filed Apr. 16, 1984, Ser. No. 600,892

Int. Cl.^{4} G01K *1/08;* **G01N** *25/00*

U.S. Cl. 374—208 **18 Claims**



9. Encased dilatometer comprising

(a) a dilation sensor mounted on an elongated attachment beam,

(b) a tubular fixed specimen holder having an open end and a closed end that is internally adapted to abut a flat surface of a specimen, said specimen holder being held adjacent its open end by a clamp mounted on said attachment beam,

(c) a movable pushrod that is coupled at one end to said sensor and at the outer end is adapted to abut a second parallel flat surface on said specimen, said pushrod extending into the open end of said tubular fixed specimen holder,

(d) a tubular sleeve encircling said attachment beam, sensor and clamp,

(e) a cover closing and hermetically sealing a first end of said sleeve distal to said clamp, said cover being attached to an end of said attachment beam,

(f) a ring shaped plate closing and hermetically sealing a second end of said sleeve and being demountably coupled to an oppoiste end of said attachment beam to adjustably lock said cover to said sleeve and to permit said cover and sensor attachment beam to be removed as a unit, said plate containing a vacuum port and having a connecting tube extending for a rim of a circular aperture of said plate on a side of said plate opposite said connecting tube terminating in a first flange at an open end and said sleeve,

(g) a protective tube having open and closed ends and a second flange at said open end which is demountably clamped and hermetically sealed to said first flange, said specimen holder extending loosely through said aperture and connecting tube into the open end of sid protective tube.

4,618,275
METHOD FOR RESETTING THE PRINTING HEAD OF A TYPEWRITER

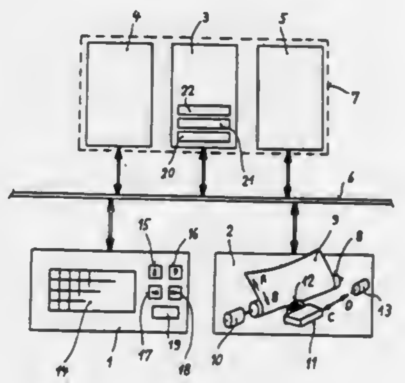
Gerhard Brinkmann, Schortens, and Bolko Wietrzynski, Wilhelmshaven, both of Fed. Rep. of Germany, assignors to Olympia Werke AG, Fed. Rep. of Germany

Filed Feb. 22, 1985, Ser. No. 704,422

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1984, 3410505

Int. Cl.^{4} B41J *11/42*

U.S. Cl. 400—76 **3 Claims**



1. The method for resetting the printing head of a processor-controlled typewriter to the end of a text printed on an inserted recording medium through initiation of an automatic reset function after a preceding positioning of the printing head to another position, said method comprising the steps of:

storing the current horizontal position of the printing head and of the last character of the printed text;

developing signals corresponding to the steps of vertical movement of the recording medium, said signals having a positive or negative characteristic sign corresponding to the direction of upward and downward movements;

adding said signals and storing the sum thereof, said sum indicating the number of steps of vertical movement of the record media;

cancelling the stored number of steps of upward movement of the recording medium upon initiation of a character impression;

retaining the stored number of steps of downward movement upon initiation of a character impression;

upon initiation of a reset function, evaluating the stored number of steps for controlling a movement of the recording medium in accordance with the characteristic directional sign indicating the relative position to the last printing line;

evaluating the difference between the stored horizontal position of the printing head and the last character typed for controlling the horizontal repositioning of the printing head leftwardly and rightwardly as dictated by said difference to the last blank printing position behind the last character.

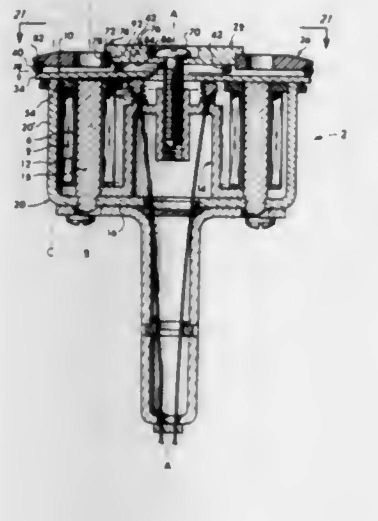
4,618,276
DOT MATRIX PRINT HEAD

James E. Blomquist, and Robert H. Wilczewski, both of 1130 Major Ave., both of Riverton, Wyo. 82501

Continuation-in-part of Ser. No. 616,792, Jun. 1, 1984, Pat. No. 4,587,724, which is a division of Ser. No. 499,208, May 31, 1983, abandoned, which is a division of Ser. No. 425,255, Sep. 28, 1982, Pat. No. 4,401,392, which is a continuation of Ser. No. 256,032, Apr. 21, 1981, abandoned, which is a division of Ser. No. 38,724, May 14, 1979, Pat. No. 4,279,518. This application Dec. 10, 1984, Ser. No. 679,928

Int. Cl.⁴ B41J *3/12*

U.S. Cl. 400—124 **23 Claims**



1. In a dot matrix print head having a central axis, a plurality of pole pieces extending along respective axes and mounted about said central axes, and a plurality of coil assemblies, each coil assembly including at least a clapper member and a coil member positioned about a respective pole piece, the improvement including:

means for mounting the clapper member of each respective coil assembly for movement relative to a respective pole piece between at least first and second positions, said mounting means including a cover member and an annular backstop member, said cover member having a central axis and means for retaining said backstop member in said cover member with said backstop member extending about the central axis of said cover member, said mounting means further including means for positioning said backstop member within said retaining means relative to the central axis of said cover member, said retaining means including a plurality of finger members radially spaced from each other about the central axis of said cover member, and said positioning means including a cap member having a central axis and a plurality of finger members extending substantially outwardly of and being radially spaced from each other about the central axis of said cap member, the respective radial spacing of the finger members of said cover member and said cap member about the respective central axes of said cover member and cap member substantially corresponding wherein said positioning means further includes means for securing said cap member in a first position relative to said cover member with the respective axes thereof substantially aligned and with at least first portions of each finger member of said cap member being received between portions of at least two finger members of said cover member and contacting said backstop member, and means for biasing each clapper member against said backstop member to define the respective second position thereof.

4,618,277
PRINT HEAD

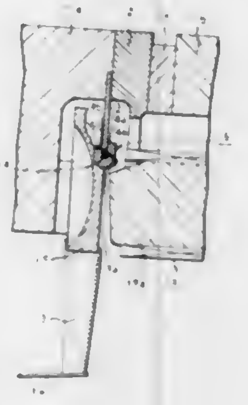
Kiyomitsu Asano, Tokyo, and Toshikatsu Kondo, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya and Nippon Telecommunication Engineering Company, Tokyo, both of, Japan

Continuation of Ser. No. 548,355, Nov. 3, 1983, abandoned. This application Oct. 17, 1985, Ser. No. 789,342

Claims priority, application Japan, Nov. 18, 1982, 57-175142[U]

Int. Cl.⁴ B41J *3/12*

U.S. Cl. 400—124 **3 Claims**



1. A print head arrangement mounted on a dot matrix printer of an impact type, comprising a plurality of armatures (**15**), each connected fixedly at one end thereof to a print wire (**14**), said print wire (**14**) and said armature (**15**) being movable during printing operation; and electromagnetic device (**19**) disposed at a position corresponding to each of said armature (**15**) to drive a corresponding armature (**15**) and print wire (**14**) connected thereto selectively for printing operation; a holding part (**16**) connected to the other end of each said armature (**15**); and rigid resilient spring plate (**9**) fixed at one end thereof (**9***a*) to said holding part (**16**) and held fixedly in a frame (**11***a*) another end thereof; wherein said holding part (**16**) comprises a single unitary structure comprising a body portion connected to said other end of said armature, one arm portion (**16***b*), another arm portion (**16***c*), said body portion connecting said one arm portion and said other arm portion, and a recess (**16***a*) formed by said one arm portion (**16***b*), said other arm portion (**16***c*) and said body portion for holding said one end (**9***a*) of said spring plate therein, wherein said one arm portion (**16***b*) extends from said body portion away from said armature and perpendicularly toward said frame (**11***a*) in an unbent state and contiguously on one side of said spring plate, said one side of said spring plate being subjected to a compressive stress when said spring is bent in a predetermined direction during print operation, and is longer than said other arm portion (**16***c*), and wherein said other arm portion (**16***c*) extends from said body portion away from said armature and perpendicularly towards said frame (**11***a*) in an unbent state and contiguously on another side of said spring plate, said other side of said spring plate is being subjected to a tensile stress when said spring plate is bent in said predetermined direction (arrow) during point operation, said spring plate (**9**) and said one arm portion (**16***b*) and said other arm portion (**16***c*) being joined together by brazing (**18***a*, **18***b*) at ends opposite said body portion, whereby concentration of tensile stress is prevented at the brazed parts when said spring is bent in said predetermined direction (arrow).

4,618,278
PAPER FEED CONTROL IN A PRINTER

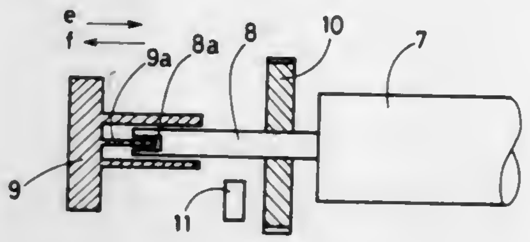
Hiroji Iwai, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 4, 1985, Ser. No. 697,878

Claims priority, application Japan, Feb. 15, 1984, 59-20706[U]

Int. Cl.⁴ B41J *19/92*

U.S. Cl. 400—568 **2 Claims**



1. A paper feed control system in a printer comprising:

a paper feed drive pulse motor;

a platen which supports a record receiving paper sheet;

a transmission gear secured to a shaft of said platen, and mechanically connected to said paper feed drive pulse motor so as to transfer the rotation of said paper feed drive pulse motor to said platen;

a manual rotation knob secured to one end of said shaft of said platen so as to allow a manual rotation of said platen;

rotation position detection means associated with said paper feed drive pulse motor for developing a rotation pulse signal in response to the rotation of said paper feed drive pulse motor said detection means including two slit plates secured .to a shaft of said paper feed drive pulses motor and corresponding photocouplers provided for detecting slits formed in said slit plates;

a counter which counts by the Nth number which receives said rotation detection pulse signal developed from said rotation position detection means, and develops a control output when said pulse signal is counted to the Nth number;

electrical detent means for conducting an electrical detent operation of said paper feed drive pulse motor in accordance with the contents stored in said counter; and

reset means for resetting said counter before initiating an automatic paper feed operation wherein when said manual rotation knob is held at a first position, a first type of manual paper feed operation is permitted wherein said platen is manually rotated while said electrical detent means is in an operative condition, and when said manual knob is held in a second position a second type of manual paper feed operation is permitted wherein said electrical detent means is not in an operative condition so as to ensure a fine adjustment of the record receiving paper sheet on said platen.

4,618,279
DISHWASHING APPARATUS WITH PLURAL SPONGES

Joseph Gurevich; Alex Gurevich, and Jan Gurevich, all of 64-40, 99 St., Rego Park, N.Y. 11374

Filed Feb. 15, 1984, Ser. No. 580,230

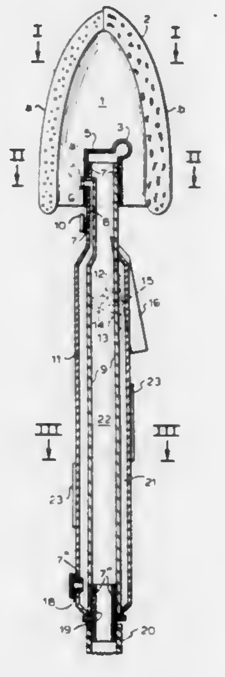
Int. Cl.⁴ A47L *17/00, 13/19;* **A46B** *11/06*

U.S. Cl. 401—36 **4 Claims**

1. A dishwashing apparatus, comprising

a hand grip provided with water supply means and liquid detergent supply means and having an upper end, said liquid detergent supply means having a storage facility formed in said grip;

a tongue-like hollow working head mountable on said upper end of said grip so that said upper end of said grip extends into the interior of said hollow working head, said working head having an axis, said working head including a plurality of portions integrally arranged circumferentially around said axis and formed as contiguous sponges having different degrees of softness so as to apply to dishes different actions, said working head having a water outlet provided in one of said portions and communicating with said water supply means so that said water supply means supply water to be discharged through said water outlet, and said working head also having a liquid detergent outlet provided in another of said portions and communicating with said liquid detergent supply means so that said liquid detergent supply means supply detergent to be discharged through said liquid detergent outlet, whereby during rotation of said working head about said axis the discharged liquid detergent and said another portion act on a dish and then the discharged water and said one portion act on the same dish successively;



passage means including a passage communicating said liquid detergent supply means with said liquid detergent outlet and also a passage communicating said water supply means with said water outlet;

manually actuatable valve means cooperating with said passages so as to allow the liquid detergent and the water to flow selectively through the respective passages successively and to said liquid detergent outlet and water outlet successively so as to first wash and then rinse the dish; and

an adapter arranged to connect said grip with a faucet of water system.

4,618,280
PUSH-BUTTON WRITING INSTRUMENT WITH FRONT SEAL MEANS

Hidehei Kageyama, Kawagoe, Japan, assignor to Toyo Polymer Co., Ltd., Tokyo and Kotobuki & Co., Ltd., Kyoto, both of, Japan

Filed Aug. 14, 1984, Ser. No. 640,693

Claims priority, application Japan, Feb. 1, 1984, 59-11628; Mar. 16, 1984, 59-37664

Int. Cl.⁴ B43K *9/00*

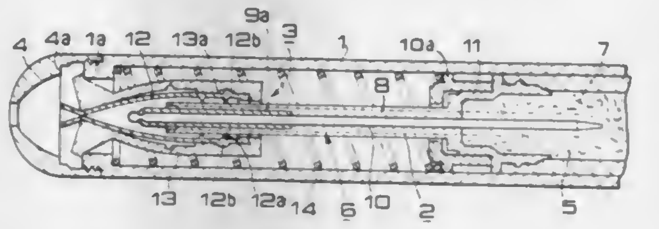
U.S. Cl. 401—107 **4 Claims**

1. A push-button type writing instrument having a barrel and comprising:

(a) a refill received within said barrel and slidable in an axial direction thereof,

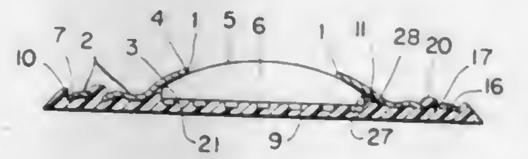
(b) a writing part receiving mechanism provided at a forward end portion of the refill, said writing part receiving mechanism being slidably coupled with a cylindrical base by way of a slide stem and an interlocking portion provided at a forward end of the slide stem and said writing part receiving mechanism being further equipped with a lead chuck adapted to open and enclose a cylindrical seal, a chuck closing ring loose-fit on said lead chuck and a coil spring disposed under compression between said chuck closing ring and said cylindrical base,

(c) sealing means provided with the writing part receiving mechanism at said forward end portion of the refill for sealing said writing part, and said sealing means being formed of an elastic cylindrical seal and a lead chuck fit over the cylindrical seal, and



(d) said barrel being equipped adjacent to its forward end with an annular inwardly extending protrusion adapted to close the lead chuck.

4,618,281
RAISED PAVEMENT MARKER BRACE
Van R. Ajemian, 331 N. Vail Ave., Montebello, Calif. 90640
Filed Dec. 31, 1984, Ser. No. 688,066
Int. Cl.⁴ E01F *9/01*
U.S. Cl. 404—16 **8 Claims**



1. A raised pavement marker brace configured and adapted to extend about a wholly stationary raised pavement marker having an uppermost surface and at least one side surface, said brace inseparably comprising

a retaining lip portion of uniform thickness extending snugly over at least a part of that portion of said uppermost surface of the marker adjacent to said side surface, and

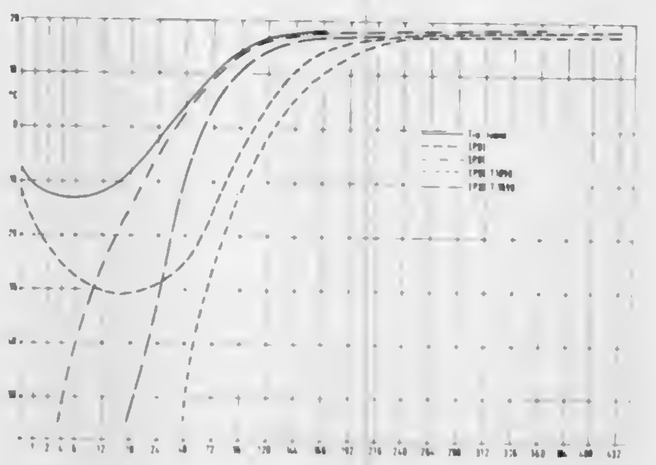
a wall portion extending downward from said lip portion, said wall portion extending over at least a part of said side surface, said wall portion defining an opening about at least one existing reflective portion of said side surface, and

a base portion extending outward from said wall portion, said base portion extending contiguously about at least a part of said wall portion, said base portion comprising, in order to make better use of the adhesive used for securement, at least one of an uneven underside and an uneven periphery and a uniform width of said base portion beyond said wall portion. .

4,618,282
COMPOSITION AND A METHOD FOR COVERING THE SUMP IN CAVITIES
Karl F. L. Gloria, Hattingen; Alexandru B. Costinescu-Tataranu, Essen; Wilhelm Schuster, and Jürgen Wittekind, both of Frankfurt, all of Fed. Rep. of Germany, assignors to Ruhrgas Aktiengesellschaft, Essen, Fed. Rep. of Germany
Filed Aug. 24, 1983, Ser. No. 526,081
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1982, 3231349
Int. Cl.⁴ B65G *5/00*
U.S. Cl. 405—53 **14 Claims**

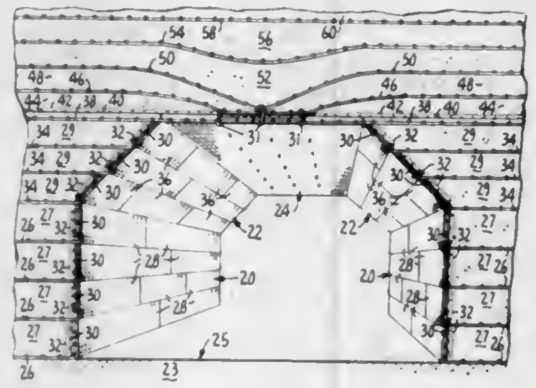
1. A method for covering the sump in cavities, especially cavities leached out of salt-domes, serving to store gaseous or liquid, non-aqueous substances, said method comprising the following steps:

(a) preparing a liquid mixture consisting of: a crude oil having functional groups and containing an amount not exceeding 7% by weight of hydrocarbons having at the most 5 C-atoms in the molecule, the specific weight thereof amounting, at a temperature of +20° C., to at the most 1.2 g/cm^3; and at least one reactive component which combines with the functional groups of the crude oil and blocks said groups;



(b) applying said liquid mixture to, and distributing it over, the surface of the sump in an amount such as to form a layer at least 1 cm thick of the said mixture.

4,618,283
ARCHWAY CONSTRUCTION UTILIZING ALTERNATING REINFORCING MATS AND FILL LAYERS
William K. Hilfiker, Eureka, Calif., assignor to Hilfiker Pipe Co., Eureka, Calif.
Filed Sep. 6, 1984, Ser. No. 647,841
Int. Cl.⁴ E21D *9/00*
U.S. Cl. 405—124 **35 Claims**



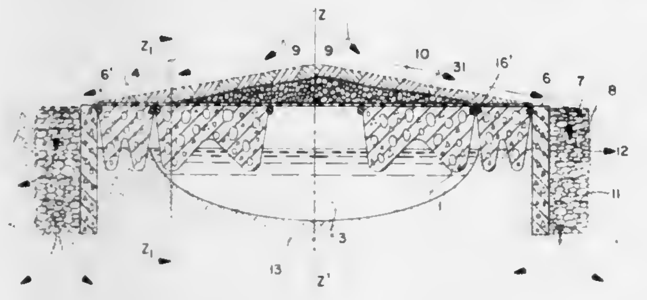
1. An archway construction over a pathway comprising:

a pair of vertical support sections disposed on opposite sides of the pathway;

a ceiling section which extends over the pathway and which is supported by said vertical support sections; and

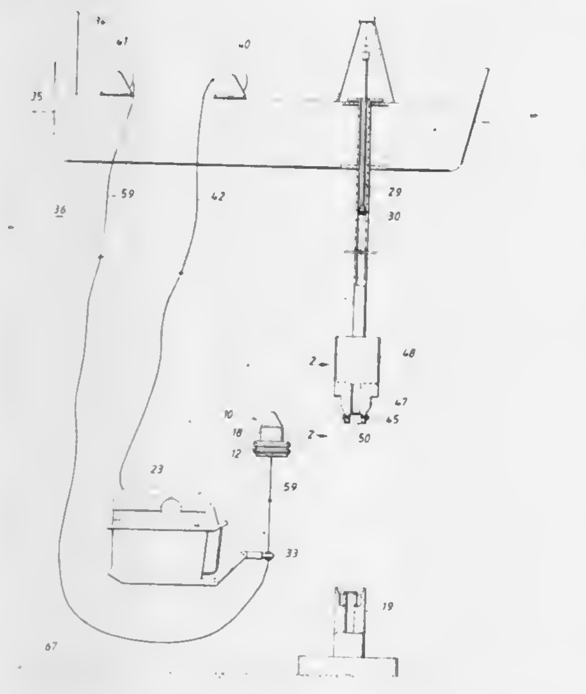
wherein said vertical support sections each include a plurality of reinforcing mats separated by one or more layers of unbound fill and said ceiling section includes a plurality of reinforcing mats, including a first mat and a second mat disposed above and connected to said first reinforcing mat.

4,618,284
DEVICE AND METHOD FOR THE RECLAMATION OF POLLUTED LAND AREAS
Alvin M. Marks, Bigelow Rd., Athol, Mass. 01331
Filed May 24, 1984, Ser. No. 613,799
Int. Cl.⁴ B65G *5/00;* G21F *9/24*
U.S. Cl. 405—129 **2 Claims**



1. In a system for the reclamation of polluted areas, an interior polluted area, an exterior nonpolluted area surrounding said polluted area, a plurality of load-bearing modules, each of said modules having voids with average low density capable of floating on water, said modules having a substantially stable top flat surface, said modules being placed side by side abutting each other over the said polluted area, a rim around each of the said modules, gaskets mounted on each of the said rims, means on the said modules to draw the said modules together horizontally to compress said gaskets and form seals between said modules, a retaining wall around said polluted area, an annular moat around the said wall, said moat being filled with gravel and clean water, the said water in said moat sealing the polluted area from the exterior nonpolluted area, a film impervious to water and gas over the said top surface of the the said modules, and a sloping pebble and earth fill over the said film, whereby the pollutants are contained within the said polluted area.

4,618,285
BUOYANT RING GASKET INSTALLATION TOOL
Arthur G. Ahlstone, Ventura, Calif., assignor to Shell Offshore Inc., Houston, Tex.
Filed Feb. 19, 1985, Ser. No. 703,013
Int. Cl.⁴ B63C *11/00*
U.S. Cl. 405—191 **17 Claims**



1. Method of attaching underwater a ring gasket to a ring gasket retainer assembly located in a submerged wellhead connector having an opening defined upwardly therethrough, said method employing the use of an underwater vehicle, said ring gasket mounted on a buoyant ring gasket installation tool, said tool operatively engaged in a buoyant manner to said underwater vehicle, said method comprising;

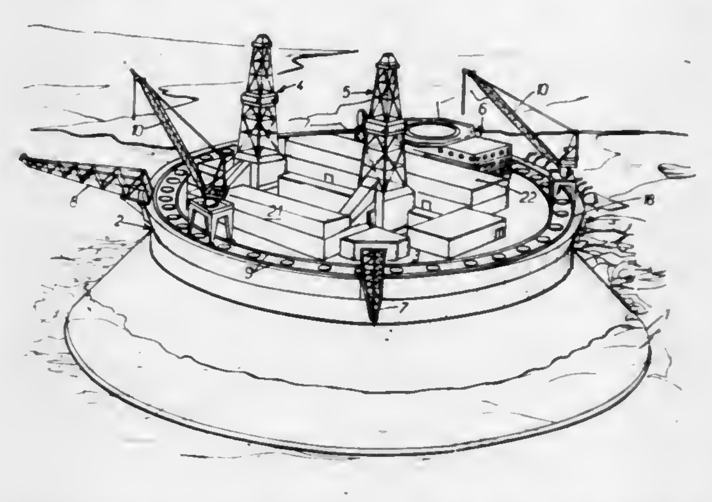
lowering said underwater vehicle, ring gasket, and buoyant ring gasket installation tool downwardly through the water together to a location adjacent said submerged wellhead connector,

transporting said buoyant installation tool carrying said ring gasket from said location adjacent said wellhead connector to a position substantially centrally beneath said wellhead connector opening,

floating said ring gasket and said buoyant tool upwardly into said wellhead connector opening into engagement therewith, and

connecting said ring gasket to said wellhead connector.

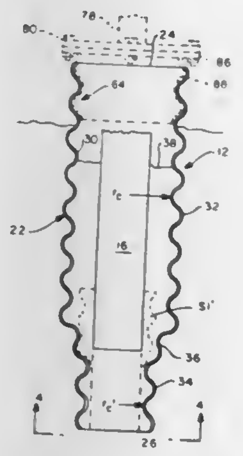
4,618,286
COMPOSITE PLATFORM FOR PETROLEUM WORKINGS IN POLAR SEAS
Dominique Michel, Paris, France; Delbert B. Johnson, Houston, Tex.: Jean F. Pagès, Paris, France; Vincent F. P. Foglia, Aulnay-sous-Bois, France; Jean G. M. Martin, Paris, France; Michel P. Vaché , Combs-la-Ville, France; Francois G. Sedillot, Velizy, France, and Carroll M. Crull, Houston, Tex., assignors to Fluor-Doris Incorporated, Houston, Tex.
Filed Feb. 12, 1985, Ser. No. 700,950
Claims priority, application France, Feb. 16, 1984, 84 02345
Int. Cl.⁴ B63B *35/44;* E02B *17/00;* E02D *5/54*
U.S. Cl. 405—208 **6 Claims**



1. A composite movable platform for use in petroleum explorations and drillings in polar seas, comprising a frustoconical first base section designed to be supported on the seabed, a cylindrical central second section, and a deck supported by said first and second sections for supporting drilling and production equipment, said first base section being formed as a watertight concrete structure and having the shape of a right-angled triangle and adapted to rest on the seabed on one side of the right angle, the hypotenuse of said triangle being a peripheral frustoconical wall and the third side of the triangle forming an inner cylindrical wall, the volume formed inside said walls forming ballastable tanks, and the apex opposite said one side being truncated and forming above sea level a peripheral ring in which are provided watertight passage tubes receiving anchoring piles parallel to said inner cylindrical wall, and wherein the cylindrical center second section is composed of at least one circular bottom, the said second section being housed inside the inner cylindrical wall of the concrete annular truncated cone and fixed watertightly to said wall, the bottom of the annular truncated cone and the circular bottom being in the same plane.

4,618,287
TECHNIQUES FOR ESTABLISHING INGROUND SUPPORT FOOTINGS AND FOR STRENGTHENING AND STABILIZING THE SOIL AT INGROUND LOCATIONS

Frank Kinnan, Camas Valley, Oreg., assignor to Electric Power Research Institute, Palo Alto, Calif.
Division of Ser. No. 458,817, Jan. 18, 1983. This application Aug. 2, 1984, Ser. No. 637,127
Int. Cl.⁴ E02D *5/64*
U.S. Cl. 405—232 **8 Claims**

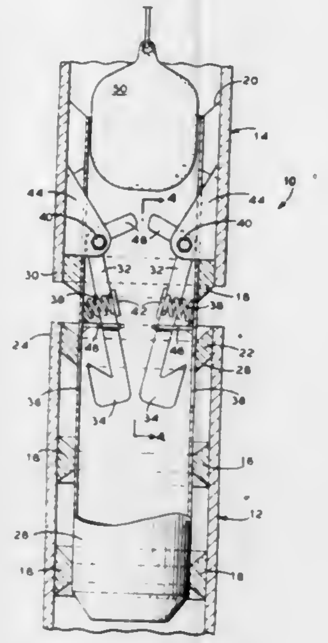


1. A casing especially suitable for use as a footing around an inground segment of a post, pole or other such object, said casing comprising a main body having opened top and bottom ends larger in diameter than the maximum width of said inground segment, an uppermost cylindrical end section including said top end, a lowermost cylindrical end section including said bottom end, said lowermost end section being smaller in diameter than said uppermost end section, and a radially tapering intermediate section joining said end sections, said main body also having a helically threaded outer surface between its ends sufficient to allow the casing to be threaded into the ground around said inground sections starting at its bottom end, the bottom and intermediate sections of said casing serving to limit the amount of soil entering the casing from its bottom end as the casing is threaded into the ground where by soil initially entering the bottom end of said casing as the latter is threaded into the ground eventually moves through the tapering intermediate section and into the uppermost end section where it has room to break up.

4,618,288
RELEASABLE LOWERING AND COUPLING ASSEMBLY FOR PILE DRIVING

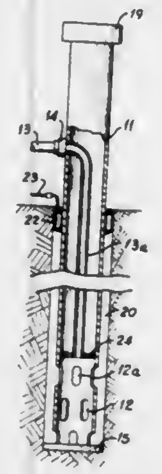
Verlon C. Daigle, Gray, La., assignor to McDermott International, Inc., New Orleans, La.
Filed Oct. 4, 1985, Ser. No. 784,392
Int. Cl.⁴ E02D *7/00*
U.S. Cl. 405—232 **8 Claims**

1. A pile lowering and coupling assembly comprising:
- a skirt pile having an upper region and a catch secured to said skirt pile in said upper region;
- a follower pile sized to engage said upper region of said skirt pile;
- a stabbing guide secured to said follower pile for concentrically aligning said skirt and said follower piles;
- at least one latching arm pivotally secured to said follower pile having a latching end region configured to latch with said catch of said skirt pile;
- first bias means for pivoting said latching end region in a first direction away from said catch;
- second bias means for pivoting said latching end region in a second direction toward said catch; and,
- operating means for selectively pivoting said latching end region whereby when said first bias means overcomes the bias of said second bias means, said latching end region is moved in said first direction and, when said second bias means overcomes the bias of said first bias means, said latching end region is moved in said second direction.



4,618,289
METHOD OF FORMING A CAST-IN-PLACE SUPPORT COLUMN

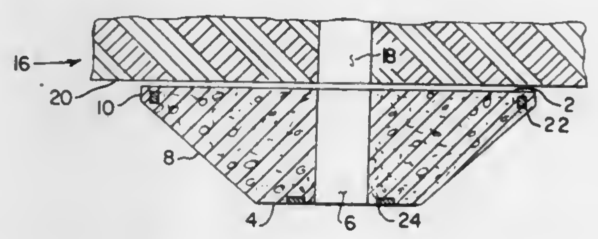
David L. Federer, 5058 Sirron Ct., Dunwoody, Ga. 30338
Filed May 22, 1984, Ser. No. 599,727
Int. Cl.⁴ E02D *5/34*
U.S. Cl. 405—236 **8 Claims**



1. A method of forming a cast-in-place support column of solid diameter comprising the steps of:
- a. Positioning a driving foot, having a portion of cross-sectional shape and size corresponding to the desired cross-sectional shape and size of the support column, into contact with the ground surface at the desired column location;
- b. Positioning an elongated hollow rigid driving mandrel, having a cross-sectional size slightly smaller than the driving foot, with the mandrel having an upper and a lower section;
- c. Driving the driving foot and the mandrel into the ground to a desired depth;
- d. Continuing to drive the driving foot and mandrel while introducing liquified fill material under pressure into the hollow portion of the driving mandrel so as to substantially fill the lower section of the hollow mandrel with fill material as desired, the pressure on the liquified fill material being maintained so that a portion of the liquified fill material is conveyed through a plurality of radial apertures in the lower section of the mandrel to exert a pressure against walls of the hole surrounding the mandrel so as to prevent the walls from collapsing upon the mandrel and adjusting the pressure so as to avoid the excessive loss of liquified fill material out of the area in which the support column is to be formed;
- e. Allowing said liquified fill material to harden to form the support column when the desired depth is obtained.

4,618,290
PRECAST ROOF BEARING BLOCK

Roger M. Hansen, 1544 Panorama Dr., Birmingham, Ala. 35216
Filed Jun. 27, 1983, Ser. No. 507,748
Int. Cl.⁴ E21D *21/00*
U.S. Cl. 405—259 **25 Claims**

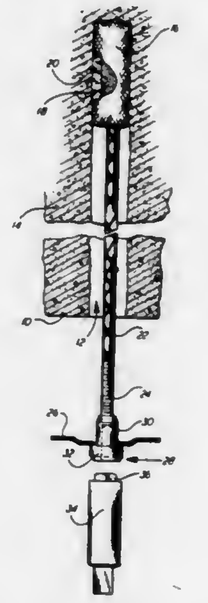


1. A precast mine roof supporting bearing block assembly comprising
- a mine roof,
- a molded mine roof bearing block body,
- said body having an upper roof surface engaging bearing surface and a lower bearing surface,
- said bearing surfaces being substantially parallel,
- said upper bearing surface being larger than said lower bearing surface,
- a lateral surface connecting said bearing surfaces,
- a hole extending through said body from one said bearing surface to the other said bearing surface,
- reinforcing means disposed within said molded body,
- said reinforcing means including first reinforcing means disposed closer to said upper bearing surface than to said lower bearing surface,
- roof bolt means having a head disposed adjacent to said lower bearing surface and a shank, and
- said roof bolt means shank being introduced into said hole adjacent to said lower bearing surface extending through said body into a hole in the mine roof and being in tension such that the roof bolt head disposed at said lower bearing surface applies a compressive force to said block.

4,618,291
NUT MEMBER AND MINE ROOF SUPPORT SYSTEM INCORPORATING SAME

Raymond L. Wright, Syracuse, N.Y., assignor to The Eastern Company, Naugatuck, Conn.
Filed Feb. 22, 1985, Ser. No. 704,254
Int. Cl.⁴ E21D *20/02;* **F16B** *37/00*
U.S. Cl. 405—261 **2 Claims**

1. An improved mine roof support system including a support plate having a central opening, and an elongated rod having a leading end inserted into a drill hole behind a resin cartridge and advanced to break the cartridge and rotated to mix the components thereof to form a hardened, chemical anchor for said rod, and a trailing end of predetermined diameter from which said rod is threaded for a portion of its length. wherein the improvement comprises a nut element engaged with a said threaded portion of said rod, said nut element comprising:
- (a) a generally cylindrical stem portion of diameter less than that of said central opening in said support plate and extending therethrough into said drill hole;
- (b) a base portion of cross sectional dimensions larger than said support plate opening and integrally adjoining said stem portion on the side of said plate opposite said rod;
- (c) an unobstructed, through opening extending axially from end to end of said nut element, through both said stem and base portions, the wall of said through opening extending into said base portion providing wrench engagement surfaces;
- (d) a frangible, annular, shear ring extending integrally inward from the wall of said through opening to define a circular lip having a diameter less that said predetermined diameter;
- (e) an internally threaded portion extending from the end of said through opening in said stem portion opposite the juncture thereof with said base portion for a first axial length of said nut element;
- (f) a first, smooth-walled portion of said through opening of diameter larger than said predetermined diameter extending for a second axial length of said nut element from the terminus of said threaded portion to said shear ring; and
- (g) a second, smooth-walled portion of said through opening of diameter larger than said predetermined diameter extending for a thrid axial length of said nut element from said shear ring to said wrench engagement surfaces, whereby said rod may be threaded into said nut element to bear against said shear ring and rotation of said nut by a wrench engaged with said wrench engagement surfaces will be imparted to said rod, thereby mixing said resin components and excess torque applied to said nut element after said components harden to prevent rotation of said rod will fracture said shear ring and permit further rotation of said nut element to tension said rod.

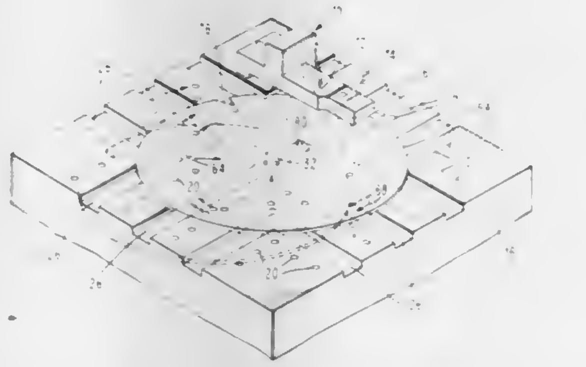


4,618,292
CONTROLS FOR SEMICONDUCTOR WAFER ORIENTOR

Robert L. Judge, Poughkeepsie, N.Y., and Anthony D. Wutka, Burlington, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 772,393, Feb. 28, 1977, abandoned. This application Aug. 8, 1980, Ser. No. 176,374
Int. Cl.⁴ B65G *51/03, 47/24*
U.S. Cl. 406—19 **10 Claims**

1. In a semiconductor wafer orientor with a wafer supporting fluid film that imparts rotational motion to the wafer around some point in the orientor, and having object sense means including two closely spaced electro-optic device means photoelectrically generating separate electrical signals that are compared to sense the presence of an indicia on the edge of the wafer over a first location on the orientor and also having a pneumatic stop means which when it is on stops motion of the wafer relative to that point and when it is off allows the wafer to rotate on the wafer supporting fluid film, a new control mechanism which enables the placing of the wafer in the orientor and the orienting of the wafer without contacting the edge of the wafer with a solid object comprising:

- control means coupled to the pneumatic stop means for causing the pneumatic stop means to exert pneumatic pressure on the wafer to guidelessly stop the wafer over the point as the wafer is moving through the orientor on the fluid film and then when the wafer is so stopped for turning off said pneumatic stop means to end the pneumatic pressure on the wafer allowing the wafer to freely rotate with unhindered motion around the point under the influence of the supporting fluid film;
- a second object sense means having a string of electro-optic device means which does not include either of the two closely spaced electro-optic device means and which is positioned at a second location of the orientor that is angularly advanced from the first location an amount that is considerably larger than the angular spacing of the two closely spaced electro-optic sense means for producing an output when the indicia on the wafer is sensed by an electro-optical sense means in said string of electro-optic sense means as passing over the second location while it rotates with said unhindered motion around the point;



- electronic oscillating means coupled to said control means and responsive to said output of the optical sense means for ending said unhindered motion by operating said pneumatic stop means on for a period and off for a period so that the wafer rotates with a jogging motion from said second location to said first location where all motion of the wafer relative to the orientor is stopped when the two electro-optic device means are illuminated substantially equally by light passing through the indicia.

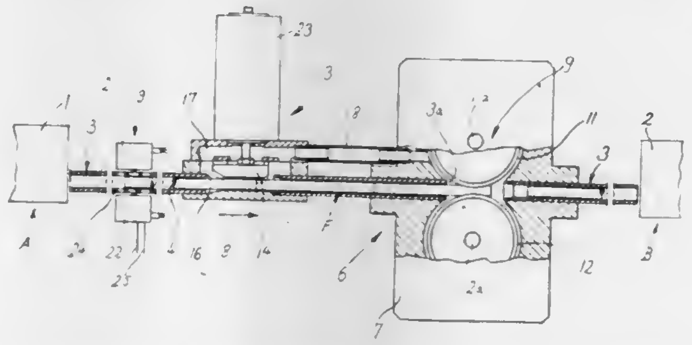
4,618,293
METHOD AND APPARATUS FOR PNEUMATICALLY TRANSPORTING ROD-SHAPED ARTICLES OF THE TOBACCO PROCESSING INDUSTRY
Bob Heitmann, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Feb. 5, 1985, Ser. No. 699,187

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1984, 3404885

Int. Cl.⁴ B65G *51/02*

U.S. Cl. 406—28 **12 Claims**



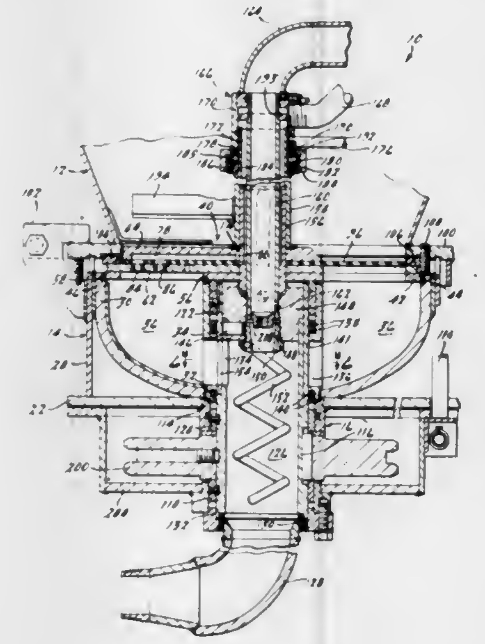
1. A method of transporting rod-shaped articles of the tobacco processing industry axially between an article discharging station and an article receiving station along an elongated path which is defined by a pneumatic conveyor, comprising the steps of propelling a series of successive articles from the discharging station into the elongated path; mechanically influencing the speed of successive articles of said series in a first portion of said path ahead of the receiving station so that each of the thus influenced articles advances at a predetermined speed and the articles form a file of closely adjacent articles extending from said first portion upstream toward said discharging station; pneumatically accelerating successive foremost articles of the file in a second portion of said path between said first portion and said receiving station so as to establish gaps between successive accelerated articles and the next-following articles of the file; monitoring the length of the file; and mechanically arresting the articles of such file when the monitored length is less than a predetermined length.

4,618,294
CONCRETE FEEDER APPARATUS
Warren D. Brown, Birmingham, Mich., assignor to Sprayton Equipment Company, Birmingham, Mich.

Filed Feb. 1, 1985, Ser. No. 697,493

Int. Cl.⁴ B65G *53/46*

U.S. Cl. 406—113 **14 Claims**



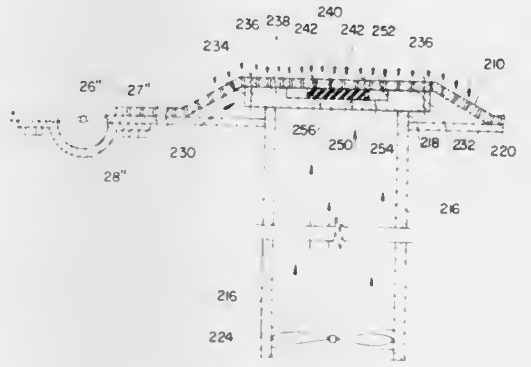
2. A receiver and transmitter of granular material such as concrete comprising:
- a hopper adapted to contain a supply of said material;
- an annular array of charging chambers positioned in non-rotating underlying relationship to said hopper;
- rotary valve means interposed between said hopper and said array of charging chambers, said valve means being operative to selectively place successive ones of said charging chambers in communication with said hopper whereby they are filled with said material;
- each of said charging chambers having a generally radially inwardly directed opening positioned adjacent the lower end thereof so as to facilitate full discharge of said material;
- a rotatable tubular member positioned coaxially within said array of charging chambers and defining a mixing chamber open at the lower end thereof, said tubular member including an opening in the sidewall thereof successively alignable with said radially inwardly directed openings in said charging chambers whereby material may move from respective ones of said charging chambers into said mixing chamber as said tubular member is rotated;
- means within said tubular member defining a fluid passage opening into said mixing chamber at the upper end thereof whereby one or more additives may be added to said material which has been received within said mixing chamber;
- agitator means within said mixing chamber, said agitator means being operative to intermix said material and said additives.

4,618,295
PLENUM CHAMBER FLOW RESTRICTOR AND CHECK VALVE
Richard H. Dugge, St. Louis County, and Jan D. Holt, St. Charles County, both of Mo., assignors to ACF Industries, Incorporated, Earth City, Mo.

Filed Aug. 24, 1984, Ser. No. 644,083

Int. Cl.⁴ B65G *53/18*

U.S. Cl. 406—138 **2 Claims**



1. A flow restrictor, comprising:
- a fixed wall; an air inlet nozzle extending through said wall and defining a membrane valve seat; a resilient and flexible porous membrane located over said wall and over said valve seat in a first position; a flexible impervious member attached to a surface of the membrane such that when the membrane is in said first position, the impervious member is located over the valve seat such that air from said air inlet is substantially only in operative communication with the air impervious member; whereby when air is supplied through the inlet nozzle between the wall and the membrane, pressure on the side of the membrane between the wall and the membrane causes the membrane to lift off the valve seat to a second position, thereby increasing its area in operative communication with air pressure between the membrane and the wall; and whereby in said second position air passes through the membrane at least in that portion of the membrane not occupied by the impervious member; and whereby when air flow through said air inlet nozzle is interrupted gravity and/or air pressure forces the impervious member downward against said valve seat reducing its operative area substantially to that extending across the air inlet nozzle and substantially shutting off the flow of air into said air inlet nozzle, wherein said impervious member contains an opening and a second impervious member is located within said opening and is located generally above said seat and is also attached to said membrane.

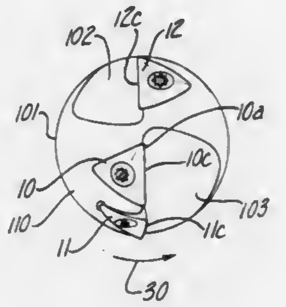
4,618,296
CUTTING TOOL AND INSERT THEREFOR
Paul B. Allaire, Troy, and Daniel R. Stashko, Holly, both of Mich., assignors to GTE Valeron Corporation, Troy, Mich.

Continuation of Ser. No. 531,844, Sep. 14, 1983, abandoned. This application Jun. 28, 1985, Ser. No. 781,205

Int. Cl.⁴ B23C *5/02*

U.S. Cl. 407—42 **13 Claims**

1. A cutting tool comprising:
- a cylindrical shank terminating in a spherical cutting end, the cutting end including first and second indexable cutting inserts each comprising first and second equilateral polygonal major faces, three identical planar flank surfaces forming the sides of the polygon with two of the flank surfaces intersecting at each corner thereof, the first major face including upwardly sloping convex portions intersecting each flank surface to form identical arcuate cutting edges along each side of the polygon, said convex portions including corresponding clearance face portions extending along said first major face rearwardly from said cutting edges, said second major face intersecting each flank at an obtuse angle forming identical rake edges; first and second mounting cavities shaped for respective receipt, in lay-down fashion of the first and second indexable cutting inserts; and means mounting the first and second indexable cutting inserts respectively to the first and second mounting cavities, the first cavity oriented such that an active arcuate cutting edge of the first insert placed in lay-down fashion in the first cavity will extend radially outwardly from a corner arc of the insert passing through a longitudinal axis of the shank, and the second cavity positioned on the cutting end with respect to the first cavity such that the second insert placed in lay-down fashion therein presents an active arcuate cutting edge whose cutting zone partially overlaps that of the first insert's cutting edge and extends the arcuate cutting action of the first insert substantially in a common plane passing through the shank axis, thereby enabling the cutting tool to generate an arcuate out of substantially uniform radius.



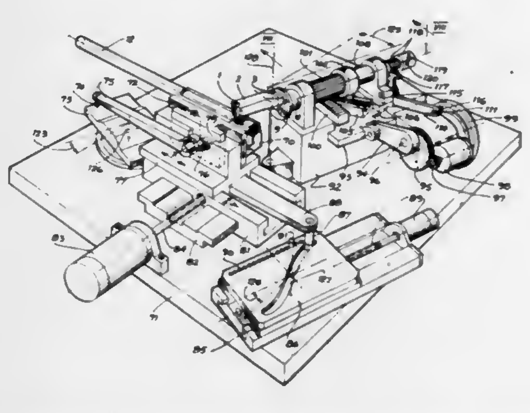
4,618,297
METHOD AND APPARATUS FOR MACHINING RACKS FOR STEERING GEAR
Arthur E. Bishop, 17 Burton St., Mosman, N.S.W., Australia, and Klaus J. Roeske, Beverley Hills, Australia, assignors to Arthur E. Bishop, Mosman, Australia

Filed Jul. 20, 1984, Ser. No. 632,662

Claims priority, application Australia, Jul. 21, 1983, PG0399

Int. Cl.⁴ B23D *37/06;* **B23F** *1/08*

U.S. Cl. 409—58 **4 Claims**

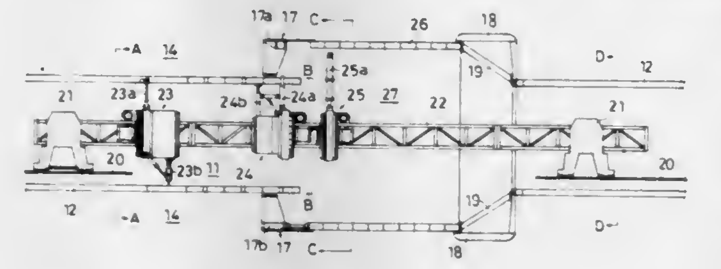


1. A machine for cutting the teeth of a rack for a variable ratio rack and pinion steering gear employing a helical pinion having a plurality of identical teeth engaged with a rack having some tooth gaps of varying form and angular disposition to the rack axis, said machine comprising a base, a spindle adapted to carry a tool with a single cutting tooth having cutting edges which lie on the surface of a single tooth of said helical pinion, a housing on said base, means supporting said spindle for helical reciprocation in the housing between two predetermined limits about a mid position in which said tool is directed normally to the plane of the teeth of said rack, a fixture supporting said rack on the base and means for relatively moving said rack

and said tool with translatory curvilinear motion during the cutting of a gap of said rack, said motion for any one said tap being a part of the locus of said helical pinion when slid without rotation in the same said gap of said rack.

4,618,298
METHOD FOR CONSTRUCTING AN ENLARGED TUNNEL AND APPARATUS FOR FORMING THE SAME

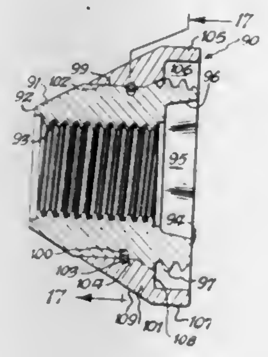
Shigeo Takamiya; Kazutoshi Inoue, and Kenzo Tsutaya, all of Tokyo, Japan, assignors to Mitsui Kensetsu Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 30, 1984, Ser. No. 595,406
Claims priority, application Japan, Mar. 30, 1983, 58-54635
Int. Cl.⁴ E21D *11/00, 9/06*
U.S. Cl. 405—150 **13 Claims**



1. A method for constructing an enlarged tunnel wherein a portion of a predetermined region of an existing tunnel to be enlarged is circumferentially enlarged by the following steps:
excavating to form a circumferentially enlarged portion defining a starting base for a shield machine;
positioning a shield machine in the circumferentially enlarged portion;
cutting a tubular liner lining the existing tunnel into segment pieces;
advancing the shield machine forward along the existing tunnel in order to enlarge the circumference of the predetermined region of the existing tunnel;
removing those segment pieces of the liner of the existing tunnel; and
circumferentially lining the resultant enlarged tunnel portion with segments.

4,618,299
LOCKNUT AND KEY THEREFOR

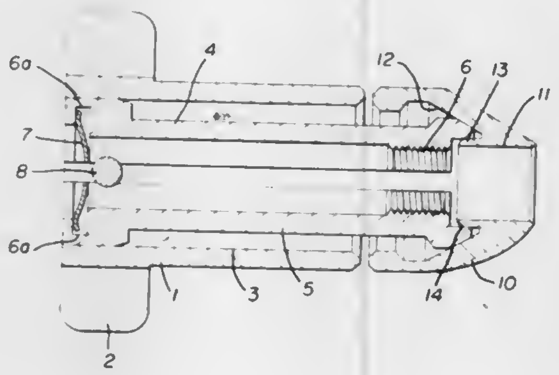
Gary R. Bainbridge, North Tonawanda; Lewis D. McCauley, Eggertsville, and John H. Taylor, Orchard Park, all of N.Y., assignors to McGard, Inc., Buffalo, N.Y.
Filed Mar. 7, 1984, Ser. No. 587,135
Int. Cl.⁴ F16B *23/00, 37/14*
U.S. Cl. 411—374 **4 Claims**



1. A locknut comprising a body portion having an outer surface and an axis of rotation and first and second opposite ends, a threaded bore extending inwardly into said body portion from said first end, a depression extending inwardly into said body portion from said second end, and endless lobed curvilinear surface located outwardly of said axis of rotation and defining the periphery of said depression, a thread on said outer surface extending inwardly from said second end toward said first end, said outer surface including an elongated cylindrical outer surface portion between said thread and said first end, a sleeve rotatably mounted on said elongated cylindrical outer surface, and an annular shroud portion on said sleeve located radially outwardly of said thread in spaced relation thereto, said outer surface including a frustoconical surface having its smaller end at said first end, and said sleeve including a second frustoconical outer surface which is in alignment with said frustoconical surface.

4,618,300
QUICK-CLAMPING NUT FOR USE WITH A THREADED MEMBER

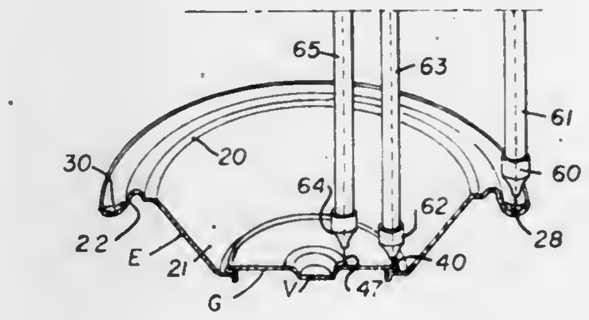
Eickhart Goebel, Elbestr. 11, 6102 Pfungstadt, Fed. Rep. of Germany
Filed Sep. 7, 1984, Ser. No. 648,314
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1983, 8325783[U]
Int. Cl.⁴ F16B *37/08*
U.S. Cl. 411—433 **3 Claims**



1. A quick-clamping nut for engaging an externally threaded member for engagement therewith with a minimum of turning to lock a first member to a second member, the second member carrying the threaded member, said nut comprising:
(a) a tubular housing having an inner bore and including external turning means, said housing including a pair of opposed apertures adjacent an end thereof defining a pivot axis;
(b) a pair of elongated, similarly configured segments carried within said housing and pivotable about said pivot axis, said elongated segments each including outer ends having an internal thread formed therein and having an outwardly facing tapered surface, and including inner ends contacting said inner bore of said housing and carrying biasing means to urge the outer ends apart;
(c) a pivot pin extending transversely across said inner bore of said housing and securely received in said opposed apertures to define a pivot surface about which said elongated segments pivot, said pin extending between and contacting said elongated segments to cause said segments to rotate with said housing; and
(d) a clamping cone having a through bore, an outer surface adapted for engagement with the first member, an inner tapered surface for cooperative engagement with the outwardly facing tapered surfaces of said elongated segments so that axial movement of said elongated segments into said clamping cone operates to cause the tapered surfaces to come into contact and to urge the outermost ends of said elongated segments inwardly toward each other to engage the internal threads therein with the externally threaded member, and limiting means carried by said clamping cone for limiting the inward movement of said elongated segments toward each other.

4,618,301
CONICAL CAN END WITH PUSH DOWN GATE

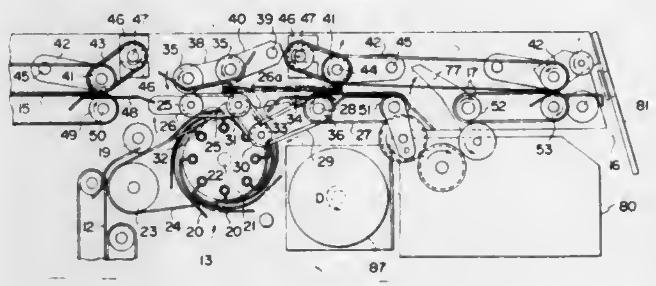
Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo. 80020
Division of Ser. No. 63,794, Aug. 6, 1979, Pat. No. 4,244,490. This application Jul. 8, 1980, Ser. No. 166,968
Int. Cl.⁴ B21D *51/26*
U.S. Cl. 413—8 **3 Claims**



1. A method for sealing and coating the underside of a can end of the type having a concentrically disposed aperture with a gate therein defined by a gate panel which is cut through about a peripheral score line, said method comprising the steps of:
inverting the can end;
applying a globule of fluid sealant at the center of the underside of can end; and
rotating the can end about its axis while in the inverted position to flow the globule of fluid sealant by centrifugal action outwardly from the center of the can end and into the cut through score line to seal the score line and to effect the deposit of a dielectric coating on the underside of the can end.

4,618,302
DEVICE FOR ACCUMULATING AND DELIVERING PAPER SHEETS

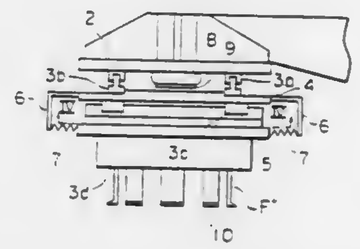
Eiichi Kokubo, and Akira Hirata, both of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 298,585, Sep. 2, 1981, abandoned. This application Mar. 5, 1984, Ser. No. 585,029
Claims priority, application Japan, Sep. 4, 1980, 55-122642
The portion of the term of this patent subsequent to Dec. 14, 1999, has been disclaimed.
Int. Cl.⁴ B65H *29/40*
U.S. Cl. 414—33 **3 Claims**



1. An apparatus for accumulating and delivering paper sheets to a plurality of conveyor belts for use with a bank note dispenser, said apparatus comprising:
a paddle wheel rotatably mounted on a horizontal shaft, said paddle wheel being provided with a plurality of swirling paddles for receiving paper sheets therebetween;
a scraper disposed adjacent the periphery of said paddle wheel to scrape the paper sheets away from said swirling paddles;
an alignment plate adapted to be held vertically during the accumulating operation to engage with the paper sheets at the leading ends thereof for aligning the paper sheets above the paddle wheel;
lower and upper delivery roller means cooperating to deliver, at one time, the accumulated paper sheets as a whole above the paddle wheel in a horizontal direction;
said lower delivery roller means comprising a pair of lower rollers adapted to be raised upwardly to horizontally support the accumulated paper sheets thereon and to be rotatably driven for delivery of the paper sheets, and the axis of each said lower roller being spaced from each other; and
said upper delivery roller means comprising a pair of upper rollers adapted to be lowered downwardly to resiliently clamp the paper sheets between the pair of the lower rollers and the pair of the upper rollers and to be rotatably driven for delivery of the paper sheets.

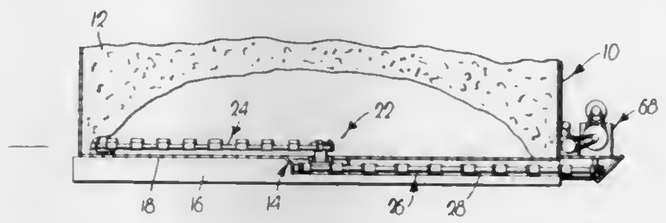
4,618,303
TIRE SUPPLYING APPARATUS

Nobuhiko Irie, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Japan
Division of Ser. No. 511,092, Jul. 6, 1983. This application Sep. 24, 1985, Ser. No. 779,523
Claims priority, application Japan, Jul. 6, 1982, 57-117417
Int. Cl.⁴ B65H *5/12*
U.S. Cl. 414—226 **3 Claims**



1. A green tire supplying apparatus for supplying a green tire to a selected position with respect to a vulcanizing press, the selected position having a center corresponding to a center of a green tire to be supplied to the selected position comprising:
a self-propelled green tire wagon for carrying a green tire; and
a green tire unloading means mounted on said wagon for transferring a green tire from said wagon to the selected position;
said green tire unloading means comprising an arm which is movable with respect to said wagon, a green tire holding device for holding a green tire, said holding device having a plurality of pawls movable to engage and disengage from a green tire, said pawls having a center of operation corresponding to a center of a green tire to be held by said holding device, said green tire unloading means also comprising automatic aligning means connected between said arm and said holding device for moving said center of operation in any radial direction with respect to said arm so as to bring said center of operation into correlation with the center of the selected position;
said automatic aligning means comprises a first disc element fixed to said arm, a second disc element mounted to said first disc element for movement in a first radial direction, a plate fixed to said holding device and mounted to said second disc element for movement in a second radial direction which is perpendicular to said first radial direction, and brake means engageable between said first disc element, said second disc element and said plate, for maintaining a relative radial position therebetween;
biasing means connected between said first disc element and said second disc element for biasing said first and second disc elements into a selected position in said first radial direction; and
biasing means connected between said second disc element and said plate for biasing said secod disc element and said plate into a selected position with respect to said second radial direction.

4,618,304
SILO HOPPER FOR SILAGE UNLOADERS
Edward M. Finger, Rte. 1, Powhattan, Kans. 66527
Filed Dec. 31, 1984, Ser. No. 687,967
Int. Cl.⁴ B65G *65/42*
U.S. Cl. 414—306 **8 Claims**

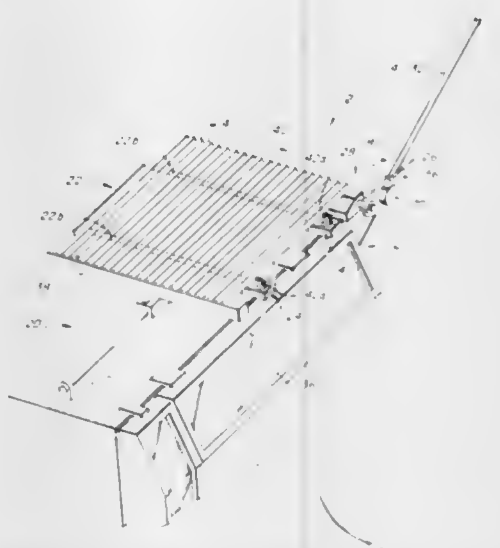


1. In an upright, cylindrical silo for storing silage, having a U-shaped silage-receiving cavity in the bottom thereof, a floor at a higher elevation than the cavity and provided with a U-shaped opening vertically aligned with the cavity, a silage unloader including mechanism above the floor for dislodging the silage and funneling the same gravitationally into the opening, and a conveyor for lateral feeding of the dislodged silage to the exterior of the silo, said mechanism having rotatable silage-dislodging means situated above said opening, said silage-conveying means including rotatable paddle means located within said cavity below said opening, and means including upright shaft means presenting a rotational axis for selective, alternate movement in both the clockwise and counterclockwise directions of said silage-dislodging means and said paddle means, the improvement of which comprises:

a hopper in the cavity for receiving the dislodged silage from said mechanism, said hopper including:
- a U-shaped, upright wall having a bight, a pair of elongated, horizontally-spaced legs and a discharge port in opposed relation to the bight for flow of dislodged silage therethrough in response to operation of said conveyor,
- said wall having an upper edge extending along the legs and the bight thereof and being disposed at a lower elevation than the floor, and
- a U-shaped, slip ramp interposed between the wall and the floor in direct communication with the opening and the confines of said wall,
- said ramp having a smooth, flat, inner surface and sloping downwardly and inwardly from said floor to said edge at an angle along which the silage will freely slide downwardly and inwardly from the opening into said confines of the wall without any appreciable repose on said surface; and

a rotatable rake assembly, including:
- an elongated rake having an inner end and an outer end and located in the region between said silage-dislodging means and said paddle means;
- means operatively and pivotally coupling the inner end of said rake to said shaft means for rotation of the rake assembly in both of said directions with said silage-dislodging means and said paddle means, and for pivoting movement of the rake about an upright axis independently of said rotation of the rake assembly with the silage-dislodging means and the paddle means; and
- stop structure associated with said rake for engaging and holding the same in an operating position extending outwardly from said shaft means when said moving means is operated to rotate the rake assembly in one of said directions, and for permitting the rake to pivot to a retracted position adjacent said shaft means when said moving means is operated to rotate the rake assembly in the other of said directions.

4,618,305
AUTOMATIC FEED APPARATUS AND PROCESS FOR INTEGRATED CIRCUITS STORED IN TUBES
Nicholas J. Cedrone, Wellesley Hills, and Kenneth R. Lee, Lincoln, both of Mass., assignors to Daymarc Corporation, Waltham, Mass.
Filed Nov. 23, 1983, Ser. No. 554,776
Int. Cl.⁴ B65B *35/30*
U.S. Cl. 414—403 **30 Claims**

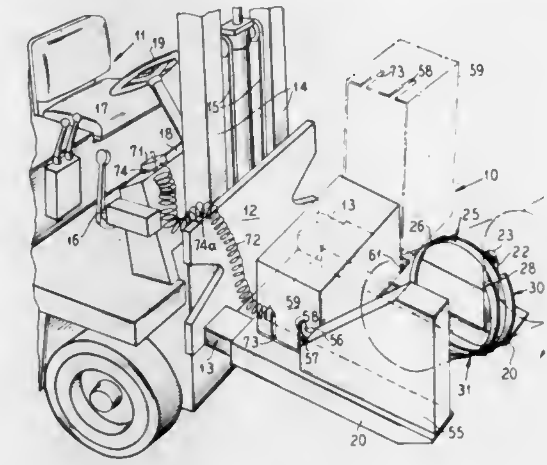


1. A process for automaticlaly feeding elongated tubes having a first open end and a second closed end and each loaded with plurality of integrated circuits (IC's) held in a line within the tube to the input of a test handler/sorter, comprising the steps of

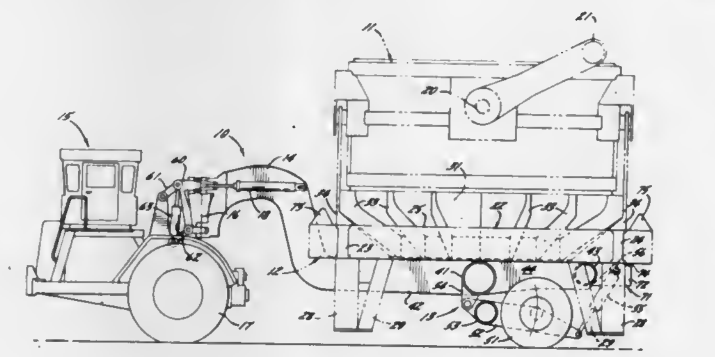
A. providing an accumulating conveyor table that transports the tubes laterally in a first direction;
B. inclining said conveyor table from the horizontal about a lower edge that extends generally in said first direction;
C. placing said tubes on said conveyor table with said tubes lying on their side and oriented generally transverse to said first direction and with said second closed end adjacent said lower edge;
D. transporting said tubes placed on said conveyor table transversely across said table in said first direction to a pick-up position adjacent one end of said conveyor table and oriented substantially perpendicular to said first direction;
E. sensing when one of said tubes is located at said pick-up position;
F. gripping said tube in said pick-up position in response to said sensing at its open upper end;
G. rotating said gripped tube about an axis that is generally parallel to said first direction to transport said open end to a discharge position at said input.

4,618,306
SELF CONTAINED DRUM DUMPER FOR FORK TRUCKS
William J. Dorsch, Wheeling, Ill., assignor to Liftomatic Material Handling Co., Inc., Evanston, Ill.
Continuation of Ser. No. 480,900, Mar. 31, 1983, abandoned.
This application Jul. 26, 1985, Ser. No. 758,847
Int. Cl.⁴ B65G *65/24, 65/34*
U.S. Cl. 414—420 **14 Claims**

1. An independent self powered drum dumping attachment unit quickly mounted on, operated in its mounted position, and demounted from the forks of driver seat equipped fork lift trucks by the truck driver without leaving the truck seat and controlled by the driver from his seat when mounted on the forks which comprises a U-shaped frame having a rear bight portion and forwardly projecting sides with elongated hollow fork receiving shoes with open rear ends for receiving the forks, a drum encircling clamp between the front ends of the sides of the U-shaped frame and rotatably mounted on said sides, a hydraulic jack mounted on one side of the U-shaped frame for rotating said drum encircling clamp, an energy source on the bight portion of said frame for said jack, a single portable switch controlling the energy source and the hydraulic jack adapted to be selectively positioned on the fork lift truck adjacent the driver seat when the attachment is mounted on the forks of the truck, and a single flexible cord connection between the energy source and switch.

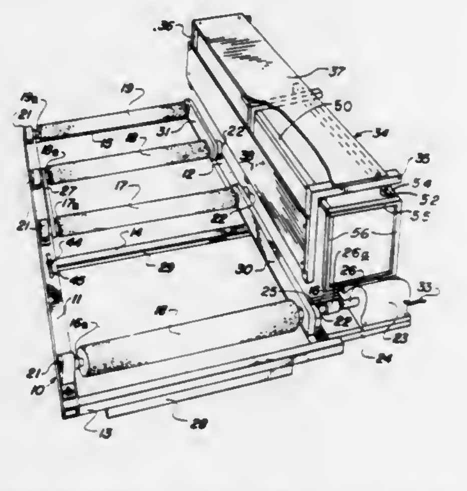


4,618,307
SCRAP BUCKET CARRIER
Edward S. Kress; William L. LaBerdia, and Dennis R. Thomas, all of Brimfield, Ill., assignors to Kress Corporation, Brimfield, Ill.
Filed Feb. 22, 1985, Ser. No. 704,382
Int. Cl.⁴ B60P *1/64*
U.S. Cl. 414—498 **2 Claims**



1. A carrier for lifting and transporting a scrap bucket supported in a stand having a substantially rectangular lower frame with front, rear and side beams and depending ground engaging legs located substantially at the four corners thereof, comprising in combination, a self-propelled tractor and a wheeled trailer having a main frame cross member dimensioned to fit between the stand legs and an integral forwardly projecting tongue with a gooseneck pivotally connected to the tractor to permit turning thereof at substantially right angles, a rear frame member secured to the main frame member by a plurality of vertical plates, means for journalling the trailer wheels on a plurality of trailing arms each pivotally connected at one end to the main frame member and interconnected at the other end to the rear frame member by a first hydraulic actuator for raising and lowering the trailer, stand and bucket to transport position, and means including links and a second hydraulic actuator interconnecting the gooseneck to the tractor for raising and lowering the trailer tongue to maintain the trailer substantially level as the first and second hydraulic actuators are simultaneously extended and retracted, a plurality of lift plates projecting substantially tangentially rearwardly and horizontally from the rear frame member so as to underlie and support the rear beam of the stand, said lift plates being secured to the rear frame member by rigid box sections and being disposed in substantially the same horizontal plane as the top surfaces of said main frame cross member and integrally connected tongue, the outboard ones of said lift plates being formed with outside edges extending rearwardly and inwardly with respect to the trailer centerline to help guide the trailer between the stand legs, the trailing ends of said lift plates and supporting box sections being angled downwardly to help guide the trailer under the rectangular frame of the stand, and the stand being provided with guide means projecting forwardly from its front beam to cooperate with the trailer gooseneck to center the stand laterally on the trailer.

4,618,308
CARPET HANDLING DEVICE
Lee J. Ballard, 1912 Armstrong Dr., Plano, Tex. 75074
Filed Feb. 13, 1984, Ser. No. 579,415
Int. Cl.⁴ B60P *1/00*
U.S. Cl. 414—532 **12 Claims**



1. A carpet roll handling device for use with a transport vehicle comprising: a frame adapted to rest wholly within the bed area of the transport vehicle with a tailgate of the vehicle in a closed position and to be moved to a position extending over the tailgate of the vehicle in a lowered open position for moving a roll of carpet relative to the vehicle; a cross member intermediate opposite ends of said frame, said cross-member having a downwardly projecting lip member adapted to be received in a space between the bed of the transport vehicle and the lowered tailgate of the vehicle; a plurality of rollers mounted transversely at spaced intervals along the length of said frame and coupled to be driven simultaneously in rotational motion in the same direction, said rollers having surfaces textured to provide a high coefficient of friction upon engagement with a roll of carpet; and reversible drive means coupled to provide rotational drive to said rollers.

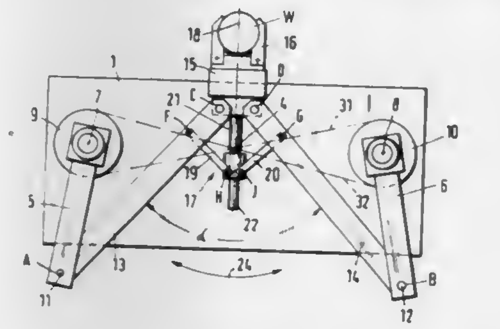
4,618,309
MECHANICAL HANDLING MECHANISM, IN PARTICULAR FOR THE LOADING AND UNLOADING OF MACHINE TOOLS
Hans Gregg, Woerthsee, and Theodor Artmeier, Puchheim, both of Fed. Rep. of Germany, assignors to Carl Hurth Maschinen und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany
Filed Jan. 11, 1985, Ser. No. 690,797
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1984, 3404553
Int. Cl.⁴ B65G *11/00*
U.S. Cl. 414—753 **10 Claims**

1. A mechanical handling mechanism comprising at least one gripping mechanism or the like, which is movable back and forth between an initial and an end position, comprising:

(a) two swivel arms rotationally drivably supported about axes which are parallel to one another on a base plate;
(b) a hinged arm is hinged to each free end of the swivel arms;
(c) the free ends of the hinged arms are hinged to a common

joint head, which carries at least a gripping mechanism thereon;

(d) a steering knuckle arm hinged to each of the hinged arms such that the steering knuckle arms form a sliding joint



parallelogram with the hinged arms, the slide member of which parallelogram is guided on the joint head; and

(e) the axes of all joints lie parallel with respect to the axes of rotation of the swivel arms.

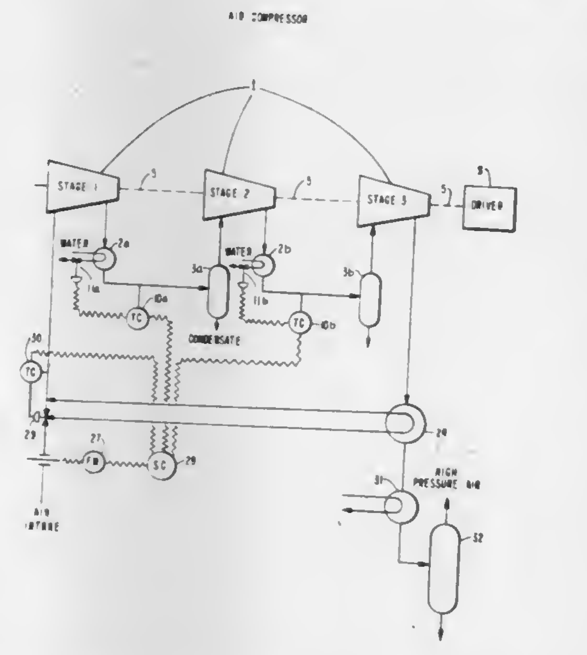
4,618,310
METHOD OF MULTI-STAGE COMPRESSOR SURGE CONTROL

Herbert D. Michelson, Fort Lee, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 7, 1984, Ser. No. 618,080

Int. Cl.^{4} F04D *27/02*

U.S. Cl. 415—1 **14 Claims**



1. An improvement in an anti-surge control method for a multi-stage centrifugal compressor having interstage cooling means which comprises, when the stages are at different approaches to surge, controlling the temperature of the gas flowing to the inlet of any critical stages thereby allowing the gas to heat up to increase the volume thereof so that said critical stages are put at a more distant approach to surge.

4,618,311
VANE ANGLE CHANGING DEVICE FOR AN AXIAL FLUID MACHINE

Haruo Miura; Takashi Nagaoka; Yoshiaki Abe, and Souji Sakata, all if Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 7, 1983, Ser. No. 511,734

Claims priority, application Japan, Jul. 7, 1982, 57-116766

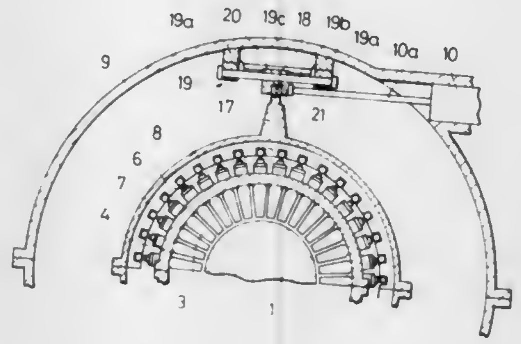
Int. Cl.^{4} F04D *29/36*

U.S. Cl. 415—149 R **34 Claims**

1. A vane angle changing device for an axial-flow fluid machine having a rotor means, an inner casing means, an outer casing means disposed exteriorly of said inner casing means, a rotatably mounted intermediate cylinder means disposed between said inner and outer casing means, stationary vane means, means for rotatably mounting said stationary vane means for enabling a selective adjustment of a mounting angle of the stationary vane means, an actuator means for rotating said intermediate cylinder means, the vane angle changing device comprising:

at least one arm means having a first end connected to said intermediate cylinder means;

a first means adapted to be selectively reciprocated in a direction substantially perpendicular to a longitudinal center axis of the rotor means for transmitting an adjusting force to said intermediate cylinder means;



second means formed in one of said first means and a second end of said at least one arm means for transmitting the force from said first means to said at least one arm means in a direction substantially perpendicular to the longitudinal center axis of the rotor means; and

third means formed in the other of said first means and the second end of said at least one arm means adapted to be inserted in said second means in a radial direction of said rotor means for effecting a connection of said at least one arm means to said first means.

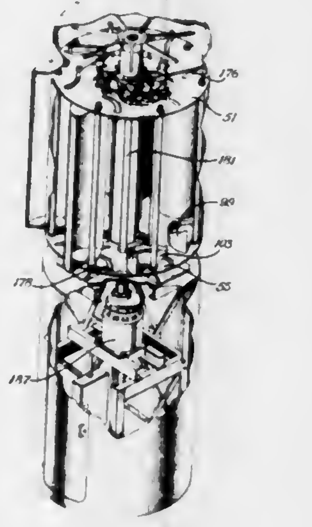
4,618,312
WIND OPERATED APPARATUS

Robert A. Williams, 2721 White Settlement Rd., Fort Worth, Tex. 76107

Filed Jan. 28, 1985, Ser. No. 695,726

Int. Cl.^{4} F03D *7/06*

U.S. Cl. 416—119 **31 Claims**



1. A wind operated apparatus, comprising:

a frame,

support means for supporting said frame for rotation about a generally vertical axis,

an enclosing side wall supported by said frame for rotation about said generally vertical axis,

said enclosing side wall forming an interior chamber shielded from the wind,

a plurality of openings formed through said enclosing side wall at spaced apart positions around said enclosing side wall,

a plurality of vane means supported by said frame at spaced apart positions around said enclosing side wall and near said enclosing side wall for causing said frame and said enclosing side wall to be rotated by the wind,

each of said vane means being associated with one of said openings,

each vane means being supported for pivotal movement relative to said frame about a pivot axis such that it may be moved through its associated opening between inward and outward positions on opposite sides of said enclosing side wall,

said pivot axes being located inward of said enclosing side wall,

cam means supported by said support means at said generally vertical axis,

a plurality of cam follower means coupled to said frame for rotation therewith and for engaging said cam means as said frame rotates,

the number of said cam follower means being equal to the number of said vane means,

each of said cam follower means being associated with one of said vane means, and

linkage means pivotally coupled to each of said cam follower means and to its associated vane means, for cyclically moving each of said vane means to its inward and outward positions as said frrame rotates such that on one side of said generally vertical axis said vane means are moved to their outward positions as said vane means are rotated by said frame to said one side and on the opposite side of said generally vertical axis said vane means are moved to their inward positions as said vane means are rotated by said frame to said opposite side.

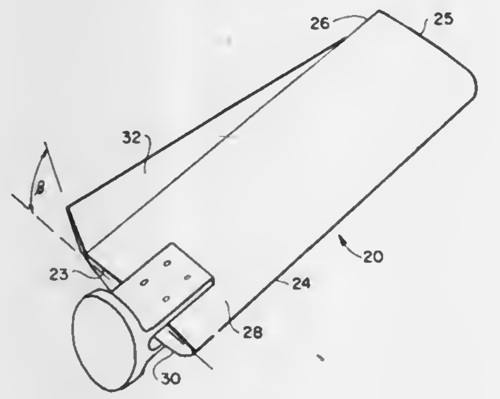
4,618,313
AXIAL PROPELLER WITH INCREASED EFFECTIVE DISPLACEMENT OF AIR WHOSE BLADES ARE NOT TWISTED

Antonio Mosiewicz, Milan, Italy, assignor to Cofimco S.r.l., Milan, Italy

Continuation-in-part of Ser. No. 228,972, Jan. 27, 1981, abandoned. This application Oct. 6, 1983, Ser. No. 539,382

Int. Cl.^{4} B64C *11/18*

U.S. Cl. 416—237 **8 Claims**



1. An axial propeller comprising:

a blade with constant inclination angle along its whole length (untwisted) and having a leading edge and a trailing edge, an upper surface and a convex lower surface which extend between said leading and trailing edges, said lower surface having a curvature greater than that of said upper surface, said blade having a proximal end for securing to a hub and a distal end and having a constant cross-section between said ends; and means for increasing the effective displacement of air generated by said blade near said proximal end, said means for increasing comprising a tab secured to said trailing edge of said blade, extending upwardly and outwardly from said trailing edge and having its maximum width toward the proximal end of the blade, its minimum width toward the distal end of the blade, said tab forming an angle of between 10° and 70° with the blade and located on the blade upper surface and the maximum width of the tab being not greater than about 30% of the width of the blade.

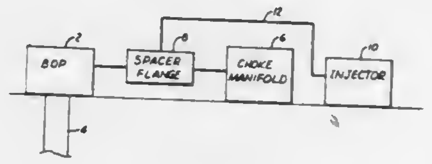
4,618,314
FLUID INJECTION APPARATUS AND METHOD USED BETWEEN A BLOWOUT PREVENTER AND A CHOKE MANIFOLD

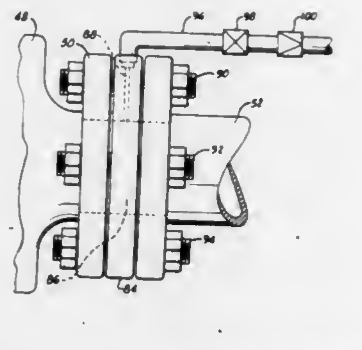
Charles D. Hailey, 11628 Burning Oaks Rd., Oklahoma City, Okla. 73150

Filed Nov. 9, 1984, Ser. No. 670,410

Int. Cl.^{4} F04B *21/00;* **E21B** *33/00*

U.S. Cl. 417—53 **17 Claims**





1. An apparatus for pumping fluid into a blowout preventer through a first opening thereof and into a choke manifold through a second opening thereof, said apparatus comprising:

a base frame;

fluid container means, mounted on said base frame, for receiving the fluid to be pumped into said blowout preventer and said choke manifold;

pump means, mounted on said base frame, for pumping said fluid of said fluid container means through a flow inlet and an outlet of said pump means; and

spacer flange coupling means, connectible between said first and second openings, for coupling said outlet of said pump means with said blowout preventer and said choke manifold, said spacer flange coupling means including:

a flange body having a longitudinal opening defined therethrough for providing a flow path in line with said first and second openings, said flange body also having a lateral port defined therein outwardly from said longitudinal opening to an exterior surface of said flange body; and

conduit means for providing a flow conductor between said outlet of said pump and said lateral port of said flange body.

9. A method of injecting a fluid into a blowout preventer, connected to a well and having first valve means disposed within a choke flow line extending from said blowout preventer, and into a choke manifold, having second valve means disposed between an inlet adapted for connecting to said choke flow line and an outlet of said choke manifold, said method comprising the steps of:

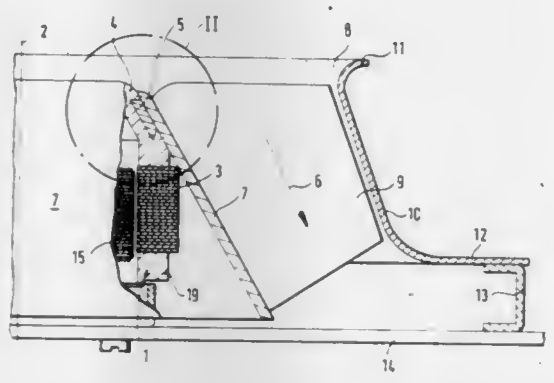
connecting to said choke flow line and said inlet, between said first and second valve means, flow port means for providing a fluid communication path between said choke flow line of said blowout preventer and said inlet of said

- choke manifold and for providing an injection port into said fluid communication path; and
- pumping said fluid into said injection port so that said fluid is dispersed through said fluid communication path towards said first and second valve means.

4,618,315
SMALL FAN

Georg Papst, St. Georgen, and Günter Wrobel, Villingen-Schwenningen, both of Fed. Rep. of Germany, assignors to Papst-Motoren GmbH & Co., St. Georgen, Fed. Rep. of Germany

Continuation of Ser. No. 382,247, May 26, 1982, abandoned.
This application Jan. 28, 1985, Ser. No. 694,912
Claims priority, application Switzerland, May 29, 1981, 3520/81
Int. Cl.⁴ F04B *35/04;* **F04D** *29/02*
U.S. Cl. 417—354 **9 Claims**



1. A small electric motor fan having an air discharge side and an air suction side, comprising:

- a housing having an outer wall conically widening in the direction of air flow;
- a cup-shaped outer rotor, said rotor having an integral conically narrowed portion facing outwardly towrad the incoming air on the air suction side of said fan, said rotor being in the form a squirrel cage housing and including a squirrel cage lamination stack;
- a conical member being generally hollow and having an inner surface and an outer surface, said conical member being separate from but mounted on said rotor around at least a portion of the periphery thereof for rotation coaxially therewith and formed and mounted in such manner that no portion thereof extends onto or pierces the radial plane of the portion of the rotor that faces outwardly toward the incoming air on the air suction side of said fan, said conical member widening coaxially in the direction of air flow, the outer surface of said conical member and the outer wall of said housing defining therebetween a conically directed air flow duct, said conical member further defining a dead space inwardly of its wide end between said member and said rotor;
- fastening means engaging said conical member to said rotor; and
- a plurality of blades mounted on the outer surface of said conical member in the air flow duct.

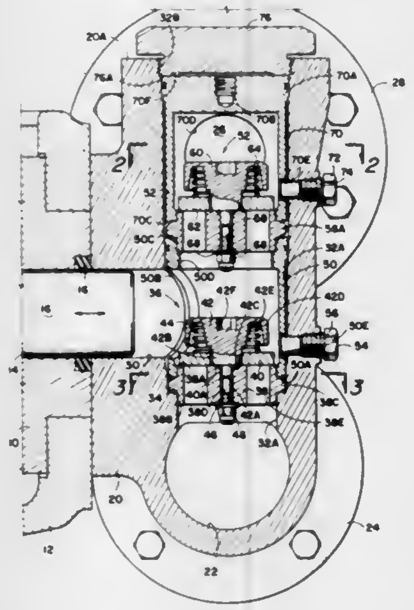
4,618,316
LIQUID END FOR A RECIPROCATING PUMP HAVING EASILY REMOVABLE VALVES AND VALVE RETAINERS

Robert Elliott, Two Ridgman Ct., Midland, Tex. 79703

Continuation of Ser. No. 373,021, Apr. 29, 1982, Pat. No. 4,477,236. This application Jul. 24, 1984, Ser. No. 633,849
The portion of the term of this patent subsequent to Oct. 16, 2001, has been disclaimed.
Int. Cl.⁴ F04B *21/00, 39/14*
U.S. Cl. 417—454 **14 Claims**

1. An improved liquid end for use on a reciprocating pump in which the pump has a body providing a cylinder and a plunger reciprocating therein, a valve structure comprising:

- a liquid end body having a lower liquid intake port, an upper exhaust port, and an intermediate plunger port between the intake and exhaust ports, the liquid end body being secured to the pump body with the plunger port in communication with the valve chamber, and the liquid end body being further defined by a vertical cylindrical valve chamber extending from the surface of the liquid end body, the cylindrical axis thereof being perpendicular the axis of the plunger, the lower end of the valve chamber communicating with said intake port, the upper end communicating with said exhaust port, and the intermediate portion communicating with said plunger chamber, the valve chamber having a reduced internal diameter portion adjacent the lower end providing a seating ledge, the valve chamber being defined by concentric enlarged diameter portions, each portion being slightly larger in internal diameter than the portion just below it;
- an intake valve of external diameter less than said valve chamber smallest diameter port above said reduced internal diameter portion and positioned in said valve chamber in engagement with said seating ledge;
- a lower tubular seat retainer of external diameter less than said valve chamber and being slidably received therein, the lower end of the lower seat retainer engaging said intake valve and serving to hold it in fixed position, the lower seat retainer having an opening in the sidewall thereof in coincidence with said plunger chamber, the upper end portion of the lower seat retainer forming an annular seating surface having sealing engagement with one of said valve chamber concentric enlarged diameter portions;

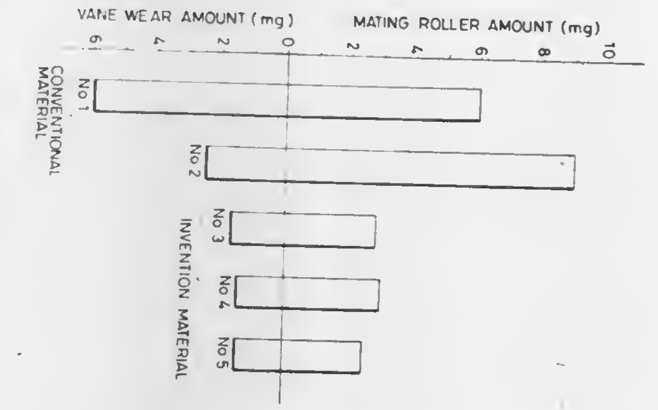


- an exhaust valve of external diameter less than said valve chamber and positioned in engagement with said lower retainer upper end;
- an upper tubular seat retainer slidably received therein, the lower end of the upper retainer engaging said exhaust valve to hold it in fixed position and having openings in the sidewall thereof in coincidence with said outlet ports, the upper end portion of the upper seat retainer forming an annular seating surface having sealing engagement with one of said valve chamber concentric enlarged diameter portions, said lower and upper seat retainers each having a smaller diameter opening in the sidewall thereof spaced from said liquid end plunger chamber port and said exhaust port opening respectively, and wherein said liquid end body has threaded drain openings therein intersecting said valve chambers and in coincidence with said smaller diameter openings when said retainers are properly positioned within said liquid end;
- means to close the upper end of said valve chamber and to retain said upper seat retainer in secure engagement with said upper valve whereby said intake and exhaust valves may be of the same diameter and thereby optionally interchangeable and whereby said seat retainers may be removed from said valve chamber by short distance upward pull, the seat retainers thereafter entering into portions of said valve chamber having increased internal diameters;
- a threaded alignment plug received in each said liquid end threaded drain openings and extending loosely into said small diameter cage openings to align said retainers in proper orientation in said liquid end body passages, and
- wherein each of said intake and exhaust valves is in the form of a cylindrical valve seat having an upper and lower side, and having an integral enlarged diameter portion of external diameter less than said valve chamber and engageable with a said seating ledge, both the upper and lower surface providing valve sealing surfaces and having an axial opening therethrough and liquid passageway opening therethrough spaced from said axial opening;
- a cylindrical valve disc member having an upper and lower sealing surface and having an axial opening therethrough;
- a cylindrical valve guide stem member having a reduced diameter portion received and removably secured to said valve seat axial opening and having an upper enlarged diameter portion engaging the upper surface of said valve seat and slidably receiving said valve disc, the valve guide having an upper further enlarged diameter portion limiting the upward travel of said valve disc and providing spring retaining means; and
- compression spring means receiving between said valve guide stem upper portion and said valve disc to resiliently urge said valve disc into sealing engagement with said valve seat sealing surface.

4,618,317
ROTARY TYPE FLUID COMPRESSOR

Michiyoshi Matsuzaki, Saitama, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Nov. 30, 1983, Ser. No. 556,665
Claims priority, application Japan, Nov. 30, 1982, 57-208567
Int. Cl.⁴ F04C *15/00*
U.S. Cl. 418—63 **4 Claims**



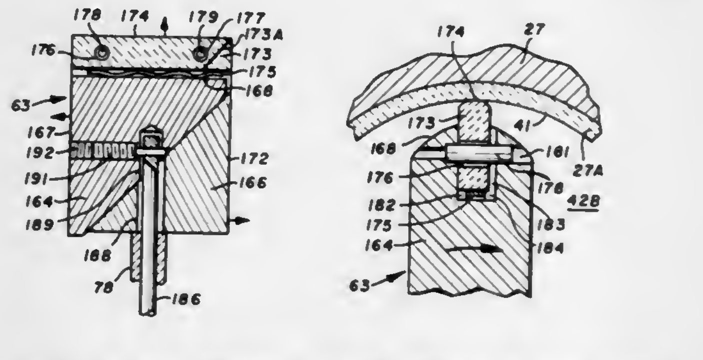
1. A rotary-type fluid compressor, comprising:

- a housing having a vane groove therein; and a vane fitted in the vane groove, and a member mating with said vane, the vane being formed of a soft nitrided hardened steel material comprising 0.50 to 1.30% C by weight, 11.0 to 20.0% Cr by weight, with the balance being predominantly Fe; and said mating member being formed of cast iron containing 0.10 to 6.00% carbide, the cast iron having a graphite configuration and a grade selected from the group consisting of ASTM grades A, D, and E, the iron having the structure of tempered martensite and a Rockwell C hardness (HRC) in the range of 40 to 55.

4,618,318
VANE AND SEAL ASSEMBLY

Craig N. Hansen, Minnetonka, Minn., assignor to Hansen Engine Corporation, Minnetonka, Minn.

Division of Ser. No. 447,448, Dec. 6, 1982, Pat. No. 4,507,067. This application Mar. 25, 1985, Ser. No. 715,900
Int. Cl.⁴ F01C *1/00, 19/04, 19/08*
U.S. Cl. 418—111 **20 Claims**



1. A vane and seal assembly for a rotary device having a housing with spaced side walls having inside wall surfaces and an inside circumferential wall surrounding an annular chamber and a rotor located within the chamber rotatably mounted on the housing, said rotor having at least one generally radial slot slidably accommodating the vane and seal assembly comprising: a first vane segment having a side wall engageable with one inside wall surface, a second vane segment having a side wall engageable with the other inside wall surface, said first and second vane segments having diagonal engaging surfaces and generally parallel side walls allowing the first and second vane segments to move in opposite lateral directions relative to each other in sliding and sealing engagement with sid inside wall surfaces, means connecting the vane segments to said side walls, said first vane segment having a groove in the outer end thereof extended along the length thereof, seal means located in said groove, said seal means having an outer transverse face locatable in sealing engagement with said inside circumferential wall, means mounting the seal means on the first vane segment, said means allowing limited radial movement of the seal means relative to the first vane segment, and biasing means mounted on the first vane segment for biasing the seal means in an outward direction into engagement with the inside circumferential wall of the housing, said groove having a width wider than the width of the seal means and depth greater than the radial dimension of the seal means whereby gas under pressure in said chamber biases the outer transverse face of the seal means into sealing engagement with the inside circumferential wall.

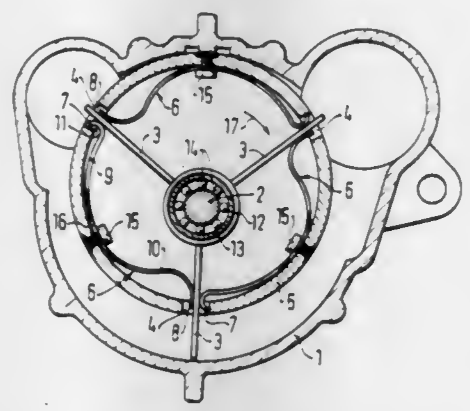
4,618,319
VANE-TYPE COMPRESSOR HAVING RESILIENT SLOT SEALS

Franz Kochannek, Schwabach, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 1, 1985, Ser. No. 794,241
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1984, 3442225
Int. Cl.⁴ F04C *27/00*
U.S. Cl. 418—136 **9 Claims**

1. A vane-type machine comprising a rotor housing, a tubular slotted rotor supported for rotation in said housing, a set of radial vanes arranged in said rotor and passing with a play through slots of the latter, and means for resiliently sealing said vanes in said slots, said sealing means including a plurality of

leaf springs extending in said rotor between consecutive slots, adjacent end portions of said springs projecting into corresponding slots to resiliently engage opposite sides of said vanes.



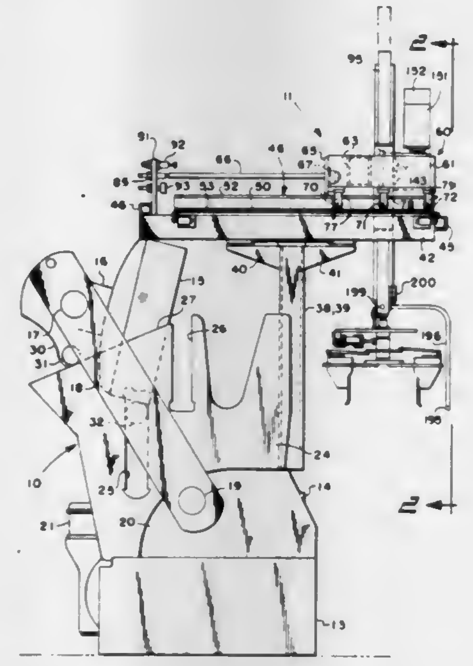
4,618,320
TIRE PRESS AND LOADER

Anand P. Singh, Youngstown, Ohio, assignor to NRM Corporation, Columbiana, Ohio

Filed Dec. 4, 1985, Ser. No. 804,460

Int. Cl.⁴ B29H *5/02*

U.S. Cl. 425—38 **27 Claims**



1. In combination a tire press including side-by-side fixed bottom mold sections, vertically movable side-by-side top mold sections, thus movable to open and close the press, and a loader operative to place uncured tires on or near the bottom mold sections when the press is open, said loader comprising a carriage frame movable fore and aft of the front of the press, means to move said carriage frame fore and aft, vertically movable posts mounted on said frame, a loader chuck on the lower end of each said post, said chucks and posts being aligned with pick-up positions in the fore position of the carriage, and being aligned with the bottom mold sections in the aft position of the carriage, and squaring mechanism means to move said posts vertically in unison thus to load uncured tires in the molds of the press as aforesaid.

4,618,321
FOAMING SYSTEM IN PARTICULAR FOR FOAMING REFRIGERATOR FURNITURE

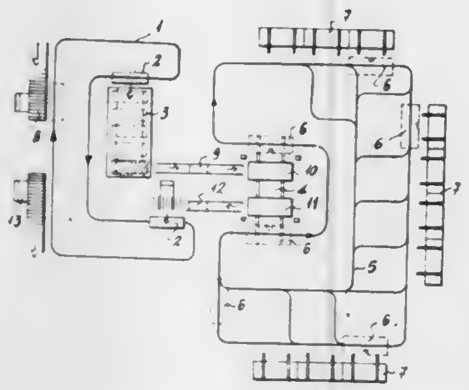
Silvano Claisen, Abbiategrasso, Italy, assignor to Perros Industriale S.p.A., Milan, Italy

Filed Jun. 26, 1985, Ser. No. 749,318

Claims priority, application Italy, Jul. 2, 1984, 21715 A/84

Int. Cl.⁴ B29C *1/00, 5/04;* B29D *27/04*

U.S. Cl. 425—88 **16 Claims**



1. A system for foaming in particular refrigerator furniture pieces, which comprises a first path for the translation of first means for independently carrying furniture pieces, pre-heating means for pre-heating said furniture pieces, on operating station for handling masks, a second path for the translation of second means for independently carrying masks and at least a stocking region for stocking said masks and the related furniture pieces contained therein.

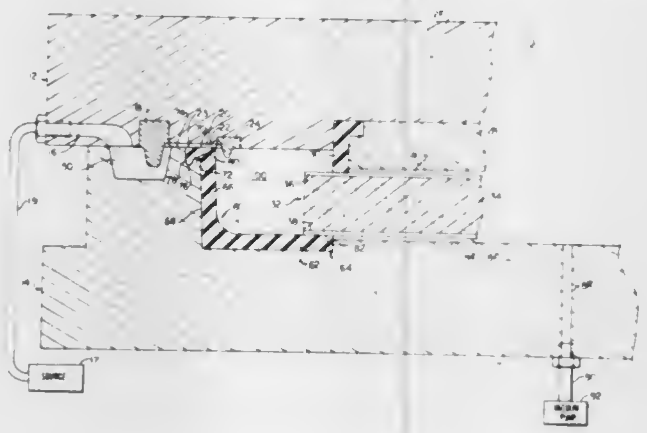
4,618,322
REACTION INJECTION MOLDING SYSTEM WITH FINGER GATE

Charles A. Lagasse, Newburyport, Mass., assignor to PlasTek Corporation, Newburyport, Mass.

Continuation-in-part of Ser. No. 507,336, Jun. 24, 1983, abandoned. This application Nov. 8, 1984, Ser. No. 669,905

Int. Cl.⁴ B29C *33/12*

U.S. Cl. 425—129 R **11 Claims**



1. An injection molding machine comprising:

a core and a permanent cavity at least a portion of which is elastomeric, said elastomeric portion including a first part defining at least a portion of the floor of said cavity, a second part defining at least a portion of the wall of said cavity, and a third part defining at least a portion of the upper edge of the wall and extending outwardly therefrom to form at least a portion of the top of said cavity, the cavity floor having an interior portion which is not elastomeric and said first part of said elastomeric portion defining the periphery of the cavity floor for receiving an insert at its inner end proximate said interior non-elastomeric portion of the cavity floor; and

a finger gate for interconnecting said cavity with a source of molding medium, said finger gate including a plurality of spaced fingers on said core transverse to the edge of the wall and aligned with the flow of the molding medium into said cavity for engaging said third part of said elastomeric portion and securing said elastomeric portion against said core to prevent disruption of said elastomeric portion as molding medium is introduced to said cavity.

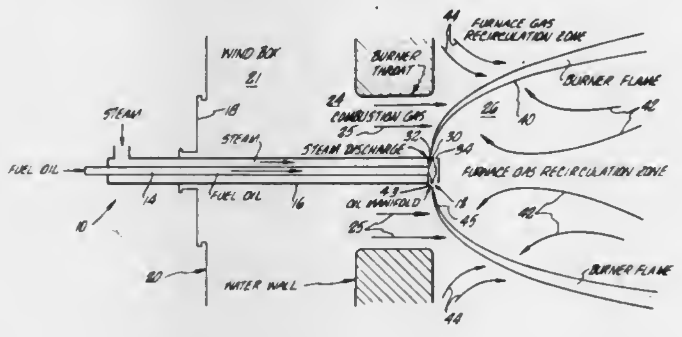
4,618,323
METHOD AND BURNER TIP FOR SUPPRESSING EMISSIONS OF NITROGEN OXIDES

Mansour N. Mansour, Hacienda Heights, Calif., assignor to Southers California Edison, Rosemead, Calif.

Division of Ser. No. 122,690, Feb. 19, 1980, Pat. No. 4,505,665. This application Aug. 6, 1984, Ser. No. 638,295

Int. Cl.⁴ F23C *5/08*

U.S. Cl. 431—177 **40 Claims**



1. A burner tip for burning of a liquid fuel in a combustion chamber containing a flame while suppresing the production of oxides of nitrogen, the combustion chamber including an opening, and means for introducing an oxygen containing combustion gas thereinto through said opening, the burner tip being located in the path of the oxygen containing gas as it passes through said opening and comprising:

(a) a fuel port and means for ejection of the liquid fuel without any atomization gas through said fuel port into the combustion chamber, the burner tip having a longitudinal axis and the fuel port being oriented so that the fuel is ejected into the combustion chamber at an angle generally perpendicular to the longitudinal axis of the burner tip and to the angle of introduction of the combustion gas; and

(b) at least two gas ports in the burner tip, and means for introducing a control gas into the combustion zone at an angle generally perpendicular to the longitudinal axis of the burner tip and the angle of introduction of the combustion gas for controlled atomization of the liquid fuel, the gas ports being on axially opposite sides of the fuel port and axially spaced apart from the fuel port, at least one of the gas ports being axially spaced apart from the fuel port by at least 0.3 inch and no more than about 12 inches, said gas ports being oriented to direct gas in the same general direction as said fuel port.

4,618,324
CENTRI-LEVER ORTHODONTIC APPLIANCE

Philip J. Nord, 5213 SE. 30th, No. 210A, Portland, Oreg. 07202

Filed Jan. 28, 1985, Ser. No. 695,565

Int. Cl.⁴ A61C *7/00*

U.S. Cl. 433—19 **6 Claims**

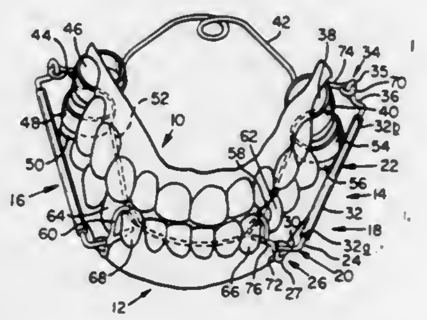
1. An intraoral orthodontic appliance extending between the teeth of the upper jaw and the teeth of the lower jaw comprising:

an elongate extensible-contractable mechanism positioned laterally outwardly of the teeth in the upper and lower jaws,

a ring mounted on the lower jaw and a ring mounted on the upper jaw,

a first planar loop engaging one of said rings adjacent one end of said mechanism and means mounting said loop on said mechanism with such located laterally inwardly of the mechanism and outwardly of the teeth and in a substantially vertical plane, and

a second planar loop engaging the outer ring adjacent the other end of said mechanism and means mounting said second loop on said mechanism with such located laterally inwardly of the mechanism and outwardly of the teeth and in a substantially vertical plane.



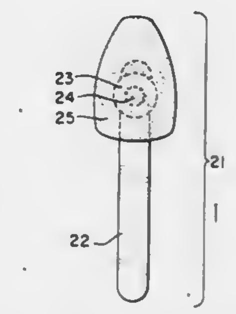
4,618,325
CUSTOM DENTAL SHADE GUIDE TAB

Gerald K. Appelle, 245 E. 87th St., New York, N.Y. 10128

Filed Mar. 18, 1985, Ser. No. 713,182

Int. Cl.⁴ A61C *19/10*

U.S. Cl. 433—26 **11 Claims**



1. An assembly for the custom formation of a dental shade guide tab comprising a hollow transparent substantially closed mold and stick-like handle, said substantially closed mold having an opening in which selected raw tooth filling restorative material is located to harden and cure in the shape of said mold, said handle having anchor means projecting through said opening and into anchoring engagement with the restorative material, and said mold being separable from said restorative material and said handle.

4,618,326
EQUIPMENT STAND FOR DENTAL IMPLEMENTS

Helmut Schmidt; Anton Bodenmiller, both of Leutkirch, and Alfred Straka, Isny, all of Fed. Rep. of Germany, assignors to Kaltenbach & Voigt GmbH & Co., Biberach/Riss, Fed. Rep. of Germany

Filed May 10, 1985, Ser. No. 733,121

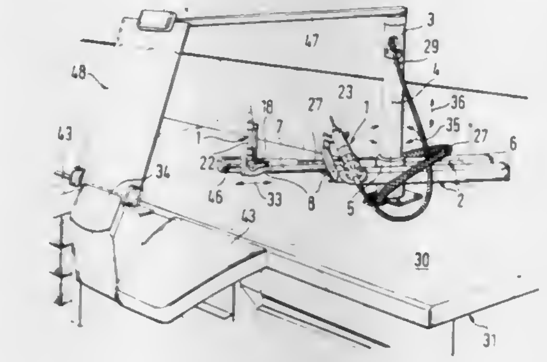
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1984, 3420566

Int. Cl.⁴ A61G *1/14;* A01C *15/00*

U.S. Cl. 433—79 **18 Claims**

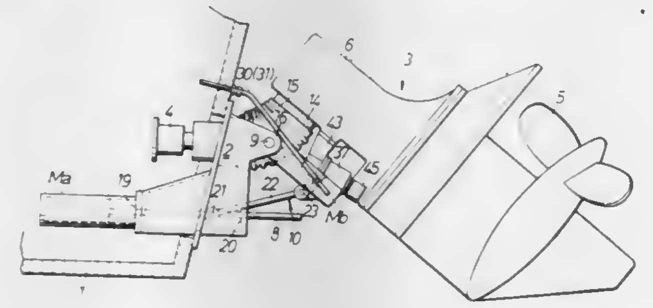
1. In an equipment stand for the deposition of dental implements during the non-use of said implements, a stationary support column; holders for said implements being mounted on said support column, said holders being linearly reciprocable in a horizontal plane relative to said support column and pivotable about the longitudinal axis of said support column, the improvement comprising: said holders being arranged on a

turning sleeve which is rotatable about the support column, said holders being pairwise diametrically located opposite each other on said support column, and said holders with said turning sleeve are vertically adjustable in height.



4,618,327
STEERING STRUCTURE FOR SHIP PROPELLING DEVICE

Toshio Kitai, Nagoya, Japan, assignor to Kabushiki Kaisha Kitai Tekkosho, Nagoya, Japan
Filed Sep. 19, 1984, Ser. No. 652,235
Claims priority, application Japan, Sep. 19, 1983, 58-172709
Int. Cl.⁴ B63H *5/13*
U.S. Cl. 440—53 **4 Claims**



1. A steering structure for a ship propelling device, comprising:

a support member which is secured to a hull and is adapted to support a body of the ship propelling device mounted outboard such that said body is wholly pivotable about a pivot shaft extending horizontally as well as about an axis orthogonal to an axis of said pivot shaft;

a universal joint which connects between a drive shaft connected to a drive source provided inboard and an input shaft of said ship propelling device;

a vertically driving means which is disposed inboard and is adapted to pivot the body of said ship propelling device about said pivot shaft;

a link mechanism which connects together said vertically driving means and said body of the ship propelling device and which allows the body to perform a vertical pivot motion in response to a horizontal linear motion of the driving means;

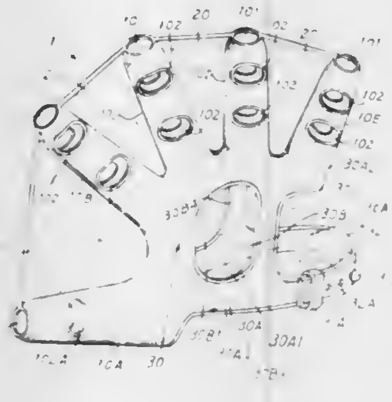
a hydraulically operated turning driving means which is provided on said support member and is operatively connected with said body so as to pivotally drive the whole body about the axis orthogonal to the axis of said pivot shaft;

a swing lever means pivotally supported on the support member through said pivot shaft and extending in a radial direction of the pivot shaft, said swing lever means having a free end to which is secured said turning driving means, said turning driving means including a box member for supporting a steering shaft integrally formed on the body for rotation around the axis orthogonal to the axis of the pivot shaft; and

said body of the ship propelling device being provided with a pair of upper and lower support means projected frontwardly from a front surface of the body, said steering shaft being clamped and held between said support means against relative rotation.

4,618,328
SWIMMING GLOVE

Hsin-Hsiung Chi, No. 387, Ta Nan Road, Shih Lin District, Taipei, Taiwan
Continuation-in-part of Ser. No. 647,843, Sep. 6, 1984, abandoned. This application Jan. 2, 1986, Ser. No. 815,814
Int. Cl.⁴ A63B *31/04*
U.S. Cl. 441—57 **2 Claims**

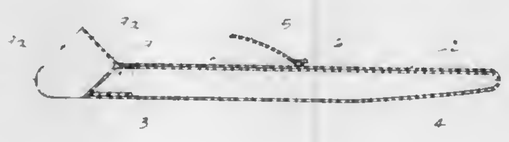


1. A swimming glove comprising five finger sleeves corresponding with the thumb and four fingers of a wearer of the swimming glove, said five finger sleeves having a web in between each two neighboring finger sleeves, each finger sleeve having an end opening and at least one pair of opposite side openings to correspond with a finger joint to enable easy bending of the wearer's fingers;

a glove body integrally formed with said finger sleeves and webs, said glove body having a first side and an opposite, symmetric second side respectively provided with first and second central openings, and a third opening along one edge part of said glove body; and a pair of fastening straps integrally formed with said glove body and arranged to extend traversally across the wearer's hand and to be tied around the side edge of the wearer's hand opposite the thumb.

4,618,329
WATER SLIDERS

Remy Celez, 9112 W. Fort St., Detroit, Mich. 48209
Continuation-in-part of Ser. No. 515,868, Jul. 21, 1983, abandoned. This application Jul. 31, 1984, Ser. No. 636,167
Int. Cl.⁴ A63C *15/00*
U.S. Cl. 441—76 **2 Claims**



1. A pair of water sliders for floating, walking or sliding on the surface of water, each water slider comprising:

a shell means for enclosing a float means, a stiffener means, a tail means and a foot strap means;

said shell means having an opening at the rear only;

said float means enabling the wearer to float on the surface of the water and being made of a slab of foam;

said stiffener means for strengthening the water slider, and being located between the upper part of the shell means and the upper part of the float means;

said tail means being used for propelling and steering and consisting of a hollow forward part and an open rear part;

said hollow forward part fitting snugly inside of the rear of the shell means;

said open rear part consisting of a first set of two flat panels, placed at an angle to each other, one panel covering the opening at the rear part of the float means, the other panel rising above the top of the shell means, the intersection of the two panels forming a line which also intersects the upper edge of the opening at the rear of the shell means;

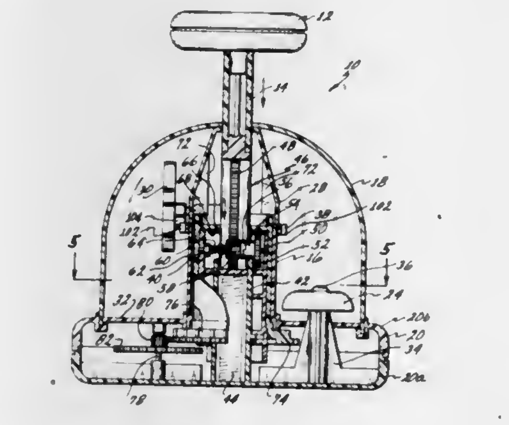
said open rear part also consisting of a second set of two flat panels, each panel being perpendicular to and on opposite sides of the set of first flat panels, two edges of each of said second set of two flat panels being connected to one edge each of first set of two flat panels, one edge each of each of the second set of two flat panels being connected respectively to each of the sides of the rear opening of the shell means;

said open rear part forming an opening away from the rear part of said water sliders, and facing backwardly, such as to trap water and form a resistance to rearward movement of the water slider;

said foot strap means holding the wearer's foot.

4,618,330
TOY AMUSEMENT DEVICE

Akira Abe, Tokyo, Japan, assignor to Tomy Kogyo Co. Inc., Tokyo, Japan
Filed Jan. 22, 1985, Ser. No. 693,842
Int. Cl.⁴ A63H *1/00*
U.S. Cl. 446—236 **19 Claims**



1. A toy which comprises:

a housing;

first and second members located on said housing;

said first member shaped as a surface of rotation having a hollow interior and open ends opening into said hollow interior, said first member rotatively mounted on said housing;

said second member being elongated in shape and located on said housing so as at least a portion of said second member is located within the hollow interior of said first member with at least a portion of said second member extending out of one of said ends of said first member, said second member linearly movable in and out of one of said ends of said first member;

first gear means located on said first member;

second gear means located on said second member;

connecting gear means located on said housing in operative association with both said first and said second gear means so as to transfer linear motion of said second member into rotational motion of said first member;

output means for producing a mechanical output, said output means independent of said first member, said output means movably located on said housing in operative association with said first member whereby rotational motion of said first member moves said output means on said housing;

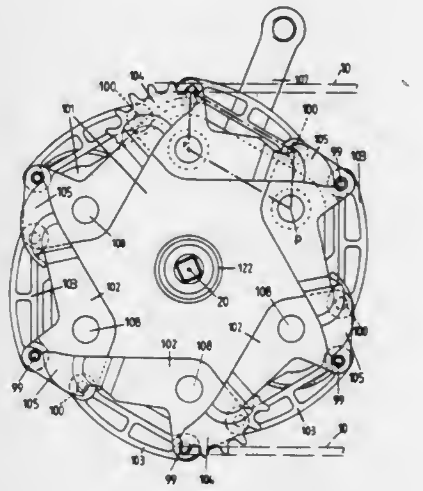
said housing includes an upstanding element shaped as a surface of rotation mimicking the shape of the surface of rotation of said first member, said upstanding element sized and shaped so as to fit within the interior of said first member whereby said first member rotates around said upstanding element;

said upstanding element further including an opening located through the interior of said upstanding element, said opening sized and shaped so as to contain at least a portion of said second member;

said first member rotating around said upstanding element in response to movement of said second member with respect to said upstanding element.

4,618,331
VARIABLE RATIO TRANSMISSION

Michel Deal, Villers, 42460 Cunzier, France
Filed Dec. 14, 1983, Ser. No. 561,204
Claims priority, application United Kingdom, Dec. 14, 1982, 8235574
Int. Cl.⁴ F16H *9/02*
U.S. Cl. 474—49 **14 Claims**



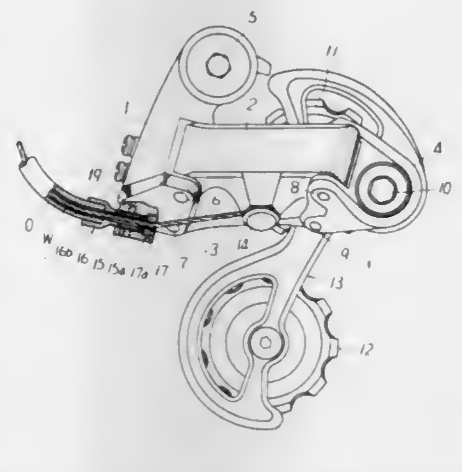
1. A rotary drive device for a variable ratio transmission mechanism including an endless flexible tension element, the device comprising a rotary support carrying a plurality of angularly spaced contact elements for the tension element, the contact elements being movable to vary their radial displacement from the axis of said support, and including resilient means urging said contact elements outwards, an input drive member, which is capalbe of limited rotation relative to said support, and control means arranged to exert a resisting force on the movement of the contact elements, said control means being responsive to changes in the torque transmitted between said input drive member and said rotary support, and arranged to vary a braking force restraining inward movement of said contact elements, in dependence on the torque applied by said input drive member.

4,618,332
DERAILLEUR FOR A BICYCLE

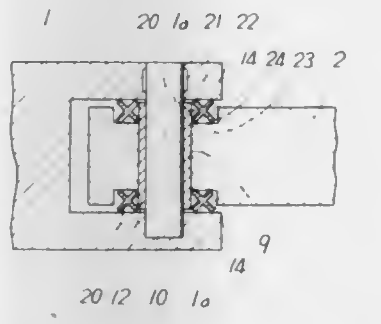
Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Filed May 13, 1985, Ser. No. 733,600
Claims priority, application Japan, May 21, 1984, 59-74705[U]
Int. Cl.⁴ F16H *9/00*
U.S. Cl. 474—80 **5 Claims**

1. In a derailleur for a bicycle which is provided with a linkage mechanism comprising a base member, a pair of linkage members each pivotably connected on one end to said base member, and a movable member having a chain guide, said linkage members each being pivotably connected on another end to said movable member; a fixture for a control wire to operate said linkage mechanism; and a holder for an outer sheath for guiding said control wire; said fixture being mounted on one of two members movable relative to each other among said base member, said linkage members and said movable member of said linkage mechanism, and said holder

being supported to the other of said two members, the improvement wherein said derailleur further comprises a support member including a threaded bore in which said holder is screwably engaged, and a guide fixed to a side of said support member at which said control wire is drawn out therefrom away from a position at which said holder is supported by said support member, said guide comprising a guide bore for guiding said control wire from an exit of said holder to said fixture when said control wire is actuated, said guide being formed of a material having a relatively high wear resistance and a relatively low coefficient of friction and having means for causing said control wire to avoid contact with an edge of said holder at said exit thereof and to contact said guide bore.

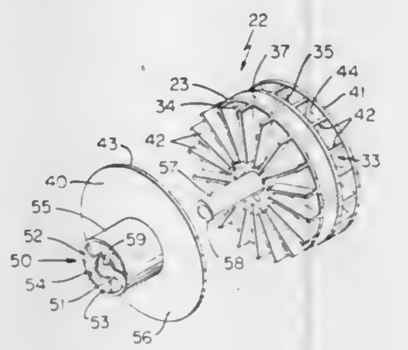


4,618,333
DERAILLEUR FOR A BICYCLE
Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Filed May 20, 1985, Ser. No. 735,668
Claims priority, application Japan, May 26, 1984, 59-77506[U]
Int. Cl.⁴ F16H *9/00*
U.S. Cl. 474—80 **8 Claims**



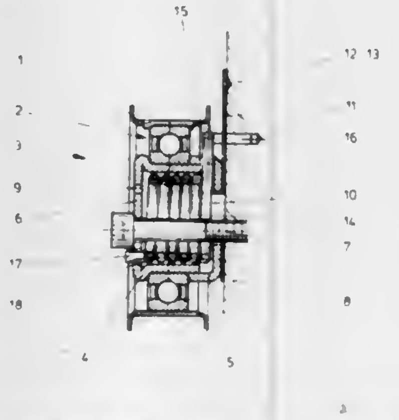
1. A bicycle derailleur, comprising a base member, a movable member, and a pair of linkage members interposed between said base member and said movable member and supporting said movable member such that said movable member is movable with respect to said base member, one of (i) said base member and said movable member and (ii) each of said linkage members having a pair of mounting walls, the other of said base member and said movable member and each of said linkage members comprising an insertion portion inserted between said mounting walls, said mounting walls having therebetween a link pin passing through said insertion portion inserted between said mounting walls, one of each of said mounting walls and a said insertion portion inserted therebetween having annular recesses disposed around said link pin, said annular recesses each having therein a sealing member to restrain water from entering between said mounting wall and said inserting portion into a space around said link pin.

4,618,334
BELT PULLEY AND METHOD OF MAKING THE SAME
Joseph P. Miranti, Jr., Porter Township, Christian County, Mo., assignor to Dayco Corporation, Dayton, Ohio
Division of Ser. No. 383,855, Jun. 1, 1982, Pat. No. 4,530,680. This application Jul. 22, 1985, Ser. No. 757,561
The portion of the term of this patent subsequent to Jul. 23, 2002, has been disclaimed.
Int. Cl.⁴ F16H *57/04*
U.S. Cl. 474—93 **2 Claims**



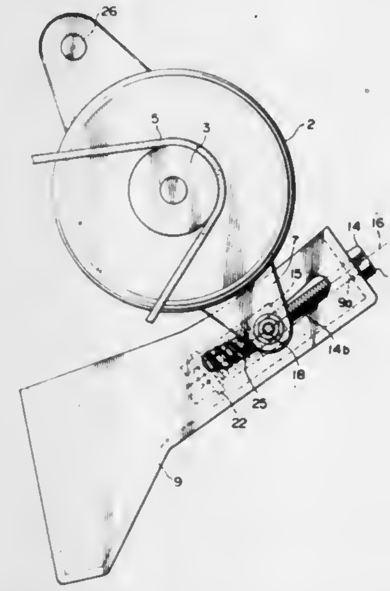
1. In a belt pulley having a hub and a peripheral groove for receiving part of an endless belt therein that is to drive said pulley or be driven thereby whereby said pulley is adapted to be rotated about the axis of said hub, said pulley having means defining at least one passage means provided with an inlet adjacent said hub and an outlet adjacent said peripheral groove whereby fluid passing through said passage means from said inlet to said outlet thereof will tend to cool said pulley and/or said belt as said pulley rotates about said axis, the improvement comprising a rotatably operable fluid flow forcing duct-like member carried by said pulley so as to be rotated and thereby operated in unison with said pulley and being disposed upstream from said inlet for forcing fluid into said inlet and thus through said passage means and said pulley means as said pulley and said fluid flow forcing means rotate about said axis, said duct-like member having opposed ends and at least one fan blade, one of said ends of said duct-like member being disposed adjacent said inlet of said passage means, said blade being disposed in said duct-like member adjacent the other of said ends thereof.

4,618,335
TENSION-ADJUSTING DEVICE FOR DRIVING BELT
Manfred Brandenstein, Eussenheim; Roland Haas, Hofheim; Gerhard Herrmann, Schweinfurt; Wolfgang Friedrich, Schweinfurt, and Ludwig Edelmann, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany
Filed Oct. 15, 1984, Ser. No. 660,968
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1983, 8330695[U]
Int. Cl.⁴ F16H *7/08, 7/10*
U.S. Cl. 474—112 **6 Claims**



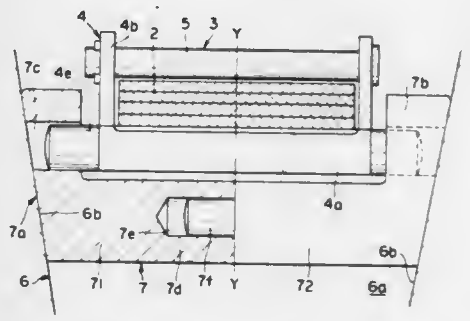
1. In a tension-adjusting device for a driving belt having an axis of swivel and comprising a tension roller securely mounted on a machine by means of a tightened mounting bolt, said tension roller having a support, said axis of swivel being radially displaced from the rolling axis of said tension roller, the improvement comprising an engagement arrangement fastened to said support for coupling said support and said machine frame, said engagement arrangement enabling stepwise swiveling movement of said tension-adjusting device relative to said machine frame when said mounting bolt is slightly loosened and comprising resilient means adapted to flex in a direction substantially parallel to said axis of swivel, said resilient means having means for form-locking with any one of a plurality of receiving means formed at predetermined swivel positions on said machine frame.

4,618,336
BELT STRETCHING MECHANISM
Masahiro Isobe; Sumio Okazaki, and Hideki Tanaka, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Mar. 1, 1985, Ser. No. 707,234
Claims priority, application Japan, Mar. 2, 1984, 59-029372
Int. Cl.⁴ F16H *7/14*
U.S. Cl. 474—133 **10 Claims**



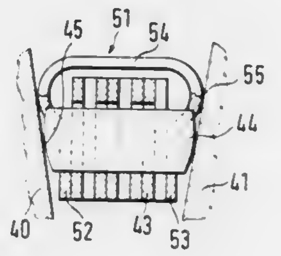
1. A belt stretching mechanism to adjust the tension of a belt wound around pulleys, the position of one of said pulleys being adjustable by moving a stay, comprising:
- an adjust bar with an elongated guide-hole extending in an arc along an axis;
- an adjust bolt whose head contact-engages said adjust bar, said contact-engagement supporting said adjust bolt, the end of said adjust bolt opposite said head being freely moveable with respect to said adjust bar;
- a slider through which said adjust bolt slidably extends;
- a nut extending in the longitudinal direction of said adjust bolt and threaded onto said adjust bolt;
- a slide cam formed at the end of said nut;
- a spring interposed between said slider and said slide cam and urging said slider toward said head of said adjust bolt;
- a spring plate extending from said slider parallel to the axis of said adjust bolt and being slidably engageable with said slide cam until a predetermined force is placed on said spring; and
- stay-fastening bolt means, attached to said slider and extending through said guide hole of said adjust bar for fastening said stay together with said slider to said adjust bar, the axis of said stay-fastening bolt means and the axis of said adjust bolt passing through a point along said axis of said guide-hole, said adjust bolt, adjust bar, nut and stay-fastening bolt means being arranged to place said adjust bolt under tension as said adjust bolt is turned to stretch said belt, the axis of said adjust bolt extending substantially tangential to said axis of said elongated guide-hole when said spring is under said predetermined force.

4,618,337
V-BELT ASSEMBLY FOR TRANSMITTING POWER
Susumu Okawa, Numazu, and Yasunobu Jufuku, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Oct. 19, 1984, Ser. No. 662,617
Claims priority, application Japan, Oct. 26, 1983, 58-199240; Oct. 26, 1983, 58-164548[U]; Oct. 26, 1983, 58-164549[U]; Nov. 30, 1983, 58-183823[U]; Dec. 2, 1983, 58-185785[U]; Dec. 2, 1983, 58-185786[U]; Dec. 2, 1983, 58-185787[U]; Dec. 2, 1983, 58-185788[U]; Dec. 2, 1983, 58-185790[U]
Int. Cl.⁴ F16G *5/16, 5/18, 5/22*
U.S. Cl. 474—201 **43 Claims**



1. A V-belt assembly for transmitting power, comprising:
- a V-belt assembly trained over a V-belt wheel;
- a flexible endless belt;
- a plurality of suspension members slidably mounted on the endless belt in a longitudinal direction thereof and which further comprises a pin member and a U-shaped member connected to said pin thereof; and
- a plurality of U-shaped transmission pieces separated from said U-shaped member, having side surfaces corresponding to side walls of a V-shaped groove of the V-belt wheel and supported swingably by the suspension members, respectively.

4,618,338
LINK CHAIN FOR A VARIABLE RATIO CONE PULLEY TRANSMISSION
Manfred Rattunde; Herbert K. Steuer, and Hans-Jürgen Wolf, all of Bad Homburg, Fed. Rep. of Germany, assignors to Reimers Getriebe AG, Zug, Switzerland
Filed Mar. 11, 1985, Ser. No. 710,141
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1984, 3413384
Int. Cl.⁴ F16G *1/21*
U.S. Cl. 474—245 **16 Claims**



1. Link chain for a variable transmission ratio cone pulley transmission having
- a plurality of chain link elements (**1**, **15**, **43**) extending—in the running direction of the chain—longitudinally of the chain,
- the chain link elements being formed with openings (**2**) therein;
- rocker elements (**3**, **16**, **44**) extending transversely of the

chain, fitted into the openings, forming hinge joints for the link elements, and having lateral end surfaces (**45**) dimensioned and shaped for engagement with facing surfaces of the cone pulleys (**12**; **40**, **41**) of the transmission,

said chain further comprising, in accordance with the invention,

means to reduce operating noise level of the link chain in the transmission, primarily resulting from sequential engagement of the end surfaces (**45**) of the rocker elements (**3**, **16**, **44**) with the facing surfaces of the cone pulleys (**12**; **40**, **41**) including

frame bodies extending transversely of the chain and located between two hinge joints formed by the rocker elements (**3**, **16**, **44**) and surrounding the chain links at least over a major extent of the chain links

lateral resilient engagement surface formed on the frame bodies and located laterally adjacent the sides of the outermost chain link elements for resilient and frictional engagement with the facing surfaces of the cone pulleys (**12**, **40**, **41**) of the transmission,

said frame bodies being retained on the chain by force engagement with at least one of said elements

to reduce the spacing of surfaces formed on the chain which, in operation, contact facing surfaces of the cone pulleys to only the gap between the lateral end surfaces (**45**) of the rocker elements and the lateral engagement surfaces of the frame bodies.

4,618,339

CONVEYING CONTINUOUS FILTER MATERIAL

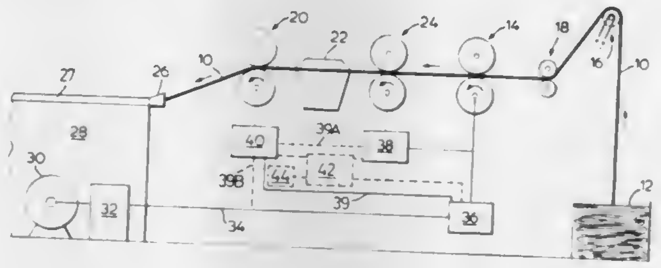
Hugh M. Arthur, and Graham H. Bates, both of High Wycombe, United Kingdom, assignors to Molins PLC, Great Britain

Filed Jul. 30, 1984, Ser. No. 635,928

Claims priority, application United Kingdom, Aug. 2, 1983, 8320817

Int. Cl.⁴ B31C *13/00*

U.S. Cl. 493—4 **19 Claims**



16. Apparatus for conveying continuous filter material of the tobacco industry between a source of said material and a rod-making machine, including first conveying means for withdrawing material from said source, a conditioning station arranged to receive material from said first conveying means, driven second means for receiving material from the conditioning station and for feeding it towards the rod-making machine, means for operating the first conveying means at a predetermined first speed related to the speed of the rod-making machine, and means for varying the tension of material passing through the conditioning station, said varying means including control means for varying the speed of the second conveying means independently of that of the first conveying means.

4,618,340

APPARATUS FOR THE RECEIVING PACKING AND TRANSFERRING OF SHEET MATERIAL

Luciano Meschi, Corso Amedeo 73, 57100 Livorno, Italy

Filed May 4, 1983, Ser. No. 491,412

Int. Cl.⁴ B05B *1/14*

U.S. Cl. 493—13 **31 Claims**

1. An apparatus for receiving and forming a package of cut piled sheets, the sheet material being received by the apparatus as a continuous strip composed of individual single sheets joined to an adjacent sheet and delineated therefrom by means of separation lines, comprising:

a fixed frame;

roller feeder means supported by said frame upstream thereof for advancing an oncoming continuous strip along a path in a controlled manner;

a sheet receiving plate together with means for the controlled positioning thereof carried by said frame downstream thereof for receiving the sheets after passing through said roller feeder means;

guiding means interposed between said roller feeder means and said sheet receiving plate for receiving, guiding and vertically directing the continuous strips towards said receiving plate on which the individual sheets are piled up in an accordian-like configuration;

means between said guide means and said receiving plate for temporarily holding the strip being piled up onto said receiving plate at a predetermined pile height;

means associated with said guide means for engaging the strip coming from said guide means and for accompanying the strip for the piling up thereof into said accordian-like configuration;

means between said guiding means and said receiving plate for temporarily separating and supporting the strip coming from said guiding means and advancing to said receiving plate, said temporarily separating means including at least one horizontal plate interposable between adjacent strips after leaving said guiding means slidable between a retired position and an operative position;

cutting blade means mounted proximate to said at least one horizontal plate and movable together therewith for engaging one edge formed by the accordian shaped folded strip immediately below said temporarily separating and supporting means, said cutting blade means including a blade movable between a resting position in which said blade does not protrude from said plates and an operative position in which said blade protrudes from said plates;

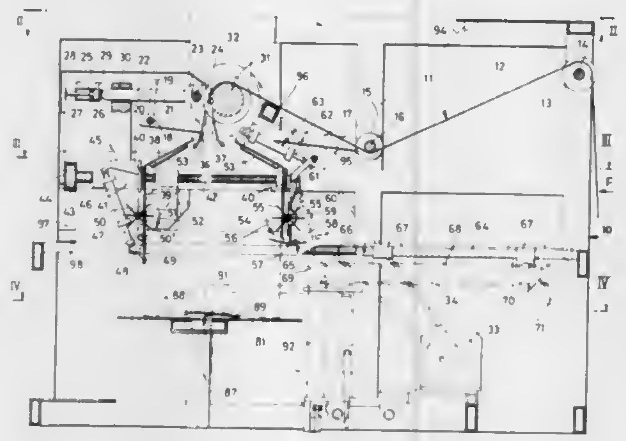
a driving jack and two rigid bars fastened to said blade, said bars being driven by said jack for the resting and said operative positions;

first detecting means proximate to said roller feeder means for detecting the presence of the strip in said roller feeder means upstream of said apparatus;

second detecting means along said path downstream of said first detecting means for measuring the length of the strip passing through said roller feeder means;

third detecting means associated with said receiving plate for detecting the accumulation level of the strip folded as an accordian onto said receiving plate; and

transferring means for the removal of a package of piled sheets from said receiving plate formed after the sheets are separated from the oncoming strip, and formed into packaged piles on an operative surface of said receiving plate.



4,618,341

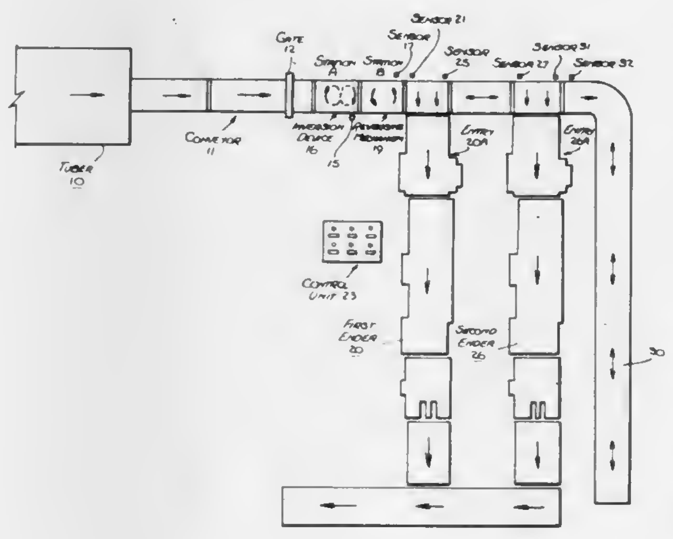
TUBE POSITIONING AND TRANSFER SYSTEM

Steve A. Oldham, Sandy, and Ronald T. Picotte, Murray, both of Utah, assignors to Champion International Corporation, Stamford, Conn.

Filed Oct. 11, 1984, Ser. No. 659,707

Int. Cl.⁴ B31B *1/00*

U.S. Cl. 493—14 **14 Claims**



1. A tube transfer system of the class described comprising:

means for forming and stacking a hand of tubes;

first and second enders for closing and sealing one end of each tube;

conveyor means for transporting said hand of tubes from said forming and stacking means to said enders;

a by-pass section for transporting said hand beyond said enders, the second ender being disposed between said first ender and said by-pass section;

means for sensing when said first and second enders cannot accept tubes;

means responsive to said sensing means for causing the hand of tubes to be transported to said second ender when said first ender cannot accept tubes and to said by-pass section when said second ender cannot accept tubes; and

means for reversing the direction of transport of said by-pass section when the system is not supplied with tubes from said means for forming and stacking a hand of tubes to transport the hand from said by-pass section to said second ender when said second ender can accept tubes and to said first ender when said second ender cannot accept tubes.

4,618,342

MACHINE FOR PROCESSING WEB MATERIAL

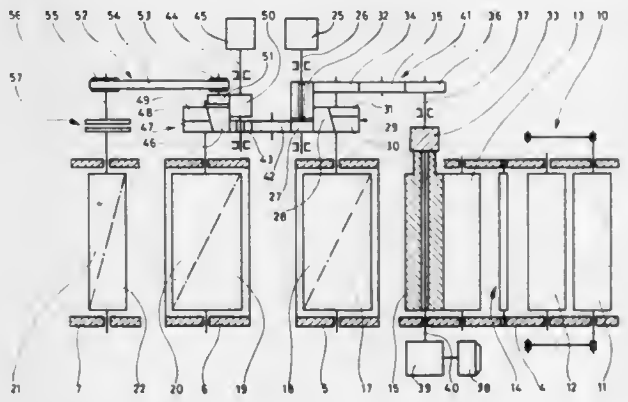
Edouard Borel, Corcelles-Chavornay, Switzerland, assignor to Bobst SA, Lausanne, Switzerland

Filed Nov. 20, 1985, Ser. No. 799,930

Claims priority, application Switzerland, Nov. 21, 1984, 05566/84

Int. Cl.⁴ B31B *1/10, 1/18, 1/25*

U.S. Cl. 493—30 **8 Claims**



1. In a machine for processing web material comprising a feeding station, a creasing station provided with rotatable tools, a cutting station with rotatable tools, a stripping station with rotatable tools, a delivery station and drive means for rotating the rotatable tools, the improvements comprising each of the stations with rotatable tools including a frame having two lateral frame members, each lateral frame member having a groove, a drive pinion of the drive means being mounted on one of the two lateral frame members adjacent the groove, each of said grooves receiving a lower bearing block and an upper bearing block separated by a thickness plate, said upper and lower bearing blocks mounting upper and lower rotatable tools with one of the tools having a pinion in driven engagement with the drive pinion of the station, said bearing blocks having identical outside shapes regardless of the size of the rotatable tool, locking means being provided on each of the frame members for providing a locking pressure to urge the upper and lower bearing blocks downwardly with the lower bearing block engaging the lower face of the groove, said locking means including jam-preventing means for releasing the locking pressure on the bearing blocks in response to a predetermined pressure being applied to the rotatable tools; and said drive means having a single drive motor directly connected through a shaft to the drive pinion of one of said stations with rotatable tools, said drive pinion being connected by a first drive train to a differential means having an output connected to a feed roll of the feed station, said differential means receiving an input from a correction motor for varying the rate of feed of the web to the stations having rotatable tools, said drive pinion being connected by a second drive train to the drive pinion of an adjacent station having rotatable tools, said second drive train including an angular phase means for setting the phase between stations, said adjacent station having braking means connected to a pinion acting on the gears of its rotatable tools and a third drive train connecting the second station to the stripping station, said stripping station having an angular phase means for setting the phase between its upper and lower tools.

CHEMICAL

4,618,343
APPARATUS FOR PERITONEAL DIALYSIS

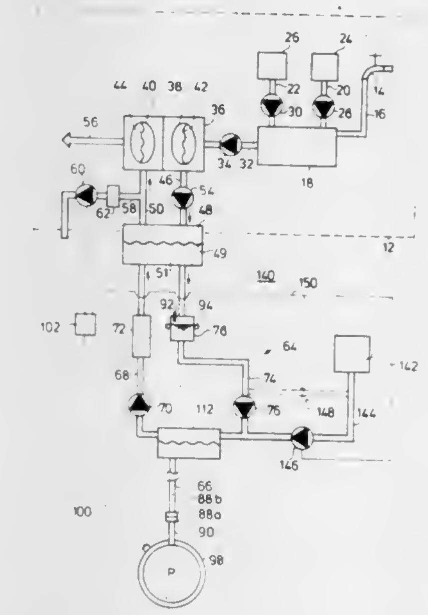
Hans-Dietrich Polaschegg, Oberursel, Fed. Rep. of Germany, assignor to Fresenius AG, Bad Homburg, Fed. Rep. of Germany

Filed Sep. 12, 1984, Ser. No. 649,873

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1983, 3333362

Int. Cl.⁴ A61M ***1/28***

U.S. Cl. 604—29 **29 Claims**



21. A peritoneal dialysis apparatus comprising:
at least one dialyzer with a membrane dividing a space therein into a first chamber and a second chamber,
said first chamber being in a first circuit connected with a single lumen catheter means and a storage means and comprising a means for supplying a dialysis fluid, and
said second chamber being connected via a second circuit with a means for preparing said dialysis fluid,
said second circuit comprising pump means and a dialysis filter divided by a membrane into a first chamber and a second chamber,
said first chamber of said dialysis filter being in said first circuit, and
said second chamber of said dialysis filter being connected with said catheter means.

4,618,344
DEPILATORY COMPOSITIONS

Robert L. Wells, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 1, 1982, Ser. No. 383,433

Int. Cl.⁴ A61K ***7/155;*** **C14C** ***1/06***

U.S. Cl. 8—161 **13 Claims**

1. An aqueous depilatory composition comprising:
(a) from about 0.1M to about 2.0M of an active thiol agent; and
(b) from about 0.01M to about 2.0M of aminoguanidine or its salts;
wherein said composition has a pH of from about 10.5 to about 12.5 at 25° C.

4,618,345
METHOD OF PREPARING HIGH PURITY WHITE PHOSPHORUS

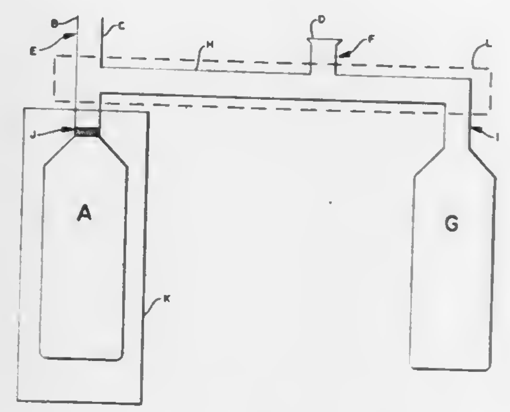
Mark A. Kuck, Upper Montclair, N.J., and Susan W. Gersten, Elmsford, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Feb. 17, 1984, Ser. No. 581,105

Int. Cl.⁴ B01D ***3/10***

U.S. Cl. 23—293 R **12 Claims**

1. The method of converting high purity red phosphorus to high purity white phosphorus comprising the steps of:
(A) heating red phosphorus of a purity of at least 99% in vacuo to cause it to vaporize, and



(B) condensing liquid white phosphorus from the vapor without the aid of a carrier gas in vacuo.

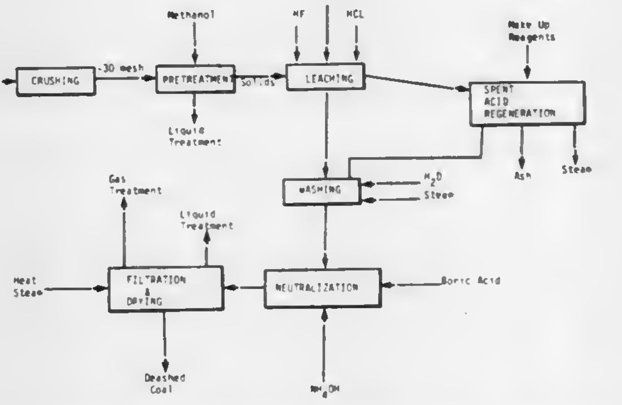
4,618,346
DEASHING PROCESS FOR COAL

Norman Schapiro, Sudbury, and Eugene J. Moreau, Waltham, both of Mass., assignors to Resource Engineering Incorporated, Waltham, Mass.

Filed Sep. 26, 1984, Ser. No. 654,498

Int. Cl.⁴ C10L ***1/00***

U.S. Cl. 44—1 A **14 Claims**



1. A process for removing ash and sulfur from coal comprising wetting said coal with an alcohol solution sufficient to swell said coal's pores in order to optimize permeability, wherein said alcohol contains between 1 and 4 carbon atoms; and leaching said coal with a mineral acid wherein both of said wetting and leaching steps take place at a temperature less than 100° C.

4,618,347
FUEL BRIQUETTES AND THEIR PREPARATION

George Watt, 17 Strand View Road, Ballycastle, Co. Antrim, and George E. Young, 24 Rockfield Gardens, Moycraig, Mosside, Ballymoney, Co. Antrim, both of Northern Ireland

PCT No. PCT/GB84/00151, § 371 Date Dec. 26, 1984, § 102(e) Date Dec. 26, 1984, PCT Pub. No. WO84/04534, PCT Pub. Date Nov. 22, 1984

PCT Filed May 4, 1984, Ser. No. 690,491

Claims priority, application United Kingdom, May 10, 1983, 8312742; Feb. 21, 1984, 8404527

Int. Cl.⁴ C10L ***5/10, 5/20***

U.S. Cl. 44—16 F **21 Claims**

5. A process for preparing a combustible shaped body, which comprises forming an essentially homogeneous mixture of a particulate fuel material, a lignosulphonate binder and water, in which the weight of water is 2 to 15% of the weight of the fuel material; adding to the essentially homogeneous mixture a dichromate as a cure-initiating component and, simultaneously or subsequently, aqueous sulphuric acid as a cure-accelerating agent; and shaping the resultant composition.

21. A fuel briquette which comprises a particulate fuel material and a binder which is the reaction product of a lignosulphonate, a dichromate and sulphuric acid.

4,618,348

COMBUSTION OF VISCOUS HYDROCARBONS

Michael E. Hayes, Fernandina Beach; Kevin R. Hrebenar, Jacksonville; Patricia L. Murphy; Laurence E. Futch, Jr., both of Fernandina Beach, and James F. Deal, III, Amelia Island, all of Fla., assignors to Petroleum Fermentations N.V., Curaco, Netherlands Antilles

Filed Nov. 2, 1983, Ser. No. 547,892

Int. Cl.⁴ C10L *1/32*

U.S. Cl. 44—51 **21 Claims**

1. A method for utilizing viscous hydrocarbons as combustible fuels comprising:

(A) forming a hydrocarbosol using a surfactant package in a proportion of about 1:100 to about 1:20,000 by weight based on hydrocarbon,
  (1) said surfactant package comprising
    (a) at least one water-soluble surfactant, an effective amount of which surfactant promotes emulsification of a hydrocarbon with API gravity of about 20° API or less, viscosity of about 100 centipoise or greater at 150° F., paraffin content of about 50% by weight or less and aromatic content of about 40% by weight or greater into an aqueous phase to form a hydrocarbon-in-water emulsion wherein the proportion of hydrocarbon to aqueous phase is about 90:10 by volume or less, the viscosity of which emulsion is reduced by at least a factor of about 10 compared to the viscosity of the hydrocarbon; and
    (b) at least one water-soluble bioemulsifier, being a microbially-derived substance which predominantly resides at hydrocarbon/water interfaces to substantially surround hydrocarbon droplets in hydrocarbon-in-water emulsions, an effective amount of which bioemulsifier stabilizes a hydrocarbon-in-water emulsion formed with a hydrocarbon as in (a) by maintaining viscosity reduced by at least a factor of about 10 for a period of at least about a day under static conditions,
  (2) said hydrocarbosol
    (a) comprising a hydrocarbon characterized by an API gravity of about 20° API or less, viscosity of 100 centipoise or greater at 150° F., paraffin content of about 50% by weight or less and aromatic content of about 40% by weight or greater; and
    (b) having a hydrocarbon:water ratio of about 70:30 by volume; and

(B) burning the resultant hydrocarbosol.

4,618,349

GRINDING WHEEL MANUFACTURING METHOD

Masahiro Hashimoto, Kamakura, and Hideo Tani, Nara, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki and Osaka Kongo Seito Co., Ltd., Osaka, both of, Japan

Filed May 9, 1983, Ser. No. 492,826

Claims priority, application Japan, May 10, 1982, 57-77733

Int. Cl.⁴ B24D *5/00*

U.S. Cl. 51—298 **3 Claims**

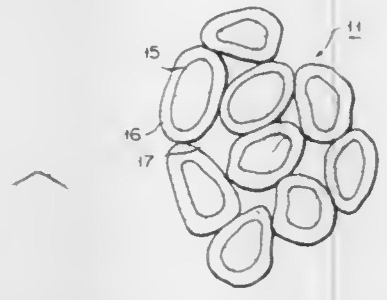
1. A method of manufacturing a grindstone which comprises the steps of:

(a) coating each of a plurality of abrasive grains with a conductive material in an amount ranging in total from 30 to 80% by weight based on said abrasive grains,

(b) homogeneously mixing the resultant coated abrasive grains with a non-conductive binder so as to contain said coated abrasive grains with a non-conductive binder so as to contain said coated abrasive grains in an amount ranging from 40 to 64% by volume and sufficient to effect electrical conductivity throughout the grindstone,

(c) filling the mixture of said coated abrasive grains with said non-conductive binder into a mold,

(d) molding said mixture by discontinuously applying a pressure a plurality of times while maintaining the temperature of said mixture by heating said mixture in a range in which said binder is softened so as to discharge gasses therein.



4,618,350

GAS-LIQUID CONTACTING

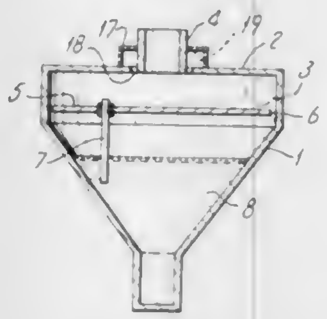
Frederick Rowe, Middlesbrough, and Peter N. Jackson, Stockton-on-Tees, both of England, assignors to Imperial Chemical Industries Plc., London, England

Continuation of Ser. No. 331,386, Dec. 16, 1981, abandoned. This application Mar. 28, 1983, Ser. No. 479,912

Claims priority, application United Kingdom, Dec. 17, 1980, 8040397

Int. Cl.⁴ B01D *47/00*

U.S. Cl. 55—92 **3 Claims**



1. A method for contacting a gas or vapour and a liquid which comprises injecting a gas or vapour tangentially into a gas-liquid contacting zone said contacting zone having an inlet for gas or vapour and an exit and being of such shape and dimensions that said injected gas or vapour follows a substantially flat spiral path between said inlet and exit at a tangential velocity which is sufficient to create a large centrifugal force field within said zone and wherein along said substantially flat spiral path said gas or vapour transits at least one inlet to said zone for liquid supplied from liquid supply means located externally to said zone, said liquid inlet being located at a point which is displaced away from the center of the contacting zone and pressure conditions within said contacting zone being so controlled that liquid from said liquid supply means is drawn through said liquid inlet for liquid thereby to counter currently contact the gas or vapour, and injecting a second gas or vapour into said contacting zone, said second gas or vapour being injected with a direction of swirl which is the same as that of the gas or vapour already within said contacting zone and at a point adjacent to said gas or vapour exit, whereby to restrain passage of liquid through said exit.

4,618,351

DEVICE FOR CLEANING OF GASES

Friedrich Esper, Leonberg, and Thomas Frey, Friolzheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

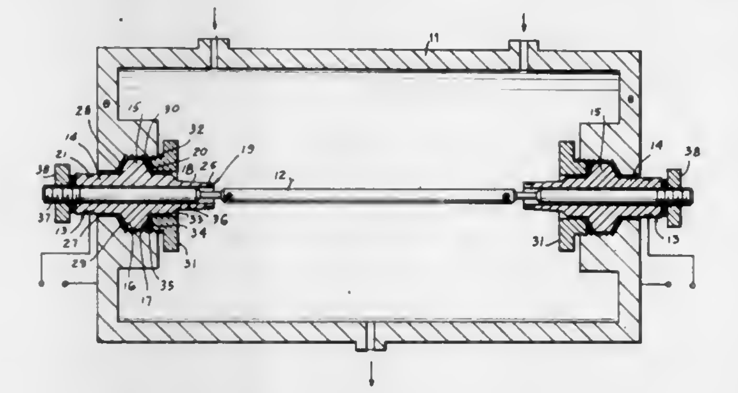
PCT No. PCT/DE84/00022, § 371 Date Aug. 10, 1984, § 102(e) Date Aug. 10, 1984, PCT Pub. No. WO84/03332, PCT Pub. Date Aug. 30, 1984

PCT Filed Jan. 27, 1984, Ser. No. 642,671

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1983, 3305601

Int. Cl.⁴ B03C *3/06*

U.S. Cl. 55—146 **13 Claims**



1. A coagulator device for cleaning in an electrical field of gases of electrically conductive particles, such as soot and the like, particularly for cleaning exhaust gases of fossil fuels, such as exhaust gases of diesel engines and the like, the device comprising a poled housing which forms a counter electrode, said housing having an axis and being provided with a gas inlet and outlet; an electrode longitudinally extending in said housing concentrically with the latter; an insulator mounted in said housing and encompassing said electrode over a portion of its longitudinal extension so as to insulate said electrode from said housing, said electrode having an outlet location inside said housing, said insulator being provided in the region of said outlet location with a conically tapering ring section extending in an axial direction; means on said insulator forming an annealing zone, said annealing zone forming means including at least one electrical resistance wire which is formed as a thick layer heat path extending around the circumference of said conically tapering ring section of said insulator and having two ends; and electrical connecting contacts provided on said insulator and connected through insulated connecting lines with said ends of said thick layer heat path.

4,618,352

DUST COLLECTOR

Robert T. Nelson, P.O. Box 763, Oklahoma City, Okla. 73101

Filed Oct. 22, 1982, Ser. No. 435,940

Int. Cl.⁴ B01D *46/04*

U.S. Cl. 55—287 **10 Claims**

1. A dust collector comprising:

(a) a housing having inlet means for receiving air to be cleaned;

(b) a plurality of filter units within said housing;

(c) a first centrifugal fan arranged for drawing air through said units for removing dust from the air;

(d) a plurality of ducts each connected to a corresponding one of said units at one end and to said first fan at the other end to provide passages for air from said units to said first fan, said ducts through a portion of their length being arranged in side-by-side relationship;

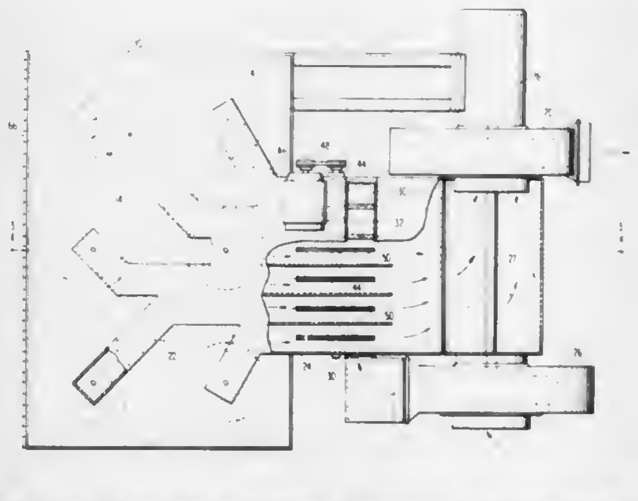
(e) a second centrifugal fan for providing reverse flow of air through said ducts to said units, said second fan providing a high volume of air at low pressure;

(f) a transverse duct connected to said second fan and extending transversely of said portion of said plurality of ducts and adjacent thereto;

(g) a plurality of openings providing communication between said transverse duct and each of said plurality of ducts;

(h) a plurality of control vanes, one such vane being disposed in each of said pluality of ducts, for controlling communication between said transverse duct and said plurality of ducts, each of said vanes being movable between a first position closing a corresponding one of said openings to block communication between said transverse duct and the corresponding one of said plurality of ducts and a second position providing communication with said transverse duct for effecting reverse flow of air through said corresponding one of said ducts and blocking passage of air through said corresponding one of said ducts to said first fan whereby no air to be cleaned is directed toward the filter unit connected to said corresponding one of said ducts; and

(i) rotatable means engaging said vanes for sequentially moving said plurality of vanes between said first and second positions.



4,618,353

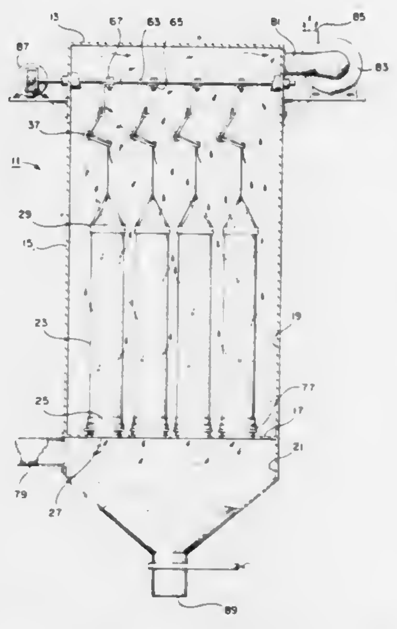
FILTER BAG ASSEMBLY

Gerald J. Reier, P.O. Box 79141, Fort Worth, Tex. 76179

Filed Jul. 23, 1985, Ser. No. 757,943

Int. Cl.⁴ B01D *46/02*

U.S. Cl. 55—378 **7 Claims**



4. An improved filter bag assembly for a filter housing, comprising:

at least one filter bag having a lower end which is anchored within said filter housing and having an upper end;

a flexible strap attached at one end to the upper end of said bag and having an opposite free end;

- a bag spring having a central coil, a pair of angularly arranged spring sides which extend outwardly from said coil and which are movable between tensed and relaxed positions, and a loose spring arm extending outwardly from said coil, a selected one of said spring sides together with said loose spring arm comprising clasp means engaging said free end of said flexible strap; and
- hanger means suspended within said filter housing and engaging the remaining bag spring side to support said bag spring within said filter housing, said flexible strap being engaged with said clasp means with said bag spring in said tensed position, whereby relaxing said spring serves to tense said filter bag.

4,618,354

METHOD, APPARATUS AND BURNER FOR FABRICATING AN OPTICAL FIBER PREFORM

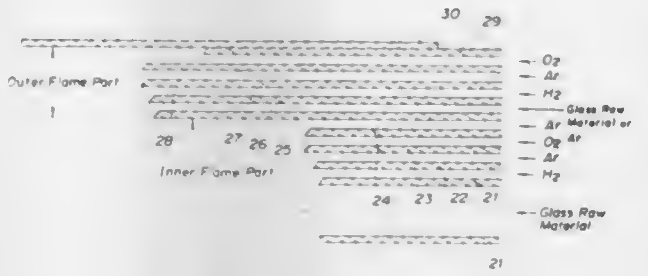
Hiroyuki Suda; Shuichi Shibata, and Motohiro Nakahara, all of Mito, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Feb. 25, 1985, Ser. No. 705,362

Claims priority, application Japan, Feb. 27, 1984, 59-34300; Mar. 1, 1984, 59-37223; Feb. 12, 1985, 60-23486; Feb. 12, 1985, 60-23487; Feb. 12, 1985, 60-23488

Int. Cl.⁴ C03F *37/018*

U.S. Cl. 65—2 **10 Claims**



1. An optical fiber preform fabrication method comprising the steps of:

- using a burner having a central raw material supply orifice for supplying a glass raw material and a plurality of flame forming orifices disposed around said raw material supply orifice sequentially for forming a plurality of flames, respectively, the number of flames being at least equal to k+1;
- determining and controlling the flame speed V_k of, a kth flame, the flame speed V_{k+1} of a (k+1)th flame outwardly surrounding said kth flame and the flow speed Vm of the glass raw material supplied through the center of the buner in such a way that the following relations are satisfied:

$$0.1V_{k+1} \leqq Vk \leqq 2.5V_{k+1},$$

$$Vm \leqq V_{k+1} \text{ and}$$

$$Vm \leqq V_k;$$

- supplying combustion gases to said flame forming orifices and combusting to provide said flames;
- supplying said glass raw material to the multiflame produced by said burner in which the kth flame is positioned axially rearwardly of the (k+1)th flame to synthesize fine glass particles;
- depositing said fine glass particles on a seed rod to form a porous preform; and
- consolidating said porous preform into a transparent optical fiber preform.

4,618,355

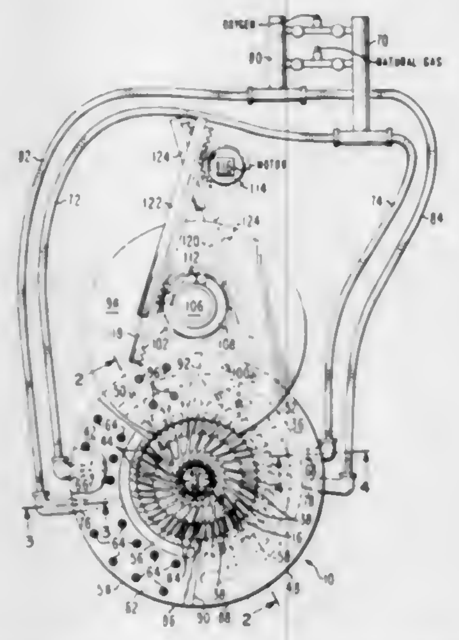
METHOD AND APPARATUS FOR SEALING A MOUNT IN A CATHODE RAY TUBE

Jack F. Otto, and Michael A. Colacello, both of Trenton, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Oct. 31, 1985, Ser. No. 793,313

Int. Cl.⁴ C03B *23/217*

U.S. Cl. 65—36 **14 Claims**



1. A method for sealing a mount including a wafer in a neck of a stationary cathode-ray tube oriented along an axis comprising:

- positioning a first tier of burner tips completely around the neck of said cathode-ray tube at a first distance therefrom such that said burner tips are aimed nonradially along directions tangent to a first circle, the plane of said first circle being aligned along said wafer, said first tier of burner tips being split into at least first and second radial segments, each segment being connected to means for moving the segment toward and away from the neck;
- providing a vortical pattern of flames around the neck from said first tier of stationary burner tips; and
- removing said radial segments from around the stationary neck of said cathode-ray tube sufficiently to allow said tube to proceed along a conveyor line.

11. Apparatus for sealing a mount in a neck of a cathode-ray tube oriented along an axis comprising a first tier of burner tips disposed completely around said axis at a first distance therefrom and similarly aimed nonradially along directions tangent to a first circle, said first tier of burner tips being split into at least first and second radial segments, each segment being connected to means for moving the segment toward and away from the neck.

4,618,356

MOVING MEANS FOR USE IN A GLASSWARE MANUFACTURING MACHINE

Walter Hirt, Buelach, and Fritz Futterknecht, Zurich, both of Switzerland, assignors to Emhart Industries, Inc., Farmington, Conn.

Filed Oct. 23, 1985, Ser. No. 790,558

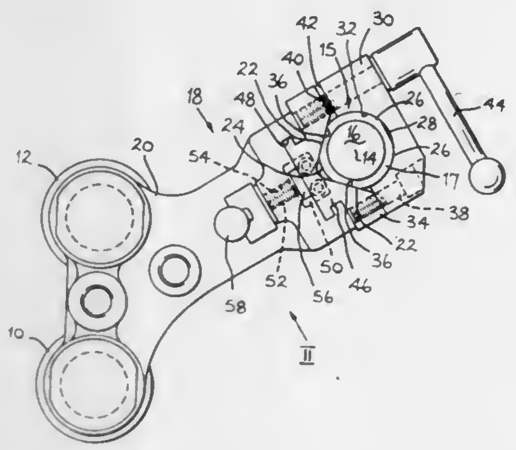
Claims priority, application United Kingdom, Oct. 27, 1984, 8427221

Int. Cl.⁴ C03B *9/40*

U.S. Cl. 65—173 **9 Claims**

1. Moving means for use in a glassware manufacturing machine for moving an operative member between an out-of-the-way position thereof and an operative position thereof in alignment with an opening of a cavity of a mould of the machine, the operative member making a movement which has a rotary component about a vertical axis and a linear component in a vertical direction, the moving means comprising a vertically-

extending shaft, a support for the operative member comprising a horizontally-extending arm on which the operative member is mounted and clamping means by which the support is clamped to the vertically-extending shaft so that the support moves with the shaft, and means operable to move the shaft longitudinally thereof and to turn the shaft about a vertical axis thereof to thereby move the operable member vertically and about the vertical longitudinal axis of the shaft, wherein the shaft and the support are provided with complementarily-shaped camming surfaces which, when in engagement with one another, force the support into a particular orientation with respect to the shaft, the particular orientation being the correct orientation for the support on the shaft.



4,618,357

NOVEL ALKENYL ACETAMIDES AND THEIR USE IN THE REGULATION OF THE NATURAL GROWTH OR DEVELOPMENT OF TURF GRASS

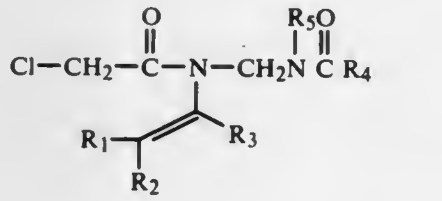
Gerhard H. Alt, University City; John P. Chupp, Kirkwood, and Lane A. Clizbe, Chesterfield, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 13, 1985, Ser. No. 701,272

Int. Cl.⁴ A01N *37/118*

U.S. Cl. 71—76 **8 Claims**

1. A method for retarding the growth of turf grass which comprises applying to said turf grass an effective growth retarding amount of a compound of the formula:



wherein R_1, R_2, and R_3 are independently hydrogen, halogen C_{1-6} alkyl, or haloalkyl; R_4 is hydrogen; C_{1-4} alkyl, alkenyl, C_{3-4} cycloalkyl, or C_{2-6} alkoxyalkyl, and R_5 is hydrogen or C_{1-4} alkyl.

4,618,358

HERBICIDAL N-2-(NITRO-5-PHENOXY-PHENYL)-AMINOALKYL-PHOSPHONIC ACID AND ESTERS

Ludwig Maier, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

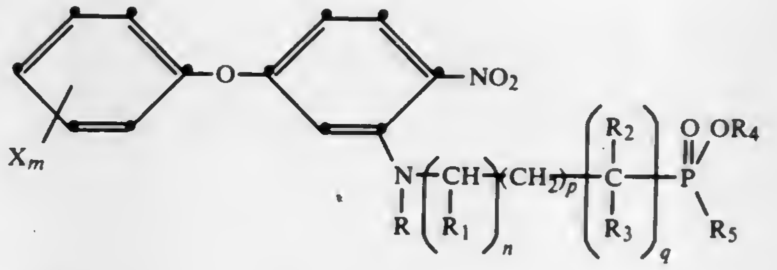
Division of Ser. No. 484,765, Apr. 14, 1983, abandoned. This application Sep. 19, 1984, Ser. No. 651,968

Claims priority, application Switzerland, Apr. 23, 1982, 2500/82; Nov. 11, 1982, 6585/82

Int. Cl.⁴ A01N *57/06, 57/08;* **C07F** *9/40*

U.S. Cl. 71—86 **22 Claims**

1. A (2-nitro-5-aryloxyphenylamino)alkylphosphonic, -alkylphosphonic or -alkylphosphonous acid derivative of the formula



wherein

- X is halogen, CF_3, NO_2, CN, $CONH_2$ or $CSNH_2$,
- R_1 is C_1–C_4alkyl,
- R_2 is C_1–C_4alkyl, phenyl or —$PO(OR_6)_2$,
- R_3 is hydrogen or C_1–C_4alkyl,
- R_4 is hydrogen, C_1–C_4alkyl or a cation,
- R_5 is hydrogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, hydroxyl or an —O—cation group,
- R_6 is hydrogen or C_1–C_4alkyl,
- m is a value from 0 to 3,
- n is 0 or 1,
- p is a value from 0 to 3 and
- q is 0 or 1,

with the proviso that R_1 and R_3 taken together may also be an unsubstituted or substituted C_1–C_3alkylene chain and at least one of the symbols n, p and q is a value different from 0.

2. A method of controlling undesired plant growth or of regulating plant growth, which comprises applying to plants, to the locus thereof or to parts of plants an effective amount of a compound of as claimed in claim 1.

4,618,359

HETEROCYCLIC ESTERS OF PHENOXYBENZOIC ACIDS USEFUL AS HERBICIDES

Frank Wu, Libertyville, Ill., assignor to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 475,414, Mar. 14, 1983, abandoned, which is a continuation-in-part of Ser. No. 351,697, Feb. 24, 1982, abandoned. This application Mar. 25, 1985, Ser. No. 715,442

Int. Cl.⁴ A01N *43/08;* **C07D** *307/04*

U.S. Cl. 71—88 **9 Claims**

1. 3-Tetrahydrofuryl 2-nitro-5-(2-chloro-4-trifluoromethylphenoxy)benzoate.

2. A herbicidal composition comprising an inert carrier and a herbicidally toxic amount of the compound of claim 1.

4,618,360

CYCLOHEXANEDIONECARBOXYLIC ACID DERIVATIVES WITH HERBICIDAL AND PLANT GROWTH REGULATING PROPERTIES

Hans-Georg Brunner, Lausen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

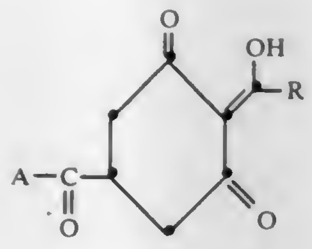
Continuation-in-part of Ser. No. 610,222, May 14, 1984. This application Nov. 19, 1984, Ser. No. 673,077

Claims priority, application Switzerland, May 18, 1983, 2693/83; Dec. 19, 1983, 6747/83

Int. Cl.⁴ C07C *103/737;* **C07D** *207/06, 211/06, 295/18;* **A01N** *43/36, 43/40, 43/84, 37/18*

U.S. Cl. 71—88 **17 Claims**

1. A cyclohexanedionecarboxylic acid derivative of the formula



wherein A is an $—NR_3R_4$ radical, R is C_1–C_6alkyl which is unsubstituted or substituted by halogen, C_1–C_6alkoxy or C_2–C_4alkylthio, R_3 and R_4 are each independently hydrogen, C_1–C_6alkyl, C_2–C_{10}alkoxyalkyl, C_2–C_{10}alkylthioalkyl; C_3–C_6alkenyl, C_3–C_6alkynyl; one of R_3 and R_4 is also phenyl or benzyl, wherein the phenyl nucleus is unsubstituted or substituted by halogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4haloalkyl, nitro or cyano, or R_3 and R_4, together with the nitrogen atom to which they are attached form a pyrrolidine, piperidine or morpholine ring; or a metal or ammonium salt thereof.

13. A method of controlling undesirable plant growth, which comprises applying an effective amount of a cyclohexanedionecarboxylic acid derivative according to claim **1** to the plant or the locus thereof.

14. A method of regulating plant growth, which comprises applying an effective amount of a cyclohexanedionecarboxylic acid derivative according to claim **1** to the plant or the locus thereof.

4,618,361

ACYLAMIDES AND COMPOSITIONS FOR THE PROTECTION OF CULTIVATED PLANTS AGAINST THE PHYTOTOXIC ACTION OF HERBICIDES

Hans Moser, Magden, Switzerland, assignor to CIBA-GEIGY Corporation, Ardsley, N.Y.

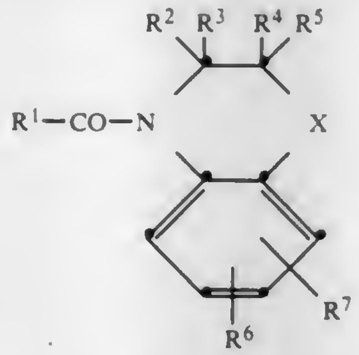
Filed Dec. 12, 1983, Ser. No. 560,465

The portion of the term of this patent subsequent to Jul. 22, 2003, has been disclaimed.

Int. Cl.⁴ A01N *43/84;* **C07D** *265/36, 279/16*

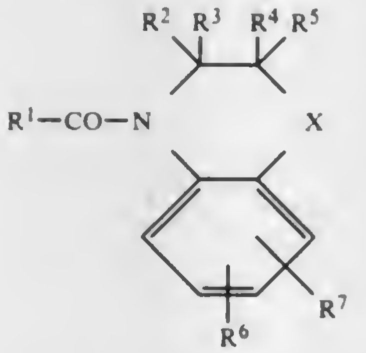
U.S. Cl. 71—88 **28 Claims**

1. Acylamides of the formula



in which X is oxygen, R^1 is C_1–C_6-cyanoalkyl, C_2–C_6-halogenoalkenyl or C_1–C_6-alkyl which is substituted by at least two chlorine atoms; R^2 and R^5 independently of one another are hydrogen, C_1–C_4-alkyl, C_1–C_4-halogenoalkyl, C_2–C_4-alkenyl, C_2–C_4-alkynyl or C_2–C_4-alkoxyalkyl; R^3 and R^4 independently of one another are hydrogen, C_2–C_4-alkenyl, C_2–C_4-alkynyl, cyano, C_2–C_4-alkoxyalkyl, $—COOR^8$, $—CO—NR^9R^{10}$ or C_1–C_4-alkyl which is unsubstituted or substituted by halogen, cyano or —CO—A; R^6 and R^7 independently of one another are hydrogen, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-halogenoalkyl or C_1–C_4-halogenoalkoxy, A is C_1–C_4-alkyl, C_2–C_4-alkenyl, C_1–C_4-alkoxy, C_3–C_4-alkenyloxy, C_3–C_4-alkynyloxy or $-NR^{11}R^{12}$; R^8, R^{10} and R^{12} independently of one another are hydrogen, C_1–C_4-alkyl, C_3–C_4-alkenyl, C_3–C_4-alkynyl or C_3–C_4-alkoxyalkyl;and R^9 and R^{11} independently of one another are hydrogen, C_1–C_4-alkyl, C_3–C_4-alkenyl, C_1–C_4-alkoxy, C_3–C_4-alkynyl or C_3–C_4-alkoxyalkyl, it being also possible for R^9 and R^{10} and also R^{11} and R^{12}, together with the nitrogen atom linking them, to form a 5-membered or 6-membered saturated heterocyclic structure which can, optionally, contain an oxygen or sulfur atom or an —NH— or $—N(C_1$–C_4-alkyl)- bridge as a member of the ring.

27. A process for protecting cultivated plants against damage occurring in the application of herbicides, which comprises treating either the area cultivated for the plant, before or during the application of the herbicide, or the seed or cuttings of the plants or the plant itself, with an effective amount of an acylamide of the formula



in which X is oxygen, R^1 is C_1–C_6-cyanoalkyl, C_2–C_6-halogenalkenyl or C_1–C_6-alkyl which is substituted by at least two chlorine atoms; R^2 and R^5 independently of one another are hydrogen, C_1–C_4-alkyl, C_1–C_4-halogenoalkyl, C_2–C_4-alkenyl, C_2–C_4-alkynyl or C_2–C_4-alkoxyalkyl; R^3 and R^4 independently of one another are hydrogen, C_2–C_4-alkenyl, C_2–C_4-alkynyl, cyano, C_2–C_4-alkoxyalkyl, $—COOR^8$, $—CO—NR^9R^{10}$ or C_1–C_4-alkyl which is unsubstituted or substituted by halogen, cyano or —CO—A; R^6 and R^7 independently of one another are hydrogen, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-halogenoalkyl or C_1–C_4-halogenoalkoxy; A is C_1–C_4-alkyl, C_2–C_4-alkenyl, C_1–C_4-alkoxy, C_3–C_4-alkenyloxy, C_3–C_4-alkynyloxy or $—NR^{11}R^{12}$; R^8, R^{10} and R^{12} independently of one another are hydrogen, C_1–C_4-alkyl, C_3–C_4-alkenyl, C_3–C_4-alkynyl or C_3–C_4-alkoxyalkyl; and R^9 and R^{11} independently of one another are hydrogen, C_1–C_4-alkyl, C_3–C_4-alkenyl, C_1–C_4-alkoxy, C_3–C_4-alkynyl or C_3–C_4-alkoxyalkyl, it being also possible for R^9 and R^{10} and also R^{11} and R^{12}, together with the nitrogen atom linking them, to form a 5-membered or 6-membered saturated heterocyclic structure which can, optionally contain an oxygen or sulfur atom or an —NH— or $—N(C_1$–C_4-alkyl)- bridge as a member of the ring.

4,618,362

INCREASING THE SUGAR CONTENT OF PLANTS

Rainer Becker, Bad Durkheim; Dieter Jahn, Edingen-Neckarhausen; Ulrich Schirmer, Heidelberg; Eberhard P. Schott, Neustadt; Bernhard Hesse, Neuhofen, and Johann Jung, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

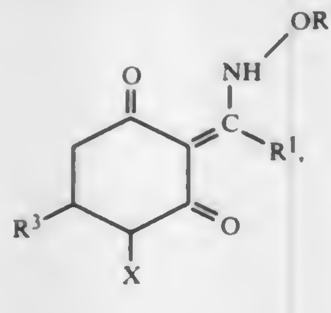
Filed Jul. 29, 1985, Ser. No. 760,042

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1984, 3428457

Int. Cl.⁴ A01N *43/16, 43/18*

U.S. Cl. 71—88 **8 Claims**

1. A method for increasing the sugar content of sugar producing plants, wherein the plants are treated, from 1 to 15 weeks prior to harvesting, with an effective amount of a compound of the formula (I)



(I)

where R^1 is alkyl of 1 to 4 carbon atoms, R^2 is alkyl of 1 to 4 carbon atoms, unsubstituted or halogen-substituted alkenyl of 3 to 5 carbon atoms or alkynyl of not more than 5 carbon atoms, R^3 is a tetrahydropyranyl or a tetrahydrothiopyrnanyl substituent, and can be substituted by alkyl of not more than 3 carbon atoms, and X is H or COO-alkyl, or one of its plant-tolerated salts.

4,618,363

N-PHENYLSULFONYL-N'-TRIAZINYLUREAS

Karl Gass, Magden; Werner Föry, Basel; Willy Meyer, Riehen, and Werner Töpfl, Dornach, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

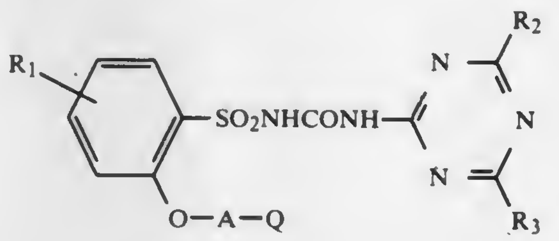
Filed Jan. 18, 1983, Ser. No. 458,799

Claims priority, application Switzerland, Jan. 25, 1982, 437/82

Int. Cl.⁴ C07D *401/12, 405/12;* **A01N** *43/70, 43/66*

U.S. Cl. 71—90 **26 Claims**

1. A compound selected from the group consisting of a sulfonylurea of the formula:



wherein

- R_1 is hydrogen, halo, nitro, alkyl of 1 to 4 carbon atoms, haloalkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkenyl of 2 to 5 carbon atoms, or alkoxycarbonyl of 1 to 4 carbon atoms in the alkoxy group;
- R_2 is alkyl or alkoxy, each of 1 to 3 carbon atoms, unsubstituted or substituted with 1 to 3 halogen atoms;
- R_3 is halo, hydrogen, unsubstituted alkyl of 1 to 3 carbon atoms, alkyl of 1 to 3 carbon atoms substituted with alkoxy of 1 to 4 carbon atoms or with 1 to 3 halogen atoms, unsubstituted alkoxy of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms substituted with methoxy, ethoxy or 1 to 3 halogen atoms, or $—NR_4R_5$ in which R_4 is hydrogen or methyl and R_5 is hydrogen, methyl, ethyl or methoxy; and
- Q is a heterocyclic ring selected from the group consisting of (i) a saturated ring of 3 to 6 members containing one or two nonadjacent oxygen atoms as the hetero atoms, which ring is unsubstituted or substituted with one to three alkyl groups, each of 1 to 3 carbon atoms, (ii) pyridyl, unsubstituted or substituted with chloro or methyl, or (iii) thienyl; and
- A is a direct bond, alkylene of 1 to 4 carbon atoms or alkenylene of 2 to 4 carbon atoms; and
- the alkali metal, alkaline earth metal, and organic amine salts thereof.

4,618,364

3-(2-TETRAHYDROPYRANYL)-1,2,3,4,5,6,7-HEXAHYDRO-1-P-TOLYLOXYCARBONYL-5H-CYCLOPENTAPYRIMIDINE-2,4-DIONE AND HERBICIDAL COMPOSITIONS AND METHODS USING IT

Jean Tessier, Vincennes, and Pierre Girault, Paris, both of France, assignors to Roussel Uclaf, Paris, France

Filed Jul. 6, 1984, Ser. No. 628,331

Claims priority, application France, Jul. 11, 1983, 83 11518

Int. Cl.⁴ A01N *47/38;* **C07D** *239/70*

U.S. Cl. 71—92 **6 Claims**

1. A compound which is 3-(2-tetrahydropyranyl)-1,2,3,4,6,7-hexahydro-1-p-tolyoxycarbonyl-5H-cyclopentapyrimidine-2,4-dione.

3. A method of selectively killing weeds comprising contacting weeds with and herbicidally effective amount of at least one compound of claim **1**.

4,618,365

SUBSTITUTED TETRAZOLINONES AND THEIR USE AS HERBICIDES

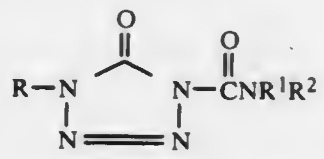
Rupert A. Covey, Bethany; Patricia J. Forbes, Waterbury, and Allyn R. Bell, Cheshire, all of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Filed Dec. 9, 1983, Ser. No. 560,031

Int. Cl.⁴ C07D *401/06, 257/04;* **A01N** *43/67*

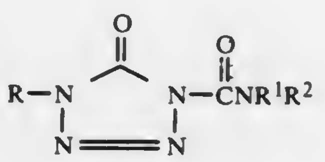
U.S. Cl. 71—92 **7 Claims**

1. A compound having the formula



where R is C_1–C_{12} alkyl, C_5–C_6 cycloalkyl, C_2–C_{13} alkoxyalkyl, C_7–C_9 aralkyl, phenyl, naphthyl, phenyl substituted with F, Cl, Br, I, C_1–C_4 alkyl, C_1–C_4 alkoxy, methylenedioxy, NR^3R^4 wherein R^3 and R^4 are the same or different and are hydrogen or C_1–C_6 alkyl, C_2–C_5 alkoxycarbonyl, carboxy, phenoxy, NO_2, cyano, trihalomethyl or trihalomethoxy wherein halo is F, Cl or Br or benzyl substituted with F, Cl, Br, I, C_1–C_4 alkyl, C_1–C_4 alkoxy, methylenedioxy, C_2–C_5 alkoxycarbonyl, phenoxy, NO_2, cyano, trihalomethyl or trihalomethoxy wherein halo is F, Cl or Br; R^1 and R^2 are the same or different and are C_1–C_6 alkyl, C_3–C_6 alkenyl, C_5–C_6 cycloalkyl or R^1 and R^2 together are C_4–C_8 alkylene.

5. A method for controlling weeds by applying a herbicidally effective amount of a compound having the formula



where R is C_1–C_{12} alkyl, C_5–C_6 cycloalkyl, C_2–C_{13} alkoxyalkyl, C_7–C_9 aralkyl, phenyl, naphthyl, phenyl substituted with F, Cl, Br, I, C_1–C_4 alkyl, C_1–C_4 alkoxy, methylenedioxy, NR^3R^4 wherein R^3 and R^4 are the same or different and are hydrogen or C_1–C_6 alkyl, C_2–C_5 alkoxycarbonyl, phenoxy, NO_2, cyano, trihalomethyl or trihalomethoxy where halo is F, Cl or Br or benzyl substituted with F, Cl, Br, I, C_1–C_4 alkyl, C_1–C_4 alkoxy, methylenedioxy, C_2–C_5 alkoxycarbonyl, carboxy, phenoxy, NO_2, cyano, trihalomethyl or trihalomethoxy where halo is F, Cl or Br; R^1 and R^2 are the same or different and are C_1–C_6 alkyl, C_3–C_6 alkenyl, C_5–C_6 cycloalkyl or R^1 and R^2 together are C_4–C_8 alkylene.

4,618,366

CERTAIN N-(2,4-DIFLUOROPHENYL)-2-(3-TRIFLUOROMETHYLPHENOXY)-NICOTINAMIDES HAVING HERBICIDAL ACTIVITY

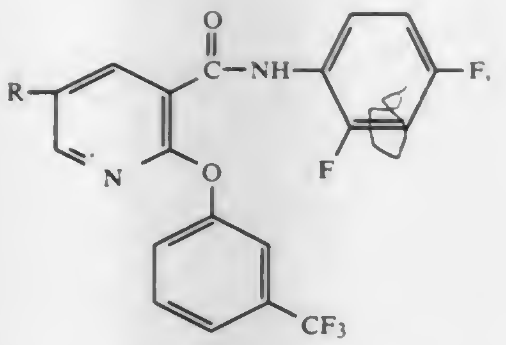
Michael C. Cramp, Romford; James Gilmour, Barkingside, and Edgar W. Parnell, Hornchurch, all of England, assignors to May & Baker Limited, Dagenham, England

Continuation of Ser. No. 378,224, May 14, 1982, abandoned. This application Jun. 15, 1984, Ser. No. 621,102

Int. Cl.⁴ C07D *213/64, 213/65;* **A01N** *43/40*

U.S. Cl. 71—94 **21 Claims**

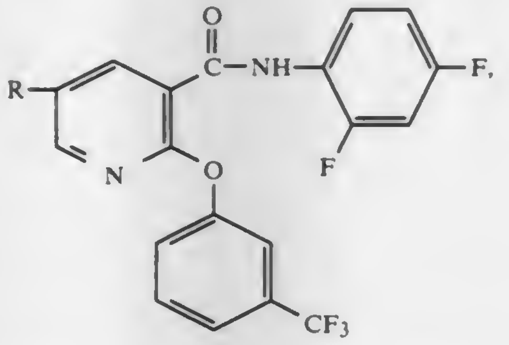
1. A nicotinamide derivative of the general formula:



(I)

wherein R represents a hydrogen atom or a methyl group.

5. A method for controlling the growth of weeds at a locus which comprises applying a herbicidal composition to the locus pre-emergence of the weeds, which herbicidal composition comprises, as the active ingredient, a herbicidally effective amount of a nicotinamide derivative of the general formula:



(I)

wherein R represents a hydrogen or a methyl group.

4,618,367
NOVEL HERBICIDAL SALT

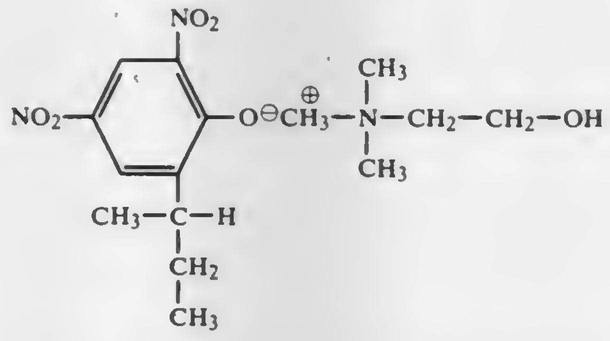
Milton S. Bernard, Vicksburg, Miss., assignor to Vertac Chemical Corporation, Memphis, Tenn.

Filed Sep. 18, 1985, Ser. No. 777,368

Int. Cl.⁴ A01N *31/08;* **C07C** *91/04*

U.S. Cl. 71—121 **5 Claims**

1. The salt of 6-sec.-butyl-2,4-dinitrophenol and choline of the formula



I

4. A method of selectively controlling weeds in useful crops comprising applying to fields of a useful crop an herbicidally effective amount of the choline salt of dinoseb.

4,618,368
METHOD OF INJECTION OF WIRE INTO MOLTEN STEEL AND APPARATUS FOR UNCOILING WIRE FOR USE IN THE METHOD

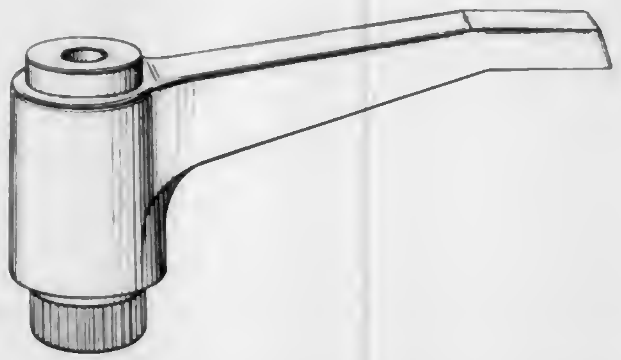
Leonard Jansse, Amsterdam, Netherlands, assignor to Hoogovens Groep B.V., Ijmulden, Netherlands

Filed Sep. 24, 1985, Ser. No. 779,456

Claims priority, application Netherlands, Sep. 24, 1984, 8402911

Int. Cl.⁴ C21C *7/02*

U.S. Cl. 75—53 **7 Claims**



1. A method for injecting wire into molten steel comprising

(a) positioning a self-supporting parallel-wound coil of the wire around a mandrel, resiliently clamping the coil around at least part of its outer surface over its whole axial length, the axial length of the mandrel being greater than that of the coil and, at the start of uncoiling of the coil there being a gap of at least 5 cm between the inside surface of the coil and the mandrel,

(b) thereafter pulling the wire from the inside of the coil and feeding the wire into the molten steel through a ring which is mounted around the mandrel axially spaced from the coil and which has a slot-shaped radial extension open to the interior of the ring, and

(c) connecting the wire end on the outside of the coil to the wire end on the inside of a further such coil through the said slot-shaped radial extension.

4,618,369
OIL-IN-WATER SUSPENSIONS AS ADDITIVES FOR CEMENTS

Robert Smith-Johannsen, Incline Village, Nev., assignor to Ramu International, Incline Village, Nev.

Division of Ser. No. 418,790, Sep. 16, 1982, abandoned. This application Dec. 21, 1984, Ser. No. 684,556

Int. Cl.⁴ C04B *24/08*

U.S. Cl. 106—95 **24 Claims**

1. A method of forming a cement which comprises mixing hydratable cement particles with water in conventional proportions and adding thereto before curing an oil-in-water suspension in which the oil droplets are surrounded by colloidal particles comprising the reaction product of at least one anionic agent and at least one cationic agent, said particles having a zeta potential of between about +18 and −18 millivolts.

4,618,370
FOAM GENERATING COMPOSITIONS

Harold A. Green, Havertown, Pa., and Morris Weinstein, Paramus, N.J., assignors to Millmaster Onyx Group, Inc., New York, N.Y.

Filed Sep. 3, 1985, Ser. No. 771,628

Int. Cl.⁴ C04B *24/00;* **B32B** *5/20;* **B01V** *13/00;* **B29C** *27/60*

U.S. Cl. 106—111 **3 Claims**

1. A composition comprising a salt of a mixture of n-alkyl oxyethylated sulfuric acids, the salt being selected from the group consisting of sodium salt, ammonium salt and mixtures thereof, all of said salts having the formula $CH_3(CH_2)_x(OCH_2CH_2)_yOSO_3^-M^+$, being either the

sodium or ammonium cation, x being an integer from about 6 to 12 and y being an integer of about 1 to 3.5, a major portion of said mixture consisting of those compounds in which x equals about 6 to 8 and a minor portion of said mixture consisting of those salts in which x equals about 10 to 12, wherein the ratio of the combined weight of the compounds in which x equals about 6 to 8 to the combined weight of the compounds in which x equals about 10 to 12 is from about 2:1 to about 8:1, wherein the ratio of the weight of the compounds in which x equals about 6 to the weight of the compounds in which x equals about 8 is about 1:1, and wherein the ratio of the weight of the compounds in which x equals about 10 to the weight of the compounds in which x equals about 12 is from about 3:1 to about 1:3.

4,618,371
COATING MATERIALS WHICH CONTAIN α-HYDROXYKETONES AS ANTISKIMMING AGENTS

Wolfram Weiss, Mutterstadt; Wolf Dieter Balzer; Rolf Fikentscher, both of Ludwigshafen; Guenther Immel, Weinheim, and Hans Wolf, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

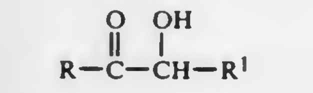
Filed May 15, 1985, Ser. No. 734,186

Claims priority, application Fed. Rep. of Germany, May 22, 1984, 3418988

Int. Cl.⁴ C08L *91/00*

U.S. Cl. 106—263 **6 Claims**

1. A coating material, paint or finish which contains an oxidatively drying film former and, as an anti-skimming agent, an aliphatic α-hydroxyketone of the formula



$$R-\overset{\overset{O}{\|}}{C}-\overset{\overset{OH}{|}}{CH}-R^1$$

where R and R¹ are each hydrogen or a hydrocarbon radical of 1 to 4 carbon atoms.

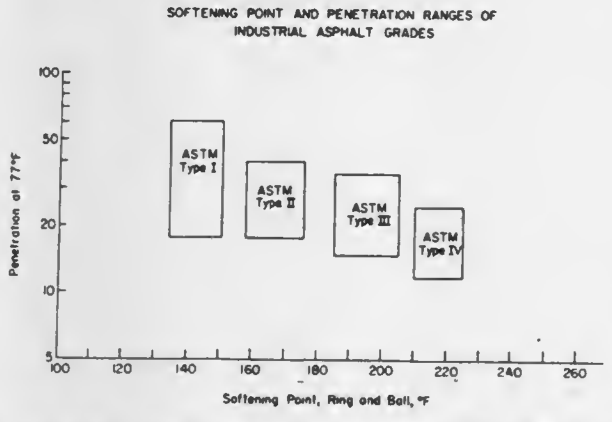
4,618,372
METHOD FOR PRODUCING INDUSTRIAL ASPHALTS WITHOUT AIR-BLOWING USING HYDROBROMIC ACID

Judson E. Goodrich, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 31, 1984, Ser. No. 672,430

Int. Cl.⁴ C08L *95/00*

U.S. Cl. 106—273 R **11 Claims**



1. A one-step method of producing an industrial asphalt from a bituminous material which consisting essentially of mixing together without air-blowing:

(a) a feed material consisting essentially of a bituminous material having a viscosity of at least 50 centistokes at 350 degrees Fahrenheit and wherein the feed material forms a single phase when mixed with 5 weight percent hydrobromic acid; and

(b) from about 0.1 to 20.0 percent by weight of hydrobromic acid, said mixing being done at a temperature in the range of 351 to 600 degrees Fahrenheit, whereby the softening point of the feed is substantially increased and the penetration is significantly decreased.

8. A one-step method of producing an industrial asphalt from a petroleum residuum which consisting essentially of mixing together without air-blowing:

(a) a feed consisting essentially of a petroleum residuum having a viscosity of 65 to 180 centistokes at 350 degrees Fahrenheit and wherein said feed forms a single phase when mixed with 5 weight percent hydrobromic acid; and

(b) from more than 0.5 to less than 10 percent by weight of hydrobromic acid, said mixing being done at a temperature in the range of 400 to 500 degrees Fahrenheit for from 5 to 25 minutes; whereby the softening point of the petroleum residuum is substantially increased by 30 to 70 degrees Fahrenheit and the penetration is significantly decreased by at least 10 to 60 dmm at 77 degrees Fahrenheit thereby producing an industrial asphalt having a softening point in the range 200 to 235 degrees Fahrenheit and a penetration of 12 to 30 dmm.

4,618,373
AIR-BLOWING ASPHALT USING HYDROHALIC ACID CATALYSTS

Penny K. Eidem, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 28, 1984, Ser. No. 584,428

Int. Cl.⁴ C08L *95/00*

U.S. Cl. 106—273 R **17 Claims**

1. An asphalt composition for air-blowing consisting of a catalytic amount of hydrohalic acid, and asphalt in an amount to equal 100 weight percent.

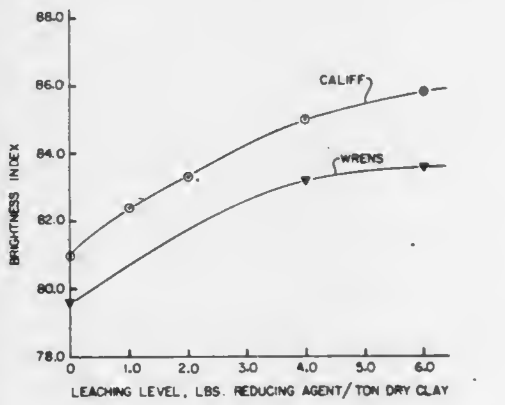
4,618,374
HIGH SOLIDS PROCESSING OF KAOLINITIC CLAYS WITH POST-LEACHING OXIDATION

Thomas D. Thompson, III, Upper Black Eddy, Pa.; Walter J. Polestak, Summit, and Robert W. Bradshaw, Brick, both of N.J., assignors to Georgia Kaolin Company, Inc., Union, N.J.

Filed Mar. 29, 1985, Ser. No. 717,937

Int. Cl.⁴ C04B *14/00, 33/00*

U.S. Cl. 106—288 B **7 Claims**



1. A process for treating a crude kaolinitic clay containing iron-containing impurities, comprising:

a. mixing a crude kaolinitic clay with water having a dispersing agent dissolved therein to form a fluid aqueous suspension of said crude kaolinitic clay, said suspension having a solids content of at least 55% by weight;

b. subjecting said suspension to a degritting process to reduce the percentage by weight of the particles in said suspension to 92–95% having a particle size finer than 2 microns;

c. dissolving a water-soluble reducing agent in an aqueous solution of a water-soluble anionic phosphate dispersing agent to form an aqueous leachng solution;

d. treating said degritted suspension at an acid pH with said

aqueous leaching solution at a treatment level of at least four pounds of reducing agent per ton of dry clay for a time sufficient to convert a substantial portion of ferric ions in the iron-containing impurities therein to ferrous ions, said leached suspension having a solids content of at least 55% by weight; and
e. treating said leached suspension with an oxidizing agent at a treatment level sufficient to oxidize a substantial portion of any unreacted reducing agent and leaching process byproducts in said leached suspension.

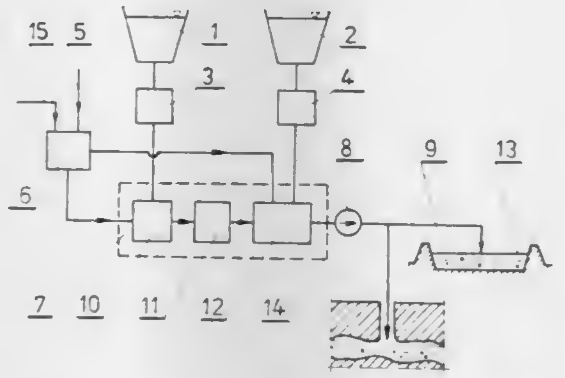
4,618,375
TRANSPARENT IRON OXIDE PIGMENTS

Arvind S. Patil, Wyoming, and Louis J. Pepoy, Holland, both of Mich., assignors to BASF Corporation, Wyandotte, Mich.
Filed Oct. 4, 1984, Ser. No. 657,579
Int. Cl.⁴ C08K ***3/20***
U.S. Cl. 106—304 **25 Claims**

1. A process for preparing transparent iron oxide pigment comprising reacting an iron compound, an organic ammonia releasing compound and water in a non-aqueous solvent in which both the iron compound and ammonia releasing compound have appreciable solubility, and in which water has some solubility by refluxing for a period of about 1 to 24 hours.

4,618,376
METHOD OF PRODUCING A SUSPENSION OF FLY ASH IN WATER

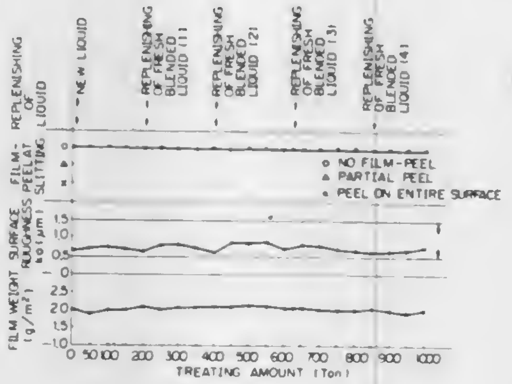
Antoni Saternus, Tychy-Bierun Stary; Ludwik Miczek, Pszczyna, and Mieczyslaw Bartnik, Gliwice, all of Poland, assignors to Zaklady Produkcji Urzadzen Mechanicznych im. Janka Krasickiego "Elwo", Pszczyna and Biuro Studiow i Projektow Energetycznych "Energoprojekt", Katowice, both of, Poland
Filed Dec. 19, 1984, Ser. No. 683,654
Claims priority, application Poland, Dec. 19, 1983, 245199
Int. Cl.⁴ B01F ***3/12***
U.S. Cl. 134—26 **3 Claims**



1. A method for the continuous producing of a suspension of fly-ash in water having a concentration of 0.5 to 2.5 parts ash to 1 part water in a flow mixer including a moisturization zone, a homogenization zone, and a fluidization zone, which steps comprise:
(a) adding 1 part fly ash to 0.2 parts water by weight to the moisturization zone and slowly mixing to produce an intermediate product comprising a dense plastic non-fluid substance;
(b) homogenizing and dethickening the intermediate product by intensive non-turbulent mixing in the homogenization zone; and
(c) in the fluidization zone, adding water to obtain said concentration and turbulently mixing said intermediate product at increasing velocity gradients to electrostatically discharge said fly ash and form said suspension.

4,618,377
METHOD FOR SURFACE TREATMENT OF ELECTRICAL STEEL SHEET

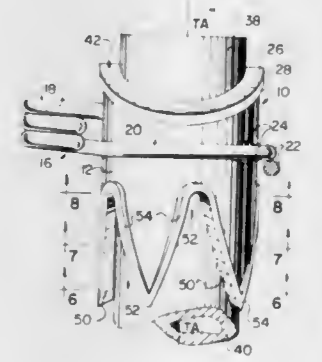
Motoharu Nakamura; Kikuzi Hirose, and Tooru Sakamoto, all of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Oct. 9, 1985, Ser. No. 785,750
Claims priority, application Japan, Feb. 9, 1985, 60-22761
Int. Cl.⁴ C23C ***22/26***
U.S. Cl. 148—6.15 R **8 Claims**



1. A method for forming an insulating film on an electrical steel sheet, comprising the steps of:
(a) surface-treating organic resin particles having a diameter of from 2 μm to 50 μm with a predetermined amount of dispersion improver;
(b) adding a predetermined amount of said surface-treated organic resin particles into an emulsion resin solution;
(c) mixing a predetermined amount of said emulsion resin solution, into which said surfacetreated organic resin particles are added and dispersed, with a solution containing an at least one inorganic component selected from the group consisting of phosphate and chromate;
(d) applying a predetermined amount of the obtained mixture in step(c) on a surface of the electrical steel sheet; and,
(e) baking the applied mixture at a temperature at which the organic resin particles are semimelted and provide a surface roughness Ra in the range of from 0.5 μm to 1.5 μm, thereby enabling a stable formation of an insulating film having improved blanking and insulation properties and weldability, over a long period of treatment time.

4,618,378
PIPE CUTTING TEMPLET

James E. Huckaby, Tatum, N. Mex., assignor to Shuf-Kut, Inc., Tatum, N. Mex.
Filed Jul. 16, 1985, Ser. No. 755,942
Int. Cl.⁴ B23K ***7/10***
U.S. Cl. 148—9.6 **15 Claims**

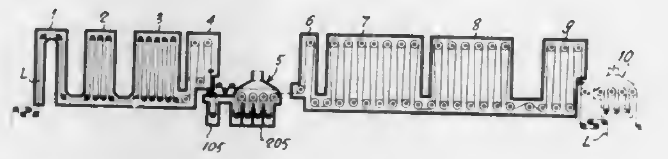


8. A process of cutting metal pipe having an axis and a pipe wall comprising:
(a) providing a cutting torch having a flat-sided collar proximate the tip,

(b) aligning the flat sides of the collar in a substantially parallel orientation to a desired cutting axis,
(c) telescoping a tube having a cylindrical tube wall over the pipe and
(d) adjusting the tube so that a desired axial pattern at one end of the tube is positioned as desired on the pipe,
(e) placing the flat side of the torch collar flush against a flat face defining the pattern, and being at a desired angle transverse of the tube wall, thus
(f) orienting the cutting axis at a desired angle to the tube wall,
(g) moving the torch collar along the flat face while
(h) maintaining the flat side of the torch collar flush on the flat face and
(i) cutting through the pipe wall along the cutting axis, thus
(j) cutting a desired axial pattern in the pipe at a desired angle through the pipe wall.

4,618,379
METHOD FOR THE CONTINUOUS ANNEALING OF STEEL STRIPS

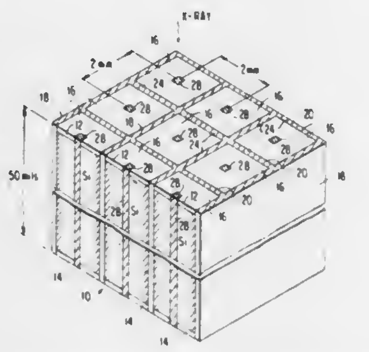
Roberto Bruno, Via Cassia 1041, Roma; Nazzareno Azzeri, Via Catullo 57,, Pomezia (Roma); Pierluigi Antoniucci, Via San Florido 64, Citta di Castello (Perugia); Giorgio Bocci, Viale Quartara 29 L, Genova; Sandro Brizielli, Corso De Micheli 115/22, Chiavari (Genova), and Paolo Berardi, Via Licino Calvo 26, Roma, all of Italy
Continuation-in-part of Ser. No. 534,946, Sep. 21, 1983, abandoned. This application Jul. 12, 1985, Ser. No. 754,539
Claims priority, application Italy, Sep. 21, 1982, 12623 A/82
Int. Cl.⁴ C21D ***1/18***
U.S. Cl. 148—144 **10 Claims**



1. A method for continuously annealing a moving steel strip comprising the following sequential steps:
(a) heating the steel strip to annealing temperature;
(b) maintaining the annealing temperatures;
(c) first slow quenching the steel strips;
(d) second rapid quenching of the steel strip which comprises:
dipping the steel strip in an electrolytic pickling bath;
feeding said steel strip through liquid in said bath at a feeding rate effective to promote a laminar motion in layers of the liquid pickling bath at boundaries of the surface of the steel strip;
regulating current density applied to the steel strip, while it is being used as a cathode, to control the amount of hydrogen thus developed on its surface and, concurrently, to control the quenching speed of said steel strip;
increasing the current density applied to the steel strip while it is being used as a cathode, while maintaining the said laminar motion conditions in said pickling bath, in order to increase the quenching rates;
thereafter using the steel strip as an annode in said pickling bath;
(e) heating the steel strip to overaging temperature;
(f) maintaining said overaging temperature, and
(g) finally cooling the steel strip.

4,618,380
METHOD OF FABRICATING AN IMAGING X-RAY SPECTROMETER

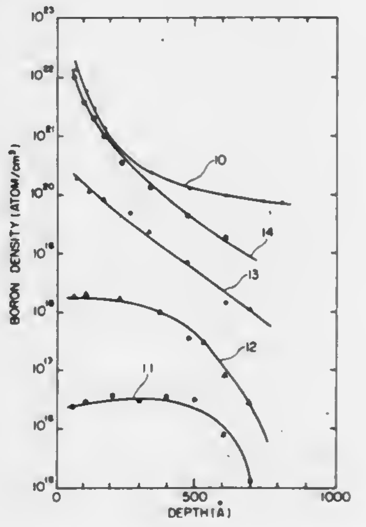
George E. Alcorn, Reston, Va., and André S. Burgèss, Forestville, Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Jun. 18, 1985, Ser. No. 745,977
Int. Cl.⁴ H01L ***21/383, 21/385***
U.S. Cl. 148—187 **10 Claims**



1. A process of fabricating a semiconductor array of detector cells comprising the steps of:
drilling a plurality of openings in a rectangular configuration completely through a body of semiconductor material to form a grid of discrete openings defining walls of adjoining cells therethrough;
diffusing a dopant material through said openings; and
forming within every cell a metal central electrode from the top surface of said semiconductive body to the bottom surface.

4,618,381
METHOD FOR ADDING IMPURITIES TO SEMICONDUCTOR BASE MATERIAL

Noritada Sato; Yasukazu Seki, and Osamu Ishiwate, all of Kanagawa, Japan, assignors to Fuji Electric Corporate Research and Development Ltd. and Fuji Electric Company Ltd., both of Kanagawa, Japan
Filed May 24, 1984, Ser. No. 613,778
Claims priority, application Japan, May 26, 1983, 58-93218; May 26, 1983, 58-93219
Int. Cl.⁴ H01L ***21/225;*** **H01J** ***17/00***
U.S. Cl. 148—189 **13 Claims**



1. A method of adding impurities to a semiconductor base material comprising the steps of:
placing the semiconductor base material in a vacuum chamber;
evacuating said vacuum chamber to a pressure of approximately 1×10^{-7} Torr after the semiconductor base material has been placed in said chamber;

pressurizing said chamber with a gas containing the impurities until the pressure in said chamber reaches 0.1 to 10 Torr, inclusive;

heating the semiconductor base material to a temperature not exceeding 400° C.; and

causing a glow discharge in said vacuum chamber.

4,618,382
SUPERPLASTIC ALUMINIUM ALLOY SHEETS

Yoshimitsu Miyagi, Ohyadaimachi; Mitsuo Hino, Tochigi, and Takehiko Eto, Ohyadaimachi, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan
Filed Oct. 12, 1984, Ser. No. 660,126
Claims priority, application Japan, Oct. 17, 1983, 58-193598; Oct. 17, 1983, 58-193599
Int. Cl.⁴ C22C *21/00*
U.S. Cl. 148—415 **15 Claims**

1. A sheet of superplastic aluminum alloy exhibiting a superplastic elongation of 480% or higher selected from the group consisting of Al—Zn—Mg alloys and Al—cu alloys and having a maximum grain size below 30 μm on average which are obtained by a method which comprises the steps of:

(1) homogenizing a high strength aluminum alloy ingot comprising at least one solute element and at least one transition element under heating conditions;

(2) subjecting the alloy ingot to hot working to form an alloy plate;

(3) heating the alloy plate to a first temperature higher than a solution temperature of the at least one solute element and keeping it at the first temperature;

(4) cooling the alloy plate to a temperature at which the at least one solute metal element is precipitated and then keeping the alloy plate at the precipitating temperature for a time sufficient to cause fine intermetallic compounds of the at least one transition element and aluminum to precipitate uniformly;

(5) cooling the alloy plate at such a rate of cooling of 100° C./hour or higher to result in precipitates being obtained of the intermetallic compounds of the at least one solute element of a size finer than those obtained at a slower cooling rate; and

(6) subjecting the cooled alloy plate to cold working to the extent of 60 to 80%, to thereby achieve the above stated superplastic elongation property and grain size.

4,618,383
METHOD AND APPARATUS FOR THE MANUFACTURE OF PLASTIC BAGS HAVING INTERLOCKING PROFILE EXTRUSIONS

Fox J. Herrington, Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 623,623, Jun. 22, 1984, Pat. No. 4,561,109, which is a continuation of Ser. No. 433,588, Oct. 12, 1982, abandoned. This application Mar. 5, 1985, Ser. No. 708,612
Int. Cl.⁴ B29D *5/00*
U.S. Cl. 156—66 **16 Claims**

1. An apparatus for attaching locking profile extrusions to a plastic film, comprising:

first and second serially arranged arcuate plate-like support sections for receiving and supporting a web of film;

means for moving a web of film over said first and then said second arcuate plate-like support sections;

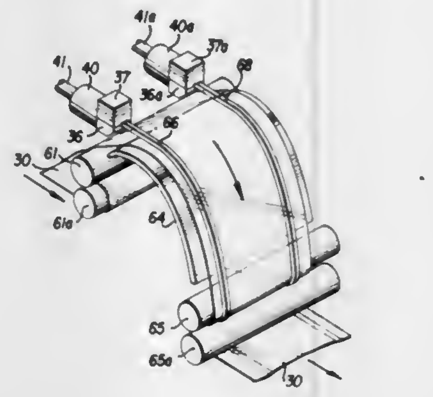
an extruding assembly positioned adjacent to said moving web, comprising first and second means for extruding first and second locking profiles onto said web while said web is positioned on said first arcuate plate-like support section, and means for supplying molten thermoplastic to said extruding assembly;

means for cooling said profiles while on said second arcuate plate-like support section to freeze said profiles onto said web; and

means for maintaining said moving web under tension as it passes over said first and second arcuate plate-like support sections so that upon release of said moving web contraction of said film upon release compensates for the contraction of said profiles as the profiles cool to prevent puckering of said moving web.

10. A method of attaching locking profile extrusions to a plastic film, comprising:

moving a web of film over first and second serially arranged arcuate plate-like support sections for receiving and supporting a film web;



extruding from an extruding assembly first and second locking profiles of molten thermoplastic onto said moving web;

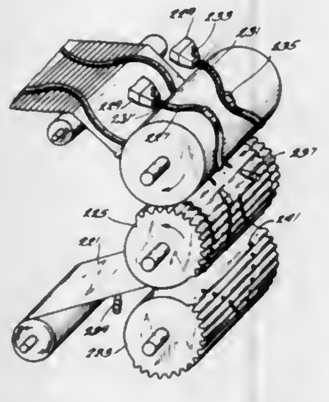
joining said profiles and said web on a fusing section of said first arcuate plate-like support section;

freezing said profiles to said web on said second arcuate plate-like support section; and

maintaining said moving web under tension as it passes over said first and second arcuate plate-like support sections so that contraction of said film upon release of said tension compensates for the contraction of said profiles as said profiles cool to prevent puckering of said moving web.

4,618,384
METHOD FOR APPLYING AN ELASTIC BAND TO DIAPERS

Reinhardt N. Sabee, 728 S. Summit St., Appleton, Wis. 54911
Filed Sep. 9, 1983, Ser. No. 530,544
Int. Cl.⁴ B31F *1/22;* **B65C** *1/00*
U.S. Cl. 156—205 **11 Claims**



1. A method for continuously attaching an elastic member to a moving web to impart an elasticized character of a controlled varying intensity along its length, said method comprising the steps of:

(a) providing an extrusion die having a preselected variable cross-section;

(b) controlling the cross-sectional area of the extrudate die while simultanously extruding a thermoplastic rubber in a heat softened substantially unstretched condition into an assembly station to thereby create an extrudate having a pre-selected variable cross-section to form an elastic ribbon member;

(c) cooling said elastic ribbon member;

(d) applying adhesive to said elastic member;

(e) feeding a web to the assembly station;

(f) forming corrugations in said web with peaks and valleys;

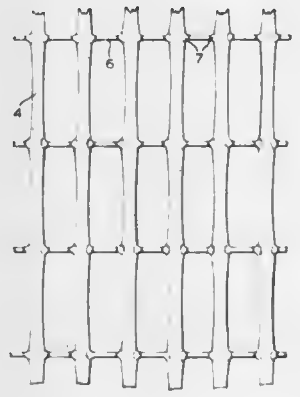
(g) adhering the substantially unstretched member to said web with the ribbon poritons having greater cross-section being applied to areas of the web requiring greater tension;

(h) maintaining said elastic member in a substantially unstretched condition contacting only the peaks until the adhesive sets up; and

(i) drawing the web and elastic member assembly under tension to the corrugations, thereby stretching said elastic member.

4,618,385
PRODUCTION OF PLASTIC MESH

Frank B. Mercer, Blackburn, England, assignor to P.L.G. Research Limited, Blackburn, England
Continuation of Ser. No. 510,252, Jul. 1, 1983, abandoned. This application Aug. 13, 1985, Ser. No. 765,186
Claims priority, application United Kingdom, Jul. 6, 1982, 8219477
Int. Cl.⁴ B29C *55/06, 55/14*
U.S. Cl. 156—229 **27 Claims**



1. A method of making a plastics material mesh structure, comprising:

providing a plastics starting material which has a regular pattern of holes or depressions, the holes or depressions being in parallel lines, the distance between the holes or depressions of one line and those of the adjacent line being substantially greater than the distance between the holes or depressions in each line, the holes or depressions defining elongate, side-by-side main zones between the lines of holes or depressions and intermediate zones between the holes or depressions in each line, each of which intermediate zones is generally symmetrical about a line at right angles to the line of holes or depressions, the major part of the thickness of each intermediate zone being between planes defined by the outer faces of the main zones; and

drawing the starting material at a temperature above the glass transition temperature but low enough so that melt flow orientation is prevented, said drawing being only in a direction substantially parallel to the main zones while preventing substantial reduction of the pitch of the main zones though permitting reduction in width of each individual main zone, thereby stretching the main zones out into continuous, uniaxially-orientated main strands with the orientation therein extending substantially uniformly from end to end and generally parallel to the drawing direction, substantially decreasing the width of the main zones when forming the main strands, the distance between the holes or depressions of one line and those of the adjacent line being sufficiently greater than the distance between the holes or depressions in each line so that the force of contraction of each main strand as the main strand reduces in width causes said intermediate zones to stretch in a direction generally at right angles to the drawing direction to form discontinuous, uniaxially-orientated interconnecting strands which interconnect the main strands, whereby a biaxially-orientated mesh structure is produced comprising said orientated main strands and said orientated interconnecting strands with the orientation in the interconnecting strands extending generally at right angles to the main strands and the cross-sectional area of the mid-points of the interconnecting strands being less than the minimum cross-sectional area of the main strands, and in which mesh structure there is adjacent each end of each interconnection strand a zone of plastics material which is thicker than the material of the remainder of the interconnecting strand.

4,618,386
METHOD OF MAKING A MULTILAYERED CONTAINER

Tadao Yatsu, and Nobuya Hinooka, both of Yamaguchi, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 552,189, Nov. 15, 1983, abandoned. This application Jul. 8, 1985, Ser. No. 752,488
Claims priority, application Japan, Nov. 15, 1982, 57-198898
Int. Cl.⁴ B29C *49/04*
U.S. Cl. 156—242 **2 Claims**

1. A method of making a multilayered container comprising (1) laminating a layer of molten polyethylene terephthalate (A) and a layer of polyester (B) consisting of a dicarboxylic acid component containing isophthalic acid in an amount exceeding 20 molar % and a glycol component comprising ethylene glycol in an amount exceeding 80 molar %, while layer (A) and layer (B) are maintained at a temperature of 230° to 350° C. and 180° to 260° C., respectively, under a pressure (gauge) of 20 kg/cm² or higher; (2) cooling and solidifying the laminate to a temperature of −10 to 30° C. so as to prepare a preform which comprises essentially of the layer of polyethylene terephthalate (A) and the layer of polyester (B); and (3) biaxially orienting and blow molding the preform at an orientation temperature of 80° to 130° C. under drawing of at least 1.5 times in the axial direction and at least 2 times in the radial directions.

4,618,387
SPLICING METHODS FOR AN EXTRUDED HANDRAIL

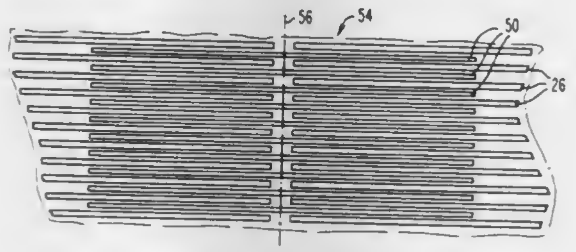
Marvin D. Fisher, Murrysville Boro, Pa., and Louis E. Bobsein, Basking Ridge, N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Mar. 8, 1985, Ser. No. 709,874
Int. Cl.⁴ B29C *47/00;* **B32B** *31/04, 31/18*
U.S. Cl. 156—244.11 **21 Claims**

1. A method of splicing first and second ends of a length of extruded flexible handrail to form a continuous loop, with the handrail including a body portion having a substantially C-shaped cross-sectional configuration which defines a substantially flat inner drive surface, and with the body portion being formed of an elastomeric, thermoplastic material having a plurality of spaced, longitudinally extending inextensible members embedded therein which extend substantially from end-to-end of the length, comprising the steps of:

squaring the first and second ends of said length,

aligning the first and second ends of said length to form a tight butt joint, with each end of each inextensible member adjacent to the first end of said length being aligned with a like positioned end of an inextensible member adjacent to the second end of said length, and with said aligned ends of said inextensible members being spaced from one another in the tight butt joint to prevent interference,

cutting parallel, longitudinally extending grooves into the flat inner drive surface of the body portion, with said grooves being located in the spaces between the plurality of inextensible members and extending through, and for a predetermined dimension on each side of, said butt joint,



placing predetermined lengths of inextensible members and elastomeric material into the grooves, to interleave said placed inextensible members with said aligned embedded inextensible members, with certain of said placed inextensible members extending for a dimension of at least about twelve inches on each side of said butt joint,

and bonding the added elastomeric material to the surfaces which define the grooves, to secure the predetermined lengths of inextensible members therein.

4,618,388

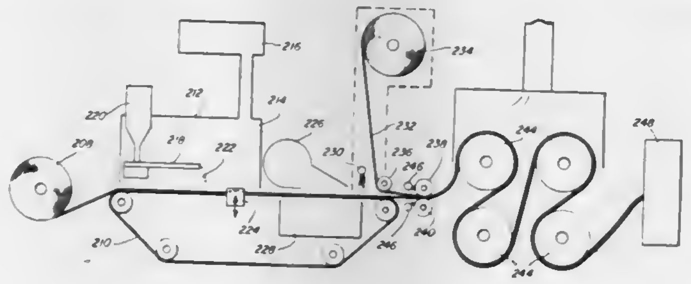
WATER REMOVING FILTER MEDIA AND METHOD OF MAKING THE SAME

William R. Ayers, Bement, Ill., assignor to Central Illinois Manufacturing Co., Bement, Ill.

Division of Ser. No. 447,909, Dec. 8, 1982, which is a continuation-in-part of Ser. No. 413,981, Sep. 2, 1982. This application Sep. 11, 1984, Ser. No. 649,502

Int. Cl.^{4} B01D *39/16*

U.S. Cl. 156—284 **6 Claims**



1. A method of making a laminated, water absorbing mechanical filter media comprising the steps of:

placing a water absorbing polymer in granular form on a fiberglass mat;

dispersing the polymer in the mat;

wetting the polymer with water at a surface of the mat sufficiently to make said surface sticky;

applying a layer of filter paper to said surface while said surface is sticky;

pressing the mat and the layer together to cause the polymer to contact the layer; and

extracting sufficient water from the resulting laminate to cause the polymer to secure the mat and the layer together.

4,618,389

PROCESS FOR BONDING HEAT CURABLE SILICONE RUBBER TO A SUBSTRATE USING AN AQUEOUS PRIMER COMPOSITION

Michael K. Agodoa, Toledo, Ohio, assignor to SWS Silicones Corporation, Adrian, Mich.

Continuation of Ser. No. 491,158, May 4, 1983, abandoned. This application Jan. 14, 1985, Ser. No. 691,357

Int. Cl.^{4} C09J *5/02*

U.S. Cl. 156—307.5 **5 Claims**

1. An improved method for bonding a heat curable silicone rubber composition to a substrate which comprises applying a heat curable silicone rubber composition to a substrate and thereafter curing the silicone rubber composition at an elevated temperature, the improvement which comprises coating the substrate prior to the application of the silicone rubber composition with an aqueous primer composition consisting essentially of from 0.5 to 20 percent by weight based on the weight of the primer composition of an 1 alkenyltrihydrocarbonoxysilane having the formula

$$RSi[(OR'')_nOR']_3$$

where R is an alkenyl radical having from 2 to 6 carbon atoms, R′ is a monovalent hydrocarbon radical having from 1 to 10 carbon atoms, R″ is a divalent hydrocarbon radical having from 1 to 6 carbon atoms and n is a number of from 0 to 4, an aqueous miscible solvent which is present in an amount of from 10 to 25 percent by weight based on the weight of the aqueous primer composition and having a boiling point up to 180° C., water in an amount of from 55 to 82 percent based on the weight of the aqueous primer composition and an organic acid in an amount sufficient to provide a pH below 7, and thereafter drying the coated substrate.

4,618,390

METHOD FOR PREPARING LAMINATED ARTICLES

Clois E. Powell, Westerville, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 504,027, Jun. 13, 1983, abandoned. This application Aug. 14, 1984, Ser. No. 689,641

Int. Cl.^{4} C09J *5/02*

U.S. Cl. 156—307.3 **14 Claims**

1. A method for laminating a flexible substrate and a rigid wood substrate which comprises:

(I) consolidating said substrates through an adhesive medium having a pot life of at least one hour consisting essentially of:
  (a) a colloidal aqueous dispersion of a hydroxyl functional acrylic polymer;
  (b) a polyalkylene glycol;
  (c) a thickener to permit dispersion of hardener, control of processing characteristics, and control of penetration into wood substrates;
  (d) a dispersed organic solution of protected polyisocyanate hardener in hydrophobic solvent; and
  (e) water; and
(II) effecting the cure of said adhesive at ambient or elevated temperature.

4,618,391

AUTOMATIC DEVICE FOR BRINGING INTO REGISTER A TOOL MOUNTED ON A ROTARY CYLINDER FOR PROCESSING PRODUCTS IN SHEET FORM

Mario Torti, Lyons, and Emilio Fernandez, Bron, both of France, assignors to S. A. Martin, Villeurbanne, France

Filed Aug. 1, 1984, Ser. No. 636,763

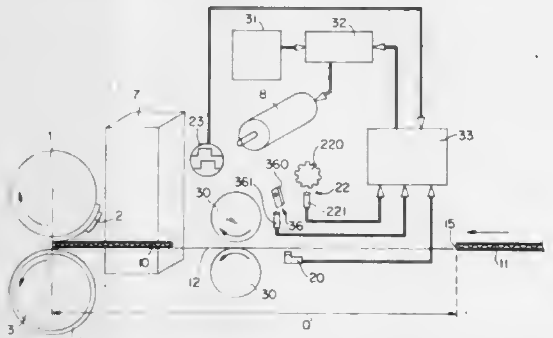
Claims priority, application France, Aug. 18, 1983, 83 13577

Int. Cl.^{4} B26D *5/20*

U.S. Cl. 156—353 **1 Claim**

1. Apparatus for achieving automatic register for a processing installation for products in sheet form, which utilizes a rotary cylinder and comprising means for the cyclic feeding of sheets to a tool holder cylinder (**1**) driven by the general kinematic chain of a machine in such a manner that the interval of introduction of the successive sheets corresponds to the development of the tool holder, or to a multiple thereof, the drive of the tool holder cylinder comprising a device (**7**) for angular adjustment, relative to the general kinematic chain, under the control of an adjusting motor, said apparatus comprising

(a) a first coding device (**22**) connected to the general kinematic chain (**30**) and supplying information representing the theoretical speed of advance of the sheets;
(b) a second coding device (**23**) connected to the adjustment device (**8**) and providing information representing the angular adjustment value given to the tool holder;



(c) a first detector (**20**) of the passage of a selected reference mark (**15**) on the sheet, this detector being disposed upstream of the tool holder cylinder at a distance less than the theoretical distance between two successive sheets;
(d) a second detector (**36**) coupled to the general kinematic chain (**30**) and providing electric pulses linked to the feed cycle of the sheets; and
(e) a computing and correction unit receiving and analyzing the information provided by said first and second detectors (**20, 36**) and coding devices (**22, 23**) and accordingly providing for each cycle of said machine one or more commands for the correction of the tool holder in response to the difference between the actual position of the sheet introduced and its theoretical position.

4,618,392

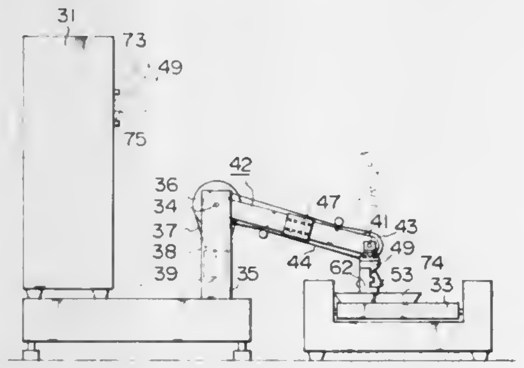
LABEL ADHERING APPARATUS

Mitsuo Uchimura, and Satoru Uematsu, both of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Apr. 19, 1983, Ser. No. 486,490

Int. Cl.^{4} B65C *9/08, 9/36*

U.S. Cl. 156—384 **16 Claims**



1. Label adhering apparatus comprising:

A label printer having a label issuing port for use in issuing a label;

a mount block on which an object to be labeled is mounted;

an arm having one end rotatably held and the other end reciprocated between a label issuing position at said label issuing port and a label adhering position for said object to be labeled;

a driving shaft for reciprocatably rotating the arm;

a fixed pulley fixed to a rotary center of said arm;

a rotary pulley having the same diameter as that of the fixed pulley and rotatably arranged at said other end of said arm;

an endless belt wound around the rotary pulley and said fixed pulley so as to connect both of said pulleys; and

a label adhering means fixedly connected to said rotary pulley;

the label adhering means further including:

a frame;

a pivotable frame mounted on said frame;

rollers rotatably mounted on said pivotable frame;

electromagnetic driving means mounted on said pivotable frame;

label pressing rollers connected to the electromagnetic driving means and movable to and away from a lower outer circumference of said rollers, and further rotatably connected to said frame around a lateral axis; and

operative means for pivotably rotating said pivotable frame in such a direction that said label pressing rollers are displaced along an outer circumference of said rollers from below said rollers to side portions thereof in response to movement of said label adhering means toward a labeling adhering position.

4,618,393

HAND LABELING DEVICE

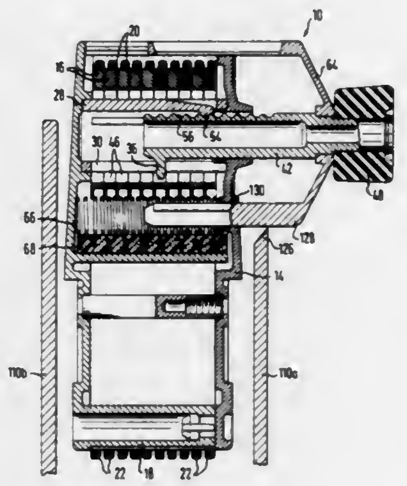
Heinrich Volk, Beerfelden, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Feb. 21, 1985, Ser. No. 703,943

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1984, 3406810

Int. Cl.^{4} B65C *9/46, 11/02*

U.S. Cl. 156—384 **6 Claims**



1. Hand labeling device for imprinting and dispensing self-adhesive labels comprising a housing, a printing mechanism which is movable therein between a raised inoperative position and a lowered printing position and which comprises a plurality of axially adjacent setting wheels with which type carriers carrying printing types are in a drive connection, and a setting shaft which extends in the direction of the axis of the setting wheels is connected to the printing mechanism, projects outwardly at a housing wall and is displaceable at a side face of the printing mechanism between an inserted position and an extended position and with the aid of which the setting wheels can be moved relatively to each other in such a manner that desired printing types on the type carriers move into a printing zone at the printing mechanism, characterized in that to the setting shaft (**42**) a stop body (**128**) extending parallel thereto is connected which is displaceable with the setting shaft (**42**) between an extended and an inserted position and that in the path which the stop body (**128**) describes in the extended position when the printing mechanism (**10**) is lowered into the

printing position a stop edge (**126**) fixed with respect to the housing is disposed.

4,618,394
ONE-SIDED CORRUGATED CARDBOARD MACHINE WITH SUCTION DEVICE

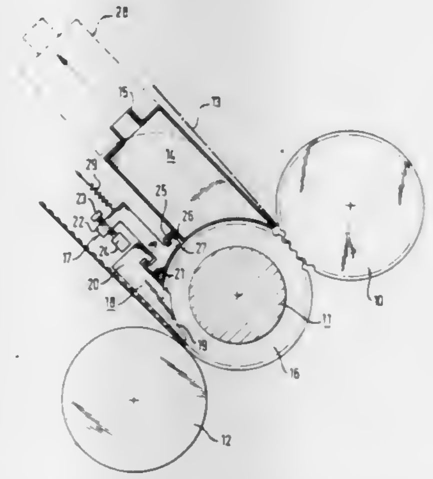
Martin Hoffmann, Tangstedt, Fed. Rep. of Germany, assignor to Werner H. K. Peters Maschinenfabrik GmbH, Hamburg, Fed. Rep. of Germany

Filed Oct. 12, 1984, Ser. No. 661,165

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1983, 8331823[U]

Int. Cl.⁴ B31F *1/00, 1/28*

U.S. Cl. 156—473 **8 Claims**



1. A one-sided corrugated cardboard machine comprising an upper fluted roller and a lower fluted roller, a pressure roller associated with the lower fluted roller, a suction box essentially extending the width of the lower fluted roller and connected to a vacuum source and arranged on that side of the lower fluted roller which is not covered by the corrugated material web and juxtaposed to said upper fluted roller, said suction box creating a vacuum in annular suction grooves of the lower fluted roller, and sealing sheet metal members engaging within the suction grooves on the uncovered side of said lower fluted roller and juxtaposed to said pressure roller, characterized by a supporting beam positioned between said sealing sheet metal members and said suction box and supporting said sheet metal members and said suction box, and said suction box and said sealing sheet metal members being independently adjustable relative to said supporting beam for independent movement of either of said sealing sheet metal members and said suction box relative to said supporting beam.

4,618,395
CUTTING IMPLEMENT FOR REMOVING PLASTIC SEALING STRIPS FROM JOINTS BETWEEN REINFORCED CONCRETE ELEMENTS

Hermann Breucha, Mittelstadtstrasse 52, D-7210 Rottweil, Fed. Rep. of Germany

Filed May 17, 1985, Ser. No. 735,312

Claims priority, application Fed. Rep. of Germany, May 19, 1984, 34186891

Int. Cl.⁴ B32B *31/18*

U.S. Cl. 156—584 **17 Claims**

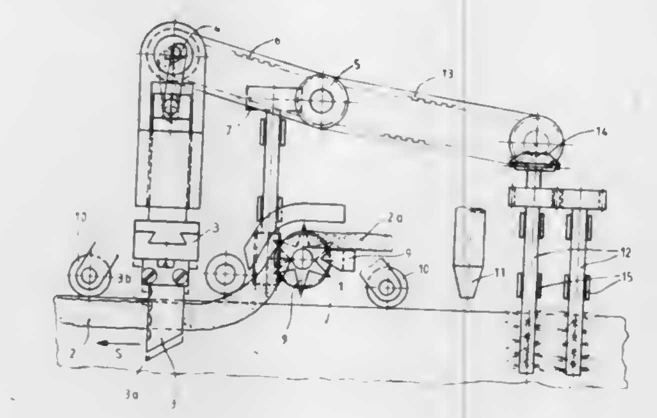
1. In a cutting implement for removing a plastic sealing strip from a joint between reinforced concrete elements, comprising

cutting blade means adapted to be inserted into said joint at said sealing strip,

the improvement residing in that

said cutting blade means comprise blade holding means and two parallel cutting blades, which are transversely spaced apart and transversely adjustable relative to each other,

drive means comprising a rotatable concentric member are coupled to said cutting blades and operable to reciprocate said cutting blades in their longitudinal direction in phase opposition to each other to sever said plastic sealing strip from said reinforced concrete elements when said cutting blades have been inserted into said joint on opposite sides of said sealing strip, and



strip conveying means are disposed on one side of said cutting blades and adapted to receive and withdraw said sealing strip from said cutting blades when said sealing strip has been severed from said reinforced concrete elements.

4,618,396
GAAS SINGLE CRYSTAL AND PREPARATION THEREOF

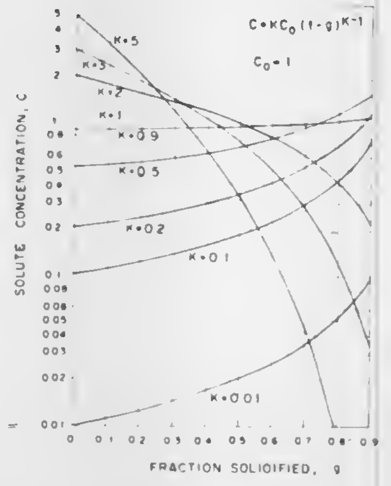
Takashi Shimoda, and Masami Sasaki, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 27, 1984, Ser. No. 675,400

Claims priority, application Japan, Dec. 1, 1983, 58-227247

Int. Cl.⁴ B01J *17/00;* **C01B** *27/00;* **C04B** *35/00*

U.S. Cl. 156—605 **8 Claims**



1. A GaAs single crystal suitable for use as a transistor, an LED or a laser diode, comprising a GaAs crystal doped with an impurity selected from the group consisting of In, Al, C and S, in which fluctuation of the concentration of said impurity in said crystal is less than 20% in any direction.

4. A process for preparing a GaAs single crystal suitable for use as a transistor, an LED or a laser diode, said crystal comprising a GaAs crystal doped with an impurity selected from the group consisting of In, Al, C and S, in which fluctuation of the concentration of said impurity in said crystal is less than 20% in any direction, said process comprising the steps of:

pulling up a single crystal from a raw material melt comprising Ga and As or a GaAs compound as well as at least one impurity selected from the group consisting of In, Al, C and S while controlling the concentration of As so as to keep a distribution coefficient of the impurity in GaAs within 1±0.1.

4,618,397
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE HAVING A PRESSURE SENSOR

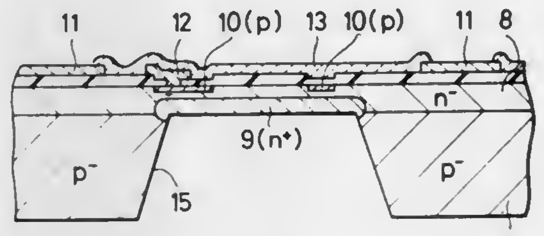
Isao Shimizu, Tamamura, and Kazuji Yamada, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 563,748, Dec. 21, 1983. This application Nov. 27, 1985, Ser. No. 802,431

Claims priority, application Japan, Dec. 24, 1982, 57-226274

Int. Cl.⁴ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—628 **9 Claims**



1. In a method of manufacturing a semiconductor device wherein diffused resistors for a pressure sensor are formed in a front surface of a semiconductor crystal body, a rear surface of which is thereafter etched partly so as to put a part of the body into a membrane portion; a method of manufacturing a semiconductor device having a pressure sensor characterized in that, in advance of the etching step, a buried layer which has an impurity concentration higher than that of the semiconductor body and which has the gradient of the impurity concentration is provided in said semiconductor body, whereupon said body is partly etched from its rear surface while an etching rate is being controlled by the high concentration buried layer.

4,618,398
DRY ETCHING METHOD

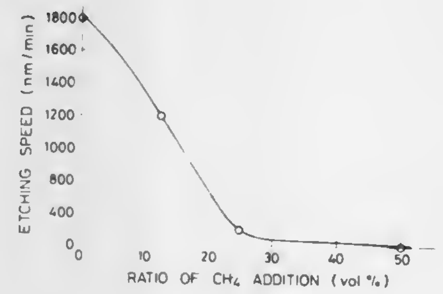
Makoto Nawata; Ryoji Fukuyama; Norio Nakazato, and Masaharu Nishiumi, all of Kudamatsu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 11, 1985, Ser. No. 700,287

Claims priority, application Japan, Feb. 13, 1984, 59-22805

Int. Cl.⁴ C23F *1/02;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—643 **2 Claims**



1. A dry etching method wherein a gaseous mixture of boron trichloride, chlorine and hydrocarbon, where the ratio of the content of the chlorine to the sum of the contents of the boron trichloride and the chlorine is 40 to 80% by volume and the ratio of the content of the hydrocarbon to the sum of the contents of boron trichloride and chlorine is 5 to 30% by volume, is used as an etching gas, and said etching gas is converted into plasma to etch aluminum or its alloys with said plasma.

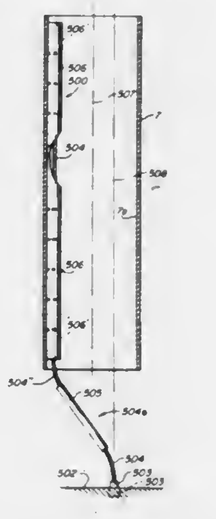
4,618,399
WOBBLE TUBE EVAPORATOR WITH WHIP ROD FLUID DISTRIBUTOR

Yao T. Li, Huckleberry Hill, Lincoln, Mass. 01773

Continuation-in-part of Ser. No. 367,251, Apr. 7, 1982, Pat. No. 4,441,963, which is a continuation of Ser. No. 201,380, Oct. 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 961,452, Nov. 16, 1978, Pat. No. 4,230,529. This application Apr. 9, 1984, Ser. No. 598,473

Int. Cl.⁴ B01D *1/22, 3/04*

U.S. Cl. 159—6.2 **30 Claims**



1. In a fluid evaporation apparatus having (i) a reference number, (ii) at least one heat transfer tube aligned about a generally vertical axis adjacent said reference member, (iii) means to drive said heat transfer tube to revolve about a wobbling center on said vertical axis without rotating the transfer tube, and means for directing a stream of said fluid toward the inner surface of said tube, the wobble motion imparted to said tube serving to cause said stream of said fluid to cling to the inner surface of said tube away from the wobbling center and form a revolving flow stream that wipes the inside surface of the tube, the improvement comprising a whip rod that lies within said inner tube surface, said whip rod being flexible to conform to irregularities in said surface when driven against the surface by the centrifugal force developed by the whip rod sliding over said inner surface in response to said wobbling motion, means for anchoring a first end of said whip rod to the reference member near the longitudinal vertical axis of said tube, said anchoring means allowing said whip rod to lie within said tube extending generally vertically against and revolving about said inner surface of said tube during said wobbling to distribute said fluid stream in a higly thin, uniform film over said inner surface, said highly thin film presenting a low heat resistance to facilitate said evaporation.

4,618,400
WASTEPAPER DEINKING PROCESS

Donald L. Wood, and Herbert E. Fried, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 687,110, Dec. 28, 1984, abandoned. This application Jan. 10, 1986, Ser. No. 817,803

Int. Cl.⁴ D21C *5/02*

U.S. Cl. 162—5 **8 Claims**

1. A process for the deinking of wastepaper stocks which comprises steps for

a. converting the wastepaper to a pulp,

b. contacting the pulp with an aqueous medium of alkaline pH containing between about 0.2 and 2 percent by weight, calculated on dry weight of the pulp, of a deinking agent which is one or a mixture of thiol ethoxylate compounds of the formula

$RS—CH_2CH_2O)_nH$,

wherein R represents a C_9 to C_{18} alkyl group and n has an average value between about 3 and 20,

c. treating the resulting pulp-containing medium to remove suspended or dispersed ink therefrom, and

d. treating the pulp-containing aqueous medium, subsequent to step c, with an oxidizing agent at a temperature of at least about 75° C. and at a pH of at least about 12.0 to bleach the pulp and to convert all or part of the thiol ethoxylate deinking agent to non-surface-active matter.

4,618,401

BATTERY SEPARATOR MATERIAL

Warren J. Bodendorf, Montgomery, Mass., assignor to Texon, Inc., Farmington, Conn.

Division of Ser. No. 551,072, Nov. 14, 1983, Pat. No. 4,529,677, which is a continuation-in-part of Ser. No. 445,857, Dec. 12, 1982, abandoned, which is a continuation-in-part of Ser. No. 345,173, Feb. 2, 1982, abandoned. This application Dec. 17, 1984, Ser. No. 682,546

Int. Cl.^{4} D21H *3/44, 5/18*

U.S. Cl. 162—138 **9 Claims**

1. A method for forming a battery separator material which comprises the steps of:

a. forming an aqueous dispersion which comprises polyolefin fiber in an amount sufficient to provide between about 5 to about 20 percent by weight of polyolefin fiber in the final separator material; polyester fiber in an amount sufficient to provide between about 2 to about 15 percent by weight of polyester fiber in the final separator material, glass fiber in an amount sufficient to provide between 12 to about 20 percent by weight of glass fiber in the final separator material, diatomaceous earth in an amount sufficient to provide between about 40 to about 75 percent by weight of diatomaceous earth in the final separator material;

b. stabilizing said aqueous dispersion in the presence of an anionic dispersing agent to form an aqueous dispersion of substantially non-flocculated agglomerates comprising said polyolefin fiber, polyester fiber, glass fiber, and diatomaceous earth;

c. adding an acrylate copolymer binder, which is anionic in character and which includes a silane coupling agent attached to the polymeric backbone, in an amount sufficient to provide between about 7 to about 20 percent by weight of binder in the final separator sheet material;

d. conveying the dispersion of step c. to a porous support for receiving the dispersion;

e. adding a cationic flocculating agent to said conveyed dispersion before delivering said dispersion to said porous support;

f. distributing and draining the dispersion provided by step e. on said porous support, to form a wet web; and

g. drying the web.

4,618,402

SAFETY MEANS, PAPER AND DOCUMENT AGAINST FALSIFICATION BY CHEMICAL AGENT

Michel Camus, Charavines, France, assignor to Arjomari-Prioux, Paris Cedex, France

Filed Jul. 24, 1985, Ser. No. 758,361

Claims priority, application France, Aug. 10, 1984, 84 12704; Apr. 12, 1985, 85 05574

Int. Cl.^{4} D21H *5/10*

U.S. Cl. 162—140 **20 Claims**

1. A non-fluorescent safety paper containing Fe(III) ions stabilized against reduction to Fe(II) ions from constituents of the paper with a sufficient amount of an oxidizing agent which prevents substantial reduction of Fe(III) to Fe(II) by the paper constituents, and a substantially colorless Fe(II) ions complexing agent which produces a strong permanent color in the presence of Fe(II) ions, said stabilized Fe(III) ions being present in sufficient quantity to form a sufficient amount of Fe(II) ions when exposed to a reducing source originating external to said paper to form a permanent visible color with said complexing agent.

4,618,403

METHOD OF STABILIZING METAL-SILICA COMPLEXES IN ALKALI METAL HALIDE BRINES

David L. Fair, Chattanooga; David D. Justice, Cleveland, both of Tenn., and Pilar P. Kelly, Spartanburg, S.C., assignors to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 544,677, Oct. 24, 1983, Pat. No. 4,515,665. This application May 2, 1985, Ser. No. 729,787

The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.

Int. Cl.^{4} C25B *1/46*

U.S. Cl. 204—98 **15 Claims**

12. A process for electrolysis in a membrane electrolytic cell for producing an alkali metal hydroxide which comprises feeding a concentrated alkali metal halide brine containing a complex of at least one complex-forming element and silica at a pH of from about 4 to about 12 to said membrane electrolytic cell, and electrolyzing said alkali metal halide brine under conditions which maintain the pH of said alkali metal halide brine above the decomposition value of said complex.

4,618,404

ELECTRODE FOR ELECTROCHEMICAL PROCESSES, METHOD FOR PREPARING THE SAME AND USE THEREOF IN ELECTROLYSIS CELLS

Alberto Pellegri, Luino, Italy, assignor to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Division of Ser. No. 791,266, Oct. 25, 1985. This application Feb. 10, 1986, Ser. No. 827,590

Claims priority, application Italy, Nov. 7, 1984, 83633 A/84

Int. Cl.^{4} C25B *1/24, 11/08*

U.S. Cl. 204—128 **14 Claims**

1. A process for generating halogen which comprises electrolyzing an aqueoous halide in an electrolytic cell having an anode and a cathode, said cathode comprising an inert metallic substrate and having an external or superficial coating comprising an inert electroconductive platinum group metal ceramic and an intermediate pre-coating or interlayer between said substrate and said external or superficial coating, said pre-coating or interlayer comprising an inert metal matrix having dispersed therein particles of a ceramic material which is compatible with the external or superficial coating.

4,618,405

PROCESS FOR THE ELECTROCHEMICAL ROUGHENING OF ALUMINUM FOR USE AS PRINTING PLATE SUPPORTS, IN AN AQUEOUS MIXED ELECTROLYTE

Dieter Mohr, Schlangenbad, and Werner Frass, Wiesbaden-Naurod, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 23, 1985, Ser. No. 726,244

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1984, 3415364

Int. Cl.^{4} C25F *3/04*

U.S. Cl. 204—129.75 **16 Claims**

1. A process for the electrochemical roughening of a material selected from aluminum and aluminum alloys, comprising the steps of:

placing the material in an aqueous mixed electrolyte solution containing HCl and at least one additional electrolyte selected from condensed phosphoric acids, amidosulfonic acid, and the water-soluble alkali metal salts and ammonium salts of any of the above acids; and

subjecting said material to the action of alternating current to effect roughening of the material surface, said roughening rendering said material suitable for use in a printing plate support;

wherein the mixed electrolyte contains from about 0.5 to about 10% by weight of HCl and from about 0.05 to about 5.0% by weight of the additional electrolyte;

wherein said aqueous mixed electrolyte solution is at a temperature of from about 20° C. to about 60°, the density of said alternating current is from about 3 to about 200 A/dm^2.

4,618,406

GRAPHITE-COATED TUBE AND PROCESS FOR PRODUCING THE SAME

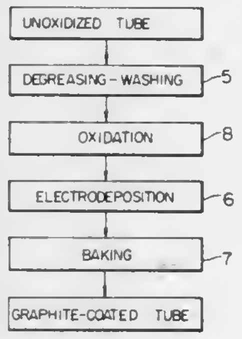
Yoshikazu Wakashima, and Sachio Shimada, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 085,232, Oct. 16, 1979, abandoned. This application Nov. 22, 1982, Ser. No. 443,530

Claims priority, application Japan, Oct. 17, 1978, 53-127725

Int. Cl.^{4} C25D *13/00;* G21C *3/06*

U.S. Cl. 204—181.1 **14 Claims**



1. A process for producing a graphite-coated zircalloy tube, which comprises oxidizing an inside surface of an unoxidized zircalloy tube to form a zirconium oxide layer having a thickness of not more than 5,000 Å on the inside surface, depositing a graphite layer on the zirconium layer by electrodeposition, and baking the graphite layer-deposited tube.

4,618,407

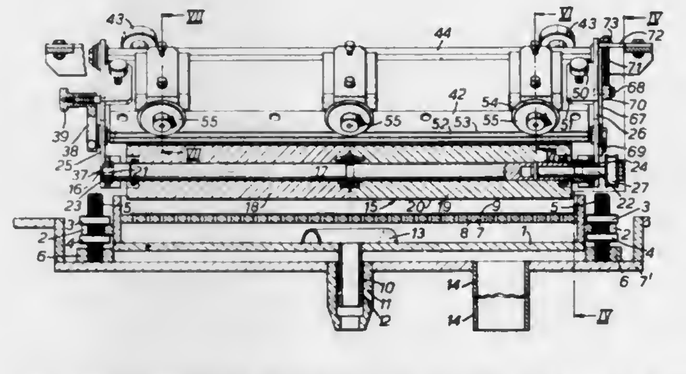
GALVANO-TECHNICAL DEVICE FOR LOCALLY APPLYING A METAL LAYER TO AN ELONGATE METAL TAPE OR THE LIKE

Peter J. G. Loermans, BW Bergharen, Netherlands, assignor to Meco Equipment Engineers B.V., Netherlands

Filed Feb. 9, 1984, Ser. No. 578,581

Int. Cl.^{4} C25D *17/00, 17/16*

U.S. Cl. 204—206 **18 Claims**



1. An electroplating apparatus for locally applying a metal layer to an elongate metal tape or to metal objects united in an elongate tape or the like in which the tape, acting as a first electrode, is guided along a main roller coupled to a frame so as to rotate about a rotary axis in operation and be dipped at least partly in an electrolyte solution contained in a reservoir having a second electrode and arranged below said main roller, and in which the tape is displaced generally parallel to the rotary axis of the main roller in a manner such that the parts of the tape to be provided with the metal layer come into contact with the main roller, wherein the improvement comprises a guide surface, disposed adjacent the main roller and stationery during operation in the direction of displacement of the tape, along which guide surface the tape is displaced during operation, and a guide rim protruding out of the guide surface remote from the main roller and extending generally parallel to the rotary axis of the main roller, against which guide rim an edge of the elongate tape is pressed, and a plurality of wheels pressing the tape against the guide surface and the tape edge against the guide rim, the wheels having their rotational axes at an acute angle to the direction of displacement of the tape.

4,618,408

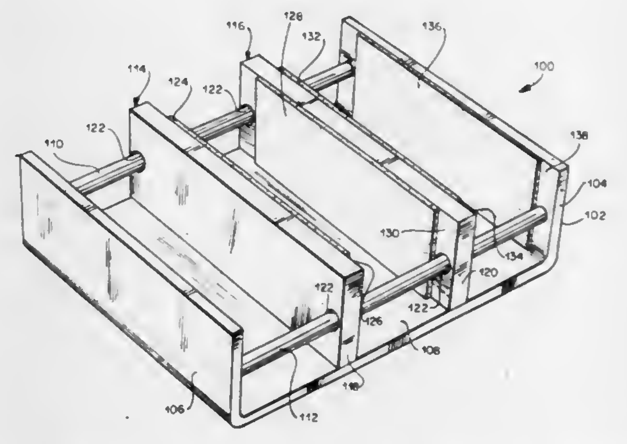
CASTING APPARATUS FOR ELECTROPHORETIC GEL TRAY

Richard Malavarca, South Orange, and Thomas Livelli, Lyndhurst, both of N.J., assignors to Lab Stuff, Inc., South Orange, N.J.

Filed Nov. 29, 1984, Ser. No. 675,984

Int. Cl.^{4} G01N *27/28*

U.S. Cl. 204—299 R **20 Claims**



1. An apparatus for casting an electrophoretic separation medium within a received tray having open ends, said apparatus comprising a housing, first sealing means and second sealing means arranged spaced apart within said housing for sealing the open ends of said tray when brought into engagement therewith, said first sealing means supporting a first gasket for sealing one open end of said tray and arranged opposing said second sealing means, said second sealing means supporting a second gasket and arranged opposing said first gasket for sealing the other open end of said tray, said first sealing means being movable with respect to said second sealing means, and guide means in operative association with said first sealing means for adjusting the spaced apart relationship between said first sealing means and said second sealing means so as to receive said tray therebetween with said open ends in sealing engagement with said first gasket and said second gasket.

4,618,409

ELECTROPHORETIC SEPARATOR

Peter C. Lovegrove, Didcot, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Jan. 14, 1985, Ser. No. 691,001

Claims priority, application United Kingdom, Jan. 20, 1984, 8401510

Int. Cl.^{4} G01N *27/28*

U.S. Cl. 204—300 R **7 Claims**

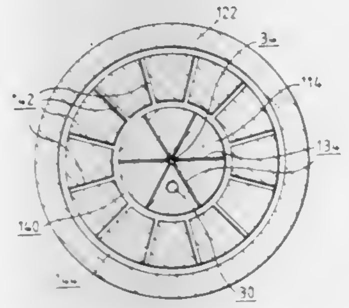
1. A continuous flow electrophortic separator comprising a cylindrical stator, a concentric tubular rotor defining an annular chamber between the stator and the rotor, an electrode incorporated in the stator, an electrode incorporated in the rotor, means for causing a carrier liquid to flow through the chamber, and an inlet means in the stator for injecting a migrant material into the carrier liquid, the inlet means defining:

a supply duct for the supply of the migrant material,

a first annular chamber,

a plurality of ducts providing communication between the supply duct and the first annular chamber,

a circumferential slot around the periphery of the stator, a second annular chamber coaxial with the stator and in fluid communication with the slot, and of greater width than the corresponding width of the slot,



and a plurality of channels providing fluid communication between the first annular chamber and the second annular chamber, the channels being not coplanar with the slot, so that in use the flux of the migrant material is substantially the same through all parts of the slot.

4,618,410
SHALE OIL DEARSENATION PROCESS
Frederick E. Brinckman, Derwood, Md.; Thomas F. Degnan, Jr., Yardley, Pa., and Carl S. Weiss, Racine, Wis., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Continuation of Ser. No. 665,875, Oct. 29, 1984, abandoned. This application Nov. 4, 1985, Ser. No. 794,590

Int. Cl.⁴ C10G *55/04*

U.S. Cl. 208—97 **6 Claims**

1. A method for producing a dearsenated shale oil product from a shale oil feedstock contaminated with more than 4 ppmw arsenic in the form of at least one soluble arsenic comprising:

(a) forming a coker distillate having an arsenic content lower than that of the shale oil feedstock by coking at least a portion of said feedstock at a temperature between 750° and 2000° F.;

(b) contacting said coker distillate with water; and

(c) separating said water from said coker distillate to produce a shale oil product having less than 3 ppmw soluble arsenic.

4,618,411
ADDITIVE COMBINATION AND METHOD FOR USING IT TO INHIBIT DEPOSIT FORMATION
Ghazi B. Dickakian, Kingwood, Tex., assignor to Exxon Chemical Patents Inc., Florham Park, N.J.

Filed Jun. 4, 1985, Ser. No. 741,078

Int. Cl.⁴ C10G *9/16*

U.S. Cl. 208—48 AA **14 Claims**

1. A method for inhibiting deposit formation on the contact surfaces of structures confining heated hydrocarbon fluids comprising the step of introducing into said hydrocarbon fluids at least an inhibiting amount of thiophene-containing polycondensed aromatic/naphthenic compounds of number average molecular weight ($\overline{M}n$) from 200 to 1,000 and a macrocyclic polyamine having 2 to 8 nitrogen atoms per molecule.

4,618,412
HYDROCRACKING PROCESS
Carl W. Hudson, and Glen P. Hamner, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 31, 1985, Ser. No. 760,835

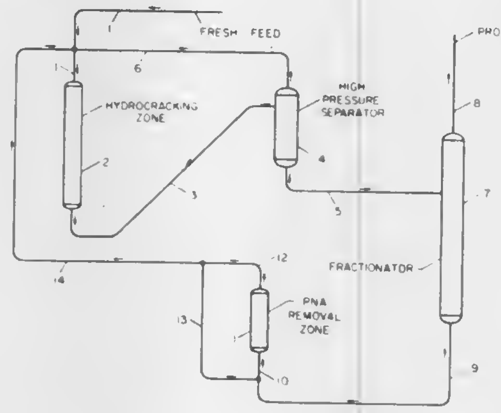
Int. Cl.⁴ C10G *65/10, 65/18*

U.S. Cl. 208—59 **24 Claims**

1. A catalytic hydrocracking process which comprises:

(a) contacting a hydrocarbon feed having a propensity to form polynuclear aromatic hydrocarbon compounds in a hydrocracking zone with added hydrogen and a metal promoted crystalline zeolite hydrocracking catalyst at elevated temperature and pressure sufficient to produce substantial conversion of said feed to lower boiling products;

(b) condensing the hydrocarbon effluent from said hydrocracking zone and separating the same into a low boiling hydrocarbon product and unconverted hydrocarbon oil containing small quantities of polynuclear aromatic hydrocarbon compounds;



(c) contacting at least a portion of said uncoverted hydrocarbon oil containing polynuclear aromatic compounds with a catalyst which contains elemental iron and one or more of an alkali or alkaline-earth metal, or compound thereof, in the presence of hydrogen, at conditions inclusive of temperatures ranging from about 225° C. to about 430° C. sufficient to hydrogenate and hydrocrack the polynuclear aromatic hydrocarbon compounds; and

(d) recycling unconverted hydrocarbon oil having a reduced concentration of polynuclear aromatic compounds resulting from step (c) to said hydrocracking zone.

4,618,413
METHOD FOR EXTRACTING NICKEL AND VANADIUM COMPOUNDS FROM OILS
Robert E. Overfield, Washington, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Jul. 15, 1985, Ser. No. 755,089

Int. Cl.⁴ C10G *17/00;* **C10C** *3/00*

U.S. Cl. 208—251 R **10 Claims**

1. A method for the extraction of vanadium or nickel metalloporphyrinic compounds from hydrocarbon oil containing such compounds comprising the step of contacting said oil with a solvent having a δ_h of between 0 and 6, a δ_p of between 8.6 and 10.7 and a δ_d of between 8.7 and 10.00.

4,618,414
PROCESS FOR SEPARATING MINERAL ULTRA-FINE GRAIN FROM WASHINGS OBTAINED IN COAL PROCESSING OR FROM COAL SLURRIES
Hans-Georg Hartan, Kevelaer; Werner Padberg, Dudweiler, and Dietrich Müller, Wadgassen, all of Fed. Rep. of Germany, assignors to Chemische Fabrik Stockhausen GmbH, Krefeld and Saarbergwerke AG, Saarbrucken, both of, Fed. Rep. of Germany

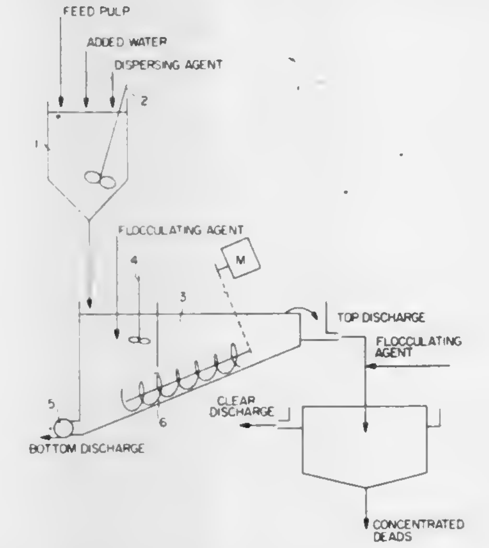
Continuation of Ser. No. 556,827, Dec. 1, 1983, abandoned. This application Jun. 6, 1985, Ser. No. 741,765

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1982, 3244898

Int. Cl.⁴ B03D *3/06*

U.S. Cl. 209—5 **8 Claims**

1. In the separation of coal from ash containing mineral material by treating a slurry thereof the improvement which comprises first adding to the slurry a selective dispersing agent for the mineral finest grain, said dispersing agent being an organic, synthetic polymer having a molecular weight of ≦10,000 g/mol and selected from the group consisting of polyacrylic acid, polymethacrylic acid, copolymers of acrylic acid/acrylamide, methacrylic acid/methacrylamide of from 5 to 99% by weight acrylic acid/methacrylic acid, copolymers of acrylic acid/acrylates, poly-2-acrylamido-2-methylpropanesulphonic acid, salts of poly-2-acrylamides-2-methylpropanesulphonic acid, copolymers of poly-2-acrylamido-2-methylpropanesulphonic acid with arylamide and copolymers of salts of poly-2-acrylamido-2-methylpropanesulphonic acid with acrylamide, and acrolein polymers, stirring to disperse the solids, adding an anionic or non-ionic flocculating agent to the dispersion thereby selectively to flocculate the coal and coarser mineral particles while leaving dispersed the ash-containing mineral particles of ≦32 μm separating the flocculated coal and larger mineral particles from the dispersion, the absence of the particles of ≦32 μm resulting in improved subsequent separation.

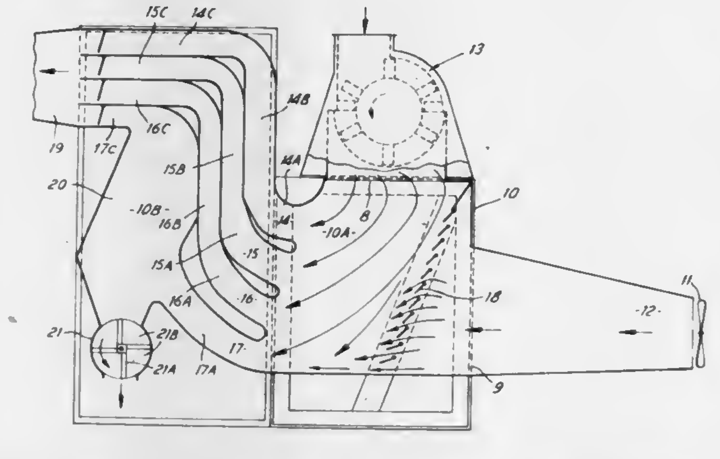


4,618,415
TOBACCO SEPARATOR
Anthony J. Vecchio, and John H. Hudson, Jr., both of Richmond, Va., assignors to AMF Incorporated, White Plains, N.Y.

Filed Aug. 31, 1984, Ser. No. 646,657

Int. Cl.⁴ B07B *4/02;* **B02C** *23/10*

U.S. Cl. 209—134 **5 Claims**



1. A tobacco separator for separating tobacco laminae from mid-rib or stem matter of threshed tobacco, comprising the combination

a separating chamber having top, bottom and side walls,

an inlet in the top of said chamber for admitting downwardly into said chambers a mixture of tobacco laminae and stems,

an air inlet in one side of the chamber for establishing an air flow across the chamber,

a plurality of discharge openings arranged vertically one above the other in the side wall of the chamber opposite the air inlet for receiving respective portions of the air flow,

the bottom of the lowermost one of said discharge openings being no higher than the level of the bottom of the separating chamber,

means for creating a flow of air through the air inlet on one side wall of the chamber, horizontally across the chamber, and into said discharge openings on the opposite side wall of the chamber,

said air flow extending from substantially the top to the bottom of the chamber and substantially completely across its dimension that is transverse to the air flow,

means located as said air inlet for establishing a nonuniform speed distribution of air flow, in a vertical plane, through said separating chamber so that the substantially horizontally moving air has higher speeds at the bottom of the chamber than at the top of the chamber,

said air speeds being proportioned so that stems fall to the bottom of the chamber and are swept out said lowermost discharge opening by the higher air speed at the bottom of the chamber and lighter laminae move transversely and pass through the remainder of said discharge openings where air speeds are lower,

a vertically extending air passage connected to and receiving air only from said lowermost discharge opening for further separating laminae and stems that were swept into the lowermost discharge opening,

a single outlet passage connected to said vertical extending air passage and to said remainder of the discharge openings for combining all the laminae separated from the stems into a single output air stream, and

means at the bottom of the vertically extending air passage for removing stems swept into the lowermost discharge opening of the separation chamber.

4,618,416
THIOAMIDES, THEIR PREPARATION AND USES
Guy Levesque, Contest, and Pierre Tozzolino, Serres-Morlaas, both of France, assignors to Societe Nationale Elf Aquitaine (Production), France

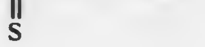
Continuation-in-part of Ser. No. 632,630, Jul. 19, 1984, abandoned. This application Oct. 15, 1985, Ser. No. 787,449

Claims priority, application France, Jul. 19, 1983, 83 11880

Int. Cl.⁴ B03D *1/14*

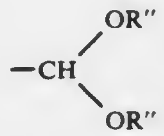
U.S. Cl. 209—166 **12 Claims**

1. Process of froth flotation of metal sulfide minerals in which a thioamide is employed as the collector and the metal sulfide is recovered from the froth, wherein the thioamide is of the formula



$$R-\underset{\underset{S}{\|}}{C}-NR'(CH_2)_nZ$$

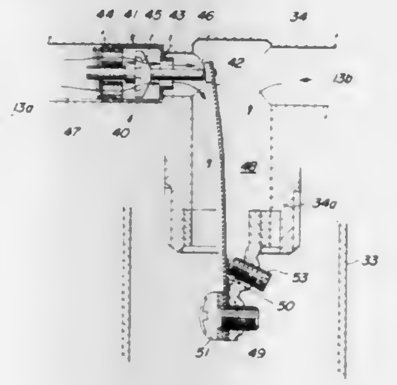
R designating C_5 to C_{17} alkyls, R′ being H or $(CH_2)_nOR''$ and n an integer of 1 to 6, while Z is —OR″ or



where R″ means H, CH_3 or C_2H_5.

4,618,417
FUEL FILTER FOR DIESEL ENGINE

Katsuto Yamanouchi; Katsuo Saitoh, both of Yokohama; Yoshinori Saito, and Tadashi Kikyohara, both of Atsugi, all of Japan, assignors to Nissan Motor Co., Ltd. and Atsugi Motor Parts Co., Ltd., both of, Japan
Filed Jan. 31, 1985, Ser. No. 696,912
Claims priority, application Japan, Feb. 4, 1984, 59-17659
Int. Cl.^{4} B01D *27/10*
U.S. Cl. 210—149 **13 Claims**



1. A fuel filter for use in a diesel engine having a fuel injection pump, said fuel filter comprising;
- a fuel filter body having a center tube, an inlet port to receive fuel from a fuel tank and connected to supply such fuel to said center tube, and an outlet port to supply filtered fuel to said fuel injection pump;
- a filter element located coaxially of said center tube through which fuel received from said center tube is filtered before being supplied through said outlet port to the fuel injection pump;
- means on said filter body defining a fuel introduction port to receive a part of warmed fuel overflowing from the fuel injection pump and connected to supply said warmed fuel to said center tube to be mixed with fuel supplied from said tank;
- a check valve disposed in said fuel introduction port and operable to allow said warmed fuel to flow therethrough; and
- a bimetal element operatively connected to said check valve and mounted on said filter body to sense temperature of fuel flowing through the center tube to cause said check valve to open in response to a predetermined temperature thereof and adjust the proportion of the warmed fuel supplied to the center tube for filtering by the filter element.

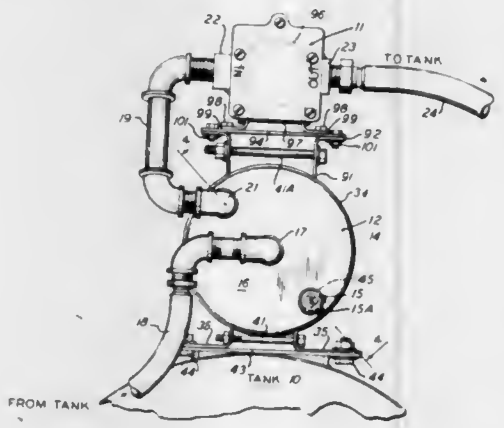
4,618,418
FLUIDIZED BED REACTOR

Joseph J. Heijnen, Rijen; Pieter A. Lourens, and Albertus J. Vixseboxse, both of Delft, all of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands
Continuation of Ser. No. 479,200, Mar. 28, 1983, abandoned.
This application Dec. 26, 1984, Ser. No. 685,220
Claims priority, application Netherlands, Mar. 29, 1982, 8201293
Int. Cl.^{4} C02F *3/28*
U.S. Cl. 210—151 **20 Claims**

1. A single unit fluidized-bed reactor for purification of waste water with biomass attached to carrier particles, comprising a reaction space equipped with a liquid distribution device above the bottom of the reaction space particularly suited for introduction of waste water in wide reactors to achieve uniform fluidization therein, said device consisting of a number of substantially horizontal pipes, each having in the under-surface a number of regularly distributed openings for downward introduction of a liquid, and on top of the reaction space united therewith a multifunctional three phase separator for complete separation of a gas-liquid-solids mixture leaving the reaction space, said three phase separator comprises a space for collection and accumulation of gas remaining or formed during biological waste water treatment provided with a gas outlet, and a liquid-solid separation compartment positioned and arranged to act on the liquid-solids mixture and provided with means to remove at least a part of the purified liquid and with means for complete return of the carrier particles overgrown with biomass into the reaction space by gravity, the gas oulet is provided with a means for increasing gas pressure in the gas collection and accumulation space, the three phase separator being construction and arranged so as to act on treatments involving large or small gas fractions in the reactor.

4,618,419
LIQUID STORAGE TANK MOISTURE FILTER

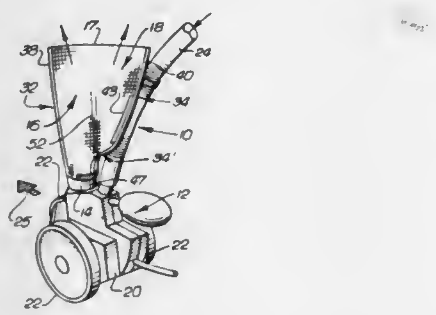
Clive Hollinshead, 29572 Spotted Bull La., San Juan Capistrano, Calif. 92675, and Marion A. Willbanks, P.O. Box 1154, National City, Calif. 92050
Filed Jul. 19, 1984, Ser. No. 632,378
Int. Cl.^{4} B01D *35/00*
U.S. Cl. 210—167 **3 Claims**



1. In a liquid fuel system having a fuel tank with connections to a fuel pump and a fuel consuming device and to a fuel filter having input and output ports the combination comprising fuel tank having first and second ends; a fuel filter; a recirculation filter pump;
- a first fuel line operatively connected from said first fuel tank end, to a port of said fuel filter, a second fuel line operatively connected between said recirculating pump and said second fuel tank end, a third line connecting said recirculating pump to said fuel filter; said fuel filter comprising
- a cannister with opposed ends, a paper filter core having a hollow center, obverse and reverse cannister end caps, input and output ports in said reverse cannister end cap, a collector volume between said paper core and the reverse end cap inner wall, said output port opening into said volume;
- a fluid entry tube connecting to said input port and extending through said hollow center of said paper core, walls defining a manifold cavity between said paper core and said obverse cap inner wall, said entry tube entering said cavity; a restrictive outlet from said entry tube being the only communication through said manifold cavity to said paper core;
- a seal between the cavity and the paper core hollow center;
- and means removably securing said obverse cap to said cannister end.

4,618,420
FILTER BAG FOR POOL CLEANERS

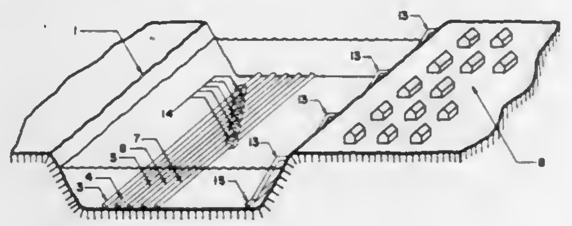
J. Jesus Alanis, San Marcos, Calif., assignor to Alopex Industries, Inc., San Marcos, Calif.
Filed Nov. 5, 1984, Ser. No. 668,487
Int. Cl.^{4} B01D *35/16*
U.S. Cl. 210—169 **19 Claims**



1. A filter bag for use with a pool cleaner having a suction mast for flow of water and debris drawn from a swimming pool or the like, said bag comprising:
- a pair of sidewalls of generally common shape and formed from a material pervious to water flow and generally impervious to passage of debris therethrough, said sidewalls being joined together by a seamless upper end and having generally aligned front margins and rear margins;
- means for interconnecting said sidewalls along said front margins and along said rear margins, said interconnecting means being releasably separable over at least a portion of said rear margins to define a debris discharge opening;
- a mounting collar carried by said sidewalls generally at the lower ends thereof and generally adjacent said front margins for mounting said bag onto the discharge end of the pool cleaner suction mast, said mounting collar cooperating with said sidewalls to define an open mouth for passage of water and debris drawn through the suction mast into the bag interior between said sidewalls; and
- means for dividing the bag interior into a primary flow chamber disposed generally adjacent said front margins in flow communication with the open mouth defined by said collar and a collection chamber disposed generally adjacent said rear margins and having a lower end blocked from direct flow communication with the open mouth and an upper end in flow communication with the primary flow chamber, said divider means comprising a divider seam interconnecting said sidewalls and extending generally upwardly from the side of said mounting collar opposite said front margins and terminating in spaced relation below said seamless upper end, whereby water flowing through the open mouth passes through the primary flow chamber and exits the bag generally through the seamless upper end and debris flowing through the open mouth passes through the primary flow chamber and settles within the collection chamber.

4,618,421
FLUID TRANSPORT AND PROCESSING SYSTEM

Frederick W. Kantor, 523 W. 112th St., New York, N.Y. 10025
Filed Sep. 27, 1982, Ser. No. 423,522
Int. Cl.^{4} C02C *1/02*
U.S. Cl. 210—170 **7 Claims**



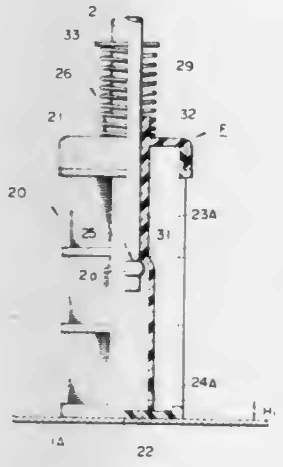
1. A liquid transport system for disposing of liquid waste from the land adjacent an inland water artery having a naturally sloping bed, said system comprising at least one flexible wall main conduit beneath the surface of the artery and extending in the direction of water flow along said artery, the liquid waste inside said conduit being in fluid equilibrium with the fluid outside; a plurality of liquid inlet conduits for conveying liquids into said main conduit from positions spaced along said artery, said artery emptying into a larger body of water, merge means for coupling said inlet conduits with said main conduit for feeding said liquid wastes into said main conduit at a plurality of locations therealong; pump means for safely augmenting the flow of liquid waste in said main conduit towards said larger body of water said pump means including flow augmentation means within said main conduit to augment safely the flow of said liquid wastes in one direction along through said main conduit without causing substantial departure from said pressure equilibrium for achieving dynamic stability of the flow of said liquid wastes through said conduit, and said flow augmentation means including means permitting flow of said liquid wastes therepast in the event of operating failures of said flow augmentation means; and disposal means located in said larger body of water for receiving and disposing of the liquid waste from said main conduit: the disposal means including a submerged processing plant submerged beneath the surface of said body of water and having means for carrying out treatment of said liquid wastes while said wastes are at fluid equilibrium with the larger water body and having an inlet thereof connected to an outlet of said main conduit.

4,618,422
FILTER DEVICE FOR A FUEL TANK

Michiaki Sasaki, Hadano, and Akira Mizusawa, Fujisawa, both of Japan, assignors to Nissan Motor Company, Limited and NIFCO Incorporated, both of, Japan
Continuation of Ser. No. 598,679, Apr. 10, 1984, abandoned.
This application Aug. 27, 1985, Ser. No. 769,803
Claims priority, application Japan, Apr. 25, 1983, 58-72394
Int. Cl.^{4} B01D *29/10, 35/02*
U.S. Cl. 210—172 **20 Claims**

1. A filter for use in a fuel tank, said fuel tank being provided with a suction pipe mounted substantially vertically with a first intake opening formed at the tip of a lower portion and spaced a first distance from the bottom wall of the tank, said filter comprising:
- a filter body having an upper wall and a lower wall;
- a tubular guide portion extending axially from said upper wall through the filter body toward said lower wall and having a second intake opening near the lower wall of the filter body;
- said tubular guide portion including a first section supported for sliding movement on the lower portion of said suction pipe and a second section of said guide portion extending beyond the tip of the suction pipe substantially the entire said first distance to the bottom wall of the tank, said second intake opening being spaced a second distance less than said first distance from the bottom wall of the tank,

and said filter body, including said guide portion, being slidable along said suction pipe to prevent damage to the filter in the event the bottom wall of the tank is collapsed inwardly for a portion of said first distance;

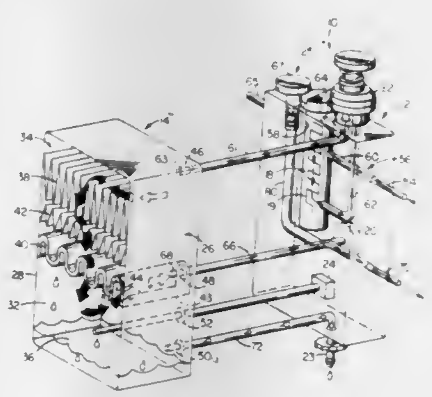


spring means extending between the suction pipe and the filter body for biasing the filter body toward the bottom wall of the tank; and

retaining means provided at said lower portion of the suction pipe for retaining said guide portion and for preventing the suction pipe from slipping out of the filter body.

4,618,423
DISPOSABLE FUEL FILTER/WATER SEPARATOR ELEMENT

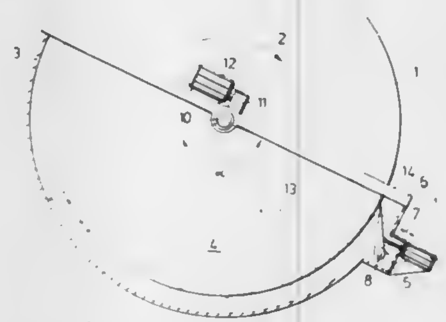
David Hodgkins, Manchester, Conn., assignor to Stanadyne, Inc., Windsor, Conn.
Division of Ser. No. 507,799, Jun. 24, 1983, Pat. No. 4,491,120. This application Dec. 27, 1984, Ser. No. 696,643
Int. Cl.⁴ B01D *29/06*
U.S. Cl. 210—305 **8 Claims**



1. A disposable fuel filter/water separator element comprising a housing having a filter chamber including an upper portion and a lower portion, said lower portion defining a sump, a fuel inlet port communicating with an upper portion of said filter chamber, a fuel outlet port communicating with said lower portion of said filter chamber, a filter assembly disposed within said filter chamber and extending thereacross, said filter assembly separating said upper portion from said lower portion and including a plurality of elements arranged in vertical series and through which fuel flow from said fuel inlet port to said fluid outlet port is constrained to pass, said elements including a primary filter element and a coalescing element, said primary filter element being located between said coalescing element and said upper portion, an inverted generally U-shaped liquid impervious baffle disposed within said lower portion and defining a fluid outlet region of said filter chamber, said fuel outlet port communicating with said lower portion of said filter chamber within said fluid outlet region, said coalescing element and said baffle cooperating to define the upper extent of said lower portion.

4,618,424
ROTARY VACUUM FILTER WITH ADJUSTABLE IMMERSION ANGLE

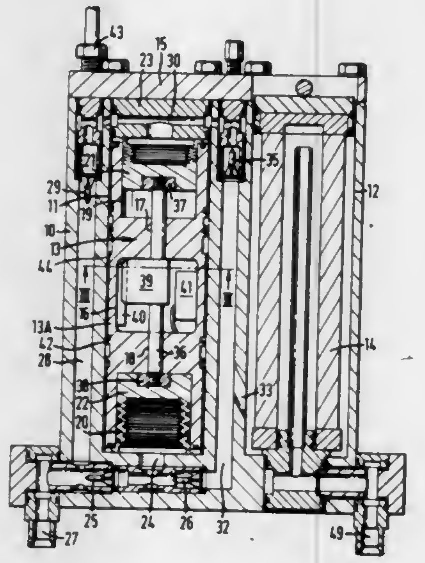
Ingvar Lundin, Stora Herrestad 75:2, 271 00 Ystad, Sweden
Filed Jun. 23, 1983, Ser. No. 506,996
Claims priority, application Sweden, Jul. 7, 1982, 8204212
Int. Cl.⁴ B01D *33/06*
U.S. Cl. 210—396 **4 Claims**



1. Rotary vacuum filter for filtering a suspension of yeast or any other plant cell material, comprising a drum (1), a trough (3) for the suspension positioned under the drum, and a doctor knife (5) for removing a filter cake produced during the filtration, wherein the doctor knife is attached to said trough adjacent to one of the upper edges (6) of the trough, and wherein an axle (10), which coincides with the geometric axis of the drum (1), is provided for and supports the trough which is mounted so as to be rotatable around the axle (10), whereby the immersion angle (α) is infinitely adjustable by said rotation, and so that the doctor knife (5) can be moved towards and away from the center of the drum (1).

4,618,425
PUMP FOR PUMPING CORROSIVE FLUIDS

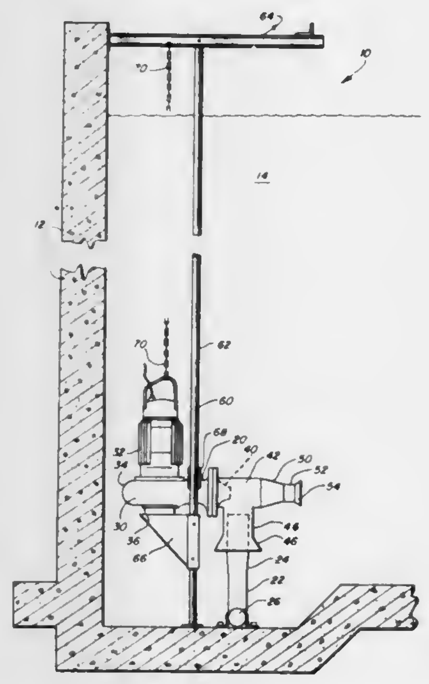
Martyn R. G. Yates, Surrey, United Kingdom, assignor to Production Techniques Limited, Hampshire, England
PCT No. PCT/GB84/00153, § 371 Date Dec. 17, 1984, § 102(e) Date Dec. 17, 1984, PCT Pub. No. WO84/04363, PCT Pub. Date Nov. 8, 1984
PCT Filed May 4, 1984, Ser. No. 684,928
Claims priority, application United Kingdom, May 4, 1983, 8312122
Int. Cl.⁴ B01D *29/42*
U.S. Cl. 210—416.1 **9 Claims**



1. A submersible pump for pumping corrosive fluids which comprises one group of parts which collectively comprise all the parts of the pump that are wetted by corrosive fluids during use of the pump, all the parts of said one group being formed of a material which is resistant to corrosion by corrosive fluid which the pump is designed to pump and including corrosive fluid displacement means operable to cause flow of corrosive fluid, said pump having a complete outer casing and motive power supply means connectable to an external source of motive power; and another group of parts which is wholly encased within structure which is formed by said one group of parts and thereby is shielded from contact by corrosive fluid which is pumped by the pump, and which includes power operable motive means operable to drive the corrosive fluid displacement means, characterized in that said pump is gas driven reciprocatory double acting bellows pump, the bellows of which bound respective working fluid spaces of said power operable motive means and function as said corrosive fluid displacement means, and said motive power supply means comprise gas supply conduit means for supplying working gas from a remote source of such gas under pressure through said structure to either working fluid space, there being exhaust gas conduit means provided for exhausting working gas from the other working fluid space and for conveying exhausted working gas through said structure and away to a remote location during operation of the pump.

4,618,426
RETRIEVABLE JET MIXING SYSTEMS

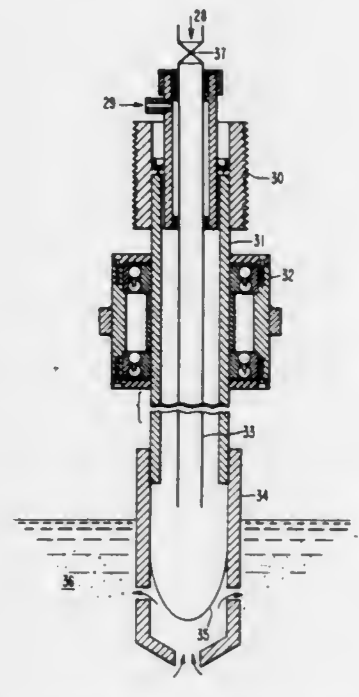
Mikkel G. Mandt, 2309 Grand Blvd., Cedar Falls, Iowa 50613
Continuation of Ser. No. 565,021, Dec. 22, 1983, abandoned. This application Aug. 2, 1985, Ser. No. 762,038
Int. Cl.⁴ C02F *3/02*
U.S. Cl. 210—620 **14 Claims**



11. A method for retrievably assembling a wastewater aeration system comprising the steps of providing a pressurized air source having an upstanding discharge pipe at a predetermined location within a wastewater treatment basis below the level of wastewater to be aerated therein, providing guide and support means for guiding a retrievable jet aerator assembly into a predetermined position within the wastewater treatment basis for supporting the jet aerator assembly in jet aeration operation at said predetermined position and for permitting withdrawl of the jet aerator assembly from the reservoir for servicing, retrievably positioning on said guide and support means a jet aerator assembly having a downwardly directed secondary fluid inlet conduit such that the conduit is telescopically disengageably positioned at said predetermined position over the discharge orifice of the gas discharge pipe to provide a hydrostatic head of at least about 1 inch of water between the lowest elevation of the discharge pipe orifice and the highest elevation of the secondary fluid inlet orifice providing at least one primary motive stream of liquid wastewater from within the wastewater treatment basin, combining said at least one primary motive stream in a jet mixing nozzles of said jet aerator assembly with secondary fluid from said secondary fluid inlet conduit, said secondary fluid comprising air discharge from said pressurized air source through said upstanding discharge pipe, and discharging the combined primary motive stream and secondary fluid into the waste water treatment basin below the level of wastewater to be aerated therein.

4,618,427
METHOD OF TREATING AND BREAKING UP A LIQUID WITH THE HELP OF CENTRIPETAL FORCE

Karl Venås, Saupstad, Norway, assignor to Ardal og Sundal Verk a.s., Norway
Filed Jan. 23, 1985, Ser. No. 694,116
Claims priority, application Norway, Jan. 25, 1984, 840272
Int. Cl.⁴ C02F *3/02;* C21C *7/00*
U.S. Cl. 210—629 **18 Claims**



1. A method of treating a liquid which is caused to rotate inside a hollow cylindrical body having a smooth outer vertical surface thereof with at least one inlet hole at the bottom of the hollow cylindrical body and a plurality of outlet holes in said outer vertical surface spaced from the bottom of the hollow body, the cylindrical hollow body being attached to a vertical hollow shaft in fluid communication with the hollow cylindrical body and the hollow cylindrical body being at least partly submerged in a liquid with the outlet holes below the level of liquid, comprising:

rotating said hollow cylindrical body in the liquid with said outlet holes in said smooth outer vertical surface below the upper surface of said liquid to cause liquid to pass through said at least one inlet hole and rotate inside said hollow cylindrical body forming a parabolic liquid surface within said hollow cylindrical body, the lowermost level of said parabolic liquid surface being below said outlet holes and the uppermost level of said parabolic liquid being above said outlet holes; and

passing gas into said hollow cylindrical body for intermixing with said liquid below said parabolic liquid surface, which together are ejected out said outlet holes into the surrounding liquid, whereby the liquid is treated with gas solely by rotation of said cylindrical hollow body having a smooth outer vertical surface.

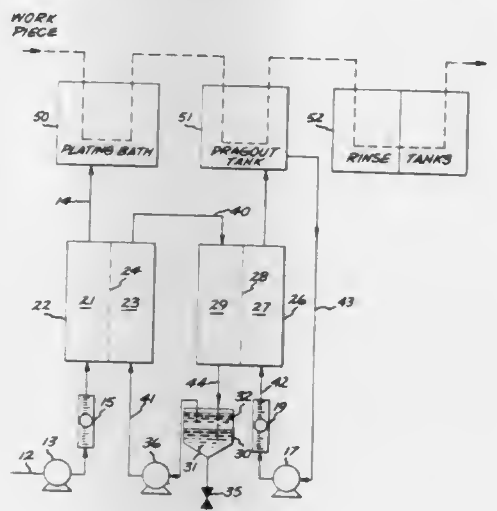
4,618,428
PROCESS FOR RECOVERY OF ZINC FROM PLATING WASTE SOLUTIONS

Bang M. Kim, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 13, 1982, Ser. No. 407,961

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 210—648 **10 Claims**



1. A method for recovery of zinc from an aqueous zinc containing solution, said method comprising the steps of:

contacting the aqueous zinc containing solution with a first side of a first membrane;

contacting the second side of said first membrane with an organic zinc-selective solvent for the selective passage of zinc through said first membrane;

contacting the first side of a second membrane with a solvent which has been in contact with said first membrane;

removing aqueous solution from said solvent;

contacting the second side of said first membrane with the solvent which has been in contact with the first side of said second membrane; and

contacting the second side of said second membrane with a stripping solution for the selective passage of zinc through said second membrane.

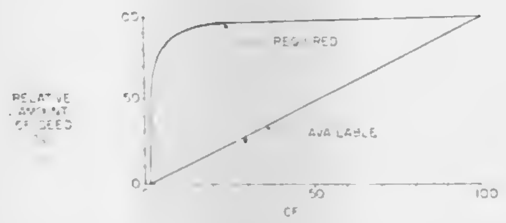
4,618,429
METHOD OF MAINTAINING ADEQUATE SEED CRYSTAL IN PREFERENTIAL PRECIPITATION SYSTEMS

Howard R. Herrigel, Seattle, Wash., assignor to Resources Conservation Co., Bellevue, Wash.

Continuation-in-part of Ser. No. 678,900, Dec. 6, 1984. This application Dec. 14, 1984, Ser. No. 682,441

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 210—652 **24 Claims**



1. In a method comprising, maintaining an adequate amount of seed crystal required to inhibit scaling and fouling in solution concentration systems employing preferential precipitation and concentrating solutions at an initial concentration factor between 1 and 2, which said concentration factor increases during successive concentration steps, said method comprising substantially precluding seed crystal deficiency in the system, and thereby scaling, when the concentration factor is less than about 2, and substantially precluding overloading of the system with seed crystals, and thereby minimizing pumping problems, when the concentration factor is at least about 2, by:

(a) determining the minimum amount of seed crystal necessary to prevent scaling for the particular solution being concentrated at a relatively high concentration factor, $C.F._{MAX}$, of about 10 or greater;

(b) providing a percentage multiplier determined as follows:

$$\%\ \text{multiplier} = 25 \times (C.F.) \times [C.F._{MAX} / (C.F._{MAX} - 1)]$$

wherein C.F. is the concentration factor at which the feed solution will initially be concentrated, and wherein $C.F._{MAX}$ is some relatively high concentration factor of about 10 or greater, which said percentage multiplier is multiplied by the amount determined in step (a) above to determine an amount to be introduced to the feed solution; and

(c) introducing to the feed solution the amount determined in step (b) above.

4,618,430
PROCESS AND APPARATUS FOR REMOVING SCUM FROM A LIQUID SURFACE

Uncas B. Favret, Jr., Covington, and Phil J. Duhon, Abbeville, both of La., assignors to Engineering Specialties, Inc., Covington, La.

Filed Nov. 6, 1984, Ser. No. 668,833

Int. Cl.⁴ C02F *1/24*

U.S. Cl. 210—703 **17 Claims**

1. An apparatus for removing waste matter contained in a liquid, comprising:

a cell for receiving waste-containing liquid;

means for introducing gas into the waste-containing liquid in said cell to float waste matter to the liquid surface in the form of a floating scum;

a waste outlet disposed adjacent at least one edge of the liquid surface,

means for displacing scum into said waste outlet comprising gas nozzle means situated adjacent the liquid surface and oriented to eject streams of pressurized gas across the liquid surface to blow scum into said waste outlet, and means for supplying pressurized gas to said nozzles at a pressure sufficient to blow the scum into said waste outlet.

12. A process for removing waste from a liquid, comprising the steps of:

locating the liquid in a cell;

introducing gas into the liquid to float waste matter to the liquid surface to form a floating scum thereon; and

ejecting a stream of pressurized gas across the liquid surface from a nozzle located adjacent the water surface and directed toward a waste outlet disposed along a side of said cell, to displace the scum into said waste outlet.

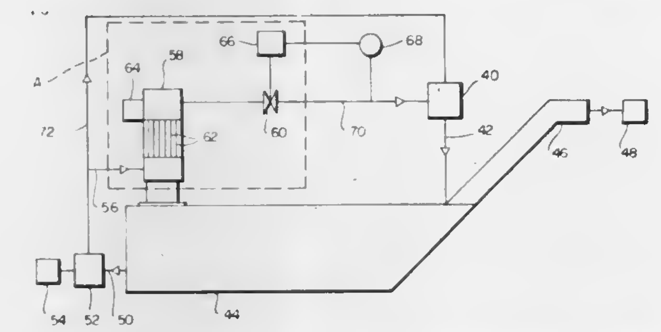
4,618,431
METHOD FOR STABILIZING THE RELATIONSHIP BETWEEN THE FILTERING UNIT AND A FILTER FEED PUMP

David B. Hindman; James S. Paduchowski, and Joseph D. Lima, all of Rochester, N.Y., assignors to French Systems, Inc., Rochester, N.Y.

Filed Jan. 8, 1985, Ser. No. 689,818

Int. Cl.⁴ B01D *37/04*

U.S. Cl. 210—741 **20 Claims**



1. A method of reducing the effects of fluctuating fluid pressure differential between the inlet and outlet of a filtering unit operating in a system for filtering metal contaminants from a lubricating coolant and for recycling a constant volume flow of filtered lubricating coolant to a workpiece to be machined, including the steps of:

(a) providing a holding vessel for receiving metal-contaminated lubricating coolant,

(b) collecting said metal-contaminated lubricating coolant in said holding vessel,

(c) providing pumping means for pumping said contaminated lubricating coolant from said holdng vessel,

(d) providing a filtering unit-modulator valve combination downstream of said pumping means, said combination including a filtering unit associated with a modulator valve, and having an outlet connected directly to a workpiece to be machined,

(e) operating said pumping means to pump said metal-contaminated lubricating coolant at a pressure above atmospheric pressure from said holding vessel to said filtering unit-modulator valve combination,

(f) filtering metal contaminants from said lubricating coolant in said filter unit,

(g) monitoring the flow of filtered lubricating coolant at said outlet of said filter unit-modular valve combination, and

(h) operating said modulator valve in response to any changes in the flow rate or pressure of said lubricating coolant at said outlet, thereby maintaining a predetermined constant fluid pressure differential across said filtering unit-modulator valve combination thus compensating for fluctuations across said filtering unit due to build-up of contaminants at the filter surface and further resulting in the maintenance of constant head pressure at the outlet of said pumping means and the maintenance of a constant flow rate and pressure of filtered lubicating coolant to the workpiece to be machined.

8. A lubricating coolant filtering and recycling system comprising:

(a) a holding vessel for receiving and collecting metal-contaminated lubricating coolant from a machining station,

(b) pumping means positioned downstream of said holding vessel,

(c) a filtering unit-modulator valve combination comprising a modulator valve connected to a filtering unit, positioned downstream of said pumping means, and having an outlet connected directly to said machining station,

(d) said pumping means being operative to pump coolant from said holding vessel to said filtering unit-modulator valve combination against a head pressure above atmospheric pressure,

(e) monitoring means for monitoring the flow of filtered lubicating coolant downstream of said filtering unit-modulator valve combination adjacent the outlet thereof, and

(f) modulator valve operation control means for controlling the operation of said modulator valve in response to any changes in the pressure or flow rate of said coolant downstream of said filtering unit-modulator valve combination as monitored at the outlet thereof by said monitoring means, wherein operation of said modulator valve functions to restore the fluid pressure differential across the filtering unit-modulator valve combination to a predetermined value selected according to system operating parameters in response to fluctuations in fluid pressure differential across the filtering unit due to accumulation of metal contaminants in the filtering unit, and thereby to maintain said head pressure constant.

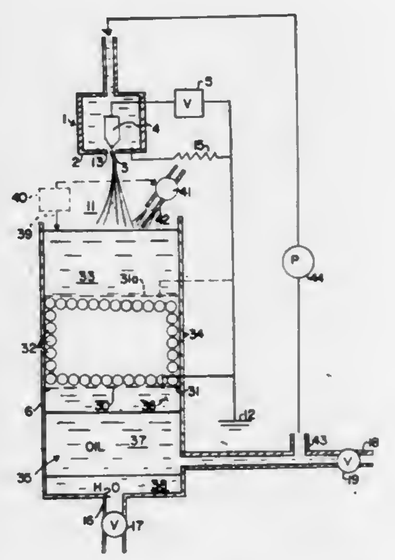
4,618,432
METHOD AND APPARATUS FOR CHARGING A CONTAMINANT-LADEN LIQUID

Donald J. Mintz, Summit, and Anthony M. Gleason, Westfield, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Apr. 17, 1984, Ser. No. 601,274

Int. Cl.⁴ B01D *17/06;* **B03C** *5/00, 5/02*

U.S. Cl. 210—748 **25 Claims**



1. A method of charging a dispersed contaminant phase in a continuous liquid phase, comprising the steps of:

(1) introducing a net unipolar charge into a further liquid that is substantially free of any dispersed contaminant phase; and

(2) causing the dispersed contaminant phase to become charged by bringing the contaminated and substantially contaminant-free liquids into contact with one another and allowing charge from the substantially contaminant-free liquid to be volumetrically distributed through the continuous liquid phase of the contaminated liquid to the dispersed contaminant phase.

4,618,433
DRILLING FLUIDS AND THINNERS THEREFOR

George M. Allison, III, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 30, 1984, Ser. No. 636,054

Int. Cl.⁴ C09K *7/02*

U.S. Cl. 252—8.514 **17 Claims**

1. An aqueous drilling fluid comprising water, finely divided solids and a first agent comprising a sulfoalkylated tannin containing no complexing heavy metal and a second agent comprising at least one at least partly water-soluble metal compound comprising tin, wherein the weight ratio of said first agent to said second agent is in the range from about 100:1 to about 1:1.

4,618,434

DRILLING FLUIDS MADE FROM SOLID, FREE-FLOWING, CONTINUOUSLY-MADE, WATER DISPERSIBLE PVA-ALDEHYDE REACTION PRODUCT

John J. Blouin, Baltimore, Md., assignor to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 553,510, Nov. 21, 1983, Pat. No. 4,472,552, which is a continuation-in-part of Ser. No. 423,798, Sep. 27, 1982, abandoned. This application Mar. 21, 1984, Ser. No. 591,833

Int. Cl.⁴ C09K *7/02*

U.S. Cl. 252—8.51 **6 Claims**

1. In a water based drilling fluid suitable for circulating in a bore hole while drilling the bore hole into subterranean formations which include water, a weighting agent and a fluid-loss controller, the improvement which comprises that said fluid loss controlling agent is the product made by the process comprising

- (a) adding to a rotating continuous reactor to form a mixture
  - (i) solid particles of polyvinyl alcohol,
  - (ii) an aldehyde, and
  - (iii) an aqueous salt solution adjusted to have an acidic pH;
- (b) mixing the mixture of step (a) in the reactor until a polyvinyl alcohol-aldehyde reaction product is obtained; and
- (c) drying the polyvinyl-aldehyde material, said product being present in said fluid in from about 0.1 to 15 percent by weight based on the weight of the water present in said fluid and said fluid is maintained at a pH of from 8 to 12.

4,618,435

ORGANIC TITANIUM COMPOSITIONS FOR USE IN OIL AND GAS WELLS

Donald E. Putzig, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 540,721, Oct. 11, 1983, abandoned. This application Jan. 27, 1986, Ser. No. 823,122

Int. Cl.⁴ C09K *7/02*

U.S. Cl. 252—8.551 **11 Claims**

1. A composition comprising a dry, water soluble, solid mixture of

- (a) the reaction product of a titanate represented by the formula

  $(R^1O)_4Ti$

  with (i) an amino alcohol represented by the formula

  $H_gN(R^2OH)_k$

  at a titanate:amino alcohol mol ratio of about 1:1, or (ii) an amino alcohol represented by the formula

  $R^3[N(R^4OH)_mR_n^5]_2$

  at a titanate:amino alcohol mol ratio in the range between about 1:1 and about 2:1, and
- (b) an additive, in an amount sufficient to enhance the uniform crosslinking capacity of said reaction product, which additive is a monosaccharide, a disaccharide, or a polyhydric alcohol which can be obtained by reduction of a monosaccharide,

wherein

R^1 is alkyl containing 1–6 carbon atoms;

each of R^2, R^3 and R^4 is alkylene containing 1–6 carbon atoms;

R^5 is H or alkyl containing 1–6 carbon atoms;

k is 1–3 and g plus k equals 3; and

m is 1 or 2 and m plus n equals 2.

4,618,436

MULTIFUNCTIONAL LUBRICANT ADDITIVES AND COMPOSITIONS THEREOF

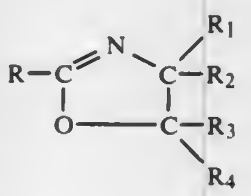
Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 1, 1985, Ser. No. 750,197

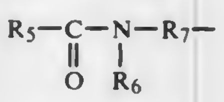
Int. Cl.⁴ C10M *129/00, 137/00, 139/00*

U.S. Cl. 252—325 **27 Claims**

1. A composition comprising a major proportion of an oil of lubricating viscosity or grease prepared therefrom and a minor antiwear or friction reducing proportion of a borated oxazoline derived internal acid phosphate prepared by reacting a hydroxyalkyl hydrocarbyl oxazoline having the following generalized structure with phosphorus pentoxide

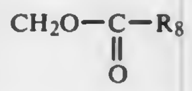


wherein R is from about C_8 to about C_{30} hydrocarbyl or



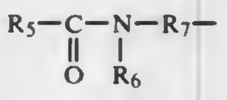
$$R_5-\underset{\underset{O}{\|}}{C}-\underset{\underset{R_6}{|}}{N}-R_7-$$

or mixtures thereof and at least one of R_1, R_2, R_3 or R_4 is hydroxyalkyl having from 1 to about 6 carbon atoms and the remaining R_1, R_2, R_3 and R_4 are independently selected from the group consisting of C_1 to about C_{30} hydrocarbyl, C_1 to about C_6 hydroxyalkyl, hydrogen or



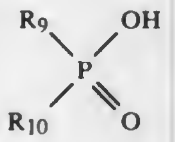
$$CH_2O-\underset{\underset{O}{\|}}{C}-R_8$$

where R_8 is hydrogen or C_1 to about C_{30} hydrocarbyl, or



$$R_5-\underset{\underset{O}{\|}}{C}-\underset{\underset{R_6}{|}}{N}-R_7-$$

or mixtures thereof and wherein R_5 is from about C_8 to about C_{30} hydrocarbyl, R_6 is from about C_1 to about C_6 hydrocarbyl and R_7 is from about C_1 to about C_3 hydrocarbylene, obtaining the corresponding oxazoline-derived internal acid phosphate having the generalized structure



wherein at least one of R_9 and R_{10} has an oxazoline moiety as described herein and the other R_9 or R_{10} is hydroxyl or C_2 to about C_8 hydrocarbyl, and thereafter borating said oxazoline acid phosphate with a suitable borating agent.

4,618,437

MULTIFUNCTIONAL FRICTION-MODIFYING ADDITIVES AND COMPOSITIONS THEREOF

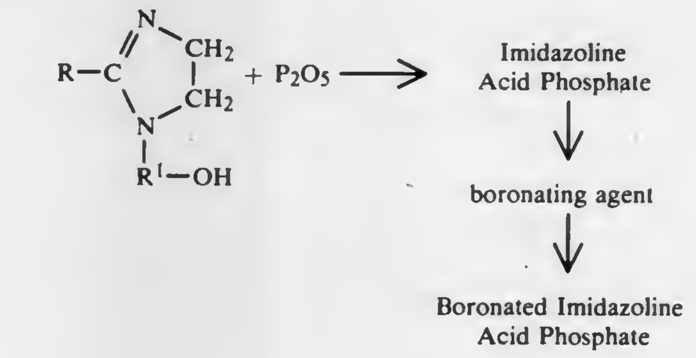
Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Company, New York, N.Y.

Filed Jul. 1, 1985, Ser. No. 750,195

Int. Cl.⁴ C10M *129/00, 137/00, 139/00*

U.S. Cl. 252—32.5 **25 Claims**

1. A composition comprising a major proportion of an oil of lubricating viscosity or grease prepared therefrom and a minor friction reducing or antiwear proportion of a boronated imidazoline derived internal acid phosphate prepared by reacting a hydrocarbyl imidazoline in the following generalized reaction with phosphorus pentoxide, followed by reaction with a boronating agent



where

R is about C_6 to about C_{30} hydrocarbyl or hydrocarbyl substituted with oxygen, sulfur and/or nitrogen and

R^1 is C_1 to about C_6 hydrocarbylene.

4,618,438

POLYMERIC THIADIAZOLE LUBRICANT ADDITIVE

Sameeh S. Toukan, Chester, and James P. King, Lansdale, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Apr. 3, 1985, Ser. No. 719,596

Int. Cl.⁴ C10M *1/38*

U.S. Cl. 252—47.5 **23 Claims**

1. An oil soluble lubricant additive composition comprising a reaction product of:

- (a) a polymer of 3,5-dimercapto-1,2,4-thiadiazole; and
- (b) a polyalkylene succinimide having an alkenyl group of about 50 to 100 carbon atoms.

4,618,439

MULTIFUNCTIONAL ADDITIVE FOR LUBRIFICATING OILS AND PROCESS FOR THE PREPARATION THEREOF

Gabriella Brandi, S. Donato Milanese; Paolo Koch, Melegnano; Stefano Maiorana; Piero Dalla Croce, both of Milan, and Clara Baldoli, Vimodrone, all of Italy, assignors to AGIP Petroli S.p.A. and Consiglio Nazionale Delle Ricerche, both of Rome, Italy

Filed Jun. 10, 1985, Ser. No. 742,735

Claims priority, application Italy, Jun. 15, 1984, 21428 A/84

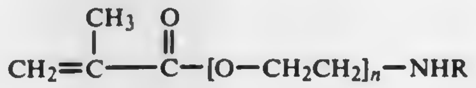
Int. Cl.⁴ C10M *145/14*

U.S. Cl. 252—47.5 **14 Claims**

1. Multifunctional additive for lubricating oils, constituted by a graft copolymer, with weight average molecular weight of from about 50,000 to about 600,000, consisting of a base copolymer and of an amount of grafted monomers of from 1 to 20 parts by weight per each 100 parts by weight of base copolymer:

said base copolymer being the product of the copolymerization of an alkyl metacrylate, containing from 1 to 4 carbon atoms in the alkyl radical, with an alkyl metacrylate containing from 10 to 18 carbon atoms in its alkyl radical, in such a ratio to each other that the average number of carbon atoms of the alkyl is of from 11 to 15,

said grafted monomers comprising at least a member selected from the class consisting of (a): N-vinylimidazoles, N-vinylpyrrolidones, vinylpyridines and N,N-dialkylaminoethyl-metacrylates; and at least a member selected from the class of compounds definable by means of the general formula (b):

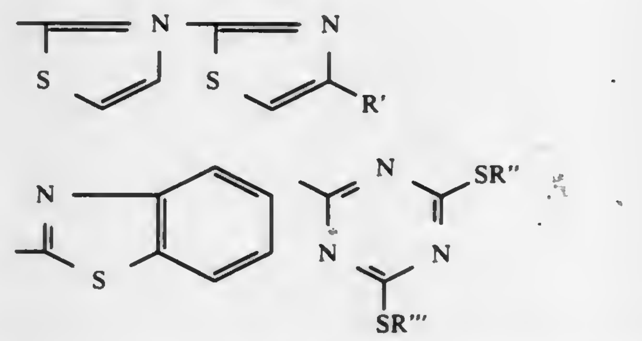


$$CH_2{=}\overset{\overset{CH_3}{|}}{C}-\overset{\overset{O}{\|}}{C}-[O-CH_2CH_2]_n-NHR$$

wherein:

n is 0 or 1;

R is a group selected from:



R', R" and R''' being alkyl groups containing from 1 to 18 carbon atoms.

4,618,440

SUBSTITUTED 4-HYDROXYBENZYLTHIO ALDEHYDE AND KETONE STABILIZERS

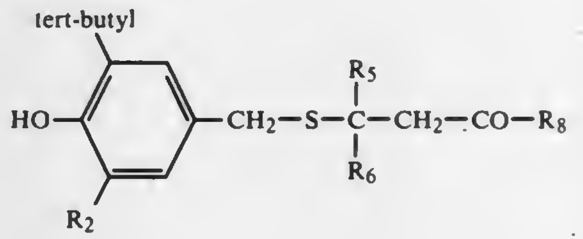
David H. Steinberg, New York; John J. Luzzi, Carmel, and Frank P. Cortolano, Valhalla, all of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 743,224, Jun. 10, 1985, abandoned, which is a continuation of Ser. No. 544,297, Oct. 21, 1983, abandoned. This application Jan. 2, 1986, Ser. No. 815,772

Int. Cl.⁴ C07C *149/273;* **C08K** *5/37*

U.S. Cl. 252—48.2 **10 Claims**

1. A compound of the formula



Wherein

R_2 is methyl or tert-butyl,

R_5 is hydrogen or methyl,

R_6 is hydrogen, alkyl of 1 to 3 carbon atoms or phenyl, and

R_8 is hydrogen or methyl.

10. A composition of matter comprising a lubricating oil subject to oxidative, thermal and actinic degradation stabilized with an effective stabilizing amount of a compound of claim 1.

4,618,441

METALWORKING WITH A LUBRICANT COMPOSITION COMPRISING MINERAL OIL AND ALKOXYALKYL ESTER

Mei-Yuan Tsai, Murrysville, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 23, 1984, Ser. No. 674,287

Int. Cl.⁴ C10M *173/00, 129/70*

U.S. Cl. 252—49.5 **20 Claims**

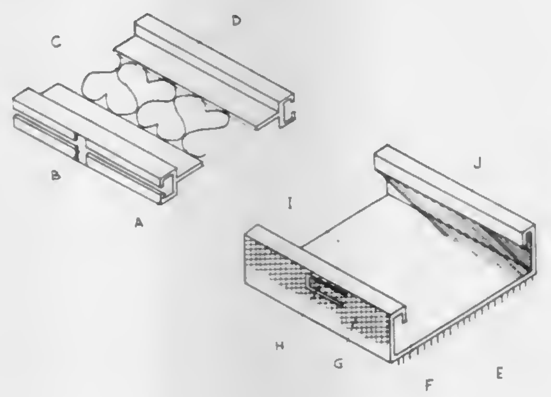
1. A method of metalworking comprising the steps of

- (a) applying to a metal object a lubricant composition comprising
  - (1) about 50–95 wt % mineral oil, and
  - (2) about 5–50 wt of an alkoxyalkyl ester having the formula $R_2\,COO(CH_2CH_2O)_nR_1$ wherein $n=1$ or 2, R_1 is a C_1 to C_8 alkyl group and R_2 is a C_7 to C_{19} alkyl or alkenyl group, and
- (b) performing a metalworking operation on the metal object.

4,618,442
PLANT CRYOPROTECTION
Robert J. Geary, and Robert J. Geary, III, both of 6655-53rd St., Vero Beach, Fla. 32960
Filed Oct. 7, 1985, Ser. No. 784,935
Int. Cl.⁴ C09K *3/18*
U.S. Cl. 252—70 **11 Claims**

1. A method of increasing the resistance of plants to damage by freezing conditions comprising applying to the plant surfaces at ambient non-freezing temperatures about 0.25 to about 9 days prior to exposure to such conditions an aqueous solution containing, approximately by weight and as an essential active cryoprotectant component, 0.1% to 2.5% of a water soluble nonionic surface active polyethoxylated polyoxypropylene block copolymer having a molecular weight of about 2,000 to about 7,000 and a molar ratio of propylene oxide:ethylene oxide of about 2.5:1 to about 0.7:1.

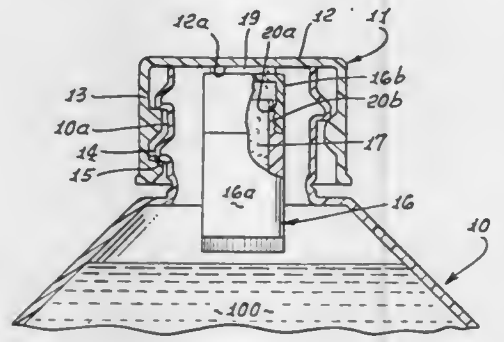
4,618,443
EASY GRIP EASY SCRUB SOAP BAR-SCRUB BRUSH COMBINATION
John L. Jude, 200 Edgewater Dr., Coral Gables, Fla. 33133
Filed Sep. 12, 1985, Ser. No. 775,375
Int. Cl.⁴ A47K *7/03;* **C11D** *17/04*
U.S. Cl. 252—92 **17 Claims**



1. A combination soap bar and scrub brush comprising:
(A) A soap bar having an insert providing channels on opposite surfaces of said bar for releasably engaging a scrubbing implement, said channels being connected to each other by means extending through the center of said bar and
(B) A scrubbing implement having means attached thereto for engaging with the channels of the soap bar insert, said scrubbing implement being capable of being removed from the channels and reinserted in inverted position so as to permit utilization of substantially the entire soap bar, said scrubbing implement being releasably engaged with the channels of said insert.

4,618,444
HOUSEHOLD LAUNDRY DETERGENT WITH DUAL STRENGTH BLEACH
John O. Hudson, Garden Grove; Mickey M. Schleien, Culver City, and John Barrett, La Mirada, all of Calif., assignors to Purex Corporation, Lakewood, Calif.
Filed Sep. 17, 1984, Ser. No. 651,579
Int. Cl.⁴ C11D *17/00;* **B08D** *3/00*
U.S. Cl. 252—92 **29 Claims**

1. A laundry aid package comprising, in combination:
(a) a first openable container containing a bleach base that includes a peroxygen bleaching agent for use in home laundering of fabrics, and a first halide salt or salts,
(b) a dispensing container containing a bleach activator composition including a second halide salt or salts and forming a fitment,
(c) the fitment carried by the first container to be readily detachable at least in part for dispensing the activator composition to controllably activate the bleach forming hypohalites at the time of fabric laundering.
(d) the first container being a bottle having a removable cap, the bottle having a neck and the cap having a top wall and a depending skirt that extends in interfitting threaded relation with said neck, and the fitment being retained by said cap top wall,



(e) the fitment dispensing container cap being presented at the exterior side of the cap top wall for removal to gain access to the dispensing container contents irrespective of whether the bottle cap is on the bottle neck or removed therefrom,
(f) the major portion of said dispensing container and the major portion of the contents thereof being located below the top level of said bottle neck, and extending within said neck but spaced inwardly from the neck.

4,618,445
PEROXIDE BLEACH AND COMPOSITIONS COMPRISING SAID BLEACH
Gulzari L. Madan, Andheri, and Bookinkere C. S. Rao, Mysore, both of India, assignors to Lever Brothers Company, New York, N.Y.
Filed May 21, 1984, Ser. No. 612,504
Claims priority, application United Kingdom, May 20, 1983, 8313941
Int. Cl.⁴ C11D *7/18, 7/56*
U.S. Cl. 252—99 **5 Claims**

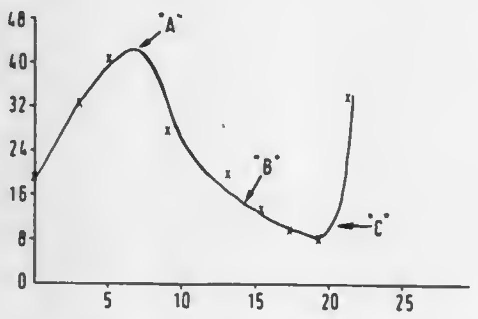
1. A peroxide bleach comprising an adduct which is a mixed crystal having the formula:

$$4Na_2SO_4.2H_2O_2.NaCl\ (xM_2O.yP_2O_5)_n,$$

wherein M is alkalimetal; x is a number from 1 to 3; y is a number from 0.5 to 2; and n is from 0.1 to 1.

4,618,446
SPHERULITIC LIQUID DETERGENT COMPOSITION
William P. Haslop, Cleator Moor; John M. Allonby; Brian J. Akred, both of Whitehaven, and Edward T. Messenger, Workington, all of England, assignors to Albright & Wilson Limited, Oldbury, England
Continuation-in-part of Ser. No. 576,632, Feb. 3, 1984. This application Dec. 21, 1984, Ser. No. 684,802
Claims priority, application United Kingdom, Dec. 22, 1983, 8334250; Jun. 20, 1984, 8415783; Aug. 28, 1984, 8421759
Int. Cl.⁴ C11D *3/14, 3/065, 3/08, 1/18*
U.S. Cl. 252—135 **20 Claims**

1. A Stable, Pourable, fluid, detergent composition consisting essentially of water, about 5% to about 30%, by weight, Active Ingredients and sufficient Electrolyte to form with at least part of said Active Ingredients a space filling floc of Spherulites.



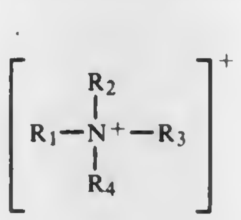
4,618,447
SURFACTANT-BASED SOLVENT SYSTEM FOR DEWATERING DIFFERENT SUBSTRATES
Stanley S. Seelig, Williamsville, N.Y., assignor to Allied Corporation, Morris Township, Morris County, N.J.
Continuation-in-part of Ser. No. 674,394, Nov. 23, 1984, abandoned. This application Oct. 29, 1985, Ser. No. 791,147
Int. Cl.⁴ C11D *1/34, 1/62*
U.S. Cl. 252—139 **37 Claims**

1. A quaternary ammonium salt of a phosphate acid ester of the formula:

$$[A^+]\cdot[B^-]$$

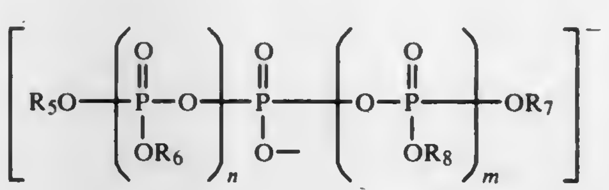
wherein:

A^+ is a moiety of the formula:



$$\left[R_1{-}\overset{\displaystyle R_2}{\underset{\displaystyle R_4}{N^+}}{-}R_3 \right]^+$$

B^- is a moiety of the formula:



$$\left[R_5O{-}\left(\overset{\displaystyle O}{\underset{\displaystyle OR_6}{\overset{\|}{\underset{|}{P}}}}{-}O\right)_n{-}\overset{\displaystyle O}{\underset{\displaystyle O-}{\overset{\|}{\underset{|}{P}}}}{-}\left(O{-}\overset{\displaystyle O}{\underset{\displaystyle OR_8}{\overset{\|}{\underset{|}{P}}}}\right)_m{-}OR_7 \right]^-$$

n and m are integers from 0 to about 10 provided that n+m is not greater than 10 and further provided that n+m is equal to or greater than 1 when R_5, R_6, R_7 and R_8 are other than aryl, aralkyl or alkylaryl;
R_1 is alkyl having from about 1 to about 2 carbon atoms;
R_2 is alkyl having from about 8 to about 18 carbon atoms;
R_3 is R_1 or R_2;
R_4 is R_1, R_2, aryl, aralkyl or alkaryl and R_5, R_6, R_7 and R_8 are the same or different at each occurrence and are hydrogen alkyl having from about 8 to about 18 carbon atoms, aryl, aralkyl or alkylaryl; with the proviso that at least one of R_4, R_5, R_6, R_7 and R_8 are aryl, aralkyl or alkaryl when n+m is 0, and with the further proviso that at least one of R_5, R_6, R_7 and R_8 other than hydrogen.

4,618,448
CARBOXYLIC/SULFONIC/POLYALKYLENE OXIDE POLYMER FOR USE AS SCALE, CORROSION, AND IRON OXIDE DEPOSIT CONTROL
Charles Y. Cha, McMurray; Richard G. Varsanik, and Shih-Ruey T. Chen, both of Coraopolis, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 669,903, Nov. 9, 1984, abandoned. This application Sep. 4, 1985, Ser. No. 772,496
Int. Cl.⁴ C02F *5/10*
U.S. Cl. 252—180 **9 Claims**

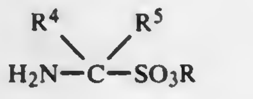
1. A process for inhibiting corrosion and the formation and deposition of scale and iron oxide in an aqueous system, comprising adding to said system at least 0.1 ppm of a water soluble polymer having an intrinsic viscosity of 0.05 to 2.5 dl/g, prepared from:
(a) 35 to 90%, by weight, of an unsaturated carboxylic acid, or its salt;
(b) 5 to 40%, by weight, of an unsaturated sulfonic acid, or its salt; and
(c) 5 to 40%, by weight, of an unsaturated, polyalkylene oxide compound, the total of (a), (b), and (c) being 100% by weight of the polymer.

4,618,449
METHOD FOR THE TERMINATION OF LIVING POLYMERS, AND COMPOUNDS SUITABLE FOR THE PURPOSE
Arnaldo Roggero, and Mario Bruzzone, both of Milan, Italy, assignors to Enichem Polimeri, S.p.A., Sassari, Italy
Filed Apr. 19, 1984, Ser. No. 602,213
Claims priority, application Italy, May 3, 1983, 20904 A/83
Int. Cl.⁴ C07D *213/06;* **C08F** *2/38*
U.S. Cl. 252—182 **1 Claim**

1. A coupling agent for living macroanions comprising a mixture of 2,6-distyrylpyridine and 2,4,6-tristyrylpyridine.

4,618,450
AQUEOUS SYSTEMS CONTAINING AMINO SULFONIC ACID DERIVATIVES OF CARBOXYLIC ACIDS
William A. Higgins, Gates Mills, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
Filed Nov. 7, 1984, Ser. No. 669,173
Int. Cl.⁴ B01F *17/24;* **B01J** *13/00*
U.S. Cl. 252—355 **8 Claims**

1. An aqueous system comprising:
at least about 70% by weight of water based on the weight of the aqueous system; and
about 3% to about 6% by weight based on the weight of the aqueous system of an imido hydrocarbyl sulfonic acid or salt thereof obtained by reacting a hydrocarbyl substituted succinic acid or anhydride with an amino hydrocarbyl sulfonic acid or salt thereof having the formula



$$H_2N{-}\overset{R^4\ \ \ R^5}{\overset{\diagdown\ \diagup}{C}}{-}SO_3R$$

wherein R^4 and R^5 are each independently hydrogen, alkyl or aromatic and R is hydrogen or a cation.

4,618,451
SYNTHESIS GAS
Colin W. Gent, Yarm, England, assignor to Imperial Chemical Industries PLC, London, England
Filed Mar. 27, 1984, Ser. No. 594,014
Claims priority, application United Kingdom, Apr. 6, 1983, 8309359
Int. Cl.⁴ C01B *3/38*
U.S. Cl. 252—373 **5 Claims**

1. In a continuous process of producing a gas stream comprising hydrogen and carbon oxides having a ratio R in the range 1.5 to 2.22 where R is defined as

$$R = \frac{H_2 - CO_2}{CO + CO_2}$$

where H_2, CO, and CO_2 represent the number of moles of these gases in said gas stream, by the steps of

(a) reacting a normally gaseous hydrocarbon feedstock with oxygen, the proportion of oxygen being less than sufficient for complete combustion, but sufficient to avoid substantial by-product carbon formation, whereby a hot gas stream at a temperature in the range 1093°-1260° C. is produced;

(b) mixing a further amount of said normally gaseous hydrocarbon into said hot gas stream;

(c) reacting the whole of the resulting gas mixture adiabatically over a steam reforming catalyst comprising a Group VIII metal on a heat resistant support, whereby to increase the ratio R from that of said hot gas and to decrease the temperature of the gas mixture to give a product gas at a temperature in the range 750°-950° C. and at a pressure in the range 5 to 50 bar abs.;

the improvement whereby a compressed gas stream that is suitable for methanol synthesis at a pressure in the range 20 to 120 bar abs. is provided by

(i) in step (b) adding steam as well as said further hydrocarbon to said hot gas stream whereby the product gas produced in step (c) contains unreacted steam;

(ii) cooling the product gas produced in step (c) by expansion in a turbine;

(iii) cooling the expanded gas produced in step (ii) further and separating water, but not carbon dioxide, therefrom; and

(iv) compressing the resultant water-depleted gas to said methanol synthesis pressure in a compressor powered by said turbine.

4,618,452
SPOT TEST FOR 1,3,5-TRIAMINO-2,4,6-TRINITROBENZENE, TATB

Betty W. Harris, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 29, 1984, Ser. No. 676,149

Int. Cl.⁴ G01N *31/00, 33/00*

U.S. Cl. 252—408.1 **11 Claims**

1. A method for the identification of materials containing 1,3,5-triamino-2,4,6-trinitrobenzene, said method comprising the steps of:

a. rinsing the material thoroughly with a solvent in order to remove significant concentrations of explosive substances present in the materials under investigation in which the 1,3,5-triamino-2,4,6-trinitrobenzene is substantially insoluble;

b. forming a homogeneous suspension of a liquid which comprises between 5 and 20 weight percent of a water-soluble strong base, between 5 and 20 weight percent of water and the remainder a solvent for 1,3,5-triamino-2,4,6-trinitrobenzene, the solvent for 1,3,5-triamino-2,4,6-trinitrobenzene having a slight solubility for the water with the water-soluble strong base dissolved therein;

c. contacting said thoroughly rinsed material with said homogeneous suspension; and

d. observing the color of the liquid resulting therefrom, whereby a bright orange color results if 1,3,5-triamino-2,4,6-trinitrobenzene is present in the material.

4,618,453
CONDUCTIVE HETEROCYCLIC LADDER POLYMERS

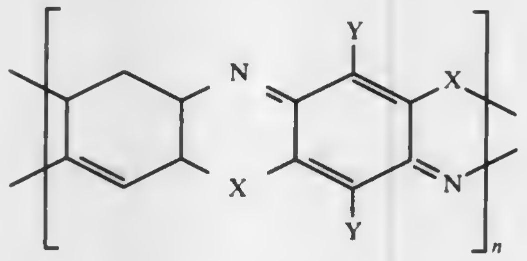
Oh-Kil Kim, Burke, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 30, 1985, Ser. No. 739,354

Int. Cl.⁴ C08G *8/02;* H01B *1/00*

U.S. Cl. 252—500 **14 Claims**

1. A polymer of the formula:



wherein X is a chalcogen;
wherein Y is hydrogen or halogen; and n is the number of repeating units of said polymer.

4,618,454
CONDUCTING POLYMERS

Denis G. H. Ballard, Littleton; Kenneth T. Moran, Runcorn, and Ian M. Shirley, Weaverham, all of England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 597,389, Apr. 6, 1984, Pat. No. 4,548,737. This application Jul. 5, 1985, Ser. No. 751,873

Claims priority, application United Kingdom, Apr. 6, 1983, 8309362

Int. Cl.⁴ A01B *1/00*

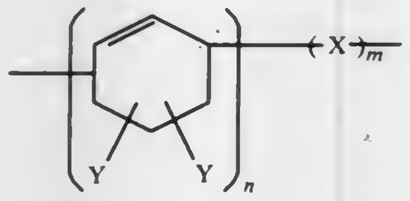
U.S. Cl. 252—500 **5 Claims**

1. A process for the preparation of an electrically conducting composition which process comprises:

(A) the steps of doping a poly(1,2-disubstitutedcyclohexa-3,5-diene) with a suitable doping agent and then converting the said polycyclohexadiene into a polyarylene; or

(B) the steps of converting a poly(1,2-disubstituted-cyclohexa-3,5-diene) into a polyarylene and then doping the polyarylene with a suitable doping agent wherein

(C) the said polycyclohexadiene has the structure



wherein
the cyclohexenylene ring and X, where X is present, may vary from unit to unit in the polymer chain,
each Y, which may be the same or different, is amide, halide, thioester, urethane, xanthate or OR' where each R' is hydrogen, hydrocarbyl, aroyl, alkanoyl or R^2OCO where R^2 is aryl or an alkyl group having up to 10 carbon atoms,
X is a residue of one or more polymerisable comonomers selected from the group consisting of styrene, methacrylates, vinyl halides, vinyl esters, acrylonitrile, tetrafluoroethylene and sulphur dioxide,
n and m are whole numbers and the ratio of n:m lies in the range 1:0 to 1:100;

(D) the said suitable doping agent is selected from the group consisting of Group IA metals, Group IA metal arenes, Bronsted acids, non-metal oxides, Group VB sulphides and halides of Groups VB, VIA, IB, IIB, IVB and the inert gases;

(E) wherein the concentration of doping agent in the electrically conducting composition is from about 10^{-5} to 0.5 mole per mole of arylene unit in the polyarylene.

4,618,455
PROCESS FOR PREPARING CRYSTALLINE SALTS OF ACETOACETAMIDE-N-SULFOFLUORIDE

Adolf Linkies, Frankfurt am Main, and Dieter Reuschling, Butzbach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 19, 1985, Ser. No. 713,466

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1984, 3410233

Int. Cl.⁴ C07C *143/70*

U.S. Cl. 260—543 F **7 Claims**

1. A process for preparing crystalline salts of acetoacetamide-N-sulfofluoride by reacting amidosulfofluoride H_2NSO_2F with diketene in the presence of bases in an inert organic solvent, wherein the bases used are inorganic bases.

4,618,456
ETHYNYLATION OF 16-METHYL-17-KETO STEROIDS

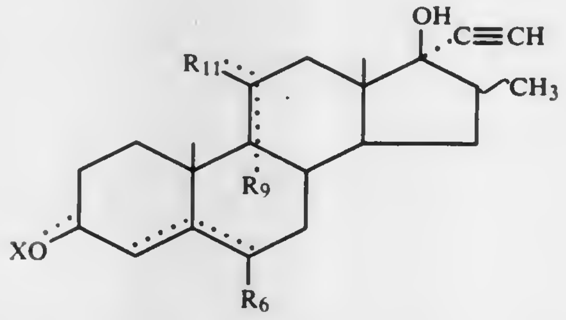
Joseph M. Timko, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 591,631, Mar. 20, 1984, abandoned. This application Apr. 26, 1984, Ser. No. 604,091

Int. Cl.⁴ C07J *1/00*

U.S. Cl. 260—397.4 **23 Claims**

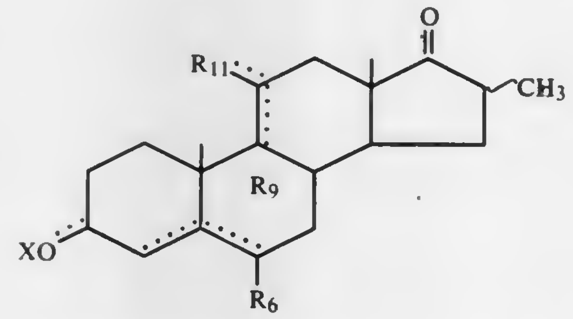
1. A process for the preparation of a C_3 protected form of a 17α-ethynyl-17β-hydroxy-16-methyl steroid of the formula



(IIA,C)

with less than 2% epimerization which comprises

(1) contacting a C_3 protected form of a 17-keto-16-methyl steroid of the formula



(IA,C)

with monolithium acetylide in a dry solvent at a temperature of about −10° or less in the absence of ethylene diamine

(2) maintaining the reaction temperature at about −10° or less and

(3) quenching with a quenching agent where

R_6 is a hydrogen or fluorine atom, methyl or methylene group; when R_6 is methylene, there is no 5–6 double bond in formula (A) or in formula (C);

R_9 is nothing, a hydrogen, fluorine or oxygen atom which makes the C-ring

(a) $\Delta^9(11)$ when R_9 is nothing and

(b) 9β,11β-epoxide when R_9 is an oxygen atom and $\underline{\cdots}$ between C_{11} and R_{11} is a single bond, and

(c) a ketone when R_{11} is an oxygen atom and $\underline{\cdots}$ between C_{11} and R_{11} is a double bond;

X is a hydrogen atom or nothing, when X is nothing, the $\underline{\cdots}$ at C_3 is a double bond, when X is a hydrogen atom the $\underline{\cdots}$ at C_3 is a single bond;

is a single or double bond; and

~ indicates that the attached atom or group can be in either the α or β configuration.

4,618,457
SULFONATED POLYOXYALKYLENE ETHERS OF 1,2 OR 1,3-DIOLS, THEIR PREPARATION AND USE

Eberhard Esselborn, Essen, and Jürgen Fock, Duesseldorf, both of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Mar. 1, 1985, Ser. No. 707,056

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1984, 3407563

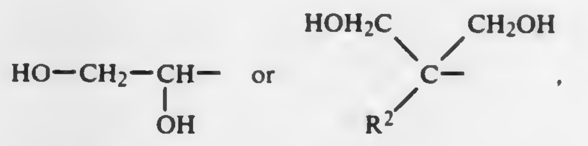
Int. Cl.⁴ C07C *139/00, 143/02;* C08K *5/05*

U.S. Cl. 260—504 R **1 Claim**

1. Compounds having the formula

$$R^1CH_2O—(C_2H_4O—)_n(C_3H_6O—)_mCH_2CHR^3CH_2—SO_3X$$

in which
R^1 is



$$HO—CH_2—CH(OH)— \quad \text{or} \quad (HOH_2C)(HOH_2C)(R^2)C—,$$

R2 is CH_3—, C_2H_5—, or C_3H_7—,
R^3 is H— or CH_3—,
X is H—, alkali metal or ammonium ion,
n is 0 to 100,
m is 0 to 50, and
n+m is not less than 1.

4,618,458
SULPHONIC ACIDS AND SULPHONATES

Marcel Prillieux, Mont-Saint-Aignan; Robert M. Laurent, Bois Guillaume, and Robert Tirtiaux, Mont-Saint-Aignan, all of France, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 973,032, Dec. 26, 1978, abandoned. This application Nov. 3, 1980, Ser. No. 203,169

Claims priority, application United Kingdom, Dec. 23, 1977, 53638/77

Int. Cl.⁴ C07C *143/24*

U.S. Cl. 260—505 P **6 Claims**

1. In an oleum sulfonation process wherein an alkaryl alkylate, having alkyl groups of 20 to 30 carbon atoms and an aryl group selected from the group consisting of benzene, toluene and xylene, is treated with oleum to form a sulfonated product, settling said sulfonated product to separate impurities and sulfuric acid to thereby give a crude alkaryl sulfonic acid containing more than 3 wt. % sulfuric acid, the improvement which comprises washing said crude alkaryl sulphonic acid, to reduce the sulfuric acid content to no more than 3 wt. % sulfuric acid, with from 1% to 30% by weight, based on the weight of the alkylate from which the sulphonic acid is derived, of water, allowing the resulting mixture to separate and removing the aqueous layer; adding 2 to 10% by weight based on the weight of the alkylate from which the sulphonic acid is derived of a liquid oil soluble monoolefin of 9 to 30 carbon atoms and subsequently heating the sulphonic acid containing the olefin to a temperature in the range of about 100° C. to about 150° C. for at least 15 minutes to about one hour, and recovering a purified sulfonic acid containing less than 0.5 wt. % sulfuric acid.

4,618,459

SUBSTITUTED 2,4-DIALKOXY BENZENE SULFONYL CHLORIDES

Jean-Paul Fournier, Versailles, and Patrick Choay, Paris, both of France, assignors to Choay S.A., Paris, France

Continuation of Ser. No. 371,451, Apr. 23, 1982. This application Dec. 30, 1983, Ser. No. 567,161

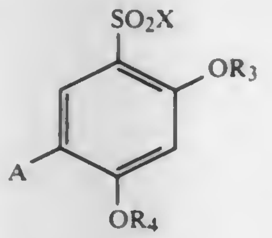
Claims priority, application France, Apr. 23, 1981, 81 08126

The portion of the term of this patent subsequent to Jul. 3, 2001, has been disclaimed.

Int. Cl.⁴ C07C *143/70, 147/06*

U.S. Cl. 260—543 R **10 Claims**

1. A sulfohalide of the formula:



wherein:

X is chlorine or bromine;

R_3 and R_4 is alkyl from 1 to 4 carbon atoms;

A is Cl, Br, CF_3, NO_2 or alkyl sulfonyl having from 1 to 4 carbons;

provided that when X is Cl and R_3 and R_4 both are CH_3, A is different from Cl.

4,618,460

PROCESS FOR THE PREPARATION OF ACETIC ANHYDRIDE

Jean Gauthier-Lafaye, Lyons, and Robert Perron, Charly, both of France, assignors to Rhone-Poulenc Industries, Courbevoie, France

Continuation of Ser. No. 331,809, Dec. 17, 1981, abandoned. This application Mar. 7, 1984, Ser. No. 585,625

Claims priority, application France, Dec. 24, 1980, 80 27942

Int. Cl.⁴ C07C *51/56*

U.S. Cl. 260—549 **26 Claims**

1. A process for the preparation of acetic anhydride which comprises carbonylating methyl acetate in the liquid phase, in a carboxylic acid which represents from about 10 to about 90% by volume of the reaction liquid, in the presence of an effective amount of nickel, methyl iodide, an ionic iodide, and a co-catalyst, the ionic iodide being selected from the group consisting of quaternary ammonium iodides, quaternary phosphonium iodides, sodium iodide, potassium iodide and cesium iodide when the co-catalyst is a lithium salt, and the ionic iodide being selected from the group consisting of sodium iodide, potassium iodide and cesium iodide when the co-catalyst is an alkaline earth metal salt, at a total pressure between about 25 and about 200 bars.

4,618,461

O,O'-, O,S'- OR S,S'-DITHIODIALKYLENE-BIS(MONO- OR DIHYDROCARBYL CARBAMOTHIOATES) AND S,S'-DITHIODIALKYLENE-BIS(MONO- OR DIHYDROCARBYL CARBAMODITHIOATES) AND METHOD OF PREPARATION THEREOF

Roger W. Bergman, and Harry A. Smith, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 25, 1983, Ser. No. 517,180

Int. Cl.⁴ C07C *155/02, 155/08*

U.S. Cl. 558—234 **22 Claims**

1. O,O'-, O,S'- or S,S'-dithiodialkylene-bis(mono- or dihydrocarbyl carbamothioates) and S,S'-dithiodialkylene-bis(-mono- or dihydrocarbyl carbamodithioates).

4,618,462

HUMIDIFIER WITH CONTROLLED HEAT INPUT

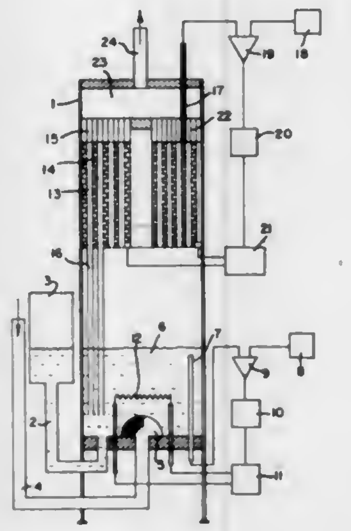
Robert S. Fisher, 2 Haite Close, West Pymble, New South Wales, 2073, Australia

Filed Oct. 17, 1984, Ser. No. 663,073

Claims priority, application Australia, Oct. 24, 1983, PG2001

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—130 **8 Claims**



1. A humidifier for evaporating a liquid into a gas comprising:

a bubble humidifier including a gas inlet and a bubble chamber containing said liquid and connected in gas flow communication with said gas inlet;

a labyrinth extended surface humidifier positioned in spaced relation above said liquid connected in gas flow communication with said bubble chamber and an extend surface element located throughout said surface humidifier;

a series of capillary action water transmitting means connecting said liquid in said bubble chamber and said surface element in said surface humidifier;

a first heat generating means for heating the liquid in said bubble chamber; and

a first temperature control means responsive to temperature within the bubble chamber for controlling the operation of said first heat generating means.

4,618,463

PROCESS FOR PRODUCING PITCH CARBON FIBERS

Seiichi Uemura, Tokyo; Takao Hirose, Kamakura; Yoshio Shohda, Kawasaki; Takayoshi Sakamoto, Hiratsuka, and Kenji Katoh, Kawasaki, all of Japan, assignors to Nippon Oil Company, Japan

Filed Dec. 18, 1984, Ser. No. 682,679

Claims priority, application Japan, Dec. 20, 1983, 58-238836

Int. Cl.⁴ D01F *9/22, 9/12*

U.S. Cl. 264—29.2 **4 Claims**

1. In a process for producing pitch carbon fibers by subjecting pitch fibers obtained by melt-spinning a carbonaceous pitch to infusiblization treatment and then to carbonization treatment or both carbonization treatment and subsequent graphitization treatment, the improvement comprises applying a dimethyl polysiloxane having a viscosity at 25° C. in the range of 12,000 to 1,000,000 cSt to the fibers after the infusiblization treatment, and subjecting the infusiblized fibers with the dimethyl polysiloxane applied thereto to the carbonization treatment or both the carbonization treatment and the subsequent graphitization treatment.

4,618,464

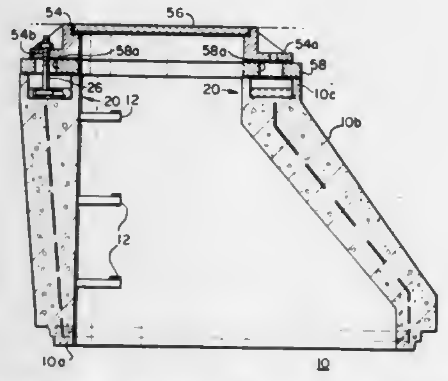
PRECAST CONCRETE MANHOLE ADJUSTABLE BOLT SLOT FOR SECURING CAST IRON FRAME AND COVER AND METHOD FOR CASTING SAME

Jack Ditcher, Langhorne, Pa., assignor to A-Lok Products, Incorporated, Tullytown, Pa.

Filed Jul. 19, 1984, Ser. No. 632,392

Int. Cl.⁴ B28B *5/00, 7/00*

U.S. Cl. 264—35 **13 Claims**



1. Molding apparatus for providing an elongated bolt slot in a manhole top section for accomodating manhole cover frames of varying diameter said molding apparatus including:

a mold assembly comprising inner and outer mold members which collectively form a hollow interior region defining the shape of the manhole top section;

channel forming lugs being arranged at spaced intervals about the top end of said mold members and providing receiving channels for a retaining slide member having a main body portion whose long sides are received by the aforesaid channels and being provided with first and second elongated flange receiving channels arranged along the long sides of said member with the open ends of said channels facing one another;

the channels of said retaining slide members slideably receiving the flanges of an insert comprising a hollow, elongated fully enclosed member having an interior of substantially T-shaped cross-section transverse to its length;

said flanges of said insert being a pair of outwardly directed flanges arranged along the long sides of said elongated insert for slideable insertion into the flange receiving channels of said retaining slide member for holding the insert in position within the hollow interior of said mold assembly during the casting of said manhole top section;

said slideable member being slideably removed from said channel forming lugs to release said insert flanges from said flange receiving channels after the top section has been cast and cured.

7. A method for producing manhold top sections to facilitate the threaded fastening of a cover frame thereto comprising the steps of:

providing a mold assembly having a hollow interior defining the shape of the manhole top section to be cast;

providing an elongated insert having a hollow interior of a substantially T-shaped cross-sectional configuration which cross sectional configuration is substantially uniform over the length of said insert;

said mold assembly having channel forming members along the top end thereof;

slideably inserting a slidable insert positioning member into the channels of said channel forming members for supporting said slideable member along the top of said mold assembly and extending between said inner and outer mold members;

said slideable member having a pair of flange receiving channels for slideably receiving the flanges provided along the upper end of said insert;

holding an insert in the hollow interior region near the top of said mold assembly and adjacent said channel forming members;

sliding said slideable member into the channels formed by said channel forming member and so that the flanges of said insert are slideably received by the flange receiving channels of said slideable member;

pouring the cast material into said mold to fill said mold and engage the bottom and sides of said insert so as to retain said insert within the manhole top section when the cast material has cured.

4,618,465

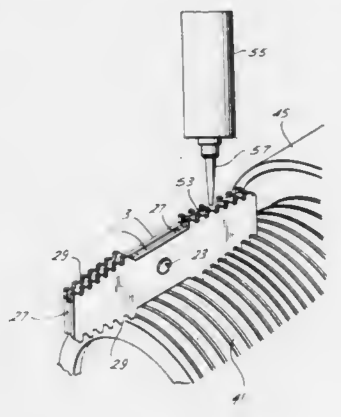
METHOD AND APPARATUS FOR FORMING A THREAD PROFILE IMPRESSION

Jimmy C. Parks, Houston, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Apr. 26, 1982, Ser. No. 371,394

Int. Cl.⁴ B29C *33/40*

U.S. Cl. 264—40.1 **5 Claims**



1. A method for determining whether a thread conforms with a norm in the laboratory without having to transport the thread itself thereto comprising:

placing two flat plates having serrated edges that are correlative to the same thread in side-by-side, parallel and spaced apart position, thereby forming a gap therebetween;

securing the two plates in such side-by-side, parallel and spaced apart position;

positioning the two flat plates across the thread in such a manner that the serrations of the serrated edges are in mating engagement with the roots and the crests of the thread;

caulking the junctures of the serrated edges of the blades and the thread;

filling the gap with a self-curing plastic material;

packing the self-curing plastic material into the gap;

allowing the plastic material to harden to form a cast of the thread profile;

removing the cast from the gap;

sending the cast to the laboratory for inspection; and

inspecting the cast of the thread profile for conformance with a norm.

2. An apparatus adapted to fit on the surface of a thread and to form a mold therewith for making a cast showing a profile of the thread comprising:

a first flat plate having a serrated portion with serrations correlative to the profile of the thread;

a second flat plate having a serrated portion with serrations also correlative to the profile of the same thread; and

positioning means positioning said first and said second plates in side-by-side, parallel and spaced apart position, thereby forming a gap therebetween.

4,618,466
MOULDING APPARATUS

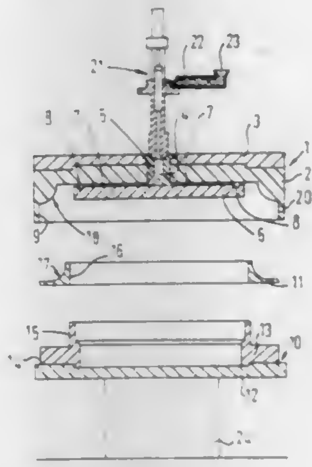
James N. McGlashen, Winstanley, and Colin Holroyd, Southport, both of England, assignors to Apsley Metals Limited, England

Filed Sep. 27, 1983, Ser. No. 536,400

Claims priority, application United Kingdom, Oct. 21, 1982, 8230139

Int. Cl.⁴ B29C *45/14, 45/78, 45/80*

U.S. Cl. 264—40.6 **7 Claims**



1. Moulding apparatus for moulding a component of unvulcanized elastomeric material, comprising in operable combination:

(a) first and second mould members defining a moulding cavity, the two members being slidably movable relative to each other to change the volume of the cavity from a first, larger value to a second, smaller value;

(b) a feed port formed in the first mould member through which elastomeric material to be moulded is fed to fill the cavity having the first, larger value of volume;

(c) means to relatively move the members to change the volume of the cavity to the second, smaller value, thereby pushing some material back into the feed port, the material remaining in the cavity becoming the moulded component; and

(d) a detachable component carrying insert positionable within the moulding cavity and carried by the second moulding member and positioned to be contacted by elastomeric material admitted into the moulding cavity from the feed port by means of which insert the moulded component of unvulcanized elastomeric material, while attached to the insert, may be removed from the cavity when the first and second mould members are separated.

4,618,467
METHOD FOR SEALING CAVITIES

Hans-Joachim Burger, Kummersbruck, and Hubert Schuster, Oberleinsiedl, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Nov. 29, 1984, Ser. No. 676,181

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1983, 3343534

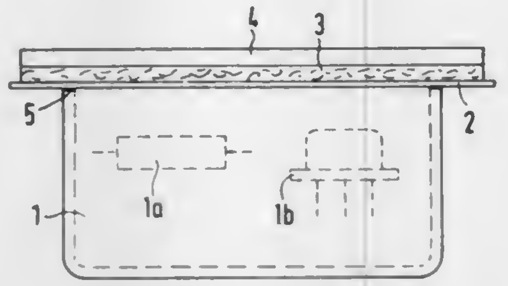
Int. Cl.⁴ B29C *39/10, 67/22;* **C08G** *18/14*

U.S. Cl. 264—46.6 **18 Claims**

1. A method for sealing cavities having one open side and adapted to receive electrical or electronic components therein, comprising the steps of:

disposing a measured quantity of encapsulant into the cavity:

placing a layer of a releasable permeable absorbent synthetic resin fabric across said open side and overlapping the edge thereof:



allowing the encapsulant to harden against said fabric; and

removing said fabric.

4,618,468
METHOD FOR CONTROLLING BEAD SIZE IN THE PRODUCTION OF EXPANDABLE STYRENE POLYMERS BY SUSPENSION POLYMERIZATION

Josef K. Rigler, Recklinghausen, and Horst Leithäuser, Marl, both of Fed. Rep. of Germany, assignors to Chemische Werke Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Aug. 27, 1984, Ser. No. 644,451

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1983, 3331570

Int. Cl.⁴ C08J *9/14, 9/20, 9/22;* **C08F** *2/20*

U.S. Cl. 264—53 **14 Claims**

1. In a process for the preparation of shaped bodies based on expanded styrene polymers comprising: the polymerization of styrene or a mixture thereof with at least one monomer copolymerizable therewith in an aqueous suspension having an aqueous phase and an organic phase containing said styrene, in the presence of an organic protective colloid and radical forming initiators and expanding agent, pre-foaming of the resulting expandable particles, aging of the foamed particles and molding thereof in a pressure-resistant mold, the improvement comprising:

(a) dissolving said organic protective colloid in said aqueous phase which has a K value of 15 to 100 and is homogeneously soluble therein in the range between 25° and 125° C. at a concentration of 0.01 to 0.3 part/100 parts of water;

(b) adding said organic phase containing said initiators to said aqueous phase;

(c) maintaining a boundary surface tension between said aqueous phase and said organic phase above 18 N/mm^2;

(d) varying the molecular weight of said organic protective colloid as indicated by said K value between 15 to 100;

(e) maintaining the ratio of said aqueous phase to said organic phase greater than 0.9:1; and

(f) polymerizing the mixture so prepared.

4,618,469
FLAME-RETARDANT ACRYLIC FIBERS AND PROCESS FOR PREPARING SAME

Takahiro Ogawa, Kobe; Masahiko Takada, Akashi; Takaharu Matsumoto, Takasago, and Youichi Kanbara, Kakogawa, all of Japan, assignors to Kanegafuchi Kaguku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 7, 1984, Ser. No. 607,476

Claims priority, application Japan, May 6, 1983, 58-79799; May 10, 1983, 58-82296

Int. Cl.⁴ C08K *3/16, 5/09, 3/30, 3/10*

U.S. Cl. 264—182 **16 Claims**

1. A flame-retardant acrylic fiber as defined in claim 1, wherein said fiber is prepared by the process comprising: (1) preparing a reaction mixture comprising acrylonitrile and a vinyl monomer copolymerizable therewith in an aqueous system, (2) carrying out polymerization, wherein a water-soluble tin compound is admixed with said reaction mixture prior to, during and/or after polymerization, (3) separating the resulting polymer and tin compound from the aqueous system, (4) purifying the separated mixture of polymer and tin compound, (5) mixing the resulting product with a solvent for the polymer and (6) spinning the resulting mixture to form said fiber, said tin compound being present in the fiber in an amount sufficient to impart flame retardancy and having an average particle size of up to 100 mμ.

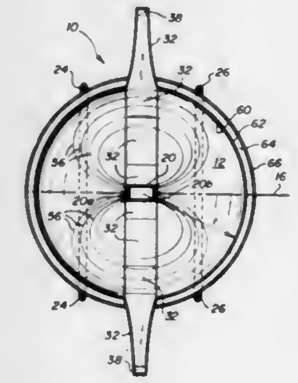
4,618,470
MAGNETIC CONFINEMENT NUCLEAR ENERGY GENERATOR

Winfield W. Salisbury, Scottsdale, Ariz., assignor to Austin N. Stanton, Dallas, Tex., a part interest

Filed Dec. 1, 1982, Ser. No. 445,934

Int. Cl.⁴ G21B *1/00*

U.S. Cl. 376—123 **3 Claims**



1. A fusion reactor comprising:

a sphere defining an inner surface and having a center;

superconducting coil means disposed substantially at the center of said sphere for producing a first magnetic field centered within said sphere;

coil means disposed circumferentially around said sphere for producing a second magnetic field;

means for injecting a gas containing fusible ions into said sphere;

said first and second magnetic fields defining cusps adjacent said superconducting coil means to form back-to-back magnetic mirrors for containing and compressing said ions;

means for heating said gas within the interior of said sphere to permit collisions between ions within said sphere; and

means disposed adjacent said inner surface of said sphere responsive to energy produced from said ion collisions.

4,618,471
ELECTROMAGNETIC SAFETY DEVICE OF A SCREW/NUT TYPE

Jacques B. Defaucheux, and Freddy Guedj, both of Jeumont, France, assignors to Jeumont-Schneider, Puteaux and Framatone, Courbevoil, both of, France

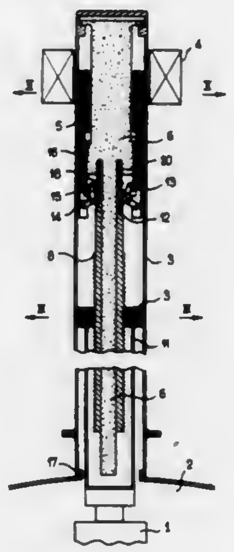
Continuation of Ser. No. 226,015, Jan. 19, 1981, abandoned. This application Oct. 13, 1983, Ser. No. 541,482

Claims priority, application France, Jan. 24, 1980, 80 01515

Int. Cl.⁴ G21C *7/12*

U.S. Cl. 376—228 **11 Claims**

1. In a nuclear reactor having a control rod, an electromagnetic safety apparatus for longitudinal displacement of said control rod, said apparatus comprising, in combination, a vertically elongated container, stator means at an upper part of the container for providing a rotating magnetic field in said upper part, rotor means disposed in the container adjacent to the stator means for rotation by the field of the stator means about an axis extending along the length of the container, a shaft extending along the length of the container and supported therein for rotation about said axis, said shaft being coupled to said rotor means for rotation therewith, a hollow threaded rod supported on said shaft for translation along the shaft, said hollow threaded rod being coupled to the shaft for rotation therewith, a nut having threads engaged with the threads of the hollow threaded rod and being supported in the container for translation along the length of the container but held against rotation in the container, said nut supporting said control rod, and locking means movable between a locked position at which the locking means engages an upper part of said hollow threaded rod and holds said hollow threaded rod at an elevated position on said shaft and an unlocked position at which the locking means disengages said hollow threaded rod to permit said hollow threaded rod and said nut to fall toward the bottom of said container, whereby said control rod may be lowered rapidly, said apparatus being characterized in that the rotor means is supported for translation along said shaft and is moved by said field of said stator means in translation in a first direction while it is rotated by said field, and in that said rotor means is coupled to said locking means and actuates said locking means to engage and hold said hollow threaded rod at said elevated position when said rotor means moves in said first direction.



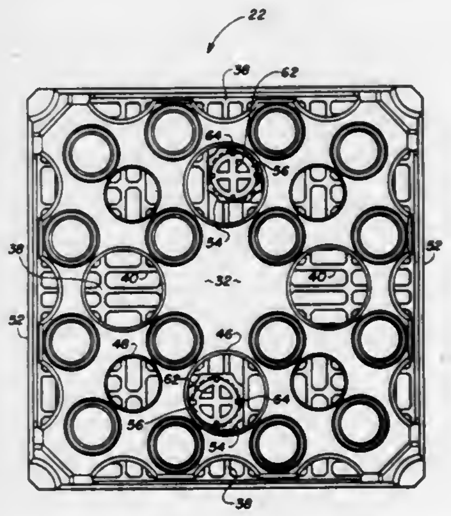
4,618,472
NUCLEAR REACTOR FUEL ASSEMBLY WITH FUEL ROD REMOVAL MEANS

Robert K. Gjertsen, Monroeville; John F. Wilson, and Walter F. Weiland, Jr., both of Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 25, 1983, Ser. No. 545,419

Int. Cl.⁴ G21C *3/32*

U.S. Cl. 376—446 **11 Claims**



1. A fuel assembly for a nuclear reactor including a bottom nozzle, at least one longitudinally extending control rod guide thimble attached to and projecting upwardly from the bottom nozzle, a plurality of transverse grids spaced along said thimble, an organized array of elongated fuel rods transversely

spaced and supported by said grids and axially captured between said bottom nozzle and a top nozzle which comprises:

(a) a transversely extending adapter plate formed by an arrangement of integral cross-laced ligaments defining a plurality of coolant flow openings;

(b) means for mounting said adapter plate on an upper end portion of said thimble and spaced axially above and disposed transversely over the upper ends of all of said fuel rods present in said fuel assembly such that ones of said ligaments overlie corresponding ones of said fuel rods so as to prevent said fuel rods from moving upwardly through said coolant flow openings; and

(c) removable plug means confined within said adapter plate and positioned over and spaced axially above selected ones of said fuel rods in providing access to at least one fuel rod for removal thereof upwardly through said axially spaced adapter plate without removing said top nozzle from said fuel assembly, said removable plug means including

  (i) a retainer portion being disposed between and fixedly retained by adjacent ones of said ligaments and having a bore defined therethrough,

  (ii) a removable plug portion being of a cylindrical shape adapted to be removably inserted into said bore of said retainer portion, and

  (iii) means for releasably locking said plug portion in its inserted position within said retainer portion, said locking means including indentations on the top surface of said retainer portion adjacent said bore and upstanding tabs on said plug portion adapted to be bent over into locking engagement with said indentations.

4,618,473

IRON POWDER ARTICLE HAVING IMPROVED TOUGHNESS

William F. Jandeska, Jr., Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 14, 1985, Ser. No. 745,353

Int. Cl.⁴ B22F *1/00*

U.S. Cl. 419—11 **3 Claims**

1. A method for forming a cohesive article from iron powder comprising

compacting a powder mixture comprising a suitable low-carbon iron powder, carbon powder in an amount effective for diffusion into the iron mass to produce a carbon content suitable to form a pearlitic or martensitic microstructure, and a powder composed of a nickel boron compound suitable for forming a liquid phase at iron sintering temperatures,

sintering the powder compact at a temperature and for a time effective to diffusion bond the iron into an integral structure having pores, to diffuse carbon into the iron structure, to cause said nickel boron to form a transient liquid phase that wets pore surfaces, and to diffuse nickel and boron from said liquid phase into the iron structure, said nickel diffusion being limited to regions about the pores that are austenitic at said sintering temperature,

and cooling the sintered structure to form the article, whereupon a major portion of the iron alloy structure transforms to a pearlitic or martensitic microstructure, but whereupon the nickel-enriched iron alloy regions about the pores comprise retained austenite suitable to retard crack formation and thereby enhance mechanical properties of the article.

4,618,474

CO-BASE HEAT RESISTANT ALLOY

Junya Ohe, Urawa; Saburo Wakita, Omiya; Kiichi Yamatsuta; Shoji Goto, both of Kanagawa; Yukinori Kutsukake, Tokyo, and Masuo Sugizaki, Yokohama, all of Japan, assignors to Asahi Fiber Glass Company, Limited; Asahi Glass Company, Limited and Mitsubishi Kinzoku Kabushiki Kaisha, all of Tokyo, Japan

Filed Jan. 25, 1985, Ser. No. 694,791

Int. Cl.⁴ C22C *19/07*

U.S. Cl. 420—436 **8 Claims**

1. A Co-base heat resistant alloy consisting essentially of:

from 0.05 to 1% by weight of C,

from 0.05 to 2% by weight of one or both of Si and Mn,

from 35 to 40% by weight of Cr,

from 5 to 15% by weight of Ni,

from 2 to 12% by weight of one or both of W and Mo,

from 0.1 to 5% by weight of Hf,

the rest being Co and unavoidable impurities, with the proviso that iron may be present in amount of up to 3% by weight.

4,618,475

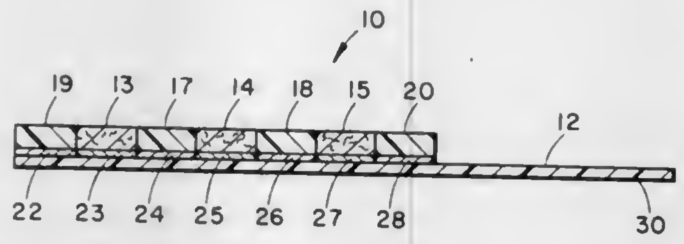
REAGENT TEST DEVICE CONTAINING HYDROPHOBIC BARRIERS

Joseph Y. Wang, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Aug. 30, 1985, Ser. No. 771,061

Int. Cl.⁴ G01N *21/78, 33/52*

U.S. Cl. 422—56 **8 Claims**



1. A reagent test device comprising multiple reagent carrier matrices attached in spaced relationship to one side of a substrate, with hydrophobic barrier pads of identical height to the reagent carrier matrices attached to the same side of the substrate between the reagent carrier matrices and in physical contact with the reagent carrier matrices to protect the reagent carrier matrices from abrasion and to prevent liquid runover between adjoining spaced carrier matrices.

4,618,476

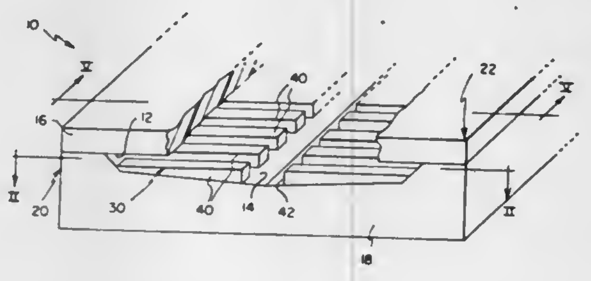
CAPILLARY TRANSPORT DEVICE HAVING SPEED AND MENISCUS CONTROL MEANS

Richard L. Columbus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 579,056, Feb. 10, 1984, abandoned. This application Oct. 31, 1984, Ser. No. 666,719

Int. Cl.⁴ G01N *1/00, 27/46*

U.S. Cl. 422—100 **8 Claims**



1. In a liquid transport device having two opposed surfaces spaced apart a distance effective to create a capillary transport zone and to induce capillary flow between said surfaces of introduced liquid, said opposed surfaces being joined together at opposite edges of said zone, whereby flow of introduced liquid and air is confined between said edges, and access means for admitting liquids to said zone.

the improvement wherein one of said surfaces includes: (a) spaced-apart energy barriers extending across a portion of a primary direction of travel of liquid through said zone between said edges, said barriers (i) having a height less than said distance between said surfaces and (ii) being effective to retard the rate of flow of liquid through said zone, and (b) means on said one sufface for initiating liquid flow past each of said energy barriers at a predetermined location between said edges.

4,618,477

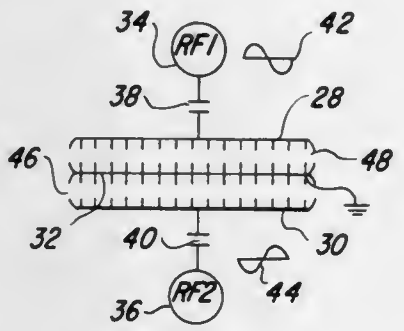
UNIFORM PLASMA FOR DRILL SMEAR REMOVAL REACTOR

Suryadevara V. Babu, Potsdam; Ronald S. Horwath, Binghamton; Neng-hsing Lu, Endwell, and John A. Welsh, Binghamton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 17, 1985, Ser. No. 692,145

Int. Cl.⁴ B01J *19/08, 19/12;* C23F *1/02*

U.S. Cl. 422—186.29 **31 Claims**



1. An apparatus for generating a substantially uniform plasma for processing a substrate having two major surfaces, each of said major surfaces having electrically conductive portions disposed thereon, comprising:

(a) two electrode means oppositely disposed with respect to one another on either side of said substrate;

(b) a first radio frequency power source operatively connected to the first of said electrode means; and

(c) a second radio frequency power source operatively connected to the second of said electrode means, said second radio frequency power source being out of phase with respect to said first radio frequency power source.

4,618,478

APPARATUS FOR THE PRODUCTION OF LEAD OXIDE

Benjamin F. McKinney, Indianapolis, Ind., assignor to Oxide & Chemical Corporation, Indianapolis, Ind.

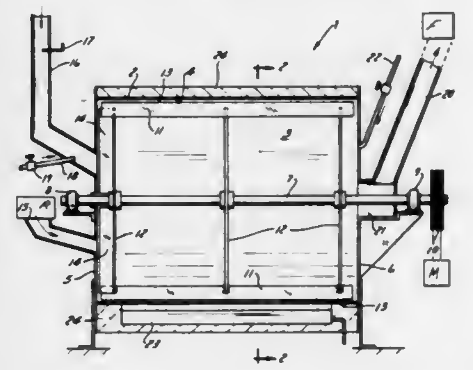
Division of Ser. No. 490,149, Apr. 29, 1983, Pat. No. 4,521,399. This application Apr. 1, 1985, Ser. No. 718,500

Int. Cl.⁴ B01F *7/04*

U.S. Cl. 422—198 **3 Claims**

1. In a reactor for the oxidation of lead particles to produce litharge with selectively varying free lead content includ.pa ing a horizontally disposed reactor chamber having a cylindrical interior surface and parallel opposite end walls, a shaft extending through the interior and supported for rotation on the longitudinal axis of the chamber, at least one pair of blades attached to the shaft, said at least one pair of blades being disposed generally parallel to the cylindrical surface and extending substantially the full axial length thereof, lead inlet means, water inlet means and air inlet means positioned with respect to one of said end walls for admitting supplies of lead, air and water to the interior of the chamber, an outlet in the other of said end walls for discharging the litharge therefrom, and means for producing a flow of air through the chamber to oxidize the lead particles and transport the litharge to the outlet; the improvement comprising:

the at least one pair of blades having radially outer edges which are disposed in closely spaced relation to the interior surface of the chamber to provide a uniform zone for oxidation, attrition and classification along substantially the entire blade edge-reactor interior surface interface; and,



drive means for rotating the shaft and at least one pair of blades at a speed sufficient to maintain incompletely oxidized lead particles within the oxidation and attrition zone and to effect centrifugal classification of the litharge for transport to the outlet.

4,618,479

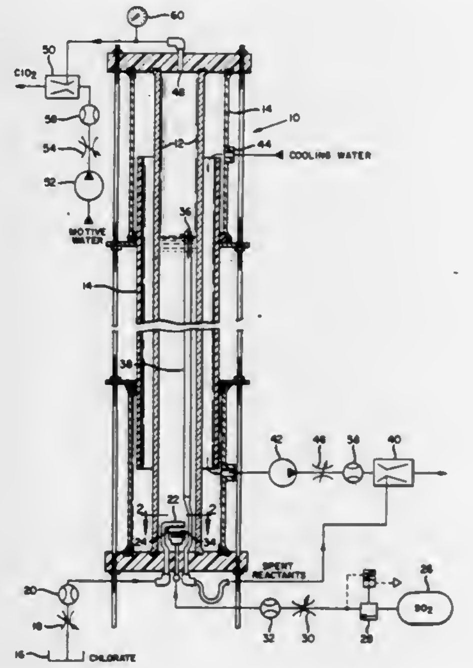
APPARATUS FOR PRODUCING CHLORINE DIOXIDE

Paul W. Santillie, Richland, and Daniel M. Ramras, Seattle, both of Wash., assignors to Lamb-Weston, Inc., Portland, Oreg.

Division of Ser. No. 313,256, Oct. 21, 1981, Pat. No. 4,451,444. This application Jan. 24, 1984, Ser. No. 573,463

Int. Cl.⁴ B01J *8/02;* C01B *11/02;* F28D *21/00*

U.S. Cl. 422—202 **6 Claims**



1. An apparatus for the continuous production of gaseous chlorine dioxide by the reaction between gaseous sulfur dioxide and an aqueous solution of a metallic chlorate, said apparatus comprising:

(a) a vertically-oriented reaction chamber;

(b) a source of an aqueous solution of a metallic chlorate and means for introducing said aqueous solution into the bottom of said reaction chamber;

(c) a source of gaseous sulfur dioxide and means for introducing said sulfur dioxide into the bottom of said reaction chamber and bringing said sulfur dioxide into contact with said aqeous solution;

(d) means for withdrawing from the top of said reaction chamber gaseous chlorine dioxide;

(e) means for withdrawing spent reactant liquors at an intermediate point of said reaction chamber;

(f) flow means for maintaining a flow of coolant liquid in contact with the exterior surface of said reaction chamber to remove heat from said reaction chamber;

(g) eductor means in fluid communication with the flow means, said eductor means also being in fluid communication with said reaction chamber for withdrawing chlorine dioxide and spent reactant liquors therefrom; and

(h) means for conducting coolant liquid from said flow means through said eductor means so as to create a vacuum therein and cause said chlorine dioxide and spent reactant liquors to be withdrawn through said eductor means, so that a change of coolant liquid flow rate through the eductor induces a corresponding change in the rate of withdrawal of chlorine dioxide and spent reactant liquors from said reaction chamber.

4,618,480

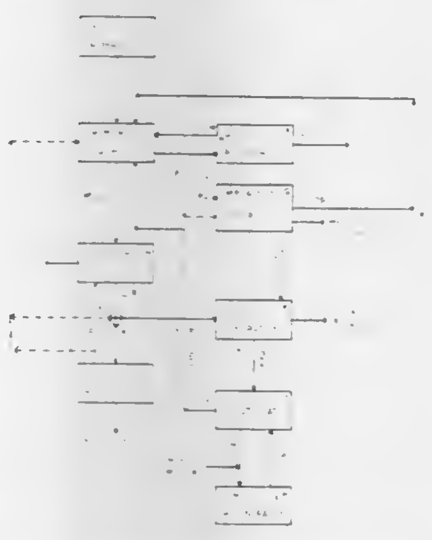
RECOVERY OF ALUMINA VALUES FROM ALUNITE ORE

Wayne W. Hazen, Denver; David L. Thompson; James E. Reynolds, both of Golden; Nicholas J. Lombardo, Boulder; Paul B. Queneau, and John P. Hager, both of Golden, all of Colo., assignors to Resource Technology Associates, Boulder, Colo.

Filed Aug. 15, 1984, Ser. No. 641,020

Int. Cl.⁴ C01F *7/06*

U.S. Cl. 423—127 **37 Claims**



1. A process for recovering aluminum and potassium values from alunite ore comprising:

(a) contacting said ore at a temperature above 60° C. with potassium hydroxide saturated with potassium sulfate to which no Na has been added to form a potassium sulfate-saturated primary potassium hydroxide leach liquor containing said Al values and a primary leach residue containing said K values;

(b) separating said primary leach liquor from said primary leach residue;

(c) precipitating $Al(OH)_3$ crystals from the liquor of step (b) to recover the Al values therefrom; and

(d) aqueous leaching said primary leach residue of step (b) to form a secondary leachate containing said K values.

4,618,481

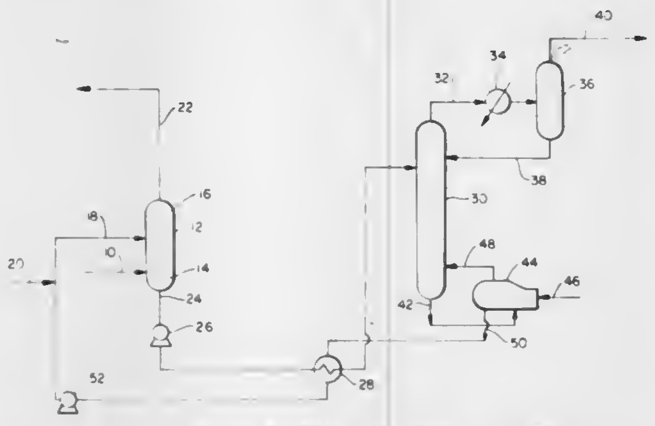
ABSORBENT COMPOSITION CONTAINING A SEVERELY HINDERED AMINO COMPOUND AND AN AMINE SALT AND PROCESS FOR THE ABSORPTION OF H_2S USING THE SAME

Fred J. Heinzelmann, Fanwood, N.J.; Noah S. Rothblatt, New York, N.Y.; James P. Glass, Jr.; Geoffrey R. Say, both of Baton Rouge, La.; George R. Chludzinski, South Orange, N.J.; Guido Sartori, and W. S. Winston Ho, both of Annandale, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 30, 1985, Ser. No. 771,515

Int. Cl.⁴ C01B *17/16, 31/20;* **C09K** *3/00*

U.S. Cl. 423—228 **28 Claims**



ABSORPTION-REGENERATION UNIT FOR SELECTIVE H_2S REMOVAL

1. An absorbent composition comprising: (1) at least one severely hindered amino compound having a cumulative $-E_s$ value (Taft's steric hindrance constant) greater than 1.75, and (2) an amine salt, said amine salt being the reaction product of an amine selected from the group consisting of a severely hindered amino compound having a cumulative $-E_s$ value greater than 1.75, a tertiary amine and mixtures thereof and a component selected from the group consisting of an acid having at least one pKa of not more than about 7, a decomposable salt of an acid having at least one pKa of not more than about 7, a compound capable of forming an acid having a pKa of not more than about 7 and mixtures thereof, said amine salt and said severely hindered amino compound being present in said absorbent composition in a mole ratio of said amine salt to said severely hindered amino compound ranging from about 0.2:1 to 4:1.

4,618,482

METHOD FOR CONTROLLING A CONCENTRATION OF SLURRY IN WET FLUE GAS DESULFURIZATION APPARATUS

Naoharu Shinoda; Atsushi Tatani; Setsuo Omoto; Susumu Okino, all of Hiroshima City, and Taku Shimizu, Tokyo, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1984, Ser. No. 643,456

Int. Cl.⁴ C01B *17/00;* **C01F** *1/00, 5/40, 11/46*

U.S. Cl. 423—242 **5 Claims**

1. A method of controlling the concentration of slurry in an absorption tower where exhaust gas containing SO_2 is brought into contact with a slurry having a suspension of a Ca compound therein so as to absorb SO_2, said method comprising a slurry tank disposed at the lower part of said absorbing tower, a liquid chamber provided to communicate with said slurry tank and the slurry contained therein whereby the slurry is separated into at least a first and a second slurry having different concentrations of the Ca compound to form a first slurry layer having a higher concentration of the Ca compound relative to the concentration of Ca compound in said slurry tank and a second slurry layer of lower concentration of the Ca compound relative to the concentration of the Ca compound in said slurry tank, withdrawing a portion of the slurry from each of said two slurry layers and controlling the amount of slurry flow withdrawn and providing means for stirring the slurry in said slurry tank whereby the concentration of Ca compound in the slurry coming into contact with exhaust gas is controlled.

4,618,483

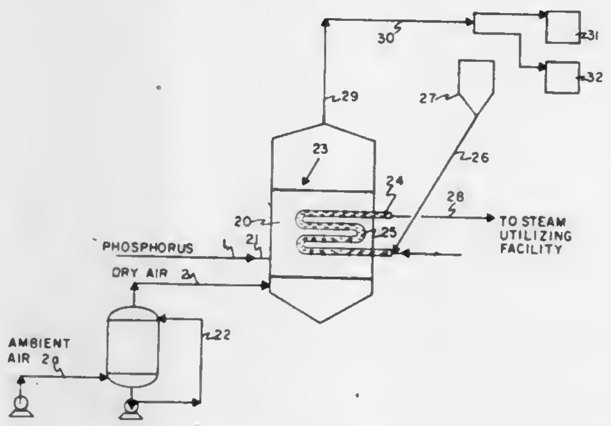
HEAT RECOVERY THROUGH OXIDATION OF ELEMENTAL PHOSPHORUS IN A FLUIDIZED BED

Howard T. Spruill, Franklin, and Thelton A. Webster, Madison, both of Tenn., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 26, 1985, Ser. No. 759,201

Int. Cl.⁴ C01B *25/12*

U.S. Cl. 423—304 **10 Claims**



1. A process for the recovery of the heat values produced during the production of phosphorus pentoxide comprising:

(a) passing ambient air through drying means to produce dry air; and

(b) burning elemental phosphorus in said dry air produced in step (a) to produce hot P_2O_5-containing combustion gases said burning taking place in at least one fluid bed wherein said hot combustion gases transfer heat to the fluid bed particles, said fluid bed also having steam generating means containing circulating steam generating fluid within the fluid bed itself in intimate contact with said heated fluid bed particles.

4,618,484

COMPOSITION AND METHOD FOR TREATMENT OF MELANOMAS

John M. Pawelek, Hamden, Conn., assignor to Yale University, New Haven, Conn.

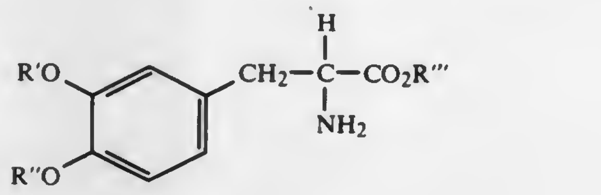
Division of Ser. No. 480,402, Mar. 30, 1983. This application Apr. 5, 1984, Ser. No. 597,121

Int. Cl.⁴ A61K *43/00, 49/00*

U.S. Cl. 424—1.1 **7 Claims**

1. A method for the treatment of melanomas in human beings comprising the step of administering to said human a composition comprising an admixture of

(a) an effective amount of at least one O-phosphorylated derivative of DOPA of the general formula I



1

wherein R′ and R″ are each hydrogen or

$(R'^{v}O)_2P(O)$—

or R′ and R″ together represent

$(R'^{v}O)P(O)$

wherein R′ᵛ and R‴ each represent hydrogen or a pharmaceutically acceptable cation and P is ^{32}P with the provisos that R′ and R″ cannot simultaneously be hydrogen.

4,618,485

KINETIC RADIOIMMUNOASSAY TEST METHOD AND DEVICE

Yuh-Geng Tsay, San Jose, and Vipin D. Shah, Saratoga, both of Calif., assignors to International Immunoassay Laboratories, Inc., Santa Clara, Calif.

Filed Mar. 12, 1982, Ser. No. 357,399

The portion of the term of this patent subsequent to Sep. 21, 2001, has been disclaimed.

Int. Cl.⁴ G01N *33/56, 33/78*

U.S. Cl. 424—1.1 **17 Claims**

11. A test method for the quantitative radioimmunoassay of an analyte of interest in endogenous liquid sera utilizing an immunoreagent that is specific to said analyte of interest, which immunoreagent is immobilized on a substrate, and an exogenous liquid containing radiolabeled analyte of interest, comprising the steps of:

(a) combining a measured volume of said endogenous liquid and a measured volume of said exogenous liquid with said immobilized immunoreagent in a reaction vessel and permitting an immunoreaction to occur:

(b) determining the rate of change of the quantity of radiolabeled analyte of interest which is bound to said immobilized immunoreagent at a time prior to equilibrium conditions being reached in said immunoreaction;

(c) repeating the above-described steps (a) and (b) utilizing a calibrating liquid containing a concentration of a standard amount of said analyte of interest in place of said endogenous liquid, the volume of said calibrating liquid being substantially identical to said measured volume of endogenous liquid;

(d) comparing the result of the instant test method for said endogenous liquid having an unknown concentration of said analyte of interest with said test result of the instant test method for said calibrating liquid to produce a quantitative determination of the concentration of said analyte of interest in said endogenous liquid.

4,618,486

MONOCLONAL ANTIBODY FORMULATION FOR DIAGNOSTIC USE

Karl A. Lundblad, Upsala, Sweden, assignor to MonoCarb AB, Lund, Sweden

Filed Jan. 12, 1984, Ser. No. 570,264

Claims priority, application Sweden, Jan. 21, 1983, 8300320

Int. Cl.⁴ G01N *33/53, 33/577, 33/555*

U.S. Cl. 424—11 **9 Claims**

1. A method for identifying ABO blood groups comprising contacting a member selected from the group consisting of whole red cells, red cell membranes and soluble group substances with an aqueous formulation comprising monoclonal antibodies active against cell-bound antigens of blood group A, B or AB and a soluble salt selected from the group consisting of salts of the alkali and alkaline earth metals in a concentration within the range of from 250 mmoles/liter to about 650 mmoles/liter.

4,618,487

DEVICE FOR ADMINISTERING CALCIUM ASCORBATE

Mark DuBois, Mt. View; Felix Theeuwes, Los Altos, and Patrick S. L. Wong, Hayward, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 628,677, Jul. 6, 1984, abandoned. This application Aug. 9, 1985, Ser. No. 764,027

Int. Cl.⁴ A61K *9/22, 9/32, 31/365*

U.S. Cl. 424—15 **8 Claims**

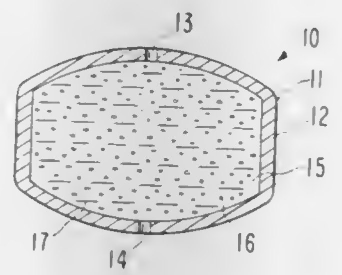
1. A dispensing device for the rate controlled delivery of the

beneficial agent calcium ascorbate to a biological environment of use, said dispensing device comprising:

(a) a wall comprising a member selected from the group consisting of a cellulose acylate and cellulose ether, which wall permits the passage of fluid present in the biological environment of use and maintains its physical and chemical integrity in the presence of calcium ascorbate, which wall also surrounds and defines:

(b) a compartment;

(c) a beneficially effective amount of calcium ascorbate in the compartment;



(d) means in the wall communicating with the compartment and the exterior of the dispensing device for delivering the calcium ascorbate to the biological environment of use; and,

(e) wherein, when the dispensing device is in operation in the biological environment of use, the dispensing device delivers the calcium ascorbate to the biological environment with a substantial decrease in irritation of the tissues of the biological environment.

4,618,488
TOOTHPASTE COMPOSITION

Tsutomu Maeyama, Chiba; Shigeru Ishii, and Kenji Kaneko, both of Tokyo, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Jul. 26, 1985, Ser. No. 759,360

Claims priority, application Japan, Jul. 31, 1984, 59-162661; Sep. 7, 1984, 59-187424

Int. Cl.^{4} A61K *7/16*

U.S. Cl. 424—49 **24 Claims**

1. A toothpaste composition, comprising:

an abrasive selected from the group consisting of amorphous silica, silicate and mixtures thereof having a specific surface area of 5 to 100 m^2/g as measured by the BET method with nitrogen adsorption and a specific surface area of 100 to 400 m^2/g as measured by the BET method with water vapor adsorption, said abrasive having a ratio of the specific surface area as measured by the BET method with water vapor absorption to the specific area as measured by the BET method with nitrogen adsorption of from 2 to 30.

4,618,489
DENTAL COMPOSITIONS AND METHOD OF USE THEREFOR

Jerry J. Pollock, East Setauket, and Thomas F. McNamara, Port Jefferson, both of N.Y., assignors to Research Foundation of the State University of New York, Albany, N.Y.

Filed Sep. 2, 1983, Ser. No. 529,163

Int. Cl.^{4} A61K *9/16, 9/18*

U.S. Cl. 424—52 **5 Claims**

1. A method of inhibiting or reducing Streptococcus mutans colonization of carious lesions of tooth surfaces infected with cariogenic strains of *S. mutans* in substantially normal physiological concentrations in submandibular, parotide and mixed human salivas containing concentrations of bicarbonate ion of from about 1 to about 60 mM., chloride ion from about 10 to about 50 mM., and thiocyanate ion from about 0.5 to 4.5 mM., said concentrations being ineffective to kill bacteria, which comprises:

treating between one and three times a day the sites of caries lesions on said teeth with about 0.03M sodium bicarbonate by weight used in combination with about 0.03M. sodium chloride, and 0.03M. sodium thiocyanate at least until the significant reduction of *S. mutans* can be noted.

4,618,490
METHOD OF TREATMENT OF ANIMAL AND HUMAN TISSUES DAMAGED BY BURNS AND FRANK VISIBLE GANGRENE

Peter T. De Marco, 7th Ave. and Erial Rd., Pine Hill, N.J. 08021

Continuation of Ser. No. 156,915, Jun. 6, 1980, abandoned, which is a continuation of Ser. No. 919,087, Jun. 26, 1978, abandoned, which is a continuation of Ser. No. 87,621, Nov. 6, 1970, abandoned. This application Apr. 23, 1985, Ser. No. 726,062

Int. Cl.^{4} A61K *31/79*

U.S. Cl. 424—80 **2 Claims**

1. A method of minimizing scarring in a patient suffering from burns which comprises administering to said patient by injection into tissues adjacent said burn injury an aqueous composition of about 50 mg. to about 2.5 g. of a pharmaceutically acceptable salt of procaine and about 100 mg. to about 5 g. of polyvinylpyrrolidone having a molecular weight of 5,000 to 50,000.

4,618,491
STABLE GEL COMPOSITION CONTAINING A CARBOXYMETHYL CELLULOSE SALT AND A PROCESS FOR THE PREPARATION OF THEM

Tetuo Kanematu, and Yoshiaki Yamaguchi, both of Himeji, Japan, assignors to Daicel Chemical Industries Ltd., Osaka, Japan

Continuation of Ser. No. 617,352, Jun. 5, 1984, abandoned. This application Oct. 31, 1985, Ser. No. 793,723

Int. Cl.^{4} A61K *31/78*

U.S. Cl. 424—81 **8 Claims**

1. A stable gel composition which is prepared by a process comprising adding a water-soluble salt of carboxymethyl cellulose selected from the group consisting of sodium carboxymethyl cellulose, potassium carboxymethyl cellulose and ammonium carboxymethyl cellulose which has previously been wetted by or dispersed in a hydrophilic organic liquid selected from the group consisting of an aliphatic polyol, a lower aliphatic alcohol, an aliphatic ketone and a fatty acid ester to an aqueous solution containing a water-soluble polyvalent metal salt selected from the group consisting of an aluminum salt, an iron salt and a cupric salt, wherein the water-soluble salt of carboxymethyl cellulose and the water-soluble polyvalent metal salt are both present in amounts of 0.01–50 parts by weight per 100 parts by weight of water contained in the aqueous solution and the weight ratio of hydrophilic organic liquid to water-soluble salts of carboxymethyl cellulose is 0.2–100:1.

4,618,492
ACID-CLEAVABLE COMPOUND

Walter A. Blattler; John M. Lambert, both of Brookline, and Peter D. Senter, Jamaica Plain, all of Mass., assignors to Dana-Farber Cancer Institute, Inc., Boston, Mass.

Division of Ser. No. 645,614, Aug. 29, 1984, Pat. No. 4,542,225. This application May 13, 1985, Ser. No. 733,479

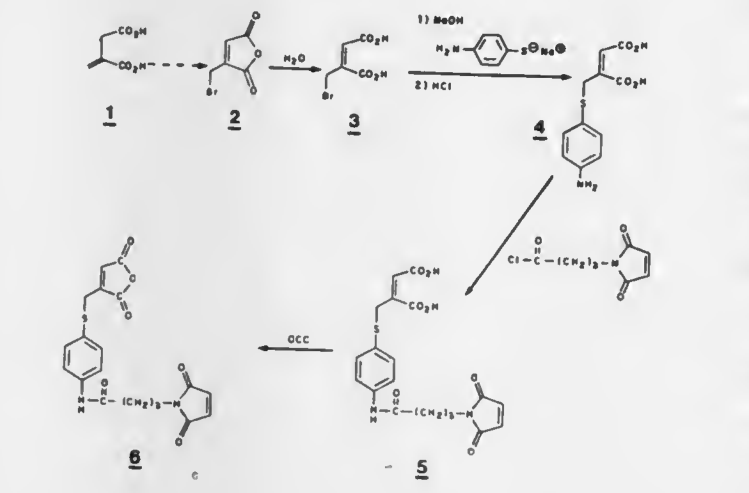
Int. Cl.^{4} C07D *519/00, 521/00*

U.S. Cl. 424—85 **6 Claims**

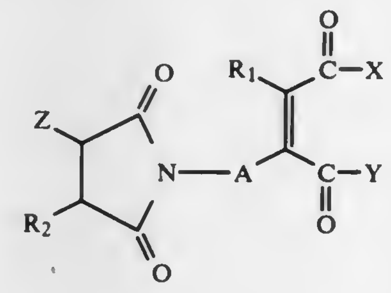
1. A method of delivering a biologically active amino-group-containing substance selectively to members of a cell population which comprises providing an acid-cleavable complex for controlled release of a biologically active amino-group-containing substance to a liquid medium, said complex comprising

said amino-group-containing substance,

a sulfide-linked substance comprising a cell binding-partner for a cell-surface receptor, and

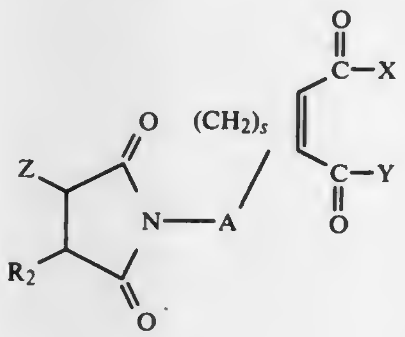


an acid cleavable linker between the sulfide-linked substance and the amino-group-containing substance, said complex comprising one of the two following units:



(1)

where: one of X and Y is 0$^-$; the other of X and Y is the residue of the amino-group-containing substance whose amino nitrogen forms an amide link with a crbonyl group of the maleic acid function; Z is the sulfide-linked substance, including the sulfur of that link; R_1 and R_2 are independently selected from H and alkyl groups of C_5 or less; and A is a bridge unit; and



(2)

where X, Y, Z, R_2, and A are as defined above, and s=2–5, and

exposing the cells to said complex, whereby the complex is exposed to a pH low enough to hydrolyze the amide bond between the nitrogen of an amino group of the amino-group-containing substance and a carbonyl group of the maleic acid function of the cross-linked complex.

4,618,493
TEMPERATURE SENSITIVE STRAINS OF BOVINE VIRAL DIARRHOEA VIRUS, PREPARATION THEREOF AND VACCINES CONTAINING THEM

Jean-Claude Delgoffe, Bierges; Michèle Lobmann, Rosieres, and Nathan Zygraich, Brussels, all of Belgium, assignors to Smith-Kline-RIT, Belgium

Filed Oct. 13, 1982, Ser. No. 434,155

Int. Cl.^{4} A61K *39/12;* **C12N** *7/06*

U.S. Cl. 424—89 **17 Claims**

1. A live bovine viral diarrhoea (BVD) virus vaccine capable of inducing immunity in bovines comprising an effective amount to induce immunity of at least $10^{3.5}$ $TCID_{50}$ of a temperature sensitive (ts) mutant of BVD virus wherein the ts mutant is obtained by mutagenesis with nitrous acid and wherein the mutant shows a replication ability considerably limited at the animal body temperature, 39.5° C., and shows a difference of infectious titer of about 3 log 10 $TCID_{50}$ between 35° C. and 39.5° C.

3. A vaccine according to claim **1** or **2** further comprising at least one live bovine respiratory virus vaccine.

7. A vaccine according to claim **1** or **2** wherein the ts mutant is the BVD virus strain C.N.C.M. I-199.

4,618,494
HUMAN IMMUNE FACTORS AND PROCESSES FOR THEIR PRODUCTION AND USE

John W. Angers, Red Bank, N.J., assignor to Immunology Development Corporation, Red Bank, N.J.

Filed Jul. 20, 1984, Ser. No. 632,705

Int. Cl.^{4} A61K *35/14*

U.S. Cl. 424—101 **37 Claims**

1. A process for the preparation of a pharmaceutical composition for treating virus-induced and autoimmune diseases which comprises:

a. removal of a blood sample from a donor,

b. treatment of the blood sample with at least one effective activator selected from the group of interferons, bacterial antigens or both, to form an activated blood mixture,

c. incubation of the activated blood mixture for a period sufficient for blood cells in the blood mixture to secrete extracts,

d. purification of the extracts from the activated blood mixture by isolation of compounds in the activated blood mixture with molecular weights in the range from about 1,000 to about 25,000 daltons.

4,618,495
PREPARATION FOR REDUCING CANCER SYMPTOMS WITHOUT TREATING CANCER

Hiromichi Okuda, Matsuyama; Hiroshi Masuno, Ehime; Masaki Aburada; Shigefumi Takeda, both of Kawasaki; Eiko Itoh, Nagareyama; Moe Matsushita, Machida, and Eikichi Hosoya, Tokyo, all of Japan, assignors to Tsumura Juntendo Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 509,200, Jun. 29, 1983, abandoned. This application Feb. 14, 1985, Ser. No. 701,458

Claims priority, application Japan, Aug. 25, 1982, 57-146143

Int. Cl.^{4} A61K *35/78*

U.S. Cl. 424—195.1 **4 Claims**

1. A composition useful in inhibiting promotion of adipose degradation and anorexia, comprising an effective amount to inhibit promotion of adipose degradation and anorexia of an aqueous extract of a mixed crude preparation consisting of two parts by weight of each of Astragali radix, Cinnamomi cortex, Rehmanniae radix, Paeoniae radix, Cnidii rhizoma, Atractylodis lanceae rhizoma, Angelicae radix, Ginseng radix and Hoelen, and one part by weight of Glycyrrhizae radix.

4,618,496

ANTIMICROBIAL PEAT MOSS COMPOSITION

Raynald Brasseur, Montreal, Canada, assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Jul. 16, 1984, Ser. No. 631,271

Int. Cl.⁴ A01N *65/00*

U.S. Cl. 424—195.1 **4 Claims**

1. A process for providing a composition for inhibiting the growth of microorganisms comprising:

soaking peat moss in a solution comprising from 0.01 to 5.0 percent, by weight of an antimicrobial heterocyclic compound;

removing excess solution and

washing said treated peat moss to remove non-substantively bound heterocyclic compound while retaining at least five mg of substantively bound heterocyclic compound per gram of peat moss.

4,618,497

QUARANTINE SYSTEM FOR PAPAYA

H. Melvin Couey, Hilo, and Charles F. Hayes, Kailua, both of Hi., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C. and The University of Hawaii, Honolulu, Hi.

Filed Jul. 22, 1985, Ser. No. 757,396

Int. Cl.⁴ A23L *1/212*

U.S. Cl. 426—233 **7 Claims**

1. A quarantine method for papaya, a selection process and disinfestation treatment method, which comprises:

(a) measuring the color of papaya on a Hunter Colorimeter and rejecting papaya which have either a blossom end Hunter b value greater than 27.4 or a yellow spot Hunter b value greater than 30.5;

(b) heating the papaya to be treated in a fluid at 38° to 45° C. (T_1) for about 30 to 60 minutes (t_1); and

(c) heating the papaya from step (b) in a fluid at 45° to 55° C. (T_2) for about 5 to 30 minutes (t_2);

said time between heating steps (b) and (c) does not exceed 3 minutes;

said temperature of step (b) is lower than the temperature of step (c);

said time of step (b) is equal to or greater than the time of step (c); and

wherein three of the values of T_1, t_1, T_2, and t_2 are specified and the fourth value is determined from the equation:

$$S = \sum_j s_j P_j$$

wherein S is the overall survival rate of infestation in papaya which is determined by the mortality of fruit flies required; P_j is the probability for the occurrence of a fruit fly egg at depth j, and s_j is the survival of a fruit fly egg at depth j and is determined from the equation:

$$\log s_j = \sum_i \log s_{ij} = \sum_i - \exp(AT_{ij} - B)t_{ij}$$

where A=0.554/°C.; B=26.8; and where T_{ij} is determined from the equation:

$$T = T_o - \frac{2T_o}{R} \sum_{n=1} \frac{\exp(-k\alpha_n{}^2 t)J_o(r\alpha_n)}{\alpha_n J_1(R\alpha_n)} + \frac{2}{R^2} \sum_{n=1} \frac{\exp(-k\alpha_n{}^2 t)J_o(r\alpha_n)}{J_1{}^2(R\alpha_n)} \int_0^R rf(r)J_o(r\alpha_n)dr$$

where T_o is the fluid temperature; t is the length of time of heating; r is the distance from the center to the desired position in the fruit; k is 1.52×10^{-3} cm²/s; $J_o(\ )$ is a zero order Bessel function of the first kind; $J_1(\ )$ is a zero order Bessel function of the second kind; α_n is determined from the equation:

$$J_o(R\alpha_n)=0$$

and R is determined from the equation:

$$\text{density}=\text{average fruit mass}/\pi R^2L$$

where L is the average fruit length from the blossom to stem end.

4,618,498

PROCESS FOR PRODUCING LATTICED PASTRY PRODUCTS

Robert R. Thulin, Wyckoff, N.J., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jun. 11, 1985, Ser. No. 743,380

Int. Cl.⁴ A23P *1/08*

U.S. Cl. 426—275 **15 Claims**

1. The process of continuously forming individual product pieces having filler therein and having perforations of substantial size in the top layer thereof, comprising:

(a) forming a first continuous flat dough sheet;

(b) transporting the first continuous flat dough sheet on a first conveyor belt;

(c) periodically depositing at least one portion of a natural filler or an artificial filler on the first continuous flat dough sheet;

(d) forming a second continuous flat dough sheet;

(e) transporting the second continuous flat dough sheet on a second conveyor belt of a material to which the dough of the second continuous flat dough sheet will adhere in response to pressure, the second conveyor belt being positioned above the first conveyor belt along the axis of movement of the first conveyor belt after the at least one filler depositor (c);

(f) moving cutting elements through the second continuous flat dough sheet to form a multitude of holes in the second continuous flat dough sheet, each such hole containing a dough piece therein, the cutting elements pressing the perimeter of each dough piece so that the perimeter of each dough piece adheres to the second conveyor belt;

(g) lifting the second continuous flat dough sheet off of the second conveyor belt by means of a third conveyor belt without disturbing the cut out dough pieces, adhered to the second conveyor belt, thereby providing perforations in the second continuous flat dough sheet, the third conveyor belt being positioned above the end portion of the second conveyor belt along the axis of movement of the second conveyor belt and above the first conveyor belt;

(h) placing the perforated, second continuous flat dough sheet on top of the first continuous flat dough sheet and deposits of filler thereon, thereby forming a continuous composite comprising the filler deposits enclosed between the perforated, second continuous dough sheet and the first continuous flat dough sheet; and

(i) dividing the continuous composite into individual pieces, each individual piece having at least one deposit of filler enclosed between a segment of the perforated, second dough sheet and a segment of the first flat dough sheet, the filler showing through the perforations in the segments of the second dough sheet.

4,618,499

METHODS FOR MAKING FILLED EXTRUDED FOOD PRODUCTS

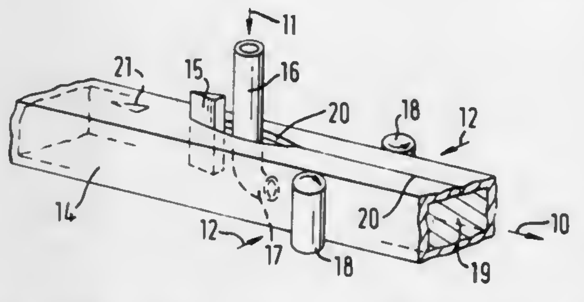
Andrew R. Wainwright, Reading, England, assignor to United Biscuits (UK) Limited, Edinburgh, Scotland

Filed Feb. 14, 1985, Ser. No. 701,684

Int. Cl.⁴ A21D *13/08*

U.S. Cl. 426—283 **5 Claims**

4. A method of making a filled extruded food product, which comprises extruding a unitary tubular casing of food stuff having a cross-sectional shape of closed-loop form as extruded, slitting the tubular casing to form a single longitudinal opening through a wall thereof, filling the interior of the slit casing through said opening with a food stuff, and closing the opening over the filling by bringing into contact with each other the edges of the opening formed by slitting.



4,618,500

METHOD FOR PREPARING AN ESPRESSO-TYPE COFFEE BEVERAGE

Richard Forquer, Glendale, Calif., assignor to Fulcrum Enterprises, Cayman Islands

Filed Aug. 20, 1985, Ser. No. 767,486

Int. Cl.⁴ A23F *5/24*

U.S. Cl. 426—433 **11 Claims**

1. A method for preparing an espresso-type coffee beverage having an appearance, flavor, texture and aroma like that of freshly-brewed espresso coffee, comprising the steps of:

pouring a substantially froth-free aqueous solution of water-soluable extract of espresso coffee containing between about 3-4% solutes and having a temperature between about the freezing point of said solution and ambient temperature into an open-topped, heat resistant preparation vessel in an amount sufficient to make the number of servings desired;

injecting steam into said solution in a region near the bottom of said solution in said vessel at a temperature and velocity sufficient to heat said solution to the serving temperature desired without boiling or substantially diluting said solution with water condensed from said steam, and at region near the top of said solution to form a froth on top of said aqueous solution which is substantially identical to the froth on freshly-brewed espresso coffee; and

dispensing said heated, frothed solution into individual serving cups for immediate serving, each said cup containing a portion of said froth.

4,618,501

FLAVORING WITH α, β-KETO-IMINES

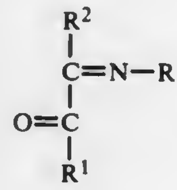
Thomas H. Parliment, New City, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Filed May 28, 1985, Ser. No. 737,852

Int. Cl.⁴ A23L *1/226*

U.S. Cl. 426—534 **10 Claims**

1. A composition comprising a foodstuff and a flavoring compound in an amount to impart a cereal, nutty corn character wherein said compound has a structure selected from the group of α,βKeto-imines consisting of:



$$\begin{array}{l} \quad R^2 \\ \quad | \\ \quad C{=}N{-}R^3 \\ \quad | \\ O{=}C \\ \quad | \\ \quad R^1 \end{array}$$

wherein

R^1 is a saturated or unsaturated alkyl straight or branched chain hydrocarbon having from C_1 to C_3 carbon atoms;

R^2 is a saturated or unsaturated alkyl straight or branched chain hydrocarbon having from C_1 to C_3 carbon atoms;

R^3 is a saturated or unsaturated alkyl straight or branched chain hydrocarbon having from C_1 to C_3 carbon atoms.

4,618,502

PROCESS FOR CONVERTING CASEIN TO CASEINATE

Marvin F. Beach, 2899 Arthington Blvd.-P.O. Box 18298, Indianapolis, Ind. 46218

Filed Aug. 8, 1984, Ser. No. 638,979

Int. Cl.⁴ A23C *21/06*

U.S. Cl. 426—583 **7 Claims**

1. A process for converting casein to caseinate, comprising the steps of

pretreating a concentrated whey solution by heating to a temperature of 140° F. and adjusting the pH of said preheated solution to above about 8 to provide a pretreated wey solution;

blending neutralized casein with the pretreated whey solution at temperatures up to about 190° F., thereby producing a mixture having a pH above 6.5 thus producing a blend comprising by weight between 40% and 90% whey solids and between about 10% and 60% casein solids;

thereby converting said blend to caseinate.

4,618,503

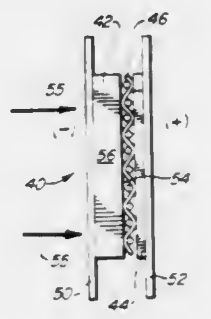
METHOD OF FORMING A REACTIVE METAL ANODE HAVING AN EDGE SEAL

Arnold Z. Gordon, Lyndhurst, Ohio; Jerry L. Morris, San Jose, and Gary E. Mason, Sunnyvale, both of Calif., assignors to Gould, Inc., Rolling Meadows, Ill.

Filed Mar. 14, 1985, Ser. No. 711,492

Int. Cl.⁴ B05D *5/12*

U.S. Cl. 427—11 **16 Claims**



1. A method of forming a sealed reactive metal anode useful in an electrochemical cell comprising said anode, a cathode and an electrolyte in which said anode and cathode are in operation during operation of said cell, said method comprising the steps of:

(a) providing an anode of said reactive metal, said anode defining a first surface which contacts said electrolyte and at least one additional surface at the perimeter of at least a portion of said first surface; and,

(b) coating said additional surface with a hydrophobic polymer which is substantially chemically inert with respect to said reactive metal and said electrolyte and wherein:

(i) the ratio of the flexural modulus to the flexural strength of said polymer is at least about 25;

(ii) the Izod impact value of said polymer is less than or equal to about 2.0 ft.-lb./in.; and,

(iii) the percent elongation of said polymer is less than or equal to about 20%, said first surface being substantially free of said hydrophobic polymer, and said coating step (b) being carried out in an atmosphere which is non-reactive with respect to said reactive metal.

4,618,504

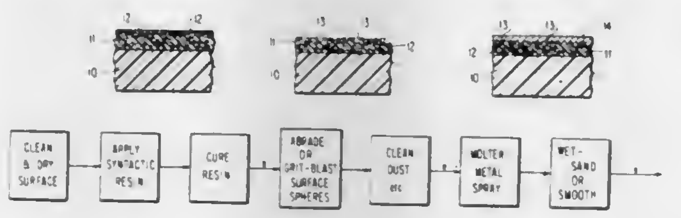
METHOD AND APPARATUS FOR APPLYING METAL CLADDING ON SURFACES AND PRODUCTS FORMED THEREBY

Alexander A. Bosna, 814 Washington St., Cape May, N.J. 08204, and Louis M. Riccio, 6 Hollow Rd., Malvern, Pa. 19355

Division of Ser. No. 563,430, Dec. 20, 1983, Pat. No. 4,521,475, which is a continuation-in-part of Ser. No. 481,412, Apr. 1, 1983. This application Feb. 28, 1985, Ser. No. 706,989

Int. Cl.⁴ B05D *1/08, 3/06*

U.S. Cl. 427—34 **24 Claims**



1. In a method of applying a metal coating to a marine surface of a metal selected from the group comprising copper and copper alloys, the improvement comprising the steps (1) of grit-blasting said marine surface, (2) coating said marine surface with a curable syntactic foam adhesive layer, (3) curing said curable adhesive layer, (4) abrading said cured syntactic foam adhesive layer to expose any voids in said cured syntactic foam adhesive layer and thereby produce undercuts, nooks and crannies in the surface thereof, and (5) thermally spraying the undercuts, nooks and crannies in said syntactic foam adhesive layer with molten particles of said metal in one or more passes thereof.

4,618,505

METHOD OF MAKING ADHERENT SCORE-RESISTANT COATING FOR METALS

Bernard A. MacIver, Lathrup Village; James C. Erskine, Jr., Birmingham, and John C. Bierlein, Washington, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 674,239, Nov. 23, 1984, Pat. No. 4,554,208. This application Aug. 19, 1985, Ser. No. 766,449

Int. Cl.⁴ B05D *3/06*

U.S. Cl. 427—38 **1 Claim**

1. A method of making an adherent coating on a bearing surface of an iron based alloy member having a surface roughness average of less than about 8 microinches, which coating exhibits high lubricity and score resistance when in sliding contact with an aluminum based alloy surface, the method comprising:

applying a coating about 0.5–1.0 micrometer thick of a sulfur-free, methacrylate-type of resist to a bearing surface of an iron based alloy member;

initially implanting ions into the coated surface at an energy greater than about 180 keV at a rate greater than about 2 microamperes per square centimeter and at a dosage of about 1×10^{15}–1×10^{16} ions per square centimeter, wherein the ions are of a substance of gaseous atmospheric pressure or which can chemically bond to carbon or iron, and have sufficient energy to completely penetrate the resist coating, and are implanted in sufficient dosage to reduce coating thickness to about one-half to one-fourth of the initial coating thickness; and

subsequently implanting ions into the coated surface at an energy of about 100–150 keV at a rate of at least about 2 microamperes per square centimeter at a dosage of about 1×10^{15}–1×10^{16} ions per square centimeter, wherein the energy is tailored to provide maximum damage to existing chemical bonds to occur and thereby allow carbon-to-metal bonds to form at the interface between the bearing surface and the coating, effective to produce a coating containing graphite-like and diamond-like crystalline microstructures and initially bond the coating to the iron based alloy bearing surface.

4,618,506

METHOD OF PROVIDING A METAL MIRROR

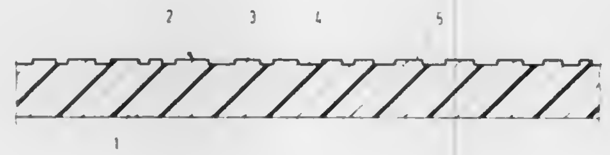
James S. Temple; Petrus E. J. Legierse, and Theodorus H. G. Martens, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 9, 1984, Ser. No. 587,793

Claims priority, application Netherlands, Dec. 27, 1983, 8304443

Int. Cl.⁴ B05D *1/00, 3/00, 5/06*

U.S. Cl. 427—40 **6 Claims**



1. A method of providing an adhering metal layer on a surface of polycarbonate, characterized in that the surface is treated with an aminosilane, that the treatment with aminosilane is preceded by a corona discharge applied to the surface and/or is succeeded by a treatment of the surface with tannin, and that finally a metal mirror is provided according to a known electroless chemical metallization process.

4,618,507

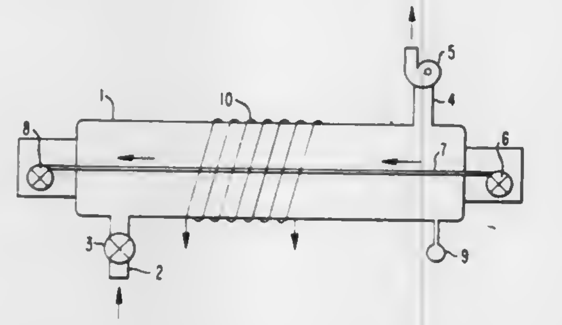
METHOD OF MAKING A CAPACITOR WINDING

Rajender K. Sadhir, Plum, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 7, 1985, Ser. No. 731,258

Int. Cl.⁴ B05D *3/06*

U.S. Cl. 427—41 **17 Claims**



1. A method of depositing conducting and polymeric films on a substrate comprising:

(A) exposing a plasma polymerizable vapor, selected from the group consisting of organometallic compounds and mixtures thereof with inert carrier gas, to a plasma; and

(B) moving a substrate, which is in the form of a film, beneath said plasma-exposed polymerizable organometallic vapor at a speed such that the metallic element in said organometallic vapor is deposited on said substrate as a conducting film, and carbon from said organic portion of said organometallic vapor is deposited on said conducting film as a pinhole-free highly-cross-linked polymeric film.

4,618,508

PROCESS FOR PRODUCING COMPOSITE LAYERS

Gerard Blandenet, Meylan; Jean-Jacques Chazee, Grenoble, and Michel Court, Echirolles, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

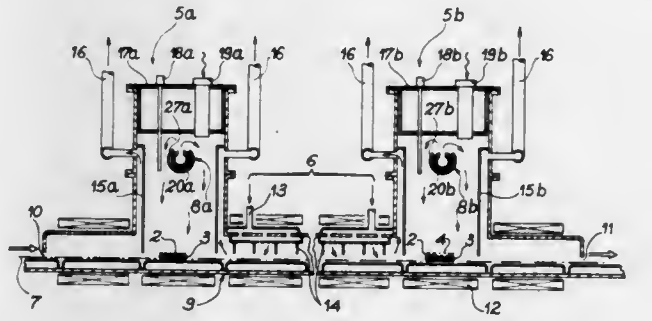
PCT No. PCT/FR84/00073, § 371 Date Nov. 21, 1984, § 102(e) Date Nov. 21, 1984, PCT Pub. No. WO84/03720, PCT Pub. Date Sep. 27, 1984

PCT Filed Mar. 21, 1983, Ser. No. 682,352

Claims priority, application France, Mar. 21, 1983, 83 04565

Int. Cl.⁴ B05D *3/12*

U.S. Cl. 427—57 **3 Claims**



1. Process for producing conductive composite layers constituted by a first layer (2) and a second layer (4), produced from chemical compounds, the layers being superimposed, this process consisting of depositing the first layer (2) on a substrate (3) and then the second layer (4) on the first layer (2), the first layer (2) being formed from tin-doped indium oxide, the second layer (4) being formed from tin oxide doped with one of the two elements fluorine or antimony, wherein the second layer is deposited immediately after the first and the depositions of the layers are carried out by reactive chemical spraying and at temperatures determined by the compounds to be deposited, a chemically inert atmosphere being maintained between each deposition, so that said first layer has an electrical resistivity at the most equal to 2.5×10^{-4} Ω·cm, without heat treatment.

4,618,509

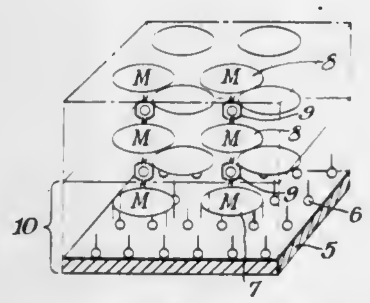
ARRAYS OF STACKED METAL COORDINATION COMPOUNDS

John E. Bulkowski, Newark, Del., assignor to University of Delaware, Newark, Del.

Division of Ser. No. 246,648, Mar. 23, 1981, abandoned. This application May 29, 1984, Ser. No. 614,894

Int. Cl.⁴ C23C *18/00, 28/00;* **H01L** *27/14*

U.S. Cl. 427—74 **9 Claims**



1. The process of assembling an array having utility in photosensitive elements comprising contacting a first monolayer of a metal coordination compound, said first monolayer characterized by a linking agent attached to the metal atom of the compound, with a water solution of a second metal coordination compound thereby causing the assembly of a second metal monolayer on said first monolayer, said linking agent forming thereby an interlayer linkage between metal atoms of the first monolayer and the second monolayer whereby to cause said layers to assume an interlayer orientation wherein the metal atoms are a stacked one above the other.

4,618,510

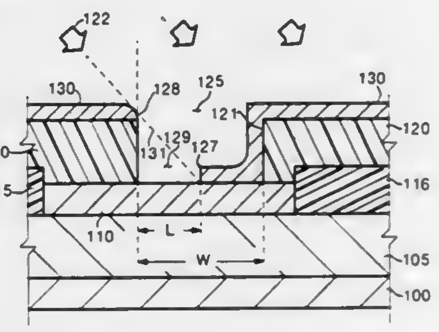
PRE-PASSIVATED SUB-MICROMETER GATE ELECTRODES FOR MESFET DEVICES

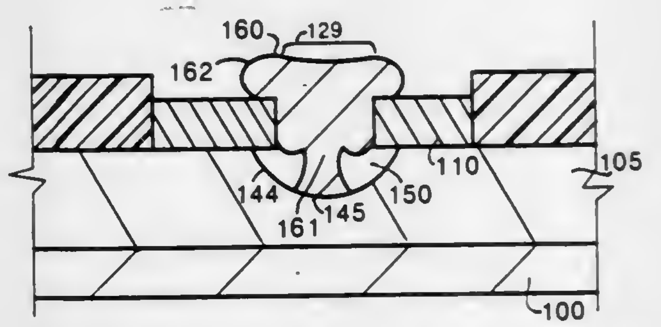
Tun S. Tan, Santa Rosa, Calif., assignor to Hewlett Packard Company, Palo Alto, Calif.

Filed Sep. 5, 1984, Ser. No. 634,250

Int. Cl.⁴ H01L *21/285*

U.S. Cl. 427—89 **8 Claims**





1. A method for producing a device in a semiconductor wafer comprising the steps of:

- forming a dielectric layer over a first region of a surface of the semiconductor wafer;
- forming a first and second contact on second and third regions of the wafer surface, the first and second contacts being separated by the dielectric layer;
- forming a first coating layer over the first and second contacts and the dielectric layer between the contacts, the first coating having an opening over a first region of the dielectric layer, thereby leaving an exposed area of the dielectric layer;
- forming a first metal layer over the first coating layer and a portion of the dielectric layer by angle evaporation;
- removing the dielectric layer in the exposed area, thereby exposing a surface region of the wafer;
- forming a trough region in the exposed surface region of the wafer; and
- depositing a second metal layer on a portion of the wafer in the trough region.

4,618,511

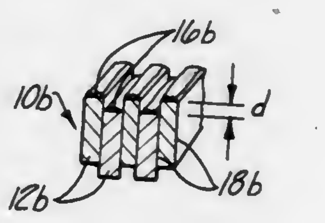
METHOD FOR APPLYING NON-SKID COATING TO METAL BARS WITH ELECTRIC ARC OR GAS FLAME SPRAY AND ARTICLE FORMED THEREBY

William S. Molnar, 3565 Roland Dr., Birmingham, Mich. 48010

Filed May 31, 1985, Ser. No. 739,692

Int. Cl.⁴ B05D *1/08*

U.S. Cl. 427—203 **30 Claims**



1. A process for forming metal bars with non-skid coating on

the narrow end surfaces of the metal bars comprising the steps of

providing a plurality of longitudinally extending metal bars each having side surfaces and a top end surface to be coated, with said end surface having a thickness in a range of between around ⅛" to around 1",

processing said end surfaces to provide a clean, roughened surface finish,

arranging said metal bars in an assembly having an overall width of between around 24" to around 48" with said bars being oriented in a side by side relationhip with each of said end surfaces being exposed in the same direction,

said bars as assembled having adjacent ones of said end surfaces spaced from each other a distance of between around 0.07" to around 0.20",

applying a first metallic coat on said end surfaces by a first thermal spray,

applying a coat of grit onto said first metallic coat while said first metallic coat is still in a thermally plastic state whereby said grit will adhere to said first metallic coat,

applying a second metallic coat by a second thermal spray over said grit coat and said first metallic coat, and

fabricating the resultant coated bars into a finished product.

4,618,512

PROCESS TO IMPART SMOOTH-DRY AND FLAME RETARDANT PROPERTIES TO SYNTHETIC-CELLULOSIC BLENDED FABRICS

Robert J. Harper, Jr., Metairie, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 586,617, Mar. 6, 1984, Pat. No. 4,536,422. This application Jun. 28, 1985, Ser. No. 749,905

The portion of the term of this patent subsequent to Aug. 20, 2002, has been disclaimed.

Int. Cl.^{4} B05D *3/02;* D06M *13/34*

U.S. Cl. 427—381 **16 Claims**

1. A process for imparting smooth-dry and flame retardant properties to synthetic-cellulose blend fabrics comprising:

(a) padding a synthetic-cellulosic blend fabric, said fabric containing a minimum of 50% cellulose with a solution comprising sufficient amounts of N-methylol crosslinking agent, an acid catalyst, a halogen containing alcohol, and antimony oxide to produce smooth-dry, flame retardant properties in the blend fabric;

(b) drying said cellulosic-blend fabric for sufficient time and at sufficient temperature to drive off the moisture; and then;

(c) curing said blend fabric for sufficient time and temperature to impart smooth-dry, flame retardant properties to said blend fabric.

4,618,513

TIN PLATING IMMERSION PROCESS

Edmund W. Kinkelaar, Dublin, and Howard G. Pekar, Columbus, both of Ohio, assignors to Texo Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 682,749, Dec. 17, 1984, Pat. No. 4,550,037. This application Oct. 24, 1985, Ser. No. 790,736

The portion of the term of this patent subsequent to Oct. 29, 2002, has been disclaimed.

Int. Cl.^{4} B05D *1/18*

U.S. Cl. 427—443.1 **11 Claims**

1. In a method for coating an electro-conductive substrate with tin, the steps of (1) immersing the substrate to be coated and one or more pieces of metallic zinc in a bath having the following composition:

(a) approximately 3 to 70 grams of stannous ions per liter of water;

(b) approximately 10 to 200 grams of a strong mineral acid per liter of water, the concentration of said acid being sufficient to maintain the stannous ions in solution in the bath; and

(c) 0.1 to 10 grams of a surface active agent which functionally controls the rate of desposition of stannous ion in an acid bath environment to obtain an adherent, non-porous tin coat on the substrate;

(2) effecting electro-conductive contact between the substrate to be coated and the metallic zinc immersed in said bath for a pre-determined length of time related to the thickness of the tin coating to be deposited on the substrate; (3) operating said bath at a temperature between approximately 50 to 110 degrees F.; (4) removing the substrate coated with tin from the bath.

4,618,514

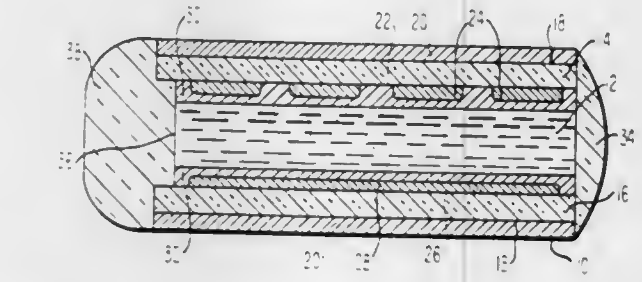
ALIGNMENT LAYER FOR LIQUID CRYSTAL DISPLAY

Sandra K. McClelland, Bordentown Township, Burlington County, and Eugene S. Poliniak, Willingboro Township, Burlington County, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 20, 1985, Ser. No. 811,877

Int. Cl.^{4} C09K *3/34*

U.S. Cl. 428—1 **7 Claims**



1. In a liquid crystal display device comprising a layer of liquid crystal material sealed between two substrates which have electrodes formed thereon, the opposing inner surfaces of the substrates being covered with an alignment layer, the improvement wherein the alignment layer comprises an optically clear, alkali-soluble resin which is an addition product of at least one ethylenically unsaturated, ligand-free monomer and at least one ethylenically unsaturated monomer having at least one carboxyl group.

4,618,515

POLYESTER CONTAINER WITH ORIENTED, CRYSTALLIZED THREAD FINISH FOR HOT FILL APPLICATIONS AND METHOD OF MAKING SAME

Wayne N. Collette, and Donald R. Demanche, both of Merrimack, N.H., assignors to Continental PET Technologies, Inc., Stamford, Conn.

Filed Apr. 5, 1985, Ser. No. 720,504

Int. Cl.^{4} B29C *17/07*

U.S. Cl. 428—35 **18 Claims**

1. A polyester container comprising a body terminating in a large diameter mouth, said mouth having a diameter generally approaching the diameter of said body, said mouth being defined by a neck finish of the type for releasably receiving a closure, said neck finish being biaxially oriented, and said neck finish having a greater density than said body to provide a diameter reduction when the container is hot filled that is materially less than that of said body.

4,618,516

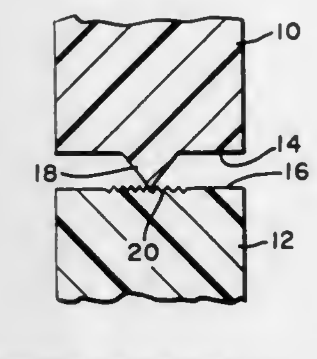
ULTRASONIC WELDING OF THERMOPLASTIC WORKPIECES

Thomas B. Sager, Newtown, Conn., assignor to Branson Ultrasonics Corporation, Danbury, Conn.

Filed Sep. 12, 1985, Ser. No. 775,343

Int. Cl.^{4} B29C *65/08*

U.S. Cl. 428—35 **4 Claims**



3. An article of manufacture formed by:

positioning two thermoplastic workpieces in juxtaposed, stacked relationship with one another along confronting surfaces, one of said surfaces having an energy director extending from such surface for contacting the confronting surface of the other workpiece, the confronting surface of such other workpiece being of a rough texture;

applying a compressive force to said workpieces for urging said confronting surfaces into contact with one another;

applying ultrasonic vibratory energy to said workpieces to cause softening of the thermoplastic material of said energy director and the material on said other workpiece surface contacted by said energy director for providing molten thermoplastic material at the interface between said workpieces, and

ceasing the application of ultrasonic energy while briefly maintaining said workpieces under a compressive force for causing said molten thermoplastic material to rigidify and form a weld.

4,618,517

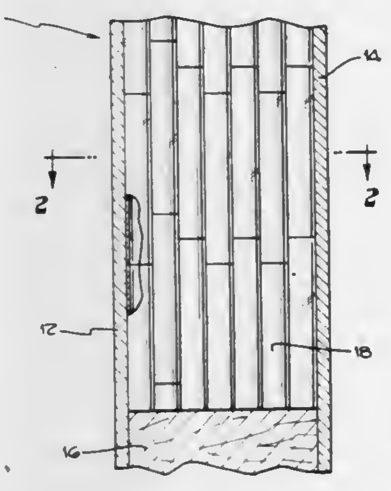
THERMAL INSULATING MATERIAL

Frank A. Simko, Jr., 5666 Cope Leyte Dr., Sarasota, Fla. 33580

Continuation of Ser. No. 767,059, Aug. 19, 1985, abandoned, which is a continuation of Ser. No. 626,016, Jun. 29, 1984, abandoned. This application Apr. 8, 1986, Ser. No. 850,426

Int. Cl.^{4} B32B *1/08, 3/26*

U.S. Cl. 428—36 **12 Claims**



1. A thermal insulating material comprising at least two layers of thin-walled, hollow tubes arranged such that the longitudinal axes of the tubes are perpendicular to the direction of heat flow, each layer having at least two rows of such tubes, and each tube having a length-to-diameter ratio of at least about 1.5 to about 10 and a diameter-to-wall thickness ratio of at least about 50 to 150.

4,618,518

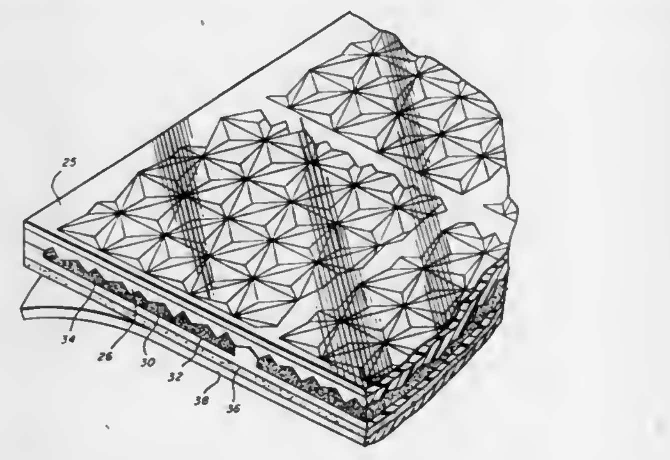
RETROREFLECTIVE SHEETING AND METHODS FOR MAKING SAME

Robert M. Pricone, Vernon Hills; William N. Roberts, Niles, and Richard Zanotti, Hoffman Estates, all of Ill., assignors to Amerace Corporation, Hackettstown, N.J.

Continuation-in-part of Ser. No. 640,009, Aug. 10, 1984, abandoned, which is a continuation-in-part of Ser. No. 533,068, Sep. 19, 1983, abandoned. This application Jun. 20, 1985, Ser. No. 747,103

Int. Cl.^{4} D06N *7/00;* B32B *3/00*

U.S. Cl. 428—40 **67 Claims**



1. A flexible retroreflective cube corner type laminate sheet construction including a thermoplastic web with a light-receiving and transmitting first side and a second side coextensive with said first side, and a cube corner type retroreflective pattern formed on at least a portion of said second side, said construction comprising:

a layer of hydrophobic granular material deposited on said second side to cover selected portions of said formed cube corner retroreflective pattern with remaining portions of said second side devoid of said hydrophobic granular material; and

a layer of backcoating material deposited on said second side to substantially completely overly said hydrophobic granular material without disturbing the pattern formed by said granular material, said backcoating material substantially fully contacting said portions of said second side devoid of said granular material and being fixedly secured thereto, thereby encapsulating said hydrophobic granular material between said second side and said backcoating layer, the particle size of said hydrophobic granular material being such that the area in which it is deposited will be effectively impervious to said backcoating material whereby said backcoating material is unable to penetrate said granular material and interact with said second side except in the area devoid of said granular material.

4,618,519

TIRE REPAIR BY "PATCH ONLY" METHOD

Russell W. Koch, Hartville, Ohio, and Douglas D. Snyder, Tempe, Ariz., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 584,426, Feb. 28, 1984, abandoned. This application Apr. 1, 1985, Ser. No. 718,666

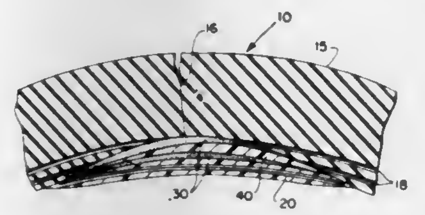
Int. Cl.^{4} B32B *3/26*

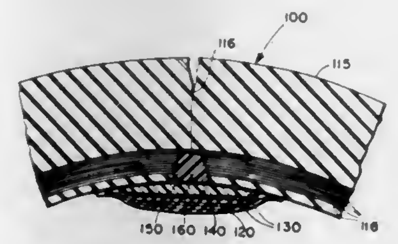
U.S. Cl. 428—63 **7 Claims**

1. A repaired elastomer article, consisting essentially of the elastomer article, said article having a crack/cut extending therethrough;

said article having a reinforcement area, said article having a cavity formed in the interior vicinity of said crack/cut,

said cavity interiorly extending inclusively into said reinforcement area;
a filler, said filler residing in said interior cavity;
a treating agent, said treating agent residing at least on the interior portion of said elastomer article surrounding said filler;

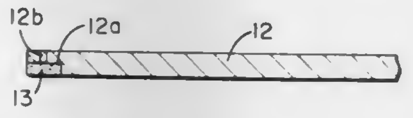




an amine curable polymer or prepolymer, said amine curable polymer or prepolymer residing on said treating agent;
a cured elastomeric patch, said patch residing on said amine curable polymer or prepolymer;
said amine curable polymer or prepolymer bonded to said patch and to said article at ambient temperature.

4,618,520
PREFABRICATED BINDABLE SHEET

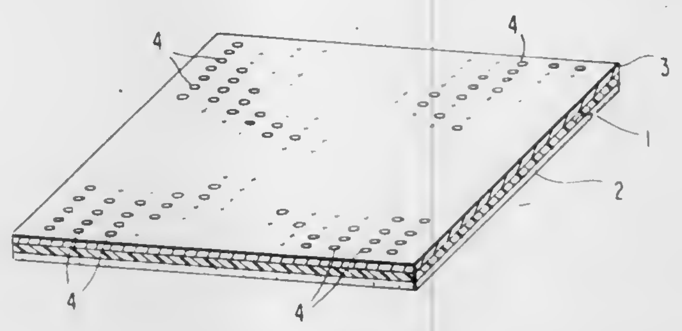
Albert E. Holmberg, Edina, Minn., assignor to The Holmberg Company, Minneapolis, Minn.
Filed Feb. 27, 1984, Ser. No. 584,169
The portion of the term of this patent subsequent to May 8, 2001, has been disclaimed.
Int. Cl.⁴ B32B ***3/10***
U.S. Cl. 428—131 **1 Claim**



1. A prefabricated bindable sheet comprising,
a sheet of paper having a marginal recess formed along one edge thereof,
a substantially continuous strip of heat-responsive glue applied to said paper in said recess of a thickness no greater than the depth of the recess to produce a prefabricated bindable sheet of substantially uniform thickness throughout its entire surface area,
and a plurality of spaced-apart openings formed in the recessed portion of said sheet and extending therethrough so that the heat-responsive glue applied in said recess extends through the thickness of the sheet and is exposed on the opposite side of the sheet from the recess to produce glue-to-glue binding when two sheets are heat-sealed together.

4,618,521
CORROSION PROTECTION SHEET

Karl Rühl, Bad Nauheim, and Karlheinz Bildner, Rodenbach, both of Fed. Rep. of Germany, assignors to Rütgerswerke Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Jan. 18, 1985, Ser. No. 692,751
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1984, 3403407
Int. Cl.⁴ B32B ***11/02, 3/10***
U.S. Cl. 428—137 **6 Claims**



1. A corrosion protective sheet provided with perforations for the application by melting to steel surfaces at a temperature of 120° to 160° C. within 30 minutes which has a resistance to temperature in a range of −40° to 160° C. comprising a mixture of 60 to 90 weight percent bitumen, 0.5 to 7 weight percent SBR-rubber, 5 to 25 weight percent elastomeric modified bitumen, 0.5 to 7.5 weight percent natural resin and 0.5 to 10 weight percent of an organic or inorganic fibrous material which is resistant to a temperature of up to 160° C., and provided on the underside with a meltable adhesive **(2)** which exists as a solid sheet at a temperature under 90° C. and has a melting temperature between 120° and 160° C. and which is resistant to bitumen and having on the upper side a bitumen resistant anti-block material **(3)** which also is solid at a temperature under 90° C.

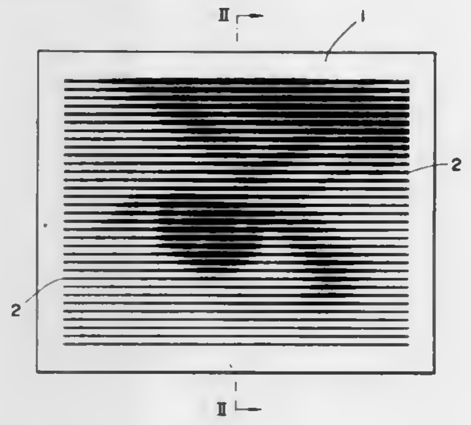
4,618,522
ORGANOSILOXANE FABRIC COATING COMPOSITIONS

Frank J. Modic, Scotia, N.Y., assignor to General Electric Company, Waterford, N.Y.
Filed Dec. 19, 1983, Ser. No. 562,800
Int. Cl.⁴ B32B ***5/02***
U.S. Cl. 428—145 **22 Claims**

16. An article useful as a roofing fabric membrane structure having improved tear strength and flame retardance comprising:
(a) a base fabric material;
(b) an addition curable elastomeric silicone base coating composition having an effective amount of non-abrasive filler selected from the group consisting of calcium carbonate, hydrated alumina, fumed silica, aluminum silicate, potassium titanate, zirconium silicate, carbon black, zinc oxide, titanium dioxide, ferric oxide, silica aerogel, precipitated silica, calcium silicate, chromic oxide, cadmium sulfide, lithopone, talc, magnesium oxide and graphite, and mixtures thereof applied to at least one side of said base fabric material; and
(c) a coating composition which is resistant to dirt pickup on at least onse side of said base fabric material.

4,618,523
FORMING A SIMULATED HALFTONE PICTURE

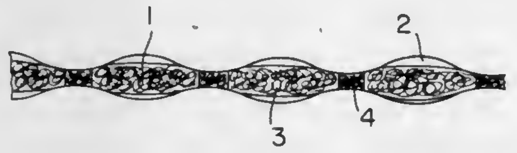
Masao Yoshida, Tokyo, Japan, assignor to Kabushiki Gaisha Waizen, Tokyo, Japan
Filed Oct. 3, 1985, Ser. No. 783,432
Claims priority, application Japan, Oct. 5, 1984, 59-209456
Int. Cl.⁴ B32B ***3/14***
U.S. Cl. 428—189 **3 Claims**



1. A poster comprising: a base member and a plurality of strips of various widths and of a color different from the color of said base sheet, said strips being arranged parallel to each other at a regular interval distance between the longitudinal center lines of adjacent strips, and being applied to the surface of said base member with an adhesive agent, the widths of said strips varying with the values in the light or dark tones in a picture or pattern to be reproduced, thus showing varying shades by stripes, and producing a desired halftone-like image on the background of said base member.

4,618,524
MICROPOROUS MULTILAYER NONWOVEN MATERIAL FOR MEDICAL APPLICATIONS

Dieter Groitzsch, Hirschberg, and Erich Fahrbach, Weinheim, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany
Filed Sep. 17, 1985, Ser. No. 776,811
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1984, 3437183
Int. Cl.⁴ B32B ***27/14***
U.S. Cl. 428—198 **13 Claims**



1. A microporous, multilayer nonwoven material, comprising:
a layer of nonwoven, microfiber material having a weight of from about 0.5 to about 60 g/m^2, each microfiber thereof being hydrophobic and having a diameter of from about 0.1 to about 10 microns;
nonwoven layers covering opposite sides of the microfiber layer; and
water-repellent paste members penetrating through the layers in a pattern across the layers sufficient for bonding the layers together.

4,618,525
COATED GLASS MICROBUBBLES AND ARTICLE INCORPORATING THEM

Craig S. Chamberlain, Woodbury; George F. Vesley, Hudson; Patrick G. Zimmerman, St. Paul, and Jerome W. McAllister, Hudson, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jun. 3, 1985, Ser. No. 740,577
Int. Cl.⁴ B32B ***3/00***
U.S. Cl. 428—209 **21 Claims**

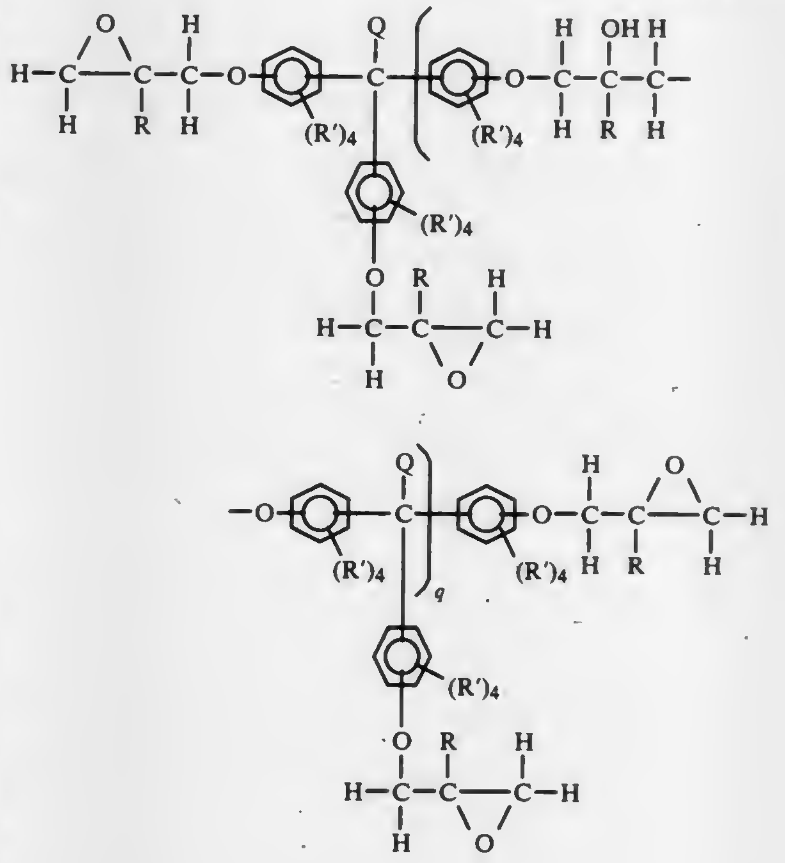
1. Glass microbubbles having an average density not exceeding 1.0 g/cm^3 and an average diameter from 5 to 200 micrometers wherein the improvement comprises:
the microbubbles have an inorganic thin-film coating having an average thickness not exceeding 10 nm.

4,618,526
CURABLE COMPOSITIONS CONTAINING MULTIGLYCIDYL ETHERS AND A SULFONIC ACID AMIDE

Jody R. Berman, Lake Jackson; Dennis L. Steele, Freeport, and Michael P. Kubisiak, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.
Filed Jul. 22, 1985, Ser. No. 757,692
Int. Cl.⁴ C08G ***59/32, 59/40***
U.S. Cl. 428—209 **25 Claims**

1. A curable composition comprising a mixture of
(A) at least one of
(1) at least one epoxy resin represented by the following formulas (I) or (II)

FORMULA (I)



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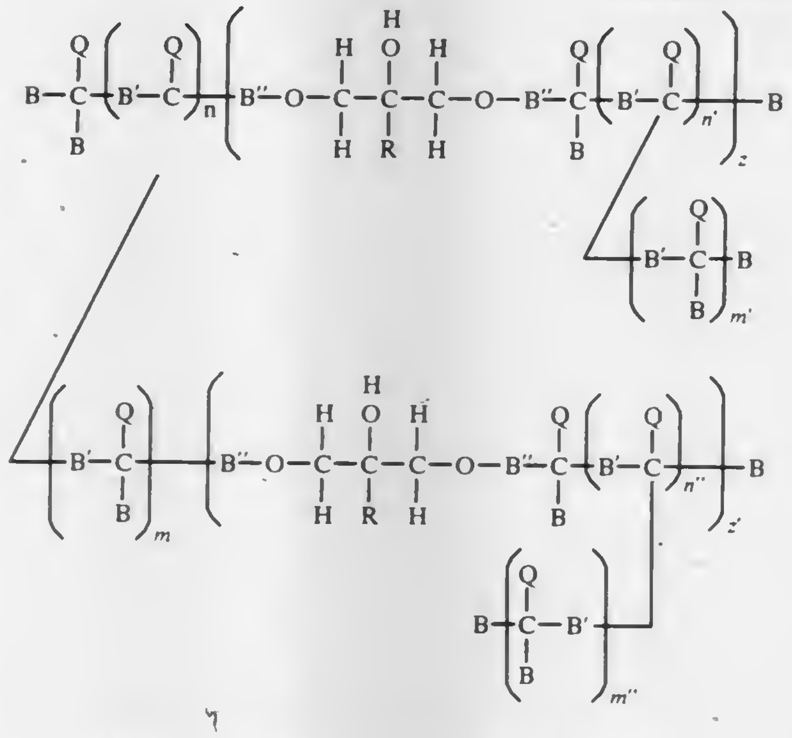
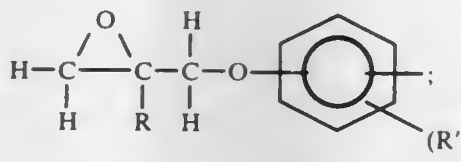
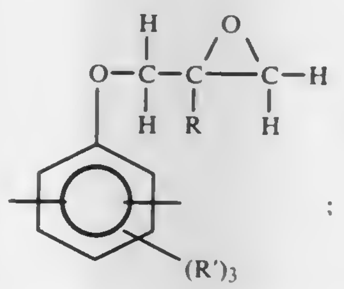
FORMULA (II)



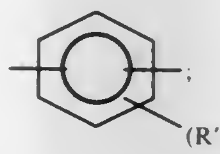
wherein each B is represented by the formula



each B′ is represented by the formula



each B″ is represented by the formula

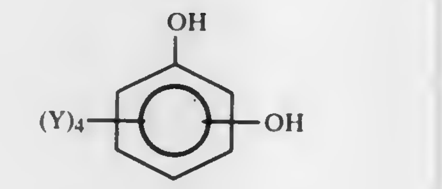


each R is independently hydrogen or an alkyl group having from 1 to about 4 carbon atoms; each Q is independently hydrogen or a hydrocarbyl group having from 1 to about 10 carbon atoms; each R′ is independently hydrogen, a hydrocarbyl or hydrocarbyloxy group having from 1 to about 10 carbon atoms or a halogen; m has a value of n−1; m′ has a value of n′−1; m″ has a value of n″−1; each n, n′ and n″ independently has a value from zero to about 3; q has a value from zero to about 4; and each z and z′ independently has a value from zero to about 3;

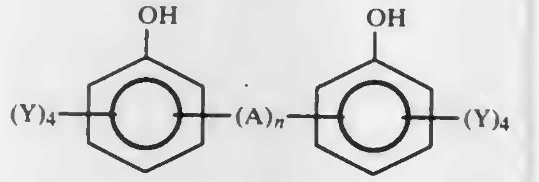
(2) the reaction product of

(a) at least one epoxy resin as defined in component (A-1) and

(b) at least one dihydric phenol represented by the following formulas (III) or (IV)

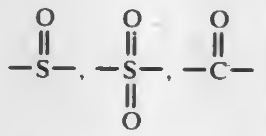


FORMULA (III)



FORMULA (IV)

wherein A is a divalent hydrocarbon group having from 1 to about 12 carbon atoms, —S—, —S—S—,

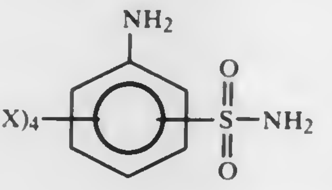


$$\overset{\text{O}}{\overset{\|}{-\text{S}-}},\quad \overset{\text{O}}{\overset{\|}{\underset{\underset{\text{O}}{\|}}{-\text{S}-}}},\quad \overset{\text{O}}{\overset{\|}{-\text{C}-}}$$

or —O—; each Y is independently hydrogen, a halogen or a hydrocarbyl or hydrocarbyloxy group having from 1 to about 10 carbon atoms; and n has a value of zero or 1; and wherein components (a) and (b) are present in quantities such that the ratio of phenolic hydroxyl groups to epoxide groups is from about 0.01:1 to about 0.5:1;

(3) mixtures thereof;

(B) at least one amine substituted aromatic sulfonic acid amide represented by the following formula (V)



FORMULA (V)

wherein each X is independently hydrogen, a monovalent hydrocarbyl group having from 1 to about 10 carbon atoms or a halogen; and wherein components (A) and (B) are present in quantities such that the ratio of epoxy groups to hydrogen atoms attached to a nitrogen atom is from about 0.8:1 to about 2:1.

4,618,527

GOOD MACHINEABILITY FILM STRUCTURE

Rene H. Doyen, Pittsford, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 6, 1985, Ser. No. 805,633

Int. Cl.⁴ B32B *7/02, 7/12, 27/00*

U.S. Cl. 428—213 **16 Claims**

1. A biaxially oriented film structure comprising:

(I) a comparatively thick base layer of a thermoplastic resin containing: an anti-static combination of (a) a compound of the formula $RN(R_1)_2$, wherein R is a C_6–C_{24} alkyl group; R_1 is H $(OCH_2CH_2)_n$; n=1–25; and (b) a monoester of an aliphatic C_2–C_8 polyhydric alcohol and a C_{12}–C_{24} fatty acid; and a slip improving proportion of (c) a C_{12}–C_{24} fatty amide; and

(II) a comparatively thin surface layer on at least one surface of (I), said surface layer comprising a thermoplastic resin containing an anti-block and COF reducing proportion of a finely divided inorganic material.

4,618,528

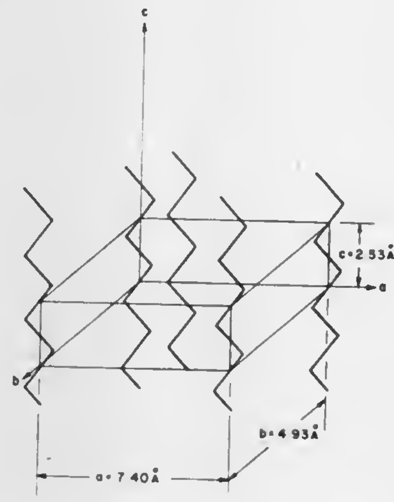
POLYMER FILMS CONTAINING PLATELET PARTICLES

William Sacks, Gillette; John P. Sibilia, Livingston; Abraham M. Kotliar, Westfield, all of N.J.; Harold D. Oltmann, and Shu P. Chen, both of Baton Rouge, La., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 405,225, Aug. 5, 1982, Pat. No. 4,528,235. This application Apr. 15, 1985, Ser. No. 709,264

Int. Cl.⁴ B32B *7/02, 5/16, 27/34*

U.S. Cl. 428—216 **11 Claims**



1. A film having at least one layer comprising:

a polyamide having a melt index of from 0.01 to 10 g/10 minutes as measured on ASTM D-1238 at 1000 gram load at 235° C., and from 10 to 50 weight percent of a platelet filler wherein the filler has an average equivalent diameter of from 1 to 8 micrometers, a maximum diameter of 25 micrometers, and a thickness of less than 0.5 micrometers, the filler being homogeneously distributed through the film and substantially parallel to the plane of the film, the film being from 10 to 100 micrometers in thickness.

4,618,529

INORGANIC FIBER-REINFORCED CERAMIC COMPOSITE MATERIAL

Takemi Yamamura; Masahiro Tokuse, and Yoshiharu Waku, all of Ube, Japan, assignors to UBE Industries, Ltd., Ube, Japan

Filed Apr. 19, 1985, Ser. No. 725,128

Claims priority, application Japan, Apr. 24, 1984, 59-81156

Int. Cl.⁴ D03D *3/00*

U.S. Cl. 428—224 **8 Claims**

1. An inorganic fiber-reinforced ceramic composite material comprising a matrix of a ceramic and inorganic fibers as a reinforcing material, characterized in that

(a) the inorganic fibers are inorganic fibers containing silicon, either titanium or zirconium, carbon and oxygen and being composed of

(i) an amorphous material consisting substantially of Si, M, C and O, or

(ii) an aggregate consisting substantially of ultrafine crystalline particles with a particle diameter of not more than 500 Å of β-SiC, MC, a solid solution of β-SiC and MC and MC_{1-x}, and amorphous SiO_2 and MO_2, provided that in the above formulae, M represents titanium or zirconium, and x is a number represented by $0<x<1$, or

(iii) a mixture of the amorphous material (i) and the aggregate (ii),

(b) the ceramic is at least one material selected from the group consisting of carbides, nitrides, oxides, glass ceramics, graphite and inorganic materials containing silicon, either titanium or zirconium, carbon and oxygen and composed of

(i) an amorphous material consisting substantially of Si, M, C and O, or

(ii) an aggregate consisting substantially of ultrafine crystalline particles with a particle diameter of not more than 500 Å of β-SiC, MC, a solid solution of β-SiC and MC and MC_{1-x}, and amorphous SiO_2 and MO_2, provided that in the above formulae, M represents titanium or zirconium, and x is a number represented by $0<x<1$, or

(iii) a mixture of the amorphous material (i) and the aggregate (ii),

(c) the inorganic fibers have an initial reaction degradation speed of not more than 0.35 $kg/mm^2.sec^{-1}$ and a tenacity reduction ratio of not more than 40% during the production of the composite material,

(d) the composite material has a critical stress intensity factor about 2 to 7 times as high as that of said matrix alone, and

(e) the composite material has a bending strength reduction ratio, measured by a thermal shock fracture resistance measuring method, of not more than about 10% after it is heat-treated in air at 800° to 1300° C. immediately then dipped in water at room temperature, and then dried.

4,618,530

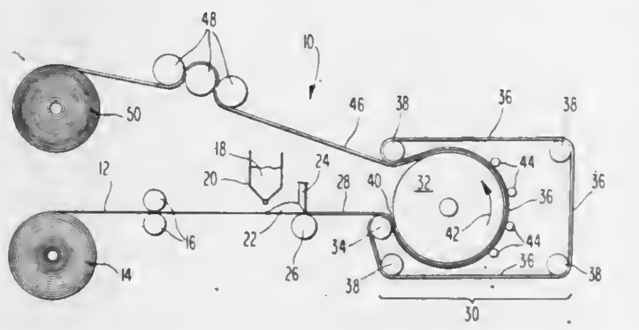
PROCESS FOR THE PREPARATION OF A COMPOSITE MAT

John R. Stetson, Lebanon, N.J., assignor to Congoleum Corporation, Kearny, N.J.

Continuation of Ser. No. 549,949, Nov. 9, 1983, abandoned. This application Feb. 12, 1986, Ser. No. 831,045

Int. Cl.⁴ B32B *5/02;* **B05D** *3/02*

U.S. Cl. 428—236 **9 Claims**



1. A process for the preparation of a foamable composite mat having a smooth and printable first surface and a smooth and adherable opposite surface which foamable composite mat may be foamed to a uniform expanded thickness and which composite mat comprises a fibrous mat encapsulated within a foamable, printable resinous polymeric gel which process comprises:

(a) providing a supply of suitable fibrous mat material;

(b) combining a controlled amount of a foamable, liquid resinous polymeric composition with said fibrous mat material in such a manner that the foamable liquid permeates into and through the interstices of the fibrous material and coats both surfaces of said fibrous mat, wherein the foamable liquid resinous polymeric composition is capable of forming a printable resinous polymeric gel at a suitable temperature, thereby providing a foamable liquid resinous polymeric composition saturated fibrous mat having a uniform thickness;

(c) providing a suitable environment for the gellation of said foamable liquid resinous polymeric composition, said suitable environment for the gellation of said foamable liquid resinous polymeric composition consisting of a heated, rotary drum at least partially enclosed with a seamless belt, wherein the surface of said seamless belt coming into contact with the foamable liquid resinous polymeric composition has been coated with a silicone rubber; and

(d) maintaining the foamable liquid saturated fibrous mat within said suitable environment for a sufficient period of time to gel the foamable liquid resinous polymeric composition to produce a fibrous mat encapsulated within a foamable and printable resinous polymeric gel.

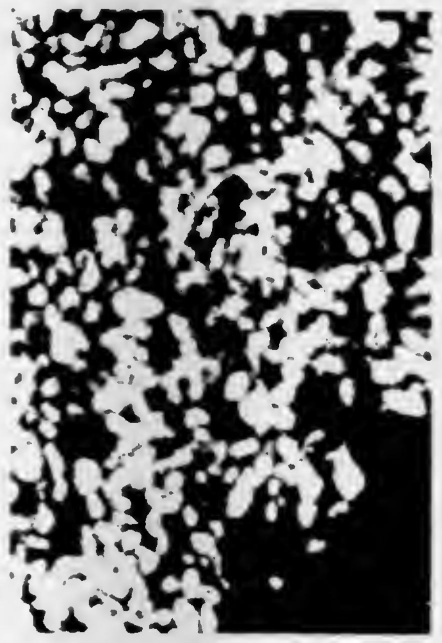
4,618,531
POLYESTER FIBERFILL AND PROCESS

Ilan Marcus, Versoix, Switzerland, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 15, 1985, Ser. No. 734,423

Int. Cl.⁴ B32B *5/16*

U.S. Cl. 428—283 18 Claims



1. Refluffable fiberballs of average dimension 1 15 mm, consisting essentially of randomly-arranged, entangled, spirally-crimped polyester fiberfill having a cut length of about 10 to about 60 mm, and having a cohesion measurement as defined of less than 6 Newtons (N).

4,618,532
UPHOLSTERED SEAT HAVING AN AIR-PERMEABLE COVERING AND A COLD FOAM CORE

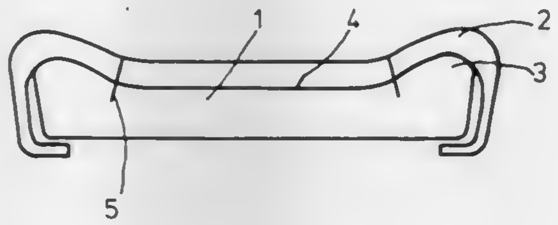
Robert Volland, Leverkusen; Hans-Albrecht Freitag, Bergisch Gladbach; Johannes Seesing, Leverkusen, and Herbert Bergmann, Kuerten-Broich, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 15, 1984, Ser. No. 641,118

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1983, 3330760

Int. Cl.⁴ B32B *3/26*

U.S. Cl. 428—304.4 4 Claims



1. An upholstered seat comprising:
- (a) an in situ foam core based on a cold foam formulation,
- (b) a foam-impermeable sealing layer which covers said foam core and which is selected from the group consisting of paper, paper-like products, and films which are capable of being dissolved, and
- (c) an air-permeable covering which covers said sealing layer.

4,618,533
POROUS MEMBRANE HAVING HYDROPHILIC SURFACE AND PROCESS

Michael J. Steuck, N. Reading, Mass., assignor to Millipore Corporation, Bedford, Mass.

Filed Nov. 30, 1984, Ser. No. 676,681

Int. Cl.⁴ B32B *3/26*

U.S. Cl. 428—315.7 38 Claims

1. A composite porous thermoplastic membrane which comprises a porous membrane substrate having an average pore size between about 0.001 and 10 microns formed of a first polymer, said substrate being directly coated on its entire surface with a cross-linked second polymer formed from a monomer polymerized in situ with a free radical initiator and cross-linked in situ on said substrate, said composite porous membrane having essentially the same porous configuration as said porous membrane substrate.

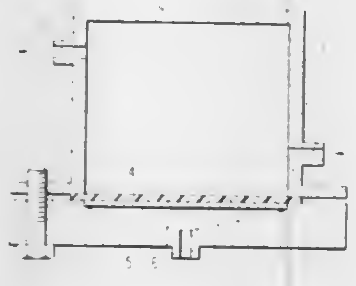
4,618,534
COMPOSITE MEMBRANE AND PROCESS FOR PRODUCING THE SAME

Akio Iwama; Kentaro Tasaka, and Yoshitaka Kazuse, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

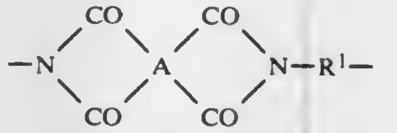
Filed Oct. 23, 1984, Ser. No. 663,750

Int. Cl.⁴ B32B *3/26;* **C08D** *5/20*

U.S. Cl. 428—316.6 21 Claims



1. A composite membrane comprising
an anisotropic membrane made of a polyimide resin comprising a dense surface layer and a porous layer continuously connected to the dense surface layer, said polyimide resin consisting essentially of a repeating unit represented by the formula:



wherein A is a tetravalent aliphatic or aromatic group, and R¹ is a divalent aromatic, alicyclic or aliphatic hydrocarbon group, or a divalent organic group comprising the hydrocarbon groups linked with a divalent organic linking group, and
a cross-linked silicone resin thin film formed on the dense surface layer of the anisotropic membrane.

4,618,535
MAGNETIC RECORDING MEDIUM

Masaharu Nishimatsu, Komoro; Toshiaki Ide; Hiroyuki Arioka, both of Saku, and Yuichi Kubota, Komoro, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Aug. 20, 1984, Ser. No. 642,208

Claims priority, application Japan, Sep. 12, 1983, 58-166677

Int. Cl.⁴ G11B *5/72*

U.S. Cl. 428—325 6 Claims

1. A magnetic recording medium comprising a plastic base film, a thin magnetic metal layer formed on one side of the base film and a backing layer formed on the other side of the base film, characterized in that the backing layer is composed essentially of a thermoset or radiation-cured resin and carbon black and inorganic compound powder uniformly dispersed in the resin, and has a surface roughness of from 0.05 to 0.4 μm, said carbon black having an average particle size of from 10 to 150 mμm as measured by an electron microscope, said inorganic compound powder having a Mohs hardness of at most 6 and a particle size of from 10 to 500 mμm, and the weight ratio of the carbon black to the inorganic compound powder being from 1:9 to 9:1.

4,618,536
MAGNETIC RECORDING MEDIUM

Akira Morioka; Takeshi Matsuura, both of Kyoto, and Yoshiyuki Takahira, Suita, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Sep. 4, 1984, Ser. No. 647,244

Claims priority, application Japan, Sep. 7, 1983, 58-165779

Int. Cl.⁴ G11B *5/70*

U.S. Cl. 428—329 1 Claim

1. An abrasion resistant magnetic recording medium comprising a base material and a magnetic layer provided thereon, said magnetic layer containing magnetic particles, a binder, and a mixture of abrasion resistant particles consisting essentially of alpha-Fe_2O_3 particles having an average particle size of from 0.4 to 2.0 microns in an amount of from 2 to 10% by weight to the weight of the magnetic particles, Al_2O_3 particles having an average particle size of from 0.2 to 0.7 micron in an amount of from 2 to 4% by weight to the weight of the magnetic particles and Cr_2O_3 particles having an average particle size of from 0.4 to 1.5 microns in an amount of from 0.2 to 1.0% by weight to the weight of the magnetic particles.

4,618,537
RECORDING MEDIUM

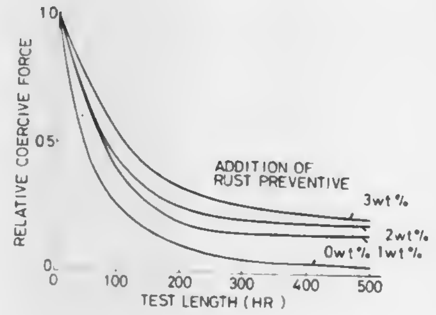
Katsuhiko Takano, Yokohama; Shigeharu Iijima; Satoshi Yoshihara, both of Kawasaki; Masaaki Matsushima, Machida; Hiroyoshi Kishi, Tokyo, and Eizo Sasamori, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1984, Ser. No. 573,478

Claims priority, application Japan, Jan. 31, 1983, 58-12940

Int. Cl.⁴ G11B *5/72*

U.S. Cl. 428—336 21 Claims



1. A recording medium which comprises a substrate, a recording layer formed on the substrate, an anticorrosive adhesive layer formed on the recording layer and containing a chemical agent capable of preventing corrosion of the recording layer and inert to the recording layer, and a protective plate bonded to the recording layer through the anticorrosive layer.

17. A recording medium which comprises two substrates, a recording layer formed on each of the substrates, and an anticorrosive adhesive layer containing a chemical agent capable of preventing corrosion of the recording layer and inert to the recording layer, said anticorrosive layer bonding said two substrates such that the recording layers face each other.

4,618,538
COLORED ENAMEL COMPOSITION FOR OBTAINING DECORATIVE LAYERS OF FLOAT GLASS SHEETS

Heinfried Emonts, Aachen, and Franz Gebhardt, Wurselen, both of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, Aubervilliers, France

Filed Sep. 12, 1985, Ser. No. 775,286

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1984, 3433408

Int. Cl.⁴ B32B *17/06;* **B05D** *5/00*

U.S. Cl. 428—428 14 Claims

1. An enamel composition having a baking temperature corresponding substantially to the softening temperature of a float glass glazing for forming an enamel coating layer thereon, consisting essentially of
- (a) a vitreous matrix amounting to at least 75% by weight of the enamel composition having the following features
- (1) a composition, by weight, including
  - SiO_2: 25–33
  - PbO: 47–65
  - B_2O_3: 3–7
  - Na_2O: 1–4
  - K_2O: 0–2
  - Li_2O: 0–0.8
  - ZnO: 0.2–5
  - wherein the molar ratio of SiO_2 to PbO is between 1.6 and 2.7 and the total of alkaline oxides present being less than 5% by weight, and
- (2) a linear thermal expansion coefficient in the range of temperature of 20° to 300° C. less than that of the glazing to be coated;
- (b) pigments; and
- (c) tin dioxide in an amount up to about 5% by weight of the enamel composition.

4,618,539
CORROSION-INHIBITING COMPOSITIONS, AND OIL COMPOSITIONS CONTAINING SAID CORROSION-INHIBITING COMPOSITIONS

Richard W. Jahnke, Mentor, and William C. Woerner, Pepper Pike, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Dec. 6, 1984, Ser. No. 678,731

Int. Cl.⁴ B32B *15/04;* **C04B** *9/02*

U.S. Cl. 428—470 29 Claims

1. A corrosion-inhibiting composition comprising a mixture of
- (A) at least one oil-soluble neutral or basic alkali metal or alkaline earth metal salt or complex of at least one organic acid, and
- (B) at least one nitrogen- and boron-containing composition which is the reaction product of at least one amino alcohol, at least one of a boric acid or boron trioxide, and at least one organic carboxylic acid; with the proviso that said corrosion-inhibiting composition is free of microcrystalline wax.

4,618,540

COMPOUND BODY AND METHOD OF MAKING THE SAME

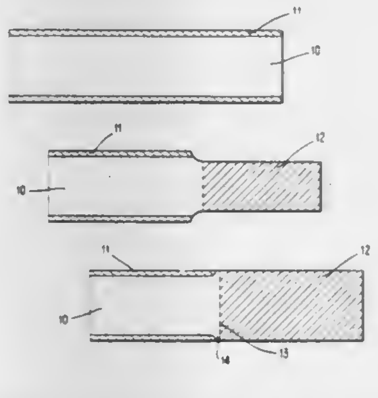
Johan P. von Holst, Sandviken, and Rolf G. Oskarsson, Rönninge, both of Sweden, assignors to Santrade Limited, Lucerne, Switzerland

Filed May 2, 1984, Ser. No. 606,296

Claims priority, application Sweden, May 13, 1983, 8302735

Int. Cl.⁴ B22F *7/02, 7/04*

U.S. Cl. 428—552 **16 Claims**



1. A compound body of at least two parts, one of said at least two parts being a wear-resistant surface consisting essentially of a hard material of from 30 to 70 volume percent of particles selected from the group consisting of carbides, nitrides, carbonitrides and mixtures thereof of metals selected from the group consisting of Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W and mixtures thereof, in a matrix based on a metal selected from the group consisting of Fe, Ni, Co and mixtures thereof, and another of said at least two parts being a supporting surface consisting essentially of high speed steel or tool steel, the thickness of the wear-resistant surface being from 3 to 50% of the radial dimension of the said compound body.

13. Method of making a compound body according to claim 1, characterized in that a body of high speed steel or tool steel is placed in a powder mixture consisting of 30–70 by volume of hard constituents formed by particles selected from the group consisting of carbides, nitrides and carbonitrides and mixtures thereof of a metal selected from the group consisting of Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W and mixtures thereof in a matrix based on a metal selected from the group consisting of Fe, Ni, Co, and mixtures thereof after which the body and the powder mixture are compacted by cold isostatic pressing to form an extrusion billet, which then is placed in a can and hot extruded to a compound body blank.

4,618,541

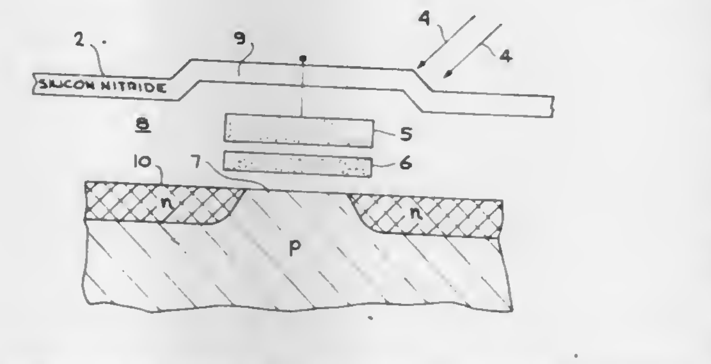
METHOD OF FORMING A SILICON NITRIDE FILM TRANSPARENT TO ULTRAVIOLET RADIATION AND RESULTING ARTICLE

Abdul R. Forouhi, San Jose, and Bert L. Allen, Los Altos, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 21, 1984, Ser. No. 684,516

Int. Cl.⁴ B44C *5/08*

U.S. Cl. 428—688 **22 Claims**



1. A method for forming an ultraviolet radiation transparent silicon nitride film on a substrate, comprising:

- heating a reaction chamber;
- placing said substrate into said reaction chamber;
- evacuating said reaction chamber;
- establishing a flow of silane and ammonia, such that an essentially small ratio of silane-to-ammonia atmosphere is established in said chamber;
- passing said flow over said substrate; and
- catalyzing said atmosphere, such that said silane and said ammonia react to deposit an ultraviolet radiation transparent silicon nitride film on said substrate.

4,618,542

MAGNETIC THIN FILM

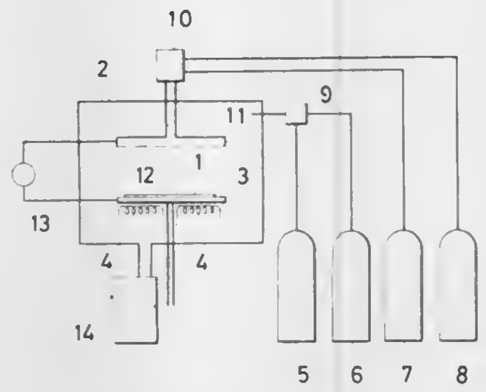
Haruyuki Morita; Jiro Yoshinari, and Masatoshi Nakayama, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Nov. 21, 1984, Ser. No. 673,987

Claims priority, application Japan, Nov. 21, 1983, 58-217801; Nov. 29, 1983, 58-223070

Int. Cl.⁴ G11B *5/64*

U.S. Cl. 428—694 **15 Claims**



1. A magnetic crystalline thin film comprised of at least one magnetic metal and vapor phase grown on a substrate, said thin film being prepared by a process comprising the steps of

- introducing a chemical compound of the metal in vapor form and a reducing gas into an evacuated vacuum chamber where the substrate is placed,
- subjecting the reaction gases to plasma excitation, thereby achieving the vapor phase growth of the magnetic thin film on the substrate while the substrate is held at a temperature of lower than 100° C., and
- heat treating the metal thin film at a temperature of at least 200° C. in a non-oxidizing atmosphere or at a temperature of at least 100° C. in a non-oxidizing plasma.

4,618,543

FUSED CARBONATE-TYPE FUEL CELL

Mitsuie Matsumura, Ashiya; Motomu Yoshimura, Kishiwada, and Hiroaki Urushibata, Kawanishi, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 15, 1985, Ser. No. 755,013

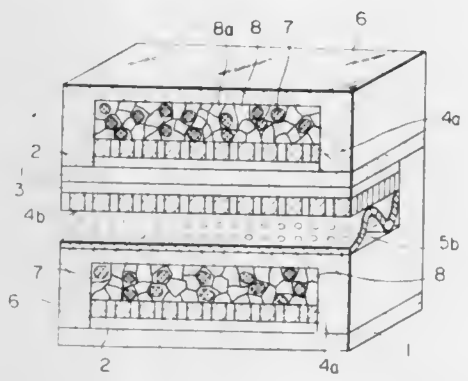
Claims priority, application Japan, Jul. 13, 1984, 59-146323

Int. Cl.⁴ H01M *8/14*

U.S. Cl. 429—19 **9 Claims**

1. A fused carbonate-type fuel cell comprising

- a fused carbonate electrolyte matrix,
- a first and second electrodes in contact with the opposite surfaces of the electrolyte matrix, the first electrode being positioned on a fuel gas side and the second electrode being positioned on an oxidizing gas side,
- a partition plate for supporting the first electrode on the fuel gas side and a supporting plate for supporting the second electrode on the oxidizing gas side,
- an oxidizing gas passageway adjacent to the supporting plate for supporting the second electrode, and
- a fuel gas passageway adjacent the supporting plate for supporting the first electrode, which passageway contains a reforming catalyst which comprises catalyst particles supported on a carrier held in a metallic porous body disposed in the fuel gas passageway.



4,618,544

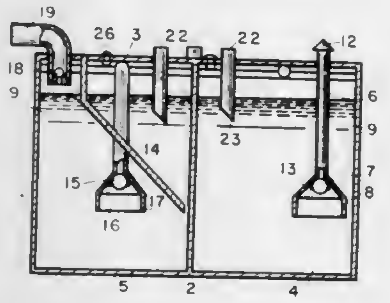
EXPLOSION PROOF BATTERY

Alan C. Brooks, 572 Darlington La., Apt. 24, Crystal Lake, Ill. 60014

Filed Aug. 5, 1985, Ser. No. 762,428

Int. Cl.⁴ H01M *2/12*

U.S. Cl. 429—53 **4 Claims**



1. A portable explosion proof battery comprising; in combination,

(a) more than one cell, each cell having a top, a bottom and sides wherein,

(b) the top is provided with a cover which has operably joined therewith a gas entry check valve which admits atmospheric air to the cell, a gas exit check valve, a continuously self sealing liquid input and removal passage, and a liquid level indicator sight rod, and

(c) the gas entry check valve and the gas exit check valve are associated with fluid carrying paths, between the cell and a liquid filled combustion barrier chamber.

4,618,545

RECOMBINATION ELECTRIC STORAGE CELLS

Gordon A. Clegg, Rossendale, and Phillip Jarrett, Bramhall, both of England, assignors to Chloride Group Public Limited Company, London, England

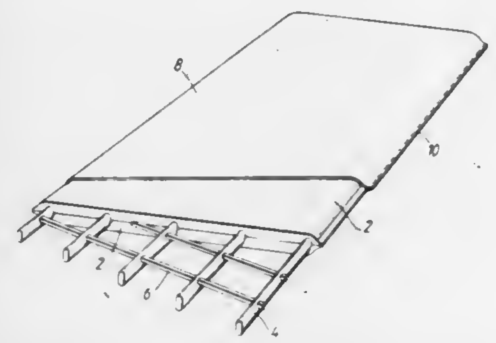
Filed Jun. 21, 1985, Ser. No. 747,438

Claims priority, application United Kingdom, Jun. 22, 1984, 8415949

Int. Cl.⁴ H01M *2/18*

U.S. Cl. 429—130 **11 Claims**

1. A recombination electric storage cell comprising a container, a plurality of alternating positive and negative plates within said container and a plurality of separators, each adjacent pair of said plates being separated by one of said separators, said plates and separators being under a mutual compressive force, each said separator comprising reinforcing means and microfine glass fibre material surrounding said reinforcing means, said reinforcing means comprising one or more reinforcing members and extending over substantially the entire area of said separator and having a plurality of apertures in the reinforcing means, said apertures being substantially filled with said microfine glass fibre material, the reinforcing members being so constructed and arranged that the major proportion of said compressive force is transmitted through said reinforcing members while substantially the entire proportion of the surface area of said plates is contacted by said glass fibre material.



4,618,546

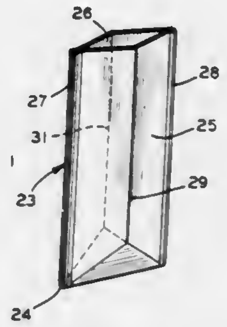
CELL SEPARATOR BASKET AND METHOD OF FORMING SAME

Robert D. Simonton, Fremont; John D. Cattano, Castalia, and Robert K. Mason, Gibsonburg, all of Ohio, assignors to Fremont Special Machine Co., Inc., Fremont, Ohio

Filed Mar. 4, 1985, Ser. No. 707,887

Int. Cl.⁴ H01M *2/18;* **B32B** *3/20*

U.S. Cl. 429—133 **13 Claims**



1. A primary cell separator basket preform comprising a rectangular sheet of ionically permeable material folded upon itself across the width of the rectangle to form first and second rectangular superimposed walls joined at said fold, a face-to-face bond between said first and second walls along each of two straight margin portions of said rectangular first and second walls to cooperate with said fold to join said walls along three contiguous straight margin portions as a continuous junction, the fourth straight margin portions of the overlying first and second walls being free from each other, and an outwardly crowned crease in said wall extending from the fourth straight margin portion of said first wall which is free from said second wall.

4,618,547

LEAK RESISTANT NON-TACKY SEALANT

Charles Markin, Toronto, Canada, assignor to Duracell Inc., Bethel, Conn.

Filed Oct. 6, 1983, Ser. No. 539,453

Int. Cl.⁴ H01M *2/08*

U.S. Cl. 429—174 **9 Claims**

1. An electrochemical cell sealed with an insulative sealing member having a sealant material thereto characterized in that said sealant material is substantially non-tacky and is comprised of a solvent castable, film forming thermoplastic polymer selected from the group consisting of acrylic, nylon, polypropylene, polyethylene and polyvinylchloride; and a polymeric binder material, which is in the liquid state at room temperature, selected from the group consisting of polybutene, polyisobutene, polybutadiene resins, carboxyl terminated polybutadiene, and hydroxyl terminated butadiene, and wherein

said liquid binder material comprises between 5-45% by weight of said sealant material.

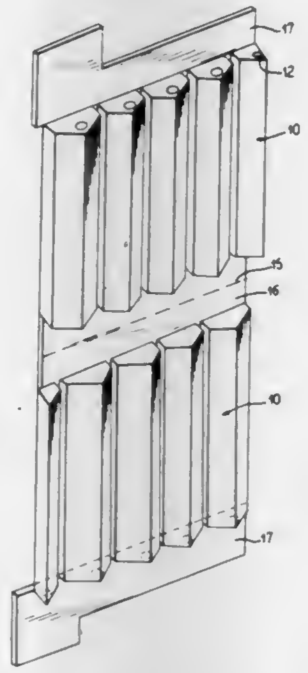
4,618,548
ELECTROLYTE ADDITIVE

James E. Brule, South Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Mar. 18, 1985, Ser. No. 712,978
Int. Cl.⁴ H01M *6/14*
U.S. Cl. 429—194 **7 Claims**

1. In a battery comprising an anode having lithium metal as the anode-active material, a cathode having a metal chalcogenide as the cathode-active material, and a nonaqueous electrolyte containing an ionizable lithium salt as the solute and a dipolar aprotic organic solvent therefor, the improvement which comprises said nonaqueous electrolyte further contains 1,4-diazabicyclo [2.2.2] octane as an energy density enhancing additive in an amount from about 2% by weight to about 8% by weight.

4,618,549
SANDWICH ELECTRODE AND A BATTERY COMPRISING THE SAME

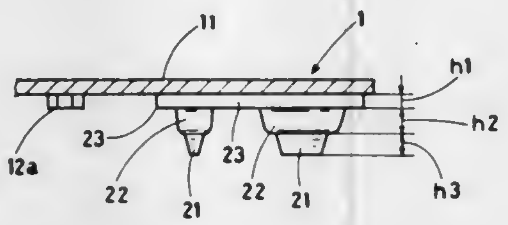
Ove K. G. Nilsson, Utterstigen 1, S-440 41 Nol, Sweden
PCT No. PCT/SE84/00007, § 371 Date Sep. 12, 1984, § 102(e) Date Sep. 12, 1984, PCT Pub. No. WO84/02806, PCT Pub. Date Jul. 19, 1984
PCT Filed Jan. 13, 1984, Ser. No. 653,241
Claims priority, application Sweden, Jan. 13, 1983, 8300141; May 19, 1983, 8302808
Int. Cl.⁴ H01M *4/70, 4/76*
U.S. Cl. 429—234 **5 Claims**



1. An electrode for a lead-acid battery, comprising: a frame of an acid resistant plastic material holding a current grid and active material covered by a porous pervious web, said electrode comprising at least two portions, each portion constituting a frame portion of plastic material having a grid and surrounding active material disposed in shallow troughs and covered by a web on one side thereof, and interengageable with a similar frame portion, back to back, so as to jointly form the electrode, each said frame portion having a plurality of parallel, elongated recesses, each holding active material, and a grid spine of an electrically conductive material extending into the active material from an upper grid frame.

4,618,550
RESIN PRINTING PLATE AND PREPARATION THEREOF

Seiichi Uchida, Moriguchi, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Division of Ser. No. 690,550, Jan. 11, 1985. This application Jan. 24, 1986, Ser. No. 822,194
Claims priority, application Japan, Jul. 23, 1984, 59-154611; Nov. 6, 1984, 59-168182[U]
Int. Cl.⁴ G03F *7/02*
U.S. Cl. 430—11 **3 Claims**

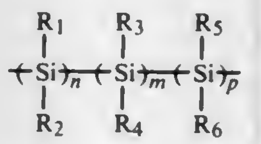


1. A printing plate comprising a base portion formed from a photosensitive curable resin on a transparent base film, a mount portion formed on the base portion and having a contour corresponding to and larger than a printing pattern, and a relief portion formed on the mount portion and corresponding to the printing pattern, the printing plate being characterized in that the base portion is formed around the mount portion, the base film being exposed outside the base portion.

4,618,551
PHOTORESPONSIVE IMAGING MEMBERS WITH POLYSILYLENES HOLE TRANSPORTING COMPOSITIONS

Milan Stolka; Damodar M. Pai, both of Fairport; Thomas W. Smith, Penfield, all of N.Y.; James M. Duff, Mississauga, and Rafik O. Loutfy, Willowdale, both of Canada, assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 25, 1985, Ser. No. 694,862
Int. Cl.⁴ G03G *5/10*
U.S. Cl. 430—58 **21 Claims**

1. An improved layered photoresponsive imaging member comprised of a supporting substrate, a photogenerating layer, comprised of inorganic or organic photoconductive pigments, and as a hole transport layer in contact therewith a polysilylene compound of the formula



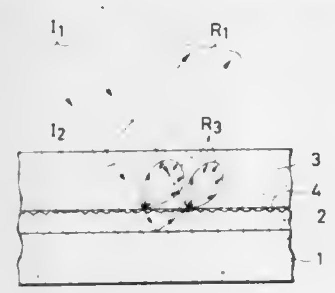
$$\left(\underset{R_2}{\overset{R_1}{\mathrm{Si}}}\right)_n\left(\underset{R_4}{\overset{R_3}{\mathrm{Si}}}\right)_m\left(\underset{R_6}{\overset{R_5}{\mathrm{Si}}}\right)_p$$

wherein R_1, R_2, R_3, R_4, R_5 and R_6 are independently selected from the group consisting of alkyl, aryl, substituted alkyl, substituted aryl, and alkoxy; and n, m, and p are numbers that represent the percentage of the monomer unit in the polysilylene.

4,618,552
LIGHT RECEIVING MEMBER FOR ELECTROPHOTOGRAPHY HAVING ROUGHENED INTERMEDIATE LAYER

Shigemori Tanaka; Fumio Sumino, both of Tokyo, and Hitoshi Toma, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 12, 1985, Ser. No. 700,973
Claims priority, application Japan, Feb. 17, 1984, 59-28273; Mar. 7, 1984, 59-42171
Int. Cl.⁴ G03G *5/14*
U.S. Cl. 430—60 **27 Claims**

1. A light receiving member comprising an intermediate layer between a substrate of a metal or an alloy having a reflective surface and a photosensitive layer, the reflective surface of said substrate forming a light-diffusing reflective surface, and



the surface of said intermediate layer forming a rough surface having an average surface roughness of about 0.5 to 30 μm.

4,618,553
ELECTROPHOTOGRAPHIC RECORDING MATERIAL COMPRISES BACKING LAYER CONTAINING LONG-CHAIN ALKANOIC ACID METAL SALT

Yasuaki Yuyama; Junji Nakano; Shyunichi Kondo; Hideo Sato, and Kenichi Sawada, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed May 28, 1985, Ser. No. 737,967
Claims priority, application Japan, May 28, 1984, 59-108010
Int. Cl.⁴ G03G *5/10*
U.S. Cl. 430—69 **11 Claims**

1. An electrophotographic recording material comprising a support having provided thereon a photoconductive layer and a backing layer provided on the opposite side of the support, wherein said backing layer comprises a binder and a long-chain alkanoic acid metal salt represented by the formula:

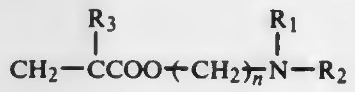
$(RCOO)_nM$

wherein M represents a mono-, di- or trivalent metal; R represents an alkyl group having from 12 to 21 carbon atoms and n represents 1, 2 or 3.

4,618,554
ELECTROPHOTOGRAPHIC PHOTORECEPTOR HAVING PHOTOSENSITIVE LAYER MADE OF A PHTHALOCYANINE TREATED WITH AN ACRYLIC RESIN

Masato Ohashi; Motohiko Kashioka, both of Toda; Shinichi Tamura, Tokyo; Hiromitsu Katsura, Tokorozawa; Hideaki Ueda, Kawanishi, and Akihiro Nakamura, Toyonaka, all of Japan, assignors to Toyo Ink Mfg. Co., Ltd., Tokyo and Minolta Camera Kabushiki Kaisha, Osaka, both of, Japan
Filed Mar. 26, 1985, Ser. No. 715,985
Claims priority, application Japan, Mar. 30, 1984, 59-60866
Int. Cl.⁴ G03G *5/06*
U.S. Cl. 430—78 **6 Claims**

1. An electrophotographic photoreceptor having a photosensitive layer comprising a binding resin and phthalocyanine dispersed therein, wherein the phthalocyanine has been treated with an acrylic resin in an amount of 0.5 to 50 parts by weight of acrylic resin based on 100 parts by weight of phthalocyanine; said acrylic resin having been obtained by polymerization of not less than 15 mole % of a monomer represented by the general formula (I),



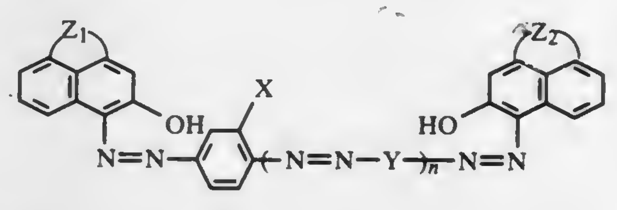
$$CH_2{-}\overset{R_3}{\overset{|}{C}}COO{+}CH_2{)_n}\overset{R_1}{\overset{|}{N}}{-}R_2 \qquad (I)$$

wherein R_1 and R_2 independently represent a hydrogen atom or an alkyl, aryl or cycloalkyl group, or R_1 and R_2, taken together, may form a heterocyclic-ring containing a nitrogen atom, R_3 represents a hydrogen atom or methyl group, and n represents an integer of 1 or more, or an acid salt of the monomer.

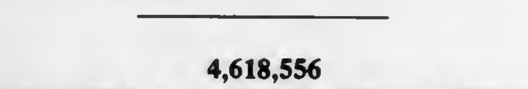
4,618,555
ELECTROPHOTOGRAPHIC PHOTORECEPTOR COMPRISING AZO COMPOUNDS

Tetsumi Suzuki, Isehara; Tetsuo Murayama, Machida; Hitoshi Ono, Yokohama; Shinji Aramaki, Machida, and Michiyo Yokoyama, Yokohama, all of Japan, assignors to Mitsubishi Chemical Ind., Ltd., Tokyo, Japan
Filed Dec. 27, 1984, Ser. No. 686,991
Claims priority, application Japan, Jan. 11, 1984, 59-3167
Int. Cl.⁴ G03G *5/06, 5/14*
U.S. Cl. 430—78 **13 Claims**

1. An electrophotographic photoreceptor having a photosensitive layer in which a photoconductive substance of azo compound having the general formula (I):


(I)

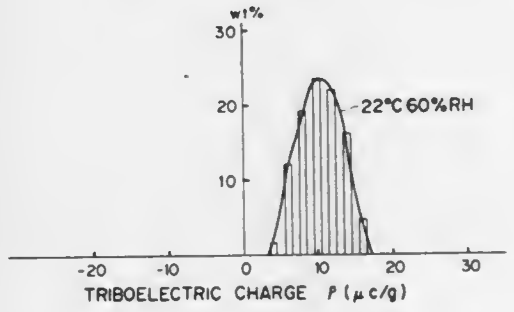
wherein
- X is selected from the group consisting of hydrogen atom, lower alkyl group, lower alkoxy group, halogen atom and cyano group;
- Y is phenylene or naphthylene group;
- Z_1 and Z_2 are independently the divalent group represented by the following formula:



wherein
- A is a divalent group derived from the aromatic hydrocarbon or heterocyclic compound including one or more nitrogen atoms in the ring; and
- n is 1 or 2, is incorporated.

4,618,556
DEVELOPER AND DEVELOPING METHOD

Masanori Takenouchi, Urawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of Ser. No. 522,501, Aug. 12, 1983, abandoned. This application Jul. 3, 1985, Ser. No. 751,994
Claims priority, application Japan, Aug. 23, 1982, 57-145823; Sep. 3, 1982, 57-154127; Sep. 8, 1982, 57-157156; Sep. 8, 1982, 57-157157; Dec. 29, 1982, 57-231526; Dec. 29, 1982, 57-231527; Mar. 8, 1983, 58-37705; Mar. 8, 1983, 58-37706; Mar. 9, 1983, 58-39807; Apr. 7, 1983, 58-61884
Int. Cl.⁴ G03G *9/08*
U.S. Cl. 430—110 **18 Claims**



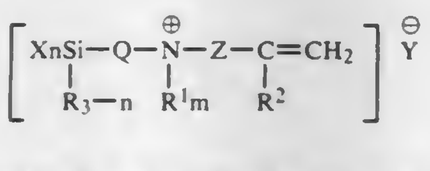
1. A developer comprising a binder resin, a colorant and a

positive charge controller, said positive charge controller comprising fumed silica particles treated with a coupling agent having a hydrolyzable group and a non-hydrolyzable organic group bonded to a tetravalent center atom of Si or Ti, said positive charge controller having a hydrophobicity within the range of from 30 to 80 as measured by the methanol titration test, in which said coupling agent is a silane or titanate coupling agent selected from the group consistng of formula compounds (1), (2) or (3), wherein formula (1) compounds have the formula:

$$R_mSiY_n \quad (1)$$

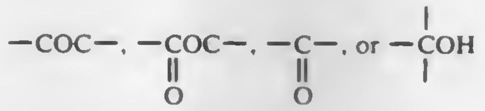
wherein R is an alkoxy group or a chlorine atom; m and n are integers satisfying the relation of $m+n=4$; Y is an organic group containing at least one of amino, vinyl, glycidoxy, mercapto, methacryl, and ureido groups;

wherein formula 2 compounds are cation type unsaturated amino-functional silanes selected from the compounds represented by formula 2 as follows:


(2)

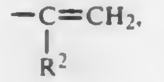
$$\left[\underset{R_3-n}{XnSi}-Q-\underset{R^1m}{\overset{\oplus}{N}}-Z-\underset{R^2}{C}=CH_2 \right] \overset{\ominus}{Y} \quad (2)$$

wherein X is a hydroxyl group or a hydrolyzable group; R is an alkyl having 1 to 6 carbon atoms; n is an integer of 1 to 3; Q is a divalent hydrocarbon group or an organic group containing oxygen in the form of



$$-COC-,\ -\underset{O}{\overset{\|}{COC}}-,\ -\underset{O}{\overset{\|}{C}}-,\ \text{or}\ -\overset{|}{\underset{|}{C}}OH$$

or nitrogen in the form of $R^2N=$group; R^1 is a hydrogen atom, an alkyl group having 1 to 6 carbon atoms or a heterocyclic organic group having a nitrogen in the ring; m is 2; Z is a divalent organic group having a conjugated double bond with

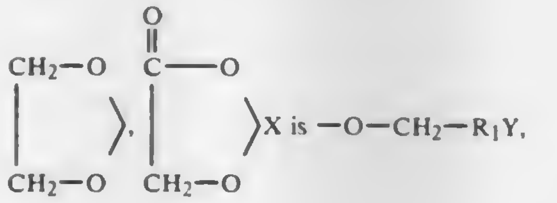


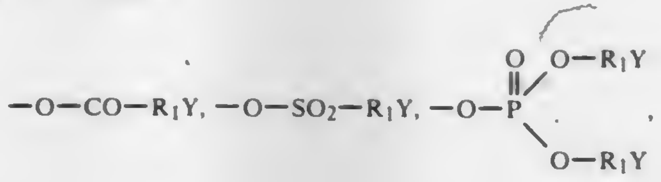
$$-\underset{R^2}{C}=CH_2,$$

and bonded through C—N bonding to the nitrogen atom; R^2 is hydrogen atom or an alkyl having 1 to 6 carbon atoms; and Y is an acid anion or a hydrolyzed product of said cation type unsaturated amino-functional silane; and wherein formula 3 compounds are titanium compounds represented by the formula (3) as follows:

$$R_m-Ti-X_n \quad (3)$$

wherein m and n are 1 and 2, respectively, or 4 and 2, respectively; R is an alkoxy group,





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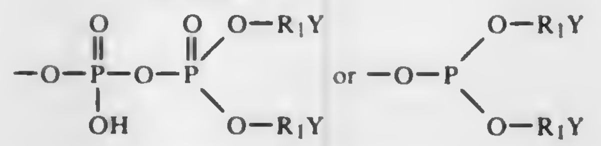


wherein in the above formulae, R_1 is a saturated or unsaturated divalent aliphatic group having 1 to 31 carbon atoms or a divalent aromatic hydrocarbylene group; Y is a hydrogen atom or an amino group; and a plurality of X, R_1 and Y existing in the same compound being the same or different, respectively.

4,618,557

LIQUID DEVELOPER FOR ELECTROSTATIC PHOTOGRAPHY

Shigeyuki Dan; Kazuo Ishii; Eiichi Kato, and Hidefumi Sera, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

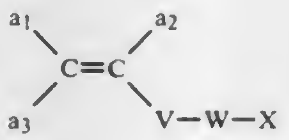
Filed Aug. 7, 1985, Ser. No. 763,112

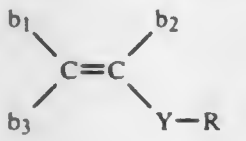
Claims priority, application Japan, Aug. 7, 1984, 59-165088

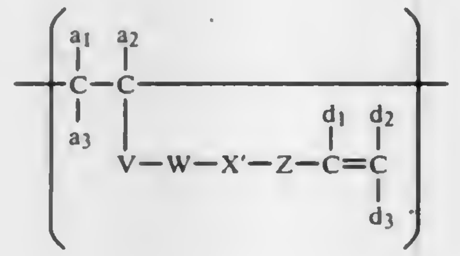
Int. Cl.^{4} G03G *9/12*

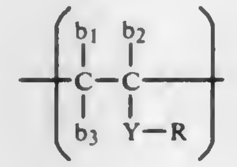
U.S. Cl. 430—114 **10 Claims**

1. A liquid developer for electrostatic photography comprising a carrier liquid having an electric resistance of at least 10^9 Ω·cm and a dielectric constant of not more than 3.5, and a resin dispersed therein, said resin being obtained by polymerizing a monomer, which is soluble in said carrier liquid but becomes insoluble upon being polymerized, in the presence of at least one kind of a soluble dispersion stabilizing resin, said soluble dispersion stabilizing resin being a copolymer containing at least recurring units represented by following formulae (IIIa) and (IIIb) obtained by applying a reaction for introducing an unsaturated bond into a copolymer obtained by polymerizing a monomer represented by formula (I) and a monomer represented by formula (II)


(I)


(II)


(IIIa)


(IIIb)

wherein

in formula (I), V represents —O—, —S—, —CO—, $—CO_2—$, $—SO_2—$, —OCO—, —CONH—, —CONR′— (wherein R′ represents a hydrocarbon group), —NHCO—, $NHCO_2—$, or —NHCONH—; X represents $—CO_2H$, —COCl, —OH, —SH, $—NH_2$, —NCO, or $—SO_2CH_2CH_2Cl$; W represents a hydrocarbon group linking said atomic group V and said atomic group X directly or through a hetero atom or W represents a chemical bond; and a_1, a_2, and a_3 each represents a hydrogen atom, a hydrocarbon group, a carboxy group, or a carboxy group through a hydrocarbon group;

in formula (II), Y represents —O—, —S—, —CO—, $—CO_2—$, $—SO_2—$, —OCO—, CONH—, —CONR″— (wherein R″ represents a hydrocarbon group), —NHCO—, $—NHCO_2—$, or —NHCONH—; R represents a hydrocarbon group; and b_1, b_2, and b_3 each represents a hydrogen atom, a hydrocarbon group, a carboxy group, or a carboxy group through a hydrocarbon group;

in formula (IIIa), a_1, a_2, a_3, V, and W have the same meanings as defined for formula (I); X′ represents $—CO_2—$, —COS—, —SCO—, —CONH—, —OCO—, —NHCO—, —NHCONH—, $—SO_2—$, —O—, or —S—; Z represents a hydrocarbon group linking said atomic group X′ and unsaturated bond directly or through a hetero atom, or Z represents a chemical bond; the total number of atoms of the main chain portion of atomic group —V—W—X′—Z— must, however, be at least 9; and d_1, d_2, and d_3 each represents a hydrogen atom, a hydrocarbon group, a carboxy group, or a carboxy group through a hydrocarbon group; and

in formula (IIIb), b_1, b_2, b_3, Y, and R have the same meanings as defined for formula (II).

4,618,558

LIQUID DEVELOPER FOR USE IN ELECTROSTATIC PHOTOGRAPHY

Shinichi Kuramoto, and Hajime Takanashi, both of Numazu, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1984, Ser. No. 666,402

Claims priority, application Japan, Oct. 31, 1983, 58-204522

Int. Cl.^{4} G03G *9/12*

U.S. Cl. 430—115 **7 Claims**

1. In a liquid developer for use in electrophotography which comprises a dispersion of toner particles and filler particles in a highly electrically insulating carrier liquid, said toner particles consisting essentially of colorant and resin and having wax contained therein, said filler particles being effective for preventing crushing of the developed image during transfer, the improvement which comprises: said filler particles consist essentially of 63.5 number % or more of filler particles having a particle diameter in the range of 10–20μ, 6.5 number % or less of filler particles having a particle size of over 20μ and 30 number % or less of filler particles having a particle size of not more than 10μ.

4,618,559

PROCESS OF MAKING ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER

Yuichi Yashiki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1985, Ser. No. 733,766

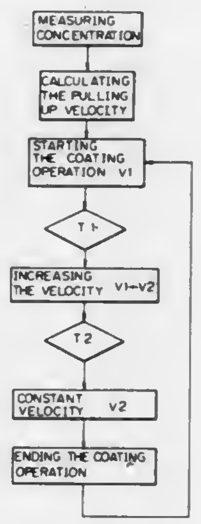
Claims priority, application Japan, May 17, 1984, 59-97480

Int. Cl.^{4} G03G *5/087*

U.S. Cl. 430—127 **7 Claims**

1. In a process for preparing an electrophotographic photosensitive member by forming a charge generation layer on a substrate by dip-coating and forming a charge transport layer by dip-coating, wherein the charge transport layer forms a predetermined irregular end film portion of length H, which irregular film portion impairs the photosensitivity of the member, the improvement which comprises:

(a) controlling the thickness of the corresponding end film portion of the charge-generation layer over the length H by varying the withdrawal rate of the substrate during the dip-coating thereof in accordance with the formula


MEASURING CONCENTRATION
CALCULATING THE PULLING UP VELOCITY
STARTING THE COATING OPERATION V1
T1
INCREASING THE VELOCITY V1→V2
T2
CONSTANT VELOCITY V2
ENDING THE COATING OPERATION

$$H = \int_0^{T1} V1\,dt + \int_{T1}^{T2} V(t)\,dt$$

wherein **T1** is the total time which elapses from the start of the dip-coating of the charge generation layer until the portion of the charge generation film is reached which corresponds to one end of the length H; **V1** is the withdrawal rate of the substrate which rate is maintained for the time **T1**; V(t) is the rate of acceleration of the substrate from the first rate, **V1** to a final higher rate, **V2**; **T2** is the elapsed time required to withdraw the substrate over the length H as the withdrawal rate increases from **V1** to **V2**; and

(b) thereafter, completing the dip-coating of the charge generation layer at the rate, **V2**; whereby the total thickness of the charge generation layer and the charge transport layer over the length H is sufficient to improve the photosensitivity of the member.

4,618,560

MULTI-ACTIVE PHOTOCONDUCTIVE INSULATING ELEMENTS EXHIBITING VERY HIGH ELECTROPHOTOGRAPHIC SPEED AND PANCHROMATIC SENSITIVITY AND METHOD FOR THEIR MANUFACTURE

Paul M. Borsenberger, Hilton; Michael T. Regan, and William J. Staudenmayer, both of Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 674,197, Nov. 23, 1984, Pat. No. 4,578,334. This application Aug. 5, 1985, Ser. No. 762,174

Int. Cl.^{4} G03G *5/06, 5/14*

U.S. Cl. 430—130 **16 Claims**

1. A method for the manufacture of a multi-active photoconductive insulating element exhibiting very high electrophotographic speed and panchromatic sensitivity, said element having at least two active layers comprising a charge-generation layer in electrical contact with a charge-transport layer, which method comprises the steps of:

(1) depositing on an electrically-conductive support a substantially amorphous layer of N,N′-bis(2-phenethyl)perylene-3,4:9,10-bis(dicarboximide);

(2) overcoating said amorphous layer with a layer of a liquid composition comprising an organic solvent, a polymeric binder and an organic photoconductive material which is capable of accepting and transporting injected charge carriers from a charge-generation layer; and

(3) effecting removal of said organic solvent from said element; said liquid composition functioning to (A) form a charge-transport layer and (B) penetrate into said amorphous layer and convert said N,N′-bis(2-phenethyl)perylene-3,4:9,10-bis(dicarboximide) to a crystalline form, thereby forming a charge-generation layer that:

(a) contains a crystalline form of N,N′-bis(2-phenethyl)-perylene-3,4:9,10-bis(dicarboximide) which is capable, upon exposure to activating radiation, of generating and injecting charge carriers into said charge-transport layer,

(b) exhibits a first spectral absorption peak within the range of 420 to 470 nm and a second spectral absorption peak within the range of 610 to 630 nm, and

(c) has a prominent line at a 2*θ* angular position within the range of 22 to 25 degrees in the X-ray diffraction pattern obtained with CuK *α* radiation;

said charge-generation layer and said charge-transport layer co-acting to provide said photoconductive insulating element with the desired combination of very high electrophotographic speed and panchromatic sensitivity.

4,618,561

MONOMOLECULAR RECORD MEMORY MEDIUM WITH PHOTOSENSITIVE DIAZONIUM SALT

Hirohide Munakata; Yoshinori Tomida, both of Yokohama; Masahiro Haruta, Funabashi; Yutaka Hirai, Tokyo; Yukuo Nishimura, Sagamihara, and Takashi Hamamoto, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1984, Ser. No. 676,254
Claims priority, application Japan, Dec. 6, 1983, 58-229118
Int. Cl.⁴ G03C *1/54, 1/58;* **G03G** *5/04;* **G01D** *15/14*
U.S. Cl. 430—156 **14 Claims**

1. A record memory medium comprising (a) a substrate and (b) a recording layer on said substrate which recording layer comprises a monomolecular film or monomolecular layer built-up film from about 4 to 10,000 angstroms in thickness of a photosensitive benzene diaxonium salt having a long-chain C_8 to C_{30} alkyl group as a side chain, said C_8 to C_{30} alkyl group being any one of saturated, unsaturated or substituted with an amino group or a carboxyl group, whereby said benzene diazonuim salt is capable of coupling with a coupling component to form an azo compound and whereby the medium, after photolysis and coupling reactions, is capable of being read out by light or photocurrent.

4. A record memory medium comprising (a) a substrate and (b) a recording layer on said substrate which recording layer comprises a monomolecular film or monomolecular layer built-up film from about 4 to 10,000 angstrom in thickness of a photosensitive benzene diazonium salt having a long-chain C_8 to C_{30} alkyl group as a side chain, said C_8 to C_{30} alkyl group being any one of saturated, unsaturated or substituted witn an amino group or a carboxyl group, and (c) photoconductive layer, whereby said benzene diazonium salt is capable of coupling with a coupling component to form an azo compound and whereby the medium, after photolysis and coupling reactions, is capable of being read out by light or photocurrent.

8. A record memory medium comprising (a) a substrate and (b) a recording layer on said substrate which recording layer comprises a monomolecular film or monomolecular layer built-up film from about 4 to 10,000 angstroms in thickness of (1) a photosensitive benzene diazonium salt having a long-chain C_8 to C_{30} alkyl group as a side chain, said C_8 to C_{30} alkyl group being, any one of saturated, unsaturated or substituted with an amino group or a carboxyl group, and (2) a coupling component whereby said benzene diazonium salt is capable of coupling with a coupling component to form an azo compound and whereby the medium, after photolysis and coupling reactions, is capable of being read out by light or photocurrent.

11. A record memory medium comprising (a) a substrate (b) a recording layer on said substrate which recording layer comprises a monomolecular film or monomolecular layer built-up film from about 4 to 10,000 angstroms in thickness of (1) a photosensitive benzene diazonium salt having a long-chain C_8 to C_{30} alkyl group as a side chain, said C_8 to C_{30} alkyl group being any one of saturated, unsaturated or substituted with an amino group or a carboxyl group, and (2) a coupling component and (c) photoconductive layer whereby said benzene diazonium salt is capable of coupling with a coupling component to form an azo compound and whereby the medium, after photolysis and coupling reactions, is capable of being read out by light or photocurrent.

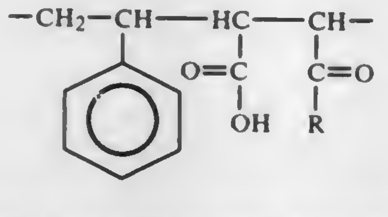
4,618,562

AQUEOUS DEVELOPABLE LITHOGRAPHIC PRINTING PLATES CONTAINING AN ADMIXTURE OF DIAZONIUM SALTS AND POLYMERS AND COMPOSITION THEREFOR

John E. Walls, Hampton, and Shuchen Liu, Clinton, both of N.J., assignors to American Hoechst Corporation, Somerville, N.J.

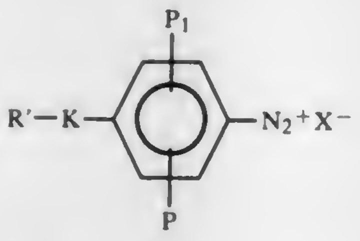
Filed Dec. 27, 1984, Ser. No. 686,778
Int. Cl.⁴ G03C *1/60, 1/54, 1/94;* **G03F** *7/08*
U.S. Cl. 430—157 **14 Claims**

1. A photosensitive composition which comprises in admixture: a polyvinyl acetate resin having an average molecular weight in the range of from about 100,000 to less than about 800,000; a styrene end-capped co-polymer of the formula



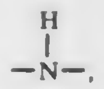
wherein R is a lower aliphatic alcohol residue having from 1 to about 5 carbon atoms and wherein said polymer has an average molecular weight of not more than about 50,000; at least one light sensitive, negative working diazonium salt

Diazo 1 which is a light sensitive, substantially linear polymeric diazonium reaction compound comprising repeating units of the condensation product of each of the general types E^+X^- and Q, in which E^+X^- is a radical of the compound of the general formula:



wherein:

—K— is selected from the group consisting of



$$-\overset{H}{\overset{|}{N}}-,$$

—S—, —O—, and $—CH_2—$, or is absent;

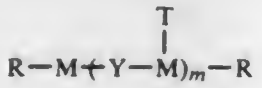
R′ is selected from the group consisting of phenyl and C_1 to C_4 alkyl substituted phenyl;

P and P_1 are selected from the group consisting of C_1 to C_4 alkyl, methoxy, ethoxy, butoxy, or H;

P_1 may be the same as P or different; and

X^- is an anion;

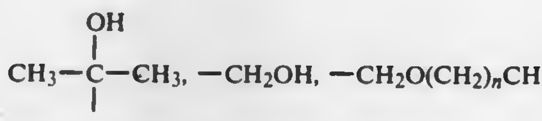
and Q is a radical of an oligomer having the structure:



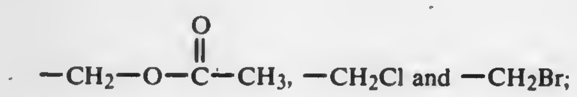
$$R-M(-Y-\overset{T}{\overset{|}{M}})_m-R$$

wherein:

R is selected from the group consisting of



$$CH_3-\underset{|}{\overset{OH}{\overset{|}{C}}}-CH_3,\ -CH_2OH,\ -CH_2O(CH_2)_nCH_3,$$



$$-CH_2-O-\overset{O}{\overset{\|}{C}}-CH_3,\ -CH_2Cl\text{ and }-CH_2Br;$$

n is an integer from 0 to 3;

M is an aromatic radical selected from the group consisting of aromatic hydrocarbons, diaryl ethers, diaryl sulfides, diaryl sulfones, diaryl amines, diaryl ketones and diaryl diketones;

m is 1 to 6;

Y is selected from the group consisting of $—CH_2—$ or $—CH_2—O—CH_2—$bridge; and

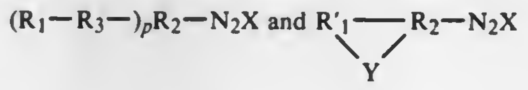
T is the same as R when $Y=—CH_2—$ and H— when $Y=—CH_2—0—CH_2—$

wherein said diazonium compound is prepared by a two-step process consisting essentially of forming a precondensed oligomer component Q and reacting said component Q with radical E^+X^- such that the ratio of M to E^+X^- is at least 2:1; and at least one light sensitive, negative working diazonium salt

Diazo 2 which is a light sensitive diazonium compound prepared by reacting in the absence of added paraformaldehyde at least one $A—N_2X$ compound and at least one B_1 compound of the formula

$$E(—CHR_a—OR_b)_m$$

in which $A—N_2X$ is a radical of a compound selected from the group consisting of a compound of the formula



wherein

R_1 is a phenyl or naphthyl group

R'_1 is a phenylene or naphthylene group

R_2 is a phenylene group

R_3 is a single bond or one of the groups

$—(CH_2)_q—NR_4—$
$—O—(CH_2)_r—NR_4—$
$—S—(CH_2)_r—NR_4—$
$—S—CH_2—CO—NR_4—$
$—O—R_5—O—$
—O—
—S— or
$—CO—NR_4—$

the left-hand free valence of the specified groups is attached to R_1 and the right-hand free valence is attached to R_2,

wherein

q is a number from 0 to 5

r is a number from 2 to 5

R_4 is selected from the group consisting of hydrogen, alkyl with 1 to 5 carbon atoms, aralkyl with 7 to 12 carbon atoms, and aryl with 6 to 12 carbon atoms,

R_5 is an arylene group having 6 to 12 carbon atoms

Y is one of the groups —NH—, and —O—

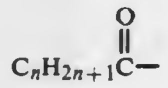
X is an anion

p is a number from 1 to 3

E is a radical obtained by splitting off of m H atoms from a compound free of diazonium group selected from the group consisting of aromatic amines, phenols, thiophenols, phenyl ethers, aromatic thioethers, aromatic heterocyclic compounds, aromatic hydrocarbons and organic acid amides,

R_a is selected from the group consisting of hydrogen and phenyl,

R_b is selected from the group consisting of hydrogen, alkyl,



$$C_nH_{2n+1}\overset{O}{\overset{\|}{C}}-$$

wherein n is from 0 to 3 and a phenyl group, and

m is an integer from 1 to 10

in a strongly acidic condensation medium and under condensation conditions sufficient to produce a polycondensation product of an aromatic diazonium compound containing, on the average, about 0.1 to 50 B_1 units per unit of $A—N_2X$, wherein the total amount of the diazonium compounds ranges from about 20% to about 50% by weight of the composition, and the ratio of Diazo 1 to Diazo 2 is in the range of 1 to about 0.95–1.45; and wherein the polyvinyl acetate resin is present in the amount of from about 8% to about 33%; and wherein the styrene/maleic acid half ester copolymer is present in an amount of from about 25% to about 55% by weight of said composition.

10. A lithographic printing plate which comprises an aluminum containing substrate and the composition of claim **1** coated on said substrate.

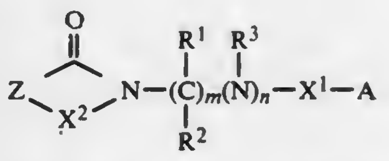
4,618,563

PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Mitsunori Ono; Isamu Itoh, and Keiji Mihayashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 15, 1984, Ser. No. 641,101
Claims priority, application Japan, Aug. 15, 1983, 58-148980
Int. Cl.⁴ G03C *1/40, 5/54, 1/08, 1/34*
U.S. Cl. 430—219 **34 Claims**

1. A silver halide photographic light-sensitive material comprising a support having thereon a light-sensitive silver halide emulsion layer having associated therewith a blocked photographic agent represented by formula (I)



(I)

wherein A represents a photographically useful agent moiety; X^1 represents a carbonyl group, a sulfonyl group, or a sulfinyl group, X^1 being bonded to A through a heteroatom, and X^2 represents a carbonyl group; Z represents an atomic group forming a 5-membered, 6-membered, or 7-membered ring; R^1 and R^2 each represents a hydrogen atom, a halogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, an alkoxy group, an acyl group, a sulfonyl group, or a heterocyclic group; R^3 represents an alkyl group, an alkenyl group, a cycloalkyl group, a heterocyclic group, an aryl group, or an aralkyl group; m represents 0, 1, or 2; n represents 0 or 1; and the total of $m+n$ is 1, 2, or 3.

18. A silver halide photographic light-sensitive material as in claim **1**, wherein the blocked photographic agent is present in a coloring material layer, a subbing layer, a protective layer, an interlayer, a filter layer, an antihalation layer, an image-receiving layer or a cover sheet layer.

4,618,564
PROCESS FOR PRODUCTION OF POSITIVE IMAGES USING SULFONIC ACID PRECURSORS

Christopher G. Demmer, Cherry Hinton, and Edward Irving, Burwell, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 24, 1985, Ser. No. 738,197

Claims priority, application United Kingdom, May 25, 1984, 8413395

Int. Cl.⁴ G03C *1/495, 5/16*

U.S. Cl. 430—270 **20 Claims**

1. A process for the production of an image comprising
(i) forming a composition which comprises
(A) a film-forming organic material consisting essentially of an aqueous base-soluble material having a phenolic hydroxyl group or a carboxylic, sulfonic, phosphonic or phosphoric acid group, and
(B) a substance which releases a sulfonic acid on exposure to actinic radiation, thereby effecting a reduction of the dissolution rate of said film-forming material in aqueous base, and
(ii) exposing said composition to actinic radiation in a predetermined pattern, thereby nullifying said dissolution rate reduction to render the composition more soluble in an aqueous base developer in exposed areas than in unexposed areas, and
(iii) removing the composition in the exposed areas by treatment with the aqueous base developer.

11. A photosensitive composition, suitable for carrying out the process of claim **1**, which comprises
(A) a film-forming organic material consisting essentially of an aqueous base-soluble material having a phenolic hydroxyl group or a carboxylic, sulfonic, phosphonic or phosphoric acid group, and
(B) a substance which releases a sulfonic acid on exposure to actinic radiation,
the composition being substantially free from ethylenically unsaturated material which is polymerized by means of free radicals and from material which is polymerized by sulfonic acids.

4,618,565
ABSORPTIVE LAYER FOR OPTICAL LITHOGRAPHY

Lawrence K. White, W. Windsor Township, Mercer County; Nancy A. Miszkowski, and Aaron W. Levine, both of Lawrenceville Township, Mercer County, all of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jun. 5, 1985, Ser. No. 741,358

Int. Cl.⁴ G03C *5/16, 1/84, 1/76*

U.S. Cl. 430—271 **11 Claims**

1. A multilayer resist recording medium disposed on a substrate comprising a planarizing layer overlying the substrate, an absorptive layer overlying the planarizing layer and a photoresist layer overlying the absorptive layer, wherein the absorptive layer comprises poly(methylmethacrylate) or a copolymer of methylmethacrylate and methacrylic acid, and a dye that is absorptive at the light frequency used to irradiate the photoresist layer and that is insoluble in the solvent for the photoresist layer.

7. A process for forming a relief pattern on a substrate comprising:
(a) coating the substrate with a composition comprising poly(methylmethacrylate) or a copolymer of methylmethacrylate and methacrylic acid, a suitable dye and a solvent therefor;
(b) drying the coating to form an absorptive layer;
(c) applying thereover a coating of a photoresist composition comprising a light-sensitive resist material and a solvent therefor, the solvent being a nonsolvent for the dye so that substantially no dye is dissolved into the photoresist layer;
(d) drying said coating to form a photoresist layer;
(e) irradiating and developing the photoresist layer, thus exposing a portion of the absorptive layer; and
(f) plasma etching the exposed portion of the absorptive layer in an oxygen plasma, thus exposing a corresponding portion of the substrate.

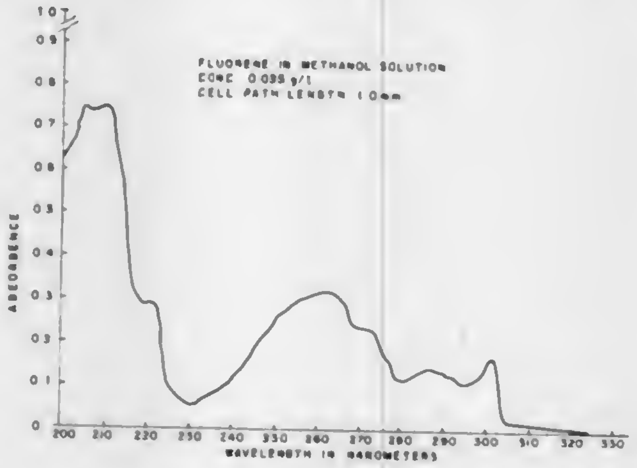
4,618,566
FLUORENE CONTAINING COMPOUNDS AND NEGATIVE PHOTORESIST COMPOSITIONS THEREFROM

James E. Guillet, Dons Mills, and Anthony E. Redpath, Toronto, both of Canada, assignors to Ecoplastics Limited, Willowdale, Canada

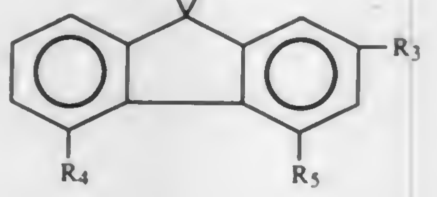
Filed Oct. 31, 1984, Ser. No. 666,592

Int. Cl.⁴ G03C *1/71, 1/76;* **C08F** *8/00*

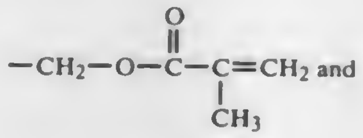
U.S. Cl. 430—271 **5 Claims**



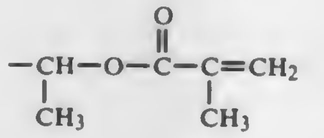
1. An article of manufacture comprising an integrated circuit substrate element having applied thereon a thin homogeneous film sensitive in the deep UV light range of a composition comprising a ploymer of a fluorene monomer selected from the group consisting of monomers of the formula:



wherein R_1, R_2 and R_3 are the same of different substituents and are selected from the group consisting of hydrogen, alkyl radicals or 1 to 6 carbon atoms,



$$-CH_2-O-\overset{O}{\overset{\|}{C}}-\underset{CH_3}{\underset{|}{C}}=CH_2 \text{ and}$$



$$-\underset{CH_3}{\underset{|}{CH}}-O-\overset{O}{\overset{\|}{C}}-\underset{CH_3}{\underset{|}{C}}=CH_2$$

radicals and at least one R_1, R_2 and R_3 having a polymerizable $>C=C<$, group, and R_4 and R_5 are the same or different substituents are selected from the group consisting of hydrogen and alkyl radicals containing 1 to 6 carbon atoms, and copolymers of these fluorene monomers wherein the fluorene monomer is present in amounts of at least 2 percent by weight.

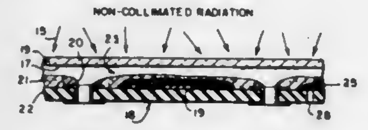
4,618,567
HIGH RESOLUTION LIQUID PHOTOPOLYMER COATING PATTERNS OVER IRREGULAR PRINTED WIRING BOARD SURFACE CONDUCTORS

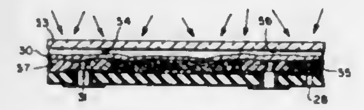
Donald F. Sullivan, 115 Cambridge Rd., King of Prussia, Pa. 19406

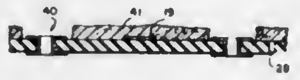
Filed Jan. 14, 1985, Ser. No. 690,998

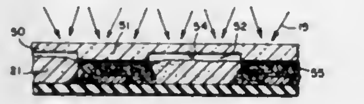
Int. Cl.⁴ G03C *5/00*

U.S. Cl. 430—311 **12 Claims**









1. The method of photoprinting the non-collimated radiation high resolution printed wiring board patterns on a liquid photopolymer layer of pastelike consistency over conductive surfaces disposed on a printed wiring board insulating substrate, comprising the steps of: (1) placing a phototransparency sheet having opaque and transparent patterns thereon defining a desired pattern image in substantially a parallel plane over said liquid photopolymer layer of a type having the property that the radiation required to cure it is greater when its surface is exposed to air for photoimaging a pattern upon the photopolymer layer by means of radiation from an uncollimated source passing through the phototransparency onto the photopolymer layer, (2) providing at the opaque photo pattern locations an air gap separation between the phototransparency sheet and the photopolymer layer to inhibit by the air surface the curing of the photopolymer areas defined by the opaque portions of the phototransparency in response to any stray radiation resulting from the use of an uncollimated radiation source, and, (3) photoexposing the photopolymer layer by passing uncollimated radiation of enough intensity to solidify only part of the liquid polymer layer adjacent the substrate and not exposed to air in response to the image by polymerization through the phototransparency sheet transparent patterns with the air gap separation providing an inhibition of the polymerization at the image positions on surface of the photopolymer layer exposed to air so that liquid polymer remains in surface positions defined by the opaque patterns of the phototransparency sheet.

4,618,568
CHEMICAL METALLIZATION PROCESS WITH RADIATION SENSITIVE CHROMIUM (III) COMPLEX

Armin Gemmler, Blaubeuren-Weiler, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 16, 1984, Ser. No. 661,336

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1983, 3337790

Int. Cl.⁴ G03C *5/24, 5/22*

U.S. Cl. 430—417 **10 Claims**

1. In a chemical metallization process in which a radiation sensitive sensitizer is applied to an electrically insulating surface to form a radiation sensitive layer on the surface, the layer is exposed to radiation to activate at least selected regions of the layer, and a salt solution of a catalytically effective metal is applied to the layer and metal is deposited from the solution in an external current-free manner to form a metal coating at the activated regions of the layer, the improvement wherein the sensitizer is oxidation agent-free and contains at least one noble metal salt and at least one chromium (III) complex compound whose ligands are a reducing agent or, when exposed to light, form a reducing agent for at least chromium(III) ions, to produce chromium(II) ions which in turn reduce noble metal ions contained in the noble metal salt, thereby forming noble metal nuclei which act as centers for the current-free metal deposition.

4,618,569
METHOD FOR PROCESSING OF SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Masayuki Kurematsu, and Shigeharu Koboshi, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1985, Ser. No. 721,568

Claims priority, application Japan, Apr. 17, 1984, 59-77813

Int. Cl.⁴ B01D *15/06;* **G03C** *5/24, 7/40*

U.S. Cl. 430—428 **21 Claims**

1. A method for processing of a silver halide photographic material which comprises carrying out stabilizing processing of a silver halide photographic material directly with a liquid stabilizer substantially without passing through the step of washing with water subsequent to the desilverization processing step, wherein processing is conducted while at least one of (i) contacting the liquid stabilizer with an ion-exchange resin or (ii) at least a part of the overflow liquid stabilizer after contacting the ion-exchange resin is used as the liquid stabilizer to prevent yellow stains in the photographic material immediately after processing or during storage thereafter.

4,618,570
SILVER HALIDE PHOTOGRAPHIC MATERIALS

Takashi Kadowaki, and Kaoru Onodera, both of Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

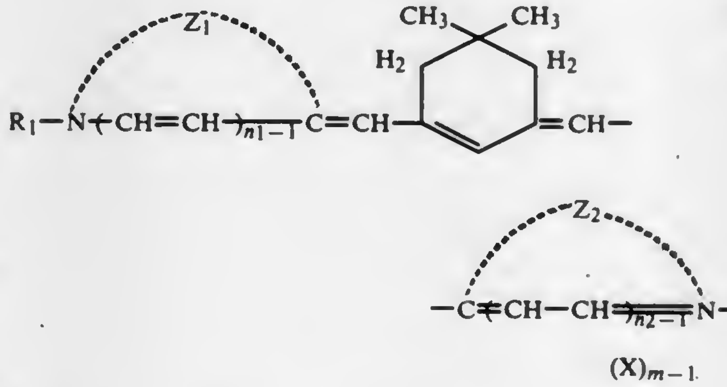
Filed Mar. 15, 1985, Ser. No. 712,342

Claims priority, application Japan, Mar. 27, 1984, 59-60421; Mar. 28, 1984, 59-61396

Int. Cl.⁴ G03C *1/40, 1/30, 1/02*

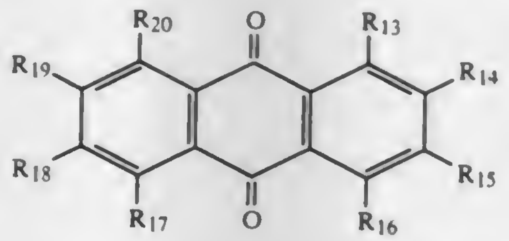
U.S. Cl. 430—505 **16 Claims**

1. A silver halide color photographic material having one layer of silver halide emulsion layers containing a silver halide having a silver chloride content of not less than 25 molar % and a color coupler, characterized in that at least one of said silver halide emulsion layers contains a silver halide sensitized with a compound having at least one of the following formula (Ia), and the following formula (Ib) and is hardened with a compound having at least one of the following formula (II) and a compound having the formula (III);



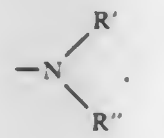
(Ia)

wherein each of R_1 and R_2 represents an alkyl group; each of Z_1 and Z_2 represents a nonmetallic atom group for forming a 5- or 6-membered nitrogen-containing heterocyclic ring; X represents an anion; each of n_1 and n_2 is 1 or 2; and m is 1 or 2 provided that, when an inner salt is formed, m is 1;

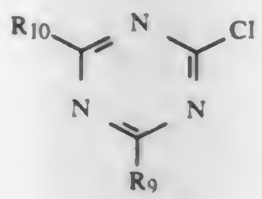


(Ib)

wherein each of R_{13}, R_{16}, R_{17} and R_{20} represents a hydrogen atom, a hydroxy group, a group of —OR of a group of

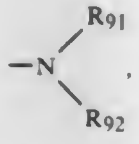


in which R is an alkyl or aryl group and each of R′ and R″ is a hydrogen atom or an alkyl or aryl group having at least one of a sulfonic acid group or a carboxylic acid group; and each of R_{14}, R_{15}, R_{18} and R_{19} represents a hydrogen atom, a sulfonic acid group, a carboxylic acid group or an alkyl or aryl group having at least one of a sulfonic acid group or a carboxylic acid group;

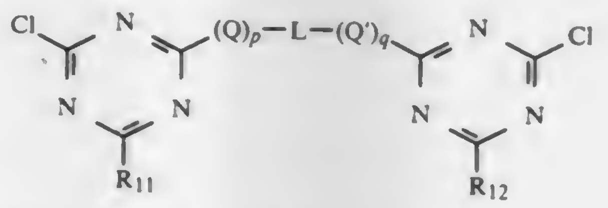


(II)

wherein R_9 represents a chlorine atom, a hydroxyl group, an alkyl group, an alkoxy group, a group of



in which each of R_{91} and R_{92} is a hydrogen atom, an alkyl group or an aryl group, a group of 13 NHCOR$_{93}$, in which R_{93} is a hydrogen atom, an alkyl group, an aryl group or an alkylthio group, or a group of —OH, in which M is a monovalent metal atom; and R_{10} is the same as R_9 except for a chlorine atom;



(III)

wherein each of R_{11} and R_{12} represents a chlorine atom, a hydroxyl group, an alkyl group, an alkoxy group or a group of —OM, in which M is as defined above; each of Q and Q′ represents a binding group of —O—, —S— or —NH—; L represents an alkylene group of an arylene group; and each of p and q is 0 or 1.

4,618,571

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Seiji Ichijima; Hideo Usui, and Naoyasu Deguchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 25, 1985, Ser. No. 705,473

Claims priority, application Japan, Feb. 23, 1984, 59-33059

Int. Cl.^{4} G03C *1/46, 7/30, 7/32, 7/26*

U.S. Cl. 430—505 **22 Claims**

1. A silver halide color photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer, the color photographic light-sensitive material containing a coupler which releases a compound after the coupling reaction with the oxidation product of a developing agent, the released compound further releasing a photographically useful group by an oxidation-reduction reaction with the oxidation product of a developing agent, wherein the coupler is represented by the following general formula (I):

$$A-RED-PUG \qquad (I)$$

wherein A represents a coupler residue which releases the RED—PUG group upon the coupling reaction with the oxidation product of a developing agent; RED represents a group which releases the PUG group after the oxidation-reduction reaction with the oxidation product of a developing agent after the bonding to A is cleaved selected from the group consisting of a hydroquinone, a catechol, a naphthohydroquinone, an o-amino or p-amino phenol or a bisphenol; and PUG represents a group which exerts a substantial photographic function after the bonding to RED is cleaved.

4,618,572

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Keiji Mihayashi; Hidetoshi Kobayashi, and Shunji Takada, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 12, 1984, Ser. No. 680,632

Claims priority, application Japan, Dec. 15, 1983, 58-237108

Int. Cl.^{4} G03C *7/26*

U.S. Cl. 430—543 **19 Claims**

1. A silver halide photographic light-sensitive material comprising a support having provided thereon at least one silver halide emulsion layer and containing, in a silver halide emulsion layer having an average iodide content of about 10 mol% to about 30 mol%, a compound capable a development accelerator or a precursor thereof upon development in proportion to the amount of developed silver.

4,618,573

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Hisashi Okamura; Hidetoshi Kobayashi; Toshihiro Nishikawa, and Koji Tamoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

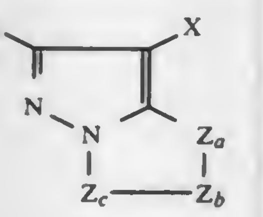
Filed May 10, 1985, Ser. No. 732,770

Claims priority, application Japan, May 10, 1984, 59-093604

Int. Cl.^{4} G03C *7/32, 1/30*

U.S. Cl. 430—558 **19 Claims**

1. A silver halide color photographic material containing a hardener capable of exerting a hardening effect through activation of a carboxyl group and a magenta coupler of the pyrazoloazole type represented by formula (I)



(I)

wherein R_1 represents a hydrogen atom or a certain substituent group; X represents a hydrogen atom or a group capable of being split off by a coupling reaction with an oxidized aromatic primary amine developing agent; and Z_a, Z_b and Z_c each represents a methine group, a substituted methine group, =N— or —NH—; or the pyrazoloazole type coupler is a dimeric coupler, a polymeric coupler or a macromolecular coupler, each having a unit of the pyrazoloazole compound represented by the formula (I).

4,618,574

HIGH CONTRAST PHOTOGRAPHIC ELEMENTS EXHIBITING REDUCED PEPPER FOG

Anthony Cavallaro, East Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 18, 1985, Ser. No. 756,158

Int. Cl.^{4} G03C *1/34*

U.S. Cl. 430—567 **18 Claims**

1. A negative working photographic element capable of producing a high contrast silver image comprised of

a support,

a contrast enhancing arylhydrazide, and

a gelatino-silver halide emulsion layer comprised of surface latent image forming monodispersed silver halide grains having a mean diameter of less than 0.7 μm,

further characterized in that said emulsion layer contains in an amount sufficient to reduce pepper fog while maintaining high contrast a polyhydroxybenzene and a carboxyalkyl-3H-thiazoline-2-thione.

4,618,575

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Yukio Maekawa, and Yasuo Mukunoki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

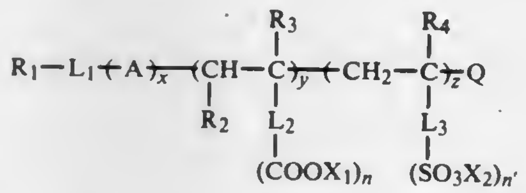
Filed Apr. 3, 1985, Ser. No. 719,396

Claims priority, application Japan, Apr. 3, 1984, 59-66465

Int. Cl.^{4} G03C *1/38*

U.S. Cl. 430—634 **14 Claims**

1. A silver halide photographic light-sensitive material comprising a hydrophilic organic colloid layer, wherein the hydrophilic organic colloid layer contains at least one compound represented by formula (I)



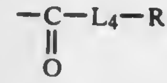
(I)

$$R_1-L_1-(A)_x-\left(\underset{R_2}{CH}-\overset{R_3}{\underset{\underset{(COOX_1)_n}{L_2}}{C}}\right)_y-\left(CH_2-\overset{R_4}{\underset{\underset{(SO_3X_2)_{n'}}{L_3}}{C}}\right)_z-Q$$

wherein

R_1 represents a substituted or unsubstituted alkyl or aromatic group:

R_2 represents a hydrogen atom or



$$-\underset{\underset{O}{\|}}{C}-L_4-R_5,$$

wherein L_4 represents a divalent bonding group, and R_5 represents a hydrogen atom or a substituted or unsubstituted alkyl or aromatic group;

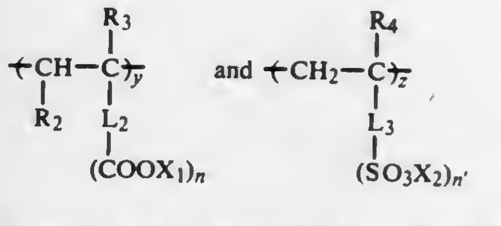
R_3 and R_4 each represents a hydrogen atom, or a substituted or unsubstituted alkyl group;

L_1 represents a divalent bonding group selected from —S— and —SO$_2$—;

L_2 and L_3 each represents a single bond or a divalent or trivalent bonding group;

n and n′ each represents an integer of 1 or 2;

A represents a repeating unit resulting from polymerization of an ethylenically unsaturated monomer copolymerizable with monomers constituting the units



$$\left(\underset{R_2}{CH}-\overset{R_3}{\underset{\underset{(COOX_1)_n}{L_2}}{C}}\right)_y \quad \text{and} \quad \left(CH_2-\overset{R_4}{\underset{\underset{(SO_3X_2)_{n'}}{L_3}}{C}}\right)_z$$

wherein X_1 and X_2 each represents a hydrogen atom or a cation;

x, y, and z are each an average number of units derived from respective monomers, with x being greater than 0 and at least one of y and z being greater than 0; and

Q represents a monovalent group.

4,618,576

DIAGNOSTIC TEST FOR STREPTOCOCCUS A

Robert Rosenstein, Ellicott City; Kim P. Aspden, Reisterstown, and Peter Stopa, Timonium, all of Md., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Feb. 27, 1984, Ser. No. 584,175

Int. Cl.^{4} G01N *33/53;* **C12Q** *1/04;* **C12M** *1/40, 1/30*

U.S. Cl. 435—7 **12 Claims**

7. A method for detecting Streptococcus A comprising

providing an applicator including an applicator stick with a fibrous swab and swabbing a biological sample with said swab,

providing an extraction reagent containing enzymes produced by *S. albus* for effecting release of Streptococcus A antigen from said swab, dipping said swab in said extraction reagent and incubating said swab within said extraction reagent for a period of time sufficient to release antigen from said fibrous swab,

providing indicator reagent containing antibody reactive with said antigen and adding an aliquot of said extraction reagent thereto, and

noting the occurrence or nonoccurrence of an antibody-antigen reaction, indicating the presence or absence of Streptococcus A in said biological sample.

4,618,577

HUMAN-HUMAN HYBRIDOMA, CLNH5

Harold H. Handley, Cardiff-by-the-Sea; Mark C. Glassy, San Diego, both of Calif.; Yoshihide Hagiwara, Hyogo, and Hideaki Hagiwara, Osaka, both of Japan, assignors to The Regents of The University of California, Berkeley, Calif.

Filed Feb. 9, 1983, Ser. No. 465,081

Int. Cl.^{4} G01N *33/53;* **C12P** *21/00;* **C12N** *15/00, 5/00;* **C12R** *1/91*

U.S. Cl. 435—7 **11 Claims**

1. A human hybridoma designated CLNH5 having A.T.C.C. Accession No. HB8206.

4,618,578

EXPRESSION OF GLYCOPROTEIN D OF HERPES SIMPLEX VIRUS

Rae L. Burke; Mickey S. Urdea, and Pablo D. T. Valenzuela, all of San Francisco, Calif., assignors to Chiron Corporation, Emeryville, Calif.

Filed Jul. 17, 1984, Ser. No. 631,669

Int. Cl.^{4} C12P *21/00;* **C12N** *15/00, 1/00;* **C07H** *21/04*

U.S. Cl. 435—68 **30 Claims**

1. An improved method for producing a polypeptide which is immunologically cross-reactive with glycoprotein D of herpes simplex virus, said method comprising:

growing a yeast host which has been modified to include a DNA sequence expressing a polypeptide of at least nine amino acids defining at least one epitopic site found in naturally-occurring glycoprotein D; and collecting the polypeptide produced by the yeast host.

4,618,579
RAW STARCH SACCHARIFICATION

Bruce L. Dwiggins; Carl E. Pickens, both of Decatur, and Carl W. Niekamp, Forsyth, all of Ill., assignors to Genencor, Inc., South San Francisco, Calif.

Filed Sep. 28, 1984, Ser. No. 656,051

Int. Cl.^{4} C12P *19/20, 19/14;* **C12N** *9/34;* **C12R** *1/645*

U.S. Cl. 435—96 **24 Claims**

1. A method of preparing a syrup containing, on a dry substance weight basis, a high percentage of glucose, said method comprising:

(a) preparing a first aqueous slurry of granular starch containing between about 20 and about 60 weight percent starch, d.s.;

(b) adjusting the pH and the temperature of said first slurry to values suitable to promote activity of a raw starch hydrolyzing enzyme preparation which is produced by a fungal organism and which catalyzes the hydrolysis of granular starch directly to glucose, said raw starch hydrolyzing enzyme preparation being characterized in that it catalyzes the hydrolysis of granular starch suspended in water at a concentration of about 15 percent by weight starch solids substantially completely to soluble glucose syrup solids containing at least about 97 percent by weight glucose, d.s., when the hydrolysis is carried out at a pH of about 5.0 to about 7.0 and a temperature of about 55° C. and without added alpha amylase or added debranching enzyme of the pullulanase, isoamylase or beta amylase type, said enzyme preparation being further characterized in that it is separable by carboxymethyl cellulose into a first adsorbing fraction and a second non-adsorbing proteinaceous fraction, said first adsorbing fraction containing a glucoamylase enzyme (EC 3.2.1.3) that has an isoelectric point of about 8.0 or higher and said second non-adsorbing fraction having glucoamylase-protentiating activity that catalyzes the hydrolysis of granular starch;

(c) adding to said first slurry the raw starch hydrolyzing enzyme preparation in an amount sufficient to solubilize and saccharify a substantial portion of the starch in said first slurry;

(d) allowing said raw starch hydrolyzing enzyme preparation to solubilize and saccharify a substantial portion, but less than all, of the starch in said first slurry to yield a first syrup of at least about 22 weight percent saccharides, d.s.;

(e) separating said first syrup from the insolubles which remain and which contain unsolubilized starch from said first slurry;

(f) preparing a second aqueous slurry from said insolubles, said second slurry containing less than about 20 weight percent, d.s., starch;

(g) adjusting the pH and the temperature of said second slurry to values suitable to promote raw starch hydrolyzing enzyme activity;

(h) contacting said second slurry with the raw starch hydrolyzing enzyme preparation in an amount sufficient to solubilize and saccharify substantially all of the starch contained in said second slurry;

(i) allowing said raw starch hydrolyzing enzyme preparation to solubilize and saccharify substantially all of the starch in said second slurry to provide a second syrup; and

(j) separating said second syrup from insolubles contained therein.

4,618,580
PROCESS FOR THE PRODUCTION OF L-TRYPTOPHAN USING SULFAGUANIDINE-RESISTANT MICROORGANISMS

Isamu Shiio, Kamakura; Shinichi Sugimoto, and Kazue Kawamura, both of Kawasaki, all of Japan, assignors to Ajinomoto Company, Incorporated, Tokyo, Japan

Filed Apr. 13, 1984, Ser. No. 599,922

Claims priority, application Japan, Apr. 13, 1983, 58-65010; Dec. 23, 1983, 58-243572

Int. Cl.^{4} C12P *13/22;* **C12R** *1/13, 1/15*

U.S. Cl. 435—108 **2 Claims**

1. A method for producing L-tryptophan by fermentation, which comprises:

culturing aerobically in a culture medium *Corynebacterium glutamicum* FERM-BP 478 or *Brevibacterium flavum* FERM-BP 475 which are resistant to sulfaguanidine and capable of producing L-tryptophan; and

recovering the L-tryptophan which has accumulated in the culture medium.

4,618,581
CLAVINE-PRODUCING STRAIN, A PROCESS FOR THE PREPARATION THEREOF AS WELL AS A MICROBIOLOGICAL PROCESS FOR PRODUCING CLAVINE ALKALOIDS

Mária Trinn, Pecs; Gabriella Kordik, Budapest; Eva Udvardy-Nagy née Cserey Pecháany, Budapest; Zsuzsanna Vida, Budapest, and Rzsebet Zsóka née Sómkuti, Budapest, all of Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT., Budapest, Hungary

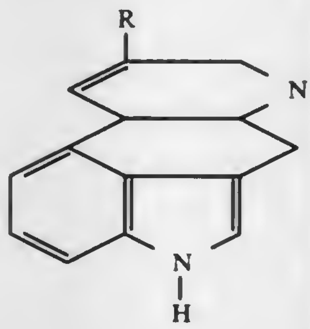
Filed Aug. 3, 1984, Ser. No. 637,524

Claims priority, application Hungary, Aug. 10, 1983, 2817/83

Int. Cl.^{4} C12P *17/18;* **C12N** *15/00, 1/14*

U.S. Cl. 435—119 **5 Claims**

1. A microbiological process for the preparation of clavine alkaloids of the Formula (I)



(I)

wherein R stands for a methyl or a hydroxymethyl group, by culturing a *Claviceps fusiformia* strain in a liquid submerged culture medium containing sources of carbon, nitrogen, and mineral salts, under aerobic conditions, which comprises using a *Claviceps fusiformia* variant strain deposited under No. 00211 as alkaloid producing strain on Nov. 15, 1981 at the National Collection of Microorganisms, National Institute for Public Health, Budapest, Hungary, and recovering the alkaloids obtained.

4,618,582
PROCESS FOR PRODUCING XANTHOMONAS BIOPOLYMERS

Konrad Engelskirchen, Meerbusch; Werner Stein, Düsseldorf; Michael Bahn, Hilden; Ludwig Schieferstein, Oberhausen; Joachim Schindler, Hilden, and Rolf Schmid, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 8, 1982, Ser. No. 346,591

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1981, 3105556

Int. Cl.^{4} C12P *19/06;* **C12N** *1/26, 1/20;* **C12R** *1/64*

U.S. Cl. 435—104 **10 Claims**

1. In the method of conducting a fermentation reaction wherein an aqueous culture medium comprising a carbohydrate source and a nitrogen source is inoculated with a polysaccharide gum producing Xanthomonas microorganism and said medium is mechanically agitated and aerated under conditions to effect fermentation thereof, the improvement which comprises said culture medium being dispersed via a surfactant in about 15 to about 90%, based on the total weight of dispersion, of a water insoluble oil in which the resultant polysaccharide is also insoluble.

4,618,583
METHOD OF PREPARING L-(+)-β-HYDROXYISOBUTYRIC ACID BY FERMENTATION

Robert S. Robison, North Brunswick, and Michael G. Doremus, South Bound Brook, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 19, 1984, Ser. No. 672,984

Int. Cl.^{4} C12P *7/42*

U.S. Cl. 435—146 **16 Claims**

1. A method for producing L-(+)-β-hydroxyisobutyric acid, which comprises subjecting a substrate which is isobutyric acid, methacrylic acid, isobutyryl chloride, the methyl ester of isobutyric acid, the ethyl ester of isobutyric acid, the methyl ester of methacrylic acid, the ethyl ester of methacrylic acid, isobutyl alcohol, esters of isobutyl alcohol, isobutyl amine, isobutyl aldehyde, isobutyl amide or mixtures of two or more thereof, to the action of a microorganism of the species *Pseudomonas aeruginosa* or of the species *Protaminobacter alboflavus* to convert the substrate into L-(+)-β-hydroxyisobutyric acid in an aqueous medium, and recovering L-(+)-β-hydroxyisobutyric acid from the medium.

4,618,584
ULTRAFILTRATION PURIFICATION OF GLUCOSE ISOMERASE

Richard A. Johnson; Richard L. Antrim, both of Clinton, Iowa, and Norman E. Lloyd, Ridgefield, Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Dec. 20, 1984, Ser. No. 684,205

Int. Cl.^{4} C12N *9/92*

U.S. Cl. 435—234 **20 Claims**

1. A process for the production of a purified glucose isomerase enzyme which comprises contacting an enzyme extract containing glucose isomerase and impurities with a first polysulfone membrane not normally permeable to glucose isomerase, in the presence of a salt concentration capable of selectively inducing permeation of glucose isomerase through the membrane, and obtaining a glucose isomerase containing permeate.

4,618,585
HYBRIDOMA CELL LINES PRODUCING MONOCLONAL ANTIBODIES DIRECTED AGAINST CERVICAL CANCER CELLS

Teh-sheng Chan, League City, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 359,514, Mar. 18, 1982, abandoned. This application Jul. 16, 1984, Ser. No. 631,252

Int. Cl.^{4} C12N *5/00;* **A61K** *39/395;* **C07K** *15/00*

U.S. Cl. 435—240 **2 Claims**

1. A continuous hybrid cell line having ATCC deposit number HB8563 and clones thereof, which cell line produces monoclonal antibody to an antigenic determinant unique to HeLa cervical cancer cells.

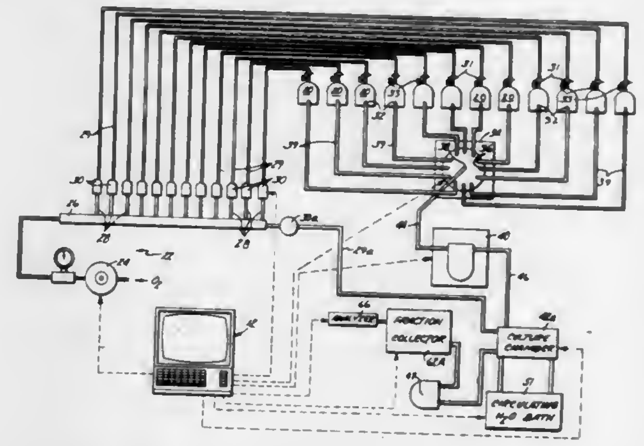
4,618,586
APPARATUS FOR ADMINISTERING A CONTROLLED DOSAGE OF A CHEMICAL SUBSTANCE HAVING AN IMPROVED CULTURE CHAMBER

Robert D. Walker, Ham Lake, Minn., assignor to Endotronics, Inc., Minneapolis, Minn.

Filed Apr. 8, 1983, Ser. No. 483,284

Int. Cl.^{4} A01N *1/02;* **C12M** *1/36, 3/00*

U.S. Cl. 435—1 **7 Claims**



1. An apparatus for delivering a controlled dosage of a chemical substance to a chamber containing cells or tissue, the apparatus comprising:

a plurality of vessels, each vessel containing a different known concentration of the chemical substance;

valving means having a plurality of inlets and a single outlet for fluidly connecting a preselected inlet to the single outlet;

first conduit means for fluidly connecting the vessels to the inlets;

a culture chamber for receiving the chemical substance having a lower fluid chamber and an upper neck portion, the neck portion being of smaller diameter than the fluid chamber and the chemical substance having an upper level in the neck portion, the neck portion communicating with the fluid chamber and the culture chamber further including an inlet and a second conduit means having a lower end disposed within the neck portion defining a predetermined level of the chemical substance in the culture chamber;

third conduit means for fluidly connecting the single outlet of the valving means to the inlet of the culture chamber;

first pump means fluidly connected to the third conduit means for providing a transport force to the chemical substance in a flow controlled manner for delivering the chemical substance to the culture chamber;

second pump means fluidly connected to the second conduit means for removing excess volume of the chemical substance from the culture chamber and keeping the volume within the culture chamber constant; and

control means for controlling the valving means having means for providing input signals and means for providing signals indicative of a desired program of administation such that a preselected inlet is fluidly connected to the outlet for presenting a preselected known concentration of the chemical substance to the chamber, and for controlling the first pump means for providing a transport force to the chemical substance, and for controlling the second pump means so that the volume in the chamber is kept constant, and including means for controlling the concentration of the chemical substance in the chamber according to the program of administration corresponding to the equation

$$C_{(t)}=C_s+(C_i-C_s)e^{-(Rt)/V}$$

wherein

t=integration time interval

V=volume of fluid within the culture chamber affecting the cells or tissue in which the chemical substance is being delivered

R=the rate of delivery of the chemical substance to the culture chamber

C_i=the initial concentration level of the chemical substance in the integration time interval within the culture chamber

$C_{(t)}$=the final concentration of the chemical substance in the integration time interval within the culture chamber

C_s=the concentration of the chemical substance being delivered in the integration time interval from the vessels into the culture chamber,

wherein the means for controlling the concentration selects values of R/V and C_s such that the concentration change between C_i and $C_{(t)}$ is linear.

4,618,587

METHOD FOR THE QUANTITATIVE DETERMINATION OF CALCIUM IN BIOLOGICAL FLUIDS THROUGH DIRECT POTENTIOMETRY

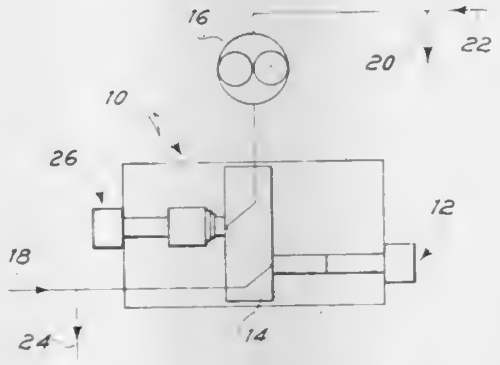
Pietro Premoli, Via S. Lorenzo 19, Andorno Micca, Vercelli, Italy 13061; Angelo Manzoni, Via Ugo Foscolo 22, Brugherlo, Milan, Italy 20047, and Claudio Calzi, Via Martiri Oscuri 21, Milan, Italy 20125

Filed Feb. 21, 1985, Ser. No. 703,649

Claims priority, application Italy, Feb. 28, 1985, 19826 A/84

Int. Cl.⁴ G01N *27/46, 33/48*

U.S. Cl. 436—74 **7 Claims**



1. In a method for the determination of calcium ion content of serum using a potentiometric system the improvement comprising the steps of calibrating the potentiometric system with a first calibrating solution containing about 0.001 molar calcium and a second calibrating solution containing about 0.003 molar calcium, the first and second calibrating solutions also containing about 0.1 molar tris(hydroxymethyl)aminomethane or derivatives thereof having a pH value of about 7.5 at about 25° C. and from about 300 to about 400 milligrams per deciliter of 2.2 Bis-(hydroxymethyl)-2,2',2"-nitrilotriethanol, and diluting a serum sample with a dilution solution containing 0.1 molar tris(hydroxymethyl)aminoethane having a pH value of about 7.5 at about 25° C.

4,618,588

REAGENT AND MERCHANDISING KIT FOR USE IN THE DIAGNOSIS OF SYPHILIS AND PREPARATION THEREOF

Takashi Sato, Saitama, and Emiko Kubo, Tokyo, both of Japan, assignors to Fujizoki Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 430,238

Claims priority, application Japan, Oct. 23, 1981, 56-168646

Int. Cl.⁴ G01N *33/571, 33/555, 33/531;* **C12Q** *1/04*

U.S. Cl. 436—511 **8 Claims**

1. In a regent for use in the diagnosis of syphilis by hemagglutination of an antigen obtained from a cultrure of pathogenic Treponema pallidum Nichols and wherein carrier particles are sensitized with said antigen, the improvement which comprises said antigen being subtantially devoid of proteinic fractions of said culture, said proteinic fractions having a specific gravity less than 1.01.

4,618,589

IMMUNOPRECIPITATION ASSAY OF IMMUNOGLOBULINS USING MONOCLONAL ANTIBODIES

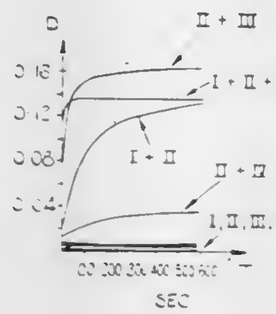
Royston Jefferis, Birmingham, England, and Jens Steensgaard, Aarhus, Denmark, assignors to The University of Birmingham, Birmingham, England

Continuation of Ser. No. 582,155, Feb. 24, 1984, abandoned, which is a continuation of Ser. No. 351,444, Feb. 23, 1982, abandoned. This application Jun. 19, 1985, Ser. No. 745,837

Claims priority, application United Kingdom, Jul. 16, 1980, 8023151

Int. Cl.⁴ G01N *33/541, 33/577*

U.S. Cl. 436—540 **6 Claims**



1. A method of quantification of a sub-population of an immunoglobulin having first and second sub-populations, said method comprising the steps of:

(a) reacting a first sample containing said immunoglobulin with first and second monoclonal antibody preparations which specifically bind to respective distinct antigenic sites on the macromolecule of said immunoglobulin, such that binding of one monoclonal antibody to its specific antigenic site does not intefere with the binding of the other antibody to its specific antigenic site, both of said sites being common to both of said first and second sub-populations, to obtain a first antigen-antibody precipitate;

(b) reacting a second sample identical to said first sample with said first preparation and with a third monoclonal antibody preparation which specifically binds to an antigenic site expressed by only one of said first and second sub-populations, to obtain a second antigen-antibody precipitate; and

(c) determining from said second antigen-antibody precipitate the quantity of said first sub-population in the sample.

4,618,590

STARTING MIXTURE FOR A DIELECTRIC COMPOSITION

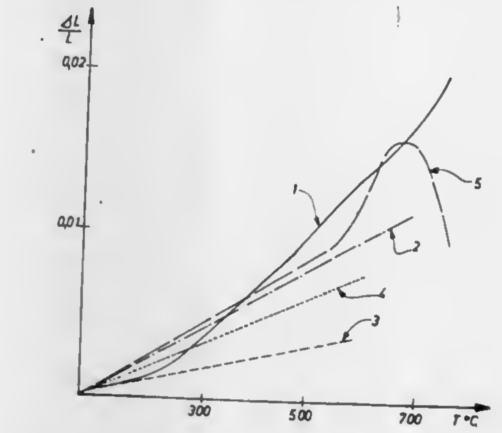
Hugues Baudry, Varennes-Jarcy, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 3, 1985, Ser. No. 730,220

Claims priority, application France, May 18, 1984, 84 07769

Int. Cl.⁴ C03C *14/00, 8/14, 8/04*

U.S. Cl. 501—17 **4 Claims**



1. A starting mixture suitable for forming a dielectric composition consisting essentially of 85%-60% by volume of a vitreous phase and 15%-40% by volume of ceramic phases, said vitreous phase having the following composition by mol.%:

30-55% SiO_2, 15-30% ZnO, 15-40% BaO, 0-20% B_2O_3 and 0-10% Al_2O_3 and said ceramic phases consisting essentially in volume percent of:

ZnO-5-20%, Co_3O_4-0-10% and PbO_2-10-25%.

4,618,591

SILICON CARBIDE-CARBON COMPOSITE MOLDED PRODUCT AND PROCESS FOR MANUFACTURING THE SAME

Kiyohito Okamura; Yoshio Hasegawa, both of Ibaraki; Yoshiyasu Kuroo, Koganei, and Masana Ugaji, Tokyo, all of Japan, assignors to Sony Corporation and The Foundation: The Research Institute for Special Inorganic Materials, Tokyo, both of, Japan

Division of Ser. No. 557,183, Nov. 9, 1983, abandoned. This application Jun. 3, 1985, Ser. No. 740,475

Int. Cl.⁴ C04B *35/56*

U.S. Cl. 501—90 **10 Claims**

1. A silicon carbide-carbon composite consisting of a matrix consisting essentially of SiC and having bonded therein an amorphous carbon, said composite having been produced by:

providing a molded base material composed of an organic polymer which is thermally decomposable to a fibrous carbon by high temperature treatment, said base material being shaped into a desired configuration,

impregnating said base material with an organic silicon polymer having a molecular skeleton consisting mainly of carbon-silicon bonds,

burning the thus impregnated product at a temperature of at least 700° C. in the absence of oxygen to simultaneously (a) convert said organic silicon polymer to a matrix consisting mainly of SiC, (b) convert said base material mainly to fibrous carbon and (c) bond the two together by simultaneous shrinkage without separation during such burning.

4,618,592

FINE POWDER OF ALUMINUM NITRIDE, COMPOSITION AND SINTERED BODY THEREOF AND PROCESSES FOR THEIR PRODUCTION

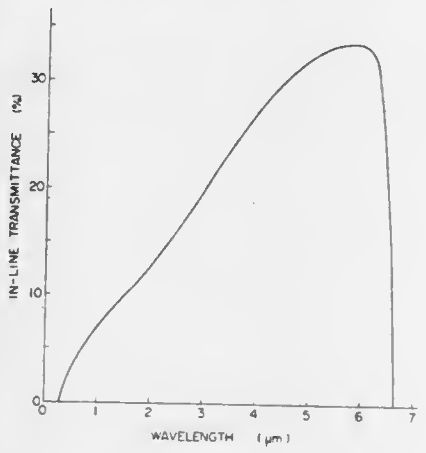
Nobuyuki Kuramoto, Sagamihara, and Hitofumi Taniguchi, Chigasaki, both of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

Continuation-in-part of Ser. No. 532,591, Sep. 15, 1983, abandoned. This application Mar. 12, 1984, Ser. No. 588,773

Claims priority, application Japan, Sep. 17, 1982, 57-160782; Sep. 17, 1982, 57-160783; May 13, 1983, 58-82536

Int. Cl.⁴ C04B *35/58;* **F27D** *7/06*

U.S. Cl. 501—96 **36 Claims**



1. A fine powder of aluminum nitride

(a) having an average particle diameter of not more than 2 microns.

(b) comprising at least 97% by weight of aluminum nitride, and at most 0.5% by weight as metal of metal compounds as impurities, or at most 0.5% by weight, as impurities, of carbon or silicon as carbon or silicon compounds, wherein at most 0.1% by weight of the metal of the metal compounds is selected from the group consisting of iron, chromium, nicket, cobalt, copper, zinc and titanium, and

(c) containing at most 1.5% by weight of bound oxygen.

4,618,593

PROCESS FOR IMPROVING ACTIVITY OF TELLURIUM CONTAINING METAL OXIDE CATALYSTS

Yutaka Sasaki; Yutaka Kiyomiya, and Toshio Nakamura, all of Kanagawa, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed May 17, 1982, Ser. No. 379,205

Claims priority, application Japan, May 15, 1981, 56-73144; Feb. 15, 1982, 57-21095

Int. Cl.⁴ B01J *27/30, 23/92;* **C07C** *121/32, 120/14*

U.S. Cl. 502—20 **19 Claims**

1. A regeneration process for tellurium containing metal oxide catalysts used in the process for oxidation, ammoxidation or oxidative dehydrogenation reaction of organic compounds at a temperature of about 300° C. to about 600° C. in a reactor using a metal oxide catalyst (A) having a composition, as defined in a freshly prepared state, represented by an empirical formula,

$$A_aTe_bC_cD_dE_eO_x$$

wherein A represents at least one element selected from the group consisting of Sb, Mo and V, Te represents tellurium, C represents at least one element selected from the group consisting of B, P, As, Bi, S and Se, D represents at least one element selected from the group consisting of Li, Na, K, Rb, Cs and Tl, E represents at least one element selected from the group consisting of Mg, Ca, Sr, Ba, Y, La, Ce, U, Ti, Zr, Nb, Ta, Cr, W, Mn, Re, Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, Ag, Zn, Cd, Al, Ga, In, Ge, Sn and Pb, and O represents oxygen; and a, b, c, d, e and x represent the atomic ratios of the elements in the formula for which they are subscripts, wherein a=10, b=0.01 to 5, c=0 to 10, d=0 to 5, e=0 to 60 and x is the number of oxygen corresponding to the oxides formed by combining the above described components, said catalyst has become partially deactivated during the reaction, said process comprising regenerating the deactivated catalyst at the reaction temperature under a non-reductive atmosphere by contacting the deactivated catalyst with a tellurium enriched metal oxide catalyst (B), represented by the same empirical formula as said metal oxide catalyst (A) except for the tellurium content, the tellurium content of said catalyst (B) being about 1% by weight or more and higher than that of freshly prepared metal oxide catalyst (A), said tellurium enriched metal oxide catalyst (B) being present in an amount of at least about 0.01% by weight based on said metal oxide catalyst (A).

9. A regeneration process for tellurium containing metal oxide catalyst used in the process for oxidation, ammoxidation or oxidative dehydrogenation reaction of organic compounds at a temperature of about 300° C. to about 600° C. in a reactor using a metal oxide catalyst (A) having a composition, as defined in a freshly prepared state, represented by the empirical formula,

$$A_aTe_bC_cD_dE_eO_x$$

wherein A represents at least one element selected from the group consisting of Sb, Mo and V, Te represents tellurium, C represents at least one element selected from the group consisting of B, P, As, Bi, S and Se, D represents at least one element selected from the group consisting of Li, Na, K, Rb, Cs and Tl, E represents at least one element selected from the group consisting of Mg, Ca, Sr, Ba, Y, La, Ce, U, Ti, Zr, Nb, Ta, Cr, W, Mn, Re, Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, Ag, Zn, Cd, Al, Ga, In, Ge, Sn and Pb, and O represents oxygen; and a, b, c, d, e and x represent the atomic ratios of the elements in the formula for which they are subscripts, wherein a=10, b=0.01 to 5, c=0 to 10, d=0 to 5, e=0 to 60 and x is the number of oxygens corresponding to the oxides formed by combining the above described components, said catalyst having become partially deactivated during the reaction, said process comprising regenerating the deactivated catalyst at the reaction temperature under a non-reductive atmosphere by contacting the deactivated catalyst with a tellurium-molybdenum enriched catalyst system (C) represented by the same empirical formula as said metal oxide catalyst (A) except for both of the tellurium and molybdenum contents, and selected from the group consisting of (i) a physical blend of a tellurium enriched catalyst and a molybdenum enriched catalyst, and (ii) a tellurium-molybdenum enriched catalyst, the tellurium and molybdenum contents being higher than those of the freshly prepared metal oxide catalyst (A), respectively, the tellurium content of the tellurium-molybdenum enriched catalyst system (C) being about 1% by weight or more and higher than that of said metal oxide catalyst (A) and said tellurium-molybdenum enriched catalyst system (C) being present in an amount of a total of about 0.01% by weight or more based on said metal oxide catalyst (A).

19. A process according to claim **9**, wherein deactivated catalyst (A) is blended with a dry tellurium-molybdenum-enriched catalyst or a dry blend of a tellurium-enriched catalyst and a molybdenum-enriched catalyst such that the increase in tellurium contained in the catalyst blend is from about 0.001 to 15% of the total catalyst weight, and the increase in molybdenum contained in the catalyst blend is from about 0.002 to 10% of the total catalyst weight.

4,618,594

CATALYST AND PROCESS FOR THE HYDRODENITROGENATION AND HYDROCRACKING OF HIGH-NITROGEN FEEDS

A. Martin Tait; Thomas D. Nevitt, both of Naperville, Ill., and Albert L. Hensley, Jr., Munster, Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 669,655, Nov. 8, 1984, abandoned, which is a continuation-in-part of Ser. No. 200,536, Oct. 24, 1980, abandoned, which is a continuation-in-part of Ser. No. 181,433, Aug. 4, 1980, Pat. No. 4,306,965, which is a continuation of Ser. No. 21,575, Mar. 19, 1979, Pat. No. 4,224,144. This application Jan. 23, 1986, Ser. No. 821,843

Int. Cl.⁴ B01J *29/28, 29/04, 21/00*

U.S. Cl. 502—66 **23 Claims**

1. A catalyst which comprises a hydrogenation component comprising chromium, molybdenum, and at least one Group VIII Metal, a crystalline molecular sieve zeolite selected from the group consisting of ZSM crystalline aluminosilicates and AMS crystalline metallosilicates, and containing exchangeable cations, and a porous refractory inorganic oxide, the metals of said hydrogenation component being present in the elemental form, as oxides, as sulfides, or mixtures thereof.

4,618,595

POLYMERIZATION OF OLEFINS

Richard E. Dietz, Bartlesville, Okla., assignor to Phillips Petrolem Company, Bartlesville, Okla.

Continuation of Ser. No. 680,688, Dec. 12, 1984, abandoned, which is a continuation of Ser. No. 380,788, May 21, 1982, abandoned. This application Jun. 5, 1985, Ser. No. 742,168

Int. Cl.⁴ C08F *4/02, 4/64*

U.S. Cl. 502—108 **33 Claims**

3. A process comprising precipitating a product in the presence of a particulate diluent which comprises polyolefin fibrils suspended in a solution of metal halide compound and transition metal compound wherein the metal halide compound comprises a metal dihalide or metal hydroxyhalide and the metal of the metal halide compound is selected from the group consisting of Group IIA and Group IIB metals and the transition metal compound contains a transition metal compound selected from Group IVB and VB and the transition metal is bonded to at least one atom selected from the group consisting of oxygen, nitrogen and sulfur and said oxygen, nitrogen and sulfur atoms are in turn bonded to a hydrocarbyl group containing from 1 to about 20 carbon atoms.

7. A process as in claim **3** further comprising polymerizing an effective amount of an alpha-olefin onto the catalyst to form an improved catalyst.

4,618,596

POLYMERIZATION CATALYST, PRODUCTION AND USE

Agapios K. Agapiou, Humble; Michael E. Muhle, Kingwood, and Myron B. Kurtzman, Houston, all of Tex., assignors to Exxon Chemical Patents Inc., Florham Park, N.J.

Filed Jul. 26, 1985, Ser. No. 759,202

Int. Cl.⁴ C08F *4/62, 4/64, 4/68*

U.S. Cl. 502—116 **40 Claims**

1. A transition metal-containing catalyst component comprising the solid reaction product obtained by treating an inert solid support material in an inert solvent with (A) Cl_2, Br_2 or an interhalogen, (B) an organometallic compound of a Group IIa, IIb or IIIa metal wherein all the metal valencies are satisfied with a hydrocarbon selected from alkyl, aryl, cycloalkyl, aralkyl, alkadienyl or alkenyl groups having from 1 to 20 carbon atoms, (C) an oxygen-containing compound selected from ketones, adehydes, alcohols, siloxanes or mixtures thereof, (D) at least one transition metal compound of a Group IVb, Vb, VIb or VIII metal, and (E) prereducing the transition metal-containing component with an organo-metallic compound of a Group IIa, IIb or IIIa metal, with the proviso that

the inert support is first contacted with (A) Cl_2, Br_2 or interhalogen and the (B) and (C) ingredients can be added to the inert solid (i) simultaneously, (ii) as the reaction product of (B) and (C), or (iii) treatment of the inert solid with (C) immediately precedes treatment with (B).

4,618,597

HIGH SURFACE AREA DUAL PROMOTED IRON/MANAGANESE SPINEL COMPOSITIONS

Rocco A. Fiato, Scotch Plains, and Stuart L. Soled, Pittstown, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 564,465, Dec. 20, 1983. This application Dec. 27, 1985, Ser. No. 814,040

Int. Cl.⁴ B01J *23/02, 23/34*

U.S. Cl. 502—324 **16 Claims**

1. A composition of matter comprising an unsupported, Group IA or IIA metal and copper promoted, single phase, iron-manganese spinel, said spinel exhibiting a powder X-ray diffraction pattern substantially isostructural with Fe_3O_4, and possessing a BET surface area greater than 30 M^2/g and an iron-manganese atomic ratio greater than about 2:1.

4,618,598

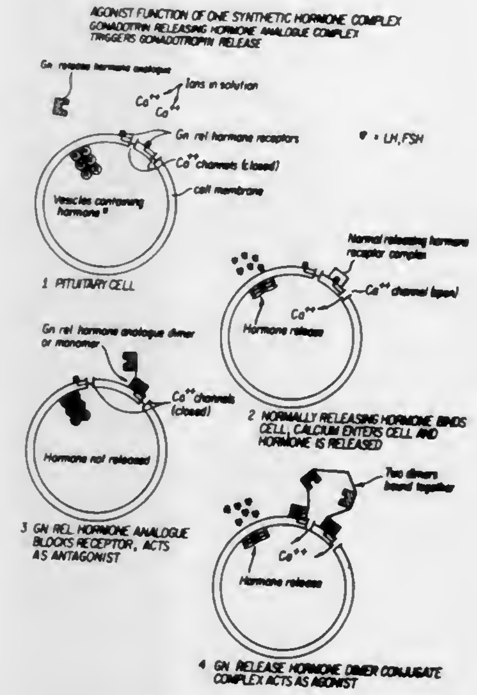
METHOD OF REGULATING HORMONE FUNCTION OR RELEASE

P. Michael Conn, Durham, N.C., assignor to Duke University, N.C.

Filed Apr. 12, 1982, Ser. No. 367,339

Int. Cl.⁴ A61K *37/00;* **A23J** *7/00;* **C07K** *1/00;* **G01N** *53/00*

U.S. Cl. 514—6 **26 Claims**


AGONIST FUNCTION OF ONE SYNTHETIC HORMONE COMPLEX
GONADOTROPIN RELEASING HORMONE ANALOGUE COMPLEX
TRIGGERS GONADOTROPIN RELEASE
Gn release hormone analogue
Ions in solution
Ca++
Gn rel hormone receptors
* = LH,FSH
Ca++ channels (closed)
cell membrane
Vesicles containing hormone *
1 PITUITARY CELL
Normal releasing hormone receptor complex
Ca++ channel (open)
Hormone release
Gn rel hormone analogue dimer or monomer
Ca++ channels (closed)
Hormone not released
2 NORMALLY RELEASING HORMONE BINDS CELL, CALCIUM ENTERS CELL AND HORMONE IS RELEASED
3 GN REL HORMONE ANALOGUE BLOCKS RECEPTOR, ACTS AS ANTAGONIST
Two dimers bound together
4 GN RELEASE HORMONE DIMER CONJUGATE COMPLEX ACTS AS AGONIST

1. A synthetic gonadotropin releasing hormone conjugate, which functions as a gonadotropin releasing hormone agonist and consists of

- (a) gonadotropin releasing hormone or a biologically active analog thereof which comprises a D-lysine at the 6 position of gonadotropin releasing hormone to which another said gonadotropin releasing hormone or gonadotropin releasing hormone analog is covalently bound via a covalent spacer, wherein said spacer comprises a C_1 to C_{20} hydrocarbon chain and said spacer is from 10–300 Å in length, thereby producing a dimer, and
- (b) wherein said dimer is bound via a gonadotropin releasing hormone antibody to another of said dimer to produce said conjugate having gonadotropin releasing hormone agonistic activity.

4,618,599

SYNERGISTINE DERIVATIVES HAVING ANTI-BACTERIAL ACTIVITY AND THEIR USE

Jean-Pierre Corbet, Ecully; Claude Cotrel, Paris; Daniel Farge, Thiais, and Jean-Marc Paris, Vaires sur Marne, all of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

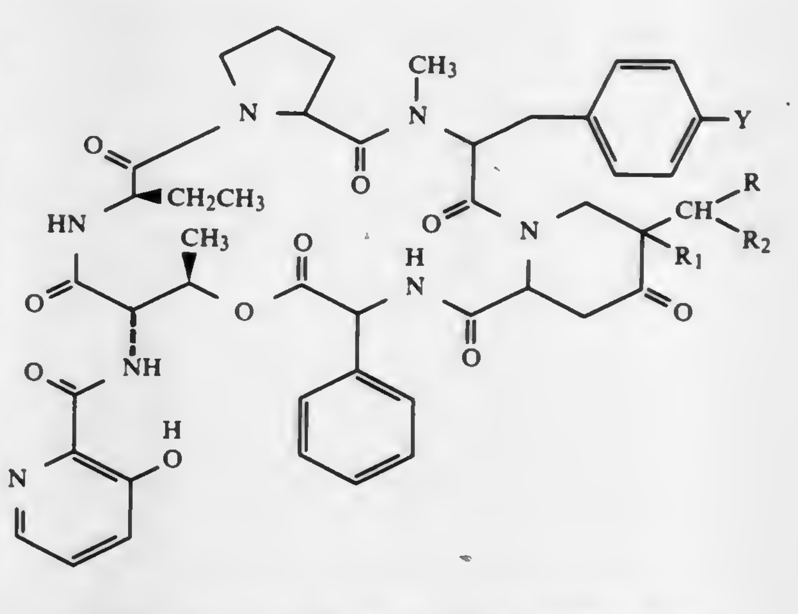
Filed Jul. 12, 1984, Ser. No. 630,288

Claims priority, application France, Jul. 13, 1983, 83 11705

Int. Cl.⁴ A61K *37/02;* **C07K** *5/12*

U.S. Cl. 514—11 **12 Claims**

1. A synergistine of the formula:



in which Y represents hydrogen or dimethylamino and

- (a) R_1 and R_2 each represent hydrogen, and R represents a member of the class consisting of pyrrolidin-3-ylthio, alkyl-substituted pyrrolidin-3-ylthio, piperidin-3-ylthio, alkyl-substituted piperidin-3-ylthio, piperidin-4-ylthio, and alkyl-substituted piperidin-4-ylthio, and alkylthio substituted by one to two radicals selected from the class consisting of:
  - hydroxysulphonyl,
  - alkylamino,
  - mercaptoalkylamino,
  - dialkylaminoalkylamino,
  - dialkylamino,
  - N-alkyl-N-mercaptoalkyl-amino,
  - N-alkyl-N-dialkylaminoalkyl-amino
  - piperazino,
  - alkyl-piperazino,
  - mercaptoalkyl-piperazino,
  - morpholino,
  - thiomorpholino,
  - piperidino,
  - pyrrolidin-1-yl,
  - piperidin-2-yl,
  - N-alkyl-piperidin-2-yl,
  - piperidin-3-yl,
  - N-alkyl-piperidin-3-yl,
  - piperidin-4-yl,
  - N-alkyl-piperidin-4-yl,
  - pyrrolidin-2-yl,
  - N-alkylpyrrolidin-2-yl,
  - pyrrolidin-3-yl, and
  - N-alkyl-pyrrolidin-3-yl; or
- (b) R_1 and R_2 together form a valence bond, and R represents a member of the class consisting of: pyrrolidin-3-ylamino, N-alkyl-pyrrolidin-3-ylamino, piperidin-3-ylamino, N-alkyl-piperidin-3-ylamino, piperidin-4-ylamino, N-alkyl-piperidin-4-ylamino, pyrrolidin-3-yloxy, N-alkyl-pyrrolidin-3-yloxy, piperidin-3-yloxy, N-alkyl-piperidin-3-yloxy, piperidin-4-yloxy N-alkyl-piperidin-4-yloxy pyrrolidin-3-ylthio, N-alkyl-pyrrolidin-3-ylthio piperidin-3-ylthio, N-alkyl-piperidin-3-ylthio piperidin-4-ylthio N-alkyl-piperidin-4-ylthio, and alkylamino, alk-

oxy and alkylthio radicals substituted by one to two radicals selected from the class consisting of:
hydroxysulphonyl
alkylamino
dialkylaminoalkylamino
dialkylamino
N-alkyl-N-dialkylaminoalkyl-amino
trialkylammonio
imidazol-4-yl
imidazol-5-yl
piperazino
alkylpiperazino
mercaptoalkylpiperazino
morpholino
thiomorpholino
piperidino
pyrrolidin-1-yl
piperidin-2-yl
piperidin-3-yl
piperidin-4-yl
pyrrolidin-2-yl
pyrrolidin-3-yl
N-alkyl-pyrrolidin-2-yl, and
N-alkyl-pyrrolidin-3-yl

the aforesaid alkyls and alkyl portions of said radicals containing 1 to 5 carbon atoms each in a linear or branched chain, and its isomeric forms where such exist, and mixtures thereof, and its pharmaceutically acceptable acid addition salts.

4,618,600

NOVEL POLYPEPTIDE DIURETIC/VASODILATORS

Lorin K. Johnson, Castro Valley, Calif.; Steven A. Atlas, and John H. Laragh, both of New York, N.Y., assignors to Biotechnology Research Associates, J.V., Mountain View, Calif.

Filed Apr. 19, 1984, Ser. No. 602,117

Int. Cl.^{4} A61K *37/02, 39/00;* **C07K** *7/10*

U.S. Cl. 514—12 **10 Claims**

1. A polypeptide compound useful as a natriuretic, diuretic and vasorelaxant in mammals, said polypeptide compound comprising the formula:

H-Arg-Ser-Ser-Cys-Phe-Gly-Gly-Arg-Ile-Asp-Arg-Ile-Gly-Ala-Gln-Ser-Gly-Leu-Gly-Cys-Asn-Ser-Phe-Arg-X

where X is OH or Tyr-OH; and including such compound containing a disulfide bridge joining the cysteine residues, and the pharmacologically acceptable salts thereof.

4,618,601

MEDICAMENTS BASED ON ZINC GLUCONATE USEFUL FOR THE TREATMENT OF HYPERPROLACTINAEMIAS

Guy Chazot, La Mulatiere, and Catherine Suck, Sceaux, both of France, assignors to 501 Societe Civile de Recherches et d'Etudes Theraputiques, Antony, France

Filed Dec. 3, 1985, Ser. No. 804,099

Claims priority, application France, Dec. 7, 1984, 84 18756

Int. Cl.^{4} A61K *31/70, 31/315*

U.S. Cl. 514—23 **2 Claims**

1. A method of treating hyperprolactinaemias which comprises orally administering to a patient in need thereof from 50 to 150 mg of zinc gluconate.

4,618,602

AMINE CONTAINING PSEUDOOLIGOSACCHARIDE, PHARMACEUTICAL COMPOSITION AND METHOD OF USE

László Vértesy, Eppstein; Rudolf Bender, Kronberg, and Hans-Wolfram Fehlhaber, Idstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 3, 1985, Ser. No. 771,638

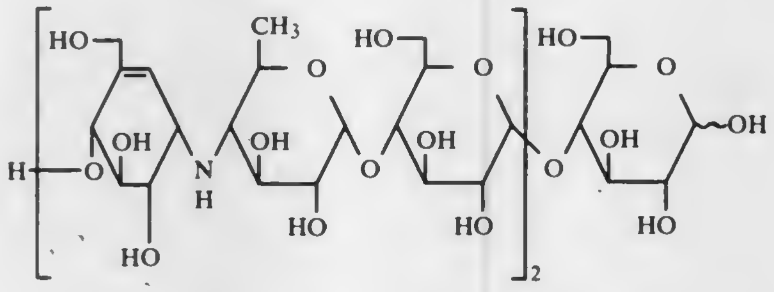
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1984, 3432432

Int. Cl.^{4} A61K *31/73;* **C08B** *37/00*

U.S. Cl. 514—54 **5 Claims**

1. The pseudooligosaccharide of the formula I

I



and a physiologically acceptable salt thereof with an acid.

4. A method which comprises using a compound as claimed in claim **1** for the treatment of diabetes, prediabetes and adiposity.

4,618,603

ALPHA-HETEROCYCLIC CARBINOL PHOSPHATES

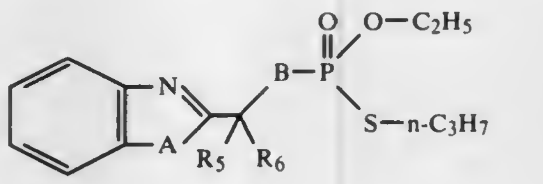
Jamin Huang, Chapel Hill, N.C., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 364,073, Mar. 31, 1982, abandoned. This application Sep. 24, 1985, Ser. No. 779,634

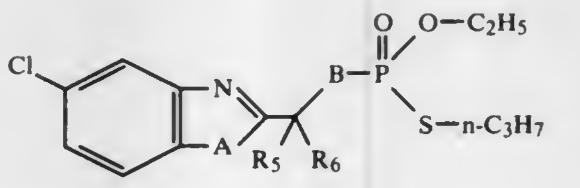
Int. Cl.^{4} A01N *57/16, 57/32;* **C07D** *263/56, 263/14*

U.S. Cl. 514—80 **21 Claims**

1. A compound having the formula selected from



and



wherein:

A is O or S;

R_5 is hydrogen;

R_6 is alkyl; and

B is O or S.

15. A method of controlling insects and mites which comprises subjecting them to an insecticidally or miticidally effective amount of the compound of claim **1**.

4,618,604

COMPOSITION AND METHOD FOR IMPROVING FEED UTILIZATION OR TISSUE PRODUCTION IN ANIMALS

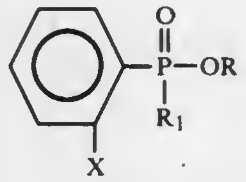
Melvin J. DeGeeter, Chesterfield; Gregory M. Lanza, Kirkwood, and Billy D. Vineyard, St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 535,498, Sep. 26, 1983, abandoned. This application Jun. 14, 1984, Ser. No. 620,412

Int. Cl.^{4} A61K *31/36, 31/66*

U.S. Cl. 514—130 **13 Claims**

1. A method of improving feed utilization or tissue production in animals which comprises administering to animals a feed supplement comprising an effective amount of at least one substituted phenylphosphinic acid derivative represented by the structure:



where R is selected from the group consisting of hydrogen, alkyl, aryl and suitable cationic radicals forming pharmaceutically acceptable salts thereof; R_1 is lower n-alkyl; and X is selected from the group consisting of hydroxy, halo, amino, carboxy, nitro, lower n-alkoxy and lower n-alkylamino radicals.

4,618,605

PROCESS FOR THE PRODUCTION OF β-ELEMONIC ACID AND PHARMACEUTICAL PREPARATIONS CONTAINING SAID ACID

Günter Stapel, Münstereifeler St. 30, 5000 Köln 41; Karl-Heinz Gober, Archimedesstr. 38, 5000 Köln 80; Sigurd Leyck, Am Quechenhauf 21, 5024 Pulheim 2; Helmut Wetzig, Paulstr. 46, 5024 Pulheim-Sinnersdorf; Christian Birkner, Grubenbecherstr., 5000 Köln 30; Kurt Kesselring, Villenweg 49, 5024 Erfstadt-Köttingen; Bruno Christ, Peter Franzen-Str. 44, 5000 Köln 3; Klaus Steiner, Gartenstr. 18, 5024 Pulheim-Stommeln, and Friedhelm Schröder, An der Maar 10, 5024 Pulheim 2, all of Fed. Rep. of Germany

Filed Oct. 15, 1984, Ser. No. 660,957

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1983, 3337229

Int. Cl.^{4} A61K *31/56*

U.S. Cl. 514—177 **4 Claims**

1. A process for the production of β-elemonic acid from an alcoholic solution of gum elemi which comprises recovering a crude mixture of elemi acids consisting essentially of β-elemonic acid, $\Delta^7\alpha$-elemolic acid and $\Delta^8\alpha$-elemolic acid, isomerizing the $\Delta^7\alpha$-elemolic acid to $\Delta^8\alpha$-elemonic acid in a chlorinated hydrocarbon in the presence of a mineral acid, oxidizing the $\Delta^8\alpha$-elemolic of the crude acid mixture to yield additional β-elemonic acid, and separating the total resulting β-elemonic acid from said crude acid mixture.

3. A process which comprises administering to a human or animal suffering from inflammatory conditions an effective amount of a preparation containing β-elemonic acid combined with a pharmaceutically acceptable carrier.

4,618,606

ANTIBIOTIC 7-(THIAZOLYL)-3-(PYRAZINYLMETHYL) OR (PYRIDAZINYLMETHYL) CEPHALOSPORINS

Hiroshi Sadaki; Hiroyuki Imaizumi; Takashi Nagai; Kenji Takeda; Isao Myokan, all of Toyama; Takihiro Inaba, Namerikawa; Yasuo Watanabe, Toyama; Yoshikazu Fukuoka, Toyama; Shinzaburo Minami, Toyama, and Isamu Saikawa, Toyama, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

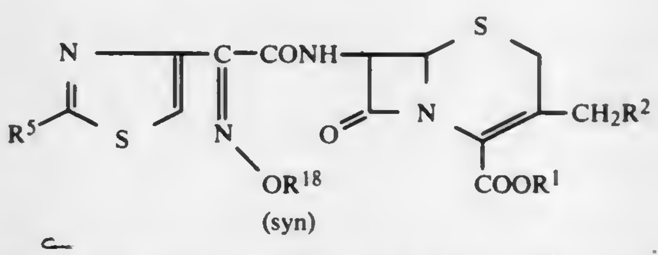
Filed Nov. 16, 1983, Ser. No. 552,468

Claims priority, application Japan, Nov. 17, 1982, 57-200382; Apr. 19, 1983, 58-67871

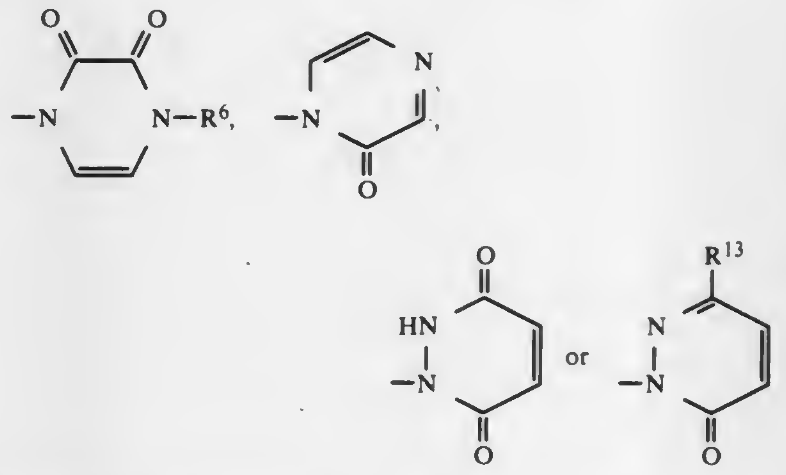
Int. Cl.^{4} A61K *31/545;* **C07D** *501/46*

U.S. Cl. 514—202 **16 Claims**

1. A cephalosporin compound represented by the following formula, or a salt thereof:



wherein R^1 represents a hydrogen atom or a carboxyl-protecting group; R^2 represents a group of the formula:



in which R^6 represents a hydrogen atom, a C_{1-5} alkyl group or a di—C_{1-5} alkylamino group and R^{13} represents a C_{1-5} alkyl group; R^5 represents a protected or unprotected amino group; and R^{18} represents a C_{1-5} alkyl group which may be substituted by carboxyl group.

4,618,607

1,4-DIHYDROPYRIDINE-3,5-DICARBOXYLIC ACID ESTER DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS

Kazuhiko Araki; Hideki Ao, both of Nakatsu; Jun Inui, Tokyo, and Kenichi Aihara, Fukuoka, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

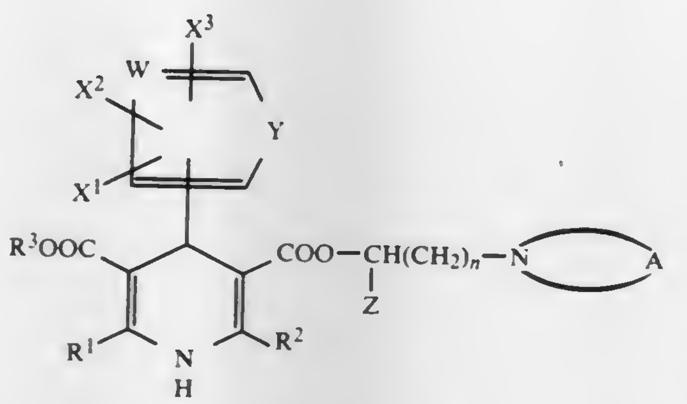
Filed Dec. 10, 1982, Ser. No. 448,576

Claims priority, application PCT Int'l Appl., Mar. 17, 1982, PCT/JP82/00075

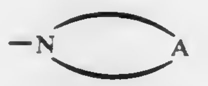
Int. Cl.^{4} A61K *31/445, 31/55;* **C07D** *401/12, 401/14*

U.S. Cl. 514—212 **7 Claims**

1. A 1,4-dihydropyridine-3,5-dicarboxylic acid ester derivative of the general formula:



or a pharmaceutically acceptable acid addition salt thereof, wherein W is —CH=; Y is —CH=CH—, —O—, —S—, —CH=N or —N(R)— (R is hydrogen or lower alkyl); X^1, X^2 and X^3 are the same or different, and are each hydrogen, halogen, nitro, trifluoromethyl, cyano or lower alkylthio; Z is aryl or 5- or 6-membered aromatic heterocyclic ring (which may have a substituent or two or three substituents which are the same or different, and the substituent may be halogen, lower alkyl, lower alkoxy, lower alkanoylamino, cyano, nitro, lower alkylthio, trifluoromethyl, sulfamoyl, di-lower alkyl-sulfamoyl, amino or di-lower alkylamino);



is 5- to 7-membered heterocyclic ring which may have nitrogen atom, oxygen atom, or sulfur atom on the ring and may be substituted by lower alkyl, lower alkoxycarbonyl, lower alkanoylamino, ethylenedioxy or $—(CH_2)_m—OR^4$ (R^4 is hydrogen, lower alkyl or lower alkanoyl and m is 0, 1 or 2); R^1 and R^2 are the same or different and are each lower alkyl; R^3 is lower alkyl, aralkyl or heteroalkyl; and n is an integer 1 to 5.

7. A pharmaceutical composition comprising the compound of claim **1** in combination with a pharmaceutically acceptable inert carrier, said compound being present in a therapeutically effective amount.

4,618,608
OXADIAZINES AND PESTICIDAL COMPOSITIONS CONTAINING THEM

Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, and Jozef Drabek, Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 21, 1985, Ser. No. 789,677

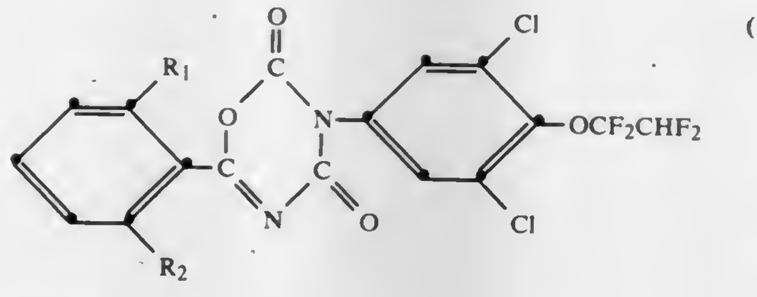
Claims priority, application Switzerland, Oct. 31, 1984, 5208/84

Int. Cl.⁴ C07D *273/04;* **A01N** *43/72*

U.S. Cl. 514—235 **10 Claims**

1. A compound of formula I

(I)



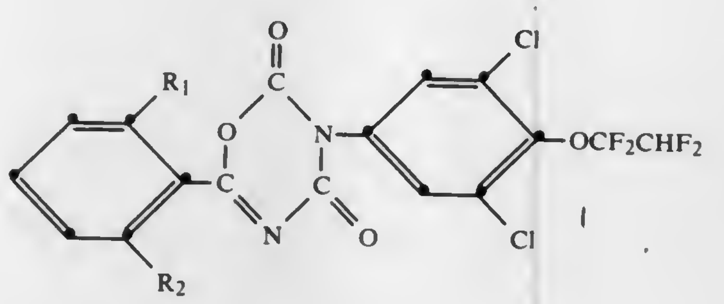
wherein

R_1 is fluorine or chlorine and

R_2 is hydrogen, fluorine or chlorine.

8. A method of controlling pests of animals and plants, which method comprises applying to said animals and plants or to the locus thereof a pesticidally effective amount of a compound of formula I

(I)



wherein

R_1 is fluorine or chlorine and

R_2 is hydrogen, fluorine or chlorine.

4,618,609
ANTI-ISCHAEMIC AND ANTIHYPERTENSIVE 2-[PYRIMIDYLOXY ALHOXYMETHYL]-1,4-DIHYDROPYRIDINES

David Alker, Eastry; Simon F. Campbell, Deal, and Peter E. Cross, Canterbury, all of England, assignors to Pfizer Inc., New York, N.Y.

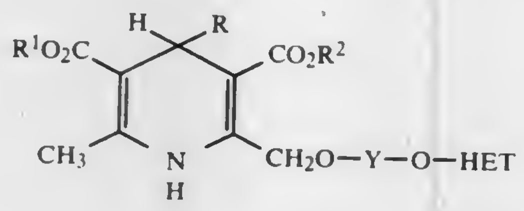
Filed Jun. 5, 1985, Ser. No. 741,339

Claims priority, application United Kingdom, Jun. 7, 1984, 8414520; Apr. 3, 1985, 8508736

Int. Cl.⁴ C07D *401/12, 413/14, 401/14;* **A61K** *31/505*

U.S. Cl. 514—236 **11 Claims**

1. A dihydropyridine compound of the formula



and a pharmaceutically acceptable acid addition salt thereof, wherein R is selected from the group consisting of 2-chlorophenyl and 2,3-dichlorophenyl; R^1 and R^2 are each alkyl having from one to three carbon atoms; Y is selected from the group consisting of $—(CH_2)_2—$ and $—CH_2CH(CH_3)—$; and HET is selected from the group consisting of 2- and 4-pyrimidyl and substituted 2- and 4-pyrimidyl wherein said substituent is selected from the group consisting of carbamoyl, amino, alkoxy having from one to three carbon atoms, chloro, 2-aminoethylamino, 2-hydroxyethylamino, 2-pyridylmethylamino, 2,3-dihydroxypropylamino, 2-pyridylmethoxy, 1-methyl-2-imidazolylmethoxy and morpholino.

10. A pharmaceutical composition comprising an anti-hypertensive or anti-ischaemic effective amount of a compound according to claim **1**, together with a pharmaceutically acceptable carrier or diluent.

4,618,610
TRIAZINE DERIVATIVES, AND PHARMACEUTICAL COMPOSITIONS COMPRISING THE SAME

Tsutomu Teraji, Osaka; Youichi Shiokawa, Ibaraki; Kazuo Okumura, Sakai, and Yoshinari Sato, Takaishi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Apr. 23, 1984, Ser. No. 603,173

Claims priority, application Japan, Apr. 22, 1983, 58-72013

Int. Cl.⁴ C07D *253/06;* **A61K** *31/53*

U.S. Cl. 514—242 **12 Claims**

1. The compound, which is 6-(4-cyclopropanecarbonylaminophenyl)-5-methyl-4,5-dihydro-1,2,4-triazin-3(2H)-one.

4,618,611
1-(AMINOALKOXYPHENYL)-1-PHENYL-PROPANOLS, PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Edit Tóth; József Törley; György Fekete; László Szporny; László Vereczkey; Éva Pálosi; Imre Klebovich; Pál Vittay; Sándor Görög, and István Hajdu, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt, Budapest, Hungary

Filed Dec. 27, 1983, Ser. No. 565,901

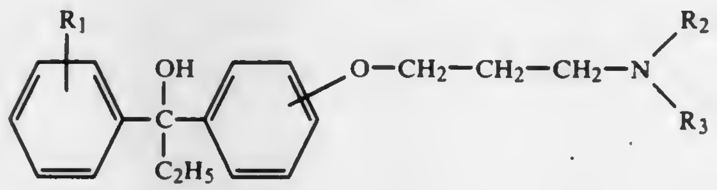
Claims priority, application Hungary, Dec. 28, 1982, 4190/82

Int. Cl.⁴ A61K *31/495;* **C07D** *295/02;* **C07C** *149/32*

U.S. Cl. 514—255 **5 Claims**

1. A compound of the Formula (I)

(I)



wherein

R_1 is halogen, trihalomethyl, or alkoxy having 1 to 3 carbon atoms; and

R_2 and R_3 together with the nitrogen atom to which they are attached form a piperazino group which can be substituted in the 4-position by C_1 to C_4 alkyl or benzyl; or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof.

5. A method of treating ethanolic intoxication in an affected animal subject which comprises administering a pharmaceutically effective amount of the compound of the Formula (I) as defined in claim **1** or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof to said subject.

4,618,612
ESTER DERIVATIVES OF 7-(ω-OXYALKYL) THEOPHYLLINE AND THEIR PHARMACEUTICAL ACTIVITY

Alessandro Baglioni, Rome, Italy, assignor to Medosan Industrie Biochimiche Riunite S.p.A., Albano Laziale, Italy

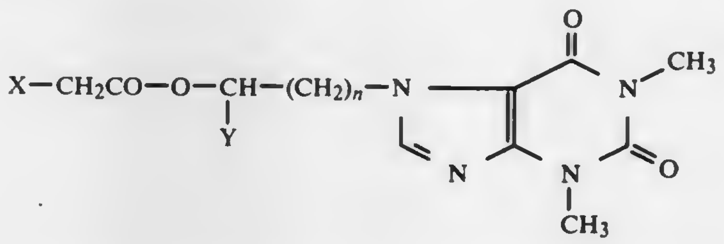
Filed Jun. 8, 1984, Ser. No. 618,661

Claims priority, application Italy, Jun. 10, 1983, 48471 A/83

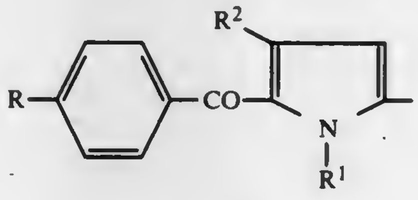
Int. Cl.⁴ A61K *31/52;* **C07D** *473/08*

U.S. Cl. 514—265 **15 Claims**

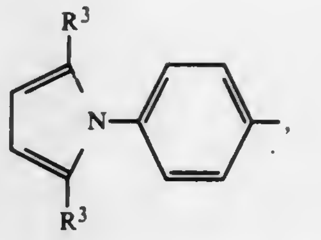
1. Ester derivatives of 7-(ω-oxyalkyl)theophylline of general formula



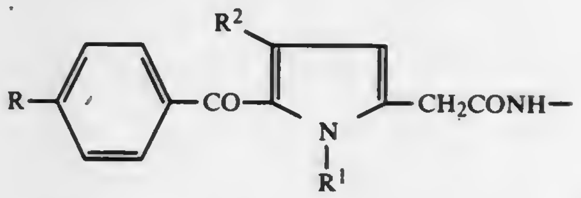
in which X represents an aroylpyrrol radical of formula



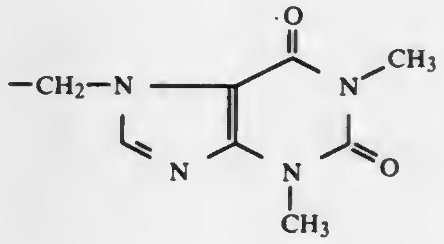
a pyrrylphenyl radical of formula



or an aroylpyrrolacetamide radical of formula



in which R is hydrogen, chloro, methyl or ethyl, R^1 is methyl or ethyl, R^2 is hydrogen or methyl, R^3 is hydrogen or methyl, Y represents hydrogen or the radical



an n represents and integer between 1 and 5.

4,618,613
PREVENTIVE AND HEALING COMPOSITION FOR DISEASES DUE TO LIPOXYGENASE METABOLIC PRODUCTS

Kazuko Hashizume, Tokyo; Hiroshi Kase, Koganei; Shigeto Kitamura, Machida; Takao Iida, Hofu; Kunikatsu Shirahata, Komae; Kenji Omori, Mishima, and Katsuichi Shuto, Shizuoka, all of Japan, assignors to Kyowa Hakko Kogyo Company, Ltd., Tokyo, Japan

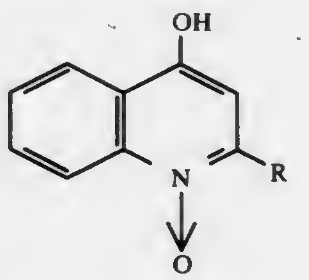
Continuation of Ser. No. 606,997, May 3, 1984, abandoned. This application Jun. 28, 1985, Ser. No. 749,716

Claims priority, application Japan, May 12, 1983, 58-83339

Int. Cl.⁴ A61K *31/47*

U.S. Cl. 514—312 **9 Claims**

1. A composition in the form of tablets, pills, powder, granules, capsules or suppositories for treating diseases due to lipoxygenase metabolic products, which comprises an effective lipoxygenase inhibiting amount of a compound represented by the formula:



wherein R is an alkyl group having 1 to 15 carbon atoms and at least one pharmaceutically acceptable carrier.

4,618,614
METHOD OF TREATING PSYCHOSIS USING TETRAHYDROCARBAZOLE DERIVATIVES

Hans-Heinrich Hausberg, Ober-Ramstadt; Henning Böttcher, Darmstadt; Rudolf Gottschlich, Reinheim; Christoph Seyfried, Seeheim-Jugenheim, and Klaus-Otto Minck, Ober-Ramstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

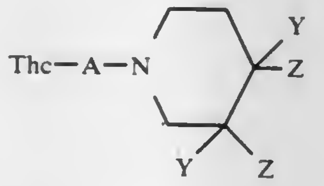
Continuation of Ser. No. 747,594, Jul. 24, 1985, abandoned, which is a division of Ser. No. 568,310, Jan. 4, 1984, Pat. No. 4,547,576. This application Jan. 15, 1986, Ser. No. 818,859

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1983, 3300094; Oct. 8, 1983, 3336643

Int. Cl.⁴ A61K *31/44, 31/445*

U.S. Cl. 514—321 **14 Claims**

1. A method of treating psychosis in a patient in need of such treatment comprising administering to the patient a tetrahydrocarbazole derivative of the formula



wherein,

Thc is 1,2,3,4-tetrahydro-3-carbazolyl, 1,2,3,4-tetrahydro-3-carbazolyl substituted once or twice by alkyl, O-alkyl, S-alkyl, SO-alkyl, SO_2-alkyl, OH, F, Cl, Br, CF_3 or CN or by a methylenedioxy group;

the two radicals Y together form a C—C bond;

one radical Z is Ar and the other radical Z is H;

A is $—CH_2—$ or $—CH_2CH_2—$; and

Ar is phenyl, phenyl substituted once or twice by alkyl, O-alkyl, S-alkyl, SO-alkyl, SO_2-alkyl, OH, F, Cl, Br, CF_3 or CN or by a methylenedioxy group, or is 2- or 3-thienyl;

all alkyl groups each have 1–4 C atoms;

or a physiologically acceptable acid addition salt thereof.

4,618,615
CERTAIN 6-PHENOXY-2-PYRIDINYL-α-METHYL-METHYLENE ESTERS OF α-CYCLOPROPYL-α-PHENYL-ACETIC ACID DERIVATIVES AND THEIR USE FOR CONTROLLING PESTS

Peter Ackermann, Pfeffingen; Laurenz Gsell, Basel, and Boris Kohler, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

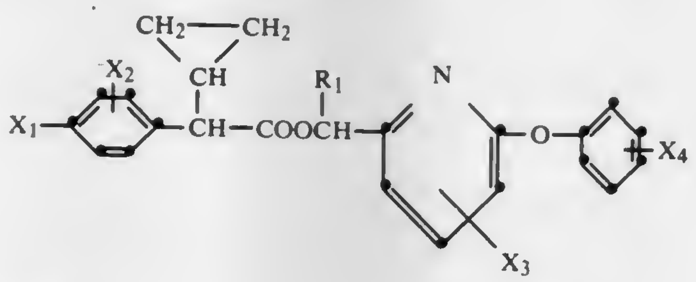
Filed Nov. 7, 1983, Ser. No. 549,149

Claims priority, application Switzerland, Nov. 18, 1982, 6727/82; Sep. 1, 1983, 4816/83

Int. Cl.⁴ C07D *213/64, 491/056;* **A01N** *43/40*

U.S. Cl. 514—338 **6 Claims**

1. An α-cyclopropyl-α-phenylacetate or salt thereof, of the formula



wherein

R_1 is methyl,

X_1 is hydrogen, halogen, C_1–C_5-alkyl, C_1–C_5-haloalkyl or C_1–C_5-alkoxy,

X_2 is hydrogen, halogen or C_1–C_5-alkyl, or together with X_1 is methylenedioxy, and

X_3 and X_4 are each hydrogen or halogen.

6. A method of controlling various pests on animals and plants, which method comprises applying thereto or to the locus thereof an effective amount of a compound of claim 1.

4,618,616
CYCLOPROPYLIDENE ANTIFUNGAL AGENTS

Kenneth Richardson, Canterbury; Robert J. Bass, Birchington, and Kelvin Cooper, Ramsgate, all of England, assignors to Pfizer Inc., New York, N.Y.

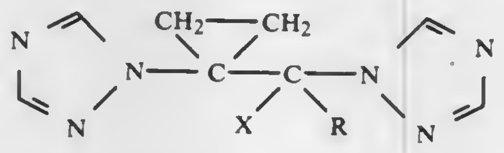
Filed May 24, 1985, Ser. No. 738,143

Claims priority, application United Kingdom, Jun. 7, 1984, 8414519

Int. Cl.⁴ A01N *43/653;* **C07D** *249/08*

U.S. Cl. 514—340 **10 Claims**

1. A compound of the formula



(I)

and a pharmaceutically or agriculturally acceptable salt thereof, wherein X is selected from the group consisting of hydroxy and chloro; and R is selected from the group consisting of chlorophenyl, fluorophenyl, dichlorophenyl, difluorophenyl and 5-chloropyrid-2-yl.

7. A pharmaceutical composition comprising a compound according to claim **1** or a pharmaceutically acceptable salt thereof together with a pharmaceutically acceptable diluent or carrier.

8. A fungicidal composition for agricultural use comprising a compound according to claim **1** or an agriculturally acceptable salt thereof together with an agriculturally acceptable diluent or carrier.

4,618,617
NOVEL 5-SUBSTITUTED 1,2,4,-OXADIAZOLE DERIVATIVES AND PREPARATION THEREOF

Michihiro Yamamoto, Nishinomiya, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

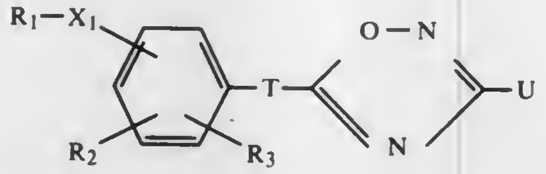
Filed Feb. 24, 1983, Ser. No. 469,511

Claims priority, application Japan, Mar. 3, 1982, 57-34168

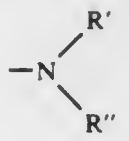
Int. Cl.⁴ C07D *271/06;* **A01K** *31/41*

U.S. Cl. 514—364 **18 Claims**

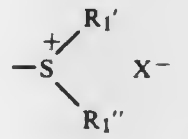
1. A compound of the formula



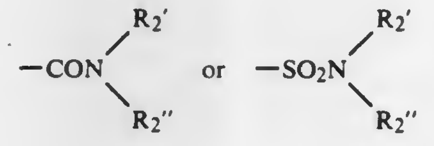
wherein R_1 is phenyl or substituted phenyl; R_2 and R_3 are independently hydrogen or halogen; X_1 is the radical $>C{=}O$ or —NH— or a single bond; T is lower alkylene; and U is hydrogen, lower alkyl, lower alkenyl, polyhalo-lower alkyl, lower cycloalkyl, lower cycloalkenyl, pyridyl, a group of the formula $R_{12}—T_1—$ (wherein R_{12} is halogen, hydroxy, mercapto, lower alkylsulfinyl, di-lower alkoxymethyl, lower alkoxycarbonyl, carboxy, sulfo, cyano, the group



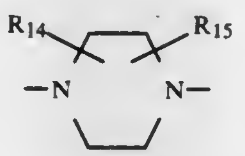
(wherein R′ and R″ may be the same of different, and are hydrogen, lower alkyl or hydroxy-lower alkyl, and when taken together with the adjacent nitrogen atom, they may form a 5- or 6-membered saturated or unsaturated heterocyclic ring, which may contain another nitrogen or oxygen atom, or may form a quaternary ammonium salt or N-oxide) or the group



wherein R_1' and R_1'' may be the same or different, and are lower alkyl or lower alkenyl; and X is a negative monovalent ion; and T_1 is lower alkylene or lower alkenylene, both of which may bear an oxo or a hydroxy group on their carbon chains), or a group of the formula $R_{13}—X_4—T_1—$ (wherein R_{13} is lower alkyl, lower alkenyl, hyroxy-lower alkyl, acyloxy-lower alkyl, amino-lower alkyl, acylamino-lower alkyl, lower cycloalkyl, lower cycloalkenyl, phenyl, substituted phenyl, phenyl-lower alkyl, heterocyclic group, heterocyclic-lower alkyl, acyl, acylthio-lower alkanoyl, mercapto-lower alkanolyl, lower alkoxycarbonyl, lower alkylsulfonyl, the group



(wherein R_2' and R_2'' are independently hydrogen, lower alkyl or hydroxy-lower alkyl); X_4 is the radical —O—, —S—, —NH—,



(wherein R_{14} and R_{15} are independently hydrogen or lower alkyl) or a single bond; and T_1 is as defined above), wherein:

- (a) said substituted phenyl is selected from the group consisting essentially of a phenyl group substituted by halogen, trifluromethyl, $C_{1\text{-}6}$ alkyl, $C_{1\text{-}6}$ alkoxy and $C_{1\text{-}6}$ alkanoylamino;
- (b) said heterocyclic group is selected from the group consisting essentially of pyridyl, thienyl, furyl, thiazoyl, imidazoyl, pyrazolyl, pyrrolyl, dihydropyrrolyl, pyrrolidinyl, oxazolyl, oxadiazolyl, benzothiazolyl, dihydrobenzothiazolyl, benzoxazolyl, isoindolinyl, idazopyridyl, piperidyl, morphlinyl, pyrimidyl or pyridazinyl, which may optionally be substituted by haogen, C^{16} alkyl, amino, oxo, and phenyl;
- (c) said substituted benzoyl is selected from the group consisting esentially of a benzoyl group substituted by halogen, $C_{1\text{-}6}$ alkyl, $C_{1\text{-}3}$ alkylene-dioxy and $C_{1\text{-}6}$ alkylsulfinyl;
- (d) said acyl is selected from the group consisting essentially of $C_{2\text{-}4}$ alkanoyl, benzoyl, substituted benzoyl as defined in (c) and nicotinoyl;
- (e) said substituted styrylidene is selected from the group consisting essentially of a styrylidene group substituted by halogen and $C_{1\text{-}6}$ alkylsulfinyl; and wherein
- (f) the acyl moieties of acyloxy-lower alkyl, acylamino-lower alkyl and acylthio-lower alkyl in R_{13} as well as acyl therein being as defined in (d); and
- (g) the heterocyclic moiety of heterocyclic-lower alkyl in R_{13} being as defined in (b).

4,618,618
COMPOUNDS AND COMPOSITIONS

Errol J. McGarry, 3 Argyll Court, Eltham North, Victoria, Australia (3095)

Continuation of Ser. No. 443,737, Nov. 22, 1982. This application Dec. 28, 1984, Ser. No. 685,617

Claims priority, application Australia, Nov. 25, 1981, PF1691

Int. Cl.⁴ C07D *513/04;* **A61K** *31/425*

U.S. Cl. 514—368 **14 Claims**

1. A compound selected from D,L-2,3,5,6-tetrahydro-6-phenylimidazo[2,1-b]thiazolium 4-cyano-2-iodo-6-nitrophenoxide and L-2,3,5,6-tetrahydro-6-phenylimidazo[2,1-b]thiazolium 4-cyano-2-iodo-6-nitrophenoxide.

4,618,619
SUBSTITUTED T-BUTANOL FUNGICIDAL AGENTS

Erik Regel, Wuppertal; Karl H. Büchel, Burscheid; Paul Reinecke, Leverkusen, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

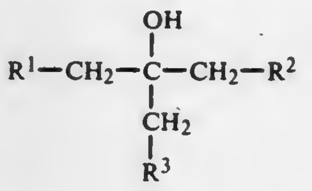
Filed Mar. 14, 1984, Ser. No. 589,613

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311702

Int. Cl.⁴ A01N *43/50, 43/64*

U.S. Cl. 514—383 **9 Claims**

1. A method of combating plant pathogenic fungi comprises administering to such fungi or to a habitat thereof a plant pathogenic fungicidally effective amount of a substituted tert.-butanol derivative of the formula

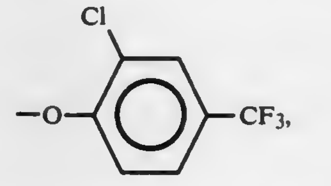


$$R^1—CH_2—\overset{\displaystyle OH}{\underset{\displaystyle \underset{\displaystyle R^3}{CH_2}}{C}}—CH_2—R^2$$

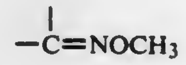
in which

R^1 and R^2 each independently is selected from the group consisting of 1,2,4-triazol-1-yl and 1,2,4-triazol-4-yl, and

R^3 is a member selected from the group consisting of phenoxy; phenoxy substituted up to three times by at least one substituent independently selected from the group consisting of fluorine, chlorine, bromine, methyl, tert.-butyl, methoxy, methylthio, trifluoromethyl, cyclohexyl, nitro, methylcarbonyl, phenyl, chlorophenyl, phenoxy, chlorophenoxy, the radical of the formula



methoximinomethyl, the radical of the formula CH_3



$$-\overset{|}{C}{=}NOCH_3$$

and the —CHO group; phenylthio; and phenylthio substituted up to three times by at least one substituent independently selected from the group consisting of fluorine, chlorine, bromine, methyl, tert.-butyl, 2-methyl-but-2-yl, methoxy, ethoxy, trifluoromethyl and nitro.

4,618,620

FUNGICIDAL COMPOSITION

Yukio Ishiguri; Hirotaka Takano, both of Takarazuka, and Yuji Funaki, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 484,957, Apr. 14, 1983, abandoned. This application Aug. 14, 1985, Ser. No. 765,574

Claims priority, application Japan, Apr. 22, 1982, 57-68097

Int. Cl.^{4} A01N *43/52, 43/64*

U.S. Cl. 514—383 **2 Claims**

1. A fungicidal composition which comprises an inert carrier and as an active ingredient (E)-1-(2,4-dichlorophenyl)-4,4-dimethyl-2-(1,2,4-triazol-1-yl)-1-penten-3-ol and methylbenzimidazol-2-yl carbamate in the ratio of 1 to 0.5–5 parts by weight in a total amount of 1 to 99% by weight.

4,618,621

METHOD FOR TREATING MEDICAL CONDITIONS INVOLVING CEREBRAL ISCHEMIA

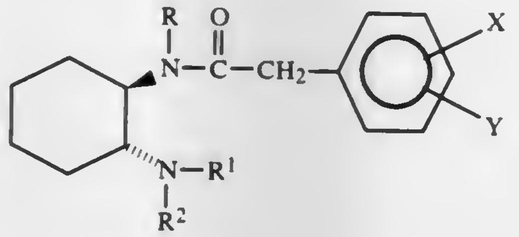
Andrew H. Tang, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Sep. 21, 1984, Ser. No. 653,385

Int. Cl.^{4} A61K *31/40, 31/165, 31/395*

U.S. Cl. 514—408 **4 Claims**

1. A process for treating a warm-blooded animal patient suffering from cerebral ischemia which comprises administering to such a patient a safe, non-toxic amount sufficient to prevent or to relieve the consequences of cerebral ischemia of a compound of the formula



(II)

where

R is hydrogen or methyl;

R^1 and R^2, taken separately, are hydrogen, C_1 to C_3-alkyl, or when R^1 is hydrogen or C_1 to C_3-alkyl, R^2 is allyl;

R^1 and R^2, taken together with the nitrogen to which they are bonded, complete a ring selected from the group consisting of azetidinyl and pyrrolidinyl;

X and Y are independently selected from the group consisting of hydrogen, a halogen having an atomic number of from 9 to 35, trifluoromethyl, C_1 to C_3-alkyl, methoxy, azido and phenyl, and at least one of X and Y is a substituent other than hydrogen, and when one of X and Y is azido, phenyl, methoxy or trifluoromethyl, the other of X and Y is hydrogen, and when R is hydrogen, both X and Y are substituents other than hydrogen,

which compounds of Formula II contain the compound having an (S,S) absolute configuration; or a pharmaceutically acceptable salt thereof.

4,618,622

SULFONATES OF HYDROXYCOUMARINS

Rainer Schlecker, Bissersheim; Peter Schmidt, Weisenheim; Peter C. Thieme, Wachenheim; Dieter Lenke, Ludwigshafen; Hans-Jüergen Teschendorf, Dudenhofen; Martin Traut, Heidelberg; Claus D. Mueller, Viernheim; Hans P. Hofmann, Limbergerhof, and Horst Kreiskott, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

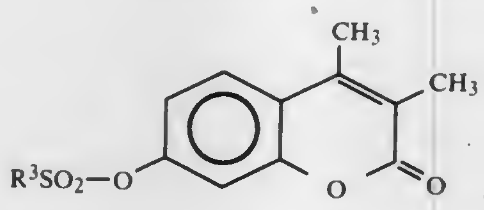
Filed Nov. 17, 1983, Ser. No. 552,787

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1982, 3243158

Int. Cl.^{4} C07D *311/08;* **A61K** *31/37*

U.S. Cl. 514—457 **8 Claims**

1. A hydroxycoumarin sulfonate of formula I



(I)

wherein R^3 is a straight-chain or branched alkyl radical of 1 to 8 carbon atoms which can be substituted by halogen, or R^3 is an amino group —NR^{4}R^5 or phenyl or naphthyl, each aryl of which is unsubstituted or mono-, di- or tri-substituted by $—NO_2$, halogen, —CN, or a combination of these substituents, wherein R^4 and R^5 are identical or different and each is hydrogen or alkyl of 1 to 4 carbon atoms.

4,618,623

CARBAZIC ACID DERIVATIVES, PROCESS FOR THEIR PREPARATION AND COMPOSITIONS CONTAINING THE SAME

Zoltan Budai; Pal Benko; Ildikó Rátz nee Simonek; Eva Rákóczy nee Pinter; Károly Magyar; József Kelemen, and Attila Mandi, all of Budapest, Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

Division of Ser. No. 573,586, Jan. 24, 1984, Pat. No. 4,570,002, which is a continuation-in-part of Ser. No. 491,035, May 3, 1983, abandoned. This application May 23, 1985, Ser. No. 737,388

Claims priority, application Hungary, May 4, 1982, 1381/82

Int. Cl.^{4} A61K *31/27*

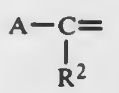
U.S. Cl. 514—478 **9 Claims**

1. An animal fodder having a weight gain increasing effect which comprises as active ingredient effective to cause weight gain in an animal in an amount of 1 ppm to 85% by weight a compound of the Formula I

$$R^1{=}N—NH—COOR^3 \qquad (I)$$

wherein

R^1 stands for a C_7–C_{12} cycloalkylidene group, an indanylidene group, or a group of the Formula (IX)



$$A—\underset{R^2}{\underset{|}{C}}{=} \qquad (IX)$$

wherein

A is a phenyl group which can have one or more identical or different substituents selected from the group consisting of halo, nitro, hydroxy, C_1–C_4 alkoxy, C_1–C_4 alkyl, amino, and C_1–C_4 alkoxycarbonyl-hydrazino; or

A is phenyl-(C_1–C_4 alkyl), C_1–C_{16} alkyl, C_3–C_7 cycloalkyl, indolyl, or a C_3–C_6 cycloalkyl group substituted by C_3–C_6 cycloalkyl;

R^2 is hydrogen, C_1–C_6 alkyl, or C_3–C_7 cycloalkyl; and

R^3 is C_1–C_4 alkyl, or a biologically acceptable salt thereof in admixture with an edible solid or liquid carrier or diluent suitable for use in animal husbandry and with an additive generally used in the production of fodders.

4,618,624

3-AMINO-4-HYDROXY(OR ALKOXY)PHENETHANOLAMINE DERIVATIVES AND PHARMACOLOGICALLY-ACCEPTABLE ACID ADDITION SALTS THEREOF FOR INCREASING THE GROWTH RATE AND/OR IMPROVING THE LEAN MEAT TO FAT RATIO OF WARM-BLOODED ANIMALS

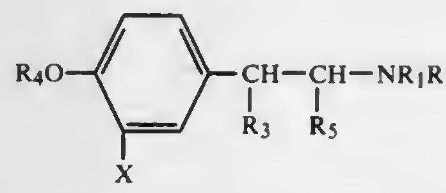
Goro Asato, Titusville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 439,495, Nov. 5, 1982, Pat. No. 4,477,680, which is a continuation-in-part of Ser. No. 326,878, Dec. 2, 1981, Pat. No. 4,404,224. This application Jul. 5, 1984, Ser. No. 628,058

Int. Cl.^{4} A61K *31/27, 31/22, 31/225, 31/18*

U.S. Cl. 514—486 **5 Claims**

1. A method for increasing the growth rate and the lean meat to fat ratio of warm-blooded animals comprising: administering either orally or parenterally to animals a growth-promoting and lean meat-enhancing amount of a compound having the structural formula,



wherein R_1 is hydrogen or C_1–C_4 alkyl; R_2 is hydrogen, C–C_4 alkyl, C_3–C_5 cycloalkyl, benzyl, phenethyl, α-methylphenethyl or α,α-dimethylphenethyl; R_3 is OH; R_4 is hydrogen, C_1–C_4 alkyl, benzyl or C_2–C_5 alkanoyl; R_5 is hydrogen, methyl or ethyl; X is $N(SO_2R_8)_2$, $N(R_1)_2$, $NHCOR_1$, $NH—CO—N—(R_1)_2$, $NSO_2N(R_1)_2$, $NHCOOR_9$, or NHCOO-benzyl; R_8 is C_1–C_4 alkyl; R_9 is C_1–C_5 alkyl; with the provisos that when R_2 is C_3–C_5 cycloalkyl, benzyl, phenethyl, α-methylphenethyl or α,α-dimethylphenethyl, R_1 of NR_1R_2 is hydrogen; and further that the R_1 group in $(R_1)_2$ may or may not be identical substituents; and the optically active isomers and pharmacologically acceptable acid addition and metal salts thereof.

4,618,625

ZINC CARBOCYSTEINATE

Antonio B. Vinas, Barcelona, Spain, assignor to Laboratorios Vinas, S.A., Barcelona, Spain

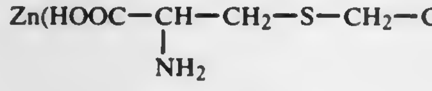
Filed Jul. 31, 1984, Ser. No. 636,201

Claims priority, application Spain, Aug. 8, 1983, 524820

Int. Cl.^{4} C07F *3/06*

U.S. Cl. 514—494 **3 Claims**

1. A compound having the formula:



$$Zn(HOOC—\underset{NH_2}{\underset{|}{C}}H—CH_2—S—CH_2—COO)_2.$$

2. A pharmaceutical composition comprising an amount of a compound as claimed in claim 1 effective to treat hair or skin conditions including seborrhea, alopecia, oily hair, exfoliative dermatitis, acne or fingernail fragility, in combination with a pharmacologically acceptable carrier, diluent or vehicle.

4,618,626

NOVEL CARBACYCLIN ESTERS, PROCESS FOR THE PREPARATION THEREOF, AND THEIR USE AS MEDICINAL AGENTS

Werner Skuballa; Bernd Radüechel; Helmut Vorbrueggen, all of Berlin; Gerda Mannesmann, Cologne; Bob Nieuweboer, and Michael-Harold Town, both of Berlin, all of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

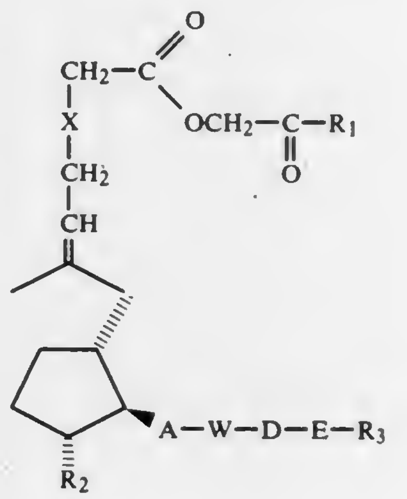
Continuation of Ser. No. 499,687, May 31, 1983, abandoned. This application Sep. 16, 1985, Ser. No. 777,535

Claims priority, application Fed. Rep. of Germany, May 28, 1982, 3221193

Int. Cl.^{4} C07C *177/00;* **A61K** *31/557*

U.S. Cl. 514—530 **31 Claims**

1. A carbacyclin of the formula



wherein

R_1 is phenyl, α-naphthyl or β-naphthyl; or phenyl, α-naphthyl or β-naphthyl each substituted by 1–3 $C_{1\text{-}4}$-alkoxy groups, 1–3 halo atoms, 1–3 phenyl groups or 1–3 phenyl groups substituted by 1–3 halo atoms;

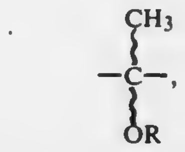
R_2 is OH or OR:

R_3 is (a) $C_{2\text{-}10}$-alkenyl, (b) $C_{1\text{-}10}$ alkyl, (c) $C_{2\text{-}10}$ -alkenyl or $C_{1\text{-}10}$ alkyl each substituted by $C_{6\text{-}10}$ aryl or $C_{6\text{-}10}$ aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 $C_{1\text{-}4}$ alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or $C_{1\text{-}4}$ alkoxy group, (d) $C_{3\text{-}10}$ cycloalkyl, (e) $C_{3\text{-}10}$ cycloalkyl substituted by $C_{1\text{-}4}$ alkyl, (f) $C_{6\text{-}10}$ aryl, (g) $C_{6\text{-}10}$ aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 $C_{1\text{-}4}$ alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or $C_{1\text{-}4}$ alkoxy group, or (h) an aromatic heterocycle of 5 or 6 ring atoms one of which is O, N or S, the remainder being carbon atoms;

X is an oxygen atom or $—CH_2—$;

A is $—CH_2—CH_2—$, trans—CH=CH—, or —C≡C—;

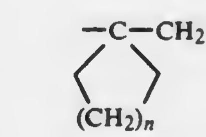
W is —CHOR— or



$$-\overset{CH_3}{\underset{OR}{C}}-,$$

wherein the OR-group can be in the -or -position,

D is



$—CH_2—CH_2—$; $—CH_2—CH_2$1-substituted by CH_3 or di—CH_3 or substituted by 1,2-methylene; or one of the former substituted by fluorine;

n is 0–4;
- E is —C≡C, or —CR_4=CR_5—wherein R_4 and R_5 each independently is hydrogen or alkyl or 1–5 carbon atoms, and
- R is H, tetrahydropyranyl, tetrahydrofuranyl, α-ethoxyethyl, trimethylsilyl, dimethyl-tert-butysilyl, tribenzylsilyl or an acyl group of a $C_{1\text{-}15}$-hydrocarbon carboxylic or sulfonic acid.

4,618,627
CATECHOL DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS THEREOF FOR INHIBITING ANAPHYLAXIS (SRS-A)

Kiyoshi Murase, Saitama; Toshiyasu Mase, Chiba; Hideki Arima, Tokyo, and Kenichi Tomioka, Saitama, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

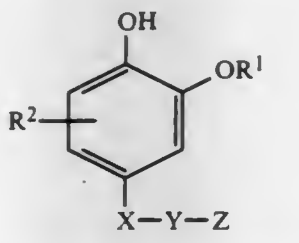
Filed May 11, 1984, Ser. No. 609,143

Claims priority, application Japan, May 13, 1983, 58-83748; Oct. 25, 1983, 58-199854; Dec. 29, 1983, 58-248034; Feb. 24, 1984, 59-34979

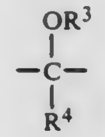
Int. Cl.^{4} C07C *39/08, 43/164, 47/11;* **A61K** *31/05*

U.S. Cl. 514—678 **19 Claims**

1. A catechol derivative represented by the formula



wherein R^1 represents a hydrogen atom; R^2 represents a hydrogen atom or a halogen atom; X represents a straight chain or branched alkylene group having 1 to 15 carbon atoms or a vinylene group; Y represents a carbonyl group or a group represented by



$$-\overset{\overset{\large OR^3}{|}}{\underset{\underset{\large R^4}{|}}{C}}-$$

(wherein R^3 and R^4, which may be the same or different, each represents a hydrogen atom or a lower alkyl group) and Z represents a hydrogen atom, a straight chain or branched alkyl group having 1 to 15 carbon atoms or a cycloalkyl group; the sum of the carbon atoms of said X and Z being at least 7.

7. A pharmaceutical composition for inhibiting the production and release of slow reacting substance of anaphylaxis (SRS-A) comprising a pharmaceutically effective amount of the compound of claim 1 and a pharmaceutically acceptable carrier.

14. A method of preventing and/or treating disorders of various allergic diseases, ischemic heat diseases or inflamations, caused by slow reacting substance of anaphylaxis (SRS-A) or leukotriens comprising administering a pharmaceutically effective amount of the composition of claim 7.

4,618,628
CATALYTIC PROCESS

Robert A. Head, Chester, and Robin Whyman, Christleton Nr Chester, both of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 485,455, Apr. 15, 1983, abandoned. This application Dec. 12, 1984, Ser. No. 680,660

Claims priority, application United Kingdom, Apr. 15, 1982, 8211002; Jan. 1, 1983, 8301005

Int. Cl.^{4} C07C *27/06*

U.S. Cl. 518—700 **11 Claims**

1. A method for the selective, direct preparation of ethanol which comprises contacting a mixture of carbon monoxide and hydrogen at a temperature of from 100° to 400° C. and at a pressure of from 50 to 1000 bars with a catalyst comprising ruthenium and at least one other metal selected from Groups VII and VIII of the Periodic Table and a source of iodide ions in a liquid medium comprising an aprotic amide or imide or an aprotic heterocyclic compound containing an —OCO— grouping in the ring.

4,618,629
FRAGRANCE-EMITTING POLYURETHANE FOAMS

Michael S. Buchanan, Baltimore, Md., assignor to Wm. T. Burnett & Co., Inc., Baltimore, Md.

Filed May 29, 1985, Ser. No. 739,075

Int. Cl.^{4} C08G *18/14*

U.S. Cl. 521—76 **18 Claims**

1. A flexible polyurethane foam comprising the foam-forming reaction product of water as a foaming agent, an isocyanate reactive polyol and a polyisocyanate, and including uniformly contained in said foam a fragrance material comprising a finely divided resin carrying a fragrance, said water being present in an amount sufficient to provide a flexible foam and said fragrance material being present in an amount sufficient to provide fragrance-emitting characteristics to said foam for a prolonged time period.

4,618,630
ORGANIC POLYMER COMPOSITION CONTAINING AN ANTISTATIC AGENT COMPRISING A NONVOLATILE IONIZABLE METAL SALT AND A SALT OR ESTER OF A CARBOXYLIC ACID

Thomas M. Knobel; Earl E. Kennedy, and Mary A. Walker, all of Lake Jackson, Tex., assignors to The Dow Chemical Co., Midland, Mich.

Continuation-in-part of Ser. No. 644,586, Aug. 27, 1984, abandoned. This application Jul. 2, 1985, Ser. No. 751,351

Int. Cl.^{4} C08G *18/14*

U.S. Cl. 521—105 **29 Claims**

1. An organic polymer composition comprising an organic polymer having dispersed therein
- (a) a non-volatile ionizable metal salt and
- (b) an enhancer compound comprising a salt or ester of a carboxylic acid, which salt or ester contains about 6 to about 30 carbon atoms and is compatible with said organic polymer, and in which said metal salt is soluble, wherein from about 1 to about 25 moles of said enhancer are present per mole of ionizable metal salt.

4,618,631
PRODUCTION PROCESS FOR HIGHLY WATER ABSORBABLE POLYMER

Hisao Takeda, Zama, and Yasunori Taniguchi, Samukawamachi, both of Japan, assignors to American Colloid Company, Skokie, Ill.

Division of Ser. No. 710,702, Mar. 11, 1985, which is a division of Ser. No. 460,037, Jan. 21, 1983, Pat. No. 4,525,527. This application Mar. 4, 1986, Ser. No. 836,103

Claims priority, application Japan, Jan. 25, 1982, 57-8983; Mar. 9, 1982, 57-035913; Mar. 9, 1982, 57-035914

Int. Cl.^{4} C08J *9/02*

U.S. Cl. 521—109.1 **3 Claims**

3. A method of manufacturing a composition comprising mixing a monomer solution of (A) acrylic acid, neutralized 70 to 100 mole percent, (B) acrylamide in a mole ratio of (A):(B) in the range of 70:30 to 100:0; (C) a water soluble or water miscible polyvinyl monomer cross-linking agent in an amount of 0.001 to 0.3 percent by weight of (A) plus (B); and water to form a mixed monomer solution, wherein the monomers of the mixed monomer solution consist essentially of (A), (B) and (C) and the monomer concentration is at least 70 percent by weight of the monomer solution prior to polymerization initiation; incorporating a porosity increasing agent into said mixed monomer solution selected from the group consisting of polystyrene and methylcellulose in an amount of 0.5 to 10 percent based on the total weight of monomers in the mixed monomer solution; and initiating polymerization of monomers (A) and (B) such that during polymerization, the exothermic heat of reaction is substantially the only heat energy used to accomplish polymerization, cross-linking and to drive off sufficient water to form a water absorbing cross-linked polyacrylate resin composition having a water content of 15 percent by weight or less, and wherein said neutralized acrylic acid is one other than potassium acrylate.

4,618,632
UV CURABLE HIGH TENSILE STRENGTH RESIN COMPOSITION

Wei-Fang A. Su, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 7, 1985, Ser. No. 699,373

Int. Cl.^{4} C08L *67/02*

U.S. Cl. 522—43 **32 Claims**

1. A resin composition containing no non-reactive solvent comprising
- (A) a polyester that comprises the reaction product of
  - (1) polyhydroxy compound having at least three hydroxyl groups, and
  - (2) aromatic compound that is at least difunctional in a group selected from acid, anhydride, ester, and mixtures thereof, where the proportion of said polyhydroxy compound to said aromatic compound is selected so that said polyester has about 150 to about 250 mole % excess hydroxyl groups;
- (B) an acrylate urethane in about stoichiometric proportion with said polyester up to about 10% excess polyester over stoichiometric, where said acrylate urethane comprises the reaction product of
  - (1) hydroxy acrylate having a single hydroxyl group; and
  - (2) diisocyanate, said hydroxy acrylate being equimolar ±10 mole % with said diisocyanate; and
- (C) liquid acrylate reactive diluent sufficient to give said resin composition a viscosity of less than 5000 cps.

17. A composition according to claim 1 which includes about 1 to about 5 phr of a UV photoinitiator.

4,618,633
HALOGEN-FREE SELF-EXTINGUISHING THERMOPLASTIC MOLDING MATERIAL

Christof Taubitz, Wachenheim; Volker Muench, Ludwigshafen; Juergen Hambrecht, Heidelberg; Adolf Echte, Ludwigshafen, and Karl H. Illers, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 5, 1985, Ser. No. 772,662

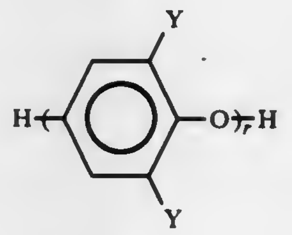
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1984, 3432750

Int. Cl.^{4} C08K *3/02, 5/51, 5/52, 5/53*

U.S. Cl. 524—80 **5 Claims**

1. A halogen-free self-extinguishing thermoplastic molding material comprising
- A: 3–97% by weight of a halogen-free thermoplastic resin which contains as copolymerized units
- (a_1) from 60 to 91% by weight, based on A, of one or more vinylaromatic monomers from the group consisting of styrene, α-methylstyrene, p-methylstyrene or mixtures of these, and
- (a_2) from 40 to 9% by weight, based on A, of acrylonitrile,
- B: from 0 to 40% by weight of an elastomer from the group consisting of polybutadiene, polyacrylates and copolymers of the monomers of these polymers, which has a glass transition temperature below 0° C. and is used in the form of a graft copolymer formed from monomers (a_1) and (a_2) of component A as the grafted shell and one of the above rubbers as a base,
- C: 97–3% by weight of a further halogen-free thermoplastic resin which differs from A,
- D: 0.5–40% by weight of a phosphorus-containing flameproofing agent and
- E: 4–30% by weight of a phenol/aldehyde resin,

the percentages in each case being based on the molding material consisting of A, B, C, D, E and F,
wherein component C is a poly(phenylene) ether of the general formula (I)



(I)

where Y is a monovalent substituent, such as H or a hydrocarbon radical which does not possess a tertiary carbon atom in the α-position and is of 1 to 25 carbon atoms or alkoxy of 1 to 25 carbon atoms, and r is an integer of from 20 to 200, and the molding material furthermore contains
- F: 0.3–95% by weight of a copolymer which consists of a main chain and one or more side chains attached to this by condensation, the main chain having a weight average molecular weight $\overline{M}_w$ of from 5,000 to 5 million and the side chain or chains each having a weight average molecular weight of from 2,000 to 80,000, determined by gel permeation chromatography,

the main chain furthermore constitutes a terpolymer which contains, as copolymerized units,
- (f_a) 60–91% by weight of one or more vinylaromatic monomers of 8 or 9 carbon atoms,
- (f_b) 40–9% by weight of acrylonitrile and
- (f_c) 0.3–10% by weight of one or more monomers from the group consisting of the esters of acrylic acid and methacrylic acid which contain alcohol radicals capable of ether formation,

and each side group possesses one or more poly(phenylene) ether radicals which bond the polymer of the side group to the monomer or monomers capable of ether formation, bonding taking place in each case via the radical of a bifunctional or polyfunctional coupling agent.

4,618,634
COMPOUNDS CONTAINING PIPERIDINE GROUPS, AS STABILIZERS FOR SYNTHETIC POLYMERS

Giuseppe Cantatore, Bitonto, and Valerio Borzatta, Bologna, both of Italy, assignors to Ciba-Geigy S.p.A., Origgio, Italy

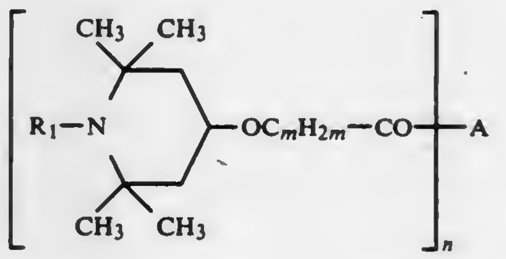
Filed Feb. 27, 1985, Ser. No. 706,301

Claims priority, application Italy, Feb. 28, 1984, 19830 A/84

Int. Cl.^{4} C07D *401/12, 401/14;* **C08K** *5/34, 5/35*

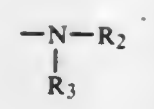
U.S. Cl. 524—97 **14 Claims**

1. A compound of the formula



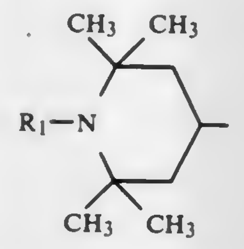
(I)

in which R_1 is hydrogen, O—, cyanomethyl, C_1–C_{12}-alkyl, C_3–C_{12}-alkenyl or -alkylnyl, C_7–C_{12}-aralkyl or C_1–C_{12}-acyl, m is an integer from 1 to 12 and n is an integer from 1 to 3, and, if n=1, A is a radical



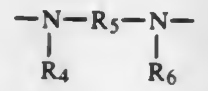
$$-N(R_2)-R_3$$

in which R_2 and R_3 can be identical or different and are hydrogen, C_1–C_{18}-alkyl, C_1–C_{18}-alkyl substituted by C_1–C_{18}-alkoxy or C_2–C_{18}-dialkylamino, C_3–C_{18}-alkenyl, C_5–C_{18}-cycloalkyl, C_6–C_{18}-aryl, C_7–C_{18}-aralkyl or a radical of the formula (II)

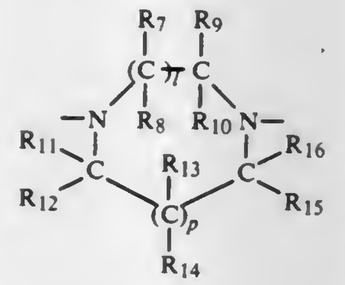


(II)

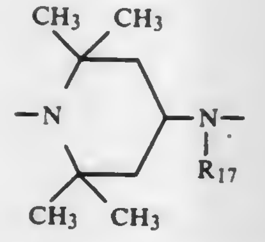
in which R_1 is as defined above, or A is a monovalent radical of a 5-membered to 13-membered heterocyclic compound containing at least one nitrogen atom, the free valency being on the nitrogen atom, and, with n=2, A is a radical of the formula (III), (IV) or (V)



$$-N(R_4)-R_5-N(R_6)- \quad \text{(III)}$$

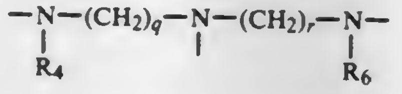


(IV)



(V)

in which R_4, R_6 and R_{17} can be identical or different and are as defined for R_2 and R_3, R_5 is C_2–C_{18}-alkylene, C_4–C_{18}-alkylene substituted by 1 to 3 oxygen atoms, C_5–C_{12}-cycloalkylene, C_6–C_{12}-arylene or C_7–C_{12}-aralkylene, the radicals R_7–R_{16} can be identical or different and are hydrogen or methyl, R_9 together with R_{10} and R_{13} together with R_{14} can be oxygen, p and l indipendently are zero or 1, and, with n=3, A is a radical of the formula (VI)



$$-N(R_4)-(CH_2)_q-N(-)-(CH_2)_r-N(R_6)- \quad \text{(VI)}$$

in which R_4 and R_6 are as defined above and q and r can be identical or different and are integers from 2 to 6, or A is a hexahydro-1,3,5-triazine-1,3,5-triyl radical.

9. A light-stabilised, heat-stabilised and oxidation-stabilised polymer composition comprising a synthetic polymer and one or more stabilisers of the formula (I) in a quantity from 0.01 to 5% by weight relative to the weight of the synthetic polymer.

4,618,635

COATING COMPOSITIONS PREPARED FROM LACTONE-ACRYLATE ADDUCT, POLYOL AND ISOCYANATE

Claiborn L. Osborn; Joseph V. Koleske, and Kenneth Drake, all of Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 509,389, Jun. 30, 1983, abandoned. This application May 17, 1985, Ser. No. 735,096

Int. Cl.^{4} C08L *75/00*

U.S. Cl. 524—113 **28 Claims**

1. A composition suitable for use as a radiation curable coating comprising the reaction product of a polycaprolactone polyol, a multi-functional isocyanate, and a lactone-acrylate adduct.

4,618,636

FLAMEPROOFED THERMOPLASTIC MOLDING MATERIAL COMPRISING A NOVOLAK RESIN

Volker Muench, Ludwigshafen; Juergen Hambrecht, Heidelberg; Herbert Naarmann, Wattenheim; Adolf Echte, Ludwigshafen, and Karl H. Illers, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 18, 1985, Ser. No. 692,621

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1984, 3401834

Int. Cl.^{4} C08K *3/10, 5/51, 5/13;* **C08L** *61/10*

U.S. Cl. 524—176 **16 Claims**

1. A flameproofed thermoplastic molding material, comprising

A. one or more thermoplastic resins containing a vinylaromatic monomer,

and furthermore contains

B. from 0 to 100 parts by weight of one or more elastomers having a glass transition temperature Tg<0° C., as an impact modifier,

C. from 2 to 50 parts by weight of one or more halogen-containing organic compounds (flameproofing agents),

D. from 0.5 to 20 parts by weight of a member selected from the group consisting of As_2O_3, Sb_2O_3, Bi_2O_3, SnO_2, Fe_2O_3, ferrocene, Al_2O_3, ZnO, hypophosphites, borates and mixtures thereof (synergistic agents with component C) and

E. from 5 to 50 parts by weight of a novolak (phenol/aldehyde resin),

the amounts in each case being based on 100 parts by weight of A, wherein the novolak used has a number average molecular weight $\overline{M}_n$ of from 500 to 2000 and is obtainable from an aldehyde of the formula (I)

$$R^1—CHO \quad \text{(I)}$$

where R^1 is H, C_1–C_{10}-alkyl, cycloalkyl, C_6–C_{12}-aryl or ω-aryl-C_1–C_3-alkyl, and a mixture of phenols, and this mixture contains two or more monosubstituted phenols and the substituents can be alkyl of 1 to 8 carbon atoms or CN.

4,618,637

POLYMER MIXTURE WHICH COMPRISES A POLYPHENYLENE ETHER AND A DIHYDRAZIDE AS A STABILIZER

Johannes H. G. M. Lohmeijer, Hoogerheide; Jacobus W. M. Noordermeer, Nieuwstadt/Susteren, and Jan Bussink, Bergen op Zoom, all of Netherlands, assignors to General Electric Company, Selkirk, N.Y.

Filed Dec. 16, 1985, Ser. No. 809,553

Claims priority, application Netherlands, Dec. 20, 1984, 8403863

Int. Cl.^{4} C08K *5/25*

U.S. Cl. 524—192 **4 Claims**

1. A polymer mixture which comprises a polyphenylene ether and a dihydrazide as an antioxidant stabilizer, characterized in that per 100 parts by weight of polyphenylene ether the polymer mixture comprises 0.05–5 parts by weight of oxalyldihydrazide as the stabilizer.

4,618,638

COMPOSITIONS CONTAINING ALPHA-CYANOCINNAMATE ULTRAVIOLET-ABSORBING STABILIZERS SUBSTITUTED BY AN ALIPHATIC HYDROXYL GROUP

Martin Dexter, Briarcliff Manor, and Roland A. E. Winter, Armonk, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 431,497, Sep. 30, 1982, Pat. No. 4,504,419, which is a division of Ser. No. 318,648, Nov. 5, 1981, Pat. No. 4,414,393. This application Nov. 23, 1984, Ser. No. 674,216

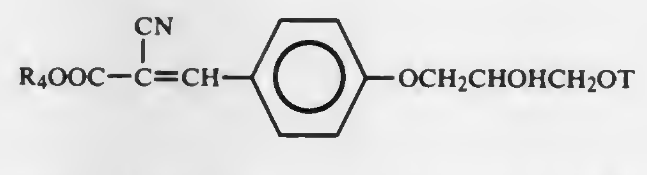
Int. Cl.^{4} C08K *5/34*

U.S. Cl. 524—208 **4 Claims**

1. A stablized composition which comprises

(a) a polymer, and

(b) 0.1 to 5% by weight of said polymer of a compound having the formula



where T is alkyl of 4 to 14 carbon atoms, and R_4 is alkyl of 1 to 4 carbon atoms.

4,618,639

ANTISTATIC ORGANOPOLYSILOXANE COMPOSITION

Masaharu Takahashi, and Motoo Fukushima, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 16, 1985, Ser. No. 755,424

Claims priority, application Japan, Jul. 19, 1984, 59-150278

Int. Cl.^{4} C08K *5/24*

U.S. Cl. 524—262 **1 Claim**

1. An antistatic organopolysiloxane composition which comprises

(a) 100 parts by weight of an organopolysiloxane gum represented by the average unit formula

$$R_aSiO_{(4-a)/2},$$

in which R is a monovalent hydrocarbon group and the subscript a is a positive number in the range from 1.98 to 2.01;

(b) up to 500 parts by weight of a siliceous filler;

(c) from 2.5 to 25 parts by weight of an organopolysiloxane represented by the average unit formula

$$R_c.[NC—C_3H_6]_fSiO_{(4-e-f)/2},$$

in which e is zero or a positive number not exceeding 2, c is zero, 1 or 2, and f is a positive number from 0.01 to 2 with the proviso that e+f is in the range from 0.01 to 2.01 and the weight percentage of the cyano groups is from 0.05 to 20%, component (c) having a viscosity of at least 10 centistokes at 25° C.; and

(d) and organic peroxide.

4,618,640

HOT-MELT ADHESIVE COMPOSITIONS COMPRISING A PARTIALLY (FUMARIZED AND/OR MALEINIZED) DISPROPORTIONATED ROSIN ESTER TACKIFIER

Seiichi Tsuchida, Sakai; Yoshihiro Kodama, Kobe, and Hiroari Hara, Osaka, all of Japan, assignors to Arakawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP84/00351, § 371 Date Mar. 20, 1985, § 102(e) Date Mar. 20, 1985, PCT Pub. No. WO85/00615, PCT Pub. Date Feb. 14, 1985

PCT Filed Jul. 9, 1984, Ser. No. 717,175

Claims priority, application Japan, Jul. 27, 1983, 58-138526

Int. Cl.^{4} C09J *3/14, 3/26;* **C08L** *23/08, 93/04*

U.S. Cl. 524—272 **14 Claims**

1. A hot melt adhesive composition containing an ethylene copolymer, wax and a tackifying resin as major components, the composition being characterized in that the tackifying resin is partially fumarinized and/or partially maleinized, disproportionated rosin ester.

4,618,641

CONCENTRATED, AQUEOUS DISPERSIONS OF VINYLIDENE FLUORIDE POLYMERS AND A PROCESS FOR THEIR PREPARATION

Rolf Hengel, Burgkirchen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 7, 1985, Ser. No. 785,160

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1984, 3437278

Int. Cl.^{4} C08K *5/09*

U.S. Cl. 524—284 **11 Claims**

1. An improved concentrated, aqueous, colloidal dispersion of at least one copolymer of vinylidene fluoride containing at least 5% strength by weight of vinylidene fluoride and at least one further fluoroolefinic comonomer, having a solids content of 30 to 65% by weight, based on the total weight of the concentrated dispersion, wherein the improvement comprises having a content of 2 to 8% strength by weight, based on the solids content of the concentrated dispersion, of at least one ammonium salt of a carboxylic acid, which has 10 to 14 carbon atoms and is unsubstituted by fluorine or chlorine, as dispersion stabilizer.

4,618,642

SILICONE WATER-BASED CAULKING MATERIAL

Christine J. Schoenherr, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed May 2, 1985, Ser. No. 729,835

Int. Cl.^{4} C08G *77/16;* **C08K** *3/26, 3/22;* **C08L** *83/08*

U.S. Cl. 524—425 **12 Claims**

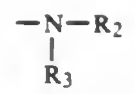
1. A silicone composition consisting essentially of the aqueous emulsion obtained by mixing

(A) 100 parts by weight of an anionically stabilized, hydroxyl endblocked polydiorganosiloxane having a weight average molecular weight of above 50,000, the organic radicals being monovalent hydrocarbon radicals containing less than 7 carbon atoms per radical or 2-(perfluoroalkyl)ethyl radicals having less than 7 carbon atoms per radical, present as an emulsion of dispersed particles in water, the emulsion having a pH of greater than 9 and a solids content of greater than 50% by weight,

(B) from 0.075 to 0.75 part by weight of dialkyltindicarboxylate,

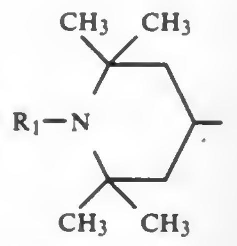
(C) from 0.2 to 5 parts by weight of silane of the formula $RSi(OR')_3$ where R is a monovalent hydrocarbon radical of from 1 to 4 carbon atoms inclusive and R′ is a lower alkyl radical of from 1 to 4 carbon atoms inclusive or a radical of the formula $—N{=}CR_2$ where R is as defined above and,

(D) from 50 to 200 parts by weight of inert, non-siliceous filler, to produce a paste-type emulsion having a total solids content of greater than 70% by weight and being



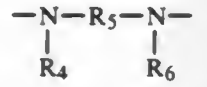
$$-N(-R_2)-R_3$$

in which R_2 and R_3 can be identical or different and are hydrogen, C_1–C_{18}-alkyl, C_1–C_{18}-alkyl substituted by C_1–C_{18}-alkoxy or C_2–C_{18}-dialkylamino, C_3–C_{18}-alkenyl, C_5–C_{18}-cycloalkyl, C_6–C_{18}-aryl, C_7–C_{18}-aralkyl or a radical of the formula (II)



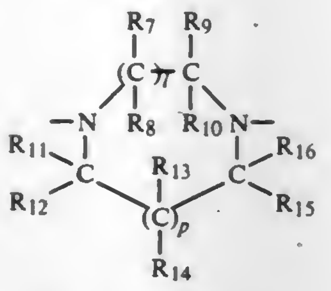
(II)

in which R_1 is as defined above, or A is a monovalent radical of a 5-membered to 13-membered heterocyclic compound containing at least one nitrogen atom, the free valency being on the nitrogen atom, and, with n=2, A is a radical of the formula (III), (IV) or (V)

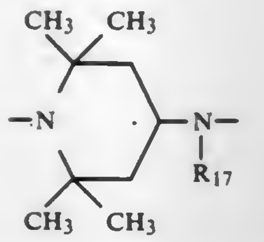


$$-N(R_4)-R_5-N(R_6)-$$

(III)

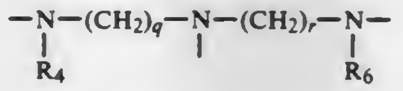


(IV)



(V)

in which R_4, R_6 and R_{17} can be identical or different and are as defined for R_2 and R_3, R_5 is C_2–C_{18}-alkylene, C_4–C_{18}-alkylene substituted by 1 to 3 oxygen atoms, C_5–C_{12}-cycloalkylene, C_6–C_{12}-arylene or C_7–C_{12}-aralkylene, the radicals R_7–R_{16} can be identical or different and are hydrogen or methyl, R_9 together with R_{10} and R_{13} together with R_{14} can be oxygen, p and l indipendently are zero or 1, and, with n=3, A is a radical of the formula (VI)



$$-N(R_4)-(CH_2)_q-N(-)-(CH_2)_r-N(R_6)-$$

(VI)

in which R_4 and R_6 are as defined above and q and r can be identical or different and are integers from 2 to 6, or A is a hexahydro-1,3,5-triazine-1,3,5-triyl radical.

9. A light-stabilised, heat-stabilised and oxidation-stabilised polymer composition comprising a synthetic polymer and one or more stabilisers of the formula (I) in a quantity from 0.01 to 5% by weight relative to the weight of the synthetic polymer.

4,618,635

COATING COMPOSITIONS PREPARED FROM LACTONE-ACRYLATE ADDUCT, POLYOL AND ISOCYANATE

Claiborn L. Osborn; Joseph V. Koleske, and Kenneth Drake, all of Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 509,389, Jun. 30, 1983, abandoned. This application May 17, 1985, Ser. No. 735,096

Int. Cl.^{4} C08L *75/00*

U.S. Cl. 524—113 **28 Claims**

1. A composition suitable for use as a radiation curable coating comprising the reaction product of a polycaprolactone polyol, a multi-functional isocyanate, and a lactone-acrylate adduct.

4,618,636

FLAMEPROOFED THERMOPLASTIC MOLDING MATERIAL COMPRISING A NOVOLAK RESIN

Volker Muench, Ludwigshafen; Juergen Hambrecht, Heidelberg; Herbert Naarmann, Wattenheim; Adolf Echte, Ludwigshafen, and Karl H. Illers, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 18, 1985, Ser. No. 692,621

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1984, 3401834

Int. Cl.^{4} C08K *3/10, 5/51, 5/13;* **C08L** *61/10*

U.S. Cl. 524—176 **16 Claims**

1. A flameproofed thermoplastic molding material, comprising

A. one or more thermoplastic resins containing a vinylaromatic monomer,

and furthermore contains

B. from 0 to 100 parts by weight of one or more elastomers having a glass transition temperature $Tg<0°$ C., as an impact modifier,

C. from 2 to 50 parts by weight of one or more halogen-containing organic compounds (flameproofing agents),

D. from 0.5 to 20 parts by weight of a member selected from the group consisting of As_2O_3, Sb_2O_3, Bi_2O_3, SnO_2, Fe_2O_3, ferrocene, Al_2O_3, ZnO, hypophosphites, borates and mixtures thereof (synergistic agents with component C) and

E. from 5 to 50 parts by weight of a novolak (phenol/aldehyde resin),

the amounts in each case being based on 100 parts by weight of A, wherein the novolak used has a number average molecular weight $\overline{M}_n$ of from 500 to 2000 and is obtainable from an aldehyde of the formula (I)

$$R^1—CHO \qquad (I)$$

where R^1 is H, C_1–C_{10}-alkyl, cycloalkyl, C_6–C_{12}-aryl or ω-aryl-C_1–C_3-alkyl, and a mixture of phenols, and this mixture contains two or more monosubstituted phenols and the substituents can be alkyl of 1 to 8 carbon atoms or CN.

4,618,637

POLYMER MIXTURE WHICH COMPRISES A POLYPHENYLENE ETHER AND A DIHYDRAZIDE AS A STABILIZER

Johannes H. G. M. Lohmeijer, Hoogerheide; Jacobus W. M. Noordermeer, Nieuwstadt/Susteren, and Jan Bussink, Bergen op Zoom, all of Netherlands, assignors to General Electric Company, Selkirk, N.Y.

Filed Dec. 16, 1985, Ser. No. 809,553

Claims priority, application Netherlands, Dec. 20, 1984, 8403863

Int. Cl.^{4} C08K *5/25*

U.S. Cl. 524—192 **4 Claims**

1. A polymer mixture which comprises a polyphenylene ether and a dihydrazide as an antioxidant stabilizer, characterized in that per 100 parts by weight of polyphenylene ether the polymer mixture comprises 0.05–5 parts by weight of oxalyldihydrazide as the stabilizer.

4,618,638

COMPOSITIONS CONTAINING ALPHA-CYANOCINNAMATE ULTRAVIOLET-ABSORBING STABILIZERS SUBSTITUTED BY AN ALIPHATIC HYDROXYL GROUP

Martin Dexter, Briarcliff Manor, and Roland A. E. Winter, Armonk, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 431,497, Sep. 30, 1982, Pat. No. 4,504,419, which is a division of Ser. No. 318,648, Nov. 5, 1981, Pat. No. 4,414,393. This application Nov. 23, 1984, Ser. No. 674,216

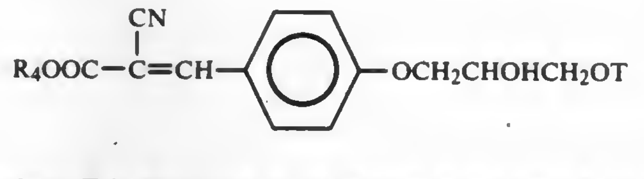
Int. Cl.^{4} C08K *5/34*

U.S. Cl. 524—208 **4 Claims**

1. A stablized composition which comprises

(a) a polymer, and

(b) 0.1 to 5% by weight of said polymer of a compound having the formula



where T is alkyl of 4 to 14 carbon atoms, and R_4 is alkyl of 1 to 4 carbon atoms.

4,618,639

ANTISTATIC ORGANOPOLYSILOXANE COMPOSITION

Masaharu Takahashi, and Motoo Fukushima, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 16, 1985, Ser. No. 755,424

Claims priority, application Japan, Jul. 19, 1984, 59-150278

Int. Cl.^{4} C08K *5/24*

U.S. Cl. 524—262 **1 Claim**

1. An antistatic organopolysiloxane composition which comprises

(a) 100 parts by weight of an organopolysiloxane gum represented by the average unit formula

$$R_aSiO_{(4-a)/2},$$

in which R is a monovalent hydrocarbon group and the subscript a is a positive number in the range from 1.98 to 2.01;

(b) up to 500 parts by weight of a siliceous filler;

(c) from 2.5 to 25 parts by weight of an organopolysiloxane represented by the average unit formula

$$R_c\cdot[NC—C_3H_6]_fSiO_{(4-e-f)/2},$$

in which e is zero or a positive number not exceeding 2, c is zero, 1 or 2, and f is a positive number from 0.01 to 2 with the proviso that e+f is in the range from 0.01 to 2.01 and the weight percentage of the cyano groups is from 0.05 to 20%, component (c) having a viscosity of at least 10 centistokes at 25° C.; and

(d) and organic peroxide.

4,618,640

HOT-MELT ADHESIVE COMPOSITIONS COMPRISING A PARTIALLY (FUMARIZED AND/OR MALEINIZED) DISPROPORTIONATED ROSIN ESTER TACKIFIER

Seiichi Tsuchida, Sakai; Yoshihiro Kodama, Kobe, and Hiroari Hara, Osaka, all of Japan, assignors to Arakawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP84/00351, § 371 Date Mar. 20, 1985, § 102(e) Date Mar. 20, 1985, PCT Pub. No. WO85/00615, PCT Pub. Date Feb. 14, 1985

PCT Filed Jul. 9, 1984, Ser. No. 717,175

Claims priority, application Japan, Jul. 27, 1983, 58-138526

Int. Cl.^{4} C09J *3/14, 3/26;* **C08L** *23/08, 93/04*

U.S. Cl. 524—272 **14 Claims**

1. A hot melt adhesive composition containing an ethylene copolymer, wax and a tackifying resin as major components, the composition being characterized in that the tackifying resin is partially fumarinized and/or partially maleinized, disproportionated rosin ester.

4,618,641

CONCENTRATED, AQUEOUS DISPERSIONS OF VINYLIDENE FLUORIDE POLYMERS AND A PROCESS FOR THEIR PREPARATION

Rolf Hengel, Burgkirchen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 7, 1985, Ser. No. 785,160

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1984, 3437278

Int. Cl.^{4} C08K *5/09*

U.S. Cl. 524—284 **11 Claims**

1. An improved concentrated, aqueous, colloidal dispersion of at least one copolymer of vinylidene fluoride containing at least 5% strength by weight of vinylidene fluoride and at least one further fluoroolefinic comonomer, having a solids content of 30 to 65% by weight, based on the total weight of the concentrated dispersion, wherein the improvement comprises having a content of 2 to 8% strength by weight, based on the solids content of the concentrated dispersion, of at least one ammonium salt of a carboxylic acid, which has 10 to 14 carbon atoms and is unsubstituted by fluorine or chlorine, as dispersion stabilizer.

4,618,642

SILICONE WATER-BASED CAULKING MATERIAL

Christine J. Schoenherr, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed May 2, 1985, Ser. No. 729,835

Int. Cl.^{4} C08G *77/16;* **C08K** *3/26, 3/22;* **C08L** *83/08*

U.S. Cl. 524—425 **12 Claims**

1. A silicone composition consisting essentially of the aqueous emulsion obtained by mixing

(A) 100 parts by weight of an anionically stabilized, hydroxyl endblocked polydiorganosiloxane having a weight average molecular weight of above 50,000, the organic radicals being monovalent hydrocarbon radicals containing less than 7 carbon atoms per radical or 2-(perfluoroalkyl)ethyl radicals having less than 7 carbon atoms per radical, present as an emulsion of dispersed particles in water, the emulsion having a pH of greater than 9 and a solids content of greater than 50% by weight,

(B) from 0.075 to 0.75 part by weight of dialkyltindicarboxylate,

(C) from 0.2 to 5 parts by weight of silane of the formula $RSi(OR')_3$ where R is a monovalent hydrocarbon radical of from 1 to 4 carbon atoms inclusive and R′ is a lower alkyl radical of from 1 to 4 carbon atoms inclusive or a radical of the formula $—N{=}CR_2$ where R is as defined above and,

(D) from 50 to 200 parts by weight of inert, non-siliceous filler, to produce a paste-type emulsion having a total solids content of greater than 70% by weight and being useful as caulking material that cures upon removal of the water to an elastomer.

2. The composition of claim **1** in which the polydiorganosiloxane is a polydimethylsiloxane having a weight average molecular weight in the range of from 200,000 to 700,000.

6. The composition of claim **2** in which the dialkyltindicarboxylate is dioctyltindilaurate or dibutyltindilaurate in an amount of from 0.2 to 0.4 part by weight, the silane is methyltrimethoxysilane or vinyltrimethoxysilane in an amount of from 0.4 to 2 parts by weight, and the filler is calcium carbonate having an average particle size of less than 2 micrometers.

4,618,643
GLUE STICK ADHESIVES

Hubertus von Voithenberg, and Gotz Hillert, both of Bad Homburg, Fed. Rep. of Germany, assignors to USM Corporation, Farmington, Conn.

Filed Mar. 2, 1984, Ser. No. 585,520

Claims priority, application United Kingdom, Mar. 2, 1983, 8305733

Int. Cl.^{4} C08L *67/02, 67/04;* **C08G** *63/08, 63/18*

U.S. Cl. 524—430 **10 Claims**

1. A hot melt glue stick suitable for use in conjuction with a device for melting and dispensing a glue stick, the glue stick comprising thermoplastic copolyester material corresponding to a condensation product of:

(a) an acid component consisting essentially of
  44 to 53 moles % of terephthalic acid,
  33 to 48 moles % of isophthalic acid, and
  10 to 15 moles % of aliphatic dicarboxylic acid having 4 to 12 carbon atoms in its molecular chain
  and
(b) a hydroxyl component comprising one or more aliphatic diols of which not less than 90 moles % of the aliphatic diols is 1.4 butance diol, and
(c) a polymeric hydroxyl bearing diol polyester component present to an extent of about 1 to about 10 wt % of the components (a) and (b) provided that when the hydroxyl componet (b) consists solely of 1.4 butane diol, the polyester is present to an extent of not less than 3% weight of the components (a) and (b), the glue stick having a melting point (DSC) in the range 90 to 120° C., and a reduced viscosity (measured in a mixture of phenol and tetrachloroethane in a ratio by weight of 60 to 40 using 0.4 g copolyester per 100 ml mixture) of 0.5 to 0.7.

8. A hot melt glue stick suitable for use in conjuction with a device for melting and dispensing a glue stick, the glue stick comprising thermoplastic copolyester material corresponding to a condensation product of an acid component comprising
  about 46 moles % terephthalic acid,
  about 41 moles % esophthalic acid, and
  about 13 moles % aliphatic dicarboxylic acid
  having 4 to 12 carbon atoms in its molecular chain, and a hydroxyl component comprising 1.4 butane diol and a second aliphatic diol in a molar ratio of about 95:5, and a polymeric hydroxyl bearing diol polyester in an amount sufficient to provide about 3 to 4% by weight of the copolyester,
  the glue stick having a melting point (DSC) in the range 105° to 110° and a reduced viscosity (measured in a mixture of phenol and tetrachloroethane in a ratio by weight of 60 to 40 using 0.4 gm copolyester per 100 ml mixture) of 0.6 to 0.65.

4,618,644
NOVEL SILICONE-CONTAINING INTERPENETRATING POLYMER NETWORKS

Wan-Li Liu, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Apr. 16, 1985, Ser. No. 724,361

The portion of the term of this patent subsequent to Apr. 29, 2003, has been disclaimed.

Int. Cl.^{4} C08F *283/12;* **C08L** *83/10*

U.S. Cl. 524—535 **12 Claims**

1. A curable composition comprising:
(I) a silicone resin comprising:
(a) at least one block consisting essentially of from about 6 to about 120 units of the formula

R^2SiO

(b) at least one block consisting essentially of from about 3 to about 160 units of the formula

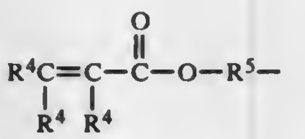
$R^1SiO_{1.5}$,

and

(c) at least one block consisting essentially of from about 0.1 to about 20 mole percent of (a) and (b) of units of the formula

RR^3SiO;

where R is an independently selected alkyl radical having 1 to 5 carbon atoms, aryl radical having 6 to 10 carbon atoms, or aralkyl radical having 6 to 10 carbon atoms; R^1 is an aryl or aralkyl radical having 6 to 10 carbon atoms; and R^3 is an acrylic-functional radical having the general formula



$$R^4C(R^4){=}C(R^4){-}\overset{\overset{\displaystyle O}{\|}}{C}{-}O{-}R^5{-}$$

where the R^4 radicals are the same or different and represent hydrogen parts or monovalent substituted or unsubstituted hydrocarbon radicals having from 1 to 12 carbon atoms and R^5 is a divalent substituted or unsubstituted hydrocarbon radical having from 2 to 12 carbon atoms, said resin being dispersed in
(II) at least one olefinic monomer.

4,618,645
METHOD OF PRODUCING AQUEOUS LATEX OF CROSSLINKED POLYDIORGANOSILOXANE

Therese M. Bauman, and David J. Huebner, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed May 24, 1985, Ser. No. 737,600

Int. Cl.^{4} C08K *5/41, 5/42;* **C08L** *83/14*

U.S. Cl. 524—745 **15 Claims**

1. A method of producing an aqueous latex of crosslinked polydiorganosiloxane consisting essentially of
(A) homogenizing immediately after admixing, a mixture consisting essentially of
  (1) 100 parts by weight of polydiorganosiloxane of the formula

$HO(R_2SiO)_xH$

wherein each R is a radical selected from the group consisting of methyl, ethyl, propyl, phenyl, vinyl, allyl, and 3,3,3-trifluoropropyl, and x is an average value in the range of from 3 to 100 inclusive,
  (2) from 0.5 to 15 parts by weight of alkoxy silicon compound selected from the group consisting of silane of the formula

$R_a'Si(OR^3)_{4-a}$

wherein R′ is a monovalent hydrocarbon radical having up to 12 carbon atoms, R^3 is an alkyl radical having from 1 to 6 inclusive carbon atoms, and a is 0 or 1; a partial hydrolyzate of the silane where the partial hydrolyzate is soluble in the polydiorganosiloxane (1); and mixture of silane and partial hydrolyzate,
  (3) sufficient anionic emulsifying agent to give an emulsion particle of an average diameter of from 0.3 to 0.4 micrometers, wherein said emulsifying agent is an alkali metal surface active sulfonate or sulfate, and
  (4) water, to give a non-volatile content of from 50 to 80 percent by weight, then
(B) admixing into the emulsion (A) from 15 to 100 millimoles of surface active anionic catalyst per kilogram of polydiorganosiloxane, wherein said catalyst is a surface active sulfonic acid catalyst or a surface active hydrogen sulfate catalyst, then
(C) maintaining the catalyzed emulsion at a temperature of from 15° to 30° C. for at least 5 hours at a pH of less than 5 until the desired molecular weight of polydiorganosiloxane is obtained, then
(D) admixing sufficient base to raise the pH of the emulsion to greater than 7, to give a latex having a non-volatile content of from 50 to 80 percent by weight, and which cures to an elastomer upon removal of the water at room temperature.

4,618,646
ROOM TEMPERATURE-CURABLE ORGANOPOLYSILOXANE COMPOSITION

Toshio Takago; Masatoshi Arai, and Koji Futatsumori, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 9, 1985, Ser. No. 753,319

Claims priority, application Japan, Jul. 9, 1984, 59-141974

Int. Cl.^{4} C08K *3/10*

U.S. Cl. 524—783 **3 Claims**

1. A room-curable organopolysiloxane composition which comprises:
(a) 100 parts by weight of a diorganopolysiloxane of a substantially linear molecular structure terminated at both molecular chain ends each with a silanolic hydroxy group;
(b) from 0.5 to 30 parts by weight of a compound having the formula R_bSiY_c, in which R is a monovalent hydrocarbon group, Y is a hydrolyzable group selected from the class consisting of alkoxy, acyloxy, alkenyloxy, ketoxime, substitute or unsubstituted amino, aminoxy, and amido groups, b is zero or 1 and c is 3 or 4 with the proviso that b+c is 4;
(c) from 5.0 to 300 parts by weight of a filler; and
(d) from 0.1 to 5.0 parts by weight of an organosilicon-modified polyoxyalkylene compound of which the molecular main chain is formed of the recurring units represented by the gneral formula $—R^1—O—$, in which R^1 is an ethylene or propylene group, and at least one of the molecular chain ends is terminated with a silicon-containing group represented by the general formula

$—O)_mCH_2—CH_2(SiR_2—O)_nSiR_aX_{3-a}$,

in which X is a hydrolyzable group; R is a substituted or unsubstituted monovalent hydrocarbon group, m is zero or 1, n is zero or a positive integer and a is 1, 2 or 3.

4,618,647
PROCESS FOR PRODUCING A POLYMER WATER-IN-OIL EMULSION

You-Ling Fan, East Brunswick; George L. Brode, Somerville, both of N.J., and Meyer R. Rosen, Spring Valley, N.Y., assignors to Union Carbide Corp., Danbury, Conn.

Continuation of Ser. No. 474,420, Mar. 11, 1983, abandoned. This application Nov. 26, 1984, Ser. No. 674,951

Int. Cl.^{4} C08F *2/32*

U.S. Cl. 524—801 **29 Claims**

1. A process for producing water-in-oil emulsions of a polymer from at least one ethylenically-unsaturated monomer comprising the steps of
(a) forming an aqueous phase comprising an aqueous solution containing at least one ethylenically-unsaturated, water-soluble monomer;
(b) forming an oil phase comprising a hydrophobic liquid and an oil-soluble surfactant;
(c) blending said aqueous phase and oil phase to form a water-in-oil emulsion of said monomer;
(d) initiating polymerization of said monomer in said emulsion by heating said emulsion in the presence of a first polymerization initiator capable of initiating polymerization of said monomer at a temperature less than about 45° C.; and
(e) after a small amount of polymer is formed sufficient to provide a shear-stable monomer emulsion, completing said polymerization in the presence of a second polymerization initiator capable of initiating polymerization of said monomer at a second temperature which is both higher than about 40° C. and higher than said first temperature.

4,618,648
COPOLYMERS OF VINYL ALCOHOL AND POLY(ALKYLENEOXY)ACRYLATES

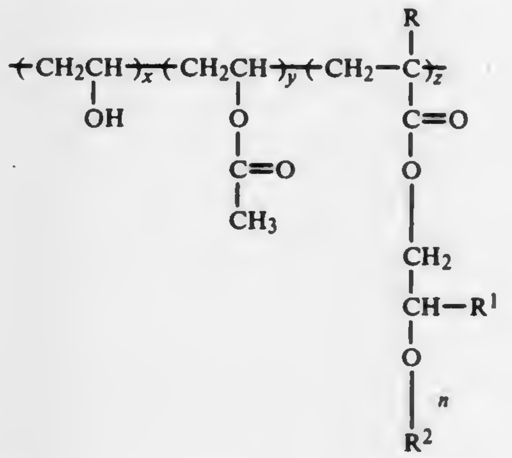
Finn L. Marten, Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 26, 1985, Ser. No. 727,638

Int. Cl.^{4} C08F *16/06*

U.S. Cl. 525—60 **19 Claims**

1. A substantially homogeneous random vinyl alcohol copolymer comprising the following general structure:



wherein
  R is hydrogen or methyl;
  R^1 is hydrogen or methyl;
  R^2 *is hydrogen,* C_1–C_{20} alkyl, C_6–C_{20} aryl or C_7–C_{30} alkylaryl;
  n is a number from 1–1,000; provided n is not 1 when R^2 is hydrogen, methyl or ethyl;
  x is 50–99.9 mole%;
  y is 0–50 mole%; and
  z is 0.001–50 mole%.

4,618,649
COPOLYMERS OF POLY(VINYL TRIFLUOROACETATE) OR POLY(VINYL ALCOHOL)

Ronald F. Ofstead, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 500,785, Jun. 3, 1983, Pat. No. 4,528,325. This application May 8, 1985, Ser. No. 731,915

The portion of the term of this patent subsequent to Jul. 9, 2002, has been disclaimed.

Int. Cl.⁴ C08F *16/06*

U.S. Cl. 525—60 **16 Claims**

1. A non-crosslinked poly(vinyl alcohol) copolymer which is the reaction product of:

a. a non-crosslinked poly(vinyl trifluoroacetate) copolymer having a molecular weight in the range of 200,000 to 4,000,000 which is the reaction product of:
  1. 95 to 99.99 weight percent of vinyl trifluoroacetate monomer, and
  2. 0.01 to 5 weight percent of a comonomer selected from vinyl esters, vinyl ethers, and copolymerizable disubstituted ethylenes; and

b. a mild base in a non-aqueous diluent selected so that the poly(vinyl trifluoroacetate) copolymer and its poly(vinyl alochol) copolymer solvolysis product are insoluble therein.

12. A process for preparing a poly(vinyl alcohol) copolymer comprising the steps:

a. admixing
  (1) 95 to 99.99 weight percent of vinyl trifluoroacetate monomer, and
  (2) 0.01 to 5 weight percent of a comonomer selected from vinyl esters, vinyl ethers, and disubstituted ethylenes,

b. allowing said admixture to react so as to form a poly(vinyl trifluoroacetate) copolymer having a molecular weight in the range of 200,000 to 4,000,000, and

c. solvolyzing said poly(vinyl trifluoroacetate) copolymer in a base in a non-aqueous diluent so as to produce said poly(vinyl alcohol) copolymer, said base in a non-aqueous diluent being selected so that the poly(vinyl trifluoroacetate) copolymer and the copolymeric poly(vinyl alcohol) solvolysis product are insoluble therein.

4,618,650
SILOXANE CONTAINING NETWORK POLYMER

Adel F. Halasa, Bath, and George Jalics, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 4, 1985, Ser. No. 772,484

Int. Cl.⁴ C08F *8/00*

U.S. Cl. 525—105 **19 Claims**

1. A process for crosslinking a metal terminated polymer comprising:

(a) reacting the metal terminated polymer with a molar excess of a halogenated silicon containing compound, wherein the halogenated silicon containing compound contains at least two halogen atoms which are bonded directly to a silicon atom, to produce a polymer which is terminated with halogenated silicon moieties wherein the halogenated silicon moieties contain at least one halogen atom which is bonded directly to a silicon atom;

(b) reacting the polymer which is terminated with halogenated silicon moieties with a molar excess of a tertiary alcohol to produce a polymer which is terminated with hydroxy silyl moieties; and

(c) allowing the polymer which is terminated with the hydroxy silyl moieties to crosslink under conditions sufficient to produce a crosslinked polymer containing siloxane linkages.

4,618,651
ADHESIVE COMPOSITIONS

Heinz Gilch, Bad Homburg-Kirdorf; Hubertus von Voithenberg, Bad Homburg, and Karl-Heinz Albert, Oberursel, all of Fed. Rep. of Germany, assignors to USM Corporation, Farmington, Conn.

Continuation of Ser. No. 595,595, Apr. 2, 1984, abandoned. This application Aug. 19, 1985, Ser. No. 766,592

Claims priority, application United Kingdom, Apr. 5, 1983, 8309129

Int. Cl.⁴ C08L *23/00*

U.S. Cl. 525—130 **10 Claims**

1. A solvent free, adhesive composition capable of application to a workpiece in heat softened condition to provide a layer which after exposure to moisture is capable of activation by heat to a bond forming condition to form an adhesive bond, the composition comprising a minor amount of a tackifying resin and a moisture curable polyurethane formed from a first component comprising a diisocyanate, and a second component comprising a substantially linear hydroxy polyester diol having a crystalline melting point in the range 40° C. to 70° C. and a molecular weight in the range 1500 to 6000 in proportions to provide an NCO:OH ratio in the range 2.5:1 to 1.25:1 and to provide a prepolymer having from 1.0 to 2.0 percent by weight —NCO groups available for reaction, and a third component comprising a monofunctional reactant having as its sole reactive group an —OH or —NH_2 group, present in an amount sufficient to react with 1–40 mole % of the NCO groups of the product of the prepolymer reaction.

4,618,652
PROCESS FOR CURING BISMALEIMIDE RESINS

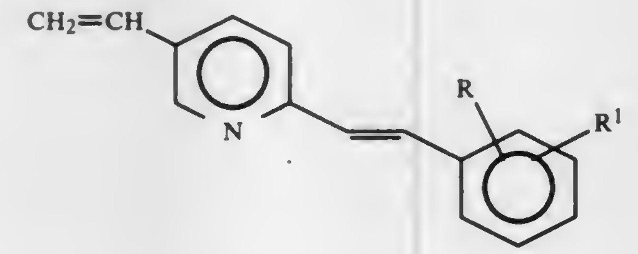
John A. Parker, Los Altos; Alvin H. Heimbuch, El Cerrito; Ming-ta S. Hsu, and Timothy S. Chen, both of San Jose, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 553,339, Nov. 18, 1983, Pat. No. 4,526,925. This application Apr. 22, 1985, Ser. No. 725,686

Int. Cl.⁴ C08F *271/02*

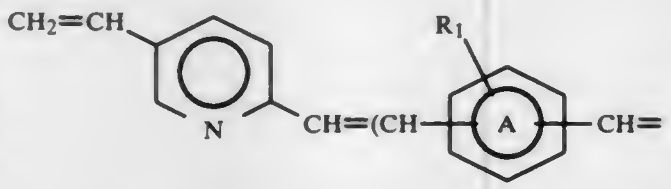
U.S. Cl. 525—282 **20 Claims**

1. In a process for thermally curing a bismaleimide resin into a solid polymer, the improvement comprising admixing with each 2.0 to 10 parts by weight of said bismaleimide resin, one part of a 5-vinyl-2-stilbazole of the structure



wherein R and R^1 are independently selected from hydrogen, lower alkyls, lower alkoxy, phenyls, bromo, chloro, or iodo and effecting the curing at a temperature of from about 130° C. to about 190° C.

14. In a process for thermally curing a bismaleimide resin into a polymer, the improvement comprising admixing with each 1.0 to 15 parts by weight of said bismaleimide resin one part by weight of a vinyl styrylpyridine oligomer of the structure



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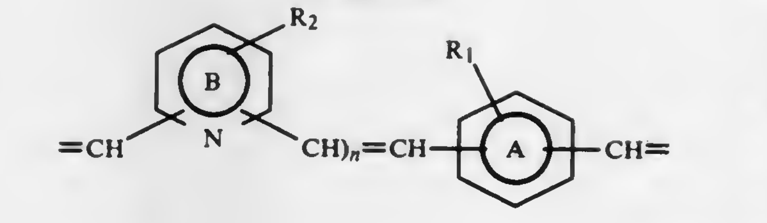
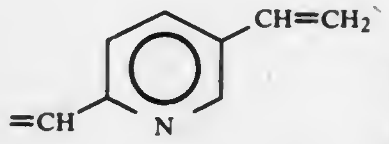




wherein in the A aromatic rings R_1 is hydrogen or lower alkyl and the two olefin bonds are attached to the aromatic ring meta or para to one another, and in the B aromatic ring R_2 is a lower alkyl, haloalkyl, or alkoxy and the two olefin bonds are attached to the B aromatic ring in the 2, 6 or 2, 4 positions, with R_2 in the 4 or 6 position not occupied by an olefin bond, and effecting the curing at a temperature in the range of from about 160° C. to about 230° C.

4,618,653
NOVEL POLYMER AND CURED PRODUCT OF THE SAME

Fumio Kawakubo; Miyako Takanoo; Sadao Yukimoto, and Katsuhiko Isayama, all of Kobe, Japan, assignors to Kanegafuchi Chemical Industry Co., Ltd., Japan

Filed Apr. 25, 1985, Ser. No. 727,296

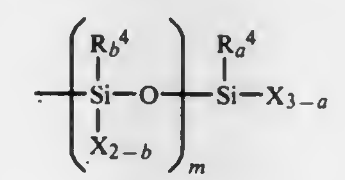
Claims priority, application Japan, Apr. 26, 1984, 59-84849

Int. Cl.⁴ C08L *71/02;* **C08F** *283/06*

U.S. Cl. 525—404 **14 Claims**

1. A polymer which is prepared by addition polymerizing at least one ethylenically unsaturated monomer in the presence of:

(A) an organic polymer having a reactive silicone group of the formula:



$$-\left(\overset{R_b^4}{\underset{X_{2-b}}{\mathrm{Si}}}-O\right)_m-\overset{R_a^4}{\mathrm{Si}}-X_{3-a} \qquad \text{(I)}$$

wherein R^4 is a C_1–C_{20} alkyl group, a C_6–C_{20} aryl, a C_7–C_{20} aralkyl group or a triorganosiloxane group of the formula:

$(R'')_3SiO$—

in which R″ is, the same or different, a C_1–C_{20} hydrocarbon group, X is a hydroxyl group or, the same or different, a hydrolyzable group, a is an integer of 0 to 3, b is 0, 1 or 2 and m is an integer of 1 to 18 and a polymerizable ethylenically unsaturated group in a molecule, the total number of the reactive silicone group and the unsaturated group in a molecule being on the average not less than 1.1 and the number of the ethylenically unsaturated group being on the average not less than 0.1 and said polymer being selected from the group consisting of a polyalkyleneoxide, a polyester and a ether-ester block copolymer, and

(B) at least one component selected from the group of consisting of a radical polymerization initiator having a reactive silicone group (I), a chain transfer agent having a reactive silicone group (I) and a mixture thereof.

4,618,654
BASE MATERIAL FOR SILANE GRAFTED, CROSSLINKED THERMOPLASTIC OR ELASTOMERIC MATERIAL

Hans-Martin Schmidtchen, Osnabrück, and Hermann U. Voigt, Langenhagen, both of Fed. Rep. of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshuette, Hanover, Fed. Rep. of Germany

Continuation of Ser. No. 698,861, Jun. 23, 1976, abandoned. This application Nov. 16, 1982, Ser. No. 442,012

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1975, 2527935

Int. Cl.⁴ C08F *275/00*

U.S. Cl. 525—288 **10 Claims**

1. In a method for making cross-linked thermoplastic or elastomeric material, comprising:

providing as a base material a blend (100%) of a component A and a component B, at a ratio of at least 50% by weight of component A to not more than 50% by weight, but at least 10% by weight of component B, wherein component A is comprised of a silane-graftable polyolefin or of one of its silane-graftable copolymers, and component B is a modifier being different from component A and having different physical properties, by being an elastomer or another polymer compatible with component A;

providing a mixture of the base material and of silane at 0.5 to 10 parts silane per 100 parts by weight graftable base material together with additives needed for grafting, such as a grafting initiator;

grafting the silane onto those macromolecules of the base material capable of receiving such silane; and

subsequently forming the material into the desired shape prior to final crosslinking of the graft material in the presence of moisture.

4,618,655
PROCESS FOR PREPARATION OF POLYMERS CONTAINING DICARBOXYLIC ACID CYCLIC IMIDE UNITS IN A SOLID/LIQUID SLURRY

David C. Dehm, Thornton, and H. Franklin Lawson, Downingtown, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 547,304, Oct. 31, 1983. This application Dec. 3, 1984, Ser. No. 677,656

Int. Cl.⁴ C08F *8/36, 8/32*

U.S. Cl. 525—344 **5 Claims**

1. In the process for producing a sulfonated polymer containing styrene moieties and cyclic imide moieties by reacting a copolymer containing styrene moieties and cyclic carboxylic anhydride moieties with a primary amine followed by sulfonation,

the improvement comprises conducting the imidization of the anhydride moieties by reacting the primary amine with the copolymer slurried in an aromatic hydrocarbon having a boiling point greater than 120° C. and simultaneously removing water formed as the reaction proceeds, wherein the aromatic hydrocarbon does not dissolve the copolymer and the imidization reaction is conducted in a heterogenous slurry of the primary amine, the undissolved copolymer and the aromatic hydrocarbon.

4,618,656
NOVEL POLYMER AND CURED PRODUCT OF THE SAME

Fumio Kawakubo; Miyako Takanoo; Sadao Yukimoto, and Katsuhiko Isayama, all of Kobe, Japan, assignors to Kanegafuchi Chemical Industry Co., Ltd., Japan

Filed Apr. 25, 1985, Ser. No. 727,295

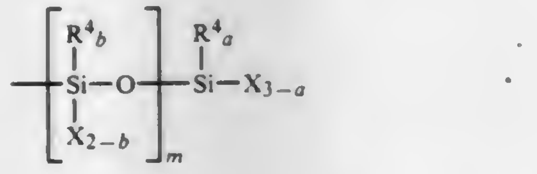
Claims priority, application Japan, Apr. 26, 1984, 59-84848

Int. Cl.⁴ C08L *71/02;* **C08F** *283/06*

U.S. Cl. 525—404 **13 Claims**

1. A polymer which is prepared by addition polymerizing at least one ethylenically unsaturated monomer in the presence of:

(A) an organic polymer having, in a molecule, at least one reactive silicone group of the formula:



$$-\left[\begin{matrix}\mathrm{R^4}_b & \\ | & \\ \mathrm{Si}- & \mathrm{O} \\ | & \\ \mathrm{X}_{2-b} & \end{matrix}\right]_m \begin{matrix}\mathrm{R^4}_a \\ | \\ \mathrm{Si}-\mathrm{X}_{3-a}\end{matrix} \qquad (I)$$

wherein R^4 is a C_1-C_{20} alkyl group, a C_6-C_{20} aryl, a C_7–C_{20} aralkyl group or a triorganosiloxane group of the formula:

$(R'')_3SiO$—

in which R″ is, the same or differant, C_1–C_{20} hydrocarbon group, X is a hydroxyl group or, the same or different, a hydrolyzable group, a is an integer of 0 to 3, b is 0, 1 or 2 and m is an integer of 1 to 18, said polymer being selected from the group consisting of a polyalkyleneoxide, a polyester and an ether-ester block copolymer,

(B) a compound having at least two independent ethylenically unsaturated group in a molecule, and

(C) at least one component selected from the group consisting of a radical polymerization initiator having a reactive silicone group (I), a chain transfer agent having a reactive silicone group (I) and a mixture thereof.

4,618,657

HEAT CURABLE POLYSILOXANE RELEASE COATINGS WHICH STRATIFY WHEN BAKED AND PAPER COATED THEREWITH

John Katchko, Palatine; Thomas H. Plaisance, Wilmette, and Karel Kriz, Mt. Prospect; all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Mar. 11, 1985, Ser. No. 710,336

Int. Cl.⁴ C08L *67/02*

U.S. Cl. 525—443 **40 Claims**

1. A heat curable coating composition adapted to deposit a release coating which stratifies to allow less silicone to coat a given surface area comprising:

(1) an hydroxy-functional resin;

(2) a cross-linking agent for the hydroxy-functional resin; and

(3) at least one reactive silicone resin to provide release properties,

said silicone resin being reactive with the hydroxy resin or the cross-linking agent, and components (1), (2) and (3) being compatible in liquid admixture.

4,618,658

POLYMER MODIFIED EPOXY RESIN COMPOSITIONS

Robert E. Hefner, Jr., and Virginia B. Messick, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 16, 1985, Ser. No. 734,516

Int. Cl.⁴ C08L *63/10*

U.S. Cl. 525—454 **13 Claims**

1. A polymer modified epoxy resin composition which comprises a copolymerization product of

(A) from about one to about 99 percent by weight of an epoxy resin wherein from about 0.01 to about 10 mole percent of the epoxide groups have been reacted to provide groups containing polymerizable ethylenic unsaturation;

(B) from about one to about 99 percent by weight of at least one vinyl terminated urethane oligomer; and

(C) from about zero to about 75 percent by weight of one or more polymerizable ethylenically unsaturated compounds.

4,618,659

LOW MOLECULAR WEIGHT ACRYLIC POLYMERS

Charles M. Kania, Tarentum, and Rostyslaw Dowbenko, Gibsonia, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 5, 1984, Ser. No. 678,435

Int. Cl.⁴ C08F *283/04*

U.S. Cl. 525—455 **23 Claims**

1. An ungelled polymeric reaction product having a number average molecular weight of up to about 3000 and having a polydispersity of within 1.2 to 2.5 prepared by a process, comprising the vinyl addition polymerization of a vinyl monomer component of which at least 30 percent by weight is an active hydrogen-containing vinyl monomer, in the presence of an active hydrogen-containing polymer having a number average molecular weight of less than 3000.

4,618,660

POLYMERIZATION CATALYST

Victoria Graves, Crosby, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 626,172, Jun. 29, 1984, Pat. No. 4,554,265. This application Aug. 30, 1985, Ser. No. 771,393

Int. Cl.⁴ C08F *4/64*

U.S. Cl. 526—114 **20 Claims**

1. A process for polymerizing at least one alpha-olefin under conditions characteristic of Ziegler polymerization wherein the polymerization is conducted in the presence of a catalyst comprising:

I. A supported catalyst prepared under anhydrous conditions by the steps of:
  (1) sequentially
    (a) preparing a slurry of inert particulate support material;
    (b) adding to said slurry a solution of an organomagnesium compound;
    (c) adding to said slurry and reacting a solution of zirconium compound; and
  (2) thereafter
    (d) adding to said slurry and reacting a halogenator;
    (e) adding to said slurry and reacting a tetravalent titanium compound;
    (f) recovering solid catalyst; and
II. an organoaluminum compound.

4,618,661

SUPPORTED HIGH EFFICIENCY POLYOLEFIN CATALYST COMPONENT AND METHODS OF MAKING AND USING THE SAME

Malcolm J. Kaus, Humble, Tex., and Nemesio D. Miro, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 543,166, Oct. 19, 1983, abandoned, and a continuation-in-part of Ser. No. 535,630, Sep. 26, 1983, abandoned, which is a division of Ser. No. 389,619, Jun. 18, 1982, Pat. No. 4,422,957, which is a division of Ser. No. 146,341, May 2, 1980, Pat. No. 4,347,158, said Ser. No. 543,166, is a division of Ser. No. 252,661, Apr. 22, 1981, Pat. No. 4,425,257, which is a continuation-in-part of Ser. No. 146,341,. This application Jul. 12, 1985, Ser. No. 754,311

Int. Cl.⁴ C08F *4/62, 4/64, 4/68*

U.S. Cl. 526—114 **28 Claims**

1. A process for the polymerization of olefins comprising contacting an alpha-olefin or a mixture of alpha-olefins under suitable reaction conditions with a catalyst system comprising a catalyst and a cocatalyst, wherein the cocatalyst comprises an organometallic compound and the catalyst comprises a solid resulting from the interaction of reactants consisting essentially of a support base selected from magnesium and manganese dihalides; a second solid material selected from aluminum trihalides, phosphorus trichloride, and phosphorus oxyrichloride; a first electron donor selected from ethers and nonhalogenated esters of carboxylic acids; and a polymerization active tritetra-, or penta-valent transition metal compound of a Group IVB–VIB metal; said catalyst being prepared by co-comminuting said support base and said second solid material to form an anhydrous mixture, co-comminuting the anhydrous mixture with said first electron donor to form a catalyst support, and treating said catalyst support with, said transition metal compound.

4,618,662

CATALYST COMPOSITION FOR POLYMERIZING ALPHA-OLEFINS

Thomas E. Nowlin, Yanbu, Saudi Arabia, assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 23, 1984, Ser. No. 603,048

Int. Cl.⁴ C08F *4/02, 10/00*

U.S. Cl. 526—129 **88 Claims**

1. A process for preparing a supported catalyst composition for use in alpha-olefin polymerization reactions, said process consisting essentially of the following steps in the recited order:

(i) contacting a solid, porous carrier having reactive OH groups with a liquid, said liquid containing at least one organomagnesium composition having the empirical formula

$$R_nMgR'_{(2-n)} \qquad (I)$$

where R and R′ are the same or different and they are C_1–C_{12} hydrocarbyl groups, provided that R′ may also be halogen, and n is 0, 1, or 2, the number of moles of said organomagnesium composition being in excess of the number of moles of said OH groups on said carrier;

(ii) removing said liquid from step (i) to obtain a magnesium-containing carrier in the form of a dry, free-flowing powder; and

(iii) contacting said powder of step (ii) with a solution comprising a liquid medium, an aluminum-containing brominating and/or chlorinating agent having the formula:

$$R'''_pAlX_{(3-p)}$$

wherein R‴ is a C_1–C_{12} branched or unbranched alkyl group, X is bromine or chlorine, and p is 1 or 2, and at least one titanium (IV) alkoxide compound having the formula :

$$Ti(OR'')_m$$

wherein R″ is branched or unbranched alkyl radical of 1 to 20 carbon atoms and m is 4, said titanium (IV) alkoxide compound, said brominating and/or chlorinating agent being soluble in said liquid medium, and said magnesium-containing carrier being substantially insoluble in said liquid medium,

whereby a compound of titanium which is insoluble in said liquid medium becomes incorporated onto said carrier.

4,618,663

PROCESS FOR PREPARING α-METHYLSTYRENE-ACRYLONITRILE COPOLYMERS

Masao Nakagawa, Kobe, Japan, assignor to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 23, 1983, Ser. No. 535,262

Claims priority, application Japan, Oct. 1, 1982, 57-173738

Int. Cl.⁴ C08F *4/36, 220/44*

U.S. Cl. 526—232.3 **14 Claims**

1. A process for preparing a copolymer having improved transparency at high conversion levels which comprises copolymerizing 10 to 80% by weight of α-methylstyrene, 5 to 50% by weight of acrylonitrile and 0 to 70% by weight of at least one member selected from the group consisting of styrene, methyl methacrylate, vinyl toluene and t-butylstyrene in the presence of a difunctional organic peroxide as an initiator at a temperature of 80° to 120° C. in a suspension or bulk polymerization manner.

4,618,664

PULLULAN COPOLYMER

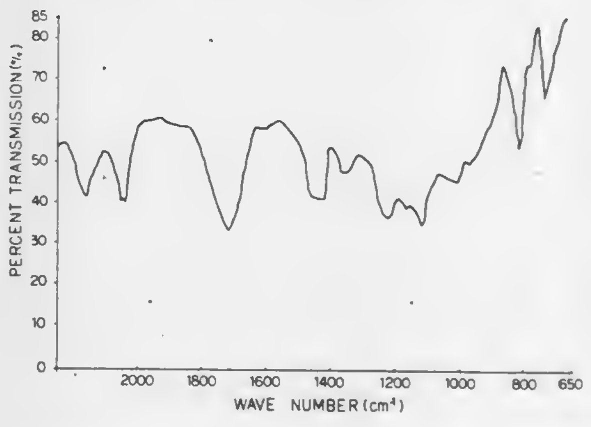
Yasuhiko Ohnishi, Seto, Japan, assignor to Sadayoshi Kamiya, Nagoya, Japan, a part interest

Filed Jan. 9, 1985, Ser. No. 689,928

Claims priority, application Japan, Jan. 9, 1984, 59-002345

Int. Cl.⁴ C08G *89/00;* **C08F** *36/00*

U.S. Cl. 527—300 **4 Claims**



1. A pullulan copolymer obtained by reacting pullulan with an unsaturated acid of the formula $HOOCR^{10}$ or the anhydride thereof in which R^{10} is an unsaturated hydrocarbon group having a carbon-carbon double bond and 2 to 16 carbon atoms, in the presence of a saturated acid of the formula $HOOCR^{11}$ in which R^{11} is an alkyl group having 2 to 16 carbon atoms and an acid catalyst to produce a pullulan olefin ester of formula (A):

$$[C_6H_7O_2(OH)_{3-a-b}(OX)_a(OY)_b]_mH_2O \qquad (A)$$

where

X is $-C(=O)R^1$ and R^1 is an unsaturated hydrocarbon group derived from an unsaturated acid and having a carbon-carbon double bond and 2 to 16 carbon atoms,

Y is $-C(=O)R^2$ and R^2 is an alkyl group having 1 to 14 carbon atoms, m is a natural number of at least 5; and a and b each is a natural number defined by $a+b\leqq 3$

and copolymerizing said pullulan olefinic ester with an olefinic compound polymerizable to form a recurring unit of formula (B):

$$[C(R^3)R^4-C(R^5)R^6]_n \qquad (B)$$

where

R^3, R^4 and R^5 are each selected from hydrogen and CH_3;

R^6 is selected from $-C(=O)OR^7$, $-C(=O)CN$, $-OH$, acyloxy, phenyl, pyridine, tolyl, pyrrolidone, lower alkyl and substituted pyrrolidone groups, R^7 being selected from an alkyl group having 1 to 12 carbon atoms, a cyclohexyl group, a hydroxyalkyl group having 1 to 4 carbon atoms, an aminoalkyl group having 1 to 8 carbon atoms, a dialkyl aminoalkyl group having 1 to 8 carbon atoms, a glycidyl group, a tetrahydrofuran group, a lower alkyl substituted tetrahydrofuran group having 1 to 4 carbon atoms, a benzyl group, a polyethylene oxide group having a polymerization degree of 2 to 11 and an imino group; and

n is a natural number of 20 to 300,000.

4,618,665

PROCESS TO PREPARE 2-PHENYLPROPYL CONTAINING POLYDIORGANOSILOXANES

Joseph T. Braun, and Schuyler B. Smith, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jan. 13, 1986, Ser. No. 818,150

Int. Cl.⁴ C08G *77/04*

U.S. Cl. 528—25 **15 Claims**

1. A method of preparing hydroxyl endblocked copolymers with methyl(2-phenylpropyl)disiloxanediol and dialkylcyclosiloxane consisting essentially of

(A) adding to a reaction vessel containing distilled water and water miscible solvent in a ratio of from about 1:2 to 2:1, methyl(2-phenylpropyl)dichlorosilane, at a slow rate with stirring so that the temperature is maintained between 20° C. and 45° C., and the maxiumum HCl concentration is 5 Normal, then

(B) cooling to below 35° C. and separating the reaction product from the acidified water, then

(C) dissolving the reaction product in solvent, then

(D) washing with saturated sodium bicarbonate solution, followed by distilled water to give a pH of about 7, then

(E) removing solvent to give a product of primarily methyl(2-phenylpropyl)disiloxanediol, then

(F) mixing with sufficient dialkylcyclosiloxane to give the desired mol ratio of radicals and heating, then

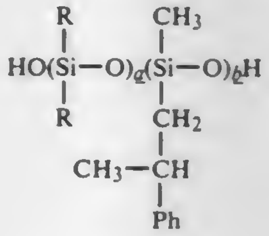
(G) adding powdered potassium hydroxide and heating to equilibrate, then

(H) removing the water from the composition by use of a water trap and heating to reflux, then

(I) cooling rapidly to about 65° C. and neutralizing with CO_2, then

(J) filtering and stripping under vacuum

to yield a copolymer having the formula



$$\mathrm{HO}(\underset{R}{\overset{R}{\mathrm{Si}}}-\mathrm{O})_a(\underset{\mathrm{CH_2-CH(CH_3)-Ph}}{\overset{\mathrm{CH_3}}{\mathrm{Si}}}-\mathrm{O})_b\mathrm{H}$$

where Ph is phenyl, R is methyl, ethyl, propyl, trifluoropropyl, a is from 3 to 500 and b is from 2 to 500 with a being at least equal to b.

4,618,666

DISILANE/ORGANOSILICON RESIN HAVING ENHANCED THERMOMECHANICAL PROPERTIES

Hugues Porte, Lyons, France, assignor to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed May 20, 1985, Ser. No. 735,994

Claims priority, application France, May 18, 1984, 84 07725

Int. Cl.⁴ C08G *77/04*

U.S. Cl. 528—33 **22 Claims**

1. An organosilicon resin containing recurring disilane units, which comprises the reaction product of a simultaneous cohydrolysis and condensation reaction in a heterogeneous solvent medium of an admixture of organochlorosilanes and organochlorodisilanes, said admixture comprising:

(i) from about 10 to 70 molar % of at least one diorganochlorosilane having the formula R_2SiCl_2, in which the radicals R, which may be identical or different, are each hydrogen, methyl or phenyl;

(ii) from about 30 to 70 molar % of at least one methylchlorodisilane which comprises at least about 30 molar % of tetrachloro-1,2-dimethyldisilane; and

(iii) from 0 to about 60 molar % of at least one organotrichlorosilane having the formula $R'SiCl_3$, in which R' is defined as is R above;

and said resin having an average functionality of from about 2.2 to 3.

4,618,667

NUCLEATION OF URETHANE COMPOSITIONS

Edward L. Kay, Akron, and Kenneth B. Roskos, Clinton, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 18, 1985, Ser. No. 724,692

Int. Cl.⁴ C08G *18/32, 18/34, 18/30*

U.S. Cl. 528—49 **23 Claims**

1. An essentially phase free separation pattern urethane elastomer composition, comprising:

a urethane prepolymer having free polyisocyanate therein;

from about 0.01% to about 5.0% by weight based upon the weight of said prepolymer of a fine nucleating agent, said fine nucleating agent uniformly dispersed in said prepolymer whereby a nucleating agent-prepolymer blend is formed, a chain extender, said chain extender added to said formed nucleating agent-prepolymer blend, said nucleating agent prepolymer blend cured by said chain extender at a curing temperature so that the urethane composition is essentially free of phase separation patterns.

9. A process for producing urethane elastomers which are essentially free from phase separation patterns, comprising the steps of:

adding urethane prepolymers containing free polyisocyanate therein to a vessel;

adding from about 0.01% to about 5.0% by weight based upon the weight of said prepolymer of a nucleating agent;

mixing said prepolymer and said nucleating agent so that said nucleating agent is uniformly dispersed throughout said prepolymer,

subsequently adding a chain extender to said nucleating agent-prepolymer mixture, and

curing said nucleating agent-prepolymer mixture.

4,618,668

PREPARATION OF POLYPHENYLENE ETHERS

Volker Muench, Ludwigshafen; Juergen Hambrecht, Heidelberg; Walter Himmele, Walldorf; Adolf Echte, and Johann Swoboda, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

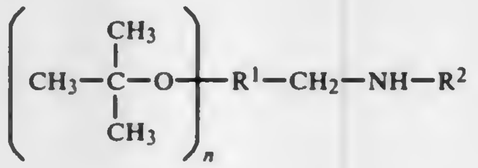
Filed Apr. 11, 1985, Ser. No. 722,154

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1984, 3414237

Int. Cl.⁴ C08G *65/44, 65/46*

U.S. Cl. 528—215 **3 Claims**

1. A process for the preparation of a high molecular weight polyphenylene ether from a monohydric phenol which possesses alkyl substituents in the two ortho positions and may additionally possess an alkyl substituent in a meta position but not in the para position, by an oxidative coupling reaction with oxygen at from 10° to 50° C. in the presence of a ctalyst complex consisting of a copper salt and an organic amine and in the presence of an aromatic C_6–C_{10}-hydrocarbon as solvent, in an amount of from 1 to 20 parts by weight per part by weight of the monomeric phenol, and in the presence or absence of an activator, the reaction is terminated, the copper component is separated from the reaction mixture and the high molecular weight polyphenylene ether is isolated from the solution, wherein the amine component used in the catalyst complex is an amine of the formula I



(I)

$$\left(\mathrm{CH_3}-\underset{\mathrm{CH_3}}{\overset{\mathrm{CH_3}}{\mathrm{C}}}-\mathrm{O}\right)_n\mathrm{R^1-CH_2-NH-R^2} \qquad (I)$$

where R^1 is C_2–C_{20}-alkylidene or alkenylidene, R^2 is H or C_1–C_{12}-alkyl or C_5–C_8-cycloalkyl, each of which is unsubstituted or substituted by $—OR^3$, $—NHR^3$ or $—SR^3$, where R^3 is H, C_1–C_{12}-alkyl or C_5–C_8-cycloalkyl, and n is an integer from 1 to 4.

4,618,669

S-(CARBAMOYL-PHENYLSELENYL) DERIVATIVES OF GLUTATHIONE AND OF AMINOMERCAPTOCARBOXYLIC ACIDS

Norbert Dereu, Frechen-Bachem; André Welter, Pulheim; Albrecht Wendel; Sigurd Leyck, both of Tübingen; Michael Parnham, Pulheim; Erich Graf, Kerpen; Helmut Sies, Neuss; Hans Betzing, Kerpen-Horrem, and Hartmut Fischer, Cologne, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

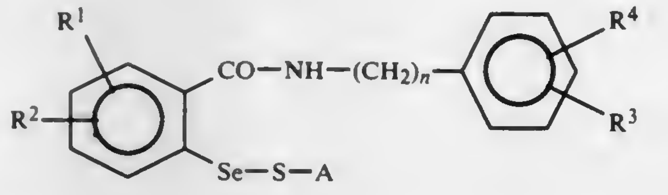
Filed Jun. 14, 1985, Ser. No. 744,920

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1984, 3422962; Nov. 29, 1984, 3443468

Int. Cl.⁴ C07K *5/08;* **C07C** *149/40, 121/50*

U.S. Cl. 530—331 **3 Claims**

1. S-(Carbamoyl-phenylselenyl) derivatives of glutathione and of α-aminomercaptocarboxylic acids according to the general formula (I)



(I)

wherein

R^1, R^2, R^3 and R^4, represent members selected from the group consisting of hydrogen, halogen, C_{1-4}-alkyl, C_{1-4}-alkoxy, trifluoromethyl, nitro, cyano, hydroxy, carboxy and C_{1-4}-alkoxycarbonyl,

n is zero or an integer from 1 to 4 and

A is a member selected from the group consisting of the glutathione radical, the α-amino acid radicals, the α-amino acid radicals wherein the carboxylic group and the amino group are unsubstituted the α-amino acid radicals wherein the carboxylic group is esterified with a C_{1-3}-alcohol and the amino group is unsubstituted, the α-amino acid radicals wherein the amino group is acylated and the carboxylic group is unsubstituted, and the α-amino acid radicals wherein both the carboxylic group is esterified with a C_{1-3}-alcohol and the amino group is acylate

4,618,670

METHOD FOR PRODUCTION OF USEFUL SUBSTANCES FROM SOYMEAL

Giorgio Colmelet, Milan, Italy, assignor to Novavis Intercontinental, Ltd., San Mateo, Calif.

Continuation-in-part of Ser. No. 587,838, Mar. 12, 1984, abandoned, which is a continuation of Ser. No. 516,285, Jul. 22, 1983, abandoned. This application Mar. 19, 1985, Ser. No. 713,586

Int. Cl.⁴ A23J *1/14;* **C07K** *3/28*

U.S. Cl. 530—378 **20 Claims**

1. A method for recovering useful products from de-oiled soymeal comprising the steps of

(a) extracting said residue with aqueous liquid at a temperature in the range of 60°-95° C.;

(b) separating the liquid extract from step (a), from said residue;

(c) subjecting said residue from step (b) to aqueous acidic hydrolyzing conditions;

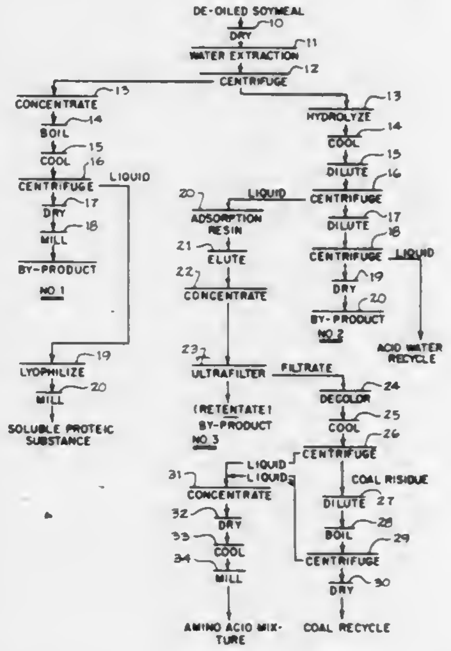
(d) separating the liquid phase from the mixture in step (c) from said residue;

(e) contacting said liquid phase with a cationic sulfonated resin;

(f) eluting amino acids from said resin with aqueous base;

(g) subjecting the eluate of step (f) to ultrafiltration;

(h) purifying the filtrate from step (g) on carbonaceous adsorbent;



(i) separating amino acid containing liquid from said carbonaceous adsorbent.

4,618,671

4-METHYL-PYRIDONE MONOAZO COMPOUND HAVING BOTH MONOCHLOROTRIAZINYL AND VINYLSULFONE TYPE FIBER-REACTIVE GROUPS

Yutaka Kayane, Ibaraki; Tetsuya Miyamoto, Takatsuki; Takashi Omura, Ashiya; Hirokazu Sawamoto, Minoo; Naoki Harada, Ibaraki, and Akira Takeshita, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

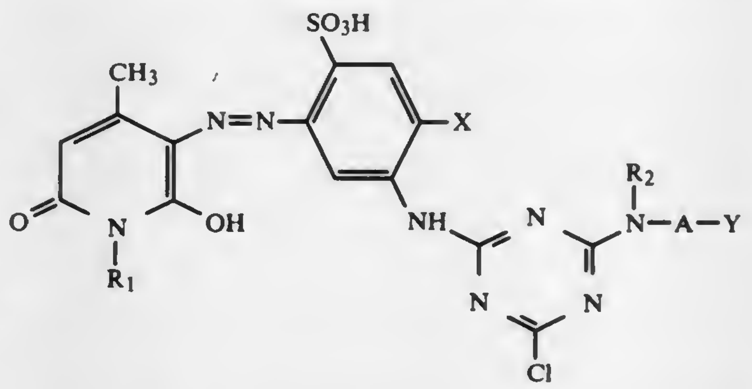
Filed Dec. 17, 1984, Ser. No. 682,241

Claims priority, application Japan, Jul. 31, 1984, 59-162740

Int. Cl.⁴ C09B *62/085, 62/53;* **D06P** *1/382, 3/66*

U.S. Cl. 534—635 **6 Claims**

1. A compound of the following formula, or a salt thereof,



wherein R_1 and R_2 are independently hydrogen or lower alkyl having up to 4 carbon atoms, X is hydrogen, methyl or sulfo, A is phenylene unsubstituted or substituted with one or two substituents selected from the group consisting of chlorine, bromine, methyl, ethyl, methoxy, ethoxy and sulfo, or naphthylene unsubstituted or substituted with one sulfo, and Y is $—SO_2CH{=}CH_2$ or $—SO_2CH_2CH_2Z$, in which Z is a group capable of being split by the action of an alkali.

4,618,672
BISAZO COMPOUNDS USEFUL AS CHARGE GENERATING PIGMENTS IN ELECTROPHOTOGRAPHY

Mitsuru Hashimoto, Numazu, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

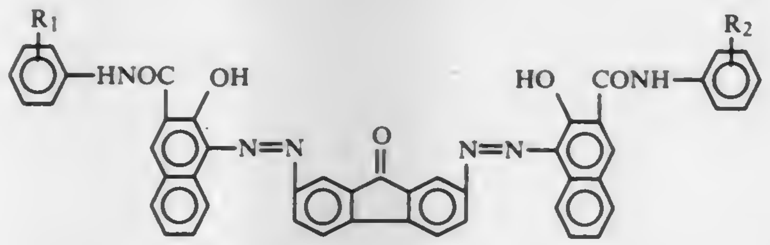
Filed Apr. 21, 1981, Ser. No. 256,162

Claims priority, application Japan, Apr. 30, 1980, 55-56234; Apr. 30, 1980, 55-56235; Apr. 30, 1980, 55-56236; Dec. 1, 1980, 55-169391; Dec. 1, 1980, 55-169392; Dec. 1, 1980, 55-169393; Dec. 1, 1980, 55-169394

Int. Cl.^{4} C09B *35/037, 35/10, 35/20, 35/233*

U.S. Cl. 534—658 **10 Claims**

1. A bisazo compund of the formula



wherein R_1 and R_2 each represent a halogen selected from the group consisting of fluorine, chlorine, bromine and iodine, and
when R_1 or R_2 is fluorine, it is present at the ortho, para or meta position in each phenylcarbamoyl group;
when R_1 or R_2 is chlorine, it is at the ortho position in each phenylcarbamoyl group;
when R_1 or R_2 is bromine, it is at the ortho or meta position in each phenylcarbamoyl group; and
when R_1 or R_2 is iodine, it is at the meta position in each phenylcarbamoyl group.

4,618,673
SALTS OF THE 1:2 CHROMIUM COMPLEX OF 4-(5′-CHLORO-2′-HYDROXY-3′-SULFOPHENYLAZO)-3-METHYL-1-PHENYLPYRAZOL-5-ONE AND 4-(3′,5′-DICHLORO-2′-HYDROXYPHENYLAZO)-3-METHYL-1-PHENYLPYRAZOL-5-ONE

Jacky Dorë, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

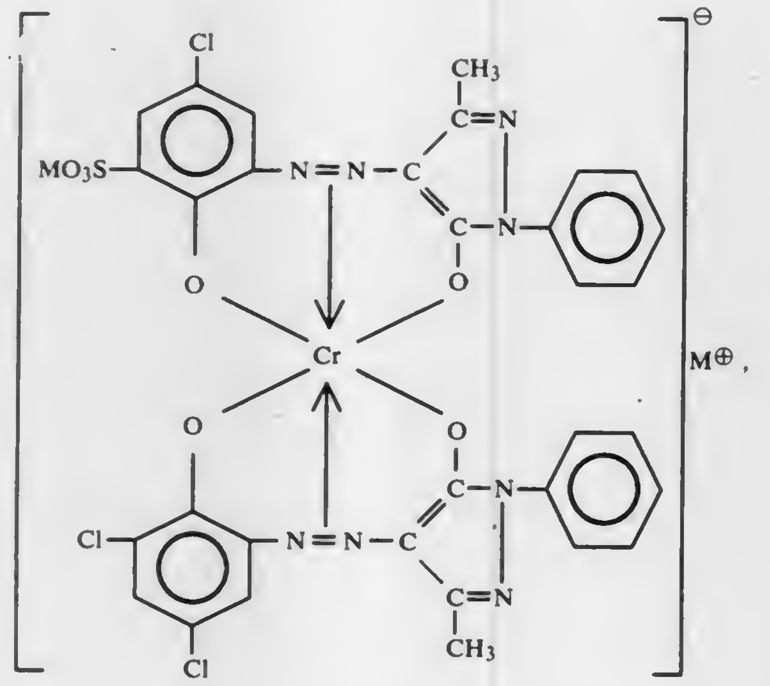
Continuation of Ser. No. 880,446, Feb. 23, 1978, abandoned, which is a continuation-in-part of Ser. No. 716,139, Aug. 20, 1976, abandoned. This application Sep. 22, 1981, Ser. No. 304,621

Claims priority, application Switzerland, Aug. 27, 1975, 11099/75

Int. Cl.^{4} C09B *45/06, 45/16;* **D06P** *1/10*

U.S. Cl. 534—698 **2 Claims**

1. A complex of the formula



wherein
M⊕ is hydrogen or a non-chromophoric cation, and
M is a non-chromophoric cation.

2. The complex according to claim 1 wherein
M⊕ is sodium, and
M is sodium.

4,618,674
RED-1-(CYANOPHENYLAZO- OR CYANO, HALOPHENYLAZO)-2-AMINO-8-HYDROXYNAPHTHALENE-6 SULFONIC ACID DYESTUFFS

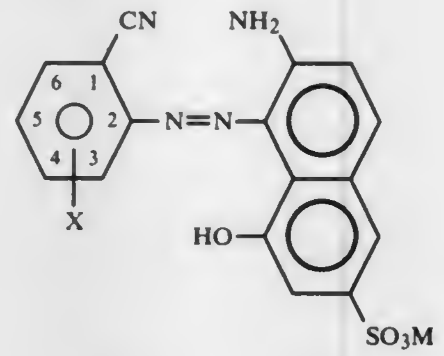
Kurt A. Dellian, 2101 Wakefield Rd., Greensboro, N.C. 27410

Filed Dec. 30, 1983, Ser. No. 567,295

Int. Cl.^{4} C09B *29/01, 29/30, 67/22;* **D06P** *1/39*

U.S. Cl. 534—878 **5 Claims**

1. A dye of the formula



wherein X is hydrogen or halogen and M is a colorless cation.

4,618,675
DERIVATIVES AND REDUCTION PRODUCTS OF D-GLUCOPYRANOSYL-ALPHA(1→5)-D-ARABINONIC ACID; AND PRODUCTION OF SAME

Frieder W. Lichtenthaler, Mühltal, and Roger G. Klimesch, Alsbach-Hahnlein, both of Fed. Rep. of Germany, assignors to Suddeutsche Zucker-Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

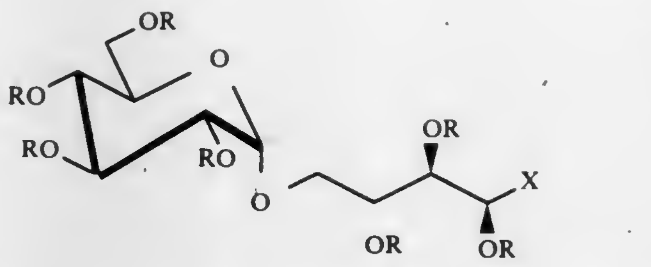
Filed Dec. 16, 1983, Ser. No. 562,135

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1982, 3248404

Int. Cl.^{4} C07H *15/04*

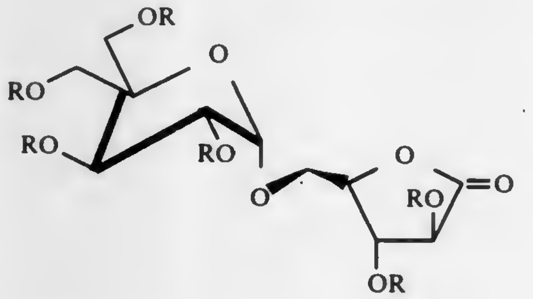
U.S. Cl. 536—17.2 **19 Claims**

1. Derivatives of D-glucopyranosyl-alpha-(1→5)-D-arabinonic acid of the formula:



(I)

wherein X is a member selected from the group consisting of —COOM, —COOR′, —$CONH_2$, and —CH_2OH, and M is an alkali metal and R′ is an alkyl group having 1 to 20 carbon atoms; and wherein R is a hydrogen atom or an acyl group having 1 to 20 carbon atoms;
the compounds of formula (I) including those aliphatic acid group is closed in a lactone ring represented by the formula:



wherein R has the same meaning as set forth above.

4,618,676
PREPARATION OF N,N′,N″-TRIS-(2-HYDROXYPROPYL)-MELAMINE

Klaus Ebel, Ludwigshafen, and Wolfgang Reuther, Heidelberg, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 15, 1985, Ser. No. 787,087

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1984, 3438387

Int. Cl.^{4} C07D *251/70*

U.S. Cl. 544—196 **5 Claims**

1. In a process for the preparation of N,N′,N″-tris-(2-hydroxypropyl)-melamine by reacting melamine with isopropanolamine in the presence of an acidic catalyst and at a temperature of from 120° to 300° C., the improvement which comprises: maintaining the molar ratio of free isopropanolamine to the sum of free and converted melamine at a level of at least 4:1 during the entire reaction time.

4,618,677
SUBSTITUTED PHENYLALKYL-(PIPERAZINYL OR HOMOPIPERAZINYL)ALKYL-THIOLS AND -THIOCARBAMATES USEFUL FOR THE TREATMENT OF IMMUNOLOGICAL, INFLAMMATORY, AND ALLERGIC DISORDERS

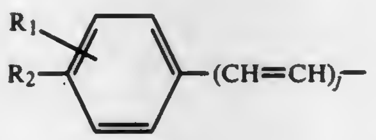
Karl D. Hargrave, Brookfield Center; John P. Devlin, Sharon, and Edward A. Barsumian, Danbury, all of Conn., assignors to Boehringer Ingelheim Limited, Ridgefield, Conn.

Continuation-in-part of Ser. No. 499,188, May 31, 1984, abandoned. This application Nov. 5, 1984, Ser. No. 668,089

Int. Cl.^{4} C07D *241/38;* **A61K** *31/495*

U.S. Cl. 544—400 **27 Claims**

1. A compound of the formula



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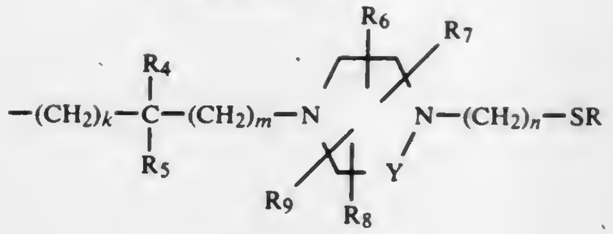
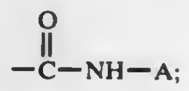


wherein
R is hydrogen or



$$-\overset{\overset{\displaystyle O}{\|}}{C}-NH-A;$$

A is alkyl of 1 to 8 carbon atoms; cycloalkyl of 3 to 7 carbon atoms; phenyl; phenyl mono- or di-substituted independently with alkyl of 1 to 4 carbon atoms, halogen, trihalomethyl, alkoxy or 1 to 3 carbon atoms, carboxylic acyl or 1 to 3 carbon atoms, carboxyl, (alkoxy of 1 to 3 carbon atoms) carbonyl, nitro, cyano or di(alkyl of 1 to 3 carbon atoms)amino; or phenyl tri-substituted with alkoxy of 1 to 3 carbon atoms;
R_1 and R_2 are independently hydrogen, halogen, alkyl of 1 to 4 carbon atoms, trihalocmethyl, nitro, cyano, di(alkyl of 1 to 4 carbon atoms)- amino, (alkoxy of 1 to 4 carbon atoms)carbonyl, alkoxy of 1 to 4 carbon atoms or hydroxyl;
R_4 and R_5 are indenpendently hydrogen; alkyl of 1 to 4 carbon atoms, or phenyl;
R_6, R_7, R_8 and R_9 are independently hydrogen or methyl;
Y is —CH_2—;
j is 0 or 1;
k and m are independently 0, 1, 2, or 3, their sum being no more than 6 and must be 0 when j is 1;
n is 2, 3, or 4, with the proviso that n must be 3 or 4 when R_1 is hydrogen or 2-methyl, R_2, R_4, R_5, R_6, R_7, R_8, R_9 and R are ach hydrogen and j, k, and m are each 0, and Y is —CH_2—;
or a non-toxic, pharmaceutically acceptable acid addition salt thereof.

27. The method of suppressing allergic reactions or inflammation in a warm-blooded animal in need thereof, which comprises topically administering to said animal an effective antiallergic or anti-inflammatory amount of a compound of claim 1.

4,618,678
4-(2,3-DICHLORO-6-FLUOROPHENYL)-1,4,5,6,7,8-HEXAHYDRO-2-METHYL-5-OXO-1,7-NAPHTHYRIDINE-3-CARBOXYLIC ACID 2-(2,3-DICHLOROPHENOXY)ETHYL ESTER

Theodore S. Sulkowski, Wayne; Paul J. Silver, West Chester, and Albert A. Mascitti, Norristown, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 760,220, Jul. 29, 1985. This application Dec. 17, 1985, Ser. No. 809,962

The portion of the term of this patent subsequent to Jun. 14, 2003, has been disclaimed.

Int. Cl.^{4} C07D *471/02*

U.S. Cl. 546—123 **1 Claim**

1. The compound which is 4-(2,3-dichloro-6-fluorophenyl)-1,4,5,6,7,8-hexahydro-2-methyl-5-oxo-1,7-naphthyridine-3-carboxylic acid 2-(2,3-dichlorophenoxy)ethyl ester or a pharmaceutically acceptable salt thereof.

4,618,679

3,5-DICARBOXYLIC ACID ESTERS OF 2,6-BIS(FLUORO-ALKYL)-2,6-BIS(HYDROXY) PIPERIDINES

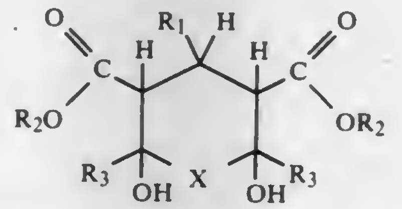
Len F. Lee, St. Charles, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 522,271, Aug. 11, 1983, abandoned. This application Apr. 24, 1984, Ser. No. 602,023

Int. Cl.^{4} C07D *211/60. 309/08;* **A01N** *43/40. 43/16*

U.S. Cl. 546—220 **4 Claims**

1. A compound of the formula



wherein X is NH and wherein R_1 is selected from branched-chain lower alkyl, alkoxyalkyl, alkylthioalkyl, cycloalkyl, and cycloalkanylalkyl radicals, R_2 is a C_{1-4} alkyl radical and R_3 represents a C_{1-4} fluoroalkyl radical.

4,618,680

BENZANILIDE DERIVATIVE

Robert F. Mayol, and Richard E. Gammans, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Continuation of Ser. No. 188,184, Sep. 18, 1980, Pat. No. 4,332,803. This application Nov. 27, 1981, Ser. No. 325,166

The portion of the term of this patent subsequent to Jun. 1, 1999, has been disclaimed.

Int. Cl.^{4} C07D *211/26*

U.S. Cl. 546—234 **1 Claim**

1. 4-Hydroxy-3-methoxy-N-[2-[2-(1-methyl-2-piperidinyl)ethyl]phenyl]benzamide.

4,618,681

ARYL SUBSTITUTED 1H-4,5-DIHYDRO-1,2,3-TRIAZOLES AS ANTICONVULSANTS

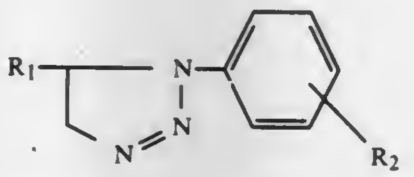
Pankaja K. Kadaba, Lexington, Ky., assignor to The University of Kentucky Research Foundation, Lexington, Ky.

Continuation-in-part of Ser. No. 476,792, Mar. 18, 1983, Pat. No. 4,511,572. This application Jul. 10, 1984, Ser. No. 629,554

Int. Cl.^{4} C07D *401/04*

U.S. Cl. 546—276 **9 Claims**

1. A compound of the following formula:



wherein R_1 is 4-pyridyl, 3-pyridyl, 2-pyridyl, or ortho-chlorophenyl, and R_2 is hydrogen, p-fluoro, m-chloro-p-fluoro, m- or p-trifluoromethyl, p-ethyl, or m-chloro, and when R_1 is orthochlorophenyl, R_2 is trifluoromethyl, and when R_2 is hydrogen, R_1 is 2-pyridyl.

4,618,682

2-AMINO-4,5-DIHYDRO-1H-IMIDAZOLE-1-CARBOXANILIDES

Leonard R. Hecker, Ambler, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

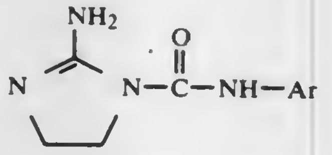
Division of Ser. No. 514,541, Jul. 18, 1983, Pat. No. 4,513,140, which is a division of Ser. No. 316,601, Oct. 30, 1981, abandoned. This application Jan. 14, 1985, Ser. No. 691,105

Int. Cl.^{4} C07D *233/46*

U.S. Cl. 548—315 **19 Claims**

1. A compound selected from the group consisting of

(a) a 2-amino-4,5-dihydro-1H-imidazole-1-carboxanilide of the formula



I

wherein Ar is phenyl substituted with from 0 to 3 substituents independently selected from the group consisting of fluoro, chloro, bromo, methyl, ethyl, methoxy, ethoxy, trifluoromethyl and methylthio, and

(b) a pharmaceutically acceptable salt thereof.

4,618,683

TETRAHYDRO-6,7-DIMETHOXY-1H-BENZ-[E]ISOINODOLINES USEFUL IN THE TREATMENT OF HYPERTENSION AND AS SEDATIVES

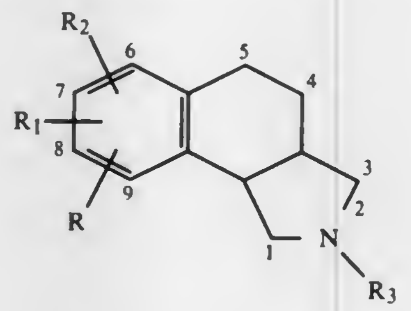
John F. DeBernardis, Lake Villa; Daniel J. Kerkman, Gurnee, and William J. McClellan, Waukegan, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 383,631, Jun. 1, 1982, abandoned. This application Nov. 20, 1984, Ser. No. 673,458

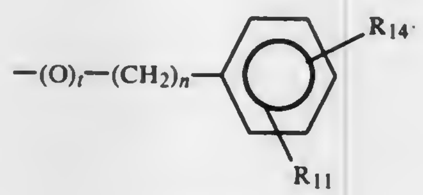
Int. Cl.^{4} C07D *491/02;* **A61K** *31/40*

U.S. Cl. 548—420 **17 Claims**

1. A compound of the formula



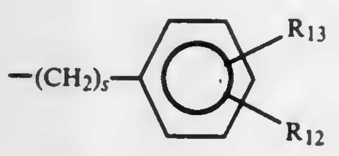
wherein R, R_1 and R_2 are independently selected from hydrogen, loweralkyl of 1 to 4 carbon atoms, hydroxy, loweralkoxy of 1 to 3 carbon atoms, allyloxy, benzyloxy, benzoyloxy, thiomethyl, halo, or



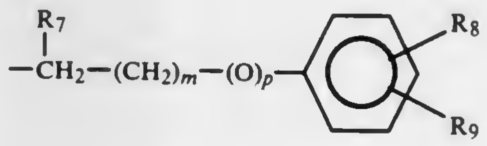
wherein t is 0 or 1, n is 0 to 5, and R_{11} and R_{14} are independently selected from hydrogen, halo, hydroxy, loweralkyl of 1 to 4 carbon atoms, loweralkoxy of 1 to 3 carbon atoms or amino; or

R and R_1, or R_1 and R_2 can be taken together to form a methylenedioxy or ethylenedioxy bridge; with the proviso that at least one of R, R_1 or R_2 must be other than hydrogen and the proviso that two of R, R_1 or R_2 must be other than methoxy in the 7 and 8 positions when the remaining one of R, R_1 or R_2 is hydrogen; and

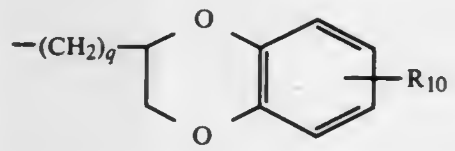
R_3 is hydrogen, loweralkyl of 1 to 4 carbon atoms, halo-substituted loweralkyl of 1 to 4 carbon atoms, amino-substituted loweralkyl of 1 to 4 carbon atoms, amino-substituted arylalkyl, allyl, thioloweralkyl, loweralkanol, or



wherein R_{12} and R_{13} are independently selected from hydrogen, hydroxy, amino, loweralkoxy of 1 to 3 carbon atoms and s is 1 to 3; or



wherein m is 0, 1 or 2, p is 0 or 1, R_7 is hydrogen or loweralkyl of 1 to 4 carbon atoms and R_8 and R_9 are independently selected from hydrogen, hydroxy, methoxy, loweralkyl of 1 to 4 carbon atoms, or halo, or R_8 and R_9 can be taken together to form a methylenedioxy or ethylenedioxy bridge; or 1,4-benzodioxan of the formula



wherein q is 1, 2 or 3, and R_{10} is hydrogen, methoxy, amino, or halo; and the pharmaceutically acceptable salts thereof.

17. A pharmaceutical composition for sedation or treating hypertension comprising a pharmaceutical carrier and sedative or antihypertensive effective amount of the compound of claim 1.

4,618,684

SUBSTITUTED INDOLES

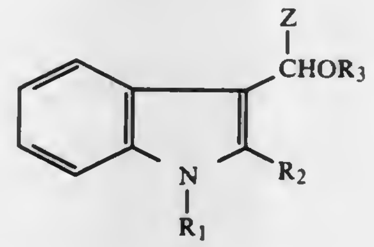
Paul J. Schmidt, Sharonville, and William M. Hung, Cincinnati, both of Ohio, assignors to The Hilton-Davis Chemical Co., Cincinnati, Ohio

Division of Ser. No. 288,495, Jul. 30, 1981, Pat. No. 4,485,242, which is a division of Ser. No. 127,648, Mar. 6, 1980, Pat. No. 4,307,898. This application Jul. 13, 1984, Ser. No. 630,911

Int. Cl.^{4} C07D *209/12*

U.S. Cl. 548—455 **2 Claims**

1. A compound having the formula



wherein:

R_1 is hydrogen or lower-alkyl;

R_2 is hydrogen, lower-alkyl or phenyl;

R_3 is di-lower-alkylamino-lower-alkyl or tri-lower-alkylammonium-lower-alkyl, and

Z is phenyl, tolyl or lower-alkoxyphenyl.

4,618,685

N-HOMOCYSTEINE THIOLACTONYL RETINAMIDE AND USE THEREOF AS AN ANTINEOPLASTIC AGENT

Kilmer S. McCully, 15 Wildwood St., Winchester, Mass. 01890

Filed Dec. 18, 1985, Ser. No. 810,175

Int. Cl.^{4} C07D *333/36;* **A61K** *31/38*

U.S. Cl. 549—63 **1 Claim**

1. N-homocysteine thiolactonyl retinamide.

4,618,686

PROCESS FOR DEHALOGENATION OF ARYL AND ALPHA-ARALIPHATIC HALIDES

Stephen K. Boyer, Far Hills, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 27, 1984, Ser. No. 655,279

Int. Cl.^{4} C07B *61/00;* **C07D** *319/24*

U.S. Cl. 549—360 **15 Claims**

1. A process for the dehalogenation of a compound selected from a (carbocyclic or heterocyclic) aromatic halide and an alpha-(carbocyclic or heterocyclic) aromatic-aliphatic halide wherein said carbocyclic or heterocyclic aromatic group is selected from

phenyl, naphthyl, biphenyl, anthracenyl, phenanthrenyl, quinolinyl, isoquinolinyl, carbazole, purinyl, pyridinyl, pyrimidinyl, pyrazolyl, imidazolyl, furanyl, oxazolyl, indolyl, benzofuranyl, benzoquinolinyl, and dibenzodioxinyl,

each of said carbocyclic or heterocyclic aromatic groups being further unsubstituted or further substituted by a substituent selected from

cyano, nitro, —NHR, —N(R)$_2$, —COOR, —CONHR, —CON(R)$_2$, —OR, —C(O)R, —OOCR, —NHC(O)R, —SO$_2$R, —NHCOOR, —SO$_3$R, —SR, and R,

wherein R is hydrogen, or a phenyl which is unsubstituted or further substituted with a substituent selected from lower alkyl, lower alkoxy, carboxy, sulfoxy, amino, mono-lower alkylamino, di-lower alkylamino, cyano, lower alkanoyloxy, amido, mono-alkylamido, dialkylamido, hydroxy, and halo, or R is an aliphatic selected from lower alkyl or lower alkenyl, each of which is unsubstituted or substituted by lower alkoxy, carboxy, sulfoxy, amino, mono-lower alkylamino, di-lower alkylamino, cyano, lower alkanoyloxy, amido, mono-lower alkylamido, di-lower alkylamido, hydroxy or halo, or R is a phenyl-lower alkyl which is unsubstituted or substituted by lower alkoxy, carboxy, sulfoxy, amino, mono-lower alkylamino, di-lower alkylamino, cyano, lower alkanoyloxy, amido, mono-lower alkylamido, di-lower alkylamido, hydroxy or halo,

said aliphatic portion of said alpha-(carbocyclic or heterocyclic) aromatic-aliphatic halide being lower alkyl which is unsubstituted or further substituted by lower alkoxy, carboxy, sulfoxy, amino, mono-lower alkylamino, di-lower alkylamino, cyano, lower alkanoyloxy, amido, mono-lower alkylamido, di-lower alkylamido, hydroxy or halo, and when said compound is polynuclear, the analogs thereof having at least one but not all of the nuclear rings partially or totally saturated, comprising:

reacting said compound with a stoichiometric excess of a hypophosphite salt in the presence of a catalytic amount of a hydrogenation catalyst in an aqueous, aqueous/organic, or liquid alkanoic acid medium at a temperature between 0° C. and the boiling point of the medium in the presence of a stoichiometric excess of a base.

4,618,687

CYCLOPENTENONE COMPOUND AND PROCESS FOR PRODUCTION THEREOF

Tadashi Hirata, Yokohama; Hiromitsu Saito, Sagamihara, and Makoto Morimoto, Shizuoka, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

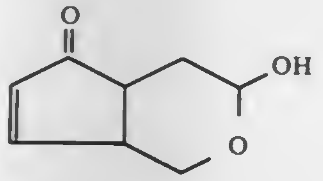
Filed Apr. 18, 1985, Ser. No. 724,549

Claims priority, application Japan, Apr. 23, 1984, 59-81500

Int. Cl.⁴ C07D *311/94*

U.S. Cl. 549—396 **1 Claim**

1. A cyclopentenone compound represented by the following formula:



4,618,688

SILANE COMPOSITIONS

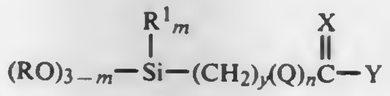
Ralph J. DePasquale; James M. Evans, both of Jacksonville, and Paul W. Kremer, Gainesville, all of Fla., assignors to SCM Corporation, New York, N.Y.

Filed Apr. 12, 1985, Ser. No. 722,324

Int. Cl.⁴ C07F *7/10, 7/18*

U.S. Cl. 556—419 **22 Claims**

1. A silane having the general formula:



$$(RO)_{3-m}-\overset{\overset{\textstyle R^1{}_m}{|}}{Si}-(CH_2)_y(Q)_n\overset{\overset{\textstyle X}{\|}}{C}-Y$$

wherein R and R^1 are independently selected from alkyl groups containing from 1 to 3 carbon atoms; X is selected from (a) chalcogens, (b) NCH_2CH_2Y, where Y is N-saturated or N-unsaturated C_1-C_{20} alkyl or cycloalkyl, (c) $N—C_6H_4$-ortho-Y where Y is S; Q is CH_2S; and, when X is chalcogen, Y is selected from $NH—CH_2CH_2CH_2N(CH_3)_2$, and $NHNH_2$; m is zero to 3, y is 1 to 3, and n is zero to 1.

4,618,689

NOVEL AMINOFUNCTIONAL SILICONE COMPOSITIONS

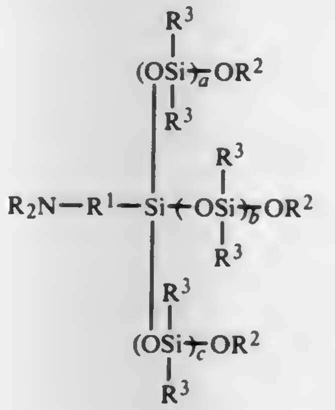
Frank J. Traver, Troy, and Edward T. Simoneau, Greenwich, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Jul. 18, 1985, Ser. No. 756,481

Int. Cl.⁴ C07F *7/10*

U.S. Cl. 556—425 **19 Claims**

1. A composition having the general formula



wherein each R is independently selected from hydrogen, substituted and unsubstituted organic radicals, and radicals of the formula $—R^1NR_2$, where R is as previously defined; R^1 is a divalent organic radical; each R^2 is independently selected from substituted and unsubstituted alkyl radicals having at least 14 carbon atoms; each R^3 is an independently selected organic radical having from 1 to 13 carbon atoms; and a, b and c are, independently, 0 or a positive integer.

4,618,690

PROCESS FOR THE PREPARATION OF (1S, 4R)-4-HYDROXY-2-CYCLOPENTENYL ESTERS

Manfred Schneider, Wuppertal, and Kürt Laümen, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

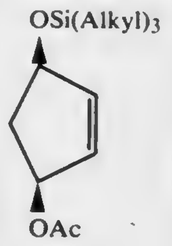
Filed May 15, 1985, Ser. No. 734,421

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1984, 3420510; Oct. 30, 1984, 3439598

Int. Cl.⁴ C07F *7/08, 7/18, 7/04*

U.S. Cl. 556—441 **4 Claims**

1. A 4-trialkylsilyloxy-2-cyclopentenyl ester of the formula



in which the alkyl radical contains 1–5 l **carbon atoms and is optionally phenyl substituted, and Ac is an aliphatic acyl radical having** 1 to 18 carbon atoms.

4,618,691

CYCLOTRIPHOSPHAZATRIENE-DERIVATIVES

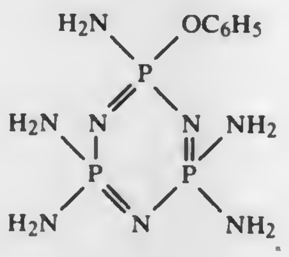
Ramiro Medina, Sheffield, and Jack M. Sullivan, Florence, both of Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 625,424, Jun. 28, 1984, now Defensive Publication No. T105,605. This application Dec. 31, 1984, Ser. No. 688,101

Int. Cl.⁴ C07F *9/22;* **C12P** *3/00*

U.S. Cl. 558—80 **4 Claims**

1. A composition of matter eminently suitable for substantially sustaining the control of enzymatic decomposition of urea in soil systems, said enzymatic decomposition of said urea being to ammonia and carbonic acid and being due to the action of the enzyme urease thereupon, said new composition of matter having the formula:



4,618,692

4-CARBAMOYLOXY-OXAZAPHOSPHORINS

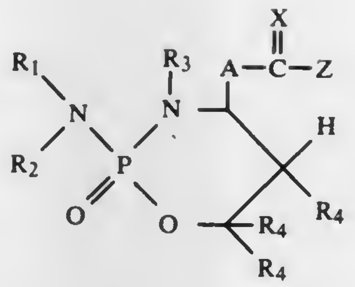
Gerhard Scheffler; Ulf Niemeyer; Norbert Brock, all of Bielefeld, and Jörg Pohl, Halle, all of Fed. Rep. of Germany, assignors to Asta-Werke Aktiengesellschaft, Bielefeld, Fed. Rep. of Germany

Continuation of Ser. No. 299,006, Sep. 3, 1981, abandoned. This application Feb. 13, 1984, Ser. No. 579,570

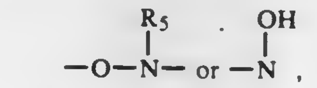
Int. Cl.⁴ C07F *9/24, 9/65*

U.S. Cl. 558—81 **10 Claims**

1. A 4-ureido-oxazaphosphorin of the general formula I

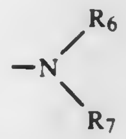


in which A is the group

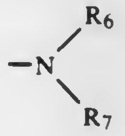


$$-O-\overset{\overset{\textstyle R_5}{|}}{N}-\text{ or }-\overset{\overset{\textstyle OH}{|}}{N}\ ,$$

Z is the group



or the group $—OR_7$; X is oxygen or sulphur; R_1 is 2-chloroethyl or 2-methanesulphonyloxyethyl; R_2 is hydrogen, methyl, ethyl or 2-chloroethyl; R_3 is hydrogen, methyl, ethyl, 2-chloroethyl or 2-methanesulphonyloxyethyl; R_4 is hydrogen or methyl; R_5 is hydrogen or C_{1-4}-alkyl; R_6 is hydrogen or C_{1-4}-alkyl; R_7 when in the secondary amino group is hydrogen, hydroxy, the carbamoyl group, C_{1-4}-alkyl, allyl, cyclohexyl, phenyl (optionally substituted by one or two of halogen, C_{1-4}-alkyl, C_{1-4}-alkoxy, trifluoromethyl, nitro or sulfamoyl), benzyl, naphthyl, fluorenyl, 9-oxofluorenyl, benzoyl, C_{1-4}-alkyl substituted by 1 to 3 substituents which may be the same or different and are selected from the group consisting of hydroxy, halogen, —COOH, $—COOR_8$, phenyl, benzyloxycarbonyl, and $—PO(CH_3)_2$, in which R_8 is methyl or ethyl; the total group



representing the morpholino ring or a saturated heterocyclic ring having from 4 to 6 carbon atoms and a nitrogen atom; R_7 when in the ether group is a C_{1-4}-alkyl possibly substituted by phenyl; and the pharmaceutically useful salts thereof.

4,618,693

CYCLIC ORGANIC PHOSPHORUS COMPOUND AND PROCESS FOR PRODUCING SAME

Toranosuke Saito, Ibara; Masakatu Kitani, Kobe, and Hiroyuki Ohishi, Ibara, all of Japan, assignors to Sanko Kaihatsu Kagaku Kenkyusho, Osaka, Japan

Filed Dec. 10, 1984, Ser. No. 679,720

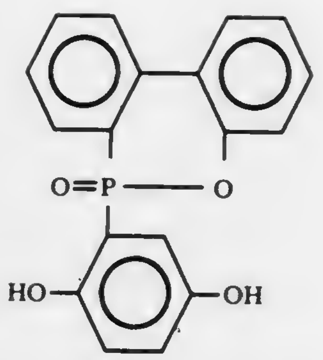
Claims priority, application Japan, Dec. 9, 1983, 58-231503

Int. Cl.⁴ C07F *9/32*

U.S. Cl. 558—82 **2 Claims**

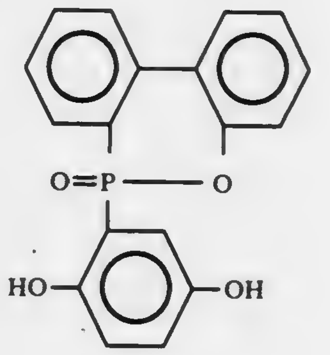
1. A cyclic organic phosphorus compound expressed by the formula (I)

(I)



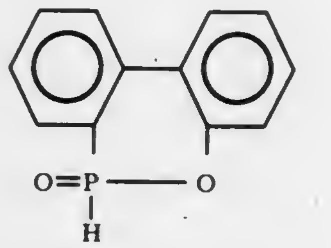
2. A process for producing a cyclic organic phosphorus compound expressed by the formula (I)

(I)



which process comprises reacting a compound expressed by the formula (II)

(II)



with 1,4-benzoquinone in the absence of a catalyst and wherein said compound expressed by the formula (II) is reacted with 1,4-benzoquinone while a state is kept wherein the former compound is always present in an inert solvent in excess of an equivalent amount to that of the latter compound.

4,618,694

PERYLENE COMPOUNDS

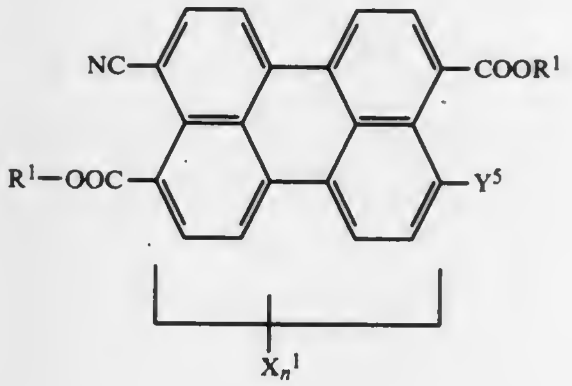
Rüdiger Iden, Speyer, and Günther Seybold, Neuhofen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Jan. 11, 1985, Ser. No. 690,524

Int. Cl.⁴ C07C *121/64*

U.S. Cl. 558—416 **6 Claims**

1. A perylene compound of the formula



where

Y^5 is halogen or cyano,
R^1 is hydrogen, straight-chain or branched C_1–C_{18}-alkyl or C_5–C_{18}-cycloalkyl-substituted C_1- or C_2-alkyl or is C_7–C_{18}-cycloalkyl, and the cycloalkyl radicals can contain from 1 to 4 rings,
X^1 is chlorine or bromine and
n is 0, 1 or 2.

4,618,695
METHOD OF PREPARING METHYL ESTER AND ITS HYDROCHLORIDE

Yoichi Ozawa, Yokohama; Shinichi Kishimoto, Yokkaichi; Emiko Shinohara, Saga; Tadashi Takemoto, Kawasaki, and Chikahiko Eguchi, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed May 17, 1984, Ser. No. 611,548

Claims priority, application Japan, Jun. 2, 1983, 58-98716; Jun. 3, 1983, 58-99038

Int. Cl.⁴ C07C *101/02*

U.S. Cl. 560—41 **4 Claims**

1. A method of preparing an α-L-aspartyl-L-phenylalanine β-lower alkyl ester comprising reacting an N-carboxy anhydride of L-aspartic acid β-lower alkyl ester with L-phenylalanine in an aqueous solvent at a pH of from about 9.5 to about 11, followed by decarboxylation of the resultant N-carboxy-α-L-aspartyl-L-phenylalanine β-lower alkyl ester by acidifying said resultant ester with a mineral acid, wherein said lower alkyl ester is a methyl ester, ethyl ester or propyl ester.

4,618,696
9-OXO-15α-HYDROXY-16-PHENOXY AND 16-SUBSTITUTED PHENOXY 17,18,19,20-TETRANORPROSTA-4,5,13,(E)-TRIENOATES

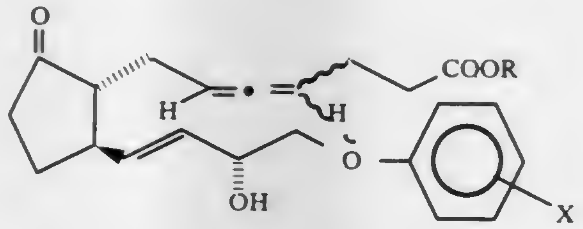
Gary F. Cooper, Menlo Park; John A. Edwards, Los Altos, both of Calif., and Albert R. Van Horn, Boulder, Colo., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jul. 31, 1984, Ser. No. 636,058

Int. Cl.⁴ C07C *177/00*

U.S. Cl. 560—53 **8 Claims**

1. A compound of the formula



or a racemic mixture thereof wherein R is hydrogen, lower alkyl or a pharmaceutically acceptable, non-toxic salt of a compound wherein R is hydrogen; X is hydrogen, halo, trifluoromethyl, lower alkyl or lower alkoxy; and the wavy lines represent the α or β configuration with the proviso that when one wavy line is α the other is β.

4,618,697
PROCESS FOR PREPARING ALPHA-ARYLALKANOIC ACIDS

Graziano Castaldi, Briona, and Claudio Giordano, Vicenza, both of Italy, assignors to Zambon SpA, Vicenza, Italy

Continuation-in-part of Ser. No. 520,131, Aug. 3, 1983, Pat. No. 4,535,166. This application Feb. 3, 1984, Ser. No. 576,711

Claims priority, application Italy, Mar. 7, 1983, 19930 A/83

The portion of the term of this patent subsequent to Aug. 13, 2002, has been disclaimed.

Int. Cl.⁴ C07C *69/76*

U.S. Cl. 560—56 **8 Claims**

1. A process for the preparation of alpha-arylalkanoic acids which comprises the rearrangement of an alpha-chloro- (or bromo)-alkyl-arylketal in neutral or slightly alkaline conditions in the presence of a dipolar aprotic diluent selected from dimethylformamide, dimethylsulphoxide, hexamethylfosforotriamide, N-methyl-pyrrolidone, dimethylacetamide, N-methyl-morpholine, O-alkylated polyglicols, sulpholane and mixtures thereof, and of a protic substance having a high dielectric constant selected from water, urea, thiourea, formamide, acetamide, N-methyl-formamide, N-methyl-acetamide, N,N'-dimethyl-urea and mixtures thereof, and the subsequent hydrolysis of the thus obtained ester.

4,618,698
PROCESS FOR THE PREPARATION OF A MIXTURE OF AN OPTIONALLY SUBSTITUTED CINNAMIC ACID ESTER AND AN OPTIONALLY SUBSTITUTED β-ALKOXY-β-PHENYL-PROPIONIC ACID ESTER, AND A PROCESS FOR THE PREPARATION OF OPTIONALLY SUBSTITUTED CINNAMIC ACID

Bernhard Beitzke, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 11, 1985, Ser. No. 743,533

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1984, 3422412

Int. Cl.⁴ C07C *69/76*

U.S. Cl. 560—060 **11 Claims**

1. A process for the preparation of a mixture of an optionally substituted cinnamic acid ester and an optionally substituted β-alkoxy-β-phenyl-propionic acid ester which comprises contacting an optionally substituted benzaldehyde with a molar excess of an optionally substituted acetic acid ester and with an alcoholate in the presence of an alcohol.

4,618,699
PHTHALIC ACID LOW MOLECULAR WEIGHT POLYESTERS AND PROCESS FOR PREPARING THE SAME

Peter Fialla, Wiener Neudorf, Austria, assignor to Isovolta Oesterreichische Isolierstoffwerke AG, Wiener Neudorf, Austria

Filed Jun. 1, 1984, Ser. No. 616,406

Claims priority, application Austria, Jun. 3, 1983, 2031/83

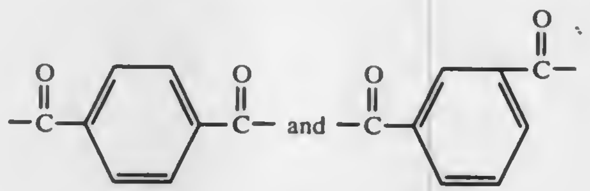
Int. Cl.⁴ C07C *67/14, 69/80, 69/82*

U.S. Cl. 560—86 **14 Claims**

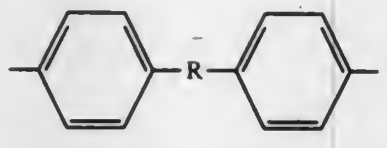
1. A low molecular weight polyester consisting essentially of chain members of the formula

$$+O-X-O-Y+$$

wherein X is at least one member of the group consisting of



Y is



and R is selected from the group consisting of a bifunctional aliphatic hydrocarbon optionally containing at least one cycloaliphatic ring and a bifunctional hydrocarbon containing at least one aromatic ring, said polyester having an inherent viscosity of 0.08 to 0.35 dl/g measured at 30° C. on a 100 ml solution of 0.5 g of polyester in a solvent of 60% by weight of phenol and 40% by weight of 1,1,2,2-tetrachloroethane.

4,618,700
PROCESS FOR THE PREPARATION OF A HYDROXYPHENYLCARBOXYLATE

Erich Gubler, Birsfelden, and Max Siegrist, Lausen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 12, 1984, Ser. No. 680,687

Claims priority, application Switzerland, Dec. 22, 1983, 6858/83

Int. Cl.⁴ C07C *69/88*

U.S. Cl. 560—67 **8 Claims**

1. A process for the preparation of pentaerythrityl tetrakis-[3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate] by transesterifying a lower alkyl 3-(3,5-di-tert-butyl-4-hydroxyphenyl)-propionate with pentaerythritol, in the presence of a catalytic amount of a basic catalyst, which process comprises carrying out the transesterification with a 15 to 50% excess of lower alkyl 3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate over the stoichiometric amount of 4 moles per 1 mole of pentaerythritol.

4,618,701
PROCESS FOR PREPARING 6-ACETOXY-2-NAPHTHOIC-ACID AND PURE 6-HYDROXY-2-NAPHTHOIC ACID

Rudolf Neeb, Offenbach am Main; Wolfgang Ironich, Eppstein/Taunus, and Heinrich Volk, Bad Vilbel, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 26, 1985, Ser. No. 705,626

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1984, 3407100

Int. Cl.⁴ C07C *67/08, 69/145*

U.S. Cl. 560—139 **24 Claims**

1. A process for preparing 6-acetoxy-2-naphthoic acid which comprises reacting an alkali metal salt of 6-hydroxy-2-naphthoic acid in aqueous alkaline solution with acetic anhydride at a pH of at least 10 and at a temperature below 50° C., with the use of 1 to 3.5 moles of acetic anhydride per mole of 6-hydroxy-2-naphthoic acid.

4,618,702
MANUFACTURE OF BUTANEDICARBOXYLIC ACID ESTERS

Michael B. D'Amore, and Roger R. Ellefson, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 24, 1985, Ser. No. 694,679

Int. Cl.⁴ C07C *67/38*

U.S. Cl. 560—204 **7 Claims**

1. In a process for the carboalkoxylation of butadiene by reacting in a first step butadiene, carbon monoxide and at least one lower alkyl alcohol which process comprises introducing at least about 0.15 mole of a cobalt-containing catalyst based upon cobalt and at least 0.5 mole of nitrogen base per mole of butadiene along with carbon monoxide, alcohol and butadiene into a reactor and thereafter reacting the butadiene at elevated temperature and pressure to form an alkylpentenoate, followed by a second step comprising the carboalkoxylation of the alkylpentenoate to a dialkyladipate at an increased temperature relative to the first step and wherein essentially no components are removed from the reaction product between the first and second steps.

4,618,703
PRODUCTION OF THE ACRYLATES AND METHACRYLATES OF OXYALKYLATED ALLYL ALCOHOL

Chandrakant B. Thanawalla, Exton, and David C. Dehm, Thornton, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 13, 1985, Ser. No. 775,898

Int. Cl.⁴ C07C *67/26*

U.S. Cl. 560—209 **14 Claims**

1. A radiation-crosslinkable diluent for radiation-hardenable compositions comprising the acrylates or halo-substituted derivatives thereof of the reaction product of allyl alcohol with from about 1 to about 20 moles of an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide, butylene oxide and mixtures thereof.

4,618,704
ACYLOXY-2-BUTENES AND THEIR PREPARATION

Hans-Martin Weitz, Bad Durkheim, and Rolf Fischer, Heidelberg, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

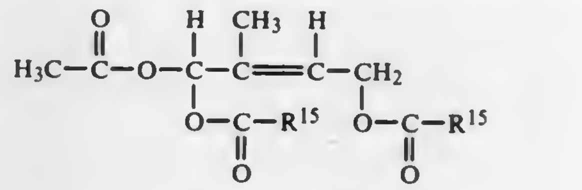
Filed Apr. 3, 1979, Ser. No. 26,737

Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819592

Int. Cl.⁴ C07C *67/055, 69/10, 69/18, 69/30*

U.S. Cl. 560—262 **3 Claims**

1. 1,1,4-Triacyloxy-2-methyl-2-butenes of the formula



$$H_3C-\overset{\overset{\displaystyle O}{\|}}{C}-O-\underset{\underset{\displaystyle O-\underset{\underset{\displaystyle O}{\|}}{C}-R^{15}}{|}}{\overset{\overset{\displaystyle H}{|}}{C}}-\overset{\overset{\displaystyle CH_3}{|}}{C}=\overset{\overset{\displaystyle H}{|}}{C}-\underset{\underset{\displaystyle O-\underset{\underset{\displaystyle O}{\|}}{C}-R^{15}}{|}}{CH_2}$$

III

where R^{15} is hydrogen, methyl or ethyl.

4,618,705
PROCESS FOR CONVERSION OF ACID ANHYDRIDES TO ALKYLIDENE DIESTERS

Nabil Rizkalla, River Vale, N.J., assignor to The Halcon SD Group, Inc., Montvale, N.J.

Continuation of Ser. No. 171,064, Jul. 22, 1980, abandoned. This application Jan. 22, 1982, Ser. No. 341,977

Int. Cl.⁴ C07C *67/00, 69/003, 69/007, 69/16*

U.S. Cl. 560—263 **5 Claims**

1. A process for the preparation of an alkylidene diester from a carboxylic acid anhydride, which comprises reacting said carboxylic acid anhydride with hydrogen in the presence of a cobalt carbonyl, said reacting being carried out at a temperature below 100° C., whereby decomposition of said cobalt carbonyl is minimized and said alkylidene diester is produced with minimum formation of aldehydes and like by-products, and recovering the thus-produced alkylidene diester from the resulting substantially aldehyde-free reaction mixture.

4,618,706
PROCESS FOR THE PREPARATION OF AROMATIC POLYISOCYANATES CONTAINING UREA AND/OR BIURET GROUPS

Hans-Joachim Scholl, and Hans Hettel, both of Cologne, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 2, 1982, Ser. No. 364,945

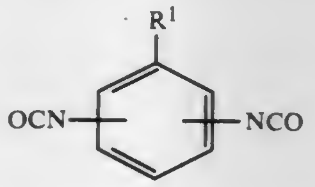
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1981, 3114638

Int. Cl.⁴ C07C *127/24*

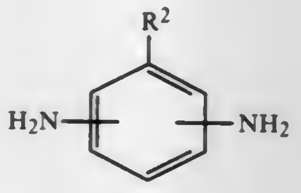
U.S. Cl. 560—335 **4 Claims**

1. A process for the preparation of aromatic polyisocyanates containing urea and/or biuret groups, optionally in the form of a mixture of homologues and/or isomers, which comprises reacting diisocyanates which are free from urea and biuret groups selected from the group consisting of aromatic diisocy-

anates with diamines having primary or secondary amino groups and which are free from urea and biuret groups at about 20° to 180° C., and at an equivalent ratio of isocyanate groups to amino groups in the range of about 5:1 to 100:1 without precipitating any insoluble urea and/or biuret constituents, wherein at least about 25 mol % of the diisocyanates put into the process correspond to the formula:



and/or at least about 25 mol % of the diamines put into the process correspond to the formula:



wherein

R^1 represents a saturated aliphatic hydrocarbon having 6 to 18 carbon atoms and

R^2 represents a saturated aliphatic hydrocarbon having 10 to 13 carbon atoms.

4,618,707

PREPARATION OF MENTHANE DIISOCYANATE BY ADDITION OF ISOCYANIC ACID TO TERPINYL MONOISOCYANATES

Robert A. Grimm, Columbus; Jai H. Kyung, Dublin; Phyllis L. Brusky; Joseph G. Holehouse, both of Columbus, and Biau-hung Chang, Worthington, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 25, 1985, Ser. No. 801,443

Int. Cl.⁴ C07C *71/00*

U.S. Cl. 560—337 **7 Claims**

1. The process for preparing menthane diisocyanate consisting essentially of reacting a terpinyl monoisocyanate with isocyanic acid at a pressure in the range of from about atmospheric to about 2000 psi in a medium which is selected from the group consisting of a nitrohydrocarbon, an organic carbonate, and a mixture of an organic carbonate with toluene, benzene, xylene or chlorobenzene in the presence of a catalyst which is at least one member selected from the group consisting of a perfluorinated sulfonic acid, boron trifluoride, boron trifluoride etherate, toluene sulfonic acid, benzene sulfonic acid, camphor sulfonic acid, naphthalene sulfonic acid, methane sulfonic acid, aluminum chloride, and iodine.

4,618,708

AMINO ACID DERIVATIVE

Bernard Roques, 12 Rue E. Delacroix, 94410 St. Maurice; Jean-Charles Schwartz, 9, Villa Seurat, 75014 Paris, and Jeanne-Marie Lecomte, 30 Rue des Francs-Bourgeois, 75003 Paris, all of France

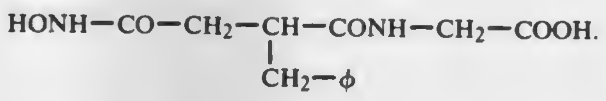
Continuation of Ser. No. 449,687, Dec. 14, 1982, abandoned. This application Mar. 25, 1985, Ser. No. 715,764

Claims priority, application France, Dec. 16, 1981, 81 23488

Int. Cl.⁴ C07C *101/24, 103/52*

U.S. Cl. 562—448 **1 Claim**

1.



$$HONH-CO-CH_2-\underset{\substack{|\\ CH_2-\phi}}{CH}-CONH-CH_2-COOH.$$

4,618,709

WASTE WATER TREATMENT IN THE PRODUCTION OF METHACRYLIC ACID

Masao Sada, Nara; Michio Kato, Ehime; Masami Ayano, Ehime; Tadashi Abe, Ehime, and Masanori Moriwaki, Ehime, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jan. 30, 1981, Ser. No. 229,844

Claims priority, application Japan, Feb. 1, 1980, 55-11622

Int. Cl.⁴ C07C *51/25, 51/48, 57/05, 57/055*

U.S. Cl. 562—532 **9 Claims**

1. A process for separation of methacrylic acid from a methacrylic acid-containing gaseous reaction mixture, comprising the steps of:

(a) cooling a gaseous reaction mixture, which has been obtained by subjecting methacrolein or a compound which can produce methacrolein under reaction conditions and molecular oxygen to a gas phase oxidation reaction in the presence of an oxidation catalyst in the presence of an inert non-condensable dilution gas or a mixture thereof with water vapor in a concentration of less than 20 mol %, to separate said gaseous reaction mixture into condensable components including methacrylic acid, acetic acid and water as a condensed liquor and non-condensable components including methacrolein as a non-condensed gaseous mixture;

(b) separating contaminating methacrolein from the condensed liquor to form a condensed liquor and an exhaust gas;

(c) recycling exhaust gas from step (b) for use as said inert non-condensable dilution gas;

(d) contacting the condensed liquor with an organic solvent to extract methacrylic acid, followed by separation into an organic solvent solution including methacrylic acid and a waste water solution;

(e) evaporating the waste water solution; and

(f) subjecting the waste water vapor to catalytic combustion with molecular oxygen.

4,618,710

PREPARATION OF OPTICALLY ACTIVE KETONES

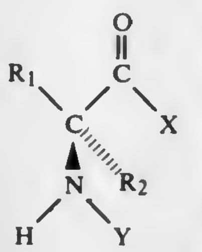
Henry Rapoport, Berkeley, and Thomas F. Buckley, III, Albany, both of Calif., assignors to The Regents of the University of Calif., Berkeley, Calif.

Division of Ser. No. 262,972, May 12, 1981, abandoned. This application Sep. 13, 1982, Ser. No. 417,771

Int. Cl.⁴ C07C *125/065, 125/067, 143/74, 143/78*

U.S. Cl. 564—1 **8 Claims**

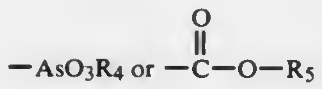
1. A method of preparing an alpha-amino alkyl organic ketone having an asymmetric alpha carbon atom, comprising reacting a compound having an asymmetric alpha carbon atom, said compound having the formula:



wherein X is OH, Cl, Br, or $OCOR_3$;

Y is a radical selected to stabilize the alpha carbon atom of the alpha-amino acid derivative sufficiently to prevent significant change in symmetry thereof during replacement of X with an alkyl, aryl, alkenyl, alkynyl, alkarly, aralkyl, alkenaryl or alkynaryl radical, or such radical having one or more chemical constituents thereon, Y being selected from

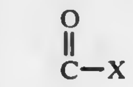
$-SO_2R_4$; $-SeO_2R_4$; $-TeO_2R_4$; $-PO_3R_4$;



$$-AsO_3R_4 \text{ or } -\overset{\overset{\displaystyle O}{\|}}{C}-O-R_5$$

wherein R_4 is hydrogen, an alkyl, aryl, alkenyl, alkynyl, alkaryl, aralkyl, alkenaryl, alkynaryl radical, or such radical having one or more non-protic chemical constituents thereon, or is one or more non-protic chemical constituent; and R_5 is an alkyl, aryl, alkenyl, alkynyl, alkaryl, aralkyl, alkenaryl or alkynaryl radical, or such radical having one or more non-protic chemical constituent;

R_1 and R_2 are different from one another and are each hydrogen or an alkyl, aryl, alkenyl, alkynyl, alkaryl, aralkyl, alkenaryl, or alkynaryl radical, or such radical having one or more non-protic chemical constituents thereon; and R_3 is hydrogen, or an alkyl, aryl, alkenyl, alkynyl, alkaryl, aralkyl, alkenaryl, or alkynaryl radical or such a radical having one or more chemical constituents thereon; with a reagent capable of converting the



$$\overset{\overset{\displaystyle O}{\|}}{C}-X$$

portion of said compound to said ketone, either said reacting being via a Friedel-Crafts reaction and said reagent being aromatic or said reacting being via an organometallic reaction and said reagent being an organometallic reagent, said ketone substantially retaining the stereospecificity of said compound at said alpha carbon atom.

4,618,711

ANTI-ARRHYTHMIC AGENTS

George C. Buzby, Jr., Blue Bell, Pa., assignor to American Home Products Corporation, New York, N.Y.

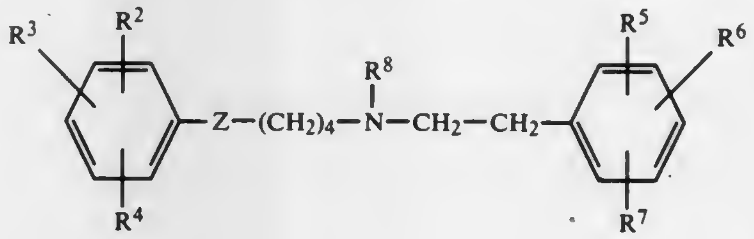
Filed Mar. 29, 1985, Ser. No. 717,341

The portion of the term of this patent subsequent to Sep. 3, 2002, has been disclaimed.

Int. Cl.⁴ C07C *143/80, 143/78, 143/822*

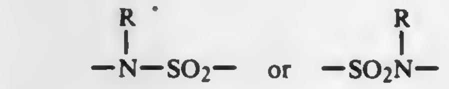
U.S. Cl. 564—86 **2 Claims**

1. A compound of the formula:



in which

Z is



$$-\overset{\overset{\displaystyle R}{|}}{N}-SO_2- \quad \text{or} \quad -SO_2\overset{\overset{\displaystyle R}{|}}{N}-$$

where R is hydrogen, alkyl of 1-6 carbon atoms, polyfluorinated alkyl of 1 to 6 carbon atoms, —CN, cyanoalkyl in which the alkyl moiety contains 1 to 3 carbon atoms, cycloalkyl of 3 to 6 carbon atoms or cycloalkylalkyl of 4 to 8 carbon atoms;

R^2, R^3, R^4, R^5, R^6 and R^7, independently, are hydrogen, alkoxy of 1-3 carbon atoms, trifluoromethyl, —Cl, —Br or —F;

R^8 is hydrogen or alkyl of 1 to 6 carbon atoms;

or a pharmaceutically acceptable salt thereof.

4,618,712

N-CYANOCARBOXYLIC ACID AMIDES, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Friedrich Stockinger, Hölstein; Friedrich Lohse, Oberwil, and Roland Moser, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

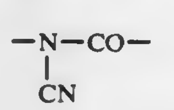
Filed Feb. 15, 1983, Ser. No. 466,457

Claims priority, application Switzerland, Feb. 23, 1982, 1107/82

Int. Cl.⁴ C07L *125/08;* **C08G** *59/44*

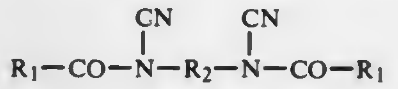
U.S. Cl. 564—103 **3 Claims**

1. An M-cyanocarboxylic acid amide derivative which contains two or three



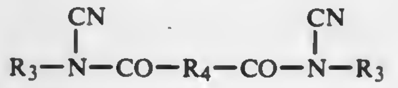
$$-\underset{\underset{\displaystyle CN}{|}}{N}-CO-$$

groupings in the molecule, of one of the formulae I to III



$$R_1-CO-\overset{\overset{\displaystyle CN}{|}}{N}-R_2-\overset{\overset{\displaystyle CN}{|}}{N}-CO-R_1$$

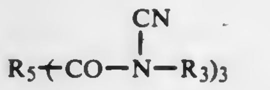
(I)



$$R_3-\overset{\overset{\displaystyle CN}{|}}{N}-CO-R_4-CO-\overset{\overset{\displaystyle CN}{|}}{N}-R_3$$

(II)

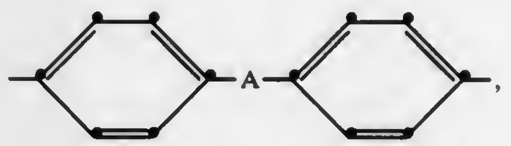
and



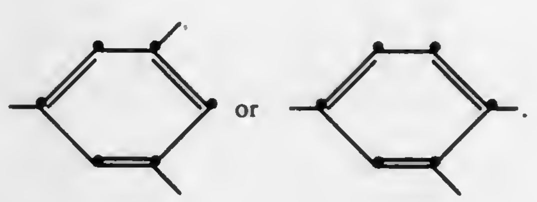
$$R_5\left(CO-\overset{\overset{\displaystyle CN}{|}}{N}-R_3\right)_3$$

(III)

in which R_1 is unsubstituted or substituted alkyl having 1 to 8 carbon atoms, cycloalkyl having 5 to 8 carbon atoms or unsubstituted or substituted aryl having 6 or 10 ring carbon atoms, R_2 is alkylene having 2 to 12 carbon atoms, which may be interrupted by O or S atoms, but-2-enylene, but-2-ynylene, phenylenedimethylene or a radical of the formula



in which —A— is $-CH_2-$, $-SO_2-$ or —O—, R_3 is unsubstituted or substituted alkyl having 1 to 8 carbon atoms, unsubstituted or substituted phenyl or aralkyl having not more than 12 carbon atoms, cycloalkyl having 5 to 8 carbon atoms, allyl or methallyl, R_4 is a direct bond, alkylene having 1 to 12 carbon atoms which may be interrupted by O or S atoms, 1,3- or 1,4-cyclohexylene or 1,3- or 1,4-phenylene and R_5 is a radical of the formula



4,618,713

PREPARATION OF 2′-METHYL-2-HALOACETANILIDES

John P. Chupp, Kirkwood, and Michael J. Miller, Manchester, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 7, 1983, Ser. No. 530,154

Int. Cl.^{4} C07C *102/00, 103/34, 149/42*

U.S. Cl. 564—214 **13 Claims**

1. A process for preparing a 2′-methyl-2-haloacetanilide which comprises reacting a 2′-(halomethyl)-2-haloacetanilide with hydrogen in the presence of an acid scavenger and hydrogenation catalyst, whereby said 2′-(halomethyl)-2-haloacetanilide is selectively hydrogenated to 2′-methyl-2-haloacetanilide.

2. A process for preparing a 2′-methyl-2-haloacetanilide comprising:

(a) reacting an ortho-(halomethyl) aniline or its anilinium salt with a haloacetyl halide in the presence of an inert solvent to produce a 2′-(halomethyl)-2-haloacetanilide; and

(b) thereafter reacting the 2′-(halomethyl)-2-haloacetanilide with hydrogen in the presence of an acid scavenger and hydrogenation catalyst, whereby said 2′-(halomethyl)-2-haloacetanilide is selectively hydrogenated to a 2′-methyl-2-haloacetanilide.

4,618,714

PROCESS FOR PREPARATION OF 3,3′- OR 3,4′-DIAMINOBENZOPHENONES

Keizaburo Yamaguchi, Kanagawa; Kenichi Sugimoto, Tokyo; Yoshimitsu Tanabe, Kanagawa; Saburo Kawashima, Kanagawa, and Akihiro Yamaguchi, Kanagawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed May 2, 1983, Ser. No. 490,546

Claims priority, application Japan, Mar. 23, 1983, 58-47097

Int. Cl.^{4} C07C *97/10*

U.S. Cl. 564—329 **5 Claims**

1. A process for the preparation of 3,3′- or 3,4′-diaminobenzophenone, which comprises nitrating a chloronitrobenzophenone mixture obtained by the Friedel-Crafts reaction between 3- or 4-nitrobenzoyl chloride and chlorobenzene and then catalytically reducing and dechlorinating the resulting chlorodinitrobenzophenone mixture in the presence of a reduction catalyst and a dehydrochlorinating agent.

4,618,715

PRODUCTION OF OXYGEN AND NITROGEN SUBSTITUTED BENZENES

Stephen C. Eyley, and Stephen C. W. Coltman, both of Loughborough, England, assignors to Fisons Limited, Ipswitch, England

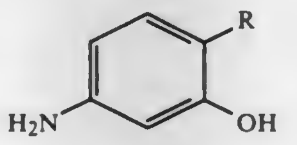
Filed Nov. 2, 1981, Ser. No. 317,138

Claims priority, application United Kingdom, Nov. 15, 1980, 8036737

Int. Cl.^{4} C07C *85/20, 85/153*

U.S. Cl. 564—414 **10 Claims**

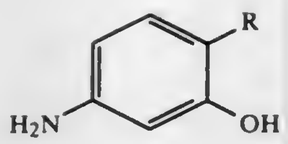
1. A process for the production of 3-amino-4,6-diacetyl phenol, or a derivative thereof, which comprises reacting a compound of formula III,



III

or a protected derivative thereof, in which R is acetyl or hydrogen, with an excess of acetyl chloride or acetyl bromide and aluminium chloride or aluminium bromide at a temperature of from 30° to 50° C. in an halogenated hydrocarbon solvent.

10. A process for the production of 3-amino-4,6-diacetyl phenol, or a derivative thereof, which comprises reacting a compound of formula III,



III

or a protected derivative thereof,
in which R is acetyl or hydrogen, with at least five equivalents of acetyl chloride or acetyl bromide and with at least five equivalents or aluminium chloride or aluminium bromide at a temperature of from 30° to 50° C. in an halogenated hydrocarbon solvent.

4,618,716

PREPARATION OF POLYETHYLENE POLYAMINES FROM 2-AMINOETHYL SULFURIC ACID

Michael E. Ford, Center Valley, and Thomas A. Johnson, Orefield, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 8, 1985, Ser. No. 796,472

Int. Cl.^{4} C07C *85/02*

U.S. Cl. 564—469 **8 Claims**

1. In a process for producing polyethylene polyamines utilizing 2-aminoethyl sulfuric acid as a reactant, the improvement for enhancing the production of polyethylene polyamines with high selectivity to linear polyethylene polyamines which comprises:

reacting ammonia or an ethyleneamine with 2-aminoethyl sulfuric acid under conditions sufficient to form a higher polyethylene polyamine salt,

neutralizing the higher polyethylene polyamine salt under conditions for forming the free amine; and

recovering said free higher polyethylene polyamine.

4,618,717

CATALYTIC PROCESS FOR THE PRODUCTION OF PRIMARY AMINES FROM OXYETHYLENE GLYCOL MONOALKYL ETHERS

Terry L. Renken, and John F. Knifton, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 17, 1984, Ser. No. 651,372

Int. Cl.^{4} C07C *89/02*

U.S. Cl. 564—475 **8 Claims**

1. A process for the conversion of an oxyalkylene glycol monoalkyl ether to the corresponding primary amine, said monoalkyl ether having the formula:

$$[R(OCH_2CH_2)OH]\ R(OCH_2CH_2)_xOH \qquad (I)$$

wherein R is an alkyl group containig 1 to 10 carbon atoms and x is an integer having a value of about 1 to about 5,

said catalyst containing, as the active components, from about 50 to about 90 wt. % of nickel, about 10 to about 50 wt. % of copper and about 0.5 about 5 wt. % of an oxide selected from the class consisting of chromium oxide, iron oxide, titanium oxide, thorium oxide, zirconium oxide, manganese oxide, magnesium oxide and zinc oxide,

said monoalkyl ether being brought into contact with said catalyst under liquid phase conversion conditions effective for the conversion of about 40% to about 80% of said monoalkyl ether including a temperature within the range of about 175° to about 250° C., and a pressure within the range of about 500 to about 5000 psig, said conversion being conducted in the presence of added hydrogen and added ammonia utilized in the proportions of about 0.3 to about 0.7 mole of hydrogen and about 4 to about 25 moles of ammonia per mole of said monoalkyl ether, the partial pressure of said hydrogen being less than 30%, whereby said monoalkyl ether is substantially selectively converted to the corresponding primary amine, and recovering said primary amine from the products of said reaction.

4,618,718

PREPARATION OF TRIFLUOROETHYLAMINE

Arthur J. Elliott, Sloatsburg, N.Y., and Gary W. Astrologes, Hackensack, N.J., assignors to Halocarbon Products Corporation, Hackensack, N.J.

Filed Jun. 14, 1985, Ser. No. 745,058

Int. Cl.^{4} C07C *85/04*

U.S. Cl. 564—481 **7 Claims**

1. In the reaction of a 2,2,2-trifluoroethyl halide with ammonia to produce 2,2,2-trifluoroethylamine, the improvement which comprises effecting the reaction with from about 1 to 3 moles of ammonia per mole of the trifluoroethyl halide at a temperature of about 170° to 240° C. and a pressure less than about 300 psig in the presence of a substantially anhydrous inert solvent present in at least about the same molar amount as the trifluoroethyl halide.

4,618,719

ADDITION OF PHOSPHINES TO ALPHA-OLEFINS

W. Elliot Bay, Ridgefield, Conn., and Karl E. Reineke, Mohegan Lake, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 4, 1985, Ser. No. 707,714

Int. Cl.^{4} C07F *9/50*

U.S. Cl. 568—17 **12 Claims**

1. A process for addition-reacting a phosphine first reactant with an alpha olefin second reactant by mixing said first reactant and said second reactant and heating said mixture in the absence of an initiator or catalyst at a temperature of at least 200° C. for a time and at a pressure sufficient to effect a yield of at least 50% of an alkyl diphenyl phosphine product.

4,618,720

PREPARATION OF ALKYLDIARYLPHOSPHINES

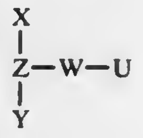
W. Elliott Bay, Ridgefield, Conn.; Karl E. Reineke, Mohegan Lake, and Edward D. Weil, Hastings-on-Hudson, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 4, 1985, Ser. No. 707,713

Int. Cl.^{4} C07F *9/50*

U.S. Cl. 568—17 **52 Claims**

1. An improved two-step process for preparing a compound C3 having the structural formula



$$\begin{array}{l} X \\ | \\ Z-W-U \\ | \\ Y \end{array}$$

wherein:

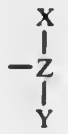
Z is phosphorus;

Y is aryl;

X is aryl;

W is a substituted or unsubstituted aryl, alkyl, arylalkyl, or alkylaryl radical or hydrogen; and

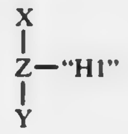
U is hydrogen or



$$\begin{array}{r} X \\ | \\ -Z \\ | \\ Y \end{array}$$

or halogen; by a first step comprising converting a first diphenylphosphinous halide compound, C1, into a second compound, C2; and a second step comprising converting C2 into a third compound, C3; wherein the first step comprises reacting a first halide C1, with a molten alkali metal, M, or amalgam thereof, in the presence of an insert solvent, S, to form a first reacted mixture comprising C2; and the second step comprises reacting C2 with a second halide, W-"H2" or "H2"-W-"H2", to form a second reacted mixture comprising C3; all wherein

(i) C1 has a structural formula



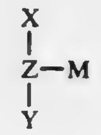
$$\begin{array}{l} X \\ | \\ Z-\text{"H1"} \\ | \\ Y \end{array}$$

wherein:

X,Y,Z are as defined above: and

"H1" is a halogen atom; and

(ii) C2 has a structural formula



$$\begin{array}{l} X \\ | \\ Z-M \\ | \\ Y \end{array}$$

wherein: X,Y,Z and M are as defined above:

(iii) "H2" is a halogen atom; and

(iv) W is as defined above; wherein the improvement comprises using an amount of M such that the first reacted mixture comprises an excess of M in an amount of less than 100%, and wherein the yield of C3 is greater than 70 percent, and wherein the second halide is added to the first reacted mixture in situ.

4,618,721

PROCESS FOR THE PREPARATION OF NITRODIPHENYL DISULFIDES

Vittore Sartori, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

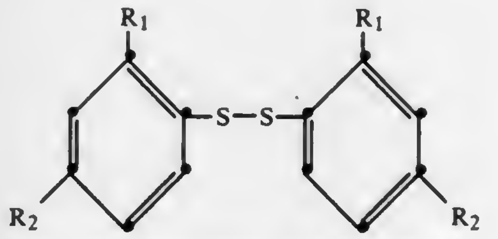
Filed Mar. 21, 1985, Ser. No. 714,308

Claims priority, application Switzerland, Mar. 26, 1984, 1499/84

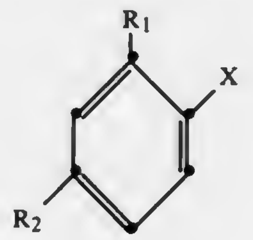
Int. Cl.^{4} C07C *148/00*

U.S. Cl. 568—23 **10 Claims**

1. A process for the preparation of a nitrodiphenyl disulfide of the formula



by reacting a halonitrobenzene of the formula



in which formulae above X is chlorine, bromine or iodine, R_1 is hydrogen or nitro and R_2 is hydrogen, C_1–C_4 alkyl, halogen, nitro or sulfo, with the proviso that at least one of R_1 and R_2 is nitro, with an alkali disulfide, which process comprises carrying out the reaction in water with the addition of 2 to 30% by weight, based on halonitrobenzene, of a non-ionic surfactant selected from the group of adducts of ethylene oxide and alkylphenols, fatty alcohols, fatty amines or fatty acids, the molecular weight of these adducts being in the range from 300 to 10,000, or an anionic surfactant selected from the group of condensates of formaldehyde and aromatic sulfonic acids, alkylbenzimidazoledisulfonic acids containing 10 to 25 carbon atoms in the alkyl moiety, alkylphenol polyglycol ether sulfates or phosphates containing 5 to 15 carbon atoms in the alkyl moiety, fatty alcohol glycol ether sulfates, sulfonated or sulfated dicarboxylic acid esters or C_6–C_{20}-alkylbenzenesulfonates.

4,618,722

PREPARATION OF ORGANIC SULFIDES

Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

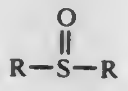
Continuation-in-part of Ser. No. 701,705, Feb. 14, 1985, abandoned. This application Jun. 10, 1985, Ser. No. 742,677

Int. Cl.⁴ C07C *149/10*

U.S. Cl. 568—59 **20 Claims**

1. A process for preparing dihydrocarbyl sulfides comprising the step of simultaneously contacting:

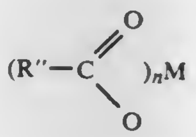
(a) a dialkyl sulfoxide of the formula



$$R-\overset{\overset{\displaystyle O}{\|}}{S}-R$$

(b) a hydrocarbyl halide of the formula R′-X, and

(c) a metal carboxylate of the formula



under such conditions as will result in a reaction product comprising at least one alkyl hydrocarbyl sulfide of the formula R-S-R′; wherein the radicals R, which can be the same or different, are alkyl groups containing from 1 to 8 carbon atoms; R′ is selected from the group consisting of alkyl groups containing from 1 to 25 carbon atoms, alkenyl groups containing from 3 to 25 carbon atoms and cycloalkyl groups containing from 5 to 25 carbon atoms; X is selected from the group consisting of Cl, Br and I; R″ is selected from the group consisting of H and alkyl groups having from 1 to 4 carbon atoms; n is 1 or 2; and M is a mono- or divalent cation of a metal selected from the group of metals belonging to Groups IA, IIA, IVA, IB, IIB VIIB and VIII of the Periodic Table.

4,618,723

REDUCTION OF CARBON OXIDES WITH HYDROGEN SULFIDE

Daniel R. Herrington, Bainbridge, and Philip L. Kuch, Aurora, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 10, 1982, Ser. No. 448,466

Int. Cl.⁴ C07C *149/06, 1/04, 1/12, 29/15*

U.S. Cl. 568—70 **21 Claims**

1. A process of reducing carbon oxides with hydrogen sulfide, the method comprising:

(a) contacting at least one of carbon monoxide and carbon dioxide with hydrogen sulfide to form carbonyl sulfide,

(b) contacting the carbonyl sulfide produced in (a) with oxygen to form carbon monoxide and sulfur dioxide, and

(c) hydrogenating at least one of the carbon monoxide and carbonyl sulfide to an organic compound.

4,618,724

PERFLUOROCARBON POLYMER OXIDATION CATALYST AND PREPARATION OF CARBONYL COMPOUND

Hitosi Nozaki, Takatsuki, and Koichiro Oshima, Kyoto, both of Japan, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 11, 1985, Ser. No. 700,655

Claims priority, application Japan, Feb. 28, 1984, 59-35321

Int. Cl.⁴ C07C *45/29*

U.S. Cl. 568—311 **3 Claims**

1. A method of oxidizing a secondary organic alcohol to form a ketone which comprises treating said alcohol with at least one oxidizing agent selected from the class consisting of tertiary butyl hydroperoxide, cumene hydroperoxide, benzoyl peroxide, and sodium bromate in the presence of a perfluorocarbon polymer consisting of a perfluorocarbon main chain and side chains containing terminal structural units of the formula

$$-CF_2SO_2X$$

wherein X is chromium (III) or cerium (IV) wherein the weight in grams of the perfluorocarbon polymer per one mole of $-CF_2SO_2X$ groups is between 900 and 3000, and wherein the polymer is present in catalytically effective amounts, for a time and temperature sufficient to produce said ketone.

4,618,725

PREPARATION OF α-METHYL-SUBSTITUTED KETONES

Hans-Heinrich Lenz, Mannheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

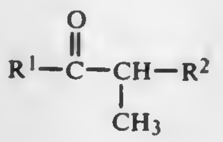
Filed Jun. 13, 1985, Ser. No. 744,225

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1984, 3422282

Int. Cl.⁴ C07C *45/71*

U.S. Cl. 568—315 **6 Claims**

1. A process for producing α-methyl-substituted ketones of the formula



$$R^1-\overset{\overset{\displaystyle O}{\|}}{C}-\underset{\underset{\displaystyle CH_3}{|}}{CH}-R^2$$

wherein R^1 is unsubstituted or substituted aryl or hetaryl or a tert.-alkyl radical, and R^2 is hydrogen or straight-chain or branched alkyl of 1 to 12 carbon atoms, or R^1 and R^2 together form an unsubstituted or substituted alkylene group $-(CH_2.)_n-$, where n is an integer from 3 to 13, wherein the corresponding unsubstituted ketone, which must possess two or more geminal hydrogen atoms in the α-position, is reacted with methanol in the gase phase at from 350° to 500° C. and under from 1 to 20 bar in the presence of a magnesium oxide catalyst.

4,618,726

PROCESS FOR THE PREPARATION OF BENZOPHENONES

Michel Desbois, Rillieux, France, assignor to Rhone-Poulenc Specialites Chimiques, France

Filed Dec. 18, 1984, Ser. No. 683,171

Claims priority, application France, Dec. 22, 1983, 83 20537

Int. Cl.⁴ C07C *45/47*

U.S. Cl. 568—322 **15 Claims**

1. A process for the preparation of benzophenones comprising the step of reacting a compound of the formula COX_4X_5 (I), where X_4 and X_5 are identical or different and each is a halogen atom. with a deactivated benzene derivative in liquid hydrofluoric acid and in the presence of boron trifluoride

(BF_3) in an amount sufficient that the absolute pressure of (BF_3) is at least 1 bar.

4,618,727

NITRO SUBSTITUTED DIPHENYL ETHERS

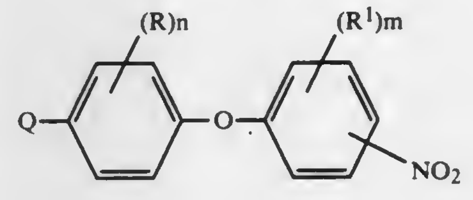
Shenghong A. Dai, Wallingford, Conn., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 5, 1984, Ser. No. 668,540

Int. Cl.⁴ C07C *79/35*

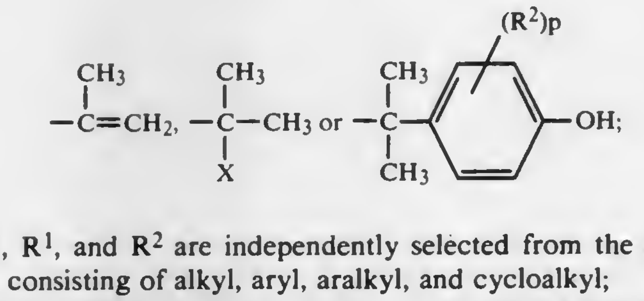
U.S. Cl. 568—585 **12 Claims**

1. A nitro substituted diphenyl ether having the formula



wherein

Q is



R, R^1, and R^2 are independently selected from the group consisting of alkyl, aryl, aralkyl, and cycloalkyl;

X represents halogen; and n, m, and p each have an independent value of 0 to 4, inclusive.

4,618,728

WATER AIDED CATECHOL ETHERIFICATION

Philip B. Hobson, Trenton, and Robert E. Keay, Stockton, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Feb. 22, 1985, Ser. No. 704,434

Int. Cl.⁴ C07C *41/16*

U.S. Cl. 568—652 **4 Claims**

1. In a process for preparing 2-methallyloxyphenol by reacting catechol with methallyl chloride at a temperature in the range of 70° C. to 150° C. in the presence of one or more bases selected from the group consisting of alkali metal carbonates, alkali metal bicarbonates, alkaline earth carbonates, and alkaline earth bicarbonates, said reaction being conducted without an etherification catalyst in a solvent system consisting of water and an aliphatic ketone having 4 to 8 carbon atoms, using from 0.55 to 0.75 moles of methallyl chloride per mole of catechol, the improvement comprising using a molar ratio of 0.3 to 1.9 moles of water per mole of catechol and conducting the reaction for a period of 1 to 3 hours.

4,618,729

RUTHENIUM-COBALT CARBONYL METAL CLUSTER CATALYSTS FOR THE DEALKOXYHYDROXYMETHYLATION OF ACETALS TO FORM GLYCOL ETHERS

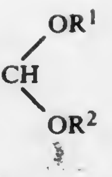
D. Michael Duggan, Drexel Hill; James E. Lyons, Wallingford, and Harry K. Myers, Jr., Cochranville, all of Pa., assignors to Sun Refining and Marketing Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 622,816, Jun. 21, 1984, abandoned. This application Oct. 2, 1985, Ser. No. 782,807

Int. Cl.⁴ C07C *41/28, 41/18*

U.S. Cl. 568—678 **16 Claims**

1. Process for the dealkoxyhydroxymethylation of an aldehyde acetal of the formula



wherein R is hydrogen, alkyl, cycloalkyl, or aryl; r^1 and r^2, which may be same or different, are alkyl, cycloalkyl, or aryl, and wherein R^1 and R^2, taken together, may form a cyclic acetal, which comprises reacting said acetal, which has been formed separately or in situ, with syngas in the presence of a catalytically effective amount of a catalyst comprising the complex $Co_2Ru(CO)_{11}$ to form the corresponding glycol monoether.

4,618,730

PROCESS FOR THE PRODUCTION OF PYROCATECHOL AND HYDROQUINONE

Karlheinz Drauz, Freigericht, and Axel Kleemann, Hanau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 8, 1984, Ser. No. 587,652

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1983, 3308737

The portion of the term of this patent subsequent to Aug. 6, 2002, has been disclaimed.

Int. Cl.⁴ C07C *37/60, 39/10*

U.S. Cl. 568—771 **32 Claims**

1. A process for the production of pyrocatechol and hydroquinone by nuclear hydroxylation of phenol with hydrogen peroxide in a substantially water-free organic solvent in the presence of a catalyst comprising reacting phenol with hydrogen peroxide in a solution in substantially water-free organic solvent which solvent forms an azeotrope with water, the boiling point of the azeotrope being below the boiling point of hydrogen peroxide, based on normal pressure, said reaction being carried out in the presence of sulfur dioxide as a catalyst.

4,618,731

PROCESS FOR PURIFYING 2-PERFLUOROALKYLETHANOLS

Leonard H. Beck, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 20, 1985, Ser. No. 800,007

Int. Cl.⁴ C07C *29/74, 29/88*

U.S. Cl. 568—842 **5 Claims**

1. In a process wherein a perfluoroalkylethyl iodide or a mixture of perfluoroalkylethyl iodides is reacted with oleum, the resulting perfluoroalkylethyl hydrogen sulfate or mixture of said sulfates is hydrolyzed in an aqueous sulfuric acid medium, and a perfluoroalkylethanol or a mixture of such ethanols having the formula $R_fCH_2CH_2OH$ is recovered as a final product which contains unreacted iodides having the formulae $R_fCH_2CH_2I$ and R_fI in sufficient quantities so as to cause discoloration of $R_fCH_2CH_2OH$ or products made from it wherein R_f is a perfluoroalkyl radical or a mixture of said radicals containing 4 to 28 carbon atoms, the improvement consisting essentially of reacting said unreacted iodides with an excess of an aqueous alkali metal hydroxide and a C_1–C_3 alcohol in a closed vessel at a temperature above 80° C. until neither of said iodides can be detected in said final product.

4,618,732

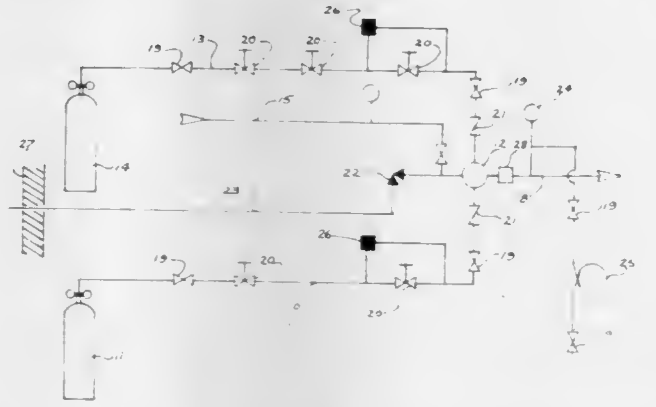
DIRECT CONVERSION OF NATURAL GAS TO METHANOL BY CONTROLLED OXIDATION

Hyman D. Gesser, 218 Girton Ave., Winnipeg, Manitoba; Norman R. Hunter, Lot 68, Red River Drive, R.M. of Ritchot, Manitoba, and Lawrence Morton, 1018-110 Adamar Road, Winnipeg, Manitoba, all of Canada

Filed May 20, 1985, Ser. No. 735,983

Int. Cl.^{4} C07C *29/48*

U.S. Cl. 568—910.5 **13 Claims**



1. A process for converting natural gas containing methane to methanol, comprising:

thoroughly and intimately mixing natural gas with gaseous air or oxygen to achieve substantially complete homogeneity of these gases;

feeding the resulting gas mixture to an inert reactor under elevated pressure, said inert reactor having an internal surface surrounding a zone in which said gases react, said surface being made of a material selected from the group consisting of glass, non-reactive plastics, non-reactive waxes and non-reactive salts; and

reacting said gases in said reaction zone at an elevated temperature in the absence in said reaction zone of any added material which measurably affects the rate of selectivity of the reaction or the yield of the product.

4,618,733

VAPOR PHASE NITRATION OF AROMATIC COMPOUNDS

Ignatius Schumacher, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 14, 1984, Ser. No. 671,253

Int. Cl.^{4} C07C *79/10;* C07B *43/02*

U.S. Cl. 568—927 **25 Claims**

1. In a process for the vapor phase nitration of aromatic compounds where an aromatic compound-containing feed mixture is contacted with a nitrating agent in the vapor phase to produce the corresponding nitroaromatic compound, the improvement comprising conducting the nitration in the presence of a nitration promoting catalyst which consists essentially of the adduct of:

(a) a Group 4b-Group 3b mixed oxide composition represented by the emprical formula:

$$(M^1{}_aM^2{}_bO_c)_x(NO_2)_y$$

wherein M^1 is at least one element selected from Group 4b of the Periodic Table of the Elements, M^2 is at least one element selected from Group 3b of the Periodic Table of the Elements, a is 1, b is 0 to 20, c is a number taken to satisfy the average valences of M^1 and M^2 in the oxidation states in which they exist inthe composition, x is 1, and y is 0 to c, and

(b) a catalytically effective amount of sulfur trioxide.

4,618,734

METHOD OF MAKING AND POLYMERIZING PERFLUOROALKYLENE ACETYLENE COMPOUNDS

Kurt Baum, Pasadena; Ronald O. Hunadi, Los Angeles, and Clifford D. Bedford, Mountain View, all of Calif., assignors to Fluorochem Inc., Asuza, Calif.

Continuation-in-part of Ser. No. 412,929, Aug. 30, 1982, abandoned, which is a division of Ser. No. 219,938, Dec. 24, 1980, Pat. No. 4,347,376. This application Aug. 12, 1983, Ser. No. 522,605

Int. Cl.^{4} C07C *21/22*

U.S. Cl. 570—136 **2 Claims**

1. As a composition of matter, a perfluoroalkylene α,ω-diacetylene having the formula $HC{\equiv}C(CF_2)_nC{\equiv}CH$, wherein n is a whole number from 5 to about 20, inclusive.

4,618,735

PROCESS AND APPARATUS FOR THE CONVERSION OF SLUDGES

Trevor R. Bridle, Burlington, and Herbert W. Campbell, Dundas, both of Canada, assignors to Canadian Patents and Development Limited; Societe des Brevets et D'Exploritation Limited, both of Ottawa, Canada

Filed Aug. 29, 1984, Ser. No. 645,149

Claims priority, application Canada, Sep. 13, 1983, 436601

Int. Cl.^{4} C07C *1/00*

U.S. Cl. 585—240 **14 Claims**

1. Process for the conversion of sludge to produce oil products and sludge residue comprising the steps of:

(a) converting the sludge to the form of dried sludge;

(b) heating the dried sludge in a heating zone in the absence of oxygen to a temperature of at least 250° C. for the volatilization of organic products therefrom, resulting in heating zone gaseous organic products and sludge residue;

(c) removing the said gaseous organic products and the sludge residue from the heating zone and delivering them to a reaction zone;

(d) heating the reaction zone to establish therein a reaction temperature of from 280° C. to 600° C.;

(e) contacting the sludge residue in the reaction zone with the heating zone gaseous organic products in the absence of oxygen at the reaction temperature with repeated intimate gas/solid contact to cause reactions of the heating zone gaseous organic products catalysed by the heated sludge residue resulting in reaction zone gaseous products containing oil prbducts;

(f) removing the reaction zone gaseous products of step e from the reaction zone and separating at least the oil products therefrom.

4,618,736

CONVERSION OF A MUNICIPAL WASTE TO FUEL

Frederick R. Benn, Sale, and Charles A. McAuliffe, Altrincham, both of England, assignors to Salford University Industrial Centre Limited, Manchester, England

Continuation-in-part of Ser. No. 549,543, Nov. 4, 1983, abandoned, which is a continuation-in-part of Ser. No. 331,732, Dec. 17, 1981, abandoned. This application Aug. 6, 1985, Ser. No. 763,049

Claims priority, application United Kingdom, Dec. 18, 1980, 8040489

Int. Cl.^{4} C10G *1/06*

U.S. Cl. 585—240 **8 Claims**

1. A process for production of hydrocarbons from cellulosic material comprising the steps of forming a suspension of cellulosic material in a liquid polycyclic hydrogen donor substance, the suspension containing an amount of water equal to at least about 5%, but no more than about 10%, by weight of the cellulosic material, subjecting the suspension to a temperature above 200° C. and a pressure which increases to at least 1000 psi, in the presence of hydrogen, to bring about hydrogenation of the cellulosic material and produce a mixture of gaseous, liquid, and solid hydrocarbons having an oxygen content below 10% by weight and a calorific value greater than 15,000 Btu/lb, separating the mixture of hydrocarbons into gaseous, liquid, and solid phases, and recovering liquid polycyclic hydrogen donor substance from the liquid phase and recycling said recovered liquid hydrogen donor substance for treatment of fresh cellulosic material.

4,618,737

PEROXIDE-INDUCED POLYMERIZATION OF MOGD LIQUIDS TO HIGH VISCOSITY LUBES

Arthur W. Chester, Cherry Hill; William E. Garwood, Haddonfield, and Samuel A. Tabak, Wenonah, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 13, 1985, Ser. No. 808,705

Int. Cl.^{4} C07C *2/02*

U.S. Cl. 585—329 **15 Claims**

1. A multi-stage process for producing lubricant range hydrocarbons by oligomerizing a low olefin feedstock which comprises contacting said lower olefin feedstock in a first reactor stage under oligomerizing conditions with a medium pore shape-selective siliceous zeolite catalyst and contacting at least a portion of the first stage effluent in a second reactor stage with a ditertiary alkyl peroxide catalyst to produce a high viscosity lubricant range hydrocarbon.

4,618,738

HYDROCARBON CONVERSION PROCESS WITH CATALYTICALLY ACTIVE AMORPHOUS SILICA

Dean A. Young, Yorba Linda, and Jeffery W. Koepke, La Habra, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 645,920, Aug. 29, 1984, Pat. No. 4,548,705, which is a division of Ser. No. 526,866, Aug. 25, 1983, Pat. No. 4,481,102, which is a division of Ser. No. 356,351, Mar. 9, 1982, Pat. No. 4,414,137. This application Jul. 29, 1985, Ser. No. 760,077

Int. Cl.^{4} C07C *5/22*

U.S. Cl. 585—480 **25 Claims**

1. An isomerization process comprising contacting a hydrocarbon comprising ortho-xylene under isomerization conditions including an elevated temperature with a catalyst prepared by a method comprising forming a hydrogel or precipitate in a reaction mixture comprising water, silicate anions and an organic reactant selected from the group consisting of amines having a pK_a value above about 10.0, quaternary ammonium cations having a nitrogen atom bonded to four carbon atoms, quaternary phosphonium cations having a phosphorus atom bonded to four carbon atoms, precursors of the foregoing and mixtures thereof, and dehydrating the resultant hydrogel or precipitate to yield a product containing amorphous silica, said isomerization conditions are such that at least a portion of said ortho-xylene is converted to para-xylene or meta-xylene.

ELECTRICAL

4,618,739

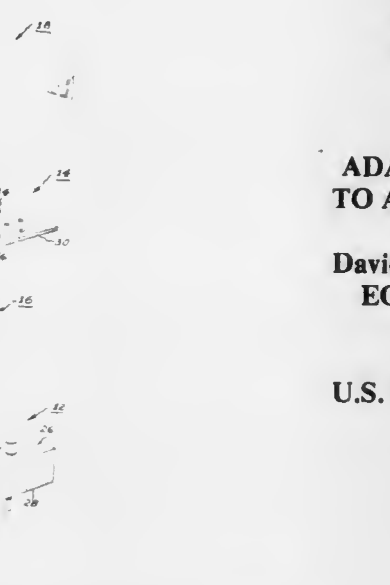
PLASTIC CHIP CARRIER PACKAGE

Paul R. Theobald, Signal Mountain, Tenn., assignor to General Electric Company, Schenectady, N.Y.

Filed May 20, 1985, Ser. No. 736,019

Int. Cl.⁴ H01L *23/02*

U.S. Cl. 174—52 FP **28 Claims**



1. A pin grid array integrated circuit chip carrier package comprising a planar main body member of a first synthetic organic polymer having a centrally disposed chip connect recess cavity and top and bottom surfaces, the base of said recess being formed with a material having greater thermal conductivity than said first synthetic organic polymer, terminal pins extending from the top surface of said main body member and protruding from its bottom surface, and a metallized layer of a second synthetic organic polymer being bonded to the top surface of said body member to enable electrical interconnection between the chip and said terminal pins, said electrical interconnection including a metallized trace deposited on the bottom surface of said metallized layer which further includes through holes extending from the top surface of said second polymer to the bottom surface of said metalized layer and terminating in spaced apart metallized pads located on the bottom surface of said metallized layer which are in registration with the terminal pin pattern of the body member.

4,618,740

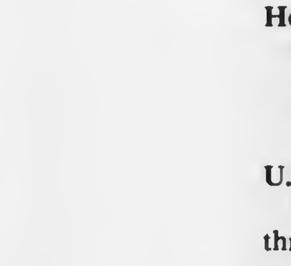
ELECTRICAL OUTLET SAFETY DEVICE

Edgar C. Ray, Rte. 2, Box 137, Buffalo Lake, Minn. 55314, and William A. Kohl, P.O. Box 1154, Marshall, Minn. 56258

Filed Nov. 6, 1985, Ser. No. 795,529

Int. Cl.⁴ H01R *13/44*

U.S. Cl. 174—67 **4 Claims**



1. A safety device for attachment to an electrical outlet comprising:

an adhesive core comprising a tear resistant resilient material, the adhesive core having openings and a general size and shape corresponding to the electrical outlet to which it is to be attached, the adhesive core capable of securing a male electrical plug to a female electrical outlet, the adhesive core having a first and a second surface;

a peel-away backing mated to the first surface of the adhesive core, and protecting the first surface of the adhesive core, to be peeled away prior to attachment of the safety device to an electrical outlet; and

a front cover mated to the second surface of the adhesive core, the front cover adhesively secured to the adhesive core, the front cover impermeable to the insertion of objects into the female electrical outlet, the front cover removable to allow insertion of the male electrical plug.

4,618,741

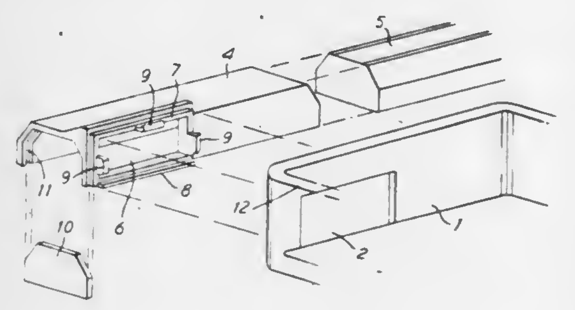
ADAPTOR FOR CONNECTING RACEWAY TRUNKING TO A BOX FOR ELECTRICAL COMPONENTS, AND THE ADAPTOR AND BOX IN COMBINATION

David W. Bramwell, Prestatyn, United Kingdom, assignor to EGA Limited, United Kingdom

Filed Jul. 9, 1984, Ser. No. 628,725

Int. Cl.⁴ H02G *3/04, 3/06*

U.S. Cl. 174—68 C **14 Claims**



1. An adaptor for connecting raceway trunking to a box for electrical components, comprising an open-ended, elongate channel member to contain a length of raceway trunking therethrough or thereinto, a side wall of the channel member having a hole and the channel member having integral, snap-fitting means for attaching it to a box with the hole in registry with a corresponding aperture in a wall of the box.

8. In combination, a box for electrical components and an adaptor for connecting raceway trunking to the box, the adaptor comprising an open-ended, elongate channel member to contain a length of raceway trunking running therethrough or thereinto, a side wall of the channel member having a hole and the channel member having integral, snap-fitting means for attaching it to the box; and the box comprising walls and an aperture in at least one of the walls of the box, said aperture being intended to be in registry with the hole in the channel member when the adaptor is attached to the box.

4,618,742

METHOD AND APPARATUS FOR DECODING AUDIOFREQUENCY INFORMATION SENT THROUGH ROTARY DIALING

Horacio Castro, El Salvador 5962, Buenos Aires (1414), Argentina

Filed Mar. 25, 1983, Ser. No. 479,026

Claims priority, application Argentina, Mar. 31, 1982, 288969

Int. Cl.⁴ H04M *11/00*

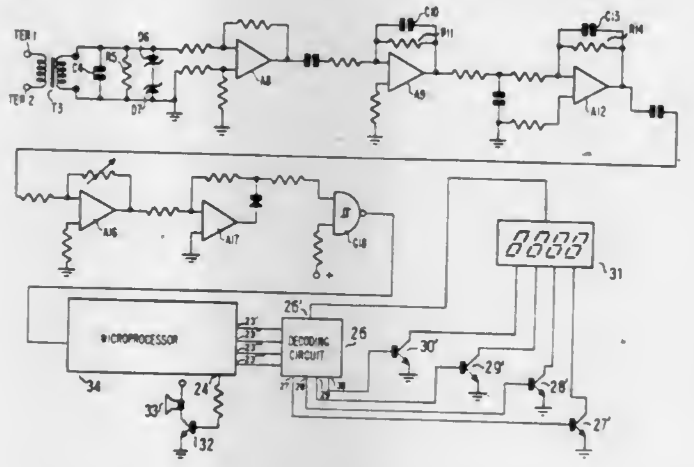
U.S. Cl. 179—2 A **9 Claims**

1. A method for decoding audiofrequency information sent through rotary dialing from a calling phone set during the conversation period established over a phone line with a called party, wherein said method comprises the steps of:

(A) sending from the calling end of said phone line the series of characters corresponding to the phone number of the called party, and, after closure of the d.c. current or conversation circuit;

(B) sending said audiofrequency information through rotary dialing from the calling party;

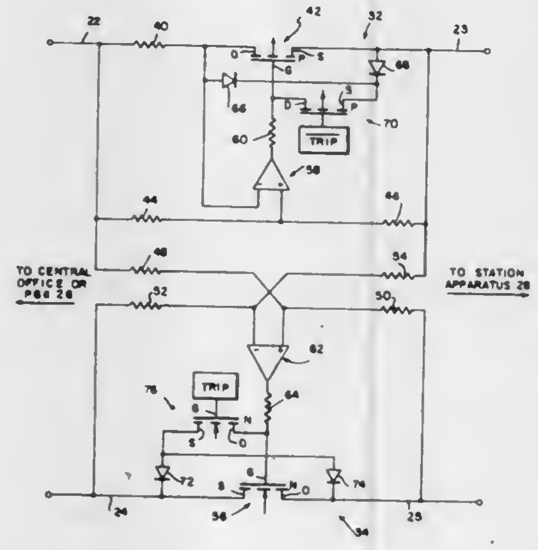
(C) decoding said audiofrequency information at the called party, said decoding comprising the steps of:
(1) substantially converting every audiofrequency information into square wave signals;
(2) determining the presence of the first square wave signal produced by the beginning of the first pulse of a phone pulse train;
(3) ignoring the presence of square wave signals during a first time period of approximately 50 milliseconds initiated as from the determination of the presence of said first square wave signal;
(4) determining the presence of the second square wave signal produced by the ending of said phone pulse, within a second time period of approximately 30 milliseconds initiated immediately after said first time period has elapsed;
(5) converting said first and second square wave signals into logic data or into a single pulse;
(6) ignoring the presence of square wave signals within a third time period of approximately 30 milliseconds initiated as from the determination of the presence of said second square wave signal;
(7) determining, should the beginning of an additional phone pulse take place, the presence of an additional square wave signal within a fourth time period of approximately 50 milliseconds initiated immediately after said third time period has elapsed;
(8) determining the presence of the second additional square wave signal produced by the ending of said additional phone pulse, as in steps 3 and 4;



(9) converting said first and second additional square wave signals produced by said additional phone pulse into new logic data or into a new single pulse;
(10) determining the presence of possible square wave additional signals produced by possible additional phone pulses, as in steps 6, 7 and 8;
(11) converting into logic data or single pulses said possible square wave additional signals produced by said possible additional phone pulses;
(12) determining the ending of a said phone pulse train when the presence of an additional square wave signal is not determined within a fourth time period or within a second time period;
(13) ignoring the presence of square wave signals within a time period of approximately 300 milliseconds initiated immediately after a said fourth time period has elapsed or within a time period of approximately 220 milliseconds initiated immediately after a said second time period has elapsed, when the presence of an additional square wave signal is not determined within a said fourth time period or within a said second time period;
(14) recycling back to step 2;
(D) applying said logic data or single pulses to commanding, ordering or informing means.

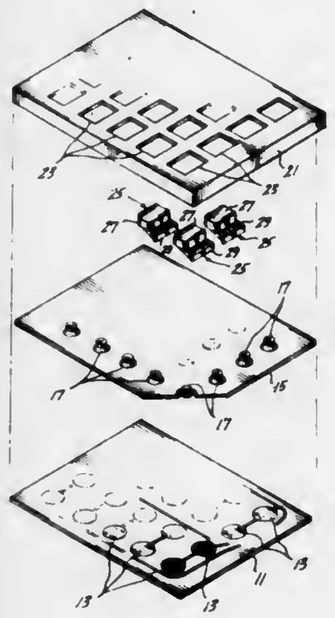
2. An apparatus for decoding audiofrequency information sent through rotary dialing from a calling phone set during the conversation period established with a called party over a phone line, wherein it comprises a signal limiting means capable of being connected to the phone line; an operational amplifier means coupled to said limiting means, said operational amplifier including a filter means for eliminating a portion of the signals received from said limiting means; a level regulator coupled to said operational amplifier means; a rectifier coupled to said level regulator; a trigger coupled to said rectifier; an integrator coupled to said trigger; and a counter with one input being connected to the output of said microprocessor and at least one output coupled to indicating means.

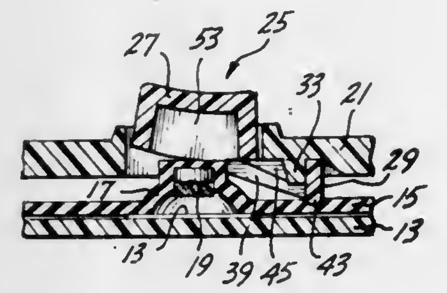
4,618,743
MONOLITHIC TRANSIENT PROTECTOR
Scott L. Falater, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.
Filed Nov. 27, 1984, Ser. No. 675,222
Int. Cl.^{4} H04B *3/36*
U.S. Cl. 179—16 AA **12 Claims**



1. Apparatus for use with a telephone circuit including a source of telephone service, a station apparatus and first and second conductors for coupling the source of telepnone service and the station apparatus, the apparatus comprising:
first and second current-limiting circuits including first and second variable impedance means respectively each having first and second terminals for insertion in series into a respective one of said first and second conductors for providing a main current conducting path and having a control terminal to control the respective variable impedance means;
first means for supplying a signal representative of an impedance of said first conductor to be synthesized to said control terminal of said first variable impedance means to provide a synthesized impedance of said first conductor; and
second means for monitoring an impedance of said second conductor, for comparing said synthesized impedance of said first conductor and monitored impedance of said second conductor and for supplying a matching signal to said control terminal of said second variable impedance means for matching said monitored impedance of said second conductor to said synthesized impedance of said first conductor.

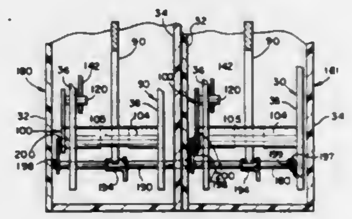
4,618,744
ROCKER KEY ELASTOMER DOME KEYBOARD
Kent M. Pope, and Bryan L. Hardesty, both of Coeur d'Alene, Id., assignors to Advanced Input Devices, Inc., Coeur d'Alene, Id.
Filed Apr. 29, 1985, Ser. No. 728,231
Int. Cl.^{4} H01H *13/70*
U.S. Cl. 200—5 A **19 Claims**

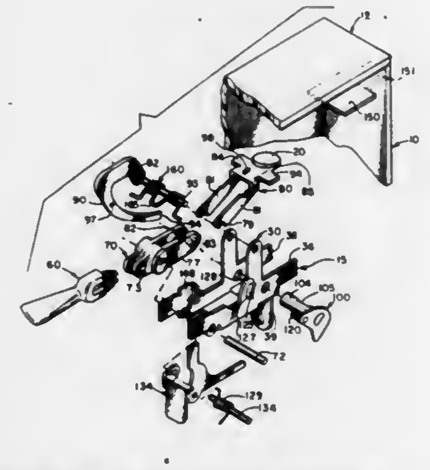




1. A rocker key elastomer dome keyboard comprising:
a printed wire board having an array of spaced apart switch contacts located on one surface;
an elastomer dome keypad positioned so as to overlay the surface of said printed wire board on which said array of spaced apart switch contacts are located, said elastomer dome keypad formed of a layer of elastomeric material having a plurality of domes formed in said layer, said domes being aligned with said array of spaced apart switch contacts, said domes including conducting means positioned such that the collapsing of said domes results in said conducting means being brought into electrical contact with the spaced apart switch contacts aligned with said conducting means;
a bezel positioned so as to overlay said elastomer dome keypad on the side thereof remote from said printed wire board, said bezel including a plurality of apertures, said apertures aligned with said domes of said elastomer dome keypad;
a plurality of keys positioned in said apertures in said bezel such that said keys impinge on the tops of the domes aligned with said apertures in said bezel, the region of said keys that impinge on said domes formed so as to apply a collapsing force to the center of said dome that causes the center of said domes to collapse in an even, positive manner when the keys follow an arcuate path of travel, each of said keys including a button portion and a flange portion, said button portions passing through said apertures in said bezel; and,
rotary mounting means for attaching said keys to said bezel such that the path of travel of said keys is arcuate, said rotary mounting means comprising two spaced apart apertures formed in the flange of each of said keys and two corresponding spaced apart protrusions, one aligned with each of said apertures in said flange, extending outwardly from said bezel on the side thereof facing said elastomer dome keypad.

4,618,745
CIRCUIT BREAKER MECHANISM
Harry A. Thompson, III, Lawrenceville, N.J., assignor to Heinemann Electric Company, Lawrenceville, N.J.
Filed Apr. 1, 1985, Ser. No. 718,081
Int. Cl.^{4} H01H *9/26, 3/00*
U.S. Cl. 200—50 C **39 Claims**





35. A circuit breaker mechanism comprising:
(A) a frame;
(B) a pair of contacts supported relative to the frame displaceable relative to one another between open and closed positions;
(C) a contact arm rotatably supported at a pin having an integral contact support carrying one of the contacts and being rotatable about said pin to open and close the contacts;
(D) a cradle arm rotatably mounted on the frame, said cradle arm being rotatable between a latched position and an unlatched position;
(E) an over-center extension spring connected between a connection on the contact arm and a connection on the cradle arm for biasing said contact arm into over-center positions about the contact arm pin;
(F) latch means having a displaceable latch and a latch spring supported relative to the frame, said latch spring biasing said latch into a latching position so that the latch releasably engages and latches said cradle arm in the latched position wherein the over-center spring holds the cradle arm against the latch;
(G) an actuator link rotatably mounted on the frame and pivotally coupled with the contact arm at the contact arm pin to provide the contact arm pivot so that when the cradle arm is held against the latch in the latched position movement of said actuator link from a first position to a second position displaces the pivot of the contact arm over center relative to the connections on the cradle arm and the contact arm causing the over-center biasing means to displace said contact arm to close the contacts;
(H) trip means supported relative to the frame for releasing the latch means under predetermined conditions, said trip means having a displaceable trip element for engaging and displacing said latch against the bias of the latch spring

under said predetermined conditions to disengage said latch from said cradle arm to permit displacement of the cradle arm by the over-center spring from the latched position to the unlatched position causing the connection on the cradle arm to move relative to the pivot of the contact arm so that the pivot of the contact arm is passed over-center relative to the connections on the contact arm and the cradle arm causing the over-center spring to displace said contact arm to open the contacts; and

(I) a cradle arm return spring connected between the frame and the cradle arm to displace the cradle arm from the unlatched position back to the latched position causing the actuator link to return from the second position back to the first position as the over-center spring biases the contact arm to hold the contacts open.

4,618,746

BALL ACTUATED POSITION SENSITIVE SWITCH

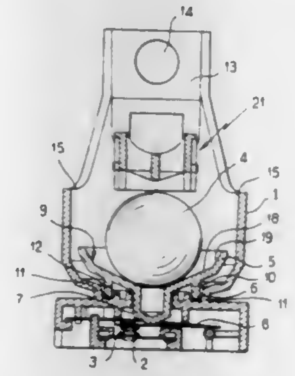
Pierre Schwob, Lyons, and Marcel Dimey, Grandfontaine, both of France, assignors to SEB S.A., Selongey, France

Filed Jun. 4, 1985, Ser. No. 741,292

Claims priority, application France, Jun. 5, 1984, 84 08775

Int. Cl.⁴ H01H *35/14*

U.S. Cl. 200—61.45 R 11 Claims



1. A multi-directional switch comprising:

a housing comprising two electrical contacts, one of said contacts being movable between a closed position and an open position;

an actuating member movably disposed in the housing and having a control portion engaging the movable contact and a cup-shaped recess opening away from the contacts;

mutually engageable first and second fulcrum means provided respectively on the actuating member and in the housing, radially between a deepest area of the cup-shaped recess and an outer edge of the cup-shaped recess;

a ball movable in the housing;

the housing being internally shaped so as to limit movement of the actuating member and of the ball, and maintain the ball in the cup-shaped recess, and the first and second fulcrum means in a mutually facing relationship;

wherein the control portion controls displacement of the movable contact into one of its positions when the actuating member is in a seated position in which the first and second fulcrum means are mutually engaged all around the deepest area, whereas the control portion controls displacement of the movable contact into its other of said closed and open positions when the actuating member is in a tilted-away position with the first and second fulcrum means being at least partly lifted from one another.

4,618,747

ELECTRICAL SNAP SWITCH WITH DOUBLE ARM RESETTING LEVER

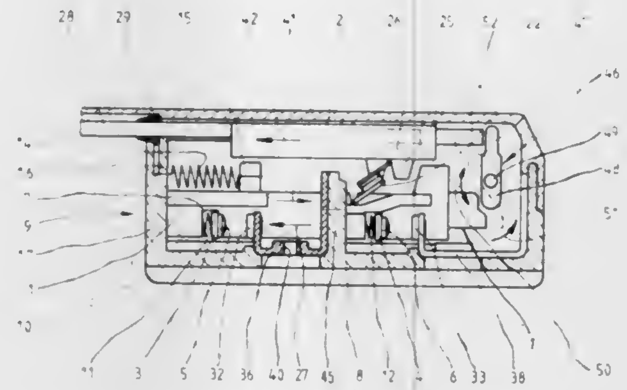
Alois Schaffeler, Spaichingen, Fed. Rep. of Germany, assignor to Marquardt GmbH, Fed. Rep. of Germany

Filed Oct. 3, 1984, Ser. No. 657,341

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1983, 3336338

Int. Cl.⁴ H01H *5/06, 15/18*

U.S. Cl. 200—67 PK 3 Claims



1. An electrical switch comprising a housing, first and second fixed contacts arranged in spaced relationship in said housing, a slide movably mounted on a movement path in said housing and having first and second spaced apart movable contacts thereon which are moved therewith into a contact making position in which they engage respective first and second fixed contacts, spring means urging said slide out of a contact making position, an actuating plunger movable on another movement path in said housing backwardly and forwardly substantially parallel to said slide, said slide and said plunger having adjacent ends in said housing with the end of said slide being spaced from said movable contacts, a snap spring engaged between said plunger in said slide being effective to snap said slide rapidly into and out of a contact making position when said plunger is moved in said housing in a predetermined direction, and a two armed resetting lever pivotally mounted in and to said housing at a fixed location between said plunger and said slide alongside the adjacent ends thereof and between said movement paths, said resetting lever having respective first and second arm portions extending in a straight line on opposite sides of said fixed location and positioned so that they engage the ends of the respective plunger and slide so that when said plunger is moved in a predetermined direction said slide is snapped in a corresponding opposite direction by said resetting lever which is pivoted in snap fashion by engagement with said plunger to cause said resetting member to slap and rapidly move said slide.

4,618,748

SWITCHING DEVICE FOR ELECTRICAL SWITCHING APPARATUS

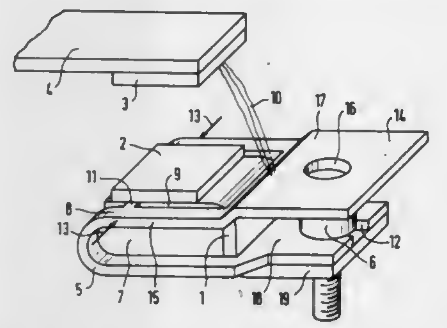
Manfred Mueller, Amberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Oct. 15, 1984, Ser. No. 661,094

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1983, 3337515

Int. Cl.⁴ H01H *33/20*

U.S. Cl. 200—144 R 4 Claims



1. In a switching means for electrical switchgear having a pair of contacts, particularly a contactor, with a substantially linear current lead and an arc deflector arranged adjacent the contact portion, said arc deflector forming a U the free end of which accepts an arc drawn between said contacts, said U being aligned approximately at the level of one of the contacts, the improvement comprising a step-shaped current lead bearing a contact and an arc deflector having a U-shape, one leg portion of the U lying in the area of the stationary contact being offset parallel to the contact, while the other leg portion of the U is penetrated by a fastening bolt and rests against the contact-bearing side of the free end of the step-shaped offset current lead.

4,618,749

SOLID INSULATOR-TYPE VACUUM SWITCH GEAR

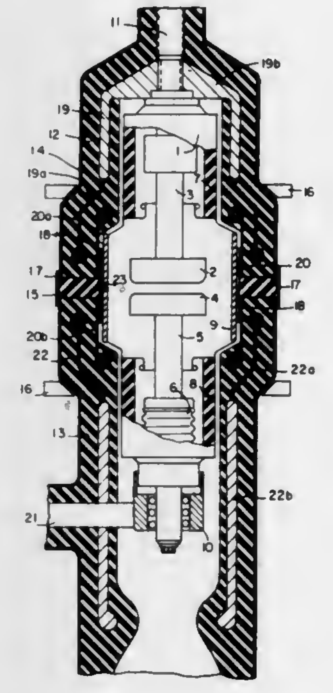
Klaus Böhme, Dresden; Wolfgang Beyer, Radebeul; Günter Seibt, Dresden, and Michael Digmayer, Nossen, all of German Democratic Rep., assignors to VEB Otto Buchwitz Starkstrom Anlagebau Dresden, Dresden, German Democratic Rep.

Filed Sep. 18, 1985, Ser. No. 777,225

Claims priority, application German Democratic Rep., Sep. 24, 1984, 267532

Int. Cl.⁴ H01H *33/66*

U.S. Cl. 200—144 B 11 Claims



1. A vacuum switching apparatus comprising a housing made from an insulating material, a cover means on the outer surface of said housing, said cover means adapted to be connected to ground potential, a vacuum switching chamber placed into said housing, a fixed and a movable contact member mounted in said vacuum switching chamber and each extending through said housing and forming a terminal means, said insulating housing and said vacuum switching chamber forming a space therebetween, gas filling said space, a pair of control electrodes embedded in said insulating housing axially spaced from each other, each of said pair of control electrodes being conductively coupled to a different one of said terminal means, and a further electrode means spaced from said pair of electrode means between said insulating housing and in a region of said insulating housing located with respect to said switching chamber in such a manner that said further electrode is at an electric potential lying between the potential of said terminal means and said ground potential.

4,618,750

VACUUM SWITCHING TUBE WITH A COIL FOR GENERATING A MAGNETIC FIELD

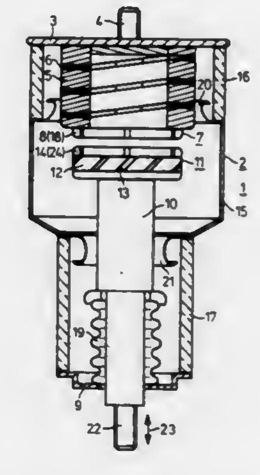
Karl Zückler, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 11, 1985, Ser. No. 743,697

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1984, 3422949

Int. Cl.⁴ H01H *33/66*

U.S. Cl. 200—144 B 5 Claims



1. A vacuum switching tube having a housing, a stationary contact and a movable contact disposed in the housing, said movable contact being movable in a straight line relative to the stationary contact, said switching tube further comprising coil means carrying the current to be switched by the switching tube for generating a magnetic field extending in the space between the contacts, said coil means having two sections, a first and substantially larger section of said coil means being disposed on the stationary contact and the second and smaller section being disposed on the movable contact.

4,618,751

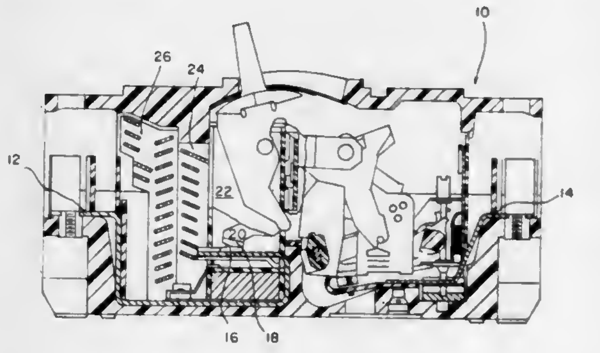
ARC EXTINGUISHING ASSEMBLY

Eugene W. Wehr; Clark L. Oster, and Terence J. Evans, all of Cedar Rapids, Iowa, assignors to Square D Company, Palatine, Ill.

Filed Dec. 21, 1984, Ser. No. 684,559

Int. Cl.⁴ H01H *33/08*

U.S. Cl. 200—144 R 7 Claims



1. An arc suppressing assembly for a circuit breaker having at least one pair of separable contacts comprising;

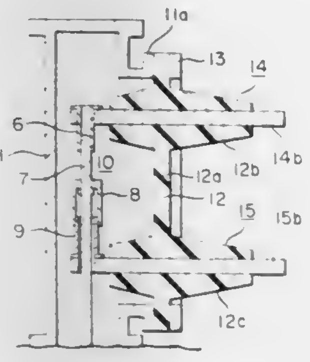
an arc stack assembly;

a baffle assembly in facing relationship with said arc stack assembly, said arc stack assembly intermediate said baffle assembly and said contacts;

said arc stack assembly comprising a pair of insulating support legs having a plurality of slots provided therein, a plurality of arc plates having a tab at each side, said tabs respectively received within said slots of the side legs to retain said arc plates between said side legs, said baffle assembly comprising a pair of insulating side supports including a plurality of slots provided therein, a plurality of insulating baffles provided with a tab at each side, said tabs received within respective slots within said side supports.

4,618,752
GAS-INSULATED INTERRUPTER

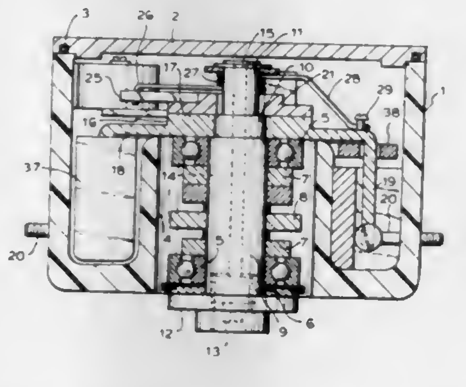
Yukio Ozaki, Amagasaki; Osamu Fujisawa, Kobe; Ryukichi Sakai, Itami, and Hiroshi Hasegawa, Marugame, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 23, 1985, Ser. No. 693,894
Claims priority, application Japan, Jan. 24, 1984, 59-9509
Int. Cl.⁴ H01H *33/54*
U.S. Cl. 200—148 R **3 Claims**



1. A gas-insulated interrupter comprising:
an interrupting unit;
a pair of rigid terminal conductors connected to and extending substantially parallel to each other from said interrupting unit at spaced positions, each one of said terminal conductors having connector elements extending toward the other of said terminal conductors and forming part of said interrupting unit;
a hermetically-sealable housing enclosing said interrupting unit, said housing having therein a single opening sufficiently large to allow said interrupting unit and said terminal conductors, including said connector elements, as assembled to pass therethrough to locate said connector elements within said housing;
means secured to said terminal conductors for hermetically closing said opening in said housing while mechanically rigidly supporting said terminal conductors and said interrupting unit; and
an electrically insulating gas disposed within said housing.

4,618,753
INSULATING CHAMBER

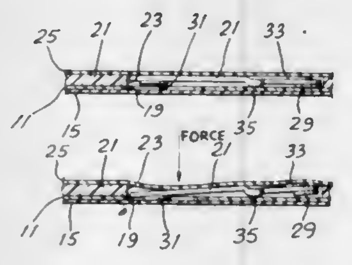
Hans H. Heyde, Itajai-SC, and Julio A. Echeverria, Sao Paulo-SP, both of Brazil, assignors to Lorenzetti-Inebrasa S/A., Itajai-Santa Catarina, Brazil
Filed Dec. 6, 1984, Ser. No. 679,017
Int. Cl.⁴ H01H *33/56*
U.S. Cl. 200—148 G **12 Claims**



1. An insulating chamber for connecting and disconnecting electric switches in medium and high voltage overhead lines so as to quench any electric arc formed, comprising:
a closed and sealed casing containing pressurized sulfur hexafluoride gas for quenching the arc;
at least one fixed contact;
a rotatable shaft provided in said casing and having a length and lower and upper ends;
at least one movable contact rotatably driven by said shaft for engaging said fixed contact; and
spring means engaging said shaft for rotatably driving said shaft so that said movable contact engages said fixed contact,
said rotatable shaft having a first shaft portion beginning at said lower end and extending along a majority of said length for mounting said shaft, a second shaft portion extending above and having a diameter smaller than said first shaft portion for mounting said movable contact, and a third shaft portion extending from said second shaft portion to said upper end of said shaft.

4,618,754
MEMBRANE SWITCH WITH PIVOTABLE ROCKER

David Gross, 2128 Duxbury Cir., Los Angeles, Calif. 90034
Filed Jun. 17, 1985, Ser. No. 745,694
Int. Cl.⁴ H01H *13/52*
U.S. Cl. 200—159 B **22 Claims**



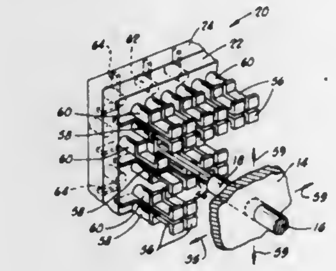
1. A normally closed membrane switch comprising:
a circuit board having an electrical contact fixed thereon;
rocker means located immediately above the circuit board and including a first end and a second end, the first end having an electrical contact on its underside, normally positioned to electrically contact the circuit board contact, and the second end being normally spaced a predetermined distance above the circuit board; and
positioning means for holding the rocker means in its prescribed position above the circuit board, the positioning means including a resilient membrane overlaying the rocker means;
wherein a downward force applied to the portion of the resilient membrane overlaying the second end of the rocker means pivotally lifts the rocker means contact out of electrical contact with the circuit board contact, against the yielding resistance of the resilient membrane, and wherein, upon removal of the downward force, the resilient membrane forceably returns the rocker means to its normal position, with the rocker means contact again electrically contacting the circuit board contact.

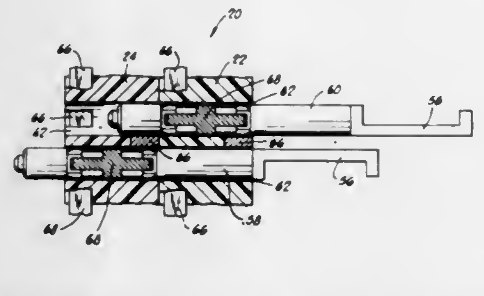
4,618,755
UNIVERSAL MATRIX SWITCHING DEVICE

John E. Wallace, Athens, Ala., assignor to The Boeing Company, Seattle, Wash.
Filed May 28, 1985, Ser. No. 737,941
Int. Cl.⁴ H01H *63/00, 67/00;* H02B *1/02*
U.S. Cl. 200—175 **9 Claims**

1. A universal matrix switching device connected to an electronic controller for matrix switching two sets of electric signal pairs, the device comprising:
a position table with plate having a plurality of actuators mounted thereon, the actuators under electronic control;

a matrix board having a plurality of apertures therethrough and slots cut on both sides of the board and orthogonally oriented with the slots forming a grid pattern, the slots and apertures slightly overlapping;
transmission conductor strips received in the slots for conducting a signal input to output; and

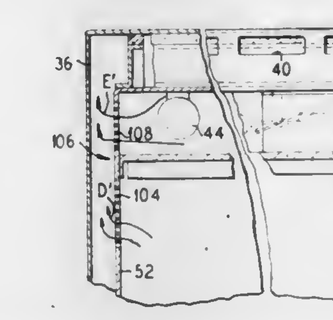




a plurality of movable pins received in the apertures in the matrix board and having electrical contacts therearound, one end of the pins extending outwardly from the matrix board for engagement with the actuators, the actuators when actuated engaging the pins for moving the pins in the matrix board and providing contact between the transmission conductor strips in the slots on both sides of the matrix board.

4,618,756
AIR CIRCULATION SYSTEM FOR MICROWAVE OVEN

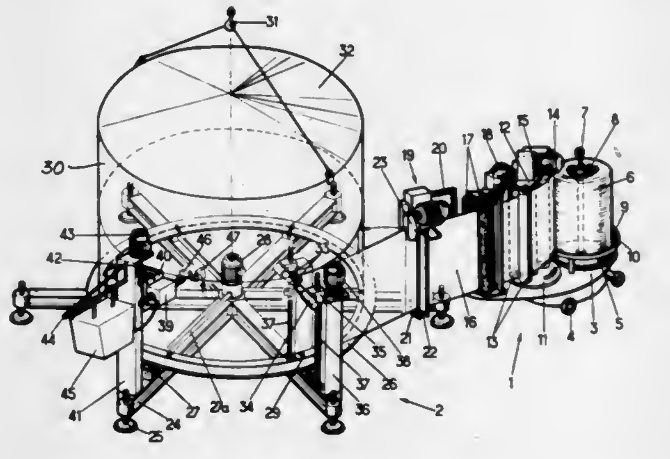
John R. Schwaderer, Claridon Township, Marion County, and Mark J. Kristof, Marion Township, Marion County, both of Ohio, assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Jul. 8, 1985, Ser. No. 752,816
Int. Cl.⁴ H05B *6/64*
U.S. Cl. 219—10.55 R **13 Claims**



1. In a microwave oven having an outer oven cabinet with a front opening door, an inner oven cooking cavity accessed through the door and divided by a panel into a lower cooking area and an upper lighting area with a light bulb, air inlets and outlets in both the oven cabinet and cavity and an air blower in the cabinet to provide an air flow through the inlets and outlets in the cabinet and cavity, means for dividing the air flow from the blower into three spearate air streams comprising:
a first means for directing an air stream through only the cooking cavity lower area and out the front of the oven cabinet;
a second means for directing an air stream through only the cooking cavity upper area, across the light bulb and out the front of the oven cabinet;
said panel forming an air barrier between said cavity lower area and said cavity upper area to prevent the air stream from passing from said cavity upper area to said cavity lower area; and
a third means for directing an air stream to bypass the cooking cavity and exit directly out of the front of the oven cabinet;
whereby predetermined proportions of the air flow through the oven cabinet can be directed through each of the individual air streams.

4,618,757
METHOD AND APPARATUS FOR MANUFACTURING LARGE, METAL CYLINDRICAL STRUCTURES

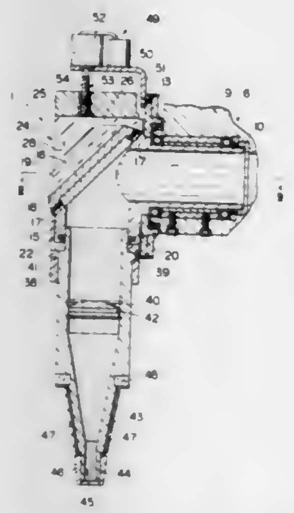
Pierre Cabany, Riorges-Roanne; Andre Gardette, Le Coteau; Xavier Jacquet, Le Coteau; Aurelio Tollis, Le Coteau, and Fernando Tollis, Le Coteau, all of France, assignors to Constructions Soudees du Coteau, Le Coteau, France
Filed Sep. 6, 1984, Ser. No. 647,799
Claims priority, application France, Sep. 6, 1983, 83 14227
Int. Cl.⁴ B23K *9/02*
U.S. Cl. 219—60 R **7 Claims**



1. An apparatus for manufacturing a large-sized cylindrical metal casing by forming and welding successive cylindrical sections, said apparatus comprising:
a coil unwinding device with a vertical spindle and a support disc for unwinding a metal strip from a coil of said strip;
a device for forming and treating said metal strip;
a device for severing a sheet from said strip by cutting said strip to form vertical edges;
a turntable comprising a base and a rotating table made of a ring mounted on rollers, at least one of said rollers being driven at an adjustable speed to form each new cylindrical section from said sheet;
raising means for raising a casing being assembled above a subsequent section to be formed;
welding means for welding together the vertical edges of a raised cylindrical section and a subsequent section located under the raised casing;
a pair of rigid vertical columns integrally fixed to said base of the said turntable and each supporting a roller carriage displaceable vertically by means of a screw, said carriage carrying a jack capable of pressing a roller against the cylindrical section, the two columns and carriages supported thereby being arranged one on the outside and the other on the inside with respect to the rotating table, a variable-speed gear motor being arranged to drive both said screws at the same speed; and
a third column integrally fixed to said base of said turntable and carrying a welding carriage movable vertically under the action of a screw driven by a variable-speed gear motor, said welding carriage carrying a welding head with auxiliary supply elements therefor.

4,618,758
FOCUSING HEAD FOR A LASER-BEAM CUTTING MACHINE

Luigi Gilli, and Domenico Peiretti, both of Turin, Italy, assignors to Prima Industrie S.p.A., Italy
Filed May 21, 1985, Ser. No. 736,649
Claims priority, application Italy, May 22, 1984, 67512 A/84
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121 LG **6 Claims**



1. A focusing head for a laser-beam cutting machine, comprising:

a focusing moving structure;

a focusing lens and an output nozzle, integral with each other, and being connectable to the said structure so as to move, in relation to the same, around two axes combining to form an angle, so as to move the said nozzle along any path and keep the center of said lens, in operation, at a given constant theoretical distance from the surface of the sheet material being cut; wherein the said head comprises a first and second portion moving, in mutual manner, axially parallel to the optical axis of the said lens and to the axis of the said nozzle;

one of the said two portions comprising the said nozzle, the said lens and sensor means for sensing the distance of the center of said lens from the said surface of the sheet material;

a servomechanism, controlled by the said sensor means, said servomechanism being mounted between the said two portions for moving them mutually in the said axial direction, so as to keep the center of said lens, in operation, at at given constant real distance from the said surface of the said sheet material;

the said sensor means comprising a sliding-contact sensor mounted in axially sliding manner onto the output end of the said nozzle and projecting from it so as to slide in operation essentially contacting the said sheet material.

4,618,759
BEAM POSITION CONTROL FOR A LASER MACHINE DEVICE

Gerhard Müller, Aalen; Gerhard Hohberg, Oberkochen, and Peter Greve, Essingen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany
Filed Feb. 13, 1985, Ser. No. 701,167
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1984, 3406677
Int. Cl.⁴ B23K *27/00*
U.S. Cl. 219—121 LR **7 Claims**

1. Arrangement for compensating for the excursion of a laser beam guided along a predetermined path line by a deflecting optical system made up of a plurality of deflecting components for deflecting the laser beam, the arrangement comprising:

a first one of said deflecting components being configured so as to be changeable in position so as to alter and adjust the spatial position of said laser beam;

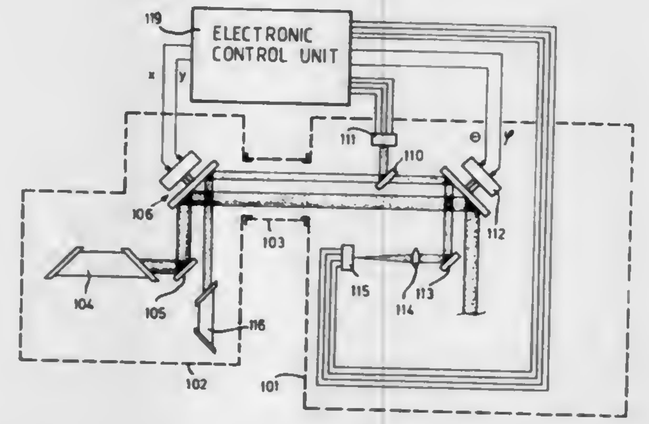
a first photoelectric detector corresponding to said first deflections component and being configured so as to generate a first output signal indicative of the position of rays of light impinging thereon;

means for generating a bundle of rays of light travelling parallel to said path line;

first diverting means disposed downstream of said first deflecting component for diverting a first portion of the rays of said bundle away from said path line so as to impinge on said first detector;

a second one of said deflecting components being configured so as to be changeable in position so as to alter and adjust the angular position of said laser beam;

a second photoelectric detector corresponding to said second deflecting component and being configured so as to generate a second output signal indicative of the position of rays of light impinging thereon;



second diverting means disposed downstream of said second deflecting component for diverting a second portion of the rays of said bundle away from said path line so as to impinge on said second detector; and,

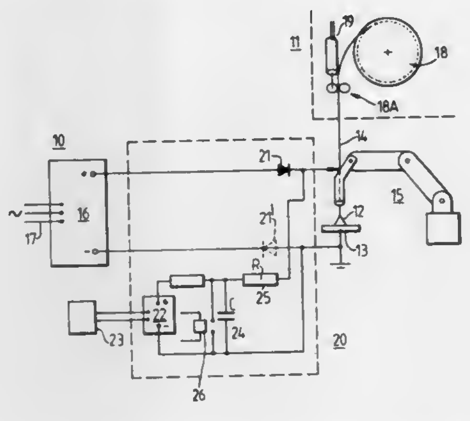
a control unit for receiving said first and second output signals and for generating respective control signals corresponding thereto, said control signals being supplied to said first and second deflecting components to change the respective position thereof to compensate for said excursion by correcting the spatial and angular positions of said beam; and,

said second deflecting component and said second diverting means both being disposed downstream of said first one of said deflecting components whereby said second deflecting component also compensates for angular errors introduced by said first deflecting component.

4,618,760
SHIELDED ARC WELDING USING AUXILIARY VOLTAGE

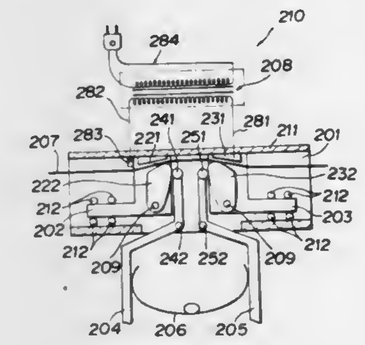
Michael G. Murch, Royston, and Geoffrey B. Melton, Gt Abington, both of England, assignors to The Welding Institute, Cambridge, England
Filed Jan. 8, 1985, Ser. No. 689,712
Claims priority, application United Kingdom, Jan. 11, 1984, 8400685
Int. Cl.⁴ B23K *9/06*
U.S. Cl. 219—130.4 **15 Claims**

7. A method of shielded arc welding using a consumable electrode, said method comprising applying a welding voltage between said electrode and a workpiece; applying an auxiliary, unipolar voltage between said electrode and said workpiece; and advancing said electrode towards said workpiece while said auxiliary voltage is applied, wherein said magnitude of said auxiliary voltage generally increases from an initial value to a value at which an arc is initiated between said electrode and said workpiece, whereby said auxiliary voltage initiates said arc between said electrode and said workpiece before said electrode engages said workpiece.



4,618,761
ELECTRODE CUTTING APPARATUS FOR WIRE CUT ELECTRIC DISCHARGE MACHINE

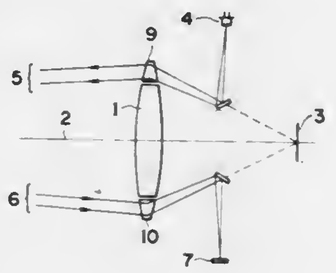
Kiyoshi Inoue, Tokyo, and Tatsue Toyoshima, Kawasakishi, both of Japan, assignors to Inoue-Japax Research Incorporation, Yokohamashi, Japan
Filed Sep. 14, 1983, Ser. No. 532,177
Int. Cl.⁴ B23P *1/08*
U.S. Cl. 219—517 **10 Claims**



1. A wire electrode cutting apparatus for a wire-cut electric discharge machine, comprising means for applying a predetermined tensile force to a portion of a wire electrode to be cut and means for supplying electrical current in a predetermined magnitude to said portion to heat said portion to soften the same in concurrence with the application of tensile force thereto the effect cutting of the wire electrode by the combination of the heating of the wire with application of tensile force thereto, said means for supplying electrical current comprising a contact holder movably supported for displacement towards and away from the wire electrode, a pair of spaced contacts positioned on said contact holder to contact the wire electrode at spaced locations on opposite sides of the location where the wire electrode is to be cut without substantially affecting the tensile force in the wire whereby the heating of the wire and the application of tensile force are applied to the wire at separate locations and control means for displacing the contact holder to bring the contacts into contact with the wire electrode and for operating the electrical current supplying means when the tensile force in said wire reaches a predetermined value.

4,618,762
IN-FOCUS POSITION DETECTING APPARATUS

Jun Hattori, and Sadahiko Tsuji, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 20, 1983, Ser. No. 563,584
Claims priority, application Japan, Dec. 27, 1982, 57-231428
Int. Cl.⁴ G01J *1/20*
U.S. Cl. 250—201 **5 Claims**



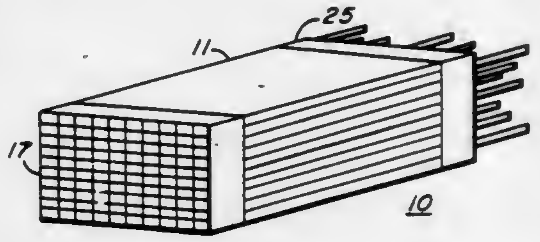
1. An in-focus position detecting optical system comprising:

a focus lens for imaging the image of an object to be photographed at an imaging position, and

a light projecting lens for projecting a distance measuring light from a light source onto said object, a predetermined imaging plane of said light projecting lens being identical to that of said focus lens, and said light projection lens being arranged to move with said focus lens along an optical axis of said focus lens.

4,618,763
INFRARED FOCAL PLANE MODULE WITH STACKED IC MODULE BODY

Charles E. Schmitz, Irvine, Calif., assignor to Grumman Aerospace Corporation, Irvine, Calif.
Filed Apr. 12, 1985, Ser. No. 722,776
Int. Cl.⁴ H01J *40/14*
U.S. Cl. 250—211 R **15 Claims**



1. An infrared focal plane module for interfacing a plurality of detector elements to external electronics comprising:

a plurality of multi-channel integrated circuits disposed in substantially overlapping registry to form a module body, each of said integrated circuits having exposed conductive areas formed along first and second edge portions thereof;

a detector array segment disposed transverse to the plane of said integrated circuits in abutting electrical connection to said integrated circuit first edge portions;

a module header interface for facilitating connections between said integrated circuits and external electronics, said interface being disposed transverse to the plane of said integrated circuits in abutting electrical connection to said integrated circuit second edge portions; and

adhesive insulating layers disposed between adjacent integrated circuits.

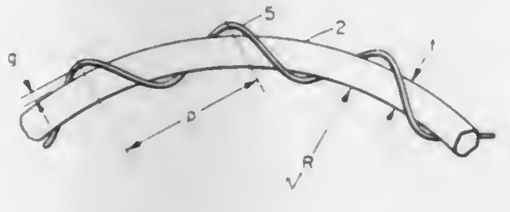
4,618,764
FIBER-OPTICAL PRESSURE DETECTOR

Alan L. Harmer, Plan-les-Ouates, Switzerland, assignor to Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 450,809, Dec. 17, 1982, Pat. No. 4,572,950. This application Nov. 14, 1985, Ser. No. 797,740

Int. Cl.⁴ H01J *5/16*

U.S. Cl. 250—227 **5 Claims**



1. A device for the detection of pressure, comprising an optical fiber of a diameter f having at least one curve of a radius of curvature R, a light source juxtaposed with one end with said optical fiber for injecting a light beam into said optical fiber, a photodetector positioned to receive the light beam at an opposite end of said optical fiber so as to detect modification of said light beam representing pressure applied to said optical fiber between said ends, and a filament of a substantially incompressible material coiled around said optical fiber in a helix having a pitch p and with a mean spacing g between the helix and the optical fiber, said radius of curvature R being greater than a minimum defined by the relationship

$$R_{mm} = \frac{p^2}{2\pi^2} \cdot \frac{f}{g(f + g)}.$$

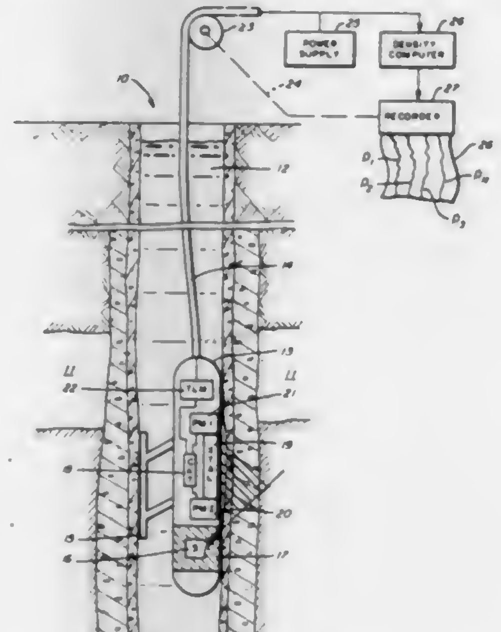
4,618,765
GAMMA RAY MEASUREMENT OF EARTH FORMATION PROPERTIES USING A POSITION SENSITIVE SCINTILLATION DETECTOR

Darrell S. Sonne, Katy, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Jan. 18, 1984, Ser. No. 571,973

Int. Cl.⁴ G01V *5/00*

U.S. Cl. 250—269 **16 Claims**



1. A system for measuring properties of earth formations in the vicinity of a well borehole at a plurality of different radial distances from the borehole, comprising:

a fluid tight hollow body member sized and adapted for passage through a well borehole and housing therein;

a source of gamma rays and means for directing gamma rays from said source outwardly from said body member into earth formations in the vicinity of the borehole; and

a position sensitive scintillation detector for detecting gamma rays scattered back into said body member from the earth formation in the vicinity of the borehole, means for collimating said scattered gamma rays onto said detector, said detector comprising a scintillation crystal longitudinally spaced from said gamma ray source and having a longitudinal length L and two opposite ends and having photomultiplier tubes optically coupled to said opposite ends for providing output voltage signals having voltage amplitudes A and B representative of the intensity of scintillation events occurring in said crystal and impinging at said opposite ends thereof and means for combining said output voltage signals A and B according to a predetermined relationship to derive the position along said length L of each of said scintillation events in said crystal, thereby providing measurements of the gamma ray scattering properties of the earth formations at different radial distances from the borehole.

4,618,766
AUTOMATICALLY ADJUSTABLE ELECTRON MICROSCOPE

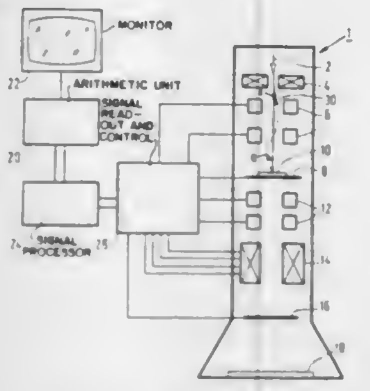
Karel D. van der Mast, Pynacker, and Ulrich Gross, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 608,599, May 9, 1984, abandoned. This application Sep. 9, 1985, Ser. No. 773,721

Claims priority, application Netherlands, Dec. 7, 1983, 8304217

Int. Cl.⁴ G01N *23/04, 23/225*

U.S. Cl. 250—311 **13 Claims**



1. A method of optimally adjusting an image-correcting control variable in an electron microscope including an electron source, an illumination beam tilting device, an electron-optical lens system, and an electron detection device, characterized in that, using the illumination beam tilting device a specimen is irradiated in succession from different predetermined illumination angles, the image information thus provided being detected in the form of pixels and recorded in order to determine an optimum correction condition and, using an algorithm $F(s)=\Sigma(Xi-Yi+s)^{*}$, that value s of the image shift is determined for which the function F(s) is minimum, herein referred to as the s-value, where Xi and Yi are the intensity values of the compared pixels from images, resulting from corresponding successive tilt angles, i is the two-dimensional vector index which specifies the location of the image point at which the intensities Xi and Yi are compared, after which the corresponding image-correcting control variable is readjusted in dependence on the s-value thus determined, and * indicates the absolute value of the quantity or an even power thereof.

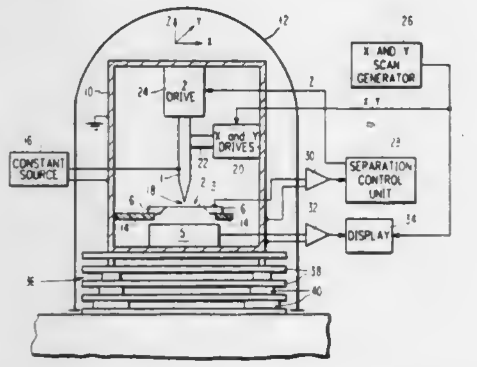
4,618,767
LOW-ENERGY SCANNING TRANSMISSION ELECTRON MICROSCOPE

David A. Smith, Katonah, and Oliver C. Wells, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 22, 1985, Ser. No. 715,139

Int. Cl.⁴ H01J *37/26*

U.S. Cl. 250—311 **14 Claims**



1. A low-energy scanning transmission electron microscope, comprising:

a pointed electrode;

a thin film sample spaced less than 100 nanometers from said electrode;

means providing flow of low-energy electrons from said electrode to said spaced sample without focusing elements, some of the low-energy electrons passing through the sample;

means for mechanically scanning said pointed electrode with respect to the sample; and

electron sensing means for detecting low-energy electrons from said electrode which have passed through the sample.

4,618,768
THERMAL IMAGING DEVICE HAVING NON-ORTHOGONAL SCAN POSITION SENSOR TO SCANNING MIRROR BEAM PATH ANGLE

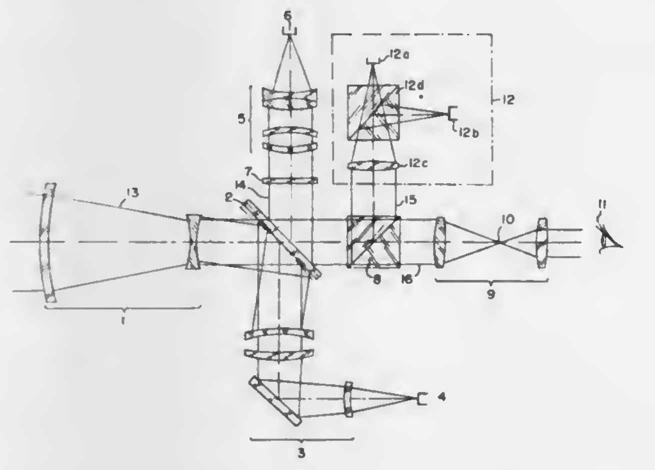
Wolfgang Weigel, Dossenheim, Fed. Rep. of Germany, assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 9, 1984, Ser. No. 670,438

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1983, 3341066

Int. Cl.⁴ G02B *23/02*

U.S. Cl. 250—334 **17 Claims**



1. An improved thermal imaging device including:

an infrared telescope for receiving an incident beam of radiation;

a scanning mirror in optical alignment with said infrared telescope for directing said incident beam of radiation;

said scanning mirror being disposed at a rest position which is inclined at an angle of 45 degrees to said incident beam of radiation;

said scanning mirror further having a visual collimator side facing a beamsplitter and an imaging optical system including an eyepiece, both in optical alignment with said scanning mirror;

an infrared objective in optical alignment with said scanning mirror;

a detector array for receiving radiation which is optoelectronically converted and then represented by a corresponding light emitting diode array in optical alignment with said scanning mirror;

said light emitting diode array being capable of emitting a plurality of l.e.d. output light beams that are

collected by an objective,

directed onto said visual collimator side of said scanning mirror, and

transmitted through said dichroic beamsplitter to said eyepiece; and

a scan position sensor including:

a light source for irradiating said visual collimator side of said scanning mirror and

a scan position sensor detector for sensing radiation and for generating a trigger signal when said detector senses radiation;

the improvement comprising:

said light emitting diode array being capable of emitting said plurality of l.e.d. output light beams that are further

passed through an l.e.d. collimator objective and a plane plate and are also

directed to impinge upon said visual collimator side of said scanning mirror;

said light source within said scan position sensor further being capable of also irradiating said plane plate through said beamsplitter; and

said plane plate being disposed to reflect a plurality of beams of incident radiation through said beamsplitter in order to conduct said plurality of beams of incident radiation to said scan position sensor detector of said scan position sensor.

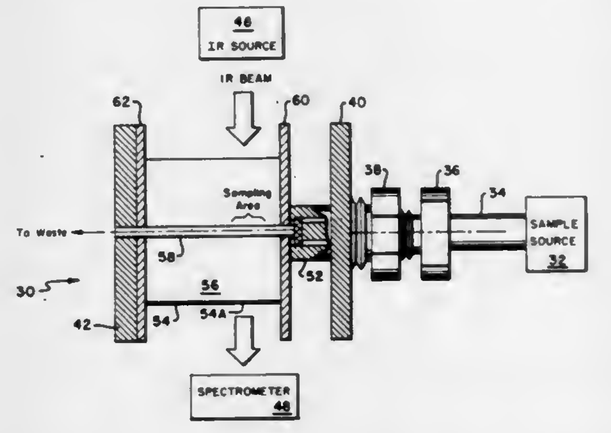
4,618,769
LIQUID CHROMATOGRAPHY/FOURIER TRANSFORM IR SPECTROMETRY INTERFACE FLOW CELL

Charles C. Johnson, Fairfield, Ohio, and Larry T. Taylor, Blacksburg, Va., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 4, 1985, Ser. No. 689,104

Int. Cl.⁴ G01J *1/00;* G01N *1/10*

U.S. Cl. 250—338 **12 Claims**



1. In a Fourier transform infrared spectrometer wherein a sample material is isolated by liquid chromatography and directed through an elongated tube of small inner diameter for irradiation by an infrared beam in obtaining an infrared spectrum of the sample material representing the composition thereof, a sample flow cell comprising:

a generally cylindrical crystal having a longitudinal axis and a generally circular cross-section, wherein said crystal is transparent to infrared radiation and is positioned in line with the infrared beam with its longitudinal axis aligned generally perpendicular to the infrared beam, whereby said infrared beam is incident upon said crystal and is focused generally on the crystal's longitudinal axis and is transmitted therethrough so as to exit therefrom; and

a small diameter, linear bore having a circular cross-section positioned within said crystal along the longitudinal axis and extending the length thereof and oriented generally perpendicular to the direction of propagation of the infrared beam therein, said bore coupled to the elongated tube for receiving and directing the sample material in the path of the infrared beam wherein the exiting infrared beam includes the infrared spectrum of the sample material.

4,618,770

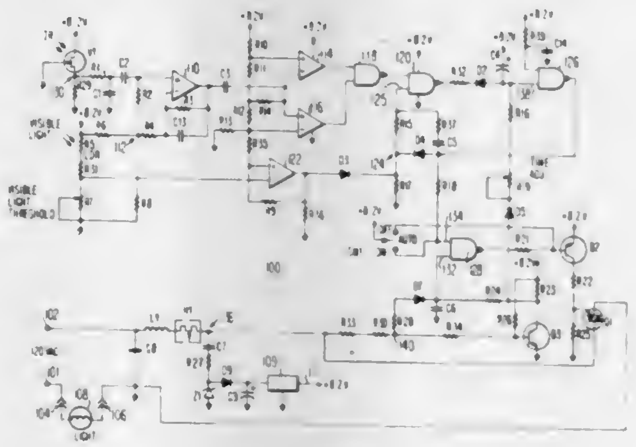
ELECTRICAL CONTROLLER HAVING A WINDOW DISCRIMINATOR

Donald W. Maile, Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 21, 1985, Ser. No. 714,510

Int. Cl.⁴ G08B *13/18;* G01J *5/10*

U.S. Cl. 250—338 3 Claims



1. In a device for controlling the flow of electricity wherein the device includes means for detecting infrared radiation within a given area, the improvement comprising of a window discriminator including:

a voltage divider having three nodes for providing three different voltage potentials, said potentials being relatively and respectively high, intermediate and low;

a first comparator having a noninverting input terminal connected to the node of high voltage potential and an inverting input terminal coupled to the output of said infrared radiation detecting means;

a second comparator having an inverting input terminal connected to the node of low voltage potential and a noninverting input terminal coupled to the output of said infrared radiation detecting means;

means for coupling the node of intermediate potential to both the inverting input terminal of the first comparator and the noninverting input terminal of the second comparator; and

means responsive to the outputs of the comparators for actuating the control of electricity.

4,618,771

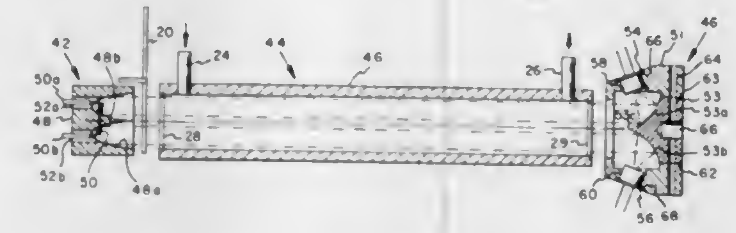
NON-DISPERSIVE INFRARED ANALYZER HAVING IMPROVED INFRARED SOURCE AND DETECTING ASSEMBLIES

Carl A. Farren, Placentia, Calif., assignor to Beckman Industrial Corporation, Fullerton, Calif.

Filed Nov. 14, 1983, Ser. No. 551,454

Int. Cl.⁴ G01J *1/00*

U.S. Cl. 250—343 27 Claims



1. An infrared analyzer comprising:

(a) a sample cell for conducting a flow of a sample gas, said cell comprising a chamber within which the sample gas may be illuminated by a beam of infrared radiation,

(b) an infrared source assembly including:

  (i) a reflecting element, said reflecting element having a reflecting surface which lies in the surface of revolution formed by the rotation of a concave figure about an axis that is offset from the axis of the sample cell, and

  (ii) an approximately circular heating element mounted approximately at the focal region of the reflecting surface,

(c) an infrared detecting assembly for receiving infrared radiation from the source assembly, through the sample cell, and converting said radiation into an electrical signal indicative of the composition of the sample gas.

4,618,772

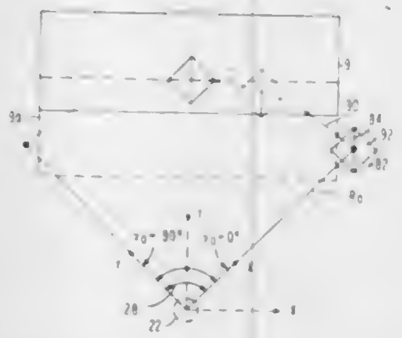
NUCLEAR IMAGING APPARATUS

Werner J. Haas, Uttenreuth, Fed. Rep. of Germany, and Rainer L. Haerten, Long Grove, Ill., assignors to Siemens Gammasonics, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 381,143, May 24, 1982, abandoned. This application Jan. 22, 1985, Ser. No. 693,493

Int. Cl.⁴ G01T *1/166*

U.S. Cl. 250—363 S 13 Claims



1. A nuclear imaging apparatus for producing images of an object under examination which emits nuclear radiation, comprising in combination

(a) a scintillation camera for receiving said radiation and for determining the locations of scintillation events generated by said nuclear radiation, said scintillation camera issuing x and y coordinate signals corresponding to said locations and issuing z unblank signals corresponding to the intensity of said scintillation events;

(b) display means having a screen for displaying image points under the control of said z unblank signals on screen locations determined by said x and y coordinate signals;

(c) means for generating a relative movement between said scintillation camera and said object along a first and a second arc-shaped scanning path;

(d) transferring means generating a shift movement between said object and said scintillation camera from a first pass position to a second pass position along a linear shift direction, each of said first and second pass positions being associated with said first and second scanning paths, respectively; and

(e) electronic means for enclosing a square field of view when said imaging points are displayed on said display means, said electronic means being fed by said x and y coordinate signals and supplying the input of said display means with input signals such that said square field of view maintains a fixed angular orientation with respect to a fixed coordinate system during each of said passes.

4,618,773

APPARATUS FOR THE DIAGNOSIS OF BODY STRUCTURES INTO WHICH A GAMMAEMITTING RADIOACTIVE ISOTOPE HAS BEEN INTRODUCED

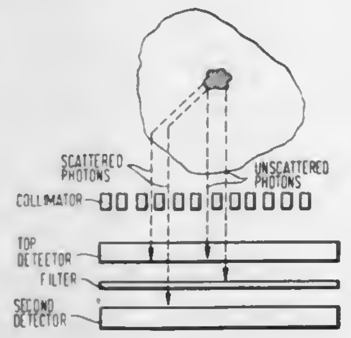
Andrej K. Drukier, c/o H. Hessel, 532 W. 111th Apt. 76, New York, N.Y. 10025

Filed Oct. 4, 1983, Ser. No. 538,794

Claims priority, application United Kingdom, Oct. 4, 1982, 8228232

Int. Cl.⁴ G01T *1/164*

U.S. Cl. 250—363 S 14 Claims



1. Apparatus for the diagnosis of body structures into which an essentially monochromatic gamma-emitting radioactive isotope has been introduce, wherein said gamma-emitting radioactive isotope emits gamma photons at a specific energy and wherein some of said gamma photons lose energy due to Compton scattering in said body structures so that on emerging from said body structures they have second energies below said specific energy, the apparatus comprising, in sequence, a collimator through which photons emanating from the body structure being studied are directed; a first position sensitive photon detector, said first photon detector being adapted to absorb a fraction lying between 10 and 50% of both the scattered and non-scattered photons incident thereon; a filter comprising an element with an atomic number not less than 74 and having an absorption edge at an energy just below said specific energy but above said second energies, whereby said filter preferentially absorbs photons emanating from but not scattered within said body structures and preferentially transmits scattered photons; a second position sensitive photon detector positioned after said filter in line with said body structures, said first detector and said filter for detecting scattered photons passing through said filter and analysing means for producing an image due to non-scattered photons from the image of scattered photons formed by the second detector and the image of scattered and non-scattered photons formed by the first detector.

4,618,774

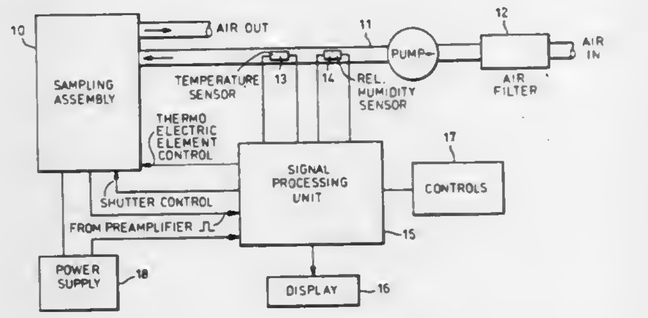
INSTRUMENT FOR MEASURING LEVELS OF CONCENTRATION OF TRITIUM AND TRITIUM OXIDES IN AIR

Marcel Hascal, 1 Boldmere Crescent, Willowdale, Ontario, Canada (M2J 2R8); Adrian Mihai, 181 Robert Hicks Dr., Willowdale, Ontario, Canada (M2R 3R3), and Robert C. Hanrahan, 302 Woodbine Ave., Toronto, Ontario, Canada (M4L 3P4)

Filed Aug. 13, 1984, Ser. No. 639,798

Int. Cl.⁴ G01T *1/20, 7/02*

U.S. Cl. 250—364 17 Claims



1. An instrument for measuring levels of concentration of tritium oxides and/or elemental tritium in air, comprising:

an instrument housing providing an inlet and an outlet for air to be monitored,

a light sensing device mounted therein, the light sensing device having a window,

circuit means connected to the light sensing device for deriving output signals therefrom proportional to the light sensed,

a thermally conductive mounting block having a mounting surface spaced from the window for mounting a scintillator in viewing relationship thereto,

means for flowing air to be monitored through the space between the mounting surface and the window,

means for selectively cooling and warming the mounting block for condensing air moisture onto the scintillator and evaporating condensed moisture therefrom, and

means for selectively exposing the scintillator to the window for timed durations.

4,618,775

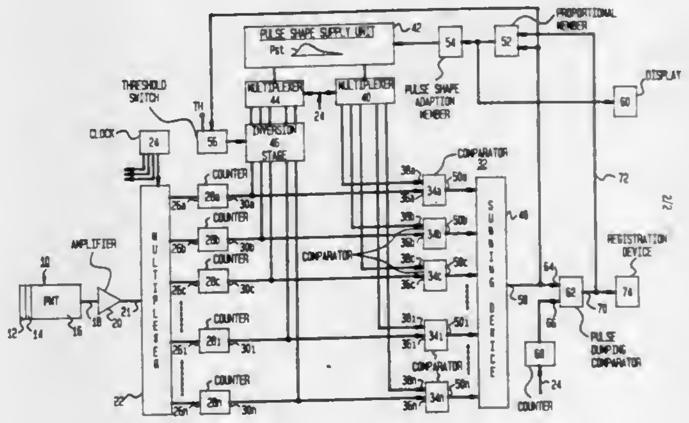
RADIATION DETECTOR CIRCUIT WITH REAL TIME PHOTON COUNTING

Dennis E. Persyk, Barrington, and Everett W. Stoub, Villa Park, both of Ill., assignors to Siemens Gammasonics, Inc., Des Plaines, Ill.

Filed Mar. 26, 1984, Ser. No. 593,020

Int. Cl.⁴ G01T *1/208*

U.S. Cl. 250—369 12 Claims



1. A radiation detector circuit, comprising:

(a) a radiation detector containing

(a1) a scintillation crystal; and

(a2) a photomultiplier tube of a type adapted for real time photon measurement and having a pulse output;
(b) a plurality of pulse counters each having a pulse input and a count signal output;
(c) a time multiplexer means between the pulse output of the photomultiplier tube and the pulse inputs of the pulse counters for connecting each pulse input of each counter in succeeding time periods with the pulse output of the photomultiplier tube; and
(d) an evaluation circuit means connected with the count signal outputs of the counters for evaluating each count signal of each counter measured during each of said succeeding tim eperiods.

4,618,776
LIGHT AND WEATHER RESISTANCE SENSING SYSTEM WITH A SENSED SIGNAL TRANSMISSION CHANNEL

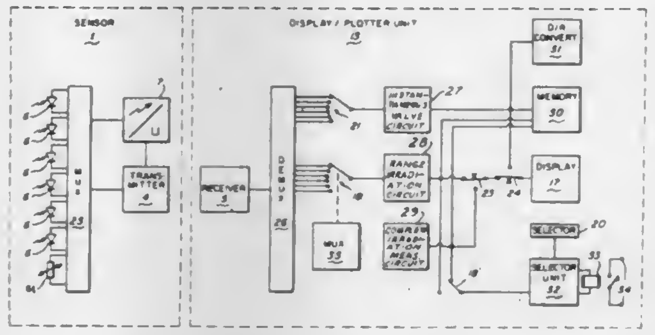
Walter Stürm, Hanau; Helmut Becker, Limeshain; Jürgen Witt, Hainburg; Werner Fritz, Steinau-Sarrod, and Ursula Eysholdt, Hanau, all of Fed. Rep. of Germany, assignors to W. C. Heraeus GmbH, Hanau, Fed. Rep. of Germany

Filed Mar. 9, 1984, Ser. No. 587,500

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1983, 3310631

Int. Cl.^{4} G01J *3/36;* G01N *17/00*

U.S. Cl. 250—372 **4 Claims**



1. Apparatus for testing the resistance of samples of various materials to light and weathering, comprising
a sample testing chamber (10) defined by a housing wall (8),
lamps (2) disposed in said chamber and simulating the effect, on samples, of radiation, including sunlight, said samples being rotatably arranged in a plane in said chamber,
a sensor (15) disposed in the plane of, and rotatable with, said samples,
said sensor (15) having multiple receptor cells (6) producing a plurality of respective output signals,
each cell being responsive to a particular spectral range of radiation and generating signals corresponding to the irradiance (mW/sq.cm.) and irradiation (Ws/sq.cm.) incident upon it, and having a respective output;
means (4), rotatable with said sensor (15), transmitting the output signals from the sensor, serially, to a stationary radio receiver (5) external to said rotatable sensor, said means including a single multiplexer (25) and a single radio transmitter (4), said multiplexer (25) having an input connected to each receptor cell output and an output connected to said radio transmitter (4);
a plurality of solar cells (7) arranged on said sensor (15) and generating, from radiation received from said sunlight-simulating lamps (2), all electrical power necessary for operation of said receptor cells (6) and transmitting means (4);
said stationary radio receiver (5), including an antenna (3) projecting from said housing wall (8) into said chamber (10), receiving said signals and directing them to a de-multiplexer (26) for subsequent processing and display.

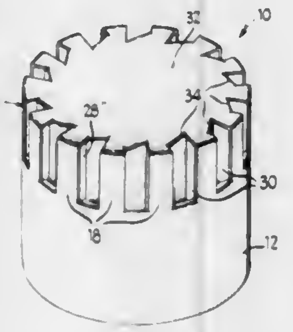
4,618,777
OUTER ELECTRODE WITH IMPROVED SMOKE ENTRY

George A. Schoenfelder, Downers Grove; Stephen L. Siegel, Hanover Park, and James S. Slater, Batavia, all of Ill., assignors to Pittway Corporation, Aurora, Ill.

Filed Nov. 19, 1984, Ser. No. 673,110

Int. Cl.^{4} G01T *1/185*

U.S. Cl. 250—381 **1 Claim**



1. An outer electrode for a combustion products detector comprising a cylindrical base portion; a cylindrical vent portion integral with said base portion; and a top wall integral with said vent portion; said vent portion including a plurality of alternating inner and outer slats forming entry slots allowing the introduction of ambient air and products of combustion, said outer slats being segments of a first surface of revolution having a first diameter, said inner slats being skewed between second and third surfaces of revolution having a second and third diameters, respectively, and a plurality of inner walls joining said inner slats to said base and sloping radially inwardly and away from said top wall.

4,618,778
RADIOGRAPHIC INTENSIFYING SCREEN

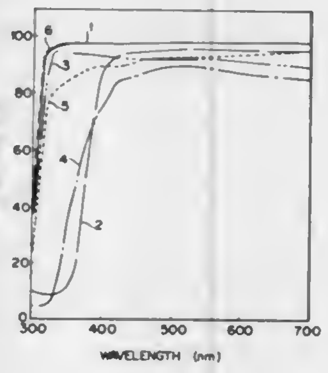
Akira Kitada, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed Jun. 6, 1984, Ser. No. 617,978

Claims priority, application Japan, Jun. 7, 1983, 58-100184

Int. Cl.^{4} G01J *1/58;* G01N *21/64;* G01T *1/00*

U.S. Cl. 250—483.1 **6 Claims**



1. A radiographic intensifying screen comprising a support, a phosphor layer which comprises a binder and a phosphor dispersed therein, and a light-reflecting layer provided between the support and the phosphor layer which contains a white pigment, characterized in that said white pigment comprises alkaline earth metal fluorohalide represented by the formula $M^{II}FX$, in which M^{II} is at least one alkaline earth metal selected from the group consisting of Ba, Sr and Ca; and X is at least one halogen selected from the group consisting of Cl and Br.

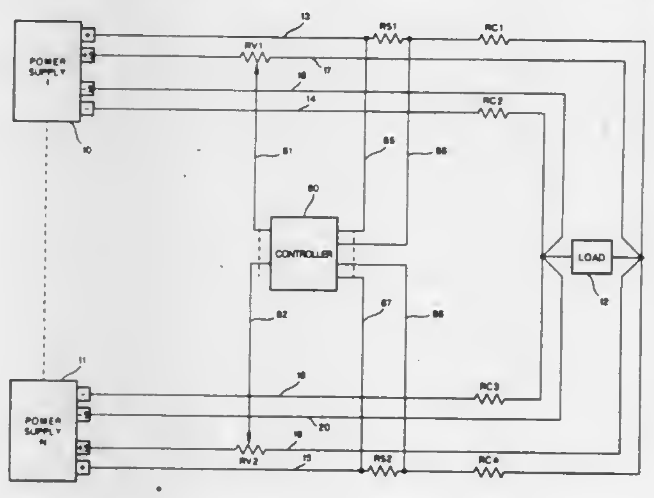
4,618,779
SYSTEM FOR PARALLEL POWER SUPPLIES

Nathan Wiscombe, Broomfield, Colo., assignor to Storage Technology Partners, Louisville, Colo.

Filed Jun. 22, 1984, Ser. No. 623,646

Int. Cl.^{4} H02J *1/10*

U.S. Cl. 307—60 **12 Claims**



1. A system for connecting a plurality of power supplies in parallel, each of said power supplies having an output terminal for connecting a power line between the output terminal and a common load, and a sense terminal for connecting a sense line between the sense terminal and the common load, each of said power supplies having control means therewithin for adjusting the power delivered to said common load over said power line in response to a sense signal appearing at said sense terminal, said system comprising:
means for sensing the current delivered to the load through the power line of each of said power supplies;
means for comparing the current sensed by said sensing means against a desired shared current value, and for generating a control signal representative of said comparison; and
means responsive to said control signal for varying said sense signal appearing at the same terminal of each of said power supplies in a manner that causes the current delivered by that power supply to the load to approach said desired current value, wherein said means for varying the sense signal appearing at the sense terminal comprises a variable impedance element inserted into the sense line of each power supply, said variable impedance element having an impedance that varies as a function of a signal applied to a control terminal thereof, said control signal generated by said comparison means being coupled to the control terminal of said variable impedance element.

4,618,780
POWER-OFF DETECTION CIRCUIT FOR AN ELECTRONIC APPARATUS

Keiichi Ikoma, Nara, and Syuji Katayama, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

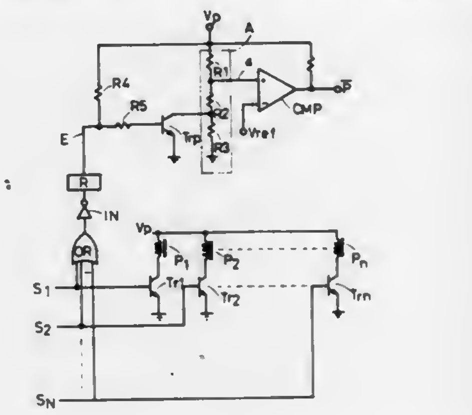
Filed Jan. 25, 1984, Ser. No. 573,645

Claims priority, application Japan, Feb. 8, 1983, 58-18834[U]

Int. Cl.^{4} G01R *17/02*

U.S. Cl. 307—130 **14 Claims**

1. Power-off detection means for use in an electronic apparatus having a power supply developing a supply voltage and at least one heavy load selectively connectable to said power supply in response to the generation of a control signal, said means comprising:
means, responsive to said supply voltage, for determining whether said supply voltage drops below a reference level to thereby indicate that said power supply has been disconnected and for producing a power-off signal indicative thereof;
means, responsive to generation of said control signal, for raising said reference level of said means for determining



for a period of time so as to prevent said power-off signal from erroneously indicating a power-off condition when said heavy load is initially connected to said power supply.

4,618,781
GATE TURN-OFF THYRISTOR CONSTRUCTION

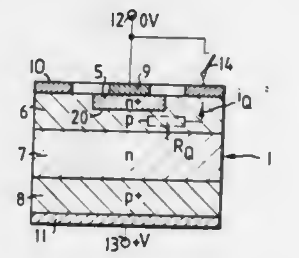
Dieter Silber, Hausen; Friedhelm Sawitzki, Frankfurt am Main, and Kurt Roy, Götzenhain, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Fed. Rep. of Germany

Continuation of Ser. No. 46,935, Jun. 8, 1979, abandoned. This application Mar. 20, 1981, Ser. No. 246,019

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1978, 2825794

Int. Cl.^{4} H03K *17/60*

U.S. Cl. 307—252 C **5 Claims**



1. A gate turn-off thyristor with low control power consumption comprising:
a first emitter layer (8) of one conductivity type;
a main base layer (7) of another conductivity type connected to said first emitter layer;
a control base layer (6) of said one conductivity type connected to said main base layer;
a second emitter layer (5) of said other conductivity type connected to said control base layer at a junction (20) therebetween which surrounds a portion of said second emitter layer;
a second emitter contact (9) connected to said second emitter layer;
a control base contact (10) connected to said control base layer and having an opening with a geometric shape that has a center, said opening having a boundary surrounding and spaced from said second emitter contact and said junction;
a first emitter contact (11) connected to said first emitter layer;
biasing means (12,13) connected to said contacts for applying a turn-off current to said control base contact;
said control base layer having a lateral shunt resistance (R_Q)

between said junction (**20**) and said control base contact (**10**); and

means (**14,14'**) for turning said turn-off thyristor off by a short circuiting of said control base contact (**10**) with said second emitter contact (**9**), connected between said control base and second emitter contacts;

the surface resistance (ρ_s) of said control base layer (**6**) between said center and said control base contact boundary being selected so that, with a control base turn-off current which is sufficient for turning off the thyristor, a potential appears on said lateral shunt resistance (R_Q) which is less than that appearing at said junction (**20**) whereby the difference between said potentials is used as an additional driving potential for a carrier current flowing over said lateral resistance and said control base contact by said means for turning said gate turn-off thyristor off.

4,618,782

TRANSISTOR POWER AMPLIFIER HAVING REDUCED SWITCHING TIMES

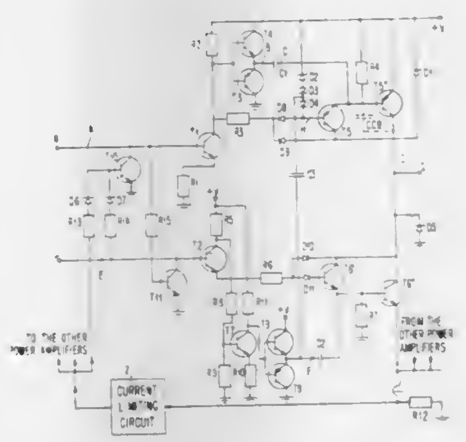
Albrecht Lang, Leinfelden-Echterdingen, and Walter H. Sakmann, Nufringen, both of Fed. Rep. of Germany, assignors to Interr:: ional Business Machines Corporation, Armonk, N.Y.

Filed Aug. 5, 1983, Ser. No. 520,410

Claims priority, application European Pat. Off., Aug. 25, 1982, 82107773.2

Int. Cl.⁴ H03K *17/60, 3/01, 3/33*

U.S. Cl. 307—255 **5 Claims**



TO THE OTHER POWER AMPLIFIERS
FROM THE OTHER POWER AMPLIFIERS
CURRENT LIMITING CIRCUIT

1. A transistor power amplifier having short switching times comprising:

an input terminal;

an output terminal;

an input stage provided with an input bipolar transistor having the base thereof connected to said input terminal, collector thereof connected to a positive voltage source and emitter thereof connected to a negative voltage source maintained at a reference potential;

an output stage provided with first and second output bipolar transistors interconnected in Darlington circuit configuration including the emitter of said first out ut transistor connected to said positive voltage source, the collector of said first output transistor connected to said output terminal, the base of said first output transistor connected to the emitter of said second output transistor, the base of said second output transistor connected, via a first diode, to the collector of said input transistor and the collector of said second output transistor connected, via a second diode, to said positive voltage source and, via a third diode, to the collector of said input transistor; and

a pair of complementary bipolar transistors having their bases interconnected and their emitters interconnected, said interconnected bases being connected to the collector of said input transistor, said interconnected emitters being connected, via a capacitor, to the base of said first output transistor and the collectors of said complementary transistors being connected to said positive and negative voltage sources, respectively.

4,618,783

PRODUCTION OF SHORT LIGHT PULSES BY TIME COMPRESSION

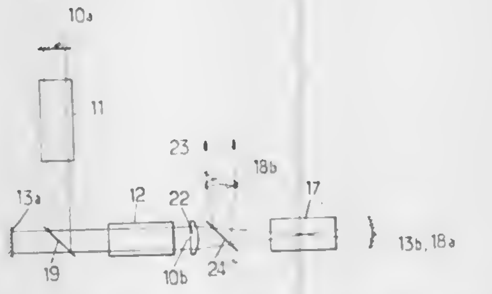
Francois Pradere, Soisy Sous Montmorency, and Robert Frey, Paris, both of France, assignors to Centre National de la Recherche Scientifique, Paris, France

Filed Apr. 23, 1984, Ser. No. 602,675

Claims priority, application France, Oct. 6, 1983, 83 15913

Int. Cl.⁴ H03F *7/00*

U.S. Cl. 307—426 **15 Claims**



1. A method for generating mono-pulses of light by time compression of laser energy, comprising: providing a Raman medium in a low Q energy storage cavity having low losses for light at a predetermined frequency; storing energy delivered by a laser at said predetermined frequency in said storage cavity; locating said Raman medium in a Stokes cavity having a high gain at a Stokes frequency; and extracting the stored energy at said Stokes frequency, whereby most of the stored energy is extracted by a single to and fro travel through the Stokes cavity.

4,618,784

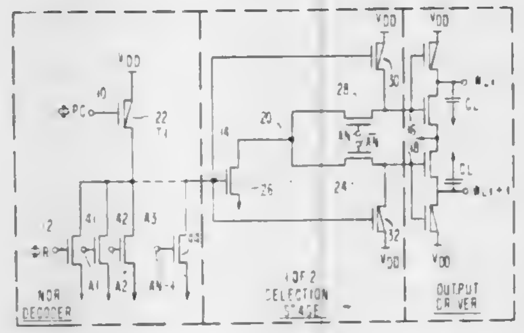
HIGH-PERFORMANCE, HIGH-DENSITY CMOS DECODER/DRIVER CIRCUIT

Barbara A. Chappell, Amawalk; Thekkemadathil V. Rajeevakumar, Scarsdale; Stanley E. Schuster, Granite Springs, and Lewis M. Terman, South Salem, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 28, 1985, Ser. No. 695,664

Int. Cl.⁴ H03K *19/096, 19/20, 19/017;* **G11C** *8/00*

U.S. Cl. 307—449 **11 Claims**



1. A decoder/driver circuit for a semiconductor memory comprising:

a NOR decoder means connected to true and complement lines of a plurality of A1 to AN−1 memory address bits for receiving said memory address bit signals thereon,

said NOR decoder means further including a first output node having a high signal condition thereon when all said plurality of designated address bit signals A1 to AN−1 coupled thereto are at a low signal condition and having a low signal condition thereon when any of said plurality of designated address bit signals A1 to AN−1 have a high signal condition,

an output word line driver means coupled to a first memory work line and a second memory work line,

a selection means coupled to said first node of said NOR decoder means and the input of said output word line driver means, said selection means being also coupled to the true and complement lines of an AN memory address bit signal, said selection means being responsive to high signal condition on said NOR decoder first node and a high signal condition on said true line of said AN address bit signal for producing a high signal condition on said first memory work line and a low signal condition on said second memory work line, said selection means being also responsive to a high signal condition on said NOR decoder first node and a high signal condition on said complement line of said AN address bit signal for producing a high signal condition on said second memory work line and a low signal condition on said first memory work line,

wherein said selection means includes a first transistor switching device having a gate coupled to said true line of said AN address bit signal and a second transistor switching device having a gate coupled to said complement line of said AN address bit signal,

a third transistor switching device having a gate coupled to said first node of said NOR decoder means, said third transistor switching device being coupled to and forming a conduction path between first and second transistors and voltage ground when said third transistor is switched on in response to a high signal condition on said NOR decode first node,

wherein a high signal condition on said true line coupled to said first transistor and a high signal condition on said NOR decoder first node coupled to said third transistor forms a conduction path for producing said high signal condition on said first word line, and

wherein a high signal condition on said complement line connected to said second transistor and a high signal condition on said NOR decoder first node forms a conduction path for producting said high signal condition on said second word line.

4,618,785

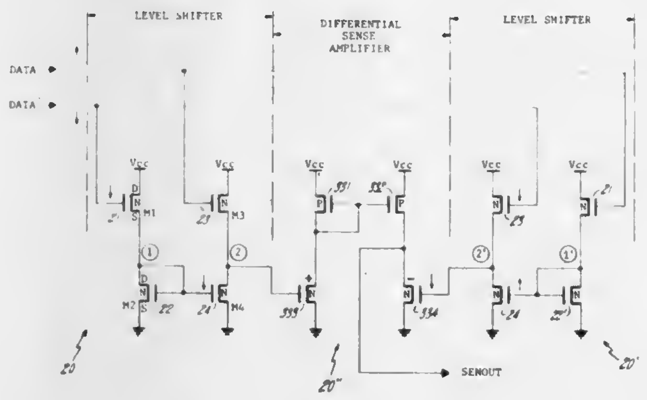
CMOS SENSE AMPLIFIER WITH LEVEL SHIFTER

Hiep van Tran, Carrollton, Tex., assignor to Thomson Components - Mostek Corporation, Carrollton, Tex.

Filed Sep. 6, 1984, Ser. No. 648,091

Int. Cl.⁴ H03K *5/24;* **G11C** *7/06*

U.S. Cl. 307—530 **3 Claims**



1. A sense amplifier for a CMOS static RAM which has a pair of complementary data outputs comprising a CMOS differential amplifier including first and second inputs and an output, first and second level shifters, the first connected between one data output and the first differential amplifier input and the second connected between the other data output and the second differential input, each level shifter comprising two pairs of series-connected MOS transistors, the differential amplifier comprising two pairs of complementary transistors, the level shifters being operatively connected to lower the voltage levels applied to the inputs of the differential amlifier below the levels of the data outputs.

4,618,786

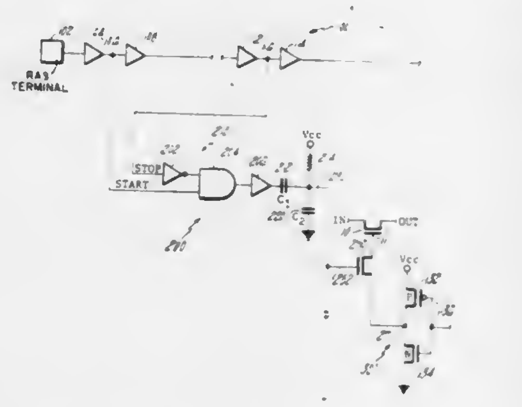
PRECHARGE CIRCUIT FOR ENHANCEMENT MODE MEMORY CIRCUITS

Mark G. Johnson, Sunnyvale, Calif., assignor to Thomson Components - Mostek Corporation, Carrollton, Tex.

Filed Aug. 13, 1984, Ser. No. 640,276

Int. Cl.⁴ H03K *17/06, 19/096*

U.S. Cl. 307—578 **3 Claims**



1. A field-effect transistor circuit, employing only enhancement transistors, for controlling the passage of at least one controlled signal, after a first predetermined relative time, from an input terminal to an output terminal comprising:

at least one pass transistor having a pass transistor gate, an input node and an output node respectively connected to said input terminal and an output terminal, for passing to said input terminal to said output terminal;

receiving means for receiving a cycle-initiating signal;

pulse-forming means, responsive to said receiving means, for forming a precharge pulse signal having a predetermined duration and a precharge voltage magnitude greater than a power supply voltage magnitude, said precharge pulse signal reaching said precharge voltage magnitude said first predetermined relative time after said cycle-initiating signal;

distributing means for distributing said precharge pulse signal to at least one gate control means for controlling the voltage on said pass transistor gate in response to said precharge pulse signal, said gate control means including means for forming an electrical path, for raising said pass transistor gate to said power supply voltage magnitude, between a switching node and said pass transistor gate; and

controllable current means, connected to said switching node, for supplying current at a voltage substantially equal to said supply voltage to said switching node at said predetermined relative time after said cycle-initiating signal has been received by said receiving means, whereby said pass transistor gate is brought substantially to said power supply voltage, and also for establishing a path from said pass transistor gate to ground at a second predetermined relative time after said first predetermined relative time.

4,618,787

ADJUSTABLE TIME DELAY CIRCUIT

Barry H. Jacksier, Wheeling, and Gary B. Ollendick, Mundelein, both of Ill., assignors to AT&T Teletype Corporation, Skokie, Ill.

Filed Dec. 9, 1983, Ser. No. 559,619

Int. Cl.⁴ H03K *5/13*

U.S. Cl. 307—591 **10 Claims**

1. An adjustable time delay circuit (**10**) which includes an adjustment feature compensating for environmental influences comprising:

an input terminal (**14**);

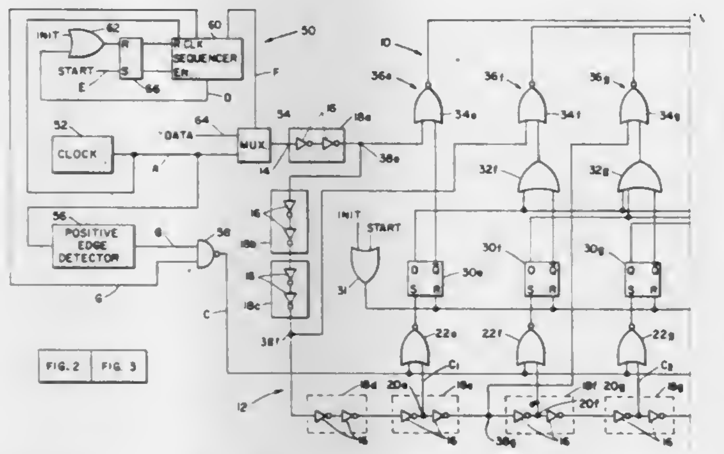
an output terminal (**41**);

a plurality of serially connected time delay elements (**16**) forming a tapped time delay line (**12**), said time delay line having one end thereof connected to the input terminal;

first means (**52**) for generating first signal (A), said first signal being fed to the input terminal of said time delay line (**12**);

second means (**56**) for generating second signal (C) in response to said first signal;

third means (**22*e–m***) responsive to said first signal at a plurality of selected locations along said time delay line (**12**) and



responsive to said second signal for providing one of a plurality of possible control signals in response to a predetermined relationship between said first (A) and second (C) signals; and

a plurality of signal activated switches (**36*e–m***), each switch being responsive to a corresponding one of said control signals for connecting a selected tap (**38*e–m***) of said time delay line (**12**) to said output terminal (**41**).

4,618,788

INTEGRATED DELAY CIRCUIT FOR DIGITAL SIGNALS

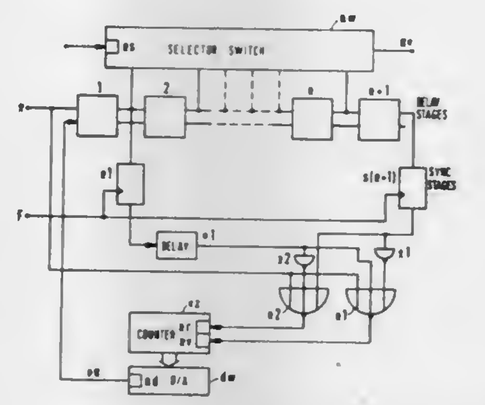
Reiner Backes, and Ulrich Langenkamp, both of Freiburg, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Feb. 15, 1984, Ser. No. 580,512

Claims priority, application European Pat. Off., Feb. 17, 1983, 83101401; Apr. 20, 1983, 83103820

Int. Cl.⁴ H03K *5/13;* H03L *7/00*

U.S. Cl. 307—603 **18 Claims**



1. An integrated delay circuit for digital signals said circuit providing a delay adjustable in n equal steps comprising:

an input terminal for receiving said digital signals;

an output terminal;

n+1 cascaded delay stages coupled at one end of said input terminal, each of said delay stages comprising a control terminal, first and second cascaded inverters, an integrated capacitor having one terminal coupled to the output of said first inverter, a transfer transistor having a gate coupled to a control terminal and via its channel coupling the other terminal of said capacitor to ground, the delay time of said delay stage being adjusted by the potential at said control terminal;

a one-out-of-n selector switch for selecting the delay between said input and said output terminal and having n inputs coupled respectively to the outputs of n of said delay stages and having an output coupled to said output terminal;

a clock terminal receiving clock signals having a frequency fc where fc=1/nt and t is the delay provided by n of said n+1 cascaded delay stages;

a first clock synchronizing stage having a first input coupled to said clock terminal, a second input coupled to the output of a first delay stage of said n+1 cascaded delay stages, a first synchronizing output, and providing signals from the output of said first delay stage synchronized to said clock signals at said first synchronized output;

a second clock synchronizing stage having a first input coupled to said clock terminal, a second input coupled to the output of the last delay stage of said n+1 cascaded delay stages, a second synchronizing output, and providing signals from the output of said last delay stage synchronized to said clock signals at said second synchronizing output;

a delay circuit having an input coupled said first synchronizing output for delaying the output thereof by one period of said clock signals;

first and second combinational logic circuits each coupled to the output of said delay circuit, said second synchronizing output, and said input terminal for providing first and second control signals;

an up/down count having an up input responsive to said first control signal and a down input responsive to said second control signal, and a plurality of count output terminals;

a digital to analog converter having a plurality of input terminals each coupled to one of said plurality of count output terminals and having an analog output terminal coupled to said control terminal of all of said n+1 cascaded stages.

4,618,789

LINEAR MOTOR FOR THE HIGH-SPEED RECIPROCATING MOVEMENT OF A ROTOR SLIDE POSSESSING MASS

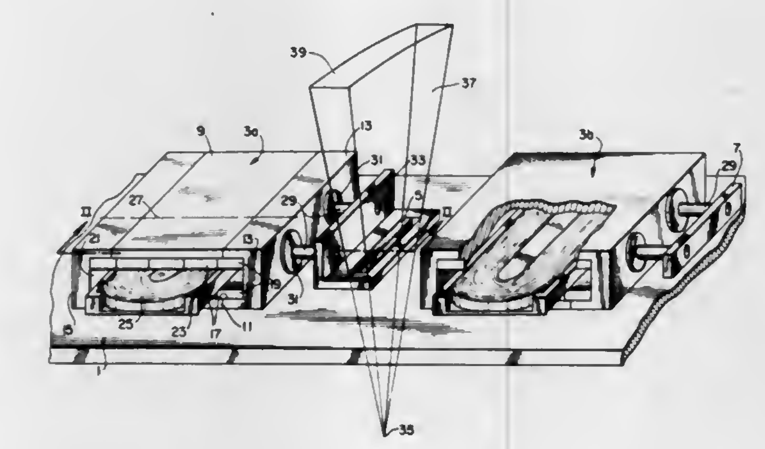
Peter Flisikowski, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 12, 1984, Ser. No. 630,474

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1983, 3326238

Int. Cl.⁴ H02K *41/02*

U.S. Cl. 310—13 **9 Claims**



1. A linear motor for high-speed reciprocation of a slide having a substantial mass, comprising

first and second mutually parallel flat stator plates, each of said plates having a respective facing side facing the other plate,

at least one flat permanent magnet disposed on one of said facing sides and defining an air gap, said magnet creating a magnetic field in said air gap, substantially perpendicular to said facing sides,

a slide member disposed in said air gap and mounted for linear motion with respect to said stator in a given direction substantially parallel to said stator plates, and

a coil carried on said slide member, movable by said slide member in said magnetic field,

characterized in that said coil is spiral wound from an aluminum film having a surface insulating layer, the axis of said spiral being perpendicular to the direction of movement of the slide and parallel to the direction of the magnetic field, and

said motor comprises first and second bridges extending between said fist and second stator plates at opposite ends of the plates in the direction of slide movement, and gas bearings formed in respective bridges, said slide being positioned transversely of the direction of movement by said gas bearings.

4,618,790

AXIAL AIR GAP MOTOR

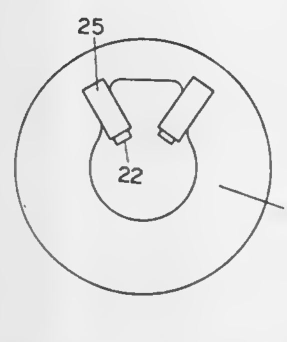
Yoshitaka Kakuda, Takefu, and Norimasa Kondoh, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 13, 1985, Ser. No. 765,197

Claims priority, application Japan, Aug. 16, 1984, 59-170640; Aug. 16, 1984, 59-170641

Int. Cl.⁴ H02K *5/16*

U.S. Cl. 310—90 **6 Claims**



1. An aixal air gap motor comprising a coreless armature having a plurality of coils in planar form set in resin, and fixed on a shaft, a bracket including a permanent magnet opposed to said armature through an axial air gap, a planar portion having said permanent magnet fixed thereto, a cylindrical oil receiving and holding portion continuous with the radially inner side of said planar portion and projecting axially outward, and a cylindrical bearing holding portion continuous with said oil receiving and holding portion and projecting axially inward, a magnetic path plate opposed to that planar surface of the armature which faces away from said permanent magnet, with an air gap defined between said magnetic path plate and said planar surface, said magnetic path plate being fixed around its outer periphery to said bracket, a sleeve bearing fixed to the bearing holding portion of said bracket with its opposite ends exposed outside said bearing holding portion, said sleeve bearing cantilever-wise supporting said shaft for rotation therein, oil storage members positioned on the inner and outer surfaces of said bracket to surround at least a portion of said sleeve bearing and serving to feed lubricating oil to said sleeve bearing, an end cover attached to the outer side of said oil receiving and holding portion and adapted to hold said oil storage member positioned on the outer side of said bracket, a bearing cover attached to the inner side of said oil receiving and holding portion and adapted to hold said oil storage member positioned on the inner side of said bracket, an oil thrower secured to said shaft with its front end positioned inwardly of said end cover, said oil thrower ensuring that lubricating oil leaking from the portion of said sleeve bearing which is exposed outside said bracket is returned to the oil storage member which is positioned on the outer side of said bracket, and a second oil thrower secured to the shaft between the end surface of said sleeve bearing positioned inside said bracket and said armature, the front end of said second oil thrower being positioned between said bearing cover and said sleeve bearing.

4,618,791

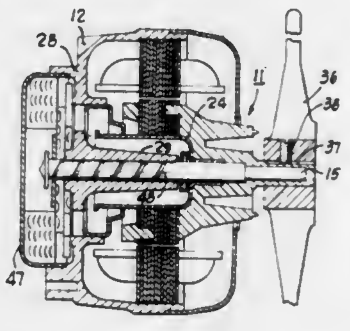
ROTOR ASSEMBLY WITH DIE CAST SHAFT EXTENSION COUPLING

Giles W. Morrill, Rocky Fork, and Stephen G. Rice, Rt. 2, Box 505, both of Erwin, Tenn. 37650

Filed Oct. 17, 1985, Ser. No. 788,333

Int. Cl.⁴ H02K *3/06, 5/16*

U.S. Cl. 310—90 **18 Claims**



1. A rotor assembly for an alternating current motor having a stator, said rotor assembly comprising:

a magnetically permeable rotor mass having apertures and a rotational axis;

a die cast squirrel cage extending through said apertures in said rotor mass;

an integral die cast extension on said rotor mass coaxially on one end thereof;

a journal portion on said rotor assembly for journaling said rotor assembly relative to a stationary bearing; and

said integral die cast extension adapted to be connected to a load to transmit torque thereto.

4,618,792

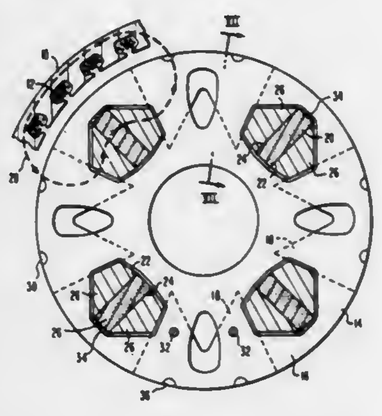
DYNAMOELECTRIC MACHINE WITH A LAMINATED POLE PERMANENT MAGNET ROTOR

William W. Yates, Lima, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 26, 1984, Ser. No. 654,627

Int. Cl.⁴ H02K *21/12*

U.S. Cl. 310—156 **8 Claims**



1. A dynamoelectric machine comprising:

a stator assembly;

a rotor mounted for rotation within said stator assembly;

said rotor comprising a laminated core having a central portion including a plurality of non-magnetic structural laminations and a plurality of magnetic laminations interspersed among said non-magnetic structural laminations, and said core having two end portions each having a plurality of said non-magnetic structural laminations positioned adjacent to each other;

a plurality of permanent magnets extending longitudinally within said core, each of said permanent magnets having pole faces oriented in planes which are substantially perpendicular to the circumferential direction;

a plurality of magnetic pole pieces extending longitudinally within said core, each of said magnetic pole pieces lying adjacent to one of said pole faces of each of said permanent magnets and extending circumferentially from the associated major surface to an edge of adjacent ones of said magnetic laminations to produce a plurality of magnetic flux paths circumferentially disposed about the periphery of said core, wherein the cross-sectional area of each of said pole pieces in a plane perpendicular to the rotor axis is substantially constant within the central portion of said core and decreases as said pole pieces extend from said central portion into the end portions of said core; and

means for securing said laminations into a unit.

4,618,793

ROTOR FOR ALTERNATORS WITH MOLDED SLIPRING ASSEMBLY

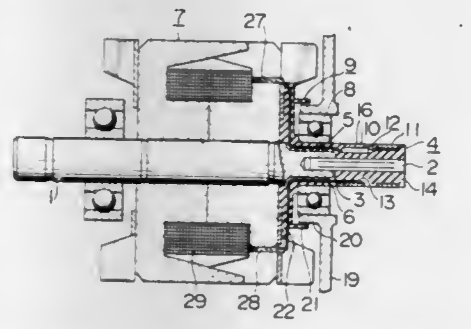
Masayuki Shizuka, and Shigeki Yamada, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 21, 1985, Ser. No. 714,473

Claims priority, application Japan, Mar. 23, 1984, 59-54491

Int. Cl.⁴ H02K *13/02;* H01R *39/08*

U.S. Cl. 310—232 **6 Claims**



1. A rotor for alternators comprising: a rotor shaft integral on the center of a rotary magnetic pole assembly having a field coil wound thereon; an axial hole in a central portion of one end surface of said rotor shaft and extending inwardly of the rotor shaft therefrom and receiving a slip ring supporting shaft; and a slip ring assembly including a plurality of slip rings, conductor wires leading from said slip rings, respectively, and said slip ring supporting shaft, said slip rings, said conductor wires and said slip ring supporting shaft being molded in one body with an insulating material, said slip ring assembly being fixed to said rotor shaft with said slip ring supporting shaft press-fitted in said axial hole of said rotor shaft.

4,618,794

ELECTRIC MOTOR FOR DRIVING ELEMENTS OF MOTOR VEHICLES IN TWO OPPOSITE DIRECTIONS WITH A HIGHER RESISTING FORCE IN ONE DIRECTION THAN IN THE OTHER, SUCH AS WINDOW RAISERS OR PIVOTAL SEAT BACKS

Marc Rampignon, Villemonble, France, assignor to Compagnie Industrielle de Mecanismes en agrege C.I.M., France

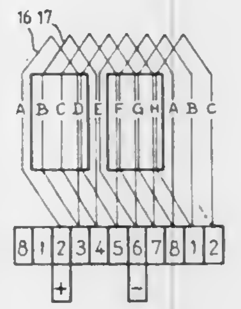
Filed Mar. 25, 1985, Ser. No. 715,849

Claims priority, application France, Mar. 26, 1984, 84 04666

Int. Cl.⁴ H02K *13/04*

U.S. Cl. 310—234 **2 Claims**

1. An electric motor of the type in which the speed of rotation as a function of the resisting torque is different in one direction of rotation than in an opposite direction, said motor comprising: (a) field poles; (b) a pair of brushes placed between the field poles; (c) an armature structure having an armature support defining a plurality of armature slots designated A, B, C, . . .; (d) a commutator connected to rotate with the armature support and having a series of commutator strips defining commutator slots therebetween; (e) a motor shaft extending through the armature support; and, (f) wires connecting said series of commutator strips wound in said armature slots, the brushes being cooperative with said armature structure, said wires connecting the commutator strips (**1**,**2**,**3** . . .) and wound in said armature slots (A,B,C, . . .) being wound in accordance with the following progression: **2** - AD - **3** - BE - **4** - CF - **5** - DG - **6** - EH - **7** - FA - **8** - GB - **1** - HC - **2** . . . so as to achieve an angular offset of a commutator strip (**1**,**2**,**3** . . .) relative to a line through the field poles in the connection of the winding to the commutator in the direction of rotation of the armature structure.



4,618,795

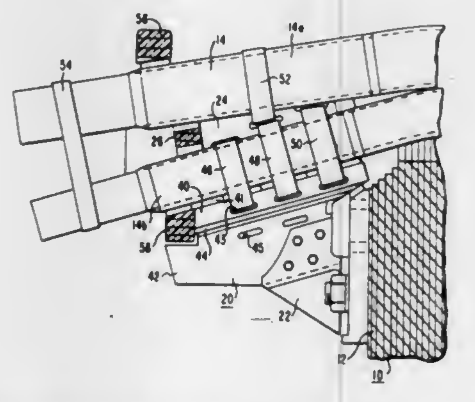
TURBINE GENERATOR STATOR END WINDING SUPPORT ASSEMBLY WITH DECOUPLING FROM THE CORE

Glenn D. Cooper; John M. Butler, III; Darrell R. Morrison, all of Orlando; Charles L. Senic; Lennart S. Nilsson, both of Winter Park, and Charles M. Rowe, Orlando, all of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 10, 1985, Ser. No. 721,618

Int. Cl.⁴ H02K *3/46*

U.S. Cl. 310—260 **5 Claims**



1. A dynamoelectric machine comprising:

a stator with a core and a stator winding, said core having a generally cylindrical bore;

said stator winding including inner portions within slots in said core and end portions extending axially from each end of said core;

a support assembly for restraining said end portions of said stator winding, said support assembly comprising a brace and a bracket located at each of a plurality of spaced positions radially outside said end portions;

said bracket being fixedly secured to said core and to said brace;

said brace comprising a top rigid piece adjacent said end portions of said winding, a bottom rigid piece, radially outside said top piece, secured to said bracket, and an intermediate decoupler between said top and bottom pieces, said intermediate decoupler comprising an elastomer layer and a slip layer which together provide cushioning between said top and bottom pieces and low friction between said top and bottom pieces for permitting relative movement in an axial direction;

said brace bottom piece being a generally plate-like member having its major surfaces disposed in a radial plane with an upper surface disposed transverse to said radial plane, said bottom piece extending axially over a substantial portion of said end portion of said winding;

said brace top piece being a generally plate-like member having a lower major surface disposed parallel to said upper surface of said bottom piece; and,

said elastomer layer and said slip layer are disposed between and parallel with said upper surface of said brace bottom piece and said lower major surface of said brace top piece.

4,618,796

ACOUSTIC DIODE

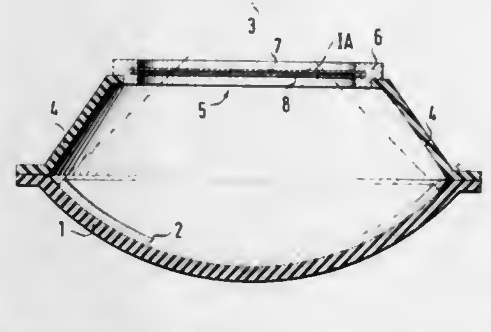
Rainer Riedlinger, Karlsruhe, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed Oct. 2, 1985, Ser. No. 783,143

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1984, 3437488

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—311 **12 Claims**



1. Sonic transmitter comprising a source of sonic waves and a system for suppression of negative sound pulses, wherein there is positioned across the acoustic signal path of said sonic wave source an acoustic discriminator comprising at least two peripherally secured foils normally in contact with each other, said foils having opposed surfaces with a degree of cohesion between them such as to enable them to be pulled apart at a variable threshold value of negative sound pressure, thereby suppressing said negative pulses whereas positive sound pulses can be transmitted at almost unaltered levels in view of the existing mechanical contact of the foils.

4,618,797

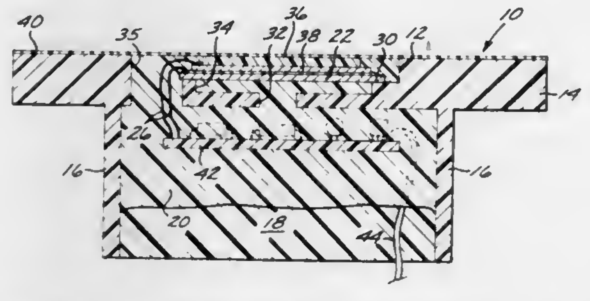
ENVIRONMENTALLY SEALED PIEZOELECTRIC SENSING ASSEMBLY FOR ELECTRICAL SWITCH

David J. Cline, 9 Loma Ave., Long Beach, Calif. 90803

Filed Dec. 24, 1984, Ser. No. 685,997

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—339 **17 Claims**



1. A sensing assembly for an electrical switch, said sensing assembly comprising:

enclosure means defining a cavity and including support means defining a supporting ledge and a stop means;

a flexible generally planar member resting at its edge portions upon said ledge in overlying, closely spaced relation to said stop means whereby said planar member is permitted flexure within the space between said planar member and said stop means, said stop means being engagable by said planar member to limit the degree of said flexure, and said space being in communication with said cavity;

a generally planar piezoelectric element attached to one of the surfaces of said flexible member and characterized on deformation by generation of an electrical signal;

electrical conductor means coupled to said piezoelectric element and extending into said cavity for carrying said signal; and

resiliently deformable potting means filling said space and extending into said cavity to block entry of moisture into said space and said cavity, the resilient deformability of said potting means enabling flexure of said flexible member and said piezoelectric element for generating said signal.

4,618,798

RESONATOR VIBRATING IN A THICKNESS-SHEAR MODE

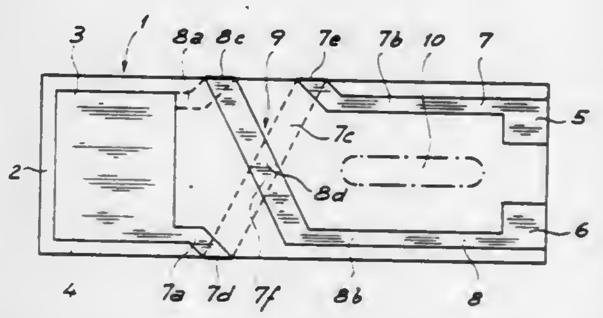
Walter Zingg, La Neuveville, Switzerland, assignor to Asulab A.S., Bienne, Switzerland

Filed Feb. 28, 1985, Ser. No. 706,830

Claims priority, application Switzerland, Apr. 6, 1984, 1743/84

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—366 **8 Claims**



1. A resonator adapted to vibrate in a thickness-shear mode and including a plate of piezo-electric material and plate vibrating means, said plate having a zone for fastening the resonator mechanically to a support and said plate vibrating means comprising a first electrode on a first surface of the plate, a second electrode on a second surface of the plate opposite the first electrode, means for connecting the first and second electrodes electrically to different potentials of an oscillator circuit to provide a main electric field between the first and second electrodes for generating a main vibration of said plate and including a first terminal on said plate connected to said first electrode by a first conductor and a second terminal on said plate connected to said second electrode by a second conductor, a third electrode connected electrically to the first electrode and disposed on the second surface of the plate between the second electrode and the mechanical fastening zone, and a fourth electrode connected electrically to the second electrode and disposed opposite the third electrode on the first surface of the plate, said third and fourth electrodes being arranged to provide therebetween an auxiliary electric field in a direction opposite to said main electric field for generating an auxiliary vibration of said plate in opposition of phase with respect to said main vibration generated by said main electric field for decreasing the amplitude of the vibration of the plate in said mechanical fastening zone.

4,618,799

FLASHLIGHT BULB

James A. Carley, Rolling Hills, Calif., assignor to Carley, Torrance, Calif.

Filed May 3, 1984, Ser. No. 606,657

Int. Cl.⁴ H01J *5/48*

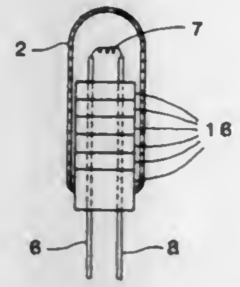
U.S. Cl. 313—318 **1 Claim**

1. A precision flashlight bulb in which a filament is accu-

rately located within an envelope by limiting excessive lateral wandering of the envelope with respect to the filament during the sealing phase of manufacture, said precision flashlight bulb comprising:

a stack of cylindrical-shaped beads, said stack being cylindrical in shape and having a length that is at least as large as its diameter;

wires that pass through said stack to maintain its integrity and that extend from said stack in a direction parallel to its axis;

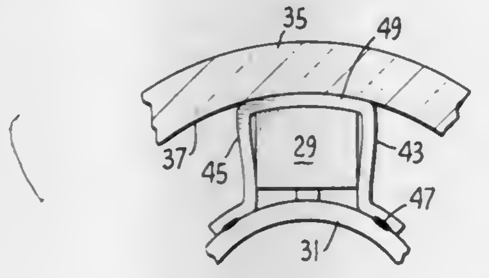


a filament connected between said wires; and,

an envelope, cylindrical in shape, fitting snugly over said stack and extending almost the entire length of said stack, having a closed end that encloses said filament, and having an open end that is joined to said stack, whereby the snug fit of said envelope on said stack prevents said envelope from wandering laterally as the open end of said envelope is joined to said stack.

4,618,800
PRECISION ELECTRODE ALIGNMENT

Kenneth G. Gorman, Jr., Capitola, Calif., assignor to Rank Electronic Tubes, Inc., Scotts Valley, Calif.
Filed Feb. 17, 1983, Ser. No. 467,343
The portion of the term of this patent subsequent to Feb. 21, 2003, has been disclaimed.
Int. Cl.⁴ H01J *29/48, 29/82*
U.S. Cl. 313—417 **5 Claims**

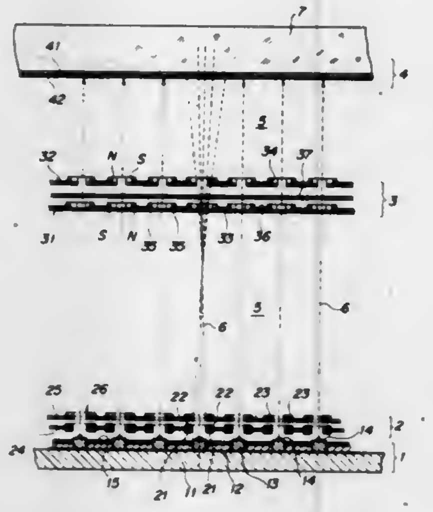


1. In an electron tube having at least a portion of the envelope in the form of an elongated tubular neck with a plurality of spaced electrodes mounted concentrically within said neck, the improvement comprising:

(a) a plurality of elongated glass rods surrounding said electrodes and lying parallel to said neck,
(b) pins anchoring said rods to said electrodes,
(c) the outer surface of said rods being convex and congruent to and spaced from the inner surface of said neck,
(d) a plurality of metal straps each having a U-shape extending over said rods and being anchored on each side of a rod to an electrode,
(e) the bight of the U forming a tight fit between the outer surface of the rod and the inner surface of the neck, and
(f) the legs of the U being bowed outwardly and exerting tension in the neck.

4,618,801
FLAT CATHODE RAY TUBE

Mitsuteru Kakino, 14-37, Nishino-cho, Kitakazan, Yamashina-ku, Kyoto, Japan, assignor to Mitsuteru Kakino, Kyoto, Japan
Filed Aug. 5, 1983, Ser. No. 520,815
Claims priority, application Japan, Jan. 10, 1983, 58-002588; Feb. 23, 1983, 58-029726
Int. Cl.⁴ H01J *29/50, 31/00*
U.S. Cl. 313—495 **6 Claims**



1. A flat cathode ray tube comprising:

a plurality of cathodes arranged in a two dimensional array, formed as individual elements by patterning a uniform layer of thermionic emissive material which overlies a first planar insulating substrate, and means for energizing each of said cathodes be energized individually in turn in the horizontal and vertical pattern corresponding to the scanning of a picture for television;

a second planar insulating substrate parallel to and spaced from the first insulating substrate, adjacent to the plurality of cathodes, and including a like plurality of individual apertures aligned with individual ones of the plurality of cathodes;

a like plurality of control grids surrounding individual ones of the plurality of apertures for alignment with the plurality of cathodes and having been formed by patterning a layer of conductive material overlying the second insulating substrate;

an anode comprising an anode plate electrode coated with fluorescent material and aligned for irradiation by electrons from the plurality of cathodes passing through the apertures in the second insulating-substrate; and

an enclosure for enclosing the cathodes, grids and anode in a high vacuum.

4,618,802
HERMETICALLY SEALED ENCLOSURE FOR THIN FILM DEVICES

Martin P. Schrank, Ipswich, Mass., assignor to GTE Products Corporation, Danvers, Mass.
Filed Oct. 29, 1984, Ser. No. 665,896
Int. Cl.⁴ H05B *33/04*
U.S. Cl. 313—512 **8 Claims**

1. A hermetically sealed enclosure for a thin film device, said enclosure comprising:

frame means;

a light transmitting, electrically insulated substrate having a thin film matrix positioned on one side thereof, said substrate having indentations therein and said thin film matrix including conductive contacts extending therefrom and into a respective one of said indentations, said contacts being supported by said substrate, said substrate being in contact with said frame means and made of a material having a coefficient of thermal expansion substantially similar to the material forming said frame means;

hermetic seal means adjacent said substrate and in contact with said frame means;

a pair of electrical conductors electrically coupled to said thin film matrix; and

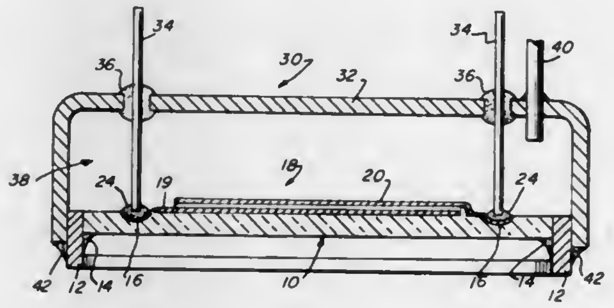
cover means hermetically sealed to said frame means, said cover means, said frame means, and said substrate defining a chamber therebetween wherein said thin film matrix is located, said cover means supporting said conductors extending therethrough.

6. A method of hermetically sealing a thin film device, said method comprising the steps of:

providing frame means;

sealing a plate to said frame means to form a hermetic seal;

disposing a light transmitting, electrically insulating substrate having indentations formed therein in contact with said frame means, said substrate being made of a material having a coefficient of thermal expansion substantially similar to the material forming said frame means;



forming a thin film matrix on one side of said substrate having said indentations, said thin film matrix having conductive contacts extending therefrom and into a respective one of said indentations, said indentations then being filled with a conductive adhesive;

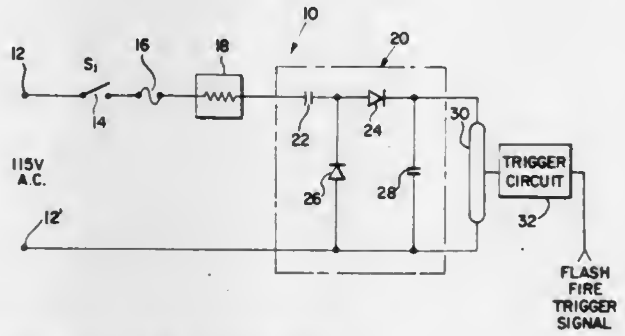
securing cover means to said frame means, said cover means having a pair of electrical conductors extending therefrom and into said conductive adhesive upon securing said cover means, said cover means, said frame means and said substrate defining a chamber therebetween, said thin film matrix being located within said chamber;

heating said conductive adhesive for a predetermined period of time at a predetermined temperature thereby curing said adhesive and fixedly joining said contacts and conductors; and

hermetically sealing said cover means and said frame means to define an enclosed thin film device.

4,618,803
CURRENT LIMITED STROBE CHARGE CIRCUIT

Herbert L. Hardy, Sudbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Nov. 19, 1984, Ser. No. 673,101
Int. Cl.⁴ H05B *41/32*
U.S. Cl. 315—241 R **7 Claims**



1. An electronic flash comprising:

a flash discharge tube;

a storage capacitor;

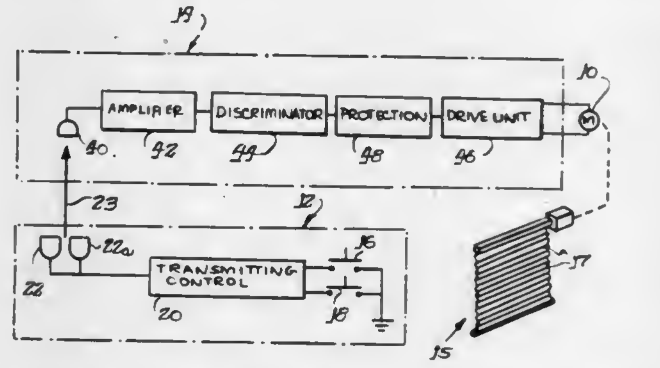
trigger circuit means responsive to an applied flash fire trigger signal for effecting the discharge of said capacitor through said discharge tube to produce an illuminating flash of light;

means responsive to an applied source of electrical energy for charging said storage capacitor; and

a positive temperature coefficient resistor element in serial connection between the source of electrical energy and said capacitor charging means to control the current flow from the source of electrical energy to said storage capacitor, said positive temperature coefficient resistor automatically switching to a high resistance mode to safely limit the flow of current during the reforming of said storage capacitor by said charging means and a low resistance mode so as not to materially affect the flow of current during the charging of said storage capacitor by said charging means subsequent to said storage capacitor being reformed.

4,618,804
REMOTE CONTROL APPARATUS FOR OPENING AND SHUTTING A BLIND

Masashi Iwasaki, Osaka, Japan, assignor to Kanematsu-Gosho, Ltd., Kobe, Japan
Filed Jun. 14, 1985, Ser. No. 745,275
Claims priority, application Japan, Jun. 28, 1984, 59-134722
Int. Cl.⁴ H04Q *9/14*
U.S. Cl. 318—16 **6 Claims**



1. A remote control system for controlling bidirectional rotation of an electric motor comprising: a hand-held transmitter provided with a transmitting control circuit capable of developing a forward rotation command signal and a reverse rotation command signal and transmitting means responsive to each of said command signals for transmitting a predetermined, corresponding number of infrared pulses for a predetermined amount of time; and a receiver and drive unit operatively coupled with said electric motor and comprising receiving means responsive to said infrared pulses from said transmitting means for developing a corresponding received command signal, a discriminator circuit for determining whether said received command signal corresponds to the command signal for forward rotation or reverse rotation, and drive circuit means responsive to said discriminator circuit for energizing said electric motor for rotation in a corresponding direction; wherein said receiver and drive unit further includes a protection circuit coupled intermediate said discriminator circuit and said drive circuit and responsive to a current surge produced by stalling of said electric motor for causing the discrminator circuit to produce a control signal opposite to the received signal for reversing the direction of rotation of the motor.

4,618,805

DEVICE FOR REGULATING ROTARY SPEED OF AN ALTERNATING CURRENT ELECTRIC MOTOR

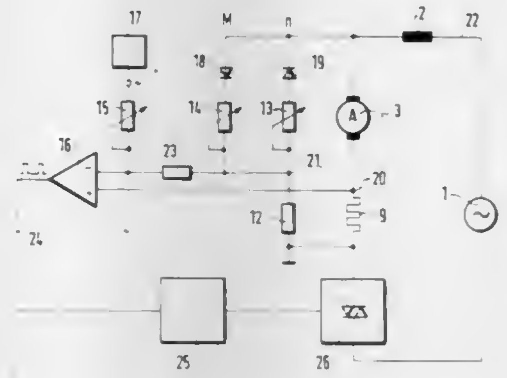
Friedrich Hornung, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 14, 1985, Ser. No. 734,385

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1984, 3422458

Int. Cl.⁴ H02P *7/36*

U.S. Cl. 318—245 13 Claims



1. A device for regulating rotary speed and torque of an alternating current electric motor having an armature winding connected as a branch of a bridge circuit balanced for a fixed rotary speed and a fixed operational voltage of the motor, comprising a current adjuster having a control input and being connected for controlling current flowing through said armature winding, another branch of said bridge circuit including polarity dependent resistive means for rectifying voltages generated across said another branch during alternating halfwaves of the current; and control means controlled by a voltage generated across a diagonal of said bridge circuit and having an output connected to the control input of said current adjuster to regulate during halfwaves of one polarity the rotary speed and during halfwaves of opposite polarity the operational voltage of the motor.

4,618,806

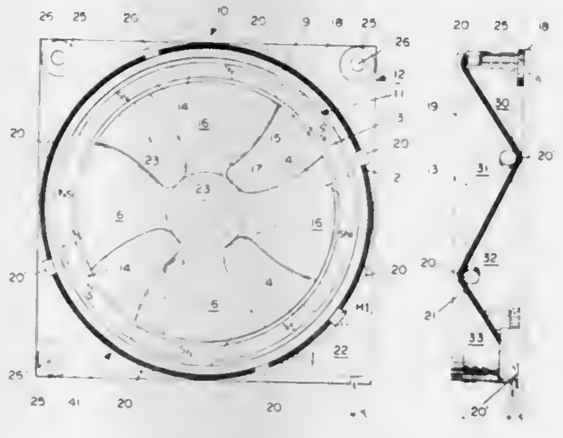
IRONLESS, BRUSHLESS DC MOTOR WITH WAVE-WINDING

Alan Grouse, Cary, N.C., assignor to Rotron, Inc., Woodstock, N.Y.

Filed Feb. 11, 1985, Ser. No. 700,670

Int. Cl.⁴ H02K *29/08*

U.S. Cl. 318—254 14 Claims



12. A fan and motor combination including an annular permanent magnet having a relatively large central opening therethrough and magnetized segments, wherein succeeding segments of like polarity are circumferentially spaced apart, fan blades secured to the magnet internally thereof in the central opening, wave-shaped coil means surrounding the magnet and supported proximate the magnet on a cylindrical support surface encircling the magnet to produce areas of oppositely directed electromagnetic fields proximate the magnet, detection means responsive to the position of the annular magnet segments, and means responsive to the detection means to repeatedly energize the coil means to exert a rotational torque on the annular magnet.

4,618,807

REVERSING CONTACTOR FOR A THREE-PHASE MOTOR

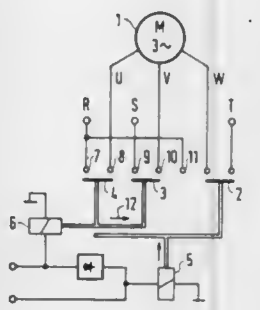
Edgar Wiessner, Amberg; Werner Harbauer, Schwandorf, and Klaus-Dieter Paul, Sulzbach-Rosenberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Apr. 16, 1985, Ser. No. 723,659

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1984, 3415019

Int. Cl.⁴ H02P *1/40;* **H01H** *9/00*

U.S. Cl. 318—280 7 Claims



1. A three-phase, reversing contactor for use with an electric machine with a housing, fixed-mounted contact parts for input and output power lines and contact bridges connecting the input and output lines, having a common drive mechanism and a positioning mechanism for switching the flow of current between the input and output lines to another configuration, comprising;

two separate movable contact bridge carriers aligned in parallel to one another providing mounting in place in a grouped fashion for said contact bridges, coupled alternatively and selectably by said positioning mechanism to said drive mechanism;

said positioning mechanism having a reversing yoke moveable by means of an auxiliary magnet connected to a switching magnet, and said yoke having a free end providing a selectable mechanical coupling to said parallel aligned movable contact bridge carriers.

4,618,808

ELECTROMAGNETIC ACTUATOR SYSTEM USING STEPPER MOTOR WITH CLOSED LOOP POSITION SENSING, ELECTRONIC COMMUTATION AND DYNAMIC POSITION AND ANOMALY CORRECTION

Jehuda Ish-Shalom, Croton-on-Hudson; Leonard A. Katz, Yorktown Heights, and Dennis G. Manzer, Bedford Hills, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 30, 1985, Ser. No. 696,568

Int. Cl.⁴ H02P *8/00*

U.S. Cl. 318—696 4 Claims

1. An electromagnetic actuator system characterized by

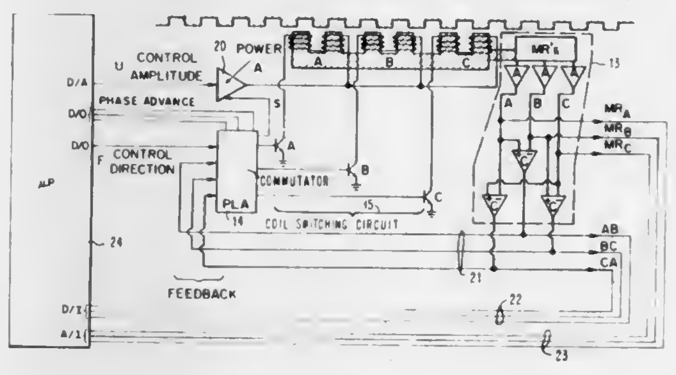
(a) a stepper motor (**11-12**) having a plurality of windings (A,B,C);

(b) power means (**20**), connected to said windings (A,B,C), to supply power to said windings;

(c) coil switching means (**15**), connected to said windings (A,B,C) to complete when selected the enabling circuit from said power means (**20**) through the selected enabled coil upon activation;

(d) means (**14**), having a plurality of input nodes, to provide position and anomaly corrected switch selection signals as a composite function of a control direction signal and a pattern of present armature position signals to provide a related pattern of enabling coil selection signals to said coil switching means (**15**); and

(e) position sensing means (**13**), monitoring the armature (**12**) position of said stepper motor and feedback connected to said programmable logic means (**14**) to provide a pattern of present armature position signal inputs to said means (**14**) to provide position and anomaly corrected switch selection signals.



4,618,809

APPARATUS FOR CONVERTING SINGLE-PHASE POWER TO THREE-PHASE OUTPUTS

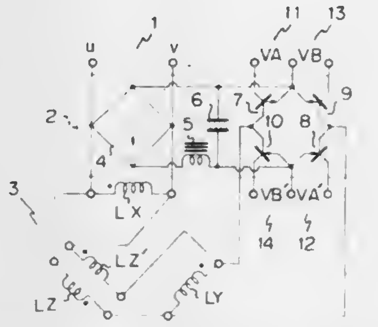
Naoyuki Maeda, Inuyama, Japan, assignor to Tokai TRW & Co., Ltd., Aichi, Japan

Filed Jun. 7, 1985, Ser. No. 742,204

Claims priority, application Japan, Jun. 8, 1984, 59-118008

Int. Cl.⁴ H02P *7/00*

U.S. Cl. 318—768 3 Claims



1. An inverter apparatus for converting a single-phase A.C. power source to three-phase A.C. outputs, characterized in that the single-phase power source is directly connected to first phase load means and is connected through one-phase converter means to second phase load means, and the single-phase power source and the one-phase converted single-phase power source are connected to third phase load means and fourth phase load means, the third and fourth phase load means being formed by dividing single load means, so that three-phase power outputs are provided for the first phase load means, the second phase load means, and the third plus fourth phase load means.

4,618,810

VARIABLE SPEED AC MOTOR CONTROL SYSTEM

James E. Hagerman, Rancho Cucamonga; William D. Mathewes, Costa Mesa, both of Calif.; Fenton L. Rees, Rockford, Ill., and Albert J. Flack, Santa Ana, Calif., assignors to Emerson Electric Company, St. Louis, Mo.

Filed Feb. 4, 1983, Ser. No. 464,114

Int. Cl.⁴ H02P *5/40*

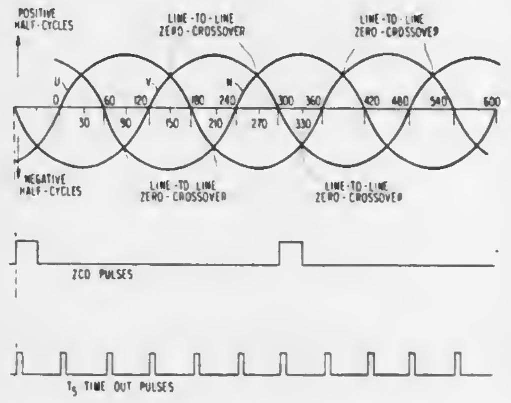
U.S. Cl. 318—803 10 Claims

1. Apparatus for controlling the speed of an AC motor which is powered by a multi-phase AC input, said apparatus comprising:

a plurality of bridge rectifier SCR means respectively arranged to receive the input phases of the AC input and to supply a DC output in response thereto;

a plurality of inverter SCR means arranged in auxiliary commutated inverter configuration for converting said DC output into an AC output having a frequency proportional to said DC output, said inverter SCR means including a connecting means for supplying said AC output to the AC motor; and

control means for generating bridge rectifier SCR conduction and sequencing data, said control means including a timing means for generating zero-crossover signals which track the line-to-neutral zero-crossover points of each phase in the AC input, a first computing means connected to said timing means for generating bridge rectifier SCR sequencing data which serves to identify the particular bridge rectifier SCR means in said plurality of bridge rectifier SCR means associated with each half cycle of each AC input phase in advance of gating said particular one of said bridge rectifier SRC means into conduction and a second computing means connected to said timing means for generating bridge rectifier SCR conduction data for each half cycle of each AC input phase in advance of the first line-to-line zero-crossover point for that half cycle, said bridge rectifier SCR conduction data serving to specify the conduction point in each half cycle of each AC input phase at which particular bridge rectifier SCR means associated with that half cycle is gate into conduction, said control means also including a bridge rectifier gating means connected to said timing means for gating the bridge rectifier SCR means on and off in accordance with said bridge rectifier SCR conduction and sequencing data.



4,618,811

VOLTAGE REGULATOR FOR CHARGING GENERATOR

Keiichi Mashino, Katsuta; Morio Satou, Toukai-mura; Shouji Masumoto, Katsuta; Kunio Kobayashi, and Osamu Miki, both of Takasaki, all of Japan, assignors to Hitachi, Ltd. and Hitachi Automotive Engineering Co., Ltd., both of Tokyo, Japan

Filed Feb. 10, 1984, Ser. No. 578,794

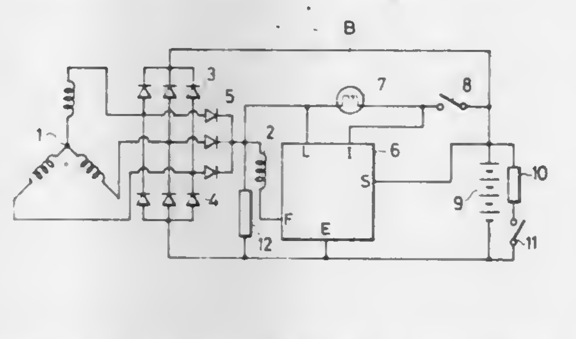
Claims priority, application Japan, Feb. 10, 1983, 58-19807

Int. Cl.⁴ H02J *7/14*

U.S. Cl. 322—28 7 Claims

1. A voltage regulator for a charging generator comprising: an a.c. generator having armature windings and a field winding; rectification means for rectifying an a.c. output of said a.c. generator to a d.c. output; a battery connected to an output terminal of said rectification means to receive power from said a.c. generator; an initial exciting current supply circuit including a key switch and a charge lamp connecting said battery to said field winding; a load connected parallel to said field winding; a voltage regulator including means for comparing the battery voltage with a reference voltage and means for controlling a current flowing through said field winding in accordance with an output of said comparing means; and abnormal-

ity detection means for comparing an output voltage of said rectification means with the battery voltage and producing an abnormality indication output when a difference between both voltages exceeds a predetermined value, wherein said current controlling means in said voltage regulator cuts off a current flowing through said field winding in accordance with the abnormality indication output of said abnormality detection means so that the power generation of said a.c. generator is stopped and a current from said battery flows through said initial exciting current supply circuit and said load to light said charge lamp in said initial exciting current supply circuit.



4,618,812

DIRECT CURRENT POWER CONTROL ON SELECTABLE VOLTAGE STEP-UP AND STEP-DOWN

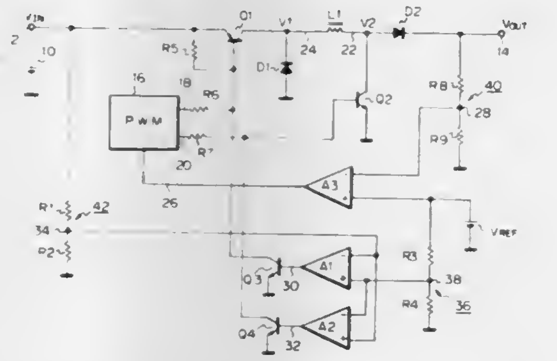
Chikuni Kawakami, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 20, 1985, Ser. No. 713,886

Claims priority, application Japan, Apr. 11, 1984, 59-70898

Int. Cl.^{4} G05F *1/618*

U.S. Cl. 323—224 **3 Claims**



1. A DC power control circuit for converting an input DC voltage into an output DC voltage of a predetermined value comprising:

an input terminal receiving said input DC voltage;

a first inductor having an induction input terminal and an induction output terminal;

first semiconductor switch having a control terminal and first and second controlled terminals;

an output terminal developing said output DC voltage;

said first inductor and said controlled terminals of said first semiconductor switch being serially connected between said input terminal and said output terminal;

a second semiconductor switch having a control terminal and first and second controlled terminals, said controlled terminals of said second semiconductor switch being connected between said inductor output terminal and ground;

driver means, operatively connected to said output terminal, for comparing the output DC voltage with a first reference voltage and for modulating the conduction of said first and second semiconductor switches in response thereto, said drive means being operatively connected to said control terminals of said first and second switch means; and

control means, operatively connected to said input terminal, for comparing the input DC voltage with a second reference voltage to selectively enable said drive means to modulate the conduction of only one of said first and second semiconductor switches,

said control means including,

first and second comparator means, operatively connected to said input terminal for comparing said input DC voltage with said second reference voltage,

a third semiconductor switch having a control terminal connected to said first comparator means, and first and second controlled terminals connected between the control terminal of said first semiconductor switch and ground, and

a fourth semiconductor switch having a control terminal connected to said second comparator means, and first and second controlled terminals connected between the control terminal of said second semiconductor switch and ground;

said control means, when said input DC voltage is lower than said second reference voltage, disabling said first semiconductor switch to allow said drive means to modulate the conduction of only said second semiconductor switch;

said control means, when said input DC voltage is greater than said second reference voltage, disabling said second semiconductor switch to allow said drive means to modulate the conduction of only said first semiconductor switch.

4,618,813

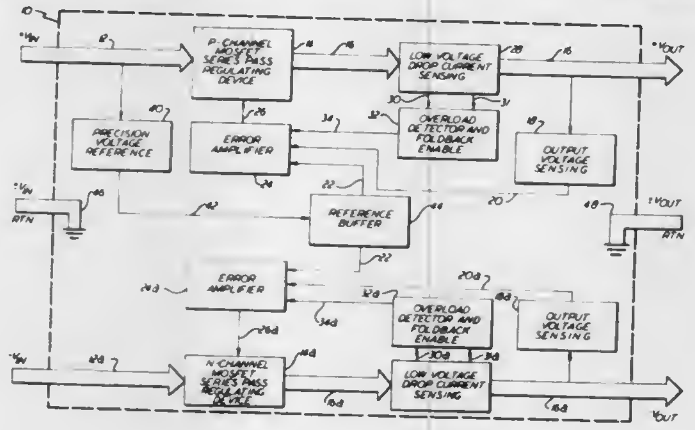
HIGH EFFICIENCY SERIES REGULATOR

Richard V. Vesce, East Hampton, and John R. Torres, Somers, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 4, 1985, Ser. No. 708,197

Int. Cl.^{4} G05F *1/445*

U.S. Cl. 323—268 **3 Claims**


10
+VIN
12
P-CHANNEL MOSFET SERIES PASS REGULATING DEVICE
14
16
LOW VOLTAGE DROP CURRENT SENSING
28
16
+VOUT
26
30
31
40
PRECISION VOLTAGE REFERENCE
ERROR AMPLIFIER
34
32
OVERLOAD DETECTOR AND FOLDBACK ENABLE
18
OUTPUT VOLTAGE SENSING
24
22
±VIN
46
RTN
42
REFERENCE BUFFER
44
20
48
±VOUT
RTN
22
ERROR AMPLIFIER
24a
20a
32a
18a
34a
OVERLOAD DETECTOR AND FOLDBACK ENABLE
OUTPUT VOLTAGE SENSING
26a
-VIN
12a
14a
30a
31a
N-CHANNEL MOSFET SERIES PASS REGULATING DEVICE
LOW VOLTAGE DROP CURRENT SENSING
16a
16a
-VOUT

1. A three-terminal positive voltage series regulator, comprising:

an enhancement mode P-Channel FET series regulating element, responsive at its source node to a positive input voltage source and responsive to a control signal at its gate node for providing a positive regulated output voltage at its drain node;

a reference source, for providing a regulated reference voltage signal;

sensing means, responsive to said regulated output voltage for providing a sensed voltage signal indicative of the present magnitude of said regulated output voltage; and

error sensing means, responsive to said reference voltage signal and to said channel voltage signal fro comparing the magnitude of said sensed voltage signal to the magnitude of said reference voltage signal and providing said control signal for regulating said sensed voltage signal at the same magnitude as said reference voltage signal.

4,618,814

VOLTAGE-TO-CURRENT CONVERTER CIRCUIT

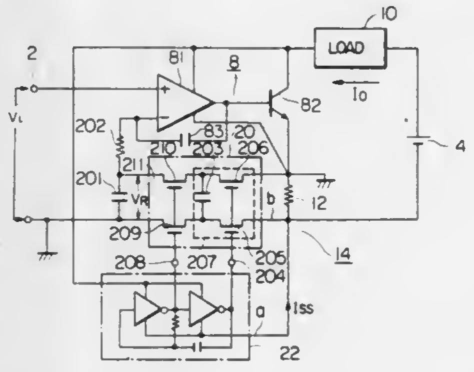
Kazuo Kato, Ibaraki, and Hideo Sato, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 19, 1984, Ser. No. 622,159

Claims priority, application Japan, Jun. 20, 1983, 58-110668

Int. Cl.^{4} G05F *1/44*

U.S. Cl. 323—280 **13 Claims**



1. A voltage-to-current converter circuit for supplying a current proportional to an input signal voltage to a load, comprising:

an amplifying circuit receiving the input signal voltage and a feedback signal voltage to supply a current to said load corresponding to a difference between the input signal voltage and the feedback signal voltage;

resistor means for being fed with said current flowing through said load;

signal generating means for generating first and second control signals;

sample-hold circuit means for sampling and holding a voltage across said resistor means in accordance with said first control signal, said sample-hold circuit means including a capacitor for being charged with said voltage, and first switching means responsive to said first control signal for connecting said capacitor and said resistor means in parallel with each other when said voltage is charged in said capacitor; and

second switching means responsive to said second control signal for inverting a polarity of the held voltage by connecting said capacitor to said amplifying circuit after completion of the charging of said capacitor so that said charged voltage is inverted and inputted to said amplifying circuit as said feedback signal voltage.

4,618,815

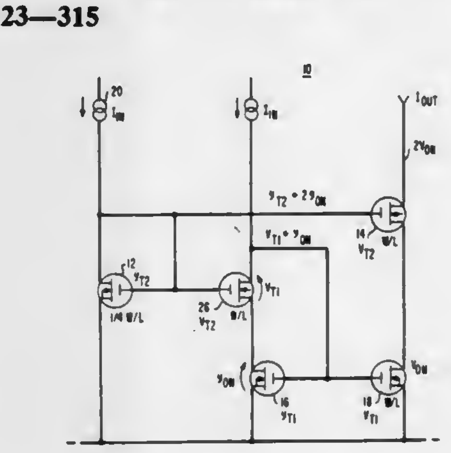
MIXED THRESHOLD CURRENT MIRROR

Eric J. Swanson, Reading, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 11, 1985, Ser. No. 700,029

Int. Cl.^{4} G05F *3/26*

U.S. Cl. 323—315 **6 Claims**



1. An MOS current amplifying apparatus comprising at least two input MOS transistors, each having a conduction path and a gate electrode, the conduction paths being connected in parallel with each other;

means for providing an input current to each transistor of said at least two input MOS transistors;

at least two output MOS transistors associated in a one-to-one relationship with said at least two input MOS transistors, each output transistor having a conduction path and a gate electrode, the gate electrode of each of said at least two output transistors being coupled to a point in the input conduction path and also the gate electrode of said input transistor associated therewith, wherein at least one of said input transistors and at least one of said output transistors comprises a first threshold voltage (V_{T1}) greater in magnitude than a second threshold voltage (V_{T2}) associated with the remaining input and output transistors; and

an equalizing MOS transistor including a drain, source and gate electrode, having its conduction path connected between one side of the conduction path of one of said at least two input transistors and the point at which the gate electrode of said one input transistor is connected to the input current path, said equalizing transistor providing currents of like magnitude to each input transistor and comprising a drain-to-source voltage equal to the first greater, threshold.

4,618,816

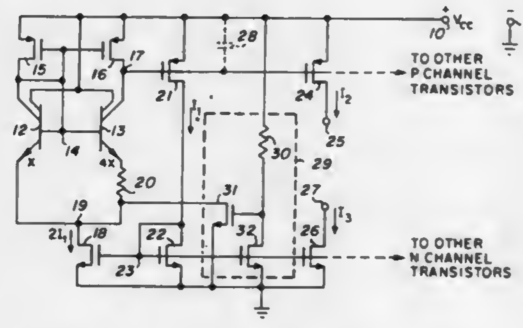
CMOS ΔV_{BE} BIAS CURRENT GENERATOR

Dennis M. Monticelli, Fremont, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 22, 1985, Ser. No. 768,274

Int. Cl.^{4} G05F *3/16*

U.S. Cl. 323—316 **5 Claims**


10
Vcc
11
28
15
16
17
21
24
TO OTHER P CHANNEL TRANSISTORS
I2
25
12
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14
20
19
31
I3
27
21
18
22
32
26
23
TO OTHER N CHANNEL TRANSISTORS

1. A bias current generator circuit for implementation in CMOS construction, said circuit comprising:

first and second BJTs, each one having a base, an emitter, a substrate dedicated collector and a lateral collector with the two collectors sharing the emitter current;

means for operating said first BJT at a higher emitter current density than said second BJT;

means for coupling the bases of said first and second BJTs together and to said lateral collector of said first BJT;

first and second IGFETS coupled together as a current mirror load for said lateral collectors of said BJTs;

means for coupling the emitter of said first BJT to a tail current source;

a resistor coupled between the emitter of said second BJT and said tail current source; and

means for modulating said tail current source in response to the potential at said second BJT lateral collector whereby said circuit is stabilized and the potential across said resistor is PTAT.

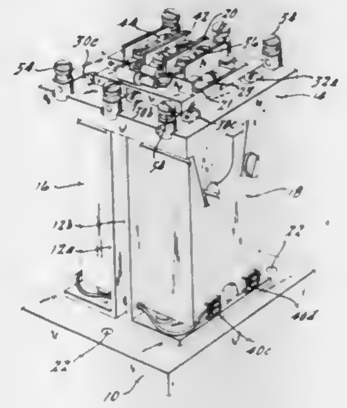
4,618,817
MULTIPLE PHASE SWITCHING CIRCUIT AND HEAT SINK STRUCTURE

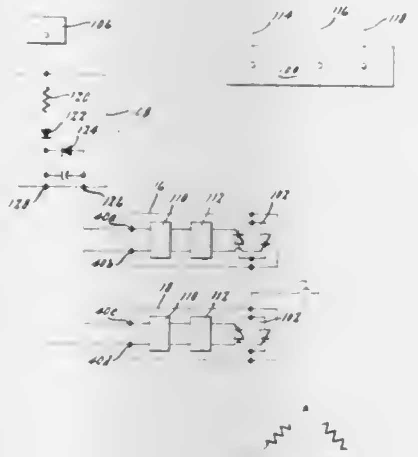
Roger A. Holtslander, Mt. Clemens, Mich., assignor to Wolf Engineering Corporation, Dearborn, Mich.

Filed Sep. 12, 1985, Ser. No. 775,152

Int. Cl.^{4} G05F *1/44;* **H05K** *7/20*

U.S. Cl. 323—322 **7 Claims**





1. A three-phase electrical switching apparatus comprising, a generally rectangular bottom member, a top member constructed from an electrically non-conductive material, said top and said bottom members being separated and maintained in generally parallel places by connection to at least two parallel support members oriented generally perpendicular to said top and said bottom, a first and a second pair of inverse parallel connected silicon control rectifiers electrically connected respectively between a first and a second phase of an electrical power supply and a first and a second phase of an electrical load, a third phase of said power supply being connected to a third phase of said electrical load, said first pair of silicon control rectifiers being releasably secured to a first of said parallel support members and said second pair of silicon control rectifiers being releasably secured to a second of said parallel support members, said silicon control rectifiers having a switching means which is responsive to and electrically connected with an external logic source, said two parallel support members and said bottom member being constructed from a heat conductive material, and said electrical power supply, said electrical load and said external logic source being releasably connected to components of said apparatus by terminals releasably secured to said top member.

4,618,818
EVALUATION CIRCUITS FOR PASSIVE MEASUREMENT-VARIABLE PICKUPS

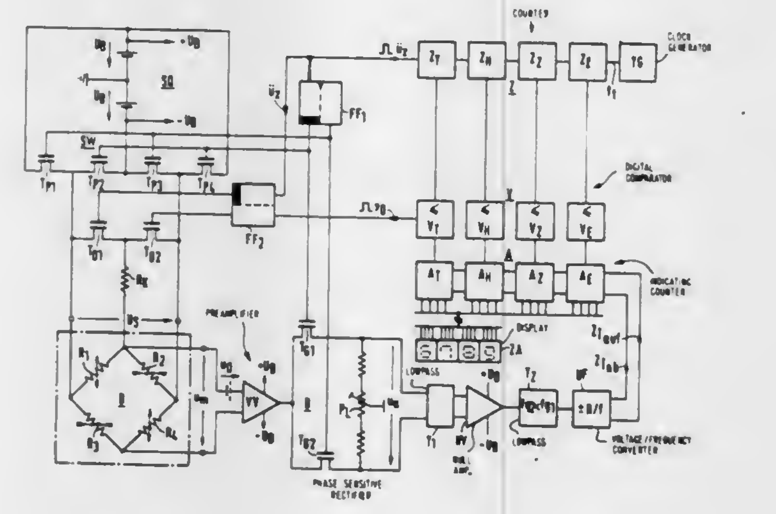
Klaus Horn, Braunschweig, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 24, 1984, Ser. No. 643,875

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1983, 3330841

Int. Cl.^{4} G01D *1/00*

U.S. Cl. 324—62 **19 Claims**



1. In an evaluation circuit for a passive measurement variable pickup, the pickup having ohmic sensor resistor means disposed in a bridge circuit having a feed diagonal and an output measurement diagonal, said circuit further having clock pulse counter means, digital comparator means, sign sensitive voltage to frequency converter means, phase-sensitive rectifier means, low pass filter means and balancing adjustment means for adjusting an output signal of the pickup, said adjustment means including switching means having first and second switching positions and providing duration-modulated switching via said switching means of a switchable resistor into said first and second switching positions, said resistor being switched into said first position by an overflow signal from said clock pulse counter means and into said second position by an output signal of said digital comparator means, said digital comparator means comprising the contents of the clock pulse counter means and of said sign sensitive voltage of frequency converter means, an input voltage of the voltage to frequency converter means comprising an amplified balancing difference signal which is rectified by said phase-sensitive rectifier means and filtered by said lowpass filter means, the bridge circuit and the switchable resistor being fed by a polarity-reversing switch means controlled by the overflow signal of said clock pulse counter means from at least one of a d-c current and voltage source, the phase-sensitive rectifier means being controlled synchronously with the polarity-reversing switch means, the improvement comprising:

preamplifier means for amplifying the balancing difference signal, said preamplifier means further transmitting d-c components of said balancing signal, an output of said preamplifier means being coupled to an input of the phase-sensitive rectifier means, said preamplifier means having a linear phase frequency response in the transmission bandwidth of said preamplifier means and further having an amplitude independent gain characteristic, thereby preventing modulation of said balancing signal;

null amplifier means coupled to an output of said rectifier means; and

means for passing d-c components coupling said switchable resistor to said polarity-reversing switch means.

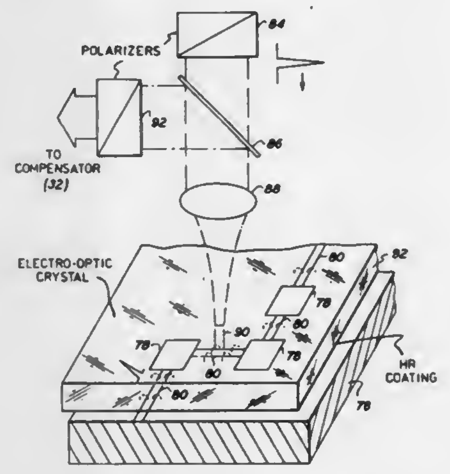
4,618,819
MEASUREMENT OF ELECTRICAL SIGNALS WITH SUBPICOSECOND RESOLUTION

Gerard Mourou, Rochester, N.Y., and Janis A. Valdmanis, Westfield, N.J., assignors to The University of Rochester, Rochester, N.Y.

Filed Mar. 27, 1984, Ser. No. 593,993

Int. Cl.^{4} G01R *23/16*

U.S. Cl. 324—77 K **11 Claims**



1. The method of measuring an electrical signal on a line in a micro-circuit with subpicosecond resolution which comprises the steps of propagating said signal along a line on a substrate of said micro-circuit which creates an electric fringe field adjacent thereto, placing an electro-optic crystal of dimensions of the same order as the micro-dimensions of said line adjacent and outside of said line and said substrate so that said field passes through at least a portion of said crystal and changes the index of refraction thereof and the polarization of optical radiation therethrough in accordance with the Pockels effect, passing a beam of optical pulses through said crystal in a direction transverse to the direction of said field to optically sample successively occurring portions of said signal, and processing said samples to provide a display of said signal.

4,618,820
PROBE SUPPORT FOR TEST FIXTURE OF PRINTED CIRCUIT ARTWORKS

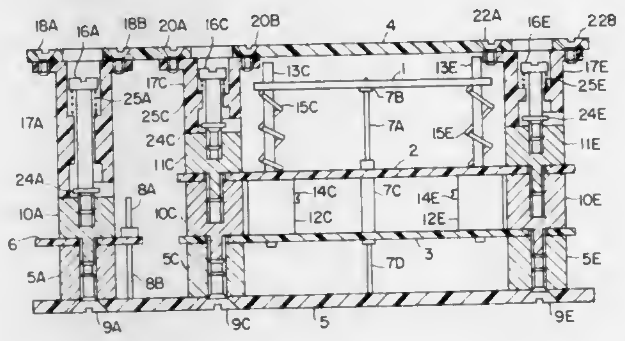
Elvio Salvagno, and PierLuigi Piacentino, both of Caluso, Italy, assignors to Honeywell Information Systems Italia, Milan, Italy

Filed Jun. 15, 1984, Ser. No. 621,274

Claims priority, application Italy, Jul. 4, 1983, 21915 A/83

Int. Cl.^{4} G01R *1/04, 31/02, 31/28*

U.S. Cl. 324—158 F **1 Claim**



1. A probe support for a test fixture for testing printed circuit artwork boards (PWA's) comprising:

a plurality of probes, each one provided with a contact tip biased by a spring and with a connection pin;

a plurality of connecting elements, each one provided with a contact tip and a connection pin electrically connected to the connection pin of a corresponding probe;

a first supporting plate for supporting said plurality of probes;

a second supporting plate for supporting said plurality of connecting elements;

a base plate parallel to said first and second supporting plates and facing the ends of the pins of said plurality of probes and said plurality of connecting elements;

first means for spacing said base plate from said first and second supporting plates;

second means removably attaching said base plate to said first and second support plates in the spaced relation imposed by said first means;

a cover plate parallel to said first and second supporting plates and facing the contact tips of said plurality of probes and said plurality of connecting elements;

third means for spacing said cover plate from said first and second supporting plates; and

fourth means removably attaching said cover plate to said first and second support plates in the spaced relation imposed by said third means;

whereby said cover plate provides protection of said contact tips and unitary assembling of said first and second supporting plates when said base plate is removed from said first and second supporting plates to perform wiring operations on the harness between the pins of said probes and the pins of said connecting elements, and whereby said base plate provides protection of said pins and unitary assembly of said first and second supporting plates when said cover plate is removed for use of said probe support in a test fixture.

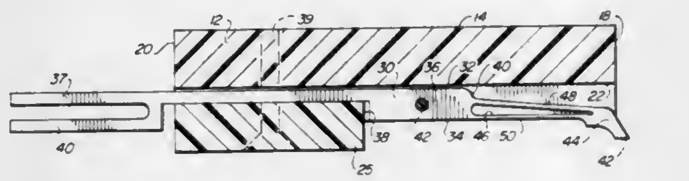
4,618,821
TEST PROBE ASSEMBLY FOR MICROELECTRONIC CIRCUITS

Seymour S. Lenz, P.O. Box 669, Longwood, Fla. 32750

Filed Sep. 19, 1983, Ser. No. 533,358

Int. Cl.^{4} G01R *1/06, 31/02*

U.S. Cl. 324—158 P **14 Claims**



1. A test probe assembly for microelectronic circuits, comprising:

(a) a unitary support block of an electrically nonconductive material having first and second plane surfaces;

(b) said support block having plural test probe slots therein extending from said first surface and substantially short of said second surface to maintain the unitary structural integrity of said support block;

(c) plural flexible, electrically conductive test probes, each test probe positioned in one of said test probe slots and including a forward probe tip adapted to engage a test point of a microelectronic circuit, each said probe tip extending out of said block and away from said first surface and spaced from the extremity of the associated test probe slot a distance which permits the probe tip to recede into the test probe slot during testing;

(d) said support block further including a keyway extending from said first surface transverse to said test probe slots and into said support block a lesser dimension than said test probe slots;

(e) each said test probe further including a keyway therein corresponding in dimension and position to said support block keyway;

(f) a key positioned in said support block keyway and said keyways of all of said test probes; and

(g) means for fastening said key to said support block.

4,618,822

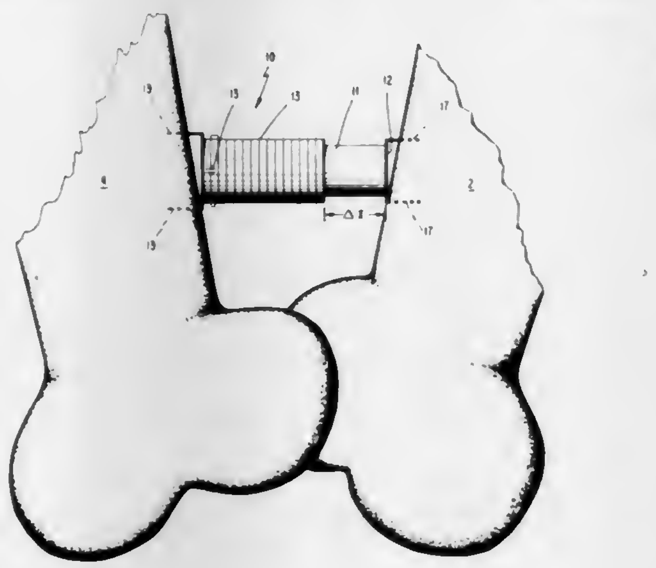
DISPLACEMENT SENSING DEVICE UTILIZING ADJUSTABLE TUNED CIRCUIT

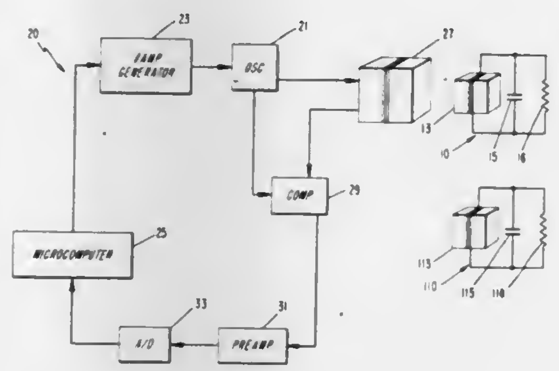
Per K. Hansen, Burlington, Vt., assignor to Position Orientation Systems, Ltd., Burlington, Vt.

Filed Apr. 18, 1984, Ser. No. 601,681

Int. Cl.^{4} G01B *7/14*

U.S. Cl. 324—207 **18 Claims**





1. A method of monitoring the displacement of a first object with respect to a second object comprising the steps of:

(a) attaching a sensor to said objects, said sensor including circuit means having a variable resonant frequency, said resonant frequency being varied by moving means in said sensor (1) attached to said objects and (2) moved in conjunction with movements of said objects with respect to one another;

(b) measuring the resonant frequency of said sensor with measuring means unattached to said sensor;

(c) calculating the relative position of said moving means; and

(d) calculating the displacement of said first object with respect to said second object;

(e) further wherein said sensor circuit means comprises:

(1) capacitor means;

(2) coil means connected in parallel with said capacitor means;

(3) ferrite rod means located at least partially within said coil means;

(4) said ferrite rod means being reciprocable with respect to said coil means, said coil means and ferrite rod means comprising said moving means.

4,618,823

INDUCTIVE PROXIMITY SWITCH HAVING AN OSCILLATOR MAGNETIC CORE AND A PERMANENT MAGNET FORMING A SATURATION-SENSITIVE MAGNETIZATION AREA

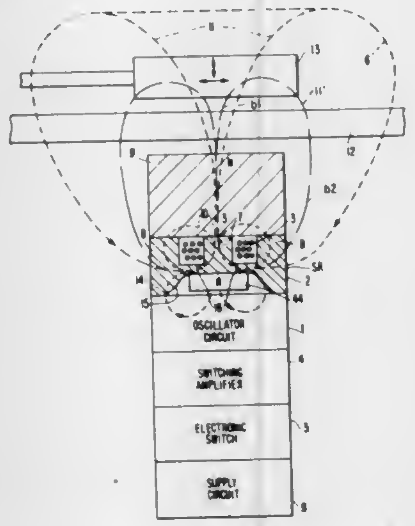
Peter Dahlheimer, Schalksmuehle, and Gerno Soyck, Halver, both of Fed. Rep. of Germany, assignors to Werner Turck GmbH & Co. KG, Halver, Fed. Rep. of Germany

Filed Sep. 30, 1983, Ser. No. 537,536

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1982, 3236224

Int. Cl.^{4} G01B *7/14;* H03K *17/95*

U.S. Cl. 324—207 **19 Claims**



1. An inductive proximity switch comprising oscillator circuit means including an oscillator coil wound on a magnetic core for generating a magnetic field, electronic switch means connected to the oscillator circuit means and adapted to be actuated in dependence upon a damping of the oscillations of the oscillator circuit means, at least one auxiliary magnet having at least one pole surface forming an active surface of the proximity switch and the pole axis of said pole surface being substantially transversely directed with respect to the active surface so that the auxiliary magnet produces a sensor field having flux extending out from the active surface, a trip device fashioned of a permeable material and being moveably supported so as to be movable toward said active surface, and said auxiliary magnet being connected to the magnetic core of said oscillator circuit means so as to form a permeable unit, the flux of said magnetic core of said oscillator circuit means being completely closed by the auxiliary magnet, and wherein said permeable unit has a reduced cross-sectional area in which the magnetic fluxes of the auxiliary magnet and the magnetic core of said oscillator circuit means heterodyne, said reduced cross-sectional area forming a saturation-sensitive magnetization area, said reduced cross sectional area being adapted to be operated in saturation by a reduction in the magnetic resistance in the sensor field which occurs when the trip device is introduced into the sensor field, thereby damping the flux of the magnetic core of said oscillator circuit means.

4,618,824

METHOD OF TESTING THE OPERABILITY OF CHECK VALVES

Robert D. Magee, Monroeville; Michael J. Asztalos, Churchill, and Vuong D. Trinh, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 16, 1984, Ser. No. 631,285

Int. Cl.^{4} G01B *7/14*

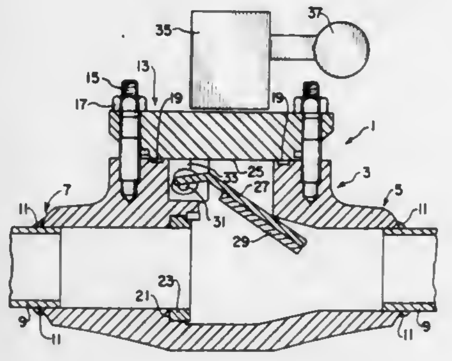
U.S. Cl. 324—208 **5 Claims**

1. A method of testing a check valve having a pivotal closure disk in a valve body, for operability, without the need for flow of fluid through the check valve, and without the need for any levers or extensions which extend through the valve body, comprising:

providing a check valve that is formed from a check valve body and first sealing member of nonmagnetic material and a pivotal closure disk of magnetic material having a second sealing member;

applying a magnetic field, by means of a magnetic field generator, to the check valve in a direction which will cause the magnetic closure disk to move away from said first sealing member; and

measuring the attraction between the magnetic field generator and the magnetic closure disk to determine the relative position of the magnetic closure disk to the first sealing member.



4,618,825

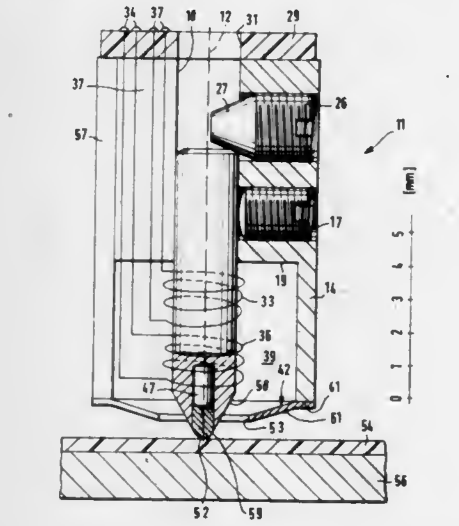
ELECTRO-MAGNETIC THICKNESS MEASURING PROBE

Helmut Fischer, Industriestrasse 21, 7032 Sindelfingen-6, Fed. Rep. of Germany

Filed Oct. 11, 1984, Ser. No. 659,654

Int. Cl.^{4} G01B *7/10;* G01R *33/12*

U.S. Cl. 324—230 **19 Claims**



1. An electro-magnetic thickness measuring probe having:

a pot core of high permeable magnetic material which has a central bore, a pot chamber coaxial to the central bore accommodating a winding, and a pot rim,

a pole-piece of high permeable magnetic material having one end fixed into the central bore and a free front-face with a coaxial recess machined therein such that an outer shell remains around the recess, and a hard-metal pin seated in the recess having a front-face forming a crowned contact surface which stands a little proud of the pot rim, and

the improvement comprising:

said pin being of low permeable magnetic material relative to the pole-piece

a coaxial annular disk made of highly permeable magnetic material, slot extending from the intrados-radius surface to the outer edge, having an outer edge in contact with the pot rim, and an intrados-radius surface having a diameter greater than the diameter of the pole-piece but significantly smaller than the diameter of the pot chamber, said intrados-radius surface lying close to the front-face of the pole-piece, whereby the magnetic resistance between the intrados-radius surface and the outer shell is significantly greater than the magnetic resistance between the intrados-radius surface and the free front-face when the measuring probe is set down on a surface.

4,618,826

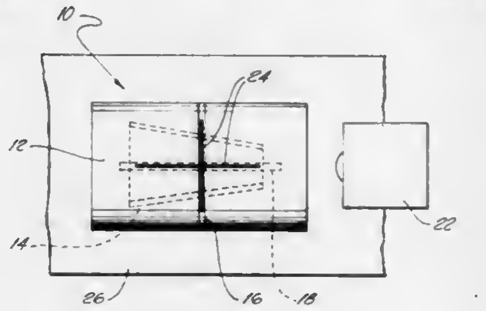
QUALITY CONTROL PHANTOM FOR USE IN COMPUTED TOMOGRAPHIC IMAGING INSTRUMENTS AND METHOD OF USE

Stanford L. Smith, Lexington, Ky.; Paul C. Wang, Washington, D.C., and Charles W. Coffey, Lexington, Ky., assignors to U.K. Research Foundation, Lexington, Ky.

Filed Jul. 30, 1984, Ser. No. 635,600

Int. Cl.^{4} G01R *33/20*

U.S. Cl. 324—308 **13 Claims**



1. A quality control phantom for use in the calibration and standardization of a computed tomographic imaging instrument, comprising:

a slab-like casing formed from a material type compatible with said computed tomographic imaging instrument;

a frustoconical groove formed in said casing, said groove including a material providing a different image signal from said casing during scanning with the instrument; and

a central bore formed in said casing, defining a central axis of said frustoconical groove, said central bore including a material providing a different image signal from said casing during scanning with the instrument.

4,618,827

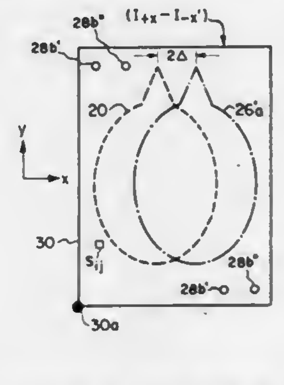
METHOD FOR HIGH-SPATIAL-RESOLUTION SPECTROSCOPIC NMR IMAGING OF CHEMICALLY-SHIFTED NUCLEI

Rowland W. Redington, Schenectady, N.Y., and Leon Axel, Philadelphia, Pa., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 10, 1984, Ser. No. 648,567

Int. Cl.^{4} G01R *33/20*

U.S. Cl. 324—309 **19 Claims**



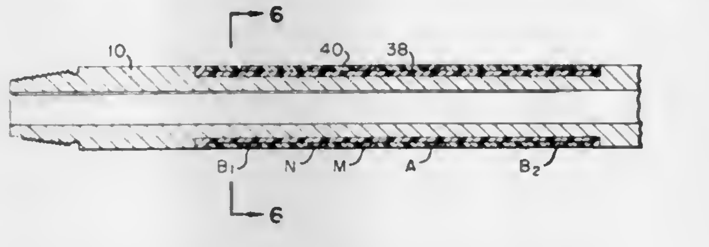
1. A method for obtaining a high-spatial-resolution NMR image of a sample containing first and second chemically-shifted nuclei, the method comprising the steps of:

(a) forming a first NMR image of a selected region of the sample from projections along a first line extending in a first direction;

(b) forming a second NMR image of the selected region

from projections along the same first line but extending in a second direction;
(c) selecting the second direction to be opposite to the first direction and to cause the first and second NMR images to each comprise a first image component produced by the first nuclei and a second image component produced by the second nuclei and with the second image component offset from the first image component by the chemical shift between the first and second nuclei;
(d) mirroring the second NMR image about a second line orthogonal to the first line;
(e) registering the first image components of the first and mirrored second NMR images;
(f) combining the first and mirrored second registered NMR images so as to eliminate the first image components and to produce a composite image containing second image components; and
(g) processing the composite image to produce a resolved image containing substantially only the second image component of the first NMR image.

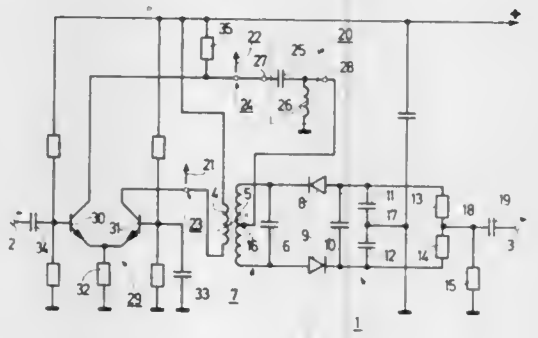
4,618,828
INSULATING SEGMENT FOR A DRILL STRING ELECTRODE STRUCTURE
Jean C. Raynal, Pau, France, assignor to Teleco Oilfield Services Inc., Meriden, Conn.
Filed Nov. 12, 1982, Ser. No. 440,753
Int. Cl.⁴ G01V *3/20;* E21B *49/00*
U.S. Cl. 324—347 **7 Claims**



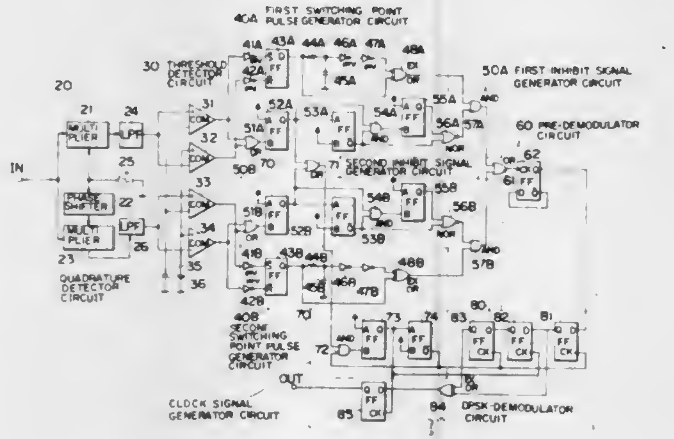
1. An electrode structure for a drill string, including:
a drill string segment having a recess defining a recessed surface along an axial length thereof;
a first sleeve of insulating material in said recess on the recessed surface of said drill string segment;
a second sleeve of insulating material on said first sleeve of insulating material;
said first and second sleeves of insulating material being of different hardness, with said second sleeve being harder than said first sleeve, said second sleeve of insulating material providing protection against abrasion and said first sleeve permitting absorption of lateral loads; and a plurality of electrodes embedded in said second sleeve.

4,618,829
BRIDGE CIRCUIT DEMODULATOR
Rudolf Hasler, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 22, 1985, Ser. No. 693,434
Claims priority, application Austria, Jan. 20, 1984, 189/84
Int. Cl.⁴ H03D *3/00*
U.S. Cl. 329—103 **9 Claims**

1. A demodulator bridge comprising:
a resonant circuit comprising a secondary winding of a transformer connected in parallel with a resonating capacitance;
a primary winding of said transformer connected to a signal source of modulated signals for coupling said signals to said resonant circuit;
an inductor-capacitor LC phase shift circuit connected to supply said modulated signals to said resonant circuit at a phase shifted angle of substantially 90° independent of said primary winding;
first and second oppositely polarized diodes connected to each end of said resonant circuit; and
a capacitor network connected across said diodes for receiving charging currents proportional to the frequency of said modulated signals.



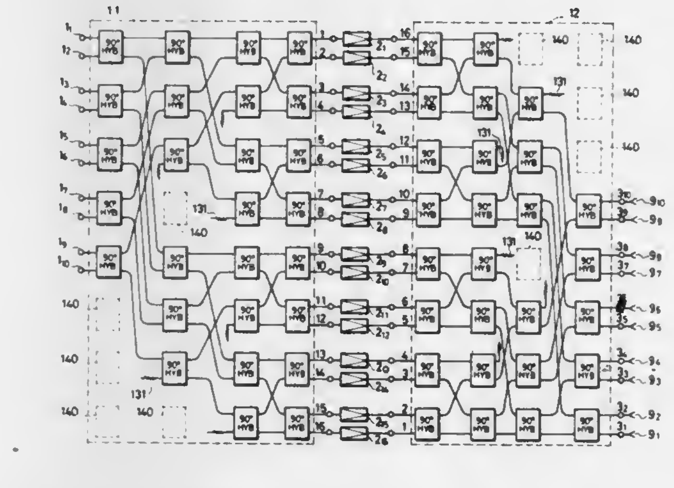
4,618,830
PSK DEMODULATOR USING ASYNCHRONOUS LOCAL OSCILLATOR
Masaharu Mori, and Ryuichi Asai, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan
Filed Dec. 14, 1984, Ser. No. 681,597
Claims priority, application Japan, Jan. 9, 1984, 59-1737
Int. Cl.⁴ H04L *27/22*
U.S. Cl. 329—105 **2 Claims**


40A FIRST SWITCHING POINT PULSE GENERATOR CIRCUIT
30 THRESHOLD DETECTOR CIRCUIT
50A FIRST INHIBIT SIGNAL GENERATOR CIRCUIT
60 PRE-DEMODULATOR CIRCUIT
MULTIPLIER
LPF
IN
PHASE SHIFTER
COM
FF
AND
OR
NOR
EX OR
71 SECOND INHIBIT SIGNAL GENERATOR CIRCUIT
QUADRATURE DETECTOR CIRCUIT
40B SECOND SWITCHING POINT PULSE GENERATOR CIRCUIT
OUT
CLOCK SIGNAL GENERATOR CIRCUIT
84 DPSK DEMODULATOR CIRCUIT

1. A PSK demodulator comprising:
a local oscillator circuit working asynchronously with respect to the carrier phase of an inputted butst PSK signal;
carrier phase information detection means including first and second multipliers for multiplying a first output signal obtained from said local oscillator circuit and a second output signal shifted in phase by 90 degrees with respect to the first output signal, respectively, by said inputted burst PSK signal;
a reference voltage source generating a first reference voltage and a second reference voltage which is lower than the first reference voltage;
signal level discriminator means generating 4 sorts of level signals, 2 of which are produced when the output signal from said first multiplier is higher than the first reference voltage and another 2 of which are produced when the output signal from said second multiplier is lower than the second reference voltage, by comparing the output signals of the first and second multipliers with the first and second reference voltages; and
PSK circuit means for demodulating the inputted burst PSK signal, based on said 4 sorts of level signals, said PSK circuit means including:
first and second switching point pulse generator means for generating a pulse, every time respective 2 sorts of signals corresponding to the output signals coming from said first and second multipliers are applied alternatively thereto;

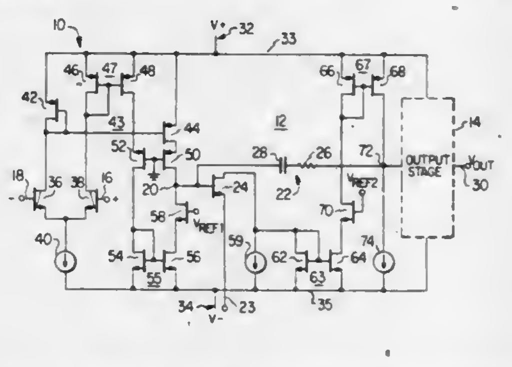
first and second inhibit signal generator means for generating inhibit pulses having a predetermined width, when the period of pulses obtained by logically adding said respective 2 sorts of signals is longer than a predetermined period of time;
first logic multiplication means for logically multiplying the output of said first switching point pulse generator means by that of said first inhibit signal generator means;
second logic multiplication means for logically multiplying the output of said second switching point pulse generator means by that of said second inhibit signal generator means;
first logic addition means for logically adding the outputs of said first and second logic multiplication means; and
clock signal generating means for generating clock pulses having a constant period;
modulating signal demodulation means for generating pulses whose polarity is inversed in response to said clock pulses, every time a pulse output of said logic addition means is applied thereto.

4,618,831
POWER AMPLIFYING APPARATUS
Shunichiro Egami, Yokosuka, and Makoto Kawai, Yokohama, both of Japan, assignors to Nippon Telegraph & Telephone Corporation, Tokyo, Japan
Filed Sep. 13, 1985, Ser. No. 775,976
Claims priority, application Japan, Sep. 25, 1984, 59-200959
Int. Cl.⁴ H03F *3/68*
U.S. Cl. 330—124 R **7 Claims**



1. A power amplifying apparatus comprising:
a first multi-port hybrid coupler having M input terminals and N output terminals and formed by n stages of 90° hybrid couplers alone, the first of said stages including the number, M/2, of 90° hybrid couplers, the nth stage including the number, 2^{n-1}, of 90° hybrid couplers, and the first through nth stages of said 90° hybrid couplers being operative to distribute a signal input to any one of said M input terminals equally to said N output terminals, where N>M, $N=2^n$, n is an integer that is at least equal to 2, and M/2 represents an integer having any decimal value of M/2 raised to a unit;
N amplifiers connected directly to respective ones of said N output terminals of said first multi-port hybrid coupler;
a second multi-port hybrid coupler having N input terminals connected to the output sides of respective ones of said N amplifiers, said second multi-port hybrid coupler having M output terminals and being formed by n stages of 90° hybrid couplers alone, the first stage in said second hybrid coupler including the number, 2^{n-1}, of 90° hybrid couplers, the nth stage in said second hybrid coupler including the number, M/2, of 90° hybrid couplers, and the first through nth stages of said 90° hybrid couplers of said second multi-port hybrid coupler being operative to combine the distributed signal components input to said N input terminals into one at the one of said M output terminals of said second multi-port hybrid coupler which corresponds to the one of said M input terminals of said first multi-port hybrid coupler; and
dummy loads connected to unused ones of said input and output terminals of the 90° hybrid couplers in said first and second multi-port hybrid couplers.

4,618,832
DIFFERENTIAL AMPLIFIER WITH IMPROVED POWER SUPPLY REJECTION RATIO
Stephen R. Schenck, McKinney, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Jun. 18, 1985, Ser. No. 746,212
Int. Cl.⁴ H03F *3/45*
U.S. Cl. 330—254 **1 Claim**

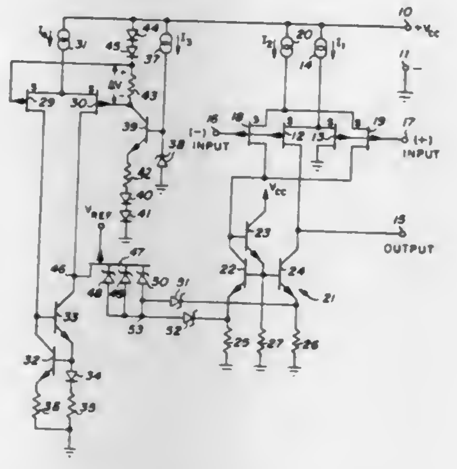


1. A differential amplifier having improved immunity to signals on the power supply inputs thereof, comprising:
an input differential stage including first and second transistors coupled to the inputs of said amplifier, first and second current mirrors each connected respectively between one of the power supply inputs and said first and second transistors, and a current source connecting said first and second transistors to the other power supply input;
a gain stage having a MOS transistor with a source input, current mirror means connected to the output of said MOS transistor and to the power supply inputs for providing an output voltage with upper and lower limits corresponding substantially to the voltages on said power supply inputs;
an amplifier output terminal connected to the source input of said MOS transistor for referencing said MOS transistor to desired low noise references; and
means for connecting said input differential stage to said MOS transistor for driving said MOS transistor with a differential signal about a predetermined circuit potential.

4,618,833
OPERATIONAL AMPLIFIER OFFSET TRIM THAT DOES NOT CHANGE THE OFFSET POTENTIAL TEMPERATURE DRIFT
Ronald W. Russell, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Aug. 12, 1985, Ser. No. 764,450
Int. Cl.⁴ H03F *3/45*
U.S. Cl. 330—256 **6 Claims**

1. A differential amplifier circuit including a differentially connected input transistor pair which has an offset potential that drifts with temperature change and an offset trimming circuit which reduces said offset potential to an acceptable value without changing the offset potential temperature drift, said offset trimming circuit comprising:
a compensation transistor pair connected as a differential amplifier;
means for applying a constant, temperature independent, input potential to said compensation transistor pair thereby to unbalance conduction in said compensation pair and to develop a compensation current related to the unbalanced conduction in said compensation pair and

which varies with temperature inversely with the transconductance in said input transistor pair; and



means for coupling a portion of said compensation current to said input transistor pair wherein said portion is coupled to reduce said offset potential.

4,618,834
VARIABLE CHARACTERISTICS AMPLIFIER CIRCUIT

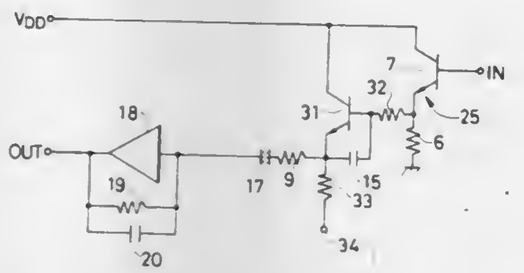
Hiroo Adachi, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 10, 1985, Ser. No. 753,468

Claims priority, application Japan, Jul. 10, 1984, 59-104238[U]

Int. Cl.⁴ H03G *3/30*

U.S. Cl. 330—284 **8 Claims**



1. A variable characteristics amplifier circuit comprising:
an active element provided with a pair of controlled terminals and a single controlling terminal and conductive in a forwardly biased state;
an amplifier circuit having a feedback circuit coupled between input and output terminals thereof, said input terminal being connected to a selected one of said controlled terminals of said active element;
means for selectively reversely biasing said active element in accordance with a characteristics varying command; and
an impedance element connected between said one controlled terminal and said controlling terminal.

4,618,835
PROXIMITY SENSOR OSCILLATOR UTILIZING CONTROLLED CHARGE

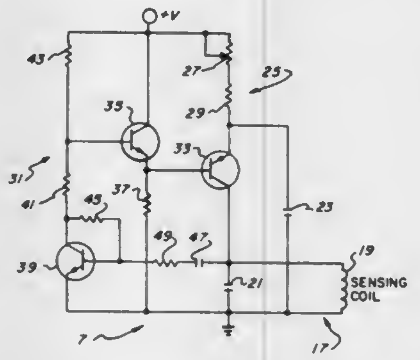
Michael A. Wilson, Berthoud, Colo., assignor to Maranantha Research Ltd., Franklin, W. Va.

Filed Nov. 27, 1984, Ser. No. 675,425

Int. Cl.⁴ G01V *3/11;* **H03B** *5/12*

U.S. Cl. 331—65 **15 Claims**

1. A proximity oscillator device, comprising:
a continuously oscillating resonant circuit one element of which provides a sensor that is responsive to a conductive object such that the distance therebetween has an inverse effect on the power loss of said resonant circuit;
controlled charge means connectable with a power supply and with said resonant circuit, said controlled charge means, when discharged, providing a substantially constant metered charge; and
switching means connected between said controlled charge means and said resonant circuit to effect periodic discharge of said substantially constant metered charge from said controlled charge means to said resonant circuit with at least one measurable parameter of said power loss of said resonant circuit being substantially uneffected by said supplied charge so that said parameter provides an indication of the proximity to said sensor of a conductive object causing said power loss of said resonant circuit.



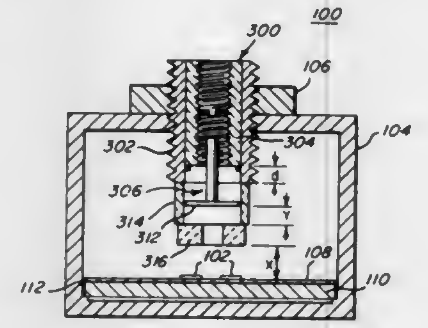
4,618,836
WIDE BAND DIELECTRIC RESONATOR OSCILLATOR HAVING TEMPERATURE COMPENSATION

Mark A. Gannon, Carpentersville; Francis R. Yester, Jr., Arlington Heights, and Paul H. Gailus, Prospect Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 24, 1984, Ser. No. 685,662

Int. Cl.⁴ H03B *5/18, 7/14*

U.S. Cl. 331—96 **5 Claims**



1. An improved wide-band microwave dielectric oscillator with a removable channel element having a dielectric resonator which determines the frequency of operation and with a substrate for supporting active oscillator circuitry, comprising:
(a) a housing for electrically shielding and containing the microwave dielectric oscillator;
(b) a substrate having a conductive pattern deposited thereon which couples the dielectric resonator to the active oscillator circuitry; and
(c) a removable dielectric resonator channel element said channel element mounted in said housing in a manner which places said dielectric resonator in a proximity which provides coupling via electromagnetic field with the conductive pattern on said substrate.

4,618,837
LOW-POWER CONSUMPTION REFERENCE PULSE GENERATOR

Yoshiaki Matsuura, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

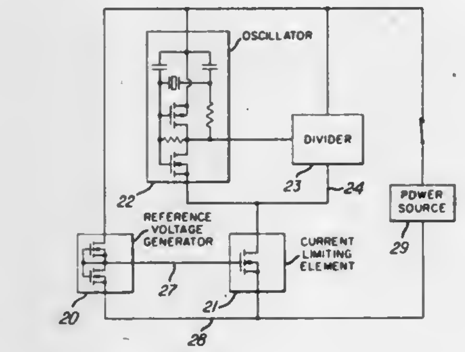
Filed Jun. 29, 1982, Ser. No. 393,307

Claims priority, application Japan, Jul. 3, 1981, 56-104846

Int. Cl.⁴ H03B *5/32*

U.S. Cl. 331—160 **15 Claims**

1. A reference pulse generator for use with a power source comprising: a quartz crystal oscillator for producing an oscillatory output; a frequency divider connected to receive the oscillatory output of the oscillator; a reference voltage generator for producing a reference voltage; and a constant current generator connected in series both with the oscillator and the frequency divider to control the current applied to the oscillator and the frequency divider from a power source, the constant current generator being connected to receive the reference voltage produced by the reference voltage generator.



4,618,838
IMPEDANCE ADJUSTING ELEMENT FOR A MICROSTRIP CIRCUIT

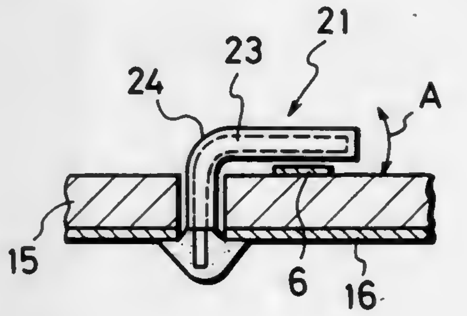
Tadashi Kajiwara; Akira Sato; Shinobu Tsurumaru, all of Kanagawa, and Kenichiro Kumamoto, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 12, 1985, Ser. No. 700,915

Claims priority, application Japan, Feb. 27, 1984, 59-35788

Int. Cl.⁴ H01P *5/00, 1/00*

U.S. Cl. 333—33 **15 Claims**



1. A microstrip circuit comprising:
a signal transmission line;
a circuit element connected at one end to said signal transmission line;
an impedance matching element connected in parallel to said signal transmission line; and
an electrically conductive wire element having one end connected to ground potential and arranged in proximity to at least one of said signal transmission line and said impedance matching element and being arranged for free movement in space above said transmission line and said impedance matching element with said one end taken as a supporting point, whereby a spatial position of said conductive wire element relative to one of said signal transmission line and said impedance matching element is varied to vary an effective impedance of said signal transmission line relative to said circuit element.

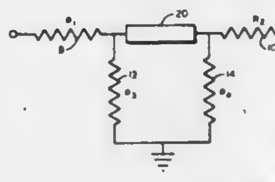
4,618,839
MICROWAVE ATTENUATOR

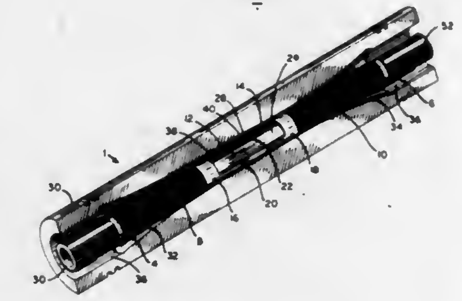
Jon E. Barth, 1300 Wyoming St., Boulder City, Nev. 89005

Filed Apr. 11, 1985, Ser. No. 722,210

Int. Cl.⁴ H01P *1/22*

U.S. Cl. 333—81 A **17 Claims**





1. A microwave attenuator comprising
a dielectric base having an elongate, generally cylindrical peripheral surface,
a first resistive strip deposited on said surface adjacent an end portion of the attenuator,
a second resistive strip deposited on said surface adjacent another end portion of the attenuator,
first and second spaced annular conductive bands deposited on said surface adjacent said first and second resistive strips, respectively, said bands defining an interior annular portion of the cylindrical surface between said end portions,
a first conductive strip connecting said conductive bands,
a second conductive strip intermediate said conductive bands,
a third resistive strip disposed between said first conductive band and said second conductive strip and in electrical connection therewith, and
a fourth resistive strip disposed between said second conductive band and said second conductive strip and in electrical connection therewith.

4,618,840
AIR-LINE MICROWAVE COAXIAL REVERSING SWITCH HAVING DIAGONALLY SWITCHED PATH

Harold H. Yee, Rancho Palos Verdes, and James F. Hudson, Manhattan Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

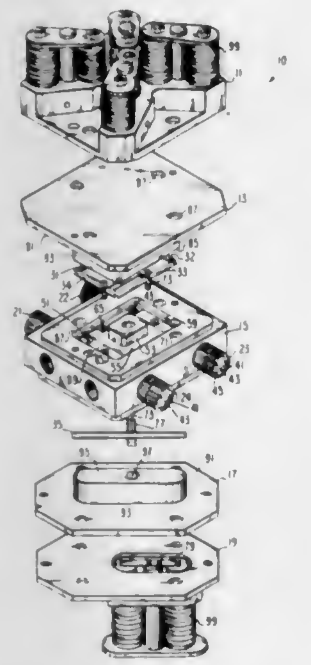
Filed Apr. 9, 1984, Ser. No. 598,102

Int. Cl.⁴ H01P *1/10*

U.S. Cl. 333—105 **10 Claims**

1. An air-line RF switch comprising:
an RF cavity unit housing defining respective first and second adjacent RF cavities substantially disposed in respective first and second substantially parallel and spaced apart positions, the cavity unit housing having a square cross section, said first RF cavity having a plurality of RF cavity segments substantially in the first position, said first RF cavity, having a plurality of interconnecting grooves disposed therewithin, said second RF cavity, disposed substantially in the second position; the second cavity having a groove that is located in a substantially diagonal relationship to the interconnecting grooves of said first RF cavity;
first, second, third and fourth RF ports connected to the RF cavity housing, the first and second ports also located on one side of the RF cavity housing, the third and fourth ports located on an oppositely disposed side of the cavity housing, in relation to the first and second port, the first

and the third ports being located in a first diagonal relationship with each other, the second and the fourth ports being located in a second diagonal relationship with each other, each of the ports comprising a center conductor disposed within an outer conductor, the outer conductor of each of the ports being connected to the cavity housing, the center conductors of said first, second, third and fourth ports extending to the interior of said first RF cavity, the center conductors of the first and third ports also extending to the interior of said second RF cavity, the center conductors of the first and third ports extending to the interior of the first RF cavity at substantially diagonally opposed portions of said first RF cavity and extending to the interior of the second cavity at substantially opposite ends thereof, the center conductors of said second and fourth ports extending to the interior of said first RF cavity at substantially different diagonally opposed portions of said first RF cavity, said first, second, third



and fourth ports each being substantially equally spaced from adjacent ports about said first RF cavity;

actuable first, second, third and fourth RF transfer bars disposed within said first cavity, said first bar when actuated, electrically connecting the center conductors of said first and second RF ports, said second bar when actuated, electrically connecting the center conductors of said second and thrid RF ports, said third bar when actuated, electrically connecting the center conductors of said third and fourth RF ports, said fourth bar when actuated, electrically connecting the center conductors of said fourth and first RF ports;

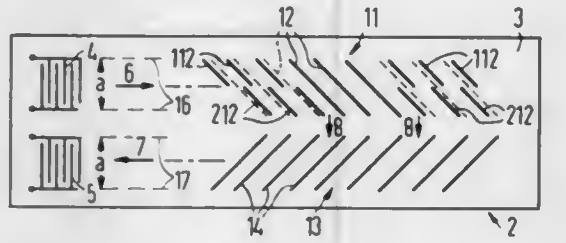
an actuable fifth RF transfer bar disposed within said second cavity, said fifth RF transfer bar when actuated, diagonally electrically connecting the center conductors of said first and third RF ports; and

actuation means for actuating said first, second, third, fourth and fifth RF transfer bars.

4,618,841
ELECTRONIC COMPONENT FUNCTIONING WITH REFLECTED ACOUSTIC WAVES

Gerd Riha, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 520,418, Aug. 4, 1983, Pat. No. 4,520,330. This application Feb. 8, 1985, Ser. No. 699,949
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1982, 3230038; Feb. 9, 1984, 3404618
Int. Cl.⁴ H03H ***9/145, 9/42, 9/64***
U.S. Cl. 333—195 **7 Claims**

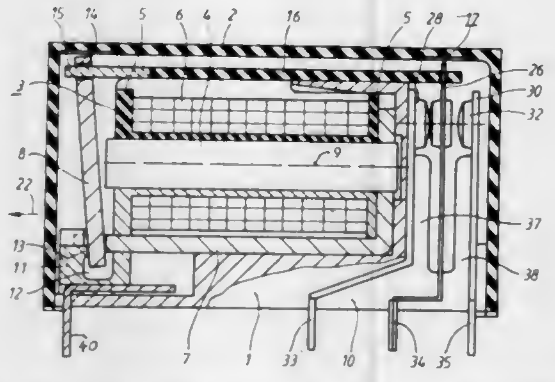
1. An electronics component operating with reflected accoustic waves on a substrate wherein a transducer is provided for inputting and/or outputting the waves relative to a reflector structure, comprising:
(a) a reflector structure formed of a plurality of reflector fingers, at least some of which are weighted;
(b) a principal path of the acoustic waves having first and second outer edges and extending along the substrate and through said reflector structure given absence of distortions in the component;
(c) a maximum anticipated deviation path of the acoustic waves occurring laterally offset to either side of said principal path given distortions and defining first and second deviated outer edges respectively outwardly of the first and second principal path edges;
(d) all reflector fingers extending at least to the first and second deviated outer edges;



(e) at least one weighted reflector finger which is divided so as to create sub-pieces offset relative to one another in a principal wave propagation direction by a dimension corresponding to a prescribed weighting;
(f) associated with said at least one divided reflector finger additional reflector finger sub-pieces which extend said divided reflector finger outwardly of the first and second edges of said principal path;
(g) a weighting division and dislocation of the divided reflector finger within the principal path being continued outwardly from the first and second edges of the principal path as an at least fundamentally periodically repeated sequence; and
(h) said continued sequence being provided at least up to said first and second deviated edges.

4,618,842
MINIATURE RELAY

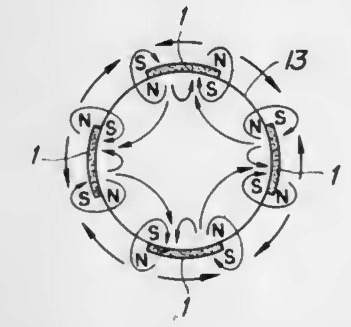
Wolfgang Nestlen, Konrad-Witz-Str. 12, Rottweil, Fed. Rep. of Germany 7210, and Gerd Schmitt, Harras 53, Wehingen, Fed. Rep. of Germany 7209
Filed Apr. 17, 1985, Ser. No. 724,017
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1984, 3414731
Int. Cl.⁴ H01H ***67/02***
U.S. Cl. 335—128 **13 Claims**



1. In an improved miniature relay unit having a magnet coil, a pivoting armature and a spring contact bank for said magnet coil, a spring carrier having a base portion for mounting said magnet coil, said spring contact bank having at least a pair of spring switches, said base portion having lug or solder connections for said magnet coil that extend to an outside of the unit, and said magnet coil having a longitudinal axis extending parallel to said base portion and in a cross relation to a longitudinal axis of said spring contact bank; the relay being further characterized by said pivoting armature having a substantially planar actuating leg of insulating material linked thereto, said leg being adapted to act on the pair of spring switches of said spring contact set, said pivoting armature being positioned along an end of said magnet coil and the spring contact bank being positioned on the opposite end of the magnet coil and said actuating leg being positioned along a side of said magnet coil and in an opposite and parallel relation with respect to said base portion.

4,618,843
ELECTRON BEAM DEFLECTION YOKE

Yukio Nakamura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 4, 1985, Ser. No. 794,732
Claims priority, application Japan, Nov. 8, 1984, 59-235451
Int. Cl.⁴ H01F ***7/00***
U.S. Cl. 335—210 **5 Claims**

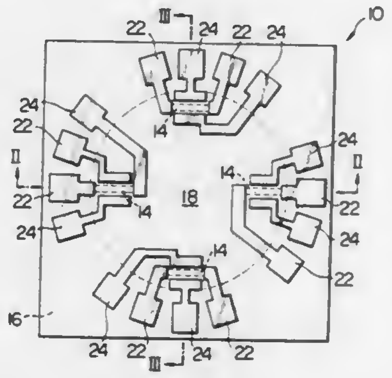


1. An electron beam deflection yoke used for a color cathode ray tube in which a plurality of electron guns are arranged in-line fashion, which comprises of:
(a) a magnetic core;
(b) a horizontal deflecting coil for generating a horizontally deflecting magnetic field;
(c) a vertical deflecting coil for generating a vertically deflecting magnetic field;
(d) separator means for separating said two horizontal and vertical deflecting coils; and
(e) a plurality of magnetic field correcting magnets of plate shape disposed onto said separator means, said magnets being magnetized in such a way that a pair of magnetic poles are formed near both ends of said plate-shaped magnet, respectively, in a thickness direction thereof and further one magnetic polarity formed near one end thereof is opposite to the other magnetic polarity formed near the other end thereof along a longitudinal direction thereof.

4,618,844
SEMICONDUCTOR PRESSURE TRANSDUCER

Yukio Takahashi, Katsuta; Michitaka Shimazoe, and Yoshitaka Matsuoka, both of Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 12, 1983, Ser. No. 494,075
Claims priority, application Japan, May 14, 1982, 57-79867
Int. Cl.⁴ G01L ***1/22***
U.S. Cl. 338—2 **15 Claims**

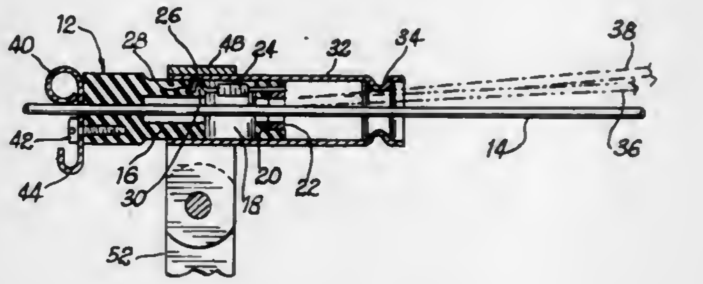
1. A semiconductor pressure transducer comprising:
a base comprising a semiconductor monocrystal;
a strain gauge resistor element formed on said base;
an oxide film formed on said base in contact with said strain gauge resistor element for protecting said strain gauge resistor element; and
a conductive layer formed on said oxide film, said layer not overlapping said strain gauge resistor element through said oxide film, being adjacent two opposed sides of said strain gauge element and functioning to cause movable



ions within and on the oxide film in proximity to the strain gauge resistor element to be fixed.

4,618,845
MULTI-MODAL PROXIMITY SENSOR SYSTEM

William J. Elks, 1310 Cary Way, San Diego, Calif. 92109
Filed Sep. 28, 1984, Ser. No. 655,561
Int. Cl.⁴ B60Q ***1/00;*** **H01H** ***3/16***
U.S. Cl. 340—61 **9 Claims**



1. A two-step proximity indicator comprising:
(a) an elongated, electrically conductive normally substantially straight probe;
(b) a probe mounting means fixing a fixed end of said probe with an extending portion of said probe extending to terminate in a distal end;
(c) said probe mounting means also mounting a primary and a secondary contact ring, said rings being axially spaced along the extending portion of said probe, such that upon increasing the deflection of said probe from straight, it contacts first said primary ring, and subsequently said secondary ring; and,
(d) an electrical alarm wired into a circuit which includes said rings and said probe such that said circuit is open until said probe touches either of said contact rings, closing said circuit to actuate said alarm, said circuit including a means therein producing a different signal from said alarm depending on which contact ring has been contacted by said probe;
(e) said means to produce a different signal comprising a resistor wired between said primary contact and the rest of the circuit such that upon contacting said primary ring, a diminished current flows in said circuit, because of said resistor, producing a diminished signal; and,
(f) said resistor is omissible or removable with said primary ring without destroying the integrity of the circuit through said secondary contact ring.

4,618,846

DATA CODING

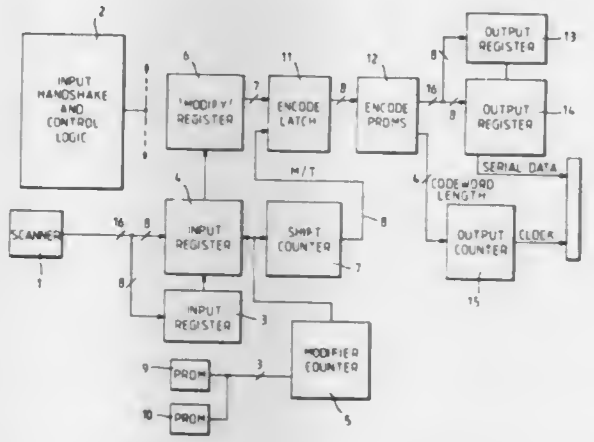
Peter F. Ross; Ian W. Rodgers, and Rupert L. Goodings, all of Cambridge, England, assignors to Crosfield Electronics Limited, London, England

Filed Dec. 10, 1984, Ser. No. 680,028

Claims priority, application United Kingdom, Dec. 8, 1983, 83 32771

Int. Cl.⁴ H03M *7/46*

U.S. Cl. 340—347 DD **10 Claims**



1. A method of coding signals representing a stream of digital data groups for transmission or storage, wherein each said group represents a numerical quantity, said method comprising the steps of: supplying said signals to coding means, and generating at said coding means, for each said data group, a code representing said group, said code comprising one of a terminator codeword, and a terminator codeword and at least one or more make-up codewords, wherein said terminator codewords and said make-up codewords are based on at least one multiplicative modifier.

4,618,847

C-R TYPE D/A CONVERTER

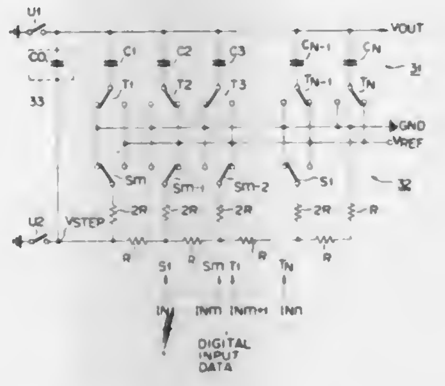
Tetsuya Iida, Yokohama, and Fuminari Tanaka, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 6, 1984, Ser. No. 586,721

Claims priority, application Japan, Mar. 8, 1983, 58-37941

Int. Cl.⁴ H03K *13/02*

U.S. Cl. 340—347 DA **1 Claim**



1. A C-R type linear D/A converter for converting a digital word input having a predetermined number of upper and lower bits into an analog value, said converter comprising:

- a first portion comprising a C-array type D/A converter for converting said upper bits into an analog value as an output, said first portion comprising a plurality of capacitors having capacitances sequentially weighted in a binary manner, first and second power source voltages, a plurality of first switches corresponding to said capacitors, said first switches responsive to said upper bits of digital input to selectively connect said capacitors to said first power source voltage or said second power source voltage;
- a second portion comprising an R-2R type D/A converter for converting said lower bits into an analog value as an output, said second portion comprising a plurality of R-2R type resistors and a plurality of second switches corresponding to said resistors, said second switches and said resistors being connected to said first and second power source voltages, said second switches being controlled by said lower bits of digital input to output a voltage varying in a stepwise manner between said first power source voltage and said second power source voltage; and
- a capacitive coupler electrically connecting said first and second portions at said output a value corresponding to the sum of the analog values of said first and second portions.

4,618,848

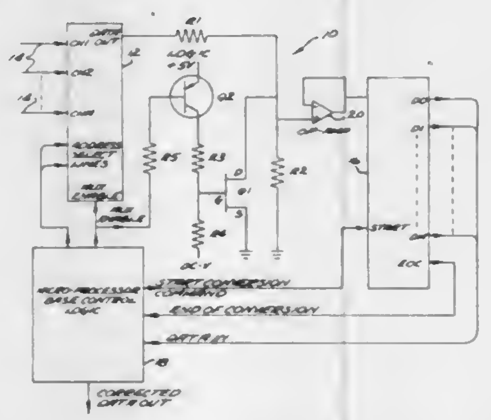
ANALOG TO DIGITAL CONVERTER CIRCUIT

Steven P. Parfitt, Johnson City, Tenn., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 14, 1984, Ser. No. 681,518

Int. Cl.⁴ H03M *1/10*

U.S. Cl. 340—347 CC **6 Claims**



3. In a circuit for converting input analog data to digital data having a CMOS M channel multiplexer, an analog to digital converter, a buffer operational amplifier coupled between the multiplexer and the converter driving the converter and control logic means coupled to and controlling the operation of the multiplexer and converter to sequentially convert the input analog data from each of the M channels in a scan of the conversion cycles, the improvement comprising a shunt circuit having a field effect transistor with a gate, source and drain having symmetrical gate-source and gate-drain structure, the drain connected to the input of the operational amplifier, the source connected to ground and the gate connected to the control logic means, the control logic means adapted to pull the input of the operational amplifier to ground for an M+1 conversion cycle of the converter for each scan.

4,618,849

GRAY CODE COUNTER

John H. Bruestle, North Plainfield Borough, N.J., assignor to RCA Corporation, Princeton, N.J.

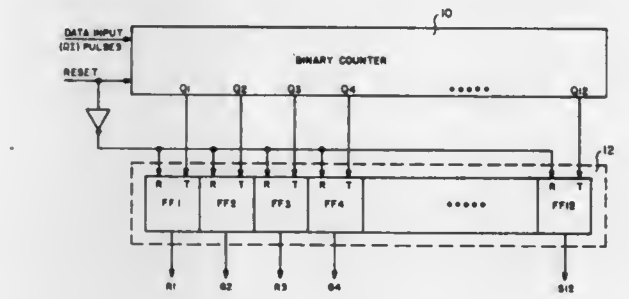
Filed Oct. 31, 1984, Ser. No. 666,721

Int. Cl.⁴ H03M *1/00*

U.S. Cl. 340—347 DD **6 Claims**

1. The combination comprising:

- an N stage binary counter having N outputs for producing a binary code at said N outputs; where N is an integer greater than one (1); and
- N toggle flip-flop, each toggle flip-flop having a toggle input and an output, each one of said N toggle flip-flops being connected at its toggle input to a different one of the N binary outputs of said N stage binary counter for causing each one of said N toggle flip-flops to be responsive solely to the binary signal produced at the output of its corresponding binary counter stage, each toggle flip-flop being responsive to the signal at its toggle input and changing state only when, said each time, the signal at its toggle input undergoes a transition from a first level to a second level and remaining in its previous state when the signal at its toggle input makes a transition in the opposite direction.



4,618,850

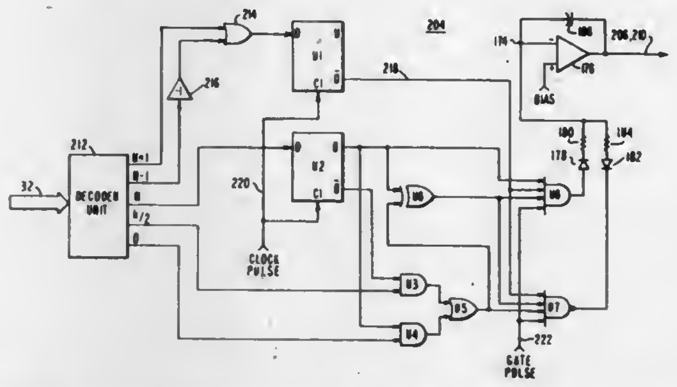
A/D CONVERTER HAVING DIGITALLY CONTROLLED SUBRANGING AND SELF ALIGNMENT APPARATUS FOR USE THEREIN

John G. Lenhoff, Jr., Linthicum, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 418,944, Sep. 16, 1982, Pat. No. 4,544,917. This application Jul. 18, 1985, Ser. No. 756,470

Int. Cl.⁴ H03M *1/10*

U.S. Cl. 340—347 CC **8 Claims**



1. A subranging analog-to-digital (A/D) converter including a quantizer which is time-shared to render multiple subranged digital word conversions of an analog signal input, each conversion dynamic subrange prealigned with the next higher conversion dynamic subrange to effect a unique set of digital conversion codes of the analog signal input value corresponding to the conversion transition region between said prealigned subranges; and apparatus for each pre-aligned pair of subranged conversions for maintaining the conversion dynamic subrange alignment thereof, said apparatus comprising:

- a first circuit operative to compare the pair of subranged conversions of the analog signal input value corresponding to the conversion transition region of said pair to detect an anomaly in the digital conversion codes thereof; and
- a second circuit governed by said detected anomalous condition and said pair of digital conversion codes associated therewith to adjust at least one of the conversion dynamic subranges of said pair to ameliorate said anomalous conditions.

4,618,851

APPARATUS FOR REPRODUCING SIGNALS PRE-STORED IN A MEMORY

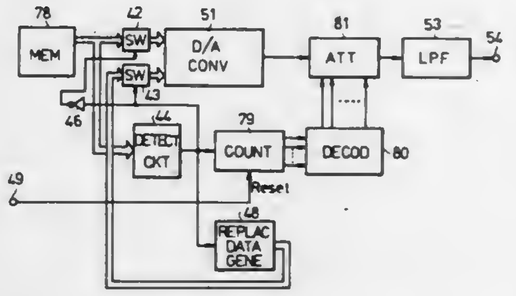
Tokumi Watanabe, Tachikawa, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Aug. 22, 1984, Ser. No. 643,065

Claims priority, application Japan, Aug. 23, 1983, 58-153669

Int. Cl.⁴ G10H *1/02, 3/03;* **H03M** *1/70*

U.S. Cl. 340—347 DA **9 Claims**



1. An apparatus for reproducing signals which are pre-stored in a memory, said apparatus comprising:

- a memory pre-stored with signals made up of a level code and a gain change code, said level code being an original analog signal which is amplified, sampled, and digitally coded, said original analog signal being amplified to an extent such that a maximum value of the original analog signal is smaller than a full scale value in a small level region within a predetermined period, said original analog signal having a level smaller than threshold values in said small level region, said gain change code having predetermined values and replacing said level code at least for a certain period from a predetermined time in said small level region;
- a detecting circuit for detecting said gain change code from a signal which is read out from said memory, and for producing an output detection signal when said gain change code is detected; and
- variable gain and digital-to-analog converting means supplied with the signal read out from said memory, for producing a reproduced signal having a signal waveform which is essentially the same as the signal waveform of said original analog signal, said variable gain and digital-to-analog converting means being variably controlled of a gain thereof after receiving the output detection signal of said detecting circuit so as to attenuate the level of the signal read out from said memory to an extent complementary to the amplification performed at the time when the signal is pre-stored in said memory, and subjecting the signal read out from said memory to a digital-to-analog conversion regardless of whether the output detection signal of said detecting circuit is received.

4,618,852

MONOTONIC A/D CONVERTER WHICH MINIMIZES CIRCUITRY FOR HIGH ORDER BIT CONVERSION

Stephen H. Keliey, and Mathew A. Rybicki, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 27, 1985, Ser. No. 706,208

Int. Cl.⁴ H03K *13/08*

U.S. Cl. 340—347 AD **20 Claims**

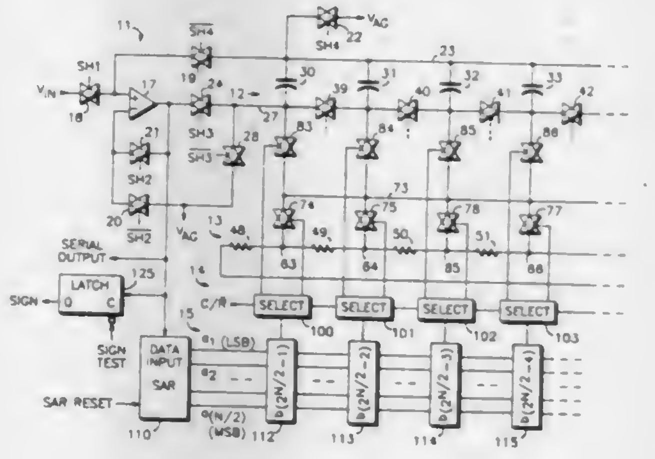
1. A converter for providing an N bit digital output signal corresponding to an analog input signal, where N is an integer, the most significant X bits of the N bits representing a selected one of a plurality of chords defining a range of possible values of the analog input signal and the least significant (N-X) bits of the N bits representing a selected one of a plurality of steps defining a range of possible step values of the analog input signal within any one of the chords, where X is also an integer, comprising:

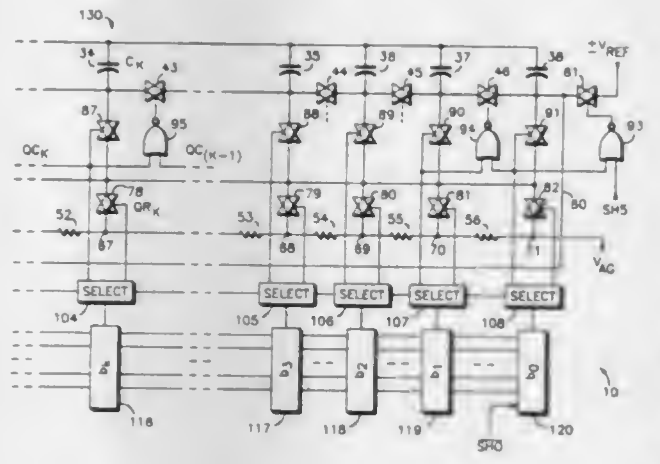
- charge redistribution means for selectively storing a charge proportional to the analog input and selectively redistributing the stored charge in proportion to the N bits, comprising:

a plurality of capacitors having first interconnected electrodes and respective second electrodes, for selectively redistributing an amount of the stored charge corresponding to the N bits;

a C rung switching network comprising a plurality of C rung switching elements, each coupled between the second electrode of a respective one of the capacitors and a common rail, for coupling the respective one of the second electrodes to the common rail in response to a predetermined one of a plurality of first select signals; and

a C rail switching network comprising a plurality of C rail switching elements, each coupled between the second electrodes of respective successive pairs of the capacitors, for decoupling, in response to the first select signals corresponding to each successive pair of capacitors, the second electrode of a selected one of the capacitors from the second electrodes of adjacent capacitors;





voltage divider means coupled to the charge redistribution means for selectively further redistributing the stored charge corresponding to the (N-X) bits, comprising:

resistance means coupled between first and second reference voltage terminals, for developing on each of a plurality of step nodes a predetermined step voltage; and

an R rung switching network comprising a plurality of R rung switching elements, each coupled between a respective one of the step nodes and the common rail, for coupling, in response to a predetermined one of a plurality of second select signals, one of the step voltages or said first reference voltage terminal to the common rail;

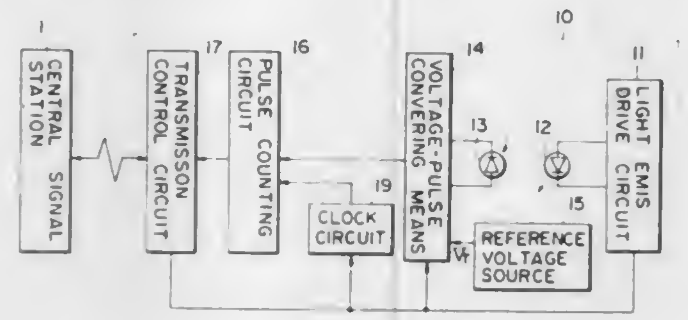
a plurality of select logic means coupled to the R rung and C rung switching networks for providing the pluralities of first and second select signals, each of said select signals having a logic high or low value in response to a predetermined one of a plurality of decode control signals; and

a single one of X or one of (N-X) decoder, whichever is greater, coupled to the select logic means for providing the decode control signals in response to an approximation of the digital output signal.

4,618,853
FIRE DETECTOR

Sadataka Yuchi, Sagamihara, Japan, assignor to Hochiki Corporation, Tokyo, Japan

Filed Feb. 21, 1985, Ser. No. 704,766
Claims priority, application Japan, Mar. 5, 1984, 59-41731
Int. Cl.⁴ G08B *26/00*
U.S. Cl. 340—505 **4 Claims**



1. A fire detector which comprises:

a fire detecting means adapted to be actuated upon receiving a call by polling from a central signal station and to produce an output signifying a change in physical phenomena caused by fire, in the form of an analog voltage;

a voltage-pulse width converting means connected to the fire detecting means for converting the analog output voltage therefrom into a pulse of a width corresponding thereto;

means for generating clock pulses of high frequencies;

a pulse counter connected to the clock pulse and to the pulse width converting means for counting the clock pulses occurring during the duration of the pulse produced by said voltage-pulse width converting means;

means connected to the clock pulse generator for transmitting the count produced thereby to the central station in digital form

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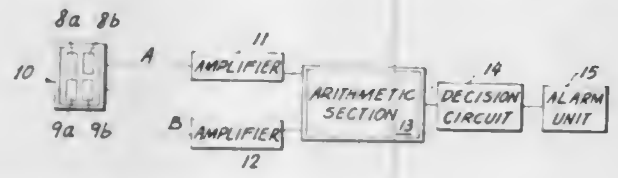
4,618,854
DOUBLE EYE TYPE CRIME PREVENTING SENSOR SYSTEM

Ryota Miyake, Shiga, and Masami Makino, Osaka, both of Japan, assignors to Takenaka Engineering Co., Ltd., Kyoto, Japan

PCT No. PCT/JP83/00182, § 371 Date Feb. 3, 1984, § 102(e) Date Feb. 3, 1984, PCT Pub. No. WO83/04316, PCT Pub. Date Dec. 8, 1983

PCT Filed Jun. 3, 1983, Ser. No. 576,689
Claims priority, application Japan, Jun. 5, 1982, 96633
Int. Cl.⁴ G08B *13/18*
U.S. Cl. 340—567 **4 Claims**



1. A passive double eye type crime preventing sensor system comprising:

a first pair of detection axes substantially horizontally spaced apart and extending in substantially the same direction in a predetermined space;

a second pair of detection axes substantially horizontally spaced apart and extending above or below the first pair of detection axes in the corresponding direction;

an energy focusing element including an optical mirror disposed at the terminal ends of these two pairs of detection axes for focusing radiant energy which comes in along the respective axis, said radiant energy being extreme infrared rays emitted from an object to be detected;

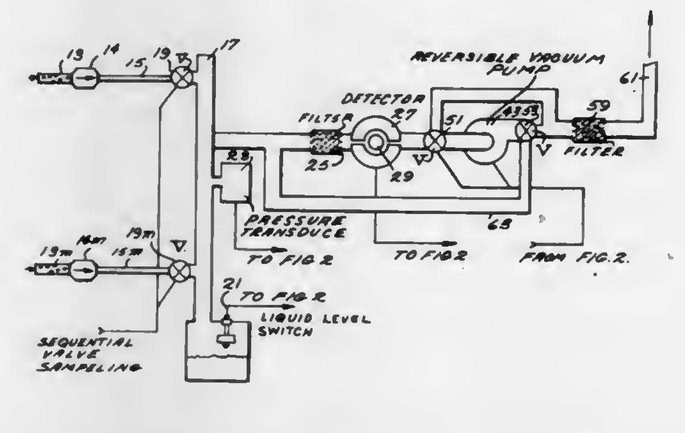
two pairs of radiant energy sensing elements each including a pair of pyroelectric elements of ferroelectric material disposed in the image forming position corresponding to the two pairs of detection axes in the vicinity of the focal point of the focusing element, the two pyroelectric elements comprising each pair of radiant energy sensing elements being connected in such a manner so as to produce a substantially resultant sensing output when they detect energy in a time differential fashion; and

a signal processing circuit for producing a warning when two resultant sensing outputs from the pairs of radiant energy sensing elements coincide with each other in the element arranging direction, and produced in response to the detection of energy in said time differential fashion, said signal processing circuit including an arithmetic section which receives an analog resultant output signal A from the first pair of said energy sensing elements and an analog resultant output signal B from the second pair of said energy sensing elements, calculates $K(|A+B|-|A-B|)$ (where K is a constant), and, if the result of this calculation is a positive value, finds that the time differential detecting directions associated with said two pairs of sensing elements coincide with each other.

4,618,855
SOIL POLLUTION MONITORING SYSTEM

Robert C. Harding, Dallas, and Edward H. Olsen, Farmersville, both of Tex., assignors to Genelco, Inc., Dallas, Tex.

Filed Dec. 14, 1984, Ser. No. 681,575
Int. Cl.⁴ G08B *21/00*
U.S. Cl. 340—605 **6 Claims**



1. A soil pollution monitoring system comprising:

a plurality of ducts for conveying air and gases;

a sensor means for detecting selected compounds in said air and gases;

means for drawing said gases and air past said sensor means;

means for sequentially connecting said sensor means to each of said ducts and applying said drawing means to draw said air and gases through said connected duct past said sensor means;

means for establishing an ambient level of said selected compounds in said gases and air;

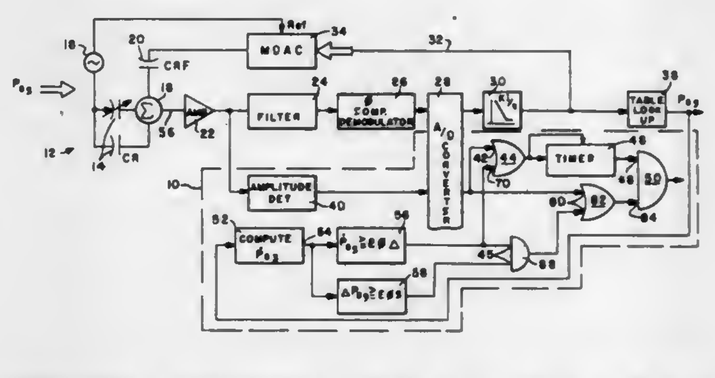
means for comparing said detected, selected compounds with said ambient level of said selected compounds; and

means for generating an alarm signal when the level of the detected, selected compounds exceeds said ambient level by a predetermined level.

4,618,856
STALL SURGE DETECTOR

Frank J. Antonazzi, South Bend, Ind., assignor to Allied Corporation, Morristown, N.J.

Filed May 3, 1985, Ser. No. 729,846
Int. Cl.⁴ G08B *21/00*
U.S. Cl. 340—626 **11 Claims**

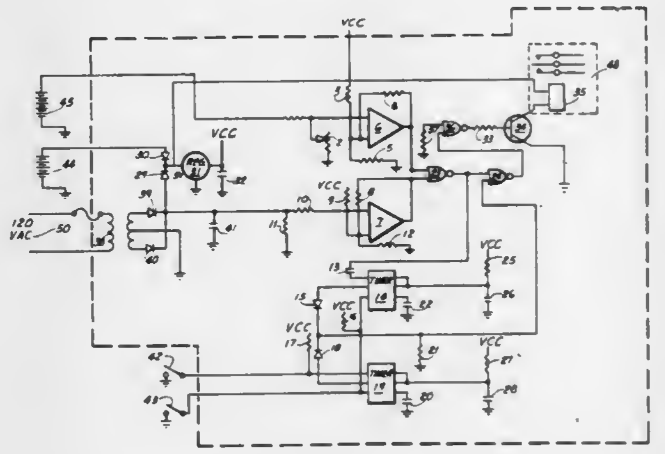


1. For use in a pressure measuring system which includes a pressure transducer for generating an instantaneous analogue signal as a function of pressure, means for generating non-linear error signal as a function of the difference between the input signal and a feedback signal and, means including feedback circuit means for generating said feedback signal as a function of said error signal for nulling said error signal and generating a digital output signal as a function of said pressure, a pressure surge detecting circuit comprising; amplitude detector means connected to said pressure measuring system to receive said error signal for generating an output signal when said error signal is equal to and greater than a predetermined magnitude; and timer means connected to receive said output signal for generating an alarm signal when said output signal continues for a predetermined period of time.

4,618,857
LOW D.C. AND LOSS OF A.C. SENSOR AND ALARM WITH SERVICE INHIBITOR

Harvey W. Dubois, P.O. Box 9568, New Iberia, La. 70560, and Fred Heselton, New Iberia, La., assignors to Harvey W. Dubois and R. J. Provost, both of New Iberia, La., part interest to each

Filed Jun. 20, 1984, Ser. No. 622,560
Int. Cl.⁴ G08B *21/00*
U.S. Cl. 340—654 **11 Claims**



1. A system for monitoring the terminal voltage of a first battery and the loss of A.C. power to said system, comprising:

a. A.C. power means connected to said system;

b. means powered by said A.C. power means for providing a reference voltage to said system;

c. a second battery for powering said means for providing said reference voltage in the event said A.C. power means fails;

d. comparator means for sensing the failure of said A.C.

power means and/or the drop of said terminal voltage of said first battery below a predetermined value and producing an output signal in response thereto;

e. a timer coupled to said comparator means and having a timing cycle activated by receipt of said output signal; and

f. alarm means coupled to said timer and activated by said timer only at the end of said timing cycle, for indicating said voltage drop below a predetermined value and/or failure of said A.C. power means.

4,618,858

INFORMATION DISPLAY SYSTEM HAVING A MULTIPLE CELL RASTER SCAN DISPLAY

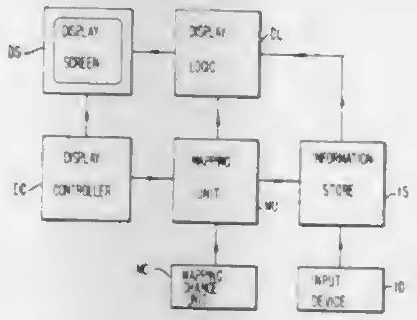
Francis R. Belch, Sale, England, assignor to Ferranti plc, Cheshire, England

Filed Nov. 3, 1983, Ser. No. 548,434

Claims priority, application United Kingdom, Nov. 3, 1982, 8231415

Int. Cl.⁴ G09G *1/14*

U.S. Cl. 340—724 **6 Claims**



1. An information display system capable of displaying a variable mosaic of information derived from a number of separate information items, comprising a raster scan display having a display screen, said display screen being divided into a number of cells, each cell representing a separate area of the display screen and each cell having an unique screen address; an information store comprising a plurality of storage elements and having a storage capacity for display information greater than the maximum amount of information which may be displayed on the screen at any instant and capable of storing a number of separate information items; display control means for generating the screen addresses of successive cells of the display screen; mapping means including a look-up table in the form of a random access memory containing the address of each individual storage element in the information store and responsive to the screen addresses for translating each individual screen address individually into a store address indicating the location in the information store of the information to be displayed in the cell of the display screen corresponding to the individual screen address such that each separate cell of the display may display information from any selected information item; display logic means responsive to the outputs from each successive location in the information store and operatively connected to the display to produce the necessary signals for activating the display; and map changing means connected to the mapping means for varying the translations effected by the mapping means on any desired screen address by changing the contents of said look-up table.

4,618,859

GRAPHIC DISPLAY UNIT

Yoshiaki Ikeda, Hachioji, Japan, assignor to Fanuc Ltd., Tokyo, Japan

Filed Feb. 28, 1984, Ser. No. 584,360

Claims priority, application Japan, Mar. 2, 1983, 58-32940

Int. Cl.⁴ G09G *1/06*

U.S. Cl. 340—724 **3 Claims**

1. A graphic display unit comprising:

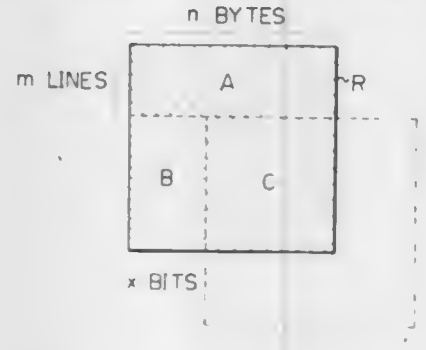
a graphic random access memory for storing data of at least one picture image,

a clock signal generating means for generating a main clock signal and a divided clock signal obtained by dividing said main clock signal,

a control means for generating a display timing signal synchronous with said divided clock signal, and

a display panel for displaying said data stored in said graphic random access memory while said display timing signal is on, characterized in that said graphic display unit further comprises a shifting means for shifting said picture-image a designated amount to a designated position on or off said display panel, said shifting means comprising:

a signal delaying means for delaying said divided clock signal and said display timing signal in accordance with a designated amount of shift of said picture image, whereby, in response to the delayed divided clock signal and the delayed display timing signal, said data of the picture image is read from said graphic random access memory; and



a storage means for latching the designated amount of shift of said picture image, said designated amount of shift having a format consisting of high-order data expressed by m×n bytes and low-order data expressed by x bits, where m, n and x are zero or positive integers, n bytes are necessary for shifting one horizontal line on said display panel, and x bits are smaller than n bytes;

said signal delaying means having means for delaying said divided clock signal and said display timing signal by the amount of the lower bit data in said x bits, said lower bit data being smaller than one byte.

4,618,860

RADIO PAGING METHOD OF ARRANGING MESSAGE INFORMATION WITH REFERENCE TO A KEY CODE AND A BASE STATION AND A PAGER RECEIVER FOR USE IN THE METHOD

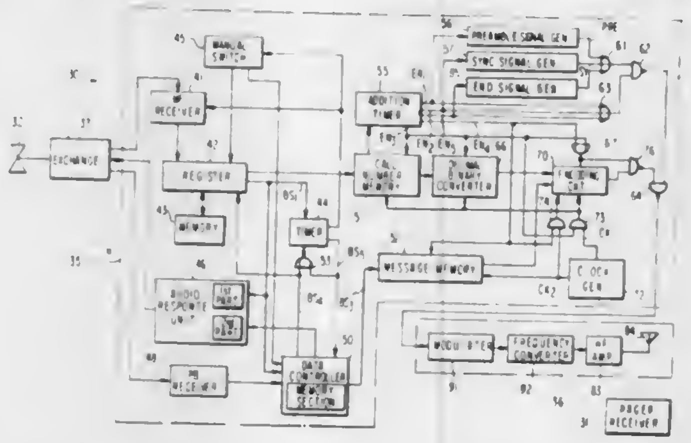
Toshihiro Mori, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 31, 1983, Ser. No. 499,681

Claims priority, application Japan, May 31, 1982, 57-92508; May 31, 1982, 57-92509; May 31, 1982, 57-80396[U]

Int. Cl.⁴ G08B *5/22*

U.S. Cl. 340—825.44 **18 Claims**



1. A radio paging method for use in transmitting radio calling signals from a base station to pager receivers, said radio calling signals including message information originating from at least one subscriber station and specified by a plurality of species, said radio paging method comprising the steps of:

providing a plurality of key codes for the respective species;

receiving at said base station from a subscriber's substation a call number signal assigned to one of said pager receivers that is selected at said subscriber's substation;

requesting from said base station, in response to the received call number signal, said subscriber's substation to select one of said key codes;

receiving the selected key code at said base station;

requesting from said base station, in compliance with the received key code, said subscriber's substation to convey the message information to be transmitted to the selected one of said pager receivers;

receiving the conveyed message information at said base station; and

transmitting from said base station, as one of said calling signals, to said pager receivers said call number signal and a message signal carrying the received key code and the received message information.

4,618,861

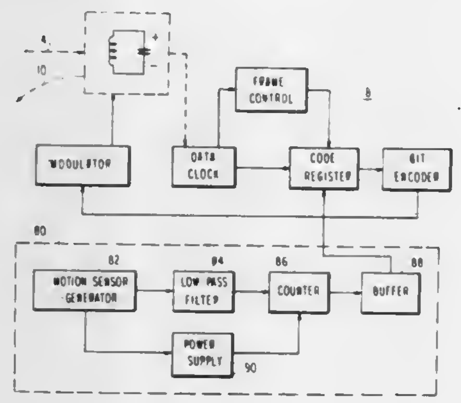
PASSIVE ACTIVITY MONITOR FOR LIVESTOCK

John W. Gettens, Ithaca, N.Y.; Nick A. Sigrimis, Halandri, Greece, and Norman R. Scott, Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Mar. 20, 1985, Ser. No. 713,946

Int. Cl.⁴ H04Q *9/00*

U.S. Cl. 340—825.54 **11 Claims**



1. A detection system for an animal comprising:

a transponder mounted to the animal, said transponder including transducer means responsive to movement of the animal to generate a series of electrical pulses, first circuit means receiving said electrical pulses and generating a count indication of animal movement, second circuit means receiving said electrical pulses and storing electrical energy for driving said first circuit means, and means for storing said count together with an identification code unique to said animal,

means for interrogating said transponder to receive data therefrom; and

process means for receiving data from said interrogator means.

4,618,862

MECHANICAL DISPLACEMENT TRANSDUCER

Keiichiro Tago, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

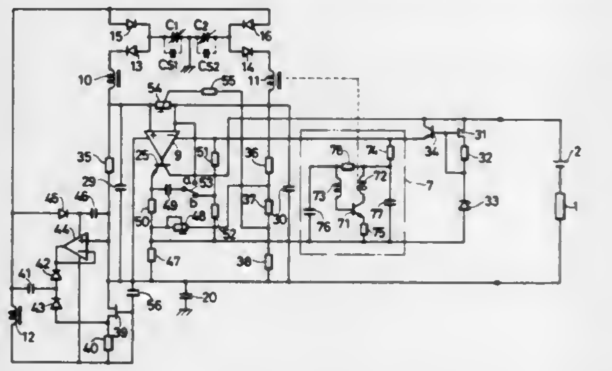
Filed Jun. 28, 1983, Ser. No. 508,755

Claims priority, application Japan, Jun. 28, 1982, 57-111243

Int. Cl.⁴ G01R *11/52;* G08C *19/10*

U.S. Cl. 340—870.37 **7 Claims**

1. A two-wire displacement converter circuit for converting a minute mechanical displacement to a DC current signal, comprising: a pair of first and second AC-excited reactive impedance elements, at least one of said first and second impedance elements having an impedance variable in response to said mechanical displacement; means for supplying first and second DC current signals proportional to the impedances of said first and second impedance elements, respectively; first means for supplying an output current signal corresponding to a difference between said first and second current signals and indicative of the amount of said mechanical displacement; a third reactive impedance element having a fixed impedance; second means for supplying a third current signal proportional to the impedance of said third impedance element; and current regulating means for maintaining a sum of said third current signal and at least one of said first and second current signals at a predetermined value.



4,618,863

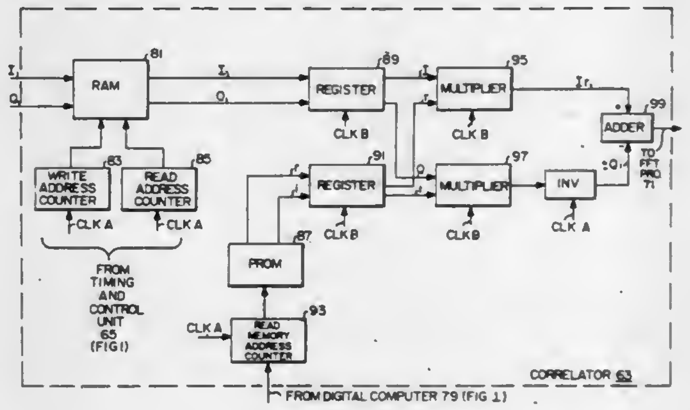
CONTINUOUS WAVE RADAR WITH RANGING CAPABILITY

John D. Collins, Burlington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Sep. 29, 1983, Ser. No. 537,133

Int. Cl.⁴ G01S *13/32*

U.S. Cl. 342—194 **3 Claims**



1. In a receiver for a frequency modulated CW radar wherein received signals out of a complex mixer are processed with each one of a plurality of differently delayed signals representative of the transmitted signal to produce a like plurality of differently correlated signals, each one of the received signals, the delayed signals and the differently correlated signals being a set of complex digital numbers, each one of such numbers having a real and imaginary part, a correlator comprising:

(a) means for storing a first set of complex digital numbers representative of received signals from a target;

(b) means for storing a plurality of sets of complex digital numbers, each one of such sets being representative of the complex conjugate of the transmitted signal delayed by a different amount;

(c) first multipler means, responsive to the real parts of corresponding complex digital numbers in the first set and in each one of the plurality of sets of stored complex digital numbers, for producing the product of the real parts of such complex digital numbers;

(d) second multiplier means, responsive to the imaginary parts of corresponding complex digital numbers in the first set and in each one of the plurality of sets of stored complex digital numbers, for producing the product of the imaginary parts of such complex digital numbers;

(e) means for changing the sign of each product out of the second multiplier means; and

(f) means, responsive to corresponding ones of the products out of the first multiplier means and the products, with changed sign, out of the second multiplier means, for forming the like plurality of differently correlated signals.

4,618,864

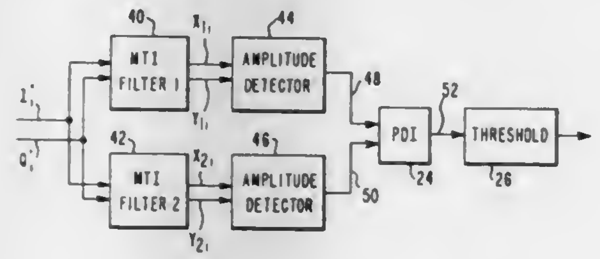
RADAR CHANNEL INCLUDING AN ORTHOGONAL MTI FILTER PAIR

Raymond G. Martin, Ellicott City, and James H. Mims, Millersville, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 31, 1984, Ser. No. 575,642

Int. Cl.⁴ G01S ***13/52***

U.S. Cl. 342—162 **18 Claims**



1. In a radar operating in a moving target indication (MTI) mode with frequency diversity by transmitting N+1 pulse bursts and receiving echo signalling therefrom, each pulse of the same burst enveloping a fixed carrier frequency, said radar operative to change the transmitted carrier frequency from one pulse burst to another, a radar channel for doppler processing said received N+1 pulse echo signal bursts comprising:

filtering means operative as two different MTI filters having mutually orthogonal tap weights, each having a frequency response similar to an N-pulse MTI filter, to process functionally in parallel a received N+1 pulse echo signal burst to generate a filter signal from each functional filter; and

means for combining said two filtered signals non-coherently to generate a composite signal corresponding to said N+1 pulse echo signal burst for target detection.

4,618,865

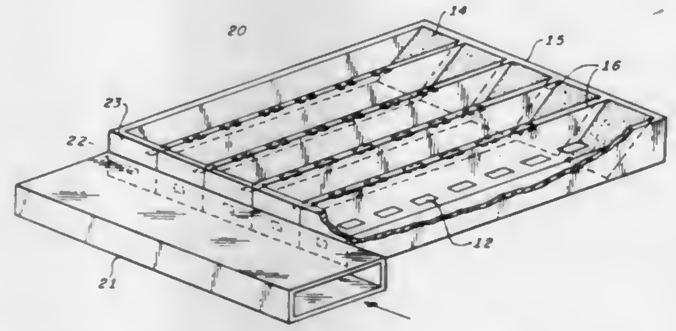
DIELECTRIC TROUGH WAVEGUIDE ANTENNA

David Lamensdorf, and Chris J. Daigle, both of Middlesex County, Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Sep. 27, 1984, Ser. No. 654,716

Int. Cl.⁴ H01Q ***13/28***

U.S. Cl. 343—776 **8 Claims**



1. A dielectric trough waveguide antenna comprising:

a metal trough waveguide having first and second ends, a solid rectangular bottom, and two parallel solid rectangular walls of preselected height electrically coupled to edges of said solid rectrangular bottom ;

a dielectric slab dimensioned to entirely cover said solid rectangular bottom between said parallel solid rectangular walls and having a thickness that is less than said preselected height positioned in said metal trough waveguide to form dielectric-waveguide bottom and dielectric-air interfaces;

a plurality of metallic radiating elements of predetermined dimensions, positioned on said dielectric at said dielectric-air interface with presselected spacings herebetween;

a termination at said first end of said metal trough waveguide; and

waveguide feed means at said second end for coupling electromagnetic energy into said metal trough waveguide.

4,618,866

DUAL REFLECTOR ANTENNA SYSTEM

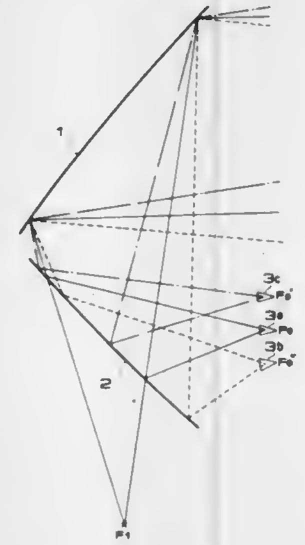
Shigeru Makino; Takashi Katagi; Shuji Urasaki; Shunichiro Kawabata, and Yuji Kobayashi, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1983, Ser. No. 546,048

Claims priority, application Japan, Nov. 17, 1982, 57-201525

Int. Cl.⁴ H01Q ***19/19***

U.S. Cl. 343—779 **13 Claims**



1. An antenna system comprising a main reflector having a concave reflective surface for reflecting incident electromagnetic wave beams to opposite antennas;

a subreflector having a concave reflective surface disposed in facing relationship with said main reflector for reflecting said electromagnetic wave beams to said main reflector;

primary radiators disposed in positions without blocking;

said main reflector and said subreflector being disposed on the same side with respect to said primary radiators; and

said primary radiators being so positioned as to illuminate said subreflector to illuminate the same general area of said main reflector.

4,618,867

SCANNING BEAM ANTENNA WITH LINEAR ARRAY FEED

Michael J. Gans, Monmouth Beach Township, Monmouth County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 14, 1984, Ser. No. 620,722

Int. Cl.⁴ H01Q ***15/16, 19/19***

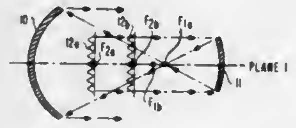
U.S. Cl. 343—781 P **5 Claims**

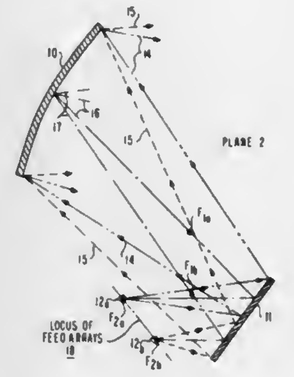
1. An antenna arrangement comprising:

a main reflector capable of bidirectionally reflecting a wavefront of electromagnetic energy along a feed axis of the antenna arrangement, the main reflector being curved along a first and second orthogonal axis on a reflecting surface of the main reflector in a first and a second orthogonal plane, respectively, to produce a first and a second focal point, respectively, at a respective separate first and a second predetermined location along the feed axis of the antenna arrangement;

a subreflector disposed on the feed axis of the antenna arrangement between the first and second focal point of the main reflector, the subreflector including a first and a second reflecting surface configuration in the first and the second orthogonal plane, respectively, to form an image line of the first axis on the surface of the main reflector, which image line intersects a secondary focal line formed by the combination of the main reflector and the subreflector in the second plane; and

a linear phased array feed capable of launching or receiving a wavefront of electromagnetic energy, the feed being disposed on the image line of the first axis on the surface of the main reflector and lying in the first plane of the subreflector.





4,618,868

INK JET RECORDING APPARATUS

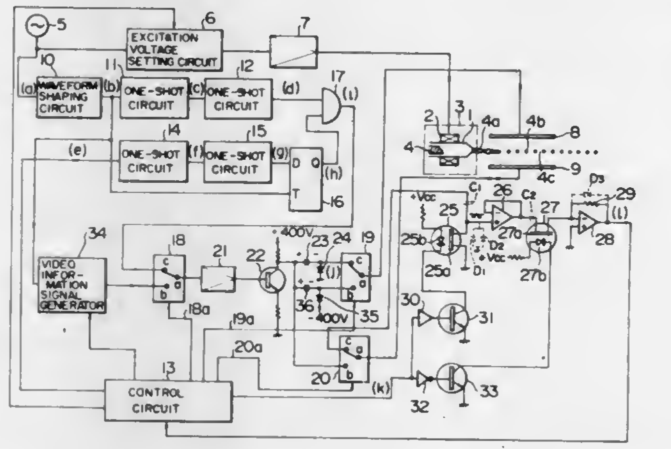
Takahiro Yamada, Ibaraki; Satoshi Namekawa, Ebina; Eiji Yoshino, and Yasumasa Matsuda, both of Hitachi, all of Japan, assignors to Hitachi, Ltd.; Hitachi Koki Co. and Hitachi Seiko Ltd., all of Tokyo, Japan

Filed Aug. 21, 1985, Ser. No. 767,350

Claims priority, application Japan, Aug. 24, 1984, 59-175057

Int. Cl.⁴ G01D ***18/00***

U.S. Cl. 346—75 **4 Claims**



1. An ink jet recording apparatus comprising a recording system recording an image by the combination of recording dots formed by attachment of ink droplets to a recording medium according to a video information signal and a state detecting system including means for producing charged ink droplets charged according to an ink-droplet state checking signal, a detecting electrode generating a detection signal indicative of the quantity of charge of the charged ink droplets, and means for amplifying the detection signal for detecting the state of the ink droplets on the basis of the level of the amplified detection signal, wherein said ink-droplet state detecting system comprises variable amplification means capable of changing the degree of amplification of the detection signal in said system, and an amplification-degree control signal generating circuit applying an amplification-degree control signal to said variable amplification means so as to decrease the degree of signal amplification by said variable amplification means during the period in which said ink-droplet state checking signal is generated, but to increase the degree of signal amplification by said variable amplification means during the period in which the quantity of charge of the charged ink droplets is to be detected.

4,618,869

FACSIMILE PRINT OUT SYSTEM EMPLOYING AN INK JET SYSTEM PRINTER

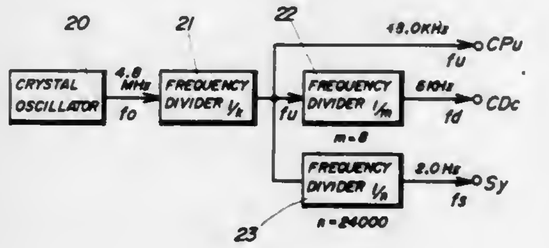
Matahira Kotani, Ikoma, and Masafumi Matsumoto, Takaichi, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 29,920, Apr. 13, 1979, abandoned. This application Oct. 29, 1981, Ser. No. 316,401

Claims priority, application Japan, Apr. 17, 1978, 53-45740

Int. Cl.⁴ G01D ***15/18***

U.S. Cl. 346—75 **11 Claims**



1. A facsimile print out system comprising an ink jet system printer for printing a plurality of lines, each line comprising a series of dots formed by deposit of ink droplets on a recording medium, and a control circuit for controlling the print out operation conducted by said ink jet printer, said control circuit comprising;

first means for developing a first timing signal for controlling droplet formation timing in said ink jet system printer;

second means for developing a second timing signal for controlling initiation of printing of each line formed by said printer, said second timing signal being synchronized with said first timing signal whereby formation of droplets is synchronized with initiation of printing of each line and each line is in alignment with every other line;

wherein said first means comprises means for outputting a first signal at a first frequency for controlling droplet formation; and

said second means comprises means for dividing said first frequency to obtain a second frequency and for outputting a second signal at said second frequency for controlling initiation of printing of each line.

4,618,870

DEVICE FOR COMPENSATING FOR FLUCTUATION OF INK TRANSFER IN THERMAL TRANSFER TYPE PRINTER

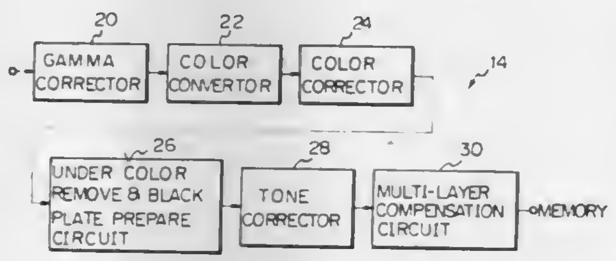
Takashi Inoue, Asaka, Japan, assignor to Ricoh Company, Ltd., Tokvo, Japan

Filed Jun. 4, 1985, Ser. No. 741,139

Claims priority, application Japan, Jun. 7, 1984, 59-117260; Jun. 7, 1984, 59-117261

Int. Cl.⁴ G01D *15/10*

U.S. Cl. 346—76 PH **6 Claims**


20
22
24
GAMMA CORRECTOR
COLOR CONVERTOR
COLOR CORRECTOR
14
26
28
30
UNDER COLOR REMOVE & BLACK PLATE PREPARE CIRCUIT
TONE CORRECTOR
MULTI-LAYER COMPENSATION CIRCUIT
MEMORY

1. A device for compensating fluctuation in the amount of transfer of ink to a printing medium in a thermal transfer type printer which is supplied with transfer signals each of said transfer signals being indicative of a particular assigned transfer order of said signals in response to a video signal representive of an image to thermally and sequentially transfer particular kinds of thermally fusible ink which are each associated with said assigned transfer order one upon another on a printing medium, said device comprising:

transfer signal input means to which a plurality of transfer signals are supplied; and

transfer signal compensation means for outputting one of the transfer signals indicative of one of a first and a last transfer directly as a transfer signal of said one of said first and last transfer of said assigned transfer order, while outputting all other of said transfer signals as transfer signals of the orders assigned respectively to said other transfer signals after subjecting each of said other transfer signals to compensation which is representative of said particular assigned order of said transfer signals.

4,618,871

SCHOTTKY POWER DIODE

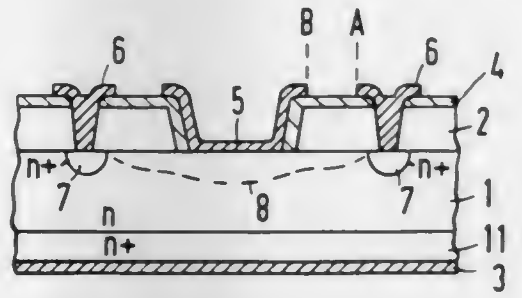
Heinz Mitlehner, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 16, 1983, Ser. No. 494,698

Claims priority, application Fed. Rep. of Germany, May 25, 1982, 3219598

Int. Cl.⁴ H01L *29/48, 29/04, 29/06*

U.S. Cl. 357—15 **8 Claims**



1. In a Schottky power diode, comprising a semiconductor substrate having a given band gap, an insulating layer disposed on said substrate, a first contact making Schottky contact with said substrate through a window formed in said insulating layer, and a semi-insulating layer disposed on said insulating layer and electrically connected to said first contact for receiving a fixed potential at a lateral distance from said first contact, said semi-insulating layer having a resistivity in the range of 10^5 and 10^{11} ohm ·cm; the improvement wherein said semi-insulating layer has a portion thereof disposed between said first contact and said substrate, said portion having a band gap which is larger than said given band gap of said substrate, said Schottky power diode further including a means for applying a substrate potential to said semi-insulating layer.

4,618,872

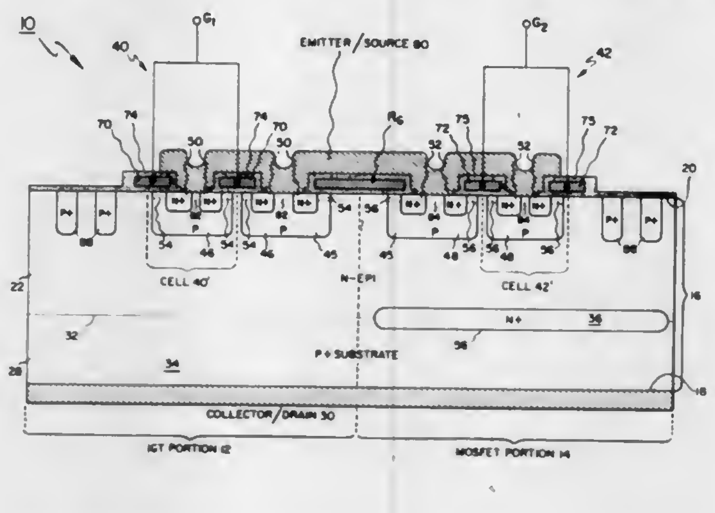
INTEGRATED POWER SWITCHING SEMICONDUCTOR DEVICES INCLUDING IGT AND MOSFET STRUCTURES

Bantval J. Baliga, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 5, 1983, Ser. No. 558,403

Int. Cl.⁴ H01L *29/78, 29/74;* **H03K** *17/687*

U.S. Cl. 357—23.4 **6 Claims**



1. An integrated power switching semiconductor device comprising:

a body of semiconductor material including an insulated-gate transistor portion and an insulated-gate field-effect transistor portion, said body having first and second opposed principal surfaces on opposite sides thereof;

a first base layer of one conductivity type common to both said insulated-gate transistor portion and said insulated-gate field-effect transistor portion;

a first main terminal region adjacent said first base layer and extending to said first principal surface, said first main terminal region including at least a portion heavily-doped to a conductivity type opposite to the conductivity type of said one conductivity and defining a PN junction with said first base layer within said insulated gate transistor portion, and said first base layer and said first main terminal region including structure for avoiding bipolar conduction within said insulated-gate field-effect transistor portion;

a second base region of the opposite conductivity type and having two portions contiguous with said first base layer, one of said portions of said second base region being included in said insulated gate transistor portion and the other of said portions of said second base region being included in said insulated-gate field-effect transistor portion;

a first region of the one conductivity type being included in said insulated-gate transistor portion contiguous with said one portion of said second base region;

a second region of the one conductivity type included in said insulated-gate field-effect transistor portion contiguous with said other portion of said second base region;

a second terminal overlying at least a portion of said second base region and said first region and being in contact therewith;

a first channel region included in said insulated-gate transistor portion within said first region of the one conductivity type, and a second channel region included in said insulated-gate fieldeffect transistor portion within said second region of the one conductivity type, said first and second regions of the one conductivity type being spaced from the respective portions of said first base layer to define the extent of the respective channel regions therebetween;

first and second gate electrodes respectively disposed over said first and second channel regions and insulatingly spaced therefrom, said gate electrodes configured for inducing, when gate voltage is applied thereto, respective conduction paths of the one conductivity type in the respective channel regions beneath the respective energized gate electrodes;

a resistance element connected between said first and second gate electrodes; and

a device gate conductor connected directly to one of said gate electrodes and to the other of said gate electrodes by said resistive element.

4,618,873

THIN FILM DEVICE

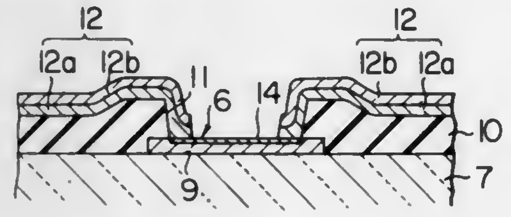
Akira Sasano, Tokyo; Koulchi Seki, Hachiojl; Hideaki Yamamoto, Tokorozawa; Toru Baji, Kodaira, and Toshihisa Tsukada, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 18, 1984, Ser. No. 621,683

Claims priority, application Japan, Jun. 16, 1983, 58-106798

Int. Cl.⁴ H01L *29/78*

U.S. Cl. 357—23.7 **13 Claims**



1. A thin film device having an amorphous silicon film formed on a substrate and a reaction layer formed by a reaction between a metal film formed on said amorphous silicon film and said amorphous silicon film, said reaction layer serving as a resistor.

4,618,874

SOLID STATE IMAGING DEVICE

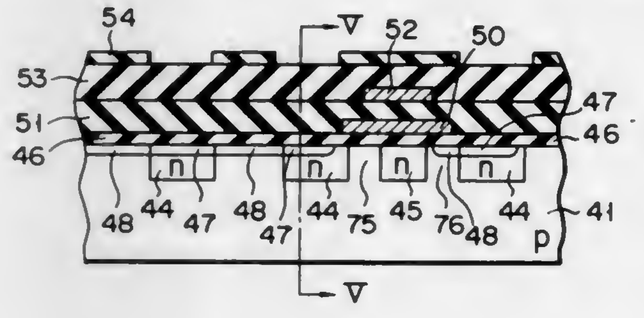
Tetsuo Yamada, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Sep. 6, 1984, Ser. No. 647,899

Claims priority, application Japan, Sep. 7, 1983, 58-164855

Int. Cl.⁴ H01L *27/14, 31/00*

U.S. Cl. 357—30 **2 Claims**



1. A semiconductor device in a solid state imaging device comprising:

a semiconductor layer of a first conductivity type; one or more photo-electro converting elements, of a second conductivity type, formed in said semiconductor layer, said converting elements being arranged in a predetermined pattern;

one or more charge transfer elements, of said second conductivity type, formed in said semiconductor layer, said charge transfer elements transferring charges generated in said converting elements; and

one or more further elements of said first conductivity type for suppressing the flow of dark current through the surface of said semiconductor layer, said further elements being formed in said photo-electro converting elements and in the separating region defined therebetween, said further elements having an impurity concentration higher than that of said semiconductor layer.

4,618,875

DARLINGTON TRANSISTOR CIRCUIT

Peter Flohrs, Reutlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

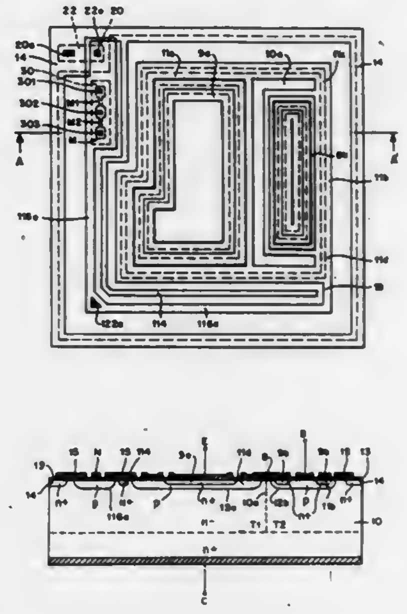
PCT No. PCT/DE82/00234, § 371 Date Aug. 8, 1983, § 102(e) Date Aug. 8, 1983, PCT Pub. No. WO83/02528, PCT Pub. Date Jul. 21, 1983

PCT Filed Dec. 30, 1982, Ser. No. 525,031

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1982, 8201186[U]; Jul. 23, 1982, 3227536

Int. Cl.⁴ H01L *27/02, 29/34;* **H03K** *3/26*

U.S. Cl. 357—46 **12 Claims**



1. An external-field-insensitive Darlington transistor circuit, with adjustable junction breakdown voltage, having a power transistor (T1) and having a driver transistor (T2), the collector of which driver transistor is connected to the collector of the power transistor (T1) and the emitter of which driver transistor is connected to the base of the power transistor (T1), and in which circuit the power transistor (T1) and the driver transistor (T2) are monolithically integrated by a planar process in a common substrate (**10**) forming the collector zones of the two transistors (T1, T2),

wherein a first (**11*a***) and a second zone (**11*b***) are diffused into the substrate (**10**) from a main surface, the substrate (**10**) having a specified conductivity type and the first (**11*a***) and second (**11*b***) zones having the opposite conductivity type, said first and second zones (**11*a*, 11*b***) respectively forming with the material of the substrate (**10**) a first (**12*a***) and a second (**12*b***) p-n junction and the base zones of the two transistors (T1, T2),

wherein, from the same main surface of the substrate (**10**), an emitter zone, having the same conductivity type as the basic material of the substrate (**10**) but a higher concentration of impurities, is diffused into each of said first and second base zones (**11*a*, 11*b***), said emitter zones serving as the emitter zones (**9*a*, 9*b***) of the respective transistors, and

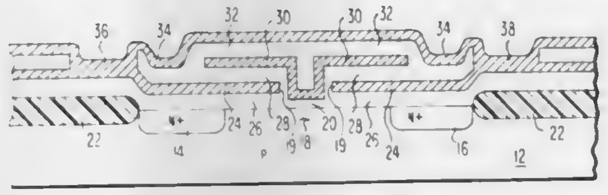
wherein a substantially non-conductive passivation layer (**13**) covering this same main surface of the substrate (**10**), except for contact windows, is provided, comprising

- a further annular zone (**14**), serving as a stop ring, diffused into the substrate (**10**) from the same main surface around the first (**11***a*) and second (**11***b*) base zones, said annular stop ring zone (**14**) having the same conductivity type as the basic material of the substrate (**10**) but a higher concentration of impurities;
- a metal coating, serving as a cover electrode (**15**) and as a shield against external electric fields, applied atop the passivation layer (**13**), said metal coating (**15**) extending over a region between the base zones (**11***a*, **11***b*) and the annular stop ring zone (**14**), and overlapping not only the annular stop ring zone (**14**), but also portions of the base zones (**11***a*, **11***b*) adjacent to the annular stop ring zone (**14**), and
- a voltage divider (**16**) monolithically integrated with said power (**T1**) and driver (**T2**) trransistors in said circuit, for adjusting the potential of the cover electrode (**15**) to a value dependent upon the desired breakdown voltage of the first and second p-n junction (**12***a*, **12***b*), which value falls in a range defined by the potential of the first base zone (**11***a*) and the potential of a portion of the substrate (**10**) located outside the first (**11***a*) and second (**11***b*) zones and having a conductivity type opposite from that of the first (**11***a*) and second (**11***b*) base zones, said voltage divider (**16**) including a voltage divider resistor (**16***a*) and a tap (**16***b*), and
- wherein the tap (**16***b*) is connected to the cover electrode (**15**),
- the first end (**19**) of the voltage divider resistor (**16***a*) is connected with one of the first zone (**11***a*) and the second zone (**11***b*), and the second end (**20**) of the voltage divider resistor (**16***a*) is connected on a surface of said integrated circuit with a portion of the substrate (**10**) located outside the first (**11***a*) and second (**11***b*) zones, which portion has a conductivity type opposite from that of the first (**11***a*) and second (**11***b*) zones,
- whereby said breakdown voltage can be adjusted, after fabrication of said integrated circuit, by varying where, on the surface thereof, one of said ends of said voltage divider resistor (**16***a*) is connected.

4,618,876
ELECTRICALLY ALTERABLE, NONVOLATILE FLOATING GATE MEMORY DEVICE

Roger G. Stewart, Neshanic Station, and Alfred C. Ipri, Princeton, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jul. 23, 1984, Ser. No. 633,188
Int. Cl.⁴ H01L ***29/34***
U.S. Cl. 357—54 **5 Claims**



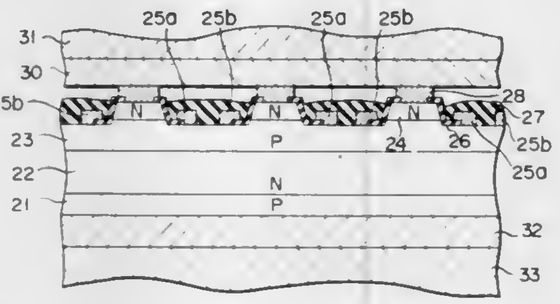
1. In a floating gate memory device of the type including a body of semiconductor material of a first conductivity type having first and second doped regions of a second conductivity type formed in the semiconductor body at the surface thereof, the first and second doped regions spaced one from the other to define a channel region therebetween in the semiconductor body for supporting current flow between the doped regions, a first conductive layer insulated from the body of semiconductor material and a second conductive layer positioned over both the channel region and the first conductive layer and insulated therefrom, the improvement comprising:

- the first conductive layer being discontinuous, one portion thereof positioned over and extending from a point at least over the first doped region toward an end terminating over the channel region, another portion thereof positioned over and extending from a point at least over the second doped region toward an end terminating over the channel region;
- the ends of both portions defining a slot therebetween aligned with the channel region;
- the second conductor layer positioned over corresponding portions of the first conductive layer and extending into slot defined by the ends of the portions, for coupling to the channel region; and
- means for electrically connecting said portions of said first conductive layer together.

4,618,877
POWER SEMICONDUCTOR DEVICE WITH MESA TYPE STRUCTURE

Youichi Araki, Yokohama, and Yoshinari Uetake, Sagamihara, both of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Dec. 18, 1984, Ser. No. 682,838
Claims priority, application Japan, Dec. 21, 1983, 58-239644
Int. Cl.⁴ H01L ***29/06***
U.S. Cl. 357—56 **5 Claims**



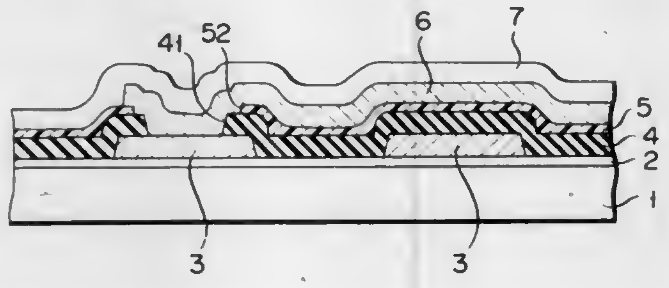
1. A power semiconductor device of mesa type structure having a semiconductor element surface formed with a mesa type groove and a gate electrode formed on the bottom of the groove and covered on an exposed surface thereof with an insulator, wherein

- said electrode is divided into two and spaced apart to be disposed only at both peripheries of the groove bottom, and an insulator is filled between the spaced electrodes.

4,618,878
SEMICONDUCTOR DEVICE HAVING A MULTILAYER WIRING STRUCTURE USING A POLYIMIDE RESIN

Masaharu Aoyama, Fujisawa; Masahiro Abe, Yokohama; Takashi Ajima, Kamakura, and Toshio Yonezawa, Kitakyushu, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Jun. 15, 1984, Ser. No. 621,086
Claims priority, application Japan, Jun. 18, 1983, 58-108558
Int. Cl.⁴ H01L ***23/48***
U.S. Cl. 357—71 **7 Claims**

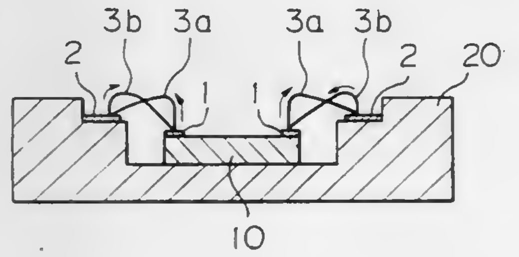


1. A semiconductor device having a multilayer wiring structure which comprises a semiconductor substrate, a first wiring layer deposited on said substrate, and a second wiring layer deposited on said first wiring layer with an insulating interlayer disposed therebetween, wherein said insulating interlayer consisting essentially of an inorganic insulating layer as an underlying layer and a polyimide-based resin film as an overlying layer, wherein said inorganic insulating film has a thickness falling within a range between 0.5 μm and 1.5 μm, the ratio of a thickness of said polyimide-based resin film to that of said inorganic insulating film falling within a range between 0.1 and 0.5.

4,618,879
SEMICONDUCTOR DEVICE HAVING ADJACENT BONDING WIRES EXTENDING AT DIFFERENT ANGLES

Masataka Mizukoshi, Kokubunji, and Teiichi Endo, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 18, 1984, Ser. No. 601,360
Claims priority, application Japan, Apr. 20, 1983, 58-070558
Int. Cl.⁴ H01L ***23/48, 23/50***
U.S. Cl. 357—74 **8 Claims**



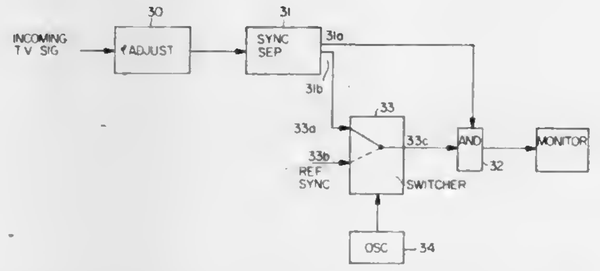
1. A semiconductor device comprising:

- a semiconductor chip;
- a plurality of chip electrodes formed on said semiconductor chip and having electrode surfaces;
- a package for housing said semiconductor chip;
- a plurality of package electrodes formed on said package and having electrode surfaces; and
- wires for respectively bonding to said plurality of chip electrodes and said plurality of package electrodes, each of said wires having first and second ends, the angle of said first end with respect to the electrode surface of one of the chip and package electrodes to which the wire is bonded being substantially larger than the angle of said second end with respect to the electrode surface of the other of the chip and package electrodes to which the wire is bonded, said wires being disposed side-by-side so that one of said first and second ends of each wire is bonded to one of said chip electrodes, and the other of said first and second ends is bonded to one of said package electrodes, said wires being arranged so that said first ends are alternately bonded to one of said chip electrodes and one of said package electrodes.

4,618,880
METHOD AND APPARATUS FOR SYNCHRONIZING A PLURALITY OF TELEVISION SIGNALS

H. George Pires, 20 Surrey La., Parlin, N.J. 08859

Filed Mar. 12, 1984, Ser. No. 588,393
Int. Cl.⁴ H04N ***17/04, 5/073***
U.S. Cl. 358—10 **10 Claims**



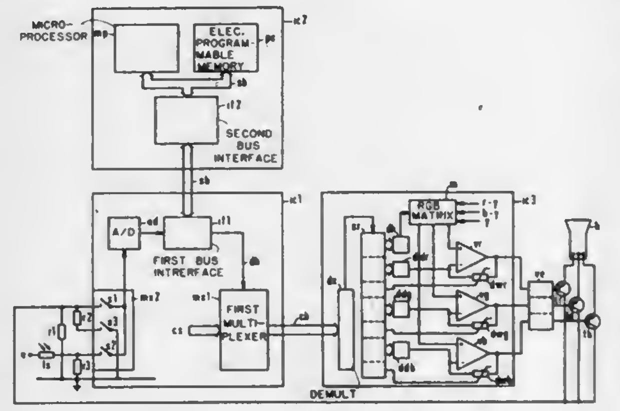
1. Method for synchronizing an incoming television signal having incoming synchronization signals to a reference television signal having reference synchronization signals, comprising the steps of

- substituting said reference synchronization signals for said incoming synchronization signals at a selected rate and for selected time intervals, thereby creating a test signal;
- applying said test signal to a television monitor thereby creating a visual monitor output signal, said selected rate and time intervals being adapted to create a constant flicker in said monitor output signal in response to lack of synchronization between said incoming synchronization signals and said reference synchronization signals; and
- adjusting the phase of said incoming synchronization signals to remove said flicker from said monitor output signal.

4,618,881
SET OF THREE INTEGRATED CIRCUITS FOR DIGITAL VIDEO SIGNAL PROCESSING IN COLOR-TELEVISION RECEIVERS

Laürin C. Freyberger, Bahlingen, Fed. Rep. of Germany; Daniel Mlynek, Wolfgantzen, France, and Friedrich Schmidtpott, Gundelfingen, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 465,697, Feb. 10, 1983, Pat. No. 4,523,222. This application Mar. 26, 1985, Ser. No. 716,338
Claims priority, application European Pat. Off., Feb. 27, 1982, 82101519.5
The portion of the term of this patent subsequent to Jun. 11, 2002, has been disclaimed.
Int. Cl.⁴ H04N ***9/68***
U.S. Cl. 358—27 **5 Claims**



1. Circuitry for digital video signal processing in color television receivers or the like, comprising:

- video codec circuits including a plurality of analog amplifiers each adopted to drive an electron gun of a picture tube via a video output stage;
- circuit means coupled to each said electron gun for providing measured data corresponding to the cathode currents of said picture tube under predetermined conditions flowing in each said electron gun;
- microprocessing means utilizing said measured data and predetermined data to derive operating data for said picture tube, said video codec circuits being responsive to said operating data to adjust the operating points and the gains of said plurality of analog amplifiers to adjust the dark currents and white levels, respectively;
- said circuit means including: an analog to digital converter, a multiplexer for selectively coupling the input of said analog-to-digital converter to each said electron gun in successive vertical blanking intervals to provide said measured data.

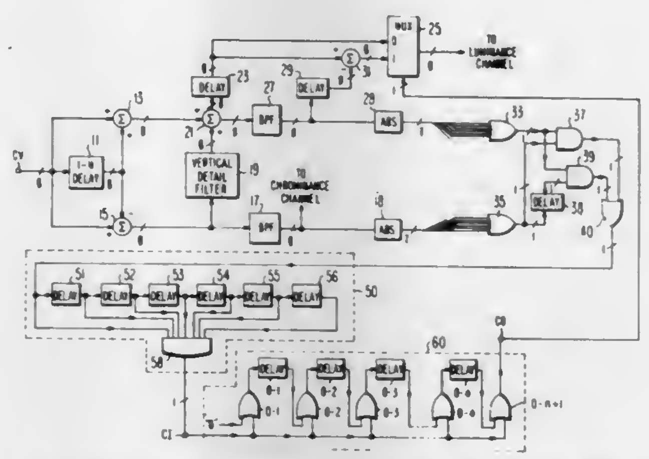
4,618,882
DIGITAL CORRELATION INDICATOR AND HANGING DOT REDUCTION SYSTEM EMPLOYING SAME

Leopold A. Harwood, Bridgewater; Danny Chin, Plainsboro, and Kirk A. Law, East Windsor, all of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Apr. 18, 1985, Ser. No. 724,555

Int. Cl.^{4} H04N *9/64, 7/18*

U.S. Cl. 358—31 **10 Claims**



1. In a video signal processing apparatus including a source of a first digital signal of "m" bits representative of a first bipolar signal component, and a second digital signal of "m" bits representative of a second bipolar signal component, a digital correlation indicator comprising:

first logic circuit means, responsive to only the "k" most significant bits of said first digital signal, where "k" is less than "m", for outputting a "1" whenever said first digital signal is representative of an excursion of said first bipolar signal component, in either a positive or a negative direction, which equals or exceeds a threshold determined by the "k'th" most significant bit of said first digital signal;

second logic circuit means, responsive to only the "j" most significant bits of said second digital signal, where "j" is less than or equal to "m", for outputting a "1" whenever said second digital signal is representative of an excursion of said second bipolar signal component, in either a positive or a negative direction, which equals or exceeds a threshold determined by the "j'th" most significant bit of said second digital signal;

an "and" gate having two inputs, one responsive to the output of said first logic circuit means and the other responsive to the output of said second logic circuit means and

correlation indication signal developing means responsive to the output of said "and" gate.

4,618,883
METHOD OF EDITING IMAGE SIGNAL

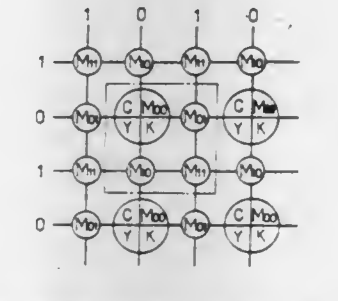
Takashi Sakamoto, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Kyoto, Japan

Filed Mar. 13, 1985, Ser. No. 711,445

Claims priority, application Japan, Apr. 5, 1984, 59-69826

Int. Cl.^{4} H04N *1/46*

U.S. Cl. 358—78 **2 Claims**



1. A method of editing image signal comprising a step of establishing a plurality of picture elements adjacent to one another on a color original picture to be an unit region of condense, a step of performing condense of image signal so that a representative picture element of said unit region of condense may have all of a plurality of image signals substantially corresponding to color signals required when reproducing the color picture image and that each picture element other than the representative picture elements may have only an image signal substantially corresponding to the brightness signal of said plurality of image signals, and a step of performing editing and rearrangement of image signal using the image signal condensed in said step, in combination with a step of establishing said unit region of condense to be a minimum unit for designation of coordinate position in the editing, and a step of performing the rearrangement of each image signal by the unit region of condense based on the layout designation under the same coordinate system as the editing.

4,618,884
IMAGE PICKUP AND OBSERVATION EQUIPMENT FOR ENDOSCOPE

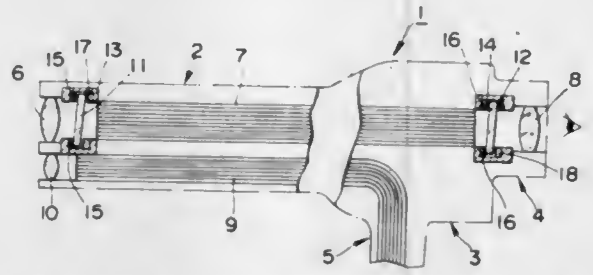
Tatsuo Nagasaki, Musashino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 4, 1984, Ser. No. 647,214

Claims priority, application Japan, Sep. 5, 1983, 58-163587

Int. Cl.^{4} A61B *1/04, 1/06*

U.S. Cl. 358—98 **5 Claims**



1. Image pickup and observation equipment for an endoscope which has an optical observation system to make it possible to observe the image of a subject formed on the image-forming face in the image-forming optical system using the eye lens optical system via fiber bundle, characterized in that it is provided with a driving means to vibrate at least part of the image-forming optical system of the endoscope using the said optical observation system by the amount to meet the pitch of the arrangement of the fibers on the image-forming face.

4,618,885
ELECTROMAGNETIC NOISE PREVENTIVE MEANS FOR AN ENDSCOPE WITH SOLID STATE IMAGE PICKUP ELEMENT

Tatsuo Nagasaki, Musashino, and Hiroyoshi Fujimori, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 5, 1984, Ser. No. 647,513

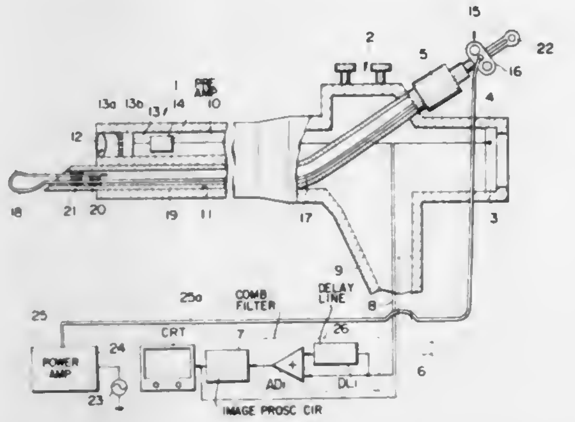
Claims priority, application Japan, Sep. 5, 1983, 58/163600

Int. Cl.^{4} A61B *1/04, 17/39*

U.S. Cl. 358—98 **3 Claims**

1. A noise eliminating device for an endoscope having a current source means for actuating a high frequency scalpel and an image indicating means for displaying image signals from a solid state image pickup element in the endoscope, said noise eliminating device comprising:

an adjusting means for adjusting the spectrum of the high frequency current of said current source means for said high frequency scalpel, wherein said adjusting means adjusts the frequency band of the high frequency current to coincide with an image signal band, and the frequency spectrum of the high frequency current overlaps with the frequency spectrum of a driving pulse for reading an image signal from said solid state image pickup element, and wherein the frequency of the driving pulse for reading the image signal from said solid state image pickup element corresponds to an integral multiple of an image horizontal frequency f_H; and



a comb filter means coupled to said image indicating means for removing high frequency noise generated by said current source means from the image signal of said solid state image pickup.

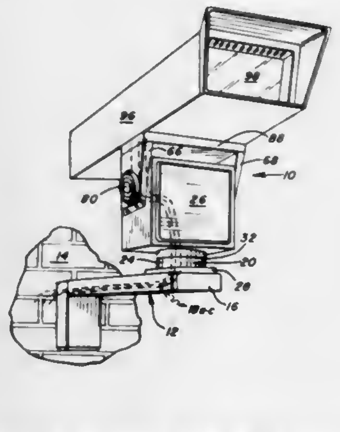
4,618,886
SURVEILLANCE CAMERA MOUNT

Paul C. Mooney, Northbrook, Ill., assignor to Quick-Set Incorporated, Northbrook, Ill.

Filed Jun. 19, 1985, Ser. No. 746,444

Int. Cl.^{4} H04N *5/225*

U.S. Cl. 358—108 **12 Claims**



1. A surveillance camera mount capable of providing multiple and variable selectable viewing vistas for a camera mounted thereon, comprising:

a base having mated lower and upper parts,

the lower part having a base flange with means for securing the lower part to a stationary member to secure the mount and a planar bearing surface across the top thereof generally parallel to the flange,

the base upper part having a vertical cylindrical body secured to the lower part centrally of said bearing surface so as to leave an annular bearing surface portion exposed about the body, and further having an outwardly extending flange generally parallel to and spaced from said bearing surface,

both base parts having walls defining a hollow central passage through the base from top to bottom;

a hollow housing of relatively box-like configuration having a lower, inwardly extending bearing flange engaging said base bearing surface, said bearing flange further having an upper surface in close proximity below said base upper part flange and a cylindrical surface closely mating with the cylindrical body of said base upper part to rotatively secure said housing to said base;

means defining enlarged openings through opposite sides of the housing, said openings being cylindrical and substantially aligned horizontally;

a pair of upstanding tilt arms, each arm having a bearing part entering and filling said housing enlarged openings and a body portion extending above the housing;

a platform secured to the arm body portions to provide unitary movement of arms and platform, said platform being adapted to support a camera housing thereon;

means forming cable passages through the platform and through the interior of at least one of said tilt arms and bearing parts exiting to the interior of the hollow housing so that camera cables may be lead through the mount to a camera housing on the platform;

means for holding said tilt arms in a selected position relative to said housing; and

means for securing said housing in a selected position relative to said base.

4,618,887
METHOD AND APPARATUS FOR REPRESENTING ULTRASONIC ECHO SIGNALS ARRIVING IN POLAR COORDINATES

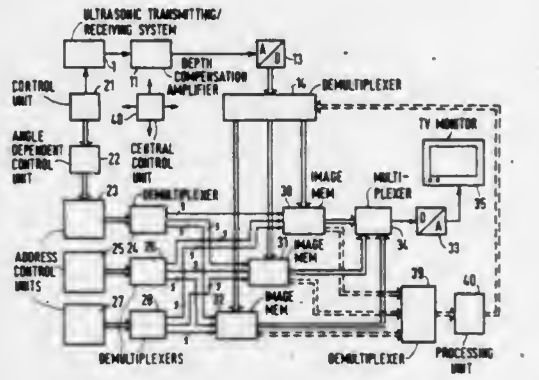
Adalbert Birk, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 14, 1984, Ser. No. 589,656

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1983, 3308995

Int. Cl.^{4} H04N *7/01, 7/18*

U.S. Cl. 358—112 **9 Claims**



1. A method for representing in real-time ultrasonic echo signals sequentially arriving in polar coordinates obtained by a sector scan technique, each of selected pluralities of said ultrasonic echo signals corresponding to an ultrasonic echo image comprising the steps of:

geometrically correctly alternatingly entering said ultrasonic echo images in at least two two-dimensional image memories for intermediate storage therein, each said intermediate memory accepting and storing a complete ultrasonic echo image;

reading out a previously-stored complete ultrasonic echo image from one of said image memories in a manner conforming to television standards simultaneously as another ultrasonic echo image is being entered in another of said image memories; and

displaying the read out ultrasonic echo image on a television display means.

4,618,888

SCRAMBLING SYSTEM OF TELEVISION SIGNAL

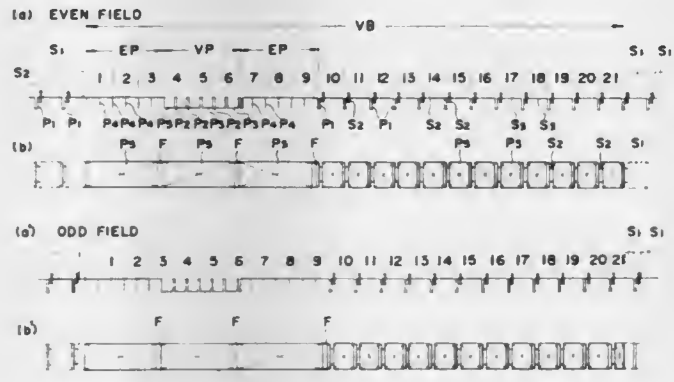
Kazunori Nohara, Moriguchi; Katsuo Tanmatsu, Katano; Nobukazu Hosoya, Nara, and Takeshi Higashino, Daito, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 17, 1984, Ser. No. 581,158

Claims priority, application Japan, Feb. 18, 1983, 58-26485

Int. Cl.⁴ H04N *7/167*

U.S. Cl. 358—120 **14 Claims**


(a) EVEN FIELD
VB
S₁ EP VP EP S₁ S₁
S₂ 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
P₁ P₁ P₄ P₄ P₄ P₃ P₂ P₂ P₃ P₂ P₃ P₄ P₄ P₁ S₂ P₁ S₂ S₂ S₃ S₃
(b) P₅ F P₅ F P₅ F P₅ P₅ S₂ S₂ S₁
(a) ODD FIELD S₁ S₁
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
(b) F F F

1. A scrambling system for a television signal including horizontal sync pulses and having a vertical blanking period which includes a vertical sync pulse period and first and second equalizing pulse periods before and after said vertical sync pulse period, said system comprising:

means for eliminating vertical sync pulses in said vertical sync pulse period and equalizing pulses in said first and second equalizing pulse periods;

means for inserting substitute pulses in said vertical sync pulse period and in said first and second equalizing pulse periods with a plurality of framing code time periods between said substitute pulses remaining unoccupied by said substitute pulses, said substitute pulses having a frequency equal to an integral multiple of the frequency of said horizontal sync pulses; and

means for inserting a framing code in each of said framing code time periods, said framing code being in the form of binary code pulses connected to said substitute pulses with no break in continuity and carrying information of how the television signal is scrambled.

4,618,889

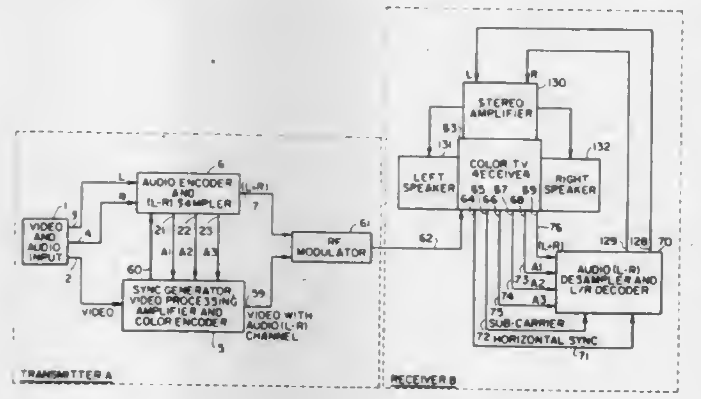
VIDEO COLOR TRANSMISSION SYSTEM WITH INDEPENDENT AUDIO SIGNALS WITHIN THE VIDEO SIGNALS

Dennis Berde, Plainview, and Edward Youskites, Melville, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation of Ser. No. 439,165, Nov. 4, 1982, abandoned. This application Jun. 26, 1985, Ser. No. 748,759

Int. Cl.⁴ H04N *7/04*

U.S. Cl. 358—144 **22 Claims**


VIDEO AND AUDIO INPUT
AUDIO ENCODER AND (L-R) SAMPLER
SYNC GENERATOR VIDEO PROCESSING AMPLIFIER AND COLOR ENCODER
VIDEO WITH AUDIO (L-R) CHANNEL
MODULATOR
STEREO AMPLIFIER
LEFT SPEAKER
COLOR TV RECEIVER
RIGHT SPEAKER
AUDIO (L-R) DESAMPLER AND L/R DECODER
SUB-CARRIER
HORIZONTAL SYNC
TRANSMITTER A
RECEIVER B
130
132

1. A video color transmission system, comprising transmitter means for producing video and audio signals and transmitting said signals, said transmitter means including encoding means for encoding stereo audio signals with the video signals, said encoding means comprising an audio encoder for converting left and right microphone stereo audio signals L and R to a sum audio signal (L+R) of said left and right signals and a difference audio signal (L−R) of said left and right signals and (L−R) sampler means for sampling said difference audio signal (L−R) at a rapid rate, said (L−R) sampler means providing three samples within a horizontal time rate of 63.5 microseconds and said samples providing for a bandwidth of substantially 15 kHz; and

receiver means for converting signals received from said transmitter means to a color picture and stereo sound, said receiver means including decoding means for deriving said stereo audio signals from said received signals.

4,618,890

DIGITAL AUDIO SYNCHRONIZING SYSTEM WITH MUTE TIME SWITCHING FUNCTION

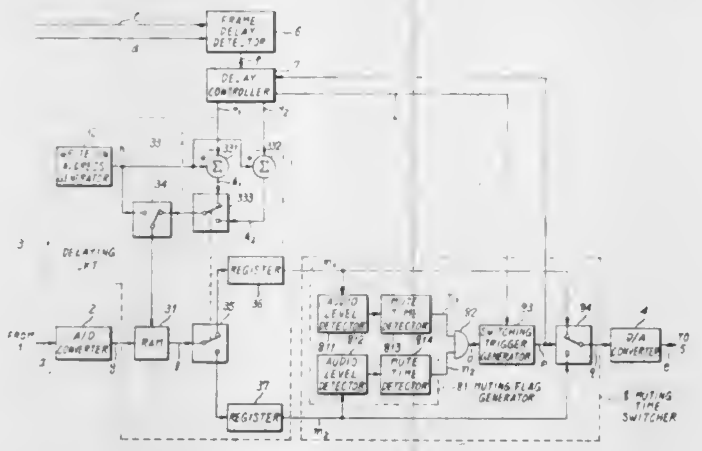
Toshitake Kouyama, and Ryoji Katsube, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Jan. 21, 1986, Ser. No. 820,952

Claims priority, application Japan, Jan. 22, 1985, 60-8425

Int. Cl.⁴ H04N *5/04*

U.S. Cl. 358—149 **12 Claims**



1. A digital audio synchronizing system for synchronizing an audio signal accompanying an input composite video signal to a reference composite video signal to which said input composite video signal should be synchronized, said digital audio synchronizing system comprising:

delay detecting means for detecting a video delay between said input and said reference composite video signals to produce a video delay signal representative of said video delay;

first means responsive to a control signal for storing said video delay signal as a stored delay signal to produce said stored delay signal as a first delay data signal representative of a first delay which said video delay signal has when stored in said first means;

second means for producing said video delay as a second delay data signal;

encoding means for encoding said audio signal into an input digital audio signal;

delaying means responsive to said first and said second delay data signals for delaying said input digital audio signal to produce first and second delayed digital audio signals which have said first delay and said video delay relative to said input digital audio signal, respectively;

producing means for producing said first delayed digital audio signal as an output digital audio signal;

muting flag generating means responsive to said first and second delayed digital audio signals for generating first and second muting flag signals when said first and said second delayed digital audio signals are at a predetermined muting level, respectively;

muting coincidence detecting means for detecting coincidence between said first and said second muting flag signals to produce a muting coincidence signal; and

control signal generating means for generating said control signal in response to said coincidence signal.

4,618,891

REFERENCE TIME DETECTING CIRCUIT

Hisafumi Yamada, Tokyo; Choei Kurik, Urawa, and Junya Saito, Wako, all of Japan, assignors to Sony Corporation, Tokyo, Japan

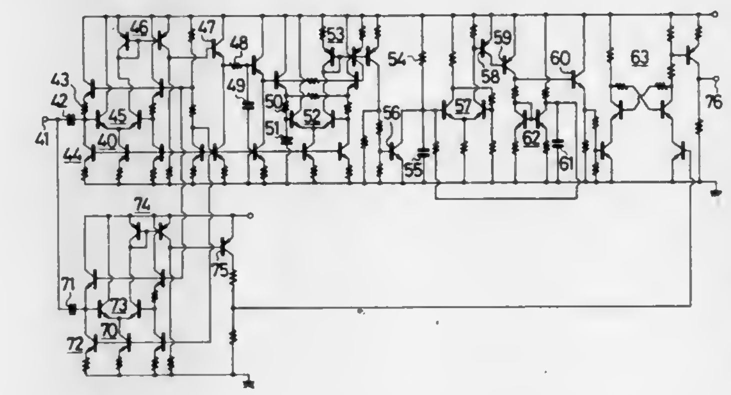
PCT No. PCT/JP82/00417, § 371 Date Jun. 20, 1983, § 102(e) Date Jun. 20, 1983, PCT Pub. No. WO83/01553, PCT Pub. Date Apr. 28, 1983

PCT Filed Oct. 21, 1982, Ser. No. 515,044

Claims priority, application Japan, Oct. 23, 1981, 56-169907

Int. Cl.⁴ H04N *5/05, 5/93*

U.S. Cl. 358—153 **3 Claims**



1. A reference time detecting circuit for a video signal having a video signal source for supplying a video signal including vertical and horizontal synchronizing signals, with a transit portion of a predetermined synchronizing signal being selected as a reference time point; comprising in combination, a first clamping circuit (40) connected to said video signal source, a second clamping circuit (70) connected to said video signal source, the time constant of said second clamping circuit being shorter than that of said first clamping circuit, a masking pulse generator connected to said first clamping circuit for generating a masking pulse at a time corresponding to said reference time point, and detecting means connected between said masking pulse generator and one of said clamping circuits for detecting said transit portion during said masking pulse and for obtaining a timing signal accurately corresponding to said transit portion.

4,618,892

DYNAMIC SHADING COMPENSATION FOR IR TRACKING SYSTEM

Frank M. Kawaguchi, Fountain Valley, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Mar. 25, 1985, Ser. No. 715,441

Int. Cl.⁴ H04N *5/14*

U.S. Cl. 358—163 **9 Claims**

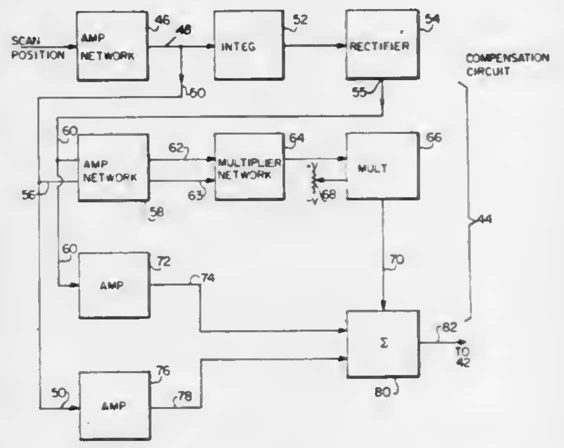
1. A circuit which compensates for display shading in an infrared tracking system, including a scanning mirror, signal post amplifiers, vidicon, and a CRT display, the circuit comprising:

amplifying means having its input connected to a signal source representative of tracking scanner position and generating a triangular signal therefrom;

integrating means connected at its input to the triangular signal for translating it to a parabolic signal;

rectifying means connected to the output of the integrating means for performing full wave rectification of the parabolic signal;

means for multiplying the triangular and rectified parabolic signals for forming a first partial compensation signal which biases the post amplifiers in a manner achieving substantial diminution of variable shading due to post amplifier gain; and



means connecting the post amplifier to the multiplying means for dynamically controlling the gain of the multiplying means as a function of the post amplifier gain.

4,618,893

NOISE REDUCING SYSTEM FOR VIDEO SIGNAL

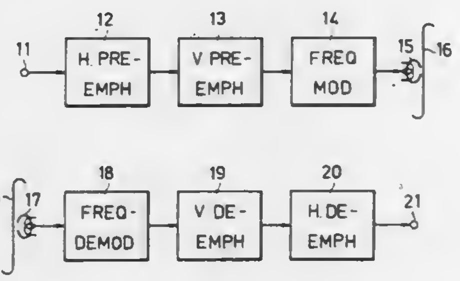
Akira Hirota, Chigasaki, and Takuya Tsushima, Ayase, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jul. 27, 1984, Ser. No. 634,954

Claims priority, application Japan, Jul. 29, 1984, 58-138873

Int. Cl.⁴ H04N *5/213*

U.S. Cl. 358—167 **6 Claims**



1. A noise reducing system for a video signal, said noise reducing system comprising:

vertical pre-emphasis means supplied with an input video signal which is to be transmitted for pre-emphasizing the input video signal and transmitting a pre-emphasized video signal to a transmitting system, said vertical pre-emphasis means having such a non-linear pre-emphasis characteristic that said vertical pre-emphasis means relatively emphasizes a high-frequency component of the input video signal in a vertical spatial frequency of a picture compared to a low-frequency component of the input video signal with a degree of emphasis which decreases as the level of the input video signal increases; and

vertical de-emphasis means for receiving said pre-emphasized video signal after said pre-emphasized video signal has been transmitted through said transmitting system for de-emphasizing said pre-emphasized video signal, said vertical de-emphasis means having such a non-linear de-emphasis characteristic that said vertical de-emphasis means relatively attenuates a high-frequency component of said pre-emphasized video signal in a vertical spatial frequency of the picture compared to a low-frequency component of said pre-emphasized video signal, with a degree of attenuation which decreases as the level of said pre-emphasized video signal increases to produce a de-emphasized video output signal.

4,618,894

COLOR VIDEO SIGNAL RECORDING AND REPRODUCING APPARATUS

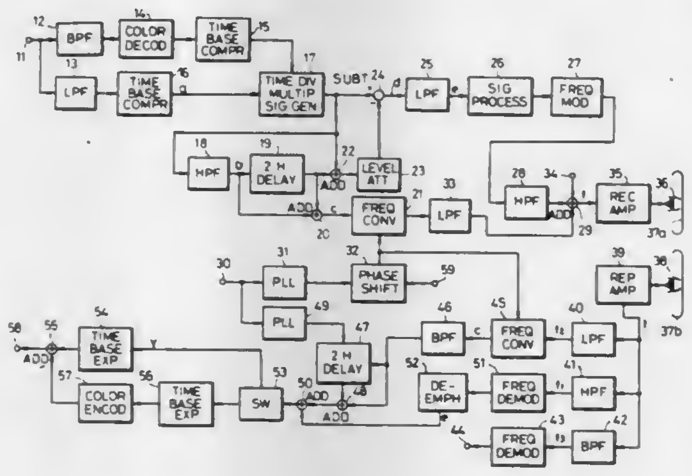
Yutaka Ichinoi, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Japan

Filed Apr. 6, 1984, Ser. No. 597,708

Claims priority, application Japan, Apr. 7, 1983, 58-61293

Int. Cl.⁴ H04N *5/76, 9/493*

U.S. Cl. 358—310 **7 Claims**



1. A color video signal recording and reproducing apparatus comprising:

luminance signal producing means for producing a luminance signal which has or has not been subjected to a time base compression, between the luminance signal and a carrier chrominance signal which constitute a standard system color video signal;

time base compressed line-sequential color difference signal forming means for forming a time base compressed line-sequential color difference signal from two kinds of color difference signals which constitute the carrier chrominance signal;

a time-division-multiplexed signal generating circuit supplied with the output signal of said luminance signal producing means and the time base compressed line-sequential color difference signal from said time base compressed line-sequential color difference signal forming means, for generating a time-division-multiplexed signal in which one of two kinds of time base compressed color difference signals which constitute the time base compressed line-sequential color difference signal and the output signal of said luminance signal producing means are time-sequentially multiplexed within one horizontal scanning period;

separating means for separating a low-frequency component of the time-division-multiplexed signal from said time-division-multiplexed signal generating circuit, so as to obtain a low-frequency time-division-multiplexed signal;

a modulator for frequency-modulating a carrier by the low-frequency time-division-multiplexed signal from said separating means, so as to obtain a frequency modulated signal;

first frequency converting means for separating a high-frequency component of the time-division-multiplexed signal by use of a filter circuit, and for frequency-converting the high-frequency component to a frequency band which is lower than the frequency band of the frequency modulated signal so as to produce a low-band converted high-frequency time-division-multiplexed signal;

recording and reproducing means for recording a frequency-division-multiplexed signal on a recording medium and reproducing the frequency-division-multiplexed signal from the recording medium, said frequency-division-multiplexed signal being obtained by frequency-division-multiplexing at least the frequency modulated signal and the low-band converted high-frequency time-division-multiplexed signal;

demodulating means for obtaining a reproduced low-frequency time-division-multiplexed signal by frequency-selecting a reproduced frequency modulated signal from the frequency-division-multiplexed signal which is reproduced by said recording and reproducing means and frequency-demodulating the reproduced frequency modulated signal;

second frequency converting means for frequency-selecting a reproduced low-band converted high-frequency time-division-multiplexed signal from the frequency-division-multiplexed signal which is reproduced by said recording and reproducing means, and for frequency-converting the reproduced low-band converted high-frequency time-division-multiplexed signal back to the original frequency band so as to obtain a reproduced high-frequency time-division-multiplexed signal;

deriving means for deriving a reproduced time base compressed line-sequential color difference signal and a reproduced luminance signal which has or has not been subjected to a time base compression, from a reproduced time-division-multiplexed signal which is obtained by mixing the output signals of said demodulating means and said second frequency converting means;

a carrier chrominance signal reproducing circuit for forming a reproduced carrier chrominance signal having a signal format which is in conformance with the standard system by subjecting the reproduced time base compressed line-sequential color difference signal from said deriving means to a time base expansion so as to return the time base to the original time base; and

a color video signal forming circuit for forming a reproduced color video signal which is in conformance with the standard system, from the reproduced luminance signal from said deriving means and the reproduced carrier chrominance signal from said carrier chrominance signal reproducing circuit.

4,618,895

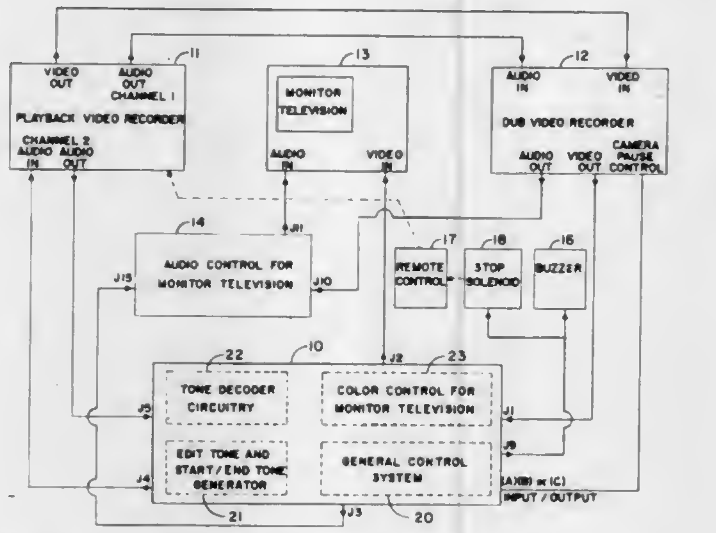
VIDEO EDITING SYSTEM

Bruce R. Wright, 1006 Nana, St. Louis, Mo. 63131

Filed Aug. 31, 1983, Ser. No. 528,047

Int. Cl.⁴ H04N *9/79;* **G11B** *27/08*

U.S. Cl. 358—311 **22 Claims**



1. The process of preparing a color video tape having an audio track for video self-editing when subsequently played across to a video recorder, comprising the steps of

playing an initial portion of such tape on a video playback machine and simultaneously viewing same on a color video monitor connected therewith, to the conclusion of a first segment selected for such subsequent duplication,

while so playing and viewing, laying down on such audio track signal means both to differentiate portions of the video tape then selected for duplication from unselected portions thereof, and to start and stop such video recorder,

so controlling, by the presence or absence of said signal means, the video input to the monitor as to delete color from such video input simultaneously with the display on such monitor of unselected portions of the video tape, and

repeating the aforesaid steps for subsequent portions of the tape,

whereby, by adjusting the position at which such signal means are laid down on the audio track, the absence of color on the monitor screen indicates those portions which will be self-edited from the tape when thereafter played across to such video recorder.

4,618,896

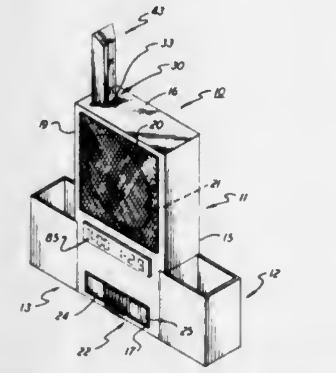
SINGLE MESSAGE RECORDER AND PLAYBACK APPARATUS

Michael F. Rusyniak, 9 Donald Pl., Liverpool, N.Y. 13088

Filed Apr. 12, 1985, Ser. No. 722,686

Int. Cl.⁴ G11B *5/00, 5/02, 25/04*

U.S. Cl. 360—1 **18 Claims**



1. A single message recording and playback apparatus that includes

a rigid elongated stick having at least one flat surface thereon,

a magnetic recording tape disposed along the flat surface of the stick for recording a message,

a guideway having a passage for slidably receiving said stick therein and directing the stick along a linear path of travel,

a drive means located along the guideway for engaging the stick and moving it along said linear path of travel,

a switch means operatively connected to said drive means, said switch positioned at the entrance to the guideway passage to automatically activate the drive means as the leading edge of the stick passes the entrance, and to automatically deactivate the drive means as the trailing edge of the stick passes through the entrance,

a combination magnetic recording and playback head positioned adjacent the guideway for contacting the magnetic tape on said stick as it moves along said path of travel to permit selective recording and playing back of messages contained thereon, and

said switch means being located a distance from the exit of said guideway that is less than the linear length of the stick whereby the leading edge of the stick extends beyond the exit of the guideway when the drive means is deactivated.

4,618,897

SYSTEM FOR SYNCHRONIZING PLURAL DATA STORAGE DEVICES TO A COMMON MASTER

Ronald R. Johnson, Shorewood, and James A. Sieben, Mound, both of Minn., assignors to IXI Laboratories, Inc., Shorewood, Minn.

Filed Feb. 11, 1985, Ser. No. 700,553

Int. Cl.⁴ G11B *5/86, 15/46*

U.S. Cl. 360—15 **6 Claims**

1. A system for the mass replication of information stored on a magnetic recording medium comprising:

(1) a master station including means at said master station for generating sync pulses and means for storing the information to be replicated;

(b) a plurality of slave stations, each slave station including:

(i) drive means for moving a magnetic recording disk relative to a magnetic read/record head, said drive means or recording disk having a sensible indicia thereon;

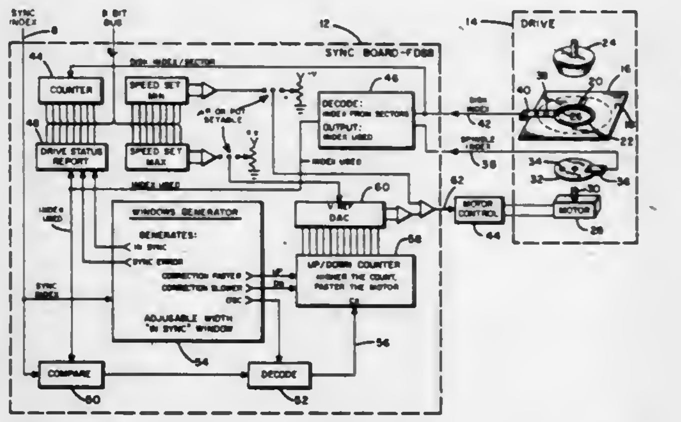
(ii) speed control means coupled to said drive means for adjusting the speed of said recording disk relative to said read/record head;

(iii) sensor means associated with said drive means or recording disk for producing an index pulse each time said indicia passes said sensor;

(c) bus means coupling said master station to each of said plurality of slave stations for transmitting said sync pulses and signals representative of the stored information to be replicated to said plurality of slave stations;

(d) synchronization circuit means including

(i) comparing means operatively coupled to receive said index pulses and said sync pulses for producing an output signal representative of the temporal spacing therebetween;



(ii) decoding means connected to the output of said comparing means for producing timing pulses at a rate proportional to said output signal of said comparing means;

(iii) bi-directional counting means coupled to said decoding means for tallying the timing pulses produced by said decoding means; and

(iv) digital-to-analog conversion means coupled to periodically convert the binary count in said bi-directional counting means to an analog signal, said analog signal being applied to said speed control means for adjusting the speed of said recording disk until said index pulses are in substantial time coincidence with said sync pulses; and

(e) sync status report means in said slave stations coupled to said bus means for signaling to said master station when the substantial time coincidence condition is obtained.

4,618,898

METHOD AND APPARATUS FOR READING A DISK

Mark S. Young, Mountain View; John Drew, Los Gatos; Michael C. Shebanow, Berkeley, and Vineet Dujari, San Jose, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 20, 1984, Ser. No. 684,423

Int. Cl.⁴ G11B *5/09*

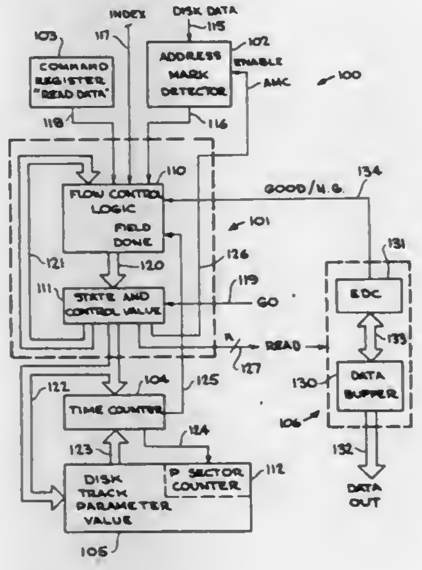
U.S. Cl. 360—51 **10 Claims**

1. A method of reading a selected field from among a plurality of fields on a disk wherein said disk comprises a plurality of field address marks, each of said plurality of fields having one of said field address marks associated therewith and wherein one or more of said field address marks, other than the address mark associated with said selected field, is unreadable and said disk comprises an index mark and a spindle speed which may vary, comprising the steps of:

detecting said index mark;

generating signals for providing a first plurality of successive time windows in response to said detecting of said index mark, wherein each of said time windows is associated with a predetermined one of said plurality of address marks and occurs at a time and has a duration within which said associated one of said address marks is expected to occur;

enabling an address mark detecting apparatus during each of said time windows for detecting an address mark which may occur within said time window;



restarting said generating step to provide another plurality of said successive time windows each time one of said address marks is detected within an associated one of said plurality of time windows; and

reading said selected one of said predetermined fields when the address mark associated with said selected field is detected within said time window associated therewith.

4,618,899
RECORD MODE DISCRIMINATION CIRCUIT

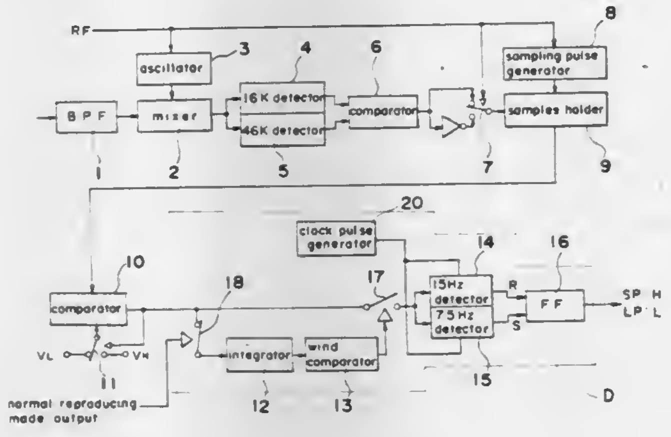
Nobuhide Doutsubo, Daitō, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jun. 19, 1985, Ser. No. 746,413

Claims priority, application Japan, Jun. 20, 1984, 59-126920; Oct. 12, 1984, 59-214952

Int. Cl.⁴ G11B *15/52*

U.S. Cl. 360—73 **3 Claims**



1. In an 8 mm video including a tracking error signal circuit which outputs tracking error signals formed through comparison in the levels of particular beat components produced by the mixture of injection pilot signals and reproduction pilot signals to be obtained by a tape composed of the pilot signals for tracking use placed and recorded on the video track, and a record mode discrimination circuit which outputs a mode discrimination output for discriminating two modes of a standard record mode and a long time record mode twice as much upon counting the variation period of the tracking error signals, thereby to render to control the rotational phase of a capstan motor so as to switch the rotation speed of the capstan motor in accordance with the output of said record mode discrimination circuit, the record mode discrimination circuit comprising:

a sample hold circuit or sample holding the tracking error signals at a field period,

a comparator circuit for changing a threshold level of a reference input in accordance with a comparator output to input the sample hold output into the comparator input,

a duty identification circuit for identifying the duty cycle of said comparator output,

a mode discrimination output generating circuit for transmitting the mode discriminating output in accordance with the comparator output, and

a switching circuit for switching the duty identification circuit output in a manner that, upon identifying the duty cycle within the duty identification circuit, if the duty cycle is approximately 50, the comparator output is adapted to transmit into the mode discrimination output generating circuit, but, if the duty cycle is out of approximate 50, the comparator output is cut off not to transmit into the mode discrimination output generating circuit.

4,618,900
MAGNETIC DISK AND SPINDLE FOR DRIVING THE SAME

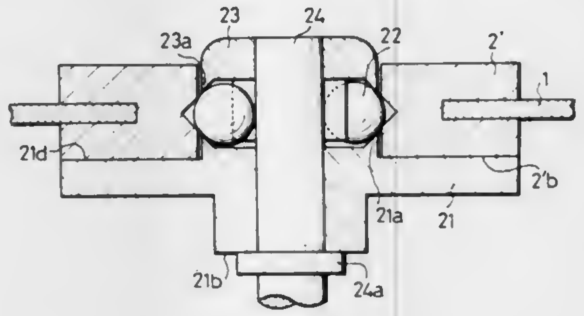
Yukio Saito, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Oct. 11, 1983, Ser. No. 540,862

Claims priority, application Japan, Oct. 8, 1982, 57-153130[U]

Int. Cl.⁴ G11B *5/012, 5/82*

U.S. Cl. 360—97 **8 Claims**



1. A magnetic disk, for use in conjunction with a driving spindle having a plurality of members movable upon rotation of said spindle to project circumferentially of said spindle in a plane of rotation of said magnetic disk, comprising:

a disk-like magnetic storage medium having a center hole;

a center hub fixedly attached in said center hole of said medium, said hub having a central bore co-axial with the axis of rotation of said disk and being formed by an annular inner wall of a radius for accomodating said spindle; and

an annular groove formed as a circumferential recess in said inner wall having a depth to another radius relative to said axis of rotation larger than said radius of said inner wall of said center hub for receiving said projecting members upon rotation of said spindle to drive said magnetic disk.

4,618,901
HIGH DENSITY MAGNETIC HEAD

Iwao Hatakeyama; Yasushi Maeda; Osamu Ishii, and Shizuka Yoshii, all of Ibaraki, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Jul. 19, 1983, Ser. No. 515,135

Claims priority, application Japan, Jul. 19, 1982, 57-124317; May 20, 1983, 58-87557

Int. Cl.⁴ G11B *5/127*

U.S. Cl. 360—114 **6 Claims**

1. A magnetic head for recording/reproducing magnetic information on a magnetic medium comprising:

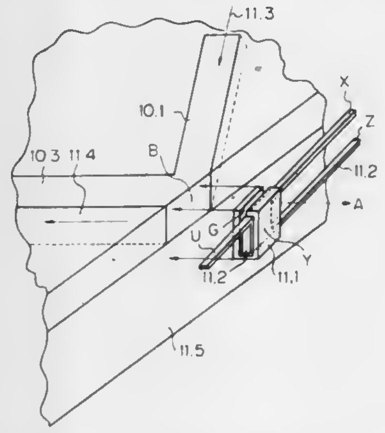
(a) a thin substantially C-ring shaped magnetic core with a longitudinal gap extending generally perpendicular to the direction of travel of a recording medium which accepts leakage flux from said recording medium;

(b) detection means for detecting magnetic status in said core to provide electrical output signal; wherein

said core is small enough to have a single magnetic domain in 3 dimensions, and has a magnetization easy axis along the C-shaped magnetic core axis perpendicular to the longitudinal direction of said gap,

said detection means is an optical detection means which projects an optical beam on said core to detect magnetic status of said core, and

means for providing magnetic bias flux in a hard magnetization axis which is perpendicular to said magnetization easy axis.



4,618,902
MAGNETIC HEAD WITH CLAMPING ERASE BACK CORE

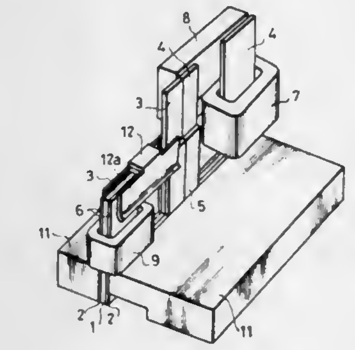
Toshihiro Kuriyama, Koidemachi, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Jun. 30, 1983, Ser. No. 509,720

Claims priority, application Japan, Jul. 1, 1982, 57-114669

Int. Cl.⁴ G11B *5/27*

U.S. Cl. 360—118 **2 Claims**



1. A magnetic head comprising a write-read layer for writing and reading data on a magnetic medium, a pair of erase layers made of magnetic material arranged on both sides of the write/read layer, and an erase back core made of a metal magnetic material and being formed with side clamping pieces resiliently joined by a coupling portion uniformly formed therebetween for clamping on both sides of said pair of erase layers, whereby said erase back core is provided to complete the flux path of the erase layers and is mounted in a clamping manner on the erase layers during assembly.

4,618,903
MAGNETIC TAPE CASSETTE

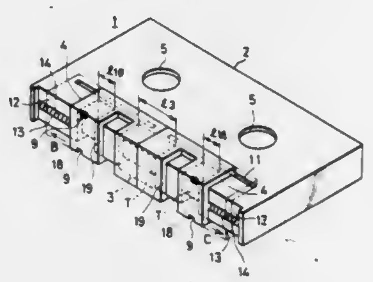
Kengo Oishi, and Masaaki Suzuki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 12, 1984, Ser. No. 649,581

Claims priority, application Japan, Sep. 16, 1983, 58-142349

Int. Cl.⁴ G11B *23/02, 23/04*

U.S. Cl. 360—132 **17 Claims**



1. In a magnetic tape cassette having a cassette case housing a pair of hubs on which a magnetic tape is wound, said case having upper and lower walls and a front wall therebetween, said front wall extending in a first direction between first and second ends, said front wall having a central opening therein for receiving a magnetic head and two side openings for receiving pinch rollers and capstans, with one of said side openings being located between said central opening and said first end, and the other of said side openings being located between said central opening and said second end, the improvement wherein said magnetic tape cassette includes:

slide grooves which are formed in said upper and lower walls of said cassette case behind said central opening and side openings and extending in said first direction;

two slidable guard panels which are substantially U-shaped in cross section, each of said guard panels having a front wall with a single through-hole formed therein, each of said guard panels further having slides engaged with said slide grooves, said two slidable guard panels being slidable towards each other for closing said central opening and said side openings and slidable away from each other for exposing said central opening and said side openings; and

biasing means for urging said two guard panels toward each other.

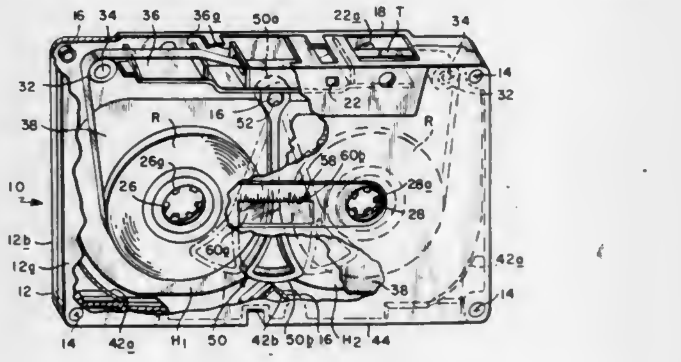
4,618,904
MAGNETIC TAPE CASSETTE ISOLATOR

George H. Manning, Nashua, N.H., assignor to Memtec Corporation, Salem, N.H.

Filed Feb. 14, 1983, Ser. No. 466,015

Int. Cl.⁴ G11B *23/04*

U.S. Cl. 360—132 **4 Claims**



1. In a magnetic tape cassette of the type including a generally rectangular housing having an edge, which constitutes the working edge of the cassette, formed with an aperture for

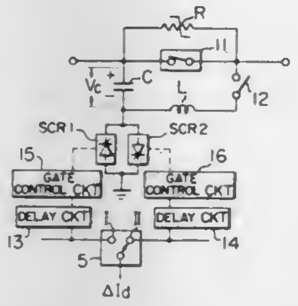
receiving a magnetic head, a pair of spaced-apart roll cores rotatively mounted to opposite walls of the housing along a line spaced parallel to said working edge, a length of magnetic tape having its opposite ends wound on the two roll cores, and a pair of guides mounted at the opposite ends of said working edge for guiding a stretch of tape from one roll core along just inside said working edge of the housing to the other roll core, the improvement comprising

- A. an elongated tape isolating arm positioned between the tape cores and having one and located adjacent said cassette working edge and said arm extending substantially from said cassette working edge to the opposite edge of the housing and having opposite sides facing said cores which are concavely curved to correspond substnatially to the curvature of the largest diameter tape roll wound onto a said core;
- B. means for pivotably mounting said one end of said arm to the housing whereby the arm
  - (1) swings freely within the housing between the two roll cores and prevents slack tape from adjacent one core from looping or twisting within the housing so that is snagged by and wound up with tape on the other roll core when the cassette is next operated, and
  - (2) exerts negligible drag on the rotating tape rolls when the cassette is in operation; and
- C. arcuate ribs adjacent said cassette opposite edge and extending between said opposite housing walls so as to partially extend around and help guide the tape to and from said cores, the free end of said arm just clearing segments of said ribs located between said cores.

4,618,905
DC CIRCUIT BREAKER

Shunji Tokuyama, Hitachi; Koji Suzuki, Takahagi, and Keiji Arimatsu, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 21, 1984, Ser. No. 653,051
Claims priority, application Japan, Sep. 21, 1983, 58-173039
Int. Cl.⁴ H02H *7/00*
U.S. Cl. 361—4 **11 Claims**



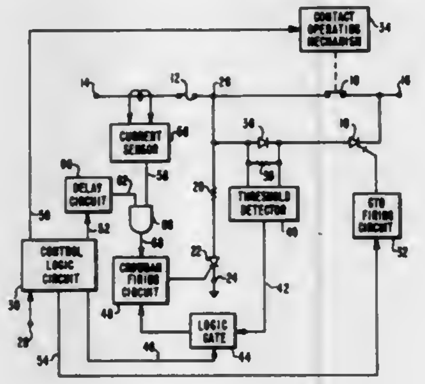
1. A line voltage charging type DC circuit breaker for use in DC transmission system, having a series circuit connected in parallel with a commutation breaker, said series circuit being constituted by a capacitor to be charged by a line voltage, a reactor, and a circuitclosing means connected in series with each other, said DC circuit breaker comprising:

- a charging circuit for charging said capacitor, said charging circuit including current direction restricting means for restricting a current flowing through said restricting means only in one direction and a reverse control means for controlling said current direction restricting means to reverse the direction of a current for charging said capacitor in accordance with a power flow reversal control of said DC transmission system.

4,618,906
HYBRID SOLID STATE/MECHANICAL SWITCH WITH FAILURE PROTECTION

Derek A. Paice, Murrysville, and Kenneth E. Mattern, Gibsonia, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 16, 1984, Ser. No. 631,357
Int. Cl.⁴ H02H *3/087*
U.S. Cl. 361—5 **8 Claims**



1. A hybrid electrical switch comprising:

- a pair of terminals for connection to a power line;
- a branch circuit connected between said power line terminals, said branch circuit including the series connection of a circuit breaking device and a pair of mechanical contacts;
- a solid state switching device electrically connected in parallel with said pair of mechanical contacts;
- a crowbar circuit connected between a reference terminal and a connection point in said branch circuit located between said circuit breaking device and said pair of mechanical contacts;
- means for controlling the operation of said pair of mechanical contacts and said solid state switching device such that said solid state switching device is turned on before the closure of said mechanical contacts and is turned off after said mechanical contacts open;
- means for triggering said crowbar circuit when the leakage current through said solid state switching device exceeds a preselected magnitude; and
- means for triggering said crowbar circuit when current flows through said circuit breaking device for a period which exceeds a predetermined duration following the expected opening time of said pair of mechanical contacts.

4,618,907
DESENSITIZED GROUND FAULT INTERRUPTER

Howard S. Leopold, Plainview, N.Y., assignor to Eagle Electric Mfg. Co., Inc., Long Island City, N.Y.

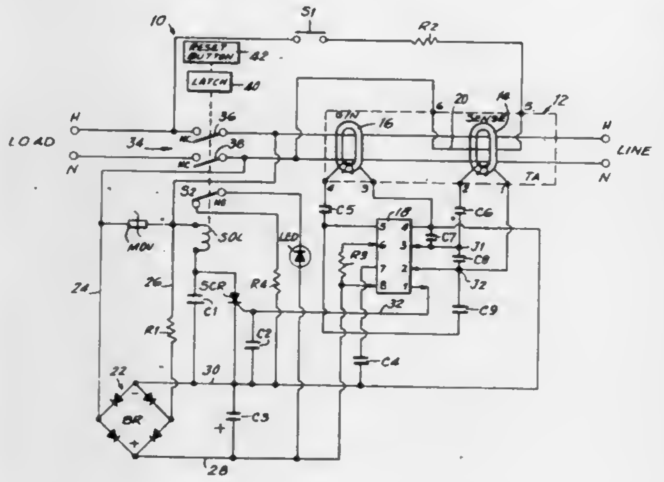
Filed Jan. 29, 1985, Ser. No. 695,965
Int. Cl.⁴ H02H *3/26*
U.S. Cl. 361—45 **12 Claims**

1. In an improved ground fault interrupter for protecting an electrical power outlet operative for supplying electrical alternating current along hot and neutral lines to a load, said interrupter being of the type including:

- (A) means for sensing a current differential between the lines, and for generating a sense output signal indicative of the current differential, and
- (B) control means operatively connected to the sensing means and energizable from an off state, said control means being operative for comparing the sense output signal to a predetermined current threshold indicative of a ground fault condition, and for interrupting the supply of current to the load when the sense output signal is at least equal to the predetermined current threshold,

wherein the improvement comprises:

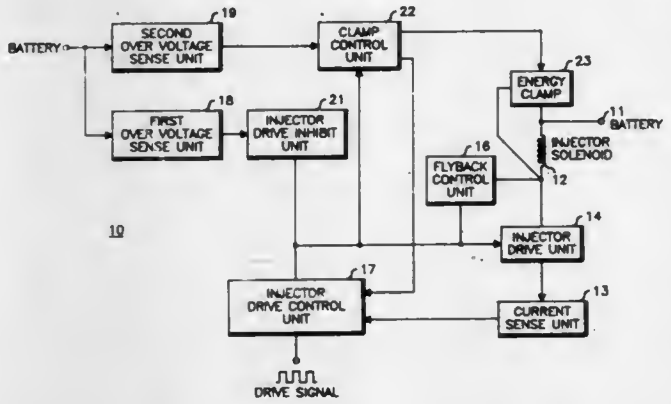
means operatively connected to the control means for desensitizing the same, and for maintaining the control means in a desensitized state, other than the off state, after the ground fault condition has been sensed and the supply of current to the load has been interrupted.



4,618,908
INJECTOR DRIVER CONTROL UNIT WITH INTERNAL OVERVOLTAGE PROTECTION

Dennis A. Anttila, Coconut Creek, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 5, 1985, Ser. No. 762,467
Int. Cl.⁴ F02D *41/30;* H01H *47/32*
U.S. Cl. 361—187 **14 Claims**



1. In an injector driver circuit for use with a fuel injector solenoid and a power source, said injector driver circuit comprising current sense means for sensing current flow through said injector solenoid and for providing a current sense signal in response thereto, injector drive control means for receiving an input signal and said current sense signal and for outputting a drive signal, and injector drive means responsive to said drive signal for selectively allowing current to flow from said power source through said injector solenoid and said injector drive means, an improvement comprising:

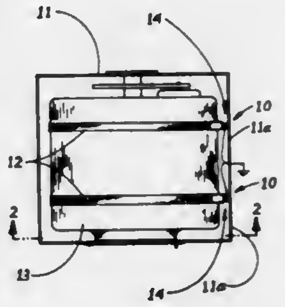
(a) first overvoltage sense means operably connected to said power source for detecting overvoltage conditions and for providing an overvoltage detected signal in response to detecting such an overvoltage condition; and

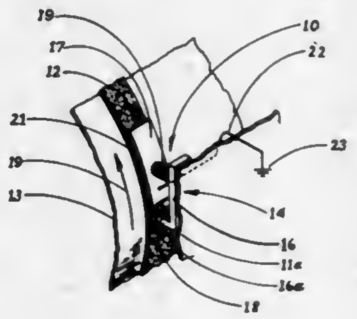
(b) injector drive inhibit means responsive to said overvoltage detected signal for inhibiting said drive signal from causing said injector drive means to allow current to flow from said power source through said injector solenoid and said injector drive means, such that injector solenoid current cannot flow through said injector drive means.

4,618,909
STATIC DISCHARGE DEVICE

James L. Sanders, 12235 Crawford Rd., Omaha, Nebr. 68144

Filed Dec. 23, 1985, Ser. No. 812,459
Int. Cl.⁴ H05F *3/00*
U.S. Cl. 361—212 **7 Claims**





1. A static discharge device for use on a clothes dryer, comprising:

- a continuous band of material tending to give up electrons to adjacent atoms, attached to the exterior circumference of the drum of said clothes dryer;
- a contact shoe of electrically conductive material mounted on one end to an electrically insulated base attached to said dryer, and located such that a portion of one face of said shoe is in frictional contact with said band;
- a layer of material tending to tear away electrons from adjacent atoms, attached to the drum-adjacent face of said shoe and having dimensions greater than the area of contact between said shoe and band; and,
- a wire, electrically connecting said shoe to an independent ground, whereby electrical charges built up on said layer of material will be discharged through said shoe and wire to the ground.

4,618,910
ELECTRICAL CIRCUIT INTERRUPTER FOR DRY METALLIZED FILM CAPACITORS

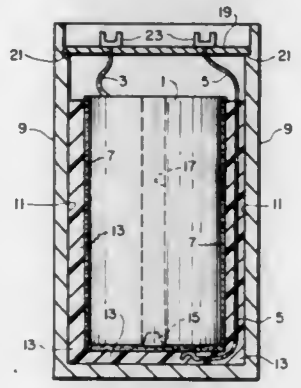
Thomas F. Strange, and John W. Carino, both of Columbia, S.C., assignors to North American Philips Corporation, New York, N.Y.

Filed Oct. 25, 1984, Ser. No. 664,659
Int. Cl.⁴ H01G *1/11*
U.S. Cl. 361—275 **9 Claims**

4. An electrical dry metallized film capacitor comprising:

- a capacitor roll section, formed from a metallized film, having a first and a second connecting lead electrically connected to a top and a bottom end, respectively, of said capacitor roll section, the capacitance of said capacitor being established between said connecting leads;
- a container closed at one end thereof for receiving said capacitor roll section, said bottom end of said capacitor roll section being adjacent said closed end of said container and said second connecting lead extending along a side of said capacitor roll section to an open end of said container;
- means for rigidly fixing said second connecting lead with respect to said container; and
- means for holding said capacitor roll section with respect to said container allowing only axial movement thereof,

whereby, upon failure of said capacitor due to an electrical potential applied across said connecting leads, gases formed in said capacitor roll section, due to said failure,

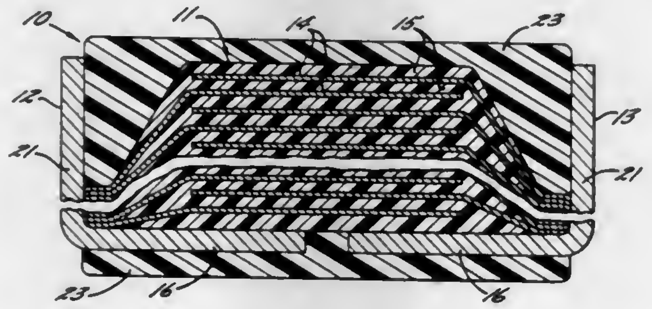


axially shift said capacitor roll section away from the closed end of said container thereby breaking the connection between the bottom end of said capacitor roll section and said second connecting lead.

4,618,911
END TERMINATION FOR CHIP CAPACITOR

Stanley W. Cichanowski, Bennington, Vt., and David G. Shaw, Glens Falls, N.Y., assignors to SFE Technologies, San Fernando, Calif.

Filed Nov. 19, 1984, Ser. No. 672,528
Int. Cl.⁴ H01G *1/13, 4/08*
U.S. Cl. 361—308 **7 Claims**



1. In a monolithic capacitor having electrode layers with the edge of adjacent electrode layers at each end of the capacitor bonded to each other and at least one of said edges bonded to an electrically conductive substrate and center portions spaced and held by dielectric material in an interleaved, multi-layer capacitor body, the improvement comprising, electrically conductive material defining a termination surface approximately equal in area to one end of said capacitor body, and said material being in intimate, electrically conducting contact with said substrate.

4,618,912
MONOLITHIC CERAMIC CAPACITOR

Yukio Sakabe; Shintaro Karaki, and Kiyoshi Nakano, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

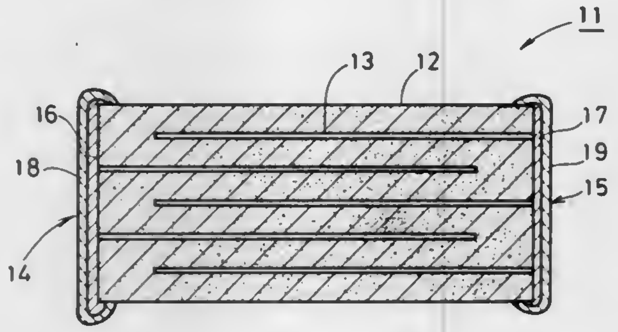
Filed Jul. 12, 1985, Ser. No. 754,393
Claims priority, application Japan, Aug. 13, 1984, 59-169579
Int. Cl.⁴ H01G *1/14, 4/12*
U.S. Cl. 361—309 **4 Claims**

1. A monolithic ceramic capacitor comprising a sintered body obtained by laminating a plurality of ceramic green sheets and simultaneously firing the same,

said sintered body having a plurality of gaps opening in either side of a pair of end surfaces of said sintered body, said monolithic ceramic capacitor further including:

a plurality of internal electrodes formed by injecting molten lead or lead alloy into said gaps; and

a pair of external electrodes provided on said pair of end surfaces of said sintered body for extracting the electrostatic capacity,



said external electrodes being formed of respective first layers including a fired paste mainly composed of Ni_3B and respective second layers provided on the outer sides of said first layers.

4,618,913
ELECTRICAL CAPACITOR INCLUDING A QUENCHER GAS ADDITIVE

Dieter Handtmann, Sindelfingen; Egon Mossburger, Stuttgart, and Herbert Förster, Schorndorf, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 11, 1985, Ser. No. 709,785
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1984, 3411793
Int. Cl.⁴ H01G *4/22;* **H01B** *3/48*
U.S. Cl. 361—315 **10 Claims**

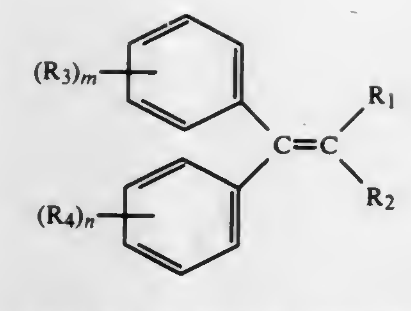
1. An electrical capacitor, preferably a non-impregnated, self-curing capacitor comprising a roll of a dielectric paper and/or plastic foil provided with metal layers applied thereon preferably by evaporation in vacuum, a housing enclosing the roll, a polyatomic additive substance in gaseous phase enclosed in the housing to fill interspaces between the metal layers of the roll, said additive substance including a hydrocarbon compound free of halogens and having a first ionization potential which is less than the ionization potential of at least a part of a decomposition product of said dielectric paper and/or plastic foil, and said additive substance being selected from a group consisting of toluene, xylene, benzene, acetone, ethyl alcohol, propane, propylene and butane.

4,618,914
ELECTRICAL INSULATING OIL AND OIL-FILLED ELECTRICAL APPLIANCES

Atsushi Sato, Tokyo; Keiji Endo, Yokosuka; Shigenobu Kawakami, Ichikawa; Hitoshi Yanagishita, and Shozo Hayashi, both of Yokohama, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Filed Feb. 28, 1985, Ser. No. 706,408
Claims priority, application Japan, Mar. 8, 1984, 59-44951
The portion of the term of this patent subsequent to Jan. 15, 2002, has been disclaimed.
Int. Cl.⁴ H01G *4/22;* **H01B** *3/22*
U.S. Cl. 361—315 **11 Claims**

4. Electrical appliances impregnated with an electrical insulating oil comprising at least one of 1,1-diarylalkenes which are represented by the following general formula (I):



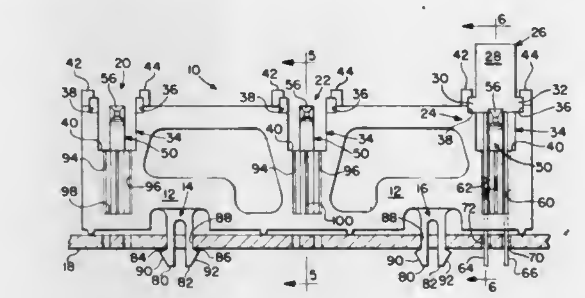
(I)

wherein R_1 to R_4's are the same or different and each of them is a hydrogen atom or an alkyl group having 1 to 5 carbon atoms, and m and n are integers from 0 to 3, inclusive.

4,618,915
SUPPORT MEMBER FOR ELECTRICAL COMPONENTS

George J. Bury, Lake Villa, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 17, 1984, Ser. No. 682,503
Int. Cl.⁴ H05K *7/10*
U.S. Cl. 361—400 **9 Claims**



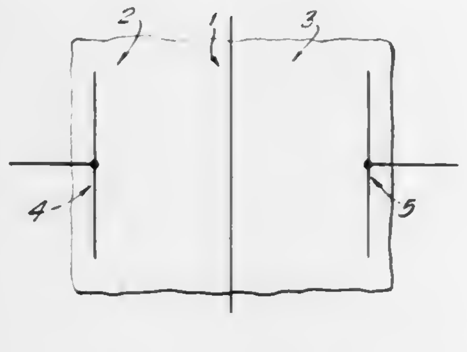
9. A support member for mounting electrical components having outwardly extending flange portions to a circuit board comprising: a frame-like body portion; retention means for coupling said body portion to a circuit board in a predetermined orientation relative thereto; and a plurality of socket means for receiving and supporting electrical components in a predetermined orientation relative to said body portion; wherein each of said socket means comprises recess means formed in said body portion for receiving at least a predetermined portion of one of said electrical components, inwardly projecting finger means overlying outer edge portions of said recess means for overlying said outwardly extending flange portions of said one electrical component therein, and a resilient spring-like element integrally formed with said body portion and disposed interiorly of said recess for engaging a bottom surface of said electrical component and resiliently urging said component for positive engagement of said flange portions thereof with said inwardly extending fingers.

4,618,916
LIPID BILAYER MEMBRANE ELECTRONIC CIRCUIT COMPONENTS

Robert L. Muller, City Island, and Olaf S. Andersen, New York, both of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Dec. 18, 1984, Ser. No. 683,255
Int. Cl.⁴ H01G *9/00;* **G11C** *11/00*
U.S. Cl. 361—434 **30 Claims**

10. A circuit component comprising:
(a) a lipid bilayer membrane;
(b) a first liquid phase in contact with a first surface of the membrane, the first liquid phase comprising an ionic solution that is electrically conductive and a material that is capable of inducing voltage-dependent conductance in the membrane;
(c) a second liquid phase in contact with the second surface of the membrane, the second liquid phase comprising an ionic solution that is electrically conductive;
(d) means for inducing an electrical potential across the first liquid phase, the membrane and the second liquid phase; and

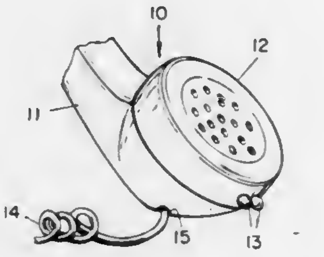


(e) means for maintaining constant the concentration of ionic charge carriers in the liquid phases.

4,618,917
INTEGRAL PHONE LIGHT ACCESSORY

Peter Lee, Monterey Park; George F. Cheung, La Mirada, and Joe T. Yee, Huntington Beach, all of Calif., assignors to American Phone Products, Anaheim, Calif.

Filed Aug. 31, 1984, Ser. No. 645,840
Int. Cl.⁴ H04M *1/22*
U.S. Cl. 362—88 **15 Claims**



1. A light device for use with existing telephone instruments comprising,

a mouthpiece transducer housing **(12)** adapted to detachably engage the existing handset portion **(10)** of a telephone instrument,

at least one aperture formed in the sidewall of said mouthpiece transducer housing,

light emitting device means **(13)** arranged to be mounted in the aperture in said housing, and

a wafer-like electrical conductor **(30, 530)** having an annulus configuration joined to said light emitting device and mounted within said mouthpiece transducer housing adjacent to the transducer and adapted to be connected with the electrical power line in the handset of the telephone instrument whereby said light emitting device selectively is activated solely by the electrical power produced in said telephone instrument.

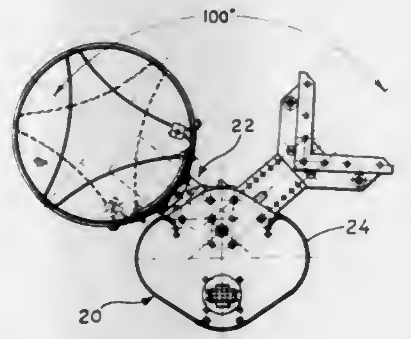
4,618,918
UNIVERSAL FILTER CHANGER FOR THEATRICAL LIGHTS

Ilya Zhabokrug, 434 16th Ave., San Francisco, Calif. 94118

Filed Jun. 3, 1985, Ser. No. 740,528
Int. Cl.⁴ F21V *9/08*
U.S. Cl. 362—281 **6 Claims**

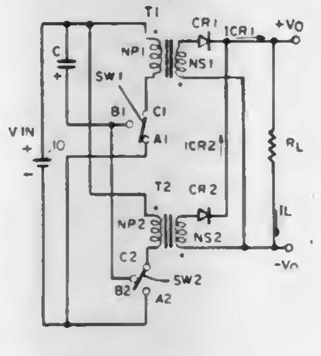
1. A filter changer for lighting units, comprising:
a casing,
a lighting unit,
means for attaching said casing to said lighting unit,
a set of filter holders, at least one of said filter holders containing a filter,
means in said casing for switching any of said filter holders between two extreme positions, said switching means

comprising a set of identical switching mechanisms, the number of said switching mechanisms corresponding to the number of said filter holders,
each switching mechanism consisting of a stationary part which is rigidly connected to said casing, a moveable part which can rotate with respect to said stationary part, and means for rotating said moveable part with respect to said stationary part,
said means for rotating said moveable part with respect to said stationary part comprising an electromagnet,
said electromagnet consisting of a first core and a second core, each core having a tail portion, each tail portion having a U-shaped slot therein,



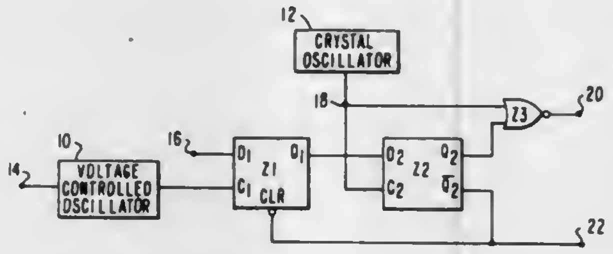
means for fixing said moveable part with respect to said stationary part in either of said extreme positions,
said means for fixing being operably controlled by said electromagnet,
a first column being rigidly connected to said stationary part,
a second column being rigidly connected to said moveable part,
said first column being fit into said U-shaped slot of said tail portion of said first core and said second column being fit into said U-shaped slot of said second core, and
resilient means positioned between each of said columns and its respective core.

4,618,919
TOPOLOGY FOR MINIATURE POWER SUPPLY WITH LOW VOLTAGE AND LOW RIPPLE REQUIREMENTS
Hubert C. Martin, Jr., Sandy, Utah, assignor to Sperry Corporation, New York, N.Y.
Filed Oct. 4, 1984, Ser. No. 657,668
Int. Cl.⁴ H02M *3/335*
U.S. Cl. 363—21 **13 Claims**



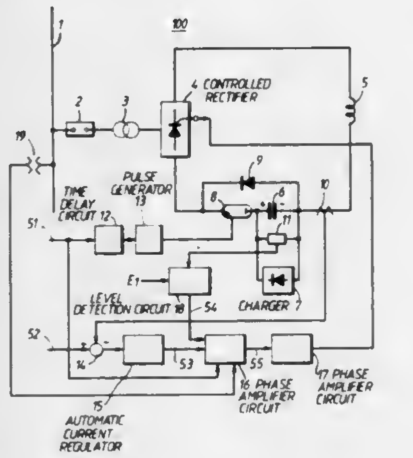
1. A transformer circuit comprising,
first electrical transformer means having a primary winding and a secondary winding,
second electrical transformer means having a primary winding and a secondary winding,
source means,
capacitor means,
switch means for selectively connecting at least one of said primary windings to said capacitor means to receive an electrical signal therefrom and selectively connecting each of said primary windings to said source means when said primary winding is not connected to said capacitor means, and
output means connected to both of said secondary windings of said first and second electrical transformer means.

4,618,920
FREQUENCY CONTROL CIRCUIT
David A. Fox, Shawnee Township, Perry County, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed May 24, 1984, Ser. No. 613,676
Int. Cl.⁴ H02M *5/45;* H03K *3/72*
U.S. Cl. 363—37 **4 Claims**



3. An electric power system comprising:
a generator for producing a DC voltage on a pair of DC-link conductors;
an inverter for converting said DC voltage to a multiple phase AC output, said inverter including a pattern generator, a plurality of output power poles, and means for alternatively switching said power poles between one of said DC-link conductors having a positive polarity and the other one of said DC-link conductors having a negative polarity in accordance with a signal generator by said pattern generator; and
a frequency control circuit for controlling the frequency of the output signal of said pattern generator, said frequency control circuit including an input terminal for receiving a clock signal comprising a plurality of voltage pulses which occur at a fixed frequency; a voltage controlled oscillator for producing an output signal comprising a plurality of voltage pulses which occur at a variable frequency, dependent upon an applied control voltage; first and second type D flip flop circuits; said first flip flop circuit having a data input terminal, a clock input terminal, a clear input terminal, and a Q output terminal wherein said first flip flop circuit data input terminal is connected to a preselected logic signal and said first flip flop circuit clock input terminal is connected to receive said voltage controlled oscillator output signal; said second flip flop circuit having a data input terminal, a clock input terminal, a clear input terminal, a Q output terminal and a $\overline{Q}$ output terminal wherein the data input terminal of said second flip flop circuit is connected to the Q output terminal of said first flip flop circuit, the clock input terminal of said second flip flop circuit is connected to receive said clock signal, and the $\overline{Q}$ output terminal of said second flip flop circuit is connected to the clear input terminal of said first flip flop circuit; and a logic gate having two input terminals and an output terminal wherein the Q output terminal of said second flip flop circuit is connected to one of said logic gate input terminals and the other one of said logic gate input terminals is connected to receive said clock signal such that a modified clock signal occurs on said logic gate output terminal; said modified clock signal being produced by passing the voltage pulses of said clock signal to said logic gate output terminal such that each clock signal voltage pulse which immediately succeeds a voltage controlled oscillator output signal voltage pulse is inhibited.

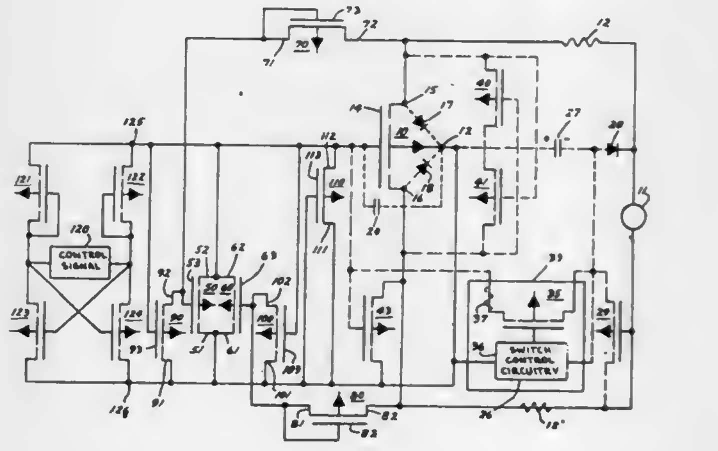
4,618,921
POWER SUPPLY SYSTEM AND A STARTING METHOD THEREOF
Hiroshi Ikeda, and Osamu Higa, Fuchu, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Aug. 13, 1985, Ser. No. 765,127
Claims priority, application Japan, Aug. 24, 1984, 59-176254
Int. Cl.⁴ H02P *13/26;* G05F *1/455*
U.S. Cl. 363—49 **11 Claims**


1
100
4 CONTROLLED RECTIFIER
5
2
3
19
PULSE GENERATOR
13
TIME DELAY CIRCUIT 12
9
8
10
11
51
E1
LEVEL DETECTION CIRCUIT 18
54
CHARGER 7
52
14
53
55
15 AUTOMATIC CURRENT REGULATOR
16 PHASE AMPLIFIER CIRCUIT
17 PHASE AMPLIFIER CIRCUIT

1. A power supply system for supplying a load current to a load, comprising:
control rectifier means having input and output terminals for receiving an AC voltage at said input terminals and for performing bypass pair operation and current control operation based on a control signal to supply said load current from said output terminals;
first means having two terminals for charging a first voltage between said two terminals;
switch means;
said first means, said switch means and said output terminals of said control rectifier means being connected in series;
second means, connected in parallel with one of said first means and a serially connected circuit of said first means and said switch means, for flowing said load current therethrough in one direction; and
control circuit means, connected to receive a start-up command, said first voltage and said AC voltage, for producing an ON signal based on said start-up command, and for producing said control signal, based on said AC voltage and said start-up command, as a first control signal for bypass pair operation of said controlled rectifier means when said first voltage is larger than or equal to a specified voltage and a second control signal for current control operation of said controlled rectifier means when said first voltage is below said specified voltage, and for outputting said first control signal and said second control signal sequentially as said control signal;
said switch means being closed based on said ON signal from said control circuit means, and
said second means flowing said load current therethrough when said first voltage is a predetermined value.

4,618,922
ISOLATED CONTROL SIGNAL SOURCE
Marc D. Hartranft, Brooklyn Park, and Thomas E. Hendrickson, Wayzata, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Division of Ser. No. 141,512, Apr. 18, 1980, Pat. No. 4,319,182.
This application Nov. 16, 1981, Ser. No. 321,977
Int. Cl.⁴ H02M *7/219*
U.S. Cl. 363—127 **3 Claims**

1. A control signal source means having first and second output regions between which signals can be presented of a constant polarity upon being directed to do so by a control signal generating means, and without such a direction said first and second output regions appear to be electrically separated from one another by substantially an open circuit should a voltage source of either polarity be provided between said first and second output regions, said control signal source means comprising:
first and second unidirectional current conducting means each having therein first and second terminating regions between which in asymmetrical current conducting capability is exhibited, said first unidirectional current conducting means first terminating region being electrically connected to said control signal source means first output region, said second unidirectional current conducting means first terminating region being electrically connected to said control signal source means first output region, said first unidirectional current conducting means second terminating region being electrically connected to a first terminal means adapted for electrical connection to one of first and second output regions of said control signal generating means, said control signal generating means being capable of providing, if directed to do so, signals between said control signal generating means first and second output regions selected from both constant polarity and alternating polarity signals, said second unidirectional current conducting means second terminating region being electrically connected to a second terminal means adapted for electrical connection to that one of said control signal generating means first and second output regions opposite that to which said first terminal means is adapted to be electrically connected connected, as aforesaid; and
first and second control signal presentation means each having first and second terminating regions and each control signal presentation means being capable of being directed by a control region therein to effectively provide a conductive path of a selected conductivity between said first and second terminating regions thereof, said first control signal presentation means first terminating region and control region each being electrically connected to a different one of said first and second terminal means, and said first control signal presentation means second terminating region being electrically connected to said control signal source means second output region, said second control signal presentation means first terminating region and control region each being electrically connected to a different one of said first and second terminal means, and said second control signal presentation means second terminating region being electrically connected to said control signal source means second output region.



4,618,923

DIRECT CURRENT TIGHT COUPLING

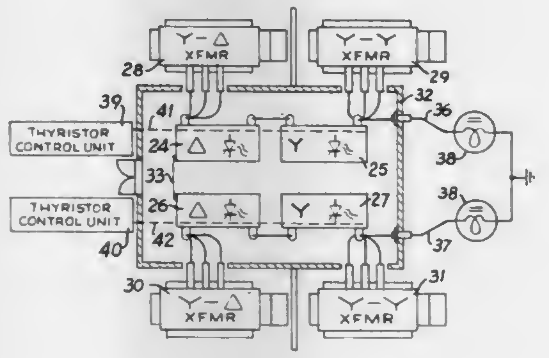
Michael Meisel, Dormitz, Austria, and Heinz Wiendl, Nuremburg, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Dec. 18, 1984, Ser. No. 682,899

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1984, 3404076

Int. Cl.⁴ H02J *3/36;* H02M *7/00*

U.S. Cl. 363—144 **2 Claims**



1. A d.c. short coupling for connecting a first and a second asynchronous, high-voltage, three-phase, power network comprising:

a three-phase, full-wave static converter arrangement having a Wye-connected secondary static converter transformer, and a Delta-connected secondary static converter transformer and controllable semiconductors allocated to each of the networks to be connected by said short coupling;

said controllable semiconductors are controlled by a central electronic control unit so that a network-supplying power static converter assembly functions as a rectifier and a network-receiving-power static converter assembly functions as an inverter, and the controllable semiconductors of each functional assembly are arranged in a stack pattern forming matching static converter towers connected together on the d.c. power coupling side at the same voltage polarity, and on the three-phase, a.c. power side with respective Wye-connected secondary and Delta-connected secondary sides of the static converter transformers; and

each of the two full-wave static converter arrangements has two full-wave controllable semiconductor subassemblies allocated to the Wye-connected and the Delta-connected secondary sides of the static converter transformers, each semiconductor subassembly forming a static converter tower, said four static converter towers are arranged in a rectangular pattern and assembled in such a manner that the static converter towers electrically connected to the secondary sides of the static converter transformers of one power network and the static converter towers electrically connected to the secondary sides of the static converter transformers are located next to each other, parallel to the static converter towers, and the static converter towers electrically connected to the Delta-connected secondary sides of both power networks and the static converter towers electrically connected to the Wye connected secondary sides of both power systems face each other.

4,618,924

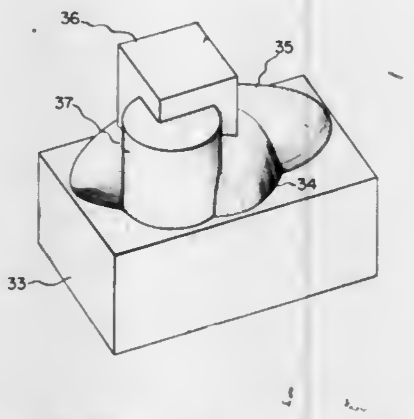
AUTOMATIC MACHINING USING CONSTRUCTIVE SOLID GEOMETRY WITH BOOLEAN COMBINATIONS OF PRIMITIVES INCLUDING TOOL OFFSETS TO FORM A MACHINING PATTERN

John K. Hinds, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 28, 1984, Ser. No. 655,185

Int. Cl.⁴ G05B *9/00*

U.S. Cl. 364—191 **14 Claims**



1. The method of machining solid parts on a machine tool having a rotating milling cutter comprising the steps of:

providing a constructive solid geometric description of a desired part expressed as a Boolean combination of primitive shapes;

determining offset primitives by offsetting every primitive shape by an amount equal to the radius of said milling cutter;

creating a description of an offset part which is a Boolean combination of said offset primitives and the result of applying the same set operations as in the initial step;

obtaining curves on the perimeter of said offset part which is the envelope of cutter positions; and

generating machine tool position commands to direct said milling cutter to follow said curves, and automatically machining the desired part.

4,618,925

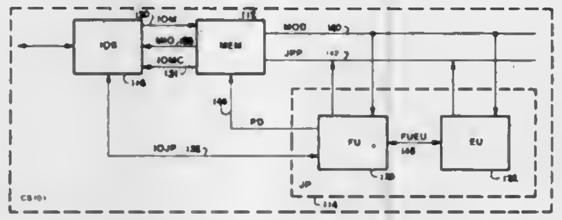
DIGITAL DATA PROCESSING SYSTEM CAPABLE OF EXECUTING A PLURALITY OF INTERNAL LANGUAGE DIALECTS

Richard G. Bratt, Wayland; Ronald H. Gruner, Cary; Thomas M. Jones, Chapel Hill, and James T. Nealon, Cary, all of N.C., assignors to Data General Corporation, Westboro, Mass.

Continuation of Ser. No. 266,418, May 22, 1981, abandoned. This application Jul. 13, 1984, Ser. No. 630,991

Int. Cl.⁴ G06F *9/16*

U.S. Cl. 364—200 **6 Claims**



1. In a digital computer system including processor means for performing operations upon operands, memory means for storing instructions for directing said operations, bus means for conducting instructions between said memory means and said processor means, and I/O means for conducting operands between said processor means and devices external to said digital computer sytem, said processor means comprising:

ALU means connected to said bus means for performing said operations,

means connected to said bus means for receiving said instructions, each of said instructions being a member of a group of related instructions from a plurality of groups of related instructions,

microcode control means including means for storing sequences of microinstructions for controlling said operations performed by said ALU means,

said sequences of microinstructions including a plurality of sets of sequences of microinstructions, each set thereof corresponding to a group of related instructions from said plurality of groups of related instructions, and

each said set of sequences of microinstructions including at least one sequence of microinstructions which corresponds to one of the instructions of its corresponding group of related instructions,

said instruction receiving means including group code register means for storing a plurality of group codes, each said group code corresponding to one of said group of related instructions and a current group code representing a group of related instructions of which a current instruction directing said operations is a member,

said microcode control means further including means responsive to each current instruction and to each corresponding current group code for providing at least one sequence of microinstructions to said ALU means.

4,618,926

BUFFER STORAGE CONTROL SYSTEM

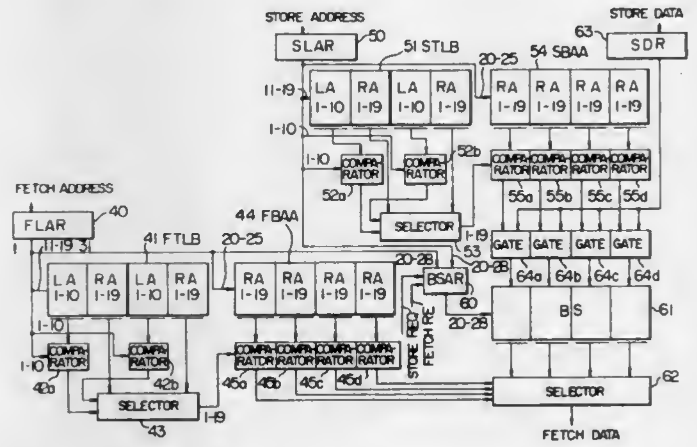
Kanji Kubo, Hadano; Kenichi Wada, Zama, and Yooichi Shintani, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 29, 1983, Ser. No. 518,698

Claims priority, application Japan, Sep. 10, 1982, 57-156634

Int. Cl.⁴ G06Z *9/38, 9/34*

U.S. Cl. 364—200 **22 Claims**



1. A buffer storage control system, comprising:

first register means in which an address for a fetch request is set;

second register means in which an address for a store request is set;

third register means in which data for a store operation is set;

buffer storage means connected to said first, said second and said third register means for holding data;

first buffer directory means connected to receive the address from said first register means for outputting a signal indicating whether or not data designated by said address is held by said buffer storage means; and

second buffer directory means connected to receive the address from said second register means for outputting a signal indicating whether or not data designated by said address is held by said buffer storage means;

wherein said buffer storage means includes means connected to said first buffer directory means and said second buffer directory means for fetching the data from said buffer storage means or for storing the data of said third register means in said buffer storage means in dependence on the outputs of said first and said second buffer directory means and the addresses of said first and second register means.

4,618,927

ELECTRONIC GAME APPARATUS

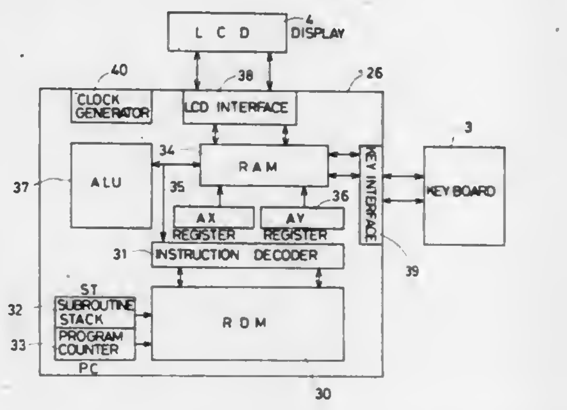
Koichi Hatta, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 24, 1983, Ser. No. 497,427

Claims priority, application Japan, May 24, 1982, 57-89380; Jun. 28, 1982, 57-112180

Int. Cl.⁴ G06F *15/44;* A63F *9/00*

U.S. Cl. 364—410 **9 Claims**



1. An electronic game apparatus performing a gaming function for use with a device having a diverse primary function comprising:

means for selecting between said primary function in a primary mode and said gaming function in a gaming mode;

display means for displaying a plurality of characters at a plurality of display positions, said display means further displaying one or more target symbols and corresponding game indicia when in said gaming mode;

key input means for introducing information into said device, said key input means further introducing game play information in said gaming mode, said key input means including at least one shift key, a shot key and a class selection key, said class selection key selecting game difficulty in said gaming mode;

target generation means, responsive to selection of said gaming mode, for simultaneously developing a plurality of sequentially varying target symbols at randomly selected ones of said plurality of display positions;

shift means, responsive to actuation of said at least one shift key for shifting a battery game indicia between said display positions;

shot means, responsive to actuation of said shot key, for determining the coincidence between said battery game indicia and any one of said target symbols and upon a coincidence thereof developing a score based on the variation of said one of said target symbols present upon actuation of said shot key;

score means, responsive to said score developed by said shot means, for accumulating a game score by adding each score developed thereby to a total score; and

difficulty varying means, responsive to actuation of said class selection key, for varying game difficulty by varying the speed at which said target symbols are sequentially varied by said target generation means;

said target generation means, shift means, shot means, score means and difficulty varying means being collectively comprised by a central processing means (CPU);

said CPU comprising a ROM, a RAM, and an arithmetic and logical unit;

wherein said RAM comprises;

data register means for storing symbol data representative of one or more said target symbols;

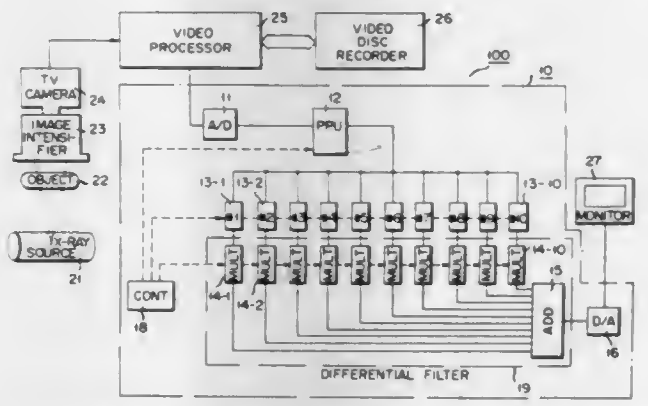
data-figure register means for storing position data representative of one or more of the display positions of said target symbols;

score register means for storing said total score;
point register means for storing said score;
game indicia-position register means for storing the display position of the battery game indicia;
timer counter for counting a period of shooting said one or more target symbols with the battery game indicia;
class register means for storing a difficulty class indicative of the selected game difficulty; and
count-up register means for incrementing the data representative of the variation in said target symbols.

4,618,928
DATA PROCESSING APPARATUS FOR PRODUCING X-RAY IMAGES WITH IMPROVED SIGNAL TO NOISE RATIO

Michitaka Honda, Ootawara, and Katsuya Kikuchi, Tochigi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 5, 1983, Ser. No. 558,100
Claims priority, application Japan, Dec. 6, 1982, 57-214294
Int. Cl.⁴ H04N *5/32, 7/00*
U.S. Cl. 364—414 **4 Claims**



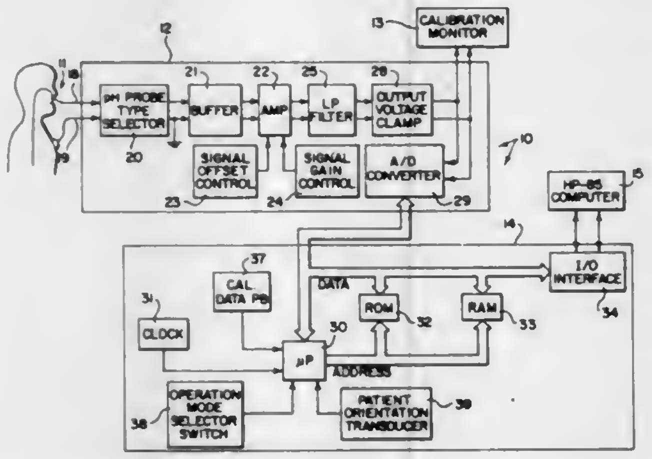
1. An apparatus for generating a processed video signal representative of an image of an object over a series of successive observation times, comprising:
a source of radiation directable at said object;
means for converting radiation passing through said object into an electric video signal having successive frames;
means for storing a series of said successive frames of said video signal;
means for multiplying, for each observation time, each of said successive stored frames by a differential filter coefficient, with the value of said coefficient for each frame being a function of the relationship between the time that frame occurred and said observation times; and
means for combining said multiplied frames, for each observation time, to produce said processed video signal.

4,618,929
PORTABLE CIRCUIT AND METHOD FOR PERFORMING A TIME STUDY AND ANALYSIS OF BODILY IONIC CHARACTERISTICS

Joseph M. Miller; Stephen W. Fannin, and Paul R. Steiner, Akron; Bruce C. Taylor, Kent, all of Ohio, assignors to Akron City Hospital, Akron, Ohio

Filed May 4, 1983, Ser. No. 491,455
Int. Cl.⁴ G06G *7/60;* **A61B** *5/05, 5/00*
U.S. Cl. 364—415 **14 Claims**

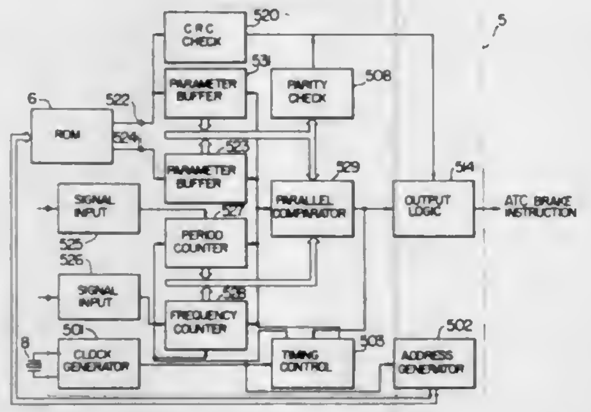
1. A circuit for monitoring over a period of study time a bodily ionic characteristic comprising:
transducer means for measuring the ionic characteristic and generating an analog signal proportional thereto;
interface means for receiving said analog signal from said transducer means and converting said analog signal into a representative digital signal, said interface means including adjustment means for permitting correction for drift in calibration of said transducer means;
processor means for receiving said digital signal, sampling and storing said digital signal at preselected occasions over the period of study time, and upon the conclusion of the period of study time rapidly transmitting all said stored digital signals to a data analysis device, said processor means including means for determining the orientation of the patient from which the bodily ionic characteristic is being monitored; and,
housing means for portably carrying said interface means and said processor means, said transducer means electrically connected to said interface means.



4,618,930
AUTOMATIC TRAIN CONTROL APPARATUS

Masahiro Ueno; Korefumi Tashiro, both of Hitachi, and Eiichi Toyota, Katsuta, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Continuation of Ser. No. 307,202, Sep. 30, 1981, abandoned. This application Oct. 16, 1984, Ser. No. 661,388
Claims priority, application Japan, Oct. 3, 1980, 55-137652
Int. Cl.⁴ B61L *3/08*
U.S. Cl. 364—426 **14 Claims**

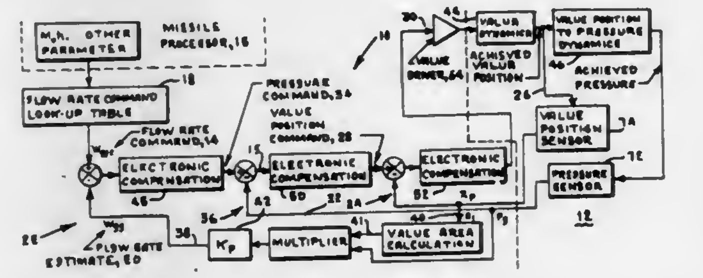


1. An automatic train control apparatus responsive to a frequency-modulated ATC signal, which is transmitted from a transmitter disposed along the train track and indicates one of a plurality of selected speed limits, for limiting the speed of the train as indicated by a speed signal received from a speed detector to a speed not higher than the speed limit indicated by the ATC signal, comprising:
memory means including a read-only memory for storing digital codes corresponding to respective ones of said plurality of selected speed limits; and
a large-scale integrated circuit connected to said read-only memory, and including:
(a) signal input means for receiving an ATC signal from said transmitter and said speed signal having a frequency corresponding to the train speed from said speed detector,
(b) speed limit detecting means connected to said signal input means and said read-only memory for identifying the speed limit indicated by said received ATC signal and for reading out of said read-only memory a digital code corresponding to said identified speed limit,
(c) speed correlation means for comparing the speed limit indicated by the received ATC signal with the actual train speed indicated by said received speed signal, including first signal mode matching means connected to said signal input means and said speed limit detecting means for converting the mode of said speed signal or the mode of said digital code read out of said read-only memory to produce a speed signal and a speed limit signal whose signals modes correspond to each other, and comparison means connected to said signal mode matching means for producing an output when said speed signal exceeds said speed limit signal, and
(d) output means for delivering a false instruction signal in response to the output of said comparison means so as to prevent the train from exceeding the speed indicated by said ATC signal.

4,618,931
GAS GENERATOR FUEL FLOW THROTTLE CONTROL SYSTEM

William H. Miller, McGregor; Samuel E. McClendon, Waco, both of Tex.; Raymond J. Kolodziej, Canoga Park, Calif., and Donald L. Brand, Bend, Oreg., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 21, 1984, Ser. No. 591,715
Int. Cl.⁴ G06F *15/46*
U.S. Cl. 364—431.02 **1 Claim**



1. A throttle control system for controlling a gas flow from a gas generator to a solid propellant grain of an air-to-air missile, a plurality of input signals from a missile command processor and a plurality of feedback sensor signals from said gas generator controlling at least one output signal from said throttle control system, said throttle control system comprising:
a look-up table means, said look-up table means receiving said input signals from said missile command processor, said input signals addressing said look-up table means whereby said look-up table means outputs preselected data being a commanded fuel flow rate signal based upon said input signals;
means for signal conditioning, said feedback sensor signals being input said signal conditioning means, said signal conditioning means operating on said feedback sensor signals for digital signal processing, said signal conditioning means outputting conditioned feedback sensor signals;
a data acquistion means for multiplexing and converting said plurality of conditioned feedback sensor signals from analog to digital signals, said data acquisition means outputting a plurality digital signals;
a microprocessor, said microprocessor receiving said commanded fuel flow rate signal from said look-up table means and said digital signals from said data acquisition means, said microprocessor operating upon said digital signals in accordance with a program, said microprocessor outputting an actuator signal to control said gas generator;
means for memory, said memory means connected to said microprocessor by a data bus and an address bus, said memory means storing said program, said program minimizing a fuel flow error rate being the difference between a slope adjusted commanded fuel flow rate signal and a calculated fuel flow rate signal based upon said feedback sensor signals and said commanded fuel flow rate signal, said error rate determining an adaptive gain factor, said adaptive gain factor being defined as

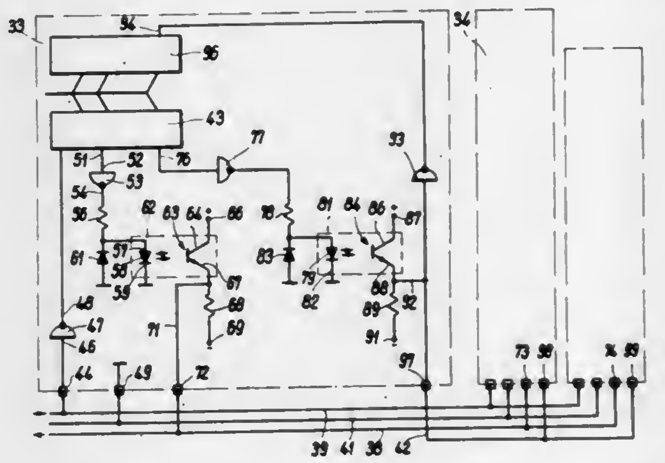
$$GX_{pn}=(1.175)^{n}GX_{po}$$

said n being determined from an error history file stored in said memory means, said error history file having data therein to determine the next value of n whereby said n remains constant if said fuel flow error rate falls within an error band of a selected value, said n is reduced by a selected value if said fuel flow error rate changes polarity, said n changes by a selected value if a magnitude of a current fuel flow error rate is different by a preselected percentage than a previous fuel flow error rate;
an address decoder, said address decoder connected to said microprocessor and said memory means, said address decoder allowing said microprocessor and said memory means to read said digital signals from said data acquisition circuit and said commanded fuel flow rate from said look-up table;
a timer, said timer connected to said microprocesor, said timer outputting a pulse width modulated signal;
a voltage regulator, said voltage regulator converting input voltages to selected voltages and applying said selected voltages to said throttle control system;
a switching power amplifier, said amplifier being connected to said voltage regulator and providing a drive voltage, said power amplifier being connected to said microprocessor and said timer through said address decoder, said microprocessor outputting said actuator signal that determines a direction of movement of said actuator, said timer proportionally varying said drive voltage by pulse-width modulation; and
a valve driver, said valve driver being used to control direction and speed of a valve in a throttle of said gas generator, said valve driver connected to said switching power amplifier.

4,618,932
CONTROL DEVICE FOR AT LEAST TWO CIRCULATING SHELVING SYSTEMS

Hans-Peter Sauer, Bellheim, Fed. Rep. of Germany, assignor to Bellheimer Metallwerk GmbH, Bellheim, Fed. Rep. of Germany

Filed Mar. 27, 1984, Ser. No. 593,823
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1983, 3312777
Int. Cl.⁴ G06F *15/46*
U.S. Cl. 364—478 **12 Claims**



1. Control arrangement for circulating shelving having at least first (11) and second (12) systems of circulating shelving, each of said systems of circulating shelving being controlled by

a data processing system and having a plurality of carriers for storing goods, said carriers being moved by a drive system, means for detecting the position of said carriers, means for detecting the occupancy of said carriers, and a data station having a data terminal and a data transmission device,

said data station (**33**) of said first system being connected via a receive line (**39**), a transmit line (**38**) and a return line (**41**) to the data station (**34**) of said second system and to a data station (**36**) of the data processing system (**37**), said receive line being connected to a signal input of the data terminal of said first system, said transmit line being connected to a signal output of the data transmission device of the first system, and said return line being connected to the ground of the data station of the first system, and

a first transistor driven by the signal output of the data transmission device of said first system, said first transistor being operated in an emitter circuit having a high resistance voltage path, said transmit line being connected to the emitter of said first transistor.

4,618,933

METHOD FOR DETECTING A FAULT OR ALSO THE DIRECTION OF A FAULT IN ELECTRIC LINES AND MEANS FOR EXECUTING THIS METHOD

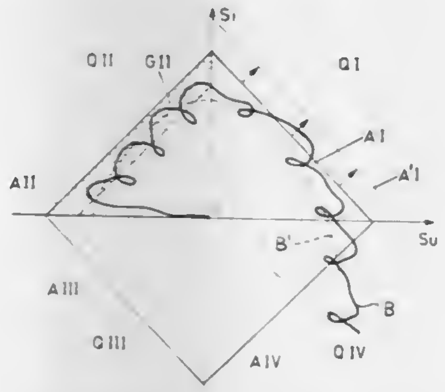
Michael Vitins, Zürich, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Jun. 21, 1983, Ser. No. 506,410

Claims priority, application Switzerland, Jun. 23, 1982, 3836/82

Int. Cl.⁴ G06F *15/20;* **G01R** *31/08*

U.S. Cl. 364—481 **12 Claims**



1. A method for detecting a fault and a fault direction in electric lines, comprising:

simultaneously measuring voltage and current at at least one location in said electric lines and forming voltage and current step signals (Su, Si) based on said measuring;

establishing a Cartesian coordinate system defining four quadrants and an origin, said coordinate system having one coordinate corresponding to said voltage step signal Su and another coordinate corresponding to said current step signal Si, wherein each pair of said simultaneously measured signals Su, Si forms a point in said coordinate system and said points define a line of motion progressing from one quadrant to a next adjacent quadrant;

establishing predetermined triggering boundaries in each of said quadrants and establishing predetermined boundary zones to a predetermined depth from each triggering boundary toward said origin;

monitoring progress of said line of motion relative to said triggering boundaries and said boundary zones;

displacing the triggering boundary in said next adjacent quadrant upon a detection in said monitoring step that said line of motion has entered the boundary zone of said one quadrant;

detecting a fault upon a detection in said monitoring step that said line of motion has transgressed a triggering boundary and detecting a fault direction based on the quadrants in which a fault detection is made; and

generating a triggering signal upon a detection in said monitoring step that said line of motion has transgressed a triggering boundary.

4,618,934

ULTRASONIC MICROSCOPE APPARATUS

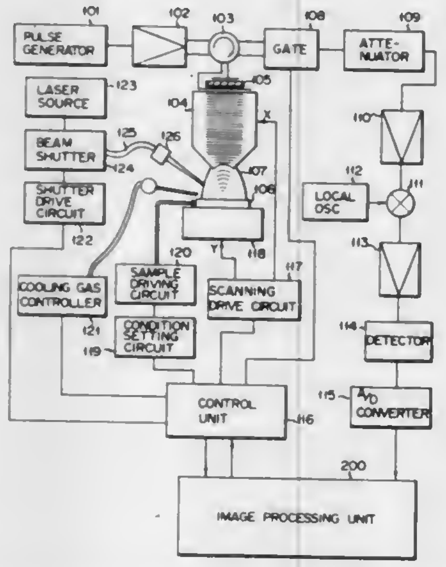
Masashi Nagase, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 27, 1983, Ser. No. 565,479

Claims priority, application Japan, Dec. 28, 1982, 57-233412

Int. Cl.⁴ G06F *15/20;* **G01N** *29/04*

U.S. Cl. 364—507 **9 Claims**



1. An ultrasonic microscope apparatus comprising:

means for varying the operating conditions of an integrated circuit;

means for obtaining ultrasonic images of said integrated circuit by scanning said circuit with an ultrasonic beam;

memory means for individually storing said ultrasonic images;

means for calculating difference values for corresponding portions of said stored ultrasonic images produced for different operating conditions of said circuit; and

means for displaying said difference values to provide information regarding defects in said circuit.

4,618,935

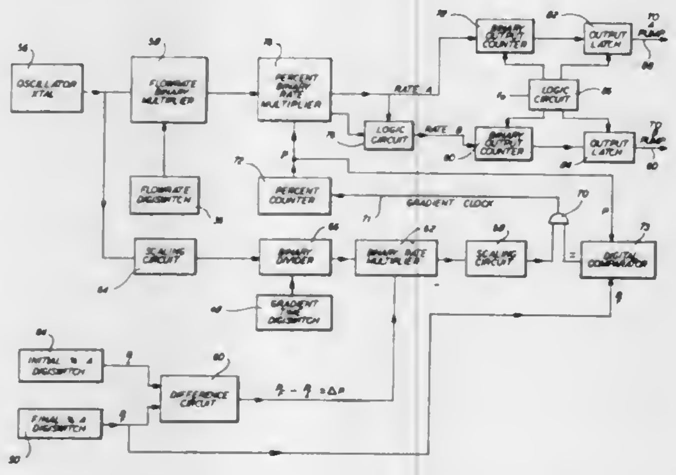
LIQUID CHROMATOGRAPHY CONTROLLER

Arnold Schwartz, Bridgeport, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 6, 1984, Ser. No. 568,765

Int. Cl.⁴ G06G *7/57;* **G01N** *31/00*

U.S. Cl. 364—510 **11 Claims**



1. A controller for creating a linear gradient dual solvent flow pattern in a dual pump liquid chromatography system wherein one pump pumps one solvent and the other pump pumps the second solvent, said controller comprising:

first clock means for producing a timing signal;

second means for inputting a preselected first digital signal representative of an initial value for one of the two solvents;

third means for inputting a preselected second digital signal representative of a final value for said one of two solvents;

fourth means responsive to said second and third means for outputting a third digital signal representative of the difference between said initital and said final values;

fifth means manually setable for providing a fourth digital signal representative of a preselected time duration of said linear gradient;

sixth digital means for regulating said timing signal to produce a fifth digital signal proportional to said fourth digital signal;

seventh digital means, responsive to the fifth digital signal and the third digital signal, for producing a sixth digital signal representing digital counts proportional to the span of the gradient;

eighth means for accumulating digital counts from said sixth digital signal and outputting a seventh signal corresponding thereto;

said clock means producing a second timing frequency signal;

ninth means for providing an eighth digital signal representative of the total flow rate of both of said pumps;

tenth digital means, responsive to the second timing signal and the eighth digital signal for producing a ninth digital signal representative of the product of the timing frequency signal and the flow rate of both said pumps;

eleventh means for regulating said ninth digital signal responsive to said seventh signal and outputting pulse rates representing the percent rate of said first pump and the percent rate of said other pump;

twelfth means for counting said percent rates over a preselcted time interval to produce digital numbers representing the flow of the first pump and the flow of the other pump, said digital numbers being latched at the end of said preselect intervals; and

thirteenth means for inputting the digital numbers latched to said pumps to set the flow rates of the pumps, respectively.

4,618,936

SYNTHETIC SPEECH SPEED CONTROL IN AN ELECTRONIC CASH REGISTER

Fusahiro Shiono, Habikino, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 27, 1982, Ser. No. 452,941

Claims priority, application Japan, Dec. 28, 1981, 56-212705; Dec. 28, 1981, 56-212706

Int. Cl.⁴ G10L *5/00*

U.S. Cl. 364—513.5 **13 Claims**

1. A synthetic speech generation control system comprising:

buffer memory means for temporarily storing speech data representative of audible speech;

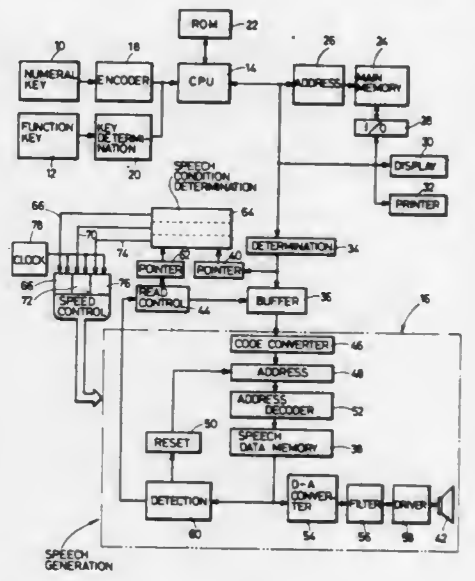
a synthetic speech generation circuit, receiving said speech data from said buffer memory means and converting said speech data into audible speech;

write control means, operatively connected to said buffer memory means, for introducing the speech data into said buffer memory means at a selected writing speed;

read control means for controlling the read out of said speech data stored in said buffer memory at a selected reading speed and the application of said speech data to said synthetic speech generation circuit;

determination means for monitoring the writing speed of said write control means and the reading speed of said read control means, and for developing a control signal when said writing speed is faster than said reading speed; and

control means, responsive to said control signal developed by said determination means, for increasing the reading speed of said read control means when said control signal is developed from said determination circuit.



4,618,937

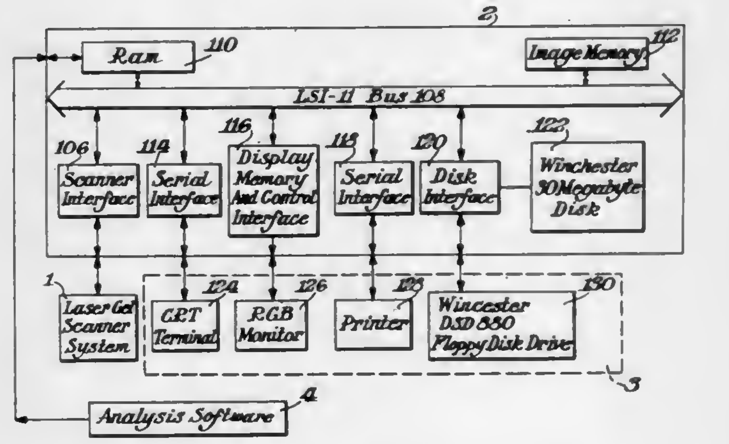
SPOT QUANTITATION

John G. Elias, Wilmington, and Peter A. Jansson, Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Co., Inc., Wilmington, Del.

Filed Jan. 27, 1984, Ser. No. 574,713

Int. Cl.⁴ G06F *15/20;* **G06K** *9/00*

U.S. Cl. 364—518 **11 Claims**



1. A method of quantitating spatially-integrated intensities of individual spots contained in a multiple spot image defined by a discrete pixel-by-pixel representation of the intensity of the spots comprising the steps of:

(a) searching the image for the pixel representing the greatest intensity deviation in each of two opposite senses from a reference intensity level,

(b) constructing a mathematical three-dimensional model, in a sense corresponding to the sense of the maximum pixel found, of the spot containing such pixel, one of the dimensions being related to spot intensity,

(c) compensating the image by subtracting the mathematical model therefrom leaving possible overcompensated regions in the image which in turn can give rise to additional pixels that will subsequently be detected in step (a),

(f) quantitating the spot from the model by determining the volume of the model by multiplying the model's dimensions together, and

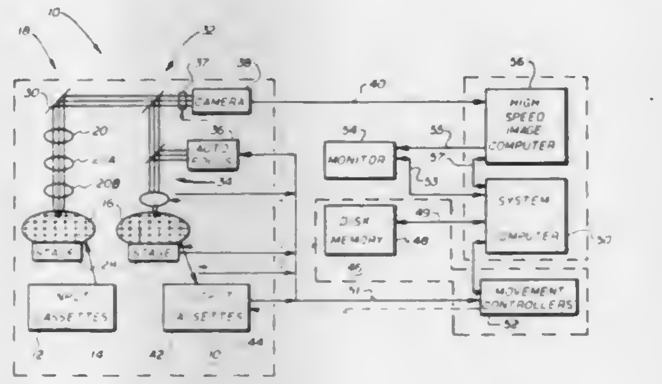
(g) repeating steps (a) through (d) for successive pixels each having a lower intensity deviation from the reference level until the image is of substantially constant intensity.

4,618,938

METHOD AND APPARATUS FOR AUTOMATIC WAFER INSPECTION

Paul Sandland, Gilroy; Curt H. Chadwick, Los Altos; Russell M. Singleton, Sunnyvale, and Howard Dwyer, Mountain View, all of Calif., assignors to KLA Instruments Corporation, Santa Clara, Calif.

Filed Feb. 22, 1984, Ser. No. 582,587
Int. Cl.⁴ G06F *15/20*
U.S. Cl. 364—552 **25 Claims**



1. Apparatus for automatically inspecting a patterned wafer, comprising:

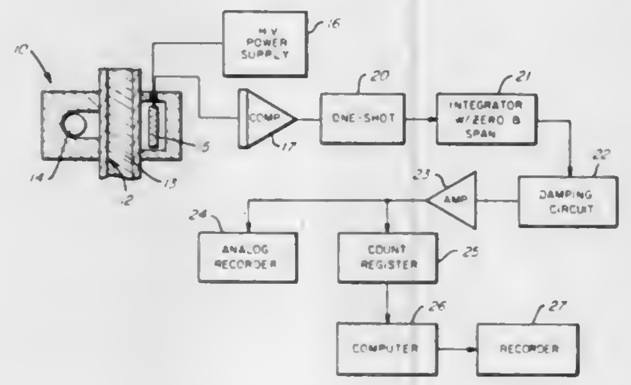
a high-speed image computer for developing image data from input image signals;
a system control computer;
data storage means for storing image data corresponding to either pre-established image patterns or previously stored image patterns from an inspected wafer under control of said system computer, the stored image data being selectively used in accordance with a test program for test comparison with image data obtained from the wafer under inspection and processed by said high-speed image computer;
a wafer inspection subsystem including:
camera means for developing said input image signals corresponding to a wafer under inspection;
a macro inspection station for casting an image within a first range of magnification of the wafer under inspection onto said camera means;
a micro inspection station for casting an image of the wafer within a second range of magnification of the wafer onto said camera means;
a base for supporting both macro and micro inspection stations above a floor surface;
means for vibrationally isolating said wafer inspection subsystem from said base portion to minimize the effect of outside disturbances;
means for holding a plurality of cassettes, each said cassette being capable of storing a plurality of wafers;
an X-Y inspection stage for carrying a wafer under inspection from a position within said macro inspection station to a position within said micro inspection station;
a vacuum chuck on said X-Y stage for holding said wafer under inspection;
means for loading a wafer from one said cassette onto said vacuum chuck when it is in said macro inspection station;
means for automatically macro inspecting a wafer under different illumination conditions and powers of magnification to find if there are any serious macro defects;
means for automatically shifting the position of the vacuum chuck on the stage so as to align it and the carried wafer with the micro inspection station;
means for automatically performing micro inspection of the wafer to determine if it meets pre-established criteria for a good wafer; and
means for unloading the wafer from said chuck; and control means associated with said system computer and operative to control operation of said subsystem.

4,618,939

NUCLEAR DENSOMETER

James L. Davis, Marlow, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jul. 13, 1983, Ser. No. 513,528
Int. Cl.⁴ G01T *1/16*
U.S. Cl. 364—555 **7 Claims**



1. A method for use in a system utilizing a radioactive source and detector collimated to pass radiation through a flow of fluid for monitoring the density of such fluid, comprising the steps of:

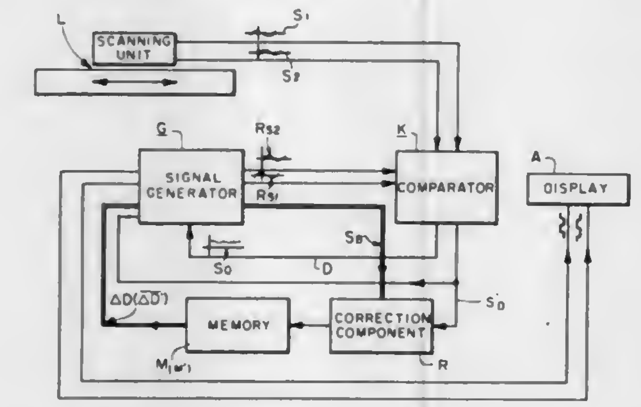
detecting radiation passed through a flow of fluid and developing electrical signals representative of the detected radiation,
processing said electrical signals with respect to a predetermined time and magnitude function parameter to provide an output response signal whenever said electrical signals simultaneously attain both the time and magnitude function parameter of said predetermined parameter whereby random electrical signals which do not attain said predetermined time and magnitude function parameter do not significantly affect an output response signal.

4,618,940

ERROR CORRECTION SYSTEM FOR DIGITAL LENGTH OR ANGLE MEASURING INSTRUMENT

Walter Schmitt, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Jan. 20, 1983, Ser. No. 459,376
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1982, 3202339
Int. Cl.⁴ G06F *15/36;* **G06G** *7/18*
U.S. Cl. 364—560 **10 Claims**



1. In a digital position measuring instrument of the type comprising means for generating a plurality of analog, periodic primary signals indicative of the relative position of a first object with respect to a second object, the plurality of primary signals defining a set of primary signals, the improvement comprising:

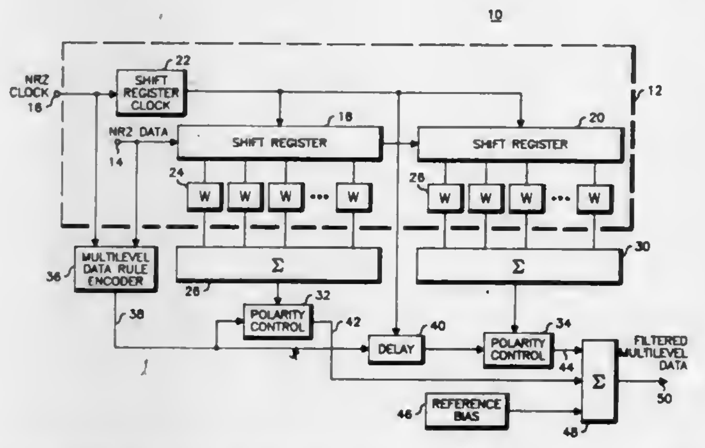
signal generator means for generating a plurality of reference signals, the plurality of reference signals defining a set of reference signals, each reference signal associated with a respective one of the primary signals;
comparator means, responsive to the plurality of primary signals and the plurality of reference signals, for comparing the primary and the respective reference signals with respect to phase and amplitude;
correction means, coupled to the generator means and the comparator means, for determining correction data for symmetry, amplitude ratio, phase angle, and signal form of the reference signals; and
means, responsive to the correction means, for adapting one of (1) the set of reference signals and (2) the set of primary signals to correspond to the other of (1) the set of reference signals and (2) the set of primary signals in response to the correction data.

4,618,941

APPARATUS AND METHOD FOR GENERATING FILTERED MULTILEVEL DATA FROM NRZ DATA

Donald L. Linder, Palatine, and Scott N. Carney, Hoffman Estates, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 19, 1983, Ser. No. 533,484
Int. Cl.⁴ G06F *7/38;* **G06G** *7/02;* **H04L** *25/34, 25/49*
U.S. Cl. 364—724 **22 Claims**



1. An apparatus for generating filtered return to zero multilevel data from binary non-return to zero (NRZ) data comprising:

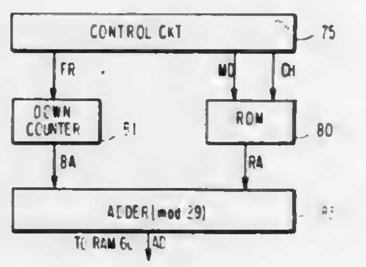
a binary finite impulse response (FIR) filter including a shift register means having a plurality of stages which receives the NRZ data, clock means for providing clock pulses to said shift register means for sampling each bit of NRZ data, a weighting element coupled to each stage for weighting each stage's output, and means for summing groups of said weighting elements to define summed signals, the number of weighting elements in each group not exceeding the number of clock pulses occurring during each bit of NRZ data;
means for selectively inverting the polarity of each of said summed signals, said inverting means comprising an operational amplifier for each of said summed signals, and means for selectively biasing each operational amplifier to function either as an inverting amplifier or a noninverting amplifier;
means responsive to each NRZ data bit for controlling the polarity selection of said inverting means in accordance with said return to zero multilevel data to be generated; and
means for summing each of said polarity selected summed signals to define said filtered return to zero multilevel data.

4,618,942

ADDRESS INDICATION CIRCUIT CAPABLE OF RELATIVELY SHIFTING CHANNEL ADDRESSES RELATIVE TO MEMORY ADDRESSES

Yasuharu Tomimitsu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 26, 1984, Ser. No. 604,273
Claims priority, application Japan, Apr. 26, 1983, 58-73267
Int. Cl.⁴ G06F *12/00*
U.S. Cl. 364—900 **5 Claims**



1. An address indication circuit for use in combination with a random access memory included in a data processing system to indicate memory addresses of said random access memory for data sets arranged in a leading channel and other successive channels following said leading channel, said address indication circuit being for indicating each of said memory address with different delays predetermined for said channels, respectively, said different delays being equal to integral multiples of a prescribed time interval, said system comprising signal generating means for generating channel signals specifying the respective channels, wherein the improvement comprises:

channel address producing means responsive to said channel signals for producing, as a set of channel addresses, a reference number for said leading channel and integers for the respective successive channels, each of said integers being determined in relation to said reference number by successively accumulating said reference number and each of said integral multiples;
pointer means for pointing one of said addresses as a base address that is variable at every prescribed time interval; and
calculating means for calculating sums of said base address plus said channel addresses to provide the memory addresses.

4,618,943

SEMICONDUCTOR STATIC READ/WRITE MEMORY HAVING AN ADDITIONAL READ-ONLY CAPABILITY

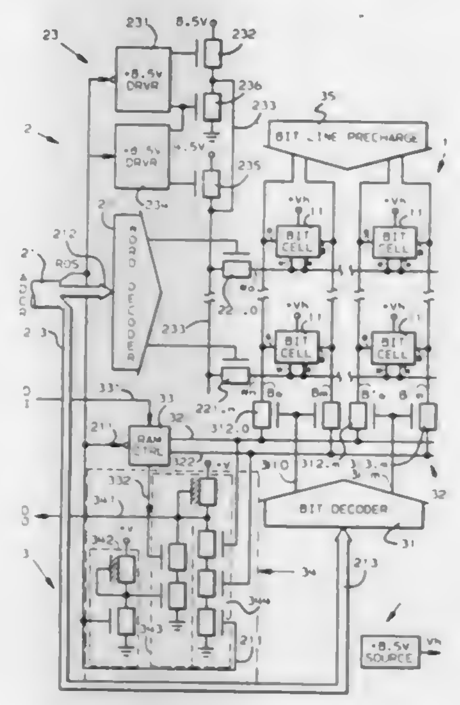
Anthony G. Aipperspach; Joseph M. Fitzgerald, and Philip T. Wu, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 9, 1984, Ser. No. 569,080
Int. Cl.⁴ G11C *11/40, 17/00*
U.S. Cl. 365—104 **10 Claims**

1. A combined read-only and read/write memory, comprising:

an array of storage cells, each said storage cell including an FET latch for storing read/write data and at least one transfer FET having source/drain and gate electrodes, the transfer FETs in different ones of storage cells being of first and second physically different types having different first and second threshold voltages for storing read-only data;
a mode-control line carrying a signal for selecting between a read/write and a read-only mode;
source means responsive to said mode-control line for selectively supplying a read/write voltage higher than both of said threshold voltages and a read-only voltage intermediate said threshold voltages;
word selector means including a plurality of individually

addressable word lines coupled to respective ones of said transfer-FET gates and to said source means;
bit selector means including a plurality of bit lines coupled to respective ones of said transfer FETs;



output means coupled to said bit lines and responsive to said mode-control line for selectively producing read-only and read/write output data from said bit selector means.

4,618,944
SEMICONDUCTOR MEMORY HAVING WORD LINE DISCHARGE CURRENT CONTROLLER

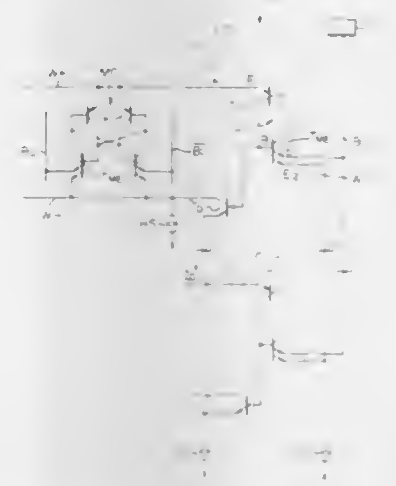
Yoshinori Okajima, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 28, 1984, Ser. No. 594,276

Claims priority, application Japan, Mar. 31, 1983, 58-053627

Int. Cl.⁴ G11C *7/00*

U.S. Cl. 365—189 **8 Claims**



1. A semiconductor memory comprising:
a plurality of word line pairs;
a plurality of bit line pairs intersecting said plurality of word line pairs;
a plurality of memory cells respectively connected at the intersections of said word line pairs and said bit line pairs, an inverse current flowing from said bit lines to said memory cells;
a word line discharge circuit, operatively connected to said word line pairs, for absorbing a discharge current from said word line pairs during a change from a selection state to a nonselection state of said word line pairs; and
control means, operatively connected to said word line discharge circuit, for controlling the discharge current so as to be gradually reduced together with a gradual attenuation of the inverse current flowing from one of said bit lines to one of said memory cells, the waveform of the discharge current approximating an exponential characteristic curve.

4,618,945
SEMICONDUCTOR MEMORY DEVICE

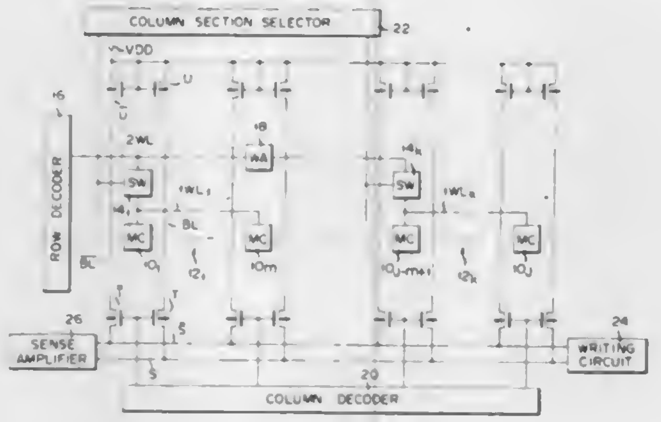
Takayasu Sakurai, Tokyo, and Tetsuya Iizuka; Funabashi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 26, 1983, Ser. No. 517,419

Claims priority, application Japan, Aug. 11, 1982, 57-138573; Nov. 19, 1982, 57-202948

Int. Cl.⁴ G11C *7/00*

U.S. Cl. 365—189 **18 Claims**



1. A semiconductor memory device comprising:
a plurality of memory cells arranged in a two-dimensional matrix array of rows and columns, said memory cells in each of said rows being divided into a plurality of column sections;
first word lines each connected to the memory cells in a different one of said column sections, said first word lines being organized into groups of word lines such that the memory cells connected to the first lines in each group of word lines are all in the same row of memory cells;
second word lines; and
switching means for connecting each of said second word lines to a different one of said group of first word lines.

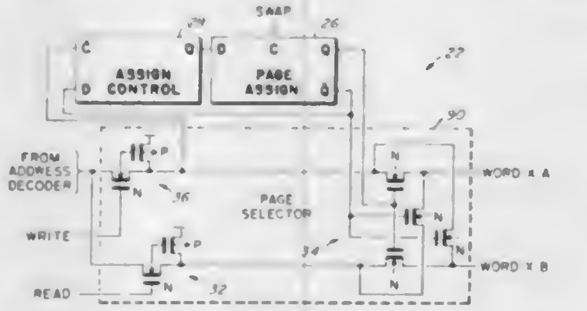
4,618,946
DUAL PAGE MEMORY SYSTEM HAVING STORAGE ELEMENTS WHICH ARE SELECTIVELY SWAPPED BETWEEN THE PAGES

Wendell Little, and Tim Williams, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 17, 1984, Ser. No. 651,028

Int. Cl.⁴ G11C *13/00*

U.S. Cl. 365—189 **4 Claims**



1. A memory system having first and second pages, each of which is accessible by a corresponding one of first and second processors, the system comprising:
a plurality of storage locations, each of which provides access thereto in response to the coupling of a selection signal thereto;
page assignment means for assigning a first set of the storage locations to the first page and a second set of the storage locations to the second page;
address decoding means for providing, in response to an address signal provided by a selected one of said first and second processors, a selection signal corresponding to a predetermined storage location in each of said first and second pages;
page selection means for coupling said selection signal to the corresponding storage location in the one of said first and second pages which is assigned to said selected one of said first and second processors;
access control means for providing said selected processor access to the storage location in said selected page corresponding to said selection signal; and
assignment control means for selectively swapping corresponding storage locations assigned to each of the first and second pages.

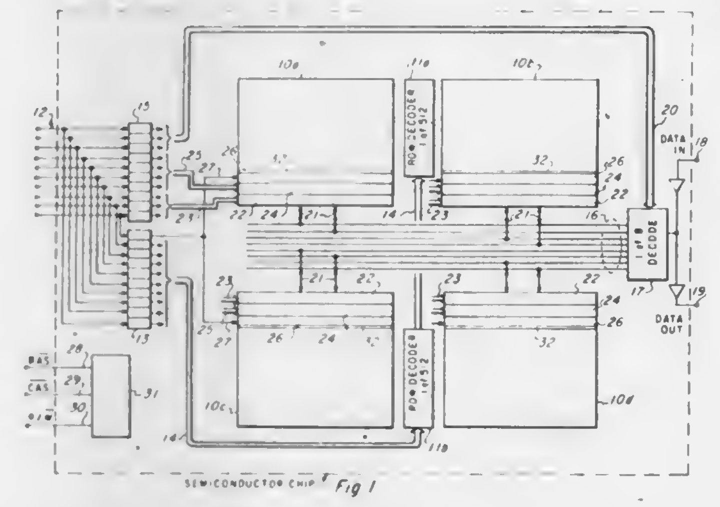
4,618,947
DYNAMIC MEMORY WITH IMPROVED ADDRESS COUNTER FOR SERIAL MODES

Bao G. Tran, Houston; Joseph H. Neal, Missouri City, and Lionel S. White, Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 26, 1984, Ser. No. 634,901

Int. Cl.⁴ G11C *8/00*

U.S. Cl. 365—230 **18 Claims**



1. A semiconductor memory device comprising:
an array of rows and columns of storage cells, row addressing means receiving a row address and activating one of said rows of cells in response thereto,
column addressing means receiving a column address and selecting from said activated row a plurality of columns of cells in response to the column address, to produce column output data,
and an address counter included in said column addressing means, said address counter receiving selected bits of said column address in response to a control signal to provide a stored address, the address counter including means for incrementing said stored address in response to an address control input, and means responsive to said stored address for connecting said column output data to an output terminal.

4,618,948
APPARATUS FOR DETECTING OBSTRUCTIONS BEHIND VEHICLE

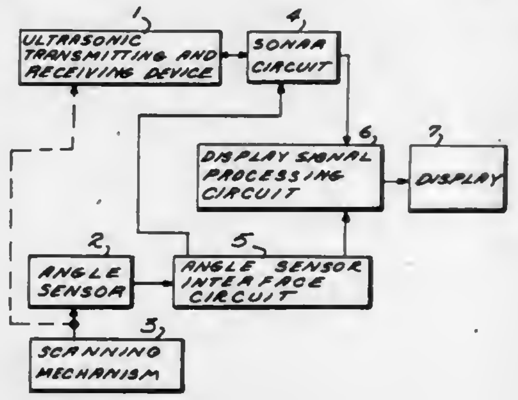
Hiroyuki Sakakibara, Hekinan; Shigeyuki Akita; Masao Kodera, both of Okazaki, and Tsuyoshi Maeno, Chiryu, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Nov. 15, 1983, Ser. No. 552,367

Claims priority, application Japan, Nov. 17, 1982, 57-201757

Int. Cl.⁴ G01S *15/93*

U.S. Cl. 367—104 **10 Claims**


1
ULTRASONIC TRANSMITTING AND RECEIVING DEVICE
4
SONAR CIRCUIT
6
DISPLAY SIGNAL PROCESSING CIRCUIT
7
DISPLAY
2
ANGLE SENSOR
5
ANGLE SENSOR INTERFACE CIRCUIT
3
SCANNING MECHANISM

1. An apparatus for detecting obstructions behind a vehicle, the apparatus comprising:
an ultrasonic transmitting and receiving device disposed on the rear portion of the vehicle;
a scanning means for causing said transmitting and receiving device to scan the obstruction detecting region behind the vehicle;
an ultrasonic emitting and receiving means for emitting ultrasonic waves at given scanning positions via said ultrasonic transmitting and receiving device and for receiving the waves reflected from obstructions via said ultrasonic transmitting and receiving device;
a distance measuring means for measuring the time taken from the transmission to the reception of the ultrasonic waves to determine the distances to the obstructions;
scanning position detecting means for detecting the positions at which said transmitting and receiving device scans; and
a display means for displaying the distances to the obstructions at said given scanning position;
the ultrasonic transmitting and receiving device of said apparatus including: a shaft rotatably and vertically mounted to the rear portion of the vehicle; at least one ultrasonic vibrator rotatable together with said shaft; and a reflecting plate formed opposite to the vibrator and around the shaft whereby the ultrasonic waves produced by said ultrasonic vibrator are reflected by said reflecting plate and then directed radially outwardly, and wherein said reflecting plate also reflects the waves which are reflected back by obstructions to said ultrasonic vibrator for reception.

4,618,949
SELF-ORIENTING DIRECTIONALLY SENSITIVE GEOPHONE

Clive R. B. Lister, P.O. Box 45101 University Station, Seattle, Wash. 98145

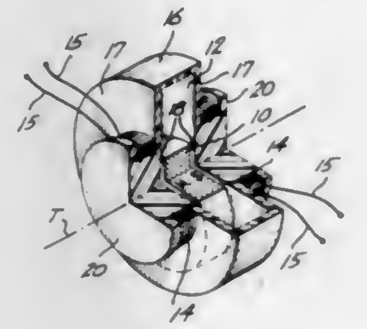
Filed Mar. 19, 1984, Ser. No. 590,734

Int. Cl.⁴ H04R *1/44;* G01V *1/16*

U.S. Cl. 367—171 **14 Claims**

1. A geophone comprising, in combination:
magnetic field means with a polar axis aligned horizontally;
sealed chamber means containing a ferromagnetic fluid and magnetic field means, the ferromagnetic fluid interacting with the magnetic fluid means to movably suspend said magnetic field means within the ferromagnetic fluid;
coil means associated with said sealed chamber means, the axis of the coil means aligned with the axis of the magnetic field means whereby relative vertical movements of the

sealed chamber means and the magnetic means electromagnetically induce a current within the coil means;

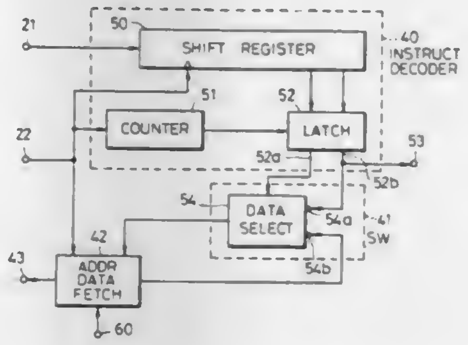


connection means for electrically connecting said coil to a conductor means.

4,618,950
ADDRESS DATA ACCESSING DEVICE IN A ROTARY RECORDING MEDIUM REPRODUCING APPARATUS

Ryozo Abè, and Masaki Sakurai, both of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 16, 1984, Ser. No. 570,908
Claims priority, application Japan, Jan. 17, 1983, 58-4524[U]
Int. Cl.^{4} G11B *21/02*
U.S. Cl. 369—32 **6 Claims**



1. An address data accessing device in a reproducing apparatus which reproduces recorded signals from a rotary recording medium, said rotary recording medium being time-sequentially recorded with a plurality of channels of information signals, a time address signal and a chapter address signal, said reproducing apparatus having a predetermined mode in which only reproduced information signals in selected channels out of the plurality of channels are produced, each of the information signals in the respective channels being recorded in terms of different programs, said time address signal indicating a time required in a normal reproducing mode to reach a signal recorded position on said rotary recording medium from a starting position where recording of the programs is started at the time of the recording, said chapter address signal indicating each of the different programs, said address data accessing device comprising:

an output switching circuit for selectively outputting only the reproduced information signals in the selected channels out of the plurality of channels in the predetermined mode;

an address data fetch circuit for fetching as an address signal one of the time address signal and the chapter address signal which are reproduced from said rotary recording medium;

an instruction decoder for controlling said output switching circuit and said address data fetch circuit in response to an instruction signal which is supplied to said instruction decoder, said instruction signal comprising two bits for representing four instruction codes, two of said four instruction codes being used for selecting certain channels out of the plurality of channels, the remaining two instruction codes being used for determining which one of the time address signal and the chapter address signal is to be fetched; and

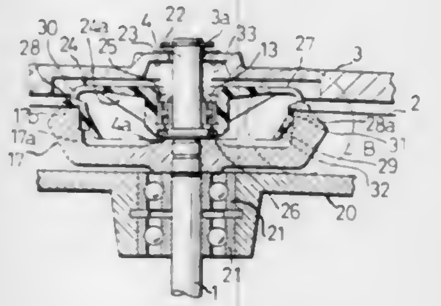
a switch circuit for switching output signals of said instruction decoder in response to a switching signal from said address data fetch circuit and for supplying one output signal thereof to said address data fetch circuit,

said address data fetch circuit alternately fetching and producing said time address signal and said chapter address signal to transmit the address signals under control of the one output signal of said switch circuit so that either one of said time address signal and said chapter address signal is obtainable in said predetermined mode.

4,618,951
DISC CLAMP DEVICE

Masao Okita, and Satoshi Sakai, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Apr. 17, 1985, Ser. No. 724,196
Claims priority, application Japan, Apr. 19, 1984, 59-56699[U]
Int. Cl.^{4} G11B *3/62*
U.S. Cl. 369—270 **5 Claims**



1. In a disc clamp device of the type comprising a turntable having an axial center of rotation for supporting a disc medium to be clamped thereon and driven in a horizontal plane of rotation, said turntable having an annular vertical wall forming a concave portion concentric with its axial center and having a diameter substantially equal to a diameter of a center hole formed in the disc, and a frame provided elevatably above said turntable and movable downwardly to a clamping position in opposition thereto, a shaft mounted on said frame and aligned with said axial center of said turntable when said frame is moved to said clamping position, and a clamp member mounted on said shaft so as to be positioned in said concave portion of said turntable and to clamp the disc to said turntable in said clamping position,

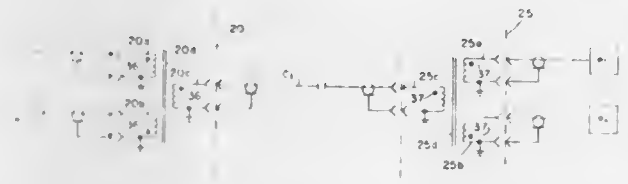
the improvement wherein said clamp member is formed as an integral member and includes a central hub mounted on said shaft, an arm connected to said central hub at one end thereof and extending downwardly and connected to a pressing face at the other end thereof, said pressing face of said clamp member having a horizontal clamping surface opposed to said turntable for clamping the disc thereon and a vertical engagement surface connected radially inwardly to said clamping surface for engagement with said vertical wall of said turntable, and a guide portion connected to said engagement surface of said pressing face and extending in a downwardly inclined direction toward said axial center and terminating in a free end located at a radial position inwardly of said radius of said concave portion,

whereby as said frame is moved to said clamping position, said guide portion enters the center hole of the disc and said concave portion of said turntable so as to center the disc on said turntable and guides said engagement surface into engagement with said vertical wall of said concave portion of said turntable, and then said clamping surface of said pressing face is pressed downwardly on the disc to clamp it to said turntable.

4,618,952
COMMUNICATION OF UNIPOLAR PULSES

Meir Bochor, Herzlia, and Mordechai Gura, Haifa, both of Israel, assignors to Fibronics Ltd., Haifa, Israel

Filed Nov. 14, 1983, Ser. No. 551,882
Claims priority, application Israel, Nov. 4, 1983, 70134
Int. Cl.^{4} H04J *7/02*
U.S. Cl. 370—78 **11 Claims**



10. A connector unit for use in a unipolar pulse communication system, comprising:

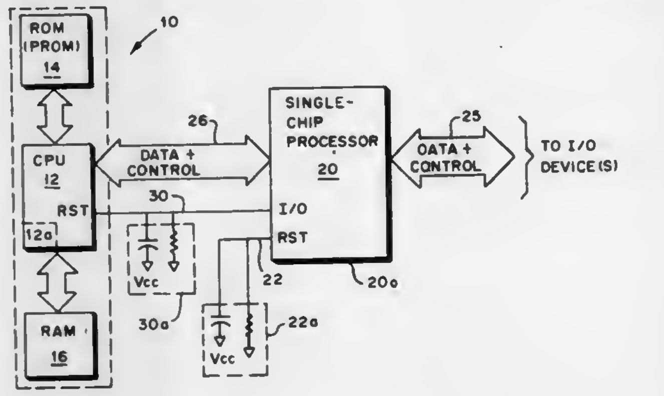
first, second and third end terminals, each of said end terminals including means for connection to a coaxial cable; and

circuit means for providing a pulse at said third end terminal whenever a pulse is received at said first end terminal and for providing a pulse at said first end terminal whenever a pulse is received at said third end terminal, the pulse being provided at said third end terminal being of the same polarity as the pulses being received at said first end terminal and the pulse being provided at said first end terminal being of the same polarity as the pulse being received at said third end terminal, and for providing a pulse at said third end terminal whenever a pulse is received at said second end terminal and for providing a pulse at said second end terminal whenever a pulse is received at said third end terminal, the pulse being provided at said third end terminal being of the opposite polarity as the pulse being received at said second end terminal and the pulse being provided at said second end terminal being of the opposite polarity as the pulse being received at said third end terminal.

4,618,953
WATCHDOG CIRCUIT

Edward P. Daniels, Bridgeport, and Risto A. Rinne, Jr., New Milford, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed May 1, 1984, Ser. No. 605,733
Int. Cl.^{4} G06F *11/00*
U.S. Cl. 371—12 **17 Claims**



1. A data processing system comprising:

(a) a main, multi-chip processor;

(b) a single-chip processor operatively associated with said main processor, said main processor transmitting and said single-chip processor receiving status information;

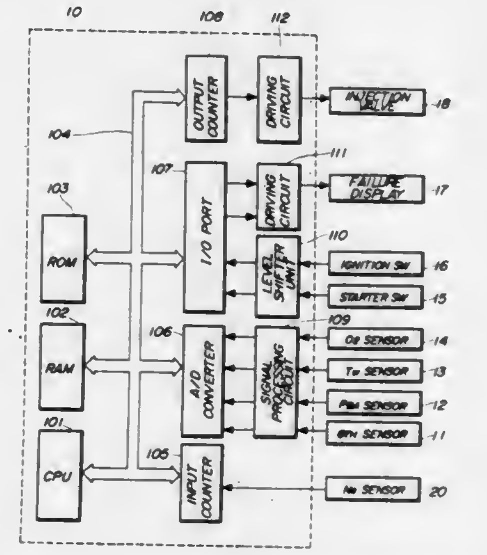
(c) reset means, controlled by said single-chip processor, for resetting said main processor; and,

(d) timing means operatively associated with said single-chip processor for measuring the time elapsed between said status receptions by said single-chip processor and for signaling said single-chip processor, said single-chip processor through said reset means resetting said main processor in response to said signal if a predetermined amount of time elapses after one of said status receptions and before the next of said receptions.

4,618,954
METHOD OF DETECTING ABNORMALITY IN INPUT AND OUTPUT UNITS

Yutaka Otobe, Shiki, and Takeo Kiuchi, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1984, Ser. No. 615,056
Claims priority, application Japan, Jun. 21, 1983, 58-111665
Int. Cl.^{4} G06F *11/00*
U.S. Cl. 371—16 **7 Claims**



1. A method of detecting abnormalities through fault diagnosis applied to one input unit or one output unit by an electronic control unit to which said input unit or output unit is connected, said method comprising the steps of:

(a) subjecting said input unit or output unit to fault diagnosis wherein it is determined whether or not a signal indicative of operating conditions of said one input or output unit indicates a value which can be assumed when said one unit is in normal operating conditions;

(b) storing information, which is indicative of abnormality, in a first storage area of a memory in a first storage area of a memory in said electronic control unit when the abnormality detected by the diagnosis continues over a predetermined period of time (t_{FS1}, t_{FS2});

(c) subjecting said one input unit or output unit in which said abnormality has been detected, to the step (a);

(d) storing information, which is indicative of abnormality, in a second storage area of a memory in said electronic control unit when the abnormality detected by the diagnosis continues over said predetermined period of time (t_{FS1}, t_{FS2});

(e) determining whether or not contents stored in said first and second storage areas are identical;

(f) rendering a decision to the effect that an abnormality has occurred in said one input unit or output unit when the contents stored in said first and second storage areas are determined to be identical; and

(g) the contents stored in said first and second storage areas are cleared when it is determined in said step (e) that the contents are not identical, thereby ensuring the detection of the occurrence of an abnormality in said one input or output unit, without being influenced by external noise or the like.

4,618,955
DIGITAL DATA TRANSMISSION SYSTEM

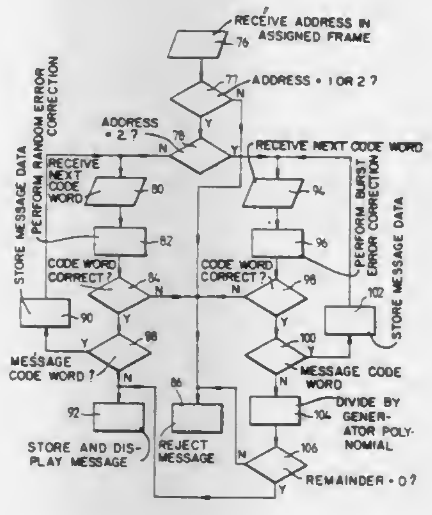
Anthony K. Sharpe, Teversham, and Peter J. Mabey, Crawley, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 21, 1984, Ser. No. 581,753

Claims priority, application United Kingdom, Feb. 25, 1983, 8305296

Int. Cl.⁴ G06F *11/10*

U.S. Cl. 371—37 **18 Claims**



1. A digital data transmission system comprising a base station having encoding means for encoding message data in accordance with a code word format which includes information bits and cyclic redundancy check bits, and means for transmitting said encoded message, and a receiver having means for receiving said encoded and transmitted message, means responsive to said cyclic redundancy check bits to determine the presence of errors in a received code word, and means for applying error correction on a code word by code word basis, wherein said base station further comprises means for deriving a predetermined number of error detecting check bits by assembling a complete string of said information bits, dividing said string by an n-bit generator polynomial, n being an interger, and forming the (n−1) bit remainder of this division, and means for substituting said error detecting check bits for an equal number of the information bits of said transmitted message and said receiver further comprises means to detect false correction of erroneous data received.

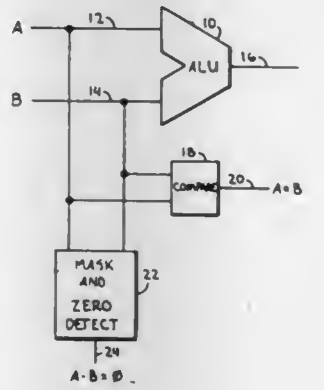
4,618,956
METHOD OF OPERATING ENHANCED ALU TEST HARDWARE

Robert W. Horst, Cupertino, Calif., assignor to Tandem Computers Incorporated, Cupertino, Calif.

Filed Sep. 29, 1983, Ser. No. 537,041

Int. Cl.⁴ G06F *11/00*

U.S. Cl. 371—68 **1 Claim**



1. A method of operating a loop counter routine in a central processing unit of a digital computer, including the steps of:

(a) providing a data input, representative of a first desired quantity, to a first input of an arithmetic logic unit,

(b) providing a data input representing a second desired quantity to a second input of said arithmetic logic unit,

(c) performing a subtract operation using said arithmetic logic unit during a first clock period,

(d) performing an equivalence test on said first and second arithmetic logic unit inputs external to said arithmetic logic unit during said first clock period,

(e) terminating said loop counter routine if the result of said equivalence test indicates that first and second arithmetic logic unit inputs are equal and returning the results of said arithmetic logic unit subtract operation to said first input of said arithmetic logic unit if the result of said equivalence test indicates that said first and second arithmetic logic unit inputs are not equal,

(f) Repeating steps (b) through (e) until the result of said equivalence test indicates that said first and second arithmetic logic unit inputs are equal.

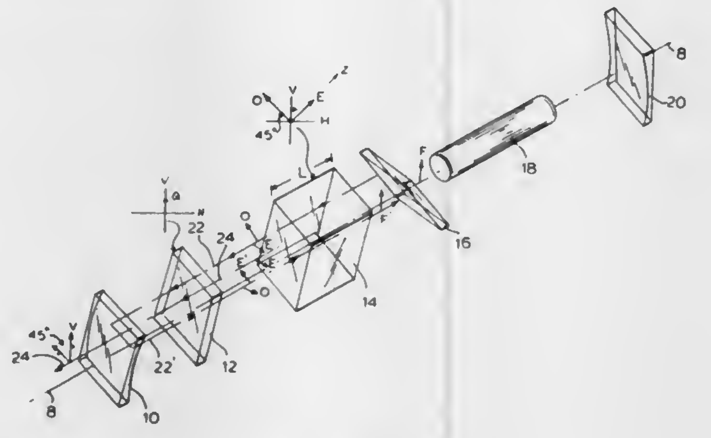
4,618,957
FREQUENCY DOUBLING A LASER BEAM BY USING INTRACAVITY TYPE II PHASE MATCHING

Kuo-Ching Liu, Setauket, N.Y., assignor to Quantronix Corporation, Smithtown, N.Y.

Filed Apr. 17, 1985, Ser. No. 724,089

Int. Cl.⁴ H01S *3/10*

U.S. Cl. 372—22 **12 Claims**



1. A frequency-doubled laser comprising:

first and second mirrors forming an optical cavity therebetween;

a laser active medium disposed within said cavity for generating a fundamental beam at a preselected fundamental frequency and having a linear polarization which can be resolved into two orthogonal components;

a crystal for generating via Type II phase-matching a linearly polarized second harmonic beam in response to said fundamental beam, said crystal having an ordinary and an extraordinary axis, said orthogonal components of said fundamental beam being oriented along said axes, said crystal further generating a differential phase delay between said orthogonal components; and

means for eliminating on the return trip through said crystal said differential delay to produce a frequency doubled output beam.

4,618,958
DEVICE FOR CONTROLLING THE RADIATING OUTPUT OF A SEMICONDUCTOR LASER

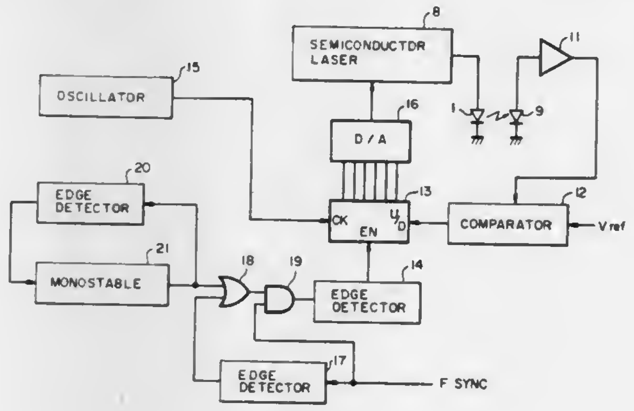
Isamu Shibata, and Yoshiaki Kanmoto, both of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Feb. 8, 1985, Ser. No. 699,590

Claims priority, application Japan, Feb. 10, 1984, 59-24090; Feb. 14, 1984, 59-25704; Feb. 16, 1984, 59-27739

Int. Cl.⁴ H01S *3/13*

U.S. Cl. 372—29 **3 Claims**



1. A device for controlling the radiating output of a semiconductor laser, comprising:

(a) a photodetector for detecting the radiating output of the semiconductor laser;

(b) a comparator for comparing an output signal from said photodetector with a reference signal;

(c) an up/down counter for counting clock signals in a count mode controlled by an output signal from said comparator;

(d) a digital-to-analog converter for converting a count output from said up/down counter into an analog signal;

(e) a semiconductor laser driver for supplying said semiconductor laser with a current proportional to the analog signal from said digital-to-analog converter; and

(f) means for controlling and holding the current supplied to said semiconductor laser to equalize the input signals applied to said comparator.

4,618,959
DOUBLE HETEROSTRUCTURE SEMICONDUCTOR LASER WITH PERIODIC STRUCTURE FORMED IN GUIDE LAYER

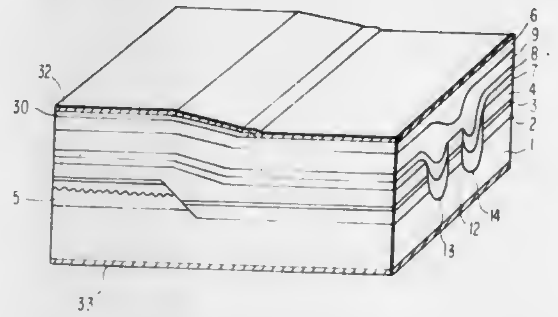
Ikuo Mito, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 12, 1983, Ser. No. 541,211

Claims priority, application Japan, Oct. 12, 1982, 57-178824; Mar. 16, 1983, 58-43477; Apr. 5, 1983, 58-59505

Int. Cl.⁴ H01S *3/19*

U.S. Cl. 372—46 **4 Claims**



1. A double heterostructure semiconductor laser device comprising:

a composite structure including a semiconductor substrate of one conductivity type and a first semiconductor layer disposed on said semiconductor substrate, said composite structure having a first level and a second level, said second level being higher than said first level by a distance equal to or greater than the thickness of said first semiconductor layer, the transition between said first and second levels being in the propagation direction of the laser radiation and having a slant crystal face, and said first semiconductor layer on said second level, having a periodic structure of a prescribed pitch and thickness formed in the propagation direction of the laser radiation, for providing an optical reflector;

a second semiconductor layer of said one conductivity type, formed on said first and second levels, having a greater bandgap than that of said first semiconductor layer, said second semiconductor layer comprising two portions the first portion overlying said first level, the second portion overlying said second level;

a semiconductor active layer, formed on said second semiconductor layer, having a smaller bandgap than that of said second semiconductor layer, the ends of said semiconductor active layer and first semiconductor layer abutting together in the extension of said slant crystal face;

a third semiconductor layer of the opposite conductivity type to that of said substrate, formed on said semiconductor active layer and said slant crystal face, and having a greater bandgap than that of said semiconductor active layer; and

a pair of electrodes in contact with said laser device for injecting a current into said semiconductor active layer to produce stimulated emission of radiation.

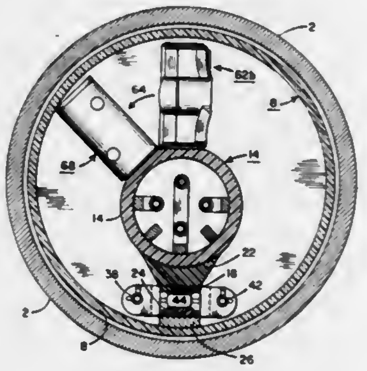
4,618,960
GAS LASER WITH ACOUSTIC BAFFLE

Said Nazemi, Belmont, Mass., assignor to Laser Science, Inc., Cambridge, Mass.

Filed Jan. 23, 1984, Ser. No. 573,003

Int. Cl.⁴ H01S *3/22*

U.S. Cl. 372—58 **7 Claims**



1. In a gas laser having a resonant cavity, an active gas medium, and energy extracting means, the combination comprising

a generally cylindrical baffle formed of insulating material positioned within and spaced from an outer shell of said cavity,

a generally cylindrical support formed of insulating material positioned within said baffle,

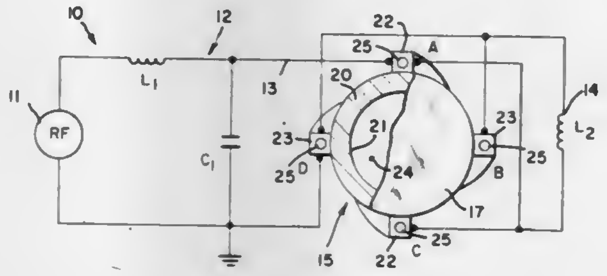
means for circulating said gas medium around an annular path between said baffle and said support,

a cathode and an anode mounted in spaced opposing relationship in said annular path, and

power supply means having a conductive circuit applying a high voltage to said anode and cathode and thereby produce a transverse electrical discharge therebetween.

4,618,961
CONFIGURATION OF ELECTRODES FOR TRANSVERSELY EXCITED GAS LASERS
Leroy V. Sutter, Jr., 6301 Summertime La., Culver City, Calif. 90230

Filed Dec. 16, 1982, Ser. No. 450,195
The portion of the term of this patent subsequent to Jun. 19, 2001, has been disclaimed.
Int. Cl.^{4} H01G *3/097*
U.S. Cl. 372—87 **11 Claims**



1. A configuration of electrode means for use in a transversely excited gas laser which includes:

a. an elongated cylindrical chamber of cross-sectional dimensions suitable for confining a laser gas discharge;

b. a laser gas disposed in said chamber;

c. first and second reflecting means for reflecting light energy from said laser gas discharge within said chamber so that said light energy travels longitudinally the length of said chamber;

d. energy means for applying a voltage of alternating polarity between said electrode means at a frequency ranging from 10 Mhz to about 3 GHz to establish said laser gas discharge in said laser gas; and

e. coupling means for matching the steady state reactive impedance of said chamber to the impedance of said energy means and for coupling said energy means to said electrode means, said configuration of electrode means comprising:

  a. a first electrode plate and a second electrode plate each of which is formed from an electrically conductive material and is disposed opposite to the other on the outer surface of said chamber in a first plane; and

  b. a third electrode plate and a fourth electrode plate, each of which is formed from an electrically conductive material and is disposed opposite to the other on the outer surface of said chamber in a second plane which is orthogonal to said first plane whereby the phase correlation of said improved configuration of electrode means is such that said first electrode plate is in phase with said second electrode plate, said third electrode plate is in phase with said fourth electrode plate and said first electrode plate has an opposite polarity than said third electrode plate.

4,618,962
FURNACE BOTTOM HEATING
Ronald W. Palmquist, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 2, 1985, Ser. No. 729,619
Int. Cl.^{4} C03B *5/027*
U.S. Cl. 373—30 **21 Claims**

1. A melting furnace comprising:

a refractory vessel, a molten bath retained therein,

a metal liner having sidewall portions and a bottom plate positioned within said refractory vessel and spaced-apart from inner surface portions thereof,

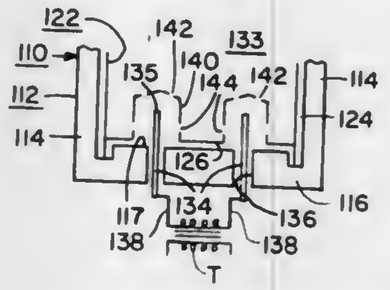
electrically energizable heating means for supplying heat to a lower portion of said melting furnace positioned within a space between said bottom plate and a bottom wall of said refractory vessel,

molten bath-like material within said space between said bottom plate and said bottom wall,

said heating means being spaced-apart from the bottom wall of said refractory vessel,

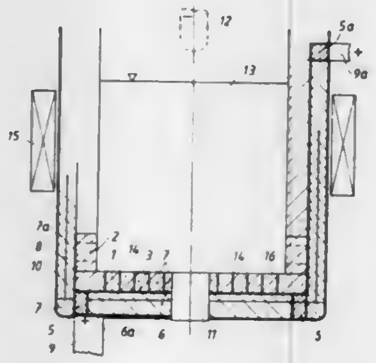
and said bottom plate having raised portions

which receive said heating means positioned within the space formed between said bottom plate and the bottom wall of said refractory vessel.



4,618,963
DIRECT CURRENT ARC FURNACE
Bo Rappinger, and Sven-Einar Stenkvist, both of Västerås, Sweden, assignors to Asea AB, Västerås, Sweden

Filed Jan. 22, 1985, Ser. No. 693,165
Claims priority, application Sweden, Jan. 25, 1984, 8400367
Int. Cl.^{4} H05B *7/00*
U.S. Cl. 373—72 **2 Claims**

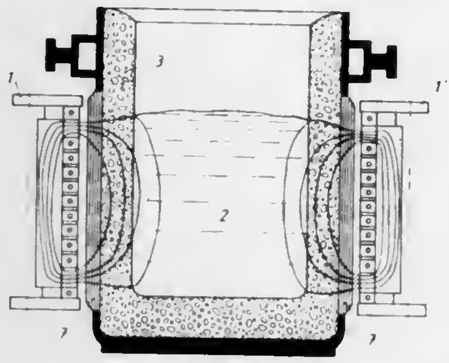


1. A DC arc furnace having an electrically conductive hearth adapted to contain a melt, at least one arcing electrode above the hearth and adapted to form a heating arc with the melt when the hearth and electrode are supplied with DC power; the hearth having a wear lining directly contacted by the melt and formed by refractory material through which electrical conductors extend from the bottom of the wear lining to its top, a metal plate under the wear lining and substantially coextensive therewith and connected to the electrical conductors, a layer of refractory on which the bottom of said plate rests, said layer having a periphery formed by electrically conductive refractory in electrical contact with the plate's periphery and radially inwardly thereof being formed by electrically non-conductive refractory providing thermal insulation under the plate, and means for connecting said electrically conductive refractory with electric power.

4,618,964
LADLE OR TUNDISH
Hans G. Larsson; Erik Westman, both of Västerås, and Artur Ostlund, Linkoping, all of Sweden, assignors to Asea AB, Västerås, Sweden

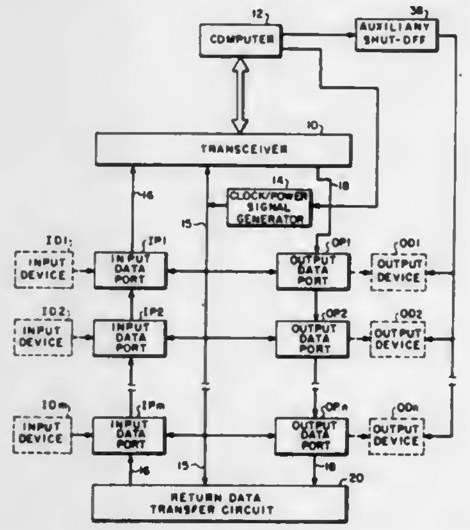
Filed Feb. 5, 1985, Ser. No. 698,447
Claims priority, application Sweden, Feb. 6, 1984, 8400586
Int. Cl.^{4} H05B *5/16*
U.S. Cl. 373—155 **7 Claims**

1. A ladle or tundish for inductively heating molten metal in the ladle or tundish, and having a side wall formed by an inner wall of heat-insulated ladle lining compound contacted by the molten metal, and an outer concrete wall made of concrete reinforced by metal wires embedded in the concrete, the wires being electrically insulated from each other, the outer concrete wall supporting the inner wall made of the ladle lining compound.



4,618,965
MONITORING OF DATA TRANSFER SYSTEM HAVING SERIALLY DISTRIBUTED DATA PORTS
Duane S. Maxwell, Coronado; Roger Phillips, Cardiff By The Sea, and Eduard A. Schwan, Oceanside, all of Calif., assignors to Teleplex Corporation, San Diego, Calif.

Filed Mar. 18, 1985, Ser. No. 713,295
Int. Cl.^{4} H04B *3/46*
U.S. Cl. 375—10 **23 Claims**



1. A method of monitoring a data transfer system having input data ports connected in series to a receiver by an input data line for frame-by-frame serial shifting of input data from the respective input data ports over the input data line to the receiver and output data ports connected in series to a transmitter by an output data line for frame-by-frame serial shifting of output data to the respective output data ports over the output data line from the transmitter, wherein each frame of input data is transferred through the respective input data ports onto the input data line for input devices respectively connected to individual input data ports; and wherein each frame of serially-shifted output data is transferred through the respective output data ports from the output data line to output devices respectively connected to individual output data ports, the method comprising the steps of

(a) serially shifting successive data frames bit-by-bit to the output data ports over the output data line from the transmitter, wherein each frame contains a single unique data bit in a data bit position that changes progressively from one frame to the next in relation to the position of the respective output data ports;

(b) upon the conclusion of each frame shift, transferring data from a predetermined data bit position on the output data line past the most remote output data port with respect to the transmitter to a position on the input data line that is a given number of bit positions past the most remote input data port with respect to the receiver;

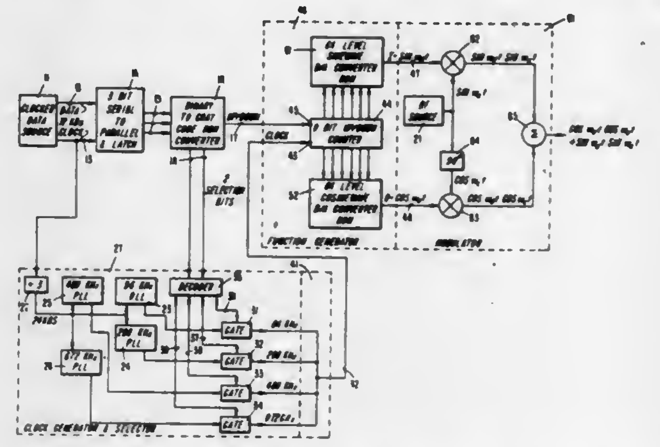
(c) shifting successive data frames over the input data line to the receiver synchronously with the shifting of data frames over the output data line;

(d) examining each data frame shifted to the receiver to detect a frame containing a said unique data bit; and

(e) counting the number of data frames shifted from the transmitter prior to detecting the frame containing the unique data bit to provide an indication of the number of output data ports.

4,618,966
FREQUENCY SHIFT KEY MODULATOR
Elvin D. Stepp, Fairfield, and Gary L. Claypoole, West Chester, both of Ohio, assignors to Cincinnati Electronics Corporation, Cincinnati, Ohio

Filed Jun. 1, 1983, Ser. No. 500,090
Int. Cl.^{4} H04L *27/12;* H03C *3/02*
U.S. Cl. 375—62 **15 Claims**



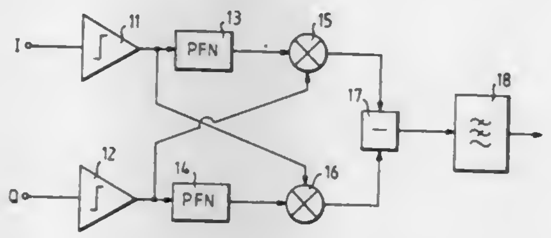
15. Apparatus for frequency modulating a carrier wave in response to a digital data input signal comprising means responsive to the data signal for deriving variable frequency orthogonal sinusoidal like stepped waves, the variable frequency being controlled so that it is changed in discrete steps with phase coherence in response to successive values of the data signal having different values, the variable frequency deriving means including: means for deriving a plurality of different frequencies synchronized to the input signal, an up/-down counter, and means responsive to the value of the input signal for controlling the counting direction of said counter and for controlling which one of said frequencies is applied to a clock input of said counter, said counter deriving a multi-bit output representing the phase angle indication, and means responsive to the phase angle indication for sinusoidally changing the frequency and phase of the carrier by amounts respectively determined by the rate of change of the represented phase angle value and the phase angle value, and means for vectorially combining the orthogonal stepped waves and the carrier wave to derive a constant amplitude AC wave having the carrier frequency and frequency modulated at the variable frequency.

4,618,967
RADIO RECEIVER
Ian A. W. Vance, Newport, and Michael W. Neale, Harlow, both of England, assignors to Standard Telephones and Cables, plc, London, England

Filed Jun. 26, 1984, Ser. No. 624,749
Claims priority, application United Kingdom, Jul. 14, 1983, 8319101
Int. Cl.^{4} H04B *1/16;* H04L *27/14*
U.S. Cl. 375—80 **6 Claims**

1. A radio receiver for receiving frequency modulated signals on an R.F. carrier signal, wherein the received signals are mixed with a local oscillator signal at the carrier signal frequency to produce quadrature baseband signals in two separate

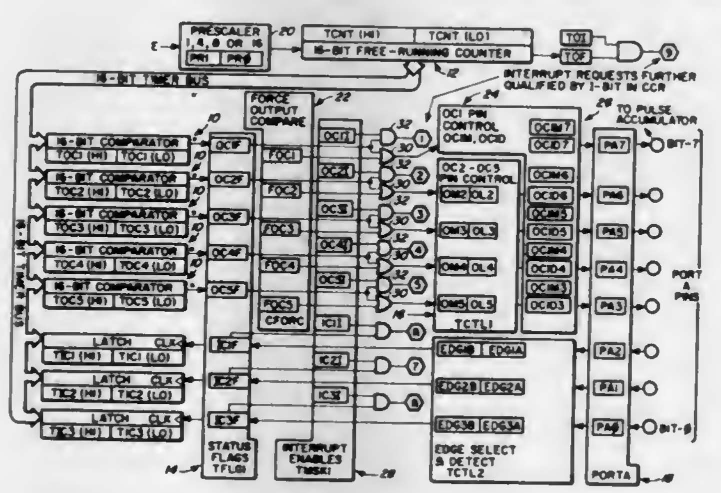
signal channels, the receiver including a demodulator arrangement for the baseband signals, the demodulator arrangement including means for limiting the baseband signals in each signal channel to form square wave signals in quadrature, means in each channel to derive from the square wave signals in that channel a sequence of pulses the frequency of which is representative of the polarity changes in the square wave signal, means for multiplying the pulse sequence in each channel by the square wave signal in the other channel to produce two unipolar pulse trains, the pulse frequency in each unipolar pulse train being equal to that of the pulse sequence from which it is derived, and means for generating an output pulse signal the frequency of which is equal to the sum of the frequencies of the two unipolar pulse trains such that when the output pulse signal is low pass filtered it simulates information modulated on the R.F. signal.



4,618,968
OUTPUT COMPARE SYSTEM AND METHOD AUTOMATICALLY CONTROLLING MULTIPLE OUTPUTS IN A DATA PROCESSOR

James M. Sibigtroth, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 4, 1983, Ser. No. 549,363
Int. Cl.^{4} H03K *21/00;* G06F *7/02*
U.S. Cl. 377—39 **4 Claims**



1. In a timer system comprising:

a first counter for counting pulses of a first input signal;

a first compare register for selectively storing first compare value therein; and

a first comparator, coupled to the output of the first counter and to output of the first compare register, for comparing the first counter value to the first compare value, and for providing a first compare signal when said values are the same;

the improvement comprising:

a data register for selectively storing first and second data bits therein;

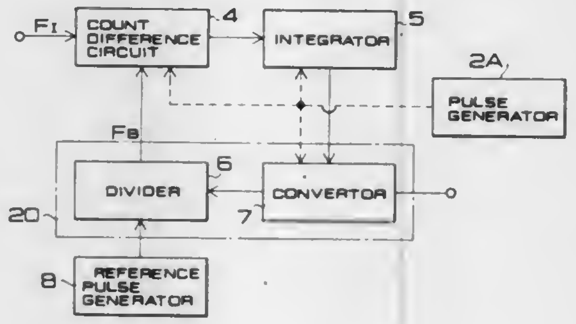
a mask register for selectively storing first and second mask bits therein; and

logic means, connected to said first comparator to receive the first compare signal, for providing a first output signal indicative of the state of the first data bit in response to said first compare signal only if the first mask bit is a predetermined state, and to provide a second output signal indicative of the state of the second data bit in response to said first compare signal only if the second mask bit is a predetermined state.

4,618,969
DIGITAL RATEMETER

Shinji Badono, and Yoshikazu Tsutaka, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1985, Ser. No. 716,098
Claims priority, application Japan, Mar. 27, 1984, 59-57264
Int. Cl.^{4} H03K *25/00*
U.S. Cl. 377—49 **6 Claims**



1. A digital count ratemeter comprising:

a count difference circuit for adding input pulse signals, subtracting frequency of divider pulse and accumulating pulse count values every unit time;

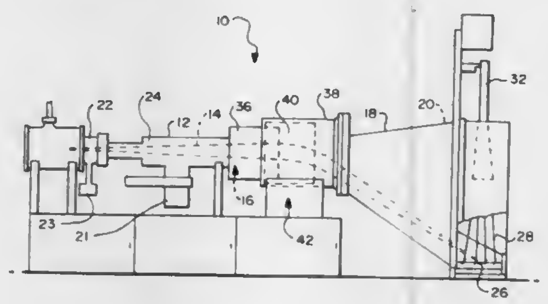
an integrator for receiving and integrating the positive and negative the numbers of accumulated pulse counts of said count difference circuit; and

a feedback unit including a converter for converting integral count value of the integrator into frequency division ratio and a frequency divider for submultiplying the reference pulse frequency from reference pulse generator in dependence on the frequency division ratio output of the converter and generating a divider pulse, and adapted for transforming a divider pulse by the use of exponential function of the integral count value and delivering the transformed result.

4,618,970
BEAM POSITIONING ARRANGEMENT FOR USE IN A SCANNING ELECTRON BEAM COMPUTED TOMOGRAPHY SCANNER AND METHOD

Roy E. Rand, Palo Alto; John W. J. Mitchell, Redwood City, and John L. Couch, San Francisco, all of Calif., assignors to Imatron, Inc., San Francisco, Calif.

Filed Apr. 5, 1984, Ser. No. 597,134
Int. Cl.^{4} A61B *6/08;* H01J *35/14*
U.S. Cl. 378—10 **6 Claims**

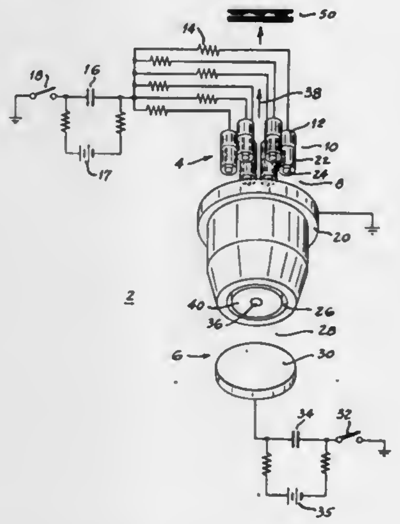


1. In a scanning electron beam computed tomography scanner including means defining a vacuum chamber, means for producing an electron beam at a first location in the chamber and for directing said beam to a second location therein along a particular desired path, an arrangement for detecting deviations between the actual path taken by said beam between said first and second locations and the desired path, said arrangement comprising a network of electrically conductive wires which are electrically insulated from one another and which are located across said desired path between said first and second locations such that the impingement of one or more of said wires by said electron beam produces an electrical signal dependent upon the actual path taken by said beam between said locations, whereby said signal can be compared to a reference signal corresponding to one which is produced by said network of wires as a result of the impingement of said beam when the latter extends along said desired path, said scanner including means for comparing said first mentioned signal with said reference signal.

4,618,971
X-RAY LITHOGRAPHY SYSTEM

Arnold Weiss, Minneapolis, Minn.; Herman P. Schutten; Louis Cartz, both of Milwaukee, Wis.; Gordon B. Spellman, Mequon, Wis.; Stanley V. Jaskolski, Sussex, Wis., and Peter H. Wackman, deceased, late of Wauwatosa, Wis. (by Connie M. Wackman, personal representative), assignors to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 420,558, Sep. 20, 1982, Pat. No. 4,536,884.
This application Sep. 13, 1984, Ser. No. 651,052
Int. Cl.^{4} G21K *5/00;* H01L *21/302*
U.S. Cl. 378—34 **14 Claims**



1. Apparatus for fine line X-ray lithography comprising:

means for repeatably generating vapor directly from solid material;

means including axially spaced electrodes for generating X-rays by passing high current axially between said axially spaced electrodes through said vapor causing magnetic field plasma pinching radially inwardly perpendicularly to the axial current flow; and

a masked semiconductor substrate axially spaced from said vapor generating means and said X-ray generating means and disposed normal to said axial direction.

4,618,972
X-RAY SOURCE COMPRISING DOUBLE-ANGLE CONICAL TARGET

George E. Georgiou, Gillette, and Martin E. Poulsen, New Providence, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

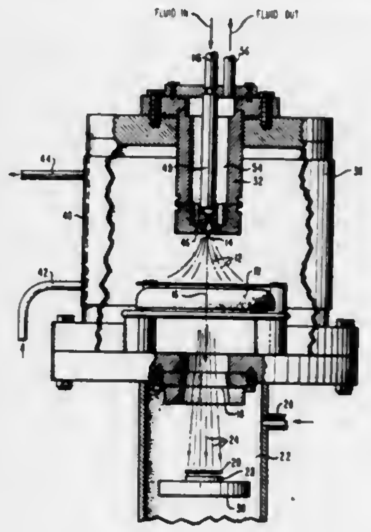
Filed Sep. 7, 1984, Ser. No. 648,021
Int. Cl.^{4} H01J *35/08*
U.S. Cl. 378—34 **13 Claims**

13. An X-ray lithographic system for irradiating a mask member that is registered in a spaced-apart relationship with respect to a wafer member coated with a resist material, said system comprising

a conical target electrode having an interior inclined surface comprising a conical apex portion and a conical base portion,

and means for directing substantially the entirety of a beam of electrons at said interior surface of said apex portion to produce X-ray emission therefrom,

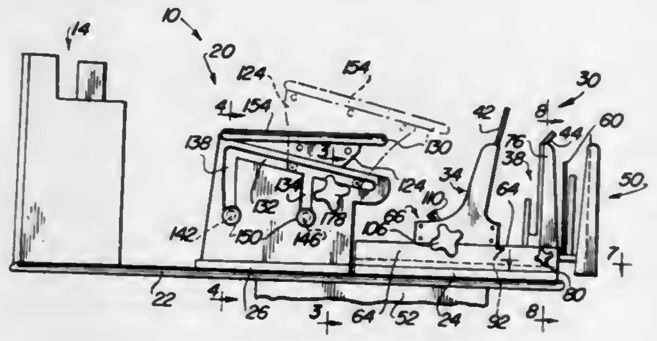
wherein the improvement resides in that the material of the interior surface of said apex portion is selected to provide, in response to electron bombardment thereof, X-rays whose wavelength propagates through said system with relatively little attenuation to impinge upon said resist material within the sensitivity range of said material, and wherein the material of the interior surface of said conical base portion is selected to insure that only a relatively low intensity of any X-rays emitted therefrom in the direction of said wafer member propagate through said system and impinge upon said resist material within the sensitivity range of said material.



4,618,973
MAMMOGRAPHIC X-RAY APPARATUS

Harold J. Lasky, 716 Roslyn Pl., Evanston, Ill. 60201

Filed Nov. 1, 1985, Ser. No. 794,048
Int. Cl.^{4} A61B *6/04;* G03B *41/16*
U.S. Cl. 378—037 **10 Claims**



1. An apparatus to facilitate the X-ray examination of the breast of a female subject and including:

a radiation source and means for directing said source to impinge upon target tissue to be examined,

radiation energy sensor means responsive to radiation emanating from said radiation source and impinging on said sensor means to provide a visual image of said tissue,

wall means for confining said tissue to be examined and for applying controlled compression force thereto during exposure of said tissue to said radiation source,

said means for confining said tissue including spaced wall means disposed positively to engage said tissue gravitationally suspended therebetween,

at least one of said wall means comprising a sheet of material transparent to visible light to facilitate viewing of the positioning of the breast to ensure proper placement for radiographic display,

means for shifting said wall means relative to each other to establish selectable spacing correlated with associated compression forces applied by said wall means to said tissue to establish a controlled through thickness field of said tissue presented to said radiation source and to provide more uniform density in visual images produced,

the improvement comprising:

generally horizontally extending table means interposed intermediate said radiation source and said wall means for supporting a body component of the subject thereon and for shielding said body component from irradiation during radiographic examination of the subject,

means for manipulatively positioning said table means in a selectable mode correlated with a particular physical attitude assumed by the subject and dictated by orientation of the tissue being examined,

guide means for delineating optional positions of said table means,

said guide means including channel means and shaft means slidably disposed in said channel means, said shaft means cooperating with said channel means to delineate optional paths of movement of said table means,

means supporting said table means in said guide means, and locking means for securing said table means in said guide means at a selectable positional and angular orientation.

4,618,974

DENTAL X-RAY DIAGNOSTIC UNIT

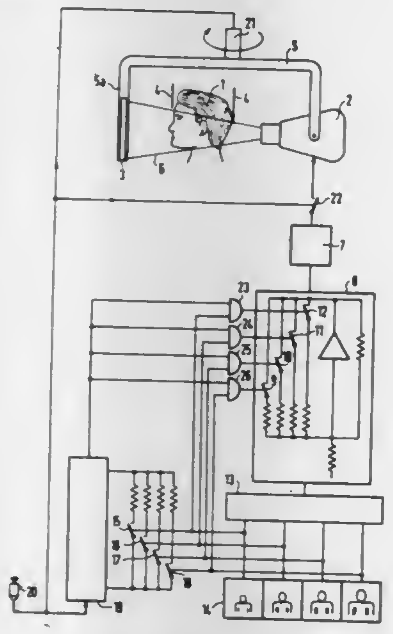
Ulrich Grassme, Nuremberg, and Erich Noske, Weiher, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 3, 1984, Ser. No. 576,583

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1983, 3304271

Int. Cl.^{4} G03B *41/16*

U.S. Cl. 378—40 **2 Claims**



1. An improved dental X-ray diagnostic unit for producing panoramic planigraphs of an object of a type having:

(a) a radiation source;

(b) a cassette for holding an X-ray film substantially diametrically opposite said radiation source;

(c) an adjusting mechanism for moving said radiation source and said cassette around said object; and

(d) a slit stop located in the radiation path between said radiation source and said cassette for limiting a radiation beam generated by said radiation source,

wherein the improvement comprises switching devices for varying intensity of the X-ray beam during the exposure of said object to said radiation beam, said switching devices further including pushbutton switching devices for selecting a desired X-ray dosage.

4,618,975

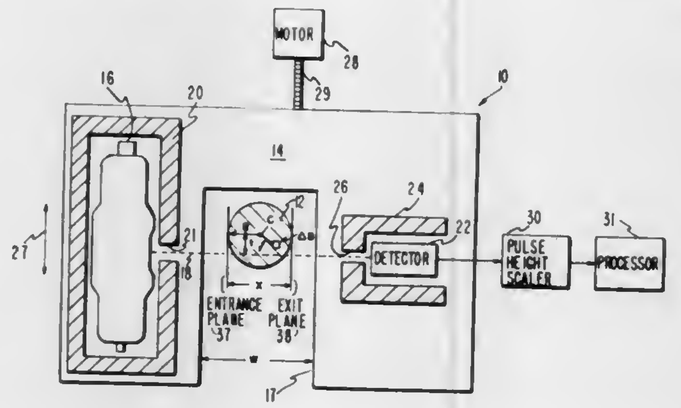
METHOD AND APPARATUS FOR ANALYZING A POROUS NONHOMOGENEOUS CYLINDRICAL OBJECT

Werner J. Glantschnig, Belle Mead, N.J., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Dec. 21, 1984, Ser. No. 684,950

Int. Cl.^{4} G01N *23/06*

U.S. Cl. 378—51 **8 Claims**



5. An apparatus for nondestructively analyzing a porous, inhomogeneous object having n known molecular components (where n is an integer) comprising:

means for scanning the object with a beam of photons whose axis is perpendicular to the axis of the object, each photon having a distinct energy within at least one of $n-1$ energy groups;

means for measuring intensity of the photons upon passage through the object at each of a plurality of separate heights t_i of the beam as measured between the axis thereof and the center of the object;

means for establishing $n-1$ attenuation coefficients $\mu_1(r)$, $\mu_2(r) \ldots \mu_{n-1}(r)$ at each said height t_i of the beam in accordance with the measured intensity of the photons within a separate one of said $n-1$ energy groups, respectively; and

means for calculating the density $\rho(r)$ and the individual molecular mass fraction $X_1(r)$, $X_2(r)$, $X_3(r) \ldots X_n(r)$ of each of the n constituent molecular components of the object at said each height t_i of the beam in accordance with a separate one of the attenuation coefficients $\mu_1, \mu_2 \ldots \mu_{n-1}$, respectively.

4,618,976

X-RAY DIAGNOSTIC INSTALLATION

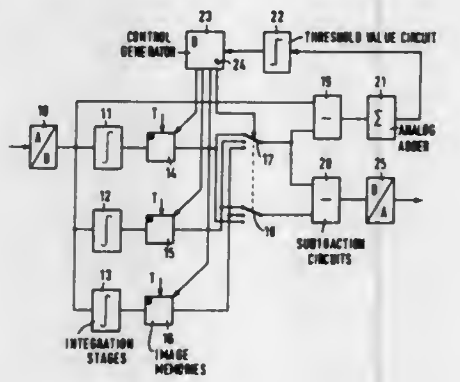
Joerg Haendle, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 13, 1984, Ser. No. 630,674

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1983, 3332317

Int. Cl.^{4} H05G *1/64*

U.S. Cl. 378—99 **5 Claims**



1. An X-ray diagnostic system for angiographic X-ray examination of a patient after injection of a contrast medium, said system comprising:

means for generating an X-ray beam directed at said patient;

an image intensifier/television chain including an image intensifier on which said radiation is incident, a video camera having an input connected to an output of said image intensifier for generating video signals, a processing circuit connected to an output of said camera for receiving said video signals therefrom, a monitor connected to said processing circuit for displaying an image comprised of said video signals, and a central control unit for controlling the video camera, the processing circuit and the monitor;

said processing circuit including at least three image memories, a control generator for generating clock pulses connected to said image memories for controlling entry of said video signals therein cyclically during respective clock pulse intervals by successively switching respective ones of the image memories to the right state for storing a current video signal averaged over several images therein, a first subtraction device to which the current video signal and the video signal for one image memory are supplied for forming a first difference video signal, a maximum detector connected to said first subtraction device for recognizing a maximum of the flow of said contrast medium in said patient and connected to the control generator for actuating said control generator for effecting storage of an image occurring at the maximum of said flow of said contrast medium, and a second subtraction device;

said control generator controlling the image memories such that, upon occurence of said maximum, the image memory which was last in the right state, and the image memory with the chronologically oldest video signal, are switched to the read state and are connected to said second subtraction device for forming a second difference video signal; and

said second subtraction device being connected to said monitor for displaying said second difference video signal.

4,618,977

X-RAY TUBE COMPRISING AN AT LEAST PARTLY METAL HOUSING AND AN ELECTRODE WHICH CARRIES A POSITIVE HIGH VOLTAGE WITH RESPECT THERETO

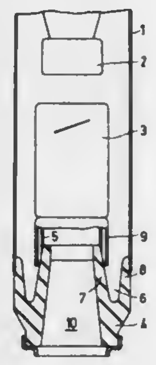
Horst Brettschneider, Tangstedt; Walter Hartl, and Diethard Peter, both of Hamburg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 436,121, Oct. 22, 1982. This application Dec. 9, 1985, Ser. No. 806,132

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1981, 3142281

Int. Cl.^{4} H01J *35/16*

U.S. Cl. 378—139 **11 Claims**



1. An X-ray tube comprising an at least partly metal housing and an electrode which can be connected to a positive high voltage with respect thereto and which is mounted on a ceramic insulator projecting into the tube, a connection area between said electrode and said insulator being enclosed by a screening sleeve electrically connected to the electrode, wherein surrounding the insulator is provided a wall having an insulating inner surface and beingconnected to the metal housing, said screening sleeve projecting into a recess defined by the inner surface of the wall and an outer surface of the insulator, said recess having a bottom at a depth which is sufficient to ensure that the distance d between a bottom edge of the screening sleeve and the bottom of the recess is no smaller than $d=cU$, where c is a constant having an approximate value of 0.1 mm/kV and where U is the maximum voltage difference between the electrode and the housing.

4,618,978

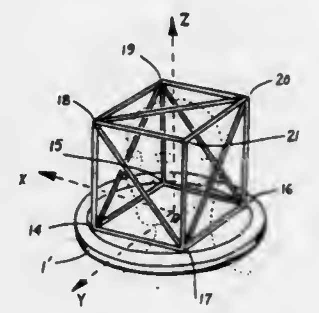
MEANS FOR LOCALIZING TARGET COORDINATES IN A BODY RELATIVE TO A GUIDANCE SYSTEM REFERENCE FRAME IN ANY ARBITRARY PLANE AS VIEWED BY A TOMOGRAPHIC IMAGE THROUGH THE BODY

Eric R. Cosman, 872 Concord Ave., Belmont, Mass. 02178

Filed Oct. 21, 1983, Ser. No. 544,090

Int. Cl.^{4} H05G *1/28*

U.S. Cl. 378—164 **1 Claim**



1. A localizer system that can be placed in a fixed spacial relationship to a body to be scanned by a scanning apparatus that produces scan images in which target images of a physical target in the body can be seen and can be related to specific coordinates of the physical target in the body relative to said localizer system, said localizer system comprising:

A. a localizer having an axial axis, said localizer comprising:
   (i) at least twelve rod elements which lie on the edges of a right parallelapiped which can be defined mathematically in space relative to said localizer system;
   (ii) at least three side diagonal rod elements which are not parallel to any of said rod elements, but each of said side diagonal elements being parallel to at least one of the four planar axial sides of said parallelapiped which are parallel to said axial axis;
   (iii) at least one top diagonal rod element which lies in a plane that is perpendicular to said axial axis and which is not parallel to any of the edges of said parallelapiped;

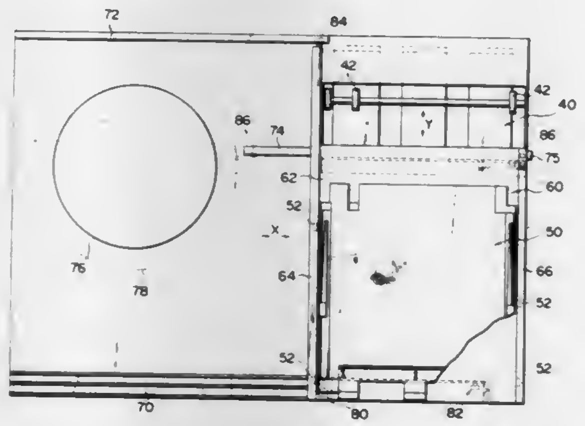
B. means for placing said localizer in a fixed relationship to the body to be scanned with the localizer axial axis being substantially parallel to the axis of the body to be scanned so that any reconstructed planar slice from a scan will lie in an arbitrary plane relative to the axes of said parallelapiped and intersect at least four of said rod elements and at least three of said diagonal elements and a slice image therefrom will contain identifiable image marks corresponding to the intersection of the planar slice with said elements, and so that if a target image is present in the slice image, the coordinates of the target in the body associated with said target image can be calculated.

4,618,979
X-RAY FLUOROSCOPIC/RADIOGRAPHIC APPARATUS

Katsuhide Koyama, Yaita, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Jun. 1, 1984, Ser. No. 616,151
Claims priority, application Japan, Jun. 3, 1983, 58-99151
Int. Cl.⁴ G03B *42/02*

U.S. Cl. 378—176 **8 Claims**



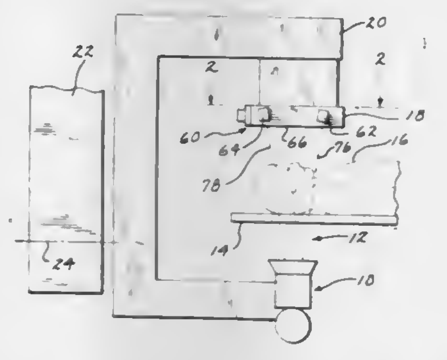
1. An X-ray fluoroscopic/radiographic apparatus for photographing an X-ray image on a film, comprising:
   carriage means movable along an X axis for conveying the film between a standby position, where said carriage means receives and supplies the film, and a photographing position, where the X-ray image is photographed on the film, said standby and photographing positions being separated by a first prescribed distance L along said X axis;
   a plurality of guide rails extending parallel to each other along said X axis from said standby position to said photographing position of said carriage means;
   a plurality of guided members mounted on said carriage means, each of said guided members being engageable with and movable along one of said plurality of guide rails; and
   support means mounted on said carriage means for supporting at least one of said guided members, said support means being movable relative to said carriage means by a second prescribed distance S along said X axis, said guided member supported by said support means being moved by a distance equal to L minus S along said guide rail corresponding thereto when said carriage means moves from said standby position to said photographing position.

4,618,980
EXIT BEAM INDICATOR FOR RADIOGRAPHIC EQUIPMENT

Charles Lescrenier, 660 Crescent Dr., Wauwatosa, Wis. 53213, and Val Bautista, Spring Grove, Ill., assignors to Charles Lescrenier, Wauwatosa, Wis.

Filed Sep. 12, 1984, Ser. No. 650,306
Int. Cl.⁴ A61B *6/08*

U.S. Cl. 378—206 **13 Claims**



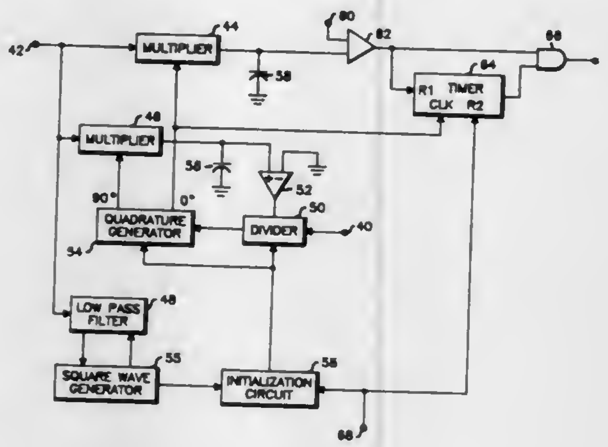
1. An indicator for indicating at least one dimension of a X-ray beam diverging from an X-ray source, said X-ray source being located on one side of an object and the X-ray beam exiting on a second side of the object, the X-ray beam being defined by movable collimator means and having an axis, said indicator comprising:
   a base member positioned on the second side of the object;
   a pair of light sources mounted on said base member for generally linear movement toward and away from each other normal to the axis of the X-ray beam and for angular movement about an axis normal to the direction of linear movement of the light sources and the axis of the X-ray beam, said light sources providing beams of light for application to the second side of the object and capable of defining one dimension of said X-ray beam;
   operating means for providing linear and angular movement of the light sources; and
   control means connected to said operating means and couplable to the collimator means for causing said operating means to move said light sources so that the beams of light are congruent with the edges of the X-ray field, as defined by the collimator means, and converge at the source of the X-ray beam.

4,618,981
TONE DETECTOR WITH PSEUDO PHASE LOCKED LOOP

Lawrence M. Ecklund, Wheaton, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 28, 1985, Ser. No. 706,583
Int. Cl.⁴ H04H *5/00*

U.S. Cl. 381—15 **1 Claim**



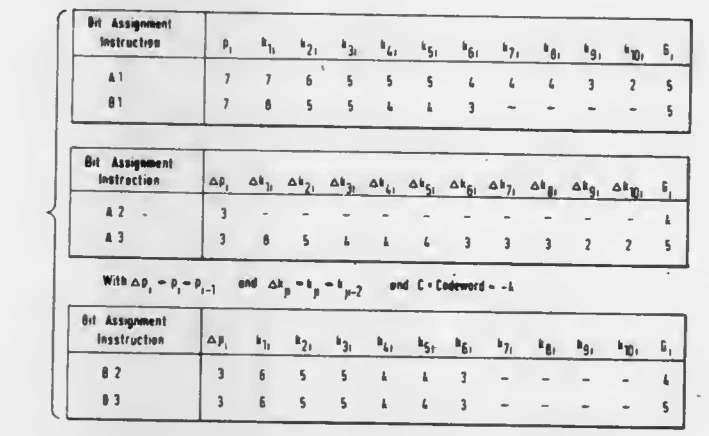
1. A tone detector comprising:
   an input means for providing a received signal which may contain a tone of a predetermined frequency;
   a signal source for providing a signal having a second frequency, the second frequency being much higher than said predetermined frequency;
   divider means coupled to said signal source and having two divisor numbers for providing a first output signal slightly higher than said predetermined frequency and a second output signal slightly lower than said predetermined frequency, only one of said divisor numbers being enabled at a time;
   control means coupled to the input means and to the divider means for determining the frequency difference between any received tone signal and the divider output and adjusting the choice of divisor number to maintain the average of the divider output at the predetermined frequency;
   phase shifting means coupled to the divider means for shifting a divider means output signal by 90°;
   detect means coupled to the input means and to the phase shifting means for detecting the tone frequency in the received frequency, determining the amplitude of the tone frequency and providing an output signal in response to said amplitude.

4,618,982
DIGITAL SPEECH PROCESSING SYSTEM HAVING REDUCED ENCODING BIT REQUIREMENTS

Stephan Horvath, and Carlo Bernasconi, both of Zurich, Switzerland, assignors to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Sep. 23, 1982, Ser. No. 421,884
Claims priority, application Switzerland, Sep. 24, 1981, 6168/81
Int. Cl.⁴ G10L *5/00*

U.S. Cl. 381—36 **15 Claims**



Bit Assignment Instruction	p_i	k_{1i}	k_{2i}	k_{3i}	k_{4i}	k_{5i}	k_{6i}	k_{7i}	k_{8i}	k_{9i}	k_{10i}	G_i
A 1	7	7	6	5	5	5	4	4	4	3	2	5
B 1	7	8	5	5	4	4	3	–	–	–	–	5

Bit Assignment Instruction	Δp_i	Δk_{1i}	Δk_{2i}	Δk_{3i}	Δk_{4i}	Δk_{5i}	Δk_{6i}	Δk_{7i}	Δk_{8i}	Δk_{9i}	Δk_{10i}	G_i
A 2	3	–	–	–	–	–	–	–	–	–	–	4
A 3	3	8	5	4	4	4	3	3	3	2	2	5

With $\Delta p_i = p_i - p_{i-1}$ and $\Delta k_\mu = k_\mu - k_{\mu-2}$ and C = Codeword = −4

Bit Assignment Insstruction	Δp_i	k_{1i}	k_{2i}	k_{3i}	k_{4i}	k_{5i}	k_{6i}	k_{7i}	k_{8i}	k_{9i}	k_{10i}	G_i
B 2	3	6	5	5	4	4	3	–	–	–	–	4
B 3	3	6	5	5	4	4	3	–	–	–	–	5

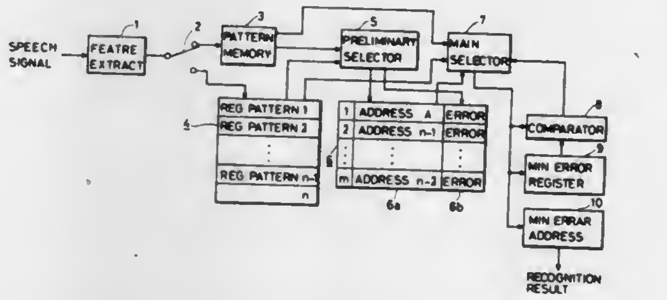
1. In a linear prediction speech processing system wherein a digital speech signal is divided in the time domain into sections and each section is analyzed to determine the parameters of a speech model filter, a volume parameter and a pitch parameter, a method for coding the determined parameters to reduce bit requirements and increase the frame rate of transmission of the parameter information for subsequent synthesis, comprising the steps of:
   combining the determined parameters of at least two successive speech sections into a block of information;
   coding the determined parameters for the first speech section in said block in complete form to represent their magnitudes; and
   coding at least some of the parameters in the remaining speech sections in said block in a form representation of their relative difference in magnitude from the corresponding parameters in said first speech section.

4,618,983
SPEECH RECOGNITION WITH PRELIMINARY MATCHING

Yoshiki Nishioka, Tenri; Mitsuhiro Hakaridani, Nara, and Hiroyuki Iwahashi, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 22, 1982, Ser. No. 452,298
Claims priority, application Japan, Dec. 25, 1981, 56-210605
Int. Cl.⁴ G10L *5/00*

U.S. Cl. 381—43 **8 Claims**



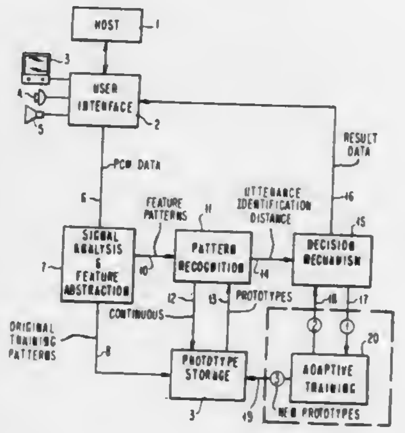
1. A method of recognizing audible speech made up of a plurality of speech patterns comprising:
   (a) providing a plurality of reference speech patterns, each said reference speech pattern being divided into a predetermined number of feature frames;
   (b) introducing a speech signal including at least one speech pattern to be recognized;
   (c) dividing said speech pattern to be recognized into said predetermined number of feature frames, said frames of said speech pattern to be recognized corresponding in time to said frames of each said reference pattern;
   (d) comparing said speech pattern to be recognized to said reference pattern, in only a portion of said predetermined number of feature frames to determine a coarse indication of relative correlation therebetween;
   (e) ranking said reference patterns as to relative degree of correlation with speech patterns to be recognized as represented by said coarse indication developed by said step of comparing, the highest ranking indicating the highest coarse indication of related correlation;
   (f) determining a final degree of correlation between only the highest ranked of said reference patterns and said speech pattern to be recognized to determine which reference pattern corresponds to said speech pattern to be recognized.

4,618,984
ADAPTIVE AUTOMATIC DISCRETE UTTERANCE RECOGNITION

Subrata K. Das, Granite Springs, and Norman R. Dixon, Katonah, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 8, 1983, Ser. No. 502,415
Int. Cl.⁴ G10L *5/00*

U.S. Cl. 381—43 **4 Claims**



1. A method of adaptive automatic discrete utterance recognition comprising:
   (a) providing the system with a single utterance set of prototype vocabulary keywords;
   (b) operating the system until a misrecognized utterance is detected;
   (c) prompting a prompted prototype vocabulary keyword candidate utterance;
   (d) calculating recognition distances for the unrecognized utterance, the prompted prototype vocabulary keyword candidate utterance, and the prototype vocabulary keyword;
   (e) comparing the calculated recognition distances; and
   (f) selectively accepting as prototype vocabulary keyword the prototype vocabulary keyword candidate utterance as a function of said step of comparing the calculated recognition distances.

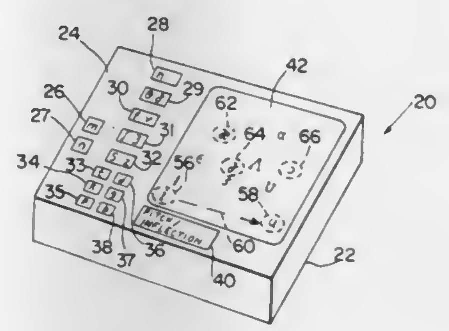
4,618,985
SPEECH SYNTHESIZER

J. David Pfeiffer, 64 Côte St. Charles, Box 470, Hudson Heights, Québec, Canada (J0P 1J0)

Continuation of Ser. No. 391,981, Jun. 24, 1982, abandoned. This application Jul. 22, 1985, Ser. No. 757,205

Int. Cl.⁴ G10L *5/00*

U.S. Cl. 381—51 **40 Claims**



1. A speech sound generating system comprising:
means for simulating the frequency response of the vocal tract, said frequency response including two or more resonant peaks or formants continuously movable in frequency, said means for simulating the frequency response of the vocal tract comprising a tunable formant filter for each of said formants;
means continuously responsive to operator input for simultaneously and continuously controlling the frequency locations of each of said formants by continuously tuning said tunable formant filters;
means for simulating electrically the vibration of the vocal cords, with variable pitch period;
additional means continuously responsive to operator input for controlling said vocal cord pitch variation;
means combining said vocal cord simulation with said frequency response simulation of the vocal tract to produce a resulting waveform; and
transducing means to cause the resulting waveform to be emitted as an audible sound.

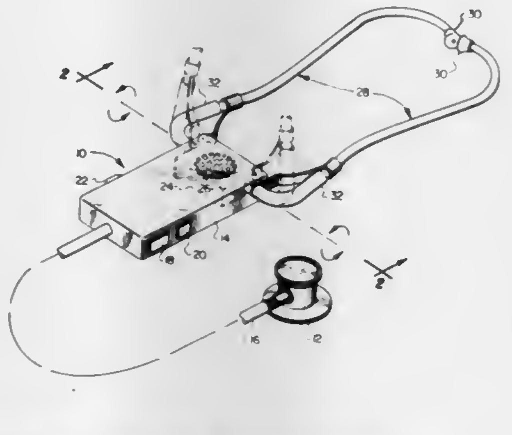
4,618,986
ELECTRONIC STETHOSCOPE

Larry H. Hower, New York, N.Y., assignor to The Hart Group, Dallas, Tex.

Continuation-in-part of Ser. No. 480,062, Mar. 29, 1983. This application Nov. 4, 1983, Ser. No. 549,195

Int. Cl.⁴ A61B *5/02*

U.S. Cl. 381—67 **8 Claims**



1. An electronic stethoscope comprising:
an electronic component case for encompassing electronic components in circuitry;
a pickup head;
a microphone;
a first tubular acoustic member coupling said pickup head and said microphone;
a binaural headpiece;
a speaker mounted within said electronic component case;
an amplifier circuit having its input coupled to said microphone and its output coupled to said speaker;
a rotatable tubular member disposed adjacent to said speaker and extending out through each side of said electronic component case for coupling the output of said speaker out of said electronic component case; and
means coupling said binaural headpiece to said rotatable tubular member whereby said binaural headpiece may be rotated with respect to said electronic component case for ease in storage of said electronic stethoscope.

4,618,987
LARGE-AREA ACOUSTIC RADIATION SYSTEM

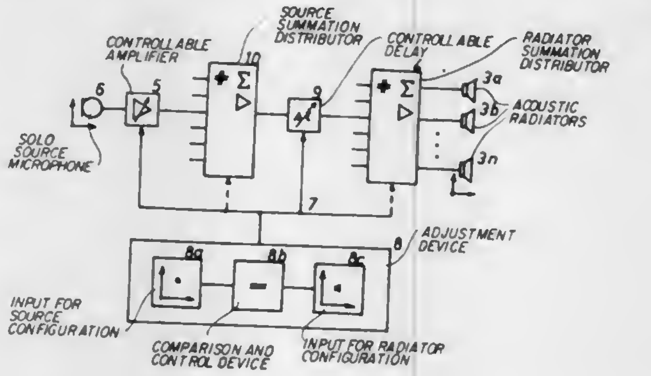
Gerhard Steinke; Peter Fels; Wolfgang Hoeg; Werner Lorenz; Wolfgang Ahnert, all of Berlin; Frank Steffen, Blankenfelde, and Walter Reichardt, Dresden, all of German Democratic Rep., assignors to Deutsche Post, Rundfunk-und Fernsehtechnisches Zentralamt, Berlin-Adlershof, German Democratic Rep.

Filed Sep. 6, 1984, Ser. No. 647,951

Claims priority, application German Democratic Rep., Dec. 14, 1983, 257890

Int. Cl.⁴ H04R *1/22*

U.S. Cl. 381—82 **12 Claims**


CONTROLLABLE AMPLIFIER
SOURCE SUMMATION DISTRIBUTOR
CONTROLLABLE DELAY
RADIATOR SUMMATION DISTRIBUTOR
6
5
10
9
3a
3b
3n
ACOUSTIC RADIATORS
SOLO SOURCE MICROPHONE
7
8
ADJUSTMENT DEVICE
8a
8b
8c
INPUT FOR SOURCE CONFIGURATION
COMPARISON AND CONTROL DEVICE
INPUT FOR RADIATOR CONFIGURATION

1. In a large-area sound reinforcement system for multidimensional extended action and reception areas having several distributed sound radiators and microphones as well as devices for the delay, amplification and non-reactive summation in the microphone sound radiator connections, at least one of the microphones being assigned to a solo source; the improvement wherein at least two of the devices for the delay and for amplification disposed in connections assigned to said one microphone comprise a device for the control of delay times and at least another for the control of amplitudes, wherein, in addition to sound radiators positioned in the transitional area between the action area and the reception area, additional sound radiators distributed in the action area are connected to the output devices for the summation and distribution of said connections, and wherein a control device for said two devices for delay and amplification is comprised of input means for receiving microphone position and sound source power data and for receiving sound radiator position and power data, and a comparison and control device for deriving delay time and amplitude signals for the control of said two of said devices for delay and amplification from the comparison of said position and sound power data.

4,618,988
MATCHER

Michael Schiller, Riverdale, N.Y., assignor to Fingermatrix, Inc., North White Plains, N.Y.

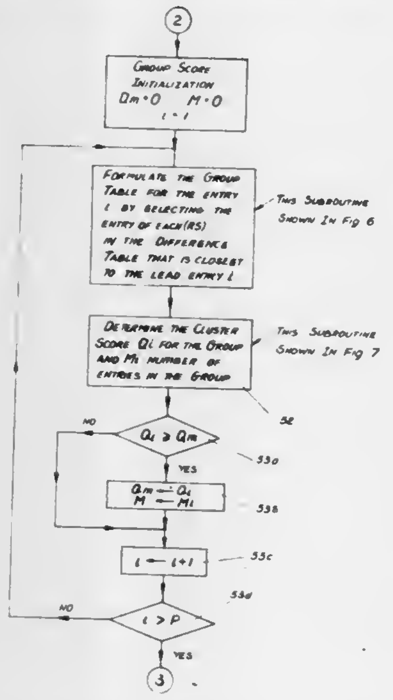
Filed Jul. 25, 1984, Ser. No. 634,410

Int. Cl.⁴ G06K *9/00*

U.S. Cl. 382—5 **49 Claims**

1. In the method of matching a set of subject identification points against a set of reference identification points involving

a matcher mechanism that employs a difference table, the improvement comprising the steps of:
optically scanning the surface of an object that is deemed to be a subject input to provide said set of subject identification points substantially unique to the object being scanned,
for each line entry on the difference table as a lead entry, providing a group of difference table line entries, limiting each group so provided to no more than one line entry for each of said reference identification points,


2
GROUP SCORE INITIALIZATION
Qm=0 M=0
i=1
FORMULATE THE GROUP TABLE FOR THE ENTRY i BY SELECTING THE ENTRY OF EACH (RS) IN THE DIFFERENCE TABLE THAT IS CLOSEST TO THE LEAD ENTRY i
THIS SUBROUTINE SHOWN IN FIG 6
DETERMINE THE CLUSTER SCORE Qi FOR THE GROUP AND Mi NUMBER OF ENTRIES IN THE GROUP
THIS SUBROUTINE SHOWN IN FIG 7
52
NO
Qi ≥ Qm
53a
YES
Qm ← Qi
M ← Mi
53b
i ← i+1
53c
53d
NO
i > P
YES
3

for each of said groups, providing a quality value determined by a weighted relationship between the relative displacements of the various line entries in the group,
selecting the most significant group quality value, and
verifying a match between the set of subject points and the set of reference points as a function of the relative magnitude of the most significant quality value as compared to the number of identification points in a first one of said sets.

4,618,989
METHOD AND SYSTEM FOR DETECTING ELLIPTICAL OBJECTS

Hideo Tsukune, Kashiwa, and Keisuke Goto, Tokyo, both of Japan, assignors to Michio Kawata, Director-General of Agency of Industrial Science and Technology and Kabushiki Kaisha Meidensha, both of, Japan

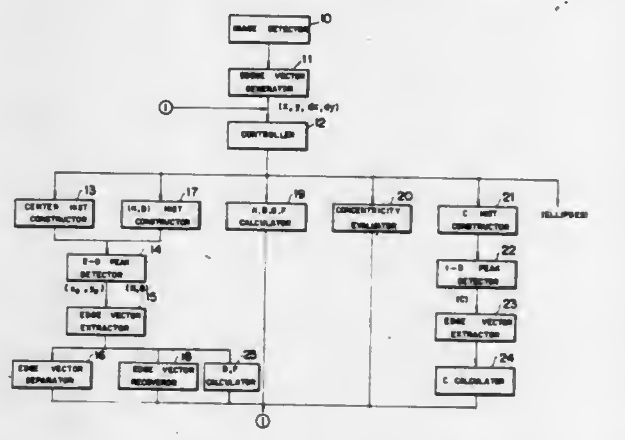
Filed Jan. 19, 1984, Ser. No. 572,535

Claims priority, application Japan, Jan. 21, 1983, 58-8156

Int. Cl.⁴ G06K *9/46*

U.S. Cl. 382—25 **18 Claims**

1. A method of detecting an elliptical object, which comprises the following steps of:
(a) transducing optical energy representative of image brightness of all locations (x, y) on an image plane including the elliptical object into electric brightness signals;
(b) partially differentiating the transduced brightness signals with respect to x and y to obtain gradient signals representative of edge image brightness gradient $I=(\partial I/\partial x, \partial I/\partial y)$;
(c) generating edge vector signals representative of locations (x,y) and directions (dx,dy) of an edge vector field in perpendicular to the edge image brightness gradient I in a direction such that the bright image will always be on one side of the vector signals;
(d) selecting the edge vector signals representative of all pairs of mate edge vectors having opposite directions to each other and calculating all midpoints $(n_1+n_2=0)$ between the two selected mate edge vectors;
(e) selecting a center signal having a center peak value (x_o, y_o) from the calculated midpoints;
(f) selecting vector signals representative of the locations (x, y) and directions (dx, dy) of the edge vectors supporting the centered conics having the selected center peak value (x_o, y_o) from the edge vector field signals;
(g) transforming the selected values (x, y, dx, dy) of the edge vector signals to a first two-dimensional $(p=(YdX+XdY)/YdY, Q=XdX/YdY)$ space to form a first straight line and calculating all intersections of second straight lines corresponding to each transformed point on the first straight line in a second two-dimensional (H, B) space in accordance with a Hough transformation method;



(h) selecting a signal having a peak value located within a specific range $(H^2-B<0)$ on the (H, B) space for detecting an ellipse;
(i) calculating coefficients $G=-X_o-Hy_o$ and $F=-Hx_o-By_o$ of an ellipse group having the same center on the basis of the selected coefficients H, B and the selected center locations (x_o, y_o);
(j) calculating coefficients C on the basis of the calculated coefficients H, B, G, F and the edge vector locations (x, y); and
(k) selecting a peak value from the calculated coefficients C to identify a detected ellipse.

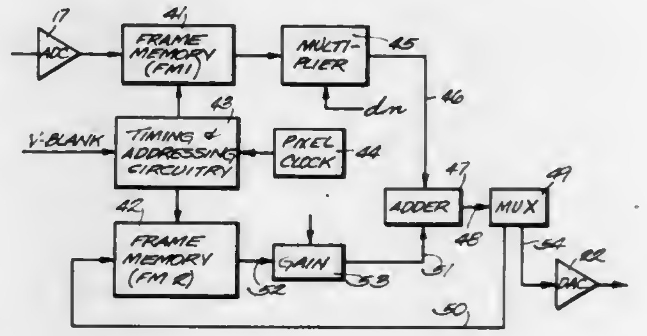
4,618,990
EDGE ENHANCEMENT FILTERING FOR DIGITAL FLUOROGRAPHY IMAGES

Lawrence E. Sieb, Jr., Oconomowoc, and David G. Mliner, New Berlin, both of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 15, 1984, Ser. No. 671,746

Int. Cl.⁴ G06K *9/40*

U.S. Cl. 382—43 **1 Claim**



1. A method of enhancing edges in a fluorographic image obtained with a video camera and converted to digitized picture elements (pixels) which contain frequency components corresponding to true image information and higher frequency components corresponding to noise, comprising the steps of:
determining the filter function, d_n in the time domain required for accentuating frequency components corresponding to edges in the image by calculating

$$d_n = \frac{1}{\omega_s} \int_{-\frac{\omega_s}{2}}^{\frac{\omega_s}{2}} D(j\omega)e^{j\omega nT} d_\omega$$

where:

ω_s = pixel sampling frequency

$T = 1/\omega_s$

n = an integer from $-\infty$ to ∞

$D(j\omega)$ = filter frequency response

d_n = Fourier coefficients

to thereby obtain a series of filter coefficients over the integral from $-\omega_s/2$ to $\omega_s/2$, where the "n" selected are finite integral numbers in the range of $-n$ to $+n$ corresponding to the left and right and up and down pixel shifts desired,

storing the Fourier coefficients, d_n,

storing in one full frame memory the digitized image that is to have its edges enhanced,

each time a video vertical blanking pulse occurs effecting a time delay corresponding to a number of pixels at said sampling frequency for one of the values of "n" and then reading out the pixel values from said one memory to thereby effectively shift the images readout from said one memory to the left and right and up and down relative to said image stored in said one memory by numbers of pixels through the range of $-n$ to n, and when the first shifted image is read out multiplying it by the coefficient d_n corresponding to the value of "n" by which the image is shifted and storing this image in a second full frame memory, then as each subsequent image is read out multiplying it by a coefficient, d_n, corresponding to "n" and adding it to the sum of the previously read out and multiplied images and each time storing the result in said second memory such that when a number of images corresponding to the number of images from $-n$ to n said second memory will contain an edge map image represented by digital pixel values corresponding only to edges,

next summing the edge map image from said second memory with said original image from said first memory to thereby enhance the edges in the original image,

converting the digital result of said summing to analog video signals and using the analog video signals to drive a video monitor for facilitating visualization of the edge enhanced image.

4,618,991
PROCESSING METHOD FOR THE ROTATION OF AN IMAGE

Kuniaki Tabata, Nishitama, and Haruo Takeda, Machida, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 23, 1984, Ser. No. 613,189

Claims priority, application Japan, May 23, 1983, 58-89119; Nov. 2, 1983, 58-204826

Int. Cl.^{4} G06K *9/32*

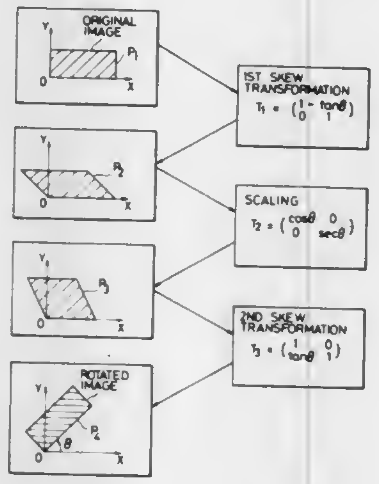
U.S. Cl. 382—46 **8 Claims**

1. An image rotation processing method for transforming the address signals identifying the storage locations in memory where there are stored signals of an original image represented in two-dimensional orthogonal coordinates into the address signals of memory locations for storing signals of an image rotated by an angle θ (radians) with respect to said original image, comprising:

a first step of transforming the address signals of the memory storage locations of said original image into address signals of memory storage locations which are represented on skew coordinates making an intersectional angle θ (radians) with respect to one of said orthogonal coordinates;

a second step of conducting reduction of the transformed address signals substantially of cos θ in the direction of one axis of said orthogonal coordinates and enlargement substantially of sec θ (or cosec θ) in the direction of the other axis; and

a third step of transforming the reduced/enlarged address signals into address signals of memory storage locations which are represented on skew coordinates making an intersectional angle θ (radians) with respect to the other one of said orthogonal coordinates.



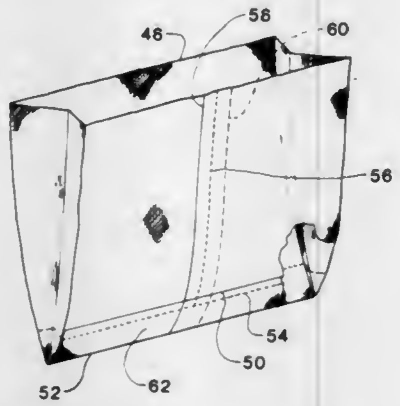
4,618,992
BAG CONVERTABLE TO PLACE MAT

Julius K. La Grotteria, 607 E. Lee Dr., Santa Maria, Calif. 93454

Filed Dec. 6, 1984, Ser. No. 678,789

Int. Cl.^{4} B65D *33/00, 30/10*

U.S. Cl. 383—4 **1 Claim**



1. In a bag of the type that is formed by overlapping two opposite edges of a rectangular sheet of material to form a tube that includes an overlapped strip, then folding one end portion of the tube back upon itself to form a trough-shaped bottom, the improvement comprising:

a first row of tearing perforations extending through the end portion of the tube that was folded back on itself, adjacent and generally parallel to the trough-shaped bottom; and,

a second row of tearing perforations extending within the overlapped strip from said first row of tearing perforations to the open end of the bag, whereby after all of the tearing perforations have been torn, the material of the bag can be spread out flat to serve as a place mat, and this result is achieved without appreciably weakening the bag.

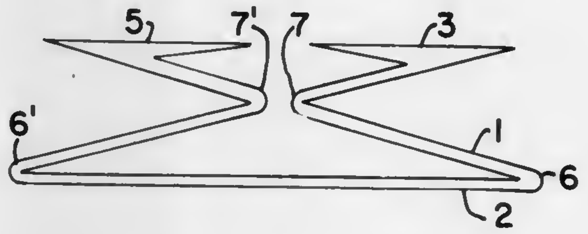
4,618,993
VALVE BAG

Ernst R. Berthelsen, Terndrup, Denmark, assignor to Dac-Emballage A.M.B.A., Denmark

Filed Apr. 29, 1983, Ser. No. 490,018

Int. Cl.^{4} B65D *30/24*

U.S. Cl. 383—44 **5 Claims**



1. A valve bag, comprising;

(a) a substantially flat upper bottom, including a valve adapted for insertion of a filling spout,

(b) a substantially flat lower bottom,

(c) an elongated central portion disposed between said upper and lower bottom, said central portion including a first and second sets of fold lines, said fold lines being perpendicular to the direction of elongation of the central portion, each of said first set of fold lines being disposed between the center line of the central portion and the bottoms and each of the second set of fold lines being disposed between the first lines and the bag bottoms,

(d) where the bag is symmetrically folded along the first and second fold lines so that the upper and lower bottoms lie on the central portion in a side-by-side and parallel manner.

4,618,994
TAPS

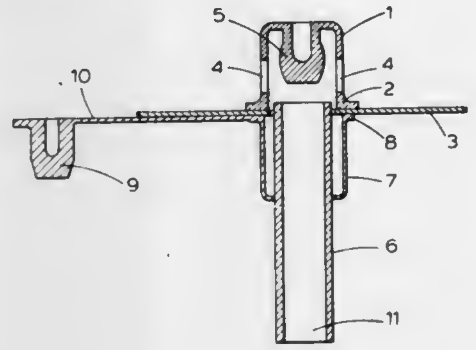
David C. Bishop, Portslade, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Aug. 1, 1984, Ser. No. 636,826

Claims priority, application United Kingdom, Aug. 2, 1983, 8320783

Int. Cl.^{4} B65D *33/16, 33/38*

U.S. Cl. 383—96 **5 Claims**



1. A container for liquids having a tap comprising a first valve member including a cap secured to the container and having a drainage hole leading into the cap and a male valve plug in the cap; a second valve member including a tubular female valve element which is engageable with the male valve plug to close the tap, but which is disengageable to open the tap, and a flexible sheath which is secured to and encloses part of the female valve element and which is connected with the cap in a fluid-tight manner and permits relative movement between the two valve members.

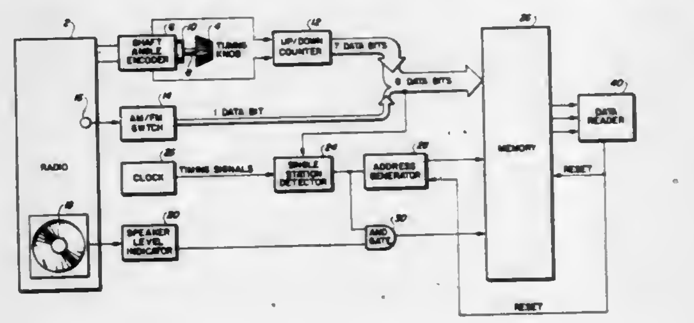
4,618,995
AUTOMATIC SYSTEM AND METHOD FOR MONITORING AND STORING RADIO USER LISTENING HABITS

Saundra R. Kemp, 114 Davis Ave., Staten Island, N.Y. 10310

Continuation-in-part of Ser. No. 549,800, Nov. 9, 1983, abandoned. This application Apr. 24, 1985, Ser. No. 726,672

Int. Cl.^{4} H04H *9/00;* **H04B** *17/00*

U.S. Cl. 455—2 **14 Claims**



13. A method of monitoring and storing the listening habits of a radio user, comprising:

providing a one bit digital output to indicate whether a radio is tuned to the AM band or the FM band;

providing a seven bit digital output to indicate what particular radio station said ratio is tuned to;

checking over a two minute period to see if the eight bits including said one bit and said seven bits remain constant for at least a one minute period during said two minute period;

storing said eight bits in a memory location of a memory once each two minute period if said eight bits remained constant for at least said one minute period during said two minute period and said radio is playing at an audible level;

repeating the above steps every two minutes and moving to a new memory location each time each eight bits are stored in said memory.

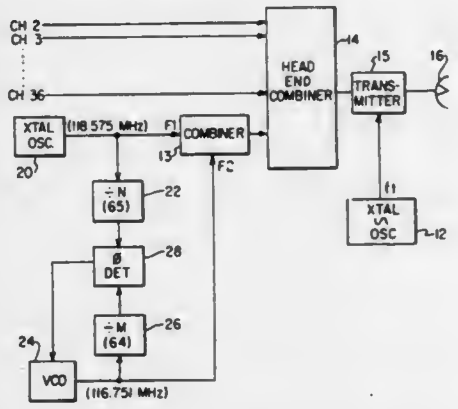
4,618,996
DUAL PILOT PHASE LOCK LOOP FOR RADIO FREQUENCY TRANSMISSION

Marc D. Rafal, Durham; Larry W. Burton, Bahama, and William T. Joines, Durham, all of N.C., assignors to Avnet, Inc., New York, N.Y.

Filed Apr. 24, 1984, Ser. No. 603,432

Int. Cl.^{4} H04B *1/04, 1/30*

U.S. Cl. 455—46 **11 Claims**



11. A radio frequency transmitter for use in producing a suppressed-carrier radio frequency signal F_1 containing at least one coherently modulated information signal and two pilot tones, comprising:

a crystal oscillator producing a pilot tone F1 at a frequency unrelated to the suppressed carrier f_1;

a controllable local oscillator producing a second frequency F2, wherein F1=N/M F2, where N and M are integers;
means for combining the outputs of the crystal oscillator and controllable local oscillator, and applying them to the suppressed carrier modulator along with the at least one coherently modulated information signal;
means for dividing the crystal oscillator signal by the integer value N;
means for dividing the controllable local oscillator signal by the integer value M; and
means for comparing the divided outputs to produce a control signal controlling the local controllable oscillator.

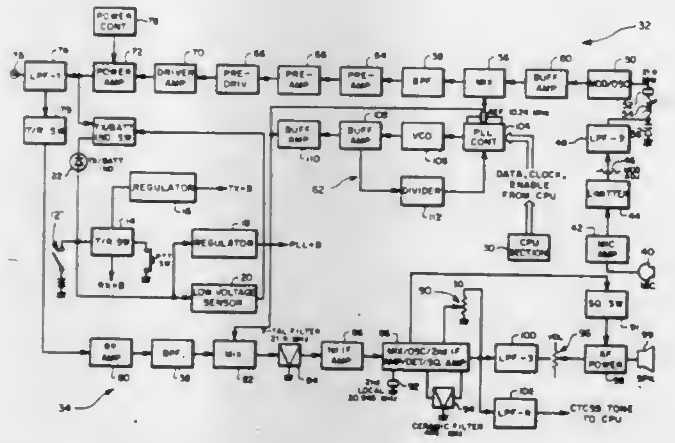
4,618,997
PORTABLE TRANSCEIVER

Kazuyoshi Imazeki; Toshiyuki Tanaka, and Hiromichi Miyakoshi, all of Tokyo, Japan, assignors to General Research of Electronics, Inc., Tokyo, Japan

Filed Mar. 23, 1984, Ser. No. 592,825

Int. Cl.⁴ H04B *1/40*

U.S. Cl. 455—76 **15 Claims**



1. A microprocessor-controlled frequency-synthesized radio transceiver system comprising: frequency synthesizing means; microprocessor means for controlling the synthesis by said frequency synthesizing means of local-oscillator frequencies for both the transmitting and receiving of radio signals, said microprocessor means having a predetermined capacity for storage of data smaller than the capacity required to store sufficient data to control the synthesis of local-oscillator frequencies for a first plurality of radio frequencies comprising defined broadcast frequencies extending over a predetermined band of radio frequencies between given upper and lower frequency limits; transmitter circuit means and receiver circuit means, each capable of operating at all radio frequencies within said predetermined band; said transmitter circuit means and said receiver circuit means being respectively operatively coupled with said frequency synthesizing means; and control input means for programming said microprocessor means to control the synthesis of local-oscillator frequencies for a second plurality of radio frequencies comprising fewer than all of said first plurality of radio frequencies and requiring a quantity of data which is within the predetermined data storage capacity of the microprocessor means; wherein said frequency synthesizing means comprises phase-locked loop means coupled with said microprocessor means for synthesizing a plurality of local-oscillator frequencies including local-oscillator frequencies for all of the radio frequencies within said predetermined band; said microprocessor means being operative for producing predetermined control signals including data corresponding to local-oscillator frequencies for said second plurality of frequencies; said phase-locked loop means including PLL control means responsive to said predetermined control signals for controlling synthesis of corresponding local-oscillator frequencies, and dual-modulus selection means responsive to a predetermined one of said predetermined control signals for controlling synthesis of a first group of local-oscillator frequencies in response to predetermined corresponding data from said microprocessor; said dual-modulus selection means being further responsive to a second predetermined one of said predetermined control signals for controlling synthesis of a second group of local-oscillator frequencies in response to the same predetermined corresponding data from said microprocessor means.

4,618,998
RADIO COMMUNICATIONS CONTROL SYSTEM WHICH AUTOMATICALLY RETURNS THE SYSTEM TO THE SPEECH CHANNEL

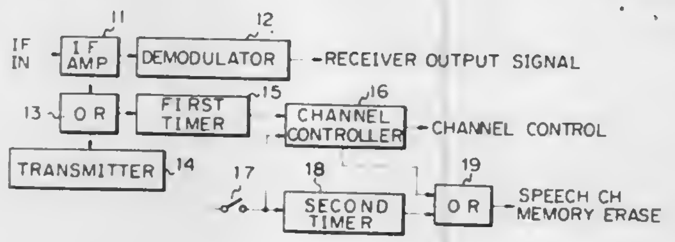
Katsuaki Kawamura, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 29, 1983, Ser. No. 537,011

Claims priority, application Japan, Sep. 30, 1982, 57-171576

Int. Cl.⁴ H04B *1/40;* H04Q *7/00;* H04M *11/00*

U.S. Cl. 455—77 **2 Claims**



1. A radio communications system including a plurality of stations using a call channel and a plurality of speech channels one of which is to be selected to convey information, each of said stations comprising:
a receiving part for receiving a radio signal transmitted by another station;
a transmitting part for transmitting a radio signal modulated in accordance with various information; and
a control circuitry for controlling said receiving and transmitting parts which includes,
a channel control means connected to said receiving part and said transmitting part for determining a receiving frequency of said receiving part and a frequency of a transmitting radio signal from said transmitting part, among frequencies of said call channel and said plurality of speech channels;
a speech channel memory means connected to said channel control means for temporarily memorizing a frequency data of a speech channel on which an activity is taking place;
a manually operable reset switch for transmitting a reset command signal to said channel control means for resetting the frequency of the system at said call channel;
a first timer means connected to said receiving part, said transmitting part, and said channel control means, for detecting a condition that none of said radio signals is present in said receiving and transmitting parts and transmitting a first timer output signal to said channel control means with a delay of a first predetermined time period after the detection of said condition, thereby controlling said channel control means to reset the frequency of the system at said call channel after the delay of said first predetermined time period; and
a second timer means connected to said manually operable reset switch and said channel control means and to said speech channel memory means, and responsive to said reset command signal and transmitting an erase command signal to said speech channel memory means with a delay of a second predetermined time period after a reception of said reset command signal, thereby delaying an erasure of said frequency data memorized in said speech channel memory means so that a last used speech channel can be recalled by said channel control means from said speech channel memory means.

4,618,999
POLAR LOOP TRANSMITTER

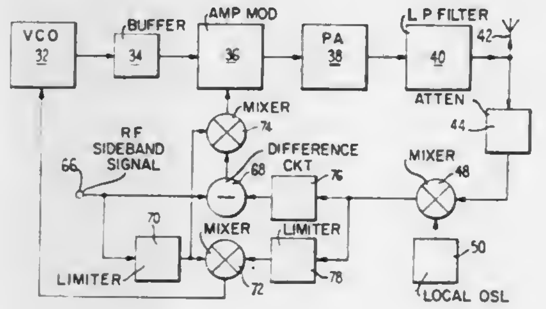
Stephen W. Watkinson, Cambridge, England, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 577,945, Feb. 8, 1984, abandoned. This application Sep. 9, 1985, Ser. No. 774,373

Claims priority, application United Kingdom, Feb. 23, 1983, 8304975

Int. Cl.⁴ H04B *1/04*

U.S. Cl. 455—108 **9 Claims**



1. In a polar loop transmitter comprising a voltage controlled oscillator, an amplitude modulator connected to receive the output of said voltage controlled oscillator, an output circuit coupled to the amplitude modulator, means coupled to the output circuit for producing an attenuated down-converted signal, a source of radio frequency signals and a feed back circuit connected to the source and down-converting means for producing a control signal for said amplitude modulator;
the improvement wherein said feedback circuit comprises difference circuit means for producing a difference signal whose instantaneous value is the difference between the instantaneous values of said down-converted signal and radio frequency signals, amplitude demodulator means for amplitude demodulating said difference signal, and means applying the thus demodulated signal to said amplitude modulator as a control signal.

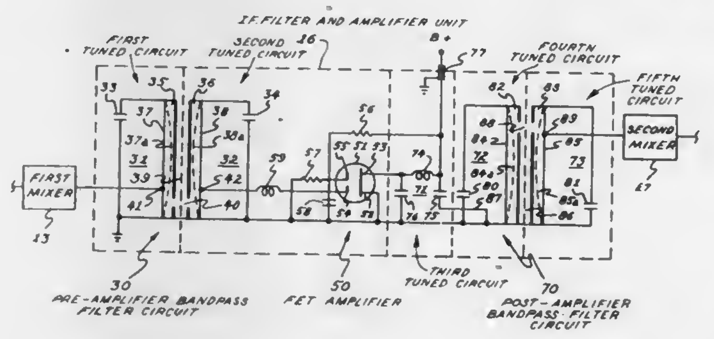
4,619,000
CATV CONVERTER HAVING IMPROVED TUNING CIRCUITS

John Ma, 499 Dundee Ave., Milpitas, Calif. 90535

Filed Sep. 24, 1984, Ser. No. 654,201

Int. Cl.⁴ H04B *1/18;* H03J *1/26, 1/16*

U.S. Cl. 455—131 **7 Claims**



1. A filter for use in a CATV converter which receives a wideband CATV signal comprising a plurality of channel bandwidths and converts said wideband CATV signal to a narrowband signal comprising a single channel bandwidth by applying said wideband signal to said filter to obtain said narrowband signal, said filter comprising a first tunable resonant circuit excited in response to said wideband signal, said first tunable circuit including a fixed capacitive element coupled to a variable inductance means for tuning said first tunable resonant circuit; a second tunable resonant circuit including a fixed capacitive element coupled to a variable inductance means for tuning said second tunable resonant circuit, said narrowband signal being received from said second tunable circuit; and a means for substantially shielding said first tunable resonant circuit from said second tunable resonant circuit, said first tunable resonant circuit being transmissively coupled to said second tunable resonant circuit through an aperture in said sheilding means, wherein at least one of said variable inductance means is provided by a wire disposed in proximity to and spaced from said shielding means, and wherein the inductance of said variable inductance means provided by said wire resonates with the respective fixed capacitive element to which it is coupled and said inductance is varied by adjusting the spacing of said wire from said shielding means in order to tune the tunable circuit including said wire.

4,619,001
TUNING SYSTEMS ON DIELECTRIC SUBSTRATES

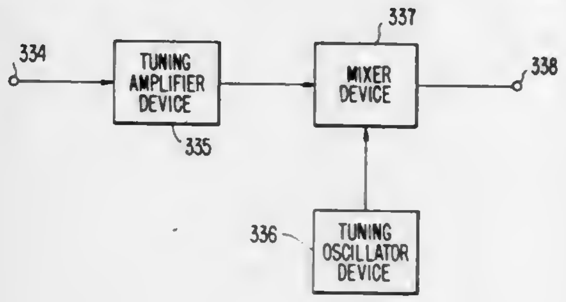
Johji Kane, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

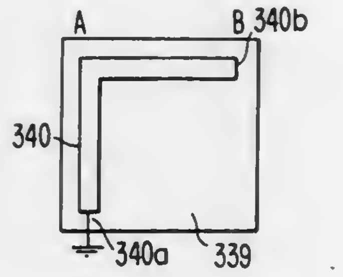
Filed Aug. 1, 1984, Ser. No. 636,666

Claims priority, application Japan, Aug. 2, 1983, 58-141543; Aug. 3, 1983, 58-143056; Aug. 3, 1983, 58-143057; Aug. 3, 1983, 58-143058; Aug. 3, 1983, 58-143062; Aug. 4, 1983, 58-143247; Aug. 4, 1983, 58-143248; Aug. 4, 1983, 58-143260

Int. Cl.⁴ H04B *1/26;* H03F *3/191;* H03B *5/18;* H03J *3/00*

U.S. Cl. 455—192 **49 Claims**





28. A superheterodyne tuning system comprising:
a tuning oscillator circuit for producing a tuning oscillating signal;
a selective tuning amplifier circuit for amplifying a received signal to obtain a selective tuning amplified signal;
a mixer circuit for mixing said selective tuning amplified signal and said tuning oscillating signal thereby to obtain an intermediate frequency signal; and
an equivalent parallel resonant circuit comprising:
a dielectric; and
a pair of first and second electrodes confronting each other with said dielectric interposed therebetween, each of said first and second electrodes having at least one bent portion to present primarily a lumped-constant inductance and having a desired equivalent electrical length;
said first and second electrodes having ground or common terminals located out of mutually confronting positions so that voltage signals induced by mutual induction between the electrodes will be opposite in phase with respect to each other, thereby producing a parasitic distributed-constant capacitance due to a potential difference between the electrodes and a dielectric constant of the dielectric;
one of said first and second electrodes having a first terminal at a desired position thereof, the electrodes forming a two-terminal circuit network having the first terminal with the ground or common terminals serving as a second

terminal, the two-terminal circuit network forming said equivalent parallel resonant circuit composed of a lumped-constant inductance formed by said one electrode and a parasitic distributed-constant capacitance between the first and second electrodes;

wherein at least one of an oscillation output terminal of said tuning oscillator circuit, an amplifying output terminal of said selective tuning amplifier circuit and a mixing output terminal of said mixer circuit is connected to said first terminal of said equivalent parallel resonant circuit.

4,619,002

SELF-CALIBRATING SIGNAL STRENGTH DETECTOR

Stuart W. Thro, Cary, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 2, 1984, Ser. No. 627,270

Int. Cl.⁴ H04B *17/00, 1/16*

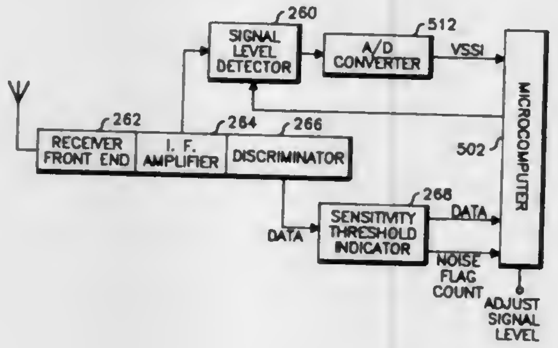
U.S. Cl. 455—226 **10 Claims**

1. A self-calibrating signal strength detector for use in an RF receiver having an output, comprising:

(a) an RF signal strength detector coupled to the output of said receiver having a relatively wide dynamic range and an adjustable output signal;

(b) a receiver sentivity threshold indicator circuit coupled to the output of said receiver circuit having a relatively narrow dynamic range, said receiver sensitivity threshold indicating circuit providing an output signal indicating when a received signal is at the receiver sensitivity threshold; and

(c) processing means coupled to each of said signal strength detector and said signal sensitivity threshold indicator circuit for monitoring the outputs thereof and adjusting the output signal of said signal strength detector means to a predetermined value when said signal sensitivity threshold indicator indicates a received signal is at the received threshold.



DESIGN PATENTS

GRANTED OCT. 21, 1986

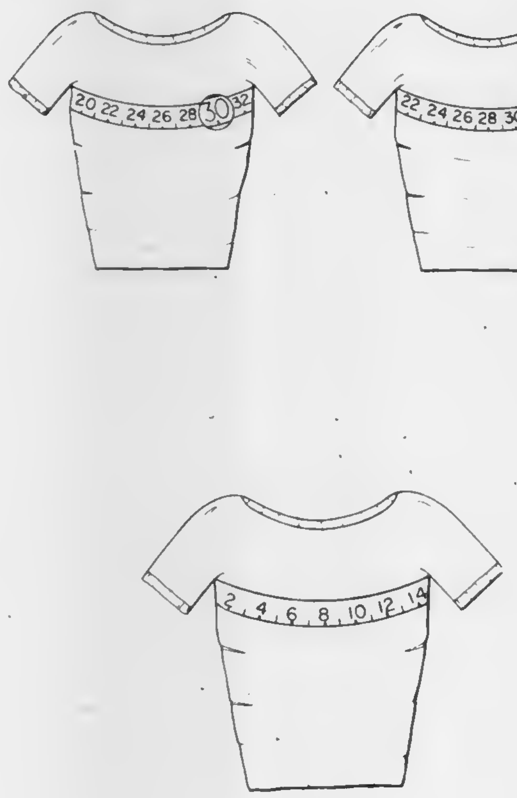
ERRATA

For CLASS	See PATENT NO.
D29–015	286,222
D11–232	286,223
D11–232	286,224
D11–232	286,225
D03–104	286,226

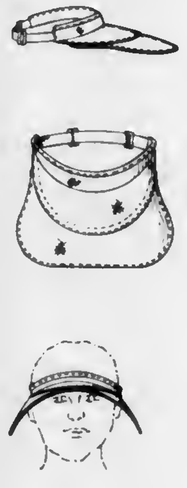
DESIGNS

OCTOBER 21, 1986

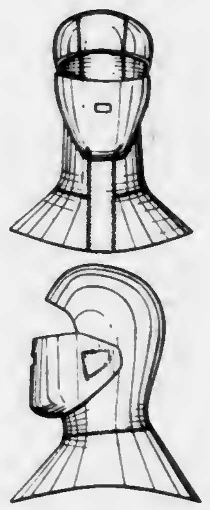
286,220
T-SHIRT
James Irwin, 1706 Fifth Ave., Arnold, Pa. 15068
Filed Jan. 13, 1984, Ser. No. 570,599
Term of patent 14 years
U.S. Cl. D2—209



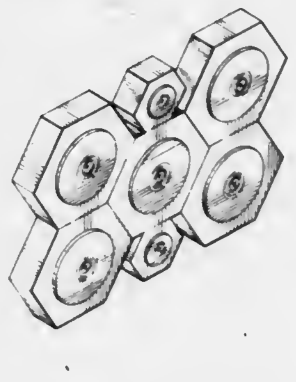
286,221
PILOT'S TRAINING VISOR
John T. Murray, II, 89 Butler Pkwy., Summit, N.J. 07901
Filed Oct. 1, 1984, Ser. No. 656,527
Term of patent 14 years
U.S. Cl. D2—514



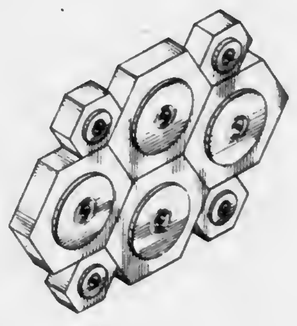
286,222
COMBINED THERMAL HOOD AND FACE MASK FOR SCUBA DIVERS
Brian N. Talbot, 281 S. Spalding #H, Beverly Hills, Calif. 90212
Filed Jun. 18, 1984, Ser. No. 621,616
Term of patent 14 years
U.S. Cl. D29—15



286,223
BELT BUCKLE
Jack C. Seehase, 1200 Osceola Ave., Winter Park, Fla. 32789
Filed Jul. 18, 1985, Ser. No. 756,341
Term of patent 14 years
U.S. Cl. D11—232



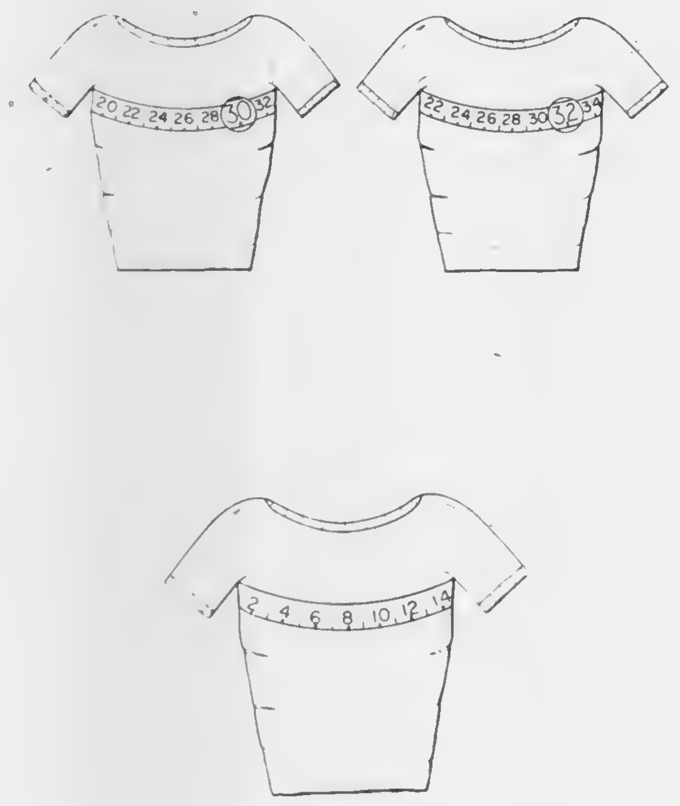
286,224
BELT BUCKLE
Jack C. Seehase, 1200 Osceola Ave., Winter Park, Fla. 32789
Filed Jul. 18, 1985, Ser. No. 756,342
Term of patent 14 years
U.S. Cl. D11—232



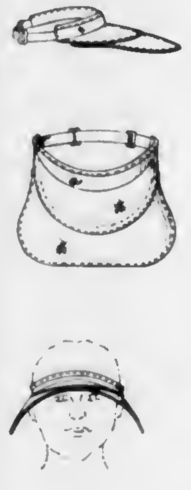
DESIGNS

OCTOBER 21, 1986

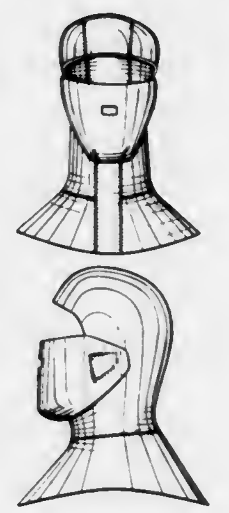
286,220
T-SHIRT
James Irwin, 1706 Fifth Ave., Arnold, Pa. 15068
Filed Jan. 13, 1984, Ser. No. 570,599
Term of patent 14 years
U.S. Cl. D2—209



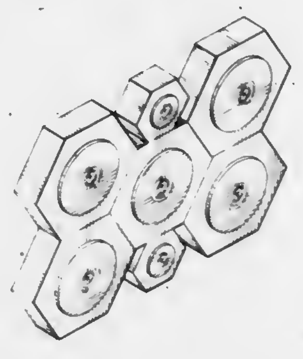
286,221
PILOT'S TRAINING VISOR
John T. Murray, II, 89 Butler Pkwy., Summit, N.J. 07901
Filed Oct. 1, 1984, Ser. No. 656,527
Term of patent 14 years
U.S. Cl. D2—514



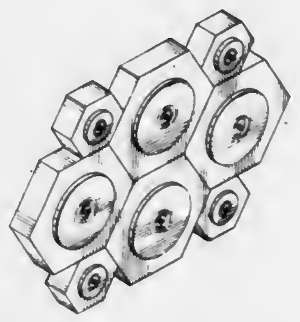
286,222
COMBINED THERMAL HOOD AND FACE MASK FOR SCUBA DIVERS
Brian N. Talbot, 281 S. Spalding #H, Beverly Hills, Calif. 90212
Filed Jun. 18, 1984, Ser. No. 621,616
Term of patent 14 years
U.S. Cl. D29—15



286,223
BELT BUCKLE
Jack C. Seehase, 1200 Osceola Ave., Winter Park, Fla. 32789
Filed Jul. 18, 1985, Ser. No. 756,341
Term of patent 14 years
U.S. Cl. D11—232



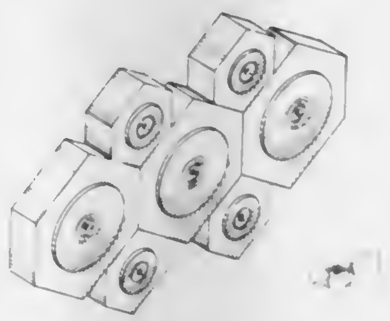
286,224
BELT BUCKLE
Jack C. Seehase, 1200 Osceola Ave., Winter Park, Fla. 32789
Filed Jul. 18, 1985, Ser. No. 756,342
Term of patent 14 years
U.S. Cl. D11—232



286,225

BELT BUCKLE

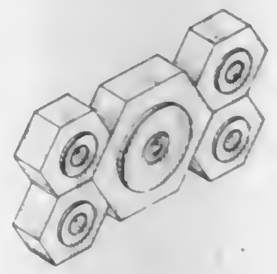
Jack C. Seehase, 1200 Osceola Ave., Winter Park, Fla. 32789
Filed Jul. 18, 1985, Ser. No. 756,343
Term of patent 14 years
U.S. Cl. D11—232



286,226

BELT BUCKLE

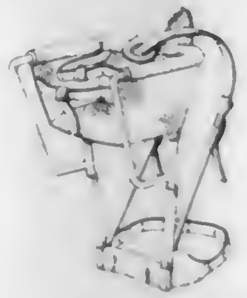
Jack C. Seehase, 1200 Osceola Ave., Winter Park, Fla. 32789
Filed Jul. 18, 1985, Ser. No. 756,345
Term of patent 14 years
U.S. Cl. D11—232



286,227

CARRIER FOR A CHILD

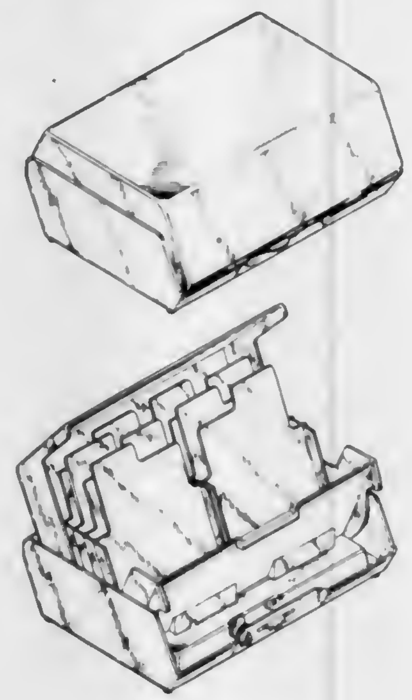
Gary R. Ellis, Rte. 3, Box 40A, Fulton, Mo. 65251
Continuation-in-part of Ser. No. 441,401, Nov. 15, 1982. This application Jul. 22, 1985, Ser. No. 757,359
Term of patent 14 years
U.S. Cl. D3—32



286,228

DISKETTE STORAGE CONTAINER FOR HOLDING A PLURALITY OF DISKETTES

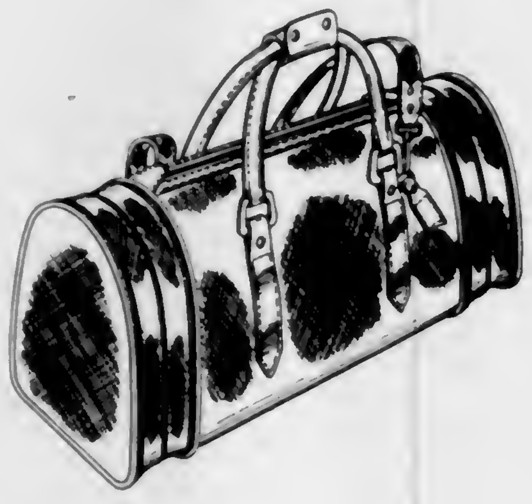
Jerry M. Long, Pleasanton, and James A. Womack, Los Gatos, both of Calif., assignors to Innovative Concepts, Inc., San Jose, Calif.
Filed Mar. 23, 1984, Ser. No. 592,678
Term of patent 14 years
U.S. Cl. D3—35



286,229

LUGGAGE CASE

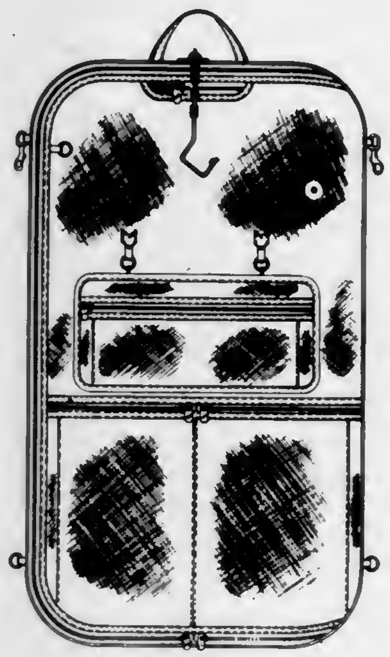
Eckhard Knoepke, Norwalk, Conn., and Martin R. Feinberg, New York, N.Y., assignors to Samsonite Corporation, Denver, Colo.
Filed Mar. 19, 1984, Ser. No. 591,143
Term of patent 14 years
U.S. Cl. D3—48

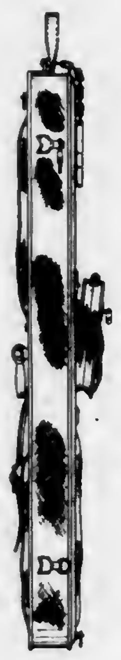


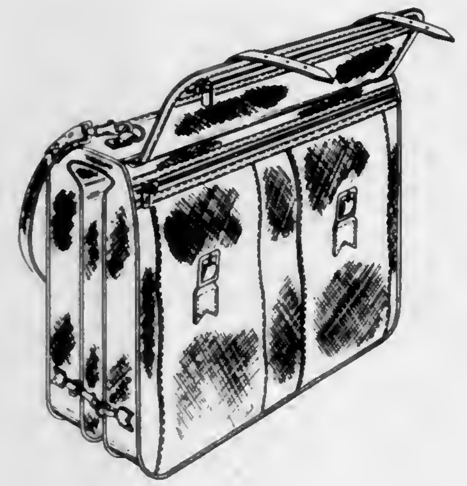
286,230

GARMENT BAG

Leonard Cohen, Valley Stream; Martin R. Feinberg, New York, both of N.Y.; Eckhard Knoepke, Norwalk, Conn., and William J. Quinlan, New York, N.Y., assignors to Samsonite Corporation, Denver, Colo.
Filed Mar. 19, 1984, Ser. No. 591,142
Term of patent 14 years
U.S. Cl. D3—71



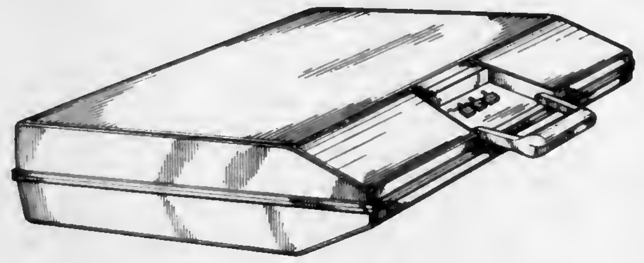




286,231

ATTACHE CASE

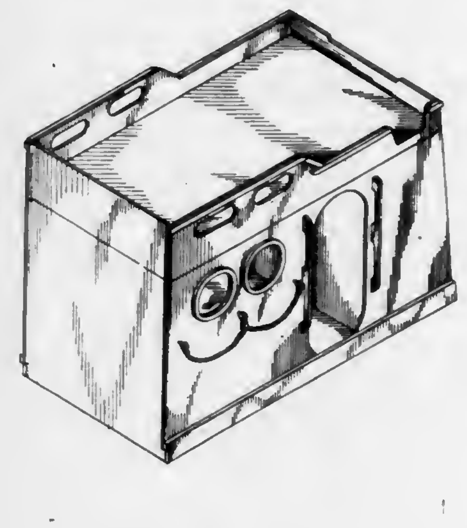
Otto Werk, LangÅ, Denmark, assignor to Cavalet ApS, Denmark
Filed Apr. 19, 1983, Ser. No. 486,428
Claims priority, application Denmark, Feb. 16, 1983, 163/83
Term of patent 14 years
U.S. Cl. D3—72



286,232

COMBINED CHILDREN'S BED, STORAGE UNIT AND AMUSEMENT CENTER

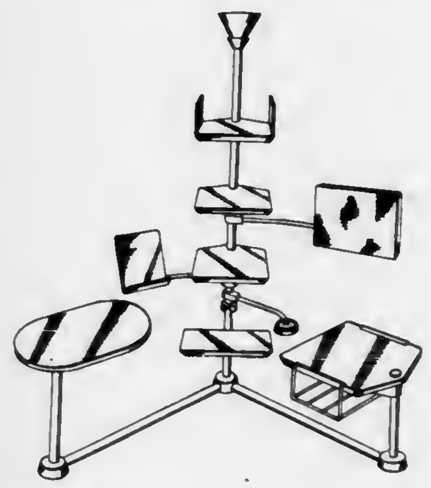
Richard E. Fisher, 194 Tudor Blvd., West Seneca, Buffalo, N.Y. 14220
Continuation of Ser. No. 867,827, Jan. 9, 1978. This application Mar. 18, 1983, Ser. No. 476,802
Term of patent 14 years
U.S. Cl. D6—384



286,233

WORK STATION

Charles Schreiner, 346 Mary St., Box 711, Saugatuck, Mich. 49453
Filed Mar. 19, 1984, Ser. No. 590,898
Term of patent 14 years
U.S. Cl. D6—397



286,234
SUPPORT FOR FLOWER POTS

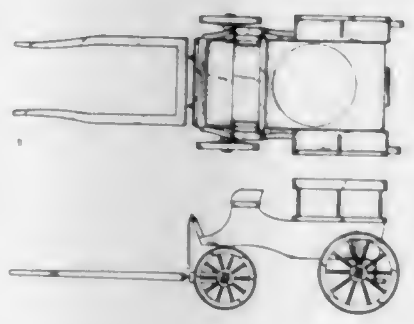
Gerardus F. Mens, Von Bonninghausenlaan 4, 2161 Et Lisse, Netherlands

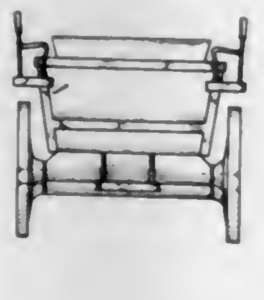
Filed Feb. 7, 1985, Ser. No. 699,249

Claims priority, application Hague, Aug. 20, 1984, DM004109

Term of patent 14 years

U.S. Cl. D6—404





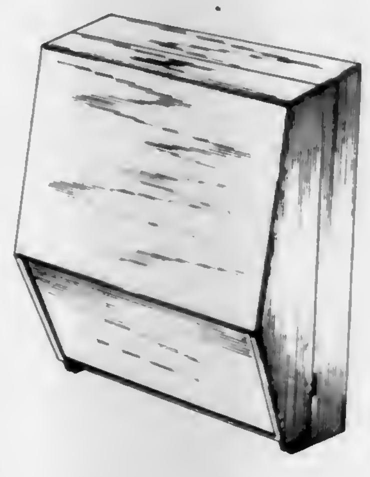
286,235
PAPER TOWEL CABINET

Scott J. Collins, Brown Deer, Wis., assignor to Wisconsin Tissue Mills, Inc., Menasha, Wis.

Filed Jul. 23, 1984, Ser. No. 633,557

Term of patent 14 years

U.S. Cl. D6—522



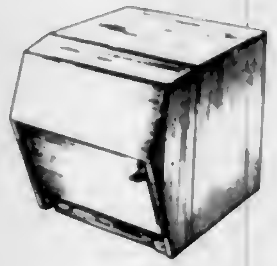
286,236
PAPER TOWEL DISPENSING CABINET

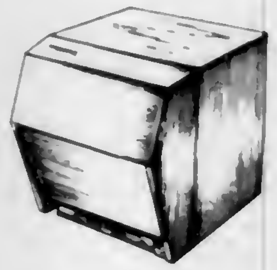
Scott J. Collins, Brown Deer, Wis., assignor to Wisconsin Tissue Mills, Inc., Menasha, Wis.

Filed Jul. 23, 1984, Ser. No. 633,556

Term of patent 14 years

U.S. Cl. D6—522





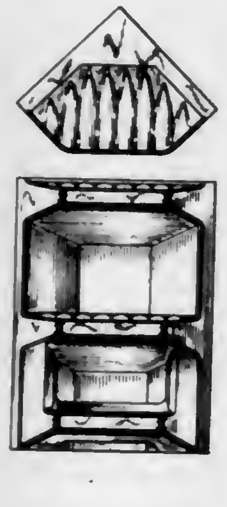
286,237
COMBINED ACCESSORY HOLDER AND GRAB BAR UNIT FOR A TUB AND SHOWER

Kenneth J. Muderlak, Del Mar, Calif., assignor to Lippert Corporation, Menomonee Falls, Wis.

Filed Aug. 22, 1984, Ser. No. 643,143

Term of patent 14 years

U.S. Cl. D6—525



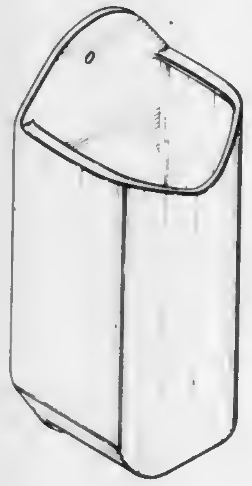
286,238
WALL MOUNTED HOLDER FOR AN ELECTRIC CURLING IRON, CURLING BRUSH OR THE LIKE

Thelma R. Burton, 5904 Hamilton Rd., Peoria, Ill. 61614

Filed Apr. 24, 1984, Ser. No. 603,339

Term of patent 14 years

U.S. Cl. D6—573



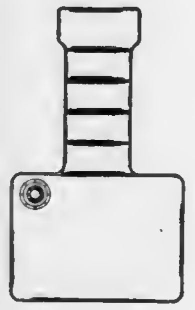
286,239
HEAD CUSHION

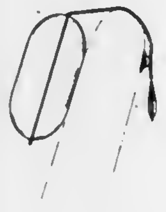
Robert S. Scheurer, and Stephen Scheurer, both of P.O. Box 539, Wichita Falls, Tex. 76307

Filed Dec. 20, 1984, Ser. No. 684,040

Term of patent 14 years

U.S. Cl. D6—601





286,240
NOTION TRAY

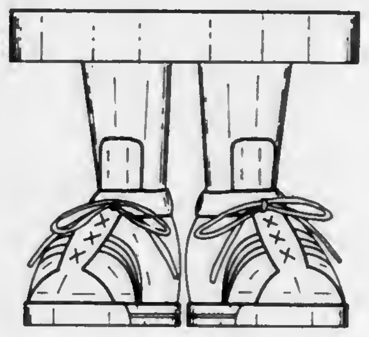
Roy E. Satterfield, 309 Oak Park Dr., Knoxville, Tenn. 37918

Filed Sep. 27, 1983, Ser. No. 536,189

The portion of the term of this patent subsequent to Feb. 7, 1998, has been disclaimed.

Term of patent 14 years

U.S. Cl. D7—5



286,241
CHAMPAGNE FLUTE

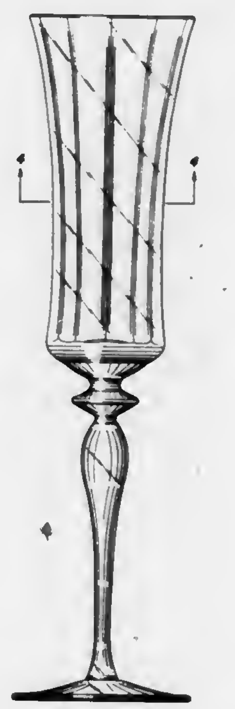
Alfred Blake, Hillsdale, N.J., and Michael Lax, New York, N.Y., assignors to American Commercial, Incorporated, Secaucus, N.J.

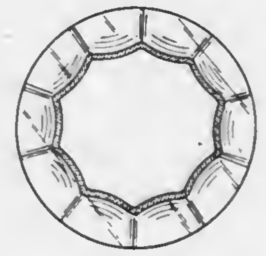
Filed Jun. 6, 1983, Ser. No. 501,020

The portion of the term of this patent subsequent to Oct. 21, 2000, has been disclaimed.

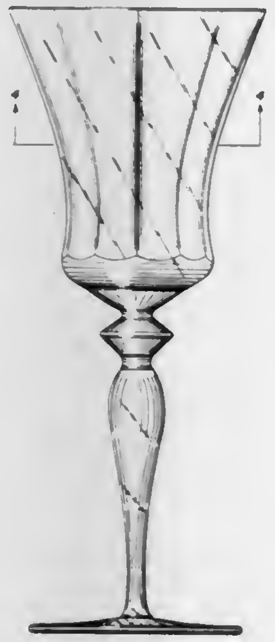
Term of patent 14 years

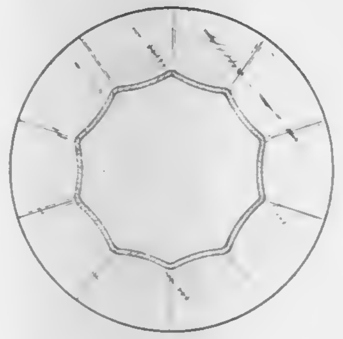
U.S. Cl. D7—11



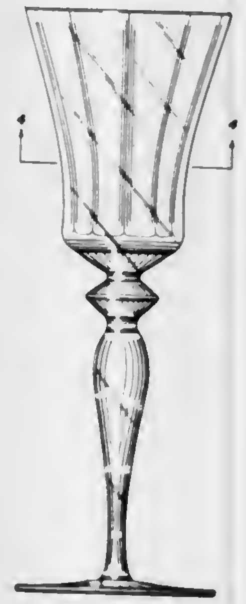


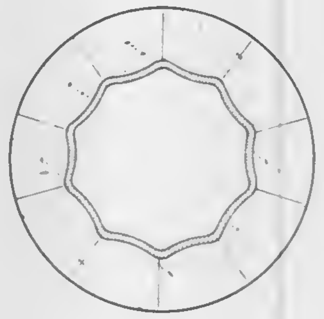
286,242
GOBLET
Alfred Blake, Hillsdale, N.J., and Michael Lax, New York, N.Y., assignors to American Commercial, Incorporated, Secaucus, N.J.
Filed Jun. 6, 1983, Ser. No. 501,021
The portion of the term of this patent subsequent to Oct. 21, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—11



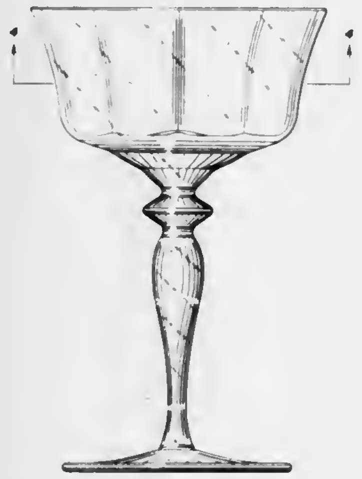


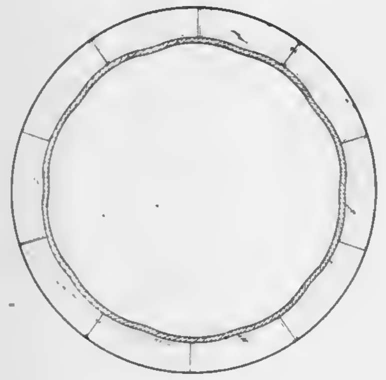
286,243
WINE GLASS
Alfred Blake, Hillsdale, N.J., and Michael Lax, New York, N.Y., assignors to American Commercial, Incorporated, Secaucus, N.J.
Filed Jun. 6, 1983, Ser. No. 501,257
The portion of the term of this patent subsequent to Oct. 21, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—11



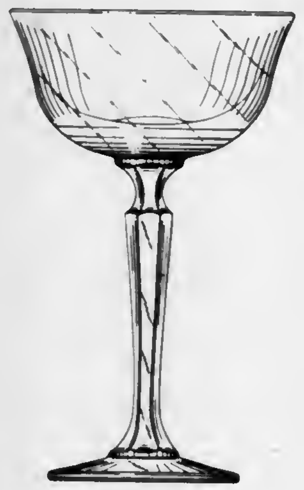


286,244
CHAMPAGNE GLASS
Alfred Blake, Hillsdale, N.J., and Michael Lax, New York, N.Y., assignors to American Commercial, Incorporated, Secaucus, N.J.
Filed Jun. 6, 1983, Ser. No. 501,288
The portion of the term of this patent subsequent to Oct. 21, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—11

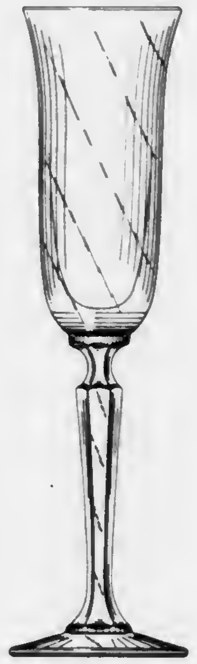




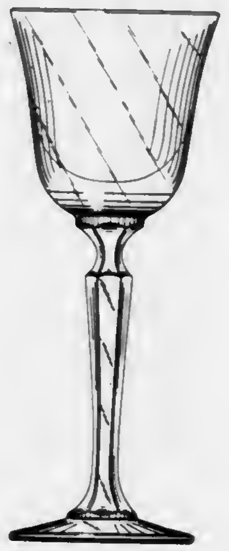
286,245
CHAMPAGNE GLASS
Alfred Blake, Hillsdale, N.J., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jun. 6, 1983, Ser. No. 501,019
The portion of the term of this patent subsequent to Oct. 21, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—13



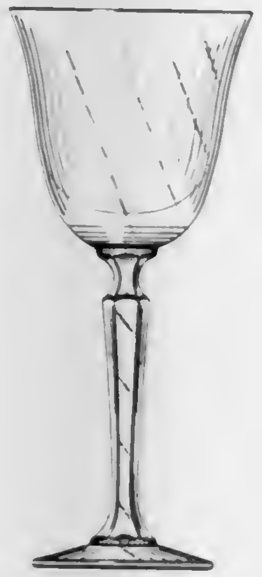
286,246
CHAMPAGNE FLUTE
Alfred Blake, Hillsdale, N.J., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jun. 6, 1983, Ser. No. 501,148
The portion of the term of this patent subsequent to Oct. 21, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—13



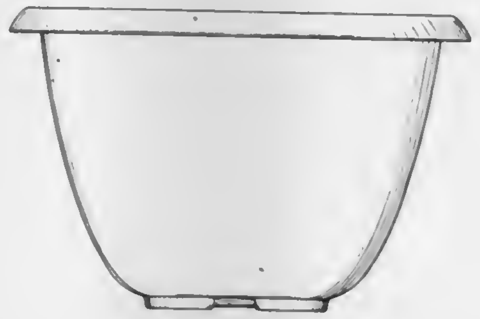
286,247
WINE GLASS
Alfred Blake, Hillsdale, N.J., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jun. 6, 1983, Ser. No. 501,150
The portion of the term of this patent subsequent to Oct. 21, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—13

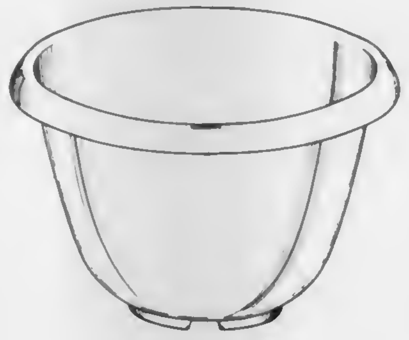


286,248
GOBLET
Alfred Blake, Hillsdale, N.J., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jun. 6, 1983, Ser. No. 501,258
The portion of the term of this patent subsequent to Oct. 21, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—13

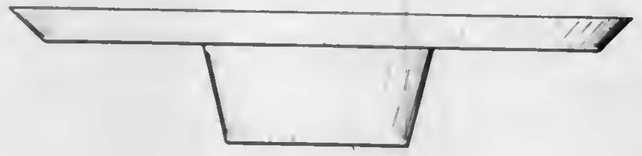


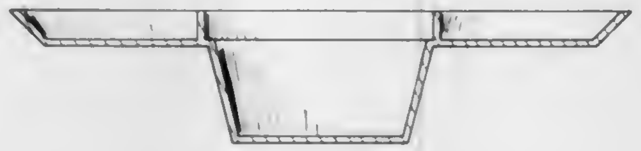
286,249
FOOD BOWL
Arthur R. Carlson, East Malvern, Australia, assignor to The Decor Corporation Proprietary Ltd., Scoresby, Australia
Filed Mar. 2, 1983, Ser. No. 471,523
Term of patent 14 years
U.S. Cl. D7—23

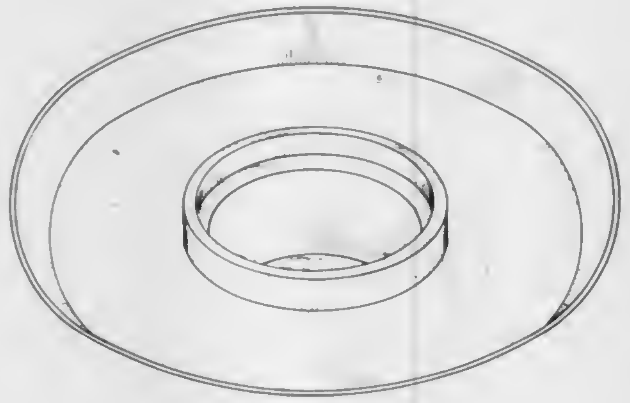




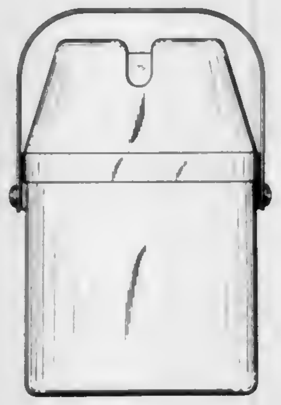
286,250
COMBINED FOOD PLATE AND BEVERAGE CONTAINER HOLDER
Earl H. Prescott, W. Los Angeles, Calif., assignor to Syl Kouby and Scarlett P. Tuttle, both of Sherman Oaks, Calif.
Filed Jun. 27, 1984, Ser. No. 625,013
Term of patent 14 years
U.S. Cl. D7—27



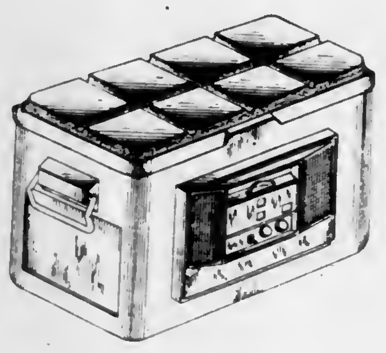




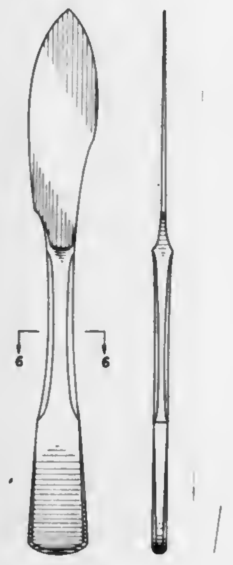
286,251
INSULATED CONTAINER
Izak K. Steyn, P.O. Box 973, Somerset West, 7130, Cape Province, South Africa
Filed Mar. 4, 1983, Ser. No. 472,198
Claims priority, application South Africa, Sep. 7, 1982, 82/0835
Term of patent 14 years
U.S. Cl. D7—77



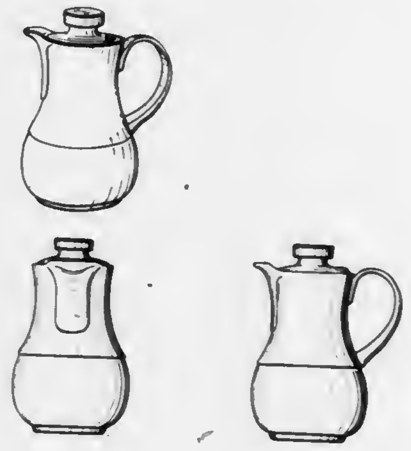
286,252
COMBINED COOLER CHEST AND RADIO
Raymond Goodwin, Shrewsbury, Mass., assignor to International Leisuretime Products, Inc., Worcester, Mass.
Filed Oct. 5, 1983, Ser. No. 539,264
Term of patent 14 years
U.S. Cl. D7—77



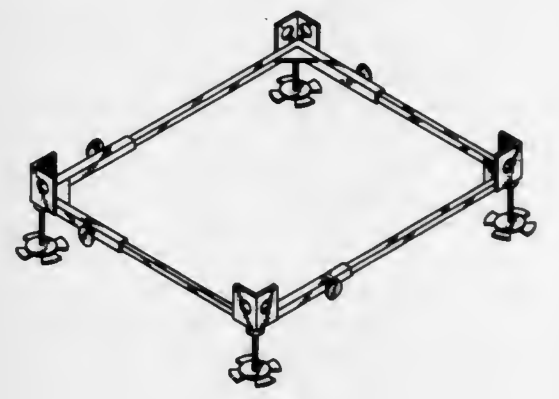
286,253
ARTICLE OF FLATWARE
Horst Schultz, Frankfurt, Fed. Rep. of Germany, assignor to AMC International ALFA Metalcraft Corporation, Fed. Rep. of Germany
Division of Ser. No. 561,634, Dec. 15, 1983. This application Dec. 4, 1985, Ser. No. 804,546
Term of patent 14 years
U.S. Cl. D7—137



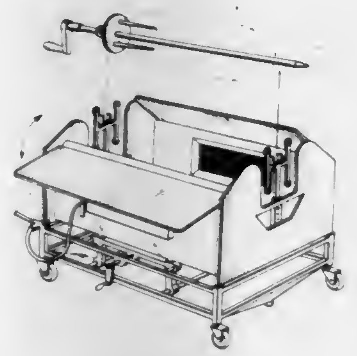
286,254
VACUUM JUG
Anso Zimmerman, Bad Hersfeld, Fed. Rep. of Germany, assignor to Rotpunkt Dr. Anso Zimmermann, Niederaula, Fed. Rep. of Germany
Filed May 9, 1983, Ser. No. 493,027
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1982, MR 185
Term of patent 14 years
U.S. Cl. D7—317



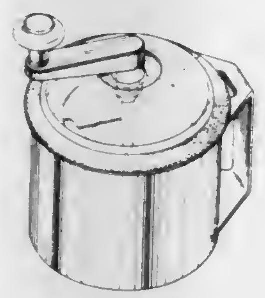
286,255
CAMP STOVE LEVELER FRAME
Eugene M. Gage, 11610 Larch St., Coon Rapids, Minn. 55433
Filed Oct. 26, 1984, Ser. No. 665,143
Term of patent 14 years
U.S. Cl. D7—332



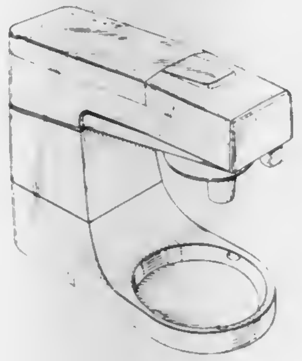
286,256
BARBECUE GRILL
Kwan S. Jung, 54-18, 1-Ka, Myong Dong, Chung-Ku, Seoul, Rep. of Korea
Filed Nov. 30, 1984, Ser. No. 676,841
Claims priority, application Rep. of Korea, May 30, 1984, 6253 ROK
Term of patent 14 years
U.S. Cl. D7—334



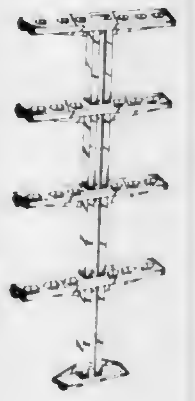
286,257
ICECREAM MAKER
Susumu Uesaka, Tokyo, Japan, assignor to Nippon Light Metal Company Limited, Tokyo, Japan
Filed Dec. 22, 1983, Ser. No. 564,214
Term of patent 14 years
U.S. Cl. D7—368



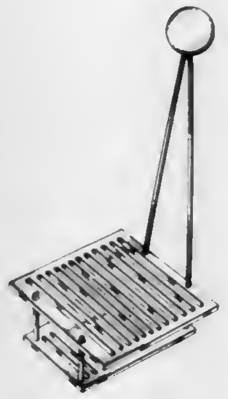
286,258
FOOD MIXER
Kenneth H. Grange, London, England, assignor to Thorn Emi Domestic Appliances Limited, London, England
Filed Dec. 15, 1983, Ser. No. 561,944
Claims priority, application United Kingdom, Aug. 20, 1983, 1014749
Term of patent 14 years
U.S. Cl. D7—379



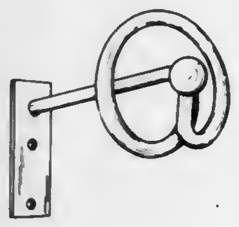
286,259
ESPALIER FRAME
Eric R. Evans, Napier, New Zealand, assignor to EBRO Espalier Limited, Napier, New Zealand
Filed Jun. 17, 1983, Ser. No. 505,475
Claims priority, application New Zealand, Jan. 6, 1983, 18179
Term of patent 14 years
U.S. Cl. D8—1

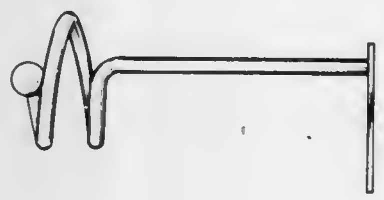


286,260
HOLDER FOR STERILIZING JAR LIDS OR SIMILAR ARTICLES
John Rankin, Milwaukie, Oreg., assignor to Nordic Products, Inc., Mountlake Terrace, Wash.
Filed May 8, 1984, Ser. No. 608,333
Term of patent 14 years
U.S. Cl. D8—14

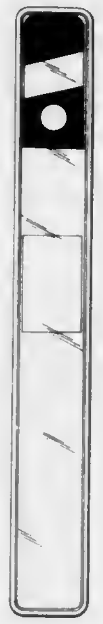


286,261
CURTAIN DRAPING HOOK
Sten A. M. Smederöd, Box 20066, S-400 50 Göteborg, Sweden
Filed Feb. 10, 1984, Ser. No. 579,128
Term of patent 14 years
U.S. Cl. D8—354

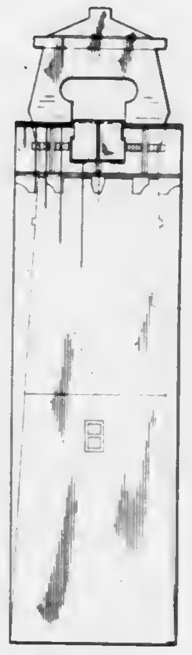




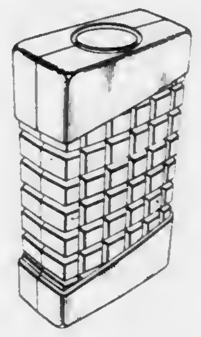
286,262
CONTAINER FOR KNITTING NEEDLES
Hidekazu Okada, Ashiya, Japan, assignor to Clover Mfg. Co., Ltd., Osaka, Japan
Filed Oct. 25, 1983, Ser. No. 545,220
Claims priority, application Japan, Aug. 18, 1983, 58-35983
Term of patent 14 years
U.S. Cl. D9—303



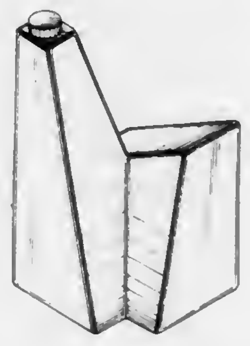
286,263
SIMULATIVE BOX
John R. Maschal, Beach Haven, N.J., and Judy Dreisbach, West Chester, Pa., assignors to JM^{10}, Beach Haven, N.J.
Filed Nov. 29, 1983, Ser. No. 556,180
Term of patent 14 years
U.S. Cl. D9—322



286,264
CONTAINER FOR REFRIGERANT GEL OR THE LIKE
Stanley A. Katz, Houston, Tex., assignor to Igloo Corporation, Houston, Tex.
Filed Apr. 10, 1984, Ser. No. 598,717
Term of patent 14 years
U.S. Cl. D9—367



286,265
BOTTLE OR THE LIKE
Juris M. Mednis, Howell, N.J., assignor to Universal Symetrics Corporation, Howell, N.J.
Filed May 14, 1984, Ser. No. 609,988
Term of patent 14 years
U.S. Cl. D9—367



286,266

COMBINED BOTTLE AND CAP

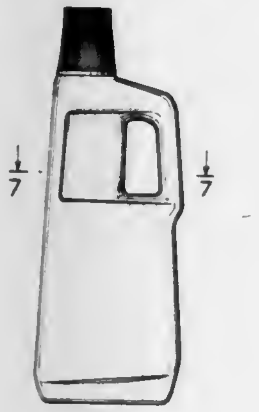
Steen Vesborg, Gentofte, and Henrik Jacobsen, Vedbaek, both of Denmark, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 16, 1984, Ser. No. 590,313

Claims priority, application Denmark, Sep. 2, 1983, 83.823; Sep. 2, 1983, 83.824

Term of patent 14 years

U.S. Cl. D9—376



286,267

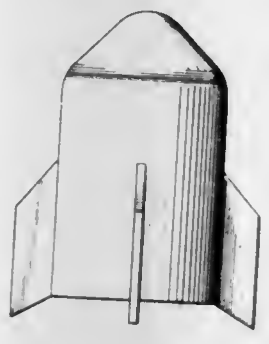
CAP FOR EXTRUSION TUBES AND THE LIKE

Bernard Schneider, Sainte Ménehould, France, assignor to Tuboplast s.a., Paris, France

Filed Jan. 3, 1984, Ser. No. 568,241

Term of patent 14 years

U.S. Cl. D9—435



286,268

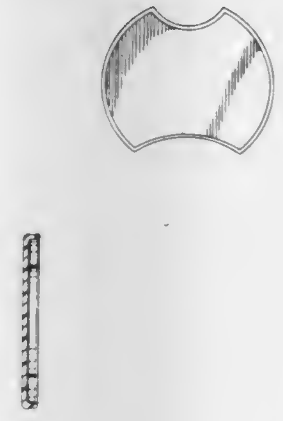
PORTION MEASURING INSERT FOR A CONTAINER OR THE LIKE

Martin J. Wolff, North Providence, R.I., assignor to Dart Industries Inc., Northbrook, Ill.

Filed Jun. 6, 1983, Ser. No. 501,347

Term of patent 14 years

U.S. Cl. D9—447



286,269

COMBINED WRISTWATCH AND RADIO

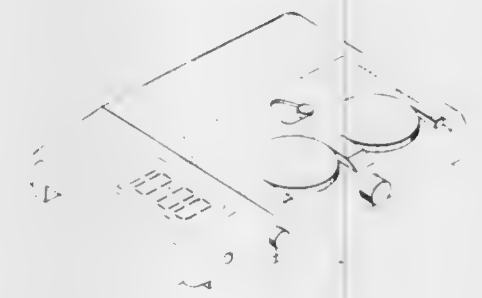
Jiro Matsuo, Chiba, and Kaname Atsumi, Tokyo, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jul. 5, 1984, Ser. No. 627,927

Claims priority, application Japan, Apr. 11, 1984, 59-14401

Term of patent 14 years

U.S. Cl. D10—31



286,270

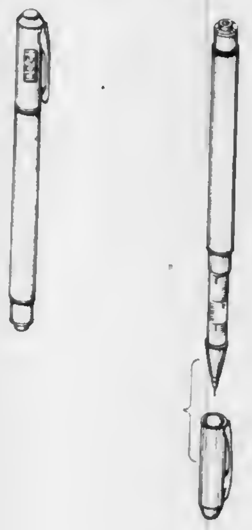
COMBINED PEN, WATCH AND PRESSURE GAUGE

Tien T. Huang, No. 4, 30 Lane, Wu-Chuang Street, Pan-Chiao City, Taipei, Taiwan

Filed Aug. 5, 1983, Ser. No. 520,624

Term of patent 14 years

U.S. Cl. D10—86



286,271

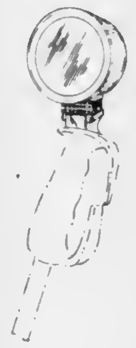
INSTRUMENT HOUSING FOR A SKI POLE

Roman Buch, Box 33 St. Marys Rd., P.O. Box 686, Mettawa, Ill. 60048

Filed Feb. 21, 1984, Ser. No. 581,867

Term of patent 14 years

U.S. Cl. D10—102



286,272

LINK FOR JEWELRY CHAIN

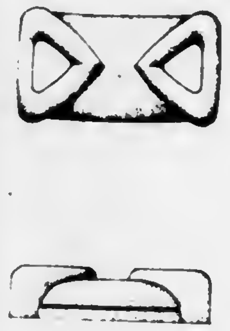
Gianni Bulgari, Rome, Italy, assignor to Partecipazioni Bulgari S.p.A., Rome, Italy

Filed May 23, 1984, Ser. No. 613,368

Claims priority, application Italy, Dec. 21, 1983, 36.363/83[U]

Term of patent 14 years

U.S. Cl. D11—93



286,273

VASE

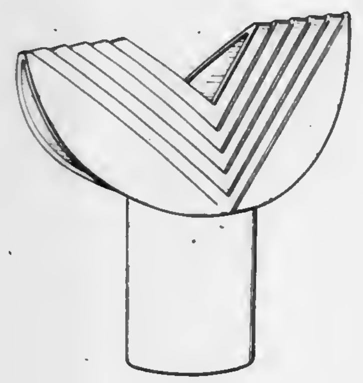
Ambrogio Pozzi, Gallarate, Italy, assignor to Rosenthal Aktiengesellschaft Rechtsabteilung, Fed. Rep. of Germany

Filed Aug. 23, 1984, Ser. No. 643,663

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1984, 7368

Term of patent 14 years

U.S. Cl. D11—143



286,274

TIRE FOR A VEHICLE WHEEL

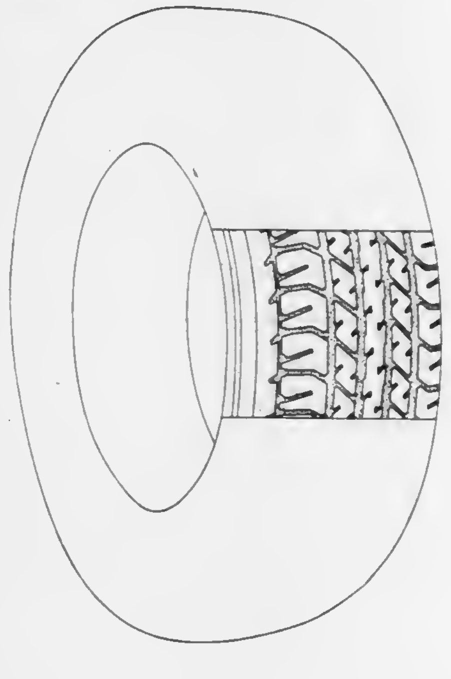
Edward P. Davis, Sutton Coldfield, and Michael J. Gallery, Cannock, both of England, assignors to Dunlop Limited, England

Filed Dec. 8, 1983, Ser. No. 559,264

Claims priority, application United Kingdom, Jun. 28, 1983, 1013789

Term of patent 14 years

U.S. Cl. D12—146



286,275

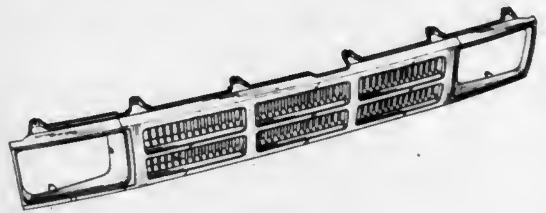
RADIATOR GRILLE FOR AN AUTOMOBILE

Mitsuo Katoh, Hachioji, and Junpei Tadano, Akishima, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jun. 19, 1984, Ser. No. 622,280

Term of patent 14 years

U.S. Cl. D12—163



286,276

FRONT RADIATOR GRILLE FOR AN AUTOMOBILE

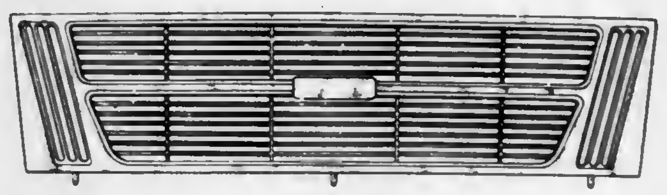
Aribert Vahlenbreder, Trollhättan, Sweden, assignor to Saab-Scania Aktiebolag, Trollhättan, Sweden

Filed Nov. 15, 1982, Ser. No. 441,553

Claims priority, application Sweden, Jun. 15, 1982, 82-1567

Term of patent 14 years

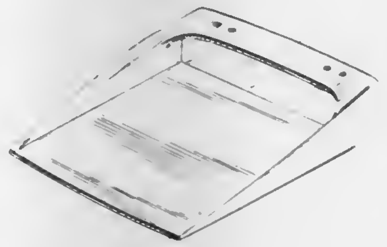
U.S. Cl. D12—163



286,277

AUTOMOBILE TRUNK LID REPLACEMENT UNIT

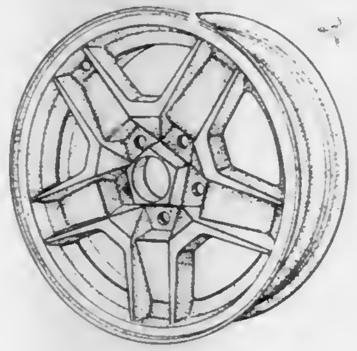
Barry Biondo, 8 Dartmouth Rd., Cos Cob, Conn. 06807
Filed Feb. 8, 1984, Ser. No. 578,174
Term of patent 14 years
U.S. Cl. D12—196



286,278

WHEEL

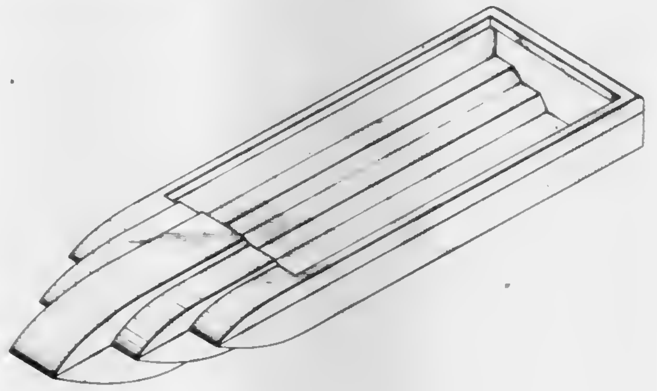
Ulf A. Sandberg, Box 4829, 434 00 Kungsbacka, Sweden, assignor to Aktiebolaget Volvo, Goteborg, Sweden
Filed Jul. 19, 1984, Ser. No. 632,338
Claims priority, application Sweden, Mar. 5, 1984, 84-0736
Term of patent 14 years
U.S. Cl. D12—211



286,279

BOAT HULL AND DECK

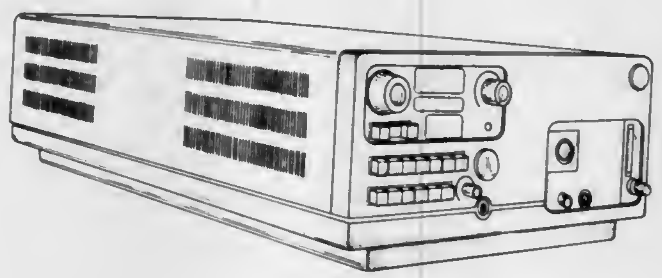
Robert R. Maher, 521 B Matheson, Healdsburg, Calif. 95448
Filed Feb. 13, 1984, Ser. No. 579,509
Term of patent 14 years
U.S. Cl. D12—313



286,280

HOUSING FOR CONNECTING A MEDICAL ARGON LASER TO A LASER PROBE

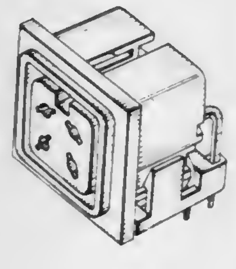
Steve H. Holtman, Salt Lake City, and George A. Nelson, Sandy, both of Utah, assignors to HGM, Inc., Salt Lake City, Utah
Filed Sep. 14, 1983, Ser. No. 532,015
Term of patent 14 years
U.S. Cl. D13—19



286,281

ELECTRICAL CONNECTING SOCKET

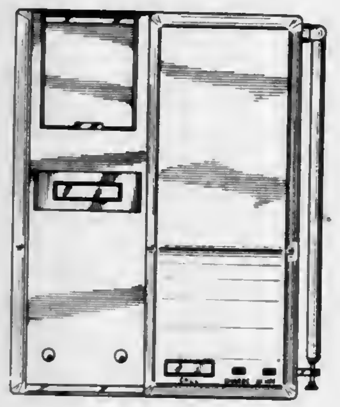
Shigemi Sekiguchi, Gunma, Japan, assignor to Hosiden Electronics Co., Ltd, Japan
Filed Aug. 30, 1984, Ser. No. 645,646
Claims priority, application Japan, Mar. 21, 1984, 59-11008
Term of patent 14 years
U.S. Cl. D13—24

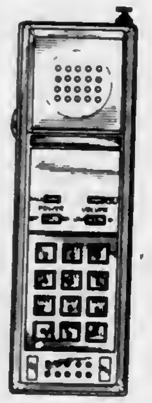


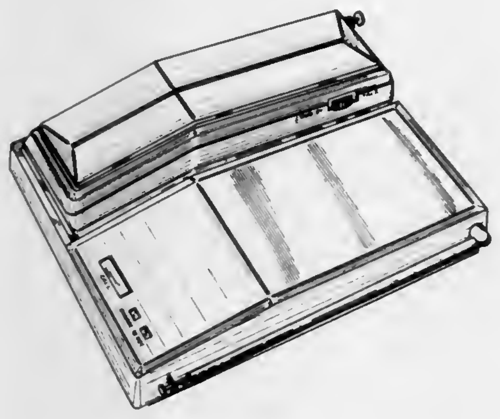
286,282

CORDLESS COMBINATION HANDSET AND STAND TELEPHONE SET

James T. Asaki, Raleigh, N.C., assignor to ITT Corporation, New York, N.Y.
Filed Jan. 30, 1984, Ser. No. 575,372
Term of patent 14 years
U.S. Cl. D14—53



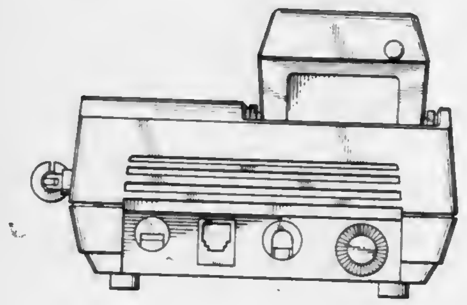


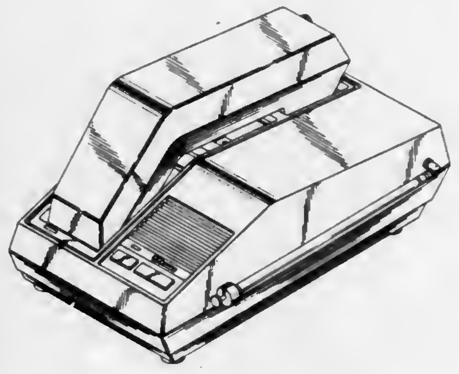


286,283

CORDLESS TELEPHONE ASSEMBLY

Stephen A. Nichols, Indianapolis, Ind., assignor to Uniden Corporation of America, Indianapolis, Ind.
Filed Mar. 9, 1983, Ser. No. 473,458
Term of patent 14 years
U.S. Cl. D14—53

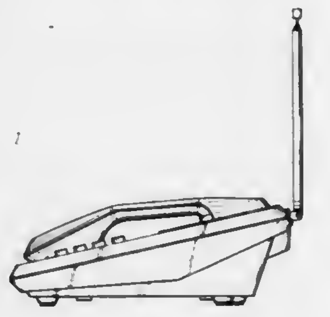


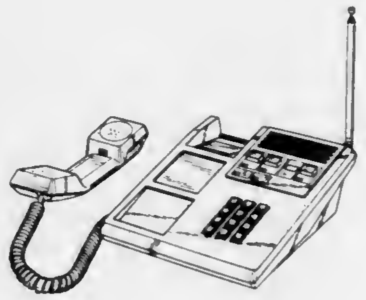


286,284

TELEPHONE SET

Yoshio Sasaki; Toshio Nishimura, and Kei Matsuda, all of Kawasaki, Japan, assignors to Nitsuko Limited, Kanagawa, Japan
Filed Oct. 15, 1984, Ser. No. 660,882
Claims priority, application Japan, Jun. 29, 1984, 59-26565
Term of patent 14 years
U.S. Cl. D14—53





286,285

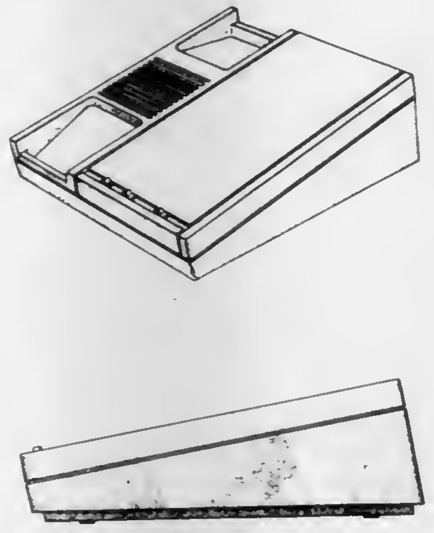
TELEPHONE STAND

David C. Danielson, New Canaan, Conn., and John N. McGarvey, Drexel Hill, Pa., assignors to AT&T Information Systems Inc., Morristown, N.J.

Filed Jan. 6, 1986, Ser. No. 816,493

Term of patent 14 years

U.S. Cl. D14—60



286,286

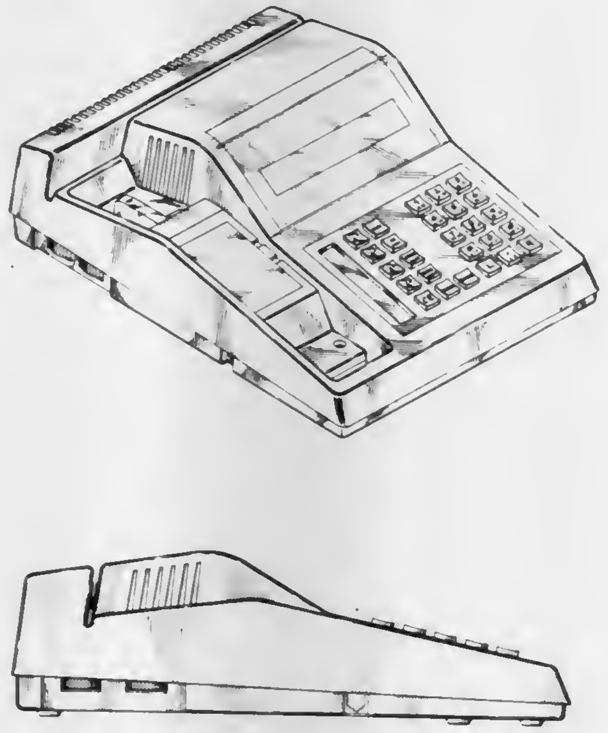
TELEPHONE STAND

Jeffrey A. Skigen, Vienna; James C. P. Lum, Herndon, both of Va., and C. Thomas Taylor, Leawood, Kans., assignors to GTE Telenet Communications Corporation, Reston, Va.

Filed Nov. 30, 1984, Ser. No. 677,007

Term of patent 14 years

U.S. Cl. D14—62



286,287

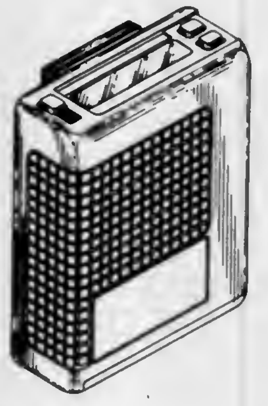
RADIO PAGER OR SIMILAR ARTICLE

Richard J. Toth, Boca Raton, and George J. Selinko, Light House Point, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 11, 1984, Ser. No. 619,084

Term of patent 14 years

U.S. Cl. D14—68



286,288

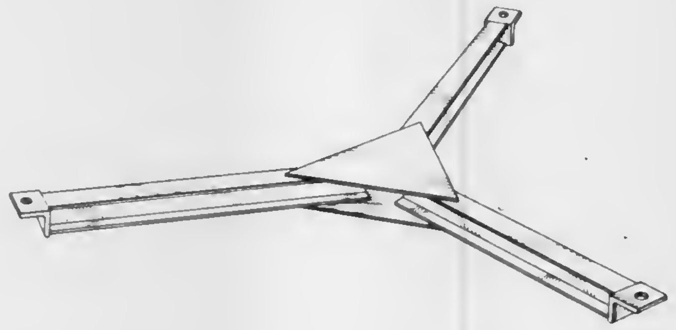
SATELLITE ANTENNA MOUNTING BASE

Jerald P. Skinner, 3014 Eveningside Dr., Topeka, Kans. 66614; Richard A. Zlotky, 246 Yorkshire, Topeka, Kans. 66606, and Robert L. Diel, 2537 Michigan, Topeka, Kans. 66605

Filed Mar. 1, 1984, Ser. No. 585,158

Term of patent 14 years

U.S. Cl. D14—91



286,289

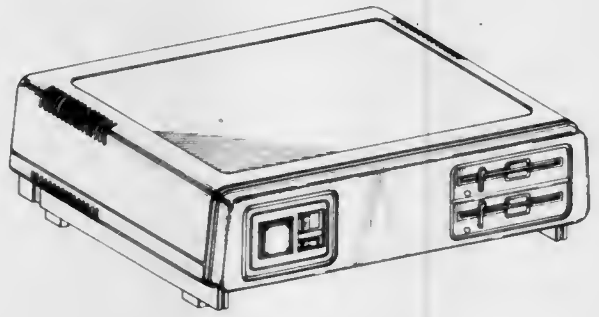
COMPUTER HOUSING

David A. Barr, Arlington, and Bernard A. Grae, Fort Worth, both of Tex., assignors to Tandy Corporation, Fort Worth, Tex.

Filed Nov. 29, 1983, Ser. No. 556,207

Term of patent 14 years

U.S. Cl. D14—100



286,290

SEASON TICKET ISSUING MACHINE

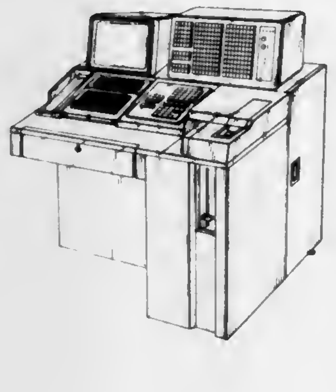
Yoshiaki Nishida, Omorinishi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 1, 1983, Ser. No. 510,248

Claims priority, application Japan, Jan. 6, 1983, 37/83

Term of patent 14 years

U.S. Cl. D14—104



286,291

PRINTER

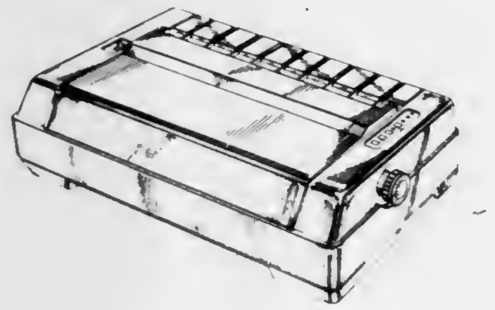
Nobufusa Kuroki, Machida, Japan, assignor to Janome Sewing Machine Co., Ltd., Kyobashi, Japan

Filed Jan. 17, 1984, Ser. No. 571,520

Claims priority, application Japan, Sep. 8, 1983, 58-38887

Term of patent 14 years

U.S. Cl. D14—111



286,292

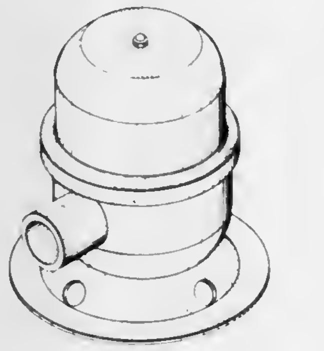
AIR COMPRESSOR FOR TUBS AND THE LIKE

James E. Kingston, Arlington, Wash., assignor to Hollibaugh Manufacturing Company, Inc., Marysville, Wash.

Filed Feb. 28, 1983, Ser. No. 470,818

Term of patent 14 years

U.S. Cl. D15—9



286,293

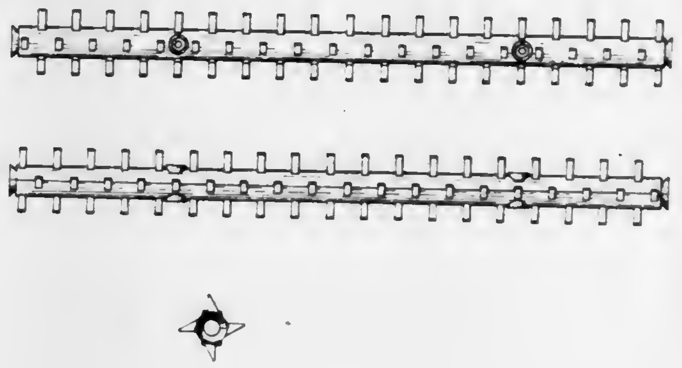
DESIGN FOR SPREADER AGITATOR

Robert A. Germain, Anderson, S.C., assignor to USM Corporation, Farmington, Conn.

Filed Feb. 29, 1984, Ser. No. 584,583

Term of patent 14 years

U.S. Cl. D15—28



286,294

MACHINE USED FOR DRILLING, TAPPING AND MILLING, AND HAVING AN AUTOMATIC TOOL CHANGING SYSTEM

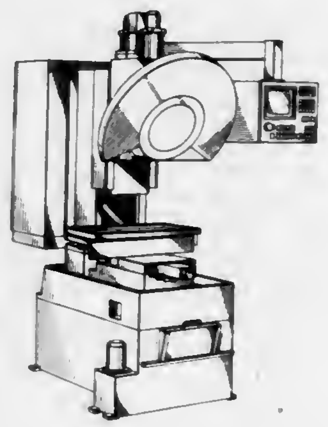
Kazuo Itoh, Aichi, Japan, assignor to brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Aug. 27, 1984, Ser. No. 644,538

Claims priority, application Japan, Feb. 29, 1984, 59-7699

Term of patent 14 years

U.S. Cl. D15—132



286,295

ELECTRONIC COPYING MACHINE

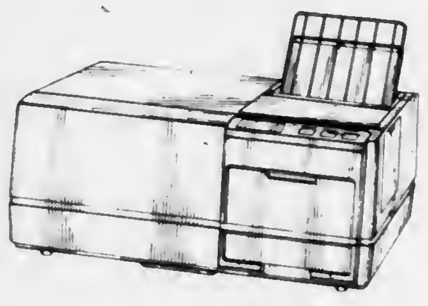
Kunio Hara, Chiba, and Tooru Okuyama, Isehara, both of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Apr. 19, 1984, Ser. No. 602,128

Claims priority, application Japan, Oct. 19, 1983, 58-45036

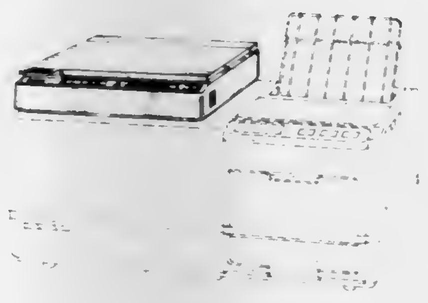
Term of patent 14 years

U.S. Cl. D16—31



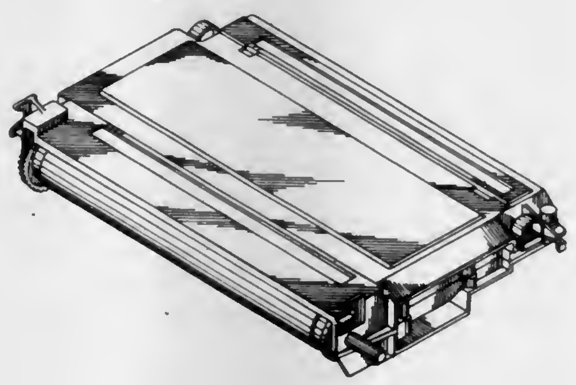
286,296
SCANNER FOR ELECTRONIC COPYING MACHINE

Kunio Hara, Chiba, and Tooru Okuyama, Isehara, both of Japan, assignors to Kabushiki Kaisha Toshiba, Japan
Filed Apr. 19, 1984, Ser. No. 602,129
Claims priority, application Japan, Oct. 19, 1983, 58-45037
Term of patent 14 years
U.S. Cl. D16—32



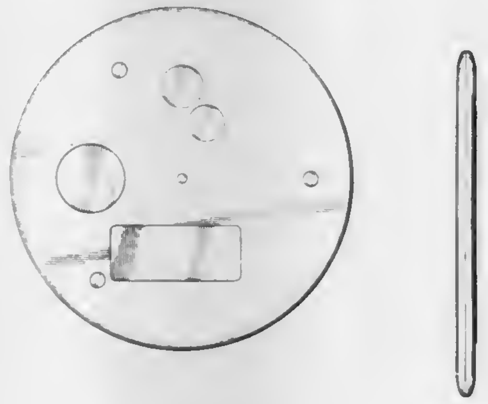
286,297
OFFICE COPIER PROCESSING CARTRIDGE

Robert A. Clowe, Penfield, N.Y., and Robert L. Gault, Raleigh, N.C., assignors to Xerox Corporation, Stamford, Conn.
Filed May 25, 1984, Ser. No. 614,217
Term of patent 14 years
U.S. Cl. D16—32



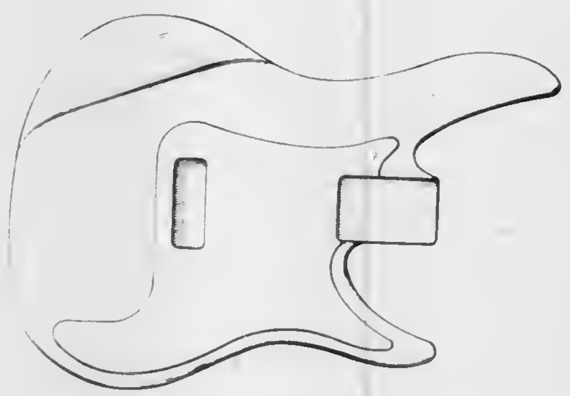
286,298
INTEGRATING PHOTOMETER

Joe T. May, Leesburg, and Steven D. Hale, Lovettsville, both of Va., assignors to Colight, Inc., Minneapolis, Minn. and Electronic Instrumentation & Technology, Sterling, Va.
Filed Feb. 3, 1984, Ser. No. 576,753
Term of patent 14 years
U.S. Cl. D16—39



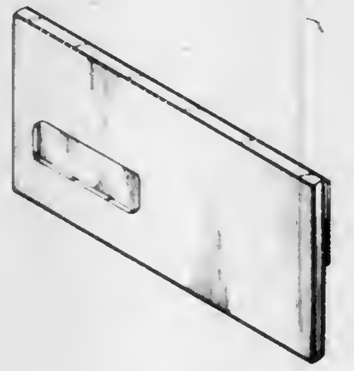
286,299
GUITAR BODY OR SIMILAR ARTICLE

Hartley D. Peavey, Meridian, Miss., assignor to Peavey Electronics Corp., Meridian, Miss.
Filed Mar. 2, 1984, Ser. No. 585,871
Term of patent 14 years
U.S. Cl. D17—20



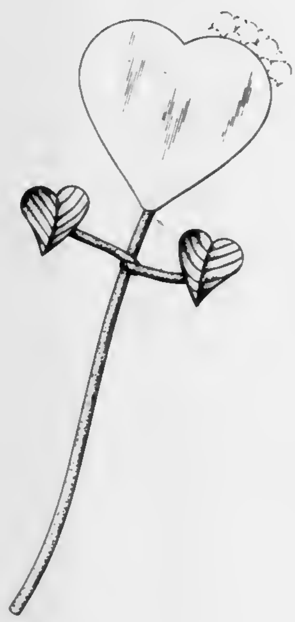
286,300
MAILING ENVELOPE

Bruce E. Bourgeois, 807 Arlington Cr., Richmond, Va. 23229
Filed Jan. 19, 1984, Ser. No. 572,011
Term of patent 14 years
U.S. Cl. D19—3



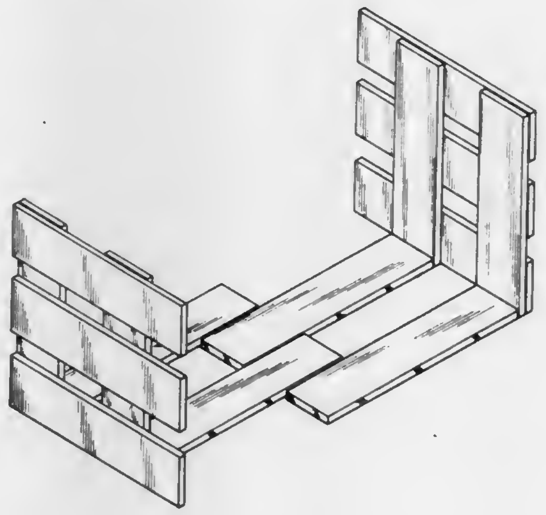
286,301
LONG STEM VALENTINE CARD

Virginia K. Fain, 1933 Lamont St., Kingsport, Tenn. 37664
Filed Jan. 6, 1984, Ser. No. 568,816
Term of patent 14 years
U.S. Cl. D19—6



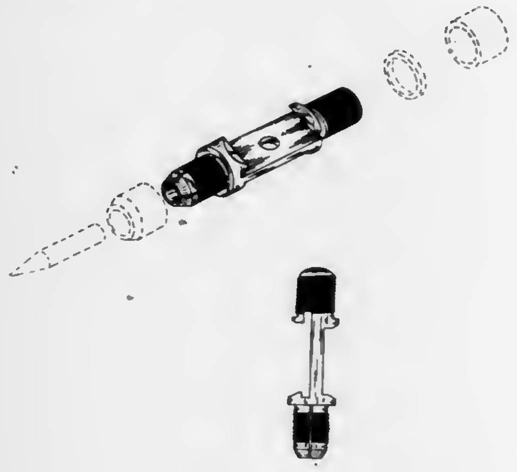
286,302
ADJUSTABLE LIBRARY SHELF

Jenneye L. Shugar, 8818 Croes Dr., Houston, Tex. 77055
Filed Feb. 15, 1984, Ser. No. 580,561
Term of patent 14 years
U.S. Cl. D19—34.1



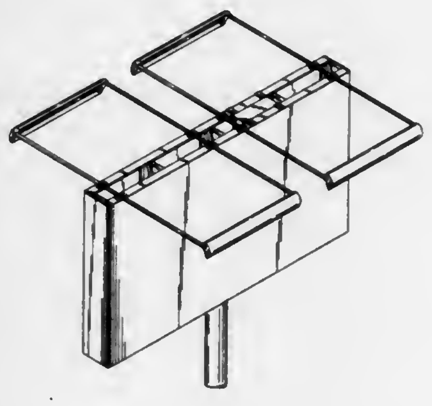
286,303
TRAMMEL HEAD

Hong K. Park, 300 Harolds Dr., Huntsville, Ala. 35806
Filed Mar. 26, 1984, Ser. No. 593,588
Term of patent 14 years
U.S. Cl. D19—99



286,304
OUTDOOR ADVERTISING SIGN

Peter Wiens, 2225 Pine Street, Prince George, British Columbia, Canada
Filed Aug. 2, 1984, Ser. No. 637,117
Claims priority, application Canada, Feb. 8, 1984, 08-02-84-7
Term of patent 14 years
U.S. Cl. D20—39



286,305

GAME BOARD

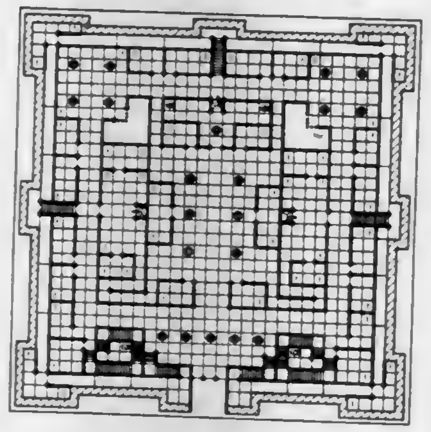
Harold B. Leggett, P.O. Box 134, Alliston, Ontario, Canada (L0M 1A0)

Filed Jan. 20, 1984, Ser. No. 572,297

Claims priority, application Canada, Jul. 26, 1983, 26/07/83/6

Term of patent 14 years

U.S. Cl. D21—25



286,306

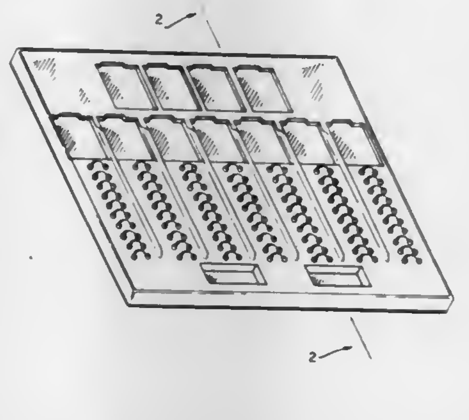
SOLITAIRE GAME BOARD

James J. Colomac, Jr., 2855 Marine St. #4, Boulder, Colo. 80302

Filed May 11, 1984, Ser. No. 609,465

Term of patent 14 years

U.S. Cl. D21—57



286,307

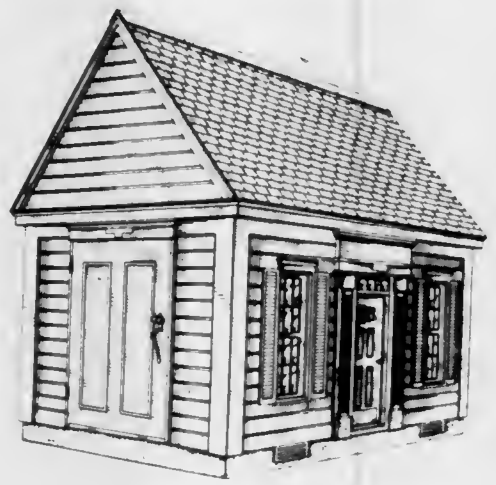
PLAYHOUSE

Joseph C. Roy, Columbia, S.C., assignor to J. C. Roy Company, Inc., Columbia, S.C.

Filed Jul. 3, 1984, Ser. No. 627,966

Term of patent 14 years

U.S. Cl. D21—114



286,308

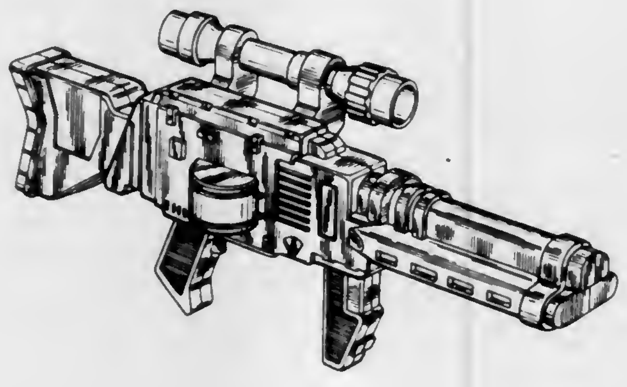
COMBINED TOY GUN AND CARRYING CASE

John F. Mayer, Fort Thomas, Ky., and John J. Norton, Cincinnati, Ohio, assignors to CPG Products Corp., Minneapolis, Minn.

Filed Jul. 2, 1984, Ser. No. 627,362

Term of patent 14 years

U.S. Cl. D21—146



286,309

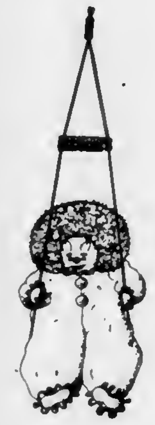
CLOWN DOLL IN A SWING OR THE LIKE

Frank Volney, Jr., 715 De Graffenreid Ave., New Bern, N.C. 28560

Filed Apr. 16, 1984, Ser. No. 600,946

Term of patent 14 years

U.S. Cl. D21—173



286,310

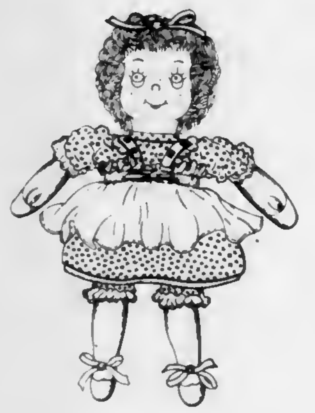
DOLL

Joretta Rupp, 2801 Rexing Rd., Wadesville, Ind. 47638, and Vera E. Emmons, Rte. 1, Box 412, Dale, Ind. 47523

Filed Jul. 6, 1984, Ser. No. 628,623

Term of patent 14 years

U.S. Cl. D21—175



286,311

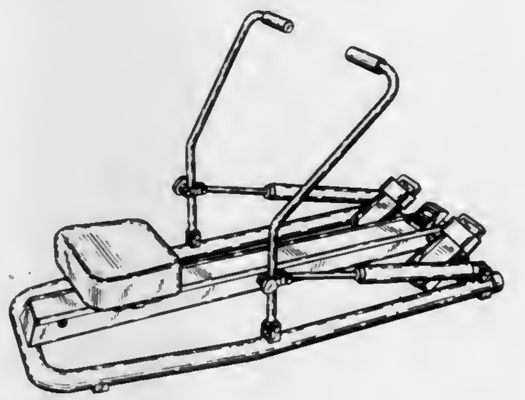
ROWING MACHINE

William J. Martinell, and Steven W. Martinell, both of Vancouver, Wash., assignors to Pro Form, Inc., Beaverton, Oreg.

Filed May 25, 1984, Ser. No. 614,159

Term of patent 14 years

U.S. Cl. D21—195



286,312

GRIP EXERCISER

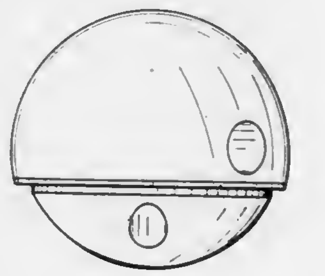
Kiyohiko Tsuzuki, Sakaki, Japan, assignor to Kabushiki Kaisha Tsuzuki Seisakujo, Sakaki, Japan

Filed Feb. 16, 1984, Ser. No. 580,953

Claims priority, application Japan, Jan. 21, 1983, 58-8943

Term of patent 14 years

U.S. Cl. D21—198



286,313

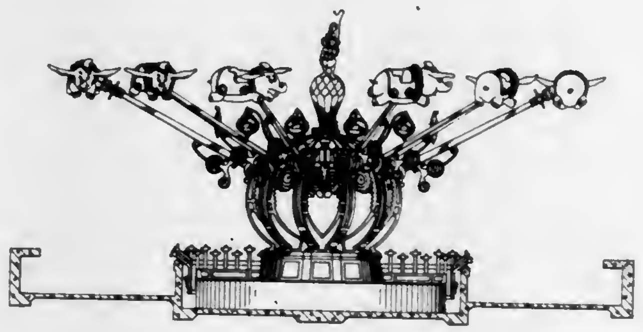
AMUSEMENT RIDE

Robert J. Kurzweil, Van Nuys, Calif., assignor to Walt Disney Productions, Burbank, Calif.

Filed Aug. 26, 1983, Ser. No. 526,622

Term of patent 14 years

U.S. Cl. D21—249



286,314

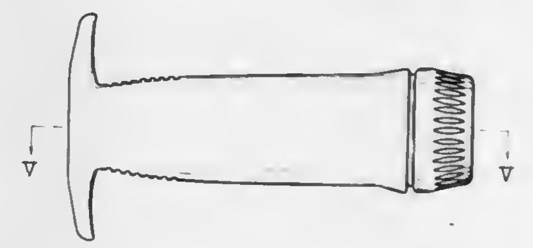
KNIFE HANDLE

Minoru Sawa, Seki, Japan, assignor to Kinryu Cutlery Mfg. Co., Ltd., Seiki, Japan

Filed Apr. 16, 1984, Ser. No. 601,042

Term of patent 14 years

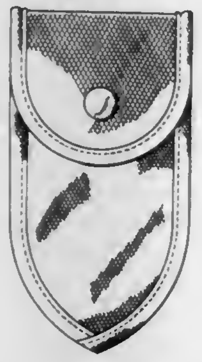
U.S. Cl. D22—118



286,315

AMMUNITION MAGAZINE POUCH

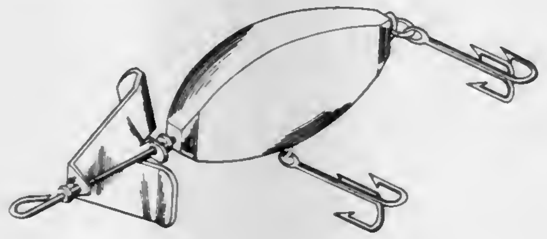
Wayne R. Gregory, San Diego, Calif., assignor to Bianchi International, Temecula, Calif.
Filed Jan. 30, 1984, Ser. No. 575,307
Term of patent 14 years
U.S. Cl. D3—104



286,316

FISHING BAIT

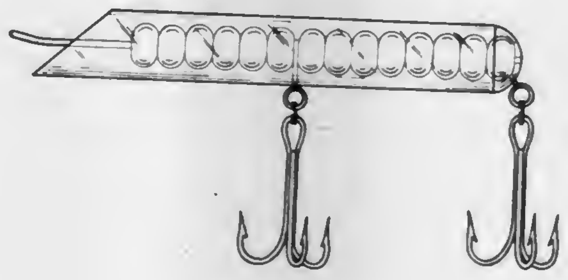
Crafton R. Penalber, Rte. 2, Box 299-B, Baker, La. 70714, assignor to Crafton L. Penalber, Wellington, Kans.
Filed Sep. 21, 1983, Ser. No. 534,334
Term of patent 14 years
U.S. Cl. D22—129



286,317

FLUORESCENT LURE

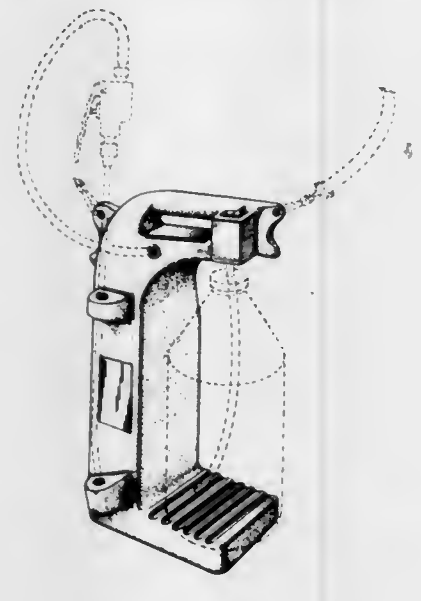
Lance Orlick, 60 Hope Ave., and Kenneth Parlatore, 1320 Bay St., both of Staten Island, N.Y. 10305
Filed Nov. 10, 1983, Ser. No. 550,912
Term of patent 14 years
U.S. Cl. D22—127



286,318

SPRAYER

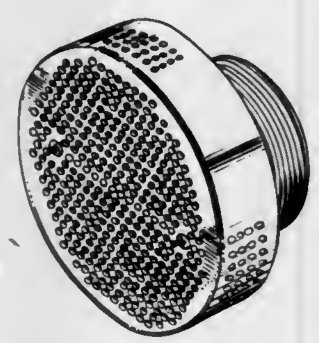
Ray Passien, Rte. 3, Box 291, Klamath Falls, Oreg. 97601
Filed Nov. 18, 1983, Ser. No. 553,531
Term of patent 14 years
U.S. Cl. D23—18



286,319

GUARD FOR A WATER SUCTION PIPE

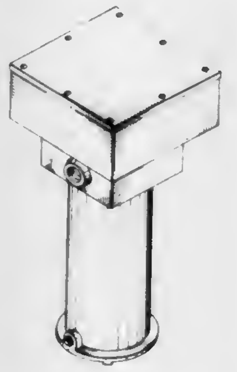
Cleo D. Mathis, 1808 Potrero Ave., South El Monte, Calif. 91733
Filed Jul. 11, 1983, Ser. No. 512,594
Term of patent 14 years
U.S. Cl. D23—41



286,320

WATER HEATER FOR TUBS, SWIMMING POOLS AND THE LIKE

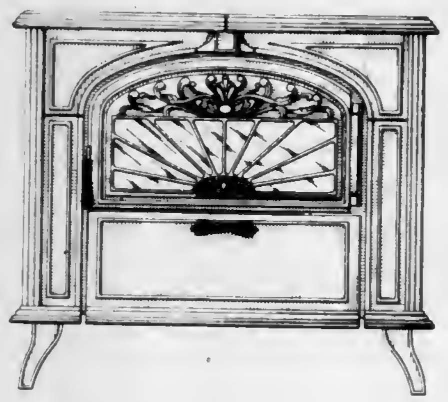
James E. Kingston, Arlington, Wash., assignor to Hollibaugh Manufacturing Company, Inc., Marysville, Wash.
Filed Feb. 28, 1983, Ser. No. 470,829
Term of patent 14 years
U.S. Cl. D23—88



286,321

WOOD BURNING STOVE

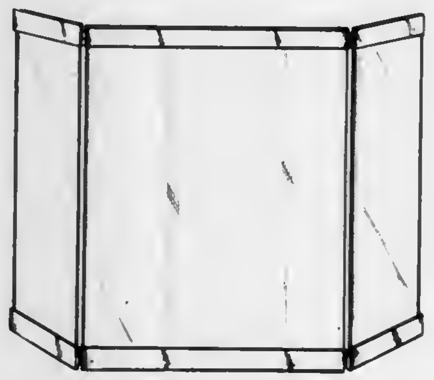
Benoit Catry, Bondues, France, assignor to Fonderies Franco-Belges, Merville, France
Filed Aug. 27, 1984, Ser. No. 644,336
Claims priority, application Hague, Feb. 27, 1984, DM 003 469
Term of patent 14 years
U.S. Cl. D23—97



286,322

FIREPLACE SCREEN

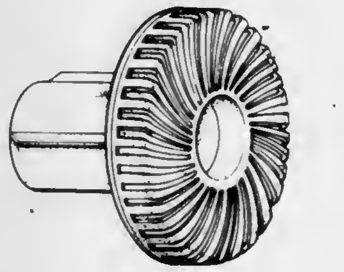
Joseph J. Catania, Cheshire; Angelo Gaudino, Wallingford; Russell DeTuzzi, Huntington, and Maxwell Gardner, Wallingford, all of Conn., assignors to Century Fireplace Furnishings, Inc., Wallingford, Conn.
Filed Jun. 29, 1984, Ser. No. 626,436
Term of patent 14 years
U.S. Cl. D23—138.3



286,323

AIR FRESHENER DISPENSER

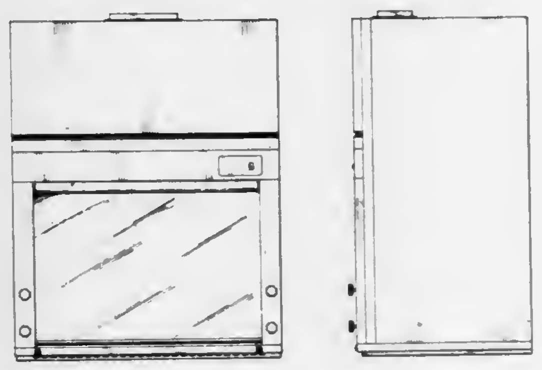
Brian D. Haworth, Farnborough, England, assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Oct. 3, 1983, Ser. No. 538,242
Term of patent 14 years
U.S. Cl. D23—150



286,324

LABORATORY FUME HOOD

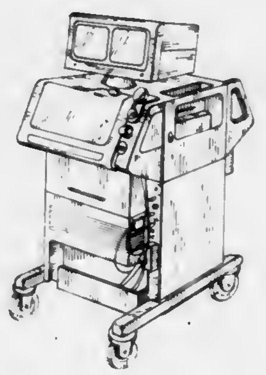
James D. Parks, Johnson County, Kans.; Charles A. Moss, Jackson County, Mo.; Kermit W. Dyer, and James F. Corn, both of Johnson County, Kans., assignors to Labconco Corporation, Kansas City, Mo.
Filed Jun. 27, 1983, Ser. No. 507,762
Term of patent 14 years
U.S. Cl. D23—151



286,325

MEDICAL ULTRASOUND SCANNER

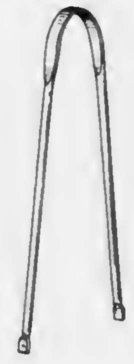
LeRoy J. LaCelle; Joseph L. Ungar, both of Redmond, and Gary J. Selke, Kirkland, all of Wash., assignors to Advanced Technology Laboratories, Inc., Bothell, Wash.
Filed Nov. 25, 1983, Ser. No. 555,237
Term of patent 14 years
U.S. Cl. D24—1.1



286,326

TONGUE CLEANER OR SIMILAR ARTICLE

Anil S. Gautam, 261 Hill Ave., Glen Ellyn, Ill. 60137
Filed Jun. 14, 1984, Ser. No. 620,730
Term of patent 14 years
U.S. Cl. D24—28



286,327
RAZOR

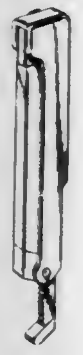
Hans Halm, Herne, Fed. Rep. of Germany, assignor to Wilkinson Sword Limited, High Wycombe, England

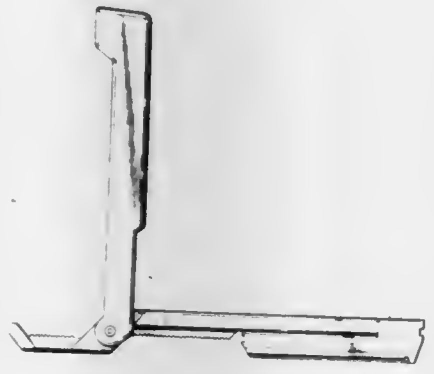
Filed Jun. 1, 1984, Ser. No. 616,369

Claims priority, application United Kingdom, Dec. 2, 1983, 1 016 666

Term of patent 14 years

U.S. Cl. D28—45





286,328
ELECTRIC DRY SHAVER

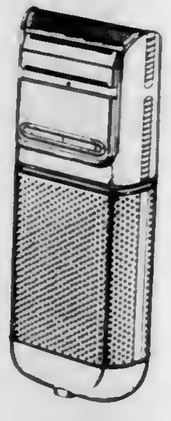
Roland Ullmann, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Sep. 21, 1984, Ser. No. 652,925

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1984, 73NR9269

Term of patent 14 years

U.S. Cl. D28—49



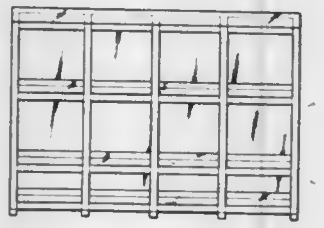
286,329
COMPARTMENTED TRAY FOR COSMETIC ORGANIZER OR THE LIKE

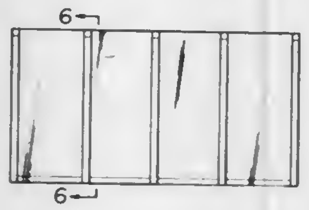
Howard Sussman, 3101 NW. 25th St., Pompano Beach, Fla. 33060

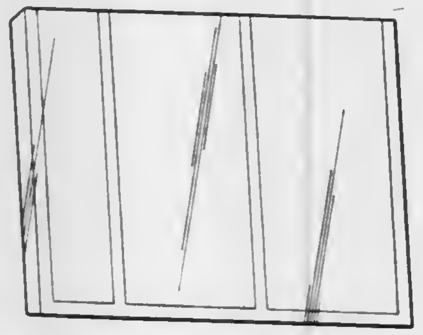
Filed Sep. 26, 1983, Ser. No. 535,430

Term of patent 14 years

U.S. Cl. D28—73







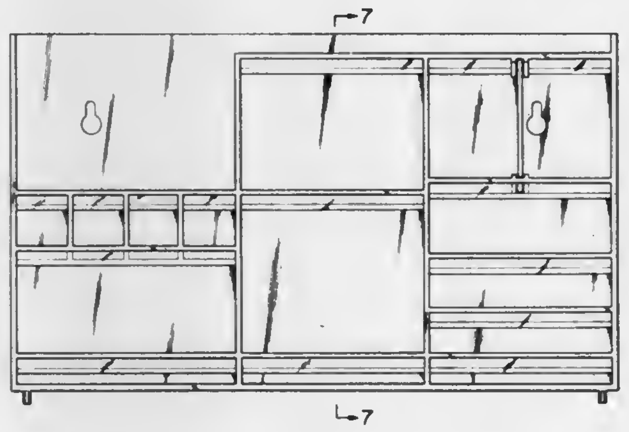
286,330
SHELF UNIT FOR TOILETRIES OR THE LIKE

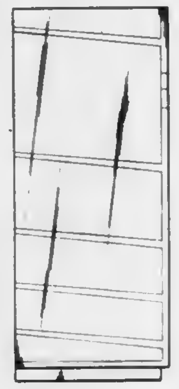
Howard Sussman, 3101 NW. 25th St., Pompano Beach, Fla. 33060

Filed Sep. 26, 1983, Ser. No. 535,731

Term of patent 14 years

U.S. Cl. D28—73





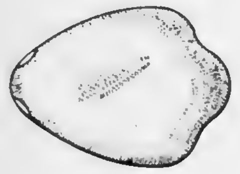
286,331
PERSONAL CARE COMPACT

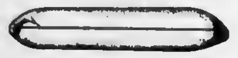
Dominic L. Scoccola, Cleveland, Ohio, assignor to S.A.S. Ventures, Inc., Cleveland, Ohio

Filed Oct. 3, 1984, Ser. No. 657,155

Term of patent 14 years

U.S. Cl. D28—78





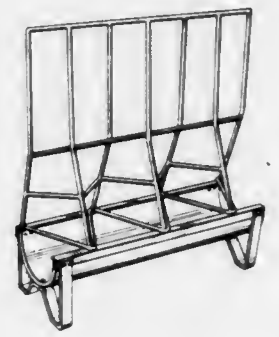
286,332
COMBINED HOG TROUGH FEEDER AND DIVIDER

Peter Christianson, Box 2005, Elbow Lake, Minn. 56531

Filed Dec. 17, 1984, Ser. No. 682,687

Term of patent 14 years

U.S. Cl. D30—13



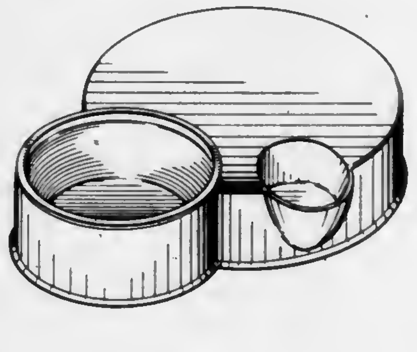
286,333
COMBINATION FOOD AND WATER PET FEEDER

Arthur L. Fassauer, 420 Foster La., Canyon, Tex. 79015

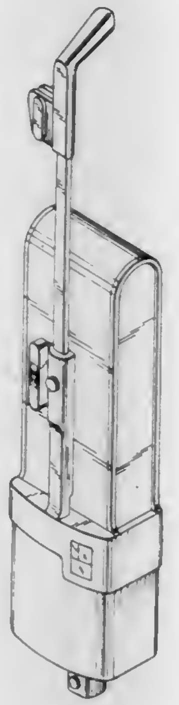
Filed Sep. 13, 1984, Ser. No. 650,766

Term of patent 14 years

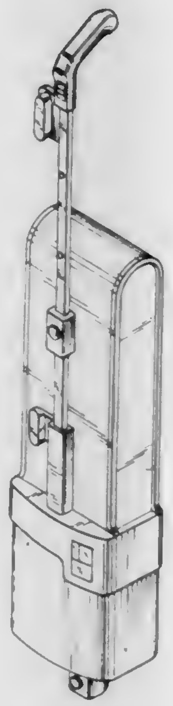
U.S. Cl. D30—16



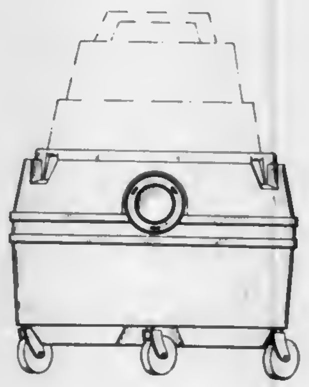
286,334
VACUUM CLEANER
Rolf Strohmeyer, Wuppertal, Fed. Rep. of Germany, assignor to Vorwerk & Co. Elektrowerke KG, Wuppertal, Fed. Rep. of Germany
Filed Jul. 25, 1983, Ser. No. 517,357
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1983, 54 MR 14 754
The portion of the term of this patent subsequent to Oct. 21, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D32—22

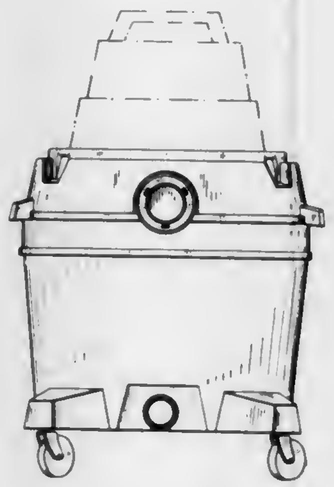


286,335
VACUUM CLEANER
Rolf Strohmeyer, Wuppertal, Fed. Rep. of Germany, assignor to Vorwerk & Co. Elektrowerke KG, Wuppertal, Fed. Rep. of Germany
Filed Jul. 25, 1983, Ser. No. 517,359
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1983, 54 MR 14 736
Term of patent 14 years
U.S. Cl. D32—22

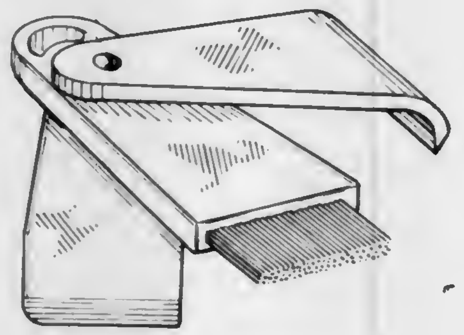


286,336
TANK FOR ELECTRIC VACUUM CLEANER
Robert C. Berfield, Jersey Shore, and Robert L. Crevling, Jr., Williamsport, both of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.
Filed Feb. 15, 1984, Ser. No. 580,559
Term of patent 14 years
U.S. Cl. D32—23

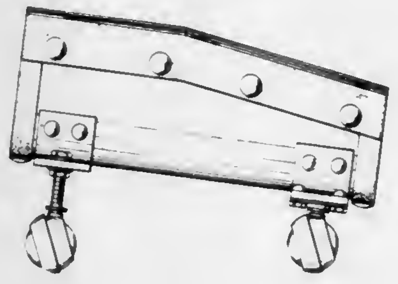




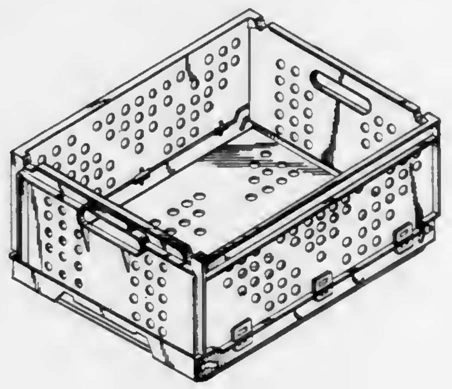
286,337
SNOW SKI CLEANING TOOL
Frank A. Wilkie, Jr., 4407 Guildhall Ct., Westlake Village, Calif. 91360
Filed Jul. 23, 1984, Ser. No. 633,639
Term of patent 14 years
U.S. Cl. D32—47



286,338
ARM SUPPORT FOR HAND TOOL
William T. Cunningham, P.O. Box 182, Butler, Mo. 64730
Filed Dec. 7, 1983, Ser. No. 558,802
Term of patent 14 years
U.S. Cl. D34—23



286,339
FOLDABLE TOTE BOX
Joost van Berne, Dongen, and Gerardus J. van der Vlies, Heusden, both of Netherlands, assignors to Curver B.V., Rijen, Netherlands
Filed Aug. 9, 1983, Ser. No. 521,627
Claims priority, application Benelux, Feb. 11, 1983, 57576-00
Term of patent 14 years
U.S. Cl. D34—43



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF OCTOBER, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. J. Antunes & Co.: *See—*
  - Miller, Dye O.; Antunes, August J.; Antunes, Jerome; and Godsen, Ronald, 4,617,908, Cl. 126-20.000.
- A-Lok Products, Incorporated: *See—*
  - Ditcher, Jack, 4,618,464, Cl. 264-35.000.
- A. Nattermann & Cie GmbH: *See—*
  - Dereu, Norbert; Welter, Andre ; Wendel, Albrecht; Leyck, Sigurd; Parnham, Michael; Graf, Erich; Sies, Helmut; Betzing, Hans; and Fischer, Hartmut, 4,618,669, Cl. 530-331.000.
- Abbott Laboratories: *See—*
  - DeBernardis, John F.; Kerkman, Daniel J.; and McClellan, William J., 4,618,683, Cl. 548-420.000.
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- Abe, Masahiro: *See—*
  - Aoyama, Masaharu; Abe, Masahiro; Ajima, Takashi; and Yonezawa, Toshio, 4,618,878, Cl. 357-71.000.
- Abe, Mitsuo: *See—*
  - Miyatake, Satoshi; Abe, Mitsuo; and Kume, Masao, 4,617,761, Cl. 51-95.0GH.
- Abe, Ryozo; and Sakurai, Masaki, to Victor Company of Japan, Ltd. Address data accessing device in a rotary recording medium reproducing apparatus. 4,618,950, Cl. 369-32.000.
- Abe, Tadashi: *See—*
  - Sada, Masao; Kato, Michio; Ayano, Masami; Abe, Tadashi; and Moriwaki, Masanori, 4,618,709, Cl. 562-532.000.
- Abe, Yoshiaki: *See—*
  - Miura, Haruo; Nagaoka, Takashi; Abe, Yoshiaki; and Sakata, Souji, 4,618,311, Cl. 415-149.00R.
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- Aburada, Masaki: *See—*
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- AccuSwing, Incorporated: *See—*
  - Hurd, Bruce; and Oda, Robert, 4,618,147, Cl. 273-54.00B.
- ACF Industries, Incorporated: *See—*
  - Dugge, Richard H.; and Holt, Jan D., 4,618,295, Cl. 406-138.000.
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- Adams, William C.; and Taylor, William J., to Atlanta Cutlery Corporation. Weapon concealment and locking means. 4,617,951, Cl. 135-66.000.
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  - Pope, Kent M.; and Hardesty, Bryan L., 4,618,744, Cl. 200-5.00A.
- Advanced Micro Devices, Inc.: *See—*
  - Forouhi, Abdul R.; and Allen, Bert L., 4,618,541, Cl. 428-688.000.
  - Young, Mark S.; Drew, John; Shebanow, Michael C.; and Dujari, Vineet, 4,618,898, Cl. 360-51.000.
- Agapiou, Agapios K.; Muhle, Michael E.; and Kurtzman, Myron B., to Exxon Chemical Patents Inc. Polymerization catalyst, production and use. 4,618,596, Cl. 502-116.000.
- Agfa-Gevaert N.V.: *See—*
  - Boeve, Gerard J.; and Vierveijzer, Franciscus, 4,618,137, Cl. 271-219.000.
- AGIP Petroli S.p.A.: *See—*
  - Brandi, Gabriella; Koch, Paolo; Maiorana, Stefano; Dalla Croce, Piero; and Baldoli, Clara, 4,618,439, Cl. 252-47.500.
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- Ahnert, Wolfgang: *See—*
  - Steinke, Gerhard; Fels, Peter; Hoeg, Wolfgang; Lorenz, Werner; Ahnert, Wolfgang; Steffen, Frank; and Reichardt, Walter, 4,618,987, Cl. 381-82.000.
- Aihara, Kenichi: *See—*
  - Araki, Kazuhiko; Ao, Hideki; Inui, Jun; and Aihara, Kenichi, 4,618,607, Cl. 514-212.000.
- Aipperspach, Anthony G.; Fitzgerald, Joseph M.; and Wu, Philip T., to International Business Machines Corporation. Semiconductor static read/write memory having an additional read-only capability. 4,618,943, Cl. 365-104.000.
- Air Products and Chemicals, Inc.: *See—*
  - Ford, Michael E.; and Johnson, Thomas A., 4,618,716, Cl. 564-469.000.
  - Marten, Finn L., 4,618,648, Cl. 525-60.000.
- Aisin Seiki Kabushiki Kaisha: *See—*
  - Fujikawa, Motoi; and Kagata, Tooru, 4,618,044, Cl. 192-54.000.
  - Kobayashi, Kiyonori, 4,618,048, Cl. 192-106.200.
  - Nishimura, Takumi; and Saito, Tadao, 4,618,188, Cl. 303-116.000.
  - Ogasawara, Tsunehiko; Arakawa, Yoshichika; Sumiya, Koji; and Sakaguchi, Yoshikazu, 4,618,038, Cl. 192-3.290.
- Aisin Warner Kabushiki Kaisha: *See—*
  - Ogasawara, Tsunehiko; Arakawa, Yoshichika; Sumiya, Koji; and Sakaguchi, Yoshikazu, 4,618,038, Cl. 192-3.290.
- Ajemian, Van R. Raised pavement marker brace. 4,618,281, Cl. 404-16.000.
- Ajima, Takashi: *See—*
  - Aoyama, Masaharu; Abe, Masahiro; Ajima, Takashi; and Yonezawa, Toshio, 4,618,878, Cl. 357-71.000.
- Ajinomoto Co., Inc.: *See—*
  - Ozawa, Yoichi; Kishimoto, Shinichi; Shinohara, Emiko; Takemoto, Tadashi; and Eguchi, Chikahiko, 4,618,695, Cl. 560-41.000.
  - Shiio, Isamu; Sugimoto, Shinichi; and Kawamura, Kazue, 4,618,580, Cl. 435-108.000.
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- Akred, Brian J.: *See—*
  - Haslop, William P.; Allonby, John M.; Akred, Brian J.; and Messenger, Edward T., 4,618,446, Cl. 252-135.000.
- Akron City Hospital: *See—*
  - Miller, Joseph M.; Fannin, Stephen W.; and Steiner, Paul R., 4,618,929, Cl. 364-415.000.
- Aktiebolaget IRO: *See—*
  - Hellstroem, Jerker, 4,617,971, Cl. 139-370.200.
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- Albert-Frankenthal AG: *See—*
  - Niedermaier, Arnold; and Maier, Peter, 4,617,864, Cl. 101-219.000.
- Albert, Karl-Heinz: *See—*
  - Gilch, Heinz; von Voithenberg, Hubertus; and Albert, Karl-Heinz, 4,618,651, Cl. 525-130.000.
- Albright & Wilson Limited: *See—*
  - Haslop, William P.; Allonby, John M.; Akred, Brian J.; and Messenger, Edward T., 4,618,446, Cl. 252-135.000.
- Alcorn, George E.; and Burgess, Andre S., to United States of America, National Aeronautics and Space Administration. Method of fabricating an imaging X-ray spectrometer. 4,618,380, Cl. 148-187.000.
- Alfranca, Jose-Maria P. Surgical instrument for practicing mechanical sutures and biopsies. 4,617,928, Cl. 128-305.000.
- Ali, Frank F. Sanding, buffing and polishing tool and parts thereof. 4,617,767, Cl. 51-358.000.
- Alker, David; Campbell, Simon F.; and Cross, Peter E., to Pfizer Inc. Anti-ischaemic and antihypertensive 2-[pyrimidyloxy alhoxymethyl]-1,4-dihydropyridines. 4,618,609, Cl. 514-236.000.
- Allaire, Michael J.: *See—*
  - Cartmell, James V.; Allaire, Michael J.; and Wolf, Michael L., 4,617,935, Cl. 128-641.000.
- Allaire, Paul B.; and Stashko, Daniel R., to GTE Valeron Corporation. Cutting tool and insert therefor. 4,618,296, Cl. 407-42.000.
- Allais, Jean-Philippe P. B.; and Tremouilles, Francis J. M. G., to Hispano-Suiza. Military equipment comprising a turret having a main external weapon. 4,617,852, Cl. 89-36.130.
- Allen, Bert L.: *See—*
  - Forouhi, Abdul R.; and Allen, Bert L., 4,618,541, Cl. 428-688.000.
- Allen, Charles A.; and Durrett, Van D., to Allen, Charles A. Torsional vibration isolator and method. 4,617,884, Cl. 123-192.00R.
- Allied Corporation: *See—*
  - Antonazzi, Frank J., 4,618,856, Cl. 340-626.000.
  - Sacks, William; Sibilia, John P.; Kotliar, Abraham M.; Oltmann, Harold D.; and Chen, Shu P., 4,618,528, Cl. 428-216.000.
  - Seelig, Stanley S., 4,618,447, Cl. 252-139.000.
  - Vincent, Jacques, 4,618,071, Cl. 220-371.000.
- Allison, George M., III, to Phillips Petroleum Company. Drilling fluids and thinners therefor. 4,618,433, Cl. 252-8.514.
- Allonby, John M.: *See—*
  - Haslop, William P.; Allonby, John M.; Akred, Brian J.; and Messenger, Edward T., 4,618,446, Cl. 252-135.000.

Alopex Industries, Inc.: *See—*

Alanis, J. Jesus, 4,618,420, Cl. 210-169.000.

Alps Electric Co., Ltd.: *See—*

Kuriyama, Toshihiro, 4,618,902, Cl. 360-118.000.

Okita, Masao; and Sakai, Satoshi, 4,618,951, Cl. 369-270.000.

Saito, Yukio, 4,618,900, Cl. 360-97.000.

Alt, Gerhard H.; Chupp, John P.; and Clizbe, Lane A., to Monsanto Company. Novel alkenyl acetamides and their use in the regulation of the natural growth or development of turf grass. 4,618,357, Cl. 71-76.000.

Aluminum Company of America: *See—*

Tsai, Mei-Yuan, 4,618,441, Cl. 252-49.500.

ALZA Corporation: *See—*

DuBois, Mark; Theeuwes, Felix; and Wong, Patrick S. L., 4,618,487, Cl. 424-15.000.

Ameda AG: *See—*

Beer, Christian; Riedweg, Robert; and Schlensog, Klaus, 4,617,912, Cl. 128-1.00B.

Amerace Corporation: *See—*

Pricone, Robert M.; Roberts, William N.; and Zanotti, Richard, 4,618,518, Cl. 428-40.000.

American Colloid Company: *See—*

Takeda, Hisao; and Taniguchi, Yasunori, 4,618,631, Cl. 521-109.100.

American Cyanamid Company: *See—*

Asato, Goro, 4,618,624, Cl. 514-486.000.

Li, Lehmann K.; and Marra, Michael, 4,618,086, Cl. 227-19.000.

American Hoechst Corporation: *See—*

Walls, John E.; and Liu, Shuchen, 4,618,562, Cl. 430-157.000.

American Home Products Corporation: *See—*

Buzby, George C., Jr., 4,618,711, Cl. 564-86.000.

Sulkowski, Theodore S.; Silver, Paul J.; and Mascitti, Albert A., 4,618,678, Cl. 546-123.000.

American Phone Products: *See—*

Lee, Peter; Cheung, George F.; and Yee, Joe T., 4,618,917, Cl. 362-88.000.

American Safety Closure Corp.: *See—*

Conti, Vincent N., 4,618,121, Cl. 249-59.000.

AMF Incorporated: *See—*

Vecchio, Anthony J.; and Hudson, John H., Jr., 4,618,415, Cl. 209-134.000.

Amoco Corporation: *See—*

Domenico, Samuel N., 4,618,024, Cl. 181-120.000.

Amos, Walter; and Klein, Horst, to Blendax-Werke R. Schneider GmbH & Co. Toothbrush. 4,617,695, Cl. 15-195.000.

Andersen, Olaf S.: *See—*

Muller, Robert L.; and Andersen, Olaf S., 4,618,916, Cl. 361-434.000.

Anderseu, Axel; and Bondergaard, Klaus, to Sincotron APS. Method and device for mounting electronic components on a printed circuit card. 4,617,728, Cl. 29-836.000.

Anderson, William J., to Nastec, Inc. Variable preload ball drive. 4,617,838, Cl. 74-798.000.

Andersson, Eilert, to Dentalvarutjanst AB. Method in the manufacture of tartar removing dental instruments. 4,617,718, Cl. 29-558.000.

Ando, Junji; and Hirose, Yoshihisa, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 4,618,019, Cl. 180-219.000.

Andrews Maclaren Limited: *See—*

Harvey, Samuel E., 4,618,184, Cl. 297-19.000.

Andrews, Patrick V.; and Kaczmarski, Edward Z., to BICC Public Limited Company. Optical fibre cutting tool. 4,618,084, Cl. 225-96.000.

Angers, John W., to Immunology Development Corporation. Human Immune Factors and processes for their production and use. 4,618,494, Cl. 424-101.000.

Anthony, James R.; and Lortz, Allan R., to Indiana Mills & Manufacturing, Inc. Child belt buckle. 4,617,705, Cl. 24-642.000.

Antonazzi, Frank J., to Allied Corporation. Stall surge detector. 4,618,856, Cl. 340-626.000.

Antoniucci, Pierluigi: *See—*

Bruno, Roberto; Azzeri, Nazzareno; Antoniucci, Pierluigi; Bocci, Giorgio; Brizielli, Sandro; and Barardi, Paolo, 4,618,379, Cl. 148-144.000.

Antrim, Richard L.: *See—*

Johnson, Richard A.; Antrim, Richard L.; and Lloyd, Norman E., 4,618,584, Cl. 435-234.000.

Anttila, Dennis A., to Motorola, Inc. Injector driver control unit with internal overvoltage protection. 4,618,908, Cl. 361-187.000.

Antunes, August J.: *See—*

Miller, Dye O.; Antunes, August J.; Antunes, Jerome; and Godsen, Ronald, 4,617,908, Cl. 126-20.000.

Antunes, Jerome: *See—*

Miller, Dye O.; Antunes, August J.; Antunes, Jerome; and Godsen, Ronald, 4,617,908, Cl. 126-20.000.

Ao, Hideki: *See—*

Araki, Kazuhiko; Ao, Hideki; Inui, Jun; and Aihara, Kenichi, 4,618,607, Cl. 514-212.000.

Aoi, Kazuo; and Tsuchida, Naoki, to Yamaha Hatsudoki Kabushiki Kaisha. Actuating mechanism for multiple valve internal combustion engine. 4,617,881, Cl. 123-90.270.

Aoyama, Masaharu; Abe, Masahiro; Ajima, Takashi; and Yonezawa, Toshio, to Kabushiki Kaisha Toshiba. Semiconductor device having a multilayer wiring structure using a polyimide resin. 4,618,878, Cl. 357-71.000.

AP Industries, Inc.: *See—*

Kotnik, Ernest J., 4,617,710, Cl. 29-268.000.

Appelle, Gerald K. Custom dental shade guide tab. 4,618,325, Cl. 433-26.000.

Applied Elastomerics, Incorporated: *See—*

Chen, John Y., 4,618,213, Cl. 350-96.340.

Applied Materials, Inc.: *See—*

Maydan, Dan; Somekh, Sasson; and Kaczorowski, Edward M., 4,618,262, Cl. 356-357.000.

Aprica Kassai Kabushikikaisha: *See—*

Kassai, Kenzou, 4,618,033, Cl. 188-20.000.

Apsley Metals Limited: *See—*

McGlashen, James N.; and Holroyd, Colin, 4,618,466, Cl. 264-40.600.

Arai, Masatoshi: *See—*

Takago, Toshio; Arai, Masatoshi; and Futatsumori, Koji, 4,618,646, Cl. 524-783.000.

Arai, Yasunori, to Asahi Kogaku Kogyo K.K. Focal position adjusting device for small variable-magnification type copying machine with zoom lens. 4,618,253, Cl. 355-57.000.

Arakawa Kagaku Kogyo Kabushiki Kaisha: *See—*

Tsuchida, Seiichi; Kodama, Yoshihiro; and Hara, Hiroari, 4,618,640, Cl. 524-272.000.

Arakawa, Satoshi, to Fuji Photo Optical Co., Ltd. Construction of manual control section of endoscope. 4,617,915, Cl. 128-4.000.

Arakawa, Yoshichika: *See—*

Ogasawara, Tsunehiko; Arakawa, Yoshichika; Sumiya, Koji; and Sakaguchi, Yoshikazu, 4,618,038, Cl. 192-3.290.

Araki, Kazuhiko; Ao, Hideki; Inui, Jun; and Aihara, Kenichi, to Yoshitomi Pharmaceutical Industries, Ltd. 1,4-dihydropyridine-3,5-dicarboxylic acid ester derivatives and pharmaceutical compositions. 4,618,607, Cl. 514-212.000.

Araki, Youichi; and Uetake, Yoshinari, to Kabushiki Kaisha Toshiba. Power semiconductor device with mesa type structure. 4,618,877, Cl. 357-56.000.

Aramaki, Shinji: *See—*

Suzuki, Tetsumi; Murayama, Tetsuo; Ono, Hitoshi; Aramaki, Shinji; and Yokoyama, Michiyo, 4,618,555, Cl. 430-78.000.

Ardal og Sundal Verk a.s.: *See—*

Venås, Karl, 4,618,427, Cl. 210-629.000.

Arians, Arlyn J.: *See—*

Garman, James A.; Swift, Stephen D.; Livesay, Richard E.; and Arians, Arlyn J., 4,618,190, Cl. 305-39.000.

Arima, Hideki: *See—*

Murase, Kiyoshi; Mase, Toshiyasu; Arima, Hideki; and Tomioka, Kenichi, 4,618,627, Cl. 514-678.000.

Arimatsu, Keiji: *See—*

Tokuyama, Shunji; Suzuki, Koji; and Arimatsu, Keiji, 4,618,905, Cl. 361-4.000.

Arioka, Hiroyuki: *See—*

Nishimatsu, Masaharu; Ide, Toshiaki; Arioka, Hiroyuki; and Kubota, Yuichi, 4,618,535, Cl. 428-325.000.

Arjomari-Prioux: *See—*

Camus, Michel, 4,618,402, Cl. 162-140.000.

Armerad Betong Vagforbattringar AB: *See—*

Bergstrom, Ulf, 4,617,776, Cl. 52-690.000.

Armitage, David, to United States of America, Air Force. Electron-bombarded silicon spatial light modulator. 4,618,217, Cl. 350-355.000.

Armstrong, Gordon M., to Fermentation Engineering, Inc. Whey treatment apparatus. 4,617,861, Cl. 99-453.000.

Arneteg, Ingemar, to Stellana Plast AB. Trolley bracket. 4,617,867, Cl. 105-154.000.

Aros Electronics AB: *See—*

Hellstroem, Jerker, 4,617,971, Cl. 139-370.200.

Arthur, Hugh M.; and Bates, Graham H., to Molins PLC. Conveying continuous filter material. 4,618,339, Cl. 493-4.000.

Artmeier, Theodor: *See—*

Gregg, Hans; and Artmeier, Theodor, 4,618,309, Cl. 414-753.000.

Asagi, Yasuyoshi: *See—*

Hattori, Toshihiro; Ishihara, Masaki; Uriuhara, Makoto; Kasai, Hitoshi; and Asagi, Yasuyoshi, 4,618,043, Cl. 192-0.052.

Asahi Fiber Glass Company, Limited: *See—*

Ohe, Junya; Wakita, Saburo; Yamatsuta, Kiichi; Goto, Shoji; Kutsukake, Yukinori; and Sugizaki, Masuo, 4,618,474, Cl. 420-436.000.

Asahi Glass Company, Limited: *See—*

Ohe, Junya; Wakita, Saburo; Yamatsuta, Kiichi; Goto, Shoji; Kutsukake, Yukinori; and Sugizaki, Masuo, 4,618,474, Cl. 420-436.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*

Uchida, Seiichi, 4,618,550, Cl. 430-11.000.

Asahi Kogaku Kogyo K.K.: *See—*

Arai, Yasunori, 4,618,253, Cl. 355-57.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*

Ueda, Hirohisa, 4,617,914, Cl. 128-4.000.

Asai, Ryuichi: *See—*

Mori, Masaharu; and Asai, Ryuichi, 4,618,830, Cl. 329-105.000.

Asano, Kiyomitsu; and Kondo, Toshikatsu, to Brother Kogyo Kabushiki Kaisha; and Nippon Telecommunication Engineering Company. Print head. 4,618,277, Cl. 400-124.000.

Asato, Goro, to American Cyanamid Company. 3-amino-4-hydroxy(or alkoxy)phenethanolamine derivatives and pharmacologically-acceptable acid addition salts thereof for increasing the growth rate and/or improving the lean meat to fat ratio of warm-blooded animals. 4,618,624, Cl. 514-486.000.

ASC Auto Spezial Carosserie Vertrieb GmbH: *See—*

Farmont, Rolf, 4,618,176, Cl. 292-263.000.

Asea AB: *See—*

Larsson, Hans G.; Westman, Erik; and Ostlund, Artur, 4,618,964, Cl. 373-155.000.

Rappinger, Bo; and Stenkvist, Sven-Einar, 4,618,963, Cl. 373-72.000.

Ashikawa, Noboru; and Sakuma, Shunji, to Honda Giken Kogyo Kabushiki Kaisha. Driving gear for front and rear wheels of automobile. 4,618,021, Cl. 180-248.000.

Ashland Oil, Inc.: *See—*

Grimm, Robert A.; Kyung, Jai H.; Brusky, Phyllis L.; Holehouse, Joseph G.; and Chang, Biau-hung, 4,618,707, Cl. 560-337.000.

Powell, Clois E., 4,618,390, Cl. 156-307.300.

Ashworth, Thomas, Jr. Therapeutic exercise device. 4,618,141, Cl. 272-73.000.

Aspden, Kim P.: *See—*

Rosenstein, Robert; Aspden, Kim P.; and Stopa, Peter, 4,618,576, Cl. 435-7.000.

Aspen Laboratories, Inc.: *See—*

Manes, Michael R., 4,617,927, Cl. 128-303.140.

Assaf, Gad, to Geophysical Engineering Company. Apparatus for producing power using concentrated brine. 4,617,800, Cl. 60-689.000.

Asta-Werke Aktiengesellschaft: *See—*

Scheffler, Gerhard; Niemeyer, Ulf; Brock, Norbert; and Pohl, Jorg, 4,618,692, Cl. 558-81.000.

Astrologes, Gary W.: *See—*

Elliott, Arthur J.; and Astrologes, Gary W., 4,618,718, Cl. 564-481.000.

Asulab A.S.: *See—*

Zingg, Walter, 4,618,798, Cl. 310-366.000.

Asztalos, Michael J.: *See—*

Magee, Robert D.; Asztalos, Michael J.; and Trinh, Vuong D., 4,618,824, Cl. 324-208.000.

AT&T Bell Laboratories: *See—*

Fleury, Paul A., V, 4,618,211, Cl. 350-96.150.

Gans, Michael J., 4,618,867, Cl. 343-781.00P.

Georgiou, George E.; and Poulsen, Martin E., 4,618,972, Cl. 378-34.000.

Kwilos, Jerald J., 4,618,194, Cl. 339-14.00R.

Ludington, Paul D.; and White, Ian A., 4,618,212, Cl. 350-96.210.

Swanson, Eric J., 4,618,815, Cl. 323-315.000.

AT&T Technologies, Inc.: *See—*

Fanning, William J., 4,617,708, Cl. 29-25.420.

Glantschnig, Werner J., 4,618,975, Cl. 378-51.000.

AT&T Teletype Corporation: *See—*

Jacksier, Barry H.; and Ollendick, Gary B., 4,618,787, Cl. 307-591.000.

Atlanta Cutlery Corporation: *See—*

Adams, William C.; and Taylor, William J., 4,617,951, Cl. 135-66.000.

Atlantic Richfield Company: *See—*

Dehm, David C.; and Lawson, H. Franklin, 4,618,655, Cl. 525-344.000.

Thanawalla, Chandrakant B.; and Dehm, David C., 4,618,703, Cl. 560-209.000.

Atlas, Steven A.: *See—*

Johnson, Lorin K.; Atlas, Steven A.; and Laragh, John H., 4,618,600, Cl. 514-12.000.

Atsugi Motor Parts Co., Ltd.: *See—*

Yamanouchi, Katsuto; Saitoh, Katsuo; Saito, Yoshinori; and Kikyohara, Tadashi, 4,618,417, Cl. 210-149.000.

Australian Design Marketing Pty. Ltd.: *See—*

Studwell, Kevin A. R., 4,617,773, Cl. 52-537.000.

Autoflug GmbH: *See—*

Butenop, Klaus; and Kroger, Doris, 4,618,108, Cl. 242-107.000.

Just, Herbert; and Hansen, Holger, 4,618,110, Cl. 244-151.00B.

Automobiles Citroen: *See—*

Celnik, Jean, 4,617,729, Cl. 29-840.000.

Le Salver, Robert; and Poupard, Dominique, 4,618,127, Cl. 267-8.00R.

Automobiles Peugeot: *See—*

Celnik, Jean, 4,617,729, Cl. 29-840.000.

Le Salver, Robert; and Poupard, Dominique, 4,618,127, Cl. 267-8.00R.

Automotive Products plc: *See—*

Wrobleski, David L.; Mienko, David K.; and Leigh-Monstevens, Keith V., 4,617,855, Cl. 92-5.00R.

Avnet, Inc.: *See—*

Rafal, Marc D.; Burton, Larry W.; and Joines, William T., 4,618,996, Cl. 455-46.000.

Axel, Leon: *See—*

Redington, Rowland W.; and Axel, Leon, 4,618,827, Cl. 324-309.000.

Ayano, Masami: *See—*

Sada, Masao; Kato, Michio; Ayano, Masami; Abe, Tadashi; and Moriwaki, Masanori, 4,618,709, Cl. 562-532.000.

Ayers, William R., to Central Illinois Manufacturing Co. Water removing filter media and method of making the same. 4,618,388, Cl. 156-284.000.

Azzeri, Nazzareno: *See—*

Bruno, Roberto; Azzeri, Nazzareno; Antoniucci, Pierluigi; Bocci, Giorgio; Brizielli, Sandro; and Barardi, Paolo, 4,618,379, Cl. 148-144.000.

Babu, Suryadevara V.; Horwath, Ronald S.; Lu, Neng-hsing; and Welsh, John A., to International Business Machines Corporation. Uniform plasma for drill smear removal reactor. 4,618,477, Cl. 422-186.290.

Backes, Reiner; and Langenkamp, Ulrich, to ITT Industries, Inc. Integrated delay circuit for digital signals. 4,618,788, Cl. 307-603.000.

Bacskai Husipari Kozos Vallalat: *See—*

Batorfalvi, Geza; Lendvai, Tibor; Radai, Antal; Pongrac, Gaborne ; Szabo, Miklos; and Szilardi, Jeno , 4,617,700, Cl. 17-45.000.

Badono, Shinji; and Tsutaka, Yoshikazu, to Mitsubishi Denki Kabushiki Kaisha. Digital ratemeter. 4,618,969, Cl. 377-49.000.

Badrak, Robert P.; and Mayo, Terry H., to Reed Tool Company. Hardened bearing surface and method of forming same. 4,618,269, Cl. 384-95.000.

Baglioni, Alessandro, to Medosan Industrie Biochimiche Riunite S.p.A. Ester derivatives of 7-(ω-oxyalkyl) theophylline and their pharmaceutical activity. 4,618,612, Cl. 514-265.000.

Bahn, Michael: *See—*

Engelskirchen, Konrad; Stein, Werner; Bahn, Michael; Schieferstein, Ludwig; Schindler, Joachim; and Schmid, Rolf, 4,618,582, Cl. 435-104.000.

Bainbridge, Gary R.; McCauley, Lewis D.; and Taylor, John H., to McGard, Inc. Locknut and key therefor. 4,618,299, Cl. 411-374.000.

Baji, Toru: *See—*

Sasano, Akira; Seki, Kouichi; Yamamoto, Hideaki; Baji, Toru; and Tsukada, Toshihisa, 4,618,873, Cl. 357-23.700.

Baker, Harriett V., heir: *See—*

Baker, Herbert K., deceased; and Baker, Harriett V., heir, 4,617,835, Cl. 74-677.000.

Baker, Herbert K., deceased; and by Baker, Harriett V., heir. Transmission. 4,617,835, Cl. 74-677.000.

Balazs, Zoltan: *See—*

Pal, Gabor; Endroczi, Gabor; Hollos, Gyorgy; Nagy, Gabor; Szonyi, Gabor; Bodi Laszlo ; and Balazs, Zoltan, 4,617,830, Cl. 73-590.000.

Baldoli, Clara: *See—*

Brandi, Gabriella; Koch, Paolo; Maiorana, Stefano; Dalla Croce, Piero; and Baldoli, Clara, 4,618,439, Cl. 252-47.500.

Baldwin, David A., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Transmission systems for tracked vehicles. 4,617,836, Cl. 74-682.000.

Baliga, Bantval J., to General Electric Company. Integrated power switching semiconductor devices including IGT and MOSFET structures. 4,618,872, Cl. 357-23.400.

Ballard, Denis G. H.; Moran, Kenneth T.; and Shirley, Ian M., to Imperial Chemical Industries PLC. Conducting polymers. 4,618,454, Cl. 252-500.000.

Ballard, Lee J. Carpet handling device. 4,618,308, Cl. 414-532.000.

Balmer, Oskar: *See—*

Focke, Heinz; and Balmer, Oskar, 4,617,974, Cl. 141-239.000.

Balzer, Norbert R., to Tocco, Inc. System for hardening camshafts. 4,618,125, Cl. 266-90.000.

Balzer, Wolf-Dieter: *See—*

Weiss, Wolfram; Balzer, Wolf-Dieter; Fikentscher, Rolf; Immel, Guenther; and Wolf, Hans, 4,618,371, Cl. 106-263.000.

Banninger, Urs, to Swiss Aluminium Ltd. Caterpillar type mold having mold links with chamfered edges. 4,617,980, Cl. 164-430.000.

Barardi, Paolo: *See—*

Bruno, Roberto; Azzeri, Nazzareno; Antoniucci, Pierluigi; Bocci, Giorgio; Brizielli, Sandro; and Barardi, Paolo, 4,618,379, Cl. 148-144.000.

Barber, David C.: *See—*

Brown, Brian H.; Barber, David C.; and Freeston, Ian L., 4,617,939, Cl. 128-734.000.

Bardle Servovalve Co.: *See—*

Nicholson, Robert D., 4,617,966, Cl. 137-625.620.

Barker, Douglas R.: *See—*

Gegel, Harold L.; Malas, James C.; Prasad, Yellapregada V. R. K.; Doraivelu, Sokka M.; Barker, Douglas R.; Morgan, James T., Jr.; and Lark, Kristine A., 4,617,817, Cl. 72-364.000.

Barnard, Richard. Dryer insert, holder, container. 4,617,743, Cl. 34-109.000.

Barnes, Andrew; Elliott, Gary K.; MacFarlane, William; and Pheasant, Stephen T., to Foseco Trading A.G. Refractory, heat-insulating slabs. 4,618,079, Cl. 222-591.000.

Barnes, Robert S.: *See—*

Campbell, James R., 4,618,152, Cl. 277-53.000.

Baron, Heinz; Hoefer, Peter; and Schwind, Herbert, to Titmus Eurocon Kontaktlinsen GmbH. Bifocal contact lens of the bivisual type. 4,618,228, Cl. 351-161.000.

Barrett, John: *See—*

Hudson, John O.; Schleien, Mickey M.; and Barrett, John, 4,618,444, Cl. 252-92.000.

Barry Wright Corporation: *See—*

Nardella, Michael A.; and Cournoyer, Bernard T., 4,618,118, Cl. 248-243.000.

Barsumian, Edward A.: *See—*

Hargrave, Karl D.; Devlin, John P.; and Barsumian, Edward A., 4,618,677, Cl. 544-400.000.

Bartfield, William; and Ferguson, Charles L. Cup dispensing apparatus. 4,618,073, Cl. 221-11.000.

Barth, Jon E. Microwave attenuator. 4,618,839, Cl. 333-81.00A.

Bartnik, Mieczyslaw: *See—*

Saternus, Antoni; Miczek, Ludwik; and Bartnik, Mieczyslaw, 4,618,376, Cl. 134-26.000.

Bartolomeo, Mark E., to Eaton Corporation. Stroboscopic method for determining gear mesh quality. 4,618,256, Cl. 356-23.000.

- BASF Aktiengesellschaft: *See—*
  - Becker, Rainer; Jahn, Dieter; Schirmer, Ulrich; Schott, Eberhard P.; Hesse, Bernhard; and Jung, Johann, 4,618,362, Cl. 71-88.000.
  - Ebel, Klaus; and Reuther, Wolfgang, 4,618,676, Cl. 544-196.000.
  - Iden, Rudiger; and Seybold, Gunther, 4,618,694, Cl. 558-416.000.
  - Lenz, Hans-Heinrich, 4,618,725, Cl. 568-315.000.
  - Muench, Volker; Hambrecht, Juergen; Naarmann, Herbert; Echte, Adolf; and Illers, Karl H., 4,618,636, Cl. 524-176.000.
  - Muench, Volker; Hambrecht, Juergen; Himmele, Walter; Echte, Adolf; and Swoboda, Johann, 4,618,668, Cl. 528-215.000.
  - Schlecker, Rainer; Schmidt, Peter; Thieme, Peter C.; Lenke, Dieter; Teschendorf, Hans-Jurgen; Traut, Martin; Mueller, Claus D.; Hofmann, Hans P.; and Kreiskott, Horst, 4,618,622, Cl. 514-457.000.
  - Taubitz, Christof; Muench, Volker; Hambrecht, Juergen; Echte, Adolf; and Illers, Karl H., 4,618,633, Cl. 524-80.000.
  - Weiss, Wolfram; Balzer, Wolf-Dieter; Fikentscher, Rolf; Immel, Guenther; and Wolf, Hans, 4,618,371, Cl. 106-263.000.
  - Weitz, Hans-Martin; and Fischer, Rolf, 4,618,704, Cl. 560-262.000.
- BASF Corporation: *See—*
  - Patil, Arvind S.; and Pepoy, Louis J., 4,618,375, Cl. 106-304.000.
- Basotherm GmbH: *See—*
  - Hofmann-Igl, Ernest, 4,617,949, Cl. 132-88.500.
- Bass, Robert J.: *See—*
  - Richardson, Kenneth; Bass, Robert J.; and Cooper, Kelvin, 4,618,616, Cl. 514-340.000.
- Bates, Graham H.: *See—*
  - Arthur, Hugh M.; and Bates, Graham H., 4,618,339, Cl. 493-4.000.
- Batorfalvi, Geza; Lendvai, Tibor; Radai, Antal; Pongrac, Gaborne ; Szabo, Miklos; and Szilardi, Jeno , to Orszagos Husipari Kutatointezet; and Bacskai Husipari Kozos Vallalat. Process and apparatus for the hygienic extraction and collection of animal blood fit and unfit for human consumption. 4,617,700, Cl. 17-45.000.
- Batra, Vijay K. Air shoe. 4,617,745, Cl. 36-3.00B.
- Battelle Development Corporation: *See—*
  - Harmer, Alan L., 4,618,764, Cl. 250-227.000.
  - Maringer, Robert E., 4,617,981, Cl. 164-453.000.
- Batten, Ronald W., to VSI Corporation. Removable key for wrenching tool. 4,617,844, Cl. 81-436.000.
- Baudry, Hugues, to U.S. Philips Corporation. Starting mixture for a dielectric composition. 4,618,590, Cl. 501-17.000.
- Bauer, Karl-Heinz. Multi-purpose furniture piece. 4,618,183, Cl. 297-2.000.
- Baughman, Gary M.: *See—*
  - Hamman, Martin E.; and Baughman, Gary M., 4,618,078, Cl. 222-478.000.
- Baum, Kurt; Hunadi, Ronald O.; and Bedford, Clifford D., to Fluorochem Inc. Method of making and polymerizing perfluoroalkylene acetylene compounds. 4,618,734, Cl. 570-136.000.
- Bauman, Therese M.; and Huebner, David J., to Dow Corning Corporation. Method of producing aqueous latex of crosslinked polydiorganosiloxane. 4,618,645, Cl. 524-745.000.
- Bausch & Lomb Incorporated: *See—*
  - Jacobstein, Benjamin L.; Mestrits, Thomas J.; and Miller, Murray, 4,618,229, Cl. 351-161.000.
- Bautista, Val: *See—*
  - Lescrenier, Charles; and Bautista, Val, 4,618,980, Cl. 378-206.000.
- Bay, W. Elliot; and Reineke, Karl E., to Stauffer Chemical Company. Addition of phosphines to alpha-olefins. 4,618,719, Cl. 568-17.000.
- Bay, W. Elliott; Reineke, Karl E.; and Weil, Edward D., to Stauffer Chemical Company. Preparation of alkyldiarylphosphines. 4,618,720, Cl. 568-17.000.
- Bayer Aktiengesellschaft: *See—*
  - Beitzke, Bernhard, 4,618,698, Cl. 560-060.000.
  - Regel, Erik; Buchel, Karl H.; Reinecke, Paul; and Brandes, Wilhelm, 4,618,619, Cl. 514-383.000.
  - Schneider, Manfred; and Laumen, Kurt, 4,618,690, Cl. 556-441.000.
  - Scholl, Hans-Joachim; and Hettel, Hans, 4,618,706, Cl. 560-335.000.
  - Volland, Robert; Freitag, Hans-Albrecht; Seesing, Johannes; and Bergmann, Herbert, 4,618,532, Cl. 428-304.400.
- Bayne, Robert T.; and Heidelberger, James E., to Standard Change-Makers, Inc. Color-sensitive currency verifier. 4,618,257, Cl. 356-71.000.
- Bayshore, Charles A., to Vistakon, Inc. Soft contact lens. 4,618,227, Cl. 351-161.000.
- BBC Brown, Boveri & Company Limited: *See—*
  - Vitins, Michael, 4,618,933, Cl. 364-481.000.
- Beach, Marvin F. Process for converting casein to caseinate. 4,618,502, Cl. 426-583.000.
- Beattie, Craig W.: *See—*
  - Ens, John; McEwen, James A.; and Beattie, Craig W., 4,618,230, Cl. 351-221.000.
- Bechu, Jean-Pierre, to Caoutchouc Manufacture et Plastiques. Vibration damping arrangement. 4,618,129, Cl. 267-140.100.
- Beck, Harold K., to Halliburton Company. Downhole tool with compression chamber. 4,617,999, Cl. 166-372.000.
- Beck, Leonard H., to Du Pont de Nemours, E. I., and Company. Process for purifying 2-perfluoroalkylethanols. 4,618,731, Cl. 563-842.000.
- Beck, William R.; Jahn, William; Koltenback, Steven R.; Scharf, Robert M.; and Schwab, Ronald, to Thomas & Betts Corporation. Method for termination of flat cable. 4,617,732, Cl. 29-866.000.
- Becker, Floyd W. Dual-wall drill pipe. 4,618,172, Cl. 285-141.000.
- Becker, Helmut: *See—*
  - Sturm, Walter; Becker, Helmut; Witt, Jurgen; Fritz, Werner; and Eysholdt, Ursula, 4,618,776, Cl. 250-372.000.
- Becker, Rainer; Jahn, Dieter; Schirmer, Ulrich; Schott, Eberhard P.; Hesse, Bernhard; and Jung, Johann, to BASF Aktiengesellschaft. Increasing the sugar content of plants. 4,618,362, Cl. 71-88.000.
- Beckman Industrial Corporation: *See—*
  - Farren, Carl A., 4,618,771, Cl. 250-343.000.
- Becton, Dickinson and Company: *See—*
  - Kopacz, Bernard F., 4,617,738, Cl. 30-339.000.
  - Rosenstein, Robert; Aspden, Kim P.; and Stopa, Peter, 4,618,576, Cl. 435-7.000.
- Bedford, Clifford D.: *See—*
  - Baum, Kurt; Hunadi, Ronald O.; and Bedford, Clifford D., 4,618,734, Cl. 570-136.000.
- Beeland, William D.: *See—*
  - Van Doorn, Donald W.; Hawkins, James B.; Carpenter, Francis W., III; Hudson, Wilbur G.; Webb, Tommy W.; and Beeland, William D., 4,617,862, Cl. 100-53.000.
- Beer, Christian; Riedweg, Robert; and Schlensog, Klaus, to Ameda AG. Incubator. 4,617,912, Cl. 128-1.00B.
- Beitzke, Bernhard, to Bayer Aktiengesellschaft. Process for the preparation of a mixture of an optionally substituted cinnamic acid ester and an optionally substituted β-alkoxy-β-phenyl-propionic acid ester, and a process for the preparation of optionally substituted cinnamic acid. 4,618,698, Cl. 560-060.000.
- Belch, Francis R., to Ferranti plc. Information display system having a multiple cell raster scan display. 4,618,858, Cl. 340-724.000.
- Bell, Allyn R.: *See—*
  - Covey, Rupert A.; Forbes, Patricia J.; and Bell, Allyn R., 4,618,365, Cl. 71-92.000.
- Bell & Howell Company: *See—*
  - Wells, Thomas R., 4,618,232, Cl. 353-79.000.
- Bell, James C., to Oliver Industries, Inc. Luggage rack. 4,618,082, Cl. 224-321.000.
- Bellheimer Metallwerk GmbH: *See—*
  - Sauer, Hans-Peter, 4,618,932, Cl. 364-478.000.
- Belloche, Alain. Installation and method for supplying merchandise to sales display structures. 4,618,031, Cl. 186-52.000.
- Belokin, Paul, Jr. Display device module with multiple shelves. 4,618,115, Cl. 248-174.000.
- Bender, Rudolf: *See—*
  - Vertesy, Laszlo ; Bender, Rudolf; and Fehlhaber, Hans-Wolfram, 4,618,602, Cl. 514-54.000.
- Benko, Pal: *See—*
  - Budai, Zoltan; Benko, Pal; Ratz nee Simonek, Ildiko ; Rakoczy nee Pinter, Eva; Magyar, Karoly; Kelemen, Jozsef; and Mandi, Attila, 4,618,623, Cl. 514-478.000.
- Benn, Frederick R.; and McAuliffe, Charles A., to Salford University Industrial Centre Limited. Conversion of a municipal waste to fuel. 4,618,736, Cl. 585-240.000.
- Berde, Dennis; and Youskites, Edward, to Grumman Aerospace Corporation. Video color transmission system with independent audio signals within the video signals. 4,618,889, Cl. 358-144.000.
- Bergman, Roger W.; and Smith, Harry A., to Dow Chemical Company, The. O,O'-, O,S'- or S,S'-dithiodialkylene-bis(mono- or dihydrocarbyl carbamothioates) and S,S'-dithiodialkylene-bis(mono- or dihydrocarbyl carbamodithioates) and method of preparation thereof. 4,618,461, Cl. 558-234.000.
- Bergmann, Herbert: *See—*
  - Volland, Robert; Freitag, Hans-Albrecht; Seesing, Johannes; and Bergmann, Herbert, 4,618,532, Cl. 428-304.400.
- Bergstrom, Ulf, to Armerad Betong Vagforbattringar AB. Building element having spaced longitudinal members with each member having a different moisture content. 4,617,776, Cl. 52-690.000.
- Berman, Jody R.; Steele, Dennis L.; and Kubisiak, Michael P., to Dow Chemical Company, The. Curable compositions containing multiglycidyl ethers and a sulfonic acid amide. 4,618,526, Cl. 428-209.000.
- Bernard, Milton S., to Vertac Chemical Corporation. Novel herbicidal salt. 4,618,367, Cl. 71-121.000.
- Bernasconi, Carlo: *See—*
  - Horvath, Stephan; and Bernasconi, Carlo, 4,618,982, Cl. 381-36.000.
- Berthelsen, Ernst R., to Dac-Emballage A.M.B.A. Valve bag. 4,618,993, Cl. 383-44.000.
- Betzing, Hans: *See—*
  - Dereu, Norbert; Welter, Andre ; Wendel, Albrecht; Leyck, Sigurd; Parnham, Michael; Graf, Erich; Sies, Helmut; Betzing, Hans; and Fischer, Hartmut, 4,618,669, Cl. 530-331.000.
- Beyer, Wolfgang: *See—*
  - Bohme, Klaus; Beyer, Wolfgang; Seibt, Gunter; and Digmayer, Michael, 4,618,749, Cl. 200-144.00B.
- Bezier, Jean: *See—*
  - Franzolini, Marc; Maria, Edmond; Vanderschaeghe, Alain; and Bezier, Jean, 4,617,990, Cl. 165-173.000.
- BICC Public Limited Company: *See—*
  - Andrews, Patrick V.; and Kaczmarski, Edward Z., 4,618,084, Cl. 225-96.000.
- Bierlein, John C.: *See—*
  - MacIver, Bernard A.; Erskine, James C., Jr.; and Bierlein, John C., 4,618,505, Cl. 427-38.000.
- Big-Inch Marine Systems, Inc.: *See—*
  - Dopyera, Emil E.; and Miller, Jack E., 4,618,173, Cl. 285-261.000.
- Bildner, Karlheinz: *See—*
  - Ruhl, Karl; and Bildner, Karlheinz, 4,618,521, Cl. 428-137.000.
- Bilharz, Manfred; Heider, Peter; Roper, Hartmut; Taal, Martin; Henken, Fritz; Kohl, Ernst; and Schubert, Dietmar, to Ford Motor Company. Valve system for a hydraulically controlled starting friction clutch. 4,618,123, Cl. 251-28.000.

- Biotechnology Research Associates, J.V.: *See—*
  - Johnson, Lorin K.; Atlas, Steven A.; and Laragh, John H., 4,618,600, Cl. 514-12.000.
- Birk, Adalbert, to Siemens Aktiengesellschaft. Method and apparatus for representing ultrasonic echo signals arriving in polar coordinates. 4,618,887, Cl. 358-112.000.
- Birkner, Christian: *See—*
  - Stapel, Gunter; Gober, Karl-Heinz; Leyck, Sigurd; Wetzig, Helmut; Birkner, Christian; Kesselring, Kurt; Christ, Bruno; Steiner, Klaus; and Schroder, Friedhelm, 4,618,605, Cl. 514-177.000.
- Bishop, Arthur E.; and Roeske, Klaus J., to Bishop, Arthur E. Method and apparatus for machining racks for steering gear. 4,618,297, Cl. 409-58.000.
- Bishop, David C., to Smiths Industries Public Limited Company. Taps. 4,618,994, Cl. 383-96.000.
- Bishop, Thomas D., to DEC (Realisations) Limited. Machine for the treatment web material. 4,617,850, Cl. 83-324.000.
- Biuro Studiow i Projektow Energetycznych "Energoprojekt": *See—*
  - Saternus, Antoni; Miczek, Ludwik; and Bartnik, Mieczyslaw, 4,618,376, Cl. 134-26.000.
- Blackman, Kent G., to Suter Company, Inc., The. Apparatus to facilitate hand packing of containers. 4,617,778, Cl. 53-391.000.
- Blandenet, Gerard; Chazee, Jean-Jacques; and Court, Michel, to Commissariat a l'Energie Atomique. Process for producing composite layers. 4,618,508, Cl. 427-57.000.
- Blattler, Walter A.; Lambert, John M.; and Senter, Peter D., to Dana-Farber Cancer Institute, Inc. Acid-cleavable compound. 4,618,492, Cl. 424-85.000.
- Blaylock, Michael A. Egg cooking device. 4,617,860, Cl. 99-415.000.
- Blendax-Werke R. Schneider GmbH & Co.: *See—*
  - Amos, Walter; and Klein, Horst, 4,617,695, Cl. 15-195.000.
- Blomquist, James E.; and Wilczewski, Robert H. Dot matrix print head. 4,618,276, Cl. 400-124.000.
- Blouin, John J., to W. R. Grace & Co. Drilling fluids made from solid, free-flowing, continuously-made, water dispersible PVA-aldehyde reaction product. 4,618,434, Cl. 252-8.510.
- BM Digiflow A/S: *See—*
  - Melgaard, Oluf, 4,617,955, Cl. 137-240.000.
- BMD Badische Maschinenfabrik Durlach GmbH: *See—*
  - Damm, Norbert, 4,617,978, Cl. 164-37.000.
- Board of Regents, The University of Texas System: *See—*
  - Chan, Teh-sheng, 4,618,585, Cl. 435-240.000.
- Bobsein, Louis E.: *See—*
  - Fisher, Marvin D., and Bobsein, Louis E., 4,618,387, Cl. 156-244.110.
- Bobst SA: *See—*
  - Borel, Edouard, 4,618,342, Cl. 493-30.000.
- Bocci, Giorgio: *See—*
  - Bruno, Roberto; Azzeri, Nazzareno; Antoniucci, Pierluigi; Bocci, Giorgio; Brizielli, Sandro; and Barardi, Paolo, 4,618,379, Cl. 148-144.000.
- Bochor, Meir; and Gura, Mordechai, to Fibronics Ltd. Communication of unipolar pulses. 4,618,952, Cl. 370-78.000.
- Bodendorf, Warren J., to Texon, Inc. Battery separator material. 4,618,401, Cl. 162-138.000.
- Bodenmiller, Anton: *See—*
  - Schmidt, Helmut; Bodenmiller, Anton; and Straka, Alfred, 4,618,326, Cl. 433-79.000.
- Bodi Laszlo : *See—*
  - Pal, Gabor; Endroczi, Gabor; Hollos, Gyorgy; Nagy, Gabor; Szonyi, Gabor; Bodi Laszlo ; and Balazs, Zoltan, 4,617,830, Cl. 73-590.000.
- Boehringer Ingelheim Limited: *See—*
  - Hargrave, Karl D.; Devlin, John P.; and Barsumian, Edward A., 4,618,677, Cl. 544-400.000.
- Boeing Company, The: *See—*
  - Shaw, Christopher G.; and Kramer, Ted J., 4,618,218, Cl. 350-363.000.
  - Victor, Paul F., 4,618,109, Cl. 244-130.000.
  - Wallace, John E., 4,618,755, Cl. 200-175.000.
- Boeve, Gerard J.; and Vierveijzer, Franciscus, to Agfa-Gevaert N.V. Sheet imaging apparatus. 4,618,137, Cl. 271-219.000.
- Boger, Manfred; and Drabek, Jozef, to Ciba-Geigy Corporation. Oxadiazines and pesticidal compositions containing them. 4,618,608, Cl. 514-235.000.
- Bohme, Klaus; Beyer, Wolfgang; Seibt, Gunter; and Digmayer, Michael, to VEB Otto Buchwitz Starkstrom Anlagebau Dresden. Solid insulator-type vacuum switch gear. 4,618,749, Cl. 200-144.00B.
- Bond, Michael E.; and Noll, Robert S., to Emhart Corporation. Tool for drilling and securing screw anchor to a wall. 4,617,692, Cl. 7-158.000.
- Bondergaard, Klaus: *See—*
  - Anderseu, Axel; and Bondergaard, Klaus, 4,617,728, Cl. 29-836.000.
- Booth, Inc.: *See—*
  - Pritchett, James D.; and Cutbush, James D., 4,617,807, Cl. 62-399.000.
- Bordeaux, Marvin L.; and Ward, Dennis R. Electronic rangefinder for archery. 4,617,741, Cl. 33-228.000.
- Borden, Albert R., to United States of America, Energy. Apparatus and method for fabricating multi-strand superconducting cable. 4,617,789, Cl. 57-6.000.
- Borel, Edouard, to Bobst SA. Machine for processing web material. 4,618,342, Cl. 493-30.000.
- Bori, Jacques, to Team, Inc. Finger-mounted device for cleaning teeth. 4,617,694, Cl. 15-167.00R.
- Born, Raymond W. Method and apparatus for shipping and storing cargo. 4,618,068, Cl. 220-4.00R.
- Borsenberger, Paul M.; Regan, Michael T.; and Staudenmayer, William J., to Eastman Kodak Company. Multi-active photoconductive insulating elements exhibiting very high electrophotographic speed and panchromatic sensitivity and method for their manufacture. 4,618,560, Cl. 430-130.000.
- Borzatta, Valerio: *See—*
  - Cantatore, Giuseppe; and Borzatta, Valerio, 4,618,634, Cl. 524-97.000.
- Bosna, Alexander A.; and Riccio, Louis M. Method and apparatus for applying metal cladding on surfaces and products formed thereby. 4,618,504, Cl. 427-34.000.
- Bottcher, Henning: *See—*
  - Hausberg, Hans-Heinrich; Bottcher, Henning; Gottschlich, Rudolf; Seyfried, Christoph; and Minck, Klaus-Otto, 4,618,614, Cl. 514-321.000.
- Bottega, Giampietro: *See—*
  - Sartor, Rino; and Bottega, Giampietro, 4,618,226, Cl. 351-113.000.
- Boyer, Stephen K., to Ciba-Geigy Corporation. Process for dehalogenation of aryl and alpha-araliphatic halides. 4,618,686, Cl. 549-360.000.
- Bradshaw, Robert W.: *See—*
  - Thompson, Thomas D., III; Polestak, Walter J.; and Bradshaw, Robert W., 4,618,374, Cl. 106-288.00B.
- Braitrim (London) Limited: *See—*
  - Shalson, Peter, 4,618,080, Cl. 223-95.000.
- Bramwell, David W., to EGA Limited. Adaptor for connecting raceway trunking to a box for electrical components, and the adaptor and box in combination. 4,618,741, Cl. 174-68.00C.
- Brand, Donald L.: *See—*
  - Miller, William H.; McClendon, Samuel E.; Kolodziej, Raymond J.; and Brand, Donald L., 4,618,931, Cl. 364-431.020.
- Brandenstein, Manfred; Haas, Roland; Herrmann, Gerhard; Friedrich, Wolfgang; and Edelmann, Ludwig, to SKF Kugellagerfabriken GmbH. Tension-adjusting device for driving belt. 4,618,335, Cl. 474-112.000.
- Brandes, Wilhelm: *See—*
  - Regel, Erik; Buchel, Karl H.; Reinecke, Paul; and Brandes, Wilhelm, 4,618,619, Cl. 514-383.000.
- Brandi, Gabriella; Koch, Paolo; Maiorana, Stefano; Dalla Croce, Piero; and Baldoli, Clara, to AGIP Petroli S.p.A.; and Consiglio Nazionale Delle Ricerche. Multifunctional additive for lubrificating oils and process for the preparation thereof. 4,618,439, Cl. 252-47.500.
- Branson Ultrasonics Corporation: *See—*
  - Sager, Thomas B., 4,618,516, Cl. 428-35.000.
- Brasser, Jan: *See—*
  - Vos, Cornelis; and Brasser, Jan, 4,617,945, Cl. 131-310.000.
- Brasseur, Raynald, to Johnson & Johnson. Antimicrobial peat moss composition. 4,618,496, Cl. 424-195.100.
- Bratt, Richard G.; Gruner, Ronald H.; Jones, Thomas M.; and Nealon, James T., to Data General Corporation. Digital data processing system capable of executing a plurality of internal language dialects. 4,618,925, Cl. 364-200.000.
- Braun, Joseph T.; and Smith, Schuyler B., to Dow Corning Corporation. Process to prepare 2-phenylpropyl containing polydiorganosiloxanes. 4,618,665, Cl. 528-25.000.
- Brettschneider, Horst; Hartl, Walter; and Peter, Diethard, to U.S. Philips Corporation. X-ray tube comprising an at least partly metal housing and an electrode which carries a positive high voltage with respect thereto. 4,618,977, Cl. 378-139.000.
- Breucha, Hermann. Cutting implement for removing plastic sealing strips from joints between reinforced concrete elements. 4,618,395, Cl. 156-584.000.
- Bridgestone Corporation: *See—*
  - Kawajiri, Junichi, 4,617,976, Cl. 152-209.00R.
- Bridle, Trevor R.; and Campbell, Herbert W., to Canadian Patents and Development Limited. Process and apparatus for the conversion of sludges. 4,618,735, Cl. 585-240.000.
- Brinckman, Frederick E.; Degnan, Thomas F., Jr.; and Weiss, Carl S., to United States of America, Commerce. Shale oil dearsenation process. 4,618,410, Cl. 208-97.000.
- Brinkman, Robert J., to C. J. Winter Machine Works. Thread rolling attachment. 4,617,816, Cl. 72-104.000.
- Brinkmann, Gerhard; and Wietrzynski, Bolko, to Olympia Werke AG. Method for resetting the printing head of a typewriter. 4,618,275, Cl. 400-76.000.
- Brisco, John S.: *See—*
  - Peel, Harry H.; Brisco, John S.; Moczygemba, Mark E.; Neatherlin, Robert L.; and Sargent, Brenda A., 4,617,937, Cl. 128-680.000.
- Brizielli, Sandro: *See—*
  - Bruno, Roberto; Azzeri, Nazzareno; Antoniucci, Pierluigi; Bocci, Giorgio; Brizielli, Sandro; and Barardi, Paolo, 4,618,379, Cl. 148-144.000.
- Brock, Norbert: *See—*
  - Scheffler, Gerhard; Niemeyer, Ulf; Brock, Norbert; and Pohl, Jorg, 4,618,692, Cl. 558-81.000.
- Brode, George L.: *See—*
  - Fan, You-Ling; Brode, George L.; and Rosen, Meyer R., 4,618,647, Cl. 524-801.000.
- Brooks, Alan C. Explosion proof battery. 4,618,544, Cl. 429-53.000.
- Brother Kogyo Kabushiki Kaisha: *See—*
  - Asano, Kiyomitsu; and Kondo, Toshikatsu, 4,618,277, Cl. 400-124.000.
- Brown, Alfred, to Texaco Inc. Carbon dioxide stimulated oil recovery process. 4,617,993, Cl. 166-250.000.

- Brown, Brian H.; Barber, David C.; and Freeston, Ian L., to University of Sheffield, The. Tomography. 4,617,939, Cl. 128-734.000.
- Brown, Peter L. Physical exercising apparatus. 4,618,140, Cl. 272-72.000.
- Brown, Warren D., to Sprayton Equipment Company. Concrete feeder apparatus. 4,618,294, Cl. 406-113.000.
- Brown & Williamson Tobacco Corporation: *See—*
  - Keith, Charles H., 4,617,946, Cl. 131-336.000.
- Bruestle, John H., to RCA Corporation. Gray code counter. 4,618,849, Cl. 340-347.0DD.
- Brule, James E., to Combustion Engineering, Inc. Electrolyte additive. 4,618,548, Cl. 429-194.000.
- Brummel, Roger L., to Fluidtherm Corporation. Heat treat apparatus. 4,617,742, Cl. 34-57.00A.
- Brunner, Hans-Georg, to Ciba-Geigy Corporation. Cyclohexanedionecarboxylic acid derivatives with herbicidal and plant growth regulating properties. 4,618,360, Cl. 71-88.000.
- Brunner, Rudolf, to Heilmeier & Weinlein Fabrik fur Oel-Hydraulik GmbH & Co., KG. Hydraulic device. 4,617,962, Cl. 137-613.000.
- Bruno, Roberto; Azzeri, Nazzareno; Antoniucci, Pierluigi; Bocci, Giorgio; Brizielli, Sandro; and Barardi, Paolo. Method for the continuous annealing of steel strips. 4,618,379, Cl. 148-144.000.
- Brunswick Corporation: *See—*
  - Staerzl, Richard E., 4,617,892, Cl. 123-352.000.
- Brusky, Phyllis L.: *See—*
  - Grimm, Robert A.; Kyung, Jai H.; Brusky, Phyllis L.; Holehouse, Joseph G.; and Chang, Biau-hung, 4,618,707, Cl. 560-337.000.
- Bruzzone, Mario: *See—*
  - Roggero, Arnaldo; and Bruzzone, Mario, 4,618,449, Cl. 252-182.000.
- Buchanan, Michael S., to Wm. T. Burnett & Co., Inc. Fragrance-emitting polyurethane foams. 4,618,629, Cl. 521-76.000.
- Buchar, Wayne A., to Xerox Corporation. Test patch generation utilizing system scan optics. 4,618,248, Cl. 355-14.00R.
- Buchel, Karl H.: *See—*
  - Regel, Erik; Buchel, Karl H ; Reinecke, Paul; and Brandes, Wilhelm, 4,618,619, Cl. 514-383.000.
- Buckley, Thomas F., III: *See—*
  - Rapoport, Henry; and Buckley, Thomas F., III, 4,618,710, Cl. 564-1.000.
- Budai, Zoltan; Benko, Pal; Ratz nee Simonek, Ildiko ; Rakoczy nee Pinter, Eva; Magyar, Karoly; Kelemen, Jozsef; and Mandi, Attila, to Egyt Gyogyszervegyeszeti Gyar. Carbazic acid derivatives, process for their preparation and compositions containing the same. 4,618,623, Cl. 514-478.000.
- Budd Company, The: *See—*
  - Kozyra, William L.; MacIsaac, Andrew B.; and Santoro, Vincent J., 4,618,159, Cl. 280-93.000.
- Bulkowski, John E., to University of Delaware. Arrays of stacked metal coordination compounds. 4,618,509, Cl. 427-74.000.
- Burger, Hans-Joachim; and Schuster, Hubert, to Siemens Aktiengesellschaft. Method for sealing cavities. 4,618,467, Cl. 264-46.600.
- Burgess, Andre S.: *See—*
  - Alcorn, George E.; and Burgess, Andre S., 4,618,380, Cl. 148-187.000.
- Burke, Rae L.; Urdea, Mickey S.; and Valenzuela, Pablo D. T., to Chiron Corporation. Expression of glycoprotein D of herpes simplex virus. 4,618,578, Cl. 435-68.000.
- Burke, William F.; and Winiecki, Alan L., to United States of America, Energy. Remote temperature-set-point controller. 4,618,267, Cl. 374-50.000.
- Burlington Industries, Inc.: *See—*
  - Cochran, James A., 4,618,059, Cl. 206-392.000.
- Burris, Wesley J., II, to Halliburton Company. Pump open safety valve and method of use. 4,618,000, Cl. 166-373.000.
- Burton, Larry W.: *See—*
  - Rafal, Marc D.; Burton, Larry W.; and Joines, William T., 4,618,996, Cl. 455-46.000.
- Bury, George J., to Illinois Tool Works Inc. Support member for electrical components. 4,618,915, Cl. 361-400.000.
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  - Lohmeijer, Johannes H. G M.; Noordermeer, Jacobus W. M.; and Bussink, Jan, 4,618,637, Cl. 524-192.000.
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  - Clegg, Gordon A.; and Jarrett, Phillip, 4,618,545, Cl. 429-130.000.
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  - Boyer, Stephen K., 4,618,686, Cl. 549-360.000.
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  - Moser, Hans, 4,618,361, Cl. 71-88.000.
  - Sartori, Vittore, 4,618,721, Cl. 568-23.000.
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  - Stockinger, Friedrich; Lohse, Friedrich; and Moser, Roland, 4,618,712, Cl. 564-103.000.
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- Coleman, Michael. Sling. 4,617,923, Cl. 128-94.000.
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- Collins, John D., to Raytheon Company. Continuous wave radar with ranging capability. 4,618,863, Cl. 342-194.000.
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  - Collette, Wayne N.; and Demanche, Donald R., 4,618,515, Cl. 428-35.000.
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- Corsette, Douglas F. Liquid dispensing pump. 4,618,077, Cl. 222-383.000.
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  - Gloria, Karl F. L.; Costinescu-Tataranu, Alexandru B.; Schuster, Wilhelm; and Wittekind, Jurgen, 4,618,282, Cl. 405-53.000.
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- Couch, John L.: *See—*
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  - Nardella, Michael A.; and Cournoyer, Bernard T., 4,618,118, Cl. 248-243.000.
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- Cross, Peter E.: *See—*
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- Cutshall, Robert S., to Omega Castings, Inc. Link conveyor belt for heat treating apparatus. 4,618,056, Cl. 198-853.000.
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  - Fonne, Gunnar J.; Daae-Johansen, Finn; Thoresen, Per; and Nilsen, Stein-Arne, 4,617,777, Cl. 52-802.000.
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- Dai, Shenghong A., to Dow Chemical Company, The. Nitro substituted diphenyl ethers. 4,618,727, Cl. 568-585.000.
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  - Abthoff, Jorg; Schuster, Hans-Dieter; Loose, Gunter; and Ebinger, Gunther, 4,617,795, Cl. 60-276.000.
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- Dale, Jerry D. Tree step. 4,618,028, Cl. 182-92.000.
- Dale, Steven M.; Lyon, Richard A.; and Schutram, David P., to Conax Buffalo Corporation. Connector for sealingly joining the ends of a pair of electrical cables. 4,618,198, Cl. 339-60.00M.
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  - Brandi, Gabriella; Koch, Paolo; Maiorana, Stefano; Dalla Croce, Piero; and Baldoli, Clara, 4,618,439, Cl. 252-47.500.
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  - Blattler, Walter A.; Lambert, John M.; and Senter, Peter D., 4,618,492, Cl. 424-85.000.
- Daniels, Edward P.; and Rinne, Risto A., Jr., to Pitney Bowes Inc. Watchdog circuit. 4,618,953, Cl. 371-12.000.
- Das, Subrata K.; and Dixon, Norman R., to International Business Machines Corporation. Adaptive automatic discrete utterance recognition. 4,618,984, Cl. 381-43.000.
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  - Bratt, Richard G.; Gruner, Ronald H.; Jones, Thomas M.; and Nealon, James T., 4,618,925, Cl. 364-200.000.
- David, Constant V. Moldable handle adapter. 4,617,697, Cl. 16-110.00R.

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- Davis, Thomas E., to Cerline Ceramic Corporation. Tell-tale wear monitor for pipes having wear resistant inner linings. 4,617,822, Cl. 73-40.50R.
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  - Miranti, Joseph P., Jr., 4,618,334, Cl. 474-93.000.
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  - Cedrone, Nicholas J.; and Lee, Kenneth R., 4,618,305, Cl. 414-403.000.
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  - Hayes, Michael E.; Hrebenar, Kevin R.; Murphy, Patricia L.; Futch, Laurence E., Jr.; and Deal, James F., III, 4,618,348, Cl. 44-51.000.
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  - Bishop, Thomas D., 4,617,850, Cl. 83-324.000.
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  - Brinckman, Frederick E.; Degnan, Thomas F., Jr.; and Weiss, Carl S., 4,618,410, Cl. 208-97.000.
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  - Ichijima, Seiji; Usui, Hideo; and Deguchi, Naoyasu, 4,618,571, Cl. 430-505.000.
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  - Drauz, Karlheinz; and Kleemann, Axel, 4,618,730, Cl. 568-771.000.
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- Demanche, Donald R.: *See—*
  - Collette, Wayne N.; and Demanche, Donald R., 4,618,515, Cl. 428-35.000.
- De Marco, Peter T. Method of treatment of animal and human tissues damaged by burns and frank visible gangrene. 4,618,490, Cl. 424-80.000.
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  - Katchko, John; Plaisance, Thomas H.; and Kriz, Karel, 4,618,657, Cl. 525-443.000.
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  - Steinke, Gerhard; Fels, Peter; Hoeg, Wolfgang; Lorenz, Werner; Ahnert, Wolfgang; Steffen, Frank; and Reichardt, Walter, 4,618,987, Cl. 381-82.000.
- Develco, Inc.: *See—*
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- Dickakian, Ghazi B., to Exxon Chemical Patents Inc. Additive combination and method for using it to inhibit deposit formation. 4,618,411, Cl. 208-48.0AA.
- Diederich, Paul W., Jr. Tie mount. 4,617,702, Cl. 24-16.0PB.
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  - Hirano, Yutaka; Inoue, Kazuo; and Yasuhara, Seishi, 4,617,902, Cl. 123-501.000.
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- Doremus, Michael G.: *See—*
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- Doutsubo, Nobuhide, to Sanyo Electric Co., Ltd. Record mode discrimination circuit. 4,618,899, Cl. 360-73.000.
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  - Berman, Jody R.; Steele, Dennis L.; and Kubisiak, Michael P., 4,618,526, Cl. 428-209.000.
  - Dai, Shenghong A., 4,618,727, Cl. 568-585.000.
  - Ellebracht, Stephen R., 4,617,828, Cl. 73-866.000.
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- Doyen, Rene H., to Mobil Oil Corporation. Good machineability film structure. 4,618,527, Cl. 428-213.000.
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- Drew, John: *See—*
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- DuBois, Mark; Theeuwes, Felix; and Wong, Patrick S. L., to ALZA Corporation. Device for administering calcium ascorbate. 4,618,487, Cl. 424-15.000.
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- Durrett, Van D.: *See—*
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  - Cavallaro, Anthony, 4,618,574, Cl. 430-567.000.
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- Echeverria, Julio A.: *See—*
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- Eckle, Otto; and Veigel, Helmut, to Komet Stahlhalter- und Werkzeugfabrik Robert Bruning, GmbH. Turret head for a lathe and a tool holder suitable for use therewith. 4,617,848, Cl. 82-36.00A.
- Ecklund, Lawrence M., to Motorola, Inc. Tone detector with pseudo phase locked loop. 4,618,981, Cl. 381-15.000.
- Ecoplastics Limited: *See—*
  - Guillet, James E.; and Redpath, Anthony E., 4,618,566, Cl. 430-271.000.
- Eddington, Donald K., to University of Utah, The. Artificial hearing device and method. 4,617,913, Cl. 128-1.00R.
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- Edling, Theodore L. Belt driven knife sharpener. 4,617,763, Cl. 51-135.00R.
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- Edwards, Thomas C. Oil separation system using superheat. 4,617,808, Cl. 62-472.000.
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  - Bramwell, David W., 4,618,741, Cl. 174-68.00C.
- Egami, Shunichiro; and Kawai, Makoto, to Nippon Telegraph & Telephone Corporation. Power amplifying apparatus. 4,618,831, Cl. 330-124.00R.
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- Eguchi, Jutaro; Odahara, Tetsuichi; and Sukenari, Junzo, to Kubota, Ltd. Combine harvester machine. 4,617,787, Cl. 56-14.600.
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- Eidem, Penny K., to Chevron Research Company. Air-blowing asphalt using hydrohalic acid catalysts. 4,618,373, Cl. 106-273.00R.
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- Elias, John G.; and Jansson, Peter A., to Du Pont de Nemours, E. I., and Company. Spot quantitation. 4,618,937, Cl. 364-518.000.
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- Greenberger, Joseph I., to Wean United, Inc. Apparatus for descaling hot strip in a rolling mill. 4,617,815, Cl. 72-39.000.
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- Gueret, Jean-Louis H., to L'Oreal. Make-up unit, for eyelashes in particular. 4,617,948, Cl. 132-88.500.
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- Hailey, Charles D. Fluid injection apparatus and method used between a blowout preventer and a choke manifold. 4,618,314, Cl. 417-53.000.
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  - Ueno, Masahiro; Tashiro, Korefumi; and Toyota, Eiichi, 4,618,930, Cl. 364-426.000.
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  - Morioka, Akira; Matsuura, Takeshi; and Takahira, Yoshiyuki, 4,618,536, Cl. 428-329.000.
- Hitachi Seiko Ltd.: *See—*
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  - Lay, Khin M.; Palguta, Stephen E.; Fernandez, Ramon B.; and Cabalquinto, Santiago C., 4,617,716, Cl. 29-526.00R.
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  - Hengel, Rolf, 4,618,641, Cl. 524-284.000.
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  - Mohr, Dieter; and Frass, Werner, 4,618,405, Cl. 204-129.750.
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  - Carter, Thurman B.; Reynolds, Carl D.; and Mundorf, Larry R., 4,618,009, Cl. 175-267.000.
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  - Otobe, Yutaka; and Yamato, Akihiro, 4,617,901, Cl. 123-489.000.
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  - Ando, Junji; and Hirose, Yoshihisa, 4,618,019, Cl. 180-219.000.
  - Ashikawa, Noboru; and Sakuma, Shunji, 4,618,021, Cl. 180-248.000.
  - Kimura, Ryoichi; Nomura, Kanji; Ubukata, Kazumi; and Kasahara, Shinju, 4,618,132, Cl. 296-97.00J.
  - Kishida, Eiji; and Hasegawa, Shumpei, 4,617,891, Cl. 123-344.000.
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  - Miyatake, Satoshi; Abe, Mitsuo; and Kume, Masao, 4,617,761, Cl. 51-95.0GH.
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  - Nakajima, Tetsuo, 4,617,899, Cl. 123-487.000.
  - Nishikawa, Masao; Sakai, Shinzo; and Miyake, Junichi, 4,618,037, Cl. 192-3.300.
  - Noda, Azusa; and Kamiya, Tadashi, 4,618,020, Cl. 180-229.000.
  - Okuyama, Takahiro; Toki, Susumu; and Ishihara, Masahito, 4,617,883, Cl. 123-90.440.
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  - Salvagno, Elvio; and Piacentino, PierLuigi, 4,618,820, Cl. 324-158.00F.
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- Horn, Klaus, to Siemens Aktiengesellschaft. Evaluation circuits for passive measurement-variable pickups. 4,618,818, Cl. 324-62.000.
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- Horst, Robert W., to Tandem Computers Incorporated. Method of operating enhanced alu test hardware. 4,618,956, Cl. 371-68.000.
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- Horwitz, Bruce A., to Itek Corporation. Method of fabricating a controlled harmonic binary grating. 4,618,214, Cl. 350-162.200.
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  - Sakai, Tadashi; and Naruse, Nobutaka, 4,617,806, Cl. 62-347.000.
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- Hostetter, John L. Weeder-cultivator. 4,618,003, Cl. 172-25.000.
- Howard, Cecil J. Method and apparatus for building borders. 4,618,004, Cl. 172-176.000.
- Hower, Larry H., to Hart Group, The. Electronic stethoscope. 4,618,986, Cl. 381-67.000.
- Howser, M. Gene, to Production Systems, Inc. Chain-link belt conveyor with adjustable parallel offset and variable radius guide. 4,618,057, Cl. 198-861.200.
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- Hsi, Peter H. Y. Notebook construction. 4,618,166, Cl. 281-15.00R.
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  - Parker, John A.; Heimbuch, Alvin H.; Hsu, Ming-ta S.; and Chen, Timothy S., 4,618,652, Cl. 525-282.000.
- Huang, Jamin, to Union Carbide Corporation. Alpha-heterocyclic carbinol phosphates. 4,618,603, Cl. 514-80.000.
- Huckaby, James E., to Shuf-Kut, Inc. Pipe cutting templet. 4,618,378, Cl. 148-9.600.
- Huckle, Ralph E., to De La Rue Systems Limited. Injection moulded shutter. 4,618,070, Cl. 220-350.000.
- Hudson, Carl W.; and Hamner, Glen P., to Exxon Research and Engineering Co. Hydrocracking process. 4,618,412, Cl. 208-59.000.
- Hudson, James F.: *See—*
  - Yee, Harold H.; and Hudson, James F., 4,618,840, Cl. 333-105.000.
- Hudson, John H., Jr.: *See—*
  - Vecchio, Anthony J.; and Hudson, John H., Jr., 4,618,415, Cl. 209-134.000.
- Hudson, John O.; Schleien, Mickey M.; and Barrett, John, to Purex Corporation. Household laundry detergent with dual strength bleach. 4,618,444, Cl. 252-92.000.
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  - Van Doorn, Donald W.; Hawkins, James B.; Carpenter, Francis W., III; Hudson, Wilbur G.; Webb, Tommy W.; and Beeland, William D., 4,617,862, Cl. 100-53.000.
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  - Bauman, Therese M.; and Huebner, David J., 4,618,645, Cl. 524-745.000.
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  - Golicz, Roman M.; Seniff, Dana W.; Fogle, Ronald L.; and Huggins, Orville C., 4,617,784, Cl. 53-540.000.
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  - Weigel, Wolfgang, 4,618,768, Cl. 250-334.000.
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  - Schmidt, Paul J.; and Hung, William M., 4,618,684, Cl. 548-455.000.
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  - Silverstein, Sidney, 4,617,735, Cl. 30-151.000.
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- Hurd, Bruce; and Oda, Robert, to AccuSwing, Incorporated. Bowling glove. 4,618,147, Cl. 273-54.00B.
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  - Wagenseil, Ludwig; and Merkle, Walter, 4,617,853, Cl. 91-505.000.
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  - Padovani, Pietro, 4,617,748, Cl. 40-312.000.
- Ichijima, Seiji; Usui, Hideo; and Deguchi, Naoyasu, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,618,571, Cl. 430-505.000.
- Ichikawa, Toshiji; and Shimizu, Atsushi, to Terumo. Blood collector. 4,617,941, Cl. 128-765.000.
- Ichinoi, Yutaka, to Victor Company of Japan, Ltd. Color video signal recording and reproducing apparatus. 4,618,894, Cl. 358-310.000.
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  - Nishimatsu, Masaharu; Ide, Toshiaki; Arioka, Hiroyuki; and Kubota, Yuichi, 4,618,535, Cl. 428-325.000.
- Iden, Rudiger; and Seybold, Gunther, to BASF Aktiengesellschaft. Perylene compounds. 4,618,694, Cl. 558-416.000.
- Ideta, Yasufumi, to Nissan Motor Co., Ltd. Hydraulic control system for lock-up clutch of torque converter. 4,618,036, Cl. 192-3.300.
- Igarashi, Osamu, to Nikko Kogyo Kabushiki Kaisha. Circuit test clip. 4,618,208, Cl. 339-200.00P.
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- Ikeda, Akira; Nakayama, Shigeki; Ishii, Toshitsugu; and Itakura, Isao, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for plant cultivation. 4,617,755, Cl. 47-65.000.
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- Ikeda, Yoshiaki, to Fanuc Ltd. Graphic display unit. 4,618,859, Cl. 340-724.000.
- Ikemura, Akio; and Kajiki, Minoru, to Yoshida Kogyo K. K. Air conditioner system for building. 4,617,805, Cl. 62-259.100.
- Ikoma, Keiichi; and Katayama, Syuji, to Sharp Kabushiki Kaisha. Power-off detection circuit for an electronic apparatus. 4,618,780, Cl. 307-130.000.
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- Illinois Tool Works Inc.: *See—*
  - Bury, George J., 4,618,915, Cl. 361-400.000.
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  - Fish, Aaron M.; D'Intino, Adamo M.; Moessner, Frank G.; and Mazoff, Stanley S., 4,617,810, Cl. 70-14.000.
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  - Angers, John W., 4,618,494, Cl. 424-101.000.
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  - Ballard, Denis G. H.; Moran, Kenneth T.; and Shirley, Ian M., 4,618,454, Cl. 252-500.000.
  - Gent, Colin W., 4,618,451, Cl. 252-373.000.
  - Head, Robert A.; and Whyman, Robin, 4,618,628, Cl. 518-700.000.
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  - Sadaki, Hiroshi; Imaizumi, Hiroyuki; Nagai, Takashi; Takeda, Kenji; Myokan, Isao; Inaba, Takihiro; Watanabe, Yasuo; Fukuoka, Yoshikazu; Minami, Shinzaburo; and Saikawa, Isamu, 4,618,606, Cl. 514-202.000.
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  - Seres, Alex, 4,617,752, Cl. 43-27.400.
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  - Inoue, Kiyoshi; and Toyoshima, Tatsue, 4,618,761, Cl. 219-517.000.
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  - Sivov, Ferdo A., 4,617,970, Cl. 137-805.000.
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  - Aipperspach, Anthony G.; Fitzgerald, Joseph M.; and Wu, Philip T., 4,618,943, Cl. 365-104.000.
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  - Ish-Shalom, Jehuda; Katz, Leonard A.; and Manzer, Dennis G., 4,618,808, Cl. 318-696.000.
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  - Fiedler, Armin, 4,617,802, Cl. 62-125.000.
- International Immunoassay Laboratories, Inc.: *See—*
  - Tsay, Yuh-Geng; and Shah, Vipin D., 4,618,485, Cl. 424-1.100.
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  - Hittel, William C., 4,617,934, Cl. 128-425.000.
  - Ingersoll, Willard A.; Norquest, Robert C.; and Weber, Richard A., 4,617,781, Cl. 53-477.000.
- Inui, Jun: *See—*
  - Araki, Kazuhiko; Ao, Hideki; Inui, Jun; and Aihara, Kenichi, 4,618,607, Cl. 514-212.000.
- Ipri, Alfred C.: *See—*
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- Irie, Nobuhiko, to Mitsubishi Jukogyo Kabushiki Kaisha. Tire supplying apparatus. 4,618,303, Cl. 414-226.000.
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  - Nishimiya, Torazo; Ito, Tomoo; and Iseyama; Takashi, 4,617,889, Cl. 123-339.000.
- Ish-Shalom, Jehuda; Katz, Leonard A.; and Manzer, Dennis G., to International Business Machines Corporation. Electromagnetic actuator system using stepper motor with closed loop position sensing, electronic commutation and dynamic position and anomaly correction. 4,618,808, Cl. 318-696.000.
- Ishida Scales Mfg. Co., Ltd.: *See—*
  - Sashiki, Takashi; and Nakagawa, Yukio, 4,618,011, Cl. 177-1.000.
- Ishida, Takashi: *See—*
  - Toshimitsu, Yoshihiko; Takaoka, Tokuro; Kawai, Toshitake; and Ishida, Takashi, 4,618,018, Cl. 180-142.000.
- Ishida, Tokuji; and Hamada, Masataka, to Minolta Camera Kabushiki Kaisha. Focus detecting device for a camera. 4,618,235, Cl. 354-403.000.
- Ishiguri, Yukio; Takano, Hirotaka; and Funaki, Yuji, to Sumitomo Chemical Company, Limited. Fungicidal composition. 4,618,620, Cl. 514-383.000.
- Ishihara, Masahito: *See—*
  - Okuyama, Takahiro; Toki, Susumu; and Ishihara, Masahito, 4,617,883, Cl. 123-90.440.
- Ishihara, Masaki: *See—*
  - Hattori, Toshihiro; Ishihara, Masaki; Uriuhara, Makoto; Kasai, Hitoshi; and Asagi, Yasuyoshi, 4,618,043, Cl. 192-0.052.
  - Honma, Minoru; Hattori, Toshihiro; Saito, Hideo; and Ishihara, Masaki, 4,618,040, Cl. 192-0.090.
- Ishii, Kazuo: *See—*
  - Dan, Shigeyuki; Ishii, Kazuo; Kato, Eiichi; and Sera, Hidefumi, 4,618.557, Cl. 430-114.000.
- Ishii, Osamu: *See—*
  - Hatakeyama, Iwao; Maeda, Yasushi; Ishii, Osamu; and Yoshii, Shizuka, 4,618,901, Cl. 360-114.000.
- Ishii, Shigeru: *See—*
  - Maeyama, Tsutomu; Ishii, Shigeru; and Kaneko, Kenji, 4,618,488, Cl. 424-49.000.
- Ishii, Toshitsugu: *See—*
  - Ikeda, Akira; Nakayama, Shigeki; Ishii, Toshitsugu; and Itakura, Isao, 4,617,755, Cl. 47-65.000.
- Ishito, Mitsuya: *See—*
  - Hisajima, Masahiko; Shigemura, Yutaka; Makiura, Yoshinori; and Ishito, Mitsuya, 4,618,252, Cl. 355-55.000.
- Ishiwate, Osamu: *See—*
  - Sato, Noritada; Seki, Yasukazu; and Ishiwate, Osamu, 4,618,381, Cl. 148-189.000.
- Ishizaki, Akira: *See—*
  - Akashi, Akira; Ishizaki, Akira; Hiramatsu, Akira; Suda, Yasuo; and Ohtaka, Keiji, 4,618,236, Cl. 354-406.000.
- Isobe, Masahiro; Okazaki, Sumio; and Tanaka, Hideki, to Toyota Jidosha Kabushiki Kaisha. Belt stretching mechanism. 4,618,336, Cl. 474-133.000.
- Isovolta Oesterreichische Isolierstoffwerke AG: *See—*
  - Fialla, Peter, 4,618,699, Cl. 560-86.000.

- Isuzu Motors Limited: *See—*
  - Hattori, Toshihiro; Ishihara, Masaki; Uriuhara, Makoto; Kasai, Hitoshi; and Asagi, Yasuyoshi, 4,618,043, Cl. 192-0.052.
  - Honma, Minoru; Hattori, Toshihiro; Saito, Hideo; and Ishihara, Masaki, 4,618,040, Cl. 192-0.090.
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  - Ikeda, Akira; Nakayama, Shigeki; Ishii, Toshitsugu; and Itakura, Isao, 4,617,755, Cl. 47-65.000.
- Itek Corporation: *See—*
  - Horwitz, Bruce A., 4,618,214, Cl. 350-162.200.
- Ito, Tomoo: *See—*
  - Nishimiya, Torazo; Ito, Tomoo; and Iseyama, Takashi, 4,617,889, Cl. 123-339.000.
- Ito, Toshimitsu: *See—*
  - Kobayashi, Nobuyuki; and Ito, Toshimitsu, 4,617,890, Cl. 123-339.000.
- Itoh, Eiko: *See—*
  - Okuda, Hiromichi; Masuno, Hiroshi; Aburada, Masaki; Takeda, Shigefumi; Itoh, Eiko; Matsushita, Moe; and Hosoya, Eikichi, 4,618,495, Cl. 424-195.100.
- Itoh, Isamu: *See—*
  - Ono, Mitsunori; Itoh, Isamu; and Mihayashi, Keiji, 4,618,563, Cl. 430-219.000.
- ITT Corporation: *See—*
  - Muzslay, Steven Z., 4,618,196, Cl. 339-17.00C.
- ITT Industries, Inc.: *See—*
  - Backes, Reiner; and Langenkamp, Ulrich, 4,618,788, Cl. 307-603.000.
  - Freyberger, Laurin C.; Mlynek, Daniel; and Schmidtpott, Friedrich, 4,618,881, Cl. 358-27.000.
- Iwahashi, Hiroyuki: *See—*
  - Nishioka, Yoshiki; Hakaridani, Mitsuhiro; and Iwahashi, Hiroyuki, 4,618,983, Cl. 381-43.000.
- Iwai, Hiroji, to Sharp Kabushiki Kaisha. Paper feed control in a printer. 4,618,278, Cl. 400-568.000.
- Iwama, Akio; Tasaka, Kentaro; and Kazuse, Yoshitaka, to Nitto Electric Industrial Co., Ltd. Composite membrane and process for producing the same. 4,618,534, Cl. 428-316.600.
- Iwasaki, Masashi, to Kanematsu-Gosho, Ltd. Remote control apparatus for opening and shutting a blind. 4,618,804, Cl. 318-16.000.
- Iwaya, Toshio: *See—*
  - Yanagawa, Hitoshi; Nagasawa, Takeshi; Inoue, Shunzo; Iwaya, Toshio; and Murata, Shinji, 4,618,251, Cl. 355-28.000.
- IXI Laboratories, Inc.: *See—*
  - Johnson, Ronald L.; and Sieben, James A., 4,618,897, Cl. 360-15.000.
- J. M. Voith GmbH: *See—*
  - Kuhn, Friedrich, 4,618,105, Cl. 242-56.00R.
- Jacksier, Barry H.; and Ollendick, Gary B., to AT&T Teletype Corporation. Adjustable time delay circuit. 4,618,787, Cl. 307-591.000.
- Jackson, Joseph F., to Pratt Burnerd International Limited. Jaw changing apparatus. 4,617,721, Cl. 29-568.000.
- Jackson, Peter N.: *See—*
  - Rowe, Frederick; and Jackson, Peter N., 4,618,350, Cl. 55-92.000.
- Jacobstein, Benjamin L.; Mestrits, Thomas J.; and Miller, Murray, to Bausch & Lomb Incorporated. Bifocal contact lens. 4,618,229, Cl. 351-161.000.
- Jacquet, Xavier: *See—*
  - Cabany, Pierre; Gardette, Andre; Jacquet, Xavier: Tollis, Aurelio; and Tollis, Fernando, 4,618,757, Cl. 219-60.00R.
- Jahn, Dieter: *See—*
  - Becker, Rainer; Jahn, Dieter; Schirmer, Ulrich; Schott, Eberhard P.; Hesse, Bernhard; and Jung, Johann, 4,618,362, Cl. 71-88.000.
- Jahn, William: *See—*
  - Beck, William R.; Jahn, William; Koltenback, Steven R.; Scharf, Robert M.; and Schwab, Ronald, 4,617,732, Cl. 29-866.000.
- Jahnig, Lutz: *See—*
  - Donner, Bernd; Schultze, Hartmut; and Jahnig, Lutz, 4,617,893, Cl. 123-361.000.
- Jahnke, Richard W.; and Woerner, William C., to Lubrizol Corporation, The. Corrosion-inhibiting compositions, and oil compositions containing said corrosion-inhibiting compositions. 4,618,539, Cl. 428-470.000.
- Jalics, George: *See—*
  - Halasa, Adel F.; and Jalics, George, 4,618,650, Cl. 525-105.000.
- Jamestown Metal Marine Sales Inc.: *See—*
  - Hassell, George, 4,617,772, Cl. 52-461.000.
- Jandeska, William F., Jr., to General Motors Corporation. Iron powder article having improved toughness. 4,618,473, Cl. 419-11.000.
- Jansse, Leonard, to Hoogovens Groep B.V. Method of injection of wire into molten steel and apparatus for uncoiling wire for use in the method. 4,618,368, Cl. 75-53.000.
- Jansson, Peter A.: *See—*
  - Elias, John G.; and Jansson, Peter A., 4,618,937, Cl. 364-518.000.
- Jarrett, Phillip: *See—*
  - Clegg, Gordon A.; and Jarrett, Phillip, 4,618,545, Cl. 429-130.000.
- Jaskolski, Stanley V.: *See—*
  - Weiss, Arnold; Schutten, Herman P.; Cartz, Louis; Spellman, Gordon B.; Jaskolski, Stanley V.; and Wackman, Peter H., deceased, 4,618,971, Cl. 378-34.000.
- Jayne, Laurence I. Stair-climbing wheelchair. 4,618,155, Cl. 280-5.280.
- Jefferis, Royston; and Steensgaard, Jens, to University of Birmingham, The. Immunoprecipitation assay of immunoglobulins using monoclonal antibodies. 4,618,589, Cl. 436-540.000.
- Jennings, Alfred R., Jr., to Mobil Oil Corporation. Foam enhancement of controlled pulse fracturing. 4,617,997, Cl. 166-299.000.
- Jeumont-Schneider: *See—*
  - Defaucheux, Jacques B.; and Guedj, Freddy, 4,618,471, Cl. 376-228.000.
- Jog & Lift Development Co.: *See—*
  - Joseph, Tony, Jr., 4,618,142, Cl. 272-75.000.
- Johansson, Hakan. Fishing tackle with a fiber optic light guide as the fishing line. 4,617,751, Cl. 43-17.500.
- Johansson, Sven H.; and Nytomt, Jan G., to Saab-Scania Aktiebolag. Ignition unit in the ignition system of an internal combustion engine. 4,617,907, Cl. 123-647.000.
- Johnson, Allen L., to RTE Corporation. Quick latch mounting bracket. 4,618,116, Cl. 248-222.100.
- Johnson, Charles C.; and Taylor, Larry T., to United States of America, Energy. Liquid chromatography/Fourier transform IR spectrometry interface flow cell. 4,618,769, Cl. 250-338.000.
- Johnson, Delbert B.: *See—*
  - Michel, Dominique; Johnson, Delbert B.; Pages, Jean F.; Foglia, Vincent F. P.; Martin, Jean G. M.; Vache , Michel P.; Sedillot, Francois G.; and Crull, Carroll M., 4,618,286, Cl. 405-208.000.
- Johnson & Johnson: *See—*
  - Brasseur, Raynald, 4,618,496, Cl. 424-195.100.
- Johnson, Lorin K.; Atlas, Steven A.; and Laragh, John H., to Biotechnology Research Associates, J.V. Novel polypeptide diuretic/-vasodilators. 4,618,600, Cl. 514-12.000.
- Johnson, Mark G., to Thomson Components - Mostek Corporation. Precharge circuit for enhancement mode memory circuits. 4,618,786, Cl. 307-578.000.
- Johnson, Richard A.; Antrim, Richard L.; and Lloyd, Norman E., to Nabisco Brands, Inc. Ultrafiltration purification of glucose isomerase. 4,618,584, Cl. 435-234.000.
- Johnson, Ronald L.; and Sieben, James A., to IXI Laboratories, Inc. System for synchronizing plural data storage devices to a common master. 4,618,897, Cl. 360-15.000.
- Johnson, Thomas A.: *See—*
  - Ford, Michael E.; and Johnson, Thomas A., 4,618,716, Cl. 564-469.000.
- Johnston Pump/General Valve, Inc.: *See—*
  - Smith, Gordon M., 4,617,964, Cl. 137-625.300.
- Joines, William T.: *See—*
  - Rafal, Marc D.; Burton, Larry W.; and Joines, William T., 4,618,996, Cl. 455-46.000.
- Jones, Thomas M.: *See—*
  - Bratt, Richard G.; Gruner, Ronald H.; Jones, Thomas M.; and Nealon, James T., 4,618,925, Cl. 364-200.000.
- Joseph, Tony, Jr., to Jog & Lift Development Co. Jumprope apparatus having weighted bar. 4,618,142, Cl. 272-75.000.
- Jude, John L. Easy grip easy scrub soap bar-scrub brush combination. 4,618,443, Cl. 252-92.000.
- Judge, Robert L.; and Wutka, Anthony D., to International Business Machines Corporation. Controls for semiconductor wafer orientor. 4,618,292, Cl. 406-19.000.
- Jufuku, Yasunobu: *See—*
  - Okawa, Susumu; and Jufuku, Yasunobu, 4,618,337, Cl. 474-201.000.
- Jung, Johann: *See—*
  - Becker, Rainer; Jahn, Dieter; Schirmer, Ulrich; Schott, Eberhard P.; Hesse, Bernhard; and Jung, Johann, 4,618,362, Cl. 71-88.000.
- Jung, Rolf, to Krauss u. Reichert GmbH & Co. KG. Machine for cutting out flat material. 4,617,737, Cl. 30-273.000.
- Jurek, Julius V. .22 caliber rimfire adapter system for M16 type rifle. 4,617,749, Cl. 42-16.000.
- Just, Herbert; and Hansen, Holger, to Autoflug GmbH. Quick release lock for a parachute. 4,618,110, Cl. 244-151.00B.
- Justice, David D.: *See—*
  - Fair, David L.; Justice, David D.; and Kelly, Pilar P., 4,618,403, Cl. 204-98.000.
- Kabel-und Metallwerke Gutehoffnungshuette: *See—*
  - Schmidtchen, Hans-Martin; and Voigt, Hermann U., 4,618,654, Cl. 525-288.000.
- Kabushiki Gaisha Waizen: *See—*
  - Yoshida, Masao, 4,618,523, Cl. 428-189.000.
- Kabushiki Kaisha Daini Seikosha: *See—*
  - Matsuura, Yoshiaki, 4,618,837, Cl. 331-160.000.
- Kabushiki Kaisha Daisei Kikai: *See—*
  - Chikatani, Hajime; and Kawakami, Sanji, 4,617,785, Cl. 53-562.000.
- Kabushiki Kaisha Kitai Tekkosho: *See—*
  - Kitai, Toshio, 4,618,327, Cl. 440-53.000.
- Kabushiki Kaisha Kobe Seiko Sho: *See—*
  - Miyagi, Yoshimitsu; Hino, Mitsuo; and Eto, Takehiko, 4,618,382, Cl. 148-415.000.
- Kabushiki Kaisha Meidensha: *See—*
  - Tsukune, Hideo; and Goto, Keisuke, 4,618,989, Cl. 382-25.000.
- Kabushiki Kaisha Morita Seisakusho: *See—*
  - Kataoka, Kenzo; and Watanabe, Hiroo, 4,617,837, Cl. 74-785.000.
- Kabushiki Kaisha Toshiba: *See—*
  - Aoyama, Masaharu; Abe, Masahiro; Ajima, Takashi; and Yonezawa, Toshio, 4,618,878, Cl. 357-71.000.
  - Araki, Youichi; and Uetake, Yoshinari, 4,618,877, Cl. 357-56.000.
  - Fukushi, Yukihiro; and Segawa, Hiroyuki, 4,618,245, Cl. 355-14.0SH.
  - Ikeda, Hiroshi; and Higa, Osamu, 4,618,921, Cl. 363-49.000.
  - Kimura, Tokuji; and Urushihara, Toshio, 4,618,085, Cl. 225-100.000.
  - Koyama, Katsuhide, 4,618,979, Cl. 378-176.000.
  - Watanabe, Junji, 4,618,244, Cl. 355-8.000.
  - Yamada, Tetsuo, 4,618,874, Cl. 357-30.000.

- Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
  - Fujitani, Yoshiyasu; Muraki, Hideaki; Yokota, Koji; Sobukawa, Hideo; and Matsunaga, Shinichi, 4,617,794, Cl. 60-274.000.
- Kabushiki Kaisha Universal: *See—*
  - Kimura, Y[illegible]18,150, Cl. 273-143.00R.
- Kaczmarski, Edward Z.: *See—*
  - Andrews, Patrick V.; and Kaczmarski, Edward Z., 4,618,084, Cl. 225-96.000.
- Kaczorowski, Edward M.: *See—*
  - Maydan, Dan; Somekh, Sasson; and Kaczorowski, Edward M., 4,618,262, Cl. 356-357.000.
- Kaczynski, Bernhard: *See—*
  - Hofmann, Karl; Mladek, Walter; and Kaczynski, Bernhard, 4,618,097, Cl. 239-124.000.
- Kadaba, Pankaja K., to University of Kentucky Research Foundation, The. Aryl substituted 1H-4,5-dihydro-1,2,3-triazoles as anticonvulsants. 4,618,681, Cl. 546-276.000.
- Kadowaki, Takashi; and Onodera, Kaoru, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic materials. 4,618,570, Cl. 430-505.000.
- Kagata, Tooru: *See—*
  - Fujikawa, Motoi; and Kagata, Tooru, 4,618,044, Cl. 192-54.000.
- Kageyama, Hidehei, to Toyo Polymer Co., Ltd.; and Kotobuki & Co., Ltd. Push-button writing instrument with front seal means. 4,618,280, Cl. 401-107.000.
- Kagiura, Kazuo: *See—*
  - Sakurai, Masaaki; and Kagiura, Kazuo, 4,618,240, Cl. 355-3.0FU.
- Kagiyama, Tsutomu; Kobayashi, Fumio; Yamagishi, Jun; and Nishikawa, Hiromitsu, to Ohi Seisakusho Co., Ltd. Sliding door opening-closing mechanism. 4,617,757, Cl. 49-280.000.
- Kajiki, Minoru: *See—*
  - Ikemura, Akio; and Kajiki, Minoru, 4,617,805, Cl. 62-259.100.
- Kajita, Shunsuke: *See—*
  - Kobayashi, Shinma; and Kajita, Shunsuke, 4,617,986, Cl. 165-42.000.
- Kajiwara, Tadashi; Sato, Akira; Tsurumaru, Shinobu; and Kumamoto, Kenichiro, to Sony Corporation. Impedance adjusting element for a microstrip circuit. 4,618,838, Cl. 333-33.000.
- Kakino, Mitsuteru, to Kakino, Mitsuteru. Flat cathode ray tube. 4,618,801, Cl. 313-495.000.
- Kakuda, Yoshitaka; and Kondoh, Norimasa, to Matsushita Electric Industrial Co., Ltd. Axial air gap motor. 4,618,790, Cl. 310-90.000.
- Kaltenbach & Voigt GmbH & Co.: *See—*
  - Schmidt, Helmut; Bodenmiller, Anton; and Straka, Alfred, 4,618,326, Cl. 433-79.000.
- Kamens, Bruce H.; and Ritter, George E., to Timex Corporation. Acoustic alarm setting device for a timepiece. 4,618,264, Cl. 368-74.000.
- Kamiya, Sadayoshi: *See—*
  - Ohnishi, Yasuhiko, 4,618,664, Cl. 527-300.000.
- Kamiya, Tadashi: *See—*
  - Noda, Azusa; and Kamiya, Tadashi, 4,618,020, Cl. 180-229.000.
- Kampichler, Guenter, to Motorenfabrik Hatz GmbH & Co. KG. Governor mechanism counterbalance for a fuel injected internal combustion engine of a vehicle. 4,617,894, Cl. 123-372.000.
- Kanada, Eiji: *See—*
  - Miyasaka, Eiji; Hirose, Iwao; Yamashita, Koji; Kawai, Kenji; and Kanada, Eiji, 4,618,255, Cl. 355-71.000.
- Kanbara, Youichi: *See—*
  - Ogawa, Takahiro; Takada, Masahiko; Matsumoto, Takaharu; and Kanbara, Youichi, 4,618,469, Cl. 264-182.000.
- Kane, Johji, to Matsushita Electric Industrial Co., Ltd. Tuning systems on dielectric substrates. 4,619,001, Cl. 455-192.000.
- Kanegafuchi Chemical Industry Co., Ltd.: *See—*
  - Kawakubo, Fumio; Takanoo, Miyako; Yukimoto, Sadao; and Isayama, Katsuhiko, 4,618,653, Cl. 525-404.000.
  - Kawakubo, Fumio; Takanoo, Miyako; Yukimoto, Sadao; and Isayama, Katsuhiko, 4,618,656, Cl. 525-404.000.
- Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
  - Nakagawa, Masao, 4,618,663, Cl. 526-232.300.
- Kanegafuchi Kaguku Kogyo Kabushiki Kaisha: *See—*
  - Ogawa, Takahiro; Takada, Masahiko; Matsumoto, Takaharu; and Kanbara, Youichi, 4,618,469, Cl. 264-182.000.
- Kaneko, Kenji: *See—*
  - Maeyama, Tsutomu; Ishii, Shigeru; and Kaneko, Kenji, 4,618,488, Cl. 424-49.000.
- Kanematsu-Gosho, Ltd.: *See—*
  - Iwasaki, Masashi, 4,618,804, Cl. 318-16.000.
- Kanematu, Tetuo; and Yamaguchi, Yoshiaki, to Daicel Chemical Industries Ltd. Stable gel composition containing a carboxymethyl cellulose salt and a process for the preparation of them. 4,618,491, Cl. 424-81.000.
- Kania, Charles M.; and Dowbenko, Rostyslaw, to PPG Industries, Inc. Low molecular weight acrylic polymers. 4,618,659, Cl. 525-455.000.
- Kanmoto, Yoshiaki: *See—*
  - Shibata, Isamu; and Kanmoto, Yoshiaki, 4,618,958, Cl. 372-29.000.
- Kantor, Frederick W. Fluid transport and processing system. 4,618,421, Cl. 210-170.000.
- Karaki, Shintaro: *See—*
  - Sakabe, Yukio; Karaki, Shintaro; and Nakano, Kiyoshi, 4,618,912, Cl. 361-309.000.
- Karla, Heinz, to Saint Gobain Vitrage. Process for soldering a current connecting element and a current feed conductor of a heatable glass pane. 4,618,088, Cl. 228-124.000.
- Kasahara, Shinju: *See—*
  - Kimura, Ryoichi; Nomura, Kanji; Ubukata, Kazumi; and Kasahara, Shinju, 4,618,132, Cl. 296-97.00J.
- Kasai, Hitoshi: *See—*
  - Hattori, Toshihiro; Ishihara, Masaki; Uriuhara, Makoto; Kasai, Hitoshi; and Asagi, Yasuyoshi, 4,618,043, Cl. 192-0.052.
- Kasai, Kazumi, to Nippon Notion Kogyo Co., Ltd. Swivel snap hook of synthetic resin. 4,617,704, Cl. 24-236.000.
- Kasai Kogyo Co., Ltd.: *See—*
  - Nakamura, Haruo, 4,617,699, Cl. 16-262.000.
- Kase, Hiroshi: *See—*
  - Hashizume, Kazuko; Kase, Hiroshi; Kitamura, Shigeto; Iida, Takao; Shirahata, Kunikatsu; Omori, Kenji; and Shuto, Katsuichi, 4,618,613, Cl. 514-312.000.
- Kashioka, Motohiko: *See—*
  - Ohashi, Masato; Kashioka, Motohiko; Tamura, Shinichi; Katsura, Hiromitsu; Ueda, Hideaki; and Nakamura, Akihiro, 4,618,554, Cl. 430-78.000.
- Kassai, Kenzou, to Aprica Kassai Kabushikikaisha. Wheel stopping device. 4,618,033, Cl. 188-20.000.
- Katagi, Takashi: *See—*
  - Makino, Shigeru; Katagi, Takashi; Urasaki, Shuji; Kawabata, Shunichiro; and Kobayashi, Yuji, 4,618,866, Cl. 343-779.000.
- Kataoka, Kenzo; and Watanabe, Hiroo, to Kabushiki Kaisha Morita Seisakusho. Speed change device for medical handpiece. 4,617,837, Cl. 74-785.000.
- Katayama, Syuji: *See—*
  - Ikoma, Keiichi; and Katayama, Syuji, 4,618,780, Cl. 307-130.000.
- Katchko, John; Plaisance, Thomas H.; and Kriz, Karel, to DeSoto, Inc. Heat curable polysiloxane release coatings which stratify when baked and paper coated therewith. 4,618,657, Cl. 525-443.000.
- Kato, Eiichi: *See—*
  - Dan, Shigeyuki; Ishii, Kazuo; Kato, Eiichi; and Sera, Hidefumi, 4,618,557, Cl. 430-114.000.
- Kato, Hideaki; and Oohashi, Kaoru, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Vehicle height control system. 4,618,156, Cl. 280-6.00R.
- Kato, Kazuo; and Sato, Hideo, to Hitachi, Ltd. Voltage-to-current converter circuit. 4,618,814, Cl. 323-280.000.
- Kato, Masatake, to Canon Kabushiki Kaisha. Telephoto zoom lens. 4,618,220, Cl. 350-427.000.
- Kato, Michio: *See—*
  - Sada, Masao; Kato, Michio; Ayano, Masami; Abe, Tadashi; and Moriwaki, Masanori, 4,618,709, Cl. 562-532.000.
- Katoh, Kenji: *See—*
  - Uemura, Seiichi; Hirose, Takao; Shohda, Yoshio; Sakamoto, Takayoshi; and Katoh, Kenji, 4,618,463, Cl. 264-29.200.
- Katsube, Ryoji: *See—*
  - Kouyama, Toshitake; and Katsube, Ryoji, 4,618,890, Cl. 358-149.000.
- Katsura, Hiromitsu: *See—*
  - Ohashi, Masato; Kashioka, Motohiko; Tamura, Shinichi; Katsura, Hiromitsu; Ueda, Hideaki; and Nakamura, Akihiro, 4,618,554, Cl. 430-78.000.
- Katz, Leonard A.: *See—*
  - Ish-Shalom, Jehuda; Katz, Leonard A.; and Manzer, Dennis G., 4,618,808, Cl. 318-696.000.
- Kaufman, Yaacov. Ergonomic chair. 4,618,185, Cl. 297-285.000.
- Kaus, Malcolm J.; and Miro, Nemesio D., to Phillips Petroleum Company. Supported high efficiency polyolefin catalyst component and methods of making and using the same. 4,618,661, Cl. 526-114.000.
- Kawabata, Shunichiro: *See—*
  - Makino, Shigeru; Katagi, Takashi; Urasaki, Shuji; Kawabata, Shunichiro; and Kobayashi, Yuji, 4,618,866, Cl. 343-779.000.
- Kawaguchi, Frank M., to Northrop Corporation. Dynamic shading compensation for IR tracking system. 4,618,892, Cl. 358-163.000.
- Kawaguchi, Katsuhiko; and Ono, Yoshiaki, to Tokyo Electric Co., Ltd. Automatic paper sheet supplying apparatus. 4,618,134, Cl. 271-4.000.
- Kawai, Kenji: *See—*
  - Miyasaka, Eiji; Hirose, Iwao; Yamashita, Koji; Kawai, Kenji; and Kanada, Eiji, 4,618,255, Cl. 355-71.000.
- Kawai, Makoto: *See—*
  - Egami, Shunichiro; and Kawai, Makoto, 4,618,831, Cl. 330-124.00R.
- Kawai, Toshitake: *See—*
  - Toshimitsu, Yoshihiko; Takaoka, Tokuro; Kawai, Toshitake; and Ishida, Takashi, 4,618,018, Cl. 180-142.000.
- Kawajiri, Junichi, to Bridgestone Corporation. Tire for use in running on soft ground and excellent in ground-contacting property. 4,617,976, Cl. 152-209.00R.
- Kawakami, Chikuni, to Fuji Photo Film Co., Ltd. Direct current power control on selectable voltage step-up and step-down. 4,618,812, Cl. 323-224.000.
- Kawakami, Sanji: *See—*
  - Chikatani, Hajime; and Kawakami, Sanji, 4,617,785, Cl. 53-562.000.
- Kawakami, Shigenobu: *See—*
  - Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Yanagishita, Hitoshi; and Hayashi, Shozo, 4,618,914, Cl. 361-315.000.
- Kawakubo, Fumio; Takanoo, Miyako; Yukimoto, Sadao; and Isayama, Katsuhiko, to Kanegafuchi Chemical Industry Co., Ltd. Novel polymer and cured product of the same. 4,618,653, Cl. 525-404.000.
- Kawakubo, Fumio; Takanoo, Miyako; Yukimoto, Sadao; and Isayama, Katsuhiko, to Kanegafuchi Chemical Industry Co., Ltd. Novel polymer and cured product of the same. 4,618,656, Cl. 525-404.000.

Kawamura, Katsuaki, to Pioneer Electronic Corporation. Radio communications control system which automatically returns the system to the speech channel. 4,618,998, Cl. 455-77.000.

Kawamura, Kazue: *See—*
Shiio, Isamu; Sugimoto, Shinichi; and Kawamura, Kazue, 4,618,580, Cl. 435-108.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Hanada, Sadashi; and Nakabayashi, Akira, 4,618,089, Cl. 228-212.000.

Kawashima, Saburo: *See—*
Yamaguchi, Keizaburo; Sugimoto, Kenichi; Tanabe, Yoshimitsu; Kawashima, Saburo; and Yamaguchi, Akihiro, 4,618,714, Cl. 564-329.000.

Kay, Brian D.: *See—*
Campisi, Carl; and Kay, Brian D., 4,618,131, Cl. 269-32.000.

Kay, Edward L.; and Roskos, Kenneth B., to Firestone Tire & Rubber Company, The. Nucleation of urethane compositions. 4,618,667, Cl. 528-49.000.

Kayane, Yutaka; Miyamoto, Tetsuya; Omura, Takashi; Sawamoto, Hirokazu; Harada, Naoki; and Takeshita, Akira, to Sumitomo Chemical Company, Limited. 4-methyl-pyridone monoazo compound having both monochlorotriazinyl and vinylsulfone type fiber-reactive groups. 4,618,671, Cl. 534-635.000.

Kayes, Allan G., to Pneumatic Punchers Limited. Impact-action self-propelled mechanism for driving holes in the earth. 4,618,007, Cl. 175-19.000.

Kazuhiko, Ueda: *See—*
Sasaki, Junzo; Hitomi, Mitsuo; and Kazuhiko, Ueda, 4,617,897, Cl. 123-432.000.

Kazuse, Yoshitaka: *See—*
Iwama, Akio; Tasaka, Kentaro; and Kazuse, Yoshitaka, 4,618,534, Cl. 428-316.600.

Keane, James W., to Whirlpool Corporation. Vacuum cleaner hose coupling. 4,618,195, Cl. 339-16.00R.

Keay, Robert E.: *See—*
Hobson, Philip B.; and Keay, Robert E., 4,618,728, Cl. 568-652.000.

Kedzierski, Heinrich, to WABCO Westinghouse Steuerungstechnik GmbH. Sealing arrangement for a longitudinally-slotted pressure cylinder closed on the ends. 4,617,857, Cl. 92-88.000.

Keigler, John E., to RCA Corporation. Spacecraft angular momentum stabilization system and method. 4,618,112, Cl. 244-158.00R.

Keiichi, Yamada: *See—*
Suzuki, Shoichi; and Keiichi, Yamada, 4,617,793, Cl. 60-285.000.

Keith, Charles H., to Brown & Williamson Tobacco Corporation. Tobacco smoke mouthpiece and method of making same. 4,617,946, Cl. 131-336.000.

Kelemen, Jozsef: *See—*
Budai, Zoltan; Benko, Pal; Ratz nee Simonek, Ildiko ; Rakoczy nee Pinter, Eva; Magyar, Karoly; Kelemen, Jozsef; and Mandi, Attila, 4,618,623, Cl. 514-478.000.

Keller, Vernon W.; Owen, Robert B.; Elkins, Bobby R.; and White, William T., to United States of America, National Aeronautics and Space Administration. Double window viewing chamber assembly. 4,618,215, Cl. 350-319.000.

Kelley, James O., to Herman Miller, Inc. Cabinet with hanger rails. 4,618,192, Cl. 312-245.000.

Kelley, Stephen H.; and Rybicki, Mathew A., to Motorola, Inc. Monotonic A/D converter which minimizes circuitry for high order bit conversion. 4,618,852, Cl. 340-347.0AD.

Kelly, Pilar P.: *See—*
Fair, David L.; Justice, David D.; and Kelly, Pilar P., 4,618,403, Cl. 204-98.000.

Kelmetis, George C. Bird cage with fold-down top. 4,617,873, Cl. 119-17.000.

Kemp, Saundra R. Automatic system and method for monitoring and storing radio user listening habits. 4,618,995, Cl. 455-2.000.

Kendall-Tobias, Michael W. Fluid flow control system. 4,617,953, Cl. 137-110.000.

Kennedy, Earl E.: *See—*
Knobel, Thomas M.; Kennedy, Earl E.; and Walker, Mary A., 4,618,630, Cl. 521-105.000.

Kenyon, Jack. Plate and diaphragm assembly for a filter press. 4,617,863, Cl. 100-194.000.

Kerkman, Daniel J.: *See—*
DeBernardis, John F.; Kerkman, Daniel J.; and McClellan, William J., 4,618,683, Cl. 548-420.000.

Kesselring, Kurt: *See—*
Stapel, Gunter; Gober, Karl-Heinz; Leyck, Sigurd; Wetzig, Helmut; Birkner, Christian; Kesselring, Kurt; Christ, Bruno; Steiner, Klaus; and Schroder, Friedhelm, 4,618,605, Cl. 514-177.000.

KEUCO Paul Keune GmbH & Co. KG: *See—*
Gerbe, Helmut, 4,618,117, Cl. 248-222.100.

Kikuchi, Katsuya: *See—*
Honda, Michitaka; and Kikuchi, Katsuya, 4,618,928, Cl. 364-414.000.

Kikuchi, Toshiyuki: *See—*
Sotoyama, Kaoru; Sumida, Shizuo; and Kikuchi, Toshiyuki, 4,618,041, Cl. 192-0.044.

Kikyohara, Tadashi: *See—*
Yamanouchi, Katsuto; Saitoh, Katsuo; Saito, Yoshinori; and Kikyohara, Tadashi, 4,618,417, Cl. 210-149.000.

Kim, Bang M., to General Electric Company. Process for recovery of zinc from plating waste solutions. 4,618,428, Cl. 210-648.000.

Kim, Oh-Kil, to United States of America, Navy. Conductive heterocyclic ladder polymers. 4,618,453, Cl. 252-500.000.

Kimoto, Takami: *See—*
Tokuda, Makoto; and Kimoto, Takami, 4,618,181, Cl. 296-191.000.

Kimura, Ryoichi; Nomura, Kanji; Ubukata, Kazumi; and Kasahara, Shinju, to Honda Giken Kogyo Kabushiki Kaisha. Rear window light screen particularly for an automobile. 4,618,132, Cl. 296-97.00J.

Kimura, Tokuji; and Urushihara, Toshio, to Kabushiki Kaisha Toshiba. Sheet separating apparatus. 4,618,085, Cl. 225-100.000.

Kimura, Yutaka, to Kabushiki Kaisha Universal. Game machine with selective stop means for moving display. 4,618,150, Cl. 273-143.00R.

King Instrument Corporation: *See—*
Woodley, George M., 4,617,719, Cl. 29-564.600.

King, James P.: *See—*
Toukan, Sameeh S.; and King, James P., 4,618,438, Cl. 252-47.500.

Kinkelaar, Edmund W.; and Pekar, Howard G., to Texo Corporation. Tin plating immersion process. 4,618,513, Cl. 427-443.100.

Kinnan, Frank, to Electric Power Research Institute. Techniques for establishing inground support footings and for strengthening and stabilizing the soil at inground locations. 4,618,287, Cl. 405-232.000.

Kinz, Peter, to Luk Lamellen und Kupplungsbau GmbH. Friction clutch with pivotable diaphragm spring on the clutch cover. 4,618,047, Cl. 192-89.00B.

Kishi, Hiroyoshi: *See—*
Takano, Katsuhiko; Iijima, Shigeharu; Yoshihara, Satoshi; Matsushima, Masaaki; Kishi, Hiroyoshi; and Sasamori, Eizo, 4,618,537, Cl. 428-336.000.

Kishida, Eiji; and Hasegawa, Shumpei, to Honda Giken Kogyo Kabushiki Kaisha. Secondary air supply for internal combustion engine. 4,617,891, Cl. 123-344.000.

Kishida, Eiji: *See—*
Kobayashi, Hideo; and Kishida, Eiji, 4,617,900, Cl. 123-489.000.

Kishie, Hidehiko: *See—*
Yamamoto, Hideomi; Watanabe, Haruzo; Kishie, Hidehiko; and Nishihara, Toshio, 4,617,717, Cl. 29-527.400.

Kishimoto, Shinichi: *See—*
Ozawa, Yoichi; Kishimoto, Shinichi; Shinohara, Emiko; Takemoto, Tadashi; and Eguchi, Chikahiko, 4,618,695, Cl. 560-41.000.

Kitada, Akira, to Fuji Photo Film Co., Ltd. Radiographic intensifying screen. 4,618,778, Cl. 250-483.100.

Kitagawa, Masahiro, to Olympus Optical Co., Ltd. Motor drive for camera. 4,618,237, Cl. 354-412.000.

Kitai, Toshio, to Kabushiki Kaisha Kitai Tekkosho. Steering structure for ship propelling device. 4,618,327, Cl. 440-53.000.

Kitamura, Shigeto: *See—*
Hashizume, Kazuko; Kase, Hiroshi; Kitamura, Shigeto; Iida, Takao; Shirahata, Kunikatsu; Omori, Kenji; and Shuto, Katsuichi, 4,618,613, Cl. 514-312.000.

Kitani, Masakatu: *See—*
Saito, Toranosuke; Kitani, Masakatu; and Ohishi, Hiroyuki, 4,618,693, Cl. 558-82.000.

Kiuchi, Takeo: *See—*
Otobe, Yutaka; and Kiuchi, Takeo, 4,618,954, Cl. 371-16.000.

Kiyomiya, Yutaka: *See—*
Sasaki, Yutaka; Kiyomiya, Yutaka; and Nakamura, Toshio, 4,618,593, Cl. 502-20.000.

KLA Instruments Corporation: *See—*
Sandland, Paul; Chadwick, Curt H.; Singleton, Russell M.; and Dwyer, Howard, 4,618,938, Cl. 364-552.000.

Klebovich, Imre: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,618,611, Cl. 514-255.000.

Kleemann, Axel: *See—*
Drauz, Karlheinz; and Kleemann, Axel, 4,618,730, Cl. 568-771.000.

Klein, Gerald B. Conical can end with push down gate. 4,618,301, Cl. 413-8.000.

Klein, Horst: *See—*
Amos, Walter; and Klein, Horst, 4,617,695, Cl. 15-195.000.

Klimesch, Roger G.: *See—*
Lichtenthaler, Frieder W.; and Klimesch, Roger G., 4,618,675, Cl. 536-17.200.

Knaack Mfg. Co.: *See—*
Weger, Kenneth F., Jr., 4,618,083, Cl. 224-324.000.

Knapp, Janet S.; and Hillman, Jerry L., to Rockwell International Corporation. Sleeve valve for a pulsed gas generator. 4,617,796, Cl. 60-39.790.

Knapp, John F., to Xerox Corporation. Apparatus for color development with a magnetic separator containing a stationary shell with rotating magnets. 4,618,243, Cl. 355-4.000.

Knell, Bernhard: *See—*
Tinnes, Bernhard; Knell, Bernhard; and Vetterli, Walter, 4,618,126, Cl. 266-271.000.

Knifton, John F.: *See—*
Renken, Terry L.; and Knifton, John F., 4,618,717, Cl. 564-475.000.

Knobel, Thomas M.; Kennedy, Earl E.; and Walker, Mary A., to Dow Chemical Co., The. Organic polymer composition containing an antistatic agent comprising a nonvolatile ionizable metal salt and a salt or ester of a carboxylic acid. 4,618,630, Cl. 521-105.000.

Kobayashi, Fumio: *See—*
Kagiyama, Tsutomu; Kobayashi, Fumio; Yamagishi, Jun; and Nishikawa, Hiromitsu, 4,617,757, Cl. 49-280.000.

Kobayashi, Hideo; and Kishida, Eiji, to Honda Giken Kogyo Kabushiki Kaisha. Air-fuel ratio control system for an internal combustion engine having a control characteristic varying with the engine load. 4,617,900, Cl. 123-489.000.

Kobayashi, Hidetoshi: *See—*
Mihayashi, Keiji; Kobayashi, Hidetoshi; and Takada, Shunji, 4,618,572, Cl. 430-543.000.
Okamura, Hisashi; Kobayashi, Hidetoshi; Nishikawa, Toshihiro; and Tamoto, Koji, 4,618,573, Cl. 430-558.000.

Kobayashi, Kiyonori, to Aisin Seiki Kabushiki Kaisha. Clutch disk assembly. 4,618,048, Cl. 192-106.200.

Kobayashi, Kunio: *See—*
Mashino, Keiichi; Satou, Morio; Masumoto, Shouji; Kobayashi, Kunio; and Miki, Osamu, 4,618,811, Cl. 322-28.000.

Kobayashi, Masaaki, to Shinko Denshi Company Limited. Weight measuring apparatus of vibration type. 4,618,014, Cl. 177-210.0FP.

Kobayashi, Nobuyuki; and Ito, Toshimitsu, to Toyota Jidosha Kabushiki Kaisha. Apparatus for controlling idling speed in internal combustion engine having two bypass air passages. 4,617,890, Cl. 123-339.000.

Kobayashi, Shinma; and Kajita, Shunsuke, to Nissan Shatai Company, Limited. Air conditioning arrangement for automotive vehicle or the like. 4,617,986, Cl. 165-42.000.

Kobayashi, Yuji: *See—*
Makino, Shigeru; Katagi, Takashi; Urasaki, Shuji; Kawabata, Shunichiro; and Kobayashi, Yuji, 4,618,866, Cl. 343-779.000.

Koboshi, Shigeharu: *See—*
Kurematsu, Masayuki; and Koboshi, Shigeharu, 4,618,569, Cl. 430-428.000.

Kocev, Angel: *See—*
Palfery, Kenneth J.; Puckering, Donald R.; Kocev, Angel; and Maharaj, Kenrick B., 4,617,720, Cl. 29-568.000.

Koch, Paolo: *See—*
Brandi, Gabriella; Koch, Paolo; Maiorana, Stefano; Dalla Croce, Piero; and Baldoli, Clara, 4,618,439, Cl. 252-47.500.

Koch, Russell W.; and Snyder, Douglas D., to Firestone Tire & Rubber Company, The. Tire repair by "patch only" method. 4,618,519, Cl. 428-63.000.

Kochannek, Franz, to Robert Bosch GmbH. Vane-type compressor having resilient slot seals. 4,618,319, Cl. 418-136.000.

Kodama, Yoshihiro: *See—*
Tsuchida, Seiichi; Kodama, Yoshihiro; and Hara, Hiroari, 4,618,640, Cl. 524-272.000.

Kodera, Masao: *See—*
Sakakibara, Hiroyuki; Akita, Shigeyuki; Kodera, Masao; and Maeno, Tsuyoshi, 4,618,948, Cl. 367-104.000.

Koepke, Jeffery W.: *See—*
Young, Dean A.; and Koepke, Jeffery W., 4,618,738, Cl. 585-480.000.

Kohl, Ernst: *See—*
Bilharz, Manfred; Heider, Peter; Roper, Hartmut; Taal, Martin; Henken, Fritz; Kohl, Ernst; and Schubert, Dietmar, 4,618,123, Cl. 251-28.000.

Kohl, William A.: *See—*
Ray, Edgar C.; and Kohl, William A., 4,618,740, Cl. 174-67.000.

Kohler, Boris: *See—*
Ackermann, Peter; Gsell, Laurenz; and Kohler, Boris, 4,618,615, Cl. 514-338.000.

Kohnen, Klaus; Niermann, Hans; and Ullrich, Norbert, to Krupp-Koppers GmbH. Soot blower for the removal of deposits from surfaces of heat exchangers or the like. 4,617,988, Cl. 165-95.000.

Koistinen, Pauli A. T.; and Hamalainen, Risto J., to OY Tampella AB. Method for preliminary anchoring of a wire rope bolt. 4,617,715, Cl. 29-456.000.

Kojima, Tetsuji: *See—*
Noguchi, Matsusaburo; Yamamoto, Mikio; and Kojima, Tetsuji, 4,618,250, Cl. 355-15.000.

Kokubo, Eiichi; and Hirata, Akira, to Laurel Bank Machine Co., Ltd. Device for accumulating and delivering paper sheets. 4,618,302, Cl. 414-33.000.

Koleske, Joseph V.: *See—*
Osborn, Claiborn L.; Koleske, Joseph V.; and Drake, Kenneth, 4,618,635, Cl. 524-113.000.

Kolodziej, Raymond J.: *See—*
Miller, William H.; McClendon, Samuel E.; Kolodziej, Raymond J.; and Brand, Donald L., 4,618,931, Cl. 364-431.020.

Koltenback, Steven R.: *See—*
Beck, William R.; Jahn, William; Koltenback, Steven R.; Scharf, Robert M.; and Schwab, Ronald, 4,617,732, Cl. 29-866.000.

Komamura Photographic Co., Ltd.: *See—*
Tomidokoro, Kanji, 4,618,062, Cl. 206-455.000.

Komet Stahlhalter- und Werkzeugfabrik Robert Bruning, GmbH: *See—*
Eckle, Otto; and Veigel, Helmut, 4,617,848, Cl. 82-36.00A.

Kondo, Michikazu, to NEC Corporation. Optical switch of switched directional coupler type. 4,618,210, Cl. 350-96.140.

Kondo, Shyunichi: *See—*
Yuyama, Yasuaki; Nakano, Junji; Kondo, Shyunichi; Sato, Hideo; and Sawada, Kenichi, 4,618,553, Cl. 430-69.000.

Kondo, Toshikatsu: *See—*
Asano, Kiyomitsu; and Kondo, Toshikatsu, 4,618,277, Cl. 400-124.000.

Kondo, Yasuo; Watanabe, Masakane; and Oshiro, Takao, to Nippon Soken, Inc.; and Nippondenso Co., Ltd. Window washer for vehicle. 4,618,096, Cl. 239-101.000.

Kondoh, Norimasa: *See—*
Kakuda, Yoshitaka; and Kondoh, Norimasa, 4,618,790, Cl. 310-90.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Kadowaki, Takashi; and Onodera, Kaoru, 4,618,570, Cl. 430-505.000.
Kurematsu, Masayuki; and Koboshi, Shigeharu, 4,618,569, Cl. 430-428.000.

Kopacz, Bernard F., to Becton, Dickinson and Company. Surgical blade handle. 4,617,738, Cl. 30-339.000.

Kordik, Gabriella: *See—*
Trinn, Maria; Kordik, Gabriella; Udvardy-Nagy nee Cserey Pechaany, Eva; Vida, Zsuzsanna; and Zsoka nee Somkuti, Rzsebet, 4,618,581, Cl. 435-119.000.

Kori, Takuaki; Ozawa, Hirotaka; and Sugawara, Shiro, to Sony Corporation. Process and apparatus for finishing a guide roller. 4,617,714, Cl. 29-434.000.

Kornberg, Elliot. Device and method for performing an intraluminal abdominal aortic aneurysm repair. 4,617,932, Cl. 128-334.00R.

Kotani, Matahira; and Matsumoto, Masafumi, to Sharp Kabushiki Kaisha. Facsimile print out system employing an ink jet system printer. 4,618,869, Cl. 346-75.000.

Kotera, Yoshikazu, to Mitsubishi Denki Kabushiki Kaisha. Process for controlling load distribution in continuous rolling mill. 4,617,814, Cl. 72-8.000.

Kotliar, Abraham M.: *See—*
Sacks, William; Sibilia, John P.; Kotliar, Abraham M.; Oltmann, Harold D.; and Chen, Shu P., 4,618,528, Cl. 428-216.000.

Kotnik, Ernest J., to AP Industries, Inc. Insulator removal tool. 4,617,710, Cl. 29-268.000.

Kotobuki & Co., Ltd.: *See—*
Kageyama, Hidehei, 4,618,280, Cl. 401-107.000.

Kouyama, Toshitake; and Katsube, Ryoji, to NEC Corporation. Digital audio synchronizing system with mute time switching function. 4,618,890, Cl. 358-149.000.

Koyama, Katsuhide, to Kabushiki Kaisha Toshiba. X-ray fluoroscopic/radiographic apparatus. 4,618,979, Cl. 378-176.000.

Kozyra, William L.; MacIsaac, Andrew B.; and Santoro, Vincent J., to Budd Company, The. Steering knuckle assembly. 4,618,159, Cl. 280-93.000.

Kraiss, Richard, to Georg Prinzing GmbH & Co. KG Betonformen-und Maschinenfabrik. Core segment for concrete forming apparatus. 4,618,122, Cl. 249-94.000.

Kramer, Ted J.: *See—*
Shaw, Christopher G.; and Kramer, Ted J., 4,618,218, Cl. 350-363.000.

Kraus, Charles E., to Excelermatic Inc. Hydrostatic bearing structure. 4,618,270, Cl. 384-114.000.

Krauss u. Reichert GmbH & Co. KG: *See—*
Jung, Rolf, 4,617,737, Cl. 30-273.000.

Kreiskott, Horst: *See—*
Schlecker, Rainer; Schmidt, Peter; Thieme, Peter C.; Lenke, Dieter; Teschendorf, Hans-Jurgen; Traut, Martin; Mueller, Claus D.; Hofmann, Hans P.; and Kreiskott, Horst, 4,618,622, Cl. 514-457.000.

Kremer, Paul W.: *See—*
DePasquale, Ralph J.; Evans, James M.; and Kremer, Paul W., 4,618,688, Cl. 556-419.000.

Kress Corporation: *See—*
Kress, Edward S.; LaBerdia, William L.; and Thomas, Dennis R., 4,618,307, Cl. 414-498.000.

Kress, Edward S.; LaBerdia, William L.; and Thomas, Dennis R., to Kress Corporat[illegible] Scrap bucket carrier. 4,618,307, Cl. 414-498.000.

Kriskovich, Robert T.: *See—*
Christopher, Walter S.; Kriskovich, Robert T.; and Steinbach, Robert L., 4,617,813, Cl. 70-394.000.

Kristof, Mark J.: *See—*
Schwaderer, John R.; and Kristof, Mark J., 4,618,756, Cl. 219-10.55R.

Kriz, Karel: *See—*
Katchko, John; Plaisance, Thomas H.; and Kriz, Karel, 4,618,657, Cl. 525-443.000.

Kroger Co., The: *See—*
Woolf, Robert M., 4,618,032, Cl. 186-61.000.

Kroger, Doris: *See—*
Butenop, Klaus; and Kroger, Doris, 4,618,108, Cl. 242-107.000.

Kropp, Walter, to Linde Aktiengesellschaft. Multiple consumer hydraulic mechanisms. 4,617,854, Cl. 91-517.000.

Kropp, Walter: *See—*
Krusche, Alfred; and Kropp, Walter, 4,617,798, Cl. 60-450.000.

Krupp-Koppers GmbH: *See—*
Kohnen, Klaus; Niermann, Hans; and Ullrich, Norbert, 4,617,988, Cl. 165-95.000.

Krusche, Alfred; and Kropp, Walter, to Linde Aktiengesellschaft. Hydrostatic drive systems. 4,617,798, Cl. 60-450.000.

Kubisiak, Michael P.: *See—*
Berman, Jody R.; Steele, Dennis L.; and Kubisiak, Michael P., 4,618,526, Cl. 428-209.000.

Kubo, Akio. Lead device for drawing machine. 4,617,739, Cl. 33-18.100.

Kubo, Emiko: *See—*
Sato, Takashi; and Kubo, Emiko, 4,618,588, Cl. 436-511.000.

Kubo, Kanji; Wada, Kenichi; and Shintani, Yooichi, to Hitachi, Ltd. Buffer storage control system. 4,618,926, Cl. 364-200.000.

Kubota, Ltd.: *See—*
Eguchi, Jutaro; Odahara, Tetsuichi; and Sukenari, Junzo, 4,617,787, Cl. 56-14.600.

Kubota, Yuichi: *See—*
Nishimatsu, Masaharu; Ide, Toshiaki; Arioka, Hiroyuki; and Kubota, Yuichi, 4,618,535, Cl. 428-325.000.

- Kuch, Philip L.: *See—*
  - Herrington, Daniel R.; and Kuch, Philip L., 4,618,723, Cl. 568-70.000.
- Kuck, Mark A.; and Gersten, Susan W., to Stauffer Chemical Company. Method of preparing high purity white phosphorus. 4,618,345, Cl. 23-293.00R.
- Kuhn, Friedrich, to J. M. Voith GmbH. Roller winding machine attaching and serving apparatus. 4,618,105, Cl. 242-56.00R.
- Kumamoto, Kenichiro: *See—*
  - Kajiwara, Tadashi; Sato, Akira; Tsurumaru, Shinobu; and Kumamoto, Kenichiro, 4,618,838, Cl. 333-33.000.
- Kume, Masao: *See—*
  - Miyatake, Satoshi; Abe, Mitsuo; and Kume, Masao, 4,617,761, Cl. 51-95.0GH.
- Kuo, Dai-Ming. Toilet having adjustable water-spray nozzles. 4,617,688, Cl. 4-420.200.
- Kuramoto, Nobuyuki; and Taniguchi, Hitofumi, to Tokuyama Soda Kabushiki Kaisha. Fine powder of aluminum nitride, composition and sintered body thereof and processes for their production. 4,618,592, Cl. 501-96.000.
- Kuramoto, Shinichi; and Takanashi, Hajime, to Ricoh Co., Ltd. Liquid developer for use in electrostatic photography. 4,618,558, Cl. 430-115.000.
- Kurematsu, Masayuki; and Koboshi, Shigeharu, to Konishiroku Photo Industry Co., Ltd. Method for processing of silver halide color photographic material. 4,618,569, Cl. 430-428.000.
- Kurik, Choei: *See—*
  - Yamada, Hisafumi; Kurik, Choei; and Saito, Junya, 4,618,891, Cl. 358-153.000.
- Kuriyama, Toshihiro, to Alps Electric Co., Ltd. Magnetic head with clamping erase back core. 4,618,902, Cl. 360-118.000.
- Kuroda, Kouki: *See—*
  - Nagashima, Nao; Suzuki, Koji; Nagahira, Jyoji; Kuroda, Kouki; and Takayanagi, Yoshiaki, 4,618,246, Cl. 355-14.00R.
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  - Malavarca, Richard; and Livelli, Thomas, 4,618,408, Cl. 204-299.00R.
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- Lawson, H. Franklin: *See—*
  - Dehm, David C.; and Lawson, H. Franklin, 4,618,655, Cl. 525-344.000.
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  - Thalmann, Alfred; and Lehmann, Ernesto, 4,618,168, Cl. 285-21.000.
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  - Madan, Gulzari L.; and Rao, Bookinkere C. S., 4,618,445, Cl. 252-99.000.
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  - White, Lawrence K.; Miszkowski, Nancy A.; and Levine, Aaron W., 4,618,565, Cl. 430-271.000.

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  - Dorsch, William J., 4,618,306, Cl. 414-420.000.
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  - Fadner, Thomas A.; and Linton, Nancy J., 4,618,151, Cl. 273-148.00A.
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  - Johnson, Richard A.; Antrim, Richard L.; and Lloyd, Norman E., 4,618,584, Cl. 435-234.000.
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  - McFarland, James H., 4,618,114, Cl. 248-65.000.
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  - Hazen, Wayne W.; Thompson, David L.; Reynolds, James E.; Lombardo, Nicholas J.; Queneau, Paul B.; and Hager, John P., 4,618,480, Cl. 423-127.000.
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  - Anthony, James R.; and Lortz, Allan R., 4,617,705, Cl. 24-642.000.
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  - Higgins, William A., 4,618,450, Cl. 252-355.000.
  - Jahnke, Richard W.; and Woerner, William C., 4,618,539, Cl. 428-470.000.
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  - Hill, William F., 4,617,905, Cl. 123-614.000.
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  - Dale, Steven M.; Lyon, Richard A.; and Schutram, David P., 4,618,198, Cl. 339-60.00M.
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  - Greiner, Harry; and Schwebel, Adolf, 4,618,135, Cl. 271-9.000.
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- Maharaj, Kenrick B.: *See—*
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- Maiorana, Stefano: *See—*
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  - Rand, Roy E.; Mitchell, John W. J.; and Couch, John L., 4,618,970, Cl. 378-10.000.
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  - Badono, Shinji; and Tsutaka, Yoshikazu, 4,618,969, Cl. 377-49.000.
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  - Kotera, Yoshikazu, 4,617,814, Cl. 72-8.000.
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  - Sasano, Ryoichiro; Toyohara, Tsutomu; and Takigawa, Toshimichi, 4,617,845, Cl. 82-1.00C.
- Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
  - Hirano, Masahiro; and Miyauchi, Toshio, 4,617,870, Cl. 110-323.000.
  - Irie, Nobuhiko, 4,618,303, Cl. 414-226.000.
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  - Ohe, Junya; Wakita, Saburo; Yamatsuta, Kiichi; Goto, Shoji; Kitsukake, Yukinori; and Sugizaki, Masuo, 4,618,474, Cl. 420-436.000.
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  - Takamiya, Shigeo; Inoue, Kazutoshi; and Tsutaya, Kenzo, 4,618,298, Cl. 405-150.000.
- Mitsui Petrochemical Industries, Ltd.: *See—*
  - Yatsu, Tadao; and Hinooka, Nobuya, 4,618,386, Cl. 156-242.000.
- Mitsui Toatsu Chemicals, Inc.: *See—*
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- Miyake, Ryota; and Makino, Masami, to Takenaka Engineering Co., Ltd. Double eye type crime preventing sensor system. 4,618,854, Cl. 340-567.000.
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  - Hofmann, Karl; Mladek, Walter; and Kaczynski, Bernhard, 4,618,097, Cl. 239-124.000.
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  - Sieb, Lawrence E., Jr.; and Mliner, David G., 4,618,990, Cl. 382-43.000.
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  - Freyberger, Laurin C.; Mlynek, Daniel; and Schmidtpott, Friedrich, 4,618,881, Cl. 358-27.000.
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  - Horodysky, Andrew G., 4,618,437, Cl. 252-32.500.
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  - Chester, Arthur W.; Garwood, William E.; and Tabak, Samuel A., 4,618,737, Cl. 585-329.000.
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  - Herrington, Fox J., 4,618,383, Cl. 156-66.000.
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  - Jennings, Alfred R., Jr., 4,617,997, Cl. 166-299.000.
  - Nowlin, Thomas E., 4,618,662, Cl. 526-129.000.
  - Shu, Winston R., 4,617,996, Cl. 166-273.000.
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  - Willis, John G., 4,617,722, Cl. 29-572.000.
- Mobley, Lawrence R.: *See—*
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  - Silbernagel, Raymond A., 4,618,207, Cl. 339-176.00M.
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- Molitor, Victor D. Method of and device for preventing smoke curling from underneath the hood of a grease extraction ventilator. 4,617,909, Cl. 126-299.00R.
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  - Golicz, Roman M.; Seniff, Dana W.; Fogle, Ronald L.; and Huggins, Orville C., 4,617,784, Cl. 53-540.000.
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  - Hasler, Franz; Monch, Ernst; Reiter, Karl; and Timm, Heinrich, 4,618,163, Cl. 280-785.000.
- Mondel, Karl: *See—*
  - Seifert, Helmut; and Mondel, Karl, 4,618,165, Cl. 280-808.000.
- MonoCarb AB: *See—*
  - Lundblad, Karl A., 4,618,486, Cl. 424-11.000.
- Monsanto Company: *See—*
  - Alt, Gerhard H.; Chupp, John P.; and Clizbe, Lane A., 4,618,357, Cl. 71-76.000.
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  - Lee, Len F., 4,618,679, Cl. 546-220.000.
  - Schumacher, Ignatius, 4,618,733, Cl. 568-927.000.
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  - Monti, Martha S.; and Monti, Gilbert L., 4,617,691, Cl. 5-434.000.
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  - Meyer, Marjorie A.; and Moore, John D., 4,617,693, Cl. 15-104.3SN.
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  - Cooper, Glenn D.; Butler, John M., III; Morrison, Darrell R.; Senic, Charles L.; Nilsson, Lennart S.; and Rowe, Charles M., 4,618,795, Cl. 310-260.000.
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  - Payraudeau, Henri-Andre , 4,618,050, Cl. 194-212.000.
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- Moser, Roland: *See—*
  - Stockinger, Friedrich; Lohse, Friedrich; and Moser, Roland, 4,618,712, Cl. 564-103.000.
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- Motorenfabrik Hatz GmbH & Co. KG: *See—*
  - Kampichler, Guenter, 4,617,894, Cl. 123-372.000.
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  - Anttila, Dennis A., 4,618,908, Cl. 361-187.000.
  - Ecklund, Lawrence M., 4,618,981, Cl. 381-15.000.
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  - Linder, Donald L.; and Carney, Scott N., 4,618,941, Cl. 364-724.000.
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  - Heberle, Hans-Jorg; and Rudert, Wolfgang, 4,617,903, Cl. 123-501.000.
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  - Vail, John G., 4,618,066, Cl. 215-12.00R.
- Muhle, Michael E.: *See—*
  - Agapiou, Agapios K.; Muhle, Michael E.; and Kurtzman, Myron B., 4,618,596, Cl. 502-116.000.
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  - Maekawa, Yukio; and Mukunoki, Yasuo, 4,618,575, Cl. 430-634.000.
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  - Fujitani, Yoshiyasu; Muraki, Hideaki; Yokota, Koji; Sobukawa, Hideo; and Matsunaga, Shinichi, 4,617,794, Cl. 60-274.000.
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  - Fukushima, Toshihiko; Miyamoto, Seigo; Fujita, Masahiko; Musoo, Masanori; and Sayo, Kosaku, 4,618,092, Cl. 236-92.00B.
- Musschoot, Albert, to General Kinematics. Vibratory apparatus having variable lead angle and force. 4,617,832, Cl. 74-87.000.
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  - White, Glenn S.; Mussler, Karl J.; and Van Exel, Gary A., 4,618,100, Cl. 239-440.000.
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  - Johnson, Richard A.; Antrim, Richard L.; and Lloyd, Norman E., 4,618,584, Cl. 435-234.000.
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- Nakamura, Yukio, to Sony Corporation. Electron beam deflection yoke. 4,618,843, Cl. 335-210.000.
- Nakanishi, Nobuyasu; and Nomura, Yoshihisa, to Toyota Jidosha Kabushiki Kaisha. Vehicle hydraulic braking system with anti-skid pressure control means. 4,618,189, Cl. 303-116.000.
- Nakano, Junji: *See—*
  - Yuyama, Yasuaki; Nakano, Junji; Kondo, Shyunichi; Sato, Hideo; and Sawada, Kenichi, 4,618,553, Cl. 430-69.000.
- Nakano, Kiyoshi: *See—*
  - Sakabe, Yukio; Karaki, Shintaro; and Nakano, Kiyoshi, 4,618,912, Cl. 361-309.000.
- Nakayama, Masatoshi: *See—*
  - Morita, Haruyuki; Yoshinari, Jiro; and Nakayama, Masatoshi, 4,618,542, Cl. 428-694.000.
- Nakayama, Shigeki: *See—*
  - Ikeda, Akira; Nakayama, Shigeki; Ishii, Toshitsugu; and Itakura, Isao, 4,617,755, Cl. 47-65.000.
- Nakazato, Norio: *See—*
  - Nawata, Makoto; Fukuyama, Ryoji; Nakazato, Norio; and Nishiumi, Masaharu, 4,618,398, Cl. 156-643.000.
- Namekawa, Satoshi: *See—*
  - Yamada, Takahiro; Namekawa, Satoshi; Yoshino, Eiji; and Matsuda, Yasumasa, 4,618,868, Cl. 346-75.000.
- Nardella, Michael A.; and Cournoyer, Bernard T., to Barry Wright Corporation. Releasably locking. 4,618,118, Cl. 248-243.000.
- Naruse, Nobutaka: *See—*
  - Sakai, Tadashi; and Naruse, Nobutaka, 4,617,806, Cl. 62-347.000.
- Nastec, Inc.: *See—*
  - Anderson, William J., 4,617,838, Cl. 74-798.000.

- Natali, Roberto: *See—*
  - Mattei, Riccardo; and Natali, Roberto, 4,617,782, Cl. 53-479.000.
- National Research Development Corporation: *See—*
  - Dent, John C., 4,617,888, Cl. 123-307.000.
- National Semiconductor Corporation: *See—*
  - Monticelli, Dennis M., 4,618,816, Cl. 323-316.000.
  - Russell, Ronald W., 4,618,833, Cl. 330-256.000.
- Nawata, Makoto; Fukuyama, Ryoji; Nakazato, Norio; and Nishiumi, Masaharu, to Hitachi, Ltd. Dry etching method. 4,618,398, Cl. 156-643.000.
- Nazemi, Said, to Laser Science, Inc. Gas laser with acoustic baffle. 4,618,960, Cl. 372-58.000.
- NCR Canada Ltd: *See—*
  - Therrien, Roger H.; and Chahal, Maninderpal S., 4,618,254, Cl. 355-68.000.
- NDM Corporation: *See—*
  - Cartmell, James V.; Allaire, Michael J.; and Wolf, Michael L., 4,617,935, Cl. 128-641.000.
- Neal, Joseph H.: *See—*
  - Tran, Bao G.; Neal, Joseph H.; and White, Lionel S., 4,618,947, Cl. 365-230.000.
- Neale, Michael W.: *See—*
  - Vance, Ian A. W.; and Neale, Michael W., 4,618,967, Cl. 375-80.000.
- Nealon, James T.: *See—*
  - Bratt, Richard G.; Gruner, Ronald H.; Jones, Thomas M.; and Nealon, James T., 4,618,925, Cl. 364-200.000.
- Neatherlin, Robert L.: *See—*
  - Peel, Harry H.; Brisco, John S.; Moczygemba, Mark E.; Neatherlin, Robert L.; and Sargent, Brenda A., 4,617,937, Cl. 128-680.000.
- NEC Corporation: *See—*
  - Kondo, Michikazu, 4,618,210, Cl. 350-96.140.
  - Kouyama, Toshitake; and Katsube, Ryoji, 4,618,890, Cl. 358-149.000.
  - Mito, Ikuo, 4,618,959, Cl. 372-46.000.
  - Mori, Toshihiro, 4,618,860, Cl. 340-825.440.
  - Tomimitsu, Yasuharu, 4,618,942, Cl. 364-900.000.
- Neeb, Rudolf; Ironich, Wolfgang; and Volk, Heinrich, to Hoechst Aktiengesellschaft. Process for preparing 6-acetoxy-2-naphthoic-acid and pure 6-hydroxy-2-naphthoic acid. 4,618,701, Cl. 560-139.000.
- Nelson, Maynard A.; and Gloger, Kelly C., to GN Alternatives. Bed frame and releasable coupling employed therein. 4,617,689, Cl. 5-400.000.
- Nelson, Robert T. Dust collector. 4,618,352, Cl. 55-287.000.
- Nelson, Thomas A.: *See—*
  - Seidel, William E.; Markunas, Albert L.; and Nelson, Thomas A., 4,617,958, Cl. 137-492.500.
- Nestlen, Wolfgang; and Schmitt, Gerd. Miniature relay. 4,618,842, Cl. 335-128.000.
- Nevitt, Thomas D.: *See—*
  - Tait, A. Martin; Nevitt, Thomas D.; and Hensley, Albert L., Jr., 4,618,594, Cl. 502-66.000.
- Nichols, Albert D.; and Nichols, Raymond C. Meat product press apparatus. 4,617,859, Cl. 99-351.000.
- Nichols, Raymond C.: *See—*
  - Nichols, Albert D.; and Nichols, Raymond C., 4,617,859, Cl. 99-351.000.
- Nicholson, Robert D., to Bardle Servovalve Co. Electromagnetic positioner for a servovalve or the like. 4,617,966, Cl. 137-625.620.
- Niedermaier, Arnold; and Maier, Peter, to Albert-Frankenthal AG. Cylinder with internal heat exchange coils to handle continuous webs. 4,617,864, Cl. 101-219.000.
- Niekamp, Carl W.: *See—*
  - Dwiggins, Bruce L.; Pickens, Carl E.; and Niekamp, Carl W., 4,618,579, Cl. 435-96.000.
- Niemeyer, Ulf: *See—*
  - Scheffler, Gerhard; Niemeyer, Ulf; Brock, Norbert; and Pohl, Jorg, 4,618,692, Cl. 558-81.000.
- Niermann, Hans: *See—*
  - Kohnen, Klaus; Niermann, Hans; and Ullrich, Norbert, 4,617,988, Cl. 165-95.000.
- Nieuweboer, Bob: *See—*
  - Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Mannesmann, Gerda; Nieuweboer, Bob; and Town, Michael-Harold, 4,618,626, Cl. 514-530.000.
- Nifco Inc.: *See—*
  - Omata, Nobuaki, 4,618,039, Cl. 192-4.00B.
  - Sasaki, Michiaki; and Mizusawa, Akira, 4,618,422, Cl. 210-172.000.
- Nihon Technical Kabushiki Kaisha: *See—*
  - Ohashi, Tamaki; Suzuki, Tsunefusa; Nakada, Kaoru; Hoshi, Nobuya; Fujimura, Hisao; and Ui, Hiromitu, 4,617,831, Cl. 74-10.330.
- Nikkei Kako Kabushiki Kaisha: *See—*
  - Suzuki, Nobuyuki; Tanaka, Kenichi; and Yamanashi, Masanao, 4,617,979, Cl. 164-97.000.
- Nikko Kogyo Kabushiki Kaisha: *See—*
  - Igarashi, Osamu, 4,618,208, Cl. 339-200.00P.
- Nilsen, Stein-Arne: *See—*
  - Fonne, Gunnar J.; Daae-Johansen, Finn; Thoresen, Per; and Nilsen, Stein-Arne, 4,617,777, Cl. 52-802.000.
- Nilsson, Lennart S.: *See—*
  - Cooper, Glenn D.; Butler, John M., III; Morrison, Darrell R.; Senic, Charles L.; Nilsson, Lennart S.; and Rowe, Charles M., 4,618,795, Cl. 310-260.000.
- Nilsson, Ove K. G. Sandwich electrode and a battery comprising the same. 4,618,549, Cl. 429-234.000.
- Nilsson, Rolf, to Volvo BM AB. Annular reinforced wiper for piston rods. 4,618,153, Cl. 277-152.000.
- Nippon Colin: *See—*
  - Peel, Harry H.; Brisco, John S.; Moczygemba, Mark E.; Neatherlin, Robert L.; and Sargent, Brenda A., 4,617,937, Cl. 128-680.000.
- Nippon Light Metal Company Limited: *See—*
  - Suzuki, Nobuyuki; Tanaka, Kenichi; and Yamanashi, Masanao, 4,617,979, Cl. 164-97.000.
- Nippon Notion Kogyo Co., Ltd.: *See—*
  - Kasai, Kazumi, 4,617,704, Cl. 24-236.000.
  - Taga, Yukio, 4,618,053, Cl. 198-389.000.
- Nippon Oil Company: *See—*
  - Uemura, Seiichi; Hirose, Takao; Shohda, Yoshio; Sakamoto, Takayoshi; and Katoh, Kenji, 4,618,463, Cl. 264-29.200.
- Nippon Petrochemicals Company, Limited: *See—*
  - Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Yanagishita, Hitoshi; and Hayashi, Shozo, 4,618,914, Cl. 361-315.000.
- Nippon Piston Ring Co., Ltd.: *See—*
  - Matsuzaki, Michiyoshi, 4,618,317, Cl. 418-63.000.
- Nippon Seiki Co., Ltd.: *See—*
  - Yokoyama, Meiso; Takahashi, Makoto; Nishiwaki, Tsunehiko; and Imai, Makoto, 4,617,821, Cl. 73-23.000.
- Nippon Soken, Inc.: *See—*
  - Kondo, Yasuo; Watanabe, Masakane; and Oshiro, Takao, 4,618,096, Cl. 239-101.000.
  - Sakakibara, Hiroyuki; Akita, Shigeyuki; Kodera, Masao; and Maeno, Tsuyoshi, 4,618,948, Cl. 367-104.000.
- Nippon Steel Corporation: *See—*
  - Nakamura, Motoharu; Hirose, Kikuzi; and Sakamoto, Tooru, 4,618,377, Cl. 148-6.15R.
- Nippon Telecommunication Engineering Company: *See—*
  - Asano, Kiyomitsu; and Kondo, Toshikatsu, 4,618,277, Cl. 400-124.000.
- Nippon Telegraph & Telephone Corporation: *See—*
  - Egami, Shunichiro; and Kawai, Makoto, 4,618,831, Cl. 330-124.00R.
- Nippon Telegraph & Telephone Public Corporation: *See—*
  - Hatakeyama, Iwao; Maeda, Yasushi; Ishii, Osamu; and Yoshii, Shizuka, 4,618,901, Cl. 360-114.000.
  - Suda, Hiroyuki; Shibata, Shuichi; and Nakahara, Motohiro, 4,618,354, Cl. 65-2.000.
- Nippondenso Co., Ltd.: *See—*
  - Kato, Hideaki; and Oohashi, Kaoru, 4,618,156, Cl. 280-6.00R.
  - Kondo, Yasuo; Watanabe, Masakane; and Oshiro, Takao, 4,618,096, Cl. 239-101.000.
  - Sakakibara, Koji; Haraguchi, Hiroshi; and Yukumoto, Hideki, 4,617,895, Cl. 123-425.000.
  - Yamada, Yutaka, 4,617,959, Cl. 137-512.100.
- Nishida, Yoshikazu; and Hashimoto, Isamu, to Matsushita Electric Industrial Co., Ltd. Electrically-operated driver. 4,617,843, Cl. 81-57.110.
- Nishide, Kazuhiro: *See—*
  - Yamano, Shoji; Mikata, Yoshitaka; Teramoto, Osamu; and Nishide, Kazuhiro, 4,618,012, Cl. 177-25.000.
  - Yamano, Shoji; Mikata, Yoshitaka; Teramoto, Osamu; and Nishide, Kazuhiro, 4,618,013, Cl. 177-25.000.
- Nishihara, Toshio: *See—*
  - Yamamoto, Hideomi; Watanabe, Haruzo; Kishie, Hidehiko; and Nishihara, Toshio, 4,617,717, Cl. 29-527.400.
- Nishikawa, Hiromitsu: *See—*
  - Kagiyama, Tsutomu; Kobayashi, Fumio; Yamagishi, Jun; and Nishikawa, Hiromitsu, 4,617,757, Cl. 49-280.000.
- Nishikawa, Masao; Sakai, Shinzo; and Miyake, Junichi, to Honda Giken Kogyo Kabushiki Kaisha. Control device for direct clutch in automatic transmission. 4,618,037, Cl. 192-3.300.
- Nishikawa, Toshihiro: *See—*
  - Okamura, Hisashi; Kobayashi, Hidetoshi; Nishikawa, Toshihiro; and Tamoto, Koji, 4,618,573, Cl. 430-558.000.
- Nishimatsu, Masaharu; Ide, Toshiaki; Arioka, Hiroyuki; and Kubota, Yuichi, to TDK Corporation. Magnetic recording medium. 4,618,535, Cl. 428-325.000.
- Nishimiya, Torazo; Ito, Tomoo; and Iseyama, Takashi, to Hitachi, Ltd. Idle speed control device. 4,617,889, Cl. 123-339.000.
- Nishimura, Takumi; and Saito, Tadao, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Kaisha. Hydraulic anti-skid apparatus for automotive vehicles. 4,618,188, Cl. 303-116.000.
- Nishimura, Yukuo: *See—*
  - Munakata, Hirohide; Tomida, Yoshinori; Haruta, Masahiro; Hirai, Yutaka; Nishimura, Yukuo; and Hamamoto, Takashi, 4,618,561, Cl. 430-156.000.
- Nishioka, Yoshiki; Hakaridani, Mitsuhiro; and Iwahashi, Hiroyuki, to Sharp Kabushiki Kaisha. Speech recognition with preliminary matching. 4,618,983, Cl. 381-43.000.
- Nishiumi, Masaharu: *See—*
  - Nawata, Makoto; Fukuyama, Ryoji; Nakazato, Norio; and Nishiumi, Masaharu, 4,618,398, Cl. 156-643.000.
- Nishiwaki, Tsunehiko: *See—*
  - Yokoyama, Meiso; Takahashi, Makoto; Nishiwaki, Tsunehiko; and Imai, Makoto, 4,617,821, Cl. 73-23.000.
- Nissan Motor Co., Ltd.: *See—*
  - Ideta, Yasufumi, 4,618,036, Cl. 192-3.300.
  - Nakamura, Haruo, 4,617,699, Cl. 16-262.000.
  - Sasaki, Michiaki; and Mizusawa, Akira, 4,618,422, Cl. 210-172.000.
  - Sugano, Kazuhiko, 4,617,841, Cl. 74-869.000.
  - Yamanouchi, Katsuto; Saitoh, Katsuo; Saito, Yoshinori; and Kikyohara, Tadashi, 4,618,417, Cl. 210-149.000.

Nissan Shatai Company, Limited: *See—*

Kobayashi, Shinma; and Kajita, Shunsuke, 4,617,986, Cl. 165-42.000.

Nisshin Kogyo Kabushiki Kaisha: *See—*

Hachiro, Nobuaki, 4,617,858, Cl. 92-98.00D.

Nitto Chemical Industry Co., Ltd.: *See—*

Sasaki, Yutaka; Kiyomiya, Yutaka; and Nakamura, Toshio, 4,618,593, Cl. 502-20.000.

Nitto Electric Industrial Co., Ltd.: *See—*

Iwama, Akio; Tasaka, Kentaro; and Kazuse, Yoshitaka, 4,618,534, Cl. 428-316.600.

Noda, Azusa; and Kamiya, Tadashi, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 4,618,020, Cl. 180-229.000.

Noda, Hideo, to Shimano Industrial Company Limited. Fishing reel with friction and magnetic brakes. 4,618,106, Cl. 242-84.50R.

Noguchi, Matsusaburo; Yamamoto, Mikio; and Kojima, Tetsuji, to Oki Electric Industry Co., Ltd. Photosensitive drum cleaning device in electrophotographic recording system. 4,618,250, Cl. 355-15.000.

Nohara, Kazunori; Tanmatsu, Katsuo; Hosoya, Nobukazu; and Higashino, Takeshi, to Sanyo Electric Co., Ltd. Scrambling system of television signal. 4,618,888, Cl. 358-120.000.

Noll, Robert S.: *See—*

Bond, Michael E.; and Noll, Robert S., 4,617,692, Cl. 7-158.000.

Nomura, Kanji: *See—*

Kimura, Ryoichi; Nomura, Kanji; Ubukata, Kazumi; and Kasahara, Shinju, 4,618,132, Cl. 296-97.00J.

Nomura, Yoshihisa: *See—*

Nakanishi, Nobuyasu; and Nomura, Yoshihisa, 4,618,189, Cl. 303-116.000.

Noordermeer, Jacobus W. M.: *See—*

Lohmeijer, Johannes H. G. M.; Noordermeer, Jacobus W. M.; and Bussink, Jan, 4,618,637, Cl. 524-192.000.

Nord, Philip J. Centri-lever orthodontic appliance. 4,618,324, Cl. 433-19.000.

Norlin, Stig I., to Saab-Scania Aktiebolag. Arrangement in a vehicle with a drive unit mounted in a subframe. 4,618,023, Cl. 180-312.000.

Norquest, Robert C.: *See—*

Ingersoll, Willard A.; Norquest, Robert C.; and Weber, Richard A., 4,617,781, Cl. 53-477.000.

North American Philips Consumer Electronics Corp.: *See—*

Donofrio, Robert L.; and Puhak, Peter G., 4,618,206, Cl. 339-144.00T.

North American Philips Corporation: *See—*

Malko, John A., 4,617,936, Cl. 128-653.000.

Strange, Thomas F.; and Carino, John W., 4,618,910, Cl. 361-275.000.

Northrop Corporation: *See—*

Eisenberg, Philip H., 4,618,222, Cl. 350-582.000.

Kawaguchi, Frank M., 4,618,892, Cl. 358-163.000.

Smith, Eugene A., 4,618,224, Cl. 350-618.000.

Noske, Erich: *See—*

Grassme, Ulrich; and Noske, Erich, 4,618,974, Cl. 378-40.000.

Novavis Intercontinental, Ltd.: *See—*

Colmelet, Giorgio, 4,618,670, Cl. 530-378.000.

Nowlin, Thomas E., to Mobil Oil Corporation. Catalyst composition for polymerizing alpha-olefins. 4,618,662, Cl. 526-129.000.

Nozaki, Hitosi; and Oshima, Koichiro, to Du Pont de Nemours, E. I., and Company. Perfluorocarbon polymer oxidation catalyst and preparation of carbonyl compound. 4,618,724, Cl. 568-311.000.

NRM Corporation: *See—*

Singh, Anand P., 4,618,320, Cl. 425-38.000.

Nygren, Jan; and Hilmersson, Anders, to Tetra Pak International AB. Method and an arrangement for the manufacture of packing containers. 4,617,779, Cl. 53-433.000.

Nytomt, Jan G.: *See—*

Johansson, Sven H.; and Nytomt, Jan G., 4,617,907, Cl. 123-647.000.

Obe-Werk Ohnmacht & Baumgartner GmbH & Co. K.G.: *See—*

Drlik, Gunther, 4,617,698, Cl. 16-228.000.

Oda, Robert: *See—*

Hurd, Bruce; and Oda, Robert, 4,618,147, Cl. 273-54.00B.

Odahara, Tetsuichi: *See—*

Eguchi, Jutaro; Odahara, Tetsuichi; and Sukenari, Junzo, 4,617,787, Cl. 56-14.600.

O'Donnell, Joe: *See—*

Weiler, Robert M., 4,617,765, Cl. 51-205.0WG.

Ofstead, Ronald F., to Minnesota Mining and Manufacturing Company. Copolymers of poly(vinyl trifluoroacetate) or poly(vinyl alcohol). 4,618,649, Cl. 525-60.000.

Ogasawara, Tsunehiko; Arakawa, Yoshichika; Sumiya, Koji; and Sakaguchi, Yoshikazu, to Aisin Seiki Kabushiki Kaisha; and Aisin Warner Kabushiki Kaisha. Control apparatus of an automatic transmission with a lock-up clutch. 4,618,038, Cl. 192-3.290.

Ogawa, Takahiro; Takada, Masahiko; Matsumoto, Takaharu; and Kanbara, Youichi, to Kanegafuchi Kaguku Kogyo Kabushiki Kaisha. Flame-retardant acrylic fibers and process for preparing same. 4,618,469, Cl. 264-182.000.

Ohashi, Masato; Kashioka, Motohiko; Tamura, Shinichi; Katsura, Hiromitsu; Ueda, Hideaki; and Nakamura, Akihiro, to Toyo Ink Mfg. Co., Ltd.; and Minolta Camera Kabushiki Kaisha. Electrophotographic photoreceptor having photosensitive layer made of a phthalocyanine treated with an acrylic resin. 4,618,554, Cl. 430-78.000.

Ohashi, Tamaki; Suzuki, Tsunefusa; Nakada, Kaoru; Hoshi, Nobuya; Fujimura, Hisao; and Ui, Hiromitu, to Nihon Technical Kabushiki Kaisha. Push button type tuner. 4,617,831, Cl. 74-10.330.

Ohe, Junya; Wakita, Saburo; Yamatsuta, Kiichi; Goto, Shoji; Kutsukake, Yukinori; and Sugizaki, Masuo, to Asahi Fiber Glass Company, Limited; Asahi Glass Company, Limited; and Mitsubishi Kinzoku Kabushiki Kaisha. Co-base heat resistant alloy. 4,618,474, Cl. 420-436.000.

Ohi Seisakusho Co., Ltd.: *See—*

Kagiyama, Tsutomu; Kobayashi, Fumio; Yamagishi, Jun; and Nishikawa, Hiromitsu, 4,617,757, Cl. 49-280.000.

Ohishi, Hiroyuki: *See—*

Saito, Toranosuke; Kitani, Masakatu; and Ohishi, Hiroyuki, 4,618,693, Cl. 558-82.000.

Ohnishi, Yasuhiko, to Kamiya, Sadayoshi, a part interest. Pullulan copolymer. 4,618,664, Cl. 527-300.000.

Ohshima, Toshio: *See—*

Yokoyama, Naoki; and Ohshima, Toshio, 4,617,724, Cl. 29-576.00B.

Ohtaka, Keiji: *See—*

Akashi, Akira; Ishizaki, Akira; Hiramatsu, Akira; Suda, Yasuo; and Ohtaka, Keiji, 4,618,236, Cl. 354-406.000.

Oishi, Kengo; and Suzuki, Masaaki, to Fuji Photo Film Co., Ltd. Magnetic tape cassette. 4,618,903, Cl. 360-132.000.

Okajima, Yoshinori, to Fujitsu Limited. Semiconductor memory having word line discharge current controller. 4,618,944, Cl. 365-189.000.

Okamura, Hisashi; Kobayashi, Hidetoshi; Nishikawa, Toshihiro; and Tamoto, Koji, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. 4,618,573, Cl. 430-558.000.

Okamura, Kiyohito; Hasegawa, Yoshio; Kuroo, Yoshiyasu; and Ugaji, Masana, to Sony Corporation; and Foundation: The Research Institute for Special Inorganic Materials, The. Silicon carbide-carbon composite molded product and process for manufacturing the same. 4,618,591, Cl. 501-90.000.

Okawa, Susumu; and Jufuku, Yasunobu, to Toyota Jidosha Kabushiki Kaisha. V-belt assembly for transmitting power. 4,618,337, Cl. 474-201.000.

Okazaki, Sumio: *See—*

Isobe, Masahiro; Okazaki, Sumio; and Tanaka, Hideki, 4,618,336, Cl. 474-133.000.

Oki Electric Industry Co., Ltd.: *See—*

Noguchi, Matsusaburo; Yamamoto, Mikio; and Kojima, Tetsuji, 4,618,250, Cl. 355-15.000.

Okimoto, Haruo: *See—*

Todokoro, Tomoo; Okimoto, Haruo; and Matsuda, Ikuo, 4,617,799, Cl. 60-602.000.

Okino, Susumu: *See—*

Shinoda, Naoharu; Tatani, Atsushi; Omoto, Setsuo; Okino, Susumu; and Shimizu, Taku, 4,618,482, Cl. 423-242.000.

Okita, Masao; and Sakai, Satoshi, to Alps Electric Co., Ltd. Disc clamp device. 4,618,951, Cl. 369-270.000.

Okubo, Kunihiko, to Shimadzu Corporation. Slit changing device for monochromator. 4,618,260, Cl. 356-331.000.

Okuda, Hiromichi; Masuno, Hiroshi; Aburada, Masaki; Takeda, Shigefumi; Itoh, Eiko; Matsushita, Moe; and Hosoya, Eikichi, to Tsumura Juntendo Inc. Preparation for reducing cancer symptoms without treating cancer. 4,618,495, Cl. 424-195.100.

Okumura, Kazuo: *See—*

Teraji, Tsutomu; Shiokawa, Youichi; Okumura, Kazuo; and Sato, Yoshinari, 4,618,610, Cl. 514-242.000.

Okuyama, Takahiro; Toki, Susumu; and Ishihara, Masahito, to Honda Giken Kogyo Kabushiki Kaisha; and Tokai TRW & Co., Ltd. Pivot members for a cam follower of valve mechanism for internal combustion engine. 4,617,883, Cl. 123-90.440.

Oldham, Steve A.; and Picotte, Ronald T., to Champion International Corporation. Tube positioning and transfer system. 4,618,341, Cl. 493-14.000.

Olin Corporation: *See—*

Fair, David L.; Justice, David D.; and Kelly, Pilar P., 4,618,403, Cl. 204-98.000.

Oliver Industries, Inc.: *See—*

Bell, James C., 4,618,082, Cl. 224-321.000.

Ollendick, Gary B.: *See—*

Jacksier, Barry H.; and Ollendick, Gary B., 4,618,787, Cl. 307-591.000.

Olsen, Edward H.: *See—*

Harding, Robert C.; and Olsen, Edward H., 4,618,855, Cl. 340-605.000.

Olson, Robert E.: *See—*

LeVahn, Bruce A.; and Olson, Robert E., 4,617,916, Cl. 128-20.000.

Olson, Thor, to Molex Incorporated. Process of manufacturing a flexible substrate assembly. 4,617,733, Cl. 29-874.000.

Olson, Wayne L., to Rose Manufacturing Company. Apparatus and method for producing a counteracting force. 4,618,026, Cl. 182-4.000.

Olsson, Frank C.: *See—*

Cohn, Robert J.; Olsson, Frank C.; Holzman, James W.; and Santarelli, Paul, 4,618,067, Cl. 220-1.500.

Oltmann, Harold D.: *See—*

Sacks, William; Sibilia, John P.; Kotliar, Abraham M.; Oltmann, Harold D.; and Chen, Shu P., 4,618,528, Cl. 428-216.000.

Olympia Werke AG: *See—*

Brinkmann, Gerhard; and Wietrzynski, Bolko, 4,618,275, Cl. 400-76.000.

Olympus Optical Co., Ltd.: *See—*

Ikari, Kazuo; and Fujii, Toru, 4,618,234, Cl. 354-225.000.

Maitani, Yoshihisa; Tsunefuji, Katsuhiko; and Yamasaki, Masafumi, 4,618,238, Cl. 354-431.000.

Nagasaki, Tatsuo, 4,618,884, Cl. 358-98.000.

Nagasaki, Tatsuo; and Fujimori, Hiroyoshi, 4,618,885, Cl. 358-98.000.

Olympus Optical Co., Ltd: *See—*

Kitagawa, Masahiro, 4,618,237, Cl. 354-412.000.

Omata, Nobuaki, to Nifco Inc. One-way clutch. 4,618,039, Cl. 192-4.00B.

Omega Castings, Inc.: *See—*

Cutshall, Robert S., 4,618,056, Cl. 198-853.000.

Omori, Kenji: *See—*

Hashizume, Kazuko; Kase, Hiroshi; Kitamura, Shigeto; Iida, Takao; Shirahata, Kunikatsu; Omori, Kenji; and Shuto, Katsuichi, 4,618,613, Cl. 514-312.000.

Omoto, Setsuo: *See—*

Shinoda, Naoharu; Tatani, Atsushi; Omoto, Setsuo; Okino, Susumu; and Shimizu, Taku, 4,618,482, Cl. 423-242.000.

Omura, Takashi: *See—*

Kayane, Yutaka; Miyamoto, Tetsuya; Omura, Takashi; Sawamoto, Hirokazu; Harada, Naoki; and Takeshita, Akira, 4,618,671, Cl. 534-635.000.

Ono, Hitoshi: *See—*

Suzuki, Tetsumi; Murayama, Tetsuo; Ono, Hitoshi; Aramaki, Shinji; and Yokoyama, Michiyo, 4,618,555, Cl. 430-78.000.

Ono, Mitsunori; Itoh, Isamu; and Mihayashi, Keiji, to Fuji Photo Film Co., Ltd. Photographic light-sensitive material. 4,618,563, Cl. 430-219.000.

Ono, Takatoshi: *See—*

Sekiya, Shinji; and Ono, Takatoshi, 4,617,766, Cl. 51-209.00R.

Ono, Yoshiaki: *See—*

Kawaguchi, Katsuhiko; and Ono, Yoshiaki, 4,618,134, Cl. 271-4.000.

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Kadowaki, Takashi; and Onodera, Kaoru, 4,618,570, Cl. 430-505.000.

Oohashi, Kaoru: *See—*

Kato, Hideaki; and Oohashi, Kaoru, 4,618,156, Cl. 280-6.00R.

Orimoto, Takashi: *See—*

Yoshida, Junichi; and Orimoto, Takashi, 4,618,146, Cl. 273-1.00E.

Oronzio de Nora Impianti Elettrochimici S.p.A.: *See—*

Pellegri, Alberto, 4,618,404, Cl. 204-128.000.

Orszagos Husipari Kutatointezet: *See—*

Batorfalvi, Geza; Lendvai, Tibor; Radai, Antal; Pongrac, Gaborne ; Szabo, Miklos; and Szilardi, Jeno , 4,617,700, Cl. 17-45.000.

Osaka Kongo Seito Co., Ltd.: *See—*

Hashimoto, Masahiro; and Tani, Hideo, 4,618,349, Cl. 51-298.000.

Osborn, Claiborn L.; Koleske, Joseph V.; and Drake, Kenneth, to Union Carbide Corporation. Coating compositions prepared from lactone-acrylate adduct, polyol and isocyanate. 4,618,635, Cl. 524-113.000.

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Oshiro, Nobuaki; and Futakuchi, Yorio, to Yamaha Hatsudoki Kabushiki Kaisha. Balancer device for internal combustion engines. 4,617,885, Cl. 123-192.00B.

Oshiro, Takao: *See—*

Kondo, Yasuo; Watanabe, Masakane; and Oshiro, Takao, 4,618,096, Cl. 239-101.000.

Oskarsson, Rolf G.: *See—*

von Holst, Johan P.; and Oskarsson, Rolf G., 4,618,540, Cl. 428-552.000.

Oster, Clark L.: *See—*

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Ostlund, Artur: *See—*

Larsson, Hans G.; Westman, Erik; and Ostlund, Artur, 4,618,964, Cl. 373-155.000.

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Otto, Jack F.; and Colacello, Michael A., to RCA Corporation. Method and apparatus for sealing a mount in a cathode ray tube. 4,618,355, Cl. 65-36.000.

Overfield, Robert E., to Exxon Research and Engineering Company. Method for extracting nickel and vanadium compounds from oils. 4,618,413, Cl. 208-251.00R.

Overvaag, Duane B.: *See—*

Meis, Charles H.; and Overvaag, Duane B., 4,618,102, Cl. 239-737.000.

Owen, Robert B.: *See—*

Keller, Vernon W.; Owen, Robert B.; Elkins, Bobby R.; and White, William T., 4,618,215, Cl. 350-319.000.

Oxide & Chemical Corporation: *See—*

McKinney, Benjamin F., 4,618,478, Cl. 422-198.000.

OY Tampella AB: *See—*

Koistinen, Pauli A. T.; and Hamalainen, Risto J., 4,617,715, Cl. 29-456.000.

Ozaki, Yukio; Fujisawa, Osamu; Sakai, Ryukichi; and Hasegawa, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Gas-insulated interrupter. 4,618,752, Cl. 200-148.00R.

Ozawa, Hirotaka: *See—*

Kori, Takuaki; Ozawa, Hirotaka; and Sugawara, Shiro, 4,617,714, Cl. 29-434.000.

Ozawa, Yoichi; Kishimoto, Shinichi; Shinohara, Emiko; Takemoto, Tadashi; and Eguchi, Chikahiko, to Ajinomoto Co., Inc. Method of preparing methyl ester and its hydrochloride. 4,618,695, Cl. 560-41.000.

P.L.G. Research Limited: *See—*

Mercer, Frank B., 4,618,385, Cl. 156-229.000.

Padberg, Werner: *See—*

Hartan, Hans-Georg; Padberg, Werner; and Muller, Dietrich, 4,618,414, Cl. 209-5.000.

Padovani, Pietro, to I.S.A.P. Spa (Industrie Specializzate Articoli Plastici). Label for egg trays and the like. 4,617,748, Cl. 40-312.000.

Padrun, John. Extensible reinforcing bar assembly and clip. 4,617,775, Cl. 52-684.000.

Paduchowski, James S.: *See—*

Hindman, David B.; Paduchowski, James S.; and Lima, Joseph D., 4,618,431, Cl. 210-741.000.

Pagdin, Brian C., to Solex (U.K.) Limited. Air/fuel induction system for a multi-cylinder internal combustion engine. 4,617,904, Cl. 123-525.000.

Pages, Jean F.: *See—*

Michel, Dominique; Johnson, Delbert B.; Pages, Jean F.; Foglia, Vincent F. P.; Martin, Jean G. M.; Vache , Michel P.; Sedillot, Francois G.; and Crull, Carroll M., 4,618,286, Cl. 405-208.000.

Pai, Damodar M.: *See—*

Stolka, Milan; Pai, Damodar M.; Smith, Thomas W.; Duff, James M.; and Loutfy, Rafik O., 4,618,551, Cl. 430-58.000.

Paice, Derek A.; and Mattern, Kenneth E., to Westinghouse Electric Corp. Hybrid solid state/mechanical switch with failure protection. 4,618,906, Cl. 361-5.000.

Pal, Gabor; Endroczi, Gabor; Hollos, Gyorgy; Nagy, Gabor; Szonyi, Gabor; Bodi Laszlo ; and Balazs, Zoltan. Method and apparatus for checking heterogeneous transformation process of diffusing kinetics in turbulent liquid flow. 4,617,830, Cl. 73-590.000.

Palfery, Kenneth J.; Puckering, Donald R.; Kocev, Angel; and Maharaj, Kenrick B., to McDonnell Douglas Corporation. Automated machine tool having a rotary indexing fixture. 4,617,720, Cl. 29-568.000.

Palguta, Stephen E.: *See—*

Lay, Khin M.; Palguta, Stephen E.; Fernandez, Ramon B.; and Cabalquinto, Santiago C., 4,617,716, Cl. 29-526.00R.

Palmer, Charles R., to Rolls-Royce plc. Thrust deflection. 4,618,094, Cl. 239-265.370.

Palmquist, Ronald W., to Corning Glass Works. Furnace bottom heating. 4,618,962, Cl. 373-30.000.

Palosi, Eva: *See—*

Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,618,611, Cl. 514-255.000.

Pantasote Inc.: *See—*

Pasqualini, Bruno; and Merla, Adriano, 4,617,759, Cl. 49-487.000.

Papst, Georg; and Wrobel, Gunter, to Papst-Motoren GmbH & Co. Small fan. 4,618,315, Cl. 417-354.000.

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Papst, Georg; and Wrobel, Gunter, 4,618,315, Cl. 417-354.000.

Paquet, Andre J., to Engetra S.A. Process and device for recovery of thermal energy in a steam generating system. 4,617,878, Cl. 122-422.000.

Parfitt, Steven P., to Texas Instruments Incorporated. Analog to digital converter circuit. 4,618,848, Cl. 340-347.0CC.

Paris, Jean-Marc: *See—*

Corbet, Jean-Pierre; Cotrel, Claude; Farge, Daniel; and Paris, Jean-Marc, 4,618,599, Cl. 514-11.000.

Parker, John A.; Heimbuch, Alvin H.; Hsu, Ming-ta S.; and Chen, Timothy S., to United States of America, National Aeronautics and Space Administration. Process for curing bismaleimide resins. 4,618,652, Cl. 525-282.000.

Parkinson, Brian. Oyster opener. 4,617,734, Cl. 30-120.100.

Parks, Jimmy C., to Smith International, Inc. Method and apparatus for forming a thread profile impression. 4,618,465, Cl. 264-40.100.

Parliment, Thomas H., to General Foods Corporation. Flavoring with α, β-keto-imines. 4,618,501, Cl. 426-534.000.

Parnell, Edgar W.: *See—*

Cramp, Michael C.; Gilmour, James; and Parnell, Edgar W., 4,618,366, Cl. 71-94.000.

Parnham, Michael: *See—*

Dereu, Norbert; Welter, Andre ; Wendel, Albrecht; Leyck, Sigurd; Parnham, Michael; Graf, Erich; Sies, Helmut; Betzing, Hans; and Fischer, Hartmut, 4,618,669, Cl. 530-331.000.

Pasqualini, Bruno; and Merla, Adriano, to Pantasote Inc. Profile of plastic material for refrigerator cabinets. 4,617,759, Cl. 49-487.000.

Patil, Arvind S.; and Pepoy, Louis J., to BASF Corporation. Transparent iron oxide pigments. 4,618,375, Cl. 106-304.000.

Paul, Klaus-Dieter: *See—*

Wiessner, Edgar; Harbauer, Werner; and Paul, Klaus-Dieter, 4,618,807, Cl. 318-280.000.

Pauley, Gregory L.; and Zahn, Wayne V., to Pauley, Gregory L. Spinner bait component system. 4,617,753, Cl. 43-42.190.

Pawelek, John M., to Yale University. Composition and method for treatment of melanomas. 4,618,484, Cl. 424-1.100.

Payraudeau, Henri-Andre , to MORS. Device for locking and releasing objects intended for public use, such as luggage carts. 4,618,050, Cl. 194-212.000.

Peel, Harry H.; Brisco, John S.; Moczygemba, Mark E.; Neatherlin, Robert L.; and Sargent, Brenda A., to Nippon Colin. Blood pressure monitoring system. 4,617,937, Cl. 128-680.000.

Peiretti, Domenico: *See—*

Gilli, Luigi; and Peiretti, Domenico, 4,618,758, Cl. 219-121.0LG.

Pekar, Howard G.: *See—*

Kinkelaar, Edmund W.; and Pekar, Howard G., 4,618,513, Cl. 427-443.100.

- Pellegri, Alberto, to Oronzio de Nora Impianti Elettrochimici S.p.A. Electrode for electrochemical processes, method for preparing the same and use thereof in electrolysis cells. 4,618,404, Cl. 204-128.000.
- Pennwalt Corporation: *See—*
  - Toukan, Sameeh S.; and King, James P., 4,618,438, Cl. 252-47.500.
- Pepoy, Louis J.: *See—*
  - Patil, Arvind S.; and Pepoy, Louis J., 4,618,375, Cl. 106-304.000.
- Perkin-Elmer Corporation, The: *See—*
  - Schwartz, Arnold, 4,618,935, Cl. 364-510.000.
- Perobelli, Aldo: *See—*
  - Pessina, Giorgio; and Perobelli, Aldo, 4,618,136, Cl. 271-150.000.
- Perron, Robert: *See—*
  - Gauthier-Lafaye, Jean; and Perron, Robert, 4,618,460, Cl. 260-549.000.
- Perros Industriale S.p.A.: *See—*
  - Claisen, Silvano, 4,618,321, Cl. 425-88.000.
- Persyk, Dennis E.; and Stoub, Everett W., to Siemens Gammasonics, Inc. Radiation detector circuit with real time photon counting. 4,618,775, Cl. 250-369.000.
- Pessina, Giorgio; and Perobelli, Aldo. Device for loading signatures for application to signature locating assemblies in bookbinding apparatus. 4,618,136, Cl. 271-150.000.
- Peter, Diethard: *See—*
  - Brettschneider, Horst; Hartl, Walter; and Peter, Diethard, 4,618,977, Cl. 378-139.000.
- Peterman, Robert J., to Spacesaver Corporation. Anti-tip device. 4,618,191, Cl. 312-201.000.
- Petroleum Fermentations N.V.: *See—*
  - Hayes, Michael E.; Hrebenar, Kevin R.; Murphy, Patricia L.; Futch, Laurence E., Jr.; and Deal, James F., III, 4,618,348, Cl. 44-51.000.
- Petts, Nigel J.; and Marsh, John, to Dobson Park Industries Plc. Valve assemblies. 4,617,954, Cl. 137-110.000.
- Pfaff, Wayne K. Low insertion force socket. 4,618,199, Cl. 339-74.00R.
- Pfeiffer, J. David. Speech synthesizer. 4,618,985, Cl. 381-51.000.
- Pfizer Inc.: *See—*
  - Alker, David; Campbell, Simon F.; and Cross, Peter E., 4,618,609, Cl. 514-236.000.
  - Richardson, Kenneth; Bass, Robert J.; and Cooper, Kelvin, 4,618,616, Cl. 514-340.000.
- Pflaum, Hermann; and Vojacek, Herbert, to Feldmuhle Aktiengesellschaft. Friction partners for lubricated friction couplings. 4,618,049, Cl. 192-107.00M.
- Pheasant, Stephen T.: *See—*
  - Barnes, Andrew; Elliott, Gary K.; MacFarlane, William; and Pheasant, Stephen T., 4,618,079, Cl. 222-591.000.
- Phillips Petrolem Company: *See—*
  - Dietz, Richard E., 4,618,595, Cl. 502-108.000.
- Phillips Petroleum Company: *See—*
  - Allison, George M., III, 4,618,433, Cl. 252-8.514.
  - Drake, Charles A., 4,618,722, Cl. 568-59.000.
  - Kaus, Malcolm J.; and Miro, Nemesio D., 4,618,661, Cl. 526-114.000.
  - Skraba, Frank W., 4,618,051, Cl. 196-139.000.
- Phillips, Roger: *See—*
  - Maxwell, Duane S.; Phillips, Roger; and Schwan, Eduard A., 4,618,965, Cl. 375-10.000.
- Piacentino, PierLuigi: *See—*
  - Salvagno, Elvio; and Piacentino, PierLuigi, 4,618,820, Cl. 324-158.00F.
- Pickens, Carl E.: *See—*
  - Dwiggins, Bruce L.; Pickens, Carl E.; and Niekamp, Carl W., 4,618,579, Cl. 435-96.000.
- Picotte, Ronald T.: *See—*
  - Oldham, Steve A.; and Picotte, Ronald T., 4,618,341, Cl. 493-14.000.
- Piggott, Richard G. Spray nozzle. 4,618,101, Cl. 239-589.000.
- Pioneer Electronic Corporation: *See—*
  - Adachi, Hiroo, 4,618,834, Cl. 330-284.000.
  - Kawamura, Katsuaki, 4,618,998, Cl. 455-77.000.
- Piper FM Limited: *See—*
  - Gayler, Robert J., 4,617,898, Cl. 123-460.000.
- Pires, H. George. Method and apparatus for synchronizing a plurality of television signals. 4,618,880, Cl. 358-10.000.
- Piretti, Giancarlo, to Castilia S.p.A. Folding ladder with three stiles. 4,618,027, Cl. 182-35.000.
- Pitney Bowes Inc.: *See—*
  - Daniels, Edward P.; and Rinne, Risto A., Jr., 4,618,953, Cl. 371-12.000.
- Pittman, Raymond H.; and Schultz, William J., to Masonite Corporation. Building panel. 4,617,774, Cl. 52-521.000.
- Pittway Corporation: *See—*
  - Schoenfelder, George A.; Siegel, Stephen L.; and Slater, James S., 4,618,777, Cl. 250-381.000.
- Plaisance, Thomas H.: *See—*
  - Katchko, John; Plaisance, Thomas H.; and Kriz, Karel, 4,618,657, Cl. 525-443.000.
- PlasTek Corporation: *See—*
  - Lagasse, Charles A., 4,618,322, Cl. 425-129.00R.
- Pneumatic Punchers Limited: *See—*
  - Kayes, Allan G., 4,618,007, Cl. 175-19.000.
- Pohl, Jorg: *See—*
  - Scheffler, Gerhard; Niemeyer, Ulf; Brock, Norbert; and Pohl, Jorg, 4,618,692, Cl. 558-81.000.
- Pointner, Martin; and Sommer, Rudiger, to Dr. Ing. Rudolf Hell GmbH. Electrode comb and method and device for manufacturing. 4,617,727, Cl. 29-825.000.
- Polaroid Corporation: *See—*
  - Hardy, Herbert L., 4,618,803, Cl. 315-241.00R.
  - Hicks, John W., Jr., 4,618,258, Cl. 356-73.100.
- Polaschegg, Hans-Dietrich, to Fresenius AG. Apparatus for peritoneal dialysis. 4,618,343, Cl. 604-29.000.
- Polestak, Walter J.: *See—*
  - Thompson, Thomas D., III; Polestak, Walter J.; and Bradshaw, Robert W., 4,618,374, Cl. 106-288.00B.
- Poliniak, Eugene S.: *See—*
  - McClelland, Sandra K.; and Poliniak, Eugene S., 4,618,514, Cl. 428-1.000.
- Pollock, Jerry J.; and McNamara, Thomas F., to Research Foundation of the State University of New York. Dental compositions and method of use therefor. 4,618,489, Cl. 424-52.000.
- Pomagalski S.A.: *See—*
  - Tarassoff, Serge, 4,617,829, Cl. 73-865.800.
- Pomerenke, David E., to Creative Landscape Service, Inc. Nursery pot cutting tool. 4,617,713, Cl. 29-426.400.
- Pongrac, Gaborne : *See—*
  - Batorfalvi, Geza; Lendvai, Tibor; Radai, Antal; Pongrac, Gaborne ; Szabo, Miklos; and Szilardi, Jeno , 4,617,700, Cl. 17-45.000.
- Pope, Kent M.; and Hardesty, Bryan L., to Advanced Input Devices, Inc. Rocker key elastomer dome keyboard. 4,618,744, Cl. 200-5.00A.
- Porcelli, Michele L., to Hershey Foods Corporation. Collator section of lasagna packer. 4,618,055, Cl. 198-422.000.
- Porte, Hugues, to Rhone-Poulenc Specialites Chimiques. Disilane/organosilicon resin having enhanced thermomechanical properties. 4,618,666, Cl. 528-33.000.
- Porteous, Don D.; and Wittrock, Paul M., to Van R Dental Products, Inc. Gingival retraction cord with wet, drip-free astringent. 4,617,950, Cl. 132-91.000.
- Position Orientation Systems, Ltd.: *See—*
  - Hansen, Per K., 4,618,822, Cl. 324-207.000.
- Poulsen, Martin E.: *See—*
  - Georgiou, George E.; and Poulsen, Martin E., 4,618,972, Cl. 378-34.000.
- Poupard, Dominique: *See—*
  - Le Salver, Robert; and Poupard, Dominique, 4,618,127, Cl. 267-8.00R.
- Powell, Clois E., to Ashland Oil, Inc. Method for preparing laminated articles. 4,618,390, Cl. 156-307.300.
- Powell, Roger A. Adjustable inclination reading/writing board. 4,618,119, Cl. 248-456.000.
- PPG Industries, Inc.: *See—*
  - Kania, Charles M.; and Dowbenko, Rostyslaw, 4,618,659, Cl. 525-455.000.
- Pradere, Francois; and Frey, Robert, to Centre National de la Rechereche Scientifique. Production of short light pulses by time compression. 4,618,783, Cl. 307-426.000.
- Prasad, Yellapregada V. R. K.: *See—*
  - Gegel, Harold L.; Malas, James C.; Prasad, Yellapregada V. R. K.; Doraivelu, Sokka M.; Barker, Douglas R.; Morgan, James T., Jr.; and Lark, Kristine A., 4,617,817, Cl. 72-364.000.
- Pratt Burnerd International Limited: *See—*
  - Jackson, Joseph F., 4,617,721, Cl. 29-568.000.
- Premoli, Pietro; Manzoni, Angelo; and Calzi, Claudio. Method for the quantitative determination of calcium in biological fluids through direct potentiometry. 4,618,587, Cl. 436-74.000.
- Pricone, Robert M.; Roberts, William N.; and Zanotti, Richard, to Amerace Corporation. Retroreflective sheeting and methods for making same. 4,618,518, Cl. 428-40.000.
- Prillieux, Marcel; Laurent, Robert M.; and Tirtiaux, Robert, to Exxon Research & Engineering Co. Sulphonic acids and sulphonates. 4,618,458, Cl. 260-505.00P.
- Prima Industrie S.p.A.: *See—*
  - Gilli, Luigi; and Peiretti, Domenico, 4,618,758, Cl. 219-121.0LG.
- Pritchett, James D.; and Cutbush, James D., to Booth, Inc. Involute coil cold plate. 4,617,807, Cl. 62-399.000.
- Procter & Gamble Company, The: *See—*
  - Wells, Robert L., 4,618,344, Cl. 8-161.000.
- Production Systems, Inc.: *See—*
  - Howser, M. Gene, 4,618,057, Cl. 198-861.200.
- Production Techniques Limited: *See—*
  - Yates, Martyn R. G., 4,618,425, Cl. 210-416.100.
- Provost, R. J.: *See—*
  - Dubois, Harvey W.; and Heselton, Fred, 4,618,857, Cl. 340-654.000.
- Puckering, Donald R.: *See—*
  - Palfery, Kenneth J.; Puckering, Donald R.; Kocev, Angel; and Maharaj, Kenrick B., 4,617,720, Cl. 29-568.000.
- Puhak, Peter G.: *See—*
  - Donofrio, Robert L.; and Puhak, Peter G., 4,618,206, Cl. 339-144.00T.
- Purex Corporation: *See—*
  - Hudson, John O.; Schleien, Mickey M.; and Barrett, John, 4,618,444, Cl. 252-92.000.
- Putzig, Donald E., to Du Pont de Nemours, E. I., and Company. Organic titanium compositions for use in oil and gas wells. 4,618,435, Cl. 252-8.551.
- Quantronix Corporation: *See—*
  - Liu, Kuo-Ching, 4,618,957, Cl. 372-22.000.
- Queen's University at Kingston: *See—*
  - Saunders, Gerald A. B., 4,617,930, Cl. 128-317.000.

- Queneau, Paul B.: *See—*
  - Hazen, Wayne W.; Thompson, David L.; Reynolds, James E.; Lombardo, Nicholas J.; Queneau, Paul B.; and Hager, John P., 4,618,480, Cl. 423-127.000.
- Quick-Set Incorporated: *See—*
  - Mooney, Paul C., 4,618,886, Cl. 358-108.000.
- Quong, Paul. Shipping-and-storage container. 4,618,069, Cl. 220-23.400.
- R.R. McGlogan Equipment Ltd.: *See—*
  - Cybulski, Laurence P.; and McGlogan, Robert R., 4,617,824, Cl. 73-49.700.
- Rabushka, Charles; and Reprogle, Layton J. Tension actuated uncoupler. 4,617,975, Cl. 141-311.00R.
- Radai, Antal: *See—*
  - Batorfalvi, Geza; Lendvai, Tibor; Radai, Antal; Pongrac, Gaborne ; Szabo, Miklos; and Szilardi, Jeno , 4,617,700, Cl. 17-45.000.
- Raduechel, Bernd: *See—*
  - Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Mannesmann, Gerda; Nieuweboer, Bob; and Town, Michael-Harold, 4,618,626, Cl. 514-530.000.
- Rafal, Marc D.; Burton, Larry W.; and Joines, William T., to Avnet, Inc. Dual pilot phase lock loop for radio frequency transmission. 4,618,996, Cl. 455-46.000.
- Rain Bird Consumer Products Mfg. Corp.: *See—*
  - White, Glenn S.; Mussler, Karl J.; and Van Exel, Gary A., 4,618,100, Cl. 239-440.000.
- Rajeevakumar, Thekkemadathil V.: *See—*
  - Chappell, Barbara A.; Rajeevakumar, Thekkemadathil V.; Schuster, Stanley E.; and Terman, Lewis M., 4,618,784, Cl. 307-449.000.
- Rakoczy nee Pinter, Eva: *See—*
  - Budai, Zoltan; Benko, Pal; Ratz nee Simonek, Ildiko ; Rakoczy nee Pinter, Eva; Magyar, Karoly; Kelemen, Jozsef; and Mandi, Attila, 4,618,623, Cl. 514-478.000.
- Ralph McKay Limited: *See—*
  - Young, Hartley F.; and Collins, John, 4,618,093, Cl. 238-283.000.
- Rampignon, Marc, to Compagnie Industrielle de Mecanismes en agrege C.I.M. Electric motor for driving elements of motor vehicles in two opposite directions with a higher resisting force in one direction than in the other, such as window raisers or pivotal seat backs. 4,618,794, Cl. 310-234.000.
- Ramras, Daniel M.: *See—*
  - Santillie, Paul W.; and Ramras, Daniel M., 4,618,479, Cl. 422-202.000.
- Ramu International: *See—*
  - Smith-Johannsen, Robert, 4,618,369, Cl. 106-95.000.
- Ranco Incorporated: *See—*
  - Rossi, Guglielmo, 4,617,803, Cl. 62-209.000.
- Rand, Roy E.; Mitchell, John W. J.; and Couch, John L., to Imatron, Inc. Beam positioning arrangement for use in a scanning electron beam computed tomography scanner and method. 4,618,970, Cl. 378-10.000.
- Rank Electronic Tubes, Inc.: *See—*
  - Gorman, Kenneth G., Jr., 4,618,800, Cl. 313-417.000.
- Rao, Bookinkere C. S.: *See—*
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- Sandling, Michael J., to Xomox Corporation. Rotary plug valve. 4,617,957, Cl. 137-315.000.
- Sandoz Ltd.: *See—*
  - Dore, Jacky, 4,618,673, Cl. 534-698.000.
  - Wu, Frank, 4,618,359, Cl. 71-88.000.
- Sanko Kaihatsu Kagaku Kenkyusho: *See—*
  - Saito, Toranosuke; Kitani, Masakatu; and Ohishi, Hiroyuki, 4,618,693, Cl. 558-82.000.
- Sanshin Kogyo Kabushiki Kaisha: *See—*
  - Mori, Atsushi, 4,617,879, Cl. 123-73.0AD.
- Santarelli, Paul: *See—*
  - Cohn, Robert J.; Olsson, Frank C.; Holzman, James W.; and Santarelli, Paul, 4,618,067, Cl. 220-1.500.
- Santillie, Paul W.; and Ramras, Daniel M., to Lamb-Weston, Inc. Apparatus for producing chlorine dioxide. 4,618,479, Cl. 422-202.000.
- Santoro, Vincent J.: *See—*
  - Kozyra, William L.; MacIsaac, Andrew B.; and Santoro, Vincent J., 4,618,159, Cl. 280-93.000.
- Santrade Limited: *See—*
  - von Holst, Johan P.; and Oskarsson, Rolf G., 4,618,540, Cl. 428-552.000.
- Sanyo Electric Co., Ltd.: *See—*
  - Doutsubo, Nobuhide, 4,618,899, Cl. 360-73.000.
  - Nohara, Kazunori; Tanmatsu, Katsuo; Hosoya, Nobukazu; and Higashino, Takeshi, 4,618,888, Cl. 358-120.000.
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  - Peel, Harry H.; Brisco, John S.; Moczygemba, Mark E.; Neatherlin, Robert L.; and Sargent, Brenda A., 4,617,937, Cl. 128-680.000.
- Sartor, Rino; and Bottega, Giampietro, to Celes Optical S.r.l. Spring mount hinge for eyeglasses bows. 4,618,226, Cl. 351-113.000.
- Sartori, Guido: *See—*
  - Heinzelmann, Fred J.; Rothblatt, Noah S.; Glass, James P., Jr.; Say, Geoffrey R.; Chludzinski, George R.; Sartori, Guido; and Ho, W. S. Winston, 4,618,481, Cl. 423-228.000.
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- Sasaki, Masami: *See—*
  - Shimoda, Takashi; and Sasaki, Masami, 4,618,396, Cl. 156-605.000.
- Sasaki, Michiaki; and Mizusawa, Akira, to Nissan Motor Company, Limited; and NIFCO Incorporated. Filter device for a fuel tank. 4,618,422, Cl. 210-172.000.
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  - Takano, Katsuhiko; Iijima, Shigeharu; Yoshihara, Satoshi; Matsushima, Masaaki; Kishi, Hiroyoshi; and Sasamori, Eizo, 4,618,537, Cl. 428-336.000.
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- Sashiki, Takashi; and Nakagawa, Yukio, to Ishida Scales Mfg. Co., Ltd. Combinatorial weighing method with pairs of scales and zero adjustment. 4,618,011, Cl. 177-1.000.
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  - Manservisi, Renato, 4,617,783, Cl. 53-529.000.
- Sassen, Heinrich, to Zahnradfabrik Altona-Elbe Hans Meyer GmbH & Co. KG. Shifting coupling. 4,618,046, Cl. 192-67.00P.
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  - Kajiwara, Tadashi; Sato, Akira; Tsurumaru, Shinobu; and Kumamoto, Kenichiro, 4,618,838, Cl. 333-33.000.
- Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Yanagishita, Hitoshi; and Hayashi, Shozo, to Nippon Petrochemicals Company, Limited. Electrical insulating oil and oil-filled electrical appliances. 4,618,914, Cl. 361-315.000.
- Sato, Hideo: *See—*
  - Kato, Kazuo; and Sato, Hideo, 4,618,814, Cl. 323-280.000.
  - Yuyama, Yasuaki; Nakano, Junji; Kondo, Shyunichi; Sato, Hideo; and Sawada, Kenichi, 4,618,553, Cl. 430-69.000.
- Sato, Kunio, to Casio Computer Co., Ltd. Hybrid electronic musical instrument. 4,617,851, Cl. 84-1.190.
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- Sato, Takashi; and Kubo, Emiko, to Fujizoki Pharmaceutical Co., Ltd. Reagent and merchandising kit for use in the diagnosis of syphilis and preparation thereof. 4,618,588, Cl. 436-511.000.
- Sato, Yoshinari: *See—*
  - Teraji, Tsutomu; Shiokawa, Youichi; Okumura, Kazuo; and Sato, Yoshinari, 4,618,610, Cl. 514-242.000.

Satou, Morio: *See—*
Mashino, Keiichi, Satou, Morio; Masumoto, Shouji; Kobayashi, Kunio; and Miki, Osamu, 4,618,811, Cl. 322-28.000.
Sauer, Hans-Peter, to Bellheimer Metallwerk GmbH. Control device for at least two circulating shelving systems. 4,618,932, Cl 364-478.000.
Saunders, Gerald A. B., to Queen's University at Kingston. Blade stiffener. 4,617,930, Cl. 128-317.000
Sawada, Kenichi: *See—*
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Schaeffer, Richard J. Device for tightening chains and the like. 4,617,703, Cl. 24-68.0CT.
Schaffeler, Alois, to Marquardt GmbH. Electrical snap switch with double arm resetting lever. 4,618,747, Cl. 200-67.0PK.
Schaldach, Kurt. Bar puller. 4,617,847, Cl. 82-2.500.
Schapiro, Norman; and Moreau, Eugene J., to Resource Engineering Incorporated. Deashing process for coal. 4,618,346, Cl. 44-1.00A.
Scharf, Robert M.: *See—*
Beck, William R.; Jahn, William; Koltenback, Steven R.; Scharf, Robert M.; and Schwab, Ronald, 4,617,732, Cl. 29-866.000.
Scheffler, Gerhard; Niemeyer, Ulf; Brock, Norbert; and Pohl, Jorg, to Asta-Werke Aktiengesellschaft. 4-carbamoyloxy-oxazaphosphorins. 4,618,692, Cl. 558-81.000.
Schenck, Stephen R., to Texas Instruments Incorporated. Differential amplifier with improved power supply rejection ratio. 4,618,832, Cl. 330-254.000.
Schering Aktiengesellschaft: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Mannesmann, Gerda; Nieuweboer, Bob; and Town, Michael-Harold, 4,618,626, Cl. 514-530.000.
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Schirmer, Ulrich: *See—*
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Schlecker, Rainer; Schmidt, Peter; Thieme, Peter C.; Lenke, Dieter; Teschendorf, Hans-Jurgen; Traut, Martin; Mueller, Claus D.; Hofmann, Hans P.; and Kreiskott, Horst, to BASF Aktiengesellschaft. Sulfonates of hydroxycoumarins. 4,618,622, Cl. 514-457.000.
Schleien, Mickey M.: *See—*
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Schmid, Rolf: *See—*
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Schmidt, Helmut; Bodenmiller, Anton; and Straka, Alfred, to Kaltenbach & Voigt GmbH & Co. Equipment stand for dental implements. 4,618,326, Cl. 433-79.000.
Schmidt, Paul J.; and Hung, William M., to Hilton-Davis Chemical Co., The. Substituted indoles. 4,618,684, Cl. 548-455.000.
Schmidt, Peter: *See—*
Schlecker, Rainer; Schmidt, Peter; Thieme, Peter C.; Lenke, Dieter; Teschendorf, Hans-Jurgen; Traut, Martin; Mueller, Claus D.; Hofmann, Hans P.; and Kreiskott, Horst, 4,618,622, Cl. 514-457.000.
Schmidtchen, Hans-Martin; and Voigt, Hermann U., to Kabel-und Metallwerke Gutehoffnungshuette. Base material for silane grafted, crosslinked thermoplastic or elastomeric material. 4,618,654, Cl. 525-288.000.
Schmidtpott, Friedrich: *See—*
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Schmitt, Walter, to Dr. Johannes Heidenhain GmbH. Error correction system for digital length or angle measuring instrument. 4,618,940, Cl. 364-560.000.
Schmitz, Charles E., to Grumman Aerospace Corporation. Infrared focal plane module with stacked IC module body. 4,618,763, Cl. 250-211.00R.
Schneider, Manfred; and Laumen, Kurt, to Bayer Aktiengesellschaft. Process for the preparation of (1S, 4R)-4-hydroxy-2-cyclopentenyl esters. 4,618,690, Cl. 556-441.000.
Schnoeller, Manfred: *See—*
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Schoenfelder, George A.; Siegel, Stephen L.; and Slater, James S., to Pittway Corporation. Outer electrode with improved smoke entry. 4,618,777, Cl. 250-381.000.
Schoenherr, Christine J., to Dow Corning Corporation. Silicone water-based caulking material. 4,618,642, Cl. 524-425.000.
Scholl, Hans-Joachim; and Hettel, Hans, to Bayer Aktiengesellschaft. Process for the preparation of aromatic polyisocyanates containing urea and/or biuret groups. 4,618,706, Cl. 560-335.000.
Schott, Eberhard P.: *See—*
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Schultze, Hartmut: *See—*
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Schumacher, Ignatius, to Monsanto Company. Vapor phase nitration of aromatic compounds. 4,618,733, Cl. 568-927.000.
Schuster, Hans-Dieter: *See—*
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Schwaderer, John R.; and Kristof, Mark J., to Whirlpool Corporation. Air circulation system for microwave oven. 4,618,756, Cl. 219-10.55R.
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Schwartz, Arnold, to Perkin-Elmer Corporation, The. Liquid chromatography controller. 4,618,935, Cl. 364-510.000.
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SCM Corporation: *See—*
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Scott, Norman R.: *See—*
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Sealed Power Corporation: *See—*
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Seat, Bobby G. Exhaust flue heat exchange device. 4,617,989, Cl. 165-145.000.
SEB S.A.: *See—*
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Sebastian, Verne D. Lawn mower leaf mulching blade and method. 4,617,788, Cl. 56-295.000.
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Sedillot, Francois G.: *See—*
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Seeler, C. Oliver. Thermally actuated immobilizing structure. 4,617,921, Cl. 128-89.00R.
Seelig, Stanley S., to Allied Corporation. Surfactant-based solvent system for dewatering different substrates. 4,618,447, Cl. 252-139.000.
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Seidel, William E.; Markunas, Albert L.; and Nelson, Thomas A., to Sundstrand Corporation. Control valve. 4,617,958, Cl. 137-492.500.
Seifert, Helmut; and Mondel, Karl, to REPA Feinstanzwerk GmbH. Deflection device for safety belts. 4,618,165, Cl. 280-808.000.
Seiko Epson Kabushiki Kaisha: *See—*
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Shah, Vipin D.: *See—*
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Iwai, Hiroji, 4,618,278, Cl. 400-568.000.
Kotani, Matahira; and Matsumoto, Masafumi, 4,618,869, Cl. 346-75.000.
Nishioka, Yoshiki; Hakaridani, Mitsuhiro; and Iwahashi, Hiroyuki, 4,618,983, Cl. 381-43.000.
Shiono, Fusahiro, 4,618,936, Cl. 364-513.500.
Tsuji, Masaru, 4,618,247, Cl. 355-14.0FU.
Yamagishi, Toshio, 4,618,242, Cl. 355-3.0FU.
Sharpe, Anthony K.; and Mabey, Peter J., to U.S. Philips Corporation. Digital data transmission system. 4,618,955, Cl. 371-37.000.
Shaw, Christopher G.; and Kramer, Ted J., to Boeing Company, The. Radiation modulating apparatus and method. 4,618,218, Cl. 350-363.000.
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Shedrow, Sidney. Lens holder and carrier for safety masks. 4,618,225, Cl. 351-57.000.
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Wood, Donald L.; and Fried, Herbert E., 4,618,400, Cl. 162-5.000.
Sherman, Dan R. Acoustical ducting for speakers and enclosures. 4,618,025, Cl. 181-148.000.
Sherwood, Duane D.; and Conway, John J., to TRW Inc. Spacecraft structure for supporting an optical bench. 4,618,111, Cl. 244-158.00R.
Shibata, Isamu; and Kanmoto, Yoshiaki, to Ricoh Co., Ltd. Device for controlling the radiating output of a semiconductor laser. 4,618,958, Cl. 372-29.000.
Shibata, Shuichi: *See—*
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Sugizaki, Masuo: *See—*

Ohe, Junya; Wakita, Saburo; Yamatsuta, Kiichi; Goto, Shoji; Kutsukake, Yukinori; and Sugizaki, Masuo, 4,618,474, Cl. 420-436.000.

Suhre, Robert B., to Theradyne Corporation. Wheelchair with posture supports. 4,617,919, Cl. 128-78.000.

Sukenari, Junzo: *See—*

Eguchi, Jutaro; Odahara, Tetsuichi; and Sukenari, Junzo, 4,617,787, Cl. 56-14.600.

Sulkowski, Theodore S.; Silver, Paul J.; and Mascitti, Albert A., to American Home Products Corporation. 4-(2,3-dichloro-6-fluorophenyl)-1,4,5,6,7,8-hexahydro-2-methyl-5-oxo-1,7-naphthyridine-3-carboxylic acid 2-(2,3-dichlorophenoxy)ethyl ester. 4,618,678, Cl. 546-123.000.

Sullivan, Donald F. High resolution liquid photopolymer coating patterns over irregular printed wiring board surface conductors. 4,618,567, Cl. 430-311.000.

Sullivan, Jack M.: *See—*

Medina, Ramiro; and Sullivan, Jack M., 4,618,691, Cl. 558-80.000.

Sumida, Shizuo: *See—*

Sotoyama, Kaoru; Sumida, Shizuo; and Kikuchi, Toshiyuki, 4,618,041, Cl. 192-0.044.

Sumino, Fumio: *See—*

Tanaka, Shigemori; Sumino, Fumio; and Toma, Hitoshi, 4,618,552, Cl. 430-60.000.

Sumitomo Chemical Company, Limited: *See—*

Ishiguri, Yukio; Takano, Hirotaka; and Funaki, Yuji, 4,618,620, Cl. 514-383.000.

Kayane, Yutaka; Miyamoto, Tetsuya; Omura, Takashi; Sawamoto, Hirokazu; Harada, Naoki; and Takeshita, Akira, 4,618,671, Cl. 534-635.000.

Sada, Masao; Kato, Michio; Ayano, Masami; Abe, Tadashi; and Moriwaki, Masanori, 4,618,709, Cl. 562-532.000.

Yamamoto, Michihiro, 4,618,617, Cl. 514-364.000.

Sumitomo Electric Industries, Ltd.: *See—*

Shimoda, Takashi; and Sasaki, Masami, 4,618,396, Cl. 156-605.000.

Sumiya, Koji: *See—*

Ogasawara, Tsunehiko; Arakawa, Yoshichika; Sumiya, Koji; and Sakaguchi, Yoshikazu, 4,618,038, Cl. 192-3.290.

Sun Refining and Marketing Company: *See—*

Duggan, D. Michael; Lyons, James E.; and Myers, Harry K., Jr., 4,618,729, Cl. 568-678.000.

Sundstrand Corporation: *See—*

Seidel, William E.; Markunas, Albert L.; and Nelson, Thomas A., 4,617,958, Cl. 137-492.500.

Williams, Keith R., 4,617,797, Cl. 60-444.000.

Suter Company, Inc., The: *See—*

Blackman, Kent G., 4,617,778, Cl. 53-391.000.

Sutter, Leroy V., Jr. Configuration of electrodes for transversely excited gas lasers. 4,618,961, Cl. 372-87.000.

Sutton, A. Gunilla. Depilation device and method. 4,617,926, Cl. 128-303.100.

Suzawa, Osamu, to Seiko Epson Kabushiki Kaisha. Backlighted liquid crystal display using light passage member for more nearly uniform illumination. 4,618,216, Cl. 350-345.000.

Suzuki, Koji: *See—*

Nagashima, Nao; Suzuki, Koji; Nagahira, Jyoji; Kuroda, Kouki; and Takayanagi, Yoshiaki, 4,618,246, Cl. 355-14.00R.

Tokuyama, Shunji; Suzuki, Koji; and Arimatsu, Keiji, 4,618,905, Cl. 361-4.000.

Suzuki, Masaaki: *See—*

Oishi, Kengo; and Suzuki, Masaaki, 4,618,903, Cl. 360-132.000.

Suzuki, Nobuyuki; Tanaka, Kenichi; and Yamanashi, Masanao, to Nikkei Kako Kabushiki Kaisha; and Nippon Light Metal Company Limited. Method for manufacture of cast articles of fiber-reinforced aluminum composite. 4,617,979, Cl. 164-97.000.

Suzuki, Shoichi; and Keiichi, Yamada, to Diesel Kiki Co., Ltd. Exhaust-gas particle treating device for internal combustion engine. 4,617,793, Cl. 60-285.000.

Suzuki, Tetsumi; Murayama, Tetsuo; Ono, Hitoshi; Aramaki, Shinji; and Yokoyama, Michiyo, to Mitsubishi Chemical Ind., Ltd. Electrophotographic photoreceptor comprising azo compounds. 4,618,555, Cl. 430-78.000.

Suzuki, Tsunefusa: *See—*

Ohashi, Tamaki; Suzuki, Tsunefusa; Nakada, Kaoru; Hoshi, Nobuya; Fujimura, Hisao; and Ui, Hiromitu, 4,617,831, Cl. 74-10.330.

Swanson, Alfred B. Child safety restraint. 4,618,186, Cl. 297-468.000.

Swanson, Eric J., to AT&T Bell Laboratories. Mixed threshold current mirror. 4,618,815, Cl. 323-315.000.

Swift, Stephen D.: *See—*

Garman, James A.; Swift, Stephen D.; Livesay, Richard E.; and Arians, Arlyn J., 4,618,190, Cl. 305-39.000.

Swiss Aluminium Ltd.: *See—*

Banninger, Urs, 4,617,980, Cl. 164-430.000.

Switall, Thomas G., to Ryco Graphic Manufacturing, Inc. Liquid coater for a printing press with moveable inking roller and tray. 4,617,865, Cl. 101-350.000.

Swoboda, Johann: *See—*

Muench, Volker; Hambrecht, Juergen; Himmele, Walter; Echte, Adolf; and Swoboda, Johann, 4,618,668, Cl. 528-215.000.

SWS Silicones Corporation: *See—*

Agodoa, Michael K., 4,618,389, Cl. 156-307.500.

Syntex (U.S.A.) Inc.: *See—*

Cooper, Gary F.; Edwards, John A.; and Van Horn, Albert R., 4,618,696, Cl. 560-53.000.

Szabo, Miklos: *See—*

Batorfalvi, Geza; Lendvai, Tibor; Radai, Antal; Pongrac, Gaborne ; Szabo, Miklos; and Szilardi, Jeno , 4,617,700, Cl. 17-45.000.

Szilardi, Jeno : *See—*

Batorfalvi, Geza; Lendvai, Tibor; Radai, Antal; Pongrac, Gaborne ; Szabo, Miklos; and Szilardi, Jeno , 4,617,700, Cl. 17-45.000.

Szonyi, Gabor: *See—*

Pal, Gabor; Endroczi, Gabor; Hollos, Gyorgy; Nagy, Gabor; Szonyi, Gabor; Bodi Laszlo ; and Balazs, Zoltan, 4,617,830, Cl. 73-590.000.

Szporny, Laszlo : *See—*

Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,618,611, Cl. 514-255.000.

T. J. Gundlach Machine Company: *See—*

Gundlach, Theodore F., 4,617,709, Cl. 29-124.000.

Taal, Martin: *See—*

Bilharz, Manfred; Heider, Peter; Roper, Hartmut; Taal, Martin; Henken, Fritz; Kohl, Ernst; and Schubert, Dietmar, 4,618,123, Cl. 251-28.000.

Tabak, Samuel A.: *See—*

Chester, Arthur W.; Garwood, William E.; and Tabak, Samuel A., 4,618,737, Cl. 585-329.000.

Tabata, Kuniaki; and Takeda, Haruo, to Hitachi, Ltd. Processing method for the rotation of an image. 4,618,991, Cl. 382-46.000.

Taga, Yukio, to Nippon Notion Kogyo Co., Ltd. Mechanism for delivering fastener elements to fastener-assembling apparatus. 4,618,053, Cl. 198-389.000.

Tago, Keiichiro, to Fuji Electric Co., Ltd. Mechanical displacement transducer. 4,618,862, Cl. 340-870.370.

Tait, A. Martin; Nevitt, Thomas D.; and Hensley, Albert L., Jr., to Standard Oil Company (Indiana). Catalyst and process for the hydrodenitrogenation and hydrocracking of high-nitrogen feeds. 4,618,594, Cl. 502-66.000.

Takada, Masahiko: *See—*

Ogawa, Takahiro; Takada, Masahiko; Matsumoto, Takaharu; and Kanbara, Youichi, 4,618,469, Cl. 264-182.000.

Takada, Shunji: *See—*

Mihayashi, Keiji; Kobayashi, Hidetoshi; and Takada, Shunji, 4,618,572, Cl. 430-543.000.

Takago, Toshio; Arai, Masatoshi; and Futatsumori, Koji, to Shin-Etsu Chemical Co., Ltd. Room temperature-curable organopolysiloxane composition. 4,618,646, Cl. 524-783.000.

Takahashi, Makoto: *See—*

Yokoyama, Meiso; Takahashi, Makoto; Nishiwaki, Tsunehiko; and Imai, Makoto, 4,617,821, Cl. 73-23.000.

Takahashi, Masaharu; and Fukushima, Motoo, to Shin-Etsu Chemical Co., Ltd. Antistatic organopolysiloxane composition. 4,618,639, Cl. 524-262.000.

Takahashi, Yukio; Shimazoe, Michitaka; and Matsuoka, Yoshitaka, to Hitachi, Ltd. Semiconductor pressure transducer. 4,618,844, Cl. 338-2.000.

Takahira, Yoshiyuki: *See—*

Morioka, Akira; Matsuura, Takeshi; and Takahira, Yoshiyuki, 4,618,536, Cl. 428-329.000.

Takamiya, Shigeo; Inoue, Kazutoshi; and Tsutaya, Kenzo, to Mitsui Kensetsu Kabushiki Kaisha. Method for constructing an enlarged tunnel and apparatus for forming the same. 4,618,298, Cl. 405-150.000.

Takanashi, Hajime: *See—*

Kuramoto, Shinichi; and Takanashi, Hajime, 4,618,558, Cl. 430-115.000.

Takano, Hirotaka: *See—*

Ishiguri, Yukio; Takano, Hirotaka; and Funaki, Yuji, 4,618,620, Cl. 514-383.000.

Takano, Katsuhiko; Iijima, Shigeharu; Yoshihara, Satoshi; Matsushima, Masaaki; Kishi, Hiroyoshi; and Sasamori, Eizo, to Canon Kabushiki Kaisha. Recording medium. 4,618,537, Cl. 428-336.000.

Takanoo, Miyako: *See—*

Kawakubo, Fumio; Takanoo, Miyako; Yukimoto, Sadao; and Isayama, Katsuhiko, 4,618,653, Cl. 525-404.000.

Kawakubo, Fumio; Takanoo, Miyako; Yukimoto, Sadao; and Isayama, Katsuhiko, 4,618,656, Cl. 525-404.000.

Takaoka, Tokuro: *See—*

Toshimitsu, Yoshihiko; Takaoka, Tokuro; Kawai, Toshitake; and Ishida, Takashi, 4,618,018, Cl. 180-142.000.

Takayanagi, Yoshiaki: *See—*

Nagashima, Nao; Suzuki, Koji; Nagahira, Jyoji; Kuroda, Kouki; and Takayanagi, Yoshiaki, 4,618,246, Cl. 355-14.00R.

Takeda, Haruo: *See—*

Tabata, Kuniaki; and Takeda, Haruo, 4,618,991, Cl. 382-46.000.

Takeda, Hisao; and Taniguchi, Yasunori, to American Colloid Company. Production process for highly water absorbable polymer. 4,618,631, Cl. 521-109.100.

Takeda, Kenji: *See—*

Sadaki, Hiroshi; Imaizumi, Hiroyuki; Nagai, Takashi; Takeda, Kenji; Myokan, Isao; Inaba, Takihiro; Watanabe, Yasuo; Fukuoka, Yoshikazu; Minami, Shinzaburo; and Saikawa, Isamu, 4,618,606, Cl. 514-202.000.

Takeda, Shigefumi: *See—*

Okuda, Hiromichi; Masuno, Hiroshi; Aburada, Masaki; Takeda, Shigefumi; Itoh, Eiko; Matsushita, Moe; and Hosoya, Eikichi, 4,618,495, Cl. 424-195.100.

Takemoto, Tadashi: *See—*

Ozawa, Yoichi; Kishimoto, Shinichi; Shinohara, Emiko; Takemoto, Tadashi; and Eguchi, Chikahiko, 4,618,695, Cl. 560-41.000.

Takenaka Engineering Co., Ltd.: *See—*

Miyake, Ryota; and Makino, Masami, 4,618,854, Cl. 340-567.000.

Takenouchi, Masanori, to Canon Kabushiki Kaisha. Developer and developing method. 4,618,556, Cl. 430-110.000.

Takeshita, Akira: *See—*

Kayane, Yutaka; Miyamoto, Tetsuya; Omura, Takashi; Sawamoto, Hirokazu; Harada, Naoki; and Takeshita, Akira, 4,618,671, Cl. 534-635.000.

Takigawa, Toshimichi: *See—*

Sasano, Ryoichiro; Toyohara, Tsutomu; and Takigawa, Toshimichi, 4,617,845, Cl. 82-1.00C.

Tamamura, Shoji: *See—*

Tanimura, Akira; Tsubata, Hisayasu; and Tamamura, Shoji, 4,617,982, Cl. 164-463.000.

Tsubata, Hisayasu; Tamamura, Shoji; and Tanimura, Akira, 4,617,983, Cl. 164-463.000.

Tamoto, Koji: *See—*

Okamura, Hisashi; Kobayashi, Hidetoshi; Nishikawa, Toshihiro; and Tamoto, Koji, 4,618,573, Cl. 430-558.000.

Tamura, Shinichi: *See—*

Ohashi, Masato; Kashioka, Motohiko; Tamura, Shinichi; Katsura, Hiromitsu; Ueda, Hideaki; and Nakamura, Akihiro, 4,618,554, Cl. 430-78.000.

Tan, Tun S., to Hewlett Packard Company. Pre-passivated submicrometer gate electrodes for MESFET devices. 4,618,510, Cl. 427-89.000.

Tanabe, Yoshimitsu: *See—*

Yamaguchi, Keizaburo; Sugimoto, Kenichi; Tanabe, Yoshimitsu; Kawashima, Saburo; and Yamaguchi, Akihiro, 4,618,714, Cl. 564-329.000.

Tanaka, Fuminari: *See—*

Iida, Tetsuya; and Tanaka, Fuminari, 4,618,847, Cl. 340-347.0DA.

Tanaka, Hideki: *See—*

Isobe, Masahiro; Okazaki, Sumio; and Tanaka, Hideki, 4,618,336, Cl. 474-133.000.

Tanaka, Kenichi: *See—*

Suzuki, Nobuyuki; Tanaka, Kenichi; and Yamanashi, Masanao, 4,617,979, Cl. 164-97.000.

Tanaka, Shigemori; Sumino, Fumio; and Toma, Hitoshi, to Canon Kabushiki Kaisha. Light receiving member for electrophotography having roughened intermediate layer. 4,618,552, Cl. 430-60.000.

Tanaka, Toshiyuki: *See—*

Imazeki, Kazuyoshi; Tanaka, Toshiyuki; and Miyakoshi, Hiromichi, 4,618,997, Cl. 455-76.000.

Tandem Computers Incorporated: *See—*

Horst, Robert W., 4,618,956, Cl. 371-68.000.

Tang, Andrew H., to Upjohn Company, The. Method for treating medical conditions involving cerebral ischemia. 4,618,621, Cl. 514-408.000.

Tani, Hideo: *See—*

Hashimoto, Masahiro; and Tani, Hideo, 4,618,349, Cl. 51-298.000.

Taniguchi, Hitofumi: *See—*

Kuramoto, Nobuyuki; and Taniguchi, Hitofumi, 4,618,592, Cl. 501-96.000.

Taniguchi, Yasunori: *See—*

Takeda, Hisao; and Taniguchi, Yasunori, 4,618,631, Cl. 521-109.100.

Tanimura, Akira; Tsubata, Hisayasu; and Tamamura, Shoji, to Unitika Ltd. Method of and apparatus for continuously manufacturing metal products. 4,617,982, Cl. 164-463.000.

Tanimura, Akira: *See—*

Tsubata, Hisayasu; Tamamura, Shoji; and Tanimura, Akira, 4,617,983, Cl. 164-463.000.

Tanmatsu, Katsuo: *See—*

Nohara, Kazunori; Tanmatsu, Katsuo; Hosoya, Nobukazu; and Higashino, Takeshi, 4,618,888, Cl. 358-120.000.

Tarassoff, Serge, to Pomagalski S.A. Device for measuring clamping of grips notably of a detachable gondola lift or chair lift. 4,617,829, Cl. 73-865.800.

Tarter, Norman D. Floppy disc casing with optional write-protect capability. 4,618,060, Cl. 206-444.000.

Tasaka, Kentaro: *See—*

Iwama, Akio; Tasaka, Kentaro; and Kazuse, Yoshitaka, 4,618,534, Cl. 428-316.600.

Tashiro, Korefumi: *See—*

Ueno, Masahiro; Tashiro, Korefumi; and Toyota, Eiichi, 4,618,930, Cl. 364-426.000.

Task, Harry L.: *See—*

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Tatani, Atsushi: *See—*

Shinoda, Naoharu; Tatani, Atsushi; Omoto, Setsuo; Okino, Susumu; and Shimizu, Taku, 4,618,482, Cl. 423-242.000.

Taubitz, Christof; Muench, Volker; Hambrecht, Juergen; Echte, Adolf; and Illers, Karl H., to BASF Aktiengesellschaft. Halogen-free self-extinguishing thermoplastic molding material. 4,618,633, Cl. 524-80.000.

Taylor, John H.: *See—*

Bainbridge, Gary R.; McCauley, Lewis D.; and Taylor, John H., 4,618,299, Cl. 411-374.000.

Taylor, Larry T.: *See—*

Johnson, Charles C.; and Taylor, Larry T., 4,618,769, Cl. 250-338.000.

Taylor, William J.: *See—*

Adams, William C.; and Taylor, William J., 4,617,951, Cl. 135-66.000.

TDK Corporation: *See—*

Morita, Haruyuki; Yoshinari, Jiro; and Nakayama, Masatoshi, 4,618,542, Cl. 428-694.000.

Nishimatsu, Masaharu; Ide, Toshiaki; Arioka, Hiroyuki; and Kubota, Yuichi, 4,618,535, Cl. 428-325.000.

Team Engineering and Manufacturing, Inc.: *See—*

Falgout, Thomas E., Sr.; and Hester, John W., 4,618,010, Cl. 175-329.000.

Team, Inc.: *See—*

Bori, Jacques, 4,617,694, Cl. 15-167.00R.

Teglasy, Gyorgy; and Galambos, Ludwig. Coin-operable machine for dispensing cooling elements. 4,618,074, Cl. 221-15.000.

Teleco Oilfield Services Inc.: *See—*

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Teleplex Corporation: *See—*

Maxwell, Duane S.; Phillips, Roger; and Schwan, Eduard A., 4,618,965, Cl. 375-10.000.

Temple, James S.; Legierse, Petrus E. J.; and Martens, Theodorus H. G., to U.S. Philips Corporation. Method of providing a metal mirror. 4,618,506, Cl. 427-40.000.

Tennessee Valley Authority: *See—*

Medina, Ramiro; and Sullivan, Jack M., 4,618,691, Cl. 558-80.000.

Teraji, Tsutomu; Shiokawa, Youichi; Okumura, Kazuo; and Sato, Yoshinari, to Fujisawa Pharmaceutical Co., Ltd. Triazine derivatives, and pharmaceutical compositions comprising the same. 4,618,610, Cl. 514-242.000.

Teramoto, Osamu: *See—*

Yamano, Shoji; Mikata, Yoshitaka; Teramoto, Osamu; and Nishide, Kazuhiro, 4,618,012, Cl. 177-25.000.

Yamano, Shoji; Mikata, Yoshitaka; Teramoto, Osamu; and Nishide, Kazuhiro, 4,618,013, Cl. 177-25.000.

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Schlecker, Rainer; Schmidt, Peter; Thieme, Peter C.; Lenke, Dieter; Teschendorf, Hans-Jurgen; Traut, Martin; Mueller, Claus D.; Hofmann, Hans P.; and Kreiskott, Horst, 4,618,622, Cl. 514-457.000.

Tessier, Jean; and Girault, Pierre, to Roussel Uclaf. 3-(2-tetrahydropyranyl)-1,2,3,4,5,6,7-hexahydro-1-p-tolyloxycarbonyl-5H-cyclopentapyrimidine-2,4-dione and herbicidal compositions and methods using it. 4,618,364, Cl. 71-92.000.

Tetra Pak International AB: *See—*

Nygren, Jan; and Hilmersson, Anders, 4,617,779, Cl. 53-433.000.

Texaco Inc.: *See—*

Brown, Alfred, 4,617,993, Cl. 166-250.000.

Renken, Terry L.; and Knifton, John F., 4,618,717, Cl. 564-475.000.

Texas Instruments Incorporated: *See—*

Parfitt, Steven P., 4,618,848, Cl. 340-347.0CC.

Schenck, Stephen R., 4,618,832, Cl. 330-254.000.

Tran, Bao G.; Neal, Joseph H.; and White, Lionel S., 4,618,947, Cl. 365-230.000.

Texo Corporation: *See—*

Kinkelaar, Edmund W.; and Pekar, Howard G., 4,618,513, Cl. 427-443.100.

Texon, Inc.: *See—*

Bodendorf, Warren J., 4,618,401, Cl. 162-138.000.

Th. Goldschmidt AG: *See—*

Esselborn, Eberhard; and Fock, Jurgen, 4,618,457, Cl. 260-504.00R.

Thalmann, Alfred; and Lehmann, Ernesto, to Georg Fischer Aktiengesellschaft. Apparatus for the heat-sealing thermoplastic conduits with a bridging conductor. 4,618,168, Cl. 285-21.000.

Thanawalla, Chandrakant B.; and Dehm, David C., to Atlantic Richfield Company. Production of the acrylates and methacrylates of oxyalkylated allyl alcohol. 4,618,703, Cl. 560-209.000.

Theeuwes, Felix: *See—*

DuBois, Mark; Theeuwes, Felix; and Wong, Patrick S. L., 4,618,487, Cl. 424-15.000.

Theisen, Dieter: *See—*

Hartel, Volker; and Theisen, Dieter, 4,618,128, Cl. 267-140.100.

Theobald, Paul R., to General Electric Company. Plastic chip carrier package. 4,618,739, Cl. 174-52.0FP.

Theradyne Corporation: *See—*

Suhre, Robert B., 4,617,919, Cl. 128-78.000.

Therrien, Roger H.; and Chahal, Maninderpal S., to NCR Canada Ltd. Automatic light control system. 4,618,254, Cl. 355-68.000.

Thieme, Peter C.: *See—*

Schlecker, Rainer; Schmidt, Peter; Thieme, Peter C.; Lenke, Dieter; Teschendorf, Hans-Jurgen; Traut, Martin; Mueller, Claus D.; Hofmann, Hans P.; and Kreiskott, Horst, 4,618,622, Cl. 514-457.000.

Thomas & Betts Corporation: *See—*

Beck, William R.; Jahn, William; Koltenback, Steven R.; Scharf, Robert M.; and Schwab, Ronald, 4,617,732, Cl. 29-866.000.

Greenwood, William S.; and Weinmann, Karl, 4,618,203, Cl. 339-99.00R.

Sonobe, Toshimitsu, 4,618,209, Cl. 339-258.00R.
Thomas, Dennis R.: *See—*
Kress, Edward S.; LaBerdia, William L.; and Thomas, Dennis R., 4,618,307, Cl. 414-498.000.
Thomas, Richard L. Adjustable reticle device. 4,618,221, Cl. 350-566.000.
Thompson, David L.: *See—*
Hazen, Wayne W.; Thompson, David L.; Reynolds, James E.; Lombardo, Nicholas J.; Queneau, Paul B.; and Hager, John P., 4,618,480, Cl. 423-127.000.
Thompson, Harry A., III, to Heinemann Electric Company. Circuit breaker mechanism. 4,618,745, Cl. 200-50.00C.
Thompson, Steven M.: *See—*
Mortvedt, Raymond L.; and Thompson, Steven M., 4,618,148, Cl. 273-73.00C.
Thompson, Thomas D., III; Polestak, Walter J.; and Bradshaw, Robert W., to Georgia Kaolin Company, Inc. High solids processing of kaolinitic clays with post-leaching oxidation. 4,618,374, Cl. 106-288.00B.
Thomson Components - Mostek Corporation: *See—*
Johnson, Mark G., 4,618,786, Cl. 307-578.000.
van Tran, Hiep, 4,618,785, Cl. 307-530.000.
Thoresen, Per: *See—*
Fonne, Gunnar J.; Daae-Johansen, Finn; Thoresen, Per; and Nilsen, Stein-Arne, 4,617,777, Cl. 52-802.000.
Thorud, Richard A.; and White, Donald M., III, to Toro Company, The. Single stage snowthrower. 4,617,747, Cl. 37-244.000.
Thro, Stuart W., to Motorola, Inc. Self-calibrating signal strength detector. 4,619,002, Cl. 455-226.000.
Thulin, Robert R., to Nabisco Brands, Inc. Process for producing latticed pastry products. 4,618,498, Cl. 426-275.000.
Timex Corporation: *See—*
Kamens, Bruce H.; and Ritter, George E., 4,618,264, Cl. 368-74.000.
Timko, Joseph M., to Upjohn Company, The. Ethynylation of 16-methyl-17-keto steroids. 4,618,456, Cl. 260-397.400.
Timm, Heinrich: *See—*
Hasler, Franz; Monch, Ernst; Reiter, Karl; and Timm, Heinrich, 4,618,163, Cl. 280-785.000.
Tinnes, Bernhard; Knell, Bernhard; and Vetterli, Walter, to Metacon AG. Swivelling sliding closure unit. 4,618,126, Cl. 266-271.000.
Tirtiaux, Robert: *See—*
Prillieux, Marcel; Laurent, Robert M.; and Tirtiaux, Robert, 4,618,458, Cl. 260-505.00P.
Titmus Eurocon Kontaktlinsen GmbH: *See—*
Baron, Heinz; Hoefer, Peter; and Schwind, Herbert, 4,618,228, Cl. 351-161.000.
Tocco, Inc.: *See—*
Balzer, Norbert R., 4,618,125, Cl. 266-90.000.
Todokoro, Tomoo; Okimoto, Haruo; and Matsuda, Ikuo, to Mazda Motor Corporation. Plural turbine inlet passage turbo-supercharger with inlet passage shut-off valve. 4,617,799, Cl. 60-602.000.
Tokai TRW & Co., Ltd.: *See—*
Maeda, Naoyuki, 4,618,809, Cl. 318-768.000.
Okuyama, Takahiro; Toki, Susumu; and Ishihara, Masahito, 4,617,883, Cl. 123-90.440.
Toki, Susumu: *See—*
Okuyama, Takahiro; Toki, Susumu; and Ishihara, Masahito, 4,617,883, Cl. 123-90.440.
Tokuda, Makoto; and Kimoto, Takami, to Mazda Motor Corporation. Automobile roof structure. 4,618,181, Cl. 296-191.000.
Tokuse, Masahiro: *See—*
Yamamura, Takemi; Tokuse, Masahiro; and Waku, Yoshiharu, 4,618,529, Cl. 428-224.000.
Tokuyama, Shunji; Suzuki, Koji; and Arimatsu, Keiji, to Hitachi, Ltd. DC circuit breaker. 4,618,905, Cl. 361-4.000.
Tokuyama Soda Kabushiki Kaisha: *See—*
Kuramoto, Nobuyuki; and Taniguchi, Hitofumi, 4,618,592, Cl. 501-96.000.
Tokyo Electric Co., Ltd.: *See—*
Kawaguchi, Katsuhiko; and Ono, Yoshiaki, 4,618,134, Cl. 271-4.000.
Uchimura, Mitsuo; and Uematsu, Satoru, 4,618,392, Cl. 156-384.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Hashimoto, Masahiro; and Tani, Hideo, 4,618,349, Cl. 51-298.000.
Honda, Michitaka; and Kikuchi, Katsuya, 4,618,928, Cl. 364-414.000.
Iida, Tetsuya; and Tanaka, Fuminari, 4,618,847, Cl. 340-347.0DA.
Nagase, Masashi, 4,618,934, Cl. 364-507.000.
Sakurai, Takayasu; and Iizuka, Tetsuya, 4,618,945, Cl. 365-189.000.
Tollis, Aurelio: *See—*
Cabany, Pierre; Gardette, Andre; Jacquet, Xavier; Tollis, Aurelio; and Tollis, Fernando, 4,618,757, Cl. 219-60.00R.
Tollis, Fernando: *See—*
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Toma, Hitoshi: *See—*
Tanaka, Shigemori; Sumino, Fumio; and Toma, Hitoshi, 4,618,552, Cl. 430-60.000.
Tomaszewski, Walter, to Firestone Tire & Rubber Company, The. Mechanical fastener for roofing membrane and method of applying same. 4,617,771, Cl. 52-410.000.
Tomida, Yoshinori: *See—*
Munakata, Hirohide; Tomida, Yoshinori; Haruta, Masahiro; Hirai, Yutaka; Nishimura, Yukuo; and Hamamoto, Takashi, 4,618,561, Cl. 430-156.000.
Tomidokoro, Kanji, to Komamura Photographic Co., Ltd. Film holder for cameras. 4,618,062, Cl. 206-455.000.
Tomimitsu, Yasuharu, to NEC Corporation. Address indication circuit capable of relatively shifting channel addresses relative to memory addresses. 4,618,942, Cl. 364-900.000.
Tomioka, Kenichi: *See—*
Murase, Kiyoshi; Mase, Toshiyasu; Arima, Hideki; and Tomioka, Kenichi, 4,618,627, Cl. 514-678.000.
Tomy Kogyo Co. Inc.: *See—*
Abe, Akira, 4,618,330, Cl. 446-236.000.
Topfl, Werner: *See—*
Gass, Karl; Fory, Werner; Meyer, Willy; and Topfl, Werner, 4,618,363, Cl. 71-90.000.
Torley, Jozsef: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,618,611, Cl. 514-255.000.
Toro Company, The: *See—*
Thorud, Richard A.; and White, Donald M., III, 4,617,747, Cl. 37-244.000.
Torres, John R.: *See—*
Vesce, Richard V.; and Torres, John R., 4,618,813, Cl. 323-268.000.
Torti, Mario; and Fernandez, Emilio, to S. A. Martin. Automatic device for bringing into register a tool mounted on a rotary cylinder for processing products in sheet form. 4,618,391, Cl. 156-353.000.
Toshimitsu, Yoshihiko; Takaoka, Tokuro; Kawai, Toshitake; and Ishida, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Power steering device for vehicles. 4,618,018, Cl. 180-142.000.
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, to Richter Gedeon Vegyeszeti Gyar Rt. 1-(aminoalkoxyphenyl)-1-phenyl-propanols, process for their preparation and pharmaceutical compositions containing them. 4,618,611, Cl. 514-255.000.
Totten, George E.: *See—*
Harding, Ronald H.; and Totten, George E., 4,617,984, Cl. 165-1.000.
Toukan, Sameeh S.; and King, James P., to Pennwalt Corporation. Polymeric thiadiazole lubricant additive. 4,618,438, Cl. 252-47.500.
Tower, Douglass G. Orientable ripper. 4,618,005, Cl. 172-459.000.
Town, Michael-Harold: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Mannesmann, Gerda; Nieuweboer, Bob; and Town, Michael-Harold, 4,618,626, Cl. 514-530.000.
Townsend, Peter K., to Du Pont de Nemours, E. I., and Company. Connector for establishing electrical contact with a high count twisted pair cable. 4,618,201, Cl. 339-99.00R.
Toyama Chemical Co., Ltd.: *See—*
Sadaki, Hiroshi; Imaizumi, Hiroyuki; Nagai, Takashi; Takeda, Kenji; Myokan, Isao; Inaba, Takihiro; Watanabe, Yasuo; Fukuoka, Yoshikazu; Minami, Shinzaburo; and Saikawa, Isamu, 4,618,606, Cl. 514-202.000.
Toyo Ink Mfg. Co., Ltd.: *See—*
Ohashi, Masato; Kashioka, Motohiko; Tamura, Shinichi; Katsura, Hiromitsu; Ueda, Hideaki; and Nakamura, Akihiro, 4,618,554, Cl. 430-78.000.
Toyo Polymer Co., Ltd.: *See—*
Kageyama, Hidehei, 4,618,280, Cl. 401-107.000.
Toyohara, Tsutomu: *See—*
Sasano, Ryoichiro; Toyohara, Tsutomu; and Takigawa, Toshimichi, 4,617,845, Cl. 82-1.00C.
Toyoshima, Tatsue: *See—*
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Toyota, Eiichi: *See—*
Ueno, Masahiro; Tashiro, Korefumi; and Toyota, Eiichi, 4,618,930, Cl. 364-426.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Hayashi, Hideyuki, 4,618,022, Cl. 180-249.000.
Isobe, Masahiro; Okazaki, Sumio; and Tanaka, Hideki, 4,618,336, Cl. 474-133.000.
Kato, Hideaki; and Oohashi, Kaoru, 4,618,156, Cl. 280-6.00R.
Kobayashi, Nobuyuki; and Ito, Toshimitsu, 4,617,890, Cl. 123-339.000.
Nakanishi, Nobuyasu; and Nomura, Yoshihisa, 4,618,189, Cl. 303-116.000.
Nishimura, Takumi; and Saito, Tadao, 4,618,188, Cl. 303-116.000.
Okawa, Susumu; and Jufuku, Yasunobu, 4,618,337, Cl. 474-201.000.
Ryu, Nobuyuki, 4,618,164, Cl. 280-804.000.
Yoshizaki, Kouji, 4,617,880, Cl. 123-90.160.
Tozzolino, Pierre: *See—*
Levesque, Guy; and Tozzolino, Pierre, 4,618,416, Cl. 209-166.000.
Tran, Bao G.; Neal, Joseph H.; and White, Lionel S., to Texas Instruments Incorporated. Dynamic memory with improved address counter for serial modes. 4,618,947, Cl. 365-230.000.
Traut, Martin: *See—*
Schlecker, Rainer; Schmidt, Peter; Thieme, Peter C.; Lenke, Dieter; Teschendorf, Hans-Jurgen; Traut, Martin; Mueller, Claus D.; Hofmann, Hans P.; and Kreiskott, Horst, 4,618,622, Cl. 514-457.000.
Traver, Frank J.; and Simoneau, Edward T., to General Electric Company. Novel aminofunctional silicone compositions. 4,618,689, Cl. 556-425.000.

Tremouilles, Francis J. M. G.: *See—*
Allais, Jean-Philippe P. B.; and Tremouilles, Francis J. M. G., 4,617,852, Cl. 89-36.130.
Triggs, Geoffrey W.; Lightowlers, Richard J.; Robinson, Derek; and Rice, Graham, to United Kingdom Atomic Energy Authority. Heat pipe stabilized specimen container. 4,617,985, Cl. 165-32.000.
Trinh, Vuong D.: *See—*
Magee, Robert D.; Asztalos, Michael J.; and Trinh, Vuong D., 4,618,824, Cl. 324-208.000.
Trinn, Maria; Kordik, Gabriella; Udvardy-Nagy nee Cserey Pechaany, Eva; Vida, Zsuzsanna; and Zsoka nee Somkuti, Rzsebet, to Richter Gedeon Vegyeszeti Gyar RT. Clavine-producing strain, a process for the preparation thereof as well as a microbiological process for producing clavine alkaloids. 4,618,581, Cl. 435-119.000.
Truth Inc.: *See—*
Vetter, Gregory J., 4,617,758, Cl. 49-324.000.
TRW Inc.: *See—*
Sherwood, Duane D.; and Conway, John J., 4,618,111, Cl. 244-158.00R.
Tsai, Mei-Yuan, to Aluminum Company of America. Metalworking with a lubricant composition comprising mineral oil and alkoxyalkyl ester. 4,618,441, Cl. 252-49.500.
Tsay, Yuh-Geng; and Shah, Vipin D., to International Immunoassay Laboratories, Inc. Kinetic radioimmunoassay test method and device. 4,618,485, Cl. 424-1.100.
Tsubata, Hisayasu; Tamamura, Shoji; and Tanimura, Akira, to Unitika Ltd. Method and apparatus for continuously manufacturing metal filaments. 4,617,983, Cl. 164-463.000.
Tsubata, Hisayasu: *See—*
Tanimura, Akira; Tsubata, Hisayasu; and Tamamura, Shoji, 4,617,982, Cl. 164-463.000.
Tsuchida, Naoki: *See—*
Aoi, Kazuo; and Tsuchida, Naoki, 4,617,881, Cl. 123-90.270.
Tsuchida, Seiichi; Kodama, Yoshihiro; and Hara, Hiroari, to Arakawa Kagaku Kogyo Kabushiki Kaisha. Hot-melt adhesive compositions comprising a partially (fumarized and/or maleinized) disproportionated rosin ester tackifier. 4,618,640, Cl. 524-272.000.
Tsuji, Masaru, to Sharp Kabushiki Kaisha. Photoreceptor pre-initializing electrophotographic copying machine. 4,618,247, Cl. 355-14.0FU.
Tsuji, Sadahiko: *See—*
Hattori, Jun; and Tsuji, Sadahiko, 4,618,762, Cl. 250-201.000.
Sugiura, Muneharu; Fujibayashi, Kazuo; and Tsuji, Sadahiko, 4,618,219, Cl. 350-427.000.
Tsukada, Toshihisa: *See—*
Sasano, Akira; Seki, Kouichi; Yamamoto, Hideaki; Baji, Toru; and Tsukada, Toshihisa, 4,618,873, Cl. 357-23.700.
Tsukune, Hideo; and Goto, Keisuke, to Michio Kawata, Director-General of Agency of Industrial Science and Technology; and Kabushiki Kaisha Meidensha. Method and system for detecting elliptical objects. 4,618,989, Cl. 382-25.000.
Tsumura Juntendo Inc.: *See—*
Okuda, Hiromichi; Masuno, Hiroshi; Aburada, Masaki; Takeda, Shigefumi; Itoh, Eiko; Matsushita, Moe; and Hosoya, Eikichi, 4,618,495, Cl. 424-195.100.
Tsunefuji, Katsuhiko: *See—*
Maitani, Yoshihisa; Tsunefuji, Katsuhiko; and Yamasaki, Masafumi, 4,618,238, Cl. 354-431.000.
Tsurumaru, Shinobu: *See—*
Kajiwara, Tadashi; Sato, Akira; Tsurumaru, Shinobu; and Kumamoto, Kenichiro, 4,618,838, Cl. 333-33.000.
Tsushima, Takuya: *See—*
Hirota, Akira; and Tsushima, Takuya, 4,618,893, Cl. 358-167.000.
Tsutaka, Yoshikazu: *See—*
Badono, Shinji; and Tsutaka, Yoshikazu, 4,618,969, Cl. 377-49.000.
Tsutaya, Kenzo: *See—*
Takamiya, Shigeo; Inoue, Kazutoshi; and Tsutaya, Kenzo, 4,618,298, Cl. 405-150.000.
Twardosz, Brian. Weight lifting bar. 4,618,143, Cl. 272-123.000.
U.K. Research Foundation: *See—*
Smith, Stanford L.; Wang, Paul C.; and Coffey, Charles W., 4,618,826, Cl. 324-308.000.
UBE Industries, Ltd.: *See—*.
Yamamura, Takemi; Tokuse, Masahiro; and Waku, Yoshiharu, 4,618,529, Cl. 428-224.000.
Ubukata, Kazumi: *See—*
Kimura, Ryoichi; Nomura, Kanji; Ubukata, Kazumi; and Kasahara, Shinju, 4,618,132, Cl. 296-97.00J.
Uchida, Seiichi, to Asahi Kasei Kogyo Kabushiki Kaisha. Resin printing plate and preparation thereof. 4,618,550, Cl. 430-11.000.
Uchimura, Mitsuo; and Uematsu, Satoru, to Tokyo Electric Co., Ltd. Label adhering apparatus. 4,618,392, Cl. 156-384.000.
Udvardy-Nagy nee Cserey Pechaany, Eva: *See—*
Trinn, Maria; Kordik, Gabriella; Udvardy-Nagy nee Cserey Pechaany, Eva; Vida, Zsuzsanna; and Zsoka nee Somkuti, Rzsebet, 4,618,581, Cl. 435-119.000.
Ueda, Hideaki: *See—*
Ohashi, Masato; Kashioka, Motohiko; Tamura, Shinichi; Katsura, Hiromitsu; Ueda, Hideaki; and Nakamura, Akihiro, 4,618,554, Cl. 430-78.000.
Ueda, Hirohisa, to Asahi Kogaku Kogyo Kabushiki Kaisha. End curving device for endoscope. 4,617,914, Cl. 128-4.000.
Uematsu, Satoru: *See—*
Uchimura, Mitsuo; and Uematsu, Satoru, 4,618,392, Cl. 156-384.000.
Uemura, Seiichi; Hirose, Takao; Shohda, Yoshio; Sakamoto, Takayoshi; and Katoh, Kenji, to Nippon Oil Company. Process for producing pitch carbon fibers. 4,618,463, Cl. 264-29.200.
Ueno, Masahiro; Tashiro, Korefumi; and Toyota, Eiichi, to Hitachi Ltd. Automatic train control apparatus. 4,618,930, Cl. 364-426.000.
Uetake, Yoshinari: *See—*
Araki, Youichi; and Uetake, Yoshinari, 4,618,877, Cl. 357-56.000.
Ugaji, Masana: *See—*
Okamura, Kiyohito; Hasegawa, Yoshio; Kuroo, Yoshiyasu; and Ugaji, Masana, 4,618,591, Cl. 501-90.000.
Ui, Hiromitu: *See—*
Ohashi, Tamaki; Suzuki, Tsunefusa; Nakada, Kaoru; Hoshi, Nobuya; Fujimura, Hisao; and Ui, Hiromitu, 4,617,831, Cl. 74-10.330.
Ullrich, Norbert: *See—*
Kohnen, Klaus; Niermann, Hans; and Ullrich, Norbert, 4,617,988, Cl. 165-95.000.
Umemoto, Atsushi: *See—*
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Umezawa, Mitsuo: *See—*
Yamakawa, Toru; Makita, Fujio; Umezawa, Mitsuo; and Sakakiyama, Ryuzo, 4,617,840, Cl. 74-865.000.
Union Carbide Corp.: *See—*
Fan, You-Ling; Brode, George L.; and Rosen, Meyer R., 4,618,647, Cl. 524-801.000.
Harding, Ronald H.; and Totten, George E., 4,617,984, Cl. 165-1.000.
Huang, Jamin, 4,618,603, Cl. 514-80.000.
Osborn, Claiborn L.; Koleske, Joseph V.; and Drake, Kenneth, 4,618,635, Cl. 524-113.000.
Union Oil Company of California: *See—*
Young, Dean A.; and Koepke, Jeffery W., 4,618,738, Cl. 585-480.000.
Uniroyal Chemical Company, Inc.: *See—*
Covey, Rupert A.; Forbes, Patricia J.; and Bell, Allyn R., 4,618,365, Cl. 71-92.000.
United Biscuits (UK) Limited: *See—*
Wainwright, Andrew R., 4,618,499, Cl. 426-283.000.
United Kingdom Atomic Energy Authority: *See—*
Lovegrove, Peter C., 4,618,409, Cl. 204-300.00R.
Triggs, Geoffrey W.; Lightowlers, Richard J.; Robinson, Derek; and Rice, Graham, 4,617,985, Cl. 165-32.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Baldwin, David A., 4,617,836, Cl. 74-682.000.
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Agriculture: *See—*
Couey, H. Melvin; and Hayes, Charles F., 4,618,497, Cl. 426-233.000.
Harper, Robert J., Jr., 4,618,512, Cl. 427-381.000.
Air Force: *See—*
Armitage, David, 4,618,217, Cl. 350-355.000.
Gegel, Harold L.; Malas, James C.; Prasad, Yellapregada V. R. K.; Doraivelu, Sokka M.; Barker, Douglas R.; Morgan, James T., Jr.; and Lark, Kristine A., 4,617,817, Cl. 72-364.000.
Genco, Louis V.; and Task, Harry L., 4,618,231, Cl. 351-237.000.
Miller, William H.; McClendon, Samuel E.; Kolodziej, Raymond J.; and Brand, Donald L., 4,618,931, Cl. 364-431.020.
Commerce: *See—*
Brinckman, Frederick E.; Degnan, Thomas F., Jr.; and Weiss, Carl S., 4,618,410, Cl. 208-97.000.
Energy: *See—*
Borden, Albert R., 4,617,789, Cl. 57-6.000.
Burke, William F.; and Winiecki, Alan L., 4,618,267, Cl. 374-50.000.
Harris, Betty W., 4,618,452, Cl. 252-408.100.
Johnson, Charles C.; and Taylor, Larry T., 4,618,769, Cl. 250-338.000.
National Aeronautics and Space Administration: *See—*
Alcorn, George E.; and Burgess, Andre S., 4,618,380, Cl. 148-187.000.
Keller, Vernon W.; Owen, Robert B.; Elkins, Bobby R.; and White, William T., 4,618,215, Cl. 350-319.000.
Parker, John A.; Heimbuch, Alvin H.; Hsu, Ming-ta S.; and Chen, Timothy S., 4,618,652, Cl. 525-282.000.
Navy: *See—*
Fried, Lawrence, 4,618,223, Cl. 350-611.000.
Kim, Oh-Kil, 4,618,453, Cl. 252-500.000.
U.S. Philips Corporation: *See—*
Baudry, Hugues, 4,618,590, Cl. 501-17.000.
Brettschneider, Horst; Hartl, Walter; and Peter, Diethard, 4,618,977, Cl. 378-139.000.
Flisikowski, Peter, 4,618,789, Cl. 310-13.000.
Hasler, Rudolf, 4,618,829, Cl. 329-103.000.
Sharpe, Anthony K.; and Mabey, Peter J., 4,618,955, Cl. 371-37.000.
Temple, James S.; Legierse, Petrus E. J.; and Martens, Theodorus H. G., 4,618,506, Cl. 427-40.000.
van der Mast, Karel D.; and Gross, Ulrich, 4,618,766, Cl. 250-311.000.
Watkinson, Stephen W., 4,618,999, Cl. 455-108.000.
United Technologies Corporation: *See—*
Vesce, Richard V.; and Torres, John R., 4,618,813, Cl. 323-268.000.

- Unitika Ltd.: *See*—
  - Tanimura, Akira; Tsubata, Hisayasu; and Tamamura, Shoji, 4,617,982, Cl. 164-463.000.
  - Tsubata, Hisayasu; Tamamura, Shoji; and Tanimura, Akira, 4,617,983, Cl. 164-463.000.
- University of Birmingham, The: *See*—
  - Jefferis, Royston; and Steensgaard, Jens, 4,618,589, Cl. 436-540.000.
- University of Calif., The Regents of the: *See*—
  - Rapoport, Henry; and Buckley, Thomas F., III, 4,618,710, Cl. 564-1.000.
- University of California, The Regents of The: *See*—
  - Handley, Harold H.; Glassy, Mark C.; Hagiwara, Yoshihide; and Hagiwara, Hideaki, 4,618,577, Cl. 435-7.000.
- University of Delaware: *See*—
  - Bulkowski, John E., 4,618,509, Cl. 427-74.000.
- University of Hawaii, The: *See*—
  - Couey, H. Melvin; and Hayes, Charles F., 4,618,497, Cl. 426-233.000.
- University of Kentucky Research Foundation, The: *See*—
  - Kadaba, Pankaja K., 4,618,681, Cl. 546-276.000.
- University of Rochester, The: *See*—
  - Mourou, Gerard; and Valdmanis, Janis A., 4,618,819, Cl. 324-77.00K.
- University of Sheffield, The: *See*—
  - Brown, Brian H.; Barber, David C.; and Freeston, Ian L., 4,617,939, Cl. 128-734.000.
- University of Utah, The: *See*—
  - Eddington, Donald K., 4,617,913, Cl. 128-1.00R.
- UNR, Inc.: *See*—
  - Freeman, Jerry H., 4,618,205, Cl. 339-125.00L.
- Upjohn Company, The: *See*—
  - Tang, Andrew H., 4,618,621, Cl. 514-408.000.
  - Timko, Joseph M., 4,618,456, Cl. 260-397.400.
- Urasaki, Shuji: *See*—
  - Makino, Shigeru; Katagi, Takashi; Urasaki, Shuji; Kawabata, Shunichiro; and Kobayashi, Yuji, 4,618,866, Cl. 343-779.000.
- Urdea, Mickey S.: *See*—
  - Burke, Rae L.; Urdea, Mickey S.; and Valenzuela, Pablo D. T., 4,618,578, Cl. 435-68.000.
- Uriuhara, Makoto: *See*—
  - Hattori, Toshihiro; Ishihara, Masaki; Uriuhara, Makoto; Kasai, Hitoshi; and Asagi, Yasuyoshi, 4,618,043, Cl. 192-0.052.
- Urushibata, Hiroaki: *See*—
  - Matsumura, Mitsuie; Yoshimura, Motomu; and Urushibata, Hiroaki, 4,618,543, Cl. 429-19.000.
- Urushihara, Toshio: *See*—
  - Kimura, Tokuji; and Urushihara, Toshio, 4,618,085, Cl. 225-100.000.
- USM Corporation: *See*—
  - Gilch, Heinz; von Voithenberg, Hubertus; and Albert, Karl-Heinz, 4,618,651, Cl. 525-130.000.
  - von Voithenberg, Hubertus; and Hillert, Gotz, 4,618,643, Cl. 524-430.000.
- Usui, Hideo: *See*—
  - Ichijima, Seiji; Usui, Hideo; and Deguchi, Naoyasu, 4,618,571, Cl. 430-505.000.
- Vache , Michel P.: *See*—
  - Michel, Dominique; Johnson, Delbert B.; Pages, Jean F.; Foglia, Vincent F. P.; Martin, Jean G. M.; Vache , Michel P.; Sedillot, Francois G.; and Crull, Carroll M., 4,618,286, Cl. 405-208.000.
- Vail, John G., to Mug-A-Phone, Inc. Combined insulated drinking mug and megaphone. 4,618,066, Cl. 215-12.00R.
- Valdmanis, Janis A.: *See*—
  - Mourou, Gerard; and Valdmanis, Janis A., 4,618,819, Cl. 324-77.00K.
- Valenzuela, Pablo D. T.: *See*—
  - Burke, Rae L.; Urdea, Mickey S.; and Valenzuela, Pablo D. T., 4,618,578, Cl. 435-68.000.
- Van R Dental Products, Inc.: *See*—
  - Porteous, Don D.; and Wittrock, Paul M., 4,617,950, Cl. 132-91.000.
- Vance, Ian A. W.; and Neale, Michael W., to Standard Telephones and Cables, plc. Radio receiver. 4,618,967, Cl. 375-80.000.
- Vancouver General Hospital: *See*—
  - Ens, John; McEwen, James A.; and Beattie, Craig W., 4,618,230, Cl. 351-221.000.
- van der Lely, Cornelis. Motor vehicle such as a tractor. 4,618,016, Cl. 180-53.600.
- van der Mast, Karel D.; and Gross, Ulrich, to U.S. Philips Corporation. Automatically adjustable electron microscope. 4,618,766, Cl. 250-311.000.
- Vanderschaeghe, Alain: *See*—
  - Franzolini, Marc; Maria, Edmond; Vanderschaeghe, Alain; and Bezier, Jean, 4,617,990, Cl. 165-173.000.
- Van Doorn, Donald W.; Hawkins, James B.; Carpenter, Francis W., III; Hudson, Wilbur G.; Webb, Tommy W.; and Beeland, William D., to Lummus Industries, Inc. Portable bin transfer system. 4,617,862, Cl. 100-53.000.
- Van Exel, Gary A.: *See*—
  - White, Glenn S.; Mussler, Karl J.; and Van Exel, Gary A., 4,618,100, Cl. 239-440.000.
- Van Horn, Albert R.: *See*—
  - Cooper, Gary F.; Edwards, John A.; and Van Horn, Albert R., 4,618,696, Cl. 560-53.000.
- Van Laanen, Lawrence V.: *See*—
  - Holter, Warren G.; and Van Laanen, Lawrence V., 4,617,725, Cl. 29-598.000.
- van Nes, Cornelis G. J.: *See*—
  - Libregts, Hubertus B.; and van Nes, Cornelis G. J., 4,618,202, Cl. 339-99.00R.
- van Tran, Hiep, to Thomson Components - Mostek Corporation. CMOS sense amplifier with level shifter. 4,618,785, Cl. 307-530.000.
- Varsanik, Richard G.: *See*—
  - Cha, Charles Y.; Varsanik, Richard G.; and Chen, Shih-Ruey T., 4,618,448, Cl. 252-180.000.
- VEB Otto Buchwitz Starkstrom Anlagebau Dresden: *See*—
  - Bohme, Klaus; Beyer, Wolfgang; Seibt, Gunter; and Digmayer, Michael, 4,618,749, Cl. 200-144.00B.
- Vecchio, Anthony J.; and Hudson, John H., Jr., to AMF Incorporated. Tobacco separator. 4,618,415, Cl. 209-134.000.
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  - Fonne, Gunnar J.; Daae-Johansen, Finn; Thoresen, Per; and Nilsen, Stein-Arne, 4,617,777, Cl. 52-802.000.
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- Veigel, Helmut: *See*—
  - Eckle, Otto; and Veigel, Helmut, 4,617,848, Cl. 82-36.00A.
- Venås, Karl, to Ardal og Sundal Verk a.s. Method of treating and breaking up a liquid with the help of centripetal force. 4,618,427, Cl. 210-629.000.
- Vereczkey, Laszlo : *See*—
  - Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,618,611, Cl. 514-255.000.
- Vertac Chemical Corporation: *See*—
  - Bernard, Milton S., 4,618,367, Cl. 71-121.000.
- Vertesy, Laszlo ; Bender, Rudolf; and Fehlhaber, Hans-Wolfram, to Hoechst Aktiengesellschaft. Amine containing pseudooligosaccharide, pharmaceutical composition and method of use. 4,618,602, Cl. 514-54.000.
- Vesce, Richard V.; and Torres, John R., to United Technologies Corporation. High efficiency series regulator. 4,618,813, Cl. 323-268.000.
- Vesley, George F.: *See*—
  - Chamberlain, Craig S.; Vesley, George F.; Zimmerman, Patrick G.; and McAllister, Jerome W., 4,618,525, Cl. 428-209.000.
- Vetter, Gregory J., to Truth Inc. Self-locking window operator. 4,617,758, Cl. 49-324.000.
- Vetterli, Walter: *See*—
  - Tinnes, Bernhard; Knell, Bernhard; and Vetterli, Walter, 4,618,126, Cl. 266-271.000.
- Vickers, Incorporated: *See*—
  - Read, John I.; and Roderick, Raymond T., 4,617,967, Cl. 137-625.640.
- Victor Company of Japan, Ltd.: *See*—
  - Abe, Ryozo; and Sakurai, Masaki, 4,618,950, Cl. 369-32.000.
  - Hirota, Akira; and Tsushima, Takuya, 4,618,893, Cl. 358-167.000.
  - Ichinoi, Yutaka, 4,618,894, Cl. 358-310.000.
  - Watanabe, Tokumi, 4,618,851, Cl. 340-347.0DA.
- Victor, Paul F., to Boeing Company, The. Wing trailing edge air dams. 4,618,109, Cl. 244-130.000.
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  - Trinn, Maria; Kordik, Gabriella; Udvardy-Nagy nee Cserey Pechaany, Eva; Vida, Zsuzsanna; and Zsoka nee Somkuti, Rzsebet, 4,618,581, Cl. 435-119.000.
- Vierveijzer, Franciscus: *See*—
  - Boeve, Gerard J.; and Vierveijzer, Franciscus, 4,618,137, Cl. 271-219.000.
- Viklund, Ake E., to Electrolux Constructor Aktiebolag. Device for locking a beam to an upright, for example in a pallet rack. 4,618,064, Cl. 211-192.000.
- Vinas, Antonio B., to Laboratorios Vinas, S.A. Zinc carbocysteinate. 4,618,625, Cl. 514-494.000.
- Vincent, Jacques, to Allied Corporation. Venting device for an electronics housing. 4,618,071, Cl. 220-371.000.
- Vineyard, Billy D.: *See*—
  - DeGeeter, Melvin J.; Lanza, Gregory M.; and Vineyard, Billy D., 4,618,604, Cl. 514-130.000.
- Vistakon, Inc.: *See*—
  - Bayshore, Charles A., 4,618,227, Cl. 351-161.000.
- Vitins, Michael, to BBC Brown, Boveri & Company Limited. Method for detecting a fault or also the direction of a fault in electric lines and means for executing this method. 4,618,933, Cl. 364-481.000.
- Vittay, Pal: *See*—
  - Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,618,611, Cl. 514-255.000.
- Vixseboxse, Albertus J.: *See*—
  - Heijnen, Joseph J.; Lourens, Pieter A.; and Vixseboxse, Albertus J., 4,618,418, Cl. 210-151.000.
- Voigt, Hermann U.: *See*—
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- Vojacek, Herbert: *See*—
  - Pflaum, Hermann; and Vojacek, Herbert, 4,618,049, Cl. 192-107.00M.
- Volk, Heinrich, to Esselte Pendaflex Corporation. Hand labeling device. 4,618,393, Cl. 156-384.000.

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  - Neeb, Rudolf; Ironich, Wolfgang; and Volk, Heinrich, 4,618,701, Cl. 560-139.000.
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- von Holst, Johan P.; and Oskarsson, Rolf G., to Santrade Limited. Compound body and method of making the same. 4,618,540, Cl. 428-552.000.
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  - Gilch, Heinz; von Voithenberg, Hubertus; and Albert, Karl-Heinz, 4,618,651, Cl. 525-130.000.
- Vorbrueggen, Helmut: *See*—
  - Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Mannesmann, Gerda; Nieuweboer, Bob; and Town, Michael-Harold, 4,618,626, Cl. 514-530.000.
- Vos, Cornelis; and Brasser, Jan, to Naarden International N.V. Process for flavoring tobacco. 4,617,945, Cl. 131-310.000.
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  - Wahlstrom, Merle D.; and Votaw, Brian T., 4,617,868, Cl. 105-.000.
- VSI Corporation: *See*—
  - Batten, Ronald W., 4,617,844, Cl. 81-436.000.
- W. C. Heraeus GmbH: *See*—
  - Sturm, Walter; Becker, Helmut; Witt, Jurgen; Fritz, Werner; and Eysholdt, Ursula, 4,618,776, Cl. 250-372.000.
- W. P. Hickman Co.: *See*—
  - Hickman, John B., 4,617,770, Cl. 52-214.000.
- W. R. Grace & Co.: *See*—
  - Blouin, John J., 4,618,434, Cl. 252-8.510.
- WABCO Westinghouse Fahrzeugbremsen GmbH: *See*—
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- WABCO Westinghouse Steuerungstechnik GmbH: *See*—
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- Wackman, Connie M., personal representative: *See*—
  - Weiss, Arnold; Schutten, Herman P.; Cartz, Louis; Spellman, Gordon B.; Jaskolski, Stanley V.; and Wackman, Peter H., deceased, 4,618,971, Cl. 378-34.000.
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- Wada, Kenichi: *See*—
  - Kubo, Kanji; Wada, Kenichi; and Shintani, Yooichi, 4,618,926, Cl. 364-200.000.
- Wadowski, Richard A. Hexidecimal clock, and methods of constructing and utilizing same. 4,618,265, Cl. 368-82.000.
- Wadsworth, Julian A. Ventilated toilet. 4,617,687, Cl. 4-213.000.
- Wagenseil, Ludwig; and Merkle, Walter, to Hydromatik. Axial piston machine of the skew axis type with two independent working streams. 4,617,853, Cl. 91-505.000.
- Wahlstrom, Merle D.; and Votaw, Brian T., to Miner Enterprises, Inc. Railroad hopper car with self-contained discharge system. 4,617,868, Cl. 105-.000.
- Wainwright, Andrew R., to United Biscuits (UK) Limited. Methods for making filled extruded food products. 4,618,499, Cl. 426-283.000.
- Wakashima, Yoshikazu; and Shimada, Sachio, to Hitachi, Ltd. Graphite-coated tube and process for producing the same. 4,618,406, Cl. 204-181.100.
- Wakita, Saburo: *See*—
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- Waku, Yoshiharu: *See*—
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- Waletzko, Wallace. Device for manipulating cadavers. 4,617,706, Cl. 27-28.000.
- Walker, Mary A.: *See*—
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- Walker, Robert D., to Endotronics, Inc. Apparatus for administering a controlled dosage of a chemical substance having an improved culture chamber. 4,618,586, Cl. 435-1.000.
- Walker, Robert G., to Industra Products Co. Inc. Method and apparatus for winding and inserting coils in a dynamoelectric machine stator core. 4,617,972, Cl. 140-92.100.
- Wallace, John E., to Boeing Company, The. Universal matrix switching device. 4,618,755, Cl. 200-175.000.
- Walls, John E.; and Liu, Shuchen, to American Hoechst Corporation. Aqueous developable lithographic printing plates containing an admixture of diazonium salts and polymers and composition therefor. 4,618,562, Cl. 430-157.000.
- Wang, Joseph Y., to Miles Laboratories, Inc. Reagent test device containing hydrophobic barriers. 4,618,475, Cl. 422-56.000.
- Wang, Ko Pen. Bronchoscopic needle assembly. 4,617,940, Cl. 128-753.000.
- Wang, Paul C.: *See*—
  - Smith, Stanford L.; Wang, Paul C.; and Coffey, Charles W., 4,618,826, Cl. 324-308.000.
- Ward, Dennis R.: *See*—
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- Watanabe, Junji, to Kabushiki Kaisha Toshiba. Image forming apparatus capable of selectively optically scanning one or more documents to be copied during one scanning operation. 4,618,244, Cl. 355-8.000.
- Watanabe, Masae, to Yamaha Hatsudoki Kabushiki Kaisha. Wire wheel. 4,618,187, Cl. 301-56.000.
- Watanabe, Masakane: *See*—
  - Kondo, Yasuo; Watanabe, Masakane; and Oshiro, Takao, 4,618,096, Cl. 239-101.000.
- Watanabe, Tokumi, to Victor Company of Japan, Ltd. Apparatus for reproducing signals pre-stored in a memory. 4,618,851, Cl. 340-347.0DA.
- Watanabe, Yasuo: *See*—
  - Sadaki, Hiroshi; Imaizumi, Hiroyuki; Nagai, Takashi; Takeda, Kenji; Myokan, Isao; Inaba, Takihiro; Watanabe, Yasuo; Fukuoka, Yoshikazu; Minami, Shinzaburo; and Saikawa, Isamu, 4,618,606, Cl. 514-202.000.
- Watkinson, Stephen W., to U.S. Philips Corporation. Polar loop transmitter. 4,618,999, Cl. 455-108.000.
- Watson, Ronald J.: *See*—
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- Watt, George; and Young, George E. Fuel briquettes and their preparation. 4,618,347, Cl. 44-16.00F.
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- Wayman, William H.: *See*—
  - Hays, Dan A.; and Wayman, William H., 4,618,241, Cl. 355-3.0DD.
- Wean United, Inc.: *See*—
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- Webb, Tommy W.: *See*—
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- Weber, James L.; and Davidson, Donald J., to Rockwell International Corporation. Brake shoe retention apparatus. 4,618,034, Cl. 188-73.360.
- Weber, Richard A.: *See*—
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- Webster, Thelton A.: *See*—
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- Weger, Kenneth F., Jr., to Knaack Mfg. Co. Ladder clamping device for vehicle rack. 4,618,083, Cl. 224-324.000.
- Wehr, Eugene W.; Oster, Clark L.; and Evans, Terence J., to Square D Company. Arc extinguishing assembly. 4,618,751, Cl. 200-144.00R.
- Weigel, Wolfgang, to Hughes Aircraft Company. Thermal imaging device having non-orthogonal scan position sensor to scanning mirror beam path angle. 4,618,768, Cl. 250-334.000.
- Weiger, Gunter; Dorrie, Dieter; and Schwerdt, Paul, to Daimler-Benz Aktiengesellschaft. Actuating device for two mutually dependently actuable valves. 4,617,969, Cl. 137-627.500.
- Weil, Edward D.: *See*—
  - Bay, W. Elliott; Reineke, Karl E.; and Weil, Edward D., 4,618,720, Cl. 568-17.000.
- Weiland, Walter F., Jr.: *See*—
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- Weiler, Robert M., to O'Donnell, Joe, a part interest. Wiper blade edger. 4,617,765, Cl. 51-205.0WG.
- Weinmann, Karl: *See*—
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  - Green, Harold A.; and Weinstein, Morris, 4,618,370, Cl. 106-111.000.
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- Weiss, Carl S.: *See*—
  - Brinckman, Frederick E.; Degnan, Thomas F., Jr.; and Weiss, Carl S., 4,618,410, Cl. 208-97.000.
- Weiss, Wolfram; Balzer, Wolf-Dieter; Fikentscher, Rolf; Immel, Guenther; and Wolf, Hans, to BASF Aktiengesellschaft. Coating materials which contain α-hydroxyketones as antiskimming agents. 4,618,371, Cl. 106-263.000.
- Weitz, Hans-Martin; and Fischer, Rolf, to BASF Aktiengesellschaft. Acyloxy-2-butenes and their preparation. 4,618,704, Cl. 560-262.000.
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- Wells, Robert L., to Procter & Gamble Company, The. Depilatory compositions. 4,618,344, Cl. 8-161.000.
- Wells, Thomas R., to Bell & Howell Company. Desk top microform reader. 4,618,232, Cl. 353-79.000.

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- Wendel, Albrecht: *See—*
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  - Fisher, Marvin D.; and Bobsein, Louis E., 4,618,387, Cl. 156-244.110.
  - Fox, David A., 4,618,920, Cl. 363-37.000.
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  - Lenhoff, John G., Jr., 4,618,850, Cl. 340-347.0CC.
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  - Martin, Raymond G.; and Mims, James H., 4,618,864, Cl. 342-162.000.
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  - Schwaderer, John R.; and Kristof, Mark J., 4,618,756, Cl. 219-10.55R.
- White, Billy W., to Halliburton Company. Exoskeletal packaging scheme for circuit boards. 4,618,197, Cl. 339-17.00R.
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- White, Lawrence K.; Miszkowski, Nancy A.; and Levine, Aaron W., to RCA Corporation. Absorptive layer for optical lithography. 4,618,565, Cl. 430-271.000.
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- White, William T.: *See—*
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- Wietrzynski, Bolko: *See—*
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- Wilgood Corporation: *See—*
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- Williams, Keith R., to Sundstrand Corporation. Multi-function valve. 4,617,797, Cl. 60-444.000.
- Williams, Robert A. Wind operated apparatus. 4,618,312, Cl. 416-119.000.
- Williams, Tim: *See—*
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- Wilson, John F.: *See—*
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- Wilson, Michael A., to Maranantha Research Ltd. Proximity sensor oscillator utilizing controlled charge. 4,618,835, Cl. 331-65.000.
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  - Dexter, Martin; and Winter, Roland A. E., 4,618,638, Cl. 524-208.000.
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  - Holtslander, Roger A., 4,618,817, Cl. 323-322.000.
- Wolf, Hans: *See—*
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- Wolf, Michael L.: *See—*
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- Wright, Bruce R. Video editing system. 4,618,895, Cl. 358-311.000.
- Wright, Raymond L., to Eastern Company, The. Nut member and mine roof support system incorporating same. 4,618,291, Cl. 405-261.000.
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  - Papst, Georg; and Wrobel, Gunter, 4,618,315, Cl. 417-354.000.
- Wrobleski, David L.; Mienko, David K.; and Leigh-Monstevens, Keith V., to Automotive Products plc. Hydraulic slave cylinder switch. 4,617,855, Cl. 92-5.00R.
- Wu, Frank, to Sandoz Ltd. Heterocyclic esters of phenoxybenzoic acids useful as herbicides. 4,618,359, Cl. 71-88.000.
- Wu, Philip T.: *See—*
  - Aipperspach, Anthony G.; Fitzgerald, Joseph M.; and Wu, Philip T., 4,618,943, Cl. 365-104.000.
- Wutka, Anthony D.: *See—*
  - Judge, Robert L.; and Wutka, Anthony D., 4,618,292, Cl. 406-19.000.
- Xerox Corporation: *See—*
  - Buchar, Wayne A., 4,618,248, Cl. 355-14.00R.
  - Hays, Dan A.; and Wayman, William H., 4,618,241, Cl. 355-3.0DD.
  - Knapp, John F., 4,618,243, Cl. 355-4.000.
  - Silverberg, Morton, 4,618,138, Cl. 271-245.000.
  - Stolka, Milan; Pai, Damodar M.; Smith, Thomas W.; Duff, James M.; and Loutfy, Rafik O., 4,618,551, Cl. 430-58.000.
- Xomox Corporation: *See—*
  - Sandling, Michael J., 4,617,957, Cl. 137-315.000.
- Yale University: *See—*
  - Pawelek, John M., 4,618,484, Cl. 424-1.100.
- Yamada, Hisafumi; Kurik, Choei; and Saito, Junya, to Sony Corporation. Reference time detecting circuit. 4,618,891, Cl. 358-153.000.
- Yamada, Kazuji: *See—*
  - Shimizu, Isao; and Yamada, Kazuji, 4,618,397, Cl. 156-628.000.
- Yamada, Shigeki: *See—*
  - Shizuka, Masayuki; and Yamada, Shigeki, 4,618,793, Cl. 310-232.000.
- Yamada, Takahiro; Namekawa, Satoshi; Yoshino, Eiji; and Matsuda, Yasumasa, to Hitachi, Ltd.; Hitachi Koki Co.; and Hitachi Seiko Ltd. Ink jet recording apparatus. 4,618,868, Cl. 346-75.000.
- Yamada, Tetsuo, to Kabushiki Kaisha Toshiba. Solid state imaging device. 4,618,874, Cl. 357-30.000.

- Yamada, Yutaka, to Nippondenso Co., Ltd.; and Yamada, Yutaka. Check valve assembly for pipeline system. 4,617,959, Cl. 137-512.100.
- Yamagishi, Jun: *See—*
  - Kagiyama, Tsutomu; Kobayashi, Fumio; Yamagishi, Jun; and Nishikawa, Hiromitsu, 4,617,757, Cl. 49-280.000.
- Yamagishi, Toshio, to Sharp Kabushiki Kaisha. Heat fixing device for a copying machine. 4,618,242, Cl. 355-3.0FU.
- Yamaguchi, Akihiro: *See—*
  - Yamaguchi, Keizaburo; Sugimoto, Kenichi; Tanabe, Yoshimitsu; Kawashima, Saburo; and Yamaguchi, Akihiro, 4,618,714, Cl. 564-329.000.
- Yamaguchi, Keizaburo; Sugimoto, Kenichi; Tanabe, Yoshimitsu; Kawashima, Saburo; and Yamaguchi, Akihiro, to Mitsui Toatsu Chemicals, Inc. Process for preparation of 3,3'- or 3,4'-diaminobenzophenones. 4,618,714, Cl. 564-329.000.
- Yamaguchi, Yoshiaki: *See—*
  - Kanematu, Tetuo; and Yamaguchi, Yoshiaki, 4,618,491, Cl. 424-81.000.
- Yamaha Hatsudoki Kabushiki Kaisha: *See—*
  - Aoi, Kazuo; and Tsuchida, Naoki, 4,617,881, Cl. 123-90.270.
  - Oshiro, Nobuaki; and Futakuchi, Yorio, 4,617,885, Cl. 123-192.00B.
  - Watanabe, Masae, 4,618,187, Cl. 301-56.000.
  - Yoshikawa, Masaaki, 4,617,896, Cl. 123-432.000.
- Yamakawa, Toru; Makita, Fujio; Umezawa, Mitsuo; and Sakakiyama, Ryuzo, to Fuji Jukogyo Kabushiki Kaisha. System for controlling a power transmission of a four-wheel drive vehicle. 4,617,840, Cl. 74-865.000.
- Yamamoto, Hideaki: *See—*
  - Sasano, Akira; Seki, Kouichi; Yamamoto, Hideaki; Baji, Toru; and Tsukada, Toshihisa, 4,618,873, Cl. 357-23.700.
- Yamamoto, Hideomi; Watanabe, Haruzo; Kishie, Hidehiko; and Nishihara, Toshio, to Matsushita Electric Works, Ltd. Composite member comprising metallic sheet bent to be arcuate in section and rigid synthetic resin coating. 4,617,717, Cl. 29-527.400.
- Yamamoto, Koichi, to Mazda Motor Corporation. Control for automatic transmissions. 4,618,042, Cl. 192-0.044.
- Yamamoto, Michihiro, to Sumitomo Chemical Company, Limited. Novel 5-substituted 1,2,4,-oxadiazole derivatives and preparation thereof. 4,618,617, Cl. 514-364.000.
- Yamamoto, Mikio: *See—*
  - Noguchi, Matsusaburo; Yamamoto, Mikio; and Kojima, Tetsuji, 4,618,250, Cl. 355-15.000.
- Yamamura, Takemi; Tokuse, Masahiro; and Waku, Yoshiharu, to UBE Industries, Ltd. Inorganic fiber-reinforced ceramic composite material. 4,618,529, Cl. 428-224.000.
- Yamanashi, Masanao: *See—*
  - Suzuki, Nobuyuki; Tanaka, Kenichi; and Yamanashi, Masanao, 4,617,979, Cl. 164-97.000.
- Yamano, Shoji; Mikata, Yoshitaka; Teramoto, Osamu; and Nishide, Kazuhiro, to Yamato Scale Company, Limited. Combination weighing machine. 4,618,012, Cl. 177-25.000.
- Yamano, Shoji; Mikata, Yoshitaka; Teramoto, Osamu; and Nishide, Kazuhiro, to Yamato Scale Company, Limited. Combination weighing machine with auxiliary weight hopper. 4,618,013, Cl. 177-25.000.
- Yamanouchi, Katsuto; Saitoh, Katsuo; Saito, Yoshinori; and Kikyohara, Tadashi, to Nissan Motor Co., Ltd.; and Atsugi Motor Parts Co., Ltd. Fuel filter for diesel engine. 4,618,417, Cl. 210-149.000.
- Yamanouchi Pharmaceutical Co., Ltd.: *See—*
  - Murase, Kiyoshi; Mase, Toshiyasu; Arima, Hideki; and Tomioka, Kenichi, 4,618,627, Cl. 514-678.000.
- Yamasaki, Masafumi: *See—*
  - Maitani, Yoshihisa; Tsunefuji, Katsuhiko; and Yamasaki, Masafumi, 4,618,238, Cl. 354-431.000.
- Yamashita, Koji: *See—*
  - Miyasaka, Eiji; Hirose, Iwao; Yamashita, Koji; Kawai, Kenji; and Kanada, Eiji, 4,618,255, Cl. 355-71.000.
- Yamatake-Honeywell Co. Limited: *See—*
  - Fujiwara, Masatoshi; and Kuroda, Masato, 4,617,952, Cl. 137-85.000.
- Yamato, Akihiro: *See—*
  - Otobe, Yutaka; and Yamato, Akihiro, 4,617,901, Cl. 123-489.000.
- Yamato Scale Company, Limited: *See—*
  - Yamano, Shoji; Mikata, Yoshitaka; Teramoto, Osamu; and Nishide, Kazuhiro, 4,618,012, Cl. 177-25.000.
  - Yamano, Shoji; Mikata, Yoshitaka; Teramoto, Osamu; and Nishide, Kazuhiro, 4,618,013, Cl. 177-25.000.
- Yamatsuta, Kiichi: *See—*
  - Ohe, Junya; Wakita, Saburo; Yamatsuta, Kiichi; Goto, Shoji; Kutsukake, Yukinori; and Sugizaki, Masuo, 4,618,474, Cl. 420-436.000.
- Yanagawa, Hitoshi; Nagasawa, Takeshi; Inoue, Shunzo; Iwaya, Toshio; and Murata, Shinji, to Canon Kabushiki Kaisha. Recording apparatus. 4,618,251, Cl. 355-28.000.
- Yanagishita, Hitoshi: *See—*
  - Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Yanagishita, Hitoshi; and Hayashi, Shozo, 4,618,914, Cl. 361-315.000.
- Yang, James C. H. Combination can opener. 4,617,842, Cl. 81-3.090.
- Yashiki, Yuichi, to Canon Kabushiki Kaisha. Process of making electrophotographic photosensitive member. 4,618,559, Cl. 430-127.000.
- Yasuhara, Seishi: *See—*
  - Hirano, Yutaka; Inoue, Kazuo; and Yasuhara, Seishi, 4,617,902, Cl. 123-501.000.
- Yates, Martyn R. G., to Production Techniques Limited. Pump for pumping corrosive fluids. 4,618,425, Cl. 210-416.100.
- Yates, William W., to Westinghouse Electric Corp. Dynamoelectric machine with a laminated pole permanent magnet rotor. 4,618,792, Cl. 310-156.000.
- Yatsu, Tadao; and Hinooka, Nobuya, to Mitsui Petrochemical Industries, Ltd. Method of making a multilayered container. 4,618,386, Cl. 156-242.000.
- Yau, Chi L. Steerable wind-powered vehicle. 4,617,871, Cl. 114-39.000.
- Yee, Harold H.; and Hudson, James F., to Hughes Aircraft Company. Air-line microwave coaxial reversing switch having diagonally switched path. 4,618,840, Cl. 333-105.000.
- Yee, Joe T.: *See—*
  - Lee, Peter; Cheung, George F.; and Yee, Joe T., 4,618,917, Cl. 362-88.000.
- Yester, Francis R., Jr.: *See—*
  - Gannon, Mark A.; Yester, Francis R., Jr.; and Gailus, Paul H., 4,618,836, Cl. 331-96.000.
- Yochum, Michael. Rear swing arm assembly for three or four wheeled off-the-road vehicle track conversion unit. 4,618,015, Cl. 180-9.210.
- Yokota, Koji: *See—*
  - Fujitani, Yoshiyasu; Muraki, Hideaki; Yokota, Koji; Sobukawa, Hideo; and Matsunaga, Shinichi, 4,617,794, Cl. 60-274.000.
- Yokoyama, Meiso; Takahashi, Makoto; Nishiwaki, Tsunehiko; and Imai, Makoto, to Nippon Seiki Co., Ltd. Gas detecting device. 4,617,821, Cl. 73-23.000.
- Yokoyama, Michiyo: *See—*
  - Suzuki, Tetsumi; Murayama, Tetsuo; Ono, Hitoshi; Aramaki, Shinji; and Yokoyama, Michiyo, 4,618,555, Cl. 430-78.000.
- Yokoyama, Naoki; and Ohshima, Toshio, to Fujitsu Limited. Process for fabricating heterojunction bipolar transistor with low base resistance. 4,617,724, Cl. 29-576.00B.
- Yonezawa, Toshio: *See—*
  - Aoyama, Masaharu; Abe, Masahiro; Ajima, Takashi; and Yonezawa, Toshio, 4,618,878, Cl. 357-71.000.
- Yoshida, Junichi; and Orimoto, Takashi, to Casio Computer Co., Ltd. Video game apparatus allowing for a variation in playing sequence. 4,618,146, Cl. 273-1.00E.
- Yoshida Kogyo K. K.: *See—*
  - Ikemura, Akio; and Kajiki, Minoru, 4,617,805, Cl. 62-259.100.
- Yoshida, Masao, to Kabushiki Gaisha Waizen. Forming a simulated halftone picture. 4,618,523, Cl. 428-189.000.
- Yoshihara, Satoshi: *See—*
  - Takano, Katsuhiko; Iijima, Shigeharu; Yoshihara, Satoshi; Matsushima, Masaaki; Kishi, Hiroyoshi; and Sasamori, Eizo, 4,618,537, Cl. 428-336.000.
- Yoshii, Shizuka: *See—*
  - Hatakeyama, Iwao; Maeda, Yasushi; Ishii, Osamu; and Yoshii, Shizuka, 4,618,901, Cl. 360-114.000.
- Yoshikawa, Eiichi, to Laurel Bank Machine Co., Ltd. Bill paying machine. 4,618,072, Cl. 221-2.000.
- Yoshikawa, Masaaki, to Yamaha Hatsudoki Kabushiki Kaisha. Internal combustion engine having three intake valves per cylinder. 4,617,896, Cl. 123-432.000.
- Yoshimura, Motomu: *See—*
  - Matsumura, Mitsuie; Yoshimura, Motomu; and Urushibata, Hiroaki, 4,618,543, Cl. 429-19.000.
- Yoshinari, Jiro: *See—*
  - Morita, Haruyuki; Yoshinari, Jiro; and Nakayama, Masatoshi, 4,618,542, Cl. 428-694.000.
- Yoshino, Eiji: *See—*
  - Yamada, Takahiro; Namekawa, Satoshi; Yoshino, Eiji; and Matsuda, Yasumasa, 4,618,868, Cl. 346-75.000.
- Yoshitomi Pharmaceutical Industries, Ltd.: *See—*
  - Araki, Kazuhiko; Ao, Hideki; Inui, Jun; and Aihara, Kenichi, 4,618,607, Cl. 514-212.000.
- Yoshizaki, Kouji, to Toyota Jidosha Kabushiki Kaisha. Valve actuating apparatus for optionally resting the operation of a valve in internal combustion engine. 4,617,880, Cl. 123-90.160.
- Young, Dean A.; and Koepke, Jeffery W., to Union Oil Company of California. Hydrocarbon conversion process with catalytically active amorphous silica. 4,618,738, Cl. 585-480.000.
- Young, George E.: *See—*
  - Watt, George; and Young, George E., 4,618,347, Cl. 44-16.00F.
- Young, Hartley F.; and Collins, John, to Ralph McKay Limited. Rail insulation pads. 4,618,093, Cl. 238-283.000.
- Young, Mark S.; Drew, John; Shebanow, Michael C.; and Dujari, Vineet, to Advanced Micro Devices, Inc. Method and apparatus for reading a disk. 4,618,898, Cl. 360-51.000.
- Youskites, Edward: *See—*
  - Berde, Dennis; and Youskites, Edward, 4,618,889, Cl. 358-144.000.
- Yuchi, Sadataka, to Hochiki Corporation. Fire detector. 4,618,853, Cl. 340-505.000.
- Yugen Kaisha GO Chuzo Tekkosho: *See—*
  - Go, Seitaro, 4,618,169, Cl. 285-86.000.
- Yukimoto, Sadao: *See—*
  - Kawakubo, Fumio; Takanoo, Miyako; Yukimoto, Sadao; and Isayama, Katsuhiko, 4,618,653, Cl. 525-404.000.
  - Kawakubo, Fumio; Takanoo, Miyako; Yukimoto, Sadao; and Isayama, Katsuhiko, 4,618,656, Cl. 525-404.000.
- Yukumoto, Hideki: *See—*
  - Sakakibara, Koji; Haraguchi, Hiroshi; and Yukumoto, Hideki, 4,617,895, Cl. 123-425.000.
- Yuyama, Yasuaki; Nakano, Junji; Kondo, Shyunichi; Sato, Hideo; and Sawada, Kenichi, to Fuji Photo Film Co., Ltd. Electrophotographic recording material comprises backing layer .containing long-chain alkanoic acid metal salt. 4,618,553; Cl. 430-69.000.

- Zahn, Wayne V.: *See—*
  - Pauley, Gregory L.; and Zahn, Wayne V., 4,617,753, Cl. 43-42.190.
- Zahnradfabrik Altona-Elbe Hans Meyer GmbH & Co. KG: *See—*
  - Sassen, Heinrich, 4,618,046, Cl. 192-67.00P.
- Zahnradfabrik Friedrichshafen, AG.: *See—*
  - Liebert, Karl-Heinz; and Wiedemann, Erwin, 4,618,017, Cl. 180-133.000.
- Zaklady Produkcji Urzadzen Mechanicznych im. Janka Krasickiego "Elwo": *See—*
  - Saternus, Antoni; Miczek, Ludwik; and Bartnik, Mieczyslaw, 4,618,376, Cl. 134-26.000.
- Zambon SpA: *See—*
  - Castaldi, Graziano; and Giordano, Claudio, 4,618,697, Cl. 560-56.000.
- Zammarano, Alessandro. Device for the conservation and the time-distribution of food for animals. 4,617,874, Cl. 119-51.120.
- Zanotti, Richard: *See—*
  - Pricone, Robert M.; Roberts, William N.; and Zanotti, Richard, 4,618,518, Cl. 428-40.000.
- Zenith Electronics Corporation: *See—*
  - Campisi, Carl; and Kay, Brian D., 4,618,131, Cl. 269-32.000.
- Zhabokrug, Ilya. Universal filter changer for theatrical lights. 4,618,918, Cl. 362-281.000.
- Zimmerman, Patrick G.: *See—*
  - Chamberlain, Craig S.; Vesley, George F.; Zimmerman, Patrick G.; and McAllister, Jerome W., 4,618,525, Cl. 428-209.000.
- Zingg, Walter, to Asulab A.S. Resonator vibrating in a thickness-shear mode. 4,618,798, Cl. 310-366.000.
- Zott, Werner: *See—*
  - Gotz, Dieter; and Zott, Werner, 4,618,273, Cl. 384-606.000.
- Zsoka nee Somkuti, Rzsebet: *See—*
  - Trinn, Maria; Kordik, Gabriella; Udvardy-Nagy nee Cserey Pechaany, Eva; Vida, Zsuzsanna; and Zsoka nee Somkuti, Rzsebet, 4,618,581, Cl. 435-119.000.
- Zuckler, Karl, to Siemens Aktiengesellschaft. Vacuum switching tube with a coil for generating a magnetic field. 4,618,750, Cl. 200-144.00B.
- Zygraich, Nathan: *See—*
  - Delgoffe, Jean-Claude; Lobmann, Michele; and Zygraich, Nathan, 4,618,493, Cl. 424-89.000.
- 501 Societe Civile de Recherches et d'Etudes Theraputiques: *See—*
  - Chazot, Guy; and Suck, Catherine, 4,618,601, Cl. 514-23.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF OCTOBER, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Cherrington, Martin D., to Reading & Bates Construction Co. Process for drilling underground arcuate paths and installing production casings, conduits, or flow pipes therein. Re. 32,267, Cl. 175-53.000.
- Emerson Electric Co.: *See—*
  - Tuggle, Lloyd H.; Loyd, Ronald C.; and Walker, Lee R., Re. 32,266, Cl. 172-15.000.
- Gordon, Paul, to Strategic Medical Research Corp. Therapeutic composition and method of therapeutically treating warm blooded animals therewith. Re. 32,268, Cl. 514-25.000.
- Loyd, Ronald C.: *See—*
  - Tuggle, Lloyd H.; Loyd, Ronald C.; and Walker, Lee R., Re. 32,266, Cl. 172-15.000.
- Reading & Bates Construction Co.: *See—*
  - Cherrington, Martin D., Re. 32,267, Cl. 175-53.000.
- Strategic Medical Research Corp.: *See—*
  - Gordon, Paul, Re. 32,268, Cl. 514-25.000.
- Tuggle, Lloyd H.; Loyd, Ronald C.; and Walker, Lee R., to Emerson Electric Co. Lawn edger..Re. 32,266, Cl. 172-15.000.
- Walker, Lee R.: *See—*
  - Tuggle, Lloyd H.; Loyd, Ronald C.; and Walker, Lee R., Re. 32,266, Cl. 172-15.000.

LIST OF DESIGN PATENTEES

- Advanced Technology Laboratories, Inc.: *See—*
  - LaCelle, LeRoy J.; Ungar, Joseph L.; and Selke, Gary J., 286,325, Cl. D24-1.100.
- Aktiebolaget Volvo: *See—*
  - Sandberg, Ulf A., 286,278, Cl. D12-211.000.
- AMC International ALFA Metalcraft Corporation: *See—*
  - Schultz, Horst, 286,253, Cl. D7-137.000.
- American Commercial, Incorporated: *See—*
  - Blake, Alfred; and Lax, Michael, 286,241, Cl. D7-11.000.
  - Blake, Alfred; and Lax, Michael, 286,242, Cl. D7-11.000.
  - Blake, Alfred; and Lax, Michael, 286,243, Cl. D7-11.000.
  - Blake, Alfred; and Lax, Michael, 286,244, Cl. D7-11.000.
  - Blake, Alfred, 286,245, Cl. D7-13.000.
  - Blake, Alfred, 286,246, Cl. D7-13.000.
  - Blake, Alfred, 286,247, Cl. D7-13.000.
  - Blake, Alfred, 286,248, Cl. D7-13.000.
- Asaki, James T., to ITT Corporation. Cordless combination handset and stand telephone set. 286,282, 10-21-86, Cl. D14-53.000.
- AT&T Information Systems Inc.: *See—*
  - Danielson, David C.; and McGarvey, John N., 286,285, Cl. D14-60.000.
- Atsumi, Kaname: *See—*
  - Matsuo, Jiro; and Atsumi, Kaname, 286,269, Cl. D10-31.000.
- Barr, David A.; and Grae, Bernard A., to Tandy Corporation. Computer housing. 286,289, 10-21-86, Cl. D14-100.000.
- Berfield, Robert C.; and Crevling, Robert L., Jr., to Shop-Vac Corporation. Tank for electric vacuum cleaner. 286,336, 10-21-86, Cl. D32-23.000.
- Bianchi International: *See—*
  - Gregory, Wayne R., 286,315, Cl. D3-104.000.
- Biondo, Barry. Automobile trunk lid replacement unit. 286,277, 10-21-86, Cl. D12-196.000.
- Blake, Alfred; and Lax, Michael, to American Commercial, Incorporated. Champagne flute. 286,241, 10-21-86, Cl. D7-11.000.
- Blake, Alfred; and Lax, Michael, to American Commercial, Incorporated. Goblet. 286,242, 10-21-86, Cl. D7-11.000.
- Blake, Alfred; and Lax, Michael, to American Commercial, Incorporated. Wine glass. 286,243, 10-21-86, Cl. D7-11.000.
- Blake, Alfred; and Lax, Michael, to American Commercial, Incorporated. Champagne glass. 286,244, 10-21-86, Cl. D7-11.000.
- Blake, Alfred, to American Commercial, Incorporated. Champagne glass. 286,245, 10-21-86, Cl. D7-13.000.
- Blake, Alfred, to American Commercial, Incorporated. Champagne flute. 286,246, 10-21-86, Cl. D7-13.000.
- Blake, Alfred, to American Commercial, Incorporated. Wine glass. 286,247, 10-21-86, Cl. D7-13.000.
- Blake, Alfred, to American Commercial, Incorporated. Goblet. 286,248, 10-21-86, Cl. D7-13.000.
- Bourgeois, Bruce E. Mailing envelope. 286,300, 10-21-86, Cl. D19-3.000.
- Braun Aktiengesellschaft: *See—*
  - Ullmann, Roland, 286,328, Cl. D28-49.000.
- brother Kogyo Kabushiki Kaisha: *See—*
  - Itoh, Kazuo, 286,294, Cl. D15-132.000.
- Buch, Roman. Instrument housing for a ski pole. 286,271, 10-21-86, Cl. D10-102.000.
- Bulgari, Gianni, to Partecipazioni Bulgari S.p.A. Link for jewelry chain. 286,272, 10-21-86, Cl. D11-93.000.
- Burton, Thelma R. Wall mounted holder for an electric curling iron, curling brush or the like. 286,238, 10-21-86, Cl. D6-573.000.
- Carlson, Arthur R., to Decor Corporation Proprietary Ltd., The. Food bowl. 286,249, 10-21-86, Cl. D7-23.000.
- Catania, Joseph J.; Gaudino, Angelo; DeTuzzi, Russell; and Gardner, Maxwell, to Century Fireplace Furnishings, Inc. Fireplace screen. 286,322, 10-21-86, Cl. D23-138.300.
- Catry, Benoit, to Fonderies Franco-Belges. Wood burning stove. 286,321, 10-21-86, Cl. D23-97.000.
- Cavalet ApS: *See—*
  - Werk, Otto, 286,231, Cl. D3-72.000.
- Century Fireplace Furnishings, Inc.: *See—*
  - Catania, Joseph J.; Gaudino, Angelo; DeTuzzi, Russell; and Gardner, Maxwell, 286,322, Cl. D23-138.300.
- Christianson, Peter. Combined hog trough feeder and divider. 286,332, 10-21-86, Cl. D30-13.000.
- Citizen Watch Co., Ltd.: *See—*
  - Matsuo, Jiro; and Atsumi, Kaname, 286,269, Cl. D10-31.000.
- Clover Mfg. Co., Ltd.: *See—*
  - Okada, Hidekazu, 286,262, Cl. D9-303.000.
- Clowe, Robert A.; and Gault, Robert L., to Xerox Corporation. Office copier processing cartridge. 286,297, 10-21-86, Cl. D16-32.000.
- Cohen, Leonard; Feinberg, Martin R.; Knoepke, Eckhard; and Quinlan, William J., to Samsonite Corporation. Garment bag. 286,230, 10-21-86, Cl. D3-71.000.
- Colgate-Palmolive Company: *See—*
  - Vesborg, Steen; and Jacobsen, Henrik, 286,266, Cl. D9-376.000.
- Colight, Inc.: *See—*
  - May, Joe T.; and Hale, Steven D., 286,298, Cl. D16-39.000.
- Collins, Scott J., to Wisconsin Tissue Mills, Inc. Paper towel cabinet. 286,235, 10-21-86, Cl. D6-522.000.
- Collins, Scott J., to Wisconsin Tissue Mills, Inc. Paper towel dispensing cabinet. 286,236, 10-21-86, Cl. D6-522.000.
- Colomac, James J., Jr. Solitaire game board. 286,306, 10-21-86, Cl. D21-57.000.
- Corn, James F.: *See—*
  - Parks, James D.; Moss, Charles A.; Dyer, Kermit W.; and Corn, James F., 286,324, Cl. D23-151.000.
- CPG Products Corp.: *See—*
  - Mayer, John F.; and Norton, John J., 286,308, Cl. D21-146.000.
- Crevling, Robert L., Jr.: *See—*
  - Berfield, Robert C.; and Crevling, Robert L., Jr., 286,336, Cl. D32-23.000.
- Cunningham, William T. Arm support for hand tool. 286,338, 10-21-86, Cl. D34-23.000.
- Curver B.V.: *See—*
  - van Berne, Joost; and van der Vlies, Gerardus J., 286,339, Cl. D34-43.000.
- Danielson, David C.; and McGarvey, John N., to AT&T Information Systems Inc. Telephone stand. 286,285, 10-21-86, Cl. D14-60.000.
- Dart Industries Inc.: *See—*
  - Wolff, Martin J., 286,268, Cl. D9-447.000.
- Davis, Edward P.; and Gallery, Michael J., to Dunlop Limited. Tire for a vehicle wheel. 286,274, 10-21-86, Cl. D12-146.000.
- Decor Corporation Proprietary Ltd., The: *See—*
  - Carlson, Arthur R., 286,249, Cl. D7-23.000.
- DeTuzzi, Russell: *See—*
  - Catania, Joseph J.; Gaudino, Angelo; DeTuzzi, Russell; and Gardner, Maxwell, 286,322, Cl. D23-138.300.
- Diel, Robert L.: *See—*
  - Skinner, Jerald P.; Zlotky, Richard A.; and Diel, Robert L., 286,288, Cl. D14-91.000.

- Dreisbach, Judy: *See—*
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- Ellis, Gary R. Carrier for a child. 286,227, 10-21-86, Cl. D3-32.000.
- Emmons, Vera E.: *See—*
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- Evans, Eric R., to EBRO Espalier Limited. Espalier frame. 286,259, 10-21-86, Cl. D8-1.000.
- Fain, Virginia K. Long stem Valentine card. 286,301, 10-21-86, Cl. D19-6.000.
- Fassauer, Arthur L. Combination food and water pet feeder. 286,333, 10-21-86, Cl. D30-16.000.
- Feinberg, Martin R.: *See—*
  - Cohen, Leonard; Feinberg, Martin R.; Knoepke, Eckhard; and Quinlan, William J., 286,230, Cl. D3-71.000.
  - Knoepke, Eckhard; and Feinberg, Martin R., 286,229, Cl. D3-48.000.
- Fisher, Richard E. Combined children's bed, storage unit and amusement center. 286,232, 10-21-86, Cl. D6-384.000.
- Fonderies Franco-Belges: *See—*
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- Gage, Eugene M. Camp stove leveler frame. 286,255, 10-21-86, Cl. D7-332.000.
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- Gardner, Maxwell: *See—*
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- Gault, Robert L.: *See—*
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- Gautam, Anil S. Tongue cleaner or similar article. 286,326, 10-21-86, Cl. D24-28.000.
- Germain, Robert A., to USM Corporation. Design for spreader agitator. 286,293, 10-21-86, Cl. D15-28.000.
- Goodwin, Raymond, to International Leisuretime Products, Inc. Combined cooler chest and radio. 286,252, 10-21-86, Cl. D7-77.000.
- Grae, Bernard A.: *See—*
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- Grange, Kenneth H., to Thorn Emi Domestic Appliances Limited. Food mixer. 286,258, 10-21-86, Cl. D7-379.000.
- Gregory, Wayne R., to Bianchi International. Ammunition magazine pouch. 286,315, 10-21-86, Cl. D3-104.000.
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- Halm, Hans, to Wilkinson Sword Limited. Razor. 286,327, 10-21-86, Cl. D28-45.000.
- Hara, Kunio; and Okuyama, Tooru, to Kabushiki Kaisha Toshiba. Electronic copying machine. 286,295, 10-21-86, Cl. D16-31.000.
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- Haworth, Brian D., to S. C. Johnson & Son, Inc. Air freshener dispenser. 286,323, 10-21-86, Cl. D23-150.000.
- HGM, Inc.: *See—*
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- Holtman, Steve H.; and Nelson, George A., to HGM, Inc. Housing for connecting a medical argon laser to a laser probe. 286,280, 10-21-86, Cl. D13-19.000.
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- Irwin, James. T-shirt. 286,220, 10-21-86, Cl. D2-209.000.
- Itoh, Kazuo, to brother Kogyo Kabushiki Kaisha. Machine used for drilling, tapping and milling, and having an automatic tool changing system. 286,294, 10-21-86, Cl. D15-132.000.
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  - Hara, Kunio; and Okuyama, Tooru, 286,296, Cl. D16-32.000.
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- Katz, Stanley A., to Igloo Corporation. Container for refrigerant gel or the like. 286,264, 10-21-86, Cl. D9-367.000.
- Kingston, James E., to Hollibaugh Manufacturing Company, Inc. Air compressor for tubs and the like. 286,292, 10-21-86, Cl. D15-9.000.
- Kingston, James E., to Hollibaugh Manufacturing Company, Inc. Water heater for tubs, swimming pools and the like. 286,320, 10-21-86, Cl. D23-88.000.
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- May, Joe T.; and Hale, Steven D., to Colight, Inc.; and Electronic Instrumentation & Technology. Integrating photometer. 286,298, 10-21-86, Cl. D16-39.000.
- Mayer, John F.; and Norton, John J., to CPG Products Corp. Combined toy gun and carrying case. 286,308, 10-21-86, Cl. D21-146.000.
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- Murray, John T., II. Pilot's training visor. 286,221, 10-21-86, Cl. D2-514.000.
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- Orlick, Lance; and Parlatore, Kenneth. Fluorescent lure. 286,317, 10-21-86, Cl. D22-127.000.
- Park, Hong K. Trammel head. 286,303, 10-21-86, Cl. D19-99.000.
- Parks, James D.; Moss, Charles A.; Dyer, Kermit W.; and Corn, James F., to Labconco Corporation. Laboratory fume hood. 286,324, 10-21-86, Cl. D23-151.000.
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- Pozzi, Ambrogio, to Rosenthal Aktiengesellschaft Rechtsabteilung. Vase. 286,273, 10-21-86, Cl. D11-143.000.
- Prescott, Earl H., to Kouby, Syl; and Tuttle, Scarlett P. Combined food plate and beverage container holder. 286,250, 10-21-86, Cl. D7-27.000.
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- Sandberg, Ulf A., to Aktiebolaget Volvo. Wheel. 286,278, 10-21-86, Cl. D12-211.000.
- Sasaki, Yoshio; Nishimura, Toshio; and Matsuda, Kei, to Nitsuko Limited. Telephone set. 286,284, 10-21-86, Cl. D14-53.000.
- Satterfield, Roy E. Notion tray. 286,240, 10-21-86, Cl. D7-5.000.
- Sawa, Minoru, to Kinryu Cutlery Mfg. Co., Ltd. Knife handle. 286,314, 10-21-86, Cl. D22-118.000.
- Scheurer, Robert S.; and Scheurer, Stephen. Head cushion. 286,239, 10-21-86, Cl. D6-601.000.
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- Schreiner, Charles. Work station. 286,233, 10-21-86, Cl. D6-397.000.
- Schultz, Horst, to AMC International ALFA Metalcraft Corporation. Article of flatware. 286,253, 10-21-86, Cl. D7-137.000.
- Scoccola, Dominic L., to S.A.S. Ventures, Inc. Personal care compact. 286,331, 10-21-86, Cl. D28-78.000.
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- Seehase, Jack C. Belt buckle. 286,225, 10-21-86, Cl. D11-232.000.
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- Skigen, Jeffrey A.; Lum, James C. P.; and Taylor, C. Thomas, to GTE Telenet Communications Corporation. Telephone stand. 286,286, 10-21-86, Cl. D14-62.000.
- Skinner, Jerald P.; Zlotky, Richard A.; and Diel, Robert L. Satellite antenna mounting base. 286,288, 10-21-86, Cl. D14-91.000.
- Smederod, Sten A. M. Curtain draping hook. 286,261, 10-21-86, Cl. D8-354.000.
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- Strohmeyer, Rolf, to Vorwerk & Co. Elektrowerke KG. Vacuum cleaner. 286,334, 10-21-86, Cl. D32-22.000.
- Strohmeyer, Rolf, to Vorwerk & Co. Elektrowerke KG. Vacuum cleaner. 286,335, 10-21-86, Cl. D32-22.000.
- Sussman, Howard. Compartmented tray for cosmetic organizer or the like. 286,329, 10-21-86, Cl. D28-73.000.
- Sussman, Howard. Shelf unit for toiletries or the like. 286,330, 10-21-86, Cl. D28-73.000.
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- Uesaka, Susumu, to Nippon Light Metal Company Limited. Icecream maker. 286,257, 10-21-86, Cl. D7-368.000.
- Ullmann, Roland, to Braun Aktiengesellschaft. Electric dry shaver. 286,328, 10-21-86, Cl. D28-49.000.
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- Universal Symetrics Corporation: *See—*
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- USM Corporation: *See—*
  - Germain, Robert A., 286,293, Cl. D15-28.000.
- Vahlenbreder, Aribert, to Saab-Scania Aktiebolag. Front radiator grille for an automobile. 286,276, 10-21-86, Cl. D12-163.000.
- van Berne, Joost; and van der Vlies, Gerardus J., to Curver B.V. Foldable tote box. 286,339, 10-21-86, Cl. D34-43.000.
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  - Strohmeyer, Rolf, 286,335, Cl. D32-22.000.
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Barberet, Nicole; and Ducloux, Yves, to Laboratoire de Physiologie Vegetale de la Londe. Carnation named Lonsimox. 5,793, 10-21-86, Cl. 82.000.

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Laboratoire de Physiologie Vegetale de la Londe: *See*—
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McRae, Edward A., to Melridge Inc. Lily plant named Orange Pixie. 5,792, 10-21-86, Cl. 68.000.

Melridge Inc.: *See*—
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Moore, Ralph S., to Sequoia Nursery. Rose Plant/Var. MORquake. 5,791, 10-21-86, Cl. 7.000.

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CLASSIFICATION OF PATENTS

ISSUED OCTOBER 21, 1986

NOTE.—First number, class; second number, subclass; third number, patent number

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20	4,617,684
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CLASS 4

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453	4,617,690

CLASS 7

158	4,617,692

CLASS 8

161	4,618,344

CLASS 15

104.3 SN	4,617,693
167 R	4,617,694
195	4,617,695
236 R	4,617,696

CLASS 16

110 R	4,617,697
228	4,617,698
262	4,617,699

CLASS 17

45	4,617,700
	4,617,701

CLASS 23

293 R	4,618,345

CLASS 24

16 PB	4,617,702
68 CT	4,617,703
236	4,617,704
642	4,617,705

CLASS 27

28	4,617,706

CLASS 29

25.35	4,617,707
25.42	4,617,708
124	4,617,709
268	4,617,710
402.08	4,617,711
	4,617,712
426.4	4,617,713
434	4,617,714
456	4,617,715
526 R	4,617,716
527.4	4,617,717
558	4,617,718
564.6	4,617,719
568	4,617,720
	4,617,721
572	4,617,722
576 B	4,617,723
	4,617,724
598	4,617,725
	4,617,726
825	4,617,727
836	4,617,728
840	4,617,729
843	4,617,730
861	4,617,731
866	4,617,732
874	4,617,733

CLASS 30

120.1	4,617,734
151	4,617,735
169	4,617,736
273	4,617,737
339	4,617,738

CLASS 33

18.1	4,617,739
122	4,617,740
228	4,617,741

CLASS 34

57 A	4,617,742
109	4,617,743
168	4,617,744

CLASS 36

3 B	4,617,745
133	4,617,746

CLASS 37

244	4,617,747

CLASS 40

312	4,617,748

CLASS 42

16	4,617,749
65	4,617,750

CLASS 43

17.5	4,617,751
27.4	4,617,752
42.19	4,617,753
137	4,617,754

CLASS 44

1 A	4,618,346
16 F	4,618,347
51	4,618,348

CLASS 47

65	4,617,755

CLASS 49

212	4,617,756
280	4,617,757
324	4,617,758
487	4,617,759

CLASS 51

34 C	4,617,760
95 GH	4,617,761
101 R	4,617,762
135 R	4,617,763
165.71	4,617,764
205 WG	4,617,765
209 R	4,617,766
298	4,618,349
358	4,617,767

CLASS 52

40	4,617,768
167	4,617,769
214	4,617,770
410	4,617,771
461	4,617,772
521	4,617,774
537	4,617,773
684	4,617,775
690	4,617,776
802	4,617,777

CLASS 53

391	4,617,778
433	4,617,779
466	4,617,780
477	4,617,781
479	4,617,782
529	4,617,783
540	4,617,784
562	4,617,785

CLASS 55

92	4,618,350
146	4,618,351
287	4,618,352
378	4,618,353

CLASS 56

13.4	4,617,786
14.6	4,617,787
295	4,617,788

CLASS 57

6	4,617,789
263	4,617,790
299	4,617,791
401	4,617,792

CLASS 60

39.79	4,617,796
274	4,617,794
276	4,617,795
285	4,617,793
444	4,617,797
450	4,617,798
602	4,617,799
689	4,617,800

CLASS 62

116	4,617,801
125	4,617,802
209	4,617,803
212	4,617,804
259.1	4,617,805
347	4,617,806
399	4,617,807
472	4,617,808

CLASS 65

2	4,618,354
36	4,618,355
173	4,618,356

CLASS 69

44	4,617,809

CLASS 70

14	4,617,810
131	4,617,811
218	4,617,812
394	4,617,813

CLASS 71

76	4,618,357
86	4,618,358
88	4,618,359
	4,618,360
	4,618,361
	4,618,362
90	4,618,363
92	4,618,364
	4,618,365
94	4,618,366
121	4,618,367

CLASS 72

8	4,617,814
39	4,617,815
104	4,617,816
364	4,617,817
379	4,617,818
407	4,617,819

CLASS 73

1 E	4,617,820
23	4,617,821
40.5 R	4,617,822
46	4,617,823
49.7	4,617,824
152	4,617,825
182	4,617,826
200	4,617,827
590	4,617,830
865.8	4,617,829
866	4,617,828

CLASS 74

10.33	4,617,831
87	4,617,832
110	4,617,833
523	4,617,834
677	4,617,835
682	4,617,836
785	4,617,837
798	4,617,838
801	4,617,839
865	4,617,840
869	4,617,841

CLASS 75

53	4,618,368

CLASS 81

3.09	4,617,842
57.11	4,617,843
436	4,617,844

CLASS 82

1 C	4,617,845
1.2	4,617,846
2.5	4,617,847
36 A	4,617,848

CLASS 83

18	4,617,849
324	4,617,850

CLASS 84

1.19	4,617,851

CLASS 89

36.13	4,617,852

CLASS 91

505	4,617,853
517	4,617,854

CLASS 92

5 R	4,617,855
71	4,617,856
88	4,617,857
98 D	4,617,858

CLASS 99

351	4,617,859
415	4,617,860
453	4,617,861

CLASS 100

53	4,617,862
194	4,617,863

CLASS 101

219	4,617,864
350	4,617,865

CLASS 102

262	4,617,866

CLASS 105

?	4,617,868
154	4,617,867

CLASS 106

95	4,618,369
111	4,618,370
263	4,618,371
273 R	4,618,372
	4,618,373
288 B	4,618,374
304	4,618,375

CLASS 108

132	4,617,869

CLASS 110

323	4,617,870

CLASS 114

39	4,617,871

CLASS 118

19	4,617,872

CLASS 119

17	4,617,873
51.12	4,617,874
85	4,617,875
155	4,617,876

CLASS 122

4 D	4,617,877
422	4,617,878

CLASS 123

73 AD	4,617,879
90.16	4,617,880
90.27	4,617,881
90.31	4,617,882
90.44	4,617,883
192 B	4,617,885
192 R	4,617,884
223	4,617,886
279	4,617,887
307	4,617,888
339	4,617,889
	4,617,890
344	4,617,891
352	4,617,892
361	4,617,893
372	4,617,894
425	4,617,895
432	4,617,896
	4,617,897
460	4,617,898
487	4,617,899
489	4,617,900
	4,617,901
501	4,617,902
	4,617,903
525	4,617,904
614	4,617,905
617	4,617,906
647	4,617,907

CLASS 126

20	4,617,908
299 R	4,617,909
362	4,617,910
438	4,617,911

CLASS 128

1 B	4,617,912
1 R	4,617,913
4	4,617,914
	4,617,915
20	4,617,916
62 R	4,617,917
66	4,617,918
78	4,617,919
80 C	4,617,920
89 R	4,617,921
92 YS	4,617,922
94	4,617,923
204.23	4,617,924
303 B	4,617,925
303.1	4,617,926
303.14	4,617,927
305	4,617,928
305.3	4,617,929
317	4,617,930
328	4,617,931
334 R	4,617,932
348.1	4,617,933
425	4,617,934
641	4,617,935
653	4,617,936
680	4,617,937
708	4,617,938
734	4,617,939
753	4,617,940
765	4,617,941

CLASS 130

27 R	4,617,942

CLASS 131

109.3	4,617,943
235.1	4,617,944
310	4,617,945
336	4,617,946

CLASS 132

1 R	4,617,947
88.5	4,617,948
	4,617,949
91	4,617,950

CLASS 134

26	4,618,376

CLASS 135

66	4,617,951

CLASS 137

85	4,617,952
110	4,617,953
	4,617,954
240	4,617,955
272	4,617,956
315	4,617,957
492.5	4,617,958
512.1	4,617,959
554	4,617,960
596.16	4,617,961
613	4,617,962
625.17	4,617,965
625.3	4,617,963
	4,617,964
625.62	4,617,966
625.64	4,617,967
	4,617,968
627.5	4,617,969
805	4,617,970

CLASS 139

370.2	4,617,971

CLASS 140

92.1	4,617,972

CLASS 141

2	4,617,973
239	4,617,974
311 R	4,617,975

CLASS 148

6.15 R	4,618,377
9.6	4,618,378
144	4,618,379
187	4,618,380
189	4,618,381
415	4,618,382

CLASS 152

209 R	4,617,976

CLASS 156

66	4,618,383
205	4,618,384
229	4,618,385
242	4,618,386
244.11	4,618,387
284	4,618,388
307.3	4,618,390
307.5	4,618,389
353	4,618,391
384	4,618,392
	4,618,393
473	4,618,394
584	4,618,395
605	4,618,396
628	4,618,397
643	4,618,398

CLASS 159

6.2	4,618,399

CLASS 162

5	4,618,400
138	4,618,401
140	4,618,402

CLASS 164

30	4,617,977
37	4,617,978
97	4,617,979
430	4,617,980
453	4,617,981
463	4,617,982
	4,617,983

CLASS 165

1	4,617,984
32	4,617,985
42	4,617,986
95	4,617,987
	4,617,988
145	4,617,989
173	4,617,990

CLASS 166

53	4,617,991
95	4,617,992
250	4,617,993
	4,617,994
272	4,617,995
273	4,617,996
299	4,617,997
345	4,617,998
372	4,617,999
373	4,618,000

CLASS 169

23	4,618,001
37	4,618,002

CLASS 172

15	Re.32,266
25	4,618,003
176	4,618,004
459	4,618,005
699	4,618,006

CLASS 174

52 FP	4,618,739
67	4,618,740
68 C	4,618,741

CLASS 175

19	4,618,007
53	Re.32,267
65	4,618,008
267	4,618,009
329	4,618,010

CLASS 177

1	4,618,011
25	4,618,012
	4,618,013
210 FP	4,618,014

CLASS 179

2 A	4,618,742
16 AA	4,618,743

CLASS 180

9.21	4,618,015

53.6	4,618,016
133	4,618,017
142	4,618,018
219	4,618,019
229	4,618,020
248	4,618,021
249	4,618,022
312	4,618,023

CLASS 181

120	4,618,024
148	4,618,025

CLASS 182

4	4,618,026
35	4,618,027
92	4,618,028
116	4,618,029
121	4,618,030

CLASS 186

52	4,618,031
61	4,618,032

CLASS 188

20	4,618,033
73.36	4,618,034

CLASS 190

18 A	4,618,035

CLASS 192

0.044	4,618,041
	4,618,042
0.052	4,618,043
0.09	4,618,040
3.29	4,618,038
3.3	4,618,036
	4,618,037
4 B	4,618,039
54	4,618,044
58 B	4,618,045
67 P	4,618,046
89 B	4,618,047
106.2	4,618,048
107 M	4,618,049

CLASS 194

212	4,618,050

CLASS 196

139	4,618,051

CLASS 198

370	4,618,052
389	4,618,053
409	4,618,054
422	4,618,055
853	4,618,056
861.2	4,618,057

CLASS 200

5 A	4,618,744
50 C	4,618,745
61.45 R	4,618,746
67 PK	4,618,747
144 B	4,618,749
	4,618,750
144 R	4,618,748
	4,618,751
148 G	4,618,753
148 R	4,618,752
159 B	4,618,754
175	4,618,755

CLASS 204

98	4,618,403
128	4,618,404
129.75	4,618,405
181.1	4,618,406
206	4,618,407
299 R	4,618,408
300 R	4,618,409

CLASS 206

291	4,618,058
392	4,618,059
444	4,618,060
	4,618,061
455	4,618,062

CLASS 208

48 AA	4,618,411
59	4,618,412
97	4,618,410
251 R	4,618,413

CLASS 209

5	4,618,414
134	4,618,415
166	4,618,416

CLASS 210

149	4,618,417
151	4,618,418
167	4,618,419
169	4,618,420
170	4,618,421
172	4,618,422
305	4,618,423
396	4,618,424
416.1	4,618,425
620	4,618,426
629	4,618,427
648	4,618,428
652	4,618,429
703	4,618,430
741	4,618,431
748	4,618,432

CLASS 211

184	4,618,063
192	4,618,064

CLASS 215

3	4,618,065
12 R	4,618,066

CLASS 219

10.55 R	4,618,756
60 R	4,618,757
121 LG	4,618,758
121 LR	4,618,759
130.4	4,618,760
517	4,618,761

CLASS 220

1.5	4,618,067
4 R	4,618,068
23.4	4,618,069
350	4,618,070
371	4,618,071

CLASS 221

2	4,618,072
11	4,618,073
15	4,618,074

CLASS 222

189	4,618,075
331	4,618,076
383	4,618,077
478	4,618,078
591	4,618,079

CLASS 223

95	4,618,080

CLASS 224

41	4,618,081
321	4,618,082
324	4,618,083

CLASS 225

96	4,618,084
100	4,618,085

CLASS 227

19	4,618,086
131	4,618,087

CLASS 228

124	4,618,088
212	4,618,089

CLASS 229

45 R	4,618,090

CLASS 236

12.12	4,618,091
92 B	4,618,092

CLASS 238

283	4,618,093

CLASS 239

90	4,618,095
101	4,618,096
124	4,618,097
265.37	4,618,094
290	4,618,098
332	4,618,099
440	4,618,100
589	4,618,101
737	4,618,102

CLASS 241

41	4,618,103

CLASS 242

18 G	4,618,104
56 R	4,618,105
84.21 R	4,618,107
84.5 R	4,618,106
107	4,618,108

CLASS 244

130	4,618,109
151 B	4,618,110
158 R	4,618,111
	4,618,112

CLASS 248

56	4,618,113
65	4,618,114
174	4,618,115
222.1	4,618,116
	4,618,117
243	4,618,118
456	4,618,119
460	4,618,120

CLASS 249

59	4,618,121
94	4,618,122

CLASS 250

201	4,618,762
211 R	4,618,763
227	4,618,764
269	4,618,765
311	4,618,766
	4,618,767
334	4,618,768
338	4,618,769
	4,618,770
343	4,618,771
363 S	4,618,772
	4,618,773
364	4,618,774
369	4,618,775
372	4,618,776
381	4,618,777
483.1	4,618,778

CLASS 251

28	4,618,123

CLASS 252

8.51	4,618,434
8.514	4,618,433
8.551	4,618,435
32.5	4,618,437
47.5	4,618,438
	4,618,439
48.2	4,618,440
49.5	4,618,441
70	4,618,442
92	4,618,443
	4,618,444
99	4,618,445
135	4,618,446
139	4,618,447
180	4,618,448
182	4,618,449
325	4,618,436
355	4,618,450
373	4,618,451
408.1	4,618,452
500	4,618,453
	4,618,454

CLASS 254

134.3 FT	4,618,124

CLASS 260

397.4	4,618,456
504 R	4,618,457
505 P	4,618,458
543 F	4,618,455
543 R	4,618,459
549	4,618,460

CLASS 261

130	4,618,462

CLASS 264

29.2	4,618,463
35	4,618,464
40.1	4,618,465
40.6	4,618,466
46.6	4,618,467
53	4,618,468
182	4,618,469

CLASS 266

90	4,618,125
271	4,618,126

CLASS 267

8 R	4,618,127
140.1	4,618,128
	4,618,129
153	4,618,130

CLASS 269

32	4,618,131
323	4,618,133

CLASS 271

4	4,618,134
9	4,618,135
150	4,618,136
219	4,618,137
245	4,618,138

CLASS 272

70	4,618,139
72	4,618,140
73	4,618,141
75	4,618,142
123	4,618,143
134	4,618,144
146	4,618,145

CLASS 273

1 E	4,618,146
54 B	4,618,147
73 C	4,618,148
79	4,618,149
143 R	4,618,150
148 A	4,618,151

CLASS 277

53	4,618,152
152	4,618,153
205	4,618,154

CLASS 280

5.28	4,618,155
6 R	4,618,156
8	4,618,157
111 BR	4,618,158
93	4,618,159
281 LP	4,618,160
402	4,618,161
661	4,618,162
785	4,618,163
804	4,618,164
808	4,618,165

CLASS 281

15 R	4,618,166

CLASS 283

75	4,618,167

CLASS 285

21	4,618,168
86	4,618,169
90	4,618,170
93	4,618,171
141	4,618,172
261	4,618,173

CLASS 292

135	4,618,174
205	4,618,175
263	4,618,176
338	4,618,177

CLASS 294

64 I	4,618,178
82.31	4,618,179

CLASS 296

97 J	4,618,132
120 A	4,618,180
191	4,618,181
223	4,618,182

CLASS 297

2	4,618,183
19	4,618,184
285	4,618,185
468	4,618,186

CLASS 301

56	4,618,187

CLASS 303

116	4,618,188
	4,618,189

CLASS 305

39	4,618,190

CLASS 307

60	4,618,779
130	4,618,780
252 C	4,618,781
255	4,618,782
426	4,618,783
449	4,618,784
530	4,618,785
578	4,618,786
591	4,618,787
603	4,618,788

CLASS 310

13	4,618,789
90	4,618,790
	4,618,791
156	4,618,792
232	4,618,793
234	4,618,794
260	4,618,795
311	4,618,796
339	4,618,797
366	4,618,798

CLASS 312

201	4,618,191
245	4,618,192
264	4,618,193

CLASS 313

318	4,618,799
417	4,618,800
495	4,618,801
512	4,618,802

CLASS 315

241 R	4,618,803

CLASS 318

16	4,618,804
245	4,618,805
254	4,618,806
280	4,618,807
696	4,618,808
768	4,618,809
803	4,618,810

CLASS 322

28	4,618,811

CLASS 323

224	4,618,812
268	4,618,813
280	4,618,814
315	4,618,815
316	4,618,816
322	4,618,817

CLASS 324

62	4,618,818
77 K	4,618,819
158 F	4,618,820
158 P	4,618,821
207	4,618,822
	4,618,823
208	4,618,824
230	4,618,825
308	4,618,826
309	4,618,827
347	4,618,828

CLASS 329

103	4,618,829
105	4,618,830

CLASS 330

124 R	4,618,831
254	4,618,832
256	4,618,833
284	4,618,834

CLASS 331

65	4,618,835
96	4,618,836
160	4,618,837

CLASS 333

33	4,618,838
81 A	4,618,839
105	4,618,840
195	4,618,841

CLASS 335

128	4,618,842
210	4,618,843

CLASS 338

2	4,618,844

CLASS 339

14 R	4,618,194
16 R	4,618,195
17 C	4,618,196
17 R	4,618,197
60 M	4,618,198
74 R	4,618,199
75 P	4,618,200
99 R	4,618,201
	4,618,202
	4,618,203
	4,618,204
125 L	4,618,205
144 T	4,618,206
176 M	4,618,207
200 P	4,618,208
258 R	4,618,209

CLASS 340

61	4,618,845
347 AD	4,618,852
347 CC	4,618,848
	4,618,850
347 DA	4,618,847
	4,618,851
347 DD	4,618,846
	4,618,849
505	4,618,853
567	4,618,854
605	4,618,855
626	4,618,856
654	4,618,857
724	4,618,858
	4,618,859
825.44	4,618,860
825.54	4,618,861
870.37	4,618,862

CLASS 342

162	4,618,864
194	4,618,863

CLASS 343

776	4,618,865
779	4,618,866
781 P	4,618,867

CLASS 346

75	4,618,868
	4,618,869
76 PH	4,618,870

CLASS 350

96.14	4,618,210
96.15	4,618,211
96.21	4,618,212
96.34	4,618,213
162.2	4,618,214
319	4,618,215
345	4,618,216
355	4,618,217
363	4,618,218
427	4,618,219
	4,618,220
566	4,618,221
582	4,618,222
611	4,618,223
618	4,618,224

CLASS 351

57	4,618,225
113	4,618,226
161	4,618,227
	4,618,228
	4,618,229
221	4,618,230
237	4,618,231

CLASS 353

79	4,618,232

CLASS 354

20	4,618,233
225	4,618,234
403	4,618,235
406	4,618,236
412	4,618,237
431	4,618,238
477	4,618,239

CLASS 355

3 DD	4,618,241
3 FU	4,618,240
	4,618,242
4	4,618,243
8	4,618,244
14 CH	4,618,249
14 FU	4,618,247
14 R	4,618,246
	4,618,248
14 SH	4,618,245
15	4,618,250
28	4,618,251
55	4,618,252
57	4,618,253
68	4,618,254
71	4,618,255

CLASS 356

23	4,618,256
71	4,618,257
73.1	4,618,258
152	4,618,259
331	4,618,260
357	4,618,261
	4,618,262

CLASS 357

15	4,618,871
23.4	4,618,872
23.7	4,618,873
30	4,618,874
46	4,618,875
54	4,618,876
56	4,618,877
71	4,618,878
74	4,618,879

CLASS 358

10	4,618,880
27	4,618,881
31	4,618,882
78	4,618,883
98	4,618,884
	4,618,885
108	4,618,886
112	4,618,887
120	4,618,888
144	4,618,889
149	4,618,890
153	4,618,891
163	4,618,892
167	4,618,893
310	4,618,894
311	4,618,895

CLASS 360

1	4,618,896
15	4,618,897
51	4,618,898
73	4,618,899
97	4,618,900
114	4,618,901

118	4,618,902
132	4,618,903
	4,618,904

CLASS 361

4	4,618,905
5	4,618,906
45	4,618,907
187	4,618,908
212	4,618,909
275	4,618,910
308	4,618,911
309	4,618,912
315	4,618,913
	4,618,914
400	4,618,915
434	4,618,916

CLASS 362

88	4,618,917
281	4,618,918

CLASS 363

21	4,618,919
37	4,618,920
49	4,618,921
127	4,618,922
144	4,618,923

CLASS 364

191	4,618,924
200	4,618,925
	4,618,926
410	4,618,927
414	4,618,928
415	4,618,929
426	4,618,930
431.02	4,618,931
478	4,618,932
481	4,618,933
507	4,618,934
510	4,618,935
513.5	4,618,936
518	4,618,937
552	4,618,938
555	4,618,939
560	4,618,940
724	4,618,941
900	4,618,942

CLASS 365

104	4,618,943
189	4,618,944
	4,618,945
	4,618,946
230	4,618,947

CLASS 366

127	4,618,263

CLASS 367

104	4,618,948
171	4,618,949

CLASS 368

74	4,618,264
82	4,618,265

CLASS 369

32	4,618,950
270	4,618,951

CLASS 370

78	4,618,952

CLASS 371

12	4,618,953
16	4,618,954
37	4,618,955
68	4,618,956

CLASS 372

22	4,618,957
29	4,618,958
46	4,618,959
58	4,618,960
87	4,618,961

CLASS 373

30	4,618,962
72	4,618,963
155	4,618,964

CLASS 374

41	4,618,266
50	4,618,267
115	4,618,268
208	4,618,274

CLASS 375

10	4,618,965
62	4,618,966
80	4,618,967

CLASS 376

123	4,618,470
228	4,618,471
446	4,618,472

CLASS 377

39	4,618,968
49	4,618,969

CLASS 378

10	4,618,970
34	4,618,971
	4,618,972
40	4,618,974
51	4,618,975
99	4,618,976
037	4,618,973
139	4,618,977
164	4,618,978
176	4,618,979
206	4,618,980

CLASS 381

15	4,618,981
36	4,618,982
43	4,618,983
	4,618,984
51	4,618,985
67	4,618,986
82	4,618,987

CLASS 382

5	4,618,988
25	4,618,989
43	4,618,990
46	4,618,991

CLASS 383

4	4,618,992
44	4,618,993
96	4,618,994

CLASS 384

95	4,618,269
114	4,618,270
461	4,618,271
517	4,618,272
606	4,618,273

CLASS 400

76	4,618,275
124	4,618,276
	4,618,277
568	4,618,278

CLASS 401

36	4,618,279
107	4,618,280

CLASS 404

16	4,618,281

CLASS 405

53	4,618,282
124	4,618,283
129	4,618,284
150	4,618,298
191	4,618,285
208	4,618,286
232	4,618,287
	4,618,288
236	4,618,289
259	4,618,290
261	4,618,291

CLASS 406

19	4,618,292
28	4,618,293
113	4,618,294
138	4,618,295

CLASS 407

42	4,618,296

CLASS 409

58	4,618,297

CLASS 411

374	4,618,299
433	4,618,300

CLASS 413

8	4,618,301

CLASS 414

33	4,618,302
226	4,618,303
306	4,618,304
403	4,618,305
420	4,618,306
498	4,618,307
532	4,618,308
753	4,618,309

CLASS 415

1	4,618,310
149 R	4,618,311

CLASS 416

119	4,618,312
237	4,618,313

CLASS 417

53	4,618,314
354	4,618,315
454	4,618,316

CLASS 418

63	4,618,317
111	4,618,318
136	4,618,319

CLASS 419

11	4,618,473

CLASS 420

436	4,618,474

CLASS 422

56	4,618,475
100	4,618,476
186.29	4,618,477
198	4,618,478
202	4,618,479

CLASS 423

127	4,618,480
228	4,618,481
242	4,618,482
304	4,618,483

CLASS 424

1.1	4,618,484
	4,618,485
11	4,618,486
15	4,618,487
49	4,618,488
52	4,618,489
80	4,618,490
81	4,618,491
85	4,618,492
89	4,618,493
101	4,618,494
195.1	4,618,495
	4,618,496

CLASS 425

38	4,618,320
88	4,618,321
129 R	4,618,322

CLASS 426

233	4,618,497
275	4,618,498
283	4,618,499
433	4,618,500
534	4,618,501
583	4,618,502

CLASS 427

11	4,618,503
34	4,618,504
38	4,618,505
40	4,618,506
41	4,618,507
57	4,618,508
74	4,618,509
89	4,618,510
203	4,618,511
381	4,618,512
443.1	4,618,513

CLASS 428

1	4,618,514
35	4,618,515
	4,618,516
36	4,618,517
40	4,618,518
63	4,618,519
131	4,618,520
137	4,618,521
145	4,618,522
189	4,618,523
198	4,618,524
209	4,618,525
	4,618,526
213	4,618,527
216	4,618,528
224	4,618,529
236	4,618,530
283	4,618,531
304.4	4,618,532
315.7	4,618,533
316.6	4,618,534
325	4,618,535
329	4,618,536
336	4,618,537
428	4,618,538
470	4,618,539
552	4,618,540
688	4,618,541
694	4,618,542

CLASS 429

19	4,618,543
53	4,618,544
130	4,618,545
133	4,618,546
174	4,618,547
194	4,618,548
234	4,618,549

CLASS 430

11	4,618,550
58	4,618,551
60	4,618,552
69	4,618,553
78	4,618,554
	4,618,555
110	4,618,556
114	4,618,557
115	4,618,558
127	4,618,559
130	4,618,560
156	4,618,561
157	4,618,562
219	4,618,563
270	4,618,564
271	4,618,565
	4,618,566
311	4,618,567
417	4,618,568
428	4,618,569
505	4,618,570
	4,618,571
543	4,618,572
558	4,618,573
567	4,618,574
634	4,618,575

CLASS 431

177	4,618,323

CLASS 433

19	4,618,324
26	4,618,325
79	4,618,326

CLASS 435

1	4,618,586
7	4,618,576
	4,618,577
68	4,618,578
96	4,618,579
104	4,618,582
108	4,618,580
119	4,618,581
146	4,618,583
234	4,618,584
240	4,618,585

CLASS 436

74	4,618,587
511	4,618,588
540	4,618,589

CLASS 440

53	4,618,327

CLASS 441

57	4,618,328
76	4,618,329

CLASS 446

236	4,618,330

CLASS 455

2	4,618,995
46	4,618,996
76	4,618,997
77	4,618,998
108	4,618,999
131	4,619,000
192	4,619,001
226	4,619,002

CLASS 474

49	4,618,331
80	4,618,332
	4,618,333
93	4,618,334
112	4,618,335
133	4,618,336
201	4,618,337
245	4,618,338

CLASS 493

4	4,618,339
13	4,618,340
14	4,618,341
30	4,618,342

CLASS 501

17	4,618,590
90	4,618,591
96	4,618,592

CLASS 502

20	4,618,593
66	4,618,594
108	4,618,595
116	4,618,596
324	4,618,597

CLASS 514

6	4,618,598
11	4,618,599
12	4,618,600
23	4,618,601
25	Re.32,268
54	4,618,602
80	4,618,603
130	4,618,604
177	4,618,605
202	4,618,606
212	4,618,607
235	4,618,608
236	4,618,609
242	4,618,610
255	4,618,611
265	4,618,612
312	4,618,613
321	4,618,614
338	4,618,615
340	4,618,616
364	4,618,617
368	4,618,618
383	4,618,619
	4,618,620
408	4,618,621
457	4,618,622
478	4,618,623
486	4,618,624
494	4,618,625
530	4,618,626
678	4,618,627

CLASS 518

700	4,618,628

CLASS 521

76	4,618,629
105	4,618,630
109.1	4,618,631

CLASS 522

43	4,618,632

CLASS 524

80	4,618,633
97	4,618,634
113	4,618,635
176	4,618,636
192	4,618,637
208	4,618,638
262	4,618,639
272	4,618,640
284	4,618,641
425	4,618,642
430	4,618,643
535	4,618,644
745	4,618,645
783	4,618,646
801	4,618,647

CLASS 525

60	4,618,648
	4,618,649
105	4,618,650
130	4,618,651
282	4,618,652
288	4,618,654
344	4,618,655
404	4,618,653
	4,618,656
443	4,618,657
454	4,618,658
455	4,618,659

CLASS 526

114	4,618,660
	4,618,661
129	4,618,662
232.3	4,618,663

CLASS 527

300	4,618,664

CLASS 528

25	4,618,665
33	4,618,666
49	4,618,667
215	4,618,668

CLASS 530

331	4,618,669
378	4,618,670

CLASS 534

635	4,618,671
658	4,618,672
698	4,618,673
878	4,618,674

CLASS 536

17.2	4,618,675

CLASS 544

196	4,618,676
400	4,618,677

CLASS 546

123	4,618,678
220	4,618,679
234	4,618,680
276	4,618,681

CLASS 548

315	4,618,682
420	4,618,683
455	4,618,684

CLASS 549

63	4,618,685
360	4,618,686
396	4,618,687

CLASS 556

419	4,618,688
425	4,618,689
441	4,618,690

CLASS 558

80	4,618,691
81	4,618,692
82	4,618,693
234	4,618,461
416	4,618,694

CLASS 560

41	4,618,695
53	4,618,696
56	4,618,697
67	4,618,700
86	4,618,699
060	4,618,698
139	4,618,701
204	4,618,702
209	4,618,703
262	4,618,704
263	4,618,705
335	4,618,706
337	4,618,707

CLASS 562

448	4,618,708
532	4,618,709

CLASS 564

1	4,618,710
86	4,618,711
103	4,618,712
214	4,618,713
329	4,618,714
414	4,618,715
469	4,618,716
475	4,618,717
481	4,618,718

CLASS 568

17	4,618,719
	4,618,720
23	4,618,721
59	4,618,722
70	4,618,723
311	4,618,724
315	4,618,725
322	4,618,726
585	4,618,727
652	4,618,728
678	4,618,729
771	4,618,730
842	4,618,731
910.5	4,618,732
927	4,618,733

CLASS 570

136	4,618,734

CLASS 585

240	4,618,735
	4,618,736
329	4,618,737
480	4,618,738

CLASS 604

29	4,618,343

CLASSIFICATION OF DESIGNS

D2—	209	286,220			286,244		367	286,264	D13—	19	286,280	D19—	3	286,300		97	286,321
	514	286,221		13	286,245			286,265		24	286,281		6	286,301		138.3	286,322
D3—	32	286,227			286,246		376	286,266	D14—	53	286,282		34.1	286,302		150	286,323
	35	286,228			286,247		435	286,267			286,283		99	286,303		151	286,324
	48	286,229			286,248		447	286,268			286,284	D20—	39	286,304	D24—	1.1	286,325
	71	286,230		23	286,249	D10—	31	286,269		60	286,285	D21—	25	286,305		28	286,326
	72	286,231		27	286,250		86	286,270		62	286,286		57	286,306	D28—	45	286,327
	104	286,315		77	286,251		102	286,271		68	286,287		114	286,307		49	286,328
D6—	384	286,232			286,252	D11—	93	286,272		91	286,288		146	286,308		73	286,329
	397	286,233		137	286,253		143	286,273		100	286,289		173	286,309			286,330
	404	286,234		317	286,254		232	286,223		104	286,290		175	286,310		78	286,331
	522	286,235		332	286,255			286,224		111	286,291		195	286,311	D29—	15	286,222
		286,236		334	286,256			286,225	D15—	9	286,292		198	286,312	D30—	13	286,332
	525	286,237		368	286,257			286,226		28	286,293		249	286,313		16	286,333
	573	286,238		379	286,258	D12—	146	286,274		132	286,294	D22—	118	286,314	D32—	22	286,334
	601	286,239	D8—	1	286,259		163	286,275	D16—	31	286,295		127	286,317			286,335
D7—	5	286,240		14	286,260			286,276		32	286,296		129	286,316		23	286,336
	11	286,241		354	286,261		196	286,277			286,297	D23—	18	286,318		47	286,337
		286,242	D9—	303	286,262		211	286,278		39	286,298		41	286,319	D34—	23	286,338
		286,243		322	286,263		313	286,279	D17—	20	286,299		88	286,320		43	286,339

CLASSIFICATION OF PLANTS

P.—	7	5,791		68	5,792		82	5,793									

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
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Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 : 4,618,081
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4,618,755
02 : 4,618,015
04 : 4,617,684
4,617,691
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4,617,754
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4,618,029
4,618,470
05 : 4,618,003
06 : Re.32,267
4,617,697
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15 : 4,618,166
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16 : 4,617,942
4,618,744
17 : Re.32,268
4,617,708
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October 28, 1986 Volume 1071 Number 4

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

Note that the amount of the international search fee for the European Patent Office and the amounts of the International PCT fees will change effective June 1, 1986. For information on these fee changes see the notice appearing in the *Official Gazette* at 1065 O.G. 41 on Apr. 29, 1986.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before Nov. 1, 1986	930.00
if paid on or after Nov. 1, 1986	1015.00
International fees	
Basic fee (first 30 pages):	
if paid before Nov. 1, 1986	375.00
if paid on or after Nov. 1, 1986	430.00
Basic Supplemental fee (for each page over 30):	
if paid before Nov. 1, 1986	7.00
if paid on or after Nov. 1, 1986	8.00
Designation fee for the first 10 national or regional offices:	
if paid before Nov. 1, 1986	90.00
if paid on or after Nov. 1, 1986	105.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Sept. 30, 1986. *Assistant Secretary and*
Commissioner of Patents
and Trademarks.

Patent Cooperation Treaty (PCT) Update

Change in International fees effective Nov. 1, 1986.

The International Bureau of the World Intellectual Property Organization has informed the U.S. Patent and Trademark Office that, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss Franc and the German Mark, the dollar amount of the International Fees for PCT applications filed in the United States Receiving Office and for having an international search report prepared by the European Patent Office will increase effective Nov. 1, 1986.

Effective Nov. 1, 1986 the amount of the International Fees for PCT applications filed in the United States Receiving Office will be:

Basic Fee (first 30 pages)	$430.00
Basic Supplemental Fee (each page over 30)	8.00
Designation Fee (per country or region up to ten)	105.00
Designation Fee (for 11th and subsequent countries or regions)	No Charge

Effective Nov. 1, 1986 the amount of the search fee for an international application by the European Patent Office as an International Searching Authority will be $1015.

DONALD J. QUIGG,
Sept. 30, 1986. *Assistant Secretary and*
Commissioner of Patents
and Trademarks.

Board of Appeals Decisions Rendered in the Month of Sept. 1986

Affirmed	225
Affirmed in Part	38
Reversed	105
Total	368

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Oct. 25, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,411,023 through 4,412,356
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . $ 225.00
By other than a small entity . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . $ 55.00
By other than a small entity . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED AUGUST 10, 1986
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,343,059	06/251,643	8/10/82
4,343,084	06/254,536	8/10/82
4,343,104	06/285,796	8/10/82
4,343,108	06/215,784	8/10/82
4.343,139	06/252,221	8/10/82
4,343,220	06/253,789	8/10/82
4,343,266	06/218,216	8/10/82
4,343,290	06/238,507	8/10/82
4,343,306	06/236,834	8/10/82
4,343,321	06/228,901	8/10/82
4,343,399	06/254,004	8/10/82
4,343,410	06/218,839	8/10/82
4,343,412	06/251,151	8/10/82
4,343,471	06/275,603	8/10/82
4,343,478	06/243,395	8/10/82
4,343,539	06/240,048	8/10/82
4,343,557	06/225,271	8/10/82
4,343,617	06/243,871	8/10/82
4,343,618	06/291,999	8/10/82
4,343,621	06/240,317	8/10/82
4,343,662	06/249,321	8/10/82
4,343,664	06/251,635	8/10/82
4,343,676	06/248,035	8/10/82
4,343,696	06/231,115	8/10/82
4,343,701	06/253,029	8/10/82
4,343,742	06/225,150	8/10/82
4,343,796	06/272,727	8/10/82
4,343,822	06/245,636	8/10/82
4,343,938	06/304,757	8/10/82
4,344,013	06/286,827	8/10/82
4,344,047	06/233,751	8/10/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,376,261, Re. S.N. 709,519, Filed June 14, 1986, Cl. 318/254, TWO-PULSE BRUSHLESS D.C. MOTOR, Johann von der Heide, et al., Owner of Record: *Papst-Motoren GmbH & Co. KG., St. Georgen, Federal Republic of Germany,* Attorney or Agent: Theodore J. Koss, Jr., Ex. Gp.: 217

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Erratum

"All reference to Patent No. 4,614,539 to Meyer R. Rosen, et al., of N.Y. for 'PROCESS FOR AGGLOMERATING MINERALLL', appearing in the Official Gazette of Sept. 30, 1986, should be deleted since no patent was granted."

Status of PTO Services

The following is an update of the status of PTO services for October 1986:

Service Item	FY 1985 Goal (Calendar Days)*	FY 1986 Goal (Calendar Days)*	Monthly Average (Calendar Days)*
Filing Receipts:			
Patents	22	22	25
Trademarks	30	30	46**
Patent/Trademark Copies:			
Special Window Coupons	1	1	.5
Window Coupons	5	5	2
Mail Coupons	15	12	5
Letter Orders	24	16	12
Date of oldest unfilled order			Sept. 25, 1986
Current Mail Date being processed			Sept. 26, 1986
Certified Copies:			
Trademark Registrations	30	21	22
Applications-As-Filed	20	10	9
File-Wrapper/Contents	N/A	N/A	13
Walk-up Certification	1	1	2
Trademark Search Library:			
Filing Pending Marks	21	21	41**
Filing Reg. Certificates	3	Issue Date	2 days Late
Assignments:			
Patents	25	20	18
Trademarks	25	20	18
Avg. Days from Issue Fee Payment to Issue Date	90–100	90–100	107***
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	4 weeks prior to Issue Date	On schedule
Patent Copies Available	Issue Date	Issue Date	99% on Issue Date
Trademark Copies Available	Issue Date	Issue Date	99% on Issue Date

* Unless otherwise noted.

** Tapes received late from contractor.

*** Interval from fee payment to issuance is increasing because of the budget cut which necessitated the printing of 4,000 fewer patents than originally planned in FY 86.

IMPROVEMENTS TO SERVICES

- *PTO Entering of Attorney Docket Number on Missing Part/Incomplete Notices* — In response to several requests from patent attorneys, the PTO is now entering the attorney docket number on the Notice of Incomplete Application and Notice to File Missing Parts of Application.

  The attorney docket number which will be entered on the Notice will be that which was submitted on the transmittal letter as filed with a new patent application. The number must be clearly identified as an "attorney docket number". This number will be entered by the PTO under the Title of Invention on the Notices.

  If the Office makes a mistake in recording the attorney docket number on the Notice of Incomplete Application or the Notice to File Missing Parts of Application, such mistake is not to be used by the attorney as cause for delay in response. Nor is the attorney to request that the Office correct the docket number prior to response to the Notice. The attorney can notify the Office in the response, but no change will be made by the Office until the Filing Receipt is issued.

  If the attorney wishes to change the attorney docket number from that which was entered on transmittal letter as filed, the request must be submitted through amendment, submitted to the Patent Examining Corp.

QUALITY IMPROVEMENT

- Significant progress has been made in improving the quality of Patent Filing Receipts, Notices of Incomplete and Informal Patent Applications, and Notices of Recordation and Non-Recordation of Assignments.

  In Feb., when we first began a special Quality Improvement Program, 26% of these documents were being issued with some type of error on them. Extra resources were being required to make the necessary corrections and reissue notices. As of the end of Sept., the error rate has been reduced to 15%, with more improvement expected over the next several months. At the same time, the cost or processing has been reduced.

  In addition to making improvements to quality, the days to issue filing receipts was reduced by an average of four days during Sept.

Oct. 6, 1986.

THERESA A. BRELSFORD,
Assistant Commissioner
for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Oct. 28, 1986

B1. 4,369,563
PP. 5,502
D. 283,901
D. 284,094
4,274,600
4,314,833
4,370,443
4,460,558
4,476,869
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4,509,726
4,528,281
4,529,101
4,531,526
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4,534,963
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Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
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	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7609
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Irvine: University of California, Irvine Library	(714) 856-7234
	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Connecticut	New Haven: Science Park Library	(203) 786-5000
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Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
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	St. Louis Public Library	(314) 241-2288 Ext. 390
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New Jersey	Newark Public Library	(201) 733-7815
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New York	Albany: New York State Library	(518) 474-7040
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1227
	The Free Library	(215) 686-5330
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
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	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF September 13, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	5-21-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-24-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-01-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-08-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	10-09-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	4-11-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	4-25-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	11-09-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	7-17-84
DESIGN, GROUP 290—K. L. CAGE, Director	4-02-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	2-19-85
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	12-24-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	5-21-84
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	2-25-85
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	3-03-86

Expiration of patents: The patents within the range of numbers indicated below expire during September 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,464,063 to 3,470,563, inclusive
Plant Patents	Numbers 2,918 to 2,926 inclusive

REISSUES

OCTOBER 28, 1986

Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

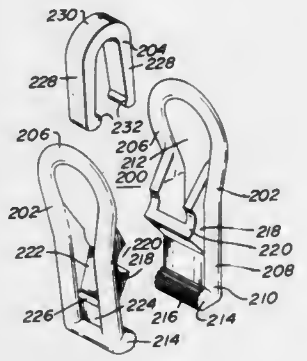
Re. 32,269
PLASTIC CLIP

Leonard Bisk, Elkins Park, and Gunther Rogahn, Lansdale, both of Pa., assignors to Independent Products Company, Inc., West Point, Pa.

Original No. 4,335,838, dated Jun. 22, 1982, Ser. No. 137,930, Apr. 7, 1980. Application for reissue Mar. 8, 1984, Ser. No. 587,343

Int. Cl.⁴ A47J *51/095, 51/14;* **D06F** *55/02*

U.S. Cl. 223—91 **8 Claims**



7. A clip arranged for ready assembly on a rod-like element of a first predetermined diameter, said clip comprising a pair of jaws formed of a first plastic material and resilient bias means formed of a second plastic material having a higher tensile strength and greater resiliency than said first plastic material, each of said jaws including a generally planar member comprising a first end portion, an intermediate portion, and a second end portion including a projection extending at an angle to the plane of said planar member, said intermediate portion having an outer inclined surface, and said first end portions being movable relative to each other by a user for moving said second end portions relative to each other from a normally closed position to an opened position, said resilient bias means, in an unbiased state thereof, being a generally U-shaped member having a pair of outwardly flared legs each terminating in a free end and an arcuate intermediate portion defining a recess having a first predetermined diameter, the free ends of said bias means being spaced apart by a distance greater than the diameter of said recess, said spaced-apart distance permitting the free ends of the bias means in said unbiased state to engage the inclined outer surfaces of the intermediate portions of the jaws to enable said bias means to be readily manually secured in a biased state to said jaws by sliding said legs along said inclined surfaces into said biased state, each of said legs overlying and engaging a respective one of said jaws adjacent said intermediate portion for holding said jaws together and biasing said second end portions into said normally closed position, said intermediate portion of each of the jaws also including an arcuate recess therein for closely receiving a portion of the periphery of said rod-like element when said resilient bias means is assembled with said jaws, the recess defined by the arcuate intermediate portion of said bias means coacting with the recesses in the intermediate portions of the jaws to form an arcuate opening closely receiving a portion of said rod-like element therein, said first end portions and said second end portions of said jaws being movable relative to each other on an outer peripheral surface of said rod-like element.

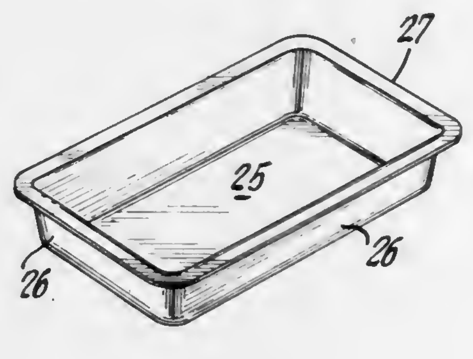
Re. 32,270
POLYESTER COATED PAPERBOARD FOR FORMING FOOD CONTAINERS AND PROCESS FOR PRODUCING THE SAME

Lee J. Murray, Jr., Appleton, Wis., assignor to James River-Norwalk, Inc., Norwalk, Conn.

Original No. 4,147,836, dated Apr. 3, 1979, Ser. No. 891,053, Mar. 28, 1978. Continuation of Ser. No. 243,359, Mar. 13, 1981, abandoned, which is a continuation of Ser. No. 104,554, Jan. 8, 1980, abandoned. Application for reissue Jan. 27, 1984, Ser. No. 574,668

Int. Cl. B32B *27/10;* **B29C** *19/04;* **B05D** *3/06*

U.S. Cl. 428—335 **5 Claims**



13. A process for producing coated paperboard material suitable for forming pressed heatable food trays, comprising the steps of:

(a) passing a web of paperboard material through a corona discharge device at a corona energy density level sufficient to subject the paperboard to an energy density of at least 0.35 joules per square inch of paperboard surface;

(b) passing the corona treated paperboard into a nip formed between a chill roll and a backup roll while simultaneously passing a hot melt extrusion of polyethylene terephthalate into the nip between the corona treated side of the paperboard and the chill roll to produce a thickness of the extrusion coating on the paperboard of between 0.5 mil and 1.5 mils, the hot melt extrusion exiting from the extrusion die at an initial temperature of between 580° F. and 640° F. through an air gap before insertion into the nip, the air gap distance being selected with respect to the speed of the paperboard and the ambient and chill roll temperatures such that the temperature of the extrusion at the time of contact with said paperboard is above its melting temperature of about 480° F. and such that it is chilled below its glass transition temperature of about 179° F. at the time that it leaves the chill roll to thereby facilitate separation therefrom, said paperboard being selected such that the corona treated surface has a surface roughness, as determined by the Bendtsen test at 5 Kg, of at least 100, and a level of impurities, as detected by an iodine stain test (ΔL) on a Macbeth MS-2000 Spectrophotometer relative to a white plate standard, of less than 25.

17. A coated paperboard product made in accordance with the process of claims 13, 14, 15 or 16.

Re. 32,271

ISOLATION OF PLASMINOGEN ACTIVATORS USEFUL AS THERAPEUTIC AND DIAGNOSTIC AGENTS

Syed S. Husain, 139 Upland Ave., Newton, Mass. 02161; Boguslaw Lipinski, 97 Beaumont Ave., Newtonville, Mass. 02160, and Victor Gurewich, 11 Reservoir St., Cambridge, Mass. 02161

Original No. 4,381,346, dated Apr. 26, 1983, Ser. No. 182,976, Sep. 2, 1980. Continuation-in-part of Ser. No. 93,246, Nov. 13, 1979, abandoned. Application for reissue Apr. 26, 1985, Ser. No. 727,807

Int. Cl.⁴ C12N *9/72, 9/48*

U.S. Cl. 435—215 **11 Claims**

1. The method of isolating a plasminogen activator from urine or culture medium, comprising

providing an adsorptive matrix having fibrin precipitated on its surface,

exposing a mother liquid based upon urine or culture medium and containing high fibrin-affinity plasminogen activator to the fibrin-containing matrix, whereby those plasminogen activator molecules which have high affinity therefor are bound to molecules of fibrin,

removing the remaining mother liquid, and

separating the plasminogen activator from the fibrin.

10. [A] *Urokinase* plasminogen activator isolated from [a biological source such as] urine or culture consisting essentially of urokinase (human) characterized as (a) having a molecular weight of about 56,000 Daltons *as determined by gel-filtration*, (b) [having a specific activity of less than 50,000 CTA units/mg when assayed on a fibrin plate, (c) having the appearance of a single chain structure corresponding to a molecular weight of 56,000 Daltons as evidenced by] *appearing as* a single protein band *corresponding to a molecular weight of about* 56,000 Daltons on 7.5 percent polyacrylamide gel when sodium dodecyl sulfate-gel electrophoresis is performed on unreduced urokinase, [d] (*c*) retaining [the] said appearance [of a single chain structure as evidenced by a single protein band on 7.5 percent polyacrylamide gel when sodium dodecyl sulfate-gel] *when said* electrophoresis is performed on urokinase which has been reduced by 0.1M dithiothreitol *thereby indicating its single chain structure* and [(e)] (*d*) displaying a high binding affinity for fibrin precipitated on diatomaceous earth.

Re. 32,272

NON-FOGGING COATING COMPOSITION AND A SHAPED ARTICLE COATED THEREWITH

Masaaki Funaki, Toyonaka; Noboru Ohtani; Motoaki Yoshida, both of Nishinomiya; Akira Fujioka, Osaka, and Kazuo Sakiyama, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited and Nippon Sheet Glass Co., Ltd., both of Osaka, Japan

Original No. 4,522,966, dated Jun. 11, 1985, Ser. No. 268,106, May 28, 1981. Application for reissue Dec. 16, 1985, Ser. No. 809,525

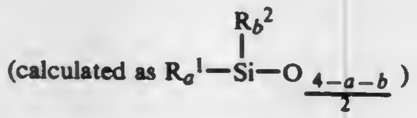
Claims priority, application Japan, May 29, 1980, 55-71747

Int. Cl.⁴ C08K *5/54*

U.S. Cl. 524—114 **14 Claims**

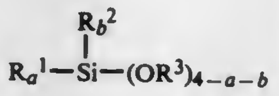
1. A non-fogging transparent coating composition free of organophosphate esters and amine aldehyde crosslinking agents, which comprises:

(A) 0 to 50 parts by weight



$$\text{(calculated as } R_a^1\!-\!\overset{\overset{\displaystyle R_b^2}{|}}{\text{Si}}\!-\!O_{\frac{4-a-b}{2}}\text{)}$$

of at least one compound selected from the group consisting of epoxy group-containing organic silane compounds represented by the general formula (1):

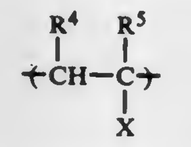


$$R_a^1\!-\!\overset{\overset{\displaystyle R_b^2}{|}}{\text{Si}}\!-\!(OR^3)_{4-a-b} \qquad (1)$$

wherein R^1 stands for an organic group having an epoxy group, R^2 for a hydrogen atom, a hydrocarbon group having 1 to 6 carbon atoms or a vinyl group, R^3 for a hydrocarbon group having 1 to 5 carbon atoms, an alkoxyalkyl group or an acyl group having 1 to 4 carbon atoms, a for an integer having the value of 1 to 3 and b 0 or for an integer having the value of 1 to 2, providing that $a+b \leq 3$ is satisfied, and partial hydrolyzates thereof,

(B) 20 to 80 parts by weight selected from triethylene glycol and a polyhydric alcohol which has an ethylene oxide chain and a molecular weight of 200 to 2000 and is capable of reacting with a component (C) as defined below or a mixture of the components (A) and (C) to form a coating film,

(C) 10 to 75 parts by weight of a polymer or copolymer containing at least 20% by weight of repeating structural units represented by the general formula (2):



$$\left(\overset{\overset{\displaystyle R^4}{|}}{\text{CH}}-\underset{\underset{\displaystyle X}{|}}{\overset{\overset{\displaystyle R^5}{|}}{\text{C}}}\right) \qquad (2)$$

wherein, R^4 and R^5 independently stand for a hydrogen atom, a lower alkyl group or a carboxyl group and X stands for a side chain possessing an epoxy group, and

(D) a catalytic amount of a perchlorate curing catalyst, providing that the total of the amounts of the aforementioned components (A), (B) and (C) is 100 parts by weight.

PLANT PATENTS

GRANTED OCTOBER 28, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,794

LOTUS PLANT CV CHARLES THOMAS

Perry D. Slocum, 191 Leatherman Gap Rd., Franklin, N.C. 28734

Filed Oct. 18, 1985, Ser. No. 789,131

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of lotus plant substantially as herein shown and described.

PATENTS

GRANTED OCT. 28, 1986

ERRATA

For CLASS	See PATENT NO.
623–023	4,619,569
423–220	4,619,608
266–088	4,619,693
420–417	4,619,696
560–122	4,619,782
540–361	4,619,783
540–593	4,619,784
540–318	4,619,785
540–310	4,619,786
540–200	4,619,787

PATENTS

GRANTED OCTOBER 28, 1986

GENERAL AND MECHANICAL

4,619,003

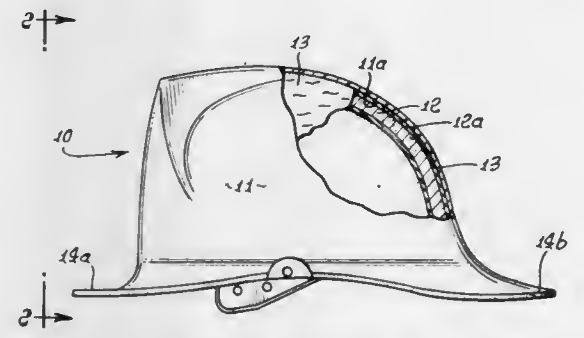
INSULATED HELMET

Robert L. Asbury, Mill Valley, Calif., assignor to Bell Helmets Inc., Norwalk, Calif.

Filed Nov. 25, 1985, Ser. No. 801,329

Int. Cl.⁴ A42B *1/06, 3/00*

U.S. Cl. 2—5 **10 Claims**



1. In a heat resistant helmet composite, the combination comprising

(a) an outer dome-shaped shell,

(b) an inner liner received in the shell, the liner having an outer dome shaped surface to fit in the shell, and

(c) a metal foil sheet extending between the shell and the liner and extending over and adjacent the dome-shaped surface of the liner,

(d) the liner consisting of foamed plastic material, and being substantially thicker than the shell, the foil sheet loosely adherent to said liner outer surface.

4,619,004

PANTS WITH AIR VENTILATION PANEL

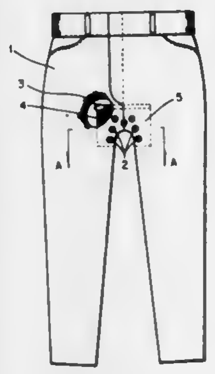
In H. Won, Seoul, Rep. of Korea, assignor to Choon Woo Lee, Seoul, Rep. of Korea

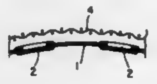
Filed May 6, 1985, Ser. No. 730,636

Claims priority, application Rep. of Korea, May 16, 1984, 84-4505[U]; Oct. 17, 1984, 84-10177[U]

Int. Cl.⁴ A41D *1/06*

U.S. Cl. 2—227 **3 Claims**





1. Pants with an air ventilation panel comprising:

a plurality of perforated eyelets riveted to said panel and providing ventilation openings therein;

a net fabric sewn to the back surface of said panel along the edge thereof, a portion of said edge of said net fabric being left unsewn;

a zipper one stringer secured to said ventilation panel and the other stringer secured to said unsewn edge for opening and closing said net fabric whereby an openable and closable pocket is formed therebetween.

2. Pants with an air ventilation panel comprising:

an air ventilating net woven fabric sewn to a crotch area of said pants;

a net fabric sewn to the back surface of said panel along the edges thereof, a portion of the edge of said second net fabric being left unsewn; and

mating separable fastening means on the inside of said panel, a first part of said separable fastening means being secured to the back surface of said first net fabric and a second part of said mating separable fastening means being secured to the unsewn edge of said second net fabric whereby an openable and closable pocket is formed therebetween.

4,619,005

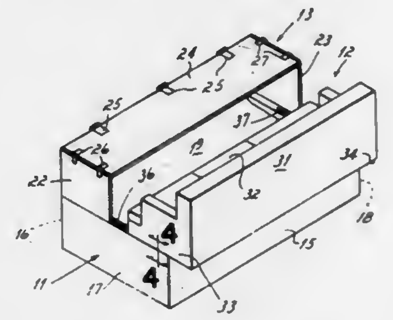
WATERBED, SOFA AND TABLE

Imants R. Rutens, 8853 Valley Circle Dr., Florence, Ky. 41042

Filed Apr. 24, 1985, Ser. No. 726,427

Int. Cl.⁴ A47C *27/08*

U.S. Cl. 5—2 R **12 Claims**



1. A modular furniture system comprising:

a waterbed having a frame including elongated side and end members defining a bed area, and a flexible bladder means for containing water within said bed area surrounded by said frame;

a sofa mounted on said waterbed frame;

said sofa comprising a seat member and back member fixed to each other in an attitude permitting sitting thereon;

mounting element means for removably mounting said sofa over said waterbed frame;

said seat and back members remaining in said fixed attitude when said sofa is removed from over said frame;

said sofa extending longitudinally along and over one of said elongated side members and portions of each of said elongated end members, such that a portion of the bed area surrounded by said frame is covered by said sofa and another portion of said bed area is uncovered by said sofa; and

a table means disposed rearwardly of said sofa and for removably covering said other portion of said bed area.

4,619,006

BED FOR PASSIVE, AUTOPASSIVE OR AGAINST PATIENT RESISTANCE MOTOR RE-EDUCATION, SUPPLIED WITH MECHANICALLY CONTROLLED AND BY ELECTRONIC OPERATED, PROGRAMMABLE AND CONTROLLABLE COMPONENTS

Pierangelo Magnoni; Pier E. Strada, both of Milan; Walter Cavagnis, Merate, and Angelo Sanvito, Milan, all of Italy, assignors to O.F.M.E.C. Officine Meccaniche Mantovane S.p.A., Mantova, Italy

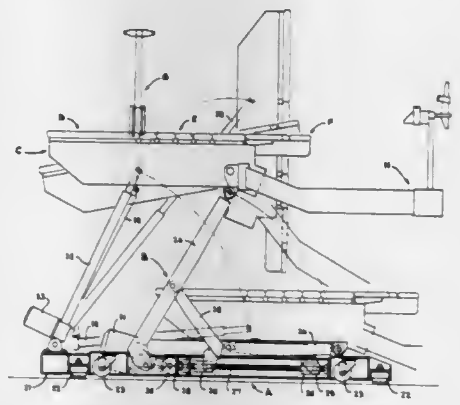
Filed Feb. 27, 1985, Ser. No. 706,325

Claims priority, application Italy, Feb. 28, 1984, 19825 A/84

Int. Cl.⁴ A61G *7/06*

U.S. Cl. 5—68 **7 Claims**

1. A bed particularly constructed for the motor re-education of a patient, said bed comprising a base, an elongated support

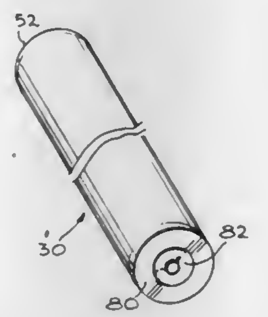


frame, first support lever means extending between said base and said support frame for raising and lowering said support frame relative to said base and selectively tilting said support frame about an axis transversely of the length of said support frame, a head rest, means mounting said head rest for pivotal movement about a transverse axis on said support frame, second support lever means extending between said support frame and said head rest for selectively tilting said head rest relative to said support frame, back rest cushion means on said support frame defining a back zone, leg supports pivotally carried by said support frame for vertical movement relative to said support frame, arm supports carried by said support frame, and a control unit for effecting movement and positioning of each of said first support lever means, said second support lever means and said leg supports, each of said control units including a motor unit for effecting movement, a speedometer dynamo coupled to each motor unit for controlling the speed of operation of each of said motor units, an angle detector for detecting the angular position effected by the respective motor unit, together with a torque detector for each of said motor units and a control device for receiving and sending signals to said motor units for selecting the speeds of operation of said motor units and angular positions to which said support frame, said head rest and said leg supports are moved to allow a patient to execute a complete range of selected single, simultaneous and variously alternative exercises relating to flexural-extension movement of a patient's backbone, said control device including a microprocessor for programming the separate actuation of each of said motors in accordance with a selected exercise.

4,619,007
CELLULAR WATERBED COMPONENT AND METHOD OF MANUFACTURE

Angel M. Echevarria, 5416 La Crescenta Ave., and Michael A. Echevarria, 3550 Altura Ave., both of La Crescenta, Calif. 91214

Filed Sep. 29, 1982, Ser. No. 426,956
Int. Cl.^{4} A47C *27/08;* B65B *7/00*
U.S. Cl. 5—451 **3 Claims**



1. A closed liquid container for use with a plurality of like containers in a waterbed, the container being fabricated from elongate pliable tubing of which each end comprises a continuous perimeter end portion, wherein the fabricated container has a fill opening of substantially lesser transverse dimension than the cross-sectional dimension of the tubing, the only opening in said tubing, between its opposite ends being said fill opening, said container being fabricated by a process comprising the steps of:

forcing a first end of said tubing around a closed perimeter support member, said support member having a backing surface conforming to a radially inwardly folded end portion of said tubing, said support member being capable of being dismantled into a configuration which can pass through said fill opening, the tubing end turning radially inward and folding against said backing surface;

placing said support member on a base for supporting said support member through said tubing;

placing a first end piece in position overlapping said radially inwardly folded end portion, said first end piece consisting of a material compatible to that of said tubing, said first end piece being sufficiently large to cover the open end of the tubing, thereby forming a first layered assembly;

bonding said first layered assembly while said end piece is in contact with said radially inwardly folded end portion so as to form a lap weld seal between said first end piece and said tubing;

transferring said support member to said opposite end of said tubing;

forcing said opposite end of said tubing around said support member such that the opposite end portion turns radially inward and folds against the backing surface of said support member;

placing said support member on a base for supporting said support member through said tubing;

placing a second end piece in position overlapping said radially inwardly folded end portion, said second end piece consisting of a material compatible to that of said tubing, said second end piece being sufficiently large to cover the open end of the tubing, thereby forming a second layered assembly;

bonding said second layered assembly while said end piece is in contact with said radially inwardly folded end portion so as to form a lap weld seal between said second end piece and said tubing;

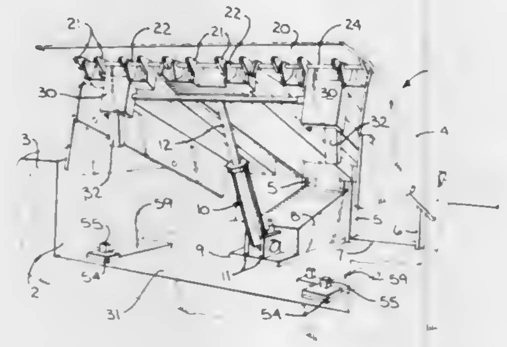
dismantling said support member; and

removing said dismantled support member through the fill opening in the thus-fabricated closed liquid container.

4,619,008
DOCKBOARD CONSTRUCTION

Jonathan W. Kovach, Milwaukee, and Martin P. Hageman, Mequon, both of Wis., assignors to Kelley Company, Inc., Milwaukee, Wis.

Filed Jul. 30, 1984, Ser. No. 635,840
Int. Cl.^{4} E01D *1/00*
U.S. Cl. 14—71.7 **16 Claims**



1. In a dockboard to be mounted in a pit in a loading dock, a supporting structure, a ramp hinged to said supporting structure and movable from a horizontal cross traffic position to an upwardly inclined position and to a downwardly inclined below dock level position, means for pivoting the ramp between said positions, at least one cross traffic leg pivoted to the forward portion of the ramp and extending downwardly from the ramp and movable between an upright supporting position and a rearwardly pivoted retracted position, said cross traffic leg when in said supporting position disposed to engage the bottom of the pit to support the ramp in said horizontal cross traffic position, locking means engageable with the cross traffic leg to prevent the cross traffic leg from pivoting from the supporting position to the retracted position when the ramp is in the cross traffic position, first biasing means interconnecting said ramp and said leg, said first biasing means being movable between a loaded condition wherein said first biasing means exerts a force on said leg to urge said leg to said retracted position and a relaxed condition, manual means for moving said first biasing means from the relaxed condition to the loaded condition, means responsive to elevation of the ramp to a predetermined position above the cross traffic position for releasing said locking means to enable said first biasing means to pivot the cross traffic leg to the retracted position whereby the ramp can then be lowered to the downwardly inclined position, and means responsive to the ramp moving to a downwardly inclined position for moving said first biasing means from the loaded condition to the relaxed condition.

4,619,009
TOOTH CLEANING APPARATUS

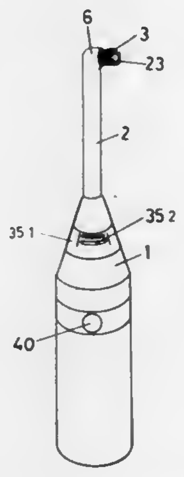
Otto Rosenstatter, Seeham, Austria, assignor to Durr-Dental GmbH & Co. KG, Bietigheim, Fed. Rep. of Germany

PCT No. PCT/EP83/00347, § 371 Date Aug. 23, 1984, § 102(e) Date Aug. 23, 1984, PCT Pub. No. WO84/02453, PCT Pub. Date Jul. 5, 1984

PCT Filed Dec. 23, 1983, Ser. No. 644,730

Claims priority, application Austria, Dec. 24, 1982, 4683/82; Jul. 28, 1983, 2752/83

Int. Cl.^{4} A46B *13/04*
U.S. Cl. 15—29 **13 Claims**



1. Tooth cleaning apparatus comprising

a drive and grip part comprising a symmetrical cylindrical casing and a motor housed in said casing, and,

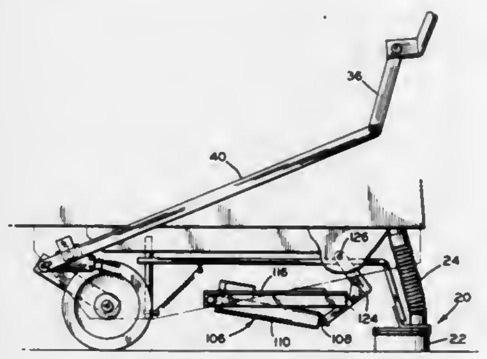
a brush part removably attached to said drive and grip part comprising a hollow elongate shank portion extending from an end of said casing and having at its outer end a transverse bearing for a rotatable brush, a brush rotatable in said bearing and a drive shaft having at an inner end driving connections with said motor and at an outer end driving connections with said rotatable brush,

said elongate shank portion and drive shaft being coaxial with said cylindrical, said shank portion having an enlarged inner end portion coaxial with and adjoining said cylindrical casing, diametrically opposite hook portions provided on said enlarged inner end portion of said shank portion and engageable with locking webs formed on a deformable thin wall portion of said cylindrical casing, said thin wall portion of the casing being deformable by lateral pressure applied to selected regions to disengage said hook portions from said webs and thereby release said brush portion from said casing.

4,619,010
SCRUBBER WITH MECHANISM FOR AUTOMATICALLY RAISING AND LOWERING A SQUEEGEE ASSEMBLY

Jack L. Burgoon, Toledo, Ohio, assignor to Cooper Industries, Inc., Houston, Tex.

Continuation of Ser. No. 596,652, Apr. 4, 1984, abandoned. This application Sep. 30, 1985, Ser. No. 783,047
Int. Cl.^{4} A47L *11/30*
U.S. Cl. 15—50 R **14 Claims**



1. A walk-behind scrubber comprising:

a body;

wheels supporting said body above a floor;

a scrub brush at a forward portion of said body;

a squeegee assembly at a rear portion of said body;

mechanical means including electrically driven means for raising and lowering said squeegee assembly, said mechanical means including a follower arm connected to said squeegee assembly and pivotally connected to said body, a pivotable lift rack engageable with said follower arm when said squeegee assembly is raised, said pivotable lift rack being connected to said electrically driven means and having a roller extending transversely of said scrubber which engages said follower arm when said squeegee assembly is raised;

a switch connected with said electrically driven means having a first condition in which said mechanical means is moved to raise said squeegee assembly and a second condition in which said mechanical means is moved to lower said squeegee assembly;

handle means movably mounted on a rear portion of said body; and

means including link means connected to said handle means and engageable with said switch to cause said switch to be in its second condition when said handle means is manipulated to move said scrubber forwardly and to cause said switch to be in its first condition when said handle means is manipulated to move said scrubber rearwardly.

4,619,011
MECHANICAL CHIMNEY SWEEP

Ronald L. Grooms, 2280 W. Ustick Rd., P.O. Box 615, Meridian, Id. 83642

Filed Apr. 8, 1985, Ser. No. 721,271
Int. Cl.^{4} F23J *3/00*
U.S. Cl. 15—163 **2 Claims**

1. Mechanical chimney sweep apparatus for chimneys of the type having a flue pipe or liner, said apparatus comprising:

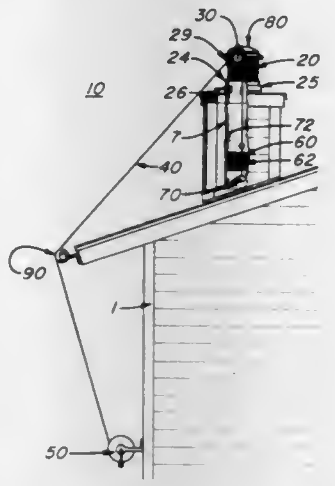
a spark arrester, tubular in shape, and provided with a multiplicity of openings in the side wall thereof, said arrester insertable into said flue pipe or liner, and said arrester provided with one or more brackets, substantially inverted L-shape in form, said brackets operable to engage the top lip and exterior surface of said flue pipe or liner;

a pulley supported by said arrester;

an externally mounted winch;

a cable attached to one end to said winch, engaging said pulley, and terminating at the other end within the enclosure defined by said arrester and said flue pipe or liner;

a brush for cleaning the walls of said pipe or liner, said brush affixed to the end of said cable; and



a counterweight attached to said cable and downwardly depending from said brush.

4,619,012

HAIRBRUSH

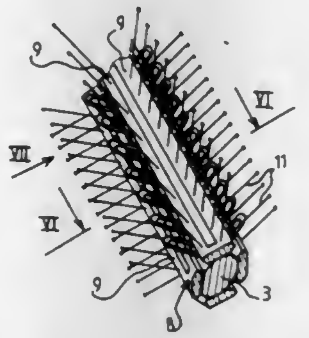
Jean-Louis Wachtel, Selestat, France, assignor to Celluloid S.A., France

Filed May 30, 1985, Ser. No. 739,327

Claims priority, application France, Feb. 27, 1985, 85 02860

Int. Cl.⁴ A46B *9/00, 9/08*

U.S. Cl. 15—187 **13 Claims**



1. A hairbrush including a handle, a head extending in prolongation of said handle, and pins projecting from said head radially outwardly thereof for disentangling hair, wherein said head includes a core portion on which is fixed an elongate hollow body including a certain number of strips arranged circumferentially at substantially regular intervals and spaced from said core portion so as to facilitate the circulation of air for drying the hair, said pins being substantially arranged regularly along said strips, said hairbrush further comprising at least one plurality of small closed loops arranged at substantially regular intervals along said core portion and projecting between two adjacent strips by a height greater than the distance between the strips and the core portion so that two adjacent loops retain the end of a hair tuft during the brushing.

4,619,013

WALL CORNER FINISHING TOOL

Gary Yon, 8495 Remington Dr., Pittsburgh, Pa. 15237

Filed Aug. 23, 1985, Ser. No. 769,163

Int. Cl.⁴ B05C *17/10*

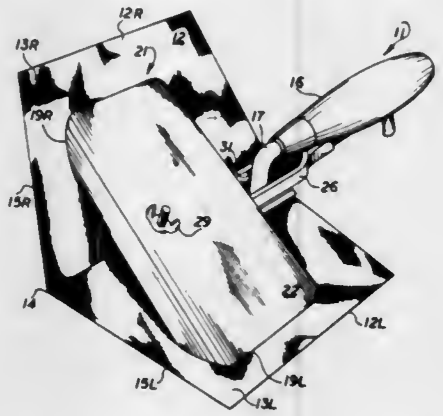
U.S. Cl. 15—235.8 **5 Claims**

1. A wall board corner finishing tool comprising:

a. A body formed of a manually flexible, planar sheet material having two substantially flat sides juxtaposed and extending radially from one common axis to define a dihedral configuration set at a uniform angle from the edge thereof throughout its length, which angle is measureably greater than 90° but less than 120°;

b. A gripping means affixed essentially centrally of the inner surfaces of the dihedral body and extending rearwardly of the back edge thereof; and

c. a tool angle biasing means extending beneath gripping means and pivotally connect therewith and connected to means for biasing outwardly the flat sides of the tool to enlarge the set angle normally defined by said flat sides, so as to allow their divergence relative to each other when the sides are flexed outwardly during use, thereby to aid in smooth blending of the seam sealing materials into the wall board corner.



4,619,014

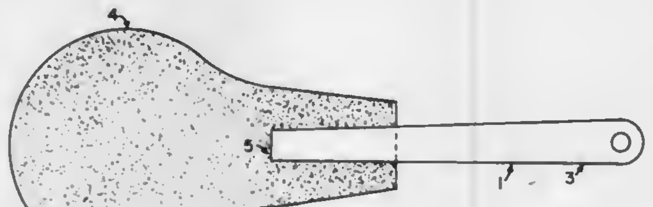
SCALP CLEANER

Stuart Piken, 351 E. 84th St., New York, N.Y. 10028

Filed Feb. 22, 1985, Ser. No. 704,511

Int. Cl.⁴ A47K *7/04*

U.S. Cl. 15—244 R **1 Claim**



1. A scalp cleaning device capable of insertion between the scalp and a hairpiece secured to the scalp along the perimeter of a non-planar contoured area of the scalp over which the hairpiece is juxtaposed, the hairpiece being secured altitudinally closely adjacent the contoured area of the scalp such that only limited altitudinal space is available for insertion and cleaning manipulations of the scalp cleaning device between the hairpiece and the contoured area of the scalp, said scalp cleaning device comprising:

an elongate handle; and

a cleaning member, such as a sponge, affixed to the elongate handle to enable said cleaning manipulations of the cleaning member;

the elongate handle and the cleaning member being flexible and relatively thin in the altitudinal direction so as to enable flexible conformance of the scalp cleaning device to the non-planar contour of the contoured area during said cleaning manipulations with minimal force against the hairpiece, whereby said cleaning manipulations are facilitated within the confines of said limited altitudinal space;

the cleaning member being located altitudinally beneath a portion of the elongate handle such that said portion of the handle is interposed between the hairpiece and the cleaning member during said manipulations.

4,619,015

VACUUM LOADING CLEANING SYSTEM

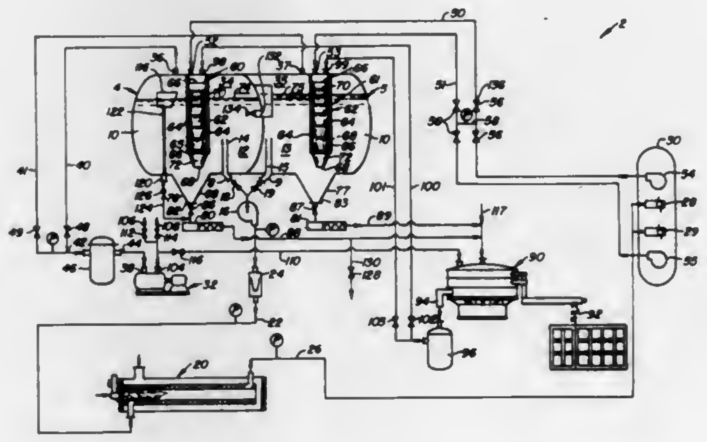
William G. Urbani, Stockton, Calif., assignor to Industrial Innovations, Inc., Stockton, Calif.

Filed Oct. 2, 1984, Ser. No. 657,284

The portion of the term of this patent subsequent to Aug. 21, 2001, has been disclaimed.

Int. Cl.⁴ A47L *5/12;* **B08B** *3/02, 3/10;* **B07C** *5/00*

U.S. Cl. 15—302 **11 Claims**



1. A surface cleaning system for use with a cleaning liquid comprising:

a substantially sealed pressure vessel having a liquid outlet, a vacuum outlet and a suction inlet in fluid communication with the interior of said vessel, said vacuum outlet and said suction inlet communicating with an upper region of said vessel and said liquid outlet communicating with a lower region of said vessel;

first pump means, fluidly connected to said liquid outlet, for pumping the cleaning liquid from said vessel through a first line, said liquid partially filling said pressure vessel so that said vacuum outlet is above the free surface of said cleaning liquid;

means, fluidly connected to said vacuum outlet, for drawing a partial vacuum within said upper region of said pressure vessel;

means fluidly connected to said first line for directing said cleaning liquid at a surface to be cleaned to dislodge contaminants from said surface;

a second line fluidly connected to said suction inlet at one end to provide a source of suction at the other end of said second line, said other end positioned at the surface to be cleaned so to suck cleaning liquid and dislodged contaminants from the surface and back to said vessel;

a booster pump mounted along said second line to aid movement of said cleaning liquid and dislodged contaminants along said second line;

solids separator means, including a solids separator inlet, for removing solids from a mixture of solids and liquids;

pipe means for fluidly connecting said solids separator inlet to said vessel, said pipe means adapted to pass a mixture of solids and said cleaning liquid from said vessel to said solids separator means; and

said solids separator means including a liquid outlet, fluidly coupled to the interior of said vessel, for drawing liquid from said solids separator means into said vessel.

4,619,016

HINGE ATTACHMENT ARRANGEMENT FOR AN ADJUSTABLE, DETACHABLE ATTACHMENT OF MOTOR VEHICLE DOORS

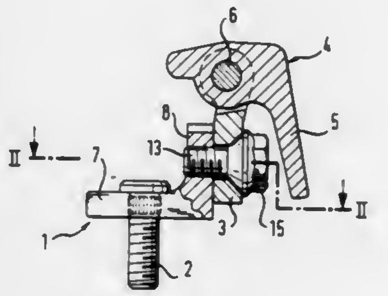
Ernst Brockhaus, Remscheid-Hasten, Fed. Rep. of Germany, assignor to ED. Scharwächter GmbH & Co. KG, Remscheid, Fed. Rep. of Germany

Continuation of Ser. No. 567,530, Jan. 3, 1984, abandoned. This application Oct. 2, 1985, Ser. No. 783,256

Claims priority, application Fed. Rep. of Germany, Jan. 3, 1983, 3300006

Int. Cl.⁴ E05D *5/02*

U.S. Cl. 16—383 **7 Claims**



1. Hinge attachment arrangement for motor vehicle doors comprising a wing-type hinge including a vertically arranged first hinge wing, a vertically arranged second hinge wing, and a vertical hinge pin interconnecting said first and second hinge wings, said first hinge is arranged to be connected to a door on a vehicle, a fastening element is arranged to be attached to the door frame of the vehicle, said second hinge wing is arranged to be detachably fastened to said fastening element so that the vehicle door can be removed after it is aligned on the door frame for completing outfitting of the vehicle and then remounted in the final assembly, means forming guide surfaces disposed at least in part on one of said second hinge wing and said fatening element so that said guide surfaces slide relative to one another when assembling said hinge attachment arrangement, said fastening element and second hinge wing each having bearing surfaces therein in slidable contact with one another when said second hinge is fastened to said fastening element, said guide surfaces extend transversely to said bearing surfaces, wherein the improvement comprises that said second hinge wing having a first hole extending therethrough transversely of said bearing surfaces, said fastening element having a second hole extending therethrough in general alignment with the first hole in said second hinge wing, at least one fastening bolt separate from said guide surfaces for attaching said second hinge wing to said fastening element and extending through the first hole in said second hinge wing and through the second hole in said fastening element, said second hole in said fastening element being threaded for receiving said fastening bolt in threaded engagement and said first hole in said second hinge bearing having a larger diameter than said second hole so that with said fastening bolt extending through said first hole into said second hole there is play between the surface of said fastening bolt and said first hole, said means forming guide surfaces are shaped at least in part for providing self-centering of said second hinge wing relative to said fastening element and for eliminating play between said second hinge wing and said fastening element, at least one axially extending attachment member having a longitudinal axis and being secured at one end to at least one of said second hinge wing and fastening element, said at least one axially extending attachment member having a part extending along the longitudinal axis with the axis of said attachment member extending transversely of said bearing surfaces, a recess extending along the longitudinal axis from the other end toward said one end and formed in the axially extending part of said attachment member extending through the other one of said second hinge wing and fastening element and said attachment member forming a part of said guide surfaces and said attachment member having an

axially extending conically shaped surface thereon that tapers toward the other end.

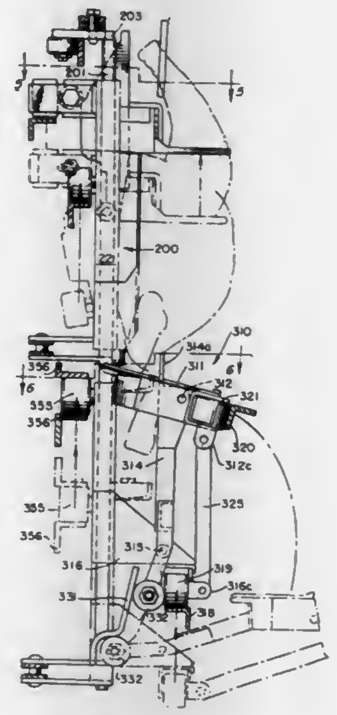
4,619,017
POULTRY PROCESSING APPARATUS

Lacy W. Simmons, 101 Simmons Industrial Blvd., Dallas, Ga. 30132

Division of Ser. No. 517,811, Jul. 27, 1983, Pat. No. 4,550,473, Continuation-in-part of Ser. No. 873,370, Jan. 30, 1978, abandoned. This application Aug. 1, 1985, Ser. No. 761,424

Int. Cl.⁴ A22C *21/00*

U.S. Cl. 17—11 **5 Claims**



1. Apparatus for breaking the neck of a bird in a poultry processing operation, comprising:

(a) means for engaging the bird in such a manner so as to identify the locations of the bird's neck;

(b) V-shaped means for aligning and holding the bird's neck against displacement;

(c) means for engaging and breaking the neck of said bird; and

(d) means for supporting said engaging means, said aligning and holding means, and said breaking means on module support means which is advanced in timed relationship with said bird as said bird is advanced in a head lowermost position along a predetermined path in a processing line during a processing operation, the V-shaped aligning and holding means is pivotally coupled to the module support means so that it can pivot between a first open position and a second closed position in which the neck of the bird is properly aligned and held during the pivoting closing motion, and cooperates with the breaking means during the closing motion to break the neck of the bird.

4,619,018
APPARATUS FOR APPLYING A LENGTH OF FLEXIBLE TUBING TO THE FILLING PIPE OF A MULTIPLE-SPOUT HEAD

Herbert Niedecker, Am Ellerhang 6, 6240 Konigstein, Taunus, Fed. Rep. of Germany

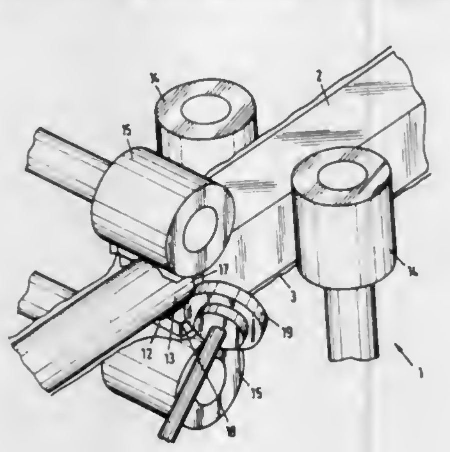
Filed Dec. 16, 1983, Ser. No. 562,491

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1982, 3246639

Int. Cl.⁴ A22C *11/12, 13/02*

U.S. Cl. 17—33 **3 Claims**

1. In an apparatus for applying a length of flexible tubing to the filling pipe of a multiple-spout head for making a casing section which is closed at one end and is to be processed further on a combined filling and closing machine, which apparatus also comprises a carrying element, which has a tubular end portion and is held by a tubing feeder for moving the tubing withdrawn from a roll of tubing and is axially moved into engagement with the end portion of the filling pipe to receive and at least partly cover the end portion of the filling pipe when the length of tubing is to be applied to the filling pipe, wherein gripping means for retaining the length of tubing on the carrying element and/or the filling pipe are provided, the improvement wherein the tubular end portion of the carrying element includes one or more notches, the apparatus further including one or more gripping elements which are pivotally movable through said notches to retain the tubing on the end portion of the filling pipe when the carrying element has been axially moved into engagement with said end portion of the filling pipe, and feed rollers held against rotation to grip and retain the tubing on the tubular end portion of the carrying element, the center lines of said feed rollers being approximately disposed in the same plane as the gripping points at which the gripping elements engage the end portion of the filling pipe.



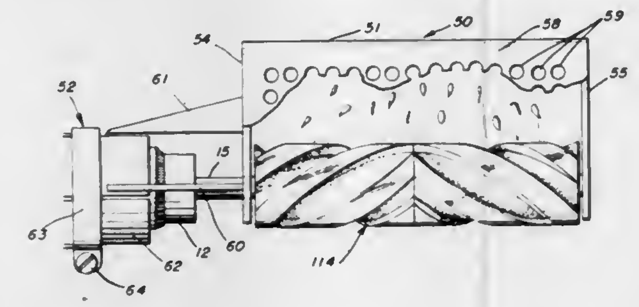
4,619,019
FISH SCALING DEVICE

Clifford D. Hardy, 6296 Ashton Rd., Memphis, Tenn. 38134

Filed Jun. 4, 1985, Ser. No. 740,981

Int. Cl.⁴ A22C *25/02*

U.S. Cl. 17—67 **14 Claims**



1. A fish scaling tool adapted to be rotated by a portable rotary motor having tool drive means, said fish scaling tool comprising an elongated cylindrical body member having a longitudinal axis and an interrupted peripheral surface, a pair of flat opposite ends normal to said axis, a plurality of equally spaced parallel longitudinal blades extending generally radially along said body member between said ends, a plurality of parallel longitudinal grooves formed in said body member between said ends and alternating with said blades, and a shank extending axially from one end of said body member for driven engagement with said tool drive means, each of said blades having a surface portion of substantial width coincident with the peripheral surface of said body member between grooves and a pair of smooth, continuous longitudinally extending edges on opposite sides of said blade where the grooves on opposite sides of said blade interrupt the peripheral surface of said body member, said grooves opening outwardly between adjacent blades and being of generally arcuate cross section and uniform depth between the longitudinal edges of adjacent blades, a space between longitudinal edges of adjacent blades providing an opening to said grooves whereby scales being removed from a fish may freely enter and leave said grooves.

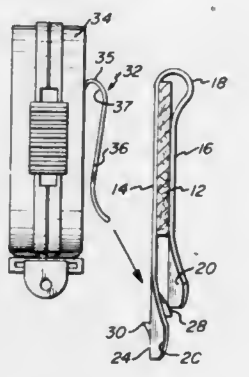
4,619,020
RULE CLIP HOLDER FOR BELT OR THE LIKE

Bernard G. Lecher, Sr., LaCrosse, Wis., assignor to The Stanley Works, New Britain, Conn.

Filed May 10, 1985, Ser. No. 732,681

Int. Cl.⁴ A44B *21/00;* A45F *5/02*

U.S. Cl. 24—10 A **8 Claims**



1. A holder for supporting a measuring rule or like object, which object has a spring clip thereon with a resiliently deflectable tongue portion declining inwardly from an upper connecting portion, said holder comprising generally parallel inner and outer legs joined by an upper, resiliently deflectable connecting portion and adapted to engage the user's belt or similar supporting part inserted upwardly therebetween, said outer leg being sustantially longer than said inner leg and having a relatively wide and substantially planar lower portion with a laterally extending slot formed therethrough adjacent the lower edge thereof, said slot being dimensioned and configured for facile insertion of the tongue portion of the spring clip of the object to be supported, said lower portion having at least one terminal element thereon which extends inwardly a distance sufficient to hamper inadvertent disengagement of said holder from a belt inserted between said legs.

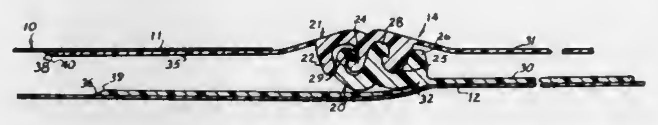
4,619,021
CLOSURE STRIP TO BE APPLIED TO BAGS

James R. Johnson, 3819 Greenbill Dr., Chamblee, Ga. 30341

Filed Jul. 23, 1984, Ser. No. 633,219

Int. Cl.⁴ B65D *77/10*

U.S. Cl. 24—30.5 P **2 Claims**



1. A bag formed of thermoplastic sheet material having a closure strip at the top of said bag for selectively closing said bag, said closure strip being formed of a substantially thicker material than said sheet material of said bag, said closure strip including a rear closure member for attachment to the back panel of said sheet material and a front closure member for attachment to the front panel of said sheet material, said rear closure member and said front closure member being interengageable with each other, said rear closure member including an upper mounting flange extending towards the top of said bag and a lower mounting flange extending towards the bottom of said bag, said front closure member including an upper mounting flange extending towards the top of said bag and a lower mounting flange extending towards the bottom of said bag, said lower mounting flange of said front closure member extending beyond said lower mounting flange of said rear closure member when said rear closure member and said front closure member are interengaged, said lower mounting flange of said front closure member defining a beveled edge for allowing said lower mounting flange to merge smoothly into said front panel of said sheet material so that said sheet material of said bag can flow smoothly into the material of said closure in spite of the differences in thickness of said sheet material of said bag and said closure, said lower mounting flange of said rear closure member defining a beveled edge for allowing said lower mounting flange to merge smoothly into said rear panel of said sheet material, and further characterized in that said beveled edge on said lower mounting flange of said front closure member begins beyond said lower mounting flange of said rear closure member, the arrangement being such that the plurality of layers comprising said rear panel of said sheet material, said lower mounting flange of said rear closure member, said lower mounting flange of said front closure member and said front panel of said sheet material all merge smoothly for allowing an imperforate weld of said thermoplastic material at said closure strip.

4,619,022
DOUBLE-SAFETY CATCH FOR A BRACELET

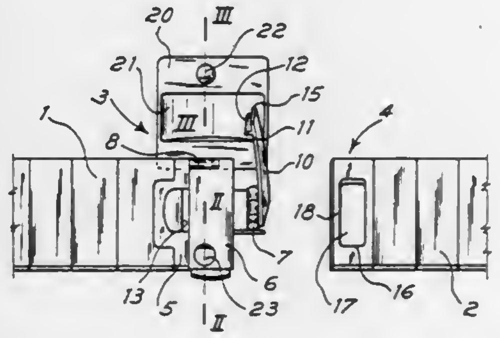
Fernando Fontana, Sesto Calende, Italy, assignor to Omega SA, Switzerland

Filed Mar. 12, 1985, Ser. No. 710,805

Claims priority, application Italy, Mar. 20, 1984, 20157 A/84

Int. Cl.⁴ A44B *11/28*

U.S. Cl. 24—69 J **12 Claims**



1. A double-safety catch for connecting a first bracelet portion and a second bracelet portion, the catch having an assembly for attachment to the first bracelet portion and comprising: first and second closure elements, said first closure element being pivotally mounted in said assembly to pivot about an axis perpendicular to the longitudinal direction of the bracelet portions to trap an end member of the second bracelet portion and said second closure element being pivotally mounted in said assembly to pivot about a second axis extending in the longitudinal direction of the bracelet portions and thereby cover said first closure element.

4,619,023
SLIDE FASTENER

Yoshitoki Tsubokawa, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Mar. 15, 1985, Ser. No. 712,153

Claims priority, application Japan, Mar. 28, 1984, 59-45465[U]

Int. Cl.⁴ A44B *19/40*

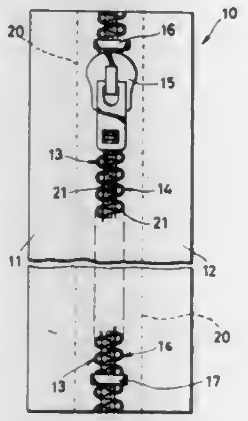
U.S. Cl. 24—394 **3 Claims**

1. A slide fastener comprising:

(a) a pair of support tapes of uniform transverse cross-section each carrying on its one longitudinal edge a row of coupling elements, each said support tape having a series of perforations extending along said row of coupling elements and being made of one of a film of plastics material, a non-woven fabric and a thread-free web;

(b) a series of sewing stitches securing said row of coupling elements to each support tape, said sewing stitches comprising double locked stitches formed of a looper thread of

a multifilamentary material and a monofilamentary needle thread having a plurality of loops passing through corresponding ones of said performations in said support tape and interlaced with said looper thread, and
(c) each of said loops of said needle thread having two adjacent thread portions received in one of said perforations and having a substantially thermally undeformable circular cross-section, each of said perforations having a substantially thermally undeformable oblong shape and conforming peripherally with said two adjacent portions of each said loop.



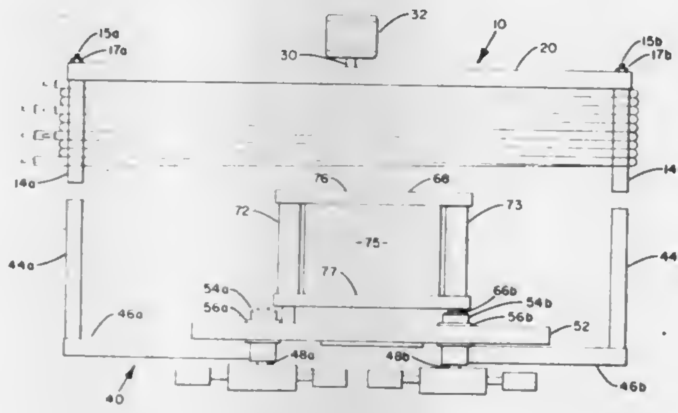
4,619,024
METHOD OF MAKING COILS

John R. McManus, Marcellus, and Lawrence W. Ubowski, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 17, 1984, Ser. No. 682,114

Int. Cl.⁴ B21D *53/00;* **B23P** *15/26;* **F28F** *1/10*

U.S. Cl. 29—157.3 R **3 Claims**



1. A method of forming a slit fin heat exchanger comprising the steps of:
wrapping slit fin tubing about the pair of spaced parallel mandrels to form a flat coil having two spaced rows;
placing the flat coil in place on a pair of spaced parallel mandrels which are rotatable about spaced axes which are initially parallel to and in the same plane as the mandrels on which the coil is in place;
placing a piece of expanded metal between the two rows and rotating the mandrels on which the coil is placed in opposite directions, thereby, shifting the plane in which the coils and the mandrels are located;
initially contacting a planar surface of a platen with a portion of a first one of the rows of the coil;
shifting the second one of the rows of the coil into contact with the portion of the first one of the rows overlying the platen and the piece of expanded metal to cause nesting of the first and second rows of the coil and the piece of expanded metal;
folding the portions of the coil extending past the platen about curved portions of the platen and, thereby, extending the portions of the first and second rows which are nested; and
contacting an additional curved portion of the platen with the first one of the rows of the coil to form a knob at each end of the coil at the mandrels to extend the portions of the first and second rows which are nested to essentially the ends of the coil.

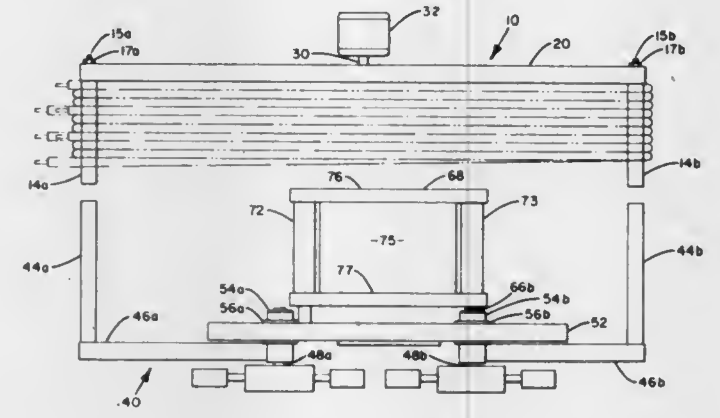
4,619,025
METHOD OF MAKING COILS

John R. McManus, Marcellus, and William E. Wright, East Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 17, 1984, Ser. No. 682,449

Int. Cl.⁴ B21D *53/00;* **B23P** *15/26;* **F28F** *1/10*

U.S. Cl. 29—157.3 R **3 Claims**



1. A method of forming a slit fin heat exchanger comprising the steps of:
placing an expanded metal cylinder on each of a pair of spaced parallel mandrels;
wrapping slit fin tubing about the pair of spaced parallel mandrels containing the expanded metal cylinders to form a flat coil having two spaced rows;
placing the flat coil in place on a pair of spaced parallel mandrels which are rotatable about spaced axes which are initially parallel to and in the same plane as the mandrels on which the coil is in place;
rotating the mandrels on which the coil is placed in opposite directions, thereby, shifting the plane in which the coils and the mandrels are located;
initially contacting a planar surface of a platen with a portion of a first one of the rows of the coil;
with the first one of the rows of the coil contacting the planar surface of the platen, shifting the second one of the rows of the coil into contact with the portion of the first one of the rows overlying the platen to cause nesting of the first and second rows of the coil;
folding the portions of the coil extending past the platen about curved portions of the platen and, thereby, extending the portions of the first and second rows which are nested; and
contacting an additional curved portion of the platen with the first one of the rows of the coil to form a knob at each end of the coil at the mandrels to extend the portions of the first and second rows which are nested to essentially the ends of the coil and further nesting the coil to the expanded metal cylinders.

4,619,026
APPARATUS FOR ASSEMBLING CABLE DRUM

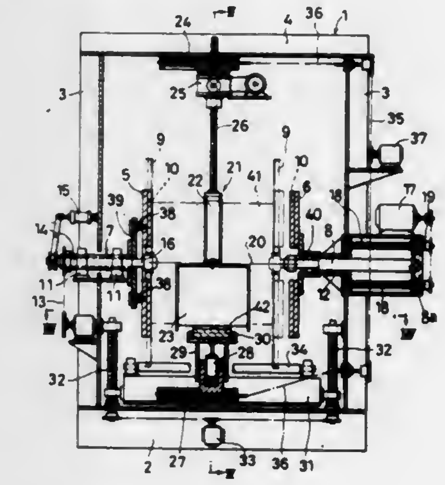
Yoshiaki Suzuki, Yokohama, Japan, assignor to Toko Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1985, Ser. No. 783,994

Claims priority, application Japan, Aug. 31, 1985, 60-190966

Int. Cl.⁴ B23K *37/04*

U.S. Cl. 29—256 **3 Claims**



1. An apparatus for assembling a cable drum having a winding drum and flange plates with ribs mounted on the ends thereof, said apparatus comprising a pair of pressing plates, each pressing plate having mounting grooves for engaging the ribs on the flange plates, said pressing plates being positioned to face one another with the centers thereof aligned on a central axis, wherein said pressing plates are movable in the axial direction with respect to one another; and annular holder means for engaging the winding drum and positioning the winding drum such that the axis thereof is aligned with said center axis of said pressing plates, wherein said annular holder means includes at least two segment members, said segment members being movable with respect to one another.

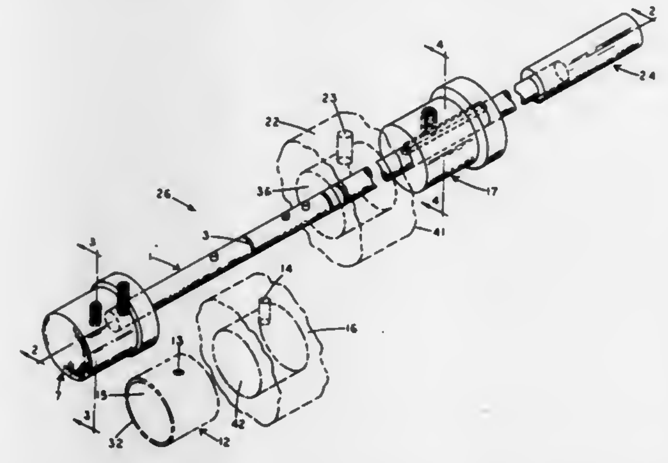
4,619,027
TOOL FOR INSTALLING AND ALIGNING CAMSHAFT BUSHINGS IN INTERNAL COMBUSTION ENGINES

Michael J. Ohannesian, P.O. Box 51, Cotati, Calif. 94928

Filed Feb. 25, 1985, Ser. No. 704,706

Int. Cl.⁴ B25B *27/14*

U.S. Cl. 29—275 **12 Claims**



1. A tool for installing and aligning camshaft bushings in internal combustion engines such that the oil supply bore extending through the wall of each camshaft bushing is aligned with a corresponding oil delivery passage in the engine block, said tool comprising: a shaft, a working head removably attached to one end of said shaft for holding a camshaft bushing, said working head being insertable into the central passage of a cylindrical camshaft bushing and including positioning means for positioning and securing a camshaft bushing on said working head, said positioning means including spring-loaded engaging means for engaging the oil supply bore of the camshaft bushing to position and rotationally orient the camshaft bushing on said working head, guide means slidably mounted on said shaft, said guide means including a cylindrical part for closely fitting in a bushing receiving bore of an internal combustion engine, a positioning shoulder for limiting the penetration of said cylindrical part of said guide means into the bushing receiving bore, and spring-loaded engaging means on said guide means cylindrical part for engaging the oil delivery passage of the engine which extends through the engine block to the bushing receiving bore, said guide means being positioned for installation of a camshaft bushing when said cylindrical part extends into the bushing receiving bore up to said positioning shoulder and said spring-loaded engaging means engages the oil delivery passage, said guide means including a longitudinal cylindrical bore through which said shaft extends for slidable movement relative to said guide means, said longitudinal cylindrical bore including a key way extending through said guide means, and said shaft including a plurality of locator pins projecting outwardly from said shaft for entering said key way of said guide means whereby said shaft and said working head thereon are aligned with said guide means when a locator pin is in said key way, such that a camshaft bushing on said working head will be installed in alignment with said guide means when said shaft is struck at the end opposite said one end where said working head it attached.

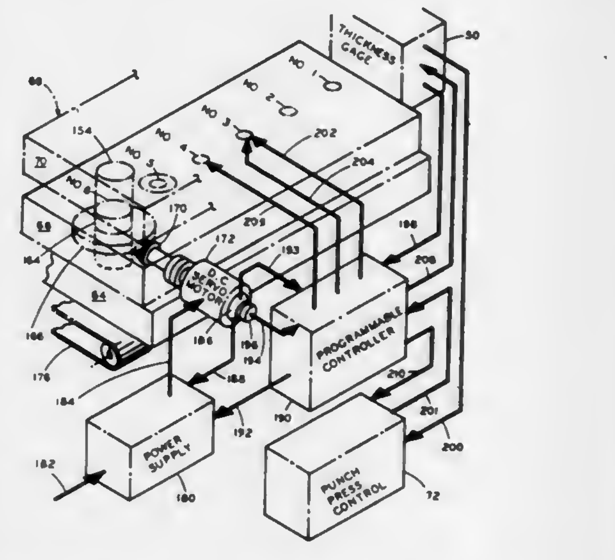
4,619,028
APPARATUS FOR MANUFACTURE OF LAMINATED PARTS

Thomas R. Neuenschwander, Fort Wayne, Ind., assignor to L H Carbide Corporation, Fort Wayne, Ind.

Filed Mar. 25, 1983, Ser. No. 478,692

Int. Cl.⁴ H02K *15/02*

U.S. Cl. 29—33 L **35 Claims**



1. Apparatus for blanking from an elongated sheet stock strip material, provided from a supply, electric motor or generator part laminas of said material and stacking said laminas to form a completed stack comprising:
a blanking station;
a stacking station;
first means for guiding said material from the supply to said blanking station;
second means at said blanking station for blanking laminas in a predetermined planar configuration;
third means at said stacking station for receiving and stacking the laminas to form a stack having a central axis substantially perpendicular to he lamina plane;
fourth means coupled to said third means at said stacking station for providing rotation of stack about said axis

relative at least one of said laminas for compensating for thickness variations in said material;
said third means for interlocking said at least one lamina to an adjacent lamina in said stack after said rotation to retain the relative rotational position of said at least one lamina with said stack;
sixth means for gauging the thickness uniformity of said lamina strip material;
seventh means coupled to said sixth means for detecting a predetermined thickness nonuniformity of said material;
eighth means coupled to said fourth and seventh means and having operator entered inputs for actuating said fourth means to cause said relative rotation between said stack and said at least one lamina to compensate for said thickness nonuniformity.

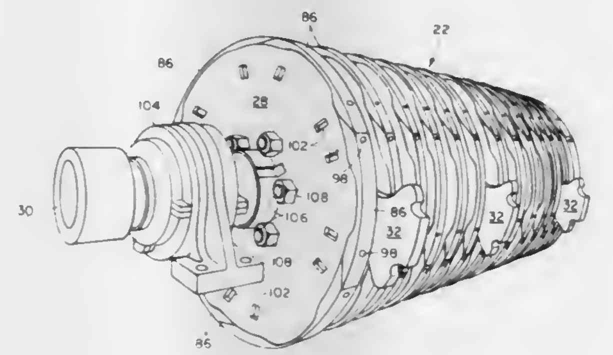
4,619,029
METHOD OF RETROFITTING A HAMMER MILL ROTOR

Alton S. Newell; A. Scott Newell, Jr.; Paul D. Popovich, and John R. Ewing, all of San Antonio, Tex., assignors to Newell Industries, Inc., San Antonio, Tex.

Division of Ser. No. 354,286, Mar. 3, 1982, Pat. No. 4,504,019. This application Mar. 7, 1985, Ser. No. 709,182

Int. Cl.⁴ B23P *7/00, 19/04*

U.S. Cl. 29—402.05 **13 Claims**



1. A method of retrofitting a hammer mill rotor having conventional discs initially mounted thereon, comprising the following steps:
removing said rotor from a hammer mill;
removing said conventional discs from a shaft of said rotor;
manufacturing modified discs which are generally circular and have outward protrusions thereon;
forming in said modified discs a means for attaching work hardening caps thereto;
attaching said caps to said modified discs via said attaching means, said caps overlapping said outward protrusions of said modified discs to form generally circular capped discs with a diameter generally the same as said conventional discs;
installing said modified discs on said shaft; and
reinstalling said rotor in said hammer mill.

4,619,030
TEMPERATURE CONTROL

Alan D. Marwick, Katonah, N.Y., and Harry C. Sansom, deceased, late of Newbury, England (by Janet Mary Sansom, administratrix), assignors to United Kingdom Atomic Energy Authority, London, England

Filed Jul. 9, 1985, Ser. No. 753,336

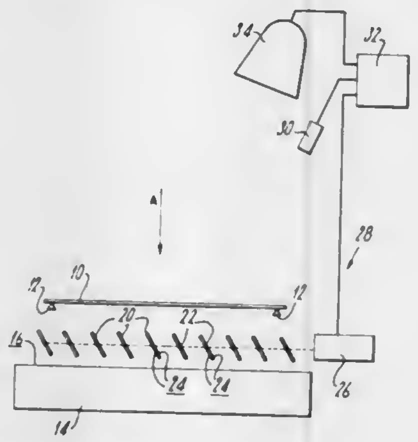
Claims priority, application United Kingdom, Jul. 16, 1984, 8418062

Int. Cl.⁴ B23Q *15/00;* **F28F** *27/00*

U.S. Cl. 29—404 **8 Claims**

1. An apparatus for controlling the temperature of a specimen undergoing treatment in an evacuated chamber, the apparatus comprising means to support the specimen, at least one heat sink adjacent to but spaced from the specimen, and means situated between the specimen and the heat sink for varying the rate of heat transfer therebetween by radiation.

8. A method for controlling the temperature of a specimen undergoing treatment in an evacuated chamber, the method comprising supporting the specimen adjacent to but spaced from a heat sink, and varying the effective thermal emissivity of the surface of the heat sink onto which radiation from the specimen is incident in relation to the temperature of the specimen.



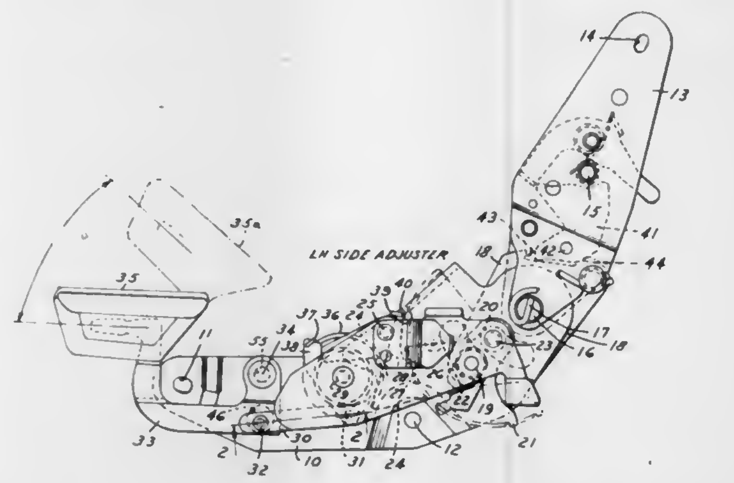
4,619,031
LINKAGE TOLERANCE COMPENSATING SYSTEM

Gerhard Loewe, Battle Creek; Egon Nithammer, Plainwell, and Vikram Zaveri, Springfield, all of Mich., assignors to Keiper Recaro, Inc., Battle Creek, Mich.

Filed Aug. 10, 1984, Ser. No. 639,579

Int. Cl.⁴ B23P *11/00, 19/00*

U.S. Cl. 29—434 **8 Claims**



1. A method for fabricating an actuating linkage assembly having a connecting link with two spaced pivot provisions with a tolerance compensating manufacturing system comprising the steps of prefabricating linkage components other than one pivot provision in said link the variable location of which can compensate for composite tolerance variations in the assembled components, preassembling said components on a fixture having locating means for positioning said assembly at a manufacturing station for establishing said one pivot location, locating said assembled components including said link at said station in required final assembled relation, establishing said one pivot provision in said link while said assembled components are located and held in said required relation, and completing said final assembly with said assembly located one pivot provision.

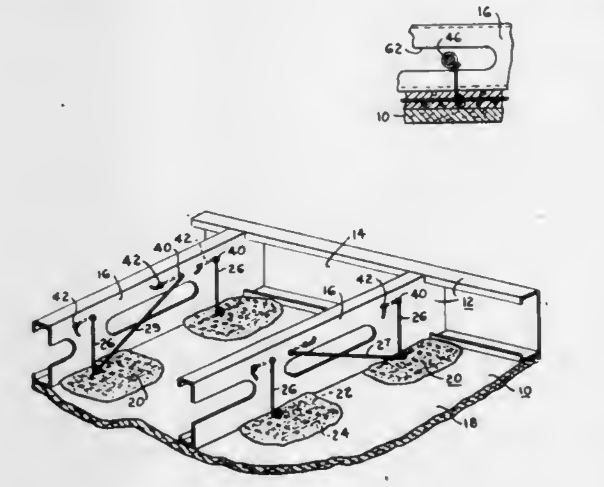
4,619,032
METHOD OF FORMING A COMPOSITE WALL FOR A BUILDING STRUCTURE

David A. Sudrabin, Delray Beach, Fla., assignor to Fibrestone Incorporated, LaBelle, Fla.

Continuation of Ser. No. 594,810, Mar. 29, 1984, and Ser. No. 506,526, Jun. 22, 1983. This application Jul. 24, 1985, Ser. No. 758,321

Int. Cl.⁴ B23P *19/04*

U.S. Cl. 29—460 **10 Claims**



9. The method of forming a composite wall for a building structure having, (a) a relatively thin outer shell formed of fiber reinforced cement and having an outer surface exposed to the atmosphere and an inner surface, and (b) a load supporting structure having a metal frame and spaced metal studs, which comprises the steps of, (1) positioning a preformed fiber reinforced shell horizontally with its outer surface in a face down position, (2) selecting a plurality of spaced patches having intersecting tension members, (3) securing a flex tie connector to intersecting tension members of each of the plurality of selected patches, (4) applying the selected patches to the inner surface of the outer shell with the flex tie connectors projecting upwardly from said patches, (5) applying a slurry of bondable substance to bond the patches to the inner surface of the shell with the flex tie connectors projecting upwardly therefrom in alignment with the location of the studs of the load supporting structure, (6) positioning the spaced metal studs of the load supporting structure of the inner surface of the fiber reinforced shell in alignment with the flex tie connectors, and (7) securing the flex tie connectors to the studs at points remotely spaced from the inner surface of the outer shell.

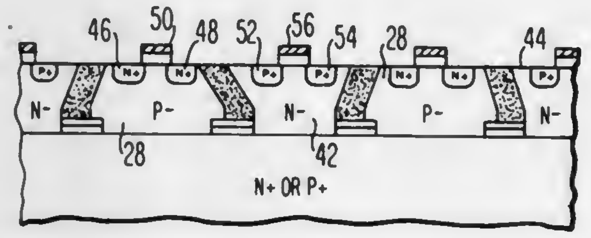
4,619,033
FABRICATING OF A CMOS FET WITH REDUCED LATCHUP SUSCEPTIBILITY

Lubomir L. Jastrzebski, Plainsboro, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 10, 1985, Ser. No. 732,605

Int. Cl.⁴ H01L *21/365*

U.S. Cl. 29—571 **7 Claims**



1. A method for forming a CMOS FET structure comprising:
forming an apertured insulating layer on a silicon substrate;
epitaxially forming a monocrystalline silicon island of first conductivity type through an aperture in said layer;
thermally oxidizing the exposed surface of said island so as to form an oxide thereon;
removing the portion of the insulating layer not covered by said oxide; and
forming a monocrystalline silicon island of second conductivity type adjacent to said oxidized silicon island of first conductivity type.

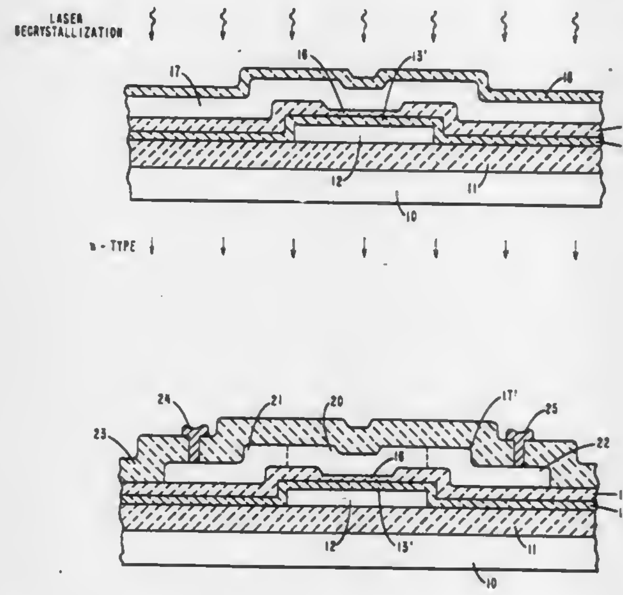
4,619,034
METHOD OF MAKING LASER RECRYSTALLIZED SILICON-ON-INSULATOR NONVOLATILE MEMORY DEVICE

John L. Janning, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Division of Ser. No. 490,743, May 2, 1983, abandoned. This application Mar. 11, 1985, Ser. No. 710,192

Int. Cl.⁴ H01L *21/263;* **C30B** *13/06*

U.S. Cl. 29—571 **7 Claims**



1. A method of forming a nonvolatile semiconductor memory element on a substrate comprising:
forming a conductive gate on a surface portion of said substrate;
forming a composite dielectric layer on said gate and the remaining surface portion of the substrate, said dielectric layer having a relatively small thickness in a central portion of the gate and relatively large thickness in the remaining portion of the gate and the substrate;
forming a doped polysilicon layer on said dielectric layer; and
converting said polysilicon layer into recrystallized silicon.

4,619,035
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE INCLUDING SCHOTTKY BARRIER DIODES

Tadahiko Hotta, and Shingo Sakakibara, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 21, 1985, Ser. No. 747,175

Claims priority, application Japan, Jun. 23, 1984, 59-129681; Jul. 5, 1984, 59-139644

Int. Cl.⁴ H01L *21/40*

U.S: Cl. 29—576 C **6 Claims**

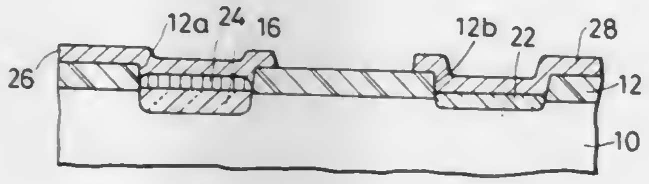
1. A method of manufacturing a semiconductor device provided with plural kinds of Schottky barrier diodes having different forward voltages on one substrate comprising:
(a) forming at least one Schottky barrier diode of a first kind, by:
(i) placing a first metal layer on a first surface part of a surface of a silicon substrate, and then

(ii) silicifying said first metal layer; and thereafter

(b) forming at least one Schottky barrier diode of a second kind, by

(i) placing a second metal layer indiscriminately both on said first surface part of said silicon substrate as a coating upon each said Schottky barrier diode of said first kind and on a second surface part of said silicon substrate which is different from said first surface part, this second metal layer consisting essentially of a metal which is different from that of said first metal layer, and then

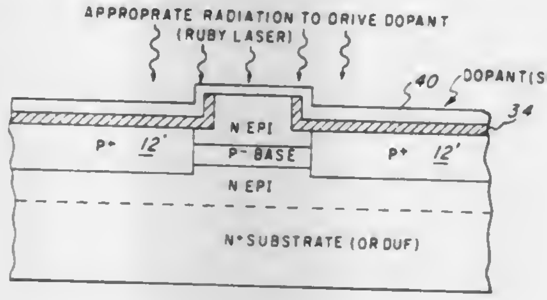
(ii) without first patterning said second metal layer, silicifying said second metal layer.

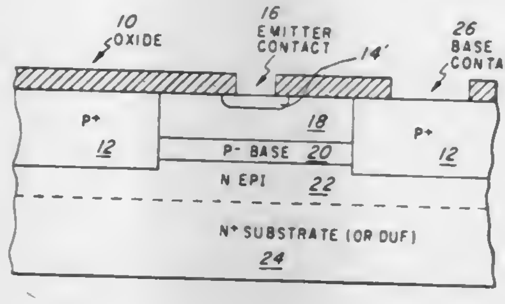


4,619,036
SELF-ALIGNED LOW-TEMPERATURE EMITTER DRIVE-IN

Robert H. Havemann, Garland, and Samuel C. Baber, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 28, 1984, Ser. No. 656,070
Int. Cl.⁴ H01L *21/265, 21/322*
U.S. Cl. 29—577 C **8 Claims**





1. A process for fabricating integrated circuits comprising bipolar transistors, comprising the steps of:

(a) providing a substrate having, at at least predetermined device locations, first conductivity type collector/emitter regions, second conductivity type base regions above said collector/emitter regions, said first conductivity type surface regions above said base regions, all formed in crystalline semiconductor material having a vertically continuous lattice structure through said collector/emitter, intrinsic base, and surface regions;

(b) partially covering said surface regions with a patterned protective layer, said patterned protective layer exposing portions of said surface layer;

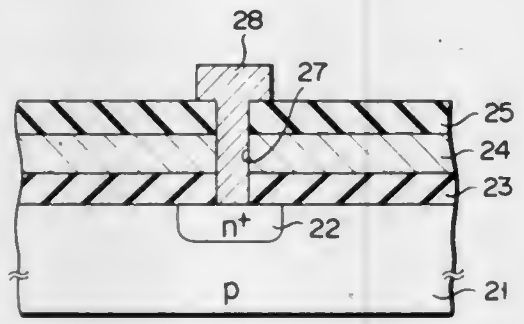
(c) depositing a first-conductivity-type dopant source on said patterned protective layer and the exposed portions of said surface region, and

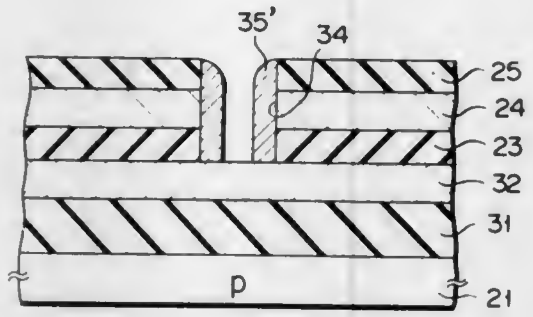
(d) applying transient pulsed radiant heating to said dopant source on the exposed portions of said surface region to form heavily-doped first-conductivity-type emitter/collector regions within portions of said surface region.

4,619,037
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Shinji Taguchi, Yokohama; Homare Matsumura, Kawasaki, and Kenji Maeguchi, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 603,699, Apr. 25, 1983, abandoned. This application Nov. 19, 1985, Ser. No. 798,728
Claims priority, application Japan, May 31, 1981, 58-96126
Int. Cl.⁴ H01L *21/44*
U.S. Cl. 29—578 **3 Claims**





1. A method for connecting first and second interconnection layers of an integrated circuit device comprising the steps of:

forming said first interconnection layer of a predetermined pattern,

forming a first insulation film on said first interconnection layer,

forming said second interconnection layer of a predetermined pattern on said first insulation film,

forming a second insulation film on said second interconnection layer,

forming a photoresist layer as a mask on said second insulation film, with a contact opening,

forming a contact hole of uniform diameter in one continuous step extending through said second insulation film, said second interconnection layer, and said first insulation film,

removing said photoresist layer, and

forming a conductive layer of a predetermined pattern extending into said contact hole and connecting said first and second interconnection layers together.

4,619,038
SELECTIVE TITANIUM SILICIDE FORMATION

Faivel S. Pintchovski, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 15, 1985, Ser. No. 765,631
Int. Cl.⁴ H01L *21/441*
U.S. Cl. 29—590 **13 Claims**

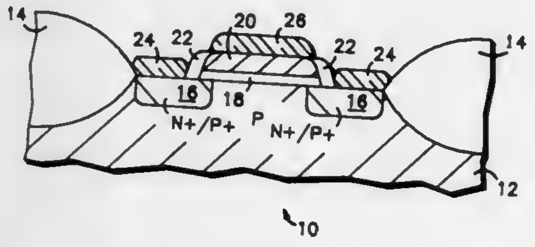
8. A process for producing a semiconductor device comprising a low resistivity layer of titanium silicide selectively overlying a region of silicon comprising the steps of

providing a single crystal silicon substrate,

forming regions of a polycrystalline silicon material,

forming regions of a silicon oxide material in the neighborhood of the polycrystalline silicon material and

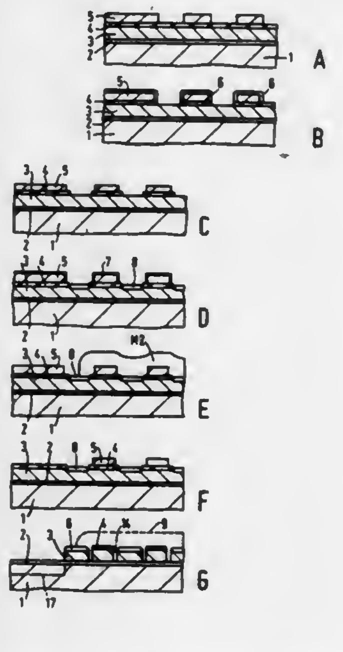
forming a titanium silicide layer selectively on the single crystal and polycrystalline silicon material, the improvement comprising reacting a gaseous titanium halide with the single crystal and polycrystalline silicon material at a temperature in the range of 700° to 1000° C. and a pressure in the range of 0.5 to 1.5 torr in the presence of a stoichiometric excess of hydrogen with respect to said titanium halide gas and in the absence of a silicon-bearing gas to form the titanium silicide layer, in the absence of subsequent anneal and unreacted titanium etch steps.



4,619,039
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE AND DEVICE MANUFACTURED BY THE USE OF THE METHOD

Henricus G. R. Maas; Jan W. Slotboom; Johannes A. Appels, and Kazimierz Osinski, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 4, 1984, Ser. No. 657,644
Claims priority, application Netherlands, Jul. 13, 1984, 8402223
The portion of the term of this patent subsequent to Mar. 11, 2003, has been disclaimed.
Int. Cl.⁴ H01L *21/90*
U.S. Cl. 29—591 **7 Claims**



1. A method of manufacturing a semiconductor device having a plurality of adjacent narrow, closely spaced coplanar silicon electrodes, said method comprising the steps of:

(a) depositing on an electrically insulating layer successively a first silicon layer, an oxidation preventing layer, and a second silicon layer;

(b) etching said second silicon layer in a pattern comprising a plurality of parallel silicon strips separated by spacings;

(c) partially oxidizing said pattern to form oxidized edge portions of said pattern;

(d) selectively removing by etching parts of said oxidation preventing layer uncovered by said oxidized pattern;

(e) selectively removing said oxidized edge portions by etching to expose edges of said oxidation preventing layer projecting from under said parallel silicon strips;

(f) applying a first mask to cover said pattern including said spacings except for an area to be situated over a connection region of said first silicon layer;

(g) removing exposed projecting edges of said oxidation preventing layer by etching in said connection region, and removing said first mask thereafter;

(h) oxidizing exposed portion of said first silicon layer in strip-shaped parts of said first silicon layer, said strip-shaped parts being alternately covered by an oxide layer and by said oxidation preventing layer;

(i) applying a second mask over said strip-shaped parts of said first silicon layer and over parts of said first silicon layer to be maintained for interconnections, and etching away unmasked parts of said second silicon layer;

(j) removing selectively exposed parts of said oxidation preventing layer including said exposed projecting edges, and then removing underlying parts of said first silicon layer to form silicon electrodes separated by grooves, said silicon electrodes comprising at least one group of three adjacent parallel silicon electrodes interconnected by said connection region;

(k) filling said grooves at least in part with oxide by thermal oxidation;

(l) separating, in said at least one group, two of said three adjacent silicon electrodes from said connection region and a remaining electrode of said one group by etching to remove selectively area of said first silicon layer;

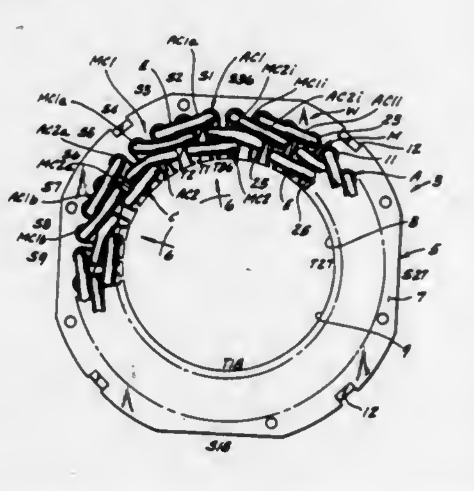
(m) providing a contact window inside said connection region by selective etching of a layer covering said remaining electrode by using an etching mask overlapping at least one adjacent silicon electrode in a self-aligned manner; and

(n) providing said two silicon electrodes of said group with contact with windows by selectively etching a layer covering said other two electrodes in a self-aligned manner.

4,619,040
METHOD OF FABRICATING STATOR FOR A MULTIPLE POLE DYNAMOELECTRIC MACHINE

David C. Wang, Allen County, Ind., and Harry W. Voepel, Lincoln County, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Continuation of Ser. No. 497,085, May 23, 1983, Pat. No. 4,520,287, which is a division of Ser. No. 315,228, Oct. 27, 1981, Pat. No. 4,426,771. This application Mar. 18, 1985, Ser. No. 713,021
The portion of the term of this patent subsequent to Jan. 24, 2001, has been disclaimed.
Int. Cl.⁴ H02K *15/06*
U.S. Cl. 29—596 **7 Claims**



1. The method of fabricating a stator for a multiple-pole dynamoelectric machine, said stator comprising a core assembled from a stack of laminations of suitable ferromagnetic sheet-material, said core having a central bore extending there-

through and a plurality of blind slots extending radially outwardly from said bore, said slots being substantially equally angularly spaced around said bore, said stator including a first winding and a second winding, said windings each comprising a plurality of coils of suitable magnet wire electrically connected to one another and inserted into said slots, each of said coils having a pair of end turns and a pair of generally straight coil sections extending between said end turns, wherein the method of this invention comprises the steps of:

A. forming said first winding by forming a skein of a suitable magnet wire of petalled, serpentine shape defining a plurality coils of a desired size, the number of coils being the same as the number of the poles in said dynamoelectric machine, each of said coils being electrically connected in a desired pattern;

B. forming said second winding by forming a skein of a suitable magnet wire of petalled, serpentine shape defining a plurality of coils of a desired size, the number of coils being the same as the number of poles in said dynamoelectric machine, each of said coils of said auxiliary winding set being electrically connected in a desired pattern; and

C. dividing said first and second windings into at least a first coil set and a second coil set;

D. inserting said coil sets of first and second windings in said slots of said core in the following manner so that the coils of said first and second windings are grouped together in layered fashion in said core by;

- i. inserting a first coil of the first coil set of said first winding in said core with said straigth coil sections of this last said first coil being received in a first and a third slot of said core,
- ii. inserting a first coil of said first coil set of said second winding in said core with said straight coil sections of said first coil of said first coil set of said second winding being received in a second and a fourth core slot,
- iii. inserting a first coil of said first coil set of said first winding in said stator core with said straight coil sections of said last said second coil being received in the third and in a fifth core slot,
- iv. inserting a first coil of said second coil set of said second winding in said stator core with the straight coil sections of this last said coil being received in the fourth and in a sixth core slot, whereby the first and second coils of said first and second coil sets of said first and second windings constitute a first layered grouping of coils in a first group of slots of said core, and
- v. repeating steps (D) (i) through (D) (iv) to form a second layered group of coils in a second group of slots of said core, and repeating said steps (D) (i) through (D) (iv) until all of said coils are inserted in said core.

4,619,041

METHOD FOR MANUFACTURING COUPLED CAVITY TRAVELLING WAVE TUBES

Peter R. Davis, Witham; Brian F. Cooper, Chelmsford, and David H. Cottey, East Hanningfield, all of England, assignors to English Electric Valve Company Limited, Chelmsford, England

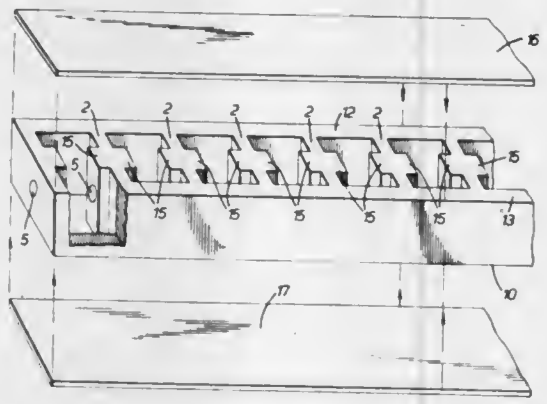
Filed Oct. 5, 1983, Ser. No. 539,147

Claims priority, application United Kingdom, Oct. 6, 1982, 8228614; Oct. 27, 1982, 8230702

Int. Cl.⁴ H01P *11/00;* **H01Q** *13/00*

U.S. Cl. 29—600 **21 Claims**

1. A method of constructing a coupled cavity travelling wave tube including the steps of forming a slow wave structure therefor of at least one longitudinally extending member having front and rear longitudinally extending faces, and utilising a hobbing technique for forming in one bobbing operation a plurality of holes through said at least one member, with said holes being hobbed right through from the front longitudinally extending face to the rear longitudinally extending face and each hole constituting at least part of a whole cavity in the completed slow wave structure.



4,619,042

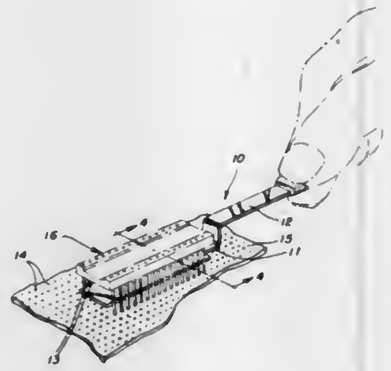
METHOD FOR ALIGNMENT AND INSERTION OF AN ELECTRIC MODULE

William M. Halstead, 709 Yale Ave., Baltimore, Md. 21229

Continuation of Ser. No. 535,051, Sep. 23, 1983, abandoned. This application Jun. 14, 1985, Ser. No. 744,659

Int. Cl.⁴ B23P *19/00*

U.S. Cl. 29—837 **5 Claims**



1. A method for installing an electrical module on a printed circuit board or the like where the module comprises a flat body portion and two parallel rows of longitudinally spaced terminal leads insertable in correspondingly spaced rows of apertures in the board and where the leads may be required to be straightened and aligned before insertion, said method comprising the steps of:

a. applying the module to a tool which comprises an elongated planar blade and an integral handle offset from the blade and forming a longitudinal extension thereof, the blade having opposite parallel side edges perpendicular to the plane of said blade and a plurality of longitudinally spaced slots formed in each side edges, the longitudinal spacing of the slots of each edge corresponding to the correct longitudinal spacing of the leads in each row and the slots in the opposite side edges being transversely aligned and perpendicular to the plane of said blade, each of said slots being defined by an open front in one of said side edges, a pair of side walls extending inwardly from said open front and a rear wall connecting said side walls, the distance between rear walls of transversely aligned slots in said opposite side edges corresponding to the correct distance between transversely aligned leads in said two rows, and the distance between side walls of each slot at said open front being just sufficient to permit entry of one of said leads into said slot and the seating thereof against said rear wall, said step of applying said module to said tool comprising supporting the module with said leads extending upwardly from said body portion, holding said tool by said handle with the blade offset upwardly from said handle, positioning said blade in overlying relationship to said module with the slots in said opposite side edges approximately aligned with said two rows of leads, inclining and lowering said blade relative to said module so that said blade is positioned between said leads with one edge turned down toward the body of said module and the other edge turned upwardly away from the body of said module, turning said blade between said leads with said slots in said side edges in transverse alignment with said leads of said two rows of leads until said blade is parallel to and spaced outwardly from the body of said module and until said leads are seated in said slots whereby said leads in said two rows are forced into their correct longitudinal spacing and the tranversely aligned leads in said two rows are forced apart a distance, equal to at least the correct transverse distance between leads in said two rows, manipulating any leads extending outwardly from said slots into said slots, translating said blade toward but short of the free ends of said leads,

b. with said module supported by said tool, turning said tool and module over until said leads extend downwardly from the body portion of said module,

c. positioning said module supported by said tool and with said leads extended downwardly over a circuit board and aligning said two rows of leads over two rows of apertures in said circuit board,

d. pressing said tool with said module supported thereon downwardly until said two rows of leads enter and extend through said two rows of apertures,

e. rotating said blade to an inclined position relative to said leads and retracting said blade until it is free from the now partially mounted module, and

f. pressing the body of said module toward said circuit board until it is fully installed thereon.

4,619,043

APPARATUS AND METHOD FOR MOUNTING CHIP TYPE ELECTRONIC PARTS

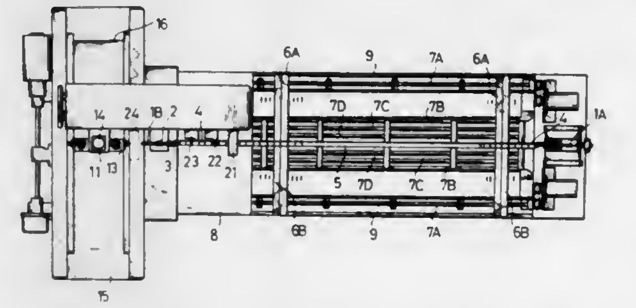
Tetsuo Takahashi; Yoshinobu Taguchi, and Kenichi Saito, all of Tokyo, Japan, assignors to TDK Corporation, Japan

Filed Mar. 19, 1984, Ser. No. 591,190

Claims priority, application Japan, May 2, 1983, 58-76205; May 19, 1983, 58-73690[U]; May 19, 1983, 58-73691[U]; Jun. 2, 1983, 58-82970[U]; Jun. 6, 1983, 58-85019[U]; Jun. 13, 1983, 58-89175[U]; Jun. 23, 1983, 58-96956[U]

Int. Cl.⁴ H05K *3/34;* **B23P** *19/00;* **B65G** *29/00*

U.S. Cl. 29—840 **15 Claims**



1. A method for mounting chip type electronic parts having leads extending therefrom, comprising the steps of

supplying the part onto means for conveying the same to be mounted,

positioning the part on said conveying means,

detecting presence/absence of the part on said conveying means, after positioning of the same upon said conveying means,

removing the part off said conveying means and mounting the same, and

transforming the individual chip type part after the positioning step and before the detecting step, so that a tip of a lead thereof and a bottom surface of the electronic part are disposed in substantially the same plane.

3. An apparatus for mounting a chip type part for electronic application to a printed circuit board, comprising

means for conveying the part to be mounted,

means for supplying the part onto said conveying means,

means for receiving the part from said conveying means and for mounting the same, and

means for positioning the part upon said conveying means before transferring the same to said receiving and mounting means, wherein

said conveying means comprise an endless belt having a portion running in a substantially horizontal plane and a portion passing through a substantially vertical direction, said belt adapted to carry a series of pallets for receiving the part from said supplying means;

said supplying means comprise at least one supply unit disposed on either side of the horizontal portion of said belt, and

said receiving and mounting means comprise at least one mounting head for receiving the part at a particular position from the pallet, and for mounting the same upon the printed circuit board.

14. A pallet for conveying a chip type part, comprising

a base,

a pair of retaining bars disposed on said base and adapted to retain the part disposed thereon, and

means for urging said retaining bars close to one another to retain the part on the pallet.

4,619,044

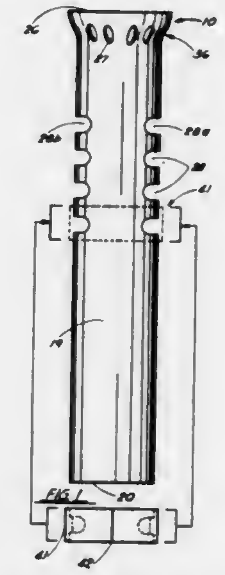
APPARATUS TO AID IN PRECISION HAIRCUTTING

Robert A. Dennis, 103 N. DeVilliers, Pensacola, Fla. 32501

Filed Aug. 8, 1984, Ser. No. 638,903

Int. Cl.⁴ B26B *19/20, 19/44*

U.S. Cl. 30—133 **11 Claims**



1. An apparatus to aid in the cutting of hair used in combination with the sorce of suction and haircutting means comprising;

a. an elongated cylindrical open-ended member having a bore longitudinally therethrough, the first end portion thereof adapted to abut the scalp of the head of hair to be cut, and the second end portion thereof adapted to communicate with said source of suction;

b. a plurality of spaced inlet ports provided in said first end portion of said member for permitting the entry of air into said member when said first end portion of said member abuts said scalp and said second end portion of said member is provided with a source of suction thereby allowing the force of said suction to entrain said hair longitudinally of said bore;

c. a plurality of longitudinally spaced openings provided in said member intermediate said end portions for selectively introducing into said member means for cutting said hair entrained longitudinally of said bore; and

d. a plurality of means slidably mounted on said member for selectively sealing all but one of said plurality of longitudinally spaced openings in said member while said source of suction is applied, wherein said means for selectively sealing said longitudinally spaced openings include a split ring having protrusions depending from its internal perimeter for engaging said openings of said member when said means is mounted on said member.

4,619,045

HEDGE TRIMMER

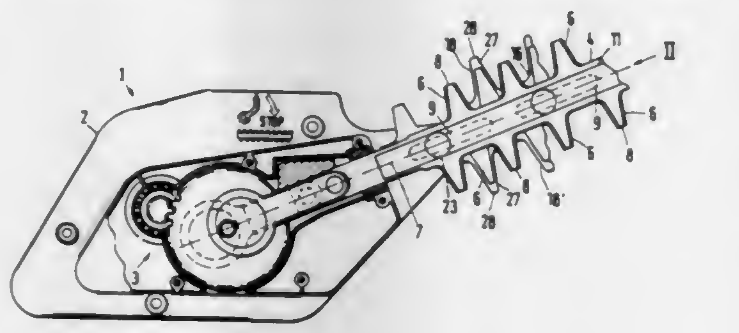
Günter Mayer, Untereisesheim, Fed. Rep. of Germany, assignor to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Mar. 29, 1985, Ser. No. 717,459

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1984, 8419115[U]

Int. Cl.⁴ B26B *19/02*

U.S. Cl. 30—216 **20 Claims**



1. A hedge trimmer comprising:
a housing;
a guide bar having two flat sides and being mounted on said housing, the guide bar defining a longitudinal axis;
a pair of elongated flat cutters journalled for reciprocal movement on one of the flat sides of said guide bar so as to cause one of said cutters to be sandwiched between said one flat side and the other one of said cutters;
reciprocating drive means for reciprocating said cutters in mutually opposing movement along said axis;
each of said cutters having a plurality of cutting teeth projecting laterally of said axis;
an elongated cover mounted on said guide bar and being formed to define a substantially U-shaped channel having an elongated recess for accommodating said guide bar therein;
said cover having a plurality of protective teeth projecting laterally and outwardly from the legs of said channel so as to be parallel and adjacent to said cutting teeth;
said protective teeth having respective end portions overlapping and projecting outwardly beyond said cutting teeth; and,
said channel having a depth corresponding substantially to the thickness of said guide bar so as to cause said one flat side to be flush with said protective teeth and to place said one cutter directly next to said protective teeth thereby defining a very narrow glide cap between said one cutter and said protective teeth so that practically no sliding friction can occur therebetween.

4,619,046

PINEAPPLE EYE EXTRACTOR

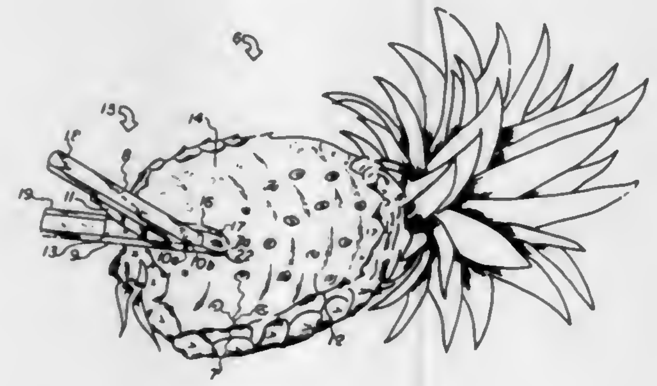
Victor H. Goulter, 485 Molimo Dr., San Francisco, Calif. 94127

Continuation of Ser. No. 623,712, Jun. 22, 1984, abandoned. This application Dec. 4, 1985, Ser. No. 804,246

Int. Cl.⁴ B26B *13/00*

U.S. Cl. 30—229 **9 Claims**

1. An extractor for removing the eyes of fresh produce rapidly, comprising:
a pair of elongated members, one being a cutting member and the other being an anvil member,
each of said members being pivotably attached to the other of said members at a location spaced from both ends of each member by a pivot,
the part of each member on one side of said pivot comprising a jaw section,
the other part of each member on the other side of said pivot comprising a handle section,
the jaw section of said cutting member being U-shaped,
the bight portion of said "U" being distal from said pivot and the legs of said "U" being connected to said pivot so as to form an opening,
said "U" being formed of a flat, elongated strip of material having two major opposing surfaces of a relatively broad width and two relatively narrow edges joining said major surfaces,
one of said major surfaces being the inside surface of said "U",
said inside major surface of said strip having one portion which forms a surface of one leg of such "U" and which faces another portion of said inside major surface of said "U", the other portion of said inside major surface forming a surface of the other leg of said "U",
the outer surface of said bight portion being the other of said two major surfaces of said strip of material, being free and constituting the end of said cutting member,
one of said two edges of said bight portion being sharpened so as to form a U-shaped cutting edge,



said cutting edge lying in a plane which is parallel to the axis of said pivot and oriented so that it moves in a circle concentric to said pivot when said cutting member is rotated with respect to the other of said members about said pivot,
the jaw section of said anvil member
being substantially straight so as to be easily insertable into an item of produce,
being substantially flat at its end and having two opposed major surfaces at such end and two opposed minor surfaces interconnecting said major surfaces,
one of said major surfaces of said end of said jaw section
(a) lying in a plane which is parallel to the axis of said pivot,
(b) facing said cutting edge of said bight portion, and
(c) having a sharpened end such that it can be inserted diagonally into the surface of a piece of produce and extend under an eye thereof,
whereafter said eye will be positioned on said one major surface of said jaw section of said anvil member so that upon rotation of said two members together, said U-shaped cutting edge of said bight portion will meet said jaw section of said anvil member and sever said eye from said piece of produce.

4,619,047

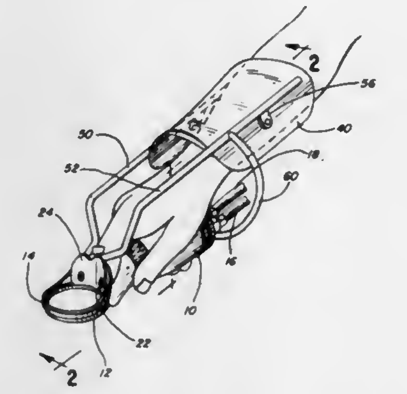
MEAT TRIMMING KNIFE WITH WRIST STRAIN RELIEF DEVICE

Sandy D. Heckman, Memphis, Tenn., assignor to John Morrell & Company, Northfield, Ill.

Filed Jan. 31, 1985, Ser. No. 698,826

Int. Cl.⁴ B26B *7/00*

U.S. Cl. 30—276 **4 Claims**



1. A hand held meat trimming knife having a wrist strain preventing device comprising, a manually-grippable cylindrical knife body, a knife mounting extending beyond one end of said knife body, means connecting the knife mounting to the knife body, a circular knife blade drivingly mounted in said knife mounting and having a cutting action by movement along a workpiece and pressure resulting from a manually-applied downward force, and a forearm-engaging force reaction means to relieve pressure on a user's wrist including an arcuate downwardly concave elongate shield for overlying a user's forearm, and mounting means connecting said shield to said knife body including a mounting plate held to the knife body by said connecting means.

4,619,048

METHOD FOR FORMING COMPOSITE PART COMPRISING A PLASTIC FRAME AND A PERFORATED METAL FOIL

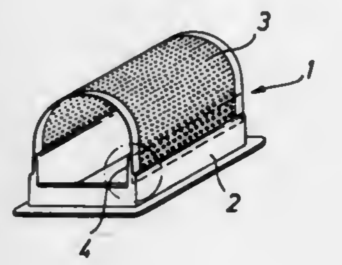
Albert Greutert, Sonnhalde, 6072 Sachseln, Switzerland

Filed Apr. 25, 1984, Ser. No. 603,548

Claims priority, application Fed. Rep. of Germany, May 2, 1983, 3315887

Int. Cl.⁴ B26B *19/04*

U.S. Cl. 30—346.51 **3 Claims**



1. An improved method for manufacturing and injection molding an improved composite part for use as a shaving head in dry razors, comprising the steps of:
providing a generally planar partially perforated metal foil, bent to provide a shaving head;
providing a mold with a recess suitable for injection molding of the composite part consisting of the foil and a frame having an affixing area along which at least one edge of the foil will be embedded in the frame and a transition region adjacent the affixing area in which one surface of the foil will abut the frame and the other surface thermally abut the mold;
providing the foil with at least one attachment orifice disposed in the transition region and providing the mold with a corresponding recess for forming at least one attachment protrusion for mating engagement with the at least one attachment orifice;
inserting the foil within the mold; and
injecting the flowable plastic into the mold.

4,619,049

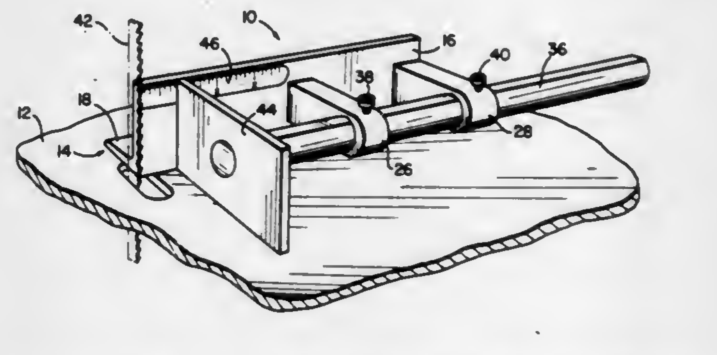
CENTERING DEVICE AND METHOD

William J. Griffin, P.O. Box 26, Walker Springs, Ala. 36586

Filed Feb. 7, 1985, Ser. No. 699,439

Int. Cl.⁴ B26D *7/06;* **B27C** *5/02*

U.S. Cl. 33—185 R **7 Claims**



1. A centering device to be mounted on a band saw table or other machine tool location for use in accurately determining the center of the ends of wood stock for use such as in a wood turning operation, comprising: a stop member formed of longitudinally extending horizontal and vertical planar portions attached along respective longitudinal edges at right angles to form an L-shaped cross-section; an adjustable fence including a rod member having a generally rectangular plate mounted at one end thereof; said plate having one surface thereof contiguous with the vertical portion of the stop member and wherein said horizontal portion of the stop member extends from the vertical portion in a direction opposite to that of said plate; and means for mounting said rod member on the stop member to permit sliding movement of said fence relative to the stop member in a direction parallel to the longitudinal axis of the stop member.

4,619,050

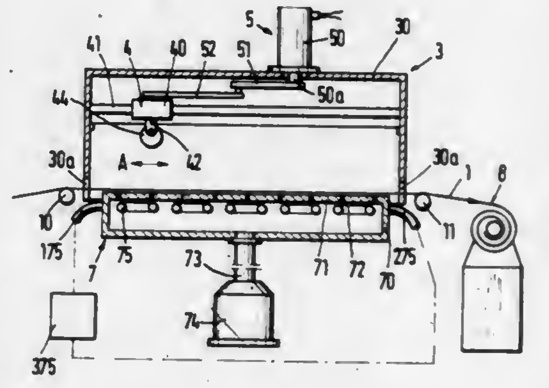
APPARATUS FOR DRYING SHEET- OR WEB-LIKE MATERIALS WITH ULTRAVIOLET RADIATION

Gerhard Klemm, Am Rehwinkel 37, D-4800 Bielefeld 1, Fed. Rep. of Germany

Filed Apr. 15, 1985, Ser. No. 723,427

Int. Cl.⁴ F26B *23/04*

U.S. Cl. 34—4 **28 Claims**



1. Apparatus for drying moisture-containing sheet-like materials, particularly for drying coated or impregnated webs of paper, textile material and the like, comprising means for advancing a material to be dried along a predetermined path and in a predetermined direction; at least one source of ultraviolet radiation adjacent to one side of said path; and means for

moving said source with reference to said path, said moving means including a carriage for said source, an arcuate guide for said carriage, and means for reciprocating said carriage along said guide.

4,619,051
PROCESS FOR DRYING POLYMERIC BEADS AND ASSOCIATING SHADING PIGMENTS THEREWITH

Laura M. Wells, Mt. Prospect; Fred D. Hawker, Villa Park; Maryam L. Dachniwskyj, and Charles W. Strobel, both of Schaumburg, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Division of Ser. No. 658,625, Oct. 9, 1984, Pat. No. 4,599,807. This application Nov. 4, 1985, Ser. No. 794,431

Int. Cl.^{4} F26B *3/00*

U.S. Cl. 34—9 **4 Claims**

1. A process for drying a water-wet paste containing vesiculated polymeric beads without agglomeration comprising, adding to said wet paste a proportion of an organic solvent which forms an azeotrope with water in an amount providing a stirrable mixture, and heating the solvent-containing aqueous paste to remove the water as an azeotrope with said solvent and to produce a water free suspension of said beads in organic solvent.

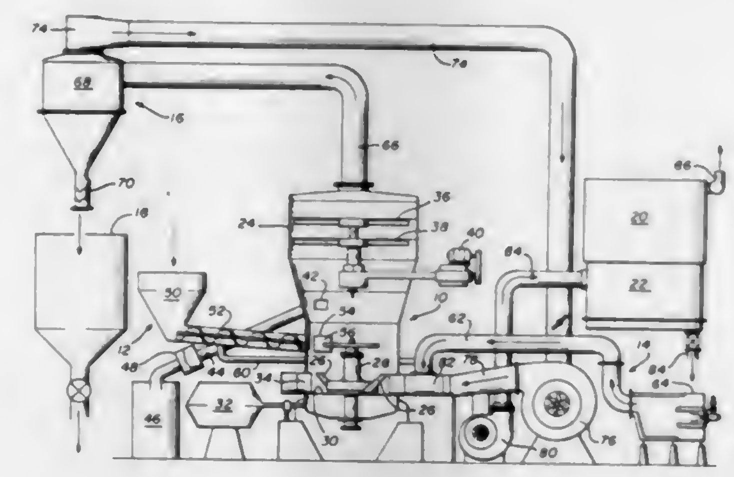
4,619,052
PROCESS AND APPARATUS FOR DRYING AND CLASSIFYING PARTICULATE GRANULATE MATERIAL

Larry E. Osburn, Harlingen, and Melvin W. Wells, Spring, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jun. 17, 1985, Ser. No. 745,180

Int. Cl.^{4} F26B *3/10*

U.S. Cl. 34—10 **2 Claims**



1. A process for drying a moist particulate ground specular hematite in a material handling system including a pneumatic conveyor, a mixer, a product separator, and a waste product separator, comprising continuously charging preheated particulate hematite having a moisture content of about 7 to about 10 weight percent by means of a screw conveyor into a mixer; continuously stirring the moist hematite in the mixer with a hot air moving in a forced hot air system by passing hot air upward through the mixer thereby agitating the moist material between rotating blades operable in displacing the moist material in an upwardly direction in an air flow dehydration of the material by introducing the hot air flow at a location below the rotating blades in a swirling flow substantially uniformly around a zone in the mixer below the rotating blades for movement upward through the mixer so as to pass the hot air upwardly to surround and pass the rotating blades; passing the material through a rotary screen comprising a pair of rotating multi-vained blades rotating at a relative speed such that finely divided materials pass in an upward direction and particles greater than approximately 200 mesh in span are rejected downwardly; and removing the oversized particles of material from said air stream that do not pass through the rotating screen and discharging them from the mixer; said stirring and said agitating occurring in an air pressure zone that is below atmospheric pressure while regulating the flow of moist particulate granulate material to said mixer and the moisture removal from the air in order to dehydrate the moist particulate granulate material to a product having approximately less than about 0.3 weight percent of moisture content; separating dried material from the air in the air flow in a product separator and collecting the dried granular particulate material product; and separating moisture and dust from a portion of the air stream in a waste product separator and recycling the remainder of the hot air into the mixer.

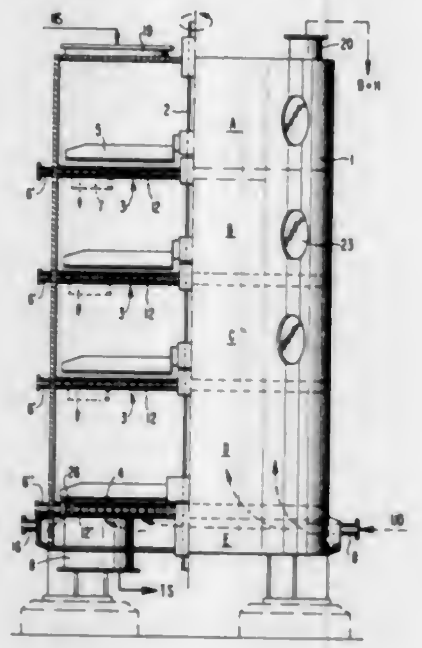
4,619,053
PROCESS AND APPARATUS FOR DESOLVENTIZING FLAKY OR GRANULAR VEGETABLE RESIDUE MATERIAL OBTAINED IN THE EXTRACTION WITH ORGANIC SOLVENTS

Heinz O. Schumacher, Höperfeld 26, D-2050 Hamburg 80, Fed. Rep. of Germany

Filed Oct. 7, 1983, Ser. No. 539,796

Int. Cl.^{4} F26B *3/16*

U.S. Cl. 34—12 **22 Claims**



1. Process for desolventizing residue material obtained in the extraction of substances with organic solvents so as to remove fire and toxicity hazards affecting shippers and consumers, the desolventizing being effected with superheated steam or superheated steam-containing fluids in continuous operation in countercurrent, wherein the solvent-wet material to be desolventized is conducted in opposition to said steam or steam-containing fluid, falling downwardly by gravity through one treatment stage or a plurality of treatment stages, the individual treatment stages being defined by perforated plates having overflow means, agitating means being moved slightly above said perforated plates, the space below the lowermost perforated plate serving to distribute the steam, said apparatus being characterized in that the perforated plates defining the respective treatment stages are double bottoms capable of being heated by means of steam, said double bottoms having bores formed by individual distance pieces or spacers each having a bore therethrough, the cross-section of said bores being such as to allow the passage of upwardly streaming steam or steam-containing fluid, but not the passage or the entrapment of the material being moved on the bottoms, said process being characterized in that the steam being used for desolventizing is present in superheated form at a temperature of at least 120° C. (248° F.) (normal pressure), particularly at least 130°-180° C. (266°-356° F.), preferably up to 220° C. (428° F.), in that at least 45%, but particularly 100% of said superheated steam is introduced below the lowermost perforated plate, which serves to distribute the steam, and in that the escaping vapors

of steam and solvent are obtained at a temperature of about 64°-69° C. (147.2°-156.2° F.).

4,619,054
APPARATUS FOR PRODUCING REFRESHABLE DRY MEAT

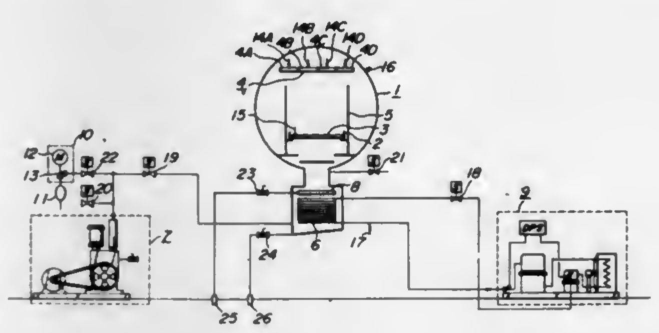
Masami Sato, 29-3-401, Minamidai 2-Chome, Nakano-Ku, Tokyo, Japan, assignor to Stephano & Co., Ltd., Yokohama and Masami Sato, Tokyo, both of, Japan

Division of Ser. No. 570,848, Jan. 16, 1984, abandoned. This application Sep. 30, 1985, Ser. No. 782,598

Claims priority, application Japan, Nov. 4, 1983, 58-205897

Int. Cl.^{4} F26B *5/06;* **A23B** *4/06*

U.S. Cl. 34—92 **4 Claims**



1. An equipment for producing refreshable dry meat comprising:
a vacuum chamber having a tray therein for supporting meat to be processed;
an infrared ray heater located within said vacuum chamber spaced from and facing said tray for irradiating said meat, said infrared heater emitting radiation having a wavelength of at least 5 μm;
a vacuum pump connected to said vacuum chamber for reducing the pressure therein to a value within the range 20 Torr to 1 Torr for cooling said vacuum chamber to a temperature within the range −5° C. to −20° C., thereby effecting vacuum-drying of said meat at a temperature within said temperature range;
a cold trap disposed within said vacuum chamber for condensing moisture evaporated from said meat by the radiation emitted from said infrared heater, thereby accelerating reduction of the pressure within said chamber;
a refrigerator coupled to said cold trap for cooling said cold trap;
a vacuum regulator for maintaining the vacuum within said chamber within said pressure range;
temperature sensor means for insertion in said meat to detect the temperature thereof;
first temperature regulator means coupling said temperature sensor means to said infrared ray heater, said first temperature regulator means controlling the temperature of said infrared ray heater in accordance with the detected temperature of said meat, the temperature of said infrared ray heater being controlled in a range of +25° C. to +200° C.;
second temperature regulator means coupled to said temperature sensor means for terminating the operation of said infrared ray heater when the temperature of said meat reaches a predetermined value in a range of +20° C. to +40° C., said predetermined value being a temperature high enough to dry said meat and low enough not to detrimentally affect the texture of said meat;
vacuum gauge means connected to said vacuum chamber for detecting the pressure therein; and
control means coupling said vacuum gauge to said vacuum regulator, said vacuum being actuated to maintain a vacuum within said vacuum chamber to between 20 Torr and 1 Torr in accordance with the pressure detected by said vacuum gauge means, whereby the temperature of said vacuum chamber is maintained within the range of −5° C. to −20° C.

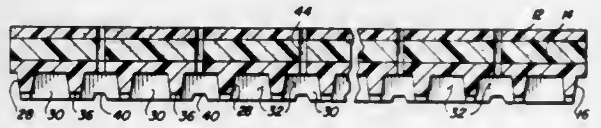
4,619,055
CUSHIONING PAD

Murray R. Davidson, P.O. Box 27087, San Diego, Calif. 92128

Filed Oct. 29, 1984, Ser. No. 666,273

Int. Cl.^{4} A43B *13/18*

U.S. Cl. 36—28 **5 Claims**



1. A cushioning mat comprising:
(a) an upper laminate of material having moisture-absorbant characteristics;
(b) an intermediate laminate having an upper and lower surface, said upper surface being bonded to the lower surface of said upper laminate, said intermediate laminate being resilient and permanently deformable over prolonged application of pressure;
(c) a lower cushioning pad having a base layer having an upper and lower surface, said upper surface of said base layer being bonded to the lower surface of said intermediate layer;
(d) a plurality of generally spaced-apart longitudinally and transversely extending ribs extending from the lower surface of said base defining a plurality of cells, said ribs having memory to return to the original shape upon removal of deformation forces and being resilient to flex and deform under application of pressure to cushion shock; and
(e) said ribs defining first air passageways placing said cells in communication with one another and wherein said laminate and pad define second air passageways at selected locations whereby air flow is induced through the mat and between the cells as the mat is flexed.

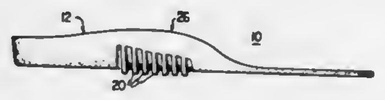
4,619,056
INSOLE WITH RIBBED ARCH STRUCTURE

Mark Y. Lin, Taichung, China, and James C. Autry, Dallas, Tex., assignors to Autry Industries, Inc., Dallas, Tex.

Filed Mar. 28, 1985, Ser. No. 716,966

Int. Cl.^{4} A43B *13/40, 21/32*

U.S. Cl. 36—43 **7 Claims**



1. An insole for insertion into a shoe to provide support for the foot, comprising:
a layer of cushioning material fabricated from a resilient material and having an upper surface for being disposed adjacent the sole of the foot and generally having a profile around the perimeter thereof similar to that of the foot, a lower surface of said cushioning layer opposed to said upper surface, said cushioning layer having:
a heel portion for disposal adjacent the heel of the foot;
a mid portion for disposal adjacent the arch of the foot; and

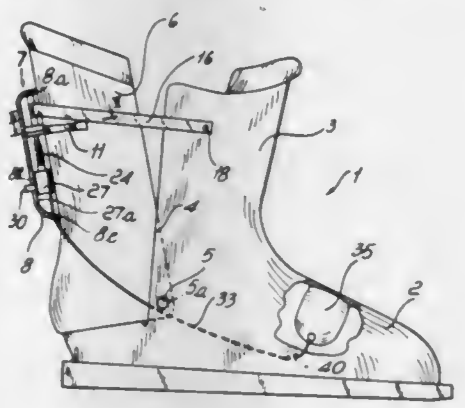
a toe portion for disposal adjacent the toes of the foot;

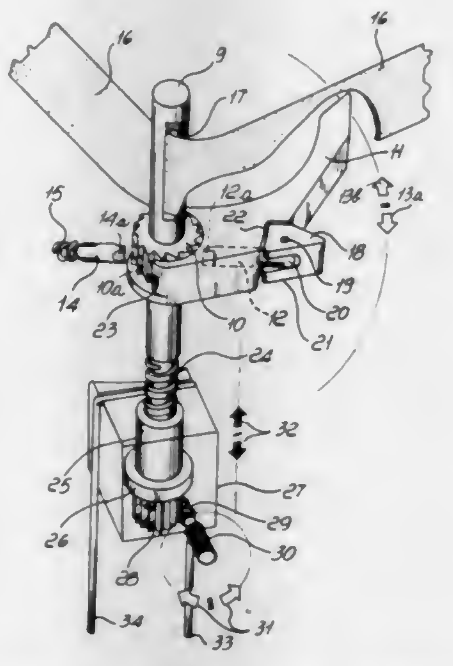
said mid portion having a plurality of substantially triangular ridges formed on said lower surface, said ridges disposed in spaced-apart relationship and extending from the medial side of said insole substantially across to the lateral side of said insole, said ridges forming arcs of concentric circles having a common radial center and dimensioned such that the apex of said triangular ridges is located proximate the arch of the foot, said ridges operative to create a raised portion on said upper surface at said mid portion to provide support for the arch of the foot.

4,619,057
TIGHTENING AND ADJUSTING DEVICE PARTICULARLY FOR SKI BOOTS

Leo Sartor, Caerano, and Franco Gobbo, Falzé Di Trevignano, both of Italy, assignors to Caber Italia S.p.A., Montebelluna, Italy

Filed May 28, 1985, Ser. No. 738,338
Claims priority, application Italy, Jun. 1, 1984, 41587 A/84
Int. Cl.⁴ A43B *11/00, 5/04*
U.S. Cl. 36—50 **4 Claims**

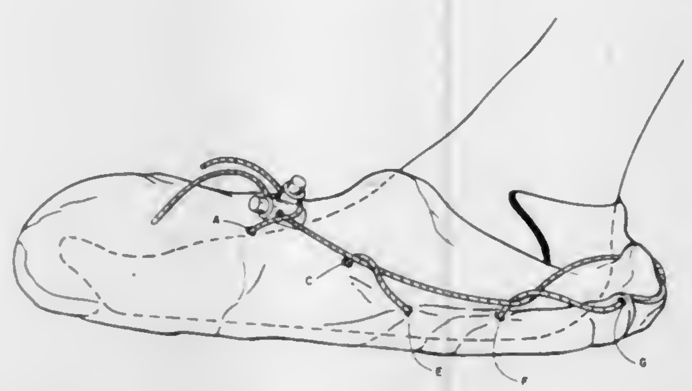




1. A tightening and adjusting device particularly for ski boots including a shell having an instep portion, and a leg portion defining a quarter, including two sections articulated to each other, said device comprising entrainment means, actuating means, housing means, traction means, adjustment means and at least one stay member, said stay member defining a working length and having an entrainable portion and at least one end said at least one end being attached to one of said two sections, said entrainable portion being adapted to be entrained by said entrainment means, said entrainment means being adapted for co-operation with said actuating means for adjusting said working length defined by said stay member, said actuating means comprising an axle having rigidly associated therewith an inclined toothed gear wheel, said axle and said gear wheel being actuable by a ratchet lever, said device further comprising a presser element adapted for exerting pressure at said instep portion, at least one link element including a tractable portion, defining a working length dimension and having attached to said presser element, at least one end, said housing means being adapted for at least partially containing said entrainable portion of said stay member said actuating means and said entrainment means, said traction means including a thread formation, a sleeve having an outer flange, and a guided block, said thread formation being threaded into said sleeve, said sleeve being rotatably arranged in said guided block, said outer flange of said sleeve being contained in said guided block to prevent relative axial movement of said sleeve with respect to said guided block, said adjustment means including a gear, and a worm including a middle pin said gear being formed on said sleeve, said-middle pin protruding from said guided block for allowing manual actuation thereof, which by obtaining the rotation of said sleeve determines a mutual position of said guided block with respect to said axle, prior to rotation of the latter by actuation of said ratchet lever, said adjustment means being adapted for varying said working length dimension defined by said at least one link element independently of said actuating means.

4,619,058
FOOTWEAR CORRESPONDING TO PHYSIOLOGY

Jerry F. Gumbert, P.O. Box 02011, Columbus, Ohio 43202-2011
Filed Apr. 30, 1985, Ser. No. 728,857
Int. Cl.⁴ A43B *1/10*
U.S. Cl. 36—102 **2 Claims**



1. Footwear comprising a unitary shell enveloping the foot, having a heel collar and an incision therein adopted to accommodate a foot inserted therein, said shell including elastic interconnections between points therein at locations adjacent the following anatomical features on the medial side of the shoe:

(1) beginning above the base of first metatarsal and corresponding to the extensor longus hallucis;
(2) to the side of the most anterior, inferior aspect of the medial side of the extensor retinaculum;
(3) to the location of attachments of the tibialis anticus;
(4) to the attachments of the tibialis posticus;
(5) to the medial side and anterior portion of the calcaneus and corresponding to the flexor retinaculum;
(6) to the medial inferior attachment of achilles tendon;
(7) to the medial and lateral superior aspects of the calcaneus and the planaris; and
(8) to the medial and lateral aspects corresponding to where the soleus attaches to the achilles tendon.

and at locations adjacent the following anatomical features on the lateral side of the shoe:

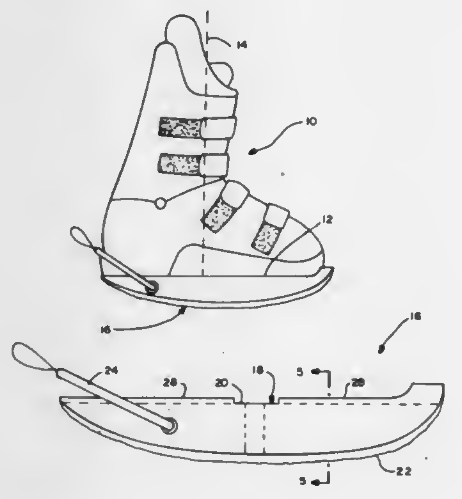
(1) beginning above the base of the 4th metatarsal and corresponding to the extensor longus digitiorim;
(2) to the side of the peroneus tertius and corresponding to the lateral side of the extensor retinaculm;
(3) to the side of the attachment of the peroneous brevis;

(4) to below the lateral malleolus and corresponding to the abductor minimui digiti and peroneus longus;
(5) to the lateral and anterior part of calcaneus and corresponding to the peroneal retinaculum;
(6) to the lateral inferior attachment of achilles tendon;
(7) to the medial and lateral superior aspects of the calcaneus and the plantaris; and
(8) to the medial and lateral aspects corresponding to where the soleus attaches to the achilles tendon.

4,619,059
BOOT ACCESSORY

Wayne A. Koniuk, 324 Divisadero St., San Francisco, Calif. 94117

Filed Aug. 2, 1984, Ser. No. 637,120
Int. Cl.⁴ A43B *5/00, 5/04, 5/18*
U.S. Cl. 36—132 **10 Claims**



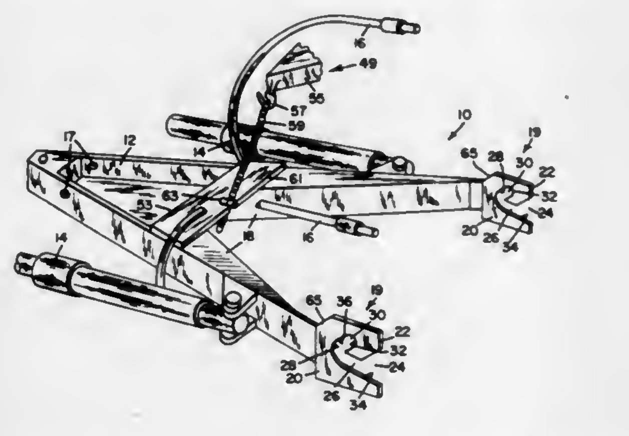
1. A boot accessory removably attached to the underside of a downhill ski boot which, when worn on the foot of an individual user, locks the user's ankle in place within the boot, said accessory comprising: an accessory body having a topside, an underside and an outer periphery which corresponds generally to the underside of said boot and thereby includes a lengthwise axis and a shorter widthwise axis; and means for removably attaching said accessory body to said boot so that it topside confronts the boot's underside, whereby to cause the user to walk on the underside of the accessory body rather than the boot; said accessory body being constructed so as to be resiliently deformable under the weight of the user at substantially all points along its lengthwise and widthwise axes and sufficiently thick so that the resilient deformation causes the underside of the accessory body to deform and does not cause its topside to deform in order to cause the underside of the accessory body to flex relative to its topside and thus conform to irregular or inclined surfaces without causing the topside to do so.

4,619,060
PLOW COUPLING

Leland P. Knowlton, 80 Forest St., Worcester, Mass. 01609
Filed Jul. 2, 1985, Ser. No. 751,247
Int. Cl.⁴ E01H *5/06*
U.S. Cl. 37—231 **18 Claims**

1. Coupling for a plow comprising:

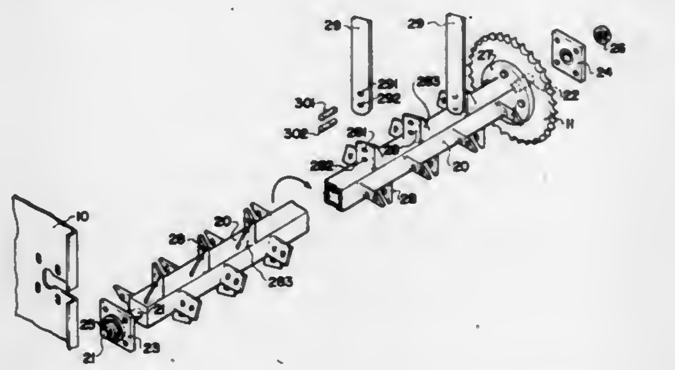
(a) a supporting frame which is attachable to the back side of a plow, said frame having a pair of spaced rearwardly extending arms, and
(b) a mounting tab which is rigidly attached to the rearward end of each arm, said tab comprising a flat plate which includes a rear edge, an opening at said rear edge, a first slot which extends forwardly from the opening and which terminates in a forward edge, and a second slot which extends rearwardly from the forward end of said first slot and which terminates in a rearward edge, said opening being adapted to receive a connecting pin of a push beam which is attached to a plow pushing vehicle, when said rear edge is moved toward said pin at a right angle to the longitudinal axis of said pin, said first slot being adapted to receive said pin so that the pin rests against said forward edge when the plow is pushed forwardly by the vehicle and said second slot being adapted to receive said pin from said first slot so that said pin rests against said rearward edge when the plow is being pulled rearwardly by the vehicle.



4,619,061
SNOWBLOWER

John L. Swanson, 1302 Louise Ave., Saskatoon, Saskatchewan, Canada S7H 2P9

Continuation-in-part of Ser. No. 551,356, Nov. 14, 1983, abandoned. This application Jul. 22, 1985, Ser. No. 757,174
Claims priority, application Canada, Dec. 24, 1982, 418629
Int. Cl.⁴ E01H *5/09*
U.S. Cl. 37—248 **1 Claim**



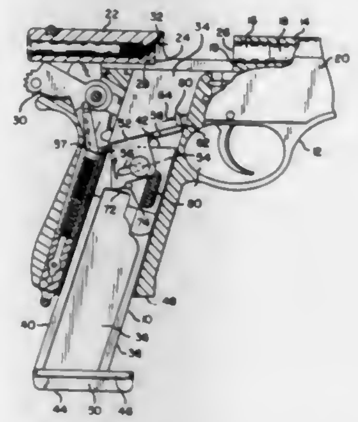
1. A snowblower comprising a casing for moving in a forward direction across ground to be clear of snow having an open front face for engaging the snow, an auger mounted in the casing for rotation about a substantially horizontal axis transverse to the forward direction, so as to move snow longitudinally of the auger towards an opening in the casing, and a fan mounted in the casing for withdrawing snow from the opening for discharge from the blower, the auger comprising a shaft which is square in cross section defining four sides, bearing means for mounting the shaft for rotation about said axis, means for rotatably driving the shaft, a plurality of blades, each blade comprising a planar rigid thin metal sheet which elongate, narrow and rectangular so as to define parallel side edges, an a plurality of mounting means each mounting a respective one of the blades on said shaft for rotation therewith so that rotation of the shaft causes snow engaged by the blades removed axially of the shaft for collection, each said mounting means comprising a rectangular flat plate having one edge attached to a respective side of the shaft and extending outwardly therefrom at right angles thereto and canted at an angle to the axis of the shaft, and a supporting web interconnecting a side edge of the plate to the side of the shaft, and including a first hole therethrough for receiving a pivot pin passing

through said plate and through the respective blade for mounting said blade on said shaft so as to be parallel to the plate and pivotable about an axis at right angles to the plate and including a second hole therethrough for receiving a shear pin through said plate and through said blade arranged to normally prevent such pivotal movement, so as to maintain said blade with the side edges thereof at right angles to the respective side and to shear to allow such pivotal movement on impact of said blade with a solid object, each of the four sides of the shaft having thereon a plurality of said mounting means and respective blades arranged at one angle thereto to move snow in one direction therealong towards said opening and a plurality of said mounting means and respective blades arranged at another angle to move snow in an opposed direction therealong towards said opening.

4,619,062

SAFETY DEVICE FOR FIREARMS USING REMOVABLE MAGAZINES

David A. Johnson, 3432 Tanglewood Way, Salem, Oreg. 97302
Filed Oct. 8, 1985, Ser. No. 785,577
Int. Cl.⁴ F41C *11/02*
U.S. Cl. 42—70.11 **20 Claims**



1. A safety device for use in a firearm, of the type having a barrel defining a cartridge receiving and firing chamber having a breech opening, a longitudinally movable breech-closing member, and a magazine well for receiving and holding a removable magazine capable of holding a cartridge to be fed into the cartridge receiving and firing chamber, the safety device comprising:

(a) a main body of a size and shape which fits within said magazine well, preventing insertion of a magazine thereinto, said main body including an inner end and an outer end;
(b) a chamber-blocking element; and
(c) connecting means attached to said main body for connecting said chamber-blocking element movably thereto, said chamber-blocking element being movable between a first position, in which said chamber-blocking element is aligned with said main body so that said main body can be inserted into said magazine well preceded by said chamber-blocking element, and a forwardly located second position in which at least a portion of said chamber-blocking element obstructs said breech opening, preventing insertion of a cartridge into said cartridge receiving and firing chamber.

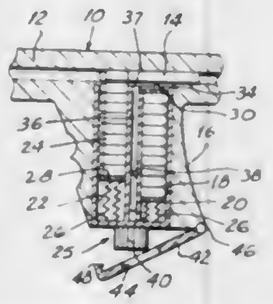
4,619,063

REVOLVING MAGAZINE FOR PISTOLS

Charles Hill, and George Spector, both of 233 Broadway Rm 3615, New York, N.Y. 10007
Filed Jan. 23, 1985, Ser. No. 694,122
Int. Cl.⁴ F41C *25/06*
U.S. Cl. 42—7 **3 Claims**

1. A pistol having a barrel and bolt which comprises:

(a) a handle having a cylindrical bore extending within;
(b) a cylindrical magazine having a plurality of radial chambers wherein said chambers can hold a plurality of cartridges, said magazine is removeably secured within said bore;
(c) means for revolving said magazine within said bore so that each chamber in turn will be in alignment with said barrel of said pistol and said cartridges in turn will be in position to be pushed by said bolt and fired from said barrel, wherein each said chamber of said magazine comprises:
(d) at least one spring placed at bottom of said chamber;
(e) a follower placed on top of said spring with said cartridges sitting one on top of each other on said follower so that said spring and said follower can push said cartridges up, wherein said magazine further comprises:



(f) a rotating disc mounted on top of said magazine, said disc having a slot to allow passage of said cartridges to and from said chambers;
(g) an alignment pin mounted perpendicular to said disc opposite said slot so that said magazine can be placed in a proper position within said bore of said handle, wherein said means for revolving said magazine within said bore comprises:
(h) a loading rod mounted to top of said bore of said handle and extending downwardly;
(i) said magazine having a central longitudinal aperture so that said magazine can slide onto said loading rod;
(j) a knob affixed to bottom of said magazine so that said magazine can revolve around said loading rod within said bore.

4,619,064

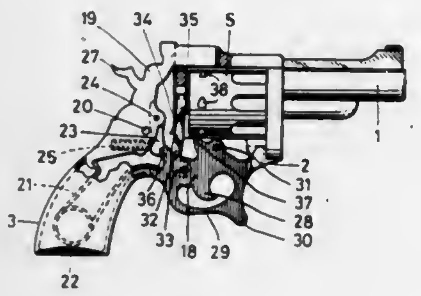
MINIATURE FIREARM

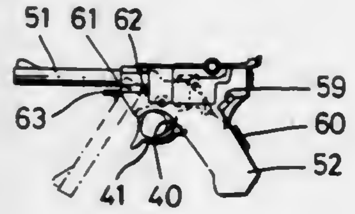
Yves Stolz, Bourguillards 10, CH-2072 Saint-Blaise, Switzerland
PCT No. PCT/CH82/00059, § 371 Date Dec. 27, 1982, § 102(e) Date Dec. 27, 1982
Continuation of Ser. No. 456,025, Dec. 27, 1982, abandoned. This PCT application Apr. 26, 1982, Ser. No. 763,085
Claims priority, application Switzerland, Apr. 25, 1981, 2720/81
Int. Cl.⁴ F41C *19/00, 3/00, 1/00*
U.S. Cl. 42—69.01 **7 Claims**

1. An operational miniature firearm approximately 4 to 5 centimeters in size comprising:

a gun body and butt;
a barrel attached to said body and having a bore caliber of about 2 millimeters;
a rimfire projectile cartridge holding means aligned with the bore of said barrel for holding a rimfire projectile cartridge with a projectile of suitable caliber for firing along said bore;
a hammer means pivotally mounted on said gun body to strike and thereby fire any such suitable caliber rimfire projectile cartridge held in said holding means;
first spring means for biasing said hammer means towards said holding means;
a pawl pivotally mounted on said hammer means and having one end projectable away from said hammer means;
second spring means for biasing said pawl away from said hammer means; and

a sear pivotally mounted on said body and abuttable against said pawl, such that when said sear is pulled towards said gun butt it first pushes said hammer means upwards through said pawl, thereby to cock said hammer means, and then releases said hammer means by passing beyond said pawl, whereupon said first spring means causes said hammer means to strike and fire any such suitable caliber rimfire projectile cartridge in said cartridge holding means;



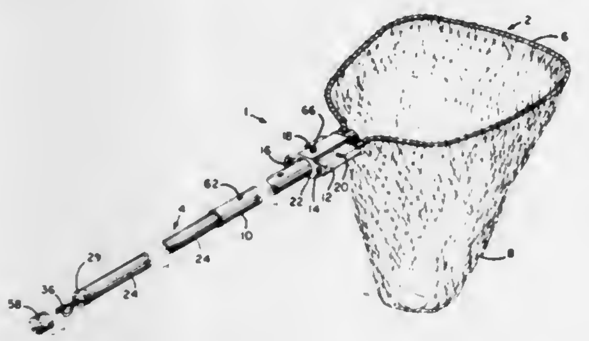


wherein said sear has an opening formed therethrough in a portion thereof substantially external to said gun body and butt when said sear is in a rest position, edges of said opening away from said gun body and butt being defined by a thin border portion of said sear having the shape of a trigger guard, and wherein said sear further has a protruding portion having the shape of a trigger and extending into said opening on a side thereof closest to said gun body.

4,619,065

COMBINATION FISHNET AND FISHHOOK RETRIEVER

Stephen S. Jones, 1761 Carlos Dr., Las Vegas, Nev. 89123
Filed Oct. 22, 1984, Ser. No. 663,399
Int. Cl.⁴ A01K *77/00*
U.S. Cl. 43—11 **8 Claims**



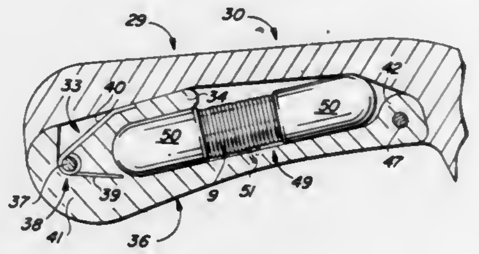
1. A combination fishing net and snagged-hook retriever comprising

a fishing net mounted on a frame,
an elongated hollow tubular handle operatively connected to the frame,
an elongated handle extension member telescopically mounted within the handle, being movable between a retracted position fully enclosed within the handle and an extended position in which only a portion of the extension member remains within the handle,
hook-retrieving means mounted on an end portion of the extension member and having a maximum diameter not exceeding the diameter of the extension member such that when the extension member is retracted, the hook-retrieving means is entirely enclosed within the tubular handle, and stop means for releasably locking the extension member in a retracted or extended position,
the hook-retrieving means comprising a ring member formed by a pair of arms, and a slot in the ring member permitting access of a fishing line therethrough.

4,619,066

FLOAT RELEASE DEVICES

Donald R. Kirkland, 1029 Edgewood Dr., Jacksonville, Tex. 75766, and Paul J. Morcom, Rte. 3, Box 1088, Troop, Tex. 75789
Continuation-in-part of Ser. No. 652,112, Sep. 19, 1984. This application Jan. 30, 1985, Ser. No. 696,263
Int. Cl.⁴ A01K *47/00, 87/00*
U.S. Cl. 43—25 **14 Claims**

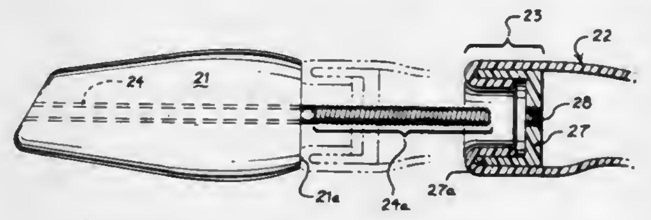


1. A float release device in combination with a fishing rod handle for locating and retrieving a submerged fishing rod, said handle having an opening or cavity provided therein, said combination comprising lever means pivotally carried by the rod handle and substantially closing the cavity when in closed configuration; bias means biasing said lever means in open configuration; flotation means located in the cavity; and release means cooperating with said lever means and the rod handle to close said lever means against the bias of said bias means, said lever means including pocket means pivotal therewith for loosely retaining said flotation means whereby said lever means opens by operation of said bias means and said flotation means exits the cavity responsive to operation of said release means when the object is submerged.

4,619,067

FISHING LURE ASSEMBLY

Robert A. West, 76-6294 Kupuna St., Kailua-Kona, Hi. 96740
Filed Apr. 18, 1985, Ser. No. 724,356
Int. Cl.⁴ A01K *85/00*
U.S. Cl. 43—42.09 **3 Claims**

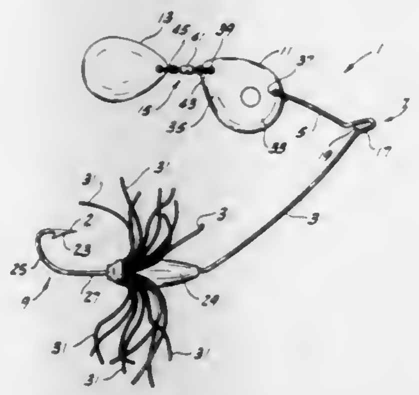


1. A fishing lure assembly comprising a head portion, an elongate tube embedded in said head portion, the trailing end of said tube extending rearwardly from said head portion, said trailing end being threaded, a rigid cup having a threaded portion for threadedly engaging the threaded trailing end of said tube, a decorative shirt for attracting fish thereto formed at its leading end with a resilient tubular portion surrounding

the cup and folded rearwardly into same to lie across the edge of said cup, that part of said tubular skirt portion lying across the edge of said cup being disposed to be pinched between the rear of said head portion and the edge of said cup to retain said skirt to said head in response to screwing said cup along the threaded trailing end of said tube until the cup and head tightly grip said resilient tubular portion therebetween.

4,619,068
FISHING LURE

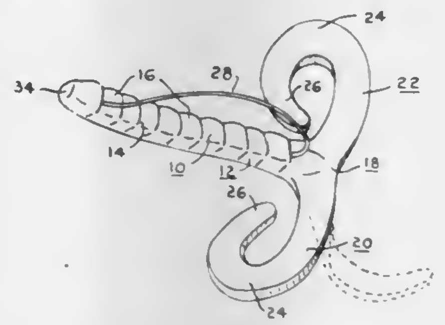
Fred W. Wotawa, 4646 Heege Rd., Affton, Mo. 63123
Filed Aug. 2, 1984, Ser. No. 637,075
Int. Cl.⁴ A01K *85/00*
U.S. Cl. 43—42.11 **8 Claims**



1. A fishing lure comprising first and second diverging arms, means adjacent the juncture of said arms for attaching the lure to a fishing line, a hook connected to the first arm, a vane connected to the second arm to permit oscillating movement of the vane relative to the second arm, a spinner and means swivelly connecting said spinner directly to said vane, said vane being generally pear-shaped, having a relatively broad front portion connected to said second arm, and a narrower rear portion, said spinner being generally pear shaped having a relatively broad rear portion and narrower front portion swivelly connected at said narrower front portion to the narrower rear portion of said vane.

4,619,069
DOUBLE TAILED FISH BAIT

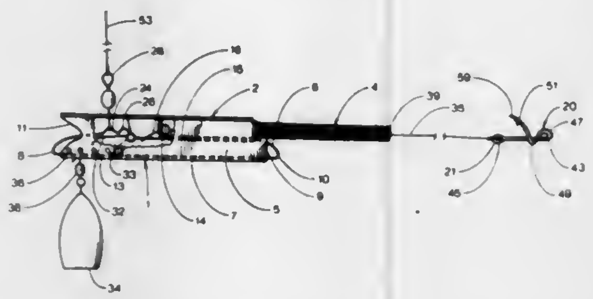
Richard C. Strickland, P.O. Box 1136, LaBelle, Fla. 33935
Filed Nov. 21, 1984, Ser. No. 673,670
Int. Cl.⁴ A01K *85/00*
U.S. Cl. 43—42.26 **2 Claims**



1. A fish bait comprising a plastic lure having an elongated body section having forwardly and rearwardly disposed ends, symmetrically disposed oppositely extending substantially flat surfaced leg members aligned with each other and extending in opposite directions at substantially right angles relative to the elongated body section from a point at the rear end of the body section, the oppositely extending leg members being symmetrical and being a mirror image of each other and having uninterrupted successively spaced outwardly, forwardly, inwardly and rearwardly extending curved sections of progressively decreasing cross section in both thickness and width to induce the terminal ends of each of the leg members to deflect in varying directions as the bait is projected through the water.

4,619,070
FISHING PLANER LINE PROTECTOR

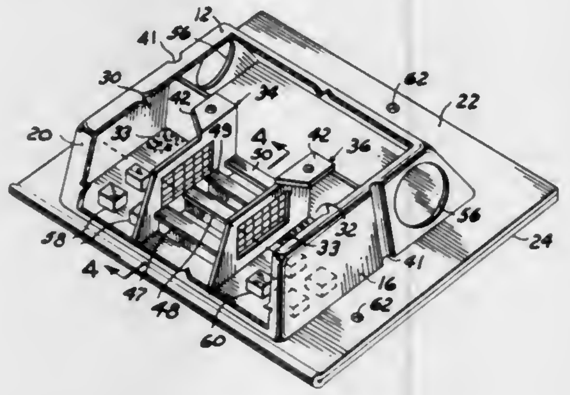
Fred C. Jung, 3411 East 52nd Avenue, Vancouver, British Columbia, Canada (V5S 1V6)
Filed Nov. 18, 1985, Ser. No. 799,356
Int. Cl.⁴ A01K *95/00*
U.S. Cl. 43—43.13 **15 Claims**



1. A fishing device comprising: a body with a flat planing surface; bail means for slidably receiving a connector at an end of a fishing line, the bail means having a first position for the connector where the planing surface is angled to carry the fishing line to a desired depth below a body of water and a second position assumed by the connector when a fish strikes where the planing surface is angled to move the device towards the surface of the water as the fishing line is reeled in; a tubular line protector for slidably embracing a leader; means for releasably connecting the line protector to the body; and means for engaging the line protector with the leader so the line protector is disconnected from the body when a fish pulls on the leader and for disengaging the line protector for slidable movement along the leader after the line protector is disconnected from the body.

4,619,071
RODENT BAIT STATION

Donald W. Willis, P.O. Box 291, Lompoc, Calif. 93436
Filed Feb. 8, 1985, Ser. No. 699,895
Int. Cl.⁴ A01M *25/00*
U.S. Cl. 43—131 **1 Claim**



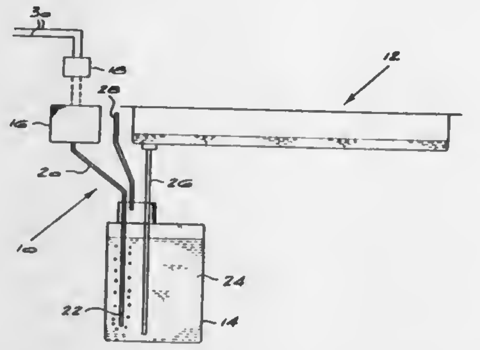
1. A rodent bait station, comprising:

a housing formed from light weight semi-flexible plastic,
  said housing having a flat top wall and parallel generally rectangular depending side, front and rear end walls with an outstanding flange formed on the lower edge of the respective depending wall;
a flat sheet forming a housing bottom wall hingedly secured to the outer limit of the flange on the rear end wall and adapted to be bonded to the outstanding flange of the respective walls,
  said side walls each having a rodent entry hole formed therein adjacent said front end wall in approximately axial aligned relation;

  a pair of bait retainers disposed in spaced-apart relation in said housing adjacent said rear wall and the respective side wall to define an open rodent compartment between the bait retainers,
    each bait retainer of said pair of bait retainers including a front panel and a side panel joined together at one end in substantially right angular relation respectively parallel with the housing front wall and housing side walls and extending between the housing top and bottom walls and contacting at their respective other ends the respective housing side wall and the housing rear end wall,
    each retainer side panel having a window facing in spaced-apart relation the window in the other side panel providing rodent access to contained bait;
rail means including a plurality of rails, T-shaped in transverse section, extending in parallel spaced-apart relation between said bait retainer side panels for normally preventing movement of bait from said bait retainers toward said housing front wall; and,
bait retainer anchor means including a vertically apertured gusset extending horizontally between and rigidly joining each said bait retainer front panel with the respective said bait retainer side panel and anchor pins depending from said housing top wall and projecting into the respective gusset aperture for preventing movement of said pair of bait retainers relative to said housing.

4,619,072
METHOD AND APPARATUS FOR IRRIGATING PLANTS

Eric B. Privett, P.O. Box 106, Honeydew 2040, South Africa
Filed Sep. 6, 1984, Ser. No. 647,935
Claims priority, application South Africa, Sep. 9, 1983, 83/6699
Int. Cl.⁴ A01G *31/02*
U.S. Cl. 47—59 **8 Claims**

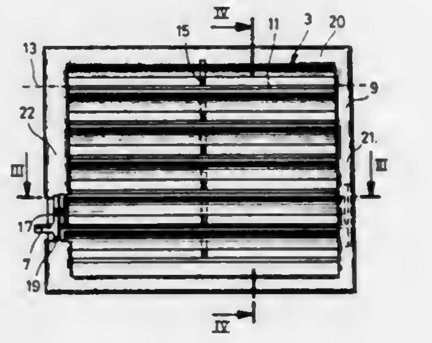


1. A method of irrigating plants in a controlled manner including the steps of moving liquid from a reservoir to a container accommodating the plants and situated a predetermined distance above the reservoir by introducing a flow of air under pressure into the reservoir through an air supply conduit extending into the reservoir to a level beneath the surface of the liquid therein and near to the bottom of the reservoir to displace liquid from the reservoir to the container and to aerate the liquid which is so displaced, constantly venting air to atmosphere from above the liquid in the reservoir through a vent controlled by a variable aperture nozzle, limiting the liquid level in the container at a desired level for efficient plant growth by an appropriate setting of the variable aperture nozzle, periodically terminating the flow of air into the reservoir to permit excess liquid to return from the container to the reservoir under gravity while permitting air to evacuate from the reservoir to atmosphere through the vent and regulating the introduction and termination of the air flow in accordance with a predetermined cycle.

5. An apparatus for irrigating plants in a controlled manner including a reservoir for containing irrigating liquid and for location at a predetermined level below that of a container which accommodates plants which are to be irrigated, a vent which includes a variable aperture nozzle and which provides continuous communication between an air space above the liquid in the reservoir and the atmosphere, air supply means operable to supply a flow of pressurized air, an air supply conduit extending from the air supply means and into the reservoir where it vents at a position beneath the surface of the liquid therein and near the bottom thereof, the air supply conduit serving to convey pressurized air into the reservoir to displace liquid from the reservoir to the container, the displaced liquid being aerated by virtue of the fact that the air vents into the reservoir beneath the surface of liquid therein and near the bottom thereof and bubbles up through the liquid, level control means for limiting the liquid level in the container at a desired level for efficient plant growth, said control means being constituted by a combination of the variable aperture nozzle in the vent and the air supply conduit which vents beneath the surface of the liquid in the reservoir, and regulating means periodically for terminating the operation of the air supply means in accordance with a predetermined cycle to permit excess liquid to return to the reservoir from the container under gravity, the vent serving to permit escape of air from the reservoir to atmosphere both during displacement of liquid from the reservoir to the container and during return of liquid from the container to the reservoir, and to control the rate of such return flow.

4,619,073
ADJUSTABLE SHUTTER ASSEMBLY AND METHOD OF MAKING THE SAME

Ingo W. Janthur, Berlinger; Alfred Roth, Undenheim, and Stefan Odry, Darmstadt, all of Fed. Rep. of Germany, assignors to General Motors Corporation, Detroit, Mich.
Filed May 30, 1985, Ser. No. 739,582
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1984, 3420419
Int. Cl.⁴ E05F *17/00*
U.S. Cl. 49—74 **6 Claims**



1. In an adjustable shutter assembly comprised of a plurality of shutter blades adapted for pivotal movement about parallel pivot axes, said shutter blades being articulated to a common actuating rod extending along one end of all the blades so as to effect adjustment of the blades, the improvement comprising:

the shutter blades being combined with an auxiliary frame so as to form a unitary structure therewith and being connected with ribs of the auxiliary frame by way of living-type hinges and forming a unitary structure with the actuating rod by way of respective further living-type hinges at said one end of the blades extending transverse to the first-mentioned hinges and joined to the respective one end of the blades by a portion extending laterally from each said one end.

4,619,074

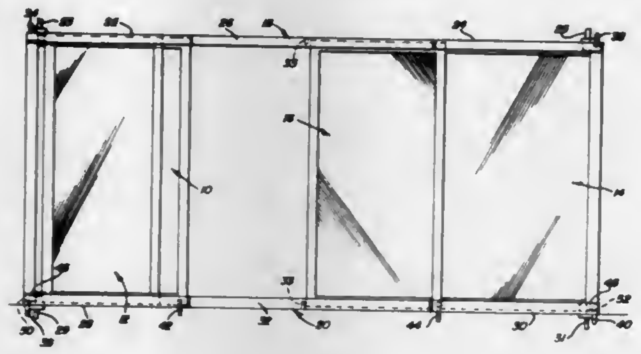
CONVERTIBLE DOOR SYSTEM

Ignatius Y. P. Leung, 8881-A Fontainbleau Blvd., Apt. 501, Miami, Fla. 33172, and Adolfo A. Diaz, 20210 SW. 114th Ct., Miami, Fla. 33157

Filed Aug. 12, 1985, Ser. No. 764,756

Int. Cl.⁴ E05D *15/00*

U.S. Cl. 49—143 **10 Claims**



1. A closure structure, namely one of a door and window structure, for receipt in an opening in a building wall and the like comprising at least one pair of cooperative panels including a first panel having means for mounting same in the opening for swinging open and closed, and a second panel for sliding relative to the first panel between a fully closed position of the structure in which the panels are located substantially end-to-end, and a semi-opened position of the structure in which the panels are juxtaposed face-to-face, the structure further including track means on which the second panel slides between said positions, the track means including a first pivoted section juxtaposed the first panel for swinging movements sustantially in parellel therewith, and a second section for fixing in the opening end-to-end with the first section whereby the second panel can be slid along the track means between the respective sections thereof and when fully received in the first section can be swung open as a unit with the first section so as to provide substantially unobstructed access across the full width of the opening.

4,619,075

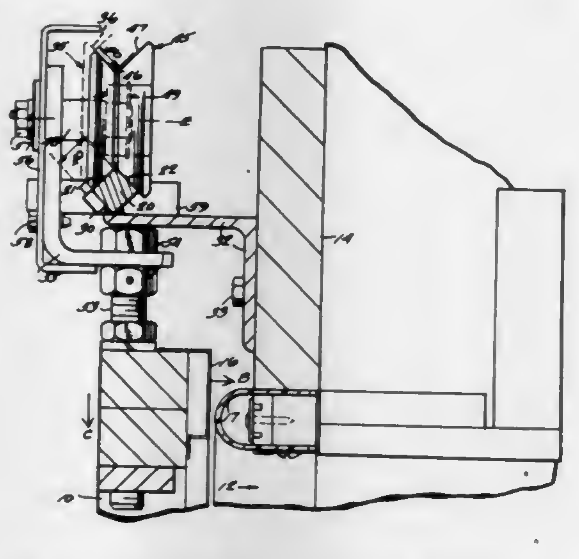
HORIZONTAL SLIDING DOOR

Vernon L. Wiles, Williamsport, Md., assignor to Jamison Door Company, Hagerstown, Md.

Filed Sep. 19, 1984, Ser. No. 652,091

Int. Cl.⁴ E05D *15/56*

U.S. Cl. 49—235 **19 Claims**



1. A sliding door assembly for closing an opening in a wall having a width W, comprising:

a door having a predetermined width;

means for mounting said door for sliding movement over a majority of the length of travel thereof in a first direction, and additionally for movement in second and third directions adjacent the end of travel thereof in said first direction, said second and third directions each being generally perpendicular to said first direction, and perpendicular to each other;

said mounting means including track means and a first and a second roller spaced from each other in said first direction a distance less than W, said first roller comprises a first V-shaped roller having asymmetrical first and second surface lengths, and wherein said second roller comprises a second V-shaped roller with asymmetrical first and second surface means; the asymmetry of said second roller being opposite the asymmetry of said first roller.

4,619,076

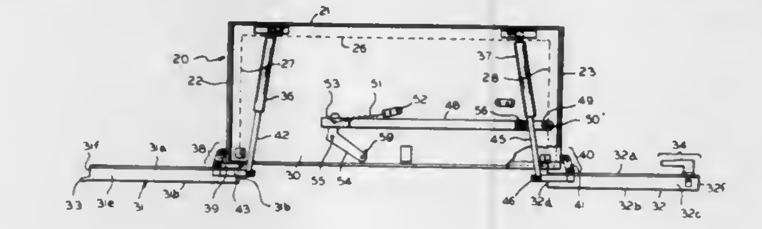
SAFETY CABINET LATCHING SYSTEM

Jerry L. Livingston, Humboldt, Ill., assignor to Justrite Manufacturing Company, Mattoon, Ill.

Filed Apr. 15, 1985, Ser. No. 723,337

Int. Cl.⁴ E05C *7/05*

U.S. Cl. 49—367 **4 Claims**



1. In a closure mechanism for a cabinet, said cabinet of the type where said closure mechanism is adapted to close off said cabinet front,

said closure mechanism comprising:

a pair of rotating doors called a first door and a second door,

closing means to urge said first and second doors to a closed position,

a timing means mounted to the interior of the cabinet to control the closing sequence of the doors,

latching means to latch said doors in a closed position responsive to the closing of said doors;

means to prop said doors in an open position,

said prop means including link means pivotally mounted to each said door,

said link means being fashioned from heat fusible material whereby a selected rise in ambient temperature will fuse said link thereby releasing said door from its open position and allowing it to close when said timing means releases it for rotation to a closed position,

the improvement comprising a latch assembly with a latching rod that includes an inclined outer end which forms an acute angle with an inner portion of said latching rod, said latching rod being spring biased outwardly to urge said inclined outer end out of an opening in one of the doors into engagement with the cabinet by having the outer inclined end protrude through an opening in the wall of the cabinet.

4,619,077

WEATHER STRIP FOR MOTOR VEHICLE BODIES AND AN EXTRUSION HEAD FOR MAKING THE STRIP

Roberto Azzola, Turin, and Luciano Carrera, Ciriè, both of Italy, assignors to S.A.I.A.G. S.p.A., Turin, Italy

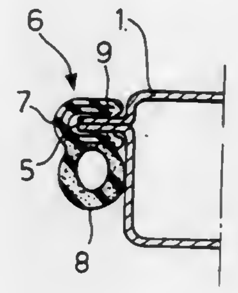
Filed Jan. 6, 1984, Ser. No. 568,565

Claims priority, application Italy, Jan. 6, 1983, 67008 A/83

Int. Cl.⁴ E06B *7/16*

U.S. Cl. 49—497 **2 Claims**

1. Weather strip adapted for securement to the edge of an opening or the edge of a closure element closing the opening in the body of a motor vehicle wherein the edge is comprised of successive, substantially straight portions connected by corner portions having small radii of curvature, the weather strip including an anchoring section of elastomeric material to which a tubular sealing section also of elastomeric material is connected, and comprising first and second longitudinal portions for connection to the substantially straight portions and to the corner portions of the edge, respectively; the wall of the tubular sealing section having a greater thickness in the second longitudinal portions than the first longitudinal portions, the increase in thickness being achieved during extrusion of the weather strip.



4,619,078

GRINDING MACHINE WITH PROTECTIVE HOOD FOR THE GRINDING WHEEL

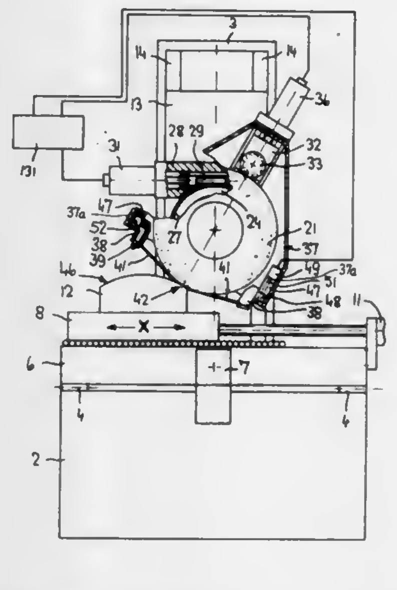
Uwe Uhlig, Buchholz, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Jun. 20, 1984, Ser. No. 622,709

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1983, 3323424

Int. Cl.⁴ B24B *7/00*

U.S. Cl. 51—5 D **15 Claims**



1. A grinding machine, comprising a frame; a work holder on said frame; a rotary spindle for at least one grinding wheel on said frame; drive means for effecting relative movement between said spindle and said holder so as to enable a wheel on said spindle to carry out a grinding operation upon the workpiece on said holder; a protective hood provided on said frame and arranged to partially surround the grinding wheel on said spindle; and means for automatically changing the position of said hood relative to said frame in dependency on the configuration of the workpiece on said holder while the grinding wheel on said spindle removes material from such workpiece and the workpiece is out of contact with the hood.

4,619,079

GRINDING MACHINE FOR BALL END MILLS WITH HELICAL CUTTER TEETH

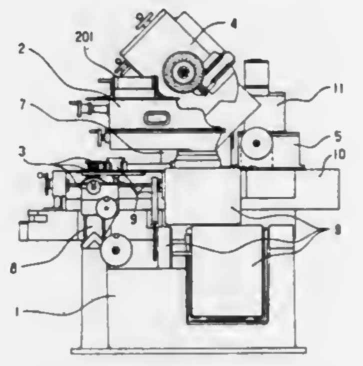
Morio Kidani, Kopo Tasaka 304, 8-14, Misasamachi 2-chome, Nishi-ku, Hiroshima-shi, Hiroshima-ken 730,, Japan

Filed Mar. 29, 1985, Ser. No. 717,788

Claims priority, application Japan, Mar. 31, 1984, 59-64218

Int. Cl.⁴ B24B *3/08*

U.S. Cl. 51—165.71 **4 Claims**



1. A grinding machine for grinding cutter teeth on a ball and mill, comprising:

a machine base;

a Y-direction slide table disposed over said machine base and movable back and forth thereon;

an X-direction slide table disposed over the Y-direction slide table and movable right and left thereon;

a proportional guideway fixed on the Y-direction slide table and being freely rotatable about a perpendicular axis;

a spindle and a turntable having means for turning the spindle through an angle α of turning movement having a reference position in which the spindle extends parallel to an X-axis, in a pattern of tan $\gamma \cdot F(\alpha)$ where γ is the helix angle of helical cutter teeth to be ground on the ball end mill, the turntable including a turntable base fixedly mounted on the X-direction slide table, swivel base box means rotatably mounted on and projecting sidewardly of the turntable base, the spindle being disposed over the sidewardly projecting swivel base box means for mounting a workpiece, and a F (α) cam means disposed in the swivel base box means;

a grinding wheel mechanism tiltable laterally about a Y axis and having grinding wheel shafts for alternatively supporting face and flank grinding wheels and means for moving the grinding wheel shafts to enable the tip end of a cutter tooth being generated on said ball end mill to lie in a prescribed point on the Y-axis at all times, the mechanism as a whole being tiltable dependent on the turning movement of the turntable in a pattern of tan $\gamma \cdot F'(\alpha) \cdot \cos \alpha$ so as to enable the face grinding wheel to have its grinding surface geometrically contact the curved surface of a spherical cutter tooth at the cutting edge thereof in a prescribed point on the Y-axis, and also enable the flank grinding wheel to contact the curved cutting edge of the spherical cutter tooth in a constant relationship at all times dependent on the shape of the flank;

a first mechanism disposed over the machine base and to the rear of the Y-direction slide table for calculating the angle of inclination of the grinding wheel mechanism at the time of grinding tapered helical cutter teeth with a constant lead;

a bearing box disposed over the first mechanism and to the rear of the swivel base box means, the face grinding wheel shaft having an axis in the Y-axis direction and the flank grinding wheel shaft having an axis in the X-axis direction respectively disposed in front of the bearing box and rotatable and adjustable vertically at about an axis parallel to the X-axis;

a second mechanism arranged over the bearing box and disposed over the first mechanism for calculating the angle of inclination of the grinding wheel mechanism.

4,619,080
ROLL GRINDING APPARATUS FOR ROLLING MILLS

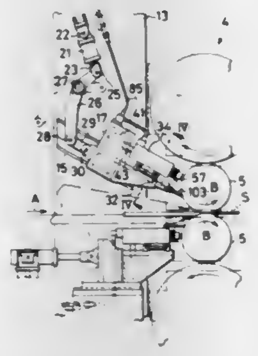
Yoshiyuki Okamoto; Kazuhiko Sato, both of Himeji; Shunji Uryu, Kitakyushu, and Kiyoshi Morita, Himeji, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 5, 1985, Ser. No. 708,847

Claims priority, application Japan, Mar. 5, 1984, 59-40443

Int. Cl.^{4} B24B *19/00*

U.S. Cl. 51—251 **10 Claims**



10. A roll grinding apparatus for use on a rolling mill which comprises:

a housing adapted to be positioned adjacent a roll having a roll axis;
a frame guide disposed on said housing and having at least one guide surface which extends in a direction which is perpendicular to said roll axis;
a frame movably mounted along said at least one guide surface of said frame guide;
means for moving said frame towards and away from said roll axis;
a casing guide disposed on said frame and extending in a direction perpendicular to said at least one guide surface of said frame guide;
a casing movably mounted on said casing guide, said casing having a plurality of guide holes facing said roll axis;
means for moving said casing reciprocatively along said casing guide;
a plurality of grindstone holders, each of said grindstone holders slidably disposed in a respective guide hole;
a plurality of grindstones, each of said grindstones disposed on a respective grindstone holder, said grindstones facing said roll axis, said grindstone holders including grindstone stoppers mounted thereon, each of said grindstone stoppers comprising a rod movably supported at one end thereof by a respective grindstone holder, a cam mechanism attached to a free end of said rod and an arm having a pawl which is engageable with a respective grindstone, said arm being connected to said cam mechanism for pvioting said pawl into and out of engagement with said resepctive grindstone; and
means for independently reciprocating each of said grindstone holders towards and away from said roll axis, said grindstone holder reciprocation means including hydraulic cylinder means attached to each to said grindstone holders for selectively moving an individual grindstone towards and away from a roll to be ground.

4,619,081
COMBINED NOZZLE WITH AIR FOIL

Scott J. Lipanski, Fremont, Calif., assignor to General Signal Corporation, Stamford, Conn.

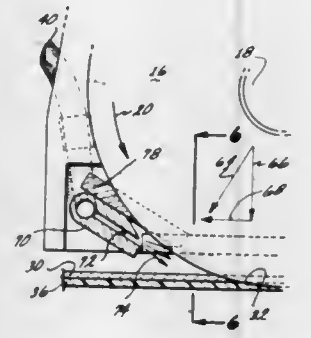
Filed Feb. 28, 1985, Ser. No. 706,620

Int. Cl.^{4} B24B *55/02*

U.S. Cl. 51—267 **16 Claims**

1. A combined nozzle and air foil for providing a flow of cooling and cleaning fluid to a rotating cutting blade providing cutting of a substrate, including,

a nozzle portion for location intermediate the cutting blade and the substrate at a position adjacent the substrate,
the nozzle portion including at least one opening for directing a flow of cooling and cleaning fluid to the blade and to the cut area of the substrate,
an elongated air foil portion mounted above and extending from the nozzle portion to be cut by the cutting blade to form an air foil on both sides of the cutting blade and with the air foil producing a partial vacuum below the air foil and adjacent the opening in the nozzle to provide an efficient flow of the fluid to the blade and the cut area of the substrate,



the air foil portion including shaped surfaces on both sides of the cutting blade and with the top leading edges of the air foil smaller in cross section than the bottom trailing edges of the air foil, and
means for movably mounting the combined nozzle and air foil portions for providing movement of the combined nozzle and air foil to have the air foil engage the cutting blade to custom cut the air foil to match the dimensions of the cutting blade and to provide the proper location of the nozzle to direct the flow of the fluid.

4,619,082
METHOD OF MANUFACTURING A CONTACT LENS

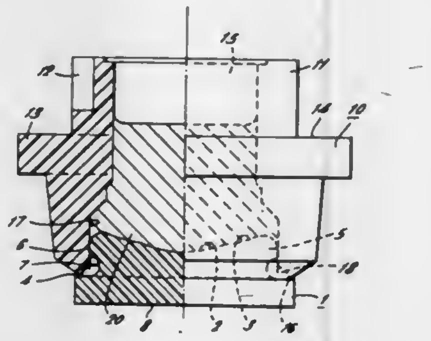
Michael J. Dent, Chalfont St Giles, and Ian L. Handricks, Chalgrove, both of England, assignors to Contact Lens Supplies Limited, England

Filed Oct. 23, 1984, Ser. No. 663,780

Claims priority, application United Kingdom, Oct. 24, 1983, 8328365

Int. Cl.^{4} B24B *1/00*

U.S. Cl. 51—284 R **2 Claims**



1. A method of manufacturing a contact lens comprising the steps of:

forming a blank in the shape of a right circular cylinder to produce thereon a first lens face facing in a first direction, an annular reference surface on said blank facing said first direction, said blank having an area of reduced diameter intermediate said first lens face and said reference surface, said reference surface being spaced by said reduced diameter area from said first lens face;
mounting said reduced diameter area of said blank within an opening of a work holder, said work holder having an outer annular rim for engaging said reference surface of said blank;
positioning said first lens face of said blank within said opening, the opposite end surface of said blank being exposed;
introducing molten securing material into said work holder and into contact with said first lens face of said blank, said molten material cooling and setting, thereby securing said blank to said work holder;
mounting the work holder on a machine tool such that the work holder holds the blank with said work holder and said first lens face accurately positioned relative to said machine tool;
machining the blank to form thereon a second lens face and concurrently removing all unwanted blank material to leave only the finished contact lens held in the work holder by the securing material; and
releasing the finished contact lens from said securing material.

4,619,083
GRINDING METHOD OF ROUNDED ANNULAR CORNER ON WORKPIECE

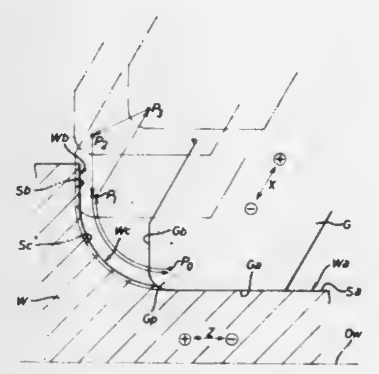
Hitoshi Akabane, Anjoh, and Gen Ishiyama, Kariya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 15, 1985, Ser. No. 712,093

Claims priority, application Japan, Mar. 19, 1984, 59-52680

Int. Cl.^{4} B24B *1/00*

U.S. Cl. 51—289 R **3 Claims**



1. A method of grinding a rounded annular corner formed between cylindrical and shoulder portions of a workpiece, the method comprising the steps of:

rotating the workpiece about a first axis coinciding with the longitudinal axis thereof;
providing a grinding wheel having cylindrical and shoulder grinding surfaces for respectively grinding the cylindrical and shoulder portions of the workpiece, said grinding wheel also having apex portion formed between the cylindrical and shoulder grinding surfaces for grinding the rounded annular corner of the workpiece;
rotating said grinding wheel about a second axis extending across the first axis;
positioning said grinding wheel at a starting point where said grinding wheel is in contact at the cylindrical grinding surface with the workpiece cylindrical portion and at the shoulder grinding surface with one end of the rounded annular corner adjacent to the workpiece cylindrical portion;
effecting first relative movement between the rotating grinding wheel and the rotating workpiece for moving the apex portion of the grinding wheel along the rounded annular corner from the starting point to a terminal point where the workpiece shoulder portion is ground by the shoulder grinding surface of said grinding wheel;
effecting second relative movement between the rotating grinding wheel and the rotating workpiece for retracting said grinding wheel radially outwardly of the workpiece from the terminal point to an escape point where the shoulder grinding surface is out of contact with the workpiece shoulder portion;
effecting third relative movement between the rotating grinding wheel and the rotating workpiece for returning said grinding wheel from the escape point to the terminal point; and
effecting fourth relative movement between the rotating grinding wheel and the rotating workpiece for moving the apex portion of the grinding wheel from the terminal point to the starting point along the rounded annular corner of the workpiece.

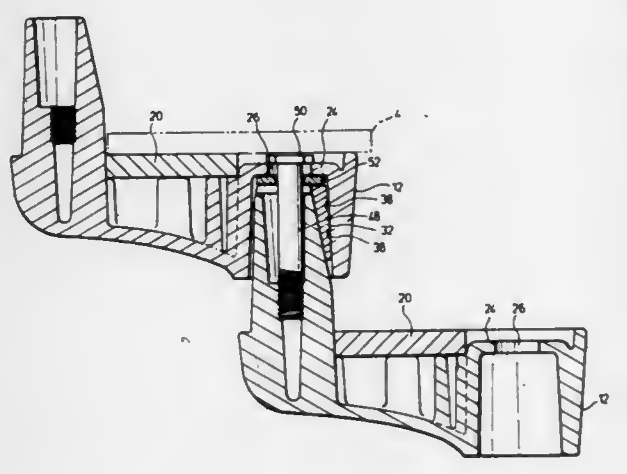
4,619,084
ARTICULATING, SELF-SUPPORTING STAIRCASE

Bernard H. Snitman, 21 Tyrrel Avenue, Toronto, Ontario, Canada (M6G 2G1)

Filed Jan. 28, 1985, Ser. No. 695,825

Int. Cl.^{4} E04F *11/00*

U.S. Cl. 52—182 **13 Claims**



11. An articulating, self-supporting staircase which comprises a plurality of individual, interconnected and locked elements, each element having a tread and a riser, and a wedge locking means locking said interconnected elements firmly together, wherein each tread is secured to the top of each riser by means of a plurality of screws, each screw extending upwardly through a boss in said riser, into said tread; each riser except for the top riser comprising a base and a conical protrusion extending upwardly from the rear of said base, said base having a plurality of strengthening ribs therein, and a strengthening box therein which is enclosed by a plate, said base having a tapering hole on the undersurface at the front thereof wherein the protrusion of the lower adjacent element is inserted and locked, each protrusion having three longitudinally slotted flattened sides; said wedge locking means comprising three longitudinally ribbed wedges, each wedge over one of said flattened sides of said protrusions, a retaining ring retaining said wedges on said flattened sides, and a threaded bolt inserted through said hole and into the protrusion of the riser to interconnect said adjacent risers, and a washer on said bolt above said wedges on the top of said protrusions; whereby when said bolt is tightened, said washer drives said wedges downwardly and firmly interconnects adjacent risers.

4,619,085
GRAIN BIN FLOOR AND METHOD OF MAKING SAME

Michael W. Carroll, Roselle, and Michael E. Harwood, Palatine, both of Ill., assignors to North American Agricultural, Inc., Schaumburg, Ill.

Filed Feb. 15, 1984, Ser. No. 580,464

Int. Cl.^{4} E04H *7/00*

U.S. Cl. 52—192 **8 Claims**

1. A grain floor for storing grain and for supporting the grain above a base which may be uneven at certain locations, said floor comprising

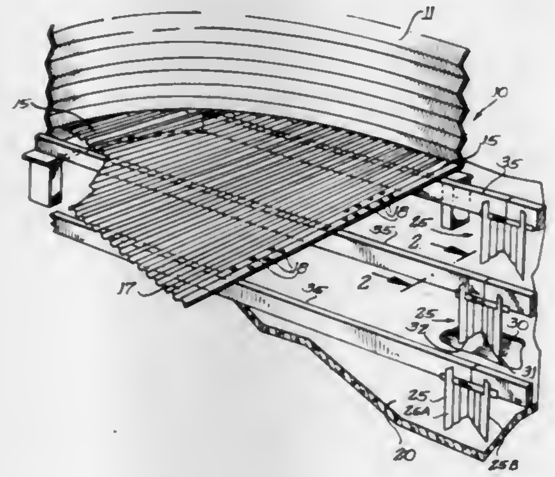
a plurality of corrugated floor plates defining a substantially horizontal floor to receive grain thereon;
a plurality of beams extending horizontally and longitudinally beneath the floor plates supporting the floor plates and grain thereon, said beams being arranged in parallel rows and extending normal to the corrugations,
said beams being spaced laterally of each other,

a plurality of vertical metal columns disposed beneath the beams and supporting the beams at spaced locations along the length of the beams,

said columns being formed of sheet metal and having at least two vertical legs joined at angles to each other,

said beams being made of wood with a rectangular cross section having the longer dimension disposed vertically, said beams being made of a plurality of portions with the portions being aligned in a straight line, and

bearing means spanning the legs of said column and secured to said wooden beam to transfer load from the wooden beam to the column, said bearing means being substantially shorter in length than the portions of the beams, said bearing means being made of metal and preventing the edges of the sheet metal legs from digging into said wooden beams and serving to distribute the load between the beams and the legs,



co-acting means on the bearing means and legs for rigidifying the legs against bending inward under loading from the grain, and

interlocking means on the beams and bearing means to hold the beams against turning and against separation from the bearing means.

4,619,086

CEILING CONSTRUCTION

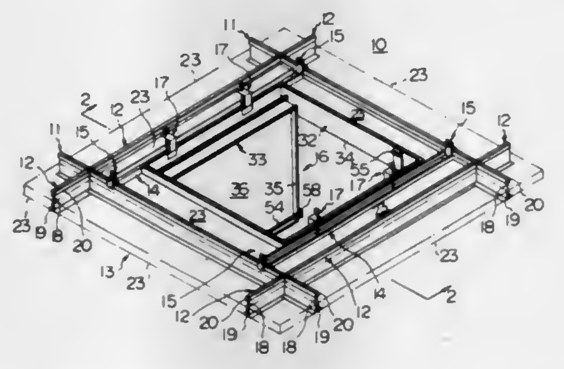
Hiromitsu Naka, Yashio, Japan, assignor to Kabushiki Kaisha Naka Gijutsu Kenkyusho, Tokyo, Japan

Filed Jul. 19, 1983, Ser. No. 515,265

Claims priority, application Japan, Jul. 11, 1983, 57-127259

Int. Cl.⁴ E04B *5/52*

U.S. Cl. 52—205 **5 Claims**



1. A ceiling construction for buildings comprising:

a plurality of main beams disposed in a predetermined spaced relationship to each other and positioned for bridging wall moldings opposed and spaced from each other, said main beams including a web, a flange integrally formed with the lower end of the web, and a bulb integrally formed with the upper end of the web;

a plurality of cross beams connected to said main beams in a predetermined spaced relationship to each other at right angies to the main beams so as to form a ceiling framework, said cross beams including a web, a flange integrally formed with the lower end of the web, and a bulb integrally formed with the upper end of the web;

a ceiling wall mounted in said ceiling framework with the upper side of the ceiling wall above the flanges of said main and cross beams in said ceiling framework, said ceiling wall having an access opening therein in a predetermined position between a pair of spaced opposed main beams and a pair of spaced opposed cross beams extending between said pair of main beams;

a pair of auxiliary beams each positioned on the upper side of the ceiling wall and each bridging the flanges of one of a pair of opposed main beams adjacent to and spaced from each other and a pair of opposed cross beams adjacent to and spaced from each other, said auxiliary beams extending along the edges of said access opening;

a plurality of fastening means securing the opposite ends of said auxiliary beams to said pair of beams, said fastening means including a pressure plate engaging said auxiliary beam at the end of the auxiliary beam and pressing said auxiliary beam and the ceiling wall on which it rests against the flange of the corresponding beam of said pair of beams, a clamping plate having a hook for engaging the bulb on said corresponding beam of said pair of beams and engaged with said pressure plate and securing said pressure plate to the web of said corresponding beam, and a screw securing said claimping plate to said pressure plate;

an access door means positioned in said access opening and having a stationary frame having an outwardly extending flange, a movable frame hingedly connected to said stationary frame, and a cover plate fixedly secured to said movable frame; and

a plurality of mounting means securing said access door to said auxiliary beams with the outwardly extending flange of the stationary frame against the edge of the ceiling wall which defines said access opening.

4,619,087

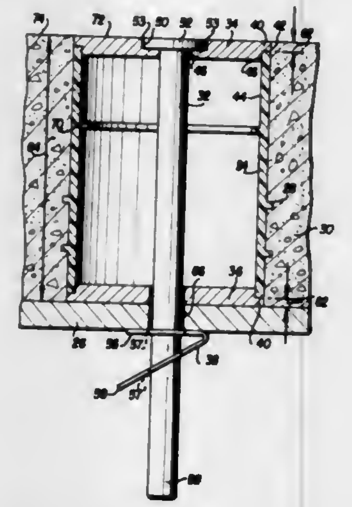
BARRIER-EMBEDDED PIPE-COUPLING APPARATUS AND METHOD

Gerold Harbeke, 2807 S. Military Trail, West Palm Beach, Fla. 33415

Filed May 1, 1985, Ser. No. 729,495

Int. Cl.⁴ E04G *5/48*

U.S. Cl. 52—221 **1 Claim**



1. A combination support apparatus and concrete wall pipe coupling comprising:

an elongated, cylindrically-shaped, female/female pipe coupling to be embedded in a concrete barrier, said pipe coupling having an elongated tubular shape and having integral female pipe receiving elements at opposite ends thereof, said pipe coupling including an anchor protrusion on the outer surface thereof for preventing longitudinal movement of said pipe coupling in said concrete barrier;

a support apparatus for attaching the fluid-conveying pipe coupling to be embedded, in the concrete barrier to a wall of a concrete form while the concrete is being poured and cures, said support apparatus comprising:

an outer rigid disk for engaging an outer end of the fluid-conveying pipe coupling which is furtherest from said wall of said form;

an elongated compressing column attached to said outer disk for extending through said fluid conveying pipe coupling and through a hole in said wall of said form, said outer disk having a size for contacting an outer end of said pipe coupling and forcing it toward said form wall, said elongated compressing column having a length such that when it is pulled through said hole in said form so that said outer disk pulls said pipe coupling rigidly against said form wall a significant portion of said compressing column extends from the other side of the form wall; and,

a fastening means for attaching to said significant portion of said compressing column at any longitudinal position on the other side of said form wall for abutting against said other side and thereby holding said fluid conveying pipe coupling rigidly compressed in a fixed postion between said form wall and said disk during the pouring and curing of said concrete;

a special relatively-short, male/male expansion insert for coupling to one end of said female/female pipe coupling, said expansion insert having a tubular shape with internal and external wall surfaces, of fixed diameters, said fixed diameter of said external wall surface being such that either end of said special expansion pipe insert fits snugly into one end of said pipe-coupling, with the external wall surface at only one of said ends having at least one circumferential groove formed therein with an O-ring positioned in said groove for forming a seal with said pipe-coupling when said only one end of said expansion insert is inserted therein and for maintaining said seal as said only one of end of said expansion insert is moved longitudinally therein, said relatively short, expansion insert having a handgrip ridge mounted on the outer surface thereof to allow one to more easily grip said relatively short expansion-pipe insert;

whereby said support apparatus can be used to mount said elongated pipe coupling on a form to embed it in a building barrier and thereafter said special expansion insert can be used to attach the pipe coupling to an external rigidly positioned pipe.

4,619,088

STRESSED REINFORCING TENDON AND STRUCTURE INCLUDING SUCH A TENDON

Javier Ripoll Garcia-Mansilla, Madrid, Spain, assignor to Manufacturas De Acero Y Caucho S.A., Barcelona, Spain

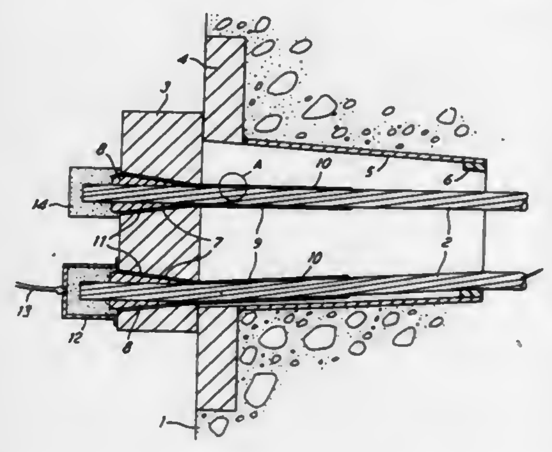
Filed Mar. 19, 1985, Ser. No. 713,604

Claims priority, application United Kingdom, Mar. 23, 1984, 8407596

Int. Cl.⁴ E04C *3/10*

U.S. Cl. 52—223 L **8 Claims**

1. A stressed reinforcing tendon for a structure comprising at least one elongate element stressed over at least a portion of its length, an anchoring body in the form of a plate engaging said structure to transmit load thereto, a primary load transfer element in the form of an anchoring device anchoring said elongate element to said anchoring body by engaging the elongate element at one end of said stressed portion thereof so as to transmit stress in the elongate element from the elongate element to the anchoring body, and a second load transfer element in the form of a tube surrounding the stressed elongate element, said tube being secured at one end to the anchoring body and extending away from the anchoring body along said stressed portion of the eleongate element and being secured to the stressed portion of the elongate element at least at a region spaced from the anchoring body such that the tube transfers to the anchoring body part of the stress in the stressed elongate element thereby relieving the primary load transfer element of part of the stress in the stressed elongate element.



4,619,089

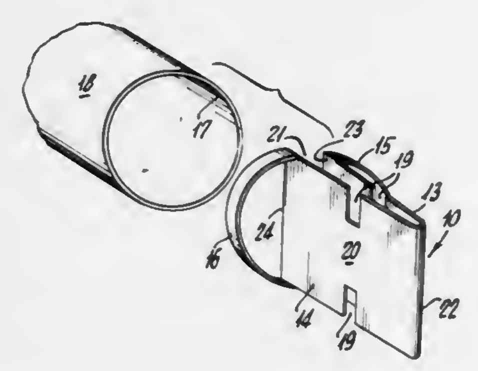
BUILDING STRUCTURE

Alejandro Stein, Residencias Sierra Nevada, Calle Chula Vista, Chula Vista Las Mercedes, Caracas, Venezuela

Continuation of Ser. No. 463,405, Feb. 7, 1983, abandoned. This application May 28, 1985, Ser. No. 738,491

Int. Cl.⁴ E04B *1/10*

U.S. Cl. 52—233 **8 Claims**



1. An end connector adapted for insertion into an opening at one end of a hollow member, said connector presenting a general V-shape and providing two side panels, the side panels being joined at one end and open and separated at the other end, said side panels being resiliently movable upon pressure applied to the outside thereof to come together at said open end and upon release of pressure to separate from each other at said open end for ready insertion into said open end of said hollow member upon application of pressure to said side panels to bring said side panels together, the open end of each of said side panels being provided with means for engaging the inside of said hollow member when said connector is inserted within the opening of said end of said hollow member and the pressure released and each side panel of said connector being provided with a top notch and a bottom notch, said notches in each of said side panels being substantially the same size and in line, the notches in one of said side panels matching the notches in the other side panel of said connector.

4,619,090

TRUSS ASSEMBLY FOR BRICK WALL OR MASONRY SUPPORT

Ira J. McManus, 39 Lincoln Ave., Florham Park, N.J. 07932

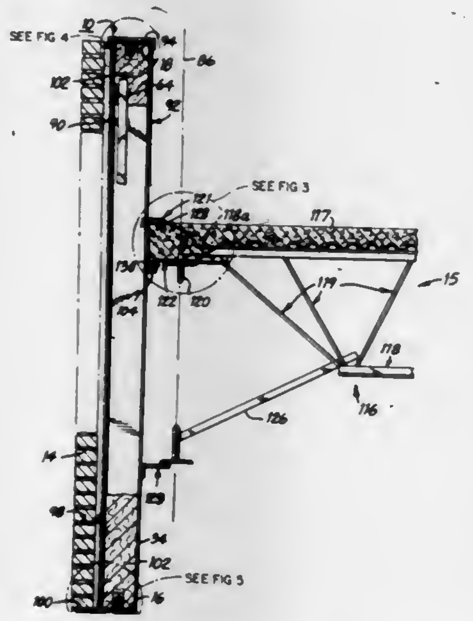
Filed Jul. 16, 1984, Ser. No. 631,179

Int. Cl.⁴ E04B *1/30*

U.S. Cl. 52—235 **10 Claims**

7. A composite wall-floor system for a building comprising a truss assembly including:

a bottom chord;
a top chord;
a plurality of channel shaped vdrtical stud members, said vertical stud members spaced apart horizontally at standard construction dimensions, e.g. 2 feet on center;
a plurality of diagonals;
said stud members and diagonals each being connected at the top thereof to the top chord and connected at the bottom thereof to the bottom chord;
a lintel angle connected to at least the bottom of the vertical stud members, said lintel angle used for supporting a brick wall or other exterior facing from underneath;
means for fixedly securing the brick wall or exterior facing to the truss assembly;
respective pairs of top and bottom end connection means for connecting the top and bottom of said truss assembly to a pair of support columns; and,
truss-floor interconnecting means including a floor supporting stud member fixedly connected to and spanning said truss assembly horizontally, a plurality of top connecting plate means designed to cooperatively engage between the floor system forming a part of the building, and the top of said floor supporting stud member, and bottom plate means designed to cooperatively engage between the floor system, including a supporting beam, and the bottom of said floor supporting stud member, whereby said floor supporting stud member serves as an edge form to contain concrete when poured to form the floor, said floor supporting stud member further including extending members which engage the concrete, and when it hardens, provides a secure lateral tie between the truss and floor, and whereby said bottom plate means acts to minimize concrete spillage when the concrete slab layer is poured,
said composite wall-floor system further comprising a concrete floor system including, a poured concrete slab layer, underhanging chord assembly and joist webbing, said joist webbing fixedly interconnecting said chord assembly to said concrete slab layer.



4,619,091

CURTAIN WALL CONSTRUCTION HAVING PANEL SUPPORT DEVICE

Karl Gartner, Gundelfingen, Fed. Rep. of Germany, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jul. 25, 1983, Ser. No. 517,008

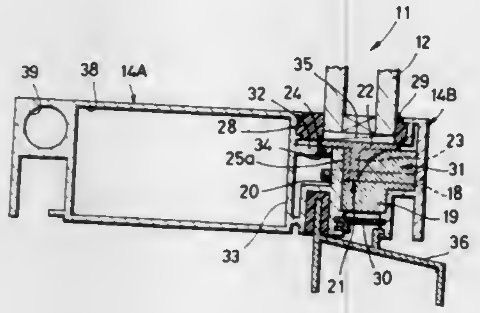
Claims priority, application Japan, Aug. 2, 1982, 57-117546[U]

Int. Cl.^{4} E04B *2/00*

U.S. Cl. 52—235 **1 Claim**

1. In a curtain wall construction, a heavyweight panel having (1) an exterior frame and (2) an interior frame connected together, (3) each of said frames including a pair of upper and lower horizontal frame members and a pair of vertical side frame members connected to said horizontal frame members at their ends, (4) said lower horizontal frame member of said interior frame having a vertical plate facing said exterior frame, and a horizontal plate with at least one opening, said horizontal plate being directed toward said exterior frame, the improvement of a support device in combination therewith, said device comprising:

(a) a horizontal support plate supporting said exterior and said interior frames at said lower horizontal frame members;



(b) a vertical plate projecting downwardly and substantially centrally from said horizontal support plate and disposed against said first-named vertical plate of said interior frame; and

(c) at least one vertical projection disposed on said horizontal support plate adjacent to an interior edge thereof and extending into said opening in said lower horizontal frame member of said interior frame, said projection comprising a downwardly directed solid cylinder.

4,619,092

CURTAIN WALL PANEL SUPPORTING DEVICE

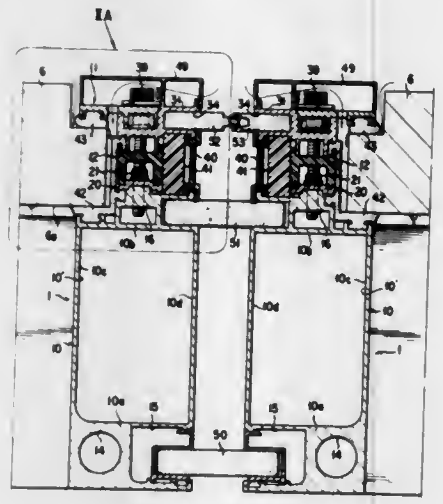
Hiromitsu Kaminaga, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Mar. 14, 1985, Ser. No. 711,831

Claims priority, application Japan, Mar. 22, 1984, 59-39961[U]

Int. Cl.^{4} E04B *7/14*

U.S. Cl. 52—235 **3 Claims**



1. A curtain wall panel supporting device comprising:

(a) a rectangular frame formed by right and left vertical frame members of a curtain wall unit having opposed inner and outer sides, upper and lower horizontal frame members of the curtain wall unit, connecting members having a heat insulating property and fixedly secured to the outer side of said vertical and horizontal frame members, and batten members fixedly secured to the outer side of said connection members;

(b) a panel mounted into said rectangular frame; and

(c) seal members provided between said rectangular frame and said panel,

wherein said batten members are connected to respective one outer side faces of said vertical and horizontal frame members through said connection members, and said rectangular frame has concave grooves which are contiguous along the four inner peripheries of the rectangular frame and which are open in vertical and transverse directions with respect to the curtain wall plane, and said panel is grippingly supported in said concave grooves through said seal members to form spaces between the panel and the concave grooves which spaces are contiguous along the four inner peripheries of the rectangular frame and are open to the outside air, and wherein the portions of said connection members which face said concave grooves are covered with said seal members, said seal members having heat insulating and water-tightness properties for portecting the integrity of the heat insulating property of said connection members.

4,619,093

DECORATIVE MATERIAL FOR WALLS OF BUILDINGS

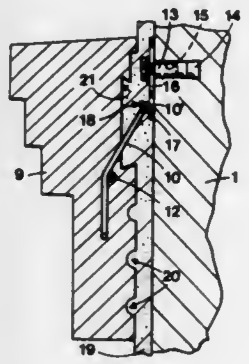
Jean-Paul Gandillon, 26 rue de Montbrillant, CH 1201 Geneva, Switzerland

Filed Mar. 31, 1983, Ser. No. 480,838

Claims priority, application Switzerland, Apr. 2, 1982, 2057/82

Int. Cl.^{4} B44F *7/00*

U.S. Cl. 52—311 **3 Claims**



1. Material for decorative reliefs on walls of buildings, comprising in combination, an assortment of prefabricated decorative elements (**3**, **4**, **5**, **3′**, **4′**, **5′**, **6**, **7**, **7′**) made of stone, each possessing a flat surface which is placed against a surface of adhesive mortar which is inserted between each of said elements and a wall (**1**) of a building, each of said elements having at least one engaging device (**10**, **10′**) accessible from said flat surface, supporting devices (**13**) each presenting a first means (**14**) anchoring said device in said wall (**1**) of said building to abut against said wall, and second means (**15**, **16**, **17**, **18**) arranged so as to be adjustable vertically and horizontally on the said first means (**14**) and shaped so as to co-operate with the engaging devices (**10**, **10′**) of the decorative elements, said engaging devices (**10**, **10′**) being interlocked with said supporting devices (**13**) previously anchored in said wall of said building so that said wall supports the weight of said decorative elements and maintains said decorative elements in position against said wall of said building, said first and second means being completely concealed between the decorative elements applied to a facade and the facade itself.

4,619,094

NON-PENETRATING MECHANICAL FASTENER FOR ROOFING MEMBRANE AND METHOD OF APPLYING SAME

James H. C. Yang, Cleveland, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Dec. 11, 1985, Ser. No. 807,632

Int. Cl.^{4} E04D *1/34, 5/14*

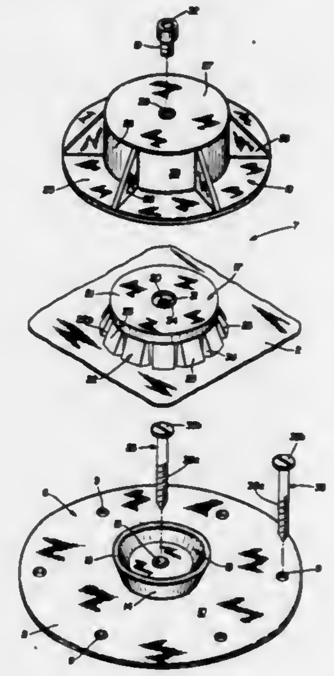
U.S. Cl. 52—410 **22 Claims**

1. A mechanical fastener for securing a flexible elastomeric sheet to the upper surface of a roof; said fastener including:

(a) a base plate formed with an upwardly extending projection adapted to be secured to the upper surface of the roof and underlie the elastomeric sheet;

(b) anchoring means for securing the base plate to the upper surface of the roof;

(c) resilient retainer means mounted on the base plate projection for engaging the elastomeric sheet located between said retainer means and projection;



(d) cap means mounted on the retainer means by a force-fit engagement with the retainer means for placing and maintaining the retainer means in a compressed state for clamping the elastomeric sheet between said retainer means and projection; and

(e) locking means for locking the cap means on the retainer means to maintain the elastomeric sheet in clamped engagement between the base plate projection and retainer means.

4,619,095

REVERSIBLE PANEL ARRANGEMENT

Kenneth A. Johnston, Mitcham, Australia, assignor to Kenross Nominees Proprietary Limited, Victoria, Australia

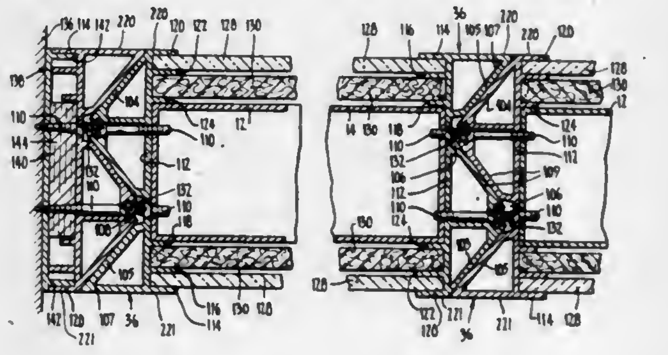
PCT No. PCT/AU80/00074, § 371 Date May 28, 1981, § 102(e) Date May 28, 1981, PCT Pub. No. WO81/01027, PCT Pub. Date Apr. 16, 1981

Continuation of Ser. No. 620,544, Jun. 18, 1984, abandoned, which is a division of Ser. No. 269,045, May 28, 1981, abandoned. This PCT application Oct. 2, 1980, Ser. No. 810,541

Claims priority, application Australia, Oct. 2, 1979, PE0732; Apr. 1, 1980, PE3150; May 8, 1980, PE3466

Int. Cl.^{4} E04C *1/0*

U.S. Cl. 52—595 **15 Claims**



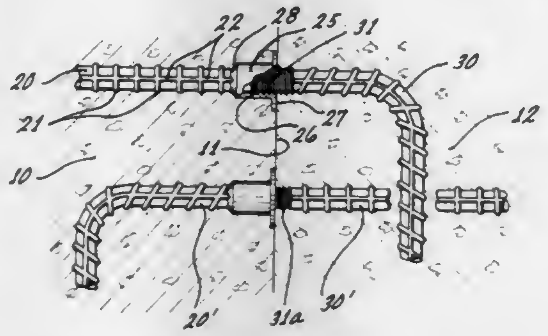
1. A panel comprising a frame having first and second side walls formed parallel to one another and defining a space therebetween, and an edge member secured to said frame

between said first and second sidewalls, said edge member comprising:

first and second flat exterior planar side surfaces formed parallel to one another and defining a space therebetween;

an elongated section having in cross section a first planar flat surface extending from one of said flat exterior planar surfaces of said edge member inwardly into said space and being inclined at an acute angle with respect to said one of said planar side surfaces, a second planar flat surface extending from the other flat exterior planar surface of said edge member inwardly into said space between said surfaces of said edge member and being inclined at an acute angle with respect to said other palnar side surface, one of said first and second planar flat surfaces extending inwardly from its adjoining side surface toward said frame and the other of said planar flat surfaces extending inwardly into said space from its adjoining side surface away from said frame, and a third planar flat surface forming with the planar surface extending away from said frame a male portion and forming with the planar surface extending toward said frame a female portion, said male and female portions engaging corresponding male and female portions of a identical edge member to guide said corresponding planar inclined surfaces into closely abutting relationship.

4,619,096
REBAR SPLICING AND ANCHORING
Harry B. Lancelot, III, Hurst, Tex., assignor to Richmond Screw Anchor Co., Inc., Richland Hills, Tex.
Filed Jan. 15, 1981, Ser. No. 225,206
Int. Cl.^{4} E04C *3/30*
U.S. Cl. 52—726 **8 Claims**



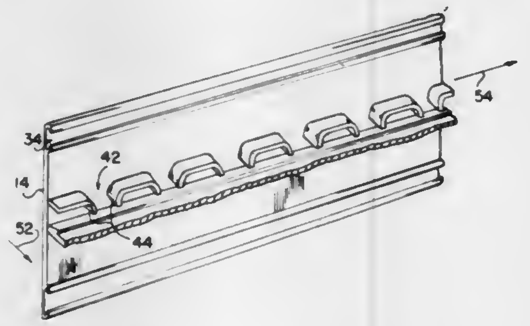
1. A rebar splice, for splicing two rebars, both of which are embedded in concrete, each being a long bar having rib means for impeding turning in and pull-out from the concrete, the splice comprising:

a receiver head unitary with (secured) to one end of one of the rebars, having a threaded bore and an end face whose external surface is flush with an external, temporary concrete surface;

a threaded male head integral with and at one end of the other rebar and being inserted into and threadedly received directly by the receiver, and to be embedded in concrete, except for the threaded head, and

said rebars having embedded in different concrete structure portions which have been made at different times so that a first one of the rebars has been embedded first in one of the concrete structure portions, a respective second rebar having been threaded to the first one rebar prior to also being embedded in the other one of the concrete structure portions.

4,619,097
THERMALLY INSULATED COMPOSITE FRAME MEMBER AND METHOD FOR MANUFACTURE
Joseph A. Trummer, Atlanta, and El. L. Coulston, Norcross, both of Ga., assignors to Kawneer Company, Inc., Atlanta, Ga.
Filed Jul. 29, 1985, Ser. No. 759,692
Int. Cl.^{4} B29D *27/04;* E04B *1/62*
U.S. Cl. 52—730 **16 Claims**



1. A thermally insulated composite structural framing member for use in window and curtain wall systems and the like, comprising:

and inner elongated structural element;

an outer elongated structural element, said elongated structural elements being positioned in adjacent spaced-apart relation with their longitudinal axes being substantially parallel;

upper and lower longitudinal walls projecting from mutually facing portions of each of said elongated structural elements to define opposing longitudinal channels;

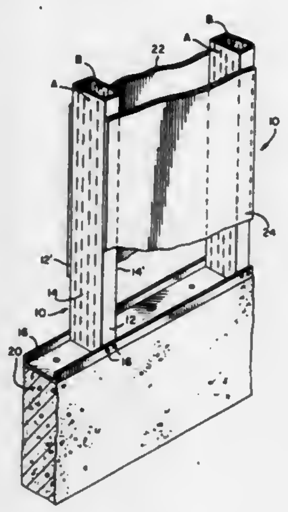
a plurality of substantially lateral tabs depending from each of said upper channel walls to protrude inwardly of each of said opposing channels;

a connector of relatively low thermal conductivity formed in situ in said pair of opposing channels to substantially encapsulate said tabs and connect said inner and outer structural elements such that said tabs are embedded in said connector to prevent transverse displacement of said elongated structural elements with respect to said connector; and

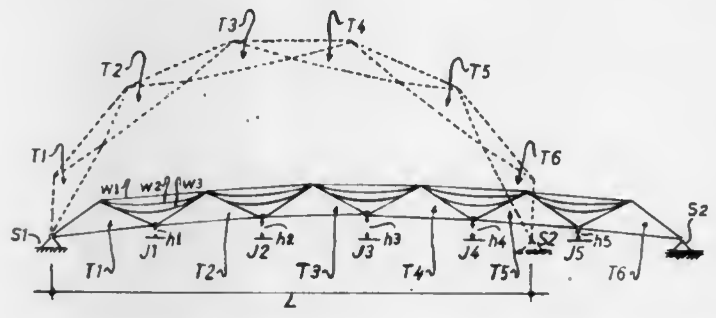
mechanical means associated with each of said opposing channels for preventing lateral displacement of said elongated structural elements with respect to said connector.

4,619,098
METALLIC STRUCTURAL MEMBER PARTICULARLY FOR SUPPORT OF WALLS AND FLOORS OF BUILDINGS
Lawrence H. Taylor, P.O. Box 49-58, 48th Street Station, Union City, N.J. 07087
Filed Oct. 19, 1984, Ser. No. 662,505
Int. Cl.^{4} E04C *3/32;* E04B *1/88*
U.S. Cl. 52—738 **4 Claims**

1. A structural metallic member particularly useful for forming interior and exterior wall, floor and ceiling support means of building structures consisting of a hollow, generally quandrangular in transverse cross-section stud consisting of at least three contiguous walls with the middle of the at least three walls being provided with a multiplicity of parallel, spaced, longitudinal rows of longitudinally spaced slits, said slits having a width of about 15,000ths of an inch to thereby reduce transmission of heat and sound there across and to prevent convection of air currents therethrough, alternate rows of slits being staggered such that the longitudinal spaces of one row are positioned substantially midway of the length of the slits of adjacent rows thereby further reducing sound and heat transmission across said at least three walls.



4,619,099
METHOD OF ERECTING ARCHED STRUCTURES
Oscar Sircovich, 5 Cremieux St., Jerusalem, Israel
Filed Aug. 17, 1984, Ser. No. 641,600
Claims priority, application Israel, Aug. 19, 1983, 69530
Int. Cl.^{4} E04B *1/32, 1/35;* E04H *12/18*
U.S. Cl. 52—745 **8 Claims**



1. A method of erecting arched structures consisting of a plurality of rigid structured members, comprising the steps of:

(a) lining up on a flat surface in an upright position a series of structural members, each member forming a generally triangular truss having a base with two free ends and an apex at a point located above the base;

(b) pivotally connecting to each other adjacent ends of the members to form a continuous, interconnected row of members on the surface;

(c) tying to each other adjacent apexes by a plurality of cables of progressively increasing lengths, made of an elastically deformable material;

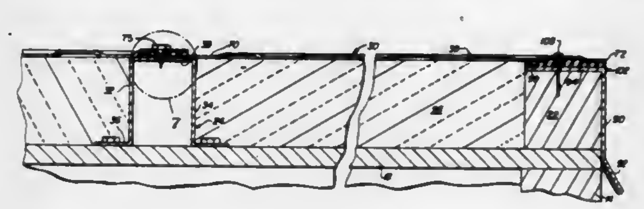
(d) hingedly supporting the free end of the first-in-line member;

(e) hingedly as-well-as slideably supporting the free end of the last-in-line member to enable sliding movement thereof along the surface in the direction of the hinge support;

(f) applying a force against the sliding support to cause its sliding movement while the row of members becomes erected into an arched form above the surface, and the shortest of each of the number of cables become taut; and

(g) maintaining the erected form of the row of members until the longest of each of the number of cables becomes elastically taut while the shorter cables become plastically deformed.

4,619,100
METHOD FOR FABRICATING A WATER IMPERVIOUS ROOF MEMBRANE
Robert T. Emblin, 5150 E. Paradise Dr., Scottsdale, Ariz. 85254
Continuation of Ser. No. 274,492, Jun. 17, 1981, abandoned.
This application May 8, 1984, Ser. No. 608,349
Int. Cl.^{4} E04D *1/00*
U.S. Cl. 52—748 **22 Claims**



1. The method of installing a roofing system on a load bearing deck, said method comprising the steps of:

(a) securing a supporting frame structure including a plurality of elongated support members on top of the deck;

(b) a portion of the support members extending across the deck in laterally spaced, parallel relationship with respect to each other and extending upwardly from the deck by a defined height;

(c) installing rigid panels of insulation between the parallel support members up to said defined height to provide a substantially continuous top surface over the top of the parallel elongated support members and the insulation disposed therebetween;

(d) providing an outer skin section having parallel outer edges and dimensioned to overlap the parallel support members disposed on either side of the rigid insulation;

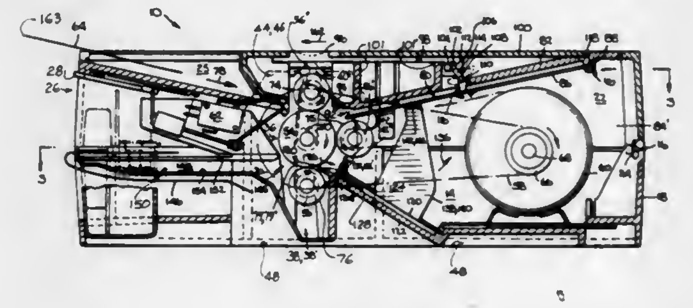
(e) freely disposing the outer skin section over the top surface of the insulation without bonding thereto with the outer edges of the outer skin section being registered with said parallel support members;

(f) fixedly securing the outer edges of the outer skin section to said parallel support members with mechanical fastener means;

(g) applying sealant means over the mechanical fastener means and outer edges of the skin section to produce a seal having watertight integrity along the securely fixed parallel outer edges on top of said parallel support members;

(h) whereby the outer skin section is allowed to freely expand and contract between said parallel support members without placing unnecessary stress on the supporting structure, thereby avoiding damage to the sealed, watertight integrity at the outer edges of the outer skin section.

4,619,101
SHEET FOLDING INSERTING MACHINE
Edward J. Havey, Jr., Stamford; Carl Miller, Fairfield, and Ted Westerman, Easton, all of Conn., assignors to Pitney Bowes Inc., Del.
Filed Dec. 16, 1985, Ser. No. 808,964
Int. Cl.^{4} B65B *63/04*
U.S. Cl. 53—117 **6 Claims**



1. A simplified sheet folding and envelope inserting machine for folding sheets of paper and inserting the folded sheets into envelopes, said machine providing operator access to the sheet

folding and inserting components to facilitate jam clearance, said folding and inserting machine comprising:

A. a housing having a lower section defining a base and an upper section defining a cover, said cover being pivotally connected to said base so that said cover can be raised and lowered relative to said base,

B. means in said cover defining an entrance slot for feeding sheets into said folding and inserting machine and means located on said base defining an exit slot for folded sheets,

C. a plurality of folding rollers mounted in said housing for receiving sheets from said entrance slot and for delivering folded sheets to said exit slot,

D. a pair of buckle chutes in said housing located adjacent said folding rollers for receiving a portion of sheets from said rollers to cause said rollers to form folds in the portion of said sheets not received within said buckle chutes, one of said buckle chutes being located in said cover and the other of said buckle chutes being located in said base,

D (1) said one buckle chute being defined by an upper wall fixedly mounted in said cover and a lower wall in spaced parallel juxtaposition with said upper wall, said lower wall being pivotally connected to said cover whereby when said cover is raised from a closed to an open position, said upper wall separates from said lower wall to expose the inside of said one buckle chute,

D (2) said other buckle chute being defined by a lower wall fixedly mounted in said base and upper wall in spaced parallel juxtaposition with said lower wall, said upper wall being pivotally connected to said base whereby said upper wall can be raised from a normal position to an open position to expose the inside of said other buckle chute.

4,619,102

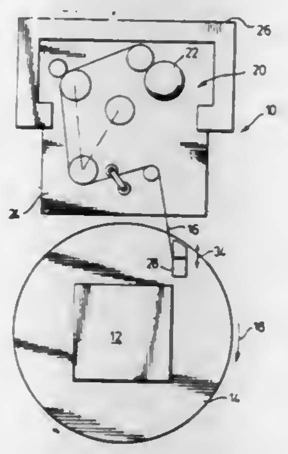
WRAPPER SEALING SYSTEM

Wolfgang Geisinger, Rosemere, Canada, assignor to Muller Manufacturing Ltd, Montreal, Canada

Filed Oct. 26, 1984, Ser. No. 665,057

Int. Cl.⁴ B65B *13/02*

U.S. Cl. 53—399 **10 Claims**



1. A method of wrapping a charge with a synthetic film comprising holding an end of a film in a clamp mounted on a moveable platform, providing an anvil, a sealing means and a cut-off means on said moveable platform, raising said anvil to a raised position relative to said platform positioning said anvil against said charge by moving said platform adjacent said charge to simultaneously move said clamp, said sealing means and said cut off means into position adjacent said charge, commencing wrapping of said film around said charge by relatively rotating said charge and a source of said film, releasing a first jaw of said clamp to free said film when said film is retained on said charge, retracting a cooperating jaw of said clamp to a retracted position clear of the path of said film while completing the wrapping of said charge with said film, wrapping a first lap of film over said anvil, moving said cooperating jaw to its initial position in overlying position to said first lap while wrapping a last lap around said charge and over said anvil and said cooperating jaw, moving said first jaw into clamping position relative to said cooperating jaw and securing said first lap to said last lap over said anvil, cutting said last lap between said anvil and said clamp and moving said anvil to a lowered position clear of said film.

8. An apparatus for wrapping a charge with a film comprising a turntable for supporting said charge, a source of film, a platform mounted on said turntable for substantially horizontal movement toward and away from said charge, means for moving said platform relative to said table, an anvil mounted on said platform for substantially vertical movement between a lower inoperative position and an elevated active position, a securing means mounted on said platform, means for moving said securing means to a position to cooperate with said anvil when said anvil is in elevated position to seal overlying layers of said film overlying said anvil, a clamp mounted on said platform, said clamp including a pair of jaws, means to independently move each of said jaws between a clamping position and a non-clamping position clear of the path of said film, cut off means mounted on said platform in position to sever said film between said clamp and said anvil.

4,619,103

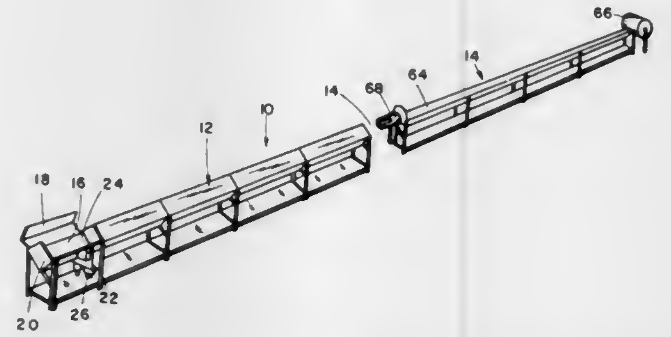
ASSEMBLY METHOD AND APPARATUS

C. Robert Kenrick, 17850 Hiawatha, Spring Lake, Mich. 49456

Filed Aug. 2, 1983, Ser. No. 519,502

Int. Cl.⁴ B65B *31/02*

U.S. Cl. 53—432 **9 Claims**



8. A method of packaging flexible hose comprising the steps of:

supporting an elongated section of flexible hose in an elongated housing; placing a movable piston in one end of said housing in peripherally sealed relationship to said housing; placing a packaging container in the second end of said housing to receive the flexible hose; applying suction to said second housing end, both inside and outside of said flexible hose, to cause a pressure differential across said piston without creating a pressure differential across the hose, and thereby causing said piston to travel from said first housing end to said second housing end for axial compression of said flexible hose into said packaging container.

4,619,104

NET BAG FORMING METHOD AND MACHINE

Gary Germunson, Yakima County, Wash., assignor to Yakima Wire Works, Inc., Yakima, Wash.

Filed Jan. 31, 1985, Ser. No. 696,723

Int. Cl.⁴ B65B *9/13*

U.S. Cl. 53—459 **22 Claims**

1. A net bag forming machine for spreading and opening continuous tubular rope net material which has been radially compacted and stored on a reel, comprising:

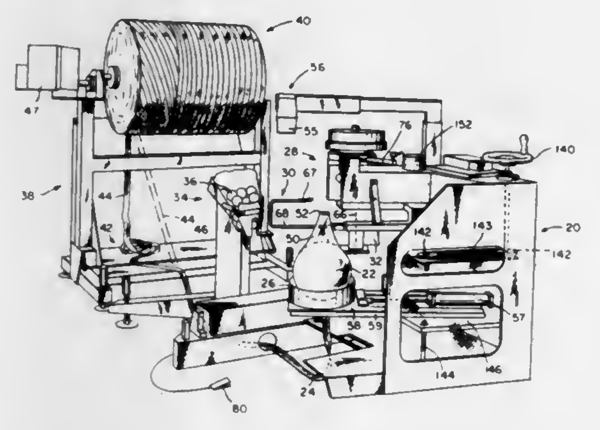
a free-floating, heavy spherical mandrel which is free to rotate about three perpendicular axes for expanding continuous rope net bag material;

a basin having a depression for entrapping the mandrel against substantial lateral movement and for supporting the mandrel; and

means within the basin for guiding the net bag material through the basin to the mandrel, wherein the mandrel slides within the tubular net bag material and is supported by the basin to spread the material for receiving articles to be bagged.

17. A method for forming tubular net bags from a reel of continuous rope net material comprising the following steps:

drawing continuous rope net material upwardly through a supporting means;



feeding the material around a free-floating spherical mandrel of sufficient weight to expand the net material to its lay-flat dimension and free to rotate about three perpendicular axes;

closing a portion of the expanded net material above the mandrel to form the bottom of a net bag;

separating the bottom of the bag from the continuous net material; and

loading the bag with a predetermined volume of articles wherein the maximum vertical distance through which the articles must fall does not exceed the length of the bag, thereby preventing bruising of delicate produce.

4,619,105

MOWING APPARATUS

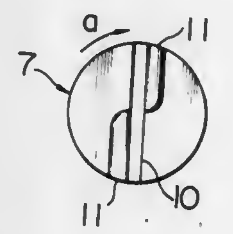
Toru Baba, Yokosuka, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Filed Feb. 4, 1985, Ser. No. 697,783

Claims priority, application Japan, Feb. 7, 1984, 59-15885

Int. Cl.⁴ A01D *34/84;* **F16B** *35/06*

U.S. Cl. 56—12.7 **3 Claims**



1. A mowing apparatus comprising:

a casing containing a cutter; and

a connecting member having a head formed with a groove on its surface for inserting a tool to tighten or loosen said connecting member, said connecting member connecting said casing from below to a driveshaft to rotate the casing in a predetermined direction;

wherein the improvement comprises:

an anterior portion having a greater height than a posterior portion formed along said groove on the surface of the head of said connecting member with respect to the direction of rotation of the casing for preventing said groove from being clogged, the upper surface of said bolt head being generally planar, and said anterior portion having a greater height constituting an elongated rib extending upwardly from said generally planar surface along a portion of the edge of said groove.

4,619,106

BALERS

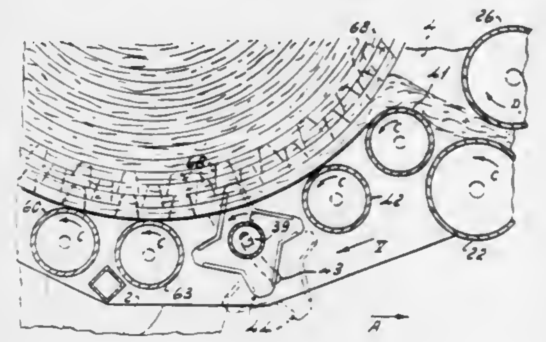
Cornelis van der Lely, Zug, Switzerland, assignor to C. van der Lely N.V., Maasland, Netherlands

Filed Nov. 29, 1984, Ser. No. 676,306

Claims priority, application Netherlands, Dec. 1, 1983, 8304137

Int. Cl.⁴ A01D *39/00*

U.S. Cl. 56—341 **45 Claims**



23. A baler comprising a pick-up device for picking up crop lying on the ground, a bale forming space and a binding mechanism for displacing a binding element inwardly of a bale thereby to interconnect layers of crop in said bale.

4,619,107

WHEEL FOR DRAWING HELICAL GROOVE RING FOR OPTICAL FIBERS

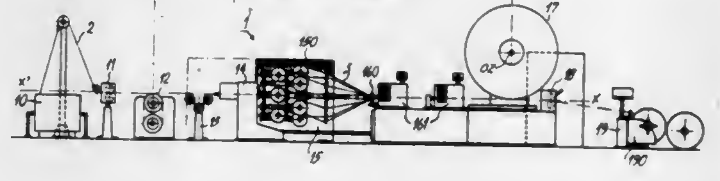
Bernard M. Missout; Jean-Pierre Michaux, and Jean-Luc A. Piova, all of Paris, France, assignors to Societe Anonyme de Telecommunications and Societe Industrielle de Liaisons Electriques, both of Paris, France

Filed May 29, 1985, Ser. No. 739,044

Claims priority, application France, May 30, 1984, 84 08531

Int. Cl.⁴ H01B *13/02;* **G02B** *6/04*

U.S. Cl. 57—6 **2 Claims**



1. Apparatus for forming an optical fiber cable including a longitudinally stretchable and shrinkable ring member (**2**) containing a plurality of parallel helical grooves (**20**) for receiving optical fibers (**3**), comprising

(a) means (**10**) for supplying an indeterminate length of the ring member to a store means (**190**);

(b) means for temporarily tensioning an intermediate portion of said ring member between said ring member supply means and said store means, thereby to stretch said intermediate portion, said tensioning means including

(1) brake wheel means (**12**) adjacent said supply means for braking the trailing end of said ring intermediate portion; and

(2) drawing wheel means (**17**) adjacent said winding means for drawing the leading end of said intermediate portion, the radius (R′) of said drawing wheel being such that

$$R' = (p^2/4\pi^2 r) - (r + h)$$

where

p=the pitch of the helical grooves
h=the depth of the helical grooves
r=the radius of a central portion of said ring member circumscribed by the bottoms of the grooves; and

(c) means (**150**) arranged between said brake wheel means and said drawing wheel means for introducing optical fibers into the helical grooves contained in said stretched intermediate portion, whereby upon shrinkage of said intermediate ring portion after passage through said tensioning means, the optical fibers have a length greater than the length of the corresponding grooves in said ring member.

4,619,108

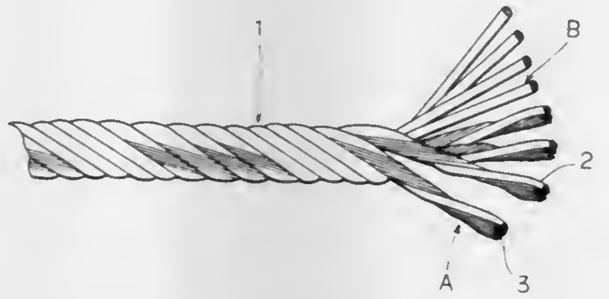
MULTIPLE STRAND TWINES COMPRISING MONOFILAMENTS AND MULTIPLE FILAMENTS, AND FISHNETS FORMED THEREOF

Keiji Hotta, Mie, Japan, assignor to Amikan Fishing Net Mfg. Co., Ltd., Yokkaichi, Japan

Filed Apr. 19, 1985, Ser. No. 725,271

Int. Cl.⁴ D04G *1/00;* **D02G** *3/02, 3/38*

U.S. Cl. 57—236 **4 Claims**



1. A multiple strand synthetic resin twisted twine comprising,

(a) a multiple strand of a plurality of multiple filaments of a synthetic resin and a monofilament of said synthetic resin twisted together in a first direction;

(b) at least one monostrand of one monofilament of said synthetic resin twisted alone in said first direction;

said first direction twisted multiple strand and said at least one monostrand twisted alone in said first direction being combined and over twisted together in a second direction opposite to said first direction.

4,619,109

METHOD AND APPARATUS FOR YARN PIECING IN A FASCIATED YARN SPINNING UNIT

Yoshihisa Suzuki, Chiryu; Yoshiharu Yasui, Toyota, and Kazuo Seiki, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Sep. 28, 1983, Ser. No. 536,886

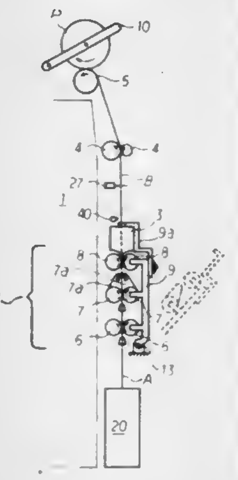
Claims priority, application Japan, Oct. 5, 1982, 57-173845

Int. Cl.⁴ D01H *15/00, 15/02, 5/28*

U.S. Cl. 57—261 **11 Claims**

1. A method of yarn piecing in a spinning unit comprising a fiber drafting mechanism having plural pairs of top and bottom drafting elements including at least back and front pairs for drafting a fibrous material into an attenuated fiber bundle, a false-twisting nozzle having a yarn passage channel extended therethrough in which the attenuated fiber bundle is false-twisted by the action of a fluid jet into a strand of yarn to be wound up in a package, and a yarn sensor for detecting a break in the yarn, said method comprising the steps of breaking off the fiber bundle in the drafting zone of the drafting mechanism leaving a broken end thereof within said drafting zone, moving said top and bottom drafting elements apart and substantially concurrently opening an axial gap extending to and along said yarn passage channel of said false-twisting nozzle to open said drafting mechanism and said channel continuously along their respective lengths, picking and drawing out a broken yarn end from the package, cutting off the yarn drawn out from the package to a predetermined length thereof as measured from said package, introducing an intermediate portion of the yarn in lateral direction into said opened fiber drafting mechanism and yarn passage channel, said predetermined length being established such that a cut end of the yarn may at least overlap said broken end of the fiber bundle within said drafting zone, moving said top and bottom drafting elements together and substantially concurrently closing said gap to close said yarn passage channel, advancing the overlapped ends within the drafting zone and then through said yarn passage channel in the false-twisting nozzle, and false-twisting said overlapped ends to thereby piece the same together within said channel.

5. In a yarn spinning unit of the false-twisting type having a fiber drafting mechanism including at least respective back and front aligned pairs of rotatable drafting elements for receiving and drafting sliver therebetween, the drafting elements in each said pair normally engaging the other drafting element of the pair, and a false-twisting nozzle aligned with said aligned pairs of drafting elements and having a yarn passage channel extending therethrough in said direction of alignment for receiving and spinning said sliver, the improvement comprising yarn piecing apparatus for piecing a broken yarn being spun in said spinning unit and comprising means for moving one of said drafting elements in each said pair thereof out of its said engagement with the other drafting element of the pair whereby all of said pairs of drafting elements are concurrently opened laterally for receiving said broken yarn when a length thereof is moved in lateral direction between all of said opened pairs, means for opening said yarn passage channel laterally along its length for concurrently receiving said length of the yarn in lateral direction within and along the length of said channel when said yarn length is moved laterally between said opened pairs of drafting elements, and means for closing said yarn passage channel and moving said opened pairs of drafting elements to their said normally engaging positions.



4,619,110

HELICOPTER ENGINE WARNING OR CONTROL SYSTEM

M. Samuel Moore, 11623 Seminole Cir., Northridge, Calif. 91324

Continuation-in-part of Ser. No. 513,458, Jul. 13, 1983, abandoned. This application May 2, 1985, Ser. No. 729,547

Int. Cl.⁴ F02C *9/28*

U.S. Cl. 60—39.091 **10 Claims**

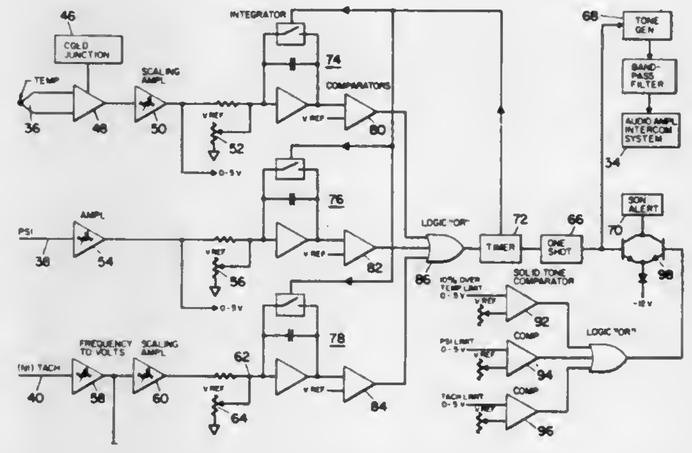
1. A helicopter turbine engine over-stress warning and protection system comprising:

a helicopter;

a helicopter turbine engine mounted in said helicopter to power the helicopter;

means for sensing at least one critical operating parameter of said helicopter engine, such as the temperature, output torque or engine speed of rotation;

means including an audio signal system for warning the helicopter pilot of incipient engine over-stressing conditions relating to at least one helicopter engine operating parameter, said means including audio output means, and circuit means for initiating operation of said audio signal output means to produce an initial warning signal when the over-stress conditions are a predetermined level below allowable limits, and for increasing the audio output and therefore the urgency of said audio warning signal as the limits, are approached;



the system further including means for automatically limiting fuel flow to the helicopter engine to avoid overstressing thereof; and

override actuation means for disabling said limiting means and permitting increased fuel flow to the helicopter engine under emergency conditions;

whereby a helicopter pilot may be warned of dangerous engine stressing conditions despite preoccupation with helicopter maneuvering matters.

4,619,111

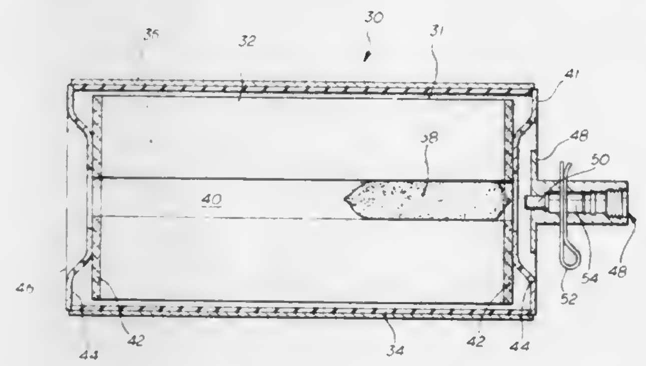
OILFIELD CLOSING DEVICE OPERATING SYSTEM

Jack Whiteman, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Filed Sep. 7, 1984, Ser. No. 648,533

Int. Cl.⁴ F01B *29/08*

U.S. Cl. 60—632 **19 Claims**



1. A system for generating pressurized hydraulic fluid to operate an oilfield apparatus comprising:

an oilfield closing device means for closing the oilfield apparatus,

a solid propellant gas generator means for generating high pressure gas when actuated,

a pressure vessel containing hydraulic fluid,

a first conduit connected between the output of said gas generator means and the pressure vessel,

a second conduit having a check valve therein connected between said pressure vessel and a closing port of a hydraulically driven piston of said oilfield closing device, and

actuating means for actuating said gas generator means, operably causing said high pressure gas to be conducted via said first conduit to force hydraulic fluid in said pressure vessel under pressure via said second conduit to said closing port, said check valve in said second conduit operably preventing fluid pressure in the closing port of said oilfield closing device from feeding back to said pressure vessel.

4,619,112

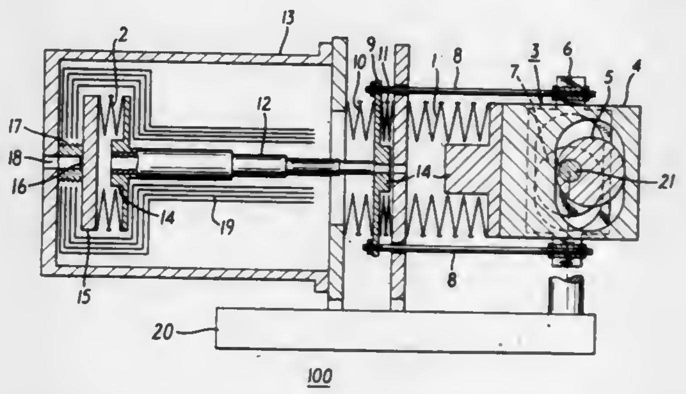
STIRLING CYCLE MACHINE

Stirling A. Colgate, Los Alamos, N. Mex., assignor to Colgate Thermodynamics Co., Princeton, N.J.

Filed Oct. 29, 1985, Ser. No. 792,689

Int. Cl.⁴ F25B *9/00*

U.S. Cl. 62—6 **30 Claims**



1. A Stirling cycle machine comprising: first and second variable-volume, compression-expansion chambers containing a gas; a regenerator interconnecting the first and second chambers for conducting the gas therebetween; and means for driving the first and second chambers, the regenerator having one or more channels each defined by spaced-apart channel walls supported by wall members having a relatively low longitudinal thermal conductivity and comprising a heat capacity material of a relatively high specific heat, the regenerator having a plurality of longitudinal sections of predetermined length, the channels having a uniform predetermined channel wall spacing and thickness of the heat capacity material in each section, wherein the machine is adapted to operate with the gas in the first chamber at a higher temperature than the gas in the second chamber and the length of each section and the thickness of the heat capacity material in each section progressively decrease in the direction from the second chamber to the first chamber and the spacing of the channel walls and the lateral extent of the channels in each section progressively increase in the direction from the second chamber to the first chamber.

4,619,113

PROCESS AND INSTALLATION FOR COOLING A POWDER BY MEANS OF A REFRIGERATING FLUID

Gérard Dubrulle, Lambersart, and Alain Roullet, Villejuif, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Jun. 20, 1985, Ser. No. 747,013

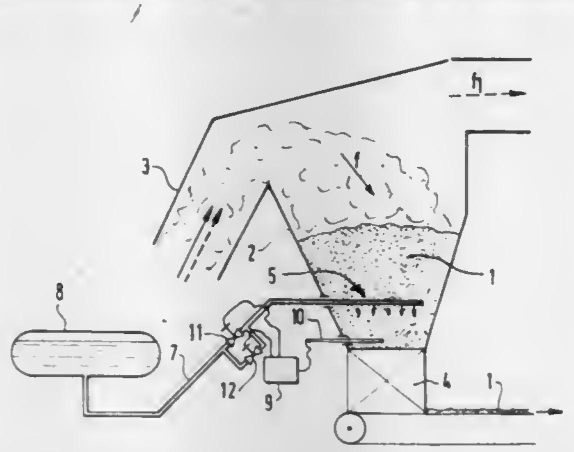
Claims priority, application France, Jun. 22, 1984, 84 09810

Int. Cl.⁴ F25D *17/02*

U.S. Cl. 62—64 **21 Claims**

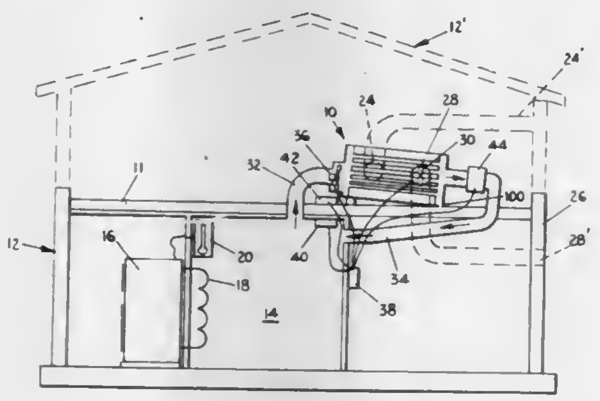
1. A process for cooling a mass of powder contained in a fixed receiving hopper by means of a refrigerating fluid, comprising injecting the refrigerating fluid in the liquefied state through an injection device having a plurality of orifices

within the mass of powder contained in the hopper and substantially below the surface of the mass of powder so that the



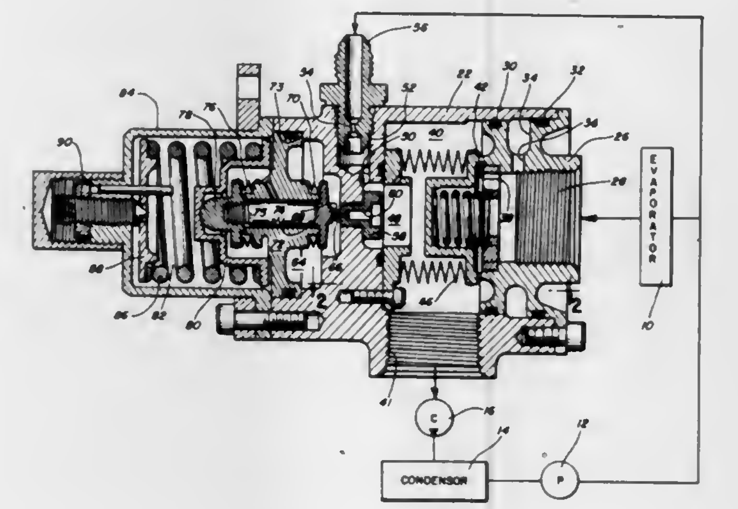
refrigerating fluid directly contacts the mass of powder while the refrigerating fluid is still in the liquefied state.

4,619,114
AUXILIARY OUTSIDE AIR REFRIGERATING MECHANISM
Ralph Wilson, 10739 Chicago Dr., Zeeland, Mich. 49464
Filed Oct. 15, 1985, Ser. No. 787,625
Int. Cl.⁴ F25B *25/00*
U.S. Cl. 62—180 **16 Claims**



1. An auxiliary outside air refrigerating means for a refrigerated storage room such as a cooler or the like comprising:
a heat exchanger having two pairs of inlets and outlets for receiving and re-circulating air supplies from two separate sources and a heat exchange means for transferring heat between the two air supplies without admixing the two air supplies, a first inlet and outlet being connected to the air in the storage room, a second inlet being connected to a source of outside air;
a storage room air fan for re-circulating storage room air through the heat exchanger;
an outside air fan for circulating outside air through the heat exchanger; and
control means for automatically actuating the storage room air fan and outside air fan whenever both the cooler temperature rises to a first predetermined temperature indicative of an upper storage room limit and the outside air temperature is no greater than a second predetermined temperature below the upper storage room limit, the control means de-actuating at least one of the fans whenever the storage room temperature drops to a third predetermined temperature indicative of any lower storage room limit, the first predetermined temperature setting being below any fourth predetermined temperature setting for actuating a conventional storage room refrigeration unit, such that the storage room refrigeration unit does not operate as long as the auxiliary outside air refrigeration means is effectively cooling the air in the storage room.

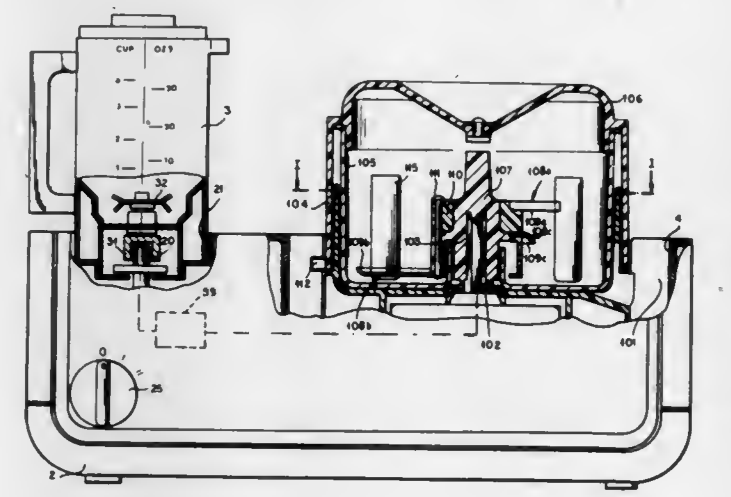
4,619,115
BACK PRESSURE REGULATING VALVE
Kent Weber, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.
Filed May 30, 1985, Ser. No. 739,212
Int. Cl.⁴ F25B *41/04*
U.S. Cl. 62—217 **10 Claims**



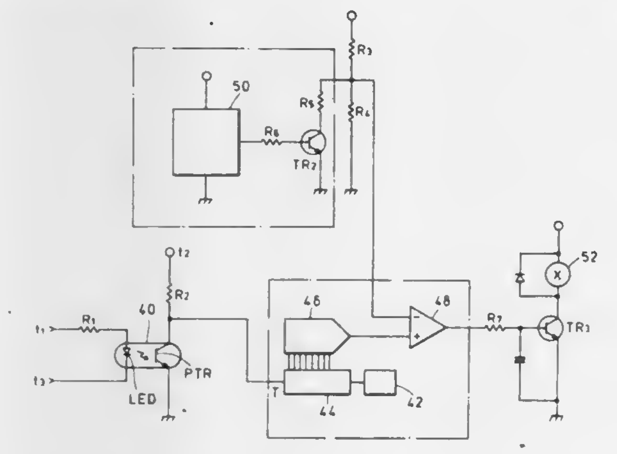
1. An evaporator system including:
an evaporator;
a condenser upstream of the evaporator;
a compressor connected to said condenser; and
a back pressure regulating valve downstream of the evaporator to regulate the pressure in the evaporator, said valve comprising:
a housing having an inlet connected to an evaporator and an outlet connected to said compressor;
a valve seat within said housing and functionally interposed between said inlet and said outlet;
a poppet within said housing and mounted for movement therein toward and away from said seat by a bellows, said bellows defining an expandable chamber, which when expanding, moves said poppet toward said seat;
a control fluid inlet to said chamber and connected to said evaporator on the upstream side thereof;
a control fluid outlet for said chamber;
a pressure responsive valve for controlling control fluid flow from said fluid outlet;
means including a fluid connection to said inlet, for applying an opening force to said pressure responsive valve; and
means for applying a closing force to said pressure responsive valve.

4,619,116
APPARATUS FOR MAKING ICE CREAM
Guido Cristante, Omegna, Italy, assignor to I.P.E. Nuova Bialetti S.p.A. Industria Prodotti Elettrodomestici, Crusinallo di Omegna, Italy
Filed Apr. 9, 1984, Ser. No. 598,371
Claims priority, application Italy, Apr. 13, 1983, 20559 A/83
Int. Cl.⁴ A23G *9/00*
U.S. Cl. 62—233 **2 Claims**

1. An apparatus for making ice cream comprising:
a housing formed with an upper surface and provided with a pair of spaced-apart upwardly open generally cylindrical recesses;
respective shafts journaled in said housing and coaxial with said recesses;
means forming a blender received in one of said recesses and including a blender container adapted to receive an ice cream mixture, and a blender blade engageable on the shaft of said one of said recesses for rotation thereby;
a treatment vessel in the other of said recesses for receiving said mixture following preparation thereof in said blender for subjecting same to stirring to transform the mixture into ice cream;
a stirrer in said vessel engaged on said shaft of said other recess and including at least three blades in a substantially equispaced relationship including an outwardly and forwardly curved upper blade extending in a sense of rotation of said stirrer and formed with a downwardly turned trailing edge,
an outwardly and forwardly curved lower blade extending in said sense of rotation and having an upwardly turned trailing edge, and an outwardly and forwardly curved intermediate blade between said upper and lower blades and formed with a trailing edge extending from a plane of said intermediate blade;
a variable speed motor in said housing operatively connected to said shafts; and
control means on said housing operatively connected to said motor for operating at least said stirrer at a plurality of different speeds in successive phases of transformation of said mixture into ice cream.

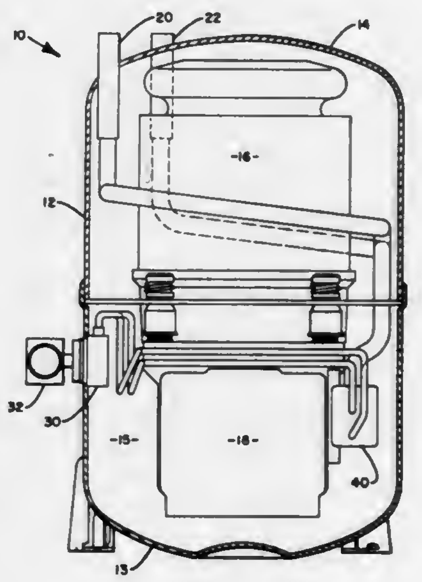


4,619,117
AUTOMATIC ICE MAKING MACHINE
Yoshinori Ito, Toyoake, Japan, assignor to Hoshizaki Electric Company, Ltd., Sakae, Japan
Filed Jan. 13, 1986, Ser. No. 818,304
Int. Cl.⁴ F25C *1/00*
U.S. Cl. 62—233 **6 Claims**



1. In an automatic ice making machine which comprises a freezing chamber formed to define a plurality of open bottom freezing cells, a water plate provided under the freezing chamber for supplying water to be frozen to spray said water into the freezing cells, a water tank provided under the water plate for storing a necessary amount of water to be frozen for one freezing cycle, a water inlet valve connected to a feed pipe for supplying water to the water tank, and a water inlet valve controlling timer circuit for controlling the opening and closing of the water inlet valve, wherein during a defrosting portion of the ice-making cycle, the water plate and the water tank are caused to be inclined downwardly so as to discharge ice cubes, said water inlet valve controlling timer circuit comprising:
first means for permitting said water inlet valve to open for a first predetermined period of time,
second means for permitting said water inlet valve to open for a second predetermined period of time which is shorter than said first predetermined period of time, and
changeover means which selects said first means only during an initial freezing cycle and switches to said second means during second and subsequent freezing cycles.

4,619,118
REVERSIBLE COMPRESSOR
Tsuwei Chu, Liverpool, and Prakash N. Pandeya, Clay, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Nov. 5, 1984, Ser. No. 668,541
Int. Cl.⁴ F25B *13/00*
U.S. Cl. 62—324.1 **10 Claims**

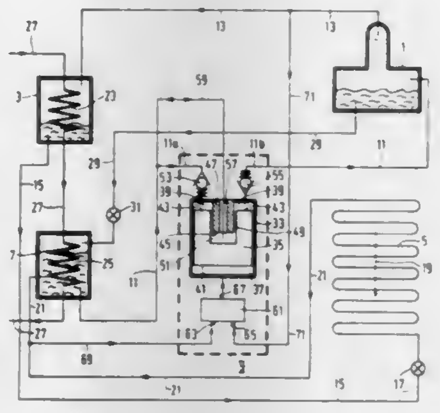


1. A reversible hermetic compressor unit comprising:
shell means;
compressor means within said shell means;
motor means within said shell means for driving said compressor means in only one direction;
valve means within said shell means;
a first fluid line extending through said shell means and connected to said valve means;
a second fluid line extending through said shell means and connected to said valve means;
a compressor discharge line extending from said compressor means to said valve means;
means for reversibly moving said valve means between a first position in which said compressor discharge line is fluidly connected to said first fluid line and a second position in which said compressor discharge line is fluidly connected to said second fluid line whereby the output of said compressor means can be selectively directed through either one of said first and second fluid lines; and
said valve means further including means for connecting said second fluid line to the interior of said shell means when said valve means is in said first position and for connecting said first fluid line to the interior of said shell means when said valve means is in said second position.

4,619,119

HEAT PUMP COMPRISING A THERMALLY DRIVEN LIQUID PUMP AND LIQUID PUMP FOR USE IN A HEAT PUMP

Kees Dijkstra, and Jan Huizinga, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 585,954, Mar. 5, 1984, abandoned. This application Jan. 29, 1985, Ser. No. 695,987
Claims priority, application Netherlands, Mar. 5, 1984, 8304359
Int. Cl.⁴ F25B *13/00*
U.S. Cl. 62—324.2 **8 Claims**

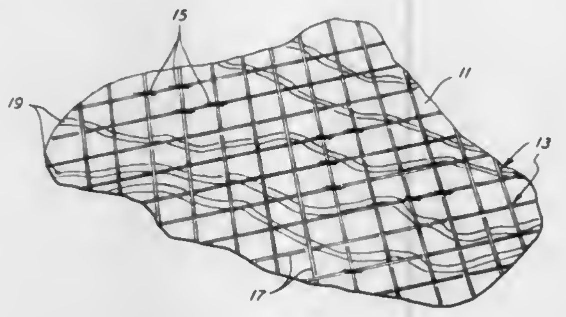


1. A heat pump comprising a first circuit in which a working medium is passed from a generator (**1**) successively to a condenser (**3**), an evaporator (**5**) and an absorber (**7**) and a second circuit in which a solution of the working medium and a solvent which is comparatively poor in working medium content is passed from the generator (**1**) to the absorber (**7**) and a solution of the working medium and a solvent which is comparatively rich in working medium content is passed from the absorber (**7**) to the generator (**1**), the transport of the rich solution from the absorber (**7**) to the generator (**1**) taking place by means of a liquid pump (**9**) arranged in a connection between the absorber (**7**) and the generator (**1**) and having a liquid piston (**35**) which is displaceable in a cylinder (**33**) in a reciprocatory manner and whose movement is reversible by means of a gas switch (**61**, **173**, **281**), which alternately connects a working surface (**41**) of the liquid piston (**35**) to gaseous working medium in the heat pump at a comparatively low and at a comparatively high pressure level, characterized in that the said working surface (**41**) constitutes a first working surface (**41**) of the liquid piston (**35**) facing a gas chamber (**37**) located in the cylinder (**33**), which piston further has a second working surface (**43**) which faces a liquid chamber (**39**) located in the cylinder (**33**) and which is smaller than the first working surface (**41**) and is separated therefrom by a liquid piston (**35**), the gas chamber (**37**) being connected to the gaseous working medium in the heat pump alternately at a comparatively low and high pressure level, whilst synchronously therewith the liquid chamber (**39**) is connected to the liquid solution in the heat pump alternately at a comparatively low and a comparatively high pressure level, which cylinder (**33**) is provided with a guide member (**47**) for the piston (**35**) arranged in the liquid chamber (**39**) and passed into a recess (**49**) in the piston (**35**), whilst an end face (**45**) of the guide member (**47**) constitutes with the recess (**49**) an auxiliary chamber (**51**) having a variable volume of liquid solution, whose pressure level at least during the delivery stroke of the liquid piston (**35**) is substantially equal to the low pressure level of the liquid solution in the heat pump.

4,619,120

DOUBLE LAYER FABRIC MATERIAL AND METHOD FOR MANUFACTURING SAME

Harry Markowitz, Great Neck, N.Y., assignor to Bruedwill, Inc., New York, N.Y.
Filed Jun. 29, 1984, Ser. No. 626,397
Int. Cl.⁴ C03B *15/14*
U.S. Cl. 66—192 **17 Claims**

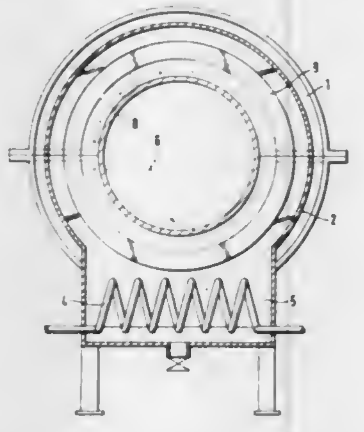


1. A double layer fabric material comprising:
a first web bearing on one side a printed design having at least one group of parallel printed elongate shapes; and
a knitted second web substantially on said one side of said first web, said second web having a multiplicity of knitted stitches penetrating and threadingly engaging said first web, whereby said second web is attached to said first web, said second web having a substantially orthogonal yarn structure with a first set of substantially parallel spaced yarns and a second set of substantially parallel spaced yarns, the yarns of said first set extending substantially perpendicularly to the yarns of said second set, said yarns having yarn sizes, yarn colors and interyarn distances coordinated with said printed design to form a visually detectable pattern different from said printed design and different from said substantially orthogonal yarn structure, one of said sets of yarns extending substantially parallel to said elongate shapes.

4,619,121

SEAL FOR TUNNEL WASHING MACHINES

Alexander Mollerus, and Robert Mollerus, both of Friedhofstr. 13, D-7128 Lauffen, Fed. Rep. of Germany
Filed Oct. 9, 1984, Ser. No. 658,601
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1983, 3337236
Int. Cl.⁴ D06F *21/02, 37/04*
U.S. Cl. 68—16 **11 Claims**

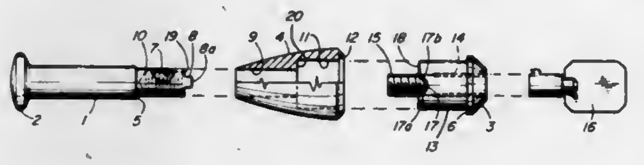


1. A rotating tunnel washing machine, comprising:
a rotatable cylindrical tunnel provided with a central region having a plurality of perforations formed therethrough;
a housing circumaxially surrounding a portion of the external periphery of the tunnel, said housing having first and second side walls, on respective sides of the tunnel central region defining an annular trough about said tunnel for retaining a washing fluid; and
first and second gaskets sealingly cooperating with said tunnel, affixed outside of the housing, the first gasket adjacent the first side wall and the second gasket adjacent the second side wall, each gasket defining an annular gasket cavity about the tunnel and provided with a section thereof maintained in fluid-tight contact with the side wall by the pressure of the washing fluid.

4,619,122

THREADABLY ENGAGED LOCKING MECHANISM

Harold N. Simpson, 10 Paul VI, Chateauquay, Quebec, Canada
Filed Dec. 24, 1984, Ser. No. 686,033
Int. Cl.⁴ E05B *67/36*
U.S. Cl. 70—34 **9 Claims**



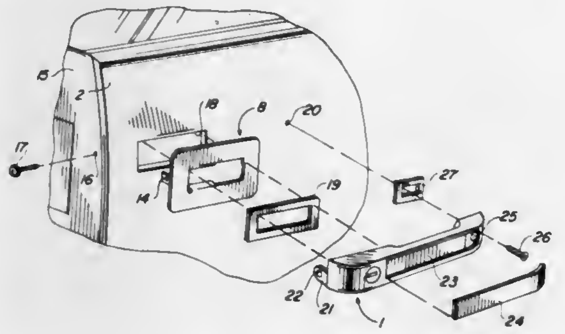
1. A threadably engaged locking mechanism comprising:
(a) a first locking element, in the form of a mushroom-headed pin, provided with a threaded portion on one end thereof;
(b) a second locking element in the form of a lock assembly mechanism having formed on said second element a complementary threaded element to the threaded portion of said first locking element;
(c) a pair of complementary longitudinally engageable rotational stop means being respectively formed on said first and second locking elements, said pair of stop means being encased in a protective casing that prevents direct access thereto from the exterior,

wherein the said pair of stop means may be drawn into interengagement by advancing the threaded engagement between said first and second locking elements; and wherein the threaded element on said second locking mechanism is attached to a key-receiving core within and lockably engageable with a housing forming part of said lock assembly and wherein said stop means associated with said lock assembly mechanism is attached to said housing.

4,619,123

GUARD PLATE AND METHOD FOR AUTOMOBILE DOOR HANDLE

Mark L. Hill, 512 So. 4th Ave., Tucson, Ariz. 85701
Filed Jan. 14, 1985, Ser. No. 691,541
Int. Cl.⁴ E05B *63/00*
U.S. Cl. 70—417 **9 Claims**

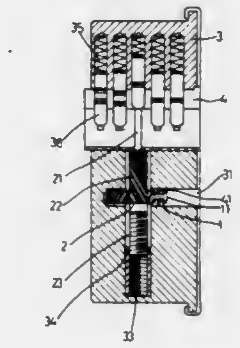


1. A mechanism for preventing unauthorized forcing of the lock of an automobile door by means of a screwdriver or the like, the mechanism comprising:
(a) a rigid guard plate having an aperture therein and having integral first and second flanges extending inwardly from opposed upper and lower edges of the aperture into an opening in an outer surface of the automobile door;
(b) a handle mechanism having a handle portion and also having an operative portion extending through the aperture in the guard plate and through the opening for actuating a latching mechanism; and
(c) means for anchoring the operative portion of the handle mechanism to an interior portion of the door and simultaneously anchoring the guard plate to the interior of the door.

4,619,124

CYLINDER LOCK WITH ANTI-PICKING DEVICE

Yau-Jung Pan, 4th Fl., No. 22, Kan Chou St., Taipei, and Sheng-Yi Chen, No. 33-1, Chung Hu Rd., 4 Lin, Ching Hu Village, Lin Kou Hsiang, both of Taiwan
Filed Sep. 16, 1985, Ser. No. 776,788
Int. Cl.⁴ E05B *17/14, 15/06*
U.S. Cl. 70—419 **3 Claims**



1. A cylinder lock with a body, a cylinder rotatably retained in said body with a keyhole extending into the cylinder to define a keyway and a plurality of spring-loaded pin tumblers, characterized in that it further comprises a mechanism to prevent a foreign object from entering said keyway, said mechanism comprising a shaft and a worm; said shaft being retained in a first tunnel in said body extending in the radial direction of said cylinder to rotate around its own axis and to shift between a first position in which one of its end extends into said keyway and a second position in which its said end is fully retracted from said keyway;
said shaft comprising three sections, including a first section for extending into the range of said keyway, a second section provided with equidistant ridges spaced around its periphery to define a gear to engage with said worm, and a threaded third section;
said first tunnel being provided with means to engage with said threaded third section so that the rotation of said shaft around its own axis is accompanied by an axial movement along its axial direction;
said worm being retained in a second tunnel perpendicular to said first tunnel to rotate around its own axis, said second tunnel having an opening on the surface of said lock, the end of said worm facing to the opening being shaped to adapt to a special tool.

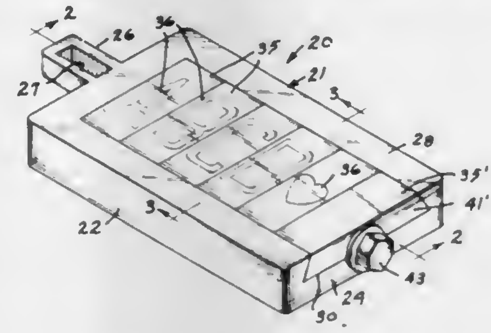
4,619,125

KEY HOLDER WITH CHANGEABLE INDICIA DISPLAY

Won H. Choi, 43 W. 27th St., New York, N.Y. 10001
Filed Jul. 6, 1984, Ser. No. 628,472
Int. Cl.⁴ E05B *19/24*
U.S. Cl. 70—460 **6 Claims**

1. A key holder apparatus comprising a body having upper and lower surfaces, first and second ends and side walls, means adjacent said first end for supporting a key from said body, a channel within said body, said channel having a pair of opposed guide walls within said body and between said upper and lower surfaces and extending from adjacent said first end thereof toward said second end, at least one slide means sup-

ported within said channel, locking means abutting at least one of said slide means for securing said slide means within said channel of said body, said locking means being selectively adjustable to permit said slide means to be removable from said body therefrom whereby preselected slide means may be selectively positioned and retained within said body of the key holder including a plurality of said slide means, at least one of said slide means having indicia displayed thereon, in which said locking means includes an elongated shaft means, said elongated shaft means having a screw threaded portion and a head portion, an elongated opening disposed between said slide means and said lower wall portion of said channel and extending from said second end towards said first end of said body, said elongated shaft means being selectively extended within said elongated opening.



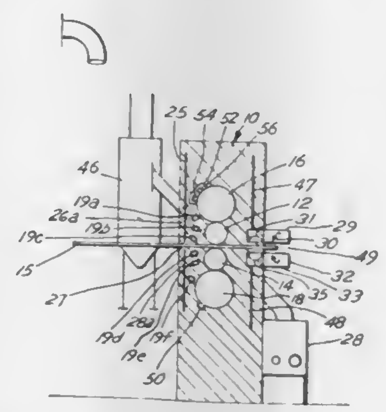
4,619,126
LUBRICANT REMOVAL SYSTEM FOR COLD ROLLING STAND

Ronald E. Kolecki, Russellville, Ky., assignor to Atlantic Richfield Co., Los Angeles, Calif.

Division of Ser. No. 720,456, Apr. 4, 1985, Pat. No. 4,552,003, which is a division of Ser. No. 521,050, Aug. 8, 1983, abandoned. This application May 24, 1985, Ser. No. 737,773

Int. Cl.⁴ B21B *9/00, 27/10, 45/02*

U.S. Cl. 72—38 **6 Claims**



1. In an apparatus for cold rolling of nonferrous metal, said apparatus of the type including a roll stand having an inlet side and an outlet side, opposed work rolls in the stand for rolling metal as the metal form passes between the rolls in a direction from the inlet side to the outlet side, coolant application means in the roll stand for applying coolant to the metal and rolls during rolling; a gas discharge assembly mounted on the stand to impinge gas on the form passing from the rolls; suction boxes mounted on the stand on opposite sides of the metal form at the outlet side of the mill at a position upstream from the gas discharge assembly, the improvement comprising, in combination; a hood collection assembly for collecting coolant and the gas from the suction boxes and from the roll stand, for separating and recovering coolant, and for supressing any combustion of the effluent coolant and gas collected by the assembly, said assembly including a shroud positioned on the inlet and outlet side of the roll stand to substantially enclose the rolled metal form in the roll stand prior to entry into the rolls and upon exit from the rolls; a plurality of suction lines connected to the suction boxes and the hood, said lines connected to a common single suction passage; at least one trap in the passage; a fluid pump upstream from the traps for drawing coolant and gas into the hood and suction boxes; a gas discharge outlet upstream from the fluid pump; combustible gas sensors located in the suction box and roll stand hood for sensing a combustible mixture in the fluid and gas mixture drawn into the assembly through fluid lines; and means for feeding a non-combustible gas into said fluid lines to suppress potential combustion.

4,619,127
ELECTROMAGNETIC FORMING METHOD BY USE OF A DRIVER

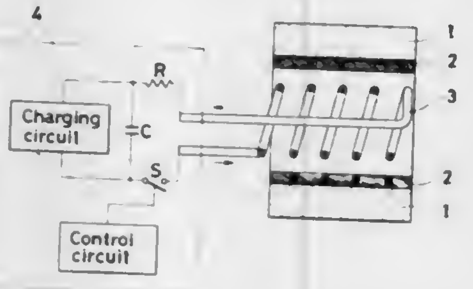
Toshio Sano, Yatabemachi; Masaharu Takahashi, Takezono; Yoichi Murakoshi, Yatabemachi, and Kenichi Matsuno, Tokyo, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Feb. 26, 1985, Ser. No. 705,524

Claims priority, application Japan, Feb. 29, 1984, 59-39056

Int. Cl.⁴ B26D *26/14*

U.S. Cl. 72—56 **6 Claims**



1. A method of electromagnetic forming, comprising the steps of:

disposing on the surface of a workpiece a driver obtained by superposing a highly electroconductive metal foil repeatedly over itself wherein said driver serves to act as a secondary coil which opposes a primary coil;

feeding an electric current to said primary coil so as to produce an induced current in said driver; and

forming said workpiece with the repulsive force generated by the induced current generated in said driver.

4,619,128
SPINDLE FOR ROTOPEENING APPARATUS

Douglas G. Harman, Pensacola Beach, Fla.; Richard A. Green, Farmington Hills, Mich., and Bruce W. Bevilacqua, Penn Township, Westmoreland County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 7, 1985, Ser. No. 731,250

Int. Cl.⁴ B24C *3/16;* **C21D** *7/06*

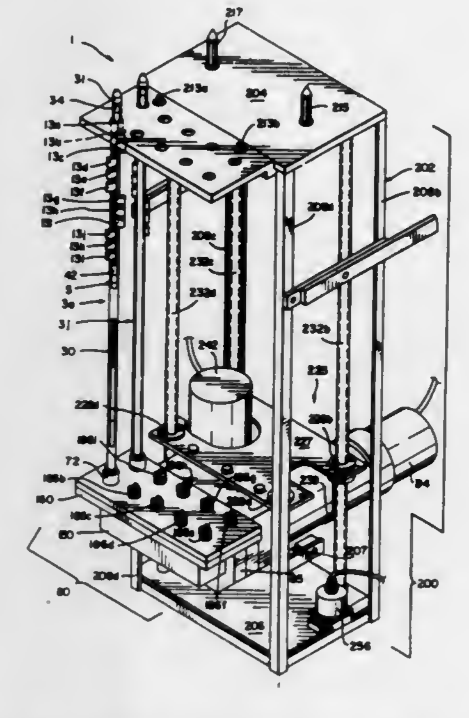
U.S. Cl. 72—53 **28 Claims**

1. A peening spindle for rotopeening the inside wall of a conduit, comprising:

(a) a rigid, rotatable and reciprocable housing having a substantially continuous outer surface with an opening along its side, said housing being insertable within the conduit;

(b) a mandrel having at least one peening means connected thereto, and

(c) bearing means located within and supported by the housing for rotatably mounting the mandrel within the housing off-center relative to the longitudinal axis of the housing with the peening means in alignment with the side opening so that said peening means rotates, reciprocates, and orbits within the conduit when said mandrel is rotated and said housing is rotated and reciprocated.



4,619,129
METHOD OF AND APPARATUS FOR FORMING BLANKS BY HYDROPLASTIC DEFORMATION

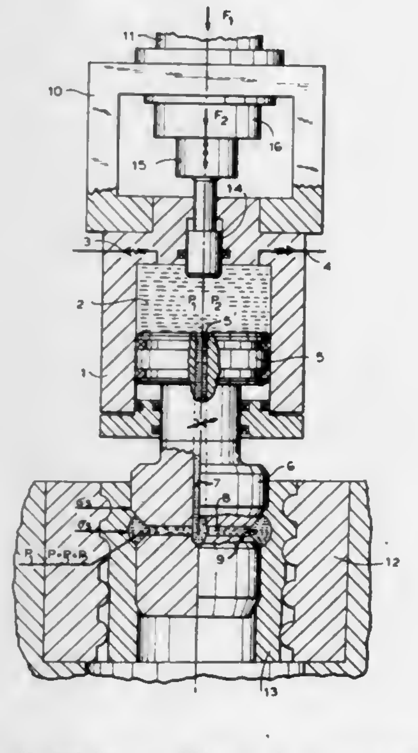
Georgi K. Petkov; Todor S. Todorov; Yordanka R. Atanassova; Nikola M. Netzov; Stefan K. Deevski; Nikola I. Radev; Botyo P. Botev; Georgi M. Metev; Ivan H. Naydenov, and Yakim N. Petrov, all of Gabrovo, Bulgaria, assignors to NPSP po Hydroplastichna Obrabotka na Metalite, Gabrobo, Bulgaria

Filed Nov. 17, 1983, Ser. No. 552,504

Claims priority, application Bulgaria, Jan. 26, 1983, 59472

Int. Cl.⁴ B21D *26/02*

U.S. Cl. 72—56 **4 Claims**



1. A method of deforming blanks by hydroplastic deformation, comprising supplying a working fluid under periodically varying high, material deforming pressure as a concentrated fluid load to a closed deformation space, said deformation space being partially bounded by a part of the surface of the blank which is momentarily to be deformed, and progressively varying the location of the part of the surface of the blank which is to be deformed until all of said surface of the blank has been subjected to hydroplastic deformation.

4,619,130
APPARATUS FOR PROVIDING A RIM ON THE TIPS OF BALLPOINT

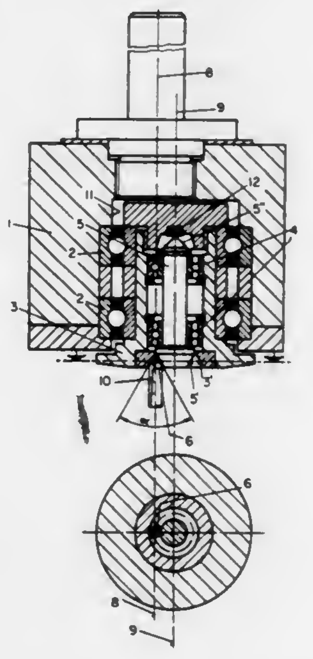
Ugo Buzzi, Arzo, Switzerland, assignor to Buzzi & Co. S.A., Chiasso, Switzerland

Filed Apr. 16, 1985, Ser. No. 723,932

Claims priority, application Switzerland, Apr. 26, 1984, 2039/84

Int. Cl.⁴ B21D *41/04*

U.S. Cl. 72—124 **4 Claims**



1. Apparatus for providing a rim on the tips for ballpoint pens even if made of a very hard material, comprising a first body (**1**) rotating about an axis (**8**) which coincides with the axis of the tip (**10**) to be provided with a rim, said body (**1**) being provided with an eccentric hole (**11**) about whose axis (**9**) a second body (**3**) rotates on first rolling means (**2**), in said second body (**3**) a pivot (**5**) rotates by means of second rolling means (**4**) supported on the inside of said second body (**3**), said pivot (**5**) being provided on its inner end (**5**″) with pushing means (**12**) and on its outer end with a first convergent conical surface (**5**′) which presses directly on the edge (**6**) of the tip to be provided with a rim with the aid of a second diverging conical surface (**3**′) joined to said second body (**5**) and such as to constitute, together with the first surface (**5**′) the angle α which is most suitable for providing a rim on the edge (**6**) of the tip (**10**) to be provided with a rim.

4,619,131
METHOD FOR BENDING SHEETS

Hans Zeman, Donaustrasse 23, Maria Enzersdorf-Südstadt, Austria

PCT No. PCT/AT80/00023, § 371 Date Feb. 26, 1981, § 102(e) Date Feb. 26, 1981, PCT Pub. No. WO81/00222, PCT Pub. Date Feb. 5, 1981

Continuation of Ser. No. 243,942, Feb. 26, 1981, abandoned. This PCT application Jul. 7, 1980, Ser. No. 580,773

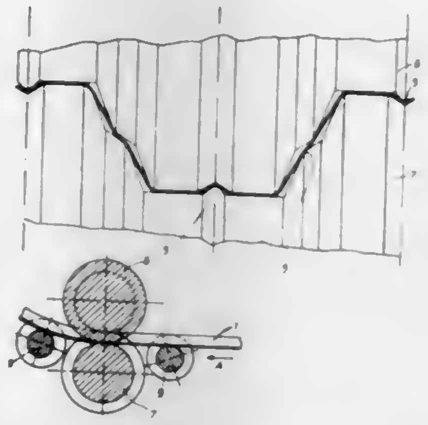
Claims priority, application Austria, Jul. 10, 1979, 4815/79

Int. Cl.⁴ B21D *5/08*

U.S. Cl. 72—173 **2 Claims**

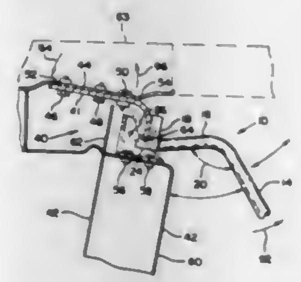
1. A process for bending a sheet metal element into an elongated self-supporting sheet metal construction panel, having inside and outside surfaces, a longitudinal axis and a transverse sectional shape continuous in the direction of the longitudinal axis, said transverse sectional shape comprising at least one trapezium section having rectilinearly arranged walls forming inner and outer beams and webs connecting the beams with the

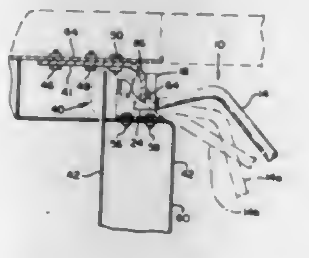
webs forming nonparallel walls and a web connecting an inner and outer beam, the height of the trapezium section being the distance between an inner and an outer beam, comprising the steps of providing a pair of rolls including a stationary roll and an adjustable roll, and at least one adjustable bending roll disposed in front or behind said pair of rolls, each of said rolls having a profile surface which corresponds to the sectional shape of the sheet metal, feeding said panel through said rolls and bending said sheet metal panel, from one end to the other in its longitudinal direction to bend, the beams and webs of said panel continuously about an axis normal to the height of said trapezium section thereby placing said sheet metal element in compressive stress, and simultaneously forming continuous longitudinal beads within said panel parallel to said longitudinal axis between those beams and webs in which the bending occurs by said pair of rolls and where upsetting of material subjected to compressive stress occurs, existing beads in any of those beams and webs being enlarged and reinforced in a form-locking manner.



4,619,132
DOOR HINGE ALIGNING TOOL

Gerald McBee, 793 West Tamarack, Hermiston, Oreg. 97838
Division of Ser. No. 512,792, Jul. 25, 1983, Pat. No. 4,555,929. This application Aug. 26, 1985, Ser. No. 769,429
Int. Cl.^{4} B21J ***13/08***
U.S. Cl. 72—458 **5 Claims**





1. A vehicle door aligning tool for use in repairing a sprung vehicle door on a hinge supported on a vehicle frame by a hinge mount having a vertically extending flange portion of a fixed width and with an exposed margin of the flange spaced closely to an adjacent inner periphery of the door, the tool comprising:

an elongated handle member; and

a generally J-shaped head member connected to an end of the handle member, the head member including:

a flat member of a first length (**74**) integrally connected on one side to the end portion of the handle member;

a base member connected to an end of the flat member and extending normal to the flat member away from the end portion; and

a terminal hook member of a second length (**76**) shorter than the first length connected to the base member at a position spaced from the flat member and extending parallel thereto so as to define the J-shape of the head member and a channel in the head member having a length extending normal to the end of the handle member and opening in a first direction radial of the handle member for engaging the margin of the flange portion of the vehicle door hinge mount in the channel;

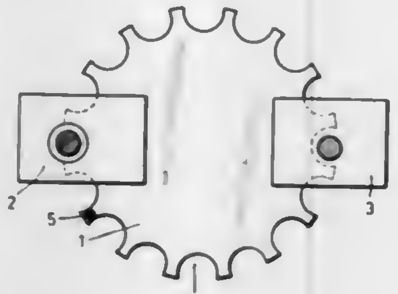
the hook member having a frontal face spaced at a spacing (**90**) across the channel to the flat member of between 0.6 and 0.7 inches so as to clear a hinge pin in the hinge mount when the head member is fitted onto the exposed margin of the hinge mount;

said second length of hook member being less than one-half the first length such that the hook member can be inserted between the flange portion of the hinge mount and an adjacent portion of the door without removing the door;

the handle member being angled in a second direction opposite the first direction so as to extend laterally behind an open door of a vehicle to enable inserting said head member between the door and door frame for engaging the hinge mount and to enable a user to move the handle member toward the vehicle to pry the hinge mount in the direction of closure of the vehicle door and thereby to realign said door with its frame when sprung.

4,619,133
SYSTEM FOR CHECKING INSPECTION MACHINES

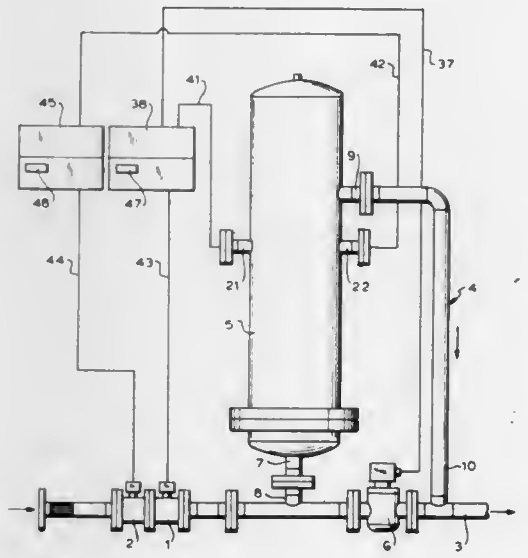
Ralf-Dieter Kautz, Bochum, and Rolf Stapelmann, Castrop-Rauxel, both of Fed. Rep. of Germany, assignors to Holstein und Kappert GmbH, Wambel, Fed. Rep. of Germany
Filed Aug. 24, 1984, Ser. No. 644,330
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1983, 3330817
Int. Cl.^{4} G01C ***25/00***
U.S. Cl. 73—1 R **8 Claims**



1. A system for checking the operational accuracy of an inspection machine, such as a bottle inspection machine, comprising at least one inspection head, and a rotatable star wheel having spaced bottle holding pockets for conducting bottles past said at least one inspection head, wherein the improvement comprises at least one checking part is arranged relative to said star wheel for movement with said star wheel during normal operation for effecting an automatic checking of the operational accuracy of said at least one inspection head, said holding pockets in said star wheel are located in angularly spaced relation around the circumferential periphery of said star wheel, and said at least one checking part is located in said star wheel at the circumferential periphery thereof and between adjacent said bottle pockets.

4,619,134
TESTING DEVICE FOR FLOW METERS

Jürgen Böhm, Mannheim-Wallstadt, Fed. Rep. of Germany, and Charles A. Schad, Tulsa, Okla., assignors to Bopp & Reuther GmbH, Mannheim, Fed. Rep. of Germany
Filed May 25, 1984, Ser. No. 614,732
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1983, 3347695
Int. Cl.^{4} G01F ***25/00***
U.S. Cl. 73—3 **10 Claims**



1. A device for testing at least one flow meter installed in a pipeline, comprising means coupled to the flow meter for delivering pulses indicative of the rate of flow of a liquid in the pipeline, a switch-over valve arranged in the pipeline downstream of the flow meter, a by-pass conduit bridging the switch-over valve, a calibration container having an inlet and an outlet connected one after the other in said by-pass conduit, a measuring piston provided in said calibration container for movement between a starting position close to said inlet and a terminal position close to said outlet of the container, a first signal releasing ring mounted on the measuring piston, a signal generator installed in the wall of the calibration container between said inlet and outlet, a second signal releasing ring arranged on the measuring piston at a fixed distance from said first releasing ring, the fixed distance being such that when multiplied by the inner cross-section of the calibration container it determines the calibration volume of the measuring path of the measuring piston, said signal generator cooperating with said first and second signal releasing rings in such a manner that when said second signal releasing ring reaches the level of the signal generator the latter produces a start signal and when the first signal releasing ring reaches the signal generator the latter produces a stop signal for a measuring cycle, and evaluation means connected to said means for delivering pulses from said flow meter, said evaluation means being connected to said signal generator for counting the pulses from the flow meter in response to said start signal and for comparing the count with the calibration volume in response to said stop signal.

4,619,135
APPARATUS AND METHOD FOR CALIBRATING ENVIRONMENT CONTROL SYSTEMS

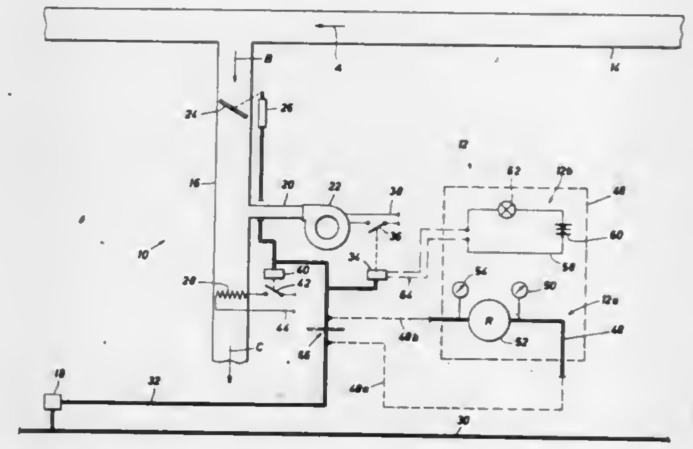
Jack D. Nunn, 802 E. 28th St., Houston, Tex. 77009
Filed Oct. 16, 1984, Ser. No. 661,360
Int. Cl.^{4} G01L ***27/00***
U.S. Cl. 73—4 R **8 Claims**

1. Apparatus for calibrating environment control equipment comprising:

a. a fluid pressure system, including a fluid pressure line having a first end and a second end opposite thereto, and connected in series along said fluid pressure line a first gauge toward said first end, a regulator and a second gauge toward said second end; and

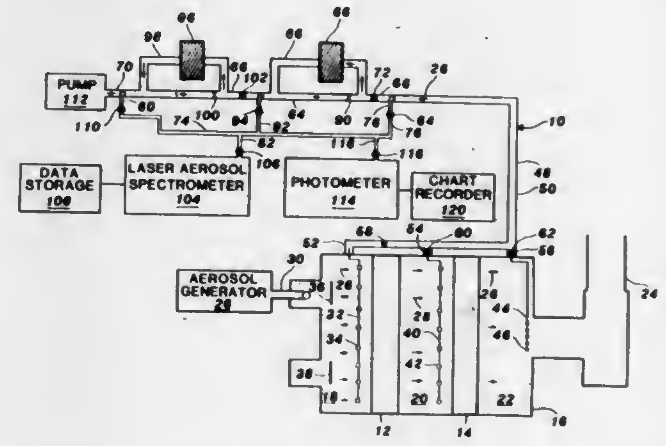
b. detector circuit means for detecting the opening and closing of electrical switches as part of said control equipment, including a power source, indicator means, and means for connecting said circuit, in series, with such an electrical switch whose condition is to be determined;

c. wherein said first and second ends of said fluid pressure system may be interposed in a fluid pressure control line as part of said environment control equipment so that said first and second gauges and said regulator are connected in series with said control line, and said means for connecting said detector circuit means may be connected across a switch whose condition is to be determined, whereupon said first gauge may determine the fluid pressure provided in the control line of the environment control equipment, and the regulator may be selectively adjusted to provide fluid pressure to one or more environment control equipment components to be regulated by fluid pressure in said control line and including said switch so that selected pressure may be so applied to such components and their configurations appropriately adjusted to cause such components to operate in response to selected pressures applied thereto along said control line.



4,619,136
APPARATUS FOR MEASURING THE DECONTAMINATION FACTOR OF A MULTIPLE FILTER AIR-CLEANING SYSTEM

John P. Ortiz, Santa Fe, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jul. 3, 1985, Ser. No. 751,412
Int. Cl.^{4} G01N ***15/08***
U.S. Cl. 73—38 **11 Claims**



1. An apparatus for measuring the overall decontamination factor of first and second filters, the first and second filters being located in a plenum having an upstream chamber, an intermediate chamber, and a downstream chamber, the first filter being located between the upstream and intermediate

chambers and the second filter being located between the intermediate and downstream chambers, said apparatus comprising:
a. an aerosol generator for producing a challenge aerosol composed of individual particles, said aerosol generator being in fluid communication with the upstream chamber;
b. an upstream collector for collecting said challenge aerosol before said challenge aerosol enters the first filter, said upstream collector being disposed in the upstream chamber;
c. an intermediate collector for collecting said challenge aerosol that passes through the first filter, said intermediate collector being disposed in the intermediate chamber;
d. a downstream collector for collecting said challenge aerosol that passes through the second filter, said downstream collector being disposed in the downstream chamber;
e. a first conduit for providing a path for said challenge aerosol, said first conduit having a main portion, an upstream portion, an intermediate portion and a downstream portion, said main portion being in fluid communication with said upstream, intermediate, and downstream portions, said upstream portion being in fluid communication with said upstream collector, said imtermediate portion being in fluid communication with said intermediate collector and said downstream portion being in fluid communication with said downstream collector;
f. an upstream valve means for controlling the passage of said challenge aerosol through said upstream collector, through said upstream portion and into said main portion, said upstream valve means being disposed in said upstream portion;
g. an intermediate valve means for controlling the passage of said challenge aerosol through said intermediate collector, through said intermediate portion and into said main portion, said intermediate valve means being disposed in said intermediate portion;
h. a downstream valve means for controlling the passage of said challenge aerosol through said downstream collector, through said downstream portion and into said main portion, said downstream valve means being disposed in said downstream portion;
i. a dilution conduit for providing a path for said challenge aerosol, said dilution conduit having entry, middle, and exit portions, said dilution entry portion being in fluid communication with said main portion;
j. a first valve means for controlling the passage of said challenge aerosol through said dilution entry portion, said first valve means being disposed in said dilution entry portion;
k. an analysis conduit for providing a path for said challenge aerosol, said analysis conduit having entry, middle, laser, and exit portions, said analysis entry portion being in fluid communication with said main portion and said analysis exit portion being in fluid communication with said dilution exit portion;
l. a second valve means for controlling the passage of said challenge aerosol through said analysis entry portion, said second valve means being disposed between said analysis entry portion and said analysis middle portion;
m. a first dilution stage for diluting said challenge aerosol, said first dilution stage being disposed between and in fluid communication with said dilution entry portion and said dilution middle portion;
n. a transverse conduit for providing a path for said challenge aerosol between said dilution middle portion and said analysis middle portion, said transverse conduit being in fluid communication with said dilution middle portion and said analysis middle portion;
o. a third valve means for controlling the passage of said challenge aerosol through said transverse conduit, said third valve means being disposed in said transverse conduit;
p. a second dilution stage for further diluting said challenge aerosol, said second dilution stage being disposed between and in fluid communication with said dilution middle portion and said dilution exit portion;
q. a fourth valve means for controlling the passage of said challenge aerosol through said second dilution stage, said fourth valve means being disposed in said dilution middle portion;
r. a laser aerosol spectrometer for detecting said individual particles, said laser aerosol spectrometer being in fluid communication with said laser portion, said laser portion providing a path for said challenge aerosol between said analysis middle portion and said laser aerosol spectrometer, said laser portion being in fluid communication with said analysis middle portion;
s. a fifth valve means for controlling the passage of said challenge aerosol through said laser portion, said fifth valve means being disposed in said laser portion;
t. a sixth valve means for controlling the passage of said challenge aerosol between said analysis middle portion and said analysis exit portion, said sixth valve means being disposed between said analysis middle portion and said analysis exit portion; and
u. a pump for facilitating the movement of said challenge aerosol within said apparatus, said pump being connected to and in fluid communication with said dilution exit portion.

4,619,137
ARRANGEMENT OF A PRESSURE-MEASURING ELEMENT

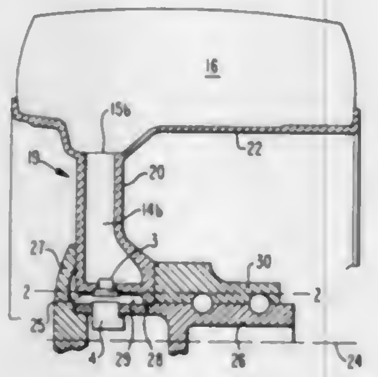
Helmuth Bott, Pforzheim, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche, Aktiengesellschaft, Fed. Rep. of Germany

Filed May 24, 1985, Ser. No. 737,436

Claims priority, application Fed. Rep. of Germany, May 26, 1984, 3419820

Int. Cl.⁴ B60C *23/04*

U.S. Cl. 73—146.5 **1 Claim**



1. An arrangement of a pressure-measuring element for an air pressure control system on a vehicle wheel having a rim, in which the measuring element is acted upon by air pressure in the hollow space of the tire and cooperates with a fixedly arranged pick-up means, an air chamber means provided on the rim side which is in communication with the tire hollow space by way of at least one air through-flow opening means, the pressure-measuring element being arranged in a closure wall of the air chamber means, said closure wall extending at least approximately parallelly with respect to one of fixed wheel hub and wheel axis of rotation, the pick-up means being held in the fixed wheel hub disposed opposite the measuring element, and an annular space separating the pick-up means from the measuring element, said annular space being closed-off between the stationary hub and the closure wall by way of an inner sealing means at the wheel and by way of a cap means adapted to be mounted from the outside.

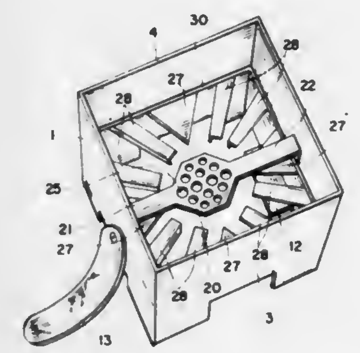
4,619,138
AIRFLOW MEASUREMENT SHROUD

Buford Ohnhaus, 9925 Lorelei NE., Albuquerque, N. Mex. 87111

Filed Dec. 19, 1984, Ser. No. 683,403

Int. Cl.⁴ G01F *15/00*

U.S. Cl. 73—198 **7 Claims**



1. Airflow measurement shroud comprising:
a substantially straight length of duct having imperforate wall means open at both ends and having a central axis;
means for seating and holding a portable airflow meter at a first end of said duct length in a position crossing the center of the cross-section of said duct, said meter having at least one measurement orifice, said position exposing a measurement orifice of said meter near said center of said cross-section;
end cutouts on opposite sides of said duct at said first end of said duct length, facing each other across said duct in a direction transverse to the seating of said airflow meter across said duct;
a central first baffle substantially perpendicular to said duct axis for breaking up central airflow jets, said first baffle having at least three apertures therethrough providing at least 30% open area, said baffle covering not more than one-ninth nor less than one-twenty-fifth of the cross-section of said duct and supported on said duct wall means so as to be located within said duct in the neighborhood of a second end of said duct length which is the opposite end thereof with respect to said first end thereof;
a multimember second baffle leaving open a central cross sectional area in said duct, located between said first baffle and said means for seating and holding said airflow meter, having members at fixed locations on said wall means substantially on a plane transverse to said axis distributed around said wall means and extending obliquely towards said axis with a component of direction towards said first baffle; and
a third multimember baffle leaving open a central cross-sectional area in said duct, located between said first baffle and said means for seating and holding said airflow meter, having members fixed at locations on said wall means substantially on a lane transverse to said axis distributed around said wall means and extending obliquely towards said axis with a component of direction towards said means for seating said airflow meter.

4,619,139
FLOW METER WITH DISPLACEABLE FLOW RATE INDICATOR

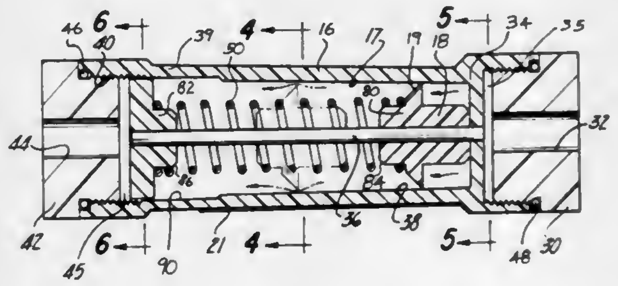
Lars O. Rosaen, Hazel Park, Mich., assignor to Universal Flow Monitors, Inc., Hazel Park, Mich.

Continuation-in-part of Ser. No. 633,649, Jul. 23, 1984. This application Jan. 4, 1985, Ser. No. 688,907

Int. Cl.⁴ G01F *1/22*

U.S. Cl. 73—198 **17 Claims**

1. A fluid flow meter comprising:
a housing comprising a peripheral wall defining an elongated hollow chamber therein and having a fluid inlet at a first end of said chamber and fluid outlet at a second end of said chamber; said peripheral wall including at least a wall portion thereof formed of a visually transparent material;
a chamber wall located in said housing and formed across one of said ends of said chamber, said chamber wall including at least one aperture therethrough;
a support body located in said housing and retained adjacent the other of said ends of said chamber, said support body including at least one aperture therethrough;
a rod extending between and mounted to each of said chamber wall and said support body;
a piston including a piston portion defining a linear peripheral demarcation aligned in profile perpendicularly to a longitudinal axis of said chamber; said piston also including a bore slidably receiving said rod therein, such that said piston is displaceably carried by said rod in a position so that said demarcation is visible through said transparent portion of said peripheral wall, and said piston portion circumferentially abuts against said peripheral wall, at said first end of said chamber; and
means for resiliently biasing said piston towards said first end of said chamber;
wherein said peripheral housing wall includes a first inner surface tapering radially outwardly from said first chamber end, and a second inner surface adjacent said support body and between said support body and said chamber wall which is radially outwardly recessed from said first inner surface so as to form a bypass about said piston when the rate of flow exceeds a predetermined rate; and
wherein said peripheral housing wall is imperforate between said chamber wall and said support body, such that said chamber is circumferentially imperforate between said chamber wall and said support body.



4,619,140
CIRCUIT ARRANGEMENT FOR THE ELECTROTHERMAL MEASUREMENT OF LEVEL

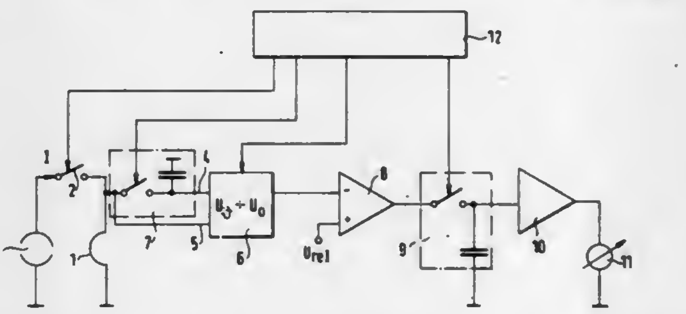
Frank Kühnel, Eschborn, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 10, 1984, Ser. No. 659,584

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1983, 3337779

Int. Cl.⁴ G01F *23/24*

U.S. Cl. 73—295 **4 Claims**



1. In an electrical measurement circuit for electrothermal measurement of a level of a liquid by use of a resistance sensor heated by a constant electric current, said measurement circuit including an evaluation circuit for evaluating a measurement voltage which is dependent on a state of immersion of the resistance sensor in the liquid, into which circuit a compensa-

tion voltage is also feedable for compensation of temperature, the improvement comprising

control means for operating said measurement circuit arrangement during a sequence of scanning periods;

means for heating said resistance sensor with a constant current during a heating interval at the start of one of said scanning periods;

means for detecting a measurement voltage from said resistance sensor at the start of the heating interval and at the end of the heating interval;

means coupled to said detecting means for storing a value of the measurement voltage detected at the start of the heating interval to serve as a compensation voltage; and wherein

said evaluation circuit includes means for forming a quotient of the measurement voltage, detected at the end of the interval, divided by the compensation voltage during each scanning period.

4,619,141

INSPECTION APPARATUS FOR SLIDE FASTENERS

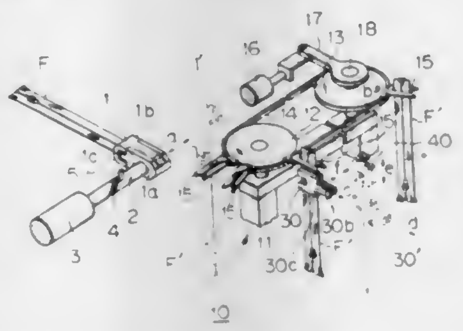
Keiichi Yoshieda, and Yuusei Sassa, both of Toyama, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Oct. 3, 1985, Ser. No. 783,667

Claims priority, application Japan, Oct. 17, 1984, 59-216407

Int. Cl.⁴ G01M *19/00*

U.S. Cl. 73—865.9 **7 Claims**



1. An apparatus for inspecting slide fasteners comprising:

a slide fastener suspension device having a horizontal rotary member provided with a plurality of equally-spaced clips for supporting each of said slide fasteners in a suspended condition, and a drive means adapted to intermittently rotate said horizontal rotary member;

a first gripper which is provided at a first position along a movement path of said horizontal rotary member and which is adapted to feed in succession said slide fasteners to said clips of said suspension device in a suspended condition; and

a second gripper which is provided at a second position along said path of said horizontally rotating member and which is adapted to remove said slide fasteners from said clips in succession;

said path of said horizontal rotary member between said first position and said second position providing a visual inspection region for said slide fasteners.

4,619,142

EMITTED VIBRATION MEASUREMENT DEVICE AND METHOD

Gary L. Gisler, Glendale, Ariz., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 3, 1984, Ser. No. 657,310

Int. Cl.⁴ G01M *1/16*

U.S. Cl. 73—462 **16 Claims**

1. A method for measuring the vibrational forces produced by a reaction wheel assembly due to the rotor and bearing components and their imbalance and imperfections comprising:

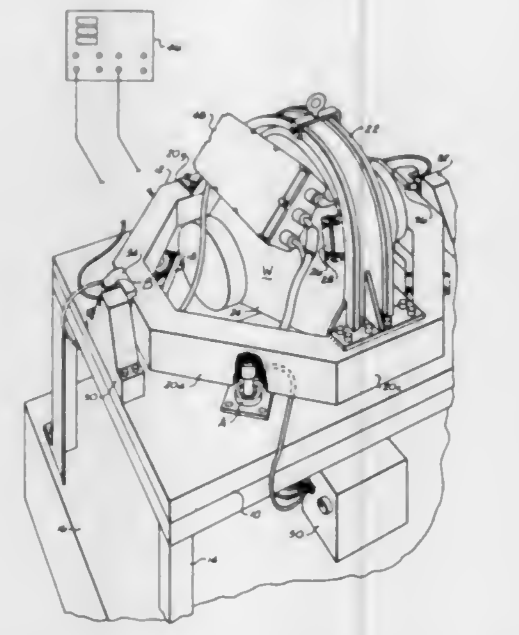
providing a large mass base;

providing a low mass carriage adapted for carrying said reaction wheel assembly out of contact with said base;

supporting said carriage on said base by means of air bearing supports at locations spaced about said carriage to provide a generally frictionless support of said carriage on said base along vertical axes;

connecting said carriage and base together by means of load cells at location different from said location of said air bearing supports having a sensing axis in a plane generally parallel to said base so that the only physical coupling between said carriage and base is through said load cells; and

analyzing the signals produced by said load cells to identify the rotor components and bearing components causing the vibrational forces.



4,619,143

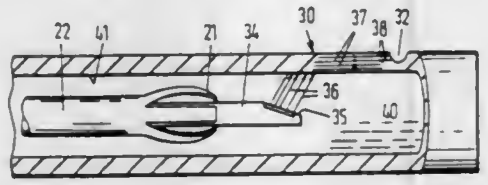
APPARATUS AND METHOD FOR THE NON-DESTRUCTIVE INSPECTION OF SOLID BODIES

Ferdinand M. J. Franken, GJ Biervliet, Netherlands, assignor to Dow Chemical (Nederl) B.V., Terneuzen, Netherlands

Filed Aug. 24, 1984, Ser. No. 643,915

Int. Cl.⁴ G01N *29/04*

U.S. Cl. 73—598 **11 Claims**



1. An apparatus for nondestructively inspecting a wave transmitting solid, said apparatus comprising in cooperative combination (a) means for generating transverse surface waves in the solid which have sufficiently different frequencies such that they travel at different depths through the solid; (b) means for receiving at least a part of a reflected portion of the surface waves; and a detector means for measuring the reflected portion of at least two surface waves having sufficiently different frequencies such that the reflected portion of these waves indicate the severity of a wave reflective discontinuity in the solid body, said apparatus characterized by utility for discriminating the location of discontinuities in the solid concealed from the surface adjacent the wave generating means.

4,619,144

METHOD OF AND APPARATUS FOR GAS PRESSURE MEASUREMENT BY THE GAS-FRICTION PRINCIPLE

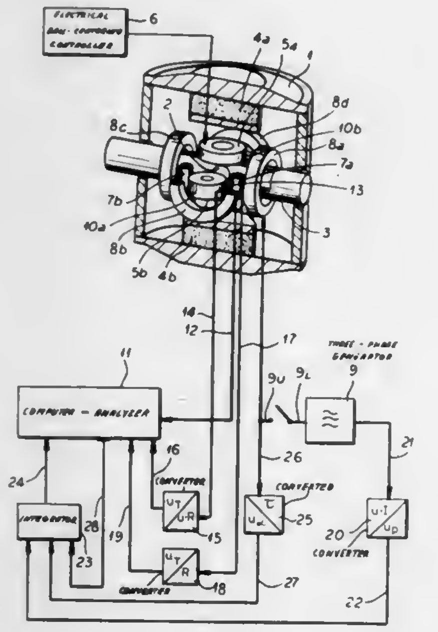
Johan K. Fremery, Bonn; Bernd Lindenau, Jülich, and Klaus Witthauer, Aachen-Vorheide, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich, Jülich and RWD-Datentechnik GmbH, Aachen, both of, Fed. Rep. of Germany

Filed Aug. 19, 1985, Ser. No. 767,170

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1984, 3431517

Int. Cl.⁴ G01L *19/04*

U.S. Cl. 73—708 **6 Claims**



1. In a process for measuring the pressure in a gas with a gas-friction vacuum meter, in which a rotating body is suspended contact-free in a magnetic field in a measuring head between a plurality of drive coils, said rotating body being set in rotation with the aid of said drive coils and being maintained in said rotation at a rotation frequency above a given predetermined minimum rotation frequency, wherein a decrease of the rotational speed of said rotating body occurring as a result of gas friction is compensated by energization of said drive coils with changes of current flow in said drive coils made by a three-phase generator, and with at least one rotation speed sensor arranged in said measuring head, which detects and responds to said rotational frequency of said rotating body, and the sensor output signals from said rotation speed sensor are transmitted to an electronic analyzer unit, which ascertains from the timely change of said rotational frequency said pressure of said gas surrounding said rotating body, the improvement which comprises feeding to said electronic analyzer unit a temperature signal representing the temperature of said gas surrounding said rotating body in such a way that the measurement of said pressure of said gas is corrected for the influence of heat transferred to said gas by the operation of said rotating body.

4,619,145

APPARATUS FOR MONITORING SOLIDS FEED, DRY SOLIDS FLOW

Russell S. Girgenti, So. Hamilton, Mass., assignor to Auburn International, Inc., Danvers, Mass.

Filed Oct. 9, 1984, Ser. No. 658,585

Int. Cl.⁴ G01F *1/74*

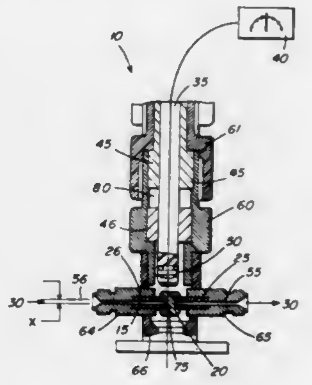
U.S. Cl. 73—861.04 **3 Claims**

1. A non-intrusive apparatus for detecting dry solids flow, having a critical flow cross section of less than 0.2 square inches, comprising:

means defining a critical flow path including a friction sensitive electrode with a bore and a first means for insulating the electrode from electrical interference;

means defining an exterior flow path communicating with said critical flow path; and,

electrode lead and readout means communicating with the friction sensitive electrode means for monitoring charge transfer created by friction within the friction sensitive electrode, said electrode lead including a second means for insulating the electrode from electrical interference;



and wherein said electrode lead means further includes an electrically conductive spring communicating with said friction sensitive electrode, said spring adapted to absorb any force applied to the first insulating means during alignment.

4,619,146

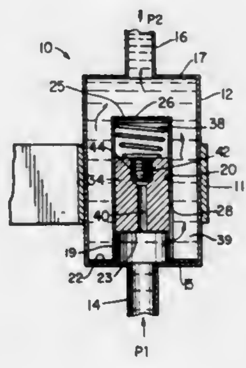
FLOW METER

Ionel E. Teodorescu, Rego Park, N.Y., and William Banko, 1496 Mayflower Ave., Bronx, N.Y. 10461, assignors to William Banko, Bronx; Henry E. Allen, Mamaroneck and Morris H. Shamos, Bronx, all of, N.Y.

Filed May 22, 1981, Ser. No. 266,622

Int. Cl.⁴ G01F *1/24*

U.S. Cl. 73—861.54 **15 Claims**



1. A fluid flow meter comprising:

a housing;

a hollow cylinder within said housing said cylinder having a slot therein;

a piston located within said cylinder, said piston having magnetic properties;

inlet means for conveying a fluid having a flow to be measured into said housing to one end of said cylinder, the fluid moving the piston within said cylinder independent of gravity and spatial orientation to locations related to its flow and exiting through the slot;

outlet means for conveying fluid exiting from the slot out of the housing; and

a Hall effect transducer fixed in a position for producing an electrical signal corresponding to the position of the moving piston in said cylinder.

4,619,147

LOAD CELL HAVING FLAMEPROOF FUNCTION

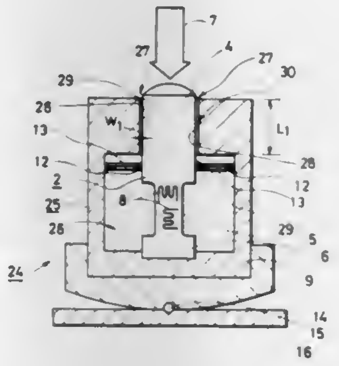
Shigeo Yoshimura, Kawanishi; Yoshiaki Shimada, and Hitoshi Kimura, both of Nara, all of Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Sep. 10, 1984, Ser. No. 648,894

Claims priority, application Japan, Nov. 21, 1983, 58-180805[U]; Nov. 21, 1983, 58-220008; Nov. 29, 1983, 58-226610; Nov. 29, 1983, 58-226611; May 15, 1984, 59-97908; May 15, 1984, 59-97909

Int. Cl.⁴ G01L *1/26, 1/22*

U.S. Cl. 73—862.38 **18 Claims**



1. A load cell having a flame proof function, comprising: a load cell body including a fixed mounting portion, a load/electric signal converting portion for converting a load into an electric signal, and a load receiving portion connected with said load/electric signal converting portion of said load cell body for receiving said load and transmitting the same to said load/electric signal converting portion in a predetermined load direction; flame proof enclosure means directly and exclusively containing said load cell body and having an opening for outwardly exposing said load receiving portion and for permitting free movement of said load receiving portion in said opening, said fixed mounting portion of said load cell body being secured to said enclosure means; said load cell body having a first surface in the vicinity of said opening of said enclosure means, said first surface having a predetermined length, and said opening of said enclosure means having a second surface facing said first surface and extending along a length corresponding at least to said predetermined length, said first and second surfaces extending substantially in parallel to each other, said first and second surfaces being spaced from each other for defining a predetermined gap between said first and second surfaces, said gap having a predetermined gap width and a gap length corresponding to said length of said second surface, said gap width and said gap length being selected to keep energy of an explosion caused in said enclosure means within the interior of the enclosure means for preventing a flame propagation out of said enclosure means.

4,619,148

ELECTROMECHANICAL APPARATUS FOR CONVERSION OF FORCE TO ELECTRIC SIGNAL

Sándor Kovács, Budapest, Hungary, assignor to Vasipari Kutato es Fejleszto Vallalat, Hungary

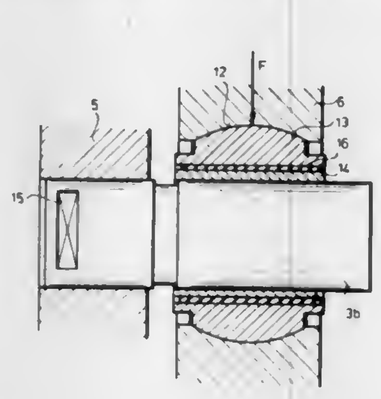
Filed Apr. 9, 1984, Ser. No. 598,501

Claims priority, application Hungary, Apr. 7, 1983, 1206/83

Int. Cl.⁴ G01L *1/04*

U.S. Cl. 73—862.62 **6 Claims**

1. Electromechanical apparatus for the conversion of a force to an electric signal comprising a member for receiving a force (F) to be measured, measuring sensors (3A, 3B, 3C) each having a member for transferring a reaction force, fitting surfaces formed between the member for receiving the force (F) to be measured and the measuring sensors (3A, 3B, 3C) for allowing multi-directional displacement, said member for transferring the reaction force is rigidly clamped, characterized in that said multi-directional displacement includes axial displacement and the fitting surfaces allowing axial displacement are formed as the outer surfaces of a shaft and inner surfaces of a bushing (14) and an insert (13) in each of the measuring sensors (3A, 3B, 3C).



4,619,149

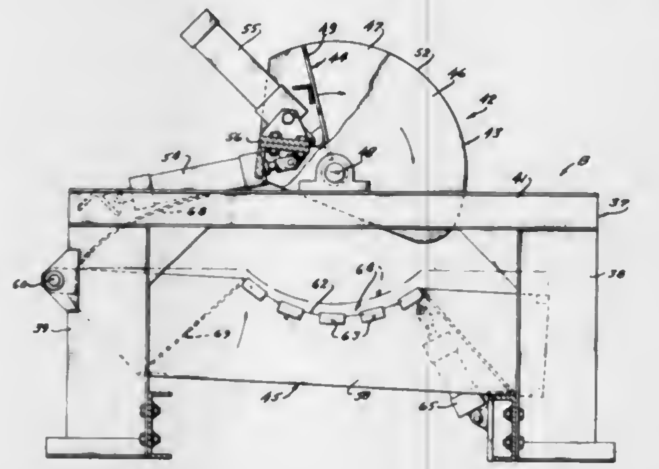
BELT CONVEYOR CROSS-STREAM SAMPLING SYSTEM

John B. Long, 421 Heron Hill Dr., Louisville, Tenn. 37777

Filed Jan. 2, 1985, Ser. No. 688,394

Int. Cl.⁴ G01N *1/12, 1/20*

U.S. Cl. 73—863.91 **14 Claims**



1. In combination with a belt conveyor having a conveyor belt for conveying bulk material disposed thereon and drive means for said belt, sample taking means movable across said conveyor belt for removing a cross-stream increment of bulk material therefrom, said sample taking means including plate means for segregating therebetween a cross-stream increment of bulk material as disposed on said conveyor belt and impeller means for removing the thus segregated cross-stream increment of bulk material from said conveyor belt, and contour means for modulating the normal troughing of said conveyor belt and supporting and conforming said conveyor belt to the operative course of said sample taking means as it moves across said conveyor belt.

4,619,150

SLIDING GEAR FOR SPEED-CHANGING TRANSMISSION

Pedro Wiggenhauser, Hagnau, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany

Continuation of Ser. No. 652,145, Sep. 17, 1984, abandoned, which is a continuation of Ser. No. 249,692, Mar. 31, 1981, abandoned. This application Aug. 19, 1985, Ser. No. 767,241

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012778

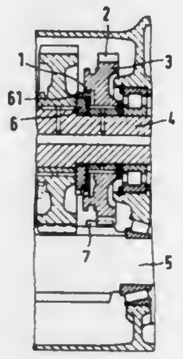
Int. Cl.⁴ F16H *3/04, 3/38, 57/00*

U.S. Cl. 74—332 **3 Claims**

1. In a speed-changing transmission including a driving gear,

an output shaft arranged for rotation in a first sense under the action of said driving gear, a sliding gear freely rotatably and axially displaceably mounted on said output shaft and having a set of peripheral running teeth which extend substantially radially outwardly of said sliding gear and are in permanent mesh with said driving gear, said sliding gear being further provided with a set of peripheral first clutch teeth and a coupling member fixedly mounted on said output shaft and having a set of peripheral second clutch teeth adapted to be in meshing engagement with said first clutch teeth upon an axial shift of said sliding gear along said output shaft into an engagement position in which said output shaft is rotated by said driving gear in a second sense opposite to said first sense through the intermediary of said sliding gear and said coupling member;

the improvement comprising said first clutch teeth extend between a pair of axially spaced annular surfaces formed on a sleeve constituting part of said sliding gear and into which said coupling member fits and said first clutch teeth project substantially radially inwardly of said sliding gear, said second clutch teeth extend between a pair of axially spaced faces of a disk forming said coupling member and project substantially radially outwardly of said coupling member, said first clutch teeth being formed within said sleeve, and said running teeth and said first clutch teeth have respective centerlines including with the axial direction of said sliding gear respective acute angles of inclination β_L and β_K substantially satisfying the expression



$$\beta_K=\arctan\,(r_K/r_L\ \tan\cdot\beta_L)$$

where r_K and r_L are the effective radii of said first clutch teeth and said running teeth, respectively, and said acute angles of inclination are of the same sign, whereby axial forces exerted under load upon said running teeth and upon said first clutch teeth in said engagement position of said sliding gear substantially cancel each other under both "push" and "pull" operating conditions in both senses of rotation of said output shaft, each of said first clutch teeth further having its flanks diverging by back angles $\rho<\beta_K$ of opposite signs from the center line of that first clutch tooth in the direction of said axial shift of said sliding gear into said engagement position of the latter, thereby to maintain said first clutch teeth securely engaged with said second clutch teeth, said flanks including with the centerlines of said clutch teeth back angles of opposite signs ranging between 1.5° and 6°.

4,619,151

TWO SPEED AXLE SHIFT ACTUATOR

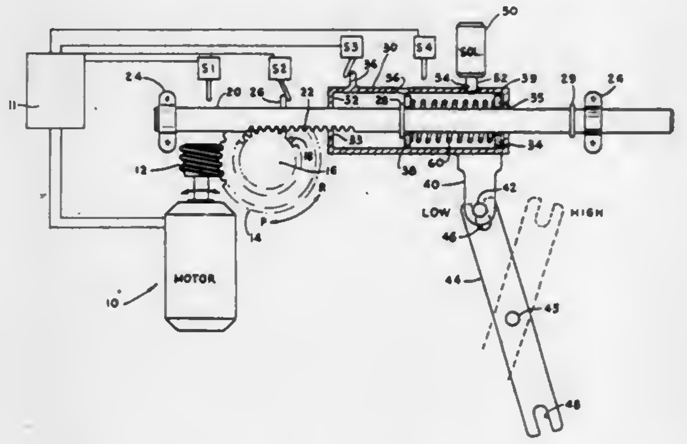
Edward G. Trachman, Birmingham, and Daniel W. Roper, Rochester, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Apr. 19, 1985, Ser. No. 725,270

Int. Cl.⁴ G05G *3/00, 17/00;* **F03G** *1/10*

U.S. Cl. 74—335 **9 Claims**

1. Reversible shifting apparatus for a two-speed axle comprising an axle unit shifting arm, a slidable spring cage connected to the shifting arm, a slidable shaft extending through the slidable spring cage, a spring surrounding said shaft in position within the cage, means fixed on the shaft at spacial part locations for compressing the spring against abutment means at opposite ends of the cage and the shaft is slid through the cage, reversible drive means connected to the shaft for driving the shaft through the cage, first locking means for locking the cage in predetermined position and second locking means for locking the shaft in predetermined position.



4,619,152

TRANSMISSION OPERATING DEVICE

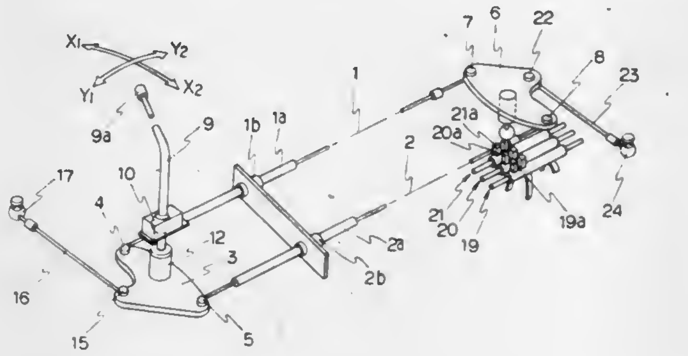
Kazuhiro Suzuki, Nishinomiya, Japan, assignor to Nippon Cable System, Inc., Takarazuka, Japan

Filed Aug. 26, 1985, Ser. No. 768,999

Claims priority, application Japan, Sep. 18, 1984, 59-195373; Oct. 17, 1984, 59-217879

Int. Cl.⁴ G05G *9/16*

U.S. Cl. 74—473 R **7 Claims**



1. A transmission operating device constructed so as to perform a shifting operation and a selecting operation of a transmission by pushing or pulling two inner wires of two control cables arranged parallel to each other, comprising:

(a) a change speed lever being supported so as to be operated in two directions perpendicular to each other and not to rotate around the axis of the lever;

(b) a connecting arm with which the two inner wires are conneced at both ends of the arm; and

(c) a cylindrical casing provided at a middle point between the two points where the two inner wires are connected with the connecting arm,

wherein the change speed lever is perpendicularly provided to the connecting arm by rotatably inserting a lower portion of the change speed lever into the cylindrical casing, the connecting arm is made to move in the direction that the inner wires are pushed or pulled by operating the change speed lever in one direction and is made to swing in the direction perpendicular to the direction that the inner wires are pushed or pulled by operating the change speed lever in the other direction perpendicular to the one direction, and the connecting arm has a rotational center so that the swinging motion of the connecting arm in the direction perpendicular to the direction that the inner wires are pulled or pushed is changed into a motion that the connecting arm rotates around the rotational center in a plane substantially parallel to the two inner wires of the two control cables.

4,619,153

VEHICLE TRANSMISSION

Jean J. Lasoen, Villepreux, France, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands

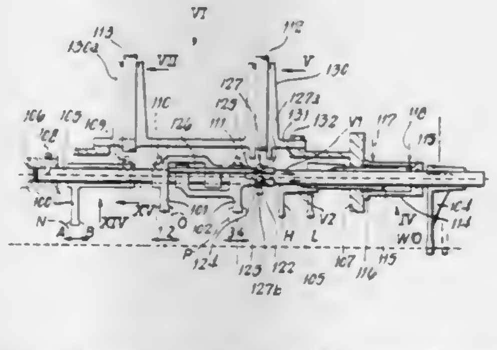
PCT No. PCT/EP84/00067, § 371 Date Nov. 2, 1984, § 102(e) Date Nov. 2, 1984, PCT Pub. No. WO84/03668, PCT Pub. Date Sep. 27, 1984

PCT Filed Mar. 8, 1984, Ser. No. 672,330

Claims priority, application United Kingdom, Mar. 15, 1983, 8307096

Int. Cl.⁴ G05G *5/10, 9/12*

U.S. Cl. 74—477 **7 Claims**



1. A vehicle transmission having a housing a multi-ratio main change speed gear set and a first range change gear set in series within the housing, selector forks for effecting speed and range changes in the transmission, a single selector fork rail on which the selector forks are mounted for axial sliding movement, rail support means and rail fastening means for supporting and fastening the rail in a stationary position within the housing and also supporting the rail for axial sliding within the housing on release of the fastening means, and an access aperture in the housing whereby, after release of the rail fastening means, the selector forks can be removed one by one from one end of the rail via the aperture on sliding of the rail within the housing.

4,619,154

CHOKE LEVER DEVICE FOR A MOTOR VEHICLE

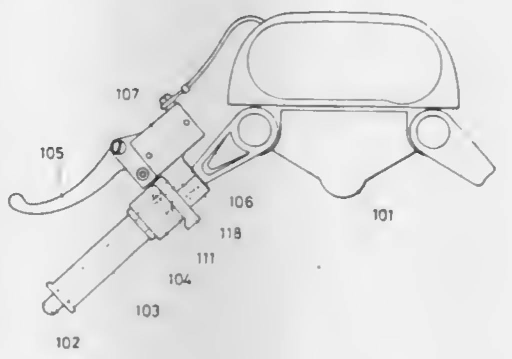
Isao Yamanaka, Saitama, Japan, assignor to Honda Giken Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 419,277, Sep. 17, 1982, Pat. No. 4,526,056. This application May 20, 1985, Ser. No. 735,517

Claims priority, application Japan, Sep. 19, 1981, 56-148147

Int. Cl.⁴ G05G *13/00*

U.S. Cl. 74—489 **4 Claims**



1. A choke adjustment lever device for a motor vehicle having a handle pipe, the improvement comprising,

a fixed handle grip fixed on said handle pipe near one end thereof,

an adjustable choke assembly having a choke lever and rotatably mounted on said handle pipe upstream of said fixed grip sufficiently near said fixed grip to permit operator thumb engagement with said choke lever while grasping said fixed grip as a fixed pivot point, wherein an adjusting amount of said choke lever increases by rotating said choke lever about said handle grip,

a switch housing mounted on said handle pipe between the upstream end of said fixed grip and said adjustable choke assembly,

and a lever positioned near said handle grip.

4,619,155

RACK AND PINION STEERING DEVICE

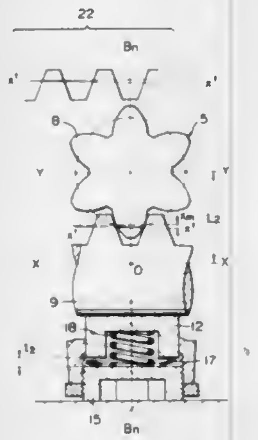
Takeshi Futaba, Yao, Japan, assignor to Koyo Jidoki Kabushiki Kaisha, Nara, Japan

Filed Apr. 15, 1983, Ser. No. 485,178

Claims priority, application Japan, Apr. 15, 1982, 57-61712; Oct. 6, 1982, 57-174668

Int. Cl.⁴ F16H *1/04;* **B62D** *1/20, 5/06*

U.S. Cl. 74—498 **9 Claims**



1. A rack and pinion device comprising: a gear housing; a pinion rotatably supported within said gear housing and connected during use of the device to a steering shaft of a vehicle; a rod-like rack connected during use of the device to a steering lever mechanism of the wheels of the vehicle, said rack having a lengthwise axis and having a group of rack teeth meshed with said pinion; and a spring device in contact with the back of said rack on the side opposite said pinion to resiliently bias said rack against said pinion; wherein said group of rack teeth includes, in symmetrical relation on opposite sides of the lengthwise center thereof, a first rack teeth portion near to and a second rack teeth portion far from said center respectively, said second rack teeth portion having a reference pitch line which is inclined so as to approach the lengthwise axis of said rack in a direction extending away from the adjacent first rack teeth portion to enable said rack to undergo flexure displacement in response to a bending pressure exerted thereon by said spring device, said spring device comprises a cylinder connected to said gear housing, said cylinder having an axis perpendicular to the axis of said pinion and defining a cylinder space which is open at one end to said rack, an end member for closing the other end of said cylinder space, a plunger slidably mounted within said cylinder space and having one end thereof in frictional engagement with the back of said rack, and first and second springs retained between said plunger and said end member to resiliently bias said plunger against said rack, and wherein the effective distance through which said first spring acts is relatively small with respect to the effective distance through which said second spring acts so that if an amount of flexure displacement in said rack is less than a predetermined value, the resultant pressure of said first and second springs is applied to said rack whereas if the amount of flexure displacement exceeds a predetermined value, only the pressure of said second spring is applied to said rack.

4,619,156

HARMONIC GEAR APPARATUS

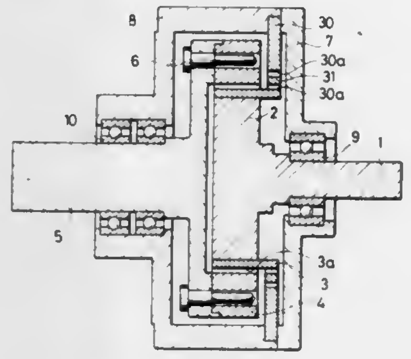
Yuichi Kiryu, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 10, 1984, Ser. No. 659,477

Claims priority, application Japan, Oct. 26, 1983, 58-202085

Int. Cl.⁴ F16H *37/04*

U.S. Cl. 74—640 **3 Claims**



1. A harmonic gear apparatus, comprising;

a circular spline of a cylindrical configuration and having a plurality of teeth on an inner periphery thereof;

a flexible spline of cylindrical configuration disposed within said circular spline and having a plurality of teeth on an outer periphery thereof which are engagable with said teeth of said circular spline, the number of teeth on said flexible spline being smaller than the number of said teeth on said circular spline;

a rotary shaft;

flexion generating means fixed to said rotary shaft and disposed within said flexible spline in contact with an inner periphery thereof, said flexion generating means operating to sequentially engage the teeth of said flexible spline with the teeth of said circular spline upon rotation of said rotary shaft; and

an annular flexible supporting member acting essentially as a stator and being connected to a housing of said harmonic gear apparatus, said supporting member supporting one axial end of said flexible spline in a manner such that said flexible spline is relatively freely flexible in a radial direction but relatively rigid in a circumferential direction, said flexible supporting member comprising a disk element having a first radial end attached to said housing and a second radial end connected to said flexible spline, said second radial end comprising a first annular portion connected to said flexible spline, and at least one second annular portion connected to said first annular portion by means of a set of bridging elements, said bridging elements comprising radially extending connecting portions arranged in a circumferential array.

4,619,157

SYSTEM FOR DETECTING THE TRANSMISSION RATIO IN AN INFINITELY VARIABLE TRANSMISSION

Yasuhito Sakai, Higashimurayama, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1984, Ser. No. 682,881

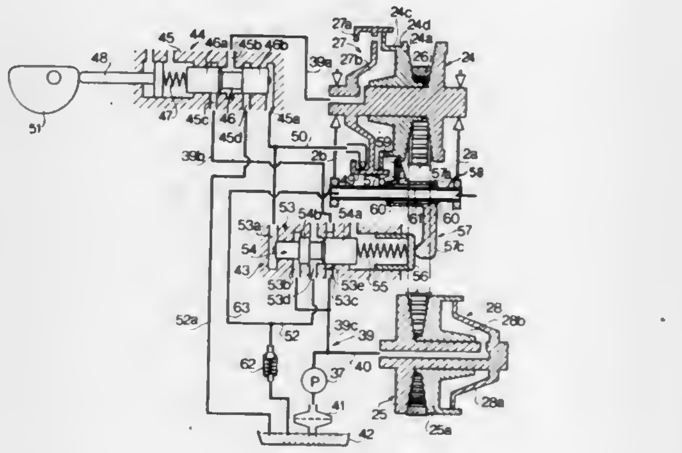
Claims priority, application Japan, Dec. 21, 1983, 58-242828

Int. Cl.⁴ F16H *11/06*

U.S. Cl. 74—689 **1 Claim**

1. An improved system for detecting the transmission ratio in an infinitely variable transmission for transmitting the power of an internal combustion engine, the transmission comprising a primary pulley having a hydraulically shiftable disc and a hydraulic cylinder for shifting the disc, a secondary pulley having a hydraulically shiftable disc and a hydraulic cylinder for operating the disc of the secondary pulley, a belt engaged with both pulleys, a hydraulic circuit having a pump for supplying oil, a transmission ratio control valve responsive to engine speed for controlling the oil and for shifting the disc of the primary pulley to change the transmission ratio, and a pressure regulator valve having a spool responsive to the transmission ratio for increasing the line pressure of the hydraulic circuit with an increase of the transmission ratio, and a spring held by a retainer for urging the spool in a direction, wherein the improvement comprises:

a sensor slidably mounted on a guide tube so as to move in parallel with the axial direction of the primary pulley;



the sensor having a sensor head engaged with the disc of the primary pulley and an arm engaged with the retainer so as to shift the spool in dependency on the movement of the disc of the primary pulley to control the line pressure; and

a lubricating system comprising passages provided in the guide tube and the sensor so as to communicate a part of the hydraulic circuit with an end opening of the passage of the sensor for lubricating contact surfaces of the head of the sensor and the disc of the primary pulley.

4,619,158

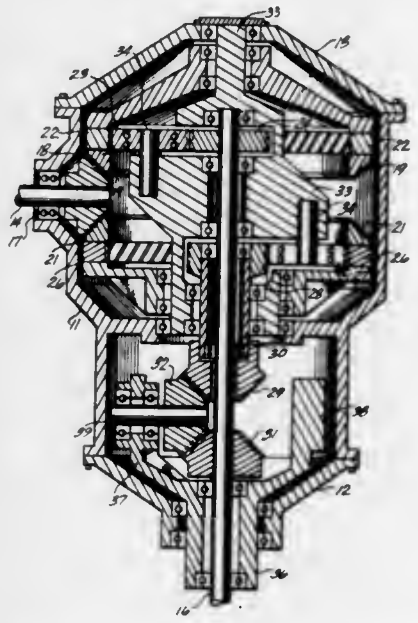
BALANCED STEERABLE TRANSMISSION

Donald F. Nelson, 7560 Kentwood Ct., Gilroy, Calif. 95020

Continuation of Ser. No. 153,177, May 27, 1980, abandoned. This application Feb. 3, 1983, Ser. No. 463,479

Int. Cl.⁴ F16H *37/08*

U.S. Cl. 74—695 **4 Claims**



1. A balanced steerable power transmission comprising:

an input shaft;

an output shaft;

a steerable yoke pivotable about an axis coaxial with the output shaft;

a first drive train comprising a first ring gear coupled to the input shaft and to a first planetary gear, the first planetary gear being coupled to a first sun gear connected directly to the output shaft for coupling the input shaft to the output shaft;

gear means carried by the steerable yoke;

means for coupling the output shaft to the gear means carried by the yoke;

a second drive train comprising a second ring gear coupled to the input shaft and to a second planetary gear, the second planetary gear being coupled to a second sun gear, the second sun gear being coupled to the gear means on the yoke for coupling the input shaft to the gear means in equal magnitude and opposite sense to the coupling of the first drive train to the output shaft so that there is no net rotational force on the steerable yoke in response to rotation of the input and output shafts; and

a pivotable spider interconnecting said first and second planetary gears for coordinating precession of said planetary gears.

4,619,159

WRENCHING UNIT FOR USE IN POWER THREADING OF A SLEEVE PORTION TO A PIPE PORTION USED IN MAKEUP OF OIL WELL CASINGS OR THE LIKE

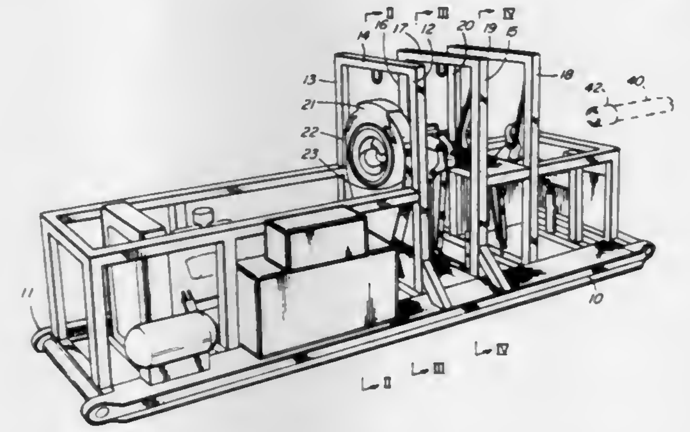
Stanley Kurek, Box 67, Fort Kent, Alberta, Canada

Filed Apr. 18, 1985, Ser. No. 724,666

Claims priority, application Canada, Feb. 4, 1985, 473492

Int. Cl.⁴ B25B *13/50*

U.S. Cl. 81—57.34 **11 Claims**



1. A wretching unit for applying a threaded collar portion to a threaded end of a tubular portion for use in an oil well casing, said wrenching device comprising, in combination:

(a) a power tong section including a drive unit for rotating said power tong section about a generally horizontal axis of rotation in a predetermined direction and clamp means for fixedly but releasably clamping the power tong section to one of said tube portion and said sleeve portion to transmit the rotation of said power tong section to a first one of said portions in order to thread or release same onto or from the other one of said portions;

(b) backup tong means including a backup tong section generally coincident with said axis and comprising clamping means for fixedly but releasably clamping the backup tong section to the other one of said portions, and anchoring means adapted to prevent rotation of the backup tong section when the backup tong section is engaged with the other one of said portions about said axis;

(c) said power tong section and said backup tong section being secured to a supporting frame such that the power tong section and the backup tong section are displaceable relative to each other, referring to the said axis in (1) a normally generally horizontal and axial direction, (2) in a normally generally horizontal and radial direction, and (3) in a normally generally vertical and radial direction when the tong sections are engaged with the sleeve portion and with the tube portion, respectively.

4,619,160

POWER WRENCH

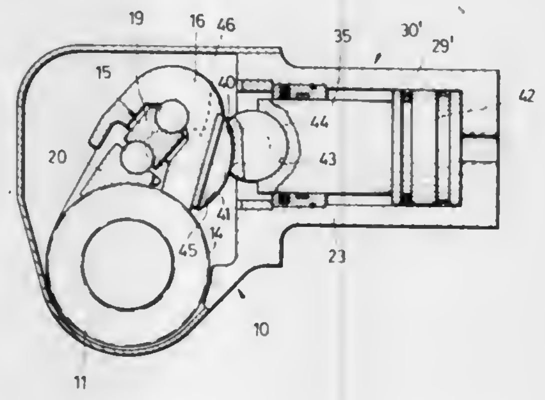
Alois Meyer, Neunkirchen-Seelscheid, Fed. Rep. of Germany, assignor to Paul-Heinz Wagner, Much-Birrenbachshöhe, Fed. Rep. of Germany

Filed Mar. 29, 1985, Ser. No. 717,548

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1984, 3413202

Int. Cl.⁴ B25B *13/46*

U.S. Cl. 81—57.39 **9 Claims**



1. In a power wrench of the type provided with an arm supporting a ring placeable over a wrench head, and a piston cylinder unit coupled at one end to the arm at a position on the arm distant from the ring, the piston-cylinder unit for turning a wrench head placed in said ring by moving the arm to rotate it about the axis of the ring, the improvement comprising:

a spherical bearing member located between said arm and said piston-cylinder unit, said spherical bearing member having generally oppositely disposed first and second spherical surfaces of different radii of curvature, the radius of curvature of said second spherical surface being greater than that of said first spherical surface;

a first complementary surface to said first spherical surface, said first complementary surface located at said first end of said piston-cylinder unit and slidably contacting said first spherical surface of said spherical bearing member; and

a second complementary surface to said second spherical surface, said second complementary surface located on said arm at said position on the arm distant from the ring and slidably contacting said second spherical surface of said spherical bearing member, contact between said spherical surfaces and their respective complementary surfaces being maintained when said piston-cylinder unit turns said wrench head.

4,619,161

SUPPORT FOR WHEEL LUG WRENCH

Keith H. Reynolds, 26 Samuel Rd., Chelmsford, Mass. 01824

Continuation of Ser. No. 688,323, Jan. 2, 1985, abandoned. This application Feb. 3, 1986, Ser. No. 825,770

Int. Cl.⁴ B25B *23/00*

U.S. Cl. 81—462 **19 Claims**

1. A support for a wheel lug wrench comprising a block having a top, a base for positioning on a firm surface and at least two parallel vertical sides intersecting the base and extending upwardly from the base;

a plurality of wrench supporting slots formed in both sides of the block and extending inwardly at an angle inclined toward the base, each slot terminating at a closed end which is positioned on a vertical line which is located inwardly of and between the vertical sides, the base having a width which extends between the vertical sides, the width of the base being at least as wide as the sides so that when the base of the support is on a firm surface the closed end of each slot is positioned vertically above the base to afford lateral stability;

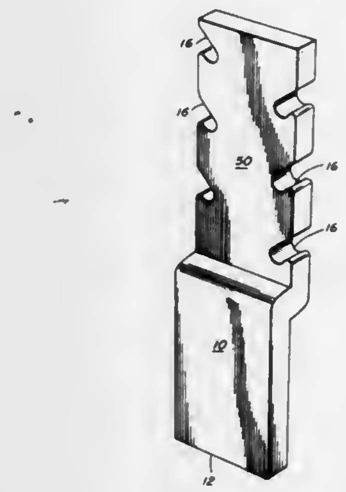
the slots being located at spaced intervals from the base to provide a series of wrench supports of varying heights;

the closed end of each slot having an arcuate portion engagable with the wrench;

whereby, the wrench may be selectively positioned in a slot to align and support it while removing or attaching a given wheel lug nut;

the slots on one side of the block being located in staggered height-wise relationship to those on the other side;

whereby the distance between each slot and the base is different.



4,619,162

HAND-HOLDABLE ELECTRIC POWER TOOL APPARATUS

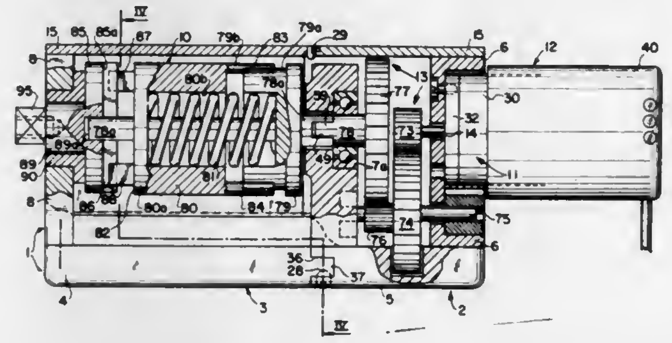
Christiaan G. M. Van Laere, Rainstr. 86, CH-8038 Zürich, Switzerland

Continuation-in-part of Ser. No. 430,763, Sep. 30, 1982, Pat. No. 4,505,170. This application Mar. 29, 1984, Ser. No. 594,797

The portion of the term of this patent subsequent to Mar. 19, 2002, has been disclaimed.

Int. Cl.⁴ B25B *19/00*

U.S. Cl. 81—464 **5 Claims**



1. An electric rotary power tool apparatus holdable by hand during operation and comprising an apparatus casing consisting essentially of an elongated building block assembly having a longitudinal axis and consisting essentially of

(1) a central building block comprising a base element, having a front end, a rear end,

(1.1) a first upright vertical wall at said rear end and extending at right angle to said longitudinally axis, and having an opening therein,

(1.2) a second upright vertical wall extending at right angle to said longitudinal axis and being spaced forwardly relative to said first vertical wall, said second vertical wall having a bore therein;

(2) a second rearward building block consisting essentially of an electric motor comprising

(a) a motor housing comprising a surrounding hull, a forward end wall and a rearward end wall and being mounted on the outside of said first upright vertical wall;

(b) a driving rotor shaft, with a central longitudinal axis therethrough, and extending through the interior of said motor housing and being rotatably supported in said rearward and foreward end walls thereof and extending with a forward shaft end through said opening in said first upright vertical wall,

(c) a rotor mounted inside said motor housing on said driving rotor shaft for rotating said shaft,

(d) commutator means comprising

(d.1) a commutator consisting essentially of collector segments and being mounted on said driving rotor shaft for rotation therewith between said rotor and said rearward motor housing end wall,

(d.2) first and second brush means mounted in said motor housing for electrical contact with said collector segments and delivering electric current to said rotor, and

(d.3) first and second stationary contactors being electrically conductively connected with said first and second brush means, respectively, said stationary contactors being firmly mounted in said motor housing rearward end wall and having terminal portions having contactable sidewall regions, said terminal portions protruding rearwardly from an outer face of said motor housing rearward end wall and ending in a transverse terminal region therein;

(3) a speed-reducing unit in said central building block;

said speed-reducing unit consisting of a gear train comprising a plurality of gears and a number of transmission shafts each bearing a gear, one of said gears being a pinion mounted on said forward shaft end of said driving rotor shaft, one of said transmission shafts being a driven power-transmitting shaft, said transmission shafts being supported in said first and second vertical walls, respectively.

(4) an on-off and reversing switch being adapted for switching a direct electric current having an electric potential from 8 to 30 volts and an amperage sufficient for affording a power input of said motor of 180 watt and, under load, of 620 watt;

said on-off reversing switch comprising supporting cover means, spaced from and pivotally mouned on said external face of said motor housing rear end wall and having a transverse wall having an inner face extending substantially transversely to said longitudinal rotor axis, and an outer face;

a pair of shiftable contactors each having a lateral contact region and being mounted in said cover means and extending substantially axially relative to said central longitudinal axis from outside said outer face thereof through said cover means transverse wall and protruding from the inner face thereof toward said motor housing rear end wall and into said transverse terminal region therein by a distance such as to extend parallel with said stationary contactor terminal portions by a sufficient length for said lateral contact regions of said shiftable contactors to make contact with said contactable sidewall regions of said terminal portions in axially extending contact zones thereof, when said cover means are angularly pivoted into either one of two limit positions relative to said motor housing end wall, while breaking contact when in at least one intermediate position between said limit positions;

said cover means having passage means for the introduction of a pair of lead means extending from a source of electric energy, into the interspace between said motor hoursing rear end wall and said inner face of said cover means transverse wall, and into electrically conductive engagement with said pair of shiftable contactors,

(5) a third forward building block comprising

(5.1) a rotary tool holder,

(5.2) a driven shaft therefor, and

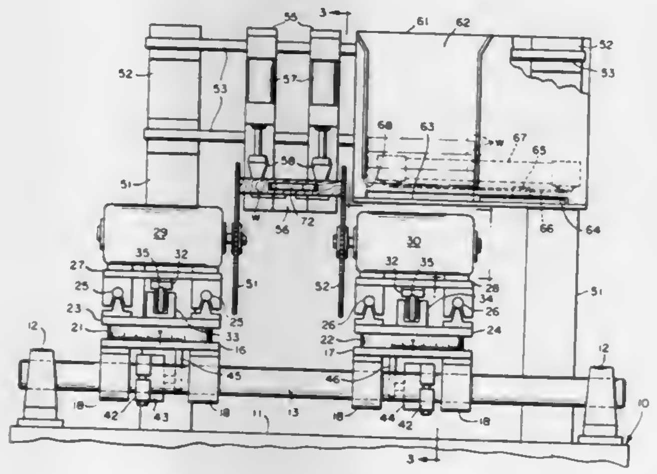
(5.3) connecting means for connecting said driven shaft of said third unit by way of said bore in said second vertical wall with said driven power-transmitting shaft for rotation therewith;

(6) means for detachably fastening said rearward building block in said first vertical wall, and

(7) means for detachably connecting said third building block with said central building block, thereby enabling replacement of said second and third building blocks.

4,619,163
AUTOMATIC MITERING APPARATUS

Irving J. Brown, R.D. 2, Cato, N.Y. 13033
Filed Jul. 9, 1984, Ser. No. 629,179
Int. Cl.⁴ B23D *45/10*
U.S. Cl. 83—82 **13 Claims**



1. Automatic mitering apparatus for wood blocks and the like, comprising

a frame, means defining a work station on said frame feeding means operable intermittently and automatically to feed workpieces in a first direction and one-by-one onto said station,

clamping means responsive to the movement of a workpiece onto said station automatically to clamp such workpiece intermediate its ends against movement on said station,

a pair of mitering saws mounted to rotate on said frame in a pair of spaced planes located adjacent opposite sides, respectively, of said work station,

means responsive to the clamping of a workpiece on said station for automatically reciprocating of said saws in said planes between retracted and advanced positions along paths disposed to intersect opposite ends, respectively, of said workpiece, thereby to cause the rotating saws during movement to their advanced positions to cut away opposed end portions of said workpiece,

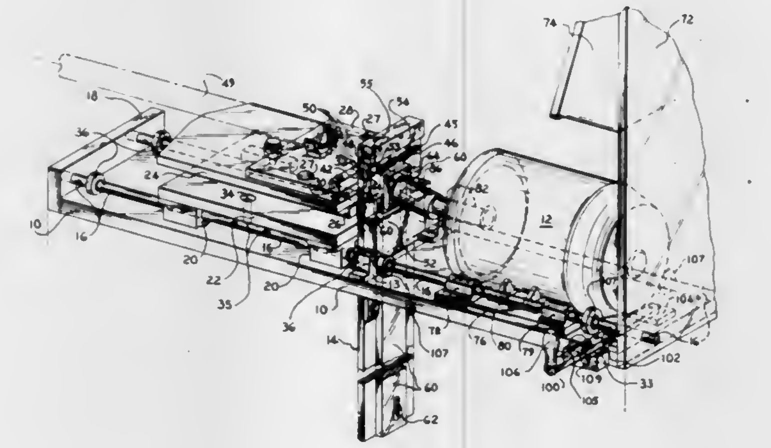
means responsive to the movement of said saws to their retracted positions, and operative independently of said feeding means, for automatically and successively releasing and ejecting said workpieces from said station in a direction transversely of said first direction after it has been cut by said saws,

cycling means operative in response to the ejection of a workpiece from said station automatically to actuate said feeding means to feed the next successive workpiece to said station to be clamped thereon by said clamping means, and

means operative to effect translational shifting movement of said saws slightly towards said opposite sides of said work station before cutting the workpiece thereon, and to effect translational shifting movement of said saws slightly and transversely away from said work station immediately following the cutting said workpiece.

4,619,164
ORBITAL STRIPPING DEVICE

Paul W. Aikens, Etters, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 10, 1984, Ser. No. 679,874
Int. Cl.⁴ B26D *3/08*
U.S. Cl. 83—200 **3 Claims**



1. Apparatus for selectively cutting the exterior layers of a plurality of cables each having a central conductor comprising:

a cutter plate with a preselected array of cutting orifices,

a positioning plate having an array of positioning orifices corresponding to the cutting orifices for positioning a plurality of cables parallel to an axis transverse to the cutter plate with the end of each cable in a different orifice, the plates being slidiably positioned relative to each other,

a movable fixture adapted to hold the cables, the fixture being movable along the axis to adjust the position of the cables relative to the plates

orbital means for effecting relative orbital motion, in a plane transverse to the axis, between the two plates about the axis, whereby the cutting orifices progressively cut through the exterior layers of the cables, the orbital means including

a rotary prime mover having an output shaft with an axis of rotation,

a rod-like member having an axis and mounted on the output shaft with the member's axis non-parallel to the shaft's axis of rotation so that the peripheral surface of the member defines the orbital motion,

a bearing housed by one of the plates and positioning means adapted to slidingly receive the rod-like member and transmit the orbital motions to one of the cutter plate and positioning means,

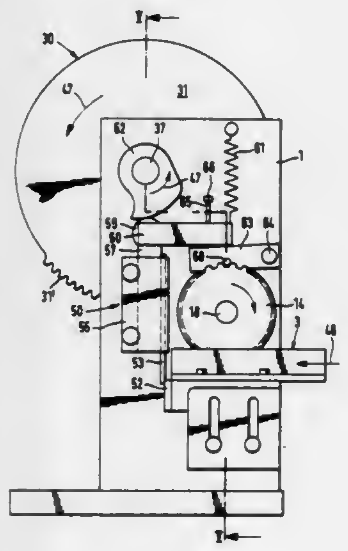
means to position the output shaft along its axis relative to the bearing thereby to adjust the axial position of the rod-like member in the bearing and hence the radius of the obital motion,

the adjusting means including a slide mount for the prime mover to permit movement of the prime mover along the axis of shaft rotation, and

means to position the prime mover along the axis of rotation to adjust the radius of orbital motion, the rod-like member being positioned so that the axis of rotation of the shaft and rod-like member intersect in the region of the rod-like member and the rod-like member is positioned in the bearing at the point of intersection of the axes, whereby axial movement of the prime mover in either direction increases the radius of orbital movement, and means to position the fixture along the axis to advance to or withdraw the cables from the plates, thereby to permit the simultaneous stripping of the exterior cut layers from the cables by withdrawing the cables from the plates.

4,619,165
APPARATUS FOR CUTTING OFF PIECES FROM WIRE COMB BINDING MATERIAL

Peter Renz, Unterm Stein 9, D-7072 Heubach-Lautern, Fed. Rep. of Germany
Filed Jan. 3, 1985, Ser. No. 688,592
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1984, 3402353
Int. Cl.⁴ B26D *5/22*
U.S. Cl. 83—246 **2 Claims**



1. An apparatus with a cutting device for the cutting of pieces of a wire comb binding material for the binding of packs of sheets having marginal perforation, wherein the pieces cut off have a selectable number of teeth, comprising:

(a) a vertical frame;

(b) a guide for said material mounted on said frame;

(c) a first shaft mounted for rotation on said frame and above said guide;

(d) a conveying wheel mounted on one end of said shaft and fixed thereto and having conveying teeth conforming in pitch to said selectable number of teeth and in cooperative relationship with said guide;

(e) a toothed wheel mounted on the other end of said first shaft and fixed thereto;

(f) a brake mounted on said first shaft between said conveying wheel and said toothed wheel;

(g) a second shaft mounted for rotation on said frame and above said first shaft defining a power shaft with sufficient force to overcome said brake;

(h) a sector gear wheel mounted and fixed thereto on one end of said second shaft, said sector gear wheel comprising a given number of teeth only in a sector of adjustable central angle, while, in the remaining sector, it has a radial extent, which is too small for an engagement of said toothed wheel, said given number of teeth driving said toothed wheel only when engaged therewith;

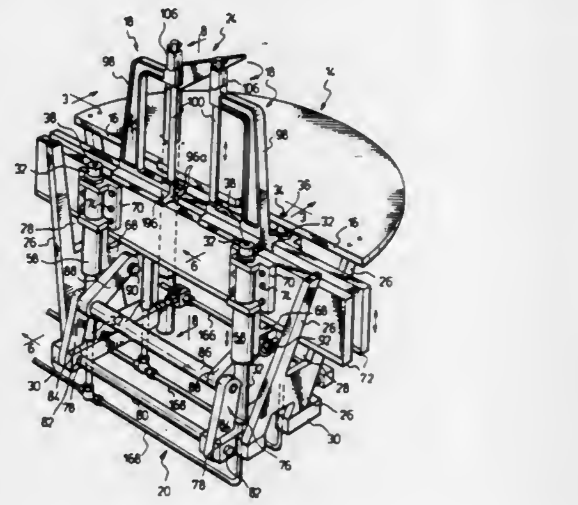
(i) cut off means mounted for reciprocation in a vertical plane on said frame incooperation with an end of said guide;

(j) a cam mounted on the other end of said second shaft with the cam surface thereof positioned at a central angle different from said given number of teeth and engaging said cut off means when said sector gear wheel is disengaged from said toothed wheel; and

(k) a pivoted catch element engaging said conveying teeth and engaging said cam surface for preventing feed of said material during cut off.

4,619,166
DOUBLE-BLADED POWER HACKSAW

Viljo K. Valavaara, Ontario, Canada, assignor to Colic Machine & Tool Limited, Woodstock, Canada
Filed Jan. 25, 1985, Ser. No. 694,774
Int. Cl.⁴ B23D *49/02*
U.S. Cl. 83—461 **15 Claims**



1. A hacksaw apparatus, for use in association with a work piece and a source of pressurized hydraulic fluid, wherein the hacksaw apparatus comprises:

a frame, adaptable to receive and support the work piece;

two hydraulic cylinder means mounted on said frame, and connectable to said source of pressurized hydraulic fluid, each said cylinder means including a cylinder and piston rod, said piston rod extending through both ends of said cylinder and whereby said cylinder is slidably mounted on said piston rod;

two hacksaw support structures connected to respective said hydraulic cylinder means, whereby operation of a said hydraulic cylinder means moves a said hacksaw support structure relative to said frame;

a hacksaw mounted on each said hacksaw support structure, and, in opposition to one another and, and operable to cut against opposite sides of said work piece; and,

hacksaw movement means operable to move each said hacksaw against said work piece from opposite sides and to maintain pressure between each said hacksaw and said work piece during a hacksaw cutting stroke.

4,619,167
ADJUSTABLE CIRCULAR INSULATION SAW SYSTEM

Harry C. Davis, 8993 Airline Hwy., Baton Rouge, La. 70815
Division of Ser. No. 310,962, Oct. 13, 1981, Pat. No. 4,466,170, which is a continuation-in-part of Ser. No. 63,743, Aug. 6, 1979, Pat. No. 4,295,263. This application Feb. 22, 1984, Ser. No. 582,315
Int. Cl.⁴ B23D *3/02, 57/00*
U.S. Cl. 83—607 **6 Claims**

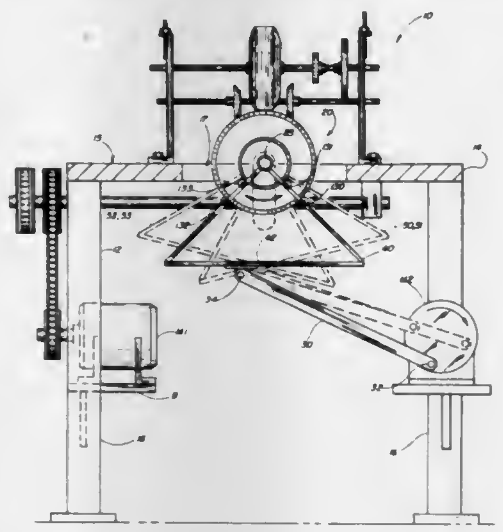
1. A circular cutting blade apparatus comprising:

a. a cylindrical blade holder comprising an endless cylindrical band having a substantially uniform thickness;

b. an annular groove being provided on said cylindrical band and having a generally uniform cross section about the periphery of said band;

c. a first toothed cutting blade attached to said cylindrical band at said groove; and

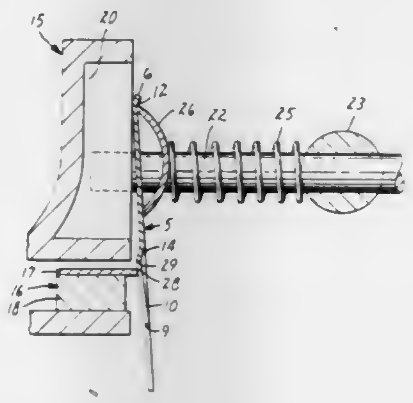
d. a second toothed cutting blade having a thickness substantially equal to the thickness of said blade holder less the thickness of said first blade, the first and second blades being affixed together with the toothed portions of the blades being positioned adjacent one another during cutting.



4,619,168

CUTTING MECHANISM

Leo M. Klisch, Falcon Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 586,200, Mar. 5, 1984, abandoned. This application Aug. 30, 1985, Ser. No. 771,268
Int. Cl.^{4} B26D *1/00*
U.S. Cl. 83—694 **9 Claims**

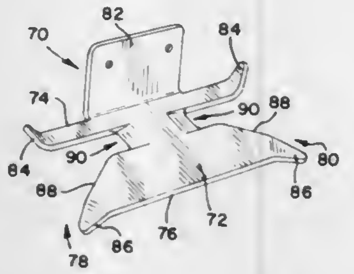


1. A paper shear comprising
an anvil to support a sheet of material to be cut transversely, said anvil having a corner defining an anvil edge for cooperation with a blade and along which the material will be cut,
a generally planar rectangular blade of thin sheet metal having a working face defined by a top edge, opposite side edges and a bottom edge which tapers toward said top edge from a point adjacent at least one side edge, said sheet metal being formed with a bend along a line parallel to said bottom edge, the amount of said bend being progressively greater from said one side edge toward said top edge, said bend being directed from the plane of the blade toward said anvil to increase the thickness of said blade by 100 to 175 percent and to define the cutting edge along the working face which will maintain contact with said anvil at least at one point upon vertical movement of said blade in the plane of said working face and,
means for biasing said blade toward said anvil.

4,619,169

CUTTER MECHANISM FOR LAMINATE SLITTING MACHINE

Michael T. King, Palatine, Ill., assignor to D&K Custom Machine Design, Inc., Elk Grove Village, Ill.
Filed Oct. 2, 1985, Ser. No. 782,961
Int. Cl.^{4} B26D *5/22*
U.S. Cl. 83—697 **4 Claims**

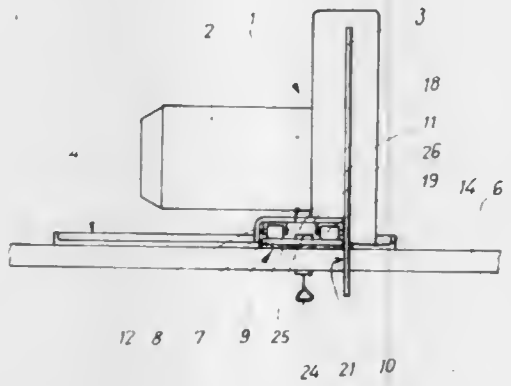


1. In a slitting machine having cutter means for slitting laminate material between adjacent articles in a continuous web of said articles with said articles having overlapping borders, said cutting means having oppositely-facing cutting blades and being formed with a downwardly-extending guide edge on one side of each of said cutting blades and an upwardly-extending guide edge on the other side of each of the cutting blades, the improvement of said cutter means having generally rectangular slots between said downwardly-extending and upwardly-extending guide edges with said slots having generally transverse bases that define said cutting blades to accommodate slight misalignment between said cutter means and said overlapping borders.

4,619,170

GUIDE FOR A HAND POWER TOOL

Peter Maier, Gerokstrasse 1, 7311 Neidlingen, and Gernot Hänsel, Gerstenstrasse 31, 7000 Stuttgart 70, both of Fed. Rep. of Germany
Filed Dec. 10, 1984, Ser. No. 679,757
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1983, 3344732
Int. Cl.^{4} B27B *9/04*
U.S. Cl. 83—745 **14 Claims**



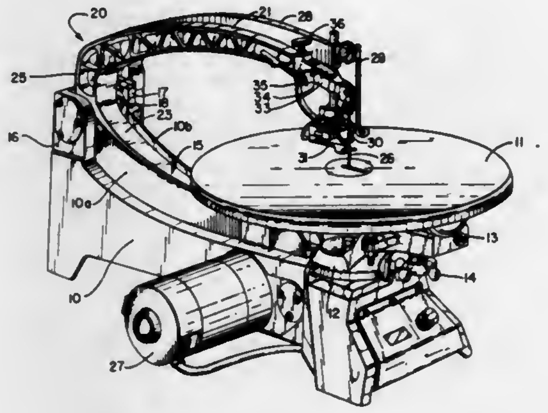
1. A guide device for a hand power tool which is movable in a feed direction to make a cut in a work, comprising a guide plate adapted to be placed on a work to be cut and a foot plate adapted to be placed on said guide plate, said foot plate being fixed to said tool and being movable along said guide plate in the feed direction for guiding said tool in the feed direction, said guide plate having the form of an elongated band with an edge lying substantially at the cut to be made by said tool while it is guided in the feed direction on said guide plate, said foot plate having a pair of bar members thereon and spaced from each other in the feed direction, each bar member having a recess therein to receive said guide plate, and each bar member straddling said guide plate with said guide plate substantially

fully within said recess of each bar member in the space, said tool being fixed to said foot plate in position to prevent lateral movement of said foot plate on said guide plate.

4,619,171

BEARING ASSEMBLY FOR C-ARM SCROLL SAW

David Miller, Tupelo, Miss., assignor to Delta International Machinery Corp., Pittsburgh, Pa.
Filed Jul. 19, 1985, Ser. No. 757,123
Int. Cl.^{4} B23D *49/00*
U.S. Cl. 83—782 **9 Claims**

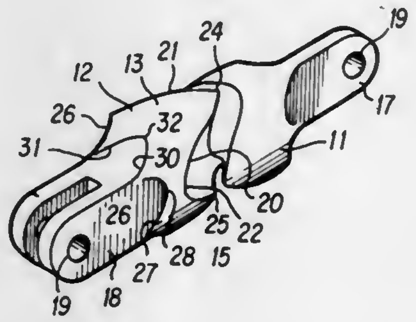


1. A scroll saw, comprising:
(a) a base having a table mounted at one end and a horizontal pivot shaft, having a central portion and opposite ends, mounted at an opposite end of said base;
(b) a C-arm member having upper and lower arms and a curved bight connecting said arms, said arms terminating in upper and lower ends having a saw blade connected therebetween and extending through said table;
(c) means mounting said C-arm member on said pivot shaft at said curved bight including an opening in said bight, means for reciprocating said C-arm member and said pivot shaft to effect movement of said saw blade; and
(d) said base comprising a pair of spaced side wall members having a pair of upstanding bearing support members at said opposite end of said base, with oppositely disposed bearing support openings therein, tapered roller bearings in said openings to support said opposite ends of said pivot shaft, means for adjustably locking said bight to said central portion of said pivot shaft extending therethrough, and means including resilient means on said bearing support members applying an inwardly directed force to said bearings to hold said bearings, pivot shaft and C-arm member in place.

4,619,172

CUTTING SAW FOR GRINDING SOLID MATERIALS

Rafael Perez, Box 474, Saint Just, P.R. 00902
Filed Jul. 5, 1985, Ser. No. 751,862
Int. Cl.^{4} B27B *33/14*
U.S. Cl. 83—830 **3 Claims**

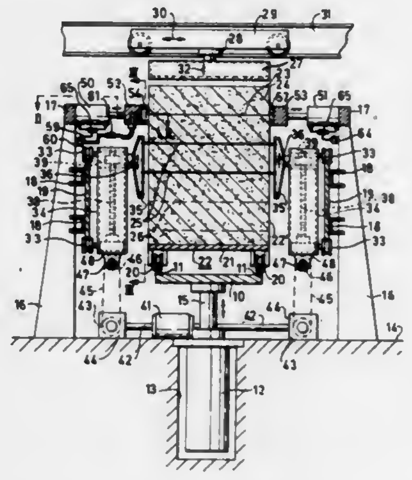


1. A cutting element adapted to cut in two laterally spaced planes when connected in series comprising a longitudinally extending element body formed to include an enlarged central portion having corresponding top and bottom faces and corresponding side faces and a longitudinal extension at each end of said element formed with a laterally extending pin-receiving hole therein, said faces including first oppositely disposed cutting edges which extend longitudinally from the center of the side faces of said enlarged central portion to substantially meet one another at the center of the top and bottom faces of said enlarged portion, and second oppositely disposed cutting edges which extend longitudinally from the center of said side faces to one of said longitudinal extensions adjacent said top and bottom faces, wherein each successive blade is connected to another by being rotated 90° relative to its preceeding blade.

4,619,173

METHOD AND APPARATUS FOR LIFTING PIECES OF MATERIAL

Rolf E. Göransson, Åkarp, and Oystein Kalvenes, Lund, both of Sweden, assignors to Internationella Siporex AB, Malmo, Sweden
Filed Jan. 9, 1985, Ser. No. 690,056
Claims priority, application Sweden, Jan. 12, 1984, 8400144
Int. Cl.^{4} B26D *3/28, 7/06*
U.S. Cl. 8.3—870 **13 Claims**



13. An apparatus for lifting slab-like pieces of material separated by substantially horizontal cuts, from a block of lightweight or aerated concrete material which is only partially cured and which is relatively soft and plastic but nevertheless shape-retaining, said apparatus comprising a suction device which is adapted to act on an upper surface of an upper piece of material and is movable to lift said upper piece and carry it away, at least one movable cover means arranged to cooperate with at least one substantially vertical side of said block and having at least one cavity therein with an open side facing said block side, means for moving said cover means to and from a position in which it is sealingly connected to and the open cavity side thereof is covered by a portion of said block side, said portion extending along and reaching above and below a region of a cut separating said upper piece of material from an underlying slab-like piece of material or residual part of said block of material, means for supplying pressurized, substantially gaseous medium to said cavity prior to lifting said upper piece of material by said suction device, and raisable and lowerable cutting wire holders which are horizontally movable relative to the block of material and which have at least two cutting wires located at mutually different levels and which, for the purpose of setting the vertical distance between the cutting wires, can be rotated and adjusted to desired rotational positions about a horizontal rotational axis extending substantially at right angles to the horizontal direction of movement of said cutting wire holders.

4,619,174
ELECTRONIC MUSICAL INSTRUMENT

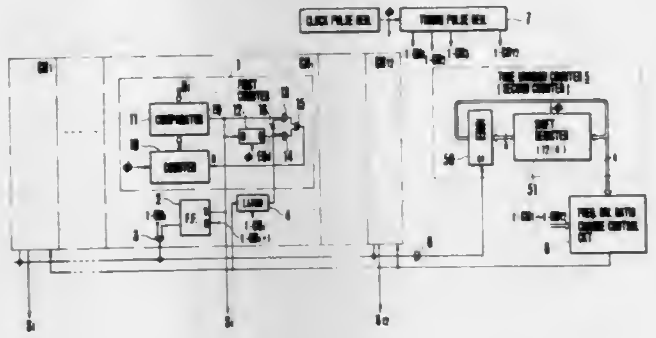
Takatoshi Okumura, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 619,068, Jun. 11, 1984, abandoned, which is a continuation of Ser. No. 367,905, Apr. 13, 1982, abandoned. This application Oct. 7, 1985, Ser. No. 785,103

Claims priority, application Japan, Apr. 15, 1981, 56-57701; May 14, 1981, 56-73251; May 22, 1981, 56-77670

Int. Cl.⁴ G10H *1/18, 7/00*

U.S. Cl. 84—1.01 **20 Claims**



13. An electronic musical instrument comprising:
clock pulse generating means for generating clock pulses;
a plurality of tone production channels, each of which includes frequency dividing means with an output pulse made by dividing the frequency of said clock pulses at a frequency division ratio of either one of N and N+1, where N is a positive integer;
time division counting means for counting, on a the time division basis, said output pulses outputted from said frequency dividing means; and
control means for determining, on the time a division basis, the frequency division ratios of said frequency dividing means in accordance with the counted values of said time division counting means, whereby each of said tone production channels individually produces a tone signal having a frequency determined by a combination pattern of N and N+1.

4,619,175
INPUT DEVICE FOR AN ELECTRONIC MUSICAL INSTRUMENT

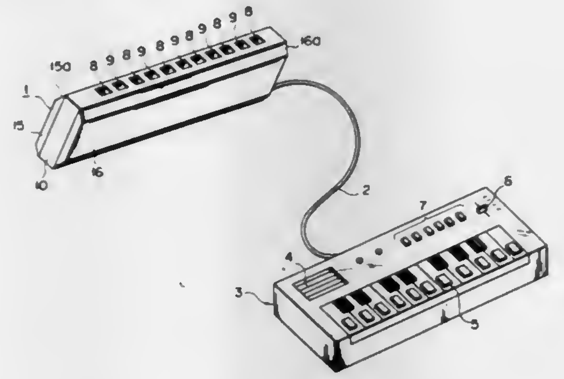
Akio Matsuzaki, Tokorozawa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1983, Ser. No. 560,155

Claims priority, application Japan, Dec. 21, 1982, 57-192111[U]; Dec. 30, 1982, 57-196779[U]; Dec. 30, 1982, 57-196782[U]; Feb. 10, 1983, 58-17415[U]

Int. Cl.⁴ G10H *1/00*

U.S. Cl. 84—1.01 **15 Claims**



1. An input device for an electronic musical instrument, comprising:
a main body having a plurality of ducts,
a plurality of actuators arranged to be driven by air sucked into and blown out of said plurality of ducts, and caused to flow through said ducts; and
a plurality of musical tone input switch means associated with said ducts, each of said switch means including a conductive movable member arranged to move according to the actuation of each of said plurality of actuators by the air flowing through said ducts, an a stationary contact member arranged to produce a contact signal upon contact with said conductive movable member.

4,619,176
AUTOMATIC ACCOMPANIMENT APPARATUS FOR ELECTRONIC MUSICAL INSTRUMENT

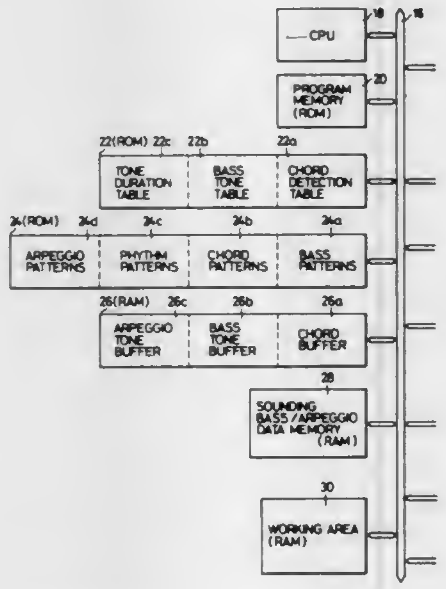
Sigeki Isii, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 551,269, Nov. 14, 1983, abandoned. This application Jun. 6, 1985, Ser. No. 741,714

Claims priority, application Japan, Nov. 20, 1982, 57-204000

Int. Cl.⁴ G10F *1/00*

U.S. Cl. 84—1.03 **11 Claims**



1. An automatic accompaniment apparatus for an electronic musical instrument, comprising:
a keyboard including keys;
time divisional data processing means which forms at a first time division depressed key data representing respective keys depressed on said keyboard, forms at a second time division a plurality of key data corresponding to the actual accompaniment tones to be possibly sounded based on said depressed key data generates at a third time division a sounding timing signal for instructing timings for sounding of accompaniment tones, and reads out at a fourth time division key data for said accompaniment tones to be sounded from hereinbelow said memory means by selectively designing addresses in said memory regions in response to said sounding timing signal;
memory means for storing said plurality of key data in separate memory regions, respectively; and
means for generating accompaniment tone signals based on the respective key data thus read out.

4,619,177
MUSICAL INSTRUMENT PNEUMATIC ACTUATOR

Kenneth B. Caulkins, 1320 Angie #C, Modesto, Calif. 95351

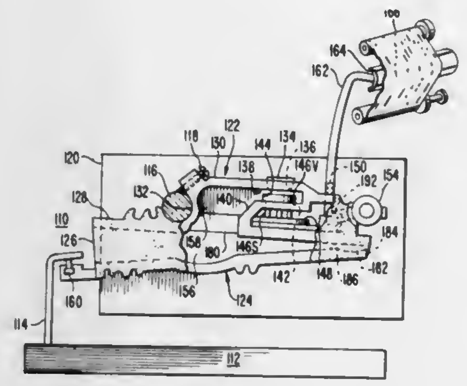
Filed Apr. 30, 1985, Ser. No. 728,937

Int. Cl.⁴ G10F *1/02*

U.S. Cl. 84—50 **21 Claims**

1. An invention comprising a musical instrument pneumatic actuator having:
(a) a plastic upper body piece including a front portion, an offset portion, a valve cover portion with an atmospheric port surrounded by an upper valve seat, said valve cover

portion connected to and offset from said front portion by said offset portion, a vacuum chamber enclosing portion connected to said valve cover portion and having a vacuum port surrounded by a lower valve seat, a vacuum hole, and a signal hole;
(b) a valve member with a valve portion and a stem portion, said valve portion disposed between said upper valve seat and said lower valve seat for alternate seating thereon, said stem portion extending through said vacuum port;
(c) a pouch in said vacuum chamber enclosing portion and operable for moving said valve member;



(d) a lower body piece; and
(e) a bellows piece attaching said upper body piece to said lower piece for relative pivotable movement therebetween; and
wherein said upper body piece is integral such that said upper valve seat and said lower valve seat are integral with each other, and wherein said valve portion has a larger upper surface area than said atmospheric port, said atmospheric port having boundaries which are integral with said upper body piece.

4,619,178
STOP ANGLE CONTROLLER FOR A VIBRATO MECHANISM ON A VIBRAPHONE

Motoya Kondoh, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

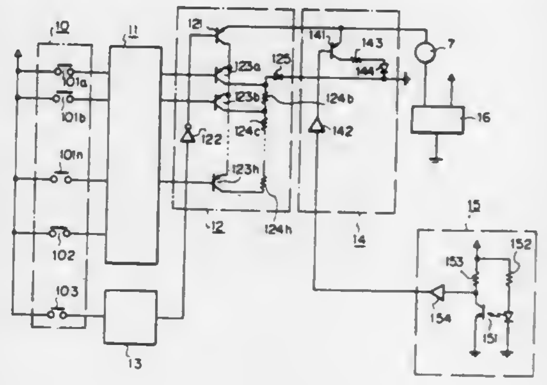
Filed Aug. 9, 1985, Ser. No. 764,429

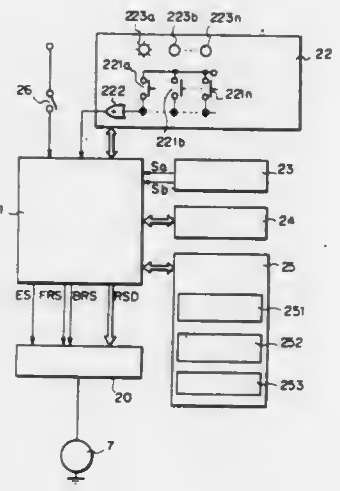
Claims priority, application Japan, Aug. 10, 1984, 59-121872[U]; Aug. 10, 1984, 59-121873[U]; Jun. 21, 1985, 60-134307

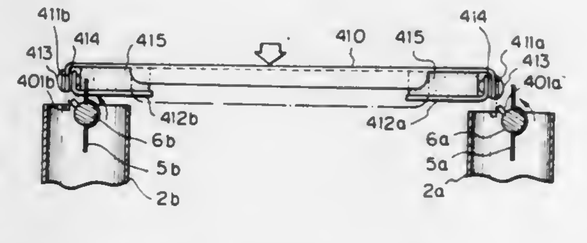
Int. Cl.⁴ G10D *13/08*

U.S. Cl. 84—410 **10 Claims**

1. Stop angle controller for a vibrato mechanism on a vibraphone comprising:
a drive motor for driving a plurality of fans arranged on a shaft of said vibrato mechanism for common rotation,
means for detecting the angular position of said fans and for generating of a detection signal as a function thereof;







means for controlling, in response to said detection signal, the operation of said drive motor to stop rotation of said fans at a selected stop angle.

4,619,179
(MUSICAL) DRUMS

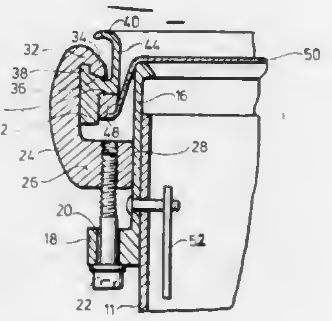
Robert J. Wright, Reservoir, Australia, assignor to Legato Pty. Ltd., Reservoir, Australia

Filed Nov. 26, 1984, Ser. No. 675,085

Claims priority, application Australia, Dec. 1, 1983, PG2659

Int. Cl.⁴ G10D *13/02*

U.S. Cl. 84—413 **2 Claims**



1. A drum head including a cylindrical side wall the end rim of which a skin is stretched thereover, said skin having a peripheral beading or flesh hoop spaced radially outwardly from said side wall, a cylindrical hoop co-axially mounted with

respect to said cylindrical side wall and surrounding a part of said cylindrical side wall, said cylindrical hoop having a first inner downwardly disposed shoulder spaced radially outwardly from said side wall and which engages said periheral beading or flesh hoop and a second outer upwardly disposed shoulder slanting upwardly and outwardly above said first shoulder, an upward extension outwardly of said second shoulder, said cylindrical hoop having an outer cylindrical surface of substantial axial dimension extending downwardly from said upward extension, a plurality of adjustable stretching means for exerting tensioning forces on said skin, each of said stretching means including a clip and a tensioning bolt, each of said tensioning bolts projecting through an aperture in an outwardly protruding skirt portion of said cylindrical side wall and substantially aligned with said flesh hoop, each of said clips being C-shaped with an upper arm part having a downwardly and inwardly disposed hook for engagement over said upward extension and on said second shoulder of said cylindrical hoop and to be lockingly engaged with said cylindrical hoop and a lower arm part abutting said cylindrical side wall, a vertically straight inner surface between said arms engaging said outer cylindrical surface, said tensioning forces acting in an imaginary cylindrical surface co-axial with and adjacent said cylindrical side wall and substantially intersecting said peripheral beading or flesh hoop and said tensioning bolts, each said tensioning bolt threadably engaging with its respective clip.

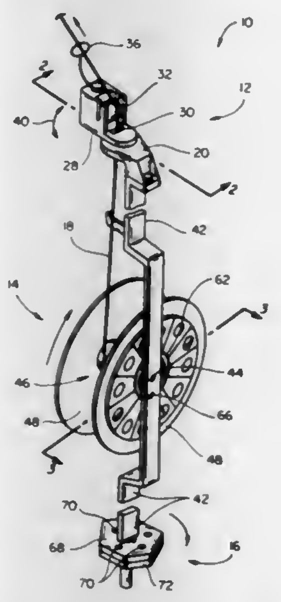
4,619,180
BRAIDER CARRIER

James D. Moyer, Downington, Pa., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Jul. 26, 1985, Ser. No. 759,533

Int. Cl.⁴ D04C *3/16, 3/02*

U.S. Cl. 87—57 **18 Claims**



1. A braider carrier guide pulley assembly for wide ribbon strand, said assembly comprising:

a support having a first opening therethrough to receive strand to be braided, said first opening having an axis therethrough normal to said first opening and generally coincident with the longitudinal axis of strand to be braided and being defined as the strand axis;

a pulley frame operatively, pivotly mounted to said support about said strand axis and having a second opening therethrough concentric with said strand axis;

a cylindrical guide pulley operatively rotatably mounted to said pulley frame and having a axis of rotation normal to the strand axis, the pulley having a generally cylindrical surface that is tangent to said strand axis; and,

a delivery eye operatively connected to said pulley frame and in alignment with said pulley to guide a strand to be braided to a braiding point, said eye and said first and second openings capable of holding strand to be braided against said cylindrical surface of said pulley preventing strand to be braided from twisting while said pulley frame pivots during a braiding operation.

4,619,181
AMMUNITION AND MAGAZINE FOR AN AUTOMATIC LOADING ARRANGEMENT

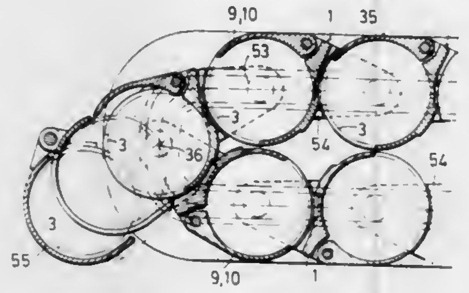
Manfred Pehker, Duesseldorf; Erich Zielinski, Haan; Josef Metz, Neuss, and Adolf P. Bierwirth, Kaarst, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 13, 1985, Ser. No. 711,394

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1984, 3409018

Int. Cl.⁴ F41D *10/14*

U.S. Cl. 89—34 **9 Claims**



1. An ammunition holding mechanism for an automatic loading arrangement for gun barrel weapons, which holding mechanism when arranged in a juxtaposed plural arrangement forms a link of an interlinked endless ammunition magazine, comprising in combination,

(a) said holding mechanism including an arcuately shaped tray for receiving the cartridged ammunition having a projectile head and a casing with a casing bottom, which tray has a semi-circular shape and at least two support regions, the inner diameter (d_1) of the first support region for supporting the forward region of the projectile of the cartridged ammunition is smaller than the inner diameter (d_2) of the second support region for supporting the rear region of the casing;

(b) pivotally mounted holding means for partially encompassingly holding the cartridged ammunition in each support region, each of said holding means being mounted on the same longitudinal side of the tray;

(c) each of said holding means including a pair of arcuately shaped clamp members pivotally connected to each other, an opening and closing mechanism operatively connected to said pair of clamp members for independently operating each holding means with respect to the other holding means, and prestressing means operatively connected to each holding means for independently biasing each holding means into a closed position in which it holds readily playfree the cartridged ammunition in the two support regions.

4,619,182
ARRANGEMENT FOR DEFLECTING POWDER GASES FROM AN AIRCRAFT WEAPON

Gunnar Hellstrom, Linköping, Sweden, assignor to Saab-Scania Aktiebolag, Linköping, Sweden

Filed Jan. 26, 1984, Ser. No. 574,057

Claims priority, application Sweden, Jan. 31, 1983, 8300464

Int. Cl.⁴ F41D *11/24*

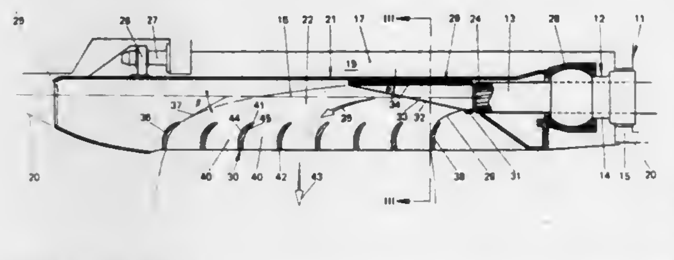
U.S. Cl. 89—37.16 **6 Claims**

1. Gas deflector means whereby powder gases issuing forwardly from the barrel of an aircraft-carried gun are deflected to one side of the forwardly extended axis of said barrel and to a discharging direction away from parts of the aircraft that would be adversely affected by such gases, said gas deflector means comprising:

A. a housing;

B. a mouthpiece forwardly adjacent to the gun barrel for initially deflecting powder gases towards said one side of said extended axis, in the form of a length of straight pipe concentric to said axis and having an inside diameter at least as large as that of the gun barrel, said mouthpiece having an outlet that opens obliquely forwardly and toward said one side of said axis, defined by an edge thereon which
  - (1) is contained in a plane disposed at an acute angle to said extended axis and
  - (2) extends along the mouthpiece from a point that is near the rear end thereof but spaced forwardly therefrom and at said one side of said axis to a point that is at the diametrically opposite side of said axis and at a substantially pointed front end of the mouthpiece; and

C. a plurality of guide plates mounted on the housing at the exterior of said mouthpiece, for further deflecting said gases to said discharging direction,
  - (1) each said guide plate having substantially opposite inner and outer edges that extend substantially transversely to said extended axis, said inner edge of each guide plate being proximal to said extended axis,



  - (2) said guide plates
    - (a) having their inner edges spaced to said side of said extended axis at substantially uniform distances therefrom and
    - (b) being spaced apart in the direction along said axis at substantially uniform distances to cooperate in defining gas outlet slots, and
  - (3) each guide plate being so curved between its inner and outer edges as to have
    - (a) its surface portions adjacent to its outer edge extending substantially in said discharging direction and parallel to the corresponding surface portions of the other guide plates, and
    - (b) its surface portions adjacent to its inner edge extending substantially in the direction of gas flow that has issued from the mouthpiece and is meeting its inner edge, the last mentioned surface portions of the plurality of guide plates being at angles to said extended axis which decrease progressively from the guide plate closest to the mouthpiece to the guide plate farthest from the mouthpiece.

4,619,183
DEVICE FOR CAUSING A FIREARM TO FIRE IN CONTROLLED BURSTS

Paolo Benelli, Pesaro, Italy, assignor to Benelli Armi S.p.A., Urbino, Italy

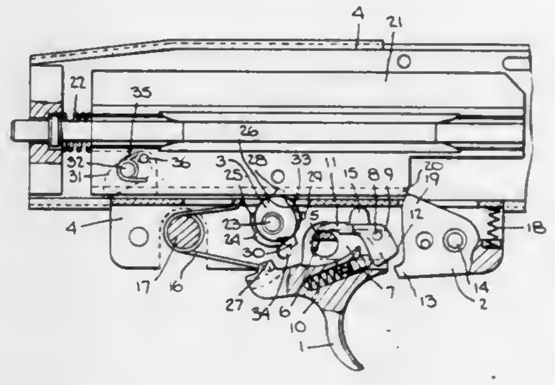
Filed Apr. 19, 1984, Ser. No. 602,216

Claims priority, application Italy, May 9, 1983, 44020 A/83

Int. Cl.⁴ F41D *11/10*

U.S. Cl. 89—129.02 **2 Claims**

1. In a firearm including a receiver, a bolt, means resiliently biasing the bolt towards a firing position, a bolt stopping element which releasably engages the bolt in a rest position thereof and prevents the bolt from moving to its firing position, means resiliently biasing the bolt stopping element into releasable engagement with the bolt, a trigger pivotally connected to the receiver for moving the bolt stopping element out of engagement with the bolt to release the bolt, and means resiliently biasing the trigger toward a rest, non-firing position, the improvement comprising apparatus causing the firearm to fire in controlled bursts, said apparatus comprising a ratchet wheel pivotally connected to the receiver, means resiliently urging the ratchet wheel towards a rest position when the trigger is in its rest position, the ratchet wheel comprising a plurality of trip teeth corresponding to the number of shots to be fired by a single burst and a plurality of lugs equal in number to the number of trip teeth, the trigger having a trip tooth for releasably engaging the trip teeth of the ratchet wheel in a pivoted, firing position of the trigger to stop pivoting of the ratchet wheel, an arm pivotally connected to the bolt, means resiliently biasing the arm into engagement with a lug on the ratchet wheel as the bolt moves towards its rest position from its firing position to cause release of the ratchet wheel by a trip tooth of the trigger and rotation of the ratchet wheel until the next ratchet wheel trip tooth is engaged by the trigger trip tooth, the trigger being pivoted on a pin, a rocking arm pivotally connected to the trigger, means resiliently biasing the rocking arm into engagement with the pin on which the trigger is pivoted, the rocking arm having a trip tooth, the bolt stopping element having a trip tooth releasably engageable by the trip tooth of the rocking arm when the rocking arm engages the pin to hold the bolt stopping element out of engagement with the bolt, one of the trip teeth on the ratchet wheel being releasably engaged by the trip tooth of the trigger and permitting the trigger to pivot to a position causing the rocking arm to release the bolt stopping element and permit it to move into engagement with the bolt, said one trip tooth of the ratchet wheel defining the end of the burst.



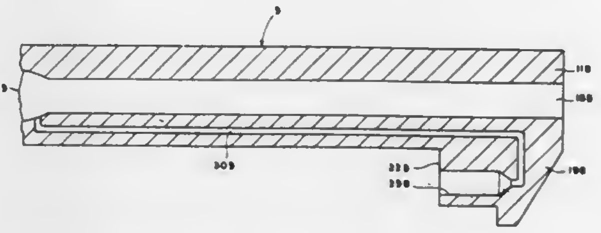
4,619,184
GAS ACTUATED PISTOL

Ilan Shalev, Givataim, Israel, assignor to The State of Israel Ministry of Defense, Military Industries, Ramat-Hasharon, Israel

Continuation of Ser. No. 555,334, Nov. 28, 1983, abandoned. This application Dec. 19, 1985, Ser. No. 810,549

Int. Cl.⁴ F41C *5/02*

U.S. Cl. 89—185 **5 Claims**



1. In a fully gas operated pistol including:

a frame unit defining first and second sections extending to the front and rear ends thereof, respectively;

a barrel unit defining an axial bore with muzzle and breech ends and front and rear locking means fixedly receivable by said frame unit at the front and rear ends thereof;

a bolt carrier unit intermediary between said frame and barrel unit, slidably supported on said frame unit and slidable between said front and rear locking means of the barrel unit and including a forward, barrel receiving section and a rear, bolt receiving section, said forward section including a bridge-like member connecting two opposite walls of the bolt carrier unit;

biasing means having a first end in contact with said frame unit and a second end in contact with said bridge-like member for urging the bolt crarier unit forward,

the improvement wherein:

(i) said bolt carrier unit comprises a piston extending forwrad from said bridge-like member;

(ii) said barrel unit comprises, near the muzzle end, a rearward facing cavity to accommodate said piston of the bolt carrier unit, said cavity being hereinafter referred to as the piston accommodating cavity;

(iii) said barrel unit further comprises a passage linking the breech end of said axial bore with said piston accommodation cavity, said passage being distinct and separate from said axial bore which passes comprises an intake port near the breech end of the barrel, a main section extending in parallel to the barrel and essentially coextensive .therewith and a delivery section designed for injecting propellant gas into said cavity to expand rearward therein;

(iv) the arrangement being such that gases expanding from the breech end of the barrel unit is consequence of a bullet being fired expand under pressure to said piston accommodating cavity whereby the bolt carrier unit is forced against the action of said biasing means from a first, forward position in which said piston extends into the piston accommodating cavity, to a second, retracted position; and after the emergence of the bullet from the muzzle and the consequential full expansion of the gases, the bolt carrier unit is urged by said biasing means back into said first position.

4,619,185
BRAKE BOOSTER

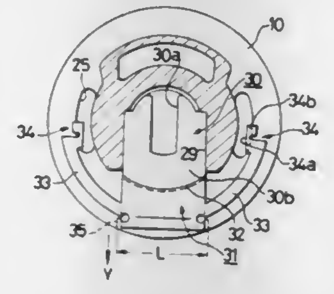
Kohei Mori, Ogawa, and Haruo Suzuki, Higashimatsuyama, both of Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1984, Ser. No. 684,450

Claims priority, application Japan, Dec. 28, 1983, 58-199987[U]

Int. Cl.⁴ F15B *9/10*

U.S. Cl. 91—369 R **3 Claims**



1. In a brake booster including a power piston disposed within a closed vessel and subject to a pressure differential for reciprocatory movement, a valve mechanism for controlling fluid pressure supplied to said power piston, a valve body in which said valve mechanism is housed, a valve plunger disposed within said valve body and defining part of said valve mechanism, a bore formed to extend through said valve body, and a stop member inserted into said bore for engagement with said valve plunger to prevent said valve plunger from being withdrawn from said valve body, comprising the improvement wherein a retainer is provided which includes a support which supports said stop member and also including a detent which is engageable with a mating detent defined by an axially extending opening formed on said valve body, said axially extending opening providing communication between pressure chambers in said brake booster, said retainer being positioned externally of said stop member, the engagement between said detent on said valve body and said detent on said retainer being effective to prevent said stop member from being disengaged.

4,619,186
PRESSURE RELIEF VALVES

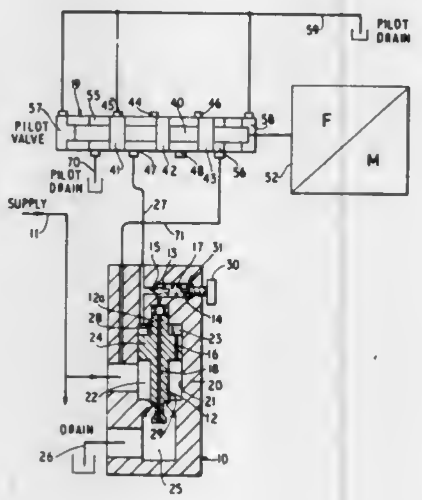
Ronald B. Walters, Wembley, United Kingdom, assignor to Vickers, Incorporated, Troy, Mich.

Continuation of Ser. No. 348,779, Feb. 16, 1982, abandoned, which is a continuation of Ser. No. 959,865, Nov. 13, 1978, abandoned. This application Feb. 14, 1985, Ser. No. 701,793

Claims priority, application United Kingdom, Sep. 3, 1977, 36869/77

Int. Cl.⁴ F15B *11/10*

U.S. Cl. 91—433 **10 Claims**



1. A hydraulic relief valve system for controlling the supply pressure of a hydraulic supply line extending unrestrictedly from a hydraulic supply to a hydraulic load comprising

a main relief valve,

a pilot valve having a control port and a drain port for controlling the supply pressure in said supply line,

said main relief valve comprising a housing having a valve seat, a closure member cooperating with the said seat and a piston attached to said closure member, said piston in said housing defining an inlet chamber connected to said supply line and a control chamber,

said housing and closure member forming an outlet chamber,

a hydraulic return line extending from said outlet chamber to a drain,

a hydraulic passage extending between said control chamber and inlet chamber and defining a control path,

said control path having a restriction therein,

a control line extending between said control chamber and said control port of said pilot valve for applying a control pressure to said control chamber which pressure is the pressure prevailing between the restriction and said pilot valve, and

an electric force motor for operating said pilot valve,

said pilot valve having at least one feedback chamber to which pressure is applied from said supply pressure or a pressure associated with the hydraulic device to which supply pressure is applied, said pressure to said feedback chamber being opposed to the force produced by said electric force motor and acting in a direction to connect said control port to said drain port.

4,619,187
FLUID CONTROL FOR TWO INDEPENDENT ACTUATORS

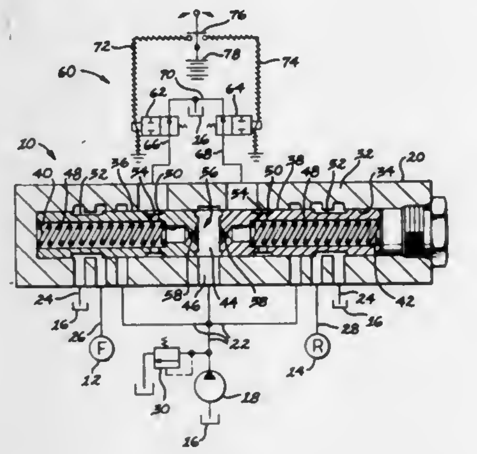
William W. Blake, Kewanee, and Alan R. Coutant, Chillicothe, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

PCT No. PCT/US82/01540, § 371 Date Oct. 25, 1982, § 102(e) Date Oct. 25, 1982

PCT Filed Oct. 25, 1982, Ser. No. 638,447

Int. Cl.⁴ F15B *11/00*

U.S. Cl. 91—523 **6 Claims**



1. A fluid control system (**10**) for selectively controlling actuation of a pair of actuators (**12,14**) comprising:

a reservoir (**16**);

a pump (**18**) connected to the reservoir (**16**);

a control valve (**20**) having a bore (**34**), a pair of directional spools (**36,38**) slidably positioned in the bore (**34**), a common actuating chamber (**44**) defined in the bore (**34**) between one end of each of the directional spools (**36,38**), and first and second actuating chambers (**40,42**) each being defined in the bore (**34**) at the other end of each of the directional spools (**36,38**), said common actuating chamber (**44**) being in fluid communication with said pump (**18**), each of the directional spools (**36,38**) being movable between a first position at which the pump (**18**) is in communication with one of the actuators (**12,14**) and a second position at which said one of the actuators is in communication with the reservoir (**16**), said directional spools (**36,38**) being arranged in the bore (**34**) so that only one of the directional spools (**36,38**) is moved to its first position when one of the first and second actuating chambers (**40,42**) is pressurized;

orifice means (**56**) for communicating said pump (**18**) with said first and second actuating chambers (**40,42**); and

control means (**60**) for selectively pressurizing said first and second actuating chambers (**40,42**).

4,619,188
PNEUMATIC CYLINDER DEVICE WITH LOCKING MECHANISM

Takashi Kimura, Nagoya, Japan, assignor to Nippon Joucomatic Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1984, Ser. No. 683,614

Claims priority, application Japan, Dec. 21, 1983, 58-241654

Int. Cl.⁴ F15B *15/26*

U.S. Cl. 92—26 **13 Claims**

1. A pneumatic cylinder device with a locking mechanism comprising a pneumatic cylinder having a cylinder, a piston slidably received in said cylinder and a piston rod extending from said piston outwardly of said cylinder; and a locking mechanism adapted to selectively lock said piston rod against movement;

said locking mechanism comprising:

a housing disposed adjacent said cylinder and through which said piston rod is slidably extended;

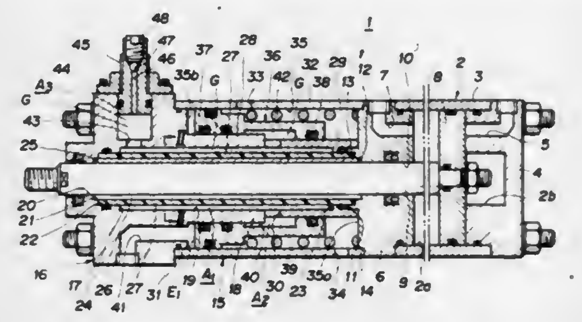
a flexible tubular member disposed in said housing so as to surround said piston rod, said flexible tubular member being contractable and expandable in a radial direction for locking and unlocking of said piston rod;

an annular variable-volume chamber means formed around said flexible tubular member and having a variable volume;

a volume changing means for causing a change in the volume of said variable-volume chamber means; and

a pressure transmission means accommodated in said variable-volume chamber means and adapted to transmit to said flexible tubular member a pressure change produced in said variable-volume chamber means as a result of a volume change; and

said variable-volume chamber means including a first pressure chamber formed between the outer peripheral surface of said flexible tubular member and the inner peripheral surface of an annular partition wall means extending in said housing in the axial direction, said partition wall means having a large-diameter portion and a small-diameter portion; and a second pressure chamber defined by a stepped outer peripheral surface of said annular partition wall means and a recess formed in the inner peripheral surface of a control piston slidably fitted over said stepped outer peripheral surface, said second pressure chamber communicating with said first pressure chamber through communication passage means formed in said annular partition wall means, said second pressure chamber extending over at least said small-diameter portion of said annular partition wall means, the volume of said second pressure chamber being variable as a result of axial sliding movement of said control piston with respect to said annular partition wall means.



4,619,189
APPARATUS FOR MANUFACTURING BOILED NOODLES

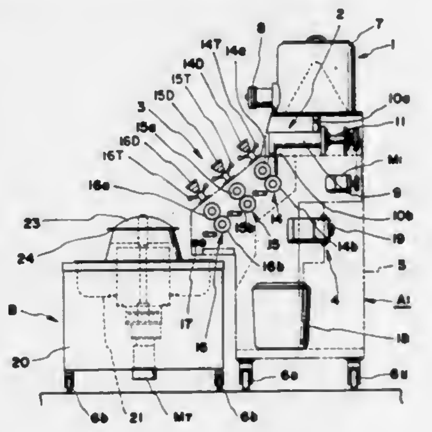
Nagai Kou, Takasaki, Japan, assignor to Hoshino Butsusan Co., Ltd., Gunma, Japan

Filed Feb. 4, 1985, Ser. No. 697,840

Claims priority, application Japan, Feb. 17, 1984, 59-26987

Int. Cl.⁴ A47J *27/10*

U.S. Cl. 99—334 **16 Claims**



1. A boiled noodles manufacturing apparatus comprising in combination:

at least one raw noodle manufacturing unit including a grain flour supplying means for supplying and measuring grain flour, a kneading means connected to said grain flour supplying means for kneading said grain flour, said kneading means including a worm-shaped screw wing and a blade, a kneading water supplying means for measuring and supplying kneading water to said kneading means for kneading said grain flour into a kneaded noodle substrate and a noodle element forming means connected to said kneading means for forming raw noodle elements from said kneaded noodle substrate; and

a boiling unit for boiling said raw noodle elements fed from said noodle element forming means including a rotating wheel which is rotatable intermittently and which supports at least one removable basket which receives said raw noodle elements, a sensor means for producing an electric signal when sensing said basket passing through a predetermined position, a controlling unit means generating electric signals corresponding to a predetermined number of meals for controlling said at least one raw noodle manufacturing unit and said boiling unit, whereby the predetermined number of meals is fabricated from said grain flour by controlling starting and stopping operations of said at least one raw noodle manufacturing unit and said boiling unit by said electric signals from said controlling unit means.

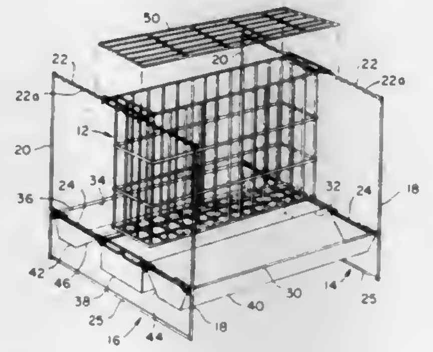
4,619,190
VERTICAL BED PORTABLE COOKING GRILL

Douglas A. Smith, R.F.D. #1, Box 54, Ellsworth, Me. 04605

Filed Nov. 12, 1985, Ser. No. 797,115

Int. Cl.⁴ A47J *37/00*

U.S. Cl. 99—393 **20 Claims**



1. An improved cooking grill comprising:

a vertically oriented fuel bed elongate in the vertical direction providing a vertical radiant source of heat for cooking food in cooking zones on either side of the bed;

a portable and collapsible grill frame of rectangular configuration formed by light weight rods assembled in three tiers, a top tier, a lower tier and base level;

said vertical radiant source being supported in the center of the frame removeably suspended from the top tier and not extending below the lower tier;

an ash tray removeably suspended from the lower tier below the vertically oriented fuel bed but above the base level so that the ash tray and vertically oriented fuel bed are supported by the frame a safe distance above a surface on which the grill may be placed;

first and second drip trays removeably suspended from the lower tier below the cooking zones on either side of the vertically oriented fuel bed and adjacent to the ash tray, said ash tray and drip trays comprising a substantially continuous surface between the lower tier and base tier across the grill frame for reflecting heat upward to protect a surface on which the grill may be placed, said ash tray and drip trays being removeable from the grill frame for cleaning and for portability;

said grill frame comprising end rods rigidly assembled in rectangular end frame pieces having said three tiers, and elongate cross rods removeably extending between the end frame pieces at the upper and lower tiers for suspending the vertically oriented fuel bed, ash tray and drip trays from the end frame pieces;

a plurality of panels for providing reflector oven enclosure of the grill frame including end panels extending from the top tier to the lower tier over the end frame pieces of the grill frame and at least one side panel and cover panel extending between the end frame pieces over the top and side of one cooking zone of the grill frame;

said side panel and cover panel being removeable and replaceable on the grill frame and constructed and arranged for use alone or in combination on the grill frame to provide lesser or greater enclosure of the cooking zone for varying oven enclosure effects;

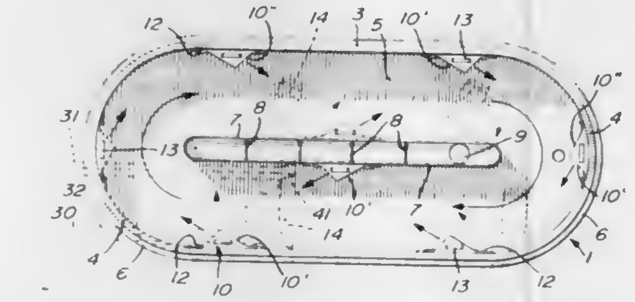
4,619,191
APPARATUS FOR THAWING, HANDLING AND REHEATING SEALED FROZEN FOOD PACKETS

Gérard Dumas, 2601 Clément Street, Charlesbourg, Canada G2N 1A1, and Jean A. Marcoux, 260 Jardin des Cascades, Beauport, Canada G1E 6J5

Filed Oct. 22, 1984, Ser. No. 663,090

Int. Cl.⁴ A23L *1/00*

U.S. Cl. 99—483 **5 Claims**



1. An apparatus for changing the temperatures of a plurality of sealed food pouches, comprising: a large bath formed of a bottom surface and of an exterior wall including elongated parallel sides and opposite ends of which at least their inner surfaces are rounded; a central, elongated wall spaced inwardly of the exterior wall including its ends; such construction defining an interior closed course; said bath being adapted to contain a liquid with said food pouches immersed therein; a plurality of identical flow-inducing means, disposed at both said exterior wall and said central wall at spaced locations along said walls and directed angularly and in the same direction relative to said course, each said flow-inducing means including a nozzle, said nozzle located in a casing formed of a first face disposed at an obtuse angle relative to said course and having at least one slot formed therein and in registry with said nozzle; said nozzle communicating with a compressed gas supply; a second face disposed at a right angle to said first face, thereby defining a casing of triangular cross-section; whereby whirlpool effects are created as said liquid circulates around the course to heat or cool each said sealed food pouch thoroughly and rapidly.

4,619,192
POTATO CUTTER

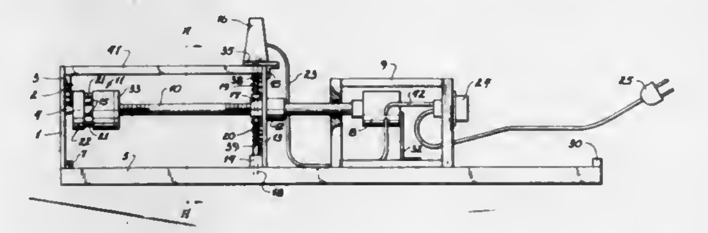
Michael A. Cycyk, 265 N. Payne Ave., N. Tonawanda, N.Y. 14120, and Robert R. Seitz, 115 Albert Ave., Buffalo, N.Y. 14207

Filed Dec. 7, 1984, Ser. No. 679,392

Int. Cl.⁴ A23L *1/212;* A23P *1/00*

U.S. Cl. 99—538 **17 Claims**

1. A potato cutting device capable of cutting an entire potato into a shoe-string form which comprises in combination a source of energy, a drive rod attached at one end to said source of energy, a receiving chamber, a cutting means, a prong potato-holding means and a stripper plate assembly attached to the opposite end of said drive rod, said stripper plate assembly comprising at least two drive fingers adapted to penetrate and support a potato and a main body having movably connected thereto at least two stripper bolt means, said stripper bolt means having attached at its outer end a stripper plate, said bolt means adapted to selectively move said stripper plate toward said cutting means thereby adapted to push a potato off said drive fingers and cause the entire potato to be consumed in said cutting operation, located and provided in substantially the center of said stripper plate are stripper fingers positioned around a receiving chamber, said chamber adapted to mate with said potato prong-holding means which is located adjacent said cutting means.



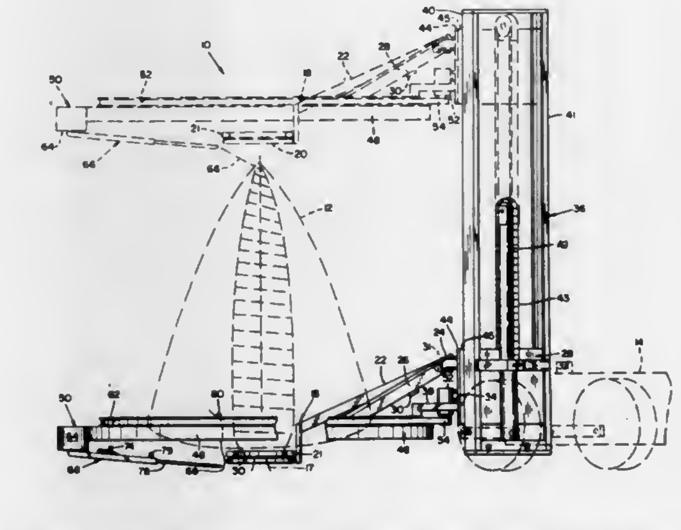
4,619,193
STANDING TREE BALER

Gerald W. Crew, 22399 S. Spring Creek Rd., Estacada, Oreg. 97023

Filed Mar. 29, 1985, Ser. No. 717,642

Int. Cl.⁴ B65B *13/20*

U.S. Cl. 100—13 **13 Claims**



1. An apparatus for baling a tree in situ, the tree including a trunk and branches, comprising:

collar means for encircling a tree trunk, the collar means being adapted to press the branches inward toward the trunk;

guide means attached to the collar means for centering the collar means over the trunk and for guiding the collar means from its centered position along the trunk; and

securing means associated with one of the collar means and the guide means for spirally baling the pressed branches to the trunk as the collar means is guided along the trunk.

4,619,194
APPARATUS FOR DEWATERING FIBROUS MATERIALS

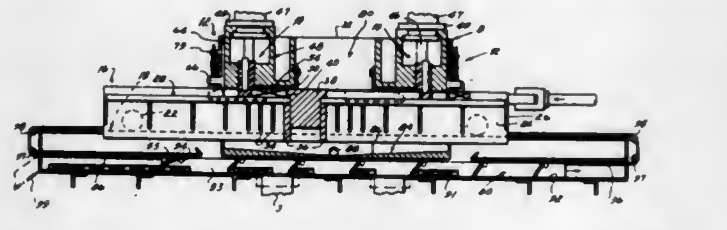
William G. Pierce, 4613 Socialville-Foster Rd., Mason, Ohio 45040

Filed Apr. 3, 1984, Ser. No. 591,514

Int. Cl.⁴ B30B *9/06*

U.S. Cl. 100—127 **8 Claims**

7. In a dewatering press wherein the material to be dewatered is confined between two surfaces, one constituting a screen, the two surfaces being spaced apart a distance about ½ to ¾ of an inch, and the material to be dewatered is pressed by a ram operated by hydraulic means in a direction parallel to the screen at a press rate which decreases as pressure continues, the pressure being asserted on the material being about 300–3,000 psi, the improvement comprising as part of the hydraulic means a load sensing variable volume hydraulic pump and a proportional flow control valve which permits the press to be operated under both low pressure/high flow and high pressure/low flow conditions.



4,619,195
DUAL-BELT PRESS FOR A CONTINUOUSLY ADVANCING WEB OF MATERIAL

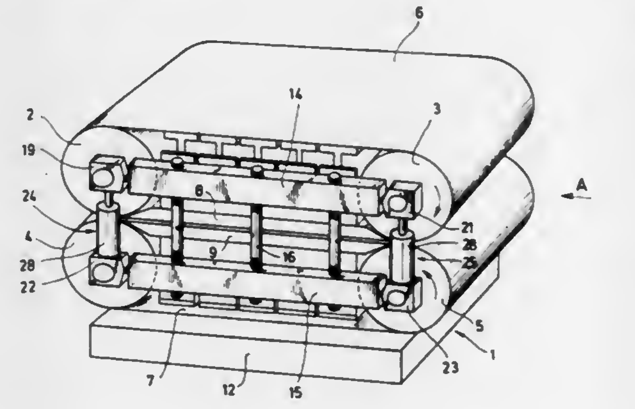
Herr K. Held, Alte Strasse 1, 7218 Trossingen 2, Fed. Rep. of Germany

Filed Jan. 15, 1985, Ser. No. 691,688

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1984, 3402751

Int. Cl.⁴ B30B *5/06*

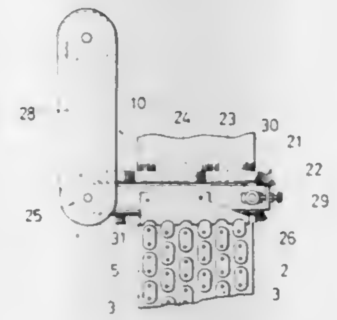
U.S. Cl. 100—154 **5 Claims**



1. A dual-belt press for processing a continually advancing web of material, and having entry and delivery ends; said press comprising a rigid frame having upper and lower bearing bridges; two upper deflection drums and two lower deflection drums in underlying relation with said upper deflection drums whereby a gap is present between each upper and each underlying lower deflection drum; drum bearing blocks in which said deflection drums are rotatably mounted; said bearing blocks being articulately connected to such bearing bridges whereby said bearing blocks are movable toward and away from each other; upper and lower endless press belts movable over the upper and lower reflection drums respectively; pressure plates mounted on said frame and engageable with inner surface portions of said press belts moving between said deflection drums for exerting pressure on a web of material passing between said upper and lower deflection drums; and adjusting means connected to the bearing blocks for the deflection drums at least at the entry end of said press for controlling the interval therebetween whereby the pressure exerted in the gap defined by the press entry end drums is independent of the pressure exerted by the pressure plates.

4,619,196
TABLET PRINTING DEVICE WITH ORIENTING BRUSH

Hikoji Matsuoka, Osaka, Japan, assignor to Matsuoka Machinery Works Co., Ltd., Osaka, Japan
Filed Oct. 1, 1984, Ser. No. 656,735
Claims priority, application Japan, Oct. 3, 1983, 58-185472
Int. Cl.^{4} B41F *17/36*
U.S. Cl. 101—35 **1 Claim**

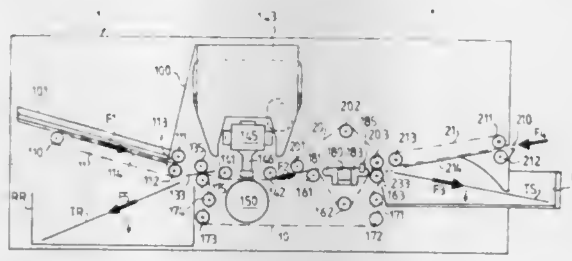


1. In a tablet printing device comprising a rotary cylinder having peripheral recesses, a hopper for supplying tablets into said recesses, and printing roller means opposed to said rotary cylinder for printing tablets within said recesses, the improvement of means ensuring that all said tablets printed by said printing roller means are oriented in respective said recesses in a normal posture to be printed properly, said ensuring means comprising:

a pair of spaced pulleys;
an endless belt extending around and between said pulleys, said belt extending across the entire width of the periphery of said rotary cylinder;
bristles extending from said endless belt for contact with said tablets in said recesses; and
means for moving said belt across said periphery of said rotary cylinder in a direction extending at a right angle to the direction of rotation of said rotary cylinder and parallel to the axis of rotation of said rotary cylinder, and thereby for causing said bristles to impart lateral forces to said tablets and thus to reorient any said tablet from an incorrect posture within said respective recess to said normal posture therein.

4,619,197
APPARATUS FOR PRINTING AND INSPECTING CARD TICKETS

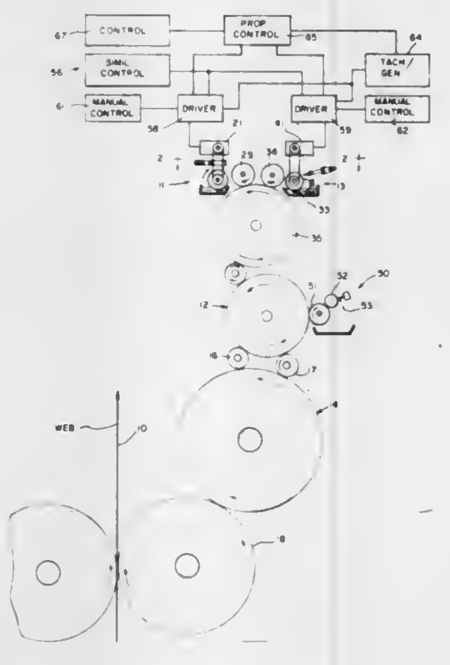
Alain L. N. Pailler, Bourg la Reine, France, assignor to Electronique Serge Dassault, Paris, France
Filed Nov. 16, 1984, Ser. No. 672,184
Claims priority, application France, Jun. 29, 1984, 83 10378
Int. Cl.^{4} B41J *3/00*
U.S. Cl. 101—93.04 **8 Claims**



1. Apparatus for processing card tickets, the apparatus being of the type including means for reversibly driving a ticket along an internal path of the apparatus which path passes through at least one processing station, with at least one of the ends of the internal path being defined by a pair of wheels which are substantially tangential to each other, the apparatus further including a first guide and feed unit, outside the internal path, for bringing a ticket to said internal path, the improvement wherein the common tangent of the said pair of wheels is inclined relative to the guide axis of the said guide and feed unit and passes underneath the said unit, with the said axis being substantially tangential to the upper wheel of the said pair, thereby enabling a ticket to be reversed without the ticket returning to the said guide and feed unit, and without any need for switching means to deflect a reversing ticket away from the guide and feed unit, the apparatus further including a second guide and feed unit located at the other end of the internal path and cooperating therewith in the same manner as the first guide the feed unit.

4,619,198
METHOD AND APPARATUS FOR KEYLESS OFFSET PRINTING

Joseph P. Moll, 1310 Elm Dr., Schaumburg, Ill. 60194
Filed Dec. 24, 1984, Ser. No. 686,040
Int. Cl.^{4} B41F *7/26, 7/28, 7/36;* **B41L** *25/02*
U.S. Cl. 101—148 **13 Claims**



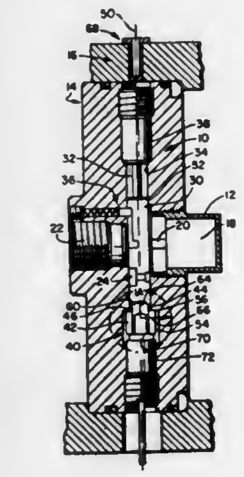
1. A method of offset printing paginated sheets having differential columnar ink demand without individual columnar ink controlling systems, employing an ink fountain and a water fountain for supplying ink and water to a variable ink-water drum having a plurality of discrete hydrophilic and oleophilic areas, each capable of holding varying quantities of water and ink for transferring variable quantities of ink and water from the ink and water fountains to a plate cylinder and a scraper system for removing ink from the variable ink-water drum, wherein the plate cylinder carries a columnar plate with varying columnar ink demand, and a form roller for transferring ink and water from the ink-water drum to the plate cylinder including the steps of: adjusting the ink and water fountains to supply ink to the variable ink-water drum in sufficient and uniform amounts entirely across the drum to meet the demand for the plate cylinder column and corresponding sheet column requiring the highest quantity of ink of all columns and to exceed the demand of the other plate cylinder columns and corresponding sheet columns, and without metering ink and water directly on the ink-water drum, transferring ink and water from the variable ink-water drum with the form roller to the plate cylinder.

4,619,199
SAFING AND ARMING MECHANISM

Leo V. Giladett, Santa Cruz, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jul. 31, 1984, Ser. No. 636,454
Int. Cl.^{4} F42C *15/36*
U.S. Cl. 102—254 **7 Claims**

1. An out-of-line safing and arming mechanism for use with an explosive train in which a movable link couples on portion of the train to another when the explosive train is armed comprising:

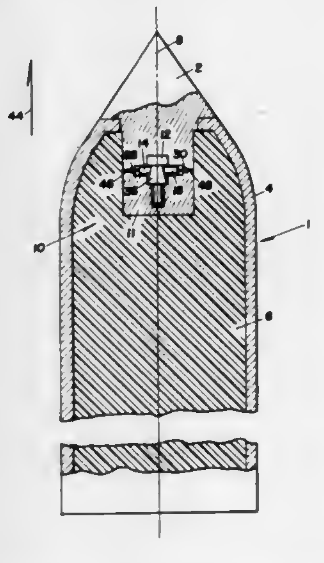
a slider means for moving the movable link along a predetermined direction between an explosive train safing position in which the train is interrupted and an explosive train arming position;
stop means for preventing said slider means from moving into said explosive train arming position;
a hollow connecting means structurally interconnecting said stop means and said slider means; and



detaching means disposed within said hollow connecting means for generating forces against said connecting means, said forces including a component transverse of said predetermined direction for breaking said connecting means in shear to break the interconnection of said stop means and said slider means, and said forces including a component along said predetermined direction and directed against said slider means for moving said slider means toward said explosive train arming position.

4,619,200
IMPACT IGNITION DEVICE FOR A PLURALITY OF STAB TYPE PRIMERS

Frank H. Bell, Logan, Utah, assignor to Morton Thiokol, Inc., Chicago, Ill.
Filed Mar. 27, 1985, Ser. No. 716,728
Int. Cl.^{4} F42C *1/02*
U.S. Cl. 102—275 **7 Claims**

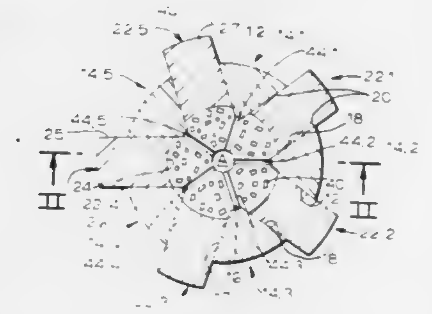


1. A multi-path impact type igniter for a projectile having a center-line that is parallel to the direction in which the projectile is launched comprising,

a plurality of stab type primers,
a plurality of rupture-discs, each of said rupture-discs being arranged to bear directly upon an individually associated one of said stab type primers,
an inertia mass having the shape of a conic body of rotation, said mass having a center-line that is coincident with the projectile center-line, and
a plurality of firing pins each of which have a first end and a second end, said firing pins being equally spaced apart and so supported for movement in a plane that is at an angle 90° with respect to the projectile center-line that each of said firing pins faces away from the projectile center-line with the first end thereof bearing directly on an individually associated one of said rupture discs, each of said firing pins having at the second end thereof a sloped conic surface forming a cam that is arranged in direct contact with said conic body-of-rotation inertia mass,
whereby upon impact of the projectile with a target after being propelled through space the inertia mass moves forward, due to the impetus thereof, at a high rate relative to the projectile and forces said firing pins away from the projectile center-line to pierce the associated rupture-disc and to enter and thereby actuate the associated stab type primer.

4,619,201
GRADUATED-DENSITY PACKED PROPELLANT CHARGE

Rudolf Romer, Kaarst; Michael Schwenzer, Duesseldorf, and Reinhard Synofzik, Juelich, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany
Filed Sep. 7, 1984, Ser. No. 648,798
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1983, 3332224
Int. Cl.^{4} C06D *5/06*
U.S. Cl. 102—283 **2 Claims**



1. In a propellant charge generally centered on an axis, said charge being formed of a mass of fluid propellant consisting of individual grains, the improvement wherein,

the propellant charge is arranged such that there is a uniform increase in density from the axis radially outwardly, whereby the average density of the charge exceeds the bulk density of the propellant.

4,619,202
MULTIPLE PURPOSE AMMUNITION

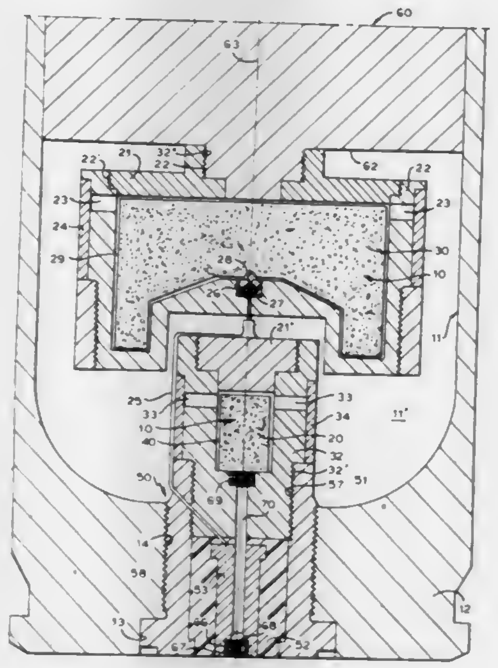
Rudolf Romer, Kaarst; Michael Schwenzer, Duesseldorf, and Reinhard Synofzik, Juechen, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 561,545, Dec. 14, 1983, abandoned. This application Dec. 17, 1984, Ser. No. 682,206
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1982, 3246173
Int. Cl.^{4} F42B *5/16*
U.S. Cl. 102—443 **14 Claims**

1. An improved multi-range ammunition unit for firing at a high angle and preselected exit muzzle velocity in which a plurality of partial propellant charges and the projectile are mounted in a shell casing and said partial propellant charges

are jointly or separately ignited for obtaining different ranges, and wherein at least one first propellant charge is fixedly mounted on the bottom of the shell casing, the improvement comprising

(a) at least one second propellant charge is fixedly connected to the bottom of said projectile and is disposed at least partially in front of said first propellant charge in said shell casing; and

(b) means operatively connected to said first and second propellant charges for selectively first, and singly igniting said first propellant charge or jointly ignite said first propellant charge with at least one of said second propellant charges.



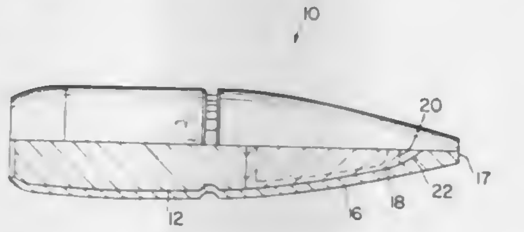
4,619,203
ARMOR PIERCING SMALL CALIBER PROJECTILE

Randall G. Habbe, Pocahantas, Ill., assignor to Olin Corporation, Stamford, Conn.

Filed Apr. 26, 1985, Ser. No. 727,716

Int. Cl.⁴ F42B *11/08*

U.S. Cl. 102—516 **1 Claim**



1. An improved small caliber steel tipped lead projectile intended to penetrate armor, which projectile consists of:

(a) a lead core body portion,

(b) a steel nose portion, in front of the body portion, and case hardened to at least Rc50 from its surface to a depth of 0.030 inches and having an interior of a hardness below Rc50, and

(c) a bullet jacket about said body and nose portions.

4,619,204
DRIVERLESS TUGGER VEHICLE AND SYSTEM

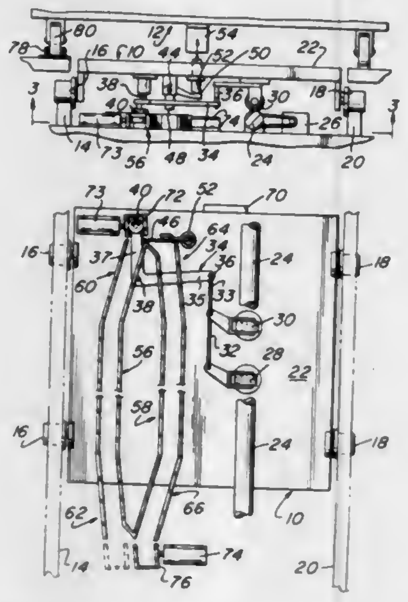
Per E. Lindquist, Easton, Pa., assignor to SI Handling Systems, Inc., Easton, Pa.

Filed Dec. 7, 1983, Ser. No. 559,124

Int. Cl.⁴ B61B *13/12*

U.S. Cl. 104—166 **10 Claims**

1. A driverless tugger vehicle adapted to shuttle back and forth on a first path to push or pull another driverless vehicle each time it moves in a forward direction, said tugger vehicle including a platform having support wheels, at least one drive wheel on said tugger vehicle, said drive wheel being adapted to be in frictional contact with a drive shaft separate from the tugger vehicle and positioned to be adjacent to said first path for propelling the tugger vehicle, an actuator connected to said drive wheel in a manner so that the drive wheels can pivot through an arc sufficient to cause the vehicle to be driven in opposite directions by a drive shaft, and means coupled to said actuator on said tugger vehicle adapted for selective engagement with another vehicle when the tugger vehicle moves in the forward direction to push or pull a second vehicle along a second path parallel to said first path only when the tugger vehicle moves in the forward direction.



4,619,205
CONVEYOR ARRANGEMENT

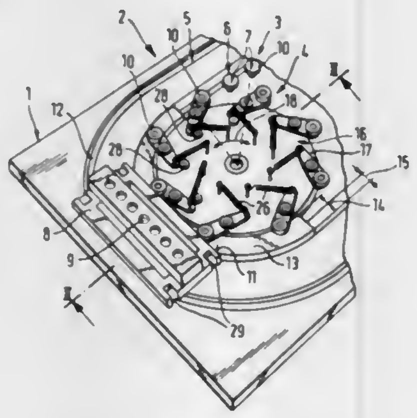
Walter Sticht, Attnang-Puchheim, Austria, assignor to STIWA-Fertigungstechnik Sticht GesmbH, Attnang-Puchheim, Austria

Filed Mar. 20, 1984, Ser. No. 591,560

Claims priority, application Austria, Mar. 29, 1983, 1117/83; Feb. 6, 1984, 360/84

Int. Cl.⁴ B61B *13/12*

U.S. Cl. 104—168 **11 Claims**



1. A conveyor arrangement for conveying a workpiece carrier in a conveying direction, the carrier having two opposite sides, and a guide means for vertically and laterally guiding the carrier in said direction, the guide means comprising

(a) a means associated with one of the carrier sides for advancing the carrier in the conveying direction, the advancing means including

(1) a succession of entrainment elements engaging the one carrier side, and

(2) a turning transport device, the entrainment elements being circumferentially arranged on the transport device for engagement of successive ones of the entrainment elements with successive points on the one carrier side upon turning the device,

(b) a guide track of two guide ledges supporting the carrier for vertical guidance therealong and having respective sides spaced apart in a direction transverse to the conveying direction and extending in the conveying direction, one of the guide track sides being opposite the advancing means in the transverse direction for laterally guiding the carrier, the one guide track side being associated with the opposite carrier side, and the advancing means being arranged to bias the carrier towards the one guide track side, and

(c) guide elements mounted on the carrier and guided without play along the one guide track side.

4,619,206
DRIVE SYSTEM FOR A TWIN SUSPENSION HAULAGE CABLE GONDOLA LIFT

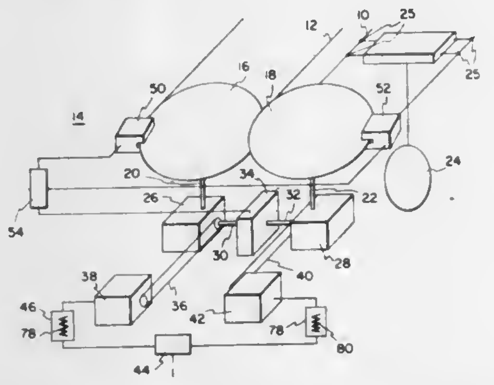
Denis Creissels, 43, Bld. des Alpes, 38240 Meylan, France

Filed Sep. 26, 1984, Ser. No. 654,657

Claims priority, application France, Oct. 3, 1983, 83 15838

Int. Cl.⁴ B61B *11/00*

U.S. Cl. 104—178 **3 Claims**



1. An overhead cable transport installation drive system comprising:

terminals each having two end pulleys,

two endless parallel suspension haulage cables passing over said end pulleys and extending along two parallel loops,

two identical electric drive motors, each motor driving one of said pulleys,

gondolas coupled in line to said two cable loops,

an electrical power supply source for delivering current to said motors, and having a common armature supply for said two motors,

control means for controlling said power supply to each said motor for maintaining substantially equal the power outputs of said two motors,

said motors being direct current electric motors with separate excitation circuits, each motor having a field magnet and an armature winding, said armature winding being connected to said common armature supply of said power supply source by an armature circuit including a series connected resistor in series with the associated armature winding, said armature circuits being identically coupled in parallel across said common armature supply, said series connected resistors each being of a value for providing an IR voltage drop that increases with increasing armature current and thus directly provoking an armature voltage reduction equal to the resistor voltage drop increase and a resulting speed reduction when the power output of the associated motor increases for restoring identical power outputs of the two motors.

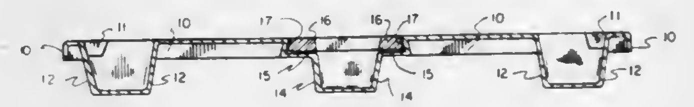
4,619,207
PALLET MADE FROM SHEET OF RIGID MATERIAL

N. Blake Boyce, Rigby, and J. Neil McSpadden, Shelley, both of Id., assignors to Universal Plastics, Inc., Salt Lake City, Utah

Filed Mar. 26, 1984, Ser. No. 593,686

Int. Cl.⁴ B65D *19/38*

U.S. Cl. 108—51.1 **7 Claims**



1. In a pallet of the type comprising a sheet of generally rigid material having a top surface for supporting a load and a bottom surface which serves as a lift-engaging surface, and wherein the pallet further comprises

a peripherally extending rib projecting from the bottom surface,

a plurality of substantially radially extending ribs projecting from the bottom surface and oriented so as to extend from the central portion of the pallet outwardly toward the periphery of the pallet,

a plurality of hollow legs projecting from the bottom surface so as to form open depressions in the top surface, with the hollow legs further being positioned around the periphery of the sheet of rigid material, and

a central hollow leg projecting from the bottom surface so as to form an open central depression in the top surface, with the central hollow leg being positioned at the central portion of the sheet of rigid material, the improvement comprising

a recessed receptacle or cavity formed in the upper surface of the sheet of material so as to encircle the open central depression which forms the central hollow leg, said receptacle or cavity having a depth which is less than the distance which the central leg projects from the bottom surface of the sheet of plastic material, with the inner side of the receptacle or cavity opening to the hollow depression forming the hollow central leg whereby the receptacle or cavity forms a countersunk enlargement about the hollow central leg, and

a center plug or insert which has a central opening therethrough, with the central opening being of substantially the same size and shape as the open central depression of the central hollow leg, said center plug or insert further being adapted to fit snugly within the countersunk receptacle or cavity whereby the center plug provides strength for the pallet to resist deflection of the central portion of the pallet when the pallet is supported along the peripheral sides thereof with no support in the central portion of the pallet.

4,619,208
WORK SURFACE HEIGHT ADJUSTMENT MECHANISM

Andrew J. Kurrasch, Saugatuck, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.

Filed Dec. 27, 1984, Ser. No. 686,846

Int. Cl.⁴ A47B *9/00*

U.S. Cl. 108—144 **26 Claims**

1. A height adjustment mechanism for automatically adjusting the height of a work surface and comprising a left-side cable lift mechanism, a right-side cable lift mechanism, a central drive mechanism and cable means operatively coupling said left-side and right-side lift mechanisms to said central drive mechanism, and wherein each of said left-side and right-side lift mechanisms comprises:

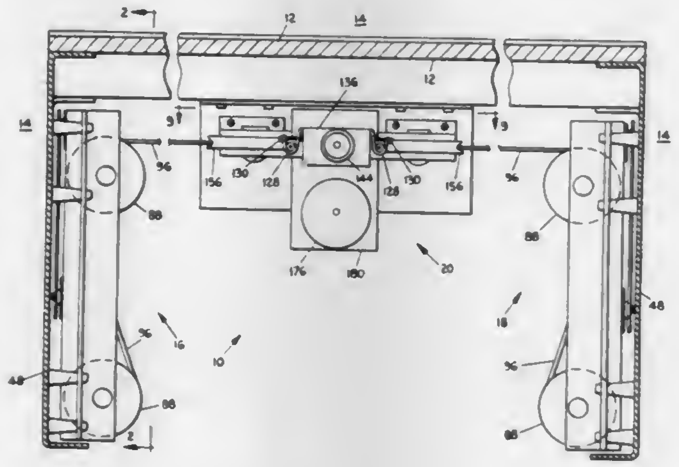
mounting means for mounting said corresponding cable lift mechanism to a wall panel or a similar supporting surface;

lift support means mounting said work surface and mounted for guided vertical movement relative to said mounting means;

support pulley means secured to said lift support means and engaging said cable means for supporting said work surface; and

said central drive mechanism comprises:

central support means for mounting said central drive mechanism to said work surface;



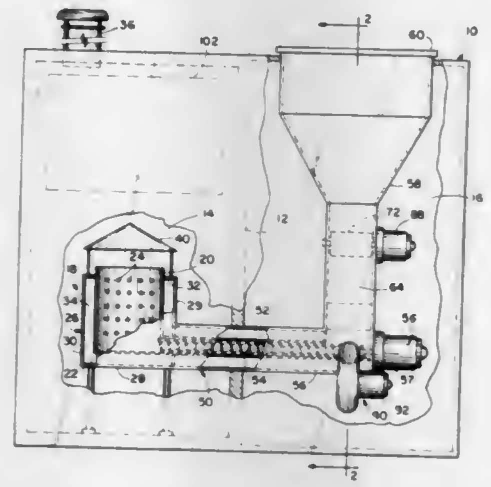
force generating means; and

means connected to said cable means and to said force generating means for exerting forces on each of said lift support means in response to forces generated by said force generating means so as to selectively raise or lower said work surface.

4,619,209
FURNACE CONSTRUCTION

Joseph P. Traeger, 250 Oak St.; Randolph J. Traeger, 530 Alder St., and Mark A. Traeger, 540 Leo St., all of Mt. Angel, Oreg. 97362

Filed Aug. 8, 1985, Ser. No. 763,520
Int. Cl.⁴ F23K *3/14, 3/16*
U.S. Cl. 110—110 **8 Claims**



1. In a furnace,

a pot with an open top for holding fuel during the burning process,

an elongate tube connecting at the outfeed end thereof with the interior of the pot and extending laterally therefrom, and an elongate rotatable auger extending within the tube for moving fuel along the length of the tube and thence into the pot,

perforate means formed in the side of the pot, and

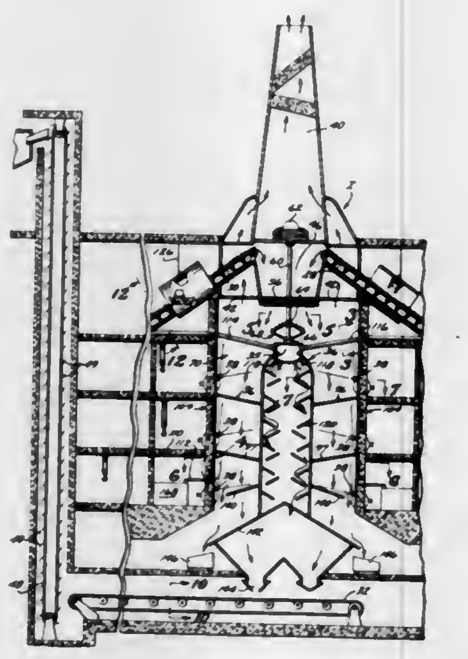
air-flow-producing means including power-driven blower means, structure connecting with said blower means producing air flow by the blower means form outside the perforate means and through the perforate means to the pot interior for supporting combustion, and structure connecting with said blower means producing air flow by the blower means through said tube and out the outfeed end thereof to further support combustion and to inhibit reverse air flow through the tube.

thereof to further support combustion and to inhibit reverse air flow through the tube.

4,619,210
SOLID AND LIQUID WASTE INCINERATOR SYSTEM

Leo D. Kennedy, 1540 Dalmatia Dr., San Pedro, Calif. 90732

Filed Feb. 5, 1985, Ser. No. 698,368
Int. Cl.⁴ F23B *7/00*
U.S. Cl. 110—234 **18 Claims**



1. A solid and liquid waste incinerator comprising:

a furnace unit for generating heat having side walls and an evaporation cylinder located within the side walls;

a plurality of nozzles rotatably mounted along the side walls of said furnace unit and positioned at the upper portion of said evaporation cylinder and including ignition means for commencing combustion;

a plurality of loading means for moving said waste into said furnace unit;

a steam turbine generator utilizing said heat generated by said furnace unit for generating electrical energy and;

a plurality of conduit means for containing and transporting water and steam to said steam turbine generator, said conduit means located within said furnace unit whereby heat energy produced by said furnace unit causes said water to change state to steam thereby energizing said steam turbine generator to produce electrical energy.

4,619,211
APPARATUS FOR PRODUCING SHIRRING

Joseph R. Semon; William J. Semon; Lawrence J. Bonczar, all of Eynon; Helen Ceresko, Mt. Cobb, and William T. MacKirdy, Eynon, all of Pa., assignors to Casket Shells, Inc., Eynon, Pa.

Filed Aug. 25, 1983, Ser. No. 526,408
Int. Cl.⁴ D05B *35/08*
U.S. Cl. 112—132 **9 Claims**

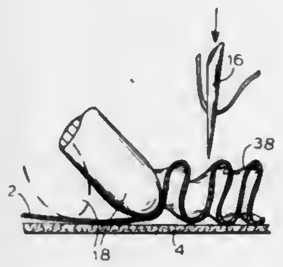
1. An apparatus for producing shirring which comprises:

a guiding means adapted to guide a panel of backing material to an adhering means so as to underlay fabric with backing material at the adhering means;

the adhering means located to receive fabric as it is conveyed from the guiding means;

a gathering means comprising a plurality of flexible mechanical projectons which automatically push fabric into folds, the guiding means being a guiding plate disposed below the gathering means and the gathering means comprising a movable support having the flexible mechanical projections extending therefrom wherein the flexible mechanical projections each having a substantially equal determined length and wherein the movable support being spaced a

predetermined distance from the guide plate, the predetermined distance being slightly less than the predetermined length of the flexible mechanical projections so that during operation of the invention of the flexible mechanical projections contact fabric passing over the guide plate, and the flexible mechanical projections being bent by



pressure from the guide plate and resultant pressure from the flexible mechanical projections on the fabric acts to press and push the fabric into folds;

a conveying means adapted to convey the panel of fabric and the panel of backing material whereby fabric and backing material pass the guiding means, gathering means, and the adhering means.

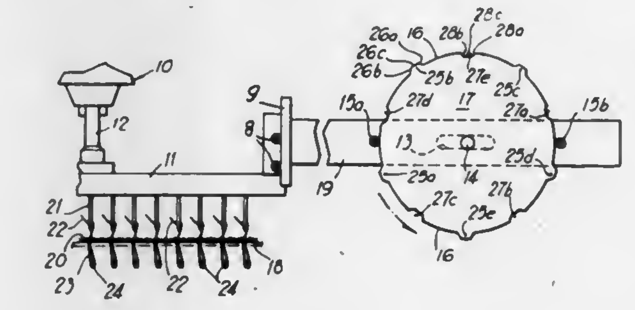
4,619,212
TUFTING MACHINE AND METHOD OF TUFTING FOR PRODUCING MULTIPLE ROWS OF TUFTS WITH SINGLE LENGTHS OF YARN

Roy T. Card, 4012 Creekwood Ter., Chattanooga, Tenn. 37421, and Joseph L. Card, 1515 Edgewood Cir., Chattanooga, Tenn. 37405

Continuation of Ser. No. 592,384, Mar. 22, 1984, which is a continuation of Ser. No. 496,010, May 19, 1983, Pat. No. 4,440,102. This application Apr. 15, 1985, Ser. No. 723,266

The portion of the term of this patent subsequent to Apr. 3, 2001, has been disclaimed.

Int. Cl.⁴ D05C *15/30, 17/02*
U.S. Cl. 112—266.2 **7 Claims**



1. A method of tufting pile fabric comprising, feeding a backing material in one direction, reciprocably penetrating a plurality of needles carrying yarns through said backing material from one side thereof, said needles being spaced apart transversely to said feed direction, shifting said needles from a first position transversely to said direction while said needles are on one side of said material and spaced therefrom, penetrating said material with said needles, and shifting said needles to said first position while said needles are within the backing material and withdrawing said needles from said backing material to form loops of said yarns in said backing material.

4. In a tufting machine, means for feeding a base material in one direction, a plurality of yarn carrying needles spaced apart transversely to said one direction, means for reciprocating said needles to penetrate the base material and to form loops therein, means for mounting said needles for movement in a direction transverse to said one direction, pattern control means for shifting said needles from a first position while said needles are outside said base material and for shifting said needles back to said first position while said needles are within said base material.

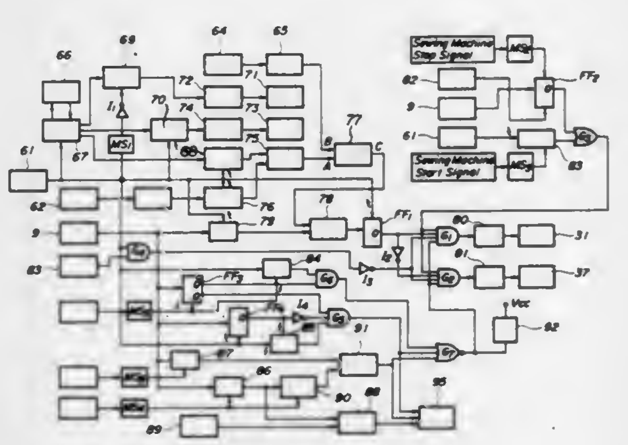
4,619,213
DRIVE CONTROL MECHANISM OF SEWING MACHINE

Ikurou Iimura, Kanagawa; Kuniharu Sakuma, and Haruo Iwabuchi, both of Tokyo, all of Japan, assignors to Tokyo Juki Industrial Co., Ltd, Chofu, Japan

Filed Sep. 27, 1984, Ser. No. 655,363

Claims priority, application Japan, Sep. 30, 1983, 58-183458; Sep. 30, 1983, 58-183459

Int. Cl.⁴ D05B *69/36*
U.S. Cl. 112—273 **6 Claims**



1. In a sewing machine comprising a sewing machine motor operable in response to a start signal, a position detection means operatively connected with said sewing machine motor for producing a position signal each time said sewing machine motor operates to a predetermined extent, paying-out detection means disposed in a thread path between a thread take-up lever and a thread supply source for producing a thread feed signal varying depending upon the amount of thread fed from said supply source to said lever, and a motor stop circuit operable in response to the lack of a thread feed signal after the occurrence of a position signal to interrupt operation said sewing machine motor, characterized by a drive control mechanism comprising: control means for operating said motor to drive said sewing machine when a position signal is produced and without a thread feed signal being produced at the start of the operation of said sewing machine.

4,619,214
SEWING MACHINE WITH CAM-CONTROLLED NEEDLE BAR AND FEED DOG

Olindo Baruffa, Thonex, and Antonio Jimenez, Meyrin, both of Switzerland, assignors to Mefina, S.A., Switzerland

PCT No. PCT/CH84/00015, § 371 Date Oct. 10, 1984, § 102(e) Date Oct. 10, 1984, PCT Pub. No. WO84/03110, PCT Pub. Date Aug. 16, 1984

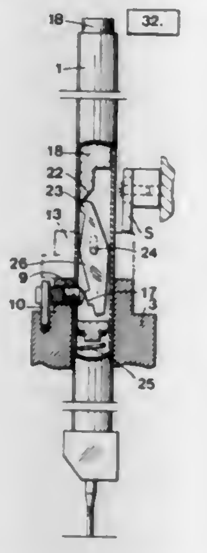
PCT Filed Feb. 3, 1984, Ser. No. 668,722

Claims priority, application Switzerland, Feb. 10, 1983, 737/83

Int. Cl.⁴ D05B *3/02*
U.S. Cl. 112—459 **8 Claims**

1. In a sewing machine comprising elements for lateral control and positioning of a needle bar carried by an oscillating cradle and for the adjustment of the amplitude and the direction of displacement of a feed dog for the movement of the material to be sewn, the improvement comprising, an upper arm containing a first servomotor driving a cam having a plurality of cam faces, a first said cam face engageable with a first feeler attached to said needle bar cradle to direct lateral

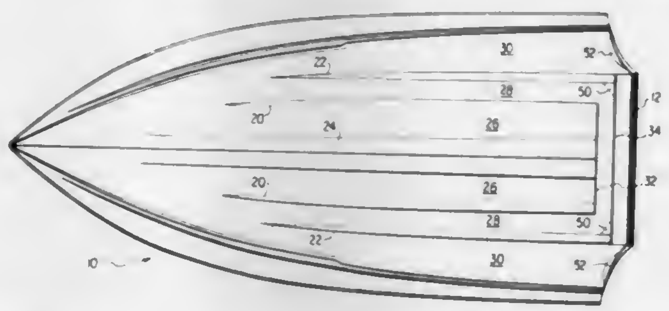
positioning of the needle bar, a second said cam face cooperating with said first said cam face and engageable by another feeler, said another feeler connected to a support element and shiftable to a position for disengaging said needle bar, a lower frame containing a second servomotor driving a second cam having a cam face, still another feeler engaging said face of said second cam, and pivoted means connecting said still another feeler to the feed dog to regulate the amplitude of the forward-/backward movement of the material to be sewn.



4,619,215
DUAL STEP, VEE TYPE PLANING HULL FOR POWER BOATS

Forrest L. Wood, Flippin; Dale H. Jensen, Everton; Kenneth P. Poley, Yellville; Charles C. Hoover, and Gary L. Wilson, both of Bull Shoals, all of Ark., assignors to Wood Manufacturing Company, Inc., Flippin, Ark.

Filed Apr. 3, 1985, Ser. No. 719,528
Int. Cl.⁴ B63B *1/18*
U.S. Cl. 114—56 **7 Claims**



1. A deep vee entry hull having an angled transom and a central running surface extending fore and aft of the hull flanked, in the after portion thereof, by inboard, intermediate and outboard running surfaces; said intermediate running surfaces terminating at the after ends thereof in a first transverse step forward of said transoms and extending transversely between said intermediate running surfaces; and said central and inboard running surfaces terminating at the after ends thereof in a second transverse step, parallel with and forward of said first transverse step.

4,619,216
SAILBOAT LUFF SYSTEM

William Crear, III, 56 Westwood Dr., Long Lake, Minn. 55356, and Roy E. Ahern, 6449 Barrie Rd., Minneapolis, Minn. 55435

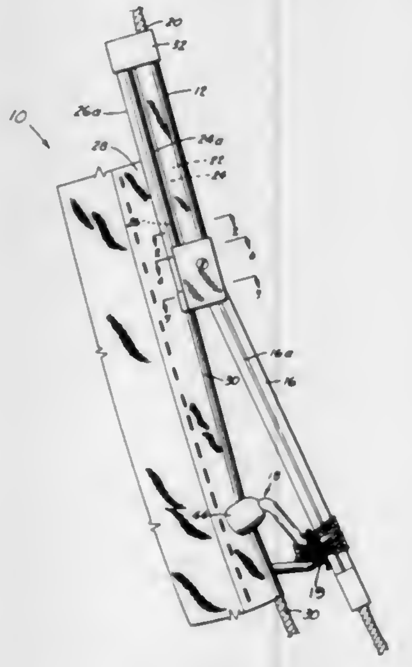
Filed Oct. 5, 1984, Ser. No. 657,931
Int. Cl.⁴ B63H *9/04*
U.S. Cl. 114—105 **21 Claims**

1. An elongated support for simultaneously supporting a plurality of sailboat sails, on a sailboat stay wherein each sail has a forward edge luff comprising an elongated luff support member including:

first and second wall means formed to define a first elongated channel;

third wall means defining a second channel having a narrow slot opening, said third wall means being mounted to said first wall means and extending toward said second wall means;

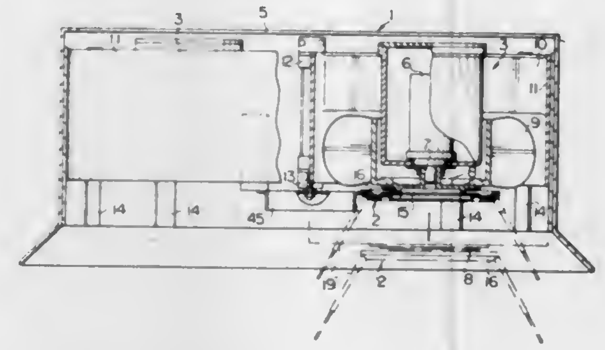
fourth wall means defining a third channel positioned on an opposite side of said second channel from the first channel, said fourth wall means being mounted to said second wall means and having a narrow slot opening facing in a different angular direction from the narrow slot opening of said second channel with respect to a bisecting plane of the first channel, and said second and third channels together defining a stay retaining slot opening leading to said first channel, which is resiliently closed by the first and second wall means urging the third wall means forming the second channel toward the second wall means, said stay retaining slot being openable by moving the third wall means away from the second wall means against the resilient urging.



4,619,217
APPARATUS FOR CLEANING UNDERWATER SURFACES

Kiyoshi Wachi, Machida, Japan, assignor to Macsea Marine Services Co., Inc., Tokyo, Japan

Filed Dec. 28, 1984, Ser. No. 687,424
Claims priority, application Japan, Apr. 4, 1984, 59-49566[U]
Int. Cl.⁴ B63B *59/10*
U.S. Cl. 114—222 **12 Claims**



9. A cleaning apparatus for cleaning an underwater surface, comprising:

a housing;

a rotary brush having a brush base, mounted in said housing, having a front side for engaging the underwater surface, and a rear side opposite said front side;

a water pump mounted in said housing having means for a pumping stream of water from said front side to said rear side of said brush; and

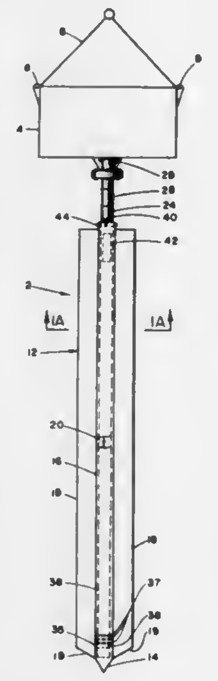
means for rotating said brush, said brush being detachably mounted to said rotating means;

said brush including a front ring and a rear ring rearward of, concentric with, superposed over, and detachably fixed to said front ring, said front ring having a plurality of circumferentially spaced apart notches opening into the radial periphery thereof, said brush further comprising bundles of bristles extending generally forwardly through said notches and having head portions rearward of said notches between said front ring and said rear ring, said rear ring comprising means for sandwichingly fixing said head portions between said front ring and said rear ring such that said bundles are radially removable from said notches when said front ring is detached from said rear ring.

4,619,218
EMBEDMENT ANCHOR

Patrick M. Kenny, Belle Chasse, La., assignor to Hen-Jac, Inc., Belle Chasse, La.

Filed Jan. 30, 1984, Ser. No. 574,871
Int. Cl.⁴ B63B *21/28*
U.S. Cl. 114—295 **6 Claims**



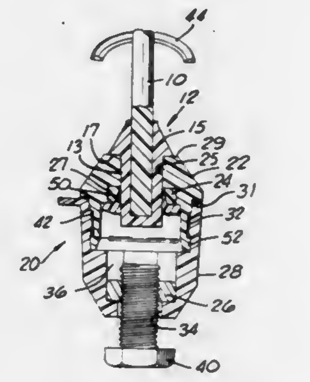
1. An embedment anchor for providing a mooring point embedded within a sea floor comprising:

a. a substantially heavy drive weight member:
b. a substantially elongated hollow drive tube assembly, extending vertically downward from said drive weight member;
c. a substantially elongated anchor spear coaxially, sealingly mounted about said drive tube member;
d. anchor rode attaching means connected to an upper point on said anchor spear;
e. low velocity explosive means within said drive tube assembly;
f. controllable detonation means adapted to detonating said explosive within said drive tube assembly; and
g. vertical position sensing means, adapted to detecting a tilt away from vertical of said anchor spear, adapted to preventing detonation of said explosive upon detection of said tilt away from vertical.

4,619,219
PRESSURE RELEASE SAFETY ANTENNA

Steven L. Millard, 1576 Wardman Dr., Brea, Calif. 92621

Filed Sep. 12, 1984, Ser. No. 649,802
Int. Cl.⁴ G09F *17/00;* **B60Q** *9/00*
U.S. Cl. 116—28 R **10 Claims**



5. A reusable pressure releasable safety antenna for off-road vehicles comprising:

an elongated member, said elongated member having a visibility enhancement means connected thereto,

a pressure releasable mounting assembly, said mounting assembly having an upper section and a lower section,

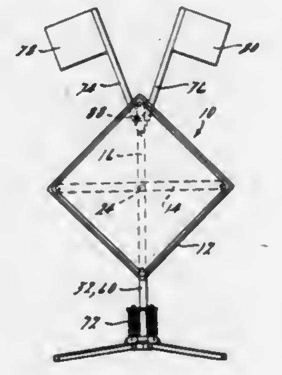
a leash, and

a means for connecting the lower section of the pressure releasable mounting assembly to the off-road vehicle, wherein said elongated member is connected to the upper section of the pressure releasable mounting assembly, said upper section having a channel circumscribing an exterior surface, said upper section being inserted within a recess in the interior of the lower section of the pressure releasable mounting assembly, the lower section having a ridge circumscribing the interior wall of the lower section, the ridge interlocking with the channel in the upper section when the upper section is properly inserted within the lower section, thereby preventing accidental loss of said safety antenna, and further wherein the leash is connected at one end to the lower section of the pressure releasable mounting assembly, the opposite end of the leash being connected to the elongated member, said upper section separating from said lower section before pressure exerted on said elongated member reaches the breaking point pressure of said elongated member.

4,619,220
COLLAPSIBLE SIGN WITH FLAGS

James R. Seely, Rochester, and Jerry A. McCabe, Union Lake, both of Mich., assignors to Marketing Displays, Inc., Farmington Hills, Mich.

Continuation of Ser. No. 573,193, Jan. 23, 1984, abandoned. This application Oct. 28, 1985, Ser. No. 792,634
Int. Cl.⁴ G09F *7/18*
U.S. Cl. 116—63 P **21 Claims**



1. In a sign assembly of the type being collapsible from a

display configuration to a storage configuration, the sign assembly having at least one cross member supporting a sign, and further having at least one warning flag attached to a corresponding warning flag rod, the improvement comprising:

a first pivot means having a shaft and being affixed to said cross member for pivotably attaching the warning flag rod thereto;

a second pivot means affixed to the cross member; and

a warning flag support bracket pivotally attached to said cross member by said second pivot means, said warning flag support bracket having at least one curled end, said flag rod being journaled for rotation about said shaft of said first pivot means and said curled end being positionable to limit the pivotal movement of said flag rod in at least one rotational direction to hold said flag in the display configuration but otherwise free of rotational restraint, the warning flag rod and said bracket further being selectively pivotable into a substantially collinear relationship with respect to said cross member when the sign assembly is in the storage configuration, the warning flag rod extending in the display configuration in a generally opposite direction from that of the warning flag rod in the storage configuration.

4,619,221

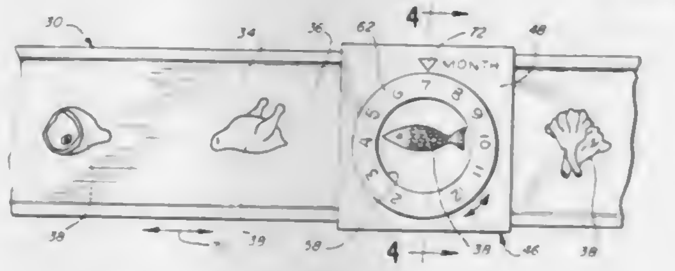
INVENTORY INDICATING MEANS FOR REFRIGERATION APPARATUS

William J. Linstromberg, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 21, 1984, Ser. No. 653,436

Int. Cl.⁴ G09F *9/00*

U.S. Cl. 116—307 **11 Claims**



1. In a refrigeration apparatus having a cabinet defining a compartment for storing food items at refrigerated temperatures, and a food support member within said compartment defining a forward portion associated with an improved inventory indicating structure comprising:

an elongated guide track attached to said forward portion;

a plurality of first indicia distributed along said track, each indicium of said first indicia representing a food type;

indicating means adjustably, slidably mounted to said track and defining a viewing aperture for alignment selectively with a selected indicium;

data means comprising a date setting dial adjustably, rotatably mounted to said indicating means, said dial surrounding said viewing aperture;

a mark provided on one of said dial and said indicating means, and a plurality of second indicia on the other of said dial and said indicating means, said viewing aperture being selectively slidable into alignment with and to make readily visible from in front of said forward portion a selected first indicium corresponding to the type of food item that is being stored on said food support member and said date setting dial being selectively rotatable to align a selected second indicium with said mark to provde an indication of the time when the food item was stored, whereby through said inventory indicating structure a determination of the length of storage time of the food item can be made without physically examining the item on said support member.

4,619,222

ANIMAL TRAINING COURSE, ESPECIALLY FOR RACE HORSES

Bo Sundberg, and Hans Jonason, both of Sundsvall, Sweden, assignors to HB Autonom

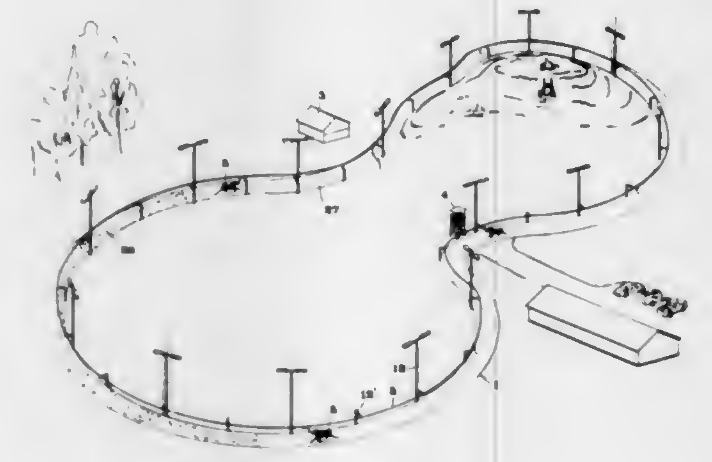
PCT No. PCT/SE84/00204, § 371 Date Jan. 25, 1985, § 102(e) Date Jan. 25, 1985, PCT Pub. No. WO84/04869, PCT Pub. Date Dec. 20, 1984

PCT Filed May 29, 1984, Ser. No. 706,858

Claims priority, application Sweden, Jun. 7, 1983, 8303194

Int. Cl.⁴ A01K *29/00*

U.S. Cl. 119—15.5 R **4 Claims**



1. An animal training course, especially for race-horses, comprising:

an endless track;

a guide arranged along said endless track, said guide being rigid and non-yielding;

a plurality of mobile wheel-mounted carriages adapted to travel along said guide, each said carriage including a depending member for tieing an animal to be trained thereto to make the animal along said track by following said carriage;

a connecting means for connecting said plurality of carriages to form a train of said carriages;

wherein said train includes a first, leading carriage and a motor mounted on said first carriage for driving said first carriage and the remaining, trailing carriages of the train along said guide;

a control means for controlling the operation of the train including a transceiver means for transmitting control signals and a receiver means actuated by the signals from said transceiver means for controlling said motor of said first carriage and

a transmitter means attached to the animal for reading physiological measured values of the animal and for transmitting signals indicative of the measured values, said transceiver means being adapted for receiving the transmitted signals of said transmitter means.

4,619,223

PORTABLE CORRAL FOR CATTLE AND THE LIKE

Dennis Koehn, Star Rte. Box 46A, Sublette, Kans. 67877

Filed Apr. 29, 1985, Ser. No. 728,691

Int. Cl.⁴ E04H *17/18;* **A01K** *1/02*

U.S. Cl. 119—20 **6 Claims**

1. A portable corral for cattle and the like which comprises:

(a) a trailer having a front frame, a rear frame and two side frames, said trailer having a first opening in said first side frame and a second opening in said rear frame so that said cattle may enter and egress therefrom;

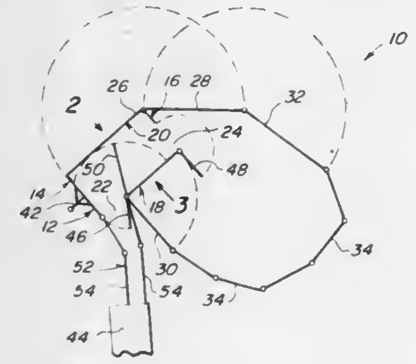
(b) a solid side cover affixed to said second side frame of said trailer to reduce wind thereof;

(c) at least two wing panel frames, each of which are pivotally coupled to one of said side frames of said trailer;

(d) a plurality of panel frames detachably coupled to said two wing panel frames and with one another wherein said wing panel frames, said panel frames and said trailer are aligned and combined to constitute said corral for confining said cattle;

(e) a wheel assembly pivotally coupled between said side frames of said trailer so that when said wheel assembly is in an upward position said trailer will sit upon the ground and be used as part of said corral;

(f) a hitch mounted to said front frame of said trailer so that said trailer may be towed by a motor vehicle when said wheel assembly of said trailer is in a downward position;



(g) a pair of gates, each of which are pivotally coupled at one of said openings of said trailer so that when said gates are closed said trailer will be made into a self-sustaining enclosure;

(h) a squeeze gate which is pivotally coupled inwardly at said first opening in said first side frame so that said squeeze gate will divide said trailer into two parts; and

(i) a catch pen being of two sets of panel frames, each said set of panel frames detachably coupled with one another, and between said first opening in said first side frame of said trailer and said motor vehicle so that said cattle may enter said trailer from said motor vehicle.

4,619,224

APPARATUS FOR CONTROLLING DRUM WATER LEVEL OF DRUM TYPE BOILER

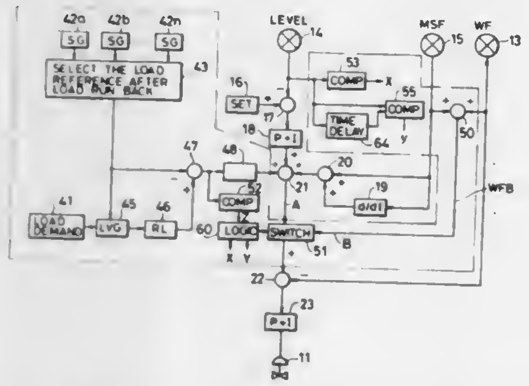
Atsushi Takita, Mito; Akira Sugano, Katsuta, and Naganobu Honda, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 14, 1985, Ser. No. 765,437

Claims priority, application Japan, Aug. 17, 1984, 59-172190

Int. Cl.⁴ F22D *5/26*

U.S. Cl. 122—451 R **6 Claims**



1. In an apparatus for controlling the drum water level of a drum type boiler having means for calculating a feed water flow rate demand value on the basis of a drum water level reference signal and a drum water level detecting signal, means for detecting a feed water flow rate, and means for controlling the feed water flow rate on the basis of the deviation of the feed water flow rate detecting signal from said feed water flow rate demand value such that said deviation becomes zero,

an improvement characterized by comprising means for detecting the start of load runback, and means for increasing said feed water flow rate demand value in response to the detection of the start of load runback by said detecting means.

4,619,225

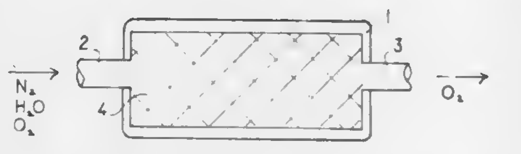
APPARATUS FOR STORAGE OF COMPRESSED GAS AT AMBIENT TEMPERATURE

Frank E. Lowther, Buffalo, N.Y., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 5, 1980, Ser. No. 146,634

Int. Cl.⁴ F02B *43/08*

U.S. Cl. 123—3 **5 Claims**



1. An engine system including a combustion engine and an oxidizer subsystem for high density gaseous oxidizer, said oxidizer subsystem comprising:

a storage vessel;

adsorbent material in said storage vessel capable of adsorbing relatively large volumes of said gaseous oxidizer at ambient temperature and of preventing the instantaneous release thereof in the event of a rupture of said vessel,

said storage vessel being operatively connected for delivery of oxidizer to said engine for combination with fuel therein to power said engine.

4,619,226

INTAKE DEVICE FOR INTERNAL COMBUSTION ENGINE

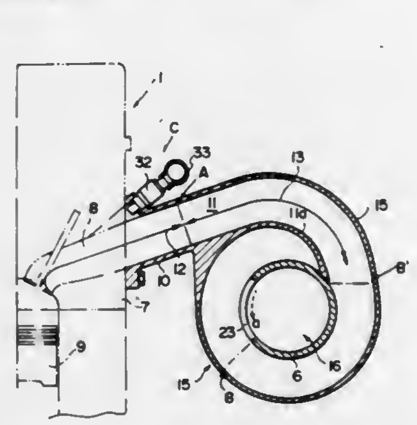
Kazuhiko Ueda; Mitsuo Hitomi, and Junzo Sasaki, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Japan

Filed Dec. 19, 1984, Ser. No. 683,836

Claims priority, application Japan, Dec. 21, 1983, 58-242698; Dec. 21, 1983, 58-242699; Dec. 28, 1983, 58-248254; Apr. 20, 1984, 59-80919

Int. Cl.⁴ F02B *75/06*

U.S. Cl. 123—52 MB **8 Claims**



1. An intake device for an internal combustion engine having a plurality of cylinders comprising a casing having an internal space disposed at one side of the engine, a surge tank which has a cylindrical outer surface and is completely enclosed within the casing for rotation about its longitudinal axis, the surge tank having an opening communicating with atmosphere for drawing air into an internal space of the surge tank, a plurality of separate intake passages which extend from the respective cylinders to an upper portion of the casing and open in an interior space of the casing at respective communicating portions, extensions of the respective separate intake passages are composed of an interior surface of the casing and the cylindrical outer surface of the surge tank which the interior surface of the casing inwardly spirals overlappingly and communicates the respective separate intake passages with an interior space

of the surge tank, hole means formed in the cylindrical surface of the surge tank to communicate each of said extensions with the internal space of the surge tank, and a surge tank driving means for rotating the surge tank about its longitudinal axis to change an effective distance between the hole means of the surge tank and the respective communicating portions according to an operating condition of the engine.

4,619,227
IGNITION DISTRIBUTOR ARRANGEMENT FOR INTEGRAL-COMBUSTION ENGINES

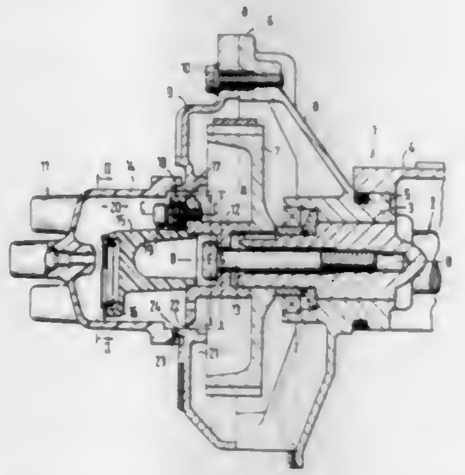
Jürgen Kapfer, Renningen, and Gerhard Kirchdorffer, Weissach-Flacht, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Weissach, Fed. Rep. of Germany

Filed May 14, 1985, Ser. No. 733,784

Claims priority, application Fed. Rep. of Germany, May 23, 1984, 3419184

Int. Cl.^{4} F02P *1/00*

U.S. Cl. 123—146.5 A **7 Claims**



1. An ignition distributor arrangement for internal combustion engines, comprising:

a generally cylindrical ignition distributor rotor having a central longitudinal axis of rotation;

means for drivingly attaching the rotor to an end of an engine camshaft such that the central longitudinal axis of the rotor is aligned with a central longitudinal axis of the camshaft, wherein said means for attaching the rotor to the camshaft includes a generally cylindrical cam attached to the end of the camshaft, said cam having a continuous flange extending transversely to the central longitudinal axis of the camshaft, and wherein said rotor is fastened to the flange by fastening means; and

a housing having an opening which surrounds the continuous flange and which has a diameter which is only slightly larger than an outside diameter of the flange, whereby the flange acts as a dust cap to prevent contaminants from passing through the opening.

4,619,228
AUTOMATIC COMPRESSION RELEASE FOR TWO-CYCLE ENGINE

Li-Hsiung Liu, Matthews, N.C., assignor to Textron Inc., Providence, R.I.

Filed Oct. 11, 1984, Ser. No. 659,840

Int. Cl.^{4} F01L *9/02, 13/08*

U.S. Cl. 123—182 **18 Claims**

1. An automatic compression release assembly for a two-cycle engine including a cylinder wall, a piston movable within said cylinder wall, a crankcase formed at a first end of said cylinder wall, and means defining a compression release opening at a second end of said cylinder wall, opposite said first end;

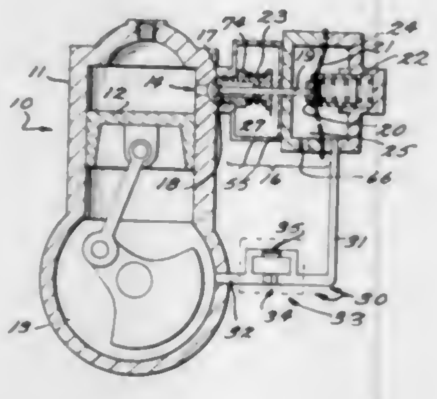
a stationary valve seat operatively connected to said means defining said pressure relief opening, and a movable valve body movable toward and away from said valve seat to selectively allow fluid to flow through said compression release opening and past said valve seat to be exhausted, and to prevent fluid from being exhausted through said pressure relief opening;

a valve actuator member operatively connected to said valve body;

said pressure responsive member defining a first chamber, said pressure responsive member operatively connected to said valve actuator member;

spring biasing means for biasing said actuator member so that said valve body is normally displaced from said valve seat to allow exhausting of fluid through said pressure relief opening; and

means defining a fluid flow path between said crankcase and said first chamber, said means including a valve means wherein said fluid pressure responsive member comprises a diaphragm, and wherein said actuating member comprises a valve stem integral with said valve body; and further comprising a cap disposed on said valve stem, said cap engaging said diaphragm; and wherein said spring biasing means comprises a first spring disposed in said first chamber and acting on said diaphragm and through said diaphragm on said valve stem to move said valve body to a displaced position with respect to said valve seat, and a second spring having less strength than said first spring, said second spring acting on said valve stem to move said valve body into closed, sealing, relationship with respect to said valve seat.



4,619,229
STRUCTURE FOR COMBUSTION CHAMBER OF AUXILIARY CHAMBER TYPE INTERNAL COMBUSTION ENGINE

Koji Imoto; Mataji Tateishi; Noriyasu Inenaga; Tadao Omura, all of Nagasaki; Hideyuki Ishikawa; Sumio Harada, both of Tokyo; Yuhiko Kiyota, Kyoto; Hiroyuki Kobayashi, Kyoto; Koichi Nakanishi, Kyoto, and Satoru Kume, Kyoto, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Mitsubishi Jidosha Kogyo Kabushiki Kaisha, both of, Japan

Filed Jan. 15, 1985, Ser. No. 691,751

Claims priority, application Japan, Jan. 21, 1984, 59-7943

Int. Cl.^{4} F02B *3/00*

U.S. Cl. 123—286 **5 Claims**

1. In a structure for a combustion chamber of an auxiliary chamber type internal combustion engine, including:

a main combustion chamber;

an auxiliary combustion chamber; and

an auxiliary chamber injection port providing communication between said main combustion chamber and said auxiliary combustion chamber, the open end of said auxiliary injection port at the side of said main combustion chamber being formed wholly or mostly in a lower surface of an auxiliary chamber plug,

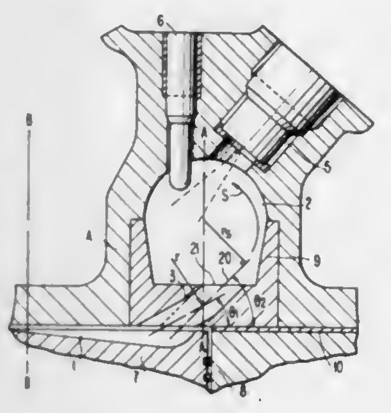
the improvement comprising wherein said auxiliary chamber injection port has a central axis oriented with respect to a center axis of said auxiliary combustion chamber which satisfies the following relationships:

$\theta_1<\theta_2$;

$20^\circ \leqq \theta_1 \leqq 45^\circ$; and

$35^\circ \leqq \theta_2 \leqq 67.5^\circ$,

wherein the outflow angle of said central axis of said auxiliary chamber injection port at the open end at the side of said auxiliary combustion chamber is designated as θ_2 with respect to a plane normal to said center axis of said auxiliary combustion chamber and wherein the outflow angle of said central axis of said auxiliary chamber injection port at the open end at the side of said main combustion chamber with respect to said plane normal to said center axis of said auxiliary combustion chamber is designated as θ_1.



4,619,230
DEVICE FOR DISCONNECTING THE FEED OF FUEL TO AN INTERNAL COMBUSTION ENGINE

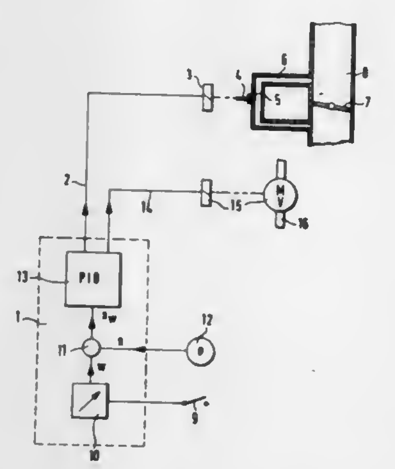
Harald Collonia, Glashütten, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 7, 1983, Ser. No. 472,908

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1982, 3209839

Int. Cl.^{4} F02D *17/04*

U.S. Cl. 123—325 **6 Claims**



1. In a device for disconnecting a feed of fuel to an internal combustion engine, particularly one with an injection pump, upon coasting of an automotive vehicle, having a disconnect member which is controlled as a function of a decrease in speed of the internal combustion engine, particularly a solenoid valve, for disconnecting and reconnecting feeding of the fuel, a valve element for controlling idle speed, and an idle speed controller having a time response with a differential portion, the improvement wherein

said valve element has a continuously variable displacement in response to variation of an electric current of said idle-speed controller, there being a threshold switch activated by said electric current; and

the disconnect member is connected via said threshold switch to an outlet line of the idle-speed controller such that, upon increasing the idling speed by means of the idle-speed controller, the feed of fuel is also connected automatically each time.

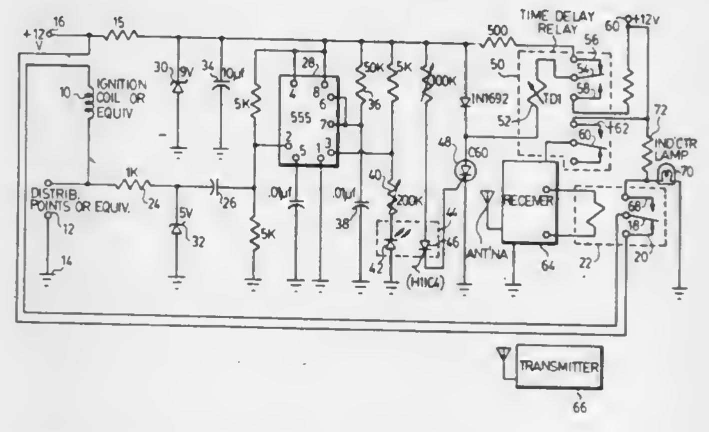
4,619,231
SYSTEM FOR REMOTE DISABLING OF AN INTERNAL COMBUSTION ENGINE

Mike Stolar, Oakville; David B. Robertson, Hamilton, and Mitchell J. Cichy, Pickering, all of Canada, assignors to Safe-T-Stop Inc., Hamilton, Canada

Filed Dec. 26, 1984, Ser. No. 686,369

Int. Cl.^{4} F02D *41/22;* **F02P** *11/04*

U.S. Cl. 123—333 **13 Claims**



1. A system for the deliberate remote disabling of an internal combustion enginer upon receipt by the engine of a disable signal from a location remote from the engine, the system comprising:

speed detecting and comparison circuit means for connection to the engine to detect the speed thereof and to produce therein a speed signal representative of the current speed or acceleration of the engine; the said circuit means comparing the speed signal with a preset signal value representative of a predetermined speed or acceleration of the engine above which it may be disabled, and producing a receiver enabling signal when the speed signal represents a speed or acceleration greater than the said predetermined value;

a radio transmitter operable by an operator to produce a broadcast disable signal;

a radio receiver connected to the speed detector and comparison circuit means to receive and be enabled by the said enabling signal, and upon receipt of the said broadcast disable signal while enabled producing a disable control signal; and

disabling means for connection to the engine to disable it, the disabling means being connected to the receiver to receive therefrom the disable control signal and upon receipt thereof being operative to disable the engine.

4,619,232
INTERACTIVE IDLE SPEED CONTROL WITH A DIRECT FUEL CONTROL

Robert L. Morris, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 6, 1985, Ser. No. 730,912

Int. Cl.^{4} F02D *41/16, 43/00*

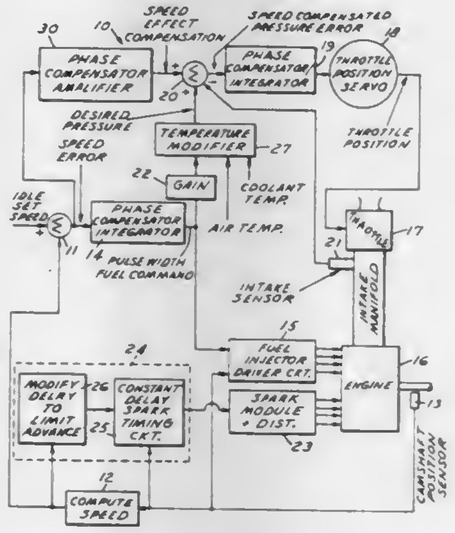
U.S. Cl. 123—339 **10 Claims**

1. A method of controlling the idling speed of an internal combustion engine, said method comprising:

generating a speed error signal as a function of the difference between a desired engine idle speed and the actual engine idle speed;

generating a fuel pulse width command signal to control a fuel mass charge as a function of the speed error signal;

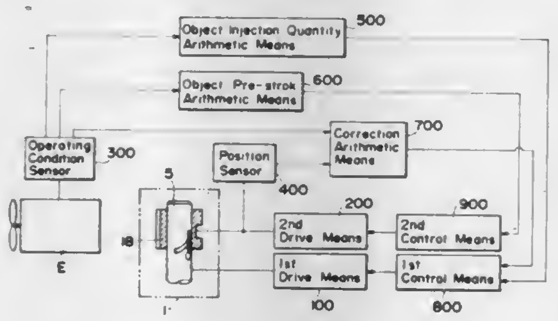
generating a throttle command signal as a function of the fuel mass charge to maintain a desired air to fuel ratio;
generating a spark advance;
phase compensating the speed error signal with respect to time;
generating a pressure error signal as the difference between a desired engine manifold pressure and an actual engine manifold pressure where desired engine manifold pressure is proportional to fuel charge and a function of air and coolant temperature;



phase compensating the pressure error signal with respect to time; and wherein
generating a fuel pulse width command signal includes summing a first signal proportional to the phase compensated speed error signal and a second signal proportional to the time integral of the speed error; and
generating a throttle command signal includes summing a first signal proportional to the phase compensated pressure error signal and a second signal proportional to the time integral of the pressure error.

4,619,233
FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

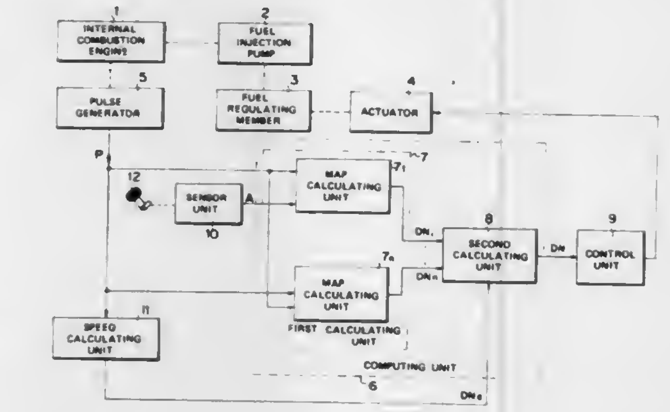
Susumu Yamaguchi, Higashi-Matsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan
Filed Jun. 18, 1985, Ser. No. 746,115
Claims priority, application Japan, Jun. 29, 1984, 59-98163[U]
Int. Cl.⁴ F02D ***31/00***
U.S. Cl. 123—357 **3 Claims**


Object Injection Quantity Arithmetic Means
500
Object Pre-strok Arithmetic Means
600
Operating Condition Sensor
300
Correction Arithmetic Means
700
Position Sensor
5
400
200
900
2nd Drive Means
2nd Control Means
18
E
1st Drive Means
1st Control Means
1
100
800

1. A fuel injection system for an internal combustion engine, comprising:
(a) a fuel injection pump driven by the engine for fuel injection thereto and including a plunger reciprocably movable at a non-uniform speed and a control sleeve slidably fitted on said plunger;
(b) first drive means operatively connected with said plunger for rotating the latter to thereby adjust the effective stroke of said plunger;
(c) second drive means operatively connected with said control sleeve for displacing the latter in an axial direction to thereby adjust the pre-stroke of said control sleeve;
(d) an operation sensor for detecting operating conditions of the engine;
(e) a position sensor for detecting a position of said control sleeve;
(f) first arithmetic means responsive to the engine operating conditions detected by said operation sensor, for computing an object injection quantity;
(g) second arithmetic means responsive to the position of said control sleeve detected by said position sensor, for computing an object pre-stroke of said plunger;
(h) third arithmetic means responsive to the engine operating conditions detected and the position of said control sleeve detected, for computing a correction amount;
(i) first control means responsive to said correction amount computed by said third arithmetic means, for correcting said object injection quantity and for delivering a control signal to said first drive means; and
(j) second control means responsive to the object injection quantity computed by said second arithmetic means, for delivering a control signal to said second drive means.

4,619,234
ELECTRONICALLY CONTROLLED FUEL INJECTION APPARATUS

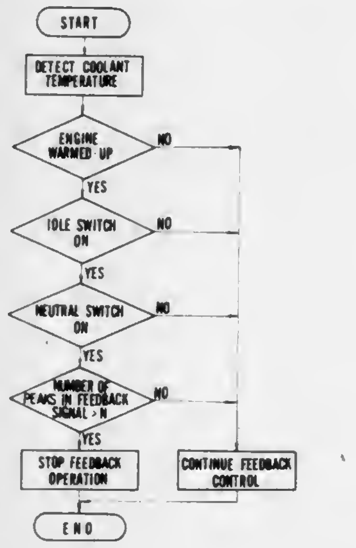
Kenji Okamoto, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Japan
Filed Jul. 2, 1985, Ser. No. 751,079
Claims priority, application Japan, Jul. 3, 1984, 59-136584
Int. Cl.⁴ F02D ***41/38;*** **F02M** ***59/20***
U.S. Cl. 123—357 **7 Claims**



1. An electronically controlled fuel injection apparatus having a fuel injection pump for supplying fuel to an internal combustion engine, an actuator for controlling the operating position of a fuel regulating member for the fuel injection pump, means for producing a condition signal indicating the operating condition of the internal combustion engine, computing means for calculating target data relating to a target amount of fuel injection in response to the condition signal, and means for driving said actuator so as to obtain said target amount of fuel injection in response to the result of the calculation from said computing means, in which said computing means comprises first calculating means for performing two dimensional map calculation in response to the condition signal so as to obtain plural sets of data pairs, one member of each pair being indicative of the operating position of said fuel regulating member and the other member thereof being indicative of the corresponding engine speed;
means for generating speed data relating to the speed of the internal combustion engine; and
second calculating means responsive to the speed data for carrying out an interpolation calculation once every predetermined degree of rotation of said internal combustion engine, the interpolation calculation being carried out on the basis of the plural sets of data pairs obtained from said first calculating means in order to obtain data relating to the target amount of fuel injection at the engine speed at each instant.

4,619,235
AIR-FUEL RATIO CONTROL SYSTEM

Ryuji Kataoka, Mitaka, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 11, 1985, Ser. No. 710,183
Claims priority, application Japan, Mar. 14, 1984, 59-49581
Int. Cl.⁴ F02D ***41/14***
U.S. Cl. 123—440 **2 Claims**

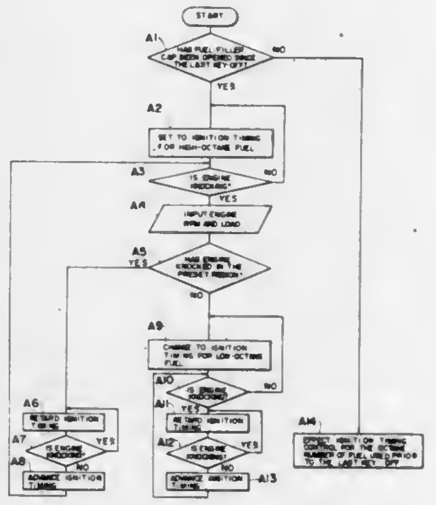


1. In an air-fuel ratio control system for an automotive engine mounted on a vehicle, having a transmission, a fuel control device, a feedback control system responsive to the output of an O_2-sensor for producing a feedback signal having a plurality of voltage peaks for operating the fuel control device, the improvement comprising:
first means for detecting the idling condition of the engine and for producing a first signal;
second means responsive to the first signal for starting counting the number of the peaks in the feedback signal of the feedback control system and for producing a second signal when the count exceeds a predetermined value;
third means responsive to the second signal for producing an output to fix the feedback control system to a predetermined value.

4,619,236
CONTROL APPARATUS OF INTERNAL COMBUSTION ENGINE

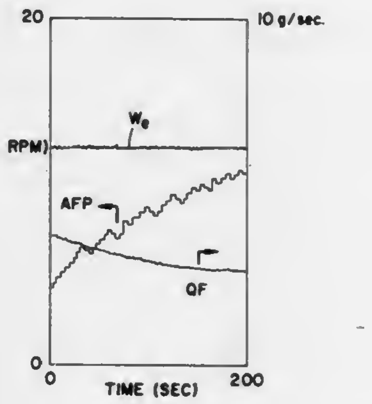
Tooru Okada, Kameoka; Takanao Yokoyama, Nagaokakyo; Atsushi Ueda, and Toshio Iwata, both of Himeji, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha and Mitsubishi Denki Kabushiki Kaisha, both of Tokyo, Japan
Filed Sep. 26, 1984, Ser. No. 655,022
Claims priority, application Japan, Sep. 30, 1983, 58-182502
Int. Cl.⁴ F02P ***5/15;*** **F02D** ***43/00***
U.S. Cl. 123—425 **18 Claims**

1. A control apparatus for an internal combustion engine comprising a base ignition timing information generating means for generating a plurality of base advance informations according to octane number of fuel being used in said internal combustion engine, a knock detecting means for detecting a knocking condition of said internal combustion engine, an operating condition detecting means for detecting an operating condition of said internal combustion engine, a fuel distinguishing means for determining said fuel being used in said internal combustion engine on the basis of detection results by said knock detecting means and detection results by said operating condition detecting means, a base ignition timing setting means adapted to be operated on the basis of detection results by said fuel distinguishing means to obtain base ignition timing information in accordance with octane number of fuel determined by said fuel distinguishing means from base ignition timing informations by said base ignition timing information generating means, thereby setting the base ignition timing of said internal combustion engine according to information obtained, and a knock control means for retarding said ignition timing set by said base ignition timing setting means on the basis of an output from said knock detecting means when said internal combustion engine knocks, thereby suppressing generation of knocking.



4,619,237
ENGINE COLD STARTING

David M. Auslander, 411 Kentucky Ave., Berkeley, Calif. 94707; Masayoshi Tomizuka, 698 Grizzly Peak Bl., Berkeley, Calif. 94708; Paul Sagues, 1731-D Spruce St., Berkeley, Calif. 94709; Takashi Ishida, 649 Kamiohi, Ohimachi, Kanagawaken, and Shuichi Kamiyama, No. 2-4-5, Honkomagome, Bunkyo-ku, Tokyo, both of Japan
Continuation-in-part of Ser. No. 677,892, Dec. 4, 1984, abandoned, which is a continuation of Ser. No. 497,894, May 25, 1983, abandoned. This application Nov. 18, 1985, Ser. No. 799,277
Int. Cl.⁴ F02D ***11/10***
U.S. Cl. 123—491 **4 Claims**



1. An optimum control method for starting and idling a cold internal combustion engine which controls the feed of both fuel and air by a computer control unit, comprising,
maintaining the engine r.p.m. at a predetermined value when the temperature of the engine is below a predetermined value and when the engine is idling,
changing the air-fuel ratio in the direction where fuel consumption is expected to decrease,
such changing being made after comparing fuel consumption at this sampling time with fuel consumption at the last sampling time and being due to the direction of the air-fuel ratio change at the last sampling time.

4,619,238
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

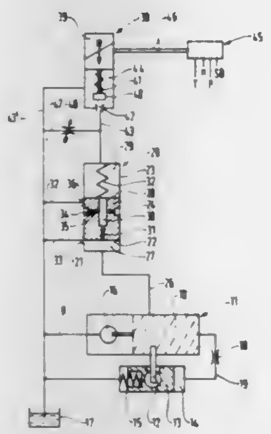
Josef Hain, Leonberg, and Karl-Friedrich Rüsseler, Ditzingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 22, 1985, Ser. No. 704,293

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1984, 3410146

Int. Cl.⁴ F02M *39/00*

U.S. Cl. 123—502 **4 Claims**



1. In a fuel injection pump for internal combustion engines, comprising a fuel feeding pump driven synchronously with the injection pump and having a pressure side; an adjusting piston loaded with a restoring spring force and adapted to adjust an injection start, said adjusting piston forming in said injection pump a working chamber which is in connection with said pressure side; a pressure-relief chamber; a pressure control valve including a movable control piston and having an outlet opening controlled by said control piston, said pressure side being further connected with said pressure-relief chamber via said outlet opening for generating a control pressure depending upon a number of revolutions, said control piston having a backside loaded with a restoring spring force, said pressure control valve having a pressure control chamber at said backside; a throttle conduit connecting said pressure control chamber with the pressure side of said feeding pump; a pressure-relief conduit connecting said pressure control chamber with said pressure-relief chamber; and a check valve mounted in said pressure relief conduit and being controllable in dependence upon operational parameters of an internal combustion engine, the improvement comprising a bypass conduit arranged parallel to said check valve and provided with a flow valve formed as a throttle valve, said bypass conduit connecting said pressure control chamber of the pressure control valve with said pressure-relief chamber.

4,619,239
FUEL INJECTION ARRANGEMENT FOR INTERNAL COMBUSTION ENGINES

Gerd Wallenfang; Reda Rizk, both of Cologne, and Hans-Gottfried Michels, Erftstadt, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Jan. 25, 1984, Ser. No. 573,803

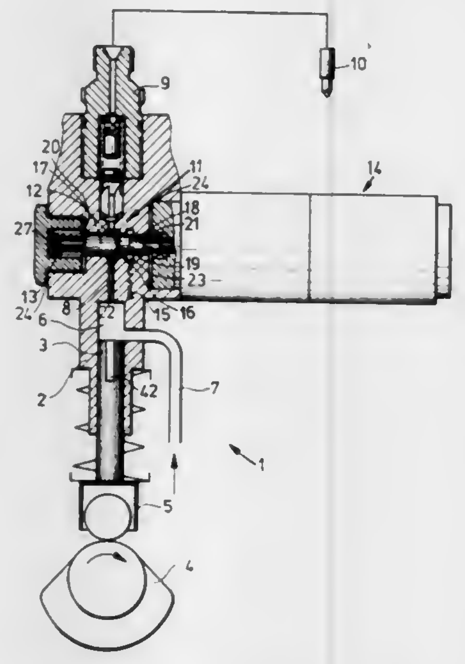
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1983, 3302294

Int. Cl.⁴ F02M *39/00*

U.S. Cl. 123—506 **24 Claims**

1. A fuel injection arrangement for an air-compressing, spontaneous ignition, internal combustion engine; said arrangement includes at least one electromagnetic control valve, via which a high-pressure channel associated with a fuel injection pump, which is provided with an intake line, can be connected with a low-pressure channel; said control valve includes a valve body which is in the form of a piston valve and is spring-loaded; said piston valve has a high-pressure end and a low-pressure end, and two end faces; said piston valve is axially movable in a first chamber which includes at least one high-pressure connection associated with said high-pressure channel and said high-pressure end of said piston valve, and at least one low-pressure connection associated with said low-pressure channel and said low-pressure end of said piston valve; said piston valve is in operative connection with an electromagnetic adjusting device;

the improvement comprises the provisioning of said piston valve with a valve seat for delimiting that piston valve region on said high-pressure end of said piston valve; said last-mentioned region has a fixed diameter which corresponds to the diameter of said valve seat, and that piston valve region on said low-pressure end of said piston valve has a diameter which is less than said fixed diameter;



said first chamber including a second chamber, which is associated with said high-pressure end of said piston valve and one of said end faces thereof, and a third chamber, which is associated with said low-pressure end of said piston valve and the other one of said end faces thereof;

at least one line for connecting said high-pressure second chamber and said low-pressure third chamber;

that piston valve region on said low-pressure end of said piston valve being provided with a fourth chamber which begins at said valve seat, and cooperates with said low-pressure connection of said first chamber.

4,619,240
FUEL OIL INJECTION ENGINE

Timothy J. Bedford, Burton-on-Trent, England, and Paul J. O'Sullivan, West Vancouver, Canada, assignors to Anker Gram & Associates Ltd., W. Vancouver, Canada

Filed Oct. 31, 1983, Ser. No. 547,593

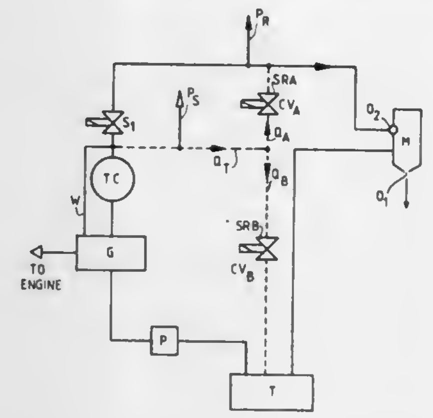
Claims priority, application United Kingdom, Oct. 30, 1982, 8231093

Int. Cl.⁴ F02B *13/00*

U.S. Cl. 123—575 **42 Claims**

1. In a dual-fuel engine having at least one combustion chamber and a fuel oil injection supply system and being adapted to run on fuel oil alone in a single-fuel mode and in a dual-fuel mode on fuel oil and gas, the combination comprising:

(a) a reference supply line located in the fuel oil injection supply system of the engine for carrying the fuel oil,



(b) means responsive to the fuel oil pressure developed in the reference supply line for automatically controlling the flow of fuel oil and gas to said combustion chamber.

4,619,241
HIGH-ENERGY IGNITION DEVICE

Takashi Yoshinari, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

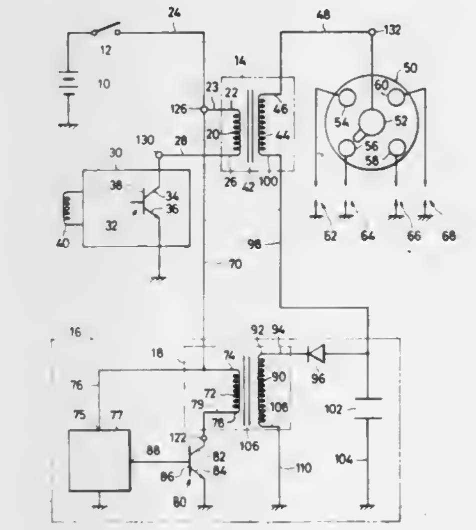
PCT No. PCT/JP84/00429, § 371 Date May 9, 1985, § 102(e) Date May 9, 1985, PCT Pub. No. WO85/01323, PCT Pub. Date Mar. 28, 1985

PCT Filed Sep. 7, 1984, Ser. No. 734,277

Claims priority, application Japan, Sep. 9, 1983, 58-165175

Int. Cl.⁴ F02P *1/00*

U.S. Cl. 123—620 **4 Claims**



1. A high-energy ignition device for an engine, the high energy ignition device comprising:

a pickup for generating an output synchronous with operations of the engine;

an ignition circuit including a switching device adapted to be turned on and off in accordance with the output from said pickup;

an igniter coil including a primary coil connected to said switching device, a secondary coil in which a high voltage is generated in response to an abrupt turning on and off of electric current in said primary coil, and an iron core between said primary and secondary coils; and

a DC-DC converter including a transformer including by a primary coil, a secondary coil and an iron core between said primary and secondary coils, a switching element connected in series to said primary coil, and an oscillator for turning said switching element on and off at a predetermined frequency, said DC-DC converter being adapted to produce, at the output side of said secondary coil, a DC voltage lower than the pulse voltage generated by said igniter coil and adapted to be superposed on the current produced by said igniter coil;

said igniter coil, said output transformer of said DC-DC converter, a first line connected between one end of said secondary coil of said output transformer and ground, a diode having a cathode connected to the other end of said secondary coil of said transformer, a smoothing capacitor one end of which is connected to an anode of said diode, a second line connected between the other end of said capacitor and ground, and a third line connected between said anode of said diode and one end of said secondary coil of said igniter coil, are integrated with a forming resin for facilitating a sufficiently strong insulation.

4,619,242
HEAT TRANSFER AND CONDITIONING UNIT

Robert J. Smith, 4511 E. Snover Rd., Silverwood, Mich. 48760

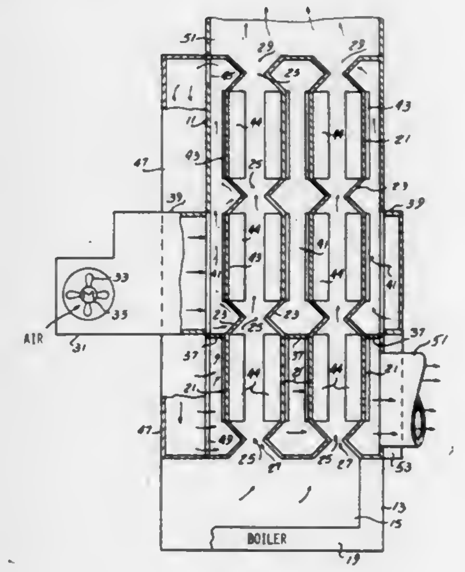
Continuation of Ser. No. 949,680, Oct. 10, 1978, abandoned.

This application Feb. 13, 1984, Ser. No. 579,395

The portion of the term of this patent subsequent to Oct. 10, 1995, has been disclaimed.

Int. Cl.⁴ F24H *3/10*

U.S. Cl. 126—110 R **1 Claim**



1. A heat transfer and conditioning unit connectively joining a fire chamber and an exhaust flue having an independent chamber for circulation of ambient air capable of transferring heat thereto comprising:

a casing having a plurality of exhaust inlets and a plurality of exhaust outlets adapted for communication with a flue to the atmosphere;

the casing containing a plurality of adjacent walls, the opposing surfaces of said walls defining elongated passages arranged in longitudinal alignment for conducting exhaust gas containing products of combustion between said exhaust inlets and outlets;

said walls being formed of a material suitable for the conductance of heat;

each elongated passage having a passage inlet adjacent to the exhaust inlet and a passage outlet adjacent to the exhaust outlet, walls disposed parallel to each other and a plurality of venturi, the venturi located at each passage inlet and outlet and periodically disposed along the elongated passage, each venturi separated from adjacent venturi by portions of the wall disposed parallel to each other, the venturi and parallel portions of the wall defining a plurality of compartments;

the compartments containing a series of longitudinally and laterally extending fins;

the casing having an air inlet and an air outlet and a continuous chamber for the passage of ambient air between said air inlet and said air outlet;

said continuous chamber for the passage of said ambient air being formed by the outer surfaces of said walls of the elongated passages and portions of said casing such that said continuous chamber is bordered for a substantial portion of its length by the walls of said elongated passages whereby a larger percent of the exhaust gas exhausted through said passages remains in contact with the compartment walls of said passage for a greater amount of time for transferring heat to said ambient air.

4,619,243

APPARATUS FOR THE CAPTURE AND TRANSFER OF RADIATION ENERGY SUCH AS SOLAR RADIATION

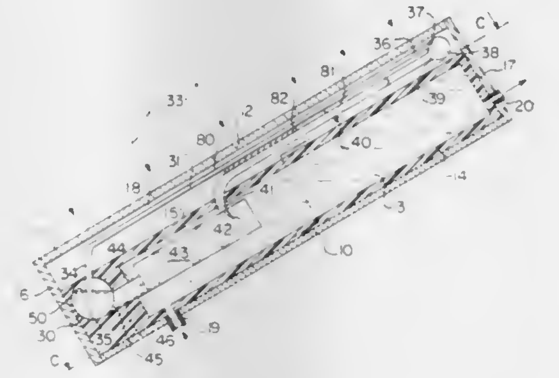
Pierre Vironneau, 2, Rue Jean-Moulin, 31120 Portet-sur-Garonne, and Jean Prunet, Domaine de la Terrasse, 31450 Montgiscard, both of France

Filed Jun. 25, 1985, Ser. No. 748,614

Claims priority, application France, Jun. 25, 1984, 84 10563

Int. Cl.⁴ F24J *2/32*

U.S. Cl. 126—433 **7 Claims**



1. Apparatus for the capture and transfer of radiation emitted in a non-continuous manner, comprising:

a first circuit, a first fluid having a quality of high volatility in said first circuit, said first circuit comprising, mounted in series, a reservoir of said first fluid in liquid phase and channels adapted to be subjected to said radiation to take on at least two tempertures t1 and t4 according to the presence or absence of radiation, respectively, t4 being less than t1, and a recovery conduit,

a second circuit, a second fluid in said second circuit, said second circuit being substantially thermally insulated,

a fluidic heat exchanger of at least one first and one second path, the first path being mounted in series in said recovery conduit, and the second path in said secondary circuit, in such a manner that said second fluid is brought to a temperature t2 between t1 and t4, when the said channels subjected to the radiation are brought to the temperature t1, and

means for maintaining the part of the said recovery conduit mounted between the said channels and the said first path of the exchanger at a temperature t3 having a non-continuous value between t2 and t4.

4,619,244

SOLAR HEATER WITH CAVITY AND PHASE-CHANGE MATERIAL

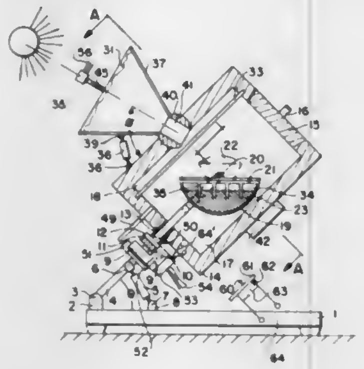
Alvin M. Marks, Bigelow Rd., Athol, Mass. 01331

Continuation-in-part of Ser. No. 479,091, Mar. 25, 1983, abandoned. This application Feb. 17, 1984, Ser. No. 581,265

Int. Cl.⁴ F24J *2/02*

U.S. Cl. 126—451 **1 Claim**

1. A solar heating device comprising an insulating chamber, an aperture on said chamber, sunfollowing means for concentrating and focussing sunlight through said aperture into said chamber, a platen in said chamber, a heat-conductive ribbed element attached to a surface on said platen, a phase-change material, a container for said phase-change material, said platen being sealed to said container, said ribbed element dipping into said phase-change material, an air space above said phase-change material, said phase-change material melting at a temperature suitable for cooking food, whereby heat is provided to said platen to increase and maintain the said temperature of the said platen within the said chamber.



4,619,245

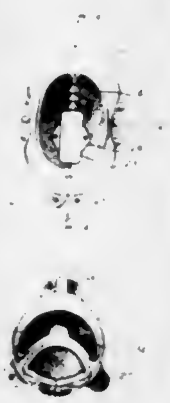
MECHANICAL PROSTHETIC SPHINCTER

Terry M. Haber, Lake Forest, and William H. Smedley, Mission Viejo, both of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Aug. 11, 1983, Ser. No. 522,107

Int. Cl.⁴ A61B *19/00*

U.S. Cl. 128—1 R **22 Claims**



1. A mechanical prosthetic sphincter for controlling an elimination passage of a patient for realizing continence, including in combination:

(a) a manually controllable actuating component in the form of a ring having pressure receiving surfaces on two diametrically opposite portions, the manual squeezing of said pressure receiving surfaces moving said opposite portions towards each other causing two other diametrically opposite portions of said ring to move away from each other such that the ring assumes an oval shape;

(b) a responsive component having an occlusion orifice for surrounding said elimination passage;

(c) a flexible force-applying means in the form of a cable having a first end passing through one of said two other portions of the ring and terminating in the other of the two other portions of the ring so that squeezing the pressure receiving surfaces of the ring pulls a portion of the cable into the ring and releasing the pressure receiving surfaces permits said portion to move in an opposite direction, the second end of the cable connecting to a wall of said occlusion orifice in said responsive component such that a pulling force on said second end of said cable expands said occlusion orifice and a movement of the cable in an opposite direction results in a contraction of said orifice; and

(d) releasable retaining means in said ring for holding the portion of the cable pulled into the ring as a result of squeezing the pressure receiving surfaces so that the occlusion orifice is held in its expanded condition automatically until such time as said retaining means is intentionally released.

4,619,246

COLLAPSIBLE FILTER BASKET

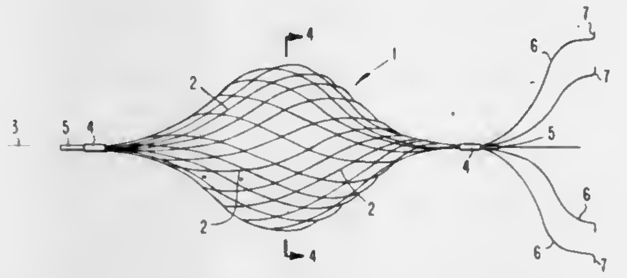
Arne Molgaard-Nielsen, Copenhagen, Denmark, and Rolf Günther, Aachen, Fed. Rep. of Germany, assignors to William Cook, Europe A/S, Bjaeverskov, Denmark

Filed May 20, 1985, Ser. No. 736,147

Claims priority, application Denmark, May 23, 1984, 2529/84

Int. Cl.⁴ A61M *29/00*

U.S. Cl. 128—1 R **48 Claims**



1. A collapsible filter basket adapted to be introduced into a blood vessel of a patient, comprising a plurality of resilient wires interconnected at their respective ends, said basket in its expanded and relaxed state assuming the shape of an apertured, elongate solid of revolution with pointed ends and having a length as measured between the pointed ends at least equal to the maximum diameter thereof.

4,619,247

CATHETER

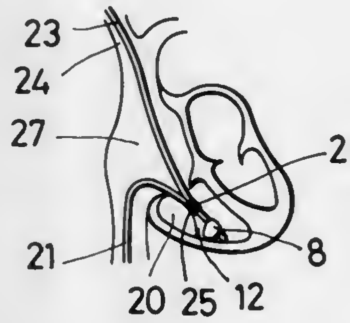
Kiyoshi Inoue, Urawa; Keiichi Kuwaki, Tokyo, and Koichi Tsuno, Osaka, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 23, 1984, Ser. No. 592,719

Claims priority, application Japan, Mar. 31, 1983, 58-56629; Sep. 26, 1983, 58-178730; Dec. 16, 1983, 58-238329

Int. Cl.⁴ A61B *1/06*

U.S. Cl. 128—6 **1 Claim**



1. An optical catheter comprising a first flexible tube supporting at least one optical transmission means terminating adjacent an open end of said tube, an inflatable, transparent balloon fixed relative to said open end of said first flexible tube, said balloon extending across the field of said optical transmission means when said balloon is inflated whereby light rays passing between an area to be examined and said optical transmission means must pass through said balloon, a first permanent magnet fixed to said first tube in proximity to said balloon, and a second flexible tube for delivering a flusing spray of fluid between the exterior of said balloon and the area to be inspected for preventing direct contact between said balloon and said area to be inspected and for removing obstructing materials from the field through which light rays pass, a second permanent magnet affixed to the end of said second flexible tube for attraction to said first permanent magnet for securing said flexible tubes together.

4,619,248

LIGHT ATTACHMENT FOR SPECULUM

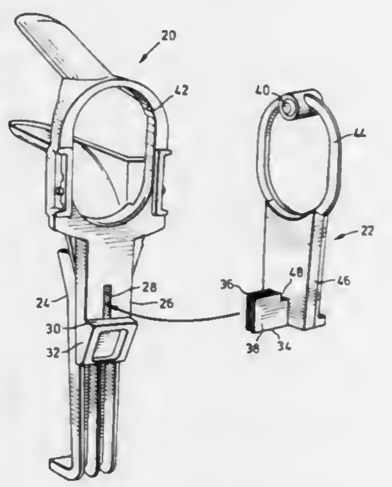
David J. Walsh, 2512 Mississauga Road, Mississauga, Ontario, Canada (L5H 2L5)

Filed Aug. 19, 1985, Ser. No. 767,208

Claims priority, application Canada, Aug. 22, 1984, 461581

Int. Cl.⁴ A61B *1/06, 1/30*

U.S. Cl. 128—18 **5 Claims**



1. A lighting attachment for use with a speculum of the type comprising first and second parts movable relative to one another to dilate a body opening for examination, the first part having a first handle portion defining a slot and a first deflector extending generally perpendicularly from the first handle portion, the second part having a pair of parallel fingers including locating detents, the fingers being engaged in the slot and defining between them an outwardly opening recess, the second part also having a second deflector extending generally parallel to the first deflector with the fingers out of the slot and movable angularly away from the first deflector causing the fingers to move into the body opening, the fingers then being deflected slightly towards one another to bias the detents to hold the fingers in the slot, the lighting attachment comprising:

an elongate casing having a main portion and a hoop lying generally in the same plane as the main portion;

an electrical energy source contained in the main portion;

a light emitter attached to the hoop at a location diametrically opposite the main portion;

circuit means coupling the light emitter to the electrical energy source and including switch means for energizing the light emitter; and

the switch means comprising a pair of conductors normally spaced from one another and proportioned for engagement in the recess so that with the fingers deflected, the conductors are flexed towards and into engagement with one another to thereby switch on the light emitter and project light between the deflectors to illuminate the body opening for examination by viewing through the hoop.

4,619,249

TRANSCUTANEOUS INTRAVENOUS ILLUMINATOR

Kim Landry, 2731 Blairstone Rd., Apt. #80, Tallahassee, Fla. 32301

Filed Jul. 24, 1985, Ser. No. 758,399

Int. Cl.⁴ A61B *1/06*

U.S. Cl. 128—23 **5 Claims**

1. A transcutaneous illuminating apparatus comprising:

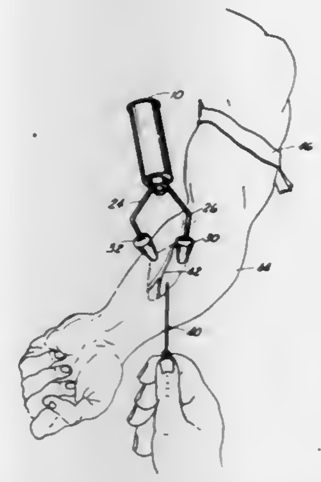
a. a housing having a source of electrical energy provided therein;

b. means removably mounted on one end of said housing for pivotally supporting a plurality of tubular members at their proximate end, each of said tubular members having mounted on its distal end illuminating means;

c. an electrical circuit including said source of power and said illuminating means;

d. means for selectively completing the circuit between said

illuminating means and said source of electrical energy, thereby activating said illuminating means;
e. means provided in said circuit for selectively varying the intensity of each of said illuminating means; and



f. means for applying each of said illuminating means to the tissue area to be inspected.

4,619,250
THERAPEUTIC APPLIANCE FOR IMPROVING FUNCTIONS OF HAND FINGERS

Tsuneo Hasegawa, Tokyo, Japan, assignor to Man Design Co., Ltd., Tokyo, Japan

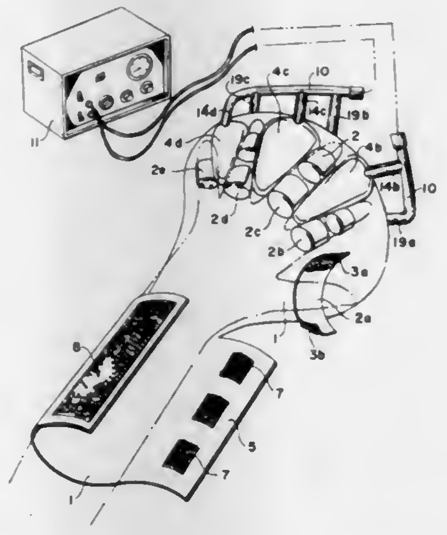
Filed Oct. 12, 1984, Ser. No. 660,046

Claims priority, application Japan, Oct. 14, 1983, 58-192254

The portion of the term of this patent subsequent to Jun. 11, 2002, has been disclaimed.

Int. Cl.⁴ A61H *1/02*

U.S. Cl. 128—26 **7 Claims**



1. A therapeutic appliance for improving the functions of an individual's carpal joints, hands and fingers comprising;

a splint cloth including a palm splint cloth shaped so as to accommodate a palm with its fingers spread apart and a forearm splint cloth extending from the palm splint cloth so as to cover the carpal joint and at least a portion of the forearm;

finger retainer means disposed on a front surface of the splint cloth for holding the fingers individually in their spread apart positions;

a plurality of first bladders disposed on the front surface of said palm splint cloth and positioned between each adjacent fingers except between the thumb and forefinger in a palmiped configuration for spreading the fingers apart from each other;

a plurality of second bladders disposed on the opposite surface of said palm splint cloth for extending the fingers, hand and the carpal joint; and

fluid supply and discharge tubes connected to said first and second bladders for supplying and discharging fluid to and from the bladders;

whereby operations of supplying fluid simultaneously to all of the bladders or selectively to any selected one or more of the bladders through said tubes and discharging the fluid from the bladders through the tubes after a predetermined period of time may be repeated to impart extending and opening motions to the functionally incapacitated carpal joint, hand and fingers forcedly, rythmically and intermittently to thereby remedy the bending contracture and dysfunction in extending motion as well as to create a motive for triggering self-motivating capacity.

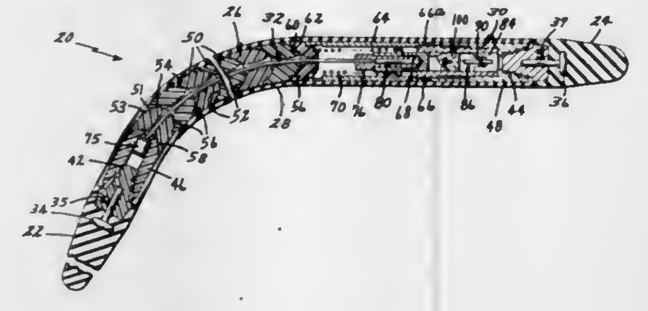
4,619,251
PENILE PROSTHESIS HAVING AN ACTUATOR MEANS INTERACTING WITH A MEMBER AND ARTICULATED COLUMN

Richard A. Helms, Elk River, Minn.; Gerald W. Timm, San Juan Capistrano, Calif., and Donald L. Sandford, Lauderdale, Minn., assignors to Dacomed Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 604,022, Apr. 26, 1984, Pat. No. 4,541,420. This application Sep. 13, 1985, Ser. No. 775,782

Int. Cl.⁴ A61F *5/00*

U.S. Cl. 128—79 **13 Claims**



1. A penile prosthesis, comprising:

(a) an elongated cylindrical body having a longitudinal axis and further having a distal end portion and a proximal end portion, said elongated cylindrical body including an outer elongated sheath formed from a physiologically inert and pliable material;

(b) an articulated column of radiused segments disposed intermediate of said distal end portion and said proximal end portion, the radiused segments having a concave surface portion proximate one end and a convex surface portion proximate an opposite end, the facing concave and convex surfaces of adjacent ones of the radiused segments cooperating to form ball and sockets joints between adjacent ones of the radiused segments, a shoulder portion being positioned about a periphery of each of the concave and convex surfaces, the facing shoulder portions of adjacent ones of the segments cooperating to limit the amount of bending movement which occurs between adjacent ones of the segments;

(c) an elongated tension member extending longitudinally of the elongated cylindrical body, the tension member being secured proximate first and second ends to proximate the distal end and proximal end portions of the prosthesis; and

(d) switch means enclosed within the sheath for switching the prosthesis between a rigid state and a flexible state, the switch means cooperating with the tension member and the articulated column for increasing the tension in the tension member and compressing the articulated column when switching the prosthesis to the rigid state.

4,619,252
THERAPEUTIC METHOD AND THERAPEUTIC MEANS USING A SHEETLIKE BATTERY

Jack K. Ibbott, 17-7, Nishiazabu 4-chome, Minato-ku, Tokyo 106, Japan

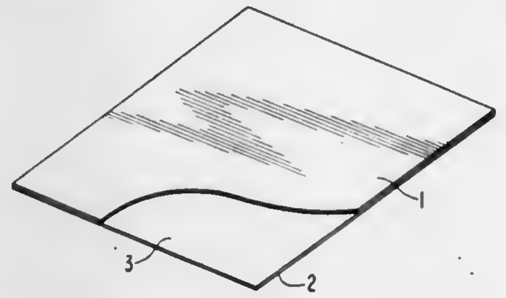
PCT No. PCT/JP84/00193, § 371 Date Dec. 13, 1984, § 102(e) Date Dec. 13, 1984, PCT Pub. No. WO84/04045, PCT Pub. Date Oct. 25, 1984

PCT Filed Apr. 16, 1984, Ser. No. 683,462

Claims priority, application Japan, Apr. 15, 1983, 58-65624; Feb. 8, 1984, 59-20101

Int. Cl.⁴ A61N *1/24*

U.S. Cl. 128—82.1 **27 Claims**



1. A therapeutic apparatus for treating an affected part of a human body, said apparatus comprising:

a sheetlike battery including opposite surfaces defining positive and negative electrodes and having flexibility and cutting characteristics similar to paper;

said sheetlike battery being cut to form a sheetlike battery piece of a size and shape for fitting over an affected body part to be treated; and

means for attaching said battery piece to the affected body part and thereby for forming an electric, current-conducting circuit between said battery and skin of the affected body part by means of contact therewith of body moisture.

4,619,253
FOIL- OR FILM-LIKE BANDAGE AND PROCESS FOR USING THE SAME

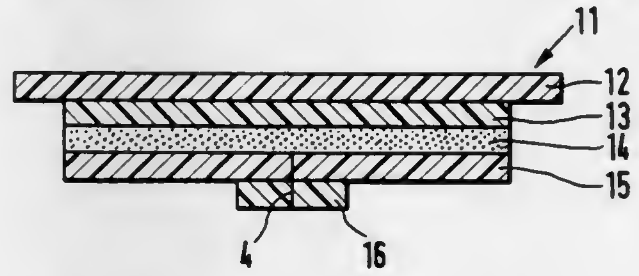
Dieter Anhäuser, Melsbach; Gerhard Kreitlow; Hubertus Olbrich, both of Neuwied; Karl-Heinz Reinhold, Hausen, and Anita Schmitt, Rossbach, all of Fed. Rep. of Germany, assignors to Lohmann GmbH & Co. KG, Neuwied, Fed. Rep. of Germany

Filed Dec. 6, 1984, Ser. No. 678,782

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1983, 3344334

Int. Cl.⁴ A61L *15/00;* **E04F** *15/16;* **B32B** *27/00*

U.S. Cl. 218—156 **11 Claims**



1. A foil- or film-like bandage consisting of a transparent continuous foil or film having a thickness of 10 to 120 μm covered on one side by a transparent supporting foil bonded thereto and on its other side by an adhesive layer which itself is covered by a removable cover layer, said supporting foil extending beyond the edges of the foil or film layer at two opposite edges thereof, thereby forming two grasp strips, said removable cover layer being the same size as the adhesive layer and having a precut or breaking line partitioning said cover layer into two partial areas thereby forming at least one peelable grasp part for each partial area, whereby bending the bandage to a convex curvature of the grasp part area produces peel-off of said grasp parts.

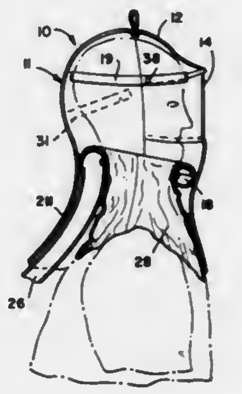
4,619,254
PROTECTIVE RESPIRATOR HOOD WITH INNER AND OUTER BIBS

Anthony L. Moretti, San Rafael, and Anselmo P. Pellolio, Jr., Cotati, both of Calif., assignors to E. D. Bullard Company, Sausalito, Calif.

Continuation-in-part of Ser. No. 457,527, Jan. 13, 1983, Pat. No. 4,484,575. This application May 29, 1984, Ser. No. 615,090

Int. Cl.⁴ A62B *7/00*

U.S. Cl. 128—201.23 **7 Claims**



1. In a head mounted hood including a hollow generally tubular body portion with a closed end and an open end made of flaccid, non-stretchable, air-impervious material dimensioned to enclose the head and neck of the wearer and having an optical lens panel interposed in the wall adjacent said closed end thereof, the improvement comprising an elongated open ended generally tubular bib structure of flaccid, non-stretchable, air-impervious material dimensioned to be received over the head of the wearer and having one end sealingly affixed about the inner surface of said tubular body portion intermediate said closed end and said open end thereof on the opposite side of said optical lens panel from said closed end of said tubular body portion, said tubular bib structure extending in overlapping substantially coaxial relation within said tubular body portion and projecting a substantial distance from said open end thereof, and including an opening through said tubular bib structure beneath said optical lens panel, centered with respect to said optical lens panel and spaced from said one end of said tubular bib structure, and the opening being dimensioned to receive the intake port and exhaust port of a face mask therethrough and having an elastic band structure sealingly affixed about the periphery thereof in an expanded state.

4,619,255
OXYGEN SUPPLY SYSTEM

Dominic J. Spinosa, Wantagh, and Frank Knoll, Huntington Station, both of N.Y., assignors to East/West Industries, Inc., Hauppauge, N.Y.

Continuation-in-part of Ser. No. 321,420, Nov. 16, 1981, abandoned. This application Jul. 19, 1984, Ser. No. 632,381

Int. Cl.⁴ A62B *7/00*

U.S. Cl. 128—202.27 **26 Claims**

1. An emergency oxygen supply system for use on an aircraft having an ejection seat, a primary oxygen supply source, an emergency oxygen supply means, and an oxygen mask disposed on said aircraft for supplying oxygen to aircraft personnel disposed upon said ejection seat through said oxygen mask or the like, upon failure of said primary oxygen supply, said system comprising in combination:

(A) differential pressure activated valve means adapted to be affixed to said ejection seat and having an elongated chamber with two input ports and an output port in communication with said elongated chamber,

(i) one of said input ports adapted to be in communication with said primary oxygen supply source and the other of said input ports adapted to be in fluid communication with said emergency oxygen supply means, and said output port adapted to be in communication with said oxygen mask, two of said ports being spaced apart along the longitudinal axis of said chamber, and the third port being disposed on one end of said chamber forming one of said input ports of said differential pressure valve means, said port furthermost from said one end of said chamber forming a longitudinal input port of said differential pressure valve means, the remaining port forming the output port of said differential pressure valve means,

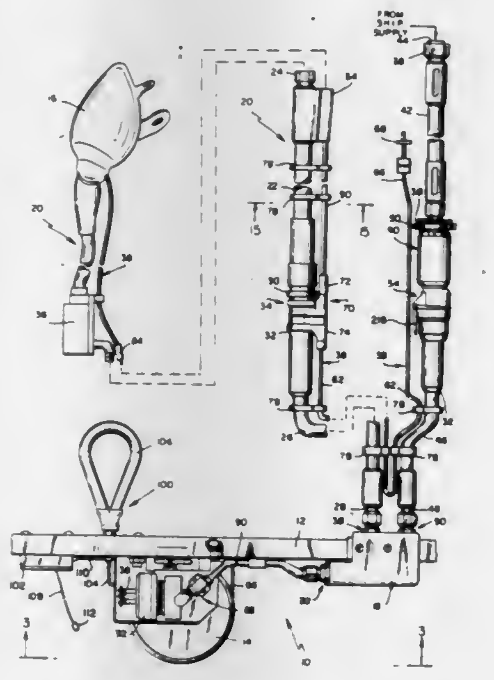
(ii) a valve shuttle disposed in said elongated chamber dimensioned to freely reciprocate from a first position wherein said valve shuttle permits communication only between said longitudinal input port and said output port and a second position wherein said valve shuttle permits fluid communication only between said input port and said output port, said valve shuttle being an elongated hollow cylinder having an open end and a closed end and having at least one through aperture disposed in said cylinder wall, said valve shuttle being disposed within said elongated chamber formed by said housing such that said open end of said valve shuttle is oriented toward said end input port, said cylinder having an O-ring washer fitted thereon proximate said closed end forming a valve poppet, and said walls of said longitudinal chamber dimensioned to permit free movement of said shuttle between said first and said second positions such that when said shuttle is in said first position said poppet seals said chamber for fluid communication only between said longitudinal input port and said output port, said walls of said longitudinal chamber further forming a complementary valve seat circumferentially disposed between said input port and said output port isolating said longitudinal input port from said output port such that disposition of said valve shuttle in said second position causes said valve poppet to seat on said valve seat so that said end input port is in fluid communication only with said output port through said at least one through aperture disposed in said valve shuttle wall; and

(iii) biasing means for biasing said valve shuttle in said first position whereby a first condition is provided wherein only the oxygen from said primary oxygen supply source is provided to said oxygen mask unless the pressure at said input port exceeds the pressure of said longitudinal input port by a predetermined value greater than the force of said biasing means whereby a second condition is provided in which only the oxygen from said emergency oxygen supply means is provided through a completed emergency fluid flow path to said oxygen mask, said differential pressure activated means changing from said first condition to said second condition by a change in the pressure differential between said valve input ports;

(B) means defining a primary fluid flow path having one end connected to said longitudinal input port of said differential pressure activated valve means and an opposite end adapted to be connected to said primary oxygen supply source, a quick disconnect means disposed within said primary fluid flow path and including check valve means for blocking the oxygen flow in said primary fluid flow path from said primary oxygen source when disconnected;

(C) emergency oxygen supply means having a pressure greater than said primary oxygen supply source adapted to be affixed on said ejection seat and in communication with the other of said input ports of said differential pressure activated valve means providing said emergency fluid flow path therebetween; and

(D) oxygen release valve means adapted to be affixed to said ejection seat provided with cooperating actuation means adapted to be connected to said aircraft and manual actuation means for manually activating said release valve means and disposed in said emergency fluid flow path, said oxygen release valve means permitting oxygen to flow in said emergency fluid flow path to the other of said input ports of said differential pressure activated valve means when manually activated and when said ejection seat is activated.



4,619,256

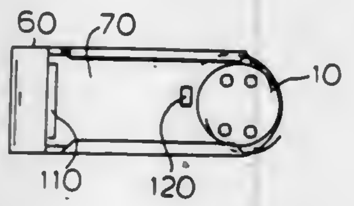
INTRAOCULAR LENS INSERTING ASSEMBLY

Gerald Horn, 5415 W. Sheridan Rd., Chicago, Ill. 60640

Filed Sep. 8, 1982, Ser. No. 415,806

Int. Cl.^{4} A61B *17/00;* A61F *2/16*

U.S. Cl. 128—303 R **4 Claims**



1. An assembly for inserting an intraocular lens with haptics into an eye, comprising:

a first member having a first member bottom with two sides and two opposing walls disposed along said sides structured and arranged to hold said lens therebetween; and

a second member slidably disposed between said walls and having a second member bottom and a projection attached to said second member bottom for restricting the movement of a lens disposed in said assembly; said members being adapted to release said lens when said members are separated.

4,619,257

APPARATUS AND METHOD FOR CRYOPREPARING CORNEAL TISSUE FOR SURGICAL PROCEDURES

John G. Linner, and John D. Goosey, both of Houston, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Nov. 30, 1984, Ser. No. 676,856

Int. Cl.^{4} A61B *17/36*

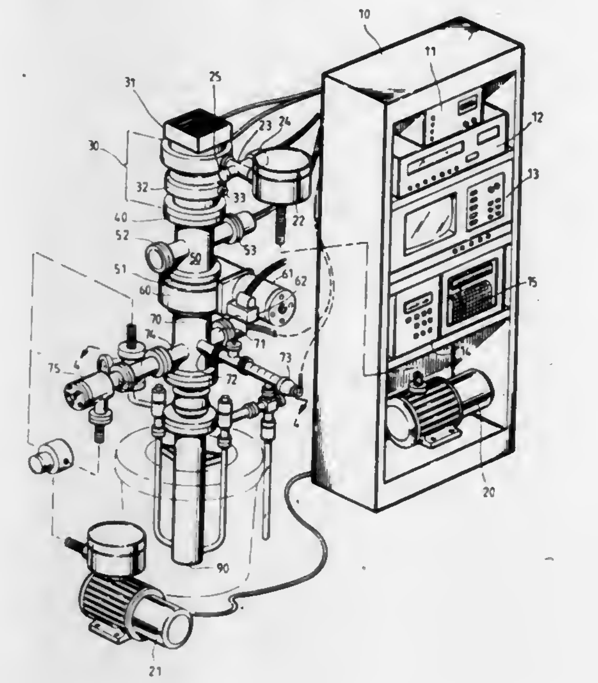
U.S. Cl. 128—303.1 **14 Claims**

1. A method for cryopreparing corneal tissue for use in surgical procedures comprising:

(a) obtaining a corneal tissue sample and sizing said tissue sample for its intended end use;

(b) vitrifying said corneal tissue sample;

(c) bringing said vitrified corneal tissue sample to equilibrium at a temperature of less than −140° C.; and



(d) dehydrating said vitrified corneal tissue sample while said sample is maintained in a state of equilibrium.

4,619,258

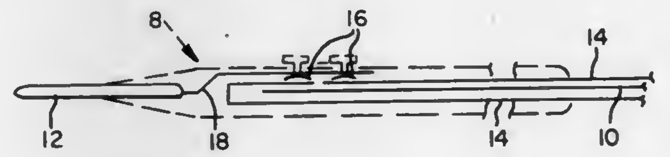
ELECTROSURGICAL PENCIL PROVIDING BLADE ISOLATION

L. Franklin Pool, Vancouver, Wash., assignor to Dart Industries Inc., Northbrook, Ill.

Filed Mar. 2, 1984, Ser. No. 585,565

Int. Cl.^{4} A61B *17/39*

U.S. Cl. 128—303.14 **7 Claims**



1. In an electrosurgical pencil of the type having a pencil housing, a blade at an end of the housing which receives current through a hot lead from an electrosurgical current generator upon electrical interconnection of a switching lead extending between the generator and the pencil with the hot lead, the improvement comprising: said pencil including

(a) first switch means for making and breaking contact between said switching lead and said hot lead;

(b) second switch for making and breaking contact between said hot lead and said blade; and

(c) means for preventing contact in said first switch means unless there is also contact in said second switch means.

4,619,259

OPHTHALMIC SURGERY TOOL

Walter R. Graybill, 4585 Auhay Dr., Santa Barbara, Calif. 93111, and Jeffery J. Graybill, 441 E. Camino Collegio, Santa Maria, Calif. 93454

Filed May 9, 1980, Ser. No. 148,258

Int. Cl.^{4} A61B *17/32*

U.S. Cl. 128—305 **1 Claim**

1. An ophthalmic surgery tool for producing a series of cuts within the cornea of an eye for the purpose of improving vision, said surgery tool comprising:

a locating base, the exterior surface of said locating base being recessed to closely conform to the exterior surface of the eye, said locating base having an internal chamber, said locating base having a longitudinal center axis, said locating base having a plurality of spaced apart first openings formed within said exterior surface;

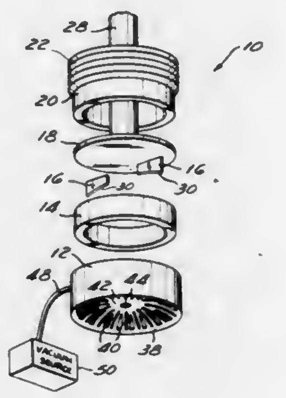
a cutter assembly, said cutter assembly located within said internal chamber and mounted in conjunction with said first openings, said cutter assembly being symmetrically arranged about said longitudinal center axis, said cutter assembly being movable in respect to said locating base between a retracted (non-cutting) position and an extended position, said retracted position locating said cutter assembly substantially entirely within said internal chamber, said extended position connecting said cutter assembly with said first openings with a portion of said cutter assembly conducted through said first openings protruding exteriorly of said locating base;

means connected to said cutter assembly for moving said cutter assembly between said retracted position and said extended position;

vacuum means connected to locating base, said vacuum means for applying a vacuum within said internal chamber;

biasing means located between said locating base and said cutter assembly, said biasing means exerting a continuing bias against said cutter assembly tending to locate such in said retracted position, said biasing means comprising a ring of resilient material; and

second openings formed within said locating base, there being a said second opening located between each directly adjacent pair of said first openings, said vacuum to cause a slight suction force to be created between said locating base and the eye thereby holding the eye tightly against said locating base directly in the proximity of said cutter assembly.



4,619,260

TISSUE-RETRIEVING MEANS FOR A SURGICAL SNARE INSTRUMENT

John W. Magill, 664 N. Michigan Ave., Chicago, Ill. 60611, and Carl F. Wurster, 3413 Sunset Ave., Boise, Id. 83703

Filed Nov. 5, 1984, Ser. No. 668,098

Int. Cl.^{4} A61B *1/72*

U.S. Cl. 128—309 **15 Claims**

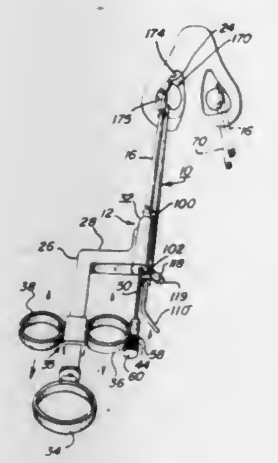
1. Tissue-retrieving means for a surgical open-snare instrument having a snare loop projecting longitudinally outwardly from a distal end thereof for encircling projecting body tissue, and means for contracting the loop, thereby to sever the encircled tissue from the remainder of the body, said retrieving means comprising:

tissue-engaging means,

manipulating means connected to said engaging means,

means for mounting said manipulating means on said instrument for manipulation of said engaging means to engage tissue encircled by said loop, for removal of the tissue on the engaging means following severance of the tissue, and

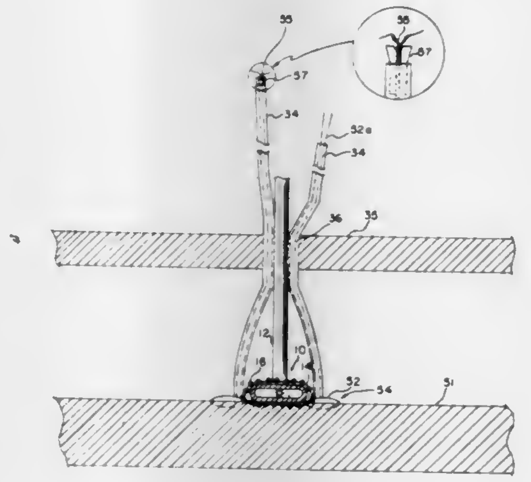
means for manually effecting rotational adjustment of the position of said engaging means relative to said loop about an axis extending longitudinally of the open-snare instrument for engagement of said engaging means with a selected portion of encircled tissue extending from either side of said loop.



4,619,261
HYDROSTATIC PRESSURE DEVICE FOR BLEEDING CONTROL THROUGH AN INFLATABLE, STITCHABLE AND RETRIEVABLE BALLOON-NET SYSTEM

Frederico Guerriero, 1212 N. Lake Shore Dr., Chicago, Ill. 60610

Filed Aug. 9, 1984, Ser. No. 639,381
Int. Cl.⁴ A61B *17/12*
U.S. Cl. 128—325 **10 Claims**



1. A device for applying hydrostatic pressure to an internal wound comprising:

an expansible balloon constructed and arranged to hold fluid;

means to restrain the movement of said expansible balloon; and

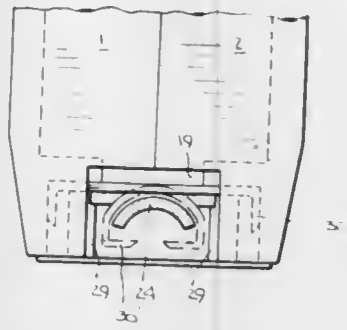
means to conduct fluid to said expansible balloon;

whereby when said expansible balloon is restrained from movement with respect to the wound, fluid may be conducted into said expansible balloon so as to expand said expansible balloon within said means to restrain the movement of said expansible balloon thus applying pressure to the internal wound.

4,619,262
SURGICAL STAPLING DEVICE

James Taylor, Droitwich, England, assignor to Syncare, Inc., Branchburg, N.J.

Filed Jun. 5, 1985, Ser. No. 741,483
Claims priority, application United Kingdom, Jul. 10, 1984, 8417562
Int. Cl.⁴ A61B *17/04;* **B31B** *1/00*
U.S. Cl. 128—334 R **9 Claims**



1. A surgical stapling device for forming and implanting a staple formed of a deformable wire and having a pair of parallel limbs bridged by a straight crosspiece into the skin of a patient undergoing a surgical procedure, the device comprising:

A. a housing having an outlet;

B. a rail disposed in the housing having a row of staples straddled thereon and a metal mandrel projecting from the front end of the rail into the outlet;

C. pusher means on said rail to advance said row toward said mandrel to cause the foremost staple to be deposited on the mandrel, the mandrel being a solid plate and having an arched shape and being flanked on opposite sides by a pair of abutments on the front end of the rail;

D. a plate-like former disposed in the housing, the leading edge of the former having a recess therein leading to a complementary arched section which conforms to the arched shape of the mandrel, said former being normally retracted from the mandrel to assume an inoperative position; and

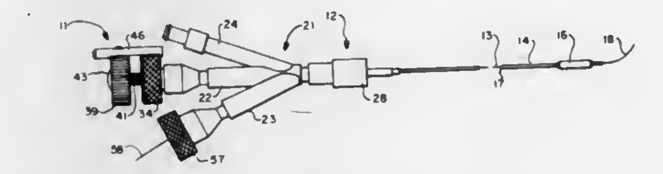
E. actuating means operatively coupled to the former to advance the former from its inoperative position to slide along the abutments at the front end of the rail to an operative position, in the course of which the mandrel is received within the recess in the former and the limbs of the staple engaged by the leading edge of the former are extended from the outlet to a degree sufficient to penetrate the skin of a patient on opposite sides of an incision to be closed, the deformable limbs being caused to bend inwardly by the coacting former and mandrel toward each other to close the incision, and the deformable crosspiece being bent to create an arched air gap above the skin to accommodate post-operative swelling.

4,619,263
ADJUSTABLE ROTATION LIMITER DEVICE FOR STEERABLE DILATATION CATHETERS

Jeffrey S. Frisbie, San Jose, and Wilfred J. Samson, Saratoga, both of Calif., assignors to Advanced Cardiovascular Systems, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 615,139, May 30, 1984, abandoned. This application May 10, 1985, Ser. No. 732,641
Int. Cl.⁴ A61M *29/02*
U.S. Cl. 128—344 **12 Claims**

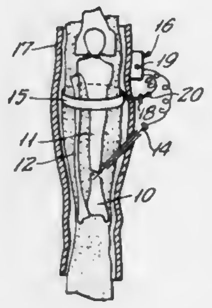
1. An adjustable rotation limiter device for use with a steerable balloon type dilatation catheter of the type having a flexible core wire extending therethrough, an adapter adapted to be secured to the proximal extremity of a dilatation catheter, the adapter having at least a first arm, a fitting on the first arm, sealing means disposed within the fitting, a thumb screw having a first knob carrying a threaded axially extending member threaded into the fitting and being adapted to engage the sealing means to establish a sealing engagement between the sealing means and the core wire, a torque knob having a second knob carrying an axially extending member threaded into said thumb screw and limit means carried by one of said knobs and having a portion thereof extending over the other of said first and second knobs and serving to limit the rotational movement of the second knob with respect to the first knob.



4,619,264
METHOD AND APPARATUS FOR TREATMENT OF FRESH FRACTURES, DELAYED UNIONS AND NON-UNIONS OF LIVING BONE

Om P. Singh, 62, Chhitwapur Road, Lucknow-226001, U.P., India

Filed Jun. 14, 1984, Ser. No. 620,748
Int. Cl.⁴ A61N *1/32*
U.S. Cl. 128—419 F **25 Claims**

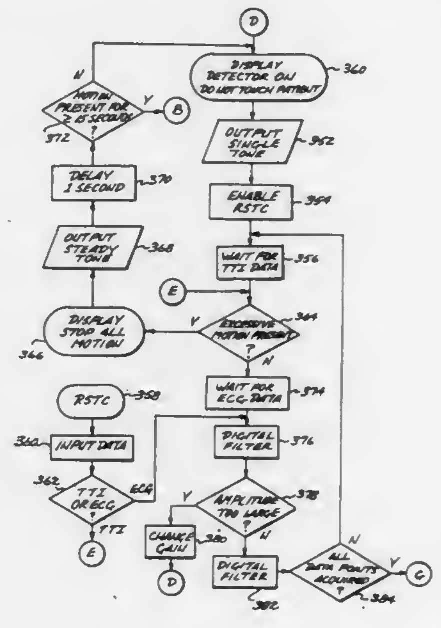


1. The method of treating freshly fractured bone in a living body which comprises selecting an electrically conductive pin element and inserting the same through flesh and marrow in the vicinity of the fracture to the extent of lodging the inserted end in internal contact with cortex tissue at one longitudinal side of the site of the fracture, applying an electrically conductive element in conductive contact with flesh in the vicinity of the fracture on the other longitudinal side of the site of the fracture, applying a single longitudinal cast over both sides of the fracture and over the sites of both of said elements with separate electrical connections external to the cast, passing direct durrent through the body via said connections, the polarity of current connection being exclusively such as to establish negative potential at said pin element with respect to positive potential at the other of said elements, the direct current comprising a steady component and a varying component, said varying component being a succession of direct-current pulses of said polarity superposed on said steady component, and maintaining the average amplitude of current via said connections at about 20 microamperes for a period of at least three weeks before removal of the cast and of said elements.

4,619,265
INTERACTIVE PORTABLE DEFIBRILLATOR INCLUDING ECG DETECTION CIRCUIT

Carlton B. Morgan; Daniel Yerkovich, both of Seattle; Thomas D. Lyster, Redmond; Eric C. Hagen, Kirkland, and Douglas H. Roberts, Lynnwood, all of Wash., assignors to Physio-Control Corporation, Redmond, Wash.

Division of Ser. No. 587,439, Mar. 8, 1984. This application Sep. 16, 1985, Ser. No. 776,391
Int. Cl.⁴ A61N *1/36;* **A61B** *5/05*
U.S. Cl. 128—419 D **10 Claims**



4. A defibrillator comprising:

sensor means including electrodes attachable to a patient, ECG detection means connectable to the electrodes for producing an electrocardiogram signal, and motion detection means connectable to the electrodes, the motion detection means comprising means for sensing the impedance between the electrodes and for producing a motion signal indicative of the degree of variation of said impedance over time, including variation not synchronized with the electrocardiogram signal;

control means for producing a control signal, the control means comprising means for analyzing the motion signal to detect excessive patient motion, and means for preventing the production of the control signal when excessive patient motion is detected; and,

output means responsive to the presence of the control signal for applying a defibrillation pulse to a patient.

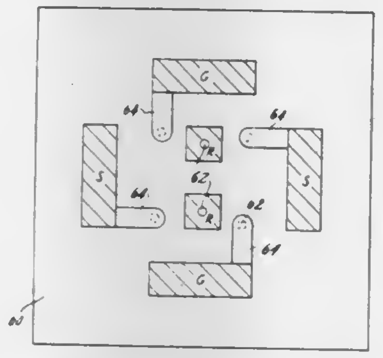
4,619,266
ELECTRODE ARRAY FOR MUSCLE STIMULATION AND RECORDING

John A. Hodgson, 42 Shirley Avenue, Shirley, Southampton, England

Filed May 9, 1984, Ser. No. 608,446
Claims priority, application United Kingdom, May 11, 1983, 8313005; Nov. 22, 1983, 8331149
Int. Cl.⁴ A61B *5/04;* **A61N** *1/04*
U.S. Cl. 128—639 **10 Claims**

1. Apparatus for stimulating and recording electrical activity in a muscle in a mammalian body, said apparatus comprising an electrode array connected to a signal processing apparatus, said electrode array comprising a pair of recording electrodes and a pair of stimulating electrodes, means for mounting said electrodes in fixed, spaced relationship, both pairs of electrodes being adapted for placement on the skin of a mammal overlying a muscle, in electrical contact therewith, the two electrodes of each pair being spaced from each other along respective axes of the array, and the axis of one electrode pair being generally at right angles to that of the other pair; and the signal processing apparatus comprising means for receiving a signal

from the recording electrodes, means for processing the signal to produce a control signal for controlling a bodily response;



and means for feeding the control signal to the stimulating electrodes.

4,619,267
METHOD FOR CHARACTERIZING THE STRUCTURE OF A MEDIUM AND DEVICE FOR CARRYING OUT THE METHOD

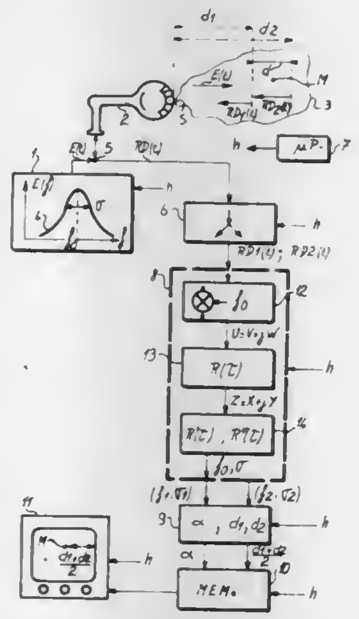
Olivier Lannuzel, Meaux, and Thierry Pradal, Creteil, both of France, assignors to CGR Ultrasonic, Paris, France

Filed Dec. 14, 1984, Ser. No. 682,756

Claims priority, application France, Dec. 16, 1983, 83 20198

Int. Cl.^{4} A61B *10/00*

U.S. Cl. 128—660 **16 Claims**



1. A method of characterising the structure of a medium by calculating the acoustic absorption coefficient of the medium comprising the steps of:

transmitting a pulsed acoustic signal having a frequency spectrum which is gaussion around a mean frequency towards the medium,

receiving a first acoustic signal reflected by a first zone of the said medium at a given period, and a second acoustic signal reflected by a second zone of the medium at a subsequent period,

analyzing the spectrum of the two received reflected signals to obtain the central frequency of the Fourier spectrum of each of these reflected signals,

calculating the acoustic absorption coefficient of the medium between the said two zones on the basis of the central frequencies obtained for each of these zones, and on the basis of the distance separating these zones,

wherein the said spectrum analysis comprises

performing a demodulation in phase quadrature at the mean frequency of the two reflected signals

calculating the autocorrelation functions of these demodulated signals, and

calculating the derivatives of the first order of these autocorrelation functions which represent said central frequencies.

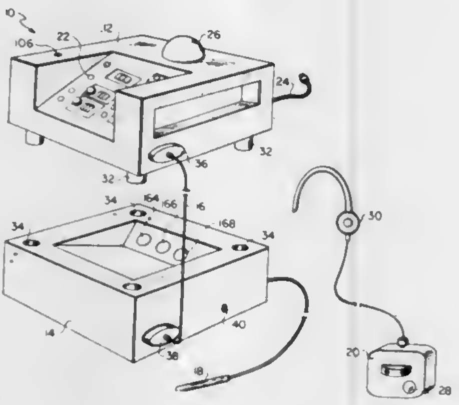
4,619,268
ESOPHAGEAL STETHOSCOPE AND VITAL SIGNS MONITOR SYSTEM

James D. Uphold, Canoga Park, and Robert L. Pfohl, Anaheim Hills, both of Calif., assignors to Vitacomm, Ltd., Orange, Calif.

Filed Aug. 11, 1983, Ser. No. 522,640

Int. Cl.^{4} A61B *5/02*

U.S. Cl. 128—671 **19 Claims**



1. An esophageal stethoscope catheter comprising:

an elongated flexible tube having a distal end and a near end and dimensioned to be disposed in a patient's esophagus;

sound detection means in the distal end of said tube;

means including connector means at said near end for connecting said sound detection means to monitoring means;

temperature sensing means in said distal end including a connector at said near end; and

interface circuit means for receiving said connector means and said connector for connecting said sound detecting means and said temperature sensing means to said monitoring means, and including self-destruct circuit means for destruction of said sound detection means.

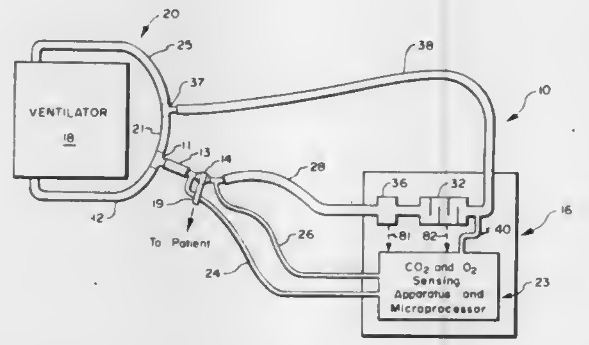
4,619,269
APPARATUS AND METHOD FOR MONITORING RESPIRATORY GAS

Christopher A. Cutler, Bountiful, and William D. Wallace, Salt Lake City, both of Utah, assignors to Utah Medical Products, Inc., Midvale, Utah

Continuation-in-part of Ser. No. 509,209, Jun. 29, 1983, abandoned. This application Apr. 11, 1984, Ser. No. 599,080

Int. Cl.^{4} A61B *5/08;* **A61M** *16/00*

U.S. Cl. 128—719 **27 Claims**



1. In a system for mechanically ventilating a patient, an apparatus comprising:

means for forming a first fluid flow circuit from which said patient is ventilated by a stream of oxygen enriched gas;

means for forming a second fluid flow circuit connected to said first circuit, said second circuit comprising means for isolating respiratory gases expired by said patient from said first circuit, said second circuit further comprising an inlet end connected at a first point in said first circuit and an outlet end connected at a second point in said first circuit, the resistance to fluid flow from said inlet end to said outlet end of said second circuit being from about 10 to about 100 times greater than the resistance to fluid flow between said first and second points in said first circuit;

a cooler capable of removing water vapor from said respiratory gases, said cooler comprising a first thermoelectric cooling block and a second insulating block mounted to said first block, a wick placed between said first and second blocks, said wick being capable of absorbing water, and a length of tubing placed between said blocks and in contact with said wick, said tubing consisting of hydrophilic material which allows for the passage of water through the walls of said tubing;

means connected to said second circuit, for detecting the concentration of one or more gases contained in a gaseous sample flowing through said second circuit; and

means for electronically processing information derived from said means for detecting the concentration of one or more said gases.

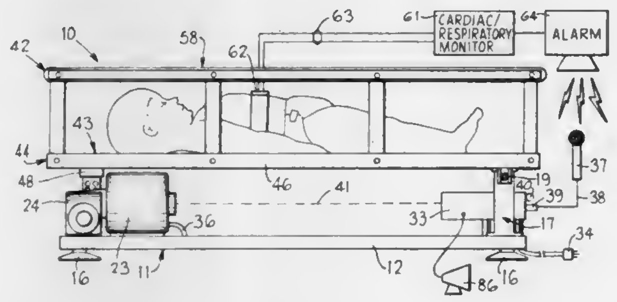
4,619,270
INFANT RESPIRATORY ARREST STIMULATOR DEVICE

Frederick J. Margolis, 2134 Waite Ave., and Clayton K. Cole, 1821 Hillsdale, both of Kalamazoo, Mich. 49008

Filed Apr. 16, 1984, Ser. No. 600,498

Int. Cl.^{4} A61B *5/05*

U.S. Cl. 128—721 **9 Claims**



1. An infant respiratory arrest stimulator device for use with a respiratory/cardiac monitoring system, comprising:

a frame;

a crib having a generally horizontal and a movable child supporting surface and sidewalls extending upstandingly therefrom adjacent the perimeter of said movable supporting surface;

a drive motor mounted on said frame and having a movable output member;

connecting means for drivingly connecting said output member to said child supporting surface;

control means for controlling the frequency and amplitude of movement of said child supporting surface, said frequency being in the range of 100 to 260 cycles per minute and said amplitude being in the range of $\frac{1}{2}$ inch to 1$\frac{1}{2}$ inches peak to peak; and

means for initiating a movement of said output member in response to an occurrence of an apnea and bradycardia episode to a child adapted to be located on said supporting surface for effecting a vigorous shaking of the child on said child supporting surface.

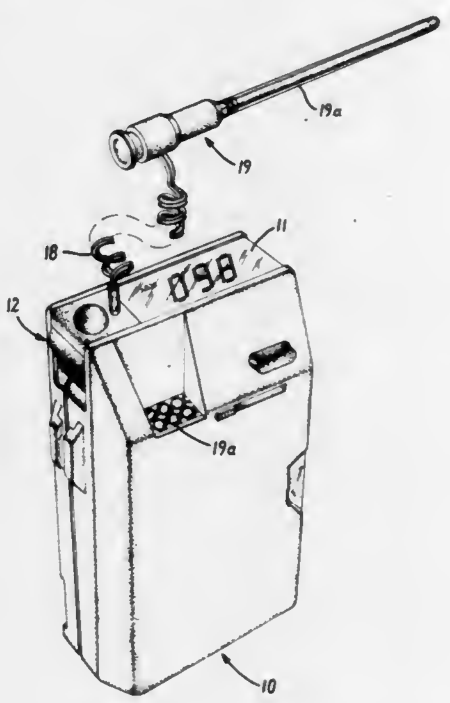
4,619,271
ELECTRONIC THERMOMETER WITH PROBE ISOLATION CHAMBER

Laurie J. Burger, North Branford; Joel N. Helfer, Cheshire; Donald E. Protzmann, Litchfield, and Robert F. Uhl, Cheshire, all of Conn., assignors to Chesebrough-Pond's, Inc., Greenwich, Conn.

Filed Dec. 13, 1984, Ser. No. 681,308

Int. Cl.^{4} A61B *5/00*

U.S. Cl. 128—736 **6 Claims**



1. An electronic thermometer comprising a housing containing electrical circuits for the thermometer, a probe including a temperature sensitive element for insertion into a body orifice, an isolation chamber for storing the probe, an electric cable connected to the temperature sensitive element and permanently connecting the probe to the chamber, conductor means connecting the cable to a connector on the isolation chamber, a compartment in the housing adapted to slidably receive the isolation chamber, a connector in the compartment for electrically receiving the chamber connector for coupling the probe electric cable to components in the housing when the isolation chamber is positioned in the compartment, a switch including an operating member in the housing connected to electrical circuits in the housing, a switch actuating device in a wall of the compartment, said switch actuating device including an actuator movable between first and second positions, the probe when inserted and withdrawn from the compartment of the isolation chamber engaging the actuator to move it between the first and second positions for moving the operating member to operate the switch.

4,619,272
INSTRUMENT FOR CARRYING OUT BIOPSIES ON TISSUES REMOVED FROM ORGANS TO BE EXAMINED

Roberto Zambelli, Via Borsa, 69, Milan, Italy

Filed Jul. 12, 1985, Ser. No. 754,844

Claims priority, application Italy, Jul. 31, 1984, 22756/84[U]

Int. Cl.^{4} A61B *10/00*

U.S. Cl. 128—753 **8 Claims**

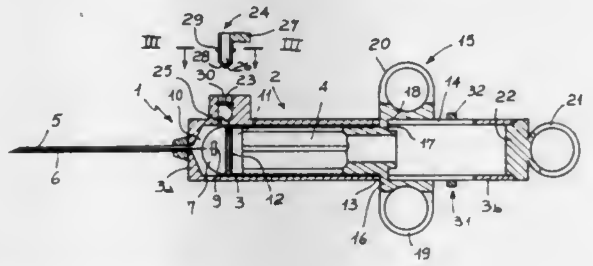
1. An instrument for performing biopsies on tissues removed from organs to be examined, which comprises:

an outer cylindrical body;

a hollow, biopsy cannula affixed to one end of the cylindrical body; the means cannula having an organ penetrating tip;

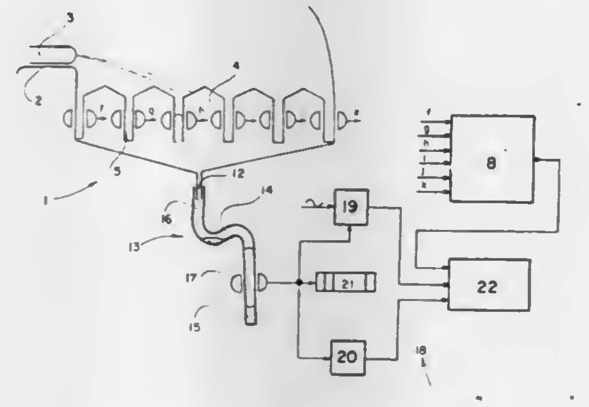
a piston slidably movable within the cylindrical body, the piston and the cylindrical body defining a suction chamber, the piston including a slit formed therein, the suction chamber communicating with the interior of the biopsy cannula;

- a stylet slidably movable within the cannula and operatively coupled to the piston, the stylet having a hollow needle defining an air path communicating with the suction chamber; through the slit formed in the piston
- a pair of oppositely disposed longitudinal guides formed on the cylindrical body;



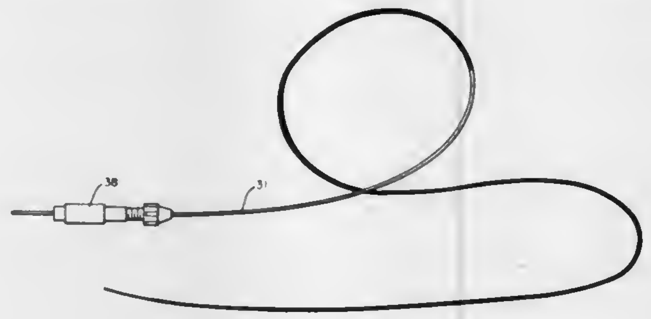
- grip means for effecting movement of the piston relative to the body, the grip means being slidably mounted within said guides and operatively coupled to the piston so as to be movable therewith; and
- stroke limiting means for limiting the movement of the grip means with respect to the body, the stroke limiting means being mounted and adjustably positioned on the cylindrical body and adapted to abut the grip means.

4,619,273
DEVICE FOR DIAGNOSING AND MONITORING UROLOGICAL DISEASES
Baumberg Iosif, 54 Bay 29 St. #B5, Brooklyn, N.Y. 11214
Filed Aug. 4, 1983, Ser. No. 520,348
Int. Cl.⁴ A61B ***5/00***
U.S. Cl. 128—771 **10 Claims**



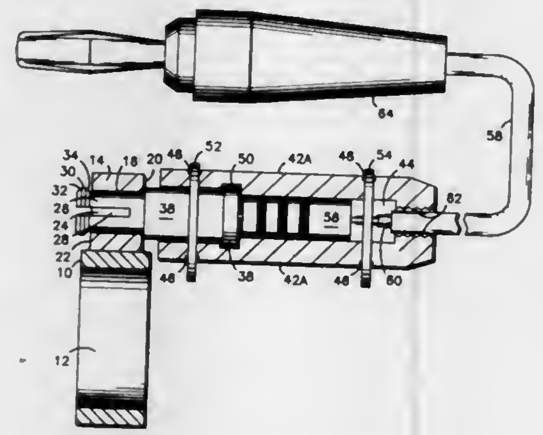
1. A device for diagnosing and monitoring urological diseases, comprising means for determining variations of an exit speed of a urine stream during urination of a patient over a period of time as a function of time, said determining means including a plurality of first sensing elements arranged successively one after the other and therefore at different distances from a point of urine stream exit and having inputs formed so that a urine stream flowing out of a patient directly reaches a respective one-of-said sensing elements without passing through intermediate elements, so that when the urine stream reaches a respective one of said first sensing elements a signal is produced which corresponds to its distance from the urine exit point of a patient and is therefore an indication of the linear exit speed of the urine stream; means for producing said signal; and selecting means cooperating with said determining means so that in the event when the urine stream reaches more than one of said sensing elements the signal is produced by only such sensing element which is located further from the urine exit point.

4,619,274
TORSIONAL GUIDE WIRE WITH ATTENUATED DIAMETER
David W. Morrison, San Jose, Calif., assignor to Advanced Cardiovascular Systems, Inc., Mountain View, Calif.
Filed Apr. 18, 1985, Ser. No. 724,624
Int. Cl.⁴ A61B ***5/00***
U.S. Cl. 128—772 **9 Claims**



1. In a guide wire having a progressively attenuated diameter, an elongated core element having proximal and distal ends and having a decreasing cross sectional area in a direction towards the distal end, a coil carried by, surrounding and secured to said core element, said coil having proximal and distal ends, said coil having a diameter which decreases in a direction towards the distal end, said coil being formed of a wire which has a diameter which decreases from one end to the other end and which is wound in a helix so that the larger diameter wire begins in a region closer to the proximal end and the smaller diameter wire ends in a region closer to the distal end.

4,619,275
GROUNDING RING
Danny E. Ross, Plantation, and Larry O. Bond, Davie, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 5, 1985, Ser. No. 762,468
Int. Cl.⁴ A61N ***1/14***
U.S. Cl. 128—783 **1 Claim**

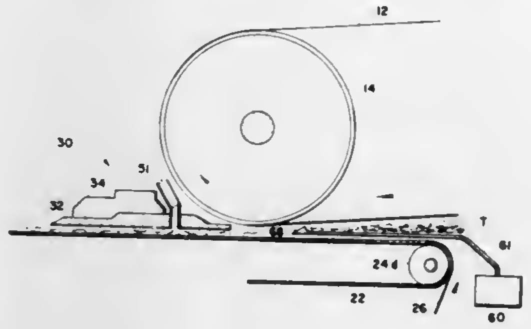


1. Apparatus for electrically contacting the human body at a finger, comprising in combination:

- an electrically conductive finger ring, engagable with said finger, for electrically contacting said finger;
- an electrically conductive connector ring having an aperture, said connector ring being electrically connected to said conductive finger ring and attached to the outside of said conductive finger ring;
- an electrical connector plug, removably inserted into said connector ring, said connector plug having a substantially longitudinal slot and a retaining flange;
- an attaching flange attached to said connector plug;
- a housing having a cavity, said cavity having an internal groove, said attaching flange being inserted into said internal groove;

- said housing including two complementary parts, said parts having an external groove;
- a snap ring, inserted into said external groove, to join said complementary parts; and
- a resistor, located in said cavity and electrically connected to said connector plug.

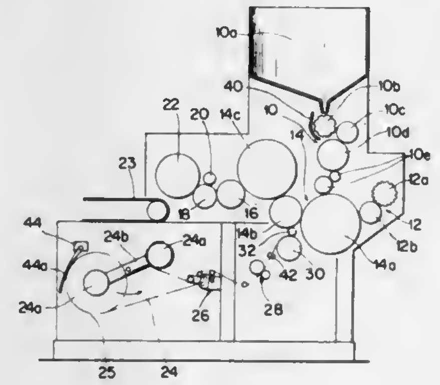
4,619,276
TOBACCO PROCESSING
Douglas E. Albertson, Richmond; James O. Dyson, Ashland; Eugene B. Fischer, Chester; Robert T. Gaudlitz, Richmond; Lewis A. Haws, Richmond; Gus D. Keritsis, Richmond; Louis L. Long, Richmond; Charles S. McClung, Richmond; Jose G. Nepomuceno, Richmond, and Steven R. Wagoner, Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Aug. 3, 1984, Ser. No. 637,259
Int. Cl.⁴ A24B ***15/28;*** **A24C** ***15/18;*** **A24D** ***1/00, 1/18***
U.S. Cl. 131—79 **27 Claims**



13. In the manufacture of cigarettes, the method which comprises:

- providing a moving stream of tobacco;
- producing a liquid additive foam;
- applying the liquid additive foam to said moving stream of tobacco.

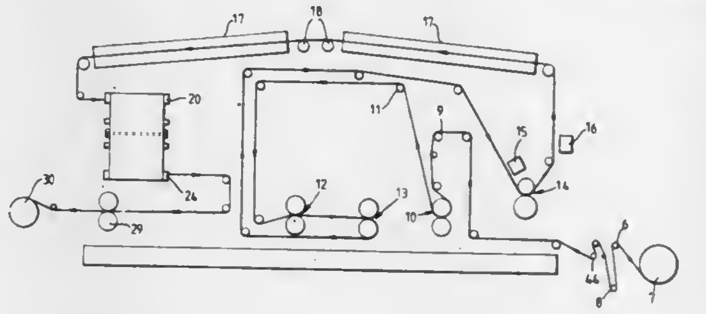
4,619,277
TOBACCO FILTER TIP ATTACHING APPARATUS
Yutaka Okumoto, Musashino; Toshiyuki Ozaki, Tokyo, and Mikio Komori, Matsudo, all of Japan, assignors to The Japan Tobacco & Salt Public Corporation, Tokyo, Japan
Filed Dec. 27, 1984, Ser. No. 686,867
Claims priority, application Japan, Dec. 27, 1983, 58-244868
Int. Cl.⁴ A24C ***5/52***
U.S. Cl. 131—94 **1 Claim**



1. A tobacco filter tip attaching apparatus including:

- (a) a filter tip attaching portion having means for rolling and pasting a tip paper onto both one end portion of a cigarette and a filter tip disposed adjacent said one end portion;
- (b) a filter tip feed portion disposed in the vicinity of said filter tip attaching portion having means for feeding filter tips to said filter tip attaching portion;
- (c) a tip paper feed portion disposed in the vicinity of said filter tip attaching portion having means for feeding a tip paper from a tip paper roll to the filter tip attaching portion;
- (d) a filter tip sensor means for detecting that the feed of filter tip from said filter tip feed portion to said filter tip attaching portion is discontinued;
- (e) a tip paper cutting sensor means for detecting a cutting accident of the tip paper during feed from said tip paper portion to said filter tip attaching portion;
- (f) a roll diameter sensor means for detecting that the diameter of the tip paper roll in said tip paper feed portion has become smaller than a predetermined value;
- (g) the whole of the apparatus being covered with a cover, said cover being provided with openable doors in positions corresponding respectively to said filter tip feed portion, filter tip attaching portion and tip paper feed portion; and
- (h) power sources source means provided in corresponding relation to said doors are operated selectively in accordance with output signals provided from said sensor means to open one or more of said plural doors automatically.

4,619,278
SMOKING ROD WRAPPER
Clement G. Smeed, Eire, and Shane C. Browning, Newtownabbey, both of Ireland, assignors to Gallaher Limited, Great Britain
Filed Jan. 30, 1984, Ser. No. 575,265
Claims priority, application United Kingdom, Jan. 31, 1983, 8302594
Int. Cl.⁴ A24B ***15/28;*** **A24C** ***5/60***
U.S. Cl. 131—284 **21 Claims**

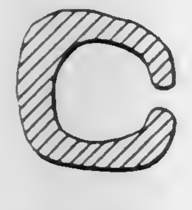


1. A method of processing a web of smoking rod wrapper suitable for filter tip cigarettes, said web having opposed first and second surfaces, wherein said web is passed through initial and final printing stations in series, and then reeled up for subsequent use on a continuous smoking rod-making machine; said web being printed at said initial printing station on said first surface with a regularly longitudinally spaced registration marking, and being printed at said final printing station and on said second surface with a repetitive regularly spaced pattern of a deposit containing at least one additive selected from a group comprising a burn control agent, a smoke producing agent, a smoke nucleation agent, a flavoring agent, and a physiologically active agent, said pattern being repeated on successive sectional web lengths comprising one or more smoking rod lengths of web, said registration markings being printed at least one end of said sectional lengths and having a dimension in the longitudinal direction of said web such that at least after cutting said web into individual smoking rod lengths, said marking dimension is small enough to be covered by the overlap of a conventionally applied tipping wrapper.

4,619,279
TOBACCO SMOKE FILTER

Makoto Shiga; Akira Miyazawa, and Mitsuyosi Miyutani, all of Osaka, Japan, assignors to Daicel Chemical Industries Ltd., Osaka, Japan

Filed Feb. 1, 1983, Ser. No. 524,141
Int. Cl.⁴ A24D *3/04*
U.S. Cl. 131—345 **4 Claims**

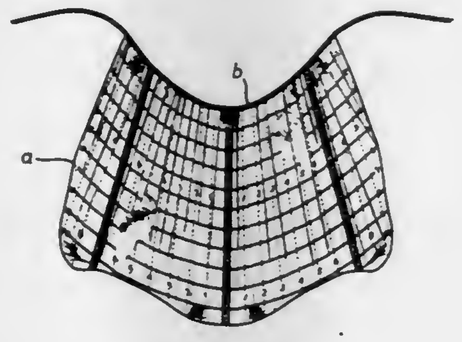


1. A tobacco smoke filter comprising cellulose acetate filaments having a C-shaped cross section.

4,619,280
CUT AND STYLE—DEVICE FOR FASHION HAIRCUTTING-HAIRSHAPING AND HAIRSTYLING

Ludmila Yampolskaya, 1-Bogardus Pl., Ap 5M, New York, N.Y. 10040

Filed Mar. 14, 1983, Ser. No. 474,975
Int. Cl.⁴ A45D *24/36*
U.S. Cl. 132—45 R **2 Claims**



1. A device for use in fashion haircutting and hairshaping to enable a hairdresser or hairdesigner to precisely and effectively create, recreate or record a predetermined haircut of any desired hair lengths at each and every point of a head or wig, said device being adapted to be selectively disposed at a plurality of positions on the head of the person whose hair or wig is to be cut and shaped, and comprises,

(a) a principal part consisting of a sheet of substantially flat, smooth, thin, limply flexible, transparent and water-impervious material having a concavely arcuate upper edge adapted to be placed and fit in completely surrounding and continuously closely fitting engagement with the front, back and sides of a user's head at any of a plurality of circumferential positions located at various preselected parting lines on any level on the head, a lower edge spaced from said upper edge by dimensions varying along its length selected to conform generally to the hair lengths and shoulders and a pair of opposed side edges connecting said upper and lower edges, said sheet being shaped and dimensioned to assume a generally truncated-conical configuration, depending from said upper edge in surrounding relation to the front, sides and back of the user's head for a distance sufficient to underlie a substantial range of side and back hair lengths when said upper edge is positioned on the head as aforesaid,

said sheet having thereon a first set of indicia consisting of a plurality of straight lines for guiding the symmetry of a haircut while the layers of strands of hair on any preselected parting line, on any level of the user's head, are being cut and shaped, said straight lines extending generally radially from said upper edge toward said lower edge and being distributed over the entire area of the sheet relative to a common center and having a predetermined angular spacing between them, and

a second set of indicia consisting of a plurality of curved arcuate generally parallel lines for guiding the cutting and shaping of layers of strands of hair on a head to any predetermined length, said plurality of curved arcuate lines conforming in curvature generally to the curvature of said upper edge and extending transversely to said straight lines entirely across the sheet, said arcuate curved lines being distributed over the entire area of the sheet with substantially equidistant spacing of predetermined extent between them and each intersecting said straight lines such that each arcuate line has a multiplicity of angularly spaced intersections with the straight lines,

a first set of identifying designations consisting of designations respectively associated with said straight radial lines, and

a second set of designations consisting of designations respectively associated with said curved arcuate lines, whereby each of said lines is identified to enable the hairdresser/hairdesigner to obtain any preselected hair length at each and every parting level at which the device is placed with said straight lines serving to guide the symmetry of the haircut relative to their center while the layers of strands of hair on any level of the head are being cut and shaped, and said curved arcuate lines serving to allow the hairdresser/hairdesigner to cut and shape said layers of strands of hair on the head to any predetermined length

(b) means permanently attached to and along the whole length of said upper edge of said sheet for selectively and adjustably securing said upper edge at any selected one of a plurality of parting lines on the head of a user whose hair is to be cut and shaped at a plurality of different levels on said head, with said upper edge of said sheet being engaged in an arcuate curved configuration around the head, and with the sheet curving around the head below said upper edge and below said one parting line on the head at which it is secured, and hanging downwardly therefrom in a generally truncated-conical configuration as aforesaid to cover the hair below said one parting line, while leaving the user's face exposed, whereby said sheet in said truncated-conical configuration separates the hair above and below said one parting line, at which it is secured, while said straight and arcuate curved lines serve to guide the cutting and shaping of the layer of strands of hair above said parting line, when said layer of strands is draped over the surface of said sheet to permit measuring of the strands to be cut and shaped and, as they are being cut and shaped, to insure symmetry, accuracy and precision of the cutting and shaping operation, while the hair beneath said sheet, within said truncated-conical configuration, is visible through said sheet for comparison with the layer of strands being cut and shaped when it is draped on and over said lines on said sheet.

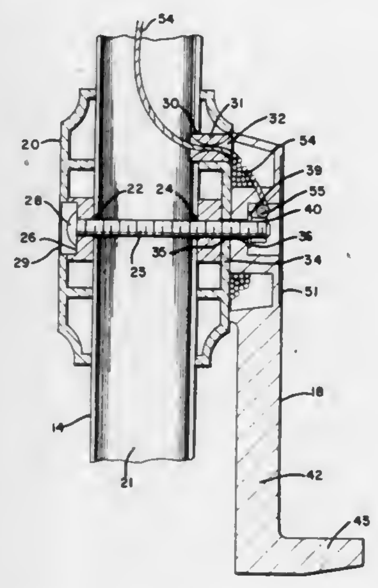
4,619,281
UMBRELLA WITH IMPROVED WIND-UP HANDLE

Richard S. Redl, and Robert F. Redl, both of 15 E. Summit Ave., Midland Park, N.J. 07432

Filed Jun. 5, 1985, Ser. No. 741,544
Int. Cl.⁴ A45B *17/00*
U.S. Cl. 135—20 M **16 Claims**

1. An umbrella comprising:
a collapsible cover;
means for operatively moving said cover between open and closed positions;
a hollow pole supporting said cover;
a flexible cable extending within said hollow pole, one end of said cable being connected to said means for moving;
handle means mounted on the exterior of said pole and including a rotatable handle and a wind-up spool adapted to rotate when the handle rotates; and

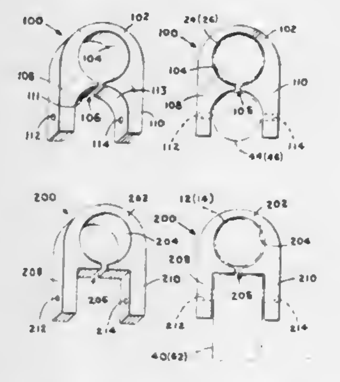
said pole having a side opening through which said cable extends, the other end of said cable being connected to said spool whereby rotation of said handle causes said cable to wind around said spool for opening said cover.



4,619,282
CLAMPS FOR INVALID WALKER TO ENHANCE STRUCTURAL INTEGRITY

Joseph Battiston, Clifton, N.J., assignor to Tubular Fabricators Industry, Inc., Passaic, N.J.

Filed Oct. 16, 1984, Ser. No. 661,260
Int. Cl.⁴ A61H *3/00;* **F16L** *41/08*
U.S. Cl. 135—67 **16 Claims**

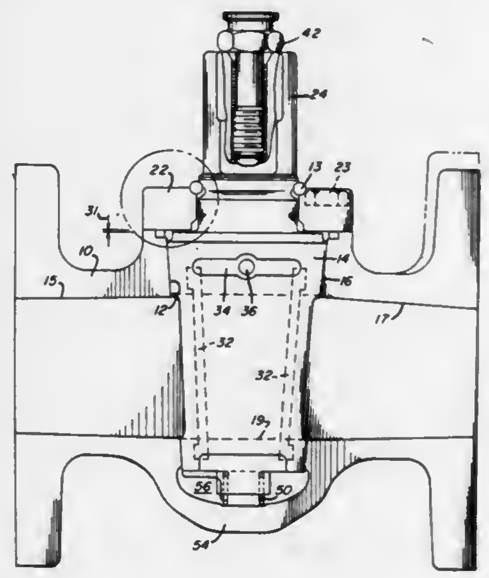


9. A device for supporting invalids, comprising:
four vertically disposed support legs, each support leg including a pair of inner and outer telescoping leg portions;
at least one cross member, each interconnecting at least two vertically disposed support legs;
a plurality of A-shaped clamps, each connecting an outer telescoping leg portion of each support leg to said at least one cross member, each A-shaped clamp including
  a substantially U-shaped portion;
  first and second spaced-apart legs having first ends extending from said U-shaped portion at first and second junctions, said first and second legs including opposing apertures for receiving a tightening member;
  a cross bar having opposite ends extending from said clamp at positions adjacent said junctions, said cross bar disposed substantially transverse to said first and second legs, said cross bar having a section thereof cut-away to define a gap therein, said cross bar having a substantially uniform depth throughout its length;
a first bar receiving section defined between said U-shaped portion and said cross bar, for receiving an outer telescoping leg portion, such that said cross bar wraps about said respective outer telescoping leg portion when said clamp is tightened by said tightening member; and
a second bar receiving section defined between said first and second legs and said cross bar for receiving a cross member, with said cross bar preventing substantial contact and substantial deformation of either of said respective cross member and outer telescoping leg portion by the other of said respective cross member and outer telescoping leg portion.

4,619,283
STEM SEAL FOR TAPERED LUBRICATED PLUG VALVES

E. Frederick Schoeneweis, Coraopolis, and Donn W. Duffey, Pittsburgh, both of, assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jan. 27, 1986, Ser. No. 822,441
Int. Cl.⁴ F16K *41/00, 43/00*
U.S. Cl. 137—15 **4 Claims**



1. Method of providing a stem seal for a tapered plug valve having a body enclosing a chamber bounded by a tapered bore, a tapered plug adapted to be received on said bore and having a stem integrally formed on and extending from the large end of said plug, a wall on said body closing the large end of said chamber and having an opening through which said stem projects, a sealant system comprised of grooves in said plug and said bore for conducting sealant to said plug and said bore, said method comprised of the steps of:

(a) inserting said plug into said bore with sufficient force to insure metal-to-metal contact between said plug and said bore,
(b) providing a clearance between the large end of said plug and said wall when said plug is in metal-to-metal contact with said bore,
(c) providing an annular space between said wall, said stem and the portion of the large end of said plug adjacent said stem which space communicates with said clearance,
(d) providing a seal ring in said annular space of deformable material which substantially fills said annular space and extends below said wall and into contact with the large end of said plug when said plug and said bore are in metal-to-metal contact and
(e) injecting sealant fluid under pressure into said system to force said plug to move away from said bore and deform a portion of said ring into the clearance between said wall and the large end of said plug.

4,619,284

PYROTECHNIC VALVE

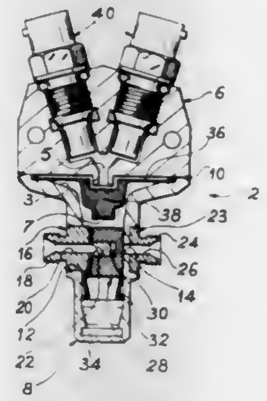
Jean-Jacques Delarue, Vélizy, and Claude Ego, Verneuil sur Seine, both of France, assignors to Societe Nationale Industrielle Aerospatiale, Verneuil sur Seine, France

Filed Mar. 18, 1985, Ser. No. 712,645

Claims priority, application France, Mar. 21, 1984, 84 04391

Int. Cl.⁴ F16K *17/14*

U.S. Cl. 137—67 7 Claims



1. A pyrotechnic valve comprising:
a valve body having an inner cavity;
a deformable disk-shaped membrane;
a rigid weight mounted on said deformable membrane, said rigid weight and said deformable membrane together tightly subdividing said inner cavity into a first part and a second part;
a fluid inlet and a fluid outlet communicating with said second part of said inner cavity;
a valve member disposed in said second part of said inner cavity for interrupting passage of fluid therethrough;
a pyrotechnic device for producing gases in said first part of said inner cavity, said weight being displaceable under the action of the gases produced by said pyrotechnic device so as to move said valve member;
said membrane being plastically deformable under the action of the gases produced by said pyrotechnic device and said inner cavity being provided with a seat to which the entire membrane is applied once it has been deformed.

4,619,285

FLUID FLOW CONTROL DEVICE

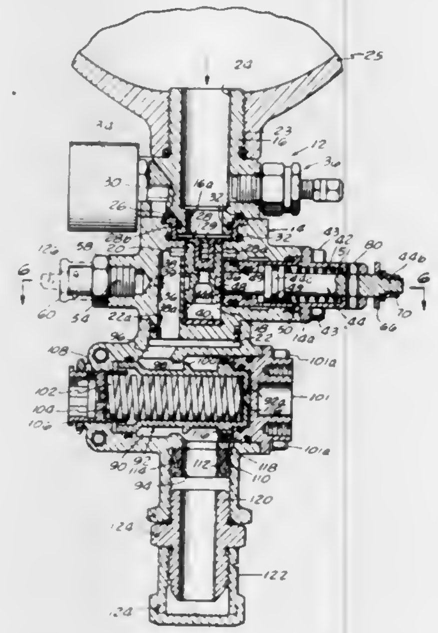
Meyer Piet, Arcadia, Calif., assignor to Futurecraft Corporation, Industry, Calif.

Filed Jun. 10, 1983, Ser. No. 503,096

Int. Cl.⁴ F16K *13/04*

U.S. Cl. 137—68.2 4 Claims

1. A fluid flow control device adapted to be interconnected between a container containing a gas at high pressure and an inflatable device for controlling the flow of gas therebetween, said control device comprising:
(a) a body including a first chamber having a fluid inlet and a fluid outlet and a pair of explosive gas flow passageways, each having first and second ends;
(b) connector means adapted to interconnect said body with the container, said means including a fluid inlet passageway adapted to communicate with said first chamber and with the fluid outlet of said container;
(c) a support spool disposed within said first chamber intermediate said fluid inlet and said fluid outlet said spool being reciprocally movable within said first chamber from a first position to a second position;
(d) a shearable diaphragm removably located between said connector means and said body for normally preventing fluid flow between said container and said fluid inlet of said first chamber, said spool being adapted to reinforce said diaphragm against pressurized fluid in said container when said spool is in said first position;
(e) a second chamber formed within said body proximate said first chamber and extending generally perpendicular with respect thereto, said second chamber being in communication with said first ends of said explosive gas flow passageways of said body;
(f) a piston reciprocally movable within said second chamber from a first position to a second position, said piston having first and second ends and including a locking boss protruding from said first end adapted to engage a shoulder formed on said support spool when said piston is in its first position whereby said spool is maintained in said first position in supportive engagement with said diaphragm, said piston also having an enlarged diameter central portion defining first and second spaced apart radially outwardly extending shoulders;
(g) actuation means carried by said body for moving said piston from said first position to said second position whereby said locking boss will move out of engagement with said shoulder and pressurized fluid within said inlet will act to shear said diaphragm to permit fluid to flow out said fluid outlet, said actuation means comprising:
(1) pyrotechnic means carried by said body proximate said second chamber for interaction with said piston to urge movement thereof toward said second position, said pyrotechnic means being in communication with said second ends of said explosive gas passageways formed in said body; and



(2) mechanical means carried by said body for moving said piston from said first position to a second position;
(h) a third chamber formed within said body having a fluid outlet and a fluid inlet in communication with said fluid outlet of said first chamber;
(i) a circumferentially inwardly extending shoulder formed within said third chamber intermediate said fluid inlet and said fluid outlet;
(j) a valve member reciprocally movable within said third chamber from a first position to a second position in response to fluid pressure exerted thereon, said member including a circumferentially outwardly extending protuberance for engagement with said shoulder when said valve member is moved to said second position to prevent fluid flow between said inlet and outlet of said third chamber;
(k) first biasing means operably associated with said valve member for yieldably resisting movement thereof from said first position to said second position;
(l) second biasing means for yieldably resisting movement of said piston from said first position to said second position; and
(m) fluid diverting means disposed within said outlet of said third chamber for diverting a portion of the fluid flowing therethrough and directing it toward said valve member to urge movement thereof toward said second position;
whereby when said pyrotechnic means is ignited, explosive gases will flow through said pair of explosive gas flow passageways and said explosive gas will impinge upon said first shoulder of said piston urging said piston toward said second position against the urging of said second biasing means.

4,619,286

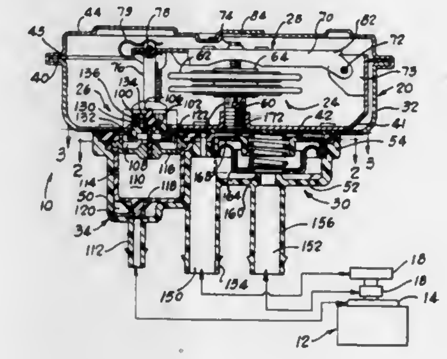
ELEVATION RESPONSIVE AUTOMATIC VEHICLE CONTROL SYSTEM

Roland B. Caldwell, Worthington, Ohio, assignor to Ranco Incorporated, Dublin, Ohio

Filed May 14, 1984, Ser. No. 609,808

Int. Cl.⁴ F02M *7/24*

U.S. Cl. 137—81.1 9 Claims



1. An altitude compensating fuel mixture controller for a carbureted automotive vehicle engine comprising:
(a) a supporting housing;
(b) an aneroid bellows connected to said housing;
(c) a control valve assembly having a pressure input port connected to a pressure source related to an intake manifold pressure, a vent port connected to atmosphere, a pressure output chamber, and valving structure movable from a predetermined position to alter communication between said output chamber and one of said input and vent ports to change an output pressure in said output chamber, said valving structure defining a differential pressure responsive means having a region exposed to atmospheric pressure and another region exposed to the output pressure such that said differential pressure responsive means is acted upon by differential pressure forces whose magnitudes vary depending on the difference between ambient atmospheric pressure and the output pressure;
(d) a force transmitting member supported by said body for transmitting force between said aneroid bellows and said valving structure, and;
(e) a pressure actuated fuel mixture controlling valve communicating with said output port and supported by said body;
(f) said force transmitting member effective to transmit incremental motion of said bellows to said valving structure in response to sensed atmospheric pressure reduction below a predetermined level indicative of a vehicle altitude above a predetermined altitude such that a biasing force is applied to said differential pressure responsive means;
(g) said output pressure changing to produce a feedback pressure force acting on said differential pressure responsive means to oppose said incremental bellows motion and to return said valving structure to said predetermined position, said feedback pressure force reacting against said bellows force via the force transmitting member to limit the degree of extension and retraction of said bellows to incremental amounts from a predetermined degree of extension.

4,619,287

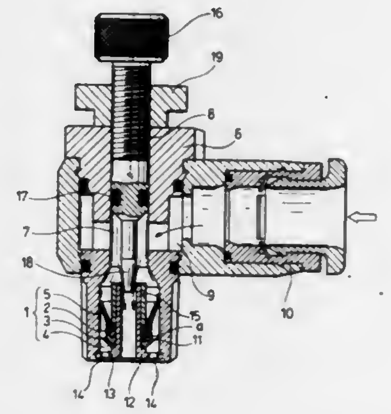
VALVES PROPER FOR VALVE-TYPE FLUID-FLOW CONTROLLERS

Tomio Hama, and Kiyoyasu Yamazaki, both of Okaya, Japan, assignors to Nihon Pisuko Kabushiki Kaisha, Nagano, Japan

Continuation of Ser. No. 433,149, Oct. 6, 1982, abandoned. This application Mar. 15, 1985, Ser. No. 712,204

Int. Cl.⁴ F16K *15/14*

U.S. Cl. 137—513.3 3 Claims



1. A valve for valve-type fluid flow controllers for providing a fluid flow path to permit the flow of fluid in a first direction and for providing a controlled flow in the reverse direction comprising:
a flow bore;
a substantially conical diaphragm constructed of an elastic material and having a predetermined height, said substantially conical diaphragm being operatively positioned with said flow bore;
said diaphragm including a minimum diameter portion having an aperture formed therein;
a cap member for mounting on said minimum diameter portion of said diaphragm;
a plurality of stripes extending from said cap member and engaging an outer surface of said diaphragm, said stripes extending along said diaphragm for a predetermined distance which is less than the predetermined height of said diaphragm;
said cap member including an aperture formed therein for aligning with said aperture in said diaphragm;
a collar support traversing said flow bore and having apertures therein;
a sleeve support affixed to said collar support and extending axially within said flow bore, said sleeve support including an aperture formed therein for aligning with said apertures in said diaphragm and cap member;
a fixing ring for retaining said diaphragm and cap member on said sleeve support in an operative position wherein said diaphragm is seated within said flow bore;
a tapered needle movably mounted for insertion into said aligned apertures in said sleeve support, said diaphragm and said cap for controlling the flow of fluid therethrough;
wherein fluid flowing in a first direction biases said diaphragm in a first direction to permit free flow of fluid through said flow bore and fluid flowing in a reverse direction biases said diaphragm in a reverse direction to permit controlled flow of fluid past said tapered needle.

4,619,288

ADJUSTABLE TRANSDUCER AND LOCK MECHANISM FOR MONITORING VALVE POSITION

Robert R. McPherson, Kalamazoo, Mich., assignor to Pneumo Corporation, Boston, Mass.

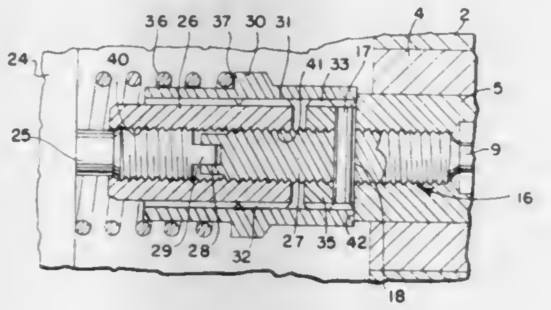
Filed Nov. 6, 1985, Ser. No. 795,337

Int. Cl.⁴ F16K *37/00*

U.S. Cl. 137—554 19 Claims

1. In combination, a fluid valve and transducer mechanism

for monitoring valve position, said valve including an axially movable valve plunger, and said transducer mechanism including an armature core connected to said valve plunger for movement therewith, adjusting means for adjusting the axial position of said armature core relative to said valve plunger, and locking means for releasably locking said armature core against relative axial movement, said adjusting means including means providing a lost-motion connection between said armature core and valve plunger permitting relative axial movement but preventing relative rotation therebetween, and sleeve means having different thread means in threaded engagement with threaded portions of said armature core and valve plunger, respectively, which, upon rotation of said sleeve means in opposite directions, will cause axial movement of said armature core toward and away from said valve plunger, and releasable lock means for preventing rotation of said sleeve means.



4,619,289
SOLENOID-CONTROLLED VALVE

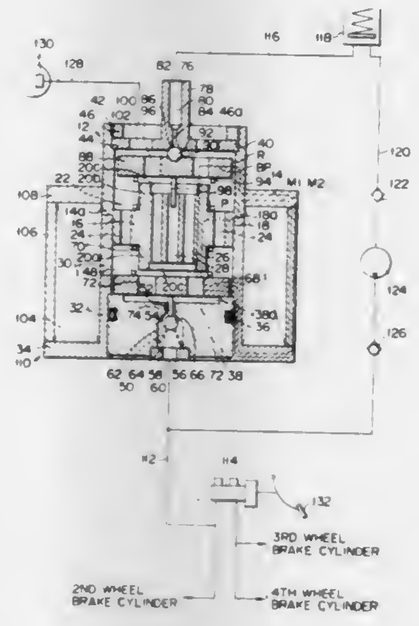
Naohiko Tsuru, Okazaki, and Yoshihisa Nomura, Toyota, both of Japan, assignors to Nippondenso Co., LTD., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Dec. 28, 1984, Ser. No. 687,740

Claims priority, application Japan, Dec. 28, 1983, 58-249785

Int. Cl.⁴ F16K ***31/02***

U.S. Cl. 137—627.5 **6 Claims**



1. A solenoid-controlled valve comprising:

a housing having an interior control chamber and including a tubular part closed at its opposite ends by first and second end parts of non-magnetic material, said tubular part having first and second end portions of magnetic material separated by an intermediate portion of non-magnetic material;

means defining first and second ports in said first and second end parts, respectively, communicating with said chamber, said first port having an outwardly facing first valve seat and said second port having an inwardly facing second valve seat;

a first valve member cooperating with said first seat to close said first port;

seating spring means urging said first valve member to seat to close said first port;

a second valve member cooperating with said second valve seat to close said second port;

means defining a third port in said second end part communicating with said chamber;

first and second members in said chamber, made of magnetic material and located adjacent and movable toward and away from said first and second ports, respectively, said first member being provided with means to engage and unseat said first valve member and said second movable member being engageable with to seat said second valve member;

fixed ported partition means of magnetic material in said chamber between said movable members and peripherally engaged with said second end portion;

spring means engaged between said partition means and each of said movable members for urging the latter toward their respective end parts to thus unseat said first valve member against the urging of said seating spring means and open said first port and engage said second valve member and close said second port;

a solenoid surrounding said tubular part and extending beyond the opposite ends of said intermediate portion for applying a magnetic field to the interior of said housing;

a yoke member which, together with said tubular part, encloses said solenoid, said yoke member, said first end portion, said first movable member, said partition means, said second movable member and said second end portion defining a magnetic circuit having a magnetic flux;

a magnetic flux by-pass for flowing magnetic flux between said second end portion and said partition means to by-pass said second movable member in said magnetic circuit, said flux by-pass being saturated with a magnetic flux smaller than that in said magnetic circuit; and

means defining magnetic resistances between said second movable member and said second end portion and between said first movable member and said first end portion, the resistance between said second movable member and said second end portion being greater than that between said first movable member and said first end portion,

whereby application of a small electric current to said solenoid magnetically attracts said first movable member toward said partition means with sufficient force to overcome that of said spring means therebetween and allows said first valve member to seat while said flux by-pass lessens the magnetic attraction of said second movable member toward said partition means sufficiently to avoid overcoming the force of said spring means therebetween and thus said second port remains closed, and

application of a large electric current to said solenoid causes said by-pass to become saturated with magnetic flux and flux flows through said magnetic resistance between said second movable member and said second end portion and develops sufficient magnetic attraction between said second movable member and said partition means to overcome the force of said spring means therebetween and thus unseats said second valve member and opens said second port.

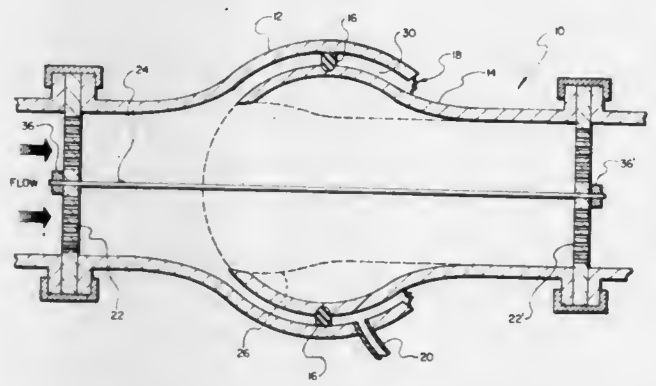
4,619,290
TORQUELESS FLUID CONNECTOR

Ellis Katz, Encino, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 7, 1985, Ser. No. 689,409

Int. Cl.⁴ F16L ***55/00***

U.S. Cl. 138—39 **9 Claims**



1. A connector for a fluid-flow line, designed to minimize the torque effects of fluid-flow on the connector, comprising;

an outer ball member comprising a truncated sphere with a tubular shape at the non-truncated end;

an inner ball member shaped like the outer ball member and nesting within it, the truncated end of the outer ball member facing towards the downstream side of the flow and the truncated end of the inner ball member facing upstream;

a seal groove having an upstream wall included in an outer surface of said inner ball member and extending around the outer surface of said inner ball member;

a pair of functioning end members comprising circular discs in the form of a grid structure, each end member being attached to the tubular open end of a different ball member;

a tension wire adjustably attached to and located between said end members;

a fluid-bearing seal located between said ball members to seal, with a limited amount of leakage, the space between said members being defined by the opposing outer surface of the inner ball member and the inner surface of the outer ball member;

a second seal between the truncated end of the outer ball member and the outer surface of the inner ball member, the second seal being spaced from the fluid-bearing seal to form a seepage space in which leakage fluid from the fluid-bearing seal accumulates; and

means for draining the leakage fluid from the seepage space.

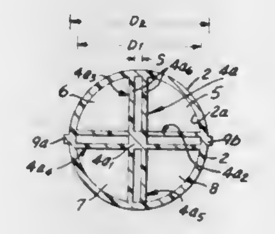
4,619,291
DUCT FOR CABLE

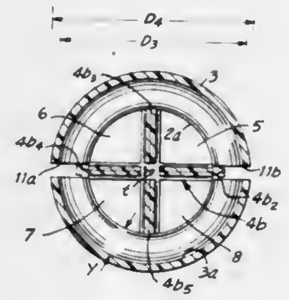
Said Shirian, Forest Hills, N.Y., assignor to Nynex Corporation, New York, N.Y.

Filed Oct. 23, 1984, Ser. No. 663,875

Int. Cl.⁴ F16L ***9/22***

U.S. Cl. 138—109 **17 Claims**





1. A duct for use in housing a cable comprising:

a tubular member having elongated barrel and bell portions, the bell portion being of larger diameter than the barrel portion;

and means disposed within said barrel portion for segmenting said barrel portion into compartments, said segmenting means having a first section in said barrel portion and a second section which follows said first section and extends into said bell portion, said first section having a first end in said barrel portion and extending therefrom through said barrel portion toward said bell portion to a second end of said first section, said first section comprising one or more pairs of spaced first walls extending along the length of said barrel portion, said second section having a first end which follows said second end of said first section and extends to a second end of said second section in said bell portion, said second end of said second section being of a configuration to interfit with said first end of said first section, and said second section comprising a second wall for each of said pairs of spaced first walls, each of said second walls following its corresponding pair of spaced first walls and having a thickness which is less than the spacing between the corresponding pair of first spaced walls.

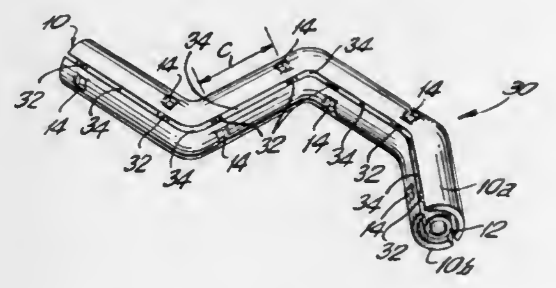
4,619,292
AIR GAP PIPE

Jon W. Harwood, Toledo, Ohio, assignor to APX Group, Inc., Toledo, Ohio

Continuation of Ser. No. 541,709, Oct. 14, 1983, Pat. No. 4,501,302. This application Jan. 30, 1985, Ser. No. 696,311

Int. Cl.⁴ F16L ***9/18***

U.S. Cl. 138—113 **7 Claims**



1. A non-linear air gap pipe for carrying heated exhaust gases from an engine, said air gap pipe comprising:

an inner pipe bent into a selected non-linear configuration for carrying the exhaust gases from the engine; and

an outer pipe disposed generally concentrically around the inner pipe along substantially their entire respective non-linear lengths with an air gap therebetween, said air gap pipe including a plurality of supports extending between and contacting both the inner pipe and the outer pipe, said outer pipe being formed by first and second longitudinal halves with said first and second halves being joined together at selected locations along opposed longitudinal sides of said other pipe, said selected locations being spaced from one another along at least one longitudinal side of said outer pipe to define vents between said selected locations.

4,619,293
CIRCULAR LOOM

Franz X. Huemer, Sonnenuhrgasse 4, 1060 Vienna, Austria

Filed May 22, 1985, Ser. No. 736,786

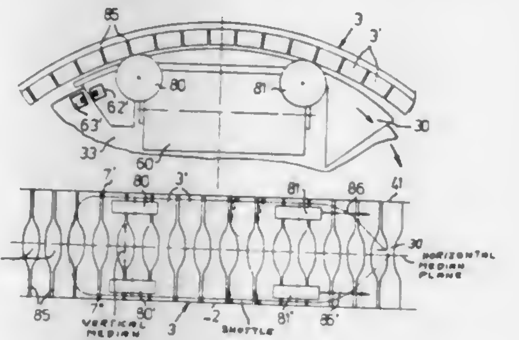
Claims priority, application Switzerland, Jun. 8, 1984, 2799/84

Int. Cl.⁴ D03D ***37/00***

U.S. Cl. 139—13 R **6 Claims**

1. In a circular loom having a circular reed traversed by warp yarn to which a shedding motion is imparted and in which at least one weaving shuttle rotates in the reed, the improvement wherein said reed comprises:

an upper circular shuttle race,
a lower circular shuttle race, and
a multiplicity of strips extending between said races and defining between them guide passages equispaced around the reed and each accommodating two yarns which cross substantially at a horizontal median plane through said reed during shedding motion of said yarns, each of said passages comprising an upper and a lower narrow slit extending from said upper and said lower races respectively in the direction of said median plane and widening to join at said median plane whereby each of said narrow slits accommodates a respective yarn in the region of the respective race when a shed is formed and the widened portions of said passages at said median plane permit the yarns of said passage to cross past one another without interference during a shed changeover movement of said yarns at a warp crossing space; and
said shuttle is provided with pairs of rollers respectively at a top edge for engagement with said upper race and at said bottom edge for engagement with said lower race whereby said rollers of said shuttle ride on said races as said shuttle is biased outwardly by centrifugal force, said slits extending below said upper and lower races to receive said yarns and recess them below respective surfaces of said races on which said rollers run.



4,619,294

METHOD OF AND APPARATUS FOR CONTROLLING MOTOR-DRIVEN LET-OFF AND TAKE-UP SYSTEM FOR LOOMS

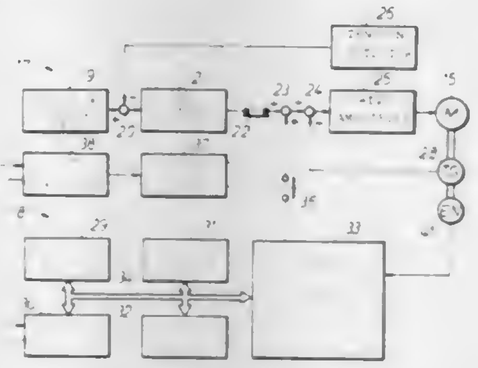
Tsutomu Sainen, and Takeshi Asai, both of Kanazawa, Japan, assignors to Tsudakoma Corp., Kanazawa, Japan

Filed Jan. 17, 1985, Ser. No. 692,273

Claims priority, application Japan, Jan. 20, 1984, 59-008956

Int. Cl.⁴ D03D ***49/06***

U.S. Cl. 139—99 **5 Claims**



1. A method of controlling motor-driven let-off and take-up motions in a loom, comprising the steps of:
(a) controlling the rotation of a motor for driving an object with a tension control system operating in response to a signal indicative of a target tension and a feedback input signal indicative of an actual tension of the object during a normal operation of the loom;
(b) controlling the rotation of the motor with a feedforward control system during a transient operation of the loom, said feedforward control system storing operation patterns of directions and speeds of rotation and an angular displacement of the motor for respective operation modes and weaving condition of the loom;
(c) detecting an operation mode of the loom at the time of the transient operation;
(d) reading an appropriate operation pattern from the feedforward control system based on the detected operation mode; and
(e) applying the read operation pattern as a control signal to a drive control system for the motor.

2. An apparatus for controlling let-off and take-up motions in a loom, comprising:
(a) a first control apparatus of a tension control system for controlling an object; and
(b) a second control apparatus of a feedforward control system for controlling the object,
(c) said first control apparatus including:
(1) a tension setting unit for generating a signal indicative of a target tension for the object;
(2) a tension detector for detecting an actual tension of the object and generating a feedback signal;
(3) a PI control unit for effecting PI operation on the target tension signal and the feedback signal; and
(4) a drive amplifier for controlling a motor for driving the object based on a PI output signal from said PI control unit, and
(d) said second control apparatus including:
(1) an input unit for entering operation data items of directions and speeds of rotation and an angular displacement of the motor for respective operation modes and weaving conditions of the loom;
(2) a memory for storing the operation data items from said input unit as a plurality of operation patterns;
(3) a detector for detecting an operating condition of the loom upon a transient operation of the loom;
(4) a central processing unit for reading an appropriate operation pattern dependent on the detected operating condition from said memory and generating a control signal; and
(5) a drive control unit responsive to the control signal from said central processing unit for driving the motor based on a given speed pattern.

4,619,295

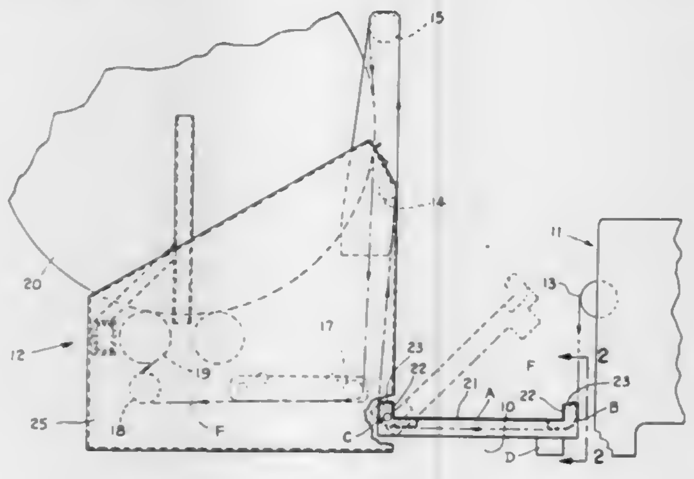
WEAVER'S PLATFORM

William J. Alexander, P.O. Box 761, Mauldin, S.C. 29662

Filed Apr. 15, 1985, Ser. No. 723,570

Int. Cl.⁴ D03D ***49/20***

U.S. Cl. 139—304 **1 Claim**



1. A weaver's platform for use in the weaver's aisle area between a textile loom and an off the loom cloth takeup comprising:
an elongated rectangular walkway disposed between said

textile loom and said cloth takeup positioned forwardly of the loom;
a pair of spaced arcuate supports positioned transversely with one of said supports adjacent each side of said elongated rectangular walkway for facilitating the passage of cloth beneath said walkway and for reinforcing and bracing said walkway for adding rigidity thereto;
said walkway including a transverse pivotal support carried adjacent one of said arcuate supports;
a support means for carrying the walkway adjacent the other of said arcuate supports;
said arcuate supports being curved sheet portions; and
said walkway being pivoted to said cloth takeup above said adjacent sheet metal portion;
whereby said walkway may be pivoted upwardly for easy removal from the aisle for clean out of the area between the loom and the cloth takeup while facilitating passage of cloth from the loom to the takeup.

4,619,296

WEFT INSERTING NOZZLE FOR JET LOOMS

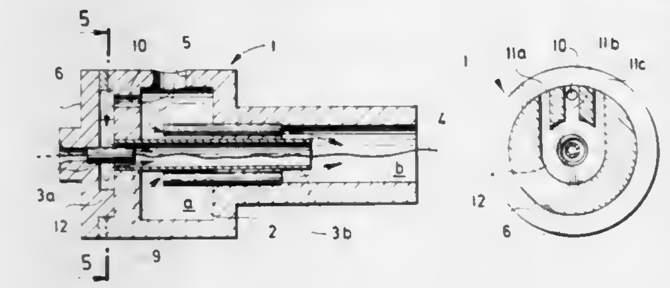
Miroslav Hrus; Vladimir Svaty; Pavel Sidlof, and Oldrich Fisar, all of Liberec, Czechoslovakia, assignors to Elitex, textilniho strojirenstvi, Liberec, Czechoslovakia

Filed Aug. 23, 1985, Ser. No. 768,952

Claims priority, application Czechoslovakia, Aug. 23, 1984, 6384-84

Int. Cl.⁴ D03D ***47/30***

U.S. Cl. 139—435 **5 Claims**



1. A nozzle for the insertion of weft threads in pnenumatic jet looms, wherein means are provided to allow air to enter said nozzle and wherein said nozzle comprises a body in which there are disposed air channels into which the air enters and at least one weft thread guide arranged in the nozzle body, and means operable to cause the air to rotate and to produce a change in the direction and speed of rotation of the air passing through the nozzle, said last named means comprising means for adjusting the position of the air channels with respect to the weft thread guide.

4,619,297

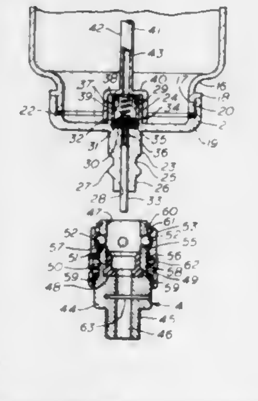
REFILLABLE PRESSURE SPRAY CONTAINER

Kenneth E. Kocher, 6030 Glenmont, Apt. 10, Houston, Tex. 77081

Filed Dec. 24, 1984, Ser. No. 686,004

Int. Cl.⁴ B65B ***31/00***

U.S. Cl. 141—20 **20 Claims**



15. A refillable pressurizable container for use in a pressure spray system having a motor driven gas compressor with a gas inlet and an outlet for compressed gas, a quick disconnect coupling having first and second separable parts having a spring-loaded sleeve and ball detents for quick assembly and disassembly , said first quick disconnect coupling part being rigidly secured in a fixed position on said compressor outlet and extending vertically upward therefrom, including valve means, supported in a fixed position on said compressor outlet and in said quick disconnect coupling adapted to be open when said quick disconnect coupling is in a connected position for flow of compressed gas through said coupling into said container and adapted to be closed on separation of said quick disconnect coupling parts,
said pressurizable container comprising
a refillable pressurizable container adapted to be removably secured on and communicating with said compressor outlet in an inverted position comprising a pressure-resistant container having one open end,
a removable cap closing and sealing said open end,
a filling and dispensing nozzle extending outwardly from said cap, and
a hollow tubular stem extending inwardly from said cap into said container to a point near the bottom end of said container,
said pressurizable container further comprising said second quick disconnect coupling part, said second quick disconnect coupling part comprising part of said nozzle and fitting said first quick disconnect nozzle part to form a passage from said compressor to the interior of said container for pressurizing the same, and
valve means adapted to be open when said quick disconnect coupling is in a connected position for flow of compressed gas through said coupling into said container and adapted to be closed on separation of said quick disconnect coupling parts,
said container being adapted to be removed by separation of said quick disconnect coupling by operation of said spring-loaded sleeve, after filling, for use in spraying.

4,619,298

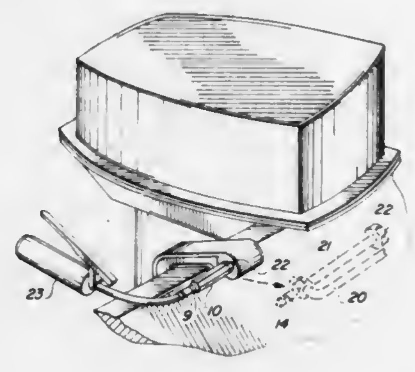
CABLE GREASING ADAPTOR

Ronney L. Broussard, Pollock, La., assignor to Antonia Products, Inc., Jena, La.

Continuation-in-part of Ser. No. 532,206, Sep. 14, 1983. This application Mar. 11, 1985, Ser. No. 710,474

Int. Cl.⁴ B65B ***3/04***

U.S. Cl. 141—384 **20 Claims**

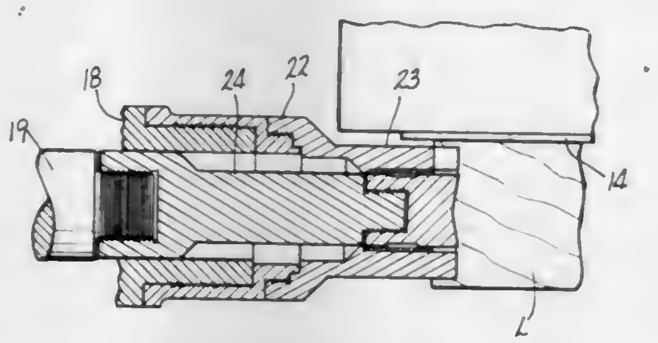


19. A five-piece apparatus for lubricating a cable and cable housing comprising:
a. an elongated, hollow, one-piece first body means for receiving and conveying lubricant from a lubricant source through the hollow portion thereof to a cable housing, said first body means having a first end and a second end, said first end having a hole therein for receipt of a grease fitting means, said second end having threads on the inside thereof, said first body means being constructed from a single continuous piece of rigid material,
b. an elongated, hollow, one-piece second body means for

receiving and conveying lubricant from said first body means to a cable housing, said second body means having a first and second end having external threads thereon, said threads on said first end being adapted for receipt in said threads on said first body means,
c. washer means for forming a seal with said cable housing, said washer means having a hole in the center thereof for receipt of said cable housing,
d. nut means having internal threads therein for receipt of said external threads located on said second end of said second body means, said nut means having a threaded first hole in one end thereof for receipt of said second end of said second body means and a second hole in the other end thereof for receipt of said cable housing means, and
e. grease fitting means rigidly connectable to said main body means for conveying lubricant from a grease gun to said main body means.

4,619,299
LOG-PEELING LATHE

Sterling B. Platt, Stamford, Conn., assignor to Champion International Corporation, Stamford, Conn.
Filed Jun. 24, 1985, Ser. No. 747,916
Int. Cl.^{4} B27C *7/04*
U.S. Cl. 144—357 **13 Claims**

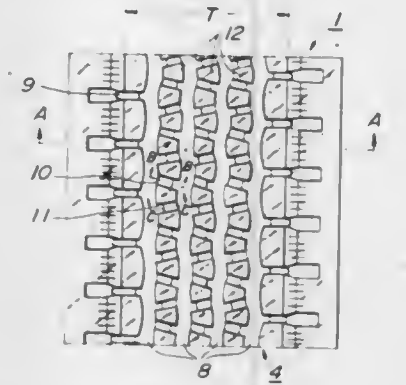


4. A log peeling lathe comprising:
(a) inner and outer spindles rotatably journalled on the lathe;
(b) inner and outer dogs mounted on said inner and outer spindles respectively for supporting ends of logs being peeled in the lathe, said inner dogs nesting in said outer dogs;
(c) retraction means for selectively retracting said inner and outer dogs away from the ends of a log in the lathe;
(d) measuring means for determining the round up size of a log in the lathe;
(e) sensing means operable to sense when a log has been rounded up in the lathe; and
(f) control means connected to said measuring means and to said sensing means, said control means being operable to actuate said measuring means to measure the size of a log in the lathe when said sensing means has sensed that the log in the lathe is rounded up.

4,619,300
PNEUMATIC TIRE TREAD

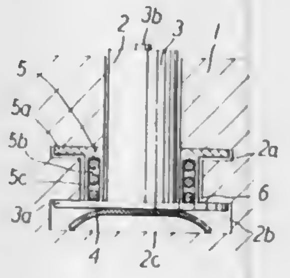
Seiichiro Tokunaga, Higashimurayama, and Nobumasa Ikeda, Kodaira, both of Japan, assignors to Bridgestone Corporation, Japan
Filed Nov. 29, 1984, Ser. No. 676,332
Claims priority, application Japan, Nov. 30, 1983, 58-224512; Mar. 29, 1984, 59-59475
Int. Cl.^{4} B60C *11/03*
U.S. Cl. 152—209 R **39 Claims**

1. An all season type pneumatic tire which is to be used throughout a year from a winter season through a summer season and comprises:
a tread pattern formed in a tread portion divided into separated blocks at an outer surface of a tread rubber layer in at least a central region of said tread portion by a plurality of main grooves extending circumferentially and a large number of lateral grooves each extending toward a cross direction to each of said main grooves and having a shallower portion as compared with said main groove, said tread portion being a cap-base composite tread portion composed of an upper rubber layer forming a pattern of blocks and a lower rubber layer bordered on said upper rubber layer just therebeneath by a face connecting groove bottoms of said shallower portions of lateral grooves and forming a pattern of ribs separated from one another by said main grooves in the lateral direction and extending substantially continuously in the circumferential direction, and said upper rubber layer being substantially composed of a cap rubber having a JIS hardness at −20° C. of not more than 75° and said lower rubber layer being substantially composed of a base rubber having a JIS hardness at 100° C. of not less than 54° and a loss tangent of not more than 0.22 at 50 Hz, 25° C. and a strain of 2%.



4,619,301
SPIKE TIRE

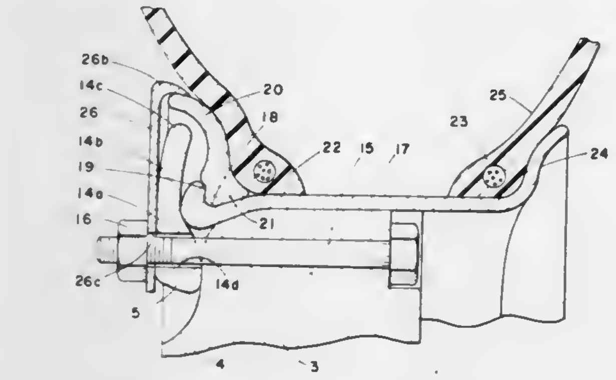
Eizo Hiroki, Sapporo, Japan, assignor to Agency of Industrial Science and Technology, Tokyo, Japan
PCT No. PCT/JP83/00443, § 371 Date Aug. 13, 1984, § 102(e) Date Aug. 13, 1984, PCT Pub. No. WO84/02497, PCT Pub. Date Jul. 5, 1984
PCT Filed Dec. 19, 1983, Ser. No. 642,689
Claims priority, application Japan, Dec. 23, 1982, 57-234308; Mar. 14, 1983, 58-042915; Mar. 29, 1983, 58-054665
Int. Cl.^{4} B60C *11/14*
U.S. Cl. 152—210 **9 Claims**



1. A spike tire for a vehicle, said tire having a tread surface, comprising:
a pin receptacle hole provided in said tread surface of said tire;
a spike pin retractably protrudable from said pin receptacle hole;
biasing means for constantly urging said spike pin to protrude from said pin receptacle hole; and
shape memory alloy actuating means for automatically restoring a memorized shape when warmed to a predetermined temperature by the heat generated in said tire as a result of operation of said vehicle on a non-frozen or snow-free road surface and for automatically retracting said spike pin into said tire against the action of said biasing means.

4,619,302
RIM AND TIRE CLAMP

Asa B. Mellor, Rte. 6, Box 131, Millersburg, Ohio 44654
Filed Sep. 24, 1984, Ser. No. 653,900
Int. Cl.^{4} B60C *5/16*
U.S. Cl. 152—398 **3 Claims**

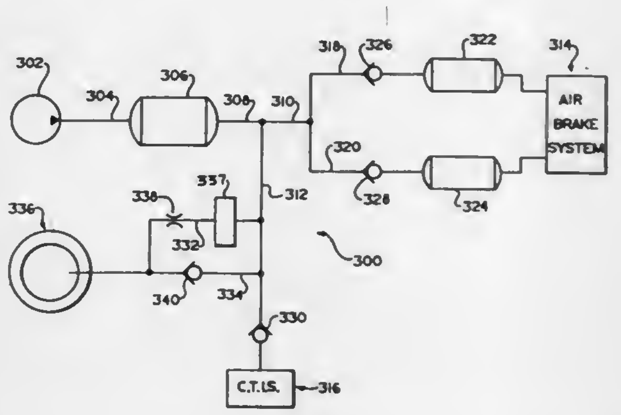


1. A multi-piece rim and wheel construction for retaining an associated tire thereon, said rim and wheel construction comprising:
a wheel having a central axle connecting portion and radially extending spokes extending outwardly therefrom;
a rim mounted adjacent an outer end of said radially extending spokes, said rim having a substantially cylindrical body, a first tire bead engaging flange at one edge and a lock ring receiving portion at the other edge;
a lock ring received in said lock ring receiving portion at an inner radial position, said lock ring including a second tire bead engaging flange extending radially outward to an outer radial position whereby an associated tire is retained between said tire bead engaging flanges;
a clamp on said wheel having a first body portion fixedly retained to said wheel at an innermost radial position, a flange engaging portion extending outwardly adjacent to said lock ring inner radial position, and a tongue portion extending outwardly from said flange engaging portion to a position adjacent said lock ring outer radial position for inhibiting axial displacement of said lock ring; and,
a stop member fixedly retained to said ring extending continuously from said innermost radial position to an outermost radial position engaging an outer circumferential edge of said lock ring whereby an additional safety factor is incorporated into said construction.

4,619,303
VEHICLE AIR SYSTEM INCLUDING CENTRAL TIRE INFLATION SYSTEM

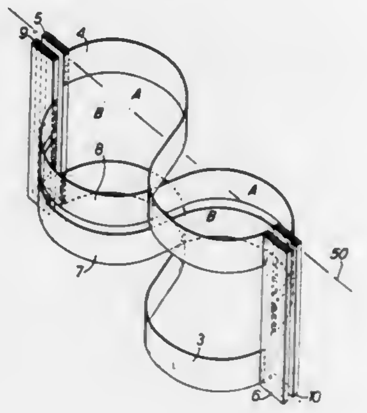
Lannie R. Bryan, Northville, and Gary R. Schultz, Novi, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio
Filed Jun. 4, 1984, Ser. No. 617,648
Int. Cl.^{4} B60C *23/00, 29/00*
U.S. Cl. 152—416 **7 Claims**

1. A vehicle air system for a vehicle equipped with air brakes, a central tire inflation system and a central tire inflation system pressurized fluid reservoir for storing pressurized fluid therein for charging both said vehicle air brake system and said central tire inflation system said vehicle air system comprising:
a source of pressurized fluid;
a first conduit fluidly connected to said source;
a second fluid conduit fluidly connecting said first conduit to said vehicle air brake system;
a first one-way check valve associated with said second conduit, said first one-way check valve allowing fluid to flow from said first conduit to said brake system only;
a third fluid conduit fluidly connected to said first conduit and to said central tire inflation system;
a fourth conduit fluidly connecting said third conduit to said central tire inflation system reservoir, said fourth conduit including a fluid flow restriction therein limiting the flow of fluid therethrough;
a fifth conduit fluidly connecting said third conduit to said central tire inflation system reservoir;
said fourth conduit and said fifth conduit defining parallel fluid conduit paths from said third conduit to said central tire inflation system reservoir
a second one-way check valve associated with said fifth conduit for controlling the flow of fluid therethrough, said second one-way check valve allowing fluid to flow from said central tire inflation system reservoir to said third conduit only
whereby pressurized fluid stored in said central tire inflation system reservoir can charge both said central tire inflation system and said air brake system.



4,619,304
HINGES

Michael T. Smith, Swanley, England, assignor to Courier Display Systems Limited, London, England
Filed Nov. 17, 1982, Ser. No. 442,307
Claims priority, application United Kingdom, Feb. 15, 1982, 8204362; Oct. 28, 1982, 8230870
Int. Cl.^{4} E05D *1/00;* **G09F** *15/00*
U.S. Cl. 160—135 **21 Claims**



1. A hinged structure comprising:
first and second cylindrical supports disposed in parallel, and having axes which generate a plane, and respective first and second surfaces disposed on opposite sides of said plane;
at least one hinge having a first and second S-shaped strip made out of a resiliently flexible material, each strip passing partially around each support, said first strip passing along the first surface of the first support, between said two cylinders and along the second surface of said second support said first and second surfaces being outer surfaces, said second strip passing along the second surface of said first support and the first surface of said second support, and said first strip having opposed ends, and said second strip having opposed ends; and
at least two independent tensioning means external of and

contiguous with said first and second cylindrical supports and being attached to said opposed ends of the strips and mounted on said supports.

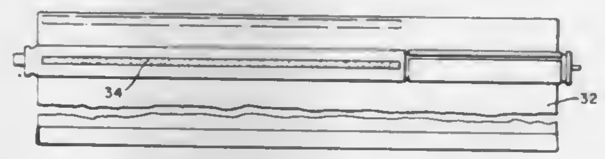
4,619,305
SEMI-ADJUSTABLE SHADE AND ROLLER COMBINATION

Paul E. Comeau, Warwick, R.I., assignor to Kenney Manufacturing Company, Warwick, R.I.

Filed Mar. 25, 1985, Ser. No. 715,390

Int. Cl.^{4} A47G *5/02*

U.S. Cl. 160—263 **4 Claims**



1. A semi-adjustable roller shade, comprising:

(a) a sheet of essentially flexible but non-stretchable material in the form of a shade cut to the width of a given one of several standard width increments, having top, bottom, and side margins;

(b) a telescoping roller assembly comprising:

an outer roller of sheet metal formed into an essentially uniform cylindrical shape on its outer surface with a lock-seam of several thicknesses of said metal extending inwardly on the inner surface thereof, and

an inner roller of sheet metal formed into a cylindrical shape and dimensioned to fit into said outer roller in smooth sliding telescoping relation, and with a longitudinal groove in the outer surface thereof dimensioned to receive the lock-seam of the outer roller;

(c) the length of the outer roller being slightly less than the width of a shade of the next narrower width increment, and the length of the inner roller being substantially more than the width dimensional difference between said given one standard width and said next narrower standard width;

(d) said inner roller positioned in said outer roller and extending outwardly thereof sufficiently to make the length of said roller assembly at least equal to said given one standard width;

(e) the top margin of said shade connected to said larger roller;

(f) a split sleeve of essentially stiff but resilient sheet material having a thickness equal to the difference in outside diameter between said outer and inner rollers, mounted on said inner roller;

(g) a flanged head having an outside diameter greater than the outside diameter of the outer roller mounted on the end of the inner roller opposite the outer roller such that said sleeve is held between the outer roller and the flanged head; and

(h) the shade rolled up on said roller assembly, whereby the side margin of said shade overlying said split sleeve may be cut to give the shade a desired width between said one given standard width and the next narrower standard width with said sleeve supporting said shade material for cutting across the groove in said inner roller, and whereby said sleeve may then also be cut and sprung open to remove the cut portion from the inner roller, with enlarged flanged head, and the inner roller may then be pushed in without risk of pushing it in too far to provide a trimmed shade of the desired width.

4,619,306
QUALITY CONTROL IN MULTIPLE CONTINUOUS CASTING PLANTS

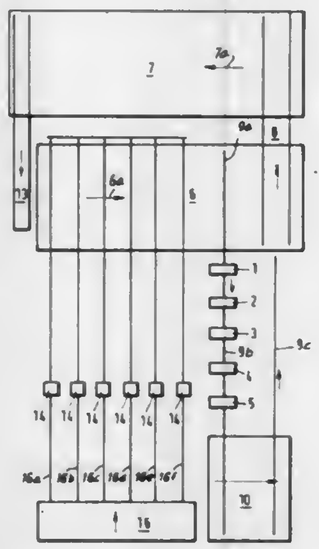
Hans Gruner, Duisburg; Helmuth Orsech, and Hans Schrewe, both of Düsseldorf, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 11, 1983, Ser. No. 540,631

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1982, 3238346

Int. Cl.^{4} B22D *11/16*

U.S. Cl. 164—150 **18 Claims**



1. In a facility for continuous casting of multiple casting strands in parallel, there being a plurality of molds and corresponding cutters for forming and separating each casting strand in a line and path of casting from the molds, into respective billets, the improvement comprising:

a first transversely operating transport means cooperating with all said casting paths to receive all of said billets in spaced apart relation but transporting them into a common direction extending transversely to the respective direction of casting of each of the billets as defined by the respective casting path;

an inspection line parallel to the casting paths and transverse to the first transport means and including a second longitudinal transporting means for selectively receiving and transporting specified billets to be inspected from said first transport means and moving the received billets to the inspection line there being at least one inspection station arranged along the inspection line;

a third transport means coupled to both the inspection line and to the first transverse transport means for transporting inspected billets as well as uninspected billets; and

a cooling facility connected to the third transport means for receiving all of said billets from the said third transport means and as combined therein, for purposes of cooling.

4,619,307
APPARATUS FOR COMPRESSING FOUNDRY MOULDING MATERIAL BY PRESSURE GAS

Günter Müller, Karlsruhe, and Norbert Damm, Karlsdorf-Neuthard, both of Fed. Rep. of Germany, assignors to BMD Badische Maschinenfabrik Durlach GmbH, Karlsruhe, Fed. Rep. of Germany

PCT No. PCT/EP 84/00392 § 371 Date Aug. 2, 1985, § 102(e) Date Aug. 2, 1985, PCT Pub. No. WO 85/02568, PCT Pub. Date Jun. 20, 1985

PCT filed Aug. 2, 1985, Ser. No. 767,274

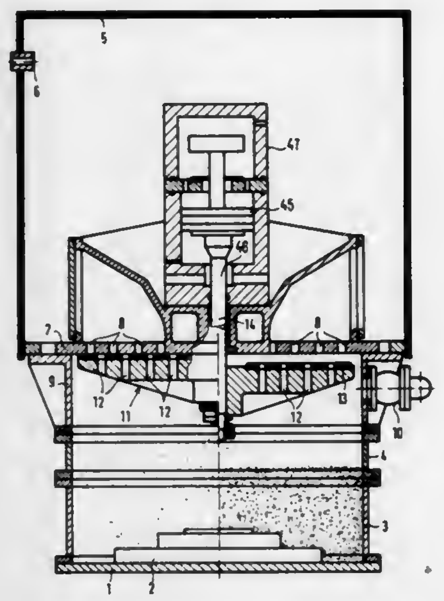
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1983, 3344520

Int. Cl.^{4} B22C *15/00*

U.S. Cl. 164—169 **12 Claims**

1. Apparatus for the compression of foundry moulding material by means of pressure or compression gas comprising a pressure vessel for the pressure gas forming an initial pressure chamber, a moulding chamber positioned below the pressure

vessel and comprising a moulding box with a sand frame and a pattern plate with a pattern closing off the moulding box at the bottom and onto which the moulding material is loosely heaped up prior to compression and a large-area valve arranged between the pressure vessel and the moulding chamber and whose closure member releases the valve opening in a few milliseconds under the joint action of the pressure in the pressure vessel, moves into the moulding chamber and can be brought into the closed position by means of a pressure cylinder, characterized in that on the lift or stroke side, the piston (**45**) of the pressure cylinder (**47**) is connected to a high pressure source (**41**) and with its opposite side forms the movable termination of a pressure reservoir (**51**) subject to the action of the gas and that the high pressure side outflow (**44, 48, 61, 64**) is constructed in such a way that the pressure flows out at a speed of >10 m/s, accompanied by the simultaneous acceleration of the piston (**45**) under the pressure in the pressure reservoir (**51**) and the closure member (**11**) into the open position.



4,619,308
MOLD FOR HORIZONTALLY AND CONTINUOUSLY CASTING MOLTEN METAL INTO CAST METAL STRAND

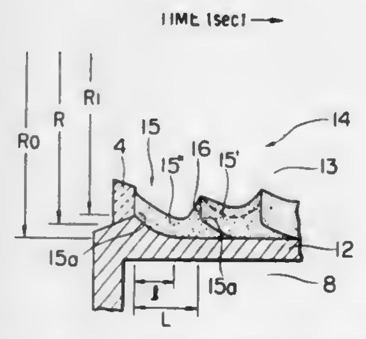
Takaho Kawawa, Tokyo, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1985, Ser. No. 734,771

Claims priority, application Japan, Jun. 4, 1984, 59-113145

Int. Cl.^{4} B22D *11/04*

U.S. Cl. 164—416 **7 Claims**



1. In a horizontal type continuous casting machine for horizontally and continuously casting molten metal into a cast metal strand, and including a horizontal mold and means for cyclically pulling and pushing the cast metal strand during formation thereof, comprising:

connecting means including at least a front nozzle, a feed nozzle and a break ring, for connecting said horizontal mold to an opening in a lower portion of a side wall of a tundish for a horizontal type continuous casting machine, one end of said front nozzle being inserted into said opening in the lower portion of said side wall of said tundish, the other end of said front nozzle being in contact with one end of said feed nozzle, the other end of said feed nozzle being in contact with one end of said break ring, the other end of said break ring being in contact with an inner bore of said mold at an inlet end thereof, thereby said opening in the lower portion of said side wall of said tundish, said front nozzle, said feed nozzle, said break ring and said inner bore of said mold forming a horizontal passage for molten metal, molten metal received in said tundish being intermittently and continuously withdrawn into a cast metal strand in the horizontal direction through said mold by means of a plurality of cycles each comprising one pull and one push, and a distance (L) of said one pull being longer than a distance of said one push; and

the transverse sectional area of said inner bore for said inlet end portion of said mold becomes gradually larger from said inlet end of said mold toward the middle portion thereof over a prescribed distance (l), and said inner bore has substantially the same transverse sectional area for the remaining portion of said mold other than said inlet end portion over said prescribed distance (l);

the improved mold wherein:

said prescribed distance (l) at said inlet end portion of said mold (**12, 17** or **18**) is equal to or less than said distance (L) of said one pull in each cycle for said withdrawal of said cast metal strand.

4,619,309
NOZZLE FOR STRIP CASTING

Ernst Huber, Schaffhausen; Wolfhart Rieger, Buch, and Martin Bolliger, Sierre, all of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

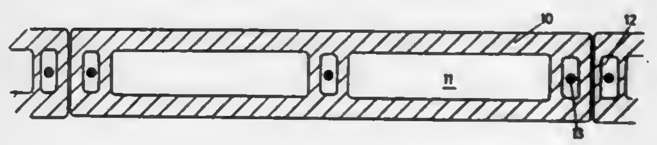
Continuation of Ser. No. 280,553, Jul. 2, 1981, Pat. No. 4,485,835, which is a continuation of Ser. No. 7,446, Jan. 29, 1979, Pat. No. 4,290,477. This application Jun. 21, 1984, Ser. No. 622,873

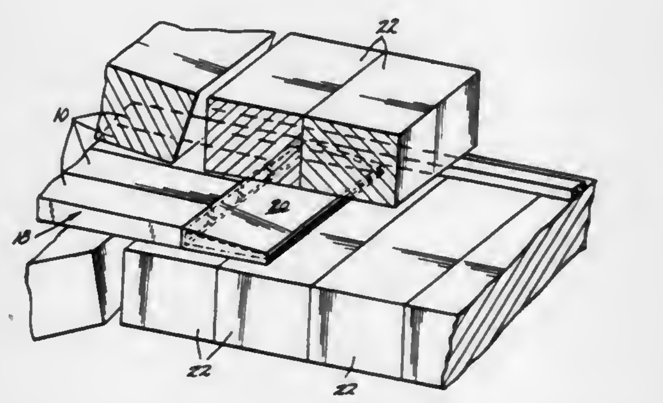
Claims priority, application Switzerland, Jan. 30, 1978, 991/78

The portion of the term of this patent subsequent to Sep. 22, 1998, has been disclaimed.

Int. Cl.^{4} B22D *11/06*

U.S. Cl. 164—430 **7 Claims**





1. An apparatus for the continuous casting of molten metal comprising in combination a caterpillar track type mold and a nozzle for feeding said molten metal to said mold, the improvement comprising:

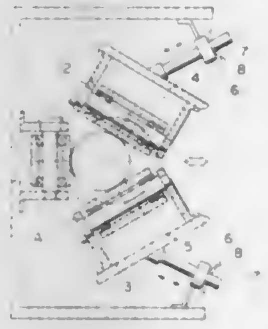
a nozzle comprising a plurality of individually separable hollow elongated tubular sections, each of said sections having a peripheral wall defining at least one feed channel, said plurality of sections being mounted in side by side relationship such that a portion of said peripheral wall surface of one of said plurality of sections abuts a portion of said peripheral wall surface of another of said plurality of sections.

4,619,310

SUPPORTING AND GUIDING APPARATUS CONTINUOUS ROUNDS CASTING

Tsuyoshi Andoh; Toshio Kanamori, both of Niihama; Takashi Yamaguchi, Wakayama; Hiroshi Tomono, Wakayama, and Satoshi Satake, Wakayama, all of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo and Sumitomo Metal Industries, Ltd., Osaka, both of, Japan

Filed Nov. 27, 1984, Ser. No. 675,316
Claims priority, application Japan, Nov. 30, 1983, 58-226640
Int. Cl.⁴ B22D *11/128*
U.S. Cl. 164—448 **20 Claims**



1. A supporting and guiding apparatus for continuous rounds casting which supports and guides a round drawn from a mold of a continuous casting machine with a plurality of rolls disposed around said round, comprising:
- a plurality of sets of rolls, each set being disposed along a drawing direction of said round and composed of three rolls which are disposed around a periphery of said round; and
- at least one roll of each set being fixed relative to said round and the remaining rolls being fixedly adjustable in a direction toward and away from a centerline of the drawing direction so as to accept various size rounds.

4,619,311

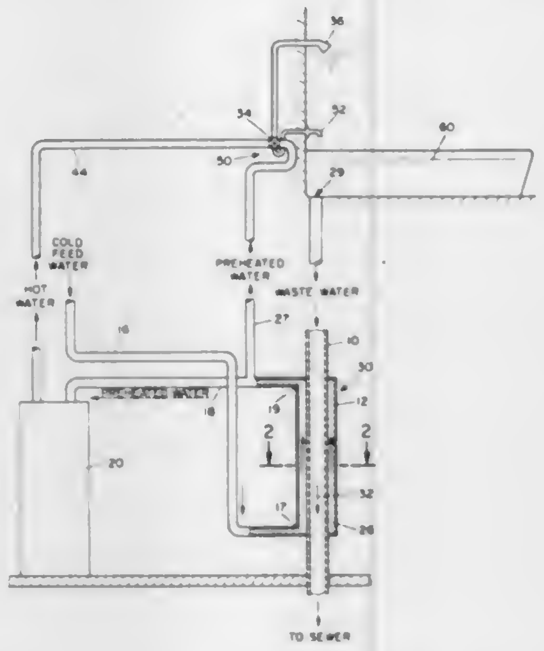
EQUAL VOLUME, CONTRAFLOW HEAT EXCHANGER

Carmine F. Vasile, and Sheila F. Vasile, both of 4 Cordwainer La., Huntington, N.Y. 11743

Filed Jun. 28, 1985, Ser. No. 749,662
Int. Cl.⁴ F24H *3/00*
U.S. Cl. 165—47 **4 Claims**

1. An apparatus for use in combination with a water heating system wherein the system includes
- (1) a cold water feed;
- (2) a water heater having an inlet connected to the cold water feed and a hot water outlet, and
- (3) a facility connected to the cold water feed and the hot water outlet and having a waste pipe for carrying mixed hot and cold water, the facility having a means for mixing the cold and hot water and immediately providing the mixed water to the waste pipe;

said apparatus comprising:
- (a) first means including a cylindrical member connected to the waste pipe for directing the flow of the mixed hot and cold water in the form of a film spiraling downward over the inner surface of the cylindrical member; and
- (b) second means connected in-line with the cold water feed prior to the cold water feed connections to the facility and prior to the cold water feed connections to the water heater for directing the flow of cold water flowing in the cold water feed upward in contact with the outer surface of the cylindrical member, said second means directing the cold water flowing in contact with the outer surface of the cylindrical member in a direction opposite to the direction of flow of the mixed hot and cold water flowing in contact with the inner surface of the cylindrical member whereby the volume of water flowing through the first means is equal to the volume of the water flowing through the second means.

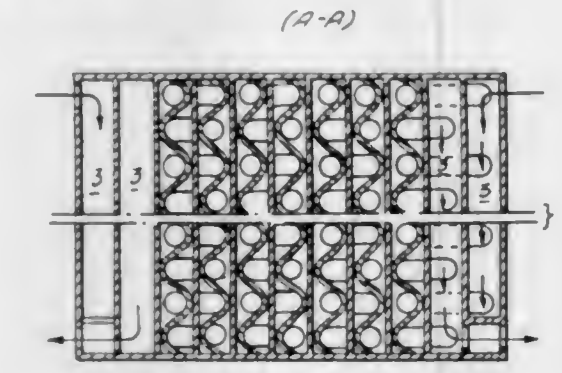


4,619,312

VENTILATING WALL ELEMENT

Olavi O. Paljakka, Stenbockens gata 114 6tr, S-136 62 Handen, Sweden

PCT No. PCT/SE83/00054, § 371 Date Oct. 24, 1983, § 102(e) Date Oct. 24, 1983, PCT Pub. No. WO83/02972, PCT Pub. Date Sep. 1, 1983
PCT Filed Feb. 21, 1983, Ser. No. 551,993
Claims priority, application Sweden, Feb. 24, 1982, 8201142-0
Int. Cl.⁴ B01J *8/00*
U.S. Cl. 165—57 **1 Claim**



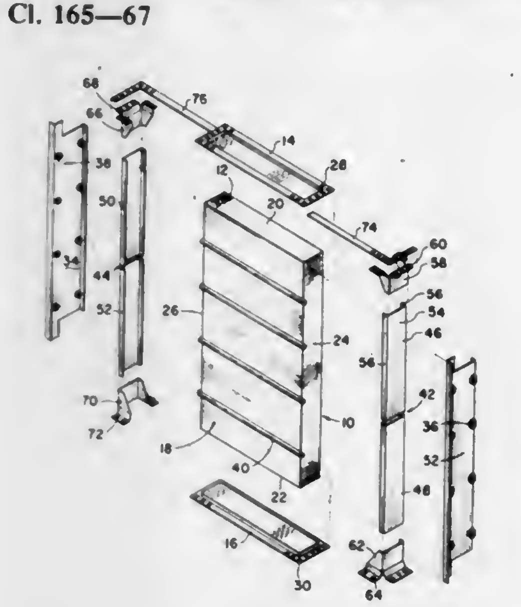
1. A ventilating wall element for ventilation and heat insulation between an inside and an outside space subject to different temperatures, where air from these spaces is conducted subject to induced pressure through a system of ducts so that the air from one space is separated from the air from another space by thin wall means for exchanging heat and humidity therebetween, the improvement comprising said element having a wall surface, a plurality of ducts extending parallel to said wall surface, a plurality of connecting duct means, each connecting duct means interconnecting a pairs of said parallel extending ducts at one of their respective ends to form a plurality of parallel S-shaped, uniplanar air flow paths, air being conducted in opposite directions through adjacent ducts, some of said air flow paths being exposed to air from one of said spaces and others of said air flow paths being exposed to air from the other of said spaces so that adjacent air flow paths carry air from different ones of said spaces;
- and further comprising means for equalizing pressures between said some and said other parallel extending ducts, said pressure equalizing means including: (a) a first chamber having a shock absorbing capacity for receiving inlet air, and (b) a second chamber having a shock absorbing capacity for containing outlet air, said pressure equalizing means thereby functioning as a shock absorber and minimizing the coupling of air turbulence from one space to the other space.

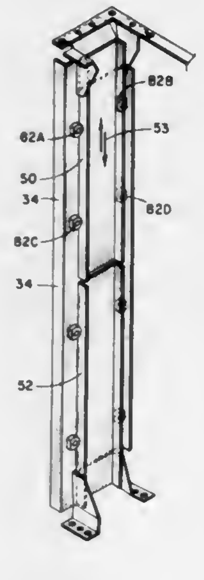
4,619,313

RADIATOR FRAME UNIT

Wayne A. Rhodes, Larray, and Kenneth D. Harrington, Jackson, both of Tenn., assignors to Touchstone Railway Supply & Mfg. Co., Inc., Jackson, Tenn.

Filed Oct. 12, 1984, Ser. No. 660,461
Int. Cl.⁴ F28F *9/00*
U.S. Cl. 165—67 **13 Claims**





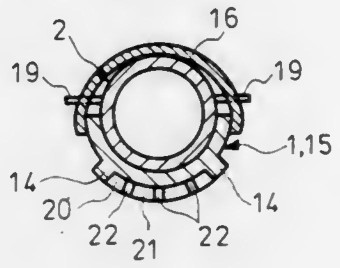
1. A radiator assembly including:
- a cooling core having two opposite sides;
- a side rail on each side of said cooling core, each said side rail having an exterior side and an interior side;
- a push-pad unit on each side of said core between said side rail and said cooling core, each said push-pad unit having a first section fixed to said side rail and a second section movable with respect to said side rail, said first section and said second section being in non-overlapping relationship;
- means to hold said side rails together.

4,619,314

DEVICE FOR PREVENTING WEAR OF HEAT TRANSFER TUBES IN FLUIDIZED-BED BOILER

Hiromi Shimoda, Hasuda, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Japan

Filed Jul. 27, 1984, Ser. No. 635,244
Claims priority, application Japan, Aug. 5, 1983, 58-143563; Aug. 5, 1983, 58-121903[U]; Jan. 20, 1984, 59-6539[U]
Int. Cl.⁴ F28F *19/00*
U.S. Cl. 165—104.16 **5 Claims**



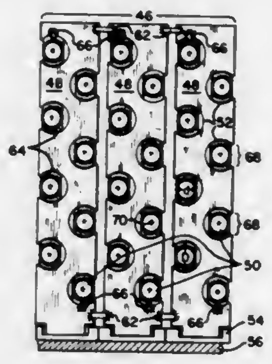
1. A device for protecting wear of a heat transfer tube in a fluidized bed boiler wherein a lower surface of said tube is exposed to a strong attack from fluidized bed materials, said device comprising a protector made of a wear-resisting material having a substantially semi-circular shape in cross-section so as to cover only said lower surface of said tube, means for attaching said protector to said tube, means on said tube for preventing the displacement of said protector in the axial direction of the tube and the rotation of the protector about said tube, and studs attached to the outer surface of said protector.

4,619,315

FLUIDIZED BED BOILER IN-BED TUBE SUPPORT BRACKET

Richard E. Waryasz, Longmeadow, Mass., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 10, 1985, Ser. No. 721,819
Int. Cl.⁴ F28C *3/16;* F28F *9/00*
U.S. Cl. 165—104.16 **4 Claims**



1. In a fluidized bed system having a tubular heat exchange bundle immersed within a bed region of the fluidized bed which includes a plurality of axially parallel vertically and horiztonally spaced tubes having an outside diameter arrayed in horiztonal rows and vertical columns through which a working fluid is passed in heat exchange relationship with the bed region, an inner bank tube support structure for supporting the tubes of the tubular heat exchange bundle comprising:
- a. a pluralithy of vertically spaced plates extending transversely between adjacent vertical columns of heat exchange tubes, each plate transmitting the mechanical load of a predetermained portion of the immersed heat exchange tubes to a support member therebeneath, each plate having an edge and a plurality of substantially circular openings along and intersecting the edge of each plate, each opening having a diameter greater than the outside diameter of a heat exchange tube whereby each opening is adapted to encompass a heat exchange tube in spaced

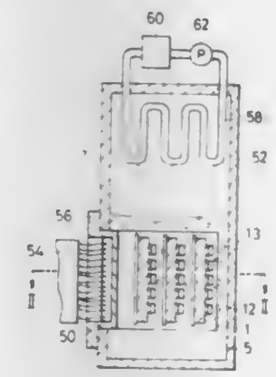
relationship therewith, the length of the intersection of the substantially circular opening with the edge of each plate being a chord of the substantially circular opening that is substantially the outside diameter of a heat exchange tube, the vertical and horiztonal spacing of the openings being such as to correspond to the vertical and horizontal spacing of the in-bed heat exchange tubes being supported; and

b. a plurality of wear inserts, at least one wear insert per tube, disposed to surround at least a portion of each heat exchange tube in the region of support intermediate the outside diameter of the heat exchange tube and the opening in the plate encompassing the heat exchange tube so as to span the space therebetween.

4,619,316
HEAT TRANSFER APPARATUS

Wataru Nakayama, Kashiwa; Tadakatsu Nakajima, Ibaraki; Shigeki Hirasawa, Ibaraki; Akiomi Kohno, Ibaraki, and Takaji Takenaka, Hatano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 24, 1985, Ser. No. 726,715
Claims priority, application Japan, Apr. 27, 1984, 59-83708
Int. Cl.⁴ F28D *15/00;* **H01L** *23/44*
U.S. Cl. 165—104.33 **4 Claims**

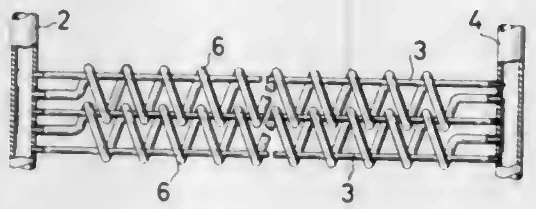


1. In an apparatus wherein heat conductive members are disposed on respective surfaces of a plurality of heat generating bodies immersed in a liquid coolant, and heat of the heat generating bodies is removed by boiling of the liquid coolant; a heat transfer apparatus characterized in that each heat conductive member is formed with a plurality of layers of first cavity groups and second cavity groups which extend elongately in a manner to be partitioned by thermally-conductive plate members, said first cavity groups and said second cavity groups being stacked alternately in a direction perpendicular to the surface of the corresponding heat generating body, said first cavity groups being adapted to restrict vapors generated in each cavity of said first cavity groups from flowing out of said cavity and stably hold the vapors in said cavity, while said second cavity groups have open ends through which the liquid coolant in each cavity of the second cavity groups flows directly and the vapors generated in the cavity of said second cavity groups flows out directly to the outside of the cavity of said second cavity groups and, that said plate members are provided with openings which bring into communication said first cavity groups and said second cavity groups of the layers adjoining each other and a cavity group of the outermost layer and an outer space of said heat conductive member.

4,619,317
HEAT EXCHANGER

Dieter Disselbeck, Bad Soden am Taunus, and Hans-Peter Vollrath, Eppstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 6, 1984, Ser. No. 617,692
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1983, 3320632
Int. Cl.⁴ F28D *7/00*
U.S. Cl. 165—162 **8 Claims**

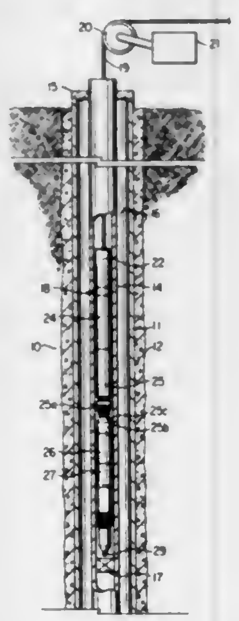


1. A heat exchanger, comprising a support frame and a feed line, a header for the forward flow, heat exchange tubes, a header for the return flow and a discharge line for a heat exchange medium, the heat exchange tubes including a plurality of individual helical capillary tubes (3) each extending between the forward flow header (2) and the return flow header (4), the axis of the helix of each tube being parallel and spaced apart from the axis of an adjacent tube and a plurality of spaced apart connecting elements (6) each interlocking an adjacent pair of capillary tubes.

4,619,318
CHEMICAL CUTTING METHOD AND APPARATUS

Jamie B. Terrell, and Donna K. Pratt, both of Fort Worth, Tex., assignors to Gearhart Industries, Inc., Fort Worth, Tex.

Filed Sep. 27, 1984, Ser. No. 655,877
Int. Cl.⁴ E21B *29/02*
U.S. Cl. 166—55 **14 Claims**



8. In a downhole chemical fluid jet cutting tool for cutting an object withn a well bore, the combination comprising:

(a) an elongated tool body adapted for insertion into a well-bore,

(b) anchoring means in with said tool body for anchoring said tool at a downhole location in response to the application of fluid pressure and for releasing said tool body in response to the release of said fluid pressure,

(c) a chemical section in said tool body having a chamber therein adapted to contain a source of gaseous chemical cutting agent;

(d) a cutting section in said tool body having a longitudinally extending bore in fluid communication with said chemical section whereby upon the application of pressure to said chemical section, a chemical cutting agent is forced into said cutting section, said cutting section having at least one cutting port extending from said bore to the exterior of said tool body,

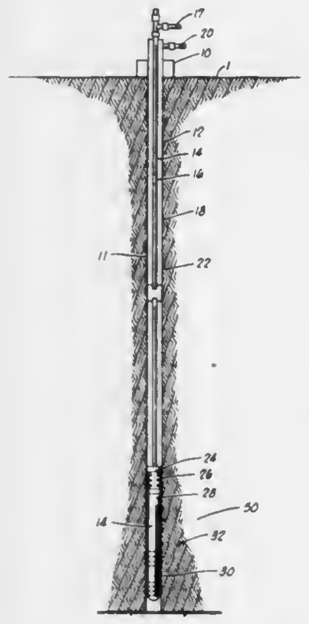
(e) a pressure generating section within said tool body within which pressurized fluid is produced to actuate said anchoring means and to displace said cutting agent into said cutting section, and

(f) a piston slidably disposed within said chemical section and interposed between said chamber and said pressure generating section to prevent commingling between pressurized fluid in said pressure generating section and chemical cutting agent within said chemical section.

4,619,319
PACKER AND ACTUATION PORTION OF TUBING CONVEYED COMPLETION SYSTEM

Paul D. Ringgenberg, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Feb. 1, 1985, Ser. No. 697,604
Int. Cl.⁴ E21B *33/129, 43/116*
U.S. Cl. 166—55.1 **15 Claims**



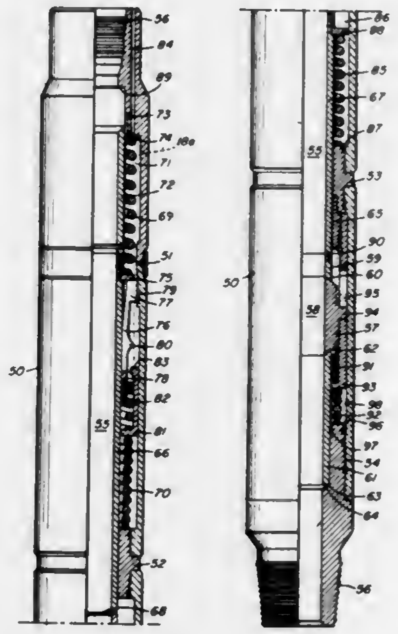
1. An improved tubing conveyed well perforating system comprising:

- a packer assembly portion;
- a port assembly portion releasably connected to the packer assembly portion, the port assembly including:
  - a lower adapter;
  - an upper mandrel extension having a portion thereof retained within the lower adapter;
  - an upper extension case releasably secured to the lower adapter;
  - a middle mandrel extension slidably, sealingly engaging a portion of the upper mandrel extension therein;
  - a lower extension case releasably secured to the upper extension case; and
  - a deflecting port adapter assembly releasably secured to the lower extension case, the deflecting port adapter assembly including:
    - a port adapter releasably secured to the lower extension case having a plurality of ports therein and a bore therethrough;
    - a deflector having a portion thereof blocking a portion of the bore of the port adapter and having the ends thereof releasably secured to the port adapter; and
    - a deflector retainer releasably secured to the port adapter releasably retaining the ends of the deflector thereon; and
- an actuating assembly portion releasably connected to the port assembly portion, the actuating assembly portion including:
  - a firing head actuating assembly.

4,619,320
SUBSURFACE WELL SAFETY VALVE AND CONTROL SYSTEM

Dewa N. Adnyana, Stamford, and Neil E. Rogen, Westport, both of Conn., assignors to Memory Metals, Inc., Stamford, Conn.

Filed Mar. 2, 1984, Ser. No. 585,424
Int. Cl.⁴ E21B *34/06*
U.S. Cl. 166—65.1 **18 Claims**



1. A subsurface well safety valve apparatus comprising:

means defining an elongate substantially tubular housing adapted at each end for connecting to and communicating with sections of well tubing,

valve means mounted within said housing and therein alternatable between an open condition for enabling fluid conduction through the bore of said tubular housing and a closed condition for blocking fluid conduction therethrough, and

means mounted within said housing for selectively opening and closing said valve means including opposing first and second actuator means, each including a shape memory alloy material which undergoes complementary shape transformations when respectively heated to or above or cooled below a predetermined temperature corresponding to the transition temperature of the shape memory alloy and each having a pair of ends, one end engaging said housing, said means for opening and closing further including means interconnecting the respective other ends of said opposing first and second actuator means and said valve means and being shiftable between a first valve open position and a second valve closed position, and means for heating said first actuator means to or above its predetermined temperature while said second actuator means is cooled below its predetermined temperature for transforming said respective actuators to shift said interconnecting means to its first position to open said valve means and means for heating said second actuator means to or above its predetermined temperature while said first actuator means is cooled to below its predetermined temperature for transforming said respective actuators to shift said interconnecting means to its second position to close said valve means.

4,619,321

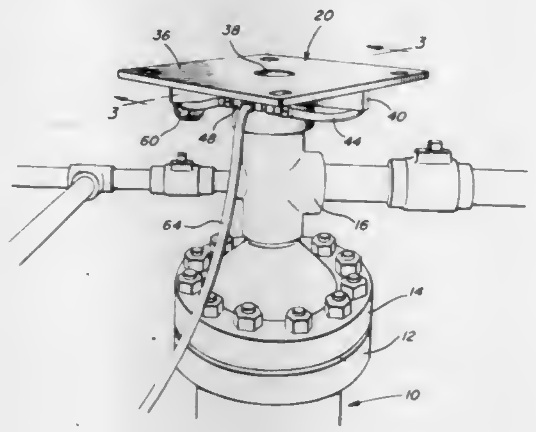
METHOD AND APPARATUS FOR TREATING DOWN HOLE EQUIPMENT FROM CORROSION IN PRODUCTION WELL

John M. Molina, Odessa, Tex., assignor to Jose F. Molina, Odessa, Tex., a part interest

Filed Jun. 17, 1983, Ser. No. 505,483

Int. Cl.^{4} E21B *19/00*

U.S. Cl. 166—90 3 Claims



1. A corrosion inhibiting chemical applying apparatus for subsurface equipment including rods, tubing, pump and other equipment, either as such equipment is being pulled from a well or when such equipment is being run in the well, said apparatus including an upright tubular nipple for downward threaded mounting from the upper end of a well pumping tee, said nipple defining a vertical passage extending therethrough, an upstanding tubular body of greater inside diameter than the inside diameter of said nipple mounted and projecting upward from the upper end of said nipple, a horizontal top mounting plate secured over the upper end of said body and projecting condiserably outwardly beyond the outer surfaces of said tubular body and having a central opening formed therethrough substantially coaxial with said passage, a plurality of spray heads mounted externally upon and spaced about said tubular body and opening generally radially thereinto intermediate the opposite ends of said body and closely underlying said mounting plate, exterior manifold means communicated with each of said spray heads for supplying fluid under pressure from said manifold means to said spray heads, said manifold means including means for receiving therein anti-corrosive treatment liquids under pressure, said top mounting plate projecting horizontally outwardly of said spray heads and said manifold means, and an upstanding gusset plate secured between undersurface of said top mounting plate and the outer surface of said tubular body below said top mounting plate intermediate each pair of peripherally adjacent spray heads.

4,619,322

CENTRALIZING DEVICES FOR USE DOWN-WELL

Richard A. Armell, and Andrew Scott, both of Montrose, Scotland, assignors to Drexel Equipment (UK) Limited, London, England

Filed Nov. 9, 1984, Ser. No. 669,785

Claims priority, application United Kingdom, Feb. 10, 1984, 8403600; Jul. 17, 1984, 8418211

Int. Cl.^{4} E21B *17/10*

U.S. Cl. 166—241 3 Claims

1. A centralizing device for use down-well in maintaining a sensor or other operational tool in a location accurately centralized in relation to the axis of the bore hole, irrespective of the angular orientation of the device and associated tool, said device comprising

an elongate member,

at least three, two-arm, linkages, carried as an array on the elongate member,

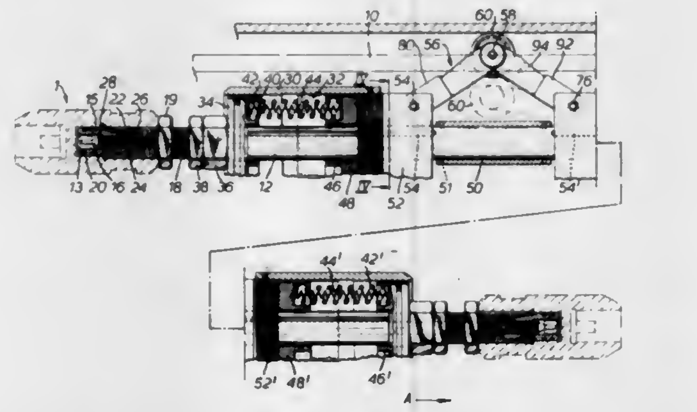
two collars mounted on and in axial moving relationship with the elongate member, each arm of each linkage being pivoted to the other arm of that linkage at a location spaced from the elongate member and being pivoted at the other end to a respective one of the two collars,

resilient means, distinct from the arms themselves, acting on the collars whereby to bias the arms angularly towards one another and thereby the common pivot axis of the arms away from the elongate member, and a plurality of wheels, each mounted for rotation on an axis coincident with the common pivot axis of each pair of arms, these wheels being arranged to contact the inside of a surrounding member within the bore hole and comprising

a self-lubricating bearing bush

a steel core, and

an outer annulus of nitrile.



4,619,323

METHOD FOR CONDUCTING WORKOVER OPERATIONS

John L. Gidley, Houston, Tex., assignor to Exxon Production Research Co., Houston, Tex.

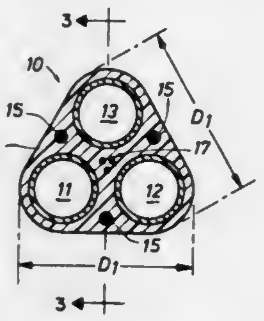
Division of Ser. No. 270,059, Jun. 3, 1981, abandoned. This application Jul. 14, 1983, Ser. No. 513,876

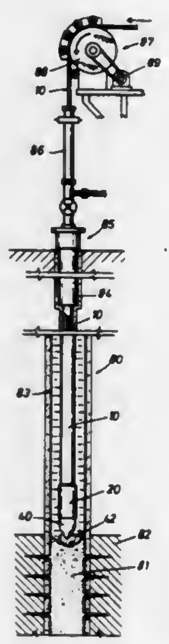
Int. Cl.^{4} E21B *33/13, 37/00*

U.S. Cl. 166—285 12 Claims

1. A method for conducting workover operations in a well extending from the earth's surface comprising the steps of:

(a) positioning in said well a non-electrically conductive matrix string containing non-pumping tool means for use in conducting workover operations, said matrix string including three conduits of similar size capable of carrying fluids through said matrix string and means capable of conducting electrical power to said tool means from the earth's surface and means capable of transmitting signals through such string to the earth's surface; and





(b) conducting well-treating operations through said tool means by circulating treating fluid down one of said conduits and up a second of said conduits.

4,619,324

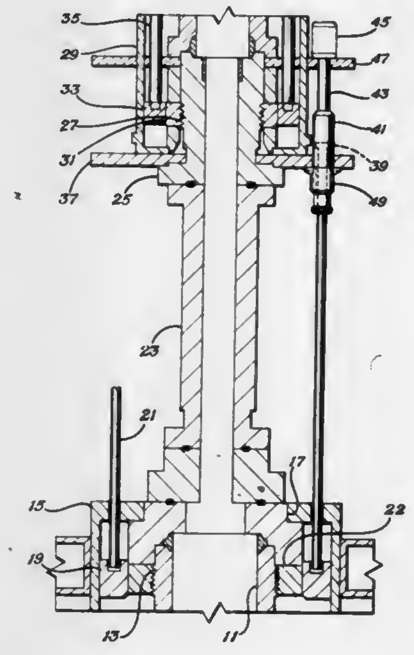
WELLHEAD CONNECTOR LOCKING MECHANISM

Donald G. Couch, Ventura, Calif., assignor to Hughes Tool Company, Houston, Tex.

Filed Oct. 15, 1985, Ser. No. 787,203

Int. Cl.^{4} E21B *23/00;* **F16L** *55/00*

U.S. Cl. 166—344 8 Claims



7. A method of connecting a coupling to a subsea wellhead body, the coupling being of the type having a plurality of latch dogs carried by the coupling and an actuator ring carried by the coupling for movement between a lower position moving the dogs inward into a latching engagement with the wellhead body, and an upper position freeing the dogs to move outward out of latching engagement with the wellhead body, the method comprising in combination:

mounting a plurality of upright rods to the actuator ring for movement therewith;

providing a running tool with a plurality of engaging members, each for engaging one of the rods;

latching the engaging members to the rods;

lowering the running tool and coupling to the wellhead;

moving the rods downwardly to move the actuator ring to the lower position;

retaining the rods in the lower position; and

unlatching the engaging members from the rods, and pulling the running tool to the surface, leaving the coupling on the wellhead.

4,619,325

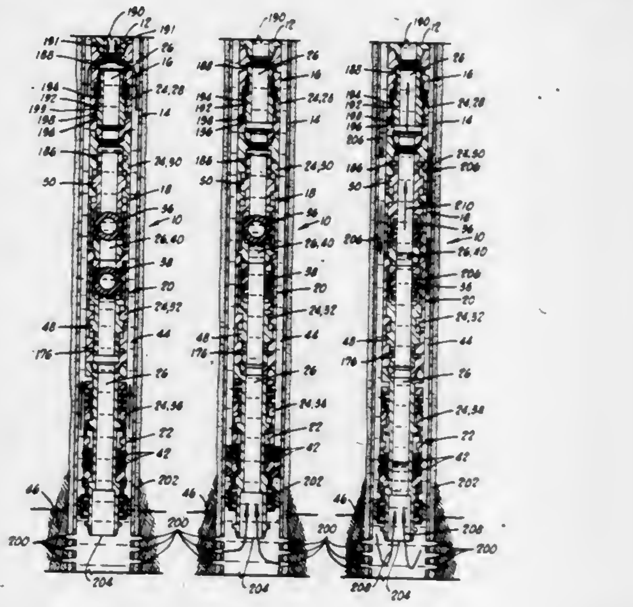
WELL SURGING METHOD AND SYSTEM

Gary D. Zunkel, Chickasha, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jan. 29, 1985, Ser. No. 696,240

Int. Cl.^{4} E21B *34/10, 37/08*

U.S. Cl. 166—374 15 Claims



1. A method of surging a well, said method comprising the steps of:

(a) providing a tool string including upper and lower spaced ball valves and a packer;

(b) initially orienting said tool string so that said ball valves are closed to define a surge chamber therebetween, and so that said packer is in a retracted position;

(c) placing said tool string as initially oriented in step (b) in a well so that said packer is located at an elevation above a zone of said well which is to be surged;

(d) setting said packer to seal a well annulus between said tool string and said well at said elevation above said zone;

(e) after step (d), opening said lower ball valve; and thereby

(f) surging fluid from said zone of said well up through said tool string past said opened lower ball valve and into said surge chamber.

9. A well surging apparatus, comprising:

an elongated housing assembly having a central flow bore disposed therethrough;

upper and lower independently operable ball valves disposed in said housing assembly, each of said ball valves being independently movable between a closed position wherein said flow bore is closed and an open position wherein said flow bore is open, said upper and lower ball valves defining a low pressure surge chamber therebetween when said ball valves are in an initially closed position, said surge chamber being a portion of said flow bore;

packer means, connected to said housing assembly for selectively sealing a well annulus between said housing assembly and a well bore so that a well zone below said packer means may be surged;

lower ball valve operator means for opening said lower ball valve prior to opening of said upper ball valve means, so that well fluid from said well zone may surge upward through said flow bore past said opened lower ball valve into said surge chamber; and

upper ball valve operator means for opening said upper ball valve after said lower ball valve has been opened, and for thereby allowing well fluid in said surge chamber to be circulated upward through a bore of a tubing string connected to said apparatus

wherein said lower and upper ball valve operator means are each constructed to be actuated in response to an increase in fluid pressure in said well annulus above said packer means relative to fluid pressure within said flow bore.

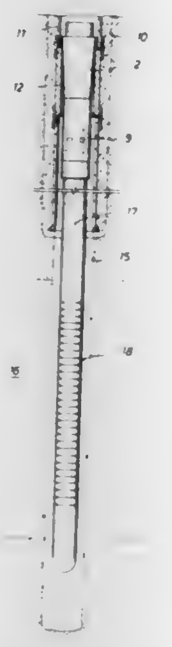
4,619,326
LINER HANGER WITH BRASS PACKER

Franciscus J. A. van Mierlo, Bakersfield, Calif., assignor to Shell California Production Inc., Houston, Tex.

Filed Apr. 19, 1985, Ser. No. 725,077

Int. Cl.^{4} E21B *43/10*

U.S. Cl. 166—382 **4 Claims**



1. In a well completion process in which a casing string is cemented within a well borehole above an oil productive interval, a permeable liner is installed within an extension of the borehole below the casing, an annular seal is installed between the liner and casing, and sand tends to enter the well to an extent tending to cause undesirable erosion of annular seals composed of materials as ductile as lead, an improvement for maintaining the efficiency of the annular seals comprising:

installing within said casing string a section of pipe which has an inner diameter smaller than those of the sections located above it and is positioned near, but above, the oil productive interval;

running the permeable liner to be used into the casing string and borehole extension with the upper end of the liner connected to a liner hanger which contains a tapered sleeve of brass-like metallic material attached around a tubular upper liner hanger element containing axially aligned slots which are penetrated by lugs estending inwardly from a sleeve which is (a) fluid-tightly connected to a tubular lower liner hanger element and (b) arranged to fit snugly, but slidably, over the tubular upper liner hanger element with the clearance between it and the upper tubular liner hanger element, being at least substantially as small as the openings within the permeable liner and said slots and lugs having dimensions arranged to accommodate the extent of vertical travel induced by thermal expansion and contraction of the liner within the well in which it is to be installed; and

wedging the tapered sleeve of brass-like metallic material into the interior of the pipe string section of reduced diameter by subjecting said sleeve to weight from the liner running string to provide a downwardly directed force sufficient to press it downward into that section and deform the brass-like metallic material into a metal-to-metal seal ring of significant width.

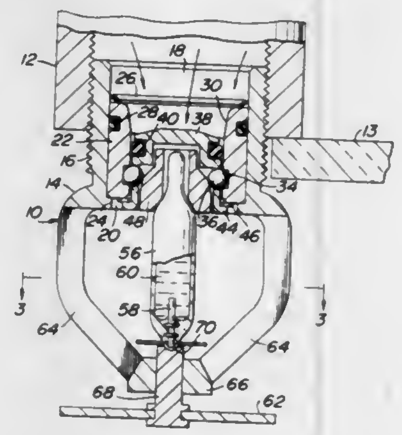
4,619,327
SPRINKLER HEAD

George S. Pieczykolan, North Wales, Pa., assignor to Central Sprinkler Corp., Lansdale, Pa.

Filed Jan. 7, 1985, Ser. No. 689,214

Int. Cl.^{4} A62C *37/14*

U.S. Cl. 169—38 **2 Claims**



1. A sprinkler for discharging a fire quenching fluid, comprising a body having a sleeve portion and a flow passage therethrough, a valve member for controlling flow through said passage, said valve member having a plurality of openings facing a groove in said sleeve portion, a plurality of balls at least partially disposed in said openings and in contact with said groove, a bulb of frangible material and containing a heat expansible fluid, a plunger seated on said bulb and disposed so as to urge a portion of each of said balls into said sleeve groove to retain said valve member in a closed position, resilient seal means disposed between a surface of said sleeve portion and said plunger housing and spring means interposed between said sleeve means and said valve member urging it into open position.

4,619,328
FIRE EXTINGUISHER VALVE WITH PRESSURE INDICATOR

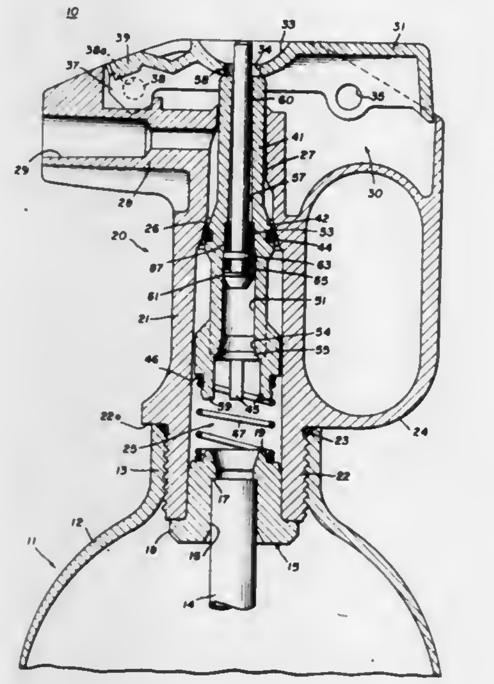
Gerard Seyler, Elgin, and Donald R. Sloan, North Aurora, both of Ill., assignors to Pittway Corporation, Aurora, Ill.

Filed Nov. 28, 1984, Ser. No. 675,630

Int. Cl.^{4} A62C *23/08*

U.S. Cl. 169—75 **20 Claims**

1. In a dispensing apparatus for controlling the discharge of material under pressure from a container outlet, including a nozzle and a passageway providing communication between the container outlet and the nozzle, and a valve seat in the passageway, the improvement comprising: an elongated tubular valve stem disposed in the passageway and having an actuating end projecting from the passageway, seal means carried by said valve stem, said valve stem being movable axially of the passageway, bias means disposed in the passageway between the container outlet and the valve seat for resiliently urging said valve stem to a closed condition wherein said seal means is disposed in sealing engagement with the valve seat, said valve stem being responsive to an external force on said actuating end thereof for movement to an open condition wherein said valve stem and said seal means are spaced from said valve seat, said valve stem having an enlarged-diameter cavity portion therein exposed to the material under pressure, and elongated indicating means shorter than said valve stem and disposed therewithin for movement axially with respect thereto, said indicating means having an enlarged inner end disposed at all times within said cavity portion of said valve stem and an outer end, said indicating means being responsive to pressure in the container for movement to extended positions with said outer end extending from said actuating end of said valve stem a distance which varies with the pressure.



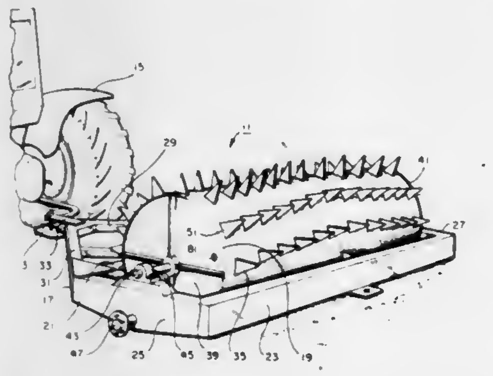
4,619,329
SOIL AERATOR

Cleon Gorbett, 6224 Indian Creek Dr., Ft. Worth, Tex. 76107

Filed Mar. 12, 1985, Ser. No. 710,998

Int. Cl.^{4} A01B *45/02*

U.S. Cl. 172—21 **2 Claims**



1. A soil aerator of the type which increases the surface area of the soil for contact with oxygen without damaging vegetation planted in the soil, comprising:

a towing frame;

a rotatable member mounted on said frame, said rotatable member having an outer cylindrical supporting surface formed along a longitudinal axis of said member, the opposing ends of said member being enclosed by disks to form a drum, said drum being rotatable with respect to said frame about the longitudinal axis of said drum;

a plurality of circumferentially and axially spaced protrusions arranged in rows on said outer cylindrical surface of said drum, each of said rows of protrusions forming a chevron-shaped pattern with respect to a next succeeding row of protrusions, the protrusions in any given row on said outer cylindrical surface being offset along the longitudinal axis of said drum with respect to the protrusions in the next succeeding row, so that the rows of teeth are formed in staggered relationship;

said protrusions being triangular-shaped teeth, each of said teeth having a pair of opposing, planar sidewalls which are separated by a uniform thickness, each opposing sidewall having a base located on the outer cylindrical surface and a pair of sides which converge in an outward radial direction to form an apex, the intersection of each side with said base forming a base angle, each of said base angles being approximately equal; and

said teeth being arranged on said drum with said sidewalls in a plane generally perpendicular to the longitudinal axis of said drum.

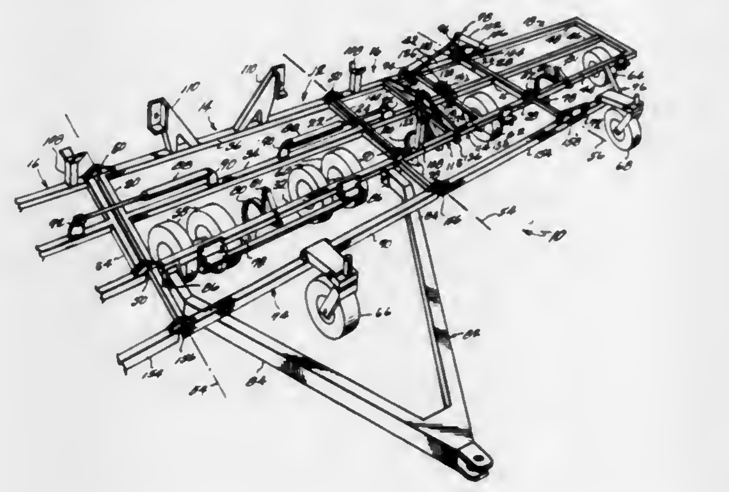
4,619,330
FLEXIBILITY FOR WIDE SWATH AGRICULTURAL IMPLEMENTS

Cecil Machnee, Yorkton, Canada, assignor to Morris Rod-Weeder Co., Ltd., Yorkton, Canada

Filed Mar. 21, 1984, Ser. No. 591,785

Int. Cl.^{4} A01B *73/04, 63/22*

U.S. Cl. 172—311 **14 Claims**



1. A flexible frame for wide-swath traveling agricultural implements adapted to follow the contours of the ground and maintain a substantially constant height relative thereto, comprising:

a plurality of frame sections arranged side-by-side relative to travel direction and each adapted to be supported by at least one ground-engaging wheel;

hinge means connecting adjacent of said sections for relative flexing therebetween about an axis substantially parallel to travel direction for following ground contours and for folding of at least one of said adjacent sections relative to the other for non-operational transport of the implement;

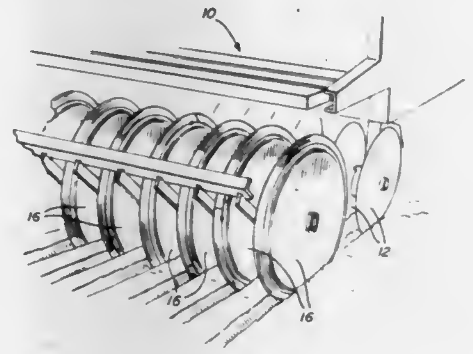
at least one of said sections comprising a pair of separate subsections arranged side-by-side relative to travel direction; and

pivot means connecting said subsections to each other for relative flexing between side-by-side portions of said frame about an axis substantially perpendicular to travel direction and located about midway between fore-and-aft ends of said sections with respect to said travel direction, each of said portions being adapted to be supported by at least two wheels spaced apart in the direction of travel, whereby said portions more readily follow ground contours.

4,619,331

PROTECTIVE SURROUND FOR PACKER WHEELS

Gerald T. Johnson, Sr., R.R., P.O. Box 76, Kulm, N. Dak. 58456
Filed Jul. 22, 1985, Ser. No. 757,291
Int. Cl.⁴ A01C *7/20, 13/00*
U.S. Cl. 172—518 **4 Claims**

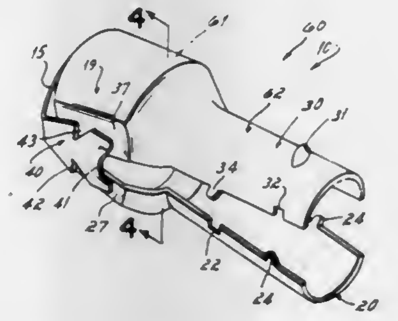


1. A packer wheel for a farm implement comprising a pair of shallow cup-like metal half shell members circumferentially secured together by welding, and circumferential reinforcing means for the wheel comprising a surrounding band of generally right angle-section metal having radially inwardly diverging webs with edge portions engaging outer peripheral surfaces of the respective half shell members to enclose said circumferental weld of said half sheel members and being welded thereto.

4,619,332

CONNECTOR FOR A HELICALLY GROOVED METALLIC CONDUIT

Robert K. Sheehan, 571 Rolling Rock La., Cincinnati, Ohio 45230
Continuation of Ser. No. 595,331, Mar. 29, 1984. This application Jan. 31, 1986, Ser. No. 825,689
Int. Cl.⁴ H02G *3/06*
U.S. Cl. 174—65 R **57 Claims**



5. A connector for mounting a conductor surrounded by a helically grooved metallic conduit to a junction box having a wall and a hole in said wall through which conductors pass, comprising:

a one-piece sheet metal member;

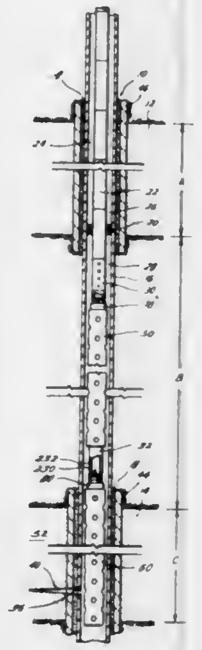
said member having a center ring and having at least one pair of projections extending rearwardly from said center ring to form a compressible tubular member over which said grooved conduit may be received, said tubular member including detent means for preventing said projections forming said tubular member from collapsing and losing said tubular form during compression; and

said member also having junction box locking means for resiliently engaging said wall of said junction box when said center ring is inserted through said hole.

4,619,333

DETONATION OF TANDEM GUNS

Flint R. George, Katy, Tex., assignor to Halliburton Company, Duncan, Okla.
Continuation-in-part of Ser. No. 481,074, Mar. 31, 1983, Pat. No. 4,544,034. This application Nov. 18, 1983, Ser. No. 553,440
Int. Cl.⁴ E21B *43/117*
U.S. Cl. 175—4.52 **29 Claims**



1. In a cased wellbore having a pipe string extending downhole through at least one formation and supporting first and second perforating guns, the method of perforating the well comprising:

forming a fluid passageway to the first perforating gun for the pressure actuation thereof;

closing the flowbore of the pipe string to the fluids in the annulus;

establishing a pressure in the flowbore of the pipe string tht is less than the formation pressure;

effecting fluid pressure down the passageway to actuate the first perforating gun;

opening the flowbore of the pipe string to flow from the annulus prior to the actuation of the second perforating gun; and

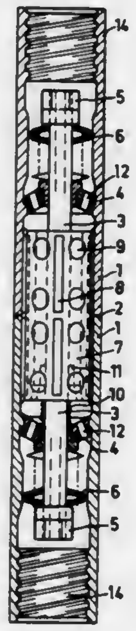
actuating the second perforating gun.

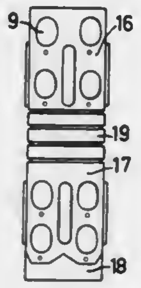
4,619,334

JOINT DEVICE IN EXTENSION DRILL EQUIPMENT FOR PERCUSSIVE DRILLING

Christer Gustafsson, Norberg, Sweden, assignor to Secoroc AB, Fagersta, Sweden
Filed Aug. 28, 1985, Ser. No. 770,165
Claims priority, application Sweden, Sep. 6, 1984, 8404488
Int. Cl.⁴ E21B *17/07*
U.S. Cl. 175—321 **11 Claims**

1. Joint device in extension drill equipment for percussive drilling and arranged in the drill string between a drill machine and a drill bit, said joint device having a pair of interacting impact surfaces therein, and means cooperating with said impact surfaces for transmitting compressive pulses in the drill string above said impact surfaces in the direction towards the drill bit, said means also being operative by reflection to transform tensile pulses that are present in the drill string below said impact surfaces, and directed opposite to said compressive pulses, into further compressive pulses.

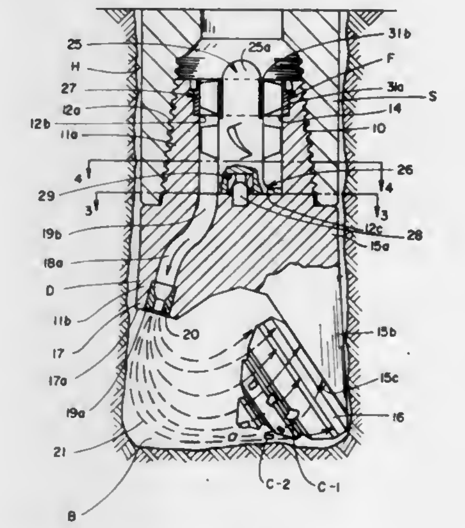




4,619,335

ENHANCED CIRCULATION DRILL BIT

Doyle W. McCullough, P.O. Box 90484, Houston, Tex. 77290
Filed Aug. 16, 1984, Ser. No. 641,577
Int. Cl.⁴ E21B *10/18, 10/60*
U.S. Cl. 175—339 **4 Claims**



1. An enhanced circulation drill bit adapted to be mounted at the end of a drill string for enhancing the removal of drill bit cuttings from the bottom of the borehole being drilled, comprising:

a drill body having an upper body section adapted to be attached to a drill string and a lower body section having mounted therewith a plurality of cone-type cutters;

said upper body section having a bore therein adapted to be in fluid communication with the bore of the drill string to receive drilling fluid flowing downwardly through the drill string;

said lower body section having three passageways therethrough, each of said passageways having a first and a second end opening, said passageways being in fluid communication with said bore of said upper body section at said first end opening and said passageways extending through said lower body section to a second end opening;

flow response means mounted in said upper body section bore for intermittently opening and closing said passageways in response to the flow of fluid entering said upper body section bore in order to intermittently deliver concentrated high velocity flow outwardly of said second end of a passageway to the end of the borehole to increase jet impact force and enhance cross circulation and removal of drill bit cuttings;

said flow response means includes rotation means mounted with said upper body section bore for rotating therein in response to fluid entering said bore, said rotation means including a rotor and rotation mount means is mounted with said rotor and with said drill body for mounting said rotor for rotation in said bore of said upper body section;

flow blocking means mounted with said rotation means and rotating therewith for intermittently blocking flow to said passageways as said rotation means rotates, said flow blocking means including a flow blocking element mounted with said rotor and moving circumferentially to intermittently block off flow to one or more of said first ends of said passageways;

flow director means for directing fluid flow against said rotation means to cause rotation thereof, said flow director means mounted with said upper body section in said bore thereof for directing fluid flow against said rotor to cause rotation thereof;

said rotor having vanes mounted thereon, said vanes extending radially outwardly for implementing rotation of said rotor in response to fluid flow;

said flow director means including static vanes;

static vane mount means fixedly attaching said vanes in said upper body section bore upstream of said rotor mounted vanes for directing fluid flow against said rotor mounted vanes;

said rotor is mounted centrally of said upper body section bore, said upper body section bore and said rotor being cylindrical such that an annular flow space is formed therebetween;

said rotor vanes and said static vanes being mounted in said annular space; and

said rotor vanes and said static vanes having opposing inclined surfaces.

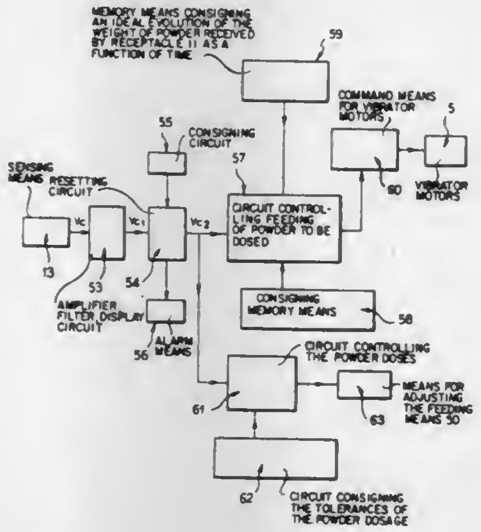
4,619,336

METHOD OF AND APPARATUS FOR WEIGHING DOSES OF POWDER

Richard Boyer, Cusset, and Jöel Diquet, Vichy, both of France, assignors to Manufacture de Machines due Haut-Rhin, Mulhouse, France
Filed Apr. 6, 1984, Ser. No. 597,463
Claims priority, application France, Apr. 18, 1983, 83 06297
Int. Cl.⁴ G01G *19/00, 19/52, 13/00, 13/02*
U.S. Cl. 177—1 **11 Claims**

1. Method of dosing a powder by weight, employing a balance **12** provided with a weighing receptacle **11** and with means **13** for continuously measuring the effective weight of the effective contents of the receptacle **11**, and means **4**, **5** for positively feeding powder to be dosed toward the weighing receptacle **1**, consisting of means which during a dosing cycle energizes feeding means **4**, **5** at an initial instant t_0 at which the receptacle **11** is theoretically empty to a final instant t_2 in which the receptacle **11** has received from the feeding means **4**, **5** since the initial instant, a weight of powder of a predetermined value P_2 less than a predetermined final value to be

obtained P_3 of a quantity corresponding (P_3 minus P_2) to an error of powder loss caused by the feeding means **4, 5** to interrupt at such final instant t_2 the functioning of the powder feeding means **4, 5** and to permit thereafter residual powder flow into the receptacle **11** corresponding to the effective amount of the error through powder loss, characterized in that the final instant t_2 has been predetermined with reference to the initial instant t_0 as well as an ideal evolution I of the weight of powder received by the receptacle **11** as a function of time from the initial instant t_0 to the final instant t_2, and that each instant of the operation of the feeding means **4, 5** the effective weight of the powder received by the receptacle **11** since the initial instant t_0 is compared with a theoretical weight which conforms to the ideal evolution I and one continuously controls the operation as a function of the resultant of such comparison, in order to increase the rate of flow of powder if the effective weight thereof is less than the theoretical weight at the instant considered or to reduce the rate of feeding of the powder if the effective weight thereof is greater than the theoretical weight of the powder at the instant considered, and thus to adapt the evolution II of the effective weight of powder received by the receptacle **11**, when the feeding means **4, 5** are functioning, to achieve an ideal evolution I of the feeding of the powder, predetermining an upper admissible limit and a lower admissible limit around the said predetermined final value P_3 and in that, at the expiration of a predetermined delay sufficient for the flowing into the receptacle **11**, after the final instant t_2, of the residual powder corresponding to the error of powder less during its transmission, one compares the effective weight of powder received by the receptacle **11** to said limits, in order to define a good weight or a bad weight depending upon whether the effective weight is located between said upper and lower limits or outside said limits.


MEMORY MEANS CONSIGNING AN IDEAL EVOLUTION OF THE WEIGHT OF POWDER RECEIVED BY RECEPTACLE 11 AS A FUNCTION OF TIME
59
COMMAND MEANS FOR VIBRATOR MOTORS
5
55
CONSIGNING CIRCUIT
57
SENSING MEANS
RESETTING CIRCUIT
VIBRATOR MOTORS
60
Vc
Vc1
Vc2
CIRCUIT CONTROLLING FEEDING OF POWDER TO BE DOSED
13
53
54
AMPLIFIER FILTER DISPLAY CIRCUIT
CONSIGNING MEMORY MEANS
58
56
ALARM MEANS
CIRCUIT CONTROLLING THE POWDER DOSES
61
MEANS FOR ADJUSTING THE FEEDING MEANS 50
63
62
CIRCUIT CONSIGNING THE TOLERANCES OF THE POWDER DOSAGE

4,619,337
ELECTRIC BALANCE WITH SCALE ON TOP

Lothar Behrend, Gleichen; Jürgen Ober, Hardegsen; Erich Knothe, Bovenden, and Franz-Josef Melcher, Hardegsen, all of Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany

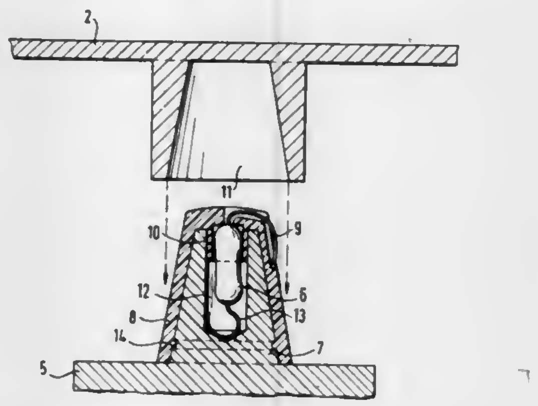
Filed Mar. 26, 1985, Ser. No. 716,082

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1984, 3411550

Int. Cl.⁴ G01G *3/14, 23/00, 23/10*

U.S. Cl. 177—210 R **9 Claims**

1. Electric balance having a housing and a metallic balance scale which is located over the housing and is supported in a removable manner by at least one pin through at least one perforation in the housing on at least one metallic load receiver of a measuring system, characterized in that an insulating layer (**8, 18, 28, 29**) is located between the metallic balance (**2**) and the metallic load receiver (**5**) insulating the scale from the receiver, the insulation is bridged by a resistor means (**6**) located on the pin (**7, 17, 27**), the resistor means prevents electrostatic charging of the scale while also preventing electromagnetic alternating fields from affecting the balance.



4,619,338
METHOD AND DEVICE FOR CONTROLLING POWER STEERING DEVICE

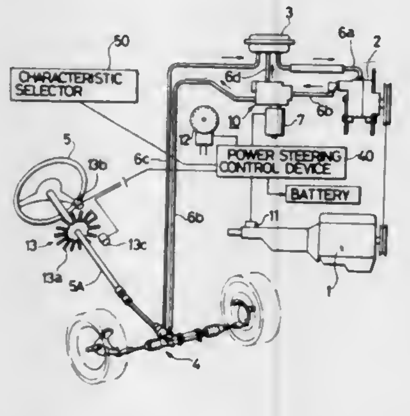
Katsumi Higashi, and Sadao Takeshima, both of Higashimatsuyama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 11, 1984, Ser. No. 680,429

Claims priority, application Japan, Dec. 13, 1983, 58-233679

Int. Cl.⁴ B62D *5/04*

U.S. Cl. 180—142 **5 Claims**



3. In a system for controlling a power steering device having a flow control valve unit coupled to an oil pump and a power steering unit, means for determining vehicle speed, means for determining steering angular velocity, and control means coupled to said flow control valee unit for controlling the flow rate of supplied by said flow control valve unit to said power steering unit in accordance with vehicle speed, the improvement wherein said control means includes:
- means for determining normal oil flow rate for a given vehicle speed;
- means for comparing steering angular velocity with a threshold value;
- means for comparing the normal oil flow rate with a predetermined minimum oil flow rate when the steering angular velocity exceeds said threshold value; and
- supply means for controlling the flow control valve unit to supply oil to the power steering unit at said normal rate when said normal rate exceeds said predetermined minimum rate and for controlling the flow control valve unit to supply oil to the power steering unit at said predetermined minimum rate when said normal rate does not exceed said predetermined minimum rate, said supply means including means for controlling the flow control valve unit to supply oil to the power steering unit at an initial higher flow rate than said predetermined minimum rate for a time period determined by the vehicle speed when said normal rate does not exceed said predetermined minimum rate.

4,619,339
FLUID PRESSURE CONTROL DEVICE IN POWER STEERING APPARATUS

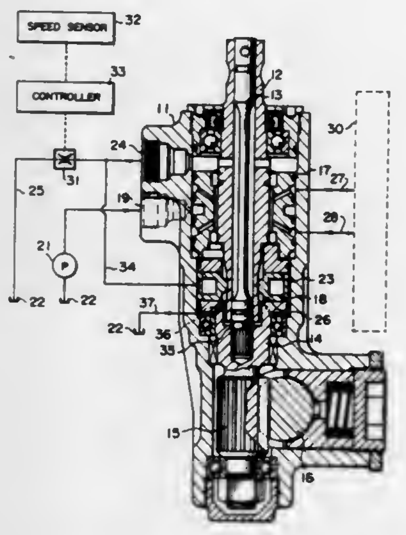
Takeshi Futaba, and Masahiko Noguchi, both of Yao, Japan, assignors to Koyo Jidoki Kabushiki Kaisha, Nara, Japan

Filed Nov. 23, 1984, Ser. No. 674,073

Claims priority, application Japan, May 9, 1984, 59-67294[U]

Int. Cl.⁴ B62D *5/08*

U.S. Cl. 180—143 **3 Claims**



1. In a power steering apparatus connected to a pump and a cylinder and provided with an input shaft, an output shaft connected with one end of said input shaft, and a control valve rotatable about said input shaft so that fluid under pressure from the pump is selectively supplied to the cylinder upon relative displacement of said control valve to thereby power-assist the rotation of said output shaft to thereby actuate steering wheels of a vehicle, an oil pressure control device comprising:
- control means for pressing against the outer circumference of said input shaft;
- a throttle valve provided in a return circuit of said fluid from said power steering apparatus to said pump and controlled in accordance with the speed of the vehicle; and
- a fluid passage member connected between an inlet of said throttle valve and an inlet of said control means for guiding said fluid controlled by said throttle valve to said control means to thereby cause said conrol means to be pressed against said input shaft.

4,619,340
HIGH CLEARANCE SELF-PROPELLED VEHICLE WITH VARIABLE CLEARANCE AND VARIABLE WHEEL SPACING

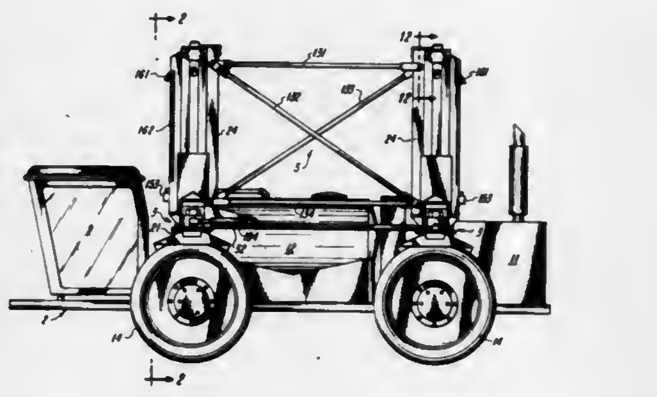
Willard O. Elmer, Indianola, Nebr. 69034, and Edgar J. Rickel, 8109 El Monte, Shawnee Mission, Kans. 66208

Filed Jan. 14, 1985, Ser. No. 691,503

Int. Cl.⁴ B60P *3/00*

U.S. Cl. 180—209 **25 Claims**

1. In a vehicle, the combination comprising:
- a frame;
- a wheel assembly at the front and rear on each side of said frame, each said wheel assembly including a wheel, a yoke mounted on the wheel, and a post extending up from the top of said yoke; and
- lateral support means connected between the front wheel assemblies and said frame and connected between the rear wheel assemblies and said frame to suspend said frame between said wheel assemblies,
- said lateral support means including an inner portion and a pair of oppositely disposed outer portions for each of said front wheel assemblies and said rear wheel assemblies, each pair of outer portions being movable laterally with respect to the associated inner portion to vary the spacing between opposite wheels,
- each said wheel assembly being pivotally connected to an upper outer end portion of an adjacent one of said outer portions at an upper pivot and having a bracing means including a pair of variable length bracing members extending from opposite positions on said lateral support means to connect with the yoke of an associated wheel assembly and movable in response to a change in position of said outer portions for holding said wheel assembly substantially vertical each time the spacing between opposite wheels changes.



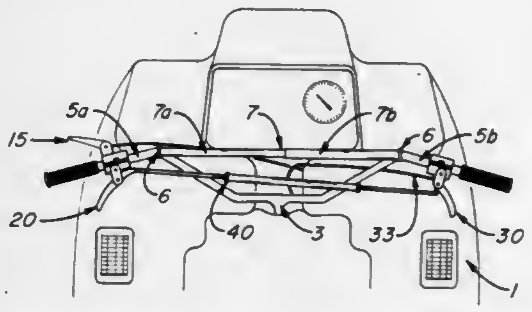
4,619,341
THROTTLE-GRAB BAR APPARATUS FOR SNOWMOBILES

Vern E. Davis, Box 744, Homedale, Id. 83628

Filed Jun. 6, 1985, Ser. No. 742,012

Int. Cl.⁴ B60K *26/00*

U.S. Cl. 180—335 **9 Claims**



7. In combination with a snowmobile having a pair of oppositely disposed handlebars for steering:
- a pair of grip-type throttle controls one of said throttle controls mounted on each of said handlebars;
- a grab bar extending between said handlebars and affixed thereto; and
- a tie rod connecting each of said throttle controls together for operation of the throttle by either hand of the operator.

4,619,342
MULTIPLE SOUND TRANSDUCER SYSTEM UTILIZING AN ACOUSTIC FILTER TO REDUCE DISTORTION

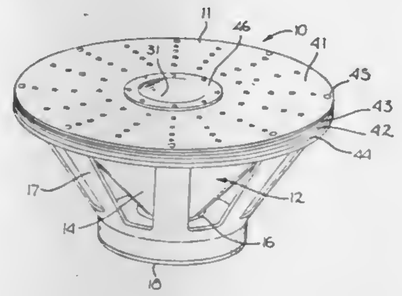
Marshall D. Buck, Los Angeles, Calif., assignor to Cerwin-Vega, Inc., Arleta, Calif.

Continuation-in-part of Ser. No. 291,425, Aug. 10, 1981, abandoned, which is a continuation of Ser. No. 57,821, Jul. 16, 1979, Pat. No. 4,283,606. This application Oct. 12, 1982, Ser. No. 433,829

The portion of the term of this patent subsequent to Aug. 11, 1998, has been disclaimed.

Int. Cl.⁴ H04R *7/00, 9/06*

U.S. Cl. 181—184 **15 Claims**



1. An improved multiple source sound transducing system comprising:

first transducing means for providing a first source of low frequency acoustic energy directed towards a listening environment;

second transducing means for providing a second source of high frequency acoustic energy, said second source and said first source having respective acoustic centers acoustically oriented coaxially along an axis oriented towards said listening environment; and

an acoustic filter comprising a baffle member having a higher acoustic impedance at higher acoustic frequencies relative to its impedance at lower acoustic frequencies, said baffle member being acoustically disposed between said first transducing means and said second transducing means and also being acoustically disposed between said first transducing means and said listening environment,

whereby said baffle member will tend to attenuate the higher frequency acoustic energy from said second transducing means as it is propagated towards said first transducing means and to further attenuate that portion of said higher frequency acoustic energy reflected by said first transducing means towards said listening environment.

4,619,343
NOISE-ISOLATED FASTENING OF AN OIL SUMP TO A CRANKCASE

Karl Lengenfelder, Nuremberg, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed Jul. 23, 1985, Ser. No. 758,169

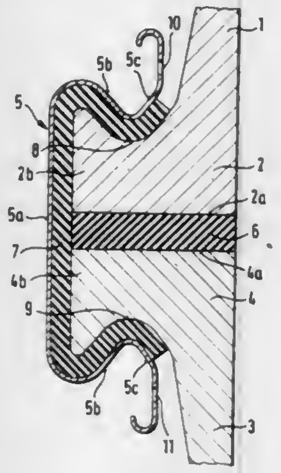
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1984, 3427529

Int. Cl.⁴ F02F *7/00;* **F16F** *15/00*

U.S. Cl. 181—208 **9 Claims**

1. A noise-isolated fastening of an oil sump to a crankcase of an internal combustion engine using an intermediate layer of elastic material; said fastening comprises:

a plurality of specially shaped spring clips which hold said oil sump and crankcase together directly with each other said crankcase being provided with a first shaped connecting flange, and said oil sump being provided with a second shaped connecting flange; in a connected state, said spring clips elastically engage said first and second connecting flanges directly to effect said holding together of said oil sump and said crankcase; soft elastic material is disposed between said spring clips on the one hand, and said first and second connecting flanges on the other hand completely free of any screw fastening otherwise being provided therewith.



4,619,344
COMPOSITE SOUND AND HEAT INSULATING BOARD

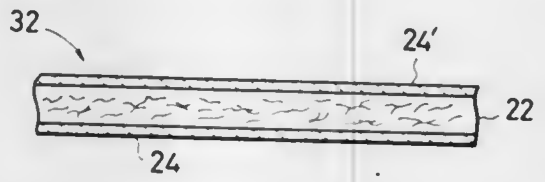
Naomoto Uesugi, Tokyo, and Shoji Suzuki, Aichi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 596,289, Apr. 3, 1984, abandoned. This application Sep. 18, 1985, Ser. No. 777,271

Claims priority, application Japan, Apr. 28, 1983, 58-075464; Apr. 28, 1983, 58-075465

Int. Cl.⁴ F02M *35/00*

U.S. Cl. 181—229 **11 Claims**



1. An air cleaner casing including an air cleaner for being operatively connected to an internal combustion engine, said casing being provided on an inner surface with at least one composite sound and heat insulating board comprising a base layer consisting of a compacted mat of filaments, and an additional layer of a plastic material, one surface of the base layer being securely attached to one surface of the additional layer, said plastic material being a relatively soft material having a lower hardness relative to said mat.

4,619,345
FLEXIBLE LUBRICANT APPLICATOR

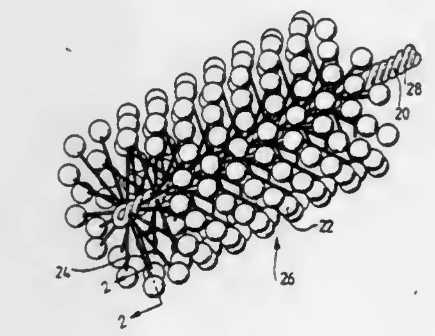
Mary Rands, 3315 Villa Knolls Dr., Pasadena, Calif. 91107

Filed Jan. 22, 1985, Ser. No. 693,583

Int. Cl.⁴ F16N *15/00*

U.S. Cl. 184—109 **10 Claims**

1. A flexible lubricant applicator for forcibly applying a desired quantity of a lubricant material to a workpiece surface, harder than the lubricant material, comprising: a lubricant applicator base member provided with outwardly extended and positioned lubricant means and compliant lubricant mounting means flexibly compliantly mounting same relative to the rest of said base member; said base member being provided with movement-transmissible force-applying coupling means cooperable for driven engagement with respect to externally applicable movement-causing means for applying force to said base member when its lubricating means is placed in abradable engagement with a harder surface of a workpiece, said lubricating means being physically softer than the surface of a workpiece adapted to be forcibly mechanically lubricated thereby through forced abrasion of said softer lubricating means by surface irregularities present in such a workpiece surface; said lubricant means comprising an outer plurality of spaced lubricating globules provided with and being affixed to outer ends of said flexible compliant lubricant mounting means.



4,619,346
ELEVATOR-TYPE WORK PLATFORM

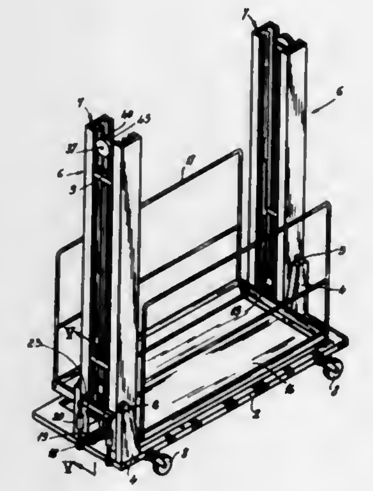
Louis Deguerry, Trevoux, France, assignor to Comabi S.A., Ain, France

Filed Jul. 11, 1984, Ser. No. 629,682

Claims priority, application France, Jul. 11, 1983, 83 11920

Int. Cl.⁴ B66B *9/20*

U.S. Cl. 187—9 E **17 Claims**



1. An elevator comprising:

a horizontal chassis;

a telescopingly extensible and retractable mast having upper and lower ends and formed of interfitting inner ~~and outer~~ elements having respective upper and lower ends;

a guide extending along the inner element between its ends;

a platform adapted to support a worker and displaceable in the guide along the inner element between its ends;

pivot means securing the lower end of the outer element to the chassis for pivoting of the mast about a pivot axis relative to the chassis but without disconnection therefrom between an erect position with the upper ends above the lower ends and a recumbent position with the mast lying on the chassis and the mast ends generally level with each other, the axis being sufficiently above the chassis that in the recumbent position the platform can lie between the chassis and the mast;

drive means connected between the chassis and the mast for pivoting the mast about the axis from the recumbent to the erect position and thereafter vertically extending the mast and raising the platform; and

latch means on the lower ends of the elements and on the chassis for blocking extension of the mast and displacement of the platform along the guide of the inner element except when the mast is in the erect position.

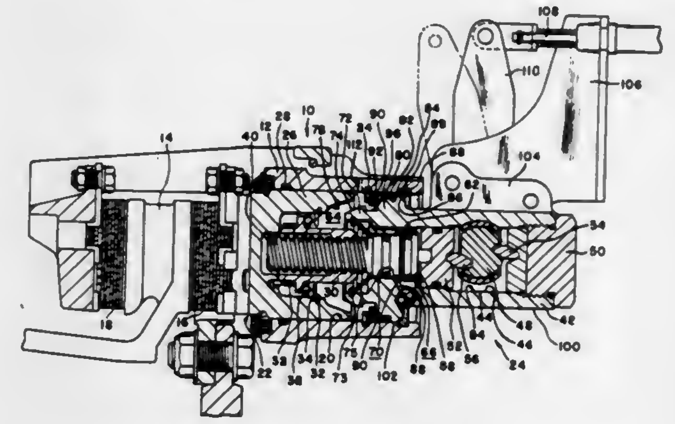
4,619,347
DISC BRAKE ASSEMBLY

Peter J. Schreiner; Daniel L. Bolenbaugh, and David R. Krebs, all of South Bend, Ind., assignors to Allied Corporation, Morristown, N.J.

Filed Feb. 2, 1984, Ser. No. 576,512

Int. Cl.⁴ F16D *55/224*

U.S. Cl. 188—72.6 **10 Claims**



1. Disc brake assembly comprising a rotor, a pair of friction pads supported adjacent said rotor, a caliper for urging said friction pads into braking engagement with said rotor when a brake application is effected, said caliper defining a bore therewithin, a piston slidably mounted in said bore to bias one of said friction pads against said rotor, said piston being mounted in an end of the bore adjacent said one friction pad, the other end of said caliper defining an opening, and a cartridge assembly including a body housing received in said opening, and means securing said body housing in said opening, said body housing cooperating with the said bore and said piston to define a fluid pressure chamber therebetween for receiving fluid pressure during a service brake application, said body housing defining a bore therewithin, and parking brake actuating means mounted in said bore of said body housing, said parking brake actuating means including a force transmitting stem slidably supported in the bore of the body housing and projecting therefrom into the bore of said caliper housing for force transmitting engagement with said piston when a parking brake application is effected, and manually actuated means in said bore of the body housing for urging said force transmitting stem toward said piston, said securing means including a sliding interface between the bore of the caliper and said body housing, sealing means at said sliding interface, a stop on said caliper, said sliding interface permitting relative movement of said body housing with respect to said caliper toward and away from said stop, and resilient means between said caliper and said body housing to bias the latter away from said piston assembly and into engagement with said stop.

4,619,348
COMBINED HYDROPNEUMATIC BRAKE CYLINDER/AIR RESERVOIR DEVICE WITH AUTOMATIC DOUBLE-ACTING SLACK ADJUSTER ARRANGEMENT

Eric G. Smith, Burlington, Canada, assignor to WABCO Ltd., Hamilton, Canada

Filed Apr. 18, 1984, Ser. No. 603,810

Int. Cl.⁴ F16D *65/72*

U.S. Cl. 188—351 **8 Claims**

1. A hydropneumatic actuator device comprising:

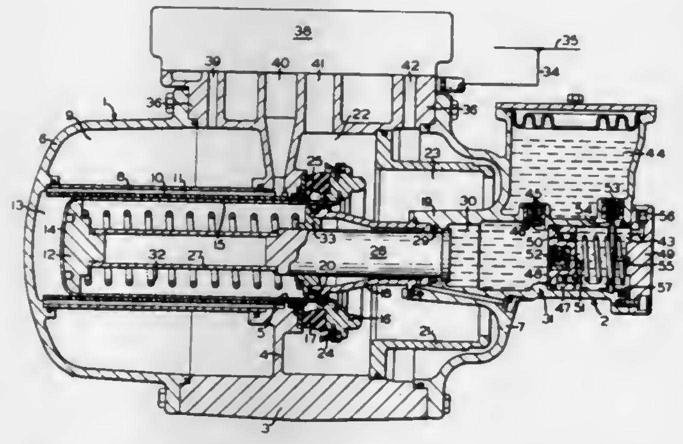
(a) a pneumatic cylinder;

(b) a dual piston assembly operatively disposed in said pneumatic cylinder for axial movement between a release position and an application position defining a predetermined stroke including:

  (i) a positioning piston cooperating with said pneumatic cylinder to form a first chamber on one side of said positioning piston, pressurization of said one chamber

producing a differential force on said positioning piston in the direction of said application position;
- (ii) a power piston interconnected with said positioning piston for joint operation therewith, said power piston cooperating with said pneumatic cylinder to form second and third chambers on the opposite sides of said power piston in which compressed air is normally stored in said release position of said dual piston assembly, one of said second and third chambers being vented in said application position of said dual piston assembly to provide a force differential across said power piston in the direction of said application position;

(c) a reservoir in which hydraulic fluid is stored;
(d) a hydraulic cylinder having an inlet via which hydraulic fluid is supplied to said hydraulic cylinder from said reservoir, and an outlet;
(e) a hydraulic piston connected to said dual piston assembly and operably disposed in said hydraulic cylinder to displace hydraulic fluid in accordance with movement of said dual piston assembly between said release and application positions; and
(f) double-acting slack adjuster means for adjusting the amount of hydraulic fluid in said hydraulic cylinder in accordance with overtravel and undertravel of said dual piston assembly to maintain said predetermined stroke thereof constant, said slack adjuster means comprising:
- (i) a pair of axially spaced end stops located in said hydraulic cylinder between said inlet and outlet;



- (ii) a slack adjuster piston reciprocally disposed in said hydraulic cylinder between said pair of end stops, one side of said slack adjuster piston forming in cooperation with said hydraulic cylinder a reference chamber;
- (iii) a first passageway in said slack adjuster piston via which hydraulic fluid in said hydraulic cylinder is connected to said reference chamber;
- (iv) a first one-way check valve in said first passageway to prevent flow of hydraulic fluid from said hydraulic cylinder to said reference chamber during movement of said slack adjuster piston from said other end stop into engagement with said one end stop, whereby a predetermined amount of hydraulic fluid is displaced from said reference chamber via said outlet;
- (v) a pin projecting from said one end stop into said reference chamber so as to engage and thereby open said first one-way check valve in response to movement of said slack adjuster piston a distance corresponding to said predetermined stroke of said dual piston assembly, whereby an additional amount of hydraulic fluid in excess of said predetermined amount is displaced from said hydraulic cylinder via said first passageway;
- (vi) a second one-way check valve in said inlet via which makeup hydraulic fluid is drawn from said reservoir into said hydraulic cylinder in response to movement of said dual piston assembly toward said release position following engagement of said slack adjuster piston with said other end stop to thereby compensate for said overtravel of said dual piston assembly during the preceding movement thereof toward said application position;
- (vii) a second passageway between said reservoir and said reference chamber;
- (viii) a third one-way check valve in said second passage via which hydraulic fluid in said reference chamber flows into said reservoir when a predetermined back pressure develops at said outlet prior to said slack adjuster piston engaging said one end stop during operation of said dual piston assembly toward said application position to thereby compensate for said undertravel of said dual piston asembly; and
- (ix) an annular seal in said reference chamber between said outlet and said second passageway with which said slack adjuster piston is engageable at substantially the same time that said first one-way check valve is opened by said pin on engagement thereof with said one end stop.

4,619,349
VIBRATION ISOLATOR

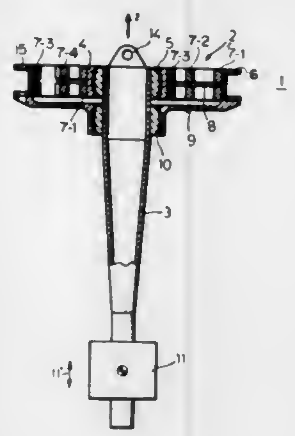
Dieter Braun, Otterfing, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Aug. 2, 1985, Ser. No. 761,956

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1984, 3428820

Int. Cl.⁴ F16F *7/10*

U.S. Cl. 188—380 **5 Claims**



1. A vibration isolator having two degrees of freedom and operating according to the anti-resonance principle, comprising a pendulum means, a spring arrangement and means connecting said pendulum means to said spring arrangement, said pendulum means including a pendulum rod and a pendulum weight adjustably mounted on a free end of said pendulum rod, said spring arrangement including an inner ring including attachment means for connection to a first body, an outer ring including attachment means for connection to a second body, and a plurality of curved leaf spring elements connected at one leaf spring end to said inner ring and the other leaf spring end to said outer ring, said connecting means including a first spherical pivot bearing operatively arranged between said inner ring and said pendulum rod, and a second spherical pivot bearing operatively arranged between said outer ring and said pendulum rod, whereby an end of said pendulum rod opposite said free end is supported by both said first and second spherical pivot bearings, and wherein said curved leaf spring elements are flexible so as to allow a relative motion between said inner ring and said outer ring perpendicular to a plane extending through both rings, thus in a direction parallel to said pendulum rod.

4,619,350
CLUTCH OPERATION CONTROL SYSTEM FOR FLUID TORQUE CONVERTER OF VEHICULAR TRANSMISSION

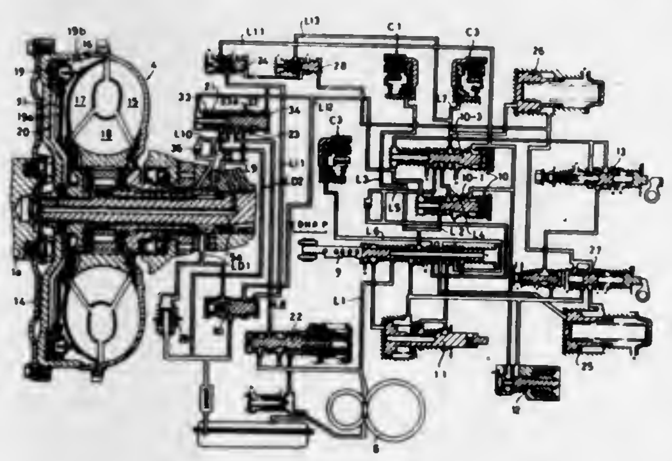
Masakazu Maezono, and Keiichi Ishikawa, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1984, Ser. No. 616,282

Claims priority, application Japan, Jun. 1, 1983, 58-95774

Int. Cl.⁴ F16D *47/06*

U.S. Cl. 192—3.31 **8 Claims**



1. A clutch operation control system for a fluid torque converter, having an input side and an output side, of a vehicular transmission in which a clutch is provided for mechanically connecting the input side and output side of said torque converter and said clutch has its clutch plate supplied at its one side with oil pressure in a control chamber for releasing the clutch and at its other side with the torque converter oil pressure in said fluid torque converter, and in which an oil line leading to said control chamber is connected at a vehicular speed equal to or higher than a predetermined level to an oil drain port by means of a control valve responsing to a vehicular speed so that said clutch may be operated with an engaging force determined by said torque converter pressure and by the drainage from said control chamber wherein said clutch plate is formed with an orifice for providing communication between the two sides of said clutch plate; and said control valve is formed with a throttle portion for throttling the communication passage between said oil line and said drain port in a relatively low vehicular speed range equal to or higher than said predetermined level.

4,619,351
ENGAGEMENT DEVICE FOR AN ELECTROMAGNETIC SPRING-WOUND CLUTCH

Koitabashi Takatoshi, Annaka, Japan, assignor to Sanden Corporation, Gunma, Japan

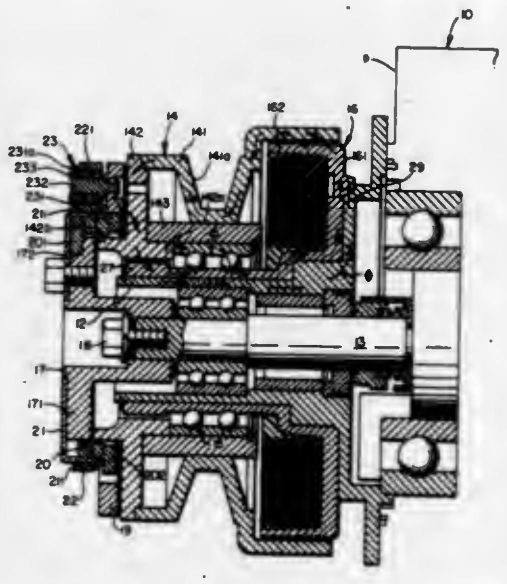
Filed Sep. 5, 1984, Ser. No. 647,383

Claims priority, application Japan, May 9, 1983, 58-137668[U]

Int. Cl.⁴ F16D *27/10, 41/20*

U.S. Cl. 192—35 **8 Claims**

1. In an electromagnetic spring-wound clutch including a first rotatable member having an axial end plate of magnetic material, a second rotatable member coaxially positioned with respect to said first rotatable member, an armature plate member coaxially positioned with respect to said first rotatable member and frictionally engageable therewith, a coil-wound spring wound around a portion of said first rotatable member and being connected at its respective ends to said second rotatable member and said armature plate member, a cover plate fixed to said second rotatable member and covering the outer peripheral surface of said coil-wound spring, and electromagnetic means associated with said axial end plate of said first rotatable member for attracting said armature plate member to said xial end plate so that rotation of said first rotatable member is transmitted to said second rotatable member through said armature plate member and said coil-wound spring by the operation of said electromagnetic means, the improvement comprising a guide member disposed on said cover plate and coaxially rotating with said first rotatable member when said clutch is engaged, said armature plate being connected to said guide member by a plurality of connecting members to maintain a predetermined axial air gap between said axial end plate of said first rotatable member and said armature plate, each of said plurality of connecting members including an elastic member, said cover plate having a radial flange portion which prevents axial movement of said guide member and said armature plate.



4,619,352
ONE-WAY CLUTCH

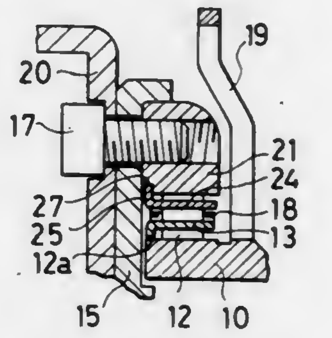
Masao Shoji, Fujisawa; Mikio Uchida, Yamato, and Yoshio Kinoshita, Ayase, all of Japan, assignors to NSK-Warner K. K., Tokyo, Japan

Filed Sep. 10, 1984, Ser. No. 649,177

Claims priority, application Japan, Sep. 27, 1983, 58-148131[U]

Int. Cl.⁴ F16D *41/06*

U.S. Cl. 192—41 A **7 Claims**



1. A one-way clutch device comprising:
an inner race;
an outer race disposed radially outside of said inner race and concentric with said inner race;
wedge means tiltably disposed between said inner and outer races for transmitting a torque from one of said races to the other, said wedge means wedge-engaging said races when tilted to connect both races for rotation in unison;
inner and outer retainers concentric with said races for retaining said wedge means between said races and facing said inner and outer races, respectively; and
spring means interposed between said retainers for urging said wedge means toward wedge engagement with said races;
one of said retainers having a radially projecting flange portion extending into a groove provided on the corre-

sponding facing race to engage said race and prevent said one retainer from tilting and moving in an axial direction.

4,619,353
CLUTCH COVER ASSEMBLY

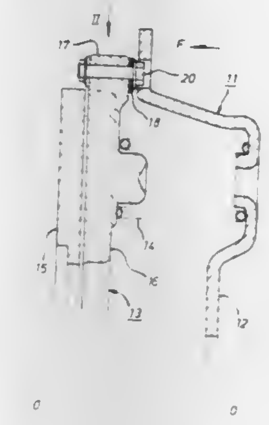
Shigeho Maeda, Neyagawa, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Feb. 20, 1985, Ser. No. 703,555

Claims priority, application Japan, Feb. 28, 1984, 59-28795[U]

Int. Cl.⁴ F16D *13/44*

U.S. Cl. 192—70.18 **3 Claims**



1. A clutch cover assembly comprising:

a clutch cover adapted to be fixed to a flywheel and to cover a rear of a clutch disc;

an annular pressure plate disposed between the clutch cover and the clutch disc;

a forcing means for forcing the pressure plate toward the clutch disc;

a connecting means connecting the pressure plate unrotatably and axially movably to the clutch cover;

releasing means for moving said pressure plate away from the clutch disc toward the clutch cover; and

the pressure plate having

an annular support member positioned adjacent to the clutch cover, connected to the forcing means and having an outer periphery and bosses projecting radially outwardly from that outer periphery,

a pressure member positioned adjacent to the clutch disc for pressing the clutch disc, and having on outer periphery and bosses projecting radially outwardly from that periphery, and

elastic strap plates unrotatably and elastically connecting the bosses of the support member and the bosses of the pressure member, and being positioned beyond the outer peripheries of the support member and the pressure member so that an axial clearance may be formed between both members in the released condition of the clutch disc.

4,619,354
PRESSURE PLATE FOR A MOTOR VEHICLE FRICTION CLUTCH

Günther Rostin, Schweinfurt; Erich Scheer, Prosselsheim; Dieter Kolb, Bad Kissingen, and Karl H. Werner, Schweinfurt, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Aug. 7, 1984, Ser. No. 638,863

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1983, 3329038

Int. Cl.⁴ F16D *13/46, 13/71*

U.S. Cl. 192—89 B **16 Claims**

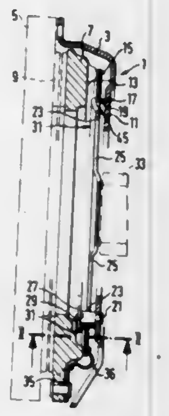
1. In a pressure plate for a motor vehicle friction clutch comprising

(a) a clutch cover,

(b) a presser plate arranged non-rotatably but axially displaceably in relation to the clutch cover,

(c) a diaphragm spring of substantially annular disc form which is provided with radially inwardly protruding spring rongues, said diaphragm spring being supported on the presser plate in the region of its external circumference and on its side axially remote from the presser plate being supported on the clutch cover along a circle radially within the external circumference,

(d) a plurality of securing elements held on the clutch cover and staggered in relation to one another in the circumferential direction of the support circle, said securing elements passing through openings in the diaphragm spring and comprising shoulders facing axially toward the diaphragm spring in the region of the support circle on the side of the presser plate,



(e) an axially undulatory wire ring substantially following the support circle and being clamped axially resiliently with initial stress between the diaphragm spring and the shoulders of the securing elements, said wire ring having alternating crests and troughs extending in the axial direction of said diaphragm spr'ng, said wire ring including means for securing the wire ring against rotation in the circumferential direction, and said undulatory wire ring being shaped so that it abuts on the shoulders of the securing elements exclusively in the regions of said undulation crests in the unstressed condition in relation to the diaphragm spring.

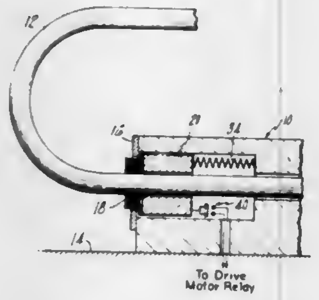
4,619,355
ESCALATOR HANDRAIL ENTRY SAFETY SWITCH ACTUATOR

Willy Adrian, Obernkirchen, and Ralf Holzhauer, Stadthagen, both of Fed. Rep. of Germany, assignors to Otis Elevator Company, Farmington, Conn.

Filed Aug. 6, 1985, Ser. No. 763,097

Int. Cl.⁴ B66B *29/00*

U.S. Cl. 198—323 **2 Claims**



1. An actuator for the handrail entry safety switch in the entry box of an escalator comprising:

two generally U-shaped pieces disposed end-to-end with the bases of the legs of one piece juxtaposed with the bases of the legs of the other piece so as to form a generally cylindrical actuator, the inside of which is sized so as to permit the handrail to pass therethrough and the outside of which is sized and shaped so as to nest within, and be guided longitudinally by the entry box.

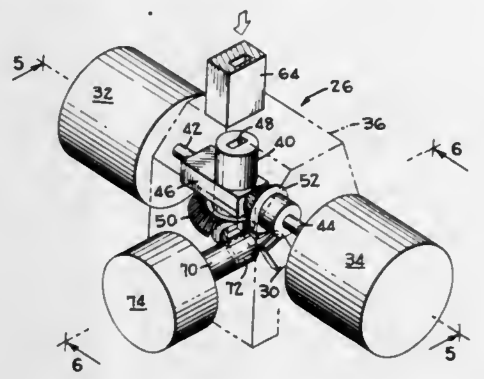
4,619,356
PROGRAMMABLE PARTS FEEDER

Arthur L. Dean, Indiana; William R. Brown; James P. Martin, both of Blairsville; Stanley P. Turcheck, Jr., Ligonier; Junius D. Scott, Homer City, all of Pa., and John D. Gotal, Bristol, R.I., assignors to FMC Corporation, Chicago, Ill.

Filed Aug. 15, 1984, Ser. No. 641,139

Int. Cl.⁴ B65G *47/24*

U.S. Cl. 198—395 **9 Claims**



6. A reorienter system orienting objects randomly served through a delivery means to said reorienter from a bulk storage means containing said objects comprising:

processor means for inputting, processing and outputting data from and to said reorienter system for controlling said reorienter device;

singulator means interposed in said delivery means for individual object release of objects served to said singulator means from said bulk storage means;

scanning means interposed in said delivery means downstream from said singulator means, said scanning means providing data to said processor means for the determination of a first orientation of said objects; and

reorientor means having a rotor through bore, said rotor supported in a cylindrical housing having at least two access apertures, one aperture being a port aligned with said delivery means and said through bore, said rotor being rotatable in a bearing yoke carried annularly on the exterior of said rotor with said bearing yoke attached to a first stepping motor output shaft, said rotor also being integral with a bevel gear capable of being driven by a second stepping motor having a pinion gear attached to a second stepping motor output shaft, thereby said reorienter means will orient said objects after said objects are delivered to said through bore responsive to processor means after said processor has received data from said scanner means.

4,619,357
PAD TURNING APPARATUS

Edmund Radzins, Sheboygan Falls, Wis., and Timothy J. Kenney, Boynton Beach, Fla., assignors to Curt G. Joa, Inc., Sheboygan Falls, Wis.

Filed Jun. 6, 1985, Ser. No. 742,099

Int. Cl.⁴ B65G *47/24*

U.S. Cl. 198—412 **1 Claim**

1. Apparatus for turning oblong pads having major and minor axes, comprising:

an input conveyor for moving a series of pads with their major axes directed along a first line,

an output conveyor for continuing movement of said pads after they have been turned such that their motor axes are directed along a second line generally parallel to the first line,

a planar table disposed between said input and output conveyors,

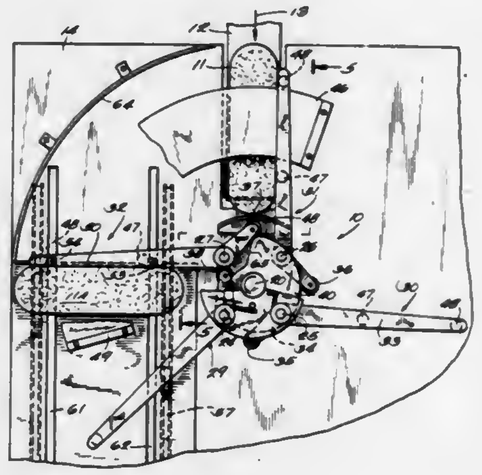
a support member for being driven rotationally about an axis generally perpendicular to the plane of said table,

a plurality of levers mounted to said support member for swinging, respectively, in a plane to which said support member rotational axis is generally perpendicular, said swinging axes of said levers being equiangularly spaced around the rotational axis of said support member and equally radially outward from said rotational axis,

said levers each having on one side of its swinging axis an arm long enough to swing into contact with pads moved in on said input conveyor and the levers having a shorter arm on the other side having cam follower means thereon,

a stationary cam mounted with its profile surrounding the support member axis, said cam follower means being constained to follow said profile as said support member rotates, said profile being configured to cause said levers to contact said pads while the levers are generally parallel to said major axis and to sweep said pads over said table in a curved path to an edge of said table while maintaining the lever generally parallel to said major axis of the pad and directing the minor axis along said second line,

said output conveyor means engaging said pads after they drop from said table and continuing movememnt of said pads along said second line, and



a plurality of shafts journaled for rotation in said support member and having said levers fastened to them for swinging about said axis,

a pre-loaded torsion spring surrounding each shaft and connected to the shaft for applying a torsional force that constrains said cam followers against said cam profile,

a curved guide member extending across said table over the path through which said levers swing between said input and output conveyors, said guide member being spaced from said table for the pads to enter underneath said guide member while the pads are on said input conveyor,

said levers each having prongs projecting toward said table, said prongs being spaced apart along the length of the levers, at least one of said prongs being radially inward of said guide member and another being radially outwardly of sid guide member to engage said pads as said levers sweep over said table between said input and output conveyors.

4,619,358
CONVEYOR ASSEMBLY

Wayne A. May, Sunrise, and Donald J. Peters, Boca Raton, both of Fla., assignors to Jensen Corporation, Fort Lauderdale, Fla.

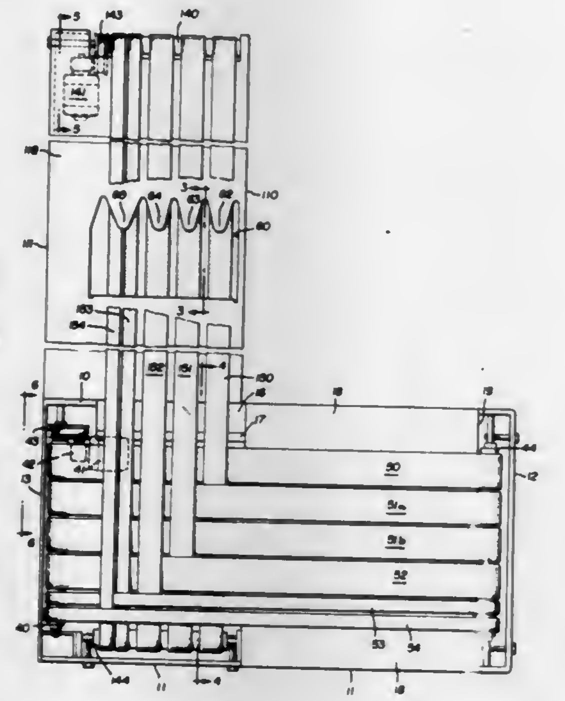
Filed Nov. 1, 1984, Ser. No. 667,373

Int. Cl.⁴ B65G *47/26*

U.S. Cl. 198—457 **10 Claims**

6. A conveyor having a trailing end and a leading end and comprising a set of elongated, flexible, endless belts having an upper course of travel from said trailing end to said leading end and a return course of travel in the opposite direction below said upper course, the belts being spaced apart in succession laterally and being substantially coplanar in said upper course of travel for conveying an article from said trailing end to said leading end of the conveyor;

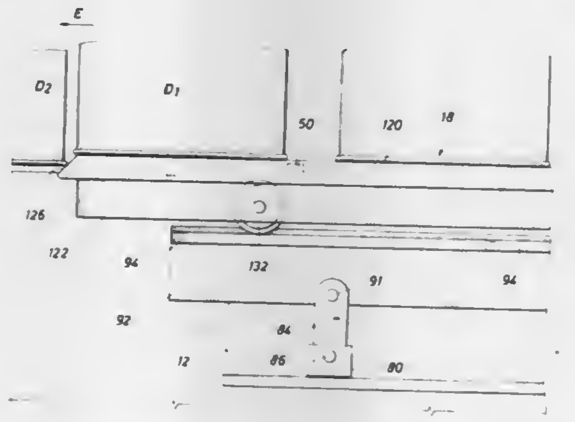
a rigid support for said conveyor presenting a substantially flat top piece immediately below said conveyor belts in said upper course of their travel, said top piece having an opening therein between said trailing and leading ends of the conveyor which extends laterally across the combined width of said belts, said top piece at the front end of said opening presenting a plurality of laterally spaced teeth which project toward the opposite end of said opening.



4,619,359
MATERIALS HANDLING AND WEIGHING APPARATUS

Conrad P. Kennedy, Jr., Beaumont, and Harry L. Kennedy, Freeport, both of Tex., assignors to Patrick Howard Gibson, Sweeney, Tex.

Filed Jul. 5, 1983, Ser. No. 510,879
Int. Cl.^{4} B65G *37/00*
U.S. Cl. 198—463.5 **44 Claims**

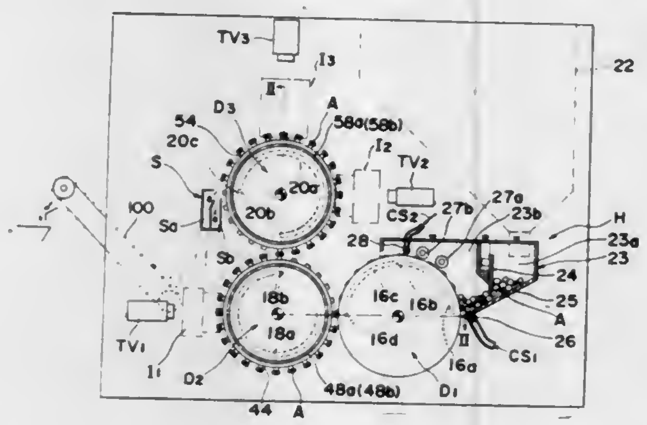


1. Materials handling apparatus comprising:
fixed, generally horizontally extending support means having a first support surface, a first end and a second end;
feed in means adjacent said first end of said fixed support means for positioning at least one work piece adjacent said fixed support means, said feed in means being generally horizontally extending;
stop means for engaging said work piece and preventing longitudinal movement of said work piece along said feed in means toward said fixed support means;
movable, generally horizontally extending support means operatively associated with said fixed support means, said movable support means having a substantially planar second support surface, a first end and a second end, said first end of said movable support means being closest to said feed in means, said first end of said movable support means including separating means for separating said work piece abutting said stop means from a second work piece contiguous said work piece abutting said stop means by forcing said second work piece in an upstream direction away from said stop means and said work piece abutting said stop means;
means for moving said movable support means to a first position whereby said second support surface is below said first support surface;
means for moving said movable support means to a second position whereby said second support surface is beneath said work piece when said work piece is in engagement with said stop means;
means for moving said movable support means to a third position whereby said second support surface is above said feed in means, said stop means and said first support surface whereby said work piece is lifted off said feed in means;
means for moving said movable support means to a fourth position away from said feed in means for a distance sufficient to position said work piece above said first support surface; and
means for moving said movable support means to a fifth position whereby said second support surface is below said first support surface and said work piece is deposited on said first support surface without change in angular orientation.

4,619,360
PRODUCT TRANSPORTING APPARATUS

Shin ichi Taniguchi, Osaka, and Takashi Ohtsuki, Kawabe, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 585,582, Mar. 2, 1984, abandoned. This application Jan. 31, 1986, Ser. No. 824,313
Claims priority, application Japan, Mar. 4, 1983, 58-36455
Int. Cl.^{4} B65G *47/86*
U.S. Cl. 198—471.1 **2 Claims**

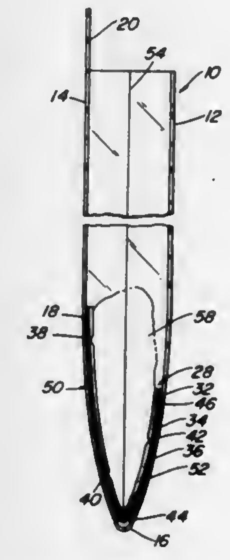


1. A solid drug product transporting apparatus for transporting solid drug products of generally similar shape and/or size successively from a take-in station towards a take-out station, which comprises, in combination:
a support structure;
at least first and second rotary drums mounted by said support structure for rotation in the opposite directions with respect to each other respectively past said take-in station and said take-out station and past each other at a transfer station, each of said first and second rotary drums having on the peripheral surface a plurality of radially outwardly extending tubular receptacles which are arranged in at least one circumferentially extending row in equally spaced relation to each other, some of said receptacles on the first rotary drum being adapted to successively receive a corresponding number of the drug products during each rotation of said first rotary drum for transportation of said drug products, each of said tubular receptacles on said first and second rotary drums being comprised of an inner tube rotatably supported on the associated rotary drum and an outer tube made of an elastic and soft material and mounted tightly on the inner tube and projecting radially outwardly from the outer periphery of the associated rotary drum and having an inside diameter less than the size of the drug product for supporting the drug product on the outer end thereof, the free end of the outer tube terminating at a location spaced from an opposing outer tube at the transfer station a distance slightly less than the thickness of the drug product being transported such that, when it contacts the corresponding drug product carried by the associated receptacle arriving at the transfer station, the outer tube is axially inwardly compressed a slight distance, whereby the drug product is positively engaged with both engaged outer tubes at the time of transfer so as to prevent a change in its orientation;
means disposed adjacent said first rotary drum at the take-in station for supplying the drug products one by one onto the receptacles on the first rotary drum, said supplying means having in the peripheral surface a plurality of pockets for receiving the drug products therein and which are arranged in at least one circumferentially extending row in equally spaced relation to each other;
a source of compressed air;
a vacuum source;
first means for causing said some of the receptacles on the first rotary drum to be successively communicated with the vacuum source for sucking the respective drug products into said receptacles and also for carrying such drug products until the drug products so carried are transported to the transfer position;
second means for causing said some of the receptacles on the first rotary drum to be successively communicated with the compressed air source for blowing the drug products so transported to the transfer position one by one off the associated receptacles on the first rotary drum;
third means for causing the receptacles on the second drum to be successively communicated with the vacuum source for sucking the respective drug products released from the corresponding receptacles on the first rotary drum into said tubular receptacles and also for carrying such drug products until the drug products so carried are transported to the take-out station; and
fourth means for causing the drug products, which have been successively transported to the take-out station, to be released from the associated receptacles on the second rotary drum onto a subsequent processing station.

4,619,361
BAG FOR DISPLAYING FOOD

John S. Thomas, Jr., Langhorne, Pa., assignor to Paramount Packaging Corporation, Chalfont, Pa.

Continuation-in-part of Ser. No. 499,586, May 31, 1983. This application Dec. 3, 1984, Ser. No. 677,669
Int. Cl.^{4} B65D *81/26, 81/22*
U.S. Cl. 206—204 **11 Claims**

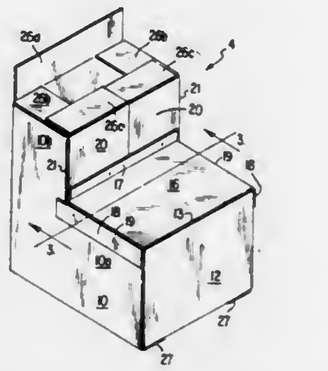


1. A bag for goods adapted to be machine-loaded comprising a front and rear panels of a thermoplastic material, said panels being integral at a fold line to form a closed end of the bag, the bag being open at the other end to facilitate loading of the bag and thereafter closing the open end, pad means for absorbing fluids, said pad means including an absorbent layer between impervious layers of thermoplastic material, said pad means being joined together, said absorbent layer being exposed along an edge of said pad means, said pad means having a fold line juxtaposed to said first mentioned fold line, so that a first portion of the pad means overlays a portion of the front panel and a second portion of the pad means overlays a portion of the rear panel, said first portion of the pad means being welded adjacent an end thereof to said front panel, and said second portion of the pad means being welded adjacent an end thereof to said rear panel.

4,619,362
L-SHAPED SHIPPING CONTAINER

Stephen O. Crowe, and Jeffrey D. Harper, both of Springhill, La., assignors to International Paper Company, New York, N.Y.

Filed Oct. 31, 1985, Ser. No. 793,396
Int. Cl.^{4} B65D *85/00*
U.S. Cl. 206—326 **8 Claims**



1. A one piece, substantially rectangular paperboard blank for a generally L-shaped carton in which to ship an article of furniture such as a chair, said blank including a plurality of generally rectangular panels and flaps each having an upper edge, a lower edge, and two vertical side edges,
- (a) back, left side, lower front and right side panels in the order named from a left end of the blank to a right end, said side panels each having lower and upper parts;
- (b) a lower top panel foldably attached at its lower edge to the upper edge of the lower front panel;
- (c) lower top panel side flaps each foldably attached at one of its side edges to a respective side edge of said lower top panel;
- (d) upper front panels each formed from an upper portion of a respective side panel, each upper front panel foldably attached along one of its vertical side edges to an upper part of a respective side panel and further defined by a horizontal slit at its lower edge and by a vertical slit along its other vertical side edge, said horizontal and vertical slits also defining, respectively, the lower and the other side edge of each lower top panel side flap;
- (e) upper top forming flaps foldably attached to the upper edges of said back, side and upper front panels.

4,619,363
MULTIPLE TRAY-SHAPED PACKING AND STORAGE UNIT

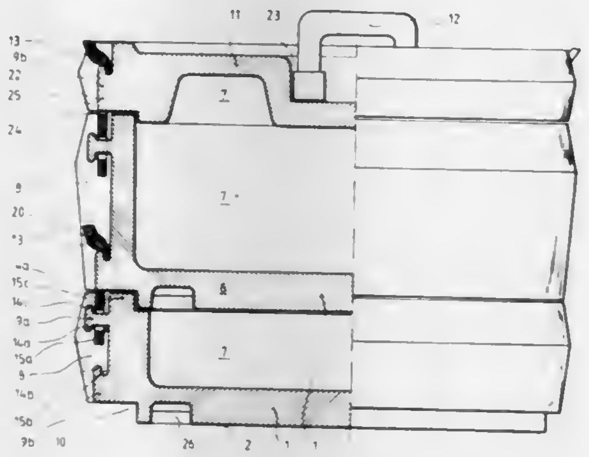
Alfred Wolfseder, Unterhaching, Fed. Rep. of Germany, assignor to Gregor Hofbauer GmbH, Planegg, Fed. Rep. of Germany

Filed Jan. 29, 1985, Ser. No. 695,876

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1984, 3407043

Int. Cl.^{4} B65D *85/28*

U.S. Cl. 206—373 **13 Claims**



1. A tray-shaped packing container unit, particularly for tools, comprising at least two containers being arranged one above the other, each of said containers having four sidewalls terminating in free upper edges, and a bottom; said sidewalls and said bottom consisting of a shape-retaining material, the downwards facing outer surface of said bottom being formed with a circumferentially extending recess adjacent said sidewalls, the width of said recess corresponding at least to the width of said free upper edges of said sidewalls so as to permit the said edges to be received in the recess of an upper adjacent stacked container, the outer surfaces of at least two opposite sidewalls being formed with locking means engageable by connecting elements, said locking means and said connecting elements being provided with snap engagement elements comprising engagement lugs, each of said at least two opposite sidewalls being provided with at least one first engagement lug disposed adjacent the free edge of said sidewall and facing in a direction towards said bottom, and at least one second engagement lug disposed adjacent said bottom and facing in a direction towards said free edge, and each of said connecting elements being formed as a rectangular plate-shaped connection clamp having a pair of elongated openings in which said lugs are engagable, said snap engagement elements are provided on one side thereof and have projecting leg portions which support said engagement lugs, said first engagement lug of one of said at least two containers being engaged with said second engagement lug of the other of said at least two containers, for connecting said one container to said other packing container arranged one above the other.

4,619,364
DISPLAY PACKAGE FOR DRILL BITS AND THE LIKE

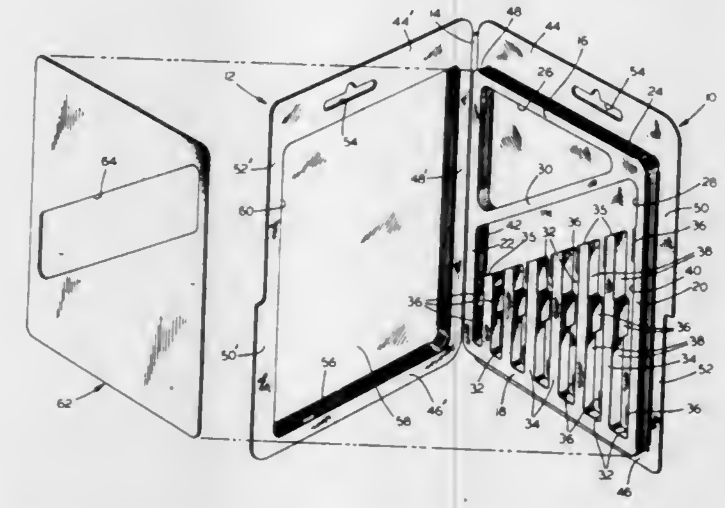
Edmund J. Czopor, Jr., Burlington, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Sep. 13, 1982, Ser. No. 417,142

Int. Cl.^{4} B65D *85/28*

U.S. Cl. 206—379 **15 Claims**

1. A one-piece case for holding a multiplicity of elongated tool parts comprising: a base component, a closure component, and a connecting hinge component along one side of said base and closure components, said base, closure and hinge components being integrally thermoformed from sheeting of synthetic resinous material; said base component including a peripheral flange portion and an upstanding pedestal portion therewithin, said pedestal portion having a multiplicity of upstanding peripheral ribs of generally inverted U-shaped configuration defining an upwardly opening cavity therewithin and a peripheral sidewall element extending thereabout, said pedestal portion also having a multiplicity of upstanding internal rib formations dividing said cavity into a multiplicity of elongated tool-receiving recesses, at least a majority of said internal ribs being in parallel spaced relationship to define parallel extending tool-receiving recesses, said peripheral flange portion extending about the lower, outer edge of said sidewall element; said closure component being povitable about said integral hinge component between a closed position overlying said base component and an open position displaced therefrom, said closure component having a cover element for overlying said cavity of said base component, a peripheral sidewall element depending therefrom, and a peripheral flange portion about the lower edge of said sidewall element; said pedestal portion of said base component seating within the cavity of said closure component in said closed position of said case, with said cover element overlying said cavity of said base component, said flange portions thereof in face-to-face surface contact, and with said respective sidewall elements thereof in frictional interengagement.



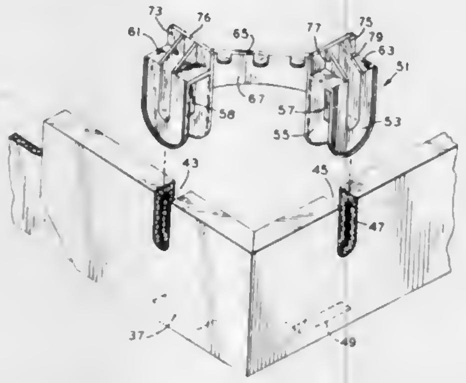
4,619,365
BOX AND FASTENER FOR STACKING

Dean A. Kelly, Angola, and Strother H. Brann, Indianapolis, both of Ind., assignors to Alca Enterprises, Inc., Ashley, Ind.

Filed Dec. 6, 1984, Ser. No. 678,655

Int. Cl.^{4} B65D *21/02, 6/24*

U.S. Cl. 206—503 **7 Claims**



1. In an open-faced tray of generally rectangular configuration formed by selectively folding a flat corrugated paper blank and having, when selectively folded, a bottom portion and vertical walls with corner holders near the open face, the improvement wherein the corner holders each comprise inner and outer flanges lying closely adjacent corresponding inner and outer tray sidewall portions and connected by an intermediate portion disposed in a tray sidewall slot and having a "U" shape in the plane of the sidewall, each corner holder including a plurality of relatively rigid upstanding lugs each having a relatively flat upstanding blade extending upwardly, as an extension of the inner flange, beyond the tray open face, each corner holder including reinforcing gussets extending generally normal to said blade flat surface, the gussets being formed as upward extensions of the opposte "U" portion sides, and a cooperating plurality of openings in a tray surface bottom wall opposite the open face whereby a number of such trays may be stacked one upon the other with adjacent trays in the stack having the lugs of one received in the openings of the other with a flat surface of each said flat upstanding blades being adapted to abut an inside surface of a vertical wall of the superjacent tray to substantially limit lateral movement between the trays.

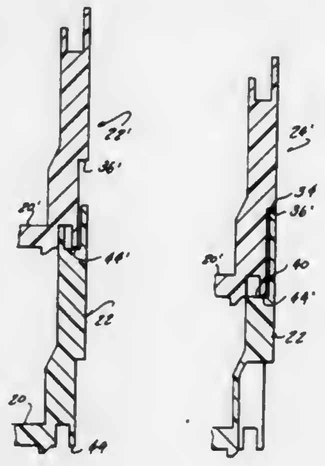
4,619,366
TWO-LEVEL STACKING CONTAINER

Elsmer W. Kreeger, Howell, Mich., assignor to Pinckney Molded Plastics, Inc., Howell, Mich.

Filed Oct. 28, 1985, Ser. No. 791,926

Int. Cl.^{4} B65D *21/04*

U.S. Cl. 206—507 **2 Claims**



1. A multi-level stacking container comprising a square bottom, a pair of like first sidewalls projecting upwardly respectively from two opposed sides of said bottom, a pair of like second sidewalls projecting upwardly respectively from the other two opposed sides of said bottom, all of said sidewalls being of the same height, each of said sidewalls comprising an inner web joined along its lower edge to said bottom along one side thereof and projecting upwardly from said bottom to a horizontal upper edge, an outer web offset outwardly from said inner web, said outer web having a horizontal upper edge and a horizontal lower edge at substantially the same elevation as the upper edge of said inner web, a central stacking web integrally joined to and disposed between said inner and outer webs, said stacking web having a top edge of upwardly facing alternate horizontal upper and lower edge sections lying respectively at first and second distances below the upper edge of said outer web and a bottom edge of downwardly facing alternate horizontal upper and lower edge sections lying respectively at first and second distances below the upper edge of said inner web, the upper and lower edge sections of said top edge being respectively coextensive with the lower and upper edge sections of said bottom edge longitudinally of said wall and said upper and lower edge sections being symmetrically arranged relative to an imaginary vertical line located midway between the opposite ends of the sidewall, said first sidewalls each having an upper edge section of its top edge located midway between the ends of the walls and said second sidewalls each having a lower edge section of its top edge located midway between the ends of the walls.

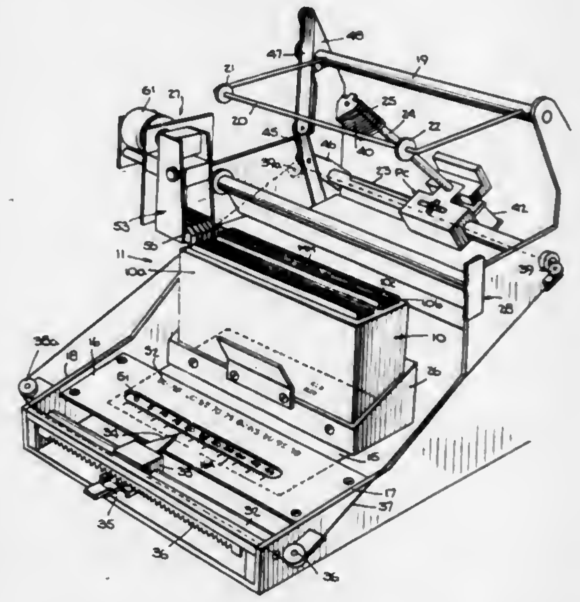
4,619,367
AUTOMATIC CARD SELECTOR FOR RANDOM-ACCESS CARD FILE SYSTEM

Isidore Dorman, Whitestone, N.Y., assignor to NB Jackets de Puerto Rico, Cagua, P.R.

Filed Nov. 30, 1984, Ser. No. 676,926

Int. Cl.^{4} B07C *5/36*

U.S. Cl. 209—608 **9 Claims**



1. A random-access card file system provided with cartridges each storing at least one deck of cards, each card including an upstanding tab whose longitudinal position corresponds to a particular point on an incremental scale running the full length of the deck, and a card selector for extracting any desired card from the deck regardless of its stored location in the cartridge, said selector comprising:

(A) a carriage movable along a horizontal path above the cartridge which houses a deck that includes a card to be selected, to a point in the path in line with the tab on said card;

(B) a crane supported on the carriage and having a card picker thereon;

(C) operating means which when actuated cause the crane to complete an operating cycle in the course of which it bows down over the cartridge to enable the picker to engage and clamp onto the tab on said card and to then lift the card by its tab to withdrawn it from the cartridge; and

(D) separator means disposed just above the cartridge to assume an operative position relative to said deck as said picker lifts the selected card by its tab to intercept non-selected cards sticking on to the selected card to prevent the picker in the course of lifting the selected card from also withdrawing non-selected cards; said separator means being constituted by a pair of card separators just above the cartridge to straddle the upper corners of the card deck, each separator having a row of gaps therein whose width is slightly greater than the thickness of the upper margin of the card so that the gap is capable of passing only a single card therethrough, each gap having an entry defined by converging walls, the entry having a longitudinal axis which is parallel to the plane of the card, whereby when the selected card is lifted above the deck by the picker and adjacent cards sticking to the selected card are also lifted, as the picker rises, it draws the upper corners of the selected card through the entry nearest thereto for passage through the gap associated therewith, the other cards being intercepted by at least one wall of the entry to be dislodged from the selected card; said separators including a clamped stack of flat blades each having a nose provided with opposing faces and a base, said faces being formed with a step portion to reduce the thickness of the nose to define said gaps, said base being triangulated to define the converging entry walls.

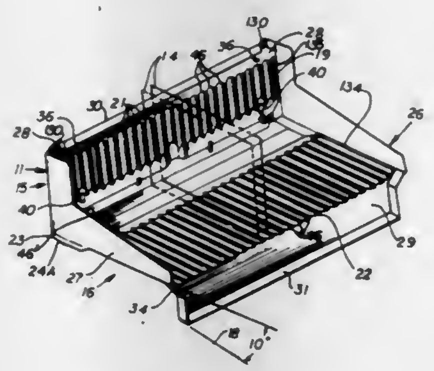
4,619,368
PC BOARD RACK

Charles E. Kappelt, Jr., Linesville, Pa., assignor to Molded Fiber Glass Company, Linesville, Pa.

Filed Jul. 25, 1985, Ser. No. 758,890

Int. Cl.⁴ A47F *7/00*

U.S. Cl. 211—41 **27 Claims**



1. A rack unit for plate like members comprising a first support wall and a second support wall disposed generally at right angles to each other,

connecting means integrally connecting said walls together,

a plurality of laterally spaced longitudinally extending first grooves formed in said first wall on the side adjacent said second wall,

a plurality of laterally spaced longitudinally extending second grooves in said second wall on the side thereof adjacent said first wall,

each said second groove being aligned with one of said first grooves whereby a side edge of a plate like member may be received in a said first groove and an end edge of said plate like member received in a said second groove,

a first plate like leg connected to said first support wall at the end thereof remote from said second support wall and extending therefrom in a direction opposite said first wall and generally parallel to said second wall,

a second plate like leg connected to said second support wall at the end thereof remote from said first support wall and extending therefrom in a direction opposite said second support wall and generally parallel to said first support wall,

first foot means being integrally attached to said first leg at the end of said first leg opposite said second support wall and extending from said first leg in a direction from said second wall,

second foot means integrally attached to said second leg at the end of said second leg opposite said first support wall and extending from said second leg in a direction from said first wall,

said rack section being adapted to be supported on a flat surface by said foot means and said connecting means connecting said walls together,

said first leg extending substantially further from said first support wall than said second leg extends from said second support wall providing a substantial grip space to receive the hand of an operator between said first support wall and a supporting surface on which said first foot and said recess bottom parts rest.

4,619,369
SUPPORT OR STABILIZER DEVICES FOR MOBILE CONSTRUCTION EQUIPMENT

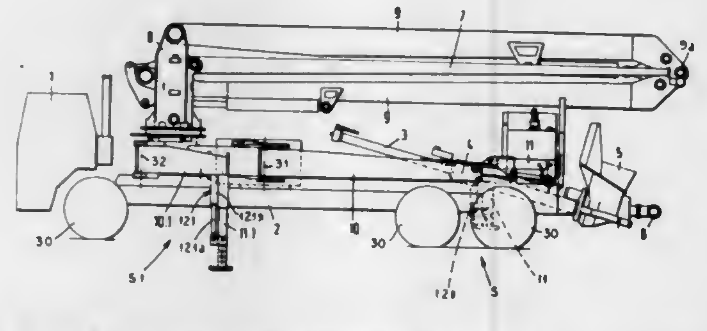
Heinz Mertens, Hamm, Fed. Rep. of Germany, assignor to Maschinenfabrik Walter Scheele GmbH & Co. KG, Unna-Massen, Fed. Rep. of Germany

Filed Mar. 12, 1985, Ser. No. 710,857

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1984, 3409476

Int. Cl.⁴ B66C *15/00*

U.S. Cl. 212—189 **7 Claims**



1. A mobile boom-type construction machine comprising:

a base frame, said base frame being provided with wheels for travel of said machine;

a plurality of support legs connected to said frame with each one of said plurality of support legs being telescopically extensible with reference to the respective longitudinal and central axis thereof, and being adapted to extend in a downwardly directed attitude from said base frame at least one of said support legs being formed with a holding bore;

means for mounting each of said support legs to said frame such that it can be moved from an erect first position in which it serves to stabilize the frame for a particular operating function of the machine, into a substantially horizontal second position in which it is at rest and substantially clear of the ground and during which the machine can be driven to a different location;

for each one of said plurality of support legs at least one piston-cylinder unit to effect said movement from said first position to said second position;

for at least one support leg, an extensible carrier arm swingably mounted on said base frame and having a fixed opening for receiving a respective lock member; means for pivotally mounting said carrier arm such that the associated support leg can be swung with respect to said base frame;

a first means for pivotally connected the associated support leg to said carrier arm, said first means forming a first point of reference, and said first means allowing turning movements of the associated support leg with respect to said first point, and wherein said associated support leg is telescopically extensible in length with reference to said first point along its longitudinal central axis;

a second means for pivotally connecting the respective piston-cylinder unit to said carrier arm said second means forming a second point of reference, and said second means allowing turning movements of said piston-cylinder unit with respect to said second point, whereby said first point and said second point are spaced from each other by a fixed distance;

at least one connector for connecting it and the respective free piston end at a third point of reference which is remote from said first point but located on said longitudinal and central axis of said piston-cylinder unit, whereby an actuation of said piston-cylinder unit said connector is adapted to move said at least one support leg between its rest position and its operating position, said connector being secured to the respective support leg in such a way as to be capable of being moved with said associated support leg during a respective telescoping extension movement thereof;

a connecting plate secured to the pivotally mounted support leg at least near said second point, said connecting plate having an opening which is in alignment with said opening of said carrier arm at least when said support leg is in its operating position; and

a lock pin insertable in said opening of said connecting plate and in said opening of said carrier arm for connecting said connecting plate to said carrier arm and for preventing swinging movement of said piston cylinder unit with respect to said first point, but allowing a precise alignment and guiding of said support leg, said lock pin being removable from said openings of said connecting plate and carrier arm for releasing said plate to allow respective swinging movements of said support leg and said piston-cylinder unit with respect to said first point and said second point as aforesaid on actuation of said piston-cylinder unit, said lock pin being adapted to be inserted into said fixed opening of said support leg for preventing the telescoping extension thereof.

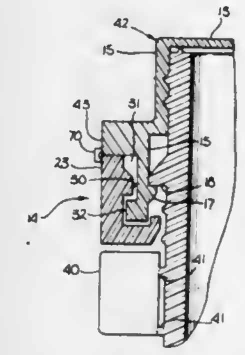
4,619,370
TAMPER RESISTANT AND TAMPER EVIDENT CLOSURES

Albert J. Agbay, Worcester, Mass., and Ralph H. Thomas, Sr., Clark, N.J., assignors to Robert Linkletter Associates, Ltd., Union, N.J.

Division of Ser. No. 591,541, Mar. 20, 1984, Pat. No. 4,519,514. This application Feb. 20, 1985, Ser. No. 703,334

Int. Cl.⁴ B65D *55/02*

U.S. Cl. 215—225 **6 Claims**



1. A safety closure for a container having a rim defining a mouth, a neck located below said rim, and a peripheral lip around said rim, said closure comprising:

a snap cap having a top overlying said mouth and said rim and having a depending annular flange projecting below said top, said flange having an inwardly directed circumferential bead engaged below said lip, and a first outwardly directed circumferential bead located below said top and cooperating therewith to define a circumferential locking groove extending around the outer side of said flange;

a rotary safety ring having an annular sidewall surrounding said flange and overlying said locking groove and said first outwardly directed circumferential bead, said annular sidewall being closely spaced to said locking groove and said first outwardly directed circumferential bead so that said inwardly directed bead is held in engagement with said lip and prevents removal of said cap;

a plurality of angularly spaced fingers on the inner side of said sidewall projecting into said locking groove and overlying the bottom wall of said locking groove to prevent downward movement of said ring along said cap, said fingers being inclined inwardly and downwardly into said locking groove and having free inner ends positioned to be wedged against the bottom of the locking groove to prevent free flexing of the fingers as the ring is pulled downwardly relative to the cap, thereby normally preventing downward movement of said ring out of overlying relation with said locking groove;

a plurality of longitudinally extending release grooves in said first outwardly directed circumferential bead, spaced and sized to permit movement of said fingers through said first outwardly directed circumferential bead in one angular position of said ring about said cap, and thus allowing downward movement of said ring away from said cap for the removal of the latter from the container in said one angular position; and

at least one tear pin being attached to said cap and to said ring, said pin being constructed so that it may be broken and being attached so that said closure cannot be opened without breaking said pin,

whereby said closure cannot be opened without breaking said pin.

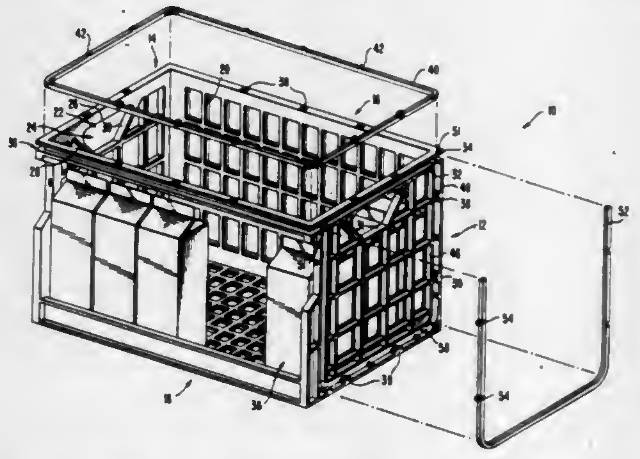
4,619,371
THREE-SIDED, STACKABLE MATERIAL HANDLING CRATE

James B. Rehrig, 6533 Via Lorenzo, Palos Verdes Peninsula, Calif. 90274

Filed May 14, 1984, Ser. No. 609,649

Int. Cl.⁴ B65D *6/34*

U.S. Cl. 220—71 **12 Claims**



1. In a stackable material handling crate having a bottom wall, and an upstanding front wall, back wall, and side walls fixed to said bottom wall, said crate botton wall and said side walls being integrally formed molded plastic panels, an open top opposite said bottom wall defined by the upper edges of said side walls, front wall and back wall, an opening in said front wall through which material in the crate can be removed, and means reinforcing said crate, the improvement wherein said reinforcing means comprises:

a first circumferential channel extending around the periphery of said crate adjacent said open top said first channel having a substantially U-shaped cross-section defined by a top wall, a back wall, and a bottom wall so that the open side of said first channel faces outwardly, one of said first channel walls having first retaining means for retaining a first reinforcing member therein;

a first circumferential reinforcing member extending around and closely engaging the periphery of said crate adjacent said open top, said first reinforcing member fitting within said first channel and retained within said first channel by said first retaining means;

a second substantially U-shaped channel having a substantially U-shaped cross-section extending around and closely engaging the periphery of each of opposite walls of the crate, said U-shaped second channel opening upwardly and extending through the bottom wall of said first channel so that said second channel connects with said first channel at a connecting position, said second channel having a second retaining means for retaining a second reinforcing member therein; and

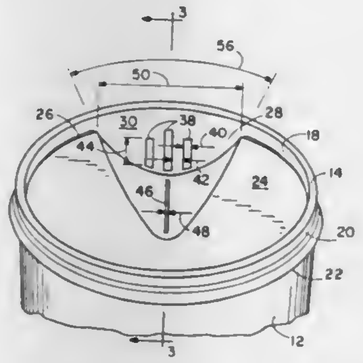
a second substantially U-shaped reinforcing member fitting within and coextensive with said second channel and retained within said second channel by said second retaining means, said second reinforcing member being integrally connected to said first reinforcing member, at said connecting position where said second channel connects with said first channel.

4,619,372

CAP FOR HOT BEVERAGE CUP

Joseph R. McFarland, 507 Palo Alto Dr., Vancouver, Wash. 98661

Filed Apr. 21, 1986, Ser. No. 854,389
Int. Cl.⁴ A47G *19/22;* **B65D** *5/64*
U.S. Cl. 220—90.4 **13 Claims**

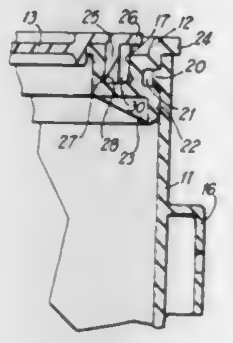


1. A detachable closure cap for a beverage container having a circular opening defining a lip, comprising:
(a) peripheral means for sealingly engaging the lip of said beverage container;
(b) a main cover portion generally horizontally disposed and circumscribed by said peripheral means;
(c) means for defining a depression adjoining said main cover portion and located within said peripheral means;
(d) downwardly-extending outer wall means, included in said means for defining a depression, for defining one side of a narrow annular space alongside an interior surface of a beverage container;
(e) a sloping floor member included in said depression and extending diagonally upward from a lower portion of said outer wall means to said main cover portion;
(f) means for defining a plurality of apertures extending through said outer wall means; and
(g) means for defining a slit through said floor means, said slit extending along said floor means generally radially of the portion of said closure cap defined within said peripheral means and located between said outer wall means and said main cover portion.

4,619,373

PLASTIC PAINT CONTAINER

Herbert W. Galer, 24 Woodland Trail, Newna, Ga. 30263
Filed Oct. 4, 1985, Ser. No. 784,549
Int. Cl.⁴ B65D *43/06*
U.S. Cl. 220—354 **13 Claims**

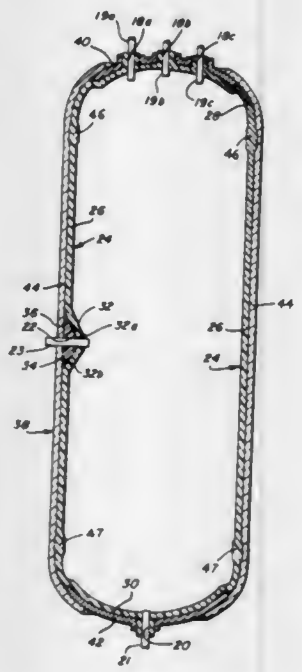


1. A resealable plastic container assembly comprising:
a generally cylindrical plastic container having a bottom end, an upward extending sidewall, an open top and at least one annular rib on its inner circumference near its top;
a plastic ring, having at least one annular recess on its outer circumference complementary to the ribs of said container fitted within the inner circumference of the rim of the open top end of said container, said ribs and said recesses mated in interlocking relationship between said container rim and said ring to provide a permanent and continuous leakproof seal between said container and said ring, said ring further comprising a channel along the inner periphery thereof opening upward with respect to the bottom of said container; and
a lid for removable attachment with said ring comprising a substantially flat disk having a downwardly extending flange at the periphery of said disk adapted to fit within the channel of said ring and to provide a tight leakproof seal between said top and said ring, and further comprising a lip extension beyond said flange around the periphery of said lid at the top of said flange, for prying open said lid from said ring and container.

4,619,374

PRESSURE VESSEL WITH AN IMPROVED SIDEWALL STRUCTURE

William M. Yavorsky, Woodbury, Minn., assignor to Ecodyne Corporation, Chicago, Ill.
Continuation of Ser. No. 612,239, May 21, 1984, abandoned, and a continuation-in-part of Ser. No. 447,769, Jan. 24, 1983, abandoned. This application Jan. 24, 1986, Ser. No. 822,921
Int. Cl.⁴ B65D *25/02, 25/34;* **F16J** *12/00*
U.S. Cl. 220—414 **4 Claims**



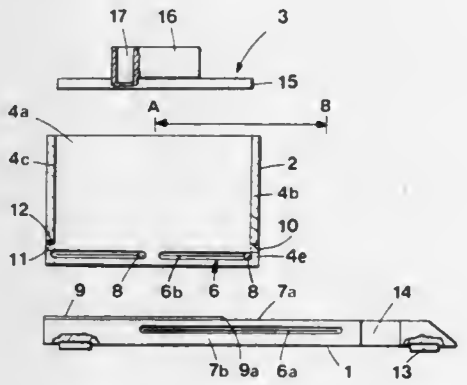
1. A pressure vessel for containing fluids, said pressure vessel comprising a thin thermoplastic inner liner forming a container which is impervious to said fluids, said container having a substantially cylindrical middle portion, a substantially hemispherical first end portion and a substantially hemispherical second end portion, said end portions being connected with said cylindrical middle portion, a segment of said cylindrical middle portion of said thin inner liner disposed inward to define at least one recess in said container, the wall of said recess being substantially the same thickness as said cylindrical middle portion of said thin inner liner, said recess having a depth which extends from the outer surface of said container to the bottom of said recess and which is substantially greater than the wall thickness of said cylindrical middle portion of said thin inner liner; an insert means positioned within and substantially filling said recess and adhered to the walls of said recess for forming a thickened section, said thickened section being an integral part of said thin inner liner and having a maximum thickness substantially greater than the wall thickness of said cylindrical middle portion of said thin inner liner, the outer surface of said thickened section being substantially contiguous with the outer surface of said cylindrical middle portion and forming a substantially smooth curved surface with said cylindrical middle portion; a thin outer filament wound liner bound to and covering a substantial portion of said inner liner and covering said insert means, for providing added strength and forming a rigid, integral vessel with said inner liner and insert means; and a port extending through a segment of said outer liner and said insert means and said segment of said inner liner for providing access to the interior of said vessel; said segment of said outer liner, said insert means and said segment of said inner liner forming a localized area of increased wall thickness for said vessel sufficient to support a fitting and form a leakproof seal along said port.

4,619,375

SHEET DISPENSER

Franz Kathari, 5, chemin des Coquelicots, 1214 Vernier, Switzerland

Filed Feb. 22, 1985, Ser. No. 704,529
Claims priority, application Switzerland, Feb. 22, 1984, 852/84
Int. Cl.⁴ A24F *15/04;* **G07F** *11/46*
U.S. Cl. 221—186 **3 Claims**

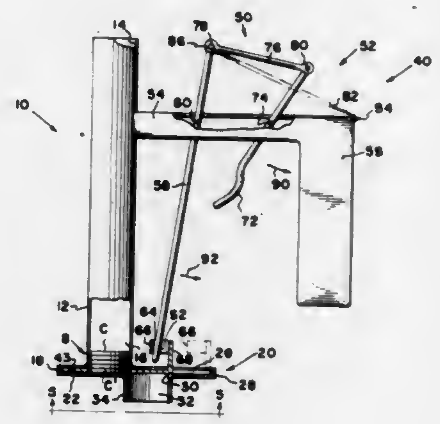


1. Device for scratch pads intended to place the bottom sheet of a stack of rectangular sheets of a predetermined thickness on a writing surface for note taking comprising: a carriage mounted to slide on a support, said carriage comprising vertical walls designed to contain the stack of sheets, the device including guiding means intended to guide the movements of the carriage on the support in a feed direction from a first stop position to a second stop position, said support consisting of a plate exhibiting an upper surface comprising a plane first and second portion, the bottom sheet of said stack resting on said first portion when said carriage is in said first stop position and on said second portion when said carriage is in said second position, said first portion being located at a higher level than said second portion, a step having a height approximately equal to said predetermined thickness separating said first and second portions, said carriage having a front wall whose lower edge is separated from the surface of said second portion by a gap considerably greater than said sheet thickness but less than twice this thickness, so that the bottom sheet of said stack upon engaging said step, is separated from the stack and goes through an opening formed by this gap, when said carriage is moved from said second position to said first position, and rests on said plane second portion intended to serve as a flat writing surface, said first and second stop positions being laterally offset from one another by such a distance that a sheet disposed in said second position is partially beneath and engaged by said stack of sheets that is in said first position so that the sheet in said second position has a part of its surface pressed against the underlying support.

4,619,376

BINGO CHIP DISPENSER

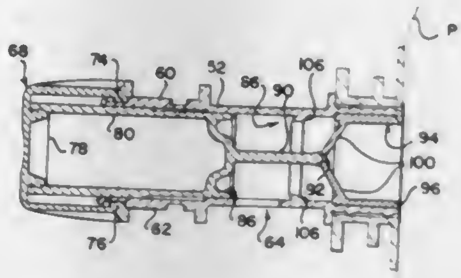
Clifford A. Huss, 1766 Hull Rd., Twining, Mich. 48766
Filed Feb. 8, 1985, Ser. No. 699,562
Int. Cl.⁴ B65G *59/00;* **B65H** *3/00;* **B65D** *5/72*
U.S. Cl. 221—243 **2 Claims**



1. Chip dispensing apparatus comprising:
an upstanding, elongate, chip receiving chute for receiving and storing a stack of chips to be dispensed including;
an upper opening for receiving chips; and
a lower opening through which chips may pass;
means for individually dispensing the lowermost chip in said stack of chips comprising:
slide means, having a chip receiving aperture therethrough, for receiving and laterally transferring the lowermost chip of said stack of chips;
means mounting said slide means for to-and-fro reciprocal movement between a chip receiving portion in which said chip receiving aperture is aligned with said lower opening and a laterally removed chip releasing position in which a chip received by said aperture is allowed to downwardly descend through said aperture while the balance of the stack is held in said chute by said slide means;
means for reciprocally moving said slide means between said chip receivng chip releasing positions comprising;
hand graspable handle means for supporting said chute means comprising a pistol grip handle including a horizontal handle portion mounted on said chute and a vertically disposed hand receiving terminal portion;
lever means swingably mounted on horizontal handle portion between said chute and said vertically disposed hand receiving terminal portion and having a lower end portion for coupling to said slide means,
finger actuable trigger means swingably mounted on said horizontal handle portion of handle means between said lever means and said vertically disposed portion and being coupled to said lever means to swing said lever means from an inoperative position in which said slide means is in said chip receiving position and an operating position in which said slide means is in said chip discharging position; and
means for retracting said trigger means from said operative position to said inoperative position;
downwardly depending guide means for receiving the released chip from said slide means and guiding it in a downward path of travel;
lost motion connection means coupling said lower end portion of said lever means to said slide means including a ring mounted on said slide means said ring including an aperture therethrough receiving said lower end portion of said lever means;
said aperture having a cross-sectional area substantially larger than the horizontal cross-sectional area of said lower end portion of the lever means received thereby.

4,619,377
TAP

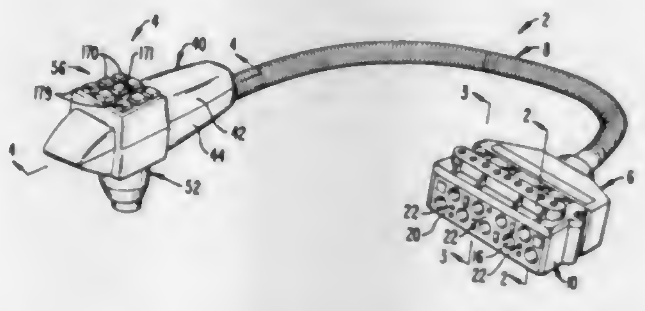
Paul F. Roos, 'Taurus', May Street, Claremont, Cape Town, Cape Province, South Africa
Filed Mar. 28, 1984, Ser. No. 594,251
Claims priority, application South Africa, Mar. 30, 1983, 83/2300; Oct. 28, 1983, 83/8070
Int. Cl.⁴ B67B *7/24*
U.S. Cl. 222—83 **6 Claims**



1. A tap comprising a cylindrical barrel and a cylindrical plunger which is movable along the barrel internally thereof, the barrel having an internal seat, a port in the wall thereof which port serves as an outlet from the barrel, and an inlet thereto, said inlet and port being on opposite sides of said seat, and the plunger being displaceable along the barrel between a first position in which a sealing surface thereof is in engagement with said seat to close said inlet off from said port, and a position in which said sealing surface is spaced from said seat to permit flow from said inlet to said port, said plunger having an edge which, as the plunger is displaced between said positions, moves across said port from a position on one side of said port to a position on the other side of said port, a piercing element in said barrel for piercing a liquid containing pouch to open the pouch, a member forming part of said plunger and which initially protrudes into said piercing element, said piercing element having a part which is initially held in an inoperative position by said member and which moves to an operative position in the path of return movement of said member upon the plunger first being displaced to cause said sealing surface to move away from the seat.

4,619,378
BEVERAGE DISPENSING APPARATUS

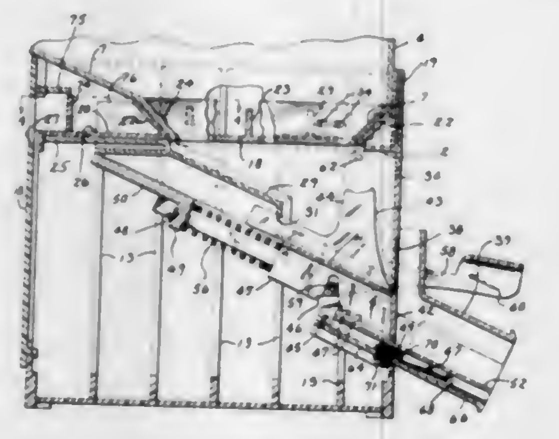
Heiko T. de Man, 7157 Hansen Dr., Dublin, Calif. 94568
Filed Nov. 8, 1984, Ser. No. 670,461
Int. Cl.⁴ B67D *5/60*
U.S. Cl. 222—144.5 **22 Claims**



1. A beverage dispensing head of the type for use with a pressurized source of soda and a number of syrups comprising:
a housing;
first, second and third valve blocks secured to one another and mounted within said housing;
said first block including a plurality of first and second openings, said first openings extending into said first block from a first face of said first block, said second openings extending into said first block from a second face of said first block, said first and second openings being transverse to one another, said first and second openings sized and positioned to intersect one another at chosen locations;
said second block having a third face mounted adjacent said second face of said first block and having a fourth face on the side of said second block opposite said third face, said second block including a plurality of third openings extending into said second block from said third and fourth faces;
said third block having fifth and sixth faces on opposite sides thereof and a plurality of fourth openings extending into said third block from said fifth and sixth faces;
syrup spool valve stems and a soda spool valve stem, said syrup and soda spool valve stems each having a cylindrical valve seat surface;
said second, third and fourth openings defining syrup and soda valve stem bores for reciprocally housing said syrup and soda valve stems therein for movement between extended and retracted positions;
valve seats positioned along said valve stem bores against which said valve seat surfaces press when respective syrup and soda valve stems are in retracted positions to close said valve stem bores;
means for biasing said syrup valve stems toward said retracted positions;
said syrup and soda valve stem bores including syrup and soda entry and exit chambers, said entry chambers positioned on one side of said valve seats and said exit chambers positioned on the other side of said valve seats; and
means for fluidly connecting said syrup and soda exit chambers to a discharge opening.

4,619,379
BULK FOOD DISPENSER

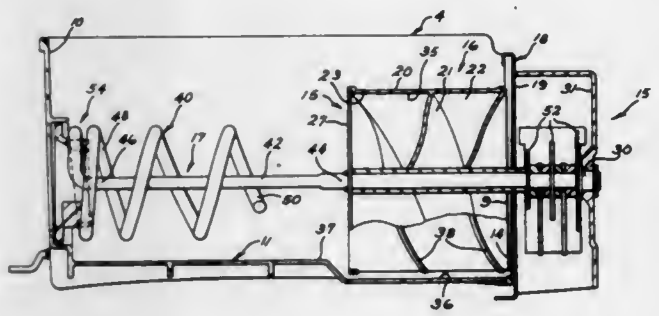
Roy J. Biehl, 1133 N. Water St., Milwaukee, Wis. 53202
Filed Aug. 30, 1984, Ser. No. 646,650
Int. Cl.⁴ B67D *5/32*
U.S. Cl. 222—153 **12 Claims**



12. A dispenser for dispensing bulk food, comprising:
a food-receiving hopper having an inlet at its top and an outlet at its bottom, said hopper including a pair of opposite upright side walls, a bottom wall interconnecting said side walls, said bottom wall being inclined downwardly toward said outlet, a front wall removably mounted on said side walls, and an outwardly projecting mounting flange disposed at the upper edges of said side walls;
a housing having a support flange engaging the mounting flange of said hopper to support said hopper;
an adjustable gate slidably mounted between a first position closing off said outlet and a second position opening said outlet to regulate the discharge of food by gravity therethrough, said gate includes a rod-receiving notch formed therein, and a planar plate member; and
actuator means for moving said gate between said positions, said actuator means includes a handle projecting from said housing having a pair of integral spaced apart side members each pivotally mounted to one of the side walls of said hopper and a rod interconnecting said side members spaced downwardly from said pivot connections and receivable within said notch in said gate.

4,619,380
ICE DISPENSER FOR A HOUSEHOLD REFRIGERATOR

Robert B. Brooks, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Jul. 13, 1984, Ser. No. 630,866
Int. Cl.⁴ B65G *33/00;* **F25C** *5/18*
U.S. Cl. 222—240 **7 Claims**

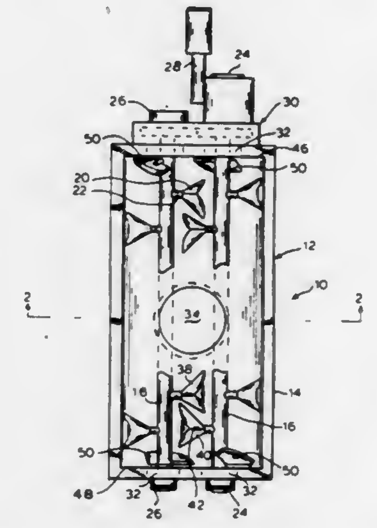


1. An ice piece dispenser comprising:
a receptacle for storing ice pieces and having a front discharge opening therein;
dispensing means supported in said receptacle and including:
a cylindrical, rotatable feed section having the outer end thereof positioned adjacent said discharge opening and the inner end thereof having an opening to receive ice pieces and spanned by a metal member which is secured thereto,
a rotatable wire auger comprising an elongate axial portion secured to the cylindrical rotatable feed section at one end and at the opposite end to a helically coiled portion that is radially spaced from and surrounds a major section of the elongated axial portion and extends therealong in a direction toward the feed section, said helically coiled portion having a free terminal end and being unconnected to the elongated axial portion of the auger throughout the length it extends along the elongated axial portion and the free terminal end is spaced from the feed section a distance sufficient to allow small clusters of ice pieces formed around the helical coil to drop off the terminal end and small enough that large clumps of ice pieces are subjected to a crushing action between the terminal end and the metal member of the feed section; and
drive means to rotate the feed section and auger.

4,619,381
METHOD AND APPARATUS FOR DISCHARGING MATERIALS FROM A STORAGE BIN

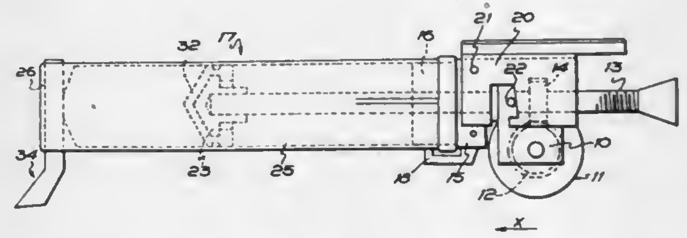
William O. Wurtz, Paramus, N.J., assignor to Willow Technology, Inc., Paramus, N.J.
Filed Dec. 6, 1984, Ser. No. 678,893
Int. Cl.⁴ G01F *11/00*
U.S. Cl. 222—272 **15 Claims**

1. A storage bin discharge apparatus for discharging difficult-to-handle materials from a storage bin, comprising:
(a) a container adapted to be attached to the bottom of a storage bin which contains difficult-to-handle materials;
(b) two parallel, horizontally spaced apart shafts disposed longitudinally and rotatably mounted in said container;
(c) means for rotating said shafts oppositely to one another in said container;
(d) a discharge opening in said container disposed along the longitudinal direction of said shafts; and
(e) a plurality of working tools mounted on said shafts, each tool comprising two substantially triangularly shaped sides having bottom edges, said sides converging toward each other at their connection to the shaft and converging toward each other to define a forward edge in the direction of rotation of said tool thereby defining a double wedge shape, and a bottom face which is recessed from the bottom edges of said sides, said tools being mounted to said shafts so that the paths of travel of the tools of one shaft come into proximity to the other shaft so as to create an overlapping zone of interaction between the respective tools of said shafts, one side of each tool being disposed at an angle to a plane perpendicular to a plane which includes the axis of said shafts which angle is greater than the corresponding angle of the other side of said tool, the angle of said one side being no greater than the angle which moves the optimum amount of material, said tools being arranged on said shafts so that said one side of each tool is arranged in the direction of said discharge opening.



4,619,382
DISPENSERS FOR FLOWABLE COMPOSITIONS

Kenneth Houlbrook, Huddersfield, and Paul A. Thornton, Barnsley, both of England, assignors to Clantex Limited, W. York, England
Division of Ser. No. 574,046, Jan. 26, 1984, Pat. No. 4,508,245. This application Dec. 21, 1984, Ser. No. 685,231
Claims priority, application United Kingdom, Feb. 24, 1981, 8105793
Int. Cl.⁴ B65D *88/54*
U.S. Cl. 222—327 **8 Claims**



1. A cartridge apparatus for the application of viscous crease-setting composition to creases of garments comprising
(a) an elongated and disposable cartridge body for containing a quantity of the crease-setting composition;
(b) a cartridge body outlet at one end of the body,
(c) means adapting the cartridge body to be connected at the other end to a dispensing mechanism to enable the composition to be discharged from said body outlet,
(d) a nozzle tube supporting body at said one end of the cartridge body,
(e) a bore in the nozzle tube supporting body communicationg with said outlet and lying transverse to the cartridge body;
(f) a rigid hollow nozzle tube sealingly push-fitted in the supporting body bore with an end projecting therefrom;
(g) an inlet in the wall of the nozzle tube communicating with said outlet so that composition discharged therethrough passes into the entrance of the nozzle tube through the tube wall;
(h) a nozzle outlet slot at an end of the nozzle tube projecting from the body, said nozzle outlet slot receiving composition from the rotation of the nozzle tube and being an

elongated narrow slot extending in the direction of the cartridge body; and

(i) means preventing any turning of the nozzle tube relative to the supporting body which could block communication between said outlet and said outlet on the wall of the nozzle and could alter the angle of the nozzle slot relative to the cartridge body.

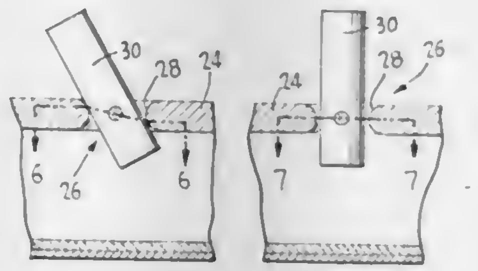
4,619,383
AUTOMATIC DOOR-ACTIVATED AIR FRESHENER

Tim R. Konicek, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Division of Ser. No. 655,173, Sep. 27, 1984. This application Dec. 12, 1985, Ser. No. 794,813

Int. Cl.⁴ B65D *47/04;* B67D *3/00*

U.S. Cl. 222—556 **2 Claims**



1. A motion-actuated liquid dispensing valve comprising a valve passage of greater length than width, a valve member positioned in said valve passage and pivotally mounted on a pivot having an axis in the direction of said width, said valve member having a major portion of the weight thereof positioned above said pivot whereby said valve member normally assumes a tilted position, said valve member and said valve passages being of related cross-sections such that when said valve member is in a tilted position said valve member fills and closes said valve passage and when said valve member is upright there is clearance in said valve passage around said valve member for limited liquid flow through said valve passage, said valve passage is formed in a bottom wall of a liquid reservoir.

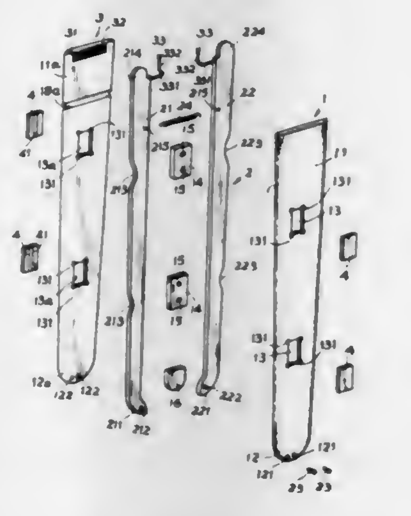
4,619,384
PRINTING OR DRAWING MOLD FOR STOCKINGS

Chia-Shih Chu, and Chin-Lung Wu, both of 4 Fl., No. 7, Lane 89, Chang-Soon St., Taipei, Taiwan

Filed Oct. 15, 1985, Ser. No. 787,733

Int. Cl.⁴ D06C *5/00*

U.S. Cl. 223—77 **3 Claims**



1. A printing mold for a stocking comprising:

a main mold including a pair of outer jacket plates each formed as a lengthy tapered plate having a lower arched portion and formed with at least a pair of openings adapted for the insertion of two removable form beds therein;

an extendible mold including a pair of side plates secured by a restoring spring and each side plate having a lower portion pivotedly fixed on said main mold by a screw; a width adjuster for causing said side plates to pivot whereby a stocking fitted over said main mold can be expanded or stretched for a printing operation including a positioning rack having teeth transversely formed on said rack formed on an upper portion of one said outer jacket plates and a pair of locking bars each located on an inner side of an upper portion of each of said side plates so that they face each other, each locking bar adjustably engaged with the teeth of said rack;

at least a pair of printing beds, each having a ferrous metal plate fixed on an inner surface of said bed and inserted within each of the openings formed on at least one of said outer jacket plates of said main mold;

at least one magnetic block located between each of said two beds and having magnets fixed thereon to be attracted by said printing beds having the ferrous metal plate fixed thereon, the thickness of said block defining a separating distance between said two outer jacket plates; and a lower partition block inserted between said two outer jacket plates and having a thickness equal to the said separating distance.

4,619,385
PANTS RACK

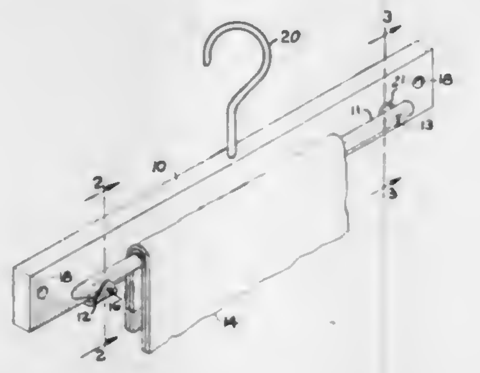
Roy W. Lessard, 19453 Kinai Rd., Apple Valley, Calif. 92307

Filed Feb. 18, 1982, Ser. No. 350,075

The portion of the term of this patent subsequent to Jul. 2, 2000, has been disclaimed.

Int. Cl.⁴ A47J *51/14*

U.S. Cl. 223—96 **1 Claim**



1. A pants hanger comprising:

a base support member, rectangular in cross section,

a longitudinal pants holding member, round in cross section, pivotally mounted at one end of said holding member and securely anchored to the base support member,

a wedge bracket anchored to said base support member and located to engage the free end of said pivoting longitudinal holding member, and thereby forcing said longitudinal member to move towards said base support member thereby locking pants draped over said holding member,

a canted hinge pin which accurately controls the pivoting motion of said longitudinal holding member in relation to said base support member and said wedge bracket, such controlled motion producing a large pants loading gap when said longitudinal member is pivoted up and a minimum gap when said longitudinal member is pivoted down,

a friction spacer located at said hinge pin which acts as a hold open device for said pivoting longitudinal holding member thereby optimizing operation,

a hook for supporting said base support member by a hanger assembly and mounting holes within said base support member capable of permanently fastening the pants hanger to a wall.

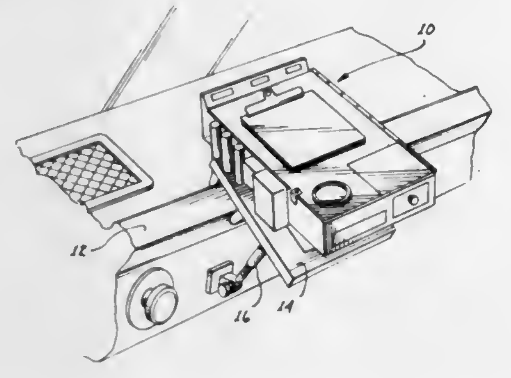
4,619,386
VEHICLE DESK CONTAINER

Jennings R. Richardson, 49 S. Cholla, Gilbert, Ariz. 85234

Filed May 9, 1984, Ser. No. 608,399

Int. Cl.⁴ B60R *7/00*

U.S. Cl. 224—277 **7 Claims**



1. A vehicle desk container for use in a vehicle, comprising:

body means for holding a variety of objects and devices;

lid means pivotably coupled to said body mean for opening and closing the top portion of said body means;

built-in compartment means operably coupled to said body means for providing a variety of useful functions, said built-in compartment means having at least one of an electric functional unit, an electronic functional unit any a mechanical functional unit; and

securing means for removably securing said body means to at least one of a seat and a support in said vehicle, said securing means comprises a plurality of straps operably coupled to said body means, each of said calculator, pencil sharpener, clock, light and counter is one of an electric unit, an electronic unit and a mechanical unit, said lid means is pivotably coupled to said body means by hinges, said lid means having a latch allowing said lid means to be snapped shut, said lid means having a spring clip attached to the top side of said lid means for holding papers and other documents, said lid means having an aperture through it for holding cups, glasses and other containers, said lid means having a smaller lid pivotably coupled to said body means by hinges, said smaller lid having a latch allowing said smaller lid to be snapped shut, said lid means having a surface on its bottom side allowing written and other information to be placed thereon, said body means being generally rectangular-shaped container having a bottom, a front end, a rear end and two sides, said body means having a wedge-shaped member attached to the top of said rear end, said wedge-shaped member having a counter, light and clock building into it, said built-in compartment means comprises a drawer which slidably engages said body means, a calculator which slidably engages said body means, a calculator operably coupled to said body means, and pencil sharpener operably coupled to said body means, said front end having apertures through it for engaging said drawer and said calculator and for inserting a pencil into said pencil sharpener, said securing means comprises a plurality of straps operably coupled to said body means, said body means having a plurality of partitions operably attached to the inside of said body means dividing the space inside said body means into a plurality of compartments, said lid means is pivotably coupled to said body means by hinges, said lid means having a latch allowing said lid means to be snapped shut, having a spring clip attached to the top side of said lid means for holding papers and other documents, having an aperture through said lid means for holding cups, glasses and other containers, having a surface on the bottom side of said lid means allowing written and other information to be placed thereon, and having a smaller lid pivotably coupled to said body means by hinges, said smaller lid having a latch allowing said smaller lid to be snapped shut, said base means comprises a flat rectangular-shaped base, said base being removably coupled to the bottom of said body means, support arm means pivotably coupled to said base for supporting said base, a support strut pivotably coupled to said base, and block means operably coupled to said base for removably securing said base to said vehicle dashboard, said body means having a plurality of elongated grooves in its bottom surface for operably engaging said support strut, said block means comprises a fixed block secured to the bottom of said base, an adjustable block slidably engaged to the bottom of said base and a positioning block removably coupled to the bottom of said base, said positioning block having a plurality of bolts engaging it and passing through it for holding said adjusting block against said vehicle dashboard.

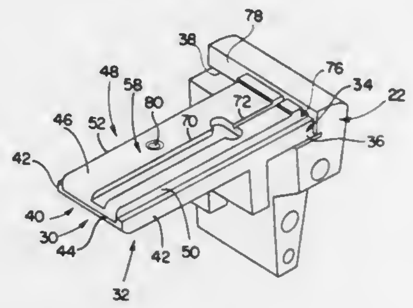
4,619,387
FIBER OPTIC CLEAVING TOOL

Jeffrey B. Shank, Williamsport, and Timmy D. Troutman, Lock Haven, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 16, 1985, Ser. No. 776,249

Int. Cl.⁴ C03B *37/16*

U.S. Cl. 225—96.5 **5 Claims**



1. In a fiber optic cleaving tool having a pair of pivoted handles operable to actuate two spaced apart pairs of clamping members and a cutting blade, said cutting blade being movable along an axis toward an optical fiber carrying anvil, the improvement comprising: an elongated cleaver base pad fixedly attached at one end to said anvil, said cleaver base pad having alignment means formed thereon; and a fiber guide pad removably positioned on said cleaver base pad, said fiber guide pad being precisely located by means thereon cooperating with said alignment means, said fiber guide pad having a groove therein for receiving an optical fiber.

4,619,388
AUTOMATIC PAPER SHEET SUPPLYING APPARATUS

Yoshiaki Ono, and Katsuhiko Kawaguchi, both of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1985, Ser. No. 708,286

Claims priority, application Japan, Mar. 9, 1984, 59-44889

Int. Cl.⁴ B65H *20/20*

U.S. Cl. 226—76 **8 Claims**

1. An automatic paper sheet supplying apparatus to be used in combination with a paper sheet processing apparatus having rotational force generating means, comprising:

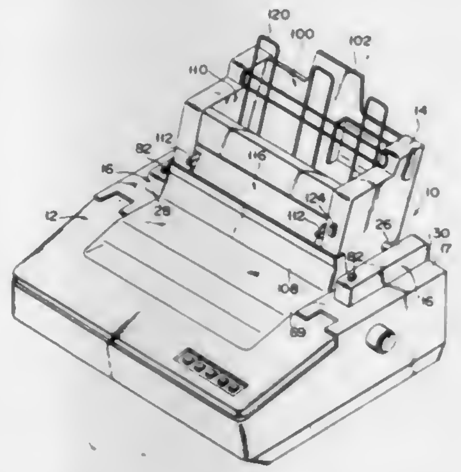
a pair of side plates mounted on said paper sheet processing apparatus;

a plurality of connecting bars connecting said pair of side plates;

an automatic long paper sheet supplying apparatus which is mounted on at least one of said pair of side plates and receives a rotational force from said rotational force generating means of said paper sheet processing apparatus so as to supply a long paper sheet to said paper sheet processing apparatus;

output transmitting means, arranged in said automatic long paper sheet supplying apparatus, for receiving the rotational force from said rotational force generating means of said paper sheet processing apparatus; and

an automatic basic-sized paper sheet supplying apparatus, detachably mounted on said plurality of connecting bars to be supported thereby, for receiving the rotational force from said rotational force generating means of said paper sheet processing apparatus through said output transmitting means so as to supply basic-sized paper sheets to said paper sheet processing apparatus when said automatic basic-sized paper sheet supplying apparatus is mounted on said plurality of connecting bars.



4,619,389
PAPER TRACTOR

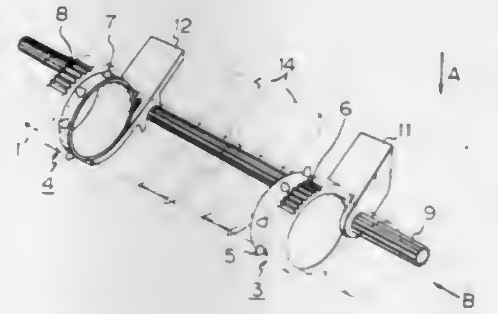
Minoru Isobe, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed May 1, 1985, Ser. No. 729,349

Claims priority, application Japan, May 2, 1984, 59-87836

Int. Cl.⁴ B65H *20/22*

U.S. Cl. 226—79 **6 Claims**



1. A paper tractor device for a printer, for feeding continuous print paper having feed holes on opposite sides thereof, comprising:

(a) a longitudinally extending cylindrical platen, rotatable for winding the print paper therearound;

(b) a pair of ring pin tractors each composed of a ring-shaped wheel slidably mounted on the outer periphery of said platen so as to be longitudinally movable thereon, and having a plurality of sprocket pins engageable in the feed holes in the print paper, each of said ring pin tractors including a tractor gear integral with said ring-shaped wheel;

(c) drive means for rotating said platen, and rotating said ring pin tractors through said tractor gears in the same direction at the same speed as said platen; and

a pair of holders holding said ring pin tractors, slidably mounted on said drive means and coupled to said ring pin tractors for longitudinal movement with said ring pin tractors.

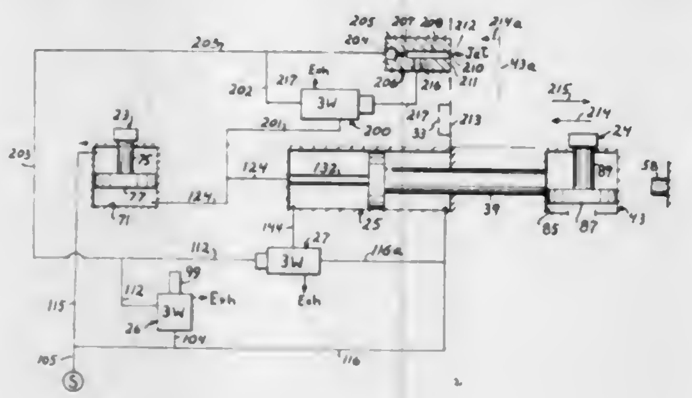
4,619,390
PNEUMATIC FEEDER FOR PUNCH PRESSES

Albert W. Scribner, 6 Country Club Rd., Darien, Conn. 06820

Continuation of Ser. No. 604,031, Apr. 26, 1984. This application Aug. 9, 1985, Ser. No. 763,777

Int. Cl.⁴ B65H *20/18*

U.S. Cl. 226—162 **7 Claims**



1. In a pneumatic feeder for intermittently advancing stock into the work station of a punch press or the like, and having a frame;

feed slide means mounted on said frame for reciprocating movement in index and stock feed directions;

actuating means for actuating said feed slide means in said index and feed directions;

stock gripping means carried by said feed slide means and adapted to be moved between stock releasing and stock gripping conditions;

fluid motor means for actuating said stock gripping means; and

control means for controlling the operation of said actuating means and fluid motor means whereby said stock may be intermittently gripped and advanced in said feed direction, said control means including a primary air valve having an output line for normally controlling the operation of said fluid motor means;

the improvement comprising

a piloted supplementary air valve having a first operative condition for normally permitting said primary air valve to control said fluid motor means, and a second operative condition for overriding the said normal control of said fluid motor means by said primary air valve and for controlling said fluid motor means so as to cause said stock gripping means to be moved to a stock releasing condition independent of, and without controlling, the operation of said actuating means for said feed slide means;

air jet means adapted to issue a jet of air for sensing the arrival of said feed slide means at the terminal portion of a feed stroke of said feed slide means, and for generating an output signal when said arrival in sensed, said air jet means comprising a nozzle and means defining a signal output line, said air jet means being adapted to generate an air output signal for controlling said supplementary air valve; and

fluid operated means responsive to an output signal from said air jet means for shifting said supplementary air valve from its said first operative condition to its said second operative condition when said air jet means senses the completion of a stock feed stroke of said feed slide means for causing said fluid motor means to operate so as to permit said stock gripping means to move to a stock releasing condition shortly after completion of said stock feed stroke and without causing the initiation of an index stroke of said feed slide means.

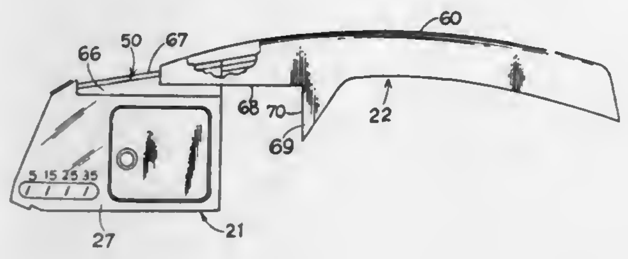
4,619,391
SURGICAL STAPLING INSTRUMENT

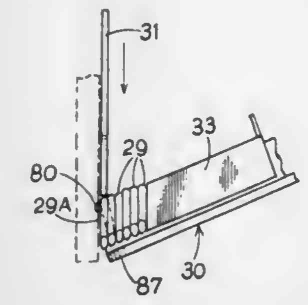
Edward J. Sharkany, Huntington, and Richard J. Mathews, Sr., Stratford, both of Conn., assignors to Acme United Corporation, Fairfield, Conn.

Filed Apr. 18, 1984, Ser. No. 601,574

Int. Cl.⁴ A61B *17/00*

U.S. Cl. 227—19 **22 Claims**





1. A surgical stapling instrument comprising:

A. a housing incorporating
  a. a staple supporting channel member mounted therein,
  b. a plurality of staples slidingly supported on the channel member for spring biased advancement therealong,
  c. a staple forming plate
    1. positioned for cooperative, forming engagement of the lead staple of the plurality of staples, and
    2. responsive to an actuation force for movement between a first, unactuated position and a second, staple engaging and forming position;

B. an actuating handle
  a. pivotally connected to the housing, and
  b. drivingly engaged with the staple forming plate for controlled movement thereof in response to the application of an actuation force; and

C. a support handle slidingly, interlockingly engaged with the housing for secured, mated, locked interconnection therewith,

whereby separate materials can be employed for the housing and the handles while the entire assembly can be securely, interlockingly, matingly assembled quickly and easily.

4,619,392
STAPLER WITH STAPLE STORAGE AREA IN BASE

Duk S. Won, 42 Kennedy Dr., West Haverstraw, N.Y. 10993

Filed Mar. 22, 1985, Ser. No. 715,030

Int. Cl.⁴ B25C *5/02, 5/11*

U.S. Cl. 227—120 **8 Claims**

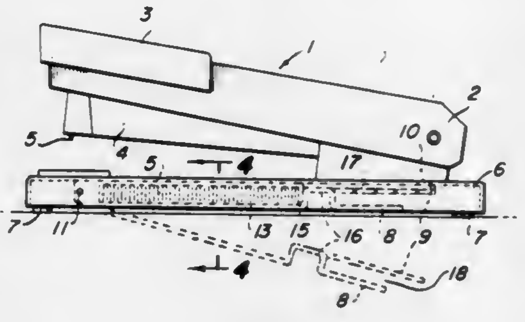
1. A stapler comprising

an upper base member,

a lower base member, said lower base member containing a chamber,

a base plate member pivotally attached to one end of the lower base member, said base plate member being adapted to close in said chamber and divide it into two storage areas, and

means for holding said base plate member in a closed position so that said chamber can house a supply of staples and paper clips, said holding means being magnetic pads disposed in said chamber.



4,619,393
DRIVING APPARATUS WITH NAIL STRIP CUTTER

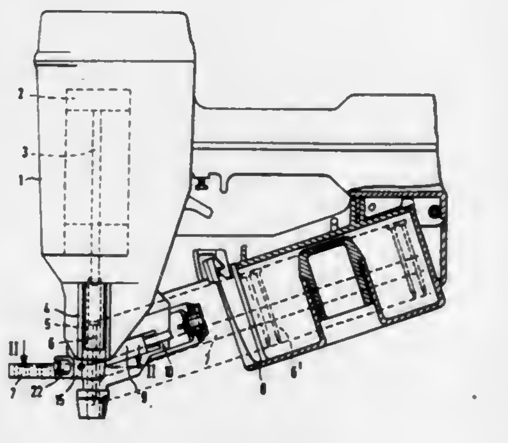
Werner Maurer, Nuertingen, Fed. Rep. of Germany, assignor to Karl M. Reich Maschinenfabrik GmbH, Nuertingen, Fed. Rep. of Germany

Filed Jun. 12, 1985, Ser. No. 744,124

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1984, 3423578

Int. Cl.⁴ B25C *7/00;* B25F *7/13*

U.S. Cl. 227—136 **4 Claims**



1. A fastener driving apparatus, comprising a housing and means for driving fasteners held in a fastener supply belt having a surface extending substantially in parallel to a longitudinal axis of said fasteners, said supply belt passing through said housing from a belt entry to a belt exit, means for cutting an empty belt portion near said belt exit, guide bushing means for mounting said belt cutting means near said belt exit for movement of said cutting means in a belt cutting operation, said housing comprising a belt guide channel between said belt entry and said belt exit, said guide bushing means for mounting said cutting means extending substantially perpendicularly to said belt guide channel for guiding said cutting means substantially perpendicularly to said supply belt surface, whereby said supply belt is cut in a direction substantially perpendicularly to said longitudinal fastener axis.

4,619,394
RIVETING ATTACHMENT FOR A STAPLE GUN

Barry Knispel, Hillsdale, and Rudolf Wingert, W. Milford, both of N.J., assignors to Arrow Fastener Company, Inc., Saddle Brook, N.J.

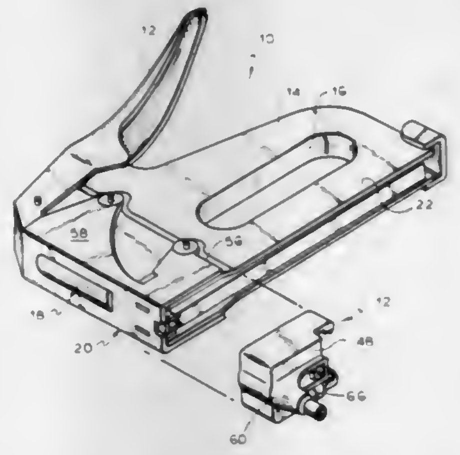
Filed Jul. 19, 1984, Ser. No. 632,628

Int. Cl.⁴ B25B *31/00;* B25C *5/00*

U.S. Cl. 227—156 **16 Claims**

1. An attachment for connection to and use with a staple gun tacker having an outer housing including a working end and a staple driving blade mounted in said working end for recipro-

cating movement, said attachment being adapted for use in installing or setting a rivet of the type having a pin member mounted in a headed rivet shank having an expandable workpiece piercing free end, said attachment comprising a one piece attachment housing having a recess formed therein for receiving and being directly and removably mounted on said outer housing at said working end of said staple gun tacker and having a bore formed therein located to be in axial alignment with said staple driving blade when the attachment housing is mounted on said outer housing of the staple gun tacker. a hollow bushing mounted in said housing bore and having a flange formed thereon cooperating with a shoulder in said housing to limit outward movement of said bushing relative to the housing, a punch slidably mounted in said bushing for axial



movement therein, said punch having a free driving end and an opposed impact end located within said attachment housing; spring means for biasing said bushing away from said housing to cause the flange of the bushing to engage the shoulder of the housing and to retract into the housing against the bias of the spring means; said bushing and punch being positioned in said attachment housing such that the impact end of the punch in impacted by said driving blade of the staple gun tacker when the staple gun tacker is operated to apply a driving force thereto which drives the punch to engage the drive end of the punch with the pin member of the rivet to drive the pin member to expand the free end of the rivet; and means for preventing inadvertent removal of the punch from the attachment housing when the attachment is removed from the staple gun tacker.

4,619,395

LOW INERTIA MOVABLE WORKSTATION

Vincent G. Amorosi, Horsham; Gautam N. Shah, Warrington; Mark B. Soffa, Philadelphia; David A. Leonhardt, Norristown, and Gary L. Gillman, Warminister, all of Pa., assignors to Kulicke and Soffa Industries, Inc., Willow Grove, Pa.

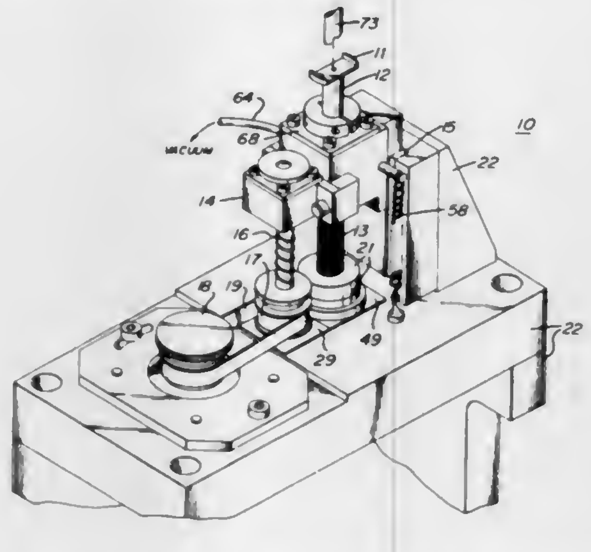
Filed Oct. 4, 1985, Ser. No. 784,629

Int. Cl.⁴ B23K *37/04*

U.S. Cl. 228—4.5 **19 Claims**

1. A low inertia movable workstation for a high speed automatic wire bonder, comprising:

a stationary base mounted on said wire bonder,
a vertical axis drive motor mounted on said stationary base,
a rotational axis drive motor mounted on said stationary base,
a vertical screw rotably mounted on said stationary base and coupled to said vertical axis drive motor,
a vertically movable pedestal support frame coupled to said vertical screw and vertically movable by said screw,
a pedestal rotably mounted in said pedestal support frame and vertically movable therewith,
a workstation on said pedestal for supporting a semiconductor device opposite a bonding tool of an automatic wire bonder,
a vertically movable coupling fixed to said pedestal,
a vertically fixed complimentary coupling rotably mounted in said stationary base being rotably coupled to said vertically movable coupling and vertically fixed to said rotational axis drive motor, and



control means coupled to said vertical axis drive motor and said rotational axis drive motor for positioning said workstation and said semiconductor device in a predetermined vertical and rotational position.

4,619,396

COLD PRESSURE-WELDING APPARATUS

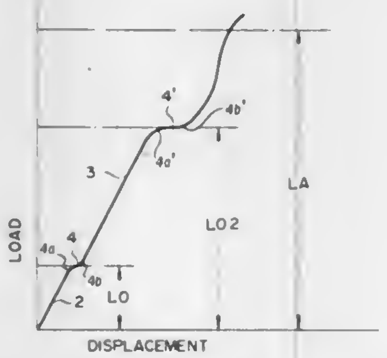
Toshio Yamamoto, Yokosuka, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 361,374, Mar. 24, 1982, abandoned. This application Sep. 17, 1984, Ser. No. 650,996

Claims priority, application Japan, Apr. 3, 1981, 56-49390

Int. Cl.⁴ B23K *20/00*

U.S. Cl. 228—102 **2 Claims**



1. A method of adaptively controlled cold pressure welding, wherein a set of parts is pressure-welded at overlapping circular areas, said method comprising the steps of: detecting a load-displacement curve during the pressure-welding of the set of parts to be pressure welded, finding a second yield point by detecting a second inflection point in the load-displacement curve detected for said set of parts, determining an optimum pressure-welding load for said set of parts based on the load at the second yield point, and removing the pressure-welding load on the set of parts when the load reaches the optimum pressure-welding load.

4,619,397

METHOD OF AND APPARATUS FOR BONDING AN ELECTRICALLY CONDUCTIVE WIRE TO BONDING PADS

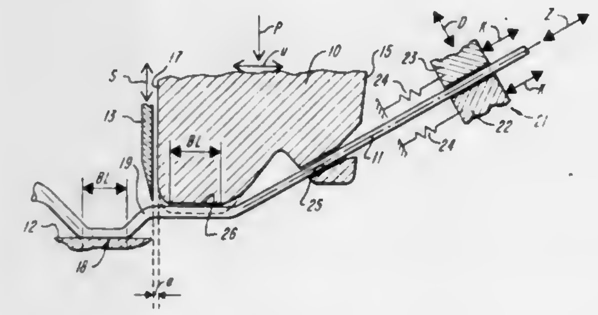
Peter Urban, Gärtnerstr. 44, Kolbermoor/BRD, Fed. Rep. of Germany

Filed Dec. 3, 1984, Ser. No. 677,189

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1983, 3343738

Int. Cl.⁴ B23K *20/10, 31/02*

U.S. Cl. 228—111 **7 Claims**



1. A method of bonding a thin, electrically conductive wire, especially an aluminium wire, to electrical bonding pads or areas of electric or electronic components, especially microchips or semiconductor components, in which the wire is briefly pressed against the bonding pad by means of an ultrasonically energized wedge and is subsequently severed at a slight spacing from the side of the wedge opposite the wire feeding side thereof by a cutting tool, such that the wire just severed by the cutting tool projects slightly beyond the side of the wedge opposite the wire feeding side, characterized in that after the severing operation and prior to another bonding operation the severed wire is retracted to such an extent that its free end is flush with the side of the wedge oppsoite to the wire feeding side thereof.

3. An apparatus for bonding a thin, electrically conductive wire, especially an aluminium wire, to electrical bonding pads or areas of electric or electronic components, especially microchips or semiconductor components, comprising an ultrasonically energized wedge for pressing the wire against the bonding pads and a cutting tool disposed on the side of the wedge opposite to the wire feeding side thereof and effective at a small spacing from said side for severing the wire after completion of a bonding operation, such that the wire just severed by the cutting tool projects slightly beyond the side of the wedge opposite the wire feeding side, characterized by means for moving the wire after the severing operation and prior to another bonding operation backwards at least to such an extent that the free wire end is flush with the side of the wedge opposite to the wire feeding side thereof.

4,619,398

CLOSER AND SEALER, EMPLOYING CHANNEL AND PARALLEL ALIGNING MEMBER, FOR GABLE-TOPPED FOOD CARTONS

Leon Laramie, P.O. Box 3493, Redwood City, Calif. 94064

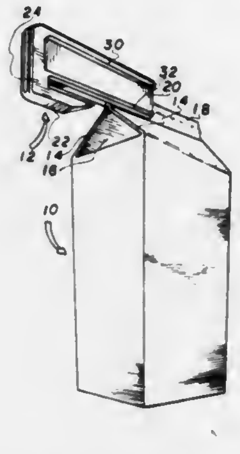
Filed Sep. 30, 1985, Ser. No. 781,508

Int. Cl.⁴ B65D *45/16*

U.S. Cl. 229—17 G **11 Claims**

1. A closer and sealer for a gable-topped carton of the type having an elongated upper flap comprising a plurality of layers which can be squeezed flat to a predetermined dimension to hold said carton closed, said sealer comprising:

an elongated channel-shaped member, the width of the channel of said member having said predetermined dimension such that said channel can be fitted over said flap to hold the layers of said flap together tightly enough to seal said carton while still allowing said channel to be slided back and forth over said flap, said channel being long enough to cover at least half the length of said flap,
a lower arm portion extending parallel to said channel-shaped member, and
means for limiting travel of said channel-shaped member when it is slided onto said flap from one direction, said



means for limiting travel comprising a bight portion extending down from one end of said channel-shaped member and interconnecting said channel-shaped member with said lower arm portion.

4,619,399

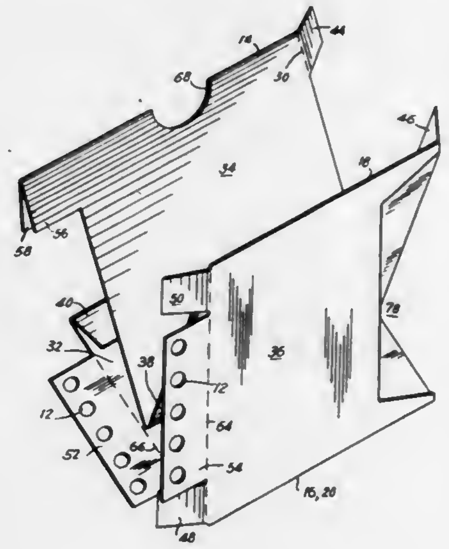
MULTI-POCKET ENVELOPE FOR FLOPPY DISCS

Szilvia Szmuk, 59 W. 82; J. Paul Kirouac, 200 W. 90 St., both of New York, N.Y. 10024, and Betsy Feist, 140 E. 81 St., New York, N.Y. 10028

Filed Aug. 10, 1984, Ser. No. 640,013

Int. Cl.⁴ B65D *27/08*

U.S. Cl. 229—72 **36 Claims**



1. A multipocket envelope having a pocket for storing a substantially planar article, such as a floppy disk, and additional pockets for storing information pertaining to said planar article, said envelope being formed from a one piece elongate sheet having a pair of ends defining therebetween a long dimension of said sheet, said sheet defining four panels, an outer back panel at one end of said sheet, an inner back panel at the other end of said sheet, and outer and inner front panels therebetween, each of said four panels having two opposed sides and two opposed free ends, said free ends being substantially parallel to the long dimension of said sheet; said outer and inner back panels each having one free side coinciding with the ends of said sheet, one side of said outer and inner front panels being joined together along a first fold line substantially perpendicular to the long dimension of said sheet, the other side of said inner front panel being joined to said inner back panel along a second fold line perpendicular to said long dimension of said sheet, and the other side of said outer front panel being joined to said outer back panel along a third fold line perpendicular to said long dimension of said sheet, said panels being arranged in confronting parallel relation in said envelope for

defining a front pocket between said inner and outer front panels, a center pocket between said inner front panel and inner back panel, and a rear pocket between said inner and outer panels, and means for at least partially closing said pockets.

4,619,400
SELF CLEANING VARIABLE WIDTH ANNULAR SLIT ATOMIZER

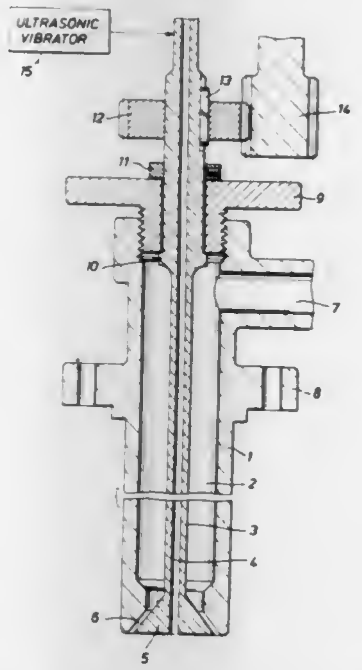
Maarten J. van der Burgt, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 13, 1984, Ser. No. 620,309

Claims priority, application United Kingdom, Jun. 13, 1983, 8316051

Int. Cl.⁴ B05B *3/02, 3/14*

U.S. Cl. 239—102.1 **8 Claims**



1. A self cleaning atomizer for liquids comprising:
a tubular body, said body having an open end and an inlet for supplying liquids under pressure to the interior of the body, said open end having a conical surface;
a valve stem extending through the tubular body, said valve stem being rotatably mounted coaxially within said tubular body;
a valve member having a conical shape, said valve member being secured to one end of said valve stem adjacent the open end of said tubular body and forming with the open end of the tubular body a substantially diverging annular slit nozzle of preselectable width;
means coupled to said valve stem to allow continuous rotation of the valve stem and valve member without changing a preselected width of the annular slit nozzle; and
means for vibrating the atomizer.

4,619,401
CONTROLLED DROPLET APPLICATOR

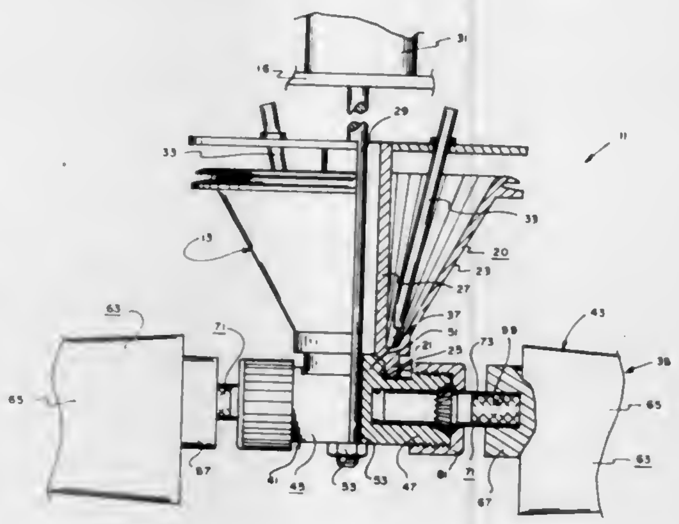
Dale G. Hardman, West Helena, Ark., assignor to Sprayrite Manufacturing Co., Inc., West Helena, Ark.

Filed Jan. 27, 1984, Ser. No. 574,603

Int. Cl.⁴ B05B *3/10;* **B64C** *11/06*

U.S. Cl. 239—214.17 **2 Claims**

1. Controlled droplet applicator means for applying fluid in droplet form to target vegetation, said applicator comprising:
(a) means for emitting fluid droplets against target vegetation;
(b) fan means for creating a high pressure air mass to stir the target vegetation as the fluid droplets are emitted against it without materially changing the size or density of the droplets, said fan means including a plurality of blade members; and
(c) adjustment means for allowing the pitch of said blade members to be varied and for controlling the amount of air movement to properly direct the air mass with the droplets therein to the target vegetation without further atomization of the droplets.



4,619,402
NOZZLE FOR SPRAYING AGRICULTURAL CHEMICALS

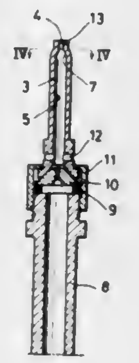
Kenzo Yamamoto, Wakayama, Japan, assignor to Yamaho Kogyo Co., Ltd., Wakayama, Japan

Filed Jun. 19, 1984, Ser. No. 622,266

Claims priority, application Japan, May 10, 1984, 59-68922[U]

Int. Cl.⁴ B05B *7/04*

U.S. Cl. 239—428.5 **1 Claim**



1. A spray nozzle for spraying agricultural chemicals comprising:
a tubular body;
an orifice plate formed with an orifice and mounted on one end of the tubular body;
a tubular nozzle mounted on the orifice plate and formed with air holes of a given diameter each at a base portion thereof so as to allow outside air to communicate with all inner walls of the tubular nozzle; and
nut means, mounted on the tubular nozzle, for fastening the tubular nozzle, the orifice plate, and the tubular body together;
said tubular nozzle having at an outer tip thereof a hole in the shape of an ellipse with a major axis and a minor axis, said minor axis having a length greater than the given diameter of each of the air holes;
wherein the inner walls of the tubular nozzle along the minor axis of the ellipse-shaped hole are straight along the entire length of the tubular nozzle and only the inner walls of the tubular nozzle along the major axis of the ellipse-shaped hole are tapered at the outer tip of the tubular nozzle;
whereby the possibility of the hole in the shape of the ellipse at the outer tip being blocked by seeds sucked up through the air holes is obviated, yet a sufficient initial velocity for the agricultural chemicals being sprayed through the hole is afforded.

4,619,403
SPRAY GUNS FOR SPRAYING LIQUIDS

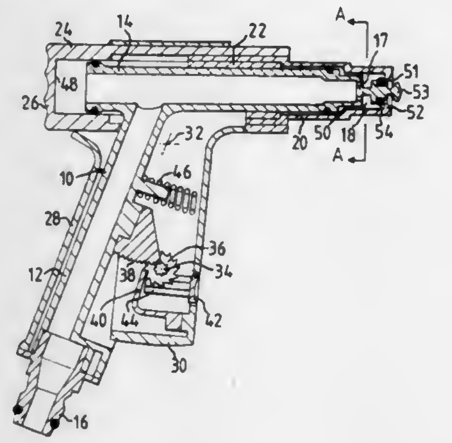
Dennis G. Goldney, and Bryn Evans, both of Aylesbury, England, assignors to Hozelock-ASL Limited, Aylesbury, England

Filed Dec. 21, 1984, Ser. No. 685,161

Claims priority, application United Kingdom, Feb. 8, 1984, 8403275

Int. Cl.⁴ B05B *1/12*

U.S. Cl. 239—456 **9 Claims**



1. A pistol grip spray gun comprising:
(a) a handle,
(b) a barrel with an outlet nozzle for delivering a spray of liquid,
(c) an actuating member movable with respect to the handle in the manner of a trigger, the actuating member being movable from a closed position thereof, corresponding to a closed condition of the nozzle, along a path through a range of open positions with differing spray characteristics of the nozzle,
(d) retaining means for retaining the actuating member in a selected position in the range of open positions, the retaining means comprising a ratchet wheel and an arm which is normally urged into engagement with the wheel, the ratchet wheel being caused to rotate when the actuating member is moved relative to the handle, with the teeth of the ratchet wheel sliding over the ratchet arm when the actuating member is moved away from its closed position, and with the ratchet arm normally engaging the ratchet wheel to prevent return movement of the actuating member towards the closed position thereof, and
(e) release means comprising a manually operable release button on the actuating member normally out of operative engagement with the ratchet arm, movement of the release button in the direction of said path and relative to the actuating member causing movement of the ratchet arm out of engagement with the ratchet wheel, to free the latter, thus allowing the actuating member to return to or towards its closed position.

4,619,404
GAS DISTRIBUTION ARRANGEMENT FOR THE ADMISSION OF A PROCESSING GAS TO AN ATOMIZING CHAMBER

Henning Rasmussen, Hovedgaden, Regstrup, Denmark, assignor to APV Anhydro A/S, Soborg, Denmark

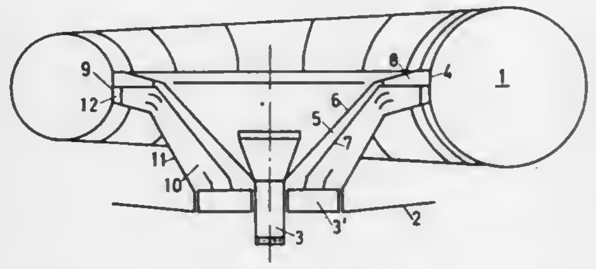
Filed Feb. 26, 1985, Ser. No. 705,548

Claims priority, application Denmark, Feb. 28, 1984, 1217/84

Int. Cl.⁴ B01D *47/16*

U.S. Cl. 239—461 **3 Claims**

1. A gas distribution arrangement for the admission of a processing gas to an atomizing zone around an atomizing device coaxially arranged in an atomizing chamber, the processing gas being supplied to a helical inlet duct and admitted from an orificial slit in said helical duct, which is in rotational symmetry with the axis of the chamber, into a space between two coaxial guide walls around and above the atomizing device, said orificial slit being provided with guide vanes to impart to the flow of processing gas a change of direction from a substantially exclusively tangential flow in the helical duct to a predominantly radial flow into the space between the coaxial guide walls, wherein each guide vane is a spatial body with differently extending, continuously curved, vertical limitation surfaces, which between adjacent guide vanes delimit ducts whose sectional area as measured transversely of the flow direction of the processing gas through the individual duct is substantially the same size over the extent of the duct.



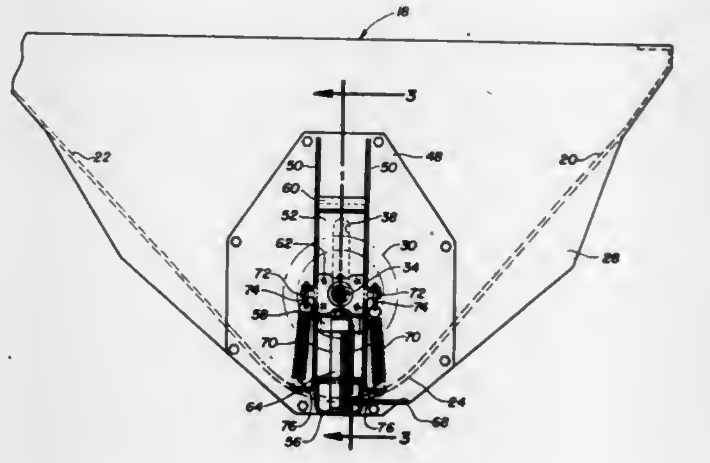
4,619,405
AUGER HOLD DOWN MECHANISM FOR MANURE SPREADERS

Gilbert W. Linde, Oxford, Pa., assignor to New Holland Inc., New Holland, Pa.

Filed Jul. 11, 1984, Ser. No. 629,919

Int. Cl.⁴ A01C *19/00*

U.S. Cl. 239—675 **4 Claims**



1. A manure spreader comprising:
a tank for containing manure, said tank having a pair of sidewalls, a bottom wall and a pair of endwalls;
an auger extending between said pair of endwalls and having its ends rotatably mounted adjacent said pair of endwalls, said auger having stub shafts at its ends extending through and slidably disposed in slots formed in said pair of endwalls, said stub shafts being rotatably mounted in blocks which are slidably disposed between guide members attached to said endwalls, said auger having a normal position in said tank for moving manure toward an opening formed in one of said pair of sidewalls;
expeller means disposed adjacent said opening to discharge manure from said tank;
hydraulic cylinders mounted on said tank adjacent the ends of said auger for moving said auger from said normal position upwardly in said tank away from said bottom wall thereof, said auger also being movable from said

normal position upwardly in said tank independently of said hydraulic cylinders; and

springs connected to said blocks adjacent the ends of said auger for urging said auger downwardly in said tank toward said bottom wall thereof, said springs returning said auger to said normal position after said auger has been moved upwardly by said hydraulic cylinders and after said auger has been moved upwardly independently of said hydraulic cylinders.

4,619,406

HYDRAULIC SYSTEM AND METHOD OF IMPROVING THE WORKING PROPERTIES THEREOF

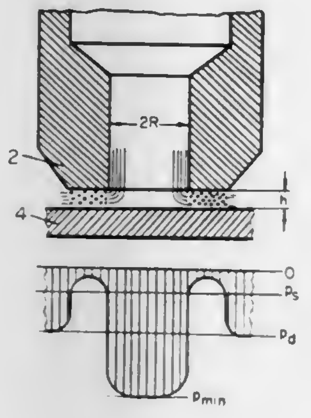
Semyon I. Fishgal, Winnipeg, Canada, assignor to Can-Am Engineering Corporation, Cedar Falls, Iowa

Continuation of Ser. No. 753,419, Dec. 22, 1976, abandoned. This application Oct. 23, 1978, Ser. No. 953,705

The portion of the term of this patent subsequent to Aug. 18, 1998, has been disclaimed.

Int. Cl.⁴ B02C *19/06;* B01J *13/00*

U.S. Cl. 241—5 **12 Claims**



1. A method of improving the working properties of a closed circulating hydraulic system in which solid contaminants are produced through operation of the system, the method including the steps of breaking down the contaminants of said liquid by means of cavitation erosion to a size not interfering with the operation of the hydraulic unit, and retaining the broken down contaminants in the operating system and recirculating the borken down contaminants through the hydraulic units.

7. A hydraulic system including a hydraulic unit, lines, a working liquid and a means for maintaining the working properties of the latter, wherein said means constitute a device for breaking down the solid contaminants of the liquid into particles of a size not interfering with the hydraulic unit and retaining said particles in said working liquid and recirculating said particles through said hydraulic unit, said device including a nozzle to form a high-speed jet with a velocity sufficiently high to cause cavitation.

4,619,407

SHREDDING MACHINE AND METHOD OF OPERATION

Albert Goldhammer, Überlingen, Fed. Rep. of Germany, assignor to Firma Feinwerktechnik Schleicher & Co., Markdoff, Fed. Rep. of Germany

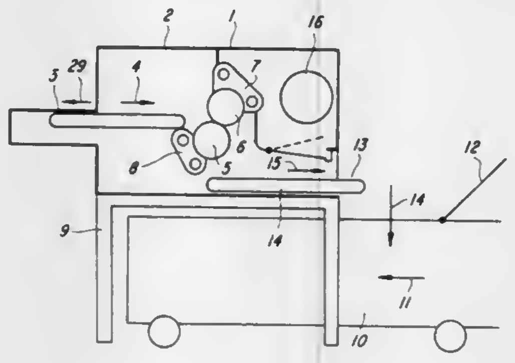
Continuation of Ser. No. 362,468, Mar. 26, 1982, abandoned. This application Dec. 19, 1984, Ser. No. 683,588

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112913

Int. Cl.⁴ B02C *18/40*

U.S. Cl. 241—30 **7 Claims**

1. Operation method for running a shredding machine of high throughput for comminution of multilayer papers, data carriers or the like with at least one drive motor (**16**) and a stator winding (**17**), which operates via at least one drive train on the cutter blocks (**5**,**6**) of the shredding machine and which upon overloading of the shredding machine can be automatically switched over to reverse operation, characterized in that upon overloading of the shredding machine initially a second stator winding (**18**) is connected in parallel to the one stator winding (**17**).



4,619,408

CONTROL SYSTEM FOR GRINDING MILL

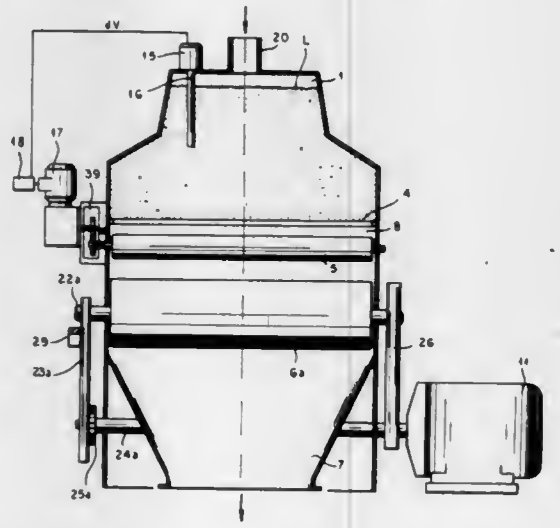
Guido Sangati, Padua, Italy, assignor to Sangati S.p.A., Padua, Italy

Filed Feb. 27, 1984, Ser. No. 583,931

Claims priority, application Italy, Feb. 25, 1983, 19774 A/83

Int. Cl.⁴ B02C *25/00*

U.S. Cl. 241—34 **1 Claim**



1. In a grinding mill for converting farinaceous seeds into flour, including a metal hopper having an inlet at an upper end for receiving seeds to be ground, a pair of counterrotating cylinders for comminuting said seeds, and a transport roller disposed at an outlet of said hopper for extracting the seeds therefrom and delivering same to said cylinders, the combination therewith of:

- a variable-speed drive motor coupled with said transport roller;
- a continuous-output capacitive sensor having a cylindrical head mounted on said upper end and a uniform-diameter cylindrical rod depending from said head adjacent said inlet but in all around spacing from walls of said hopper and extending into seeds in said hopper for continuously determining the seed level therein and producing an analog signal representing said seed level;
- means for grounding said hopper;
- analog circuit means connected between said sensor and ground for controlling said motor to vary the speed of said transport roller continuously in a manner generally proportional to said seed level in response to said signal; and
- a distributing roller interposed between said transport roller and said cylinders and coupled with said transport roller for rotating therewith at substantially the same peripheral speed, said cylinders being provided with a servomechanism controlled by said detector means for separating said cylinders from each other upon said seed level dropping below a predetermined threshold.

4,619,409

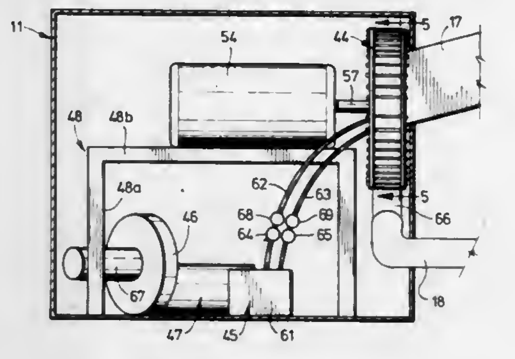
HOSPITAL WASTE DISPOSAL SYSTEM

Allan C. Harper; Joseph H. Wilson, both of Indianapolis; Randall G. McKee, Yorktown, and David N. Lasiter, Indianapolis, all of Ind., assignors to Medical Safetec, Inc., Indianapolis, Ind.

Filed Oct. 9, 1984, Ser. No. 658,701

Int. Cl.⁴ B02C *9/04, 19/12*

U.S. Cl. 241—38 **22 Claims**



1. Apparatus for disposing of contaminated waste, comprising:

- a generally sealed cabinet;
- feeding means for feeding contaminated waste into said cabinet, said feeding means including first conveyor means capable of receiving a plurality of contaminated articles, and second conveyor means for automatically transferring said contaminated articles into said cabinet one at a time;
- disintegrator means in said cabinet for disintegrating said waste articles fed into said cabinet, said disintegrator means comprising a pair of counter-rotating hammermill means;
- decontaminating means including a decontaminating fluid in said cabinet for decontaminating said waste articles fed into said cabinet;
- separator means for separating disintegrated and decontaminated waste articles from said decontaminating fluid; and
- a normally closed door blocking access into said cabinet from said feeding means, and wherein said second conveyor means includes means for opening said door when a contaminated article is to be transferred into said cabinet.

4,619,410

FIELD CHOPPER

Xaver Lenzer, Kötz; Eberhard Wistuba, Rettenbach, and Hermann Mödinger, Kissendorf, all of Fed. Rep. of Germany, assignors to Karl Mengele & Söhne GmbH & Co. KG., Günzburg, Fed. Rep. of Germany

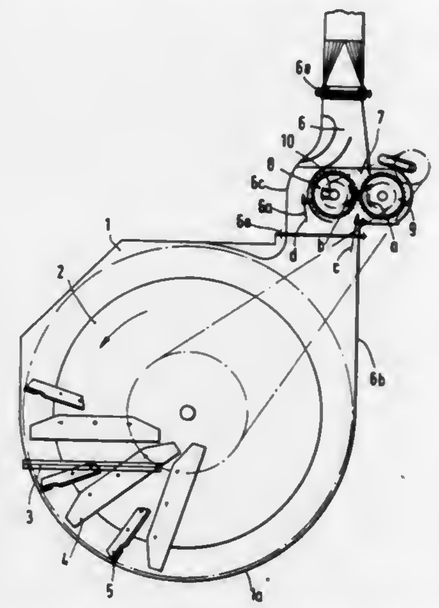
Filed Apr. 26, 1985, Ser. No. 727,586

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1984, 3415508

Int. Cl.⁴ B02C *18/22*

U.S. Cl. 241—55 **6 Claims**

1. Field chopper comprising a comminution apparatus including a disc wheel chopper rotatable about an axis, and means for crushing the material chopped by the disc wheel chopper whereby the crushing means is located downstream of the chopped material flow through the disc wheel chopper, wherein the improvement comprises a housing, said disc wheel chopper located within said housing and including a disc wheel rotatably mounted in said housing about the axis of said chopper, said chopper axis being arranged horizontally, said housing having a circumferential wall extending around the horizontal axis of said chopper and defining a surface within said housing radially remote from and encircling the axis of said chopper, means on said disc wheel for carrying material chopped by said disc wheel chopper along the inside surface of said circumferential wall and moving the chopped material in a circumferentially extending flow direction, an elongated discharge tube extending upwardly and outwardly from the circumferential wall of said housing and having an entrance at the circumferential wall of said housing for receiving material thrown outwardly by the rotational action of said disc wheel chopper and said means thereon for carrying material, said discharge tube having a flow direction therethrough extending upwardly and outwardly from said housing and forming a first section having a cross-section transversely of the flow direction and extending outwardly from the circumferential wall of said housing with said first section having a first wall and an opposite second wall spaced from said first wall and extending outwardly in the flow direction of said discharge tube from the circumferential wall of said housing, the cross-section of said first section having a first part and a second part each extending in the flow direction of said discharge tube with the first part extending from said first wall toward said second wall and said second part extending from said second wall to said first part intermediate the first and second walls, said second wall being located downstream from said first wall in the rotational direction of said disc wheel chopper, said crushing means located within said first part of the first section of said discharge tube outwardly from the circumferential wall of said housing for receiving a heavier component of the chopped material thrown outwardly by said disc wheel chopper through the entrance into said discharge tube, said second part of said first section of said discharge tube forming a duct for receiving a lighter component of the chopped material and an air flow generated by said carrying means on said disc wheel chopper with said duct formed by said second part having a decreasing flow cross-sectional area in the direction outwardly from said housing for accelerating the air flow therethrough around said crushing means, and said discharge tube having a second section extending outwardly in the flow direction therethrough from said first section.



4,619,411

RECOVERY APPARATUS

Derek S. Izzard, 12 Potton Road, Gamlingay, Cambridgeshire, England

Filed Jul. 6, 1984, Ser. No. 628,263

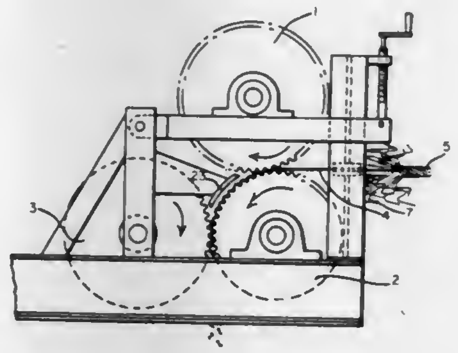
Claims priority, application United Kingdom, Jul. 12, 1983, 8318848; Nov. 2, 1983, 8329281

Int. Cl.⁴ B02C *19/12*

U.S. Cl. 241—101.4 **5 Claims**

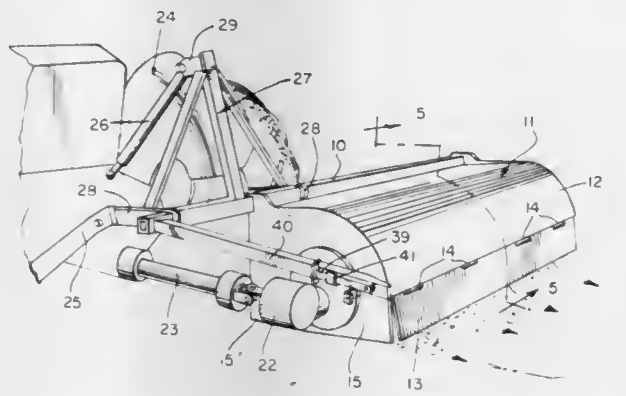
1. Apparatus for fragmenting high tensile steel cores of electrical cables, the apparatus comprising first and second sets of meshing gears supported on respective axles, a framework supporting the axles of said first and second sets of gears and having means for setting the first set of gears to clamp the core,

at least one of said first set of gears having driving means for rotating the first set of gears to progressively deform the core and convey the deformations into register with the second set of gears and at least one of the second set of gears having driving means for rotating the second set of meshing gears to stretch and fracture the core.



4,619,412
POULTRY LITTER DISINTEGRATING MACHINE

Jack Willingham, Rte. 7-Box 218, Mt. Pleasant, Tex. 75455
Filed Aug. 19, 1985, Ser. No. 766,970
Int. Cl.⁴ B02C *21/02*
U.S. Cl. 241—101.7 **8 Claims**

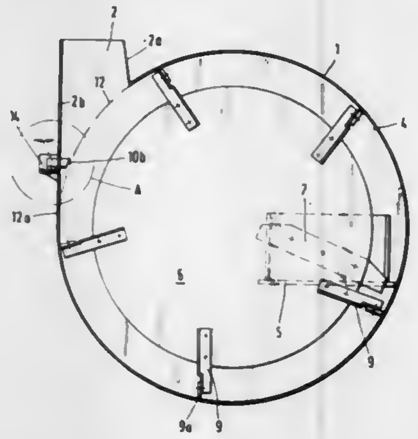


1. A poultry litter disintegrating machine comprising a housing which is substantially open at its forward side and bottom and being provided with end walls and at least a partly curved top wall, a rigid hitch structure on the housing adjacent to its forward side and extending above the top of the housing and being adapted for coupling with a tractor three point hitch, a transverse horizontal axis flail rotor within and journaled on the housing and extending between the housing end walls and carrying a multiplicity of pivoted flail hammers having litter chopping heads along its length, power drive means for the flail rotor including a drive component on one end wall of the housing, runners on the end walls of the housing adapted to engage a poultry house floor during movement of the machine therealong, and a fixed somewhat inclined litter layer pre-cutting blade on the housing near its bottom and forward side and immediately above said runners and near the bottom of said flail rotor.

4,619,413
FORAGE OR PICKING HARVESTER

Eberhard Wistuba, Rettenbach, Fed. Rep. of Germany, assignor to Karl Mengele & Söhne GmbH & Co., Günzburg, Fed. Rep. of Germany
Filed Nov. 22, 1983, Ser. No. 554,258
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1982, 3243077
Int. Cl.⁴ B02C *18/18*
U.S. Cl. 241—222 **8 Claims**

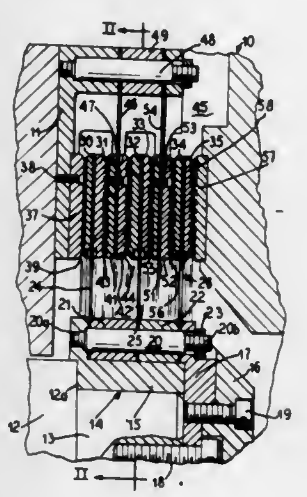
1. Forage or picking harvester, such as a flywheel cutter, for the rough grinding of grain, comprising a housing having an inlet and an outlet spaced on said housing from said inlet, a cutting blade wheel located within said housing and rotating about a horizontal axis extending through said housing, wherein the improvement comprises that said housing has a cylindrically shaped wall extending around the axis of said cutting blade wheel and defining the circumferential periphery of said housing, said outlet comprises a discharge duct projecting upwardly and outwardly from said cylindrically shaped wall with the opening into said discharge duct located through said cylindrically shaped wall, a plurality of blades mounted in angularly spaced relation on said cutting blade wheel and extending generally radially of the axis thereof with the radially outer ends of said blades being continuous in the direction of the axis of said cutting blade wheel for the full width of each blade and moving along a circle located at the inner surface of said cylindrically shaped wall so that the radially outer ends move upwardly past the opening into said discharge duct, said discharge duct having a first wall extending upwardly and outwardly from the circumferential periphery of said housing and with the surface of said first wall facing into said discharge duct facing toward the circumferential periphery of said housing, at least one comb-like arrangement of laterally spaced bearing arms mounted in said first wall of said discharge duct with said beating arms extending from said first wall to approximately the circle along which the radially outer ends of said blades move and spaced closely outwardly from the circle so that grain carried by the radially outer ends of said blades is directed into said discharge duct against said beating arms, said beating arms having upwardly extending flat side surfaces extending generally parallel to one another and to the flow through said discharge duct, slots extending in the direction of said discharge duct conveying flow of said housing are located in said first wall, and said beating arms extend through said slots from the exterior of said discharge duct into said discharge duct and the length of said beating arms being adjustably positionable within said discharge duct, and means located on the exterior of said discharge duct for securing said beating arms in position.



4,619,414
MULTI-DISK REFINER

Edward C. Kirchner, Pittsfield, and Ronald J. DeFoe, Becket, both of Mass., assignors to Beloit Corporation, Beloit, Wis.
Filed Jan. 31, 1985, Ser. No. 697,049
Int. Cl.⁴ B02C *7/14*
U.S. Cl. 241—261.3 **8 Claims**

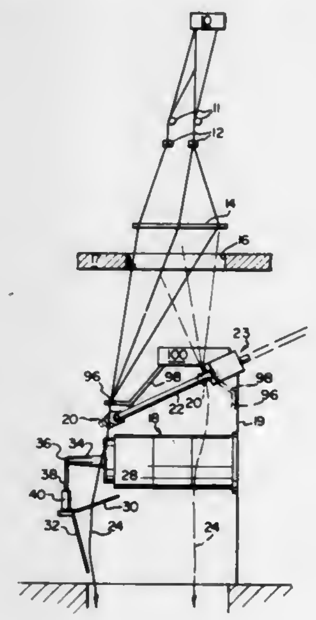
1. In an apparatus for refining fibrous materials including a housing, an inlet into said housing for receiving fibrous materials to be treated, an outlet from said housing for discharging treated materials, a shaft rotatable in said housing, a first plurality of refiner disks spaced along said shaft for rotation therewith, an additional plurality of refiner disks interleaved with said first plurality of disks and providing with the rotating disks pairs of refiner disks which rotate relative to each other and provide a refining gap therebetween, the confronting faces of the disks presenting confronting ribs to the fibrous materials passing through said refining gaps, and axially flexible annular membranes supporting both pluralities of disks in spaced relation, the improvement which comprises:



said refiner disks having undercut portions in the surfaces in which said flexible annular membranes are drivingly connected to permit bowing of said membranes within said undercut portions and thereby increase the axial flexibility of said membranes.

4,619,415
STRAND WINDING APPARATUS

Leslie J. Harris, Waterloo, Canada, assignor to Fiberglas Canada Inc., Toronto, Canada
Filed Aug. 12, 1985, Ser. No. 764,607
Claims priority, application Canada, Mar. 29, 1985, 477945
Int. Cl.⁴ B65H *54/02, 67/04*
U.S. Cl. 242—18 G **23 Claims**

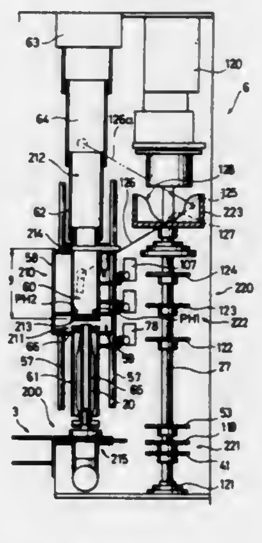


1. Automatic strand winding apparatus for use in a strand winding machine having a rotatable winding collet and means for traversing a strand to and fro along said winding collet to form a package on said winding collet, said strand winding apparatus comprising:

a first strand engagement means adapted to be mounted on a free end of said winding collet for rotation therewith into engagement with said strand;
said first strand engagement means having means for catching said strand on rotation of said winding collet and thereby causing a first portion of said strand to become wound on said first strand engagement means;
second strand engagement means for frictional engagement with said strand; and
means for supporting said second strand engagement means in an operational position adjacent said first strand engagement means and in alignment with said winding collet to cause a second portion of said strand to wind around and in frictionally engaged contact with said second strand engagement means during the winding of said first portion of said strand on said first strand engagement means until breakage of said strand occurs in response to tension in said strand between said first and second strand engagement means.

4,619,416
YARN END FINDING APPARATUS

Isamu Matsui, Kyoto; Hiroshi Uchida, Ohmihachiman; Noboru Sekitani, Ohtsu, and Hirokazu Okumura, Kyoto, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Filed Jul. 16, 1984, Ser. No. 631,304
Claims priority, application Japan, Jul. 19, 1983, 58-1315241
Int. Cl.⁴ B65H *54/20, 65/00, 67/02*
U.S. Cl. 242—35.5 R **14 Claims**



1. A yarn end finding apparatus useable with a spinning bobbin which is located at a fixed position, the bobbin being of the type which comprises a take-up tube erected at one end thereof on a carrier and having yarn wound around the take-up tube, wherein the yarn windings nearest the other end of said tube form a top bunch, the apparatus comprising:

a member mounted for vertical movement along the axial direction of the take-up tube toward and away from the spinning bobbin, the vertically movable member having mounted thereon:
a releasing means for releasing the top bunch, containing the yarn end, from the spinning bobbin;
a suction means for sucking the yarn end thus released vertically away from the bobbin;
a clamping means, disposed above said releasing means, for clamping the yarn which is sucked away from the bobbin;
a cutting means, above said clamping means, for cutting the yarn, which is sucked away from the spinning bobbin, at a predetermined position; and
a suction pipe having a first opening located below the carrier at said fixed position for inserting the yarn end thus cut into the take-up tube of the spinning bobbin.

4,619,417
ACCELERATION SENSOR

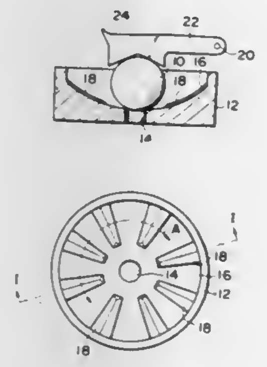
Fuminori Teraoka; Takeo Matsui, and Shinji Mori, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Mar. 20, 1984, Ser. No. 591,510

Claims priority, application Japan, Mar. 22, 1983, 58-040891[U]

Int. Cl.⁴ B60R *22/40*

U.S. Cl. 242—107.4 A **7 Claims**



6. An acceleration sensor adapted for use in a seatbelt system for protecting an occupant in a vehicle, comprising:

(a) a rolling body which moves when an acceleration acts thereupon;

(b) a receptacle member for supporting the rolling body thereon, the receptacle member being formed with a slope which rises from a bottom center portion which defines a stop position for the rolling body, and which ends at a top periphery of the receptacle member, said slope having a plurality of ribs for preventing the rolling body from rolling around its stop position in response to vibration, wherein none of said ribs come into contact with said rolling body when said body is at its stop position so that said body is equally free to roll out of its stop position in any radial direction in response to an acceleration indicative of an emergency vehicular situation, and

(c) an actuator disposed on the rolling body, one end portion thereof being pivotally mounted through a support means, and a portion of the actuator having a conical recess for contacting the rolling body and being pivotally movable upwardly when said rolling body rolls up said slope a certain radial distance.

4,619,418
SELF-LOCKING BELT REEL-IN MECHANISM FOR SAFETY BELTS

Klaus Butenop, Herzhorn, Fed. Rep. of Germany, assignor to Autoflug GmbH, Rellingen, Fed. Rep. of Germany

Filed Mar. 26, 1985, Ser. No. 716,035

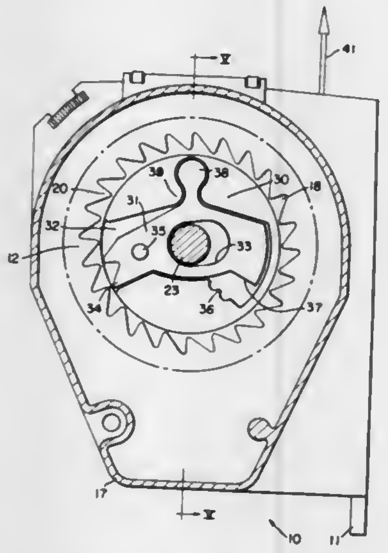
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1984, 3411067

Int. Cl.⁴ B60R *22/38, 22/40*

U.S. Cl. 242—107.4 A **11 Claims**

1. A self-locking belt reel-in mechanism for safety belts; said mechanism has a housing, and a belt reeling-in shaft having a full circular-shaped solid cross section which is mounted therein in such a way that it cannot be displaced axially, but can be displaced radially after arresting engagement and under the effect of locking forces without any synthetic material thrust-collar bearing aid; the ends of said belt reeling-in shaft extend through respective openings of said housing, and are each provided, in the plane of its opening, with an arrangement which provides for the arresting of said belt reeling-in shaft; one of these arresting arrangements engages a fixed internal toothing of one of said openings of said housing when locking forces occur which do not exceed a predetermined value, and when locking forces occur which exceed the last-mentioned locking forces, both of said arresting arrangements engage a respective fixed internal toothing of their opening of said housing, so that arresting, and hence locking, of said belt reeling-in shaft results either at one end or at both ends of the latter; the improvement therewith wherein:

to form a first one of said arresting arrangements, one of said ends of said belt reeling-in shaft is provided with a hub effective in the full circular-shaped solid cross section including therewith a recessed portion in which is disposed a locking member; the depth of said recessed portion is such that said locking member is flush relative to the plane of the associated opening of said housing; said locking member is pivotably mounted in said recessed portion, eccentrically relative to said belt reeling-in shaft, and is provided with tooth-like latching projections to effect said engagement with said internal toothing of the assoicated opening of said housing; and



to form the other of said arresting arrangements, the associated end of said belt reeling-in shaft is provided with a peripheral toothing, which is flush with the plane of the associated opening of said housing, to effect said engagement with said internal toothing of said associated opening of said housing; that end of said belt reeling-in shaft associated with said first arresting arrangement being provided with an annular peripheral surface located in the projection of said recessed portion; with the exception of an interruption which allows said latching projections of said locking member to pass through, said peripheral surface forming said hub which is centrally disposed in that associated opening of said housing designed for engaging said first arresting arrangement.

4,619,419
APPARATUS FOR THE AUTOMATIC ROLLING UP OF A VEHICLE SAFETY BELT

Karl H. Essler, Tornesch, Fed. Rep. of Germany, assignor to Autoliv GmbH, Elmshorn, Fed. Rep. of Germany

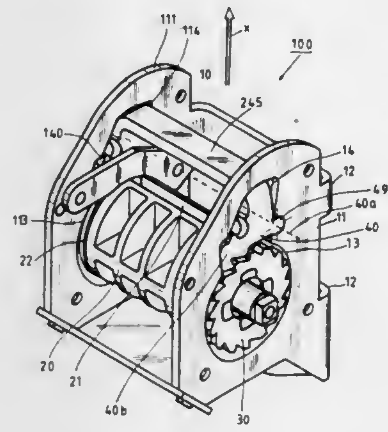
Filed Feb. 21, 1985, Ser. No. 703,739

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1984, 8405545[U]

Int. Cl.⁴ B60R *22/38, 22/40*

U.S. Cl. 242—107.4 A **3 Claims**

1. Apparatus for the automatic rolling up of a vehicle safety belt, comprising a casing in the form of a U-shaped frame with said frame comprising a pair of spaced side plates interconnected by a web, said side plates each having an inside surface and an outside surface, each said side plate having a first opening extending therethrough, a belt shaft extending between and rotatably mounted about an axis extending through said first openings, at least one ratchet wheel secured to said belt shaft at one end thereof and said ratchet wheel being located between the planes formed by the inside and outside surfaces of one of said side plates, a locking pawl pivotally mounted in a second opening in said side plate containing said opening in which said ratchet wheel is located, said second opening being contiguous to and being open to said first opening containing said ratchet wheel, said ratchet wheel having teeth spaced circumferentially thereon, said locking pawl having a first end and a second end with the first end having a pivot axis disposed parallel to the axis of said belt shaft, wherein the improvement comprises that said second opening has a circular recess in the boundary surface thereof adjacent said first opening, said locking pawl has a bearing counterpart at the first end thereof pivotally mounted in said circular recess so that said pawl is pivotally displaceable as said bearing counterpart pivots in said circular recess about the pivot axis of said locking pawl between a first position with said locking pawl in meshed engagement with said teeth on said ratchet wheel and a second position with said locking pawl spaced out of engagement with said teeth on said ratchet wheel, said locking pawl comprises an angularly shaped plate member having a first leg of said plate member extending in the first end-second end direction of said locking pawl and a second leg extending transversely of said first leg, said first leg and second leg forming a junction facing away from said ratchet wheel, a bearing recess formed in said pawl at the junction, an actuating pin located in said recess for displacing said pawl between the first and second positions, said first leg at the second end of said locking pawl having a plurality of engagement teeth for engagement with said teeth on said ratchet wheel in the first position of said locking pawl, the end of said leg located at the second end of said locking pawl has a rectilinear surface extending transversely of the first end-second end direction of said locking pawl and extending from said engagement teeth at the second end of said lockiing pawl, said rectilinear surface forming a flux force transfer surface arranged to contact and be supported by a mating surface forming a boundary surface of said second opening adjacent to said first opening when said locking pawl is in the first position, said flux force transfer surface being displaced into contact with said mating surface when tensile force acts on the safety belt whereby said actuation pin acts on said locking pawl for displacing said locking pawl into the first position whereby the forces are absorbed by said casing and the pivot bearing for said pawl is free of the forces.



4,619,420
TAPE CASSETTE

Klaus Schoettle, Heidelberg, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

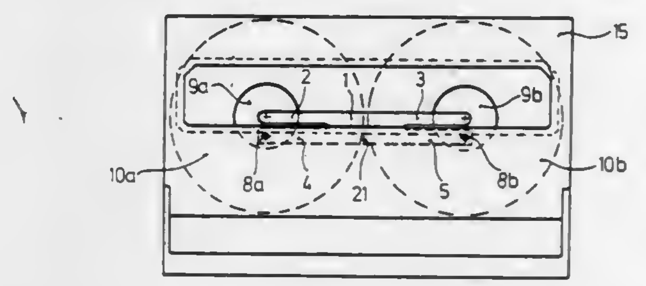
Filed Jun. 13, 1985, Ser. No. 744,202

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1984, 8418179[U]

Int. Cl.⁴ G03B *1/04;* **G11B** *15/32, 23/04*

U.S. Cl. 242—198 **9 Claims**

1. A tape cassette comprising a housing having a housing part, at least one flanged tape reel and a pressure spring having at least one fastening arm fastening the pressure spring to the said housing part and at least one pressure spring arm for exerting a spring force on the tape reel(s) in the direction of a defined operating position, said at least one tape reel having a depression in the flange facing the said housing part and an end region of the at least one fastening arm possessing fastening means for fastening the pressure spring to the said housing part in an area facing the depression provided in the at least one tape reel.



4,619,421
SENSOR ARRANGEMENT IN A SEARCH HEAD

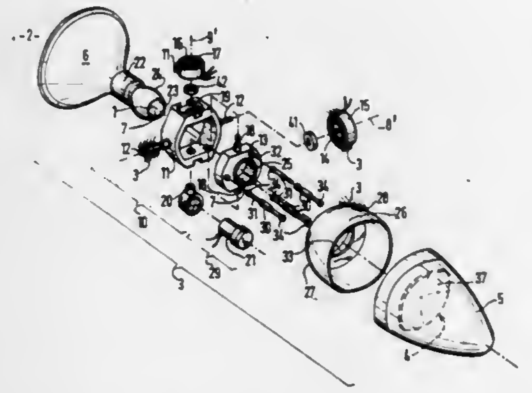
Gunther Trummer, Baiersdorf, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Nov. 7, 1984, Ser. No. 669,105

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1983, 3342958

Int. Cl.⁴ F41G *7/26*

U.S. Cl. 244—3.16 **10 Claims**



1. In a sensor arrangement within a search head, including a two-axis cardan frame system on said search head for effecting the movements of a sensor relative to the search head; the improvement comprising said sensor being axially offset ahead of said cardan frame system; paired spherical surface members supporting said frame system and sensor, said spherical surface members being extended through by a spine passageway; and a parallelogram linkage interconnecting said sensor and said cardan frame system.

4,619,422
BALLOON CARRIAGE

John R. Petrehn, 11876 W. 91st St., Overland Park, Kans. 66214

Filed Jan. 6, 1984, Ser. No. 568,825

Int. Cl.⁴ B64B *1/40*

U.S. Cl. 244—127 **2 Claims**

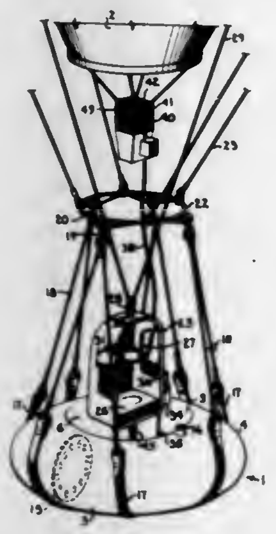
1. A gondola arrangement for a hot air balloon comprising:

(a) a rigid toroidal carriage formed of windings of synthetic fibrous material coated with resin and having external and internal walls forming an enclosure; said enclosure providing a central opening and said walls defining an internal and integral reservoir for storage of fuel for said balloon;

(b) a floor extending across said central openings for supporting a crew;

(c) carriage support lines extending from said carriage to said balloon and routed through a circular girdle with a jettison cable whereby severing part of said jettison cable provides for jettisoning of said carriage; and

(d) a crew module connected to said balloon by module support lines separate from said jettison cable and said carriage support lines and positioned between said balloon and said carriage;

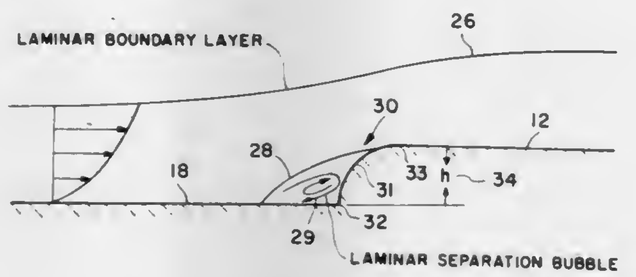


(e) said crew module having a reserve fuel supply and a burner for providing heated air for said balloon for emergency use upon jettisoning said carriage.

4,619,423
GEOMETRIES FOR ROUGHNESS SHAPES IN LAMINAR FLOW

Bruce J. Holmes; Glenn L. Martin, both of Newport News; Christopher S. Domack, Hampton; Clifford J. Obara, Poquoson, all of Va., and Ahmed A. Hassan, Tempe, Ariz., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 10, 1983, Ser. No. 550,681
Int. Cl.⁴ B64C *21/10*
U.S. Cl. 244—130 **22 Claims**



22. The method of obtaining natural laminar flow over an airfoil comprising the steps of:

smoothing the upper and lower skin structure of an airfoil sufficient to allow laminar flow;

placing a smooth leading edge structure adjacent said skin structures;

joining said leading edge structure to said skin structure;

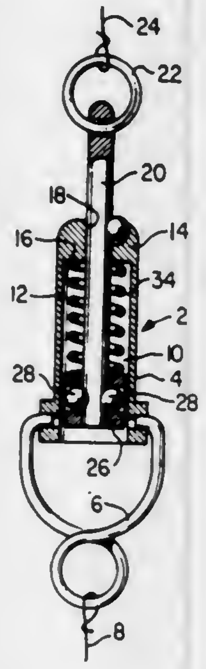
providing a forward facing step joint rising above the leading edge structure and located before the skin structure; and

shaping the step joint between the leading edge structure and skin structure to cause laminar separation before and reattachment after a laminar separation bubble formed thereat which allows extended natural laminar flow after the step joint location.

4,619,424
TENSION LINK FOR PARACHUTE/PAYLOAD SEPARATION

Philip A. Twardawa, Shannon, and Michel C. St-Onge, Neufchatel, both of Canada, assignors to Her Majesty the Queen in right of Canada, Canada

Filed Jan. 4, 1985, Ser. No. 688,897
Claims priority, application Canada, Feb. 15, 1984, 447502
Int. Cl.⁴ B64D *17/38*
U.S. Cl. 244—151 B **15 Claims**



1. A mechanical device to link a payload and a parachute together prior to and during the parachute dropping of the payload, and to effect automatic separation of the payload from the parachute after the payload and the parachute have landed, the device comprising:

(a) a housing to which either the parachute or payload is to be secured;

(b) an elongated shaft movable within the housing in the direction of the longitudinal axis of the shaft, one end of the shaft extending from the housing to which end the other of the parachute or payload is to be secured, the shaft being movable with respect to the housing between an armed position in one direction and an uncoupling position in the other;

(c) retainer means releasably secured to the other end of the shaft so that movement of the retainer means and shaft is physically constrained by the housing from going beyond the armed position in said one direction;

(d) first biasing means to apply an uncoupling force against the housing and the retainer means to urge the shaft and retainer means towards the uncoupling position, the uncoupling force being less than the force which would normally exist urging the shaft towards the armed position during the parachute dropping of the payload;

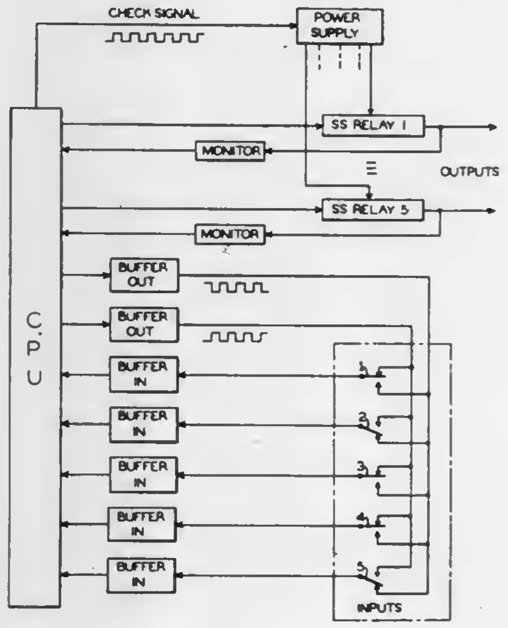
(e) first locking means directly engaged with the shaft and the housing and releasably securing the shaft to the housing, in a fixed, intermediate, unarmed position, the first locking means adapated to be released in response to the application of an unlocking force of predetermined magnitude to the shaft in said one direction, the magnitude of the unlocking force being greater than the uncoupling force of the first biasing means in the other; and

(f) second locking means associated with the shaft and retainer means and securing the retainer means to the shaft when the shaft is in unarmed position and armed position but releasing the retainer means from the shaft when the shaft is in uncoupling position, the retainer means when thus released freeing the shaft to be extracted from the housing, thereby resulting in separation of the payload from the parachute.

4,619,425
PULSE CODE SYSTEM FOR RAILROAD TRACK CIRCUITS

Harry C. Nagel, Murrysville, Pa., assignor to American Standard Inc., New York, N.Y.

Filed Jul. 17, 1981, Ser. No. 284,150
Int. Cl.⁴ B61L *21/00*
U.S. Cl. 246—34 R **14 Claims**



1. A pulse code system for transmitting in each direction through the rails of a section of railroad track data representing wayside conditions and controls associated with that section, comprising,

(a) transmitter/receiver means coupled to the rails at each end of said section for transmitting and receiving through said rails an alternating current code having selected pulse characteristics,

(b) a data processor means coupled to each transmitter/-receiver means for selecting, in accordance with applied input data, the pulse characteristics of each code transmitted through the rails to the receiver at the other end of said section and for decoding the data carried by the code pulses received through the rails from the transmitter at said other end,

(c) an input network coupled to each processor means for supplying wayside input data for transmission to said other end,

(d) an output means coupled to each data processor means for outputting the data decoded from received code pulses,

(e) a power supply means coupled to each output means for providing operating energy,

(f) a first monitor network controlled by each data processor means and coupled for dynamically checking the operation of the associated output means and responsive for supplying monitor signals to said processor means when correct operation of the associated output means and said first monitor network is detected,

(g) a second monitor network jointly controlled by each data processor means and associated input network and coupled for checking the integrity of the associated input network and completeness of the input data supplied,

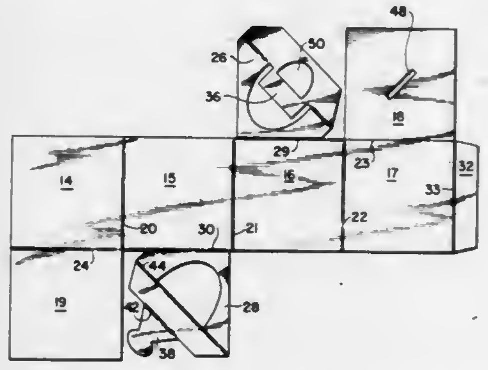
(h) each data processor means responsive to monitor signals from the associated first monitor network and to the integrity check of the associated second monitor network for generating a check signal, and

(i) each power supply means coupled to the associated processor means for receiving said check signal and enabled for providing operating energy to the associated output means only when said check signal is present.

4,619,426
SELF-ERECTING HOLLOW STRUCTURE

Fred Drueck, Jr., 4941 W. Henderson St., Chicago, Ill. 60641

Filed May 22, 1985, Ser. No. 736,854
Int. Cl.⁴ B65D *5/08, 5/36, 5/52*
U.S. Cl. 248—174 **7 Claims**



1. A collapsible, self-erecting closed hollow structure which is formed from an integral blank of paperboard which is cut and scored to form a plurality of side and end walls which when erected form said closed hollow structure, each of said plurality of side and end walls being hingedly connected along one edge thereof with one at least one other wall;

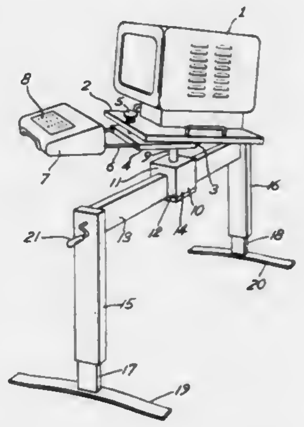
at least two flaps, each of which is hingedly connected along one edge thereof with at least one of said plurality of side walls, each of said flaps being cut and scored to form an attachment and further being folded and affixed to one of said plurality of end walls on the side thereof which is interior of the closed erected hollow structure, and

elastic means secured under tension to said attachments, said elastic means normally pulling said two end walls to which said flaps are hingedly connected toward one another and thereby erecting said closed hollow structure.

4,619,427
STAND FOR DATA DISPLAY TERMINALS

Friedhelm Leymann, Langenhagen, Fed. Rep. of Germany, assignor to Heinrich Oelschlager Metallwarenfabrik, Fed. Rep. of Germany

Filed Jun. 29, 1984, Ser. No. 626,049
Int. Cl.⁴ F16M *11/04*
U.S. Cl. 248—178 **6 Claims**



1. A stand for a display terminal comprising a plate supporting said terminal,

a carriage having an inverted U-shape with a lower end and supporting said plate,

a horizontally disposed rail, said carriage fitting over the top of the rail and being supported on and held against lateral tilting by the rail for horizontal movement on the rail and

a bearing plate secured to the lower end of said carriage, and bearing plate positioned against the underside of the rail to further prevent the carriage from tilting.

4,619,428

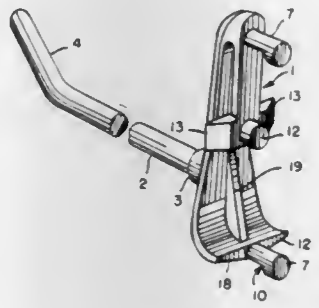
SUPPORT MEMBER FOR APERTURED SUPPORTING SURFACES

James R. Bailey, 4020 N. Pioneer, Chicago, Ill. 60634

Continuation of Ser. No. 516,637, Jul. 25, 1983, abandoned. This application Jan. 7, 1985, Ser. No. 689,146

Int. Cl.^{4} B61L *5/00*

U.S. Cl. 248—221.2 **3 Claims**



1. For use with an apertured mounting board having an array of substantially identical small circular holes therein, each of the order of ⅛–¼ inch in diameter, and arranged in substantially equally spaced rows and columns, and including at least three of such holes are vertically aligned, the combination of an improved self-locking support member adapted to be automatically, but releasibly, locked onto the mounting board off the front side thereof, said support member comprising,

an elongated unitary rigid body sized to span the three holes in the mounting board, and having opposed front and rear faces;

three spaced but aligned projections disposed rearwardly of and substantially normal to the rear face of the elongaged body, and adapted to be inserted axially into and through said board holes from the front side of the mounting board;

two of the projections being spaced apart a distance corresponding to the spacing between two of the board holes and being substantially rigid relative to the elongated body and to each other;

tabs integrally formed on the two projections, spaced from the rear body face a distance corresponding approximately to the thickness of the mounting board;

said two tabs and two projections being sized, to be inserted axially into the board holes until the tabs clear the rear face of the mounting board, and then to be moved laterally to a set position, where the projections are against the board at the holes and the tabs overlap and engage the rear board face and preclude axial removal from the board holes;

an arm integral with the body near one of the two projections and cantilevered therefrom toward the other of the two projections and being elongated substantially in line with the rear body face, and the third of the three projections being formed integrally of and rigidly on the arm at the free end thereof,

said arm

being substantially rigid against movement in the direction along the rear body face between the two projections,

having limited flexibility to allow limited movement in the direction transverse to the rear body face,

being operable to hold the third projection aligned over the third of the board holes, when the two projections are in their respective two board holes and in the set position, and

having its natural unflexed position such that when such third projection is aligned with the third board hole, it would urge the third projection into the third board hole;

the third projection having a circular cross section, and also being sized to just fit into its board hole, and

being operable thereby to retain the two tabs and projections in the set position relative to their respective two board holes, so as to lock the support member as mounted relative to the mounting board; and

means projecting forwardly of the front face of the rigid body adapted to support objects thereon relative to the mounting board.

4,619,429

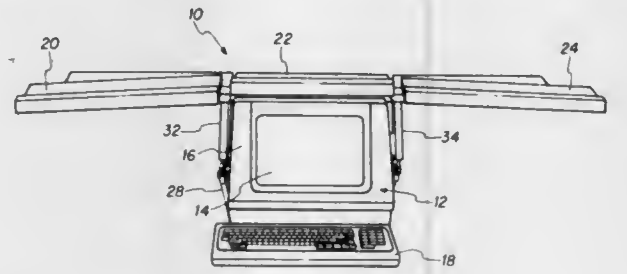
COPY HOLDER FOR DATA PROCESSING WORK STATION

Louis S. Mazza, 5737 Drexel Dr., Garland, Tex. 75043

Filed Oct. 5, 1984, Ser. No. 657,983

Int. Cl.^{4} A47B *97/04*

U.S. Cl. 248—447.2 **12 Claims**



1. Copy holder apparatus for supporting printed sheet material for use in combination with a data processing work station of the type having a data display screen mounted in a cabinet, the copy holder apparatus comprising, in combination:

a harness assembly including a flexible tension member, a first hinge assembly, a second hinge assembly and a cross bar, the first and second hinge assemblies being linked together by the cross bar and by the flexible tension member thereby defining a harness assembly mountable onto a cabinet, wherein the first and second hinge assemblies are adapted for mounting onto opposite top corners of the cabinet, with the cross bar extending across the top of the cabinet, and the flexible tension member being adapted for lashing engagement around the cabinet bottom and tensioning the hinge assemblies into compressive engagement with the cabinet;

first and second wing panels mounted onto the cross bar;

holder means coupled to the harness assembly for displaying printed sheet material adjacent the data display screen, and,

said holder means including first and second correspondence boards movably coupled to the first and second wing panels, respectively.

4,619,430

PICTURE FRAME HANGER

James W. Hogg, Nashville, Tenn., assignor to Anchor Wire Corporation of Tennessee, Goodlettsville, Tenn.

Continuation-in-part of Ser. No. 393,550, May 30, 1982, Pat. No. 4,485,995, which is a continuation-in-part of Ser. No. 268,499, May 29, 1981, Pat. No. 4,422,608. This application Mar. 28, 1984, Ser. No. 594,395

Int. Cl.^{4} A47G *1/16*

U.S. Cl. 248—467 **19 Claims**

12. A device for suspending picture frames having flexible, elongated hanging means comprising:

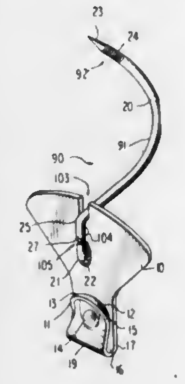
a backplate;

means for attaching said backplate to a wall having a thickness;

a lip having a convex surface facing said backplate securely fastened at a point of attachment to said backplate and extending upwardly and outwardly therefrom;

an arced groove having sidewalls for supporting a portion of the flexible, elongated hanging means, one of said sidewalls being said convex surface of said lip and the other of said side walls being said backplate; and

said arced groove adapted to receive the supported portion of the flexible, elongated hanging means whereby said flexible, elongated hanging means is urged to slide inwardly and downwardly to a position in abutment with both said sidewalls whereby the distance between the load center of the supported portion of the flexible, elongated hanging means and the backplate is reduced so that the outward component of force transmitted from the load of the picture frame through the supported portion of the flexible, elongated handing means, said lip, and said backplate to said means for attaching said backplate is minimized.



4,619,431

APPLIANCE FOR FIXING ELECTRONIC DISPLAY BOARD

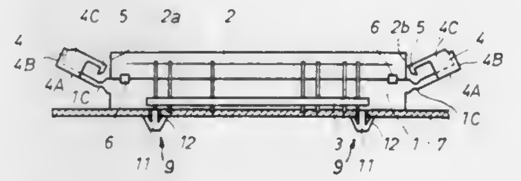
Kazuhiro Matsui, Toyoake, and Haruyuki Sugiura, Kariya, both of Japan, assignors to Kitagawa Industries Co., Ltd., Nagoya, Japan

Filed Dec. 6, 1984, Ser. No. 679,070

Claims priority, application Japan, Dec. 16, 1983, 58-194784[U]

Int. Cl.^{4} F16M *13/00*

U.S. Cl. 248—500 **7 Claims**



1. An appliance for fixing an electronic display board, comprising:

a flat elongated plate-like support body,

elastic retaining members connected to said support body by thin-walled connections adjacent to both longitudinal ends of said support body, said elastic retaining members being bendable through said thin-walled connections to a holding position such that an electronic display board on a surface of the fixing appliance body may be held thereon,

pawl retaining pieces adapted to engage pawls of the elastic retaining members when said elastic retaining members are bent to said holding position,

snaps projecting from another surface of the support body for fixing said appliance body to a substrate; and

a terminal holding frame on at least one longitudinally extending edge portion of said support body, the terminal holding frame having terminal guide holes therein.

4,619,432

DEVICE FOR RAPIDLY MOUNTING A BASE PLATE ON A CHASSIS

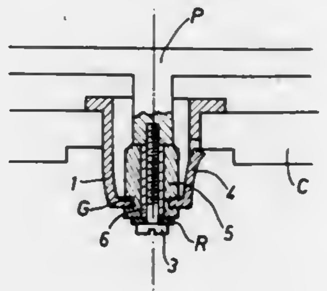
Michel P. Beugin, Flers, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 23, 1985, Ser. No. 737,015

Claims priority, application France, May 29, 1984, 84 08389

Int. Cl.^{4} F16F *15/08*

U.S. Cl. 248—635 **2 Claims**



1. A bracket for rapidly mounting a base plate on a chassis with an aperture comprised of

(a) a cup-shaped mounting element adapted to fit into said aperture, said mounting element having an outwardly extending lip at its upper end, a cylindrical surface and a bottom with an opening therein forming a bottom rim,

said mounting element having both an opening and at least one radially extending flexible arm formed in its cylindrical surface,

a gap in said bottom and in said cylindrical surface joining said opening in said cylindrical surface with said opening in said bottom,

(b) an elastic damping element having a slot in its outer surface, and having an elongated hollow tubular shape, part of said damping element being located within said mounting element,

said bottom rim being engaged in said slot of said damping element whereby said damping element is held in place by said mounting element; and

(c) a securing means passing through said opening in said bottom of the mounting element and through said damping element into said base plate for attaching said mounting element to said base plate whereby when properly so attached said mounting element is secured to said chassis through the pressure exerted thereon in opposite directions by said lip and said radially extending arm.

4,619,433

APPARATUS FOR ERECTING ARCUATE WALLS OF CONCRETE OR THE LIKE

Josef Maier, Schwimmbadstrasse 3, D-7611 Steinach, Fed. Rep. of Germany

Filed Sep. 11, 1984, Ser. No. 649,473

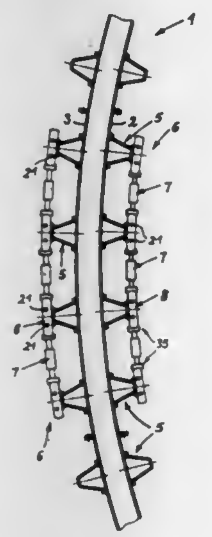
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1983, 3333619; European Pat. Off., Apr. 19, 1984, 84104458.9

Int. Cl.^{4} B28B *7/04, 7/30*

U.S. Cl. 249—18 **9 Claims**

1. Apparatus for forming an arcuate wall of concrete or the like, comprising a plurality of spaced apart elongated supports; a flexible sheathing having spaced apart portions secured to and turnable with said supports about axes extending longitudinally of said supports, said sheathing having a first side facing said supports and a second side facing away from said supports; and means for turning said supports, including a composite girder comprising neighboring connectors turnable with said supports, variable-length links disposed between neighboring connectors, fastener means for articulately connecting said links to the respective connectors so as to allow for changes in the angular positions of said connectors and the links, each of said fastener means defining a pivot axis for the respective link and the neighboring connector, and locking means for releas-

ably holding said links and the respective connectors against angular movement relative to each other, said turning means being disposed at said one side of said sheathing, each of said connectors comprising two locking portions which constitute component parts of the respective locking means and each of said locking portions comprising a set of first tooth-shaped projections, each of said links comprising two sets of second substantialy tooth-shaped projections and each set of second projections being movable into and from mesh with a set of first projections in each of a plurality of different angular positions of the respective links relative to the neighboring connectors, said sets of projections having arcuate shapes with centers of curvature located on or close to the respective pivot axes, each of said links having a central portion and first and second end portions, said sets of second projections being provided on the end portions of the respective links and said end portions being movable, at least in part, relative to the respective central portions to thereby move said sets of second projections into and from mesh with the respective sets of first projections, each of said locking means further comprising means for arresting the end portions of said links in positions such that said sets of second projections mate with the respective sets of first projections, each of said end portions including a bolt mating with the respective central portion and a muff axially movable on the bolt and provided with the respective set of second projections, said arresting means comprising nuts meshing with the respective bolts and arranged to maintain the corresponding muffs in selected axial positions.



4,619,434
HEAT SENSITIVE MOTOR VALVE JACK

David E. Snyder, and Billy R. Bruton, both of Longview, Tex., assignors to Axelson, Inc., Longview, Tex.

Filed Feb. 17, 1981, Ser. No. 235,102

Int. Cl.⁴ F16K ***31/00***

U.S. Cl. 251—14 **9 Claims**

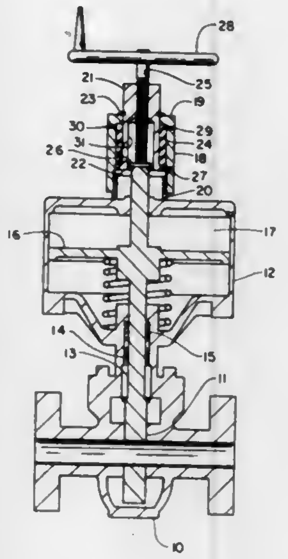
1. A heat sensitive jack for overriding a motor valve including a valve body and a gate valve member connected to a valve stem movable outwardly with respect to said valve body by pressure within said valve body which is operated to move inwardly by a linear actuator having an actuator body and an actuator stem connected to the valve stem and extending outwardly of the actuator body, said heat sensitive jack being operable to move and hold said actuator stem inwardly but to allow said actuator stem to move outwardly in elevated temperature conditions without producing hazardous projectiles, which comprises:

a cylindrical cap connectable to said actuator body said cap including a radially inwardly extending shoulder facing axially toward said actuator body when said cap is connected to said actuator body;

a nut axially movably disposed in said cap said nut including a radially outwardly extending flange facing toward said shoulder of said cap and movable between a first position and a second position, wherein the distance between said first and second positions is at least as great as the distance of inward and outward travel of said actuator stem, whereby said flange of said nut remains within said cap in said second position;

a fusible element positioned between said shoulder and flange to transmit forces therebetween for normally maintaining said nut in said first position and melting when the temperature exceeds a certain temperature allowing said nut to move to said position within said cap;

and a jack screw threadably engaged in and axially movable with rspect to said nut and adapted to be moved into abuttment with said stem when said cap is connected to said actuator body to jack said stem toward said open position.



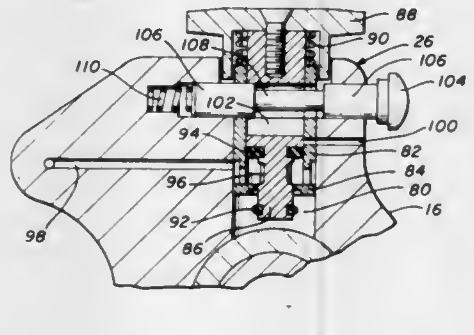
4,619,435
CONTROL VALVE APPARATUS FOR PNEUMATIC TOOLS

Paul A. Biek, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 4, 1985, Ser. No. 707,925

Int. Cl.⁴ F16K ***31/143***

U.S. Cl. 251—25 **5 Claims**



1. Control valve apparatus for use with tools having a pneumatic motor therein, said valve apparatus comprising:

a valve housing:

a flow valve member located in a flow passageway in said housing, said valve member being moveable toward and away from a valve seat in said housing encircling said flow passageway preventing and permitting flow therethrough, respectively, to said motor;

a control valve member moveably located in a bore in said housing and extending loosely through an annular seat encircling said bore, said control valve member carrying spaced first said second seal members and having a reduced size portion located between said seal members;

said housing having an air supply passageway extending from said flow passageway to said bore on one side of said annular seat, a first control passageway connected with said bore for supplying air to other portions of said tool, a second control passageway extending from said bore on the other side of said annular seat to a chamber in said housing adjacent to said flow control valve member whereby pressure may be exerted thereon to open said flow passageway, and a vent passageway connected with said bore for venting air from said first and second control passageways; and,

said control member being moveable from an open position wherein said second control passageway is open and said second seal member prevents flow through said vent passageway to a closed position wherein said first seal member engages said annular seat preventing flow from said supply passageway to said control passageways and said vent passageway is open, and to an override position wherein said reduced size portion is located adjacent to said seat for providing an excess of air flow to said second control passageway, said reduced size portion being located adjacent to said annular seat only when said control valve member is located in the override position.

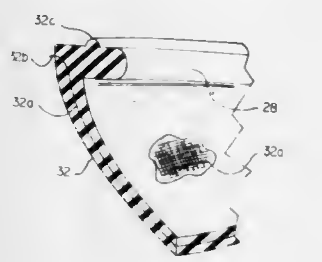
4,619,436
CONTROL REGULATOR HAVING A FABRIC REINFORCED DIAPHRAGM

William J. Bonzer, and Gary L. Scott, both of Marshalltown, Iowa, assignors to Fisher Controls International, Inc., Marshalltown, Iowa

Filed Aug. 14, 1985, Ser. No. 765,489

Int. Cl.⁴ F16K ***31/145***

U.S. Cl. 251—61.1 **11 Claims**



8. A rolling diaphragm regulator valve comprising:

a valve body defining a inlet and an outlet in axial alignment for mounting in a pipeline;

a baffle, interposed in said body between said inlet and said outlet, including a frustroconical portion defining a plurality of apertures;

a control chamber situated at right angles to said inlet and said outlet;

a diaphragm arranged for rolling and unrolling along the surface of said frustronconical portion, responsive to pressure in said control chamber, for progressively exposing and covering said apertures to regulate inlet to outlet flow, said diaphragm comprising a sandwich of a woven fabric reinforcement in a nitrile elastomer and being substantially nonstretchable;

an axially movable nose piece mounted in said control chamber behind said diaphragm;

spring means for urging said movable nose piece toward said diaphragm;

indicator means operable by movement of said nose piece for visually displaying an indication of the position of said valve; and

means exposing at least portions of said fabric to said flow for enabling release of any entrained gases in said diaphragm.

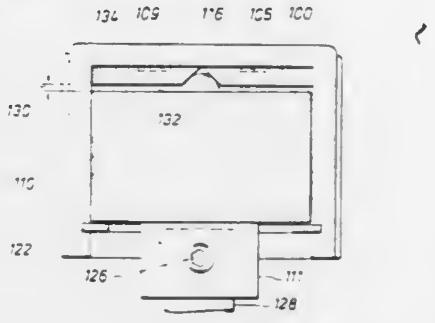
4,619,437
ADJUSTABLE TORQUE LIMITING VALVE HANDLE

William J. Williams, 395 Mulberry St., Vider, Tex. 77662, and Richard E. Purkey, Rte. 3, Box 151A, Kirbyville, Tex. 77956

Continuation-in-part of Ser. No. 797,750, Nov. 12, 1985, abandoned, which is a continuation of Ser. No. 581,068, Feb. 17, 1984, abandoned. This application Jan. 29, 1986, Ser. No. 823,670

Int. Cl.⁴ F16K ***31/44***

U.S. Cl. 251—81 **8 Claims**



3. An adjustable torque limiting handle for rotating the stem of a valve to open and close the valve, comprising:

a cylindrical body adapted for mounting on the valve stem with the longitudinal axis of the body coinciding with the axis of rotation of the stem, said body having an outside end surface transverse to said rotation axis, said body further including a longitudinally extending blind bore opening into said outside end surface at a location radially spaced apart from said axis of rotation;

a housing having a cup-shaped cavity for receiving said cylindrical body and having an inside transverse surface spaced apart from said outside transverse surface of said body, said inside transverse surface of said housing having a plurality of depressions concentrically positioned with respect to said rotation axis and radially aligned with said longitudinal bore in said body, said housing further including a rim adapted for manual engagement;

a ball carried at least partially within said bore in said body;

a spring mounted in said bore underneath said ball for urging said ball outwardly into engagement with said housing depressions;

means mounted in said bore for adjusting the force exerted by said spring to said ball;

said housing and body rotating in unison when a torque is applied to the rim of said housing below a predetermined level;

said housing rotating independently of said body when a torque above said predetermined level is applied;

manual pressure on said housing in an axial direction compressing said spring as permitted by the space between said outside end surface of said body and said inside surface of said housing to cause increased torque between said housing and said body to permit rotation of said body even in the presence of a torque above said predetermined level prior to the application of such axial manual pressure.

4,619,438
VALVE

Ronald A. Coffee, Haslemere, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Aug. 19, 1980, Ser. No. 179,438

Claims priority, application Ireland, Sep. 10, 1979, 1711/79; United Kingdom, Mar. 20, 1980, 8009499

Int. Cl.⁴ F16K ***31/02***

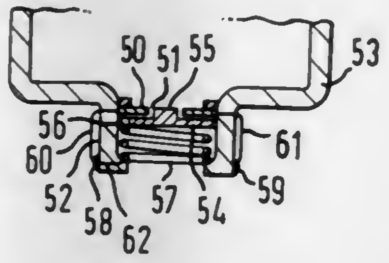
U.S. Cl. 251—129.01 **4 Claims**

1. A valve comprising:

means defining a port for the passage of fluid;

an electrostatically neutral plug for interrupting the flow of fluid through the port;

means for mechanically biasing said plug into a position closing the port, seating on said means defining the port, said means defining said port comprising a first metal plate having a port formed thereon, and said plug comprising a second metal plate, insulated from said first metal plate, and having a boss upstanding from one face of said second metal plate and dimensioned to be received within the port; and



means for applying a high electrostatic potential of the same sign to both said plug and said means defining the port, so that an electrostatic field between said plug and said means defining the port sufficient to cause said plug to move away from and open the port, and allow fluid passage therethrough, is provided.

4,619,439

LIFTING AND DEPOSITING DEVICE FOR PORTABLE CONTAINERS, COMPARTMENTS, CONTAINERS, SHELTERS OR THE LIKE

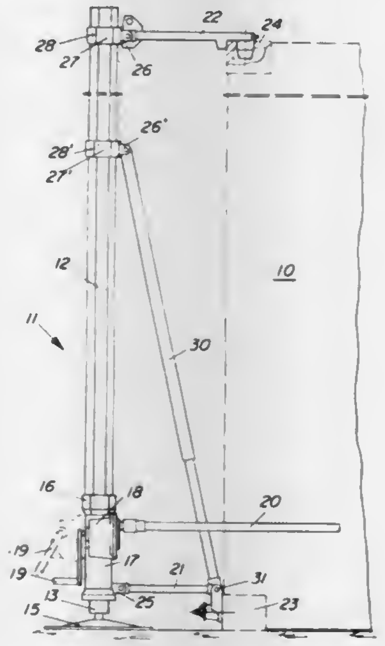
Reinhold Riedl, Miltenberg, and Conrad Lazarus, Freudenberg, both of Fed. Rep. of Germany, assignors to Haacon Hebetechnik GmbH, Freudenberg, Fed. Rep. of Germany

Filed Feb. 17, 1984, Ser. No. 581,200

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1983, 3305847

Int. Cl.⁴ B66F *7/26*

U.S. Cl. 254—45 **2 Claims**



1. Lifting and depositing apparatus for a transportable container, with rack jacks to be attached to the corners of the container by means of crossbars, wherein each rack jack comprises a tubular winch shank and a tubular support that is axially movable therein, a lifting jack part secured to said winch shank and having said tubular support slidably mounted therein, said lifting jack part having a length that is only a fraction of a height of the container, and a jack gearing mounted on said lifting jack part, characterized in that said lifting jack part guiding said support is a guide tube located at a bottom end of said tubular winch shank said winch being approximately the same height as the container, said guide tube being provided on its interior with a plurality of axially extending guide surfaces for the support which are interrupted by lengthwise grooves, said support having a rack thereon, said guide tube having a lengthwise recess on its interior for receiving the rack therein with slight play, said guide surfaces extending only through short axial peripheral areas at top and bottom ends of said guide tube, said guide tube being reinforced over on axial length of said guide surfaces, and said support having an exterior shape such that it does not extend into said lengthwise grooves.

4,619,440

FENCING DEVICE, A STAKE, A FASTENER AND AN ASSEMBLY PART FOR SUCH A DEVICE

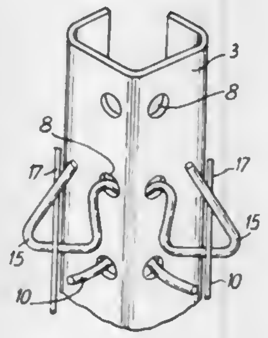
Patrick D. Thévenin; Bernard C. Gissinger, and Stéphane J. Thévenin, all of 08800, Monthermé , France

Filed Feb. 1, 1984, Ser. No. 575,883

Claims priority, application France, Feb. 2, 1983, 83 01608

Int. Cl.⁴ E04H *17/00*

U.S. Cl. 256—47 **12 Claims**



1. Apparatus for constructing a fence of the type having a generally horiztonal wire, comprising:

an elongate stake for supporting the fence wire, said stake having a generally hollow cross-sectional profile, said stake further having at least two perforations, said perforations being disposed one above the other and between two vertical planes tangent to vertically extending edges of said stake, said planes being parallel to the direction of said wire; and

a fastener adapted to fasten said generally horizontal wire to said stake, said fastener comprising a first portion in the shape of a loop for attaching said fastener into said stake perforations, a second horizontal portion connected at one end to an end of said first portion for supporting said wire when said fence apparatus is assembled, said second portion having a length such that a second end of said second portion opposite said first portion extends outside one of said vertical planes when said first portion is attached into said perforations of said stake, and a third portion connected to said second end of said second portion for securing said wire to said stake, said third portion having a free end bent upwardly and back toward the fastener first portion so that said free end is located between one of said vertical planes and a third vertical plane passing through the center of said stake and also parallel to said first two vertical planes, when said fastener is assembled into said perforations.

4,619,441

SHAFT FURNACE HAVING A METAL SHELL, A REFRACTORY LINING AND COOLING BODIES PROJECTING THROUGH THE SHELL INTO THE LINING

Jacob Felthuis, Oudorp; Jacobus Van Laar, Santpoort, and Jacob Rengersen, Sint-Pancras, all of Netherlands, assignors to Hoogovens Groep B.V., IJmuiden, Netherlands

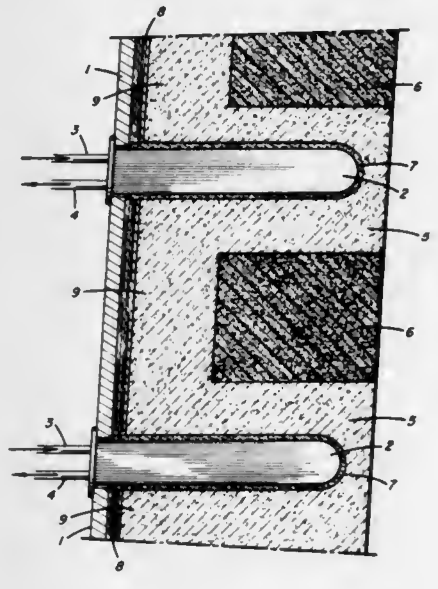
Filed Apr. 2, 1984, Ser. No. 595,682

Claims priority, application Netherlands, Apr. 1, 1983, 8301178

Int. Cl.⁴ C21B *7/10*

U.S. Cl. 266—193 **10 Claims**

1. A shaft furnace having a metal shell, a refractory lining on the interior side of the shell and cooling bodies which project inwardly through the shell into the lining and through which in operation cooling liquid flows, the lining, at least adjacent each of the cooling bodies, consisting of a refractory material with a coefficient of thermal conductivity (λ-value) of at least 10 kcal/mh°C. determined at 20° C. there further being provided, between the cooling bodies and the refractory lining a first thin layer of refractory material in contact with the bodies and the refractory lining and between the shell and the refractory lining a second thin layer of refractory material in contact with the shell and the refractory lining, said thin layers of refractory material having in each case a λ-value of less than 5 kcal/mh°C. determined at 20° C.



4,619,442

COOLING BOX FOR STEEL MAKING FURNACES

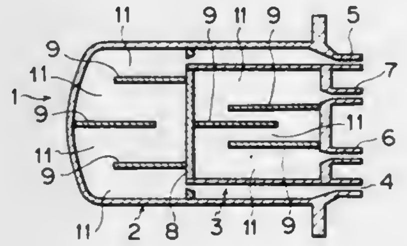
Michinori Hattori, Fukuyama, and Kazunori Niiya, Fukuyasu, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 613,966, May 24, 1984, abandoned. This application Jun. 10, 1985, Ser. No. 742,657

Claims priority, application Japan, May 26, 1983, 58-91503

Int. Cl.⁴ F27D *1/12*

U.S. Cl. 266—193 **1 Claim**



1. A cooling box for steel making furnace, comprising

a first cooling chamber comprising a first outer wall, a second outer wall having an inner surface and an outer surface, a third outer wall having an inner surface and an outer surface, a fourth outer wall having an inner surface and an outer surface, a first inner wall, a pair of second inner walls, a first inlet and a first outlet, wherein said first outer wall is connected with said furnace, said second and third outer walls extend into said furnace and said fourth outer wall forms an end of said first cooling chamber within said furnace, said pair of second inner walls are connected to and extend from said first outer wall toward said fourth outer wall, and said first inner wall is connected to and extends from said inner surface of said fourth outer wall toward said first outer wall and is disposed between said pair of second inner walls, said first inlet is formed in said first outer wall and is disposed between said inner surface of said second outer wall and one of said pair of second inner walls, and said first outlet is formed in said first outer wall and is disposed between said inner surface of said third outer wall and the other of said pair of second inner walls;

wherein a first coolant applied through said first inlet flows between said inner surface of said second outer wall and said one of said pair of second inner walls, then between said inner surface of said fourth outer wall and an unconnected end of said one of said pair of second inner walls, then between said one of said pair of second inner walls and said first inner wall, then between said first outer wall and an unconnected end of said first inner wall, then between said other of said pair of second inner walls and said first inner wall, then between said inner surface of said fourth outer wall and an unconnected end of said other of said pair of second inner walls, then between said other of said pair of second inner walls and said inner surface of said third outer wall, and then through said first outlet;

a second cooling chamber surrounding said first cooling chamber within said furnace and comprising a first outer wall, a second outer wall, a third outer wall, a fourth outer wall, a first inner wall, a pair of second inner walls, said outer surfaces of said second, third and fourth outer walls of said first cooling chamber, a second inlet, and a second outlet, wherein said first outer wall is in contact with said furnace, said second inlet and said second outlet are respectively formed in said first outer wall, said second outer wall is disposed outside of said second outer wall of said first cooling chamber and forms with said outer surface of said second outer wall of said first cooling chamber a first passageway connecting said second inlet to said second cooling chamber, said third outer wall is disposed outside of said third outer wall of said first cooling chamber and forms with said outer surface of said third outer wall of said first cooling chamber a second passageway connecting said second outlet to said second cooling chamber, said fourth outer wall of said first cooling chamber forming a common partition between said first and second cooling chambers with said inner surface thereof facing said first cooling chamber and said outer surface thereof facing said second cooling chamber, said first inner wall is connected to and extends from said fourth outer wall toward said outer surface of said fourth outer wall of said first cooling chamber, said pair of second inner walls are connected to and extend from said outer surface of said fourth outer wall of said first cooling chamber toward said fourth outer wall, with said first inner wall being disposed between said pair of second inner walls;

wherein a second coolant applied through said second inlet flows through said first passageway, then between said second outer wall and one of said pair of second inner walls, then between said fourth outer wall and an unconnected end of said one of said pair of second inner walls, then between said first inner wall and said one of said pair of second inner walls, then between said outer surface of said fourth outer wall of said first cooling chamber and an unconnected end of said first inner wall, then between said first inner wall and the other of said pair of inner walls, then between said fourth outer wall and an unconnected end of said other of said pair of second inner walls, then between said other of said pair of second inner walls and said third outer wall, and then through said second passageway, and then through said second outlet;

wherein said second coolant is supplied to said second cooling chamber at a higher volume rate than said first coolant is supplied to said first cooling chamber;

wherein said second, third and fourth outer walls of said second chamber are deteriorated first upon exposure to the inside of said furnace without affecting flow of first coolant in said first cooling chamber; and

wherein said fourth outer wall of said first cooling chamber is disposed to be ⅓ to ½ the distance between said first outer wall of said second cooling chamber and said fourth wall of said second cooling chamber.

4,619,443
GAS DISTRIBUTING TUNDISH BARRIER

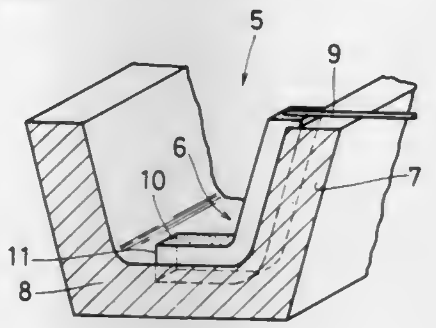
George K. Mitchell, Randfontein, South Africa, assignor to Rand Steel Technology [Proprietary] Limited, Randfontein, South Africa

Filed Oct. 2, 1984, Ser. No. 657,061

Claims priority, application South Africa. Oct. 6, 1983, 83/7463

Int. Cl.^{4} C21C *5/48*

U.S. Cl. 266—220 **6 Claims**



1. A tundish having at least one cast dam, and located in use, between the tundish walls at the lower part thereof so that it protrudes from the tundish floor; the dam having gas distributing means operatively connected to at least one pipe for conveying a supply of gas to the tundish; the gas-distributing means including a plurality of ducts formed in the body of the dam during casting thereof, and extending from the pipe to at least one dam surface which becomes exposed to molten metal during use of the tundish, the dam having an opening for drainage.

4,619,444
ARRANGEMENT FOR PREVENTING AIR FROM REACHING ABUTTING SLIDING SURFACES OF ROTARY SLIDING CLOSURE UNIT

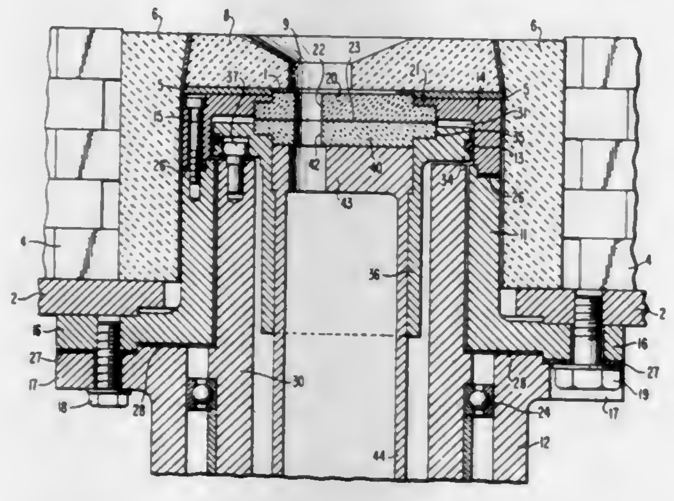
Herbert Bachmann, Lucerne, and Karl-Otto Hornung, Hombrechtikon, both of Switzerland, assignors to Stopinc Aktiengesellschaft, Baar, Switzerland

Filed May 13, 1985, Ser. No. 733,575

Claims priority, application Switzerland, May 23, 1984, 2533/84

Int. Cl.^{4} B22D *41/08*

U.S. Cl. 266—236 **8 Claims**



1. In a rotary sliding closure unit for controlling the discharge of molten metal from a metallurgical vessel, said unit being of the type including a stationary refractory member having a discharge opening, fixed mounting means for supporting said stationary refractory member at a position with said discharge opening adapted to be in alignment with an outlet of a metallurgical vessel, a rotary refractory member having a discharge opening, and rotary mounting means for supporting said rotary refractory member in abutment with said stationary refractory member along respective complementary abutting sliding surfaces and for rotating said rotary refractory member with respect to said stationary refractory member between an open position whereat said discharge openings are in alignment and a closed position whereat said discharge openings are out of alignment, the improvement comprising means for preventing air from contacting said abutting sliding surfaces of said stationary and rotary refractory members, said preventing means comprising:

said fixed and rotary mounting means defining therebetween an annular gap radially surrounding said abutting sliding surfaces; and

compressible seal means positioned at a location spaced from said abutting sliding surfaces and bearing against said fixed and rotary mounting means for sealing said annular gap and thereby defining a closed annular chamber radially surrounding said abutting sliding surfaces and isolated from exterior air.

4,619,445
SPRING UNIT

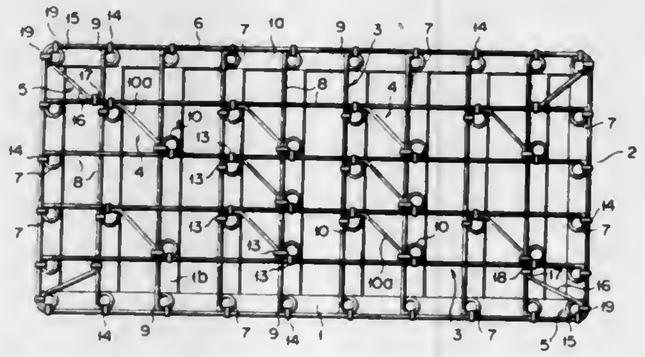
Noboru Sasaki, Tokyo, Japan, assignor to France Bed Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 493,330, May 10, 1983, abandoned. This application May 7, 1985, Ser. No. 731,604

Claims priority, application Japan, May 29, 1982, 57-92009; Feb. 22, 1983, 58-28230

Int. Cl.^{4} F16F *3/04*

U.S. Cl. 267—100 **5 Claims**



1. A spring unit, comprising:

a base plate including a first rectangular frame and parallel cross pieces, said frame having a periphery;

a second rectangular frame disposed parallel to the base plate;

a plurality of main springs, each having a first linear connecting rod portion, two first cylindrical spiral coil spring portions interconnected by said linear portion, and first straight portions substantially perpendicular to said linear portion and formed between said linear portion and each spiral coil spring portion, all integrally formed from a single length of wire, such that one end of each of said two first cylindrical spiral coil spring portions is connected to a corresponding one of two ends of said first linear connecting rod portion with a corresponding straight portion interposed perpendicularly therebetween, said plurality of main springs being disposed on the periphery of said first rectangular frame such that a first plurality of said first linear connecting rod portions are substantially at right angles to a second plurality of said first linear connecting rod portions and thereby form a matrix;

first fastening means fastening the other end of each of said first cylindrical spiral coil spring portions to the periphery of said first rectangular frame;

first clip means tightly fixing said second rectangular frame to the first straight portion at said one end of each of said first coil spring portions;

a plurality of intermediate support springs, each having a second linear connecting rod portion, two second spring portions, and second straight portions formed between said second linear portion and each second spring portion such that one end of each of said two second spring portions is connected to a corresponding one of two ends of said second linear connecting rod portion with a corresponding second straight portion interposed therebetween, each of said second linear connecting rod portions being shorter than each of said first linear connecting rod portions, and said plurality of intermediate support springs being disposed on said cross pieces of said first rectangular frame so that the two second spring portions of each intermediate spring are at diagonally opposite corners of intersections of said matrix;

second clip means tightly fixing the second straight portions at one end of each of said second spring portions to intersecting ones of said first linear connecting rod portions at said intersections of said matrix;

second fastening means fastening the other end of each of said second spring portions to said cross pieces of said first rectangular frame;

a plurality of corner springs, each corner spring being integrally formed from a single length of wire and being arranged between respective corners of said first and said second rectangular frames, each of said corner springs comprising a third spring portion having two ends, and a third linear connecting rod portion formed integrally with one end of said third spring portion, said third linear connecting rod portion having a free end bent at a given angle relative to the remainder of said third linear connecting rod portion to form a third straight portion extending integrally from said third linear connecting rod portion;

third fastening means fastening the other end of each of said third spring portions to a corresponding corner of said first rectangular frame;

fourth fastening means fastening each of said third spring portions to a corresponding corner of said second rectangular frame in the vicinity of said one end of each of said third spring portions; and

third clip means tightly fixing said third straight portion of each said corner spring to a first linear connecting rod portion of an associated main spring such that said third connecting rod portion extends at a given angle relative to said first linear connecting rod portion to which it is fixed.

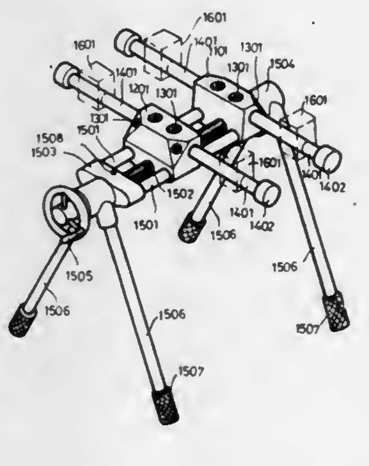
4,619,446
ADJUSTABLE SUPPORT ARM-TYPE THREE-DIMENSIONAL WORK BENCH

Tai-Her Yang, 5-1, Tai-Pin St., Si-Hu Town, Dzan-Hwa, Taiwan

Filed Jan. 2, 1985, Ser. No. 688,441

Int. Cl.^{4} B25B *1/02*

U.S. Cl. 269—88 **3 Claims**



1. In a workbench, the combination of a frame including guide rail means, leg means on the frame for elevating the guide rail means to a workbench height, a fixed jaw mounted on the guide rail means, a movable jaw carried on the guide rail means, means for moving the movable jaw on the guide rail means towards and away from the fixed jaw, respectively, each of the jaws having a plurality of faces including at least one chamfered face, each of the faces being provided with respective recesses therein, respective elongated support rods adapted to be removably mounted in selected recesses in the jaws and projecting therefrom, whereby the respective rods may be disposed parallel or transversely to each other, a clamping block means on at least one of the rods and slidably adjustable thereon, means for securing the clamping block means in its desired adjusted position on the rod, and the clamping block means including a pair of clamps, and screw-threaded means carried by one of the clamps for moving the clamps towards and away from one another in a direction parallel to the rod, whereby variously shaped workpieces may be clamped within the workbench, and whereby the workbench has increased flexibility and versatility.

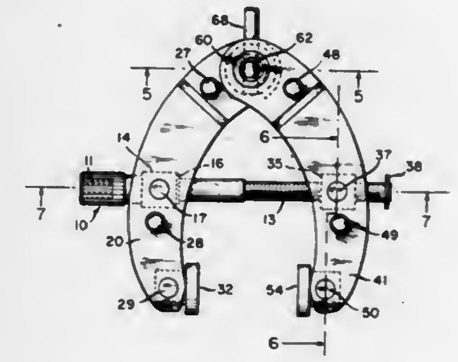
4,619,447
CLAMPING DEVICE

John B. Blake, P.O. Box 63, Park Ridge, N.J. 07656

Filed Oct. 3, 1985, Ser. No. 783,655

Int. Cl.^{4} B25B *1/06;* **A44B** *21/00*

U.S. Cl. 269—221 **14 Claims**



1. A clamping device for gripping a workpiece or workpieces between pivotally-retained clamp pads disposed at the distal ends of a pair of pivotally-retained arms, this clamping device including:

(a) a pair of C-shaped arm assemblies pivotally retained at one end and at the other end of each arm assembly having a pivotally-retained pressure clamp pad, each arm assembly of two substantially alike plate-like members of metal arranged and maintained in spaced array by spacer and securing means, and at the pivotally-retained end these arms are disposed to be in overlaid condition, and in each plate there is formed an aperture, with the apertures disposed for axial alignment;

(b) a pivot cam disposed at and retaining one end of the C-shaped arms, this pivot cam formed with two eccentric cam surfaces sized to be engaged with each of the apertured surfaces of the two plate-like members of only one of the pair of arms and with the intermediate portion of the pivot cam having an enlarged portion sized to be slideably retained between the smallest distance between plate-like members when in overlaid condition, the mounted pivot cam having its axis normal to the C-shaped arms;

(c) a trunnion block pivotally carried between said plate-like members in each arm, each trunnion block intermediate the extent of the C-shaped arm assemblies and each block disposed to be a precisely equal distance from the axis of the mounted pivot cam, one trunnion block having threads formed therein and the other trunnion block having a smooth bore therethrough, each trunnion block having means for pivotally mounting each block in the arm structure;

(d) a threaded cap screw having a head member adapted for rotative manipulation and having a shank portion with a threaded end portion, with these threads compatible with the threads in the threaded trunnion block, and limiting means for longitudinal retention of the cap screw in that trunnion block having a smooth bore and the threads on the cap screw compatible in the threads formed in the threaded trunnion block, said cap screw when and as mounted in said trunnion blocks providing an adjusting means and a force member that brings the pressure clamp pads toward and away from each other;

(e) a first spacer retainer having an enlarged midportion of a determined size and length so as to establish and maintain the plate-like members of a first arm in spaced array, and means for securing this retainer at a precise location and distance from the axis of the pivot cam;

(f) a second spacer retainer having an enlarged midportion of a size like that provided by the first spacer retainer, this second spacer retainer having a length so as to establish and maintain the plate-like members of this other clamp arm is spaced array, and means for securing this second spacer retainer at a precise location and distance from the axis of the pivot cam, the first and second spacer retainers so positioned that their axes establish a theoretical line therebetween so as to be always parallel to a theoretical line through the pivot axes of the trunnion blocks, said first and second spacer retainers and their precise location at a like distance from the axis of the pivot cam;

(g) another pair of spacer retainers, each having enlarged midportions, one spacer retainer positioned in said first arm assembly adjacent a trunnion block, and another similar spacer retainer positioned in the other arm assembly and also adjacent the trunnion block in said other arm assembly, each spacer retainer disposed between the plate-like members so as to establish and maintain the desired spacing, and

(h) a stop pin fixedly secured in the enlarged portion of the pivot cam and of sufficient length so that the stop pin as it is swung in an arc is limited by said first or second spacer retainers, this stop pin being secured so that when the stop pin engages one of the spacer retainers, the cam surfaces formed on the pivot cam engage the apertures in that arm assembly disposed to be actuated by the eccentric cam, the maximum throw of the arm assembly moving the pressure clamp pads closer together and, when the stop pin is moved to the other limit, the clamp pads are moved away from each other.

4,619,448

STOP MECHANISM, PARTICULARLY FOR STAMPLING MACHINES

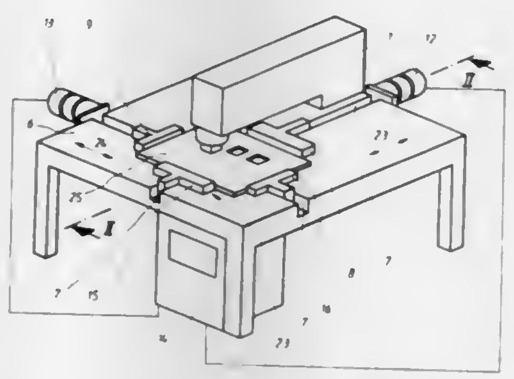
Berthold Leibinger, Gerlingen, and Eugen Herb, Ditzingen, both of Fed. Rep. of Germany, assignors to Trumpf GmbH & Co., Ditzengen, Fed. Rep. of Germany

Filed Mar. 11, 1983, Ser. No. 474,438

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1982, 3208989

Int. Cl.⁴ B23Q *3/00*

U.S. Cl. 269—303 **4 Claims**



1. A machine tool having a workpiece clamping and moving assembly for moving a workpiece in a horizontal plane and comprising:

A. a horizontal table having X and Y axes prependicular to each other;

B. first and second workpiece guide assemblies each including a first stop member supported on said table for reciprocal movement along an axis of said table and means for clamping an associated workpiece against each respective first stop member for movement therewith in the same direction as said stop member during its reciprocal movement, said clamping means of each guide assembly including a second stop member supported on said table for relative movement towards and away from the respective first stop member of the respective guide assembly independently of any movment of the first stop member thereof, and means to effect movement of said second stop member toward said respective first stop member to clamp the associated workpiece therebetween, said first stop member and clamping means of said first guide assembly being movable along said X-axis and said first stop member and said clamping means of said second guide assembly being movable along said Y-axis;

C. first and second drive means for said first stop members of said first and second guide assemblies respectively for effecting reciprocal movement thereof along said X and Y axes, said reciprocal movement of each of said first stop members producing concurrent reciprocal movement of an associated workpiece and concurrent reciprocal movement of the associated clamping means of that guide assembly to thereby effect controlled movement of an associated workpiece along said X and Y axes; and

D. control means for said first and second drive means for effecting operation thereof independently of each other.

4,619,449

FOLDING APPARATUS FOR FOLDING SUPERPOSED MULTIPLE WEBS

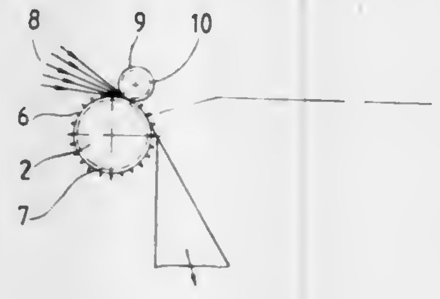
Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Continuation of Ser. No. 677,171, Dec. 3, 1984, abandoned. This application Jan. 7, 1986, Ser. No. 817,156

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1983, 3347715

Int. Cl.⁴ B41F *13/58*

U.S. Cl. 270—5 **14 Claims**



1. For combination with a rotary printing machine having a machine drive and supplying a plurality of running, superposed webs (**8**),

a folding apparatus having

a folding triangle or folding former (**1**);

a pull-off means (**5**) located downstream of an end zone of the folding triangle or folding member (**1**); and the combination of

a supply roller (**2**), driven at machine speed by the machine drive of said printing machine, positioned adjacent, upstream—in the direction of run of the webs—of a beginning zone of the folding triangle or folding former, the plurality of webs (**8**) being guided to run over said supply roller (**2**)

with means for preventing unequal feeding rates among superposed webs subjected to unequal tractive force from said driven roller (**2**), and consequent buckling, creasing, and tearing of said webs, said means comprising a plurality of engagement projections (**6**) extending radially outwardly from the circumference of the supply roller (**2**) located staggered about the circumference of the supply roller and having lengths sufficient for perforation through the superposed webs running over the supply roller (**2**).

4,619,450

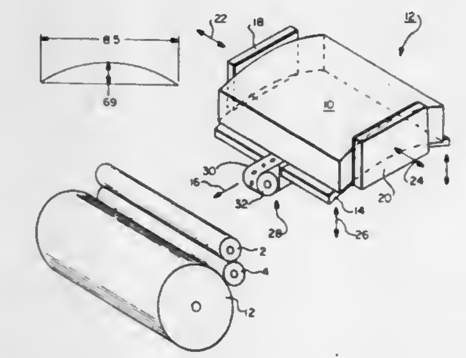
COPYING APPARATUS WITH AUTOMATIC BOTTOM FEEDER

Carl P. Anderson, Menlo Park, and Edward F. Mayer, San Jose, both of Calif., assignors to Ricoh Systems, Inc., San Jose, Calif. and Ricoh Company, Ltd., Tokyo, Japan

Filed May 10, 1985, Ser. No. 732,608

Int. Cl.⁴ B65H *3/04*

U.S. Cl. 271—35 **21 Claims**



1. In an electrophotographic apparatus designed to make successive copies utilizing a stack of copy paper utilizing a feeding arrangement configured to act on the stack in a way which successively moves pieces of paper off the bottom of the stack when the latter is placed in a feed tray, the paper feed assembly comprising

means for imparting a curvature to the stack of paper,

a pair of holding clamps arranged on either side of the feed tray facing the feed tray to hold said stack of copy paper in its curved position, said holding claims comprising a pair of plates, one on each side of said paper stack, said plates being movable into and out of engagement with the sides of said paper stack to hold said stack of copy paper in its curved position.

means for causing relative movement between the copy paper stack and the feed tray to allow withdrawal of the bottom sheet of copy paper, and

means for withdrawing the bottom sheet of copy paper while the feed tray is at a distance from the paper stack.

4,619,451

DRIVE ROLLER BIASING MECHANISM

Dennis W. Dodge, Amherst, N.H., assignor to Itek Corporation, Lexington, Mass.

Filed Oct. 31, 1984, Ser. No. 666,946

Int. Cl.⁴ B65H *5/06*

U.S. Cl. 271—274 **27 Claims**

1. A mechanism for establishing individually adjustable roller bite bias pressures between paper drive roller means mounted upon a frame and a corresponding plurality of pinch rollers, shiftable with respect to said frame, comprising:

biasing link means having a first portion rotatably mounted upon said frame by a first pivot means;

a plurality of roller support means actuated by said biasing link means, each rotatably supporting one of said pinch rollers;

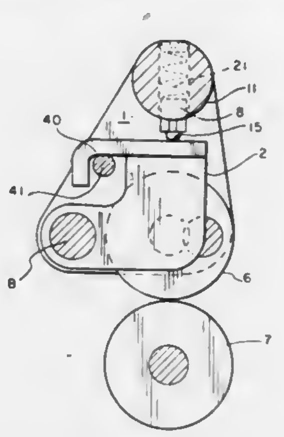
roller biasing isolation means for independently coupling each roller support means to said frame;

handle link means having a first portion thereof pivotably coupled to said frame by a second pivot means;

coupling link means having a first portion thereof rotatably coupled to a second portion of said handle link means by a third pivot means and having a second portion thereof coupled to a second portion of said biasing link means by a fourth pivot means;

a plurality of mechanical biasing means for asserting forces upon said pinch roller support means;

means for coupling said mechanical biasing means to said biasing link means for causing said pinch rollers to press against said drive roller means while producing a torque tending to rotate said roller position control link means about said second pivot means in a first direction for maintaining said handle link means in the closed position and for producing rotation of said handle link means about said second pivot means in a second direction opposite said first direction upon opening said mechanism to enable full separation of said pinch rollers from said drive roller means.



4,619,452

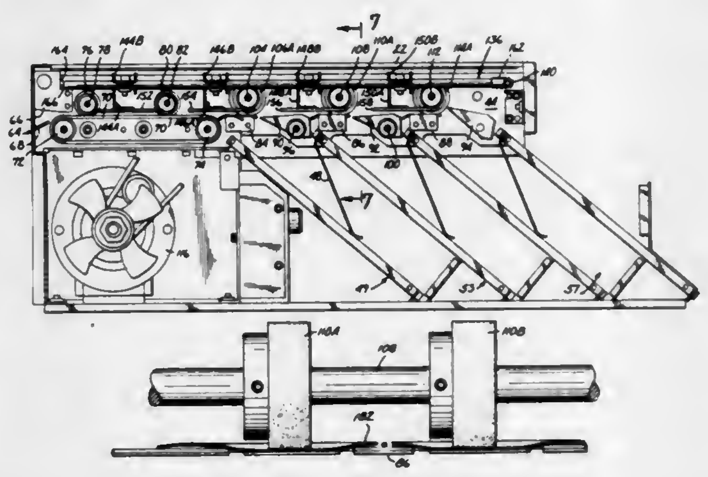
PHOTOGRAPHIC PRINT SORTER

Charles L. Euteneuer, St. Michael, and Robert E. Diesch, Rogers, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed Jun. 21, 1984, Ser. No. 623,098

Int. Cl.⁴ B65H *5/16, 29/62*

U.S. Cl. 271—305 **7 Claims**



1. A photographic print sorter having a conveyor path which includes a series of print drive stages for driving individual photographic prints in a longitudinal direction and having movable deflectors positioned between the print drive stages for selectively deflecting prints into print collecting trays, each print drive stage comprising:

a print slide having a top surface having a pair of recesses, the top surface supporting the prints as they are driven;

a drive shaft positioned above the top surface and the recesses, the drive shaft defining an axis of rotation which is parallel to the top surface and which extends in a transverse direction; and

a pair of drive rollers mounted on the drive shaft for rotation about the axis, the drive rollers being positioned to extend into the recesses to form an interference fit between the rollers, the print slide and each photographic print as the photographic print is driven over the top surface of the print slide by the drive rollers.

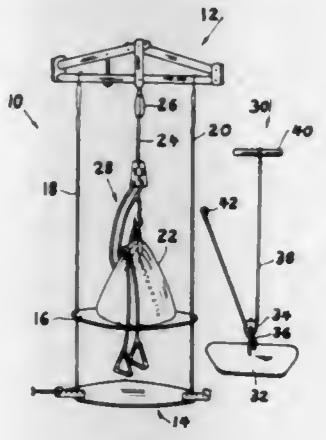
4,619,453
EXERCISE DEVICE

Lawrence H. C. Plumridge, 7 Arthur Wright Road, Fish Hoek, 7975, South Africa

Filed Nov. 1, 1984, Ser. No. 667,418

Int. Cl.^{4} A63B *21/06*

U.S. Cl. 272—117 **11 Claims**



1. An exercise device, said device comprising:
(a) a head attachment structure comprising first and second spaced engaging members for engaging respective vertical posts of a door frame, a connection link for connecting the first and second spaced engaging members together, a pair of suspension links each having a first and second end, the suspension links being connected together at their first ends, and each suspension link being connected at the second end thereof to one of the first and second engaging members, the combined length of the pair of suspension links being greater than the length of the connection link;
(b) a weight member comprising a bag for receiving removable weight units;
(c) an elongated flexible member attached at one end to the weight member and at the other end being attachable to the handle;
(d) a support member, attached to the suspension links proximate their first ends, and having means for guiding the flexible member such that when the flexible member is pulled to provide lifting of the weight member, a force is exerted by means of the support member on the pair of suspension links for urging the engaging members outwardly towards the vertical posts of a door frame to which the head attachment structure is fitted;
(e) at least one elongated guide member connected at one end to the head attachment structure;
(f) locating means for connecting said at least one guide member to a vertical post of a door frame at a location remote from the head attachment structure; and
(g) a stabilizing member which is guided by said at least one guide member in a vertical direction and which is connected to the weight member.

4,619,454
LEG CONDITIONER FOR LEG SPLIT TYPE EXERCISE

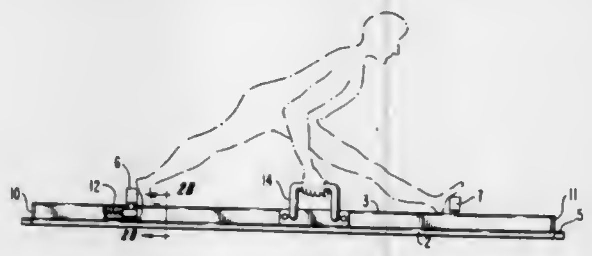
Ronald A. Walton, 4207 Byers St., Capitol Heights, Md. 20743

Filed May 30, 1985, Ser. No. 739,097

Int. Cl.^{4} A63B *21/00*

U.S. Cl. 272—141 **8 Claims**

1. A leg conditioner for use by a person performing a leg split type exercise with the legs spread apart and the body in a position above the legs comprising a frame, a pair of upstanding foot braces, means mounting said foot braces on said frame so that relative movement between said foot braces can be effected by a person performing said leg split type exercise with the fee pressed against the respective foot braces, said frame having a length sufficient to allow a person to spread the foot braces apart on the frame with the persons feet pressed against the respective foot braces during a leg exercise so that the person can attain a full or nearly full leg split exercising position, handle means arranged on said frame between said foot braces for said person to grip when performing said leg split type exercise, and means for yieldably resisting the spreading apart of the foot braces.



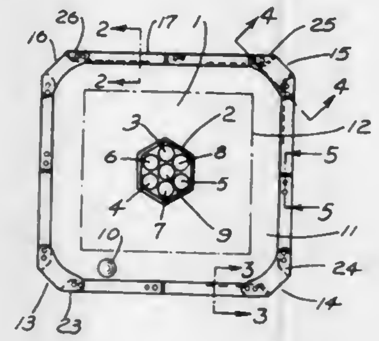
4,619,455
GAME APPARATUS

Azeez A. Quraishi, 549 Harley Dr., Apt. No. 6, Columbus, Ohio 43202

Filed Nov. 16, 1984, Ser. No. 672,063

Int. Cl.^{4} A63D *3/00*

U.S. Cl. 273—118 R **3 Claims**



1. An enclosure for a game involving balls within the enclosure comprising,
at least four side rails joined together to form a rectangular enclosure with at least four corners; each rail including a lower surface to rest on a floor, an upper surface remote from said floor a distance greater than one-half the diameter of balls used in the enclosure, and an inner surface extending between and joined to the upper and lower surfaces,
a rebound surface attached to each said rail and projecting inwardly from said rail to (1) engage balls impacting on the rail and (2) absorb the impact by deflection and rebound, said rebound surface being configured to engage the ball at its horizontal center line,
each rail having an end terminating adjacent a corner,
each corner including two rail ends spaced from each other and said two rails ends being oriented such that they are not aligned linearly, the spacing between the rail ends defining a passage for balls, each rail end having at least two apertures in its upper surface,
a cross member bridging across the space between the rail ends at each corner, each said cross member being spaced upwardly from the floor a distance greater than the diameter of the balls,
at least four pins projecting downwardly from each said cross member into said apertures, at least two said pins projecting into at least two apertures in each rail end to thereby hold the rails against relative rotation or horizontal movement.

4,619,456
MAGNETIC RETENTION OF HOCKEY GOALS

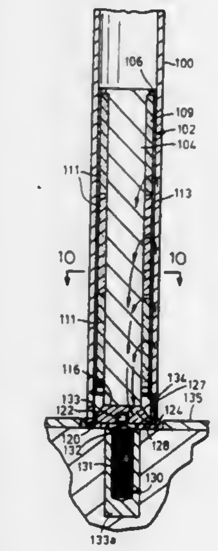
Dennis Meggs, Waterloo, Canada, assignor to Dennis Meggs Enterprises Limited, Ayr, Canada

Filed Apr. 11, 1984, Ser. No. 599,287

Claims priority, application United Kingdom, Apr. 26, 1983, 8311312

Int. Cl.^{4} A63B *63/00*

U.S. Cl. 273—127 B **15 Claims**



15. In combination:
a hollow hockey goal post in the form of a ferromagnetic pipe with an open bottom end,
a keeper secured to the ice, the keeper having a raised central portion adapted for insertion within the open bottom end of the ferromagnetic pipe, and a frusto-conical portion surrounding the raised central portion, and
a cylindrical canister within said pipe, the canister having means defining a ferromagnetic flux path within the canister and including the keeper, the canister incorporating means sustaining a closed magnetic ciruit passing through the means defining the ferromagnetic flux path within the canister, the keeper, and the ferromagnetic pipe.

4,619,457
BINGO GAME INVOLVING PROMOTIONAL COUPONS

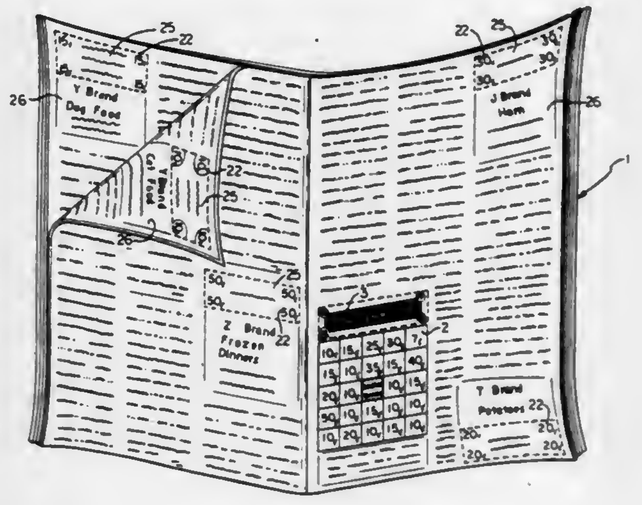
Maynard E. Small, 105 Ward Pkwy. Apt. 507, Kansas City, Mo. 64112

Continuation-in-part of Ser. No. 385,840, Jun. 7, 1982, Pat. No. 4,509,759, which is a continuation-in-part of Ser. No. 273,259, Jun. 12, 1981, Pat. No. 4,342,457, which is a continuation of Ser. No. 79,189, Sep. 26, 1979, Pat. No. 4,285,520. This application Feb. 7, 1985, Ser. No. 699,311

Int. Cl.^{4} A63F *3/06*

U.S. Cl. 273—269 **2 Claims**

1. A game of the type known as "bingo" for players comprising:
(a) a single edition printed run-of-press, multi-page and mass circulation publication;
(b) a set of playing cards, one of said set of cards being provided with each copy of said publication, each of said cards having a grid with several rows and columns forming set of patterned areas, each patterned area respectively bearing individual area indicia thereon;
(c) a set of coupons common to all players printed in said publication, at least a portion of said coupons being positioned at various isolated locations throughout the pages of the publication as to be spaced apart from one another by printed subject matter unrelated thereto, each coupon respectively bearing individual coupon indicia, whereby every player has an identical set of coupon indicia bearing coupons; at least a portion of said coupons being interspersed throughout said publication with unrelated printed material therebetween;
(d) said area indicia and said coupon indicia being cooperatively related, in that selected indicia from the coupon indicia set are matched area indicia with selected indicia from the area indicia set such that said matched area indicia describe a predetermined pattern on said playing card grid; whereby each player is urged to scan each page of said publication to determine the presence of said coupons in order to produce said predetermined pattern of matched area indicia; and wherein:



(e) said set of playing cards comprises a first portion of playing cards and a second portion of playing cards, said playing card set first and second portions each include a predetermined pattern of matched area indicia; said predetermined patterns of said matched area indicia of respective first and second playing card portions are dissimilar to each other; and said predetermined patterns of said matched indicia on all playing cards within a particular one of said portions are similar.

4,619,458
FLUID-TIGHT SHAFT MOUNTING WITH LEAKAGE DRAINAGE MEANS

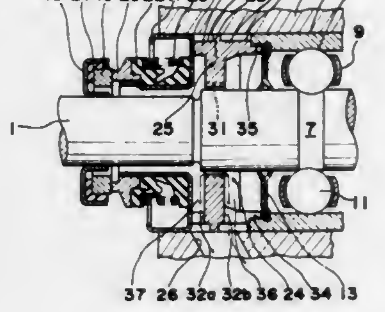
Mititosi Mitumaru, Kashiwara, Japan, assignor to Koyo Seiko Company Limited, Osaka, Japan

Filed Dec. 30, 1985, Ser. No. 814,372

Claims priority, application Japan, Oct. 15, 1985, 60-230704

Int. Cl.^{4} F16J *15/38*

U.S. Cl. 277—24 **3 Claims**



1. A fluid-tight shaft mounting for rotatably and fluid-tightly supporting a shaft member having one end rigidly mounted with a driven element, which comprises:
a generally tubular housing through which the shaft member extends;
a sealed bearing assembly positioned within the housing and exteriorly around the shaft member for the support of the shaft member relative to the housing;
an axial-mechanical face seal assembly interposed between the driven element and the sealed bearing assembly, and exteriorly around the shaft member;
said housing having at least one passage defined therein for communicating a space, between the bearing assembly

and the face seal assembly, with the outside of the housing; and

an annular partition member disposed within the housing around the shaft member so as to divide the space between the bearing assembly and the face seal assembly into first and second annular chambers adjacent the bearing assembly and the face seal assembly, said partition member comprising an annular radial body having its outer periphery formed with first and second axial flanges that protrude perpendicular to the radial body in opposite directions away from each other and terminate in abutment respectively with a portion of the bearing assembly and a portion of the face seal assembly, said radial body having its inner peripheral face spacedly surrounding the shaft member and formed with guide grooves, said first and second axial flanges having respective passage means defined therein in fluid-connected relationship with the passage in the housing.

4,619,459

CYLINDER HEAD GASKETS WITH APERTURE REINFORCING MEANS

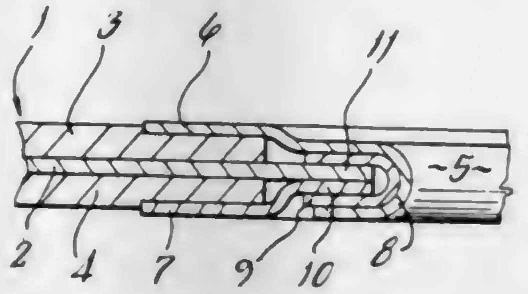
Maurice G. Herrington, Furnham Common, England, assignor to Payen International Limited, Berkshire, England

Filed Dec. 5, 1984, Ser. No. 678,758

Claims priority, application United Kingdom, Dec. 8, 1983, 8332855

Int. Cl.⁴ F16J *15/12*

U.S. Cl. 277—235 B **3 Claims**



1. A gasket comprising a flat body portion comprising two gasket facings and an inner reinforcing core, the gasket having an aperture at the inner edge of the centrally located reinforcing core defined therein, said aperture being provided with secondary sealing means comprising flat annuli located on opposite faces of the body portion in those regions there of surrounding and adjacent the aperture, the annuli extending into the aperture to provide annular primary sealing means radially inwardly of the margin of the aperture, wherein one of said annuli is folded around radially outwardly of the aperture to at least partially enclose, locate and retain a primary sealing ring radially inwardly of and relative to the margin of the aperture, said primary sealing ring comprising marginal portions of both of said annuli and co-operating portion of said reinforcing core which projects radially inwardly of the aperture from said flat body portion.

4,619,460

HAMMER-DRILL CHUCK

Günter H. Röhm, Heinrich-Röhm-Strasse 50, 7927 Sontheim, Fed. Rep. of Germany

Filed Mar. 21, 1984, Ser. No. 591,975

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1983, 8308926[U]; Apr. 29, 1983, 3315661[U]

Int. Cl.⁴ B23B *31/04*

U.S. Cl. 279—19 **10 Claims**

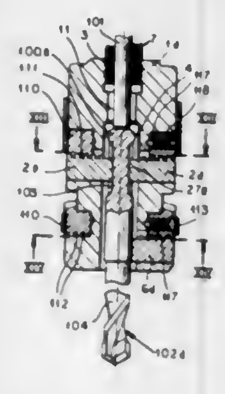
1. In combination with

a hammer drill having a drive spindle rotatable about a spindle axis and a hammer displaceable axially in the drive spindle; and

a drill bit having a shaft extending along a shaft axis and having a plurality of radially outwardly open and at least generally axially extending grooves, a chuck comprising:

a generally tubular chuck body centered on a chuck axis and having a central axially extending passage, the body normally being fixed on the spindle against movement angularly, axially, or radially relative thereto and spacedly receiving the shaft of the drill bit in its passage with the spindle, shaft, and chuck axes all coaxial, the hammer projecting axially forward into the passage and being engageable therein with the bit;

a plurality of centering jaws radially but not angularly or axially displaceable in the chuck body and having inner ends radially engageable with the drill-bit shaft offset from the grooves;



a plurality of coupling jaws radially but not angularly or axially displaceable in the chuck body and axially offset from the centering jaws, the coupling jaws having formations complementarily engageable in the grooves of the drill bit; and

respective guiding and coupling actuating means connected to the jaws for moving same radially synchronously and thereby centering the bit in the body by engagement of the inner ends of the centering jaws with the shaft and for engaging the formations of the coupling jaws in the grooves for rotationally linking the body and bit while permitting limited relative axial movement between the bit and the body.

4,619,461

HAMMER DRILL APPARATUS

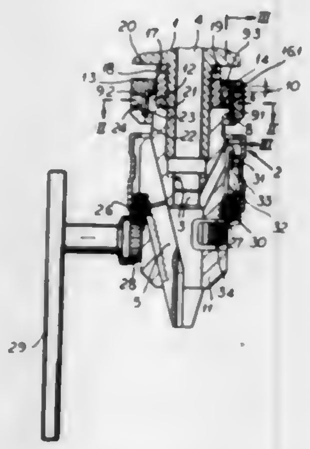
Günter H. Röhm, Heinrich-Röhm-Strasse 50, D-7927 Sontheim, Fed. Rep. of Germany

Filed Apr. 4, 1985, Ser. No. 719,760

Claims priority, application Fed. Rep. of Germany, May 8, 1984, 3416946

Int. Cl.⁴ B23B *31/08*

U.S. Cl. 279—19.3 **11 Claims**



1. In a hammer drill apparatus comprising a drill chuck driven by a drill spindle, said drill spindle being hollow and having an axial passage through which a hammer stroke of a ram passing through the spindle is transmitted to an end of a drill bit held between centrally adjustable clamp jaws in said drill chuck, and wherein a plurality of catches are provided for mounting of said drill chuck on said drill spindle so as to prevent rotation of said drill chuck relative to said drill spindle, but to allow axial play of said drill chuck on said drill spindle unless said axial play is prevented by a shift member adjustably mounted on said drill chuck, the improvement wherein said catches are radially protruding lugs rigidly connected with said drill spindle, said lugs lying axially opposite a plurality of shift surfaces on opposite sides of said drill chuck, and in one rotary position of said shift member said lugs are locked in close contact with said shift surfaces so as to prevent said axial play of said drill chuck on said drill spindle, and in another rotary position of said shift member said lugs are positioned with clearance from said shift surfaces so as to allow said axial play.

4,619,462

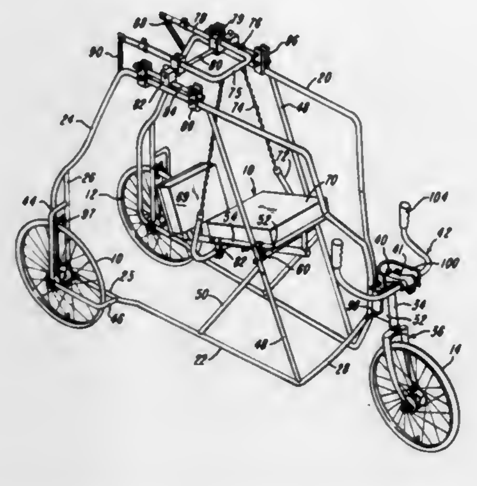
CYCLE APPARATUS HAVING THERAPEUTIC AND UTILITY ASPECTS

Don T. Shaffer, 5968 Culzean Dr., Apts. 1620, Trotwood, Ohio 45426, and Emmert Milyard, Box 11, Brookville, Ohio 45309

Filed Jun. 7, 1984, Ser. No. 618,193

Int. Cl.⁴ B62M *1/14;* **B62L** *1/00;* **A61H** *3/00;* **A63B** *21/00*

U.S. Cl. 280—242 R **22 Claims**



14. A cycle type structure including a frame, frame mounted means for supporting the body of a person so that the person's lower extremities may be in a freely dependent relation to the supporting means and extending toward an approaching relation to a frame underlying surface and means connecting said supporting means to said frame for a dynamic balancing of the supported person whereby the person's lower extremities have limited non-load bearing contact with a frame underlying surface.

4,619,463

UNIVERSAL ADJUSTMENT HITCH

Robert C. Weaver, R.D. #1, Port Matilda, Pa. 16870

Filed Jul. 18, 1985, Ser. No. 756,383

Int. Cl.⁴ B60S *9/04*

U.S. Cl. 280—475 **7 Claims**

1. On a towed power broom, said power broom having a wheel supported rear element and an attaching element coupled to and supported by said wheel supported rear element; an adjustable hitching device, comprising in combination:

pivoting means connected to said attaching element;

a tow bar connected to said pivoting means;

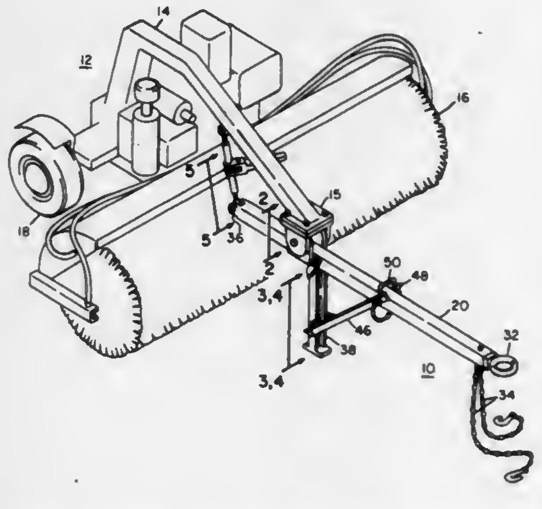
an adjusting device pivotally connected between said tow bar and said attaching element;

a foldable supporting device pivotally connected to said tow bar, adapted to support said tow bar in an approximate horizontal position; said supporting device comprising in combination:

a stand member pivotally attached to said tow bar and extending to ground support;

a stand support member pivotally attached to said stand member;

a hand grip attached to said stand support member and in sliding contact with said tow bar;



removable locking device, movable between a support locking position in which said locking device secures said stand support member to said tow bar and stowed locking position in which said locking device secures said supporting device in a folded inoperative position.

4,619,464

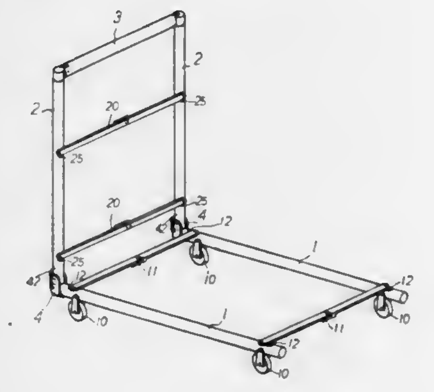
PORTABLE TYPE OF FOLDABLE LUGGAGE CART

Philip Hwang, 6A, 261 Nanking E. Rd., Sec. 3, Taipei, Taiwan

Filed May 21, 1985, Ser. No. 736,610

Int. Cl.⁴ B62B *3/02*

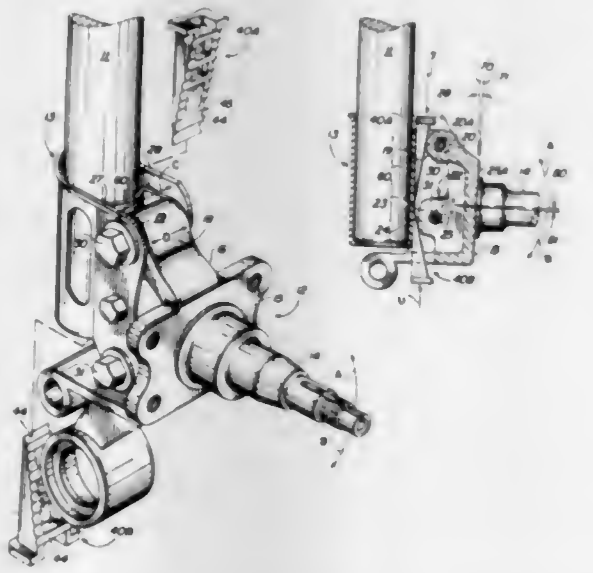
U.S. Cl. 280—655 **1 Claim**



1. A portable and foldable luggage cart comprising a pair of track rods, each track rod having a plurality of casters, a pair of vertical rods, means on one end of each of said track rods for pivotally mounting one end of one of said vertical rods to said one end of said each track rods, a handle pivotally connected at one of its ends to the free end of one of said vertical rods and having a projection at the other of its ends for engagement in a slot in the free end of the other of said vertical rods when said luggage cart is unfolded and erected for carrying luggage, hinged joints interconnecting said pair of track rods and said pair of vertical rods for spacing one of said track rods and vertical rods parallel to the other of said track and vertical rods when said hinged joints are opened for said cart to carry luggage, and for bringing said one and said other of said tracks together substantially close and parallel with each other when said hinged joints are closed for folding said cart, said pivotally mounting means on one end of each of said tracks having an open upward U-shaped end having a first pin extending through an elongated slot in said vertical rod, a second pin for engaging a slot in the end of said vertical rod when said vertical rod is perpendicular to said track rod, said open upward U-shaped end having a rear wall for engaging the slotted end of said vertical rod when said vertical rod is folded and for

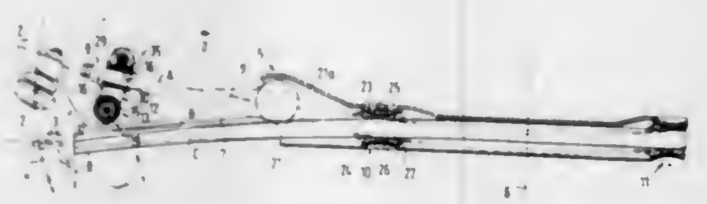
engaging the side of said rod when said slot is in engagement with said second pin, and a spring connected at one of its ends to said mounting means and at its other end to said vertical rod for engaging the slotted end of said vertical rod with said rear wall of said open U-shaped end when said vertical rod is folded and for engaging said slot in the end of said vertical wall with said second pin when said vertical rod is perpendicular to said track rod.

4,619,465
SHIM FOR ADJUSTING CAMBER
Robert D. Johnson, 2562 Trevino Pl., Mesa, Ariz. 85205
Filed Dec. 31, 1984, Ser. No. 687,916
Int. Cl.⁴ B62D *17/00*
U.S. Cl. 280—661 **1 Claim**



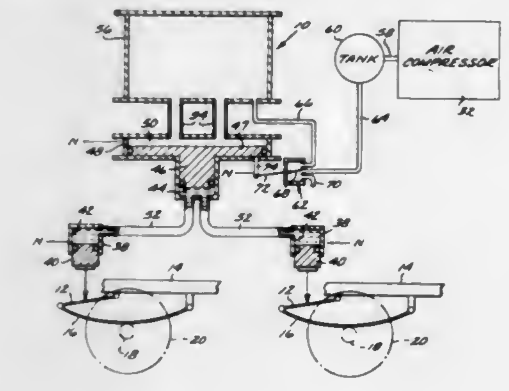
1. A method for adjusting the camber of a wheel carried by the suspension assembly of a vehicle, said suspension assembly including
  an elongate vertically disposed strut,
  a spindle including
    a base,
    an elongate member attached to said base and projecting outwardly therefrom and shaped and dimensioned to rotatably carry said wheel,
    an upper arm attached to said base and projecting rearwardly therefrom and including
      a distal end having an arcuate outer surface
      an elongate aperture formed therethrough,
    a lower arm attached to said base and projecting rearwardly therefrom and including
      a distal end having an arcuate outer surface,
      an elongate aperture formed therethrough,
  means for interconnecting said spindle and said strut, said interconnecting means being connected to said strut and including an upper aperture and a lower aperture formed therethrough,
  a first spindle securing bolt extending through said upper aperture of said interconnecting means and said elongate aperture of said upper arm,
  a second spindle securing bolt extending through said lower aperture of said interconnecting means and said elongate aperture of said lower arm,
  one of said spindle securing bolts having a cross-sectional area less than the cross-sectional area of at least one of said aperture formed through said interconnecting means to receive said one of said spindle securing bolts, and
    said elongate aperture formed through one of said lower and upper arms to receive said one of said spindle securing bolts,
  said interconnecting means being shaped and dimensioned such that said spindle securing bolts can maintain said spindle in position with respect to said strut with said arcuate outer surfaces of said spindle arms spaced away from said strut,
  said method comprising the steps of
(a) removing said wheel from said spindle;
(b) loosening said spindle securing bolts;
(c) pivoting said spindle a desired amount about the other of said spindle securing bolts;
(d) inserting a wedge-shaped shim between said strut and said arm carrying said one of said spindle securing bolts, said shim including
  (i) an elongate rear surface contacting said strut and having a longitudinal axis, and
  (ii) a front surface angled with respect to said rear surface and having a plurality of parallel arcuate grooves perpendicular to said longitudinal axis of said rear surface, one of said arcuate grooves being contacted by said arcuate outer surface of said arm having said elongate aperture to receive said one of said spindle securing bolts;
(e) tightening said spindle securing bolts; and,
(f) mounting said wheel on said spindle.

4,619,466
WHEEL SUSPENSION
Walter Schaible, Hemmingen, and Peter Mast, Ehningen, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany
Filed Sep. 24, 1984, Ser. No. 653,776
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1983, 3334623
Int. Cl.⁴ B60G *11/08, 3/06*
U.S. Cl. 280—669 **29 Claims**



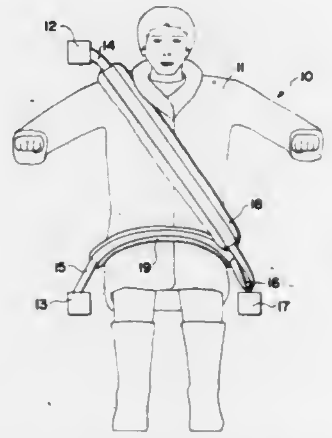
17. A wheel suspension in which wheel carriers of mutually oppositely disposed wheels are connected each with a guide member which is pivotally connected at a relatively fixed part so as to be displaceable in the generally vertical direction, and in which the guide member of each wheel is operatively connected with the free end of a leaf spring means that extends substantially transversely to the vehicle longitudinal axis and is supported at the fixed part, and in which said leaf spring means, in addition to its function as wheel spring, also serves as stabilizer, comprising guide arm means operatively connecting the free ends of the leaf spring means with the guide members at a distance to the latter, elastic bearing support means for retaining the guide arm means so as to be relatively movable and pivotal with respect to the guide members, and clamping means at the ends of the guide arm means opposite the elastic bearing support means for clampingly fastening the leaf spring means,
  wherein the guide members are formed by cross guide members,
  in which the relatively fixed part is part of the vehicle body which includes a bearer means, and wherein the center area of the leaf spring means is elastically clamped-in between two bearing support means, said bearing support means being arranged at said bearer means at a distance to the vehicle longitudinal axis,
  wherein aid bearing support means include elements elastically surrounding the leaf spring means, and bearing shells arranged mutually oppositely and constructed of arcuate shape in the vehicle transverse direction for retaining therebetween the elastic elements,
  wherein said bearer means includes walls which, within the center area of the bearing support means, have an arcuate configuration in the transverse direction corresponding to the bearing shells and which form-lockingly receive the bearing shells, and
  wherein the guide arm means extends generally vertically from the cross guide member, the leaf spring mens being held at its end of the free upper end of the guide arm means and this area of the leaf spring means assuming a position above the cross guide member.

4,619,467
VARIABLE RATE AIR SPRING APPARATUS FOR VEHICLE SUSPENSION
James W. Lafferty, 11122 Wright Rd., Lynwood, Calif. 90262
Filed Apr. 16, 1984, Ser. No. 600,949
Int. Cl.⁴ B60G *11/26*
U.S. Cl. 280—708 **11 Claims**



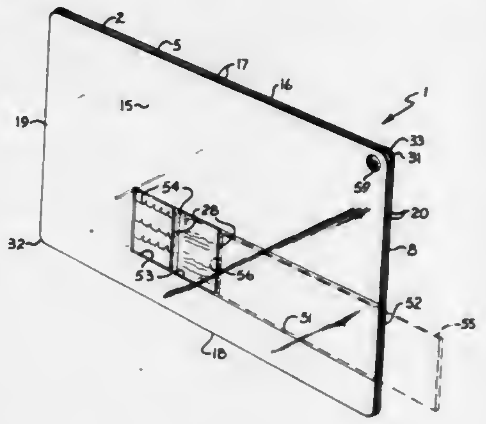
1. In a vehicle having a frame, an axle, and suspension means coupling said axle to said frame for movement of said axle and said suspension means relative to said frame through a dynamic range during travel of the vehicle over a roadway, said dynamic range including a static position relative to said frame, determined by the static load on said axle and said suspension means when the vehicle is stopped, an improved air spring apparatus comprising:
  inexpansible active air cylinder means defining air chamber means and having air piston means reciprocable therein from one side to the other of a neutral position to increase and decrease the pressure in said air chamber means, said active air cylinder means and said air piston means being operatively coupled in-series with said suspension means and said frame for reciprocating said air piston means responsive to said movement of said axle and said suspension means;
  inactive air cylinder means located remote from and coupled in-series with said active air cylinder means, said axle and said suspension means, and including first conduit means providing fluid communication with said air chamber means sufficiently friction free that the pressures in said air chamber means and said inactive air cylinder means are substantially the same during reciprocation of said air piston means whereby said inactive air cylinder means thereby constitutes an air column extension of said active air chamber means;
a source of air under pressure;
second conduit means providing fluid communication between said source and said inactive air cylinder means; and
height control means for maintaining a predetermined location of said air piston means in said active air cylinder means, at a level operative to tend to locate said air piston means in said neutral position, and thereby tend to locate said axle and said suspension means in said static position.

4,619,468
COVER FOR A SEATBELT OF AN AUTOMOBILE
Horst Spill, 702 - 261 Queen St., Winnipeg, Manitoba, Canada R3J 3R1
Filed Jan. 22, 1985, Ser. No. 693,536
Int. Cl.⁴ B60R *21/00*
U.S. Cl. 280—801 **3 Claims**



1. A combination of a seatbelt strap and a cover for the seatbelt strap of an automobile particularly for use with a fur coat worn by an occupant, the strap including means arranged to fasten around the occupant such that part of the strap contacts and restrains the occupant, the cover comprising an elongate flexible fabric rectangular layer having a length of the order of 24 to 27 inches, a central strip along the length thereof being formed from a natural fur pile fabric material having a width of the order of 2 inches for lying along one side of the strap, a first strip along one side of the central strip and a second strip along the other side thereof each being formed from a non-pile fabric material including along an edge thereof remote from the central strip one of a pair of cooperating fastening means the cover being wrapped around the strap to form a sleeve with the pile fabric inner-most for engaging the coat, whereby the only engagement of clothes of the occupant by said seatbelt is by said fur fabric.

4,619,469
CARD FOR MICROFILM AND METHOD OF FORMING SAME
Jerry D. Grover, 5406 Oliver, Kansas City, Kans. 66106
Filed Jul. 26, 1982, Ser. No. 401,636
Int. Cl.⁴ B42D *15/00;* **G09F** *3/03*
U.S. Cl. 283—76 **21 Claims**



1. A card which comprises:
(a) a core having:
  (1) a front surfae;
  (2) a back surface;
  (3) a top edge;
  (4) a bottom edge;
  (5) a pair of opposite side edges; and
  (6) an elongated cut-out open at one of said side edges and extending substantially parallel to said core top and

bottom edges, said cut-out terminating in a blind end in spaced relation from the other of said core side edges;

(b) transparent front and back panels thermally bonded to said core front and back surfaces respectively, each said panel having:

(1) a heat sensitive adhesive thereon for bonding said panel to said core;

(2) an area covering said cut-out; and

(3) a line of said adhesive extending transversely across said area and dividing said area into a pair of area subparts each free of said adhesive;

(4) said lines of adhesive being bonded together;

(c) an opaque cover attached to said back panel and including:

(1) a first portion covering said cut-out and being removable from said back panel;

(2) a second portion attached to said back panel; and

(3) said first and second portions being integrally connected and demarcated by a tear line, said cover first portion being removable from said cover second portion along said tear line; and

(d) a pocket formed by said cut-out between said front and back panels, said pocket being subdivided into a pair of discrete compartments with said adhesive lines bonding said panels together therebetween;

(e) said discrete compartments being adapted to receive at least one microfilm segment visible through said front panel with said cover first portion removed.

15. A method of forming a card which comprises the steps of:

(a) forming a core with an edge, a cut-out open at said edge and front and back surfaces;

(b) bonding a transparent front panel to said core front surface in covering relation to said cut-out;

(c) bonding a translucent back panel to said core back surface in covering relation to said cut-out;

(d) providing an opaque cover with first and second portions demarcated by a tear line whereby said cover first portion is removable from said cover second portion along said tear line;

(e) adhesively securing only said cover second portion to one of said panels;

(f) covering said cut-out with said cover first portion; and wherein a pocket is defined by said cut-out between said front and back panels, said pocket being adapted to receive a microfilm segement visible through said front panel with said cover removed and accessible at said core edge.

4,619,470

FLANGE CONNECTION ASSEMBLY FOR FIBER-REINFORCED PLASTIC PIPE MEMBERS

Friedhelm Overath, Schaffhausen, and Remo Saner, Büsserach, both of Switzerland, assignors to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Feb. 20, 1985, Ser. No. 703,331

Claims priority, application Switzerland, Feb. 20, 1984, 802/84

Int. Cl.⁴ F16L *58/00*

U.S. Cl. 285—55 **8 Claims**

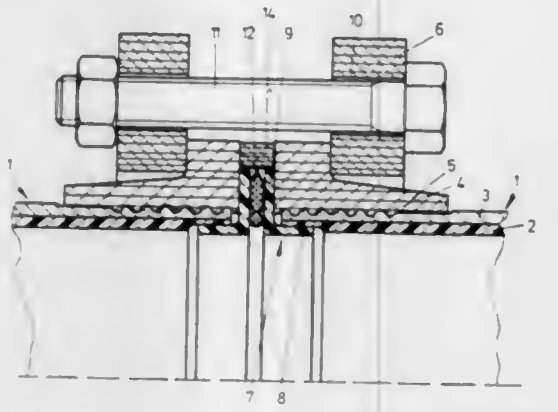
1. A flange connection assembly for fiber-reinforced plastic pipe members comprising:

a pair of pipe members joined together, said pipe members each comprising an inner pipe jacket consisting essentially of thermoplastic material and an outer pipe jacket consisting essentially of a fiber winding impregnated with a synthetic resin;

a threaded section consisting essentially of rounded threads formed in said outer pipe jacket at the end of each of said pipe members;

a flange bushing including a loose flange ring and having rounded threads formed on said bushing threadedly engaged on each of said threaded sections of said outer pipe jacket; and

a covering collar covering at least the end of each of said pipe members inserted at said inner pipe jacket, said covering collar consisting essentially of a cylindrical portion extending into engagement internally into said inner pipe jacket joined with said inner jacket by a bonded connection which is fluid tight;



said covering collar being fabricated of the same material as said inner pipe jacket and coextending in engagement therewith to at least partially overlap with said flange bushing;

said flange bushing consisting essentially of a fiber winding impregnated with synthetic resin and being solidly connected with said pipe members in said threaded section by means of a bonded connection.

4,619,471

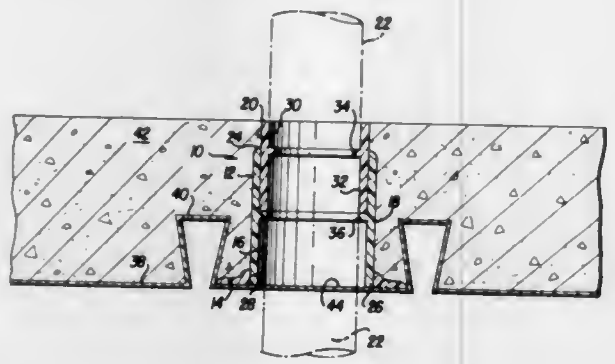
EMBEDDED PIPE COUPLING HOLDER

Gerold J. Harbeke, 2807 So. Military Trail, West Palm Beach, Fla. 33415

Filed Nov. 27, 1985, Ser. No. 802,277

Int. Cl.⁴ F16L *5/00*

U.S. Cl. 285—158 **5 Claims**



1. A pipe coupling holder for holding a pipe coupling joint to be embedded in concrete to a concrete form, said pipe coupling joint having cylindrically-shaped external and internal surfaces, said internal surface including a ridge abutment therein for abutting against the ends of pipes coupled by said pipe coupling joint, said holder comprising:

an elongated, tubularly-shaped barrel member having a cylindrical inner wall of a size for snugly receiving the external surface of said pipe coupling joint at a first end of said barrel member for being engaged thereto, said barrel-member inner wall having a size that at all positions along the length of said barrel member is at least as great as the size of the inner surface of said pipe coupling joint, the outer wall of said barrel member having a fixed shape extending from an opposite second end thereof for a substantial distance along the length thereof toward said first end;

a flange member being separate from said barrel member but defining a flange hole therethrough of a size for snugly

receiving the fixed-shaped outer wall of said barrel member to be selectively adhered thereto at a selected position along said barrel member;

whereby second-end portions of said barrel member can be cut away to accommodate raised portions of a concrete form wall so that said second end can be brought into contact with an unraised portion of said form wall, the flange being slidable along the outer wall of said barrel member so that it can be placed on top of said raised portion of said concrete form wall, and said flange can be adhered at this position along said outer wall of said barrel portion and fastened to the raised portion of said concrete form wall to hold said pipe coupling holder and said pipe coupling joint in position while concrete is poured into said form.

4,619,472

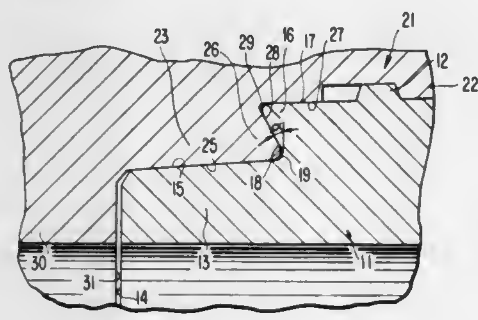
PIPE COUPLING

Haruo Kozono, and Isao Arakawa, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed May 2, 1985, Ser. No. 729,971

Int. Cl.⁴ F16L *25/00*

U.S. Cl. 285—334 **5 Claims**



1. A pipe coupling, comprising:

an inner tubular member having

a cylindrical externally threadless external sealing portion terminating in a substantially free tip, said external sealing portion being tapered in a forward direction toward said tip,

external thread rearward of said external sealing portion, and

a threadless external peripheral shoulder, triangular in cross section, between said external thread and said external sealing portion, the exterior of said inner tubular member being threadless from said tip to said external thread, said external peripheral shoulder including a first unthreaded surface leading rearwardly to said external thread, and an inversely conical surface leading from said first unthreaded surface to an external sealing surface of said external sealing portion, defining an annular V-shaped groove between said external sealing surface and said inversely conical surface; and

an outer tubular member having

a threadless internal sealing portion fitted tightly on said external sealing portion,

internal thread rearward of said internal sealing portion, threadedly engaging said external thread, and

a threadless internal peripheral shoulder, triangular in cross section, between said internal thread and said internal sealing portion, the interior of said outer tubular member being threadless from said internal sealing portion to said internal thread, said internal peripheral shoulder including a second unthreaded surface leading rearwardly to said internal thread and a conical surface extending in a rearward and radially inward direction from a forward end of said second unthreaded surface to a rearward end of an internal sealing surface of said internal sealing portion so as to define an annular V-shaped groove between said second unthreaded surface and said conical surface, such that said external and internal peripheral shoulders respectively tightly fit in the V-shaped grooves of said inner and outer tubular members, whereby said external sealing portion is free of axial stress.

4,619,473

FLUID PASSAGE CONNECTOR FOR LIQUID CHROMATOGRAPH

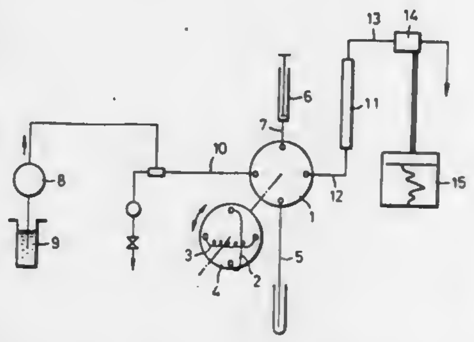
Noboru Someya, Chiba, Japan, assignor to Tokyo Rika Kikai Co., Ltd., Japan

Filed Apr. 16, 1984, Ser. No. 600,784

Claims priority, application Japan, Apr. 18, 1983, 58-68212

Int. Cl.⁴ F16L *25/00*

U.S. Cl. 285—353 **13 Claims**



1. A fluid passage connector for liquid chromatographs comprising a push bolt having a threaded portion at one end thereof and an axial hole therethrough; a tube extending through said axial hole, with the end of said tube extending through said hole, and proximate said threaded portion, being flat; a ferrule surrounding said tube near end thereof and abutting said one end of said push bolt; a cylindrical packing member having an axial recess at one end thereof terminating in a shoulder and having an axial passage therethrough; said end of said tube being seated in said axial recess against said shoulder; and a joint member having an axial opening therein terminating in a shoulder, at least a portion of the wall surrounding said opening distal from said last-mentioned shoulder being threaded, and an axial passage therethrough; said cylindrical packing member being seated in said axial opening against said last-mentioned shoulder; said threaded portion of said push bolt being inserted in said axial opening and threadedly engaged therewith; whereby a fluid-tight joint is produced.

4,619,474

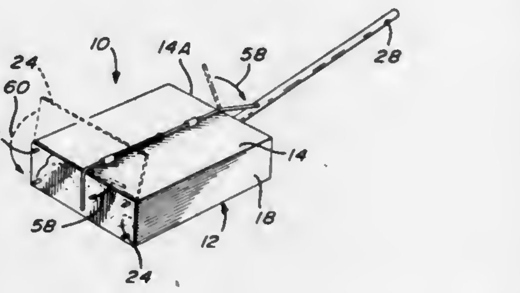
ASH-REMOVAL SHOVEL

Paul Yvan Dauphinais, 3625 Pacific Street, Saint-Hubert, Canada (J3Y 5K2)

Filed Sep. 17, 1985, Ser. No. 776,909

Int. Cl.⁴ A47F *13/08*

U.S. Cl. 294—9 **5 Claims**



1. A shovelling device for removing substantially all ashes from an ash-pit, comprising a box-like casing including top and bottom walls, two side walls, a rear wall, and a front flap door hingedly secured to said top wall; a handle bar outwardly projecting from said rear wall; a closure member, mounted on the outer face of the said top wall to releasably close by the outside said casing flap door, and consisting of a rod, including

an intermediate portion and front and rear bent end portions, and at least two longitudinally-spaced front and rear brackets fixedly secured to the outer face of said top wall and through which slidingly and rotatively engages said rod main portion; said rod rear end portion constituting a hand-actuated operating lever and said rod front end portion constituting a closure lever, the latter in its downwardly-oriented position being releasably positionable against the flap door to close same; a ring, fixedly secured to an intermediate section of said rod main portion; and a compression coil spring surrounding the rod intermediate section and extending in between said ring and said front bracket; whereby pushing said rod forwardly compresses said coil spring, by pushing said coil spring against said front bracket, said closure lever in its flap closing position being biased against said flap door by said coil spring to sealingly close said casing.

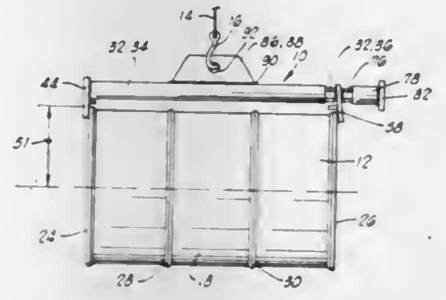
4,619,475
DRUM LIFTING APPARATUS

Lawrence E. Sylvest, II, Franklinton, La., assignor to Conoco Inc., Ponca City, Okla.

Filed Jun. 10, 1985, Ser. No. 742,984

Int. Cl.⁴ B66C *1/42*

U.S. Cl. 294—90 **16 Claims**



1. An apparatus for lifting a drum which has a particular length, said apparatus comprising:

a lifting beam having first and second ends;

a fixed first flange fixedly attached to said first end of said beam and extending laterally therefrom and having a first drum lip engagement means extending from said first flange substantially parallel to said beam in a first direction from said first end toward said second end of said beam, for engaging a first annular lip on a first end of said drum;

said second end of said beam having a shoulder defined thereon facing in said first direction, a distance parallel to said lifting beam between said shoulder and an inner surface of said first flange being less than the length of said drum;

a threaded rod fixedly attached to said beam and extending in said first direction from said shoulder of said second end of said beam;

a releasable second flange having an opening therethrough through which said rod is loosely received, so that said second flange may slide on said rod and may engage said shoulder, said second flange extending laterally from said rod and having a second drum lip engagement means extending from said second flange in a second direction substantially opposite said first direction for engaging a second annular lip on a second end of said drum, said opening in said second flange having a sufficient clearance about said threaded rod that said second flange can be tilted away from a radially extending orientation relative to said threaded rod to facilitate engagement and disengagement of said second lip engaging means with said second annular lip;

a first threaded nut means threadedly engaged with said threaded rod on a side of said second flange opposite said shoulder of said lifting beam, for tightening said second flange against said second end of said drum; and

lifting eye means, fixedly attached to said lifting beam substantially midway between said first and second ends of said lifting beam, for engagement by a crane or the like for lifting said drum lifting apparatus and said drum.

4,619,476
EXPANDABLE STORAGE SYSTEMS FOR SMALL VEHICLES

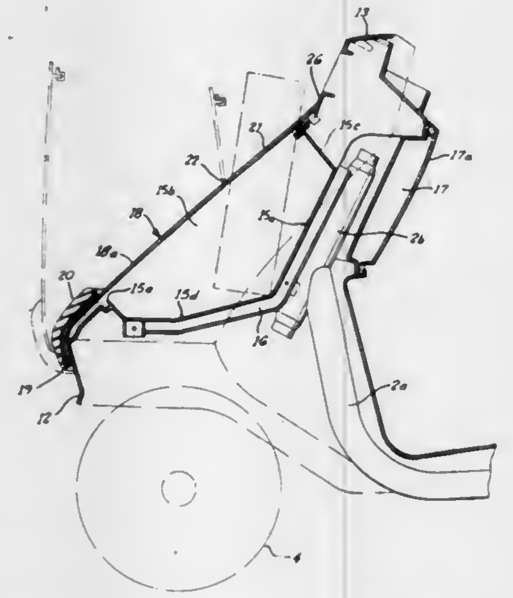
Katsuyoshi Kawasaki, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 459,482, Jan. 20, 1983, abandoned. This application Dec. 23, 1985, Ser. No. 815,183

Claims priority, application Japan, Jan. 21, 1982, 57-7278[U]; Jan. 21, 1982, 57-7279[U]

Int. Cl.⁴ B62J *7/06;* **B60R** *5/02;* **B62D** *25/12*

U.S. Cl. 296—37.1 **5 Claims**



1. A vehicle having a single steerable front wheel comprising a front fender extending about the front wheel, a leg shield having a contoured front exterior surface angled upward from ahead of the front wheel and walls extending rearwardly from said front exterior surface adjacent said front wheel, a storage compartment formed within the leg shield and above said front wheel, said front exterior surface of said leg shield forming a lid comprising a lower lid and an upper lid hinged together at adjacent edges, front bumper means positioned forward of said front wheel at the lower edge of said lower lid, said bumper means forming a lower hinge connecting said lower lid to said front fender for simultaneous pivoting of said upper and lower lids to an open position wherein said adjacent edges abut together, and cooperating closure means attached between the upper edge of said upper lid and said leg shield to retain said lid closed.

4,619,477
MOTOR VEHICLE DOOR INTERIOR LINING EQUIPPED WITH A STORAGE POCKET

Rudi Kneib; Ludwig Emmer, and Peter Robitschko, all of Sindelfingen, Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Mar. 5, 1985, Ser. No. 707,812

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1984, 3408611

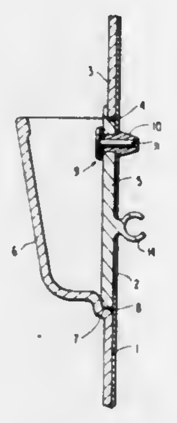
Int. Cl.⁴ B60R *7/04*

U.S. Cl. 296—37.13 **11 Claims**

1. In a motor vehicle, a door interior lining having an assembly aperture and equipped with a storage pocket congruent therewith, comprising

a plate means forming a rear wall of the storage pocket and releasably fastened within said aperture,

at least one releasable fastening means for effecting removal of at least the plate means towards the interior of the vehicle after release of said at least one fastening means to expose said assembly aperture.



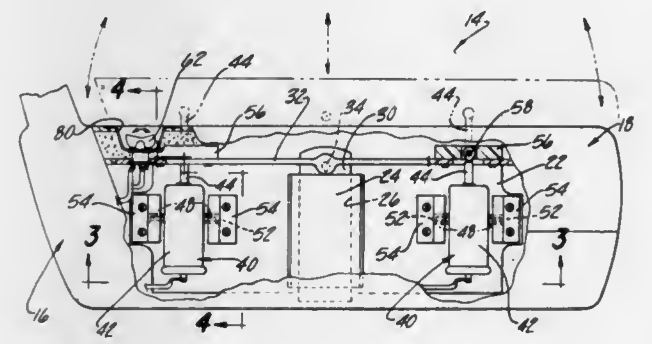
4,619,478
POWERED ADJUSTABLE ARM REST

Paul Heimnick, Owosso, and LeRoy B. Johnson, Perry, both of Mich., assignors to Schmelzer Corporation, Flint, Mich.

Continuation-in-part of Ser. No. 572,660, Jan. 20, 1984. This application Aug. 26, 1985, Ser. No. 769,265

Int. Cl.⁴ B60J *9/00*

U.S. Cl. 296—153 **20 Claims**



1. A power-operated adjustable arm rest assembly adapted to be adjustably mounted on a relatively fixed structure for adjustment along a generally vertical plane, said arm rest assembly comprising:

a generally longitudinally-extending arm rest structure;

mounting means adapted to be fixedly secured to said fixed structure for mounting said arm rest structure thereon, said mounting means having an opening extending therethrough in a generally vertical direction;

support means for interconnecting said arm rest structure with said mounting means for both pivotal and generally translational adjustable movement relative to said mounting means in said generally vertical plane, said support means including a generally vertically-extending elongated support member vertically slidably received in said opening in said mounting means and pivotally interconnected with said arm rest structure for pivotal relative movement in said generally vertical plane;

a pair of selectively actuable powered actuating means longitudinally spaced apart on opposite sides of said support means and interconnecting said arm rest structure and said mounting means for selectively urging said arm rest structure to, and for holding said arm rest structure in, preselected adjusted positions relative to said mounting means, said holding means being selectively actuable independently of one another to perform said urging and holding functions in order to allow both the pivotal and translational positions of said arm rest structure relative to said fixed structure to be adjusted independently.

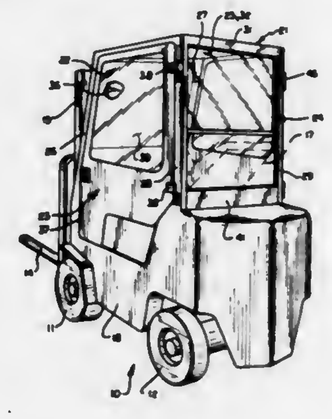
4,619,479
LIFT TRUCK CAB

Robert P. Martin, Jr., 12576 Lake Ave., Lakewood, Ohio 44107

Filed Mar. 14, 1985, Ser. No. 711,972

Int. Cl.⁴ B62D *33/06*

U.S. Cl. 296—190 **6 Claims**



1. In combination, an industrial lift truck and a cab on the truck, the truck including a frame, an engine mounted on the frame, and components in the cab mounted on the frame, the cab comprising a roof structure for protecting the operator from falling objects, weather, airborne pollution, and the like, four generally upright corner members supporting the roof adjacent their upper ends and for attachment to the truck at their lower ends, a pair of said corner members being disposed adjacent the left and right front of the cab and another pair of said upright corner members being generally disposed adjacent the left and right rear of the cab, a transparent windshield supported on the front pair of upright corner members, left and right side walls supported on left and right ones of said upright corner members, respectively, a rear wall supported on the rear pair of corner members, the rear wall including an upper transparent panel and a lower panel, the lower panel being movably mounted relative to the upper panel between extended and retracted positions, guide means supported on said rear corner members for guiding said lower panel for movement between said extended and retracted positions, the retracted position being generally elevated relative to the extended position, said lower panel in its extended position cooperating with the upper panel to close off the zone between the rear pair of corner members and thereby exclude environmental intrusion, said components of the truck being movably mounted in the cab for access to the motor, said lower panel in its retracted position permitting said components of the truck to pass through the space of its extended position, and means on said cab for releasably holding said lower panel in its retracted position.

4,619,480
SUNROOF PANEL OPENING/CLOSING APPARATUS

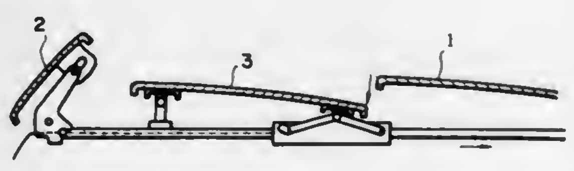
Kichizo Motoyama, Tokyo, and Yoshiharu Araki, Ueda, both of Japan, assignors to Kabushiki Kaisha Johnan Seisakusho, Ueda and Aichi Machine Industry Co., Ltd., Nagoya, both of, Japan

Filed Sep. 28, 1984, Ser. No. 655,566

Claims priority, application Japan, Sep. 29, 1983, 58-181366

Int. Cl.⁴ B60J *7/22, 7/053, 7/057, 7/185*

U,S. Cl. 296—217 **4 Claims**



1. An apparatus for opening and/or closing a forward sunroof panel (2) and a rearward sunroof panel (3) both attached

to an aperture formed in a roof panel (**1**) of a vehicle body, which comprises:

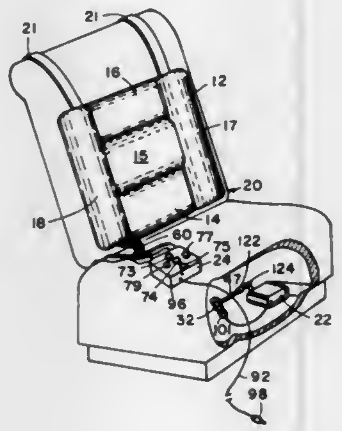
(a) a motor (**26**);
(b) a pair of guide rails (**20**);
(c) a lefthand and a righthand geared wire (**21**), one wire arranged along each guide rail (**20**) disposed under the roof panel and driven by said motor in rearward and forward directions;
(d) a lefthand and a righthand forward panel tilting mechanism (**100**), one mechanism associated with each geared wire for tilting the forward sunroof panel front down to its open position when said geared wires are shifted by a first wire stroke by said motor and for tilting the forward sunroof panel to its closed position when said geared wires are reversely shifted by the first wire stroke by said motor, said tilting mechanisms each comprising a latch (**101**) and a detent lever (**102**), both pivotally supported by one of the guide rails, said latch being pivoted by a pin (**105**) fixed to one of said geared wires to a position at which the forward sunroof panel is tilted to its open position and then locked by said detent lever when said geared wires are shifted by said motor, said latch being disengaged from said detent lever by the pin (**105**) and then pivoted by the pin to the closed position when said geared wires are reversely shifted by said motor; and
(e) a lefthand and a righthand rearward panel sliding mechanism (**200**), one associated with each of said geared wires, for first lowering one end of the rearward sunroof panel and then shifting the rearward panel along and under the roof panel to its open position when said geared wires are further shifted
by said motor while keeping the forward sunroof panel open, and for first shifting the rearward sunroof panel from under the roof panel and then raising said one end of the rearward sunroof panel to its closed position when said geared wires are reversely shifted by said motor while keeping the forward sunroof panel open, each of said sliding mechanisms comprising outer, middle and inner telescopic brackets (**202, 203, 204**), the outer bracket of which is connected to one of said geared wires, and a pair of short and long link arms (**201A, 201B**) pivotally linked together to a rearward panel supporting member (**23**) at one end thereof and pivotally linked separately to said telescopic brackets at the other ends thereof; when said outer bracket is shifted by said geared wire , said two link arms being expanded by said telescopic brackets to a position at which the rearward panel supporting member is lowered and then subsequently shifted by said telescopic brackets along and under the roof panel to a position at which the rearward sunroof panel is opened; when said outer bracket is reversely shifted by said geared wire, said two link arms being shifted by said telescopic brackets from under the roof panel and then subsequently folded by said telescopic brackets to a position at which the rearward panel supporting member is raised or the rearward sunroof panel is closed.

4,619,481
INFLATABLE SEAT CUSHION ASSEMBLY

Charles A. Grudzinskas, 3990 McCabe Ave., NE., Ada, Mich. 49301

Continuation-in-part of Ser. No. 449,853, Dec. 15, 1982, abandoned. This application May 25, 1984, Ser. No. 614,270
Int. Cl.⁴ A47C *7/42*
U.S. Cl. 297—284 **11 Claims**

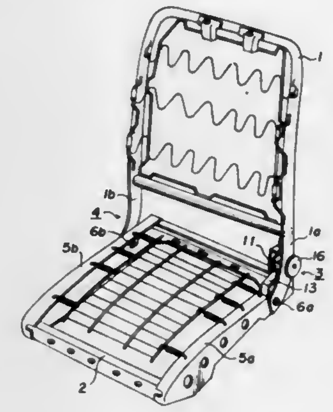
1. An inflatable seat cushion assembly, comprising:
a seat cushion having a plurality of inflatable compartments;
a manifold block having integrally formed therewith:
 a connector conduit for each of said compartments, a first end of each connector conduit in fluid communication with an associated one of said compartments and each connector conduit having a second end,
 said connector conduits formed by grooves in the exterior surface of said manifold block and a first cover plate disposed to cover said connector conduit grooves sealingly, said covered connector conduit grooves forming said connector conduits,
 a pressure manifold with a common pressure inlet having means for connection to a pressurized fluid source and said pressure manifold having a lateral pressure outlet for each compartment, each lateral pressure outlet establishing fluid communication between said common pressure inlet and an associated one of said connector conduit second ends,
 an exhaust manifold with exhaust outlet means for the common exhaust of spent fluid from said compartments and a lateral exhaust inlet for each said compartment, each lateral exhaust inlet establishing fluid communication between an associated one of said connector conduit second ends and said exhaust outlet means, said exhaust manifold being separate from said pressure manifold,
 said lateral pressure outlets of said pressure manifold and said lateral exhaust inlets of said exhaust manifold formed by grooves in the exterior surface of said manifold block and a second cover plate disposed to cover said grooves sealingly, forming manifold conduits between said grooves and said second cover plate,



 a fluid communication juncture formed at each of said connector conduit second ends between associated ones of said lateral pressure outlets, said lateral exhaust inlets and said connector conduits, and
 a recess between each of said lateral outlets and its corresponding lateral inlet;
a control valve at each of said junctures and seated within said recess, wherein each control valve is selectively adjustable among an inflation position, an exhaust position and a closed position, where in said inflation positions said associated compartment communicates with said corresponding lateral pressure outlet through an associated connector conduit for inflating said compartment, where in said exhaust position said associated compartment communicates with said corresponding lateral exhaust inlet through an associated connector conduit for deflating said compartment through said exhaust outlet means, and where in said closed position fluid communication is prevented between said associated compartment and both the pressure source and said exhaust; and
each said control valve having an actuator, and and aperture provided through one of said cover plates for each of said control valves through which said valve actuator passes for selectively adjusting said control valve.

4,619,482
RECLINING DEVICE FOR A VEHICLE SEAT

Noriyasu Itsuki, c/o Tachikawa Spring Co., Ltd., 2-12, Matubara-cho, 3-chome, Akishima-shi, Tokyo, Japan
Filed May 1, 1984, Ser. No. 605,914
Int. Cl.⁴ B60N *1/06*
U.S. Cl. 297—355 **4 Claims**

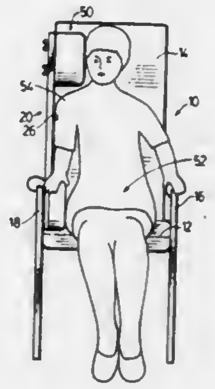


1. A reclining device for a vehicle seat including a back frame longitudinally rotatably journaled relative to a cushion frame, said reclining device comprising:
a cam having at least three working surfaces which differ from one another in amount of displacement, said cam is rotatably connected on one of said back frame and said cushion frame by a bracket member at a predetermined distance from a connecting point where said back frame is rotatably connected to said cushion frame, and said cam further having an arc-shaped guide groove perforated therein, the arc center of which is disposed cocentrically relative to the center of rotation of said cam, said arc-shaped guide groove having a plurality of recessed portions formed therein, each of said recessed portions arranged in a corresponding relationship with the respective working surfaces of said cam;
an elongated guide hole on said bracket member corresponding crosswise to said arcshaped guide groove of said cam;
a cam engagement portion provided in the other of said back frame and said cushion frame, said cam engagement portion positioned to engage with said cam;
a shaft, rotatably supported, extending through said arc-shaped guide groove and said elongated guide hole such that said shaft is slidable along said arc-shaped guide groove while at the same time slidable along said elongated guide hole in a cooperative manner, and, when said cam is rotated with one of said working surfaces thereof being brought into engagement with said cam engagement portion, said shaft is then biased by a spring means into engagement with one of said plurality of recessed portions corresponding to said one of said working surfaces; and
a hook means for retaining said cam into engagement with said cam engagement portion, said hook means rotatably mounted to said shaft and further at a tip end thereof engaged with a portion of said cam engagement portion.

4,619,483
PHYSICALLY HANDICAPPED SHOULDER SUPPORT FOR ATTACHMENT TO A CHAIR BACK

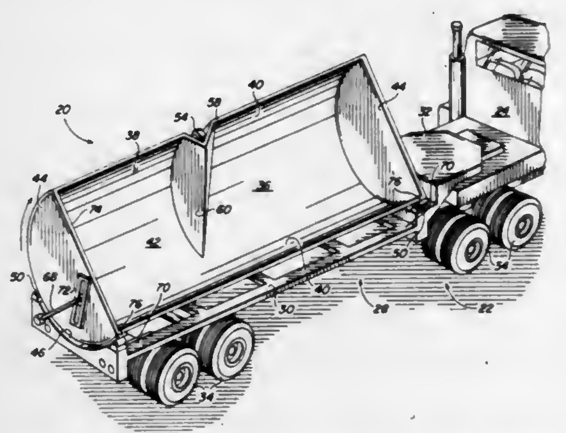
Donna J. Dickey; Sebastian Dobler, both of Kingston, and Natalie Horejda, Regina, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of Health, Toronto, Canada
Filed Oct. 1, 1984, Ser. No. 656,365
Int. Cl.⁴ A47C *1/10*
U.S. Cl. 297—397 **11 Claims**

1. A chair comprising a seat, a back and opposing side arms, a shoulder support connected to a side of said back and extending outwardly of said back in the general direction of a corresponding side arm, a headrest mounted on said shoulder support and overlapping a portion of said back, means for mounting said headrest on said shoulder support to provide for vertical height adjustment of said headrest relative to said seat to accommodate varying shoulder heights of persons using said chair, said shoulder support having a rigid plate which extends downwardly and contacts an inner portion of said side arm, said rigid plate contacting said side arm to provide said means for maintaining said shoulder support in a shoulder supporting position, means for detachably connecting said shoulder support to said back, a hip bolster being provided along said side arm and said seat to space a person's hip from said side arm, a recessed area being defined below said headrest along said shoulder support and above said hip bolster to receive and support a shoulder of a person on said chair.



4,619,484
SIDE UNLOADING DUMP TRUCK

John H. Maxey, 5509 Oakdale Ave., Woodland Hills, Calif. 91364
Filed Sep. 17, 1984, Ser. No. 651,572
Int. Cl.⁴ B60B *1/16*
U.S. Cl. 298—18 **13 Claims**



1. An improved side unloading dump truck assembly, said assembly comprising, in combination:
(a) a dump truck, including a motor and a truck body comprising a generally horizontal frame supported on a plurality of rotatable wheels;
(b) a plurality of spaced rollers connected to said frame;
(c) a container bin having an open top and rotation preventing means secured thereto, said bin being supported on said rollers;
(d) an upwardly directed tilt link pivotally connected to one end of said frame and to said bin adjacent the upper end thereof;
(e) an upwardly directed ram pivotally connected to one side of said frame and to said bin at points remote from said link, whereby initial extension of said ram rotates said bin around its longitudinal axis on said frame rollers without lateral movement of said bin until further such rotation is prevented by said rotation preventing means, whereupon further extension of said ram lifts one side of said bin from said rollers, tilts and rotates said bin and

pivots said bin around the opposite side thereof on said rollers to effect side unloading of said bin.

4,619,485

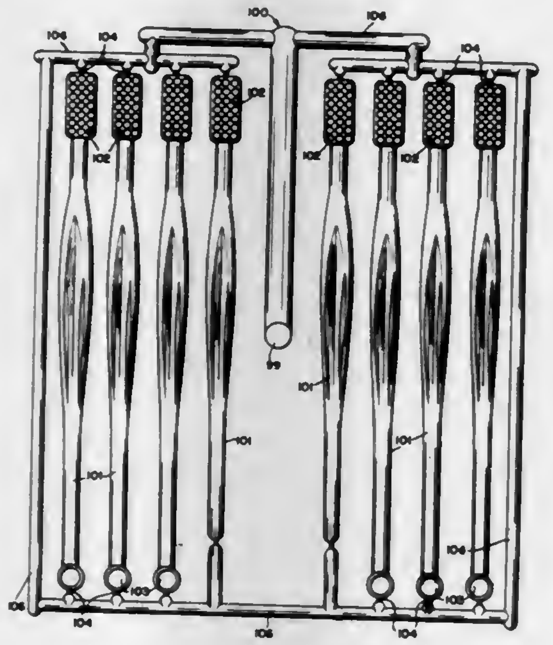
METHOD OF MANUFACTURING FUSED BRUSHES

John C. Lewis, Jr., Forest Dale, Vt., assignor to Tucel Industries, Inc., Forest Dale, Vt.

Filed Mar. 8, 1985, Ser. No. 709,667

Int. Cl.⁴ A46D *3/04*

U.S. Cl. 300—21 **6 Claims**



1. A method for producing, simultaneously, a plurality of integrally connected synthetic fused filament brush constructions comprising:

providing a thermoplastic injection molded frame in a predetermined configuration, and a plurality of thermoplastic substrate blocks integrally connected within said frame by a plurality of gate members extending between said blocks and frame;

supporting said frame and integrally connected blocks in a predetermined position;

providing a plurality of tuft pickers in a preselected design corresponding to the design of tufts to be fused to said substrate blocks, said pickers being arrayed to register a tuft design on each of said blocks in said frame;

picking a plurality of synthetic fiber tufts with said pickers whereby said tufts are contained within said pickers with the ends exposed;

simultaneously fusing the ends of each of said tufts and heating the corresponding substrate blocks;

indexing said fused tuft ends into said substrate blocks until the ends fuse with said blocks whereby said blocks are simultaneously tufted with a plurality of synthetic filament tufts in a preselected array;

withdrawing said pickers from said tufts to provide a plurality of tufted substrate blocks integrally interconnected with each other by said frame, whereby said frame and resultant tufted blocks become a finished pre-assembly package for distribution.

4,619,486

SPINE ASSEMBLY

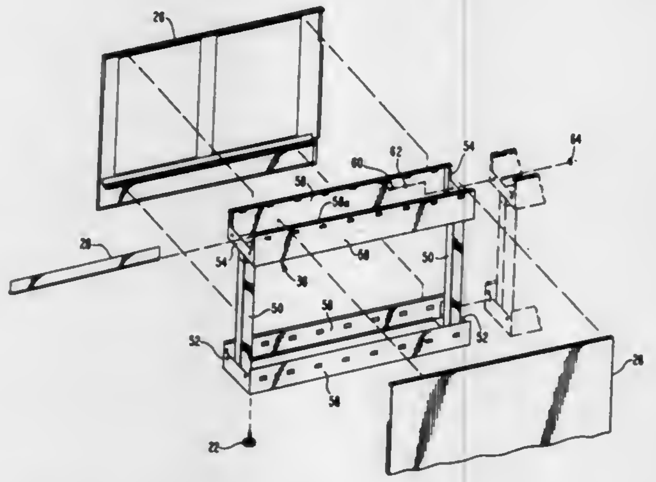
Bruce R. Hannah, Cold Spring, N.Y.; David D. McClanahan, Landsdale, and Lee Denny, Quakertown, both of Pa., assignors to Knoll International, Inc., New York, N.Y.

Filed Jun. 8, 1984, Ser. No. 618,492

Int. Cl.⁴ A47B *77/08*

U.S. Cl. 312—195 **15 Claims**

1. A spine system assembly comprising a plurality of housings joined end-to-end to create an interconnected network of such housings, each housing comprising a framework defined by vertical structural support members at each end of the housing, side support members joining together said vertical structural support members and providing support for spaced-apart parallel side panels, said vertical structural support members and said side support members lying totally within the space between said side panels and said vertical structural support members being spaced from said side panels to permit the unimpeded laying of electrical wiring within each housing and from one housing to another.



4,619,487

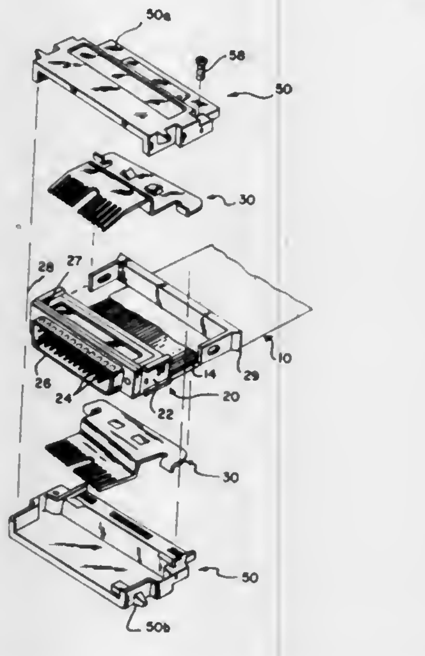
FLAT CABLE CONNECTOR WITH GROUNDING CLIP

Robert W. Brush, Jr., North Brunswick, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Sep. 28, 1984, Ser. No. 655,971

Int. Cl.⁴ H01R *13/658, 9/07*

U.S. Cl. 339—14 R **8 Claims**



1. An electrical connector for terminating flat electrical cable having a plurality of conductors, an overlying conductive shield and an outer insulative jacket, said connector comprising:

an insulative housing for accommodating said cable;

a plurality of electrical contacts supported in said housing for electrical engagement with said conductors of said cable;

a conductive shell supporting said housing; and

a conductive element having a first extent for engagement with the conductive shield of said cable and a second extent engageable with the conductive shell for providing electrical continuity between said shield and said shell, said second extent of said conductive element further including a plurality of integrally formed fingers extending into contact with said shell, said fingers providing plural parallel electrical paths between said conductive element and said shell.

4,619,488

CONNECTION ARRANGEMENT FOR AN ELECTRICALLY SCREENED SLEEVE

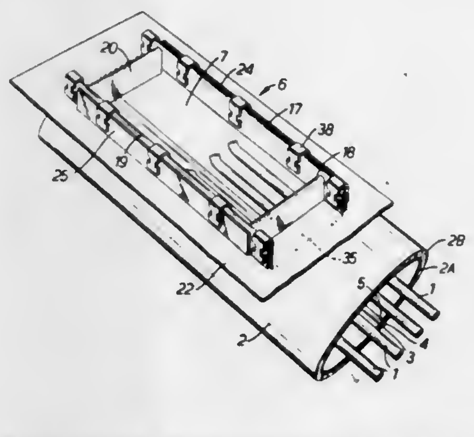
Sidney H. Martin, Mellor, Great Britain, assignor to International Computers Limited, London, England

Filed Feb. 15, 1985, Ser. No. 702,350

Claims priority, application United Kingdom, Feb. 21, 1984, 8404479

Int. Cl.⁴ H01R *4/66*

U.S. Cl. 339—14 R **8 Claims**



1. A connection arrangement including; a screened sleeve having a wall comprising an outer electrically insulating layer and an inner electrically conductive screening layer; electrically conductive members secured to open flaps formed in the wall so that electrical connections are produced between the conductive members and the inner layer, the conductive members forming a frame bounding an aperture left in the wall by the open flaps; and a connection plate of conductive material having an aperture therein arranged to receive the frame; the arrangement being such as to enable electrical cables housed within the sleeve to be passed through the aperture in the wall of the sleeve and the connection plate when the frame is positioned in the connection plate.

4,619,489

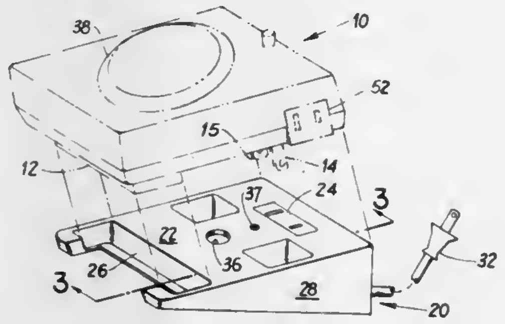
ADAPTOR FOR AN ELECTRIC TIMER

Harold Hinkens, Manitowoc, Wis., assignor to AMF Incorporated, White Plains, N.Y.

Filed Aug. 2, 1984, Ser. No. 636,881

Int. Cl.⁴ H01R *11/00*

U.S. Cl. 339—28 **3 Claims**



1. An adaptor for supporting an electric timer which plugs into a polarized wall outlet in a utility position on a table comprising:

(a) a bottom surface and a top surface extending at an angle from one end of the bottom surface;

(b) a polarized electrical receptical on said top surface for receiving the timer plug;

(c) means for electrically connecting said receptacle to an electrical source in a polarized relationship; and

(d) means for giving access to the bottom surface of a timer when said timer is plugged into the adaptor.

4,619,490

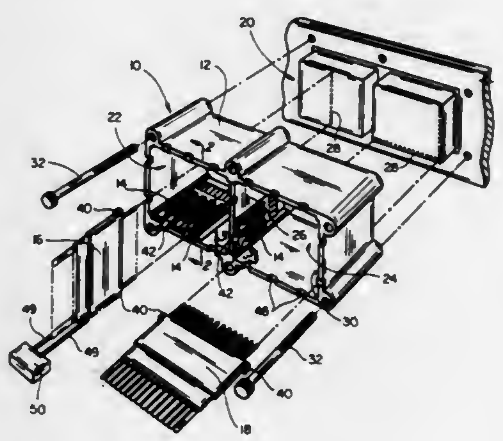
GUIDANCE AND RETENTION DEVICE AND CONNECTOR ASSEMBLY

Robert M. Hawkings, San Mateo, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Dec. 18, 1984, Ser. No. 683,757

Int. Cl.⁴ H01R *29/00*

U.S. Cl. 339—31 M **20 Claims**



1. A guidance and retention device comprising:

a housing having an opening therethrough and having first and secoind operatively interconnected opposed and generally parallel walls; and

at least one pair of wafer retention members located within said opening, one member releasably connected to said firs opposed wall and the other member releasably connected to said second wall, each member having a plurality of guidance portions and retention portions, said guidance portions capable of guiding conductor wafers that may be inserted in stacked relationship to each other into the housing and the retention portions capable of individually releasably securing conductor wafers within the housing; wherein each of the retention portions comprises an inwardly-projecting spring-like clip.

4,619,491

ELECTRIC CONNECTOR WITH PULL-OUT PLUG

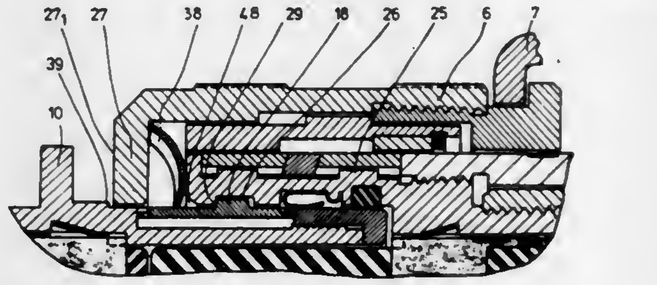
Pierre L. M. Drogo, Dampierre en Burly by Ouzouer sur Loire (Loiret), France

Filed Nov. 28, 1984, Ser. No. 675,764

Claims priority, application France, Nov. 29, 1983, 83 19049

Int. Cl.⁴ H01R *13/62*

U.S. Cl. 339—45 M **8 Claims**



1. An electrical connector comprising:

a plug **(1)** having a generally cylindrical body open at one end and containing an insert of insulating material provided with pins for electrical connection;

a base **(2)** having a generally cylindrical body sized to fit coaxially in the open end of the plug and containing an insert of insulating material provided with pins to mate with those of the plug for electrical connection, the base having an exterior annular recess;

a coupling ring **(6)** mounted around the exterior of the plug body's open end, by means enabling the plug to undergo controlled relative displacement in the axial direction and in rotation, the coupling rign having an edge (27) extending radially inwardly at one end; and

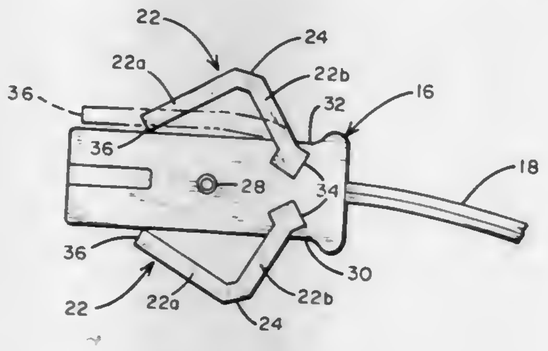
a locking device disposed in the recess of the base and having a plurality of control elements (17) normally projecting beyond the diameter of the base's body such that when the plug and base are joined together, at least one control element engages the coupling ring edge to retain the coupling ring on the body of the base, the locking device being capable of withdrawing into the recess of the base under the action of an axially opening force of the connector, which force is transmitted to the coupling ring and exceeds a predetermined threshold.

4,619,492

ELECTRICAL CONNECTOR WITH ONE-HAND DISCONNECT

Robert F. Corblick, 14830 - 58th St. N. - #515, Stillwater, Minn. 55082

Filed Feb. 4, 1985, Ser. No. 697,626
Int. Cl.⁴ H01R *13/62*
U.S. Cl. 339—45 R **5 Claims**



1. An electrical connector for a detachable power cord comprising:

(a) an electrically insulated body member including at least one connector element coupled to an insulated electrical conductor, said connector element mounted in alignment with a contact surface of said body member at which an electrical connection is made; and

(b) first and second compressively resilient pusher members mounted exteriorly of the body member in longitudinally extensible relation thereto, each pusher member having a proximal end of a first arm portion coupled to the body member and a distal end thereof coupled to a second arm portion, whereby upon simultaneously squeezing the pusher members at the juncture of their first and second arm portions inwardly toward the body member, a distal end of each second arm portion expands in generally parallel relation to the external sides of the body member to exert a rearwardly directed extraction force remote from said contact surface.

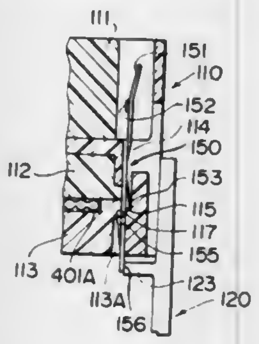
4,619,493

CONNECTING AND ENGAGING FIXTURE FOR ELECTRIC CONNECTOR

Sigeru Kikuta, Tokyo, Japan, assignor to Hirose Electric Co., Ltd., Tokyo, Japan

Filed Sep. 17, 1985, Ser. No. 776,865
Claims priority, application Japan, Oct. 16, 1984, 59-216849
Int. Cl.⁴ H01R *13/631*
U.S. Cl. 339—91 R **6 Claims**

1. A connecting and engaging fixture for an electric connector, the electric connector having an insulating housing proper in which a contact is disposed and which is snugly fitted with an insulating housing proper of a mating electric connector, and a cable restraint plate which is assembled to the insulating housing proper and which serves to fix a cable end part to be spliced to the contact; said connecting and engaging fixture comprising a locking portion at its front end part, which serves to hold snug fitting between said electric connector and said mating electric connector in engagement; a rearward falling-off preventive engagement portion at its intermediate part, which serves to check said fixture from falling off rearwards in engagement with a rearward falling-off preventive engagement step provided in a fixture inserting hole formed at a side part of said insulating housing proper; and a forward falling-off preventive shoulder and a cable restraint plate-engagement portion at its rear end part, the former of which serves to check said fixture from falling off frontwards in engagement with a forward falling-off preventive engagement step provided in said fixture inserting hole, and the latter of which engages said cable restraint plate in order to fasten said cable restraint plate assembled to said insulating housing proper in engagement.

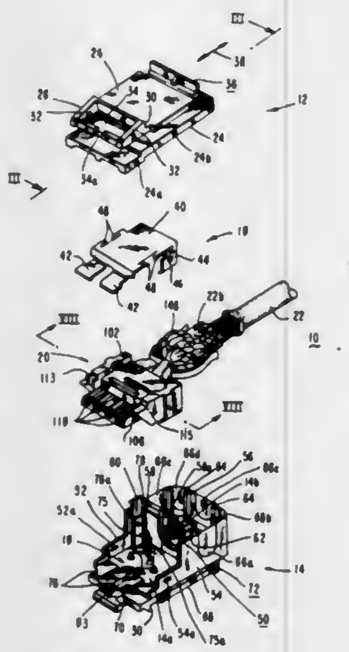


4,619,494

SHIELDED ELECTRICAL CONNECTOR

Peter Noorily, Bridgewater, and Joseph P. Slachetka, Ringoes, both of N.J., assignors to Thomas & Betts Corporation, Raritan, N.J.

Filed Oct. 7, 1985, Ser. No. 785,313
Int. Cl.⁴ H01R *13/20*
U.S. Cl. 339—103 M **15 Claims**



1. A shielded electrical connector comprising:

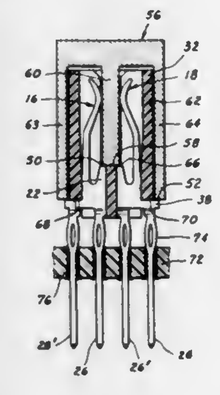
a housing defining a mating end for electrical connection to an electrical component and a cable receiving end for receipt of an electrical cable having a plurality of electrical conductors encased in an outer insulative jacket, said housing including first and second communicating compartments, said first compartment being adjacent said mating end of said housing and supporting a plurality of electrical contacts therein for electrical engagement with said conductors of said cable, said housing supporting an electrically conductive shield in said first compartment, strain relief means disposed between said first and second compartments for engaging a portion of said cable and retaining said cable thereat, said second compartment having walls defining a plurality of accessible ports for receipt of said cable in selectively different directions, said second compartment being of sufficient size to accommodate bending of said cable therein from said strain relief means to any one of said ports.

4,619,495

HIGH-DENSITY PRESS-FIT CARDEDGE CONNECTORS

Jerzy R. Sochor, 164 Rockview, Irvine, Calif. 92715

Continuation of Ser. No. 415,140, Sep. 7, 1982, abandoned. This application Aug. 17, 1984, Ser. No. 641,940
Int. Cl.⁴ H01R *9/09, 13/05*
U.S. Cl. 339—176 MP **8 Claims**



1. A cardedge connector having extremely-high-density contacts and capable of being reliably press-fit mounted in a wiring panel, comprising:

(a) an insulator housing having two rows of conductive contacts mounted within said housing,

(b) said housing comprising an insulating member having oppositely-facing upper and lower surfaces, oppositely-facing side surfaces, and oppositely-facing end surfaces, said upper surface having an elongated opening therein parallel to said side surfaces, said housing having two parallel side walls whose outer surfaces comprise said oppositely-facing side surfaces, each of said side walls having a downwardly-facing bottom surface,

(c) said elongated opening in said upper surface of said insulator housing extending into the body of said housing to form a slot separating said side walls, said slot having a predetermined length and width for receiving the edge of a circuit board of a predetermined width and thickness, said slot communicating with individual contact recesses extending from said slot toward and perpendicular to said side surfaces,

(d) said contacts each being elongated, vertically-oriented, and each mounted in a respective one of said recesses within said insulator housing by force fit,

(e) each contact having in the middle thereof a body portion containing means for retaining said body portion in a lower part of said insulator housing,

(f) each contact also having an upper portion comprising a cantilevered mating arm extending up from said body portion toward said upper surface,

(g) said mating arm having a convex mating surface adjacent the free end of said mating arm, said mating surface extending into said slot when said mating arm is in its free state so as to be positioned to mate with a printed circuit board when it is inserted into said slot,

(h) each contact also having a lower portion comprising a tail section extending down and out from the bottom surface of said housing, said tail section having means for interference retention in a hole of a predetermined size in a wiring panel when said tail section is pressed into said hole, thereby also to retain and electrically connect said connector to said wiring panel when its contact tails are pressed into respective holes in said wiring panel,

(i) the tail sections of the contacts in each row of contacts being arranged in two subrows, one subrow of tail sections being an outer subrow and one being an inner subrow, such that said connector has four subrows of tail sections extending downwardly therefrom, said four subrows of tail sections comprising two outer subrows and two inner subrows, alternating contacts in each row of contacts having tail sections in said outer and said inner subrows, respectively, such that every other contact in each row of contacts has a tail section in an outer subrow and the rest of the contacts in each row have contacts tail sections in an inner subrow, the tail sections in said outer subrow being at least partially aligned vertically with a respective sidewall of said insulator housing,

(j) each contact also having a cantilevered installation arm extending upward from its body portion, said arm having an upper end which forms an inner bearing surface extending into said slot, said inner bearing surface being straight and facing upwardly and parallel to said upper surface of said insulator housing,

(k) each contact also having a lateral portion extending laterally in an outward direction parallel to said upper surface of said insulator housing from said body portion of said contact, said lateral portion having a straight, upwardly-facing bearing surface which is parallel to said upper surface of said insulator housing, said upwardly-facing surface of said lateral portion contacting said downwardly-facing bottom surface of one of said side walls of said insulator housing, whereby when said insulator housing is pressed downwardly it will bear against said lateral portions of said contacts so as to apply balanced pressure to said contacts during insertion,

(l) each contact which has a tail section in said inner subrows having its tail section in vertical alignment with the cantilevered installation arm of such contact,

(m) the lateral sections of said contacts which have tail sections in said outer subrow extending under and out beyond their respective side wall of said insulator housing, said outer subrow tail sections being aligned under the outer bearing surfaces of said lateral portions,

(n) each contact shaped to be insertable into and withdrawable from said insulator housing from the bottom thereof only,

(o) whereby a seating tool having three parallel walls can be used to press said connector into said wiring panel by simultaneously (1) using the two outer walls thereof to straddle said connector and apply downward force directly to said lateral sections of said contacts which have tail sections in said outer subrow, such that said tail sections in said outer subrow can be forced directly into their respective holes in said wiring panel with reduced stress and more stability, and (2) inserting the center wall of said seating tool into said slot, such that said center wall will contact said inner bearing surfaces of said contacts and force said upwardly-facing bearing surfaces of said contacts, directly and via said housing, and hence said tail sections of said contacts which have their tail sections in said inner subrow, into their respective holes in said wiring panel with reduced stress and more stability.

4,619,496

COAXIAL PLUG AND JACK CONNECTORS

Edgar W. Forney, Jr., and George W. Michael, III, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 489,995, Apr. 29, 1983, abandoned. This application Sep. 14, 1984, Ser. No. 650,575
Int. Cl.⁴ H01R *17/18*
U.S. Cl. 339—177 R **5 Claims**

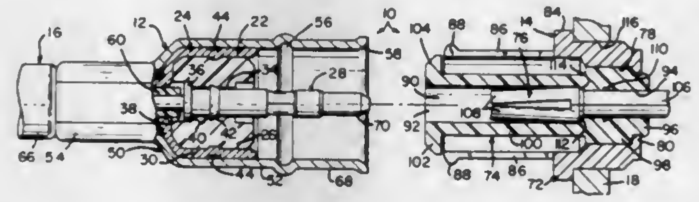
1. A coaxial connector, comprising:

matable plug and jack connector members;

said plug connector member including an inner shell member, an outer shell member and a dielectric member carrying a center contact member, said inner shell member having a large diameter section and a small diameter section, said dielectric member being secured within said large diameter section, said center contact member having a bore to receive an exposed end of a center conductor of a coaxial cable therein while an exposed outer conductor of the coaxial cable is positioned onto said small diameter section, said center contact member being crimpable onto the center conductor end, said outer shell member having a larger diameter section and a smaller diameter section, said larger diameter section extending along said large diameter section and said smaller diameter section extending along said small diameter section and being crimpable onto said small diameter section connecting the outer conductor therebetween, said larger diameter section having a hood section including an internal latching groove, said hood section extending coaxially with respect to a pin contact section of said center contact member;

said jack connector member including a shell means and a dielectric means carrying a center contact means, said shell means having bore means in which cylindrical section means of said dielectric means is disposed and secured therein, spring contact members extending outwardly from said shell means and being spaced from and coaxial with respect to said dielectric means as they extend therealong, free ends of said spring contact members having radiussed projections, said dielectric means having a passageway therethrough in which a receptacle section of said center contact means is secured;

said center contact member of the plug connector member extends along said passageway of said dielectric means so that said pin contact section electrically connects with said receptacle section and said radiussed projections of said spring contact members of the jack connector member are disposed in said internal latching groove forming an electrical connection therebetween and latching said plug and jack connector members when mated with each other.



4,619,497
DEVICE FOR ESTABLISHING CONNECTIONS BETWEEN ELECTRICAL CONDUCTORS

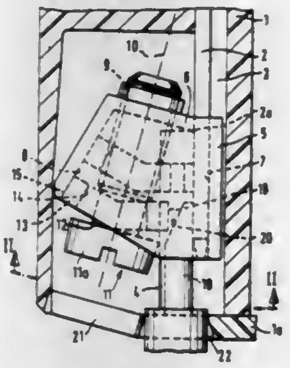
Ernst Vogel, Basel; Fritz Berger, Oberbuchsiten, and Armin Stampfli, Grenchen, all of Switzerland, assignors to Elektro-Apparatebau Olten AG., Olten, Switzerland

Filed Feb. 14, 1985, Ser. No. 701,578

Claims priority, application Switzerland, Feb. 28, 1984, 960/84

Int. Cl.⁴ H01R *13/207*

U.S. Cl. 339—244 R **14 Claims**



1. A device for electrically connecting a conductive member, particularly a flat conductive member, with at least one wire-like conductor, comprising a frame having opposing convergent first and second internal surfaces making an acute angle, said first surface being contacted by the conductive member and the wire-like conductor being located in the frame adjacent said conductive member; and means for releasably biasing the conductor against the conductive member in said frame, including a screw meshing with said frame so that the inclination of its axis with reference to said frame is fixed and such axis at least substantially halves said acute angle, and a clamping element having a slot-shaped opening for said screw and being arranged to move in the direction of said axis as well as transversely of said axis in response to rotation of said screw, said clamping member having a first marginal portion contacting the conductor in said frame and a second marginal portion slidable along said second internal surface to bias the conductor against the conductive member by way of said first marginal portion and to bias the conductive member against said first internal surface by way of the conductor in response to rotation of said screw to move said clamping member in its frame and in the direction of convergence of said internal surfaces.

4,619,498
SUSPENSION AND DRIVE METHOD AND CORRESPONDING DEVICE FOR OSCILLATING MIRROR IN SPACE TELESCOPE

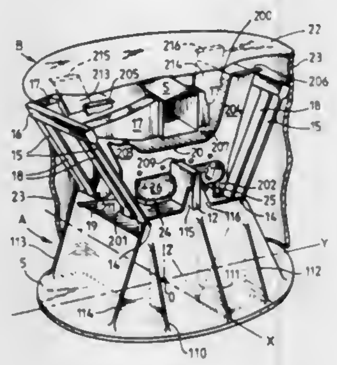
Pierre Croiset, Mandelieu, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Mar. 27, 1984, Ser. No. 593,889

Claims priority, application France, Mar. 30, 1983, 83 05235

Int. Cl.⁴ G02B *26/10*

U.S. Cl. 350—6.6 **26 Claims**



1. A method of suspending and bringing into oscillation a space telescope oscillating mirror, comprising the steps of:

mounting said oscillating mirror on connections attached to a support such that the mirror may oscillate about an oscillation axis between two first extreme angular positions;

further mounting on other connections to said support, independently from said oscillating mirror, an auxiliary mass such that it may also oscillate about said oscillation axis between two second extreme angular positions;

controlling said oscillating mirror with said auxiliary mass so as to cause periodical angular alternating motions at a given period of the oscillating mirror between the first extreme angular positions from said auxiliary mass which by reaction is submitted to angular motions in the opposite direction; and

momentaneously storing potential energy each time the mirror and the auxiliary mass come close to the respective extreme angular positions in the opposed phase.

4,619,499
SLEEVE FOR LARGE CAPACITY LIGHT WAVEGUIDE CABLES

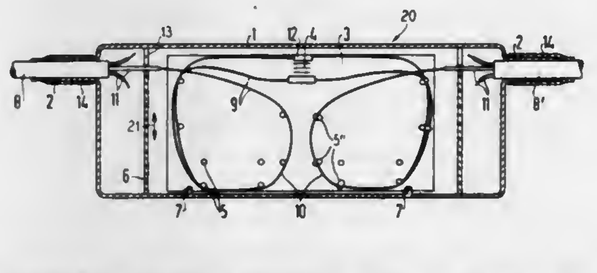
Klaus Gerber, Manching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 3, 1981, Ser. No. 269,871

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1980, 30257002

Int. Cl.⁴ G02B *6/36, 7/26*

U.S. Cl. 350—96.20 **4 Claims**



1. A sleeve for light waveguide cables having a plurality of groups of individual light waveguide cores, said sleeve having a housing with a pair of cable entrances for receiving light waveguide cables whose cores are spliced together in said housing, each cable entrance having means for sealing the cable in the entrance, said housing containing a plurality of the removable plates with a single plate for each group of individual light waveguide cores of the light waveguide cable, means for arranging and releasably holding the plates in said housing in a spaced relationship, each of said plates containing means for holding the splices of the light waveguide cores and means for fixing and supporting the excess length of the light waveguide cores being spliced together, said means for fixing and supporting comprises a plurality of guide pins arranged on each of said removable plates for supporting the light waveguide cores in loose loops, and said housing having a comb with a plurality of spaced notches adjacent each cable entrance for receiving the light waveguide groups to space and distribute them to the respective removable plates so that each of the cables with a plurality of waveguide groups enters each entrance with the combs separating and distributing the groups to individual plates which separate and hold each of the spliced cores of the respective group.

4,619,500
METHOD FOR PRODUCING ORIENTATION LAYERS FOR LIQUID CRYSTAL DISPLAYS AND LIQUID CRYSTAL DISPLAYS HAVING ORIENTATION LAYERS

Hellmut Ahne, Röttenbach; Hans Krüger, Munich, and Roland Rubner, Röttenbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

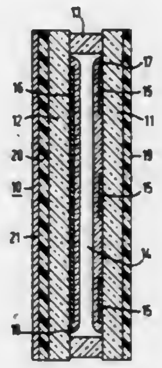
Continuation of Ser. No. 613,769, May 24, 1984, abandoned, which is a continuation of Ser. No. 350,609, Feb. 22, 1982, abandoned. This application Jan. 10, 1986, Ser. No. 818,051

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1981, 3107519

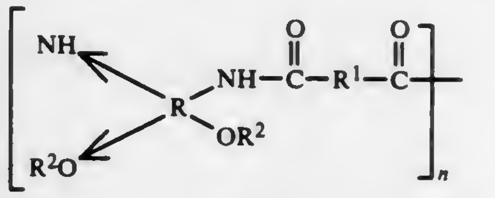
Int. Cl.⁴ G02F *1/133;* **C08F** *283/04*

U.S. Cl. 350—341 **10 Claims**

1. In a method for producing orientation layers for liquid crystal displays wherein a solution of an organic prepolymer is applied to a transparent substrate and subsequently annealed and subjected to an orientation treatment, the improvement comprising employing as said solution of an organic prepolymer, a solution of a prepolymer of a polyoxazole, a volatile compound and a solvent, and rubbing after annealing without photolyzing or irradiating before annealing as the orientation treatment, to produce a homogeneous orientation layer which will exhibit essentially no change in morphological structure up to a temperature of about 46° C., which shows essentially little intrinsic color when the layer thickness is at least about 0.1 μm, and which, after annealing, is reduced in thickness up to about forty percent compared with its thickness before annealing as a result of volatilization of the volatile compound during annealing,



wherein the polyoxazole prepolymer has the formula:



R being an at least partially aromatic or heterocyclic, halogenated or non-halogenated, tetravalent group; R^1 being a divalent, halogenated or non-halogenated aliphatic, cycloaliphatic, aromatic, or heterocyclic group; R^2 being an alkyl group which is free from an olefin substituent; and n being an integral number from 2 to about 100;

and wherein said volatile compound is a monomer, oligomer, polymer or mixture thereof which evaporates at least in part at a temperature above 250° C.

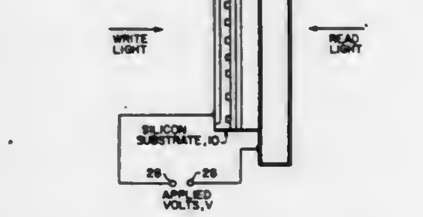
4,619,501
CHARGE ISOLATION IN A SPATIAL LIGHT MODULATOR

David Armitage, Los Altos, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 8, 1985, Ser. No. 689,699

Int. Cl.⁴ G02F *1/135, 1/015, 1/03*

U.S. Cl. 350—386 **4 Claims**


DIELECTRIC MIRROR, 16
ELECTRO - OPTIC CRYSTAL, 18
LIGHT BLOCK, 14
TRANSPARENT ELECTRODE, 20
MICROGROOVE LATTICE STRUCTURE, 32
TRANSPARENT SUPPORTING SUBSTRATE, 24
P-TYPE SILICON MATERIAL, 12
WRITE LIGHT
READ LIGHT
SILICON SUBSTRATE, 10
26
28
APPLIED VOLTS, V

1. A spatial light modulator which comprises:

a silicon substrate having a first surface and an opposed second surface, and having p-type silicon material diffused in the first surface thereof to form a photodiode;

a dielectric mirror having a first surface and an opposed second surface, the first surface thereof being adjacent the second surface of said silicon substrate;

an electro-optic crystal having a first surface and an opposed second surface, the first surface thereof being adjacent the second surface of said dielectric mirror;

a transparent electrode having a first surface and an opposed second surface, the first surface thereof being adjacent the second surface of said electro-optic crystal;

a transparent supporting substrate having a first surface and an opposed second surface, the first surface thereof being adjacent the second surface of said transparent electrode;

means for applying a voltage between said p-type material and said transparent electrode; and

a lattice configuration of microgrooves formed in the second surface of said silicon substrate to form a matrix of charge storage regions therein and prevent lateral charge transfer between said regions.

4,619,502

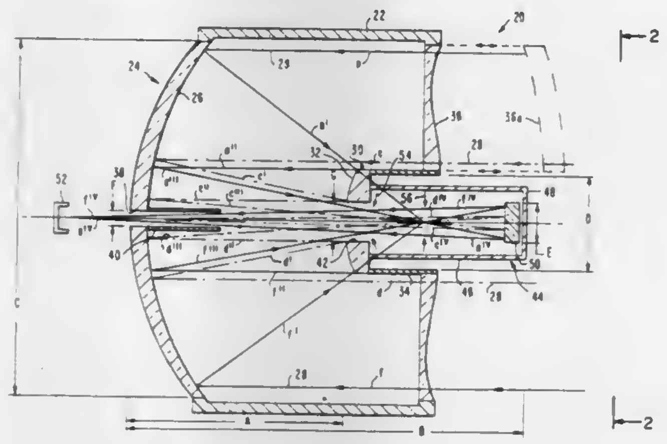
MIRROR FOCUSSING SYSTEM WITH NARROW VIEWING ANGLE

John P. Bagby, Anaheim Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 2, 1984, Ser. No. 636,892

Int. Cl.⁴ G02B *17/06*

U.S. Cl. 350—505 **6 Claims**



1. An optical system capable of guiding radiation from a distant source of the radiation to a sensor of the radiation, said system comprising:

a primary reflector having a concave surface facing the radiation from said source;

a secondary reflector having a convex surface facing the concave surface of said primary reflector;

said concave and said convex surfaces being matched to provide for multiple reflections therebetween of radiation incident on said primary reflector from a direction parallel to a central axis of said primary reflector;

apertures respectively in said reflectors;

tubular barriers communicating respectively with said apertures, a first of said barriers being oriented for enabling passage of multiply reflected rays of the radiation through said secondary reflector, and a second of said barriers being oriented for enabling passage of multiply reflected radiation to said sensor; and

an arrangement of means, including said first and second reflectors, for enabling the radiation to be directed from one of said barriers to a second of said barriers to impede the reception at said sensor of radiation emanating from sites away from the pack of radiation from said source.

4,619,503

TRANSMITTED LIGHT AND/OR INCIDENT LIGHT INVERSE MICROSCOPE

Guenter Reinheimer, Biebertal, and Norbert Gaul, Oberbiel, both of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

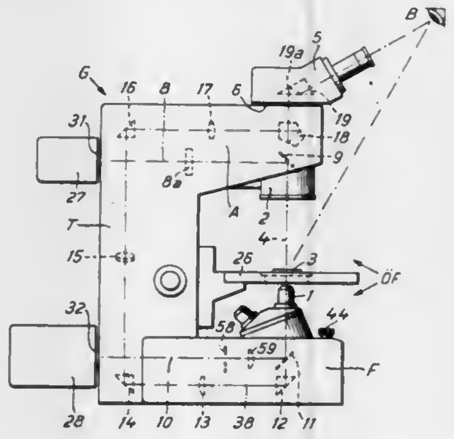
PCT No. PCT/DE82/00169, § 371 Date Apr. 26, 1983, § 102(e) Date Apr. 26, 1983, PCT Pub. No. WO83/00745, PCT Pub. Date Mar. 3, 1983

PCT Filed Aug. 25, 1982, Ser. No. 491,332

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1981, 3133784; Aug. 17, 1982, 3230504

Int. Cl.⁴ G02B *21/06, 21/18*

U.S. Cl. 350—511 **37 Claims**



1. A combination transmitted light and incident light inverted microscope, comprising:

(a) a substantially horizontal stand base;

(b) a substantially vertical stand support connected with the stand base;

(c) an objective disposed on the stand base;

(d) a substantialy horizontal stand arm connected with the stand support, wherein the stand base, the stand support and the stand arm define a "C"-shaped basic microscopic body, and wherein the basic microscope body defines a free opening directed toward a viewer;

(e) means for holding an object to be viewed, disposed in said free opening;

(f) a condenser for condensing illuminating light onto the object;

(g) an optical axis defined by the objective, the object and the condenser;

(h) an optical path disposed in the basic microscope body, and including an imaging partial beam originating at the object and extending within said stand base, said stand support and said stand arm;

(i) illuminating beam means for producing an illuminating beam, said illuminating beam means being selected from the group consisting of (1) a transmitted light illuminating beam which before striking said object runs in said stand arm essentially parallel to the imaging partial beam travelling along said optical path in the stand arm, (2) an incident light illuminating beam which before striking said object runs in said stand base essentially parallel to the imaging partial beam travelling along said optical path in the stand base, and (3) a combination of a transmitted light illuminating beam which before striking said object runs in said stand arm essentially parallel to the imaging partial beam travelling along said optical path in the stand arm, and an incident light illuminating beam which before striking said object runs in said stand base essentially parallel to the imaging partial beam travelling along said optical path in the stand base; and

(j) ocular means, attached to the stand arm, for converting the imaging partial beam into a viewable image.

4,619,504

OPHTHALMIC LENS WITH A MARKING AND METHOD OF PRODUCING THE MARKING

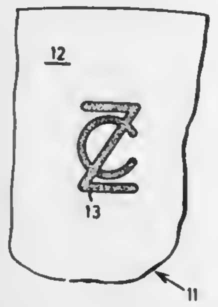
Erwin J. Daniels; Bernd Kratzer, and Hermann Schürle, all of Aalen, Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Sep. 2, 1983, Ser. No. 528,894

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1982, 3233590

Int. Cl.⁴ G02C *7/10, 7/02;* B05D *1/32*

U.S. Cl. 351—163 **11 Claims**



1. An ophthalmic lens comprising: a lens body; a removable substance adhering to a region of the surface of said lens body and having a periphery defining an identification or control marking having a predetermined outline for conveying information to one viewing the same; and, an anti-reflection coating adhering directly to said surface outside of said region so as to completely surround said substance whereby the peripheral interface between said substance and said coating defines the outline of said marking.

4,619,505

REFRACTOMETRY PROCESS AND DEVICE FOR MEASURING THE DEGREE OF AMETROPIA, AND ESPECIALLY THE DEGREE OF ASTIGMATISM, OF THE EYE

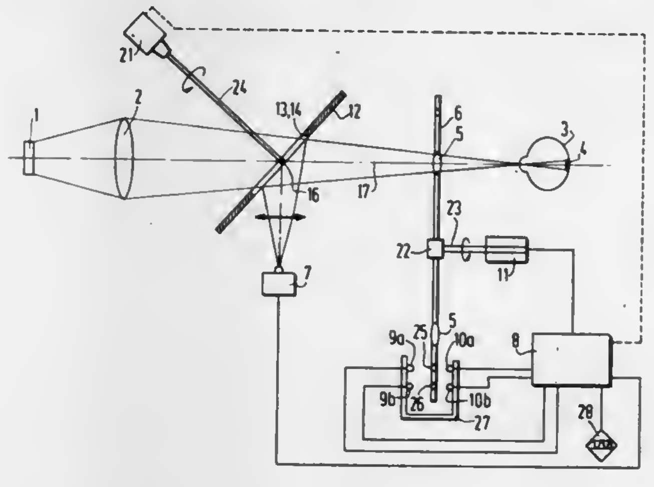
Jean C. Hache, Lille, and Mireille Servant, Villeneuve d'Ascq, both of France, assignors to Essilor International (Compagnie Generale d'Optique), Creteil, France

Continuation-in-part of Ser. No. 442,588, Nov. 8, 1982, abandoned. This application May 16, 1984, Ser. No. 610,632

Claims priority, application France, May 19, 1983, 83 08281

Int. Cl.⁴ A61B *3/10*

U.S. Cl. 351—211 **5 Claims**



1. An apparatus for refractometrically measuring the degree of ametropia and astigmastism of an eye, placed at a location predetermined with respect to said apparatus, comprising:

(a) a light source;

(b) optical means for shaping light emitted by said source into a focussed light beam propagated along a light path and directing said beam to said eye in a given direction defined by an optical test axis coinciding with the optical axis of said eye, so as to produce on the retina of said eye an image of said light source;

(c) corrective testing lens presenting means adapted to interpose adjacent said eye, successively any one of a plurality of corrective testing lenses of a lens set across said light beam, said testing lenses having different respective optical power values;

(d) circular screen means interposed in said light path between said light source and the eye for intercepting said light beam, said screen means being rotatably mounted on an axis thereof which passes through said optical test axis, said screen means and said axis thereof being inclined at an angle with respect to said optical test axis, said screen means including a black slit system with at least one opaque reflecting zone and at least one open zone, said zones being shaped in order to obtain an image of said source on said retina, the thus modified image of the source being reflected by said retina through said corrective test lens and said screen means to obtain a second image in a given plane;

(e) means for rotating said screen means about the axis thereof in successive angular pitches;

(f) light detector means disposed in said plane and centered on the axis of the beam reflected by the retina through said corrective test lens and said screen means, said detector means emitting a luminous intensity signal; and

(g) signal generating and processing means, associated with said lens presenting means, said means for causing said screen to turn, and said light detector means, for identifying that one of said corrective testing lenses which, when interposed across said test light beam by said lens presenting means, and depending upon the orientation of said black slit system, results in said light detector means producing a luminous intensity signal substantially equal to a desired value.

4,619,506

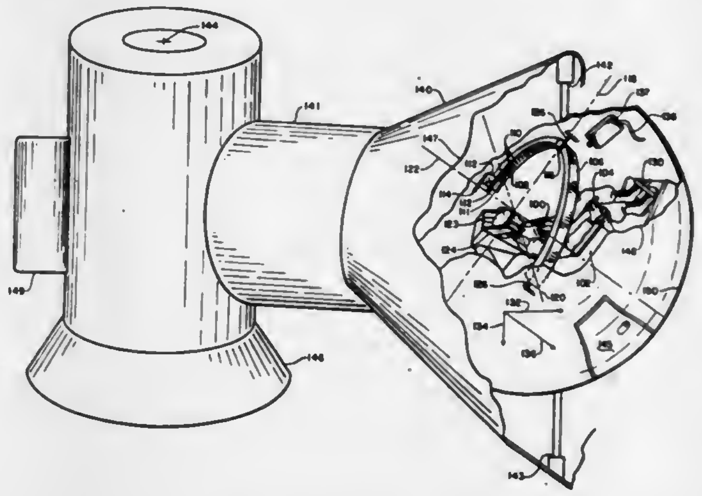
RANDOM PATTERN TRACKING ACCELERATION TOLERANCE TESTER

Daniel W. Repperger, Vandalia; Thomas J. Jennings, Dayton, and David A. Ratino, Centerville, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 29, 1984, Ser. No. 645,390

Int. Cl.⁴ A61B *3/02*

U.S. Cl. 351—243 **23 Claims**



1. G force response measuring apparatus comprising the combination of:

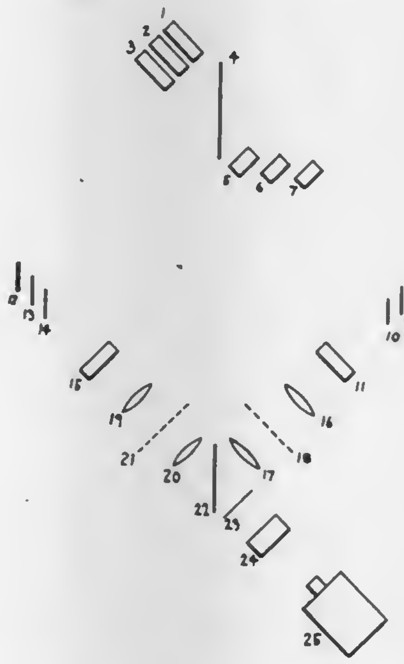
a first array of visual stimulus elements dispersed around the preripheral view area of a test subject;

means for energizing said first array elements to a visual stimulating state thereof according to a first random time pattern;

a second array of visual stimulus elements dispersed around

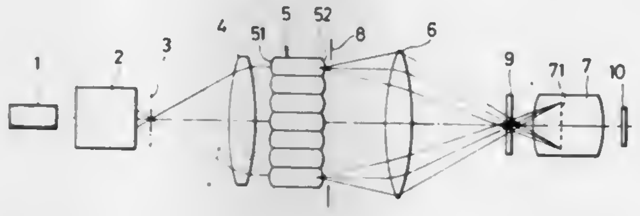
the peripheral view area of said test subject, each second array element being located adjacent a first array element;
means for energizing said second array elements to a visual stimulating state thereof in a second test subject controlled pattern tracking said first pattern to the best degree attainable by said test subject; and
means for determining the difference error between said first and second patterns.

4,619,507
METHODS AND APPARATI FOR GENERATING OPTICAL MATTES
Dennis R. Anthony, 3116 Kelton Ave., Los Angeles, Calif. 90034
Filed Aug. 22, 1983, Ser. No. 525,416
Int. Cl.³ G03B *19/18*
U.S. Cl. 352—46 **2 Claims**



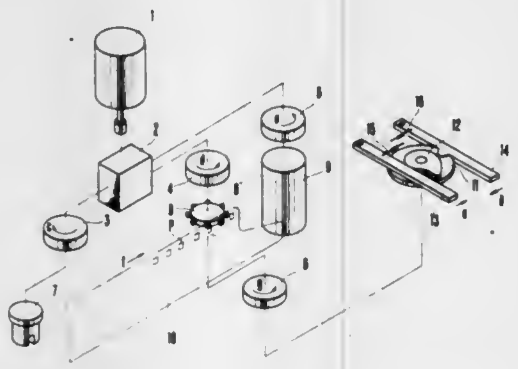
1. A method of making optical mattes, which method comprises photographing onto a suitable stock of film a luminous silhouette of an object on a dark background, the said luminous silhouette of the object on a dark background being created by optically uniting, as in a beam splitter, a positive image of the object and its nonblack background and a positive image of the background alone or a negative image of the object and its nonblack background and a negative image of the background alone and causing the light waves making up one of the images to interfere destructively with the light waves making up the other image.

4,619,508
ILLUMINATION OPTICAL ARRANGEMENT
Masato Shibuya, Ohmiya, and Makoto Uehara, Tokyo, both of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan
Filed Apr. 23, 1985, Ser. No. 726,232
Claims priority, application Japan, Apr. 28, 1984, 59-86669; Jan. 22, 1985, 60-9653
Int. Cl.⁴ F21V *7/04;* G03B *27/54*
U.S. Cl. 353—122 **12 Claims**



1. An illumination optical arrangement comprising:
(a) light source means emitting a coherent light beam; and
(b) means for forming a substantially incoherent light source from said coherent light beam, said incoherent light source forming means including means for periodically deflecting said coherent light beam and scanning a predetermined scanning area by said coherent light beam, and optical means for forming a plurality of optical paths for directing the coherent light beam passed through said predetermined scanning area to a plurality of different secondary scanning areas, each of said plurality of secondary scanning areas being scanned by said periodically deflected coherent light beam.

4,619,509
FILM WINDING DEVICE FOR CAMERA
Chikara Aoshima, and Toru Nagata, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 495,430, May 17, 1983, abandoned. This application Jun. 19, 1985, Ser. No. 746,922
Claims priority, application Japan, May 24, 1982, 57-87521
Int. Cl.⁴ G03B *1/00, 17/24*
U.S. Cl. 354—173.1 **7 Claims**

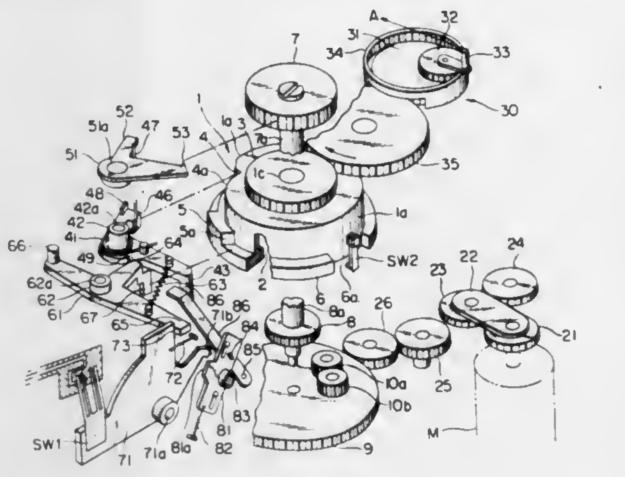


1. A film winding device for a camera, comprising:
a motor selectively rotatable in a film winding direction and a film rewinding direction;
a film takeup spool;
a sprocket selectively rotatable in the film winding direction and in the film rewinding direction, said sprocket being provided with teeth engageable with perforations provided in the film;
shutter charging means charged through said sprocket;
film rewinding means; and
first clutch means which transmits the rotation of said motor to said sprocket, said first clutch means having an input side connected to said motor and an output side connected to said sprocket, wherein said first clutch means invariably retains a nontransmissive state when said input side rotates in a rewinding direction regardless of the rotating speed and rotating direction of said output side and retains a transmissive state for transmitting the rotation of the motor to the sprocket, and the shutter charging means when said input side rotates in a winding direction and at a faster speed than said output side, said first clutch means retaining a nontransmissive state when said input side rotates in a winding direction and the rotating speed of said output side is faster than the rotating speed of the input shaft.

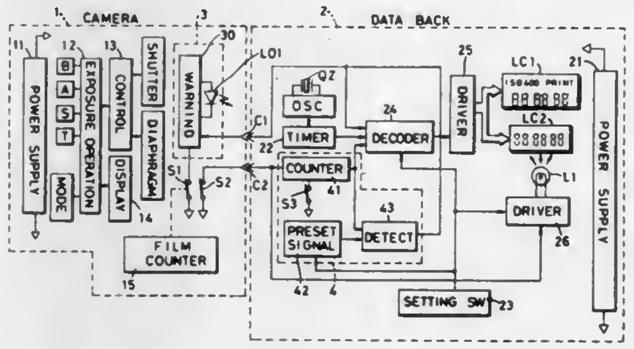
4,619,510
CAMERA
Kazuhiro Nakanishi, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Jul. 26, 1985, Ser. No. 759,641
Claims priority, application Japan, Jul. 27, 1984, 59-158457; Jul. 27, 1984, 59-158458; Jul. 27, 1984, 59-158459; Aug. 7, 1984, 59-166281
Int. Cl.⁴ G03B *1/18*
U.S. Cl. 354—173.1 **18 Claims**

15. A camera comprising a motor, a changeover mechanism and switch means,

said changeover means transmitting selectively the driving force of said motor to a film-wind mechanism and a film-rewind mechanism or to a lens-moving mechanism,
said switch means letting said motor drive said film-rewind mechanism to perform the rewind of film or drive said lens-moving mechanism to perform the movement of the lens, said switch means being turned ON either by a film-rewind operation member or by a lens-moving operation member.

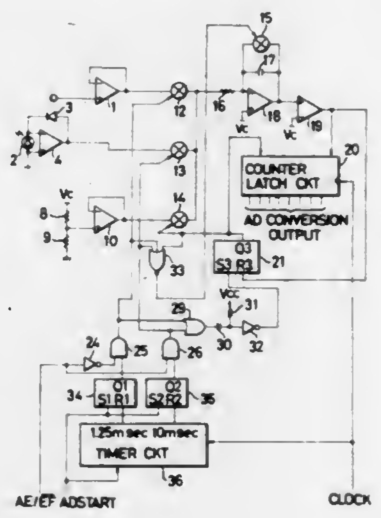


4,619,511
WARNING SYSTEM FOR REMAINING AMOUNT OF FILM IN A CAMERA
Tetsuro Goto, Funabashi, and Yoshiyuki Nakano, Tokyo, both of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan
Filed Nov. 13, 1985, Ser. No. 797,666
Claims priority, application Japan, Nov. 19, 1984, 59-244267
Int. Cl.⁴ G03B *17/36*
U.S. Cl. 354—217 **10 Claims**



1. A photographing system comprising:
a camera comprising:
means for generating an output signal at each exposure of the film;
counter means subjected to stepwise increment at each of said exposures and adapted to generate an output after counting a determined number; and
warning means to be activated in response to the output of said counter means; and
an accessory unit to be connected to said camera and comprising:
means for retaining a number of exposures to be preset by the operator;
means for accumulating the number of said output signals generated by said camera; and
means for supplying a warning signal to said camera for activating said warning means when the accumulated number of said output signals reaches said preset number of exposures.

4,619,512
AD CONVERSION DEVICE FOR CAMERA
Shuichi Kiyohara, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 14, 1985, Ser. No. 701,419
Claims priority, application Japan, Feb. 15, 1984, 59-27857
Int. Cl.⁴ G03B *7/091*
U.S. Cl. 354—458 **10 Claims**

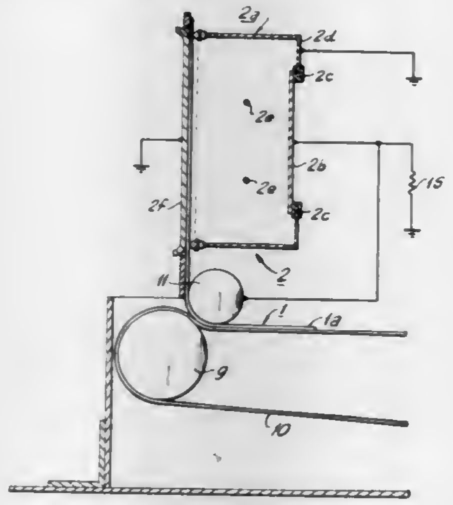


1. An AD conversion device for a camera comprising:
(A) a double integrating type AD conversion circuit for integrating information corresponding to object brightness for a prescribed length of time and thereafter inversely integrating the thus integrated value at a constant speed; and
(B) a control circuit for controlling an integrating time of the AD conversion circuit to carry out the AD conversion, said control circuit including:
(a) a first mode for AD converting information corresponding to an object brightness; and
(b) a second mode for AD converting information other than the information corresponding to the object brightness, the integrating time for the information other than the information corresponding to the object brightness in said second mode being different from the prescribed length of the integrating time for the information corresponding to the object brightness in the first mode.

4,619,513
ELECTROPHOTOGRAPHIC SYSTEM
Keiichi Yamana; Hajime Tachibana, and Shuichi Ohtsuka, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 14, 1984, Ser. No. 589,355
Claims priority, application Japan, Mar. 18, 1983, 58-44324
Int. Cl.⁴ G03G *15/02;* H01T *19/04*
U.S. Cl. 355—3 CH **8 Claims**

1. An electrophotographic system comprising: corona wires covered by a shield case, charging means for charging an electrophotosensitive surface of an electrophotographic member by applying high voltage on said corona wires, exposure means for projecting picture image information on the electrophotosensitive surface of the electrophotographic member after having been charged by said charging means to form electrostatic latent images thereon, development means for developing the electrostatic latent images formed by said exposure means on the electrophotosensitive surface by a magnetic brush process, a conveying mechanism for carrying the electrophotographic member through the charging means, the exposure means and the development means consecutively, a conveyor roller made of conductive material which abuts on said electrophotosensitive surface of the electrophotographic member after the charging means but before the development

means and which is electrically insulated from other components, said shield case having at least one portion which is insulated from another portion thereof and is electrically connected with said roller so as to apply a bias voltage thereon.



4,619,514

MONOCHROMATIC PHOTOCOPYING APPARATUS AND METHOD INCLUDING COLOR SELECTION

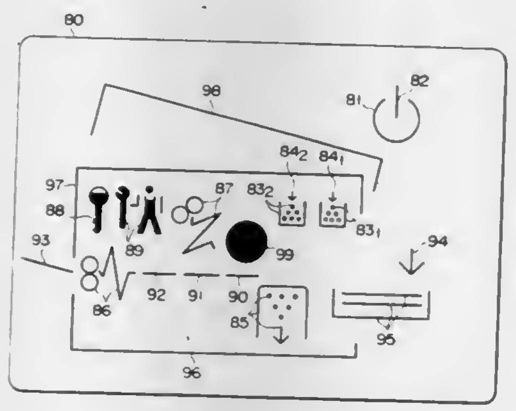
Fumito Ide, Zama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 15, 1984, Ser. No. 661,191

Claims priority, application Japan, Oct. 18, 1983, 58-195030

Int. Cl.⁴ G03G *15/08*

U.S. Cl. 355—3 R **10 Claims**



1. An apparatus for producing a monochromatic reproduction comprising:
   a photosensitive drum;
   means for forming latent image on said photosensitive drum;
   means for alternately selecting a first and a second color;
   developing means, including means for storing a supply of said toner of said first color and means for storing a supply of toner of said second color, said developing means operatively coupled to said selecting means, said developing means for supplying first color toner to said photosensitive drum if said selecting means selects said first color and for supplying second color toner to said photosensitive drum if said selecting means selected said second color toner, said supply of first or second color toner devloping said latent image;
   means, operatively connected to said selecting means, for visually indicating which of said first and second colors is selected by said selecting means;
   first depletion sensing means for producing a first signal if said supply of first color toner stored by said first color toner storing means is depleted;
   second depletion sensing means for producing a second signal if said supply of second color toner stored by said second color toner storing means is depleted;
   means for visually indicating said supply of first color toner is depleted in response to said first signal and for visually indicating said supply of second color toner is depleted in response to said second signal; and
   means for transferring an image developed by said developing means from said drum to a medium.

4,619,515

ELECTROSTATIC PRINTING APPARATUS AND METHOD

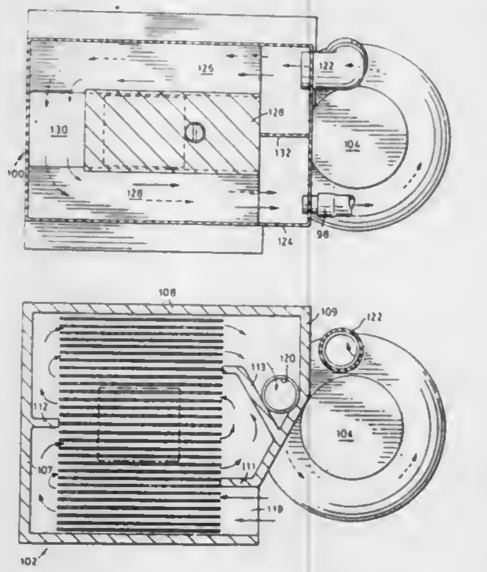
Andrzej Maczuszenko, Etobicoke; Ernest Davison, Brockville; Brian Otter; Brian F. Whittaker, both of Toronto; Christopher Novak, Whitby, and Dolf Landheer, Toronto, all of Canada, assignors to Delphax Systems, Mississauga, Canada

Division of Ser. No. 446,759, Dec. 3, 1982. This application Mar. 25, 1985, Ser. No. 698,665

Claims priority, application Canada, Dec. 4, 1981, 391561

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—3 R **10 Claims**



1. In an electrostatic printing apparatus comprising a rotatable electrostatically chargeable printing drum and ion deposition means for forming an electrostatic image on said electrostatically chargeable drum, the improvement comprising:
   means for discharging a flow of air along a path of flow extending between the periphery of said electrostatically chargeable drum and said ion deposition means,
   said air flow discharge means being oriented to discharge the air flow in a direction opposite to the direction of rotation of said electrostatically chargeable drum;
   means forming an enclosure around a portion of the periphery of said electrostatically chargeable drum, and including the air flow path;
   said air flow discharge means including means defining outlets for discharging said air into the flow path and means conforming to the periphery of said electrostatically chargeable drum and forming with said drum periphery a constriction through which air passes in leaving the flow path.

4,619,516

REPRODUCING APPARATUS

Yasuyuki Iwai, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1984, Ser. No. 675,136

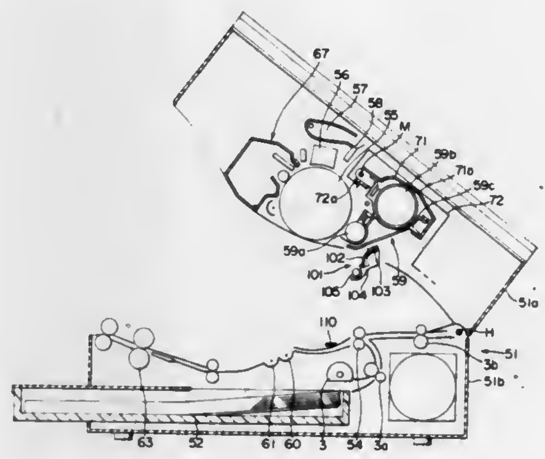
Claims priority, application Japan, Dec. 2, 1983, 58-228767; Dec. 2, 1983, 58-228768

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—3 DD **30 Claims**

1. In a reproducing apparatus comprising an upper frame having at least an image retainer and a developing device arranged near said image retainer for developing with toner a latent image on said image retainer, and a lower frame engaging at one portion thereof with said upper frame, said upper

frame being can be displaced relative to said lower frame, the improvement characterized in that said developing member being separated from the surface of said image retainer by the displacement of said upper frame.



4,619,517

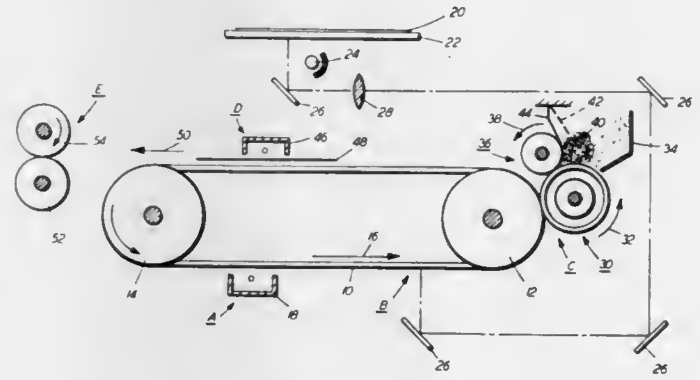
DEVELOPMENT APPARATUS

John G. Ruhland, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 20, 1985, Ser. No. 713,976

Int. Cl.⁴ G03G *15/08*

U.S. Cl. 355—3 DD **16 Claims**



1. An apparatus for developing a latent image with marking particles, including:
   means for transporting the marking particles to the latent image;
   means for electrically charging the marking particles being moved to the latent image by said transporting means;
   means for storing a supply of marking particles and dispensing marking particles to said transporting means; and
   means, spaced from said charging means, for electrically discharging the wrongly charged marking particles returned to said storing means.

4,619,518

TWO-COLOR IMAGE FORMING APPARATUS

Kazuhiro Kameyama, and Nobuo Akiba, both of Higashiyamatoshi, Japan, assignors to Casio Electronics Mfg. Co., Ltd. and Casio Computer Co., Ltd., both of Tokyo, Japan

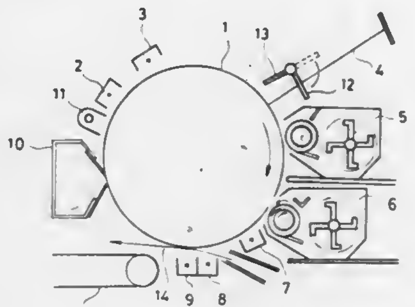
Filed Jul. 26, 1985, Ser. No. 759,326

Claims priority, application Japan, Jul. 31, 1984, 59-159285

Int. Cl.⁴ G03G *15/00, 15/01*

U.S. Cl. 355—4 **8 Claims**

1. A two-color image forming apparatus comprising means for forming a first visible image on an image bearing member, means for forming a second visible image on said image bearing member still carrying the first visible image, with said second visible image being different in color from said first visible image, and means for rotating a cylindrical non-magnetic sleeve and a permanent magnetic roll equipped within said non-magnetic sleeve in opposite directions with regard to each other, thereby allowing a developer for the second visible image to be conveyed onto said non-magnetic sleeve in a direction opposite to the rotation of said permanent magnetic roll.



4,619,519

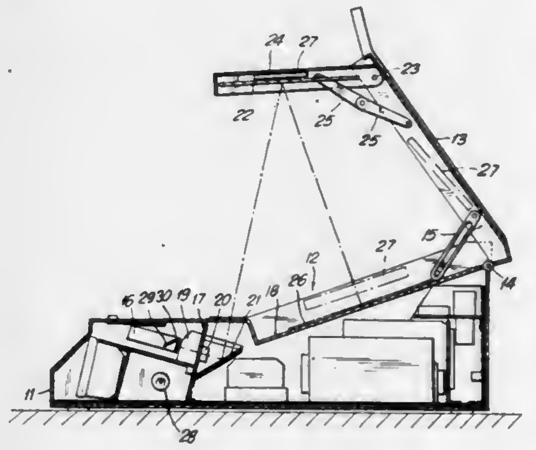
ELECTROPHOTOGRAPHIC CAMERA PROCESSOR-READER

Michihiko Takahashi; Eiichi Saito, both of Tokyo; Takeshi Okano, and Sadaaki Nakaoka, both of Nishinomiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 19, 1984, Ser. No. 632,222

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—11 **5 Claims**



1. An electrophotographic camera processor-reader comprising: a housing for removably receiving an electrophotographic film, an electrophotographic process head fixedly disposed in said housing and including a charging section, an exposure section, a developing section and a fixing section for sequentially performing a series of processing steps on the electrophotographic film, a combined screen and original-supporting plate fixedly disposed in said housing for functioning as an opaque screen onto which enlarged picture image data recorded on the electrophotographic film are projected and functioning also as an original-supporting plate, a recording-projecting lens positioned in said housing at a position opposite the exposure section of said electrophotographic process head, said process head being interposed between the recording-projecting lens and the electrophotographic film, said recording-projecting lens functioning to focus picture image data carried by an original placed on said combined screen and original-supporting plate onto the electrophotographic film and functioning also to project picture image data recorded on the electrographic film onto said combined screen and original-supporting plate, and a light source arranged for projecting the picture image data recorded on said electrophotographic film onto said combined screen and original-supporting plate with light transmitted through said film.

4,619,520
VARIABLE MAGNIFICATION ELECTROPHOTOGRAPHIC COPYING APPARATUS

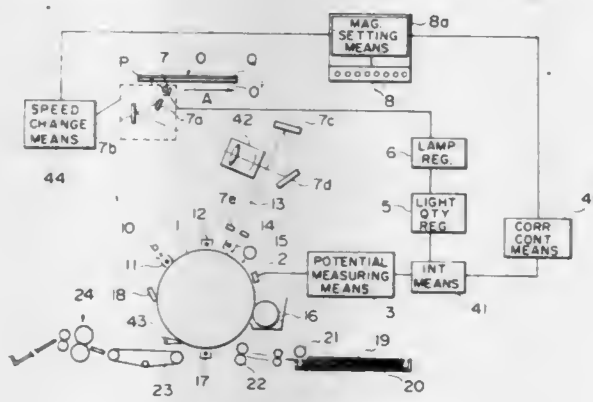
Junji Araya, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1984, Ser. No. 572,847

Claims priority, application Japan, Jan. 26, 1983, 58-9970

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—14 R **13 Claims**



1. A variable magnification electrophotographic copying apparatus, comprising:

image forming means for applying light reflected by an original to be copied to form an image of the original, said image forming means including speed changing means for changing the speed of a movable member for image formation in accordance with a desired magnification of copy;

magnification setting means for setting a one-to-one mode wherein the image is formed in a unit magnification and a magnified mode wherein the image is formed in a non-unit magnification;

detecting means for detecting information corresponding to a density of the original using the light reflected by the original;

automatic density control means, responsive to said detecting means, for automatically controlling a density of the image formed; and

automatic correcting means for correcting, in the magnified mode, said automatic density control means in accordance with the speed at which the movable member is moved based upon the magnification set by said setting means.

4,619,521
IMAGE PROCESSING APPARATUS

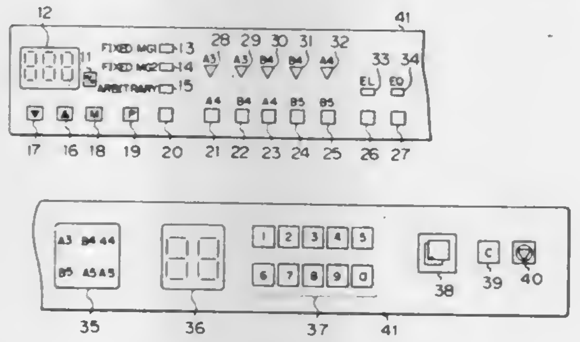
Kazuki Miyamoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1985, Ser. No. 715,416

Claims priority, application Japan, Mar. 31, 1984, 59-62231; Mar. 31, 1984, 59-62232

Int. Cl.⁴ G03G *15/00;* **G03B** *27/52*

U.S. Cl. 355—14 R **19 Claims**



1. An image processing apparatus conprising:

output means for outputting data corresponding to an original image length;

key input means for manually setting data corresponding to a desired reproducing image length;

arithmetic means for calculating a magnification based on the data output by said output means and the data set by said key input means; and

display means for displaying the magnification calculated by said arithmetic means.

4,619,522
DUAL MODE IMAGE DENSITY CONTROLLING METHOD

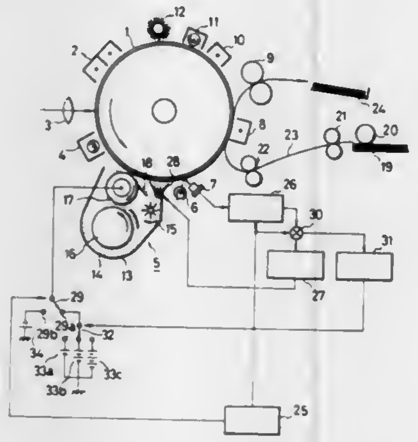
Chikara Imai, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Feb. 22, 1985, Ser. No. 704,826

Claims priority, application Japan, Feb. 9, 1982, 57-19220; Jun. 18, 1982, 57-104873; Jun. 18, 1982, 57-104874

Int. Cl.⁴ G03G *15/08*

U.S. Cl. 355—14 D **9 Claims**



1. A method for controlling the image density of a copy image, comprising:

a first mode of operation including the steps of charging a photosensitive member uniformly, projecting a light image reflecting from a reference pattern having a predetermined reflectance to said photosensitive member to form an electrostatic latent image of said pattern, developing said latent image with a developer, detecting the density of said developed image, comparing said detected density with a first reference value, and replenishing toner to said developer in accordance with a result of said comparison; and

a second mode of operation including the steps of providing a region of approximately saturating residual potential on said photosensitive member, developing said region under a predetermined bias potential, detecting the density of said developed region, and comparing said detected density with a second reference value, whereby said first and second modes of operation are carried out selectively.

4,619,523
TONER CLEANING APPARATUS IN ELECTROPHOTOGRAPHY

Masahiko Maeda, Izumiotsu; Toru Nakazawa, Kumatori; Yasuharu Utsunomiya, Nara, and Ryuji Wataki, Sakai, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

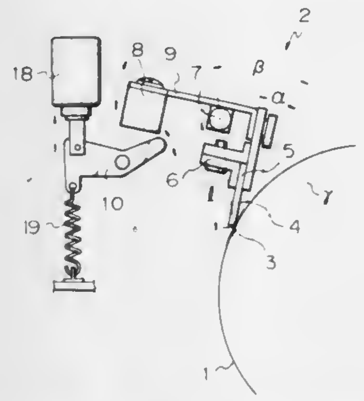
Filed Jul. 25, 1984, Ser. No. 634,466

Claims priority, application Japan, Jul. 27, 1983, 58-135898

Int. Cl.⁴ G03G *21/00*

U.S. Cl. 355—15 **5 Claims**

1. A toner cleaning apparatus for removing a toner left on the surface of an electrophotographic photosensitive material by a doctor blade in the electro-photographic process, which comprises an elastic doctor blade having a toner-scraping top end, a holder for supporting the base of the doctor blade, a fulcrum for pivotably supporting said holder and a pressing mechanism for pressing the top end of the doctor blade to the surface of the photosensitive material, wherein the pressing mechanism comprises a weight and wherein the doctor blade is located on the same side as the photosensitive material with respect to the fulcrum, and the weight, is located on the side opposite to the photosensitive material with respect to the fulcrum, the fulcrum and doctor blade are arranged so that on the feed-out side of the photosensitive material, the contact angle α between the top end of the doctor blade and the photosensitive material is smaller than the angle β between the photosensitive material and the line connecting the top end of the doctor blade to the fulcrum, the pressing mechanism and doctor blade are arranged in such an elastic engagement relation that as the applied stress is increased, the top end of the doctor blade is retreated to the feed-out side and the degree of flexion of the doctor blade is increased, said angle α is from 10° to 35° and said angle β is from 25° to 45°.



4,619,524
DEVICE FOR THE PROJECTION COPYING OF MASKS

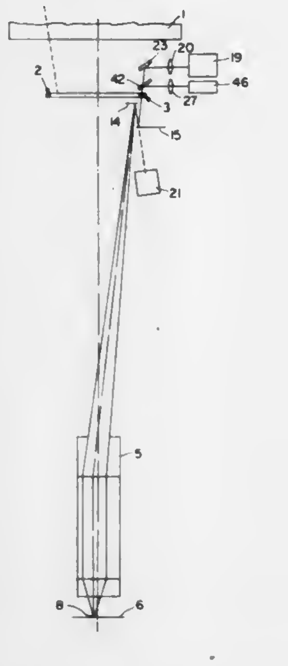
Werner Tabarelli, Vaduz, and Ernst Löbach, Eschen, both of Liechtenstein, assignors to Perkin-Elmer Censor Anstalt, Vaduz, Liechtenstein

Filed Oct. 2, 1984, Ser. No. 656,876

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1984, 3402178

Int. Cl.⁴ G03B *27/42*

U.S. Cl. 355—53 **9 Claims**



1. A projection mask aligner for aligning a mask and a workpiece relative to one another, said aligner comprising:

a radiation source for projecting patterns formed on a mask onto a radiation sensitive surface of a substrate via a projection lens means;

at least one window formed in the mask;

at least one mark formed on the substrate;

adjustment light means for projecting adjustment light through said window and said projection lens means onto the substrate;

detector means disposed to receive adjustment light reflected from said substrate via said projection lens means for determining the position of said at least one window relative to a corresponding said at least one mark;

spectrometric means also disposed in the path of the reflected adjustment light to receive said reflected adjustment light and determine changes in a mean wavelength of the reflected adjustment light;

whereby color errors introduced by the finite bandwidth of the adjustment light may be determined.

4,619,525
CAMERA CASING FOR MICROFILM CAMERAS

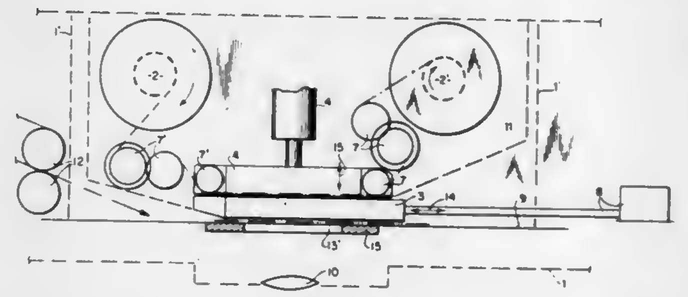
Josef Schaut, Freiher von Stein Strasse 8, 6367 Karben 1, and Peter Rüppel, Söderweg 39, Bad Nauheim, both of Fed. Rep. of Germany

Filed Aug. 13, 1984, Ser. No. 640,330

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1983, 3329395

Int. Cl.⁴ G03B *27/32, 27/52*

U.S. Cl. 355—64 **10 Claims**



1. A camera case for a microfilm camera, which comprises

(a) an exposure station,

(b) a support plate at the exposure station for supporting a segment of a film for exposure in a filming plane,

(c) a conveyor for selectively delivering a succession of punch cards to the support plate, each punch card carrying a respective one of the film segments for exposure in the filming plane,

(d) a punch card holder arranged for reciprocation between an operative position above the support plate for holding a respective one of the punch cards on the support plate and an inoperative position laterally adjacent the support plate,

(e) two spools mounted above the punch card holder at respective sides thereof and arranged to hold a continuous film strip unreeled from one of the spools and reeled onto the other spool, and

(f) a film strip holder arranged above the support plate for reciprocation in a direction extending perpendicularly to the filming plane between an operative position for holding a respective film segment of the film strip on the support plate when the punch card holder is in the inoperative position and an inoperative position above the punch card holder when the punch card holder is in the operative position.

4,619,526
SUCTION FILM HOLDER

Finn Hougaard, Copenhagen, Denmark, assignor to Eskofot A/S, Ballerup, Denmark

Filed May 9, 1985, Ser. No. 732,411

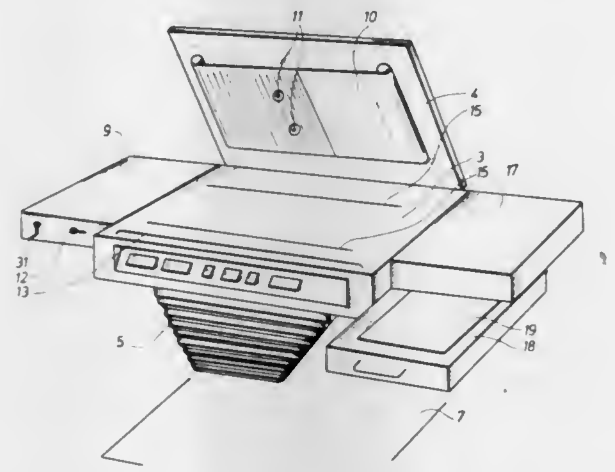
Claims priority, application Denmark, Sep. 3, 1984, 4213/84

Int. Cl.⁴ G03B *27/60*

U.S. Cl. 355—73 **14 Claims**

1. A movable suction film holder preferably for a reproduction camera comprising a flexible cover with one or more

suction cups for advancing the film and a number of substantially transverse grooves to be evacuated separately wherein

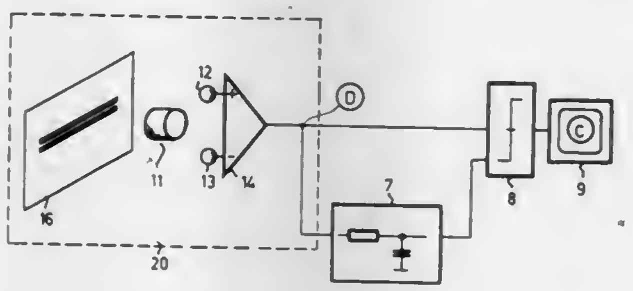


air is blown under the flexible cover after the exposure, but before the advancing of the film by means of the suction cups.

4,619,527
PROCESS AND DEVICE FOR AUTOMATICALLY DETECTING FAULTS IN FABRICS AND SIMILAR TEXTILE SHEET-LIKE STRUCTURES

Rolf Leuenberger, Pfäffikon, and Christian Hunziker, Mönchaltorf, both of Switzerland, assignors to Zellweger Uster, Ltd., Uster, Switzerland

Filed Dec. 9, 1983, Ser. No. 559,802
Claims priority, application Switzerland, Feb. 3, 1983, 624/83
Int. Cl.⁴ G06K *9/08;* G01N *21/16, 21/32*
U.S. Cl. 356—238 **20 Claims**



1. A process for automatically detecting faults in articles, such as fabrics and similar textile sheet-like structures, by filtering an image of the article to increase the contrast between the overall texture of the article perceived as normal and the local deviations therefrom which are perceived as faults, comprising the steps of:

scanning the surface of the article to form an image of the surface thereof;

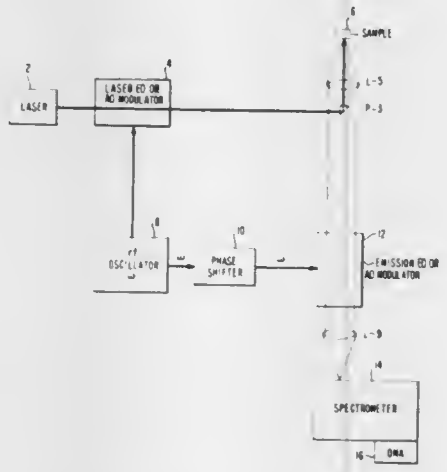
transforming said image using at least two spatial filters which are adapted to detect straight-line contour elements in the weft and warp directions thereof to produce respective transformed images; and

reducing said transformed images to binary black-white images by comparing them to a characteristic grey value threshold for each direction.

4,619,528
PHASE RESOLVED MODULATION RAMAN SPECTROMETER

Azriel Z. Genack, New York, N.Y., and Bruce N. Perry, Flemington, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jan. 26, 1984, Ser. No. 574,130
Int. Cl.⁴ G01J *3/44*
U.S. Cl. 356—301 **7 Claims**



1. A system for measuring fluorescencesuppressed Raman scattering from a sample comprising:

(a) a continuous wave laser beam means, whose intensity is modulated by a first modulator said modulated beam striking said sample so as to produce fluorescent and Raman radiation, wherein said fluorescent radiation is out of phase with Raman radiation by the angle ϕ;

(b) an optical modulator means positioned so that said fluorescent and Raman radiation passes through a second modulator;

(c) a phase shifter means for adjusting the phase of said second modulator by $\phi \pm \phi_o$ relative to said modulated laser beam where ϕ_o is an arbitrary phase;

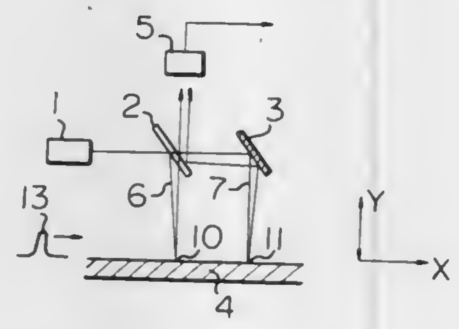
(d) spectrometer means for dispersing said radiation passing through said second modulator into spectra as a function of wavelength;

(e) means for detecting said dispersed radiation, said spectra obtained at $\phi - \phi_o$ then being subtracted from said spectra obtained at $\phi + \phi_o$.

4,619,529
INTERFEROMETRIC CONTACT-FREE MEASURING METHOD FOR SENSING MOTIONAL SURFACE DEFORMATION OF WORKPIECE SUBJECTED TO ULTRASONIC WAVE VIBRATION

Tohru Iuchi, and Fumio Tanaka, both of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jan. 4, 1983, Ser. No. 455,551
Claims priority, application Japan, Jan. 12, 1982, 57-2995
Int. Cl.⁴ G01B *9/02*
U.S. Cl. 356—358 **10 Claims**



7. An interferometric contact-free measuring method for sensing motional surface deformation of a workpiece caused by a laser beam applied to a measuring point on the workpiece surface and inducing an ultrasonic wave therein comprising the steps of:

impinging a first pulse laser beam on a surface of the workpiece to induce an ultrasonic wave in the workpiece,

generating a second laser beam,

splitting the second laser beam into a measuring beam and a reference beam,

causing the measuring beam to impinge upon the measuring point on the workpiece surface,

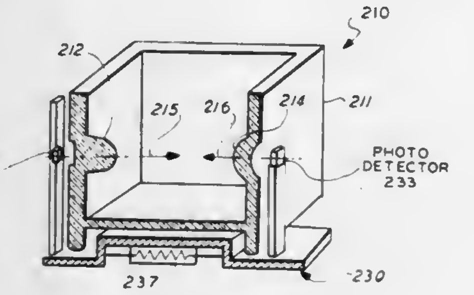
causing the reference beam to impinge upon a reference beam point on the workpiece surface separate and distinct from the measuring point, and

causing measuring and reference beams reflected from the workpiece surface at the measuring point and the reference point, respectively, to impinge upon the same optical detector.

4,619,530
COMBINED CUVETTE WITH INTEGRAL OPTICAL ELEMENTS AND ELECTRICAL CIRCUIT WITH PHOTOEMISSIVE AND PHOTOSENSITIVE ELEMENTS IN INTIMATE OPTICAL CONTACT WITH SAID OPTICAL ELEMENTS

Peter M. Meserol, Montville, and Jesse L. Acker, Rockaway, both of N.J., assignors to Personal Diagnostics, Inc., Whippany, N.J.

Continuation-in-part of Ser. No. 512,121, Jul. 8, 1983, abandoned. This application Dec. 24, 1985, Ser. No. 815,294
Int. Cl.⁴ G01N *21/00*
U.S. Cl. 356—440 **6 Claims**



1. In combination for use in photometric measurements, a cuvette with integrally molded optical means and an electrical circuit including photoemissive and photosensitive elements in intimate optical contact with said optical means, comprising:

molded cuvette means for receiving a medium undergoing change in optical characteristics which change modifies the energy level of a ray of energy passing through said medium;

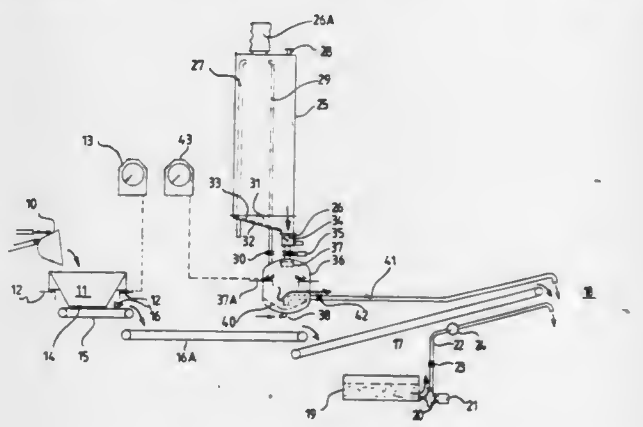
said cuvette means provided with integrally molded first and second ray modifying optical means, said first ray modifying optical means for receiving and modifying said ray in a first predetermined manner and for transmitting said ray into said medium and said second ray modifying optical means for receiving and modifying said ray in a second predetermined manner upon passing through said medium and for transmitting said ray from said cuvette means; and

electrical circuit means including photoemissive means and photosensitive means, said photoemissive means in intimate optical contact with said first ray modifying optical element means and for producing said ray of energy and said photosensitive means in intimate optical contact with said second ray modifying optical means and for receiving said ray of energy.

4,619,531
BATCHING PLANT

Trevor G. Dunstan, Brisbane, Australia, assignor to Dunstan & Partners Pty. Ltd., Australia

Filed Nov. 14, 1984, Ser. No. 671,332
Int. Cl.⁴ B28C *5/06*
U.S. Cl. 366—3 **16 Claims**



16. A process for batching particulate materials including batching of finely divided material and batching of denser materials including the steps of:

(i) loading said denser material into batching means and conveying via a dense material conveyor the batched denser material therefrom to a discharge location;

(ii) storing finely divided material in a storage bin and fluidizing said finely divided material and discharging same through a discharge outlet of the storage bin to a pressurized batching vessel;

(iii) closing valve means associated with the discharge outlet after finely divided material has been discharged therefrom;

(iv) closing valve inlet means associated with the discharge outlet so as to seal the pressurized batching vessel from the storage bin;

(v) fluidizing finely divided material in the pressurized batching vessel and determining the amount of the batch;

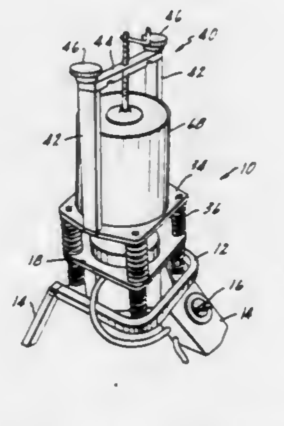
(vi) separately delivering the finely divided material to the discharge location by passing the batched amount of finely divided material into a transfer conduit which extends to said discharge location indpendently of said dense material conveyor by opening valve means associated with the transfer conduit to allow said batched amount to pass to said discharge location; and

(vii) closing said valve means.

4,619,532
SHAKER FOR PAINT CONTAINERS

John W. Schmidt, III, Safety Harbor, Fla., assignor to Everett Douglas Hougen, Flint, Mich.

Filed Nov. 29, 1984, Ser. No. 676,429
Int. Cl.⁴ B01F *11/00*
U.S. Cl. 366—110 **23 Claims**



1. A shaker for a paint container comprising a base adapted

to be positioned on a support surface, a motor support member spaced vertically from said base, resiliently flexible means extending vertically between said motor support member and said base and resiliently supporting the support member on said base, a motor mounted on said support member and having a vertically extending output shaft, a flyweight mounted eccentrically on said shaft for rotation in a generally horizontal plane, a container support member spaced vertically above said motor support member, means for fixedly securing one or more containers to be shaken on said container support member and resiliently flexible means extending vertically between said two support members and supporting the container support member on the motor support member, said resiliently flexible means being resiliently flexible both vertically and laterally, said rotating flyweight laterally tilting said motor support member in the direction of rotation and simultaneously imparting a violent orbital and lateral motion to the container and the container support member whereby, when a liquid filled container is secured on said container support member, the motor and rotating eccentric flyweight, acting through said motor support plate and the second-mentioned resilient means, generate forces which impart a violet orbital and lateral motion to the container and the first-mentioned resilient means substantially absorb the resultant forces on the motor support plate and prevent them from being transmitted to said base.

4,619,533
TUYERE PYROMETER

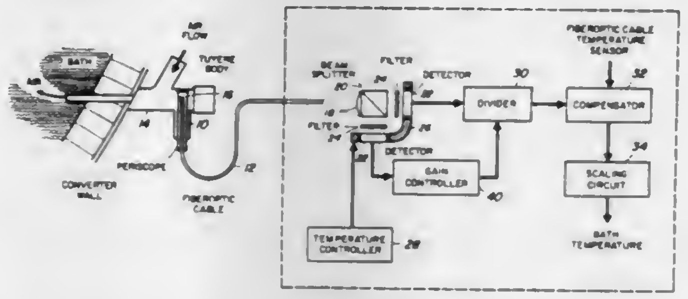
John M. Lucas, Outremont; Frank Kitzinger, Montreal; Vladimir M. Labuc, Hudson; John G. Peacey, Lancaster; Albert Pelletier, Noranda, and Gregory A. Wint, Pierrefonds, all of Canada, assignors to Noranda Inc., Toronto, Canada

Filed Feb. 22, 1985, Ser. No. 704,513

Claims priority, application Canada, Apr. 24, 1984, 452678

Int. Cl.⁴ G01K *1/14*

U.S. Cl. 374—141 **9 Claims**



1. An apparatus for measuring bath temperature of a metallurgical furnace through a tuyere which is used to blow air into the metallurgical furnace and needs to be regularly cleaned by a tuyere puncher, said apparatus comprising:

(a) a movable periscope adapted to be inserted into said tuyere at an angle to the longitudinal axis of the tuyere, and fully retracted therefrom;

(b) a fiber optic cable having one end mounted in said periscope for receiving radiation entering the tuyere from the bath of the furnace;

(c) an actuator for moving said periscope to an operating position within said tuyere to detect radiation being emitted from the bath and for moving said periscope to a fully retracted position from the tuyere to allow entry of the puncher into the tuyere to clean the tuyere; and

(d) a two wavelength pyrometer connected to the other end of said fiber optic cable for analysing the radiation transmitted through the fiber optic cable to provide an indication of the temperature of the bath.

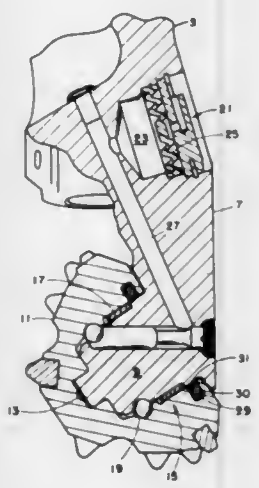
4,619,534
ROLLER CUTTER DRILL BIT HAVING A TEXTURIZED SEAL MEMBER

Jeffery E. Daly, Cypress, and Robert J. Kotch, Humble, both of Tex., assignors to Reed Tool Company, Houston, Tex.

Filed Sep. 12, 1984, Ser. No. 649,646

Int. Cl.⁴ F16C *33/74;* **E21B** *10/22;* **F16J** *9/00*

U.S. Cl. 384—94 **12 Claims**



1. A rotary drill bit for use in drilling a well bore comprising:

a bit body having a threaded pin at its upper end adapted to be detachably secured to a drill string for rotating the drill bit, and at least one depending leg at its lower end having a generally cylindrical bearing journal, constituting a first bearing member of the bit;

a roller cutter of generally conical shape constituting a second bearing member of the bit, the roller cutter having a recess therein of generally circular section for receiving the bearing journal;

bearing menas for rotatably mounting the roller cutter on the bearing journal; and

a lubrication system for providing lubricant to the bearing means comprising a reservoir holding a supply of lubricant, passaging in the bit body providing fluid communication between the reservoir and the bearing means, and seal means in an annular seal cavity between the roller cutter and the bearing journal for blocking flow of lubricant past the bearing means and out of the bit body, and for blocking flow of drilling fluid past the seal means and into the bit body;

said seal means comprising an annular seal member of elastomeric material compressed radially between said bearing members and having a circumferentially continuous annular engagement face in sealing, sliding frictional engagement with one of the bearing members, said annular engagement face having a surface texture defining a pattern of alternating depressions and projections to form a plurality of radially compressed pockets to hold lubricant therein against said one bearing member, said pattern of alternating depressions and projections on said surface texture being arranged and constructed to substantially block the flow of lubricant past said seal member and out of the bit body, and to substantially block the flow of drilling fluid past said seal member inwardly to said bearing means and inside the bit body.

4,619,535
BEARING HOUSING

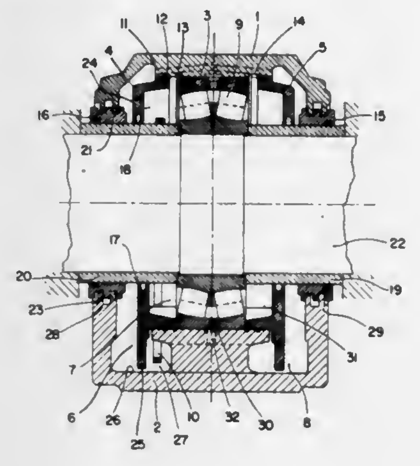
Werner Haugwitz, Schweinfurt, Fed. Rep. of Germany, assignor to SKF Gmbh, Schweinfurt, Schweinfurt, Fed. Rep. of Germany

Filed Feb. 22, 1985, Ser. No. 704,389

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1984, 3406963

Int. Cl.⁴ F16C *33/66, 35/00*

U.S. Cl. 384—472 **11 Claims**



1. A bearing housing for the horizontal support of a shaft with oil ring lubrication divided in the axial direction, means defining an outer chamber in the bearing housing containing an oil reservoir and an inner chamber for a roller bearing partitions extending essentially in the radial direction with respect to the bearing axis separating the chambers, each of said partitions including a part which is removably attached to the bearing housing and is centered in a bore in the bearing housing coaxial to the support of the shaft, an oil lubricator ring resting on the shaft in the inner chamber or on a part revolving with the shaft and projecting through recesses in one of the partitions into the oil reservoir, said lubricator ring transporting oil out of the oil reservoir into the inner chamber as the shaft turns, at least one of said partitions (**4, 5**) having in the lower area a skirt-like extension (**25**), which extends down toward the floor (**26**) of the oil reservoir (**6**) to form a narrow gap and divides the oil reservoir into two axially sequential chambers (**6, 27**), said partitions (**4, 5**) being axially adjustable in the bore (**3**) of the bearing housing (**1, 2**) to accommodate various sized race rings.

4,619,536
PRINTING HAMMER ASSEMBLY

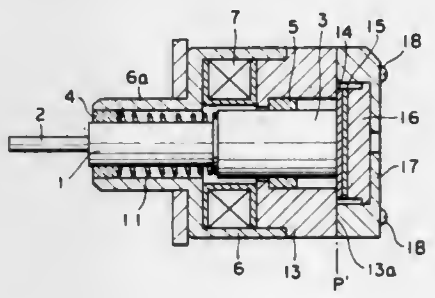
Takeshi Takemoto, Yamato, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Sep. 28, 1983, Ser. No. 536,906

Claims priority, application Japan, Sep. 29, 1982, 57-170703

Int. Cl.⁴ B41J *9/38, 9/42*

U.S. Cl. 400—157.2 **16 Claims**



1. A printing hammer assembly comprising:

a printing hammer having an impact surface and a magnetically interacting means;

means for supporting said printing hammer slidably movable along the longitudinal axis of said printing hammer;

biasing means for normally biasing said printing hammer in a backward direction along said longitudinal axis to a retracted position;

means for producing a magnetic flux passing through said magnetically interacting means of said printing hammer when energized, thereby causing said printing hammer to move in a forward direction along said longitudinal axis against the bias force of said biasing means;

means for providing a first surface which defines said retracted position of said printing hammer, said means for providing a first surface including a rear yoke having a rear end surface at least a part of which defines said first surface facing in said backward direction with respect to the return movement of said printing hammer along said longitudinal axis to said retracted position;

stopper means normally pressed against said first surface and having a second surface normally located in registry with said first surface, said second surface being contactable with said printing hammer to position said printing hammer at said retracted position; and

means for holding said stopper means normally pressed against said first surface.

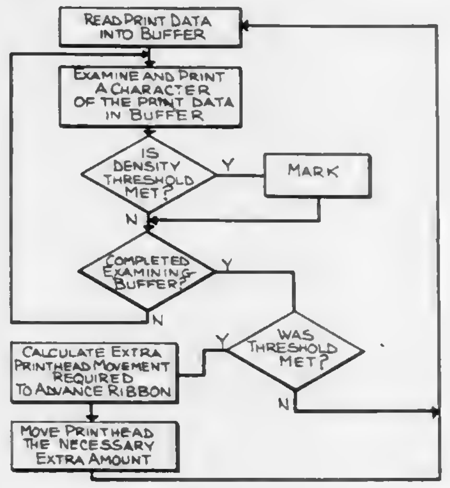
4,619,537
RIBBON FEED WITH INK DEPLETION COMPENSATION

Phuc K. Do; Carol E. Wyke; Barnes R. Kendrick, Jr., all of Charlotte; Dennis R. Hedrick, High Point, and Demetrios Troupes, Charlotte, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 23, 1985, Ser. No. 737,187

Int. Cl.⁴ B41J *33/14, 33/36*

U.S. Cl. 400—225 **14 Claims**


READ PRINT DATA INTO BUFFER
EXAMINE AND PRINT A CHARACTER OF THE PRINT DATA IN BUFFER
IS DENSITY THRESHOLD MET?
Y
MARK
N
COMPLETED EXAMINING BUFFER?
Y
N
WAS THRESHOLD MET?
Y
N
CALCULATE EXTRA PRINTHEAD MOVEMENT REQUIRED TO ADVANCE RIBBON
MOVE PRINTHEAD THE NECESSARY EXTRA AMOUNT

1. A printer for printing data on a print medium comprising

a print head mounted for movement relative to a print medium;

a supply of ink ribbon, including a span of ink ribbon which is interposed between said print head and the print medium;

means for moving said print head and for advancing ink ribbon from said supply into said span in response to movement of the print head in at least one direction; and

control means for directing print data to said print head and controlling movement of the print head;

said control means including means for detecting when the printing density exceeds a predetermined value; and

means repsonsive to said predetermined value being exceeded for moving said print head an amount greater than that necessary to position the print head at a succeeding print position so as to thereby cause additional ink ribbon to be advanced from said supply and avoid overprinting on areas of the ink ribbon where high density printing has occurred.

4,619,538

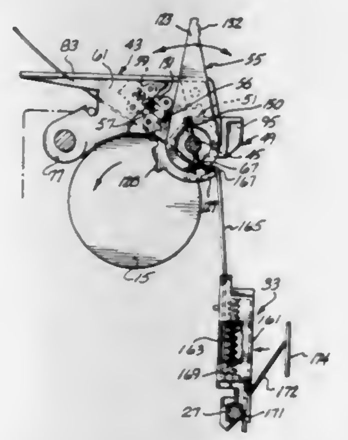
ADJUSTABLE LOAD, FRICTION FEED, QUICK TEAR BAR MECHANISM

Richard G. Patterson, Bellevue, Wash., assignor to Mannesmann Tally Corporation, Kent, Wash.

Filed Feb. 4, 1985, Ser. No. 697,955

Int. Cl.⁴ B41J *11/66, 11/32;* **B26D** *7/06*

U.S. Cl. 400—621 **8 Claims**



1. An adjustable load, quick tear bar mechanism for a printer having a cylindrical platen that friction feeds a print receiving medium through the printer and provides support for the print receiving medium as said medium is printed on by the actuation of a print head, said adjustable load, quick tear bar mechanism comprising:
   (a) arm means for supporting a tear bar, said arm means comprising at least two arms positioned at opposite ends of said platen so as to overlie said platen, each of said arms including an upstream end and a downstream end, the downstream ends of said arms being pivotally attached to said printer;
   (b) a tear bar mounted on the upstream ends of said arms for pressing said print receiving medium against said platen;
   (c) a plurality of rollers and a roller shaft, said rollers being mounted on said roller shaft and said roller shaft being mounted between the upstream ends of said arms; and,
   (d) controllable pressure means for applying pressure to the upstream ends of said arms and said tear bar to control the pressing force applied by said tear bar to said print receiving medium such that said tear bar continues to press said print receiving medium against said platen when a manual force adequate to separate said print receiving medium at said tear bar is applied to said print receiving medium downstream of said tear bar, said controllable pressure means including:
      (1) coil spring means having one end attached to said printer and the other end attached to the ends of said roller shaft; and,
      (2) hook means mounted on said roller shaft so as to rotate with said roller shaft, said hook means including hooks connectable to said coil spring means such that said coil spring means apply pressure to said roller shaft and, thus, said rollers, via said hook means.

4,619,539

MECHANICAL PENCIL EQUIPPED WITH LEAD-STORING CARTRIDGE

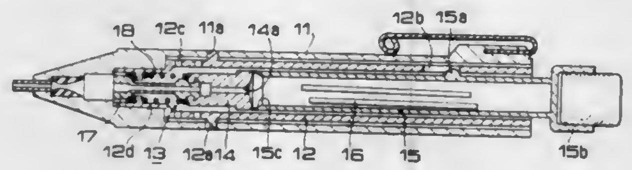
Hidehei Kageyama, Kawagoe, Japan, assignor to Kotobuki & Co, Ltd., Kyoto, Japan

Filed Aug. 14, 1984, Ser. No. 640,992

Claims priority, application Japan, Feb. 13, 1984, 59-17501[U]; Feb. 13, 1984, 59-17502[U]

Int. Cl.⁴ B43K *21/00*

U.S. Cl. 401—85 **2 Claims**



1. A mechanical pencil comprising:
(a) a barrel to be held by a user;
(b) an inner sleeve removably held in place in said barrel;
(c) a lead-feeding mechanism separate from and contained within said inner sleeve;
(d) a lead guide abutting against said lead-feeding mechanism;
(e) a lead-containing cartridge having an outer diameter substantially equal to the inner diameter of one of said barrel or said inner sleeve and held detachably in said barrel;
wherein said barrel defines an interlocking slot therethrough, said inner sleeve has a projection on the outer surface thereof, and when assembled, said projection is brought into engagement with the interlocking slot so as to interlock said inner sleeve and said barrel together.

4,619,540

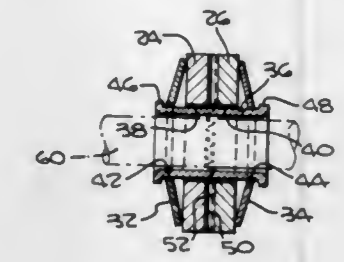
SPRING PIVOT JOINT FOR MANNEQUIN

Robert L. Day, Sun Valley, and Robert H. Day, Burbank, both of Calif., assignors to S.D.S. Industries, Inc., Pacoima, Calif.

Filed Jul. 20, 1984, Ser. No. 632,891

Int. Cl.⁴ F16D *1/12, 3/00*

U.S. Cl. 403—24 **1 Claim**



1. A pair of parts to be joined together for pivotal movement, the combination therewith of
   (1) a plurality of spring pivots, each spring pivot including:
      a. a pair of pivot plates in face to face contact, and each plate having a wing or tab for attachment to the parts respectively;
      b. a pair of Belville spring washers encompassing said pivot plates;
      c. a hollow rivet extending through aligned holes in said pivot plates and said spring washers, said rivet having heads confining said parts in a stack and loading said spring washers so that substantial frictional resistance is imposed against relative angular movement of said parts;
      d. said attaching wings or tabs extending radially beyond said spring washers; and
   (2) a rod extending in slidably fitted relationship through the hollow rivets to hold said spring pivots in coaxial relationship while said wings or tabs are attached to said parts, said rod being slidably removable from said spring pivots;
   (3) said spring pivots being joined to each other only through said parts when said rod is removed; said spring pivots confining said parts for angular movement about the common axis of said spring pivots.

4,619,541

BUILDERS SCAFFOLDING

Dennis W. Lovering, Wolverhampton, United Kingdom, assignor to GKN Kwikform Limited, London, England

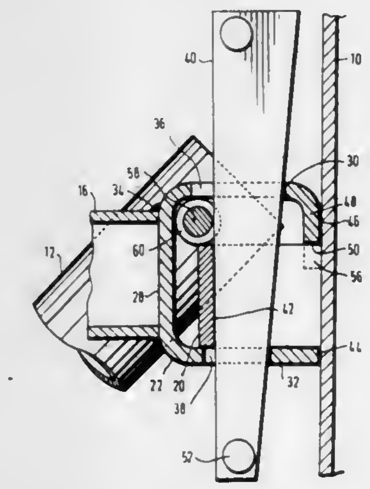
PCT No. PCT/GB84/00336, § 371 Date May 20, 1985, § 102(e) Date May 20, 1985, PCT Pub. No. WO85/01770, PCT Pub. Date Apr. 25, 1985

PCT Filed Oct. 2, 1984, Ser. No. 740,844

Claims priority, application United Kingdom, Oct. 8, 1983, 8326991

Int. Cl.⁴ E04G *7/00;* **F16B** *7/00*

U.S. Cl. 403—49 **8 Claims**



1. A releasably engageable builders scaffolding assembly comprising an upright member, a brace member, a cross member and connecting means for detachably securing the upright member and cross member together, the connecting means comprising a socket mounted on the exterior of the upright member and being open at each of its two opposite ends which are spaced apart along the length of the upright member, and a connector at one end of the cross member including two limbs which are spaced apart vertically to permit the socket to be received therebetween, each limb having a respective abutment face to abut the upright member, each limb further being provided with a respective opening which receives a wedge clamping member forming part of the connecting means;
   characterized in that the brace member is provided at one end thereof with a spigot extending perpendicularly therefrom, said spigot having a recess extending circumferentially thereof wherein an edge of the wedge clamping member is engageable to retain said spigot between the connector and an adjacent part of the socket, whereby said upright member, said brace member and said cross member are all releasably engaged together to form said assembly.

4,619,542

BABY CARRIAGE GRIP ROD LOCKING MECHANISM

Kenzou Kassai, Osaka, Japan, assignor to Aprica Kassai Kabushikikaisha, Osaka, Japan

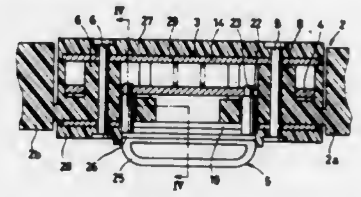
Filed Mar. 15, 1985, Ser. No. 712,707

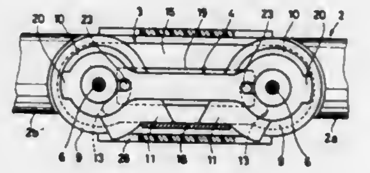
Claims priority, application Japan, Mar. 23, 1984, 59-56718

Int. Cl.⁴ F16C *11/00;* **F16D** *1/00*

U.S. Cl. 403—62 **9 Claims**

1. A locking mechanism for a baby carriage grip rod interconnecting a pair of push rods (**1**) of a foldable baby carriage, comprising coupling means including two parallel shafts (**6**) for foldably interconnecting two portions (**2***a*, **2***b*) into which said grip rod (**2**) is divided and supported for rotation around said shafts (**6**) each grip rod portion (**2***a*, **2***b*) having a boss (**8**) with a hole (**7**) through which the respective shaft (**6**) extends, two locking recesses (**12**) each formed in one lateral surface of an end section of the respective one of said grip rod portions, said locking recesses extending in a plane intersecting said parallel shafts, a locking plate (**4**) guided at each end by said respective boss for moving axially relative to said shafts, said locking plate being capable of simultaneously fitting into both locking recesses for locking said portions (**2***a*, **2***b*) of said grip rod in a single straight locked state, a spring (**29**) for urging said locking plate in the direction in which it fits in said locking recesses for automatically maintaining said locked state, and an unlocking member (**5**) for imparting an operating force for disengaging said locking plate from said locking recesses against the force of said spring.





4,619,543

COUPLING ASSEMBLY HAVING A RETAINER PLATE FOR GUIDING A COUPLING HOOK

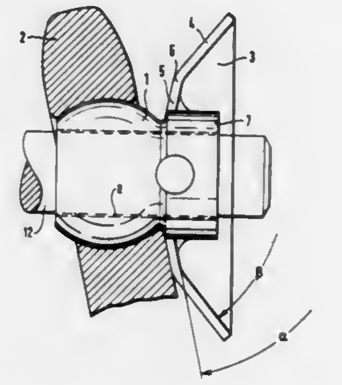
Jürgen Vollmer, and Alfred Frackenpohl, both of Lohmar, Fed. Rep. of Germany, assignors to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Mar. 20, 1985, Ser. No. 713,784

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1984, 3410314

Int. Cl.⁴ F16C *11/06;* **F16D** *3/10*

U.S. Cl. 403—114 **1 Claim**

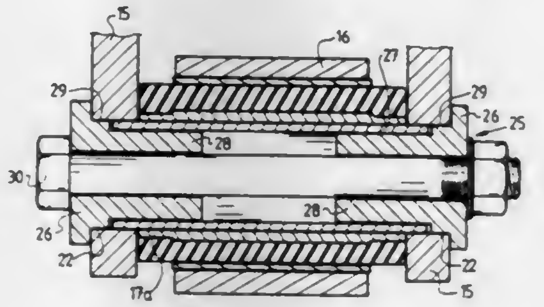


1. A coupling assembly for an agricultural attachment or trailer implement comprising:
   a coupling member including a coupling sphere adapted to be connected by sliding engagement over a coupling bolt;
   a coupling hook adapted to be connected with said coupling bolt by engagement over said coupling sphere; and
   an annular retainer plate affixed to said coupling member adjacent said coupling sphere for guiding and retaining said coupling hook on said coupling sphere, said retainer plate comprising
      a radially innermost support region affixed contiguously

with said coupling member having a conical configuration opening away from said coupling sphere and having an opening angle of about 156°,
a radially innermost guide region formed integrally with said support region and arranged peripherally thereabout opening away from said coupling sphere with an opening angle of less than 120°, with said support region extending radially through about one-third of the total radial width of said annular retainer plate.

4,619,544
BUSHINGS

Peter Laidely, 31 Dibley Street, Wooloongabba, 4012 Queensland, Australia
Filed Oct. 28, 1983, Ser. No. 546,398
Claims priority, application Australia, Nov. 1, 1982, PF6606
Int. Cl.⁴ F16C *11/06*
U.S. Cl. 403—162 **9 Claims**

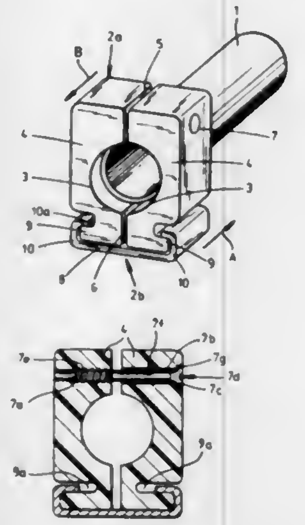


1. In an assembly for supporting an eye member or the like, having an aperture therein, between a pair of spaced supporting members at respective supporting apertures therein for relative pivotal movement, a bushing comprising support sleeve means of rigid material extending through the aperture in the eye member in supporting relationship therewith and between the supporting members with at least one end of said support sleeve means extending only part way into a respective supporting aperture for supporting engagement therewith, a pair of end plug means for holding said support sleeve means between the supporting members, and tensionable connector means passing through said end plug means and said support sleeve means for securing each end plug means in respective supporting apertures of the supporting members, at least the end plug means at said one end of said support sleeve means including an outer end portion engaging the outer side of the respective supporting member, an inner end portion within said support sleeve means for supporting engagement therewith, and an intermediate portion between said outer and inner end portions extending only part way into the respective supporting aperture short of said one end of said support sleeve means.

4,619,545
FRAME ASSEMBLY

Valentin Küttenbaum, Ringelhauser Allee 14, D-7958 Laupheim, Fed. Rep. of Germany
Continuation of Ser. No. 487,120, Apr. 21, 1983, abandoned. This application Nov. 21, 1985, Ser. No. 800,364
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1982, 3215018
Int. Cl.⁴ F16B *7/04;* **F16D** *1/06*
U.S. Cl. 403—169 **11 Claims**

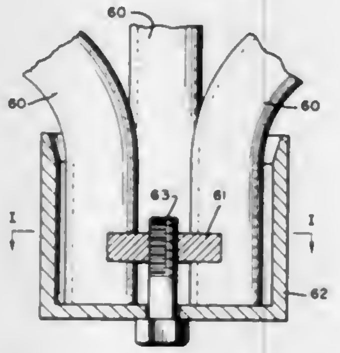
1. A device for releasably connecting an elongated frame element to a generally stationary support, the device comprising:
a pair of like elongated clamping jaws extending generally parallel to and spaced from each other, having inner and outer ends, and formed with confronting recesses embracing the element with the jaws separated by inner and outer slits extending oppositely from the recesses toward the respective ends of the jaws, the outer ends of the jaws being formed with respective oppositely directed ribs;
traction means connected between the inner ends of the jaws for drawing the jaws together at the inner slit while urging the jaws and ribs apart at the outer slit and for thereby clamping the element between the jaws;



a bridge having a pair of sides one of which is formed with a pair of confronting and relatively nondisplaceable hooks engaging over the ribs, whereby spreading of the jaws at the ribs engages the jaws tightly in the bridge; and
means for securing the other side of the bridge releasably to the support.

4,619,546
JUTTED JOINT STRUCTURES

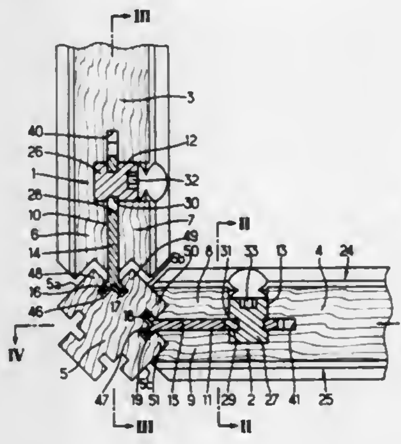
Hans-Josef Schlippes, 325 Bord de L'Eau, Ste. Dorothee, Laval P. Q., Canada (H7X 1S8)
Filed Oct. 29, 1984, Ser. No. 665,633
Claims priority, application Canada, Nov. 14, 1983, 1171231
Int. Cl.⁴ F16B *11/00;* **F16D** *3/00*
U.S. Cl. 403—171 **9 Claims**



1. An apparatus for joining together multiple pieces of structure comprising:
elongated members;
said elongated members have angled end portions;
indexing means, interposed between recessed surfaces provided in said end portions of said elongated members in order to form a joint and to secure the alignment of said joint and to prevent shifting in any direction;
said elongated members, positioned in radial orientation towards the center of said joint with said angled end portions parallel side by side in a circular configuration;
said angled end portions being maintained in engaged juxtaposition to each other;
retaining means; and
said retaining means, surrounding portions of said elongated members to hold them in their assembled position.

4,619,547
DEVICE FOR ASSEMBLING CONSTRUCTION ELEMENTS, NOTABLY CONSTRUCTION ELEMENTS MADE OF WOOD

Louis A. Renaud-Goud, Le Malod Avressieux, 73240 Saint Genix sur Guiers, France
Filed Apr. 24, 1984, Ser. No. 602,785
Claims priority, application France, Apr. 28, 1983, 83 07046
Int. Cl.⁴ F16B *7/04, 12/44*
U.S. Cl. 403—231 **10 Claims**

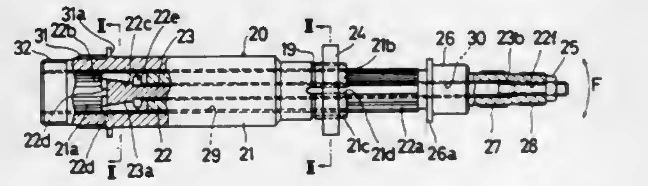


1. A device for connecting a first construction element having a connecting end to a second construction element extending at right angles thereto, said first element having a longitudinal web-receiving recess at said connecting end and a lateral pin-receiving recess extending transversely to said web-receiving recess, said second element having two longitudinal flanges forming a longitudinal groove therebetween, said groove being V-shaped and being formed of two arms, said device comprising a tie piece having a web portion which is slidable in said web-receiving recess of the said first construction element, said tie piece having an end portion which is located outside the said web-receiving recess of the said first construction element, said end portion having two oppositely projecting lateral ribs which are received in the longitudinal groove of said second element, a pin which is receivable in the pin-receiving recess in the first element, said tie piece having a transvere passage formed therein, said pin running laterally to the web-receiving recess and having an eccentric portion entering said transverse passage in the web portion of the tie piece so that rotation of the pin in the transverse pin-receiving recess moves the tie piece into the said web-receiving recess to clamp the longitudinal flanges of the second element between the ribs of the tie piece and the end of the first element in order to hold the construction elements in assembled relation, the web and the two lateral ribs on the tie piece forming a Y, the longitudinal groove of the said second element being shaped complementary to the Y-shaped end portion of the tie piece, each of said longitudinal flanges of the second element forming longitudinal rib means adjacent to said V-shaped groove, each of said longitudinal rib means of the second element having two exposed faces which lie substantially parallel to the arms of said V-shaped groove, thereby providing the longitudinal rib means with an exposed V-shaped surface for entering complementary shaped grooves in the end of the first element adjacent to its longitudinal recess receiving the web of the tie piece.

8. A device for connecting a first construction element to a second construction element, said first element having a web-receiving recess and a lateral pin-receiving recess said second element having a longitudinal groove bounding two longitudinal flanges, comprising, a tie piece having a web portion which is slidable in said web-receiving recess of the said first construction element, said tie piece having an end portion which is located outside said web-receiving recess and has two oppositely projecting lateral ribs which are received in the longitudinal groove of said second element, a pin which is receivable in the pin-receiving recess in the first element, said pin running laterally to the web-receiving recess and having an eccentric portion entering a transverse passage in the web portion of the tie piece whereby rotation of the pin in the transverse pin-receiving recess moves the tie piece into the said web-receiving recess to clamp the longitudinal flanges of the second element between the ribs of the tie piece and the first element in order to hold the construction elements in assembled relation, characterized in that the web and the two lateral ribs on the tie piece form a Y, and the longitudinal groove of said second element is V-shaped, said pin including two cylindrical portions separated by a cylindrical eccentric portion, said transverse passage of the said tie piece being cylindrical so as to receive the cylindrical portions of the pin on each side of the web-receiving recess, said transverse passage of the tie piece having, in the direction of tie piece movement, an inwardly projecting portion which is engageable with the eccentric portion of the pin so that, by rotating the pin, the tie piece can be moved outward from the web-receiving recess, one of the cylindrical portions of the pin having a longitudinal groove (61) which permits this grooved cylindrical portion to pass through the transverse passage of the tie piece until the eccentric portion of the pin is located in this transverse passage.

4,619,548
TELESCOPIC SHAFT

Kenichi Kazaoka; Masanobu Ishikawa, and Masumi Nishikawa, all of Aichi, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Feb. 8, 1985, Ser. No. 700,132
Claims priority, application Japan, Mar. 5, 1984, 59-042492
Int. Cl.⁴ F16B *2/02, 7/00*
U.S. Cl. 403—290 **10 Claims**



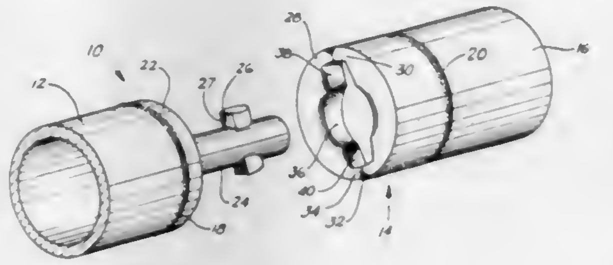
1. A telescopic shaft comprising:
an integral outer shaft, the outer shaft having an integral first inserted end portion and a second end portion;
first spline means on the outer shaft;
an integral inner shaft, the inner shaft having an integral first inserting end portion and a second end portion;
second spline means on the inner shaft for engagement with the first spline means;
first depressing means for depressing and contracting the first inserted end portion of the outer shaft against the inner shaft; and
second depressing means for depressing and expanding the first inserting end portion of the inner shaft against the outer shaft, wherein the second depressing means includes a rod extending through the second end of the inner shaft, the inner shaft including an inner circumferential surface for accommodating the rod.

4,619,549
SCAFFOLDING CONNECTION APPARATUS AND METHOD

William E. Gilbreth, Huffman, Tex., assignor to Builders Equipment and Tool Manufacturing Company, Houston, Tex.
Filed Nov. 13, 1984, Ser. No. 670,042
Int. Cl.⁴ B25G *3/16;* **F16B** *7/20*
U.S. Cl. 403—349 **16 Claims**

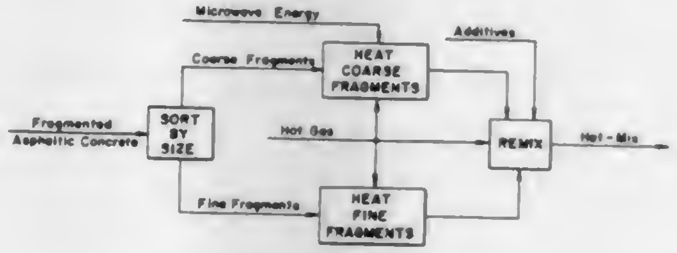
1. A scaffolding support including first and second tubular members adapted for axial alignment to form an elongate tubular support member, the improvement comprising:
a forged-construction male interconnection component having at least one outwardly projecting dog member;
a forged-construction female interconnection component

having a male-receiving receptacle and a substantially circular front end surface adapted for sliding engagement along a periphery of said male component;
said female interconnection including first and second portions joined together by a welding, each portion having a substantially C-shaped cross-sectional configuration and a tapered dog engaging surface selectively positioned on said portion for engaging said at least one dog member;
said male component being weldedly affixed about its periphery to said first tubular member; and
said female component being weldedly affixed about its periphery to said second tubular member.



4,619,550
MICROWAVE METHOD AND APPARATUS FOR HEATING LOOSE PAVING MATERIALS

Morris R. Jeppson, Carmel, Calif., assignor to CD High Technology, Inc., Georgetown, Tex.
Filed Oct. 5, 1984, Ser. No. 658,122
Int. Cl.⁴ E01C *23/14, 19/18*
U.S. Cl. 404—80 **24 Claims**

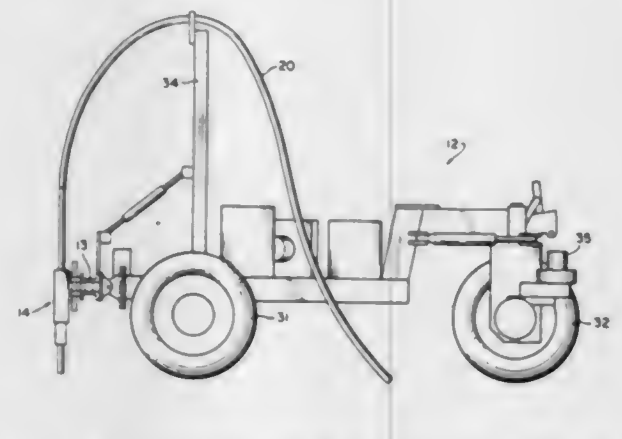


1. A method of recycling fragments of asphaltic concrete or the like comprising the steps:
sorting said fragments on the basis of size to separate coarse fragments exceeding a predetermined size from fine fragments of lesser size,
separately heating the coarse and fine fragments with different heating procedures by directing said fine fragments to a first location and heating said fine fragments thereat at least primarily by exposure to hot gas, and by directing said coarse fragments to a second separate location and heating said coarse fragments thereat at least primarily by directing microwave energy into said coarse fragments to generate heat internally therein,
recombining said fine and coarse fragments following said separate heating of said coarse fragments, and
mixing said recombined fine and coarse fragments while in the heated condition to provide new hot-mix.

11. In a hot-mix plant, the combination comprising:
a rotary drum-mixer having a first stage with a new aggregates receiving port and a second stage with a reclaimed material port for receiving fragmented old asphaltic concrete or the like for intermixing with material heated in said first stage,
means for establishing a hot gas flow within said drum-mixer,
means for selectively feeding new aggregates into said new aggregates receiving port,
a sorter for separating large fragments of said old asphaltic concrete or the like that exceed a predetermined size from small fragments which are of lesser size,
a microwave heating chamber, and
a conveyor system interconnecting said drum-mixer and said sorter and said microwave heating chamber and having means for carrying said small fragments from said sorter to said reclaimed material port of said drum-mixer, means for carrying said large fragments from said sorter to said microwave heating chamber, and means for recombining said large fragments with said small fragments following heating of said large fragments in said microwave heating chamber.

4,619,551
DEVICE FOR REMOVING DEGRADED CONCRETE

Hans Juan, la Conversion, Switzerland; Jan Å. Bjerngren, Sollentuna, and Carl Å. Strömdahl, Stockholm, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Mar. 14, 1985, Ser. No. 711,967
Claims priority, application Sweden, Mar. 27, 1984, 8401687
Int. Cl.⁴ E01C *23/10*
U.S. Cl. 404—90 **2 Claims**



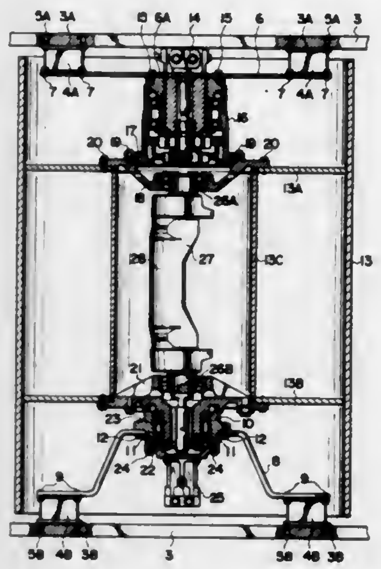
1. A device for removing degraded concrete from the surface of a concrete layer, comprising:
a carrier constructed for movement over the concrete layer;
a source of high-pressure fluid associated with said carrier;
a nozzle guide assembly disposed on said carrier;
a nozzle device including a non-cavitating nozzle fixed to said guide assembly and in fluid communication with said high-pressure fluid source, wherein the nozzle guide assembly guides said nozzle device along a predetermined path at a substantially constant distance above the concrete layer while a high-pressure fluid jet from said non-cavitating nozzle impacts the surface of the concrete layer;
said nozzle device including means for supporting said non-cavitating nozzle so that the axis of the nozzle is inclined at a fixed angle in the range of 30° to 60° relative to the concrete layer and said nozzle points in the direction in which it is guided by said guide assembly;
wherein accumulation of already dislodged surface particles in front of the surface to be impacted by said high-pressure fluid jet is substantially reduced relative to accumulation of said particles when the nozzle axis is perpendicular to the concrete layer.

4,619,552
VIBRATION PROOF SUSPENSION TYPE VIBRATING ROLLER

Hisanori Sadahiro, Kawagoe, Japan, assignor to Sakai Heavy Industries Ltd., Tokyo, Japan
Filed Aug. 6, 1984, Ser. No. 638,117
Int. Cl.⁴ E01C *19/28*
U.S. Cl. 404—117 **9 Claims**

1. A vibrating roller comprising:
a frame structure having first and second sides; and
a vibratory roller including,

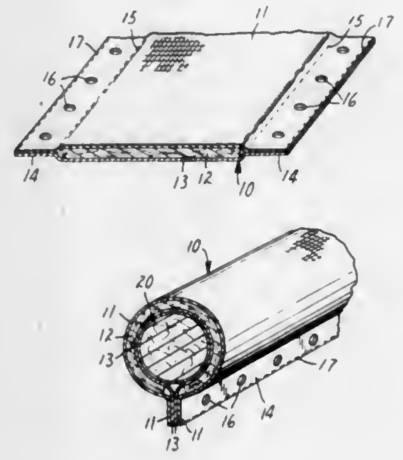
a roller of generally cylindrical shape having first and second ends, and being supported in said frame structure, said roller including a plate member disposed at said first end of said roller, said plate member having a first side closer to said frame and a second side further from said frame,
a plurality of substantially vibration proof members directly fixed to both of said sides of said frame structure and securing both of said ends of said roller so as to enable said roller to be rotatably supported by said frame structure via said members, said vibration proof members securing said first end of said roller, being attached to said first side of said plate member,



a first hydraulic motor for rotating said vibratory roller, being mounted on said first side of said frame structure and on said first side of said plate member, said first hydraulic motor having a drive gear mechanism including a housing located on and fixed to said second side of said plate member,
a vibration generating shaft having an eccentric mass secured thereto, and being generally located along the longitudinal axis of said roller, and
a second hydraulic motor for rotating said vibration generating shaft, being mounted on said second side of said frame structure.

4,619,553
HIGH TEMPERATURE OIL BOOM COVER BLANKET

Edward M. Fischer, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 24, 1985, Ser. No. 726,519
Int. Cl.⁴ A62C *1/00;* **B32B** *1/08, 18/00;* **E02B** *15/04*
U.S. Cl. 405—63 **7 Claims**

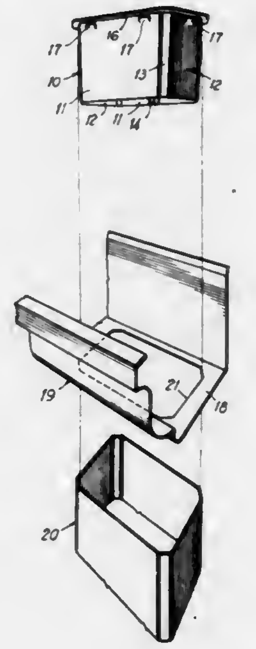


1. A high temperature oil containment boom cover blanket comprising, in laminar combination, a top layer of a polymer coated open mesh high temperature resistant refractory fabric, a middle layer of a high temperature resistant refractory fibrous batt and a bottom layer of a woven fabric, said cover blanket being unified by having at least said top layer and said bottom layer secured together along their longitudinal edges.

7. A high temperature oil containment boom capable of sustained exposure to flames with temperatures in the order of 1100° C. comprising, in combination, an elongated cylindrical oil containment boom enveloped by the cover blanket of claim 6 such that the elongated cylindrical oil containment boom is not directly exposed to said flames.

4,619,554
GUTTER OUTLET TUBE

Landis C. Walker, 72 Crystal River Dr., Riverdale, Ga. 30274, and Marcus J. Bailey, 1217 Lanier Blvd., Atlanta, Ga. 30306
Filed Aug. 15, 1984, Ser. No. 641,183
Int. Cl.⁴ E04D *13/08*
U.S. Cl. 405—120 **5 Claims**



1. In a connection for a gutter and downspout, the gutter having a flat bottom wall provided with a generally rectangular opening in alignment with the top of the downspout, a gutter outlet tube comprising a generally flat, arcuate blank member foldable into a generally octagonal, inwardly tapering tube body having four side walls and corner web portions for connecting said side walls for projecting downwardly through the rectangular opening and into the downspout, an integral, continuously formed, top marginal support flange on said tube body for sealing engagement with the gutter bottom wall, and integrally formed outstruck downwardly tapering lock lugs on said four side walls at a common elevation closely below said flange and spaced therefrom a distance approximating the thickness of the gutter bottom wall.

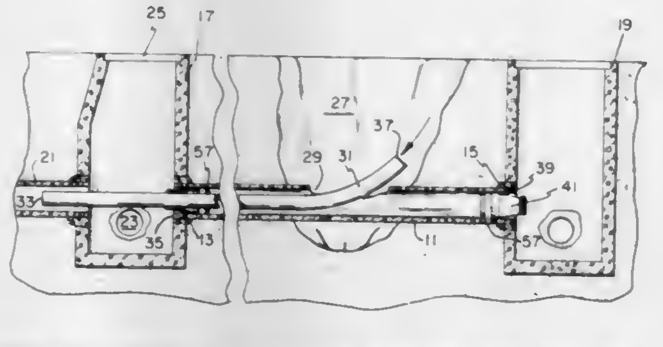
4,619,555
SLIPLINE ADJUSTABLE MANHOLE SEAL

Harry W. Skinner; James W. Skinner, both of Fort Wayne, Ind.; William O. Skinner, Baraboo, Wis., and William P. O'Donnell, Wilmington, Del., assignors to Press-Seal Gasket Corporation, Fort Wayne, Ind.
Filed Aug. 27, 1984, Ser. No. 644,387
Int. Cl.⁴ F16L *1/00*
U.S. Cl. 405—154 **15 Claims**

1. The method of retrofitting an in-ground drainage system with a drain pipe liner comprising the steps of:
providing an elongated access opening in an existing drain pipe;
providing a flexible sleeve-like gasket;
sealing a circumferential end portion of the outer surface of said flexible sleeve-like gasket to the drain pipe inner surface to provide a first seal;

feeding a flexible liner into the access opening along the drain pipe and through said gasket until the liner lead end reaches a drain pipe accessible end; and

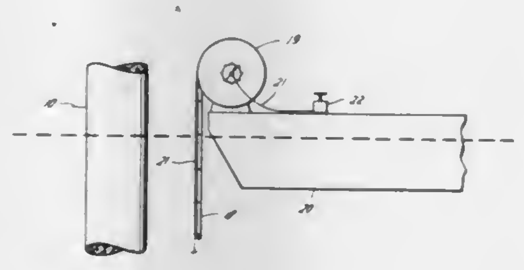
sealing a circumferential end portion of the inner surface of said flexible sleeve-like gasket to the flexible liner outer surface near the lead end thereof and adjacent said drain



pipe accessible end to provide a second seal, said first and second seals being separated somewhat along the common axis of elongation of the drain pipe and liner, whereby a body portion of said sleeve-like gasket between said seals is free to flex to accommodate any expansion and contraction of said liner.

4,619,556
METHOD AND APPARATUS FOR SEVERING A TUBULAR MEMBER

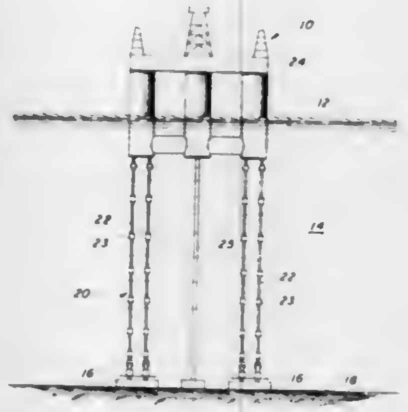
Ernest P. Parra, 1909 Laredo Dr., Houma, La. 70360
Filed Nov. 14, 1983, Ser. No. 550,821
Int. Cl.⁴ E02D *5/32, 7/24, 9/04*
U.S. Cl. 405—195 **25 Claims**



1. Apparatus for use in severing a tubular member at a desired level beneath an underwater surface from which the tubular member extends, said apparatus comprising an assembly adapted to be disposed about the tubular member at the underwater surface and including means for severing the tubular member, and means through which fluid may be jetted for scouring the underwater surface about the tubular member in order that the assembly may move downwardly about the tubular member, under its own weight, and remotely operable means for jetting fluid from the scouring means, until the severing means has been lowered with the assembly to the desired level, and for operating the severing means to sever the tubular member when so lowered.

4,619,557
CORROSION PROTECTION FOR MOORING AND RISER ELEMENTS OF A TENSION LEG PLATFORM

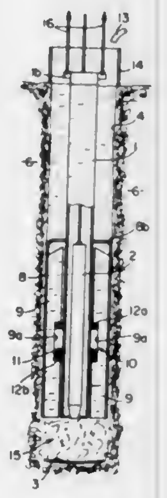
Mamdouh M. Salama, Ponca City, Okla.; Roderick J. Myers, Esher, United Kingdom; William H. Thomason, and Michael H. Joosten, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.
Filed May 2, 1984, Ser. No. 606,023
Int. Cl.⁴ E02B *17/00;* **C23F** *13/00*
U.S. Cl. 405—211 **3 Claims**



1. In a tension leg platform for marine drilling and production of subsea hydrocarbons wherein substantially vertical high strength steel tubular elements are continuously submerged in sea water and constantly maintained in tension between subsea anchoring means and a floating platform by excess buoyancy of said platform, the improvement which comprises said tubular elements being cathodically protected by a coating of flame sprayed aluminum applied to substantially the entirety of an exposed outer surface of said substantially vertical, continuously submerged, tensioned tubular elements, said coating of flame sprayed aluminum having a mean thickness of at least about 200 microns and an adhesive bond strength of about 7 MPa.

4,619,558
APPARATUS FOR PRODUCING IN-SITU CONCRETED PILES WITH ENLARGED BASES

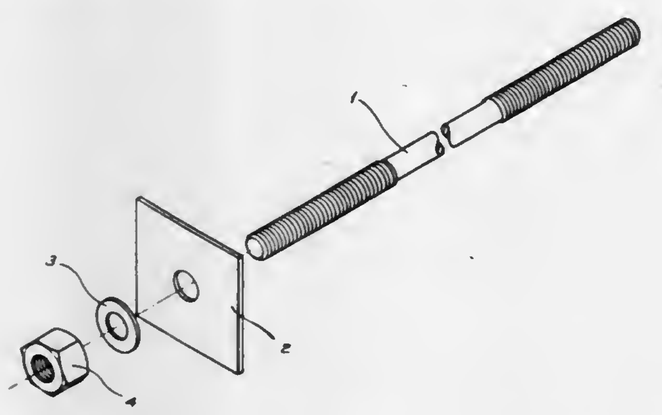
Ian H. Braatvedt, Liege, Belgium, assignor to Compagnie Internationale des Pieux Armes Frankignoul, Liege, Belgium
Division of Ser. No. 545,946, Oct. 27, 1983, Pat. No. 4,544,515. This application Aug. 8, 1985, Ser. No. 763,816
Claims priority, application United Kingdom, Nov. 5, 1982, 8231681
Int. Cl.⁴ E02D *5/44*
U.S. Cl. 405—237 **5 Claims**



1. An apparatus for producing a concrete pile in the ground with an enlarged base, comprising: a tube having a diameter, an upper end and a lower end; a shoe provided at said lower end of said tube and having a larger diameter than said tube so as to form a gap between said tube and the ground; a longitudinal outer casing fitable over said tube, and having a diameter substantially equal to said shoe diameter so as to define a space between said tube and said outer casing, said casing also having a lower end attached to said shoe, and an open upper end formed so as to allow a free flow of concrete into said space between said tube and said outer casing; a sliding joint provided so as to slidably attach said outer casing to said tube so that a predetermined length of sliding exists between said tube and said outer casing; a pile having a free-falling hammer, said tube, with said outer casing attached, being drivable into the ground by said pile to a depth greater than the length of said outer casing so as to form an opening in the ground and define said gap between said tube and the ground; means for supplying concrete to said gap and said space so that said gap and said space are fillable with concrete as said tube with said attached outer casing is driven into the ground; means for expelling said shoe from said lower end of said tube and said outer casing, along with some of the concrete, so as to form the enlarged base; and a traction cable attached to said upper end of said tube so that said tube is raiseable from said shoe after the enlarged base is formed so as to cause said tube to slide upwardly with respect to said outer casing, thereby allowing concrete from said space to enter the volume of space previously occupied by the lower end of said tube, said tube being raiseable to a point where both said tube and said outer casing are removable from the ground so that the concrete from said gap and said space fills the resulting opening.

4,619,559
ROCK BOLTING

Colin Norris, Tarro, Australia, assignor to The Titan Manufacturing Co. Pty. Ltd., New South Wales, Australia
Continuation of Ser. No. 622,858, Jun. 21, 1984, abandoned, which is a continuation of Ser. No. 417,945, Sep. 14, 1982, abandoned, which is a continuation of Ser. No. 214,895, Dec. 9, 1980, abandoned. This application Apr. 15, 1985, Ser. No. 723,554
Int. Cl.⁴ E21D *21/00;* **F16B** *43/00*
U.S. Cl. 405—259 **14 Claims**



1. In a method of reinforcing a rock face with at least one rock bolt, said method comprising:

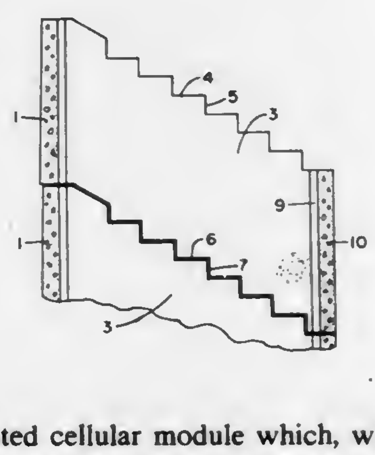
drilling a hole in the rock face,
inserting a rock bolt having at least one threaded end into the hole so that a threaded free end thereof protrudes from the hole,
anchoring the other end of the rock bolt into the hole,
placing a plate washer over the threaded free end of the bolt,
engaging a nut with the threaded free end, and
tightening the nut to force the plate washer against the rock face to induce a tension in the rock bolt,

the improvement comprising:

reducing the coefficient of friction between the plate washer and the nut by placing a friction-reducing disc over the free end of the rock bolt before the nut is engaged therewith, so that the friction-reducing disc is located between the plate washer and the nut, wherein the friction-reducing disc is made of a material having a lower coefficient of friction with at least one of the plate washer and the nut than the coefficient of friction between the plate washer and the nut.

4,619,560
STRUCTURAL MODULE FOR RETAINING WALLS AND THE LIKE

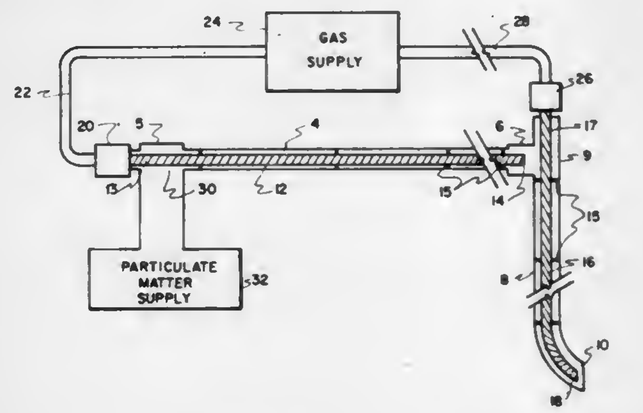
Edward V. Crinnion, 15 Brookridge Dr., and James S. Crinnion, 75 Avonwood Rd., Apt. B6, both of Avon, Conn. 06001
Filed Feb. 8, 1984, Ser. No. 578,352
Int. Cl.⁴ E02D *5/20*
U.S. Cl. 405—284 **50 Claims**



1. A prefabricated cellular module which, when placed in vertical and horizontal relationship with appropriately proportioned like modules, is used in constructing retaining walls, sea walls, and the like, said module comprising (a) a front panel, (b) a rear panel, (c) at least one vertically oriented partition means connecting said front panel and said rear panel, wherein, for a substantial length of said partition means the thickness of said partition means is substantially less than the overall width of the module, thereby creating at least one cellular chamber with vertical through-opening(s), and (d) said partition means, and said front panel and said rear panel being rigidly interconnected in a geometrical relationship such that, when the module is in its erected position in a wall structure, the uppermost and lowermost surfaces of said partition means are each disposed downwardly from said front panel at an angle, as measured from a line perpendicular to the plane of the front face of said wall structure, so that the bottom edge of said rear panel is situated at an elevation substantially below a line extending from the lower edge of said front panel perpendicular to the plane of the front face of said wall structure.

4,619,561
METHOD AND APPARATUS FOR CONVEYING PARTICULATE MATTER

Jay Perkins, Springville, Utah, assignor to Pacific States Cast Iron Pipe Co., Provo, Utah
Filed Aug. 20, 1985, Ser. No. 767,368
Int. Cl.⁴ B65G *53/18*
U.S. Cl. 406—89 **15 Claims**



1. Apparatus for conveying particulate matter comprising

an elongate conduit for carrying particulate matter and having an input end and a discharge end,

an opening at or near the input end of the conduit for introducing particulate matter into the conduit, and an opening at or near the discharge end of the conduit for discharging particulate matter,

a tightly wound coiled wire spring formed into a tube and disposed inside the conduit to extend substantially the length of the conduit, said wire spring having a proximal end generally coincident with the input end of the conduit and a distal end generally coincident with the discharge end of the conduit, and

means for supplying gas under pressure to the proximal end of the coiled wire spring so that the gas travels along the inside of wire spring toward the distal end and out between the wire coils in a spiral-like fashion to carry particulate matter toward the discharge end of the conduit.

4,619,562

PNEUMATIC TRANSPORTATION SYSTEM FOR POWDERED OR GRANULAR MATERIAL WITH A SWITCHING VALVE FOR SELECTION OF DIFFERENT TRANSPORT PATHS

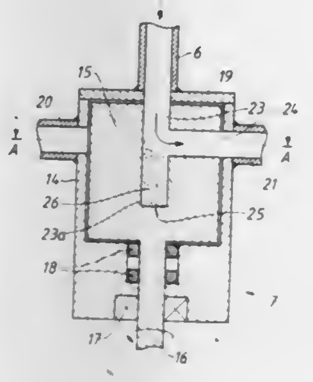
Roine Brännström, Finspong, Sweden, assignor to Asea Stal AB, Västerås, Sweden

Filed Oct. 24, 1984, Ser. No. 664,174

Claims priority, application Sweden, Oct. 31, 1983, 8305967

Int. Cl.⁴ B65G *53/56*

U.S. Cl. 406—182 **16 Claims**



1. A switching valve for selection of different paths for a flow of particulate material, such as powdered and granular materials, when transported by a gas in a pneumatic transport system for the particulate material, said switching valve comprising:

a housing with connections for an upstream conduit and a plurality of downstream conduits;

a rotor arranged for rotation within said housing and having radially extending surfaces axially opposite each other and a compartment with an open end at one radial surface facing the mouth of said upstream conduit connection, a closed end toward the opposite radial surface, a radial extension within the rotor forming at least a portion of a discharge connection between the compartment and any one of said downstream conduit connections, and an axial extension within the rotor forming a blind space at its closed end for providing a cushion of said particulate material;

driving means for rotating said rotor to position said discharge connection to open out said compartment into any one of said of downstream conduit connections; and,

means for supporting said rotor at said opposite radial surface for rotation within said housing, the axial extension of said compartment within said rotor having a sidewall with a radial thickness at least substantially equal to the radial extent of the radial extension of said compartment.

4,619,563

DIAMOND TOOL

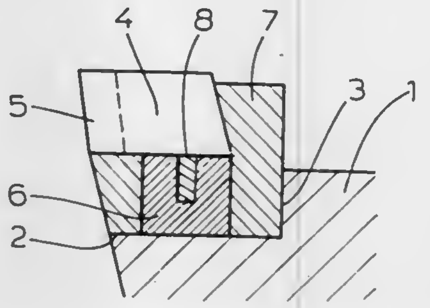
Jan Doting, Nijmegen, Netherlands, assignor to D. Drukker & Zn. N.V., Amsterdam, Netherlands

Filed Jul. 18, 1984, Ser. No. 632,128

Claims priority, application Netherlands, Aug. 4, 1983, 8302757; European Pat. Off., Nov. 7, 1984, 0133716

Int. Cl.⁴ B23P *15/28;* **B26D** *7/00*

U.S. Cl. 407—118 **7 Claims**



1. A diamond tool comprising a diamond with a cutting edge, a metal connecting block and a tool shaft with a front end, the diamond being brazed to the metal connecting block which together with the diamond is encased in a sinter mass which is brazed to the front end of the tool shaft, wherein the connecting block at its side opposite of the diamond has a brazing face lying free of the sinter mass also being fixedly brazed to the front end of the tool shaft.

4,619,564

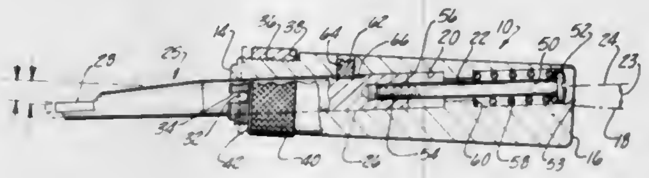
BORING BAR

Mark E. Jacobson, Troy, Mich., assignor to MLS, Inc., Troy, Mich.

Filed Jun. 12, 1985, Ser. No. 744,029

Int. Cl.⁴ B23B *27/16*

U.S. Cl. 408—146 **5 Claims**



1. A boring bar comprising:

a body having two axial ends and adapted to be rotatably driven around a predetermined axis,

said body having a longitudinally extending bore open to at least one end of said body, said bore having an axis which intersects said predetermined axis at an acute angle,

a cutting tool having an elongated shank with a cutting edge at one end, the other end of said shank being longitudinally slidably and removably received in one end of said bore at a first end of said body, and

means insertable into the other end of said bore for both retaining said shank to said body within said bore and for resiliently urging said shank into said one end of said bore,

a nut threadably secured to said first end of said body,

means for locking said shank to said body at an adjustable user selected longitudinal position within said bore comprising

a pin secured to said extending laterally outwardly from said shank, said pin being axially slidably received in a slot formed in said body, said slot being open to said first end of said body, and wherein an axial end of said nut abuts against said pin so that rotation of said nut longitudinally displaces said shank with respect to said body.

4,619,565

MILLING MACHINE, ESPECIALLY CRANKSHAFT MILLING MACHINE

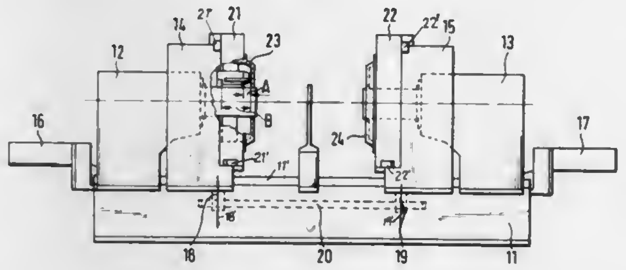
Karlheinz Schmid, Nuertingen-Oberensingen, and Heinrich Bonfert, Dettingen, both of Fed. Rep. of Germany, assignors to Gebrueder Heller, Maschinenfabrik GmbH, Nuertingen, Fed. Rep. of Germany

Filed May 20, 1985, Ser. No. 736,231

Claims priority, application Fed. Rep. of Germany, May 18, 1984, 3418583

Int. Cl.⁴ B23C *3/06*

U.S. Cl. 409—135 **7 Claims**



1. A milling machine comprising a left milling unit and a right milling unit with respective milling cutter means supported on a machine bed, and including at least a longitudinal slide on or in each milling unit, drive means for displacing the respective longitudinal slide in a longitudinal direction along said machine bed, clamping means on said machine bed, each milling unit comprising a respective length reading device for reading length values from a length scale secured in a fixed position to said machine, said milling machine comprising a single measuring pick-up means (**25**) carried by one of said longitudinal slides (**14**) in a position for measuring spacings relevant to both of said milling units, rest stop means including cooperating members (**30, 31**) arranged in a position for defining a substantially constant rest position of said measuring pick-up means (**25**) and measuring stop means including cooperating elements (**35, 36**) for defining a measuring position of said measuring pick-up means (**25**), one element (**35**) being carried by said one longitudinal slide (**14**), the other element being carried by the respective clamping means, spring means (**32, 33**) mounting said measuring pick-up means (**25**) to said one longitudinal slide for urging said stop members (**30, 31**) into cooperation in the rest position of said one longitudinal slide (**14**), said measuring pick-up means (**25**) being responsive to an instruction signal from a machine control unit for measuring a spacing between said milling cutter means (**26**) and both of said stop means and for providing a respective correction signal component to said machine control unit, said control unit providing a correction value for both milling units from said single measuring pick-up means.

4,619,566

TOOL SUPPORT ASSEMBLY

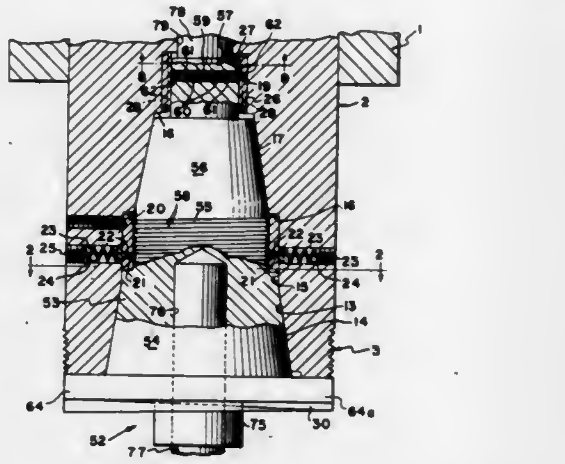
Donald W. Botimer, 8718 Swaffer Rd., P.O. Box 175, Frankenmuth, Mich. 48734

Filed Mar. 9, 1984, Ser. No. 587,807

Int. Cl.⁴ B23B *39/08*

U.S. Cl. 409—232 **32 Claims**

19. In tool holder apparatus adapted for removable connection to a body member rotatable about an axis, said body member having an axially extending socket provided with an annulus having at least one radially extending slot therein defined by a pair of circumferentially spaced sides, and a tool-supporting coupling member removably accommodated in said socket, said coupling member having a radially extending lug accommodated in said slot with one side of said lug confronting one of said sides of said slot, the improvement comprising circumferentially yieldable shock absorber means carried by at least



one of said members and interposed solely between said confronting sides.

4,619,567

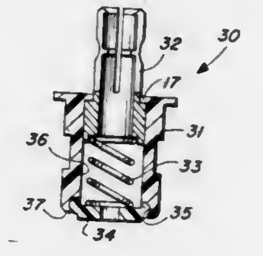
BIT HOLDER WITH IMPACT RELEASE MECHANISM

James H. Campbell, 1210 W. Alameda, Ste. 108, Tempe, Ariz. 85282

Filed May 11, 1984, Ser. No. 609,303

Int. Cl.⁴ B23C *1/00*

U.S. Cl. 409—234 **1 Claim**



1. A drill bit holder for automatic drilling machines which limits impact stresses comprising:

an elongated hollow cylindircal-shaped housing,

a hollow elongated cylindircally-shaped gripper means for slidably fitting into one end of said housing a predetermined distance with at least a part of it extending axially outwardly of the other end of said housing for gripping a bit,

a coiled spring means for slidably fitting into said one end of said housing for bearing at one end against said gripping means, and

a disc-shaped snap ring comprising a convex shaped peripheral edge for detachably engaging the inside surface of the hollow interior of said one end of said housing and a face having a centered circular depressing for engaging one end of said spring means for holding said spring means in said housing under tension,

said inside surface of the hollow interior or said one end of said housing being provided with an annular groove for receiving in a mating relationship the peripheral edge of said disc-shaped snap ring,

said disc-shaped snap ring being formed of a flexible, resilient self-lubricating material and having an aperture extending axially therethrough with a radial slot extending from said aperture to its peripheral edge.

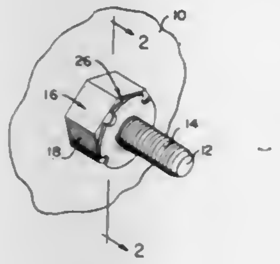
4,619,568
HEAT RECOVERABLE LOCKING DEVICE

Kenneth J. Carstensen, 4540 N. 44th St., No. 70, Phoenix, Ariz. 85018

Filed Oct. 24, 1983, Ser. No. 544,868

Int. Cl.^{4} F16B *39/12*

U.S. Cl. 411—222 **1 Claim**



1. In combination, a load-carrying nut including an internal wall defining a through hole in the load-carrying nut, the wall having internal screw threads formed on it, and a lock nut comprising a solid body in the shape of a frusto-conical disc constructed from a memory metal and having a periphery and a pair of oppositely directed faces, one of the faces having a convex shape, the periphery of the lock nut including at least one pair of opposed recesses for receiving a spanner wrench, the lock nut further including a bore having internal screw threads and a diameter that is undersized relative to the hole defined by the wall of the load-carrying nut, the load-carrying nut having a pair of opposed surfaces arranged extending from the hole thereof, one of the surfaces being concave and configured to matingly receive the convex face of the lock nut for reducing the total height dimension of the combination of load-carrying nut and lock nut, and wherein the memory metal possesses a thermoelastic transition between a martensitic state and an austenitic state, the metal being deformable dimensionally while in its martensitic state and capable of recovering to a non-deformed dimension in the austenitic state for reducing the diameter of the bore when the lock nut has recovered to the austenitic state to grippingly engage a stud on which the load-carrying nut and lock nut are threadable.

4,619,569
QUICK-RELEASE FASTENER WITH INTERMITTENT THREADS

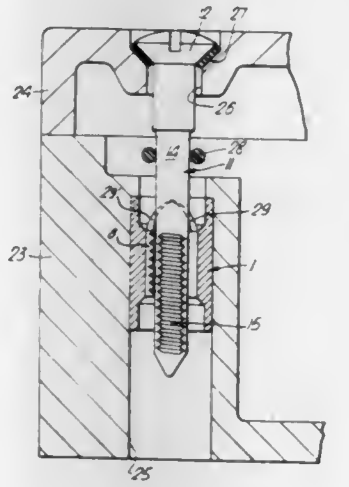
Andrew C. W. Wright, Surrey, England, assignor to Dzus Fastener Co. Inc., West Islip, N.Y.

Filed Dec. 21, 1983, Ser. No. 564,242

Claims priority, application United Kingdom, Jan. 11, 1983, 8300669; European Pat. Off., Nov. 2, 1983, 83306667.3

Int. Cl.^{4} F16B *21/00*

U.S. Cl. 411—347 **11 Claims**



1. A quick-release fastener comprising a threaded stud and a complementarily threaded receptacle, said stud and said receptacle each having at least one longitudinally extending threaded portion and at least one longitudinally extending unthreaded portion, said at least one threaded portion of said stud and said receptacle respectively having a lesser angular width than said at least one unthreaded portion of said receptacle and said stud respectively, said fastener including at least one longitudinal rib which runs along the length of said at least one threaded portion, whereby said stud can be inserted into said receptacle with said threaded and unthreaded portions of said stud and receptacle respectively aligned and can thereafter be rotated to engage said respective threaded portions, said stop preventing over rotation of said stud within said receptacle thereby to define a fastened orientation of said stud within said receptacle.

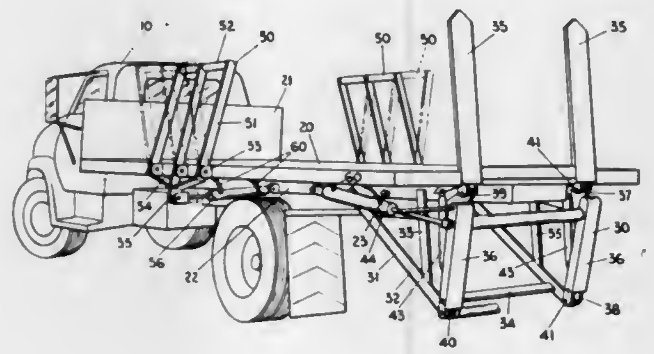
4,619,570
BALE LOADING-STACKING APPARATUS

Charles Siebenga, 76911 Gallatin Rd., Bozeman, Mont. 59715

Continuation of Ser. No. 363,645, Mar. 30, 1982, abandoned. This application Apr. 10, 1984, Ser. No. 598,925

Int. Cl.^{3} A01D *87/12;* **B60P** *1/44*

U.S. Cl. 414—39 **8 Claims**



1. Large bale loading-stacking apparatus for loading and stacking large bales of hay on a truck and then transferring the stacked bales as a unit from the truck to a storage area, all without having to manually handle the large bales, said apparatus comprising:

a large bale accumulator platform mounted on a bed of the truck, said accumulator platform including pivot mounting means for pivotally mounting said platform on the truck bed to permit said platform to be pivoted between a horizontal position and a vertical position, said pivot mounting means being at a location on the accumulator platform such that the rear end of the platform abuts the ground when the bed is pivoted to a vertical position;

power means for pivoting said platform between a horizontal position and a vertical position;

bale loading apparatus mounted at the rear of the platform, said bale loading apparatus including:

a rigid frame mounted on the underside of the platform and extending downwardly therefrom to a distal end positioned near the ground and below the rear end of the platform;

a loading ramp pivotably mounted on the distal end of the frame for vertical pivotal movement with respect to the frame, the loading ramp including a front portion that extends downwardly and outwardly from the distal end of the frame to ground level when the loading ramp is pivoted to a lowered position, the loading ramp including a rear portion that extends outwardly from the front portion at an angle such that the rear portion extends horizontally rearwardly from the front portion and lies flat against the ground when the loading ramp is lowered, the rear portion being shaped to slide under a large bale of hay when the loading ramp is lowered to the ground and the truck is backed up into a large bale of hay, the rigid frame resisting foward forces on the loading ramp and supporting the loading ramp as it is being forced under the large bales of hay;

at least one one fluid drive cylinder means for pivoting the loading ramp between its lowered position and a raised position, wherein the loading ramp extends generally vertically against the rear end of the accumulator platform to lift large bales of hay from the ground to the rear of the accumulator platform, said drive cylinder means having an extendable output shaft and being connected at one end to the accumulator platform or frame and connected at the other end to the pivotable loading ramp at a position rearwardly of the loading ramp pivot point, said drive cylinder pivoting the loading ramp upwardly from its lowered to its raised position by retracting the output shaft.

4,619,571
INSTALLATION FOR THE DISTRIBUTION OF SHEETS

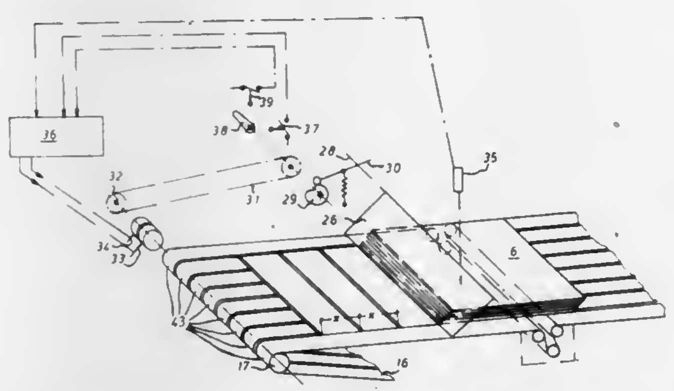
Joseph Peiffer, Iden-Pier, Fed. Rep. of Germany, assignor to O. Dorries GmbH, Duren, Fed. Rep. of Germany

Filed Apr. 8, 1982, Ser. No. 366,530

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1981, 3115925

Int. Cl.^{4} B65H *5/24*

U.S. Cl. 414—130 **2 Claims**



1. In an installation for laying down sheets, particularly sheets of paper, cardboard, or corrugated cardboard, including means for forming small piles of the sheets which are finally laid down in a large pile in a final laying down station, and means for turning a specific number of the small piles front-to-back after a predetermined number of sheets form a small pile, an apparatus for converting the small piles into a line of staggered overlapping sheets that is supplied to the final station, comprising:

conveyor means between said turning means and final laying down station for pulling away each bottom sheet in turn from the snall pile being converted,

means disposed above said conveyor means for spacing adjacent pulled away sheets of the small piles a predetermined distance apart,

said conveyor means including front and rear guide rollers and a conveyor belt disposed therearound,

a first deflection roller being disposed between said front and rear guide rollers,

a second deflection roller having at least a portion thereof disposed between said first deflection roller and said front guide roller, said second deflection roller being disposed downwardly relative to said first deflection roller,

a third deflection roller having at least a portion thereof disposed between said second deflection roller and said front quide roller,

said first deflection roller having a top surface portion thereof extending upwardly a certain distance beyond a plant disposed on respective top surface portions of said rear guide roller and said third deflection roller,

said deflection rollers being located inside a longitudinally adjustable carriage so as to be adaptable to sheets of varying length,

said conveyor belt having a top portion thereof disposed over at least a top surface portion of said first deflection roller and over at least a bottom surface portion of said second deflection roller and over at least a top portion of said third deflection roller, whereby a top portion of said conveyor belt is formed as a loop that moves downwardly out of the feeding plane of said conveyor belt and then returns upwardly into the feeding plane of said conveyor belt, thereby forming a slot between said first and third deflection rollers that is bridgeable by a sheet,

said spacing means includes a backup rail disposed in the feed direction a predetermined distance from said loop of said conveyor belt, and said backup rail having a bottom edge wherein said bottom edge and said conveyor belt define therebetween an outlet slot, said backup rail being movable during operation of the installation under the action of a cam disc so that said outlet slot is adjustable during the operation of the installation from a base position in which the outlet slot is closed so as to be less than the thickness of one sheet, the maximum opening of the slot is controllable by an adjustable time relay, said cam disc is operated by a drive device operatively connected to the drive of said conveyor belt and engageable therewith by a clutch, said drive device for said cam disc has an adjustable transmission ratio.

4,619,572
TRANSFER DEVICE WITH A DOUBLE TIGHT BARRIER BETWEEN A CONTAINER AND A CONFINEMENT ENCLOSURE

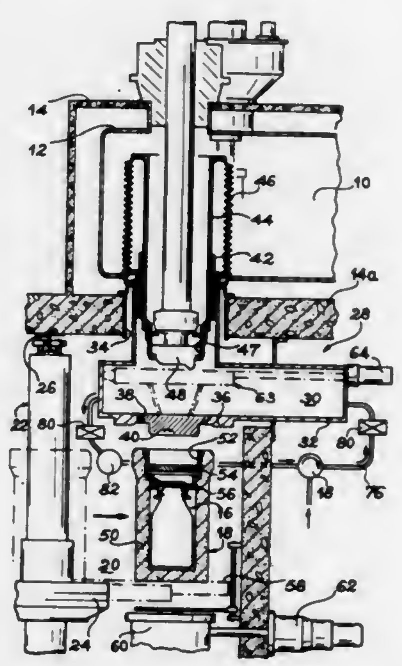
Robert Lorenzelli, Saint-Remy-les-Chevreuses; Pierre Dabernard, Gif sur Yvette, and Christian Maire, Bures-sur-Yvette, all of France, assignors to Cogema, Compagnie Generale des Matieres Nucleaires, Velizy-Villacoublay, France

Filed Nov. 21, 1985, Ser. No. 799,929

Claims priority, application France, Nov. 26, 1984, 84 17966

Int. Cl.^{4} B65B *1/04*

U.S. Cl. 414—217 **7 Claims**



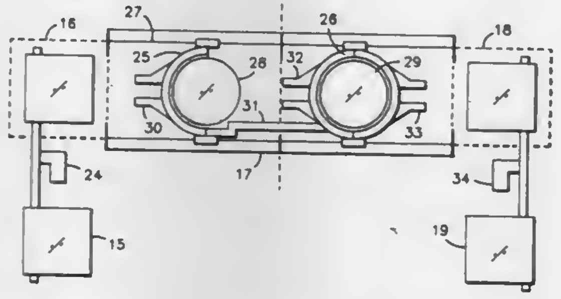
1. A transfer device with a double tight barrier between a container and a confinement enclosure, wherein it comprises a transfer chamber having a first opening issuing into the confinement enclosure and a second opening issuing out of said enclosure, the first and second openings normally being closed by first and second doors respectively; said container having an opening closed by an external door and by an internal door and which can be tightly engaged on the second opening of the chamber in order to link the latter with the container, following the removal of a first double door constituted by the external door of the container and by the second door of the chamber; and a movable wall common to the chamber and to the confinement enclosure, carrying the first opening of the cham-

ber and whose displacement makes it possible to engage the latter tightly on the container opening, after removing the first double door, in order to link the container with the confinement enclosure after removing a second double door constituted by the inner door of the container and by the second door of the chamber.

4,619,573
ARTICLE TRANSPORT APPARATUS

Thomas M. Rathmann, Rohnert Park; Herbert G. Drake, San Rafael; Ninko T. Mirkovich, Novato, and Roger B. Lachenbruch, Petaluma, all of Calif., assignors to Tegal Corporation, Novato, Calif.

Filed Mar. 9, 1984, Ser. No. 588,030
Int. Cl.^{4} B65G *25/00*
U.S. Cl. 414—222 **5 Claims**



1. Apparatus for transporting a semiconductor wafer from a vertically indexed wafer cassette to a vertically movable chuck assembly, said chuck assembly having a plurality of lift pins extending vertically therefrom, comprising:

rail means extending between said wafer cassette and said chuck assembly in an approximately horizontal and linear path;

shuttle plate means, coupled to said rail means, having an arcuate portion and at least one pair of tines for a semiconductor wafer;

said tines being connected to the convex side of said arcuate portion and extending in a direction parallel to said rail means;

drive means inside said rail means for causing recipro motion of said shuttle plate means, said drive means being magnetically coupled to said shuttle plate means; and

wherein said lift pins can move through the plane of said tines when said shuttle plate is in one position and wherein said arcuate portion is larger than at least some portion of said chuck assembly so that said chuck assembly can pass through the plane of said arcuate portion when the shuttle plate means is in another position.

4,619,574
LOADING EQUIPMENT FOR MANIPULATING TUBES IN UPSETTING PRESSES

Horst Endter, Langenfeld, and Herbert Suther, Dusseldorf, both of Fed. Rep. of Germany, assignors to SMS Hasenclever Maschinenfabrik GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Oct. 31, 1983, Ser. No. 546,910
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1982, 3240689
Int. Cl.^{4} B66F *9/00*
U.S. Cl. 414—226 **13 Claims**

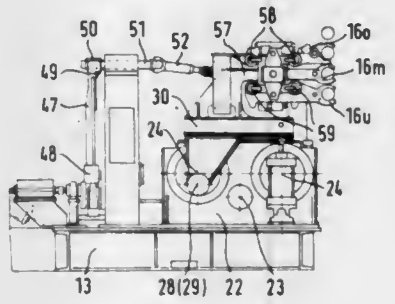
2. In a tube-upsetting plant comprising a vertically divided upsetting die provided with a plurality n of vertically spaced shaping faces, feeding means for moving successive tubes longitudinally into and out of the die and vertically, transversely to the tube axes, into alignment with successive shaping faces, which feeding means comprise:

(a) a plurality of sets of tube tansport grippers which sets are spaced longitudinally of the tubes and in which each set comprises a plurality (n+1) of the tube grippers spaced axially of the die and vertically at a spacing equal to the vertical spacing of the shaping faces of the die;

(b) first drive means for moving said sets of grippers unidirectionally along a closed path transverse to the axes of the tubes, said drive means providing an upper dwell position and a lower dwell position along said path and vertically spaced at a spacing equal to that of said shaping faces, a first one of said dwell positions being so disposed that in said position a first extreme one of said grippers if axially aligned with a first extreme one of said shaping faces of the die;

(c) second drive means for moving the uppermost and lowest grippers in opposite direction to one another towards and away from the die perpendicularly to the said path over a distance greater than the axial length of the die for inserting tubes into and withdrawing tubes from the extreme shaping faces of the die respectively;

(d) and operating means for opening said extreme one of said grippers on movement thereof from said first dwell position to the other said dwell position and for closing said other grippers on movement thereof from said other dwell position to said first dwell position;



(e) the said first and second drive means being synchronised whereby in operation in the said other dwell position the first extreme gripper is open and in an axial position retracted from the die for receiving a tube to be upset and the other extreme one of the grippers is open and in an axial position advanced towards and axially aligned with the other extreme one of the shaping faces of the die for gripping an upset tube to be withdrawn, and in the said first dwell position the first extreme gripper is in an axial position advanced towards and axially aligned with the said first extreme shaping face of the die for locating therein the tube to be upset and the other extreme gripper is axially withdrawn from the die, whereas the gripper(s) intermediate between the said extreme grippers are operative to transfer tubes successively from each said shaping face to the next following shaping face.

4,619,575
APPARATUS FOR STORAGE AND RETRIEVAL OF THIN TRAYS AND SHEETS

Gareth D. Summa, Riverside, Mo.; George K. Reed, and Harold S. Burt, both of Kansas City, Kans., assignors to Mid-West Conveyor Company, Inc., Kansas City, Kans.

Filed Jan. 28, 1985, Ser. No. 695,579
Int. Cl.^{4} B65G *1/06*
U.S. Cl. 414—280 **15 Claims**

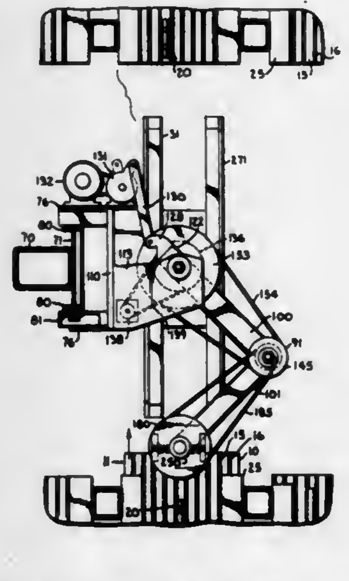
1. An apparatus for selectively storing a thin tray in an elongate storage location, and retrieving said tray therefrom; said tray being generally rectangular in configuration and having substantially parallel front and rear edges, and having substantially parallel side edges; said apparatus comprising:

(a) a tray extractor having a tray engagement mechanism, a tray linear-movement actuator, and an orientation adjustment mechanism;

(i) said tray engagement mechanism being mounted on said linear-movement actuator and comprising a generally X-shaped scissors mechanism having two pairs of substantially simultaneously actuated opposing jaw members mounted thereon for selective engagement with a selected tray during actuation of said scissors mechanism; said scissors mechanism having a first side and a second side and being oriented for selective engagement of said tray engagement mechanism with a tray substantially adjacent either of said scissors mechanism first side or said scissors mechanism second side;

(ii) said linear-movement actuator comprising a linear motion link and pulley arrangement including first and second links; said second link having a tray engagement mechanism mounting point thereon which exhibits linear movement, during operation of said linear-movement actuator, along a linear path of storage and retrieval centered on a line substantially parallel to and coplanar with said tray side edges and generally centered therebetween;

(iii) said scissors mechanism being rotatably mounted on said mounting point, rotation of said scissors mechanism being selectively controlled by said orientation adjustment mechanism to maintain a tray, being acted upon by said extractor, in an orientation for storage and retrieval;



(b) a tray support mechanism including a pair of support rails and lift means;

(i) said rails being generally parallel to said linear path of storage and retrieval, and being spaced apart to support a tray substantially along the side edges thereof;

(ii) said lift means selectively lifting said rails to support a tray, or lowering out of immediate proximity of a tray, as selected, during operation of said assembly; and

(c) a transport assembly having said extractor and said tray support mechanism mounted thereon; said transport assembly including transport means for selectively positioning said extractor in an operational position with respect to a selected storage location;

(d) whereby a selected tray may be stored within a selected storage location, or removed therefrom.

4,619,576
FEED SYSTEM FOR TOBACCO BLENDING/BULKING BINS

Kurudamannil A. George, Levittown, and Peter E. Zagorzycki, Lansdale, both of Pa., assignors to Proctor & Schwartz Inc., Horsham, Pa.

Filed Aug. 28, 1985, Ser. No. 770,319
Int. Cl.^{4} B65G *15/22*
U.S. Cl. 414—300 **7 Claims**

1. A blending and bulking bin assembly comprising

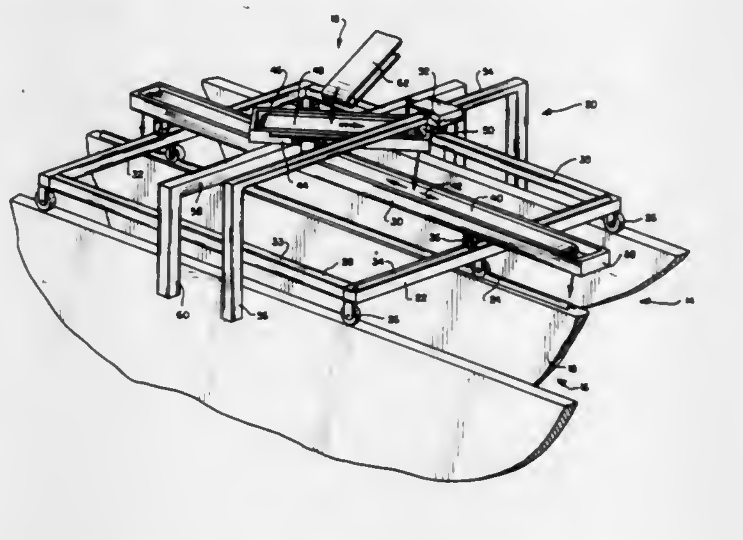
(a) an elongated, rectangular bin having longitudinal X and lateral Y directions;

(b) a trolley movable longitudinally with respect to the bin;

(c) a shuttle conveyor carried by said trolley and moveable laterally on the trolley with respect to the bin;

(d) an endless conveyor belt carried by said shuttle conveyor;

(e) a feed conveyor adapted to feed tobacco onto said shuttle conveyor belt, said feed conveyor having a movable discharge end;

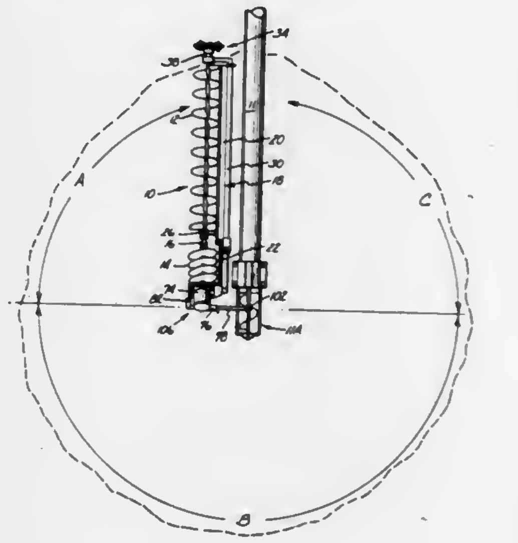


(f) drive means mechanically independent from the shuttle X direction of movement affixed to said feed conveyor discharge end to move said discharge end laterally to coincide with lateral movement of the shuttle conveyor.

4,619,577
SWEEP AUGER

Lynos Swanson, R.R. #1, Lawton, N. Dak. 58345

Filed Nov. 20, 1984, Ser. No. 673,280
Int. Cl.^{4} B65G *65/46*
U.S. Cl. 414—312 **11 Claims**



1. An elongated sweep auger attachment for use in combination with unloading conveyor means comprising:

auger means including at least one auger section;

backboard means extending along one side of the auger means;

drive means supported by the backboard means and operatively connected to the auger means;

bracket means carried by the backboard means for rotatably supporting a first end of the auger means;

support means carried by the backboard means, supporting a second end of the auger means; and

means for selectively pivotally mounting the sweep auger attachment on the unloading conveyor means about a pivot axis in a first and a second position, the sweep auger having a longitudinal plane which is parallel to the pivot axis and contains the longitudinal axis of at least one auger section, the pivot axis being offset with respect to the longitudinal plane in the first position and lying substantially in such plane in the second position.

4,619,578

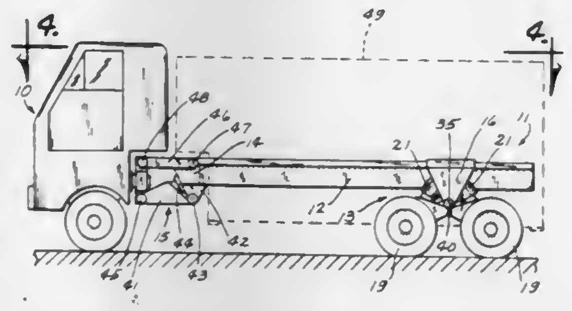
RETRACTABLE WHEEL SUSPENSION APPARATUS

James H. Routledge, 2904 SW. BlueGrass Way, West Linn, Oreg. 97068

Filed Apr. 19, 1985, Ser. No. 724,878

Int. Cl.⁴ B60P *1/02*

U.S. Cl. 414—498 **3 Claims**



1. A self loading retractable two wheel suspension apparatus for a trailer attached to a vehicle via an articulated linkage; wherein the trailer comprises a generally U-shaped frame having an open center and end, and a closed front and sides; and, wherein said suspension apparatus comprises:

a downwardly depending suspension bracket operatively secured to each side of said frame and having a pair of inclined plates formed intermediate the ends of the suspension bracket;

a pivot pin operatively secured to one end of said suspension bracket;

a first and second suspension arm operatively and independently secured to said suspension bracket and mounted on one end to said pivot pin for relative movement with respect to one another said pin being in a plane bi-secting the angle between said inclined plates on said suspension bracket with an extension of said plane forming a stop for the arms, wherein each suspension arm comprises:

attaching means for operatively pivotally attaching one end of the suspension arms to said frame along a first horizontal axis on said pin;

a wheel assembly;

means for rotatably attaching said wheel assembly to the other end of the suspension arms along a second horizontal axis;

retracting means for selectively operably pivoting said arm means about said first horizontal axis between a first position wherein said second horizontal axis is below and to the side of said first horizontal axis and a second position wherein said second horizontal axis is to the side and above said first horizontal axis; wherein said retracting means are operably attached at one end thereof to respective ones of said inclined plates on said suspension bracket and operably attached at the other end thereof to an intermediate portion of the suspension arms, for the purpose of providing independent suspensions for said wheel assemblies when the terrain beneath one of said wheel assemblies is higher than the terrain below the other wheel asembly, whereby the retracting means are provided to actuate the articulated linkage intermediate the vehicle and trailer frame as a consequence of the raising and lowering of the trailer frame to effect the loading and unloading of said trailer frame.

4,619,579

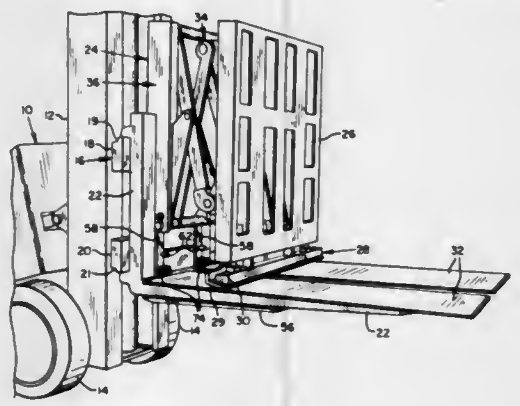
FREE STANDING LIFT TRUCK ATTACHMENT WITH QUICK CONNECTION

Emmett Frison, Portland, Oreg., assignor to Brudi Equipment Co., Longview, Wash.

Filed Jul. 13, 1984, Ser. No. 630,773

Int. Cl.⁴ B66F *9/14*

U.S. Cl. 414—607 **12 Claims**



1. A load-handling attachment for the front end of a forklift truck having a mast and a load carriage movable along the mast, the attachment comprising:

an upright base frame including connecting means for connecting said attachment to the load carriage, and means for disengaging said connecting means from said carriage to enable detachment of the attachment from the lift truck;

base frame support means for supporting said base frame in an upright free-standing position over an underlying support surface while detached from a lift truck; and

support mounting means for mounting said support means to said base frame for linear sliding movement between a lowered base frame supporting ground-engaging position and a raised retracted position and for locking the support means in said positions, said support means including a ground-engaging portion extending rearward to at least the upright rear face of the base frame in said ground-engaging position to provide ground support rearward of said mounting means and thereby resist rearward tipping of the base frame when free standing.

4,619,580

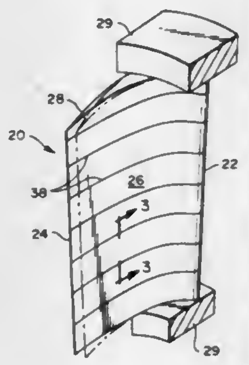
VARIABLE CAMBER VANE AND METHOD THEREFOR

Howard E. Snyder, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 8, 1983, Ser. No. 530,985

Int. Cl.⁴ F01D *17/08, 17/16*

U.S. Cl. 415—12 **4 Claims**



1. A variable camber vane having a first portion adapted to be secured to a mounting means, a second free tip portion spaced from said first secured portion, and a working face disposed within and diverting flow of a working fluid, for temperature-responsive deflection of said tip portion as respects said root coorelative to the temperature of said working fluid,

said vane comprising:

- a. a sintered, generally laminar composite of a first amorphous metallic composition as a first vane element;
- b. a second amorphous metallic composition as a second vane element;
- c. said vane elements being characterized in that the coefficients of thermal expansion for each of said first and second compositions differ in a manner that the camber of said vane varies in response to thermal variations of said working fluid;
- d. each of said amorphous metallic compositions being an RSR amorphous metallic composition;
- e. each of said first and second vane elements being formed with an array of lateral surface grooves disposed generally along a flow path of said working fluid.

4,619,581

SAFETY FUEL DEGRADING

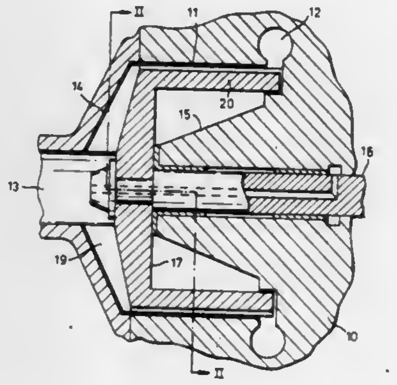
Geoffrey A. Lewis, Solihull; Ernest A. Timby, Frimley, and Rodney H. Walsh, Hindhead, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation of Ser. No. 438,722, Nov. 3, 1982, abandoned. This application Jul. 9, 1985, Ser. No. 753,357

Claims priority, application United Kingdom, Nov. 10, 1981, 8133894

Int. Cl.⁴ F02C *3/20*

U.S. Cl. 415—143 **3 Claims**



1. A single combined device for concurrently pumping and degrading an anti-mist component in a safety fuel, said device comprising:

a housing having a generally cylindrical bore, an inlet and an outlet communicating with respective ends of said bore, and

a rotor mounted for rotational movement in said bore within said housing, said rotor including (a) centrifugal pump means having plural radially extending vanes arranged substantially perpendicular to said inlet for low pressure pumping of the safety fuel from said inlet towards said bore and (b) a generally cylindrical fuel-degrading portion arranged substantially perpendicular to and downstream of said centrifugal pump means, said fuel-degrading portion having a periphery disposed closely adjacent the radially innermost surface of the wall of said bore,

said cylindrical fuel-degrading portion and said bore each including means for defining continuous substantially parallel opposing sets of relatively small sized grooves extending along the length of said bore and said periphery of said cylindrical fuel-degrading portion from said integral centrifugal pump means to said outlet to thereby establish a narrow fuel-degrading path, wherein said centrifugal pump means, upon rotational movement of said rotor, urges fuel to flow through said grooves to said outlet, and wherein said groove-defining means degrades the fuel flowing therethrough by virtue of relative movement between said opposing sets of grooves as the fuel flows along said fuel-degrading path so that said anti-mist component in said safety fuel is degraded upon reaching said outlet.

2. A method of simultaneously pumping and degrading a safety fuel of the type having an anti-mist component therein, said method comprising the steps of:

(1) raising the fuel to a predetermined pressure in a centralized pump element integrally included in a cylindrical rotor mounted for rotational movement within a bore defined in a housing;

(2) passing the thus pressurized fuel through a degrading device also integrally included in said cylindrical rotor within said housing, the periphery of said rotor lying closely adjacent an innermost surface of said bore, said rotor periphery and said surface having axially extending grooves of relatively small size; and

(3) alternately transferring the pressurized fuel, by rotating said rotor, between the small grooves defined in the rotor and the small grooves defined in the innermost surface of the housing, thereby degrading the anti-mist component, the product of the length of said small grooves, their number and the angular velocity of said rotor being such that each part of the fuel is transferred between the small grooves in the rotor and the housing by a number of times which is at least equal to the value $4150 N/cm^2$ divided by said predetermined pressure.

4,619,582

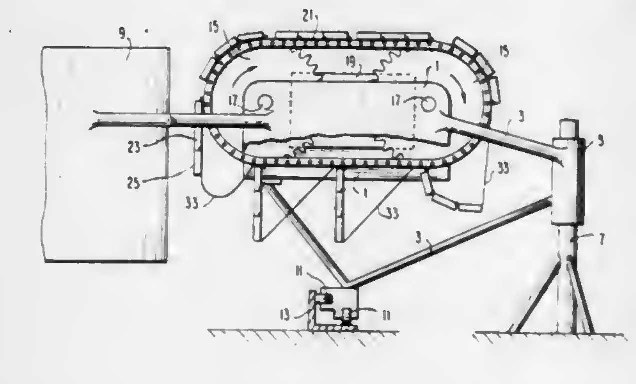
APPARATUS FOR RECOVERING THE ENERGY OF A MOVING FLUID

David M. Slonim, P.O. Box 1869, 3, Ourani Str., Nicosia, Cyprus

Filed Oct. 22, 1985, Ser. No. 790,961

Int. Cl.⁴ F03D *5/02*

U.S. Cl. 416—8 **7 Claims**

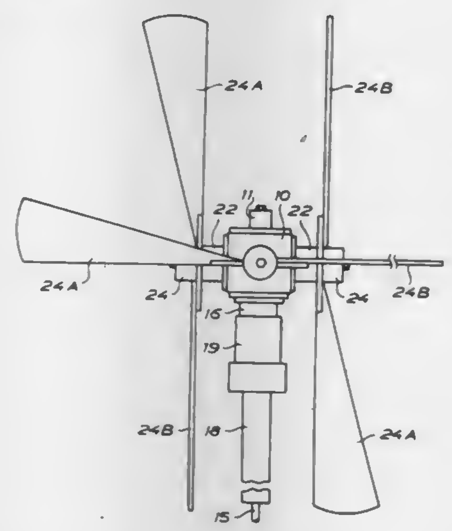


1. Apparatus for recovering energy from a moving fluid comprising a frame, means mounting the frame for horizontal swinging movement about a fixed vertical axis under the influence of the fluid, an endless series of flaps, means mounting said endless series of flaps for circulating movement on the frame in an endless path having horizontal upper and lower runs, means mounting said flaps for vertical swinging movement whereby said flaps depend from said lower run and lie flat along said upper run, a plurality of said flaps depending from said lower run being disposed in spaced parallel vertical planes, said flaps each comprising a plurality of horizontally elongated rigid frames pivotally interconnected about horizontal axes, louver slats disposed within each said rigid frame and extending transverse to the length of the rigid frame for permitting fluid to pass through the rigid frame while at the same time exerting pressure against the louver slats, there being a plurality of said louver slats on each side of the longitudinal center of each said horizontally elongated rigid frame, all the slats on one side of said center being inclined in one direction and all the slats on the other side of said center being inclined in an opposite direction to urge the fluid that passes through the slats toward a central portion of the next flap in a downstream or downwind direction, and means for converting the kinetic energy of said moving flaps into another form of energy.

4,619,583
WIND TURBINE

Bengt R. Wikstrom, Elinebergs Plats 8, S-252 58, Helsingborg, Sweden

Filed Feb. 10, 1984, Ser. No. 578,799
Claims priority, application Sweden, Dec. 9, 1983, 8306803
Int. Cl.⁴ F03D *3/02*
U.S. Cl. 416—122 **4 Claims**



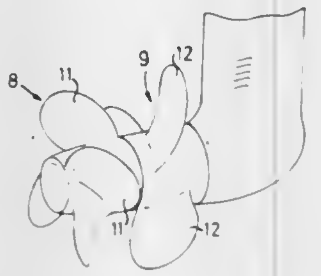
1. A wind turbine, comprising a first pair of rotors equipped with wings, rotor shafts mounting said first pair of rotors, said shafts each having a longitudinal axis with one wing lying in a plane extending substantially parallel to a plane passing through said longitudinal axis and with the other wing lying in a plane extending substantially perpendicular to said longitudinal axis, a second pair of rotors, equipped with wings, rotor shafts mounting said second pair of rotors, said rotor shafts having each a longitudinal axis with one wing lying in a plane extending substantially parallel to a plane extending through said longitudinal axis and with the other wing lying in a plane extending substantially perpendicular to said longitudinal axis of said rotor shaft, one of said first pair of rotors being displaced 180° in relation to the other rotor of said first pair of rotors and one of said second pair of rotors being displaced 180° in relation to the other rotor of said second pair of rotors, the rotors of said one pair being displaced 90° in relation to the rotors of said second pair, gear wheels being provided on said rotor shafts, an oil-proof gearing housing rotatably mounting said rotor shafts, the gear wheels on the other shafts of said first pair of rotors engaging the gear wheels on the rotor shafts of said second pair of rotors to form therewith a gear train providing a ratio of 1:1 between said first and second pairs of rotors and interconnecting said shafts for position-synchronized rotation of the rotors, a vertical output shaft fixedly connected at its upper end to the top of said gearing housing and extending through the interior thereof, said rotor shafts extending generally transverse to said output shaft on diametrically opposite sides of the output shaft, a stationary element pivotally supporting said gearing housing at the bottom thereof for rotation about the axis of said output shaft, and a gear ring on said element, enclosed by the gearing housing and positioned coaxially relative to said output shaft, the gear wheels on the rotor shafts of said second pair of rotors engaging said gear ring.

4,619,584
DOUBLE PROPELLER DRIVE FOR BOATS

Lennart Brandt, Fjärås, Sweden, assignor to AB Volvo Penta, Gothenburg, Sweden

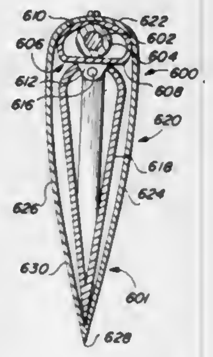
Continuation of Ser. No. 354,769, Mar. 4, 1982, abandoned. This application Feb. 2, 1984, Ser. No. 576,150
Claims priority, application Sweden, Mar. 5, 1981, 8101423
Int. Cl.⁴ B63H *5/10*
U.S. Cl. 416—129 **17 Claims**

1. In a steerable double propeller outboard drive unit for a boat having a transom and means mounting said unit on said transom for steering said unit about a generally upright steering axis, said unit including a first propeller having a plurality of blades, a first propeller shaft drivingly connected to said first propeller, and a second propeller having a plurality of blades, a second propeller shaft mounted concentrically with said first shaft and drivingly connected to said second propeller, power means including a substantially vertical output drive shaft coupled to said first and second shafts for rotation of said first and second propellers in opposite directions, the improvement comprising the after propeller of said first and second propellers being of a predetermined diameter smaller than the diameter of the fore propeller, and said after propeller including at least one blade more than said fore propeller so that said first and second propellers provide approximately equal thrust to minimize the reaction steering moments on said unit.



4,619,585
WIND TURBINE APPARATUS

Joe Storm, 1105 W. Elna Rae, Tempe, Ariz. 85281
Division of Ser. No. 518,047, Jul. 28, 1983, Pat. No. 4,545,729. This application Sep. 23, 1985, Ser. No. 779,271
Int. Cl.⁴ F03D *3/06*
U.S. Cl. 416—132 B **13 Claims**



1. Air foil sail element apparatus, comprising, in combination:

support rod means; and
air foil means journaled for rotation on the support rod means, including
  a pivot rod spaced apart from the support rod means for controlling the pivoting of the air foil means,
  an interior form secured to the pivot rod, and
  a deformable outer skin secured to and disposed about the interior form and deformable against the interior form to change the camber of the air foil in response to wind.

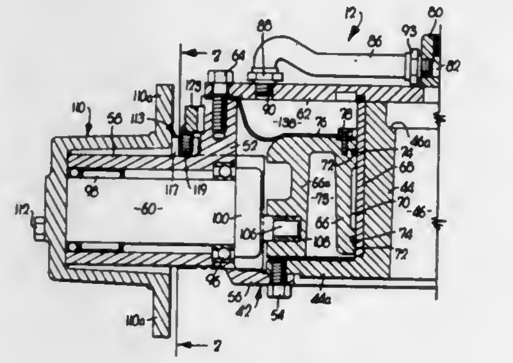
4,619,586
EXTERNALLY CONTROLLED VARIABLE PITCH FAN HUB ASSEMBLY

William C. Carter, Lenexa, Kans., assignor to The Marley Cooling Tower Company, Mission Woods, Kans.

Filed Jul. 19, 1984, Ser. No. 633,099
Int. Cl.⁴ F04D *29/36;* **B64C** *11/38*
U.S. Cl. 416—157 R **13 Claims**

1. Variable pitch fan blade and hub assembly adapted to be mounted on a power driven shaft comprising:

a rotatable housing having a central coupling configured to be secured to the driven shaft and provided with a length extending axially of the shaft when the assembly is mounted thereon, said housing further being provided with a plurality of radially-extending bores;
a fan blade for each housing bore;
an axle section connected to each blade and rotatably received in a corresponding housing bore;
transmission means within the housing and operably coupled to said axle sections for imparting a rotational moment to each axle section such that the pitch of the blades is varied, said transmission means includes cam follower means extending from the inner end of each of said axle sections, said cam follower means being disposed eccentrically relative to said inner end of each of said axle sections;
hub means including a hub member disposed coaxially within said housing, said hub member being complementally telescoped over said coupling and selectively movable longitudinally thereon relative to the rotational axis of said housing, said hub means being provided with circumferentially-extending cam track means, said cam track means cooperating with said cam follower means such that when said hub means moves longitudinally relative to the rotational axis of said housing, said cam follower means follows said cam track means so that a rotational moment is imparted to said axle section due to said eccentric disposition of said cam follower means relative to said inner end of said axle section for simultaneously varying the pitch of the blades; and
a plurality of springs within said housing and engaging said hub means outboard of said hub member for biasing said hub means longitudinally relative to the axis of rotation of said housing, said springs being spaced circumferentially around said hub means and being positioned within the housing outboard of said cam track means.

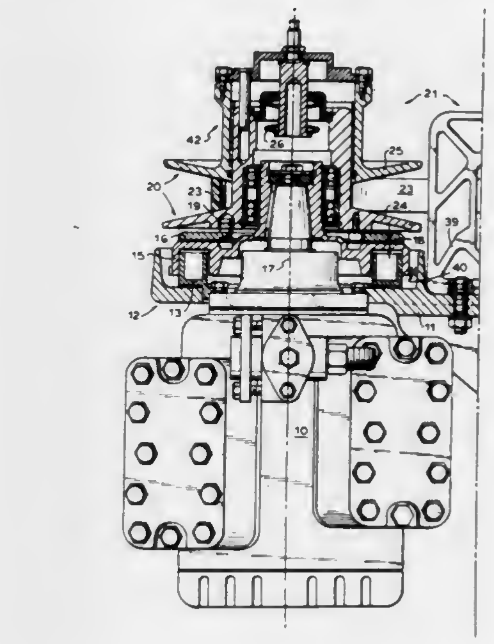


4,619,587
COMPRESSOR DRIVE FOR AUTOMOBILE AIR CONDITIONING COMPRESSOR HAVING V-BELT VARIABLE DRIVE

Karl-Heinz Linnig, Dornierstrasse 33, D-7990 Friedrichshafen, Fed. Rep. of Germany

Filed Feb. 22, 1984, Ser. No. 583,243
Int. Cl.⁴ F04B *9/00*
U.S. Cl. 417—319 **3 Claims**

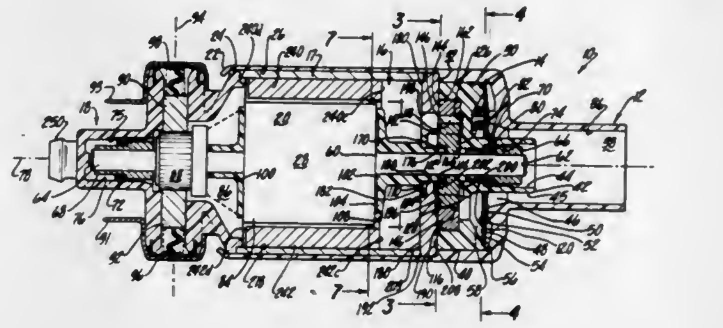
1. In a compressor drive for air conditioning compressors of motor vehicles having a combustion motor for driving a compressor having a drive shaft, wherein a drive of the compressor is performed by means of a controllable V-belt variable gear connected to the compressor and wherein an air conditioning capacity of the compressor is independent from a rotational speed of said combustion motor, the improvement comprising said variable gear including an output belt disk (20); an electromagnetic clutch (12) including a rotor (15) immediately and rigidly connected to the drive shaft of the compressor and an anchor ring (16) connected to said output belt disk whereby said variable gear with said compressor and said electromagnetic clutch, interconnected between said variable gear and said compressor, form a single structural unit, said variable gear further including a drive belt disk (22) operatively connected to said combustion motor and connected to said output belt disk by a belt; and a U-shaped support (39) and a supporting frame, said drive belt disk being supported in said support which is connected to said frame, said frame receiving the compressor.

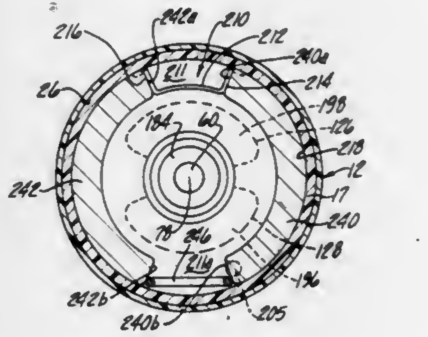


4,619,588
WET MOTOR GEROTOR FUEL PUMP WITH VAPOR VENT VALVE AND IMPROVED FLOW THROUGH THE ARMATURE

Harry W. Moore, III, Watkins Glen, N.Y., assignor to Facet Enterprises, Incorporated, Tulsa, Okla.

Filed Apr. 25, 1984, Ser. No. 603,599
Int. Cl.⁴ F04C *15/02, 2/10;* **H02K** *21/06;* **F16D** *1/08*
U.S. Cl. 417—366 **19 Claims**





1. A wet motor gerotor pump for pumping a liquid of low electrical conductivity from a liquid source, said pump comprising:

a pump case having one end, an opposite end and a flow axis therethrough, said pump case further comprising an inlet end bore at said one end adapted to communicate with said liquid source and means for sealing said pump case;

an inlet chamber adjacent sid inlet end bore;

a motor chamber located in said opposite end of said pump case;

a pump chamber interposed said motor chamber and said inlet chamber;

inlet housing means mounted in said pump chamber, said inlet housing means comprising an annular hub protruding into said inlet chamber, said inlet housing means further comprising a gerotor cavity having a gerotor outlet port, said gerotor cavity disposed about a gerotor axis located parallel to and displaced a predetermined distance in an eccentric radial direction from said flow axis;

outlet housing means having pump outlet means adapted to communicate liquid from said pump and further comprising a second means for sealing coupled to said means for sealing said pump case to said outlet housing means, said outlet housing means further comprising vapor vent means;

gerotor pump means located in said gerotor cavity, said gerotor pump means comprising an inner pump gear, an outer pump gear, and means for driving said inner and outer pump gears, said gerotor pump means further comprising a locating hole spaced from said gerotor axis; and

electric motor means comprising armature means comprising an armature shaft with a first and a second end rotatably supported, respectively, at said inlet housing means and said outlet housing means, said armature means further comprising drive hub means having an axially extending portion, said electric motor means further comprising means for separating said liquid from said armature means as said liquid flows from said gerotor cavity to said outlet housing means, said means for separating further comprising keeper means defining a first axial flow passage between said gerotor cavity and said outlet housing means substantially along said flow axis, said keeper means comprising first and second spaced apart protrusions extending axially, said first and second spaced apart protrusions defining a fluid entrance therebetween, one of said first and second spaced apart protrusions abutting said pump chamber, the other of said first and second spaced apart protrusions having an end with a first step and a second step, one of said first step and said second step abutting against said pump chamber, the other of said first and said second step extending into said locating hole in said gerotor pump means, such that said keeper means establishes said first axial flow passage past said armature means substantially free of turbulence and flow restrictions to thereby allow liquid to be pumped at substantially higher flow rates at armature currents substantially lower than without said means for separating, whereby said first axial flow passage allows liquid to be pumped about said armature means and to thereby improve pumping efficiency;

whereby said gerotor pump means pumps liquid from said source through said inlet chamber, past said gerotor cavity through said gerotor outlet port into said motor chamber, then along said means for separating said liquid from said armature means into said outlet housing means, said vapor vent means permitting vapor to vent from said gerotor pump means for a predetermined period, said vapor vent means further terminating the venting of vapor upon the pumped liquid being communicated to said vapor vent means.

4,619,589
DIAPHRAGM PUMP, PARTICULARLY FOR DOSING LIQUIDS

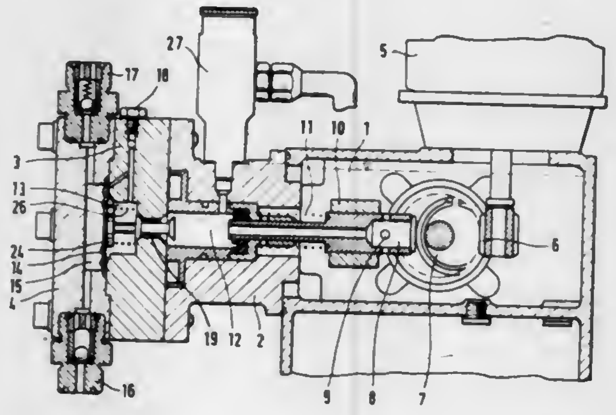
Klaus Müller, Karlsruhe, and Sieghard Oberacker, Dettenheim, both of Fed. Rep. of Germany, assignors to Alldos Eichler KG, Pfinztal, Fed. Rep. of Germany

Filed Aug. 20, 1985, Ser. No. 767,618

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1984, 3430721

Int. Cl.⁴ F04B *43/06*

U.S. Cl. 417—388 **10 Claims**



1. A diaphragm pump, particularly for dosing liquid, comprising a diaphragm arranged in a housing, a dosing chamber with a suction and a pressure valve on one side of the diaphragm, a hydraulic working chamber with a drive piston and a pressure relief valve on the other side of the diaphragm, a chamber arranged between the diaphragm and hydraulic working chamber, at least one overflow channel connecting the chamber with the hydraulic working chamber, a valve unit including a tappet with a valve disk at each end thereof facing openings of the at least one overflow channel into the chamber and hydraulic working chamber and movable alternately to close with one valve disk the opening into the chamber and with the other valve disk the opening into the hydraulic working chamber, and the valve unit being operatively connected with the diaphragm by means of a support disk and a light loading spring which urges the support disk into loose engagement with the diaphragm.

4,619,590
AIR DIVERTER FOR SUPERCHARGER

Kenneth A. Johnson, 15236 Tacoma St., Detroit, Mich. 48205

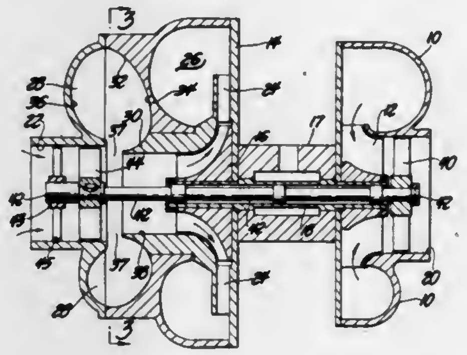
Filed Apr. 22, 1985, Ser. No. 725,956

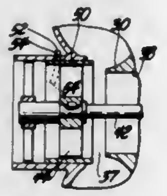
Int. Cl.⁴ F04B *17/00, 35/00*

U.S. Cl. 417—407 **3 Claims**

1. An engine supercharger comprising a turbine housing, a main turbine wheel of the radial-inflow type located within said turbine housing, a compressor housing having an air entrance passageway (**38**), a compressor wheel of the centrifugal type located within said compressor housing, a main shaft (**18**) of annular construction interconnecting said turbine wheel and said compressor wheel whereby the two wheels rotate as a unit, an auxiliary turbine wheel of the axial flow type located downstream from the main turbine wheel, a fan of the axial flow type located upstream from the compressor wheel, an auxiliary shaft (**42**) extending within the main shaft between the auxiliary turbine and fan whereby the auxiliary turbine and fan rotate as a unit, and an annular air collector chamber means (**28**) located immediately downstream from the fan in surrounding relation to the aforementioned entrance passageway for diverting some of the fan air from the compressor wheel, said fan comprising a hub and blades radiating outwardly therefrom, said air collector chamber being defined in part by

an annular wall (**30**) having a free edge located within the fan blade axial profile whereby said annular wall intercepts air discharged from outer tip areas of the fan blades to divert same away from the compressor wheel into the collector chamber.





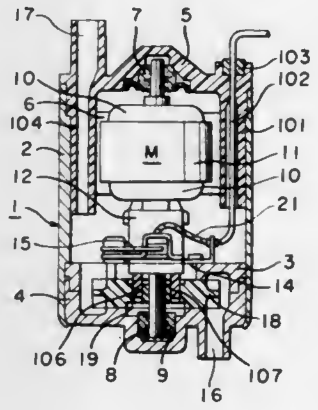
4,619,591
IN-TANK TYPE FUEL PUMP

Shingo Iwai; Ryozo Suzuki; Jun Shiraga, and Tetsuo Okashiro, all of Fukuyama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1985, Ser. No. 795,403

Int. Cl.⁴ F04B *17/00;* **H02K** *5/02, 5/04*

U.S. Cl. 417—422 **8 Claims**



1. In-tank type fuel pump comprising a pump body having a cylindrical yoke with its one end closed by a cover-out member made of a synthetic resinous material, a motor held in said pump body and an impeller driven by said motor to discharge fuel sucked from an intake port to a discharge port, characterized in that an elongated portion extending along the inner wall of said cylindrical yoke is formed integrally with said cover-out member and each of first lead wires is extended from the interior of said pump body to the exterior of the same through each through hole formed in said elongated portion, each one end of said first lead wires in said pump body being connected to each of second lead wires connected to brushes.

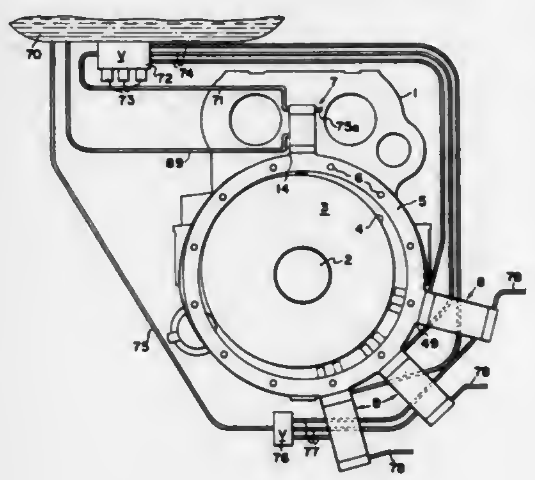
4,619,592
PUMPING SYSTEM HAVING A MAIN PUMP AND A PLURALITY OF SELECTIVELY OPERABLE SUBSIDIARY PUMPS

Fredrick L. Bender, 4825 Holland Rd., Saginaw, Mich. 48601

Filed Mar. 5, 1984, Ser. No. 586,414

Int. Cl.⁴ F04B *23/04*

U.S. Cl. 417—429 **12 Claims**

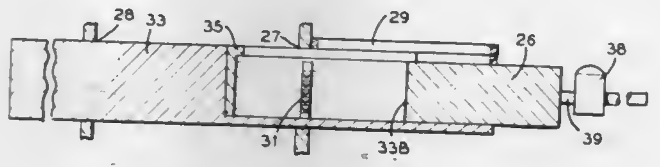


1. A pressure fluid pumping system comprising a main fluid pump having a fluid inlet and a fluid outlet and at least one subsidiary fluid pump having a fluid inlet and a fluid outlet; means coupling the fluid inlet of said main pump to a source of fluid; means coupling the fluid outlet of said main pump to a fluid circuit incorporating said subsidiary pump; valve means in said circuit for selectively diverting fluid from said subsidiary pump or delivering fluid thereto; means independent of said fluid inlet and said fluid outlet of said main pump and coupling said subsidiary pump to a source of hydraulic fluid; driving means for driving said main pump and said subsidiary pump; actuator means carried by said subsidiary pump and engageable with said driving means to effect operation of said subsidiary pump; and means mounting said actuator means for movements out of and into engagement with said driving means in response to the diversion from or delivery thereto of fluid from said main pump.

5. A fluid pump comprising a housing having therein a relatively high pressure compartment and a relatively low pressure compartment; a fluid chamber between said compartments having fluid inlet means in communication with said low pressure compartment and fluid outlet means in communication with said high pressure compartment; reciprocable piston means operable in response to movement in one direction to deliver fluid from said chamber to said high pressure compartment; and force transmitting means for effecting reciprocation of said piston means, said force transmitting means comprising a hollow, reciprocable plunger within said low pressure compartment on which said piston means bears, an actuator carried within said plunger for movements relative thereto between extended and retracted positions, and fluid port means independent of said compartments communicating with said plunger for enabling pressure fluid to flow into and out of said plunger, the presence or absence of fluid in said plunger respectively disabling or enabling relative movement of said plunger and said actuator.

4,619,593
APPARATUS COMPRISING A TURBINE AND ASSOCIATED WATER EXTRACTOR AND METHOD OF TRANSLATING THE POTENTIAL ENERGY OF DEEP SEA WATER INTO USEFUL WORK

Steven Molnar, 111-09 Seventy Sixth, Forest Hills, N.Y. 11375
Continuation-in-part of Ser. No. 74,340, Sep. 11, 1979, abandoned. This application Oct. 1, 1981, Ser. No. 307,387
Int. Cl.⁴ F04B *7/04*
U.S. Cl. 417—498 **7 Claims**



1. An apparatus for extracting fluid from a depressurized vessel comprising a closed tank adapted to contain a water level and a relatively large air cushion at low pressure

said tank having two openings formed in opposed wall portions thereof below the level of the fluid, one of said openings defining a port opening,

an external tank extension circumscribing said port opening and including valve means, valving said port opening,

said tank extension having valve means,

a fluid extracting means slidably mounted to reciprocate through said openings transversely of said tank and associated extension between a retracted and protracted position,

and a displacement cage associated with said tank extension and relative reciprocating movement with said extraction means and said tank extension,

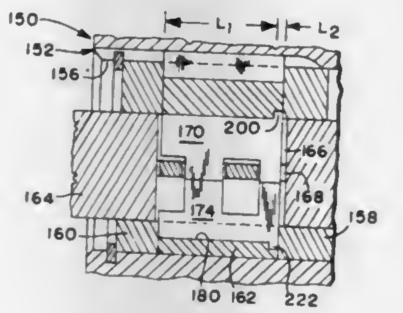
said displacement cage having valving means complementing the valve means of said tank extension,

actuating means operatively connected to each of said respective valve means to co-ordinate the opening and closing of said valve means in a predetermined sequence so as to effect the extraction of the fluid from said tank to the exterior thereof,

and means for effecting the drive of said fluid extracting means between the protracted and retracted position.

4,619,594
STACKABLE ROTARY VANE PUMP WITH IMPROVED VOLUMETRIC EFFICIENCY

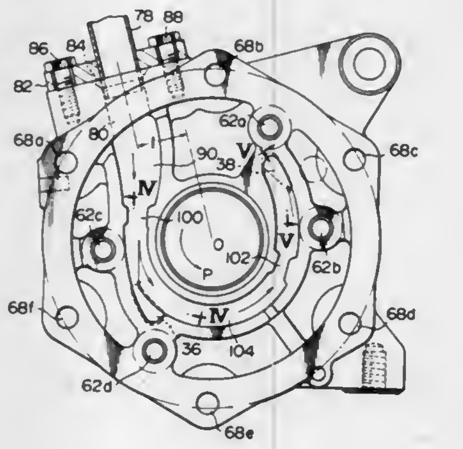
Virginia S. Moir, Elyria, Ohio, assignor to Lear Siegler, Inc., Elyria, Ohio
Filed May 13, 1985, Ser. No. 732,940
Int. Cl.⁴ F04C *8/00, 23/00*
U.S. Cl. 418—5 **28 Claims**



1. A pump assembly comprising a housing, a shaft mounted for rotation within said housing, a plurality of axially spaced pump units mounted on said shaft, each said pump unit including a cavity in said housing having an axis parallel to and offset from the axis of said shaft, a pair of end bearings defining opposite end faces of said cavity, said shaft carrying a plurality of radially slidable vanes engaging the wall of said cavity and defining pumping pockets as said shaft rotates, and positioning means for positioning said vanes axially in said cavity, said shaft having a uniform diameter at least through one of said cavities and associated end bearings, and said positioning means including wall means defining a circumferential groove extending radially outwardly of said one cavity, and tab means extending radially outward from each vane associated with said one cavity, said tab means being disposed in sliding sealing engagement within said groove.

4,619,595
CAPACITY CONTROL DEVICE FOR COMPRESSOR

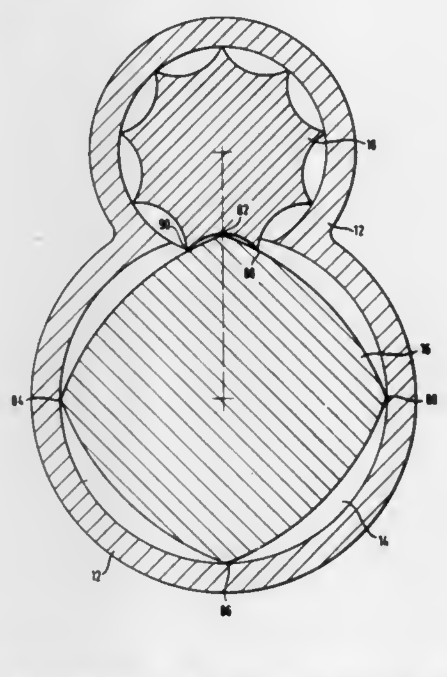
Keijiro Amano, Mito; Isao Hayase, Katsuta; Atsuo Kishi, Katsuta, and Noriharu Sato, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Automotive Engineering Co., Ltd., Katsuta, both of, Japan
Filed Apr. 16, 1984, Ser. No. 600,903
Claims priority, application Japan, Apr. 15, 1983, 58-65619
Int. Cl.⁴ F04C *18/00*
U.S. Cl. 418—83 **3 Claims**



1. A compressor for an air conditioning system of an automotive vehicle, the compressor being adapted to be rotatably driven by an engine of the vehicle to cause a refrigerant to flow in circulation through a refrigeration cycle, the compressor comprising a rotary shaft, a cylindrical rotor secured to the rotary shaft, a cam cylinder housing said rotor and cooperating with the rotor to define at least one working chamber between an outer peripheral surface of the rotor and an inner peripheral surface of the cam cylinder, a pair of side plates located at axially opposite end portions of the cam cylinder to provide a seal to said working chambers at their sides, a side cover attached to a side of one of said pair of side plates, suction portions formed in one of said side plates and communicating with said working chamber, a refrigerant inlet passage formed in said side cover and connected at one end to a lower pressure line of the refrigerant cycle and at another end to the suction ports, a capacity control device comprising at least one flow resistance portion integrally formed in said side cover in said refrigerant inlet passage, said flow resistance portion functioning to reduce a volumetric efficiency of the compressor as the engine speed rises, and wherein said at least one flow resistance portion comprises a bent portion of the refrigerant inlet passage, the bent portion having a flow resistance characteristic equal to that of a restrictor of a cross sectional area which is about one-half a cross sectional area of the refrigerant inlet passage, the cross sectional area of the refrigerant inlet passage being measured at the connecting portion between the lower pressure line of the refrigeration cycle and the compressor.

4,619,596
SCREW TYPE COMPRESSOR

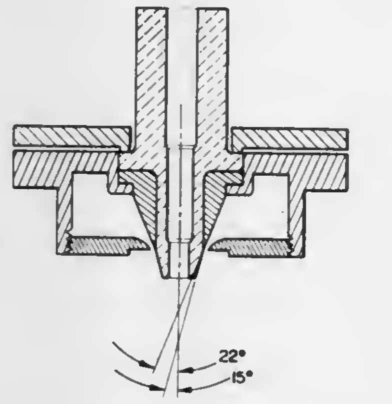
Karl-Heinz Dammann, Bielefeld, Fed. Rep. of Germany, assignor to Technika Beteiligungsgesellschaft mbH, Bielefeld, Fed. Rep. of Germany
Filed Oct. 12, 1982, Ser. No. 433,700
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1981, 3140108
Int. Cl.⁴ F04C *18/00*
U.S. Cl. 418—201 **3 Claims**



1. A parallel and outer axial rotating pistion compressor of the type comprising at least one driven helical main rotor and one auxiliary rotor meshing therewith, said main rotor including tooth surfaces configured as a layered circular helicoid defined by the helical generation of a circle about an axis, with the plane of the circle disposed perpendicular to such axis.

4,619,597
APPARATUS FOR MELT ATOMIZATION WITH A CONCAVE MELT NOZZLE FOR GAS DEFLECTION

Steven A. Miller, Amsterdam, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Feb. 29, 1984, Ser. No. 584,691
Int. Cl.⁴ B22F *9/08*
U.S. Cl. 425—7 **4 Claims**



1. A high temperature atomization nozzle comprising:

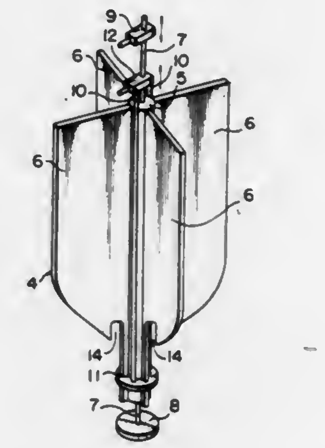
a melt delivery tube adapted to deliver a solid stream of melt, said tube being supported centrally of said nozzle for delivery of a melt to an atomization zone into which the melt delivery orifice end of said tube extends;

the outer surface of the orifice end of said tube having a concave configuration to deflect the flow of gas directed thereagainst; and

a gas delivery system including a gas nozzle for delivery of gas against the concave surface of said tube and into the melt exiting from said tube.

4,619,598
DOUGH FORMING DEVICE USED FOR MANUFACTURING CAKES

Kazuo Abe, Fukuoka, and Akira Shimamura, Kokubunji, both of Japan, assignors to Nisshin-DCA Foods Inc., Japan
Filed Sep. 27, 1985, Ser. No. 780,800
Claims priority, application Japan, Feb. 8, 1985, 60-16732[U]
Int. Cl.⁴ A21C *3/04, 11/18*
U.S. Cl. 425—131.1 **3 Claims**



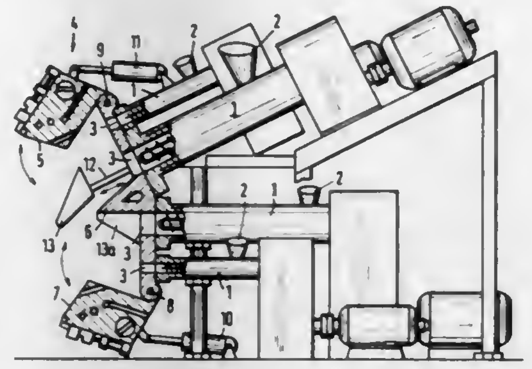
1. In a dough forming device comprising a dough tank with a dough guiding hole, said hole having a lower end opening, a disc-shaped extrusion member being downward movable from the interior of the tank into the guiding hole, a disc-shaped cutting member being upward movable from a position in which it is positioned below the lower end opening to another position in which it is engaged with the lower end opening, and drive means for moving vertically the extrusion and cutting members, the downward movement of the extrusion member causing a volume of the dough to be expanded from the lower end opening along the upper surface of the cutting member, the upward movement of the cutting member causing the expanded volume of the dough to be cut off into a ring shape, the improvement wherein a separator for partitioning the interior of the dough tank inclusive of the dough guiding hole into a plurality of sector-shaped sections is arranged in the tank.

4,619,599
EXTRUSION HEAD

Adolf Herbert, Hanover; Klaus Bellmer, Ronnenberg, and Jobst Trocha, Hanover, all of Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Fed. Rep. of Germany
Filed Jul. 12, 1985, Ser. No. 754,177
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1985, 3506257
Int. Cl.⁴ B29C *47/18*
U.S. Cl. 425—186 **6 Claims**

1. An extrusion head for producing profiles from a plurality of plastics material or rubber mixtures comprising feed means, said feed means comprising an extrusion device for each said mixture, head means receiving each said mixture from said feed means, said head means comprising a central stationary portion, first and second outer head portions disposed one on each side of said central portion, pivot mounting means for each of said first and second outer portions, said pivot mounting means permitting pivotal movement of each said outer portions into and out of an operative position relative to said central portion, insert member means interposed between each of said outer portions and said central portion in said operative position of said outer portions, each said insert member defining, with at least one of said central portion and said first and second outer members, flow channels for respective ones of said mixtures

and means for displacing each said insert member in a direction generally away from said feed means when said outer portion adjacent thereto has been pivoted out of said operative position, said displacing means comprising a push-rod detachably affixed to said insert member and actuating means for displacing said push-rod, said actuating means causing displacement of said push-rod and said insert member affixed thereto between a first position in which there is free access to said flow channels and a second position in which said insert member is interposed between said respective one of said outer portion and said central portion.



4,619,600

SIEVE DEVICE FOR CLEANING PLASTIC MELTS

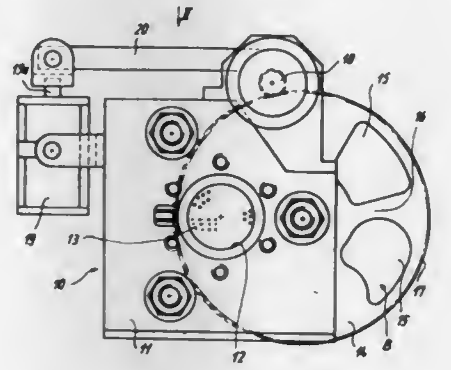
Detlef Gneuss, Am Hofen Ufer 2a, 4970 Bad Oeynhausen 1, Fed. Rep. of Germany

Filed Nov. 15, 1984, Ser. No. 671,831

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1983, 3341508

Int. Cl.⁴ B29C *45/17, 47/68*

U.S. Cl. 425—197 **4 Claims**



1. In a sieve device for cleaning plastic melts in a high-pressure press and having a plate-like housing with a flowthrough bore that constitutes part of a flow channel of the high-pressure press and a sieve disk positioned in the flowthrough bore, the improvement comprising sieve-cleaning means including a plate that rests against the sieve disk on the upstream side thereof and has several perforations therein, separated by webs, each measuring about 10% of the total area of one perforation, wherein the plate is disposed in the housing and projects to some extent out of the housing, and means mounting the plate for movement to align at least one perforation in the flow channel and while at least one perforation is outside of the housing.

4,619,601

PULSE COMBUSTOR

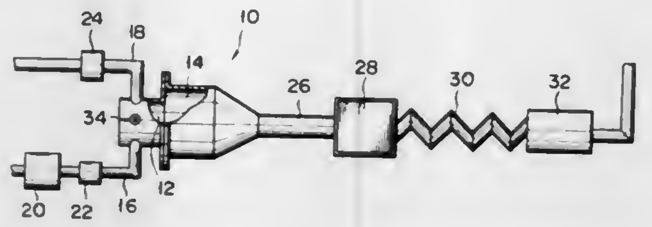
Shigeto Sumitani, Fuji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 13, 1985, Ser. No. 765,263

Claims priority, application Japan, Aug. 29, 1984, 59-179633

Int. Cl.⁴ F23C *11/24*

U.S. Cl. 431—1 **5 Claims**



1. A pulse combustor comprising:

a casing having therein a cylindrical mixing chamber closed at one end, and a combustion chamber communicating with the open end of the mixing chamber, said casing including a first air inlet hole opening to the peripheral surface of the mixing chamber, a fuel inlet hole opening to the peripheral surface of the mixing chamber and substantially opposite to the first air inlet hole, and a second air inlet hole opening into the mixing chamber downstream of said first air inlet hole toward said combustion chamber;

an air supply pipe connected to a source of air and connected to the first air inlet port for feeding air into the mixing chamber;

a pipe connected to a source of fuel and connected to the fuel inlet port for feeding fuel into the mixing chamber;

connecting means for connecting the second air inlet hole to the air supply pipe so that part of the air supplied through the air supply pipe is fed into the mixing chamber through the second air inlet hole; and means for producing pulse combustion in said combustion chamber.

4,619,602

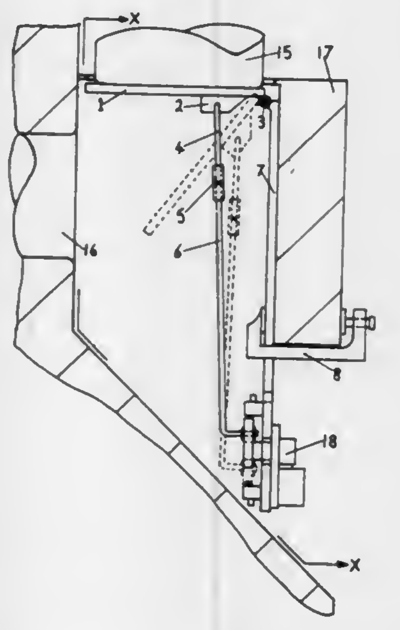
FAIL SAFE AUTOMATIC FLUE DAMPER MECHANISM

David M. Grant, 1 Autumn Court, Windsor, Ontario, Canada N9E 1R2

Filed Jan. 14, 1985, Ser. No. 691,471

Int. Cl.⁴ F23N *5/02*

U.S. Cl. 431—20 **2 Claims**



1. A flue damper mechanism fitted to and located within the draft hood of a gas furnace or other thermostatically controlled heating device, the damper being larger than and abutting the end of the flue where it leaves the draft hood, said damper having a hinge on one edge by which means it is pivoted open and closed, the hinge of the damper being connected by a hinge pin, to hinge on a support member which is clamped to the inside of the draft hood, opening and closing of the said damper being controlled by a rod, one end of which is a second pivot that is hooked through a hole located in a flange, the flange is located underneath the damper on the damper centre line near the hinge, the control rod incorporating a safety feature, by which means it renders the damper open by a part of the control rod collapsing in the presence of too high a temperature in the draft hood, the other end of the control rod being located in the eccentric of a cam which is mounted on a shaft driven by a motor incorporating a speed reduction gear, the cam is rotated between two micro switches which are operated by the cam, and through electronic circuitry incorporating a relay and integrated with that of the furnace, or other heating device to which they are fitted, control the opening and closing of the damper.

4,619,603

COMBUSTION CYLINDER CONSTRUCTION FOR OIL BURNER

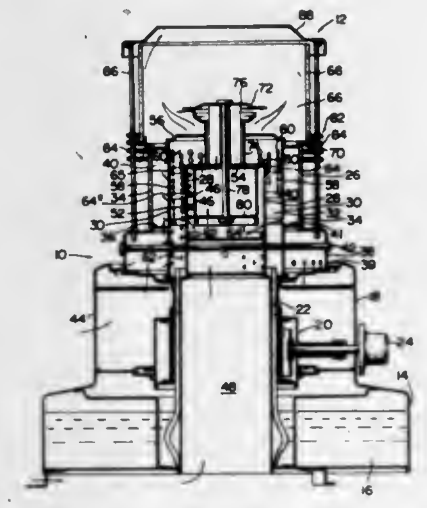
Kazuharu Nakamura, Nagoya, and Yutaka Nakanishi, Kounan, both of Japan, assignors to Toyotomi Kogyo Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1985, Ser. No. 698,473

Claims priority, application Japan, Feb. 9, 1984, 59-22395

Int. Cl.⁴ F23D *5/00*

U.S. Cl. 431—201 **21 Claims**



1. A combustion cylinder construction for an oil burner of the heat radiation type comprising:

a multi-cylinder combustion means including an inner cylindrical member, an outer cylindrical member and a first heat-permeable cylinder disposed to surround said cylindrical members;

a combustion chamber provided above said multi-cylinder combustion means so as to be communicated with said multi-cylinder combustion means;

a flame spreading means arranged in said combustion chamber and above said inner cylindrical member; and

a second heat-permeable cylinder provided above said first heat-permeable cylinder to constitute a cylindrical side wall of said combustion chamber, said second heat-permeable cylinder being formed to have a diameter larger than that of said first heat-permeable cylinder and arranged to be substantially concentrical with said first heat-permeable cylinder;

said outer cylindrical member having a top plate which has a central opening and serves also as a bottom wall of said combustion chamber;

said outer cylindrical member being formed with a plurality of upper, middle and lower through-holes;

said top plate of said outer cylindrical member extending outward past the upper end of said first heat-permeable cylinder to the lower end of said second heat-permeable cylinder;

and said top plate of said outer cylindrical member being formed at the portion thereof between said first and second heat-permeable cylinders with a plurality of through-holes which allow air to be fed from the exterior of said combustion cylinder construction therethrough to the overall inner surface of said second heat-permeable cylinder.

4,619,604

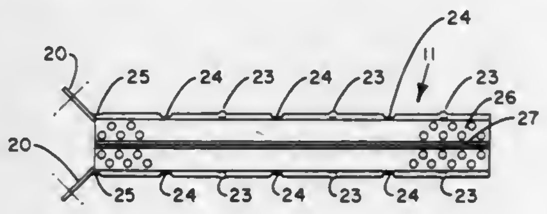
FLAME RADIATOR STRUCTURE

Mark A. Pickering, Lebanon, Ind., assignor to Carrier Corporation, Syracuse, N.Y.

Continuation of Ser. No. 509,552, Jun. 30, 1983, abandoned. This application Jul. 22, 1985, Ser. No. 757,755

Int. Cl.⁴ F23D *14/02*

U.S. Cl. 431—353 **6 Claims**



1. A combustion flame tempering device for a gas-fired furnace for inhibiting formation of oxides of nitrogen by a combustion system of the gas-fired furnace, the combustion system having at least one monoport inshot burner supplied with a gaseous fuel which is burned to produce the combustion flame which is projected through an inlet opening into an air heat exchanger for the gas-fired furnace, the combustion flame having a peripheral area of relatively high peak temperatures conductive to the formation of oxides of nitrogen, said combustion flame tempering device comprising:

a perforated tubular main body section having open ends and sidewalls, having top and bottom edges, said sidewalls having longitudinal flanges at the top and bottom edges thereof, said flanges keeping said tubular main body section rigid and stable,

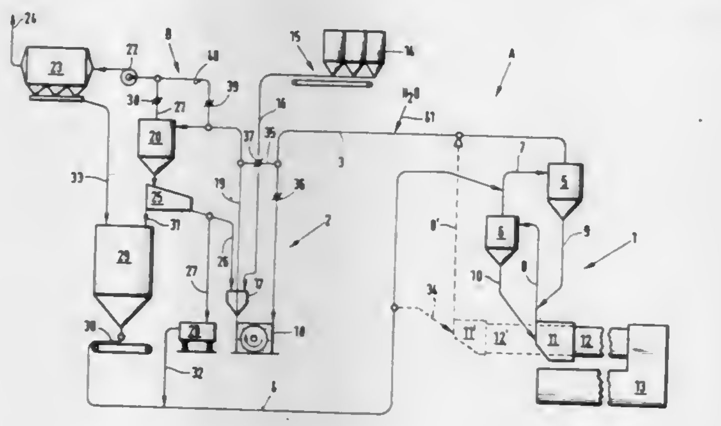
a plurality of ribs disposed on said sidewalls and being oriented generally perpendicular to the longitudinal flanges of said main body section, said ribs stiffening said sidewalls to prevent said main body section from bending relative to the combustion flame,

a plurality of oblong openings disposed on said sidewalls in alternating fashion with said ribs and substantially paralleling said ribs, said oblong openings allowing said main body section to expand and contract during thermal cycling,

said main body section being positioned generally at the peripheral area of the combustion flame where relatively high peak temperatures promote the formation of oxides of nitrogen, and being made of a temperature reducing material that absorbs heat energy from the peripheral area of the combustion flame to reduce the temperature of the flame below the high peak temperatures, thereby inhibiting the formation of oxides of nitrogen.

4,619,605
METHOD FOR THE THERMAL TREATMENT OF CALCAREOUS MINERAL RAW MATERIALS

Horst Herchenbach, Hennef, and Hubert Ramesohl, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany
Filed Dec. 14, 1984, Ser. No. 681,598
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1983, 3345166; May 19, 1984, 3418685
Int. Cl.⁴ F27B *15/00*
U.S. Cl. 432—14 **8 Claims**

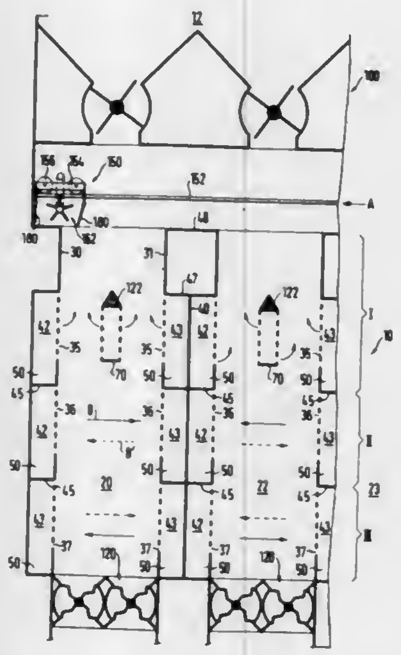


1. A method for the thermal treatment of mineral raw materials containing calcium carbonate and the like for the production of a calcined product which comprises:
crushing and homogenizing said raw materials while still in the pit-wet condition to individual particles having a particle size below 200 mm,
drying the resulting particles with hot gases from a subsequent calcining zone,
thereafter crushing, grading, and drying the particles,
preheating said particles at a particle size of from 1 mm to 25 by direct heat exchange with hot gases while in suspension therein,
calcining the preheated particles in said calcining zone, under conditions of rapid heating sufficient to cause the carbonate containing materials to burst, resulting in the modification of their crystal lattices, expulsion of the water of crystallization, and ultimately to the expulsion of carbon dioxide,
sintering the calcined materials,
cooling the sintered materials, and
adjusting the mean grain size of said particles sent to preheating in response to their free lime content, the the grain size being decreased as the calcined product has a higher free lime content.

4,619,606
VERTICAL MALTDRYING KILN

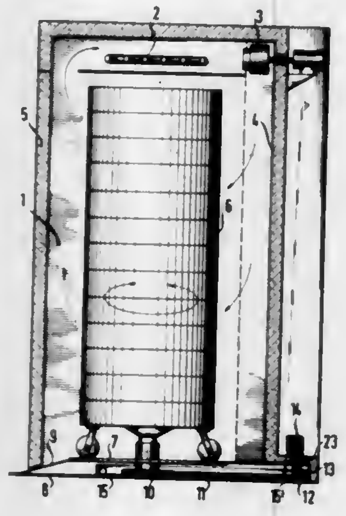
Christian K. Numberger, Muhlberg 38 1/2, D-8257 St. Wolfgang, Fed. Rep. of Germany
Filed Feb. 7, 1985, Ser. No. 699,407
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1984, 3404804
Int. Cl.⁴ F27D *1/08;* **F26B** *17/12*
U.S. Cl. 432—99 **12 Claims**

1. In a vertical malt drying kiln, the improvement comprising:
(a) a plurality of compartments each having walls for containing malt to be dried and having means for supplying green malt at the top of said compartment and means for removing dried malt at the bottom thereof, each of said compartments divided into a plurality of vertically adjacent flow zones, each zone defined by the presence of a drying air flow originating in that zone; and
(b) means defining an air duct extending through the uppermost zone in said compartment, said air duct having perforated side walls for directing drying air transversely into malt within said zone and thence upwardly and out the top of said compartment.



4,619,607
BAKING OVEN HAVING TURNTABLE DRIVEN FROM AN EXTERNAL MOTOR WHOSE DRIVE SHAFT IS COUPLED VIA A SEAL TO AN INTERNAL CHAIN

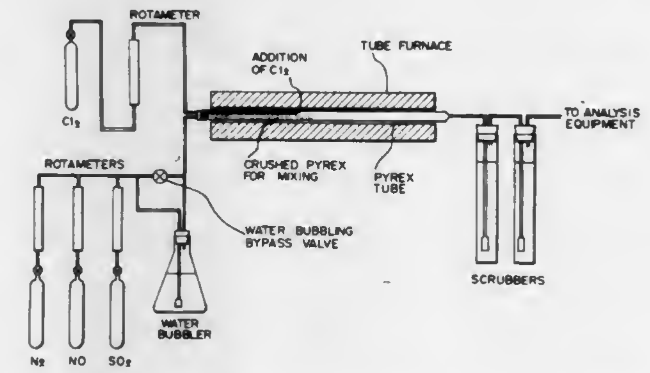
Helmut Schroder, Bietigheim-Bissingen, Fed. Rep. of Germany, assignor to Werner & Pfleiderer, Stuttgart, Fed. Rep. of Germany
Filed Aug. 28, 1985, Ser. No. 770,659
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1984, 3431505
Int. Cl.⁴ F27B *3/18, 9/16;* **F26B** *11/00;* **A47J** *37/10*
U.S. Cl. 432—162 **11 Claims**



1. In a baking oven heated by circulation of hot-air and having a baking compartment with a turntable above a bottom thereof adapted for receiving a multiple rack cart which carries the material to be baked and which is rotated around a vertical axis, the oven having a relatively narrow space below the turntable above said bottom, the turntable being provided with a drive gear therebelow disposed horizontally in said space and coupled to a horizontal chain which in turn is coupled to a pinion on a vertical shaft extending outside the baking compartment and driven by a drive motor, the improvement comprising
a chain box surrounding the chain and including a portion extending outside said baking compartment, said chain box extending in said narrow space around said drive gear and said chain,
means for rendering said portion of said chain box which extends outside the baking compartment air-tight to prevent escape of vapor thereat from the baking compartment to the ambient atmosphere,
said vertical shaft extending into said portion of said chain box which is air-tight, and
means sealing said vertical shaft and said portion of the chain box which is air-tight such that the chain is sealingly enclosed, partially in the space beneath the baking compartment and partially in the air-tight portion of the chain box extending outside the baking compartment.

4,619,608
PROCESS FOR REMOVAL OF POLLUTANTS FROM WASTE GAS EMISSONS

Brian W. McIntyre, Vancouver, and John W. Biggar, Burnaby, both of Canada, assignors to ISCA Management Limited, Vancouver, Canada
Continuation-in-part of Ser. No. 610,505, May 15, 1984, abandoned. This application Oct. 18, 1985, Ser. No. 788,835
Int. Cl.⁴ C01B *17/00*
U.S. Cl. 423—220 **23 Claims**

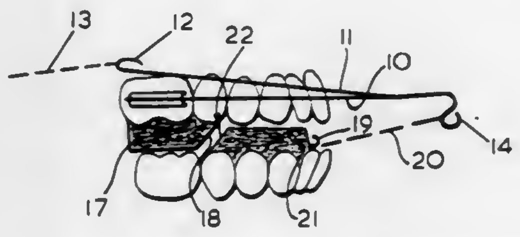


1. A process for oxidizing gaseous pollutants in a flue gas stream consisting essentially of flue gases, water vapor and one or more gaseous pollutants selected from the group consisting of SO_2, NO, NO_2, NO_x and H_2S, said oxidized form of the pollutants being more readily removable from the flue gas stream by water absorption than the non-oxidized form thereof, comprising injecting sufficient chlorine in a gaseous form, a liquid form, or as a water solution thereof into the said flue gas stream while the flue gas stream is at a temperature greater than 100° C. to react with the said pollutants and permitting the flue gas stream/chlorine mixture to react for a time sufficient to enable a significant amount of oxidation of the pollutants to occur, whereby an oxidized flue gas stream consisting essentially of flue gases, water vapor and one or more gaseous oxidized said pollutants is formed.

4,619,609
APPARATUS FOR THE ORTHODONTIC TREATMENT OF TEETH

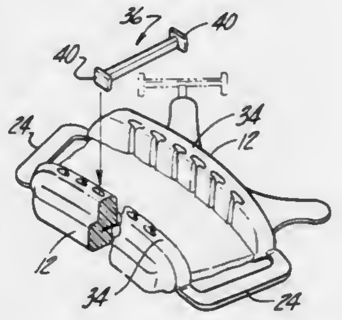
William J. Clark, Lundin Lea, Leven Road, Lundin Links, Fife, KY8 6AJ, Scotland
Division of Ser. No. 487,929, Apr. 22, 1983, abandoned. This application Dec. 21, 1984, Ser. No. 684,902
Int. Cl.⁴ A61C *7/00*
U.S. Cl. 433—6 **4 Claims**

1. Apparatus for the orthodontic treatment of malocclusion of a patient whose closed upper and lower dental arches of natural teeth define an occlusal plane, said apparatus comprising:
(a) first and second cooperating bite blocks;
(b) means for securing said first and second bit blocks respectively to the upper and lower dental arches; and
(c) said upper and lower bite blocks having respective cam surfaces cooperating with each other and oriented with respect to the occlusal plane to exert opposing forces upon the upper and lower dental arches, whereby the occlusion therebetween is adaptively changed.



4,619,610
DENTAL IMPRESSION TRAY

Joseph J. Pelerin, 2027 Klingensmith, Bloomfield Hills, Mich. 48013
Filed Jul. 15, 1985, Ser. No. 754,944
Int. Cl.⁴ A61C *9/00*
U.S. Cl. 433—41 **16 Claims**



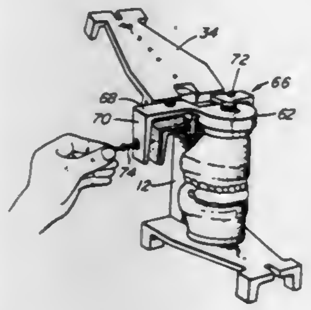
1. A dental impression tray comprising:
a pair of spaced sidewalls forming a channel therebetween, and
means for connecting said sidewalls together comprising a layer of rigid material extending perpendicularly between said sidewalls at a midpoint of said sidewalls, said layer dividing said channel into a first subchannel and a second subchannel, said first subchannel adapted to receive a settable dental impression material
wherein said layer material is of a composition such that, when heated, said layer material is deformable in a direction perpendicular to the plane of said layer by a human biting into said layer and, when cooled, said layer material retains any deformations caused by a human biting into said layer, whereby a bite trace can be formed on said layer.

4,619,611
DENTAL ARTICULATOR

Henry Shimbashi, Box 2352, Towers Building, Drayton Valley, Alberta, Canada (T0E 0M0)
Filed May 24, 1985, Ser. No. 737,655
Claims priority, application Canada, Jul. 16, 1984, 458930
Int. Cl.⁴ A61C *11/00*
U.S. Cl. 433—55 **3 Claims**

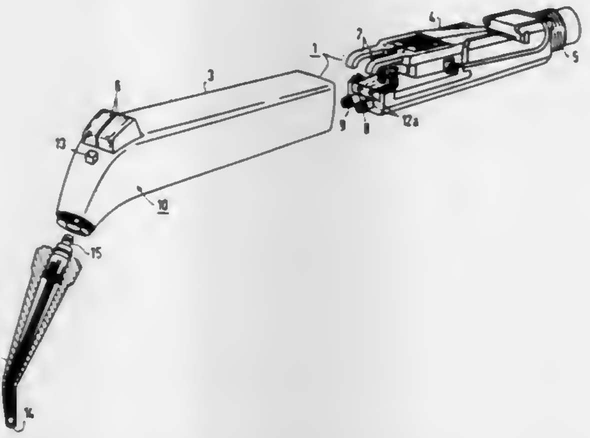
1. A dental articulator having a rigid, nonyielding structure for providing the occlusion plane required to build accurate intercuspation of teeth, said articulator comprising a lower mounting plate adapted to support a mandibular model, an upper mounting plate adapted to support a maxillary model, and a centre or spine post spacing said upper and lower mounting plates from one another; means rigidly securing the lower mounting plate to the lower end of said spine post; hinge means pivotally mounting the upper mounting plate to the top of the spine post and means for locking the upper mounting plate to the spine post in rigid, parallel location with respect to the lower mounting plate; an inner mounting plate and an outer

mounting plate adapted to support said maxillary model; means on said inner mounting plate for detachable securement to said spine post and means associated with said inner mounting plate to provide first horizontal and vertical marking surfaces respectively; said outer mounting plate comprising a central planar portion for attachment thereto of a mounting stone and maxillary model and means providing second horizontal and vertical surfaces which, when said outer mounting plate is positioned on said articulator, are spaced from and correspond to said first horizontal and vertical marking surfaces of said inner mounting plate, and apertures in the vertical and horizontal surfaces of the outer mounting plate for the reception of marking means for applying marks to the surfaces of the inner mounting plate.



4,619,612
DENTAL SPRAY HANDPIECE

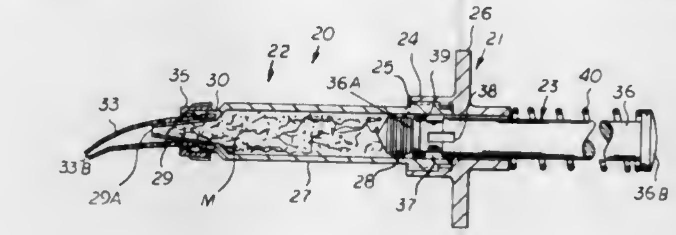
Walter Weber, Lorsch, and Doris Frank-Voeglein, Zwingenberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Oct. 12, 1984, Ser. No. 660,118
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1983, 3337166
Int. Cl.⁴ A61C *17/00*
U.S. Cl. 433—80 **20 Claims**



1. A dental spray handpiece for spraying an agent, the handpiece including a nozzle, a light source, a light conductor and a housing forming a grip piece for the dental handpiece, said nozzle at one end having a discharge orifice, said housing at one end having means for forming a connection with a supply line, said nozzle at a second end and the housing at a second end each having coacting connecting elements forming joint means for releasably connecting the nozzle and the housing together with rotational movement therebetween, said light source being provided in the handpiece adjacent to the joint means and said light conductor being centrally disposed in the nozzle and extending from adjacent the discharge orifice at the one end of the nozzle up to the joint means at the second end of the nozzle for receiving light from said light source.

4,619,613
BULK DENTAL SYRINGE

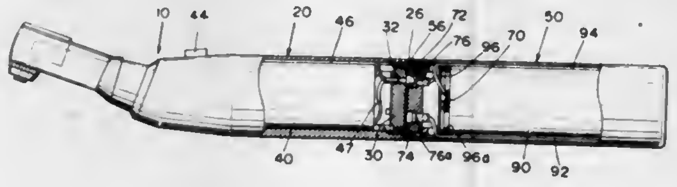
William B. Dragan, 85 Burr St., Easton, Conn. 06612
Continuation-in-part of Ser. No. 388,649, Jun. 15, 1982, Pat. No. 4,492,576. This application Mar. 12, 1984, Ser. No. 588,290
Int. Cl.⁴ A61C *5/04*
U.S. Cl. 433—90 **23 Claims**



1. A dental syringe for dispensing a predetermined amount of dental material directly to a tooth from a bulk supply of said material comprising
- a barrel means defining an elongated tubular member adapted to contain a bulk supply of a dental material,
- a discharge spout formed on one end of said tubular member, said tubular member being opened at its other end,
- a plug sealing said opened end to confine a material within said tubular member,
- means defining a plurality of flexible fingers connected to said tubular member, said fingers circumscribing said discharge spout,
- said fingers having an internal retaining notch,
- a nozzle tip detachably connected to said spout,
- said tip having a laterally extending flange adjacent one end and a nozzle orifice formed at its other end,
- said nozzle tip being fitted over said spout whereby said flange is engaged by said finger retaining notch for detachably retaining said nozzle tip on said spout,
- and a collar slidably disposed relative to said fingers for positively securing said fingers in gripping relationship onto said nozzle tip,
- a plunger slidably mounted within said tubular member for engaging said plug for extruding the dental material through said point and associated tip as said plug is displaced.

4,619,614
ROTATIONAL COUPLING DEVICE FOR A DENTAL HANDPIECE HAVING A BUILT-IN BATTERY

Tadashi Baba, Kanuma, and Norimasa Kaneko, Utsunomiya, both of Japan, assignors to Nakanishi Dental Mfg. Co., Ltd., Kanuma, Japan
Filed Aug. 31, 1984, Ser. No. 646,211
Claims priority, application Japan, Sep. 1, 1983, 58-135805[U]
Int. Cl.⁴ A61C *1/02*
U.S. Cl. 433—99 **3 Claims**

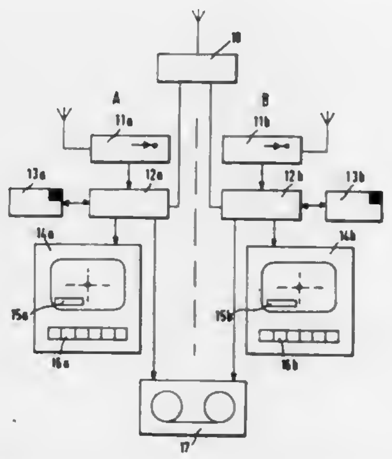


1. A rotational coupling device for a cordless dental instrument comprising:
- a motor housing and a battery housing which are detachably coupled together;
- a direct current motor mounted in said motor housing and a charging battery mounted in said battery housing;
- switch means, operatively connected to said direct current motor and mounted on said motor housing, for manually activating and deactivating said direct current motor;
- said motor housing having a rear end with a circular opening therein, a pair of semi-annular projections extending radially into said circular opening and a pair of arc-shaped recesses formed between the ends of said semi-annular projections;
- a first insulating disc disposed in said circular opening and having two symmetrical, diametrically opposed apertures, each aperture having a lead wire extending therethrough, an end of said lead wire connected to said switch and an end of the other said lead wire connected to said motor, the other end of each said lead wire connected to a contact on said first insulating disc which projects from a surface of said first insulating disc facing said battery housing;
- said battery housing having a forward end with a circular inlet therein, a pair of arc-shaped projections extending radially outward from said circular inlet and adapted to fit in said arc-shaped recesses in said motor housing, a pair of semi-annular flanges formed between said pair of arc-shaped projections and adapted to fit in said semi-annular projections of said motor housing, said arc-shaped projections being rotatable in said circular opening of said motor housing for engaging said semi-annular projections of said motor housing and detachably coupling said motor housing to said battery housing;
- a second insulating disc disposed in said circular inlet of said battery housing and having two symmetrical, diametrically opposed arc-shaped guide slots which are adapted to receive said projecting contacts on said first insulating disc, one of said guide slots having a centrally disposed positive contact with a neutral and negative contact on either side thereof, the other of said guide slots having a centrally disposed negative contact with a positive and neutral contact on either side thereof, said neutral contacts being diametrically opposed to each other and said positive contacts being diametrically opposed to said negative contacts, said second insulating disc having a radially stepped peripheral portion engaged with a radially stepped portion of said battery housing for retaining said second insulating disc in said battery housing;
- a lead wire connected between said negative contacts in said guide slots and a negative terminal of said charging battery, another lead wire connected between said positive contacts in said guide slots and a positive terminal of said charging battery; and
- a positive and negative charging contact disposed on a rear end of said battery housing, each of which is connected to a respective positive and negative terminal of said charging battery.

4,619,615
EQUIPMENT FOR MONITORING COMBAT VEHICLES, ESPECIALLY TANKS

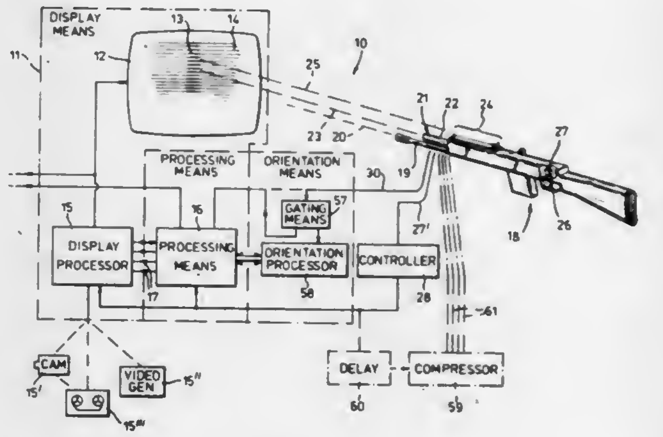
Wolfgang Kratzenberg, Staufenberg, Fed. Rep. of Germany, assignor to Wegmann & Co. GmbH, Kassel, Fed. Rep. of Germany
Filed Sep. 4, 1984, Ser. No. 647,077
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1983, 3332582
Int. Cl.⁴ G09B *9/00*
U.S. Cl. 434—22 **15 Claims**

1. In equipment for monitoring two groups of combat vehicles in the practice firing of simulated rounds, wherein each combat vehicle has a weapon, a firing button for the weapon, a laser for emitting at least one pulse of light in a direction determined by the weapon when the firing button is actuated, an optical targeting device, an optical-pulse receiver for receiving a light pulse and a display connected to the optical pulse receiver for indicating the receipt of a pulse, the improvement comprising means for monitoring the combat vehicles at a director's post remote from the combat vehicles comprising in each combat vehicle: a television camera; optical adapting means coupling the optical targeting device to the television camera; video-transmitting means for transmitting the output of the television camera to the director's post; and means for modulating a control signal onto the transmitted video signal when the firing button is actuated; and comprising at the director's post at least two video receivers each assigned to one group of combat vehicles; one television monitor for each video receiver; switching means connecting each receiver to its associated monitor and controlled by the control signal for selecting the video signal displayed on the monitor, the switching means comprising a priority circuit for applying the video signal from a selected combat vehicle in the group to the associated monitor when no firing button is actuated in any combat vehicle and for applying to the monitor for a given period of time the video signal emitted by a combat vehicle transmitting the modulated control signal.



4,619,616
WEAPON AIM-TRAINING APPARATUS

John J. Clarke, Cheadle Hulme, England, assignor to Ferranti plc, Cheshire, England
Filed Jun. 12, 1985, Ser. No. 743,900
Claims priority, application United Kingdom, Jun. 14, 1984, 8415148
Int. Cl.⁴ F41G *3/26*
U.S. Cl. 434—22 **21 Claims**



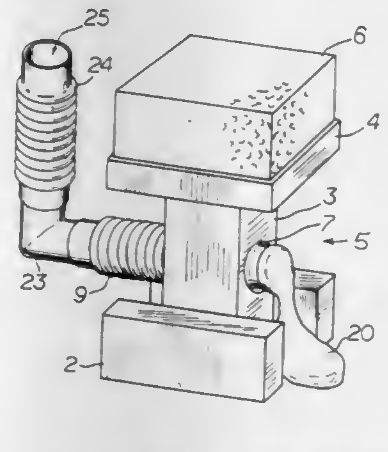
1. Weapon optical aim-training apparatus for a projectile firing type of weapon, said apparatus comprising
- (i) display means, including a screen, arranged to display an image of a target,
- (ii) a weapon means arranged to be directed at the screen and displaced therefrom at an operating position, said weapon including
  - (a) sighting means defining a sight-line axis which extends to, and intersects, the screen to define an aim point,
  - (b) photo-detection means having a field of view centred on a detection axis which extends to, and intersects, the screen at a detection point such that the detection point is displaced from the aim point in a known relationship, and
  - (c) switching means operatively connected to a trigger of the weapon,

(iii) control means responsive to operation of the switching means by actuation of the trigger to cause said display means to define on the screen, by the emission of optical radiation from a plurality of display element locations as a raster of lines of successively illuminated display element locations, a marker region smaller than the screen, but larger than the field of view of the photo-detection means, and displaced from the target image by said known relationship, and

(iv) processing means responsive to the detection by the photo-detection means of optical radiation from said marker region of the screen to determine the position of the detection point with respect to the raster and thus the position of the aim point with respect to the position of the target image.

4,619,617
TEACHING AID FOR CPR

Cecil L. Rice, 2541 Windjammer Drive, Mississauga, Ontario, Canada L5L 1H7
Filed Aug. 12, 1985, Ser. No. 764,347
Int. Cl.⁴ G09B *23/30*
U.S. Cl. 434—265 **9 Claims**

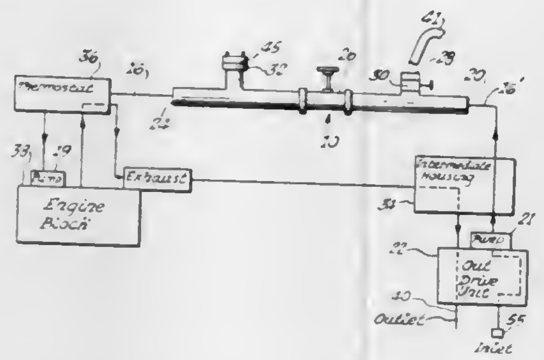


1. A teaching and practise aid for teaching and rehearsing cardio-pulmonary resuscitation (CPR) techniques, comprising:
a stand, having a base for resting on a flat surface, and a horizontal platform rigidly located above said base, said base and platform forming an integral structure;
a pad of foam material resting directly on top of said platform, where the material of the pad is resiliently compressible as to the vertical thickness of the pad through a substantial distance upon being pressed downwards towards said platform, to simulate the chest of a patient;
and a length of tubing, which is attached at an attachment point to the stand;
where one end of the tubing is left open;
where the tubing is so positioned and dimensioned and of such material that, at least a portion of the length of said tubing is vertically directed and terminates at said open end, and is substantially self-supporting;
where said open end of said tubing is so located with respect to said pad that said open end simulates the mouth of a patient;
and having a stretchable and inflatable balloon, the neck of which is fitted over the end of said length of tubing remote from said open end; and where said tubing provides a direct passage from said open end to said balloon and has no other openings.

4,619,618
FRESH WATER FLUSHING KIT

William Patti, 865 Robin Ct., Marco Island, Fla. 33937
Filed Apr. 12, 1985, Ser. No. 722,345
Int. Cl.⁴ B63H *21/38*
U.S. Cl. 440—88 **4 Claims**

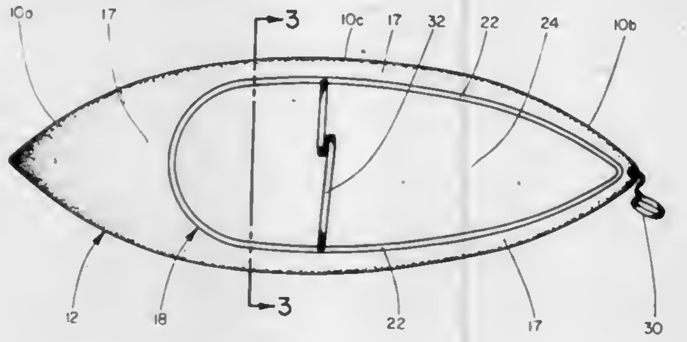
1. A fresh water flushing kit adapted for use only as an insertion in or as a permanent component in a cooling conduit system of an inboard marine engine system or an inboard/outboard marine engine system wherein the engine system includes an outboard cooling water hose water inlet, an outboard cooling pump, an intermediate housing including a passageway communicating with the pump, and an engine thermostat housing, said kit comprising:
a replacement conduit having an inlet means connectable to the outboard cooling water hose inlet via the intermediate housing;
said conduit including an outlet means connectable to the engine thermostat housing;



the conduit including an intermediate shut off valve means disposed between said inlet and said outlet means;
the conduit including a secondary outlet means with valve means disposed between said inlet means and said intermediate shut off valve means; and
the conduit including a secondary inlet means for fresh water disposed between said outlet means and said intermediate shut off valve, said secondary inlet means including a closure means.

4,619,619
COMBINATION SURFBOARD-KNEEBOARD

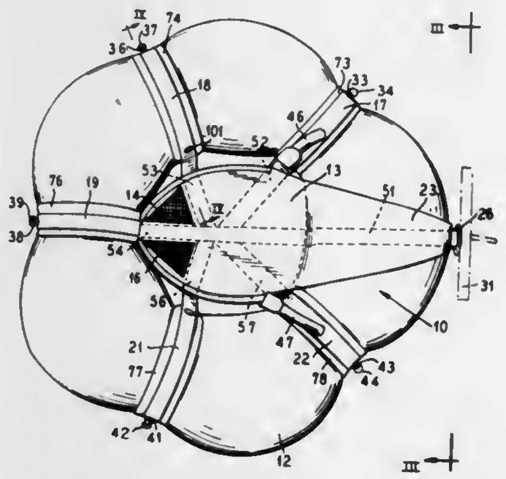
Lauchlin M. Muse, Jr., P.O. Box 925, Dunn, N.C. 28334
Continuation of Ser. No. 499,360, May 31, 1983, abandoned. This application May 20, 1985, Ser. No. 735,758
Int. Cl.⁴ A63C *5/02*
U.S. Cl. 441—65 **1 Claim**



1. A combination surfboard-kneeboard comprising: an elongated buoyant board having front and rear end portions with said front end portion including a turned up nose, and a midarea located generally halfway between said front and rear end portions, said board being wider about the midarea than at said front and rear end portions and wherein the widest portion of said board is located between said midarea and said rear end portion; said board further including a lower base portion and a generally flat bottom with said lower base portion having an outer surrounding turned down rail structure and a raised upper deck formed over said lower base portion and extending from said midarea to said rear end portion; said raised deck having forward and side portions and including an inner rail structure indented from said outer turned down rail structure of said lower base portion and which extends around said forward and said side portions of said upper raised deck; said indented inner rail structure of said upper deck forming an angle with respect to said turned down rail of said lower base portion and wherein said angle of said inner rail with respect to said turned down rail of said lower base portion varies from said midarea to said rear end portion, said raised upper deck including a formed cavity that lies inwardly from said raised inner rail structure with said cavity including a flat bottom that lies below the top of said inner rail structure; a resilient pad secured within said cavity formed in said upper deck; a plurality of detachable fins adapted to be detachably secured to the underside of the lower base portion of said board; a detachable knee strap detachably secured to said board and adapted to extend over the midarea thereof and operative to confine an individual's knees about said board when said board is being used as a kneeboard; and a detachable ankle strap detachably secured to said board for use when the same is being used as a surfboard.

4,619,620
WATER SPORTS APPARATUS

Mark R. Felter, 2626 Indian Hill Rd., Cedar Rapids, Iowa 52403
Filed Mar. 19, 1985, Ser. No. 713,696
Int. Cl.⁴ A63C *15/00*
U.S. Cl. 441—66 **1 Claim**

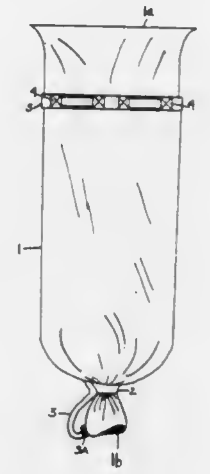


1. A water sport device comprising an inner tube which can be inflated and to which a plurality of holding pins are attached to its outer periphery, a seat portion of plastic material with a plurality of upper and lower straps extending therefrom, locking means attached to said upper and lower straps so that matching ones of said upper and lower straps can be connected around said inner tube by said locking means, said plaurlity of said upper and lower straps formed with openings that fit over said holding pins attached to said inner tube, transverse openings formed through said holding pins, locking split rings receivable in said transverse openings of said holdings pins so as to lock said straps to said inner tube, and a pair of towing portions extending from said seat portion and said inner tube so that they can be attached to a tow rope including tow rings attached to the ends of said pair of towing portions for receiving a tow rope therethrough, including at least one handle attached to one of said plurality of straps, wherein said inner tube is inflated after said plurality of straps are connected together to cause said inner tube to bulge out between said straps, and wherein there are five upper straps and five lower straps.

4,619,621
SURF RIDING AIR BAG

Harry E. Coleman, IV, P.O. Box #26, Arch Cape, Oreg. 97102
Continuation-in-part of Ser. No. 492,672, May 9, 1983, abandoned. This application Feb. 14, 1985, Ser. No. 701,777
Int. Cl.⁴ A63C *15/00*
U.S. Cl. 441—66 **3 Claims**

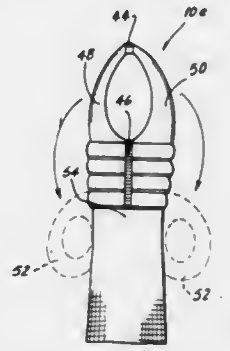
1. A surf riding air bag comprising
a flexible inflatable container having a body portion closed at one end and open at its other end to form a filler opening,
said opening being substantially the full size of the bag to provide an enlarged filler opening,
said inflatable container being constructed of a cotton polyester type of material so as to be of light weight and readily inflated by wetting it and holding it up in the air with the enlarged filler opening catching air currents,



closure strap means secured to said bag adjacent the open end of the latter for wrapping around and closing said filler opening after inflating the bag,
said bag being sufficiently elongated from end to end to carry a person lying crosswise thereon for riding a wave in the surf and to partially wrap around the person lying thereon,
and handle means adjacent each end of said bag for obtaining a riding hold on the bag by a person lying crosswise thereon.

4,619,622
SWIM SAFE PLAY SUIT

Edith N. McDonald, and George Spector, both of 233 Broadway, Rm. 3615, New York, N.Y. 10007
Filed Oct. 13, 1983, Ser. No. 541,780
Int. Cl.⁴ B63C *9/10*
U.S. Cl. 441—111 **1 Claim**



1. A buoyant swim suit having an upper portion and a lower portion, said upper portion having a plurality of substantially equi-spaced, parallel, flexible and waterproof hollow air chambers retained there within and shoulder portions extending over the shoulders of the wearer, said lower portion being comprised of ordinary swim suit material, said swim suit further comprising separable fastening means on said shoulder portions and respective sides of said upper portion to thereby form front and rear upper portions, whereby said front and rear upper portions can be rolled downward to form a life preserver about said wearer's mid section.

4,619,623
LIFE-JACKET ASSEMBLY

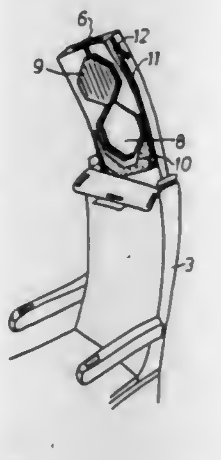
Bernt Elverskog, Upplands Väsby, Sweden, assignor to KB Elverskog Ide & Konstruktion, Upplands Väsby, Sweden

Filed Dec. 14, 1984, Ser. No. 681,815

Claims priority, application Sweden, Dec. 16, 1983, 8307002

Int. Cl.⁴ B63C *9/00*

U.S. Cl. 441—126 **8 Claims**



1. In a chair for a transportation vehicle, said chair including two armrests, a covered seat bottom and a covered backrest (3) extending upward from said seat bottom, the improvement wherein:

said covered backrest extending forward only to substantially the back of the seat bottom and defining a cavity therein, said cavity completely surrounding a life jacket assembly, said covered backrest having an openable upper end portion for providing access to said cavity; and wherein

said cavity contains substantially entirely therein said life jacket assembly, said life jacket assembly comprising an elongated, essentially flat, buoyant body (7), substantially made of buoyancy material, an end surface of said life jacket assembly being provided with a pull handle (6), said pull handle being proximate to and accessible from said openable end portion when said openable end portion is open, said buoyant body (7) defining, at a distance from said end provided with said pull handle (6), an opening (8) adapted for the passage of a user's head therethrough,

whereby said life jacket assembly may be withdrawn from said cavity and secured about the body of said user, with said head of said user extending through said opening (8), while said user is seated in said chair.

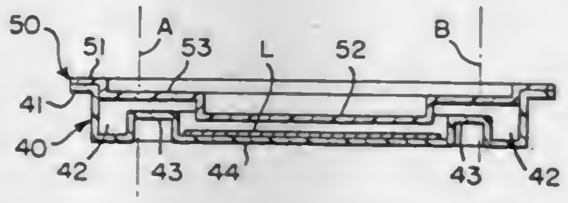
4,619,624
METHOD OF MAKING IMPROVED ELECTROLUMINESCENT PANELS

Charles Kerr, III, 120 Knox Rd., and Mark Forell, 18 Highland Dr., both of East Aurora, N.Y. 14052

Division of Ser. No. 548,972, Nov. 7, 1983, Pat. No. 4,578,617. This application Sep. 30, 1985, Ser. No. 781,346

Int. Cl.⁴ B29C *43/18*

U.S. Cl. 445—22 **5 Claims**



1. A method of producing an electroluminescent panel for instruments and the like, comprising

preparing a first, light transmissive shell having in the back thereof a pair of spaced recesses, one of which surrounds a projection on said first shell,

preparing a second shell having therein a first recess for accommodating the projection on said first shell, and having around said first recess a projection complementary to said one recess in said first shell,

placing an electroluminescent lamp element in said one recess in said first shell and filling the remainder of the last-named recess with a fluid potting material to cover said element, and

molding the two shells together by pressing said second shell into the back of said first shell to have the projection on said second shell overlie said element and force excess potting material out of said one recess into the other recess in said first shell.

4,619,625
CONSTRUCTION TOY

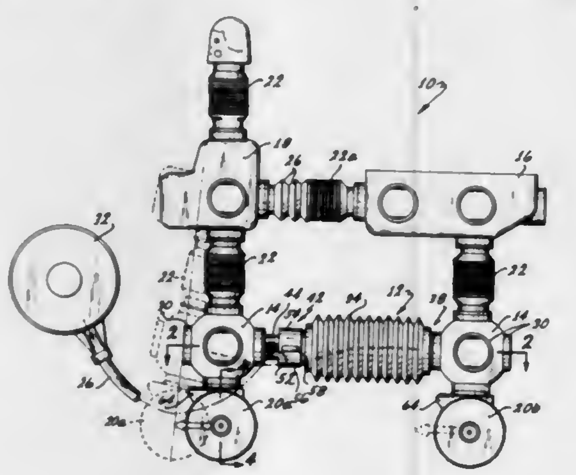
Yoshizo Seki, Tokyo, Japan, and Sidney Bass, Los Angeles, Calif., assignors to Tomy Kogyo Co: Inc., Tokyo, Japan

Filed Jun. 14, 1985, Ser. No. 745,406

Claims priority, application Japan, Sep. 18, 1984, 59-141502[U]

Int. Cl.⁴ A63H *33/04*

U.S. Cl. 446—89 **14 Claims**



1. A construction toy which comprises:

a first module, said first module including a bellows, said bellows having ends, said bellows including a connector located at each of its ends, said bellows having a closed hollow interior with a single opening providing ingress and egress into the interior of said bellows;

said first module further including an elongated hollow tube having ends, one of said ends of said tube attachable sealing to said bellows opening;

said first module further including a hollow bulb having a single opening, said bulb compressable, said opening of said bult attachable sealing to other of said ends of the tube, together said bulb, said tube and said bellows forming a closed fluid system whereby compression on said bulb elongates said bellow, and release of said compression on said bulb shortens said bellows;

at least two second modules, each of said second modules including at least two connectors located thereon, the connectors on the ends of said bellows each attachable to one of the connectors on one of said modules so as to temporarily connect one of the ends of said bellows to one of said second modules and the other of said ends of said bellows to the other of said second module;

at least two third modules, each of said third modules having a base member, an axle, a first and a second wheel and a ratchet means;

said base member including a connector located thereon, said connector on said base member connectable to one of said connectors on said second module so as to temporarily connect one of said third modules to one of said second modules;

said axle journalled in said base member and including said first and said second wheels located on the ends of said axle on opposite sides of said base member, said ratchet means operatively associated with said base member and at least one of said wheels whereby said wheels is capable of rotating in a first direction and is inhibited from rotating in a second direction.

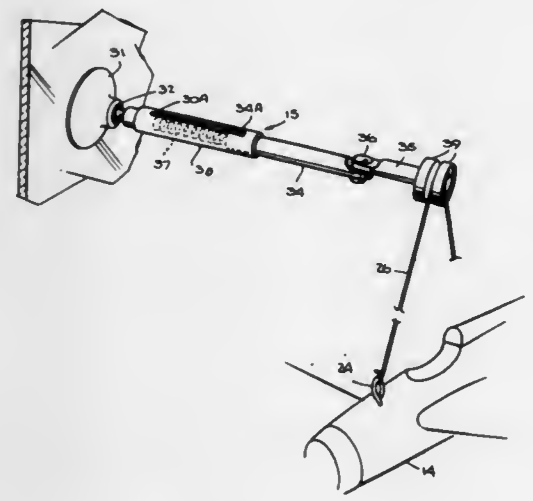
4,619,626
SUPPORT AND TETHERED AMUSEMENT DEVICE

Gerald Tarulli, 29 Godfrey Rd. West, Weston, Conn. 06883

Filed Jan. 31, 1985, Ser. No. 696,587

Int. Cl.⁴ A63H *21/02*

U.S. Cl. 446—228 **2 Claims**



1. A toy for permitting an operator to attempt to control the position of an object relative to a contour of variable elevation while the toy and operator move relative to the contour, comprising, in combination:

a support including a sleeve, an arm projecting outwardly of one end of said sleeve and telescopically movable relative to said sleeve, means urging said arm to its full extension relative to said sleeve, a finger pivotally connected at one end to the distal end of said arm;

line bearing means carried by said finger and comprising spaced members of greater radial dimension than said finger to support the line therebetween;

means associated with said support for fixing said support at a given height relative to an operator;

an object to be moved between different heights relative to said support; and

a flexible line fixed at one end to said object, looping around said finger between said spaced members and then through line guide means associated with said object and terminating in a free end for manipulation of said object relative to a variable contour more distant from said operator than said object, said contour and object being within the operator's field of view,

whereby the operator may sight along the object and control the spatial relationship of the object and contour in his field of view as the contour moves relative to the object and operator by manipulation of the free end of said flexible line.

4,619,627
FLUIDIC SHAFT COUPLING ASSEMBLY

Jochen Balken, Lindau; Wolfgang Beigang, Siegburg, and Bernhard Bihr, Neunkirchen, all of Fed. Rep. of Germany, assignors to Uni-Cardan Aktiengesellschaft, Siegburg, Fed. Rep. of Germany

Filed Nov. 2, 1984, Ser. No. 667,536

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1983, 3340966

Int. Cl.⁴ F16D *3/80;* **F16C** *3/02*

U.S. Cl. 464—24 **25 Claims**

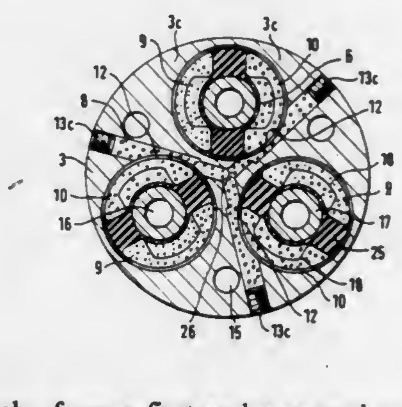
1. An elastic constant velocity torque transmitting coupling including a first hub member, a second hub member and a joint assembly elastically joining said first and second hub members in torque transmitting engagement, said joint assembly comprising:

a first and a second fluid system each containing a fluid medium which is adapted to be placed under pressure during torque transmission between said first and second hub members;

said first fluid system including a first plurality of individual fluid chambers and a first plurality of channels connecting said first plurality of chambers in flow communication;

said second fluid system including a second plurality of individual fluid chambers and a second plurality of channels connecting said second plurality of chambers in flow communication;

said first and said second plurality of channels being axially offset relative to each other and extending outwardly, respectively, from a first and a second common point at which said first and second plurality of channels, respectively, are placed in flow communication with each other; and



throttling means in each of said first and second fluid systems resisting the flow of fluid media therein;

said joint assembly comprising a generally cylindrical body member defining a central axis and having a plurality of axially extending bores therein with a plurality of inserts being arranged one within each of said bores, said first and second plurality of fluid chambers being defined between said inserts and the inner surface of said bores and said first and second plurality of channels being defined to extend through said cylindrical body member radially relative to said central axis.

4,619,628
ARRANGEMENT OF TWO ELEMENTS WHICH UNDERGO AN ALTERNATING SLIDING MOTION AND ITS APPLICATION IN A SLIDABLE TRIPOD JOINT

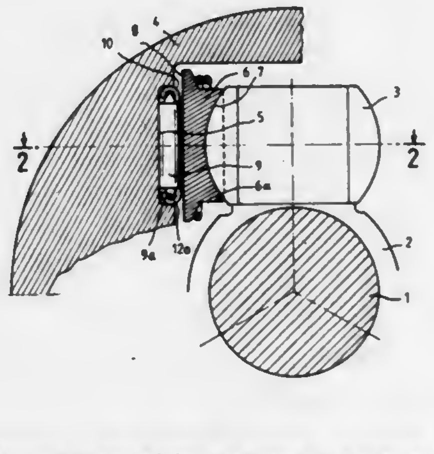
Michel A. Orain, Conflans Sainte Honorine, France, assignor to Glaenzer Spicer, France

Filed Oct. 23, 1984, Ser. No. 664,070

Claims priority, application France, Nov. 4, 1983, 83 17578

Int. Cl.⁴ F16D *3/20;* **F16F** *15/00*

U.S. Cl. 464—111 **7 Claims**



1. An arrangement comprising a planar raceway and a slide which are capable of undergoing a reciprocating motion with

respect to each other in directions parallel to said raceway, rolling members between the raceway and slide, a cage generally parallel to said raceway and having ends on opposite sides of said slide, said cage maintaining the rolling members in position, and spring means connected between only said slide and said cage for maintaining said slide centrally disposed relative to said cage, said spring means consisting of a return spring having a substantially flat configuration having a mean plane parallel to said raceway and comprising a wire of resilient metal defining at least one coil surrounding said slide and two end arm portions which extend from said coil to ends remote from said coil, and connecting means for connecting said end arm portions to respective ends of said cage.

4,619,629

HYDRAULIC PRESSURE CONTROL APPARATUS FOR A CONTINUOUSLY VARIABLE TRANSMISSION

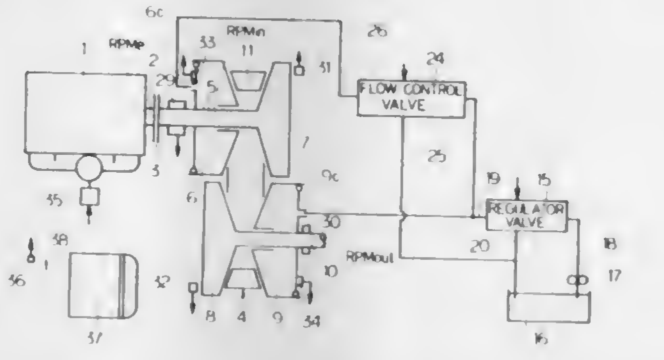
Takashi Shigematsu; Setsuo Tokoro, and Tomoyuki Watanabe, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed May 3, 1984, Ser. No. 606,523

Claims priority, application Japan, Jul. 26, 1982, 57-128878; 57-128880.

Int. Cl.⁴ F16H *11/06*

U.S. Cl. 474—28 **16 Claims**



1. A hydraulic pressure control apparatus for a continuously variable transmission, the transmission including a driving pulley having a fixed member and a movable member, the movable member being actuated by a hydraulic cylinder to form a V-shaped opening between the movable member and the fixed member, a driven pulley having another fixed member and another movable member, said another movable member being similarly actuated by another hydraulic cylinder to form a similar V-shaped opening between said another movable member and said another fixed member, and a belt member spanning said driving and driven pulleys such that an effective diameter of the driving and driven pulleys can be varied with respect to each other to obtain different speed ratios, the hydraulic pressure control apparatus comprising:

a first pressure detecting means in communication with the hydraulic cylinder of the driving pulley for detecting a pressure of the hydraulic cylinder of the driving pulleys, the first pressure detecting means outputting a first pressure signal having a first value;

a second pressure detecting means in communication with another hydraulic cylinder of the driven pulley for detecting the pressure of said another hydraulic cylinder of the driven pulley, the second pressure detecting means outputting a second pressure signal having a second value;

a storing means for storing a predetermined value;

a calculating means for calculating a third value, said calculatinng means being in communication with said first and second pressure detecting means and said calculating means receiving the first and second pressure signals from the first and second detecting means, said calculating means using said value of said first signal and said value of said second signal to calculate said third value, said calculating means outputting a signal having said third value;

a comparison means for comparing said third value with said predetermined value, said comparison means being in communication with said storing means and said calculating means, the comparison means outputting a resultant signal; and

an adjustment means for changing the pressure of the another hydraulic cylinder of the driven pulley in accordance with the resultant signal, said adjustment means being in communication with said another hydraulic cylinder and said comparison means.

4,619,630

BELT TYPE CONTINUOUS REDUCTION GEAR MECHANISM

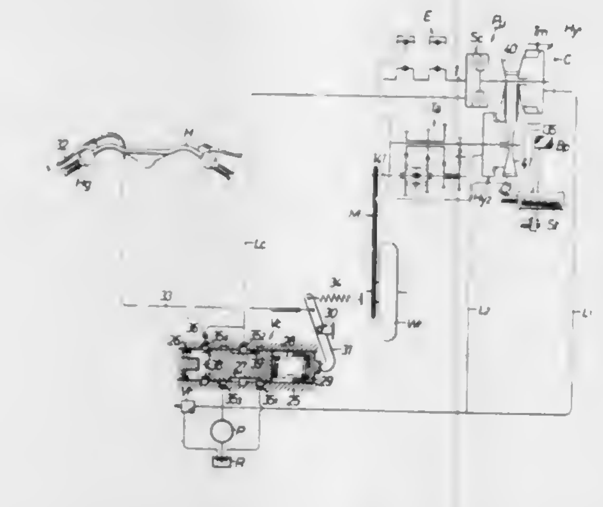
Torao Hattori, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 428,715, Sep. 30, 1982, Pat. No. 4,560,369. This application Oct. 2, 1985, Ser. No. 782,792

Claims priority, application Japan, Dec. 10, 1981, 56-198796

Int. Cl.⁴ F16H *9/00*

U.S. Cl. 474—72 **7 Claims**



1. A belt type continuous reduction gear mechanism comprising: a drive V-pulley; a driven V-pulley; and a V-belt made to run under tension between said two V-pulleys, wherein said drive V-pulley is arranged coaxially with a start clutch, which is arranged coaxially with the crankshaft of an engine and is constructed of a hydraulic multi-disc clutch, and has its external diameter reduced to substantially the same as that of said start clutch thereby to set the reduction ratio range at a relatively small value, and wherein said driven V-pulley is connected to an auxiliary reduction gear mechanism of plural-step type for compensating the shortage of said reduction ratio range.

4,619,631

CONTROL MEANS FOR SHIFTING GEARS ON DUAL SHIFT BICYCLES

Jack B. Darby, 518 First St. E., Scott City, Mo. 63780

Filed Jul. 3, 1985, Ser. No. 751,583

Int. Cl.⁴ F16H *9/00*

U.S. Cl. 474—80 **24 Claims**

1. In a device such as a dual shift bicycle or the like having a plurality of drive gears and including a drive chain means, a front derailleur associated with a front drive gear means and movable to positions for shifting the drive chain means into selected drive positions, a rear derailleur associated with a rear drive gear means and movable to positions for shifting the drive chain means into selected drive positions, a front derailleur shift means operatively connected at one end to the front derailleur and movable for positioning the front derailleur, and rear derailleur shift means operatively connected at one end to the rear derailleur and movable for positioning the rear derailleur, the improvement comprising:

means for shifting between the drive positions by moving the front and rear derailleur shift means to position the front and rear derailleurs, including

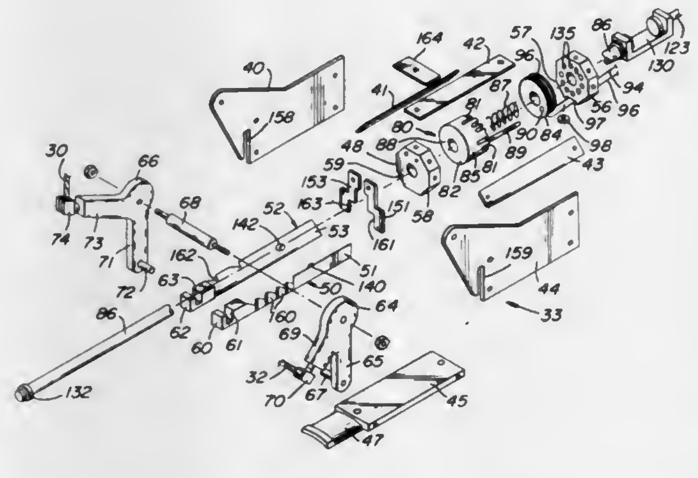
control means including a front control member movable through shifting movements between a plurality of control positions and a rear control member movable through shifting movements between a plurality of control positions,

said front derailleur shift means including a front cable extending between said front derailleur and said control means and being spring biased at the front derailleur end thereof to be maintained in a tensioned condition,

said rear derailleur shift means including a rear cable extending between said rear derailleur and said control means and being spring biased at the rear derailleur end thereof to be maintained in a tensioned condition,

means providing operative engagement between the control means end of said front cable and said front control member,

means providing operative engagement between the control means end of said rear cable and said rear control member,



selector/actuator means for selecting for each of said front and rear control members a selected control position to which said front and rear control members are to be moved in a gear shifting movement from a present control position to a selected control position and engageable with said front and rear control members for actuating the same through said shifting movement,

said control position selection operation being independent of said actuation of said control members through said shifting movement so that the shifting between the drive gears can be performed in two sequential operations,

and means for holding said front and rear control members in selected control positions thereof against said biased movement thereof.

4,619,632

REAR DERAILLEUR FOR A BICYCLE

Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Aug. 5, 1985, Ser. No. 762,404

Claims priority, application Japan, Aug. 8, 1984, 59-122365[U]

Int. Cl.⁴ F16H *9/00*

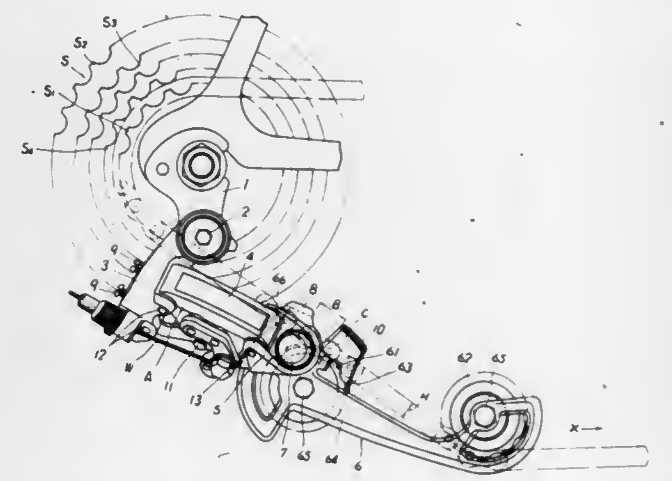
U.S. Cl. 474—80 **3 Claims**

1. A rear bicycle derailleur for switching a driving chain to a selected sprocket of a multistage sprocket assembly of a bicycle, said derailleur comprising:

a chain guide comprising a guide pulley, a tension pulley and first and second plates supporting said guide pulley and said tension pulley, and

a derailleur body having a movable member supporting said chain guide and support means supporting said movable member to be movable axially of said multistage sprocket assembly.

said first plate comprising a first restrainer at a side of said first plate adjacent said derailleur body, said first restrainer being positioned radially outwardly relative to said guide pulley at a location outside a first predetermined chain movement path along which said chain travels from a high speed sprocket of said multistage sprocket assembly to said tension pulley through said guide pulley when said multistage sprocket assembly rotates in reverse,



whereby said chain is prevented from moving away from said first chain movement path when said multistage sprocket assembly rotates in reverse.

4,619,633

DERAILLEUR FOR A BICYCLE

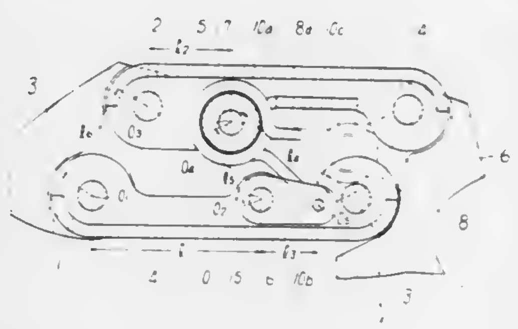
Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Jun. 21, 1985, Ser. No. 747,222

Claims priority, application Japan, Jun. 28, 1984, 59-134936

Int. Cl.⁴ F16H *9/00*

U.S. Cl. 474—82 **6 Claims**



1. A bicycle derailleur, comprising:

a linkage mechanism comprising a base member, a movable member, and first and second linkage members supporting said movable member to said base member, such that said movable member is reciprocably movable relative to said base member;

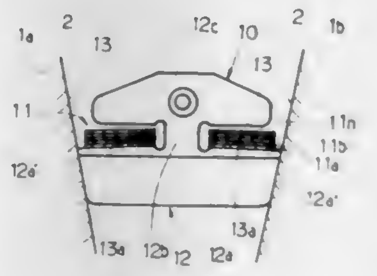
an operating means for moving said movable member in a first direction with respect to said base member;

a return spring for biasing said movable member in a second direction opposite to said first direction with respect to said base member; and

a control means for reducing a variation in a biasing force of said return spring at a starting position and a terminal position of movement of said movable member in said first direction, said control means comprising a swingable member pivoted to one member of said linkage mechanism and a support shaft disposed at another member of said linkage members which is opposite to said one member, said spring having a coiled portion supported to said support shaft and first and second spring legs extending from both ends of said coiled portion, said first spring leg being retained to said swingable member, said second spring leg being retained to said another member, whereby a variation in a torsion angle of said spring is reduced with respect to a variation in a movement stroke from said starting position to said terminal position of said movable member in said first direction.

4,619,634
TORQUE TRANSMITTING BELT

Yasunori Nakawaki, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan
Filed Mar. 4, 1985, Ser. No. 707,821
Claims priority, application Japan, Mar. 14, 1984, 59-050026
Int. Cl.⁴ F16G *1/24*
U.S. Cl. 474—201 **12 Claims**



1. A torque transmitting belt employed in a continuously variable transmission means for transmitting a torque between an input pulley and an output pulley, comprising:

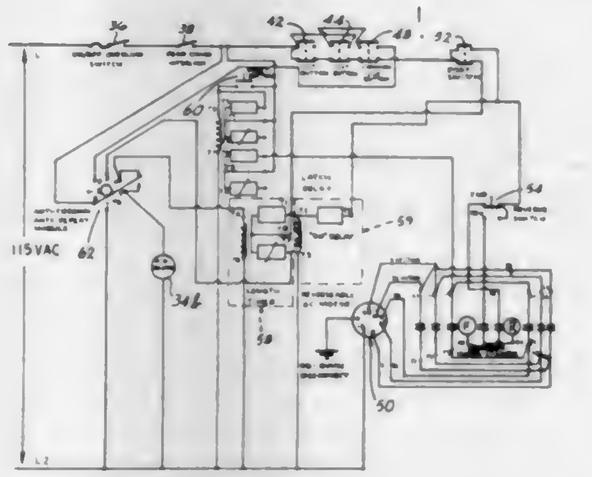
an endless carrier including a plurality of hoops extending between and contacted around peripheral portions of said input and output pulleys;

a plurality of block members being longitudinally shiftable along the hoops, each of said plurality of block members including a head portion, a main portion and a neck portion, said neck portion connecting the main portion with the head portion, wherein the neck, head and main portions cooperate to form a groove, the endless carrier extending through said groove; and

at least one of said plurality of hoops having an inner side with an inner circumferential length and an outer side with an outer circumferential length, said inner side facing said neck portion of the block member, said inner circumferential length being greater than said outer circumferential length.

4,619,635
AUTOMATIC FEED CIRCUIT FOR DUNNAGE CONVERTER

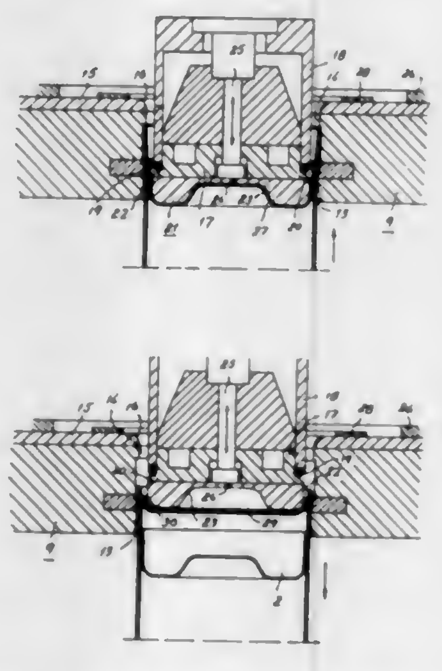
Gary W. Ottaviano, Bedford Heights, Ohio, assignor to Ranpak Corp., Willoughby, Ohio
Filed Nov. 4, 1985, Ser. No. 794,558
Int. Cl.⁴ B31B *1/00*
U.S. Cl. 493—36 **14 Claims**



1. In a mechanism for producing relatively low density pad-like cushioning dunnage product in strip form from flexible sheet-like stock material comprising a support frame, means on said support frame for pulling sheet-like stock material from a supply roll thereof into said mechanism and causing inward rolling of the lateral edges of the sheet-like stock material to form a pad-like product having lateral relatively resilient pillow-like sections and a central connecting section holding the pillow-like sections together in generally side-by-side relation and running generally lengthwise of the product, said means being also operable to emit the produced pad-like product from said mechanism, said means including an electric motor and settable control means operatively coupled to said motor and providing for selectively programming said motor for actuation thereof for a selected one period of time of a predetermined plurality of periods of time, whereby the pad-like product can be automatically produced by said mechanism for said selected one period without any further action on the part of a machine operator.

4,619,636
METHOD AND APPARATUS FOR MANUFACTURING CONTAINER HAVING BELLOWS BOTTOM AND LID

Ingemar S. B. Bogren, 193 00 S., Sigtuna, Sweden
PCT No. PCT/SE84/00181, § 371 Date Jan. 7, 1985, § 102(e) Date Jan. 7, 1985, PCT Pub. No. WO84/04510, PCT Pub. Date Nov. 22, 1984
PCT Filed May 15, 1984, Ser. No. 694,672
Int. Cl.⁴ B31B *1/90, 17/46*
U.S. Cl. 493—109 **15 Claims**



8. Apparatus for manufacturing a container comprising a tubular sleeve (1) having a bellows bottom (2) and a protection lid (3), both of which are mounted within said sleeve (1) in axially spaced apart relationship from each other and secured to the inner wall of said sleeve (1) by a thermoplastic adhesive, said apparatus comprising:

a carrier (9) having an opening therethrough;

means for supporting a sleeve (1) at a predetermined position in said opening;

welding means (10) disposed adjacent said opening for effecting melting of a thermoplastic adhesive;

a plunger (11) and means associated therewith for moving said plunger (11) between a retracted position on one side of said carrier (9) and a predetermined extended position within said opening, said plunger (11) defining means in association with said sleeve supporting means for inserting a bellows bottom (2) blank and a protection lid (3) blank one at a time into said sleeve (1) into axially spaced apart relationship from each other;

means for supporting a bellows bottom (2) blank and a protection lid (3) blank between said carrier (9) and said plunger (11) when said plunger (11) is in said retracted position;

and means in said opening to effect pressing of a blank already within said sleeve (1) against the inner wall of the sleeve (1) in said opening while said thermoplastic adhesive is melted.

15. Apparatus for manufacturing a container that comprises a substantially tubular sleeve and axially inner and outer closures at one end of the sleeve, each formed from a flat blank having a central portion and a marginal portion that is bent axially outward from said central portion and is secured to the sleeve around an inner surface thereof, said axially inner closure being supple and having its central portion of bellows-like form to accommodate expansion and contraction of container contents and said axially outer closure being substantially stiff and having a substantially flat central portion, said apparatus comprising a carrier means having an opening which has an upright axis for closely receiving and radially confining a sleeve, a welding ring means on the carrier means coaxially surrounding said opening for fusing coatings on a sleeve and on a closure to bond them, positioning means cooperating with the carrier means to releasably confine a sleeve in said opening against axial displacement relative to the carrier means, and means comprising a plunger having an axis coinciding with the axis of said opening and movable relative to the carrier means downwardly into and upwardly out of said opening for forming closures from flat blanks and inserting them into sleeves in the carrier means, said apparatus being characterized by:

(a) said plunger comprising
  (1) an upper part having an annular and coaxial downwardly facing surface,
  (2) a lower part which is confined to limited up and down motion relative to said upper part and which
    (a) defines a bottom surface on the plunger and
    (b) has an annular upwardly facing surface which is spaced above said bottom surface and which opposes said annular downwardly facing surface and cooperates with the latter in defining a radially outwardly opening groove around the plunger that is narrowed by upward movement of the lower part relative to the upper part, and
  (3) means for clamping the sleeve and closure to said welding ring means, comprising a resilient ring in said groove, said upper and lower parts defining means for radially outwardly expanding said ring by axially compressing said ring by narrowing said groove;
(b) said bottom surface on the plunger having
  (1) a central downwardly opening cavity and
  (2) a coaxial annular area surrounding said cavity that lies in a single plane normal to the axis of the plunger; and
(c) said plunger having means therein comprising a suction passage, one end of which is connectable with a vacuum source and the other end of which opens to said cavity for drawing up into the cavity the central portion of a supple closure to impart bellows-like form thereto.

4,619,637
CARTON FORMING APPARATUS

Kenneth W. Jones, 615 Quail Run, Middletown, Ohio 45042
Filed Jun. 3, 1985, Ser. No. 740,638
Int. Cl.⁴ B31B *1/28*
U.S. Cl. 493—175 **4 Claims**

1. Carton forming apparatus comprising:

an endless chain having spaced lugs for feeding carton blanks;

a rotary former rotatably mounted at the downstream end of said endless chain;

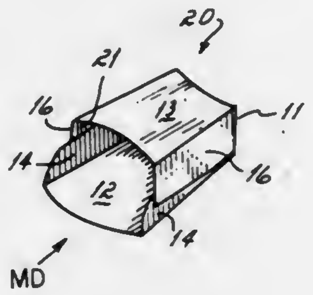
said former having means to grasp a carton blank and a mandrel over which said carton blank is partially formed;

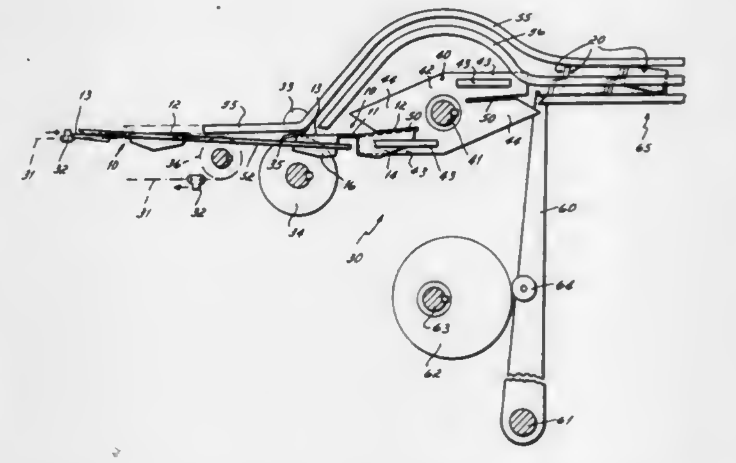
arcuate plows overlying said former in a position to engage said carton blank and effect partial folding of it as said former rotates through 180°;

a hopper located downstream of said former for receiving completed cartons;

and a kicker bar mounted at the downstream side of said rotary former, means connected to said kicker bar for reciprocating said kicker bar to engage the trailing edge of a carton blank and thrust it into said hopper;

said former having two slots on diametrically-opposite sides thereof;

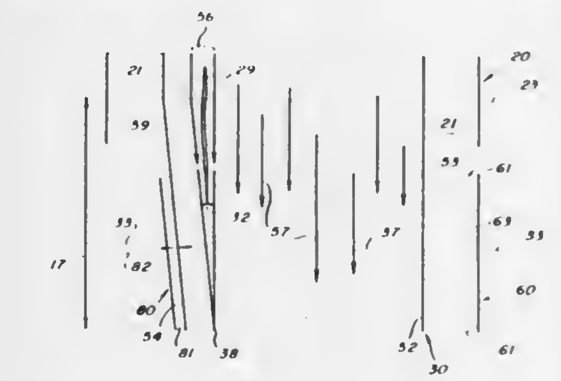




each slot defining, in part, said mandrel adjacent said slot; said slot forming said blank-grasping means.

4,619,638
SPLAYED ROLL FOLDER FOR ADHESIVE APPLICATION

F. John Herrington, Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Division of Ser. No. 297,523, Aug. 28, 1981, Pat. No. 4,419,087. This application Sep. 30, 1982, Ser. No. 429,372
Int. Cl.⁴ B31F *1/00*
U.S. Cl. 493—439 **2 Claims**



1. A method for pleating a continuously advancing flexible sheet of indeterminate length, comprising the following steps:

A. passing said sheet as a reach from a line of departure to a line of arrival; and applying selectively varied tension to said sheet at least at said line of departure and obliquely relative to said line of departure

B. passing said sheet under tension and over a composite peripheral surface from said line of arrival to a pinch zone, through a peripheral distance subtended by a peripheral angle of from 45° to 180° defined by said peripheral surface and over a circularly converging gap having a pleat angle of from about 0.25° to about 5° and ending at said pinch zone and;

C. forcing a strip of said sheet into said gap by means of said oblique tension on said sheet so as to form in said sheet a pleat parallel with the edges of said sheet.

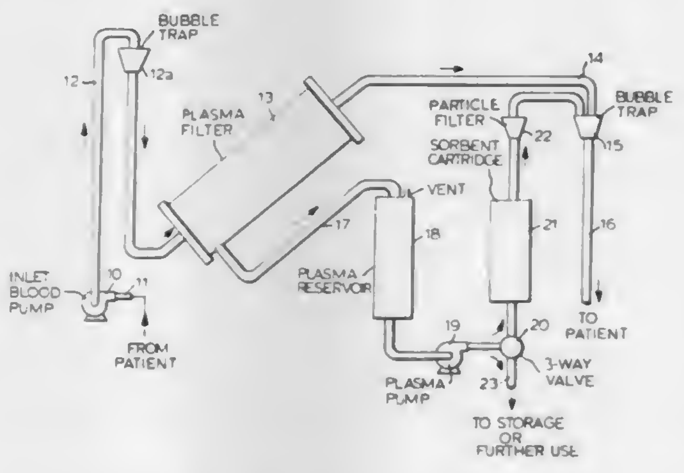
4,619,639
METHOD AND APPARATUS FOR LOW PRESSURE FILTRATION OF PLASMA FROM BLOOD

Yukibiko Nosé , Cleveland Heights, and Paul S. Malchesky, Painesville Township, Lake County, both of Ohio, assignors to Asahi Medical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 417,914, Sep. 14, 1982, abandoned, which is a continuation of Ser. No. 179,224, Aug. 18, 1980, Pat. No. 4,381,775, which is a continuation-in-part of Ser. No. 118,677, Feb. 5, 1980, abandoned. This application Sep. 11, 1985, Ser. No. 775,097

Int. Cl.⁴ A61M *1/03*

U.S. Cl. 604—6 **10 Claims**



1. An apparatus for carrying out separation of plasma from whole blood, comprising:

a filtration membrane means of a material suitable for separating plasma from whole blood and having a whole blood face and a filtrate face on opposite sides thereof and a pore size from 0.1 to 0.6 microns and having an inlet and an outlet on opposite ends of the whole blood face thereof;

a bubble trap connected to the inlet of said membrane means;

a first pump means adapted to be connected to a patient and having the discharge end connected to said bubble trap for directing blood from a patient through said bubble trap and across said whole blood face of said membrane means at a flow velocity of from 5 to 1500 cm/min and at a depth sufficient for enabling separation of plasma from the blood;

a plasma conduit means having the upstream end connected to the filtrate face of said membrane means for receiving plasma from said membrane means;

a plasma reservoir included in said conduit means and having a volume substantially larger than the remainder of said conduit means for collecting plasma;

a second pump means having the intake end connected to the downstream end of said plasma conduit means for applying reduced pressure to the filtrate face of said membrane means through said plasma reservoir for generating a positive pressure differential across said membrane means up to just below 50 mm Hg for forcing the plasma through the membrane;

a three-way valve;

a first line connected between the discharge end of said second pump means and said three way valve;

a second line connected to the outlet for said whole blood face of said membrane means and adapted to be connected to the patient;

a third line extending from said three-way valve and having a further bubble trap therein and having the end remote from said three-way valve connected to said second line downstream of said membrane means; and

a fourth line extending from said three way valve for discharging plasma therethrough;

whereby the path through which the plasma is circulated can be kept short so as to minimize the amount of heat of the blood coming from the patient which will be lost during flow of the blood and plasma through the apparatus and to minimize any adverse changes in the nature of the blood and plasma and the formation of undesirable side products due to the flow of the blood and plasma through the apparatus.

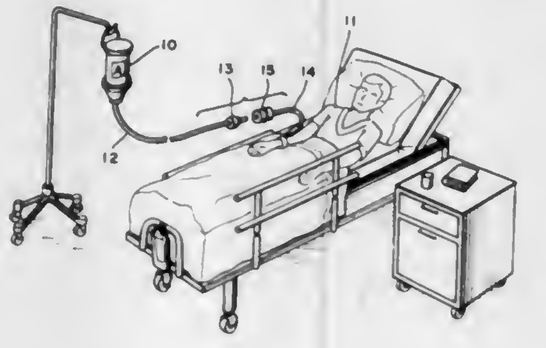
4,619,640
BLOOD TRANSFUSION CONNECTOR ASSEMBLY

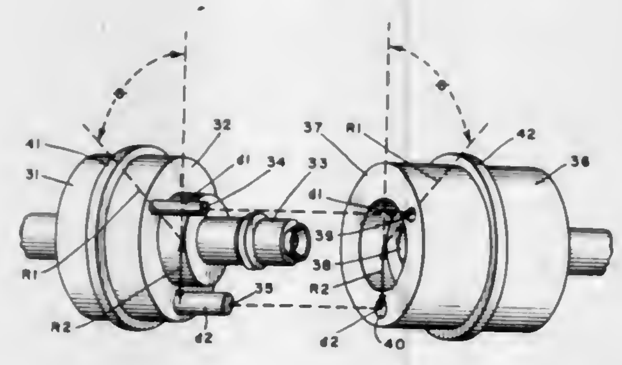
Abraham I. Potolsky, 1757 Glen Oaks Dr., Montecito, Calif. 93108, and Anton J. Blaser, 700 E. Mason St., Santa Barbara, Calif. 93103

Filed Aug. 17, 1984, Ser. No. 641,763

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—7 **16 Claims**





1. A connector assembly for use in assuring a proper blood type match when transfusing blood from a source to a patient, including:

(a) a plurality of first connectors each adapted to communicate with said source of different blood type and including a blood carrying projection of first given dimensions differing from said first given dimensions of the remaining ones of said first connectors;

(b) a plurality of second connectors each adapted to communicate with a vein in said patient and defining a blood receiving bore for communication with the patient's blood of different blood type and of second given dimensions differing from said second given dimensions of the remaining ones of said second connectors, said second given dimensions being complementary to said first given dimensions so that said first connectors are matably connectable each with only a respective one of said second connectors and only if the source and patient blood types associated with the first and second connectors match, any difference in said first and second dimensions preventing a proper connection from being carried out so that is is not possible to transfuse blood of one type into a patient having blood of another type; and

additional means on each of said first connectors and each of said second connectors for indicating a match between the source and the patient blood type and thereby further indicating that a proper connection can be made between said first and second connectors.

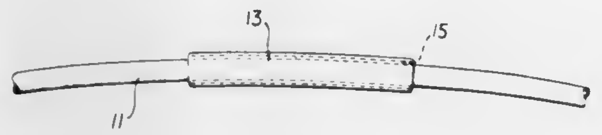
4,619,641
COAXIAL DOUBLE LUMEN ANTERIOVENOUS GRAFTS

Harry Schanzer, Larchmont, N.Y., assignor to Mount Sinai School of Medicine of The City University of New York, New York, N.Y.

Filed Nov. 13, 1984, Ser. No. 670,827

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—8 **6 Claims**



1. A filled coaxial double lumen tube for use as an implantable vascular graft in in vivo hemoaccess which comprises an outer tube positioned over an inner tube, both tubes being made of a material acceptable for use in implantable vascular grafts and having an internal and external diameter and a wall thickness, the outer tube having an internal diameter which is at least 1 mm larger than the external diameter of the inner tube creating a space between the outer tube and the inner tube and a self-sealing, nonbiodegradable, biocompatible polymer adhesive which evenly fills the space between the outer tube and the inner tube.

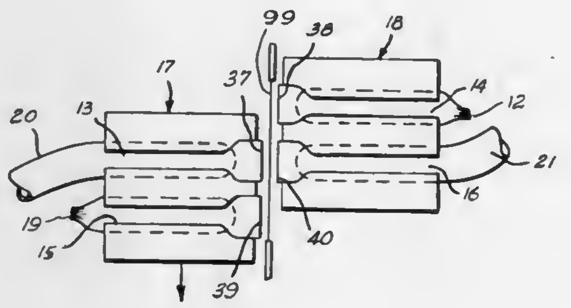
4,619,642
STERILE, COLD CUT CONNECTION PROCESS, APPARATUS AND SYSTEM

Dudley W. C. Spencer, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 12, 1985, Ser. No. 711,053

Int. Cl.⁴ A61M *25/00, 1/00*

U.S. Cl. 604—29 **31 Claims**



20. A sterile connection system for continuous ambulatory peritoneal dialysis in which a dialysis solution container with a transfer port that includes a segment of tubing is coupled to a tube extending from a patient's peritoneal cavity, wherein the improvement comprises a pair of mounting blocks adapted to receive, hold and flatten the transfer port tube and the patient's tube, cold-cutting means, means to provide movement between said blocks and said cutting means to a position such that the cutting means is between said blocks and traversing where the blocks are adapted to receive said tubes, means to realign said blocks to a position where the resulting different tube ends to be joined are aligned with and facing each other, means to separate the cutting means from the tubes that have been cut, means for heating the cut ends of the tubes, and means for urging together the tubes to be joined.

4,619,643
CATHETER

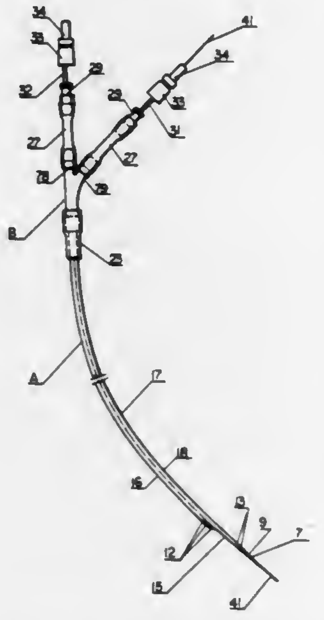
Chao-Liang Bai, 1294 Islington Ave., Apt. 404, Toronto, Ontario M9A 3K2, Canada

Filed Jun. 18, 1984, Ser. No. 621,482

Claims priority, application Canada, Jul. 25, 1983, 433088

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—43 **18 Claims**



1. A double lumen catheter for gaining vascular access to the circulatory system of a living being, comprising,

an elongated integral plastic thin walled tubular body requiring support against buckling and kinking and having a proximal end part, a distal end part and an intermediate part,

the intermediate part having an outer wall and a septum wall providing juxtaposed arterial and venous lumens,

the proximal end part being a continuation of the intermediate part and diverging into, integrally connected branches each containing the continuation of a lumen for connection to access tubing leading to a hemodialysis apparatus,

the distal end part comprising a continuation of the outer wall tapering to a slender tip merging gradually and smoothly from said body and having an internal guidewire passage leading from the venous lumen and closure means terminating the arterial lumen, short of the tip, including a part of the outer wall tapering inwards to merge with the septum wall,

the outside surface of the outer wall being smooth and continuous to offer minimum frictional resistance to insertion into the body of a patient,

the inside walls of both lumens being smooth and continuous and the transition of the lumens between the said respective parts being smooth and uninterrupted to facilitate the insertion and removal of obturators into and from the respective lumens to extend from their proximal ends to their distal ends, and

the outer wall being provided with at least one blood access orifice in the distal end part of the arterial lumen and at least one blood access orifice in the distal end part of the venous lumen.

4,619,644
CLINICAL CATHETERIZATION TECHNIQUE AND APPARATUS FOR PERFORMING SAME

Van E. Scott, 31220 Wedgewood Dr., No. 201, Walled Lake, Mich. 48088

Filed Sep. 6, 1984, Ser. No. 647,930

Int. Cl.⁴ A61M *25/00*

U.S. Cl. 604—53 **4 Claims**

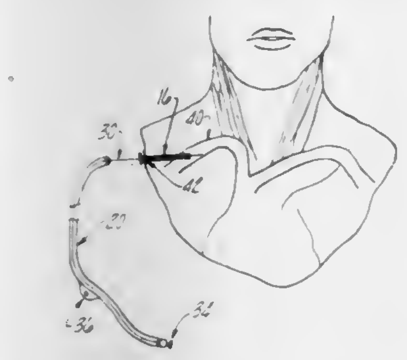
1. A catheterization techinque for use in rapid catheterization of a subject, said technique comprising the steps of:

(a) locating and preparing an insertion site;

(b) inserting into said site a needle having a shaft portion, a tip portion, and a base portion, said shaft portion being enclosed from proximate said base portion to proximate said tip portion within a hollow cylindrical introducer having a generally planar end adjacent said base portion and a lengthwise slit;

(c) pushing said needle and said introducer into said subject to a desired location;

(d) withdrawing said needle from said introducer;



(e) temporarily covering said planar end of said introducer to prevent the ingress of air;

(f) passing a guide wire having a catheter mounted thereon through said introducer into said subject;

(g) withdrawing said introducer from said location and said site;

(h) removing said introducer from said wire at said lengthwise slit;

(i) threading a catheter positioned about said wire into said subject to a desired location;

(j) withdrawing said wire from said catheter.

4,619,645
DISPOSABLE ENEMA UNIT

Richard P. Hussey, West Boxford, Mass., assignor to Aid-Pack, Inc., Gloucester, Mass.
Continuation of Ser. No. 579,183, Feb. 10, 1984, abandoned. This application Feb. 4, 1985, Ser. No. 678,875
Int. Cl.⁴ A61M *3/00*
U.S. Cl. 604—111 **16 Claims**

1. A disposable enema unit comprising:

a fluid receptacle adapted to be filled with sterile enema fluid;

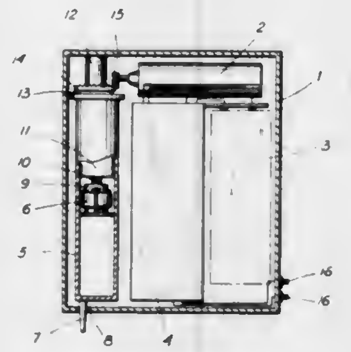
a rectal tip having one end connected to said receptacle and a passage therethrough communicating with the interior of said bottle for allowing exit of fluid from said receptacle;

a break-off tab connected to the other end of said rectal tip, said break-off tab completely sealing said passage to prevent contamination of said fluid; and

a protective sleeve attached to said break-off tab covering said rectal tip when said break-off tab is attached to said rectal tip and coming away from said rectal tip when the break-off tab is removed.

4,619,646
DEVICE FOR THE DELIVERY-DOSING OF INJECTABLE PRODUCTS

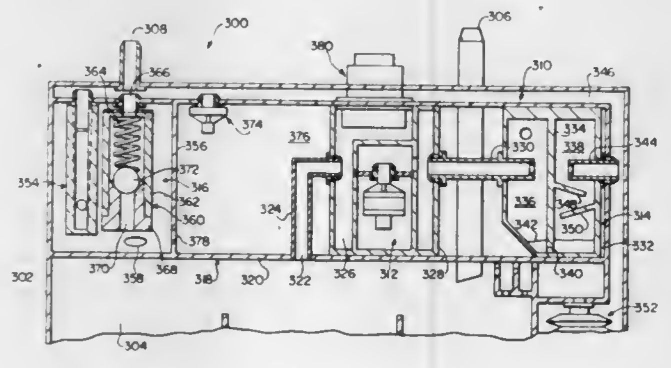
Jesus A. Fernández-Tresguerres Hernandez, and Vincente M. de Garcini Guedas, both of Avda. de los Toreros, 73, 28028 Madrid, Spain
Filed Jan. 22, 1985, Ser. No. 693,060
Claims priority, application Spain, Jan. 25, 1984, 277.095
Int. Cl.⁴ A61M *5/20*
U.S. Cl. 604—154 **3 Claims**



1. Device for the delivery-dosing of injectable products comprising a case having reduced dimensions in the interior of which an electromotor with its corresponding feed battery and an electronic programming device or Timer are disposed, the output shaft of the electromotor positioned orthogonally relative to the plunger of a syringe, the outlet tube of which passes through the walls of the case, the plunger at its posterior end fitting into two crossed slots of the head of a rod axially threaded to a cylindrical element located in the posterior zone of the tube of the syringe, which element projects through the nozzle of the syringe forming a portion having a smaller diameter, determining a stepping on which a friction clutch comprised of a bushing provided at its free end with a crown wheel, engages, which wheel constantly meshes with a pinion disposed in the output shaft of the electromotor, the electronic programming device also being provided with two manually operated controls mounted outside the case.

4,619,647
SURGICAL DRAINAGE APPARATUS

Leonard D. Kurtz, Woodmere, and Joseph M. LiCausi, Port Jefferson Station, both of N.Y., assignors to BioResearch Inc., Farmingdale, N.Y.
Division of Ser. No. 606,968, May 4, 1984. This application Aug. 15, 1985, Ser. No. 766,012
Int. Cl.⁴ A61M *1/00*
U.S. Cl. 604—318 **5 Claims**



1. A suction control device for maintaining a relatively constant negative pressure in a collection chamber of a drainage apparatus over wide variations in applied suction, comprising:

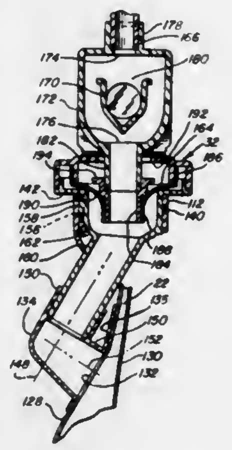
a first passageway to the collection chamber and a second passageway to a source of suction,

a fine pressure adjusting means for finely adjusting the pressure in said collection chamber including a first chamber and a resiliently biased fine one-way valve disposed in said first chamber so as to divide said first chamber into a vent side which is vented to atmosphere and a suction side which is fluidly connected to said first passageway to the collection chamber, said fine one-way valve permitting fluid flow only from said vent side to said suction side when the negative pressure in the collection chamber slightly exceeds a desired value;

a gross pressure adjusting means for grossly adjusting the pressure in said collection chamber including a second chamber and a resiliently biased gross one-way valve disposed in said second chamber so as to divide said second chamber into a vent side which is vented to atmosphere and a suction side which is fluidly connected to the said second passageway to a source of suction and downstream of said suction side of said first chamber, said gross one-way valve variably permitting a sufficient gross air flow from said vent side to said suction side of said second chamber to maintain the negative pressure in said suction side of said second chamber at a value slightly greater than the desired value for the collection chamber over a wide range of applied surfaces whereby this negative pressure is applied to said suction side of said first chamber where the negative pressure is slightly reduced to the desired value which is in turn applied to the collection chamber, and a third passage way interconnecting the suction sides of said first and second chambers whereby fluid flow passes from the collection chamber through said first passageway and said first chamber into said second chamber and to said source of suction througuh the second passageway.

4,619,648
CONNECTION APPARATUS FOR SIDE CONNECTION TO FLUID COLLECTION BAG

Lucien M. Rath, Milwaukee, Wis., and William J. Dunn, Libertyville, Ill., assignors to The Kendall Company, Boston, Mass.
Filed Dec. 20, 1984, Ser. No. 683,993
Int. Cl.⁴ A61M *1/00*
U.S. Cl. 604—326 **13 Claims**



1. Apparatus for connection of a fluid source to a flexible bag having front and back walls on opposite sides of a plane of symmetry of the bag, comprising:

a relatively rigid header attached to the flexible bag adjacent an inlet opening at the front of the bag;

a fluid conductive connector held in coupling engagement by said header and having an elongate portion for making fluid connection with the front of the flexible bag through the inlet opening thereof, said portion extending at an acute angle relative to the back of the bag when empty and making connection with the front of the bag at a location laterally offset from the plane of symmetry;

a female coupler attached to the front of the bag and having a coupler axis extending in a direction parallel to the back of the bag thereat;

said coupler having;

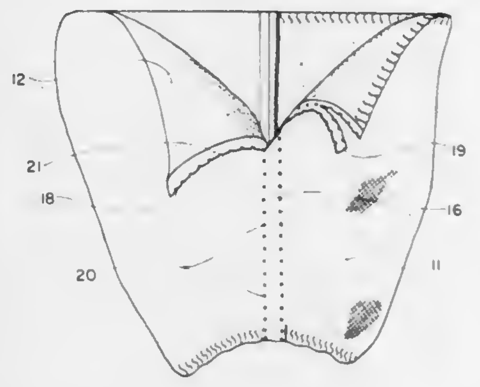
a first member extending at a right angle relative to the front of the bag, and

another portion in fluid communication with said first portion which extends in a direction transverse to that of the first portion;

said elongate portion holding the side of the bag adjacent the inlet opening at an angle extending away from the back wall.

4,619,649
DISPOSABLE TODDLER TRAINING PANTY

Joan Roberts, 2337 Edgebrook Dr., Modesto, Calif. 96351
Filed Apr. 30, 1984, Ser. No. 605,641
Int. Cl.⁴ A61F *13/16*
U.S. Cl. 604—396 **10 Claims**



1. A disposable toddler training panty, comprising a front panel having a non-permeable outer layer and a soft inner layer,

a rear panel having a non-permeable outer layer and a soft inner layer,

said front and rear panels being contiguous through a crotch area,

a thin absorbent pad interposed between said outer and said inner layers through said crotch area, and

separable side seams joining said front and rear panels along side edge portions thereof,

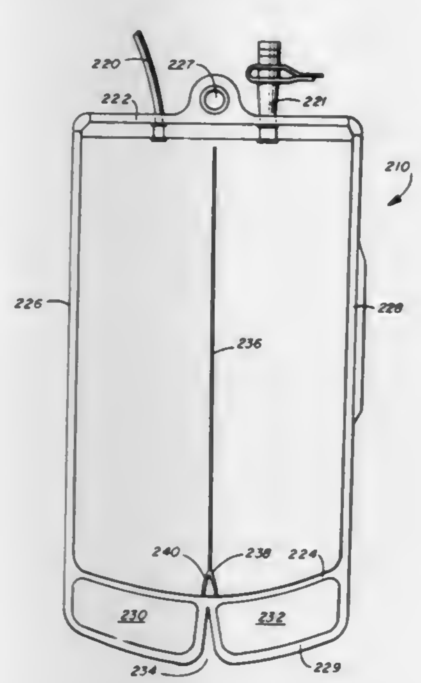
wherein said separable side seams further comprise, overlapping an edge portion of said front panel with a similar edge portion of said rear panel with only said outer layers in contact and bonding same, said same being provided with a plurality of perforations along the length thereof providing a means of seam separation by tearing same, and whereby separating both said side seams allows for easy removal of said toddler training panty from a toddler.

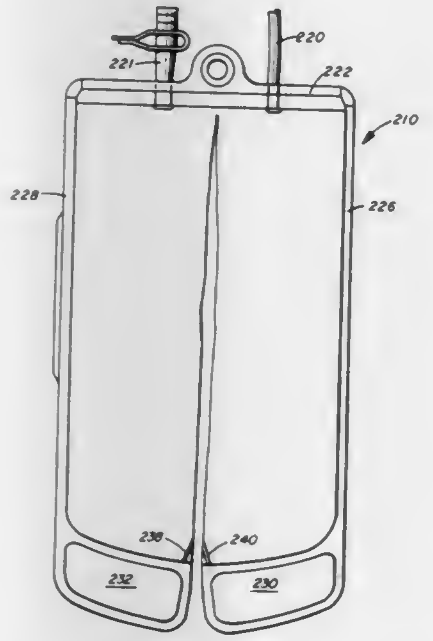
4,619,650
PLASMA BAGS

Leonard A. Wisdom, West Pymble, Australia, assignor to Miles Laboratories, Inc., Elkhart, Ind.
Filed Apr. 9, 1985, Ser. No. 721,637
Claims priority, application United Kingdom, Jul. 13, 1984, 8417914
Int. Cl.⁴ A61J *1/00*
U.S. Cl. 604—408 **10 Claims**

1. A plasma transfer bag of flexible sterilizable material, the bag having two side walls and being closed at the base, the bag having an extension to the base for gripping or holding the bag, the extension flap having a break therein extending to the base of the bag, the bag having a line of weakness in the walls extending from the break to the top of the bag, the bag on each side of the line of weakness being reinforced by means of a weld adjacent the base and extending no more than about 10% of the length of the line of weakness from the base of the bag,

the weld adapted to control tearing of the bag from the base to the top of the bag when opposing forces are applied to the





extension in a transverse direction parallel to the base of the bag to cause the bag to split and eject the contents.

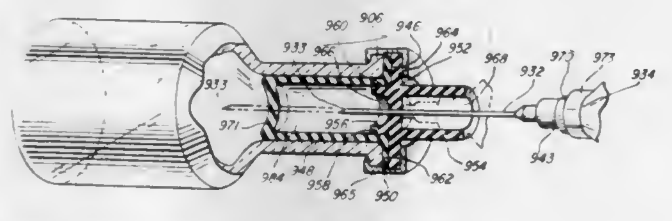
4,619,651
ANTI-AEROSOLING DRUG RECONSTITUTION DEVICE

Rudolph J. Kopfer, 1321 S. Eliseo Dr., Suite 1, Greenbrae, Calif. 94904, and Robert E. Smith, Smith Goggles, P.O. Box 2999, Ketchum, Id. 83340

Continuation-in-part of Ser. No. 600,504, Apr. 16, 1984. This application Aug. 27, 1984, Ser. No. 644,449

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—415 **20 Claims**



1. In combination: a vial having a mixing chamber and a neck for containing a fluid supply and an opening in the neck for gaining access to the mixing chamber;

an insert extendible through said opening and providing a sealed holding chamber at least partially within said neck; and

means for securing the insert to the vial to prevent separation therefrom and so that the insert seals the vial against the escape of fluid from the mixing chamber,

whereby the cannula of a syringe can be extended through the insert to establish fluid communication with the mixing chamber, and upon removing said cannula from the insert, aspirating fluid from the mixing chamber and from the syringe is substantially confined in the holding chamber to prevent exposure by the user to the fluid.

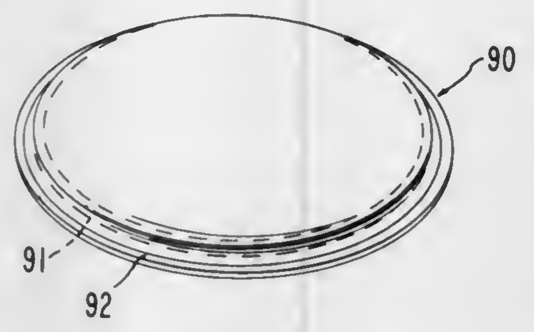
4,619,652
DOSAGE FORM FOR USE IN A BODY MOUNTED PUMP

James B. Eckenhoff, Los Altos; John R. Peery, Palo Alto, and Felix A. Landrau, Milpitas, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 452,523, Dec. 23, 1982, Pat. No. 4,452,561. This application Aug. 19, 1985, Ser. No. 766,627

Int. Cl.⁴ A61M *5/14*

U.S. Cl. 604—415 **3 Claims**



1. A container for a dosage of a biologically active agent in fluid form adapted to be received within the housing of a pump for delivery into the body of a patient comprising a closed, collapseible bag impermeable to the material comprising said dosage, said bag having a basal surface and a self-sealing welt extending circumferentially around said bag in a plane substantially parallel to and spaced apart from said basal surface.

4,619,653
APPARATUS FOR DETECTING AT LEAST ONE PREDETERMINED CONDITION AND PROVIDING AN INFORMATIONAL SIGNAL IN RESPONSE THERETO IN A MEDICATION INFUSION SYSTEM

Robert E. Fischell, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Continuation-in-part of Ser. No. 34,155, Apr. 27, 1979, Pat. No. 4,373,527. This application Nov. 4, 1982, Ser. No. 439,139

The portion of the term of this patent subsequent to Feb. 15, 2000, has been disclaimed.

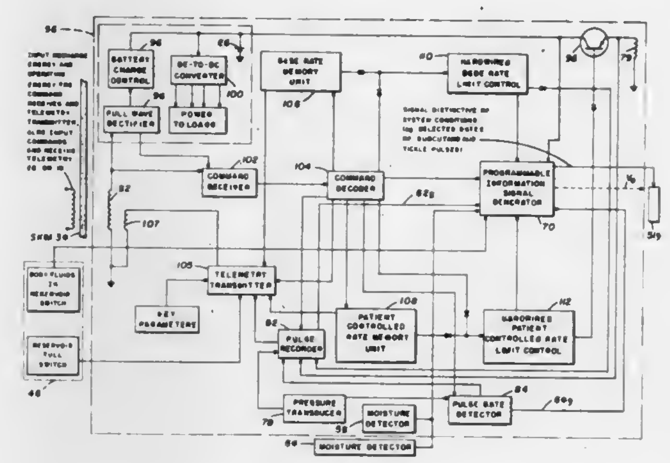
Int. Cl.⁴ A61M *7/00*

U.S. Cl. 604—891 **9 Claims**

1. An infusion system for providing medication to a living body of a patient comprising:

an infusion apparatus for implantation in said living body, including,
  a medication reservoir for storing selected medication;
  a pump means for infusing a fixed dosage of said medication into said living body with each pump actuation;
  an infusion output from which doses of medication exit the infusion apparatus and are dispensed to the patient;
  a control means for applying an electrical pulse to the pump means to delivery said fixed dosage of medication;
  a means for detecting the presence of at least one predetermined condition regarding the operational state of the infusion apparatus, wherein said detecting means comprises a condition sensor, disposed at the infusion output, for sensing the dispensing of a dose of medication,

and, a comparing means for detecting when the number of medication dosages detected by said condition sensor deviates from the number of applied electrical pulses generated by said control means; and,



a means, operably coupled to said detecting means, for alerting said patient when said at least one predetermined condition is detected.

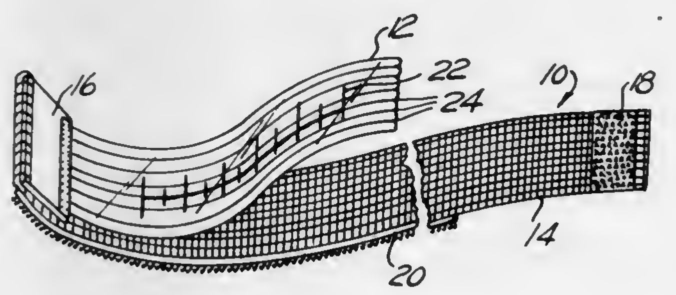
4,619,654
OINTMENT APPLICATOR

George Abplanalp, 1775 1E Florence Ave., Englewood, Fla. 33533

Continuation-in-part of Ser. No. 569,726, Jan. 10, 1984, abandoned. This application Jan. 4, 1985, Ser. No. 688,815

Int. Cl.⁴ A61M *7/00*

U.S. Cl. 604—897 **6 Claims**



1. A medication ointment applicator for applying a predetermined amount of medication ointment to a person's skin, said applicator comprising a band of flat plastic pliable film, a band of elastic material of a greater length than said band of plastic film, said band of plastic film being attached to said band of elastic material proximate an end of said band of elastic material, a scale longitudinally disposed substantially along the centerline of the band of plastic film provided with length graduations for measuring a length of ribbon of medication ointment applied to a surface of said plastic film for engagement with a person's skin, strip means disposed surrounding an open area of said plastic film provided with said scale for preventing excessive lateral and longitudinal spreading and seepage of said medication ointment when said applicator is applied to a person's skin, and fastening means at an end of said band of elastic material for attaching said end to a portion of said band of elastic material whereby said applicator is wound around a person's limb with said plastic film carrying said ointment in engagement with the skin of said person.

4,619,655
PLASTER OF PARIS AS A BIORESORBABLE SCAFFOLD IN IMPLANTS FOR BONE REPAIR

Jacob S. Hanker; Bill C. Terry; Wallace W. Ambrose, and Cecel R. Lupton, all of Chapel Hill, N.C., assignors to University of North Carolina, Chapel Hill, N.C.

Filed Jan. 26, 1984, Ser. No. 574,168

Int. Cl.⁴ C09K *3/00*

U.S. Cl. 623—1 **18 Claims**

1. An animal implant comprising a scaffold material composed of Plaster of Paris and a non-bioresorbable calcium material bound within said Plaster of Paris.

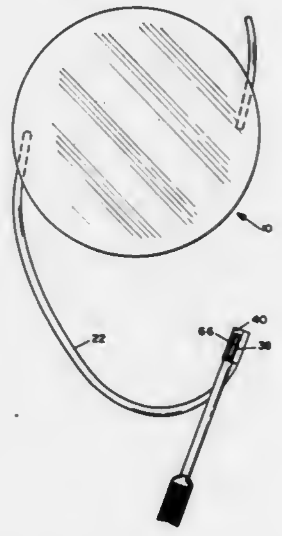
4,619,656
INTRAOCULAR LENS

Richard L. Lindstrom, 1065 W. Ferndale Rd., Wayzata, Minn. 55391

Filed Jan. 10, 1984, Ser. No. 569,610

Int. Cl.⁴ A61F *2/16*

U.S. Cl. 623—6 **10 Claims**



1. In combination, intraocular lens with a key-hole loop and a turn-key insertion instrument comprising:

a. intraocular lens including a lens optic at least one loop outwardly from said lens optic, and at least one non-circular key hole positioned in at least one of said loops; and
b. turn-key insertion instrument including a key having a corresponding geometrical relationship to said key-hole providing for key insertion of the intraocular lens into the eye.

4,619,657
FLEXIBLE INTRAOCULAR LENS HOLDER

Richard H. Keates, 264 N. Drexel Ave., Columbus, Ohio 43209; Richard T. Schneider, 3550 NW. 33rd Pl., Gainesville, Fla. 32605; Timothy E. Roxey, 2222 NW. 36 Ter., Gainesville, Fla. 32605, and John D. Cox, 3416 SE. 29th Blvd., Gainesville, Fla. 32601

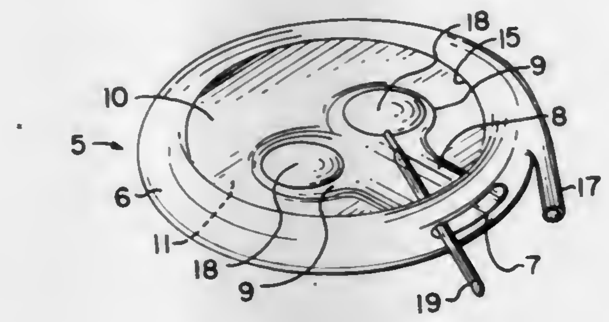
Continuation of Ser. No. 648,079, Sep. 7, 1984, abandoned. This application Dec. 23, 1985, Ser. No. 814,080

Int. Cl.⁴ A61F *2/16*

U.S. Cl. 623—6 **29 Claims**

1. An intraocular lens structure useful to position and secure a plurality of artificial lenses in the interior of a human eye and insertable through an incision in said eye, said lens structure

comprising a flexible lens holder incorporating means to affix said holder within the interior of the eye, and said lens holder



comprising means adapted to individually secure said lenses in a coplanar relationship adjacent to the irial opening of said eye.

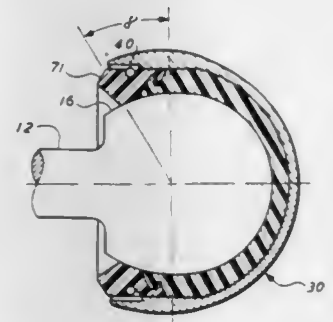
4,619,658
SPHERICAL KINEMATIC JOINT

Michael J. Pappas, 61 Gould Pl., Caldwell, N.J. 07006, and Frederick F. Buechel, 76 Crest Dr., South Orange, N.J. 07079

Division of Ser. No. 351,760, Feb. 24, 1982, abandoned. This application Oct. 1, 1984, Ser. No. 656,525

Int. Cl.⁴ A61F *2/34*

U.S. Cl. 623—22 **11 Claims**



1. An improved spherical joint prosthesis for providing three degrees of rotational movement between two bones, comprising:

a first component for engaging one of said two bones and providing internally a first seat;

a second component for engaging the other of said two bones and including a neck and a spherical head;

a bearing insert comprising a generally semi-hemispherically shaped primary bearing segment having a forward portion and a separate generally annularly shaped, radially split collar having a rearward portion, said primary bearing segment and said collar cooperatively providing internally a second seat having an opening for receiving said head; said forward and rearward portions provided respectively with complementarily shaped mating means, said mating means form said primary bearing segment and said collar into a sub-assembly whereupon engagement of said complementarily shaped mating means allows said collar to expand radially outwardly permitting said head to be inserted through said opening and once said head is received in said second seat said collar is able to contract radially inwardly without separation from said primary segment prior to and during assembly with said first and second component;

said bearing insert and said first component provided with cooperative retaining means for retaining said bearing insert within said first seat upon insertion of said bearing insert into said first component; and

upon said head being received within said second seat with said neck extending through said opening, said bearing insert for being received and retained within said first seat with said first component confining said head within said second seat whereby said rotational movement between said two bones is permitted, said bearing insert providing an overlap angle for preventing dislocation of said head from said bearing insert during said rotational movement.

4,619,659
HIP ENDOPROSTHESIS

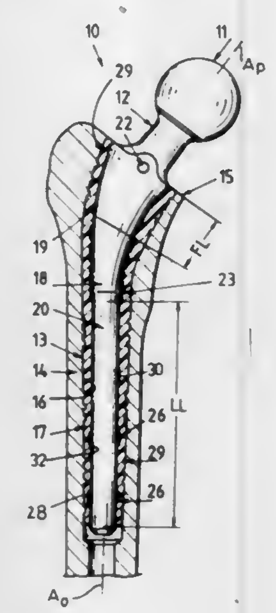
Ulrich Witzel, Wittener Str. 73d, D-5600 Wuppertal, Fed. Rep. of Germany

Filed Sep. 21, 1984, Ser. No. 653,519

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1983, 3334058

Int. Cl.⁴ A61F *2/32*

U.S. Cl. 623—23 **12 Claims**



1. A hip endoprosthesis for mounting in a distally tapering recess that opens at the proximal end of a femur, the prosthesis comprising:

a nonmetallic sheath imbedded in the recess so as to be generally integral with the femur and having an inner surface with a distally tapering proximal portion, a uniform-section distal portion, and an intermediate portion between the proximal and distal portions and generally of greater cross section than the distal portion;

a ball shaped to fit into an acetabulum;

a neck extending distally from this ball and out of engagement with the sheath and femur;

a stem unitarily formed of metal with the neck and ball and engaged in the sheath, the stem having an outer surface with a tapered proximal surface portion complementary to and tightly fitted in the proximal portion of the sheath surface and a uniform-section distal portion in the distal surface portion of the sheath surface, the stem substantially only engaging the sheath at its tapered proximal surface portion and its uniform-section distal portion, the intermedicate portion being spaced from and forming an annular compartment with the stem between the proximal and distal portions; and

means between the distal portions of the inner and outer surfaces for relative sliding of the stem and the sheath at the distal portions, whereby relative motion of the proximal surface portions is impossible but relative sliding motion of the distal surface portions is possible.

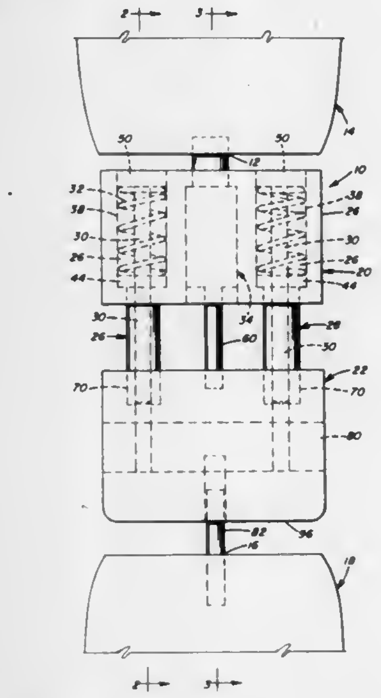
4,619,660
COMPRESSIBLE ROTATIONAL ARTIFICIAL JOINT

Jean E. Christiansen, 15 Westwood Rd. South, Massapequa Park, N.Y. 11762; Maryanne Fitzgerald, 19 Brown Pl., Red Bank, N.J. 07701; Mitchell G. Moeller, 4938 Ten Mills Rd., Columbia, Md. 21044; Artemis Pascalides, P.O. Box 4488, Washington, D.C. 20017, and R. Thaddeus Vayda, 3051 Mimon Rd., Annapolis, Md. 21403

Filed Oct. 15, 1984, Ser. No. 661,105

Int. Cl.⁴ A61F *2/64*

U.S. Cl. 623—46 **19 Claims**



12. An artifical joint comprising:

a first housing;

a second housing;

rotating means in said second housing;

means mounting said first and second housings for movement of said first and second housings toward each other into a first position and away from each other into a second position, said movement being along a substantially linear path; and

means acting on said rotating means for limiting movement of said rotating means when said first and second housings are in said first position and for permitting movement of said rotating means when said first and second housings are in the second positon.

4,619,661
PROSTHESIS FOOT

Robert Axelsson, Hunnerydsvágen 92, S-561 46 Huskvarna, Sweden

PCT No. PCT/SE83/00070, § 371 Date Nov. 3, 1983, § 102(e) Date Nov. 3, 1983, PCT Pub. No. WO83/03050, PCT Pub. Date Sep. 15, 1983

PCT Filed Mar. 3, 1983, Ser. No. 551,987

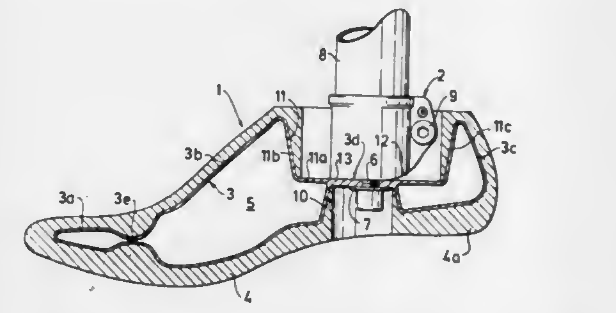
Claims priority, application Sweden, Mar. 5, 1982, 8201389

Int. Cl.⁴ A61F *2/66*

U.S. Cl. 623—55 **11 Claims**

1. An artificial foot comprising a flexible and elastic shell of unitary construction having a continuous hollow core, said shell having at least a mid-foot portion, a heel portion, and a recessed portion wherein said shell is formed with predetermined areas of elasticity so that articulation and resiliency of said foot resembles the heel strike, dorsal stop and toe rolling pattern of a natural foot during walking;

said recessed portion is spaced a distance from said sole portion and having a substantially planar bottom portion surrounded by side walls thereby forming substantially a blind bore;



said foot being coupled to a lower leg means through a substantially rigid foot adapter, said adapter being directly connected to said foot in said recessed portion such that the foot adapter contacts said bottom portion without the mediation of any articulating elements such that the joint and supporting function which occur during walking are achieved by substantially direct contact between the foot adapter and recessed portion and the predetermined areas of elasticity of said shell.

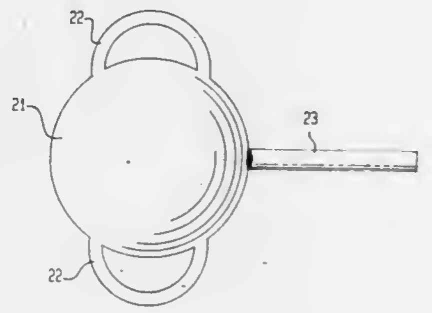
4,619,662
INTRAOCULAR LENS

Albert M. Juergens, Jr., 45 Windsor Ct., Box 418, Norwood, N.J. 07648

Filed Apr. 19, 1985, Ser. No. 724,875

Int. Cl.⁴ A61F *2/16*

U.S. Cl. 623—6 **1 Claim**



1. Intraocular lens for an eye comprising a preformed molded mantle or lens having an accurately molded and polished exterior surface and a hollow interior of a first determined volume, said hollow interior being filled with a bio-compatible silicone elastomer having a predetermined volume equal to said first predetermined volume of the cavity whereby said lens assumes a predetermined refractory power.

CHEMICAL

4,619,663

PROCESS FOR THE BLEACHING OF TEXTILES AND STABILIZING COMPOSITION THEREFOR

Gerard Tatin, Mulhouse, France, assignor to Atochem, France
Filed Apr. 25, 1984, Ser. No. 603,708
Claims priority, application France, May 10, 1983, 83 07766
Int. Cl.⁴ D06L *3/00*
U.S. Cl. 8—107 **5 Claims**

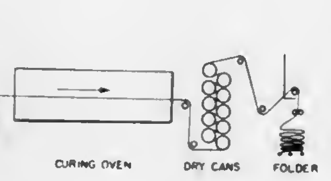
1. A process for the bleaching of cellulose-containing fibers or fabrics in a bleaching bath containing an oxidizing agent comprising adding to said bath a stabilizing composition consisting essentially of:

A metal chelating agent	1–2 g/l of bath
Sodium metalsilicate pentahydrate	0–8 g/l of bath
Sodium tetraborate decahydrate	5–10 g/l of bath
A soluble alkali phosphate	10–15 g/l of bath (calculated in weight of anhydrous product)
A non-ionic wetting agent	1–2 g/l of bath

4,619,664

METHOD OF IMPROVING THE ABRASION RESISTANCE OF RECYCLED WOOL

Randall R. Bresee, St. George, and Barbara M. Reagan, Manhattan, both of Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.
Filed Mar. 4, 1985, Ser. No. 707,890
Int. Cl.⁴ D06M *3/02, 13/00*
U.S. Cl. 8—128 A **9 Claims**



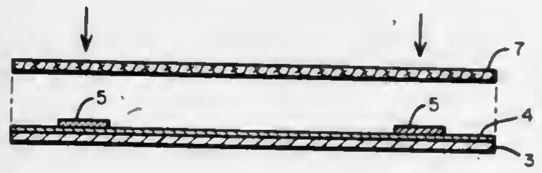
1. The method of improving the abrasion resistance of fabric composed of at least 50% by weight of recycled wool fibers, said recycled fibers containing fissures in their cuticle layers exposing interior protein, comprising:

(a) impregnating the fabric with an aqueous treating solution in the liquid phase including a bifunctional monomer selected from the group consisting of acrylic and methyacrylic type monomers, said monomer containing a vinyl group and a group capable of reacting with the free hydroxyl and/or amine groups of the exposed interior protein of wool fiber, said treating solution containing a polymerization initiator for said monomer and being adapted to promote reaction of the recycled wool with the monomers but being applied to said fabric at a temperature below its polymerization initiation temperature;
(b) washing said fabric with water at a temperature below said polymerization initiation temperature to remove said monomer from the exterior surfaces of the recycled wool fibers while leaving said monomer within said cuticle layer fissures of the recycled fibers; and
(c) curing said fabric by heating it at a temperature above the polymerization initiation temperature of said monomer.

4,619,665

SHEET CONTAINING HEAT TRANSFERABLE DYE AND SELECTIVE BLOCKING AGENT FOR HEAT TRANSFER PRINTING

Carl E. Sideman, Columbia; Thomas E. Lewis, Lexington, both of S.C., and Michael T. Nowak, Gardner, Mass., assignors to Technographics Printworld, Inc., Fitchburg, Mass.
Filed Mar. 11, 1985, Ser. No. 710,745
Int. Cl.⁴ B41M *5/26*
U.S. Cl. 8—402 **19 Claims**



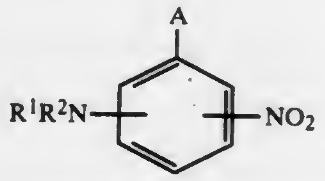
10. A method for heat transfer dye printing comprising (1) providing a transfer sheet comprising a substrate, at least one heat transferable dye being on one surfaces of the substrate which dye sublimes or vaporizes at a temperature in the range of from about 160° to 240° C., and a polyehtyleneimine blocking agent deposited on or below at least a portion of said at least one dye, said polyethyleneimine being chemically reactive with at least one of said heat transferable dyes; (2) placing said transfer sheet in contact with a material to be printed; and (3) heating said transfer sheet to a temperature and for a time sufficient to cause the heat transferable dye which is not in contact with the blocking agent to transfer to the surface of said material to be printed.

4,619,666

HAIR DYES CONTAINING AMINO-NITROBENZOIC ACID OR AMINO-NITROBENZENE SULFONIC ACIDS AS SUBSTANTIVE DYES

David Rose, Hilden; Edgar Lieske, Duesseldorf, and Norbert Maak, Neuss, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany
Filed Jul. 8, 1985, Ser. No. 752,889
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1984, 3425151
Int. Cl.⁴ A61K *7/13;* **C07C** *101/52;* **C07D** *295/08*
U.S. Cl. 8—414 **15 Claims**

1. A hair coloring preparation containing at least one substantive hair dye compound selected from the group consisting of (1) compounds having the formula



wherein A is an acidic group selected from the group consisting of —SO_3H and —COOH, R^1 and R^2 each are selected from the group consisting of hydrogen, C_1–C_4-alkyl, and —$(CH_2)_n$—X, where n is an integer from 2 to 4 and X is, a member selected from the group consisting of —OH and —NR^3R^4, where R^3 and R^4 each are selected from the group consisting of hydrogen, C_1–C_4-alkyl, C_2–C_4-hydroxyalkyl, and R^1 and R^2, together with the nitrogen are heterocycles selected from the group consisting of piperidino, pyrrolidino, piperazino and morpholino and (2) water-soluble salts thereof, in an amount sufficient to dye hair as a substantive hair dye.

4,619,667

METHOD FOR INCREASING COLOR DENSITY AND IMPROVING COLOR FASTNESS OF DYED FABRICS

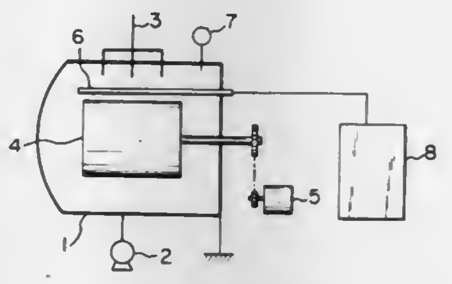
Susumu Ueno; Hirokazu Nomura, both of Ibaraki; Shinobu Hashizume, and Toshiaki Nishide, both of Fukui, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd, Tokyo; Emori & Co., Ltd and Nikka Chemical Ind. Co., Ltd, all of, Japan

Continuation-in-part of Ser. No. 557,667, Dec. 2, 1983, abandoned. This application Jun. 11, 1985, Ser. No. 743,506

Claims priority, application Japan, Feb. 12, 1982, 57-211692; Feb. 12, 1982, 57-211691

Int. Cl.^{4} D06P *5/20*

U.S. Cl. 8—444 **4 Claims**



1. A method for increasing the color density and color fastness of a dyed fabric material composed of at least 50% by weight of a synthetic fiber which comprises the steps of: (a) treating a dyed fabric material with an amino-modified organopolysiloxane or a dimethylpolysiloxane having a viscosity in the range from 10^2 to 10^8 centistokes at 25° C.; and (b) then exposing the dyed fabric material to low temperature plasma in an atmosphere of an inorganic gas under a pressure in the range from 0.01 Torr to 10 Torr.

4,619,668

DYED WRINKLE-RESISTANT AND DURABLE-PRESS COTTON FABRICS

John G. Frick, Jr., New Orleans, La.; Brian W. Jones, Raleigh, N.C.; Robbie L. Stone, Cary, N.C., and Michael D. Watson, Raleigh, N.C., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 11, 1985, Ser. No. 774,698

Int. Cl.^{4} D06P *5/00*

U.S. Cl. 8—496 **9 Claims**

1. A process for producing a dyed fabric composed entirely or in part of cellulose that has been rendered wrinkle-resistant and selfsmoothing comprising:

(a) treating a cellulosic fabric with a crosslinking agent selected from the group consisting of: an adduct from an amide and glyoxal, an acetal derived from a dialdehyde, and an aldehyde other than formaldehyde, and an acidic catalyst, said crosslinking agent and acid catalyst being of sufficient amounts and concentrations to impregnate and render said cellulosic fabric wrinkle-resistant and self-smoothing;
(b) and then drying and curing said fabric for sufficient time at sufficient temperatures to render said cellulosic fabric wrinkle-resistant and self-smoothing;
(c) subsequently dyeing the cured fabric.

4,619,669

METHOD FOR INCREASED MINE RECOVERY AND UPGRADING OF LIGNITE

Elvis E. Jones, Lake Jackson; Terry A. Pearce, Lake Jackson; Dacon C. Laird, III, Lake Jackson, and James H. Everitt, Fairfield, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 23, 1984, Ser. No. 674,382

Int. Cl.^{4} C10L *9/00;* **B03B** *5/60*

U.S. Cl. 44—1 G **1 Claim**

1. A process for upgrading lignite ores to remove a substantial proportion of the non-combustible ash content associated with the lignite which comprises:

(1) sizing by crushing to a maximum top size of less than about 6 inches in two directions (axis's)
(2) separating the clay and/or rock (gangue) which are discarded and lignite from each other in a float-sink gravity separator,
(3) directing the float containing the lignite and some small particles of clays to a screen deck to size the float into at least three portions,
(4) washing the first two screen proportions to free them of clays,
(5) collecting the third portion consisting of fines and water as an underflow from said deck,
(6) treating the underflow in a hydrocyclone to recover a substantial quantity of the lignite associated with some clays as the overflow and an aqueous stream containing the remainder of the clays and some lignite as the underflow and discarding.
(7) treating overflow to effectuate a size separation of the lignite substantially free of clays as underflow and the clays with some fine lignites as the overflow.
(9) seive bend dewatering and washing and drying the underflow and combining the resultant product with the +28 mesh lignite product,
(10) flocculating (clarifier-thickener) the refuse from the seive bend and the overflow from (7) to about 35% solids,
(11) further concentrating the refuse, as by filtration, to a discardable solid.

4,619,670

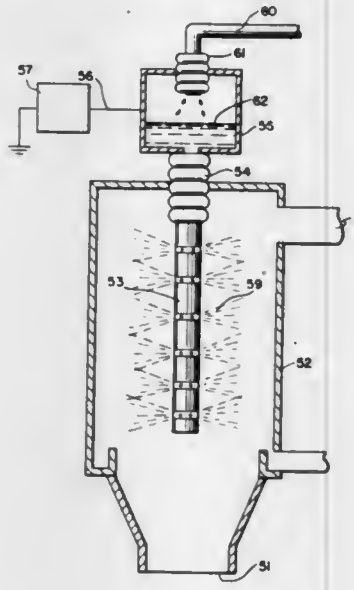
APPARATUS FOR DIELECTROPHORETICALLY ENHANCED PARTICLE COLLECTION

David H. Malcolm, 18 Deer Run Dr., Randolph, N.J. 07869, and George P. T. Wilenius, R. R. #1, Dunrobin, Ontario, Canada

Continuation-in-part of Ser. No. 605,399, Apr. 30, 1984, Pat. No. 4,541,844. This application Sep. 16, 1985, Ser. No. 776,760

Int. Cl.^{4} B03C *3/16*

U.S. Cl. 55—107 **5 Claims**



1. Apparatus for effecting dielectrophoretically enhanced separation of small sized particulates from a moving gas stream comprising

conduit means for confining said moving gas stream bearing said particulates,
a high potential electrode element disposed coaxially within said conduit means,
means for introducing a spray of selectively sized and charged liquid droplets of from 10 to 60 microns in diameter outwardly directed from said high potential electrode element into said gas stream in a path relative to the advance of said gas stream to maximize geometric interdiction of said charged droplets and the particulates in said gas stream,
means associated with said spray introduction means for limiting the size of said introduced liquid droplets to 60 microns or less in diameter,
means for applying an electrical charge of greater than 10^{-3} coulombs per kilogram to said emitted spray Oroplets, such charge not being greater than 35 percent of the Rayleigh limit therefore and,
means for regulating the volume of liquid so introduced in droplet form to be in the order to about three ten thousandths that of the volume of gas being treated per unit time to minimize space charge degradation of the collecting environment with attendant maximization of dielectrophoretic attraction forces therewithin.

4,619,671

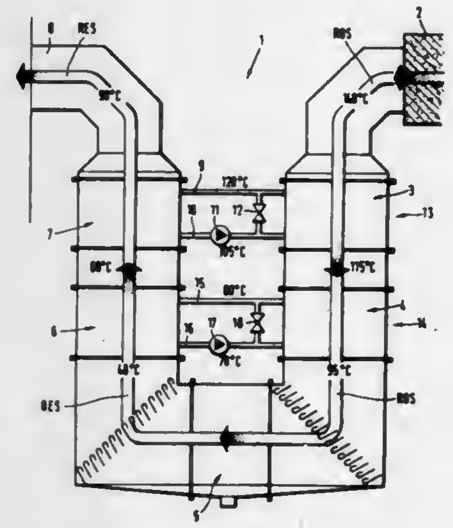
ENERGY TRANSFER DEVICE FOR DESULFURIZING INSTALLATION

Klemens Ruff, Bochum; Ludwig Suhr, Essen, and Paul Paikert, Witten, all of Fed. Rep. of Germany, assignors to GEA Luftkuehlergesellschaft Happel GmbH & Co, Bochum, Fed. Rep. of Germany

Filed May 29, 1985, Ser. No. 738,735

Int. Cl.^{4} B01D *47/05, 53/14*

U.S. Cl. 55—222 **15 Claims**



1. An energy transfer device for use in a desulfurizing installation including a first heat exchanger arranged in a stream of crude gas flowing through a scrubber, a second heat exchanger arranged in a stream of clean gas behind the scrubber, the first and second heat exchangers including heat exchange pipes and being interconnected by transfer conduits for a forcibly circulating heat carrying fluid, the heat exchange pipes and the transfer conduits being made of a pressure resistant metal material such as steel, the device comprising a third heat exchanger arranged in the stream of crude gas between the first heat exchanger and the scrubber, a fourth heat exchanger arranged in the stream of the clean gas between the scrubber and the second heat exchanger, said third and fourth heat exchangers operating at lower temperature levels than those of the first and second heat exchangers, said third heat exchanger including a plurality of heat exchanging hoses of a corrosion-resistant and adhesion inhibiting plastic material suspended in the stream of crude gas, said fourth heat exchanger including a plurality of heat exchanging hoses of a corrosion resistant and adhesion inhibiting plastic material suspended in the stream of clean gas, additional heat transfer conduits interconnecting the third and fourth heat exchangers to conduct a forcibly circulating heat carrying fluid, said additonal heat transfer conduits being made of at least corrosion-resistant plastic material, and all remaining parts of said third and fourth heat exchangers which contact the crude or clean gas stream being coated with a corrosion-resistant and adhesion inhibiting layer of plastic material.

4,619,672

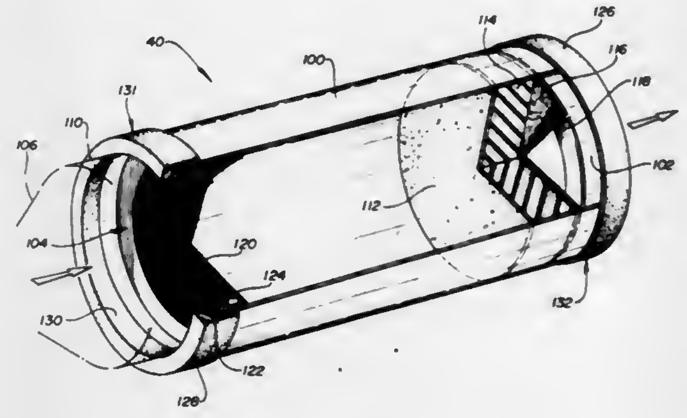
FILTER FOR LASER SURGERY SMOKE EVACUATION SYSTEM

Philip D. Robertson, Colorado Springs, Colo., assignor to Xanar, Inc., Colorado Springs, Colo.

Filed Sep. 11, 1985, Ser. No. 774,694

Int. Cl.^{4} B01D *50/00*

U.S. Cl. 55—316 **4 Claims**



1. A filter element for a laser surgery smoke evacuator system comprising:

a generally cylindrical hollow housing having an inlet end and an outlet end;
endcaps disposed about said inlet end and said outlet end and including a generally annular ring having a flange extending radially outwardly from an exterior edge of said ring and having a flange extending radially inwardly from an interior edge of said ring;
the outside diameter of said ring being slightly less than the inside diameter of said housing to provide a snug fit therein for both said endcaps;
a plurality of filter elements disposed within said housing and held in place by at least one of said endcaps;
inlet and outlet screens held in place respectively by said endcaps;
adhesive tape strips extending circumferentially about the inlet and outlet ends of said housing with said tape strips wrapping around said endcaps and covering the outer circumferential surface of said outwardly extending flange and the interior surface of the annular ring of each endcap and holding said inlet and outlet endcaps in place on said housing;
a high friction backing on said adhesive tape strips extending at least partially around the circumference of said strips; and
said high friction backing of said tape strips adapted to lightly hold said filter in place during use.

4,619,673

ADSORBENT DEVICE

John S. Cullen, Buffalo; Samuel A. Incorvia, and James A. Vogt, both of Tonawanda, all of N.Y., assignors to Multiform Desiccants, Inc., Buffalo, N.Y.

Filed May 15, 1985, Ser. No. 734,171

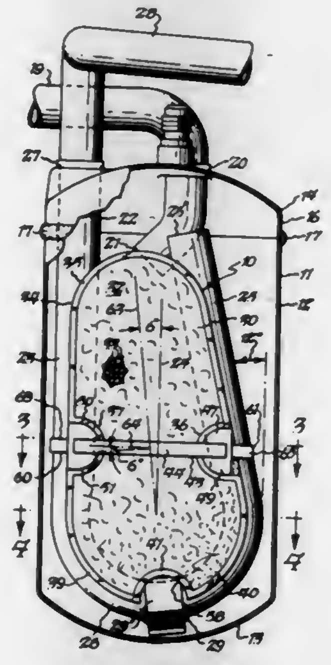
Int. Cl.^{4} B01D *53/04;* **F23B** *43/00*

U.S. Cl. 55—387 **27 Claims**

1. In a refrigerant receiver having a receiver axis and a pipe therein having first and second spaced pipe portions and a return bend connecting said first and second spaced pipe portions, an adsorbent device comprising a casing including first and second walls, adsorbent, means securing said first and second walls to each other to confine said adsorbent therebetween, spaced wall portions on said first wall in contiguous relationship with said first and second pipe portions, a first casing end portion on said casing proximate said return bend and a second casing end portion on said casing remote from said return bend, clip means operatively associated with said casing for securing said casing relative to said pipe portions, a

central clip portion on said clip means extending across said second wall in a direction transverse to said receiver axis and between said first and second casing end portions, and clip end portions on opposite ends of said central portion of said clip means for securing said clip means to said first and second pipe portions.

18. An adsorbent device comprising an elongated casing having a longitudinal axis and first and second walls, adsor-



bent, means securing said first and second walls to each other with said adsorbent therebetween, first and second casing end portions on said casing, clip means operatively associated with said casing for securing said casing to a foreign object, a central clip portion on said clip means, said central clip portion extending aross said casing transversely to said longitudinal axis and between said first and second casing end portions, and clip end portions on opposite ends of said central clip portion for securing said clip means to said foreign object.

4,619,674

DUAL-ELEMENT FILTER CARTRIDGE FOR AIR INTAKE FILTERS DESIGNED FOR A DUSTY ENVIRONMENT

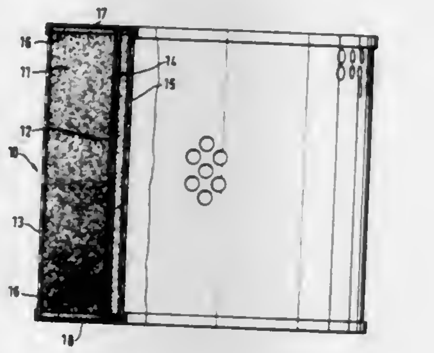
Hans Erdmannsdörfer, Ludwigsburg, Fed. Rep. of Germany, assignor to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed Sep. 13, 1985, Ser. No. 775,881

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1984, 3433622

Int. Cl.⁴ B01D *46/52*

U.S. Cl. 55—486 **7 Claims**



1. A disposable filter cartridge for air intake filters of internal combustion engines and other air aspirating machines operating in a dusty environment, the filter cartridge being of the annular type which is traversed by the air in a radially inwardly converging direction, the filter cartridge comprising in combination:

a first filter element in the shape of a first hollow cylindrical body formed of pleated filtering paper, the pleats of the filtering paper of the first filter element extending parallel and longitudinally with respect to the axis of said first hollow cylindrical body, so as to define concentric inner and outer peripheries of the first filter element;

a second filter element in the shape of a second hollow cylindrical body formed of pleated filtering paper, the pleats of the filtering paper of the second filter element extending parallel and longitudinally with respect to the axis of said second hollow cylindrical body, so as to define concentric inner and outer peripheries of the second filter element, the first and second filter elements having substantially the same axial length, and the second filter element being arranged concentrically inside the first filter element in such a way that the axes of the hollow cylindrical bodies of the two filter elements coincide to define a cartridge axis and the axial extremities of said two filter elements are substantially in radial alignment with each other; and

two disc-shaped end members engaging the axial extremities of the first and second filter elements, so as to position said two filter elements in relation to each other and to form impermeable axial end walls for said two filter elements; and wherein;

the filtering papers of said first and second filter elements are constituted of substantially the same fibers;

the density of the filtering paper of the second filter element does not exceed the density of the filtering paper of the first filter element;

the gauge of the filtering paper of the second filter element is not less than the gauge of the filtering paper of the first filter element; and

the effective surface of the second filter element is equal to between 8 and 24% of the effective surface of the first filter element, so that the incoming air, flowing through the first and second filter elements in succession, traverses the filtering paper of the first filter element at a speed which is between 8 and 24% of the speed at which it traverses the filtering paper of the second filter element, as a result of which air-entrained particles which, in the new state of the filter cartridge, pass through the first filter element are trapped by the second filter element.

4,619,675

FILTER FOR AIR CLEANERS

Moritsuna Watanabe, Tokyo, Japan, assignor to Midori Anzen Co., Ltd., Tokyo, Japan

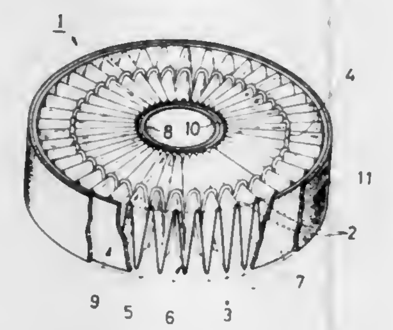
PCT No. PCT/JP84/00326, § 371 Date Feb. 12, 1985, § 102(e) Date Feb. 12, 1985, PCT Pub. No. WO85/00116, PCT Pub. Date Jan. 17, 1985

PCT Filed Jun. 22, 1984, Ser. No. 705,332

Claims priority, application Japan, Jun. 24, 1983, 58-96720

Int. Cl.⁴ B01D *27/06*

U.S. Cl. 55—498 **3 Claims**



1. A filter for air cleaners, comprising a filter medium obtained by folding a piece of elongated filter paper so that ridges and valleys are formed alternately, fitting spacers only onto a portion of said folded filter paper which does not include the edges of the folded filter paper so as to maintain the distances between the adjacent ridges and valleys properly, and then bending the resultant product to form a circular body with inner and outer circumferential surfaces and with the ridges and valleys extending in the radial direction, a filter body having inlet and outlet ports and circular inner and outer circumferential walls, said filter medium being set in said filter body between said inner and outer circumferential walls, a cushion material inserted between the inner circumferential surface of said filter medium and the inner wall of said filter body, and a cushion material bonded to the outer wall and inserted between the outer circumferential wall of said filter medium and the outer wall of said filter body, a prefilter member covering said air inlet port and an after-filter member covering said outlet port.

4,619,676

FILTER CARTRIDGE FOR FILTERING APPARATUSES

Ernst Turck, Peter-Parler-Str. 44, 8264 Waldkraiburg, Fed. Rep. of Germany

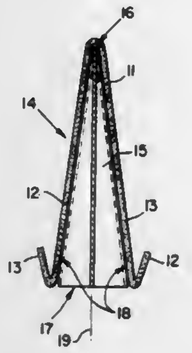
PCT No. PCT/DE84/00075, § 371 Date Nov. 27, 1984, § 102(e) Date Nov. 27, 1984, PCT Pub. No. WO84/03842, PCT Pub. Date Oct. 11, 1984

PCT Filed Mar. 28, 1984, Ser. No. 678,282

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1983, 3311863

Int. Cl.⁴ B01D *46/12*

U.S. Cl. 55—500 **5 Claims**



1. A filter cartridge for filtering apparatuses for removing impurities from hot and/or highly pressurized flowing gases, with zig-zag formed, gas-penetrated filter material folded at acute angles, whose part surfaces caused by the folding, between the fold lines, are arranged in relatively close juxtaposition to each other, characterized in that: one thin-walled strip **15** is disposed and arranged in the spaces between each two adjacent part surfaces **12**, **13** of the filter material **11**, said thin-walled strip **15** having one straight-formed edge **16** lying in the inside of the fold **14** and one opposite lying zig-zag formed edge **17**, and in that, relative to the medial plane **19** of said thin-walled strip **15**, the bend or crest lines **18** rise steadily from said one straight formed edge **16** toward said zig-zag formed edge.

4,619,677

DISPOSABLE AIR FILTER ASSEMBLY AND METHOD OF MAKING SAME

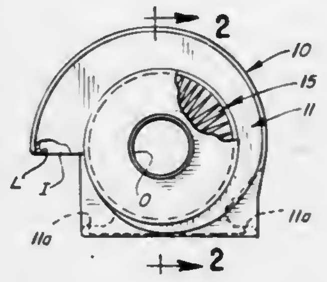
Charles L. Matheson; Preston D. Lane; James V. Dieringer, all of Cookeville, Tenn., and Emilio Ambafz, New York, N.Y., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 13, 1985, Ser. No. 808,877

Int. Cl.⁴ BQ1D *35/30*

U.S. Cl. 55—510 **8 Claims**

1. An air filter assembly for use with an internal combustion engine comprising a housing having opposed end walls and an outer wall coacting to form an interior air flow passageway, an inlet for said passageway formed on the exterior of said housing and an outlet for said passageway formed in one of said end walls for communicating with an engine manifold; and a filter member disposed within said passageway and enclosed within said housing; said end and outer walls being initially of unitary construction, one end wall having a predetermined section thereof subsequently severed from said housing so as to expose at least a portion of said interior passageway whereby said filter member is inserted into said passageway; when severing the said one end wall section from said housing, an annular segment of the housing is removed whereby a collar is formed on the exterior of the remainder of the housing and a peripheral flange is formed on the severed end wall section; the flange is sized to snugly fit within the collar when the severed end wall section is re-attached to the remainder of housing subsequent to the filter member being disposed within the passageway.



4,619,678

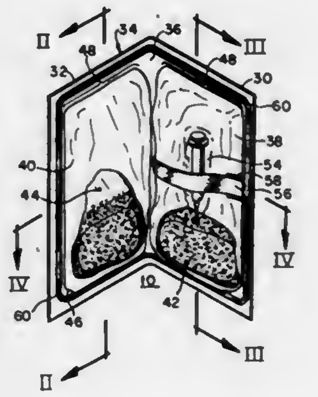
APPARATUS AND METHOD FOR TRANSPORTING AND PRESERVING PERISHABLE TEST SAMPLES

Howard Rubin, 1937 Nester St., Philadelphia, Pa. 19115

Continuation of Ser. No. 563,560, Dec. 20, 1983, abandoned, which is a continuation of Ser. No. 375,018, May 5, 1983, abandoned. This application Jul. 12, 1985, Ser. No. 754,615

Int. Cl.⁴ F25D *5/00*

U.S. Cl. 62—4 **14 Claims**



1. An apparatus for transporting and preserving a perishable test sample, comprising:

a pair of substantially flat leaf members foldably connected to one another;

a first membrane sealed about its perimeter to at least one of the leaf members, extending over a substantial portion thereof and forming a first reservoir;

a latent refrigerating means disposed in the reservoir;

means for positively positioning and securing the test sample in a position flush with the first membrane and therefore the first reservoir, when the apparatus is open, and thereafter, when the apparatus is closed; and,

means independent of the positioning means for releasably holding the leaf members together to substantially close the entire perimeter of the apparatus and to thereby surround and cushion the test sample in heat exchanging relationship with the first reservoir, whereby upon activation of the latent refrigerating means, the test sample may be safely enclosed for transportation while preserved in a chilled environment.

4,619,679

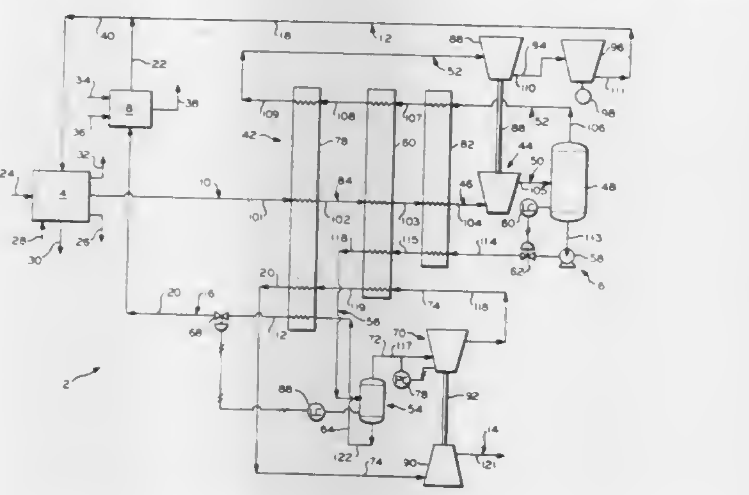
GAS PROCESSING

Bradley W. DeLong, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 29, 1984, Ser. No. 666,068

Int. Cl.⁴ F25J *3/00*

U.S. Cl. 62—11 **11 Claims**



1. A process comprising:

providing a dry, relatively low purity hydrogen gas first stream;

cooling said first stream by indirect heat exchange to form a first cooled stream;

cooling said first cooled stream by expansion to form a first cooled expanded stream;

dividing said first cooled expanded stream into a gaseous second stream comprising a higher concentration of molecular hydrogen than the first stream and a liquid third stream comprising a lower concentration of molecular hydrogen than the first stream, said expansion supplying a first portion of the cooling required to divide the first stream into the second stream and the third stream;

passing the gaseous second stream into indirect heat exchange relationship with the first stream to provide a second portion of the cooling required to divide said first stream into said gaseous second stream and said liquid third stream, thus heating the gaseous second stream and forming a second heated stream;

passing said liquid third stream into indirect heat exchange relationship with said first stream to provide a third portion of the cooling required to divide said first stream into said gaseous second stream and said liquid third stream, thus heating the liquid third stream and forming a third heated stream;

dividing said third heated stream into a gaseous fourth stream and a liquid fifth stream;

cooling the gaseous fourth stream by expansion to form a fourth cooled stream;

passing the fourth cooled stream into indirect heat exchange relationship with the first stream to provide a fourth portion of the cooling required to divide said first stream into said gaseous second stream and said liquid third stream; and

passing the liquid fifth stream into indirect heat exchange relationship with the first stream to provide a fifth portion of the cooling required to separate said first stream into said gaseous second stream and said liquid third stream.

9. Apparatus comprising:

a. a means for passing fluids in indirect heat exchange relationship;

b. a first expander means for reducing the pressure on a fluid;

c. a first conduit means connecting the means for passing fluids in indirect heat exchange relationship with the first expander means;

d. a first vessel to provide for the phase separation of a liquid and a gas;

e. a second conduit means connecting the first expander means with the first vessel;

f. a third conduit means connecting an upper portion of the first vessel with the means for passing fluids in indirect heat exchange relationship;

g. a second vessel for phase separating a liquid and a gas;

h. a fourth conduit means connecting a lower portion of the first vessel with the second vessel, said third conduit means passing through the means for passing fluids in indirect heat exchange relationship;

i. a fifth conduit means connected to a lower portion of the second vessel, said fifth conduit means passing through a portion of the means for passing fluids in indirect heat exchange relationship;

j. a second expander means for reducing the pressure on a fluid;

k. a sixth conduit means connecting an upper portion of the second vessel with the second expander; and

l. a seventh conduit means connected to the second expander, said seventh conduit means passing through a portion of the means for passing fluids in indirect heat exchange relationship.

4,619,680

MANUFACTURE OF INTEGRATED OPTICAL WAVEGUIDES

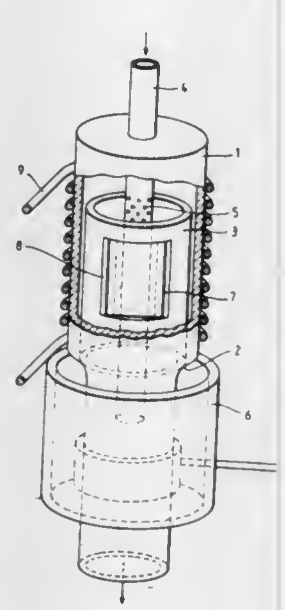
Noorallah Nourshargh, London, and John S. McCormack, Middlesex, both of England, assignors to The General Electric Co. p.l.c., England

Filed Jun. 7, 1985, Ser. No. 742,207

Claims priority, application United Kingdom, Jun. 11, 1984, 8414878

Int. Cl.⁴ C03B *37/027*

U.S. Cl. 65—3.12 **12 Claims**



1. A method of manufacturing an integrated optical waveguide in which the waveguide is composed of glass deposited in a first layer on a substrate by a chemical vapour deposition process wherein a chemical reaction for effecting the deposition process is initiated by means of a plasma produced in a reaction zone by a microwave cavity and supplied with power from a microwave generator.

4,619,681

METHOD AND APPARATUS FOR MEASUREMENT OF STRESS IN FLOAT GLASS

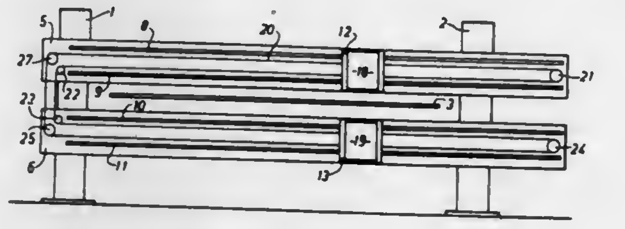
Roger Tetaz, Beauchamp, and Philippe Vizet, Bourg La Reine, both of France, assignors to Saint-Gobain Recherche, Aubervilliers Cedex, France

Filed Apr. 17, 1985, Ser. No. 724,149

Claims priority, application France, Apr. 16, 1984, 84 06182

Int. Cl.⁴ C03B *17/06;* **G01B** *11/18*

U.S. Cl. 65—29 **13 Claims**



1. Apparatus for measuring permanent longitudinal stresses in a float glass sheet during location of the sheet along a production line, said apparatus comprising a mechanical unit, means for supporting said mechanical unit over said sheet and driving the same in translation crosswise of said sheet, means for measurement continuously of any double refraction in the sheet according to one of the Friedel and Senarmont methods, said measurement means including a first light source, a first polarizer for polarizing a beam of light from said light source, means for transforming said polarized beam to a circular beam, a second polarizer, a first photosensitive receiver for transforming a sensed intensity of light beam to an electric signal, each of said light source, first and second polarizer, transforming means and first photosensitive receiver located along a linear optical path and one of said polarizers being driven in a continuous rotational movement, means for measuring the temperature of said sheet at a location within said sheet coincident with the point of measurement and at the time of mesurment of any double refraction, means for recording and processing said measurements of stresses and temperature calculating the permanent longitudinal stresses, and means mounting said measurement means on said mechanical unit.

6. A process for measuring permanent longitudinal stress in a float glass sheet along a production line, directing a beam of polarizing light toward a location within said sheet, responding to the intensity of said beam of light which shall pass through said sheet and any variation in intensity indicative of stresses which create a double refraction, transducing said response to a signal representative at any time to the quality of the sheet measured, continuously moving said beam of polarizing light across the width of said sheet to measure stresses at adjacent locations, simultaneously measuring the temperature at each said location across the width of said sheet to which said polarizing light is directed for measuring stresses, and combining said signal and response to temperature measurement from each location to provide a value of permanent stresses throughout the entire width of said sheet.

4,619,682

METHOD FOR OPERATOR-CONTROLLED MOLTEN GLASS LUMP PROCESSING

Franz Günthner, Mainz-Lerchenberg, Fed. Rep. of Germany, assignor to Schott Glaswerke, Fed. Rep. of Germany

Filed May 21, 1985, Ser. No. 736,235

Claims priority, application Fed. Rep. of Germany, May 25, 1984, 3419608

Int. Cl.⁴ C03B *9/03*

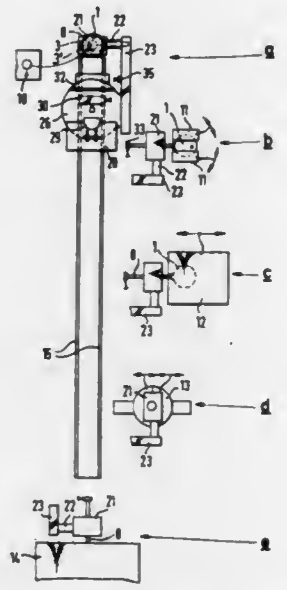
U.S. Cl. 65—64 **3 Claims**

1. A method for processing molten glass lumps using an operator-controlled manipulator having a holder comprising the steps of:

moving said glass lump from a first position to a preliminary blowing station engageable with said holder and preliminarily blowing said lump on said holder with said manipulator;

moving the holder with the preliminarily blown glass lump thereon by said manipulator to a marving station and marving said glass lump;

moving the holder with the marved glass lump thereon by said manipulator to a heating station and heating said glass lump;



moving the holder with the heated glass lump thereon by said manipulator to a forming station and forming said glass lump;

moving the holder with the formed glass lump thereon by said manipulator to a cooling lehr; and

severing the cooled glass lump from said holder.

4,619,683

GLASS SHEET BLOWING ASSEMBLY

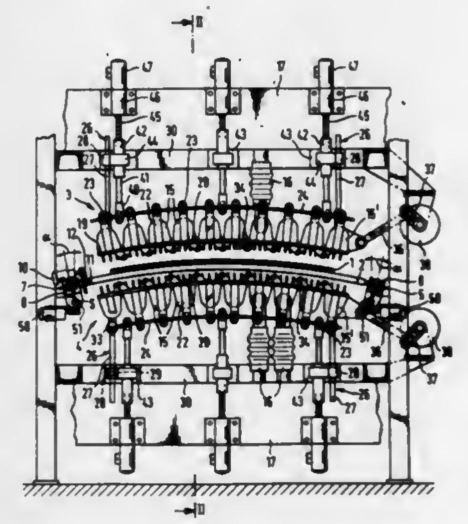
Friedrich Halberschmidt, Herzogenrath; Heinz-Josef Reinmold; Josef Audi, both of Aachen; Cornelius Puetz, Hueckelhoven, and Gerd Schubert, Herzogenrath, all of Fed. Rep. of Germany, assignors to Vegla, Aachen, Fed. Rep. of Germany

Filed Aug. 14, 1985, Ser. No. 765,610

Claims priority, application France, Aug. 22, 1984, 84 13068

Int. Cl.⁴ C03B *27/00*

U.S. Cl. 65—351 **12 Claims**



1. A glass blowing device including two mutually facing blowers having a plurality of tubular bodies placed side-by-side and nozzles directed toward shaped glass sheets placed between said blowers along a blowing surface,

said tubular bodies being adjustably mounted so as to adapt to the particular shape of said sheets;

deformable guide rails positioned perpendicularly to said tubular bodies for supporting said tubular bodies of each of said blowers in various positions along the entire width of said blowing surface;

at least one adjustable fastener for deforming said guide rails to a desired shape;

and servomotor means programmed to effect correct positioning of said adjustable fastener.

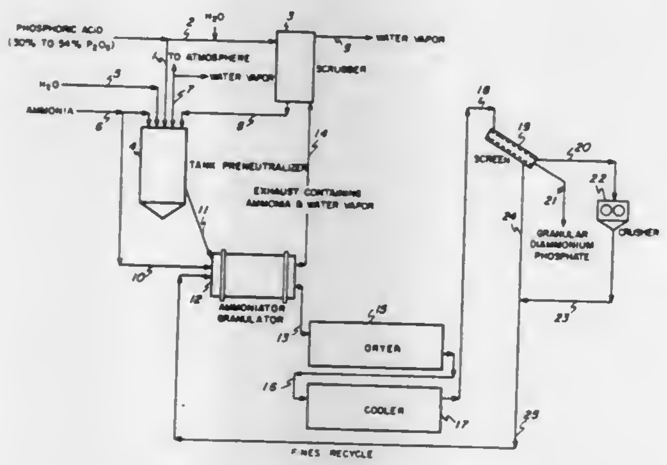
4,619,684
PRESSURE REACTOR FOR PRODUCING DIAMMONIUM PHOSPHATE

David G. Salladay, Decatur, and Frank P. Achorn, Killen, both of Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 538,714, Oct. 3, 1983, now Defensive Publication No. T104,201. This application Mar. 24, 1986, Ser. No. 843,414

Int. Cl.⁴ C05B *7/00*

U.S. Cl. 71—34 **7 Claims**



SHEET OF CONVENTIONAL PROCESS FOR PRODUCTION OF GRANULAR DIAMMONIUM PHOSPHATE

1. An improved process for preparing granular substantially dust free, diammonium phosphate of particle size distribution eminently suitable for bulk blending with other fertilizer values, which improved process comprises supplying a stream of ammonia to the reaction section of a pressure pipe reactor; simultaneously supplying a stream of partially ammoniated phosphoric acid to said reaction section of said pressure pipe reactor, said partially ammoniated phosphoric acid having a P_2O_5 content ranging from about 27 to about 31 percent by weight and a N:P mole ratio ranging from about 0.3 to about 0.8; simultaneously supplying a stream of wet-process merchant-grade phosphoric acid to said feed section of said pressure pipe reactor, said merchant-grade phosphoric acid containing from about 50 to about 54 percent P_2O_5 by weight, said streams of said partially ammoniated phosphoric acid and said merchant-grade phosphoric acid proportioned one to another to effect a blend thereof ranging from about 38 to about 42 percent P_2O_5 by weight, and contacting said ammonia introduced into said feed section of said pressure pipe reactor with said streams of phosphoric acid; maintaining in said pressure pipe reactor a temperature ranging from about 260° F. to about 340° F. and a pressure ranging from about 40 psig to about 80 psig; subsequently introducing the partial reaction product resulting from contacting said ammonia with said partially ammoniated phosphoric acid and said merchant-grade phosphoric acid into the vapor tube extension of said pressure type reactor to ensure continuous intimate contact therebetween; subsequently discharging from the downstream portion of said vapor tube extension through a discharge area comprising an exaggerated elongated aperture in the side wall thereof an amorphous diammonium phosphate material into the upper end of an inclined rotating drum and on to a bed of rolling discrete particles of diammonium phosphate maintained therein; subsequently withdrawing particulate diammonium phosphate material from the lower end of said inclined rotating drum and introducing same into sizing means; withdrawing from said sizing means granular particles within a predetermined size range and introducing same into cooling means; withdrawing from said cooling means as product the resulting cooled particles of diammonium phosphate of a preselected size range; withdrawing from said sizing means fines and crushed oversize particles of diammonium phosphate and returning same as recycle into the upper end of said inclined rotating drum, said improved process characterized by the fact that the combination of relatively high temperatures and pressures utilized therein effects a discharge area heat flux sufficient to (1) operate said process at a recycle ratio of 3:1, (2) yield a product DAP therefrom containing a moisture content of about 1 to about 2 weight percent, and (3) substantially eliminate from said process the requirement for the addition thereto of external heat energy subsequent to the step of removing said diammonium phosphate from the lower end of said inclined rotating drum.

4,619,685
PROCESS FOR CONTROLLING THE GROWTH OF SUCKERS ON A TOBACCO PLANT

Yasuo Kamuro, Urawa; Koichi Hirai, Hanyu; Fumio Suzuki; Susumu Yamamoto, both of Funabashi, and Noboru Shindo, Machida, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

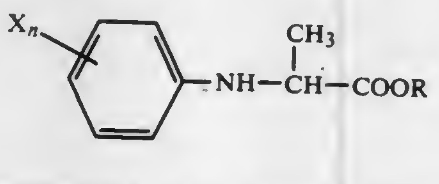
Filed Nov. 15, 1984, Ser. No. 671,689

Claims priority, application Japan, Nov. 18, 1983, 58-217166

Int. Cl.⁴ A01N *37/44*

U.S. Cl. 71—78 **13 Claims**

1. A process for controlling the growth of suckers on a tobacco plant which comprises contacting the plant with a suckers controlling amount of a plant growth regulator comprising an N-substituted alanine derivative of the formula:



wherein X represents halogen atom or trifluoromethyl, R represents hydrogen, straight chain or branched chain alkyl having 1–4 carbon atoms, alkenyl having 2–4 carbon atoms, an alkali metal atom or amine-forming residue, and n is zero or an integer of 1 or 2, with the proviso that when n is 2, X may be the same or different.

4,619,686
PYRIDAZINYLUREA COMPOUNDS AND METHODS OF USE AS HERBICIDES

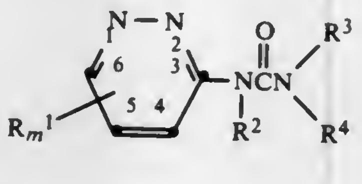
Riaz F. Abdulla, Greenfield, and Jack G. Samaritoni, Knightstown, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jul. 17, 1984, Ser. No. 631,651

Int. Cl.⁴ A01N *43/58;* G07D *237/20, 237/22*

U.S. Cl. 71—92 **16 Claims**

1. A compound of the formula



wherein

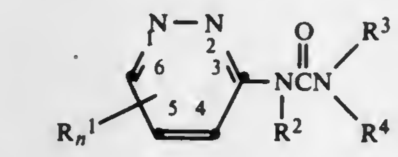
R_2 is hydrogen;

R_3 and R_4 are independently C_1–C_3 alkyl, C_1–C_3 alkoxy, C_2–C_4 alkenyl, hydroxy(C_1–C_4 alkyl) or (C_1–C_6 acyloxy)C_1–C_6 alkyl;

m is 1 or 2; and

when m is 1, R^1 represents 1,ldimethylethyl, and when m is 2, one R^1 represents 1,1-dimethylethyl and the other R^1 represents chloro.

6. A method of inhibiting the growth of unwanted vegetation which comprises contacting the vegetation or the soil in which the vegetation is growing with an effective amount of a compound of the formula



wherein

R_2 is hydrogen;

R_5 and R_6 are independpently hydrogen, C_1–C_3 alkyl, C_1–C_3 alkoxy, C_2–C_4 alkenyl, hydroxy (C_1–C_4 alkyl) or (C_1–C_6 acyloxy)C_1–C_6 alkyl;

n is 1 or 2; and

when n is 1, R^1 represents 1,1-dimethylethyl, and when n is 2, one R^1 represents 1,1-dimethylethyl and the other R^1 represents chloro.

4,619,687
TRIAZOLOPYRIDAZINES AND THEIR USE AS HERBICIDES

Toru Haga, Takarazuka; Eiki Nagano, Nishinomiya; Ryo Sato, and Kouichi Morita, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

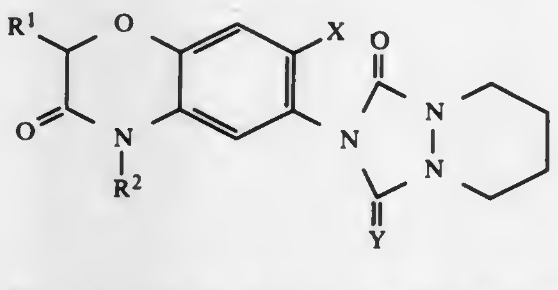
Filed Sep. 25, 1985, Ser. No. 779,865

Claims priority, application Japan, Sep. 27, 1984, 59-203785; Dec. 27, 1984, 59-279449

Int. Cl.⁴ A01N *43/84;* C07D *498/04*

U.S. Cl. 71—92 **20 Claims**

1. A compound of the formula:



wherein R^1 is a hydrogen atom or a methyl group, R^2 is a C_1–C_5 alkyl group, a C_3–C_4 alkenyl group, a C_3–C_4 alkynyl group or a C_1–C_4 alkoxymethyl group, X is a hydrogen atom or a fluorine atom and Y is an oxygen atom or a sulfur atom.

14. A method for exterminating harmful weeds which comprises applying as an active ingredient a herbicidally effective amount of the compound according to claim 1 to the area where the weeds grow or will grow.

4,619,688
HERBICIDAL SULFONYLGUANIDINE DERIVATIVES

Kozo Shiokawa, Kawasaki; Koichi Moriya, Hachioji; Toshio Goto, Sagamihara; Atsumi Kamochi, Hino, and Shigeo Kohama, Hachioji, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

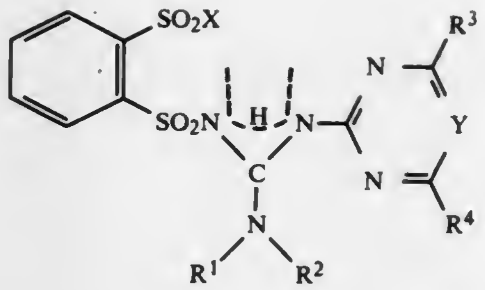
Filed Jan. 4, 1985, Ser. No. 688,844

Claims priority, application Japan, Jan. 10, 1984, 59-1257

Int. Cl.⁴ C07D *239/34, 239/42, 413/12;* A01N *43/54*

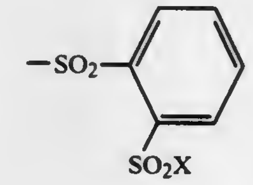
U.S. Cl. 71—92 **9 Claims**

1. A sulfonylguanidine derivative of the formula



in which

R^1 is a hydrogen atom or the group



R^2 is a hydroxy group, a lower alkoxy group or a di-lower alkylamino group,

R^3 and R^4 each independently is a lower alkyl group or a lower alkoxy group,

X is a lower alkoxy group, a lower alkylamino group or a morpholino group, and

Y is CH.

7. A herbicidal composition comprising a herbicidally effective amount of a compound according to claim 1 in admixture with a diluent.

4,619,689
DIPHENYL ETHER DERIVATIVES AND HERBICIDES CONTAINING SAME

Takeo Yoshimoto; Akira Hosono; Joh Miki; Yasunobu Funakoshi; Takashi Fujita, and Yoshikata Hojo, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

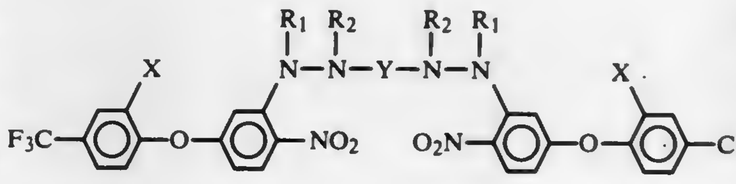
Division of Ser. No. 287,654, Jul. 28, 1981, Pat. No. 4,515,628, which is a continuation of Ser. No. 91,858, Nov. 6, 1979, abandoned. This application Oct. 12, 1984, Ser. No. 660,579

Claims priority, application Japan, Nov. 8, 1978, 53-136769

Int. Cl.⁴ A01N *47/28, 37/18;* C07C *133/02, 109/10*

U.S. Cl. 71—119 **8 Claims**

1. A diphenyl ether compound represented by the general formula I,



(I)

wherein X is hydrogen or chlorine atom, R_1 and R_2 each stands for hydrogen or a lower alkyl group and Y is —CO—, —CO-CO— or —CO$(CH_2)_n$CO— wherein n is an integer of from 1 to 4.

4,619,690
CHROMITE ORE BENEFICIATION

Patrick R. Taylor, Moscow, Id., and Matthew A. Omofoma, Ile-Ife, Nigeria, assignors to Idaho Research Foundation, Inc., Moscow, Id.

Filed Feb. 6, 1984, Ser. No. 577,531

Int. Cl.⁴ C01G *37/00;* C22B *1/00*

U.S. Cl. 75—1 R **13 Claims**

1. A process for beneficiating chromite ores, comprising: reacting chromite ore with at least one sulfur oxide selected from the group consisting of sulfur dioxide and sulfur

trioxide and oxygen by passing a gaseous stream including a sulfur oxide and oxygen about the chromite ore at temperatures in the range of approximately 300°-1000° C. or higher; and

leaching reacted chromite ore by placing the reacted ore in a leach solution comprising an aqueous ferric sulfate solution having a concentration thereof in the range greater than approximately 5 grams per liter of solution; and having a pH of less than approximately +4.0 as adjusted by adding sulfuric acid to the solution, for a sufficient period of time to allow soluble constituents of the ore to be dissolved into the leach solution to thereby improve the chromium to iron ratio and the concentration of chromium in the residual ore.

13. A process for removing sulfur oxides from waste gas streams containing oxygen and sulfur oxides, and for simultaneously beneficiating chromite ores, comprising:

passing a gas stream containing at least one sulfur oxide selected from the group consisting of sulfur dioxide and sulfur trioxide, and oxygen over prepared chromite ore at temperatures in the range of approximately 300° C.-1000° C. or higher to react the chromite with the sulfur oxides and oxygen thereby removing portions of the sulfur oxides from the gas stream and reacting the chromite ore therewith; and

leaching chromite ore reacted with the sulfur oxide and oxygen containing gas stream, using an aqueous ferric sulfate solution having a concentration thereof in the range greater than approximately 5 grams per liter of solution and having a pH of less than approximately +4.0 to thereby solubilize compounds formed during passage of the sulfur oxide and oxygen containing gas stream over the prepared chromite ore, and thus beneficiate the residual chromite.

4,619,691

METHOD OF MANUFACTURING ULTRA-FINE PARTICLES

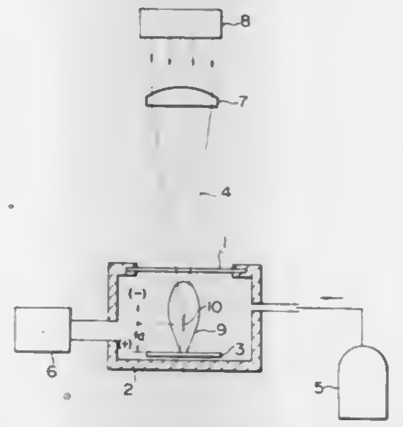
Takeshi Araya, Higashikurume; Akira Matsunawa, Nishinomiya; Seiji Katayama, Suita; Susumu Hioki, Kashiwa; Yoshiro Ibaraki, and Yoshishige Endo, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 5, 1985, Ser. No. 795,083

Claims priority, application Japan, Sep. 2, 1985, 60-191901

Int. Cl.⁴ B22F *9/00*

U.S. Cl. 75—0.5 B **18 Claims**



1. A method of producing ultra-fine particles comprising the steps of:

irradiating a laser beam on a surface of a material;

generating a plume including ultra-fine particles by the irradiation of the material with the laser beam, said generating a plume being achieved by performing said irradiating at a suitable level; and

collecting said particles.

4,619,692

PROCESS FOR THE PRODUCTION OF METALLIC SEMI-FINISHED PRODUCTS

Johannes Jachowski, Duisburg, and Paul Pant, Essen, both of Fed. Rep. of Germany, assignors to Fried Krupp GmbH, Fed. Rep. of Germany

Filed Jul. 15, 1985, Ser. No. 755,132

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1984, 3426086

Int. Cl.⁴ C22B *4/00*

U.S. Cl. 75—10.25 **11 Claims**

1. Process for the production of a metallic semi-finished product which contains at least one alloy and which has at least two zones with different nitrogen content, comprising remelting an electrode, by pressure electroslag remelting, wherein the remelting occurs in at least two steps, in each of which differing amounts of nitrogen in the form of solid nitrogen donators are added to the melt, and wherein the pressure produced by a nitrogen- or noble gas-atmosphere is changed from remelting step to remelting step in a range of 5 to 50 bar.

4,619,693

SYSTEM USING ELECTRIC FURNACE EXHAUST GAS TO PREHEAT SCRAP FOR STEELMAKING

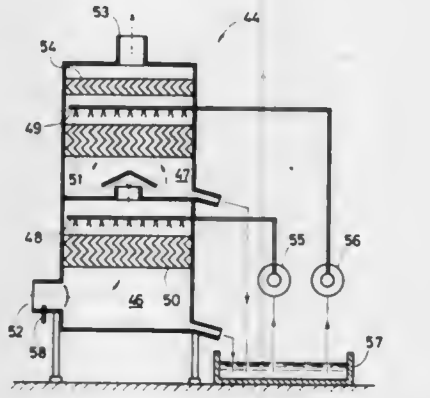
Kiyoshi Takai, and Kiyoshi Iwasaki, both of Hyogo, Japan, assignors to Godo Steel, Ltd., Osaka, Japan

Filed Apr. 9, 1985, Ser. No. 721,461

Claims priority, application Japan, Jul. 23, 1984, 59-152300

Int. Cl.⁴ C22B *4/00*

U.S. Cl. 266—88 **8 Claims**



1. A system for preheating of contaminated scrap to be used in steelmaking, employing exclusively heat from exhaust gas flow carrying dust and unburned combustibles from a furnace, said system comprising:

combustion means for burning said combustibles present in said exhaust gas flow, said combustion means being shaped for separating out a portion of dust particles from said exhaust gas flow contemporaneously with said burning of said combustibles;

scrap preheating means for preheating scrap to be charged into said electric furnace by transfer thereto of heat energy from a predetermined portion of said exhaust gas flow conveyed from said combustion means;

dust collector means for collecting dust from said exhaust gas flow after preheating of scrap in said scrap preheating means;

gas scrubber means for scrubbing malodorous substances generated by said containmants in preheating of said scrap from said gas exhaust flow, wherein said exhaust gas flow is scrubbed with a flow of an aqueous solution of deodorant solvent;

means for detecting the temperature of said exhaust gas flow at the inlet of said gas scrubber means;

means for adjusting the flow rate of said solvent flow in response to said detected exhaust gas flow temperature so as to generate saturated water vapor from said solvent flow to reduce the temperature of said exhaust gas flow flowing through said scrubber means; and

wet-type electric precipitator means for collecting residual dust particles and contaminants attached to said saturated water vapor and liquid droplets in said exhaust gas flow.

4,619,694

METHOD OF REFINING STEEL AND APPARATUS

Yasutaka Kawanobe; Hisao Noguti, both of Gunma; Singi Kanou, Shinto, and Katsuya Yamazaki, Aichi, all of Japan, assignors to Daido Tokusyuko K.K., Nagoya and Yahagi Engineering K.K., Aichi, both of, Japan

Filed Aug. 5, 1983, Ser. No. 520,727

Claims priority, application Japan, Aug. 5, 1982, 57-136532

Int. Cl.⁴ C21C *5/30*

U.S. Cl. 75—59.14 **10 Claims**

1. A method of adjusting the carbon content of molten steel to a desired carbon content, which comprises:

determining the carbon content in the molten steel by measuring a change of the heat taken away per unit time in cooling water heat exchanged with exhaust gas removed from the molten metal, according to the following formula:

$$C = \frac{Cp \cdot W}{\beta K \frac{W}{100} (\Delta Hco + \alpha \Delta Hco_2)} \cdot \Delta t$$

wherein C is the carbon content of the molten steel, Cp is specific heat of water (K cal/kg. °C.), W is weight of molten steel (kg), β is a carbon diffusion-rate constant, K is a coefficient of heat transfer for the cooling water, ΔHco is heat generated by reaction C→CO (K cal/kg. °C.), ΔHco_2 is heat generated by reaction $CO \rightarrow CO_2$ (Kcal/kg. °C.), α is conversion rate of $CO \rightarrow CO_2$, and Δt is the difference in temperature of the cooling water after and before being heat exchanged; and

blowing oxygen into the molten steel in an amount to yield the desired carbon content.

4,619,695

PROCESS FOR PRODUCING HIGH-PURITY METAL TARGETS FOR LSI ELECTRODES

Hideo Oikawa; Takao Amazawa, both of Atsugi; Nakahachiro Honma, Musashino; Hideo Miyazaki; Iwao Kyono, both of Toda; Nobuyuki Mori, Tokyo; Yoshiharu Katoh, and Masami Kuroki, both of Toda, all of Japan, assignors to Nihon Kogyo Kabushiki Kaisha and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan

Filed Jul. 26, 1984, Ser. No. 634,895

Claims priority, application Japan, Sep. 22, 1983, 58-174164

Int. Cl.⁴ C22B *4/00*

U.S. Cl. 75—65 EB **4 Claims**

1. A process for producing a high-purity metal target for the formation of LSI electrodes, in which the target has an alkali metal content of not more than 100 ppb and a radioactive element content of not more than 10 ppb, comprising the steps of dissolving a metal or metal compound, the metal selected from the group consisting of molybdenum and tungsten, into an acid or ammonia to form an aqueous metal-containing solution, filtering the aqueous solution causing the aqueous metal-containing solution to form metal-containing crystals by adjusting temperature and composition of the solution, collecting the crystals by solid-liquid separation, washing and drying the collected crystals, reducing the dried crystals by heating in the presence of high-purity hydrogen to prepare a high-purity metal powder, compacting the powder, sintering the compact, electron beam melting the sintered compact to produce a high-purity metal ingot, and thereafter plastically working the ingot with subsequent machining.

4,619,696

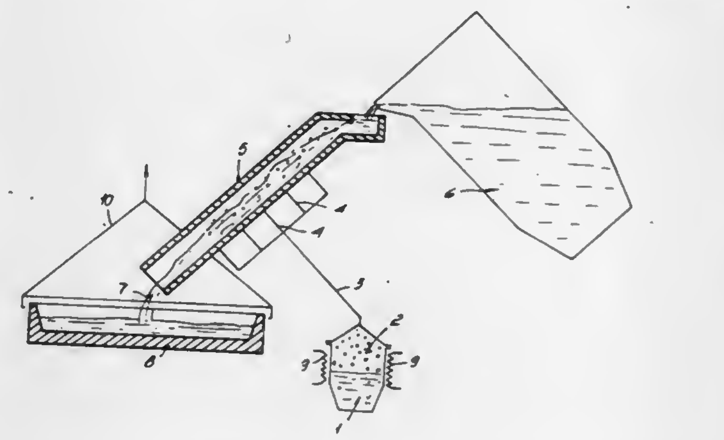
ADDITIVE FOR METALLURGICAL LIQUIDS, AND METHOD AND DEVICE FOR THE PREPARATION THEREOF

Mario D. Gorgerino, Milan, Italy, assignor to O.E.T. - Metalconsult S.r.l., Milan, Italy

Filed Dec. 3, 1984, Ser. No: 677,644

Int. Cl.⁴ C22C *33/08*

U.S. Cl. 75—130 R **8 Claims**



1. An additive for metallurgical liquids, in the form of an alloy comprising at least one first substance acting as a liquid phase solvent and at least one second substance acting as a gaseous phase solute, said first substance having semiconductor characteristics and being selected from the group consisting of: silicon, germanium; silicon and germanium alloyed with each other and with elements from the IA, IIA, IIIA and B, IVA, VIA, VIIA and VIII groups of the Periodic Table, and $A^{III}A^{V}$ and $B^{II}A^{VI}$ compounds, wherein II, III, V and VI are the respective groups in the Periodic Table and mixture thereof, said second substance having a high vapor pressure and being selected from the group consisting of lithium, sodium, potassium, magnesium, calcium, strontium, barium, zinc, cadmium, phosphorus, arsenic, antimony, bismuth, selenium, tellurium, bromine, iodine in the elemental state or in the state of oxides or salts thereof and mixture thereof, said second substance having at least part of the molecules thereof dissociated into atoms, ions, or radials of said molecules, the weight ratio of the first substance to the second substance being in the 10^{-6}% to 99% range.

4,619,697

SPUTTERING TARGET MATERIAL AND PROCESS FOR PRODUCING THE SAME

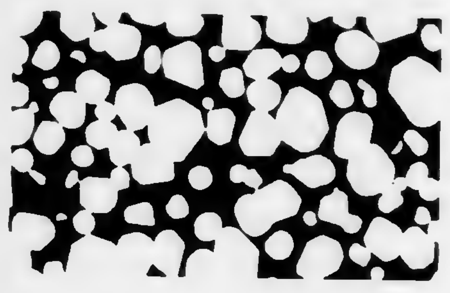
Kenichi Hijikata, Urawa; Tadashi Sugihara, and Masashi Komabayashi, both of Ohmiya, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1985, Ser. No. 769,935

Claims priority, application Japan, Aug. 30, 1984, 59-181553; Aug. 30, 1984, 59-181551; Aug. 30, 1984, 59-181552; Nov. 1, 1984, 59-230996; Dec. 5, 1984, 59-256803; Jan. 16, 1985, 60-5157

Int. Cl.⁴ C22C *29/00*

U.S. Cl. 75—230 **23 Claims**



1. A process for producing a sputtering target material that is low in oxygen content and is used for forming a metal silicide

film suitable for use in electrode wiring in a semiconductor device, said process comprising the steps of preparing a calcined body composed of at least one silicide-forming metal component and a silicon component, and impregnating molten silicon in said calcined body by means of contact with said molten silicon, thereby forming a sintered body with low oxygen content that is made of a metal silicide and silicon.

4,619,698
CUBIC BORON NITRIDE-BASED VERY HIGH PRESSURE-SINTERED MATERIAL FOR CUTTING TOOLS

Fumihiro Ueda, Ohmiya; Kaoru Kawada, Urawa; Kazuo Yamamoto, Tokyo; Noriaki Miwa, Tokyo, and Toshiki Ishimatsu, Tokyo, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1983, Ser. No. 563,666

Claims priority, application Japan, Jun. 29, 1981, 56-100980

Int. Cl.^{4} B22F *3/14*

U.S. Cl. 75—238 **18 Claims**

1. A cubic boron nitride-based very high pressure-sintered material for use in cutting tools, consisting essentially of from 1 to 20 percent by weight of at least one compound selected from the group consisting of titanium carbide and titanium carbo-nitride, from 1 to 20 percent by weight of at least one body-centered cubic intermetallic compound selected from the group consisting of CoAl, NiAl, and (Co, Ni)Al; and from 75 to 97 percent by weight of cubic boron nitride and inevitable impurities.

13. A method of manufacturing a tough cubic boron nitride-based very high pressure-sintered material for use in cutting tools, comprising:

admixing the following powders:

(1) powder of at least one compound selected from the group consisting of titanium carbide and titanium carbo-nitride;

(2) powder of at least one intermetallic compound selected from the group consisting of CoAl, NiAl, and (CO, Ni)Al; and

(3) powder of cubic boron nitride and inevitable impurities; to form a homogeneous mixture having a predetermined blended composition of from 1 to 20 percent by weight of said powder (1), from 1 to 20 percent by weight of said powder (2), and from 75 to 97 percent by weight of said powder (3);

pressing said mixture into a green compact; and

sintering said green compact to form a tough cubic boron nitride.

4,619,699
COMPOSITE DISPERSION STRENGTHENED COMPOSITE METAL POWDERS

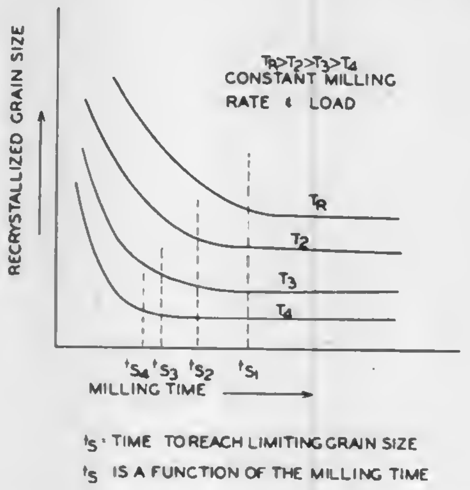
Ruzica Petkovic-Luton, Summit, and Joseph Vallone, Roselle, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 524,026, Aug. 17, 1983, abandoned. This application May 2, 1985, Ser. No. 729,742

Int. Cl.^{4} B22F *9/00*

U.S. Cl. 75—252 **23 Claims**

1. A composite metal powder wherein essentially each powder particle is comprised of one or more metals and one or more refractory compounds wherein the powder particles are characterized as (a) having a cohesive internal structure in which the one or more metals and refractory compounds are intimately united to provide an interdispersion of comminuted fragments of said metals and refractory, (b) having the refractory substantially homogeneously dispersed throughout the metal matrix, and (c) being substantially free of oxide scale; wherein the composite metal powder particles have a mean size less than about 50 microns and a mean grain size within the powder particles of less than about 0.6 microns.



4,619,700
WOOD IMPROVER AND A METHOD OF IMPROVING THE QUALITY OF WOOD

Yasutsugu Yamada, Sapporo, Japan, assignor to Nippon Tensaiseito Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 532,486, Sep. 15, 1983, Pat. No. 4,560,619. This application Sep. 11, 1985, Ser. No. 774,726

Claims priority, application Japan, Sep. 18, 1982, 57-161592

Int. Cl.^{4} C09D *5/14, 5/16, 5/18;* **C08L** *97/02*

U.S. Cl. 106—15.05 **8 Claims**

1. A wood improver comprising pulp waste liquor having a solids content adjusted to 20–60% (w/w) and an effective amount of at least one member selected from the group consisting of an insecticide, a fire retardant, an agent for preventing discoloration, Steffen waste liquor from a beet sugar plant and polyethylene glycol, said pulp waste liquor being selected from kraft pulp waste liquor and semichemical pulp waste liquor derived from the digestion of pulp.

4,619,701
ISOLATING AGENT

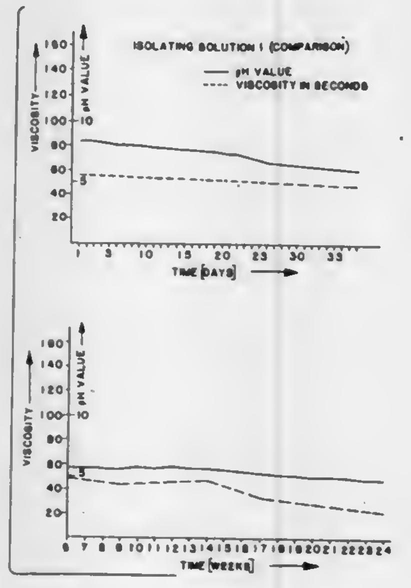
Michael Angrick, Berlin, and Martin-Willi Späth, Wehrheim, both of Fed. Rep. of Germany, assignors to Kulzer & Co. GmbH, Wehrheim, Fed. Rep. of Germany

Filed Apr. 16, 1985, Ser. No. 723,738

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1984, 3424538

Int. Cl.^{4} B28B *7/36*

U.S. Cl. 106—38.23 **6 Claims**



1. Isolating agent of an aqueous alginate solution containing a preservative and a buffer with a pH between 5.5 and 8.5, characterized in that the buffer mixture consists of glycine and sodium hydroxide.

4,619,702
RARE EARTH MODIFIERS FOR PORTLAND CEMENT

Ellis M. Gartner, Glenview, Ill., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed May 15, 1984, Ser. No. 610,345

Int. Cl.^{4} C04B *7/02*

U.S. Cl. 106—89 **34 Claims**

1. A particulate raw cement mix comprising bastnasite, a calcium oxide component and a silicon dioxide component.

14. A particulate portland cement composition comprising a thermally processed material containing between about 0.01 and about 0.20 weight percent of at least one rare earth component, calculated as REO, said rare earth component selected from the group consisting of cerium, europium, samarium, praseodymium, neodymium, gadolinium and compounds thereof, and said composition having a surface area less than about 6000, calculated as Blaine fineness in $cm^2/gram$.

4,619,703
STABLE AQUEOUS DISPERSIONS OF NON-OXIDIZED PARAFFIN WAX

Hans Gerber, Allschwil, and Eckart Schleusener, Reinach, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

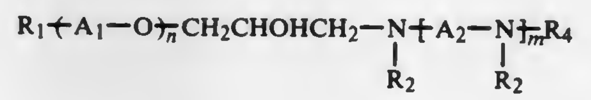
Continuation of Ser. No. 537,119, Sep. 29, 1983, abandoned. This application Nov. 30, 1984, Ser. No. 676,590

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1982, 3236672

Int. Cl.^{4} C08L *91/06;* **D06M** *13/34*

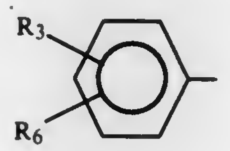
U.S. Cl. 106—271 **23 Claims**

1. An aqueous wax dispersion in which substantially all of the wax is non-oxidised paraffin wax having a drip point ≧30° C. such that the acid number of the total wax present is less than 1, said dispersion containing an amount sufficient to disperse the wax in the water of a surfactant comprising one or more compounds of formula I



$$R_1(A_1-O)_nCH_2CHOHCH_2-\underset{\substack{|\\R_2}}{N}(A_2-\underset{\substack{|\\R_2}}{N})_mR_4$$

in which R_1 is $R_xCOO—$, $R_xCONH—$ or $R_yO—$
where R_x is C_{7-21}alkyl or C_{7-21}alkenyl
and R_y is C_{8-22}alkyl, C_{8-22}alkenyl or a group (α)


(α)

where R_3 is H or C_{1-9}alkyl and R_6 is C_{4-12}alkyl;
R_2 is H, C_{1-22}alkyl, C_{2-22}alkenyl, benzyl or a group (b)

$$-CH_2CHOHCH_2O)_p(A_1O)_qR_5\%; \qquad (b)$$

R_4 is H, C_{1-22}alkyl, C_{2-22}alkenyl or a group (b);
R_5 is a group (c), (d) or (e)

$$-A_1-O)_r)R_z \qquad (c)$$

$$-A_1-O)_r)COR_w \qquad (d)$$

$$-A_1-NH-COR_w \qquad (e)$$

where R_w is C_{1-21}alkyl or C_{2-21}alkenyl
R_z is C_{1-22}alkyl, C_{2-22}alkenyl or a group (α);
A_1 is $—CH_2CH_2—$ or $—CH_2CH(CH_3)—$;
A_2 is C_{2-6}alkylene;
n is 2–20;
m is 0–4;
p is 0 or 1;
q is 0–19;
and r is 0 or 1;
with the provisos that (p+q+r)≧1 and whenever a symbol appears more than once it may have the same or different significance, or protonated or quaternised derivatives thereof.

4,619,704
COMPOSITION FOR FORMING A TRANSPARENT CONDUCTIVE FILM

Tadanori Hashimoto; Hiroshi Yoshitake; Shigenao Hata, and Akiko Nakazono, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 12, 1984, Ser. No. 680,729

Claims priority, application Japan, Dec. 22, 1983, 58-242534

Int. Cl.^{4} C09D *1/00*

U.S. Cl. 106—286.4 **3 Claims**

1. A composition for forming a transparent conductive film comprising a mixture of an organic solution of an indium salt of an inorganic acid and a tin salt of an inorganic acid with a non-aqueous silica sol wherein said composition contains about 0.5% to about 30% by weight of said indium salt of inorganic acid calculated as indium oxide, about 0.5% to about 30% by weight of said tin salt of inorganic acid in terms of the proportion of tin to indium, and about 1% to about 200% by weight of said non-aqueous silica sol in terms of the proportion of SiO_2 to indium oxide.

4,619,705
NONIONIC SURFACTANT TREATED CLAYS, METHODS OF MAKING SAME, WATER-BASED PAINTS, ORGANIC SOLVENT-BASED PAINTS AND PAPER COATINGS CONTAINING SAME

Dan M. Dixon, Gordon, and Richard J. Drexel, Jr., Irwinton, both of Ga., assignors to Engelhard Corporation, Edison, N.J.

Continuation of Ser. No. 629,606, Jul. 11, 1984, abandoned. This application Jan. 17, 1986, Ser. No. 820,884

Int. Cl.^{4} C04B *14/10*

U.S. Cl. 106—288 B **33 Claims**

1. A treated clay for use as a filler in organic solvent-based paints and water-based paints to improve the gloss of dried films thereof and in paper coatings to improve the gloss ink holdout properties of paper coating with same, said treated clay consisting essentially of a mixture of kaolin clay particles and an effective amount of a nonionic surfactant compatible with water and oil and having an HLB value in the range of 3 to 15.

4,619,706
METHOD FOR STRIPPING ORGANIC COATINGS FROM SUBSTRATES

David G. Squires; Lloyd Hundley, both of Cincinnati, and Raymond A. Barry, Powell, all of Ohio, assignors to Texo Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 706,475, Feb. 28, 1985, abandoned. This application Sep. 24, 1985, Ser. No. 779,562

Int. Cl.^{4} C23G *1/00*

U.S. Cl. 134—2 **6 Claims**

1. A method of stripping organic coatings from a coated substrate comprising the steps of subjecting said coated substrate to a two-phase liquid bath for a predetermined time, said bath comprising an organic solvent phase dispersed in an aqueous phase, said phases being relatively insoluble in one another; and agitating said liquid bath to maintain a relatively uniform state of dispersion of said organic phase in said aqueous phase and maintaining the two-phase relationship between said organic and aqueous phases in said dispersed state; said organic solvent phase comprising one or more components taken form a group consisting of glycol phenol ethers and ethoxylated furfuryl alcohol.

4,619,707

METHOD FOR CHEMICALLY REMOVING ALUMINUM DIFFUSION LAYERS

Manfred Hirschmeier, Karlsfeld, and Josef Kreitl, Viehbach, both of Fed. Rep. of Germany, assignors to MTU Motoren- und Turbinen-Union Muenchen GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 14, 1985, Ser. No. 691,481

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1984, 3414383

Int. Cl.^{4} C23G *1/02*

U.S. Cl. 134—3 **8 Claims**

1. A method for chemically removing a continuous aluminum diffusion layer having a given thickness from a work piece surface without attacking the work piece material, comprising the following steps:

(a) preparing a batch of an aqueous solution containing:
  nitrobenzenesulfonic acid,
  sodium cyanide,
  sodium hydroxide, and the remainder being water; whereby said sodium cyanide constitutes a main ingredient proportion of the batch, wherein said sodium hydroxide corresponds to about one tenth by weight of the main ingredient, and wherein said nitrobenzenesulfonic acid corresponds to less than about fifty percent by weight of said main ingredient,

(b) and exposing said work piece surface to said aqueous solution for a length of time sufficient for the removal of said aluminum diffusion layer thickness and at a temperature below about 80° C.

4,619,708

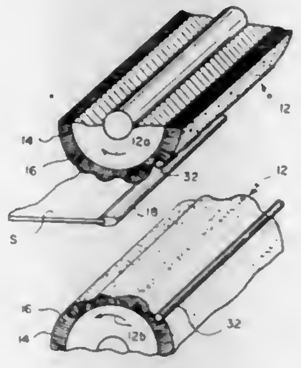
FLEXIBLE SHEET CLEANING APPARATUS AND METHOD

Carl R. Bothner, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 19, 1984, Ser. No. 683,733

Int. Cl.^{4} B08B *7/00, 7/02*

U.S. Cl. 134—6 **8 Claims**



1. In an apparatus for cleaning a flexible sheet moving along a travel path, such sheet having a leading edge portion extending transverse to such travel path, said apparatus including a brush having a fibrous surface adapted to be moved in intercepting relation with such travel path to clean such moving sheet, mechanism for enabling substantial free passage of said leading edge portion by said fibrous surface comprising:

means, located adjacent to such travel path, for engaging said moving fibrous surface upstream of the area of intercept of said surface with such travel path to generate a standing wave in said surface, such wave causing said surface to temporarily move away from such travel path; and

means, coupled to said engaging means, for selectively moving said engaging means into engagement with said moving fibrous surface to generate said standing wave in advance of contact of said leading edge portion with said surface thereby enabling said leading edge portion to move through said intercept area without contacting said surface and positioning said surface in contact with the portion of said sheet following said leading edge portion.

7. Method of cleaning a moving flexible sheet, having a leading edge portion, using a brush for brushing the surface of the moving sheet, said method comprising the steps of:

sensing the approach of a leading edge portion to the brush; and

generating a standing wave in the bristles of the brush to temporarily deflect the bristles around the leading edge portion and to return such bristles into cleaning contact with the portion of the sheet web immediately adjacent to the leading edge portion.

4,619,709

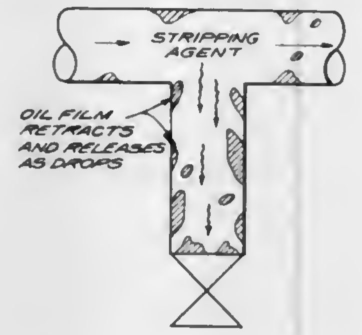
CHEMICAL TREATMENT FOR IMPROVED PIPE LINE FLUSHING

Robert J. Fiocco, Summit, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 386,705, Jun. 9, 1982, abandoned. This application May 31, 1984, Ser. No. 615,565

Int. Cl.^{4} B08B *9/00*

U.S. Cl. 134—22.14 **6 Claims**



1. A method for removing residual hydrocarbon fluids from the internal surfaces of pipe systems comprising: contacting the residual hydrocarbon fluids with a water solution containing a hydrocarbon-stripping agent which is capable of decreasing the wetting characteristics of the residual hydrocarbon fluids on the internal surfaces of the pipe system whereby the hydrocarbon fluid retracts and forms droplets, said hydrocarbon-stripping agent being selected from the group consisting of (a) mixtures of sorbitan monoesters of C_{10} to C_{20} aliphatic carboxylic acids and polyoxalkylene adducts of the sorbitan monoesters wherein said mixtures have a HLB number in the range of from about 5 to about 9, (b) mixtures of sorbitan monoesters of C_{10} to C_{20} aliphatic carboxylic acids and polyoxalkylene adducts of the sorbitan monoesters having a HLB number in the range of from about 9 to 12 with dialkyl sulfosuccinate salts in amounts ranging from about 10% to about 40% by volume of the mixture, and (c) mixtures of either of the foregoing groups with up to 2 parts by volume of a paraffinic solvent and thereafter removing said residual hydrocarbon fluid droplets with the water solution.

4,619,710

DISPOSER CLEANER

Cary K. Kuenn, Milwaukee; Jean M. Young, and John A. Wundrock, both of West Bend, all of Wis., assignors to Badger Pharmacal, Inc., Jackson, Wis.

Continuation of Ser. No. 602,544, Apr. 20, 1984, abandoned. This application Dec. 3, 1985, Ser. No. 804,243

Int. Cl.^{4} B08B *3/08, 3/10, 7/00;* **C11D** *17/00*

U.S. Cl. 134—22.17 **10 Claims**

5. A method of cleaning a food-receiving chamber of a garbage disposer unit, comprising the steps of:

passing water at a rate of about 0.5 to about 4.0 gal./min. and at a temperature of between about 90° F. to about 140° F. through said chamber for about one minute;

reducing the flow of water through said chamber to between about 0.05 to about 0.25 gal./min.;

introducing a container containing a cleaning composition comprising 5–75% by weight of an alkali carbonate, 5–75% by weight of an acid and 5–75% by weight of one or more surfactants into said chamber;

actuating said disposer unit for about 3 to about 5 minutes to shred said container and release said composition within said chamber so that said composition reacts with said water to effervesce and coat the surfaces of said chamber; and

deactuating said disposer unit after foaming of said composition is completed.

8. A product for cleaning a food-receiving chamber of a garbage disposer unit, comprising:

a cleaning composition including 5–75% by weight of an alkali carbonate, 5–75% by weight of an acid, and 5–75% by weight of one or more surfactants, said cleaning composition comprises about 37.5% by weight sodium bicarbonate, about 37.5% by weight adipic acid, and about 25% by weight of a mixture of about 5–95% by weight sodium aluryl sulfate and about 95–5% by weight alpha-olefinsulfonate; and

a packet containing said cleaning composition composed of a biodegradable, disposable material that disintegrates upon actuation of said disposer unit into fragments which aid in scrubbing the wall surfaces of the disposer cleaner.

4,619,711

PAINT STRIPPING FOAM

Peter Olbrueck, Ratingen; Hermann Kluth, Duesseldorf; Bernhard Roederhoff, Duesseldorf; Wolfgang Dierichs, Duesseldorf, and Juergen Wegner, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Aug. 20, 1985, Ser. No. 767,542

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1984, 3434985

Int. Cl.^{4} B08B *7/00;* **C23D** *17/00;* **C09K** *13/02;* **B44C** *1/22*

U.S. Cl. 134—38 **19 Claims**

1. An aqueous alkaline paint stripper composition which forms a foam when dispersed from an aerosol container comprising:

A. from about 47 to about 94% by weight of an aqueous solution containing from about 5 to about 40% by weight of at least one strongly alkaline substance,

B. from about 1 to about 8% by weight of at least one surfactant,

C. from about 5 to about 30% by weight of at least one propellant,

D. from 0 to about 5% by weight of at least one foam stabilizer and/or thickener, and

E. from 0 to about 10% by weight of at least one water-miscible organic solvent.

16. A method for stripping hydrolyzable paint coatings on alkali-stable substrates comprising applying thereto a foam layer of the composition of claim 1 at ambient temperature.

4,619,712

SUPERPLASTIC ALUMINUM ALLOY STRIPS AND PROCESS FOR PRODUCING THE SAME

Hitoshi Miyamoto, Kawasaki; Masanori Momochi, Machida, and Ryoji Mishima, Yokohama, all of Japan, assignors to Mitsubishi Light Metal Industries Limited, Tokyo, Japan

PCT No. PCT/JP82/00434, § 371 Date Jul. 7, 1983, § 102(e) Date Jul. 7, 1983, PCT Pub. No. WO83/01629, PCT Pub. Date May 11, 1983

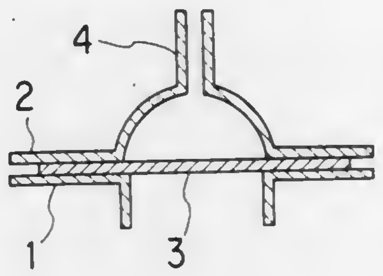
Division of Ser. No. 519,778, Jul. 7, 1983, abandoned. This PCT application Nov. 9, 1982, Ser. No. 589,850

Claims priority, application Japan, Nov. 10, 1981, 56-180247

Int. Cl.^{4} C22F *1/047*

U.S. Cl. 148—2 **3 Claims**

2. A process according to claim 1, wherein in the course of said cold rolling, said strip is subjected to intermediate annealing and the annealed strip is subjected to further cold rolling until the reduction ratio reaches up to a value of not less than 60%.



4,619,713

METHOD OF PRODUCING NODULAR GRAPHITE CAST IRON

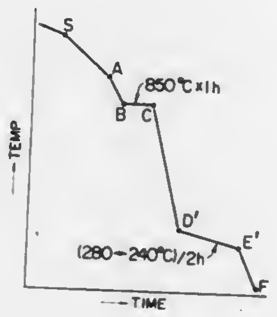
Makoto Suenaga; Mitsuru Yano; Yasuoki Ishihara, and Kohki Ohtsuka, all of Fukuoka, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Oct. 5, 1983, Ser. No. 538,821

Claims priority, application Japan, Feb. 25, 1983, 58-30471; Feb. 25, 1983, 58-30472

Int. Cl.^{4} C21D *5/00*

U.S. Cl. 148—3 **8 Claims**



1. A method of producing nodular graphite cast iron comprising:

pouring a melt having a nodular graphite cast iron composition into a mold;

solidifying the melt in the mold to form a casting;

removing the casting from the mold at a predetermined temperature above the A_1 transformation temperature;

rapidly cooling the casting at a cooling rate sufficient to prevent the generation of pearlite;

stopping the rapid cooling at a temperature above the M_S point;

substantially isothermally transforming the casting to form a matrix structure consisting essentially of bainite; and

cooling the casting to normal temperature.

4,619,714

CONTROLLED ROLLING PROCESS FOR DUAL PHASE STEELS AND APPLICATION TO ROD, WIRE, SHEET AND OTHER SHAPES

Gareth Thomas, Berkeley; Jae-Hwan Ahn, Albany, both of Calif., and Nack-Joon Kim, Laramie, Wyo., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 638,046, Aug. 6, 1984. This application Nov. 29, 1984, Ser. No. 676,066

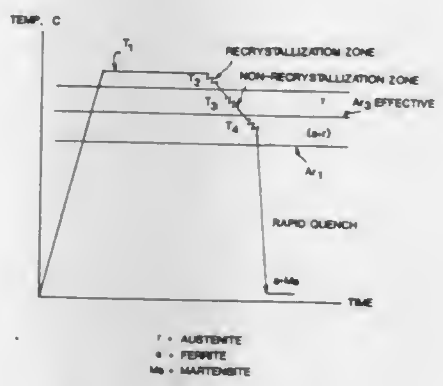
Int. Cl.^{4} C21D *7/14, 7/10*

U.S. Cl. 148—12 B **4 Claims**

1. In a method for producing a high strength, high ductility steel characterized by an ultra-fine fibrous ferrite-lath martensite microstructure, comprising heating a steel composition at a temperature T_1 for a period sufficient to substantially completely austenize said composition;

hot rolling said composition in the austenite recrystallization region at a temperature T_2 and further rolling in the non-recrystallization γ-region at temperature T_3; the improvement comprising the steps of

rolling said composition at a temperature T_4; wherein T_4 is



a temperature below the effective transition point Ar_3, within the $(\alpha+\gamma)$ region, and

rapidly quenching said composition to an ambient temperature to convert the austenite to lath martensite.

4,619,715

FUSIBLE POWDERED METAL PASTE

Jennie S. Hwang, Pepper Pike, Ohio, assignor to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 649,493, Sep. 11, 1984, Pat. No. 4,557,767, which is a continuation-in-part of Ser. No. 546,794, Oct. 31, 1983, abandoned. This application Dec. 9, 1985, Ser. No. 806,779

Int. Cl.⁴ B23R *35/34*

U.S. Cl. 148—23 **38 Claims**

1. An improved essentially nonaqueous noncorrosive inorganic salt free paste vehicle for soft solder metal powder, said vehicle comprising a nonhydrocarbon resinous binder in which is dispersed a nonaqueous organic liquid composition, said composition having a surface tension of from 43 to 65 or higher dynes/cm. at 20° C.

4,619,716

METHOD OF BRAZING AN ALUMINUM MATERIAL

Kenichi Suzuki, and Fusayoshi Miura, both of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Oct. 10, 1984, Ser. No. 659,423

Claims priority, application Japan, Oct. 13, 1983, 58-191311; Nov. 7, 1983, 58-208822; Dec. 9, 1983, 58-233362; Dec. 16, 1983, 58-238564; Jul. 31, 1984, 59-162175; Aug. 14, 1984, 59-170251; Aug. 20, 1984, 59-173530

Int. Cl.⁴ B23K *35/34*

U.S. Cl. 148—26 **32 Claims**

1. A method of brazing an aluminum material which comprises: a chemical conversion coating step of bringing at least a brazing desired part of the aluminum material into contact with a treating solution containing potassium and fluorine ions to form a brazing flux layer composed of potassium pentafluoroaluminate on the surface of said aluminum material; and a brazing step of heating at least the flux layer formed part to a temperature of lower than the melting point of the aluminum material and higher than the melting point of a brazing alloy to join said aluminum material to a counterpart material with said brazing alloy.

4,619,717

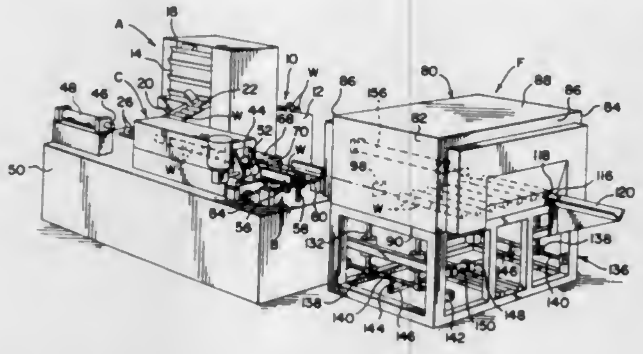
HEATING MAGNETIC METAL WORKPIECES

Norbert R. Balzer, and David R. Soworowski, both of Boaz, Ala., assignors to Park-Ohio Industries, Inc., Shaker Heights, Ohio

Filed Apr. 23, 1984, Ser. No. 602,914

Int. Cl.⁴ H01F *1/04*

U.S. Cl. 148—112 **8 Claims**



1. The method of heating a workpiece of magnetic metal from about ambient temperature to a selective elevated processing temperature above the Curie point temperature of said workpiece metal comprising the steps of:

(a) initially inductively preheating the said workpiece from about ambient temperature to a preheat temperature of about the Curie point temperature of the workpiece metal in an induction heating coil energized by an electric power source; and,

(b) then immediately radiantly post-heating said workpiece to said processing temperature in the heating chamber of an electric radiant heat furnace.

4,619,718

METHOD OF MANUFACTURING A GROUP II–VI SEMICONDUCTOR DEVICE HAVING A PN JUNCTION

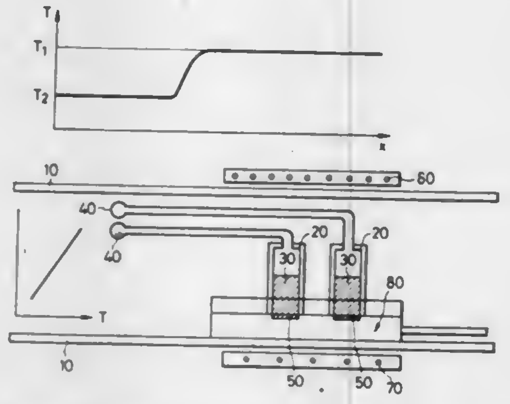
Jun-ichi Nishizawa, No. 6-16, Komegafukuro 1-chome, Sendai-shi, Miyagi-ken, Japan

Continuation-in-part of Ser. No. 266,042, May 21, 1981, abandoned. This application Jul. 10, 1984, Ser. No. 628,974

Claims priority, application Japan, Jun. 12, 1980, 55-79805

Int. Cl.⁴ H01L *21/368, 21/383, 21/388*

U.S. Cl. 148—171 **7 Claims**



1. A method of manufacturing a semiconductor device having a pn junction formed in a Group II–VI compound semiconductor crystal, comprising:

preparing an n-type Group II–VI compound semiconductor crystal by the temperature difference method under controlled vapor pressure of the crystal-constituting Group VI element from a melt that contains constituting elements; and

forming a p type semiconductor region on top of said n-type semiconductor region by an epitaxial growth technique using a temperature difference method under controlled vapor pressure of said crystal-constituting Group VI element from a melt that contains essentially constituting elements of the crystal and an impurity having a p type conductivity.

4,619,719

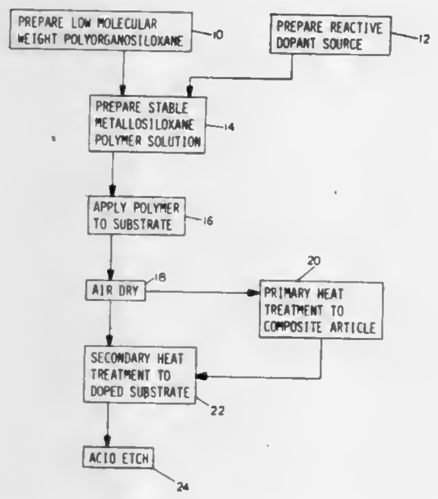
PROCESS FOR FORMING A DOPED OXIDE FILM AND COMPOSITE ARTICLE

Ian M. Thomas, Temperance, Mich., and James J. Tillman, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 604,713, Apr. 27, 1984, abandoned, which is a continuation of Ser. No. 343,667, Jan. 28, 1982, abandoned. This application Jan. 27, 1986, Ser. No. 822,942

Int. Cl.⁴ H01L *21/385*

U.S. Cl. 148—188 **24 Claims**


PREPARE LOW MOLECULAR WEIGHT POLYORGANOSILOXANE
10
PREPARE REACTIVE DOPANT SOURCE
12
PREPARE STABLE METALLOSILOXANE POLYMER SOLUTION
14
APPLY POLYMER TO SUBSTRATE
16
AIR DRY
18
20
PRIMARY HEAT TREATMENT TO COMPOSITE ARTICLE
SECONDARY HEAT TREATMENT TO DOPED SUBSTRATE
22
ACID ETCH
24

22. A process for doping a semiconductor substrate material comprising:

a. combining a silicon tetra-alkoxide of the formula SiX_4 wherein X is OR, wherein R is an alkyl group of one to six carbon atoms with less than a stoichiometric amount of water, in the presence of an acid hydrolysis catalyst that is a strong mineral acid, to prepare a solution of a low molecular weight polyorganosiloxane;

b. reacting said polyorganosiloxane with a soluble reactive dopant source compound containing P as a dopant element to form a solution of a siloxane polymer;

c. coating said siloxane polymer onto said substrate material;

d. converting the coating formed in step c to a glassy layer on said substrate material; and

e. heating said glassy layer coated substrate material for a time sufficient and at a temperature sufficient to diffuse said dopant from the glassy layer into said substrate material.

4,619,720

MAGNETIC AMORPHOUS ALLOYS COMPRISING CO, FE, ZR, AND NB

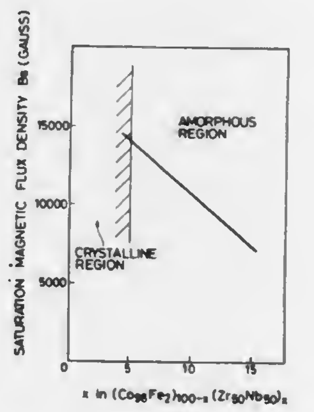
Ikuo Sakai, Sagamihara; Hiroyasu Karimoto, Tokyo, and Yasuhiko Nakayama, Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Sep. 4, 1984, Ser. No. 647,185

Claims priority, application Japan, Sep. 1, 1983, 58-161357

Int. Cl.⁴ C22C *19/07*

U.S. Cl. 148—403 **3 Claims**



1. A magnetic amorphous alloy having a compositional formula

$$(Co_{100-y}Fe_y)_{100-x}(Zr_{100-w}Nb_w)_x$$

in which $5 \leqq x \leqq 10$, $0.5 \leqq y \leqq 4$, and $20 \leqq w \leqq 90$.

4,619,721

EMULSION-CONTAINING EXPLOSIVE COMPOSITIONS

Lawrence A. Cescon, Portogruaro, Italy, and Robert W. Trebilcock, Littleton, Colo., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 15, 1985, Ser. No. 787,442

Int. Cl.⁴ C06B *45/02*

U.S. Cl. 149—21 **27 Claims**

1. In a storage-stable emulsion blend explosive comprising a sensitized blend of inorganic oxidizing salt particles and a water-in-oil emulsion comprising a carbonaceous fuel having compenents which form a continuous emulsion phase, an aqueous solution of an inorganic oxidizing salt forming a discontinuous phase dispersed as discrete droplets within said continuous phase, and an emulsifying agent, the improvement comprising inorganic oxidizing salt particles containing at least about 15 percent by weight of a fines component comprised of inorganic oxidizing salt particles which are smaller than 297 micrometers, the weight ratio of said emulsion to the total inorganic oxidizing salt particles being in the range of about from 20/80 to 70/30.

4,619,722

PROPELLANT MATERIAL WITH OXIDIZER REDUCTION TO LEAD OXIDE

Frank A. Marion, Glendale, Ariz., assignor to Universal Propulsion Company, Inc., Phoenix, Ariz.

Filed Sep. 12, 1983, Ser. No. 530,956

Int. Cl.⁴ C06B *33/14*

U.S. Cl. 149—41 **35 Claims**

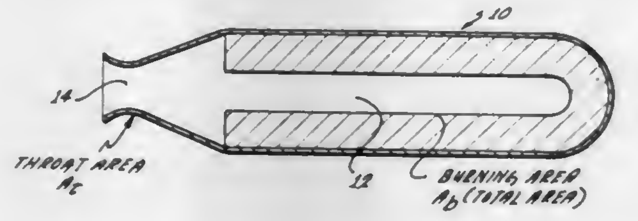
1. In combination for use a propellant,

a binder also constituting a reducing agent,

a first oxidizing material containing lead and oxygen,

a second oxidizing material containing oxygen and a metal other than lead,

a fuel additive comprising a material selected from a group consisting of aluminum, beryllium, magnesium, lithium and titanium, the first and second oxidizing materials and the fuel additive being provided in relative percentages by weight to obtain a reduction of the first oxidizing material to lead oxide, rather than lead, during the combustion of the propellant.



4,619,723
METHOD FOR PREFORMATION OF CUSHION AND APPARATUS THEREFOR

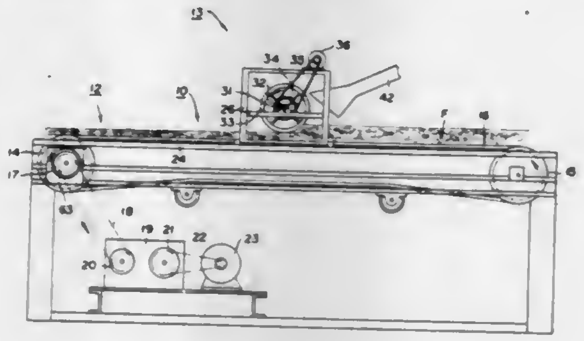
Sadaaki Takagi, 39, Mikage-cho, Okazaki-shi, Aichi-ken, Japan

Filed Aug. 14, 1981, Ser. No. 292,907

Claims priority, application Japan, Aug. 18, 1980, 55-112664; Aug. 18, 1980, 55-112665; Jun. 23, 1981, 56-95960

Int. Cl.⁴ D04H *1/48*

U.S. Cl. 156—62.2 **17 Claims**



1. A method for the preformation of a cushion for a seat with a prescribed, sculptured profile, characterized by forming a belt of fluffy, resiliently-compressible aggregate of three-dimensional, curled, short-fiber filaments on a conveyor means, causing said conveyor means carrying thereon said aggregate of filaments to be advanced under a rotary scraping member the outer surface of which comprises a multiplicy of transversely and circumferentially-spaced, axially-oriented, scraping needles while keeping said rotary scraping member in rotation and said scraping needles in contact with the advancing aggregate of filaments in a manner such that part of the filaments is scraped from surface portions of said aggregate to give said aggregate of filaments the desired prescribed, sculptured profile, wherein the scraping is effected across substantially the entire width of the aggregate of filaments with the transversely-disposed needles having different lengths corresponding to a prescribed, sculptured transverse profile.

13. An apparatus for the preformation of a cushion for a seat with a prescribed, sculptured profile, comprising conveyor means, means for forming a belt of fluffy, resiliently-compressible aggregate of three-dimensionally curled, short-fiber filaments and scraping means formed of a rotary scraping member disposed transversely on said conveyor means and comprising at the outer surface thereof a multiplicity of transversely and circumferentially-spaced, axially-oriented, scraping needles having a sculpturing transverse profile corresponding to the desired prescribed, sculptured profile, and wherein the rotary member comprises a cylindrical body which has a fixed diameter and wherein said needles project axially and extend over substantially the entire width of the conveyor means with the transversely-disposed needles having different lengths corresponding to a prescribed sculptured, transverse profile.

4,619,724
METHOD FOR PRODUCING FABRIC AND GARMENTS

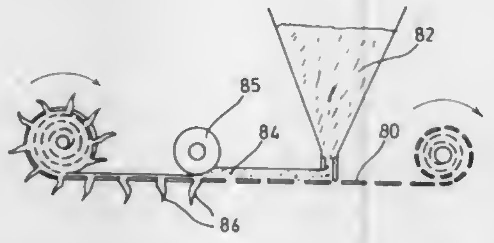
Yser Chatow, 15 Rehov HaAviv, Petach Tikva, Israel

Filed Sep. 20, 1982, Ser. No. 420,691

Claims priority, application Israel, Dec. 20, 1981, 64594

Int. Cl.⁴ B32B *5/16*

U.S. Cl. 156—72 **13 Claims**



1. A method for producing a fabric item comprising the steps of:

producing a perforated stretchable substrate in the shape of the desired fabric item and having a multiplicity of perforations extending therethrough;

providing a pressurized flow of a liquid to said substrate producing a pressure gradient for inflating said substrate, thereby stretching it and expending the perforations thereof thereby to facilitate the entry of fibers thereinto;

supplying fibers to said pressurized flow of said liquid thereby causing said fibers to engage the perforations in said substrate by driving said fibers itno said enlarged perforations through means of said pressurized liquid in which said fibers are suspended;

terminating said pressurized flow of said liquid; and

retaining said fibers in the perforations to define said fabric item.

4,619,725
METHOD OF PRODUCING A HEADREST

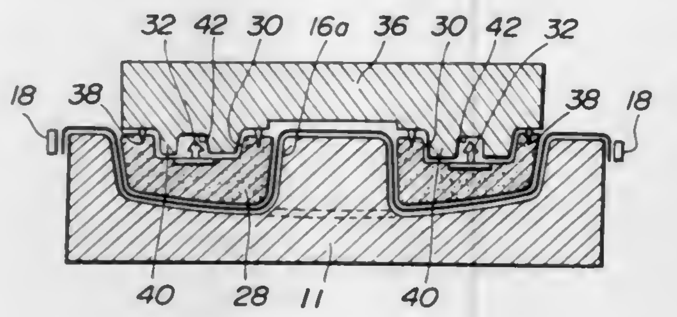
Masakazu Muraishi, Isehara, and Kazumi Hira, Fujisawa, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 9, 1985, Ser. No. 773,539

Claims priority, application Japan, Sep. 10, 1984, 59-190109

Int. Cl.⁴ B32B *31/04*

U.S. Cl. 156—182 **5 Claims**



1. A method of producing a headrest, comprising in steps:

(a) preparing a lower mold formed with a rectangular gutter-like cavity leaving at the central portion a central land;

(b) extending a thermoplastic film over the shaped work face of the lower mold;

(c) heating said thermoplastic film to soften the same;

(d) placing an upper mold with a counter-shaped face onto the work face of said lower mold to provide a molded article of the thermoplastic film;

(e) applying the inner surface of the molded article with adhesive;

(f) putting a pad of shock absorbing material into said molded article;

(g) pressing said pad against said molded article to assure bonding therebetween;

(h) cutting the molded article at the portions other than the portions which substantially cover the pad thereby to provide freely movable fragments of the film;

(i) folding back the fragments of the film to cover the remained naked portions of said pad thereby to provide one pad unit;

(j) preparing another pad unit by carrying out the same producing steps;

(k) putting the two pad units together in face-to-face relationship with a core member installed therebetween; and

(l) thrusting welts between the mutually facing faces of the assembled first and second pads.

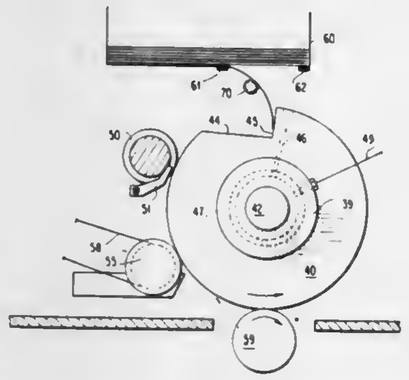
4,619,726
LABEL APPLICATOR

Stephen F. Cook, Westfield; Harland S. Fisher, Longmeadow, and Theodore E. Kosciuczyk, Worcester, all of Mass., assignors to Westvaco Corporation, New York, N.Y.

Filed May 13, 1985, Ser. No. 733,323

Int. Cl.⁴ B65C *9/02, 9/10, 9/14*

U.S. Cl. 156—366 **10 Claims**



1. An apparatus for transferring label sheets from a supply magazine to the surface of a substrate article comprising:

label magazine means for confining a stack of label sheets having outer faces and inner faces, respectively, said labels being stacked in said magazine with the inner face toward a bottom end of said magazine, said bottom end having a partially open area for withdrawal of a label sheet therefrom;

oscillating picker means for gripping the inner face of the bottom-most label sheet near one end thereof in the region of said partially open magazine bottom area at one oscillatory limit whereby said one end of said label sheet is drawn through said open area as said picker means is moved away from said magazine toward an opposite oscillatory limit;

rotatively driven applicator roll means having a substantially continuous cylindrical perimeter surface interrupted by one notch means projecting radially into said surface and extended axially across said surface, said applicator roll means including label sheet vacuum gripping means within said applicator roll positioned along a line parallel with and adjacent to an abrupt edge in said surface respective to said notch means, said magazine means, picker means and applicator roll means being relatively positioned and operatively timed whereby said picker means places said one end of said label sheet into the rotating notch means at an opposite oscillatory limit of said picker means for abutment by said abrupt edge and reversal of said label sheet into outer face contact with said applicator roll surface, said label sheet being held to said applicator roll surface by said vacuum gripping means to be completely withdrawn from said magazine by continued rotation of said applicator roll;

end-less conveyor means for movement of an article past and proximate of the perimeter of said rotating applicator roll for receipt of said label sheet from said applicator roll; and,

timing means for coordinating the label sheet delivery position of said applicator roll to the article reception position of said conveyor means.

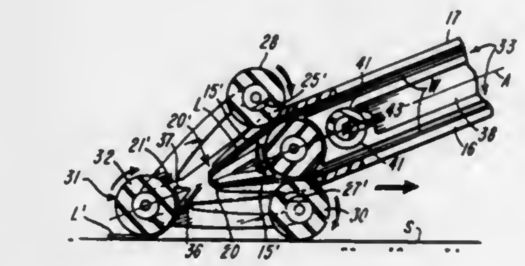
4,619,727
HAND-HELD LABELER

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Aug. 16, 1982, Ser. No. 408,310

Int. Cl.⁴ B44C *1/00, 7/00;* **B32B** *31/00*

U.S. Cl. 156—541 **14 Claims**



1. A hand-held labeler for applying labels releasably adhered to a carrier web, comprising: a labeler body, the body having means for successively delaminating labels from the carrier web, means adjacent the delaminating means for applying labels, first, second and third feed rolls rotatably mounted by the body, the first and second feed rolls being disposed in feeding cooperation, the second the third rolls being disposed in feeding cooperation, the third feed roll projecting beyond the body and being cooperable with a surface to be labeled, means defining a feed path for the carrier web to between the first and second feed rolls, to and about the delaminating means, and to between the second and third feed rolls, and wherein the first and second feed rolls contact the labels and carrier web upstream of the delaminating means and the second and third feed rolls contact the carrier web downstream of the delaminating means.

4,619,728
LAMINATING APPARATUS

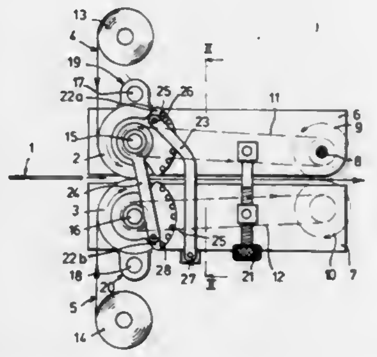
Fredericus J. Brink, Veenendaal, Netherlands, assignor to Ingenieursbureau Het Noorden B.V., Veenendaal, Netherlands

Filed Sep. 6, 1984, Ser. No. 647,571

Claims priority, application Netherlands, Sep. 7, 1983, 8303102

Int. Cl.⁴ B30B *3/04, 15/34*

U.S. Cl. 156—555 **11 Claims**



1. An apparatus for laminating articles by applying a heat-activated first plastic foil to the top surface of said articles and a heat-activated second plastic foil to the bottom surface of said articles, comprising a first frame and a second frame and pivoting means for pivotably disposing said first frame with respect to said second frame, a first pressing roller rotatably supported on said first frame, a second pressing roller rotatably

supported on said second frame, driving means for rotating said first and second pressing rollers, said pivoting means moving said first frame between a first position where said first pressing roller is pressed against said second pressing roller and a second position where said first pressing roller is spaced from said second pressing roller, said first and second plastic foils being supplied to said first and second pressing rollers at least where said first and second pressing rollers press against one another when in said first position, lifting means for lifting said first and second plastic foils away from said first and second pressing rollers, respectively, when in said second position to permit said first and second pressing rollers to rotate freely, and heating means for heating said first and second pressing rollers.

4,619,729

MICROWAVE METHOD OF MAKING SEMICONDUCTOR MEMBERS

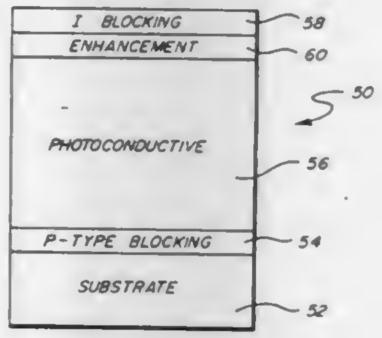
Annette G. Johncock, Royal Oak, and Stephen J. Hudgens, Southfield, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 580,081, Feb. 14, 1984. This application May 15, 1985, Ser. No. 734,576

The portion of the term of this patent subsequent to Apr. 15, 2003, has been disclaimed.

Int. Cl.⁴ C30B *25/02*

U.S. Cl. 156—606 **18 Claims**



1. An improved method of forming a semiconductor member, comprising:

providing a substrate;

providing a source of microwave energy;

providing a substantially enclosed reaction vessel and placing said substrate into said vessel;

introducing into said vessel at least one reaction gas, including at least one semiconductor element to be deposited;

Providing an operating pressure about an order of magnitude below a conventional RF deposition pressure;

coupling said microwave energy into said vessel to form a plasma in said vessel from said reaction gas, including forming depositing species, primarily free radicals, from the semiconductor element and forming molecular ions of the semiconductor element; and

depositing a semiconductor alloy member onto said substrate from said depositing species while controlling the plasma potential to alter ion bombardment of the depositing species, controlling said plasma potential including applying an external electrical bias to said substrate, said bias external to and separate from said substrate.

4,619,730

PROCESS FOR SOLIDIFICATION IN A MAGNETIC FIELD WITH A D.C. HEATER

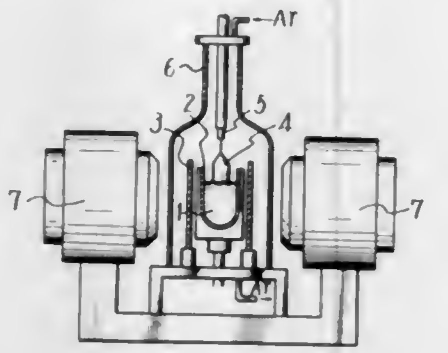
Toshihiko Suzuki; Nobuyuki Isawa; Yasunori Ohkubo, and Kinji Hoshi, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 188,519, Sep. 18, 1980, abandoned. This application Jan. 13, 1982, Ser. No. 339,065

Claims priority, application Japan, Sep. 20, 1979, 54-121339; Jan. 28, 1980, 55-8576; Jan. 28, 1980, 55-8577; Jan. 28, 1980, 55-8578

Int. Cl.⁴ C30B *15/14*

U.S. Cl. 156—617 SP **7 Claims**



1. A process for solidifcation comprising the steps of: providing a liquid material having electrical conductivity in a container made of an electrical insulator and eliminating strong vibration by applying substantially DC current to an electric heater which is energized to melt said liquid material, pulling a crystal which is solidified from said liquid material and applying a stationary magnetic field to said liquid material.

4,619,731

PROCESS FOR ETCHING VIA HOLES IN ALUMINA

Daniel A. Buttry, Laramie, Wyo.; Mohamad T. Krounbi, San Jose, and Owen R. Melroy, Morgan Hill, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1985, Ser. No. 792,409

Int. Cl.⁴ B44C *1/22;* C03C *15/00, 25/06*

U.S. Cl. 156—644 **5 Claims**

1. A process for etching via holes in an alumina layer comprising contacting selected areas of said layer with an etchant bath comprising an aqueous solution of ethylenediaminetetraacetic acid at a pH above 9.

4,619,732

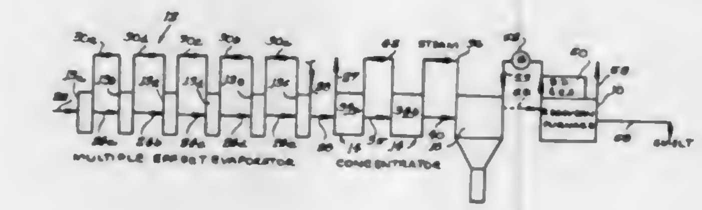
METHOD FOR DRYING PULPING LIQUOR TO A BURNABLE SOLID

David T. Clay, and Timothy B. Cartwright, both of Appleton, Wis., assignors to The Institute of Paper Chemistry, Appleton, Wis.

Continuation-in-part of Ser. No. 557,604, Dec. 2, 1983, abandoned. This application Jul. 25, 1985, Ser. No. 759,085

Int. Cl.⁴ D21C *11/00, 11/10*

U.S. Cl. 162—29 **9 Claims**



1. A method of preparing non-tacky pulping liquor solid particulates comprising

concentrating pulping liquor to between about 50 and about 75 weight percent solids, the balance being essentially all water,

providing a pressurized drying vessel having a region and containing a bed of pre-formed pulping liquor solid particulates within said region,

within said region, fludizing said bed of particulates with a gaseous medium stream, comprised of at least about 85% v/v superheated steam, balance non-interactive gases, said medium flowing upwards through said bed of particulates at a sufficient velocity to fluidize said particulates, said velocity being at least about 6.1 feet per second,

introducing said pulping liquor into said fluidized bed,

maintaining the temperature within said fluidized bed region at, at least, the boiling temperature of water from the pulping liquor at the pressure within said pressurized vessel, the temperature in said region not to exceed a maximum temperature of between about 375° F. to about 390° F., above which organic components of said pulping liquor tend to pyrolyze and not to drop below a minimum temperature of between about 245° F. and about 300° F., below which pulping liquor solid particulates aggregate in the presence of steam, the pressure in said vessel being between about 40 and about 70 psig, the temperature and pressure being such that water boils from said pulping liquor,

the major portion of the thermal energy for maintaining said temperature being provided by passing steam at such elevated temperatures and pressures through heat-exchange means within said pressurized region that the steam in said heat-exchange means condenses, releasing its latent heat as sensible heat that is transferred to said fluidized bed region, whereupon said gaseous medium vaporizes water from the pulping liquor with said region, creating additional solid particulates and substantially lowering superheat of said stream of gaseous medium,

said gaseous medium stream being introduced at a temperature at least about 10° F. higher than the temperature maintained within said fluidized bed,

continuously withdrawing solid particulates from said fluidized bed so as to maintain the size range of bed particulates at between about 0.5 and about 5.0 mm in diameter, the residence of black liquor in said fluidized bed being sufficient to produce particulates having less than about 10% water content,

withdrawing said lower superheat gaseous medium from said vessel,

directing a portion of said withdrawn medium through a superheater and recirculating the same as said fluidizing medium, and

utilizing another portion of said withdrawn medium in said concentrating step.

4,619,733

POLLUTION FREE PULPING PROCESS USING RECYCLED WASH EFFLUENT FROM MULTIPLE BLEACH STAGES TO REMOVE BLACK LIQUOR AND RECOVERING SODIUM HYDROXIDE FROM THE BLACK LIQUOR

Boon-Lam Kooi, 14429 Swallow Rue, Pierrefonds, Quebec H9H 1S6, Canada

Continuation of Ser. No. 556,381, Nov. 30, 1983, abandoned. This application Apr. 24, 1985, Ser. No. 725,506

Int. Cl.⁴ D21C *9/147, 9/153, 9/16*

U.S. Cl. 162—30.1 **3 Claims**

1. A process for pulping lignocellulosic material comprising the steps of:

(a) subjecting the lignocellulosic material to a digestion stage in the presence of NaOH as active alkali compound charged at between 20 to 25% and anthraquinone charged at between 0.1 to 0.4% at a temperature of between 160° C. to 170° C. for a time period of between 120 to 150 minutes to have a final K number of 40 to 60.

(b) defiberizing the said pulp from step (a);

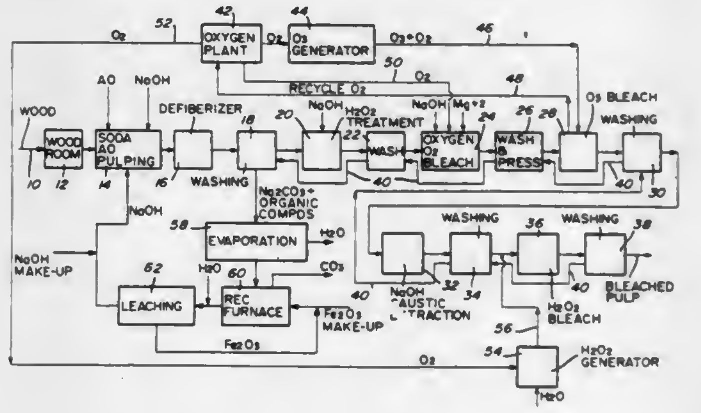
(c) washing the defiberized pulp from step (b) and sending black liquor removed by the washing to an evaporator;

(d) treating the washed pulp from step (c) with between 0.5 to 1.0% of hydrogen peroxide and 3 to 4% of sodium hydroxide for a period of between 60 to 90 minutes at a pulp consistency of between 15 to 25% to give a final K number of between 20 to 30 and subsequently washing the treated pulp;

(e) subjecting the washed pulp from step (d) to an oxygen bleaching with oxygen charged at between 0.2 to 3% with a pulp consistency of between 3 to 30% at a temperature of between 80° to 120° C. at a pH of between 9 to 12 for a time period of 10 to 60 minuted with a magnesium ion present at between 0.1 to 0.3% and NaOH present at between 3–7% and subsequently washing said pulp;

(f) further bleaching said pulp from step (e) in the presence of ozone at between 0.2 to 1% at a pulp consistency of between 1 to 40% for a time of between 5 to 300 minutes at a temperature of between 15° to 60° C. at a pH of between 2 to 7 and subsequently washing the pulp;

(g) subjecting said washed pulp from step (f) to a sodium hydroxide extraction with sodium hydroxide being applied at between 1 to 3%, a pulp consistency of between 1 to 15%, a temperature of between 20° to 60° C., a pH of between 6 to 8 for a time period of between 70 to 90 minutes and subsequently washing the pulp;



(h) further bleaching said pulp from step (g) in the presence of hydrogen peroxide charged at between 0.2 to 2% at a pulp consistency of between 10 to 25% for a time period of between 10 to 300 minutes at a temperature of between 20° to 90° C. with a pH of between 7 to 11 and subsequently washing the pulp;

(i) the effluent from the washing of the said pulp in the above said steps (h), (g), (f) and (e) is counter-currently recycled to the said washing step in (c) and subsequently sent to the evaporator;

all percentages being based on oven-dried pulp, the process being further characterized in that the black liquor from the evaporator in step (c) is forwarded to a recovery furnace to recover sodium hydroxide which is then utilized in step (a), the oxygen from the ozone bleaching in step (f) being recycled and, utilized in step (e) and the process being further characterized in being free of sulphur and chlorine.

4,619,734

SANITARY PAPER WEB HAVING HIGH BULK, BULK SOFTNESS AND SURFACE SOFTNESS AND METHOD OF MANUFACTURING SAID WEB

Ingmar A. Andersson, Hammarö , Sweden, assignor to KMW Aktiebolag, Karlstad, Sweden

PCT No. PCT/SE84/00339, § 371 Date Apr. 24, 1985, § 102(e) Date Apr. 24, 1985, PCT Pub. No. WO85/01761, PCT Pub. Date Apr. 25, 1985

PCT Filed Oct. 16, 1984, Ser. No. 727,246

Claims priority, application Sweden, Oct. 21, 1983, 8305797

Int. Cl.⁴ D21H *5/24*

U.S. Cl. 162—111 **12 Claims**

1. A sanitary paper web having high bulk, bulk softness and

surface softness, and comprising a creped sanitary paper web and expanded microspheres of thermoplastic material incorporated therein in an amount from 1 to 10% based on the weight of the dry web, said web having a high bulk value of at least about 4.0×10^{-3} m^3/kg.

4,619,735

METHOD OF RETARDING PAPER DEGRADATION WITH TIME BY TREATMENT WITH MELAMINE, AND METHOD OF PRODUCING AGEING-RESISTANT PAPER COATED WITH MELAMINE

Richard V. Norton, Columbus, Ohio, assignor to Melamine Chemicals, Inc., Donaldsonville, La.

Filed Feb. 13, 1985, Ser. No. 701,153

Int. Cl.⁴ D21H *1/28*

U.S. Cl. 162—135 **9 Claims**

1. The method of treating existing paper products to retard degradation upon ageing over a prolonged time period comprising contacting existing paper with a super-critical solution of a melamine compound selected from the group consisting of melamine, ammeline, melam, melem, and mixtures thereof, to provide on said paper at least a superfical coating of said melamine compound, said coating being effective to retard the degradation of paper upon ageing over a prolonged time period.

4,619,736

APPARATUS FOR DEFIBERIZING, SCREENING AND PUMPING CELLULOSE PULP OR RECYCLED PAPER

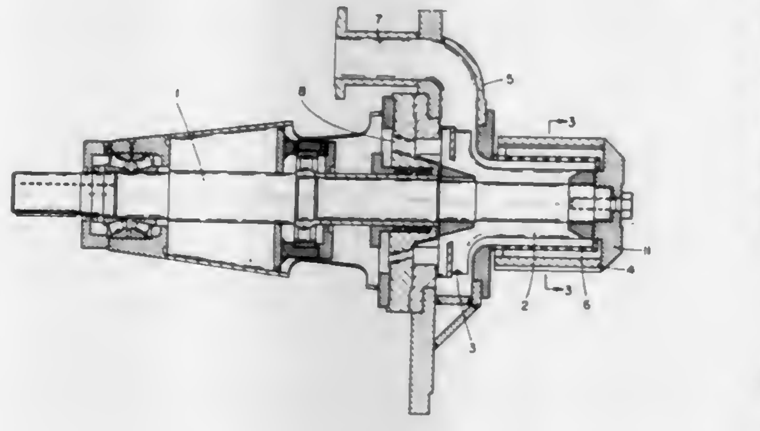
Kaj O. Henricson, Kotka, and Pekka O. Peltola, Anjala, both of Finland, assignors to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Jul. 3, 1984, Ser. No. 627,415

Claims priority, application Finland, Jul. 12, 1983, 832531

Int. Cl.⁴ D21B *1/32*

U.S. Cl. 162—261 **10 Claims**



1. Apparatus for defiberizing, screening and pumping pulp or recycled paper, at a determined high consistency which comprises

a centrifugal pump having an inlet, an impeller and a defiberizing rotor disposed in said inlet in front of said impeller, a screen member comprising a screen plate surrounding and disposed in front of the defiberizing rotor in the flow direction of the pulp for separating nondisintegrated material;

and defiberizing elements on the opposite side of said screen member from said defiberizing rotor for initially defiberizing said pulp or paper at said determined high consistency.

9. Apparatus for defiberizing, screening and pumping pulp or recycled paper, at a determined high consistency, said apparatus comprising

a centrifugal pump having an inlet, an impeller and a defiberizing rotor disposed in said inlet in front of said impeller

and a screen member surrounding and disposed in front of the defiberizing rotor in the flow direction of the pulp for separating nondisintegrated material;

wherein said screen member comprises a plurality of stationary surfaces and a plurality of moving surfaces in operative proximity with said stationary surfaces and forming a plurality of screening slots therewith.

4,619,737

ROLLER FOR MACHINES IN THE PAPER-MAKING INDUSTRY

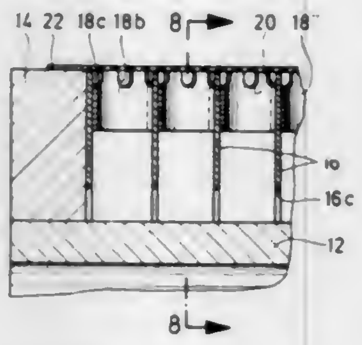
Emil Holz, Eningen, Fed. Rep. of Germany, assignor to Hermann Finckh Maschinenfabrik GmbH & Co., Fed. Rep. of Germany

Filed Sep. 6, 1985, Ser. No. 773,361

Claims priority, application European Pat. Off., Sep. 29, 1984, 84111680.9

Int. Cl.⁴ D21F *1/60, 1/46*

U.S. Cl. 162—357 **5 Claims**



1. A roller for machines in the paper-making industry, said roller comprising a support tube, a plurality of bands attached to the support tube and extending at least approximately in the circumferential direction and standing upright in the radial direction, said bands including straight and corrugated band sections alternating with each other in the axial direction and connected one to another at connecting points, said corrugated band sections having recesses at their radially outer edges approximately in the center between the connectiong points, and a cover fabric forming the circumference of the roller and supported and resting directly on at least the radially outer edges of the corrugated band sections with passages provided between the cover fabric and the bands at the connecting points of the latter in the region of the radially outer edges of the corrugated band sections, said passages allowing a through flow in the circumferential direction.

4,619,738

APPARATUS FOR OIL SHALE RETORTING

Arthur E. Lewis, Los Altos; Robert L. Braun, Livermore; Richard G. Mallon, Livermore, and Otis R. Walton, Livermore, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 534,472, Sep. 21, 1983, abandoned. This application Aug. 2, 1984, Ser. No. 636,960

Int. Cl.⁴ C10B *1/04*

U.S. Cl. 202—85 **16 Claims**

1. Apparatus for retorting oil shale particles of variable size, including fines, comprising:

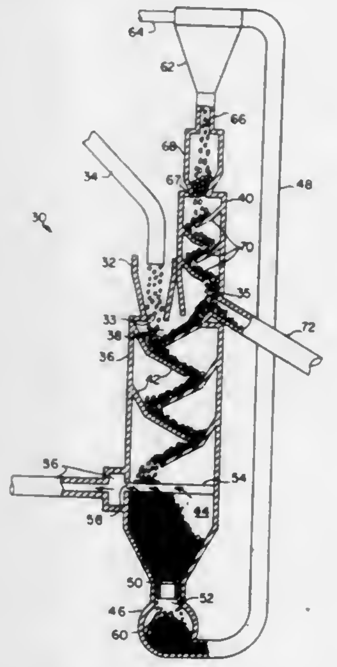
a substantially vertical cascading burner having a pair of opposing walls;

a plurality of vertically spaced baffles extending from the opposing walls of the burner inwardly and downwardly into the burner in an overlapping relationship, successive baffles extending alternately from opposing walls of the burner said baffles, comprise a first segment and a second segment connected to and above the first segment and having a slope greater than the first segment, wherein the first segment has a slope, measured from the horizontal, in the range of about 24°-60°;

a substantially vertical cascading mixer below the burner, the burner being mounted to the mixer and communicating therewith through an opening therebetween, the mixer having a pair of opposing walls;

a plurality of vertically spaced baffles extending from the opposing walls of the mixer inwardly and downwardiy into the mixer in an overlapping relationship, successive baffles extending alternately from opposing walls of the mixer;

raw shale input means mounted to the top of the mixer adjacent to the burner and communicating with the mixer through an opening therebetween;



a substantially vertical moving packed bed pyrolyzer below the mixer, the mixer being mounted to and opening into the pyrolyzer;

spent shale removal means connected at the bottom of the pyrolyzer and communicating with the pyrolyzer through an opening therebetween; and

product removal means operatively connected to the pyrolyzer.

4,619,739

METHOD AND APPARATUS FOR MEASURING HALOGEN ION CONCENTRATION

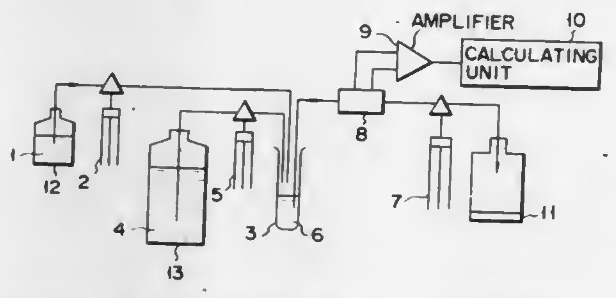
Ken-ichi Kanno; Tetsuya Gatayama; Masao Koyama, and Junji Koezuka, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 2, 1986, Ser. No. 815,467

Claims priority, application Japan, Jan. 14, 1985, 60-4361; Jan. 14, 1985, 60-4362

Int. Cl.⁴ G01N *27/28, 27/50*

U.S. Cl. 204—1 T **15 Claims**



1. A method for measuring a halogen ion concentration in a solution, comprising the steps of:

bringing halogen ion-selective detection means comprising a silver/silver halide electrode, and a reference electrode into a solution whose halogen ion concentration is to be measured; and

measuring an electromotive force of said halogen ion-selective detection means corresponding to the halogen ion concentration in the solution with the presence of silver ions predissolved in the solution.

11. An apparatus for measuring a halogen ion concentration in a solution, comprising:

an ion-selective electrode unit including a halogen ion-selective electrode comprising a silver/silver halide electrode;

a cell, having a flow path for the solution, for supporting said ion-selective electrode unit so as to expose it into said flow path;

means for introducing the solution into said flow path of said cell;

means for dissolving silver ions in the solution;

potential measurement means for measuring a potential of said ion-selective electrode unit when the solution in which the silver ions are dissolved is introduced into said flow path; and

means for calculating an ion concentration in the solution based on the potential measured by said potential measurement means.

4,619,740

METHOD OF MEASURING CURRENT DENSITY IN ELECTROPLATING BATHS

Detlev Nitsche, and Rolf Rolff, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Mar. 18, 1985, Ser. No. 713,266

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1984, 3410875

Int. Cl.⁴ C25D *5/02*

U.S. Cl. 204—15 **3 Claims**

1. In a method for measuring a current density in electroplating baths during a galvanizing process for electroplating printed circuit boards, the improvement comprising the steps of applying to a conductive area of an upper surface of a printed circuit board to be electroplated an isolated metallic island; and measuring the current density directly on the upper surface of the printed circuit board to be electroplated by measuring a voltage between the printed circuit board and said metallic island.

4,619,741

PROCESS FOR PREPARING A NON-CONDUCTIVE SUBSTRATE FOR ELECTROPLATING

Karl L. Minten, Cannock, United Kingdom, and Galina Pismennaya, Palisades Park, N.J., assignors to Olin Hunt Specialty Products Inc., Palisades Park, N.J.

Continuation-in-part of Ser. No. 721,964, Apr. 11, 1985, abandoned. This application Nov. 29, 1985, Ser. No. 802,892

Int. Cl.⁴ C25D *5/02, 5/54*

U.S. Cl. 204—15 **22 Claims**

1. A process for electroplating a conductive metal layer to the surface of a non-conductive material which comprises:

(a) preparing a liquid dispersion of carbon black comprised of:

  (1) carbon black particles having an average particle diameter of less than about 3.0 microns in said dispersion;

  (2) an effective dispersing amount of a surfactant which is compatible with said carbon black; and

  (3) liquid dispersing medium, wherein the amount of carbon black is sufficient to coat substantially all of said non-conducting surfaces and is less than about 4% by weight of said liquid dispersion;

(b) applying said liquid dispersion to the surface of the non-conducting material;

(c) separating substantially all of said liquid dispersing medium from said carbon black particles, whereby said particles are deposited on said non-conductive surface in a substantially continuous layer; and

(d) electroplating a substantially continuous conductive metal layer over the deposited carbon black layer and said non-conductive surface.

4,619,742
PROCESS FOR THE SIMULTANEOUS GRAINING AND CHROMIUM-PLATING OF STEEL PLATES AS SUPPORTS FOR LITHOGRAPHIC APPLICATIONS

Engelbert Pliefke, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 3, 1985, Ser. No. 751,538

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1984, 3424528

Int. Cl.⁴ C25D *11/38, 5/36*

U.S. Cl. 204—34 **14 Claims**

1. A process for preparing a chromium-plated steel or steel-based substrate suitable for use as a lithographic printing plate support, comprising the steps of:
   (A) plating said substrate with alternating current in an acid electrolyte bath containing chromium ions, chloride ions and sulfate ions with alternating current; and
   (B) in the same electrolyte bath, carrying out an electrochemical treatment of said substrate with direct current.

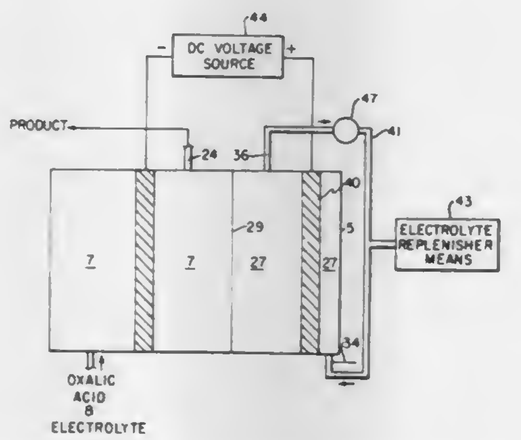
4,619,743
ELECTROLYTIC METHOD FOR REDUCING OXALIC ACID TO A PRODUCT

Ronald L. Cook, Aurora, Ill., assignor to Texaco Inc., White Plains, N.Y.

Filed Jul. 16, 1985, Ser. No. 755,528

Int. Cl.⁴ C25B *3/04*

U.S. Cl. 204—77 **6 Claims**



1. A method for reducing oxalic acid to a product comprising the steps of:
   separating a catholyte and an aqueous anolyte, having ammonium chloride, in a manner so that electrons can pass between them,
   mixing oxalic acid with an aqueous electrolyte having ammonium chloride to provide the catholyte,
   passiang the catholyte through a porous cathode having a catalyst,
   passing the anolyte through a porous anode, and
   providing a d.c. voltage across the cathode and the anode so as to cooperate in the reduction of the oxalic acid within the cathode to a product.

4,619,744
RECOVERY OF HEAVY METALS FROM AQUEOUS SOLUTIONS

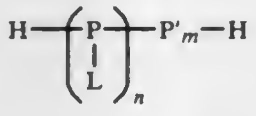
Robert L. Horton, Tulsa, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 28, 1985, Ser. No. 791,883

Int. Cl.⁴ C25C *1/00;* **B01D** *15/06, 11/04*

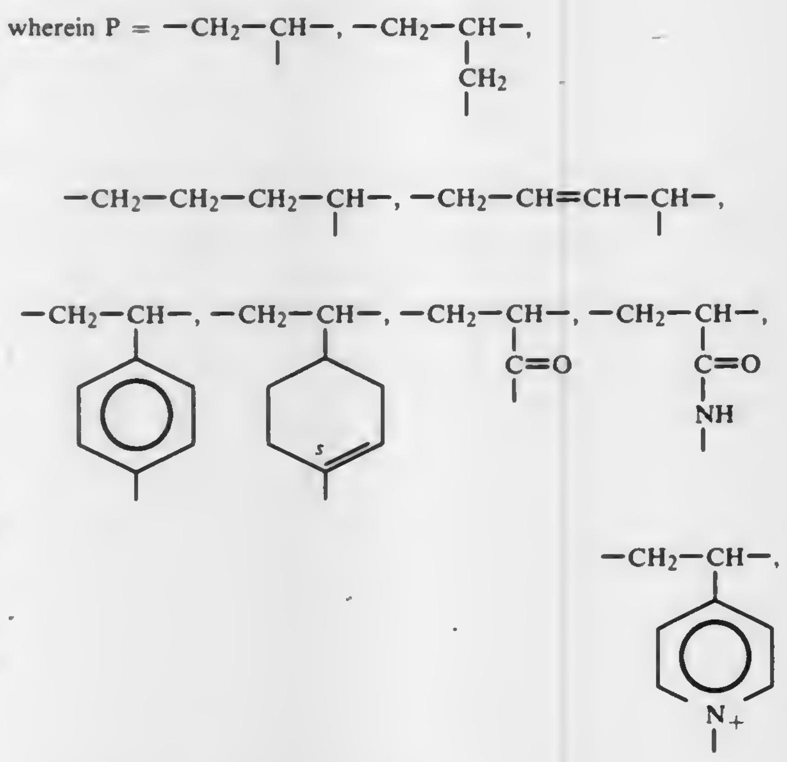
U.S. Cl. 204—105 R **12 Claims**

1. A process for the recovery of heavy metals selected from the group consisting of elements with atomic numbers
   39-51,
   57-84, and
   89-117 from aqueous solution which comprises
   (a) contacting said solution with at least one soluble, cross-linkable polyelectrolyte having the structure:

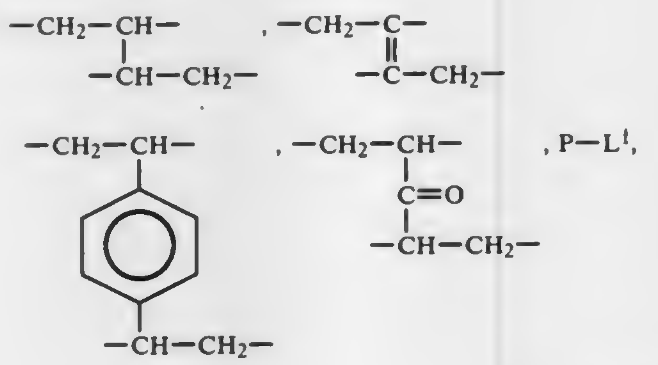


$$\mathrm{H}{-}\left(\underset{\mathrm{L}}{\underset{|}{\mathrm{P}}}\right)_n{-}\mathrm{P'}_m{-}\mathrm{H}$$

wherein P =

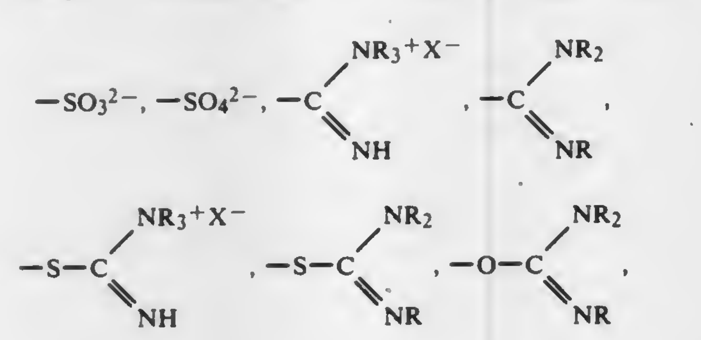


P' =



P—R, and P—X;

L = —NR$_3$$^+X^-$, —CH$_2$—NR$_3$$^+X^-$, —CO$_2$$^-$, —CH$_2$—CO$_2$$^-$,



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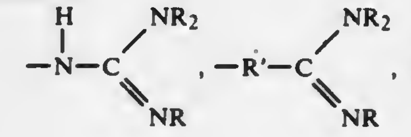


X = Cl, Br or I;

L^1 = any member of the group defined by L, with the proviso that for any given polymer L≠L^1,
R=H or C$_1$-C$_8$ alkyl or aryl group; and
R'=C$_1$-C$_4$ alkyl group,
n=2 up to 10^6, and
m=0 up to n, with the proviso that m is selected so that the resulting polymer is water soluble, under conditions suitable to cause crosslinking and precipitation of said polyelectrolyte, and
(b) recovering the precipitate produced in step (a).

4,619,745
PROCESS FOR THE ELECTROCHEMICAL DECONTAMINATION OF WATER POLLUTED BY PATHOGENIC GERMS WITH PEROXIDE FORMED IN SITU

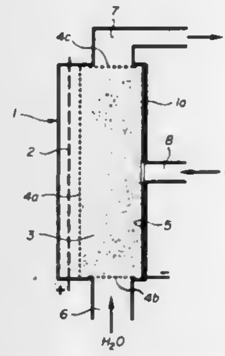
Augusto Porta, Carouge, and Antonin Kulhanek, Le Lignon, both of Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

Filed Oct. 10, 1984, Ser. No. 659,319

Claims priority, application Switzerland, Oct. 11, 1983, 5524/83

Int. Cl.⁴ C02F *1/46*

U.S. Cl. 204—151 **11 Claims**



1. A process for the decontamination of polluted water containing pathogenic germs as pollutants which comprises the following steps:
   (a) providing an electrolytic cell which comprises:
      (i) a housing;
      (ii) an elongate anode made of inert material in said housing;
      (iii) an elongate cathode of structurally porous carbon or graphite in said housing, freely permeable to water and extending parallel to said anode;
      (iv) a source of direct current in electrochemical contact with said anode and said cathode; and
      (v) a source of oxygen in contact with the polluted water to decontaminate the same;
   (b) feeding oxygen into said housing at said cathode;
   (c) passing the polluted water through the electrolytic cell and through said cathode parallel to said cathode and said anode, and in contact with both said cathode and said anode, while electrolyzing the polluted water to electrolytically reduce the oxygen at, and in contact with said cathode to hydroperoxide depollutant products, said products oxidizing said pathogenic germs to decontaminate the water; and
   (d) withdrawing the decontaminated water from the electrolytic cell.

4,619,746
PROCESS FOR TOPCOATING AN ELECTROCOATED SUBSTRATE WITH A HIGH SOLIDS FLUID COATING

James M. Delaney, Blawnox, and Edward L. Jozwiak, Gibsonia, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 2, 1985, Ser. No. 782,826

Int. Cl.⁴ C25D *13/06, 13/04*

U.S. Cl. 204—181.1 **13 Claims**

1. A method of applying a decorative or protective coating to a substrate, comprising:
   (i) electrophoretically applying a basecoat on the substrate,
   (ii) drying the substrate by baking over an effective temperature-time schedule to a stage short of complete cure so as to evaporate residual water and volatile material from the coating in order to effect reflow of said coating,
   (iii) non-electrophoretically applying a thermosetting fluid, high solids topcoat comprising isocyanate curing agents,
   (iv) curing the substrate by baking the same over a temperature-time schedule sufficient to effect complete cure.

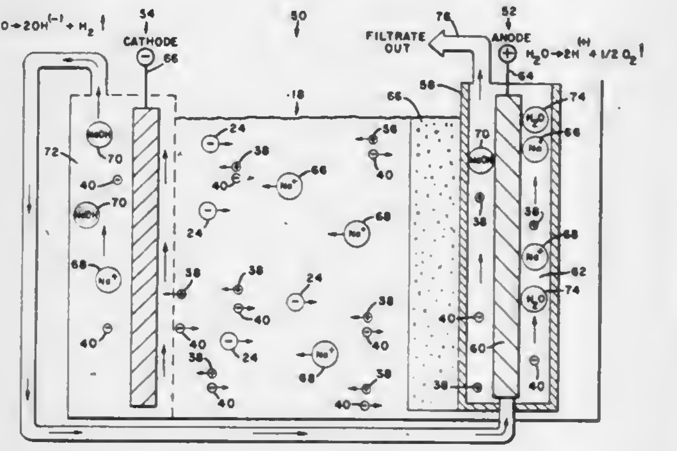
4,619,747
ELECTROFILTER PROCESS USING RECIRCULATING ELECTROLYTE

Jonathan K. Hoadley, Stamford, and Mark P. Freeman, deceased, late of Darien, both of Conn. (by Helen M. Freeman, executrix), assignors to Dorr-Oliver, Stamford, Conn.

Filed Apr. 3, 1985, Ser. No. 719,921

Int. Cl.⁴ B01D *13/02*

U.S. Cl. 204—182.3 **11 Claims**



1. A process for the dewatering or separation of particles in an aqueous suspension by means of an electrofilter, comprising the following steps:
   a. submerging at least an anode assembly, said anode assembly comprising an anode, anolyte chamber and a membrane wall, and a cathode assembly, said cathode assembly comprising a cathode, catholyte chamber and a membrane wall, of said electrofilter into said aqueous suspension for the purpose of depositing a cake of said particles onto said anode assembly and withdrawing filtrate at said cathode assembly;
   b. supplying an initial amount of electrolytic solution containing soluble compounds of an alkali metal or alkaline earth metal to said anolyte chamber of said anode assembly of the electrofilter, such that ions from the soluble compounds of alkali metal or alkaline earth metal are transported across the membrane or filter wall of said anode assembly and migrate through said aqueous suspension towards said cathode assembly;
   c. transporting said alkali metal ions or alkaline metal earth ions, together with the filtrate from said aqueous suspension, through the membrane or filter wall of said cathode assembly into said catholyte chamber, such that said alkali metal ions or alkaline metal earth ions react with OH−, produced at the cathode by a reaction between said filtrate and the cathode, to form a hydroxide solution; and

d. recirculating a solution comprising said filtrate and hydroxide solution from said cathode assembly to said anolyte chamber of the anode assembly; whereby said hydroxide solution breaks down at the anode to form alkali metal ions or alkaline earth metal ions and OH^- ions for neutralizing the reaction products at said anode.

4,619,748

METHOD AND APPARATUS FOR THE REACTIVE VAPOR DEPOSITION OF LAYERS OF OXIDES, NITRIDES, OXYNITRIDES AND CARBIDES ON A SUBSTRATE

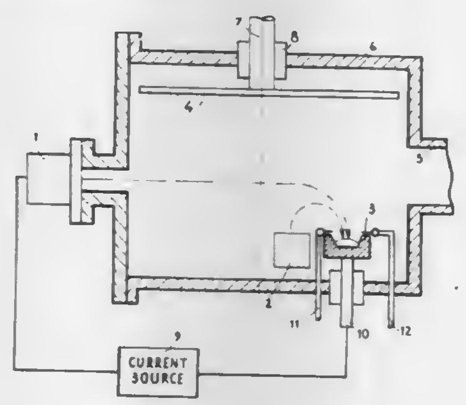
Eberhard Moll, Schellenberg; Hans K. Pulker, Triesen, both of Liechtenstein, and Walter Haag, Buchs, Switzerland, assignors to Balzers Aktiengesellschaft, Liechtenstein

Filed Feb. 28, 1986, Ser. No. 834,757

Claims priority, application Switzerland, Mar. 1, 1985, 928/85

Int. Cl.⁴ C23C *15/00*

U.S. Cl. 204—192.31 **8 Claims**



1. A method for the vapor deposition of layers of oxides, nitrides, oxynitrides, and carbides which comprises ion plating while the surface to be coated is electrically insulated or mounted on the insulation, and during the coating maintaining an electric plasma in front of the surface to be coated in such a way that the ion incidence density on the substrate is from 0.5 to 2 mA per cm^2 and the surface is charged to a potential of from −5 to −60 V.

4,619,749

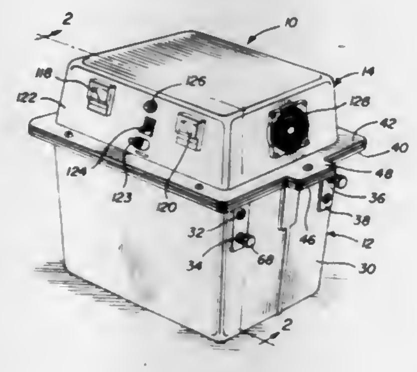
SYSTEM FOR EXTRACTING SILVER FROM LIQUID SOLUTIONS

Ronald C. Nusbaum, 12651 Hillcrest Dr., Longmont, Colo. 80501

Filed Mar. 25, 1985, Ser. No. 715,377

Int. Cl.⁴ C25C *7/00, 1/20*

U.S. Cl. 204—228 **17 Claims**



1. In combination with apparatus for recovering metal from a body of electrolytic liquid conducting plating current therethrough between at least two electrodes including current control means connected to one of the electrodes for changing said plating current supplied thereto from a voltage source, means connected in series with the other of the electrodes for establishing an electrode potential on the other of the electrodes dependent on resistance characteristics of the liquid, the improvement comprising voltage selection means connected to said source for selectively generating a reference threshold potential substantially equal to said electrode potential under a predetermined threshold condition of the liquid, detector means connected to said other of the electrodes and the voltage selection means for comparing the electrode potential with said reference threshold potential and means coupling the detector means to the current control means for prolonging recovery of metal by corrective change in the plating current in response to substantial matching of the potentials being compared by the detector means as the liquid approaches the predetermined threshold condition.

4,619,750

CATHODE POT FOR AN ALUMINUM ELECTROLYTIC CELL

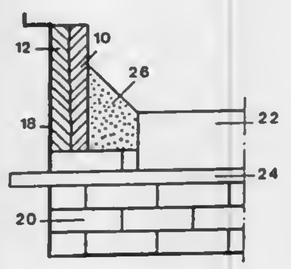
Jean-Claude Bessard, deceased, late of Sierre, Switzerland (by Nadine Bessard, heir), assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Feb. 21, 1985, Ser. No. 704,086

Claims priority, application Switzerland, Mar. 2, 1984, 1042/84

Int. Cl.⁴ C25C *3/08;* **C25B** *11/12*

U.S. Cl. 204—243 R **14 Claims**



1. Cathode pot of a fused salt electrolytic cell for the production of aluminum in service containing a melt of aluminum and electrolyte which comprises an outer steel shell, a layer of insulation on the floor, carbon floor elements on said insulation, iron cathode bars surrounded by said carbon floor elements, prefabricated layered composite bodies lining the sides of the pot bonded to and forming a seal with the carbon floor elements, wherein the inner side of the said composite extends from the carbon floor elements along the sides of the pot and comprises essentially carbonaceous material and some fraction of binder and the outer side is spaced outwardly of said inner side and comprises essentially a hard, ceramic material which conducts electric current poorly, conducts heat well, is resistant towards attack by molten aluminum and the prevailing atmosphere and has a coefficient of thermal expansion comparable to that of carbon, and wherein the said sides are intimately bonded together having an intimately joined interface structure, and the composite is characterized by good flow of heat from inside to outside.

4,619,751

ANODE INSULATOR FOR ELECTROLYTIC CELL

Douglas J. Robinson, 8832 E. Holmes, Tucson, Ariz. 85710

Filed Apr. 24, 1985, Ser. No. 726,507

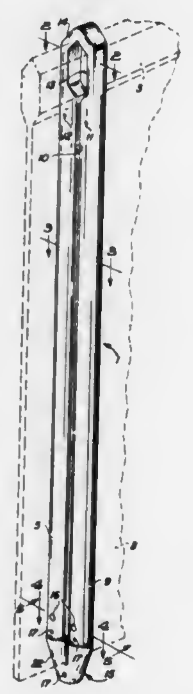
Int. Cl.⁴ C25C *7/04*

U.S. Cl. 204—267 **10 Claims**

1. An improved anode insulator for use in an electrowinning cell, including a plurality of spaced anodes each supported by an anode header bar, each having a plurality of the improved anode insulators disposed thereon for preventing contact with a plurality of spaced cathodes that are respectively disposed between adjacent anodes, each improved anode insulator comprising:

(a) first and second elongated insulating means disposed along intermediate portions of opposite faces of one of the anodes for preventing any contact between the faces of that anode and adjacent cathodes;

(b) upper connecting means disposed around the top and side portions of the anode header bar supporting that anode and conforming to the shape of the header bar; for preventing contact between the adjacent cathodes and that header bar, the upper connecting means being attached to upper end portions of the first and second elongated insulative means to support the first and second elongated insulating means, the upper connecting means also providing the function of guiding adjacent cathodes between adjacent anodes during lowering of the cathodes to their proper positions between the anodes, wherein the outer surfaces of the upper connecting means do not extend substantially further outward from the anode header bar toward an adjacent anode header bar than the outer surface portions of the first and second elongated insulating means, whereby minimum anode to cathode spacing can be achieved; and



(c) lower connecting means for joining the lower end portions of the first and second elongated insulating means and preventing sideways displacement of the first and second elongated means in directions parallel to the faces of that anode, the first and second elongated insulating means being connected together at their end portions so that the first and second elongated insulating means, the upper connecting means, and the lower connecting means form a closed loop.

4,619,752

ELECTRODE FOR ELECTROLYTIC EXTRACTION OF METALS OR METAL OXIDES

Konrad Koziol, Röthenbach a.d. Pegnitz, and Erich Wenk, Nuremberg, both of Fed. Rep. of Germany, assignors to Conradty GmbH & Co. Metallelektroden KG, Röthenbach a.d. Pegnitz, Fed. Rep. of Germany

Filed Feb. 20, 1985, Ser. No. 703,548

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1984, 3406777

Int. Cl.⁴ C25C *7/02;* **H01R** *43/00*

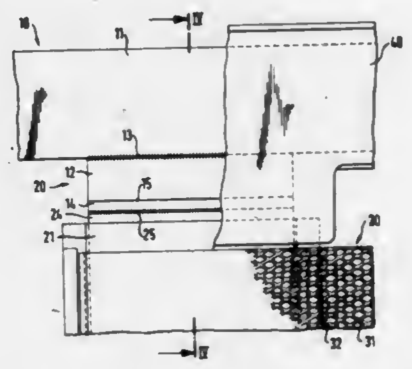
U.S. Cl. 204—286 **13 Claims**

1. An electrode for the electrolytic extraction of metals or metal compounds comprising:

a horizontal current feed having an electrically conductive rail;

at least one current distributor branching from said rail and comprising a sleeve of valve metal and a conductive metal core in electrical connection with said sleeve; an active part which is mechanically and electrically connected to said sleeve; and

a copper element connected to said rail and a connection element of valve metal welded by means of explosion welding to said copper element, said connection element of valve metal further electrically and mechanically connected to said current distributor.



4,619,753

BIPOLAR PLATE FOR AN APPARATUS WITH A STACKED CONFIGURATION, SAID APPARATUS COMPRISED OF A PLURALITY OF ELECTROCHEMICAL CELLS WITH SOLID ELECTROLYTE; AND METHOD OF MANUFACTURING SAID PLATE

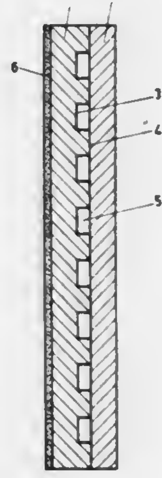
Hans-Jörg Christen, Untersiggenthal; Hubert Devantay, Neuenhof; Claude Schellenberg, Birmenstorf; Günther Scherer, Gebenstrof, and Samuel Stucki, Nussbaumen, all of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Jan. 18, 1985, Ser. No. 692,522

Claims priority, application Switzerland, Jan. 26, 1984, 354/84

Int. Cl.⁴ B65D *85/18;* **H01M** *4/88*

U.S. Cl. 204—290 F **4 Claims**



1. A bipolar plate for an apparatus having a stacked configuration comprised of a plurality of eletrochemical cells and employing a solid electrolyte, wherein at least one support comprised of porous titanium is provided which support serves as a current collector; characterized in that the support is comprised of a porous titanium plate having a parallel groove structure, which structure is welded on its face side to a nonporous, solid titanium plate at the plane loci of contact, whereby laterally closed, continuous channels are formed; and in that the side of the porous titanium plate which is directed away from the parallel groove structure is provided with a surface layer or coating comprised of a material which is a catalyst for electrolytic reactions.

4,619,754
CHEMICALLY MODIFIED ELECTRODES AND THEIR USES

Katsumi Niki; Katsuyoshi Kobayashi, both of Yokohama; Hiroo Inoguchi, Okazaki, and Tatsuhiko Yagi, Shizuoka, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Mar. 8, 1983, Ser. No. 473,207

Claims priority, application Japan, Mar. 9, 1982, 57-36870

Int. Cl.⁴ C25B *11/20*

U.S. Cl. 204—290 R **10 Claims**

1. An electrically conducting solid electrode having a surface on which a monomeric nitrogen-containing electron mediator and a strong acidic cation exchange resin containing sulfonated, aromatic groups are immobilized.

4,619,755
SPUTTERING SYSTEM FOR CATHODE SPUTTERING APPARATUS

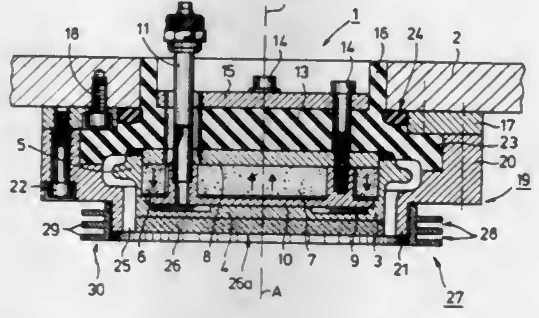
Gerhard Hessberger, Karlstein, and Michael Scherer, Rodenbach, both of Fed. Rep. of Germany, assignors to Hans Zapfe, Rodgau-3, Fed. Rep. of Germany

Filed Jul. 25, 1985, Ser. No. 759,026

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1984, 3427587

Int. Cl.⁴ C23C *15/00*

U.S. Cl. 204—298 **5 Claims**



1. Sputtering system for cathode sputtering apparatus, comprising: a cathode base body having a target with a sputtering surface of a material to be sputtered, a dark-space shield separated by an air gap from the cathode base body, and an anode disposed in the area of the margin of the target and having at least one groove opening in a side of the anode that is not in the line of sight of the target, the anode (27) being disposed on the margin of the dark-space shield (19) and side walls of the at least one groove (28) thereof being aligned substantially parallel to the sputtering surface (26*a*) of the target (26).

4,619,756
METHOD TO INHIBIT DEPOSIT FORMATION

Ghazi B. Dickakian, Kingwood, Tex., assignor to Exxon Chemical Patents Inc., Florham Park, N.J.

Continuation of Ser. No. 722,865, Apr. 11, 1985, abandoned. This application Oct. 11, 1985, Ser. No. 786,929

Int. Cl.⁴ C10G *9/16*

U.S. Cl. 208—48 AA **20 Claims**

1. A process for inhibiting deposit formation on the contact surfaces of structures confining heated hydrocarbon fluid which exhibits substantial fouling comprising the step of introducing into said hydrocarbon fluid at least an inhibiting amount of thiophene-containing polycondensed aromatic/naphthenic compounds of number average molecular weight ($\overline{M}n$) from 200 to 1,000.

4,619,757
TWO STAGE HYDROTREATING PRETREATMENT IN PRODUCTION OF OLEFINS FROM HEAVY HYDROCARBONS

Heinz Zimmermann, Munich, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 546,354, Oct. 28, 1983, abandoned, which is a continuation-in-part of Ser. No. 527,952, Aug. 31, 1983, abandoned. This application Dec. 19, 1984, Ser. No. 683,764

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1982, 3232395

Int. Cl.⁴ C10G *65/08, 69/06*

U.S. Cl. 208—57 **28 Claims**

21. In a process for hydrotreating heavy hydrocarbons, the improvement which comprises conducting the hydrotreating in two stages with two different hydrotreating catalysts, and with two different starting hydrocacrbon fractions, wherein the first stage a first starting hydrocarbon fraction high in polyaromatic compounds is selectively degraded to form a product reduced in polyaromatic compounds, and in the second stage, said product is refined in admixture with a low viscosity, non-hydrogenated second starting hydrocarbon fraction low in polyaromatic substances to remove sulfur, sulfur compounds and N-bases therefrom, the hydrotreating catalyst in the first stage being a zeolitic catalyst and the hydrotreating catalyst in the second stage being a non-zeolitic catalyst, wherein said first starting hydrocarbon fraction high in polyaromatics has a viscosity of 20–40 centistokes, and after the hydrogenation in the first stage a viscosity of about 5–15 centistokes, and the fraction low in polyaromatics has a viscosity of about 1–5 centistokes, with the differential viscosity between the fraction low in polyaromatics and the hydrogenated high in polyaromatics fraction being about at least 5 centistokes, all viscosities being measured at 50° C.

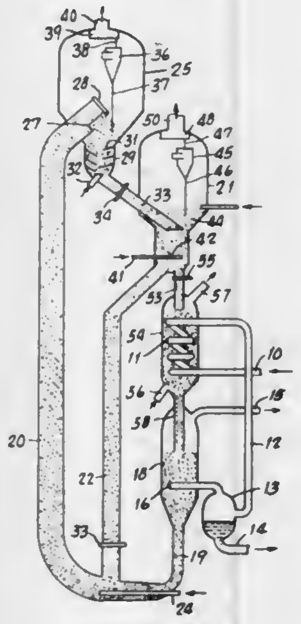
4,619,758
FLUID CATALYTIC CRACKING METHOD

Roy E. Pratt, Port Neches; Scott M. Sayles, Nederland, both of Tex.; Kerry W. Bowers, Birmingham, Ala., and Richard P. Scott, deceased, late of Groves, Tex. (by Candice C. Scott, executrix), assignors to Texaco, Inc., White Plains, N.Y.

Continuation of Ser. No. 396,564, Jul. 9, 1982, abandoned. This application Apr. 24, 1984, Ser. No. 602,632

Int. Cl.⁴ C10G *11/18, 25/09*

U.S. Cl. 208—85 **17 Claims**



1. A process for the production of lower molecular weight hydrocarbons including normally gaseous olefins from a liquid hydrocarbon charge stock comprising both paraffinic and non-paraffinic components which comprises contacting vaporized hydrocarbon charge stock having a subatmospheric vaporization temperature in the range of 260° to 400° C. comprising both paraffinic and non-paraffinic components with a cracking catalyst comprising an alumino silicate zeolite molecular sieve in an amorphous silica-alumina matrix at a temperature in the range of 300° to 400° C. and at subatmospheric pressure effecting selective adsorption of paraffinic hydrocarbons and loading the zeolite molecular sieve in said catalyst with paraffinic hydrocarbons, separating catalyst comprising said molecular sieve loaded with adsorbed paraffinic hydrocarbons from said mixture of hydrocarbons, subjecting said catalyst comprising said loaded molecular sieve to a cracking reaction temperature in the range of 650° to 700° C. for a period of time in the range of 0.1 to 2 seconds effecting cracking of said paraffins, and separating products of reaction comprising normally gaseous olefins from said cracking catalyst.

4,619,759
TWO-STAGE HYDROTREATING OF A MIXTURE OF RESID AND LIGHT CYCLE OIL

John W. Myers; Stephen L. Parrott, and Edward L. Sughrue, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 24, 1985, Ser. No. 726,760

Int. Cl.⁴ C10G *65/04*

U.S. Cl. 208—210 **12 Claims**

1. A process for the catalytic hydrotreating of a feed stream comprising a mixture of a resid and a light cycle oil comprising the steps of:

contacting said feedstream in the absence of a catalyst primarily designed for hydrocracking under suitable hydrotreating conditions with at least one first catalyst composition which comprises alumina and an amount of cobalt and molybdenum that promotes hydrotreating; and

then contacting said thus treated feedstream under suitable hydrotreating conditions with at least one second catalyst composition comprising alumina and an amount of molybdenum and nickel that promotes hydrotreating wherein the total amount of nickel plus molybdenum of the at least one second catalyst composition exceeds the total amount of cobalt plus molybdenum of the at least one first catalyst composition thereby producing a product stream having an improved cetane index.

4,619,760
ORE FLOTATION AGENT FROM 2-MERCAPTOBENZIMIDAZOLE AND FLOTATION PROCESSES THEREWITH

Kenneth B. Kimble; Clarence R. Bresson, and Harold W. Mark, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

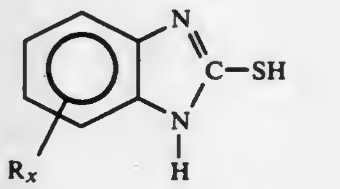
Filed May 2, 1985, Ser. No. 729,770

Int. Cl.⁴ B03D *1/14;* C09K *3/00*

U.S. Cl. 209—166 **13 Claims**

1. A process for producing a nitrogen- and sulfur-containing aromatic ore flotation collector which comprises:

(a) reacting an alkali metal hydroxide with a 2-mercaptobenzimidazole having the formula:



wherein R is a C_1–C_6 carbon radical and x is 0–4, inclusive, then thereafter

(b) reacting the production of (a) with carbon disulfide under conditions suitable to form said nitrogen and sulfur-containing aromatic ore flotation collector, and

(c) recovering the solid reaction mass produced in (b) as the product of the process.

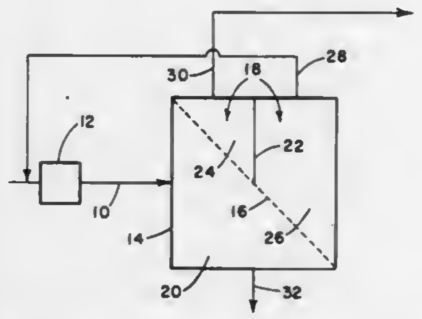
4,619,761
METHOD FOR SCREENING OR FRACTIONATION

Rune G. Franzen, Williamsport, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Dec. 20, 1984, Ser. No. 683,820

Int. Cl.⁴ B07B *1/00, 1/04;* D21C *9/08*

U.S. Cl. 209—250 **15 Claims**



1. A method for at least partially separating a first class of particles from a second class of particles, said first class of particles being larger in at least one dimension than said second class of particles, comprising the steps of:

(a) entraining said first and second classes of particles in a first process fluid stream and then introducing said first process fluid stream into a primary chamber of a housing interiorly divided by a screening means into said primary chamber and a secondary chamber with said secondary chamber itself being divided into a recirculation section and an output section by an interior wall extending between about the screen member to about the housing such that each of said sections are at least partially bounded by the screening means

(b) within said housing, separating a second and a third process fluid stream from said first process fluid stream, said second process fluid stream flowing through the screening means into the output section of the secondary chamber of the housing and said third process fluid stream flowing through the screening means into the recirculating chamber of said secondary chamber, such that said second and third process fluid steams contain a lower proportion of said first class of particles as compared to said second class of particles than does said first process fluid stream;

(c) discharging the portion of the first process fluid stream not passing through the screening means from the primary chamber through the housing and discharging said second process fluid stream through said housing from the output section of the secondary chamber; and

(d) recirculating said third process fluid stream from the recirculation section of the primary chamber to the first process fluid stream.

4,619,762
DEVICES FOR RECOVERING POLYMETAL COMPOUNDS DISCHARGED FROM A SUBMARINE HYDROTHERMAL SOURCE

Jacques Delacour, Paris; Emile Levallois, Courbevoie; Patrick Antier, Niort, and Francois-Xavier Saint Martin, Epinal, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Division of Ser. No. 451,674, Dec. 21, 1982, Pat. No. 4,533,526. This application May 7, 1985, Ser. No. 731,225

Claims priority, application France, Dec. 21, 1981, 81 24049

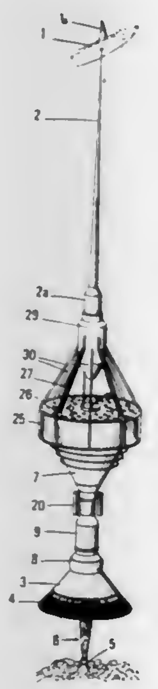
Int. Cl.⁴ E02B *23/00*

U.S. Cl. 210—170 **14 Claims**

1. Apparatus for collecting, at a collection location, polymetal compounds discharged from an underwater source of hydrothermal fluid, the apparatus comprising:

a collector member for surrounding and fitting over the hydrothermal source;

an underwater concentrating unit for increasing the concentration of polymetal compounds in the hydrothermal fluid to enrich the hydrothermal fluid with polymetal compounds, the concentrating unit being mounted above the collector member and in communication therewith, and



a conveying duct in communication with and extending above the concentrating unit for conveying the hydrothermal fluid, enriched with polymetal compounds to the collection location.

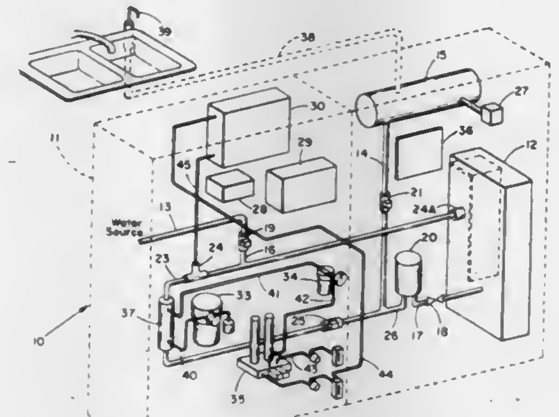
4,619,763
OZONE H_2O TREATMENT

Edward J. O'Brien, 251-5th Street NW., New Brighton, Minn. 55112

Continuation-in-part of Ser. No. 515,594, Jul. 21, 1983, abandoned. This application Oct. 22, 1984, Ser. No. 663,594

Int. Cl.⁴ C02F ***1/78;*** **B01J** ***19/08***

U.S. Cl. 210—177 **5 Claims**



1. In a water purification system wherein water to be purified is contacted with ozone-enriched atmosphere, and including a source of water under pressure, supply conduit means, a chamber communicating with said source through said supply conduit means for receiving water under pressure, recirculation conduit means having both of its ends in fluid communication with said chamber, a source of ozone, and means for introducing ozone-enriched atmosphere into the water along said recirculation conduit means, said water purification system being characterized in that:

(a) said recirculation conduit means includes a venturi interposed therealong having an injection port for introducing ozoneenriched atmosphere from said ozone source into water passing along said conduit between said source and said chamber;

(b) said ozone source comprises a generally cylindrical shell forming a first electrode enclosing a second electrode in the form of a generally co-axially disposed tube, said shell and tube defining an annular corona generating zone between the inner surface of said shell and the outer surface of said tube, means defining an inlet and an outlet for passing ambient air into said zone, through said zone, and through said outlet to said injector port of said venturi and means defining a water inlet and a water outlet in fluid communication with said tube for allowing passage of a coolant through said tube;

(c) means for chilling and thereafter drying the ambient air prior to its being passed through said ozone generator; and

(d) means for re-circulating water from said chamber through said conduit means and venturi for introducing the ozone-enriched atmosphere from said ozone source into water passing along said conduit on repeated passes from said chamber, and for return to said chamber/; and/.

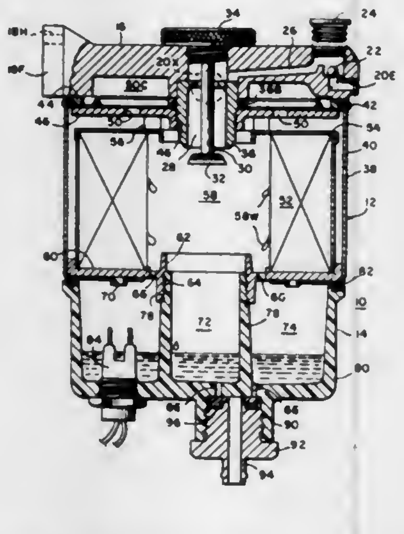
4,619,764
REPELLING-ACTION FILTER UNIT AND ASSEMBLY

John F. Church; Walter H. Stone, and Richard E. Schaupp, all of Modesto, Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jun. 19, 1984, Ser. No. 622,163

Int. Cl.⁴ B01D ***27/08***

U.S. Cl. 210—248 **28 Claims**



19. An invention comprising a water repelling-action filter unit including:

(a) a cylindrical body having a fuel inlet port and fuel outlet port, and first and second contaminant outlets disposed on a first side of said body, both said first and second contaminant outlets directly communicating with a common chamber within said body;

(b) a water repelling-action filter media disposed in a closed loop within said body and around said chamber; and

(c) mating threads on said first side of said body for mating with threads on a contaminant collection bowl and a cylindrical portion at said first side of said body, said first contaminant outlet within said cylindrical portion and said second contaminant outlet outside of said cylindrical portion; and

wherein said filter unit is operative to support a contaminant collection bowl with separate first and second contaminant collection zones disposed respectively beneath said first and second contaminant outlets.

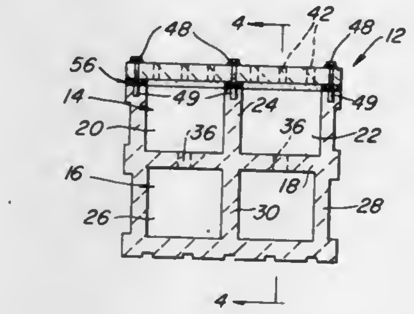
4,619,765
FILTER BOTTOM CONSTRUCTION

Robert L. Roberts, Boothwyn, Pa., assignor to Roberts Filter Manufacturing Company, Darby, Pa.

Filed Oct. 10, 1984, Ser. No. 659,375

Int. Cl.⁴ B01D ***23/18***

U.S. Cl. 210—289 **8 Claims**



1. A filter block used in the construction of a multi-block filter bottom on which filter media is supported, wherein a plurality of filter blocks are disposed in parallel adjacent rows extending between side walls of a filter and with the blocks placed end-to-end within each row, said filter block including upper and lower lateral sections extending between end walls of said block and being divided by a horizontal partition, means defining ports through said partition for communicating the upper and lower lateral sections with each other, a removable top wall section above which the filter media is retained, said top wall section having passage means therethrough for communicating with the upper lateral section and fastening means for removably securing the top wall section to the remainder of the block.

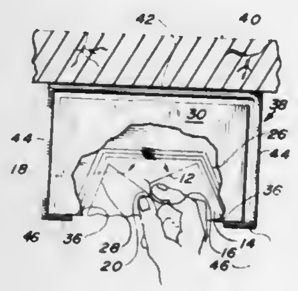
4,619,766
BEVERAGE BREWINGS FILTERS, APPARATUS AND METHOD

Thomas B. Smiley, and Christine L. Smiley, both of 5508 Doncaster Way, Edina, Minn. 55436

Continuation of Ser. No. 602,936, Apr. 23, 1984, abandoned. This application Sep. 27, 1985, Ser. No. 780,250

Int. Cl.⁴ B01D ***23/28***

U.S. Cl. 210—482 **14 Claims**



1. In a disposable beverage brewing filter of the type including a bowl-like shaped sheet of porous material having a flat bottom wall and a surrounding corrugated side wall defining an open end for receiving coffee, tea or the like to be brewed, the improvement comprising:

the bottom wall of said sheet including a fold therein of predetermined, non-interlocking configuration with opposing generally parallel flap portions extending across the bottom wall to define a transverse integral strip to facilitate manual separation and removal of individual filters from a nested stack thereof.

4,619,767
COMPOSITE SEMIPERMEABLE MEMBRANE

Yoshiyasu Kamiyama; Noriaki Yoshioka, and Keisuke Nakagome, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 28, 1981, Ser. No. 287,653

Claims priority, application Japan, Jul. 28, 1980, 55-103291

Int. Cl.⁴ B01D ***13/00***

U.S. Cl. 210—490 **10 Claims**

1. A composite semipermeable membrane comprising (1) a porous substrate, (2) an ultrathin film as a surface layer formed by polymerization by crosslinking of polyvinyl alcohol and an amino compound having at least two secondary amino groups using a polyfunctional crosslinking reagent capable of reacting with secondary amino groups and hydroxyl groups, and (3) a porous inner layer composed of water-insoluble polyvinyl alcohol which is present between the porous substrate and the ultrathin layer.

4,619,768
METHOD OF REMOVING CRUDE OIL SLUDGE

Sankichi Takahashi; Harumi Matsuzaki; Toshimi Mukushi, all of Hitachi; Katsuya Ebara, Mito; Tsunehiko Takakusagi, Hitachi; Masahiro Yoshida, Hitachi; Joshiro Sato, Hitachi; Yasumasa Yamane, Mito; Katsumi Sakaguchi, Hitachi, and Akira Watanabe, Abiko, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 20, 1984, Ser. No. 622,463

Claims priority, application Japan, Jun. 22, 1983, 58-110810

Int. Cl.⁴ B01D ***17/12, 21/02, 21/26***

U.S. Cl. 210—739 **6 Claims**

1. A method of removing crude oil sludge from crude oil, wherein the crude oil contains fine sludge grains, small sludge grains and coarse sludge grains comprising:

(a) supplying the crude oil to a sedimentation tank;

(b) removing, after about three days, coarse grains which settle from the crude oil within about three days from the bottom of the tank and a crude oil supernatant from the top of the tank;

(c) supplying the supernatant to a filtration apparatus to remove the small sludge grains;

(d) transferring the filtered crude oil to a reservoir; and

(e) after the filtered crude oil is transferred to said reservoir and after a predetermined period of time, detecting the condition of crude oil sludge settled in said reservoir, dispersing said settled sludge by stirring the crude oil, and removing the crude oil containing the suspended sludge from the reservoir, wherein the detection of the condition of the crude oil sludge is performed by scanning at least the surface of the bottom of the reservoir with one of a sonar wave and a microwave and by detecting information of a reflective wave.

4,619,769
PROCESS FOR REGENERATING MEDIA FILTERS USED TO FILTER GEOTHERMAL BRINE

Gregory A. Gritters, Indio, and Jose M. Perez, Calexico, both of Calif., assignors to Union Oil Co. of California, Los Angeles; Mono Power Co., Rosemead and Southern Pacific Land Co., San Francisco, all of, Calif.

Filed Dec. 28, 1984, Ser. No. 687,199

Int. Cl.⁴ B01D ***23/24***

U.S. Cl. 210—747 **23 Claims**

1. A process for regenerating media filters used for filtering geothermal brine, the filter regenerating process comprising:

(a) flowing steam through said filter in a backflush direction, so as to cause agitation of the filter media; and

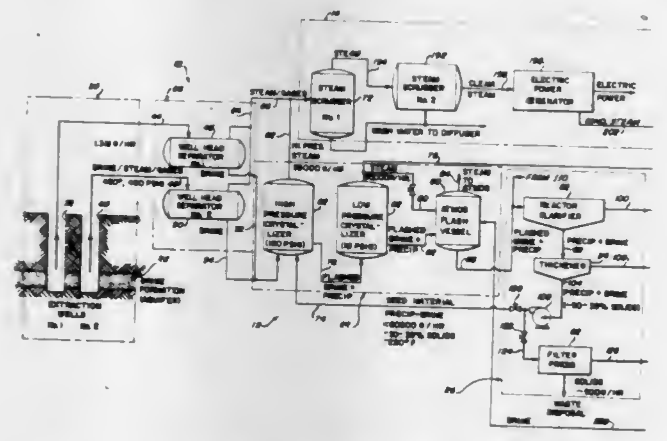
(b) flushing out said filter by flowing geothermal brine through said filter in the backflush direction.

19. In a geothermal brine handling facility for obtaining steam from a flow of naturally pressurized, silica-rich geothermal brine, said facility having a flashing stage in which the

brine is flashed to a lower pressure to convert some of the brine to steam, the brine becoming thereby supersaturated with silica, said facility further having a crystallization stage in which the flashed brine is contacted with seed material so as to cause silica precipitating from the brine to crystallize onto said seed material, having a clarification stage wherein the crystallized silica is separated from the brine to produce a clarified brine and having one or more media filters through which the clarified brine is flowed in a filtering direction so as to remove fine silica particles from the clarified brine, a process for regenerating said media filters, said process comprising:

(a) stopping the filtering flow of the clarified brine through one or more selected media filters and draining at least some of the brine therefrom;

(b) flowing through the selected filter in a reverse, backflush direction, steam converted from the geothermal brine in the flashing stage, so as to agitate the filter media and break up and loosen agglomerations of filtered material entrapped in the filter media, the steam flow rate being between about 2 SCFM and about 10 SCFM per square foot of filter cross sectional area in the region of the filter media, the duration of the steam flow being at least about 5 minutes after quenching of the steam by the filter media and any remaining entrapped brine;



(c) flowing, after the flow of steam has stopped, through the selected filter, in the backflush direction, previously filtered brine, so as to flush out of the media the filtered material broken up and loosened by the preceding steam flow, and, when the media filters are comprised of two or more different media, to stratify the media layers, the brine flow rate being between about 15 gpm and about 30 gpm per square foot of filter cross-sectional area in the region of the filter media, the duration of said brine flow being at least about 5 minutes; and

(d) combining for disposal, the flow of backflush brine discharged from the selected filter with the flashed geothermal brine in the flashing stage.

4,619,770
METHOD AND APPARATUS FOR RECOVERING A FLUID FROM A FILTER

Ernest B. Boston, Phillips, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 7, 1985, Ser. No. 689,534

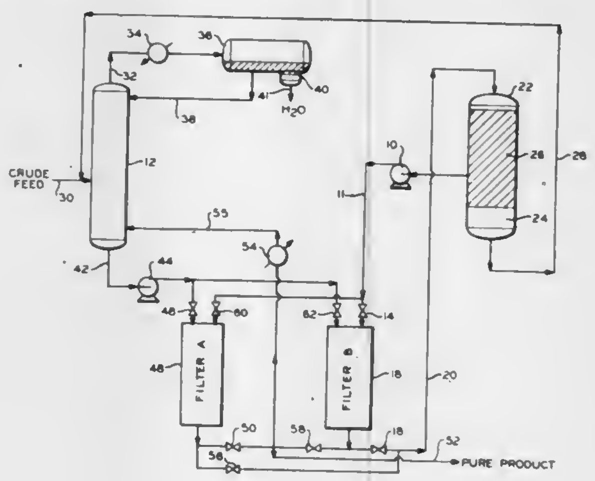
Int. Cl.^{4} B01D *11/00*

U.S. Cl. 210—772 **17 Claims**

1. A method of recovering a first fluid, comprising sulfolane, from a filter in which it is trapped as a filtrate, comprising the steps of:

(a) washing the filter by passing an aliphatic hydrocarbon wash fluid in the molecular weight range of about C_5 to about C_{16} through the filter, the wash fluid and first fluid being substantially insoluble in each other and of different densities, wherein a first mixture containing wash fluid and first fluid results from said washing; and

(b) phase separating the first mixture into at least two phases in a phase separator, wherein a first phase substantially comprises first fluid, and wherein a second phase substantially comprises wash fluid.



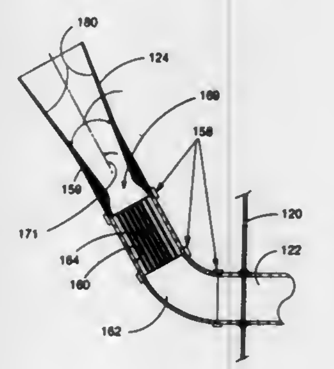
4,619,771
TECHNIQUE FOR INCREASED RETENTION TIME IN OIL FIELD SETTLING TANKS

Joe C. Stall; Steven L. Andrews, both of Tulsa, and Donald D. Curnutt, Broken Arrow, all of Okla., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 399,639, Jul. 19, 1982, abandoned, which is a continuation of Ser. No. 200,840, Oct. 27, 1980, abandoned. This application Dec. 13, 1984, Ser. No. 681,168

Int. Cl.^{4} B01D *21/24*

U.S. Cl. 210—788 **12 Claims**



9. A process for continuous gravity separation of an oil-water mixture comprising the steps of:

discharging said oil-water mixture into a settling tank in a direction and at a velocity sufficient to direct the flow of the contents of said settling tank substantially tangential to the walls of said settling tank by introducing said oil-water mixture into said settling tank through an oil-water inlet pipe entering said settling tank substantially perpendicular to the wall of said settling tank at the point of entry of said pipe into said settling tank, bending the flow direction of said oil-water mixture to be introduced into said settling tank substantially tangential to said settling tank walls and reducing the velocity of said flow of said oil-water mixture after said bending by passing said oil-water mixture through a diffuser means;

withdrawing water from a lower portion of the interior of said settling tank; and

withdrawing oil from an upper portion of the interior of said settling tank.

4,619,772
METHOD AND MATERIAL FOR INCREASING VISCOSITY AND CONTROLLING OF OIL WELL DRILLING AND WORK-OVER FLUIDS

James K. Black, 2114 12th Ave. W., and Wesley F. Black, 2615 19th Ave. W., both of Williston, N. Dak. 58801

Filed May 23, 1982, Ser. No. 497,210

Int. Cl.^{4} C09K *7/02*

U.S. Cl. 252—8.514 **11 Claims**

1. Oil well drilling fluid produced by the process of mixing water and a viscosifier and colloidal water loss material, wherein said viscosifier and colloidal water loss material is comprised essentially of the outer layer of the endosperm portion of durum kernels that constitutes approximately 10 to 15 percent of the kernel by weight, and heating the mixture to a temperature of at least 175° to 180° F. (79° to 82° C.).

4,619,773
HIGH TEMPERATURE STABLE AQUEOUS BRINE FLUIDS VISCOSIFIED BY WATER-SOLUBLE COPOLYMERS OF ACRYLAMIDOMETHYLPROPANESULFONIC ACID SALTS

Israel J. Heilweil, Princeton, and Dennis H. Hoskin, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 490,623, May 2, 1983. This application May 6, 1985, Ser. No. 731,051

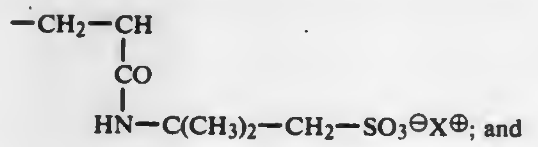
Int. Cl.^{4} C09K *7/02*

U.S. Cl. 252—8.514 **26 Claims**

1. An aqueous brine fluid comprising:

(i) a viscosity increasing amount of one or more water-soluble copolymers of acrylamidomethylpropanesulfonic acid salts, consisting essentially of a random distribution of

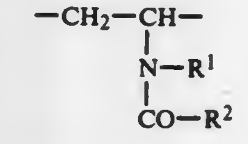
(a) 5 to 95% by weight of units of the formula



$$\begin{array}{l} -CH_2-CH \\ \qquad\;\; | \\ \qquad\; CO \\ \qquad\;\; | \\ \qquad\; HN-C(CH_3)_2-CH_2-SO_3^{\ominus}X^{\oplus} \end{array}$$

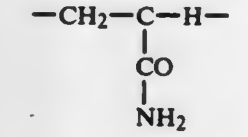
; and

(b) 5 to 95% by weight of units of the formula



$$\begin{array}{l} -CH_2-CH- \\ \qquad\quad | \\ \qquad\;\; N-R^1 \\ \qquad\quad | \\ \qquad\;\; CO-R^2 \end{array}$$

(c) 0 to 80% by weight of units of the formula



$$\begin{array}{l} -CH_2-C-H- \\ \qquad\quad | \\ \qquad\;\; CO \\ \qquad\quad | \\ \qquad\;\; NH_2 \end{array}$$

wherein R^1 and R^2 are the same or different and each is hydrogen, methyl or ethyl; and $X^{\oplus}$ is a cation; and

(ii) a densifying amount of a densifying salt sufficient to densify said fluid, said densifying salt constituting at least about 30% by weight of said fluid.

4,619,774
FABRIC SOFTENING HEAVY DUTY LIQUID DETERGENT AND PROCESS FOR MANUFACTURE THEREOF

Pallassana N. Ramachandran, Robbinsville, and Paul S. Grand, Highland Park, both of N.J., assignors to Colgate Palmolive Co., New York, N.Y.

Continuation of Ser. No. 449,261, Dec. 13, 1982, Pat. No. 4,469,605. This application Sep. 4, 1984, Ser. No. 646,983

The portion of the term of this patent subsequent to Sep. 4, 2001, has been disclaimed.

Int. Cl.^{4} C11D *3/12;* **D06M** *13/24*

U.S. Cl. 252—8.7 **6 Claims**

1. A fabric softening heavy duty liquid detergent comprising 5 to 15% of alkali metal linear or branched higher alkylbenzene sulfonate wherein the higher alkyl is of 12 to 13 carbon atoms, 2 to 5% of alkali metal alkyl polyethoxy sulfate wherein the alkyl is of 10 to 18 carbon atoms and the polyethoxy is of 3 to 11 ethylene oxide groups, 6 to 26% of builder salt selected from the group consisting of alkali metal tripolyphosphate, alkali metal carbonate, alkali metal nitrilotriacetate, and alkali metal citrate, and mixtures thereof, 10 to 20% of a swelling bentonite, and 40 to 75% of water.

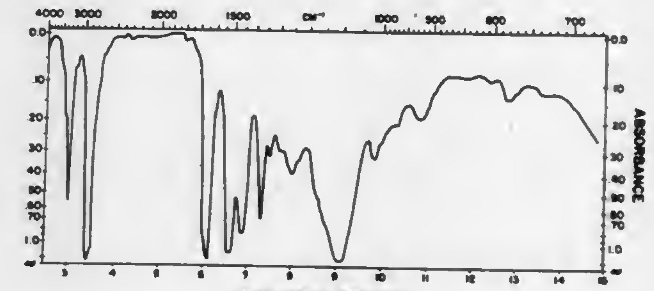
4,619,775
ANTISTATIC AGENTS WHICH ARE MULTIAMIDES OF TRIALKYLACETIC ACIDS AND MULTIAMINES

Robert J. Steltenkamp, Somerset, and Michael A. Camara, Jackson, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

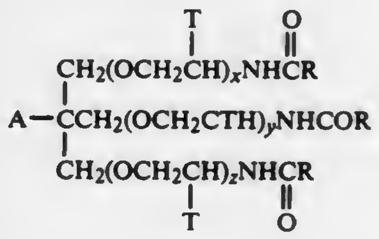
Filed May 16, 1985, Ser. No. 734,508

Int. Cl.^{4} D06M *3/30*

U.S. Cl. 252—8.8 **22 Claims**



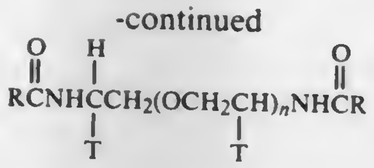
1. Polyamides of trialkylacetic acid(s) and polyamine(s), which are diamides and/or triamides and which are useful as antistatic agents for filamentary and fibrous materials, wherein the alkyls of the trialkylacetic acid moieties are each of 1 to 10 carbon atoms and the sum of the carbon atoms in the alkyls of each of the triakylacetic acid moieties is from 3 to 12, and the polyamine moieties are diamine and/or triamine moieties with alkylene group(s) of 2 to 10 carbon atoms and/or polyoxyalkylene alkylene groups connecting the amide groups of the polyamide, with the oxyalkylene of the polyoxyalkylene groups being of 2 to 4 carbon atoms, with the number of such groups in each polyoxyalkylene group being from 1 to 40, and with the alkylene groups of the polyoxyalkylene alkylene being of 1 to 10 carbon atoms, which are selected from the group consisting of



$$\begin{array}{l} \qquad\qquad\qquad\; T \qquad\;\; O \\ \qquad\qquad\qquad\; | \qquad\quad \| \\ \quad CH_2(OCH_2CH)_xNHCR \\ \quad | \\ A-CCH_2(OCH_2CTH)_yNHCOR \\ \quad | \\ \quad CH_2(OCH_2CH)_zNHCR \\ \qquad\qquad\qquad\; | \qquad\quad \| \\ \qquad\qquad\qquad\; T \qquad\;\; O \end{array}$$

and

-continued



$$RC(=O)NHC(H)(T)CH_2(OCH_2CH(T))_nNHC(=O)R$$

wherein A is selected from the group consisting of alkyl of 1 to 20 carbon atoms and hydrogen. T is selected from the group consisting of methyl and hydrogen, R is a neoalkyl of to 13 carbon atoms, n is from 1 to 40, and x, y and z are each numerals from 1 to 8, and total from 4 to 10.

4,619,776
CROSSLINKED FRACTURING FLUIDS
Thomas C. Mondshine, Houston, Tex., assignor to Texas United Chemical Corp., Houston, Tex.
PCT No. PCT/US85/01269, § 371 Date Aug. 9, 1985, § 102(e) Date Aug. 9, 1985
PCT Filed Jul. 2, 1985, Ser. No. 763,630
Int. Cl.⁴ E21B *43/26*
U.S. Cl. 252—8.551 **15 Claims**

1. A method of preparing a fracturing fluid of enhanced temperature stability comprising hydrating in an aqueous liquid having a pH in the range from about 4.0 to about 8.0 a hydrophilic polymer containing at least two hydroxyl groups positioned in the cis-form on adjacent carbon atoms or on carbon atoms in a 1,3 relationship, adding to said aqueous liquid a sparingly soluble borate in an amount sufficient to provide sufficient boron to crosslink said polymer and to increase the thermal stability of said fracturing fluid, said sparingly soluble borate having at least five boron atoms per molecule and being selected from the group consisting of alkaline earth metal borates, alkali metal alkaline earth metal borates, and mixtures thereof, and controlling the time for crosslinking to occur by providing a pH of said aqueous liquid within the range from about 4.0 to about 10.0 before adding said borate thereto.

4,619,777
PREPARATION OF A MAGNETIC DISPERSION
Milena Melzer, Ludwigshafen; Helmut Jakusch, Frankenthal; Werner Graü, Bobenheim-Roxheim; Eberhard Köster, Frankenthal; Werner Löser, Ludwigshafen; Reinhard Polke, Mutterstadt; Günter Schädel, Mannheim; Manfred Ohlinger, Frankenthal, and Günter Väth, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed May 5, 1983, Ser. No. 491,718
Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217099
Int. Cl.⁴ H01F *1/26;* **C04B** *35/04*
U.S. Cl. 252—62.54 **8 Claims**

1. A process for the preparation of a magnetic dispersion for magnetic recording media, in which a magnetically anisotropic material is dispersed in a polymer binder and in an organic solvent wherein the magnetically anisotropic material is worked in a jet mill by means of a jet of gas resulting in the jet milled magnetically anisotropic material being of a dry nature.

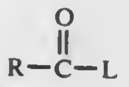
4,619,778
HEAT STORAGE MATERIALS
Christine D. Chalk, Buckinghamshire, and Cecil Hayman, Rickmansworth, both of United Kingdom, assignors to IC Gas International Limited, London, England
Continuation of Ser. No. 623,294, Jun. 22, 1984, abandoned. This application Jun. 19, 1985, Ser. No. 746,020
Int. Cl.⁴ C09K *5/06*
U.S. Cl. 252—70 **9 Claims**

1. A heat storage material which comprises at least one hydrated compound which undergoes reversible transformation to an anhydrous or less hydrated form, and at least one fusion temperature-depressing salt, said compound and said salt being dispersed and suspended throughout a water-swollen cross-linked synthetic polymer hydrogel, in which the total amount of salt is 50 to 75% by weight of the eutectic amount.

4,619,779
DETERGENT ADDITIVE PRODUCT
Frederick E. Hardy, Gosforth, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of Ser. No. 508,763, Jun. 28, 1983, abandoned. This application Dec. 12, 1984, Ser. No. 680,609
Claims priority, application United Kingdom, Jun. 30, 1982, 8218867
Int. Cl.⁴ C11D *17/00*
U.S. Cl. 252—91 **18 Claims**

1. A detergent additive product consisting essentially of

(a) a peroxyacid bleach precursor having the general formula



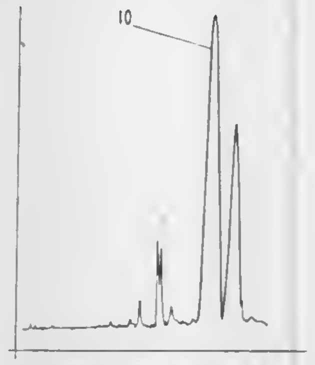
$$R-C(=O)-L$$

wherein R is an alkyl group containing from about 5 to about 18 carbon atoms wherein the longest portion of the linear alkyl chain extending from and including the carbonyl carbon contains from about 6 to about 10 carbon atoms, and L is a leaving group the conjugate acid of which has a pKa in the range from about 6 to about 13, said peroxy bleach precuror being in water-releasable combination with

(b) a non-particulate flexible substrate, the weight ratio of the precursor to the substrate being in the range from about 30:1 to about 1:10;

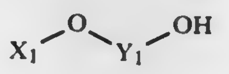
and wherein said peroxyacid bleach precursor is a particulate having particle size of less than 180 microns.

4,619,780
ETHER CARBINOLS, PROCESS FOR PREPARING SAME, PRODUCTS PRODUCED ACCORDING TO SAID PROCESSES CONTAINING SAID ETHER CARBINOLS, ORGANOLEPTIC USES THEREOF, ETHER CARBOXALDEHYDES AND ORGANOLEPTIC USES THEREOF
Futoshi Fujioka, Wanamassa; Richard M. Boden, Ocean, and William L. Schreiber, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.
Division of Ser. No. 574,150, Jan. 26, 1984, Pat. No. 4,521,634, which is a continuation-in-part of Ser. No. 533,915, Sep. 19, 1983, Pat. No. 4,532,364, which is a continuation-in-part of Ser. No. 507,292, Aug. 1, 1983, abandoned. This application Aug. 24, 1984, Ser. No. 644,054
The portion of the term of this patent subsequent to Jun. 4, 2002, has been disclaimed.
Int. Cl.⁴ C11B *9/00*
U.S. Cl. 252—522 R **9 Claims**

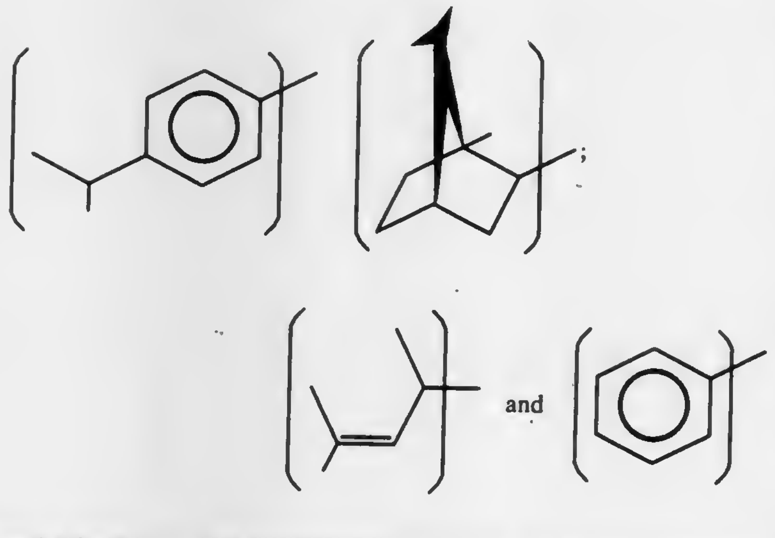


GLC PROFILE FOR FRACTION 4 OF EXAMPLE I

1. A process for augmenting or enhancing the aroma or taste of a consumable material selected from the group consisting of perfume compositions, perfumed articles, colognes, foodstuffs, chewing gums, chewing tobaccos, medicinal products, toothpastes, smoking tobaccos and smoking tobacco articles comprising the step of adding to said consumable material an aroma or taste augmenting or enhancing quantity of at least one ether carbinol defined according to structure:



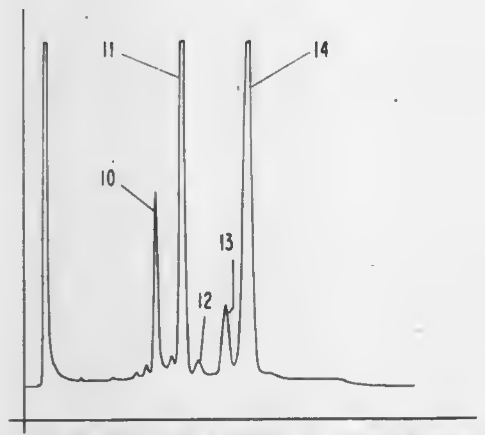
wherein X_1 is a moiety selected from the group consisting of:



and wherein Y_1 is a moiety selected from the group consisting of:

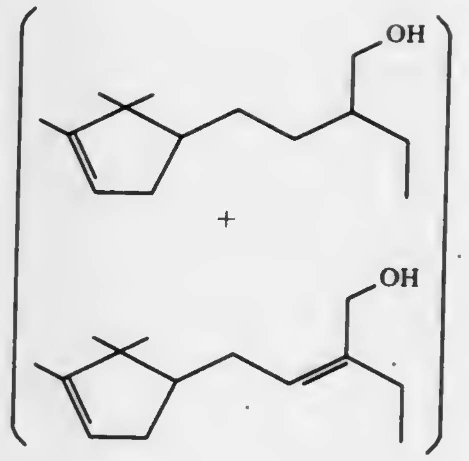
- C_4–C_5 alkylene;
- C_4–C_5 alkenylene; and
- C_4–C_5 alkynylene.

4,619,781
PROCESS FOR PREPARING MIXTURE CONTAINING 2-CAMPHOLENYLIDENBUTANOL, PRODUCT PRODUCED THEREBY AND PERFUMERY USES THEREOF
Wilhelmus J. Wiegers, Red Bank; Mark A. Sprecker, Sea Bright, and William L. Schreiber, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.
Filed Sep. 20, 1985, Ser. No. 778,442
Int. Cl.⁴ C11B *9/00;* **C07C** *35/06*
U.S. Cl. 252—522 R **2 Claims**

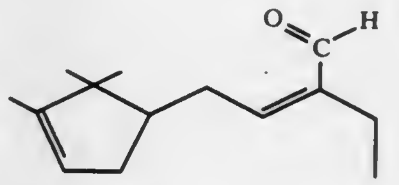


GLC PROFILE FOR EXAMPLE I, CRUDE 9 HOURS

1. A process for preparing a mixture of compounds comprising as a major quantity the compounds having the structures:



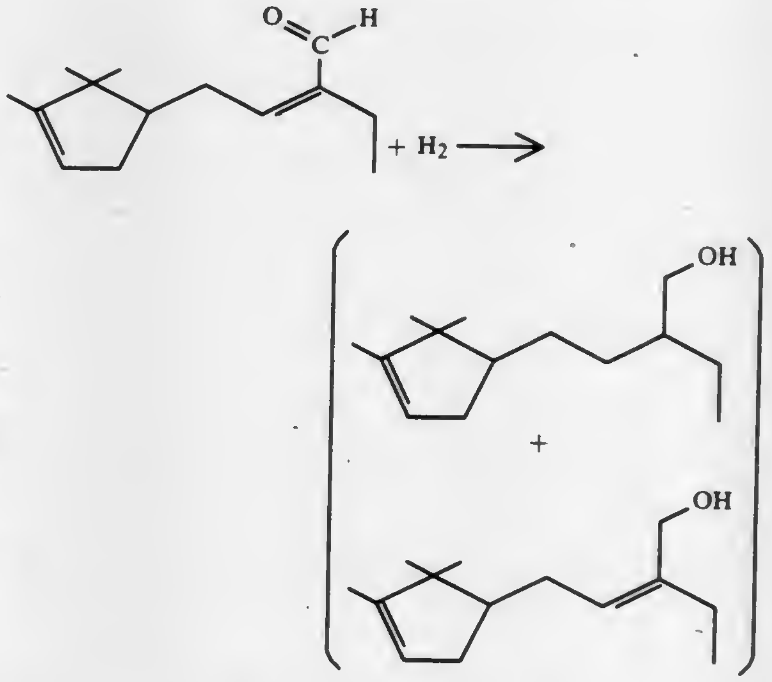
comprising the steps of (i) reacting the aldehyde having the structure:



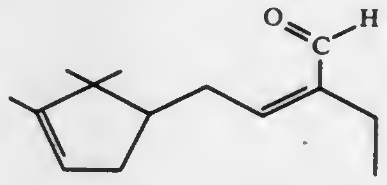
with hydrogen over a copper chromite catalyst having the formula:

$CuO.CuCr_2O_4$

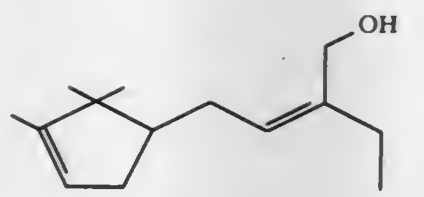
in the absence of additional reagents and in the absence of additional base, according to the reaction:



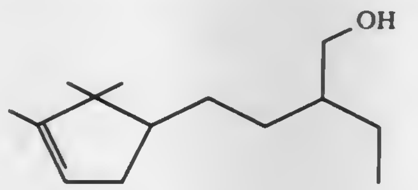
at a temperature in the range of from about 110° C. up to about 220° C.; at a pressure in the range of from about 100 up to about 1000 psig; the weight percent of catalyst based on reactant having the structure:



being from about 1 weight percent up to about 6 weight percent; the time of reaction being such that the reaction is terminated when 70–80% of the compound having the structure:



is in the reaction mass and the remainder of the reaction mass is primarily the compound having the structure:



and then (ii) recovering the resulting mixture by fractional distillation.

4,619,782

L-AMINODICARBOXYLIC ACID GEM-DIAMINES

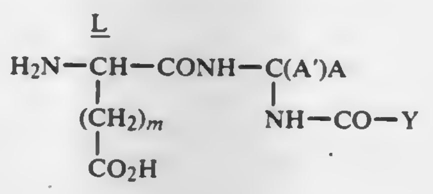
Paul R. Zanno, Nanuet; Ronald E. Barnett, Suffern, and Glenn M. Roy, Garnerville, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Apr. 15, 1985, Ser. No. 723,599

Int. Cl.⁴ C07K *5/06*

U.S. Cl. 560—122 **42 Claims**

1. A compound represented by the formula:



$$\underset{\substack{|\\(CH_2)_m\\|\\CO_2H}}{\overset{\underline{L}}{H_2N-CH}}-CONH-\underset{\substack{|\\NH-CO-Y}}{C(A')A}$$

wherein

A is H, CO_2R where R is alkyl containing 1–3 carbon atoms;
A′ is hydrogen or alkyl containing 1–3 carbon atoms;
Y is $-(CHR_2)_n-R_1$ or $-CHR_3R_4$;
R_1 is cycloalkyl, cycloakenyl, lower alkyl substituted cycloalkyl or cycloalkenyl, bicycloalkyl, bicycloalkenyl or tricycloalkyl containing up to 10 ring carbon atoms and up to a total of 12 carbon atoms;
R_2 is H or alkyl containing 1–4 carbon atoms;
R_3 and R_4 are each cycloalkyl containing 3–4 ring carbon atoms;
n=0 or 1; and
m=0 or 1;
and food-acceptable salts thereof.

4,619,783

PROCESS AND INTERMEDIATES FOR THE PREPARATION OF PENEM DERIVATIVES

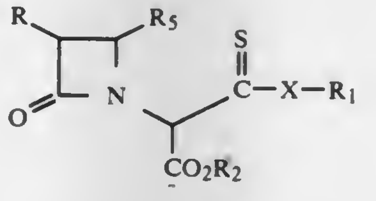
Ernest S. Hamanaka, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Jun. 10, 1983, Ser. No. 502,895

Int. Cl.⁴ C07D *205/08, 403/12, 498/04, 401/12*

U.S. Cl. 540—361 **8 Claims**

1. A compound of the formula



wherein

R is hydrogen, 1-hydroxyalkyl having 1 or 2 carbon atoms or wherein the 1-hydroxyalkyl is substituted with a hydroxyl-protecting group selected from the group consisting of benzyloxycarbonyl, p-nitrobenzyloxycarbonyl, allyloxycarbonyl, 2,2,2-trichloroethoxycarbonyl or trialkylsilyl wherein each alkyl has from 1 to 6 carbon atoms;
R_1 is (alk)-G, (alk)-G_1,G_1 or $CH(G_2)_2$ wherein (alk) is an alkyl group having one to four carbon atoms;
G is hydrogen, alkoxy having one to five carbon atoms, 2-(alkoxy)ethoxy having three to seven carbon atoms, alkylthio having one to five carbon atoms, phenoxy, thiophenoxy, azido, amino, amino substituted with an amino-protecting group selected from the group consisting of benzyloxycarbonyl, p-nitrobenzyloxycarbonyl, allyloxycarbonyl and 2,2,2-trichloroethoxycarbonyl; N-phenyl-N-alkylamino wherein the alkyl has one to four carbon atoms, N-alkanoylamino having two to six carbon atoms, N-alkoxyalkanoylamino having three to ten carbon atoms, 2-(N-alkanoylamino)ethoxy having four to eight carbon atoms, aminocarbonyl, aminocarbonyloxy, N-alkylaminocarbonylamino having two to five carbon atoms, alkanoylaminoacetylamino having four to seven carbon atoms, N-alkylaminocarbonyloxy, aminocarbonylalkoxy having two to five carbon atoms, N-alkylaminocarbonyl having two to five carbon atoms, N-(alkoxyalkyl)aminocarbonyl having three to nine carbon atoms;
G_1 is azetidinyl or azetidinyl substituted with N-alkanoyl having two to six carbon atoms or an amine-protecting group selected from the group consisting of benzyloxycarbonyl, p-nitrobenzyloxycarbonyl, allyloxycarbonyl and 2,2,2-trichloroethoxycarbonyl; a five- or six-membered ring which is carbocyclic or heterocyclic having one or two oxygen atoms, one, two three or four nitrogen atoms, a sulfur atom, a nitrogen atom and an oxygen atom or a nitrogen atom and a sulfur atom, or said five- or six-membered ring substituted with alkyl having one to four carbon atoms, dialkyl each having one to four carbon atoms, oxo, amino, amino substituted with an amine-protecting group selected from the group consisting of benzyloxycarbonyl, p-nitrobenzyloxycarbonyl, allyloxycarbonyl and 2,2,2-trichloroethoxycarbonyl; alkoxycarbonyl having two to five carbon atoms, di(alkoxycarbonyl) each having two to five carbon atoms, aminocarbonyl, alkoxyalkyl having two to seven carbon atoms, phenyl, formyl, N-alkylaminocarbonyl having two to five carbon atoms, N-alkylaminocarbonylamino having two to five carbon atoms, alkanoylamino having two to five carbon atoms, alkoxy having one to four carbon atoms or phenoxyacetyl;
G_2 is alkanoylaminomethyl each having three to seven carbon atoms or alkoxy each having one to four carbon atoms;
R_2 is hydrogen, a group which forms an ester which is hydrolyzed in vivo or a carboxylic acid protecting group selected from the group consisting of benzyl, p-nitrobenzyl, allyl or 2,2,2-trichloroethoxy;
R_5 is chloro, bromo or iodo; and
X is oxygen or sulfur.

4,619,784

IMAGE DYE-PROVIDING MATERIALS

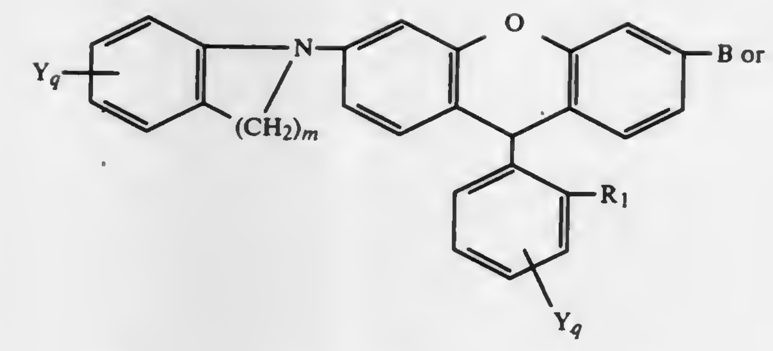
Louis Locatell, Jr., Wellesley; Charles M. Zepp, Boylston, and Ronald F. Cieciuch, Brookline, all of Mass., assignors to Polaroid Corporation, Patent Dept., Cambridge, Mass.

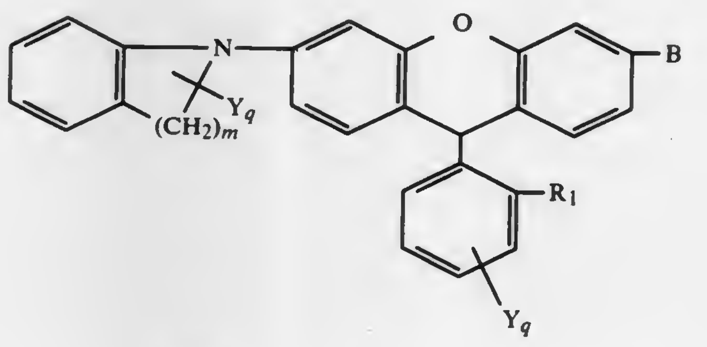
Division of Ser. No. 106,506, Dec. 26, 1979, Pat. No. 4,267,251.
This application Oct. 27, 1980, Ser. No. 200,953
The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.

Int. Cl.⁴ C07D *209/12, 215/14, 223/16*

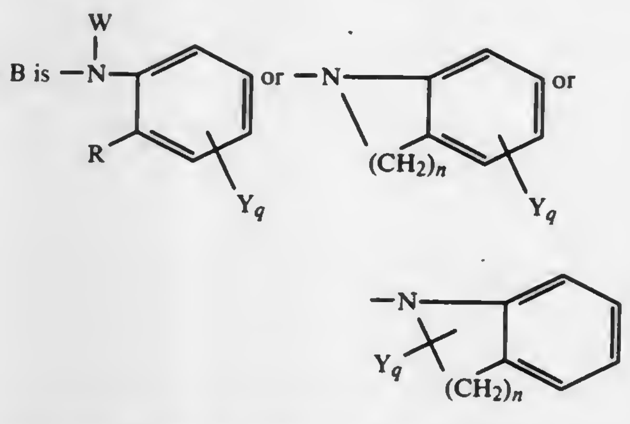
U.S. Cl. 540—593 **12 Claims**

1. A compound represented by the formula





wherein B is



each Y is a substituent having a diffusion control moiety; each q is 0 or 1 provided that at least one q is 1; W is H or alkyl having from 1 to 6 carbon atoms; R is H or alkyl having from 1 to 6 carbon atoms; R_1 is H, $-CO_2-$, SO_3- or alkyl having from 1 to 6 carbon atoms; and m and n are each integers of from 2 to 6.

4,619,785

NOVEL SYNTHESIS ROUTE FOR BACAMPICILLIN

Luigi Ratti, Bergamo, Italy, assignor to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

Filed Jun. 23, 1983, Ser. No. 507,717

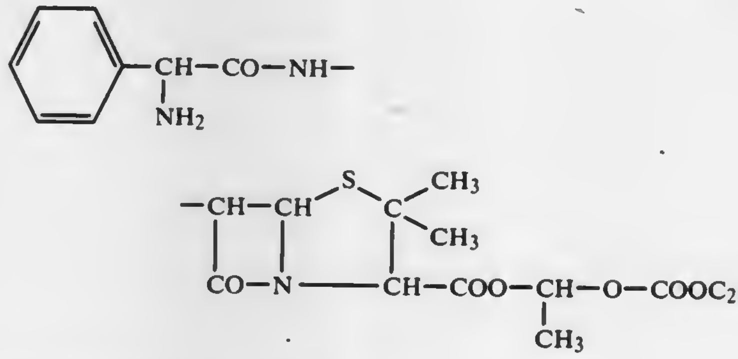
Claims priority, application Italy, Jun. 29, 1982, 22141 A/82

Int. Cl.⁴ C07D *499/08, 501/02*

U.S. Cl. 540—318 **10 Claims**

1. Process for the preparation of the 1-ethoxycarbonyloxyethyl ester of the 6-(D-(−)-α-amino-α-phenylacetamido)-penicillanic acid with the formula:

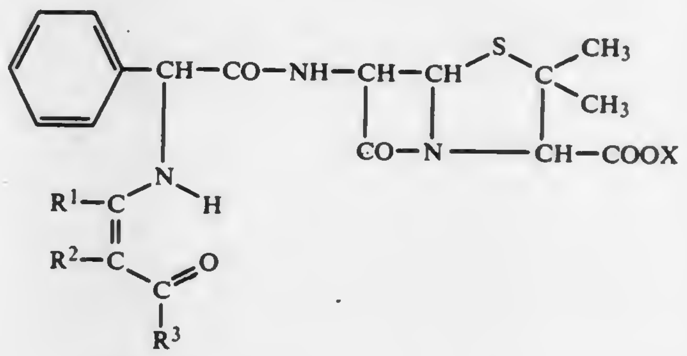
(I)



characterized by steps of:

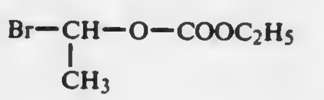
(a) in the presence of a material selected from the group consisting of an organic base and an alkaline carbonate in an aprotic solvent selected from the group consisting of N,N-dimethylacetamide, N,N-dimethylformamide, dimethoxyethane, dimethylsulphoxide, tetrahydrofuran and dioxane at a temperature between 0° C. and 60° C. for between 2 to 8 hours reacting ampicillin, or an alkaline salt, with a reactive derivative of acetoacetic acid to form the corresponding enamine with the formula:

(II)



wherein R^1 represents an alkyl group containing 1–4 carbon atoms, a substituted or non-substituted aryl group or an aralkyl group; R^2 represents hydrogen, an alkyl group containing 1–4 carbon atoms, a substituted or non-substituted aryl group or an aralkyl group; R^3 represents an alkyl group containing 1–4 carbon atoms, a substituted or non-substituted aryl group, an aralkyl group, an alkoxy group containing 1–4 carbon atoms, an aryloxy group or an amine group, and X represents an alkali metal, an alkaline earth metal or an organic base;

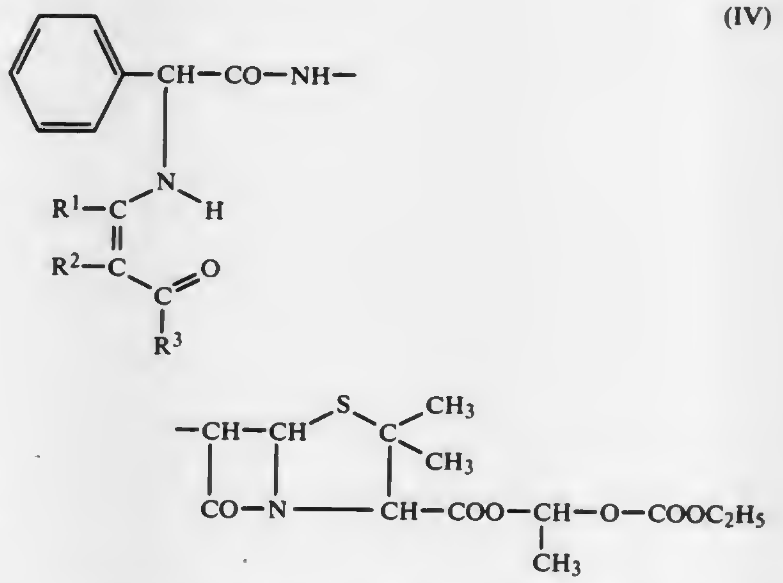
(b) reacting the resulting intermediate with α-bromo-diethyl carbonate with the formula:



$$Br-\underset{\substack{|\\CH_3}}{CH}-O-COOC_2H_5 \qquad (III)$$

at a temperature of 15°–80° C. for 1–24 hours to form the corresponding ester with the formula:

(IV)



wherein R^1, R^2 and R^3 have the meanings specified above, and

(c) mild hydrolysis in an acid medium to obtain the compound of formula (I).

4,619,786
PREPARATION OF 6-α-BROMO- AND/OR 6,6-DIBROMO-PENICILLANIC ACID-1,1-DIOXIDES

Peter W. Henniger, Leiden, and Johannes K. van der Drift, Delft, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

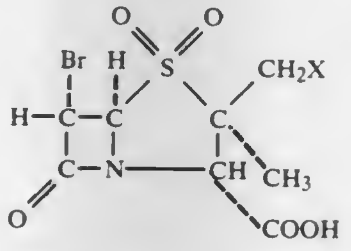
Filed Apr. 19, 1983, Ser. No. 486,981

Claims priority, application United Kingdom, Apr. 19, 1982, 8211301

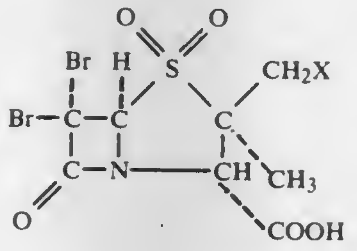
Int. Cl.⁴ C07D *499/00;* **A61K** *31/425*

U.S. Cl. 540—310 **21 Claims**

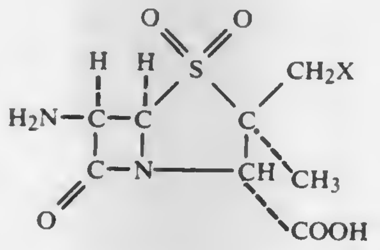
1. A process for the preparation of at lease one compound of a formula selected from the group consisting of



and



and their pharmaceutically acceptable salts and esters wherein X is selected from the group consisting of hydrogen and chlorine and acetoxy comprising diazotizing a compound of the formula



and pharmaceutically acceptable salts and esters thereof wherein X has the above definition with at least an equimolar amount of a nitrosating agent in the presence of 1 to 5 equivalents of a strong acid in solution or suspension in a mixture of water and an at least partially water-miscible organic solvent with the amount of water being 1 to 20% by volume and brominating the resulting diazotized compound with at least equimolar amounts of hydrogen bromide and bromine.

4,619,787
BETA LACTAMS

Erwin Götschi, Reinach, Switzerland, and Christian Hubschwerlen, Durmenach, France, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 13, 1984, Ser. No. 670,796

Claims priority, application Switzerland, Nov. 23, 1983, 6286/83

Int. Cl.⁴ C07D *405/04;* **C07F** *7/10*

U.S. Cl. 540—200 **2 Claims**

1. The compound, (3S,4S)-1-(2,4-dimethoxybenzyl)-4-[(R)-2,2-dimethyl-1,3-dioxolan-4-yl]-3-[(R)-1-hydroxyethyl]-2-azetidinone.

2. The compound, (3S,4S)-1-(t-butyldimethylsilyl)-4-[(R)-2,2-dimethyl-1,3-dioxolan-4-yl]-3-[(R)-1-hydroxyethyl]-2-azetidinone.

4,619,788
PYRAMIDAL LIQUID CRYSTALS

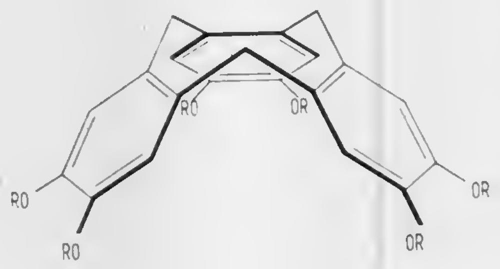
Herbert Zimmermann, Schriesheim, Fed. Rep. of Germany; Raphi Poupko; Zeev Luz, both of Rehovot, Israel, and Jean Billard, Paris, France, assignors to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften E.V., Goettingen, Fed. Rep. of Germany

Filed Oct. 18, 1985, Ser. No. 788,813

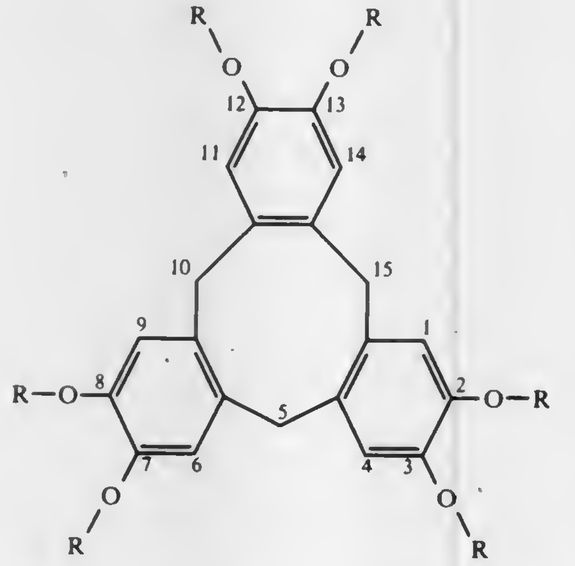
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1984, 3438424

Int. Cl.⁴ C11C *3/00;* **C07C** *43/21, 69/773;* **G02F** *1/13*

U.S. Cl. 260—410.5 **10 Claims**

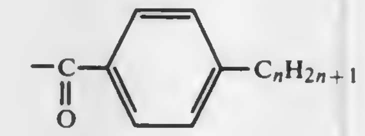


1. Hexasubstituted tribenzocyclononatriene derivatives of the general formula I

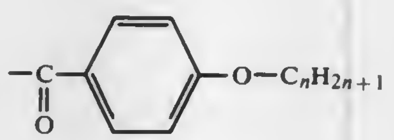


(I)

in which the residues R are the same or different and independently from each other represent alkly groups with at least 6 carbon atoms, alkanoyl groups with at least 10 carbon atoms or p-alkylbenzoyl or p-alkoxybenzoyl groups of the formula



or



in which n is an integer of at least 5.

4,619,789
PRETREATMENT PROCESS FOR RENDERING

Hans R. Strop, 12418 The Bluffs, and Richard R. Perry, 10815 Clearbrook Cir., both of Strongsville, Ohio 44136

Continuation of Ser. No. 556,007, Nov. 29, 1983, abandoned. This application Dec. 27, 1985, Ser. No. 815,303

Int. Cl.⁴ C11B *1/12*

U.S. Cl. 260—412.6 **22 Claims**

1. A rendering process comprising the steps of:

comminuting raw material to reduce and generally conform the raw material to a plurality of raw material particles having generally preselected particle sizes;

making a slurry comprising a mixture of the comminuted raw material and additional fat;

evaporating the slurry to form a generally demulsified slurry including a generally continuous phase fat and a generally continuous phase water; and

segregating said continuous phase fat from the demulsified slurry.

4,619,790
MANUFACTURE OF HIGHER ALKYLCARBOXYLIC ACIDS

Rudolf Kummer, Frankenthal, and Kurt Schwirten, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 1, 1978, Ser. No. 874,316

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1977, 2709438

Int. Cl.⁴ C07C *51/14, 53/126*

U.S. Cl. 260—413 **3 Claims**

1. A process for the manufacture of an alkylcarboxylic acid (where alkyl is of 6 to 20 carbon atoms) by hydrocarboxylating the corresponding olefin by means of a cobalt carbonyl compound in the presence of a solvent, wherein the solvent used is from 0.2 to 3 kg of N-methylpyrrolidone per kg of the olefin.

4,619,791
CARBONYLATION OF METHYL ACETATE TO ACETIC ANHYDRIDE

Jean Gauthier-Lafaye, Lyons, and Robert Perron, Charly, both of France, assignors to Rhone-Poulenc Chimie De Base, Courbevoie, France

Filed Oct. 21, 1982, Ser. No. 435,752

Claims priority, application France, Oct. 21, 1981, 81 20007

Int. Cl.⁴ C07C *51/56*

U.S. Cl. 260—549 **21 Claims**

1. A process for the preparation of acetic anhydride, comprising carbonylating methyl acetate with carbon monoxide, in liquid phase, in an essentially anhydrous reaction medium, in the presence of a catalytically effective amount of (i) nickel, (ii) methyl iodide, (iii) an alkali metal iodide, and (iv) a crown ether.

4,619,792
PROCESS FOR MAKING AN OPTICALLY TRANSMISSIVE BODY

Kenneth J. Saunders, Waltham, and Randal W. Tustison, Lexington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jun. 3, 1983, Ser. No. 500,702

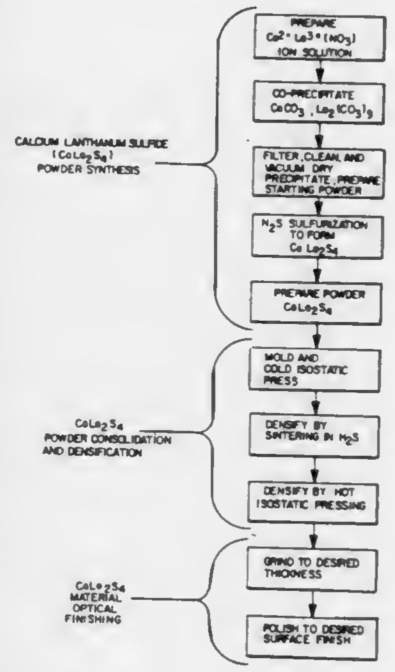
Int. Cl.⁴ B29D *11/00*

U.S. Cl. 264—1.2 **8 Claims**

1. A method for making a dense optically transmissive body comprising a ternary sulfide having a pair of cation types comprising the steps of:

coprecipitating a fine grained homogeneous powder including the pair of cation types of the ternary sulfide;

reacting the coprecipitated powder with a source of sulfide anions to convert said precipitate into the ternary sulfide; and


PREPARE Ca^{2+} La^{3+} (NO_3) ION SOLUTION
CO-PRECIPITATE $CaCO_3$, $La_2(CO_3)_3$
FILTER, CLEAN, AND VACUUM DRY PRECIPITATE, PREPARE STARTING POWDER
H_2S SULFURIZATION TO FORM $CaLa_2S_4$
PREPARE POWDER $CaLa_2S_4$
MOLD AND COLD ISOSTATIC PRESS
DENSIFY BY SINTERING IN H_2S
DENSIFY BY HOT ISOSTATIC PRESSING
GRIND TO DESIRED THICKNESS
POLISH TO DESIRED SURFACE FINISH
CALCIUM LANTHANUM SULFIDE ($CaLa_2S_4$) POWDER SYNTHESIS
$CaLa_2S_4$ POWDER CONSOLIDATION AND DENSIFICATION
$CaLa_2S_4$ MATERIAL OPTICAL FINISHING

forming the ternary sulfide into the densified, optically transmissive body.

4,619,793
METHOD OF PRODUCING ANNEALED POLYVINYL ALCOHOL CONTACT LENS

Ping I. Lee, Valley Cottage, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 372,893, Apr. 29, 1982, abandoned. This application Jul. 26, 1984, Ser. No. 633,687

Int. Cl.⁴ B29D *11/00*

U.S. Cl. 264—2.6 **32 Claims**

19. A process for preparing an optically clear soft contact lens of swollen solid polyvinyl alcohol having a weight average molecular weight of at least about 6,000, which has been annealed, without prior crosslinking, under crystallinity promoting conditions, to substantially increase the crystallinity thereof, and swollen in a swelling solvent, the resultant annealed, swollen lens possessing an oxygen transmissibility capability in an aqueous environment in excess of that necessary to meet the needs of the human cornea comprising:

(a) forming a lens blank from a substantially non-crosslinked polyvinyl alcohol resin having a weight average molecular weight of at least 6,000;

(b) annealing said lens blank under crystallinity promoting conditions to effectively increase the elastic modulus of the subsequently swollen contact lens, such that the resulting annealed polyvinyl alcohol blank has a degree of crystallinity between about 0.195 and 0.70 based on the weight fraction of crystalline material present in the polyvinyl alcohol polymer;

(c) removing selected portions of said annealed blank until the remainder of the annealed blank constitutes a replica of said contact lens on a reduced scale; and

(d) swelling said annealed replica in an aqueous or nonaqueous swelling solvent, to obtain said substantially shape-retaining swollen contact lens, wherein said lens in its swollen equilibrium state with ocular tear fluid, possesses sufficient oxygen transmissibility to meet the needs of the human cornea.

4,619,794

SPONTANEOUS PREPARATION OF SMALL UNILAMELLAR LIPOSOMES

Helmut Hauser, Uerikon, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 466,235, Feb. 14, 1983, abandoned.

This application Jan. 29, 1985, Ser. No. 696,228

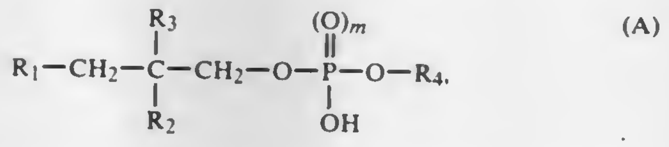
Claims priority, application Switzerland, Feb. 17, 1982, 981/82; Jan. 17, 1983, 237/83

Int. Cl.⁴ B01J *13/02*

U.S. Cl. 264—4.1 **24 Claims**

1. A process for the spontaneous preparation of small unilamellar liposomes comprising, without additional energy input, dispersing

(a) a homogeneous layer of a phospholipid of the formula



$$R_1-CH_2-\overset{\displaystyle R_3}{\underset{\displaystyle R_2}{\overset{|}{\underset{|}{C}}}}-CH_2-O-\overset{\displaystyle (O)_m}{\underset{\displaystyle OH}{\overset{\|}{\underset{|}{P}}}}-O-R_4. \qquad (A)$$

wherein m is zero or one, one of R_1 and R_2 is hydrogen, hydroxy or C_1–C_4-alkyl and the other is alkyl, alkenyl, alkoxy or alkenyloxy, each of 10–20 carbon atoms, or is acyloxy of 10–50 carbon atoms, R_3 is hydrogen or C_1–C_4-alkyl, and R_4 is hydrogen, C_1–C_7-alkyl, carboxy-lower alkyl, 2-aminoethyl, 3- amino-n-propyl, 2-methylaminoethyl, 3-methylamino-n-propyl, 2-dimethylaminoethyl, 3-dimethylamino-n-propyl, 2-amino-2-carboxyethyl, 3-amino-3-carboxy-n-propyl, 2-trimethylammonioethyl, 2-triethylammonioethyl, 3-tri-methylammonio-n-propyl, 3-triethylammonio-n-propyl, 2-hydroxyethyl, 2,3-dihydroxypropyl, 2-methoxyethyl, 3-methoxy-n-propyl, 2,3-ethylenedioxypropyl, 2,3-(2,2-propylene)dioxypropyl, 2-chloro- or 2-bromoethyl, 2- or 3-chloro-n-propyl or 2- or 3-bromo-n-propyl, or a carbohydrate radical of 5 to 12 carbon atoms, or, if R_1 and R_2 are hydrogen or hydroxy and R_3 is hydrogen, is a steroid radical, and an additional phospholipid of the formula A, wherein each of R_1 and R_2 independently of the other are alkyl, alkenyl, alkoxy or alkenyloxy, each of 10–20 carbon atoms, or is acyloxy of 10–50 carbon atoms, R_3 is hydrogen or C_1–C_4-alkyl and R_4 is C_1–C_7-alkyl, carboxy-lower alkyl, 2-aminoethyl, 3-amino-n-propyl, 2-methylaminoethyl, 3-methylamino-n-propyl, 2-dimethylaminoethyl, 3-dimethylamino-n-propyl, 2-amino-2-carboxyethyl, 3-amino-3-carboxy-n-propyl, 2-trimethylammonioethyl, 2-triethylammonioethyl, 3-trimethylammonio-n-propyl, 3-triethylammonio-n-propyl, 2-hydroxyethyl, 2,3-dihydroxypropyl, 2-methoxyethyl, 3-methoxy-n-propyl, 2,3-ethylenedioxypropyl, 2,3-(2,2-propylene)dioxypropyl, 2-chloro- or 2-bromoethyl, 2- or 3-chloro-n-propyl or 2- or 3-bromo-n-propyl, or a carbohydrate radical of 5 to 12 carbon atoms; or of a phospholipid of the formula A, wherein m is zero or one, each of R_1 and R_2 independently of the other is alkyl, alkenyl, alkoxy, or alkenyloxy, each of 10–20 carbon atoms, or is acyloxy of 10 to 50 carbon atoms, and R_3 and R_4 are hydrogen and optionally an additional phospholipid of the formula A wherein m is zero or one, each of R_1 and R_2 independently of the other is alkyl, alkenyl, alkoxy, or alkenyloxy, each of 10–20 carbon atoms, or is acyloxy of 10 to 50 carbon atoms, and R_3 is hydrogen or C_1–C_4-alkyl, and R_4 is C_1–C_7-alkyl, carboxy-lower alkyl, 2-aminoethyl, 3-amino-n-propyl, 2-methylaminoethyl, 3-methylamino-n-propyl, 2-dimethylaminoethyl, 3-dimethylamino-n-propyl, 2-amino-2-carboxyethyl, 3-amino-3-carboxy-n-propyl, 2-trimethylammonioethyl, 2-triethylammonioethyl, 3-trimethylammonio-n-propyl, 3-triethylammonio-n-propyl, 2-hydroxyethyl, 2,3-dihydroxypropyl, 2-methoxyethyl, 3-methoxy-n-propyl, 2,3-ethylenedioxypropyl, 2,3-(2,2-propylene)dioxypropyl, 2-chloro- or 2-bromoethyl, 2- or 3-chloro-n-propyl or 2- or 3-bromo-n-propyl, or a carbohydrate radical of 5 to 12 carbon atoms in an aqueous phase which is raised to a pH-value at least 11 or

(b) a homogeneous layer of a phospholipid of the formula A wherein m is 0 or 1, one of R_1 and R_2 is hydrogen, hydroxy or C_1–C_4-alkyl, and the other is alkyl, alkenyl, alkoxy or alkenyloxy, each of 10 to 20 carbon atoms, or is acyloxy of 10 to 50 carbon atoms, R_3 is hydrogen, and R_4 is lower alkyl which is substituted by an ammonio group and an additional phospholipid of the formula A wherein each of R_1 and R_2 independently of the other are alkyl, alkenyl, alkoxy or alkenyloxy, each of 10–20 carbon atoms, or is acyloxy of 10–50 carbon atoms, R_3 is hydrogen or C_1–C_4-alkyl and R_4 is C_1–C_7-alkyl, carboxy-lower alkyl, 2-aminoethyl, 3-amino-n-propyl, 2-methylaminoethyl, 3-methylamino-n-propyl 2-dimethylaminoethyl, 3-dimethylamino-n-propyl, 2-amino-2- carboxyethyl, 3-amino-3-carboxy-n-propyl, 2-trimethylammonioethyl, 2-triethylammonioethyl, 3-trimethylammonio-n-propyl, 3-triethylammonio-n-propyl, 2-hydroxyethyl, 2,3-dihydroxypropyl, 2methoxyethyl, 3-methoxy-n-propyl, 2,3-ethylene- dioxypropyl, 2,3-(2,2-propylene) dioxypropyl, 2-chloro- or 2-bromoethyl, 2- or 3-chloro-n-propyl or 2- or 3-bromo-n-propyl, or a carbohydrate radical of 5 to 12 carbon atoms; or of a phospholipid of the formula A, wherein m is 0 or 1, each of R_1 and R_2 independently of the other is alkyl, alkenyl or alkenyloxy, each of 10 to 20 carbon atoms, or is acyloxy of 10 to 50 carbon atoms, R_3 is hydrogen, and R_4 is lower alkyl which is substituted by an ammonio-lower alkylammonio group and an additional phospholipid of the formula A wherein each of R_1 and R_2 independently of the other are alkyl, alkenyl, alkoxy or alkenoxy, each of 10–20 carbon atoms, or is acyloxy of 10–50 carbon atoms, R_3 is hydrogen or C_1–C_4-alkyl and R_4 is C_1–C_7-alkyl, carboxy-lower alkyl, 2-aminoethyl, 3-amino-n-propyl, 2-methylaminoethyl, 3-methylamino-n-propyl, 2-dimethylaminoethyl, 3-dimethylamino-n-propyl, 2-amino-2-carboxyethyl, 3-amino-3-carboxy-n-propyl, 2-trimethylammonioethyl, 2-triethylammonioethyl, 3-trimethylammonio-n-propyl, 3-triethylammonio-n-propyl, 2-hydroxyethyl, 2,3-dihydroxypropyl, 2-methoxyethyl, 3-methoxy-n-propyl, 2,3-ethylenedioxypropyl, 2,3-(2,2-propylene)dioxypropyl, 2-chloro- or 2-bromoethyl, 2- or 3-chloro-n-propyl or 2- or 3-bromo-n-propyhl, or a carbohydrate radical of 5 to 12 carbon atoms, in an aqueous phase which is lowered to a pH-value of about or less than about 1 and the aqueous phase is neutralized with a physiologically acceptable acid or base and the unilamellar liposomes obtained are separated from multilamellar liposomes.

4,619,795

METHOD FOR PREPARING LIPID VESICLES

Beri Cohen, White Plains, N.Y., assignor to Technicon Instruments Corp., Tarrytown, N.Y.

Filed Dec. 24, 1984, Ser. No. 685,360

Int. Cl.⁴ B01J *13/02;* **A61K** *9/50*

U.S. Cl. 264—4.6 **15 Claims**

1. A method of preparing vesicles, which method comprises:

a. depositing a coating of lipid onto the surface of one or more particles, said particles being deformable in a hydrating aqueous phase, to form a coated particle; and

b. deforming said coated particle by contacting it with a hydrating aqueous phase in order to fragment said lipid coating so as to disperse fragments of said lipid into said aqueous phase and subject said fragments to multidirectional hydration, whereby lipid vesicles are formed in said aqueous phase.

2. The method of claim 1, wherein said depositing step comprises forming an organic phase comprising lipid and an organic solvent, contacting said deformable particle with said organic phase, and evaporating said organic solvent, said deformable particle being formed of a material which is sufficiently hydrophobic when exposed to said organic phase to permit deposition of said lipid coating.

4,619,796

PROCESS FOR PREPARATION OF POROUS CARBON PLATES

Yasuhira Awata, Tokyo, and Osamu Iwaki, Ichikawa, both of Japan, assignors to Oji Paper Company, Ltd., Tokyo, Japan

Filed Jun. 21, 1984, Ser. No. 623,260

Int. Cl.⁴ D01F *9/14*

U.S. Cl. 264—29.4 **12 Claims**

1. A process for the preparation of porous carbon plates, which comprises impregnating a sheet formed from a mixturc consisting essentially of 65to 90% by weight of a carbon fiber-forming unoxidized organic fiber and 10 to 35% by weight of a pulp according to a paper-making method with a solution of an organic polymeric substance to prepare an impregnated sheet, subjecting the impregnated sheet to an oxidizing treatment, and carbonizing the resulting infusibilized sheet at a temperature of at least 800° C. in an inert gas atmosphere.

4,619,797

METHOD FOR PRODUCING A DISPENSING CONTAINER FOR PRESSURIZED FLUIDS

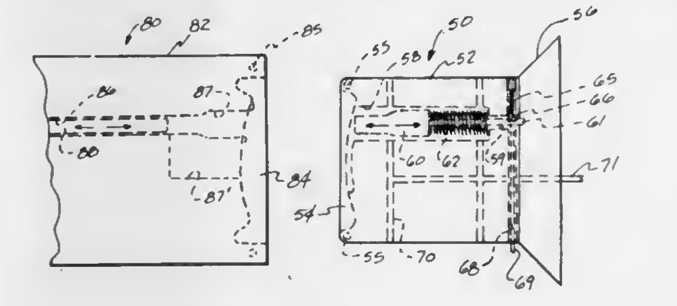
Walter K. Chlystun, 327 St. James Dr., Spartanburg, S.C. 29301

Division of Ser. No. 131,248, Mar. 17, 1980, Pat. No. 4,529,108.

This application Nov. 19, 1984, Ser. No. 673,111

Int. Cl.⁴ B29C *49/80, 49/00, 51/00*

U.S. Cl. 264—40.1 **10 Claims**



1. A method of reforming a portion of a container having a molded thermoplastic synthetic polymeric top wall with a pressure dome section and a nestable collapsible spout therein comprising the steps of:

(a) providing a molded container top of thermoplastic synthetic polymeric material and having a nestable collapsible spout;

(b) locating said molded container top between a pair of male and female forming mandrels, said mandrels having complementary die sections at facing ends of same, said die sections cooperatively defining at least an arcuate dome, said male die section defining a receiving recess for receiving said spout when said spout is extended, and said female die section defining a passageway for receiving said spout when said spout is everted;

(c) heating at least the area of said molded top that is to be reformed adequate to convert said polymeric material thereat to an amorphous state;

(d) bringing said male and female mandrels into registry at opposite sides of said top while receiving said spout in said receiving recess in said male die section and entrapping at least the portion of the top to be reformed between said male and female mandrels and causing said entrapped portion of said top to reform to the arcuate dome shape defined by said complementary die sections while said polymeric material is in the amorphous state;

(e) cooling said reformed top section adequate to return the polymeric material to a crystalline state; and

(f) withdrawing said mandrels from registry.

4,619,798

METHOD OF MANUFACTURING PARTS FOR USE TO THE HEAT PROCESSING FURNACE

Takashi Tanaka, Yamagata, and Kenro Hayashi, Hadano, both of Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo, Japan

Filed Dec. 24, 1984, Ser. No. 685,800

Claims priority, application Japan, Dec. 26, 1983, 58-251854

Int. Cl.⁴ C04B *41/53*

U.S. Cl. 264—62 **14 Claims**

1. A method of manufacturing parts for a heating furnace comprising:

(a) adding a sintering assistant of 0.5–2.0 wt. % and a binder, to SiC powder which has an average particle diameter of 2 μm or less, and molding it to a predetermined form:

(b) purifying the molded body by placing it in an atmosphere consisting essentially of of halogen gas or hydrogen halide gas at a temperature in the range of 800°–1300° C.;

(c) degassing the purified molded body in a vacuum under a temperature higher than that employed during said purification;

(d) sintering the degassed molded body; and

(e) coating a SiC film on at least part of the sintered body by chemical vapor deposition.

4,619,799

PROCESS OF MAKING SHEET MATERIAL COMPRISING A SUBSTRATE WEB OF SYNTHETIC THERMOPLASTIC MATERIAL AND AN ADHESIVE LAYER CONSISTING OF A NON-CROSSLINKABLE ELASTOMER

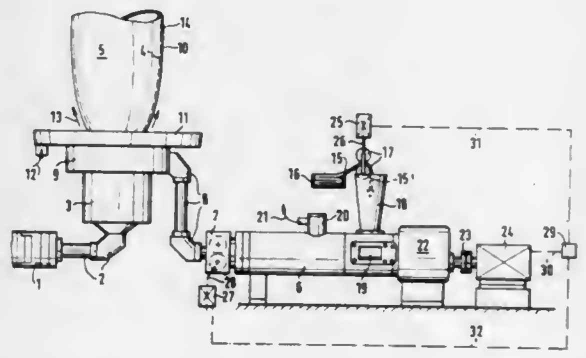
Wolfgang Teerling, Tecklenburg, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Jul. 19, 1985, Ser. No. 756,721

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1984, 3426865; Feb. 14, 1985, 3505128

Int. Cl.⁴ B29C *33/10, 33/18*

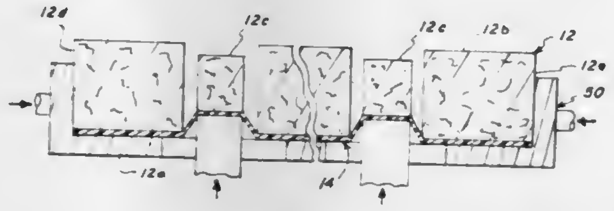
U.S. Cl. 264—101 **3 Claims**



1. A process of making sheet material comprising a substrate web of synthetic thermoplastic material and an adhesive layer of a non-crosslinkable elastomer, comprising the steps of co-extruding thermoplastic material and non-crosslinkable elastomeric material through an extrusion die to produce the sheet material, heating the elastomeric material, prior to extrusion through the extrusion die, above its devolatilization temperature by a feed screw of a screw extruder, devolatilizing the heated elastomeric material through venting means in the screw extruder, and subsequently pressurizing the devolatilized elastomeric material by a booster to a pressure which is sufficient to overcome back pressure applied by the extrusion die.

4,619,800
METHOD OF MAKING A DECORATIVE COMPOSITE PANEL

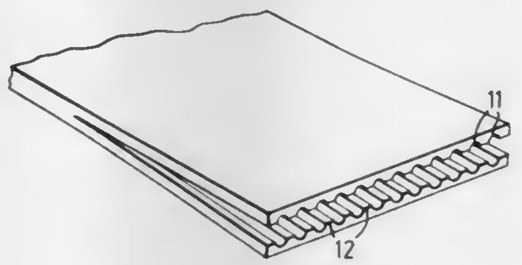
Phillip J. Santo, 12 Mountain Rd., Rochester, N.Y. 14625
Filed Apr. 15, 1985, Ser. No. 723,145
Int. Cl.^{4} B32B *31/04*
U.S. Cl. 264—139 **6 Claims**



1. A method for making a decorative panel having the appearance of tongue-in-groove construction, from a composite structure including a bass member and a decorative surface veneer on such member, said method comprising the steps of:
- removing a portion of said base member, such portion including a segment of said base member to a first depth less than the total depth of said base member measured from the surface of said base member opposite to said veneer, and spaced segments of said base member to a total depth of said base member, leaving an intermediate part of said base member connected to said veneer between such spaced segments;
- substantially simultaniously urging the sides of such base member opposite the removed portion toward one another and said intermediates part toward the surface of said base member opposite the veneer until the remaining portions of said base member and said intermediate part are in mutual contact and lie in a plane; and
- permanently securing the intermediate part to such sides of said base member.

4,619,801
METHOD FOR PRODUCING AN IMPROVED POLYMERIC HEAT EXCHANGE PANEL

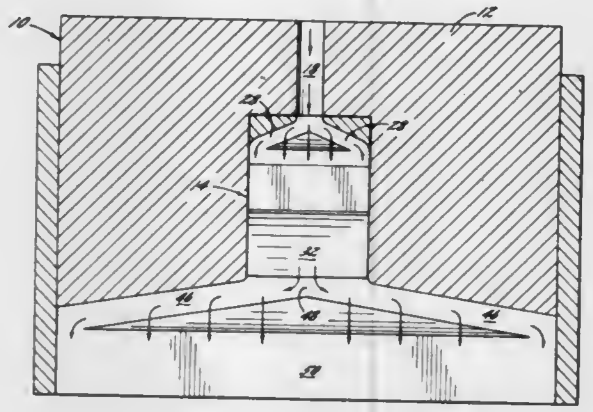
Thomas P. Engel, Verfahrenstechnik, Haldenhof, 6287 Aesch-/Lu, Switzerland
Continuation-in-part of Ser. No. 286,965, Jul. 27, 1981, abandoned. This application May 29, 1984, Ser. No. 614,773
Claims priority, application United Kingdom, Jul. 29, 1980, 8024821; Sep. 25, 1980, 8030965; Oct. 23, 1980, 8034194
Int. Cl.^{4} B28B *11/06*
U.S. Cl. 264—146 **16 Claims**



1. A method for the production of a polymeric heat exchange panel comprising a sheet having a multiplicity of longitudinally extruding passages and a plurality of juxtaposed dividing walls respectively disposed between adjacent said passages, wherein each end of said passages is closed to define a manifold space, and at least one of an inlet and an outlet communicating with at least one of said manifold spaces, said method comprising forming at least one of said manifold spaces by severing longitudinally without substantial removal of dividing wall material said plurality of juxtaposed dividing walls towards an end of the sheet to form severed opposed sides thereof, plasticizing said severed opposed sides of said sheet at an elevated temperature and molding said opposed sides together at end edges thereof to form a molded end wall having a longitudinal dimension substantially greater than a thickness of a wall of said sheet, wherein the severed opposed sides are separated during molding by means selected from the group consisting of a spider and compressed air.

4,619,802
DIE WITH COMBINING ADAPTOR INSERT AND MELT-LAMINATION PROCESS

Peter Cloeren, 2206 N. 16th St., Orange, Tex. 77630
Filed May 21, 1984, Ser. No. 612,307
Int. Cl.^{4} B28B *3/20;* B29C *47/00*
U.S. Cl. 264—171 **5 Claims**



1. A process for making a laminated sheet having layers each of substantially uniform thickness and each with a lessened curtaining effect, said process comprising forming a layered melt stream in the proximity of a locus at which said layered melt stream is caused to diverge and thereby undergoes tranverse flow, such that profiling of said layered melt stream is not essential to produce said laminated sheet from molten thermoplastic streams of dissimilar flow properties, and such that the curtaining effect is lessened.

3. An extrusion apparatus for making a laminated sheet each layer of which is of substantially uniform thickness, said extrusion apparatus comprising
- (a) a die comprising a manifold chamber, and
- (b) a removable, combining adaptor inserted in a cavity of said die for receiving said combining adaptor,

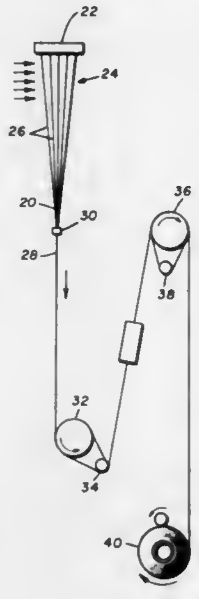
wherein said combining adaptor comprises a first flow channel, and said extrusion apparatus comprises a second flow channel; and wherein an adjustable flow divider is disposed between said first flow channel and second flow channel, said first flow channel and said second flow channel converging at a point of confluence to form an exit flow passage; said exit flow passage connecting to said die manifold chamber within which is a locus of divergence; and said locus of divergence being in the proximity of said point of confluence such that profiling of a layered melt stream formed at said point of confluence is not essential to produce said laminated sheet from thermoplastic streams of dissimilar flow properties.

4,619,803
SELF-TEXTURING NYLON YARN SPINNING PROCESS

Jing-peir Yu, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.
Filed Jul. 23, 1984, Ser. No. 633,313
Int. Cl.^{4} B29C *47/88*
U.S. Cl. 264—176.2 **10 Claims**

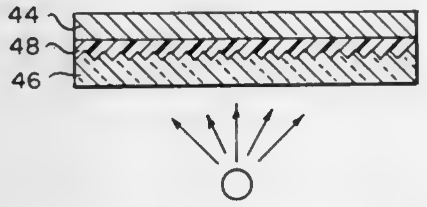
1. A process for spinning a yarn having latent crimp, comprising:
- (a) spinning a plurality of filaments, each of said filaments being formed by:
  - (1) generating first and second sub-streams of a molten polymer, and first sub-stream having a higher temperature than said second sub-stream;

  - (2) metering said sub-streams at given rates through separate passageways in a spinneret;
  - (3) said passageways being selected and arranged such that said sub-streams unite and merge side-by-side at a point below a plane 0.15 mm above the face of said spinneret to form a combined stream having a relatively cool side comprising said second sub-stream and a relatively hot side comprising said first sub-stream;
  - (4) directing quenching air against said combined stream below said spinneret from a given direction to thereby quench said combined stream into a filament, said given direction is selected so that said quench air preferentially impinges on said relatively cool side; and
  - (5) withdrawing said filament from said combined stream at a spinning speed above 2500 MPM; and
- (b) converging from filaments at a given distance from said spinneret to form said yarn;
- (c) said polymer, the temperature of said sub-streams, said metering rates, said given direction, and given distance, and said spinning speed being selected such that said filament has an elongation below 100% and a bulk of at least 10%.



4,619,804
FABRICATING OPTICAL RECORD MEDIA

Eric M. Leonard, Rochester; Robert V. Fister, Hilton, and James R. Pledger, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 15, 1985, Ser. No. 723,410
Int. Cl.^{4} B29C *33/42*
U.S. Cl. 264—220 **15 Claims**



1. A process for making at least a single-faced, optical wire and/or read recording disk having a sub-layer with a desired high-resolution featured surface, comprising the steps of:
- coating a polished surface of a glass blank with a continuous metal coating;
- applying a layer of photoresist material to said metal coating;
- exposing said photoresist layer so as to create therein a latent image of a desired pattern;
- developing said latent image, leaving some portions of said metal coating uncovered and other portions thereof covered by remaining portions of said photoresist layer;
- etching away said uncovered portions of said metal coating, leaving corresponding portions of said glass blank uncovered and other portions thereof still covered by said other portions of said metal coating covered by remaining portions of said photoresist layer;
- removing said remaining portions of said photoresist layer from said other portions of said metal coating;
- plasma etching into said uncovered portions of said glass blank while said other portions thereof remain covered by said other portions of said metal coating;
- removing said other portions of said metal coating from said other portions of said glass blank, thereby leaving a transparent glass master mold that is featured in relation to said desired pattern;
- positioning an opaque substantially flat metal substrate in spaced alignment with said transparent featured glass master mold so as to define a thin gap therebetween;
- filling said gap with a viscous composition that is radiation-curable to a solid plastic without undergoing significant shrinkage;
- irradiating said composition through said glass master mold so as to cure said composition to a solid plastic sub-layer having said desired high-resolution featured surface; and
- removing said glass master mold, leaving said plastic sub-layer adhered to said metal substrate.

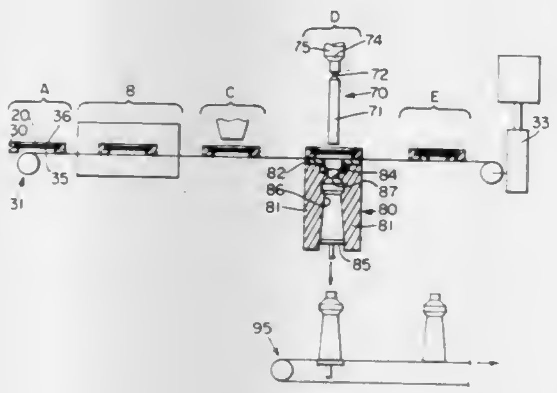
4,619,805
METHOD OF PRODUCING POROUS CARBON BODIES OF HIGH PERMEABILITY

Francisco J. Dias, Jülich; Marian Kampel, Heinsberg-Oberbruch, and Hartmut Luhleich, Düren, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany
Continuation of Ser. No. 579,656, Feb. 13, 1984, abandoned. This application Jun. 3, 1985, Ser. No. 741,016
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1983, 3305530
The portion of the term of this patent subsequent to Jul. 30, 2002, has been disclaimed.
Int. Cl.^{4} C01B *31/36*
U.S. Cl. 264—29.5 **11 Claims**

1. Method of producing permeable porous molded bodies of carbon which are capable of high fluid throughput, comprising the steps of:
- preparing a composite molding powder from carbon powder and a cokable organic binder;
- molding a cohesive precursor body in the green state from said molding powder;
- crushing said precursor body in the green state in a manner selected for obtaining a granulate predominantly of a desired size within the range of particle size from 0.2 to 10 mm;
- selecting from said granulate a fraction having a maximum particle size not exceeding twice the minimum particle size, said fraction having particle sizes within the range from 0.2 to 10 mm and being selected as to average particle size by reference to the permeability desired for the end product;
- molding a second body in the green state from said selected granulate fraction with pressing at a pressure that is lighter, the greater is said permeability desired for said end product, and
- coking said second green-state body by heating in vacuum or in an inert atmosphere up to a temperature in the range between 600° and 1000° C., thereby producing said end product having high-throughput permeability.

4,619,806
METHOD OF FORMING HIGHLY ORIENTED THERMOPLASTIC ARTICLES

Charles L. Gunn, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Mar. 15, 1985, Ser. No. 712,042
Int. Cl.⁴ B29C *51/06*
U.S. Cl. 264—522 **13 Claims**



1. A method of forming deep drawn oriented thermoplastic articles comprising the steps:

(a) planarly supporting a sheet of at least partially crystalline thermoplastic polymeric material;

(b) establishing at least one differentially heated area within said sheet; said area comprising an outer cool zone having a temperature range generally below the crystalline melt point of the thermoplastic material, a hot zone disposed within said outer cool zone having a temperature range generally above the crystalline melt point but below the complete melt point of the thermoplastic material, and an inner cool zone located centrally of said hot zone and having a temperature range generally below the crystalline melt point of the thermoplastic material;

(c) placing said heated sheet between a female mold unit and a forming mandrel, said inner cool zone generally axially aligned therewith;

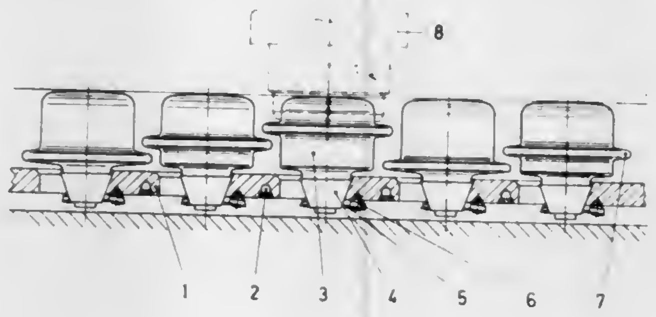
(d) driving said forming mandrel against the inner cool zone of the heated area of said sheet and into said female mold unit so that said mandrel is first drawn radially inwardly from portions of said hot zone located radially outside of the orifice of said female mold and around said mandrel as it is stretched into said female mold thereby forming an elongated generally cylindrically shaped preform having a central cavity, said forming mandrel longitudinally stretching said material a distance sufficient to cause at least a portion of the walls of said preform to undergo strain hardening, and said outer cool zone maintaining tension control of said sheet material throughout the forming process and permitting the planar support of said sheet material about the periphery of said differentially heated area without clamping the same;

(e) subjecting said central cavity of said elongated preform to increased internal fluid pressure to radially expand the walls of said preform and force the same against the interior surface of said female mold; and

(f) maintaining said internal fluid pressure for a time sufficient to allow the expanded material to cool and set.

4,619,807
HEAT SHIELD

Heinz E. Kotzlowski, Ismaning, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft Zur Foerderung der Wisenschaften E.V., Fed. Rep. of Germany
Continuation of Ser. No. 387,946, Jun. 14, 1982, abandoned. This application Dec. 27, 1984, Ser. No. 685,603
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1981, 3125970
Int. Cl.⁴ G21B *1/00*
U.S. Cl. 376—136 **7 Claims**



1. In a nuclear fusion reaction system having a vessel, said vessel containing a hot plasma, the improvement comprising a heat shield structure for shielding the inner surface of the walls of said vessel from the hot plasma, said heat shield structure comprising:

a support plate having a first side facing the inner surface of said vessel walls and a second side facing away from the inner surface of said vessel walls, said support plate having a plurality of holes extending from said first to said second side, each of said holes being provided with a substantially annular seat facing said first side, said support plate provided with conduit means for conducting a coolant for removing heat from said support plate;

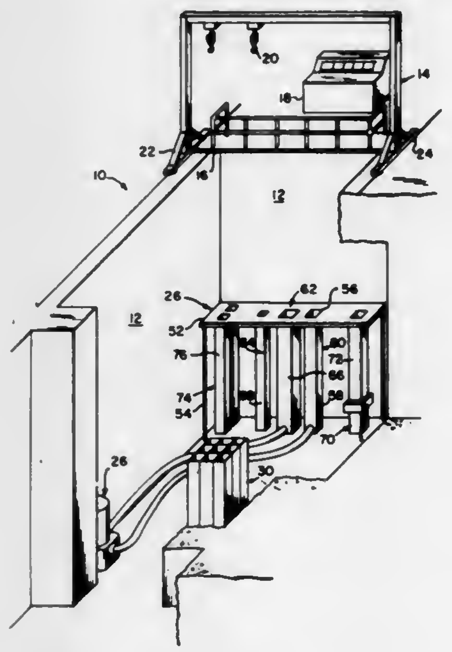
and a plurality of heat shield members, each made of thermally conductive material, said members being arranged to detachably mount to said holes in said support plate, each of said members having a body portion arranged when mounted to project from said first side of said support plate and to shield said vessel from the hot plasma, and each of said members having a support portion for thermally conductively engaging said seat on said support plate, said support portion including a substantially annular surface arranged to mate with said seat and including spring means interconnecting said support portion with said second side of said support plate and applying force on said member to pull said support portion of said member into said hole and press said annular surface against said seat.

4,619,808
SYSTEM AND METHOD FOR CONSOLIDATING SPENT NUCLEAR FUEL

Frank J. Formanek, West Suffield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Sep. 23, 1983, Ser. No. 535,105
Int. Cl.⁴ G21C *19/00*
U.S. Cl. 376—272 **11 Claims**

1. A system for consolidating spent fuel rods from a nuclear fuel assembly into a box for placement in a fuel storage area, comprising:

a. a fuel assembly disassembly station including a vertically oriented disassembly enclosure having an open upper end;
b. a fuel transfer station including a vertically oriented transfer enclosure having an open upper end;
c. a fuel consolidation station including a vertically oriented consolidation enclosure having an open upper end;
d. a generally tapered fuel transfer canister fully and removably insertable within the transfer enclosure, having an open upper end and a smaller lower end removably insertable within the open upper end of the consolidation enclosure, said canister including means therewithin for guiding fuel rods inserted at the upper end into more closely packed array at the lower end;
e. a fuel consolidation box open at least at the upper end and removably located within the consolidation enclosure, having a uniform cross sectional area substantially the same as the cross sectional area of the lower end of the transfer canister;
f. base means detachably secured to the lower end of the transfer canister;
g. means for exposing the fuel rods of the fuel assembly to direct access from above when the assembly is located within the disassembly enclosure;
h. a fuel rod pulling tool selectively locatable over the disassembly station and the fuel transfer station, for repeatedly removing a preselected group of fuel rods from a fuel assembly in the disassembly enclosure and inserting the group of rods fully into a transfer canister in the transfer enclosure, until the canister is fully loaded and the rods are supported by the base;



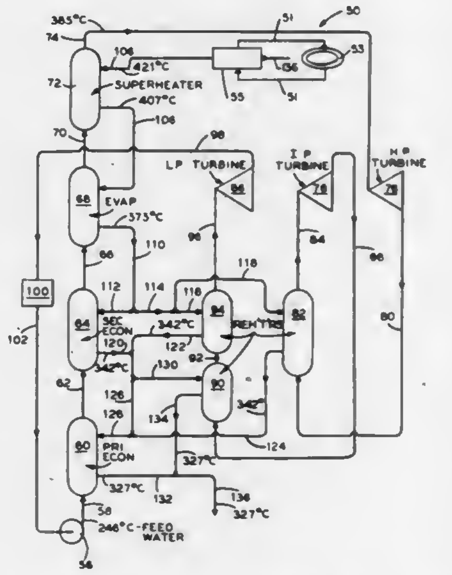
i. means for removing the fully loaded transfer canister from the transfer enclosure and aligning the lower end of the transfer canister with the upper end of the consolidation box;
j. means associated with the consolidation station for lowering the base and fuel rods supported thereon, from the transfer canister downward to the lower end of the consolidation box;
k. means for supporting the base in the lower end of the consolidation box;
l. means for removing the consolidation box with fuel rods consolidated therein, from the consolidation enclosure to a fuel storage area.

4,619,809
STEAM GENERATION AND REHEAT APPARATUS

Donald C. Schluderberg, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.
Filed Mar. 30, 1983, Ser. No. 480,450
Int. Cl.⁴ G21D *1/00*
U.S. Cl. 376—402 **17 Claims**

1. Steam generation and reheat apparatus comprising:

a. means for evaporating water to form saturated steam;
b. means for superheating the saturated steam for delivery to a heat engine;
c. at least one means for reheating exhaust steam from a heat engine for delivery to a lower pressure heat engine;
d. economizer means for pre-heating water before delivery of the water to said evaporator means;
e. means for flowing an heat supply fluid in heat exchange relation with the water an steam in series flow through said superheated means and said evaporator means; and
f. means for flowing the heat supply fluid, after its exit from said evaporator means, in heat exchange relation with the water and exhaust steam in parallel flow through said reheat means and said economizer means; and



g. means for imparting thermal energy to the heat supply fluid.

4,619,810
DENTAL ALLOYS FOR PORCELAIN-FUSED-TO-METAL RESTORATIONS

Arun Prasad, Cheshire, Conn., assignor to Jeneric Industries, Inc., Wallingford, Conn.
Continuation of Ser. No. 570,627, Jan. 13, 1984, abandoned. This application Oct. 3, 1985, Ser. No. 783,327
Int. Cl.⁴ C22C *5/04*
U.S. Cl. 420—463 **9 Claims**

1. A palladium based dental alloy, free of silver, nickel, copper and cobalt, consisting essentially of, on a weight percent basis:

gold, 8–25
gallium, 4–10
boron, 0.05–0.25
rhenium, 0.1–0.5
indium and/or tin, 0–20

and the balance, palladium—with the proviso that when a mixture of gallium, indium and/or tin is incorporated in the alloy, the total weight percent of gallium, indium and/or tin ranges from about 8 to 20, said alloy exhibiting a yield strength greater than 50,000 psi, an ultimate tensile strength of greater than 60,000 psi, an elongation greater than 10%, and a melting point ranging from 2200° to 2400° F.

4,619,811
APPARATUS FOR GROWING GAAS SINGLE CRYSTAL BY USING FLOATING ZONE

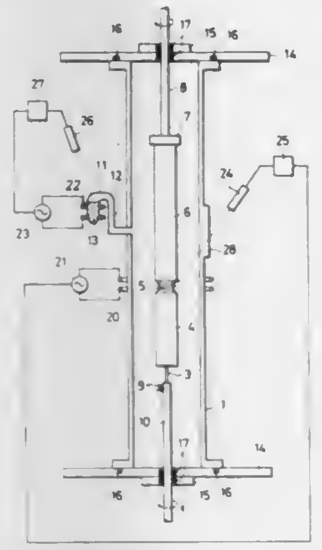
Jun-ichi Nishizawa, Sendai, Japan, assignor to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan
Continuation of Ser. No. 525,541, Aug. 22, 1983, abandoned. This application Sep. 17, 1985, Ser. No. 777,004
Claims priority, application Japan, Aug. 27, 1982, 57-149747
Int. Cl.⁴ C30B *13/20, 13/28, 35/00*
U.S. Cl. 422—109 **4 Claims**

1. An apparatus for growing GaAs single crystals using a floating zone method, said apparatus comprising:

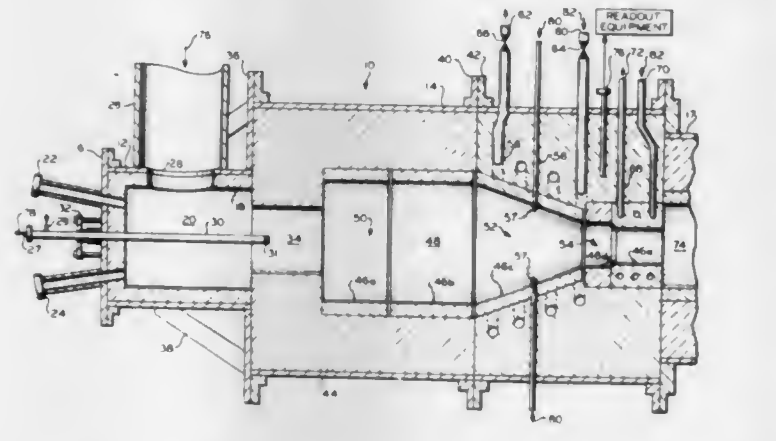
a closed cylinder charged with a GaAs polycrystal and an adjacently located GaAs single seed crystal,

an As vessel charged with As and communicating, via a narrow passage, with said closed cylinder for supplying As vapor into said closed cylinder,

first heating means for heating said GaAs polycrystal and establishing a GaAs melted portion,
first means for measuring the temperature of the GaAs melted portion,
first temperature controller connected to said first temperature measuring means and said first heating means for having said GaAs melted portion at a temperature set at or just above the melting point of GaAs,
second heating means for holding said As vessel at a substantially constant temperature sufficient to impart to a GaAs single crystal being grown an optimum As vapor pressure to cause said GaAs single crystal being grown to be at least substantially devoid of deviation from the stoichiometric composition, said second heating means providing sufficient heat to said As vessel and said narrow passage to prvent said As vapor from depositing on the inside of said closed cylinder,
second means for measuring the temperature in said As vessel,
second temperature controller connected to said second temperature measuring means and said second heating means for keeping said As vessel at a constant temperature,
first rotating and vertically moving means for said GaAs polycrystal connected to a rod rotated by a chuck,
second rotating and vertically moving means for said GaAs single seed crystal connected to a rod rotated by a chuck.

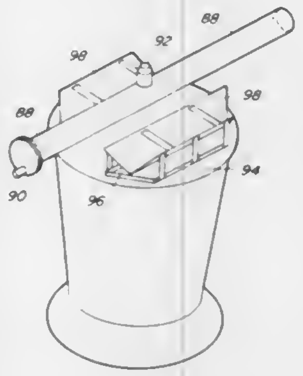


4,619,812
CARBON BLACK PRODUCTION APPARATUS
Lawrence K. Murray, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jan. 4, 1985, Ser. No. 688,678
Int. Cl.⁴ C09C *1/48*
U.S. Cl. 422—156 **1 Claim**



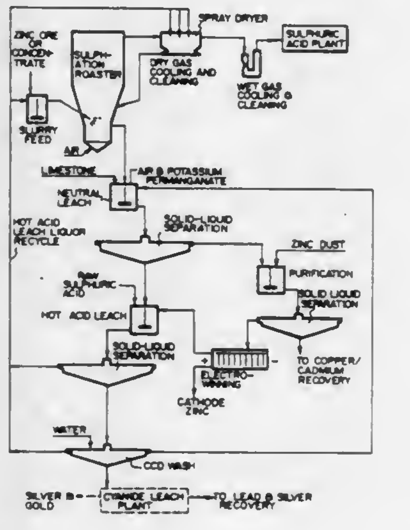
1. A carbon black producing apparatus comprising:
a hollow refractory section having an interior surface which defines a chamber, said chamber having an upstream end and a downstream end, and also having a converging zone generally frustoconical in shape, wherein said converging zone has a first end and also a second end which faces the upstream end of said chamber and which is of a larger diameter than said first end, said chamber also having a throat zone, adjacent to the downstream end of said chamber, in direct fluid communication with said converging zone first end, said chamber additionally having a combustion zone adjacent said upstream end and in direct fluid communication with said converging zone second end;
means for introducing a combustible mixture into said combustion zone at said upstream end;
means for introducing a carbonaceous feedstock directly into said converging zone so that the feedstock mixes with the combustible mixture; and
a cooling means for passing coolant fluid through a passageway defined by at least one spirally shaped tubular member embedded in said refractory section so as to be coaxially positioned with respect to said chamber and so as to extend axially along substantially the entire length of said converging zone, the passageway surround only said converging and throat zones.

4,619,813
GAS ABSORPTION SYSTEM
James A. Healey; Robert C. Duncan, both of Edmundston, and Charles F. Roussel, St-Jacques, all of Canada, assignors to Fraser Inc., Edmundston, Canada
Filed Feb. 14, 1985, Ser. No. 701,675
Claims priority, application Canada, Apr. 17, 1984, 452239
Int. Cl.⁴ B01D *50/00, 47/14*
U.S. Cl. 422—171 **4 Claims**



1. A gas absorption system comprising a vertical housing having a gas inlet at its lower end and a gas outlet at its upper end and a plurality of superposed absorption stages between said gas inlet and outlet, each stage comprising:
(a) a ball bed
(b) a plurality of venturi tubes located below said ball bed through which gas is circulated upwardly from stage to stage;
(c) a piping system for circulating an absorption liquid at each stage, the level of said absorption liquid in each stage being maintained by overflow from stage to stage;
(d) a nozzle connected to said piping system and centered over each venturi tube pointing upwardly toward the ball bed for spraying absorption liquid into the ball bed to react the gas circulated through each stage with the absorption liquid; and
(e) means for capping each venturi tube to prevent the absorption liquid from dripping from stage to stage through the venturi tubes, said capping means including gas openings allowing gas to flow upwardly from stage to stage to be reacted with the absorption liquid in the ball bed of each stage.

4,619,814
PROCESS FOR THE RECOVERY OF NON-FERROUS METALS FROM SULPHIDE ORES AND CONCENTRATES
Robert S. Salter; Roy S. Boorman, both of Fredericton, Canada, and Igor A. E. Wilkomirsky, Concepcion, Chile, assignors to Provincial Holdings Ltd., Fredericton, Canada
Continuation-in-part of Ser. No. 346,837, Feb. 5, 1982, Pat. No. 4,415,540, which is a continuation of Ser. No. 189,249, Sep. 22, 1980, Pat. No. 4,317,803, which is a continuation of Ser. No. 940,937, Sep. 11, 1978, Pat. No. 4,224,122. This application Sep. 7, 1983, Ser. No. 530,032
Claims priority, application Canada, Dec. 3, 1982, 416971
The portion of the term of this patent subsequent to Sep. 23, 1997, has been disclaimed.
Int. Cl.⁴ C01G *3/10, 9/06*
U.S. Cl. 423—27 **25 Claims**



1. In a method for recovering zinc from material selected from the group consisting of sulphidic ores and concentrates and for rendering copper, lead, silver, and gold in said material more readily recoverable, the improvement comprising:
(a) roasting said material in a subdivided form in a fluidized bed reactor at a temperature from 620° to 700° C., with 20–60% excess air over the stoichiometric for an average retention time of over 1 hour at a superficial spacial velocity of the gas within the bed of 25–150 cm per sec at reactor temperature resulting in an atmosphere comprising SO_2, SO_3, water vapour, and remaining O_2 and N_2 from the air, to obtain a calcine containing zinc and copper as sulphates and oxysulphates, ferrites, oxides, and unreacted sulphides, iron as hematite, and lead, silver, and gold in forms amenable to recovery;
(b) leaching said calcine with water or dilute sulphuric acid solution at a temperature below 80° C. in such a manner that sulphates, oxysulphates, and oxides of zinc and copper are leached out from the calcine into the water or dilute sulphuric acid solution;
(c) subjecting the leach pulp resulting from step (b) to a liquid-solid separation step to yield a leach solution from which zinc and copper can be recovered;
(d) leaching the solid residue resulting from step (c) with hot, strong sulphuric acid solutions, at a temperature above 80° C. but below the boiling point of the solution and with sulphuric acid solution stronger than used in step (b), in such a manner that zinc and copper ferrites and unreacted sulphides of zinc and copper are converted to sulphates of iron, copper, and zinc which dissolve in the leach solution;
(e) subjecting the pulp resulting from step (d) to a solid-liquid separation step to obtain a leach solution containing said sulphates of iron, copper, and zinc;
(f) recycling said sulphates of zinc, copper, and iron obtained in step (e) in part into said fluidized bed reactor in a subdivided form to convert the sulphates of iron to hematite, SO_2 and SO_3 and render the sulphates of zinc and copper to the calcine for recovery by means of steps (b) and (c);
(g) washing the solid residue resulting from step (e) with water;
(h) subjecting any pulp resulting from step (g) to a solid-liquid separation step to obtain a washed leach residue containing lead, silver and gold in forms amenable to recovery and a wash liquor containing zinc, copper, and iron sulphates and sulphuric acid; and
(i) recycling said wash liquor resulting from step (h) in part to step (b) and/or in part to said fluidized bed reactor in a subdivided form to convert the sulphates of iron to hematite, SO_2 and SO_3 and enable recovery of the sulphates of zinc and copper by means of steps (b) and (c).

4,619,815
CHLORINATION OF IRON-CONTAINING METALIFEROUS MATERIAL
Michael Robinson, Wooton, England, assignor to SCM Chemicals Limited, London, England
Filed Sep. 30, 1985, Ser. No. 782,009
Int. Cl.⁴ C01G *23/02, 23/047*
U.S. Cl. 423—74 **13 Claims**

1. A fluidized bed process for chlorinating iron-containing titaniferous ore to produce titanium dioxide beneficate and titanium chloride products, the process comprising:
providing a fluidized bed feed mixture comprising carbon and said titaniferous ore where said feed mixture contains by weight between 15% and 40% of said carbon;
maintaining the temperature of the fluidized bed at temperatures between 600° C. and 1150° C. by combusting a portion of said carbon with oxygen; and
chlorinating said fluidized bed with a quantity of chlorine between the quantity required to beneficiate said titaniferous ore without substantial chlorination of titanium dioxide and the quantity required to totally chlorinate said titaniferous ore to produce beneficate and titanium chloride products in the weight ratio between 0.70 and 0.30 of beneficiate/titanium chloride products.

4,619,816
RECOVERY OF COBALT FROM AMMONIACAL SOLUTIONS CONTAINING COBALT AND NICKEL
William A. Rickelton, Niagara Falls, Canada, assignor to American Cyanamid Company, Stamford, Conn.
Filed Nov. 21, 1985, Ser. No. 799,230
Int. Cl.⁴ C22B *23/04*
U.S. Cl. 423—139 **20 Claims**

1. A process for the extraction of Co (III) from ammoniacal solutions comprising Co (III) and Ni (II), said process comprising:
(a) contacting said ammoniacal solution with
(b) bis (2,4,4-trimethylpentyl)phosphinic acid or an ammonium or alkali metal salt thereof,
said ammoniacal solution forming the aqueous phase and said phosphinic acid, or salt thereof, forming the organic phase, and
(c) a phase modifier
whereby the Co (III) values are extracted from said aqueous phase to said organic phase.

4,619,817
HYDROTHERMAL METHOD FOR PRODUCING STABILIZED ZIRCONIA
Edgel P. Stambaugh, Worthington; James H. Adair, Bexley; Ibrahim Sekercioglu, Dublin, and Roger R. Wills, Solon, all of Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio
Filed Mar. 27, 1985, Ser. No. 716,428
Int. Cl.⁴ C01G *25/02*
U.S. Cl. 423—266 **33 Claims**

1. A process for the production of stabilized zirconia powders by hydrothermal treatment comprising:

a. providing an aqueous feedstock selected from the group consisting of zirconium nitrates, zirconium sulphates, zirconium chlorides, zirconium hydroxides, zirconium carbonates, zirconium acetates, zirconium oxides and zirconium ion containing solutions derived from the hydrothermal leach of zircon sand or baddeleyite with mineral acids;

b. adding and mixing a complexing agent with the feedstock, wherein the complexing agent forms (1) a stable soluble complex, (2) does not have side reactions resulting in undesirable products, (3) is capable of being removed from the final product, and (4) the complexing agent decomposes at hydrothermal conditions or has decreased affinity for the complexed ion;

c. mixing with the feedstock of b. at least one and mixtures thereof of materials selected from the group consisting of nitrates, sulphates, chlorides, hydroxides, carbonates, acetates, and oxides of yttrium, magnesium and calcium;

d. titrating the resulting mixture to a $pH \geqq 9$ with a base in a manner adapted to prevent precipitation of a hydrous oxide;

e. treating the titrated mixture at hydrothermal conditions adapted to produce a stabilized zirconia precipitate; and

f. separating the stabilized zirconia precipitate from the mixture.

4,619,818

CRYSTALLINE ANTIMONOPHOSPHOALUMINATE

Eric G. Derouane, Namur, Belgium, and Roland von Ballmoos, Hopewell, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 615,495, May 30, 1984, abandoned. This application Apr. 1, 1985, Ser. No. 718,269

Int. Cl.⁴ C01B *25/36*

U.S. Cl. 423—306 **8 Claims**

1. A synthetic crystalline material comprising antimony, phosphorus and aluminum which, as synthesized, exhibts a characteristic X-ray diffraction pattern as shown in Table 1 of the specification, and a composition as follows:

$$A_v{:}Q^{q*}$$

$$i/q|^{q+}{:}(AlO_2^{-})_{1-x}{:}(PO_2^{+})_{1-y}{:}MO_2^{m-4})_{x\text{-}}$$

$$+_{y}{:}T_{|j/t|}^{t-}$$

wherein A is occluded organic directing agent and solvent, v is the number of moles of A, Q is a cation of valence q, M is one or more elements of valence m selected from the group consisting of Sb^{+3} and combintation thereof with Si^{+4}, and wherein less than 50% of the atoms of M are Si^{+4}. T is an anion of valence t, and x, y, i and j are numbers which satisfy the relationships:

$$z = i - j, \text{ and}$$

$$z = y - x + (4+m)\cdot(x+y)$$

wherein z is a number of from greater than −1 to less than +1, and which further exhibits a TPAD peak of less than 200° C. when in the ammonium form.

4,619,819

PHOSPHORIC ACID COMPOSITION

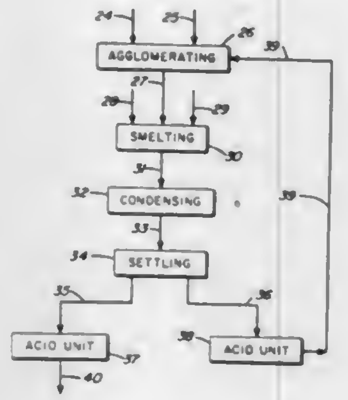
James C. Barber, Florence, Ala., assignor to James C. Barber and Associates, Inc., Florence, Ala.

Continuation-in-part of Ser. No. 301,378, Sep. 11, 1981, Pat. No. 4,383,874, which is a division of Ser. No. 223,122, Jan. 7, 1981, Pat. No. 4,372,929. This application Jun. 10, 1983, Ser. No. 503,099

Int. Cl.⁴ C01B *25/16*

U.S. Cl. 423—317 **3 Claims**

1. A composition of phosphoric acid which comprises not less than about 99.98 percent by weight phosphoric acid with a tripolyphosphoric acid content greater than about 20 percent by weight a F/P_2O_5 weight ratio in the range of 0.000120 to 0.000140 and a total metals/P_2O_5 weight ratio in the range of 0.00060 to 0.00080.



PROCESS FOR MAKING PHOSPHORIC ACID WITH LOW IMPURITIES CONTENT

4,619,820

SYNTHESIS OF ZSM-23 ZEOLITE AND THE PRODUCT PRODUCED

Ernest W. Valyocsik, Yardley, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 661,759, Oct. 17, 1984, abandoned, which is a continuation-in-part of Ser. No. 490,083, Apr. 29, 1983, Pat. No. 4,490,342, and a continuation-in-part of Ser. No. 490,084, Apr. 29, 1983, Pat. No. 4,531,012. This application Dec. 13, 1985, Ser. No. 808,367

The portion of the term of this patent subsequent to Dec. 25, 2001, has been disclaimed.

Int. Cl.⁴ C01B *33/28*

U.S. Cl. 423—328 **18 Claims**

1. A process for preparing a ZSM-23 zeolite having an X-ray diffraction pattern of Table I, comprising preparing a reaction mixture which comprises sources of an alkali metal, an oxide of aluminum (Al_2O_3), an oxide of silicon (SiO_2), water and a nitrogen-containing organic cation R^+ and having the following composition, in terms of mole ratios:

$SiO_2/Al_2O_3 = 5000$ to ∞

$H_2O/SiO_2 = 5$ to 200

$OH^-/SiO_2 = 0$ to 0.60

$M^+/SiO_2 = 0.01$ to 2.0

$R^+/SiO_2 = 0.01$ to 2.0

wherein M^+ is a cation of an alkali or alkaline earth metal and R^+ is an organic cation of the formula $(CH_3)_3N^+—R_1—N^+(CH_3)_3$ wherein R_1 is a saturated or unsaturated straight chain hydrocarbon group having seven carbon atoms, and maintaining the mixture at crystallization conditions until crystals of the ZSM-23 zeolite are formed.

8. A synthetic crystalline ZSM-23 zeolite material in the as-synthesized form having a formula, in terms of moles of oxides, in the anhydrous state:

$$(0.01\text{-}6)R_2O{:}(0\text{-}2)M_{2/n}O{:}(x)Al_2O_3{:}(100)SiO_2$$

wherein R_2O is an oxide of a promoter, organic or inorganic salt thereof, the promoter being a cation of the formula

$$(CH_3)_3N^+—R_1—N^+(CH_3)_3$$

wherein R_1 is a saturated or unsaturated straight chain hydrocarbon group having seven carbon atoms and M is an alkali or alkaline earth metal having a valence n, and x ranges from about 0.005 to 0.02.

4,619,821

OZONE DECOMPOSITION

Stephen R. Ely, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Dec. 2, 1985, Ser. No. 803,588

Int. Cl.⁴ B01D *53/36*

U.S. Cl. 423—579 **13 Claims**

1. A process to decompose ozone which comprises passing an ozone-containing gas through a catalyst comprised of an AMS-1B crystalline borosilicate catalyst.

4,619,822

NOVEL PROCESS FOR THE SYNTHESIS OF VANADIUM OXIDE, V_6O_{13}

Abdelkader Hammou, Grenoble; Philippe Rigaud, Vienne, and Catherine Rousseau, La Roche sur Yon, all of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

Filed Apr. 24, 1985, Ser. No. 726,621

Claims priority, application France, Apr. 24, 1984, 84 06415

Int. Cl.⁴ C01G *31/02*

U.S. Cl. 423—592 **5 Claims**

1. In a process for preparing V_6O_{13} by reducing V_2O_5 at high temperatures, the improvement comprising reducing V_2O_5 with a gaseous mixture of carbon monoxide and carbon dioxide to obtain substantially pure V_6O_{13}, wherein the said gaseous mixture contains between 5 and 15 percent by volume of carbon monoxide.

4,619,823

RADIOACTIVE IODINE LABELED METARAMINOL AND DIAGNOSTIC AGENT CONTAINING PLATELETS LABELED THEREWITH

Akira Yokoyama, Ohtsu, and Yoshiro Ohmomo, Kyoto, both of Japan, assignors to Nihon Medi-Physics Co., Ltd., Hyogo, Japan

Filed Dec. 22, 1983, Ser. No. 564,653

Claims priority, application Japan, Sep. 9, 1983, 58-167339

Int. Cl.⁴ A61K *43/00, 49/00;* **C07C** *131/00*

U.S. Cl. 424—1.1 **5 Claims**

1. Metaraminol labeled with radioactive iodine by replacement of at least one hydrogen in the metaraminol benzene ring.

4,619,824

METHOD FOR REDUCING THE WATER DESORPTION OF AN ACTIVE COMPOSITION CARRIED BY A SUPPORTING MEDIUM

Richard Weiss, Chartres, and Hubert Delagneau, Mainvilliers, both of France, assignors to Reckitt & Colman, S.A., Massy Cedex, France

PCT No. PCT/FR83/00042, § 371 Date Nov. 3, 1983, § 102(e) Date Nov. 3, 1983, PCT Pub. No. WO83/03056, PCT Pub. Date Sep. 15, 1983

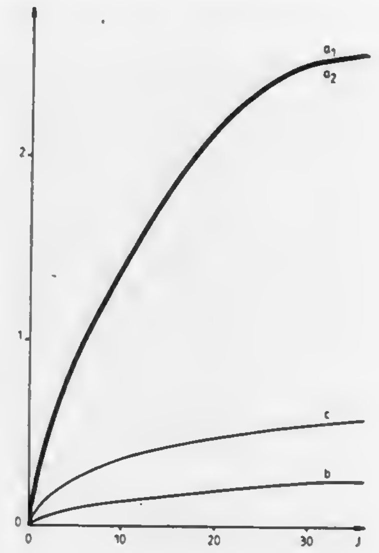
PCT Filed Mar. 4, 1983, Ser. No. 556,245

Claims priority, application France, Mar. 4, 1982, 82 03599

Int. Cl.⁴ A61L *9/01, 9/04*

U.S. Cl. 424—16 **15 Claims**

1. A process for reducing desorption by and into water of a liquid active chemical composition carried by a substrate when such an assembly is in contact with an aqueous medium, said process comprising treating at least one of the composition or the substrate with at least one compatible polar compound which provides the substrate or said composition an opposite ionic charge to that of the other, or increases the ionic charge between the composition and the substrate if such charge is already opposite to that of the other, and simultaneously provides a hydrophilic/lipophilic balance (HLB) such that the surface tension of the substrate/composition couple is lower than the surface tension of the substrate/water couple.



4,619,825

CONTROL OF DENTAL PLAQUE AND CARIES

Edward Eigen, East Brunswick, and Alexander J. Simone, Somerset, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Apr. 18, 1985, Ser. No. 724,376

Int. Cl.⁴ A61K *7/16*

U.S. Cl. 424—49 **6 Claims**

1. A method for inhibiting dental plaque and promoting caries reduction in oral hygiene comprising dispersing an effective plaque inhibiting and caries-reducing amount of emulsan in water and contacting the aqueous dispersion of emulsan with dental surfaces susceptable to caries generally recognized to be caused by Streptococcus mutans as well as to growth of dental plaque through inhibition of attachment of *S. mutans,* as well as by desorbing *S. mutans* that have previously attached to dental surfaces in a mammalian oral cavity.

4,619,826

ACNE CONTROL METHOD

George E. Lay, Fountaintown; Richard A. Knipstein, Carmel, both of Ind., and Daniel H. Haigh, Sanford, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 497,296, May 23, 1983, Pat. No. 4,489,058. This application Dec. 7, 1984, Ser. No. 679,173

The portion of the term of this patent subsequent to Dec. 18, 2001, has been disclaimed.

Int. Cl.⁴ A61K *31/78, 31/74, 31/745*

U.S. Cl. 424—78 **18 Claims**

1. A method for controlling acne or acneform eruptions in humans which comprises the topical application of an effective amount of a crosslinked or uncrosslinked sebum-imbibing, sebum-retaining polymer; said polymer being the polymerization product of at least four monomer units selected from the group consisting of styrene; styrene ring substituted with a straight or branched chain alkyl moiety of from 1 to about 12 carbon atoms; an alkyl ester derived from an alcohol containing from about 8 to about 20 carbon atoms and acrylic or methacrylic acid; a vinyl ester of an aliphatic carboxylic acid containing from about 8 to about 20 carbon atoms; and an aliphatic diolefin of from about 4 to about 6 carbon atoms.

4,619,827
METHOD FOR ADMINISTERING EQUINE VACCINES AND COMPOSITIONS THEREFOR

Robert W. Bull, Haslett; Robert M. Soltysiak, and Paul D. Minnick, both of East Lansing, all of Mich., assignors to Neogen Corporation, Lansing, Mich.

Filed Oct. 7, 1985, Ser. No. 785,001
Int. Cl.^{4} A61K *39/12, 45/02*
U.S. Cl. 424—89 **17 Claims**

1. In a method for providing an immune response to an equine disease with a viral or viral subunit or other viral-derived antigen vaccine which produces a blood serum improvement which comprises:

administering an equine leukokine with the vaccine to thereby provide an enhanced immune response in the equine.

4,619,828
POLYSACCHARIDE EXOTOXOID CONJUGATE VACCINES

Lance K. Gordon, Newmarket, Canada, assignor to Connaught Laboratories, Inc., Swiftwater, Pa.

Continuation-in-part of Ser. No. 395,743, Jul. 6, 1982, Pat. No. 4,496,538. This application Jan. 5, 1984, Ser. No. 568,453
The portion of the term of this patent subsequent to Jan. 29, 2002, has been disclaimed.
Int. Cl.^{4} A61K *39/108, 39/09, 39/385, 39/102;* **C07K** *15/00*
U.S. Cl. 424—92 **13 Claims**

1. A water-soluble, heat resistant conjugate of a polysaccharide, obtained from a pathogenic bacterial organism, covalently bound to a T-cell dependent antigen

capable of producing a T-cell dependent antibody response to polysaccharides from the said organism

of molecular size above 140,000 and below 4,500,000 daltons as referenced to dextran standard by gel permeation chromatography, and

having a polysaccharide/protein ratio between 0.25 and 2, prepared by mixing a T-cell dependent antigen with a spacer compound of the formula X-B-X, wherein B is a C^{4-8} alkylene in which a $—CH_2—$ linkage can optionally be replaced by an —O— linkage and wherein X is a nucleophilic group capable of reacting with said antigen,

mixing the resulting derivatized antigen with an electrophilically activated polysaccharide obtained from the said bacterial organism, which polysaccharide had previously been sized by heating until more than 60% of the polysaccharide was adjusted to a molecular size between 200,000 and 2,000,000 dalton as referenced to dextran standard by gel permeation chromatograpy.

4,619,829
UTILIZATION OF A SINGLE VITAMIN OR A COMBINATION OF VARIOUS VITAMINS

Georges Motschan, Schönbeinstrasse 21, 4056 Basel, Switzerland

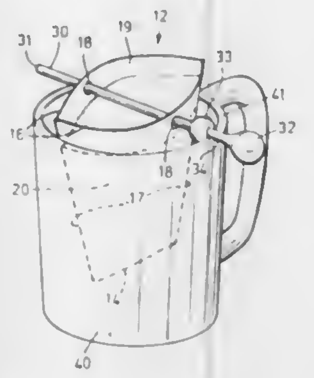
PCT No. PCT/CH83/00127, § 371 Date Jul. 13, 1984, § 102(e) Date Jul. 13, 1984, PCT Pub. No. WO84/01899, PCT Pub. Date May 24, 1984
PCT Filed Nov. 16, 1983, Ser. No. 631,555
Claims priority, application Switzerland, Nov. 16, 1982, 6682/82
Int. Cl.^{4} A61K *31/525, 33/42*
U.S. Cl. 424—128 **9 Claims**

1. A method for the treatment of polyarthritis which comprises the administration for a period of time of at least 5 months of an anti-arthritic effective amount of a vitamin composition comprising the combination of (a) about 0.15 to 0.5 mg of biotin, (b) about 5 to 20 mg of vitamin B_1, (c) about 2 to 15 mg of vitamin B_2, (d) about 20 to 50 mg of nicotinamide, (e) about 2 to 10 mg of vitamin B_6, (f) about 4 to 10 ug of vitamin B_{12} and about 3 to 25 mg of pantothenic acid or the alcohol or calcium salt thereof.

4,619,830
BEVERAGE FILTER UNIT AND SUPPORT

Edward D. Napier, 45 Faraday Drive, Scarborough, Ontario, Canada (M1H 2R9)

Filed Aug. 2, 1984, Ser. No. 637,001
Int. Cl.^{4} B65B *29/02;* **B30B** *5/02*
U.S. Cl. 426—82 **10 Claims**



8. A filter unit that can be suspended in a cup, comprising a water permeable pouch for retention of ground coffee, tea or other beverage flavoring, the pouch when empty lying flat and having a bottom fold line and opposite side edges which diverge upwardly to a mouth portion of the pouch, the divergent edges being adapted, when the pouch is lowered into the cup, to engage opposite sides of the cup thereby to urge the mouth portion to open, and a rod insertable through the pouch transversely across its mouth portion midway between said side edges substantially perpendicular to the fold line and adapted to rest transversely of the rim of the cup to support the pouch in the cup.

4,619,831
DIETARY FIBER COMPOSITION AND PROCESS OF MANUFACTURE

Shri C. Sharma, Mendham, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 4, 1984, Ser. No. 616,993
Int. Cl.^{4} A23L *1/29*
U.S. Cl. 426—93 **15 Claims**

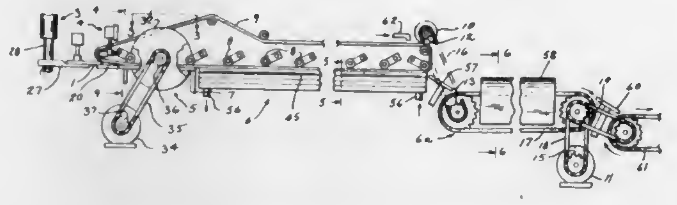
8. A process for making a coated or enrobed dietary fiber composition comprising:

(a) preparing an insoluble concentrated dietary fiber free of digestible compounents by removing the digestible portions of a cereal bran with a solvent to chemically defat the insoluble dietary fiber; and subsequently treating the defatted fiber enzymatically to remove protein and carbohydrates;
(b) recovering the concentrated concentrated insoluble fiber;
(c) coating or enrobing the concentrated insoluble fiber with a soluble dietary fiber using an aqueous medium, said soluble dietary selected from the group consisting of alginates, gums, pectin, mucillages, plant exudates, fermentation products, synthetic hydrocolloids and mixtures thereof and used in an amount sufficient to mask the fibrous, rough mouthfeel texture of the concentrated insoluble dietary fiber;
(d) removing excess water by drying to yield the coated fiber composition.

4,619,832
FORMING AND CONVEYING OF BAKED CONFECTION SHELLS

Thomas H. Lutsey, and Vernon L. Bero, both of Green Bay, Wis., assignors to Gold Bond Ice Cream, Inc., Green Bay, Wis.

Division of Ser. No. 600,764, Apr. 16, 1984, Pat. No. 4,534,722. This application Apr. 12, 1985, Ser. No. 722,680
Int. Cl.^{4} A21D *13/00*
U.S. Cl. 426—302 **4 Claims**



1. A method of forming and conveying hot baked shells for use in confections and with said shells being initially soft and of disc shape, comprising the steps of:

(a) initially picking up said discs in succession from a baking means and feeding said discs in a longitudinal direction,
(b) then forming said fed discs into lap folded taco-shaped shells having generally parallel spaced legs joined by a folded portion,
(c) then feeding said formed shells onto an elongated fixed conveyor rail so that said shells hang therefrom,
(d) then frictionally engaging and sliding said hanging shells progressively along said fixed rail toward a discharge point,
(e) and supplying cooling fluid to the interior of said rail as said shells slide therealong to thereby cool said shells.

4,619,833
PROCESS FOR PRODUCING A RAPIDLY WATER-SOLUBLE, FREE-FLOWING, SUGAR-FREE DRY BEVERAGE MIX

Del M. Anderson, Port Hope, Canada, assignor to General Foods Inc., Coubourg, Canada

Continuation of Ser. No. 681,401, Dec. 13, 1984, abandoned. This application Dec. 3, 1985, Ser. No. 804,702
Int. Cl.^{4} A23L *1/236, 2/00*
U.S. Cl. 426—548 **15 Claims**

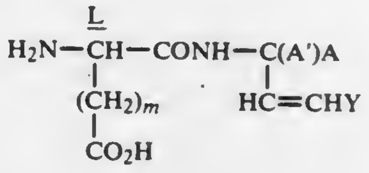
1. A process for preparing a rapidly water-soluble, free-flowing, substantially sugar-free dry beverage mix comprising the ingredients of at least one food acid, at least one flavor and at least one flow conditioner, the steps comprising a first intimate dry mixing of the coarse particles of at least one rapid water-soluble food acid with the finely divided particles of at least one slow water-soluble flow conditioner to obtain a substantially uniform dispersion of said rapidly water-soluble food acid and said slow water-soluble flavor and conditioner and a second intimately dry mixing of the said uniform dispersion composition of the first mixing step with a maltodextrin having coarse particles and a dextrose equivalency in the range from about 5 to about 20, said mixing continued until the resulting product is water-soluble, said coarse particles being of a size wherein 100% pass through a U.S. screen size of 10 mesh and up to about 95% remains on a U.S. screen size of 100 mesh and said finely divided particles being of a size wherein 100% pass through a U.S. screen size of 20 mesh and up to about 75 to 100% through a U.S. screen size of 100 mesh and about 40 to 100% through a U.S. screen size of 200 mesh.

4,619,834
SWEETENING WITH L-AMINODICARBOXYLIC ACID AMINOALKENOIC ACID ESTER AMIDES

Paul R. Zanno, Nanuet; Ronald E. Barnett, Suffern, and Glenn M. Roy, Garnerville, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Division of Ser. No. 730,970, May 6, 1985, Pat. No. 4,571,308. This application Nov. 5, 1985, Ser. No. 795,378
Int. Cl.^{4} A23L *1/236*
U.S. Cl. 426—548 **7 Claims**

1. An edible composition containing a sweetening effective amount of a compound represented by the formula:



$$\begin{array}{l} \qquad\ \ \underline{L} \\ H_2N-CH-CONH-C(A')A \\ \qquad\ \ | \qquad\qquad\qquad\ | \\ \qquad (CH_2)_m \qquad\quad HC{=}CHY \\ \qquad\ \ | \\ \qquad\ CO_2H \end{array}$$

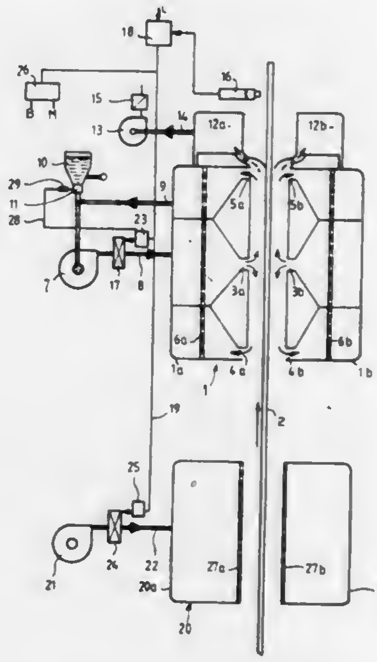
wherein

A is CO_2R in which R is alkyl containing 1–3 carbon atoms;
A′ is hydrogen or alkyl containing 1–3 carbon atoms;
Y is $—(CHR_2)_n—R_1$ or $—CHR_3R_4$;
R_1 is alkyl-substituted cycloalkyl, cycloalkenyl, bicycloalkyl or bicycloalkenyl containing at least one alkyl in the β-position of the ring, up to 7 ring carbon atoms and up to a total of 12 carbon atoms;
R_2 is H or alkyl containing 1–4 carbon atoms;
R_3 and R_4 are each cycloalkyl containing 3–4 ring carbon atoms;
n=0, or 1; and
m=0 or 1;
and food-acceptable salts thereof.

4,619,835
OPTIMIZING PROCESS AND DEVICE IN A PROCESS FOR REDUCING THE SIZE OF THE FLOWERING OF A GALVANIZED STEEL STRIP

Bernard Francois, Creil, France, assignor to Usinor, Puteaux, France

Filed Jun. 14, 1985, Ser. No. 744,578
Claims priority, application France, Jun. 22, 1984, 84 09910
Int. Cl.^{4} B05B *7/00;* **B05C** *5/00, 11/00, 19/00*
U.S. Cl. 427—8 **8 Claims**



1. A process for optimizing solidification of zinc on a steel strip comprising employing germs of crystallization constituted by zinc in the form of a fine powder, blowing said germs by means of a conveying fluid inside a spraying case onto opposite sides of the strip, measuring the temperature of the

strip adjacent a strip exit of the spraying case, and maintaining said temperature at an optimal value by regulating the rate of flow of said blown fluid as a function of the difference between the measurement of the obtained temperature and an optimal temperature for said process.

4,619,836
METHOD OF FABRICATING THICK FILM ELECTRICAL COMPONENTS

Ashok N. Prabhu, East Windsor Township; Edward J. Conlon, and Franco N. Sechi, both of Princeton Township, all of Mercer County, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 31, 1985, Ser. No. 815,076
Int. Cl.⁴ H05K *3/12*
U.S. Cl. 427—41 **6 Claims**

1. A method for fabricating a thick film electrical component on the surface of a substrate comprising the steps of:

(a) providing a thick film ink composition comprised of (i) an organic vehicle which is reactive with a suitable plasma to form gaseous reaction products at a temperature below the thermal decomposition temperature of the organic vehicle, (ii) a glass frit having a glass transition temperature above the thermal decomposition temperature of the organic vehicle, and (iii) a particulate material for imparting a predetermined electrical property to the electrical component;

(b) forming a patterned layer of the thick film ink on the surface of the substrate;

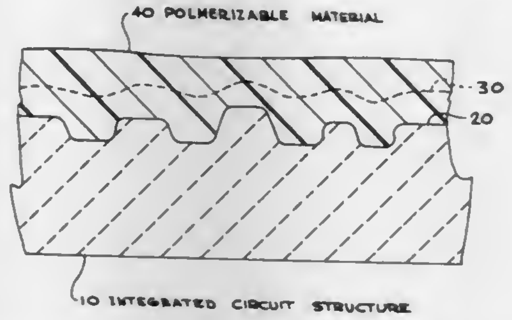
(c) subjecting the layer to a suitable plasma at a temperature below the thermal decomposition temperature of the organic vehicle for a time sufficient to remove the organic vehicle from the layer; and

(d) firing the resulting layer of glass frit and particulate material at or above the glass transition temperature of the glass frit until the glass frit fuses.

4,619,837
POLYMERIZABLE PLANARIZATION LAYER FOR INTEGRATED CIRCUIT STRUCTURES

Andrew V. Brown, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 1, 1985, Ser. No. 697,363
Int. Cl.⁴ B05D *3/06*
U.S. Cl. 427—44 **15 Claims**



1. An improvement in the process of manufacturing an integrated circuit structure having stepped topography which comprises coating said integrated circuit structure with a polymerizable monomer without the use of substantially any solvents and then polymerizing said monomer on said structure to provide a substantially planar surface on said integrated circuit structure, whereby the volume change of said polymerizable monomer, as said monomer is polymerized from a flowable monomer to a solid material, is materially reduced to permit maintenance, during polymerization, of the substantially planar surface obtained while applying said monomer to said integrated circuit structure.

4,619,838
PROCESS FOR THE DEPOSITION OF METALS ON SEMICONDUCTOR POWDERS

Kurt Meier, Allschwil; Niklaus Bühler, Rheinfelden, and Jean-Francois Reber, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 666,127, Oct. 30, 1984, Pat. No. 4,559,237, which is a continuation of Ser. No. 456,888, Jan. 10, 1983, abandoned. This application Sep. 26, 1985, Ser. No. 780,158

Claims priority, application Switzerland, Jan. 15, 1982, 241/82

Int. Cl.⁴ B05D *3/06*
U.S. Cl. 427—53.1 **11 Claims**

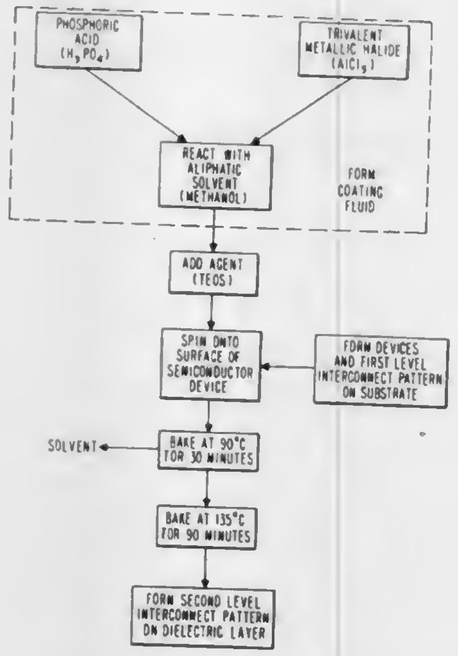
1. A process for the deposition of copper, lead, mercury, tin, gold, silver, palladium, osmium, cadmium or mixtures thereof on a semiconductor sulfide powder selected from the group consisting of Zns and Bi_2S_3, which process comprises

irradiating a suspension of said semiconductor powder in an open system, in the presence of oxygen, CO_2 or mixtures thereof, of an oxidizable medium, which protects the semiconductor from photocorrosion, and of a copper, lead, mercury, tin, gold, silver, palladium, osmium, cadmium salt or complex, or mixture thereof.

4,619,839
METHOD OF FORMING A DIELECTRIC LAYER ON A SEMICONDUCTOR DEVICE

William I. Lehrer, Los Altos, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Dec. 12, 1984, Ser. No. 680,878
Int. Cl.⁴ H01L *21/316*
U.S. Cl. 427—82 **18 Claims**


PHOSPHORIC ACID (H3PO4)
TRIVALENT METALLIC HALIDE (AlCl3)
REACT WITH ALIPHATIC SOLVENT (METHANOL)
FORM COATING FLUID
ADD AGENT (TEOS)
SPIN ONTO SURFACE OF SEMICONDUCTOR DEVICE
FORM DEVICES AND FIRST LEVEL INTERCONNECT PATTERN ON SUBSTRATE
SOLVENT
BAKE AT 90°C FOR 30 MINUTES
BAKE AT 135°C FOR 90 MINUTES
FORM SECOND LEVEL INTERCONNECT PATTERN ON DIELECTRIC LAYER

1. A method of forming a substantially planar layer of an electrically insulating material over electrical interconnect topography on a semiconductor device, said method comprising the steps of:

(a) reacting phosphoric acid and a trivalent metallic halide compound with an aliphatic solvent to form a coating fluid;

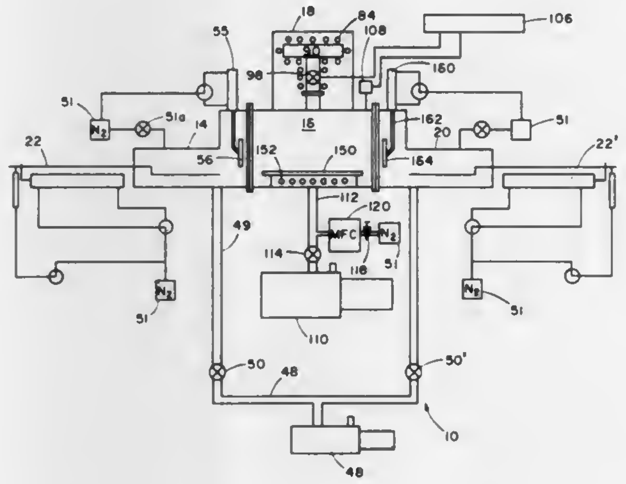
(b) spinning said coating fluid onto a surface of said semiconductor device to form a layer over said interconnect topography; and

(c) heating at least said layer to at least a first predetermined temperature for at least a first predetermined period of time.

4,619,840
PROCESS AND APPARATUS FOR LOW PRESSURE CHEMICAL VAPOR DEPOSITION OF REFRACTORY METAL

Jon C. Goldman, Orange; Michael A. Fisk, Anaheim, and Michael Diem, Orange, all of Calif., assignors to Thermco Systems, Inc., Orange, Calif.

Filed May 23, 1983, Ser. No. 497,321
Int. Cl.⁴ H01L *21/285*
U.S. Cl. 427—91 **13 Claims**

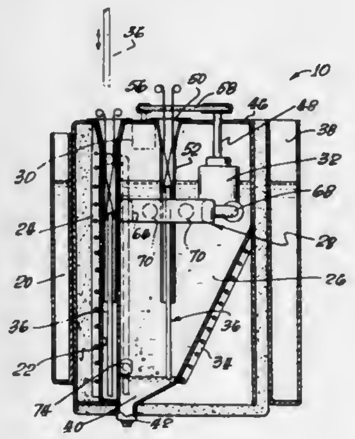


1. A process for low pressure chemical vapor deposition of a refractory metal thin film on a semiconductor substrate comprising the steps of: placing a semiconductor substrate in a deposition chamber; evacuating said deposition chamber; heating said semiconductor substrate to a temperature exceeding that at which a refractory metal carbonyl compound dissociates; heating said refractory metal carbonyl compond sufficiently to convert a portion of it to a refractory metal carbonyl vapor; continuously flowing said refractory metal carbonyl vapor into contact with the heated semiconductor substrate at subatmospheric pressure for a time sufficiently long to deposit a layer of a refractory metal from said refractory metal carbonyl vapor by means of exhausting said deposition chamber with a vacuum pumping means to maintain a substantially constant amount of said refractory metal carbonyl vapor within said deposition chamber; and removing said semiconductor substrate from said deposition chamber.

4,619,841
SOLDER LEVELER

Thomas E. Schwerin, 2131 N. 1st St., Flagstaff, Ariz. 86001

Filed Sep. 13, 1982, Ser. No. 417,428
Int. Cl.⁴ B23K *1/08;* **B05D** *5/12*
U.S. Cl. 427—96 **17 Claims**



1. Apparatus for removing excess solder from a printed circuit board containing conductive paths and plated through-holes and the like, comprising:

a container for retaining liquid flux,

a container for retaining heated liquid solder,

a container for retaining a heat transfer medium,

a ribbon flow manifold assembly immersed in the heat transfer medium to produce forcefully directed, Venturi effect-enhanced laminar flows through said medium to simultaneously impinge upon each side of a soldered printed circuit board, thereby stripping excess solder from the conductive paths and plated through-holes of said printed circuit board, and wherein the ribbon flow manifold assembly contains two parallel ribbon tube elements separated at their respective closest proximity by a distance commensurate with the development of Venturi effect enhanced, laminar flows through the heat transfer medium, each ribbon tube element having a continuous longitudinal slot of width that is small with respect to the wall thickness of each of said ribbon tube elements and of length sufficient to span the width of the printed circuit board, said slots being oriented in rotation about the longitudinal axes of said ribbon tube elements such that flow through said slots are adjustably directed downwardly at an angle of between 5 and 45 degrees from direct opposition with each other, and

pump means to drive said medium into said manifold assembly.

16. A process for treating printed circuit boards and the like to solder and then to remove excess solder from such boards and plated through-holes therein comprising:

suspending a flat sided substrate, having a pattern of conductive paths thereon and plated through-holes therein, and sequentially immersing such substrate into a flux solution,

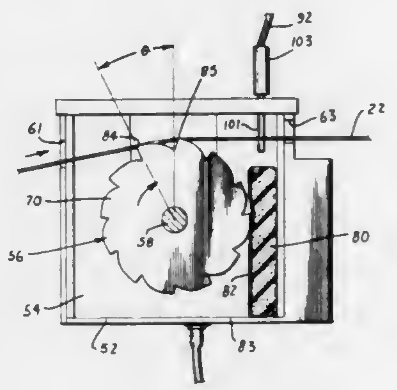
thence into a liquid solder, and

thence into a heat transfer medium bath wherein is implemented a uniform and controlled Venturi effect-enchanced laminar flow of heat transfer medium within the volume of said heat transfer medium, such flow being adjustably angled downwardly from direct normal impingement upon the sides of the substrate as said substrate is immersed and removed from the heat transfer medium bath and such flow being longitudinally continuous across the width of the substrate.

4,619,842
METHODS OF AND APPARATUS FOR MARKING ELONGATED STRAND MATERIAL

Parry A. Moss, and Francis A. Rotoloni, both of Norcross, Ga., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Mar. 28, 1985, Ser. No. 717,205
Int. Cl.⁴ B05D *5/00;* **B05C** *1/16*
U.S. Cl. 427—163 **11 Claims**



1. A method of marking an elongated strand material, said method comprising the steps of:

advancing an elongated strand material along a path of travel;

providing a liquid marking material in a controlled manner to a porous, resilient supply member;

mounting an applicator member having grooved portions spaced along the periphery thereof for movement of the grooved portions of the applicator member between the path of travel of the elongated strand material and engagement with the supply member such that increments of length of the advancing strand material are received in and then removed from the grooves; and

moving the applicator member to engage in seriatim the spaced portions of the applicator member compressively with the supply member and cause liquid marking material to be transferred from the supply member to the groove of each portion, and to transfer the liquid marking material from the groove of each portion to a predetermined peripheral portion of increments of length of the advancing strand material.

5. An apparatus for marking an elongated strand material, said apparatus comprising:

moving means for advancing an elongated strand material along a path of travel;

porous, resilient supply means for holding a liquid marking material;

at least one applicator member having spaced portions of its periphery each provided with a groove;

means for mounting said applicator member for movement of portions of the applicator member between the path of travel of the elongated strand material and engagement with the supply means such that increments of length of the advancing strand material are received in and then removed from each groove; and

means for moving the applicator member to engage compressively said spaced portions of the applicator member with the supply means and cause liquid marking material to be transferred from the supply means to the groove of each spaced portion and to transfer the liquid marking material from each groove to a predetermined peripheral portion of increments of length of the advancing strand material.

4,619,843

PROCESS FOR THE PREPARATION OF GRANULES

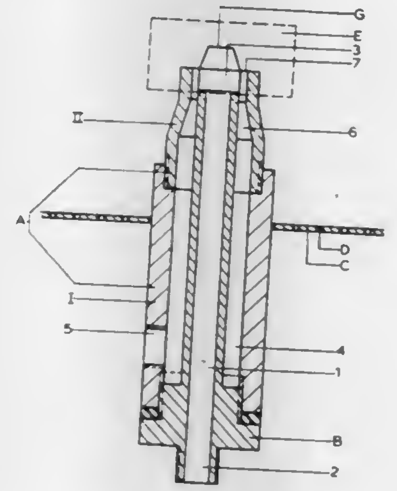
Stanislaus M. P. Mutsers, Geleen, Netherlands, assignor to Unie van Kunstmestfabrieken B.V., Utrecht, Netherlands

Filed Aug. 21, 1984, Ser. No. 643,025

Claims priority, application Netherlands, Aug. 27, 1983, 8302999

Int. Cl.⁴ B05D *1/02*

U.S. Cl. 427—213 **10 Claims**



1. A process for the preparation of solid granules from a liquid material which process comprises the steps of:

(1) forming and maintaining in a vessel, and above a feeding device therein, a fluidized bed of solid particulate nuclei by upwardly flowing a first low velocity fluidizing gas stream through said bed, said feeding device comprising:

(a) a first central conduit for delivering an upward flow of starting liquid material into said vessel from the exit of said first conduit in the form of a virtually closed conical film,

(b) said first central conduit including means for imparting a horizontal velocity component to said starting liquid prior to its exit, and

(c) a second concentric conduit annularly disposed about said first conduit for delivering an upward flow of a second gas stream into said vessel from the exit of said second conduit;

(2) introducing said starting liquid into said vessel through said first central conduit at velocity sufficient to form said cone,

(3) introducing, through said concentric annular conduit, said second gas stream into said vessel at an initially high velocity relative to the velocity of said first gas stream thereby forming a rarified zone of solid nuclei above the said exits of said conduits, whereby

(a) there is formed a virtually closed conical film of said liquid within said rarified zone, and

(b) said solid nuclei are entrained in said second gas stream before said second gas stream hits said conical film, so that

(c) said entrained solid nuclei impact with said conical film thereby moistening said solid nuclei, and

(d) the liquid material taken up by the nuclei is allowed to solidify causing the solid nuclei to grow in size, and

(4) thereafter removing the thus obtained granules from said vessel.

4,619,844

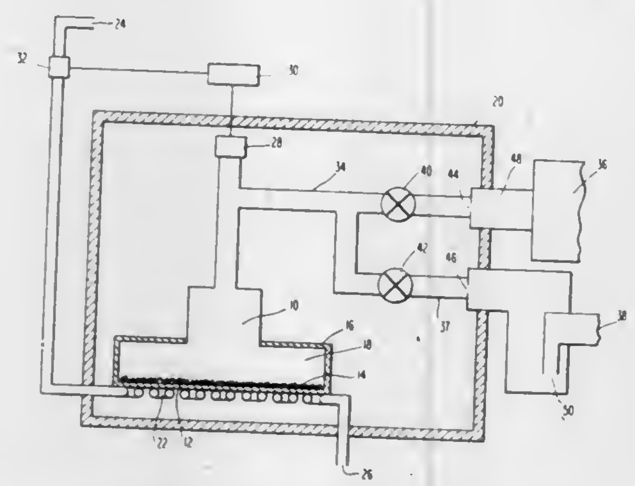
METHOD AND APPARATUS FOR LOW PRESSURE CHEMICAL VAPOR DEPOSITION

John M. Pierce, Palo Alto, and William I. Lehrer, Los Altos, both of Calif., assignors to Fairchild Camera Instrument Corp., Mountain View, Calif.

Filed Jan. 22, 1985, Ser. No. 693,401

Int. Cl.⁴ C23C *16/00;* B05C *11/00*

U.S. Cl. 427—248.1 **16 Claims**



1. A method of introducing a controlled flow of vapor from a high pressure sublimation chamber into a low pressure vapor deposition reactor, said vapor being derived from solid source material having a vapor pressure above about one (1) Torr at a temperature not exceeding about 350° C., said method comprising:

(a) heating the source material in the sublimation chamber to a temperature sufficient to produce vapor therefrom at a desired pressure;

(b) transferring said vapor to said reactor through a valved orifice of vapor transmission means, at which orifice, the pressure of the vapor can be substantially reduced to produce a controllable flow of vapor nearly proportional to the pressure in the sublimation chamber; and

(c) maintaining said vapor transmission means at a temperature sufficient to prevent condensation of the vapor therein during transfer.

4,619,845

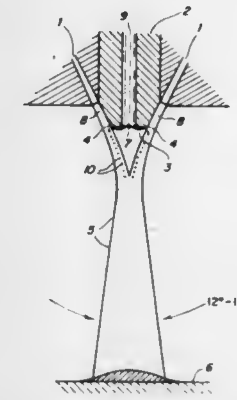
METHOD FOR GENERATING FINE SPRAYS OF MOLTEN METAL FOR SPRAY COATING AND POWDER MAKING

Jack D. Ayers, Oakton, and Iver E. Anderson, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 22, 1985, Ser. No. 704,117

Int. Cl.⁴ B05D *1/02*

U.S. Cl. 427—422 **10 Claims**



1. A method for generating a supersonic spray of atomized metal droplets, employing a melt nozzle having an exterior surface portion in the shape of the frustrum of a cone with a melt tube orifice at the center of the nozzle and with a plurality of gas jets coaxial to the nozzle flowing over said exterior surface portion, comprising the steps of:

(a) liquifying metal and allowing it to flow into the melt tube orifice;

(b) positioning the respective gas jets over circularly-spaced portions of the exterior surface portion so that a vector describing the direction of each gas jet has a positive first component in the same direction as the direction of metal flow from the melt tube orifice and a positive second component perpendicular to the direction of metal flow from the melt tube orifice;

(c) establishing the input pressure to the gas jets at a pressure in excess of 1000 psig sufficient such that a pressure comes to exist at the melt tube orifice that is of smaller magnitude than that which exists when the gas jets are at zero input pressure; and,

(d) adjusting the relative magnitudes of said first component and said second component of the gas jet direction vectors such that a spray having supersonic speed is produced.

4,619,846

BELL

Edit Oborzil, and Tibor Jeney, both of Jegenye u. 25., 1221 Budapest, Hungary

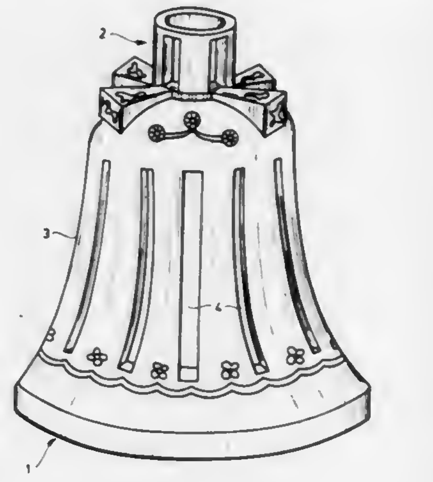
Filed May 15, 1985, Ser. No. 734,447

Claims priority, application Hungary, Jul. 3, 1984, 2574/84

Int. Cl.⁴ G10K *1/00*

U.S. Cl. 428—11 **2 Claims**

1. Bell made of aluminium or aluminium alloy, comprising a mantle, fully broken-through gaps (**4**) formed in the mantle for tuning said bell to at least a predetermined frequency range of tone, said gaps being formed along the periphery of said mantle and being separated from one another by spaces, said gaps running essentially parallel with the longitudinal axis of the bell mantle and following the shape of the bell mantle, wherein the centerlines of the gaps (**4**) lie in planes containing the longitudinal axis of the bell and when viewed from any point of said planes the gaps show a straight or arcuate pattern, wherein the width of the gaps and the space between two adjacent gaps are of different magnitude and, wherein the gaps are of different length.



4,619,847

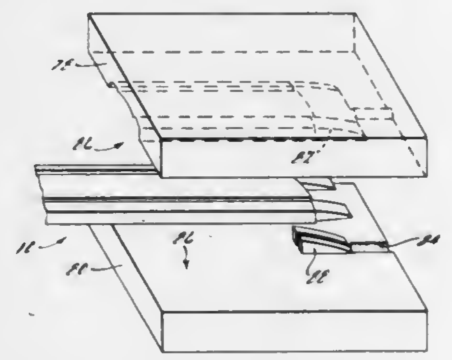
TRIM STRIP HAVING INJECTION MOLDED FINISHING PORTION AND METHOD OF MAKING

Norman C. Jackson, Livonia, Mich., assignor to The Standard Products Company, Cleveland, Ohio

Filed Mar. 20, 1984, Ser. No. 589,931

Int. Cl.⁴ B60R *13/02;* B29C *45/14*

U.S. Cl. 428—31 **14 Claims**



1. A trim strip having a finished end made by:

providing a trim strip;

cutting an end portion of said trim strip in an axial direction using an end die cutter;

cutting said end portion of said trim strip in a transverse direction to form a least one projecting finger using a transverse die cutter;

placing said projecting finger of said end portion of said trim strip into an injection molding die having an internal cavity and clamping said trim strip end portion into said injection molding die;

injecting thermoplastic material within said cavity of said die such that said material contacts and bonds to said finger and forms an end cap thereover; and

withdrawing the finished trim strip from said die.

4,619,848
COMPOSITIONS AND METHODS FOR SEALING CONTAINERS

John R. Knight, and Geoffrey R. Thwaites, both of Cambridge, England, assignors to W. R. Grace & Co., Cambridge, Mass.
Filed Apr. 9, 1984, Ser. No. 598,145
Claims priority, application United Kingdom, Apr. 25, 1983, 8311138
Int. Cl.⁴ C08L *23/06, 23/08, 31/04*
U.S. Cl. 428—35 **9 Claims**

1. A sealing gasket for the inner surface of a container closure comprising a thermoplastic composition which comprises a polymer blend consisting essentially of 60 to 95% by weight ethylene vinyl acetate copolymer having a vinyl acetate content of 5 to 19% by weight and a melt index above 420 and 5 to 40% by weight polyethylene having a melt index above 400.

4,619,849
CONTAINER SUPERIOR IN CRACK RESISTANCE

Haruyoshi Anzawa, Okayama; Kenji Satoh, Tondabayashi; Yoshinari Tanaka, Kurashiki, and Takuji Okaya, Nagaokakyo, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan
Filed Aug. 30, 1984, Ser. No. 646,369
Claims priority, application Japan, Sep. 8, 1983, 58-166022
Int. Cl.⁴ B65D *23/00*
U.S. Cl. 428—35 **5 Claims**

1. A multi-layered packaging container superior in crack resistence, said container comprising an outer layer of a polyolefin resin and an inner layer of saponified ethylene-vinyl acetate copolymer characterized in that the ethylene content is 25 to 60 mole %, the degree of saponification of the vinyl acetate component is higher than 96 mole %, the melt viscosity index is lower than 1, g/10 minutes the specific gravity (d) is in the range specified by formula (1) below, and Y_1 and Y_2 are in the range specified by the formula (2) below:

$$1.274-4.4\times 10^{-3}X<d<1.332-4.4\times 10^{-3}X \quad (1)$$

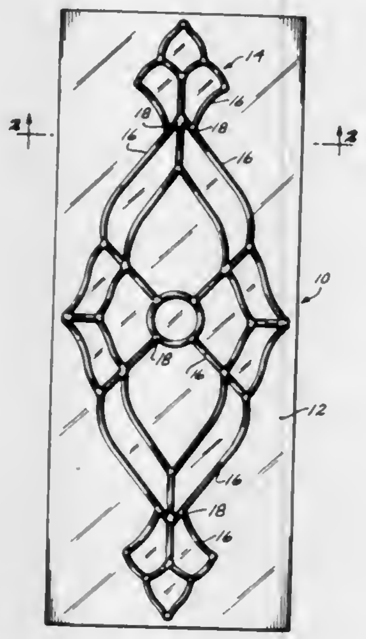
$$|Y_1-Y_2|\leq 1 \quad (2)$$

where d is the specific gravity of EVOH resin at 25° C., X is the ethylene content (mole %) of EVOH resin, and Y_1 and Y_2 are the melt viscosity indices of the thermoplastic resin and the saponified product of ethylene-vinyl acetate copolymer, respectively.

4,619,850
DECORATIVE WINDOW PRODUCT AND PROCESS

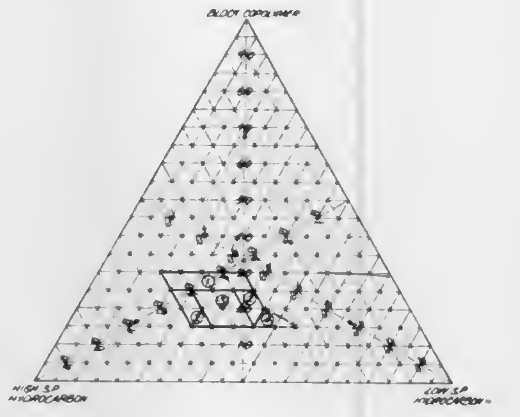
Thomas J. Charlton, Camano Island, Wash., assignor to Alltech Corporation, Bellevue, Wash.
Filed Jan. 11, 1985, Ser. No. 690,954
Int. Cl.⁴ B44F *1/06*
U.S. Cl. 428—38 **11 Claims**

1. A decorative glass window product comprising:
(a) a sheet of glass;
(b) a metal design component consisting essentially of, an integrally pre-cast, reticulated came network fabricated into a single piece of metal;
(c) said metal design component being bonded on its inner surface to one side of said sheet of glass; and
(d) a thin layer of an elastomeric adhesive bonding said metal design component to said sheet of glass.



4,619,851
ADHESIVE COMPOSITIONS

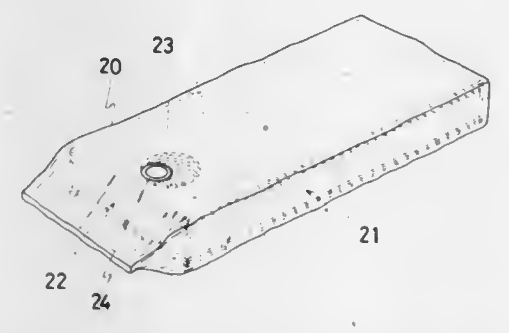
Yukihiko Sasaki, Claremont; Kenneth S. Lin, Sepulveda, and Dianne L. Patterson, Pasadena, all of Calif., assignors to Avery International Corporation, Pasadena, Calif.
Continuation of Ser. No. 515,698, Jul. 21, 1983, abandoned. This application Jan. 4, 1985, Ser. No. 688,695
Int. Cl.⁴ B32B *27/06*
U.S. Cl. 428—40 **39 Claims**



1. In a process for the production of matrix-stripped labels in which a label-stock laminate comprised of a face material, a pressure-sensitive-adhesive layer in contact with the release surface of a release liner die-cut by a die-cutting system which forms an array of labels by die-cutting through the face material and the pressure-sensitive adhesive to the release liner, followed by removal of a matrix of face material and pressure-sensitive adhesive leaving an array of labels on the release liner, the improvement which enables increased speed of production of matrix-stripped labels which comprises using as the pressure-sensitive adhesive in contact with the release liner a pressure-sensitive-adhesive system comprising an at least partially compatible mixture of a thermoplastic rubber, a low-softening-point aliphatic hydrocarbon tackifying resin and a high-softening-point aliphatic hydrocarbon tackifying resin forming a pressure-sensitive-adhesive system, said thermoplastic rubber present in an amount of from about 15 to about 30 percent by weight, based on the weight of the pressure-sensitive-adhesive system, said low-softening-point aliphatic hydrocarbon tackifying resin having a softening point of from about −5° to about 30° C. and present in an amount of from about 15 to about 40 percent by weight, based on the weight of the pressure-sensitive-adhesive system, said high-softening-point aliphatic hydrocarbon tackifying resin having a softening point of from about 65° to about 110° C. and present in a concentration of from about 35 to about 55 percent by weight, based on the weight of the pressure-sensitive-adhesive system.

4,619,852
PILE OF LEAD METAL SHEETS FOR SHIELDING ENVIRONMENT FROM HARMFUL SOURCE

Kotaro Mio, Ikeda, and Yasuo Ijiri, Itami, both of Japan, assignors to Dainichi-Nippon Cables, Ltd., Hyogo, Japan
Filed May 22, 1984, Ser. No. 612,767
Claims priority, application Japan, May 23, 1983, 58-90362
Int. Cl.⁴ B32B *1/06, 3/06, 15/08*
U.S. Cl. 428—68 **13 Claims**



1. A light weight, flexible environmental shield for shielding an object on one side of said shield from emission from a source at the other side of said shield, said shield comprising a plurality of flexible sheets stacked one upon another, each said stacked sheet consisting essentially of a lead metal foil sheet reinforced on at least one of its sides with an organic polymer resistant to the emissions to be shielded and affixed to the surface of said lead metal foil.

2. An environmental shield as recited in claim 1, wherein the lead metal sheets are enveloped in a bag.

4,619,853
EASY-CLEAN CARPETS WHICH ARE STAIN RESISTANT AND WATER IMPERVIOUS

Randolph C. Blyth, Gulf Breeze; Pompelio A. Ucci, and George R. McLellan, both of Pensacola, all of Fla., assignors to Monsanto Company, St. Louis, Mo.
Continuation of Ser. No. 546,114, Dec. 21, 1983, abandoned. This application May 30, 1985, Ser. No. 739,391
Int. Cl.⁴ B32B *3/02, 33/00*
U.S. Cl. 428—95 **4 Claims**

1. A carpet comprising a primary backing stitched with closely spaced loops or cut loops of nylon 6 or nylon 66 yarn which extend upwardly from the top surface of the primary backing to form a pile, wherein the underside of the primary backing is coated with a carpet backing adhesive composition, characterized in that said yarn is coated with a sufficient amount of a sulfonated phenol- or naphthol-formaldehyde condensation product to render the carpet stain resistant and said adhesive composition contains a fluorochemical in an amount sufficient to render said primary backing substantially impervious to water.

4,619,854
WATERPROOF, WEATHER-RESISTANT AND SUBSTANTIALLY NON-STRETCHING TEXTILE A METHOD FOR PRODUCING IT, AND A COMPONENT MADE FROM IT

Kyösti Penttinen, Helsinki, Finland, assignor to Tikkurilan Varitehtaat Oy, Finland
Filed May 24, 1985, Ser. No. 738,052
Claims priority, application Finland, Jun. 12, 1984, 842378
Int. Cl.⁴ B32B *7/00*
U.S. Cl. 428—99 **16 Claims**

1. A waterproof, weather-resistant and substantially non-stretching textile, comprising a glass-fiber cloth impregnated with at least one compound selected from polyacrylate and polyurethane, which forms a continuous coating-base for a weather-resistant synthetic coating selected from the class of compounds comprising aromatic polyimides and halogenated polyurethanes, polyacrylates and polyethylenes.

4,619,855
MAGNETIC RECORDING MEDIUM WITH ELECTRON BEAM CURED MAGNETIC LAYER

Tsutomu Okita; Nobutaka Yamaguchi, and Hiroshi Hashimoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 18, 1983, Ser. No. 542,931
Claims priority, application Japan, Oct. 18, 1982, 57-181485
Int. Cl.⁴ G11B *5/70*
U.S. Cl. 428—143 **14 Claims**

1. A magnetic recording medium comprising a support base having an average center line roughness (Ra) of 0.035 μm or less, the support base having coated thereon a magnetic layer containing ferromagnetic fine particles and the layer further containing:
(1) a polymer selected from the group consisting of vinyl chloride-vinyl acetate-type resins and vinyl chloride-vinyl propionate-type resins having a molecular weight in the range of about 20,000 to about 100,000 and having a vinyl chloride/vinyl acetate weight ratio of 80/20 to 95/5 or a vinyl chloride/vinyl propionate weight ratio of from 80/20 to 95/5;
(2) a urethane resin; and
(3) a compound having two or more of acrylate groups or methacrylate groups in the molecule thereof, said magnetic layer being cured by radiation with electron beams, wherein the mixing ratio of the polymer (1)/the urethane resin (2) is in the range of 20 to 90 parts by weight/80 to 10 parts by weight and wherein the compound (3) is present in an amount of 50 to 400 parts by weight per 100 parts by weight of the mixtures of the polymer (1) and the urethane resin (2).

4,619,856
MAGNETIC RECORDING MEDIUM

Koh Kamada; Hiroshi Hashimoto; Tsutomu Okita, and Noburo Hibino, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed May 28, 1985, Ser. No. 737,968
Claims priority, application Japan, May 28, 1984, 59-106419; Sep. 18, 1984, 59-195406
Int. Cl.⁴ G11B *5/70*
U.S. Cl. 428—143 **9 Claims**

1. A magnetic recording medium comprising a nonmagnetic support, a magnetic layer, and a nonmagnetic intermediate provided between the support and the magnetic layer, wherein the nonmagnetic intermediate layer contains a radiation-polymerizable compound and finely divided spherical or flaky particles having an average primary particle size (diameter) of at least 50 Å, which particles are distributed in the intermediate layer in such a manner that the average height of the particles protruded from the surface of the intermediate layer is from about 50 to 2,000 Å, the nonmagnetic intermediate layer being

polymerized by irradiation, wherein the surface roughness of the nonmagnetic intermediate layer, Ra, is from about 0.001 to 0.02 μm.

4,619,857
THIN WALLED SHAPED BODY AND METHOD OF PRODUCING SAME

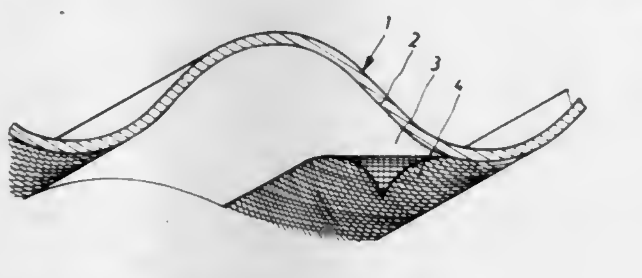
Peter Gmür, Schwerzenbach, Switzerland, assignor to Amrotex AG, Glarus, Switzerland

Filed Apr. 20, 1984, Ser. No. 602,418

Claims priority, application Switzerland, Apr. 21, 1983, 2163/83

Int. Cl.^{4} B32B *3/28*

U.S. Cl. 428—186 **26 Claims**



1. A thin walled asbestos fibre-free shaped article, comprising: a body of a hydraulically set material, said body having a first outside surface with areas subjectable to a highest critical tensile load; a layer of bonding material; and a reinforcing material applied directly on and bonded to said first outside surface by said bonding material at least at said highest critical tensile load areas without mutual penetration of said hydraulically set material of said body and said reinforcing material.

4,619,858
ADHESIVE PAPER MATERIAL AND A LABEL MADE FROM SUCH MATERIAL

Erik Dam, Anemonevej 12, DK-8870 Langaa, and Erik Grönning, Hedeskovvej 9, DK-8520 Lystrup, both of Denmark

PCT No. PCT/DK83/00065, § 371 Date Feb. 21, 1984, § 102(e) Date Feb. 21, 1984, PCT Pub. No. WO84/00233, PCT Pub. Date Jan. 19, 1984

PCT Filed Jun. 21, 1983, Ser. No. 590,584

Claims priority, application Denmark, Jun. 22, 1982, 2792/82

Int. Cl.^{4} B32B *27/10, 27/36*

U.S. Cl. 428—211 **13 Claims**

1. A web of a label sheet material comprising a printable paper laying having a layer of an adhesive at one side thereof, characterized in that the material further comprises a very thin plastic sheet interposed between the paper and the adhesive, the plastic sheet being bonded to the paper and being of a material which has a high tensile strength and a low initial extensibility, the very thin plastic sheet having a sufficiently higher tensile strength and sufficiently low initial extensibility such that the printable paper layer is reinforced and a label can be provided from said label sheet material whose tear stength is low so that the label cannot be removed from its mounting surface without rupture of the label.

2. A web according to claim 1, in which the plastic sheet has a thickness of 5–40 μm.

4,619,859
HIGHLY-ORIENTED STRETCHABLE MULTILAYER FILM AND PROCESS FOR PRODUCING THE SAME

Isao Yoshimura, Fujisawa, and Hideo Hata, Yokohama, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 25, 1984, Ser. No. 654,149

Claims priority, application Japan, Oct. 7, 1983, 58-187079

Int. Cl.^{4} B32B *27/08*

U.S. Cl. 428—213 **16 Claims**

1. A multilayer oriented film excellent in sealability and stretchability, having high strength, high elongation and at least three layers comprising:

(1) a base layer (M layer) containing primarily a specific mixed composition selected from the group of polymer compositions consisting of (A)+(B)+(C), (A)+(B) and (B)+(C);

(A) being at least one ethylene type polymer selected from a low density polyethylene, a copolymer of ethylene with a monomer selected from the group consisting of a vinyl ester monomer, an aliphatic unsaturated mono-carboxylic acid, and an alkyl ester of said mono-carboxylic acid, and the derivatives of said copolymer;

(B) being a soft elastomer having a Vicat softening point of 60° C. or lower;

(C) being at least one polymer having a Vicat softening point of at least 100° C. selected from crystalline polypropylenes and crystalline polybutenes-1,

at least one M layer being provided adjacent to a core layer;

(2) an inside core layer (H layer) comprising primarily a polymer selected from (C); and

(3) a surface layer (S layer) containing at least one polymer selected from polymer (A), soft elastomer (B), crystalline 1,2-polybutadiene and a soft ionomer resin from an ethylenic copolymer;

said film having a stress on 100% elongation from 100 to 600 (g/cm-width) on average in the longitudinal and traverse directions.

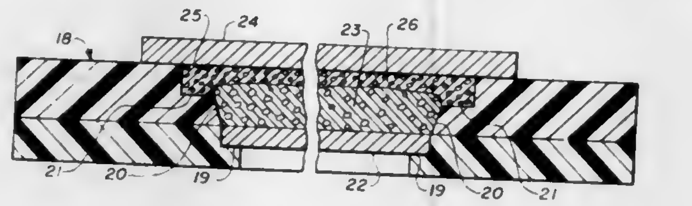
4,619,860
FOAMED PHOSPHATE TILE PRODUCTS

David S. Brown; John S. Forry, both of Manor Township, Lancaster County; Nancy E. Mentzer, Lancaster, and Donald J. Misselhorn, East Hempfield Township, Lancaster County, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Jul. 1, 1985, Ser. No. 750,187

Int. Cl.^{4} B32B *3/26, 5/14, 5/20*

U.S. Cl. 428—213 **6 Claims**



1. A molded tile product, said product comprising laminated first and second foamed phosphate ceramic materials, said materials being derived from the reaction of at least one composition comprising calcium silicate, phosphoric acid, a metal oxide and a carbonate foaming agent, said first material comprising the decorative facing of said tile and being less dense than said second material, said tile having a decorative facing comprising a selected open-celled character, the edges and backing face of said tile comprising a substantially closed-celled character.

4,619,861
MAGNETIC POWDERS WITH IMPROVED DISPERSIBILITY

Masatoshi Nakayama; Haruyuki Morita, both of Saku, and Yuichi Kubota, Komoro, all of Japan, assignors to TDK Corporation, Tokyo, Japan

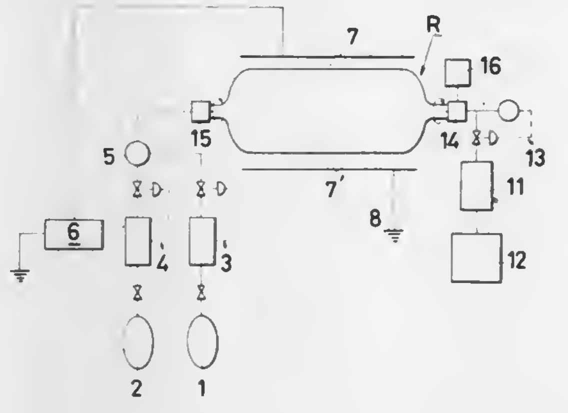
Continuation of Ser. No. 504,775, Jun. 16, 1983, abandoned. This application Jul. 19, 1985, Ser. No. 756,933

Claims priority, application Japan, Jun. 18, 1982, 57-103929; Jun. 18, 1982, 57-103930

Int. Cl.^{4} B32B *5/16*

U.S. Cl. 428—220 **7 Claims**

1. A magnetic powder for use in magnetic recording mediums comprising individual magnetic particles of the powder, said particles being individually coated with a thin film of nitrogen- or sulfur-containing organic polymer synthesized thereon by plasma polymerization.



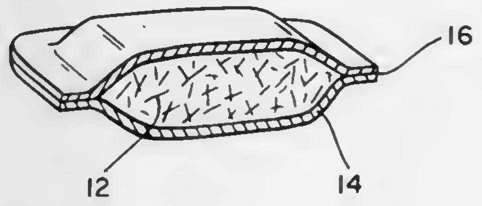
4,619,862
PARTICULATE PAPER PRODUCT, ESPECIALLY FOR USE AS ANIMAL LITTER

Robert C. Sokolowski, Menasha, and Russell L. Johnson, Weyauwega, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 463,100, Feb. 2, 1983, abandoned. This application Apr. 5, 1983, Ser. No. 482,366

Int. Cl.^{4} B32B *23/00*

U.S. Cl. 428—221 **3 Claims**



1. A multiplicity of particles comprising agglomerated wood fibers having a generally irregular spherical shape and an internal layered structure, said particles being useful as an animal litter and having a bulk density from about 0.15 to about 0.25 grams per cubic centimeter.

4,619,863
SOLAR CELL ASSEMBLY

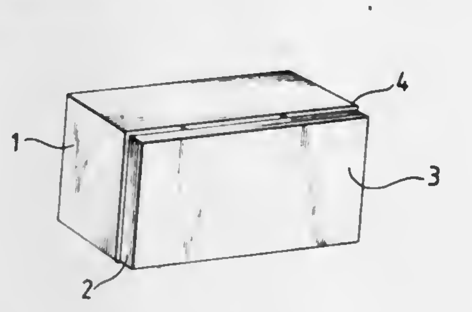
Hylton Taylor, Galltfaenan Hall, Wales, assignor to Pilkington P.E. Limited, United Kingdom

Filed Jan. 24, 1984, Ser. No. 573,487

Claims priority, application United Kingdom, Feb. 1, 1983, 8302772

Int. Cl.^{4} H01L *31/00;* **B05D** *5/12*

U.S. Cl. 428—221 **5 Claims**



1. An assembly comprising a transparent cover member having a surface reference mark provided by a surface variation on an indicating major face of the cover member, and a solar cell to an adjacent surface of which the cover member is secured by an adhesive applied between said indicating major face of the cover member and the adjacent surface of the solar cell, the adhesive having a refractive index which substantially matches that of the cover member so that the applied adhesive not only secures the cover member to the solar cell but also renders the surface reference mark substantially invisible in the completed assembly, said reference mark being arranged so as to distinguish said indicating major face of the cover member from the other major face thereof and indicates the orientation in which the cover member is to be mounted on the solar cell.

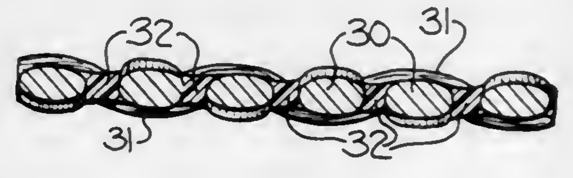
4,619,864
FABRIC WITH REDUCED PERMEABILITY TO DOWN AND FIBER FILL AND METHOD OF PRODUCING SAME

James E. Hendrix, Spartanburg, S.C.; John Y. Daniels, Pineville, and Bobby D. Jackson, Marshville, both of N.C., assignors to Springs Industries, Inc., Fort Mill, S.C.

Filed Mar. 21, 1984, Ser. No. 591,843

Int. Cl.^{4} B32B *5/16*

U.S. Cl. 428—240 **14 Claims**



1. A fabric formed of textile yarns and having a finish which significantly reduces the size of the interstices between the yarns so as to prevent the penetration of down, fiberfill or other insulating materials, and which is characterized by enhanced finish retention and reduced dusting, said fabric having a durable coating thereon forming a thin film at the surface of the fabric and bridging between intersecting yarns so as to at least partially fill the interstices between the yarns of the fabric and to durably reduce the permeability of the fabric, said coating comprising a cured reactive silicone polymer, a cross-linked durable-press finishing agent, and a starch filler dispersed in a matrix of said silicone polymer and being bound to the fabric thereby.

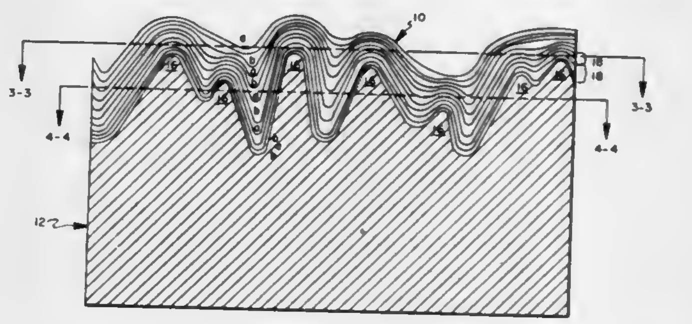
4,619,865
MULTILAYER COATING AND METHOD

John E. Keem, Bloomfield Hills, and James D. Flasck, Rochester, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 626,663, Jul. 2, 1984. This application Oct. 9, 1984, Ser. No. 658,946

Int. Cl.^{4} B32B *9/04, 13/04, 9/00, 19/00*

U.S. Cl. 428—333 **61 Claims**



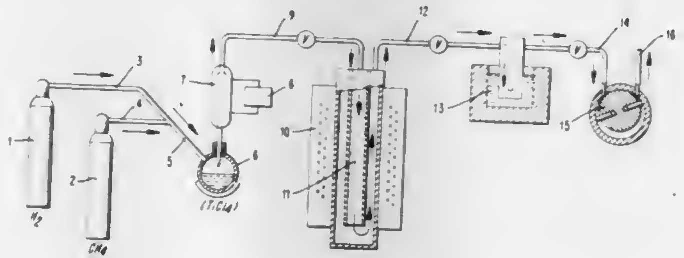
1. A wear resistant coating applied over a substrate, said coating comprising a plurality of superimposed miltilayer units, each unit comprising at least three compositionally different thin layers and each layer having a thickness sufficient to obtain its bulk coating properties, the wear properties of said coating being a combination of the individual properties of said layers, the three compositionally different layers being: (a) oxidation resistant material selected from the group consisting

of silicon, titanium, carbon, stainless steel, aluminum, stoichiometric and nonstoichiometric compositions of aluminum and oxygen, titanium and oxygen, silicon and oxygen and zirconium and oxygen; (b) nitride material selected from the group consisting of titanium nitride and hafnium nitride; and (c) disordered boron and carbon material.

4,619,866
METHOD OF MAKING A COATED CEMENTED CARBIDE BODY AND RESULTING BODY

Ulf K. H. Smith, Huddinge, and Jan N. Lindström, Norsborg, both of Sweden, assignors to Santrade Limited, Lucerne, Switzerland

Continuation of Ser. No. 558,557, Dec. 5, 1983, abandoned, which is a continuation of Ser. No. 368,375, Apr. 14, 1982, abandoned, which is a continuation of Ser. No. 285,798, Jul. 22, 1981, abandoned. This application Apr. 2, 1985, Ser. No. 706,645
Claims priority, application Sweden, Jul. 28, 1980, 8005413
Int. Cl.⁴ B32B *9/00, 19/00*
U.S. Cl. 428—336 **28 Claims**



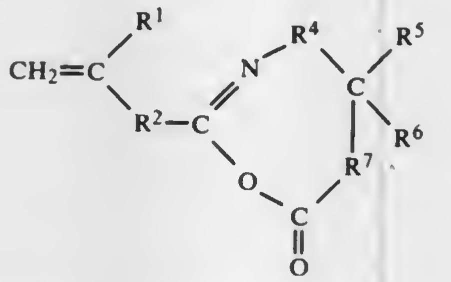
8. Coated body containing at least one metal carbide or ceramic compound on which body there is applied by chemical vapor deposition at a temperature of from 700° to 1200° C. at least one thin, even, wear resistant surface layer consisting essentially of a ceramic oxide, characterized in that the ceramic oxide layer is evenly distributed on the body and at least one of the ceramic oxide layer and the surface zone of the body containing at least one member selected from the group consisting of sulfur, selenium, tellurium, phosphorus, arsenic, antimony and bismuth in an amount sufficient to achieve said even distribution.

4,619,867
AZLACTONE-CONTAINING PRESSURE-SENSITIVE ADHESIVES

Robert R. Charbonneau, Lake Elmo; Steven M. Heilmann, North St. Paul; Jerald K. Rasmussen, Stillwater, and Michael L. Tumey, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

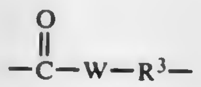
Division of Ser. No. 504,213, Jun. 14, 1983, abandoned. This application Nov. 28, 1984, Ser. No. 676,206
Int. Cl.⁴ C08F *220/10, 226/06;* **C09J** *7/02*
U.S. Cl. 428—355 **12 Claims**

1. A pressure-sensitive adhesive tape comprising
(a) a tape backing, and
(b) coated on at least one surface thereof a pressure-sensitive, normally-tacky, adhesive interpolymer which is the product of simultaneous polymerization of ethylenically-unsaturated monomers which comprise
(1) from about 70 to 90 molar parts of monomers consisting of
(a) 69–100 mole percent of an acrylic acid ester of at least one non-tertiary alkyl alcohol, the molecules of said alcohol containing 1–14 carbon atoms, the average being 5–12 carbon atoms,
(b) 31–0 mole percent of at least one monomer selected from the group consisting of vinyl acetate, styrene, vinyl ethers, and alkyl methacrylates, the alkyl group having 1 to 14 carbon atoms, and
(c) 10–0 mole percent of at least one monomer selected from the group consisting of acrylamide, methacrylamide, acrylonitrile, methacrylonitrile, and N-vinyl pyrrolidone, and
(2) from 25 to 5 molar parts of at least one alkenyl azlactone monomer having the formula I



I

where R^1 is hydrogen or methyl; R^2 is selected from a single bond, —R^3—, or



$$-\overset{\overset{\displaystyle O}{\|}}{C}-W-R^3-$$

in which R^3 is a substituted or unsubstituted alkylene group having 1 to 12 carbon atoms, and W is —O—, —S—, or —NH—; R^4 and R^7 are independently selected from a single bond, methylene, or substituted methylene having 1 to 12 carbon atoms; R^5 and R^6 are independently substituted or unsubstituted alkyl or cycloalkyl having 1 to 12 carbon atoms, aryl or aralkyl having 6 to 12 carbon atoms, or R^5 and R^6 taken together with the carbon to which they are joined forming a 5- or 6-membered carbocyclic ring or R^5 and R^6 each may be hydrogen when at least one of R^4 and R^7 is methylene; and
(3) from 25 to 5 molar parts of at least one acrylic-functional carboxylic acid monomer selected from acrylic acid, methacrylic acid, itaconic acid, maleic acid, or an N-acryloylamino acid;
said interpolymer exhibiting a glass transition temperature (Tg) of less than −15° C.

4,619,868
MAGNETIC RECORDING MEDIUM

Tsutomu Okita, Kanagawa; Kyoichi Naruo, Shizuoka, and Hiroshi Hashimoto, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 10, 1983, Ser. No. 521,808
Claims priority, application Japan, Aug. 10, 1982, 57-138980
Int. Cl.⁴ G11B *5/70*
U.S. Cl. 428—425.1 **7 Claims**

1. A magnetic recording medium comprising a support base having coated thereon a magnetic layer comprising a binder composition having a ferromagnetic powder dispersed therein, the binder composition being cured by an electron beam and comprising:
50 to 400 parts by weight of a compound having 2 or more groups selected from the groups consisting of acryloyl groups and methacryloyl groups in the molecule; and
100 parts by weight of a mixture consisting of 20 to 80 parts by weight of nitrocellulose having a thermal deformation temperature of 70° C. or more, and 20 to 80 parts by weight of a urethane resin, wherein said nitrocellulose has a modulus at 3% (stress at 3% elongation in tensile testing) of more than 3 kg/mm² and said urethane resin has a modulus at 10% of less than 0.5 kg/mm² and an elongation at break of more than 200%.

4,619,869
BIAXIALLY ORIENTED POLYESTER FILM

Tsutomu Kiriyama; Shigeru Horie; Tetsuo Ichihashi, and Masahiro Oshida, all of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan
Division of Ser. No. 593,237, Mar. 26, 1984, Pat. No. 4,539,384. This application Jul. 15, 1985, Ser. No. 755,142
Claims priority, application Japan, Mar. 30, 1983, 58-52517; Mar. 30, 1983, 58-52518
Int. Cl.⁴ B32B *27/06, 27/37*
U.S. Cl. 428—480 **1 Claim**

1. A magnetic recording medium comprising
(a) a biaxially oriented film of a film-forming aromatic polyester derived from an aromatic dicarboxylic acid as a main acid component and an aliphatic glycol as a main glycol component, said film having surface properties such that
(1) it has a surface flatness, R_{CLA} defined by the following equation, of from 0.001 to 0.016 micron,

$$R_{CLA} = \frac{1}{L} \int_{O}^{L} |f(x)|\, dx$$

wherein R_{CLA} is the flatness of the film surface determined by the center line average method, f(x) is the sum of vertical distances from a straight line with a length L drawn across a film surface roughness curve measured by using a needle-contacting type surface roughness tester and being nearly parallel to the base line of said curve to maximum and minimum points of said curve respectively, and L is the length stated above for use in calculating f(x) in the surface roughness curve,
(2) it has a coefficient of travelling friction, μk, defined by the following equation, of from 0.01 to 0.20,

$$\mu k = \frac{2.303}{0.844\pi} \log \frac{T_2}{T_1}$$

wherein T_2 is the tension of the film which has been caused to travel on a fixed rod of SUS 304 stainless steel having an outside diameter of 5 mm, and T_1 is its tension before passage over the fixed rod, and
(3) the following relation is established between R_{CLA} and μk,

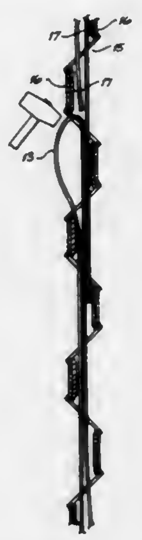
$$0.01 \leqq 10 \times R_{CLA} + \mu k \leqq 0.31, \text{ and}$$

(b) a magnetic layer on one or both surfaces of said film.

4,619,870
JOINING STRIP FOR PANELS

Norman J. Mitchell, 12 Bilmark Place, Brighton Le Sands, New South Wales 2216, and Alexander G. Mitchell, 29 Craigholm Street, Sylvania Heights, New South Wales 2224, both of Australia
Filed Mar. 14, 1984, Ser. No. 589,547
Claims priority, application Australia, Mar. 16, 1983, PF8473
Int. Cl.⁴ F16B *13/00;* **E04C** *2/32*
U.S. Cl. 428—596 **5 Claims**

1. A single metal sheet of relatively thin dimensions defining a plane, said sheet having at least one marginal edge defining an edge strip adapted for mutual cooperation with a complimentary edge strip of an adjacent similar sheet so as to facilitate joining of said adjacent sheets, said edge strip defining a primary plane generally parallel to said plane of said sheet and having a plurality of serially adjacent alternate depressions and ridges formed outwardly from the said primary plane in a manner to facilitate nesting when placed in juxtaposed relation with said complimentary edge strip of said adjacent sheet, said adjacent sheet being generally coplanar with respect to said plane of said sheet, each adjacent pair of said alternate depressions and ridges having an opening formed therebetween defined by inclined marginal edges operative to engage in a nesting relationship corresponding inclined marginal edges on said complimentary edge strip so as to effect longitudinal alignment of said openings in a manner to enable insertion of an elongated retainer pin through said openings.



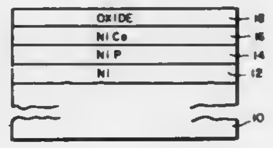
4,619,871
COPPER FOIL FOR PRINTED CIRCUIT BOARD

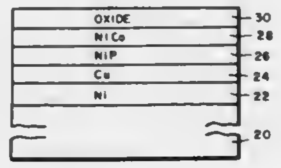
Masato Takami, Kyoto, Japan, assignor to Fukuda Metal Foil & Powder Co., Ltd., Japan
Filed Nov. 15, 1984, Ser. No. 671,985
Claims priority, application Japan, Jun. 28, 1984, 59-134923
Int. Cl.⁴ B32B *15/08*
U.S. Cl. 428—607 **6 Claims**

1. A copper foil, bonded to a resin-containing substrate to be a constituent of a printed circuit board, comprising:
on that surface which is bonded to said substrate a coating cobalt layer containing at least one element selected from the group consisting of molybdenum and tungsten for improved bonding, higher resistance to chemicals and heat, and facility for etching, wherein said element is present in an amount in the range 5 to 40 percent by weight of all the metals contained in said layer.

4,619,872
MAGNETIC PLATED MEDIA

Dan Goor, Colorado Springs, Colo.; Everett Niles, San Jose, Calif., and Robert L. Stone, Monument, Colo., assignors to Digital Equipment Corporation, Maynard, Mass.
Division of Ser. No. 560,478, Dec. 12, 1983, Pat. No. 4,581,109. This application Dec. 26, 1985, Ser. No. 813,594
Int. Cl.⁴ B32B *15/00*
U.S. Cl. 428—632 **6 Claims**





1. Magnetic plated media comprising:
an aluminum alloy substrate;
an electrolessly plated nickel layer disposed over said substrate;
a layer of nickel-phosphorous; and
a layer of nickel-cobalt over said nickel-phosphorous layer.

4,619,873

PRESERVATION DEVICE FOR LEAD STORAGE BATTERY

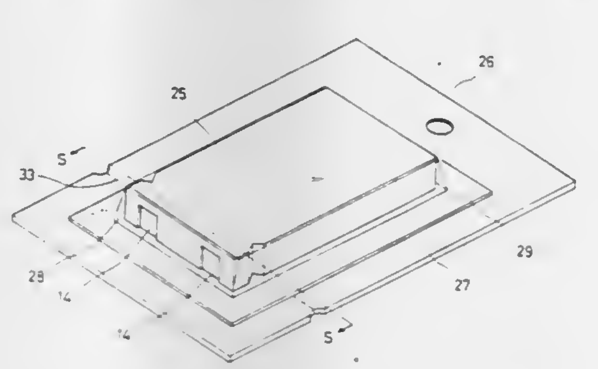
Yoshikazu Ishikura, Hirakata; Akira Watanabe, Neyagawa, and Takanao Matsumoto, Nishinomiya, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan

Continuation of Ser. No. 588,542, Mar. 12, 1984, abandoned. This application Jan. 22, 1986, Ser. No. 822,671

Claims priority, application Japan, Mar. 16, 1983, 58-43920; Mar. 16, 1983, 58-37681[U]; Mar. 16, 1983, 58-37682[U]; Apr. 15, 1983, 58-56821[U]; Jul. 13, 1983, 58-128356; Aug. 4, 1983, 58-143553; Aug. 5, 1983, 58-144043; Nov. 30, 1983, 58-227349

Int. Cl.⁴ H01M *2/10*

U.S. Cl. 429—48 **16 Claims**



1. A preservation device for a lead storage battery of the type including at least one negative plate, at least one positive plate, at least one separator between said negative and positive plates, an electrolyte impregnated in said negative and positive plates and said separator and held therein, and said electrolyte being limited in amount such that there is substantially no electrolyte liberated from said negative and positive plates and said separator, and external terminals having first ends respectively connected to said negative and positive plates and second ends external to said battery, said preservation device comprising:

an impedance connected between said external terminals of said lead storage battery while it is in storage after it has been fully charged;

a housing member for housing said lead storage battery during said storage; and

contact members secured to said housing member and adapted to respectively come in contact with said external terminals of said lead storage battery, and wherein;

said impedance means is secured to said housing member and connected between said contact members.

4,619,874

ELECTROCHEMICAL CELLS WITH END-OF-LIFE INDICATOR

Paul M. Skarstad, Plymouth, and Thomas G. Hayes, Minneapolis, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 375,447, May 6, 1982, abandoned. This application Aug. 17, 1984, Ser. No. 641,684

Int. Cl.⁴ H01M *10/48*

U.S. Cl. 429—91 **20 Claims**

1. In an electrochemical cell including an oxidizable active anode material; a non-consumable, electrically conducting, inert cathode current collector material, an electrolytic solution bridging the anode and cathode current collector, the solution including a liquid, inorganic oxyhalide or thiohalide solvent and a solute for rendering the electrolytic solution conductive of anode metal ions, the improvement comprising the addition to the cell of a quantity of an EOL component, as an initial dischargeable constituent thereof, having an eletropotential lower than that of the solvent and being selected from the group consisting of arsenic trichloride, arsenic trifluoride, arsenic tribromide, the vanadium halides, the transition metal sulfides and oxides, except for the actinide series, and technetium, and mixtures thereof whereby EOL indication in the form of a step discharge is provided during discharge of the cell.

4,619,875

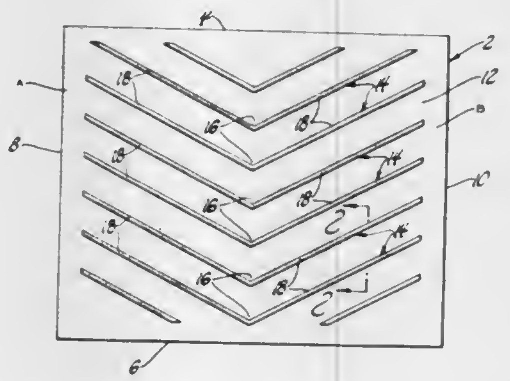
ANTI-STRATIFICATION BATTERY SEPARATOR

Daniel W. Stahura, Anderson, and Verl V. Smith, Jr., Muncie, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 27, 1985, Ser. No. 802,588

Int. Cl.⁴ H01M *2/18*

U.S. Cl. 429—143 **2 Claims**



1. In a separator for an electric storage battery comprising a thin microporous sheet for suppressing dendrite growth between adjacent plates of the battery, said sheet having top, bottom and lateral edges defining the principal face of the separator and a plurality of ribs formed on the surface of said face the improvement comprising:

said ribs each (1) having a concave shape, (2) being superposed one over another and (3) extending laterally across said face substantially from one said lateral edge to the other said lateral edge for reducing the accumulation of highly concentrated electrolyte at the bottom of the battery during recharge.

4,619,876

FLEXIBLE DISPLAY IMAGE

Lawrence Woodward, Middle Park, Australia, assignor to Variaset Pty. Limited, Mitcham, Australia

Filed Apr. 4, 1985, Ser. No. 719,495

Claims priority, application Australia, Apr. 9, 1984, PG4480; Aug. 16, 1984, PG6613

Int. Cl.⁴ G03C *1/00*

U.S. Cl. 430—11 **12 Claims**

1. A display image for display and sign applications involving bending or flexing through a substantial angle or relatively small radius curve, the display image comprising:

a flexible substrate,

an image layer on the flexible substrate, the image layer comprising an initially flexible tacky photopolymer which has been backed by a backing film, the photopolymer being of a kind that normally becomes brittle after removal of the backing film, the photopolymer having been exposed through a film positive to electromagnetic radiation so as to harden exposed portions of the photopolymer, the backing film then having been removed thereby uncovering unexposed flexible tacky photopolymer sections on the substrate, toner having been applied to the unexposed photopolymer sections so as to adhere thereto so as to thereby create an image, and

a transparent or translucent flexible sealing layer applied to the image layer while the toner coated photopolymer section remains flexible so as to sandwich the image layer between the flexible substrate and the sealing layer producing the display image which can be flexed or bent through an angle without cracking or crazing being readily discernable and showing as an adverse effect on or deterioration of the visual quality of the image.

4,619,877

LOW FIELD ELECTROPHOTOGRAPHIC PROCESS

Paul M. Borsenberger, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 642,603, Aug. 20, 1984, abandoned. This application Dec. 5, 1985, Ser. No. 804,337

Int. Cl.⁴ G03G *13/22*

U.S. Cl. 430—31 **13 Claims**

1. A method of electrophotographic imaging which comprises:

(1) providing a photoconductive insulating element comprising:
  (a) an electrically-conductive support,
  (b) a barrier layer overlying said support, and
  (c) a photoconductive stratum overlying said barrier layer, said stratum comprising a layer of intrinsic α-Si(H) in electrical contact with a layer of doped α-Si(H), saie doped α-Si(H) layer being very thin in relation to the thickness of said intrinsic α-Si(H) layer,

(2) uniformly electrostatically charging said element to a surface voltage in the range of from 5 to 50 volts, and

(3) image-wise exposing said doped α-Si(H) layer to activating radiation to thereby form a latent electrostatic image on the surface of said element.

4,619,878

TETRAZONIUM SALT COMPOUND, DISAZO COMPOUND, METHOD FOR PREPARING THE SAME, AND PHOTOSENSITIVE MATERIAL CONTAINING SAID DISAZO COMPOUND FOR USE IN ELECTROPHOTOGRAPHY

Mitsuru Hashimoto, Numazu, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

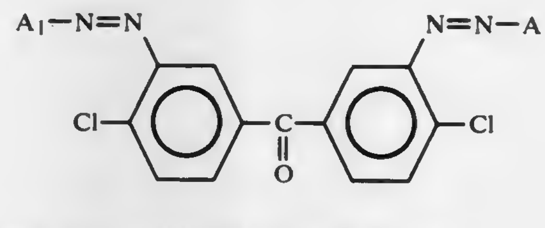
Filed Jun. 14, 1985, Ser. No. 745,331

Claims priority, application Japan, Jun. 26, 1984, 59-131250; Mar. 20, 1985, 60-56675

Int. Cl.⁴ G03G *5/06*

U.S. Cl. 430—56 **6 Claims**

1. A photosensitive material for use in electrophotography, characterized by providing a photosensitive layer containing a disazo pigment having the following general formula (VII),



(VII)

wherein A_1 represents a coupler residue.

4,619,879

COMPOSITE TYPE PHOTOSENSITIVE MEMBER HAVING METAL-FREE PHTHALOCYANINE IN THE CHARGE GENERATING LAYER AND NONIONIC DYE BASE IN THE CHARGE TRANSPORT LAYER

Atsushi Kakuta, Hitachiohta; Hiroyuki Oka, Hitachi; Shigeo Suzuki, Hitachi; Kotaro Araya, Hitachi; Yasuki Mori, Hitachi, and Hirosada Morishita, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

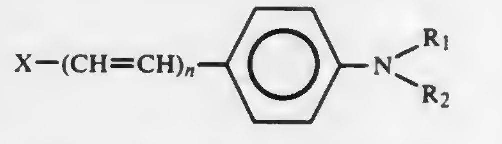
Continuation of Ser. No. 486,821, Apr. 20, 1983, abandoned. This application Jan. 28, 1985, Ser. No. 695,575

Claims priority, application Japan, Apr. 20, 1982, 57/66964

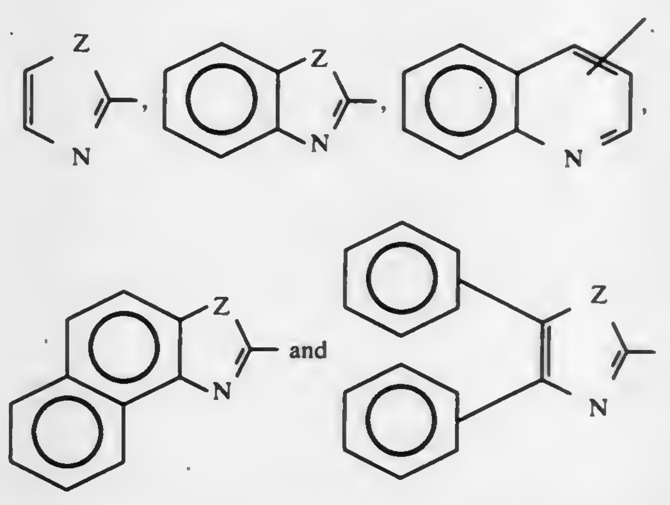
Int. Cl.⁴ G03G *5/10*

U.S. Cl. 430—58 **37 Claims**

1. In a composite type photosensitive member for electrophotography in which a layer containing a charge generating substance and a layer containing a charge transport substance is disposed on a conductive substrate, the improvement wherein said charge generating substance contains at least one of a τ, τ′, η or τ′ form metal-free phthalocyanine pigment and said charge transport substance contains a nonionic dye base represented by the following general formula:



(where X is a heterocyclic group selected from



(where Z represents O or S and the heterocyclic group may be substituted), n is 0, 1 or 2 and each of R_1 and R_2 is an alkyl group of up to three carbon atoms), whereby a photosensitive member having a high sensitivity to light not only in the visible light range but also in the long wavelength range of at least 790 nm is formed.

4,619,880

ELECTROPHOTOGRAPHIC LIGHT SENSITIVE MATERIAL CONTAINS HYDRAZONE COMPOUND

Seiji Horie; Naonori Makino, and Hideo Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 10, 1985, Ser. No. 743,323

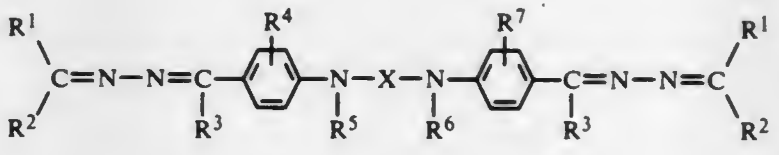
Claims priority, application Japan, Jun. 8, 1984, 59-118416

Int. Cl.⁴ G03G *5/14*

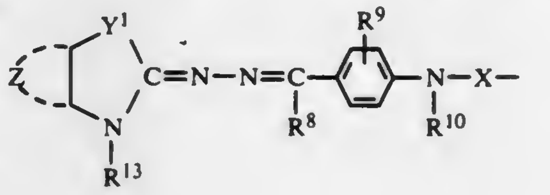
U.S. Cl. 430—58 **24 Claims**

1. An integrated type electrophotographic light-sensitive material comprising two layers comprising (1) an electric charge generating layer containing an electric charge generating material and (2) an electric charge transporting layer containing an electric charge transporting material, provided on an electrically conductive base, wherein said electric charge generating layer contains at least one compound represented by the following general formulas (I)–(V):

(I)



(II)



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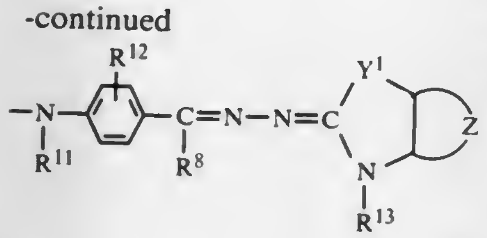
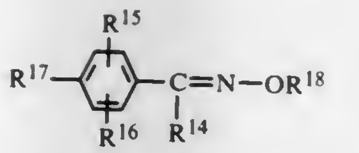
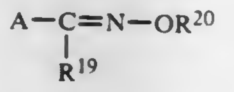
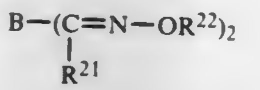




(III)

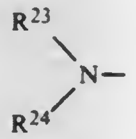


$$A-\underset{\underset{R^{19}}{|}}{C}=N-OR^{20} \qquad \text{(IV)}$$

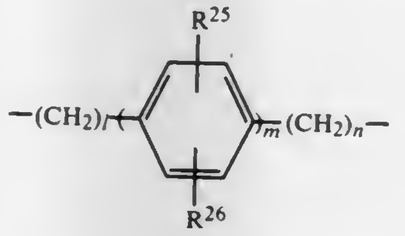


$$B-(\underset{\underset{R^{21}}{|}}{C}=N-OR^{22})_2 \qquad \text{(V)}$$

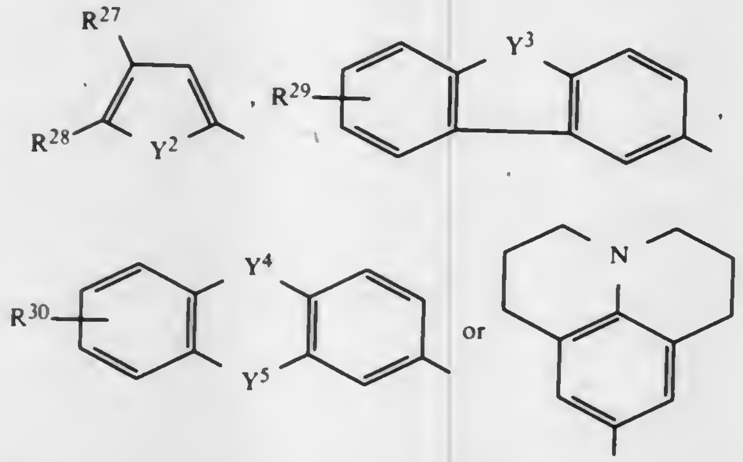
wherein R^1, R^2, R^5, R^6, R^{10}, R^{11}, and R^{13} each represent an unsubstituted or substituted straight chain or branched chain alkyl group having 1 to 12 carbon atoms, an unsubstituted or substituted straight chain or branched chain aralkyl group having 7 to 20 carbon atoms, or an unsubstituted or substituted aryl group, or R^5 and R^6 or R^{10} and R^{11} may form a N containing heterocyclic group by bonding each other, and R^5 and R^6, and R^{10} and R^{11} may be identical or different from each other, R^3, R^8, R^{14}, R^{18}, R^{19}, R^{20}, R^{21} and R^{22} and represent a hydrogen atom, an unsubstituted or substituted straight chain or branched chain alkyl group having 1 to 12 carbon atoms, an unsubstituted or substituted aralkyl group having 7 to 20 carbon atoms or an unsubstituted or substituted aryl group, and R^3, R^8, R^{14}, R^{18}, R^{19}, R^{20}, R^{21} and R^{22} may be identical or different from each other, R^4, R^7, R^9, R^{12}, R^{15} and R^{16} each represent a hydrogen atom, and unsubstituted or substituted straight chain or branched chain alkyl group having 1 to 12 carbon atoms, an unsubstituted or substituted aralkyl group having 7 to 20 carbon atoms, an unsubstituted or substituted aryl group having 6 to 20 carbon atoms, a halogen atom, an alkoxy group having 1 to 20 carbon atoms or an aryloxy group having 6 to 20 carbon atoms, and R^4, R^7, R^9, R^{12}, R^{15} and R^{16} may be identical or different from each other, R^{17} represents an alkoxy group, an aralkyloxy group or a substituted amino group represented by



wherein R^{23} and R^{24} each represent the same substituent as described above for R^5 and R^6 X represents the following general formula:



wherein l and n each represnt 0 or an integer of 1 to 6, m represents 0 or 1, and R^{25} and R^{26} represent each the same substituent as described above for R^4 and R^7, or R^{25} and R^{26} may form a condensed polynuclear aromatic ring by bonding to each other, Y^1 represents an oxygen atom, a sulfur atom, a selenium atom, an unsubstituted or substituted imino group or an unsubstituted or substituted methylene group, Z represents an atomic group necessary to form a benzene or naphthalene ring, A represents a substituted or unsubstituted condensed carbocycle or a monocyclic ring or condensed 5 member heterocyclic ring or condensed 6 member heterocyclic ring represented by the following structural formula:



wherein Y^2, Y^3, Y^4 and Y^5 each represent S, O or $N—R^{31}$ (R^{31} represents an alkyl group having 1 to 4 carbon atoms), which may be the same kind or different kinds of atom, R^{27} and R^{28} which may be identical or different each represent a hydrogen atom, an alkyl group or an alkoxy group, or R^{27} and R^{28} represent a group capable of forming a benzene ring or a naphthalene ring by linking together, and R^{29}, and R^{30} each represents a hydrogen atom, an alkyl group, an alkoxy group, an aryloxy group, and acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a halogen atom, a monoalkylamino group, a dialkylamino group, an amido group or a nitro group, which may be substituted or unsubstituted, and B represents a substituted or unsubstituted arylene group.

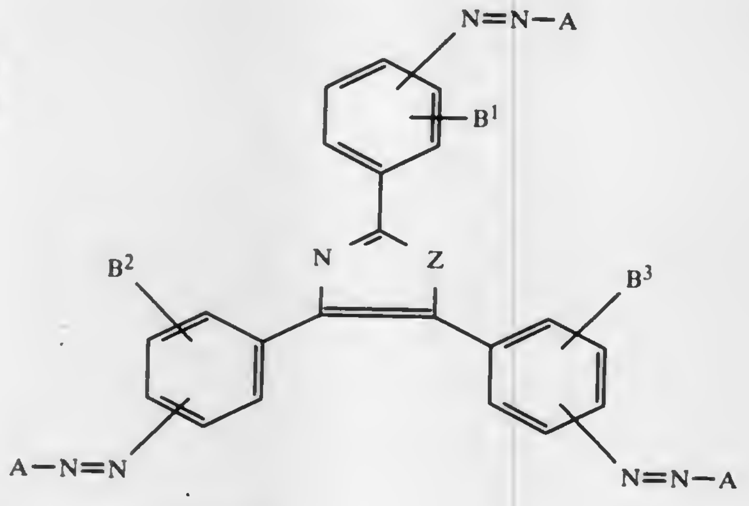
4,619,881

PHOTOCONDUCTIVE COMPOSITION AND ELECTRO-PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING A TRISAZO COMPOUND

Naonori Makino; Seiji Horie, and Hideo Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

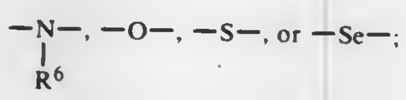
Filed Feb. 21, 1985, Ser. No. 703,968
Claims priority, application Japan, Feb. 21, 1984, 59-30918
Int. Cl.⁴ G03G *5/06*
U.S. Cl. 430—77 **15 Claims**

1. A photoconductive composition containing at least one trisazo compound represented by the following general formula (1):



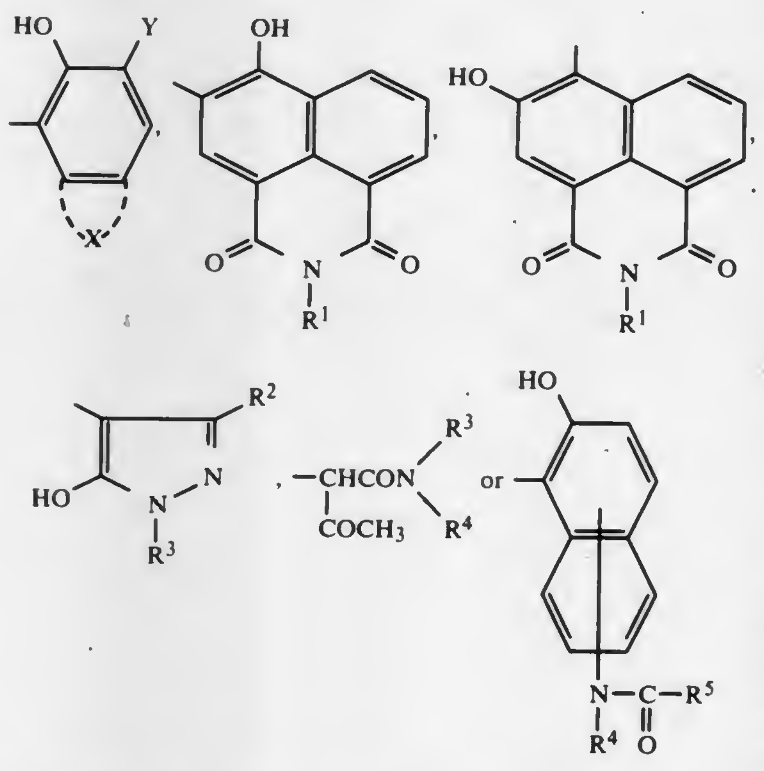
(1)

wherein Z represents

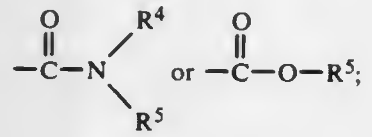


$$-\underset{\underset{R^6}{|}}{N}-,\ -O-,\ -S-,\ \text{or}\ -Se-;$$

R^6 represents a hydrogen atom, a lower alkyl group, an aryl group, an aryloxy group, an alkoxycarbonyl group, an aryloxycarbonyl group, an acyl group, or a substituted group of them; As', which may be the same or different, each represents

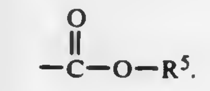


B^1, B^2 and B^3 each represents a hydrogen atom, a halogen atom, a lower alkyl group, a lower alkoxy group or a substituted lower alkyl group or lower alkoxy group, and B^1, B^2 and B^3 may be identical or different; X represents an atomic group necessary to form an aromatic ring or heterocyclic ring, which may be substituted or unsubstituted, by condensing with the benzene ring to which the hydroxyl group and Y are bonded; Y represents



$$-\overset{\overset{O}{\|}}{C}-N{<}^{R^4}_{R^5} \quad \text{or} \quad -\overset{\overset{O}{\|}}{C}-O-R^5;$$

R^1 represents an alkyl group, a phenyl group or a substituted alkyl or phenyl group; R^2 represents a hydrogen atom, a lower alkyl group, a carbamoyl group, a carboxyl group, an alkoxycarbonyl group, an aryloxycarbonyl group or a substituted or unsubstituted amino group; R^3 represents an alkyl group, an aromatic group or a heteroaromatic group or a substituted alkyl group, aromatic group or heteroaromatic group; and R^4 and R^5, which may be the same or diffent, each represents a hydrogen atom, an alkyl group, an aromatic group, a heteroaromatic group or a substituted alkyl group, aromatic group or heteroaromatic group, provided that R^4 and R^5 are not both hydrogen atoms, and R^5 are not a hydrogen atom when Y is



$$-\overset{\overset{O}{\|}}{C}-O-R^5.$$

4,619,882

PHOTOCONDUCTORS OF REDUCED PHOTOSENSITIVITY AND PROCESS FOR PRODUCING SAME

Sixdeniel Faria, Towanda, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed May 28, 1985, Ser. No. 737,998
Int. Cl.⁴ G03G *5/08*
U.S. Cl. 430—95 **9 Claims**

1. A copper activated photoconductor having reduced photosensitivity and having the general formula CdX:Cu wherein X is selected from the group consisting of sulfide, selenide and mixtures thereof, said photoconductor having an iron content of from about 0.01% to about 0.05% by weight, the presence of said iron reducing the photosensitivity of said photoconductor by about 30%.

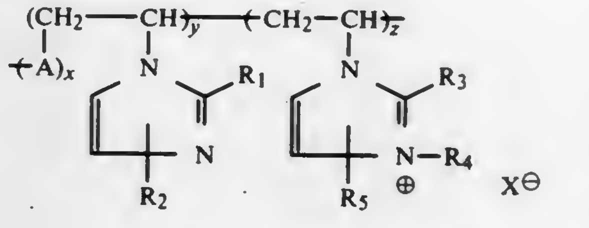
4,619,883

DYE FIXING MATERIAL

Toshiaki Aono; Koichi Nakamura, and Taku Nakamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 3, 1984, Ser. No. 677,408
Claims priority, application Japan, Dec. 1, 1983, 58-227493
Int. Cl.⁴ G03C *5/54, 1/40*
U.S. Cl. 430—203 **20 Claims**

1. A photographic element comprising a light-sensitive material and a dye fixing material for fixing a mobile hydrophilic dye formed imagewise to a dye fixing layer, said imagewise dye being formed by heating said light-sensitive material in a state containing substantially no water after or during imagewise exposure, said light-sensitive material being composed of a support and having provided thereon, at least (1) a light-sensitive silver halide, (2) a binder, (3) a compound capable of forming the mobile hydrophilic dye imagewise by being chemically related to the reaction of reducing the silver halide to silver at high temperatures, and (4) an organic silver salt oxidizing agent; and said dye fixing materials comprising at least one layer containing as a constitutent on a support a polymer having monomeric units of formula (I)



(I)

wherein A represents a vinyl monomer unit having no imidazole or imidazolium group, R_1 and R_3 respectively represent a hydrogen atom, an alkyl group, an alkyl group substituted by a group capable of forming a coordinate bond with a metal, or a salt thereof, R_2 and R_5 respectively represent a hydrogen atom or an alkyl, aralkyl, or aryl group, R_4 represents an alkyl or aralkyl group, $X^{\ominus}$ represents an acid radical, x is from 10 to 80 mole%, y is from 10 to 80 mole %, z is from 0 to 10 mole % and y is not less than z.

4,619,884

PHOTOGRAPHIC PRODUCTS EMPLOYING NONDIFFUSIBLE N',N'-DIAROMATIC CARBOCYCLIC—OR DIAROMATIC HETEROCYCLIC—SULFONOHYDRAZIDE COMPOUNDS CAPABLE OF RELEASING PHOTOGRAPHICALLY USEFUL GROUPS

Stephen P. Singer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 29, 1985, Ser. No. 759,786
Int. Cl.⁴ G03C *1/40, 5/54, 1/34, 1/42*
U.S. Cl. 430—223 **13 Claims**

1. A photographic element comprising a support having

thereon at least one photosensitive silver halide emulsion layer and also comprising, in said silver halide layer or in a layer adjacent thereto, a nondiffusible N′,N′-di aromatic carbocyclic or aromatic heterocyclic sulfonohydrazide compound, or a precursor thereof, capable of releasing a diffusible photographically useful group wherein at least one of said aromatic groups comprises a nitro substituent in the 2- position or in a position conjugated thereto.

13. A photographic assemblage comprising:
(a) a photographic element according to any of claims **1** to **12**;
(b) a dye image-receiving layer; and
(c) an alkaline processing composition with means for discharging same within said assemblage;
said assemblage also comprising a silver halide developing agent.

4,619,885

PHOTOPOLYMERIZABLE COMPOSITION COMPRISING A 1,3,10-TRIAZAANTHRACEN-4-ONE AS THE PHOTOINITIATOR

Rainer Wingen, Frankfurt; Ulrich Geissler, Hochheim am Main, and Hans Ruckert, Wiesbaden-Naurod, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

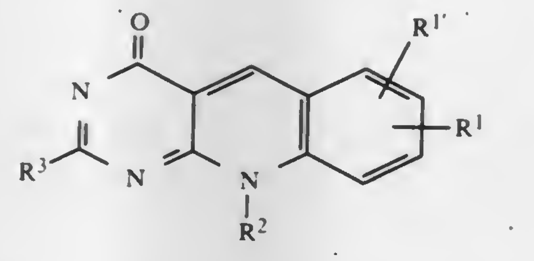
Filed May 31, 1985, Ser. No. 739,512

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1984, 3420425

Int. Cl.⁴ G03C *1/68, 1/76*

U.S. Cl. 430—260 **14 Claims**

1. A photopolymerizable composition comprising:
(a) a polymeric binder;
(b) a polymerizable compound comprising at least two terminal, ethylenically unsaturated groups and having a boiling point above 100° C.; and
(c) a trinuclear N-heterocyclic photoinitiator compound,
said photoinitiator compound being represented by the formula



(I)

wherein
R^1 denotes a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group or a dialkylamino group,
$R^{1'}$ denotes a hydrogen atom, a halogen atom or an alkyl group,
R^2 denotes an alkyl group or an alkoxycarbonylalkyl group, or, if R^1 and R^2 each denote an alkyl moiety,
R^1 and R^2 together form a five- or six-membered ring, and
R^3 denotes an aliphatic or a cycloaliphatic tertiary amino group.

11. A dry resist film comprising a transparent temporary support layer and a light-sensitive copying layer provided on said temporary support layer, said copying layer comprising a photopolymerizable composition as claimed in claim **1**.

4,619,886

PROCESS FOR FORMING HIGH CONTRAST NEGATIVE IMAGE

Eiichi Okutsu, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

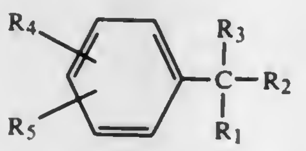
Filed Mar. 21, 1985, Ser. No. 714,418

Claims priority, application Japan, Mar. 23, 1984, 59-55685

Int. Cl.⁴ G03C *1/06, 5/24*

U.S. Cl. 430—265 **8 Claims**

1. A process for forming a high contrast negative image by developing an image-wise exposed substantial surface latent image type silver halide photographic light-sensitive material in the presence of hydrazines, which comprises using a developing solution having a pH value of 10.5 to 12.3 and containing at least
(1) a developing agent which contains dihydroxylbenzenes,
(2) 0.25 mol/l or more of sulfite, and
(3) a compound represented by general formula (I):



(I)

wherein R_1, R_2, R_3, R_4 and R_5, which may be the same or different, each represents a hydrogen atom, a hydroxyl group, an alkyl group, an alkoxy group or a substituted alkyl group.

4,619,887

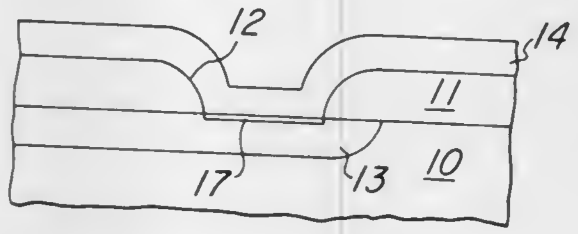
METHOD OF PLATING AN INTERCONNECT METAL ONTO A METAL IN VLSI DEVICES

Robert C. Hooper, Houston; Douglas P. Verret, Sugar Land, and Bobby A. Roane, Manvel, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 13, 1985, Ser. No. 762,886

Int. Cl.⁴ G03C *5/00*

U.S. Cl. 430—313 **9 Claims**



1. A method of depositing an interconnect metal of a higher electrical conductivity than aluminum onto a predetermined area of a metal layer in an integrated circuit device, comprising:
depositing a coating of insulator over said metal layer;
patterning and etching the insulator onto a reverse image mask of a desired lead pattern;
depositing said interconnect metal onto the exposed metal layer and, selectively removing the insulator mask and underlaying metal.

4,619,888

HEAT DEVELOPABLE LIGHT-SENSITIVE MATERIAL

Ken Kawata; Yoshiharu Yabuki; Kouzou Sato, and Hiroyuki Hirai, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

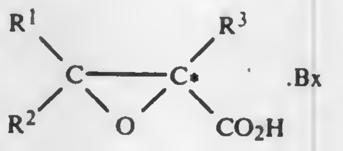
Filed Aug. 26, 1985, Ser. No. 769,297

Claims priority, application Japan, Aug. 24, 1984, 59-176397

Int. Cl.⁴ G03C *1/02*

U.S. Cl. 430—353 **14 Claims**

1. A heat developable light-sensitive material comprising a support and a heat developable light-sensitive layer containing a silver halide formed thereon wherein said light-sensitive material contains as a base precursor at least one compound selected from the group consisting of compounds having the formula [I]:



[I]

wherein
R^1 and R^2 individually represent a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted alkynyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted heterocyclic group, or $—CO_2M$ wherein M represents a hydrogen atom, an alkali metal or H.Bx, and R^1 and R^2 can be joined together to form a ring;
R^3 represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted alkynyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group;
B represents a monoacidic organic base or diacidic organic base;
x is equal to 1 when B represents a monoacidic base and equal to ½ when B represents a diacidic base; and
C* represents an asymmetric carbon atom to which R^3 and CO_2H may be attached in either of the possible configurations.

4,619,889

IMAGE FORMING METHOD

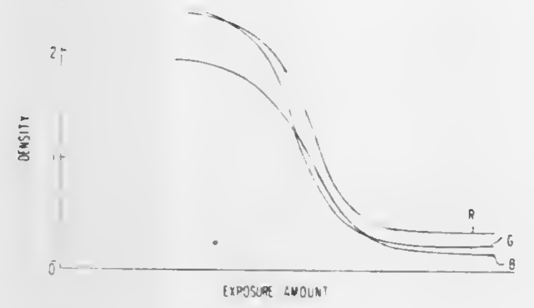
Hideo Yuyama, and Motohiko Tsubota, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 24, 1984, Ser. No. 573,455

Claims priority, application Japan, Jan. 24, 1983, 58-10421

Int. Cl.⁴ G03C *5/24*

U.S. Cl. 430—406 **2 Claims**



1. An image forming method which comprises copying an original image on a photosensitive material employing a direct reversal photographic emulsion, comprising:
conducting ordinary exposure when the original image is a positive image and conducting exposure at high illuminance when the original is a negative image, thereby obtaining a direct positive image from either original image;
wherein the direct reversal photographic emulsion employed in the photographic material is an unfogged internal latent image type emulsion;
and wherein the exposure time at high illuminance is 1/100 sec or less.

4,619,890

OPTICAL RECORDING ELEMENT HAVING A POLYMERIZED CROSSLINKED HOMOPOLYMER SMOOTHING LAYER

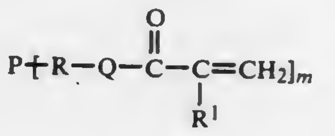
Michel F. Molaire, Rochester, and Mark S. Kaplan, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 19, 1985, Ser. No. 766,992

Int. Cl.⁴ G03C *1/00*

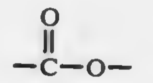
U.S. Cl. 430—495 **5 Claims**

1. An optical recording element comprising a heat-deformable optical recording layer and a support having coated thereon a smoothing layer that is a crosslinked homopolymer in which the polymerized, cross-linked recurring unit is derived from a single monomer having the structure



$$P\!\left[R-Q-\overset{\overset{\displaystyle O}{\|}}{C}-\underset{\underset{\displaystyle R^1}{|}}{C}=CH_2\right]_m$$

Q represents $—CH_2)_nO$ or $—CH_2CH_2O)_n$;
P represents a benzene or cyclohexane nucleus;
R represents



$$-\overset{\overset{\displaystyle O}{\|}}{C}-O-$$

or —O—;
R^1 represents hydrogen or methyl;
n is 2 to 10; and
m is 2 to 4.

4,619,891

PHOTOSENSITIVE MATERIAL WITH PARTICLES OF HYDROQUINONE AND POLYMER

Osamu Takahashi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

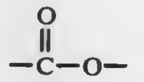
Filed May 10, 1985, Ser. No. 732,769

Claims priority, application Japan, May 11, 1984, 59-95269

Int. Cl.⁴ G03C *1/40, 5/54*

U.S. Cl. 430—505 **8 Claims**

1. A photosensitive material comprising a support having thereon at least one silver halide emulsion layer or layers associated with a dye-providing compound capable of forming an imagewise mobile dye as the result of exposure and development, wherein a hydroquinone derivative and a water-insoluble but organic solvent-soluble homopolymer or copolymer having a recurring unit containing a



$$-\overset{\overset{\displaystyle O}{\|}}{C}-O-$$

bond in a main chain or side chain are integrated and dispersed as individual particles in a hydrophilic colloid of the at least one silver halide emulsion layer or layers, wherein said hydroquinone derivatives are selected from the group consisting of a mixture of hydroquinone compounds wherein two tertiary alkyl groups having 15 carbon atoms are substituted at the 2- and 5-, or the 2- and 6-positions of the benzene ring, and an isomer mixture of secondary dodecyl hydroquinone compounds.

4,619,892

COLOR PHOTOGRAPHIC ELEMENT CONTAINING THREE SILVER HALIDE LAYERS SENSITIVE TO INFRARED

Sharon M. Simpson, Lake Elmo; John M. McQuade, and John R. Boon, both of Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 709,561, Mar. 8, 1985, abandoned, which is a continuation-in-part of Ser. No. 674,583, Nov. 26, 1984, abandoned. This application Nov. 7, 1985, Ser. No. 795,985

Int. Cl.⁴ G03C *1/40, 1/46, 5/16*

U.S. Cl. 430—505 **37 Claims**

1. A photographic element capable of providing a full color image without exposure to radiation within the visible region of the electromagnetic spectrum comprising
(a) a substrate, and

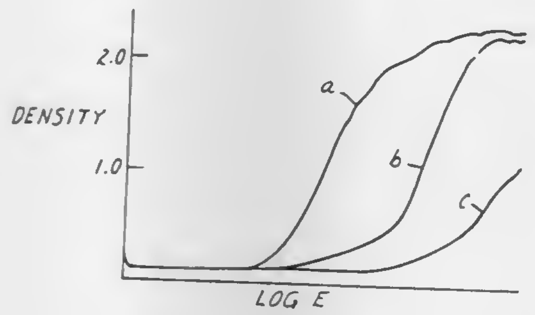
(b) on one side of said substrate at least three silver halide emulsion layers, each of said silver halide emulsion layers being associated with a different color photographic coupler, each of said couplers being capable of forming a different color dye upon reaction with an oxidized color photographic developer,

said three silver halide emulsion layers comprising, in order from the substrate to the surface of said photographic element, a first emulsion sensitized to a portion of the infrared region of the electromagnetic spectrum, a second emulsion sensitized to a portion of the infrared region of the electromagnetic spectrum which is of a shorter wavelength than the portion to which said first emulsion is sensitized, and a third emulsion sensitized to a portion of the infrared region of the electromagnetic spectrum which is of a shorter wavelength than the portion to which said second emulsion is sensitized, and said three silver halide emulsion layers having a construction selected from the group consisting of:

(1) each of the three layers having a contrast between 0.5 and 12 and differing from each other in photographic speed such that, at an optical density of 1.3, the speed of the third emulsion is at least 0.2 logE units faster than the second emulsion layer, and the second emulsion is at least 0.2 logE units faster than the first emulsion layer,

(2) between said first and second emulsion layers is a filter layer absorbing infrared radiation in a range overlapping the region of maximum sensitivity of said second emulsion layer without absorbing more than forty percent of the infrared radiation to which said first emulsion layer is sensitized, and between said second emulsion layer and said third emulsion layer is a filter layer absorbing radiation in a range overlapping the region of maximum sensitivity of said third emulsion layer without absorbing more than forty percent of the infrared radiation to which said second layer is sensitized, and

(3) directly between two layers comprising either said first and second emulsion layers or said second and third emulsion layers a filter layer absorbing radiation in a range overlapping the region of maximum sensitivity the one of the two layers further away from the substrate without absorbing more than forty percent of the infrared radiation to which the other of said two layers is sensitized and the other pair of emulsion layers comprising said second and third emulsion layers and said first and second emulsion layers, respectively, having a contrast between 0.5 and 12 and differing in speed from each other so that at an optical density of 1.3, the speed of the emulsion layer farthest from the substrate in said other pair of emulsion layers is at least 0.2 logE units faster than the speed of the emulsion layer closest to the substrate in said other pair of emulsion layers.



4,619,893

LIGHT-SENSITIVE MATERIAL FOR SILVER SALT DIFFUSION TRANSFER PROCESS WITH ANTIHALATION DYE

Yoshihiro Takagi, and Keiichi Adachi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

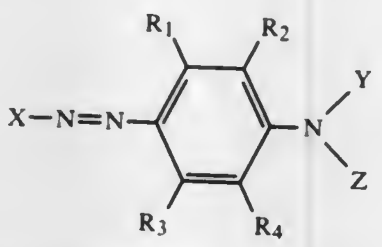
Filed Feb. 11, 1985, Ser. No. 700,245

Claims priority, application Japan, Feb. 16, 1984, 59-27663

Int. Cl.^{4} G03C *1/84, 5/54*

U.S. Cl. 430—519 **6 Claims**

1. A light-sensitive material for a silver salt diffusion transfer process comprising a silver halide emulsion layer and having an antihalation layer containing a developing agent and at least one oil-soluble dye represented by following general formula (I)



(I)

wherein X represents a benzene ring, a thiazole ring or a benzothiazole ring each having at least one electron attractive group selected from a nitro group, a cyano group, an alkylsulfonyl group, a halogen atom, and a trifluoromethyl group; R_1, R_2, R_3, R_4 each represents hydrogen, a substituted or unsubstituted alkyl group having 1 to 12 carbon atoms, a substituted or unsubstituted alkoxy group having 1 to 12 carbon atoms, a substituted or unsubstituted alkylamido group having 2 to 30 carbon atoms or a substituted or unsubstituted arylamido group having 6 to 30 carbon atoms: and Y and Z each represents hydrogen or a substituted or unsubstituted alkyl group having 1 to 10 carbon atoms.

4,619,894

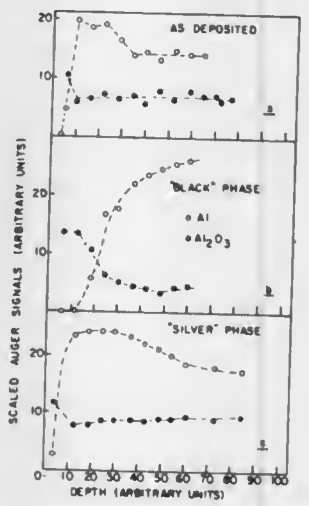
SOLID-TRANSFORMATION THERMAL RESIST

Carl O. Bozler, Sudbury; Daniel J. Ehrlich, Lexington, both of Mass., and Jeffrey Y. Tsao, Albuquerque, N. Mex., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 12, 1985, Ser. No. 722,818

Int. Cl.^{4} C23C *15/00*

U.S. Cl. 430—942 **13 Claims**



1. A process for forming a selected pattern on the surface of a substrate, comprising:

(a) forming on said substrate a substantially etchable, low ohmic resistivity cermet layer of aluminum and Al_2O_3 by depositing aluminum on said substrate in an oxygen environment;

(b) heating selected regions of said cermet layer by exposing such selected regions to radiant energy to selectively transform said exposed regions from said substantially etchable low ohmic resistivity material to substantially less-etchable material higher ohmic resistivity; and

(c) removing the unexposed regions to form a pattern of less etchable higher ohmic resistivity material on said substrate surface.

4,619,895

LIPOPROTEIN MARKER FOR HYPERTRIGLYCERIDEMIA

Roger S. Cubicciotti, El Cerrito; Alexander E. Karu, Kensington, and Ronald M. Krauss, Berkeley, all of Calif., assignors to The Regents of The University of California, Berkeley, Calif.

Filed May 10, 1984, Ser. No. 608,750

Int. Cl.^{4} G01N *33/577, 33/535;* **C12N** *5/00, 15/00*

U.S. Cl. 435—7 **4 Claims**

3. A method for identifying the presence of low density lipoprotein characteristic of hypertriglyceridemia in a patient, said method comprising:

contacting a sample of a biological fluid from said patient with antibodies specific for the epitopic site recognized by antibodies derived from hybridoma SPL.IVA5, A.T.C.C. Accession No. HB 8535, which antibodies bind to a low density lipoprotein subspecies having a size in the range of about 215Å to 230Å for a time and under conditions sufficient for said low density lipoprotein subspecies and said antibodies to form an immune complex and detecting the presence or absence of said immune complex, wherein the presence of said immune complex is indicative of hypertriglyceridemia.

4,619,896

PROCESS FOR OBTAINING DELTA ANTIGEN OF HEPATITIS D VIRUS AND USE OF SAID ANTIGEN AS A DIAGNOSTIC AGENT

Alan G. Shattock, Hillside, Bohernabreena, County Dublin, Ireland, and Bridget M. Morgan, 123 Plumstead High Street, Plumstead, London SE18 1SE, England

Filed Feb. 16, 1984, Ser. No. 580,660

Claims priority, application Ireland, Mar. 4, 1983, 473/83; Oct. 25, 1983, 2499/83

Int. Cl.^{4} G01N *33/53, 33/544, 33/531*

U.S. Cl. 435—7 **41 Claims**

1. A process for obtaining delta antigen from an animal, known or caused to be infected with the antigen, for use as a source of delta antigen for diagnostic assays, said process comprising treating blood serum from the animal with a predetermined amount of a surfactant selected from the group consisting of condensates of ethylene oxide with fatty alcohols, condensates of ethylene oxide with aromatic alcohols, cetrimonium bromide and sodium N-lauroyl sarcosinate.

4,619,897

ENZYME IMMOBILIZATION IN A FLUORINE RESIN MEMBRANE

Masakatsu Hato; Yukio Shimura, and Keishiro Tsuda, all of Ibaraki, Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Oct. 11, 1983, Ser. No. 540,618

Claims priority, application Japan, Oct. 12, 1982, 57-178669

Int. Cl.^{4} C12N *11/04, 11/08, 11/02, 11/00*

U.S. Cl. 435—182 **9 Claims**

1. A porous asymmetrical polytetrafluoroethylene membrane having an enzyme immobilized therein, said membrane having a thickness of 10 μm to 200 μm and an average pore diameter of 0.01 μm to 10 μm, and composed of a hydrophilic portion of a depth in the range of 30% to 80% of the thickness of the membrane, said hydrophilic portion being formed by contacting a solution of a perfluoroalkyl surface-active agent with one side of said membrane for a time sufficient for said surface-active agent to penetrate said depth of said membrane, and a hydrophobic portion which has a function of selective gas permeation forming the remainder of the membrane thickness, said pores of said hydrophilic portion containing an immobilized enzyme which provides said membrane with a function of enzymatic activity.

4,619,898

ALCOHOL OXIDASE FROM PICHIA-TYPE YEASTS

Thomas R. Hopkins, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 258,177, Apr. 27, 1981, Pat. No. 4,540,668, which is a continuation of Ser. No. 45,715, Jun. 5, 1979, abandoned. This application Jul. 9, 1985, Ser. No. 753,088

Int. Cl.^{4} C12N *9/04*

U.S. Cl. 435—190 **9 Claims**

1. The alcohol oxidase from yeasts of *Pichia pastoris.*

4,619,899

METHOD AND DEVICE FOR PERFORMING MICROOPERATIONS ON CELLS

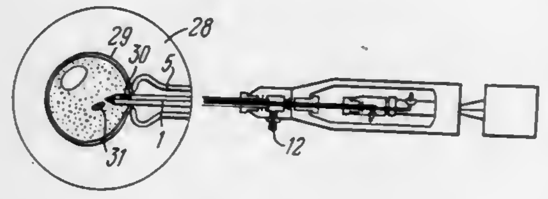
Vladimir A. Nikitin; Anatoly M. Khokhlov; Vyacheslav T. Larin, and Boris A. Fikhte, all of Puschino, U.S.S.R., assignors to Institut Biokhimii I Fiziologii Mikroorganizmov Akademii Nauk SSR, Puschino, U.S.S.R.

PCT No. PCT/SU83/00023, § 371 Date Feb. 12, 1985, § 102(e) Date Feb. 12, 1985, PCT Pub. No. WO85/00314, PCT Pub. Date Jan. 31, 1985

PCT Filed Jun. 30, 1983, Ser. No. 713,389

Int. Cl.^{4} C12M *1/76*

U.S. Cl. 435—287 **6 Claims**



1. A method for performing microoperations on cells, consisting in that a cell (**29**) is secured by means of a micro suction cup (**5**) and a microinstrument (**1**) is used to perforate the membrane of the cell (**29**), characterized in that the membrane of the cell (**29**) is perforated in a spot under the micro suction cup (**5**), the instrument (**1**) being introduced through the recess of the micro suction cup (**5**).

4,619,900

SOLVENT FOR THE DETERMINATION OF WATER BY THE KARL FISCHER METHOD

Eugen Scholz, Garbsen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 6, 1984, Ser. No. 637,912

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1983, 3329020

Int. Cl.^{4} G01N *33/18*

U.S. Cl. 436—42 **4 Claims**

1. A reagent for the determination of water by the Karl Fischer Method, comprising sulfur dioxide, a base and iodine or an iodide and a solvent containing (a) more than 10 percent by weight of a monohydric or dihydric alkanol having 1 to 3 carbon atoms, which alkanol is substituted on its carbon atoms with 1 to 4 halogen atoms, 1 to 4 phenyl radicals or 1 to 4 substituted phenyl radicals, the halogen atoms being attached to carbon atoms free from a hydroxyl group, and (b) less than 90 percent by weight of an organic solvent selected from the group consisting of a lower aliphatic alcohol, a liquid hydrocarbon and a liquid halogenated hydrocarbon.

4,619,901

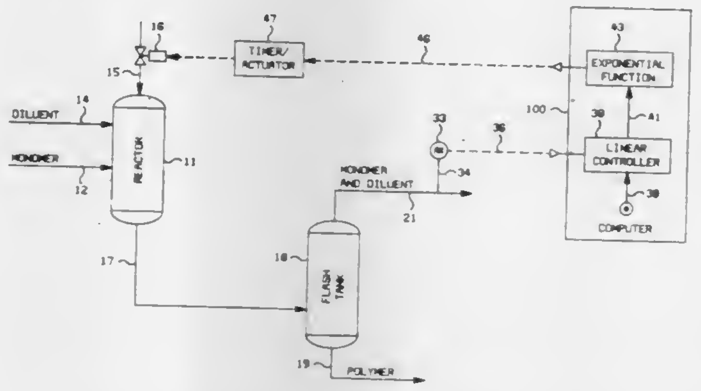
CONTROL OF POLYMERIZATION REACTION

Don W. Webb, and William B. Bard, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 21, 1985, Ser. No. 704,104

Int. Cl.⁴ B01J *8/08, 31/08*

U.S. Cl. 436—55 **4 Claims**



1. A method for maintaining a desired unreacted monomer concentration in the reaction effluent withdrawn from a polymerization reactor, wherein monomer is provided as a feed to said polymerization reactor, wherein catalyst is provided periodically through a catalyst feeder valve to said polymerization reactor and wherein said reaction effluent contains polymer and unreacted monomer, said method comprising the steps of:

establishing a first signal representative of the actual unreacted monomer concentration in said reaction effluent;

establishing a second signal representative of the desired unreacted monomer concentration in said reaction effluent;

using a linear controller to compare said first signal and said second signal and to establish a third signal which is responsive to the difference between said first signal and said second signal, wherein said third signal is scaled so as to be representative of the number of times said catalyst feeder valve should be actuated per unit time in order to maintain the magnitude of said first signal substantially equal to the magnitude of said second signal if said catalyst has a constant activity and the same amount of said catalyst is introduced into said polymerization reaction by each actuation of said catalyst feeder valve;

establishing a fourth signal representative of the exponential of said third signal, wherein the conversion of said third signal to an exponential compensates for variations in the activity of said catalyst and variations in the amount of said catalyst introduced into said polymerization reactor each time said catalyst feeder valve is actuated; and

actuating said catalyst feeder valve in response to said fourth signal.

4,619,902

TOTAL ORGANIC CARBON ANALYZER

Bernie B. Bernard, College Station, Tex., assignor to O.I. Corporation, College Station, Tex.

Filed Jul. 27, 1984, Ser. No. 635,147

Int. Cl.⁴ G01N *33/00*

U.S. Cl. 436—145 **3 Claims**

1. A process for analyzing the carbon content of a carbon-containing sample by reacting said sample with an oxidizing agent in a wet oxidation process to generate carbon dioxide in a digestion chamber, comprising the steps of:

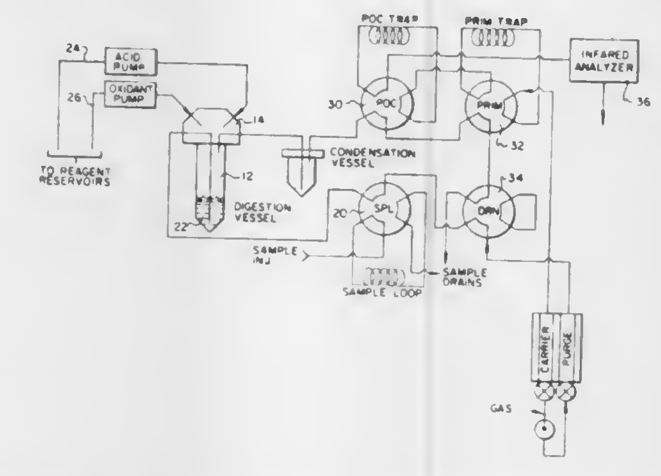
introducing said oxidizing agent within said digestion chamber;

introducing said sample within said digestion chamber;

contacting said sample with said oxidizing agent on a catalytic surface formed from a member of the platinum materials group consisting of platinum, rhodium, paladium, osmium, iridium and ruthenium;

heating said sample and said oxidizing agent contacting said catalytic surface to a temperature in a range effective to generate carbon dioxide in a liquid phase oxidation reaction;

withdrawing said carbon dioxide from said digestion chamber; and



analyzing said carbon dioxide withdrawn from said digestion chamber.

4,619,903

PROCESS FOR CARRYING OUT SEROLOGICAL INVESTIGATIONS ACCORDING TO THE PRINCIPLE OF THE COMPLEMENT FIXATION TEST, AND TEST PACKAGES FOR USE IN THIS PROCESS

Dezzö S. Bartos, Solingen, Fed. Rep. of Germany, and Denis Fitzpatrick, County Cork, Ireland, assignors to Harcourt House, Dublin, Ireland

Filed Apr. 14, 1983, Ser. No. 485,064

Claims priority, application Ireland, Apr. 21, 1982, 943/82

Int. Cl.⁴ G01N *33/566, 33/563, 33/557, 53/00*

U.S. Cl. 436—517 **9 Claims**

1. A process for carrying out serological investigations according to the complement binding reaction comprising

reacting an immunological reagent selected from the group consisting of an antigen and an antibody not specific for erythrocytes in a patient's serum with the immunological binding partner to said immunological reagent to form an immunocomplex,

providing a quantity of complement in excess of that required for reaction with said immunocomplex,

reacting said immunocomplex with said complement,

determining by a kinetic method the excess complement from the reaction of said immunocomplex and said complement after incubation with erythrocytes.

4,619,904

AGGLUTINATING IMMUNOASSAY USING PROTEIN-COATED LIQUID DROPLETS

Ivar Giaever, Schenectady, and Charles R. Keese, Schoharie, both of N.Y., assignors to General Electric Company, Schenectady, N.Y. and National Foundation for Cancer Research, Inc., Bethesda, Md.

Filed Oct. 29, 1984, Ser. No. 665,867

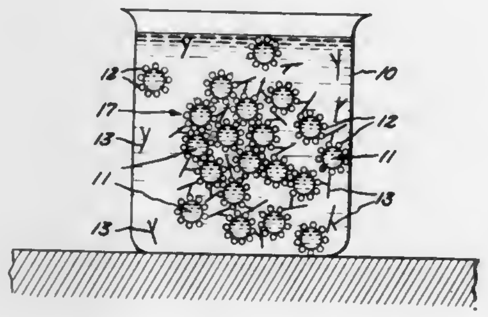
Int. Cl.⁴ G01N *33/543, 33/544;* **A61J** *5/00;* **B32B** *5/16*

U.S. Cl. 436—518 **21 Claims**

1. The diagnostic method for determining the presence or absence of select protein in a liquid sample comprising the steps of:

(a) preparing an emulsion in which a first liquid is dispersed as a large number of small protein-coated liquid droplets in a second liquid, said second liquid being an aqueous medium, said first liquid being relatively immiscible with said second liquid, and the protein coating said droplets including molecules of a protein having the property of interacting specifically with said select protein;

(b) contacting the protein-coated droplets in said emulsion with a solution containing proteinaceous material and



(c) determining the presence or absence of agglutination of the protein-coated droplets.

4,619,905

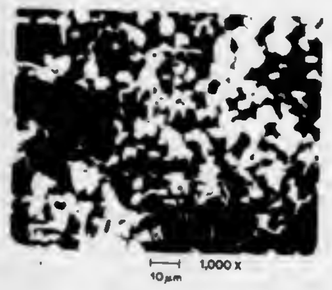
PROCESS FOR THE SYNTHESIS OF SILICON NITRIDE

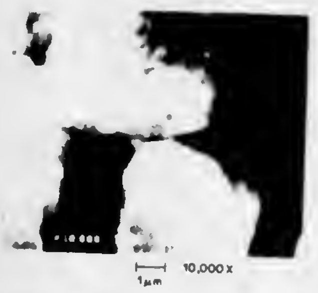
Samuel Natansohn, and Gary Czupryna, both of Sharon, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 24, 1984, Ser. No. 685,926

Int. Cl.⁴ C04B *35/58*

U.S. Cl. 501—97 **17 Claims**





1. A method for making silicon nitride powder comprising the steps:

Step 1 mixing carbon and silicon dioxide having a weight ratio from about 1 to about 4 to form a homogeneous powder mixture;

Step 2 heating the powder mixture from step 1 from about 1400° C. to about 1550° C. in a nitrogen stream for a time sufficient to form silicon nitride, the nitrogen stream having a velocity from about one to about 3 cm/sec, said carbon having an oil absorption value less than 100 ml/100 g; and

Step 3 heat treating the product from step 2 in air at about 600° C. to about 700° C. for a time sufficient to completely oxidize residual carbon.

16. A method for making silicon nitride powder in accordance with claim 1 wherein said velocity of said nitrogen stream of step 2 being sufficient to form a silicon nitride powder morphology characterized by the morphology depicted in FIGS. 1 and 2.

4,619,906

CATALYTIC COMPOSITE FOR CONVERSION OF HYDROCARBONS AND THE METHOD OF PREPARATION

Susan L. Lambert, Rolling Meadows; Randy J. Lawson, Arlington Heights; Russell W. Johnson, Villa Park, and Tery L. Barr, Northbrook, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 668,102, Nov. 5, 1984. This application May 15, 1985, Ser. No. 734,308

Int. Cl.⁴ B01J *29/10*

U.S. Cl. 502—66 **19 Claims**

1. A catalytic composite comprising a nonacidic zeolite bound within a support matrix, catalytically effective amounts of a Group VIII metal component, and sufficient surface-deposited alkali metal to provide a surface-deposited alkali metal index of at least 10.

19. A method of preparing a catalytic composite comprising compositing L-zeolite with a support matrix comprising alumina, sufficient potassium to provide a surface-deposited alkali metal index of from about 40 to about 500, and from about 0.01 to about 5.0 wt. % of platinum component based on the weight of the L-zeolite, the support matrix, the platinum component, and the surface-deposited potassium.

4,619,907

CHROMIUM PHOSPHATE CATALYST

Marvin M. Johnson, and Gerhard P. Nowack, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 578,394, Feb. 9, 1984, Pat. No. 4,543,436. This application Apr. 19, 1985, Ser. No. 725,053

Int. Cl.⁴ B01J *27/188;* **C01B** *15/16, 25/26*

U.S. Cl. 502—210 **2 Claims**

1. A catalyst composition for the alkylation of aromatic hydrocarbons and the dehydration of alcohols comprising a chromium (III) phosphate represented by the formula:

$$Cr\ (PO_4)_n \cdot (OH)_m$$

where n ranges from about 0.5 to about 0.9 and m ranges from about 1.5 to about 0.3.

2. A composition according to claim 1 where said chromium (III) phosphate is additionally in combination with aluminum phosphate.

4,619,908

NON-AGED INORGANIC OXIDE-CONTAINING AEROGELS AND THEIR PREPARATION

Chung-Ping Cheng, Mt. Kisco; Paul A. Iacobucci, Tarrytown, and Edward N. Walsh, New City, all of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 24, 1984, Ser. No. 685,698

Int. Cl.⁴ B01J *21/04, 21/08*

U.S. Cl. 502—214 **34 Claims**

1. A method of preparing inorganic oxide-containing aerogels comprising:

(a) hydrolyzing a compound comprising at least one metal dissolved in a solvent, to produce a gel;

(b) contact the hydrolyzed compound with an extraction fluid above the critical temperature and pressure of the fluid to extract the solvent and optionally,

(c) drying the gel.

4,619,909
PROCESS FOR PRODUCING MONOLITHIC CATALYST FOR PURIFYING EXHAUST GASES

Tetsuji Ono, Amagasaki; Shoichi Ichihara, Toyonaka; Tomohisa Ohta, Suita, and Sadao Terui, Ibogawa, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan
Filed Feb. 8, 1985, Ser. No. 699,552
Claims priority, application Japan, Feb. 10, 1984, 59-21872
Int. Cl.⁴ B01J *23/10, 23/42, 23/44, 23/46*
U.S. Cl. 502—303 **12 Claims**

1. A process for producing a monolithic catalyst for purification of exhaust gases, which comprises depositing at least one compound of a platinum-group element selected from the group consisting of platinum, palladium and rhodium on a powder of active alumina, then fixing the platinum-group element to the active alumina by calcination or reduction, dispersing the resulting material and a powder of cerium hydroxide in water, coating the resulting aqueous slurry composition on a monolithic support, and drying the coating monolithic support.

4,619,910
CATALYST FOR SELECTIVE CONVERSION OF SYNTHESIS GAS AND METHOD OF MAKING THE CATALYST

Paul N. Dyer, Allentown, and Ronald Pierantozzi, Macungie, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Jun. 5, 1985, Ser. No. 741,403
Int. Cl.⁴ B01J *21/04, 21/06, 23/46, 23/74*
U.S. Cl. 502—336 **18 Claims**

1. Method of making a catalyst comprising the following steps:

(a) treating an inert, inorganic metal oxide catalyst base material with a nonaqueous solution of a decomposable salt or organic compound of a group IVB metal and removing remaining said nonaqueous solution;

(b) impregnating the product of Step (a) with a nonaqueous solution of a decomposable salt or organic compound of a Fischer-Tropsch metal catalyst from the group consisting of cobalt, iron or ruthenium, and removing remaining said nonaqueous solution; and

(c) exposing the product of Step (b) to a reducing atmosphere; all while maintaining said material and said products under conditions sufficient to avoid hydrolysis, oxidation, and calcination thereof.

4,619,911
SORBANT AND PROCESS USING RICE HULL ASH COMPOSITIONS

John D. Goodwin, and Forrest W. Mulkey, both of Shreveport, La., assignors to Molly Maguire, Inc., Shreveport, La.
Continuation-in-part of Ser. No. 579,465, Feb. 13, 1984, Pat. No. 4,571,389, which is a continuation-in-part of Ser. No. 460,679, Jan. 24, 1983, Pat. No. 4,488,908. This application Feb. 10, 1986, Ser. No. 828,137
Int. Cl.⁴ B01J *20/04, 20/10*
U.S. Cl. 502—411 **11 Claims**

1. A process for sorbing liquids comprising contacting the liquid to be sorbed with a rice hull ash composition prepared by heating a mixture comprising

a. from about 45% to about 70% by weight of substantially water free rice hull ash which contains no more than about 4% carbon;

b. from about 10% to about 25% of an alkali metal hydroxide;

c. from about 2% to about 4% boric acid; and

d. from about 10% to about 25% by weight of water to a temperature of between about 70° C. and about 98° C. and maintaining the temperature in such range until the mixture becomes a solid mass, comminuting the solidified mass into discrete particles and expanding the discrete particles by rapid heating.

4,619,912
CATALYTIC CONVERTER SUBSTRATE

John I. Jalbing, Millington, and Richard T. Carriere, Davison, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sep. 3, 1985, Ser. No. 771,777
Int. Cl.⁴ B01J *35/04*
U.S. Cl. 502—439 **3 Claims**

1. A catalytic converter substrate formed of folded foil strips prevented from telescoping by retaining means engaging opposite ends of their folds characterized by two smooth foil strips and one corrugated foil strip arranged and folded together so that alternate folds of each of the smooth foil strips have spaced sides and juxtaposed abutting sides and interleave with those of the other smooth foil strip and so that all of the folds of the corrugated foil strip have spaced sides that sandwich the folds with juxtaposed abutting sides of both the smooth foil strips so as to define passages therebetween and whereby all the strips are adapted to be retained together against telescoping by engaging the retaining means at the opposite ends of all of their folds.

4,619,913
TREATMENTS EMPLOYING DRUG-CONTAINING MATRICES FOR INTRODUCTION INTO CELLULAR LESION AREAS

Edward E. Luck, and Dennis M. Brown, both of Menlo Park, Calif., assignors to Matrix Pharmaceuticals, Inc., Menlo Park, Calif.
Continuation-in-part of Ser. No. 615,008, May 29, 1984. This application May 21, 1985, Ser. No. 736,496
Int. Cl.⁴ A61K *9/00, 9/26, 9/22, 31/28*
U.S. Cl. 514—2 **12 Claims**

1. A proteinaceous composition comprising from 30% to 95% of collagen and/or fibrinogen dispersed in an aqueous medium as an amorphous flowable mass at a concentration of from about 5 to 75 mg/ml and from about 0.1 to 50 weight percent based on said collagen and/or fibrinogen of a cytotoxic drug.

4,619,914
GNRH ANTAGONISTS IIIB

Wylie W. Vale, Jr., and Jean E. F. Rivier, both of La Jolla, Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.
Continuation-in-part of Ser. No. 473,876, Mar. 10, 1983, abandoned, and Ser. No. 512,920, Jul. 12, 1983, abandoned. This application Feb. 23, 1984, Ser. No. 583,093
The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.
Int. Cl.⁴ A61K *37/43;* **C07K** *7/20*
U.S. Cl. 514—15 **21 Claims**

1. A peptide or a pharmaceutically acceptable nontoxic salt thereof, said peptide having the formula:

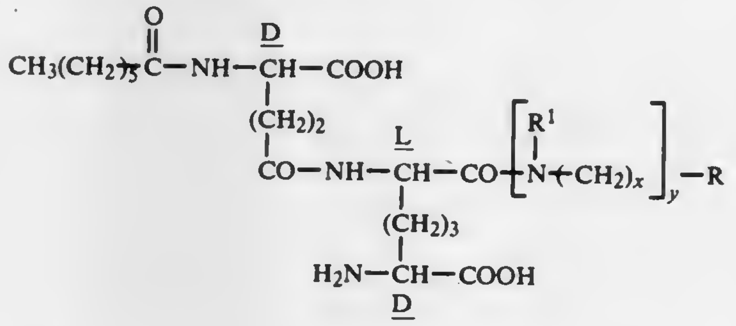
$$X\text{-}R_1\text{-}R_2\text{-}R_3\text{-}R_4\text{-}R_5\text{-}R_6\text{-}R_7\text{-Arg-Pro-}R_{10}$$

wherein X is hydrogen or an acyl group having 7 or less carbon atoms; R_1 is dehydro-Pro, D-pGlu, D-Phe, D-Trp, β-D-2NAL or β-D-1NAL; R_2 is 4-Cl-D-Phe, 4-F-D-Phe, 4-NO_2-D-Phe, C^{α}Me-4Cl-D-Phe, 3,4-Cl_2-D-Phe or 4-Br-D-Phe; R_3 is D-Trp or β-D-2NAL; R_4 is Ser, Orn, AAL or aBu; R_5 is Tyr, 3-F-Phe, 2-F-Phe, 3-I-Tyr, 3-CH_3-Phe, 2-CH_3-Phe, 3-Cl-Phe or 2-Cl-Phe; R_6 is D-Trp, D-Phe, D-Leu, D-Ile, D-Nle, D-Tyr, D-Val, D-Ala, D-Ser(OtBu), β-D-2NAL, (imBzl)D-His, 4-NH_2-D-Phe, D-Lys, D-Orn, D-Har, D-His, 4-guanido-D-Phe or D-Arg; R_7 is Leu or N^{α}Me-Leu; and R_{10} is Gly-NH_2, Gly-OCH_3, Gly-OCH_2CH_3, Sar-NH_2, D-Ala-NH_2 or NH-Y, with Y being lower alkyl, fluoro lower alkyl or NH-CONH-Q, where Q is H or lower alkyl; provided however that when R_1 is β-D-NAL, R_6 is 4-NH_2-D-Phe, D-Lys, D-Orn, D-Har, D-His, 4-guanido-D-Phe or D-Arg, and provided further that when R_5 is Tyr or 2-Cl-Phe, then either (a) R_4 is Orn, AAL or aBu or (b) R_1 is β-D-2NAL and R_6 is D-His or 4-guanido-D-Phe.

4,619,915
PEPTIDE-SUBSTITUTED HETEROCYCLIC IMMUNOSTIMULANTS

Jeffrey L. Ives, Guilford, Conn., assignor to Pfizer Inc., New York, N.Y.
Filed Oct. 19, 1984, Ser. No. 662,668
Int. Cl.⁴ A61K *37/02;* **C07K** *7/02, 5/06, 5/08, 5/10*
U.S. Cl. 514—17 **18 Claims**

1. A compound having the formula



or a pharmaceutically acceptable salt thereof wherein

R is an unsubstituted or substituted 5- or 6-membered heterocyclyl moiety selected from the group consisting of imidazolidinyl, pyrrolidinyl, piperidinyl, piperazinyl, pyridinyl, morpholinyl, thienyl, imidazolyl, pyrazolyl, thiomorpholinyl, thiazolyl, thiazolinyl, furyl, tetrahydrofuryl, pyrimidinyl and isoxazolyl;

and wherein the substituent is selected from the group consisting of methyl, oxo, carboxy or carbo(C_{1-4} alkoxy);

R^1 is hydrogen or (C_{1-2})alkyl;

x is 0 or an integer from 1 to 5; and y is 0 or 1; provided that when y is 0, said heterocyclyl moiety is linked to the —CO— group at its N atom.

4,619,916
TRIPEPTIDE COMPOUNDS CONTAINING PYROGLUTAMIC ACID AND TRYPTOPHAN, PROCESS FOR THEIR PRODUCTION AND THERAPEUTIC APPLICATIONS

Giovanni Di Stazio; Vincenzo Politi; Andrea Margonelli; Giovanna De Luca, and Mario Materazzi, all of Rome, Italy, assignors to Polifarma S.p.A., Rome, Italy
Filed Dec. 7, 1984, Ser. No. 679,477
Int. Cl.⁴ A61K *37/02;* **C07K** *5/08*
U.S. Cl. 514—18 **10 Claims**

1. Tripeptide compounds in a substantially pure form, formed by levorotatory amino acids of the formula

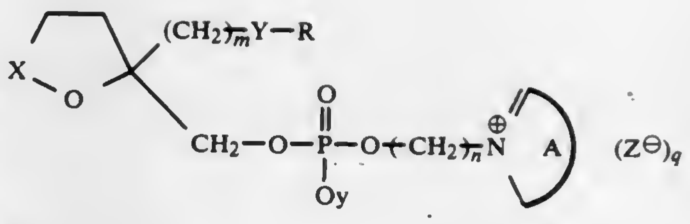
p-GLU-X-TRP

wherein X is a radical derived from an amino acid chosen from the group GLY, VAL, GLU, ASP, SER, ALA, PRO, LYS, ARG, ILE, LEU, bonded to p-GLU-TRP and by a peptide bond.

4,619,917
SUBSTITUTED 2-FURANYL- OR 5-OXO-2-FURANYL METHOXY PHOSPHORYL ALKYL CYCLIMMONIUM SALTS

Mark L. Lee, Lake Hopatcong, and Christian Jaeggi, Randolph, both of N.J., assignors to Sandoz Pharm. Corp., E. Hanover, N.J.
Continuation-in-part of Ser. No. 756,368, Jul. 18, 1985, abandoned, which is a continuation-in-part of Ser. No. 659,249, Oct. 10, 1984, abandoned. This application Oct. 31, 1985, Ser. No. 793,367
Int. Cl.⁴ A61K *31/665, 31/675;* **C07F** *9/58, 9/65*
U.S. Cl. 514—77 **24 Claims**

1. A compound of formula I:



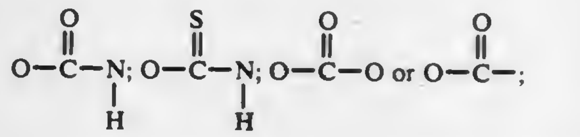
I

where

R is n-C_{12}–C_{20} alkyl, alkenyl or alkynyl; or C_{12}–C_{24} *l alkoxyalkyl;*

X is CH_2 or C═O;

Y is CH_2; O;



$$O{-}\overset{\overset{O}{\|}}{C}{-}\underset{\underset{H}{|}}{N};\ O{-}\overset{\overset{S}{\|}}{C}{-}\underset{\underset{H}{|}}{N};\ O{-}\overset{\overset{O}{\|}}{C}{-}O \text{ or } O{-}\overset{\overset{O}{\|}}{C}{-};$$

A, together with the nitrogen atom, forms an unsubstituted 5- or 6-membered, monocyclic ring which may optionally contain one further hetero atom selected from nitrogen and sulfur; a 5- or 6-membered, monocyclic ring which may optionally contain one further hetero atom selected from nitrogen and sulfur and which is either mono-, di- or trisubstituted by C_1–C_4 alkyl or monosubstituted by CF_3, halo, COOH or $COOCH_3$; an unsubstituted 10-membered, bicyclic ring which may optionally contain one further nitrogen atom; or a 10-membered, bicyclic ring which may optionally contain one further nitrogen atom and which is either mono-, di- or trisubstituted by C_1–C_4 alkyl or monosubstituted by CF_3, halo, COOH or $COOCH_3$;

$Z^{\ominus}$ is a pharmaceutically acceptable anion;

m is an integer 1 or 2;

n is an integer 2 to 8; and

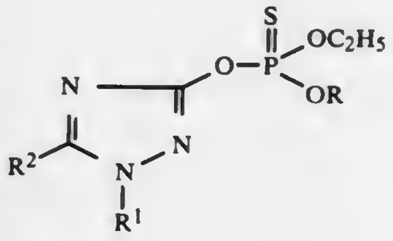
y is ⊖ and q is O or y is H and q is 1.

24. A pharmaceutical composition useful in inhibiting PAF-induced blood platelet aggregation, PAF-mediated bronchoconstriction and extravasation, PAF-induced hypotension and PAF-induced ischemic bowel disease comprising a pharmaceutically acceptable carrier and a therapeutically effective amount of a compound according to claim 1.

4,619,918
TRIAZOLYL THIONOPHOSPHATES AND INSECTICIDAL AND NEMATICIDAL USE THEREOF

Fritz Maurer, Wuppertal, and Bernhard Homeyer, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Nov. 4, 1985, Ser. No. 794,815
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1984, 3440913
Int. Cl.⁴ A01N *57/16;* **C07F** *9/65*
U.S. Cl. 514—93 **8 Claims**

1. A triazol-3-yl thionophosphate of the formula



in which

R represents i-propyl or sec.-butyl,

R^1 represents alkyl or aryl and

R^2 represents halogen.

7. A method of combating insects or nematodes which comprises applying to such insects or nematodes or to a habitat thereof an insecticidally or nematicidally effective amount of a compound according to claim 1.

4,619,919

TREATMENT OF HYPERTENSION

Elijah H. Gold, West Orange, and Wei K. Chang, Livingston, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 137,935, Apr. 7, 1980, abandoned, which is a continuation-in-part of Ser. No. 89,077, Oct. 29, 1979, abandoned, which is a continuation-in-part of Ser. No. 944,516, Sep. 20, 1978, abandoned. This application Nov. 14, 1983, Ser. No. 551,387

Int. Cl.^{4} A61K *31/615*

U.S. Cl. 514—166 **10 Claims**

1. A method of eliciting a hypotensive effect while avoiding the concomitant liability of toxic side-effects which comprises administering to a patient in need of antihypertensive therapy an amount sufficient to lower the blood pressure, but insufficient to cause said side-effects, of (−)-5-{(R)-1-hydroxy-2-[(R)-1-methyl-3-phenylpropyl)amino]ethyl}salicylamide or a pharmaceutically acceptable salt thereof, substantially free from its stereoisomers together with a pharmaceutically acceptable carrier.

4,619,920

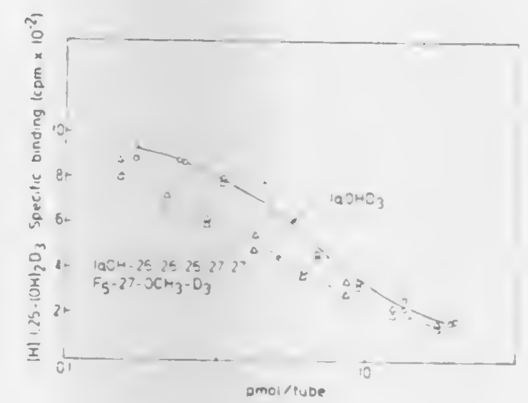
26,26,26,27,27-PENTAFLUORO-1α-HYDROXY-27-METHOXYVITAMIN D_3

Hector F. DeLuca, Madison, Wis.; Nobuo Ikekawa; Yoshiro Kobayashi, both of Tokyo, Japan, and Yoko Tanaka, Delmar, N.Y., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

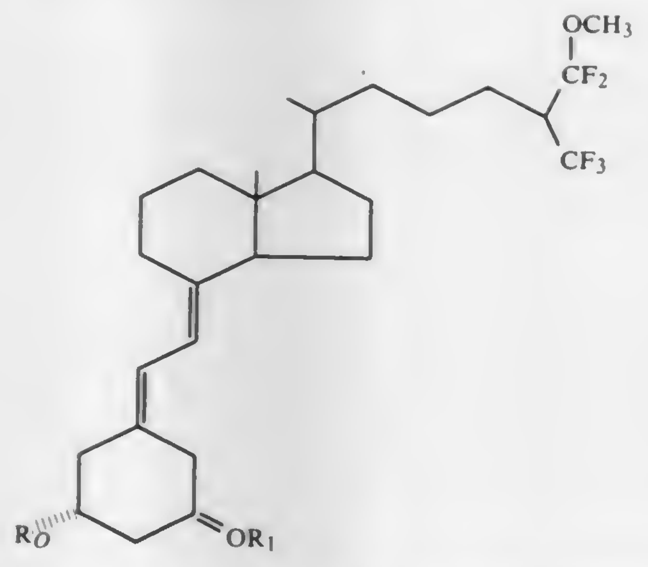
Filed Sep. 16, 1985, Ser. No. 776,342

Int. Cl.^{4} C07J *9/00*

U.S. Cl. 514—167 **8 Claims**



1. Compounds having the formula



where R and R_1 are selected from the group consisting of hydrogen and an acyl group having from 1 to about 4 carbon atoms.

3. A pharmaceutical composition comprising at least one compound of claim 1 together with at least one pharmaceutically acceptable excipient.

4,619,921

POLYHALOGENO-STEROIDS

Jaroslav Kalvoda, Binningen, and Georg Anner, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 75,939, Sep. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 836,347, Sep. 26, 1977, abandoned, which is a continuation-in-part of Ser. No. 748,337, Dec. 7, 1976, abandoned. This application Apr. 20, 1984, Ser. No. 601,746

Claims priority, application Switzerland, Dec. 12, 1975, 16151/75; Luxembourg, Sep. 29, 1976, 75903

Int. Cl.^{4} A61K *31/56*

U.S. Cl. 514—180 **2 Claims**

1. A compound which is 21-chloro-6α,9α-difluoro-11β,17α-dihydroxy-16β-methyl-pregna-1,4-diene-3,20-dione 17-propionate.

2. An anti-inflammatory pharmaceutical composition comprising an anti-inflammatory effective amount of the compound of claim 1 and a pharmaceutically acceptable carrier.

4,619,922

6α, 16α-DIMETHYL CORTICOIDS

Klaus Annen, Munster-Albachten; Henry Laurent, Berlin; Helmut Hofmeister, Berlin, and Michael Töpert, Berlin, all of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Jan. 2, 1985, Ser. No. 688,134

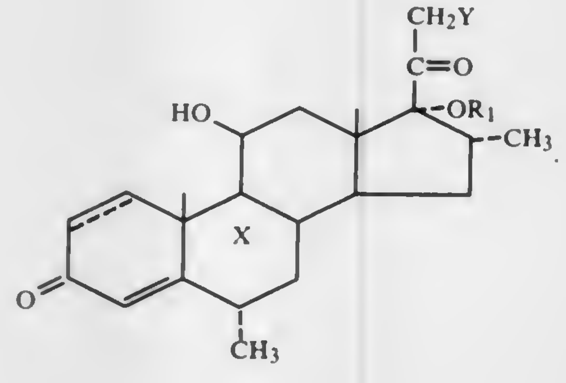
Claims priority, application Fed. Rep. of Germany, Jan. 2, 1984, 3400188

The portion of the term of this patent subsequent to Nov. 26, 2002, has been disclaimed.

Int. Cl.^{4} C07J *5/00*

U.S. Cl. 514—180 **11 Claims**

1. A 6α,16α-Dimethyl corticoid of the formula



wherein

the bond is a single bond or a double bond and

X is a hydrogen atom, a fluorine atom, a chlorine atom, or a bromine atom,

R_1 is a formyl group, an alkanoyl group or alkoxyalkyl group of 2–8 carbon atoms, or a benzoyl group, and

Y is a chlorine atom.

10. A method for alleviating inflammation which comprises topically administering an anti-inflammatory effective amount of a compound according to claim 1 in a pharmaceutically acceptable carrier.

4,619,923

METAL PROTOPORPHYRINS IN THE CONTROL OF TRYPTOPHAN METABOLISM

Attallah Kappas, and George S. Drummond, both of New York, N.Y., assignors to The Rockefeller University, New York, N.Y.

Filed Jan. 14, 1985, Ser. No. 691,460

Int. Cl.^{4} A61K *31/555*

U.S. Cl. 514—185 **3 Claims**

1. A method of increasing the rate of tryptophan metabolism in the liver of humans in need of such increase which comprises parenteral administration of an amount of tin protoporphyrin which is effective to increase such rate.

4,619,924

2-ALKYLTHIOPENEM DERIVATIVES

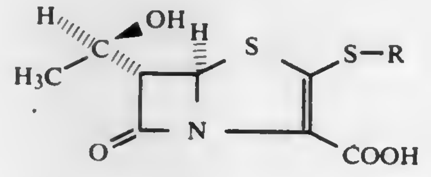
Ernest S. Hamanaka, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 610,916, May 18, 1984, abandoned, which is a continuation-in-part of Ser. No. 506,475, Jun. 21, 1983, abandoned. This application Nov. 27, 1984, Ser. No. 675,258

Int. Cl.^{4} C07D *499/00;* **A61K** *31/425*

U.S. Cl. 514—195 **24 Claims**

1. A compound of the formula



or a pharmaceutically-acceptable salt thereof, wherein:

R is trans-1-oxo-3-thiolanyl, cis-1-oxo-3-thiolanyl, 1,1-dioxo-3-thiolanyl, trans-1-oxo-3-thianyl, cis-1-oxo-3-thianyl, trans-1-oxo-3-thiethanyl, 1,1-dioxo-4-thianyl, 4-thianyl, trans-1-oxo-4-thianyl, cis-1-oxo-4-thianyl, cis-1-oxo-3-thietanyl or 1-oxo-3-thiolanyl.

4,619,925

3-PROPENYL CEPHALOSPORIN DERIVATIVES

Hideaki Hoshi, Chiba, and Takayuki Naito, Kawasaki, both of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Filed Nov. 8, 1985, Ser. No. 796,146

Int. Cl.^{4} C07D *501/22;* **A61K** *31/545*

U.S. Cl. 514—200 **4 Claims**

1. 7β-[D-2-Amino-2-(3-hydroxyphenyl)acetamido]-3-[(Z)-1-propen-1-yl]-3-cephem-4-carboxylic acid and the pharmaceutically acceptable esters, acid addition, and metal salts thereof, said salts being antibacterially effective on oral or parenteral administration.

4,619,926

PHARMACEUTICAL PREPARATIONS FOR TOPICAL APPLICATION WHICH CONTAIN SALTS OF ALKANECARBOXYLIC ACIDS, NOVEL CARBOXYLIC ACID SALTS AND THE PRODUCTION THEREOF

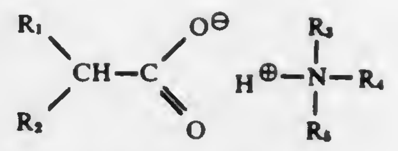
Theodor Eckert, Münster, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 517,606, Jul. 27, 1983, Pat. No. 4,551,475, which is a division of Ser. No. 236,097, Feb. 20, 1981, Pat. No. 4,407,824. This application Aug. 14, 1985, Ser. No. 765,416

Int. Cl.^{4} A61K *31/42, 31/55, 31/395, 31/535*

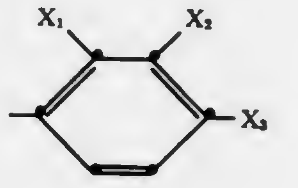
U.S. Cl. 514—210 **3 Claims**

1. A pharmaceutical preparation for topical application which contains an antiinflammatory and analgesically effective amount of a compound of the formula



(I)

wherein R_1 is a group of the formula



(IIa)

wherein X_1 is hydrogen, X_2 is chlorine, and X_3 is 3-pyrrolin-1-yl, and R_2 is methyl; or X_1 is 2,6-dichloroanilino, and X_2 and X_3 are hydrogen, and R_2 is hydrogen; and one of R_3, R_4, and R_5 is hydrogen, C_1–C_4 alkyl, hydroxy-C_1–C_4 alkyl, and the other two of R_3, R_4, and R_5 together form a 4 to 7 membered 3-oxaalkylene; and a pharmaceutically acceptable carrier.

4,619,927

NOVEL NITROPYRAZINYL- AND NITROPYRIDINYL-SUBSTITUTED PIPERAZIN-3-ONE AND HEXAHYDRO-1H-1,4-DIAZEPIN-5-ONE COMPOUNDS USEFUL AS ADJUNCTS TO RADIATION THERAPY

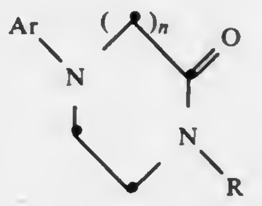
Edward L. Engelhardt, Gwynedd Valley, and Walfred S. Saari, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 27, 1985, Ser. No. 716,884

Int. Cl.^{4} A61K *31/55, 31/495;* **C07D** *401/04*

U.S. Cl. 514—218 **7 Claims**

1. A compound of the formula



I

wherein n is 1 or 2 and R is hydrogen or hydroxyethyl; and Ar is an aryl group selected from 3-nitro-2-pyrazinyl and 3-nitro-4-pyridyl.

2. A method for enhancing the therapeutic effect of radiation which comprises administering to a patient in need of such radiation treatment an effective amount of a compound defined in claim 1.

4,619,928

COMPOSITIONS FOR TREATING TUMORS

Homer A. Burch, and Frank F. Ebetino, both of Norwich, N.Y., assignors to Norwich Eaton Pharmaceuticals, Inc., Norwich, N.Y.

Filed Dec. 20, 1984, Ser. No. 683,850

Int. Cl.^{4} A61K *31/535*

U.S. Cl. 514—236 **1 Claim**

1. A pharmaceutical composition, in a dosage form selected from sterile solutions, suspensions, suppositories, tablets or capsules, comprising from about 10 mg to about 2000 mg of the compound ethyl 4-hydroxy-2-((5-morpholinomethyl-2-oxo)-3-oxazolidinyliminomethyl)furo(2,3-b)pyridine-5-carboxylate, or

a pharmaceutically-acceptable salt or hydrate or mixture thereof, and a pharmaceutical carrier.

4,619,929

PHENYLPIPERAZINE DERIVATIVES OF HETARYLPHENOLS AND HETARYLANILINES, THEIR PREPARATION, AND THERAPEUTIC AGENTS CONTAINING THESE COMPOUNDS

Peter C. Thieme, Wachenheim; Gerd Steiner, Kirchheim; Wolfgang Rohr, Wachenheim; Dieter Lenke, Ludwigshafen; Josef Gries, Wachenheim; Harald Weifenbach; Hans-Juergen Teschendorf, both of Ludwigshafen; Hans P. Hofmann, Limburgerhof, and Horst Kreiskott, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 339,507, Jan. 15, 1982, abandoned. This application Mar. 19, 1984, Ser. No. 590,746

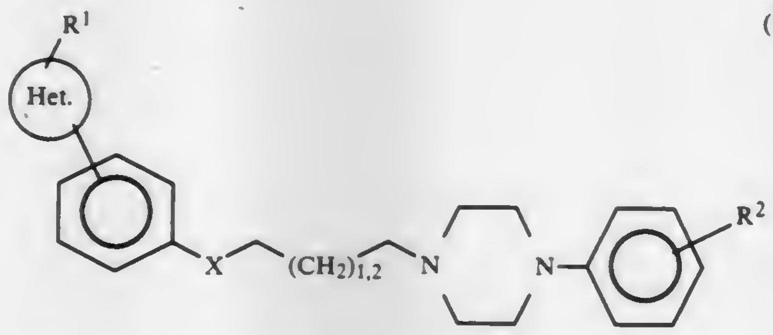
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1981, 3101502

The portion of the term of this patent subsequent to Oct. 12, 1999, has been disclaimed.

Int. Cl.⁴ C07D *413/12, 403/12, 417/12;* **A61K** *31/495*

U.S. Cl. 514—252 **10 Claims**

1. A compound of the formula I



(I)

where R^1 is hydrogen or methyl, R^2 is fluorine or methoxy, X is oxygen or an NH group, and the heterocyclic structure Het. is 1,3,4-oxadiazolyl, triazolyl or imidazolyl attached in the 2-,3- or 4-position of the phenyl ring, and their physiologically tolerated addition salts with acids.

4,619,930

ANTIPSYCHOTIC CYCLIC IMIDE DERIVATIVES OF 2-(4-BUTYLPIPERAZIN-1-YL)PYRIDINES, COMPOSITIONS AND USE

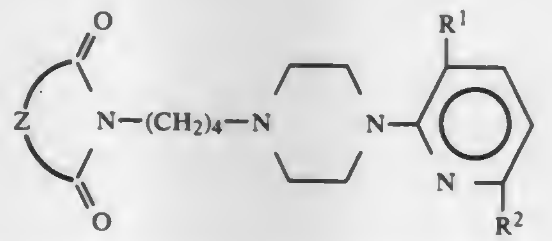
James S. New; Walter G. Lobeck, Jr., both of Evansville, and Joseph P. Yevich, Newburgh, all of Ind., assignors to Bristol-Myers Company, New York, N.Y.

Filed Jan. 16, 1985, Ser. No. 691,952

Int. Cl.⁴ A61K *31/495;* **C07D** *417/14, 513/10*

U.S. Cl. 514—252 **9 Claims**

1. A compound of Formula I



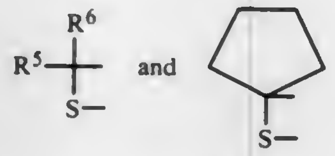
I

and the pharmaceutically acceptable acid addition salts thereof wherein

R^1 is selected from formyl and carbalkoxy

R^2 is selected from hydrogen, halogen, lower alkyl, or lower alkoxy

Z is selected from



R^5 and R^6 are independently chosen from hydrogen, lower alkyl, or phenyl.

8. The method for ameliorating an undesirable psychotic state in a mammal comprising administration to said mammal of an effective antipsychotic amount of a compound claimed in claim 1.

4,619,931

[[4-[4-(4-PHENYL-1-PIPERAZINYL)PHENOXYMETHYL]-1,3-DIOXOLAN-2-YL]METHYL]-1H-IMIDAZOLES AND 1H-1,2,4-TRIAZOLES

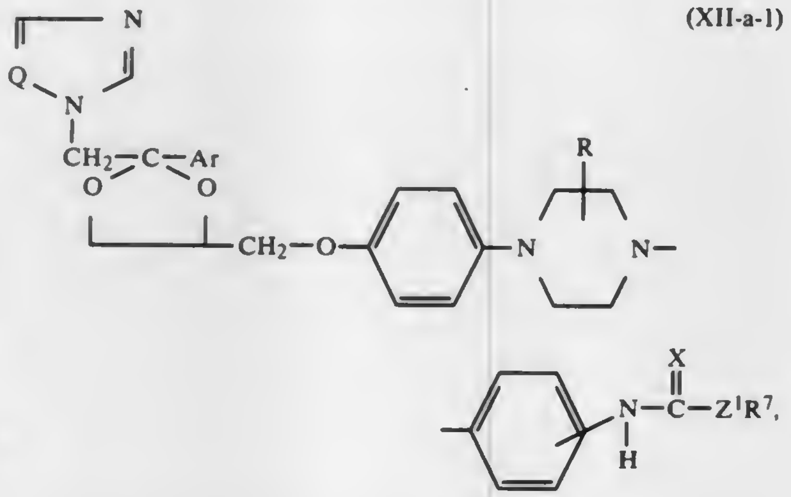
Jan Heeres, Vosselaar; Raymond A. Stokbroekx, Beerse, and Leo J. J. Backx, Arendonk, all of Belgium, assignors to Janssen Pharmaceutica, N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 470,405, Feb. 28, 1983, abandoned. This application Jan. 9, 1984, Ser. No. 569,122

Int. Cl.⁴ C07D *403/14;* **A61K** *31/495*

U.S. Cl. 514—252 **3 Claims**

1. A chemical compound having the formula



(XII-a-1)

a pharmaceutically acceptable acid-addition salt or a stereochemically isomeric forms thereof, wherein

Q is N or CH;

Ar is phenyl or substituted phenyl, said substituted phenyl having from 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkyloxy, nitro, amino and trifluoromethyl, provided that trinitrophenyl is excluded;

R is hydrogen or lower alkyl; and

X is O, S or NR^2 said R^2 being hydrogen or lower alkyl;

Z^1 is O or NR^8, said R^8 being hydrogen, Ar or lower alkyl optionally substituted by Ar, and

R^7 is hydrogen, Ar, amino or lower alkyl optionally substituted by a member selected from the group consisting of hydroxy, Ar-amino, lower alkylamino or carboxy or substituted with up to two lower alkyloxy radicals, provided that:

Z^1 is other than O where R^7 is hydrogen; and
where R^7 is amino, Z^1 is other than NH or O.

4,619,932

NOVEL CARBOSTYRIL DERIVATIVES, PROCESS FOR PRODUCING THEREOF AND PHARMACEUTICAL COMPOSITION CONTAINING THE SAME

Kazuo Banno; Takafumi Fujioka; Masaaki Osaki, and Kazuyuki Nakagawa, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Japan

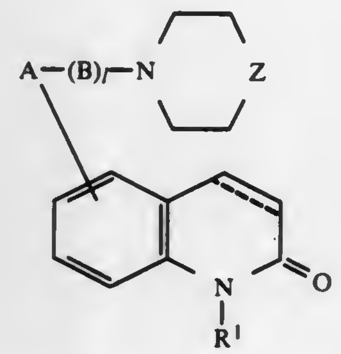
Continuation of Ser. No. 240,306, Mar. 4, 1981. This application Mar. 9, 1983, Ser. No. 473,641

Claims priority, application Japan, Mar. 6, 1980, 55-28805; Aug. 20, 1980, 55-115022

Int. Cl.⁴ C07D *401/06, 215/16;* **A61K** *31/495, 31/47*

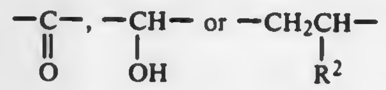
U.S. Cl. 514—253 **34 Claims**

1. A carbostyril derivative represented by formula (1)



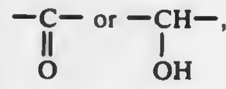
(1)

where R^1 is a hydrogen atom, a lower alkyl group, a phenyl-lower alkyl group, a lower alkenyl group or a lower alkynyl group; A is a group of the formula



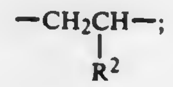
$$-\underset{\overset{\|}{O}}{C}-,\ -\underset{\overset{|}{OH}}{CH}-\ \text{or}\ -CH_2\underset{\overset{|}{R^2}}{CH}-$$

wherein R^2 is a hydrogen atom or a lower alkyl group; B is a lower alkylene group; l is 1 when A is a group of the formula



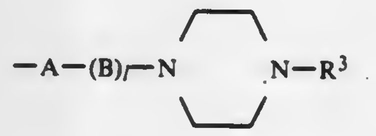
$$-\underset{\overset{\|}{O}}{C}-\ \text{or}\ -\underset{\overset{|}{OH}}{CH}-,$$

or l is 0 or 1 when A is a group of the formula

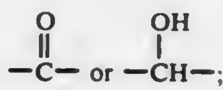


$$-CH_2\underset{\overset{|}{R^2}}{CH}-;$$

Z is a group of the formula $N\text{-}R^3$ wherein R^3 is an unsubstituted or a substituted-phenyl group having 1 to 3 substituents, on the phenyl ring, selected from the group consisting of a halogen atom, a lower alkyl group, a lower alkoxy group, a lower alkoxy-carbonyl group, a carboxy group, a lower alkylthio group, a lower alkanoyl group, a hydroxy group, a nitro group, an amino group and a cyano group, provided that no more than 2 of said substituents is a nitro group, or R^3 is a substituted-phenyl group having a lower alkylenedioxy group as the substituent on the phenyl ring, a phenyl-lower alkyl group or a 1,2,3,4-tetrahydronaphthyl group; and the carbon-carbon bond between the 3- and 4-positions in the carbostyril skeleton is a single or double bond, or a pharmaceutically acceptable salt thereof, provided that, when R^1 is a hydrogen atom, and the substitution position of the side-chain of the formula

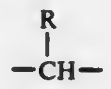


wherein A is a group of the formula



$$-\overset{\overset{O}{\|}}{C}-\ \text{or}\ -\overset{\overset{OH}{|}}{CH}-;$$

B is a group of the formula



$$-\overset{\overset{R}{|}}{CH}-$$

wherein R is a hydrogen atom or a lower alkyl group; l is 1; and R^3 is an unsubstituted phenyl group or a phenyl-lower alkyl group, is the 6-position in the carbostyril skeleton, then the carbon-carbon bond between the 3-and 4-positions in the carbostyril skeleton is a double bond.

4,619,933

6-ARYL PYRIMIDINES FOR TREATING APLASTIC ANEMIA

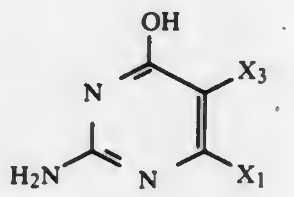
Dale A. Stringfellow, and Patricia E. Fast, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 281,820, Jul. 9, 1981, abandoned, which is a continuation of Ser. No. 136,436, Apr. 20, 1980, abandoned, which is a division of Ser. No. 79,850, Sep. 28, 1979, abandoned. This application Aug. 25, 1983, Ser. No. 526,221

Int. Cl.⁴ A61K *31/505*

U.S. Cl. 514—272 **4 Claims**

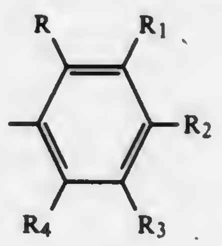
1. A process for treating aplastic anemia comprising the systemic administration of an effective amount for treating aplastic anemia of a compound of the formula:



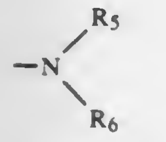
wherein X_3 is equal to X, X_4, or X_5 wherein X_4 is fluoro, chloro, bromo or iodo, and X_5 is mono-, di- or trihalo methyl, mono-, di- or trifluoroethyl, perfluoropropyl and X is alkyl of from 1 to 3 carbon atoms, inclusive, 2-propynyl, 2-propenyl, and alkyloxyacyl where alkyl is as defined above, and X_1 is a member selected from the group consisting of:

(a) phenyl,

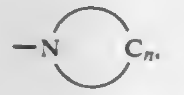
(b) a monosubstituted phenyl of the formula:



wherein provided that only one of groups R, R_1, R_2, R_3, R_4 is other than hydrogen and R or R_4 is alkyl of from 1 to 8 carbon atoms, inclusive, including isomeric forms, alkoxy of from 1 to 8 carbon atoms, inclusive, including isomeric forms, fluoro, chloro, bromo, iodo, or nitro; R_1 or R_3 is fluoro, chloro, bromo, iodo, nitro, trifluoromethyl or alkoxy of from one to eight carbon atoms, alkoxyethyloxy wherein alkoxy is from 1 to 5 carbon atoms, inclusive, or

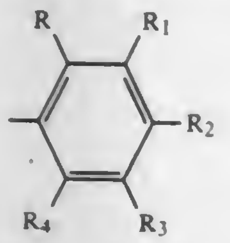


wherein R_5 and R_6 are the same or different and are alkyl of from 1 to 8 carbon atoms, inclusive, benzyl or taken together with —N< are a saturated cycloalkylamino group



wherein n′ is 3, 4, 5 or 6 or dialkyl substituted cycloalkylamino wherein each alkyl is from 1 to 3 carbon atoms, inclusive; and R_2 is chloro, fluoro, bromo, iodo, or alkyl of from 1 to 3 carbon atoms, inclusive,

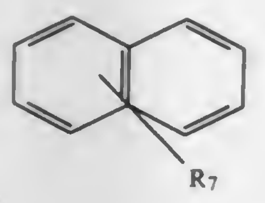
(c) a disubstituted phenyl of the formula:



wherein any two of R, R_1, R_2, R_3 and R_4 are not hydrogen and are the same or different and are fluoro, chloro, bromo, iodo, alkyl of from 1 to 8 carbon atoms, including isomeric forms, alkoxy of from 1 to 8 carbon atoms, inclusive isomeric forms, nitro and trifluoromethyl;

(d) a trihalo substituted phenyl wherein halo is chloro, bromo, iodo or fluoro,

(e) α-naphthyl of the formula:



wherein R is substituted in either ring and is hydrogen, alkyl of from 1 to 8 carbon atoms, inclusive, including isomeric forms, alkoxy of from 1 to 8 carbon atoms, inclusive, including isomeric forms, fluoro, chloro, iodo, bromo or nitro,

(f) 2-furyl,
(g) 3-pyridyl,
(h) 2-pyridyl and
(i) 2-pyrazyl,

or a salt thereof in association with a pharmaceutical carrier to a human or animal having aplastic anemia.

4,619,934

COUGH/COLD MIXTURES COMPRISING NON-STEROIDAL ANTI-INFLAMMATORY DRUGS

Abraham Sunshine, New York; Eugene M. Laska, Larchmont, and Carole E. Siegel, Mamaroneck, all of N.Y., assignors to Analgesic Associates, Larchmont, N.Y.

Division of Ser. No. 598,502, Apr. 9, 1984, Pat. No. 4,552,899. This application Jul. 8, 1985, Ser. No. 752,546

Int. Cl.⁴ A61K *31/19, 31/44, 31/435, 31/445*

U.S. Cl. 514—277 **17 Claims**

15. A method for the treatment of cough, cold, cold-like and/or flu symptoms in a mammalian organism in need of such treatment, comprising administering to such organism a symptom relieving, antihistaminically, analgesically and anti-inflammatorily effective amount of (i) at least one of the propionic acid NSAIDs, ibuprofen, naproxen, benoxaprofen, flurbiprofen, fenoprofen, fenbufen, ketoprofen, indoprofen, pirprofen, carprofen, oxaprozin, pranoprofen, miroprofen, tioxaprofen, suprofen, alminoprofen, tiaprofenic acid, fluprofen, bucloxic acid, or pharmaceutically acceptable salt thereof, in combinatory immixture with (ii) at least one antihistamine or pharmaceutically acceptable salt thereof.

4,619,935

STABLE ONCOLYTIC FORMULATIONS

Robert L. Robison, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 476,077, Mar. 17, 1983, abandoned, which is a continuation-in-part of Ser. No. 399,654, Jul. 19, 1982, abandoned. This application Oct. 10, 1984, Ser. No. 659,389

Int. Cl.⁴ A61K *31/44*

U.S. Cl. 514—281 **8 Claims**

1. A formulation comprising a stable, sterile, ready-to-use solution suitable for i.v. injection containing about 1–2 mg./ml. of a salt of vincristine, about 10–100 mg./ml. of a polyol selected from the group consisting of mannitol, sorbitol, and sucrose, an acetate buffer in the range of about 0.02–0.0005M to maintain the pH of the solution between 3.0 and 5.0, about 1–2 mg./ml. of a preservative selected from the group consisting of methyl paraben and propyl paraben, singly or in combination, and water.

4,619,936

PHARMACEUTICAL COMPOSITIONS HAVING APPETITE REDUCING ACTIVITY AND A PROCESS FOR THEIR PREPARATION

Iván Balkányi, Tündérlaki u. 6., H-1016 Budapest; Rudolf Szebeni, Béke u. 48., H-2131 Alsogöd; Ferenc Hadi, Dózsa György u. 13., H-2626 Nagymaros; Miklós Marsó , Árpád fejedelem u. 55/a., H-1036 Budapest; Éva Kéri, Kazinczy u.7.II.5., H-1075 Budapest, and Béla Köszegi, Corvin krt. 52., H-1192 Budapest, all of Hungary

PCT No. PCT/HU84/00042, § 371 Date Apr. 19, 1985, § 102(e) Date Apr. 19, 1985, PCT Pub. No. WO85/00970, PCT Pub. Date Mar. 14, 1985

PCT Filed Aug. 24, 1984, Ser. No. 742,466

Claims priority, application Hungary, Aug. 26, 1983, 2993

Int. Cl.⁴ A61K *31/44*

U.S. Cl. 514—282 **3 Claims**

1. A method for exerting an anorexigenic effect in an animal subject which comprises orally administering to said subject an anorexigenic effective amount of nalorphine or a pharmaceutically acceptable salt thereof.

4,619,937

SATURATED BICYCLIC LACTAM ACIDS AND DERIVATIVES AS COGNITION ACTIVATORS

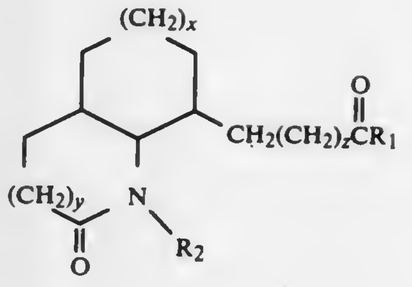
Donald E. Butler, Ann Arbor, and Yvon J. L'Italien, Plymouth, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 576,248, Feb. 2, 1984, abandoned. This application Jan. 7, 1985, Ser. No. 687,181

Int. Cl.⁴ A61K *31/40, 31/405;* **C07D** *209/34, 209/52*

U.S. Cl. 514—323 **13 Claims**

1. A compound having the structural formula



where

x is zero, one, two, or three, y is zero and z is zero or one;

R_1 is selected from

—OH, or pharmaceutically acceptable metal ammonium and amine acid addition salts thereof; and

—OR_3, where R_3 is alkyl of from one to six carbon atoms, phenyl, or benzyl;

and R_2 is hydrogen.

4,619,938

FATTY ACID DERIVATIVES OF AMINOALKYL NICOTINIC ACID ESTERS AND PLATELET AGGREGATION INHIBITORS

Keiko Takahashi; Yasushi Suwabe, both of Tokyo, and Toshio Wakabayashi, Tama, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

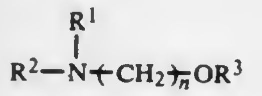
Filed Mar. 19, 1985, Ser. No. 713,496

Claims priority, application Japan, Mar. 21, 1984, 59-53796; Feb. 15, 1985, 60-26533

Int. Cl.⁴ A61K *31/455;* **C07D** *213/80*

U.S. Cl. 514—356 **7 Claims**

1. Alkanolamine derivative represented by the general formula [I]



$$R^2-\overset{R^1}{\overset{|}{N}}\!\left(CH_2\right)_n OR^3 \qquad [I]$$

wherein R^1 represents hydrogen atom or a lower alkyl group, R^2 represents an acyl group derived from α-linolenic acid, β-linolenic acid, dihomo-β-linolenic acid, 5,8,11,14,17-eicosapentaenic acid or 7,10,13,16,19-docosapentaenic acid, R^3 represents an acyl group derived from nicotinic acid and n represents 2 or 3.

5. A platelet aggregation inhibitory pharmaceutical composition comprising an effective platelet aggregation inhibitory amount of an alkanolamine derivative according to claim **1** and a pharmaceutical carrier therefor.

4,619,939

PROCESS FOR REDUCING INTRAOCULAR PRESSURE

Thomas H. Maren, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Continuation of Ser. No. 442,672, Nov. 18, 1982, abandoned, which is a continuation-in-part of Ser. No. 319,093, May 29, 1981, abandoned, which is a continuation-in-part of Ser. No. 167,220, Jul. 9, 1980, abandoned. This application May 3, 1985, Ser. No. 729,907

Int. Cl.⁴ A61K *31/41*

U.S. Cl. 514—363 **13 Claims**

1. A method for reducing aqueous humor formation and intraocular pressure consisting of topically applying to the cornea an amount of an aqueous solution of from about 0.1% to about 5%, by weight, of a carbonic anhydrase inhibitor and for a time sufficient to effect a reduction of aqueous humor formation and intraocular pressure, wherein said carbonic anhydrase inhibitor is a pharmaceutically acceptable sulfonamide having the following properties:

(a) sufficiently water soluble to form at least a 3 mM solution at pH 8.2 or pKa of not greater than 7.3;
(b) ether partition coefficient of at least 1.0;
(c) chloroform partition coefficient of at least 0.01;
(d) dissociation constant against carbonic anhydrase of not more than 3×10^{-8} molar;
(e) first order rate constant for penetration of said sulfonamide through a living rabbit cornea of at least 0.005 hr^{-1};
(f) not injurious to the cornea; and
(g) stable in solution and in contact with the cornea.

4,619,940

COMBATING FUNGI WITH NOVEL AZOLYL-TETRAHYDROFURAN-2-YLIDENE-METHANES

Hans-Ludwig Elbe, Wuppertal; Manfred Jautelat; Karl H. Büchel, both of Burscheid; Wilhelm Brandes, Leichlingen; Gerd Hänssler, and Paul Reinecke, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

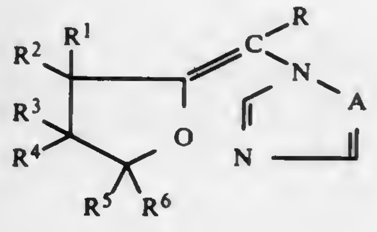
Filed Oct. 9, 1984, Ser. No. 658,941

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1983, 3336861

Int. Cl.⁴ A01N *43/50, 43/653;* **C07D** *405/06*

U.S. Cl. 514—383 **13 Claims**

1. An azolyl-tetrahydrofuran-2-ylidene-methane derivative of the formula



in which

A represents a nitrogen atom or the CH group,

R represents straight-chain or branched alkyl with 1 to 12 carbon atoms, or represents straight-chain or branched alkenyl or alkinyl with in each case 2 to 12 carbon atoms, or represents straight-chain or branched alkoxyalkyl or alkylthioalkyl with in each case 1 to 6 carbon atoms in each alkyl part, or represents halogenoalkenyl, halogenoalkoxyalkyl or halogenoalkylthioalkyl with in each case 1 to 6 carbon atoms in each alkyl part and with in each case 1 to 6 identical or different halogen atoms or represents halogenoalkenyl with 2 to 6 carbon atoms and 1 to 5 identical or different halogen atoms, or represents phenylakyl, phenoxyalkyl or phenylthioalkyl with in each case 1 to 4 carbon atoms in the alkyl part and in each case optionally monosubstituted or polysubstituted in the phenyl part by identical or different substituents selected from the group consisting of halogen, alkyl, alkoxy and alkylthio with in each case 1 to 4 carbon atoms; halogenoalkyl, halogenoalkoxy and halogenoalkylthio with in each case 1 to 4 carbon atoms and 1 to 5 identical or different halogen atoms; nitro; cyano; and optionally halogen-substituted phenyl and phenoxy; or represents cycloalkyl or cycloalkylalkyl with in each case 3 to 7 carbon atoms in the cycloalkyl part and 1 to 4 carbon atoms in the alkyl part and in each case optionally monosubstituted or polysubstituted by alkyl with 1 to 4 carbon atoms;

R^1 to R^6, which can be identical or different, represent hydrogen, straight-chain or branched alkyl with 1 to 4 carbon atoms, or represent halogenoalkyl with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms, up to a maximum of 3 substituents representing halogenoalkyl,

R^3 or R^6, which can be identical or different, also represent halogen, up to a maximum of 3 substituents having this meaning; or

R^1 and R^2, together with the carbon atom to which they are bonded, represent cycloalkyl which has 4 to 7 carbon atoms and is optionally substituted by alkyl with 1 or 2 carbon atoms; or

R^2 and R^3, together with the carbon atoms to which they are bonded, represent cycloalkyl which has 4 to 7 carbon atoms and is optionally substituted by alkyl with 1 or 2 carbon atoms,

or an addition product thereof with an acid or metal salt.

10. A fungicidal composition comprising a fungicidally effective amount of a compound or addition product thereof according to claim **1** in admixture with a diluent.

4,619,941

N-[(1H-IMIDAZOL-1-YL)ALKYL]-1H-INDOLECARBOXAMIDES USEFUL AS THROMBOXANE SYNTHETASE INHIBITORS AND ANTIHYPERTENSIVE AGENTS

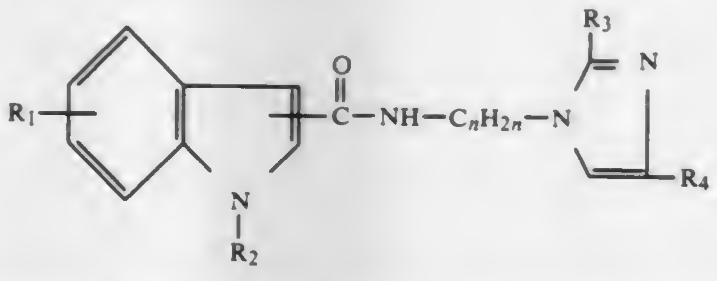
William B. Wright, Jr., Woodcliff Lake, and Jeffery B. Press, Rocky Hill, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 19, 1984, Ser. No. 673,066

Int. Cl.⁴ A61K *31/415;* **C07D** *403/12*

U.S. Cl. 514—397 **36 Claims**

1. A compound of the formula:



wherein R_1 is selected from the group consisting of hydrogen, halogen, alkyl(C_1–C_3) and alkoxy (C_1–C_3); R_2 is selected from the group consisting of hydrogen, alkyl (C_1–C_3) and benzyl; n is an integer from 2 to 8 inclusive; R_3 and R_4 are each individually selected from the group consisting of hydrogen, alkyl (C_1–C_3) and phenyl; or a pharmaceutically acceptable acid-addition salt thereof.

31. A method of inhibiting thromboxane synthetase enzyme in a mammal which comprises administering internally to said mammal an effective amount of a compound of the formula as recited in claim **1**.

4,619,942

INHIBITION OF RESPIRATORY SYNCYTIAL VIRUS-INDUCED CELL FUSION BY AMIDINO COMPOUNDS

Richard R. Tidwell; Edward J. Dubovi, and Joachim D. Geratz, all of Chapel Hill, N.C., assignors to University of North Carolina, Chapel Hill, N.C.

Division of Ser. No. 366,652, Apr. 8, 1982, Pat. No. 4,397,863, which is a division of Ser. No. 181,341, Aug. 26, 1980, Pat. No. 4,324,794. This application Aug. 8, 1983, Ser. No. 521,084

Int. Cl.⁴ A61K *31/405, 31/415, 31/155*

U.S. Cl. 514—415 **5 Claims**

1. A method for the treatment of respiratory syncytial virus-induced cell fusion which comprises administering to a host in need of said treatment an effective amount of an aromatic amidine compound selected from the group consisting of 1-4-di(4-amidinophenoxy)-2-butanol; 5-amidino-benzimidazole; and 5-amidino-1-(4-amidinobenzyl)indole.

4,619,943

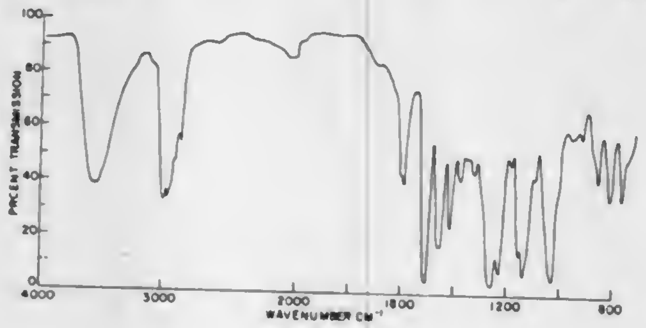
NEOLIGNANS OF *SAURURUS CERNUUS* L AND ANALOGUES THEREOF

Koppaka V. Rao, 3750 NW. 16th Pl., Gainesville, Fla. 32605

Continuation-in-part of Ser. No. 270,358, Jun. 4, 1981, abandoned. This application Sep. 10, 1984, Ser. No. 648,920

Int. Cl.⁴ A61K *31/36, 31/34;* **C07D** *317/44, 307/02*

U.S. Cl. 514—464 **26 Claims**



1. The SC-neolignan

(A) SC-5 having an Rf value of 0.44 on silica gel thin-layer chromatography plates when eluted with 15% acetone in benzene; a high performance liquid chromatography retention time of 3.6 minutes on a Partisil P x S 5/25 column when eluted with 1% methanol in chloroform; infrared bands when pelleted with KBr at 3460, 2950, 1600, 1510, 1450, 1418, 1365, 1260, 1235, 1165, 1140, 1035, 948, 925, 846, 805, and 766 cm^{-1}; and, in solution in $CDCl_3$, nmr peaks (τvalues) as follows: 3.17 (m), 4.52 and 4.62 (d), 5.30 and 5.43 (d), 5.83 (m), 6.13 (s), 7.73 (m), 8.79 and 8.89 (d), and 9.23 and 9.33 (d);

(B) SC-9 having an optical rotation of $[\alpha]_D = -54.1$ at a concentration of 0.66% in $CHCl_3$; an Rf value of 0.28 on silica gel thin-layer chromatography plates when eluted with 15% acetone in benzene; infrared bands when pelleted with KBr at 3480, 2960, 2930, 1590, 1505, 1450, 1415, 1375, 1260, 1228, 1155, 1130, 1028, 850, 805, and 758 cm^{-1}; and, in solution in $CDCl_3$, nmr peaks (τvalues) as follows: 3.17 (m), 4.83 and 4.93 (d), 5.30 and 5.43 (d), 5.80 (m), 6.14 (s), 7.83 (m), 8.79 and 8.89 (d), and 9.23 and 9.33 (d);

(C) SC-6, 2α-(4-hydroxy-3-methoxy)phenyl-5β-[3-methoxy-4-{threo-3-hydroxy-3-(3,4-dimethoxyphenyl)}isopropoxyphenyl]-3α,4β-dimethyltetrahydrofuran;

(D) SC-7, 2α-[3-methoxy-4-{threo-3-hydroxy-3-(3,4-dimethoxyphenyl)}isopropoxyphenyl]-5β-[3-methoxy-4-{threo-3-hydroxy-3-(3,4-methylenedioxyphenyl}isopropoxyphenyl]-3α,4β8-dimethyltetrahydrofuran; or

(E) SC-8, 2α,5β-bis[3-methoxy-4-{threo-3-hydroxy-3-(3,4-dimethoxyphenyl)}isopropoxyphenyl]-3α,4β-dimethyltetrahydrofuran.

23. A neuroleptic composition comprising a neuroleptically effective amount of the compound SC-5, SC-7, SC-8, or SC-9 of claim **1** in admixture with a pharmaceutically acceptable carrier.

26. A method of inducing a neuroleptic response in a warm-blooded animal, which comprises administering to such animal a neuroleptically effective amount of the neuroleptic composition of claim **23**.

4,619,944

ANTIHYPERTENSIVE COMPOUNDS

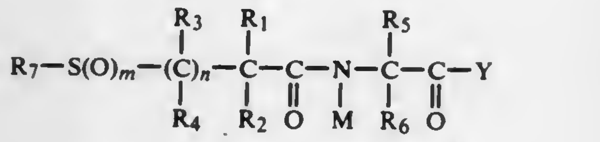
Raymond D. Youssefyeh, Tarrytown, N.Y., and Howard Jones, Holmdel, N.J., assignors to USV Pharmaceutical Corporation, Fort Washington, Pa.

Division of Ser. No. 269,166, Jun. 1, 1981, Pat. No. 4,507,136. This application Feb. 19, 1985, Ser. No. 703,054

Int. Cl.⁴ A61K *31/265, 31/275, 31/215, 31/24*

U.S. Cl. 514—513 **12 Claims**

1. Compounds of the formula



$$R_7-S(O)_m-\overset{R_3}{\underset{R_4}{(C)_n}}-\overset{R_1}{\underset{R_2}{C}}-\underset{O}{\overset{}{\underset{\|}{C}}}-\underset{M}{N}-\overset{R_5}{\underset{R_6}{C}}-\underset{O}{\underset{\|}{C}}-Y$$

wherein

R_1, R_2, R_3, R_4, R_5, and R_6 are hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, phenyl-C_1–C_6-alkyl, or C_3–C_{16} cycloalkyl, and may be the same or different,

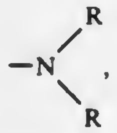
m is an integer from 0 to 2 inclusive,

n is an integer from 0 to 4 inclusive,

M is C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_3–C_{16} cycloalkyl, C_3–C_{16} cycloalkyl-C_1–C_6 alkyl, C_3–C_{16} polycycloalkyl, C_3–C_{16} polycycloalkyl-C_1–C_6 alkyl, C_1–C_6-alkoxy-C_1–C_6-alkyl, C_1–C_6-alkylthio-C_1–C_6-alkyl, C_1–C_6-alkylamino-C_1–C_6-alkyl, di-C_1–C_6 -alkylamino-C_1–C_6-alkyl, phenyl, phen-C_1–C_6-alkyl,

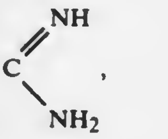
Y is hydroxy, C_1–C_6 alkoxy, amino, amino-C_1–C_6-alkanoyl, phenoxy, amino-C_1–C_6-alkoxy, or hydroxy-C_1–C_6-alkoxy, and

R_7 is alkyl, phenyl, phen-C_1–C_6-alkyl, C_3–C_{16}-cycloalkyl, C_3–C_{16}-cycloalkyl-C_1–C_6-alkyl,



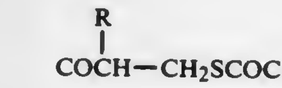
,

CH_2CO_2R, $-CHM-CO_2R$, $-CH_2-CO-SR$, $-CN$,



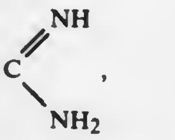
,

$-CO-NH-CH_2CO_2R$, or



$$CO\overset{\overset{R}{|}}{C}H-CH_2SCOCH_3,$$

wherein R is hydrogen, C_1–C_6 alkyl, or phenyl and where Y is hydroxy, their pharmaceutically acceptable, nontoxic alkali metal, alkaline earth metal, and amine salts provided that if R_7 is —CN or



,

then m is not zero.

9. A method of treating hypertension which comprises administering to the hypertensive animal an effective amount of a compound according to claim **1**.

4,619,945

POLYENE COMPOUNDS USEFUL IN THE TREATMENT OF ALLERGIC RESPONSES

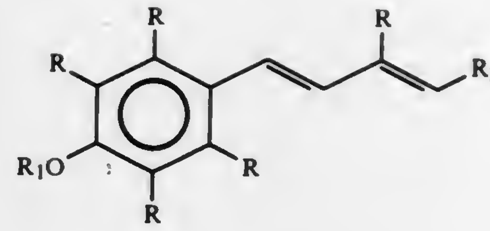
Bernard Loev, Scarsdale, and Wan-Kit Chan, Yorktown Heights, both of N.Y., assignors to USV Pharmaceutical Corp, Tuckahoe, N.Y.

Filed Oct. 9, 1985, Ser. No. 785,682

Int. Cl.⁴ A61K *31/045*

U.S. Cl. 514—729 **2 Claims**

1. A therapeutic composition for the treatment of inflammatory conditions and allergic responses in a human host, in combination with at least one pharmaceutically acceptable extender, a therapeutically effective amount of a compound of the formula



[I]

where

R is H or lower alkyl of from 1 to 5 carbon atoms;

R_1 is H, lower alkyl of from 1 to 8 carbon atoms or aralkyl; and

R_2 is $(CH_2)_nCH_2OH$; wherein n is 1 or 2.

4,619,946

LOW TEMPERATURE CATALYSTS FOR METHANOL PRODUCTION

Richard S. Sapienza, 1 Miller Ave., Shoreham, N.Y. 11786; William A. Slegeir, 7 Florence Rd., Hampton Bays, N.Y. 11946; Thomas E. O'Hare, 11 Geiger Pl., Huntington Station, N.Y. 11746, and Devinder Mahajan, 14 Locust Ct., Selden, N.Y. 11784

Division of Ser. No. 710,879, Mar. 12, 1985, which is a continuation-in-part of Ser. No. 581,935, Feb. 21, 1984, abandoned. This application Dec. 23, 1985, Ser. No. 812,705

Int. Cl.⁴ C07C *27/06, 31/04*

U.S. Cl. 518—700 **8 Claims**

1. A process for producing methanol by a low temperature reaction which comprises reacting CO with H_2 to form CH_3OH in the presence of a catalyst comprising a hydridic hydrogenating agent of the type $NaH-RONa-M(OAc)_2$ where M is selected from the group consisting of Ni, Pd and Co and R is a lower alkyl group containing from 1–6 carbon atoms in the form of a slurry.

4,619,947

CHEMICAL PROCESS

Samuel D. Jackson, Runcorn, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Jul. 17, 1985, Ser. No. 756,089

Claims priority, application United Kingdom, Aug. 8, 1984, 8420149

Int. Cl.⁴ C07C *1/04, 27/06*

U.S. Cl. 518—716 **4 Claims**

1. A method for the preparation of hydrocarbons and oxygenated hydrocarbons which comprises contacting a gaseous mixture of carbon monoxide, hydrogen and oxygen with a catalyst comprising a metal of Group VII or Group VIII of the Periodic Table, the amount of oxygen not exceeding 10% by volume based on the volume of hydrogen.

4,619,948

COMPOSITE ACTIVE FILTER MATERIAL

T. Scott Kennedy, East Boothbay, and Paul F. Herman, Boothbay Harbor, both of Me., assignors to Twin Rivers Engineering, East Boothbay, Me.

Filed Jan. 7, 1985, Ser. No. 689,249

Int. Cl.⁴ C08G *18/14;* **A24B** *15/28;* **B29C** *67/00*

U.S. Cl. 521—52 **45 Claims**

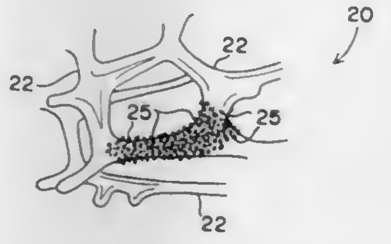
1. An improved active filter material comprising:

an open hydrophilic foam substrate and bonded active surface particle powder composite generated by foam polymerization of a prepolymer phase with an aqueous phase, said foam substrate comprising open foam characterized by relatively low pressure drop and low resistance to flow through the foam substrate;

said aqueous phase comprising a pourable and flowable slurry mixture of an aqueous liquid carrier, active surface particle powder, and surfactant wetting agent means, said aqueous phase comprising approximately 15% to 50% by weight of the active surface particle powder and comprising sufficient aqueous liquid carrier for a pourable aqueous phase and for providing a protective liquid layer or coating over the active surfaces of the active surface powder particles;

said prepolymer phase comprising a hydrophilic polyurethane NCO-terminated prepolymer receptive to the aqueous phase for foam polymerization upon mixing with the aqueous phase;

said aqueous phase and prepolymer phase being mixed together in ratio by weight of aqueous phase to prepolymer phase in the range of approximately 1/1 to 8/1 so that the mixture is initially pourable and flowable for molding;



said active filter material comprising an open hydrophilic foam substrate with active surface powder particles distributed over and bonded to the surfaces of the hydrophilic foam substrate, the major portion of active surfaces of the powder particles being substantially protected by the layer of liquid carrier from obstruction and deactivation during the foam polymerization and being exposed for active filter functioning.

2. The active filter material of claim 1 wherein the active surface particle powder comprises activated charcoal powder.

4,619,949
ABRASION RESISTANT COATINGS

John F. Kistner, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 641,723, Aug. 17, 1984, Pat. No. 4,587,169. This application Jan. 7, 1986, Ser. No. 816,807

Int. Cl.⁴ C08G *77/00*

U.S. Cl. 522—170 **10 Claims**

1. An abrasion-resistant, water-repellent film on a substrate, said film comprising the reaction product of a composition comprising:

(1) more than 60% by weight of an epoxy-terminated silane,
(2) 5 to 20% by weight of an aliphatic monoepoxide having between 8 and 20 carbon atoms in the aliphatic group, and
(3) less than 10% by weight of a material copolymerizable with epoxy groups, other than the aliphatic monoepoxide wherein said film is adhered to the surface of a developed photographic image on a color print paper.

4,619,950
METHOD AND MATERIAL FOR PLUGGING AN INGOT MOLD

Walter H. Carlson, Aurora, Ohio, assignor to Graphite Sales, Inc., Chagrin Falls, Ohio

Continuation of Ser. No. 694,589, Jan. 24, 1985, abandoned, which is a continuation of Ser. No. 587,219, Mar. 17, 1984, abandoned. This application Feb. 25, 1986, Ser. No. 833,573

Int. Cl.⁴ C21B *7/12*

U.S. Cl. 523—140 **16 Claims**

1. A particulate composition curable in situ in an ingot mold plug opening comprising, based on total weight of the composition, from 70% to 90% of a plug aggregate and from about 10% to 30% of a water free thermosetting resinous binder consisting of a furan resin and a phenolic resin in substantially equal amounts and having substantially different temperature at which polymerization of the corresponding resin commences, the moisture content of the composition being less than about 2%.

15. A particulate hydrophobic composition curable in situ in an ingot plug opening comprising, based on total weight of the composition, from about 70% to 90% of a carbon and silica based aggregate, less than about 1% moisture and from about 10% to 30% of a non-hygroscopic phenolic-based thermosetting resinous binder comprising at least about 50% of a phenolic resin which is unmodified and an additive material for changing the curing temperature of said phenolic resin in said composition and also effective to lower the freezing point of said composition.

4,619,951
SEALING COMPOSITIONS FOR ELECTRIC CABLES

Klaus Gorke, Dorsten, and Josef Schoppen, Haltern, both of Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Sep. 20, 1985, Ser. No. 778,440

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1984, 3438780

Int. Cl.⁴ C08L *9/00;* **C08K** *3/26;* **C09D** *5/25;* **H01B** *3/18*

U.S. Cl. 523—173 **9 Claims**

1. A sealing composition for electric wires comprising:
a binder component; and
an inorganic, water-insoluble, powdered filler material;
wherein:

a. the binder component is a combination of two binders—binder I (in an amount of 70–97 wt. %), and binder II (in an amount of 3–30 wt. %);

a.1 binder I is a homopolymer of 1,3-butadiene or a copolymer based on 1,3-butadiene (in an amount of ≧80 wt. %) and at least one other copolymerizable 1,3-diene or 1,3-cyclodiene or at least one other copolymerizable alpha-olefin (in an amount of ≦20 wt. %) (with the indicated composition of the said copolymer determined by IR analysis); the average relative molecular weight (referred to hydrogen), $\overline{M}n$, of the homopolymer or copolymer is 500 to 5,000, and its viscosity (at 20° C. according to DIN 53 015) is 2–80 dPa-sec;

a.2 binder II is a polymer based on 1,3-butadiene with laterally extending succinic anhydride groups (i.e., a maleinized polymer based on 1,3-butadiene) with an acid number of 15 to 150 (mg KOH/g); this polymer being prepared by adding maleic anhydride to a polymer of the type of binder I (feature a.1); and

b. the filler material is comprised of at least 80 wt. % of an alkaline earth carbonate which has not been provided with a hydrophobic coating and which is capable of reacting with the anhydride groups of binder II; said filler being present in an amount of 65–80 wt. % of the total sealing composition.

4,619,952
RESINOUS BLENDS OF EPOXY AND ACRYLIC RESINS AND THE USE THEREOF IN ELECTRODEPOSITION

Terence J. Hart, Allison Park; Rostyslaw Dowbenko, Gibsonia; Rudolf Maska; Ellor J. Van Buskirk, both of Pittsburgh, and Marvin T. Tetenbaum, Wexford, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 637,251, Aug. 2, 1984. This application Sep. 20, 1985, Ser. No. 778,000

Int. Cl.⁴ C08K *3/20;* **C08L** *63/00*

U.S. Cl. 523—409 **24 Claims**

1. A coating composition comprising as an essential film-former a resinous blend of:

(i) from about 5 to 95 percent by weight of an amine-defunctionalized epoxy resin which is at least partially amidated with a polycarboxylic acid, an acid anhydride thereof or a functional equivalent thereof; and
(ii) from about 5 to 95 percent by weight of an acid group-containing resin having an acid value of 20 to 350, said resin is different from the resin of (i) above;

the percent by weight is based on total resin solids.

4,619,953
LOW STYRENE EMISSION VINYL ESTER RESIN EMPLOYING POLYACRYLATES FOR FIBER-REINFORCED APPLICATIONS

John A. Schols, and Kee C. Yu, both of Sarnia, Canada, assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 9, 1985, Ser. No. 773,499

Int. Cl.⁴ C08K *5/00*

U.S. Cl. 523—465 **12 Claims**

1. An improved, low styrene emission, VER composition containing: (1) a VER which is an esterification product of a polyepoxide and a monounsaturated monocarboxylic acid; (2) styrene as a reactive diluent; (3) a wax as a styrene emission inhibitor; and (4) wherein the improvement comprises including in such composition a polyacrylate wherein said polyacrylate is present in an amount sufficient to increase the adhesion characteristic of the VER composition with a reinforcing material used therewith.

4,619,954
FIBERGLASS REINFORCED PLASTIC SHEET MATERIAL WITH FIRE RETARDANT FILLER

Sidney O. Warner, II, Bolivar, Tenn., assignor to Sequentia, Incorporated, Strongsville, Ohio

Filed Jun. 22, 1984, Ser. No. 623,405

Int. Cl.⁴ C08K *7/16, 9/06;* **C08L** *67/00, 67/06*

U.S. Cl. 523—516 **20 Claims**

1. A fiberglass reinforced rigid panel with fire retardant property, said panel being comprised of fiberglass reinforcement embedded in a resinous composition having a constituency comprising, in parts by weight basis 100 total weight parts of said resinous composition:

unsaturated polyester resin	42.5–56.5 parts
halogenated polyester resin	14.5–18.5 parts
monomer cross-linking agent	12.0–22.0 parts
inorganic fire retardant filler	15.0–25.0 parts

and with there being further combined with said resinous composition up to about 3 weight parts of a catalyst combination, together with from about 20 to about 30 weight parts of reinforcing fiberglass, both added to 100 weight parts of said resinous composition, said unsaturated polyester resin being prepared using glycols comprising primarily propylene glycol and glycols of higher molecular weight and said halogenated polyester resin contributing at least about 3.3 weight percent of halogen to said resinous composition.

4,619,955
ISOCYANATE FUNCTIONAL URETHANES AS FLEXIBILIZING ADDITIVES IN COATING VEHICLES

Thomas W. Druetzler, Lynwood, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

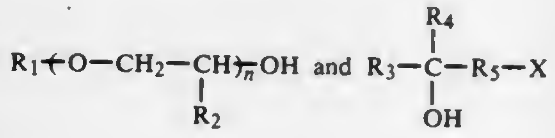
Division of Ser. No. 686,943, Dec. 27, 1984, Pat. No. 4,560,494. This application Sep. 9, 1985, Ser. No. 774,117

Int. Cl.⁴ C08L *5/04, 75/00;* **C08F** *283/04*

U.S. Cl. 524—29 **14 Claims**

1. A coating composition comprising:

(i) 30–99 parts by weight of a thermoplastic or thermosetting film-forming polymer vehicle; and
(ii) 1–70 parts by weight of an isocyanate functional urethane which comprises the reaction product of:
(a) an aliphatic polyisocyanate having an average of at least 2.1 isocyanate groups per molecule and selected from the group consisting of the biurets and isocyanurates of linear aliphatic diisocyanates; and
(b) at least one monofunctional alcohol having a molecular weight less than about 500 and which is selected from the group consisting of:

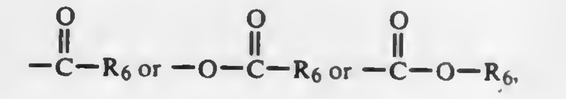


$$R_1\left(O-CH_2-\underset{\displaystyle R_2}{CH}\right)_{n}OH \quad\text{and}\quad R_3-\overset{\displaystyle R_4}{\underset{\displaystyle OH}{C}}-R_5-X$$

wherein

n is from 1 to about 10; R_1 is an aliphatic radical of 1 to about 12 carbons; R_2 is H or CH_3; R_3 and R_4 are independently aliphatic of 1 to about 12 carbons or H; R_5 is an aliphatic radical of 1 to about 8 carbons or nothing;

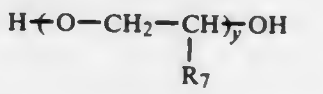
X is



$$-\overset{\displaystyle O}{\overset{\|}{C}}-R_6 \text{ or } -O-\overset{\displaystyle O}{\overset{\|}{C}}-R_6 \text{ or } -\overset{\displaystyle O}{\overset{\|}{C}}-O-R_6,$$

where R_6 is an aliphatic radical of 1 to about 12 carbons; and

(c) at least one diol having the formula:



$$H\left(O-CH_2-\underset{\displaystyle R_7}{CH}\right)_{y}OH$$

wherein R_7 is H or CH_3 and y is from 1 to about 40; wherein the total NCO/OH equivalents ratio is greater than 1.0 and the ratio of OH equivalents from (b) to OH equivalents from (c) ranges from 0.3:1 to 2.0:1.0.

4,619,956
STABILIZATION OF HIGH SOLIDS COATINGS WITH SYNERGISTIC COMBINATIONS

Peter V. Susi, Middlesex, N.J., assignor to American Cyanamid Co., Stamford, Conn.

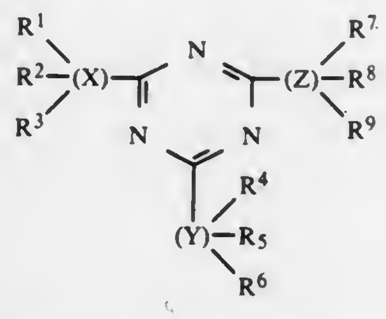
Filed May 3, 1985, Ser. No. 730,146

Int. Cl.⁴ C08K *5/34*

U.S. Cl. 524—87 **19 Claims**

1. A method of stabilizing a polymer film, coating or molded article against the action of light, moisture, and oxygen comprising incorporating in said polymer a stabilizingly and synergistically effective amount of:

(A) A 2,2,6,6-tetraalkylpiperidine compound, or the acid addition salts or complexes with metal compounds thereof; and
(B) A tris-aryl-s-triazine compound represented by the formula:



(I)

wherein X, Y and Z are each aromatic, carbocylic radicals of less than three 6-membered rings, and at least one of X, Y and Z is substituted by a hydroxy group ortho to the point of attachment to the triazine ring; and each of R^1 through R^9 is selected from the group consisting of hydrogen, hydroxy, alkyl, alkoxy, sulfonic, carboxy, halo, haloalkyl and acylamino.

4,619,957

BENZOATE-STABILIZED RIGID POLYVINYL CHLORIDE COMPOSITIONS

William J. Reid, Perth, Australia; Jean M. Zappia, Yonkers, N.Y.; Gerald A. Capocci, Greenwich, Conn., and John D. Spivack, Spring Valley, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

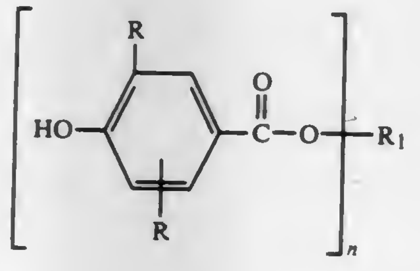
Continuation-in-part of Ser. No. 579,232, Feb. 13, 1984, Pat. No. 4,555,541. This application Aug. 9, 1985, Ser. No. 764,282

The portion of the term of this patent subsequent to Nov. 26, 2002, has been disclaimed.

Int. Cl.⁴ C08K *5/58*

U.S. Cl. 524—91 **10 Claims**

1. A rigid polyvinyl chloride composition comprising, in addition to said polyvinyl chloride, 2 to 8% titanium dioxide, by weight of the polyvinyl chloride, an effective thermal stabilizing amount of a tin mercaptide and an effective amount for the purpose of ultraviolet light stabilization of a benzoate compound of the formula



wherein

R is alkyl;

R_1 is alkylenetriyl, alkylenetetrayl, alkylenepentayl and alkylenehexayl; and

n is 3-6.

4,619,958

MIXED 2,2,6,6-TETRAMETHYL PIPERIDINYL CARBOXYLIC ACID ESTER AND AMIDE LIGHT STABILIZERS AND STABILIZED SYNTHETIC POLYMERS

Tohru Haruna, Okegawa, and Atsushi Nishimura, Saitama, both of Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa, Japan

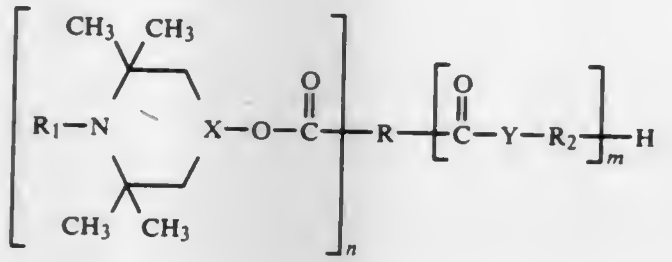
Filed Sep. 30, 1983, Ser. No. 537,479

Claims priority, application Japan, Oct. 2, 1982, 57-173589

Int. Cl.⁴ C08K *5/34*

U.S. Cl. 524—102 **24 Claims**

1. Mixed light stabilizers for synthetic polymers having the formula:



wherein:

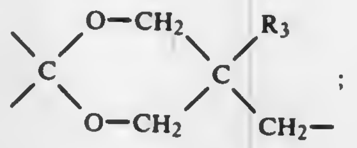
R is a polyvalent group selected from the group consisting of aliphatic hydrocarbon groups having from one to about twenty carbon atoms, cycloaliphatic hydrocarbon groups having from three to about sixteen carbon atoms and aromatic hydrocarbon groups having from six to about thirty carbon atoms; such groups substituted with from one to about six groups selected from the group consisting of hydroxy, acyloxy, and halogen; and $N(C_{n1}H_{2n1})_3$ where n_1 is a number from one to five;

R_1 is selected from the group consisting of hydrogen, oxyl, alkyl, epoxy alkyl and hydroxy alkyl having from one to about twelve carbon atoms, alkyl aryl having from six to about eighteen carbon atoms, and acyl having from two to about twelve carbon atoms;

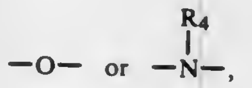
R_2 is selected from the group consisting of alkyl and alkenyl having from eight to about thirty carbon atoms;

R_3 is lower alkyl having from one to about six carbon atoms;

X is $>CH-$ or



Y is



$$-O- \text{ or } -\overset{R_4}{\overset{|}{N}}-,$$

where R_4 is hydrogen or R_2;

m is a number from 0 to 6; and

n is a number from 3 to 6;

the mixture comprising from about 10 to about 60% by weight of compounds wherein m is 0, and from about 90 to about 40% by weight of compounds wherein m is from 1 to 6.

4,619,959

CONTINUOUS PRODUCTION PROCESS OF STYRENE-BASE RESIN

Tetsuyuki Matsubara; Norifumi Ito; Kazuo Sugazaki; Kouzo Ichikawa; Mune Iwamoto, and Toshihiko Ando, all of Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated and Toyo Engineering Corporation, both of Tokyo, Japan

Filed May 24, 1985, Ser. No. 737,531

Claims priority, application Japan, May 28, 1984, 59-106555; Jun. 8, 1984, 59-116501

Int. Cl.⁴ C08F *12/08, 291/02, 2/44;* **C08K** *5/20*

U.S. Cl. 524—228 **10 Claims**

1. In a process for producing a styrene-base resin by continuous bulk polymerization or solution polymerization, the improvement wherein, in the course of the process, one or more higher fatty acid amides represented by the following formula (I):

$$R_1CONHR_2 \qquad (I)$$

wherein R_1 is an alkyl group having 8 to 22 carbon atoms, R_2 is hydrogen, a hydroxymethyl group or $-CH_2)_nNHCOR^3$, wherein R^3 is an alkyl group having 8 to 22 carbon atoms and can be same as or different from R_1, and n is 1 or 2, are continuously added in a dissolved or molten state to a continuous flow of the styrene-base resin in a molten or dissolved state so that a styrene-base resin having excellent moldability and a good hue is produced.

4,619,960

STABLE BLENDS OF VINYL CHLORIDE AND ACRYLIC LATEXES

James S. Dodge, Bay Village, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 1, 1983, Ser. No. 500,119

Int. Cl.⁴ C08J *5/29*

U.S. Cl. 524—245 **12 Claims**

1. In a latex blend comprising at least one vinyl halide latex and at least one acrylic latex, which latexes are normally collodially incompatible when mixed, the improvement comprising an admixed surfactant or a mixture thereof containing a nitrogen atom having attached thereto repeating alkylenoxy groups in sufficient amount to prevent large viscosity increase of said blend and thereby improve colloidal compatibility of said latexes, said blend containing said surfactant having acidic

pH, said vinyl halide latex contains at least 5% by weight of polymerized vinyl halide or vinylidene halide and selected from homopolymers thereof and copolymers thereof with one or more other copolymerizable monomers, said acrylic latex is a polymer of 50 to 95% by weight of polymerized C_1 to C_{18} alkyl acrylate and/or methacrylate and one or more other copolymerizable monomers, said latex blend has pH of less than about 6, said surfactant is selected from cationic-nonionic surfactants, and said blend also contains 0.5 to 10 weight parts per 100 weight parts of said vinyl halide and said acrylic latexes of a cosurfactant selected from nonionic surfactants which are devoid of nitrogen.

4,619,961

HALOGENATED POLYPHENYL SULFIDE OR SULFIDE/ETHER COMPOUNDS

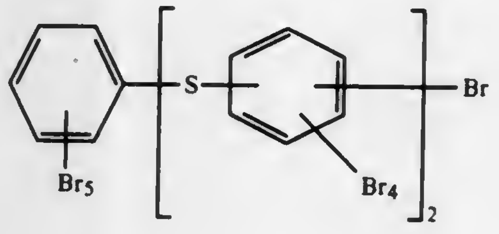
Burton J. Sutker, Edison; Saadat Hussain, East Brunswick, and Amgad S. Mossaad, S. River, all of N.J., assignors to Ethyl Corporation, Richmond, Va.

Filed Dec. 26, 1984, Ser. No. 686,486

Int. Cl.⁴ C08K *5/36;* **C07C** *149/34*

U.S. Cl. 524—393 **4 Claims**

1. A composition comprising a high impact rubber-modified polystyrene containing a fire retardant amount of a perbrominated polyphenylene sulfide having the structure:



4,619,962

THERMOPLASTIC POLYMER COMPOSITIONS

Kyosaku Sato, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada

Continuation-in-part of Ser. No. 549,501, Nov. 7, 1983, abandoned. This application Apr. 12, 1985, Ser. No. 722,358

The portion of the term of this patent subsequent to Apr. 2, 2002, has been disclaimed.

Int. Cl.⁴ C08K *3/22, 3/16;* **C08L** *13/00, 77/06*

U.S. Cl. 524—401 **23 Claims**

1. A thermoplastic composition comprising, per 100 parts by weight of polymeric materials, as one polymeric material from about 30 to about 80 parts by weight of crystalline polyamide and as second polymeric material from about 20 to about 70 parts by weight of synthetic rubbery polymer which polymer comprises, for a total of 100 parts by weight, from about 25 to about 40 parts by weight of acrylonitrile or methacrylonitrile, from about 0.5 to about 10 parts by weight of one or more α,β-unsaturated carboxylic acid and the balance butadiene, and as non-polymeric additives from about 0.1 to about 15 parts by weight per 100 parts by weight of polyamide of an additive selected from the halides of lithium, magnesium, calcium and zinc, and from about 1 to about 10 parts by weight per 100 parts by weight of polymeric materials of an additive selected from the oxides and hydroxides of magnesium, calcium, barium and zinc and the peroxides of calcium and zinc.

2. The composition of claim 1 which comprises as polymeric materials from about 35 to about 70 parts by weight of crystalline polyamide and from about 30 to about 65 parts by weight of synthetic rubbery polymer.

7. The composition of claim 2 wherein the halide additive is selected from the chlorides and bromides of lithium, magnesium, calcium and zinc.

4,619,963

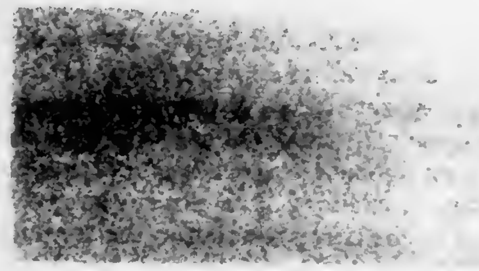
RADIATION SHIELDING COMPOSITE SHEET MATERIAL

Hisataka Shoji, and Shigehiro Ouchi, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 469,283, Feb. 24, 1983, Pat. No. 4,485,838. This application Jul. 2, 1984, Ser. No. 626,782

Int. Cl.⁴ C08K *3/00;* **D02G** *3/00*

U.S. Cl. 524—439 **7 Claims**



1. A radiation shielding composite sheet comprising lead fibers of more than 99% purity having 0.5 to 1.3 mm mean length and of a diameter of less than 60 microns and a synthetic resin, said fibers containing 50 to 500 ppm tin wherein said radiation shielding composite sheet has a specific gravity greater than 4.0.

4,619,964

STABILIZED AQUEOUS COPOLYMER DISPERSIONS

Andrew J. Kielbania, Chalfont, and Samuel S. Kim, Huntingdon Valley, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 3, 1983, Ser. No. 538,459

Int. Cl.⁴ C08F *2/22, 267/00*

U.S. Cl. 524—460 **15 Claims**

1. An aqueous latex of a water insoluble vinyl addition polymer prepared by emulsion polymerization comprising a minor portion by weight of the polymer of a residue of at least one optionally substituted compound selected from the carboxylic acid anhydrides of benzene, naphthalene, biphenyl and the (C_5-C_{10}) cycloalkanes and the corresponding carboxylic acids of benzene, naphthalene, biphenyl and the (C_5-C_{10}) cycloalkanes, provided that no residue bear fewer than two but not more than four carboxylic acid groups, and provided that at least some portion of the compound or compounds bearing such residue or residues is not present in the monomer mixture in which polymerization is first initiated.

4,619,965

DISPERSION STABILIZER AND ITS USE

Keizou Ishii, Ashiya; Takeo Kurauchi, Neyagawa; Jun Nozue, Hirakata, and Shinichi Ishikura, Kyoto, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 647,145, Sep. 4, 1984, abandoned. This application Feb. 21, 1986, Ser. No. 833,514

Claims priority, application Japan, Jul. 19, 1984, 59-150949

Int. Cl.⁴ C08L *41/00*

U.S. Cl. 524—547 **18 Claims**

1. A dispersion stabilizer for dispersing solid particles into a liquid medium, which comprises resin particles bearing a zwitter-ionic group in the molecule, said resin particles each having substantially an average particle size of not more than 1500 Å on measurement by electron microscopic observation.

4,619,966
PROCESS FOR THE PRODUCTION OF COATED SUBSTRATES

Walter Schäfer; Manfred Hajek, both of Cologne; Hanns P. Müller, Odenthal; Rolf Dhein, Krefeld; Rolf Küchenmeister, Krefeld, and Armin Sickert, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 7, 1985, Ser. No. 795,965

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1984, 3441934

Int. Cl.⁴ C08L *75/04*

U.S. Cl. 524—589 **7 Claims**

1. A process for the production of water-resistant and solvent-resistant coated substrates which comprises

(a) coating a heat-resistant substrate with a solution or dispersion of an anionically-modified polyisocyanate addition product in an aqueous solvent, said polyisocyanate addition product containing chemically incorporated anionic structural units corresponding to the formula

$$-NH-CO-\overset{\ominus}{N}-C\equiv N$$

in a quantity of about 5 to 1000 milliequivalents per 100 g of solids, said solids being based on the reaction product of an organic polyisocyanate with a salt based on cyanamide and a base comprising a member selected from the group consisting of ammonia, primary and secondary amines having a minimum pKb of 3.1 which are volatile under the conditions of the thermal treatment, tertiary-amines which are volatile under the conditions of the thermal treatment and mixtures of these bases and

(b) thermally treating the coated substrate at a temperature of about 60° to 200° C. with evaporation or vaporization of the aqueous solvent and cross-linking of the polyisocyanate addition product applied to the substrate.

4,619,967
MULTI-MODAL EMULSIONS OF WATER-SOLUBLE POLYMERS

Richard R. Emerson; Do I. Lee, both of Midland, and James P. Easterly, Bay City, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 498,222, May 26, 1983, Pat. No. 4,565,836. This application Nov. 2, 1984, Ser. No. 667,782

The portion of the term of this patent subsequent to Jan. 21, 2003, has been disclaimed.

Int. Cl.⁴ C08F *2/32*

U.S. Cl. 524—801 **19 Claims**

1. A water-in-oil emulsion of water-soluble polymer comprising a continuous oil phase and a discontinuous aqueous phase containing said water-soluble polymer, said water-in-oil emulsion comprising small dispersed phase droplets which cluster about a droplet size which ranges from 0.01 μm to 1 μm in diameter and large dispersed phase droplets which cluster about a droplet size which ranges from 1 μm to 40 μm in diameter, wherein said two droplet sizes exist as two identifiable and distinct droplet size distributions.

4,619,968
FLAME RESISTANT CARBONATE BLENDS

David E. Henton, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 12, 1985, Ser. No. 764,364

Int. Cl.⁴ C08L *69/00*

U.S. Cl. 525—67 **13 Claims**

1. A composition comprising:

(1) a continuous phase comprising an aromatic carbonate polymer and

(2) having dispersed therein an elastomeric particle material in the form of a grafted rubber concentrate which comprises

(a) a functionally effective amount of crosslinking

(b) which is further grafted with a functionally effective amount of a vinyl polymer capable of exhibiting flame resistant properties.

4,619,969
POLYOLEFIN COMPOSITION COMPRISING PROPYLENE POLYMER AND ETHYLENE/ANHYDRIDE/ESTER COPOLYMER

Toshiki Doi, Osaka; Hideo Shinonaga, and Tadayuki Omae, both of Chiba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 5, 1985, Ser. No. 795,146

Claims priority, application Japan, Nov. 5, 1984, 59-232992

Int. Cl.⁴ C08L *23/12, 23/16, 23/08, 33/06*

U.S. Cl. 525—93 **5 Claims**

1. A polypropylene-based resin composition comprising (A) from 60 to 99 parts by weight of a polypropylene-based resin selected from the group consisting of crystalline polypropylene and crystalline propylene-α-olefin block or random copolymers and (B) from 1 to 40 parts by weight of an ethylene copolymer composed of from 25 to 98.5% by weight of ethylene, from 0.5 to 15% by weight of an unsaturated dicarboxylic acid anhydride and from 1 to 60% by weight of an unsaturated ester compound having from 4 to 12 carbon atoms and/or a modified copolymer obtained by ring opening addition reaction of the acid anhydride group of said ethylene copolymer with an alcohol having from 1 to 20 carbon atoms.

4,619,970
SEPARATION AGENT

Yoshio Okamoto, Amagasaki, and Koichi Hatada, Ikeda, both of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Mar. 7, 1985, Ser. No. 709,004

Claims priority, application Japan, Mar. 19, 1984, 59-53085

Int. Cl.⁴ C08F *3/36;* **C08G** *77/12, 18/04*

U.S. Cl. 525—100 **19 Claims**

1. A resolving agent for use in chromatographic separation processes, which comprises: silica gel treated with a silane treating agent having an amino, monosubstituted amino, hydroxyl or mercapto group, said silane-treated silica gel being reacted with a polyfunctional organic compound selected from the group consisting of polyfunctional isocyante derivatives and polyfunctional acid chloride derivatives whereby to react a portion of the functional groups of said polyfunctional organic compound with said silica gel, said polyfunctional organic compound also being reacted with an optically active polymer having a functional group reactive with said polyfunctional organic compound whereby to form a bond between said optically active polymer and said polyfunctional organic compound.

4,619,971
LINEAR POLYESTER RESIN BLENDS WITH HIGH IMPACT RESISTANCE

John B. Yates, III, and Timothy J. Ullman, both of Clifton Park, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 29, 1985, Ser. No. 717,938

Int. Cl.⁴ C08L *67/02*

U.S. Cl. 525—166 **5 Claims**

1. A resinous composition having a notched Izod impact strength at room temperature in excess of 795 joules/m., wherein the resinous components consist essentialy of:

(A) at least one polyester selected from the group consisting of poly(ethylene terephthtalate) and poly(butylene terephthalate), and

(B) a blend of:

(B-1) at least one elastomeric addition copolymer consisting essentially of structural units derived form acrylonitrile and at least one conjugated diene or a combintation of at least one conjugated diene and at least one acidic monomer, and

(B-2) at least one elastomeric conjugated diene addition homopolymer or copolymer free from nitrile structural units; said blend containing nitrile structural units in an amount to provide from 1% to about 8% by weight of said units in said resinous composition.

4,619,972
MODIFIED ELASTOMER AND LAMINATE THEREOF

Hiroshi Inoue; Makoto Miyazaki; Masaaki Isoi, and Makoto Yoda, all of Saitama, Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 196,076, Oct. 10, 1980, abandoned. This application Mar. 29, 1985, Ser. No. 717,538

Claims priority, application Japan, Oct. 12, 1979, 54-130835

Int. Cl.⁴ C08F *279/02*

U.S. Cl. 525—193 **6 Claims**

1. A modified elastomer composition including modified elastomer and crystalline polyolefin prepared by the reaction of:

(A) **100** parts by weight of at least one elastomer selected from an ethylene/butene-1 copolymer, a styrene/butadiene copolymer and an ethylene/propylene copolymer wherein the ethylene content of said ethylene/butene-1 copolymer comprises 10 to 90% by weight of said copolymer and its Mooney viscosity at 100° C. is 10 to 200; and wherein the styrene content of said styrene/butadiene copolymer comprises 5 to 70% by weight of said copolymer and its Mooney viscosity at 100° C. is 10 to 200; and wherein the ethylene content of said ethylene/propylene copolymer comprises 10 to 90% by weight of said copolymer, its Mooney viscosity at 100° C. is 10 to 200 and its density is 0.85 to 0.90, and not more than 50 parts by weight of a crystalline polyolefin, with 0.005 to about 0.8 part by weight of an unsaturated carboxylic acid or its anhydride and further including a radical generator and melting and kneading the mixture at 120 to 300° C.

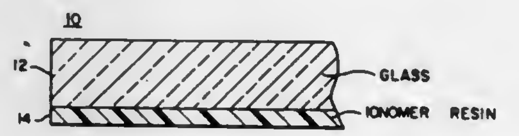
4,619,973
IONOMER RESIN FILMS

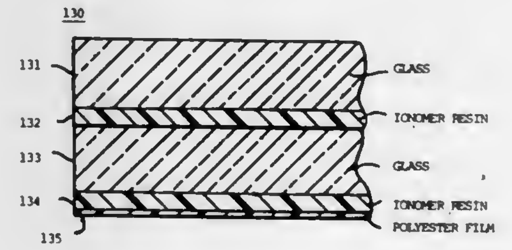
W. Novis Smith, Jr., Philadelphia, Pa., assignor to Advanced Glass Systems, Inc., Trumbauersville, Pa.

Filed Aug. 17, 1984, Ser. No. 642,042

Int. Cl.⁴ C08F *8/32*

U.S. Cl. 525—329.9 **3 Claims**





1. A sodium ionomer of ethylene methacrylic acid copolymer cross-linked with about 0.3 to about 10% by weight of bis(1,3-aminomethyl)cyclohexane.

4,619,974
PERFLUOROALKYL SUBSTITUTED POLYMERS

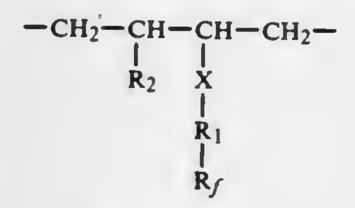
Karl F. Mueller, New York, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 455,099, Jan. 3, 1983, abandoned. This application Dec. 17, 1984, Ser. No. 682,485

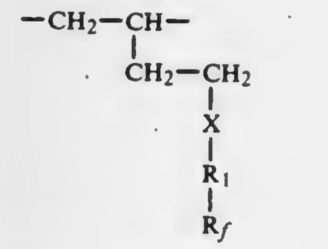
Int. Cl.⁴ C08F *8/34*

U.S. Cl. 525—332.4 **6 Claims**

1. A perfluoroalkyl-alkylene substituted polymer of 1,4-butadiene or isoprene comprising 40–400 connected monomer carbon atoms in the chain, said chain containing, for every 100 carbon atoms, at least one structural unit selected from A and B

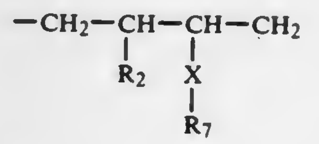


$$-CH_2-\underset{\substack{|\\R_2}}{CH}-\underset{\substack{|\\X\\|\\R_1\\|\\R_f}}{CH}-CH_2- \qquad (A)$$



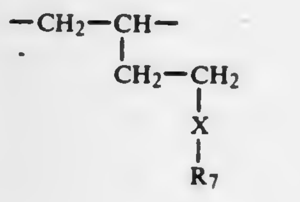
$$-CH_2-\underset{\substack{|\\CH_2-CH_2\\ \quad\ \ |\\ \quad\ \ X\\ \quad\ \ |\\ \quad\ \ R_1\\ \quad\ \ |\\ \quad\ \ R_f}}{CH}- \qquad (B)$$

wherein X is —S—, SO—, or —SO_2—, said polymer further comprising 0 to 40 mole% of a conventional copolymerizable group (C), and 0 to 20% of at least one structural unit (D) selected from



$$-CH_2-\underset{\substack{|\\R_2}}{CH}-\underset{\substack{|\\X\\|\\R_7}}{CH}-CH_2$$

and



$$-CH_2-\underset{\substack{|\\CH_2-CH_2\\ \quad\ \ |\\ \quad\ \ X\\ \quad\ \ |\\ \quad\ \ R_7}}{CH}-$$

wherein

X is as defined above,

R_1 is either alkylene of from 1 to 16 carbon atoms or is of the structure

$$-R_1'-Q-R_3-$$

wherein

R_1' and R_3 are alkylene groups of 1–16 carbon atoms, with the sum of carbon atoms being no greater than 25;

R_2 is hydrogen or methyl;

Q is —O—, or —NR_4—, wherein

R_4 is hydrogen or alkyl of 1–4 carbon atoms; and

R_f is a linear or branched perfluoroalkyl or perfluoroalkoxyperfluoroalkyl group with 4–20 carbon atoms,

R_7 is an aliphatic, aromatic or aryl-alkylene group of up to 30 carbon atoms which is unsubstituted or substituted by hydroxyl, amino, mono- or di-(lower)alkylamino, carboxy, siloxane or halogen.

4,619,975

NOVEL POLY(ARYL ETHER)- POLYESTER BLOCK COPOLYMERS

Markus Matzner, Edison, N.J., and Donald M. Papuga, Danbury, Conn., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 5, 1985, Ser. No. 772,881
Int. Cl.⁴ C08G *81/00*

U.S. Cl. 525—437 **38 Claims**

1. A block copolymer comprising a poly(aryl ether) block and a liquid crystalline polyester block.

19. A process for preparing a block copolymer comprising a poly(aryl ether) oligomer block and a liquid crystalline polyester block which comprises the following steps:

(a) reacting the dihydroxy terminated oligomer $HO(EO\text{-}E'O)_nEOH$ with an anhydride of a lower carboxylic acid $(R_5CO)_2O$ to form the diester $R_5COO(EOE'O)_nEOCOR_5$,
(b) reacting the product from (a) with the diester $R_5COOArOCOR_5$ and the dicarboxylic acid $HOOCAr_1\text{-}COOH$ under acidolysis conditions, and
(c) recovering the block copolymer, and wherein E and E′ are as defined in claim 1, R_5 is lower alkyl and Ar and Ar_1 are divalent aromatic radicals which are residues of the diphenol and diacid components of the liquid crystalline polyester segments.

4,619,976

BLENDS OF COPOLYESTERS AND POLYCARBONATE

John C. Morris, and Winston J. Jackson, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 676,908, Nov. 30, 1984, abandoned. This application Nov. 26, 1985, Ser. No. 801,726
Int. Cl.⁴ C08L *67/02, 69/00*

U.S. Cl. 525—439 **5 Claims**

1. Composition of matter comprising (a) about 5–95% by weight of a polyester comprising repeating units from about 30 to about 95 mol % terephthalic acid, repeating units from about 5 to about 70 mol % trans-4,4′-stilbenedicarboxylic acid and repeating units from at least 60 mol % 1,4-cyclohexanedimethanol, said polyester having an inherent viscosity of 0.3 or more determined at 25° C. in 60/40 (wt/wt) phenol/tetrachloroethane at a concentration of 0.5 g/100 mL and (b) about 95–5% by weight of a polycarbonate of 4,4′-isopropylidenediphenol with an inherent viscosity of at least 0.3.

4,619,977

CROSSLINKABLE COMPOSITION COMPRISING AMINOEPOXY RESIN-IV

S. Burhan A. Qaderi, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 10, 1984, Ser. No. 680,112
Int. Cl.⁴ C08G *8/30*

U.S. Cl. 525—502 **28 Claims**

1. A substantially gel-free self-crosslinkable conjugated diene functional blocked dieneophile functional aminoepoxy resin of number average molecular weight about 1000–9000, comprising the reaction product of (1) diepoxide with (2) reactants comprising (a) amine functional conjugated diene chain extending reactant, (b) amine functional blocked dieneophile chain extending reactant other than said amine functional conjugated diene chain extending reactant, and (c) modifying agent comprising hydroxy functional secondary amine.

4,619,978

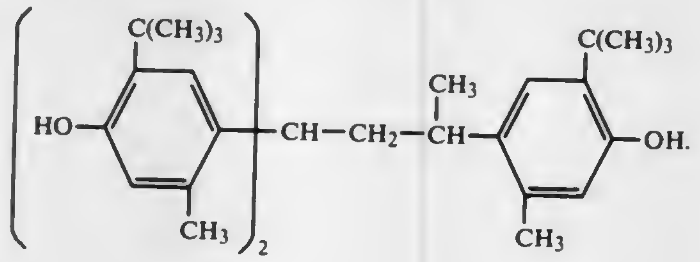
SUBSTITUTED PHENOL CHAIN TERMINATOR FOR POLYVINYL CHLORIDE POLYMERIZATION

William J. Reid, New Fairfield, Conn., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 280,389, Jul. 6, 1981, abandoned. This application Sep. 16, 1982, Ser. No. 418,518
Int. Cl.⁴ C08F *2/42, 114/06*

U.S. Cl. 526—84 **1 Claim**

1. In the process for the suspension polymerization of vinyl chloride monomer which comprises adding the monomer to an aqueous reaction system containing effective amounts of a suspending agent and a polymerization initiator, terminating the polymerization reaction and isolating the polyvinyl chloride, the improvement which comprises terminating the polymerization reaction by the addition to the reaction system at a point within the range of 70 to 95% monomer conversion of 25–5000 ppm, by weight of vinyl chloride monomer, of a compound corresponding to the formula



4,619,979

CONTINUOUS FREE RADIAL POLYMERIZATION IN A WIPED-SURFACE REACTOR

Thomas A. Kotnour, Cottage Grove; Ronald L. Barber, Oakdale, and Walter L. Krueger, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 28, 1984, Ser. No. 594,278
Int. Cl.⁴ C08F *2/02*

U.S. Cl. 526—88 **15 Claims**

1. A process of making a pressure sensitive adhesive composition by bulk polymerizing one or more free radical polymerizable vinyl compounds which comprises:

(a) continuously feeding to a wiped surface reactor comprising a vessel and at least one rotor inside the vessel having a wiping portion located close to the inside surface of the vessel and a root portion spaced substantially further from the inside surface than the wiping portion wherein the root surface is wiped continuously during rotation of the rotor raw materials which comprise unpolymerized vinyl compounds without any substantial amount of polymerized vinyl compounds, and at least two initiators for free radical polymerization under the following conditions:
  (i) all raw materials being fed substantially free of oxygen, and
  (ii) at least one monomer being a liquid unpolymerized vinyl compound having a viscosity less than about 4,000 centipoise which is fed under a pressure at least as high as the vapor pressure of the combined raw materials at the temperature to which the exotherm of the free radical polymerization brings them in the reactor;
(b) reacting the raw materials to desired conversion; and
(c) continuously withdrawing a polymeric material from the reactor.

4,619,980

POLYMERIZATION CATALYST, METHOD OF MAKING AND USE THEREFOR

Max P. McDaniel, Bartlesville, Okla., and Paul D. Smith, Houston, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 1, 1985, Ser. No. 718,668
Int. Cl.⁴ C08F *4/62, 4/68*

U.S. Cl. 526—96 **9 Claims**

1. A process for (co)polymerizing ethylene which comprises contacting ethylene and 0–10 mole % of at least one mono-1-olefin having 3–10 carbon atoms at a temperature of 20°–300° C. and a pressure ranging from 0 to 1000 psia in the presence of a catalyst consisting essentially of:

(a) a predominantly silica-containing support treated with in the range of about 0.1–20 mole %, calculated as the metal and based on the untreated support, of at least one compound selected from the group consisting of Group IIA oxide or compounds convertible to the oxide form, a Group VA or VB'oxide or compounds convertible to the oxide form or sulfuric acid, and then calcined in an oxygen-containing atmosphere at a temperature in the range of 300°–800° C. for a time in the range of 0.5–20 hours, and thereafter contacted with
(b) 0.01 to 10 wt. % of at least one zerovalent chromium compound, calculated as chromium metal and based on the weight of the treated support prepared as described in (a).

4,619,981

PROCESS FOR PREPARING POLYOLEFINS

Yoshio Tajima; Yoshiharu Iwasaki, both of Tokyo; Kiyoshi Kawabe; Wataru Uchida, both of Yokohama; Shoji Sugita, Kawasaki; Kazuo Matsuura, Tokyo, and Mituji Miyoshi, Fujisawa, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Continuation of Ser. No. 634,387, Jul. 25, 1984, abandoned. This application Aug. 12, 1985, Ser. No. 764,528
Claims priority, application Japan, Jul. 29, 1983, 58-137572
Int. Cl.⁴ C08F *4/02, 10/06*

U.S. Cl. 526—125 **3 Claims**

1. A process for preparing a polyolefin by polymerizing at least one α-olefin in the presence of a catalyst, which catalyst consists of the combination of:

[I] a solid catalyst component consisting of a solid material obtained by co-pulverization of the following components (1) to (4), and titanium tetrachloride (5) supported on said solid material:
  (1) a magnesium dihalide,
  (2) a member selected from the group consisting of vinyltrimethoxysilane, vinyltriethyoxysilane, vinyltriphenoxysilane, allyltrimethoxy silane, allyltriethoxysilane and allyltriphenoxysilane,
  (3) a compound selected from the group consisting of phenol and 1-naphthol, and
  (4) a member selected from the group consisting of anisole, phenetole, phenyl ether, benzyl phenyl benzyl ether, 1-naphthyl ether and 2-naphthyl ether;
[II] an organoaluminum compound; and
[III] monophenyltriethoxysilane;

wherein the component (1) to component (2) mole ratio is in the range of from 1 to 0.01 to 1 to 1;
the component (1) to component (3) is in the range of from 1 to 0.01 to 1 to 1;
the component (1) to component (4) is in the range of from 1 to 0.01 to 0.25;
the component [III] is used in an amount of 0.01 to 2 moles per mole of said organoaluminum compound;
said α-olefin has 3 to 8 carbon atoms; and
the polymerization reaction is carried out at a temperature in the range of 20° to 200° C. and at a pressure in the range of atmospheric pressure to 70 kg/cm^2.G.

4,619,982

POLYMERIZATION OF CONJUGATED DIENES

Derek K. Jenkins, Ashurst, England, assignor to Enoxy Chemical Limited, Southampton, England

Filed Mar. 31, 1983, Ser. No. 480,806
Claims priority, application United Kingdom, Apr. 1, 1982, 8209712
Int. Cl.⁴ C08F *4/52*

U.S. Cl. 526—164 **9 Claims**

1. A process for the homopolymerisation of a conjugated diene or the copolymerisation of a conjugated diene with one or more other conjugated dienes as the sole polymerisable compound to produce a high trans content polymer comprising carrying out the polymerisation in the presence as a catalyst of a mixture of (a) a rear earth compound which is a rare earth carboxylate, a rare earth alkoxide or rare earth diketone complex and (b) a dialkyl magnesium compound as the sole catalyst.

4,619,983

COPOLYMER FOR FLUORINE-CONTAINING ELASTOMER HAVING EXCELLENT LOW TEMPERATURE RESISTANCE AND ALCOHOL RESISTANCE

Masaaki Yamabe; Gen Kojima, both of Machida; Hiroshi Wachi, and Shun-ichi Kodama, both of Yokohama, all of Japan, assignors to Asahi Glass Company Limited, Tokyo, Japan

Continuation of Ser. No. 489,347, Apr. 28, 1983, abandoned, which is a continuation of Ser. No. 328,387, Dec. 7, 1981, Pat. No. 4,418,186. This application Jan. 28, 1985, Ser. No. 694,920
Claims priority, application Japan, Dec. 26, 1980, 55-183780
The portion of the term of this patent subsequent to Nov. 29, 2000, has been disclaimed.
Int. Cl.⁴ C08F *214/16, 214/18, 214/22*

U.S. Cl. 526—247 **4 Claims**

1. A fluorine-containing elastomer having excellent low temperature resistance and alcohol resistance, which consists essentially of a copolymer composed of vinylidene fluoride units and fluorovinyl ether units having the formula $CF_2{=}CFOX$, wherein X is a C_3–C_9 perfluoroalkyl group which has an ether bond or bonds having 1–3 oxygen atoms at a molar ratio of vinylidene fluoride units to fluorovinyl ether units of 91:9 to 72.3:27.7, and a total content of the units of at least 80 mole percent, based on the total copolymer, with the balance of up to 20 mole percent being at least one comonomer selected from the group consisting of chlorotrifluoroethylene, vinyl fluoride, ethylene, propylene, isobutylene, butene-1, perfluoro(propyl vinyl ether), perfluoro(methyl vinyl ether), ethyl vinyl ether, 2-chloroethyl vinyl ether, and vinyl monochloroacetate, wherein said elastomer has an inherent viscosity of about 0.54 to 2.13 dl/g. obtained in a 90:10 mixture of trifluorotrichloroethylene and dimethylformamide at 30° C., a thermal decomposition temperature of from 388° C. to 412° C. and a glass transition temperature of from −29° C. to −36° C.

4,619,984

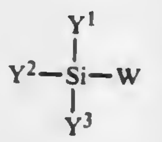
PACKING FOR USE IN RESOLUTION

Yoichi Yuki, and Akito Ichida, both of Himeji, Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

PCT No. PCT/JP84/00369, § 371 Date Mar. 15, 1985, § 102(e) Date Mar. 15, 1985, PCT Pub. No. WO85/00661, PCT Pub. Date Feb. 14, 1985
PCT Filed Jul. 20, 1984, Ser. No. 717,267
Claims priority, application Japan, Jul. 20, 1983, 58-132361; Aug. 19, 1983, 58-150383; Aug. 26, 1983, 58-154993
Int. Cl.⁴ C08G *77/26*

U.S. Cl. 528—38 **18 Claims**

1. A packing for use in the optical resolution of racemic compounds, comprising a substance of the general formula (I):

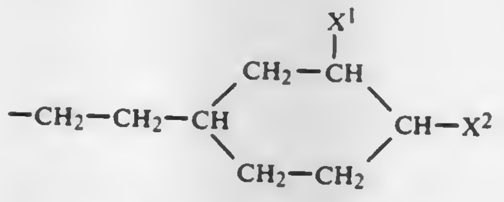


$$Y^2-\overset{\displaystyle Y^1}{\underset{\displaystyle Y^3}{Si}}-W \qquad (I)$$

wherein at least one of Y^1, Y^2 and Y^3 represents a silica gel and siloxane bond with the silica gel and the balance is selected from the group consisting of a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms, an aralkyl group having 7 to 20 carbon atoms, a halogen atom, a hydroxy group, and an alkoxy group having 1 to 20 carbon atoms, and

W represents

$$-X-R \qquad (1)$$

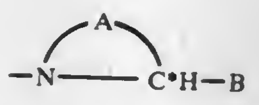


(2)

$$-X-R^1 \text{ or} \qquad (3)$$
$$-X-R^2 \qquad (4)$$

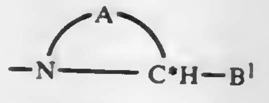
in which X represents a divalent group having 1 to 30 carbon atoms,

R represents an optically active group of the general formula:



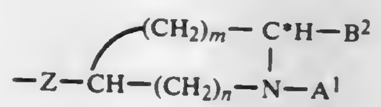
where A is a substituted or unsubstituted alkylene group having 2 or 3 carbon atoms and B is a metal thiocarboxylate group,

one of X^1 and X^2 represents a hydroxy group and the other represents an optically active group of the formula:



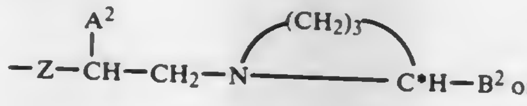
where B^1 is a metal carboxylate group,

R^1 represents an optically active group of the general formula:



where m and n are each 0 or an integer of 1 to 3 and the total of these numbers is up to 3, B^2 is a copper carboxylate or thiocarboxylate, Z is an oxygen atom, a sulfur atom or an amino group and A^1 is a hydrogen atom, an alkyl group having 1 to 40 carbon atoms, an aryl group having 6 to 40 carbon atoms, an aralkyl group having 7 to 47 carbon atoms or a group having 1 to 40 carbon atoms and a hetero atom, and

R^2 represents an optically active group of the general formula:



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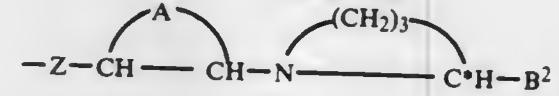


where A^2 is a hydrogen atom, an alkyl group having 1 to 40 carbon atoms, an aryl group having 6 to 40 carbon atoms, an aralkyl group having 7 to 47 carbon atoms or a group having 1 to 40 carbon atoms and a hetero atom, A^3 is alkylene having 2 to 6 carbon atoms and refers to an asymmetric carbon atom.

4,619,985

PROCESS FOR THE PRODUCTION OF DEACTIVATED SUSPENSIONS OF FINELY-DIVIDED POLYISOCYANATES IN RELATIVELY HIGH MOLECULAR WEIGHT COMPOUNDS, DEACTIVATED SUSPENSIONS AND USE THEREOF FOR THE PRODUCTION OF POLYURETHANES

Heinrich Hess; Gerhard Grögler, both of Leverkusen; Richard Kopp, Cologne, and James M. Barnes, Wermelskirchen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 8, 1985, Ser. No. 732,028

Claims priority, application Fed. Rep. of Germany, May 18, 1984, 3418430

Int. Cl.^{4} C08G *18/30*

U.S. Cl. 528—49 **12 Claims**

1. A process for the production of deactivated suspensions of solid polyisocyanates of retarded reactivity comprising:

(A) reacting

(i) one or more solid, finely divided polyisocyanates having melting points above 30° C. with

(ii) from 0.1 to 25 equivalent percent of reactive groups per isocyanate equivalent of a stabilizer compound having a molecular weight of from 32 to 6000 selected from the group consisting of aliphatic polyamines, hydrazines, alkylhydrazines, N,N'-dialkylhydrazines, polyhydrazides, amidine-group containing compounds, guanidine-group containing compounds, and mixtures thereof, in the presence of

(iii) an organic material having a molecular weight of from 400 to 6000 selected from the group consisting of

(1) compounds containing two or more hydroxyl groups,

(2) compounds containing two or more aromatically-bound amino groups, and

(3) mixtures thereof, to thereby form a suspension of stabilized polyisocyanate in said organic material, and

(B) adding to the suspension of step (A) at a temperature below the melting temperature of the polyisocyanate a deactivator which at least partially deactivates any unreacted quantities of said stabilizer compound.

4,619,986

EPOXY PHTHALONITRILE POLYMERS

Teddy M. Keller, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 28, 1985, Ser. No. 749,705

Int. Cl.^{4} C08G *59/40*

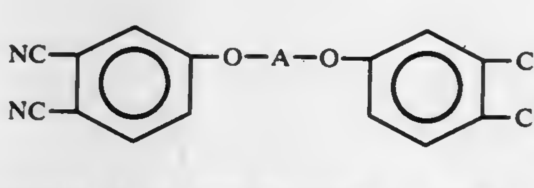
U.S. Cl. 528—99 **5 Claims**

1. A process for producing an epoxy-phthalonitrile copolymer, which comprises:

mixing amounts of an epoxy monomer having the formula,

$$R—O—A—O—R$$

wherein A is selected from a group consisting of $—\phi—C_nH_{2n}—\phi—$, $—\phi—SO_2—\phi—$, $—\phi—$, $—C_nH_{2n}—$, and $—\phi—\phi—$, wherein n ranges from 1–4, wherein the phenyl groups are linked at the para or meta positions, and wherein R is selected from the group consisting of linear epoxides having 3–5 carbon atoms; with a phthalonitrile monomer having the formula,



wherein A is selected from a group consisting of $—\phi—C_nH_{2n}—\phi—$, $—\phi—SO_2—\phi—$, $—\phi—$, $—C_nH_{2n}—$, and $—\phi—\phi—$, wherein n ranges from 1–4, wherein the phenyl groups are linked at the para or meta positions, said epoxy and phthalonitrile monomers being mixed in a molar ratio ranging from about 20:1 epoxy:phthalonitrile to about 20:1 phthalonitrile:epoxy; and

heating the epoxy-phthalonitrile mixture in the presence of an amine additive selected from the group consisting of m-phenylenediamine, p-phenylenediamine, 4,4'-methylenedianiline, 4-aminophenyl sulfone, 4-aminophenyl ether and 4,4'-(p-phenylenedioxy)dianiline to a temperature sufficient to polymerize said mixture, said temperature being between the polymerization mixture melting point and decomposition temperature.

4,619,987

PROCESS FOR PREPARATION OF HIGH-MOLECULAR WEIGHT POLYESTER

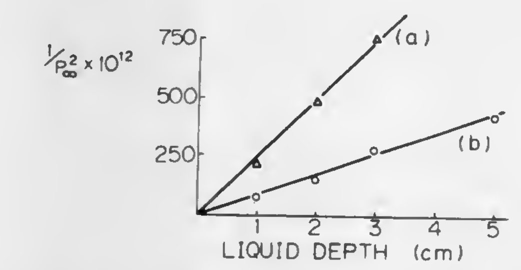
Noritsugu Saiki, and Tadashi Konishi, both of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Oct. 8, 1985, Ser. No. 785,478

Claims priority, application Japan, Oct. 12, 1984, 59-212588; Oct. 19, 1984, 59-218664; Oct. 26, 1984, 59-224207

Int. Cl.^{4} C08G *63/04, 63/22*

U.S. Cl. 528—274 **17 Claims**



1. A process for preparing a high-molecular weight polyester comprising polymerizing a polyester obtained from a dicarboxylic acid component composed mainly of an aromatic dicarboxylic acid and/or an ester-forming derivative thereof and a glycol component composed mainly of ethylene glycol and/or an ester forming derivative thereof and having an intrinsic viscosity of at least 0.8, at a temperature above the melting point of the polyester and under a reduced pressure, in the presence of a compound (A) successively generating a substance which is gaseous under the polymerization conditions and does not substantially reduce the molecular weight of the polyester, to form a polyester having an intrinsic viscosity of at least 1.0.

4,619,988

HIGH STRENGTH AND HIGH TENSILE MODULUS FIBERS OR POLY(ETHYLENE OXIDE)

Roger Y. Leung, Schaumburg, and Anthony J. Polak, Lake Zurich, both of Ill., assignors to Allied Corporation, Morristown, N.J.

Filed Jun. 26, 1985, Ser. No. 749,073

Int. Cl.^{4} C08G *65/30*

U.S. Cl. 528—421 **12 Claims**

1. A method of making a poly(ethylene oxide) filament with a tensile strength of at least 0.1 GPa and a tensile modulus of at least 0.5 GPa comprising crystallizing poly(ethylene oxide) from a solution containing less than about 5 weight percent of poly(ethylene oxide) of molecular weight greater than about 10^6 in a shear or extensional flow field of the type produced by a Couette viscometer at a temperature from about 35° to about 45° C.

4,619,989

BONE MORPHOGENETIC PROTEIN COMPOSITION

Marshall R. Urist, Pacific Palisades, Calif., assignor to The Regents of the University of Cal., Los Angeles, Calif.

Continuation-in-part of Ser. No. 260,726, May 5, 1981, which is a continuation of Ser. No. 174,906, Aug. 4, 1980, Pat. No. 4,294,753. This application Aug. 16, 1983, Ser. No. 523,606

Int. Cl.^{4} C07K *3/28, 15/06*

U.S. Cl. 530—417 **5 Claims**

1. The process of isolating substantially pure BMP composition comprising the steps of:

(a) demineralizing bone tissue;

(b) treating said demineralized bone tissue under aqueous conditions with a water soluble neutral salt and a solubilizing agent for BMP composition, said agent being selected from the group consisting of urea and quanidine, and thereby transforming the bone collagen to gelatin and extracting BMP composition into said solution of solubilizing agent;

(c) separating said solubilizing agent and neutral salt from said solution thereby precipitating BMP composition in the aqueous medium;

(d) dissolving said BMP composition precipitate in a solubilizing agent as defined in (b) above, and dialyzing said dissolved BMP composition against a less concentrated solution of said solubilizing agent; and

(e) dialyzing supernatant obtained in step (d) against water thereby precipitating substantially pure BMP composition.

4,619,990

POLYMERIC DYES WITH PENDENT CHROMOPHORE GROUPS CAPABLE OF UNDERGOING THERMOPLASTIC DEFORMATION

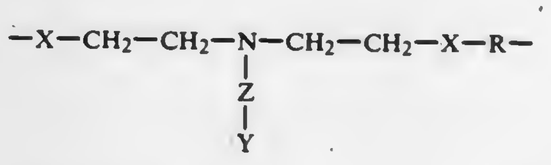
Mohamed A. Elmasry, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 11, 1985, Ser. No. 710,174

Int. Cl.^{4} C07C *107/04, 107/06;* **D09B** *1/16, 23/00, 43/00, 43/20, 43/22, 57/00*

U.S. Cl. 534—573 **15 Claims**

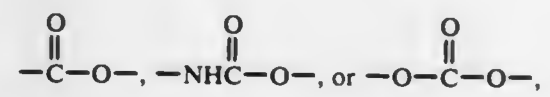
1. A polymeric dye selected from classes [A] and [B] wherein Class [A] is a dye polymer comprising repeating units of the formula



$$-X-CH_2-CH_2-\underset{\underset{\displaystyle Y}{|}}{\underset{\displaystyle Z}{\underset{|}{N}}}-CH_2-CH_2-X-R-$$

said repeating units numbering between 5 and 100,000, wherein

X is



$$-\overset{\overset{\displaystyle O}{\|}}{C}-O-,\ -NH\overset{\overset{\displaystyle O}{\|}}{C}-O-,\ \text{or}\ -O-\overset{\overset{\displaystyle O}{\|}}{C}-O-,$$

R is a hydrocarbon chain with up to 30 carbon atoms selected from the class consisting of straight chain aliphatic, branched chain aliphatic, cycloaliphatic, single or fused ring aromatic,

Z is (1) phenylene or naphthlene, or (2) a single bond when Y is an anthraquinone moiety,

Y is a chromophore moiety selected from the group consisting of an azo moiety, tricyanovinyl moiety, an anthraquinone moiety, and a methine or a polymethine moiety, and Class [B] is a dye polymer consisting essentially of units of copolymers derived from ethylenically-unsaturated monomers, at least one of which is a monomer of subclass III and at least one of which is a monomer of subclass IV wherein

Subclass III is a non-chromophore-containing monomer selected from the group consisting of
- (meth)acrylate monomer,
- (meth)acrylamide monomer,
- vinyl ether monomer,
- vinyl ester monomer, and
- meth(acrylonitrile) monomer, and

Subclass IV is selected from the group consisting of
- (meth)acrylate dye,
- vinyl ester dye, and
- vinyl ether dye,

with the proviso that Class IV monomers contain a pendent tricyanovinyl, methine, or polymethine dye group.

4,619,991

PROCESS FOR THE PRODUCTION OF AZO COMPOUNDS

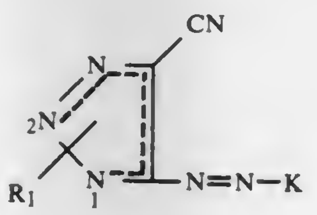
Peter Matzinger, Zürich, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 305,608, Sep. 25, 1981, abandoned, which is a continuation of Ser. No. 120,137, Feb. 11, 1980, abandoned. This application Aug. 18, 1982, Ser. No. 409,300

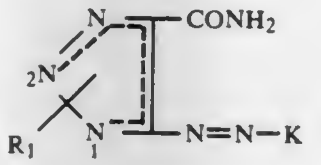
Int. Cl.^{4} C09B *29/036, 43/00*

U.S. Cl. 534—588 **20 Claims**

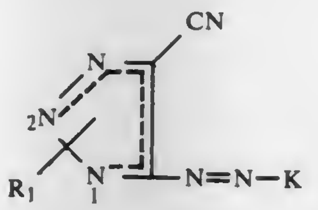
1. A process for the synthesis of a compound of the formula



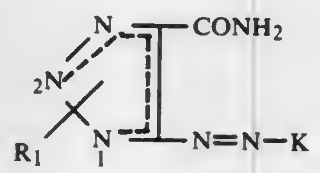
comprising treating a compound of the formula



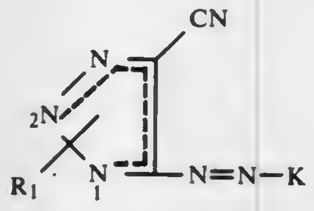
with a dehydrating agent to obtain a compound of the formula



said dehydrating agent being an agent capable of dehydrating a compound of the formula



to a compound of the formula



wherein

R_1 is hydrogen; C_{1-4}alkyl; C_{1-4}alkyl monosubstituted by fluoro, chloro, bromo, (C_{1-4}alkyl)carbonyl, C_{1-4}alkoxy, cyano, thiocyano, phenoxy, (C_{1-4}-alkoxy)carbonyl, phenoxycarbonyl, (C_{1-4}alkoxy)-ethoxycarbonyl, (C_{1-4}alkyl)-carbamoyl, di-(C_{1-4}-alkyl)carbamoyl, phenylcarbamoyl, N-C_{1-4}alkyl-N-phenylcarbamoyl, benzoyl, (C_{1-4}alkyl)-carbonyloxy, phenylsulfonyl, C_{1-4}alkylsulfonyl, sulfamoyl, C_{1-4}alkylsulfamoyl, di-(C_{1-4}alkyl)sulfamoyl, phenylsulfamoyl, N-C_{1-4}alkyl-N-phenylsulfamoyl, phenyl or substituted phenyl having 1 or 2 substituents each of which is independently chloro, bromo, nitro, cyano, trifluoromethyl, C_{1-4}alkyl or C_{1-4}alkoxy; C_{2-4}alkenyl; C_{2-4}alkenyl monosubstituted by chloro, bromo or phenyl; C_{2-4}alkynyl; phenyl or substituted phenyl having 1 to 3 substituents each of which is independently C_{1-4}alkyl, C_{1-4}alkoxy, chloro, bromo, nitro, cyano (maximum of two), trifluoromethyl (maximum of two), (C_{1-4}alkoxy)-carbonyl (maximum of two), formyl (maximum of one), (C_{1-4}-alkyl)carbonyl (maximum of one), (C_{-4}alkyl)carbamoyl (maximum of one), di-(C_{1-4}alkyl)carbamoyl (maximum of one), C_{1-4}alkylsulfonyl (maximum of one), phenylsulfonyl (maximum of one), sulfamoyl (maximum of one), C_{1-4}-alkylsulfamoyl (maximum of one), di-(C_{1-4}alkyl)sulfamoyl (maximum of one) or phenylsulfamoyl (maximum of one), with the proviso that R_1 is in the 1-position of the triazole ring and the broken line represents double bonds in the 2,3- and 4,5-positions or R_1 is in the 2-position of the triazole ring and the broken line represents double bonds in the 3,4- and 1,5-positions, and

K is a coupling component radical.

4,619,992

3-(β-AMINOETHYL)-4-CYANO-ISOTHIAZOLYLAZO DYES

Udo Bergmann, Darmstadt; Johannes P. Dix, Neubofen; Guenter Hansen, and Ernst Schefczik, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

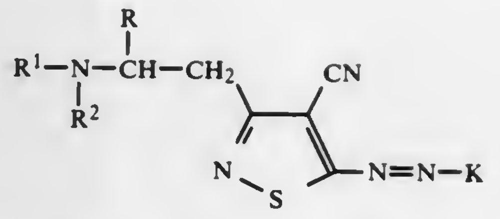
Filed Mar. 12, 1985, Ser. No. 710,993

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1984, 3409243

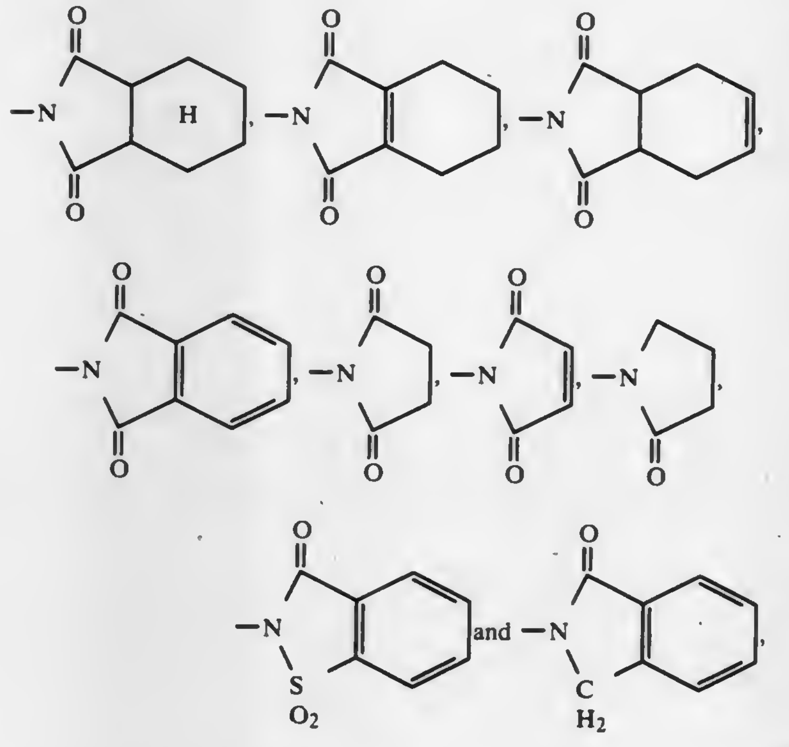
Int. Cl.^{4} C09B *29/039;* **D06P** *1/18, 3/54*

U.S. Cl. 534—733 **4 Claims**

1. A compound of the formula:



where R is hydrogen, C_1–C_4-alkyl, phenyl, chlorophenyl, methylphenyl, methoxyphenyl or nitrophenyl; R^1 is allyl, C_1–C_8-alkyl, C_1–C_8-alkyl substituted by C_1–C_8-alkoxy, phenoxy, phenyl or C_1–C_8-alkanoyloxy, cyclopentyl, cyclohexyl, and methylcyclohexyl, norbornyl, phenyl or phenyl substituted by chlorine, methyl or alkoxy; R^2 is C_1–C_{10}-alkanoyl, C_1–C_{10}-alkanoyl substituted by alkoxy or phenoxy, cyclohexanoyl, benzoyl, benzoyl substituted by chlorine, methyl or methoxy, C_1–C_8-alkoxycarbonyl, aminocarbonyl, phenylaminocarbonyl, CH_3NHCO, C_2H_5NHCO, C_3H_7NHCO, C_4H_9NHCO, $(CH_3)_2NCO$, CH_3SO_2, $C_6H_5SO_2$ or p—CH_3—C_3H_4—SO_2; or R^1 and R^2, together with the nitrogen atom, form a ring system selected from the group consisting of:



and K is a radical of a coupling component.

4,619,993

AZO COMPOUNDS HAVING A 2,4-DINITRO-5-THIOCYANOPHENYL DIAZO COMPONENT RADICAL

Werner Baumann, Therwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

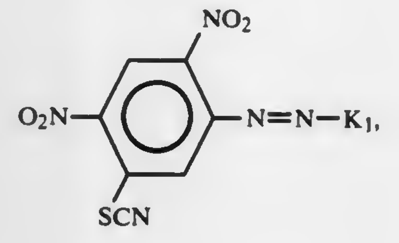
Continuation-in-part of Ser. No. 459,730, Jan. 20, 1983, abandoned. This application Jul. 18, 1984, Ser. No. 631,930

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1982, 3202117

Int. Cl.^{4} C09B *29/01, 29/085, 29/36, 29/44*

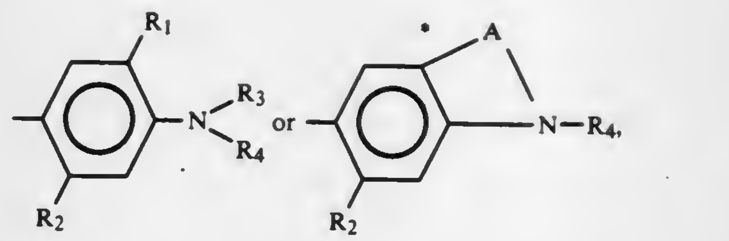
U.S. Cl. 534—735 **18 Claims**

1. A compound of the formula



wherein

K_1 is



wherein

A is C_{3-7}alkylene or —O—C_{2-4}alkylene, with the proviso that the oxygen atom of the —O—C_{2-4}alkylene-radical is attached to the asterisked atom,

R_1 is hydrogen, chloro, bromo, C_{1-4}-alkyl, C_{1-4}alkoxy, benzyloxy or —O—$(CH_2)_n$—A_1—C_{1-6}alkyl,

wherein

A_1 is —O—, —O—CO—, —O—CO—O— or —CO—O—, and

n is 1, 2, 3, 4, 5 or 6

R_2 is hydrogen, chloro, bromo, C_{1-2}alkyl, C_{1-4}alkoxy, phenyl(C_{1-3}alkoxy), acyloxy or acylamino, and each of

R_3 and R_4 is independently hydrogen; C_{1-12}alkyl; C_{3-4}alkenyl; C_{3-4}alkynyl; benzyl; C_{2-6}alkyl substituted by 1 or 2 substituents each of which is independently hydroxy, C_{1-4}alkoxy, acyloxy, chloro, bromo, cyano, phenyl or phenoxy; or —$(CH_2)_n$—A_1—C_{1-6}alkyl,

wherein

A_1 and n are as defined above, with the proviso that any —$(CH_2)_n$—A_1—C_{1-6}alkyl as R_3 or R_4 is other than —$(CH_2)_m$—O—C_{1-4}-alkyl, —$(CH_2)_m$—O—CO—C_{1-6}alkyl and —$(CH_2)_m$—O—CO—O—C_{1-6}alkyl,

wherein

m is 2, 3, 4, 5 or 6.

4,619,994

BENZENEAZO POLYNUCLEAR AROMATIC OR HETEROAROMATIC AMIDINE COMPOUNDS CONTAINING AMIDINE SUBSTITUENTS

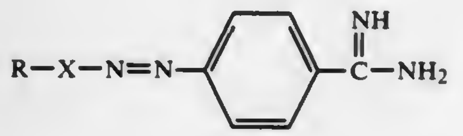
Douglas Shortridge, 36, Parkside Road., Leeds, West Yorkshire LS6 4QG, England

Continuation of Ser. No. 488,717, Apr. 26, 1983, abandoned. This application Jul. 25, 1985, Ser. No. 759,493

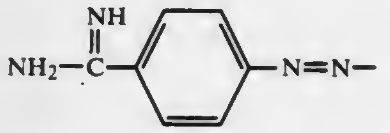
Int. Cl.^{4} C07C *107/00, 107/04, 107/08;* **A61K** *31/655*

U.S. Cl. 534—738 **5 Claims**

1. A compound of the formula



where X is a polynuclear aromatic or heteroaromatic group having from 2 to 4 fused rings which is unsubstituted or substituted by hydroxyl or C_1–C_2 alkyl; and R is hydrogen or a group of the formula



or an acid addition salt of said compound.

4,619,995
N,O-CARBOXYMETHYL CHITOSAN AND PREPARATIVE METHOD THEREFOR

Ernest R. Hayes, Wolfville, Canada, assignor to Nova Chem Limited, Halifax, Canada

Filed Dec. 24, 1984, Ser. No. 685,559

Int. Cl.⁴ C08B *37/08*

U.S. Cl. 536—20 **8 Claims**

1. N,O-carboxymethyl chitosan having a degree of substitution of carboxymethyl groups per glucosamine monomer unit in the chitosan of less than 1.0, with carboxymethyl groups being substituted on hydroxyl oxygen atoms of the glucosamine monomer units of the chitosan and carboxymethyl groups being substituted on nitrogen atoms of the glucosamine monomer units of the chitosan.

4,619,996
PROCESS FOR PREPARING 2-β-D-RIBOFURANOSYLSELENAZOLE-4-CARBOXAMIDE

P. Dan Cook, and Dennis J. McNamara, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jul. 9, 1984, Ser. No. 629,287

Int. Cl.⁴ C07H *1/00*

U.S. Cl. 536—55.3 **1 Claim**

1. A process for preparing 2-β-D-ribofuranosylselenazole-4-carboxamide comprising the steps of:

(a) reacting 2,3,5-tri-O-benzoyl-β-D-ribofuranosyl-1-carbonitrile with gaseous hydrogen selenide in a 1:1 to 1:5 molar ratio at a temperature of between about 10° C. to about 30° C. for a period of less than three hours to effect substantially complete conversion of said 2,3,5-tri-O-benzoyl-β-D-ribofuranosyl-1-carbonitrile to 2,5-anhydro-3,4,6-tri-O-benzoyl-β-D-allonselenocarboxamide;

(b) reacting said 2,5-anhydro-3,4,6-tri-O-benzoyl-β-D-allonselenocarboxamide with ethyl bromopyruvate to produce ethyl 2-(2,3,5-tri-O-benzoyl-β-D-ribofuranosyl)-selenazole-4-carboxylate;

(c) reacting said ethyl 2-(2,3,5-tri-O-benzoyl-β-D-ribofuranosyl)selenazole-4-carboxylate with sodium methoxide to produce methyl 2-β-D-ribofuranosyl-selenazole-4-carboxylate; and

(d) thereafter reacting said methyl 2-β-D-ribofuranosyn-selenazole-4-carboxylate with ammonia to product 2-β-D-ribofuranosylselenazole-4-carboxamide.

4,619,997
SUBSTITUTED 2-PYRIDYLMETHYLTHIO AND SULFINYL-BENZIMIDAZOLES AS GASTRIC ANTISECRETORY AGENTS

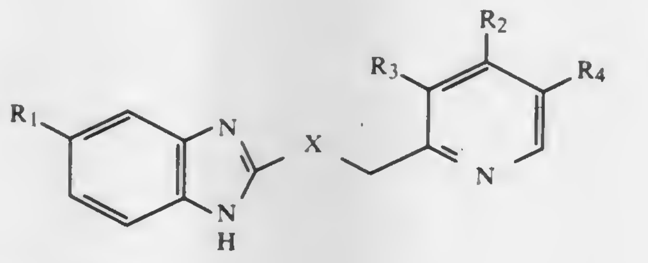
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 648,118, Sep. 6, 1984, Pat. No. 4,575,554, which is a continuation-in-part of Ser. No. 558,087, Dec. 5, 1983, abandoned. This application Dec. 23, 1985, Ser. No. 812,224

Int. Cl.⁴ C07D *401/14, 413/14*

U.S. Cl. 544—124 **2 Claims**

1. A compound of the formula I:



I

wherein X is
- (a) =S, or
- (b) =SO;

wherein R_1 is
- (a) hydrogen,
- (b) methyl,
- (c) methoxy, or
- (d) trifluoromethyl;

wherein R_2 is
- (a) $—N(R_4)_2$
- (b) 1-piperidinyl,
- (c) 4-morpholinyl,
- (d) 4-methyl-piperazin-1-yl, or
- (e) 1-pyrrolidinyl;

wherein R_3 and R_4 are the same or different and are
- (a) hydrogen, or
- (b) $(C_1–C_4)$alkyl.

4,619,998
LIGHT-SENSITIVE TRIAZINES POSSESSING TRICHLOROMETHYL GROUPS

Gerhard Buhr, Koenigstein, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

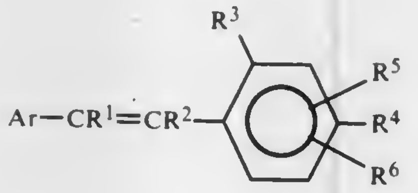
Filed Oct. 12, 1984, Ser. No. 660,098

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1983, 3337024

Int. Cl.⁴ C07D *251/20*

U.S. Cl. 544—193.1 **8 Claims**

1. A light sensitive compound have the formula



(I)

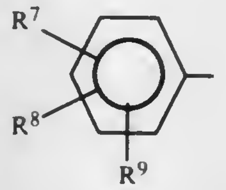
wherein

R^1 and R^2 each is a hydrogen atom or a lower alkyl group,

R^3 and R^4 are different from one another and each is a hydrogen atom or a 4,6-bis-trichloromethyl-s-triazin-2-yl group,

R^5 and R^6 are identical or different and each is a hydrogen atom, a halogen atom, an alkyl group having 1 to 3 carbon atoms, or a methoxy group, and

Ar is (i) a mononuclear group having the formula,



(II)

wherein R^7, R^8 and R^9 are identical or different and each is a hydrogen atom; a halogen atom; an unsubstituted alkyl group or an alkyl group substituted by halogen, carbocyclic aryl or carbocyclic aryloxy, such that any two of R^7 through R^9 can be connected together to form an ortho-fused 5- or 6-membered ring wherein one or two of the ring carbons can be replaced by an O- or a S-atom; a cycloalkyl group; an alkenyl group; an aryl group; or an aryloxy group, the total number of carbon atoms for R^7, R^8 and R^9 being 12,

or (ii) a carbocyclic binuclear or trinuclear group which is unsubstituted or substituted by halogen, an alkyl group having 1 to 3 carbon atoms, an alkoxy group having 1 to 4 atoms, or an alkoxy-alkyl group having 3 to 6 carbon atoms.

4,619,999
ALIPHATIC ISOCYANATE COMPOUNDS

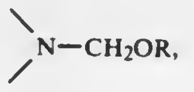
Girish G. Parekh, Fairfield, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 15, 1983, Ser. No. 466,755

Int. Cl.⁴ C07D *251/00;* C07C *118/00;* C08G *12/30, 12/12*

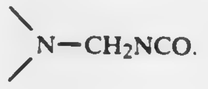
U.S. Cl. 544—196 **5 Claims**

1. A method of making an aliphatic isocyanate compound, comprising reacting isocyanic acid with a compound containing at least one N-alkoxymethyl group of the formula



$$>N-CH_2OR,$$

wherein R is $C_1–C_8$ alkyl, to form said aliphatic isocyanate containing at least one N-isocyanatomethyl group of the formula



$$>N-CH_2NCO.$$

4,620,000
METHOD FOR PREPARING 4-HYDROXYCINNOLINES IN A PH CONTROLLED SYSTEM

Lucian R. Denes, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed May 28, 1985, Ser. No. 737,963

Int. Cl.⁴ C07D *237/28*

U.S. Cl. 544—235 **2 Claims**

1. In a method for the preparation of a 4-hydroxycinnoline wherein the diazonium salt of a 2-aminoacetophenone in aqueous solution is allowed to undergo cyclocondensation, the improvement that comprises conducting the cyclocondensation in the presence of a buffering agent and an essentially water-immiscible organic liquid, maintaining the pH of the solution between about 4.0 and 8.5.

4,620,001
CHEMICAL METHODS AND INTERMEDIATES FOR PREPARING SUBSTITUTED PYRIMIDINONES

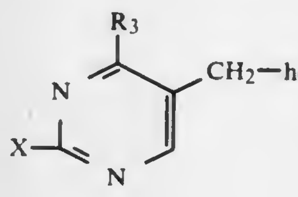
Bing L. Lam, King of Prussia, and Lendon N. Pridgen, Audubon, both of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Division of Ser. No. 366,443, Apr. 7, 1982, Pat. No. 4,477,663, which is a division of Ser. No. 232,105, Feb. 6, 1981, Pat. No. 4,352,933. This application Sep. 11, 1984, Ser. No. 649,394

Int. Cl.⁴ C07D *401/06*

U.S. Cl. 544—310 **6 Claims**

1. A compound of the basic formula:



in which:

R_3 is —Cl, —Br, lower alkoxy of 1–5 carbons, benzyloxy, allyloxy, phenoxy, 2-methoxyethoxy or 2,2,2-trichloroethoxy;

X is —Cl, —Br or, when R_3 is other than —Cl or —Br, lower alkoxy of 1–5 carbons; and

het is selected from the group consisting of 2-pyridyl, 3-pyridyl, 4-pyridyl, 2-thiazolyl, 2-oxazolyl, 2-imidazolyl, 2-pyrimidyl and 2-pyrazyl, said het optionally monosubstituted by methyl, ethyl, methoxy or ethoxy, or an acid addition salt thereof with hydrochloric, hydriodic, acetic, hydrobromic, sulfuric, phosphoric, oxalic, formic, ethanedisulfonic or methanesulfonic acid.

4,620,002
2-PYRIMIDYL ALKANESULFONATES

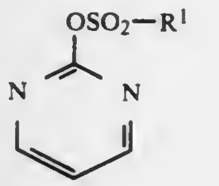
Louise O. Sandefur; Wojciech Slusarek, both of Rochester; Burton D. Wilson, Webster, and Cataldo A. Maggiulli, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 11, 1982, Ser. No. 407,223

Int. Cl.⁴ C07D *239/34*

U.S. Cl. 544—318 **2 Claims**

1. A 2-pyrimidyl alkanesulfonate represented by the structural formula



wherein R^1 represents an alkyl group having from 1 to 3 carbon atoms.

4,620,003
PROCESS FOR PRODUCING 2-QUINOXALINOLS

Tsukasa Ishikura, Ageo, Japan, assignor to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

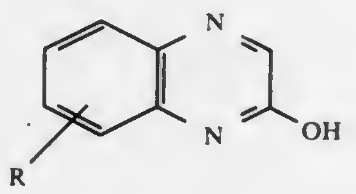
Filed May 18, 1984, Ser. No. 611,969

Claims priority, application Japan, May 25, 1983, 58-90771

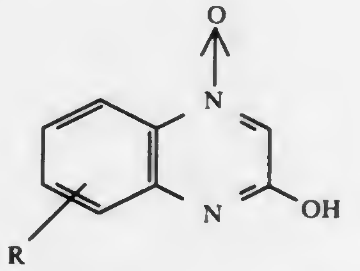
Int. Cl.⁴ C07D *241/44;* C07B *1/00*

U.S. Cl. 544—354 **7 Claims**

1. A process for preparing a 2-quinoxalinol compound of the formula:



in which R is hydrogen, halogen or a trifluoromethyl group, which comprises reducing a 2-quinoxalinol-4-oxide compound of the formula:



where R is as defined above, with hydrazine in the presence of a Raney catalyst and an alkali metal hydroxide, an alkaline earth metal hydroxide, or ammonium hydroxide.

4,620,004

POLYHETEROCYCLIC COMPOUNDS

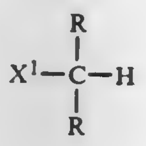
Edward B. Sanders, and Yoram Houminer, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Division of Ser. No. 45,716, Jun. 5, 1979, Pat. No. 4,318,418. This application Dec. 23, 1980, Ser. No. 220,196

Int. Cl.⁴ C07D *241/02*

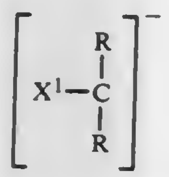
U.S. Cl. 544—357 **10 Claims**

9. A process for preparing a polyheterocyclic compound which comprises the steps of (1) dissolving and interacting in a solvent medium a basic reagent and an organic compound corresponding to the formula:



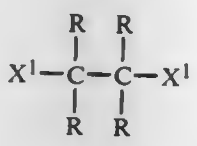
$$X^1-\overset{\overset{\textstyle R}{|}}{\underset{\underset{\textstyle R}{|}}{C}}-H$$

where R is a substituent selected from hydrogen and alkyl groups containing between 1 and about 10 carbon atoms; X^1 is a substituent selected from pyrazyl, alkyl-substituted pyrazyl, pyridyl and alkyl-substituted pyridyl, where each alkyl group contains between 1 and about 10 carbon atoms, and the X^1 substituent contains a total of between 4 and about 22 carbon atoms; and any adjacent R and X or any adjacent R and X^1 when taken together with connecting elements form an alicyclic structure; wherein the interaction converts the organic compound into an anion corresponding to the structure:



$$\left[X^1-\overset{\overset{\textstyle R}{|}}{\underset{\underset{\textstyle R}{|}}{C}}\right]^-$$

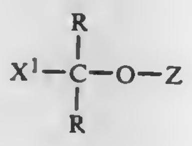
where R and X^1 are as previously defined; and (2) treating the solvent medium containing the anion with a coupling reagent to cause dimeric coupling of the anion to form a polyheterocyclic compound corresponding to the formula:



$$X^1-\overset{\overset{\textstyle R}{|}}{\underset{\underset{\textstyle R}{|}}{C}}-\overset{\overset{\textstyle R}{|}}{\underset{\underset{\textstyle R}{|}}{C}}-X^1$$

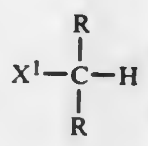
where R and X^1 are as previously defined.

10. A process for preparing a polyheterocyclic compound which comprises dissolving and interacting in a solvent medium (a) a basic reagent, (b) at least one sulfonate ester compound corresponding to the formula:



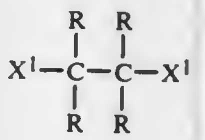
$$X^1-\overset{\overset{\textstyle R}{|}}{\underset{\underset{\textstyle R}{|}}{C}}-O-Z$$

where R is a substituent selected from hydrogen and alkyl groups containing between 1 and about 10 carbon atoms; X^1 is a substituent selected from pyrazyl, alkyl-substituted pyrazyl, pyridyl and alkyl-substituted pyridyl, where each alkyl group contains between 1 and about 10 carbon atoms, and the X^1 substituent contains a total of between 4 and about 22 carbon atoms; and any adjacent R and X or any adjacent R and X^1 when taken together with connecting elements form an alicyclic structure; and Z is an organosulfonyl radical, and (c) at least one compound corresponding to the formula:



$$X^1-\overset{\overset{\textstyle R}{|}}{\underset{\underset{\textstyle R}{|}}{C}}-H$$

where R and X^1 are as previously defined; wherein the interaction yields a polyheterocyclic compound corresponding to the formula:



$$X^1-\overset{\overset{\textstyle R}{|}}{\underset{\underset{\textstyle R}{|}}{C}}-\overset{\overset{\textstyle R}{|}}{\underset{\underset{\textstyle R}{|}}{C}}-X^1$$

where R and X^1 are as previously defined.

4,620,005

1-ISOPROPYL-4[(4-TETRAHYDRO-1-NAPHTHOYLOXY PHENYL)(ALKYLENE)-CARBONYL(OXYMETHLCARBONYL)]PIPERAZINES HAVING CHYMOTRYPSIN-INHIBITORY ACTIVITY

Setsuro Fujii, Toyonaka; Eizou Hattori, Sakado; Mitsuteru Hirata, Saitama; Hisashi Kunieda, Higashi-Murayama; Koichiro Watanabe, Niiza, and Hiroshi Ishihama, Higashi-Murayama, all of Japan, assignors to Kowa Co., Ltd., Nagoya, Japan

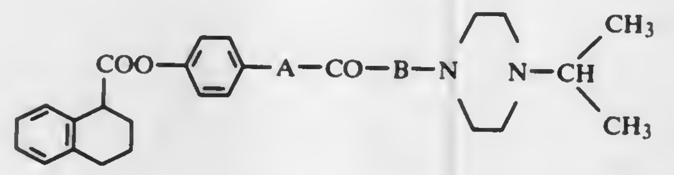
Continuation of Ser. No. 613,058, May 22, 1984, abandoned. This application Oct. 17, 1985, Ser. No. 787,714

Claims priority, application Japan, Jun. 2, 1983, 58-98713

Int. Cl.⁴ C07D *241/04;* A61K *31/495*

U.S. Cl. 544—391 **4 Claims**

1. A phenyl tetrahydronaphthylcarboxylate having the formula:



wherein A is a direct bond, or a lower alkylene group and B is a direct bond, or a —OCH_2CO— group, with the proviso that A and B are not direct bonds simultaneously.

4,620,006

ACID SALTS OF 1-(CYANOALKYL)-4-GUANYLPIPERAZINES

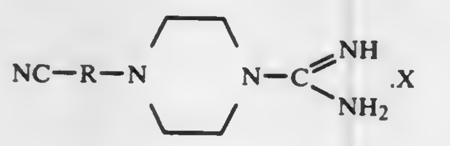
Louise O. Sandefur; Wojciech Slusarek, both of Rochester; Burton D. Wilson, Webster, and Cataldo A. Maggiulli, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 11, 1982, Ser. No. 407,215

Int. Cl.⁴ C07D *295/12*

U.S. Cl. 544—402 **4 Claims**

1. A 1-(cyanoalkyl)-4-guanylpiperazine acid salt represented by the structural formula



wherein R represents an alkylene group having from 1 to 5 carbon atoms and x represents an acid.

4,620,007

6-FLUORO-7-CHLORO-1-CYCLOPROPYL-4-OXO-1,4-DIHYDRO-QUINOLINE-3-CARBOXYLIC ACID

Klaus Grohe, Odenthal; Hans-Joachim Zeiler, Velbert, and Karl G. Metzger, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 614,923, May 29, 1984, which is a continuation-in-part of Ser. No. 436,112, Oct. 22, 1982, abandoned, which is a continuation-in-part of Ser. No. 292,560, Aug. 13, 1981, abandoned. This application Dec. 11, 1985, Ser. No. 807,554

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1980, 3033157; Oct. 29, 1981, 3142854

Int. Cl.⁴ C07D *215/14*

U.S. Cl. 546—156 **1 Claim**

1. 1-cyclopropyl-6-fluoro-1,4-dihydro-4-oxo-7-chloroquinoline-3-carboxylic acid.

4,620,008

PROCESSES FOR THE PREPARATION OF OMEPRAZOLE AND INTERMEDIATES THEREFORE

Arne E. Brändström, and Bo R. Lamm, both of Göteborg, Sweden, assignors to Aktiebolaget Hassle, Molndal, Sweden

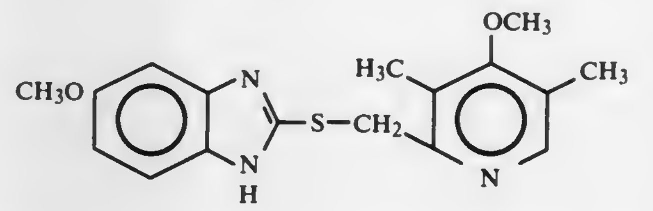
Division of Ser. No. 526,900, Aug. 26, 1983, Pat. No. 4,544,750. This application Feb. 1, 1985, Ser. No. 697,396

Claims priority, application Sweden, Aug. 26, 1982, 8204879

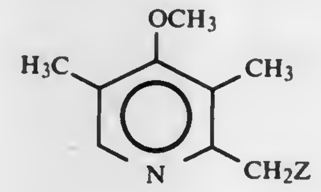
Int. Cl.⁴ C07D *213/68, 401/12*

U.S. Cl. 546—271 **3 Claims**

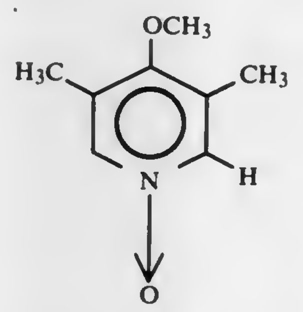
2. In a method for the preparation of a compound of the formula



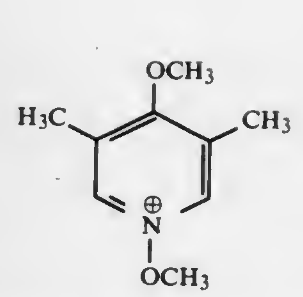
by reacting a reactive pyridine derivative of the formula



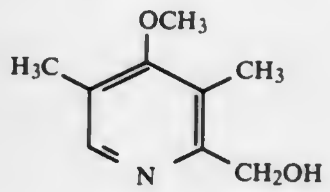
where Z is hydroxy, halogen or p-toluene-sulfonyl, with a substituted benzimidazole, the improvement comprising forming the reactive pyridine derivative by reacting a compound of the formula



with dimethyl sulfate to form the intermediate



whereafter CH_3OH is added in the presence of a source of free radicals to give a hydroxy compound of the formula



and, in the case where Z is not hydroxy, further reacting the hydroxy compound with a reagent selected from the group consisting of halogenating agents and p-toluene sulfonic acid.

4,620,009

SYNTHESIS OF INTERMEDIATES FOR TETRAMISOLE, LEVAMISOLE AND THEIR DERIVATIVES

Sivaraman Raghu, Norwalk; Arthur K. Hoffmann, New Canaan, and Balwant Singh, Stamford, all of Conn., assignors to Cyanamid Agricultural de Puerto Rico, Inc., Manati, P.R.

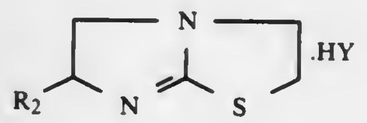
Division of Ser. No. 131,293, Mar. 17, 1980, Pat. No. 4,310,672, which is a continuation of Ser. No. 958,237, Nov. 6, 1978, abandoned, which is a division of Ser. No. 884,674, Mar. 8, 1978, Pat. No. 4,139,707, which is a division of Ser. No. 739,924, Nov. 8, 1976, Pat. No. 4,090,025, which is a continuation-in-part of Ser. No. 680,311, Apr. 26, 1976, abandoned. This application Oct. 1, 1981, Ser. No. 307,459

The portion of the term of this patent subsequent to Jan. 25, 2000, has been disclaimed.

Int. Cl.⁴ C07D *513/04*

U.S. Cl. 548—155 **8 Claims**

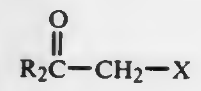
1. A method for the preparation of a compound of the formula:



(VII)

which comprises:

reacting an α-substituted ketone of the formula:

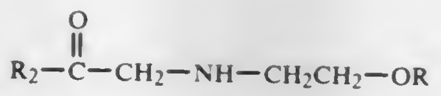


$$R_2\overset{\overset{\textstyle O}{\|}}{C}-CH_2-X \qquad (1)$$

wherein R_2 is phenyl or phenyl substituted with up to two groups of lower alkyl, lower alkoxy, halogen or trifluoromethyl and X is a substituent which can be displaced by a nucleophilic reagent with an amine of the formula:

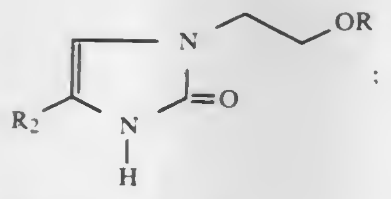
$$H_2N-CH_2CH_2OR \qquad (II)$$

or its acid addition salts wherein R is hydrogen, C_1–C_6 alkyl, halo C_1–C_6 alkyl, phenyl optionally substituted with up to three groups of lower alkyl, halogen or lower alkoxy or the formula COR_3 wherein R_3 is hydrogen, C_1–C_6 alkyl, halo C_1–C_6 alkyl, phenyl or phenyl substituted with up to four groups of lower alkyl, halogen, lower alkoxy or trifluoromethyl to produce a compound of the formula:


$R_2-\overset{O}{\overset{\|}{C}}-CH_2-NH-CH_2CH_2-OR$

(III)

dissolving compound III in an organic solvent heated from 0° to about 100° C. in the presence of cyanic acid and a hydronium ion source to yield a compound of the formula:

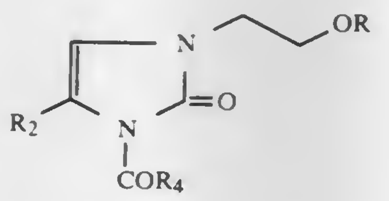


(IV)

reacting the compound of formula IV with an acyl halide or acyl anhydride of the formula:

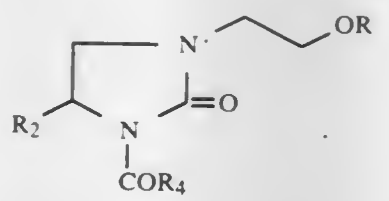
R_4COZ or $(R_4CO)_2O$

wherein R_4 is C_1-C_6 alkyl, C_1-C_6 alkoxy, phenoxy, C_5-C_{10} cycloalkyl, phenyl or phenoxy substituted with up to four groups of lower alkyl, lower alkoxy, halogen or trifluoromethyl and Z is any group which can be displaced by a nucleophilic reagent in the presence of a hydroxide ion source while refluxing neat or in a hydrocarbon solvent to produce an imidazolinone of the formula:



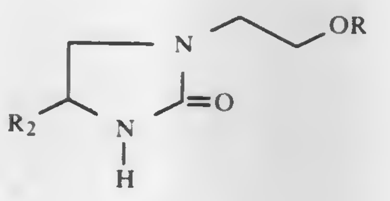
(IVa)

hydrogenating the compound of formula VIa at about 15 to about 1000 psi of hydrogen to produce an imidazolidone of the formula:



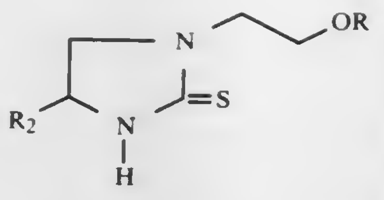
(IVb)

hydrolyzing the compound of formula IVb in the presence of a hydroxide ion source in either water or alcohol at a temperature from about 70° to 100° C. to produce an imidazolidone of the formula:



(V)

heating the imidazolidone of formula V in an inert solvent at a temperature from about 80° to about 200° C. in the presence of a reagent capable of substituting sulfur for oxygen to yield an imidazolidinethione of the formula:



(VI)

and some of a compound of formula VII, above; and heating the compound of formula VI with HY wherein Y is halogen, bisulfate or p-toluene sulfonate in a solvent at a temperature of about 0° to about 200° C. to produce the compound of formula VII.

4,620,010

PROCESS FOR PREPARING CARBOALKOXY SUBSTITUTED BENZOXAZOLE COMPOUNDS

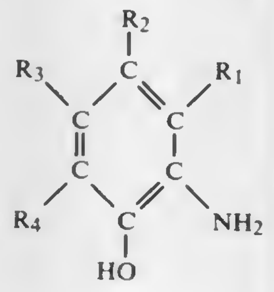
Shou-Nan Ueng, West Haverstraw, and Frederick A. Golec, Jr., Ossining, both of N.Y., assignors to USV Pharmaceutical Corp., Tuckahoe, N.Y.

Filed Mar. 29, 1984, Ser. No. 594,644

Int. Cl.⁴ C07D *263/58, 263/60*

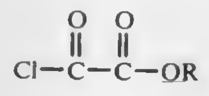
U.S. Cl. 548—217 **7 Claims**

1. A process for preparing a carboalkoxy substituted or unsubstituted benzoxazole compound which comprises reacting an aminophenol compound having the formula I



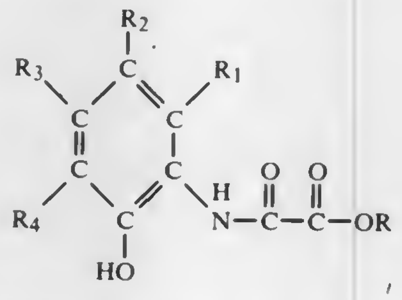
I

with an alkyl oxalyl chloride compound having the formula II


$Cl-\overset{O}{\overset{\|}{C}}-\overset{O}{\overset{\|}{C}}-OR$

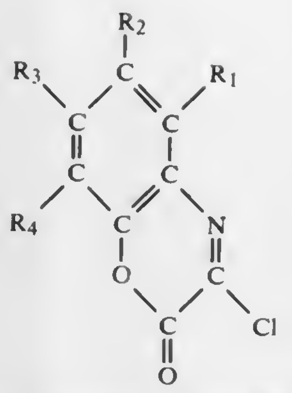
II

to form an oxamide ester having the formula III



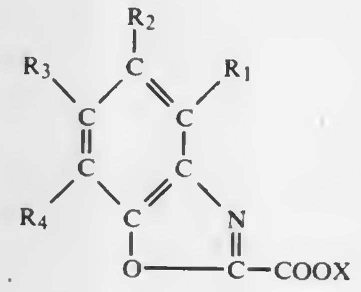
III

cyclochlorinating the oxamide ester III with phosphorus oxychloride to form an imidoyl chloride compound having the formula IV



IV

reacting the imidoyl chloride IV with alkali metal alkoxide the presence of an alcohol to form a benzoxazole product having the formula V



V

wherein

R is a C_1-C_6 alkyl group with a straight or branched chain;

X is selected from the group consisting of an alkyl group of 1 to 6 carbon atoms and an alkoxy alkyl group of 1 to 6 carbon atoms,

each R_1, R_2, R_3 and R_4 is independently hydrogen, phenyl, cycloalkyl of 3 to 5 carbon atoms alkyl of 1 to 5 carbon atoms, or may with adjacent R substitution form an alkylene bridge having 3 or 4 carbon atoms, with the proviso that when there is an alkylene bridge the remaining R substitutions are independently hydrogen, cycloalkyl or alkyl.

4,620,011

TRIAZOLYL ETHANOL DERIVATIVES

Paul A. Worthington, and Margaret C. Shephard, both of Maidenhead, England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 745,780, Nov. 29, 1976. This application May 24, 1984, Ser. No. 613,404

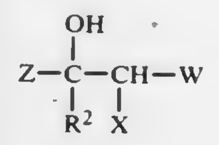
Claims priority, application United Kingdom, Dec. 3, 1975, 49656/75; Nov. 16, 1976, 47666/76

The portion of the term of this patent subsequent to Sep. 18, 2001, has been disclaimed.

Int. Cl.⁴ C07D *249/08*

U.S. Cl. 548—262 **2 Claims**

1. A compound of the formula


$Z-\underset{R^2}{\underset{|}{\overset{OH}{\overset{|}{C}}}}-\underset{X}{\underset{|}{CH}}-W$

wherein

X is hydrogen, butyl, benzyl, halobenzyl or phenylbenzyl;

Z is an unsubstituted phenyl group or a phenyl group substituted with up to three substituents selected from the group consisting of halogen, nitro, lower alkyl or lower alkoxy;

R^2 is C_1-C_8 alkyl, alkenyl or alkynyl of up to 8 carbons, unsubstituted phenyl or phenyl substituted with up to two substituents selected from the group consisting of halogen, nitro, trifluoromethyl, cyano, methyl and methoxy, or unsubstituted benzyl or benzyl substituted by substituents selected from the group consisting of halogen, nitro, trifluoromethyl, cyano, methyl or methoxy; and

W is a 1-(1,2,4-triazole); and the agronomically acceptable acid addition salts and metal complexes thereof.

4,620,012

SPIROCYCLIC AMINOACID DERIVATIVES, PROCESSES FOR THEIR PREPARATION, AGENTS CONTAINING THEM AND THEIR USE AND NEW SPIROCYCLIC AMINOACIDS AS INTERMEDIATES AND PROCESSES FOR THEIR PREPARATION

Rainer Henning, Frankfurt am Main; Hansjörg Urbach, Kronberg; Volker Teetz, Hofheim am Taunus, and Reinhard Becker, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

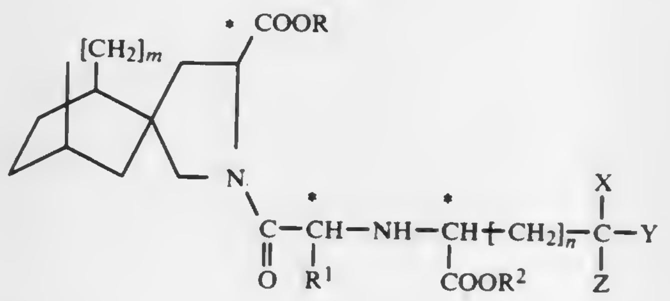
Filed Jan. 10, 1984, Ser. No. 569,758

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1983, 3300774

Int. Cl.⁴ C07C *103/52;* **A61K** *37/02*

U.S. Cl. 548—411 **8 Claims**

1. A compound of the formula I



in which

m denotes 1 or 2,

n denotes 0 or 1,

R denotes hydrogen, (C_1 to C_6)-alkyl or aralkyl having 7 to 9 carbon atoms,

R^1 denotes hydrogen or (C_1 to C_6)-alkyl which can optionally be substituted by amino, (C_1 to C_6)-acylamino or benzoylamino, (C_2 to C_6)-alkenyl, (C_5 to C_9)-cycloalkyl, (C_5 to C_6)-cycloalkenyl, (C_5 to C_7)-cycloalkyl-(C_1 to C_4)-alkyl, (C_6 to C_{12})-aryl or partially hydrogenated (C_6 to C_{12})-aryl, each of which can be substituted by (C_1 to C_4)-alkyl, (C_1 or C_2)-alkoxy or halogen, (C_6 to C_{12})-aryl-(C_1 to C_4)-alkyl or (C_7 to C_{13})-aroyl-(C_1 to C_2)-alkyl, both of which can be substituted in the aryl radical as defined above, a monocyclic or bicyclic heterocyclic radical having 5 to 7 or 8 to 10 ring atoms respectively, 1 to 2 ring atoms being sulfur or oxygen atoms and/or 1 to 4 ring atoms being nitrogen atoms, or an optionally protected side chain of a naturally occurring α-aminoacid,

R^2 denotes hydrogen, (C1 to C6)-alkyl, (C2 to C6)-alkenyl or (C_6 to C_{12})-aryl-(C_1 to C_4)-alkyl,

Y denotes hydrogen or hydroxyl,

Z denotes hydrogen or

Y and Z together denote oxygen and

X denotes (C_1 to C_6)-alkyl, (C_2 to C_6)-alkenyl, (C_5 to C_9)-cycloalkyl, (C_6 to C_{12})-aryl which can be monosubstituted, disubstituted or trisubstituted by (C_1 to C_4)-alkyl, (C_1 to C_4)-alkoxy, hydroxy, halogen, nitro, amino, (C_1 to C_4)-alkylamino, di-(C_1-C_4)-alkylamino and/or methylene-dioxy, or 3-indolyl, and its physiologically acceptable salts.

4,620,013
CHIRAL PHOSPHINES

Emil A. Broger, Magden, and Yvo Crameri, Oberwil, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

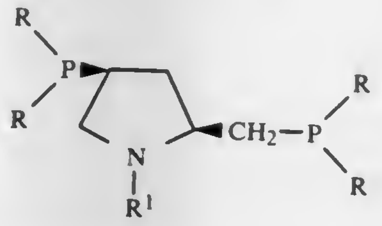
Division of Ser. No. 458,418, Jan. 17, 1983, Pat. No. 4,539,411. This application Jun. 14, 1985, Ser. No. 744,584

Claims priority, application Switzerland, Feb. 5, 1982, 711/82; Dec. 8, 1982, 7010/82

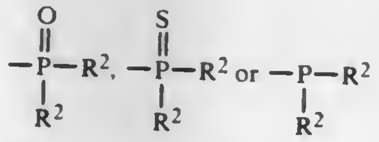
Int. Cl.^{4} C07F *9/65, 15/00*

U.S. Cl. 548—412 **8 Claims**

1. Chiral phosphines of the formula



wherein R represents aryl and R^1 represents a group of the formula



$$-\underset{R^2}{\underset{|}{\overset{\overset{O}{\|}}{P}}}-R^2,\ -\underset{R^2}{\underset{|}{\overset{\overset{S}{\|}}{P}}}-R^2 \text{ or } -\underset{R^2}{\underset{|}{P}}-R^2$$

in which R^2 represents aryl, di(lower alkyl)amino, hydroxy, aryloxy or lower alkoxy.

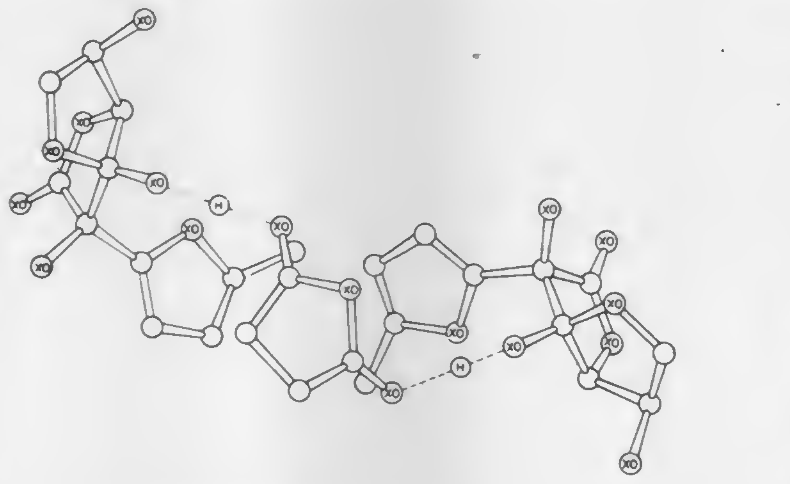
4,620,014
2-FURYLBUTYROLACTONES AND METHODS FOR USING SAME

Albert Szent-Gyorgyi, Woods Hole, Mass., and Gabor B. Fodor, Morgantown, W. Va., assignors to National Foundation for Cancer Research, Bethesda, Md.

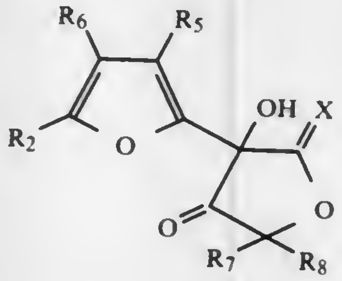
Continuation-in-part of Ser. No. 450,493, Dec. 16, 1982, abandoned, which is a continuation of Ser. No. 192,806, Oct. 1, 1980, abandoned, which is a division of Ser. No. 93,594, Nov. 13, 1979, Pat. No. 4,287,205, which is a continuation of Ser. No. 917,327, Jun. 20, 1978, abandoned. This application Sep. 29, 1983, Ser. No. 536,994

Int. Cl.^{4} C07D *207/40, 307/00, 307/34*

U.S. Cl. 548—545 **5 Claims**



1. A compound of the formula

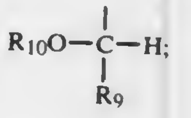


wherein:

R$_2$ is selected from the group consisting of hydrogen and lower alkyl;

R$_5$ and R$_6$ are selected from the group consisting of hydrogen and lower alkyl and may be the same or different; R$_8$ is selected from the group consisting of hydrogen and lower alkyl;

R$_7$ is hydrogen, lower alkyl or



$$R_{10}O-\underset{R_9}{\underset{|}{\overset{|}{C}}}-H;$$

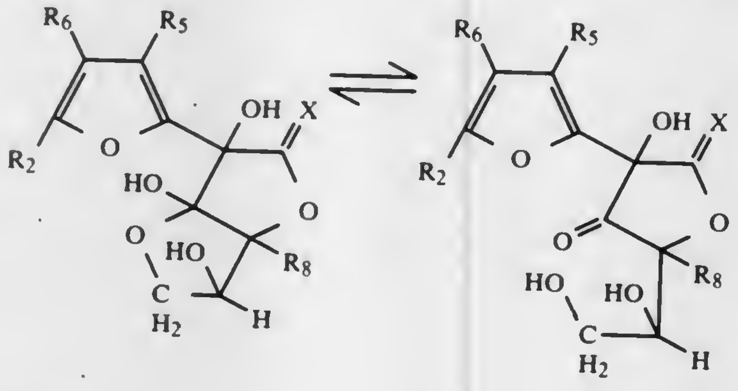
R$_9$ is CH_2OH

R$_{10}$ is hydrogen; consisting of hydrogen, lower alkyl, phenyl and hydroxyl substituted loweralkyl and may be the same or different;

when R$_7$ contains a hydroxyl group in the α or β position, R$_7$ may form the hemiketal ring closure at the carbon 3 of the butyrolactone with protonation of the carbonyl group on the same carbon atom; and

X is selected from the group consisting of O, S, and NH.

2. The compound of claim **1** having the structure formula



wherein:

R$_2$ is $-CH_3$;

R$_5$ and R$_6$ are each hydrogen;

X is O;

R$_8$ is as defined in claim **1**.

3. A crystalline molecular complex, comprising the compound of claim **2** and succinic anhydride in a molar ratio of 2:1.

4. A crystalline molecular complex, comprising the compound of claim **2** and succinimide in a molar ratio of 2:1.

4,620,015
SYNTHESIS OF *β*-((2-METHYLPROPOXY)METHYL)-N-PHENYL-N-(PHENYLMETHYL)-1-PYRROLIDINEETHANAMINE

Frank J. Stiefel, Princeton Junction, N.J., assignor to Carter-Wallace, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 334,535, Dec. 28, 1981, abandoned. This application Aug. 10, 1983, Ser. No. 521,895

Int. Cl.^{4} C07D *207/08*

U.S. Cl. 548—547 **2 Claims**

1. A process for preparing the n-propanoldiamine ether, *β*-[(2-methypropoxy)methyl]-N-phenyl-N-(phenylmethyl)-1-

pyrrolidineethanamine and its hydrochloride salts consisting essentially of the following steps:

(a) reacting isobutanol with epichlorohydrin at elevated temperature in the presence of a Lewis acid;

(b) cooling the reaction mixture of step (a) and combining the mixture with pyrrolidine and dilute sodium hydroxide, extracting the mixture with a petroleum solvent, and distilling the product;

(c) combining the product of step (b) with thionyl chloride dissolved in a petroleum solvent and heating the mixture to reflux;

(d) decomposing the reaction mixture of step (c) with water, rendering the decomposed mixture alkaline, separating the oily layer from the acqueous layer, extracting the acqueous layer with petroleum solvent, combining and washing the oily layer and extract and distilling at elevated temperatures and reduced pressure;

(e) condensing the concentrate of step (d) with n-benzylaniline utilizing sodium hydride dispersed in a solution of xylene and mineral oil as a condensing agent and recovering the desired N-propaneoldiamine ether as its hydrochloride salt.

4,620,016
PREPARATION OF BUTYROLACTONE BY CATALYTIC HYDROGENATION OF SUCCINIC ANHYDRIDE

Charles A. Drake, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 16, 1985, Ser. No. 734,506

Int. Cl.^{4} C07D *307/32*

U.S. Cl. 549—325 **13 Claims**

1. A process for preparing gamma-butyrolactone comprising the step of contacting a succinic anhydride containing feed stream with a free hydrogen containing gas, in the presence of a catalyst composition selective for the production of gamma-butyrolactone consisting essentially of

(a) substantially metallic nickel, and

(b) aluminum phosphate as support, under such conditions as will result in gamma-butyrolactone reaction product.

4,620,017
CATALYTIC HYDROGENATION OF SUCCINIC ANHYDRIDE TO BUTYROLACTONE

Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 16, 1985, Ser. No. 734,510

Int. Cl.^{4} C07D *307/32*

U.S. Cl. 549—325 **14 Claims**

1. A process for preparing gamma-butyrolactone comprising the step of contacting a succinic anhydride containing feed stream with a free hydrogen containing gas, in the presence of a catalyst composition selective for the production of gamma-butyrolactone consisting essentially of

(a) substantially metallic nickel,

(b) at least one oxide of cerium, and

(c) a silica-containing support, under such reaction conditions as will result in gamma-butyrolactone reaction product.

4,620,018
BENZO-FUSED, TETRACHLORINATED HETEROCYCLIC COMPOUNDS AND A PROCESS FOR THEIR PREPARATION

Albrecht Marhold, Leverkusen, and Erich Klauke, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

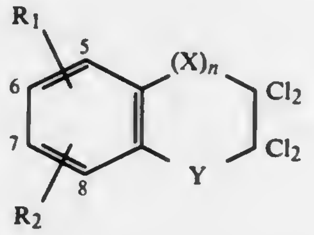
Division of Ser. No. 638,911, Aug. 8, 1984. This application Jun. 26, 1985, Ser. No. 749,151

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1983, 3329126

Int. Cl.^{4} C07D *319/14, 307/78*

U.S. Cl. 549—362 **7 Claims**

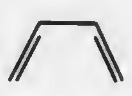
1. Process for the preparation of compounds of the formula



in which

R$_1$ and R$_2$ independently of one another represent hydrogen, fluorine, chlorine, bromine, COCl, CO_2CH_3, cyanide, alkyl, nitro, SO_2Cl, SO_2F, OCF_3, SCF_3, CF_3, CCl_3, CBr_3, phenyl, substituted phenyl, $OPOCl_2$, O-alkyl, O-aryl, S-alkyl or S-aryl or,

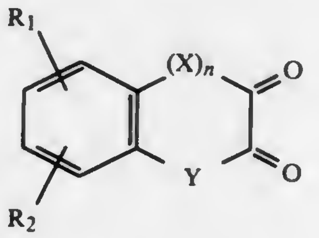
R$_1$ and R$_2$ together represent



X and Y independently of one another represent oxygen or sulphur and

n represents zero or 1,

wherein compounds of the formula



in which R$_1$, R$_2$, X, Y and n have the above-mentioned meaning, are reacted with at least 2 moles of phosphorus pentachloride at elevated temperature.

4,620,019
S-6-FLUORO-4-AMINOCHROMAN-4-CARBOXYLIC ACID DERIVATIVES USEFUL AS INTERMEDIATES FOR SORBINIL

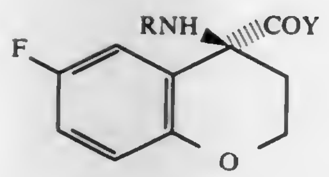
Berkeley W. Cue, Jr., Gales Ferry, and Bernard S. Moore, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Aug. 23, 1984, Ser. No. 643,895

Int. Cl.^{4} C07D *311/68*

U.S. Cl. 549—404 **6 Claims**

1. A chiral compound of the formula



wherein R is hydrogen or benzyloxycarbonyl and Y is hydroxy or amino, a cationic salt thereof when Y is hydroxy or an acid addition salt thereof when R is hydrogen.

4,620,020

BIS-PHOSPHONIUM SALTS AND PROCESS FOR MAKING THEM

Hubert Schmidbaur, Garching; Cornelia Dörzbach, Munich, both of Fed. Rep. of Germany, and Graham Bowmaker, Auckland, New Zealand, assignors to Hoecht Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

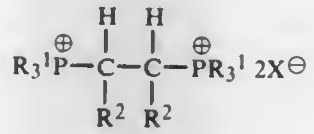
Filed Apr. 4, 1985, Ser. No. 719,590

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1984, 3415037

Int. Cl.⁴ C07F *9/54*

U.S. Cl. 556—18 **9 Claims**

1. Bis-phosphonium salts of the general formula



$$R_3{}^1\overset{\oplus}{P}-\underset{R^2}{\overset{H}{C}}-\underset{R^2}{\overset{H}{C}}-\overset{\oplus}{P}R_3{}^1\ 2X^{\ominus}$$

in which

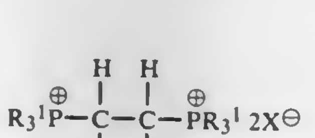
R^1 is a member selected from the group consisting of methyl, ethyl, n-propyl, iso-propyl and butyl,

R^2 is a member selected from the group consisting of methyl, ethyl, n-propyl and iso-propyl, and

$X^{\ominus}$ is a member selected from the group consisting of a halide, dihalogenocuprate(I), tetraphenylborate, tetrafluoroborate and hexafluorophosphate, or

$2X^{\ominus}$ stands for a sulfate.

2. A process for making bis-phosphonium salts of the general formula



$$R_3{}^1\overset{\oplus}{P}-\underset{R^2}{\overset{H}{C}}-\underset{R^2}{\overset{H}{C}}-\overset{\oplus}{P}R_3{}^1\ 2X^{\ominus}$$

in which

R^1 is a member selected from the group consisting of methyl, ethyl, n-propyl, iso-propyl, butyl, a cycloalkyl having from 5-8 carbon atoms, and phenyl,

R^2 is a member selected from the group consisting of a hydrogen radical, methyl, ethyl, n-propyl and iso-propyl, and

$X^{\ominus}$ is a member selected from the group consisting of a halide, tetraphenylborate, tetrafluoroborate and hexafluorphosphate, or

$2X^{\ominus}$ stands for a sulfate,

R^1 standing for a group other than a cycloalkyl or phenyl group in the event of R^2 standing for a radical other than a hydrogen radical,

which comprises: reacting a triorganylphosphonium alkylide of the general formula $R_3{}^1P{=}CHR^2$ with an anhydrous copper (II)halide, the molar ratio of alkylide: halide being ≦1, in a solvent at temperatures of $-78°$ C.–0° C. with agitation, and separating precipitated bis-phosphonium dihalogenocuprate(I).

4,620,021

ORGANIC NICKEL COMPOUNDS, PRODUCTION AND USE THEREOF AS CATALYSTS IN THE POLYMERIZATION OF OLEFINS

Karl-Heinz A. O. Starzewski, Bad Vilbel; Josef Witte, Cologne, and Herbert Bartl, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

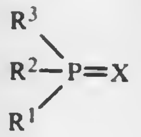
Filed Sep. 25, 1984, Ser. No. 654,227

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1983, 3336500

Int. Cl.⁴ C07F *15/04*

U.S. Cl. 556—19 **6 Claims**

1. Nickel compounds obtained by reacting a nickel-(O) compound or a nickel compound which may be converted in situ into a nickel-(O) compound with an adduct or a mixture of a quinoid compound and a tertiary phosphine and with a compound corresponding to the following general formula:

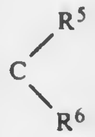


(I)

wherein

R^1, R^2 and R^3 independently represent C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_6–C_{12} aryl or C_3–C_8 cycloalkyl optionally substituted by halogen, hydroxy, C_1–C_{20} alkoxy, nitro or C_6–C_{12} aryloxy; also C_6–C_{12} aryl-C_1–C_{20} alkyl, C_6–C_{12} aryl-C_2–C_{20} alkenyl, C_1–C_{20} alkyl-C_6–C_{12} aryl, C_1–C_{20} alkyl-C_3–C_8 cycloalkyl and C_6–C_{12} aryl-C_3–C_8 cycloalkyl, di-C_1–C_4 alkylamino, optionally substituted phenoxy or alkoxy; R^4, R^5 and R^6 represent hydrogen, silyl, halogen, cyano or R^1 and

X represents O, NR^4 or



4,620,022

PREPARATION OF SUBSTITUTED TRIALKYLSILYLOXYMALONIC ACID DINITRILES

Kurt Findeisen, Odenthal, and Rudolf Fauss, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

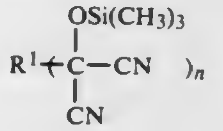
Continuation of Ser. No. 589,621, Mar. 14, 1984, abandoned. This application Jul. 19, 1985, Ser. No. 757,060

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1983, 3310954

Int. Cl.⁴ C07F *7/10*

U.S. Cl. 556—417 **4 Claims**

1. A process for the preparation of a substituted trimethylsilyloxymalonic acid dinitrile of the formula



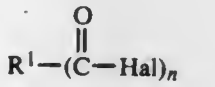
$$R^1\left(\underset{CN}{\overset{OSi(CH_3)_3}{C}}-CN\right)_n$$

in which

R^1 is phenyl, or phenyl substituted in at least one of m-,m'-, and p-positions by chlorine, fluorine, methyl, methoxy, trifluoromethyl, trifluoromethoxy or, bromine, and

n is an integer from 1 to 4,

which comprises in a first step reacting an acid halide of the formula



$$R^1-(\overset{O}{\overset{\|}{C}}-Hal)_n$$

in which

Hal is fluorine, chlorine, bromine or iodine, with at least its molar equivalent amount per acid halide substituent of trimethylsilylcyanide of the formula

$(CH_3)_3$ SiCN

at a temperature between 60° and 150° C., removing the by-product trialkylsilylhalide, and reacting the reaction mixture with additional trimethylsilylcyanide in the presence of a base at a temperature between $-10°$ and $+60°$ C.

4,620,023

METHOD FOR PREPARING HEXAMETHYLCYCLOTRISILOXANE AND USES FOR THE SAME

Franz-Heinrich Kreuzer, Martinsried, and Helmut Gebauer, Munich, both of Fed. Rep. of Germany, assignors to Consortium fur Elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 17, 1983, Ser. No. 524,009

Claims priority, application European Pat. Off., May 27, 1983, 83105271.7

Int. Cl.⁴ C07F *7/08*

U.S. Cl. 556—460 **2 Claims**

1. An improved method for preparing hexamethylcyclotrisiloxane by heating linear, branched, or cross-linked organopolysiloxanes having at least 50 mol percent of dimethylpolysiloxane units to at least 320° C. and simultaneously distilling off the cyclic dimethylpolysiloxanes formed during heating, the improvement which comprises heating the organopolysiloxanes in the absence of acidic and basic compounds which attack the siloxanes group.

4,620,024

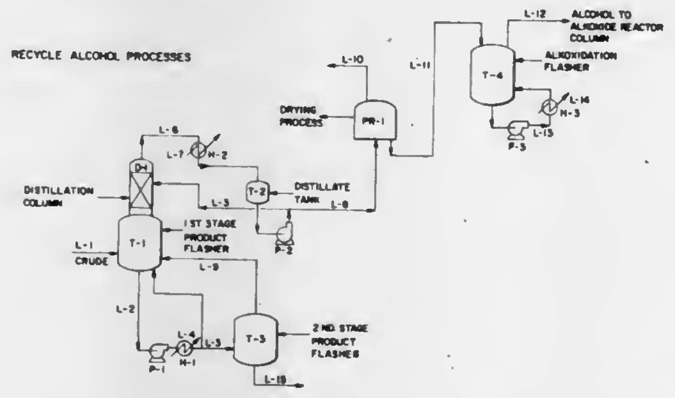
PROCESS FOR PRODUCING AND RECOVERING TRIBUTYL PHOSPHATE ESTERS

Robert I. Davis, Pennington, N.J., and Thomas G. Seador, Tonawanda, N.Y., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 491,625, May 5, 1983, abandoned. This application Oct. 22, 1984, Ser. No. 663,275

Int. Cl.⁴ B01D *3/06;* **C07F** *9/02*

U.S. Cl. 558—113 **3 Claims**



1. In a continuous alkoxidation-phosphorylation process for producing tributyl phosphate having low color utilizing excess butanol in which the continuous alkoxidation reaction is heated by flash distilling the butanol and introducing the overhead from such alkoxidation flash still into the alkoxidation reactor to heat the reaction and drive off water overhead, feeding the alkoxidation reactor bottoms, the alkoxide in excess butanol, to a continuous phosphorylation reactor and after phosphorylation recovering the excess butanol from the phosphorylation reaction mixture by two stage flash distillation, the bottoms tributyl phosphate product from the first stage butanol recovery flash still going to the second stage butanol recovery flash still, the butanol overhead product from the second stage returning to the first stage flash distillation, and the bottoms, tributyl phosphate product, from the second stage distillation going to a final product washing and drying process while the overhead butanol from the first stage flash distillation is fed to the process alkoxidation alcohol flash still, the improvement which comprises distilling in a distillation column the butanol overhead from the first stage flash distillation and then feeding the butanol overhead from the distillation column to the alkoxidation alcohol flash still.

4,620,025

PROCESS FOR THE PREPARATION OF BIPHENYL INTERMEDIATES

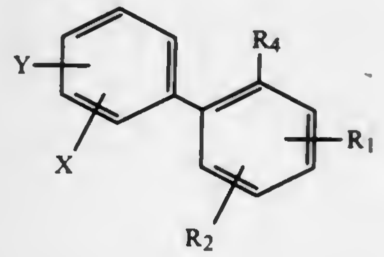
Meyer Sletzinger, North Plainfield, and Thomas R. Verhoeven, Cranford, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 1, 1984, Ser. No. 637,081

Int. Cl.⁴ C07C *121/70, 69/533, 43/303*

U.S. Cl. 558—401 **7 Claims**

1. A process for the preparation of a compound represented by the following general Formula (IV)



(IV)

wherein:

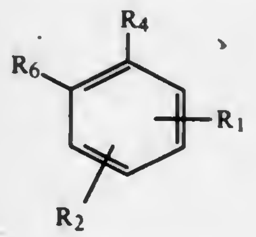
R_1 and R_2 independently re:
  (1) chloro;
  (2) fluoro; or
  (3) C_{1-4} alkyl;

R_4 is
  (1) $-CH{=}CHCN$;
  (2) $-CH{=}CHCO_2R_5$; or
  (3) $-CH{=}CHCH\ (OR_5)_2$,

in which R_5 is C_{1-4} alkyl; and

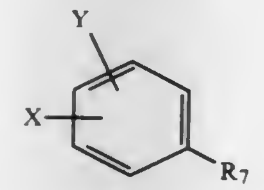
X and Y independently are:
  (1) hydrogen;
  (2) chloro;
  (3) fluoro;
  (4) C_{1-4} alkyl; or
  (5) C_{1-4} alkoxy;

which comprises reacting a compound of the Formula (V):



(V)

wherein R_1, R_2 and R_4 are defined above; and R_6 is halogen with a compound of the Formula (VI)

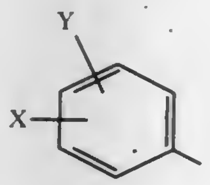


(VI)

wherein X and Y are defined above and R_7 is

(1) ZnR_8;
(2) MgR_8;
(3) CdR_8; or
(4) Li

in which R_8 is halogen or a radical represented by the following formula:



wherein X and Y are defined above, in the presence of a nickel catalyst.

4,620,026
MONOMERIC PLASTICIZERS FOR HALOGEN-CONTAINING RESINS

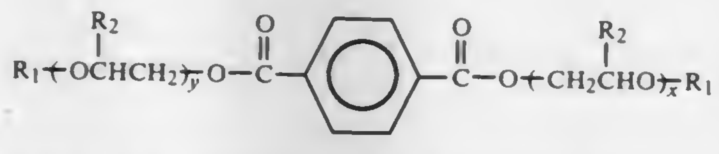
Sanford A. Siegel, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 10, 1984, Ser. No. 640,072

Int. Cl.⁴ C07C *69/76*

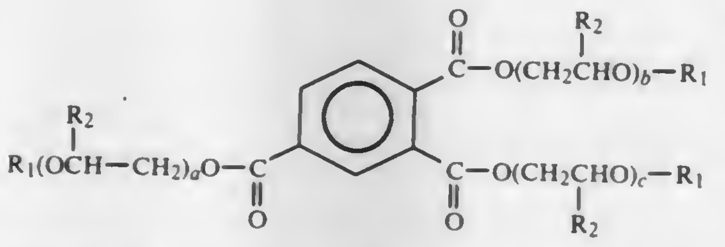
U.S. Cl. 560—85 **9 Claims**

1. A mixture of at least two diesters of terephthalic acid, said diesters being of the general formula



wherein R_1 is a phenyl radical or an aliphatic hydrocarbon radical of the formula C_nH_m, wherein n is an integer of 1 through 8 inclusive and m is equal to 2n+1; R_2 is either hydrogen or an aliphatic hydrocarbon radical having one, two, three or four carbon atoms; x is an integer of 2 to 4 inclusive; and y is an integer of 2 to 4 inclusive;

2. A mixture of at least two triesters of trimellitic acid, said triesters being of the general formula



(II)

wherein R_1 is a phenyl radical or an aliphatic hydrocarbon radical of the formula C_nH_m wherein n is an integer of 1 through 8 inclusive and m is equal to 2n+1; R_2 is either hydrogen or an aliphatic hydrocarbon radical having one, two, three or four carbon atoms; a is 2, 3 or 4; b is 2, 3 or 4; and c is 2, 3 or 4.

4,620,027
CATALYST AND PROCESS FOR PRODUCTION OF CINNAMATES

Chao-Yang Hsu, Media, Pa., assignor to Sun Refining and Marketing Company, Philadelphia, Pa.

Filed Dec. 21, 1984, Ser. No. 684,766

Int. Cl.⁴ C07C *69/76*

U.S. Cl. 560—104 **13 Claims**

1. A method for the production of alkyl esters of cinnamic acid comprising the oxidative carbonylation of a styrene compound with carbon monoxide, oxygen, and an aliphatic alcohol in the presence of a catalytic amount of a palladium salt, an alkali metal carboxylate and a copper salt.

4,620,028
ESTERS OF HYDROXYALKYL ETHERS OF BORNANE

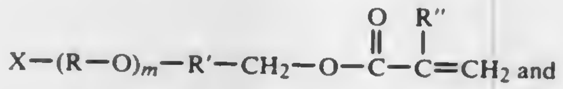
C. Rodney Gorman, Orange Park; James M. Evans, and Sean G. Traynor, both of Jacksonville, all of Fla., assignors to SCM Corporation, New York, N.Y.

Filed May 28, 1985, Ser. No. 738,230

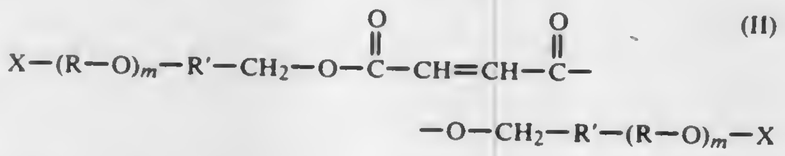
Int. Cl.⁴ C07C *69/74*

U.S. Cl. 560—193 **11 Claims**

1. A compound having a general formula selected from:



$$X-(R-O)_m-R'-CH_2-O-\overset{\overset{O}{\|}}{C}-\overset{\overset{R''}{|}}{C}=CH_2 \text{ and} \qquad (I)$$



$$\begin{aligned}&X-(R-O)_m-R'-CH_2-O-\overset{\overset{O}{\|}}{C}-CH=CH-\overset{\overset{O}{\|}}{C}- \qquad (II)\\ &\qquad\qquad -O-CH_2-R'-(R-O)_m-X\end{aligned}$$

wherein X is [2-(1,7,7-trimethylbicyclo[2.2.1]hept-2-ylo)oxy]1,7,7-trimethylbicyclo[2.2.1]hept-2-yloxy radical, R is $—(CH_2)_p—$ where p varies from 1 to 3; R' is $—(CH_2)_n—$ where n varies from 1 to 7; R'' is hydrogen or methyl; and m is 0 to 4.

4,620,029
METHOD FOR MAKING OXALIC ACID DIESTERS

Günter Schroeder, Ober-Ramstadt, and Ehrenfried Baumgartner, Darmstadt, both of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Nov. 5, 1984, Ser. No. 668,193

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1983, 3342291

Int. Cl.⁴ C07C *67/36*

U.S. Cl. 560—204 **10 Claims**

1. A method for making a diester of oxalic acid which comprises oxidatively carbonylating an alcohol having 1 to 10 carbon atoms with carbon monoxide and with oxygen at a pressure from 1 to 700 bars and at a temperature from 20° C. to 250° C. in an initally anhydrous reaction phase comprising said alcohol having dissolved therein a catalyst system consisting essentially of, as cations, ions of palladium(II) and of copper in a molar ratio of at least 0.2, together with alkali metal ions, and, as anions, halide ions and carboxylate ions having 1 to 6 carbon atoms, the amounts of all ions in said catalyst system being such that the solution of the cations and anions in the reaction phase a formal pH value, as determined electrisetrically, between 8 and 5.

4,620,030
PREPARATION OF METHYL ISOCYANATE IN A QUARTZ REACTOR

George E. Heinsohn, Elkton, Md., and Velliyur N. M. Rao, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 23, 1984, Ser. No. 663,847

Int. Cl.⁴ C07C *71/00*

U.S. Cl. 560—338 **1 Claim**

1. In a process for the preparation of methyl isocyanate by the gas-phase reaction of monomethyl formamide with oxygen at 400°-700° C. in the presence of a silver-containing catalyst, the improvement comprising carrying out the reaction in a quartz reactor.

4,620,031
PROCESS FOR PREPARING ALPHA-ARYL-ALKANOIC ACIDS

Fulvio Uggeri, Codogno; Graziano Castaldi, Briona, and Claudio Giordano, Vicenza, all of Italy, assignors to Zambon S.p.A., Vicenza, Italy

Filed Feb. 1, 1985, Ser. No. 697,449

Claims priority, application Italy, Feb. 3, 1984, 19434 A/84

Int. Cl.⁴ C07C *63/36*

U.S. Cl. 562—466 **5 Claims**

1. A process for preparing an alpha-aryl-alkanoic acid comprising heating a mixture of a corresponding alpha-bromo- or chloro-alkyl-aryl-ketone in (a) a saturated straight or branched chain aliphatic diol, or (b) a mixture thereof, said saturated diol having from 2 to 10 carbon atoms, in the presence of a Broensted's acid, and subsequently making the resulting reaction mixture alkaline.

4,620,032
DEPOLYMERIZATION OF CONDENSATION POLYMERS INVOLVING A PRE-MOLECULAR WEIGHT REDUCTION STEP

Marvin L. Doerr, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Filed Dec. 11, 1984, Ser. No. 680,443

Int. Cl.⁴ C07C *51/487, 99/12, 27/26, 85/26*

U.S. Cl. 562—483 **25 Claims**

1. A process for the depolymerization of a condensation polymer comprising the steps in combination:

(a) intimately admixing molten condensation polymer selected from the group consisting of polyamides and polyesters with a depolymerization agent selected from the group consisting of (i) a product resulting from the complete hydrolytic depolymerization of said condensation polymer in liquid form, and (ii) water, said depolymerization agent being present in said admixture in an amount by weight of less than the weight of said condensation polymer,

(b) admixing said molten condensation polymer and said depolymerization agent for a time sufficient that the molecular weight of said condensation polymer is reduced by at least 50%; and

(c) subjecting said treated condensation polymer to neutral hdryolysis with a substantial excess of water based on the weight of the condensation polymer, to thereby effect substantially complete hydrolytic depolymerization of said condensation polymer.

4,620,033
PROCESS FOR PRODUCING CARBOXYLIC ACIDS

Tomiya Isshiki, Tokyo; Yasuhiko Kijima; Yuh Miyauchi, both of Chiba, and Takao Kondo, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation of Ser. No. 369,639, Apr. 19, 1982, abandoned. This application Feb. 4, 1985, Ser. No. 697,696

Claims priority, application Japan, Apr. 21, 1981, 56-60418; Jul. 20, 1981, 56-113159

Int. Cl.⁴ C07C *51/12, 53/08*

U.S. Cl. 562—519 **17 Claims**

1. A process for producing a carboxylic acid which comprises reacting a hydrocarbyl alcohol with carbon monoxide in the presence of (A), a catalyst consisting essentially of at least one material selected from the group consisting of nickel, nickel compounds and mixtures thereof, (B) at least one iodide and (C) a promotor characterized in that said promotor consists essentially of:

component (i) composed of one or more compounds selected from the group consisting of stannous iodide, stannous acetate and stannic iodide, and

component (ii) composed of one or more compunds selected from the group consisting of lithium iodide and lithium actate;

wherein the amount of said component (ii) employed is in the range of 10^{-3} to 10 g-atom per 1 liter of the reaction solution in terms of metal and at the same time, it is in the range of 0.01 to 100 g-atom per 1 g-atom of catalyst (A) in terms of metal; said reaction being carried out at a temperature of 80° to 300° C. and at a carbon monoxide partial pressure of 1 to 200 kg/cm^2.

4,620,034
PROCESS FOR THE PREPARATION OF 2-KETO-ALDONIC ACIDS

Peter C. C. Smits, Venlo, Netherlands, assignor to Akzo NV, Arnhem, Netherlands

Filed Jan. 22, 1985, Ser. No. 693,251

Claims priority, application Netherlands, Jan. 23, 1984, 8400203

Int. Cl.⁴ C07C *51/235, 51/373, 59/215*

U.S. Cl. 562—531 **6 Claims**

1. A process for the preparation of a 2-keto-aldonic acid from an aldose or aldonic acid, wherein a liquid aqueous solution of an aldose or aldonic acid having a pH in a range of 4–12 is oxidized with molecular oxygen at a temperature in the range of from 0 to 200° C. in the presence of a platinum catalyst together with a catalytic amount of at least one member selected from the group consisting of lead, bismuth and compounds thereof.

4,620,035
PRODUCTION OF ACRYLIC ACID BY OXIDATION OF ACROLEIN

Richard Krabetz, Kirchheim, and Heinz Engelbach, Limburgerhof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 88,577, Oct. 26, 1979, abandoned, which is a continuation of Ser. No. 859,327, Dec. 12, 1977, abandoned, which is a continuation of Ser. No. 442,492, Feb. 14, 1974, abandoned, which is a continuation-in-part of Ser. No. 11,872, Feb. 16, 1970, Pat. No. 3,845,120. This application Oct. 9, 1981, Ser. No. 310,409

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1969, 1908965

Int. Cl.⁴ C07C *51/25, 57/055*

U.S. Cl. 562—534 **7 Claims**

1. A process for the production of acrylic acid which comprises oxidizing acrolein with a gas containing oxygen in the gas phase at elevated temperature and in the presence of a catalyst which, in addition to oxygen, consists essentially of (a) molybdenum, (b) tungsten, (c) vanadium and at least one mem-

ber (d) selected from the group consisting of iron and copper wherein the atomic ratio of (a):(b):(d) is 1 to 20:0.01 to 10:1 and the atomic ratio of vanadium:molybdenum is 0.2 to 6:6.

4,620,036
DIPHENYLALKANOETHER AND DIPHENYLALKANONE OXIMEETHER DERIVATIVES

Keiichi Ono, 1-5-3-530, Higashiawaji, Higashiyodogawa-ku, Osaka; Hajime Kawakami, 2-14-7, Mefu, Takarazuka, Hyogo, and Junki Katsube, 10-20 Machikaneyama-cho, Toyonaka, Osaka, all of Japan

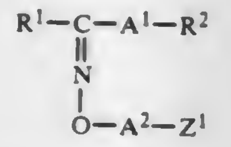
Division of Ser. No. 308,655, Oct. 5, 1981, Pat. No. 4,459,410, which is a continuation-in-part of Ser. No. 136,565, Apr. 2, 1980, Pat. No. 4,388,469. This application Mar. 22, 1984, Ser. No. 592,446

Claims priority, application Japan, Apr. 2, 1979, 54-40032; Aug. 13, 1979, 54-103340

Int. Cl.⁴ C07C *131/00*

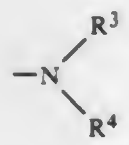
U.S. Cl. 564—256 **13 Claims**

1. A compound of the formula:



$$R^1-\underset{\underset{\underset{O-A^2-Z^1}{|}}{N}}{\underset{\|}{C}}-A^1-R^2$$

wherein R^1 and R^2 are each independently an aryl group optionally substituted with 1 to 3 substituents selected from the group consisting of halogen, C_1-C_4 alkyl, C_1-C_4 alkoxy, nitro, cyano, di(C_1-C_4)alkylamino, amino, benzyloxy, hydroxyl, C_1-C_4 alkylthio, C_1-C_4 alkylsulfinyl, C_1-C_4 alkylsulfonyl, C_1-C_4 alkanoylamino, C_1-C_4 alkylamino and N-(C_1-C_4)alkyl-N-(C_1-C_4)alkanoylamino; Z^1 is a group of the formula:



wherein R^3 and R^4 are each independently a hydrogen atom, a C_1-C_4 alkyl group or an ar(C_1-C_4)alkyl group or, when taken together with the adjacent nitrogen atom to which they are attached, represent a nitrogen-containing 5 to 7-membered saturated heterocyclic group optionally having an oxygen atom or an additional nitrogen atom as the hetero atom in addition to the said nitrogen atom and, in case of having the additional nitrogen atom, bearing a hydrogen atom, a C_1-C_4 alkyl group, an ar(C_1-C_4)alkyl group or a phenyl group thereon; A^1 is a C_3-C_6 alkylene group; and A^2 is a C_2-C_4 alkylene group, and non-toxic, pharmaceutically acceptable acid addition salts thereof.

4,620,037
SEQUENCED SURFACTANT OLIGOMERS, PROCESS FOR PREPARING THE SAME AND COMPOSITIONS CONTAINING THE SAME

Guy Vanlerberghe, Claye-Souilly, and Henri Sebag, Paris, both of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 87,794, Oct. 24, 1979, Pat. No. 4,491,534, which is a division of Ser. No. 815,847, Jul. 14, 1977, Pat. No. 4,199,562. This application Oct. 6, 1983, Ser. No. 539,743

Claims priority, application Luxembourg, Jul. 16, 1976, 75406

Int. Cl.⁴ C07C *147/02, 147/14*

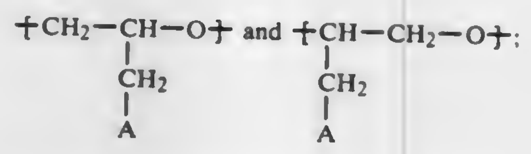
U.S. Cl. 568—36 **10 Claims**

5. A bisequenced oligomer surfactant of the formula

$$P-O[C_2H_3(CH_2A)O]_m[C_2H_3(CH_2B)O]_nH$$

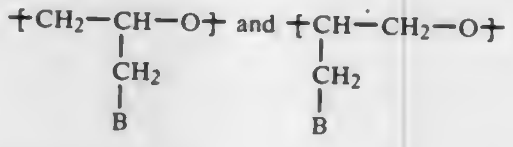
wherein

$[C_2H_3(CH_2A)O]$ represents the two isomers:



$$+CH_2-\underset{\underset{\underset{A}{|}}{CH_2}}{\underset{|}{CH}}-O+ \text{ and } +\underset{\underset{\underset{A}{|}}{CH_2}}{\underset{|}{CH}}-CH_2-O+;$$

$[C_2H_3(CH_2B)O]$ represents the two isomers:

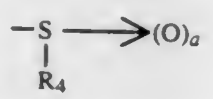


$$+CH_2-\underset{\underset{\underset{B}{|}}{CH_2}}{\underset{|}{CH}}-O+ \text{ and } +\underset{\underset{\underset{B}{|}}{CH_2}}{\underset{|}{CH}}-CH_2-O+$$

P represents linear or branched alkyl having 1–20 carbon atoms;

A represents R—CH_2— or R′—O—, wherein R represents linear alkyl having from 4–16 carbon atoms and R′ represents linear or branched alkyl having from 4–20 carbon atoms;

B represents



$$-\underset{\underset{R_4}{|}}{S}\longrightarrow(O)_a$$

wherein a represents 0 or 1 and R_4 represents alkyl having 1–3 carbon atoms, hydroxyalkyl having 1–3 carbon atoms or dihydroxyalkyl having 2–3 carbon atoms;

m represents a whole or decimal number from 2 to 10; and n represents a whole or decimal number from 2 to 25.

4,620,038
PROCESS FOR PRODUCING METHYL ETHYL KETONE

Hirotoshi Tanimoto; Mutsuo Yamada; Yoshijiro Arikawa; Taiji Kamiguchi; Yasuyuki Nishimura, and Hiroyuki Kaku, all of Kure, Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1985, Ser. No. 706,263

Claims priority, application Japan, Feb. 29, 1984, 59-038138

Int. Cl.⁴ C07C *45/34*

U.S. Cl. 568—401 **14 Claims**

1. A process for producing a methylethylketone by oxidizing 1-butene in the presence of a metal complex, comprising:

contacting a first metal catalyst MmXn.Ll with oxygen to form an oxygen complex;

contacting a second catalyst M′m′Xn′.L′l′ with 1-butene to form a 1-butene complex; and

contacting the oxygen complex with the 1-butene complex to produce methylethylketone, wherein M represents a transition metal selected from the group consisting of Group I, Groups IV–VII and the iron group of Group VIII of the Periodic Table; X, an anion; L, an organic phosphorous compound selected from the group consisting of phosphorous acid esters, phosphoric acid esters, phyenylphosphinous acid esters, dimethylphosphinic acid esters, triethylphosphine, triphenylphosphine, triphenylphosphine oxide, dimethyl methylphosphonate, methyl dimethylphosphonate and hexamethylphosphoramide; M′, a transition metal selected from the platinum group of Group VIII of the Periodic Table; L′, a ligand selected from the group consisting of at least one of acetonitrile, propionitrile, benzonitrile, tolunitrile, phosphorus acid esters, phosphoric acid esters, phenylphosphinous acid esters, dimethylphosphinic acid ester, triethylphosphine, triphenylphosphine, triphenylphosphine oxide, dimethyl methylphosphonate, methyl dimethylphosphonate, fluorinated toluene, benzotrifluoride, and hexamethylphosphoramide; m, m^1 and n, n^1, each a number determined by the valences of the above transition metals and anions, and l and 11, each the number of the ligand and each are an integer in the range of 1 to 4.

4,620,039
NORBORNYLBUTADIENE-ACROLEIN ADDUCTS

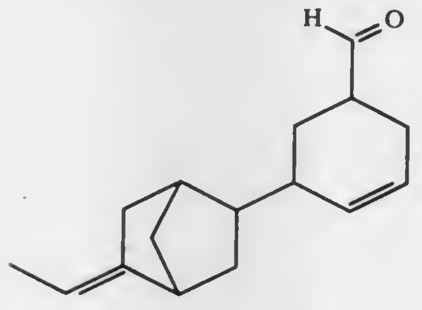
Wilhelmus J. Wiegers, Red Bank, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 613,568, May 24, 1984, Pat. No. 4,560,500. This application Jun. 7, 1985, Ser. No. 742,537

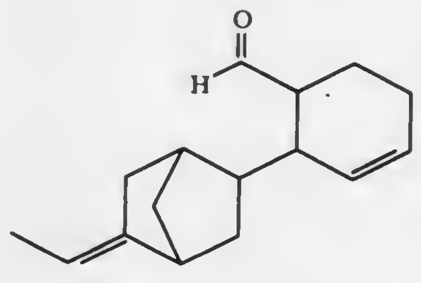
Int. Cl.⁴ C07C *47/42*

U.S. Cl. 568—445 **3 Claims**

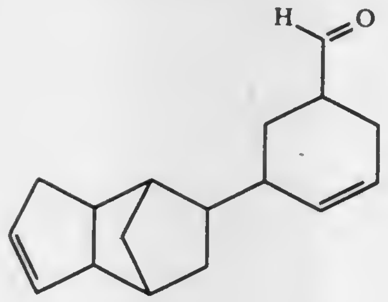
1. The mixture of compounds having the structures:



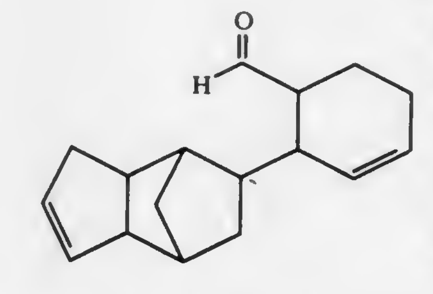
and



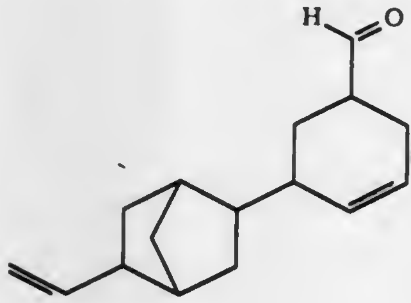
2. The mixture of compounds having the structures:



and



3. The mixture of compounds having the structures:



and

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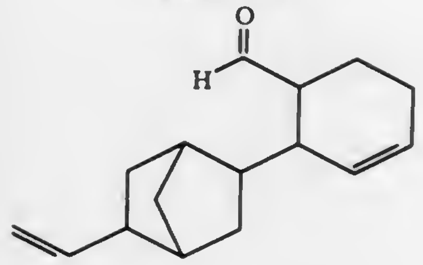


4,620,040
PROCESS FOR THE PREPARATION OF α-α-α-TRIFLUOROANISOLES

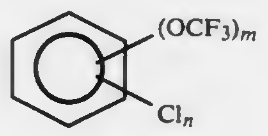
Derek J. Alsop, Buffalo, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Mar. 18, 1985, Ser. No. 713,119

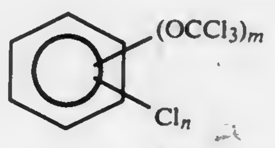
Int. Cl.⁴ C07C *41/22*

U.S. Cl. 568—656 **12 Claims**

1. A process for the preparation of a trifluoroanisole compound of the formula



wherein m is 1 or 2 and n is 0 to 3; which comprises reacting hydrogen fluoride with a trichloroanisole compound of the formula



where m and n are as defined above; in the vapor phase in the presence of a fluorinated alumina catalyst.

4,620,041
ETHER CARBINOLS

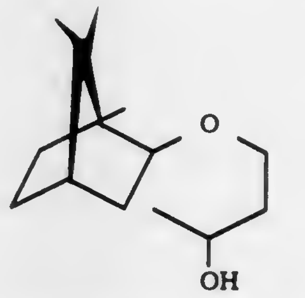
Futoshi Fujioka, Wanamassa; Richard M. Boden, Ocean, and William L. Schreiber, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 644,054, Aug. 24, 1984, which is a division of Ser. No. 574,150, Jan. 26, 1984, Pat. No. 4,521,634, which is a continuation-in-part of Ser. No. 533,364, Sep. 19, 1983, Pat. No. 4,532,364, which is a continuation-in-part of Ser. No. 507,292, Aug. 1, 1983, abandoned. This application Oct. 4, 1985, Ser. No. 784,618

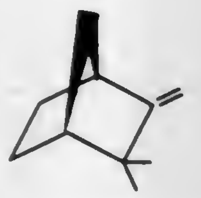
Int. Cl.⁴ C07C *43/196*

U.S. Cl. 568—665 **2 Claims**

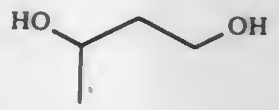
1. An ether carbinol composition comprising the compound having the structure:



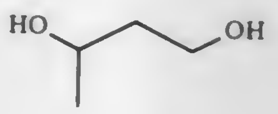
produced according to the process of reacting camphene having the structure:



and 1,3-butane diol having the structure:



in the presence of a Lewis acid catalyst at a temperature in the range of from about 60° C. up to about 100° C.; at a pressure in the range of from about one atmosphere up to about ten atmospheres; the time of reaction being from about two hours up to about twenty hours; the mole ratio of 1,3-dihydroxybutane having the structure:



to camphene varying from about 1:2 up to about 3:1 and then recovering the resulting product by means of fractional distillation.

4,620,042
PREPARATION OF 2-CHLORO-4-FLUOROPHENOL FROM 4-FLUOROPHENOL

Toshikazu Kawai, Kawagoe; Ysunobu Nishimura, and Katumi Kanesaki, both of Kamifukuoka, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Mar. 7, 1985, Ser. No. 709,435

Claims priority, application Japan, Mar. 13, 1984, 59-46607

Int. Cl.^{4} C07C *39/27*

U.S. Cl. 568—775 **6 Claims**

1. A method of preparing 2-chloro-4-fluorophenol, comprising the step of making react chlorine gas with 4-fluorophenol at a temperature in the range from about 0° C. to about 185° C. in the absence of catalyst and substantially in the absence of metal ions.

4,620,043
PRODUCTION OF PHENOLS AND CATALYST THEREFOR

Chiu T. Lam, Sewell, N.J., and David M. Shannon, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 379,229, May 17, 1982, Pat. No. 4,567,157. This application Oct. 17, 1985, Ser. No. 788,276

Int. Cl.^{4} C07C *37/00*

U.S. Cl. 568—801 **20 Claims**

1. A process for catalytically oxidizing an aromatic carboxylic acid having at least one carboxylic group substituted on the aromatic nucleus to the corresponding phenol comprising vapor phase oxidizing with molecular oxygen, in the presence of steam as a diluent, the aromatic carboxylic acid to the corresponding phenol in the presence of a catalytically effective amount of a multicomponent catalyst containing copper, phosphorus present in the form of phosphate, and a metal selected from the group consisting of vanadium, chromium, manganese, iron, cobalt, nickel and zinc, under conditions sufficient to prepare the corresponding phenol.

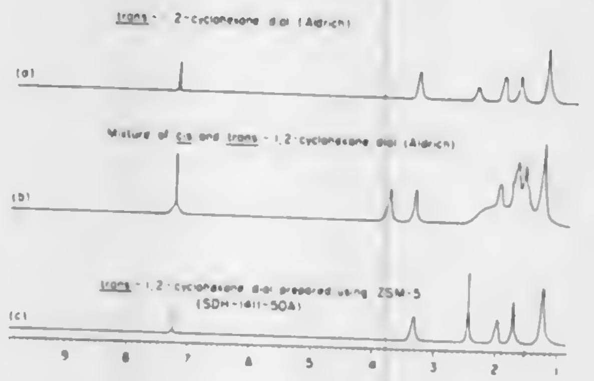
4,620,044
HYDROLYSIS OF OLEFIN OXIDES TO GLYCOLS

Clarence D. Chang, Princeton, and Stuart D. Hellring, Trenton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 16, 1985, Ser. No. 787,931

Int. Cl.^{4} C07C *35/14*

U.S. Cl. 568—833 **18 Claims**



1. A process for making 1,2-diols by the catalytic hydrolysis of an olefin oxide or a cyclo-olefin oxide, in the presence of water, comprising contacting the olefin oxide or a cyclo-olefin oxide of 2 to 20 carbon atoms with a catalyst comprising a silicate or zeolite, wherein said silicate or zeolite, has a contraint index of about 1 to about 12,
   wherein said silicate or zeolite has an alpha value ranging from 1 to 500; and
   wherein the silicate or zeolite contains acidic hydrogen atoms.

4,620,045
ENEYNOLS FROM ACETYLENES AND PROPARGYLIC ALCOHOLS

Giffin D. Jones, and Harold E. Doorenbos, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 19, 1985, Ser. No. 713,511

Int. Cl.^{4} C07C *29/32, 33/042*

U.S. Cl. 568—873 **30 Claims**

1. A process to prepare eneynols comprising contacting a terminal acetylene with a propargylic alcohol in the presence of a catalyst comprising a metallic halide of Cu^+, Ag^+, Au^+ or combination thereof under conditions such that an eneynol is produced, wherein
   the terminal acetylene is a hydrocarbon which contains at least one ethynyl group;
   the propargylic alcohol is a hydroxyl-substituted hydrocarbon which contains at least one ethynyl group and contains at least one propargylic carbon, said propargylic carbon to which at least one ethynyl group and at least on hydroxyl group are directly bonded, and
   the eneynol is a compound with at least one eneynolic bond between remnants of the terminal acetylene and the propargylic alcohol.

4,620,046
NITRATED ARYL ETHERS

Rainer Hagel, Lichtenfels, and Klaus Redecker, Nuremberg, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 477,424, Mar. 21, 1983, abandoned. This application Jun. 24, 1985, Ser. No. 748,027

Int. Cl.^{4} C07C *79/10*

U.S. Cl. 568—930 **2 Claims**

1. A nucleus-nitrated aryl ether which has a decomposition temperature above 200° C. and which has the formula Ar'-O-Ar''-O-Ar' wherein Ar' represents a phenyl radical substituted by 3 nitro groups and free of other substituents; and Ar'' represents a non-substituted phenylene radical.

2. A nucleus-nitrated aryl ether which has a decomposition temperature above 200° C. and which has the recurring unit $—Ar'\text{-}O\text{-}Ar''\text{-}O—_n$ wherein Ar' represents a phenylene radical substituted by 1 to 3 nitro groups and free of other substituents and Ar'' represents a non-substituted phenylene radical, when Ar' represents a phenylene radical substituted by three nitro groups, or a phenylene radical substituted by 1 to 3 nitro groups, when Ar' represents a phenylene group substituted by less than 3 nitro groups; and wherein n is an integer of from 4 to 20.

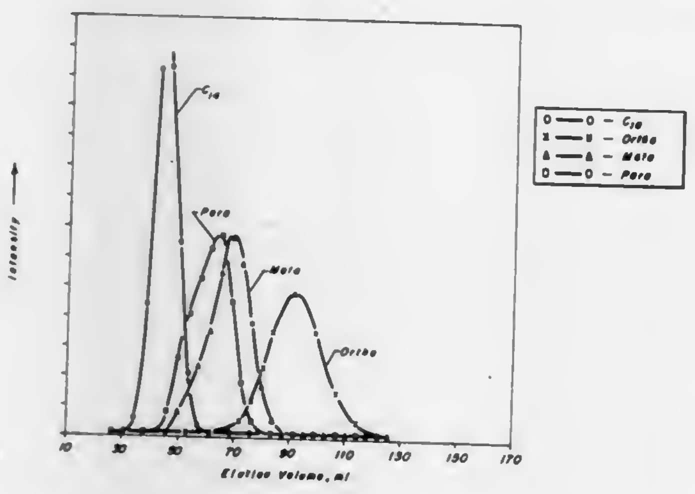
4,620,047
PROCESS FOR THE SEPARATION OF ORTHO-NITROTOLUENE

Hermann A. Zinnen, Evanston, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 18, 1984, Ser. No. 661,860

Int. Cl.^{4} C07C *79/10*

U.S. Cl. 568—939 **5 Claims**



1. A process for separating ortho-nitrotoluene from a feed mixture comprising ortho-nitrotoluene and at least one other isomer of nitrotoluene, which process comprises contacting at adsorption conditions said mixture with an adsorbent comprising a type X zeolite having cations comprising cations of metals in Group IA or Group IIA of the Periodic Table of the Elements at exchangeable cationic sites, selectively adsorbing said ortho-isomer to the substantial exclusion of the remaining isomers, removing the non-adsorbed portion of the feed mixture from contact with the adsorbent, and thereafter recovering high-purity ortho-nitrotoluene by desorption at desorption conditions with a desorbent material comprising nitrobenzene.

4,620,048
HYDROCARBON SOLUTIONS OF MACROMOLECULAR POLYMERS HAVING AN IMPROVED RESISTANCE TO MECHANICAL DEGRADATION

Gary W. Ver Strate, Matawan, N.J.; William W. Graessley, Evanston, Ill., and Edward N. Kresge, Watchung, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 356,364, Mar. 9, 1982, abandoned, which is a continuation of Ser. No. 179,022, Aug. 18, 1980, abandoned, which is a continuation-in-part of Ser. No. 27,996, Apr. 9, 1974, abandoned. This application Apr. 17, 1984, Ser. No. 601,376

Claims priority, application United Kingdom, Mar. 26, 1980, 8010190

Int. Cl.^{4} C10M *1/28*

U.S. Cl. 585—10 **10 Claims**

1. A mineral lubricating oil fluid containing a major amount of mineral lubricating oil and about 0.5 to 10 weight % of a soluble non-linear macromolecular polydisperse polymer as a V.I. improver dissolved in and at a concentration c such that $0.1 \leqq [\eta]c \leqq 5$ where $[\eta]$ is the intrinsic viscosity of said polymer in that fluid, wherein such fluid exhibits enhanced stability to mechanical shear due to the fact that

$$\frac{\overline{M}_z\overline{M}_{z+1}}{\overline{M}_w^2}$$

of the polymer is 3 or less and the reduced compliance of the fluid is less than ten times that of a linear monodisperse polymer in the fluid of the same chemical structure, concentration and $\overline{M}_w$ of said polydisperse polymer, and said polydisperse polymer being selected from the class consisting of ethylene containing polymer consisting of 30 to 80 wt. % ethylene and the balance propylene having a degree of crystallinity of less than 25 wt. % and a $\overline{M}_w$ in the range of about 10^4 to 10^7, polybutadiene, polystyrene, poly(alkylated styrene), ester based polymers and alkylene polyethers, wherein said ethylene containing polymer is characterized by the presence of topological nonlinearity as evidenced by long chain branches, flexible rings or loops in the contour of said ethylene containing polymer, and wherein said polybutadiene, polystyrene, poly(alkylated styrene), ester based polymers and alkylene polyethers are each characterized by combs, flexible rings or loops in their contours, and wherein said long chain branches and combs contain 100 or more backbone carbon atoms.

4,620,049
METHOD AND APPARATUS FOR CONTROLLING POLYBUTENE PRODUCTION

Gregory E. Schmidt; Linus K. Leung, both of Naperville; Lawrence J. Beck, Bolingbrook, all of Ill., and David S. Chang, Cincinnati, Ohio, assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Oct. 31, 1984, Ser. No. 666,896

Int. Cl.^{4} C07C *2/00*

U.S. Cl. 585—501 **11 Claims**

1. A method for controlling the molecular weight of the product output from a polybutene reactor where operating variables in the reactor are controlled, said method comprising the step of injecting moisture into the reactor or into the butene-butene feed being fed into the reactor.

4,620,050
PROCESS FOR THE MANUFACTURE OF ETHYLENE FROM ETHYL ESTERS

Jean-Marie Cognion, Saint Genis Laval, and Pierre Durual, Vernaison, both of France, assignors to ATOCHEM, France

Filed Sep. 3, 1985, Ser. No. 771,981

Claims priority, application France, Sep. 17, 1984, 84 14399

Int. Cl.^{4} L07C *1/253*

U.S. Cl. 585—640 **7 Claims**

1. A process for the manufacture of high purity ethylene by the catalytic decomposition in the gaseous phase of an ethyl ester of an aliphatic carboxylic acid comprising carrying out said decomposition at a temperature between about 150° to 300° C. in the presence of a zeolite having a pore diameter of at least 0.6 nm.

4,620,051
DEHYDROGENATION AND CRACKING OF C_3 AND C_4 HYDROCARBONS TO LESS SATURATED HYDROCARBONS

John H. Kolts, Ochelata, and Gary A. Delzer, Bartlesville, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 25, 1985, Ser. No. 758,983

Int. Cl.^{4} C07C *5/333*

U.S. Cl. 585—663 **40 Claims**

1. A method for converting feed hydrocarbons comprising

at least one of C_3 and C_4 hydrocarbons to less saturated hydrocarbons, comprising:

(a) establishing a body of cracking catalyst, in a reaction zone, selected from the group consisting essentially of:

(1) a catalyst, consisting essentially of: about 0.1 to 30 wt. % of (A) at least one oxide of manganese and the balance of (B) at least one oxide of magnesium;

(2) a catalyst, consisting essentially of: about 0.1 to 30 wt. % of (A) at least one oxide of at least one metal selected from the group consisting of calcium, strontium, barium, tin and antimony and (B) at least one oxide of manganese and the balance of (C) at least one oxide of magnesium;

(3) a catalyst, consisting essentially of: about 0.1 to 30 wt. % of (A) at least one oxide of at least one metal selected from the group consisting of calcium, strontium, barium, tin and antimony, (B) at least one oxide of at least one element selected from the group consisting of silicon, aluminum and titanium and (C) at least one oxide of manganese and the balance of (D) at least one oxide of magnesium;

(4) a catalyst, consisting essentially of: about 0.1 to 30 wt. % of (A) at least one oxide of at least one metal selected from the group consisting of calcium, strontium, barium, tin and antimony, (B) at least one oxide of chromium and (C) at least one oxide of manganese and the balance of (D) at least one oxide of magnesium;

(5) a catalyst, consisting essentially of: about 0.1 to 30 wt. % of (A) at least one oxide of at least one element selected from the group consisting of silicon, aluminum and titanium and (B) at least one oxide of manganese and the balance of (C) at least one oxide of magnesium;

(6) a catalyst, consisting essentially of: about 0.1 to 30 wt. % of (A) at least one oxide of chromium and (B) at least one oxide of manganese and the balance of (C) at least one oxide of magnesium;

(7) a catalyst comprising: about 0.1 to 30 wt. % of (A) at least one oxide of manganese and the balance of (B) of at least one metal selected from the group consisting of Lanthanum Series metals and niobium; and

(8) a catalyst comprising: about 0.1 to 30 wt. % of (A) at least one oxide of chromium and (B) at least one oxide of manganese and the balance of (C) at least one oxide of at least one metal selected from the group consisting of Lanthanum Series metals and niobium,

said wt. % being expressed in terms of the element based on the total weight of catalyst,

(b) introducing said feed hydrocarbons into the upstream end of said body of catalyst;

(c) passing the thus introduced feed hydrocarbons through said body of catalyst and in contact therewith;

(d) withdrawing said product hydrocarbons from the downstream end of said body of catalyst; and

(e) maintaining conditions within said body of catalyst sufficient to convert said feed hydrocarbons to said product hydrocarbons, including: a temperature in said upstream end of said body of catalyst between about 400° C. and about 750° C. and a temperature at said downstream end of said body of catalyst between about 100° C. and about 200° C. above said temperature in said upstream end.

4,620,052

DEHYDROGENATION AND CRACKING OF C_3 AND C_4 HYDROCARBONS

John H. Kolts, Ochelata, and Gary A. Delzer, Bartlesville, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 25, 1985, Ser. No. 758,936

Int. Cl.^{4} C07C *5/333*

U.S. Cl. 585—663 **30 Claims**

1. A method for converting feed hydrocarbons comprising at least one of C_3 and C_4 hydrocarbons to less saturated hydrocarbons, comprising:

contacting said feed hydrocarbons with a catalyst composition selected from the group consisting of:

(a) a catalyst, consisting essentially of: about 0.1 to 30 wt. % of each of (1) at least one oxide of chromium and (2) at least one oxide of manganese and the balance of (3) at least one oxide of magnesium;

(b) a catalyst, comprising: about 0.1 to 30 wt. % of each of (1) at least one oxide of chromium and (2) at least one oxide of manganese and the balance of (3) at least one oxide of at least one metal selected from the group consisting of Lanthanum Series metals and niobium;

(c) a catalyst, consisting essentially of: about 0.1 to 30 wt. % of each of (1) at least one oxide of chromium, (2) at least one oxide of at least one metal selected from the group consisting of calcium, strontium, barium, tin, and antimony and (3) at least one oxide of manganese and the balance of (4) at least one oxide of magnesium; and

(d) a catalyst, comprising: about 0.1 to 30 wt. % of each of (1) at least one oxide of chromium, (2) at least one oxide of at least one metal selected from the group consisting of calcium, strontium, barium, tin and antimony and (3) at least one oxide of manganese and the balance of (4) at least one oxide of at least one metal selected from the group consisting of Lanthanum Series metals and niobium,

said wt. % being expressed in terms of the element based on the total weight of the catalyst,

under conditions sufficient to convert said feed hydrocarbons to said less saturated product hydrocarbons.

4,620,053

ZINC ALUMINATE DOUBLE BOND ISOMERIZATION CATALYST AND DOUBLE BOND ISOMERIZATION OF OLEFINS EMPLOYING SAID CATALYST

M. Bruce Welch, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 17, 1985, Ser. No. 745,556

Int. Cl.^{4} C07C *5/23*

U.S. Cl. 585—664 **6 Claims**

4. A process for double bond isomerizing an olefinic hydrocarbon feedstock having at least four carbon atoms per molecule, said process comprising:

contacting said olefinic feedstock with an activated catalyst prepared by calcining a composition which essentially consists of zinc aluminate in an oxygen containing atmosphere at a temperature of about 250° C. to about 800° C. for a time of about 1 hour to about 30 hours and then contacting the thus calcined composition with a reducing gas selected from the group consisting of carbon monoxide, nitric oxide, and hydrogen at a temperature of about 400° C. to about 750° C. for a time of about 1 minute to about 30 hours, said activated catalyst contacting said olefinic feedstock under effective isomerization conditions to produce a double bond isomerized olefinic product.

4,620,054

ACID-CATALYZED XYLENE ISOMERIZATION

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 726,194, Apr. 22, 1985, abandoned, which is a continuation-in-part of Ser. No. 555,118, Nov. 25, 1983, Pat. No. 4,550,092, which is a division of Ser. No. 317,037, Nov. 21, 1981, Pat. No. 4,435,516. This application Oct. 15, 1985, Ser. No. 787,182

Int. Cl.^{4} C07C *5/27*

U.S. Cl. 585—481 **14 Claims**

1. A process for conducting acid-catalyzed conversion of feedstock comprising xylenes to product comprising xylene isomerization product which comprises contacting said feedstock at conversion conditions sufficient to convert said feedstock to said product with a catalyst comprising a zeolite composition prepared by a method comprising treating a crystalline zeolite having an initial silica-to-alumina mole ratio of at least 500 with an ammoniacal solution of an alkali metal aluminate for a period of time ranging from about 20 minutes to about 30 days at a temperature of from about 20° C. to about 50° C. and at a pH of at least 10.

4,620,055

PREPARATION OF STYRENE AND STILBENE COMPOUNDS

Carl M. Lentz, Mt. Carmel; James R. Overton, and David D. Cornell, both of Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 643,323, Aug. 22, 1984, abandoned. This application Oct. 7, 1985, Ser. No. 785,031

Int. Cl.^{4} C07C *15/40*

U.S. Cl. 585—438 **9 Claims**

1. A process for the preparation of styrene and stilbene compounds which comprises reacting at a temperature of about 25° to 150° C. and a pressure of about 1 to 100 atmospheres an aryl sulfonyl chloride of the formula $ArSO_2Cl$, wherein Ar represents a moiety derived from benzene or toluene, with an olefinic compound of the formula $R\text{-}CH{=}CH_2$, wherein R represents H, an alkyl group having up to about 12 carbon atoms, or a substituted or unsubstituted phenyl group, in the presence of a base having a pKa greater than that of pyridine and a catalyst consisting essentially of palladium in a concentration of about 0.1 to 10 mole percent based on the concentration of said aryl sulfonyl chloride.

4,620,056

METHOD FOR PRODUCING AROMATIC HYDROCARBONS

Isoo Shimizu; Hideki Nomura; Kazumichi Uchida, all of Yokohama, and Hitoshi Mitsuyuki, Kawasaki, all of Japan, assignors to Nippon Petrochemicals Co., Ltd., Tokyo, Japan

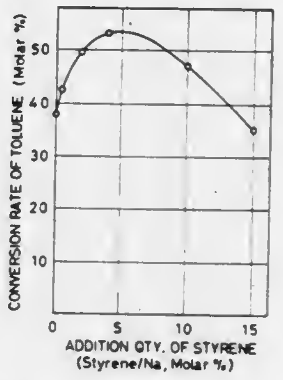
Filed Aug. 28, 1985, Ser. No. 770,506

Claims priority, application Japan, Aug. 29, 1984, 59-179977

Int. Cl.^{4} C07C *2/64*

U.S. Cl. 585—452 **5 Claims**

1. A method for producing an aromatic hydrocarbon which is characterized in that an unsaturated compound having a double bond or bonds that are conjugated with the benzene ring of said unsaturated compound is allowed to coexist in the process to alkylate a substituted aromatic hydrocarbon with ethylene and/or propylene in the presence of 5 mM (millimoles) or more of metallic sodium relative to 1 mole of said substituted aromatic hydrocarbons and at least one member selected from the group consisting of potassium carbonate, potassium hydrogen carbonate and potassium hydroxide which is sufficient to provide 3 mM or more of potassium ions also relative to 1 mole of said substituted aromatic hydrocarbon, said substituted aromatic hydrocarbon having at least one alkyl group or alkylene group which has at least one hydrogen atom in the α-position relative to the aromatic ring of said substituted aromatic hydrocarbon.



4,620,057

METHANE CONVERSION

James B. Kimble, Bartlesville, and John H. Kolts, Ochelata, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 7, 1985, Ser. No. 742,339

Int. Cl.^{4} C07C *2/00*

U.S. Cl. 585—500 **20 Claims**

1. A method for the oxidative conversion of methane to higher hydrocarbons, comprising:

contacting a feed material comprising methane with a solid contact material, comprising:

cobalt; at least one metal selected from the group consisting of zirconium, zinc, niobium, indium, lead and bismuth; phosphorous; at least one Group IA metal; and oxygen, under oxidative conversion conditions sufficient to convert said methane to said higher hydrocarbons.

ELECTRICAL

4,620,058

SEMICONDUCTOR DEVICE FOR CONVERTING LIGHT INTO ELECTRIC ENERGY

Gerhard Winterling, Ottobrunn, and Max Königer, Pullach, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bolkow-Blohm, Fed. Rep. of Germany

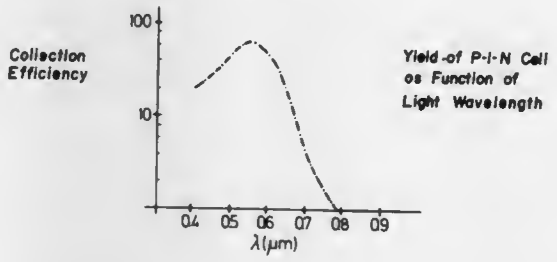
Filed Sep. 19, 1980, Ser. No. 188,725

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 2938260

The portion of the term of this patent subsequent to Oct. 28, 1999, has been disclaimed.

Int. Cl.⁴ H01L *31/06*

U.S. Cl. 136—258 **7 Claims**



1. A semiconductor device for the conversion of incident solar radiation into electrical energy, comprising an amorphous silicon body having a surface to be exposed to the incident radiation, and a cover layer or doped semiconductor material which is arranged on the surface of the amorphous silicon body to be exposed to incident radiation, the amorphous silicon body being one of relatively slightly doped, oppositely doped, or intrinsic amorphous silicon adjacent its surface to be exposed and forming with the cover layer, a heterotransition zone, the cover layer consisting of a polycrystalline silicon layer obtained by deposition from a gaseous phase comprising a silicon containing gas and having a thickness of 0.15 micron at most and an average grain size parallel to the surface which is larger than said thickness by a factor of about two, resulting directly from the deposition process, whereby even the blue-violet part of solar radiation is absorbed by the amorphous silicon body adjacent its incident surface, thereby increasing the efficiency of conversion of the solar radiation into electrical energy.

4,620,059

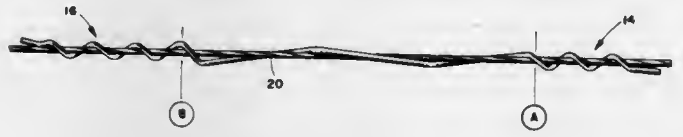
CABLE VIBRATION DAMPENER AND METHOD OF INSTALLING

Thomas E. Sherman, Chagrin Falls, Ohio, assignor to Preformed Line Products Company, Cleveland, Ohio

Filed Dec. 3, 1985, Ser. No. 804,267

Int. Cl.⁴ H02G *7/14*

U.S. Cl. 174—42 **12 Claims**



1. A device for dampening wind induced vibrations in aerial cables comprising: an elongated rod having a generally straight midsection terminating in helically configured cable gripping sections sized so as to tightly grip the aerial cable on which the device is to be used, and a support helix associated with at least one of said gripping sections, said support helix comprising at least one complete spiral with an open inner diameter greater than the inner diameter of the helically configured gripping sections and at least approximately as great as the diameter of the cable on which the device is to be used.

8. A method of installing on aerial cables a vibration dampener of the type comprising an elongated rod with a generally straight midsection terminating at first and second ends in cable gripping helical sections and having at least one non-gripping support helix adjacent the first end, said method comprising the steps of:

(a) at a first location adjacent the cable, wrapping said support helix about the cable;

(b) while remaining generally at said first location, sliding said rod along said cable to bring said second end generally to the first location;

(c) wrapping the cable gripping helical portion at the second end into gripping relationship with said cable;

(d) wrapping the straight midsection of the rod around said cable and; thereafter,

(e) applying the cable gripping helical portion at the first end to said cable.

4,620,060

ADJUSTABLE VIBRATION DAMPER FOR STRETCHED SUSPENDED CABLES

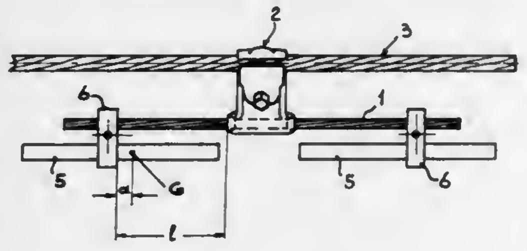
Alberto Perinetti, Milan, Italy, assignor to A. Salvi & C. S.p.A., Milan, Italy

Filed Mar. 22, 1985, Ser. No. 714,918

Claims priority, application Italy, Mar. 22, 1984, 20184 A/84

Int. Cl.⁴ H02G *7/14*

U.S. Cl. 174—42 **15 Claims**



1. Vibration damper for stretched suspended cables or conductors, comprising a messenger cable, two counterweights, a connection element adjustably connecting each counterweight to said messenger cable and said messenger cable to said counterweight and a connection clamp connected to said messenger cable between said counterweights, each said counterweight being formed of at least one bar element of constant section.

4,620,061

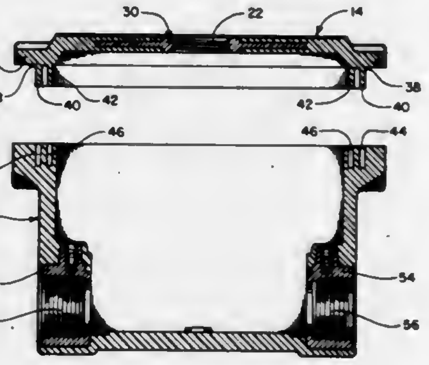
FULLY GROUNDED, CORROSION RESISTANT ELECTRICAL ENCLOSURE

Arthur I. Appleton, Miami Beach, Fla., assignor to Appleton Electric Co., Chicago, Ill.

Filed Sep. 10, 1984, Ser. No. 649,214

Int. Cl.⁴ H02G *3/14*

U.S. Cl. 174—51 **2 Claims**



1. A fully grounded electrical enclosure, comprising:

a molded plastic box portion and a cover portion therefor, said box portion being constructed primarily of plastic and having molded essentially entirely therein a metallic box insert, said box insert including a plurality of tapped seats to which said cover is fastened, said insert also including at least one hub;

means forming a part of said box insert and electrically interconnecting all of said plurality of seats;

said cover portion also being constructed primarily of plastic and carrying a metallic cover insert contained essentially entirely therein, said cover insert including a plurality of holes therethrough exposed to either side of said cover portion and arranged to each receive a fastener attaching said cover portion into said seats in said box insert and increasing the electrical connection pressure between said cover insert and said seats, said cover insert also including at least one other hole therethrough for mounting an electrical device thereon such as a switch;

said enclosure exposing a minimum of metal to the surrounding atmosphere both outside and within the enclosure whereupon corrosion of the inserts is minimized.

4,620,062

DEVICE FOR FORMING SIGNALS WHICH ARE CHARACTERISTIC OF THE POSITION OF A POINT DETERMINED ON A SURFACE

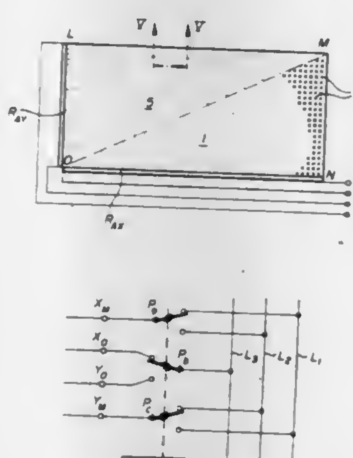
Francois Mizzi, La Celle St Cloud, and Jean-Louis Bellon, Paris, both of France, assignors to RDI Limited Partnership, Wilmington, Del.

Filed Oct. 10, 1984, Ser. No. 659,526

Claims priority, application Switzerland, Oct. 11, 1983, 5563/83

Int. Cl.^{4} G08C *21/00*

U.S. Cl. 178—18 **16 Claims**



1. Device for forming signals which are characteristic of the position of a point determined on a surface, especially by pressure exerted at right angles to this point, comprising a first insulating substrate (1) covering the surface, a first grid of conductive tracks (2) placed on one face of this first substrate and spaced apart from each other, a second substrate (5) of flexible insulating material, covering the face of the first substrate carrying the said conductive tracks (2), a second grid of conductive tracks (6) placed on the face of the second substrate located opposite to the first grid of tracks (2), the tracks of this second grid being spaced apart from each other and extending transversely with respect to the tracks of the first grid, elements (4) maintaining the second substrate in a firm position so that each track of its grid remains distant from any of the tracks of the first grid as long as no pressure is exerted on at least one zone of the said second substrate, means for locating the tracks of the said grids brought into mutual contact when the said second substrate is subjected to the said pressure, wherein these means comprise:

two resistive voltage dividers (R_{AX}, R_{AY}), one of which (R_{AX}) is associated with the first of the two grids of tracks and the other (R_{AY}) is associated with the second of these grids, each track of one grid being attached at one end to one point of the respective divider in such a manner that the ohmic resistance between this point and one of the ends of this divider is characteristic of the position occupied by this track in its grid,

first and a second switching elements (P_a, P_c) respectively associated with the first and second voltage dividers and permitting one of the ends of the corresponding divider to be connected either to a reference voltage (V_m) in a first active switching state of each element, or to a voltage signal collection means (L_2, M_e), in a second active state of each element,

a third switching element (P_b) permitting the other end of one or the other divider to be connected to ground (T) or to be disconnected from it,

elements (CDE) for periodically controlling the said switching elements (P_a, P_b, P_c), arranged in such a manner that each of the said first (P_a) and second (P_c) switching elements is set to the first of these two active states when the other of these elements is in the second of these states, and conversely, and in such a manner that said third element (P_b) connects the second end of each divider to ground (T) when the first end of the divider is connected to the said reference voltage sources (V_m), this ground connection being interrupted by this third element (P_b) when the first end of the divider is connected to said voltage signal collection means (L_2, M_e),

the whole being arranged in such a manner that, following a pressure exerted on any point of the said surface corresponding to a zone of electric contact between at least two tracks of which each belongs to a separate grid, the said collection means (L_2, M_e) receives, alternately and in synchronism with the arrival of the said switching elements (P_a, P_b, P_c) in one or the other active states, voltage signals the amplitudes of which are successively characteristic of the abscissa and ordinate of the position of the said tracks and consequently of the said point of the surface.

4,620,063

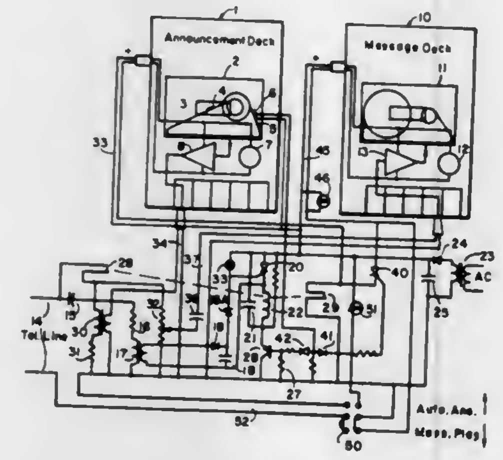
RING SIGNAL DETECTOR

Leonard M. Todd, 424 W. 119th St., New York, N.Y. 10027

Continuation of Ser. No. 959,078, Nov. 9, 1978, abandoned, which is a continuation of Ser. No. 464,626, Apr. 26, 1974, Pat. No. 4,508,466, which is a continuation-in-part of Ser. No. 88,909, Nov. 12, 1970, abandoned. This application Jan. 15, 1984, Ser. No. 691,555

Int. Cl.^{4} H04M *1/65*

U.S. Cl. 179—2 A **16 Claims**



1. A ring signal detector for a telephone line in which a ringing voltage appears, having zero d.c. drain from said telephone line for actuating associated apparatus with a direct current produced when said ringing voltage appears comprising a blocking capacitor, a rectifier having an input and an output, R-C delay means having an input and an output, a transistor having a base, an emitter and a collector, a load impedance and a power source, said capacitor and said input of said rectifier connected in series across said telephone line, said output of said rectifier connected to said input of said R-C

delay means, said output of said R-C delay means connected to said base and said emitter, said load impedance and said collector and said emitter connected in series across said power source, said ringing voltage appearing and being divided into a first voltage across said capacitor and a second voltage across said input of said rectifier, said second voltage being rectified, said rectified voltage being applied from said output of said rectifier to said input of said R-C delay means; after a time delay, said rectified voltage being applied by said output of said R-C delay means to said base and said emitter rising to a level sufficient to cause said transistor to conduct, causing current flow from said power source through said collector and said emitter and said load impedance, said load impedance comprising said associated apparatus, said direct current flow actuating said associated apparatus.

4,620,064

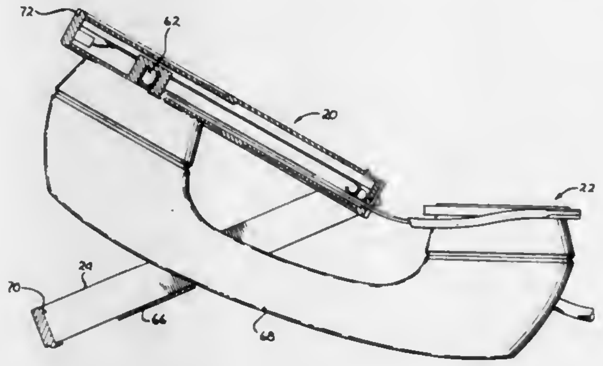
POCKET SIZED TELEPHONE LINE DATA COMMUNICATION SYSTEMS

Bayard F. Kessler, Woodland Hills, and Neil F. Nagy, Ranchos Palos Verdes, both of Calif., assignors to Novation, Inc., Chatsworth, Calif.

Filed Sep. 10, 1984, Ser. No. 648,509

Int. Cl.^{4} H04M *11/00*

U.S. Cl. 179—2 C **24 Claims**



1. A device for acoustic coupling to a telephone handset having first and second acoustic devices comprising

a body means having first and second ends and having a first acoustic coupler adjacent said first end thereof, said body means being a means for resting against a part of a handset whereby said first acoustic coupler may acoustically couple with a first acoustic device in a telephone handset

a slide means having a second acoustic coupler adjacent to an outer end thereof, said slide means being slideable with respect to said second end of said body means between a first retracted position whereby said slide means is substantially circumscribed by said body means and a second extended position whereby said second acoustic coupler is substantially spaced from said body means, whereby said slide means may be retracted when not in use, and the position of said slide means may be adjusted when in use so that said first and second couplers may simultaneously acoustically couple with said first and second acoustic devices in a telephone handset, and

means for coupling said device to a telephone handset.

4,620,065

AUTOMATIC TELEPHONE ANSWERING AND RECORDING APPARATUS

Motoichi Hattori, Fujisawa, and Hideyasu Ishigo, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 29, 1983, Ser. No. 518,487

Claims priority, application Japan, Jul. 30, 1982, 57-133518

Int. Cl.^{4} H04M *1/64*

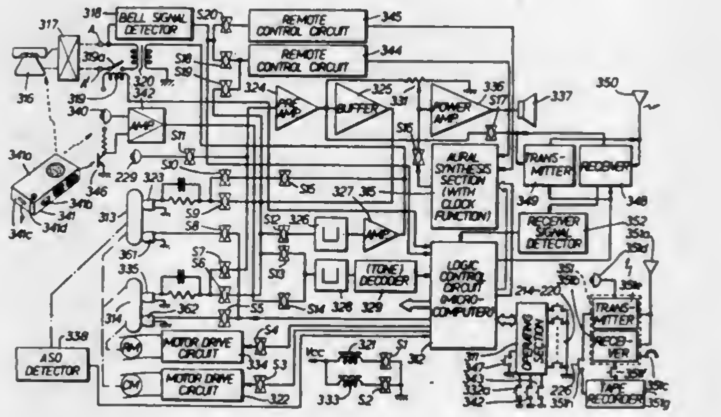
U.S. Cl. 179—6.07 **8 Claims**

1. An automatic telephone answering and recording apparatus for communicating between calling and called subscriber stations connected in a telephone system, comprising:

a speaking circuit provided at a called subscriber station;

first means operating in response to a call signal transmitted by a calling subscriber station over a telephone line to connect the speaking circuit to the calling subscriber station;

second means responsive to the operation of said first means for recording an incoming message transmitted from the calling subscriber station over the telephone line on a first recording medium located at the called subscriber station;



counting means for counting the number of operations of said first means and storing the number so obtained;

third means responsive to said counting means for producing a first aural synthesis output corresponding to the stored number in said counting means and transmitting the first aural synthesis output over the telephone line; and

fourth means connected between said speaking circuit and said third means for activating said third means in response to a specific signal transmitted to said speaking system by a subscriber through the telephone line.

4,620,066

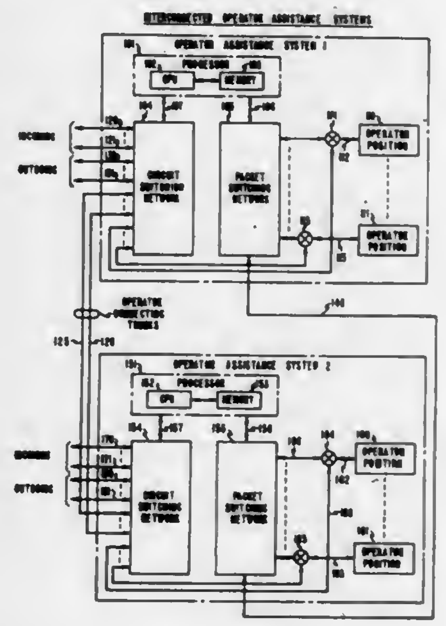
METHOD AND APPARATUS FOR SHARING OPERATORS AMONG ASSISTANCE SYSTEMS

William J. Bushnell, St. Charles; Richard W. Hemmeter, Naperville, and Palanichamy Raghavan, Woodridge, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 27, 1984, Ser. No. 655,693

Int. Cl.^{4} H04M *3/60*

U.S. Cl. 179—27 D **27 Claims**


INTERCONNECTED OPERATOR ASSISTANCE SYSTEMS
OPERATOR ASSISTANCE SYSTEM 1
PROCESSOR
CPU
MEMORY
INCOMING
OUTGOING
CIRCUIT SWITCHING NETWORK
PACKET SWITCHING NETWORK
OPERATOR POSITION
OPERATOR POSITION
OPERATOR ASSISTANCE SYSTEM 2

25. An operator assistance system for serving an operator assistance request, and adapted to be connected to a plurality of lines or trunks and to communication means for intercon-

necting said system with other operator assistance systems, comprising:

an operator position;

means for detecting an operator assistance request on one of said plurality of lines or trunks and for generating a first indication if said operator assistance request is to be served by said operator position of said first system and for generating a second indication if said operator assistance request is to be served by an operator position of one of said other operator assistance systems;

means responsive to detection of a request and to said first indication for establishing a connection between said one of said plurality of lines or trunks and said operator position of said first system;

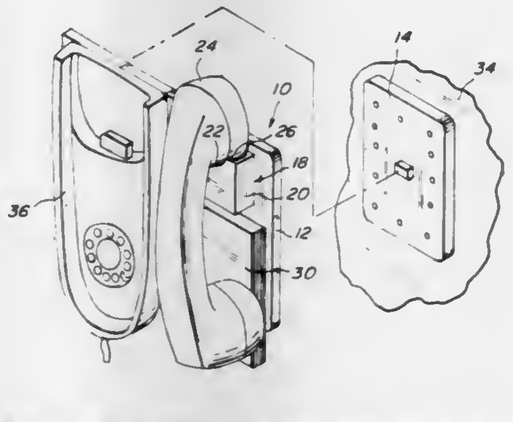
means responsive to said second indication and to detection of a request for establishing a connection between said one of said plurality of lines or trunks and said communication means and for generating a first data message for transmission over said communication means;

said first operator assistance system further comprising means, responsive to second data messages received from said communication means, for establishing a connection between said one of said plurality of lines or trunks and a selected other one of said plurality of lines or trunks.

4,620,067
TELEPHONE WALL CADDY

Philip L. D'Agostino, 1140 Castlegate Dr., Winston-Salem, N.C. 27103

Filed May 10, 1985, Ser. No. 732,557
Int. Cl.^{4} H04M *1/06, 1/04;* **A47F** *7/00*
U.S. Cl. 179—146 R **6 Claims**



1. A telephone wall caddy for a wall telephone having a wall plate and a receiver, said caddy comprises:

(a) a flat base member having a cut out area which fits around said wall plate so that when said telephone is attached to said wall plate said flat base member will be held in position;

(b) a rest box having an arc-shaped cut out which will accommodate said receiver; and

(c) means for adjustably mounting said rest box to said flat base member whereby said rest box can be turned upside down so said caddy can be changed from a right-sided to a left-sided model, wherein said adjustable mounting means includes:

(i) said base member having a mounting hole therethrough, said mounting hole having a longer diameter at rear and a smaller diameter at front;

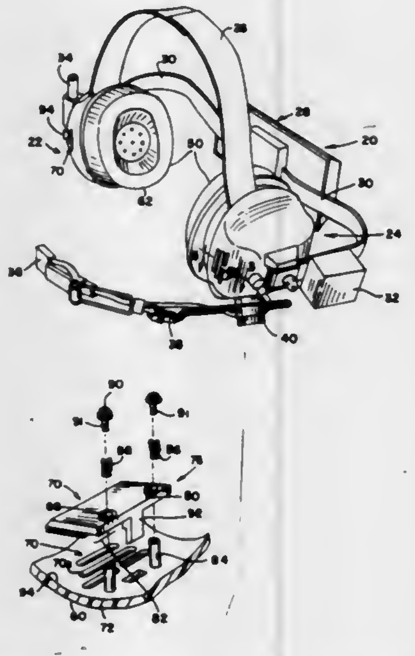
(ii) a placement pin having a larger diameter at rear and a smaller diameter at front, said smaller diameter having an inner aperture, wherein said placement pin fits inside said mounting hole in said base member; and

(iii) a small circular shaped projection on back of said rest box, said projection fits into said inner aperture of said placement pin so that said rest box is adjustable mounted thereto.

4,620,068
COMMUNICATION HEADSET

Klaus Wieder, Helenville, Wis., assignor to Remic Corporation, Elkhart, Ind.

Filed Jun. 6, 1984, Ser. No. 617,694
Int. Cl.^{4} H04M *1/05;* **H04R** *1/10*
U.S. Cl. 179—156 A **8 Claims**



1. An earphone for a wireless communication system, transducer means for said system for converting electrical signals to audio signals, means for coupling said audio signals through said earphone to the user's ear, said earphone comprising a cup adapted to surround the user's ear and having sealing means to substantially seal the user's ear from surrounding audio signals, port means extending through said cup and providing voice communication from the surrounding atmosphere, closure means including a plate inside said cup and having a first position normally sealing said port means with biasing means for moving said plate to said first position, and switch means secured to said plate and extending through said cup for moving said closure means from said first position to another position to allow a user to hear voice communication through said port means, whereby the user may activate said switch to open said port to vent the interior of said earphone housing to adjacent surroundings to more easily receive surrounding audio signals through said port means to the user's ear to enable a user to more easily receive communications from the immediate vicinity.

4,620,069
METHOD AND APPARATUS TO DETERMINE WHETHER A SUBSCRIBER LINE IS LOADED OR NON-LOADED

William R. Godwin, Clemmons, and Salvatore Quattrocchi, Raleigh, both of N.C., assignors to ITT Corporation, New York, N.Y.

Filed Dec. 3, 1984, Ser. No. 677,438
Int. Cl.^{4} H04B *3/46*
U.S. Cl. 179—175.3 R **24 Claims**

3. Apparatus to determine whether a telephone subscriber line is loaded or non-loaded comprising

first means to provide a signal having at least one given frequency; second means coupled to said first means to couple said signal to a telephone subscriber line under test having a subscriber subset on-hook;

third means coupled to said subscriber line under test to receive said signal returned from said subscriber line under test; and

fourth means coupled to said third means to analyze said received signal to determine the value of at least one parameter of said subscriber line under test to determine whether said subscriber line under test is loaded or non-loaded;

wherein said first means includes

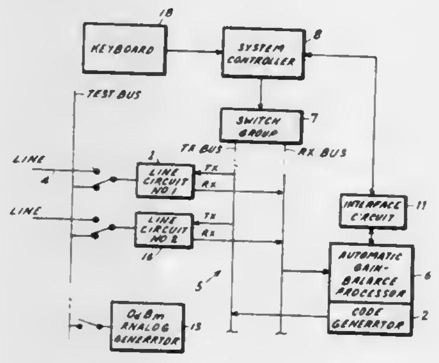
a PROM to store a first digital representation of a sine wave having said given frequency as said signal, and

said second means includes

a digital switching system coupled to said PROM to route said first digital representation to a digital line circuit coupled to said subscriber line under test, and

a digital-to-analog converter disposed in said line circuit to convert said first digital representation to said sine wave for coupling to said subscriber line under test; wherein;

said third means includes



an analog-to-digital converter disposed in said line circuit to convert said sine wave returned from said subscriber line under test to a second digital representation thereof, and second digital representation being routed through said digital switching system to said fourth means and wherein

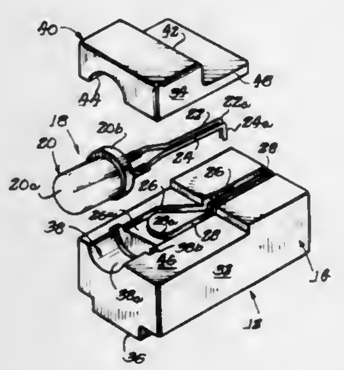
said fourth means includes

a microprocessor coupled to said digital switching means responsive to said second digital representation to measure the value of the real part of an on-hook impedance of said subscriber line under test and to determine if said measured value is present in a given impedance window indicating a loaded condition of said subscriber line under test.

4,620,070
TELEPHONE LINE TESTER

William E. Ruehl, Wheeling, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 4, 1985, Ser. No. 698,070
Int. Cl.^{4} H04B *3/46*
U.S. Cl. 179—175.3 R **14 Claims**

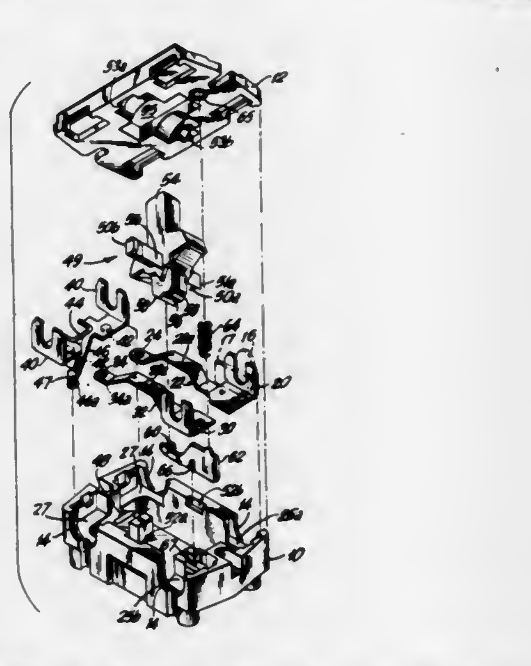


8. A telephone line tester comprising: a tester body having a connector portion of complementary configuration for insertion into a modular telephone jack; light emitting means mounted to the tester body and having a light body and a pair of elongate leads extending outwardly of said light body; guide means in said tester body for guiding said elongate leads to and across said connector portion to a position for engagement with tip and ring contacts respectively of said modular telephone jack when said connector portion is inserted into said modular telephone jack.

4,620,071
THREE POSITION ELECTRICAL SWITCH

Yully Rushansky, Port Washington, N.Y., assignor to Slater Electric Inc., Glen Cove, N.Y.

Filed Dec. 7, 1984, Ser. No. 679,559
Int. Cl.^{4} H01H *21/22*
U.S. Cl. 200—6 BA **11 Claims**

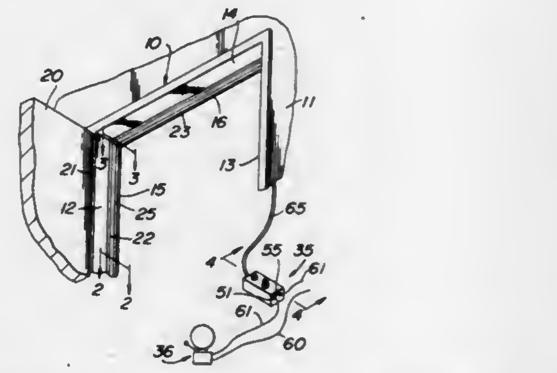


1. An improved electrical switch device, for use with electrical loads, having a switch housing with at least two source terminal/contacts therein for termination to an electrical power cable from an electrical power source and first and second load contact/terminals for termination to separate electrical loads, and a generally three-position switch member in the housing, wherein the impovement comprises a pair of shafts for actuative a pair of movable electrical contact arms, said shafts being unitary with and extending from said switch member, said arms assoicated with two of the terminal/contacts in said housing, said switch member being actuated so as to close both said movable contact arms for energizing all electrcial loads connected to each of the load contact/terminals when said seitch member is in a first, full load, position, and to cause only one of said movable contact arms to be closed for energizing any electrical load connected to only one of said first and second load contact/terminals when said switch member is in a second, partial load, position, and to cause both movable contact arms to be open for de-energizing each eletrcial load connected to either load contact/terminals when said switch member is in a third, fully open, position.

4,620,072
HOLLOW NON-OCCLUDING PRESSURE SENSOR

Norman K. Miller, Concord Industrial Park, Concordville, Pa. 19331

Filed Apr. 12, 1985, Ser. No. 722,607
Int. Cl.^{4} H01H *35/34*
U.S. Cl. 200—81 R **8 Claims**



1. A pressure change sensor comprising a flexible hollow body located in position to receive pressure changes to be

sensed, the ends of the hollow of said body being closed, a fluid operated switch in fluid communication with said hollow for response to pressure changes, and an inner body of a completely solid cross section without any enclosed hollow therein, said inner body being in the hollow of said flexible hollow body, said inner body being of a size less than the hollow of said hollow body and of a shape different from said hollow, to prevent occlusion of said hollow under pressure.

4,620,073
PRESSURE-RESPONSIVE APPARATUS HAVING HYSTERESIS TO PREVENT HUNTING

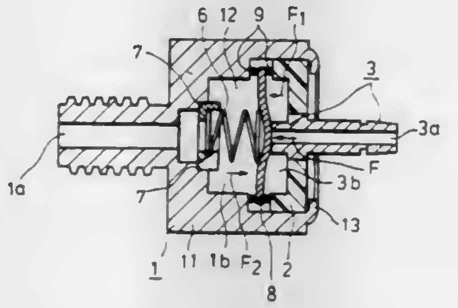
Mitsuyoshi Yokota, and Akio Matsumoto, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 605,676, Apr. 27, 1984, abandoned. This application Dec. 18, 1985, Ser. No. 815,137

Claims priority, application Japan, Jun. 18, 1983, 58-94015[U]

Int. Cl.⁴ H01H *35/34*

U.S. Cl. 200—83 P **5 Claims**



1. A pressure responsive apparatus, comprising:

a case defining an internal volume and having a first fluid port and a second fluid port, said ports each being made of electrically conductive materials but electrically insulated from each other;

a snap-action diaphragm which has a first stable state and a second stable state, with a predetermined force required to cause it to go from each one of said states to the other, mounted nonrigidly in said case and electrically insulated therefrom by flexible peripherally disposed seals on both sides for partitioning said internal volume into a first chamber accessible to fluid via said first fluid port and a second chamber accessible to fluid via said second fluid port, said diaphragm having an electrically conducting portion;

an electrically conducting spring of known stiffness contacting at a first end said electrically conducting first fluid port and contacting at a second end said electrically conducting portion of said diaphragm, said spring then being deflected from its unstressed form by maximum predetermined biasing force on said diaphragm directed towards said second port such that when a predetermined pressure difference between said first and said second chambers is exceeded the combined fluid pressure force and spring bias force causes said diaphragm to move from said first stable state into said second state in which said electrically conducting portion of said diaphragm establishes contact with said electrically conducting second port, such that said first port, said spring, said electrically conducting portion and said second port cooperate to establish an electrically conductive path when said diaphragm is in contact with said second port.

4,620,074
CONTACT ARRANGEMENT FOR VACUUM SWITCHES

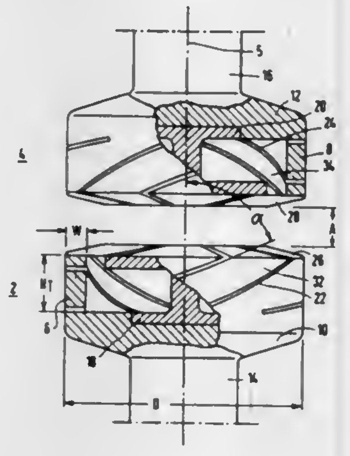
Bernt-Joachim Paul, Erlangen, and Roman Renz, Berlin, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 22, 1985, Ser. No. 704,428

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1984, 3407088

Int. Cl.⁴ H01H *33/66*

U.S. Cl. 200—144 B **4 Claims**



1. A contact arrangement for a vacuum switch comprising a pair of cup-type contacts, each contact comprising a hollow cylindrical contact carrier for supporting a contact plate having a cup depth H_T, the contacts being arranged coaxially opposite each other and being movable in their axial direction relative to each other, the contact carriers each having a plurality of slots inclined in the same sense with respect to a longitudinal axis of the arrangement, the contact carriers having an outside diameter D, a range for the outside diameter D being 60 mm≦D ≦150 mm, and wherein the cup depth H_T, the number of slots s and the azimuth B of the slots are determined by the following conditions:

$$0.1\,D \leqq H_T \leqq 0.5\,D \qquad \text{(a)}$$

$$0.03\,D/\text{mm} \leqq s \leqq 0.1\,D/\text{mm}$$

$$\left(8 + 0.1\,D/\text{mm} + 3\,\frac{D/\text{mm}}{s}\right)^{\circ} \leqq B \leqq (150 + 0.5\,D/\text{mm})^{\circ} \qquad \text{(c)}$$

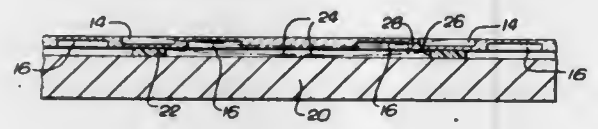
4,620,075
UNITIZED CONTROL PANEL

John T. La Belle, Long Beach; Robert S. Szemeredi, Tujunga, and Matthew G. Tarnay, Pasadena, all of Calif., assignors to Price Pfister, Inc., Pacoima, Calif.

Continuation of Ser. No. 502,925, Jun. 10, 1983, abandoned. This application Jun. 7, 1985, Ser. No. 742,572

Int. Cl.⁴ H01H *13/70, 3/12*

U.S. Cl. 200—159 B **6 Claims**



1. In a unitized switch control panel:

(a) a flat, thin cover plate made of electrically conductive, flexible and resilient material having an outer surface and an inner surface lying is spaced, parallel planes;

(b) said plate having on its outer surface, first grooves defining a plurality of discrete actuators in the normal, unflexed condition of said plate, which are of unrestricted configuration and array, said actuators having digitally engageable surfaces substantially coplanar with said outer surface of said cover plate;

(c) said plate having on its inner surface, second grooves substantially paralleling the first grooves but laterally offset therefrom in directions parallel to the said planes of said cover plate surfaces;

(d) said second grooves defining contact pads for said actuators substantially in said plane of said inner surface of said plate;

(e) a circuit board having a plurality of pairs of contact segments arrayed to be bridged by said actuator pads when said actuator pads are depressed by digital pressure; and

(f) an insulation spacer in contact with the circuit board on one side and said panel on the other, and having a plurality of apertures for said pairs of contact segments.

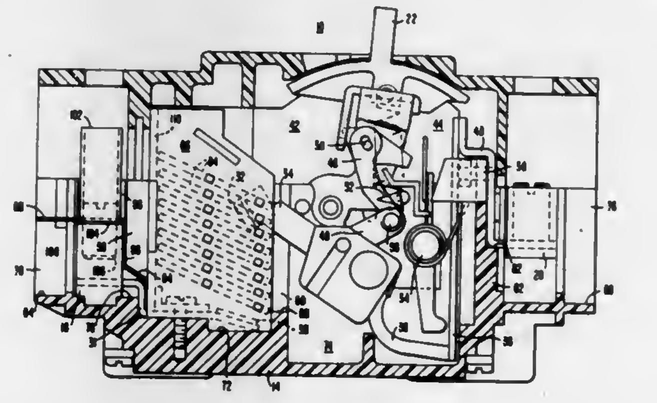
4,620,076
CIRCUIT BREAKER APPARATUS WITH LINE TERMINAL SHIELDS

Stephen A. Mrenna, Beaver, and Gale C. Vosler, South Beaver Township, Beaver County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 27, 1985, Ser. No. 716,305

Int. Cl.⁴ H01H *13/04, 9/02*

U.S. Cl. 200—304 **7 Claims**



1. A circuit breaker apparatus comprising:

(a) an electrically insulating housing having side walls forming a compartment and including a terminal within the compartment and between the sidewalls;

(b) a circuit breaker structure within the housing and having a pair of cooperable contacts operable between open and closed positions;

(c) a contact carrying arm for moving one of the contacts and pivotally mounted for movement between said positions; and

(d) an electrically insulating shield within the compartment and including a planar portion extending across the compartment and between the sidewalls, the planar portion having a hole through which a portion of the terminal projects, and the electrically insulating shield including a tubular portion extending through the hole and around the terminal.

4,620,077
INTEGRAL SWITCH CONNECTOR WITH REMOTE ACTUATOR

John Zdanys, Jr.; Tony J. Zaderej, and Matthew A. Robbins, all of Elkhart, Ind., assignors to CTS Corporation, Elkhart, Ind.

Filed Feb. 19, 1985, Ser. No. 703,197

Int. Cl.⁴ H01H *17/08*

U.S. Cl. 200—331 **20 Claims**

1. An integral switch connector apparatus with remote actuator, which comprises:

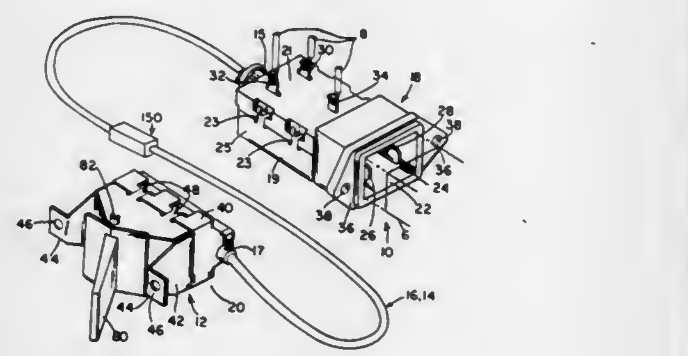
(a) a switch housing with at least a portion of said switch housing formed of a non-conductive material;

(b) a first plurality of conductive terminals disposed within the non-conductive portion of said switch housing;

(c) a second plurality of conductive terminals disposed within the non-conductive portion of said switch housing;

(d) a first slide member slidably disposed at least partially within said switch housing;

(e) resilient, conductive contact arms disposed in spaced relation within said switch housing, one end of each said contact arms operatively secured to at least one of said second plurality of conductive terminals, said contact arms positioned to be biased by said first slide member to make contact with at least one of said first plurality of conductive terminals when said first slide member is extended to a first operative position to provide electrical communication therebetween, said contact arms positioned to bias away from said first plurality of conductive terminals when said first slide member is retracted to a second operative position to break electrical communication therebetween;



(f) an elongated non-conductive, flexible external retaining sleeve, one end operatively secured to said switch housing;

(g) an elongated non-conductive, flexible actuator rod slidably received within said retaining sleeve, one end of said actuator rod operatively secured to said first slide member;

(h) a remote actuator housing, the opposite end of said retaining sleeve operatively secured to said actuator housing;

(i) a second slide member disposed at least partially within said actuator housing, the opposite end of said actuator rod operatively secured to said second slide member;

(j) means to manually bias said second slide member operatively secured to said actuator rod to selectively extend and retract said first slide member to remotely bias said contact arms to make and break electrical communication between at least one of said first and second plurality of conductive terminals, wherein the speed of movement between said first and second operative positions of said contact arms is independent of the speed of movement of said means to manually bias said second slide member.

4,620,078
POWER CONTROL CIRCUIT FOR MAGNETRON

Peter H. Smith, Anchorage, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Oct. 24, 1984, Ser. No. 664,321

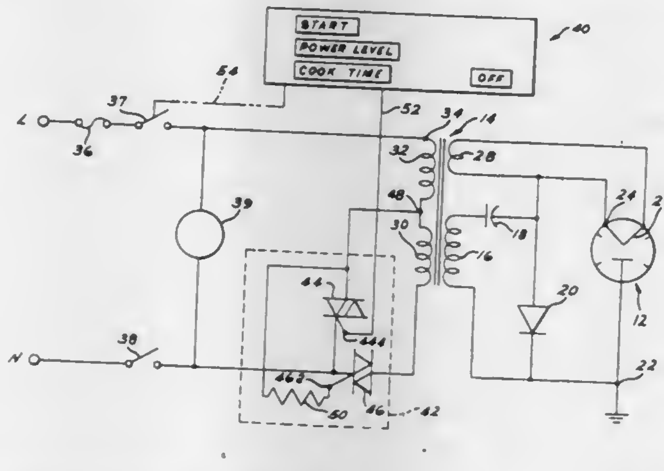
Int. Cl.⁴ H05B *6/68*

U.S. Cl. 219—10.55 B **7 Claims**

1. A duty cycle power control circuit for a microwave generating device of the type having an anode, a cathode, and a filament for heating the cathode and characterized by a threshold anode voltage level above which sufficient anode current flows to generate microwave energy and below which anode current is substantially zero, said control circuit comprising:

a power transformer comprising a primary winding adapted for energization by an external power supply, a secondary anode winding for supplying an anode voltage to the microwave generating device and a secondary filament winding for supplying a filament-voltage to the microwave generating device, said primary winding comprising a main winding and a serially connected standby winding;

duty cycle controlled circuit means for periodically switching between a power on state and a standby state to implement the desired duty cycle for the microwave generating device, said duty cycle controlled circuit means being effective in its standby state to connect said main winding in series with said standby winding across an external power supply and effective in its power on state to disconnect said standby winding and connect said main winding across the external power supply;

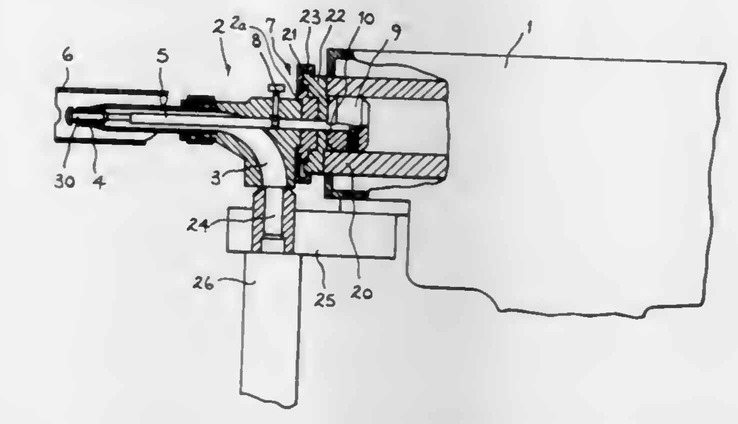


said power transformer windings being arranged such that when said circuit means is in its standby state the anode voltage applied to the microwave generating device is less than the threshold level and when in its power on state the anode voltage is greater than the threshold level and in both states the filament voltage is sufficient to maintain a filament temperature above a predetermined minimum temperature set sufficiently high to avoid moding in the microwave generating device.

4,620,079
STUD WELDING DEVICE

Günther Allmann, Biebertal, and Hans Wiessler, Wettenberg, both of Fed. Rep. of Germany, assignors to USM Corporation, Farmington, Conn.

Filed Oct. 3, 1985, Ser. No. 783,735
Int. Cl.⁴ B23K *9/00, 11/04*
U.S. Cl. 219—98 **8 Claims**

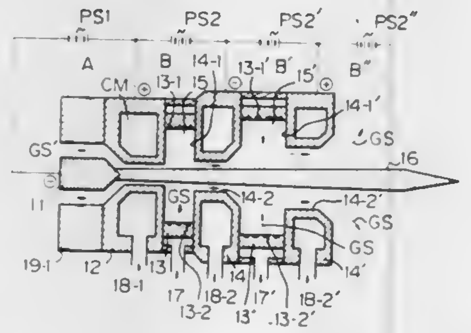


1. A stud welding device comprising a housing, a welding head, a stud-loading facility, a resiliently expandable collet and a reciprocable loading pin secured to a thrust piston operating in a pneumatic cylinder characterised in that the welding head is secured to the housing by means of a quick-releasable joint that the welding head is provided with a locking device for locking the loading pin inside the welding head the loading pin being detachably mounted in a bore of the thrust piston so that the welding head with the loading pin locked therein can, after releasing the joint be removed axially from the housing.

4,620,080
PLASMA JET GENERATING APPARATUS WITH PLASMA CONFINING VORTEX GENERATOR

Yoshiaki Arata, Amagasaki, and Akira Kobayashi, Takatsuki, both of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 25, 1985, Ser. No. 748,421
Claims priority, application Japan, Jun. 27, 1984, 59-132783
Int. Cl.⁴ B23K *9/00*
U.S. Cl. 219—121 PP **7 Claims**



1. A plasma jet generating apparatus comprising:

a torch center electrode;

a torch nozzle having first and second ends and into the first end of which said torch center electrode is directed;

a first DC power source connected across the first and the second ends of said torch nozzle for producing a plasma jet in cooperation with a working gas caused to flow through said torch nozzle; and

a vortex flow/discharge unit connected to said second end of said torch nozzle, said unit comprising:

a second DC power source, one end of which is connected to said torch nozzle;

a gas diverter nozzle spaced from the second end of said torch nozzle and to which the other end of said second DC power source is connected; and

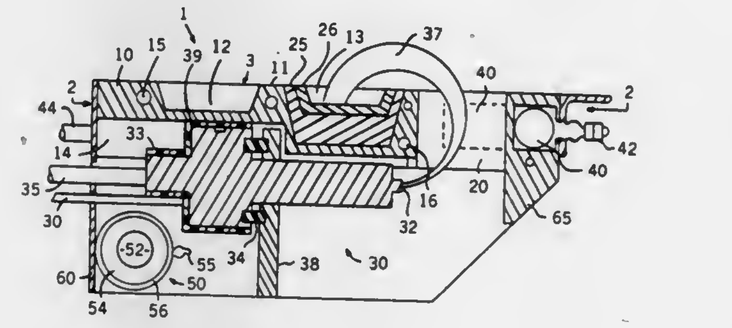
a vortex flow chamber connected between said gas diverter nozzle and said torch nozzle, said chamber having a cylindrical shape defined by a cylindrical wall, said cylindrical wall having a plurality of sets of at least four through holes extending therethrough tangentially to the inside cylindrical surface of said cylindrical wall, the through holes of each set being spaced around the periphery of said cylindrical wall and the holes in each set being aligned with corresponding holes in the other sets along lines on the cylindrical wall which are parallel to the cylindrical axis of said chamber, said chamber having a donut-shaped end wall perpendicular to the cylindrical wall and on the end remote from said torch nozzle, said end wall being constituted by the end wall of said gas diverter nozzle which is toward said torch nozzle; and

means for directing a working gas under pressure through said through holes into said vortex flow chamber for forming a vortex gas tunnel of the working gas enclosing the plasma jet therein, whereby the plasma jet is subjected to a thermal pinch effect through the gas tunnel and the plasma jet is produced while maintaining thermal isolation of the plasma jet from the inside wall of the gas diverter nozzle.

4,620,081
SELF-CONTAINED HOT-HOLLOW CATHODE GUN SOURCE ASSEMBLY

Joseph D. Zeren, Boulder, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 3, 1984, Ser. No. 637,628
Int. Cl.⁴ B23K *9/00*
U.S. Cl. 219—121 EE **9 Claims**



1. A self-contained hot-hollow cathode gun source assembly, for use in a vacuum chamber, comprising:

a crucible block having opposed and spaced upper and lower surfaces, first and second sides, front and rear portions, a coolant channel for conducting a coolant through said block, coolant input means for supplying a coolant to said channel, and coolant output means for removing a coolant from said channel;

said upper surface including means for holding a deposition material, and

a hole extending between said upper and lower surfaces, said hole being adjacent said front portion, said means for holding being between said hole and said rear portion;

first and second pole plates affixed to said first and second sides, respectively, of said block, each of said plates including:

an upper edge adjacent said upper surface of said block;

a lower edge extending below said lower surface of said block; and

a plate coolant channel connected at one end to said block coolant channel and at an opposite end to one end, respectively, of first and second tubular dielectric connectors;

a hot-hollow cathode gun having a tubular output end including a tip for releasing an ion/electron beam, an opposed input end including means for supplying gas and means for supplying electricity to said gun, and a coolant channel for conducting a coolant through said gun;

the other end of each of said dielectric connectors being connected to said gun coolant channel, whereby coolant circulates from said input means through said block and said gun to said output means;

means for mounting said gun between said pole plates adjacent said lower surface of said block, said means for mounting comprising a gun support plate extending between said pole plates and having an upper edge adjacent said lower surface of said block, said gun output end protruding through a hole in said support plate, said tip being adjacent said hole;

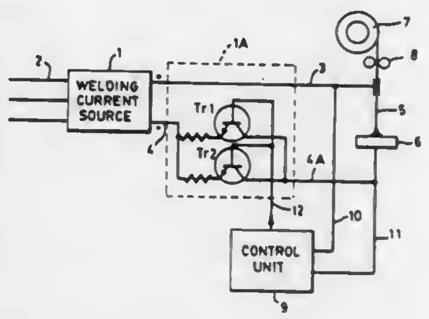
a dielectric shield surrounding said gun input end, whereby electrical discharge between said input end of said gun and said pole plates, said support plate and said lower surface is prevented; and

deflection magnet means connected between said pole plates for deflecting the beam from said tip through said hole to said means for holding a deposition material.

4,620,082
PULSED ARC WELDING APPARATUS

Brian A. Graville, Georgetown, and Edward Shmakov, Toronto, both of Canada, assignors to Welding Institute of Canada, Ontario, Canada

Continuation of Ser. No. 419,032, Sep. 15, 1982, abandoned. This application Nov. 30, 1984, Ser. No. 676,228
Claims priority, application Canada, Aug. 31, 1982, 410482
Int. Cl.⁴ B23K *9/09*
U.S. Cl. 219—130.51 **10 Claims**



1. A pulsed arc welding system, comprising:

a welding electrode;

a single power source for supplying a welding current to said welding electrode to create a welding arc between said welding electrode and a workpiece in response to a control signal;

welding current regulator means comprising at least one transistor having its emitter connected to said single power source and its collector connected to said workpiece for providing a continuous background current component, said transistor also providing a pulse current component superimposed on said continuous background current component to said welding electrode;

means for detecting the magnitude of the arc voltage of the welding arc and providing an arc voltage signal;

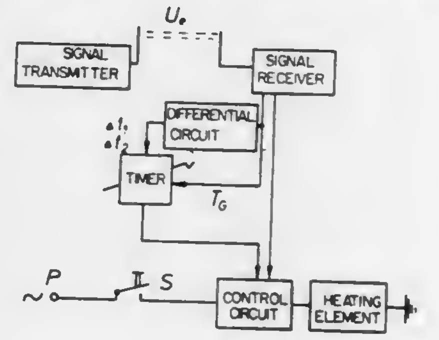
means for processing said arc voltage signal independently of any other detection of the operating parameters of said pulse arc welding system to provide a pulse control signal;

conductor means for feeding said pulse control signal to said at least one transistor whereby the frequency of said pulse control signal is proportional to the magnitude of the arc voltage, said pulse control signal being connected to the base of said at least one transistor to control said welding current applied to said welding electrode.

4,620,083
DEVICE FOR REGULATING THE COOKING PROCESS IN A COOKING VESSEL

Wolfram K. Andre, Eichenweg, Fed. Rep. of Germany, assignor to Kurt Wolf & Co. KG, Fed. Rep. of Germany

Filed Mar. 15, 1984, Ser. No. 590,420
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1983, 3314398
Int. Cl.⁴ H05B *1/02*
U.S. Cl. 219—491 **6 Claims**



1. In an apparatus of the type comprising a control circuit means and a timer means for regulating the cooking process in a cooking vessel heated by a heating element, wherein a desired cooking time is preset with said timer means, the im-

provement comprising: a signal transmitter means (TF) transmitting signals corresponding to the temperature in said cooking vessel to a signal receiver means (TE), said signal receiver means (TE) transmitting control signals proportional to said temperature in said cooking vessel to a control circuit means (ST), to a differential circuit means (DS), and to said timer means (GT), said control circuit means (ST) controlling said heating element (HE) during a heating phase extending from the time said heating element is activated until said desired cooking temperature (T_G) is reached, and during said cooking process, said timer means (GT) starting to measure said preset cooking time only after a desired cooking temperature (T_G) has been reached, said differential circuit means (DS) detecting differences between successive control signals over time and deriving a correction signal therefrom proportional to the slope of a temperature-time curve derived during said heating phase and transmitting said correction signal to said timer means (GT), said timer means (GT) adjusting said preset time (t_G) to an adjusted preset time by subtracting a time interval proportional to said correction signal from said preset time (t_G) and signalling said control circuit means (ST) after said adjusted preset time has elapsed and prior to elapse of said preset cooking time (t_G), said time interval increasing as said slope of said temperature-time curve in said heating phase decreases, and said control circuit means (ST) turning off said heating element upon receipt of said signal from said timer means (GT).

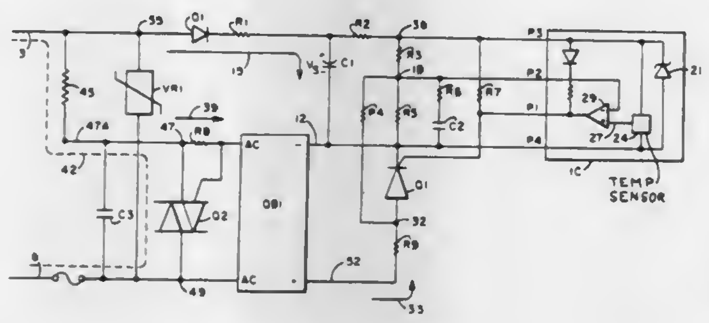
4,620,084
AIRCRAFT THERMOSTAT

Charles R. Cunningham, Seattle, and Glenn S. Godden, Woodenville, both of Wash., assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 27, 1983, Ser. No. 566,095

Int. Cl.⁴ H05B *1/02*

U.S. Cl. 219—497 **6 Claims**



1. A temperature controller, comprising:
(a) a power supply circuit comprising a bridge rectifier (DB1) having two input leads;
(b) a temperature sensing circuit (IC) which receives power from the rectifier and which produces a temperature signal in response to the temperature of a fluid;
(c) means (R3, R5) for providing a reference signal;
(d) switching means (Q1) for connecting and disconnecting at least one resistor (R4) to the recitifier in order to alter the current supplied by the rectifier;
(e) comparator means (29) for comparing the temperature signal with the reference signal and for closing the switching means when the two signals attain a predetermined relationship, thereby increasing the current supplied by the rectifier; and
(f) a Triac (Q2) which is coupled to the rectifier such that the Triac is triggered into conduction by the current increase of (e), thereby completing a circuit through a heater for heating the fluid and substantially shorting the input leads of the rectifier, thus opening the switching means thereby reducing the current supplied by the rectifier.

4,620,085
FLOOR COVERINGS HAVING BUILT-IN HEATER

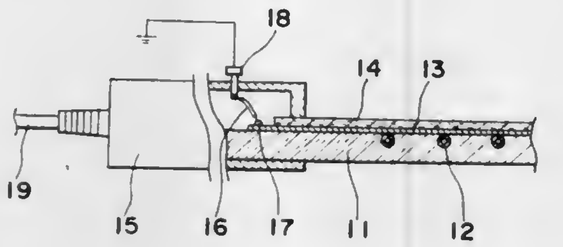
Toshihiro Horikawa, and Nobumori Kuwabara, both of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 7, 1984, Ser. No. 638,614

Claims priority, application Japan, Aug. 12, 1983, 58-125733

Int. Cl.⁴ H05B *3/34*

U.S. Cl. 219—528 **7 Claims**



1. A floorcovering having a built-in heater, comprising a planar sandwich structure including an underlining layer of heat insulating material, at least one electrically insulated heating element provided on one surface of the underlining layer, a metallic foil provided on said one surface of the underlining layer so as to cover the heating element, a surfacing layer overlying the metallic foil on one side of the heating element opposite to the underlining layer, and electrical means for electrically and mechanically connecting the metallic foil to ground; and a power take-in unit having means for supplying external electric power therethrough to the heating element, said power take-in unit including a protective casing having a wall, said surfacing layer and said underlining layer extending into said wall and being secured to said wall, said metallic foil extending into said casing through said wall, said electrical connecting means extending into said casing, said metallic foil and said electrical connecting means being connected together in said casing, whereby said casing protects the connection between said metallic foil and said electrical connecting means from external physical forces, said underlining layer, said at least one heating element, said metallic foil, said surfacing layer, said electrical connecting means and said protective casing being secured together.

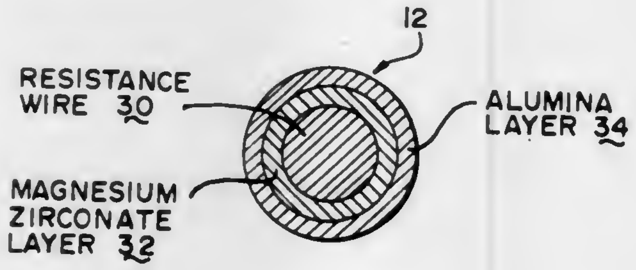
4,620,086
DUAL COATED RADIANT ELECTRICAL HEATING ELEMENT

Adrian R. Ades, Schenectady; Paul B. Pribis, Saratoga, and Donald J. Proach, Rotterdam, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 30, 1985, Ser. No. 781,380

Int. Cl.⁴ H05B *3/10;* **H01B** *7/00;* **H01C** *1/02;* **B05D** *3/02*

U.S. Cl. 219—552 **7 Claims**



1. An electrical heating element comprising, in combination:
A. a resistance wire;
B. a coating of magnesium zirconate applied to said wire; and
C. a coating of alumina applied to said magnesium zirconate coating.

4,620,087
INITIALIZE CONTROL SYSTEM IN A CASH PROCESSING SYSTEM

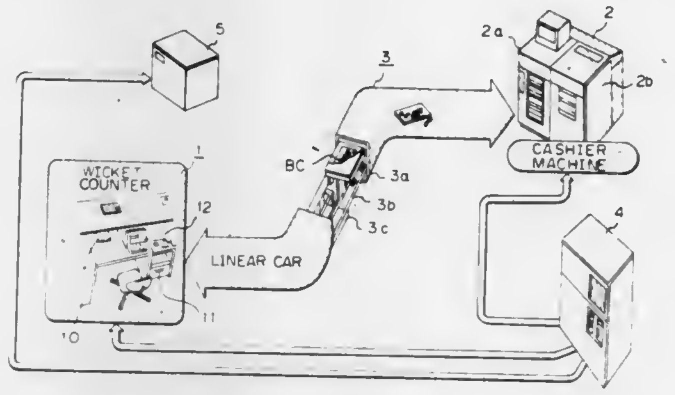
Yoshihiko Aizaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 30, 1984, Ser. No. 677,138

Claims priority, application Japan, Nov. 30, 1983, 58-226388; Dec. 13, 1983, 58-234510

Int. Cl.⁴ G06F *15/30*

U.S. Cl. 235—379 **20 Claims**



1. A cash processing system comprising: a wicket terminal having a take-out port for taking out the cash; a cashier terminal for disbursing the cash; a carrier path connecting the wicket terminal to the cashier terminal; a carrier which runs on the carrier path; and a system controller which sends cash disbursing instructions to said cashier terminal in response to a cash disbursing request from the wicket terminal, so that said carrier carries the cash disbursed by the cashier terminal; wherein said system controller further comprises memory means which stores the cash disbursing request sent from the wicket terminal; and control means which transfers said carrier to the wicket terminal from where the cash disbursing request is executed, when initialize instructions are issued during the cash disbursement processing being executed in response to the cash disbursing request.

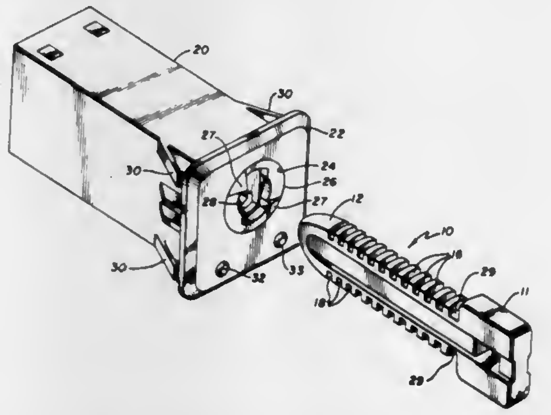
4,620,088
RECEPTACLE DESIGN FOR USE WITH ELECTRONIC KEY-LIKE DEVICE

William P. Flies, Burnsville, Minn., assignor to Datakey, Inc., Burnsville, Minn.

Filed Mar. 2, 1983, Ser. No. 471,424

Int. Cl.⁴ G06K *7/06*

U.S. Cl. 235—443 **30 Claims**



1. An electrical receptacle which is electrically activated by insertion and rotation of an electronic key-like device having electrical contact surface areas thereon for mating with corresponding contacts in the receptacle, the receptacle comprising:
  an elongate housing including a receptacle contact support portion and a slotted enclosure portion, the receptacle contact support portion and slotted enclosure portion defining an elongate interior housing chamber having an open end into which an electronic key-like device may be inserted and rotated in the chamber; and
  a set of spaced electrical contact pins arranged along at least one side of the chamber defining electrical contacts for the receptacle, each pin extending from the contact support portion of the housing into the housing chamber, one end thereof being fixed in the contact support and being free at the opposite end, the free ends of the pins being respectively received in a corresponding slot in the housing enclosure portion, the slots being arranged to allow unrestrained movement of the contact pins therein so that, as an inserted key-like device is rotated in the receptacle, each contact thereon is urged into engagement with a respective pin causing movement of the pins in the slots during rotation of the key-like device.

4,620,089
AUTOMATIC OPTICAL FOCUSING DEVICE

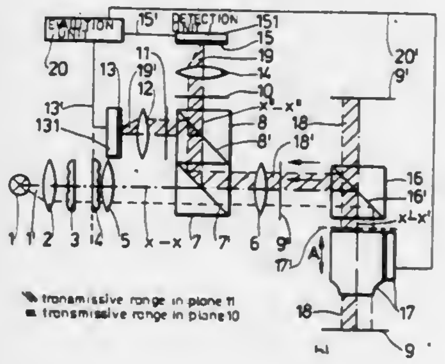
Johannes Schlichting, and Kerstin Halwass, both of Jena, German Democratic Rep., assignors to Jenoptik Jena G.m.b.H., Jena, German Democratic Rep.

Filed Apr. 8, 1985, Ser. No. 721,254

Claims priority, application German Democratic Rep., May 2, 1984, 262570

Int. Cl.⁴ H01J *40/14;* **G01J** *1/20*

U.S. Cl. 250—201 **5 Claims**



1. An auto-focusing device, particularly for positioning reflective objects under investigation
  in a measuring apparatus,
  comprising about an optical axis in mutual optical alignment,
  a light source for emitting a narrow spectral band radiation,
  means for producing a plurality of images of said light source,
    said plurality of images serving as an illumination beam,
  a first and a second lens,
  a first beam splitter being for folding said optical axis at right angles to itself,
  an objective lens being arranged subsequently to said beam splitter in the folded optical axis,
    said objective lens having an object plane and an image plane,
    said first beam splitter having a beam splitting face inclinedly arranged by 45° relative to said optical axis and to said folded optical axis,
    said first and said second lens being for directing said illumination beams for illuminating said object plane via said first beam splitter and said object lens,
  a reflective object to be measured,

said reflective object being for producing a focusing beam and an imaging beam,

said objective lens being for imaging said reflective object into said image plane for evaluation,

said beam splitting face being for transmitting said imaging beam and for reflecting said focusing beam to propagate in opposite direction to said illumination beam,

a deviating means being inserted into said focusing beam between said second and said first lens,

said deviating means being for directing said focusing beam at right angles to said optical axis,

means for producing a first beam portion and a second beam portion, from said focusing beam,

said means for producing said first and said second beam portion being arranged subsequently to said deviating means in said focusing beam,

a first aperture being arranged in said first beam portion,

a second aperture being arranged in said second beam portion,

a first detector unit,

a second detector unit,

said first aperture being for producing two first individual images from said plurality of images transfered by said first beam portion,

first means for producing a first interference pattern by superimposing said two individual images in said first detector unit,

said second aperture being for producing two second individual images from said plurality of images transfered by said second beam portion,

second means for producing a second interference pattern by superimposing said two second individual images in said second detector unit,

an evaluation unit being connected to said first and said second detector unit, on the one hand, and to an adjustment means, on the other hand, incorporated in said objective lens for performing adjustment movements of the latter along said folded optical axis,

said first detector unit and said second detector unit being for producing signals indicative of an

actual focus position of said objective lens, and of the direction of defocusing, if any,

said signals being compared to a focused position value stored in said evaluation unit,

said evaluation unit being for feeding an adjustment signal to said adjustment means when said objective lens being out-of-focus.

4,620,090
METHOD AND APPARATUS FOR OPTICAL INSPECTION OF TRANSPARENT ARTICLES

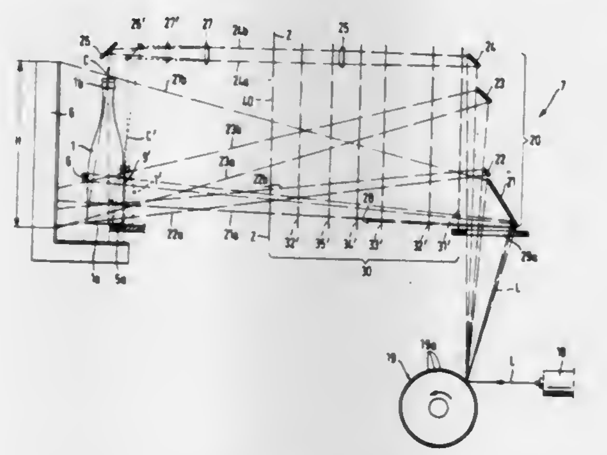
Marcel L. Ducloux, Carrieres sur Seine, France, assignor to Saint-Gobain Cinematique et Controle, Gennevilliers, France

Filed Jan. 15, 1985, Ser. No. 691,595

Claims priority, application France, Jan. 17, 1984, 84 00657

Int. Cl.⁴ G01N *21/90, 21/15*

U.S. Cl. 250—223 B **20 Claims**



1. An apparatus for optical checking of transparent or translucent objects comprising a star wheel for transporting said objects in continuous movement, means in peripheral contact with an object to rotate such object while it is being transported by said star wheel, means for generating a laser light beam, said laser light beam being directed onto a revolving mirror which directs the beam to a plurality of distributing mirrors in a multiple reflection light box to create an oscillating laser light beam field, means for tracking said object to be checked with said oscillating light beam field while said object is rotated, and photosensitive receiver means for receiving said laser light beam

characterized in that:

(a) the means which rotate said object contact said object at an intermediate height on said object; and

(b) said distributing mirrors make at least two distinct portions of said laser light beam field converge on said object at differing average angles of inclination such that the entire surface of the object can be checked by avoiding any blind spot created by said means which rotate said object.

4,620,091
MOUNTING SUPPORT FOR SEVERAL PHOTOTRANSMITTERS AND PHOTORECEIVERS

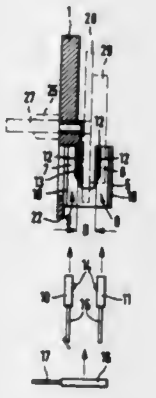
Manfred W. Zebisch, Georgensgmünd, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,663

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247447

Int. Cl.⁴ G01D *5/34*

U.S. Cl. 250—231 SE **3 Claims**



1. Mounting support for several phototransmitters and photoreceivers comprised of a baseplate having a plurality of pairs of U-shaped members, each perpendicular to said baseplate with its two legs parallel to said base-plate and a slot in each leg along its length for receiving said phototransmitters and photoreceivers, each slot forming a bearing surface for a phototransmitter or photoreceiver, arranged in pairs with a distance being left free between each one phototransmitter and one photoreceiver of a pair sufficient for a light interrupting member to be moved therebetween, characterized in that on the mounting support there are provided by said slots in each pair of U-shaped members one pair of associated insertion openings in the parallel legs of said U-shaped members, which are spaced apart at least by said distance and into which each one phototransmitter or photoreceiver is capable of being inserted, and that within the area of each insertion opening there is provided a locking means with the aid of which the inserted phototransmitter or photoreceiver, in the inserted state, is capable of being locked in a coaxially aligned position.

4,620,092
ELEVATION ANGLE MEASURING DEVICE WITH APPARATUS FOR DISABLING THE DEVICE WHEN ITS INCLINATION ANGLE IS OFFSET FROM A PREDETERMINED INCLINATION ANGLE

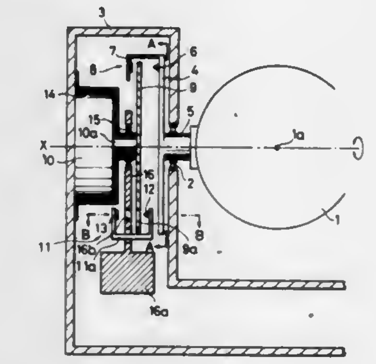
Masato Hara, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 21, 1983, Ser. No. 553,946

Claims priority, application Japan, Nov. 24, 1982, 57-177448[U]

Int. Cl.⁴ G01B *11/26*

U.S. Cl. 250—231 SE **11 Claims**



6. An elevation angle measuring device of the type including measuring means for measuring the angle of inclination of an apparatus with respect to a support, said device further comprising disabling means for disabling said device in response to inclination of said support.

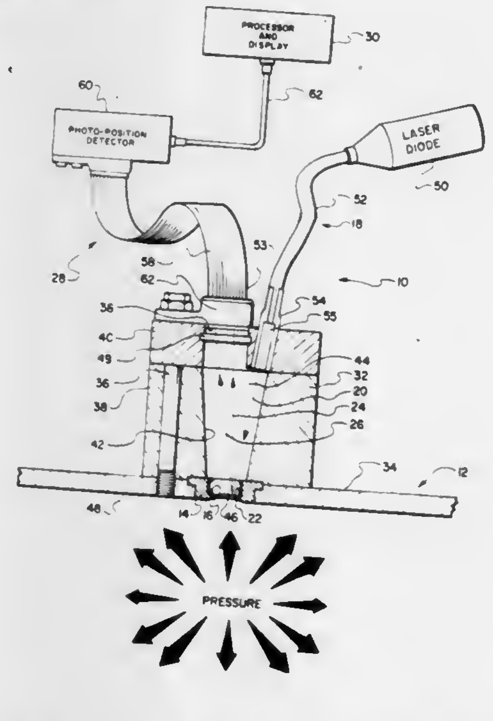
4,620,093
OPTICAL PRESSURE SENSOR

Sarkis Barkhoudarian, Canoga Park; Rudolf R. Aügüst, Laguna Beach, and Jonathan M. Maram, Chatsworth, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 31, 1983, Ser. No. 547,305

Int. Cl.⁴ G01D *5/34*

U.S. Cl. 250—231 P **18 Claims**



1. An optical pressure sensor for measuring the pressure within a container, comprising:

a housing affixed to said container, said housing having interior surfaces;

a pressure deflectable diaphragm securely emplaced by said housing, said diaphragm having a bottom surface in communication with the pressure within said container and an upper surface having a diffraction grating formed thereon, said upper surface and said interior surfaces of said housing defining an internal chamber;

means external to said housing for generating a laser beam;

an optical fiber secured to said housing and connected to said laser generating means for directing said generated laser beam into said internal chamber to strike said diffraction grating on said upper surface of said pressure deflectable diaphragm, said laser beam thereby forming within said internal chamber a central diffracted beam and a first order diffracted beam;

a fiber optic ribbon having a receiving end secured within said internal chamber across the paths of said central diffracted beam and said first order beam;

a photo-position detector external to said housing and connected to said fiber optic ribbon, said fiber optic ribbon and photo-position detector cooperating to serve as means for generating signals responsive to the position of said central diffracted beam and said first order beam; and

a processor for receiving said responsive signals from said photo-position detector and for correlating said responsive signals to a temperature compensated indication of the pressure within said container.

4,620,094
PHOTOELECTRIC ENCODER

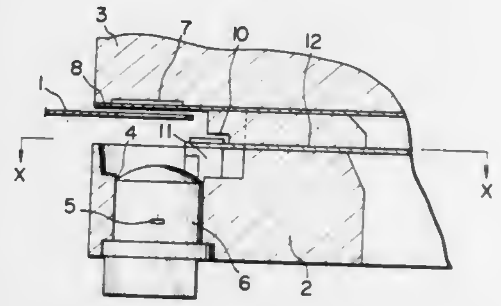
Zempei Tani, Tondabayashi; Kiyoshi Ebina, Nara; Osamu Ichikawa, Matsubara, and Mamoru Imaizumi, Nagoya, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka and Brother Industries, Ltd., Nagoya, both of, Japan

Filed Jun. 5, 1984, Ser. No. 617,351

Claims priority, application Japan, Sep. 3, 1983, 58-137226[U]

Int. Cl.⁴ G01D *5/34*

U.S. Cl. 250—231 SE **4 Claims**



1. Photoelectric encoder comprising;

a disk mounted for rotation with an outer circumference and a rotating member, and having a plurality of alternately arranged opaque and translucent portions arranged in a substantially circular timing track about the radial center of said disk;

a light emitting element disposed on one side of said disk at a position opposite one of said translucent positions, said light emitting element being provided for encoding and for intensity control;

a light sensitive unit disposed on the other side of said disk and responsive to the angular displacement of said opaque and translucent timing track portions when said rotating member is rotated for generating an output signal to detect the rotational position and the rotational direction;

the light emitting element and light sensitive element being positioned radially inward from the outer circumference; and

feedback means for substantially stabilizing the output signal of said light sensitive unit and having a light sensitive means disposed on said one side of said disk at a position to directly receive light radiation emitted by said light emitting element for generating an electrical signal representative of the intensity of said light radiation which may be used to control said intensity.

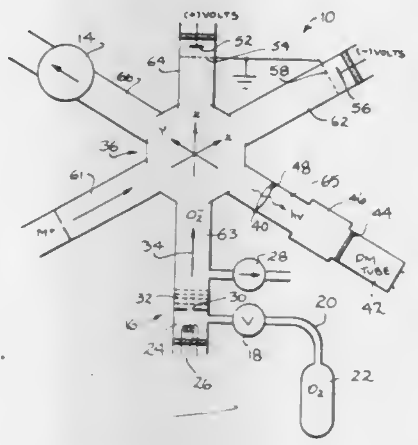
4,620,095
ION NEUTRALIZATION RESONANCE EMISSION ELEMENTAL DETECTOR

Andrzej W. Miziolek, 200 Cable St., Caltimore, Md. 21210

Filed Jan. 18, 1984, Ser. No. 571,894

Int. Cl.⁴ H01J ***49/00***

U.S. Cl. 250—281 **14 Claims**



1. Machine for selectively detecting presence of particular analyte trace elements in a given positively ionized beam of particles, including distinguishing a particular analyte from other elements having the same m/e, mass to charge ratio, comprising:
   - means for forming a negatively ionized oxygen beam for collision with said given particle beam;
   - evacuated chamber means in which the said positively and negatively ionized beams are collided;
   - means for viewing light coming from the intersection of said beams' collision at select frequencies of analysis;
   - whereby light photons emanating from said collision at select viewed frequencies, indicative of resonant behavior unique to particular known element, identifies the particular analyte element under analysis.

4,620,096
THERMAL DEVELOPING AND TRANSFERRING METHOD

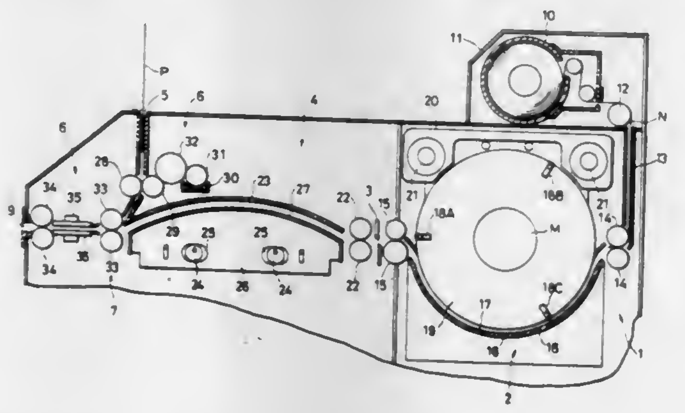
Nobumitsu Takehara; Kazuhiko Yanagihara; Masahiro Ohnishi, and Shigeo Harada, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 593,002, Mar. 23, 1984, which is a continuation of Ser. No. 545,294, Oct. 25, 1983, abandoned. This application Dec. 23, 1985, Ser. No. 814,023

Claims priority, application Japan, Oct. 25, 1982, 57-186921

Int. Cl.⁴ G03C ***5/16***

U.S. Cl. 250—319 **7 Claims**



1. An image recording apparatus comprising:
   - exposure means for scan exposing a front side of a thermally developable photo-sensitive material having an electrically heating layer in its back surface, said exposure means including means for modulating and activating light sources, having different wavelengths, in response to three basic color signals, thereby forming a latent image on said thermally developable photo-sensitive material;
   - a thermal development section having at least two electrode rollers brought into contact with said electrically heating layer provided on the back surface of said photo-sensitive material in which said latent image has been formed, said thermal development section applying a voltage between said electrode rollers and heating said electrically heating layer, thereby achieving the development of said thermally developable photo-sensitive material;
   - means for applying a diffusion agent in a fluid state to an image receiving material having a layer for pigments;
   - overlaying means for overlaying said image receiving material subjected to said diffusion with the developed photo-sensitive material;
   - transferring means for heating the overlaid image receiving material and photo-sensitive material at a temperature less than a temperature in said thermal development section, thereby transferring the image, formed in said photo-sensitive material, to said image receiving material; and
   - peeling means for peeling the overlaid image forming material apart from said photo-sensitive material.

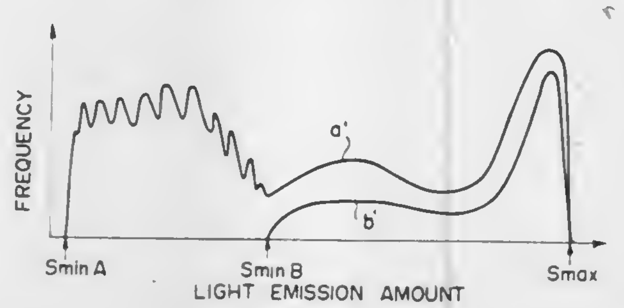
4,620,097
METHOD OF ADJUSTING SCALE FACTOR FOR RADIATION IMAGE

Hiroshi Tanaka; Yuuma Adachi, and Nobuyoshi Nakajima, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 19, 1984, Ser. No. 673,238

Int. Cl.⁴ G03C ***5/16***

U.S. Cl. 250—327.2 **6 Claims**



1. A method of adjusting a scale factor for a radiation image wherein the scale factor in final read-out for exposing a stimulable phosphor sheet carrying the radiation image stored therein to stimulating rays which cause the stimulable phosphor sheet to emit light in proportion to the stored radiation energy, and photoelectrically detecting the emitted light to obtain a visible image is adjusted by, prior to the final read-out, conducting preliminary read-out for detecting the radiation image stored in the stimulable phosphor sheet by use of stimulating rays having stimulation energy lower than stimulation energy of stimulating rays used in the final read-out,

the method of adjusting a scale factor for a radiation image comprising the steps of:

(i) by the preliminary read-out, measuring the minimum stimulated emission intensity among all points over the whole surface of said stimulable phosphor sheet and the minimum stimulated emission intensity among all points in one region within a radiation exposure field of said stimulable phosphor sheet at the time of the radiation image recording, and

(ii) adjusting the scale factor in the final read-out in accordance with the difference between the measured minimum stimulated emission intensities.

4,620,098
RADIATION PHOTOGRAPHING APPARATUS

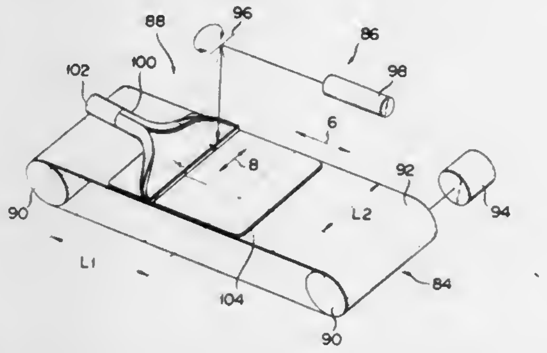
Shigemi Fujiwara, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Aug. 1, 1984, Ser. No. 636,592

Claims priority, application Japan, Aug. 2, 1983, 58-140587

Int. Cl.⁴ G03G ***5/16***

U.S. Cl. 250—327.2 **6 Claims**



1. A radiation photographing apparatus for photographing a radiation-penetrated image of a patient in several sizes, comprising:
   - radiation image converting panels each absorbing the energy of radiation and emitting this energy as phosphorescence when they are irradiated by a light beam, said panels having coded information corresponding to a predetermined photographing area on said panels;
   - spot shot means including a feed magazine for housing the radiation image converting panels, a holder for holding the radiation image converting panel supplied from the feed magazine and setting it at a radiation photographing position, and signal means for reading the coded information and for producing an output signal corresponding to said coded information;
   - means for exposing radiation at said predetermined photographing area on the radiation image converting panel which has been set at the photographing position, with the patient interposed between the panel and the radiation exposing means;
   - means for reading a radiation-penetrated image from the radiation image converting panel which has been exposed by radiation, said reading means including a light beam irradiating means for scanning the radiation image converting panel with a light beam, and detector means for detecting the phosphorescence when irradiated by the light beam and converting it to an electric detection signal;
   - image reproducing means for receiving said detection signal from the reading means and carrying out image-treatment on the basis of said detection signal to display a radiation-penetrated image; and
   - control means for recognizing said predetermined photographing area based on the output signal of the signal means and adjusting the scanning area of the light beam of said reading means to said photographing area.

4,620,099
AUTOMATED MONITORING OF FISSILE AND FERTILE MATERIALS IN INCINERATOR RESIDUE

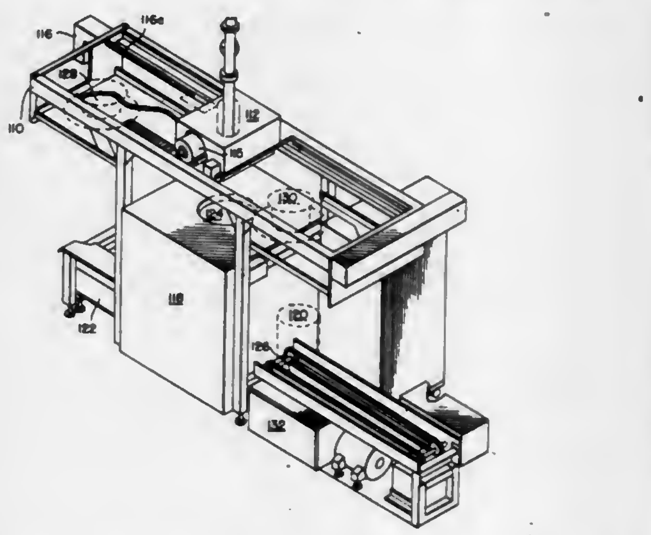
Frederick C. Schoenig, Jr., Wilmington, N.C.; Sharon G. Glendinning, Palo Alto; George W. Tunnell, Foster City, both of Calif., and Martin S. Zucker, East Moriches, N.Y., assignors to General Electric Company, San Jose, Calif.

Filed Aug. 26, 1983, Ser. No. 526,582

Int. Cl.⁴ G01F ***23/00***

U.S. Cl. 250—358.1 **3 Claims**

1. Apparatus for determining the fissile and fertile material content of incinerator residue contained in a manipulatable container, comprising: a main body member formed of neutron moderating material and formed with a well for receiving said container; a first plug formed of neutron reflecting material for closing the top of said well; a second plug containing a first neutron source for alternatively closing the top of said well and for directing neutrons into said well; a second neutron source selectively positionable in the bottom of said well for directing neutrons into said well; manipulating means for placing said container in said well and removing said container therefrom and for selectively placing one of said first and second plugs in the top of said well; a plurality of neutron detectors positioned within the neutron moderating material of said main body member around the sides of said well; at least one gamma ray detector positioned adjacent the bottom of said well; and means for receiving and processing the signals from said neutron and gamma ray detectors when said container is in said well for determining the fissile and fertile material content of the incinerator residue in said container.



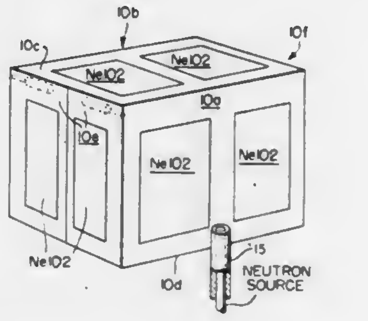
4,620,100
AUTOMATED MONITORING OF FISSILE AND FERTILE MATERIALS IN LARGE WASTE CONTAINERS

Frederick C. Schoenig, Jr., Wilmington, N.C.; Sharon G. Glendinning, Palo Alto, Calif.; Timothy Schick, Wilmington, N.C., and Samuel Untermyer, II, Portola Valley, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Aug. 26, 1983, Ser. No. 526,578

Int. Cl.⁴ G01F ***23/00***

U.S. Cl. 250—358.1 **2 Claims**



1. Apparatus for determining the amount of U-235 and U-238 which is contaminating combustible waste material contained in a combustible box, comprising: a box monitor structure for receiving said box and having side members, a top member, a bottom member; a first plurality of radiation detectors mounted on said side, top and bottom members of said monitor structure for producing first signals in response to passive radiation from radioactive material in said box; circuit means for receiving and processing said first signals including energy discrimination, signal counting and signal coincidence analysis to provide first processed signals indicating the U-238 content of said box; a second plurality of radiation detectors or energy discriminating type positioned adjacent said monitor structure for producing second signals in response to passive gamma radiation from radioactive material in said box; circuit

means for receiving and processing said second signals including energy analysis of said signals to provide second processed signals; a neutron source selectively movable to a position adjacent said monitor structure for directing neutrons into said box therein for activation of the radioactive material in said box, said first plurality of radiation detectors providing third signals in response to radiation induced in said radioactive material in said box by neutrons from said neutron source; circuit means for receiving and processing said third signals including energy discrimination and signal coincidence analysis to provide third processed signals, indicative of U-235 content of said box; a third plurality of radiation detectors responsive to neutrons positioned adjacent said monitor structure for producing fourth signals in response to neutrons resulting from fission of U-235 in said box induced by irradiation of said U-235 by the neutrons from said neutron source; circuit means for receiving and processing said fourth signals including counting said signals to provide fourth processed signals; and means for analyzing and for comparing said first, second, third and fourth processed signals against signals obtained from standards of known composition for providing an indication of the U-235 and U-238 content of said box.

4,620,101

CHARGING SWITCH FOR A BAR DOSIMETER FOR IONIZING RADIATION

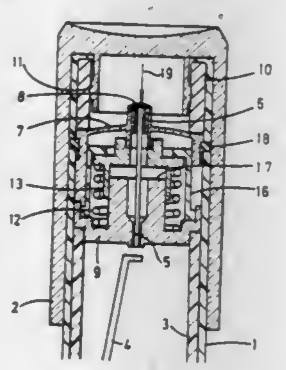
Werner Merkel, Erlangen-Möhrendorf, Fed. Rep. of Germany, assignor to Fag Kugelfischer Georg Schafer KGaA, Fed. Rep. of Germany

Filed Dec. 5, 1984, Ser. No. 678,463

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1983, 3344189

Int. Cl.⁴ G01T *1/18*

U.S. Cl. 250—376 **14 Claims**



1. A charge switch for a bar type dosimeter for ionizing radiation, comprising:

a hollow housing surrounded by a peripheral wall;

a flexible, deflectable membrane located inside and fastened to the housing, the membrane being of a size and of a material to be deflected; the membrane having a central substantially unflexed position and being deflectable to a first downwardly convex flexed position and a second downwardly concave flexed position, said two positions being on opposite sides of the central position;

a charge contact pin supported in the membrane, the pin being oriented for axial displacement upon deflection of the membrane in which the pin is supported;

an electric contact disposed in the housing toward one end of the pin; upon selective deflection of the pin in a first downward direction, said membrane then being in said first position, the pin being brought into engagement with the contact in the housing, and upon deflection of the pin in a second opposite direction, said membrane then being in said second position, the pin being deflected away from the contact;

a first stop in the housing positioned for blocking further deflection of the membrane in the first direction when the pin engages the electric contact;

a second stop in the housing positioned for establishing the extent of deflection of the pin and the membrane in the second direction away from the electric contact; and

biasing means for normally biasing the pin and membrane to deflect toward the second direction.

4,620,102

ELECTRON-IMPACT TYPE OF ION SOURCE WITH DOUBLE GRID ANODE

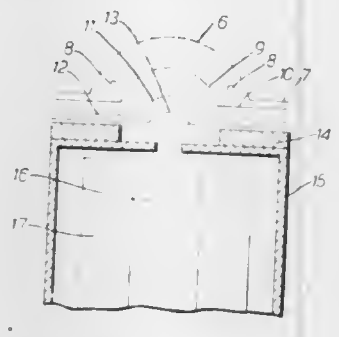
Fumio Watanabe, Fukushima; Yoshiaki Hara, Tokyo; Masao Miyamoto, Tokyo; Yasuo Kusumoto, Tokyo, and Syojiro Komaki, Tokyo, all of Japan, assignors to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed Mar. 25, 1985, Ser. No. 715,498

Claims priority, application Japan, Mar. 26, 1984, 59-58030

Int. Cl.⁴ H01J *27/20*

U.S. Cl. 250—427 **2 Claims**



1. In an electron-impact type of ion source of a three-electrode construction comprising at least a hot-cathode filament, an anode, and an ion-extraction electrode, an electron-impact type of ion source with a double grid anode characterized in that said anode is comprised of a first cage-like anode made of a metal grid or wire gauze that permits the passage of electrons and that has an open end, a second anode which also consists of a metal grid or wire gauze located at the open end side of said first anode, a hot-cathode filament arranged around the outer periphery of said first anode, and an ion-extraction electrode which faces said anode.

4,620,103

SAMPLE HOLDER FOR MASS ANALYSIS

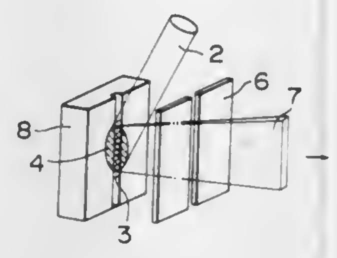
Hideki Kambara, Hachioji, and Setsuko Seki, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 30, 1984, Ser. No. 676,923

Claims priority, application Japan, Dec. 2, 1983, 58-226855

Int. Cl.⁴ G01F *21/00, 23/00*

U.S. Cl. 250—440.1 **3 Claims**



1. A sample holder for mass analysis of secondary ions produced by irradiation of a fast particle beam to a sample to be analyzed, said sample holder comprising:

box means for providing a space in which a fluid matrix and a sample material is held, said sample material being arranged to face toward said irradiation;

slit means with its opening allowing said space to communicate with the exterior of said box means; and

means for narrowing said space at the opening of said slit means.

4,620,104

INFRARED RADIATION SOURCE ARRANGEMENT

Per-Erik Nordal, Tappen 38, 1300 Sandvika, and Svein O. Kanstad, Conrad Holboes vei 67, 9000 Troms , both of Norway

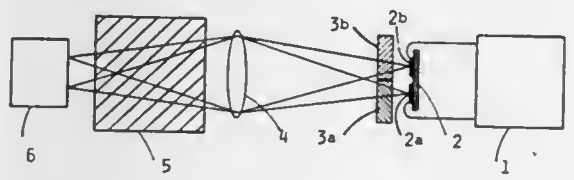
PCT No. PCT/NO83/00006, § 371 Date Sep. 28, 1983, § 102(e) Date Sep. 28, 1983, PCT Pub. No. WO83/03001, PCT Pub. Date Sep. 1, 1983

PCT Filed Feb. 16, 1983, Ser. No. 545,388

Claims priority, application Norway, Feb. 22, 1982, 820544

Int. Cl.⁴ G01J *3/10;* **H05B** *3/26*

U.S. Cl. 250—493.1 **26 Claims**



1. An improvement infrared radiation source arrangement for use in producing at least one pulsating beam of infrared radiation having

an electrically insulating substrate, at least one resistive element comprising an electrically conducting film carried on one surface of said substrate, and electrical circuit means for energising and controlling the emission of infrared radiation from said at least one resistive element; in which the improvement comprises that said electrical circuit means is arranged to energise said at least one resistive element with pulsating current whereby pulsating thermal infrared radiation is emitted, and that the thickness (L) of the substrate, and the thermal conductivity (k), specific heat capacity (C) and density (ρ) of the substrate material are so chosen that the time constant τ_s of the substrate, where

$$\tau_s = \frac{L^2 \pi \rho C}{k},$$

approximately satisfies the relationship τ_s being less than or approximately equal to f^{-1} where f is the highest pulsation frequency contained in the energising current as provided by the electrical circuit means.

4,620,105

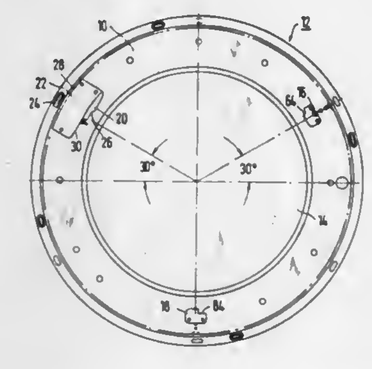
DEVICE FOR ATTACHING A COLLIMATOR TO A RADIATION DETECTOR

Anatoly I. Gosis, 552 Burno Dr., Palatine, Ill. 60067; Margaret Fialko, 8835 Mango, Morton Grove, Ill. 60053, and George J. Hanz, 254 Thrasher, Bloomingdale, Ill. 60108

Filed Mar. 12, 1984, Ser. No. 588,845

Int. Cl.⁴ G01B *5/00;* **G21K** *1/02*

U.S. Cl. 250—505.1 **17 Claims**



1. A device for attaching a collimator to a radiation detector, comprising

a. a cleat means at the radiation detector for cleating the collimator to the radiation detector;

b. a latch means for latching the cleated collimator against rotation;

c. a collimator cleating detection means associated with the cleat means for detecting incorrect cleating of the collimator; and

d. a collimator latching detection means associated with the latch means for detecting incorrect latching of the collimator.

4,620,106

IMPACT ABSORBER FOR CONTAINERS FOR NUCLEAR FUEL AND/OR DANGEROUS SUBSTANCES

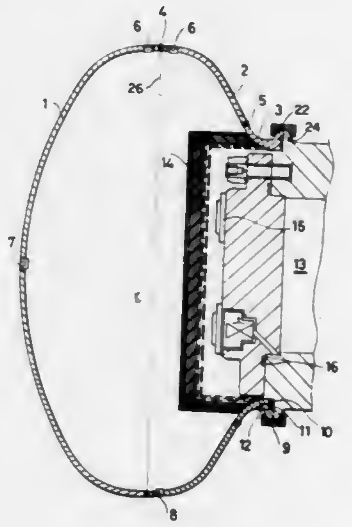
Antonio Olivieri, Milan, and Giovanni Pochini, Noverasco di Opera, both of Italy, assignors to AGIP Nucleare S.p.A., Rome, Italy

Filed Oct. 3, 1983, Ser. No. 538,742

Claims priority, application Italy, Oct. 11, 1982, 23701 A/82

Int. Cl.⁴ G21F *5/00*

U.S. Cl. 250—506.1 **19 Claims**



1. An impact absorber for a container for irradiated nuclear fuels, radioactive products and/or dangerous chemicals comprising:

a first open convex structure having one open end at its maximum diameter;

a second annular convex structure having a large opening formed at the maximum diameter of said second annular convex structure, said large opening corresponding to said open end of said first open convex structure, said second annular convex structure having a minor opening formed at the minimum diameter thereof and approximating the dimension of the end of the container, said first open convex structure and said second annular convex structure being connected at said first structure open end and said second annular convex structure large opening to form an impact absorber shell;

an annular connector attached to said second annular convex structure at said minor opening; and

ring connector means for connecting said impact absorber shell at said annular connector to said container, said impact absorber shell and said container defining an interspace therebetween, said interspace being pressurized or depressurized relative to the surrounding environment to prevent release to the environment of the substances contained in the container.

4,620,107

COMPENSATED LIGHT PEN WITH VARIABLE ATTENUATOR

Gary E. Frame, Reseda, Calif., assignor to Liprad Associates, Hanford, Calif.

Filed Sep. 10, 1984, Ser. No. 649,061

Int. Cl.⁴ G09G *3/02;* **G06K** *7/10*

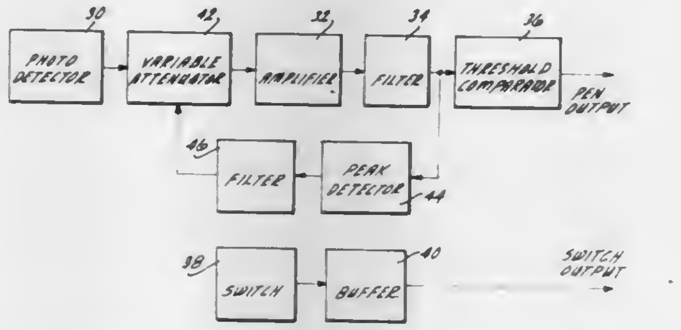
U.S. Cl. 250—566 **20 Claims**

1. An automatically compensated light pen for use with a

video display monitor incorporating a cathode ray tube, including,

a detector for detecting light pulses produced by the cathode ray tube when the detector is positioned adjacent the cathode ray tube at a particular desired location and for producing electrical pulses in accordance with the light pulses,

a variable attenuator having a first input coupled to the output of the detector and responsive to the electrical pulses from the detector for producing variably attenuated electrical pulses and having a second control input responsive to a control signal for controlling the level of the variably attenuated electrical pulses,



a threshold comparator coupled to the output of the variable attenuator and responsive to the variably attenuated electrical pulses for producing output electrical pulses when the level of the variably attenuated electrical pulses are higher than a particular threshold level for the threshold comparator, and

a peak detector coupled between the output of the variable comparator and the control input of the variable attenuator and responsive to the variably attenuated electrical pulses for producing a control signal coupled to the control input of the variable attenuator when the level of the variably attenuated electrical pulses are higher than a particular peak level for the peak detector and with the particular threshold level for the threshold comparator less than the particular peak level for the peak detector.

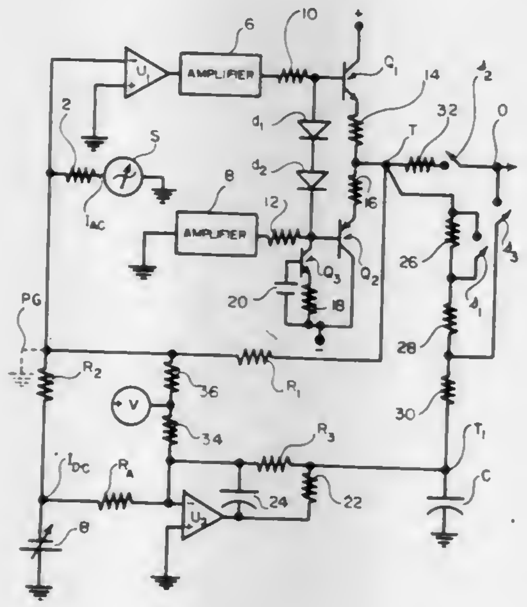
4,620,108
MEANS PROVIDING INDEPENDENTLY CONTROLLED SUPERIMPOSED AC AND DC VOLTAGES

Robert J. Bland, Berkeley Heights, N.J., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 4, 1985, Ser. No. 740,948

Int. Cl.⁴ H02J *5/00*

U.S. Cl. 307—2 **2 Claims**



1. A circuit for providing independently controllable AC and DC voltages comprising,

a first input terminal to which an AC voltage may be applied,

a second input terminal to which a DC voltage may be applied,

a first output terminal, first amplifying means coupled between said first and second input terminals and said first output terminal,

a second output terminal,

a capacitor connected between said second output terminal and a point of reference potential,

voltage dividing means coupled between said first and second output terminals,

second amplifying means coupled between said second input terminal and said second output terminal,

said first and second amplifying means having the same gain for DC voltage.

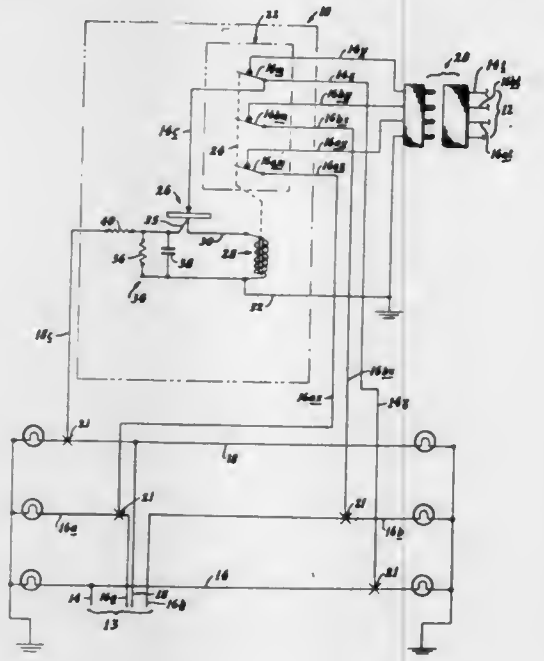
4,620,109
BOAT TRAILER LIGHT DE-ENERGIZATION MEANS

Robert F. Kummer, 2507 George St., Logansport, Ind. 46947

Filed May 6, 1985, Ser. No. 730,863

Int. Cl.⁴ H02G *3/00*

U.S. Cl. 307—10 LS **5 Claims**



1. A control means including control circuitry therefor, which prevents short circuit conditions of a boat trailer's light-circuitry at the boat-launch site, the means and control circuitry comprising, in combination:

at least two co-ordinated control circuits,

a first one of the control circuits being provided to a branch of the vehicle's backup lights' circuitry, utilizing the fact of the boat-launch and retrieval maneuver of the towing vehicle normally including a reverse-drive action of the towing vehicle, thereby assuring energizing of that first control circuit,

another of the control circuitry being provided as a branch of another of the towing vehicle's circuitry,

and a control module including switches for opening the boat trailer light-circuitry,

the control means providing that for its said operativity both those control circuits must be energized simultaneously, thus minimizing chances of inadvertent de-activation of the trailer's light-circuitry when needed for highway use.

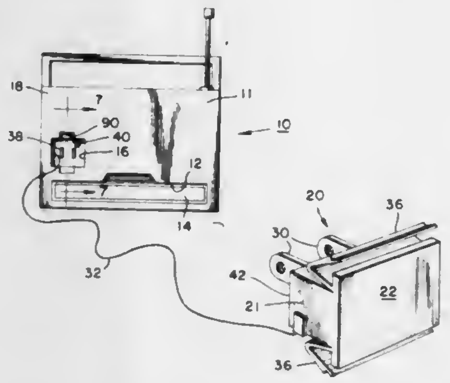
4,620,110
COMPACT POWER SUPPLY MODULE AND CORD

Robert W. Cooney, Marcy, N.Y., assignor to General Electric Company, Portsmouth, Va.

Filed Jul. 15, 1985, Ser. No. 755,115

Int. Cl.⁴ H02J *7/00*

U.S. Cl. 307—48 **14 Claims**



1. In a product having a primary housing and an electrical load therein adapted for selective energization from first and second sources of direct current electric power, said first source comprising battery means received within said primary housing and said secondary source comprising means for converting relatively high voltage alternating current to relatively low voltage direct current, the improvement comprising:

a secondary housing containing at least all of the high voltage components of said second source including terminal means for connection to an external source of alternating current electric power,

a recess within said primary housing accessible from the exterior of said primary housing,

a relatively low bulk, low voltage electrical conductor interconnecting said secondary housing and said product through said recess for supplying low voltage electric power to said product from said secondary housing,

said recess within said primary housing being configured and sized to receive both said secondary housing and said electrical conductor for storage therein when the product is not being energized from said second source, the low bulk of said low voltage electrical conductor permitting the size of said recess to be minimized,

and latching means for releasably securing said secondary housing and said electrical conductor within said recess.

4,620,111
AUXILIARY PORTABLE POWER SUPPLY

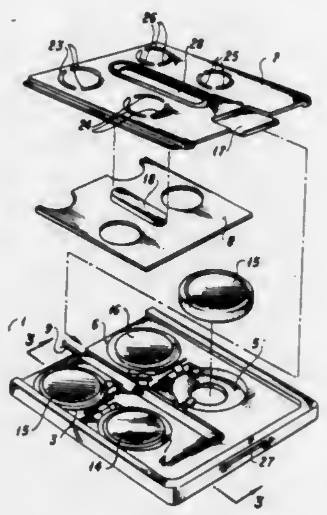
William J. McArthur, Maple Grove, and Glenn W. Merry, St. Paul, both of Minn., assignors to Duracell Inc., Bethel, Conn.

Filed Jun. 25, 1984, Ser. No. 624,450

Int. Cl.⁴ H01M *2/00*

U.S. Cl. 307—150 **9 Claims**

1. A lightweight auxiliary power supply apparatus comprising a housing member having a plurality of wells, each of said wells being adapted to receive at least one disk shaped zinc air button cell; switch means, connected to said housing, comprising a slideably mounted member, to control the flow of oxygen to each of the cells; and electrical connecting means, connected to said housing, to suitably connect said apparatus to a battery operated appliance.



4,620,112
CHIRP SIGNAL GATING CIRCUIT FOR EXPANDER IN A PULSE COMPRESSION RADAR SYSTEM

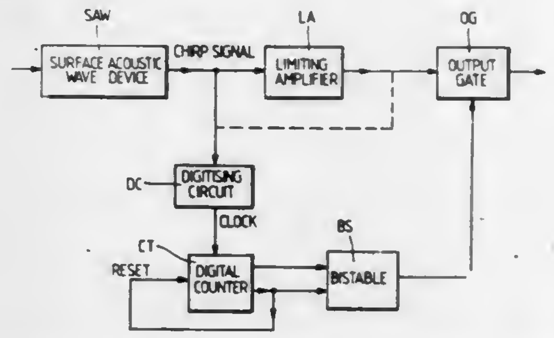
Hugh McPherson, Tweeddale, and John P. Blakely, Edinburgh, both of Scotland, assignors to FERRANTI plc, Cheshire, England

Filed Oct. 6, 1983, Ser. No. 539,559

Claims priority, application United Kingdom, Oct. 16, 1982, 8229618

Int. Cl.⁴ H03K *17/56, 17/29, 21/09*

U.S. Cl. 307—239 **4 Claims**



1. A gating circuit for an expander in a pulse compression radar system which includes a surface acoustic wave delay line responsive to an input pulse to generate a frequency-modulated radio-frequency output signal, said gating circuit comprising:

a gate having an input to which the output signal from the delay line is applied;

means responsive to the output signal from the delay line for generating a digital pulse corresponding to each cycle of the output signal;

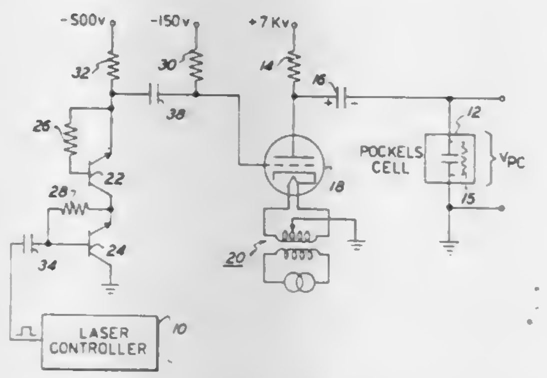
a digital counter operable to count the digital pulses and hvaing at least first and second predetermined counter states; and

control means connected to said digital counter and to said gate, said control means being responsive to the first predetermined counter state to open said gate, and responsive to the second predetermined counter state to close said gate.

4,620,113
POCKELS CELL DRIVER

Theodore Sizer, II; Irl N. Duling, III, both of Rochester; Carl H. Petras, Cameron, and Samuel A. Letzring, Honeoye Falls, all of N.Y., assignors to The University of Rochester, Rochester, N.Y.

Filed Feb. 17, 1984, Ser. No. 581,144
Int. Cl.^{4} H03K *3/26, 3/86;* **H02B** *5/30*
U.S. Cl. 307—270 **15 Claims**

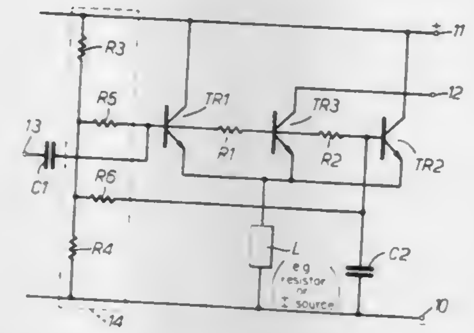


1. A Pockels cell driver which comprises a vacuum tube having a cathode, a grid and an anode, a resistor connecting said anode to a source of voltage at least as high as the half wavelength voltage of the Pockels cell, a storage capacitor connecting the anode to one end of the Pockels cell, means connecting the other end of the Pockels cell to the cathode of said tube, and means connected to the grid of said tube for switching said tube into conduction for a period of time sufficient to discharge said storage capacitor and to charge the capacitance presented by the Pockels cell to increase the voltage across the Pockels cell at least to the half wavelength voltage thereof.

4,620,114
SIGNAL STRENGTH DETECTOR

Philip A. K. Moon, Wiltshire, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Aug. 31, 1984, Ser. No. 646,113
Claims priority, application United Kingdom, Sep. 1, 1983, 8323487
Int. Cl.^{4} H03K *5/24;* **G01R** *19/165*
U.S. Cl. 307—350 **16 Claims**

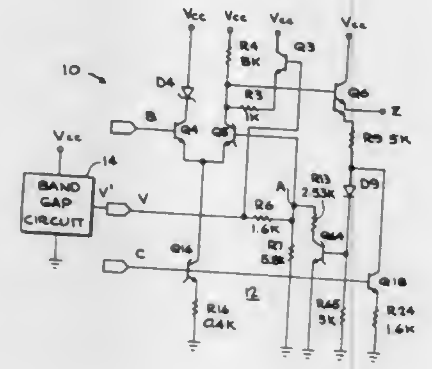


1. A signal strength detector, comprising: first, second and third transistors of the same conductivity type, each having an emitter electrode, a collector electrode and a base electrode; a pair of dc supply lines, the emitter electrode of each transistor being connected together and coupled to one of the pair of dc supply lines via a constant current source, and the collector electrodes of the first and second transistors each being coupled with the other of the pair of dc supply lines; a first resistor through which the base electrode of the first transistor is coupled to the base electrode of the third transistor; and a second resistor through which the base electrode of the second transistor is coupled to the base electrode of the third transistor, wherein the collector electrode of the third transistor is effective to provide a source of output current which is representative of a differential signal level between the base electrodes of the first and second transistors.

4,620,115
VOLTAGE-TEMPERATURE COMPENSATED THRESHOLD FOR HYSTERESIS LINE RECEIVER AT TTL SUPPLY VOLTAGE

Gil S. Lee, and A. Ram Subramaniam, both of San Jose, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 7, 1984, Ser. No. 648,843
Int. Cl.^{4} H03K *17/16, 19/086*
U.S. Cl. 307—443 **17 Claims**



1. A line receiver circuit having an input hysteresis characteristic which is compensated for both temperature changes and variations in supply voltage with a single transistor-transistor logic compatible power supply, said receiver circuit comprising:

a receiver circuit portion including a first reference transistor and a second reference transistor, said first reference transistor having its base connected to an input circuit terminal for receiving a logic signal, its collector coupled to a supply voltage potential via a Schottky diode and its emitter coupled to the emitter of said second reference transistor, said second reference transistor having its base connected to a threshold voltage node and its collector connected to the voltage potential via a load resistor;

said receiver circuit portion further including a multi-emitter output transistor having first and second emitters, said output transistor having its base connected to the collector of said second reference transistor, its collector to the voltage potential and its first emitter connected to an output circuit terminal;

a first voltage divider network formed of a first resistor and a second resistor, one end of the first resistor being connected to one end of the second resistor and to the threshold voltage node, the other end of the first resistor being connected to receive a constant reference voltage, the other end of the second resistor being connected to a ground potential;

a second voltage divider network formed of the first resistor and a third resistor, one end of the third resistor being connected to the common connection of the first and second resistors and threshold voltage node; and

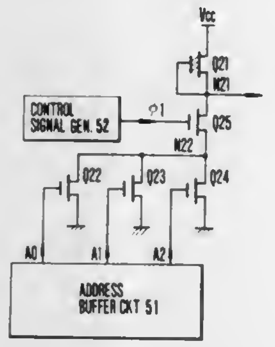
a feedback switching transistor having its base coupled to the second emitter of said output transistor, its collector connected to the other end of the third resistor and its emitter connected to the ground potential.

4,620,116
DECODER CIRCUIT WITH SETTING FUNCTION OF AN OUTPUT LEVEL

Takashi Ozawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 25, 1983, Ser. No. 545,293
Claims priority, application Japan, Oct. 27, 1982, 57-188711
Int. Cl.^{4} H03K *19/094*
U.S. Cl. 307—449 **4 Claims**

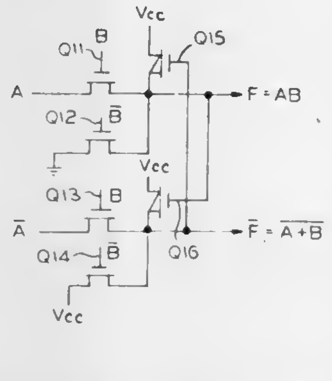
1. A decoder circuit comprising a first voltage terminal, a second voltage terminal, and an output terminal; a first field effect transistor having a drain-source path coupled between said first voltage terminal and said output terminal, a second field effect transistor having one of a drain and a source coupled to said output terminal, a plurality of third field effect transistors having gates receiving input signals, drain-source paths of said third transistors being coupled between the other of the drain and source of said second transistor and second voltage terminal, control means for continuously rendering said second transistor conductive in a first operating mode and rendering said second transistor non-conductive in a second operation mode, and means for enabling said first transistor in both of said first and second operating modes, wherein a level of said output terminal is determined by said input signals in said first operating mode while a level of said output terminal is set at the level of said first voltage terminal irrespective of said input signals in said second operating mode.



4,620,117
BALANCED CMOS LOGIC CIRCUITS

Sheng Fang, San Antonio, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 4, 1985, Ser. No. 688,781
Int. Cl.^{4} H03K *19/094, 19/20, 19/21, 19/017*
U.S. Cl. 307—451 **10 Claims**



4. A balanced CMOS AND logic gate circuit comprising:

a first pair of N-channel type MOS transistors formed of first and second transistors whose drains are connected together;

a second pair of N-channel type MOS transistors formed of third and fourth MOS transistors whose drains are connected together;

a supply potential being connected to the source of said fourth transistor;

a ground potential being connected to the source of said second transistor;

a first true input signal being applied via a first input terminal to the source of said first transistor;

a complement of said first input signal being applied via a second input terminal to the source of said third transistor;

a second true input signal being applied via a third input terminal to the gates of said first and third transistors;

a second complement of said second input signal being applied via a fourth input terminal to the gates of said second and fourth transistors;

a pair of cross-coupled P-channel type MOS transistors formed of fifth and sixth transistors whose sources are coupled to the supply potential, the gate of said fifth transistor being connected to the drain of said sixth transistor and the gate of said sixth transistor being connected to the drain of said fifth transistor;

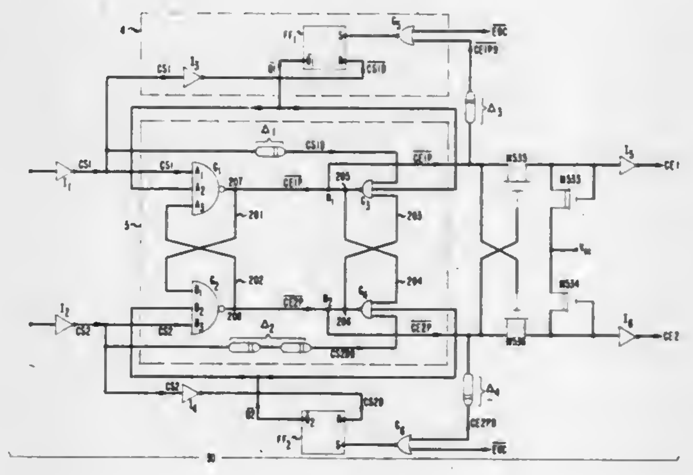
the drain of said fifth transistor being further connected to the drains of said first and second transistors and to a true output terminal; and

the drain of said sixth transistor being further connected to the drains of said third and fourth transistors and to a complement output terminal.

4,620,118
DUAL PORT ACCESS CIRCUIT WITH AUTOMATIC ASYNCHRONOUS CONTENTION RESOLVING CAPABILITY

Frank E. Barber, Center Valley, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 1, 1982, Ser. No. 432,289
Int. Cl.^{4} H03K *17/28, 5/26*
U.S. Cl. 307—518 **32 Claims**



1. A circuit for producing a pair of contention resolved output signals from first and second conflicting access request signals comprising:

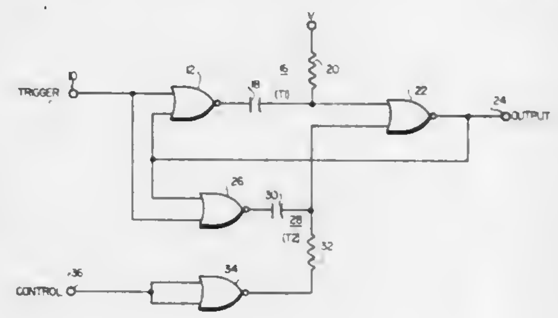
(a) first and second cross-coupled, triple input main combinational logic elements each having an input terminal that is separately connected for receiving the first and second request signals, respectively;

(b) first and second bistable logic elements each respectively connected for delivering to another separate input terminal of the first and second main logic elements, respectively, first and second priority status signals representative of the instantaneous priority of access status of the access request signals.

4,620,119
DUAL-MODE TIMER CIRCUIT

Gregory A. Williams, Elk Grove Village, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Aug. 6, 1984, Ser. No. 638,090
Int. Cl.^{4} H03K *17/28, 5/159*
U.S. Cl. 307—595 **4 Claims**



1. A timer having an input terminal and an output terminal and operable for selectively generating an output signal of two

different durations at said output terminal in response to a trigger pulse at said input terminal comprising:

- output means comprising a two-input logic gate coupled to the output terminal for generating an output signal;
- a first RC network timing circuit coupled between said input terminal and one of the inputs of said logic gate;
- a second RC network timing circuit, having a timing duration different from said first timing circuit, coupled between said input terminal and the other input of said logic gate;
- control means for selectively rendering said first and said second timing circuits effective to change the duration of the output signal generated by said output means, said control means controlling activation of the one of said RC networks having the shorter time constant, said RC networks being charged in parallel and the one having the shorter time constant controlling said output means; and
- further including second and third two-input logic gates, each having one input supplied with said trigger pulse, another input connected to said output terminal and outputs respectively connected to said first and said second RC network timing circuits.

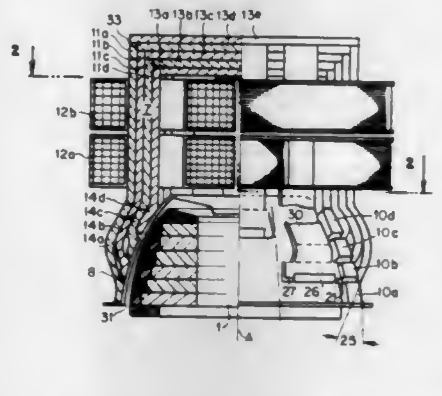
4,620,120
STATOR HAVING TOOTH LAMINATION STRIPS LYING BETWEEN CIRCULAR CYLINDERS

Karsten Laing, 632 Marsat Ct., Chula Vista, Calif. 92011

Filed Nov. 2, 1984, Ser. No. 667,793

Int. Cl.⁴ H02K *17/00*

U.S. Cl. 310—166 **6 Claims**



1. A stator for an electric motor having a rotating rotor with axis of rotation of which the gap running between the rotating rotor and the stator for the magnetic flux lies on a spherical surface, and in which the stator exhibits teeth which extend axially and are built, up from tooth lamination strips which pierce windings running in planes of rotation and are connected together in magnetic conductivity via a yoke at the axial end remote from the rotor, where pole shoes are provided through which the clearance between two teeth adjacent in the circumferential direction at the axial end next the rotor is reduced down to a narrow gap, characterized in that an area of the tooth lamination strips (**11***a* to **11***d*) next the rotor (**1**) has shoes (**10***a* to **10***d*) formed thereon which follow the spherical surface so that said shoes form groups of shoes (**10** and **20**) lying side by side and in the circumferential direction only a narrow gap (**21**) remains between adjacent groups of shoes, each of said shoes (**10***a* to **10***d*) forming with one of said tooth lamination strip (**11***a* to **11***d*) a single unit, where regions (**14***a* to **14***d*) of the tooth lamination strips (**11***a* to **11***d*) extending between windings (**12***a*, **12***b*) and the shoes (**10***a* to **10***d*) run along curves one above the other about the axis (A) of the rotor.

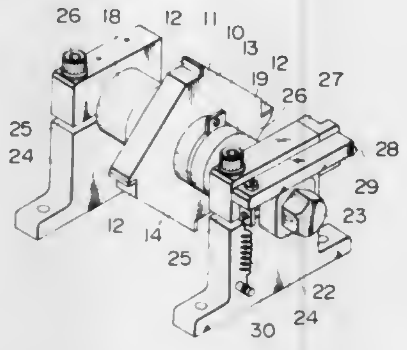
4,620,121
PIEZOELECTRIC APPARATUS FOR ACTIVATING SQUARE PLATE RESONATOR

Shoji Mishiro, Kawasaki, Japan, assignor to Taga Electric Company, Limited, Tokyo, Japan

Filed Dec. 3, 1985, Ser. No. 804,150

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—323 **4 Claims**



1. An apparatus for activating a square plate resonator, comprising annular electrostriction elements each having on one side thereof four segmental electrodes divided circumferentially and polarized in such a manner that every adjacent electrodes have mutually reverse polarities in the direction of thickness, said annular electrostriction elements being so disposed that the center lines of division become positionally coincident with the diagonal lines of said square plate resonator while passing through the surface center point thereof, wherein said annular electrostriction elements and said square plate resonator are clamped together by columnar blocks supported securely by means of bearing members.

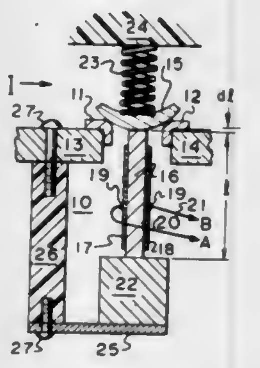
4,620,122
PIEZOELECTRIC CONTACT DRIVER FOR CIRCUIT INTERRUPTERS

Edward K. Howell, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed Jul. 29, 1985, Ser. No. 759,710

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—328 **1 Claim**



1. A contact arrangement for interrupting circuit current comprising:

- a pair of fixed contacts for connection within an electric circuit;
- a bridging contact arranged across said fixed contacts for transport of circuit current between said fixed contacts;
- a contact driver arranged to exert a force between said fixed contacts and said bridging contact, said contact driver comprising voltage responsive means whereby a voltage pulse applied to said contact driver moves said bridging contact away from said fixed contacts to interrupt said current, said contact driver comprising a piezoelectric bar having a pair of electrodes attached to either side of said bar, said bridging contact abutting one end of said piezoelectric bar, and a block abutting an opposite end of said piezoelectric bar, the mass of said block being greater than the mass of said contact for enhancing motion of said contact relative to said block, said block being attached to an insulating support arranged parallel to said piezoelectric bar, said block being attached to said insulating support by means of a cantilever spring.

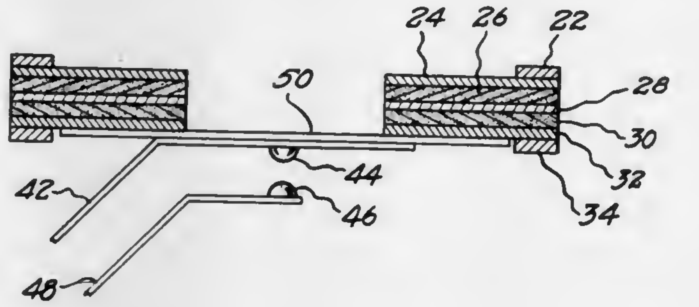
4,620,123
SYNCHRONOUSLY OPERABLE ELECTRICAL CURRENT SWITCHING APPARATUS HAVING MULTIPLE CIRCUIT SWITCHING CAPABILITY AND/OR REDUCED CONTACT RESISTANCE

George A. Farrall, Rexford, and John H. Van Noy, Ballston, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 21, 1984, Ser. No. 684,882

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—331 **7 Claims**



1. An electrical current switching apparatus comprising:

- a plurality of subtantially coplanar, flat piezoelectric benders of the type having at least two electrically conductive layers separated by a piezoelectric material and exhibiting bending motion in response to an electrical signal, said bending motion being in a direction substantially perpendicular to the plane in which said benders lie;
- each of said benders being fixed at a first end;
- an electrically insulating linking member attached between the moving ends of at least two of said piezoelectric benders;
- at least one pair of electrical current switching contacts, at least one of said contacts being movable and located substantially centrally on said linking member so that said bending motion of said piezoelectric benders causes corresponding movement of said movable contact, said contacts being disposed so that said movement of said movable contact produces a change in the relative position of said pair of contacts between open and closed positions;
- a common electrical conductor electrically connecting a first one of said electrically conductive layers of each of said piezoelectric benders to said electrical signal; and
- means for electrically connecting a second one of said electrically conductive layers of said piezoelectric benders to said electrical signal so that said benders exhibit said bending motion in response to said signal.

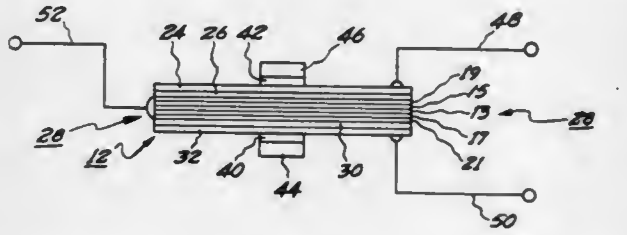
4,620,124
SYNCHRONOUSLY OPERABLE ELECTRICAL CURRENT SWITCHING APPARATUS HAVING INCREASED CONTACT SEPARATION IN THE OPEN POSITION AND INCREASED CONTACT CLOSING FORCE IN THE CLOSED POSITION

George A. Farrall, Rexford, and John H. Van Noy, Ballston, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 21, 1984, Ser. No. 684,880

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—332 **12 Claims**



1. A piezoelectrically actuated electrical current switching apparatus, comprising:

- a pair of spaced-apart opposing multimorph piezoelectric benders, each of said benders being of the type exhibiting bending motion in a direction substantially perpendicular to the plane in which said bender lies in response to a first electrical signal and bending motion in the opposite direction in response to a second electrical signal;
- each of said benders being fixed at a pair of opposing ends such that said bending motion comprises bowing proximate the center thereof; and
- at least one pair of electrical current switching contacts, one of said contacts of said pair being centrally mounted on one of the opposing surfaces of said pair of opposing benders and the second contact of said pair being centrally mounted on the second one of said opposing surfaces;
- said pair of contacts and said piezoelectric benders being disposed so that in response to said first electrical signal said opposing benders bow toward each other and move said contacts to a closed position and so that in response to said second electrical signal said opposing benders bow away from each other and move said contacts to an open position.

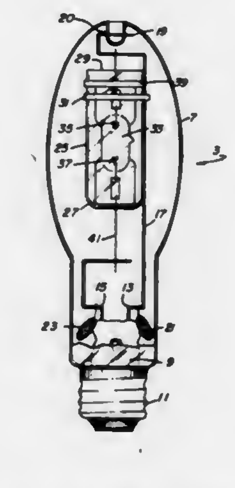
4,620,125
LOW WATTAGE METAL HALIDE LAMP WITH INVERTED DOMED SLEEVE

William M. Keeffe, Rockport; Zeya K. Krasko, Danvers, both of Mass., and Robert J. Karlotski, Weare, N.H., assignors to GTE Products Corporation, Stamford, Conn.

Filed Oct. 29, 1984, Ser. No. 665,472

Int. Cl.⁴ H01J *61/04, 61/18, 61/34*

U.S. Cl. 313—25 **8 Claims**



1. A metal halide discharge lamp comprising:

an arc tube having a chemical fill including a sodium halide,

an electrode therein at each end thereof and an outer strap member affixed thereto;
a heat reducing member in the form of a sleeve having a domed end and an open end with an outer metal band affixed thereto, said sleeve surrounding said arc tube;
an evacuated outer envelope surrounding said heat reducing member, said envelope having a pair of electrical conductors sealed therein and passing therethrough and at least one getter at one end therein;
said outer strap member, one of said electrodes of said arc tube and said outer metal strap of said heat reducing member electrically coupled to one of said pair of electrical conductors and the other electrode of said arc tube electrically coupled to the other one of said pair of electrical conductors;
and means for reducing sodium loss that includes positioning said domed end of said heat reducing member toward said getter thereby interrupting the line-of-sight between said getter and the inside of said heat reducing member.

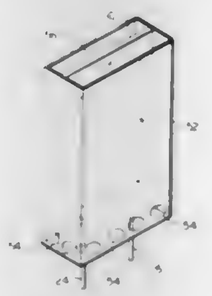
4,620,126
HIGH ENERGY DISCHARGE SPARKGAP

Hans E. Manske, Addison, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jun. 28, 1984, Ser. No. 625,401

Int. Cl.^{4} H02H *1/04*

U.S. Cl. 313—325 **3 Claims**



1. A spark gap for use in a television receiver or the like comprising:
an insulating high temperature substrate defining a plurality of support apertures;
a pair of divergent wires rigidly mounted to said substrate by means of said support apertures;
means for plug-in mounting of said substrate in an upright position with the diverged ends of said wires uppermost; and
a flameproof housing surrounding said substrate, said housing including a ventilation opening near the bottom thereof and being substantially open at the top thereof for providing a chimney effect.

4,620,127
KINESCOPE-YOKE ASSEMBLY

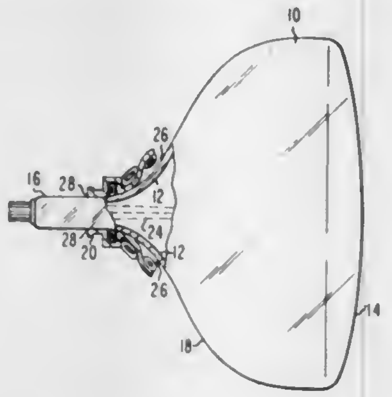
Kwong T. Chung, Hopewell Township, Mercer County, and Alfred R. Triano, Union County, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Feb. 26, 1985, Ser. No. 705,649

Int. Cl.^{4} H01J *29/70*

U.S. Cl. 313—440 **9 Claims**

1. An assembly comprising a kinescope and an external magnetic deflection yoke bonded thereto with an adhesive comprising: a polymer matrix comprising from about 40 to about 50 percent by weight of an isocyanate component, from about 40 to about 50 percent by weight of a polyol component comprising one or more polyols having an average functionality greater than 2.0 and an average hydroxyl equivalent of from about 2000 to about 2500, from about 2.8 to about 5 percent by weight of a suitable chain extender, from 0 to about 2.5 percent by weight of one or more catalysts for isocyanate/-hydroxyl reactions; and one or more suitable fillers selected from the group consisting of inorganic fillers, organic fillers and mixtures thereof, said fillers comprising from about 32 to about 60 percent by volume of the adhesive, with the proviso that when the claim extender is a diol the functionality thereof is included in said polyol component functionality average.



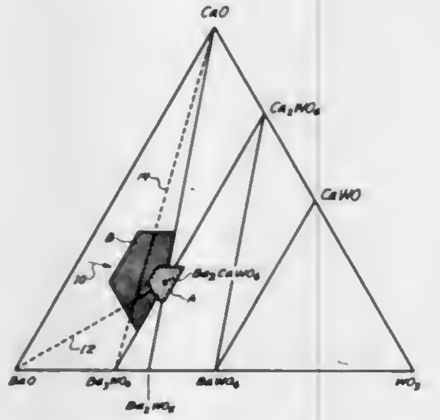
4,620,128
TUNGSTEN LADEN EMISSION MIX OF IMPROVED STABILITY

Krishan L. Luthra, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 29, 1985, Ser. No. 728,352

Int. Cl.^{4} H01J *17/04*

U.S. Cl. 313—630 **8 Claims**



1. As an emission mix for a sodium vapor lamp the composition corresponding to points within the shaped areas A and B of the triaxial plot of FIG. 3 multiphase compositions derived from CaO, BaO and WO_3, said mix having a quantity of finely divided tungsten metal dispersed therein.

4,620,129
GETTERED HIGH PRESSURE SODIUM LAMP

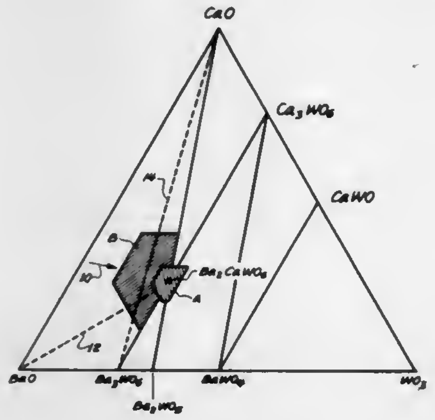
Krishan L. Luthra, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 29, 1985, Ser. No. 728,556

Int. Cl.^{4} H01J *17/04*

U.S. Cl. 313—630 **7 Claims**

1. As an emission mix for a HPS or DHPS sodium vapor lamp,
the composition corresponding to points within the shaped areas A and B of the triaxial plot of FIG. 3 multiphase compositions derived from CaO, BaO and WO_3, said composition containing a small percentage of an oxygen getter metal which is solid at the operating temperature, above 1200° C., of the emission material of the sodium vapor lamp.



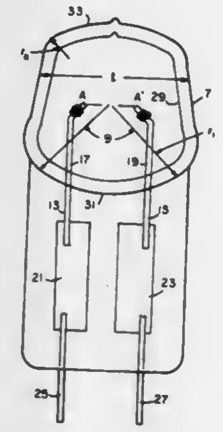
4,620,130
ELECTRODE ALIGNMENT AND CAPSULE DESIGN FOR SINGLE-ENDED LOW WATTAGE METAL HALIDE LAMPS

William M. Keeffe, Rockport; W. Calvin Gungle, Danvers; Harold L. Rothwell, Jr., Rowley, and Zeya K. Krasko, Danvers, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 27, 1984, Ser. No. 593,790

Int. Cl.^{4} H01J *61/33, 61/04*

U.S. Cl. 313—634 **8 Claims**



1. A single-ended low wattage metal halide arc discharge lamp comprising:
an isothermal arc chamber having an outer diameter, a dome seal portion and an inner press seal portion;
a fill gas disposed within said arc chamber which includes mercury, a halide and a starting gas;
a pair of electrical conductors sealed into and passing through one end of said arc chamber to provide a pair of electrodes therein, said arc discharge lamp characterized by the improvement wherein said arc chamber has a diameter as determined in accordance with the following:

$$t = aW + b$$

where:
t=arc chamber outer diameter
w=lamp wattage
a=0.07±0.01 mm/watt
b=7.20±1.00 mm
and wherein said press seal portion has a radius (r_1) whereat:

$$r_1 = t/2 + c$$

where:

$$c = 1.4 \pm 0.2 \text{ mm.}$$

4,620,131
LAMP WITH DISCHARGE VESSEL MADE OF DENSELY SINTERED TRANSLUCENT ALUMINIUM OXIDE

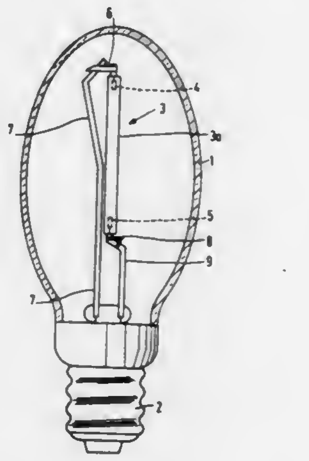
Peter R. Prud'homme van Reine, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 9, 1984, Ser. No. 629,140

Claims priority, application Netherlands, Jul. 25, 1983, 8302638

Int. Cl.^{4} H01J *17/16, 61/30*

U.S. Cl. 313—636 **4 Claims**



1. A lamp comprising a discharge vessel provided with a wall of densely sintered translucent aluminum oxide formed for the major part from crystals having a size of at most 60 μm, characterized in that at least 50% of the inner surface is formed from a first group of crystals having a maximum dimension larger than 60 μm and smaller than 300 μm, the remainder of said crystals having a grain size different from said first group of crystals, which crystal size distribution extends over a layer thickness of one crystal that provide high resistivity to corrosive attack.

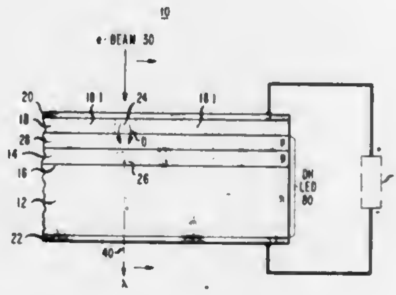
4,620,132
ELECTRON BEAM SCANNABLE LED DISPLAY DEVICE

Eugene I. Gordon, Convent Station, and Uri Levy, Berkeley Heights, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 1, 1983, Ser. No. 481,470

Int. Cl.^{4} H01J *23/16, 29/96*

U.S. Cl. 315—3 **15 Claims**



1. A CRT device comprising
a semiconductor target, and
a source of a scannable e-beam for addressing said target, characterized in that said target includes
a p-n junction which produces charge flow and radiative recombination when forward biased, and
at least one current-blocking layer which inhibits charge flow across said junction in the absence of said e-beam being incident on said layer,
said e-beam being absorbed in a localized zone of said layer

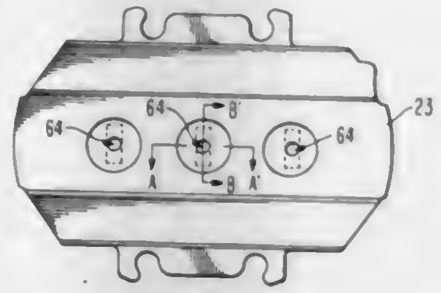
so as to allow charge flow therethrough, thereby generating from said recombination a light spot which radiates from said target and which scans with said e-beam.

4,620,133
COLOR IMAGE DISPLAY SYSTEMS
Albert M. Morrell; Richard H. Hughes, both of Lancaster, Pa., and William H. Barkow, Pensauken, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jan. 29, 1982, Ser. No. 343,734

Int. Cl.⁴ H01J *29/46, 29/56*

U.S. Cl. 315—15 **25 Claims**



1. A color image display system comprising:
a color picture tube including an evacuated envelope comprising a screen portion enclosing a display screen, a cylindrical neck portion, and a funnel portion connecting said screen portion and said neck portion;
an electron gun assembly, mounted within said neck portion, for producing three in-line electron beams;
a compact deflection yoke assembly encircling adjoining segments of said neck and funnel portions for developing deflection fields which permit tracing of display rasters on said screen with substantial convergence of said beams throughout the display, and which establish a given deflection angle between beam paths which terminate at diagonally opposed raster corners, said yoke assembly including horizontal deflection windings of saddle configuration defining respective windows, and vertical deflection windings of toroidal configuration, establishing respective deflection centers for said beams within the encircled region of said envelope;
said gun assembly including two main focusing electrodes at the beam exit end of said gun assembly maintained at different potentials, each of said main focusing electrodes including: a portion disposed transversely with respect to the longitudinal axis of said neck and having a trio of in-line apertures, through each of which a respectively different one of said beams passes; and an adjoining portion extending longitudinally therefrom and providing a common enclosure for the paths of all of said beams, the respective adjoining portions of said electrodes being juxtaposed to define therebetween a common main focusing lens for said beams from which said beam paths depart in converging fashion;
wherein the center-to-center spacing between adjacent apertures of each of said trios is such as to restrict the center-to-center spacing of adjacent ones of said beams to less than 200 mils in transverse planes occupied by said delfection centers, wherein the configurations of said juxtaposed portions establish a major transverse dimension for said main focusing lens of significantly more than three times said center-to-center spacing between adjacent apertures, wherein the diameter of said neck portion is sufficiently great that the interior surface of said neck portion is spaced from the outer surfaces of said juxtaposed enclosures, and wherein the internal diameter of said compact yoke assembly at the beam exit end of said windows totals less than 30 mils per degree of said deflection angle.

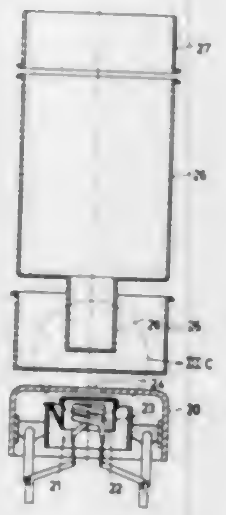
4,620,134
CATHODE-RAY TUBE
Antonius H. P. M. Peels; Antonius J. M. van den Beld; Jan Bijma, and Jan Gerritsen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 21, 1983, Ser. No. 544,169

Claims priority, application Netherlands, Oct. 29, 1982, 8204185

Int. Cl.⁴ H01J *29/46, 29/56*

U.S. Cl. 315—15 **5 Claims**



1. A cathode-ray tube comprising an envelope containing a luminescent screen and an electron gun for producing an electron beam propagating along a longitudinal axis of the tube to the screen, said electron gun including, in order along the direction of propagation of the electron beam, a plurality of electrodes having respective electron-beam-passing apertures including:
(a) a control gate and a first lens electrode defining, during operation, a first lens for forming the electron beam into a crossover;
(b) a second lens electrode which together with the first lens electrode defines, during operation, a second lens for accelerating the electron beam and pre-focusing the electron beam crossover; and
(c) at least a third lens electrode which together with the second lens electrode defines during operation, a third lens for focusing the electron beam crossover into a spot on the screen;
characterized in that said first and second lens electrodes are spaced apart and have their respective apertures centered on the axis, the aperture in the second lens electrode having a diameter smaller than twice that of the first lens electrode, and the effective spacing S-eff between said first and second lens electrodes being smaller than 1 mm., S-eff being defined as the minimum of the function $-\Delta V/E(z)$, where ΔV is the difference between predefined operating voltages of the first and second lens electrodes, and where $E(z)$ is the electrical field strength on the axis between the first and second lens electrodes as a function of the distance z along the axis, the effective spacing S-eff being larger than the geometrical spacing between the first and second lens electrodes.

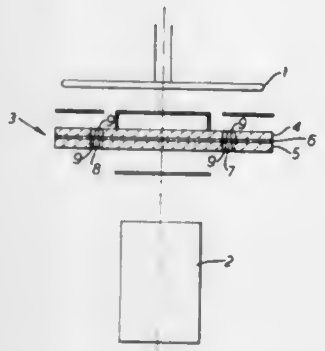
4,620,135
ELECTRIC CIRCUIT INTERRUPTING DEVICES
Timothy P. Donaldson, Great Totham; Raymond P. Knight, Braintree, and John R. Shepheard, Great Baddow, all of England, assignors to English Electric Valve Company Limited, Chelmsford, England

Filed Oct. 25, 1983, Ser. No. 545,272

Claims priority, application United Kingdom, Oct. 27, 1982, 8230695

Int. Cl.⁴ H01J *17/44*

U.S. Cl. 315—326 **12 Claims**



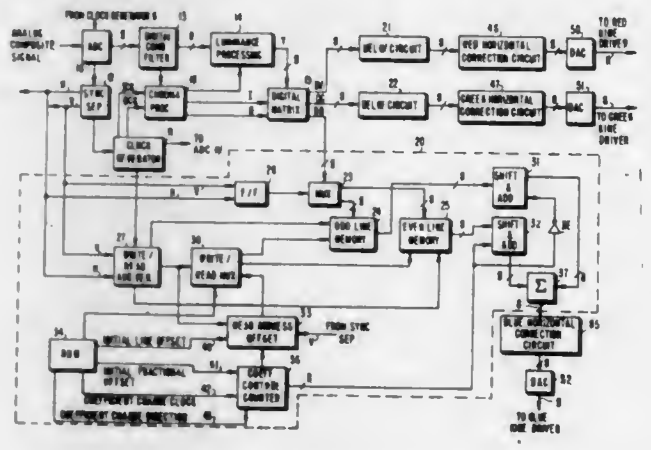
1. A thyratron including at least one apertured control grid disposed between an anode and a cathode, with said apertured control grid being divided transversely into two electrically insulated parts which are separated by a layer of insulating material and which have a spacing one from the other in the region of an aperture through said two parts which is less than the Debye length of that region, and with said aperture or apertures of each said part of said grid being so dimensioned that no point within said aperture or apertures is further from one or the other of said two parts than the aforementioned Debye length.

4,620,136
DIGITAL VERTICAL BEAM LANDING CORRECTION CIRCUIT
Thomas V. Bolger, Merchantville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 29, 1984, Ser. No. 676,141

Int. Cl.⁴ H01J *29/56*

U.S. Cl. 315—371 **6 Claims**



1. Apparatus for correcting a vertical beam landing position error in a cathode ray tube for a video information pixel comprising:
means for providing the correct vertical raster location for said video information pixel;
means responsive to said location providing means for providing a first amount of vertical beam landing position error correction for said video information pixel equal to the number of integer video scan lines of correction required;
means for digitally sampling first and second lines of video information to provide a plurality of sample pixels from each of said first and second lines of video information;
means responsive to said location providing means for combining sample pixels from said first and said second lines of video information to provide a second amount of vertical beam landing position error correction for said video information pixel equal to the fractional line amount of correction required.

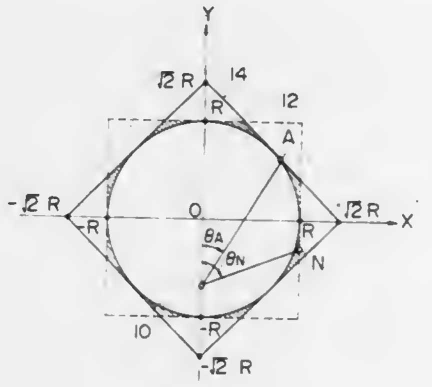
4,620,137
SWEEP TERMINATION SIGNAL GENERATING APPARATUS FOR RADAR SYSTEM
Yoshio Numaho; Yoshio Kato, both of Tokyo; Hiroshi Okada, Chiba, and Tetsuro Ogawa, Tokyo, all of Japan, assignors to Tokyo Keiki Company, Ltd., Tokyo, Japan

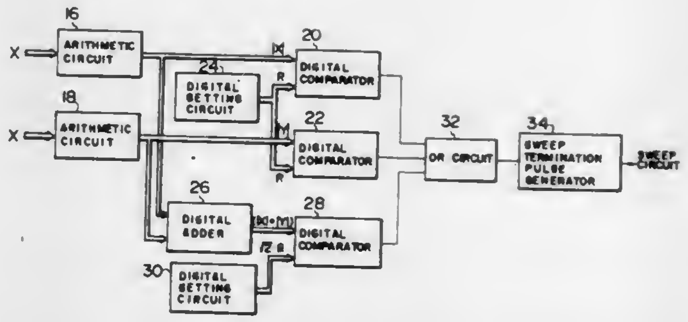
Filed Jul. 19, 1983, Ser. No. 515,253

Claims priority, application Japan, Jul. 21, 1982, 57-127408

Int. Cl.⁴ H01J *29/78;* **G01S** *7/14*

U.S. Cl. 315—378 **4 Claims**





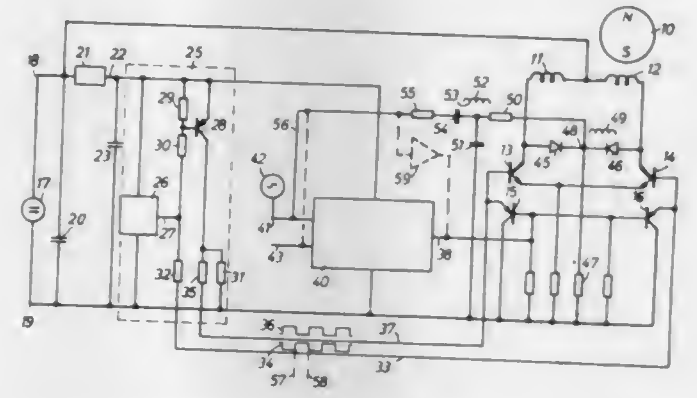
1. In a sweep termination signal generating apparatus for a radar system displaying a radar image through sweeping of an electron beam on a circular CRT screen in accordance with a PPI system, the improvement comprising:
a coordinate position calculating means for outputting a deflection position of said electron beam varying with a variation of an antenna rotation angle in the form of a coordinate position (X,Y) in rectangular coordinates having a central point of said circular CRT screen as a coordinate origin; and
a sweep termination signal generating means for outputting a sweep termination signal which commands a termination of a sweep signal for deflection of said electron beam when one of the following conditions is satisfied:
(1) an absolute value $|X|$ of X of said coordinate position (X,Y) outputted from said coordinate position calculating means is larger than a display radius R of said circular CRT screen;
(2) an absolute value $|Y|$ of Y of said coordinate position X,Y is larger than said display radius R; and
(3) a sum of said absolute values $|X|+|Y|$ is larger than value obtained by multiplying said display radius R by $\sqrt{2}$;
whereby said sweeping is terminated when said electron beam reaches a display boundary of a circumference of said circular CRT screen irrespective of whether a sweep

center is said central point of said circular CRT screen or is an off-center point.

4,620,138
DRIVE ARRANGEMENT WITH COLLECTORLESS D.C. MOTOR

Rolf Müller, St. Georgen, Fed. Rep. of Germany, assignor to Papst-Motoren GmbH & Co. KG, St. Georgen, Fed. Rep. of Germany

Filed Mar. 21, 1985, Ser. No. 714,220
Int. Cl.⁴ H02P *6/02*
U.S. Cl. 318—254 **7 Claims**



1. Drive arrangement having a collectorless d.c. motor comprising a permanent-magnet rotor and a stator winding arrangement; an angular-position transducer arrangement which during operation furnishes angular-position signals that are a function of the angular position of the rotor; an electrical commutation arrangement which receives the angular-position signals and selectively connects the stator winding arrangement to a current source; an rpm-measuring arrangement for generating an actual-rpm signal corresponding to the rotor's actual rpm; a desired-value signal generator for furnishing a signal corresponding to the desired rotor rpm; an rpm-regulating arrangement having respective inputs for the actual-rpm signal and desired-rpm signal and an output, for generating a regulator signal that appears at the output of the rpm-regulating arrangement and is a function of the deviation of the actual rpm from the desired rpm of the rotor, and which controls the supply of current to the stator winding arrangement; and an arrangement for modulating the regulator signal in synchronism with the rotor's rotation, in such a fashion that the current flowing in the stator winding arrangement between each two successive commutation operations initially builds up beginning at a point in time at least approximately coinciding with the point in time at which the commutation occurs, and then drops off again until a point in time at least approximately coinciding with the point in time at which the next-following commutation occurs.

4,620,139
BRUSHLESS D.C. MOTOR

Kazuhito Egami, Tokyo, and Norimitsu Hirano, Kanagawa, both of Japan, assignors to Kabushiki Kaisha Shicoh Giken, Kanagawa, Japan

Filed Jul. 22, 1985, Ser. No. 757,172
Int. Cl.⁴ H02K *29/08*
U.S. Cl. 318—254 **4 Claims**

1. A brushless d.c. motor comprising:

(a) a flat annular rotor magnet secured on a rotary magnetic yoke, said rotor magnet being endless and having 2p contiguous poles of alternating N and S polarity, where p is an integer of at least 1, said poles defining equal areas, having a predetermined width, of non-skewed magnetization;

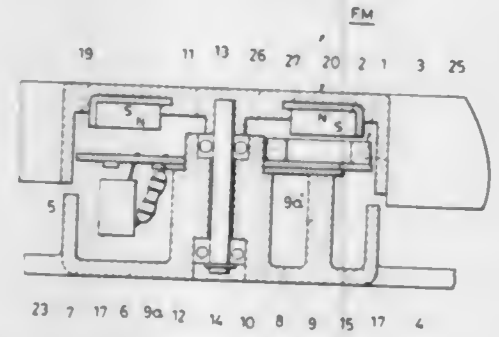
(b) a stator yoke disposed in a face-to-face relation with said rotor magnet in an axial direction;

(c) an air-gap and a printed circuit member positioned between said rotor magnet and said stator yoke;

(d) at least one armature coil of the air-core type arranged on said printed circuit facing said rotor magnet, said armature coil having a sectorial shape and conductor portions contributing to generation of torque, said conductor portions defining an opening angle having a width substantially equal to the width of each of said poles of said rotor magnet;

(e) means for detecting one of the N and S poles of the rotor magnet and causing electric current to flow in a predetermined direction in said armature coil, said detecting means comprising a sole position sensor arranged along one of a said conductor portion of said armature coil and an in-phase position relative to a said conductor portion;

(f) a power control circuit having electrical elements arranged on said printed circuit member;

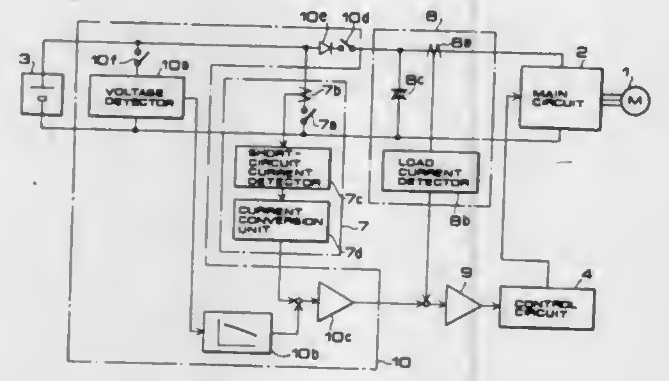


(g) means for orienting said rotary magnetic yoke such that, when no electric current is caused to flow in said armature coil, the areas of the stator yoke opposite to the N magnetic poles of the rotor magnet are substantially equal to the areas of the stator yoke opposite to the S magnetic poles of the rotor magnet, and, when no power is fed to the motor, the central axis which divides the stator yoke in two is located at a point approximately one-fourth of the width of each magnetic pole of the rotor magnet behind, relative to the direction of rotation of said rotor magnet, a point opposite to a said conductor portion of the armature coil which contributes to the generation of torque, said orienting means comprising a cut-off portion of predetermined shape in said stator yoke.

4,620,140
CONTROL DEVICE FOR VARIABLE SPEED ELECTRIC MOTOR

Katsuhiko Chonan, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 10, 1985, Ser. No. 732,719
Claims priority, application Japan, May 11, 1984, 59-92923
Int. Cl.⁴ G05F *1/67, 1/625*
U.S. Cl. 318—332 **4 Claims**



1. A control device for a variable speed electric motor comprising:

a control circuit for supplying a speed command signal to a variable speed electric motor adapted to be driven by a solar battery;

a short-circuit switch connected in parallel to said solar battery;

a current transformer for detecting a short-circuit current of said solar battery adapted to flow upon closing of said short-circuit switch;

a current conversion unit for determining a quantity of light received by said solar battery from said short-circuit current as detected by said current transformer, and generating a predetermined current command signal according to said quantity of light to be received;

a voltage detector connected in parallel to said solar battery for detecting an open circuit voltage of said solar battery;

a converter for converting a temperature of said solar battery according to said open circuit voltage as detected by said voltage detector;

a compensator for compensating said current command signal according to said temperature;

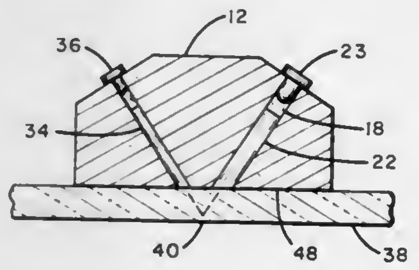
a load current detection unit for detecting a load current to said variable speed electric motor and generating a load current signal; and

an operating unit for supplying a speed command signal to said control circuit according to said current command signal as compensated and said load current signal.

4,620,141
RAIN-CONTROLLED WINDSHIELD WIPERS

Roger D. McCumber, and Rein S. Teder, both of Minnetonka, Minn., assignors to Vericom Corp., Minnetonka, Minn.

Filed Jul. 3, 1985, Ser. No. 751,544
Int. Cl.⁴ B60S *1/08*
U.S. Cl. 318—483 **7 Claims**



1. In a motor vehicle of the type incorporating a windshield and a motor-driven windshield wiper, an improved windshield wiper motor controller for automatically activating the motor of said motor-driven windshield wiper upon detection of moisture droplets on the exterior surface of said windshield, comprising:

(a) an opaque housing secured to the inside surface of said windshield, said housing having a first and a second plurality of bores whose longitudinal axes intersect at points at the exterior surface of said windshield and at an acute angle to the plane of the windshield, said first plurality of bores including individual radiant energy sources and said second plurality of bores including individual radiant energy sensors, individual ones of said sources being associated with individual ones of said sensors;

(b) driver means for periodically energizing said radiant energy sources with pulses of a predetermined duty cycle;

(c) balanced detector means coupled to said plurality of radiant energy sensors for detecting changes in the amount of light energy from said individual radiant energy sources impinging on its associated radiant energy sensor, and producing an error signal proportional to the degree of unbalance of said detector means;

(d) synchronous switching means coupled to said driver means for switching said error signal on and off in synchronism with said pulses from said driver means;

(e) comparator means coupled to said synchronous switching means for producing a voltage output when the amplitude of said error signal falls outside of a predetermined range of amplitudes; and

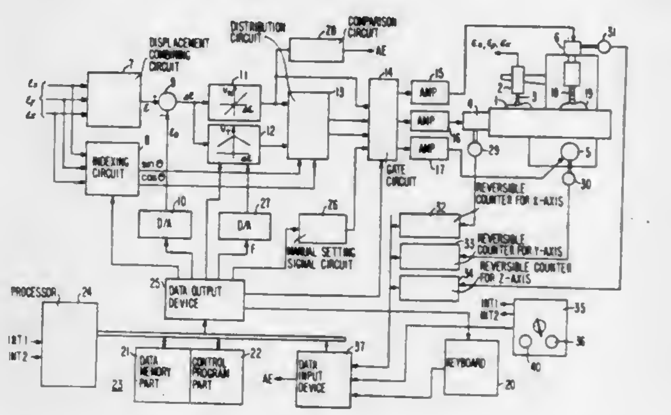
(f) a voltage-controlled oscillator having an input and an output, said input being coupled to receive said voltage output of said comparator means and said output being coupled in controlling relation to said motor.

4,620,142
SEQUENCE SWITCHING SYSTEM IN TRACER CONTROL UNIT

Etuo Yamazaki, and Hitoshi Matsuura, both of Hachioji, Japan, assignors to Fanuc Ltd, Minamitsura, Japan

PCT No. PCT/JP84/00396, § 371 Date Apr. 2, 1985, § 102(e) Date Apr. 2, 1984, PCT Pub. No. WO85/00772, PCT Pub. Date Feb. 28, 1985

PCT Filed Aug. 7, 1984, Ser. No. 723,953
Claims priority, application Japan, Aug. 11, 1983, 58-124939
Int. Cl.⁴ G05B *19/36*
U.S. Cl. 318—578 **5 Claims**

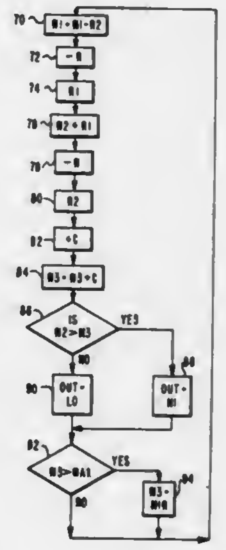


1. A sequence switching system in a tracer control unit which operates to provide a tracing direction and a tracing speed based on signals from a tracer head tracing the surface of a model and performs tracer control, comprising a control switch for inputting a sequence switching signal, a sequence changeover ignore means for ignoring the current sequence changeover during actuation of the control switch, and a sequence changeover execute means for executing the sequence changeover which as been or is to be ignored when the operation of the control switch is released.

4,620,143
DIGITAL PULSE WIDTH MODULATION MOTOR CONTROL SYSTEM

Thomas C. Matty, N. Huntingdon Township, Irwin County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 9, 1984, Ser. No. 670,423
Int. Cl.⁴ H02P *5/40*; H02M *5/458*
U.S. Cl. 318—811 **9 Claims**



1. In apparatus for controlling the energization of a load through an inverter coupled with a power supply, the combination of

first means generating a cosine function by successively providing a first value and generating a sine function by successively providing a second value, with the first value being provided in accordance with the second value and the second value being provided in accordance with the first value,

second means generating a carrier wave by successively providing a third value, with a predetermined time period being provided between each of the successive third values such that one of a sawtooth or a triangular carrier wave is established, and

third means comparing one of the first and second values with said third value for providing successive output signals for controlling said inverter to determine the energization of said load.

4,620,144
SELF-CONTROLLED VARIABLE INDUCTOR WITH AIR GAPS

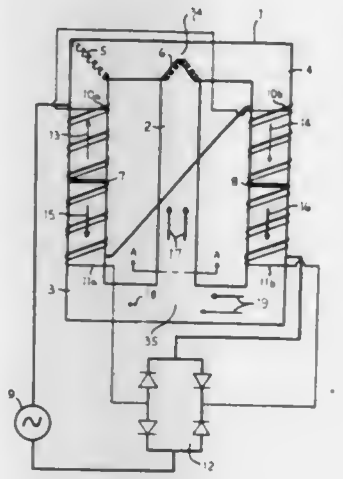
Léonard Bolduc, Ste-Julie, Canada, assignor to Hydro-Quebec, Montreal, Canada

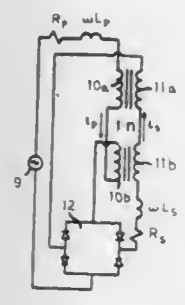
Filed May 15, 1985, Ser. No. 734,099

Claims priority, application Canada, Jan. 16, 1985, 472204

Int. Cl.⁴ G05F *1/325*

U.S. Cl. 323—331 **30 Claims**





1. Variable inductor comprising:

a magnetic core provided with three limbs each having a first end and a second end, said first ends being interconnected through a first common point of the magnetic core, and said second ends being interconnected through a second common point of said magnetic core;

primary winding means supplied with an alternating current;

control winding means; and

means for supplying the control winding means with a direct current having an amplitude which varies in relation with an electric parameter related to the operation of said variable inductor;

said primary winding means and said control winding means being disposed with respect to the magnetic core so that said alternating and direct currents induce in a first of said three limbs an alternating magnetic flux and a direct current magnetic flux which assist each other or which are in opposition with respect to each other when said alternating current has a positive or negative value, respectively, and in a second of said three limbs an alternating magnetic flux and a direct current magnetic flux which are in opposition with respect to each other or which assist each other when said alternating current has a positive or negative value, respectively, the direct current magnetic flux induced in each of said first and second limbs having a density which varies with the amplitude of said direct current for thereby varying the impedance of the primary winding means;

said first limb comprising gap means traversed by the resultant magnetic flux induced in this first limb, and said second limb comprising gap means traversed by the resultant magnetic flux induced in this second limb.

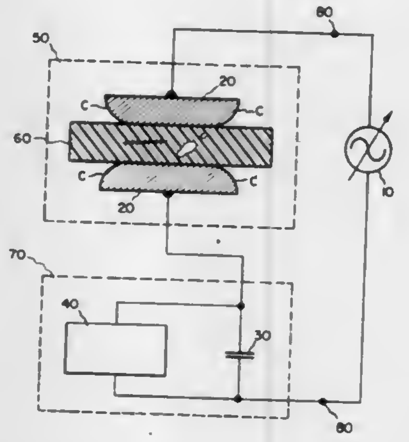
4,620,145
NON-DESTRUCTIVE DETECTION OF VOIDS IN PLASTIC MATERIALS

Peter W. Dietz, Greenwich, and Amandus H. Sharbaugh, Clifton Knolls, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 20, 1984, Ser. No. 642,227

Int. Cl.⁴ G01N *27/61, 27/62, 27/42*

U.S. Cl. 324—54 **8 Claims**



1. Apparatus for detecting the presence of a void contained internally of a dielectric material, comprising:

means for producing an electric field through said material, said field producing means comprising a pair of electrodes disposed to receive said material therebetween and adapted to provide a substantially uniform electric field through said material, said electrode pair being coupled to a source of AC voltage;

means for increasing said field to a level sufficient to cause a partial discharge through said void but insufficient to cause an electrical discharge through said dielectric material, said field increasing means being adapted to increase the magnitude of the voltage applied to said electrode pair, said discharge being characterized by a transfer of a small amount of electrical charge through a gaseous inclusion in said dielectric material; and

means for detecting the discharge through said void.

4,620,146
MICROWAVE MOISTURE SENSOR

Hirotoshi Ishikawa, and Seiichiro Kiyobe, both of Tokyo, Japan, assignors to Kogawa Hokushin Electric Corporation, Tokyo, Japan

Filed Apr. 20, 1984, Ser. No. 602,594

Claims priority, application Japan, Apr. 26, 1983, 58-73538

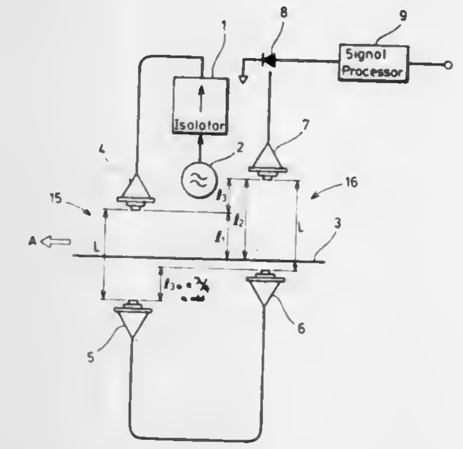
Int. Cl.⁴ G01B *15/02;* G01R *27/26*

U.S. Cl. 324—58.5 A **4 Claims**

1. A microwave moisture sensor for sensing moisture content in a sheet like measurand having a plane surface by measuring the attenuation of microwave passed through said measurand, comprising at least

a first transmission and reception system for emitting a microwave against said measurand and receiving said microwave having passed through said measurand and being attenuated thereby, said first transmission and reception system comprising first transmission horn antenna and first reception horn antenna spaced in confronting relation with respect to each other by a constant distance, with said measurand disposed therebetween;

a second transmission and reception system comprising a second transmission horn antenna disposed on the same side of said measurand in which said first reception horn antenna is disposed, for re-emitting said attenuated microwave as received by said first reception horn antenna against said measurand, and a second reception horn antanna spaced in confronting relation from said said second transmission horn antenna by said constant distance, for receiving said microwave emitted from said second transmission antenna and having passed through said measureand and being attenuated thereby, wherein the offset between antennas at the same side of the measurand, measured in a direction perpendicular to the measurand plane, is equal to an odd multiple of quarter lambda, wherein lambda is the wavelength of said microwave; and



signal processor means for processing signals from said second reception horn with a preset signal indicative of the moisture basis weight of said measurand and predetermined moisture calibration data, thereby to generate a moisture percentage signal which is substantially unaffected by vibration of the measurand.

4,620,147
SIGNAL DETECTOR

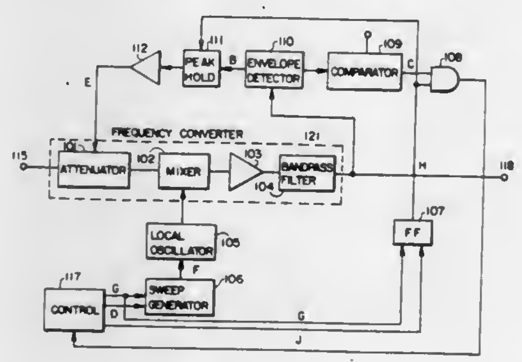
Shoji Niki, Saitama, Japan, assignor to Takeda Riken Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1984, Ser. No. 580,888

Claims priority, application Japan, Feb. 21, 1983, 58-28298

Int. Cl.⁴ G01R *23/16*

U.S. Cl. 324—77 A **19 Claims**



1. A signal detector for detecting the frequency component having the largest amplitude in a plurality of frequency components contained in an input signal, comprising

a sweep generator for generating a sweep signal,

a local oscillator for generating a local signal whose frequency is swept by the sweep signal from the sweep generator,

a frequency converter for converting said input signal to an intermediate frequency signal by mixing said input signal with said local signal,

an envelope detector for detecting the envelope of the intermediate frequency signal from the frequency converter and for providing a corresponding output,

a peak-hold circuit for storing the peak voltage of said output of the envelope detector and for providing a corresponding output,

negative feedback means for controlling the gain of the frequency converter according to said output from the peakhold circuit,

a comparator for comparing said output of the envelope detector with a reference voltage level and for outputting a corresponding comparison signal when said output of the envelope detector exceeds said reference level, after said desired gain is determined,

wherein a desired gain of said frequency converter is determined by the amplitude of said frequency component having the largest amplitude, and said desired gain of said frequency converter is maintained during at least part of a subsequent sweep of said sweep signal, until said output of said frequency converter corresponds to said frequency having the largest amplitude.

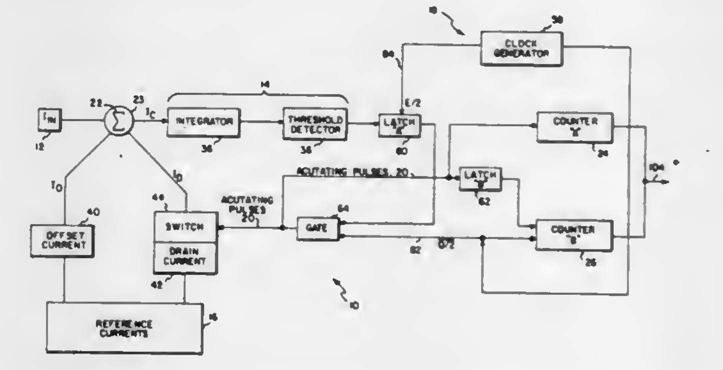
4,620,148
CURRENT METER

Arthur L. Davison, Canyon Country; Martin D. Blackburn, Costa Mesa, and Donald A. Sellek, Manhattan Beach, all of Calif., assignors to Baird Corporation, Bedford, Mass.

Filed Aug. 27, 1984, Ser. No. 644,242

Int. Cl.⁴ G01R *17/06, 19/26;* H03K *13/02*

U.S. Cl. 324—99 D **10 Claims**



1. A current meter possessing a dynamic range of about eight orders of magnitude and having an input and an output, said current meter comprising:

(a) a source of input current coupled to said input;

(b) means also coupled to said input for detecting said input current from said source;

(c) a source of reference currents coupled to said input and said detecting means;

(d) means for generating a series of pulses to actuate said reference currents source;

(e) a counter coupled to said generating means to count said series of pulses applied to actuate said reference currents source during a predetermined time interval;

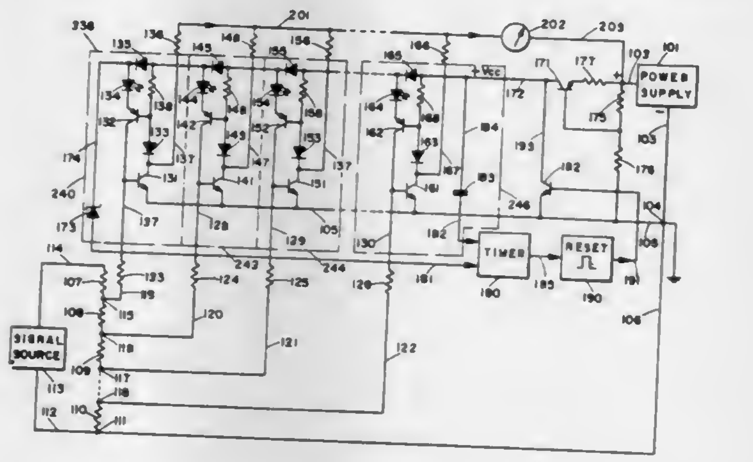
(f) said means for generating said series of pulses including a clock generator to generate clock pulses, a latch and a gate coupled between said detecting means and said counter and enabled by said detecting means; and

(g) a first optical coupler connected between said latch and said detecting means and a second optical coupler connected between said gate and said source of reference currents.

4,620,149

METHOD AND SYSTEM FOR RECORDING AND DISPLAYING INPUT DATA SIGNALS

Edward Cooper, San Diego, Calif., assignor to Power-Science, Inc., San Diego, Calif.
Filed Sep. 27, 1982, Ser. No. 423,603
Int. Cl.⁴ G01R *11/63*
U.S. Cl. 324—103 P **5 Claims**



1. A system for recording and displaying input data signals comprising:

scaling network means having parallel entry output lines responsive to input data signals for providing output signals in lines corresponding to the magnitude of the input data signals,

memory means having a plurality of stages energized by said output signals corresponding to signals in said lines of said scaling network means,

said memory means having means for providing a magnitude output corresponding to each of said stages energized by said scaling network,

meter means responsive to the output of said memory output for reading the particular magnitude of the output of the memory stage energized by said scaling network,

timer means responsive to said memory means providing an output to said meter means for providing a timed reset timing pulse,

memory control means responsive to said reset pulse for interrupting and resetting said memory means to receive corresponding output signals from the scaling network means,

and timer control means for restarting said timer means in mid-timing upon said memory means receiving a higher level corresponding signal from said scaling means.

4,620,150

ELECTRIC METER WITH ELECTRONIC ROLLING DEMAND REGISTER

Warren R. Germer, Dover, and Richard A. Balch, Rochester, both of N.H., assignors to General Electric Company, Somersworth, N.H.
Filed Apr. 12, 1984, Ser. No. 599,742
Int. Cl.⁴ G01R *19/16, 11/64, 1/40*
U.S. Cl. 324—103 R **9 Claims**

1. An electronic demand register for an electric meter comprising:

means for defining a demand subinterval;

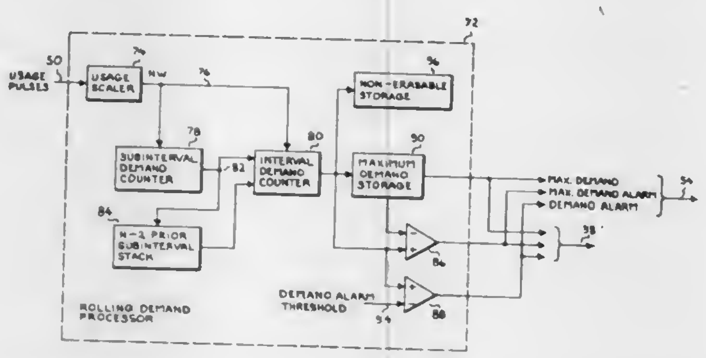
means for defining a demand interval equal to an integral number N of said demand subintervals;

means for summing a power usage data during each demand subinterval with a sum of demand data from N−1 prior demand subintervals to derive a rolling interval demand;

means for storing a maxium demand;

means for comparing said rolling interval demand with said maximum demand; and

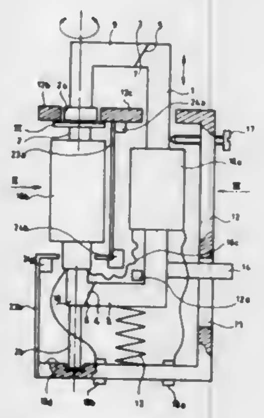
means for replacing said maximum demand with said rolling interval demand if said rolling interval demand exceeds said maximum demand whereby said means for storing a maximum demand remains updated with a maximum rolling interval demand in any preceding demand interval.



4,620,151

ELECTRIC CURRENT MEASURING TONGS WITH MAGNETIC CIRCUIT AND PIVOTING ARM

Bernard Landre, Paris, France, assignor to Universal Technic, Paris, France
Filed Dec. 20, 1983, Ser. No. 563,636
Claims priority, application France, Dec. 22, 1982, 82 21586
Int. Cl.⁴ G01R *1/20;* **H01F** *17/06*
U.S. Cl. 324—127 **9 Claims**



1. Tongs for measuring the electric current flowing in an electric conductor by a magnetic circuit surrounding the conductor and having an electric circuit associated with said magnetic circuit comprising:

a housing; and

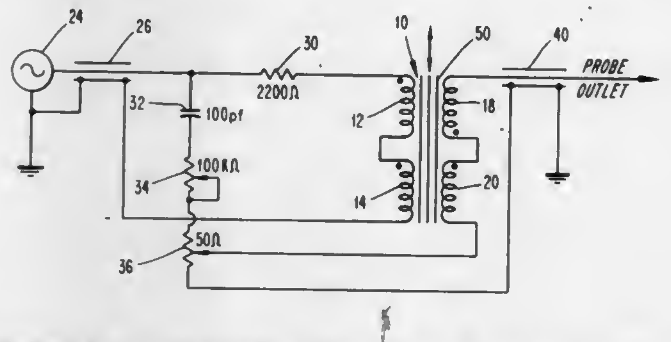
means defining a magnetic circuit including two elements mounted for movement relative to each other, said elements having portions within said housing with an electric winding associated with at least one of said portions and said in-housing portions being provided with confronting complementary oblique faces and said elements having portions projecting out of said housing and provided with confronting complementary oblique faces, said projecting portions being adapted to enclose an electric conductor, said confronting faces being engageable to close said magnetic circuit,

one of said elements being mounted for translational movement and the other of said elements being mounted for rotational movement to disengage said faces and move said faces of said projecting portions apart for reception therebetween of an electric conductor.

4,620,152

LIFT-OFF COMPENSATION OF EDDY CURRENT PROBES BY TRANSLATING WITHOUT ROTATION THE X-Y COORDINATE PLOT OF THE COMPLEX LOCUS OF THE PROBE OUTPUT

James A. Bains, Jr., Pearland, Tex., assignor to AMF Tuboscope, Inc., Houston, Tex.
Filed Jan. 11, 1983, Ser. No. 457,321
Int. Cl.⁴ G01N *27/72;* **G01R** *33/12*
U.S. Cl. 324—225 **7 Claims**



4. Means for compensating the output of an eddy current probe to be used for nondestructively inspecting a steel object to minimize the influence on the phase of the probe output signal of probe lift-off from the surface of the object, comprising the combination

an eddy current probe having a two section coil bobbin with respective primary windings wound in each section and respective secondary windings wound coaxially over a primary winding in each section, said primary windings being wound in series aiding relationship and the secondary windings being wound in series opposed relationship,

an adjustable magnetic core disposed in said coil bobbin,

a source of exciting signals coupled to said primary windings,

probe output means coupled to one end of the series connected secondary windings,

an electrical compensating circuit coupled at one end between said source and said primary windings and having other connections to said series connected secondary windings and to said probe output means,

means for varying the electrical parameters of the compensating circuit and/or the adjustment of the magnetic core to provide a compensating signal of selectable magnitude and phase,

said compensating circuit and magnetic core being adjusted to cause the origin of the complex locus of the probe output signal corresponding to intended operating conditions to translate, substantially without rotation of the complex locus, from its position at the origin of the X-Y coordinate plot made in the absence of said steel object to a new position where phasors from the original origin to different points on the complex locus for a given steel are at substantially the same phase angle.

4,620,153

MAGNETIC RESONANCE IMAGING SYSTEM

Masaaki Hino, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan
Filed Oct. 16, 1984, Ser. No. 661,459
Claims priority, application Japan, Oct. 17, 1983, 58-193750
Int. Cl.⁴ G01R *33/20*
U.S. Cl. 324—309 **7 Claims**

1. A magnetic resonance imaging system in which a magnetic resonance phenomenon is caused in an object to be examined, a magnetic resonance signal which is induced by the magnetic resonance phenomenon is detected, projection data, in which resonance data of specific nucleus is projected on a specific slice of the object to be examined, can be obtained in many directions in accordance with a detection signal, an image reconstruction processing using the projection data is performed, and image data which represents at least one of a spin density of the specific nucleus and a relaxation time constant is obtained, comprising an image reconstruction processing means for performing the image reconstruction processing, said image reconstruction processing means comprising:

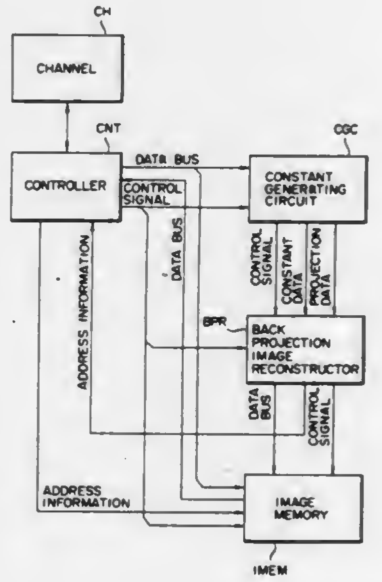
a central processing unit for respectively generating data of a reconstruction starting point of projection data about a first line parallel to a second direction in a reconstruction image matrix in which coordinate axes consist of a first direction corresponding to a direction parallel to a projection angle reference direction and the second direction perpendicular to the first direction, and data of a sampling interval and data of a predetermined correction coefficient value of the projection data along the first and second directions for every projection;

a constant generating circuit for sequentially generating respective data of the sampling interval for the second direction and the correction coefficient value for every projection and for generating the reconstruction starting point data of respective lines which are aligned along the first direction and parallel to the second direction in correspondence to the reconstruction starting point of the first line parallel to the second direction, and the sampling intervals for the first and second directions and the correction coefficient value which are provided from said central processing unit;

a reconstructor in which reconstruction sampling positions of the projection data along a line direction parallel to the second direction corresponding to the reconstruction starting points are obtained by adding the sampling intervals to the respective reconstruction starting points in correspondence with the data of the sampling interval for the second direction and the correction coefficient values and reconstruction starting points of the respective lines parallel to the second direction in the reconstruction image matrix which are supplied from said constant generating circuit, thereby performing back projection on the reconstruction image matrix for the sampling positions;

an image memory for accumulating and holding image data which is back-projected by said reconstructor; and

a timing controlling unit for generating control signals for determining an operation timing and supplying the same to said constant generating circuit, said reconstructor and said image memory.



4,620,154
IMAGING METHOD AND APPARATUS FOR OBTAINING SPIN-LATTICE RELAXATION TIME IMAGE UTILIZING NUCLEAR MAGNETIC RESONANCE

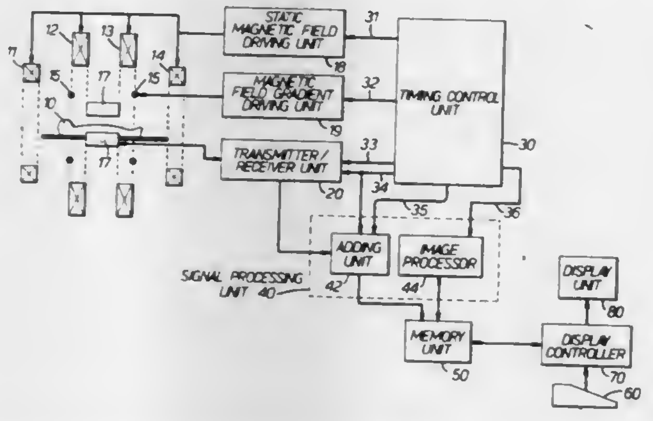
Tamon Inouye, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 19, 1984, Ser. No. 622,267

Claims priority, application Japan, Jul. 20, 1983, 58-130958

Int. Cl.⁴ G01R *33/22*

U.S. Cl. 324—309 **10 Claims**



3. An apparatus for generating an image of a designated slice of an object using a saturation recovery method and an inversion recovery method of nuclear magnetic resonance, comprising:

- a. means for generating a uniform static magnetic field and applying said static magnetic field to said object;
- b. means for generating a magnetic field gradient with said uniform static magnetic field thereby defining a slice of said object orthogonal to said field gradient for a particular resonance frequency;
- c. means for generating first and second pulse sequences in accordance with said saturation-recovery method and said inversion-recovery method respectively, wherein each pulse sequence includes a selective excitation pulse (SEP) and a 180° pulse;
- d. means for generating an alternating magnetic field wherein said alternating magnetic field passes through said designated slice of said object and said alternating magnetic field is applied with said first and second pulse sequences generated by said first and second pulse sequence generating means;
- e. means for detecting spin-echo signals from said object after a predetermined spin-echo interval from said 180° pulse of said first and second pulse sequences;
- f. means for reconstructing first and second images of said designated slice from said spin-echo signals corresponding to said saturation-recovery method and inversion-recovery method respectively; and
- g. means for generating a third image from said first and second images, whereby said first, second and third image each include pixel data, and said third image pixel data represents a distribution of relaxation time T_1 on said designated slice, being a ratio of pixel data of said first image and corresponding pixel data of said second image.

4,620,155
NUCLEAR MAGNETIC RESONANCE IMAGING ANTENNA SUBSYSTEM HAVING A PLURALITY OF NON-ORTHOGONAL SURFACE COILS

William A. Edelstein, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 16, 1984, Ser. No. 641,234

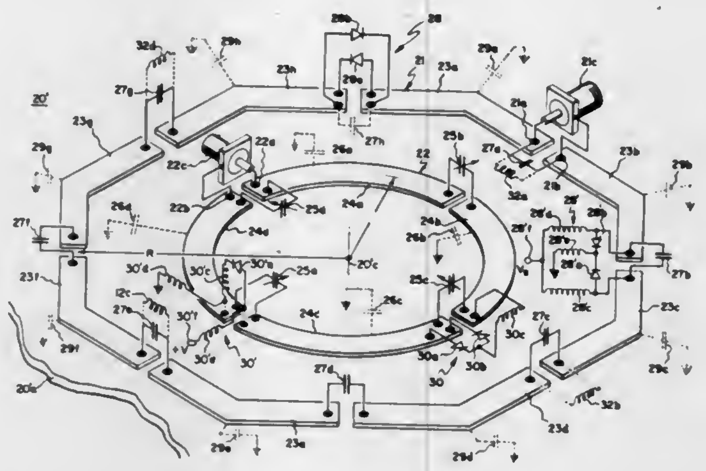
Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—322 **21 Claims**

1. An antenna subsystem for use in magnetic resonance imaging of selected nuclei in a sample, comprising:

a plurality of substantially planar surface coil antennae disposed with the planes thereof in a non-orthogonal registered relationship;

first means, forming a portion of each of said surface coil antennae to be uitlized for sample excitation with an externally-provided radio-frequency (RF) excitation signal, for causing the associated surface coil antenna to be resonant, at the Larmor frequency of the selected nuclei, responsive only to an externally-provided switching signal; and



second means, forming a portion of each of said surface coil antennae to be utilized for response signal reception, for detuning the associated surface coil antenna at least when a radio-frequency signal is induced therein by the RF excitation signal in one of said excitation antennae.

4,620,156
CONDITION INDICATOR

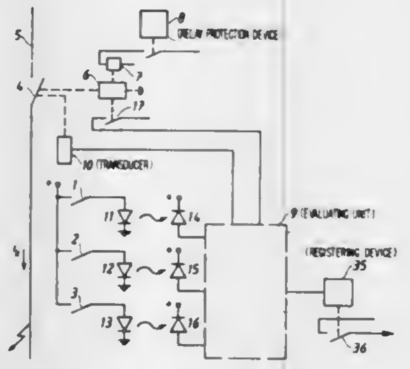
Kjell Alvin, and Kurt Hakansson, both of Ludvika, Sweden, assignors to Asea Aktiebolag, Västerås, Sweden

Filed Oct. 22, 1984, Ser. No. 663,369

Claims priority, application Sweden, Oct. 24, 1983, 8305842

Int. Cl.⁴ G01R *31/02*

U.S. Cl. 324—424 **4 Claims**



1. Means for monitoring the condition of an electric device with current-breaking contacts defining movable parts, in particular a high voltage circuit-breaker, said means comprising members (**1**, **2**, **3**) for sensing the current through the circuit-breaker, a calculating member (**9**) which is controlled from an activating member (**10**) influenced by the movable parts of the device and which is connected to said current-sensing members and arranged to calculate a value—corresponding to the sensed current—of the contact wear during a breaking operation, and a presentation member (**35**) which is controlled from the calculating member (**9**) and arranged to record the degree of the total contact wear, said current-sensing members (**1**, **2**, **3**) comprising a plurality of reed contacts having different sensitivity and/or being arranged in different positions relative to the current path (**5**) through the device, so that the reed contacts (**1**, **2**, **3**) are activated at different current levels, said calculating member (**9**) including means for weighting the pulses generated by the different reed contacts (**1**, **2**, **3**).

4,620,157
REACTIVE POWER TO DC SIGNAL CONVERTER

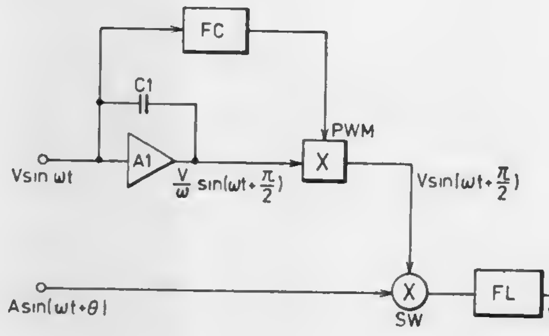
Eiji Hayashi, Tokyo, Japan, assignor to Yokogawa Hokushin Electric Corporation, Tokyo, Japan

Filed Jun. 6, 1985, Ser. No. 741,814

Claims priority, application Japan, Jun. 22, 1984, 59-128496

Int. Cl.⁴ G06G *7/16*

U.S. Cl. 328—160 **8 Claims**


FC
C1
A1
PWM
X
Vsin ωt
$\frac{V}{\omega}\sin(\omega t+\frac{\pi}{2})$
$V\sin(\omega t+\frac{\pi}{2})$
Asin(ωt+θ)
X
SW
FL
OUT
V·Asinθ

1. A reactive power to DC signal converter comprising

a capacitor for shifting the phase of either a voltage input or a current input to an AC circuit;

a frequency detector circuit for producing a signal proportional to a frequency in the AC circuit;

a first multiplier circuit for multiplying the output from said capacitor by the output from said frequency detector circuit;

a second multiplier circuit for multiplying the voltage input or the current input to the AC circuit by the output from said first multiplier circuits; and

a smoothing circuit for smoothing the output from said second multiplier.

4,620,158
PCM SIGNAL DEMODULATING CIRCUIT

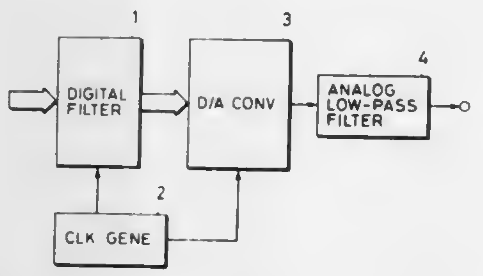
Kenichiro Yasukawa, Saitama, Japan, assignor to Pioneer Electronic Corp., Tokyo, Japan

Filed Aug. 22, 1985, Ser. No. 768,381

Claims priority, application Japan, Aug. 22, 1984, 59-127233[U]

Int. Cl.⁴ H03K *9/00;* **H04B** *14/04*

U.S. Cl. 329—50 **3 Claims**



1. In a PCM signal demodulating circuit comprising means for processing a PCM signal including a digital signal corresponding to a code representative of a first sample value obtained by sampling an analog signal at a first sampling frequency to obtain said analog signal through demodulation, the improvement wherein said PCM signal demodulating circuit further comprising: means for processing said first sample value to calculate a pseudo sample value equivalent to a second sample value obtained by sampling said analog signal at a second sampling frequency higher than said first sampling frequency.

4,620,159
DEMODULATOR FOR MULTIPHASE PSK OR MULTILEVEL QAM SIGNALS

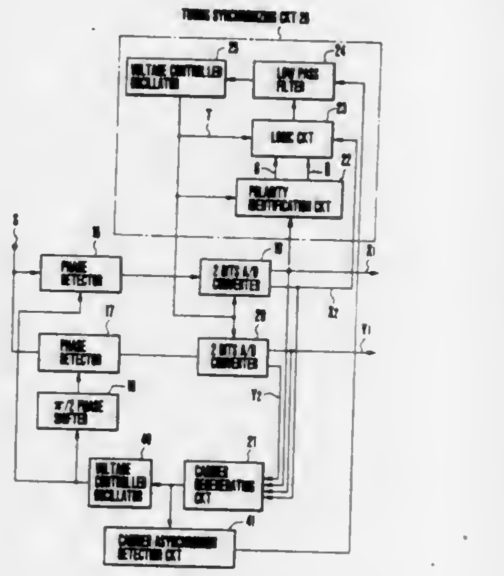
Yasuharu Yoshida, and Manabu Yagi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 27, 1985, Ser. No. 769,922

Claims priority, application Japan, Aug. 27, 1984, 59-177857

Int. Cl.⁴ H03D *3/18*

U.S. Cl. 329—50 **3 Claims**



1. A demodulation device comprising:

phase detector means for demodulating a multiphase PSK carrier wave or a multilevel QAM wave into a baseband signal;

A/D converter means for sampling the output signal of said phase detector means in response to a timing signal and converting it to digital signals;

means responsive to said digital signals from said A/D converter means for supplying a carrier wave to said phase detector means;

timing synchronizing means for generating a timing signal representing a timing of sampling of said A/D converter means, and timing synchronizing means having a timing signal generator, a phase of which is controlled by a predetermined phase control signal, which generates the timing signal, and which includes a low-pass filter and a voltage controlled oscillator adapted to receive the output from said filter and to provide an output in at least a loop with a loop parameter, a polarity identification circuit for receiving a first predetermined signal among said digital signals from said A/D converter means, identifying a polarity of a differential coefficient of the baseband signal at a sampling point of said A/D converter means and generating a polarity identification signal, and logic circuit means for receiving and processing according to a predetermined logic the polarity identification signal from said polarity identification circuit and a second predetermined signal among said digital signals from said A/D converter means and generating and supplying to said timing signal generator a phase control signal representing a deviation of an actual sampling point of the baseband signal from an optimal sampling point; and

carrier asynchronism detecting means for detecting an asynchronism state of said carrier wave supplying means and supplying to said timing synchronizing means a signal which controls said loop parameter of said timing synchronizing means.

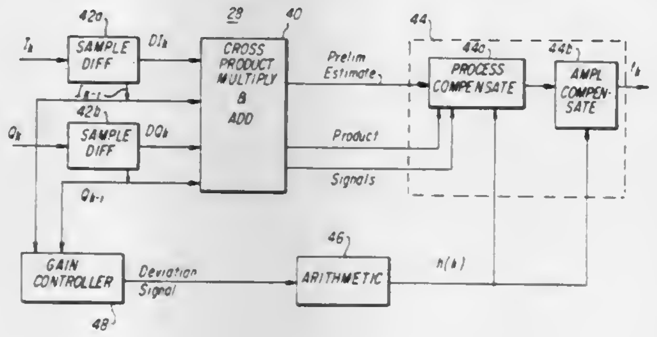
4,620,160
DIGITAL DEMODULATOR FOR CONTINUOUSLY PHASE OR FREQUENCY MODULATED SIGNALS

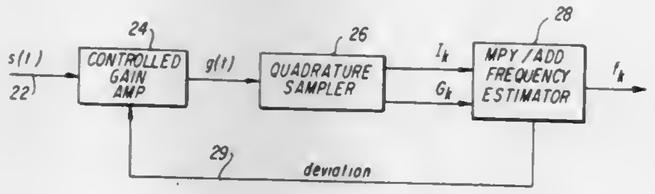
William N. Waggener, Sarasota, Fla., assignor to Fairchild Weston Systems, Inc., Sarasota, Fla.

Filed Dec. 17, 1984, Ser. No. 682,218

Int. Cl.⁴ H03D *5/00*

U.S. Cl. 329—104 **19 Claims**





1. Digital demodulating apparatus comprising:

sampling means for sampling a received phase or frequency modulated signal and for providing samples thereof;

digital circuit estimating means receiving said samples of the received signal for providing a signal representing a first estimate of a modulating phase angle of the received modulated signal; and

means for maintaining a substantially constant input amplitude to said sampling means thereby to permit said digital circuit estimating means to provide said signal representing said first estimate of the modulating phase angle of the received signal by determination of sample differentials and by adding and subtracting products of said samples and said differentials.

4,620,161
COMPOSITE TRANSISTOR CIRCUIT

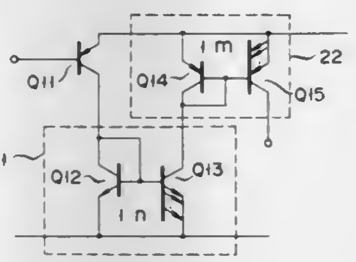
Tatsuo Tanaka, and Nana Shigematsu, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba and Toshiba Audio Video Engineering Co., Inc., both of, Japan

Filed May 8, 1985, Ser. No. 731,980

Claims priority, application Japan, May 23, 1984, 59-104035

Int. Cl.⁴ H03F *3/45*

U.S. Cl. 330—257 **5 Claims**



1. A composite transistor circuit which comprises:

an input transistor of a first polarity whose emitter is connected to a first power source;

a first current mirror circuit formed of transistors of a second polarity; the first current mirror circuit comprising a first reference current circuit and a first output current circuit and producing an output current bearing a first predetermined ratio to first reference current; and wherein one end of said first reference current circuit is connected to the collector of said input transistor; and the other end of said first reference current circuit and one end of said first output current circuit are connected to a second power source; and

a second current mirror circuit formed of transistors of the first polarity; the second current mirror circuit comprising a second reference current circuit and a second output current circuit and producing an output current bearing a second predetermined ratio to said second reference current; and wherein one end of said second reference current circuit is connected to the other terminal of said first output current circuit; the other end of said second reference current circuit and one end of said second output current circuit are connected to the emitter of said input transistor; and the other end of the second output current circuit is connected to an output terminal of the composite transistor circuit;

whereby said input transistor, first current mirror circuit and a second current mirror circuit equivalently constitute a composite transistor whose base, emitter and collector are respectively constituted, as equivalently viewed, by the base and emitter of the first transistor and the other end of the second output current circuit.

4,620,162
TUNABLE TRIANGLE WAVE GENERATOR WITH TWO-PHASE SINUSOIDAL OUTPUTS

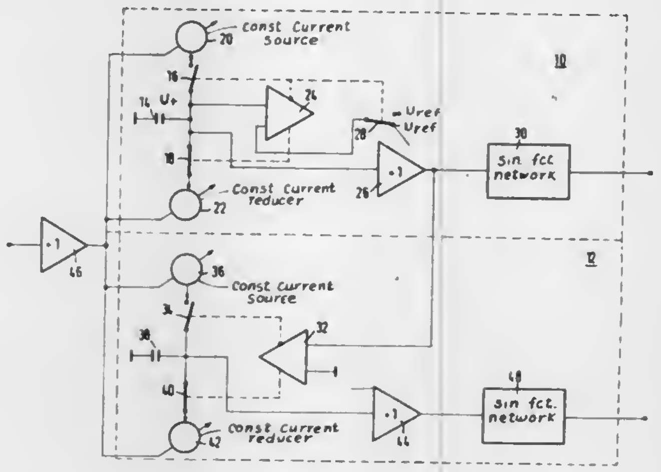
Jörg Quittkat, Neuberg; Gerhard Thiel, Freigericht, and Ruth Ursula, Ronneburg, all of Fed. Rep. of Germany, assignors to Nukem GmbH, Hanau, Fed. Rep. of Germany

Filed Sep. 17, 1984, Ser. No. 651,319

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1983, 3334592

Int. Cl.⁴ H03K *3/023*

U.S. Cl. 331—45 **13 Claims**



8. Apparatus for generating signals comprising:

a first capacitor;

first comparing and switching means for charging said first capacitor when the voltage across said first capacitor falls to a preset lower level and for discharging said first capacitor when the voltage across said first capacitor rises to a preset upper level greater than said lower level;

a second capacitor having a capacitance equal to the capacitance of said first capacitor; and

second comparing and switching means for comparing the voltage across said first capacitor with a preset reference level and for alternately charging and discharging said second capacitor in response to the result of said comparison.

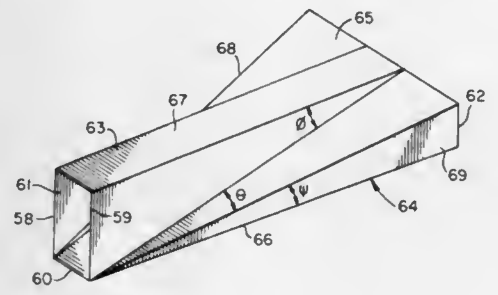
4,620,163
TE$_{10}$ RECTANGULAR TO TE$_{01}$ CIRCULAR WAVEGUIDE MODE LAUNCHER

Lock R. Young, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Apr. 17, 1984, Ser. No. 601,292

Int. Cl.⁴ H01P *1/16*

U.S. Cl. 333—21 R **11 Claims**



1. For use in an electromagnetic wave launcher, a device for converting a TE$_{10}$ rectangular made wave to a TE$_{20}$ rectangular mode wave comprising:

a first open-ended wedge-shaped waveguide section having an open input end of rectangular cross-section to which a TE$_{10}$ rectangular mode wave is to be applied, and tapering to a vertex at an open output end of said device; and

a second open-ended wedge-shaped waveguide section having an open output end of rectangular cross-section from which a TE$_{20}$ rectangular mode wave is to be output, and tapering to a vertex at an open input end of said device; and wherein

said first section is integrally coupled with said second section so that the vertex of said first section at the open output end of said device forms part of an edge of the rectangular cross-section output end of said second section and the vertex of said second section at the open input end of said device forms part of an edge of the rectangular cross-section input end of said first section.

4,620,164
VARIABLE DELAY LINE HAVING LINKING ELECTRODE WITH DEPRESSIONS THEREIN FOR SNUG ENGAGEMENT OF MOVEABLE CONTACT

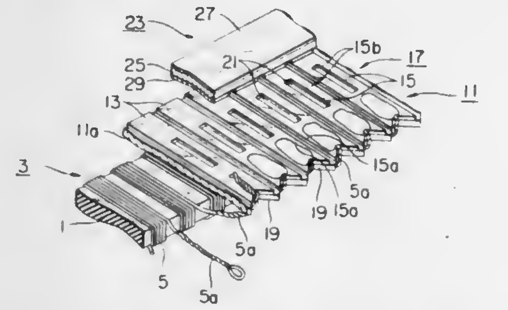
Kazuo Kameya, Tsurugashima, Japan, assignor to Elmec Corporation, Saitama, Japan

Filed Oct. 30, 1984, Ser. No. 666,301

Claims priority, application Japan, Nov. 2, 1983, 58-170175[U]; Nov. 2, 1983, 58-170176[U]; Nov. 18, 1983, 58-178515[U]

Int. Cl.⁴ H03H *7/34*

U.S. Cl. 333—139 **3 Claims**



1. A lumped constant type variable delay line capable of varying the delay time of a superhigh-speed rise signal, comprising:

an inductance element formed by a winding of a conductor and having a plurality of taps thereon;

a plurality of capacitors, each capacitor having a ground electrode on one side connected in a common ground connection and a capacity electrode on the other side,

a plurality of of linking electrodes disposed along said inductance element and adapted to interconnect said taps to said capacity electrodes of said plurality of capacitors, said linking electrodes having fixed contacts; and

movable contact means adapted to advance while keeping in pressed contact with said fixed contacts, thereby permitting selection of particular ones of said taps of said inductance element;

said linking electrodes each incorporating therein a depression for receiving into snug engagement said movable contact means at the time that said movable contact means is set in place on the particular fixed contact element selected.

4,620,165
ELECTRICAL SUPPRESSOR FILTER

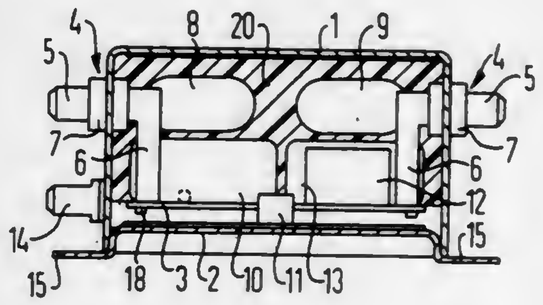
Hans Kinzler, Regensburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 21, 1983, Ser. No. 563,905

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247546; Mar. 29, 1983, 3311443

Int. Cl.⁴ H03H *7/01;* **H02B** *1/10*

U.S. Cl. 333—167 **14 Claims**



1. An electrical suppressor filter comprising: a filter housing including a housing cover, a circuit board located within the housing, and electrical components electrically connected to the circuit board, power connection plugs mounted in the housing wall, said power connection plugs having integral legs that are flat and L-shape and extend through said housing wall into the interior of said housing; said circuit board being adapted to fit over the end portion of said legs; and said circuit board having electrical conductors which are electrically connected to said legs and said circuit board is supported by said legs before the housing cover is mounted on the filter housing.

4,620,166
MULTIPLE WOUND CAPACITOR NOISE FILTER WITH COMMON LAYER

Americo De Faveri, Longarone; Sergio Zanvettor, Ospitale di Cadore, and Antonio Savi, Dogna di Longarone, all of Italy, assignors to Zanussi Elettromeccanica S.p.A., Pordenone, Italy

Filed Oct. 19, 1982, Ser. No. 435,398

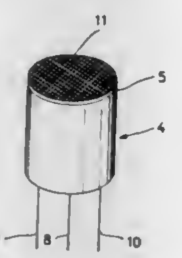
Claims priority, application Italy, Nov. 27, 1981, 34052/81[U]

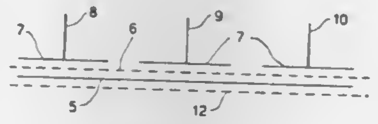
Int. Cl.⁴ H03H *7/00;* **H01G** *4/38*

U.S. Cl. 333—184 **2 Claims**

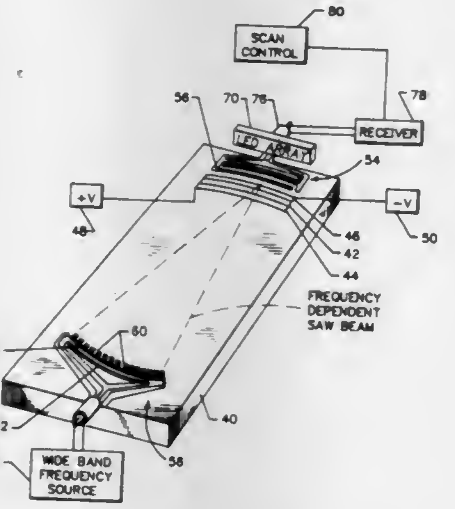
1. A single-winding capacitive filter having first and second opposite ends and comprising: a wound continuous metal layer and a discontinuous metal layer separated by a dielectric, said layers forming a plurality of capacitors having at least one common wound layer and non-common wound layers, said non-common wound layers of said plurality of capacitors each comprise respective portions of said discontinuous metal layer and have respective terminals protruding axially from said first end of said filter, wherein said continuous metal layer pro-

trudes from said second end of said filter at least for a certain number of turns whose protruding portions are electrically interconnected by means of a short-circuit means; whereby self inductance of said filter is reduced.



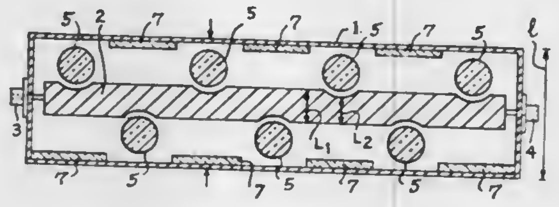


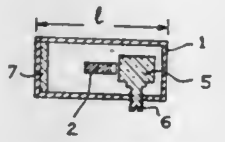
4,620,167
SURFACE ACOUSTIC WAVE SYSTEMS AND METHODS
Robert E. Brooks, Manhattan Beach, and David Penunuri, Placentia, both of Calif., assignors to TRW Inc., Ohio
Filed May 9, 1985, Ser. No. 732,117
Int. Cl.⁴ H03H *9/12, 9/145;* **H04N** *5/30*
U.S. Cl. 333—195 **11 Claims**



1. The method of controlling a surface acoustic wave field comprising the steps of:
propagating a surface acoustic wave along a wave propagating surface, the wave propagating surface including an interaction region disposed along the propagation direction of the surface acoustic wave, in which interaction region wave responsive electric fields exist along with electrical carriers;
increasing the density of the carriers in a selected spatial pattern in the interaction region by illumination with electromagnetic wave energy to produce an interaction between the electric field and the carriers such that wave energy from the acoustic wave is substantially dissipated in selected regions;
varying the selected spatial pattern dynamically during propagation of the surface acoustic wave, wherein the surface acoustic wave varies in direction along the surface and the spatial pattern is varied in accordance with the direction of the surface acoustic wave; and
placing a voltage across the interaction region to more quickly draw off carriers from the interaction region upon termination of illumination at a selected portion of the interaction region.

4,620,168
COAXIAL TYPE TUNABLE HYPERFREQUENCY ELIMINATION BAND FILTER COMPRISING OF DIELECTRIC RESONATORS
Xavier Delestre, Paris, and Marc Sauvage, La Garenne-Colombes, both of France, assignors to Thomson CSF, Paris, France
Filed May 9, 1984, Ser. No. 608,573
Claims priority, application France, May 20, 1983, 83 08423
Int. Cl.⁴ H01P *1/20*
U.S. Cl. 333—202 **14 Claims**



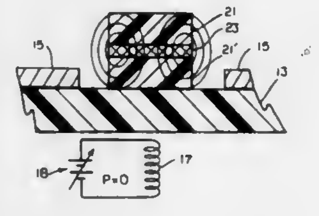


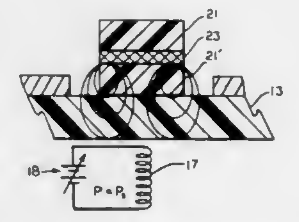
1. A tunable hyperfrequency elimination hand filter comprising:
rectangular box means for forming an external conductor of a coaxial line, said box means having a top, a bottom, two side walls, and a first longitudinal axis;
internal conductor means for forming an internal conductor of said coaxial line, said internal conductor means having a second longitudinal axis which is substantially parallel with said first longitudinal axis, and a width transverse to said second longitudinal axis and parallel to said bottom, said width being reduced at a plurality of predetermined areas along said second longitudinal axis; and
a plurality of cylindrical dielectric resonators disposed so as to form a line of resonators on said bottom adjacent to the reduced width areas of said internal conductor means, each said resonator having a longitudinal axis which is perpendicular to said second longitudinal axis and parallel to said side walls, each said resonator including support means having a dielectric screw connected to said bottom for adjusting a distance between said resonator and said top when said screw is rotated to cause a central frequency of said filter to be tuned.

4,620,169
MAGNETICALLY TUNABLE DIELECTRIC RESONATOR HAVING A MAGNETICALLY SATURABLE SHIELD
Martin J. Blickstein, Austell, Ga., assignor to Murata Erie N.A., Inc., Smyrna, Ga.
Filed Apr. 4, 1985, Ser. No. 719,982
Int. Cl.⁴ H01P *7/10*
U.S. Cl. 333—235 **4 Claims**

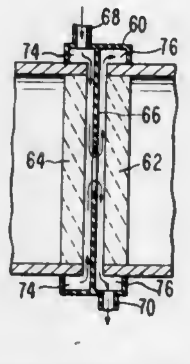
1. A magnetically tunable dielectric resonator comprising a support, a magnetically saturable shield mounted adjacent one side of said support, a ceramic microwave resonator mounted to a side of said shield facing away from said support, means

for inducing magnetic flux of variable flux densities into said shield for resonant frequency tuning, and a second ceramic microwave resonator mounted between said support and said shield.



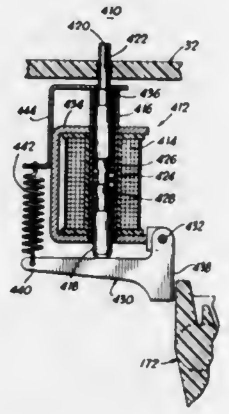


4,620,170
MEANS FOR LIQUID COOLING A MICROWAVE WINDOW
Gordon R. Lavering, Belmont, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.
Filed Dec. 19, 1984, Ser. No. 683,756
Int. Cl.⁴ H01P *1/08*
U.S. Cl. 333—252 **14 Claims**



1. A microwave window assembly, comprising:
first and second dielectric window plates sealed generally parallel to each other across the open section of a waveguide means with a space therebetween;
a dielectric septum having a central aperture, said dielectric septum being mounted in the space between said dielectric window plates and parallel thereto;
means for circulating cooling fluid inwardly between said first dielectric window plate and said dielectric septum, then through said central aperture, and then outwardly between said second dielectric window plate and said dielectric septum.

4,620,171
MOLDED CASE CIRCUIT BREAKER WITH RESETTABLE COMBINED UNDERVOLTAGE AND MANUAL TRIP MECHANISM
Dante Bagalini, Coraopolis, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Division of Ser. No. 569,058, Jan. 9, 1984, Pat. No. 4,553,116. This application Apr. 18, 1985, Ser. No. 724,727
Int. Cl.⁴ H01H *73/00*
U.S. Cl. 335—20 **5 Claims**

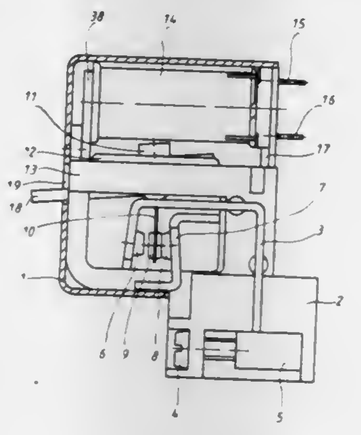


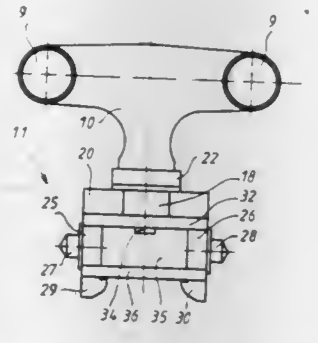
1. An electrical circuit breaker comprising:
a first electrical contact;
a second electrical contact;
operating means for moving said first and second electrical contacts into engagement and out of engagement;
undervoltage trip means for actuating said operating means to perform a trip operation to disengage said first and second contacts upon the occurrence of an undervoltage condition; and
a case for housing said first and second contacts and said operating means and said undervoltage trip means;
said trip means maintaining said operating means in a tripped condition until said trip means is reset and comprising;
a solenoid having an electrical coil;
a pair of first and second separable ferromagnetic plungers serially disposed within said coil;
a compression spring disposed between said first and second plungers for separating said plungers, the compressive force of said compression spring being less than the electromagnetic force provided by said coil when energized by a voltage greater than a predetermined value; and
reset means engageable externally of said circuit breaker for resetting said trip means, set reset means comprising a reset button in engagement with said first plunger and adapted to extend exteriorly of said case through an aperture formed therethrough.

4,620,172
ELECTROMAGNETIC RELAY WITH SWITCH SPRING
Reiner Rudolf, Fridingen, Fed. Rep. of Germany, assignor to Hengstler GmbH Geschaftsbereich Haller-Relais, Wehingen, Fed. Rep. of Germany
Filed Jun. 25, 1984, Ser. No. 624,255
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1983, 3323266
Int. Cl.⁴ H01H *51/22, 51/08*
U.S. Cl. 335—78 **5 Claims**

1. For incorporation in an electromagnetic relay having a pair of spaced apart stationary contacts, and having spaced side frame elements for mounting therebetween and therein a tumbler switch,
a tumbler switch comprising,
a base component including a magnet and a pair of anchor plates on opposite sides of and confining the magnet, said base component constituting a substantial mass and the greater part of the mass of the tumbler switch,
the base component including a pair of oppositely arranged and co-axial trunnions for mounting the tumbler switch in

said spaced side frame elements, said trunnions being positioned symmetrically of the directions of the base component transverse to the axis of the trunnions, and





a switch spring mounted on the base component and extending therefrom, in direction radially of said axis.

4,620,173

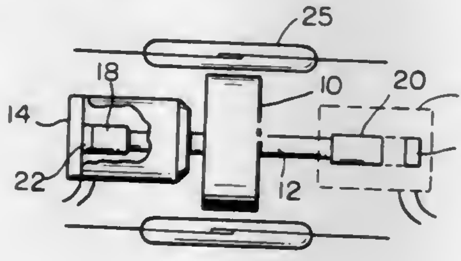
LATCHING MAGNETIC ACTUATOR

Robert B. O'Brien, Pittsford, N.Y., assignor to Robert K. O'Brien, Rochester, N.Y.

Filed May 28, 1985, Ser. No. 738,299

Int. Cl.^{4} H01H *9/00*

U.S. Cl. 335—205 **14 Claims**



1. A magnetic actuator comprising an armature, at least a portion of said armature being ferromagnetic, means mounting said armature for reciprocating, rectilinear travel between two predetermined limit positions relative to a selected frame of reference, a pair of auxiliary ferromagnetic bodies, means mounting each of said auxiliary bodies in a fixed position adjacent to a respective one of said limit positions, and electrical coil means operative upon said ferromagnetic portion of the armature to drive the armature alternately in reciprocation between said limit positions, one of said portion of said armature and said auxiliary bodies being of a hard magnetic material and permanently magnetized, said auxiliary bodies and said ferromagnetic portion of said armature being mutually attracted by magnetic forces whereby said armature is magnetically latched at the limit position to which it is last driven by the coil means.

4,620,174

DEFLECTION UNIT FOR A COLOR TELEVISION DISPLAY TUBE

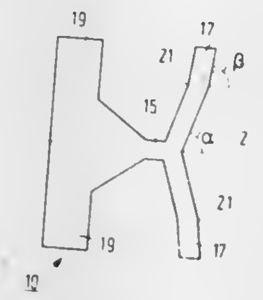
Wilhelmus A. J. Beelaard, and Johannes A. P. de Volder, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 29, 1985, Ser. No. 718,052

Claims priority, application Netherlands, Apr. 6, 1984, 8401102

Int. Cl.^{4} H01F *1/00*

U.S. Cl. 335—212 **4 Claims**



1. A deflection unit for a colour television display tube, which deflection unit comprises a field deflection coil, a line deflection coil and an annular member of a magnetically permeable material surrounding at least the line deflection coil, the field deflection coil being wound so that, when the deflection unit is mounted on a display tube having a neck portion, a display screen and an intermediately located cup-shaped outer surface, it produces, upon energization, a pronounced pincushion-shaped field deflection field on the neck side of the deflection unit and a substantially homogeneous field deflection field on the screen side of the deflection unit, and being combined with magnetic field-conducting means to generate a pronounced barrel-shaped field distribution in the centre of the field deflection field, said magnetic field-conducting means comprising two soft-magnetic elements provided diametrically opposite to each other between the field and line deflection coils, substantially parallel to the magnetic field of the field deflection coil, near the centre of the field deflection field, characterized in that each of the two soft-magnetic elements consists of a slightly curved sheet having a central portion, two limbs extending from said central portion, both on its neckside and on its screen side, substantially transversely to the axis of the annular member.

4,620,175

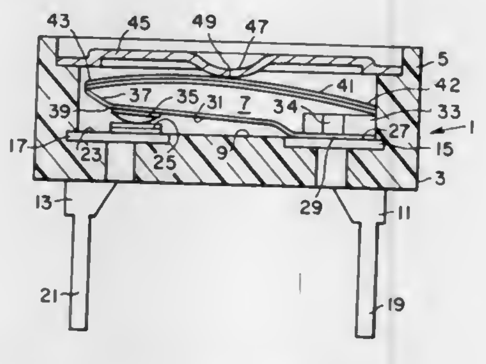
SIMPLE THERMOSTAT FOR DIP MOUNTING

Dennis K. Karr, Sykesville, and David A. Sprankle, Hagerstown, both of Md., assignors to North American Philips Corporation, New York, N.Y.

Filed Oct. 11, 1985, Ser. No. 786,776

Int. Cl.^{4} H01H *37/74*

U.S. Cl. 337—343 **9 Claims**



1. A thermostatic switch comprising:

a housing having a cavity defined by walls,

a first contact and a movable second contact, each disposed in said cavity,

first means, for making respective external electrical connections to said first and second contacts, and

second means, for biasing said second contact against, and alternatively moving said second contact in a movement direction away from, said first contact as a function of ambient temperature; said second means comprising an elongated bistable bimetallic element having two ends and defining an elongation direction and a width direction transverse to the elongation direction and said movement direction, and a contact arm, said second contact being disposed on said contact arm adjacent a free end thereof,

characterized in that said cavity is an elongated cavity having first and second ends and a bottom,

said housing includes an abutment surface at said second end of said elongated cavity,

said switch further comprises a cover fixed to said housing over said cavity, said cover having a fulcrum point thereon, and

said bimetallic element is arranged loose in said cavity, with a small clearance in the elongation direction and the width direction, arranged such that in a first stable condition one end of said element bears against said abutment, the other end bears against said contact arm free end so as to hold the contact arm in a stressed condition adjacent the bottom of the cavity, and intermediate said ends the element bears against said fulcrum; and in a second stable condition said one end is substantially free of said abutment, and said other end and said contact arm free end are moved toward said cover and away from said first contact.

4,620,176

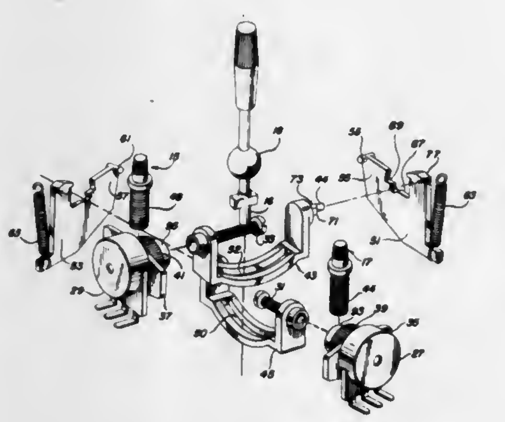
CONTROL STICK MECHANISM

Charles L. Hayes, 770 Cromwell Way, Vista, Calif. 92083

Filed Sep. 25, 1984, Ser. No. 654,379

Int. Cl.^{4} H01C *10/16*

U.S. Cl. 338—128 **11 Claims**



1. An apparatus including first and second potentiometers, said potentiometers drivable by a control stick comprising:

a housing means;

said first and second potentiometers comprising respective first and second potentiometer housings having respective first and second rotatable shafts mounted therein;

first and second gear means affixed to said first and second potentiometer housings, respectively, said first shaft extending through said first gear means and being rotatable with respect to said first gear means; said second shaft extending through said second gear means and being rotatable with respect thereto;

first and second orthogonal fork member means connected to said first and second shafts, respectively, and mounted in said housing means for rotation through an arc with respect to said housing means; and

means for driving each said gear means pivot the attached potentiometer housing with respect to the shaft mounted therein, thereby adjusting the potentiometer setting corresponding to a particular position of said form means.

4,620,177

WINKER DEVICE

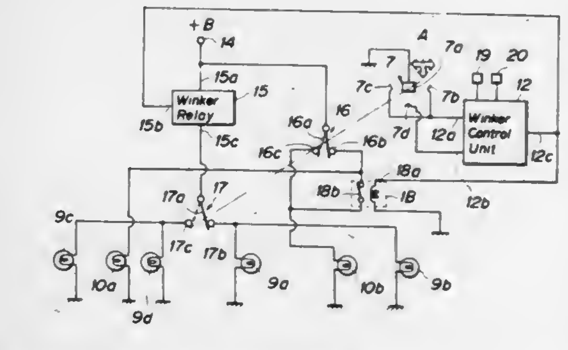
Kaoru Hatanaka, Saitama, and Yukio Miyamaru, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 14, 1985, Ser. No. 691,108

Claims priority, application Japan, Jan. 13, 1984, 59-4601

Int. Cl.^{4} B60Q *1/46, 1/00, 1/26;* **B62J** *6/00*

U.S. Cl. 340—81 R **12 Claims**



12. A winker device, comprising:

a left winker having:

  a left winker lamp adpated for a turning to the left; and

  a left position lamp;

a right winker having:

  a right winker lamp adapted for a turning to the right; and

  a right position lamp;

a winker relay connected to a power source, for intermittently supplying an electric power to said left and right winker lamps;

a first select switch interposed between said winker relay and said left and right winker lamps, for connecting said winker relay constantly to either of said left and right winker lamps;

a position lamp relay disposed between said power source and said left and right position lamps, for connecting and disconnecting said power source to and from said left and right position lamps; and

winker switch means for supplying:

  in accordance with a manual operation, a first signal to said winker relay and said position lamp relay;

  said first signal representing either of said turning to the left and said turning to the right;

  and a second signal to said winker relay and said position lamp relay; and

said second signal representing a completed state of said turning;

wherein:

  when said first signal is supplied from said winker switch means, at least either of said left and right position lamps is made extinguished in correspondence to said first signal and, when said second signal is supplied from said winker switch means, said either of said left and right position lamps, as extinguished.

4,620,178

DOUBLE INTEGRATING-TYPE ANALOG-TO-DIGITAL CONVERTER

Kazufumi Naito, Ohtsu, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Feb. 16, 1984, Ser. No. 580,690

Claims priority, application Japan, Feb. 16, 1983, 58-025149; Feb. 18, 1983, 58-026642

Int. Cl.^{4} H03K *13/02*

U.S. Cl. 340—347 NT **15 Claims**

1. A double integrating-type analog-to-digital converter comprising:

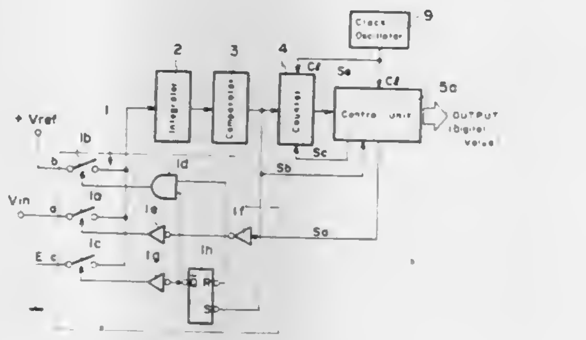
switching means, having an output terminal and having an input terminal operatively connected to receive at least a first input signal which is an analog voltage signal to be measured, and a second input signal which is a reference voltage opposite in polarity to the analog voltage signal, for switching between the first and second input signals;

integrating means, having an input side operatively connected to the output terminal of said switching means and having an output side for outputting an output signal, for integrating the analog voltage over a predetermined integrating interval when said switching means selects the analog voltage signal, and for reverse-integrating the reference voltage when said switching means subsequently selects the reference voltage, until the output signal of said integrating means attained a predetermined value;

counting means, operatively connected to said integrating means, for measuring the time interval required for the reverse integration performed by said integrating means;

memory means for storing a plurality of different set time intervals; and

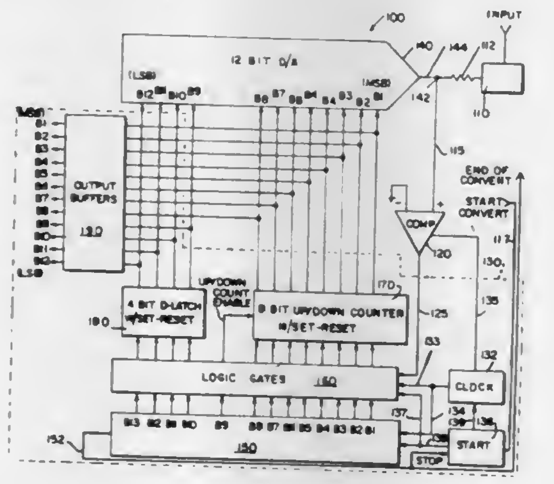
control means, operatively connected to said switching means and said counting means, for controlling said switching means and said counting means, said control means having a computer for controlling the predetermined integrating interval of the analog voltage on the basis of a number of steps executed by said computer, the integrating interval being set by said computer and being selected from among said plurality of different set time intervals stored in said memory means, the analog voltage being applied to said integrating means for a period of time equivalent to the integrating interval set by said computer.



4,620,179
METHOD FOR SUCCESSIVE APPROXIMATION A/D CONVERSION

Frank R. Cooper, West Melbourne, and Kanti Bacrania, Palm Bay, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 527,482, Aug. 29, 1983. This application Aug. 30, 1985, Ser. No. 771,160
Int. Cl.⁴ H03M *1/08*
U.S. Cl. 340—347 AD **10 Claims**



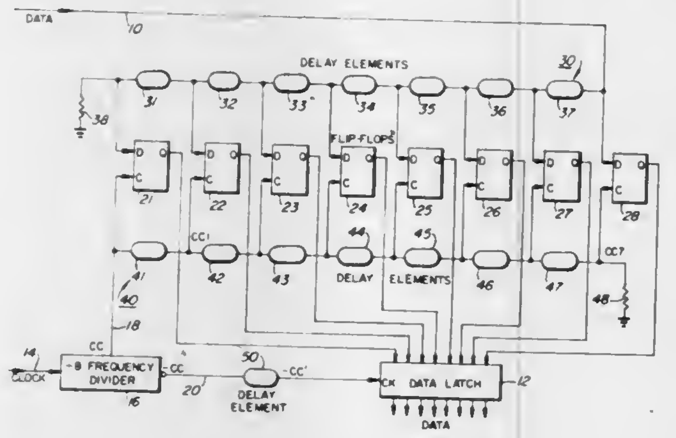
1. A method of high speed digitizing of analog input signals to N bit digital numbers in a successive approximation analog to digital converter means having an internal digital to analog converter means and successive approximation register means both scaled for N bits comprising:

a. supplying input signals to be digitized;
b. successively approximating the states of the first X bits, where X is less than N and greater than one, at a rate which provides less than the desired accuracy of conversion for the first X bits of N bits of successive approximation conversion, but which provides at least the desired accuracy of conversion for the last Y bits, where Y plus X equals N;
c. allowing the input signal to settle to at least the desired accuracy for N bits of successive approximation after successively approximating the Xth bit;
d. comparing the input signal to a signal which is representative of said first X bits and digitally incrementing or decrementing at least one of said X bits in response to said comparison to correct for conversion inaccuracies; and
e. successively approximating the states of the last Y bits, at said rate which provides at least the desired accuracy of conversion for said last Y bits, to complete the digitizing process.

4,620,180
SERIAL-TO-PARALLEL CONVERTER FOR HIGH-SPEED BIT STREAMS

Stephen C. Carlton, Edmonton, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Oct. 21, 1985, Ser. No. 789,543
Int. Cl.⁴ H03K *13/256*
U.S. Cl. 340—347 DD **11 Claims**



1. A serial-to-parallel converter comprising:

a plurality n of data latches each having a clock input, a data input, and a data output;

first and second delay lines coupled respectively to the data nputs and the clock inputs of the data latches;

means for supplying a serial bit stream having a predetermined bit rate N to one end of the first delay line and a clock signal having a frequency N/n to an opposite end of the second delay line; and

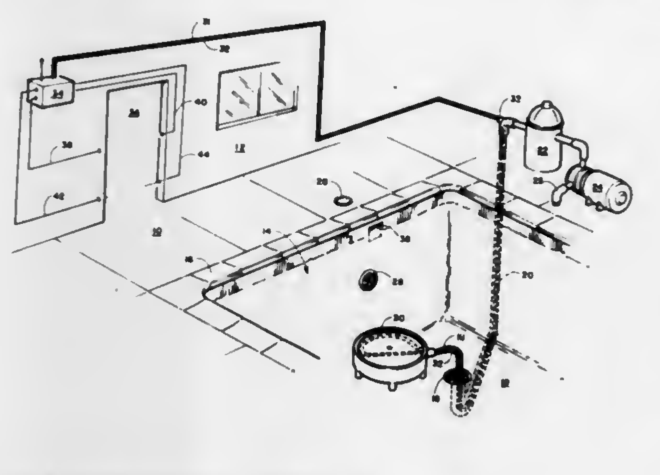
means for deriving parallel bits from the data outputs of the data latches;

the delay lines comprising delay elements providing delays such that the total delay provided by the two delay lines between the data inputs and the clock inputs of any two aqjacent latches is 1/N, and the total delay provided in each delay line between the respective inputs of the alternate data latches is 1/N.

4,620,181
POOL ALARM SYSTEM

Robert L. Sackett, 2282 #43 Caminito Pescado, San Diego, Calif. 92107

Filed Nov. 9, 1984, Ser. No. 669,896
Int. Cl.⁴ G08B *13/00*
U.S. Cl. 340—566 **16 Claims**



1. A pool alarm system comprising:

a sensing means for sensing water movement;

a first light source;

first optic transmission means extending to said sensing means from said light source;

switching means;

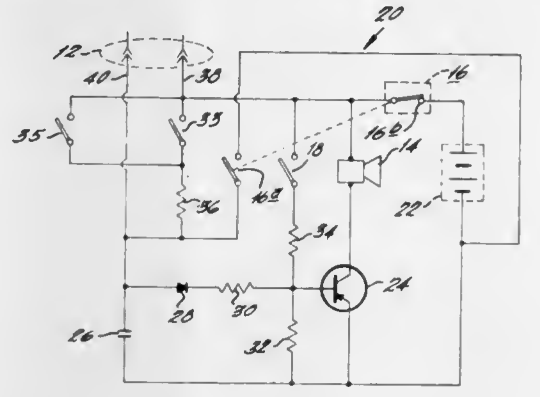
second optic transmission means extending from said sensing means to said switching means for optically operating said switching means response to surface water impact between "on" and "off" states; and

an alarm system connected to said switching means and activated when said switching means is in said "on" state.

4,620,182
SECURITY APPARATUS FOR RETAIL GOODS

Terry A. Keifer, Reading, Pa., assignor to Check Mate Systems, Inc., Reading, Pa.

Filed Jan. 10, 1985, Ser. No. 690,346
Int. Cl.⁴ G08B *13/12*
U.S. Cl. 340—568 **8 Claims**



1. A security apparatus, for use with the display of retail items for the prevention of retail theft, comprising:

an alarm mechanism which generates an alarm signal in response to electrical power being applied thereto;

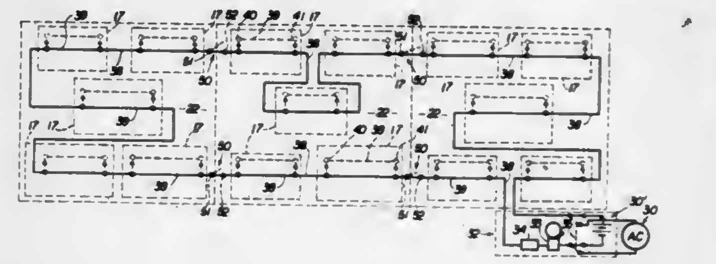
first switch means, interposed between a source of electrical power and said alarm mechanism, for allowing and interrupting the passage of electrical power to said alarm mechanism in response to a switch signal; and

second switch means responsive to a closed circuit, connected electrically between a source of electrical power and said first switch means and capable of mechanical connection to said retail items, for providing a switch signal to said first switch means when said mechanical connection is broken, such that said source does not provide electrical power to said alarm mechanism until said mechanical connection is broken, thereby preserving said source of electrical power, said second switch means including a cable having two insulated conductive elements co-extensive therein, wherein one end of said cable is mechanically connected to said retail item and wherein the other end of said cable has one conductive element electrically connected to said source of electrical power and the other of said conductive elements electrically connected to said first switch means, whereby if said cable is cut, said conductive elements are caused to contact forming a closed circuit between said source of electrical power and said first switch means, thereby providing a switch signal.

4,620,183
ALARM ASSEMBLY FOR JEWELERY-TYPE DISPLAY CASE

Sanders Kottelman, 777-C NW. 29th Ave., DelRay Beach, Fla. 33445

Filed Feb. 13, 1984, Ser. No. 579,416
Int. Cl.⁴ G08B *13/14*
U.S. Cl. 340—568 **15 Claims**



1. An alarm system of the type used in combination with a jewelry-type display case and primarily designed to prevent unathorized removal of articles from the interior thereof, said system comprising:

(a) base means dimensioned and configured for positioning on the interior of a display case and including at least one base element,
(b) said base element including a substrate means and display platform means disposed in supported position on said substrate means, said display platform means structured to substantially define an exposed surface of said base means,
(c) tray means structured to hold and display predetermined articles thereon and positioned in at least partially supported relation on said exposed surface,
(d) circuit means mounted on said base means in communicating relation with said exposed surface and in interconnecting relation to said tray means,
(e) said circuit means comprising conductor segment means secured to said tray means, a signal assembly, a power source, and further including conductor means interconnecting said latter elements in series with one another,
(f) said tray means including said conductor segment means formed thereon and removably positionable in interconnection with said conductor means and electrical communication with said signal assembly and power source, said circuit means structured to cause activation of said signal assembly upon removal of said conductor segment means from interconnection with said conductor means and said tray means from said exposed surface of said display platform means, and said base means comprising a plurality of base elements disposable in interconnected, directly adjacent relation to one another, each base element including base contact means structured to define a position of said circuit means, said base contact means disposable for removable connection with the base contact means of a next adjacent base element.

4,620,184
SENSING ARRANGEMENT ON A MATERIAL ROLL

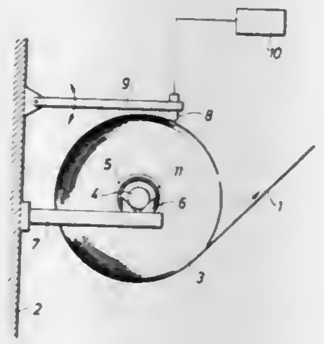
Ulf Nedstedt, Eslöv, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Feb. 19, 1985, Ser. No. 702,734

Claims priority, application Sweden, Mar. 7, 1984, 8401246

Int. Cl.⁴ G08B *21/00*

U.S. Cl. 340—675 **9 Claims**



1. An arrangement for sensing thickness of a roll of weblike material, comprising a movable sensing device positioned against a peripheral section of the roll so that at a predetermined distance from the roll center, the sensing device is acted upon by a field-generating element positioned in a central part of the roll.

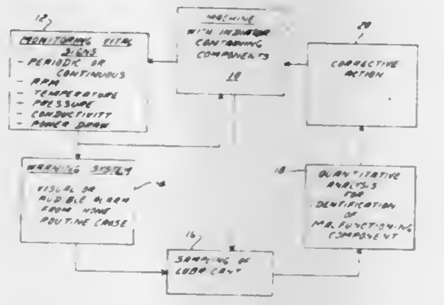
4,620,185
WEARING PART DIAGNOSTIC SYSTEM EMPLOYING TRACER ELEMENTS

Thomas G. Plahmer, Waukesha, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Apr. 8, 1985, Ser. No. 721,097

Int. Cl.⁴ G08B *21/00*

U.S. Cl. 340—682 **12 Claims**



1. In a system for monitoring a machine having an internal lubrication system and various replaceable wearable components, such that the lubricant is common to all components, the process of monitoring the condition of machine lubricant to pinpoint malfunctioning components comprising:

(a) distributing a distinct trace element indicator material in each wearable component;

(b) establishing acceptable cumulative levels of indicators from all wearable components in said lubricant;

(c) sampling said lubricant; and

(d) analyzing said sample of said lubricant by means capable of distinguishing between various indicators to detect the presence and changes in the amount of the particular indicator or indicators which signify a specific malfunctioning component.

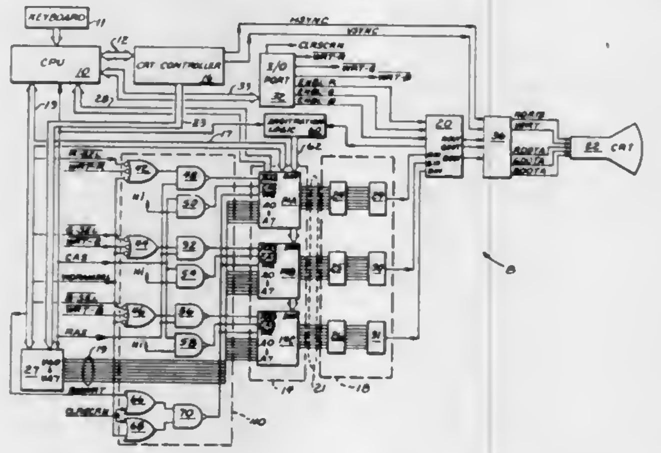
4,620,186
MULTI-BIT WRITE FEATURE FOR VIDEO RAM

Charles A. Krause, Stevensville, and Babu Rajaram, St. Joseph, both of Mich., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Aug. 30, 1983, Ser. No. 527,943

Int. Cl.⁴ G09G *1/28*

U.S. Cl. 340—703 **1 Claim**



1. In a raster scanned color video display system comprised of a video display unit having a matrix of discrete picture elements and three memory banks coupled thereto for the storage of primary color video data therein representing a respective primary color component of each of said discrete picture elements, wherein each memory bank is comprised of a plurality of memory locations arranged in a matrix format and wherein each memory location is designated by a unique row and column address combination, means for simultaneously writing said primary color video data into two or more of said plurality of memory banks comprising:

a central processor unit coupled to each of said memory banks by means of a data bus for writing a respective primary color component of each of said discrete picture elements into each of said memory banks;

a control unit coupled to each of said memory banks and to said central processor unit, for reading said primary color video data therefrom and providing said data to said video display unit;

first logic means coupled to said central processor unit and to each of said plurality of memory banks for alternately coupling said central processor unit and said control unit to said plurality of memory banks for writing said video data into and reading said video data out of said memory banks and for alternately generating row and column address signals; and

second logic means coupling each of said memory banks in parallel to said central processor unit and responsive to memory bank select signals output therefrom representing each of said respective memory banks for simultaneously coupling said central processor unit to two or more of said plurality of memory banks wherein said primary color video data is provided in parallel to two or more of said memory banks at the same time, said second logic means further coupled to said first logic means for providing said row and column address signals to each of said memory banks simultaneously.

4,620,187
TRANSFORMER COUPLED, SOLID STATE COMMUNICATIONS LINE SWITCH

David E. Conner, Cary, N.C., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 11, 1984, Ser. No. 680,621

Int. Cl.⁴ H04Q *3/00;* **H04J** *3/02, 3/00;* **H04B** *3/00*

U.S. Cl. 340—825.05 **13 Claims**

1. In a communications network having a transmission medium operable for transmitting electrical signals provided by one or more DTEs connected to said medium a switching

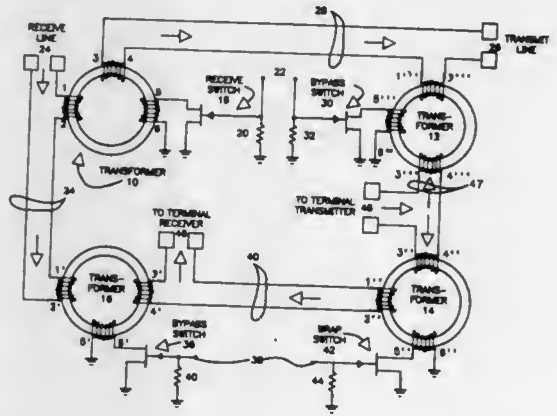
arrangement operable for inserting and/or de-inserting the DTE from the transmission medium comprising:

a first means operable for controlling the flow of electrical signals on the transmission medium;

a second means operable for controlling the flow of electrical signals into and/or from said DTE;

a first conductive means operable for coupling the first and second means to an input side of the transmission medium;

a second conductive means operable for coupling the first means to an output side of said transmission medium;



a third conductive means operable for coupling the second means to the DTE;

a fourth conductive means operable for coupling the second means to the first means; and

control means coupled to the first and second means and operable for selective disabling said first and second means so that electrical signals from a DTE are being transmitted onto the transmission medium or being wrapped from the output of said DTE to its input or signals on said transmission medium are being transmitted into the DTE or are being made to bypass said DTE.

4,620,188
MULTI-LEVEL LOGIC CIRCUIT

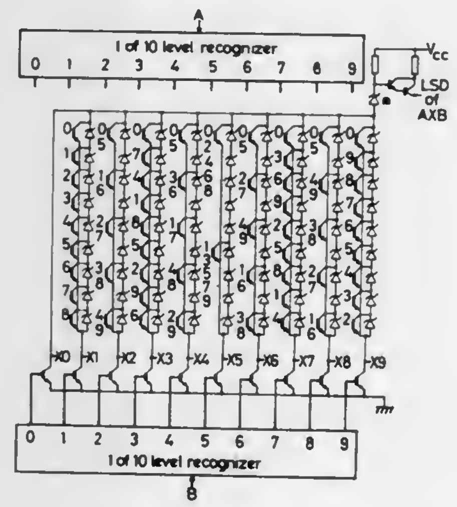
Chanty Sengchanh, Sandringham, New Zealand, assignor to Development Finance Corporation of New Zealand, Auckland, New Zealand

Filed Aug. 13, 1982, Ser. No. 408,118

Claims priority, application New Zealand, Aug. 17, 1981, 198054

Int. Cl.⁴ H04Q *1/00;* **H03K** *19/08*

U.S. Cl. 340—825.87 **7 Claims**



1. A multi-level logic circuit operating in a base n where n is greater than 2, comprising

(a) first logic circuit means including

(1) a first input level detector having one multi-level detector for detecting any one of n logic levels and for producing a first output signal in response to an appropriate input logic level;

(2) a first control switching device connected with said first input level detector for producing a first select signal in response to the output signal from said first level detector; and

(3) a first output level generator connected with said first control switching device for producing in response to said first selected signal an output of logic level (n−1−a), wherein a is the input logic level detected by said first input level detector; and

(b) second logic circuit means including

(1) a second input level detector having a plurality of multi-level input lines arranged so that the highest logic level on one of said input lines is transmitted to the second input level detector which produces a second output signal in response to the highest logic level;

(2) a second control switching device connected with said second input level detector for producing a second selected signal in response to said second output signal; and

(3) a second output level generator connected with said second control switching device for producing in response to said second select signal an output of logic level (n−1−a_x), where a_x is the highest logic level of the input logic levels (a_1, a_2, a_3 . . . a_k) detected by said second input level detector;

said first and second input level detectors each including voltage dependent input switching means, respectively, and said first and second output level generators each including a voltage divider capable of providing n different voltage outputs, respectively.

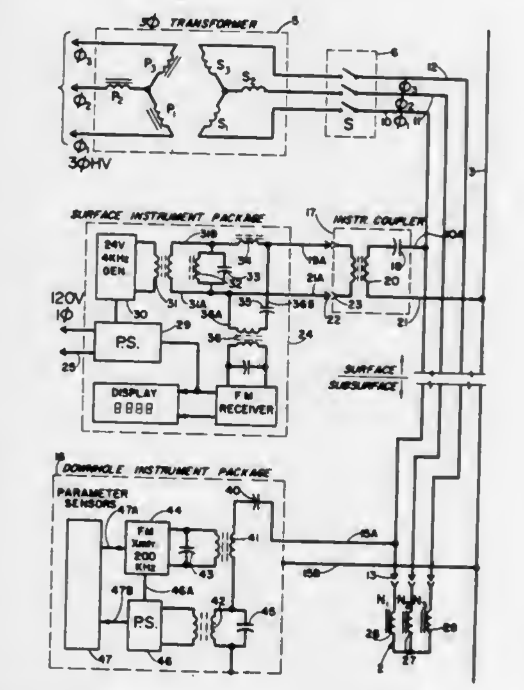
4,620,189
PARAMETER TELEMETERING FROM THE BOTTOM OF A DEEP BOREHOLE

Claude A. Farque, Tulsa, Okla., assignor to Oil Dynamics, Inc., Tulsa, Okla.

Filed Aug. 15, 1983, Ser. No. 523,455

Int. Cl.⁴ G01V *1/00;* **E21B** *29/02, 47/00*

U.S. Cl. 340—856 **14 Claims**



1. In an apparatus for pumping a liquid from a borehole in the earth, including at least a string of tubing from the surface to a selected depth in said borehole, eectric motor means and pump means supported at the bottom end of said tubing, alternating current electrical power supply means at the surface, of a first selected frequency and a multiple conductor cable that is subject to varying resistance or insulation leakage, said cable connected to said power supply means at the surface end, and to said motor means at the bottom end of said cable;

apparatus for use in combination with said multiple conductor cable to measure, in said borehole, at least one well parameter indicative of a condition contiguous to said motor and pump means and transmitting to the surface a signal representative of said at least one well parameter, comprising:

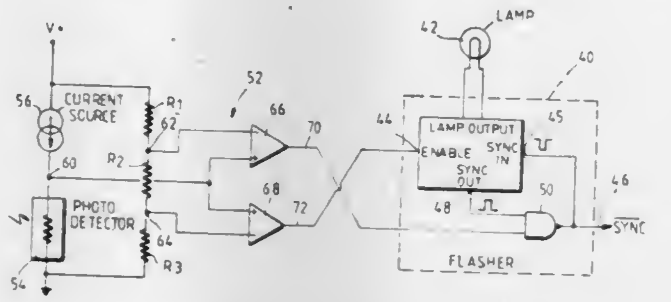
(a) means at the surface for generating an intermediate frequency signal;
(b) electrical coupling means at the surface for connecting said intermediate frequency signal between at least one conductor in said cable and ground;
(c) downhole instrument package means positioned in said borehole and connected to said at least one conductor and ground, said downhole instrument package means including;
(1) power supply means energized by said intermediate frequency signal;
(2) at least one non-eddy current sensor means for sensing said at least one parameter;
(3) means to create a low frequency signal as a function of said parameter;
(4) means to generate a high frequency carrier signal of the order of 200 KHz,
(5) means to modulate said carrier signal with said low frequency signal to create a modulated carrier signal;
(6) means transmitting said modulated carrier signal to said at least one conductor; and
(d) means to demodulate said modulated carrier signal to reconstitute said low frequency signal; and
(e) means to indicate said well parameter as a function of said reconstituted low frequency signal.

4,620,190

METHOD AND APPARATUS FOR SIMULTANEOUSLY ACTUATING NAVIGATIONAL LANTERNS

David C. Tigwell, Spring, and Marion L. Recane, Houston, both of Tex., assignors to Tideland Signal Corporation, Houston, Tex.

Filed Jul. 30, 1984, Ser. No. 635,977
Int. Cl.⁴ G08G *3/00*
U.S. Cl. 340—985 **8 Claims**



1. In a navigational lantern system having a plurality of navigational lanterns, each lantern including means for providing a synchronizing signal, each lantern including a synchronizing terminal for actuating the lantern, and the input and output from each lantern connected to the synchronizing terminal of the other lanterns, and a light level sensing means connected to each lantern, the improvement in the light level sensing means comprising,

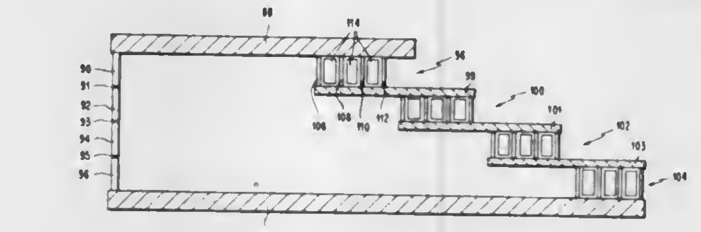
each light level sensing means sensing the thresholds of day, twilight, and night,
means connected to the sensing means, when the sensing means senses day, for disabling the connected lantern and disabling the means for providing a synchronizing signal from the connected latern,
means connected to each sensing means, when the sensing means senses twilight, enabling the connected lantern to receive a synchronizing signal, but disabling the means for providing a synchronizing signal from the connected lantern, and
means connected to each sensing means, when the sensing means senses night, enabling the connected lantern for lighting, and enabling the means for providing a synchronizing signal from the connected lantern.

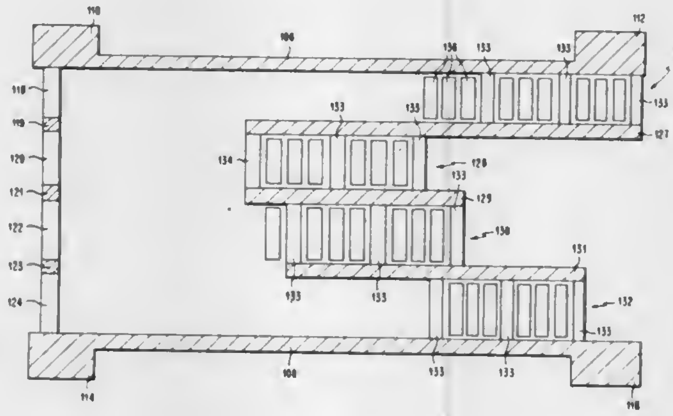
4,620,191

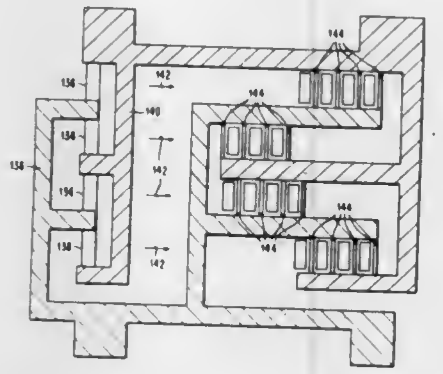
SURFACE ACOUSTIC WAVE PASSIVE TRANSPONDER HAVING PARALLEL ACOUSTIC WAVE PATHS

Halvor Skeie, 3338 Pearltone Dr., San Jose, Calif. 95117

Filed Jun. 30, 1983, Ser. No. 509,525
Int. Cl.⁴ G01S *13/80;* H03H *9/21, 9/205*
U.S. Cl. 343—6.8 R **9 Claims**







1. In a passive transponder adapted for use in an interrogation system for transmitting a reply signal containing coded information in response to the receipt of an interrogating signal, said transponder comprising:

(a) a substrate having a substrate surface defining paths of travel for surface acoustic waves;
(b) at least one launch transducer arranged on said surface for converting said interrogating signal into surface acoustic waves which propagate along said paths of travel;
(c) a plurality of tap transducers arranged on said surface at spaced intervals along said paths of travel for converting said surface acoustic waves into respective output signals; and
(d) circuit means connected to said tap transducers for combining said output signals to form said reply signal;

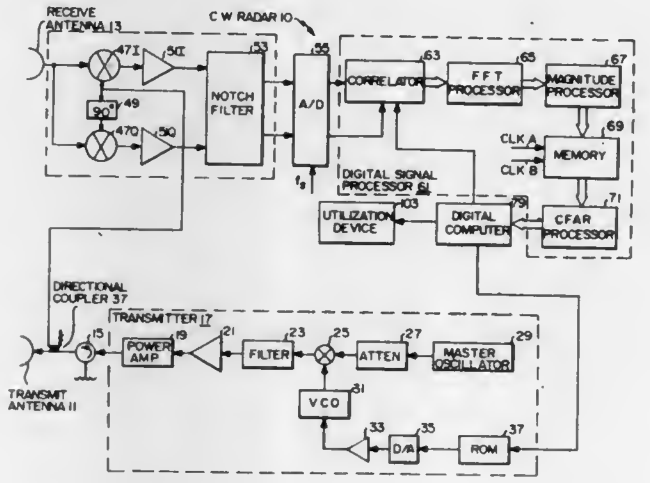
the improvement wherein said tap transducers are arranged acoustically both in series and in parallel along said paths of travel.

4,620,192

CONTINUOUS WAVE RADAR WITH RANGING CAPABILITY

John D. Collins, Burlington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Sep. 29, 1983, Ser. No. 537,475
Int. Cl.⁴ G01S *13/26*
U.S. Cl. 342—128 **1 Claim**



1. A frequency modulated continuous wave radar adapted to determine the range of a target by measuring the propagation delay of echo signals therefrom, such radar comprising:

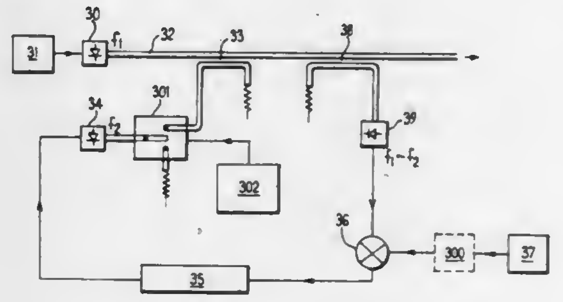
(a) a transmitter for continuously emitting a beam of radio frequency energy with repetitive linearly varying modulation, the period of such modulation being equal to, or greater than, the largest propagation delay;
(b) a receiver for converting all received signals to baseband signals and for passing only signals having a frequency above a predetermined frequency;
(c) first means, responsive to the signals out of the receiver, for converting such signals to a first plurality of sets of complex digital numbers representative of echo signals from a target during each modulation period and for storing such sets of complex digital numbers;
(d) a read only memory means storing a set of complex digital numbers representative of the modulation waveform, as modified by the receiver, of the transmitted signal;
(e) a digital correlator, responsive repetitively to the complex digital numbers in the first plurality of stored sets of complex digital numbers and to the set of complex digital numbers in the read only memory means, such latter set being repetitively read with differing delays with respect to the modulation waveform on the transmitted signal, for producing a second plurality of differently correlated signals in the form of sets of complex digital numbers having the format Ir±Qi where I and Q are the real and imaginary parts of the complex digital numbers out of the first means and r and i are the real and imaginary parts of the complex digital numbers out of the first means and r and i are the real and imaginary parts of the complex digital numbers out of the read only memory means;
(f) Fourier transforms means, responsive to the correlated signals, for producing a like plurality of frequency spectra; and
(g) second means, responsive to the frequency spectra out of the Fourier transform means, for calculating the propagation delay of the most correlated signals.

4,620,193

OPTICAL PHASE ARRAY RADAR

John S. Heeks, Old Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 11, 1984, Ser. No. 619,653
Claims priority, application United Kingdom, Jun. 16, 1983, 8316414
Int. Cl.⁴ G01S *13/00*
U.S. Cl. 342—200 **10 Claims**



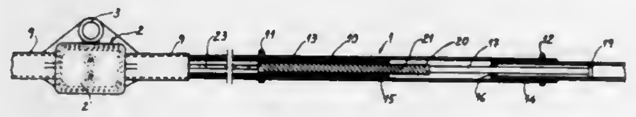
1. In an optically controlled phased array radar, the combination comprising: a plurality of sources of optical carriers; a plurality of antenna elements; a central processor; and a plurality of individual optical waveguide transmission links connecting said central processor to said antenna elements to transmit said optical carriers thereto, said central processor controlling the operation of said antenna elements by microwave signals impressed upon said optical carriers, each of said links including means for monitoring the microwave frequency phase shift introduced by that link to provide a compensation signal, said compensation signal being used to regulate the optical path length of that link.

4,620,194

TUNABLE ANTENNA WITH VARIABLE SERIES L-C NETWORK

Joaquin Bel Moratalla, 4 & 6 Carmen Street, Badalona (Barcelona), Spain

Filed Nov. 4, 1983, Ser. No. 548,574
Claims priority, application Spain, Nov. 16, 1982, 517418
Int. Cl.⁴ H01Q *1/08, 9/04*
U.S. Cl. 343—747 **7 Claims**



1. Emitting and receiving antenna system for accommodating all bands and frequencies within a given range and for operating selectively adjustably in resonance at a given emitting or receiving frequency, comprising:

at least one antenna component containing therewithin a variable inductor having a fixed inductor part and a shiftable inductor part arranged for selectively varying the inductance upon selectively shifting the shiftable inductor part relative to the fixed inductor part, and a variable capacitor having a fixed capacitor part and a shiftable capacitor part arranged for correspondingly selectively varying the capacitance upon correspondingly selectively shifting the shiftable capacitor part relative to the fixed capacitor part.
drive means arranged for shifting the shiftable inductor part relative to the fixed inductor part and conjointly for shifting the shiftable capacitor part relative to the fixed capacitor part, and
control means arranged for controlling the drive means for selectively shifting the shiftable inductor part and the shiftable capacitor part conjointly for achieving selective

antenna resonance tuning at an exact point corresponding to the desired operating band and frequency,

the inductor and capacitor being arranged in longitudinal end to end relation within said at least one antenna component, and including an inductor friction runner part and an inductor coil part in operative friction contact therewith, one of which inductor parts is fixed and the other of which is longitudinally shiftable relative thereto, and a capacitor outer concentric tubular part and a capacitor inner concentric stud part in radially spaced relation to each other whereby to form corresponding capacitor plates, one of which capacitor parts is fixed and the other of which is longitudinally shiftable relative thereto,

the shiftable inductor part and the shiftable capacitor part being electrically connected in series and mechanically connected for common shifting movement, and the fixed inductor part and the fixed capacitor part being electrically insulated from each other,

whereby upon shifting the corresponding shiftable parts relative to the corresponding fixed parts the inductance and capacitance will be varied directly and the frequency will be varied inversely.

4,620,195

METHOD OF FABRICATING AN INK DROPLET GENERATOR FOR AN INK JET PRINTER AND INK DROPLET GENERATOR FABRICATED THEREBY

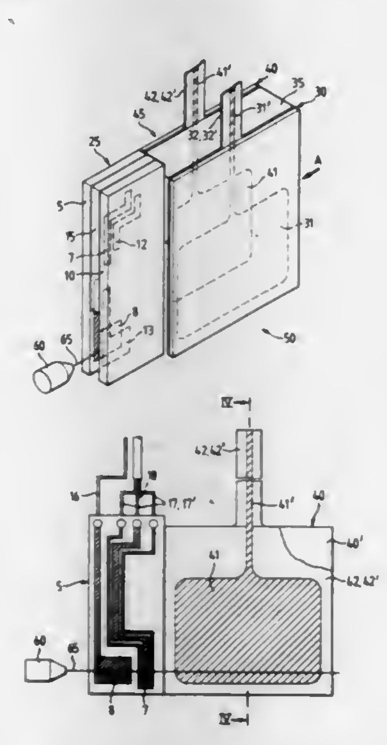
Otto Eblen, Constance; Gerhard Glöckler, Orsingen; Franz Kohler, Meersburg, and Norbert Meinusch, Stockach, all of Fed. Rep. of Germany, assignors to Contraves GmbH, Haar/-Munich, Fed. Rep. of Germany

Filed Feb. 11, 1985, Ser. No. 700,522

Claims priority, application Switzerland, Feb. 27, 1984, 939/84

Int. Cl.^{4} G01D *15/18*

U.S. Cl. 346—1.1 **21 Claims**



1. A method for fabricating components of an ink droplet generator for generating a succession of charged, detected and deflected ink droplets for an ink jet printer, comprising the steps of:

removing unrequired electrical conductive coating from metallically coated elements to form a desired configuration of mutually isolated means for charging, detecting and deflecting ink droplets;

configuring a first means of said means as charging electrodes, a second means of said means as detection electrodes and a third means of said means as deflection electrodes;

applying a surface medium resistant to organic and inorganic media at least to a side of each of said first, second and third means which is wetted by an ink droplet medium of the ink jet printer;

said charging electrodes and said detection electrodes being formed upon a first surface of a double-sided coated support element;

a metallic coating of a second surface of said double-sided coated support element being configured and employed as electromagnetic shielding for said charging electrodes and said detection electrodes;

said deflection electrodes being formed, conjunctively with therewith associated conductor traces, from a single-sided coated foil and a foil applied thereto; and

said deflection electrodes being applied in sandwich construction to a substrate provided as a support element.

4,620,196

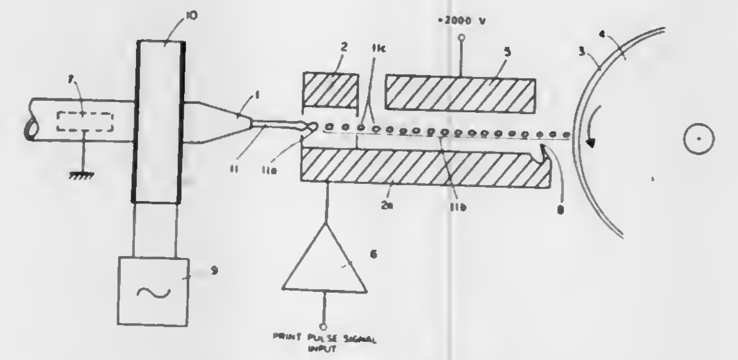
METHOD AND APPARATUS FOR HIGH RESOLUTION INK JET PRINTING

Carl H. Hertz, Skolbänksvägen 8, S-223 67 Lund, and Bo Å. Samuelsson, Lund, both of Sweden, assignors to Carl H. Hertz, Lund, Sweden

Filed Jan. 31, 1985, Ser. No. 696,690

Int. Cl.^{4} G01D *15/18*

U.S. Cl. 346—1.1 **18 Claims**



10. In an improved method for depositing an amount of a printing fluid of at least one color onto a pixel said pixel being in a predetermined position on a recording medium;

forming droplets of ssid fluid at a drop formation point using a droplet formation means comprising at least one nozzle means to create at least one liquid jet of fluid;

charging using at least one droplet charging means said droplets substantially at said drop formation point with a predetermined and appropriate voltage level sufficient to reduce droplet merging;

controlling a location of said drop formation point;

intercepting droplets not being deposited onto said pixel using a dropledt interceptor means said interceptor means comprising at least one droplet directing electrode means and a droplet catcher means, said droplet directing electrode means used for applying a charge of sufficient magnitude to cause those droplets to be intercepted to be delfected into said droplet catcher means;

vibrating said droplet formation means using a vibrator means driven by a signal of predetermined amplitude and frequency and disposed relative to said at least one nozzle means to generate substantially uniformly sized and uniformly spaced droplets said amplitude also influencing said drop formation point location;

said improvement comprising in combination:

controlling said deposited amount of printing fluid by controlling the number of said droplets, said number being a predetermined number of said droplets, said predetermined number of droplets dependent upon at least one color density to be recorded and controllably deposited within said pixel whereby each such pixel having said predetermined number of droplets therein contributes toward the creation of a specific density of printing fluid.

4,620,197

INK JET RECORDING METHOD

Shigehiko Miyamoto, Kamagaya; Yoshinobu Watanabe, Matsudo, and Yuriko Kishi, Misato, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Sep. 15, 1983, Ser. No. 532,512

Claims priority, application Japan, Sep. 17, 1982, 57-163032

Int. Cl.^{4} G01D *15/16;* **B05D** *5/00;* **B32B** *7/00;* **C09D** *11/00*

U.S. Cl. 346—1.1 **4 Claims**

1. In an ink jet recording method which comprises coating an aqueous solution on a surface of a base paper and drying it to obtain a recording sheet and thereafter printing a water-base ink on the aqueous solution-coated surface of the recording sheet, the improvement comprising employing an aqueous solution which contains a cationic fluorescent agent and wherein said water-base ink contains either a water-soluble substantive dye or a water-soluble acid dye.

4,620,198

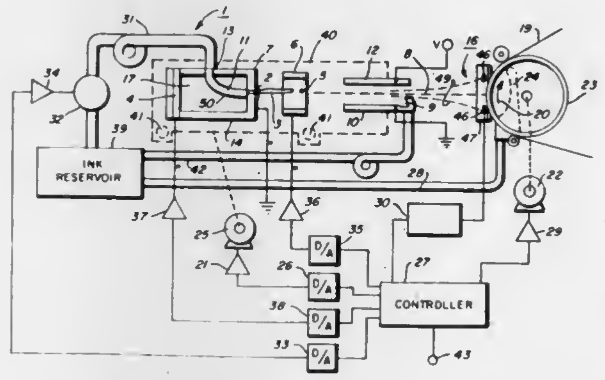
MULTICOLOR INK JET PRINTHEAD

Eugene Behun, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 20, 1985, Ser. No. 799,993

Int. Cl.^{4} G01D *15/18*

U.S. Cl. 346—75 **9 Claims**



1. An improved multicolor ink jet printhead for use in a continuous stream ink jet printer of the type having a reciprocating printhead mounted on a movable carriage, the printhead having a droplet generator with at least one nozzle for each color of ink to be printed for respectively producing a single, perturbed continuous stream of ink under pressure that breaks up into droplets at a predetermined distance from the nozzle whereat the droplets are charged in accordance with digitized data signals from a controller for printing swaths of information on a recording medium by sweeping a predetermined series of droplets in one direction while the droplet generator is reciprocated in another direction and repeating the carriage reciprocation and droplet sweeping until a completed page of information is printed in color one swath at a time, the recording medium being incrementally moved a distance equal to the height of one printed swath by a platen after each swath is printed, wherein the improved ink jet printhead comprises:

a droplet generator body having an internal cavity therein filled with a predetermined medium, the droplets generator body having a plurality of inlet ports and an outlet port for each inlet port, each inlet port connecting the cavity to a separate, different colored ink supplied thereto from an ink supply under a predetermined pressure;

a nozzle plate being sealingly positioned over the outlet ports and having one nozzle for each outlet port therein, each nozzle being in communication with the droplet generator body cavity through its outlet port;

an acoustic driver being mounted on the droplet generator body for perturbating the medium filling the cavity of the droplet generator body; and

means for sealingly interconnecting each inlet port with a one of the outlet ports, said interconnecting means providing individual passageways of each colored ink entering its respective inlet port and traveling through the medium contained in the droplet generator body cavity to its respective outlet port and separating the ink from the cavity medium as it travels therethrough to its respective nozzle and exits therefrom in a stream of ink, so that only one droplet generator body and only one acoustic driver are required to perturbate simultaneously several different colored ink streams emitted from the printhead.

4,620,199

THERMAL TRANSFER COLOR PRINTER

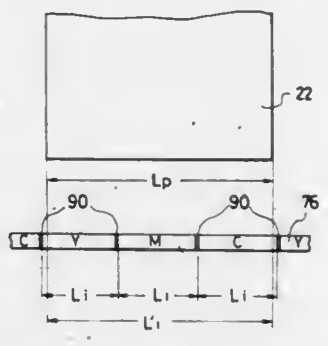
Hisao Tatsumi; Haruhiko Kayata, both of Nagoya, and Fumio Watanabe, Yokohama, all of Japan, assignors to Kabuskiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 13, 1984, Ser. No. 650,078

Claims priority, application Japan, Sep. 16, 1983, 58-144163[U]; Sep. 21, 1983, 58-147009[U]

Int. Cl.^{4} G01D *15/10*

U.S. Cl. 346—76 PH **10 Claims**



7. A thermal transfer color printer having a carriage moving mechanism, a thermal head moving mechanism, and a ribbon feeding mechanism, said printer comprising:

(a) a thermal ink ribbon having different color materials each having a predetermined equal section;

(b) a thermal head for transferring the color materials to a print paper;

(c) a color sensor for detecting each color material disposed on each section of said ink ribbon;

(d) a carriage carrying said thermal head, a cassette and said color sensor and movable relative to the print paper in accordance with the movement of the carriage moving mechanism, said cassette removably mounted on said carriage and storing the thermal ink ribbon of multi-colors; and

(e) a control unit including a microprocessor having a CPU, a ROM, and a RAM and for controlling the carriage moving mechanism, the thermal head moving mechanism, and the ribbon feeding mechanism in accordance with detected signals from the color sensor and print information received by said printer, said color sensor being arranged such that the distance from said color sensor to said thermal head along said thermal ink ribbon is substantially equal to the length of said each predetermined section of the ink ribbon in the direction of feed, the combined length of two or more different said predetermined equal sections for the color materials of said thermal ink ribbon being set at the maximum distance which the thermal head can move.

4,620,200

SCAN BEAM VELOCITY-COMPENSATION RECORDING SYSTEM

Nobutaka Fukai, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed Sep. 26, 1985, Ser. No. 780,667

Claims priority, application Japan, Oct. 8, 1984, 59-210660

Int. Cl.^{4} G01D *15/14, 9/42;* **H04N** *1/22;* **G03G** *15/00*

U.S. Cl. 346—108 **4 Claims**

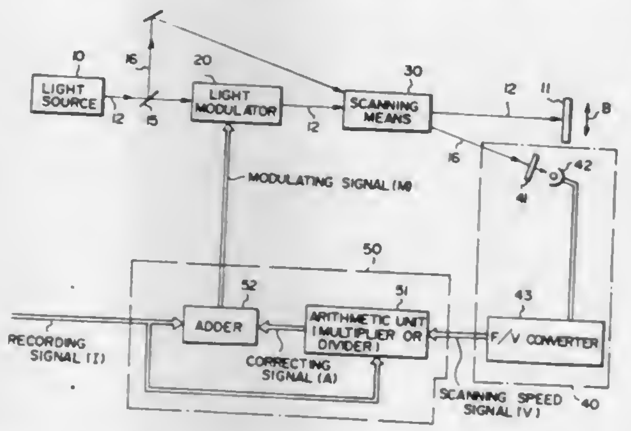
1. A recording medium scanning system comprising:

(i) a light source for generating a scanning light beam;

(ii) a light modulator for modulating said light beam with a modulating signal;

(iii) scanning means for scanning a recording medium with the modulated light beam emitted from said light modulator;

(iv) scanning speed detecting means for detecting the scanning speed of a light beam emitted from said scanning means to issue a scanning speed signal indicative of the detected scanning speed; and



(v) arithmetic means for effecting an arithmetic operation on the scanning speed signal issued from said scanning speed detecting means and a recording signal and for applying the result of said arithmetic operation as said modulating signal to said light modulator.

4,620,201
MAGNETIC DRIVER INK JET

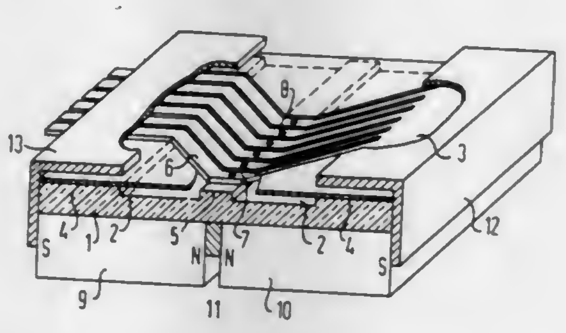
Joachim Heinzl, Munich; Hans-Dieter Penningsfeld, Freising, and Peter Berdelle-Hilge, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 3, 1986, Ser. No. 815,922

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1985, 3500985

Int. Cl.^{4} G01D *15/18*

U.S. Cl. 346—140 R **11 Claims**



1. An arrangement for generating individual droplets in an ink printer device, having a common ink chamber for a plurality of discharge openings, and having a plurality of conductor loops with web portions corresponding in number to the plurality of said discharge openings, said conductor loops being secured at both sides of said ink chamber and their middle parts being movable in the region of said ink chamber, and including a magnet system whose magnetic field penetrates at least the webs of said conductor loops, comprising the improvement of said discharge openings being fashioned as breaches in said middle part of every conductor loop and in that, for the ejection of an individual droplet, said movable middle parts execute a movement opposite the ejection direction of an ink droplet.

4,620,202
INK JET PRINTER OF THE INK-ON-DEMAND TYPE

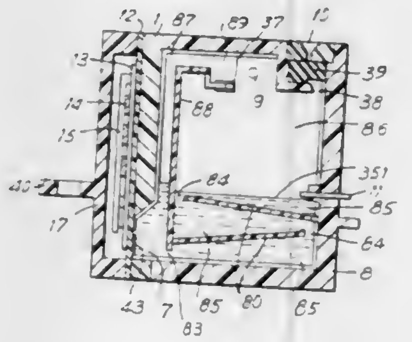
Haruhiko Koto; Junichi Okada; Hiroshi Ishii, and Kenji Sawada, all of Shiojiri, Japan, assignors to Seiko Epson Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 541,628, Oct. 13, 1983, abandoned. This application Aug. 12, 1985, Ser. No. 764,699

Claims priority, application Japan, Oct. 14, 1982, 57-180176; Dec. 7, 1982, 57-215263; Jan. 17, 1983, 58-5501; Jul. 12, 1983, 58-126668; Jul. 20, 1983, 58-132162; Aug. 23, 1983, 58-153660

Int. Cl.^{4} G01D *15/18*

U.S. Cl. 346—140 R **7 Claims**



1. An ink-on-demand type ink jet printer comprising a printer head and an ink container, said printer head including nozzles for ejecting ink droplets therethrough, pressure chambers for pressurizing ink therein, and ink passageways for supplying ink from said ink container into said pressure chambers, said printer head being movable in a linear direction for printing across a sheet of recording paper, said ink container having a vertical partition, said vertical partition having a wall disposed adjacent to an outlet of said ink container and extending substantially perpendicularly to said direction of movement of said printer head, said ink container having an interior divided by said vertical partition into a main chamber of a first volume defined between one wall surface of said vertical partition and a wall surface of said ink container, and an auxiliary chamber of smaller volume defined between the opposite wall surface of said vertical partition and another wall surface of said ink container, said ink container being movable with said printer head, said ink being supplied to said nozzles from said auxiliary chamber, the level of ink in said auxiliary chamber being different than the level of ink in said main chamber.

4,620,203
ELECTROSTATIC IMAGE FORMING APPARATUS USING FIELD EFFECT TRANSISTORS

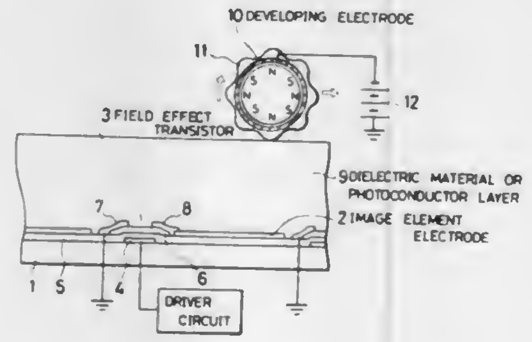
Kaname Nakatani, Osaka, and Yoshiaki Kato, Ikaruga, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Nov. 27, 1985, Ser. No. 802,329

Claims priority, application Japan, Nov. 30, 1984, 59-251658

Int. Cl.^{4} G01D *15/06*

U.S. Cl. 346—153.1 **4 Claims**


10 DEVELOPING ELECTRODE
11
S
N
S
N
S
N
S
N
12
3 FIELD EFFECT TRANSISTOR
9 DIELECTRIC MATERIAL OR PHOTOCONDUCTOR LAYER
2 IMAGE ELEMENT ELECTRODE
7
8
1
5
4
6
DRIVER CIRCUIT

1. An electrostatic image forming apparatus comprising a layer composed of a dielectric material or a photoconductor,

image element electrodes arranged in the form of a matrix on one surface of said layer, field effect transistors affiliated with the image element electrodes and interposed between the image element electrodes, and a developing electrode arranged on the other surface of the dielectric material or photoconductor layer, to which a voltage is applied.

4,620,204
TWO-COLOR THERMOSENSITIVE RECORDING MATERIAL

Norihiko Inaba, Numazu, and Kiyotaka Iiyama, Mishima, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 9, 1985, Ser. No. 785,714

Claims priority, application Japan, Oct. 9, 1984, 59-213038

Int. Cl.^{4} B41M *5/18*

U.S. Cl. 346—204 **10 Claims**

1. In a two-color thermosensitive recording material capable of forming two different colors when heated at different temperatures, selected from the group consisting of a two-color thermosensitive recording material comprising (a) a support material, (b) a high temperature color-forming layer formed on the support material, comprising a leuco dye, a color developer capable of inducing color formation in the leuco dye to produce a high temperature color when heated to a predetermined high temperature, and a decolorizing agent, (c) an intermediate layer formed on the high temperature color-forming layer and (d) a low temperature color-forming layer formed on the intermediate layer, comprising a leuco dye and a color developer capable of inducing color formation in the leuco dye to produce a low temperature color when heated to a predetermined low temperature, said low temperature color being decolorized by said decolorizing agent contained in said high temperature color-forming layer when heated to a predetermined temperature beyond said predetermined low temperature; a two-color thermosensitive recording material comprising (a) a support material, (b) a high temperature color-forming layer formed on the support material, comprising a leuco dye and a color developer capable of inducing color formation in the leuco dye to produce a high temperature color when heated to a predetermined high temperature, (b) a decolorizing layer formed on the high temperature color-forming layer, comprising a decolorizing agent, (c) an intermediate layer formed on the decolorizing layer and (d) a low temperature color-forming layer formed on the intermediate layer, comprising a leuco dye and a color developer capable of inducing color formation in the leuco dye to produce a low temperature color when heated to a predetermined low temperature, said low temperature color being decolorized by said decolorizing agent contained in said decolorizing layer when heated to a predetermined temperature beyond said predetermined low temperature; and a two-color thermosensitive recording material comprising (a) a support material, (b) a decolorizing and color developing layer formed on the support material, comprising a color developer, (c) an intermediate layer formed on the decolorizing and color developing layer and (d) a two-color thermosensitive coloring layer capable of yielding two different colors when heated at different temperatures, comprising a first leuco dye and a first color developer for inducing color formation in said leuco dye when heated to a predetermine low temperature to produce a low temperature color, and a second leuco dye which is colored in reaction with said color developer contained in said decolorizing and color developing layer when heated to a predetermined high temperature to produce a high temperature color, said low temperature color being decolorized by said color developer contained in said decolorizing and color developing layer when heated to a predetermined temperature beyond said low temperature temperature, the improvement wherein said intermediate layer comprises as the main component a vinylidene chloride resin.

4,620,205
TWO-COLOR THERMOSENSITIVE RECORDING MATERIAL

Kiyotaka Iiyama, Mishima, and Nirohiko Inaba, Numazu, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 30, 1985, Ser. No. 781,885

Claims priority, application Japan, Oct. 3, 1984, 59-207612

Int. Cl.^{4} B41M *5/00*

U.S. Cl. 346—204 **13 Claims**

1. A two-color thermosensitive recording material, comprising:

- a support material;
- a high temperature color-forming layer comprising a first leuco dye and a first color developer each having a melting point of at least 150° C.;
- a decolorizing layer containing a decolorizing agent having a melting point in the range of 120° C. to 160° C. overlaying the high temperature color-forming layer; and
- a low temperature color-forming layer comprising a second leuco dye and a second color developer each having a melting point of at least 60° C. with the melting point of at least one of said second leuco dye or second color developer being no more than 130° C.

4,620,206
SEMICONDUCTOR DEVICE

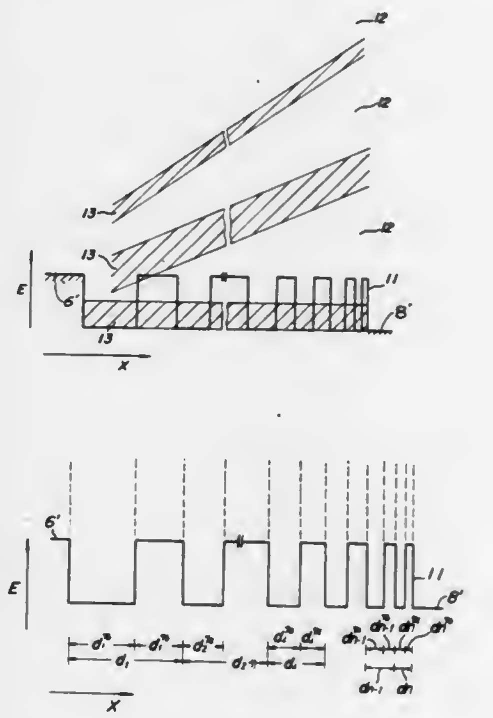
Kimihiro Ohta, Kashiwa; Tadashi Nakagawa, Sakura; Naoyuki Kawai, Yatabe; Takeshi Kojima, Kashiwa, and Mitsuo Kawashima, Toride, all of Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Feb. 9, 1984, Ser. No. 578,574

Claims priority, application Japan, Jul. 26, 1983, 58-136171

Int. Cl.^{4} H01L *27/12, 29/161*

U.S. Cl. 357—4 **26 Claims**



1. A semiconductor device comprising

a superlattice semiconductor portion having first and second ends and including a plurality of laminated pairs of semiconductor thin films arranged along an axis perpendicular to the interface thereof thereby forming a potential profile along said axis determined by the stepped differences between the band edge energies of the thin films forming each of said pairs, said potential profile having virtual miniband and minigap energy states associated therewith and being defined by at least one of the thickness, chemical composition and dopant materials of said thin films, at least one of the thickness, chemical composition and dopant materials of said thin films being modulated in the direction of said axis whereby said miniband and minigap energy states are monotonically changed in the direction of said axis for every pair of said thin films; and

electrodes coupled to the first and second ends of said superlattice semiconductor portion for applying an electric field thereacross.

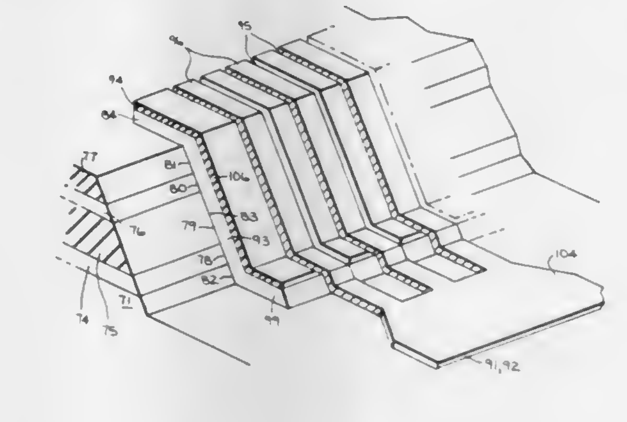
4,620,207
EDGE CHANNEL FET

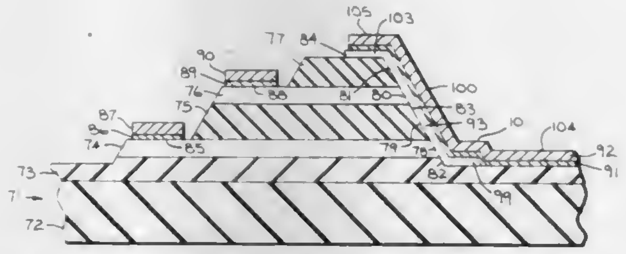
Joseph A. Calviello, Kings Park, N.Y., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 19, 1984, Ser. No. 683,722

Int. Cl.^{4} H01L *49/02*

U.S. Cl. 357—22 **13 Claims**





1. A field effect transistor of the type having a source, a gate and a drain, comprising:

- a substrate;
- a first generally horizontal semiconductor layer on said substrate providing one of said source and drain;
- a generally horizontal insulator layer on said first semiconductor layer;
- a second generally horizontal semiconductor layer on said insulator layer and providing the other of said source and drain;

said layers being stacked as a mesa structure having a generally vertical side exposing the edges of said layers;

- a third semiconductor layer having a generally vertical section extending along said side of said mesa over said exposed edges of said first and second semiconductor layers and said insulator layer and providing a channel, said third semiconductor layer having a generally horizontal section on said substrate adjacent said first semiconductor layer; and
- a gate layer having a generally vertical section on at least a portion of said vertical section of said third semiconductor layer over said first semiconductor layer, said gate layer having a generally horizontal section on said horizontal section of said third semiconductor layer, said gate layer having a second generally horizontal section on said substrate.

4,620,208
HIGH PERFORMANCE, SMALL AREA THIN FILM TRANSISTOR

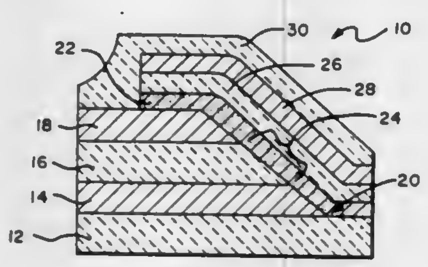
Hellmut Fritzsche, Chicago, Ill., and Robert R. Johnson, Franklin, Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Nov. 8, 1983, Ser. No. 549,996

The portion of the term of this patent subsequent to Oct. 15, 2002, has been disclaimed.

Int. Cl.^{4} H01L *29/78*

U.S. Cl. 357—23.1 **26 Claims**



1. A thin film field effect transistor of the type formed on a substantially planar substrate, said transistor comprising:

a plurality of layers, said plurality of layers being formed over said substrate so as to have faces substantially parallel to said substrate to form a source region layer, a drain region layer, and an electrically insulating layer between said source and drain regions layers, said layers having edge portions forming a substantially planar surface which is non-parallel to said substrate; a deposited semiconductor material layer overlying said non-parallel surface between and electrically coupled to said source region layer and said drain region layer along said non-parallel surface for forming a current conduction channel therebetween; a gate insulator disposed over said deposited semiconductor material layer and a gate electrode separated from said deposited semiconductor material layer by said gate insulator.

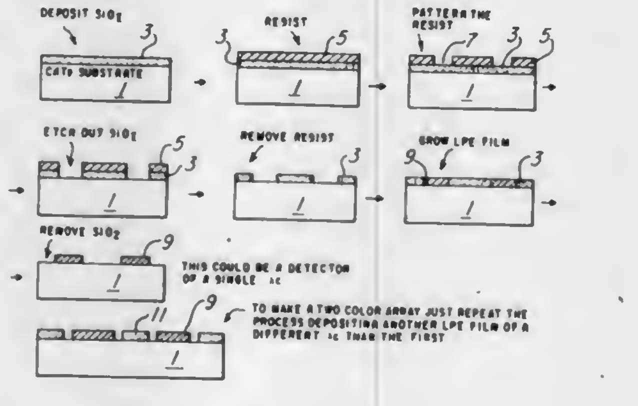
4,620,209
MOSAIC PATTERN OF INFRARED DETECTORS OF DIFFERENT CUT OFF WAVE LENGTHS

Sidney G. Parker, Dallas, and Rudy L. York, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 28, 1984, Ser. No. 656,059

Int. Cl.^{4} H01L *27/14*

U.S. Cl. 357—30 **4 Claims**



DEPOSIT SIO2
3
CATE SUBSTRATE
1
RESIST
3
5
1
PATTERN THE RESIST
7
3
5
1
ETCH OUT SIO2
5
3
1
REMOVE RESIST
3
1
GROW LPE FILM
9
3
1
REMOVE SIO2
9
1
THIS COULD BE A DETECTOR OF A SINGLE λc
11
9
1
TO MAKE A TWO COLOR ARRAY JUST REPEAT THE PROCESS DEPOSITING ANOTHER LPE FILM OF A DIFFERENT λc THAN THE FIRST

1. In an infrared detector comprising:

(a) a substrate,

(b) a first layer of HgCdTe on said substrate in a predetermined focal plane; and

(c) a second layer of HgCdTe on said substrate spaced from said first layer, having a ratio of Hg to Cd different from said first layer and in said predetermined focal plane.

4,620,210
PHOTOTRANSISTOR OF THE TYPE HAVING AN EMITTER-BASE HETEROJUNCTION

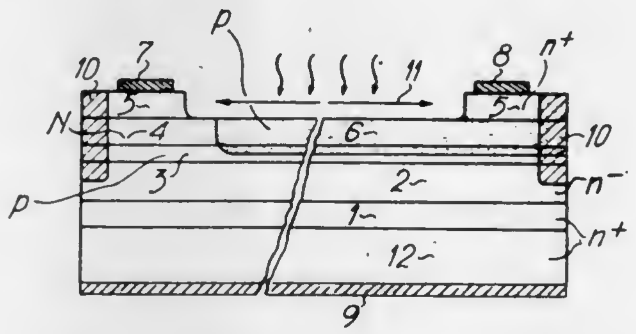
André Scavennec, 8, rue Emilie Deslandres, 75013 Paris, and David Ankri, 86, rue de l'Amiral Roussin, 75015 Paris, both of France

Continuation-in-part of Ser. No. 298,385, Sep. 1, 1981. This application Aug. 17, 1984, Ser. No. 642,135

Claims priority, application France, Sep. 11, 1980, 80 19621

Int. Cl.^{4} H01L *27/14, 31/00*

U.S. Cl. 357—30 **4 Claims**



1. A phototransistor comprising a substrate, a collector layer disposed on said substrate, a base layer disposed on said collector layer, an emitter layer disposed on said base layer, said base layer being of a first composite III–V semiconductor material with a first type of doping and said emitter layer of a second composite III–V semiconductor material, a diffusion well of said first type of doping extending on a main part of said emitter layer down to said base layer, a remainder part of said emitter layer being of a second type of doping, said main part of emitter layer with said diffusion well having an area of at least 100 times larger than the area of said remainder part, said collector layer having said second type of doping, a contact layer with said second type of doping on said remainder part of said emitter layer, an emitter contact on said contact layer, a base contact on an extremity of said diffusion well and a collector contact connected to said collector layer, said phototransistor thus comprising a homojunction photodiode under said diffusion well, said diffusion well being transparent in most of its thickness to light radiation to be detected to perform optical and electronic functions.

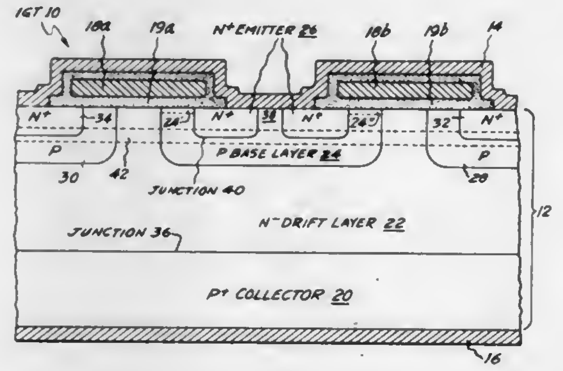
4,620,211
METHOD OF REDUCING THE CURRENT GAIN OF AN INHERENT BIPOLAR TRANSISTOR IN AN INSULATED-GATE SEMICONDUCTOR DEVICE AND RESULTING DEVICES

Bantval J. Baliga; Victor A. K. Temple, both of Clifton Park, and Tat-Sing P. Chow, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 13, 1984, Ser. No. 640,280

Int. Cl.^{4} H01L *29/74, 29/78, 29/167*

U.S. Cl. 357—38 **7 Claims**



1. An insulated-gate power semiconductor device comprising:

(a) a semiconductor drift layer of one conductivity type;

(b) a collector layer of opposite type conductivity adjacent said drift layer;

(c) a semiconductor base region of opposite conductivity type situated in said drift layer and forming a base drift junction therewith;

(d) a semiconductor emitter region of said one conductivity type situated in said base region and forming an emitter-base junction therewith, said semiconductor emitter region, said semiconductor base region and said semiconductor drift layer including portions forming a first surface of said device;

(e) an insulated-gate electrode contiguous with said base region, said insulated-gate electrode, only when appropriately biased, including a channel in said base region beneath said insulated-gate electrode, said channel conductively coupling one type conductivity carriers from said emitter region to said drift region during gate induced forward conduction in said semiconductor device and said insulated-gate electrode, when unbiased or reverse biased, repressing said channel to decouple said drift and emitter regions to render said device nonconductive and inhibit the flow of said one type conductivity carriers from said emitter region to said drift region; and

(f) a layer of recombination centers contained within a region of semiconductor material comprising a portion of said emitter and base regions, said recombination centers being effective to inhibit the injection of one conductivity type carriers from said emitter region into the base region and the transport of one type carrier through the base region so as to reduce current gain at high current levels and said layer of recombination centers exhibiting a peak concentration situated beneath said first surface of said device at said emitter-base junction to within a tolerance of about 20 percent of the thickness of said emitter region, said layer of recombination centers being spaced from said base drift junction.

4,620,212
SEMICONDUCTOR DEVICE WITH A RESISTOR OF POLYCRYSTALLINE SILICON

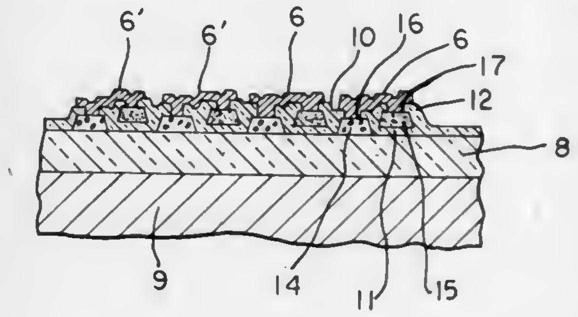
Kazuo Ogasawara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 25, 1983, Ser. No. 498,030

Claims priority, application Japan, May 28, 1982, 57-90611; May 28, 1982, 57-90612

Int. Cl.^{4} H01L *27/02*

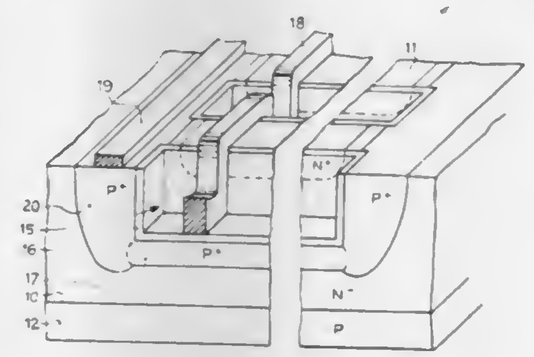
U.S. Cl. 357—51 **9 Claims**



1. A semiconductor device comprising a first insulating film formed on a semiconductor substrate; a first group of first unit resistor elements made of a first layer of polycrystalline silicon formed on and attached to said first insulating film, the first unit resistor elements being arranged in parallel with each other and extending in one direction, each of said first unit resistor elements being formed with contact portions at opposite ends thereof; a second insulating film formed over said first unit resistor elements and over the surface of said first insulating film between said first unit resistor elements; a second group of said unit resistor elements made of a second layer of polycrystalline silicon formed on said second insulating film,

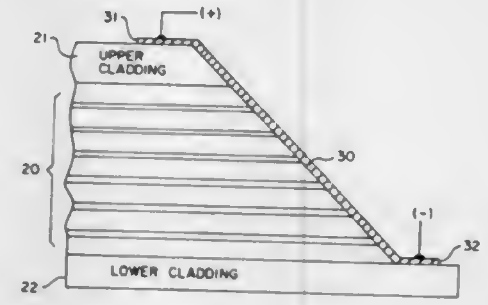
said second unit resistor elements being arranged in parallel with said first unit resistor elements, each of said second unit resistor elements being formed with contact portions at opposite ends thereof; said first unit resistor elements and said second unit resistor elements being alternately arranged, each of said second unit resistor elements being entirely separated from the adjacent first unit resistor element with a predetermined minimum distance between them when viewed in plan view so that no portion of said second unit resistor elements overlies said first unit resistor elements; a plurality of groups of wiring layers for providing connections between said contact portions at one ends of said first unit resistor elements and said contact portions at corresponding ends of said second unit resistor elements, and between said contact portions at the other ends of said first unit resistor elements and the contact portions at the corresponding other ends of said second unit resistor elements, respectively; a first input/output conductor connected to said contact portion of one unit resistor element selected from among said first and second groups of unit resistor elements; and a second input/output conductor connected to said contact portion of another unit resistor element selected from among said first and second groups of unit resistor elements, whereby said first and second groups of unit resistor elements are formed into a single resistor.

4,620,213
DEEP-GRID SEMICONDUCTOR DEVICE
Jacques Arnould, and Eugéne Tonnel, both of Paris, France, assignors to Thomson-CSF, Paris, France
Continuation of Ser. No. 253,265, Apr. 13, 1981. This application Dec. 29, 1983, Ser. No. 566,963
Claims priority, application France, Apr. 14, 1980, 80 08271
Int. Cl.⁴ H01L *29/06, 23/48, 29/44, 29/52*
U.S. Cl. 357—55 **2 Claims**



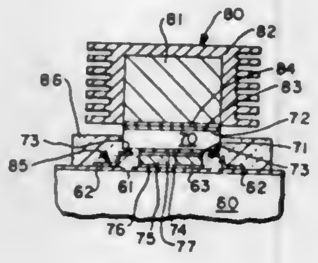
1. A diode structure that may be rendered non-conductive even when forwardly biased, comprising:
- a central monocrystalline semiconductor layer of a first conductivity type that is doped to a first doping level,
- an upper semiconductor layer of said first conductivity type that is doped to a second level higher than said first doping level, said upper layer having an upper surface which constitutes a first major face of the structure,
- a lower semiconductor layer of a second conductivity type opposite to said first conductivity type, said lower layer having a lower face which constitutes a second major face of the substrate, there being grooves extending from said first major face through said upper layer and inside said central layer, each groove having wall portions and a bottom portion,
- an insulating layer entirely coating said wall portions and bottom portion, the insulating layer having a U-shape inside the groove,
- a continuous coating of conductive material on a major part of said upper surface and being in contact with said upper layer between said grooves and with said insulating layer on the wall and bottom portions of the grooves, said coating of conductive material having a U-shape inside each groove whereby the groove is not entirely filled with conductive material and/or insulating material,
- a buried zone of said second conductivity type formed within said central layer, adjacent to said bottom portion of each groove, said buried zone comprising separate individual portions each located precisely under a groove and having a high doping level, and
- means for electrically accessing said buried zone from said first major face of the structure outside said grooves.

4,620,214
MULTIPLE QUANTUM-WELL INFRARED DETECTOR
Shlomo Margalit, Pasadena; Liew-Chuang Chiu, Milford; John S. Smith, Pasadena, and Amnon Yariv, San Marino, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.
Filed Dec. 2, 1983, Ser. No. 557,594
Int. Cl.⁴ H01L *29/167, 27/14*
U.S. Cl. 357—63 **2 Claims**



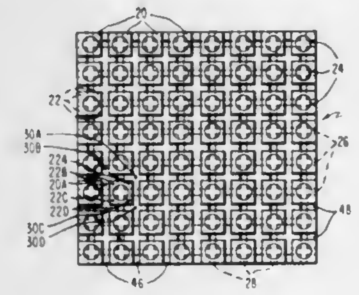
1. An infrared detector comprised of a heavily doped multiple quantum-well structure consisting of alternating layers of two semiconductor materials which form heterojunctions with a conduction-band discontinuity of desired magnitude for a quantum well in one material between layers of the second material, all of said layers being uniformly doped for the same type of single carrier conductivity, and means for biasing said quantum-well structure comprising a resistive voltage divider to bias each layer of said one material at a progressively higher voltage to neutralize any charge created by propagation of carriers in the avalanche photocurrent, thereby allowing an increase in the detector bias into the avalanche gain regime.

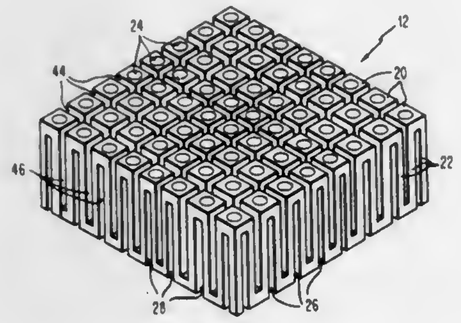
4,620,215
INTEGRATED CIRCUIT PACKAGING SYSTEMS WITH DOUBLE SURFACE HEAT DISSIPATION
James C. K. Lee, Los Altos Hills, Calif., assignor to Amdahl Corporation, Sunnyvale, Calif.
Continuation of Ser. No. 368,957, Apr. 16, 1982, abandoned. This application Oct. 9, 1985, Ser. No. 786,229
Int. Cl.⁴ H01L *23/36, 23/14, 23/54*
U.S. Cl. 357—81 **16 Claims**



1. A mounting arrangement for a semiconductor chip having a bottom surface and a top surface with an integrated circuit fashioned thereon, including a plurality of bonding pads disposed around the periphery of said top surface, comprising:
(a) a first heat sink having a mounting surface corresponding substantially to the area of said bottom surface of said chip;
(b) first means for mounting said mounting surface of said first heat sink to said bottom surface of said chip in good heat transfer relation;
(c) a second heat sink having a mounting surface corresponding substantially to a region of said top surface of said chip interior to said bonding pads;
(d) second means for mounting said second heat sink to said top surface of said chip in good heat transfer relation wherein said top surface of said chip has a passivation layer of electrical insulating material deposited thereon and a layer of gold formed over a portion of said passivation layer interior to said bonding pads to provide a mounting pad for said second heat sink and wherein said second mounting means includes a solder preform formed of a low temperature alloy for bonding said second heat sink to said mounting pad.

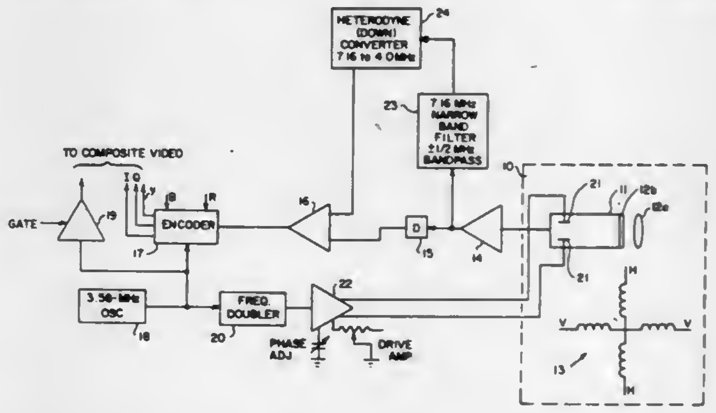
4,620,216
UNITARY SLOTTED HEAT SINK FOR SEMICONDUCTOR PACKAGES
Joseph L. Horvath, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 489,875, Apr. 29, 1983, abandoned. This application Dec. 23, 1985, Ser. No. 812,498
Int. Cl.⁴ H01L *23/34, 23/46, 23/12*
U.S. Cl. 357—81 **8 Claims**





1. In a fluid cooled high density integrated circuit semiconductor device module having a substrate with a plurality of semiconductor devices operatively mounted thereon, a lid element mounted on the substrate forming an enclosure for the semiconductor devices, and I/O terminals on said substrate, the improvement comprising
- a unitary heat sink formed of heat conductive material bonded to said lid element for dissipating heat generated by said semiconductor devices, said heatsink having a plurality of cooling fin elements arranged in columns and rows and positioned orthogonally relative to the top surface of said lid,
- said fin elements having slots in the lower end that terminate short of the top of the fin element and which divides the lower end of each of the fin elements into a plurality of leg sections,
- said heat sink having a plurality of flat quadralateral base portions individually bonded to said lid, said leg sections of an individual fin element being attached to different quadralateral base portions with adjacent fin elements supported by adjacent common base portions,
- in operation said heatsink reducing stresses at the bonded interface of the heatsink and lid by flexure of said leg sections while providing effective large area heat transfer through the lid element to said fin elements.

4,620,217
STANDARD TRANSMISSION AND RECORDING OF HIGH RESOLUTION TELEVISION
Jimmie D. Songer, Burleson, Tex., assignor to High Resolution Television, Inc., Los Angeles, Calif.
Filed Sep. 22, 1983, Ser. No. 534,592
Int. Cl.⁴ H04N *5/38, 9/04*
U.S. Cl. 358—12 **10 Claims**

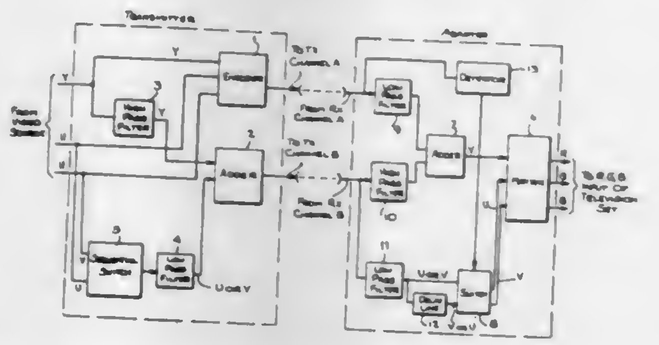


1. In a television system having a bandwidth limited transmission channel comprised of a camera and a display unit, a method for improving vertical resolution of a video signal produced by said camera, frame by frame, comprising the steps of modulating the vertical beam deflection of said camera while producing said video signal for each line of a frame, said modulation having a frequency higher than the upper bandwidth limit of said transmission channel for causing each line scanned to undulate about the normal straight line scan, separating out of the video signal from said camera vertical modulated sidebands with pixel information which is narrow band; converting said sidebands with pixel information down to a frequency within said bandwidth limited channel using a converter; adding back to the video signal out of the camera the down-converted sidebands with pixel information before processing it further for transmission through the bandwidth limited channel; modulating the vertical beam deflection of said display unit with the same phase and relative amplitude as the modulation of the vertical beam deflection of said camera for display of each line of a frame in the same pattern as scanned by said camera, and at the display unit detecting the video signal transmitted; separating the down-converted sidebands with pixel information from the detected video signal, converting the separated sidebands with pixel information back up to said modulation frequency used at said camera; and adding the up-converted sidebands with pixel information back into the detected video signal before processing it further for display.

4,620,218
METHOD OF TRANSMITTING AND RECEIVING COLOR TELEVISION SIGNALS ON TWO CHANNELS FOR BROADCASTING FROM SATELLITE AND APPARATUS FOR CARRYING OUT SAID METHOD
Paolo D'Amato, and Rolando Salvadorini, both of Turin, Italy, assignors to Rai-Radio Televisione Italiana, Rome, Italy
Filed Jul. 1, 1983, Ser. No. 510,284
Claims priority, application Italy, Jul. 7, 1982, 22276 A/82
Int. Cl.⁴ H04N *9/36*
U.S. Cl. 358—12 **2 Claims**

1. A compatible method of transmitting color television signals on two channels for broadcasting from satellite, comprising the steps of transmitting on a first channel the complete color television signal and on a second channel the baseband

chrominance R-Y and B-Y signals at from 0 to about 3 MHz sequentially on alternate lines, and from 3 MHz up to the limit of the video band the high frequency components of the luminance signal.



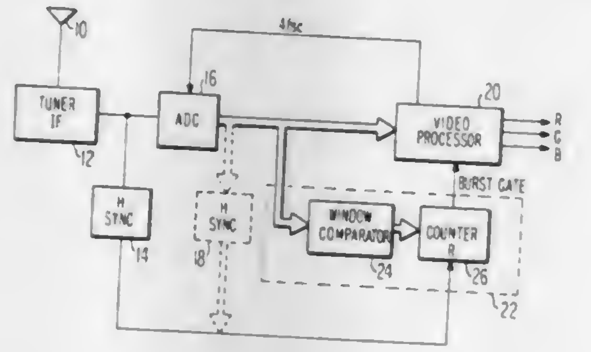
4,620,219
APPARATUS FOR DETECTING A CHROMINANCE REFERENCE BURST COMPONENT TO DEVELOP A BURST GATE PULSE

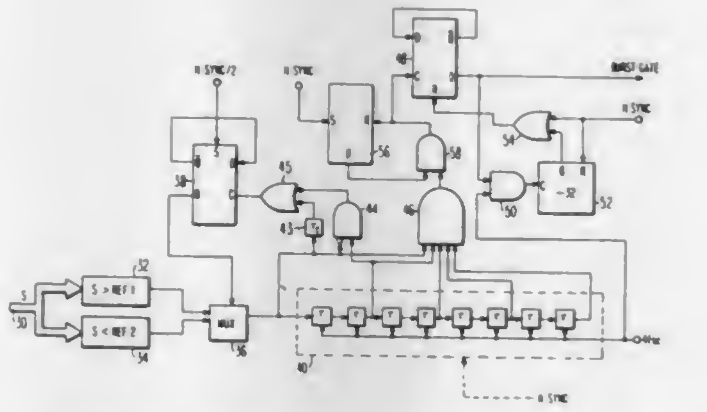
Sherwin D. D. Burrowes, East Windsor, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 6, 1984, Ser. No. 637,769

Int. Cl.⁴ H04N *9/455*

U.S. Cl. 358—20 **15 Claims**





1. Apparatus for generating a burst gate pulse from a composite video signal including a burst signal component and a horizontal synchronizing component, comprising:

a terminal for applying composite video signal;

signal detection means, coupled to said terminal, for generating a digital signal having a first state whenever the composite video signal occurs outside a predetermined range of values and a second state otherwise and wherein the mean value of the burst component resides within said predetermined range;

means coupled to said signal detection means and responsive to said digital signal for generating a control signal upon the occurrence of a predetermined number of occurrences of said digital signal being in said first state;

means, coupled to said control signal generating means, and responsive to said control signal for generating a pulse output signal corresponding to said burst gate pulse, said pulse output signal having a predetermined duration; and

means coupled to said terminal and responsive to said horizontal synchronizing component for conditioning the combination of said control signal generating means and said pulse generating means to produce said pulse output signal for the first occurrence of said predetermined number of occurrences of said digital signal being in said first state after the occurrence of said horizontal synchronizing component.

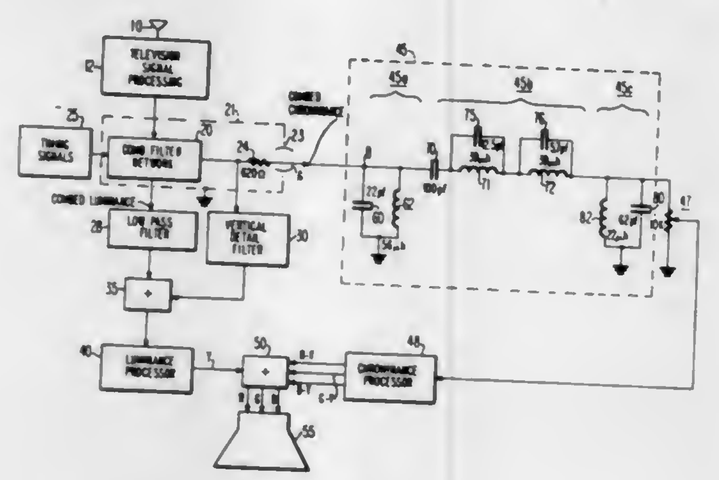
4,620,220
WIDEBAND CHROMINANCE SIGNAL FILTER

Saiprasad V. Naimpally, and Wesley W. Murphy, III, both of Indianapolis, Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Jun. 28, 1983, Ser. No. 508,593

Int. Cl.⁴ H04N *9/64, 9/77*

U.S. Cl. 358—40 **8 Claims**



2. In a system for processing a video signal including a wideband chrominance signal component comprising a chrominance subcarrier component exhibiting a frequency unsymmetrically disposed in the range of frequencies occupied by said chrominance signals, apparatus comprising:

a source of video signals exhibiting an amplitude characteristic with a decreasing slope over a frequency range including frequencies associated with said wideband chrominance component;

means for deriving said wideband chrominance component from said video signal, said derived chrominance component exhibiting said amplitude characteristic of decreasing slope; and

filter means responsive to said derived wideband chrominance signals and exhibiting a passband wherein said chrominance subcarrier frequency is unsymmetrically disposed in said passband, for providing output chrominance signals in accordance with the amplitude-versus-frequency response of said filter means; wherein

said filter means imparts to said chrominance signals an amplitude charcteristic with an increasing slope for substantially compensating for said amplitude characteristic with said decreasing slope; and

said filter means comprises plural mutually interactive resonant sections including an input resonant section; an output resonant section; and an intermediate resonant section coupling said input section to said output section.

4,620,221
COLOR IMAGING APPARATUS WITH COMPENSATION FOR BEAM DEFLECTION NONLINEARITY

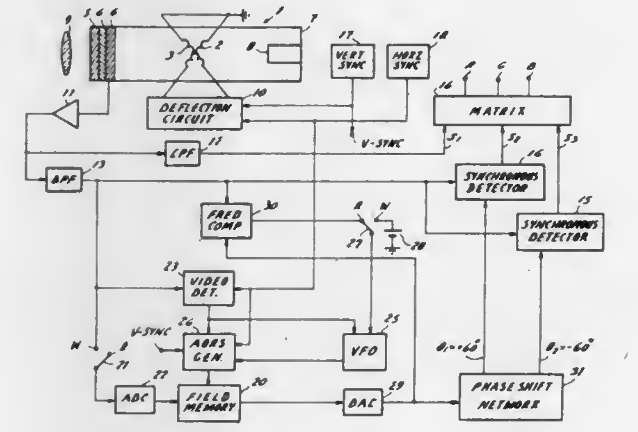
Itsuo Takanashi, Yokohama; Shintaro Nakagaki, Fujisawa; Hiroshi Ichimura, Tokyo; Takashi Kuriyama, Tokyo, and Ichiro Negishi, Tokyo, all of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Feb. 21, 1984, Ser. No. 582,226

Claims priority, application Japan, Feb. 22, 1983, 58-28332

Int. Cl.⁴ H04N *9/083, 9/07*

U.S. Cl. 358—47 **19 Claims**



1. A color imaging apparatus wherein a color image is focused on a photoelectrical conversion target of a color image pickup tube through a color stripe filter and converted to an electrostatic image which is scanned in raster form by an electron beam under the control of a deflection system in response to horizontal and vertical sync pulses to generate a video signal from said photoelectrical conversion target, said color stripe filter comprising a plurality of recurrent groups of different color stripes successively arranged at periodic intervals so that said video signal has a frequency inversely proportional to the intervals at which said recurrent groups are arranged, said video signal varying in phase with the relative values of primary color components contained in the color image passing through the stripes of each group and in amplitude with the intensity of said primary color components, comprising:

a field memory;

reading and writing means for writing into the memory, during a write mode, a reference video signal derived from said target when the target is uniformly illuminated by light of a predetermined color passing through said color filter, wherein the frequency of the reference video signal varies as a function of inherent nonlinearity of the deflection system, and for repeatedly reading the reference video signal from the memory during a read mode to generate a reference frequency signal;

control means including a frequency comparator for detecting a frequency difference between said reference frequency signal and said video signal for controlling the frequency relationship between said reference frequency signal and said video signal in response to the detected frequency difference so that the frequency difference reduces towards zero; and

detector means for deriving a pair of color video components from the frequency-controlled video signal and reference frequency signal.

4,620,222
DIGITAL COLOR TV CAMERA

Takaaki Baba, Kounan, Japan, and Gerald T. O'Keefe, Cupertino, Calif., assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 8, 1983, Ser. No. 549,812

Claims priority, application Japan, Nov. 10, 1982, 57-196985; Nov. 12, 1982, 57-199190

Int. Cl.⁴ H04N *9/077, 9/07*

U.S. Cl. 358—48 **18 Claims**

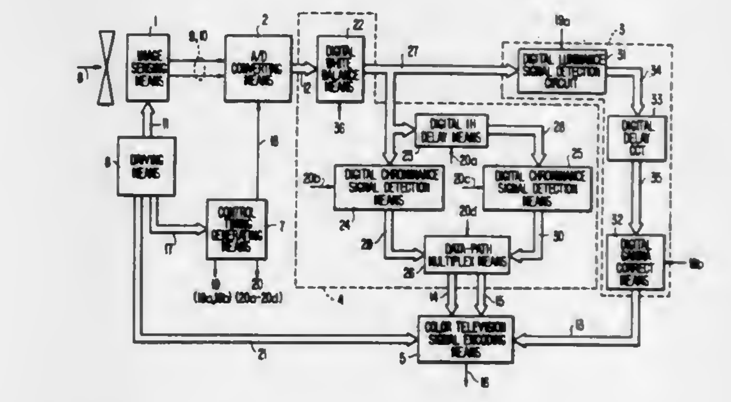


IMAGE SENSING MEANS
A/D CONVERTING MEANS
DRIVING MEANS
CONTROL CIRCUIT MEANS
DIGITAL 1H DELAY MEANS
DIGITAL CHROMINANCE SIGNAL DETECTION MEANS
DATA-PATH MULTIPLEX MEANS
DIGITAL LUMINANCE SIGNAL DETECTION CIRCUIT
DIGITAL DELAY CKT
DIGITAL GAMMA CORRECT MEANS
COLOR TELEVISION SIGNAL ENCODING MEANS

1. A color camera comprising:

image sensing means for receiving optical signals to produce two alternately different pixel signals—a first pixel signal and a second pixel signal, the first pixel signal being composed of two different α and β color pixel signals which are shifted out at a repetition frequency of f_c in one of two consecutive horizontal synchronous intervals of a television signal, and the second pixel signal being composed of two different γ and δ color pixel signals which are different from the α and β color pixel signals in the first pixel signal and which are shifted out at a repetition frequency of f_c in the other of said two consecutive horizontal synchronous intervals of the television signal;

analog to digital (A/D) converting means for receiving said two alternately different pixel signals to produce a multiplexed digital pixel signal;

digital chrominance signal processing means for receiving said multiplexed digital pixel signal to produce two independent digital chrominance difference signals;

digital luminance signal processing means for receiving said multiplexed digital pixel signal to produce a digital luminance signal;

color television signal encoding means for receiving said two independent digital chrominance difference signals and said digital luminance signal to produce a color television signal;

control circuit means for generating first, second and third sets of timing pulses which are for respectively controlling said A/D converting means, said digital chrominance signal processing means and said digital luminance signal processing means; and

driving means for driving said image sensing means, said color television signal encoding means and said control circuit means, wherein said digital chrominance signal processing means comprises: digital one horizontal synchronous period (1H) delay means; first digital chrominance signal detection means; second digital chrominance signal detection means; and data-path multiplex means, said multiplexed digital pixel signal being applied to said first digital chrominance signal detection means and said digital 1H delay means, output signals from said digital 1H delay means being applied to said second digital chrominance signal detection means, and output signals from said first and second digital chrominance signal detection means being applied to said data-path multiplex means.

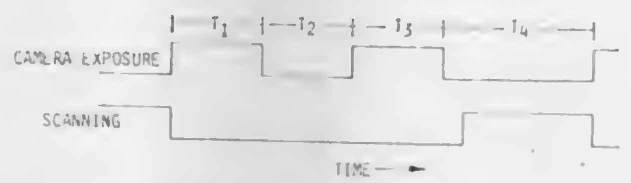
4,620,223
INTERFEROMETRIC DEFORMATION ANALYSIS SYSTEM

Richard E. Haskell, and Yau Y. Hung, both of Rochester, Mich., assignors to Industrial Holographics, Inc., Auburn Heights, Mich.

Continuation of Ser. No. 414,519, Sep. 3, 1982. This application Sep. 21, 1984, Ser. No. 652,979

Int. Cl.⁴ H04N *7/18*

U.S. Cl. 358—107 **15 Claims**



1. A method of analyzing the deformation of an object resulting from the application of a stress thereon comprising the steps of:

(a) illuminating the object with a source of coherent light;
(b) receiving light reflected from said object and resolving said reflected light into first and second overlapping images of said object;
(c) converging said first and second overlapping images into interfering relationship with each other to produce a first interferogram;
(d) exposing the signal plate of a television camera to said first interferogram;
(e) stressing said object;
(f) producing a second interferogram using light reflected from the object when the latter is stressed;
(g) exposing the signal plate of the camera to said second interferogram; and
(h) scanning said signal plate after steps (a) through (g) are performed to produce video signals corresponding to a superimposed, composite image of the object having fringe families arrayed as a function of the deformation of the object produced by said stressing.

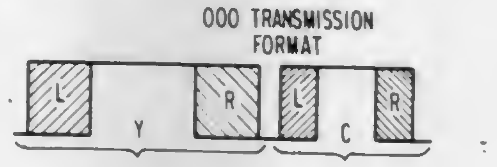
4,620,224
VIDEO SCRAMBLING TECHNIQUE FOR MULTIPLEXED ANALOG COMPONENT FORMATS

Lin-nan Lee, Potomac, and Mark D. Redman, Clarksburg, both of Md., assignors to Communications Satellite Corp., Washington, D.C.

Filed Apr. 3, 1985, Ser. No. 719,200

Int. Cl.⁴ H04K *1/00;* **H04N** *7/16, 7/167*

U.S. Cl. 358—119 **8 Claims**



1. A method for scrambling a television signal comprising the steps of:

formatting a television signal into a data portion and a video portion wherein said video portion has chrominance information and luminance information which portions are scanned for each horizontal line of a television picture;
writing said luminance portion and chrominance portion into luminance and chrominance memories, respectively;
encoding said data portion to represent the directions in which the chrominance information and luminance information are to be read; and
encoding said data portion to represent the position of the chrominance information relative to the luminance information in the video portion.

4,620,225
SYSTEM FOR TV TRANSMISSION

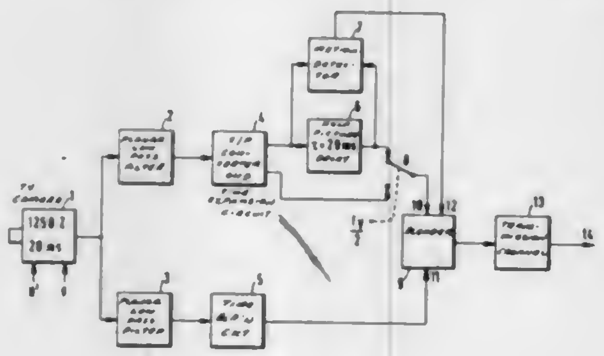
Broder Wendland, Waltrop, and Dirk Uhlenkamp, Dortmund-Somborn, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 7, 1983, Ser. No. 530,073

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1982, 3233882

Int. Cl.⁴ H04N *7/04*

U.S. Cl. 358—141 **8 Claims**



1. A system for TV transmission of pictures assembled of a first number of scanning lines, comprising pick-up means for scanning optical scenes to be transmitted, said pickup means generating a scanned signal corresponding to a series of half pictures each assembled of a second number of scanning lines that is four times higher than said first number and being scanned without scanning line jumps in a half picture;

means for branching said scanned signal into two signal processing units;
one of said signal processing units including serial/parallel converting means for retrieving from said signal every other line and time expanding the retrieved lines by a factor of four to produce first and second parallel signals corresponding to first and second half pictures each assembled of said first number of scanning lines;
the other of said signal processing units including means for retrieving from said signal each forth line and suppressing the intermediate lines and time expanding the retrieved lines of said other signal processing unit by a factor of four to produce a third signal corresponding to said first half picture assembled of said first number of scanning lines;
motion detecting means for producing a control signal when a motion component is detected in said first parallel signal;
means for delaying said first parallel signal for a scanning period of one half picture;
a blending unit controlled by said control signal to mix alternately the delayed first parallel signal from said delaying means and the non-delayed second parallel signal from said time expanding means in said one signal processing unit with the third signal from said other signal processing unit to produce an output signal corresponding to a series of first and second half pictures assembled of said first number of scanning lines and having an increased motion resolution.

4,620,226
APPARATUS FOR PRODUCING AUDIO AND VISUAL SIGNALS FOR MODULATING A TELEVISION SYSTEM CARRIER SIGNAL

William S. H. Cheung, 95B Robinson, Hong Kong, Hong Kong

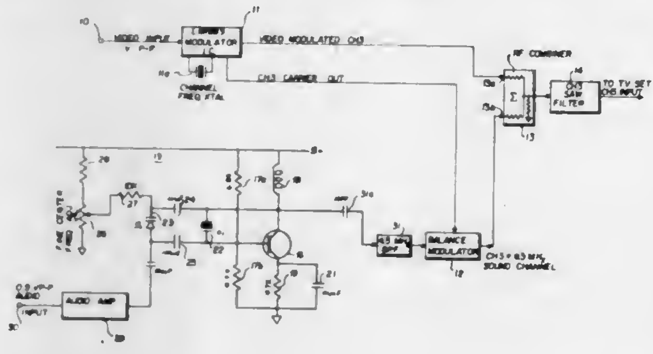
Filed May 17, 1984, Ser. No. 611,249

Int. Cl.⁴ H04N *7/04*

U.S. Cl. 358—143 **4 Claims**

1. In a television system, an audio frequency subcarrier generator comprising:

a transistor oscillator including as one frequency determining element a ceramic resonator;
a voltage sensitive reactance coupled to said ceramic resonator for shifting the frequency response of said ceramic resonator;
bias means for applying a DC voltage to said voltage sensitive reactance whereby a center frequency of operation for said transistor oscillator is obtained;



means for applying an audio modulating signal to said voltage sensitive reactance whereby said oscillator frequency varies with respect to said center frequency;
a balanced modulator for receiving on one input an unmodulated video carrier signal, and on a remaining input an audio modulated subcarrier from said transistor oscillator; and
an RF signal combiner circuit for receiving on one input a signal from said balanced modulator, and on another input a modulated video signal carrier.

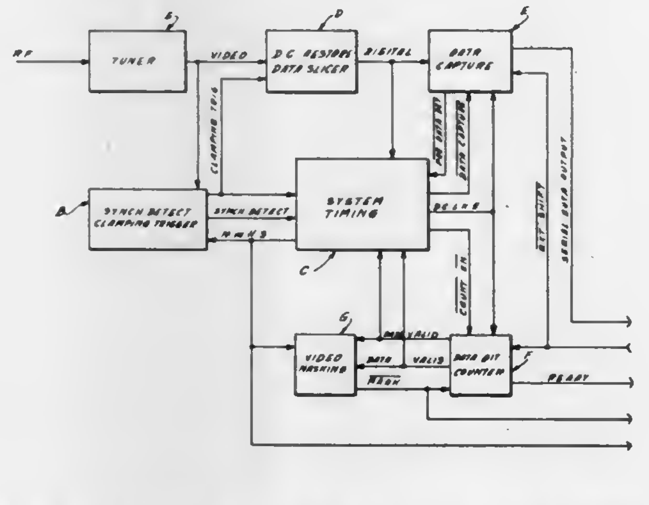
4,620,227
DATA DECODER

Michael M. Levin, Agoura Hills, and Jerry A. Boshear, Simi Valley, both of Calif., assignors to Cybernetic Data Products, Chatsworth, Calif.

Filed Jan. 30, 1984, Ser. No. 575,030

Int. Cl.⁴ H04N *7/093, 7/08*

U.S. Cl. 358—147 **37 Claims**



1. A decoder for decoding data from a video signal of the type including a series of horizontal line segments, one of the lined segments including a data signal in a normally unused part thereof, said apparatus comprising means for digitizing said video signal to form a series of digitized line signals, means for receiving each of said digitized line signals, in sequence, said receiving means comprising shift register means having an input operably connected to receive said digitized line signals, means for clocking said shift register means, means for detecting the presence of a data signal within said receiving means, means for controlling said receiving means to store the data signal in response to the detection thereof, and means for transferring said stored data signal from said receiving means.

4,620,228
TELEVISION SIGNAL GENERATOR

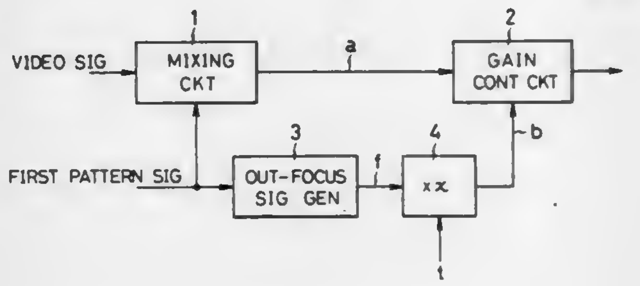
Tsuneo Mikado, Tokyo, Japan, assignor to Nippon Television Industry Corporation, Tokyo, Japan

Filed Jun. 19, 1984, Ser. No. 622,134

Claims priority, application Japan, Jun. 23, 1983, 58-113476

Int. Cl.⁴ H04N *5/14*

U.S. Cl. 358—160 **5 Claims**



1. A television signal generator comprising:

a pattern signal generator receiving a first pattern signal representing a predetermined region on a screen and producing a second pattern signal which causes an area of the predetermined region to increase and then decrease to an original value over time; and a gain control circuit receiving said second pattern signal for controlling as a function of said second pattern signal a luminance level of a video signal including the first pattern signal.

4,620,229
PICTURE DISPLAY DEVICE

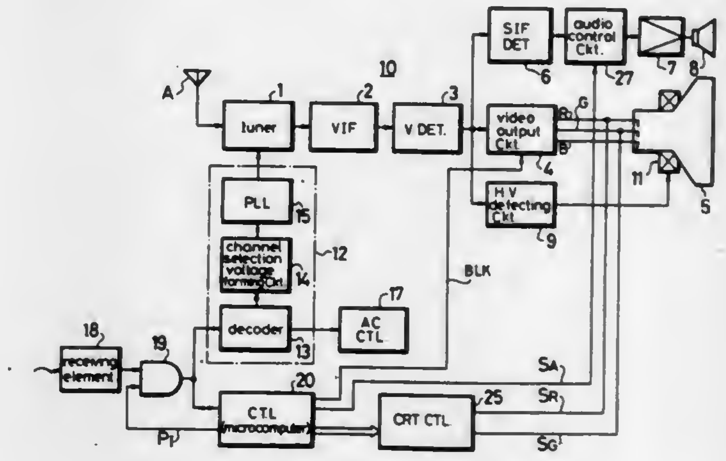
Toshio Amano, Kanagawa; Yoshihisa Fujioka, Saitama; Kunio Nagai, Kanagawa, and Osamu Oda, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 24, 1985, Ser. No. 726,680

Claims priority, application Japan, Apr. 28, 1984, 59-87637

Int. Cl.⁴ H04N *5/44*

U.S. Cl. 358—194.1 **12 Claims**



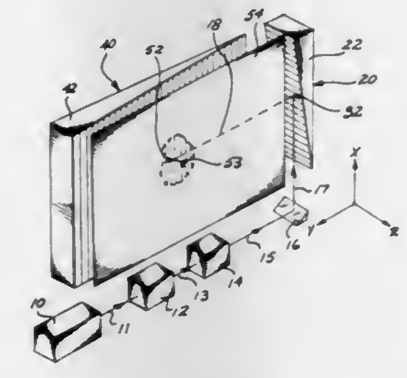
1. A picture display apparatus for displaying at least first, second and third types of pictures in that order in a repeating cyclical sequence, said picture display apparatus comprising;

display means having first, second and third modes of operation for displaying said first, second and third types of pictures, respectively;
actuable switch means;
control means operably connected to said display means and responsive to actuation of said switch means for establishing one of said modes of operation and thereby selecting the respective one of said types of pictures for display, each of said modes having a characteristic event occurring therein;
timing means for determining an elapsed time from said characteristic event occurring in the respective mode to a next actuation of said switch means;

said control means being responsive to an actuation of said switch means in each of said modes to select the next of said modes in said sequence when said elapsed time is less than a predetermined time, and to select said first mode for displaying said first type of picture when the elapsed time is at least as great as said predetermined time.

4,620,230
DISPLAY SYSTEM

Robert J. Spiger, Bothell, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Sep. 24, 1984, Ser. No. 653,582
Int. Cl.⁴ G02F *1/33;* H04N *5/66, 5/74*
U.S. Cl. 358—201 **14 Claims**

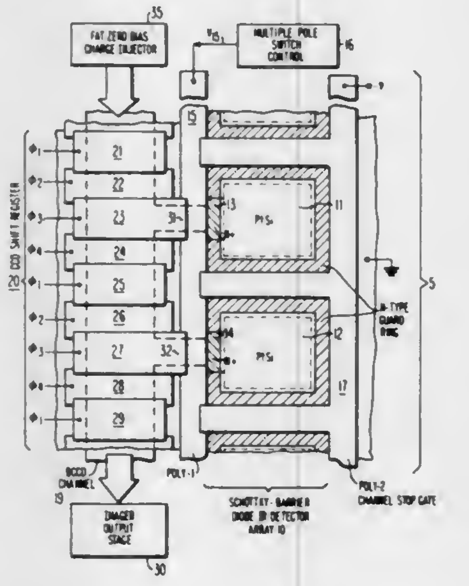


1. A display system comprising:
a display panel including a display surface extending along X and Y axes;
a plurality of first mirrors located at different positions along the X axis, each first mirror having an elongated dimension oriented normal to the X axis;
a plurality of second mirrors located at different positions along the Y axis, each second mirror having an elongated dimension oriented normal to the Y axis;
a source of light;
means for modulating the intensity of the light;
deflection means for directing the light as a first beam to a selected first reflection point on one of the first mirrors such that the first beam is reflected from the first reflection point as a second beam, the second beam strikes one of the second mirrors at a second reflection point and is reflected as a third beam, and the third beam strikes the display surface at a display point;
the first and second mirrors being positioned such that varying the location of the first reflection point along the elongated dimension of a particular first mirror causes the Y coordinate of the display point to change, and varying the location of the first reflection point from one first mirror to another first mirror causes the X coordinate of the display point to change.

4,620,231
CCD IMAGER WITH PHOTODETECTOR BIAS INTRODUCED VIA THE CCD REGISTER

Walter F. Kosonocky, Somerset County, N.J., assignor to RCA Corporation, Princeton, N.J.
Filed Jun. 18, 1984, Ser. No. 621,381
Int. Cl.⁴ H04N *3/14*
U.S. Cl. 358—213 **4 Claims**

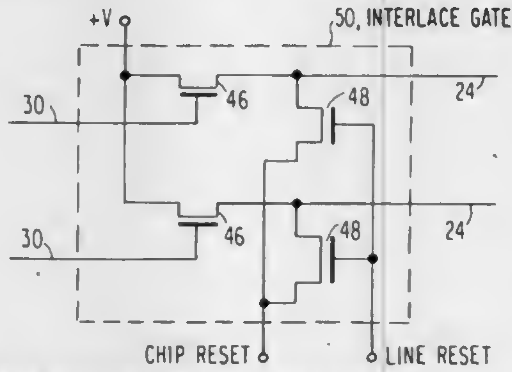
1. In a semiconductor imager including a linear array of photodetector diodes arranged to provide photoconversion to charge of radiation impinging thereon;
a CCD shift register having a charge transfer channel between an input end thereof and an output end thereof, which charge transfer channel parallels said linear array of photodetector diodes and has respective offshoots facilitating connection with those photodetector diodes;
an imager output stage for generating imager output signal responsive to charge packets supplied thereto from the output end of said CCD shift register;
means for transferring at selected times, separated by image integration intervals, charge packets from said photodetector diodes to said charge transfer channel via its respective offshoots to them;
means for forward clocking said CCD register during said image integration intervals to successively transfer to said imager output stage charge packets transferred into respective successive stages thereof from said photodetector diodes; and



means for improving the charge transfer efficiency of charge transfer from said photodetector diodes to said charge transfer channel, comprising:
means for transferring respective bias charge packets into said photodetector diodes to augment charge accumulated from photoconversion, said transferring respective bias charge packets into said photodetector diodes being done prior to each said selected time of transferring charge packets from said photodetectors, thereby to cause at those selected times transferring of charge packets from said photodetector diodes each of which packets comprises charge accumulated from photoconversion superposed on bias charge.

4,620,232
RESET CIRCUIT FOR MOS IMAGER ARRAY

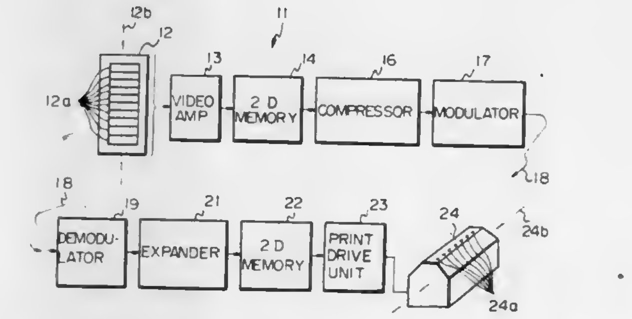
J. Gilbert Tisue, Los Altos, Calif., assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 15, 1985, Ser. No. 711,941
Int. Cl.⁴ H04N *3/14*
U.S. Cl. 358—213 **9 Claims**



1. An image-sensing device, comprising:
a photosensing array comprising a plurality of photosensing elements arranged in intersecting rows and columns, photosensing elements arranged along a row being simultaneously activated for reading, a signal from any photosensing element activated along a column being read as a signal for that column; and
means for sequentially resetting said columns of photosensing elements wherein all photosensing elements within each column are reset in a simultaneous operation.

4,620,233
FACSIMILE TRANSCEIVER UTILIZING ORTHOGONAL CONVERSION

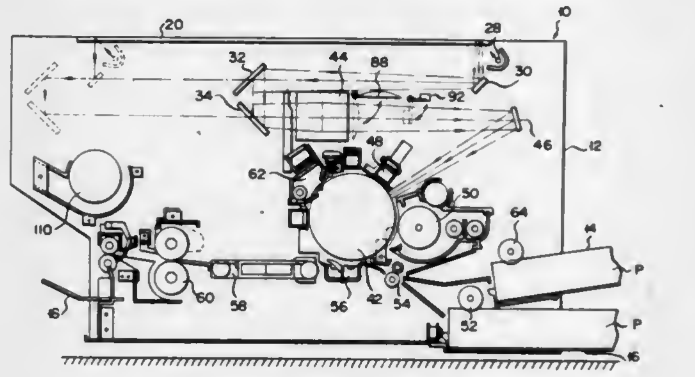
Mutsuo Ogawa; Takemi Hashimoto; Kazuyuki Hara, and Mitsuru Kondo, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 967,834, Dec. 8, 1978, abandoned. This application Dec. 29, 1982, Ser. No. 454,307
Claims priority, application Japan, Dec. 19, 1977, 52-151731
Int. Cl.⁴ H04N *7/40*
U.S. Cl. 358—260 **16 Claims**



1. A facsimile transceiver apparatus including a scanning array of photosensor elements extending in a first direction, scan drive means for moving the scanning array in a second direction which is different from the first direction for scanning an original document, the photosensor elements producing data signals corresponding to incident light from the document, transmission means for transmitting the data signals; receiving means for receiving data signals, a printing array of printing elements extending in a third direction and print drive means for moving the printing array in a fourth direction which has a same relationship to the third direction as the second direction has to the first direction for printing a pattern on a printing surface corresponding to the received data signals, characterized by comprising;
orthogonal conversion memory means for performing orthogonal conversion on data signals fed from the scanning array to the transmission means and for performing reverse orthogonal conversion on data signals fed from the receiving means to the printing array; and
data compression means connected between the memory means and the transmission means for compressing data signals and expansion means connected between the receiving means and the memory means for expanding data signals;
the memory means comprising a plurality of orthogonal memories which are constructed to sequentially store a plurality of lines of data signals, the scan drive means comprising means for detecting when at least one of the orthogonal memories is available to store data signals and move the scanning array for scanning in response thereto, the scan drive means holding the scanning array in an initial position thereof in response to none of the orthogonal memories being available to store data signals, the compression means reading data signals out of the orthogonal memories sequentially in accordance with a variable compression rate thereof regardless of whether or not the scanning array is moving.

4,620,234
ELECTRONIC VISUAL IMAGE FORMING APPARATUS

Junji Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Aug. 6, 1984, Ser. No. 637,808
Claims priority, application Japan, Aug. 12, 1983, 58-146581
Int. Cl.⁴ H04N *1/04, 1/10*
U.S. Cl. 358—285 **5 Claims**



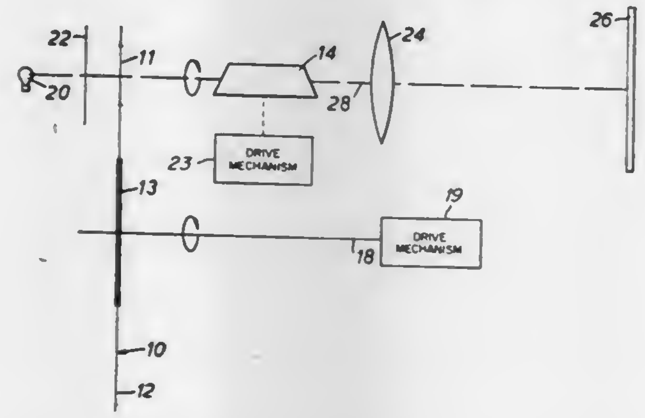
1. An image forming apparatus comprising:
a housing;
rest means provided on the housing, for resting a document thereon;
exposure means provided under the rest means, for exposing the document rested on the rest means;
drive means for causing a relative movement between the rest means and the exposure means to optically scan the document;
an image carrier provided in the housing and carrying a latent image thereon corresponding to the image impression of the document;
optical means for guiding the light reflected from the document to the image carrier through an optical path to form the latent image on the image carrier;
reading means provided in the optical path, for reading out the image impression of the document and generating signals representing the image impression, said reading means being retractable from the optical path, the reading means being set in the optical path when the exposure means advances, said reading means being retracted from the optical path when the exposure means returns; and
display means provided on the housing, for displaying the image impression of the document, based on the signals from the reading means.

4,620,235
DISC FILM SCANNING APPARATUS

Peter B. Watt, Welwyn Garden, England, assignor to Eastman Kodak Company, Rochester, N.Y.
PCT No. PCT/GB84/00223, § 371 Date Sep. 19, 1984, § 102(e) Date Sep. 19, 1984, PCT Pub. No. WO85/00490, PCT Pub. Date Jan. 31, 1985
PCT Filed Jun. 25, 1984, Ser. No. 653,266
Claims priority, application United Kingdom, Jul. 6, 1983, 8318278
Int. Cl.⁴ H04N *1/04*
U.S. Cl. 358—293 **8 Claims**

1. A method of effecting line by line scanning of a rectangular image area of a plurality of such areas located annularly on a rotatable disc film, the method comprising the steps of:
(a) indexing the disc about its axis to present the first of such areas at a scanning station,

(b) forming an image of a line of the rectangular image area on a linear CCD array in the scanning station, and



(c) moving the image so formed in a direction perpendicular to the linear CCD array to present images of successive lines of the rectangular image area on the CCD array.

4,620,236
IMAGE PICTURE READING DEVICE

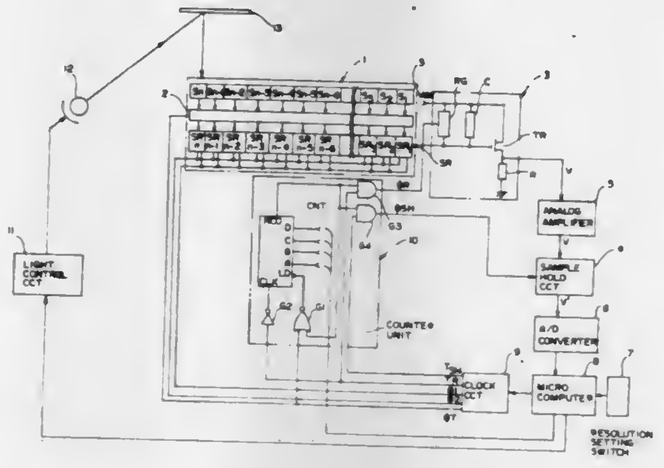
Seiichi Tanaka, Osaka, and Fumikazu Nagano, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 8, 1985, Ser. No. 796,156

Claims priority, application Japan, Nov. 9, 1984, 59-237115

Int. Cl.⁴ H04N *1/02*

U.S. Cl. 358—293 **1 Claim**



1. An image picture reading device having a light source to irradiate an original copy, a series of sensors arranged in a line for detecting densities of small areas of said original copy by light reflected from the original copy, a reading circuit for sequentially outputting signals for the densities detected by said sensors for the small area of the original copy, and a buffer for storing and outputting the density signals sequentially received from said reading circuit, said buffer being reset for an initial state at constant intervals, said image picture reading device, comprising:

setting means for inputting a resolution "K" value for said reading device;

buffer control means for setting a reset pulse cycle for said buffer at a period for which picture density signals are accumulated to the quantity of "k" corresponding to the "k" value input by said setting means;

a light source control circuit for controlling the light amount of said light source; and

control means for setting the light source control circuit so as to control the light amount to 1/k according to the "k" value set by said setting means.

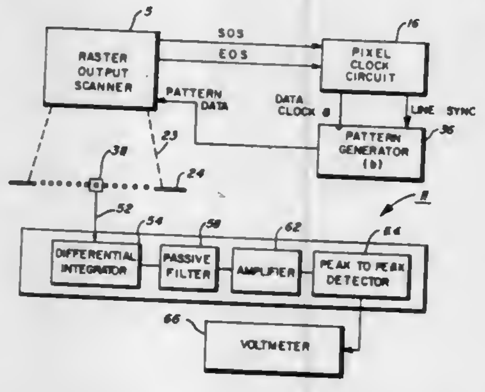
4,620,237
FAST SCAN JITTER MEASURING SYSTEM FOR RASTER SCANNERS

James C. Traino, Fairport, and Douglas L. Keene, Central Valley, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 22, 1984, Ser. No. 663,634

Int. Cl.⁴ H04N *1/23, 1/36, 1/29;* **G02B** *26/08*

U.S. Cl. 358—300 **10 Claims**



1. In a system for detecting and measuring fast scan jitter as the scanning beam of a raster output scanner scans across a recording member, said scanner including means for modulating said beam in accordance with a signal input, comprising in combination:

(a) beam detecting means, said beam detecting means including first and second photosensors in the path of said scanning beam, said first and second photosensors each being adapted to produce a signal pulse as said scanning beam scans thereacross, said signal pulses being substantially equal in the absence of fast scan jitter;

(b) means for integrating said signal pulses to provide a test signal proportional to the difference between said signal pulses on each sweep of said beam; and

(c) peak detecting means for comparing the peak to peak variation between said test signals to provide a jitter signal.

4,620,238
METHOD AND APPARATUS FOR RECORDING AND REPLAY OF DIGITAL AUDIO DATA

Philip S. Gaskell, London, England; Roger Lagadec, Rumlang, Switzerland, and Guy W. W. McNally, Shere, England, assignors to Willi Studer AG, Regensdorf, Switzerland

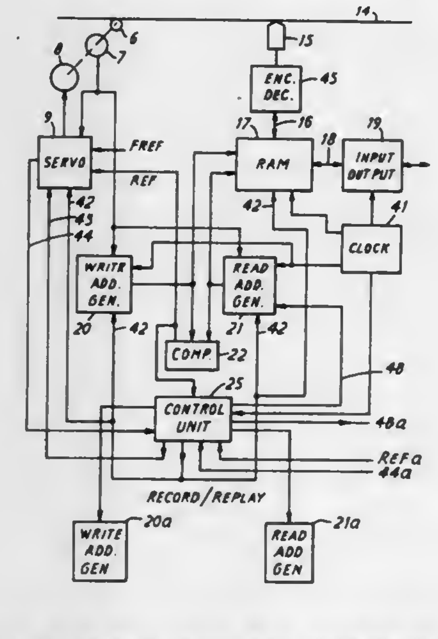
Filed Aug. 24, 1984, Ser. No. 644,194

Claims priority, application United Kingdom, Aug. 26, 1983, 8323110

Int. Cl.⁴ G11B *5/00, 15/46*

U.S. Cl. 360—8 **20 Claims**

1. A method of effecting fast start-up of a recording or replay operation of digital information on a magnetic tape having a nominal tape speed range, characterised in that recording and play-back are effected through a digital store the tape is accelerated rapidly so as to appreciably overshoot the nominal tape speed range before stabilizing in that range, and recording on to the tape from the digital store or replay from the tape into the digital store is initiated substantially before the speed has stabilized in the said range.



4,620,239
RETRIEVAL SIGNAL RECORDING APPARATUS FOR MAGNETIC TAPE RECORDING/REPRODUCING APPARATUS

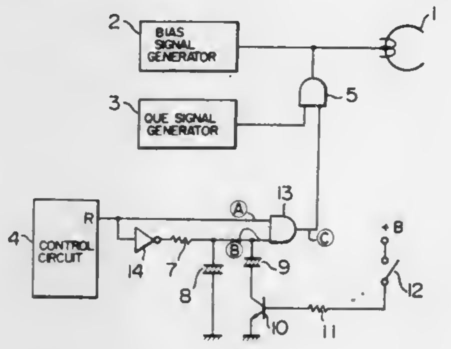
Fumiaki Fujii, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 14, 1984, Ser. No. 589,645

Claims priority, application Japan, Mar. 18, 1983, 58-44118

Int. Cl.⁴ G11B *5/00, 5/02*

U.S. Cl. 360—8 **18 Claims**



1. A retrieval signal recording apparatus for magnetic tape recording/reproducing apparatus capable of switching a plurality of different tape speeds, comprising:

means for generating a retrieval signal and recording it on a magnetic tape; and

means for controlling said recording means at least at the beginning of recording an information signal on said magnetic tape to change to recording time of said retrieval signal in response to the switching of the tape speeds so that the length of the retrieval signal recorded on the magnetic tape is substantially constant even if a different tape speed is selected, said means for controlling recording means including gate means for allowing said retrieval signal to pass therethrough, and means for generating a gate control signal the duration of which is changed in association with the tape speed switching means of the magnetic tape recording/reproducing apparatus and which is used to open said gate means, in response to a signal for making the magnetic tape recording/reproducing apparatus in the mode of recording the information signal.

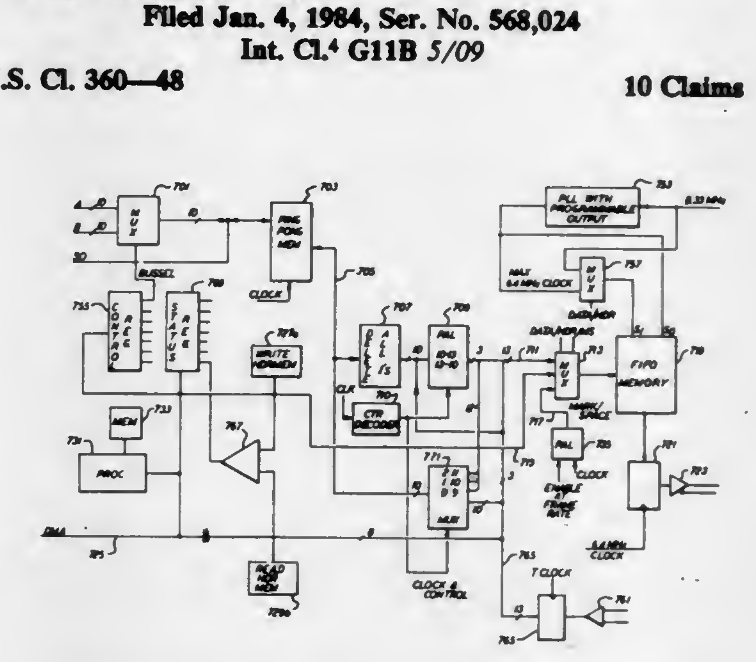
4,620,240
WIDE BAND TAPE RECORDER INTERFACE FOR RECORDING DIGITAL IMAGE DATA IN REAL TIME

Clifton J. McCarthy, Pinehurst, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Jan. 4, 1984, Ser. No. 568,024

Int. Cl.⁴ G11B *5/09*

U.S. Cl. 360—48 **10 Claims**



1. Apparatus for interfacing a wide-band tape recorder having M channels in parallel with a digital image processing system, processing frames of digital information made up of arrays of pixels, each pixel represented by an N bit digital word with the digital words representative of the pixels available on an N bit parallel bus in which each line of the array is presented in serial order from top to the bottom of the frame comprising:

(a) a memory for storing desired header information which is to be provided with each frame of information;

(b) means to buffer incoming N bit words from the bus;

(c) means for converting said N bit words into M bit words, said means for converting having said N bit words from said means to buffer as inputs and providing an M bit parallel output; and

(d) output means having as inputs the M bit parallel output of said means for converting, and having an M bit parallel output coupled as the input to said wide-band tape recorder, said output means adapted to insert the header information contained in said memory at the beginning of each frame of information which is transferred to said tape recorder.

4,620,241
TAPE SPEED CONTROL SYSTEM FOR MAGNETIC TAPE RECORDER

Tsuyoshi Ono, Yamato, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jul. 5, 1983, Ser. No. 511,112

Claims priority, application Japan, Jul. 7, 1982, 57-118287

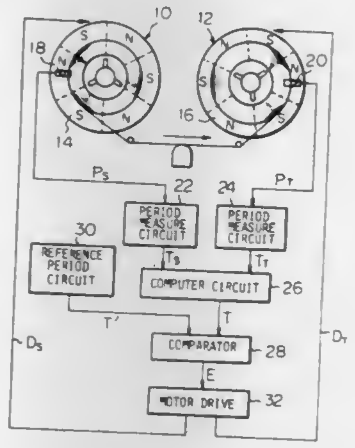
Int. Cl.⁴ G11B *15/46*

U.S. Cl. 360—73 **4 Claims**

1. A system for controlling the running speed of a magnetic tape in a fast feed mode operation of a magnetic tape recorder which includes a take-up reel and a supply reel each being driven for rotation by drive means, said system comprising:

rotation period detector means for detecting a rotation period of the take-up reel and a rotation period of the supply reel and producing outputs indicative of the detected rotation periods;

computing means for weighting one of the detected rotation periods and producing a sum of the weighted rotation period and the other which is the non-weighted rotation period, in which assuming that a weighting constant is n, n=1.5, said computing means comprising two input terminals receiving the outputs of said rotation period detection means, one of said input terminals being connected via a first resistor means to a first analog switch means, the other of said input terminals being connected via a second resistor to a second analog switch means, a third resistor connected between the junction of said one input terminal and said first resistor means and the junction of said second resistor and said second analog switch means, a fourth resistor connected between the junction of said other input terminal and said second resistor and the junction of said first resistor means and said first analog switch means, a comparator having a noninverting input connected to said one inut terminal and an inverting input connected to said other input terminal, said comparator having an output connected to said first analog switch means and via an inverter to said second analog switch means;



reference period predetermining means for predetermining a reference rotation period and producing a reference period output; and

comparing means for comparing the sum period produced by the computing means with the reference period output from the reference period predetermined means and generating a difference signal, said difference signal being fed to the drive means;

whereby the magnetic tape is moved at a selected speed regardless of the tape roll radius built up on the take-up reel.

4,620,242
APPARATUS FOR CONTROLLING A REVERSIBLE TAPE DRIVE IN A MAGNETIC TAPE PLAYER

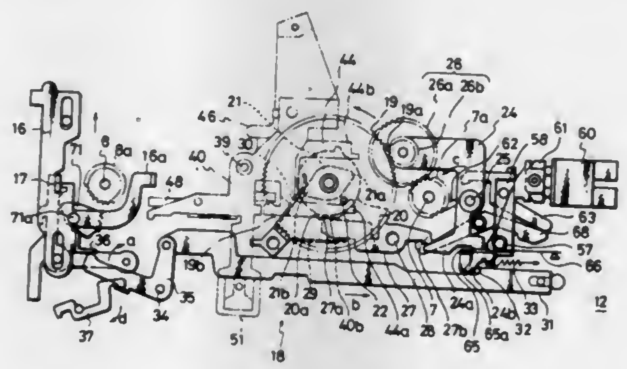
Kozoh Takahashi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 16, 1985, Ser. No. 788,113

Claims priority, application Japan, Oct. 20, 1984, 59-220720

Int. Cl.⁴ G11B *5/56, 15/44*

U.S. Cl. 360—74.1 **16 Claims**



1. In a magnetic tape player having a tape drive device selectively operative to drive a tape in normal and reverse directions in a forward mode of the tape player, apparatus for controlling said tape drive device comprising:

a rotatable cam gear having a toothed periphery with a pair of diametrically opposed gaps therein;

a rotatable driving gear engageable with said toothed periphery of the cam gear for turning the latter through approximately 180° upon each engagement of said driving gear with said toothed periphery;

a pair of diametrically opposed stopper projections rotatably coupled with said cam gear;

a latch member mounted adjacent said cam gear and movable between an engaged position, in which said latch member is engageable with one of said stopper projections for positioning said cam gear in a rest position with one of said gaps facing said driving gear, and a released position in which said latch member is disengaged from said stopper projections;

a cam surface on said cam gear having a pair of diametrically opposed, radially enlarged portions;

spring means engaging said cam surface and acting against one of said radially enlarged portions when a respective one of said gaps faces said driving gear for turning said cam gear from said rest position upon movement of said latch member to said released position;

an eccentric member on said cam gear;

a change lever movable between first and second positions for causing operation of said tape drive to drive the tape in said normal and reverse directions, respectively;

a cam follower member engageable with said eccentric member and being pivotally mounted on said change lever;

a spring-loaded lock arm also pivotally mounted on said change lever and being movable between a normal operative position for locking said cam follower member relative to said change lever and an inoperative position in which said cam follower member is free to pivot relative to said change lever;

a forward mode selecting member having an inactive position, in which said lock arm is displaced to said inoperative position thereof, and being movable to an active position for selecting said forward mode and releasing said lock arm to permit the latter to attain said normal operative position; and

means responsive to pivoting of said cam follower member by said eccentric member when said lock arm is in said inoperative position for moving said latch member to said released position.

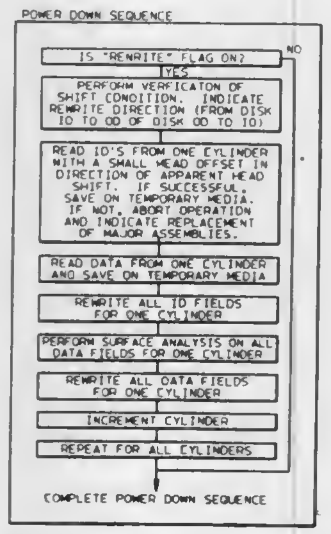
4,620,243
DISK DRIVE INCREMENTAL REWRITE

Kirby L. Bakken, Rochester, Minn.; Robert G. Judson, Santa Clara, Calif.; William E. Miller, and Ronald A. Peterson, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 29, 1985, Ser. No. 770,455

Int. Cl.⁴ G11B *21/10, 5/09*

U.S. Cl. 360—77 **17 Claims**


POWER DOWN SEQUENCE
IS "REWRITE" FLAG ON?
NO
YES
PERFORM VERFICATON OF SHIFT CONDITION. INDICATE REWRITE DIRECTION (FROM DISK ID TO OD OF DISK OD TO ID)
READ ID'S FROM ONE CYLINDER WITH A SMALL HEAD OFFSET IN DIRECTION OF APPARENT HEAD SHIFT. IF SUCCESSFUL. SAVE ON TEMPORARY MEDIA. IF NOT. ABORT OPERATION AND INDICATE REPLACEMENT OF MAJOR ASSEMBLIES.
READ DATA FROM ONE CYLINDER AND SAVE ON TEMPORARY MEDIA
REWRITE ALL ID FIELDS FOR ONE CYLINDER
PERFORM SURFACE ANALYSIS ON ALL DATA FIELDS FOR ONE CYLINDER
REWRITE ALL DATA FIELDS FOR ONE CYLINDER
INCREMENT CYLINDER
REPEAT FOR ALL CYLINDERS
COMPLETE POWER DOWN SEQUENCE

1. A system for detecting degraded readability of information stored in tracks on a disk surface of a multiple disk surface

disk drive and rewriting selected portions of the information, the system comprising:

a transducer means for reading and recording information on the disk, the transducer means being moveable from track to track as a function of servo information on a different disk surface and being moveable over portions of each track;

detection means coupled to the transducer means for detecting degraded readability of the information as the transducer means is moved about an expected center of a selected track as indicated by the servo information; and

control means for storing selected increments of information from the transducer means and providing such information to the transducer means for recording onto the selected track at its expected center as a function of the readability of the information.

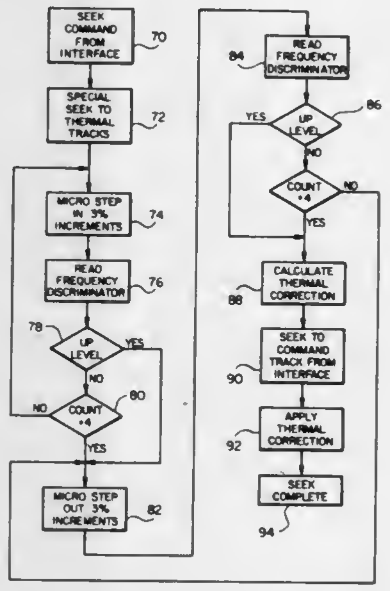
4,620,244
COMPENSATION METHOD TO CORRECT THERMALLY INDUCED OFF-TRACK ERRORS IN DISC DRIVES

James N. Krause, Santa Clara County, Calif., assignor to Seagate Technology, Scotts Valley, Calif.

Filed Nov. 20, 1985, Ser. No. 800,061

Int. Cl.⁴ G11B *5/55*

U.S. Cl. 360—77 **15 Claims**


SEEK COMMAND FROM INTERFACE
70
SPECIAL SEEK TO THERMAL TRACKS
72
MICRO STEP IN 3% INCREMENTS
74
READ FREQUENCY DISCRIMINATOR
76
78
UP LEVEL
YES
NO
COUNT +4
80
NO
YES
MICRO STEP OUT 3% INCREMENTS
82
84
READ FREQUENCY DISCRIMINATOR
86
YES
UP LEVEL
NO
COUNT +4
NO
YES
88
CALCULATE THERMAL CORRECTION
90
SEEK TO COMMAND TRACK FROM INTERFACE
92
APPLY THERMAL CORRECTION
SEEK COMPLETE
94

1. A method for correction of thermal mistracking in a disc drive comprising a rotating disc characterized by a plurality of spaced circular tracks for storing recorded data, actuator means for accessing the data comprising a carriage, means for mounting a transducer at one end of the carriage, means adjacent the periphery of the rotating disc for driving and positioning the carriage along a known path to position the transducer relative to the disc and the tracks, the method comprising the steps of

defining a selected thermal test track on said disc at a location on said disc not accessible to the user,

recording a reference signal along a track on at least one side of said test track,

moving said transducer with no thermal correction applied to said thermal test track,

moving said transducer in known incremental movements from said thermal test track toward said reference signal to detect said reference signal,

operating on said information derived from said incremental movements to determine thermal shift of said transducer relative to said tracks on said disc and applying the knowledge of said determined thermal shift to subsequent seeks to user-accessible data tracks.

4,620,245
TAPE LOADING APPARATUS FOR USE IN A RECORDING AND/OR REPRODUCING APPARATUS OF THE ROTATING HEAD KIND

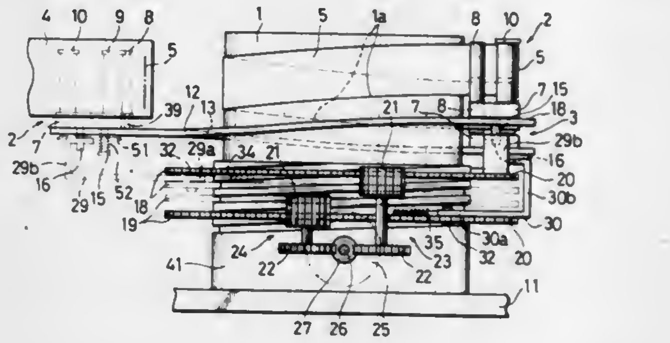
Osamu Shimizu, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 2, 1984, Ser. No. 606,151

Claims priority, application Japan, May 16, 1983, 58-85596

Int. Cl.⁴ G11B *15/66*

U.S. Cl. 360—85 **4 Claims**



1. A tape loading apparatus mounted on a chassis for extracting a tape from a tape cassette and winding the tape around a rotary head drum comprising:

a pair of tape guide blocks for extracting said tape from said tape cassette and winding said tape around said rotary head drum;

a pair of guide rails for guiding said pair of tape guide blocks along both sides of said rotary head drum, at least one of said guide rails being inclined with respect to a plane perpendicular to the axis of said rotary head drum in order that said pair of tape guide blocks have a level difference at the tape-loaded positions thereof with respect to the axial direction of said rotary head drum;

a pair of upper and lower ring gears rotatably arranged around said rotary head drum for moving said pair of tape guide blocks along said pair of guide rails with the rotations of said ring gears;

a pair of connecting means for connecting said pair of tape guide blocks to said pair of ring gears;

a drive means for rotating said pair of ring gears in the opposite directions to each other; and

means for moving at least one of said ring gears along the axis of said rotary head drum and maintaining said upper and lower ring gears in mutual parallel relationship, said means for moving being adapted for rotatably supporting said pair of upper and lower ring gears, so that the level relationships between said tape guide blocks and said ring gears are substantially kept constant while said pair of ring gears rotate in the opposite directions to each other.

4,620,246
CASSETTE EJECTION MECHANISM OF A CASSETTE TAPE RECORDER

Toshikazu Kato, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 30, 1982, Ser. No. 403,865

Claims priority, application Japan, Aug. 12, 1981, 56-126362

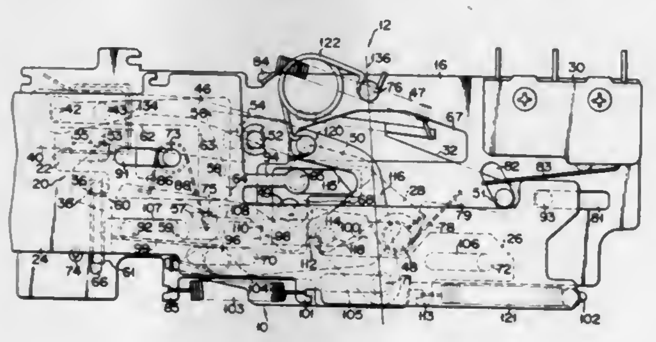
Int. Cl.⁴ G11B *15/00*

U.S. Cl. 360—96.5 **5 Claims**

1. A cassette ejection mechanism of a cassette tape recorder comprising a pair of guide plates facing each other, a cassette holder including a holder support rockingly attached to the guide plates and a holder body supported by the holder support, said cassette holder and holder body being movable between upper and lower positions between the guide plates and capable of housing a tape cassette therein, and a magnetic head and a pinch roller arranged movably to come into contact with a magnetic tape in a tape cassette in the cassette holder when the cassette holder is located in the lower position

thereof, wherein a tape cassette located together with the cassette holder in the lower position of the cassette holder, along with the cassette holder, moves to the upper position of the cassette holder after the magnetic head and the pinch roller move to positions where the magnetic head and the pinch roller do not hinder the movement of the cassette holder, and then a tape cassette slides in the cassette holder to be ejected, and further comprising:

an ejecting plate attached to one of the guide plates to be movable between first and second positions, whereby the magnetic head and the pinch roller are moved to the positions where the magnetic head and the pinch roller do not hinder the movement of the cassette holder as the ejecting plate moves from the first position to the second position thereof, and whereby a tape cassette in the cassette holder is slid to be ejected as the ejecting plate moves from the second position to the first position;



a boosting plate attached to said one guide plate to be movable between first and second positions, whereby the cassette holder is moved from the lower position to the upper position thereof as the boosting plate moves from the first position to the second position thereof;

urging means stretched between the ejecting plate and the boosting plate, whereby the boosting plate is urged to move from the first position to the second position thereof as the ejecting plate moves from the first position to the second position thereof; and

a stop member attached to said one guide plate for engaging the boosting plate, thereby locking the boosting plate in the first position thereof,

said ejecting plate including pressing means for pressing the stop member to disengage the stop member from the boosting plate when the ejecting plate reaches the second position thereof.

4,620,247

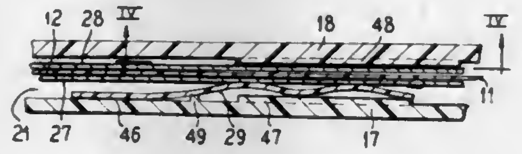
DISKETTE SPRING AND DISKETTE

Walter A. Papciak, Elmwood Park; Karl K. Hoffman, Arlington Heights; Roger Engel, Schaumburg, and Adam Wieczorek, Chicago, all of Ill., assignors to Plicon Corporation, Elk Grove Village, Ill.

Filed Jun. 4, 1985, Ser. No. 741,171

Int. Cl.^{4} G11B *5/012;* **F16F** *1/18*

U.S. Cl. 360—97 **22 Claims**



1. A spring structure for a micro floppy diskette or the like comprising:

(A) an elongated piece of plastic sheeting having opposed, parallel faces and a front end and an opposite back end,

(B) said plastic sheeting being comprised of a resilient, flexible, relatively rigid, preformed, temperature stable, uniform organic polymeric material,

(C) said piece including two regions,

(D) one said region being generally flat and located adjacent said back end,

(E) the other said region having at least one generally transversely extending wave formed therein, said wave being upstanding relative to said one region and having a generally uniform crest region with a trough region being defined on each side of each such wave, each trough region being generally coplanar with said one region, and said front end being generally coplanar with said one region, and

(F) at least a portion of one said face in said one region bearing a layer of an adhesive, said one face being opposed to the other said face wherein the outer surface of each crest regions is defined.

4,620,248

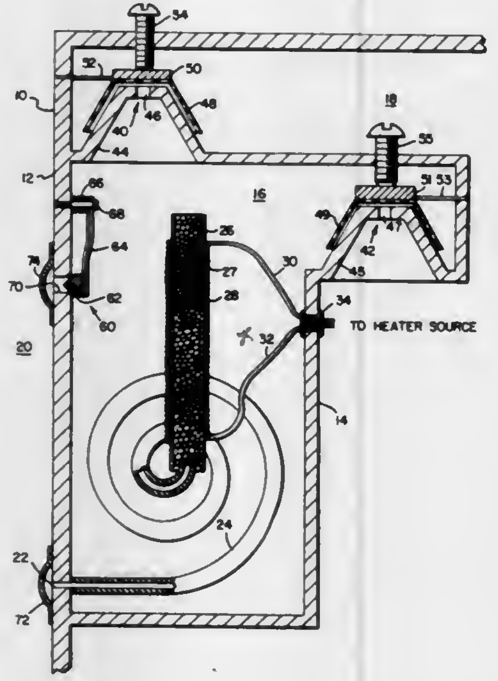
APPARATUS FOR CONTROLLING HUMIDITY IN A DISK DRIVE

Louis G. Gitzendanner, Oklahoma City, Okla., assignor to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Sep. 4, 1984, Ser. No. 646,537

Int. Cl.^{4} G11B *5/012;* **B01F** *3/02;* **G05D** *21/00*

U.S. Cl. 360—97 **17 Claims**



1. In a disk drive having a housing forming an interior chamber containing a disk and one or more heads for reading and/or writing data on said disk, said disk being rotatable in relation to said heads, the improvement comprising:

a vent tube having a first end outside said housing and a second end in said interior chamber within said housing, said vent tube providing fluid communication between said interior chamber of said housing and atmosphere outside said housing, said vent tube being characterized by having an internal bore large enough so that effects of surface tension and friction between air and water vapor flowing in the vent tube and the surface of the bore of said vent tube are not significant so that flow of air and water vapor in the vent tube is substantially laminar and capillary effects are not significantly present, said vent tube being further characterized by a length long enough to minimize the mass flow rate of water vapor from said atmosphere to said interior chamber, said vent tube being further characterized that pressure gradient across the length of said vent tube is no greater than 0.1 psi; and

a desiccant tube within said internal chamber, said desiccant tube being connected to said second end of said vent tube in fluid communication with said internal bore of said vent tube, said dessicant tube containing a desiccant material which absorbs water.

4,620,249

APPARATUS FOR DRIVING A FLOPPY DISC

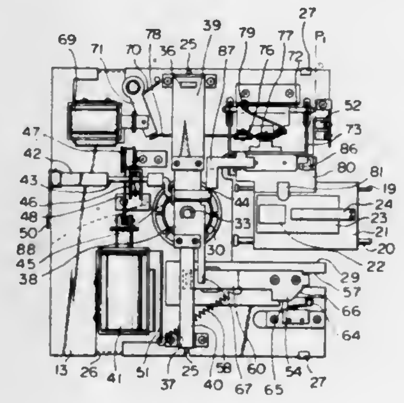
Masayuki Suzaki; Tetsuro Hirota; Tetsuo Kanno, and Takeziro Koguchi, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 19, 1982, Ser. No. 369,682

Claims priority, application Japan, Apr. 28, 1981, 56-65406; Jun. 25, 1981, 56-98942

Int. Cl.^{4} G11B *17/04, 5/012*

U.S. Cl. 360—99 **8 Claims**



8. A floppy disc driving apparatus for automatically driving a floppy disc which is rotated by a driving motor about an opening formed at the center thereof when data are to be recorded in or reproduced from the floppy disc by a head mechanism, comprising:

floppy disc gripping means for drivably gripping the floppy disc at a first predetermined position inside the apparatus;

guide means for guiding the floppy disc into the apparatus in an insertion direction and out of the apparatus in an ejection direction which is opposite to the insertion direction;

biasing means urging the floppy disc out of the apparatus through the guide means in the ejection direction;

stop means for enabling the floppy disc to be manually inserted through the guide means in the insertion direction against a force of the biasing means past the first predetermined position and stopping the floppy disc at the first predetermined position when the floppy disc is subsequently manually released and moved in the ejection direction by the biasing means; and

first sensor means for producing a first signal when the floppy disc has been moved to the first predetermined position by the biasing means and stopped thereat by the stop means, second sensor means for producing a second signal if the floppy disc is oriented in the guide means in a predetermined manner and means for ejecting the floppy disc from the apparatus if the second signal is not produced within a predetermined time after the first signal is produced.

4,620,250

TRANSDUCER-TO-MEDIUM STABILIZING DEVICE AT NEGATIVE ATTACK ANGLE WITH RESPECT TO MEDIUM

Robert G. Hills, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 29, 1984, Ser. No. 594,657

Int. Cl.^{4} G11B *5/016, 5/60, 5/48, 23/03*

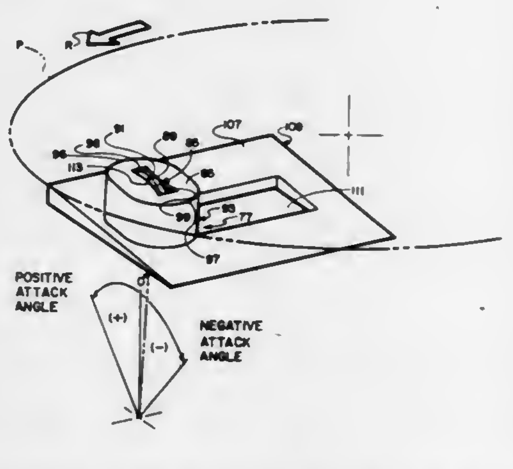
U.S. Cl. 360—102 **5 Claims**

1. In a recording and/or reproducing apparatus of the type provided with (a) means for rotating a flexible storage disk and (b) a record and/or playback head having transducer means for coacting with the disk to record or reproduce information on the disk, the improvement comprising:

a substantially flat air bearing surface for stabilizing the flexible disk as it is rotated over said surface;

means, integral with said air bearing surface, defining a negative pressure cavity having an opening to said surface, for generating a pull down force on successive portions of the rotated disk as each portion is moved over said opening;

means supporting said head in said cavity with said transducer means at said opening; and



means for disposing said air bearing surface at a negative attack angle with respect to the rotated disk for causing the formation of a pull down force along said surface to enhance disk stabilization over said surface and disk pull down at said opening, whereby a stable and intimate transducer-to-disk relation is effected.

4,620,251

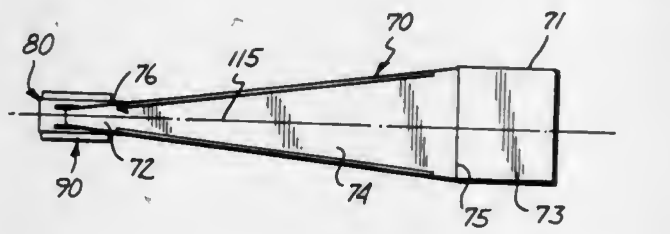
MAGNETIC TRANSDUCER SUPPORT STRUCTURE

Louis G. Gitzendanner, Oklahoma City, Okla., assignor to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed May 13, 1983, Ser. No. 494,224

Int. Cl.^{4} G11B *5/60, 15/64*

U.S. Cl. 360—103 **6 Claims**



1. In a magnetic recording system including an apparatus for supporting and selectively positioning a transducer having a surface for flying and a center therein, with respect to a rotatable magnetic disk medium, the improvement comprising:

an actuator selectively rotatable about an axis;

a substantially straight arm rigidly secured to said actuator at a first end of said arm whereby said arm rotates about said axis with said actuator;

a load spring having a first end secured to a second end of said arm; and

a gimbal spring secured to a second end of said load spring, said gimbal spring supporting the transducer with its flying surface adjacent to the recording surface of the magnetic disk medium for reading and/or writing information at locations on said recording surface selected in accordance with rotational movement of said medium and rotation of said actuator;

said arm, transducer flying surface, load spring and gimbal spring being symmetrical about a first line from said axis to the center of said transducer flying surface;

said arm and load spring with said line all extending substantially in the direction of said relative medium movement adjacent the transducer flying surface.

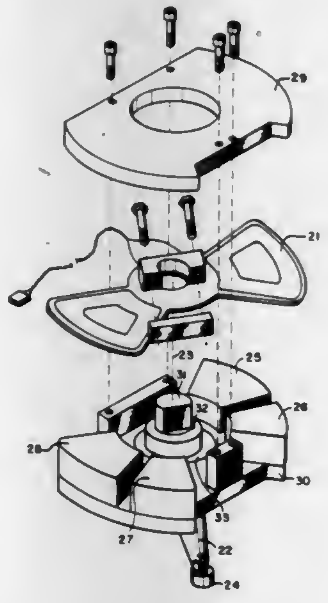
4,620,252
SYMMETRICAL COIL ACTUATOR FOR A MAGNETIC DISK DRIVE

Randall C. Bauck, East Layton, and Peter S. Kleczkowski, Ogden, both of Utah, assignors to Iomega Corporation, Ogden, Utah

Continuation-in-part of Ser. No. 259,696, May 1, 1981, abandoned. This application Nov. 9, 1982, Ser. No. 440,366

Int. Cl.⁴ G11B *5/55, 21/08;* **H02K** *33/00, 35/00*

U.S. Cl. 360—106 **9 Claims**



1. A magnetic disk drive actuator for moving a magnetic head in an arcuate path in read/write relationship with a magnetic disk comprising:

an actuator arm rotatable about a center of rotation:

a read/write head mounted on said arm so that said head travels along said arcuate path as said arm is rotated;

a planar coil having only two active sections connected in series and attached to said arm for rotating it about said center of rotation, said planar coil being symmetrical with respect to said center of rotation and having first and second substantially straight active sections extending from one side of said center of rotation and third and fourth substantially straight active sections extending in the same plane on the opposite side of said center of rotation, and symmetrical with said first and second sections having arcuate return traces joining said first and second straight active sections and arcuate return traces joining said third and fourth straight active sections, said active sections and said return traces being connected in series to two connections for supplying current to said coil; and

magnetic means positioned adjacent to each of said active sections of said coil, so that current through said active sections on opposite sides of said center of rotation produces magnetic forces on said coil which act about said center of rotation whereby the rotational forces about the center of rotation are cumulative and the torsional forces cancelled one another avoiding vibration and reducing potential servo loop instability.

4,620,253
LOW MASS ACTUATOR SYSTEM FOR MAGNETIC RECORDING DISK

Richard L. Garwin, Scarsdale, and David A. Thompson, South Salem, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

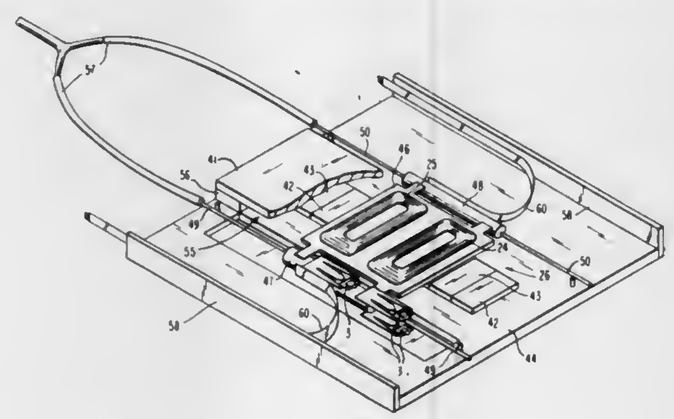
Continuation of Ser. No. 221,607, Dec. 31, 1980, abandoned. This application Jul. 28, 1983, Ser. No. 517,987

Int. Cl.⁴ G11B *5/55, 21/08, 5/52, 21/04*

U.S. Cl. 360—107 **3 Claims**

1. In an actuator for use with a magnetic recording disk file including at least one magnetic recording head and at least a pair of stacked magnetic recording disks, said actuator being characterized by:

a motor sufficiently narrow to be positionable between two adjacent stacked disks in a disk file and extending radially across at least one of said pair of disks, said motor including a stator with a magnetic yoke having a plurality of magnets alternating polarity arranged in an array, side-by-side on one arm of said yoke, and an armature adapted to be propelled along said array of magnets, said armature including a pair of flat magnetic coils arranged in side-by-side relationship for bridging from one of said magnets to another of said magnets along said stator, said armature coacting with said stator and supporting said coupled to said magnetic head;



a head position sensor means whereby said magnetic head reads said track information on a said disk and provides a position signal output in response to said track information and

an automatic control means, for controlling track position of said magnetic recording head over a specific track on a disk of said disk file, said automatic control means being adapted to control the energization of said coils sequentially and alternately as a result of said position signal output of said sensor means, which sensor means provides position information to said automatic control means.

4,620,254
INFORMATION STORAGE AND RETRIEVAL SYSTEM INCLUDING A TAPE CARTRIDGE HAVING A SLIDABLE COVER

Kobert R. Smith, II, Los Altos Hills, Calif., assignor to BSR North America, Ltd., New York, N.Y.

Filed Jan. 4, 1983, Ser. No. 455,473

Int. Cl.⁴ G11B *23/02, 23/04*

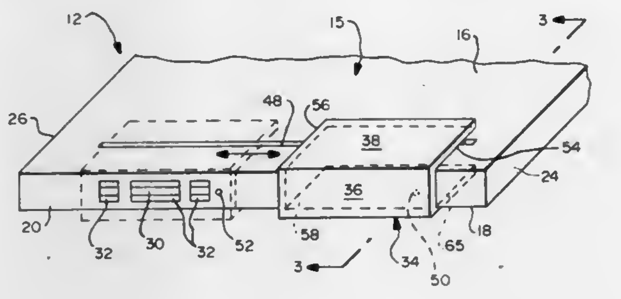
U.S. Cl. 360—132 **4 Claims**

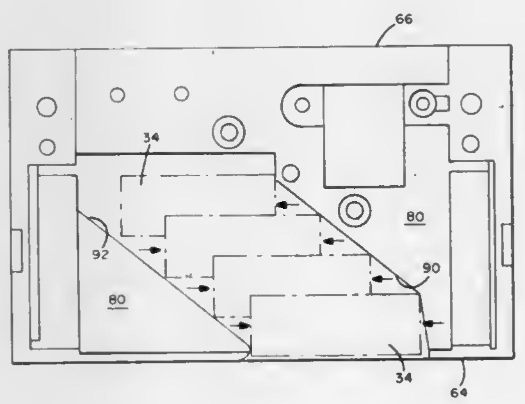
4. An information storage and retrieval system comprising: magnetic tape for storing information;

an information retrieval apparatus including a track and means for retrieving said information from said magnetic tape;

A cartridge housing having an interior including said magnetic tape, said housing also having an opening for gaining access to said magnetic tape by said information retrieving apparatus; and

cover means connected with said cartridge housing for movement between a first position closing said opening and a second position uncovering said opening and thereby allowing said information retrieving apparatus to gain access to said magnetic tape, said cover means including camming means comprising a plurality of vertically extending shoulders, each positioned at a predetermined location on said cover means such that said camming means comes in contact with said track when said cartridge housing is inserted into said information retrieving apparatus said track and said camming means being configured such that insertion of said cartridge housing into said information retrieving apparatus causes said cover means to be moved from said first position at one end of said track to said second position at the other end of said track.





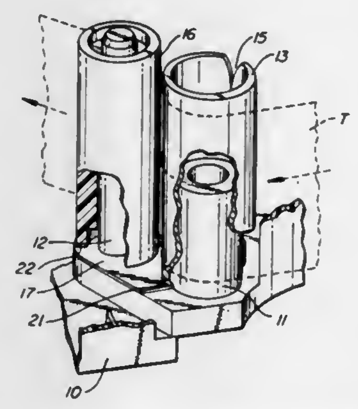
4,620,255
TAPE CARTRIDGE STATIC ELIMINATOR

Randall W. Cook, Palo Alto; Richard E. Rozporka, San Mateo, and Robert S. Jones, San Jose, all of Calif., assignors to Tandy Corporation, Fort Worth, Tex.

Filed Jul. 9, 1984, Ser. No. 629,016

Int. Cl.⁴ G11B *23/02*

U.S. Cl. 360—132 **5 Claims**



1. A magnetic tape cassette comprising: a housing containing a take-off spool and a take-up spool for magnetic tape, first and second tape guide support pins mounted within said cassette on the take-up spool side of said housing, a stationary metal guide sleeve on said first pin, an electrically conductive plastic guide roller rotatably mounted on said second pin, the magnetic tape path through said cassette housing engaging the back side of said tape against said metal guide sleeve and the magnetic coating side of said tape against said plastic guide roller, and a smooth flat metal member mounted for electrical contact against corresponding ends of said metal sleeve and plastic roller to complete an electrical path therebetween and thereby cancel the electrostatic charges generated on said metal sleeve and the magnetic coating of said tape during transport of said tape between said take-off and take-up spools.

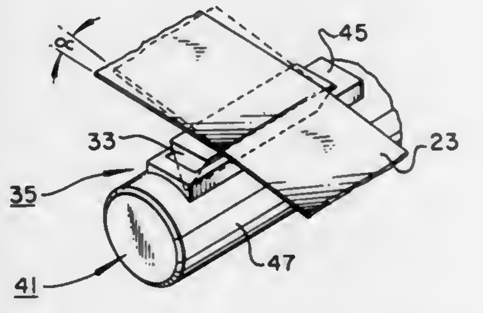
4,620,256
MAGNETIC COMPUTER TAPE CLEANER

Ulyss R. Rubey, Lewisville, Tex., assignor to Media Recovery, Inc., Dallas, Tex.

Filed Jul. 30, 1984, Ser. No. 635,722

Int. Cl.⁴ G11B *5/00;* **A47K** *7/02*

U.S. Cl. 360—137 **11 Claims**



1. In a method of cleaning a computer tape in which the tape traverses past cleaning and wiper means and traversing from a supply reel onto a take-up reel and back, the improvement comprising contacting the tape with an ultrasonically vibrating scraper blade for scrapingly engaging the surface of the tape for removing debris therefrom and improving subsequent tape-to-head contact.

4,620,257
CARRIER RELAY SYSTEM

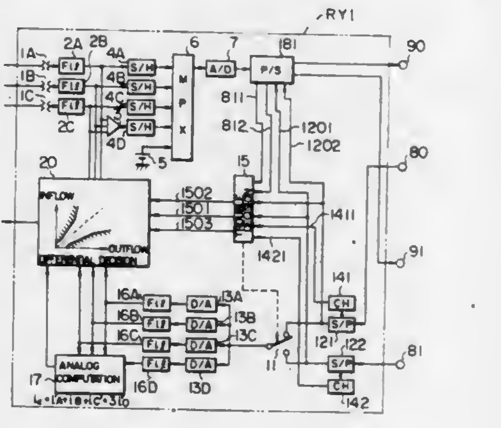
Yoshihiro Sano, Katsuta; Fumio Iwatani, Hitachi; Takao Kubo, Hitachi, and Yoshiteru Miki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 20, 1984, Ser. No. 632,846

Claims priority, application Japan, Jul. 21, 1983, 58-134158

Int. Cl.⁴ H02H *7/26*

U.S. Cl. 361—68 **8 Claims**



3. A carrier relay system comprising:

a power system having steel towers supporting power transmission lines together with an overhead ground wire including at least two signal transmission routes extending between a pair of terminal stations;

differential relay means responsive to a current signal detected in one terminal station connected to said two signal transmission routes for detecting trouble in said power system in accordance with a differential current between said current signal in said one terminal station and a current signal transferred from the other terminal station through said signal transmission routes, and including means for outputting a signal to open a current breaker of said one terminal station when trouble has occurred in said power system, a respective differential relay means being disposed at each of said terminal stations;

trouble detection relay means which detects a current or voltage of said one terminal station for detecting trouble in said power system, and for outputting a signal to open said circuit breaker of said one terminal station when trouble has occurred in said power system, a respective trouble detection relay means being disposed at each of said terminal stations;

signal transmitting means for transmitting a first specific signal to a first one of said signal transmission routes and a second specific signal to a second one of said signal transmission routes in said one terminal station, and for transmitting a third specific signal to said first one of said signal transmission routes and a fourth specific signal to said second one of said signal transmission routes in said other terminal station;

transmission detecting means for detecting a transmission trouble by comparing a specific signal transferred by said one terminal station with a specific signal received from said other terminal station;

means for opening said circuit breaker of said one terminal station when both said differential relay means and said trouble detection relay means output signals, and for inhibiting the opening of said circuit breaker in accordance with an output of said transmission detecting means; and

means for opening said circuit breaker when said transmission detecting means detects transmission troubles on said two signal transmission routes and said trouble detection relay means outputs said signal to open said circuit breaker.

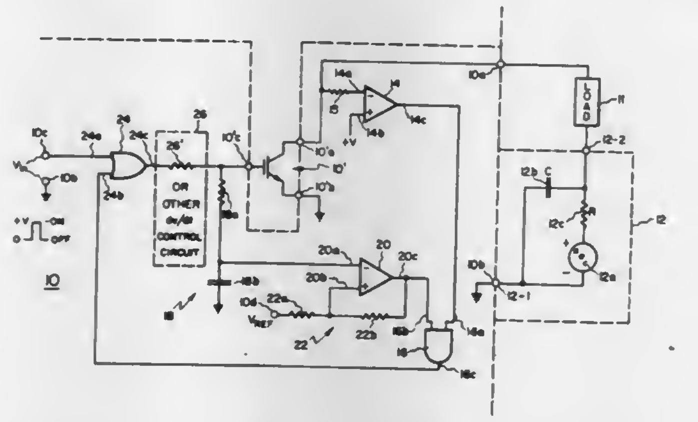
4,620,258
CIRCUIT FOR SELF-COMMUTATED TURN-OFF OF LATCHED DEVICES, SUCH AS OF THE INSULATED-GATE TRANSISTOR/RECTIFIER TYPE

Milton D. Bloomer, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 30, 1984, Ser. No. 595,179

Int. Cl.⁴ H02H *3/20*

U.S. Cl. 361—91 **14 Claims**



1. A circuit for the self-commutated turning-off of a power switching device of the type having a control electrode and a circuit in which the flow of current is controlled by the magnitude of a drive signal voltage at said control electrode, said controlled-circuit being characterized by latching in be conductive condition at a relatively high current level and remaining latched even in the presence of a turn-off magnitude of the control electrode signal voltage, until the controlled-circuit current is reduced to a holding current substantially less than said latching current, said circuit comprising:

means for monitoring only the voltage across the controlled-circuit of the switching device to provide a first signal responsive to detection of at least a latched condition;

means for monitoring the control electrode signal voltage magnitude to provide respective first and second conditions of a second signal responsive to detection of respective first and second magnitudes of said control electrode signal voltage sufficient to require a respective turning-off and turning-on of current flow through said switching device; and

means for cylically pulsing the control electrode signal voltage, responsive only to the presence of both of (1) said first signal and (2) a selected one of said second signal conditions, to cause the switching device to turn off at a current magnitude greater than the device holding current.

4,620,259
CIRCUIT FOR DRIVING SOLENOID VALVE

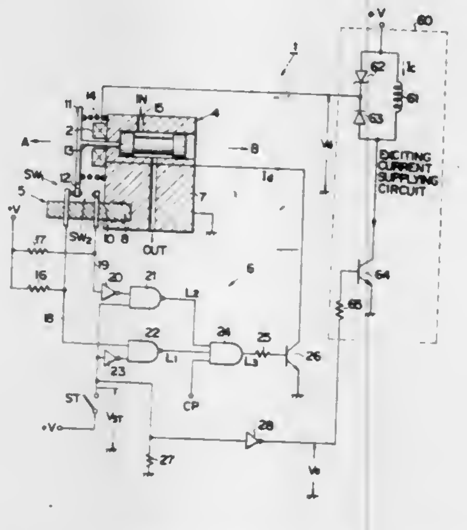
Hidekazu Oshizawa, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Japan

Filed Dec. 19, 1984, Ser. No. 683,715

Claims priority, application Japan, Dec. 20, 1983, 58-238932

Int. Cl.⁴ H01H *47/32*

U.S. Cl. 361—152 **10 Claims**



1. A circuit for driving a solenoid valve having a valve which is driven by a current flowing through a solenoid coil to open or close said solenoid valve, comprising:

an ON-OFF switching means which operates in response to the movement of said valve;

means for producing a command signal for controlling the open/close state of said solenoid valve;

a first circuit responsive to a command signal and the operation of said ON-OFF switching means for providing a supply of a stand-by exciting current which intermittently energizes said solenoid coil in such a way that said solenoid valve is substantially maintained in a state just before the open/close state thereof; and

a second circuit responsive to said command signal for supplying a driving exciting current to said solenoid coil to drive said valve to the fully open or closed state of said solenoid valve.

4,620,260
CIRCUIT FOR DRIVING SOLENOID

Hidekazu Oshizawa, and Takeo Kushida, both of Higashimatsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Japan

Filed Dec. 19, 1984, Ser. No. 683,717

Claims priority, application Japan, Dec. 20, 1983, 58-238931

Int. Cl.⁴ H01H *47/32*

U.S. Cl. 361—152 **5 Claims**

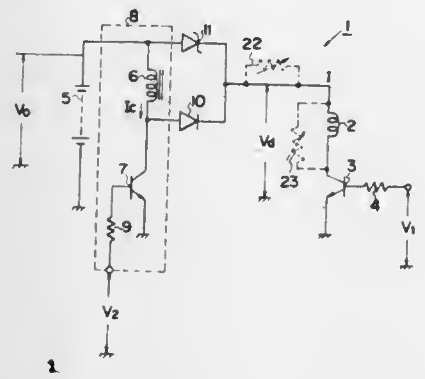
1. A circuit for driving a solenoid, which provides a suddenly standing-up exciting current to the solenoid in order to operate the solenoid at high speed, said circuit comprising:

a d.c. power source;

a first switch connected in series with the solenoid for passing or cutting off the exciting current supplied to the solenoid;

a series circuit composed of a choke coil and a second switch which is switched from its ON state to its OFF state when the first switch is switched from its OFF state to its ON state, said series circuit being connected with said d.c. power source, whereby to produce a counterelectromotive force;

a unidirectional element connected between one end of the choke coil and the solenoid in order to apply to the solenoid the counterelectromotive force produced in the choke coil; and



a voltage limiting element for limiting the level of the transient voltage applied through the unidirectional element to the solenoid and for applying the voltage of the d.c. power source to said solenoid coil, the voltage limiting element being connected between the solenoid and the d.c. power source.

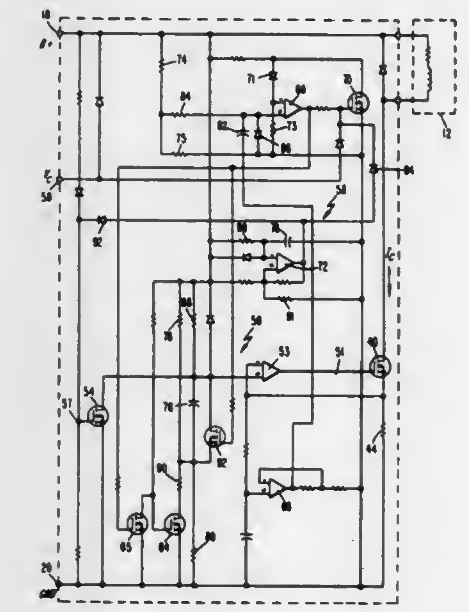
4,620,261
APPARATUS AND METHOD FOR CONTROLLING ELECTROMAGNETIC CLUTCHES AND THE LIKE

James P. Thornton, Dunmore, Pa., assignor to Fairchild Weston Systems, Inc., Archbald, Pa.

Filed Oct. 11, 1984, Ser. No. 659,737

Int. Cl.⁴ F16D *27/16;* H01H *47/32*

U.S. Cl. 361—154 **14 Claims**



1. A circuit for supplying driving current to the coil of an electromagnetic device having a movable armature comprising:

means for applying a voltage across said coil to cause a first current to flow therethrough;

means for measuring a change in said first current in response to a change in an electromagnetic characteristic of said device; and

means responsive to said change for applying through said coil and second initially decreasing and then increasing current.

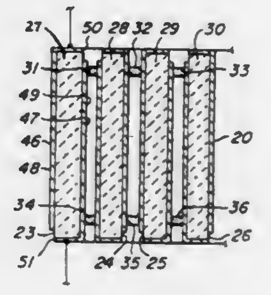
4,620,262
PYROELECTRIC ENERGY CONVERTER ELEMENT COMPRISING VINYLIDENE FLUORIDE-TRIFLUOROETHYLENE COPOLYMER

Randall B. Olsen, 3025 Via de Caballo, Olivenhain, Calif. 92024

Filed Sep. 13, 1984, Ser. No. 650,250

Int. Cl.⁴ H01B *3/44;* H02N *1/00;* H01G *4/08*

U.S. Cl. 361—323 **4 Claims**



3. A pyroelectric energy conversion film stack, which essentially consists of films of a copolymer of vinylidene fluoride and trifluoroethylene in a molar ratio of from about 90:10 to about 10:90, the surfaces of said films being substantially covered on both sides with thin metallic electrodes, wherein a separation between adjacent copolymer films is maintained by a screen mesh.

4,620,263
CONTAINER FOR ACCOMMODATING A CONTROL DEVICE

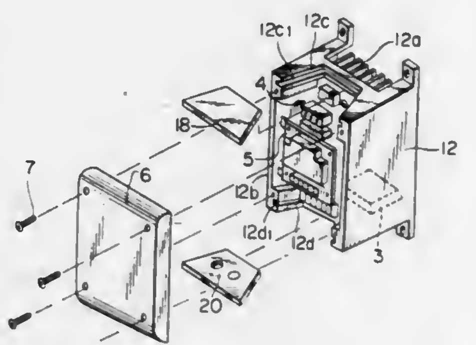
Eizi Ito, Komaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1984, Ser. No. 596,822

Claims priority, application Japan, Apr. 8, 1983, 58-52189[U]

Int. Cl.⁴ H05K *7/20*

U.S. Cl. 361—383 **11 Claims**



1. A control device, comprising:

a control mechanism which rises in temperature during use; and

a container including:

a die cast aluminum housing having radiator fins, said housing containing said control mechanism therein, said housing having a side surface having an opening therein for obtaining access therethrough to the interior thereof, and opposite top and bottom surfaces, said top and bottom surfaces respectively having top and bottom cut-away portions,

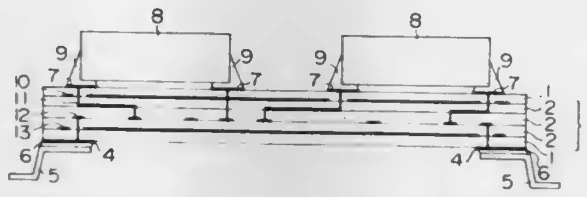
a cover plate covering said opening mounted to said housing over said opening, said housing and cover plate forming means for sealing the interior of said housing except through said cut-away portions, and

top and bottom protective covers attached to said housing respectively covering said top and bottom cut-away portions.

4,620,264
MULTI-LAYER CERAMIC WIRING CIRCUIT BOARD AND PROCESS FOR PRODUCING THE SAME

Nobuyuki Ushifusa; Satoru Ogihara, both of Hitachi, and Kosei Nagayama, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 21, 1984, Ser. No. 685,133
Claims priority, application Japan, Dec. 23, 1983, 58-243351
Int. Cl.⁴ H05K *1/03*
U.S. Cl. 361—414 **10 Claims**

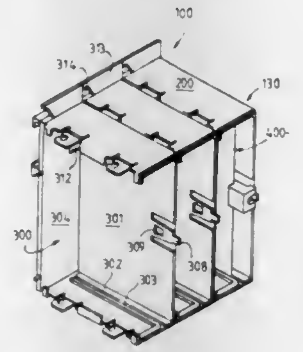


1. A multi-layer ceramic wiring circuit board, comprising:
a plurality of ceramic insulating substrate layers;
at least one wiring conductor layer betweeen selected ceramic insulating substrate layers, said plurality of insulating substrate layers and said at least one wiring conductor layer forming a laminated stack having at least one outer ceramic insulating substrate layer and at least one inner ceramic insulating substrate layer, said at least one inner ceramic insulating substrate layer contacting at least one selected wiring conductor layer; wherein,
said at least one inner ceramic insulating substrate layer has a relative dielectric constant less than or equal to 6.0 and a relative density of less than 90%;
said at least one outer ceramic insulating substrate layer has a tensile strength of at least 4 kgf/mm^2 and a relative density greater than or equal to 90%; and
said at least one outer ceramic insulating substrate layer is made of a material containing the same compounds as are contained in the material of which said at least one inner ceramic insulating layer is made.

4,620,265
MODULAR CELL FOR SUPPORTING AND PROTECTING ELECTRONIC CARDS

Gérard Lerude, Antibes, and Christine Roux, Le Rouret, both of France, assignors to La Telemecanique Electrique, France

Filed Feb. 7, 1985, Ser. No. 699,097
Claims priority, application France, Feb. 9, 1984, 84 01915
Int. Cl.⁴ H05K *5/02*
U.S. Cl. 361—424 **15 Claims**

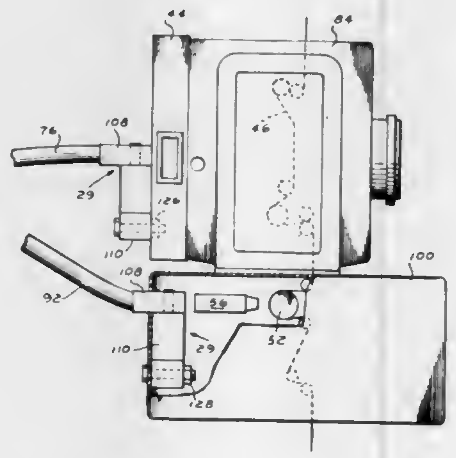


1. A modular cell for supporting and protecting electronic cards comprising a flat element or blank having two parallel side edge portions, a front edge portion and a rear edge portion; a bottom extending perpendicularly to said blank from said rear edge portion and two lateral sides extending perpendicularly to said blank respectively from said two side edge portions, said lateral sides having card guide means forming two respective lateral slides parallel to the blank and at a small distance therefrom, the spacing of these two slides being provided so that the cards may be engaged therein by two of their opposite lateral edge portions and may slide therein, further comprising fixing means for holding said card in position with respect to said blank, once the card has reached its position of use inside the cell at the end of its sliding travel in said slides, said fixing means comprising snap fit means provided on the blank cooperating with corresponding snap fit means provided on or added to the card.

4,620,266
FIBER-OPTIC LIGHT SYSTEM FOR MOVIE PROJECTORS

Richard R. Baumann, P.O. Box 19, Dalton, Mass. 01226, and Richard I. Eldridge, 551 South St., Pittsfield, Mass. 01201

Filed May 11, 1984, Ser. No. 609,789
Int. Cl.⁴ F21V *7/04*
U.S. Cl. 362—32 **11 Claims**



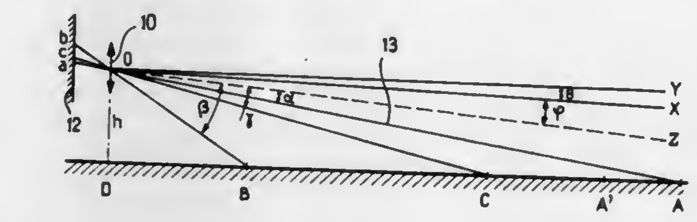
1. A fiber-optic light system for projectors and sound reproducers comprising:
(a) a fiber-optic light source;
(b) a plurality of fiber-optic cables attached adjacent to the light source for transmitting fiber-optic light through them, wherein each of the cables has one end connected adjacent to the light source and an opposite, free end with a coupler fixedly attached to it;
(c) a plurality of projectors and reproducers sound sets, wherein each set comprises a projector and an associated reproducer sound head; and,
(d) said projectors and sound heads each having an attached mount adapted to removably receive one of said couplers and its attached cable end, wherein a cable is removably attached to the projector of each of said projector and reproducer sound sets by a pair of said couplers and mounts to transluminate a film's images from a set's projector onto an adjacent screen and another cable can be removably attached to that projector's associated sound head to release the soundtrack from the film.

4,620,267
CORRECTOR DEVICE FOR AUTOMATICALLY CORRECTING THE BEAM DIRECTION OF VEHICLE HEADLAMPS TO COMPENSATE FOR VARIATIONS IN VEHICLE TRIM

Pierre Cibie, Neuilly sur Seine, France, assignor to Cibie Projecteurs, France

Filed Dec. 11, 1985, Ser. No. 807,543
Claims priority, application France, Dec. 14, 1984, 84 19172
Int. Cl.⁴ B60Q *1/08*
U.S. Cl. 362—71 **30 Claims**

1. A device for automatically correcting the beam direction of a vehicle headlamp when the trim of said vehicle changes, said device comprising:
an illumination sensor integrated in the vehicle headlamp and fixed to move therewith, said sensor being disposed to detect the luminance of the road in at least one direction at a predetermined angle with the horizontal, said luminance being detected in a region of the road lying in the field illuminated by the headlamp, and said sensor being suitable for generating a signal representative of said detected luminance;
an actuator for varying the inclination of the headlamp sensor assembly relative to the vehicle; and

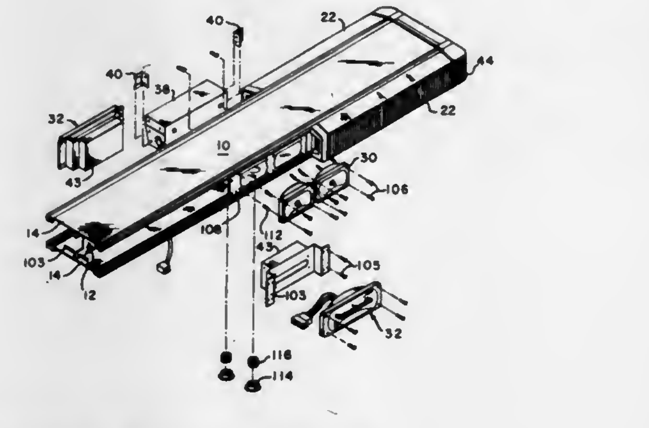


processor means for generating an actuator control signal as a function of the signal generated by said sensor, in such a manner as to servocontrol sdaid region of the road to have constant luminance.

4,620,268
LOW-PROFILE MODULAR LIGHTBAR ASSEMBLY

Robert A. Ferenc, Middletown, Conn., assignor to Whelen Engineering Co., Inc., Deep River, Conn.

Filed Feb. 13, 1984, Ser. No. 579,781
Int. Cl.⁴ B60Q *3/02*
U.S. Cl. 362—74 **19 Claims**

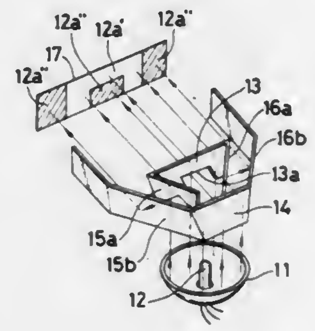


1. A warning light system comprising:
housing means, said housing means including a monolithic generally I-shaped elongated support member, said support member being defined by a planar central web portion and adjoining upper and lower flange portions which cooperate to define a pair of oppositely facing open-sided channels, the edge regions of said flange portions being provided with connector means;
a plurality of light generator means mounted at different laterally spaced positions along said support member, said light generator means being at least in part positioned within said open-sided channels in said support member;
a plurality of light transmissive cover means, said cover means being generally C-shaped and having edge portions which cooperate with said support member connector means to mount said plural cover means on said support member on opposite sides thereof, said cover means extending over said light generator means; and
spacer means for providing a sealed joint between adjacent ones of said cover means on a common side of said support member, said spacer means engaging said adjacent cover means and said support member connector means.

4,620,269
HEADLAMP FOR VEHICLE

Hiroo Oyama, Sagamihara, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Jul. 26, 1985, Ser. No. 759,651
Claims priority, application Japan, Aug. 3, 1984, 59-163732
Int. Cl.⁴ B60Q *1/04*
U.S. Cl. 362—80 **16 Claims**



1. A vehicle lamp, comprising:
a housing having a front portion, a rear portion and a lower portion;
a revolution paraboloidal reflector attached to said lower portion of said housing and facing in the upward direction;
a laterally extending rectangular shaped front lens located in said front portion of said housing and facing in a direction substantially perpendicular to said paraboloidal reflector;
a lamp located so that the position of a filament thereof is at the focus of said revolution paraboloidal reflector, whereby light produced by said lamp is formed into an upwardly directed light beam by said paraboloidal reflector in the axial direction of said paraboloidal reflector;
a substantially flat front reflector mounted above said paraboloidal reflector in the axial direction of said paraboloidal reflector and reflecting a first portion of said light beam from said paraboloidal reflector toward said front portion of said housing with a reflecting angle of about 90° so that light reflected by said front reflector impinges said front lens;
a substantially flat back reflector mounted above said paraboloidal reflector in the axial direction of said paraboloidal reflector, and spaced rearwardly of said front reflector in a direction substantially perpendicular to said axial direction of said paraboloidal reflector, said back reflector being arranged to reflect a second portion of said light beam from said paraboloidal reflector toward said front portion of said housing with a reflecting angle of about 90° so that light reflected by said back reflector impinges said front lens; and
two pairs of additional substantially flat reflectors mounted adjacent said front and back reflectors and on respective opposite sides of said front and back reflectors, for reflecting and changing the course of some of the light reflected by said back reflector to pass around said opposite sides of said front reflector and toward said front lens.

4,620,270
DECORATIVE SIMULATED TREE LIGHTING APPARATUS

John K. Laakso, 3456 Fairview Court, Kennesaw, Ga. 30144

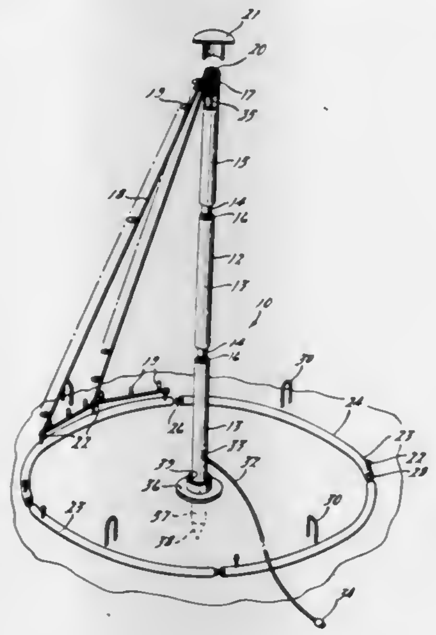
Filed Jun. 17, 1985, Ser. No. 745,864
Int. Cl.⁴ A47G *33/06*
U.S. Cl. 362—123 **17 Claims**

1. A lighting apparatus for decorating a structure comprising:
a multi-piece base member having a ring shape and positioned on a surface,
means for releasably securing said base member onto said surface,
central support means positioned substantially at the center

of said base member and positioned and supported above said base member,

at least one string of lights releasably secured to said support means and said base member,

means on said base member for releasably securing said string of lights to said base member,



means on said support means for releasably securing said string of lights to said support member, wherein said string of lights is suspensionally supported between said support means and base member.

4,620,271
CIRCUIT ARRANGEMENT FOR FEEDING ELECTRICAL USERS VIA A SWITCH CONTROLLER

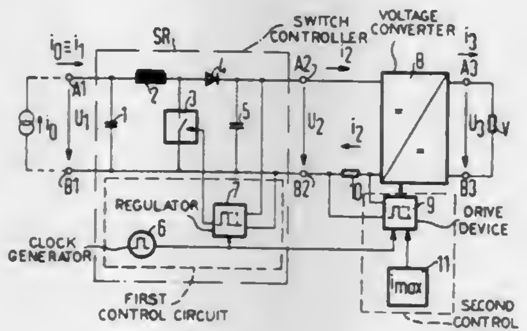
Gerhard Musil, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 9, 1985, Ser. No. 753,115

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1984, 3425903

Int. Cl.⁴ H02M ***3/335***

U.S. Cl. 363—21 **7 Claims**



1. A circuit arrangement for feeding electrical users with a DC voltage, comprising:

at least one user connected via a switch controller means to a feed circuit fed with an impressed current;

said switch controller means having a switch element controllable with switch pulses produced by a first control circuit means dependent on a DC voltage at its output;

said switch controller means maintaining said DC voltage at its output at least approximately constant;

the switch element being connected parallel to an input of the switch controller means;

a diode between the switch element and a capacitor connected parallel to an output of the switch controller means;

said diode being poled such that the diode is inhibited given a conductive switch element;

a voltage converter means connected between an output of the switch controller means and said at least one user;

a current sensor means for sensing feed current of the voltage converter means;

the voltage converter means being controllable by said current sensing means and by a second control circuit means connected to said current sensor means such that is emits a reduced output voltage given a feed current of the voltage converter means above a prescribed limit value of the feed current; and

said prescribed limit value of the feed current being lower than said impressed current.

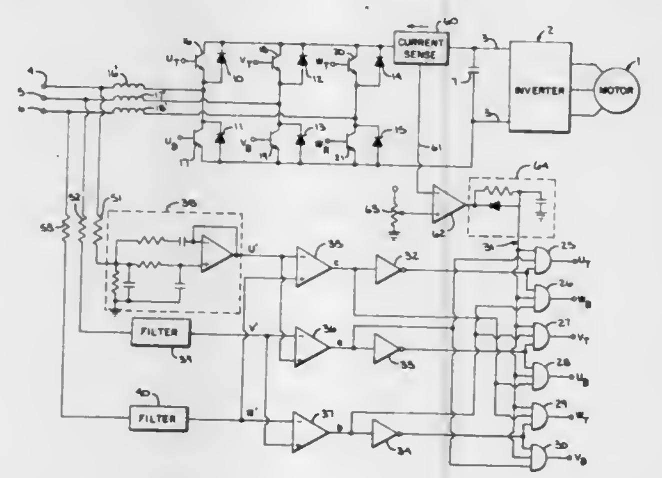
4,620,272
LINE-REGENERATIVE MOTOR CONTROLLER WITH CURRENT LIMITER

Donald E. Fulton, Stoneham, and Stanley P. Sassower, Natick, both of Mass., assignors to IMEC Corporation, Boston, Mass.

Filed Aug. 31, 1984, Ser. No. 646,411

Int. Cl.⁴ H01H ***7/12***

U.S. Cl. 363—53 **5 Claims**



1. A power converter for a motor control system, the combination comprising:

a set of three inductors, each connected to respective ones of three power lines;

a three-phase diode bridge having three legs, each leg being connected across a pair of output terminals, and each leg having a pair of series connected diodes with the juncture of each diode pair being connected to respective ones of the three inductors;

a set of six solid state switches, each solid state switch being connected in parallel with respective ones of the diodes to conduct current in the opposite direction as the diode when a control signal is applied to a control terminal on the solid state switch;

a DC bus connected to the output terminals of the three-phase diode bridge and coupled to a motor to provide current to the motor and to receive current from the motor during regeneration; and

a converter control circuit having inputs connected to the power lines and including:

(a) comparator means for determining which of the three power lines has the highest voltage at any moment in time and which of the three power lines has the lowest voltage at any moment in time,

(b) gate means connected to the comparator means and being operable to produce control signals for the solid state switches which enable regenerated current to be conducted to the pair of power lines having the maximum line-to-line voltage at any moment in time, and

(c) current limiting means coupled to the DC bus to sense the magnitude of the current flowing therein and coupled to the gate means to disable the production of said control signals when the magnitude of the sensed current exceeds a preselected limit, wherein the current limiting means includes a time delay circuit which disables the production of said control signals for a preselected time interval after the sensed current exceeds the preselected limit.

4,620,273
TERMINAL CONTROL SYSTEM AND METHOD OF TERMINAL CONTROL

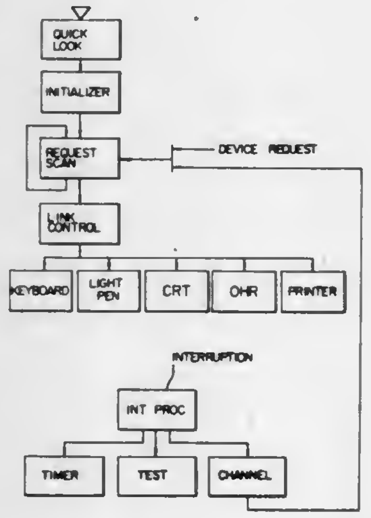
Katsuya Mitani; Toshihiro Sano; Nobutaka Nomura; Kou Numata, and Megumi Utino, all of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 10, 1982, Ser. No. 356,922

Claims priority, application Japan, Mar. 13, 1981, 56-35334

Int. Cl.⁴ G06F ***15/46***

U.S. Cl. 364—136 **26 Claims**



1. A terminal processing system for process control comprising:

at least a first terminal including a first memory;

a terminal control device including a second memory, wherein said second memory is programmed to store a first predetermined program including instructions for performing a first set of predetermined operations at said first terminal and a second predetermined program including instructions for modifying said first program to make predetermined changes to the first set of predetermined operations at said first terminal;

means coupled to said terminal control device for selecting a first portion of said second predetermined program which is to be utilized by said first terminal for modifying said first set of predetermined operations at said first terminal in a predetermined manner; and

means for transferring said first program and only said first portion of said second program determined by said selecting means from said second memory in said terminal control device to said first memory in said first terminal.

4,620,274
DATA AVAILABLE INDICATOR FOR AN EXHAUSTED OPERAND STRING

Donald C. Boothroyd, Phoenix, and Robert W. Norman, Jr., Glendale, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

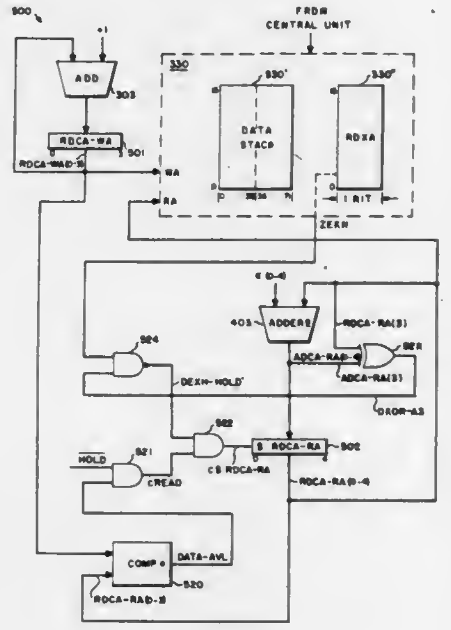
Filed Apr. 1, 1983, Ser. No. 481,227

Int. Cl.⁴ G06F ***9/34***

U.S. Cl. 364—200 **4 Claims**

1. In a data processor, which executes a predetermined instruction on a predetermined operand as indicated by an instruction word, said operand being a variable length data string made up of at least one computer word, the execution of the instruction being performed by said data processor in a sequential series of steps wherein at least one step is performed in a predetermined time period, said time period being a cycle of said data processor, and wherein at least one cycle is required to read said operand stored in a memory device of said data processor, said memory device having a plurality of addressable locations, said variable length data string being temporarily stored in at least one addressable location of said memory device, said data processor further including an apparatus for providing a control signal to indicate the end of the variable length data string thus inhibiting further reads of the variable length data string without inhibiting the subsequent steps of the cycles associated with the execution of the instruction thereby allowing the execution of the instruction to complete, said apparatus comprising:

(a) memory means, having a plurality of addressable locations, each of said plurality of addressable locations corresponding to a respective addressable location of said memory device, for storing information to generate said control signal when the stored information indicates the corresponding addressable location of the memory device is the last computer word of the variable length data string; and



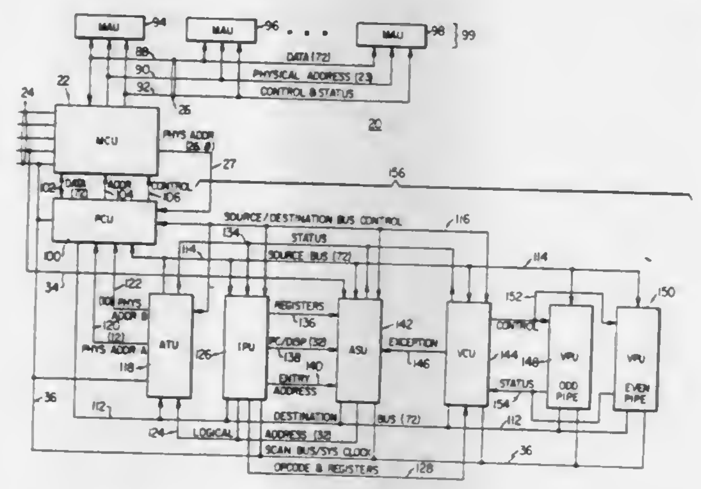
(b) register means for temporarily storing a read address value, said register means having an input terminal adapted to receive the read address value, the read address value corresponding to an addressable location of said memory device containing the computer word of the variable length data string to be read in the execution of the instruction, said register means further having a strobe input terminal operatively connected to said memory means whereby said control signal is operatively coupled to said register means to control the loading of an updated read address value into said register means in response to said control signal.

4,620,275
COMPUTER SYSTEM

Steven J. Wallach, 7314 Westerway, Dallas, Tex. 75248; Thomas M. Jones, 6050 Glen Heather, Dallas, Tex. 75252; Frank J. Marshall, 2316 Crossbend Rd., Plano, Tex. 75023; David A. Nobles, 3514 Corona, Garland, Tex. 75042; Kent A. Fuka, 1823 Treeline Dr., Carrollton, Tex. 75007; Steven M. Rowan, 1817 Greensprings Cir., Garland, Tex. 75042; William H. Wallace, 2412 Peachtree La., Plano, Tex. 75074; Harold W. Dozier, 2218 Ridgewood, Carrollton, Tex. 75006; David M. Chastain, 1208 Serenade Cir., Plano, Tex. 75075; John W. Clark, 1927 Oak Bluff Dr., Carrollton, Tex. 75007; Robert B. Kolstad, 6069 Beltline Rd., #1049, Dallas, Tex. 75240; James E. Mankovich, 2808 Pepper Tree, Plano, Tex. 75074; Michael C. Harris, 3309 Meadow Wood, Bedford, Tex. 76021; Jeffrey H. Gruger, 14151 Montfort, #217, Dallas, Tex. 75240; Alan D. Gant, 3615 Aries Dr., Garland, Tex. 75042; Harold D. Shelton, 2203 Stone Brook, Carrollton, Tex. 75007; James R. Weatherford, 5500 Knights Ct., Lake Dallas, Tex. 75065; Arthur T. Kimmel, 4322 Windward Cir., Dallas, Tex. 75252; Gary B. Gostin, 571 Havencrest La., Coppell, Tex. 75019; Gilbert J. Hansen, 3104 Bonnie Brook Dr., Plano, Tex. 75075; John M. Golenbieski, 5840 Spring Valley Rd., #208, Dallas, Tex. 75240; Larry W. Spry, 7604 Fair Oaks, #2061, Dallas, Tex. 75231; Gerald Matulka, 2004 Albert, Carrollton, Tex. 75007; Gaynel J. Lockhart, 1309 Chesterton Dr., Richardson, Tex. 75080, and Michael E. Sydow, 2004 Albert, Carrollton, Tex. 75007

Filed Jun. 20, 1984, Ser. No. 622,451
Int. Cl.^{4} G06F *9/18*

U.S. Cl. 364—200 **6 Claims**



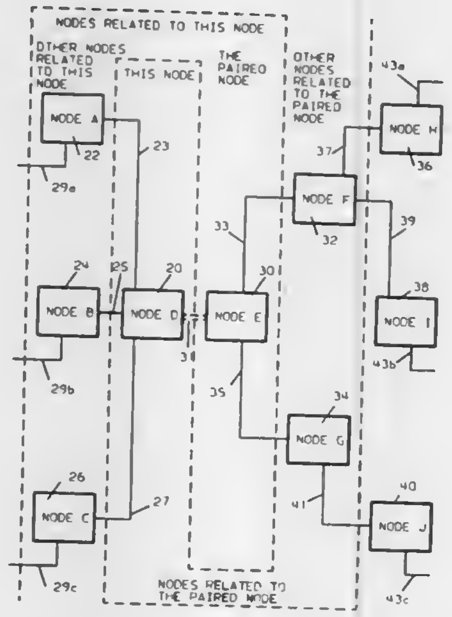
1. A computer system, comprising:
- a main memory having operands stored therein and identified by physical addresses,
- a memory control unit;
- a memory bus connecting said main memory to said memory control unit,
- a I/O bus connected to said memory control unit,
- a service processing unit connected to said I/O bus for providing initialization, operator access and system timing for said computer,
- at least one I/O processor connected to said I/O bus for supplying data to and receiving data from said computer,
- a physical cache unit connected to communicate with said memory control unit for the transfer of operands and addresses therethrough, said physical cache having operands stored therein and identified by physical addresses,
- a source bus in communication with said physical cache unit,
- a destination bus in communication with said physical cache unit,
- a logical address bus,
- an address translation unit for receiving logical addresses via said logical address bus and producing therefrom corresponding physical addresses which are transmitted to said physical cache unit;
- an instruction processing unit for storing and decoding machine instructions received from said main memory via said source bus, said instruction processing unit producing instruction execution commands from said machine instructions,
- an address scalar unit having microinstructions stored therein for executing scalar machine instructions as determined by the instruction execution commands received from said instruction processing unit, said address scalar unit generating logical address for transmission over said logical address bus,
- a vector control unit having microinstructions stored therein for executing vector machine instructions as determined by the instruction execution commands received from said instruction processing unit, said vector control unit for decoding the microinstructions stored therein and producing vector control commands therefrom, said vector control unit connected to said source and destination buses,
- a first vector processing unit connected to receive said vector control commands from said vector control unit for processing vector operands received from said source bus and producing resultant operands for transmission through said destination bus, and
- a second vector processing unit connected in parallel with said first vector processing unit for processing vector operands currently with said first vector processing unit wherein the vectors transmitted through said source bus have the elements thereof loaded alternately in said first and second vector processing units.

4,620,276
METHOD AND APPARATUS FOR ASYNCHRONOUS PROCESSING OF DYNAMIC REPLICATION MESSAGES

Thomas P. Daniell, Palo Alto; Robert C. Harding, Jr., Cupertino; Roger W. R. Harvey, Santa Cruz, and Sven H. H. Nauckhoff, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 2, 1983, Ser. No. 500,582
Int. Cl.^{4} G06F *9/00*

U.S. Cl. 364—200 **17 Claims**



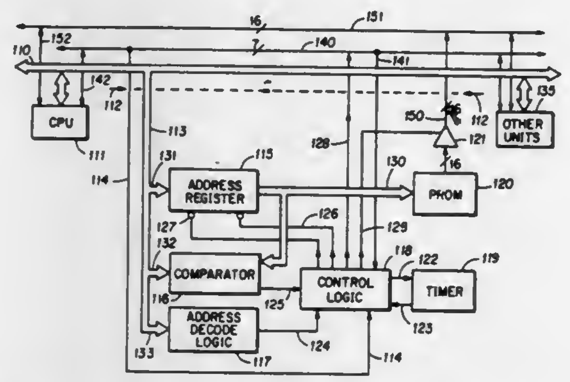
1. A method for operating a computing apparatus as this node in a multiprocessing system having at least one paired node, this node including means for receiving request messages with respect to the paired node, comprising the steps executed at this node of:
- generating a first rank value;
- receiving from said paired node a second rank value;
- associating said first and second rank values with a data atom replicated at said this node and said paired node;
- receiving a request message from said paired node, the request message including a third rank value, a fourth rank value, and a request;
- the first and third rank values being indicative of a significant event time at this node and the second and fourth rank values being indicative of a significant event time at paired node; and
- comparing said first and second rank values with said third and fourth rank values, respectively, and selectively processing said request based upon their correspondence.

4,620,277
MULTIMASTER CPU SYSTEM WITH EARLY MEMORY ADDRESSING

Jimmie L. Fisher, Phoenix, Ariz.; Mark A. Kovalan, Cedar Rapids, and Bryon L. Wiscons, Marion, both of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 28, 1983, Ser. No. 470,695
Int. Cl.^{4} G06F *12/00*

U.S. Cl. 364—200 **1 Claim**



1. A data processing system comprising in combination:
- a. a plurality of central processing units interconnected via a bus;
- b. a plurality of memory units interconnected via said bus to said central processing units; and
- c. at least one of said memory units comprising a sequential memory address generator and said at least one of said memory units being enabled by a single one of said plurality of central processing units and having a means to receive and store a first memory address and a second subsequent memory address, respectively, therefrom, wherein said at least one memory unit further comprises:
  - i. a sequential and artificial memory address generator for generating a sequential memory address, which is a single least significant bit different from said first memory address received, and directly applying said sequential memory address to said memory in anticipation of receipt of said second memory address from one of said plurality of central processing units;
  - ii. means for comparing said second received memory address from one of said plurality of central processing units to said sequentially generated memory address; and
  - iii. means for allowing said direct application of said sequential memory address to continue as a function of a correct compare of said second received memory address with said sequentially generated memory address.

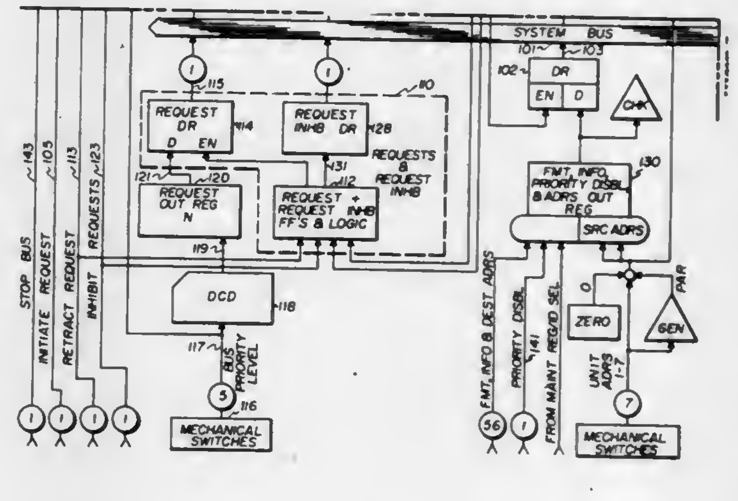
4,620,278
DISTRIBUTED BUS ARBITRATION ACCORDING EACH BUS USER THE ABILITY TO INHIBIT ALL NEW REQUESTS TO ARBITRATE THE BUS, OR TO CANCEL ITS OWN PENDING REQUEST, AND ACCORDING THE HIGHEST PRIORITY USER THE ABILITY TO STOP THE BUS

James G. Ellsworth, and Thomas E. Wulling, both of St. Paul, Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Aug. 29, 1983, Ser. No. 527,063
Int. Cl.^{4} G06F *13/36*

U.S. Cl. 364—200 **12 Claims**

1. In a digital communication system including a digital communication bus and a plurality of bus User devices communicably interconnected to said bus by a like plurality of bus interface logic circuits, which bus interface logic circuits do, responsively to initiation by the associated bus User device, perform distributed arbitration for ownership of said digital communication bus, an improvement to said bus interface logic circuits performing distributed arbitration to the end that one such said bus interface logic circuit should be able to preclude that other said bus interface logic circuits should newly enter said distributed arbitration, said improvement within each said bus interface logic circuits comprising:
- request inhibit flip-flop means for receiving a true condition request inhibit control signal from said associated bus User device that desires to preclude that the bus interface logic circuits associated with other ones of said bus User devices should newly enter into distributed arbitration, and for storing said true condition request inhibit control signal until such time as said distributed arbitration is won for said associated User device;
- request inhibit signal drive means for, conditionally upon entrance into said distributed arbitration responsively to said initiation by said associated bus User device, driving said true condition of said request inhibit control signal as stored within said request inhibit flip-flop means as a true REQUEST INHIBIT signal upon a dedicated signal line of said digital communications bus; and
- request inhibit signal receiver and preclusion means for receiving said true REQUEST INHIBIT signal upon said dedicated signal line of said digital communication bus, and for responsively thereto the duration of said true REQUEST INHIBIT signal suspending, or precluding, that, responsively to the initiation of said associated bus User device, said distributed arbitration should be newly entered;
- whereby that bus interface logic circuit receiving a true condition request inhibit control signal cannot preclude itself from newly entering said distributed arbitration because said driving of said true condition of said REQUEST INHIBIT control signal upon said bus by that bus interface logic circuit is conditional upon having already made entrance into said distributed arbitration;
- whereby ones of said plurality of bus interface logic circuits as have not already made, responsively to said initiation by associated ones of said plurality of bus User devices, entrance into said distributed arbitration by that time of said receiving of said true REQUEST INHIBIT signal upon said dedicated signal line are thereafter precluded from doing so until such time as that said bus interface logic unit which did receive said true condition request inhibit control signal from the associated User device has won said distributed arbitration for said associated User device, and does no longer store said true condition request inhibit control signal.



4,620,279

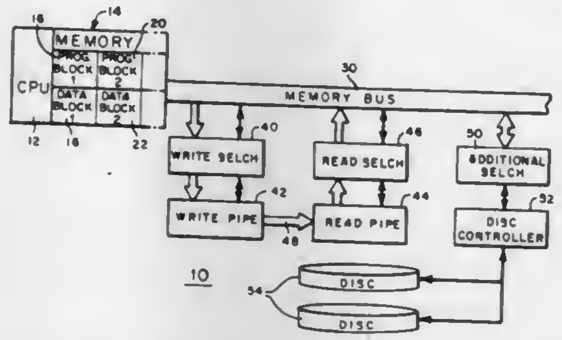
DATA TRANSFER SYSTEM

Randol R. Read, Tulsa; Everett L. Cox, Broken Arrow, and Randall L. Selzler, Tulsa, all of Okla., assignors to Standard Oil Company, now Amoco Corporation, Chicago, Ill.

Filed Jul. 29, 1983, Ser. No. 518,518

Int. Cl.⁴ G06F *13/28*

U.S. Cl. 364—200 **20 Claims**



1. A data transfer method for use with a computer system comprising at least one processor, a memory system coupled to the at least one processor, and at least first and second selector channels, each coupled to the memory system, said method comprising the following steps:

providing a hardware interconnection between the first and second selector channels to allow digital information to be transferred directly from the first selector channel to the second selector channel;

running a first program on the computer system to generate a first set of digital data and to store said first set in a first portion of the memory system;

running a second program on the computer system, asynchronously with respect to said first program, said second program adapted to process the first set of digital data as stored in a second portion of the memory system; and

utilizing the first and second selector channels and the hardware interconnection to transfer the first set of digital data in the first portion of the memory system directly to the second portion of the memory system, without intermediate mass storage.

4,620,280

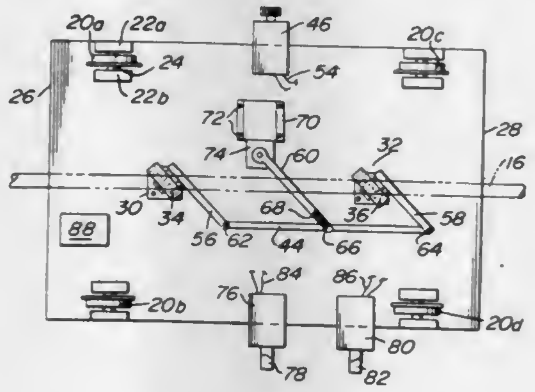
INTELLIGENT DRIVERLESS VEHICLE

Barry C. Conklin, Easton, Pa., assignor to SI Handling Systems, Inc., Easton, Pa.

Filed Jul. 29, 1983, Ser. No. 518,570

Int. Cl.⁴ B61L *27/00;* **G06F** *15/50*

U.S. Cl. 364—426 **16 Claims**



1. Apparatus comprising:

(a) a vehicle mounted on support wheels adapted to ride on a track;

(b) drive wheel means mounted on said vehicle, said drive wheel means including a drive wheel oscillatible between a drive position and an accumulation position;

(c) a slave computer associated with said vehicle;

(d) drive wheel control means disposed on said vehicle, said drive wheel control means having an output shaft movable in response to signals generated by said slave computer;

(e) a control linkage operatively connected to said drive wheel means and to said output shaft, said control linkage being responsive to movement of said output shaft to oscillate said drive wheel between said drive position and said accumulation position; whereby the movement of said vehicle is regulated by adjusting said drive wheel position in accordance with signals provided by said slave computer.

4,620,281

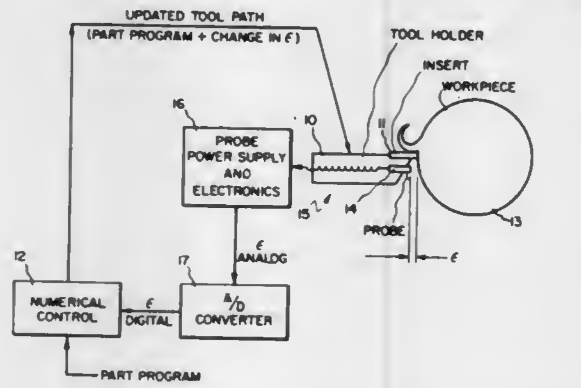
IN-PROCESS CUTTING TOOL CONDITION COMPENSATION AND PART INSPECTION

Robert A. Thompson, Quaker Street, and Richard W. Breuning, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 304,495, Sep. 22, 1981, abandoned. This application Feb. 15, 1984, Ser. No. 580,316

Int. Cl.⁴ G05B *19/24*

U.S. Cl. 364—475 **6 Claims**



1. An in-process method of monitoring and compensating for the condition of a cutting tool on a numerically controlled machine tool which has a cutting tool-tool holder assembly that follows a part program, comprising:

mounting a displacement sensor on said cutting tool-tool holder assembly and continuously measuring the distance to a freshly cut surface on a workpiece during a cutting and chip-forming operation while executing the part program, and generating a probe signal representing sensed distance;

processing said probe signal to produce cutting tool condition signals including a wear signal that indicates the amount of tool wear perpendicular to the workpiece axis; and

adjusting the location of the point of said cutting tool during the cutting and chip-forming operation to compensate for tool wear, the updated tool path being given by the part program plus the change in sensed distance.

4,620,282

SYSTEM AND METHOD FOR DOCUMENTING AND CHECKING CABLE INTERCONNECTIONS

Marlin C. Shelley, 2641 Edgehill Dr., Bountiful, Utah 84010

Filed Feb. 3, 1984, Ser. No. 576,612

Int. Cl.⁴ G06F *11/00*

U.S. Cl. 364—489 **31 Claims**

1. A method of documenting the terminal interconnections for each wire of a newly designed cable and for later checking the terminal interconnections for each wire of another cable that is to be used as a reference cable for checking subsequent cables so as to verify that the terminal interconnections of said cables are the same, said method comprising the steps of:

electronically determining the terminal interconnections for said newly designed cable;

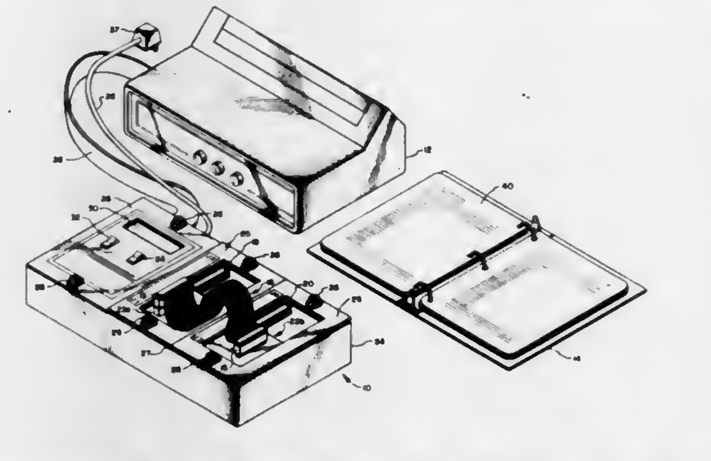
electronically generating a unique cable signature based on

the terminal interconnections determined for said newly designed cable;

documenting said cable signature and the terminal interconnections for said newly designed cable;

electronically determining and storing the terminal interconnections for said reference cable;

electronically generating a unique cable signature based on the terminal interconnections determined for said reference cable;



comparing said cable signature of said reference cable to said cable signature documented for said newly designed cable so as to verify that said reference cable has the same signature as the newly designed cable; and

thereafter electronically determining and comparing the terminal interconnections for each said subsequent cable to the terminal interconnections stored from said verified reference cable.

4,620,283

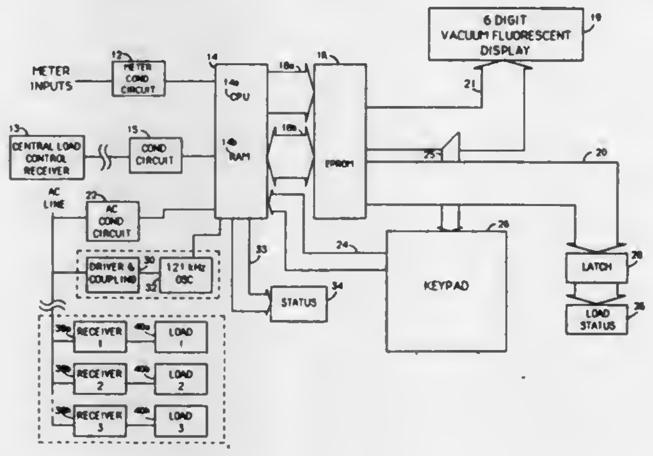
PROGRAMMABLE LOAD CONTROLLER

James A. Butt; Kalyan Mondal, and Preston L. Roberts, all of Allentown, Pa., assignors to Lehigh University, Bethlehem, Pa.

Filed Nov. 29, 1983, Ser. No. 555,960

Int. Cl.⁴ G06F *15/56;* **H04B** *3/54;* **H02J** *13/00*

U.S. Cl. 364—493 **27 Claims**



1. A control method for minimizing during a billing period the on-peak power demand of a residential electric utility customer having an AC line and a plurality of interruptible non-priority loads and non-interruptible priority loads comprising the steps of:

(a) defining a control point of desired power demand;

(b) shedding non-priority loads to attempt to decrease demand below the control point;

(c) providing predetermined sliding time windows;

(d) determining average energy demand of the loads over a predetermined sliding time window; and

(e) dynamically increasing said control point to a new control point when all non-priority loads have been shed and when the average power demand within the time window increases beyond said control point whereby the value of the new control point is related to the last-named average power demand.

4,620,284

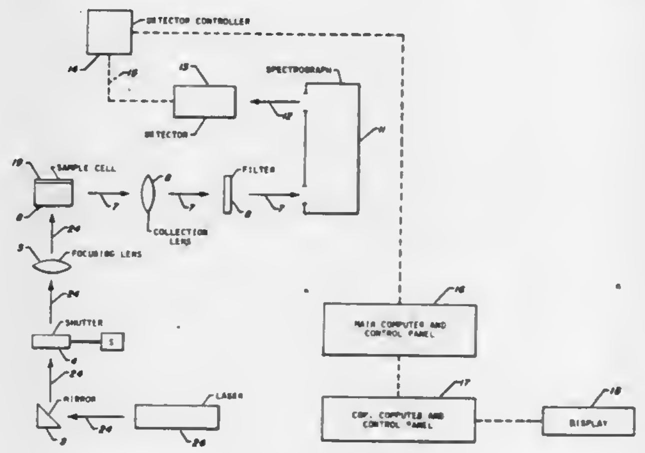
QUALITATIVE AND QUANTITATIVE ANALYSIS USING RAMAN SCATTERING

Robert P. Schnell, Deerfield; Robert W. Sampson, Wayne; Ronald F. Pacanowski, Hoffman Estates, and Donald J. Bruggema, Wheeling, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 29, 1983, Ser. No. 566,842

Int. Cl.⁴ G06F *15/20;* **G01J** *3/44*

U.S. Cl. 364—498 **32 Claims**



18. Apparatus for determining the composition of an unknown sample comprising:

(a) means for producing a beam of photons which is substantially monochromatic and impinges on the unknown sample;

(b) means for collecting photons scattered by the unknown sample into a stream of scattered photons;

(c) means for resolving the photon stream into its component frequencies to form a Raman spectrum of the unknown sample;

(d) means for converting said unknown sample Raman spectrum to digital form and transmitting said unknown spectrum to computing means;

(e) said computing means, which contain reference spectra obtained in the same manner as said unknown spectrum, where the reference spectra are of reference samples whose composition is known; and,

(f) means within the computing means for identifying substances present in the unknown sample by comparing said unknown spectrum to the reference spectra, said computing means accomplishing said comparison by performing the following functions:

  (i) inspecting the unknown spectrum and selecting a plurality of separate spectral analysis regions;

  (ii) determining a size characteristic associated with each spectral analysis region of the unknown spectrum;

  (iii) searching the reference spectra and choosing those reference spectra having in the selected spectral analysis regions features corresponding to those of the selected spectral analysis regions of the unknown spectrum and size characteristics substantially identical to those of the selected spectral analysis regions of the unknown spectrum;

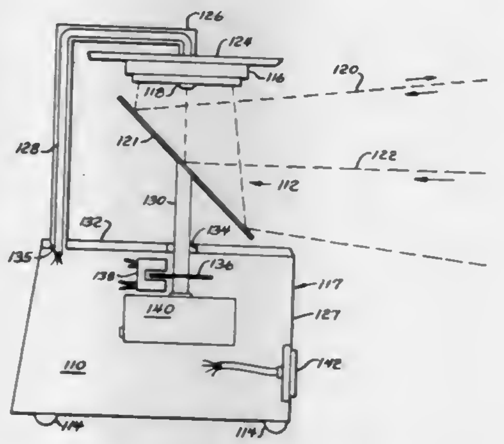
  (iv) if more than one reference spectrum is chosen, repeating functions (f)(i), (f)(ii), and (f)(iii), selecting additional regions, until only one reference spectrum is chosen, the substances present in said one chosen reference spectrum being present in the unknown sample;

  (v) if no reference spectrum is chosen, establishing a number of working hypothesis, each hypothesis being that the unknown sample consists of a different combination of the reference samples which exhibited the spectra

chosen to have features corresponding to those of the selected regions of the unknown spectrum;
(vi) testing each working hypothesis by combining the spectra of the hypothesis to produce a single hypothetical spectrum and comparing it to the unknown spectrum;
(vii) discarding each working hypothesis which is not substantially identical to the unknown spectrum; and,
(viii) if more than one working hypothesis has not been discarded, repeating functions (f)(v) through (f)(viii), selecting additional regions, until only one working hypothesis has not been discarded, the unknown sample composition then being that of said one remaining working hypothesis.

4,620,285
SONAR RANGING/LIGHT DETECTION SYSTEM FOR USE IN A ROBOT

Terry A. Perdue, St. Joseph, Mich., assignor to Heath Company, St. Joseph, Mich.
Filed Apr. 24, 1984, Ser. No. 603,471
Int. Cl.⁴ G06F *15/50;* **G05D** *1/00*
U.S. Cl. 364—513 **26 Claims**

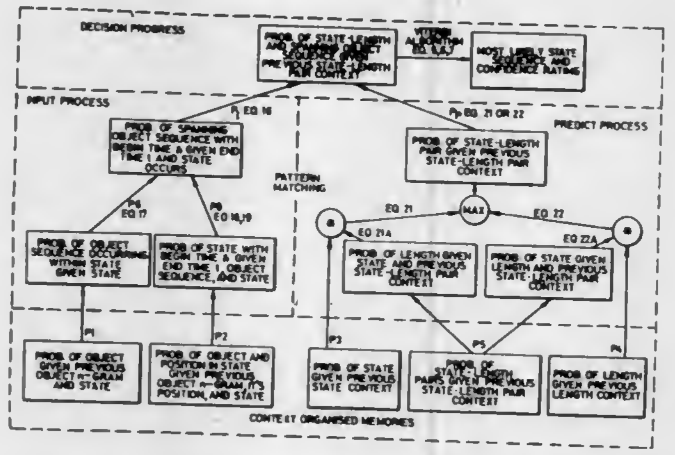


1. For use in a robot, a sensor system comprising:
a first acoustic transducer for transmitting and receiving acoustic signals;
a light detector responsive to a light signal incident thereon;
a rotating reflector rotatable through 360° and positioned adjacent said first acoustic transducer and said light detector for directing the acoustic signals transmitted by the transducer outward from said robot and for directing light signals and acoustic signal echoes incident on said reflector to said light detector and to said first acoustic transducer, respectively;
rotation sensing means coupled to said rotating reflector for determining the angular position thereof;
a controller coupled to said rotating reflector and to said sensing means for controlling the angular position of said reflector; and
a second fixed acoustic transducer positioned on a forward portion of the robot and coupled to said controller for transmitting and receiving acoustic signals.

4,620,286
PROBABILISTIC LEARNING ELEMENT

Allen R. Smith, Shelton; Chuan-Chieh Tan, Orange; Thomas B. Slack, Oxford, and Jeffrey N. Denenberg, Trumbull, all of Conn., assignors to ITT Corporation, New York, N.Y.
Filed Jan. 16, 1984, Ser. No. 571,027
Int. Cl.⁴ G09C *00/00;* **G06F** *1/00;* **G05B** *15/08*
U.S. Cl. 364—513 **41 Claims**

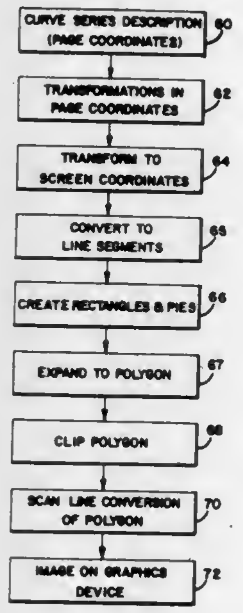
1. A probabilistic learning element that sequentially receives objects and outputs sequences of recognized states, said learning element comprising:
means for sequentially receiving objects;
means for storing received object information, including,
said received objects, and
sequences of received objects;
means for storing items of previously learned information, said items including,
sequences of states,
states contained in said sequences of states,
objects contained in said states contained in said sequences of states,
sequences of objects contained in said states contained in said sequences of states,
positional information for each object contained in said states contained in said sequences of states, and
predetermined types of knowledge relating to said previously learned information, whereby received object information, relating to received objects, is stored as well as previously learned information;
means for correlating said received object information with said previously learned information for assigning conditional probabilities to possible sequencies of recognized states;
means, responsive to said conditional probabilities of possible sequences of recognized states, for determining a most likely sequence of recognized states;
means, responsive to said previously learned information, for detecting that a state has ended and for providing an end of state signal; and
means, responsive to said end-of-state signal, for outputting said most likely sequence of recognized states as a recognized state sequence.


DECISION PROGRESS
PROB OF STATE-LENGTH AND SPANNING OBJECT SEQUENCE GIVEN PREVIOUS STATE-LENGTH PAIR CONTEXT
VITERBI ALGORITHM EQ 1,6,7
MOST LIKELY STATE SEQUENCE AND CONFIDENCE RATING
INPUT PROCESS
P₇ EQ 16
P₈ EQ 21 OR 22
PREDICT PROCESS
PROB OF SPANNING OBJECT SEQUENCE WITH BEGIN TIME & GIVEN END TIME I AND STATE OCCURS
PROB OF STATE-LENGTH PAIR GIVEN PREVIOUS STATE-LENGTH PAIR CONTEXT
PATTERN MATCHING
P6 EQ 17
P8 EQ 18,19
EQ 21
MAX
EQ 22
EQ 21A
EQ 22A
PROB OF OBJECT SEQUENCE OCCURRING WITHIN STATE GIVEN STATE
PROB OF STATE WITH BEGIN TIME & GIVEN END TIME I, OBJECT SEQUENCE, AND STATE
PROB OF LENGTH GIVEN STATE AND PREVIOUS STATE-LENGTH PAIR CONTEXT
PROB OF STATE GIVEN LENGTH AND PREVIOUS STATE-LENGTH PAIR CONTEXT
P1
P2
P3
P5
P4
PROB OF OBJECT GIVEN PREVIOUS OBJECT n-GRAM AND STATE
PROB OF OBJECT AND POSITION IN STATE GIVEN PREVIOUS OBJECT n-GRAM, IT'S POSITION, AND STATE
PROB OF STATE GIVEN PREVIOUS STATE CONTEXT
PROB OF STATE-LENGTH PAIRS GIVEN PREVIOUS STATE-LENGTH PAIR CONTEXT
PROB OF LENGTH GIVEN PREVIOUS LENGTH CONTEXT
CONTEXT ORGANISED MEMORIES

4,620,287
METHOD AND APPARATUS FOR REPRESENTATION OF A CURVE OF UNIFORM WIDTH

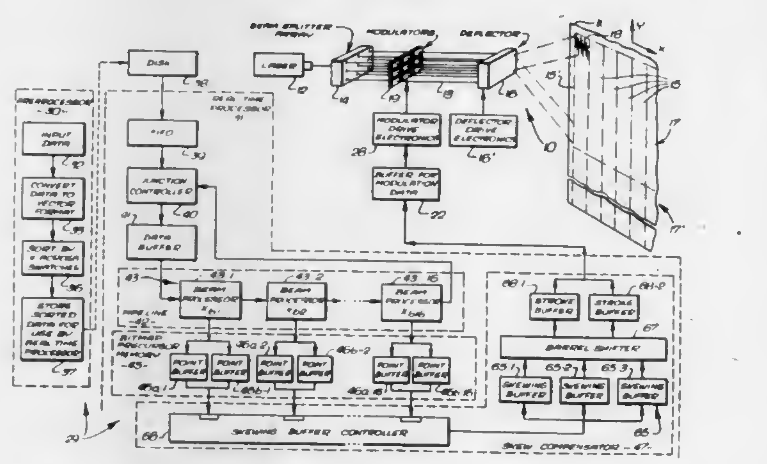
David S. Yam, Eagan, Minn., assignor to Dicomed Corporation, Minneapolis, Minn.
Filed Jan. 20, 1983, Ser. No. 459,394
Int. Cl.⁴ G06F *15/626*
U.S. Cl. 364—518 **13 Claims**

1. In a computer aided or generated graphics system, a method of graphical representation of a two dimensional form of uniform width on a display media, comprising the steps of:
providing a set of data points generally located along a longitudinal center line of the two dimensional form;
converting said data points to second sets of data for second or higher order parametric equations which define a plurality of adjoining curves that closely approximate said center line;
converting said second set of data to a plurality of line segments closely approximating each of said adjoining curves;
defining for each line segment four vertices of a rectangle having a predetermined uniform width, each of said rectangles being divided by its associated line segment into two generally equal portions, said rectangles generally defining the two dimensional form;
smoothing the junction of said rectangles; and
recreating a graphic representation of said two dimensional form from the smooth rectangle data.


CURVE SERIES DESCRIPTION (PAGE COORDINATES)
60
TRANSFORMATIONS IN PAGE COORDINATES
62
TRANSFORM TO SCREEN COORDINATES
64
CONVERT TO LINE SEGMENTS
65
CREATE RECTANGLES & PIES
66
EXPAND TO POLYGON
67
CLIP POLYGON
68
SCAN LINE CONVERSION OF POLYGON
70
IMAGE ON GRAPHICS DEVICE
72

4,620,288
DATA HANDLING SYSTEM FOR A PATTERN GENERATOR

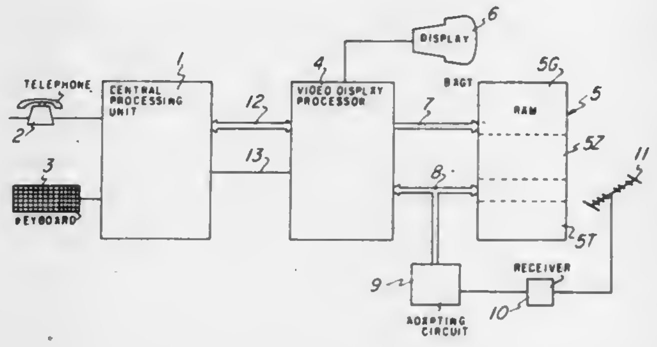
Thomas E. Welmers, Reseda, Calif., assignor to American Semiconductor Equipment Technologies, Woodland Hills, Calif.
Filed Oct. 26, 1983, Ser. No. 545,650
Int. Cl.⁴ G06K *15/00*
U.S. Cl. 364—518 **24 Claims**



9. A data handling system for use with a laser or other pattern generator in which plural beams are swept across successive blocks of a target to form an image, said image comprising a plurality of polygons defined by certain input data provided to said system, comprising:
preprocessor means (a) for converting said polygon defining input data into a vector format in which each vector represents a portion of an edge of a polygon lying entirely within a swath defined by plural adjacent successive blocks of said target, each such vector including an initial start location of said edge portion, and end location of said edge portion, and a beam on/off direction control data, and (b) for sorting said vectors in accordance with the initial start locations thereof,
real time processor means, receiving said sorted vectors and including a bit map precursor memory having a storage location for each image element position in the sweep direction for each of said plural beams, for generating a bit map precursor in said memory in response to said vectors, the contents of each memory storage location thereby comprising a numeric value established by an algebraic combination of beam on/off direction control data for all vectors relating to edges crossing image positions associated with that storage location, and
bit map generation means for deriving from the contents of said bit map precursor memory a bit map of beam turn-on and turn-off control instructions for controlling each of said beams during the sweep of each block.

4,620,289
VIDEO DISPLAY SYSTEM

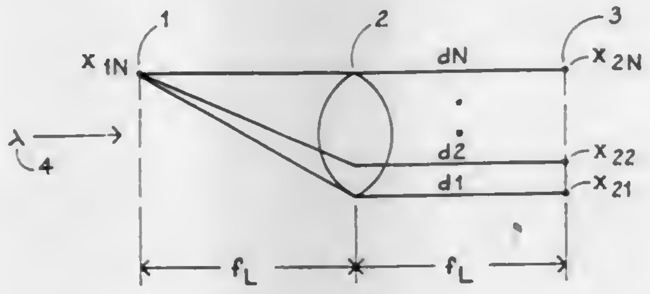
Gerard Chauvel, Cagnes, France, assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Feb. 23, 1984, Ser. No. 583,074
Claims priority, application France, Apr. 25, 1983, 83 06741
Int. Cl.⁴ G06F *3/153;* **G06K** *15/20*
U.S. Cl. 364—521 **9 Claims**



1. A control apparatus for a raster scan video display having a plurality of video display lines comprising:
a composite memory for storing data indicative of a video display including
  a managing memory having a plurality of line composition data words, one line composition data word for each video display line, each line composition data word indicating the composition of the data for the corresponding video display line, and
  a zone memory having a plurality of memory zones, one memory zone corresponding to each video display line, each memory zone including image data indicative of the image data having the corresponding video display line, said image data having the composition indicated by the corresponding line composition data word:
a central processing unit connected to said composite memory for controlling the composition of the video display by controlling the data stored in said managing memory and said zone memory:
a time base unit for generating time base signals in synchronization with the raster scan of the video display; and
a video display processor connected to said composite memory and said time base unit for generating at least one video display control signal for formation of the video display by recall of said line composition data word from said managing memory corresponding to the current video display line, recalling said image data from said zone memory corresponding to successive pixels of the current video display line and forming said at least one video control signal in accordance with said recalled image data for each pixel of the current video display line by interpreting said image data in accordance with said composition indicated by said recalled line composition data word.

4,620,290
TRANSMISSION LINE DIVIDERS MULTIPLIERS FOURIER TRANSFORMERS AND CONVOLVERS

James Constant, 1603 Danbury Dr., Claremont, Calif. 91711
Continuation-in-part of Ser. No. 259,462, May 1, 1981, abandoned. This application Oct. 26, 1983, Ser. No. 545,514
Int. Cl.⁴ G06G *9/00*
U.S. Cl. 364—578 **7 Claims**



1. A system for computation of an integral such as a Fourier transform or convolution, including:

first means coupling signals as inputs to a transmission means; and

second means for coupling signals as outputs from said transmission means,

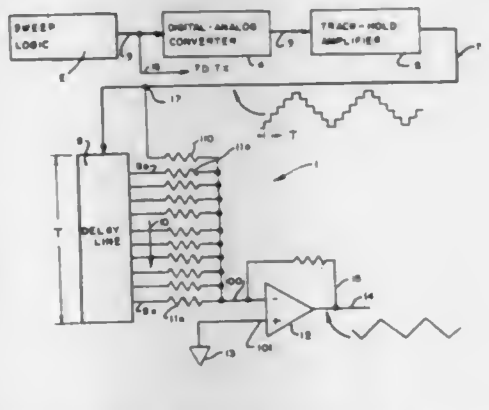
said transmission means including a plurality of transmission line each of which originates at a distinct location of said first means and terminates at a distinct location of said second means,

each transmission line having input signal f and providing output signal fg where g is a function determined by said transmission line, and

said second means providing as output the integral of fg for the plurality of said transmission lines.

4,620,291
DIGITAL-TO-ANALOG CONVERTER INTERPOLATOR

Carl J. Vorst, St. Louis County, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.
Filed Feb. 6, 1984, Ser. No. 577,561
Int. Cl.⁴ G06J *1/00;* **H03K** *6/00, 4/08, 3/00*
U.S. Cl. 364—607 **13 Claims**



1. A digital interpolator device, comprising:

means for generating an electrical signal representation of a digital ramp voltage;

digital-to-analog converter means operatively connected to an output side of said generating means, said digital-to-analog converter providing an analog stepped voltage form at its output side;

an analog delay line having an input side operatively connected to the output side of said digital-to-analog converter means, said analog delay line having a plurality of output taps;

means for summing the electrical signal representation at the output taps of said analog delay line;

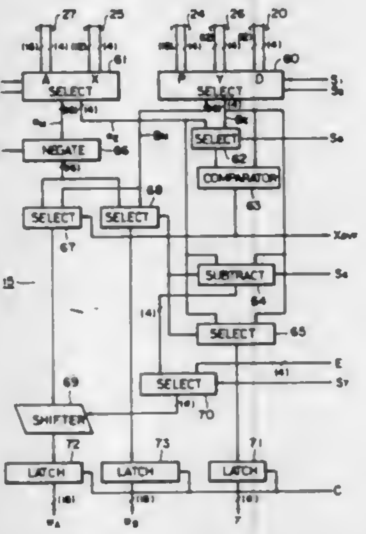
means for selecting a sample period for said delay line operatively connected between said signal generating means and said output taps;

means for controlling the gain of said summing means operatively connected between an output side and an input side of said summing means; and

means for adjusting sweep rates operatively connected to said means for selecting a sample period for said delay line including a first read only memory means operatively connected between said sweep selecting means, and a voltage controlled oscillator operatively connected to said first read only memory and to said digital-to-analog converter.

4,620,292
ARITHMETIC LOGIC UNIT FOR FLOATING POINT DATA AND/OR FIXED POINT DATA

Yoshimune Hagiwara; Shizuo Sugiyama, both of Kodaira; Narimichi Maeda, Tachikawa; Osamu Yumoto, Kokobunji; Takashi Akazawa, Kodaira; Masahito Kobayashi, Yokohama; Yasuhiro Kita, Hachioji, and Yuzo Kita, Fuchu, all of Japan, assignors to Hitachi, Ltd. and Hitachi Denshi Kabusihiki Kaisha, both of Tokyo, Japan
Division of Ser. No. 311,680, Oct. 15, 1981, Pat. No. 4,511,990. This application Feb. 12, 1985, Ser. No. 700,908
Claims priority, application Japan, Oct. 31, 1980, 55-152051
Int. Cl.⁴ G06F *7/50;* **H03M** *7/24*
U.S. Cl. 364—748 **20 Claims**



3. An arithmetic logic unit for floating point data and fixed point data, comprising:

first means for selectively providing a first pair of first and second floating point data which are to be mutually added, or a second pair consisting of third floating point data including a mantissa part into which fixed point data is provided and an exponent part having a value of zero and fourth floating point data including a mantissa part having a value of zero and an exponent part of a predetermined value;

adjusting means connected to said first means for adjusting the first or second pair of floating point data provided by said first means to provide for each data of the selected pair an exponent part having the same value and two adjusted mantissa parts;

adding means connected to said adjusting means for adding the two adjusted mantissa parts;

shifting means connected to said adding means for shifting the output of said adding means;

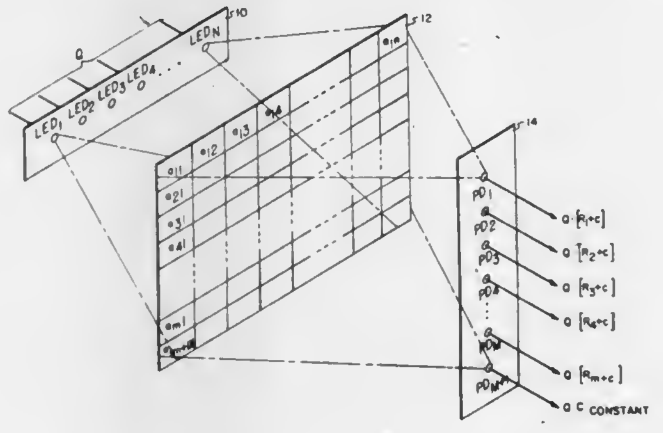
second means connected to said shifting means for controlling said shifting means to effect a shift by an amount depending on the output of said adding means, to normalize the output of said adding means; and

third means connected to said second means and said adjusting means for providing a normalized exponent by modifying the exponent part provided from said adjusting means by an amount corresponding to said shift amount to normalize the exponent part of the sum of the data pair;

whereby said shifting means and said third means provide respectively a normalized mantissa part and a normalized exponent part of either the sum of the first pair of data or a floating point data corresponding to the fixed point data.

4,620,293
OPTICAL MATRIX MULTIPLIER

Richard S. Schlunt, Loma Linda; Hans-Peter Schmid, Rancho Cucamonga, and Donald R. Fetterly, Norco, all of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.
Filed Dec. 23, 1983, Ser. No. 565,062
Int. Cl.⁴ G06G *9/00;* **G06F** *7/56*
U.S. Cl. 364—845 **8 Claims**



1. An optical system for performing matrix manipulations, comprising:

a source means for producing a plurality of light beams to illuminate a plurality of locations, the intensity of each beam representative of a predetermined value in an $N\times 1$ column vector, Q;

an optically transmissive mask disposed to be illuminated by said source means and including a plurality of elements corresponding to said plurality of locations, said elements disposed in a two-dimensional mask matrix having $M+1$ rows and N columns, wherein each said element has information defined by its degree of optical transmittance, and each element in each row of M rows of said mask matrix is representative of the sum of a predetermined value in a known $M\times N$ matrix and a scalar constant, c, and each element of the remaining row of said mask matrix is representative of said scalar constant, c; and

photodetection means positioned to receive light transmitted through said mask for determining the intensity of light received at its position, and for providing one or more first signals representative of a function of said vector Q and said known matrix and a second signal representative of a function of said vector Q and said scalar constant, c.

4,620,294
DIGITAL SIGNAL PROCESSOR MODEM

Tommy Y. Leung, Cassopolis, Mich., and Mark A. Waldron, Elkhart, Ind., assignors to CTS Corporation, Elkhart, Ind.
Filed Sep. 9, 1983, Ser. No. 530,690
Int. Cl.⁴ G06F *3/00;* **H04L** *5/12*
U.S. Cl. 364—900 **31 Claims**

1. A telephone network between an originate modem and an answer modem, at least one said modem comprising a two speed, full duplex modem for transmitting and receiving analog signals through said telephone network, said full duplex modem comprising:

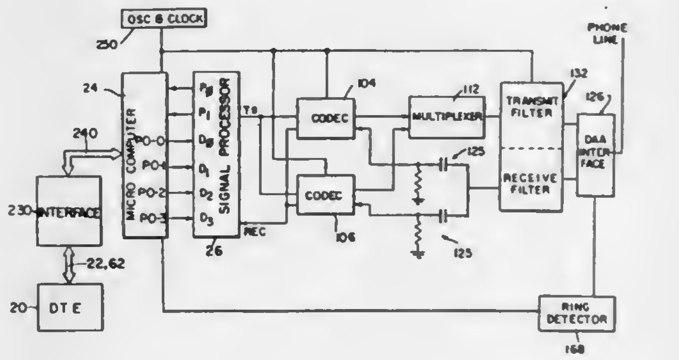
(a) a data terminal means for transmitting and receiving digital data;

(b) a microcomputer means in communication with the data terminal means;

(c) a signal processor means in communication with the microcomputer means, said signal processor means further providing a means for storing a plurality of digital data samples corresponding to a sinusoidal waveform;

(d) a converting means in communication with the signal processor means for converting digital data from the signal processor to the analog signal for transmission over the telephone network, and for converting the received analog signal from the telephone network to the digital data;

(e) a filter means in communication with the converting means and the telephone network for filtering the analog signal for transmission between the converting means and the telephone network, and for filtering the received analog signal; and



(f) a selecting means in communication with the microcomputer means for selecting a bit rate mode using the digital data from the data terminal means; said selecting means further providing a means responsive to the bit rate of the originate modem, to selectively communicate either a relatively higher bit rate by differential phase shift keying, or a relatively lower bit rate by frequency shift keying; the selecting means further providing a means for selecting digital data samples at intervals determined by the bit rate mode, to synthesize the digital data modulated for transmission through the converting means to the analog signal for transmission through the filter means over the telephone network for communication between the originate modem and the answer modem.

4,620,295
METHOD FOR ACCESSING A DATA SET IN A WORD PROCESSING SYSTEM

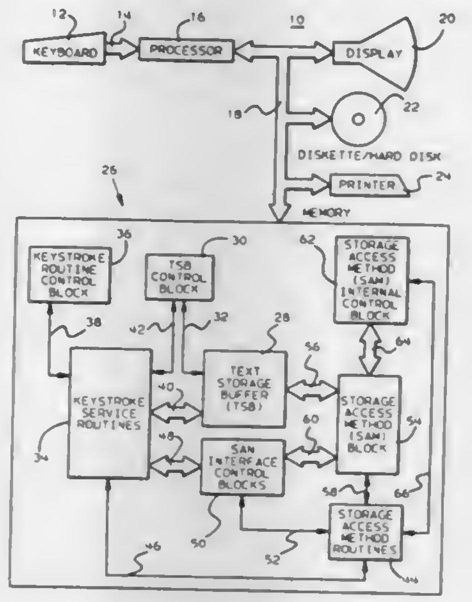
John A. Aiken, Jr., Round Rock, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 6, 1984, Ser. No. 586,594
Claims priority, application Japan, Mar. 7, 1983, 58-36087
Int. Cl.⁴ G06F *1/00*
U.S. Cl. 364—900 **7 Claims**

1. In a word processing system including a system memory and a direct access storage device (DASD) storing an input text stream where text may be selected later for revision, a method for accessing a data set in the word processing system comprising:

performing an open data set for access operation by first searching the current volume index on the DASD for a desired data set based on the data set name and a data set type;

fetching a data set root index node into an interface control block in the storage access control block section of system memory;

requiring the storage access control block to remain available at the same memory location for all subsequent accesses to the data set until a close data set operation is performed; and


12
14
16
10
20
KEYBOARD
PROCESSOR
DISPLAY
18
22
DISKETTE/HARD DISK
26
PRINTER
24
MEMORY
36
30
62
KEYSTROKE ROUTINE CONTROL BLOCK
TSB CONTROL BLOCK
STORAGE ACCESS METHOD (SAM) INTERNAL CONTROL BLOCK
38
42
32
28
64
56
KEYSTROKE SERVICE ROUTINES
40
TEXT STORAGE BUFFER (TSB)
STORAGE ACCESS METHOD (SAM) BLOCK
54
48
60
SAN INTERFACE CONTROL BLOCKS
34
58
66
STORAGE ACCESS METHOD ROUTINES
46
50
52
44

using the root node stored in the storage access control block for all subsequent searches and updates to the data set index.

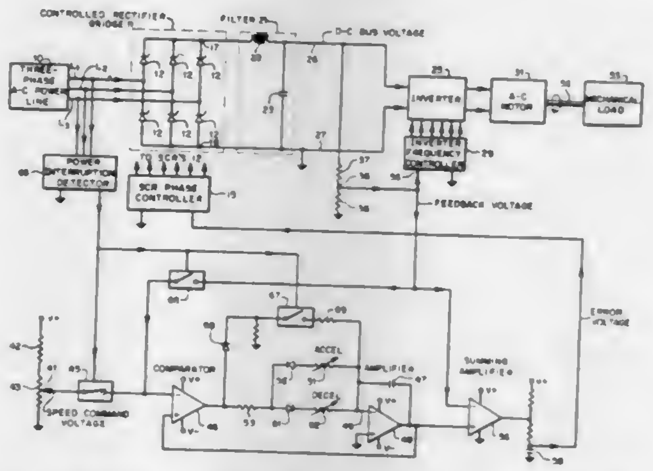
4,620,296
PROTECTION SYSTEM FOR IMMUNIZING A CONTROLLED D-C POWER SUPPLY AGAINST A-C LINE VOLTAGE INTERRUPTIONS

Edward C. Siemon, Newfield, N.Y., assignor to Dana Corporation, Toledo, Ohio

Filed Nov. 29, 1984, Ser. No. 676,146

Int. Cl.⁴ H02M *5/45;* H02H *7/122*

U.S. Cl. 363—51 **9 Claims**



1. A protection system for immunizing a controlled d-c power supply, which rectifies applied a-c power line voltage in a controlled rectifier bridge to develop a d-c bus voltage of a desired set point magnitude for driving a load, against the effects of unwanted a-c line voltage interruptions, the rectifier bridge being normally automatically controlled by control means in response to a command signal representing the set point magnitude and a feedback signal representing the d-c bus voltage's actual magnitude to normally maintain the d-c bus voltage at the desired magnitude, said protection system comprising:

sensing means for detecting an interruption of the a-c power line voltage;

said control means, controlled by said sensing means, controlling the rectifier bridge only in response to the feedback signal during the occurrence of a power interruption so that the rectifier bridge will initially produce a minimum amplitude d-c bus voltage when power is restored;

and acceleration regulating means, controlled by said sensing means, for gradually increasing the d-c bus voltage, at an adjustable rate, back up to the desired set point-level after the power has been restored.

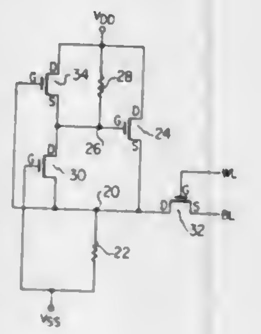
4,620,297
SCHMITT TRIGGER BASED MEMORY CELL WITH ASSISTED TURN ON

Theodore W. Houston, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 31, 1984, Ser. No. 646,871

Int. Cl.⁴ G11C *11/34*

U.S. Cl. 365—174 **17 Claims**



1. A Schmitt trigger based memory cell, comprising:

a storage node for storing a first stored voltage and a second stored voltage representative of high and low logic states, respectively;

first means having an active state and an inactive state for maintaining said storage node at said first voltage when in the active state;

second means having an active state and an inactive state for switching said first means to the inactive state and maintaining said node at said second voltage when said second means is in the active state;

said second means changing states from inactive to active when the second voltage is forced on said node and from active to inactive when the first voltage is forced on said node;

said first means switching from inactive to active state in a predefined period of time when said second means switches states from active to inactive;

assist means for decreasing said predefined period of time, said assist means operable only during transition of said first means from the inactive to active state such that said assist means is inactivated during static operation of the memory cell; and

means for connecting an external source to said node to force an external high or low voltage thereof, removal of said forced high or low voltage allowing said storage node to remain at said first or second storage voltage without change.

4,620,298
HIGH-SPEED OUTPUT CIRCUIT

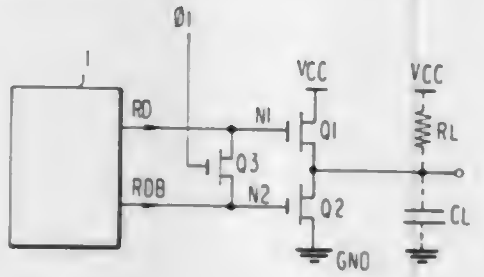
Takashi Ozawa, Tokyo, Japan, assignor to NEC, Tokyo, Japan

Filed Dec. 14, 1983, Ser. No. 561,368

Claims priority, application Japan, Dec. 14, 1982, 57-218687

Int. Cl.⁴ G11C *11/40*

U.S. Cl. 365—189 **9 Claims**



1. An output circuit comprising a first voltage terminal receiving one of potentials of binary logic levels, a second

voltage terminal receiving the other of potentials of said binary logic levels, a series circuit of first and second field effect transistors connected between said first and second voltage terminals, an output terminal coupled to an intermediate junction of said series circuit, data means for operatively generating a first signal and a second signal having an opposite phase to said first signal, means for applying said first signal to a gate of said first transistor, means for applying said second signal to a gate of said second transistor, short-circuit means directly coupled between the gates of said first and second transistors for operatively providing a current path between the gates of said first and second transistor, thereby to make potentials of the gates of said first and second transistors substantially equal each other, and control means for enabling said short-circuit means before said data means produces a renewed state of said first and second signals.

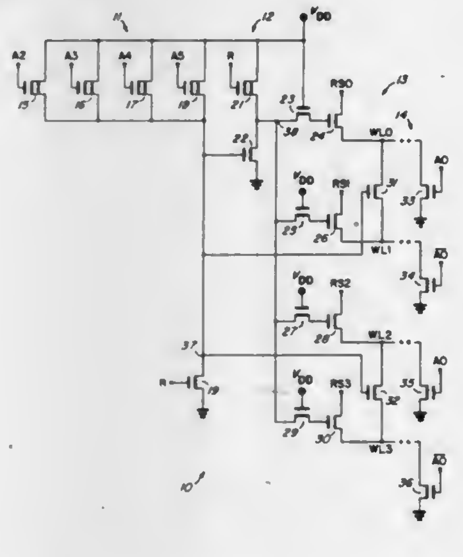
4,620,299
ROW DECODER

Scott Remington, and William L. Martino, Jr., both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 4, 1985, Ser. No. 709,262

Int. Cl.⁴ G11C *8/00, 7/02*

U.S. Cl. 365—230 **12 Claims**



1. A row decoder, having an active cycle and an inactive cycle, for enabling at least one of a plurality of word lines when selected, comprising:

an OR decoder having an input for receiving a plurality of address signals, and an output for providing an output signal at a first logic state when the OR decoder is selected by the address signals and at a second logic state when the OR decoder is deselected by the address signals;

word line driver means, coupled to the output of the OR decoder and to the plurality of word lines, for receiving a plurality of decoded address signals and for coupling said decoded address signals to respective word lines when the OR decoder is selected;

first coupling means, coupled to first and second word lines of the plurality of word lines, for coupling one of the first and second word lines to a first reference terminal during the active cycle; and

a first coupling transistor having a first current electrode coupled to the first word line, a second current electrode coupled to the second word line, and a control electrode coupled to the output of the OR decoder.

4,620,300
DIGITAL SIGNAL DETECTING AND COMPENSATING CIRCUIT WITH ADJUSTABLE WINDOW SIGNAL

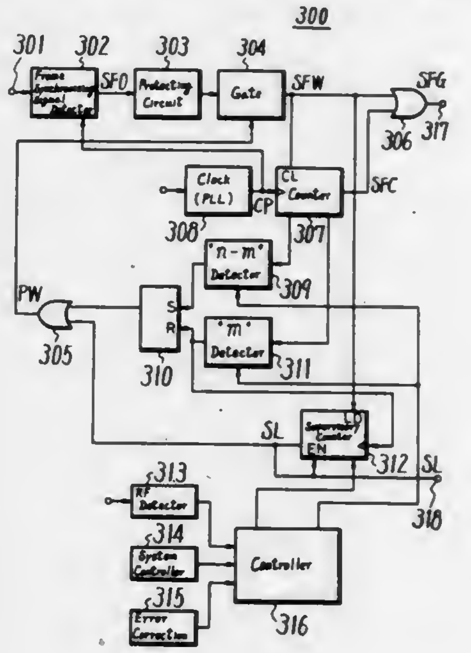
Hiroshi Ogawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 443,902, Nov. 23, 1982, abandoned. This application Oct. 3, 1985, Ser. No. 784,699

Claims priority, application Japan, Dec. 8, 1981, 56-197189; Dec. 10, 1981, 56-198814

Int. Cl.⁴ G11B *7/00, 19/00, 19/28*

U.S. Cl. 369—33 **17 Claims**



1. In a detecting and compensating circuit of an apparatus for reproducing a digital signal separated by frame synchronizing signals, each having a predetermined frame period, the combination comprising:

detecting means for detecting said frame synchronizing signals and generating respective detection signals in response thereto;

gating means receiving said detection signals for gating the latter in response to gating signals; and

windowing means including first means for supplying first window signals of a first predetermined length synchronized with said detection signals as said gating signals to said gating means, and second means for supplying second window signals of a second predetermined length as said gating signals to said gating means when a plurality of said detection signals are not generated, said second predetermined length being greater than said first predetermined length.

4,620,301
RECORDING DISK DRIVE UNIT

Hiroshi Koide, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Dec. 19, 1983, Ser. No. 562,717

Claims priority, application Japan, Dec. 20, 1982, 57-223306; Jan. 13, 1983, 58-3942

Int. Cl.⁴ H02K *29/00;* G11B *17/00, 5/82*

U.S. Cl. 369—266 **8 Claims**

1. A recording disk drive unit comprising:

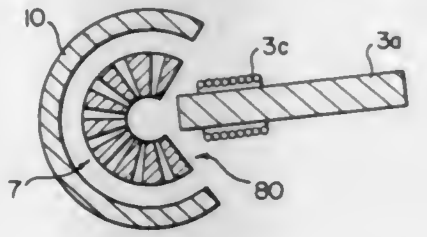
(a) a turntable for placing a recording disk thereon;

(b) a drive motor for rotating said turntable about its own axis;

(c) a head for recording information on and retrieving information from the recording disk on said turntable;

(d) a radial feed unit for moving said head radially across the recording disk on said turntable to allow said head to record information on and retrieve information from the recording disk while said turntable is being rotated by said motor; and

(e) said drive motor comprising a shaft supporting said turntable, a rotor mounted coaxially on said shaft, a first C-shaped stator disposed in spaced and confronting relation to said rotor for generating a moving magnetic field, and a second stator disposed in confronting relation to said first stator with said rotor positioned therebetween;



wherein said first C-shaped stator has a radial recess, said radial feed unit having one end inserted in said recess, said stator having a plurality of teeth extending axially of said shaft.

4,620,302

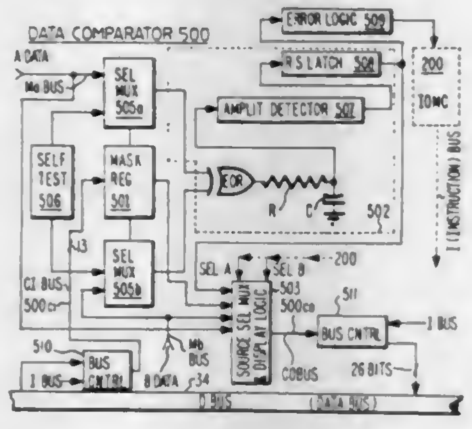
PROGRAMMABLE DIGITAL SIGNAL TESTING SYSTEM

Peter P. Binoeder, Tustin; James B. Whitacre, Westminster, and Don Kunker, San Juan Capistrano, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 6, 1984, Ser. No. 568,834

Int. Cl.^{4} G06F *11/00*

U.S. Cl. 371—1 **3 Claims**



1. Testing and diagnosing apparatus for a digital unit comprising:

(a) a standard unit to which it is desired that said digital unit conform, and including:
  (a1) pairs of output lines, each pair consisting of one output from said standard unit and one analogous output from said digital unit;
(b) a host computer having generating means for generating a testing signal comprised of a plurality of sequentially occurring different digital signal patterns and for concurrently applying said testing signal to said digital unit and to said standard unit;
(c) analyzing means for continuously comparing the outputs of said digital unit and said standard unit and for producing a failure signal in response to the determination that a predetermined comparison failure has occurred between said outputs; and wherein said analyzing means includes;
  (c1) a skew analyzer to which the said output pairs of said digital unit and said standard unit are continuously applied, said skew analyzer being operative to produce said failure signal in response to the particular output pairs of said digital and standard units being out of skew for a time greater than a predetermined minimum time period, said skew analyzer including:
  (c1a) a plurality of skew comparison circuits providing a discrete skew comparison circuit for each pair of said output lines;
(d) self-test generating means, initiated by a maintenance processor means, for generating pairs of digital output signls in two test modes for transmittal, via a select multiplexor means, to said analyzing means, said self-test generating means including:
  (d1) first means to generate a pair of digital first self-test output signals having a skew less than said predetermined minimum time period;
  (d2) second means to generate a pair of digital second self-test output signals having a skew greater than said predetermined minimum time period;
(e) select multiplexor means for receiving said pairs of output lines of said digital unit and said standard unit, and for receiving said first and second self-test output signals, said select multiplexor means being controlled by said maintenance processor means to select said pairs of output lines of said digital and standard units, or said first and second self-test output signals for transmittal to said analyzing means;
(f) said maintenance processor means for controlling said select multiplexor means and said self-test generating means, and including:
  (f1) means to receive said failure signal from said analyzing means, and to identify the particular comparison circuit of said skew analyzer which caused said failure signal.

4,620,303

CIRCUIT ARRANGEMENT FOR THE RECOGNITION OF STATIC AND DYNAMIC FAULTS IN CIRCUIT ASSEMBLIES

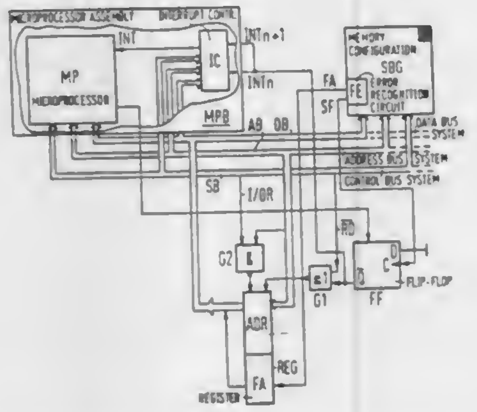
Norbert Tschoepe, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 24, 1984, Ser. No. 644,074

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1983, 3332626

Int. Cl.^{4} G06F *11/00*

U.S. Cl. 371—16 **2 Claims**



1. In a circuit arrangement for the recognition of faults occurring in circuit assemblies, the faults being indicated by these circuit assemblies in each case by the emission of a fault signal, which faults detected by a detector means may be either static faults persisting for more than a predetermined first time period or dynamic faults which do not exceed a predetermined second time period, the fault signals being recognized at a central control unit, which central control unit is connected to these circuit assemblies and drives them for the emission of data signals including the fault signals,

the improvement wherein the said central control unit has a first interrupt input that the central control unit activates when the circuit assemblies are in a fault-free state in which a fault recognition circuit emits no fault signal and a second interrupt input, having a higher interrupt priority than the first interrupt input, which the central control unit deactivates when the circuit assemblies are in the said fault-free state;

a register is provided, into which register, when the circuit assemblies are driven to emit the data signals, address information with regard to the just driven circuit assembly by the central control unit is written;

at least one such fault recognition circuit is provided, which, when a fault exists in a respective circuit assembly, emits a fault signal when that circuit assembly is driven; and

a control device is connected to the first and second interrupt inputs of the central control unit, which, in response to such a fault signal, effects, through the first interrupt input, the performance of a first interrupt routine in the central control unit, which first interrupt routine serves to determine the presence of dynamic faults, in the course of which first interrupt routine, the central control unit activates the second interrupt input and again drives the circuit assembly designated by the address stored in the said register,

and the control device effects, in the event that the said fault recognition circuit again emits a fault signal, the performance of a second interrupt routine, which serves to determine the presence of static faults and interrupts the performance of the said first interrupt routine.

4,620,304

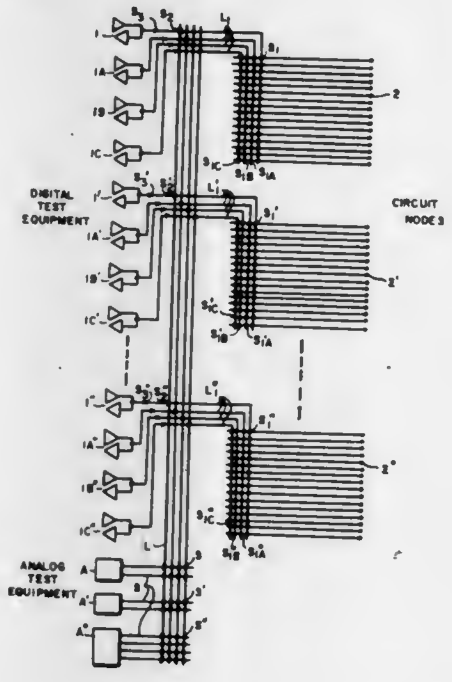
METHOD OF AND APPARATUS FOR MULTIPLEXED AUTOMATIC TESTING OF ELECTRONIC CIRCUITS AND THE LIKE

James J. Faran, Jr., Lincoln; Matthew L. Fichtenbaum, Chelmsford, and William C. Kabele, Littleton, all of Mass., assignors to Gen Rad, Inc., Concord, Mass.

Continuation of Ser. No. 417,215, Sep. 13, 1982, abandoned. This application Mar. 13, 1985, Ser. No. 710,535

Int. Cl.^{4} G01R *31/28*

U.S. Cl. 371—20 **18 Claims**



1. A method of performing a test on electronic circuits and the like comprising a relatively large number of nodes, that comprises, assigning each node to a connection point in a group of connection points connectable at any given time with only a predetermined number of signal lines connectable with test equipment, the predetermined number of signal lines being less than the number of connection points in the group; controlling said assigning of the nodes of specific connection points in a manner that insures that no more sets of nodes, used simultaneously in any test, are assigned to the same group of connection points than there are signal lines connectable to that group of connection points, wherein, at a given time, a set of nodes is defined as a set consisting of all the nodes in a group that are logically capable, according to the predetermined test, of being driven or sensed by a common instrument at that given time; and selectively connecting the connection points to the test equipment to connect the test equipment to the nodes for conducting desired testing.

4,620,305

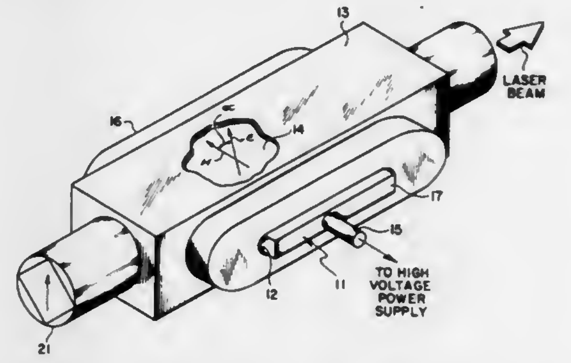
GAS LASER AND METHOD OF OPERATION

Allen M. Flusberg, Newtown, Mass., assignor to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed Sep. 17, 1984, Ser. No. 651,108

Int. Cl.^{4} H01S *3/00*

U.S. Cl. 372—37 **15 Claims**



1. In the method of operating a laser device having a lasing cavity having an optical axis and a gseous lasing medium having an upper lasing level disposed in said lasing cavity, the steps comprising:

(a) pumping said lasing medium therein to produce population inversion and stimulated emission in the saturated regime wherein the rate of stimulated emission is at least not substantially less than the sum of all other rates at which population is transferred out of said upper lasing level;
(b) causing the rate of collisions of lasing atoms and molecules occuring in said lasing medium during pumping to occur less rapidly than the sum of all the rates at which population is transferred out of said upper lasing level;
(c) generating within said cavity a DC magnetic field having an axis having a first predetermined orientation at least a component of which is transverse to the optical axis and of amplitude sufficient to induce an electron precession rate large compared to the said transition rate out of said upper lasing level; and
(d) polarizing laser light generated in said cavity to cause said light to have a predominate polarization orientated with respect to the axis of said magnetic field at angle of at least about 55° and less than 90°.

4,620,306

ELONGATED CHAMBERS FOR USE IN COMBINATION WITH A TRANSVERSELY EXCITED GAS LASER

Leroy V. Sutter, Jr., 6301 Summertime La., Culver City, Calif. 90230

Division of Ser. No. 403,781, Jul. 30, 1982, Pat. No. 4,464,760, which is a continuation-in-part of Ser. No. 370,103, Apr. 20, 1982, Pat. No. 4,455,658. This application Jul. 24, 1984, Ser. No. 633,855

The portion of the term of this patent subsequent to Aug. 7, 2001, has been disclaimed.

Int. Cl.^{4} H01S *3/09*

U.S. Cl. 372—38 **4 Claims**

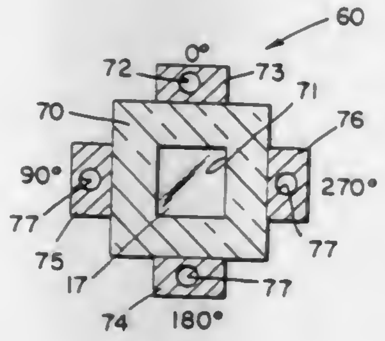
1. A gas laser comprising:

a. an elongated chamber of cross-sectional dimensions suitable for confining a laser gas discharge, said elongated chamber being formed from a dielectric material;
b. a laser gas disposed in said elongated chamber;
c. first and second reflecting means for reflecting and guiding light energy from said laser gas discharge within said elongated chamber so that said light energy is optically

independent of the internal walls of said elongated chamber as said light energy travels longitudinally the length of said elongated chamber; and

d. first and second electrode means for transversely exciting said laser gas, each of said electrode means being formed from an electrically conductive material and being disposed opposing each other wherein said first and second electrode means are disposed longitudinally on said elongated chamber;

e. third and fourth electrode means for transversely exciting said laser gas, each of said electrode means being formed from an electrically conductive material and being disposed opposing each other wherein said third and fourth electrode means are disposed longitudinally on said elongated chamber and are disposed orthogonally to said first and second electrode means;



f. energy means for applying a voltage of alternating polarity to said first and second electrode means and said third and fourth electrode means at a frequency ranging from 10 Mhz to about 3 GHz to establish a laser gas discharge in said laser gas; and

g. coupling means for matching the impedance of said elongated chamber and said first and second electrode means and said third and fourth electrode means to the impedance of said energy means.

4,620,307

SEMICONDUCTOR DIODE LASER

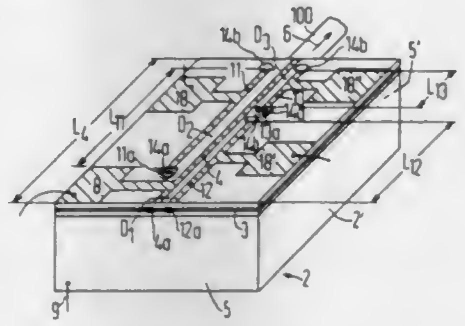
Franz Kappeler, Puchheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 2, 1985, Ser. No. 688,379

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1984, 3401102; Aug. 24, 1984, 3431228; Feb. 5, 1985, application European Pat. Off., 84113494.3

Int. Cl.⁴ H01S *3/19*

U.S. Cl. 372—50 **13 Claims**



1. A semiconductor diode laser for tunable single-frequency laser radiation, comprising:

a semiconductor body having first and second end faces, the laser radiation to be emitted being coupled out at the first end face;

a plurality of laser-active strips on a semiconductor body and having associated respective optical resonators;

said strips being aligned parallel to one another over an entire coupling length therebetween and at an interval from one another such that lateral wave-optical coupling is provided between neighboring strips;

a given selected spacing and a given selected coupling length between neighboring strips being chosen so as to provide a given coupling;

one of said laser-active strips being designated as an emitting laser-active strip generating laser radiation;

the further laser-active strips being provided at both sides of said emitting laser-active strip and being shorter than said emitting laser-active strips; and

said further laser-active strips being provided in said semiconductor body such that corresponding resonators of each further strip are provided with mirrors at both ends thereof and a first end of the further laser-active strips terminating a distance in front of said first end face of the semiconductor body through which the laser radiation to be emitted is coupled out.

4,620,308

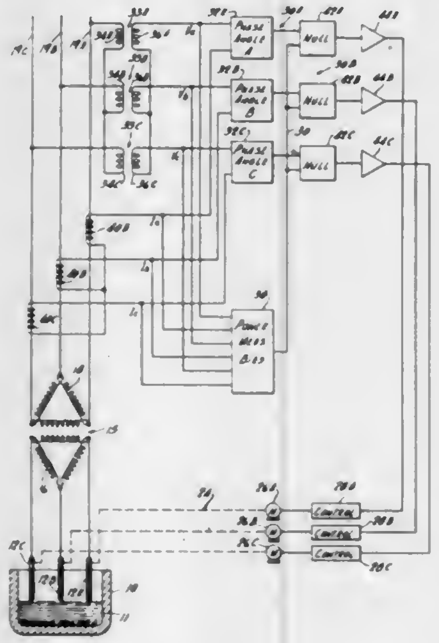
ARC FURNACE ELECTRODE CONTROL

John A. Persson, Gibsonia; Ross E. Andrews, Bethel Park, and Michael A. Maola, Pittsburgh, all of Pa., assignors to Lectromelt Corporation, Pittsburgh, Pa.

Filed Oct. 30, 1985, Ser. No. 792,782

Int. Cl.⁴ H05B *7/148*

U.S. Cl. 373—105 **10 Claims**



1. A control for positioning the electrodes of a poly-phase electric arc furnace energized by a poly-phase transformer having primary and secondary windings, and including control means for individually elevating and lowering each of the electrodes, the improvement comprising:

a plurality of first circuit means each coupled respectively to one of the primary phases of the transformer and each being operable respectively to generate a first electrical output signals functionally related to the phase angles between the voltage and current in each phase of the transformer primary,

bias circuit means coupled to each of the phases of the transformer primary for producing an additional output signal functionally related to the reactive volt amperes delivered to the transformer primary,

comparison means coupled to said first circuit means and said bias circuit means for respectively comparing the additional signal and each of said first signals to a preselected value and for producing a plurality of control signals related to differences in said signals,

said control means coupled to said comparison means and being responsive to said control signals for selectively positioning each electrode whereby each electrode will be positioned in accordance with deviations in the phase angle in its respective primary circuit.

4,620,309

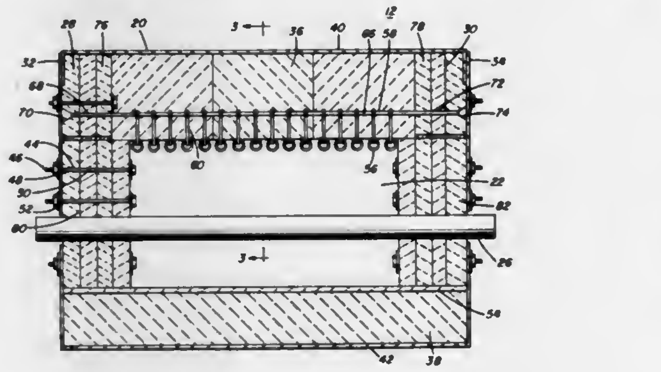
ELECTRIC FURNACE CONSTRUCTION

Stephen J. Schultz; John F. Huebner; Duane E. Wiedor, and Dennis S. Pribish, all of Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 29, 1985, Ser. No. 717,939

Int. Cl.⁴ F27D *11/02*

U.S. Cl. 373—128 **12 Claims**



1. A furnace comprising:

opposing first and second sidewalls;

first and second structurally rigid insulating board attached to the interior of said furnace at said first and second sidewalls;

a roof;

roof insulating means;

at least one elongated rod passing through said roof insulating means and spanning the width of said furnace, said rod having a first and second end embedded within said first and second insulating board, respectively;

heating elements positioned within said furnace; and,

means to support said heating elements from said rod.

4,620,310

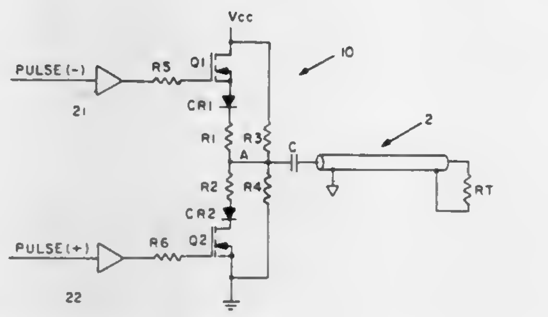
METHOD AND APPARATUS FOR GENERATING BIPOLAR PULSES IN A LOCAL AREA NETWORK

Lazar Lvovsky, Walnut Creek, and V. Bruce Hunt, Menlo Park, both of Calif., assignors to Metapath Inc., Foster City, Calif.

Filed Mar. 11, 1985, Ser. No. 710,491

Int. Cl.⁴ H03L *3/18;* **H04B** *25/49*

U.S. Cl. 375—17 **15 Claims**



1. A pulse transmitter comprising:

a first switch means which is switchable between a conducting state and a non-conducting state and having a first electrode coupled to a source of potential;

a second electrode coupled to a node through a first resistor having a first resistance;

means responsive to a control signal for switching said first switch means between said conducting and non-conducting states;

a second switch means which is switchable between a conducting state and a non-conducting state and having a first electrode coupled to said node through a second resistor having a second resistance;

a second electrode coupled to a reference potential; and

means responsive to a control signal for switching said second switch means between said conducting and non-conducting states;

a third resistor having a third resistance coupled between said source of potential and said node;

a fourth resistor having a fourth resistance coupled between said node and said reference potential, the magnitude of each of said third and said fourth resistances being substantially greater than the magnitude of each of said first and said second resistances; and

a capacitor having a first electrode coupled to said node and a second electrode for coupling to a transmission line.

4,620,311

METHOD OF TRANSMITTING INFORMATION, ENCODING DEVICE FOR USE IN THE METHOD, AND DECODING DEVICE FOR USE IN THE METHOD

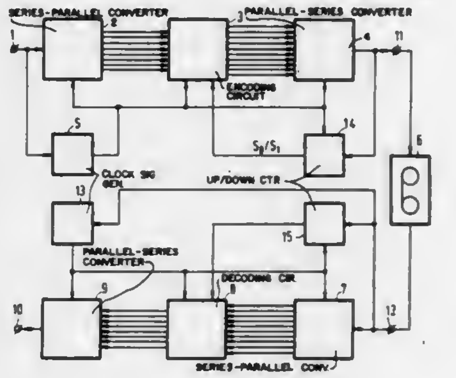
Kornelis A. Schouhamer Immink, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 676,467, Nov. 29, 1984, Pat. No. 4,573,034. This application Dec. 7, 1984, Ser. No. 679,171

Claims priority, application Netherlands, Jan. 20, 1984, 8400187; Aug. 8, 1984, 8402444

Int. Cl.⁴ H04L *25/49;* **H03M** *7/14*

U.S. Cl. 375—19 **7 Claims**



6. An encoding device for converting n-bit information words into m-bit code words with a limited maximum disparity ±d prior to transmission, where n, m and d are integers which comply with <m and d <m, in such a way that a digital-sum-vaue taken over all the preceding code words at the beginning of a code word remains limited to a range which is bounded by a first and a second value, in which the following code word is selected, at least with respect to the polarity of the disparity, as a function of said digital-sum-value over all the preceding code words so as to ensure that said following code word cannot cause an increase of the absolute value of said digital-sum-value, for which purpose a pair of code words is assigned to at least a first group of possible n-bit information words, the code words of said pair having opposite disparities with an absolute value d and being the bit-by-bit inverse of one another for each associated information word, characterized in that said encoding device comprises means for determining the digital-sum-value taken over all the preceding words; means for converting the information words of the first group; and means for inverting and reversing the code words obtained by converting information words of the first group if this is required by the digital-sum-value thus determined.

4,620,312

PULSE SIGNAL PROCESSING CIRCUIT

Noriyuki Yamashita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 515,187, Jul. 19, 1983, abandoned. This application Dec. 3, 1985, Ser. No. 804,238

Claims priority, application Japan, Jul. 20, 1982, 57-125985

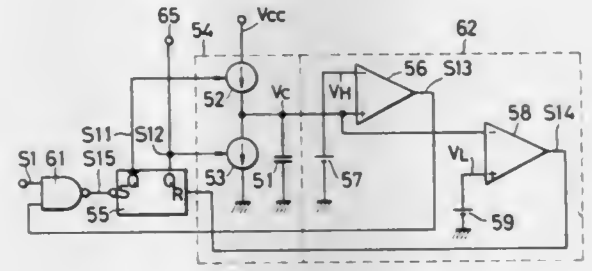
Int. Cl.⁴ H03K *3/033*

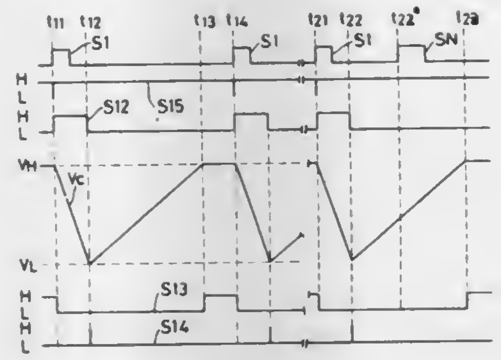
U.S. Cl. 375—22 **8 Claims**

6. A video image processing system comprising:

gate means for accepting periodic input pulses and a first detection signal and providing a setting signal in response to the presence of both, said gage means masking noise in

said periodic input pulses in response to said first detection signal;
a switching circuit for selectively providing charging and discharging signals in response to said setting signal and a second detection signal, one of said charging and discharging signals constituting an output pulse;
a capacitor for providing a variable-level indicating signal from the potential across said capacitor;
charging means for increasing the potential across said capacitor in response to said charging signal;

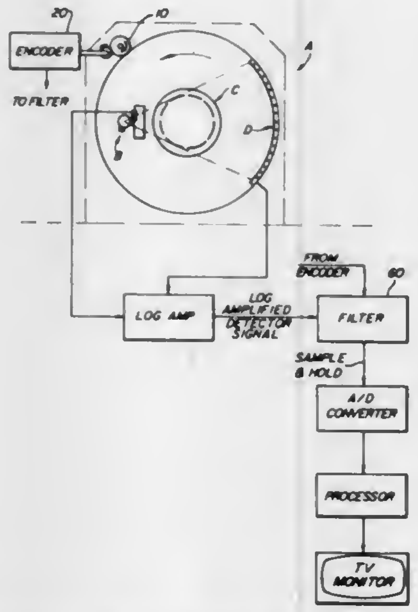




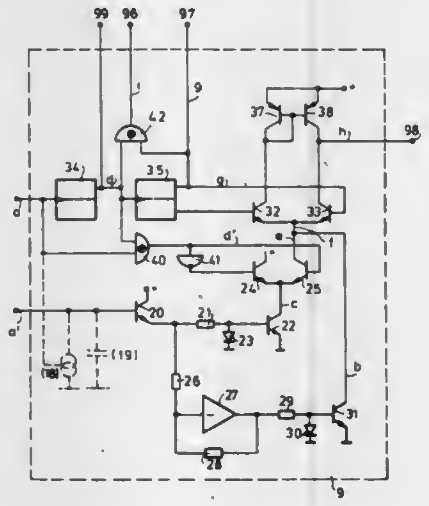
discharging means for decreasing the potential across said capacitor in response to said discharging signal; and
detecting means for providing said first and second detection signals when the potential across said capacitor reaches predetermined reference potentials, whereby the duration of the output pulse is determined by the time required for the potential of said capacitor to reach one reference potentials from the other.

4,620,313
CONTROLLED CUTOFF FREQUENCY ANALOG FILTER FOR CT SCANNERS
Joseph W. Erker, Aurora, Ohio, assignor to Technicare Corporation, Solon, Ohio
Filed Jun. 20, 1984, Ser. No. 622,522
Int. Cl.^{4} G03B *41/16*
U.S. Cl. 378—19 **5 Claims**

1. An X-ray computed tomographic scanner for reconstructing an image of a region of an object positioned in a scan circle from filtered data sampled at a preselected frequency comprising:
(a) a source of X-radiaiton rotating at an angular velocity about said scan circle for radiating the scan circle with a beam of radiation of preselected intensity from a plurality of directions;
(b) an array of radiation detectors disposed about the scan circle positioned to receive transmitted radiation emitted by said source and having traversed the scan circle and to convert said received radiation into signals proportional to their intensity, said signals having a temporal frequency content functionally related to the angular velocity of the source;
(c) position indicating means operatively connected to said rotating source for detecting the angular velocity of said source;
(d) data acquisition means for collecting the converted signals from said radiation detectors, said signals generally having a high frequency component and wide band quantum noise which contribute to degradation of reconstructed images;
(e) active analog filter means responsive to said position indicating means having a variable cutoff frequency automatically set as a predetermined fraction of the detected angular velocity of said source such that the frequency content of the filtered collected data essentially contains no frequencies above ½ the data sampling frequency;
(f) sampling means for sampling the filtered data at a preselected frequency; and (g) means for reconstructing an image of the scanned region of the object from the sampled data.

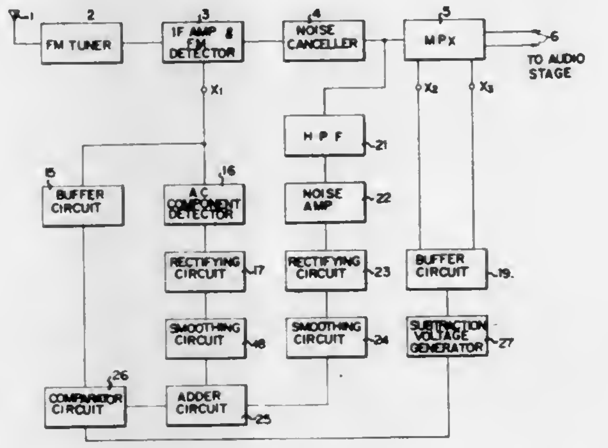


4,620,314
METHOD OF GENERATING AN APPROXIMATELY SINUSOIDAL SIGNAL AND CIRCUIT ARRANGEMENT FOR IMPLEMENTING THIS METHOD, PARTICULARLY IN A STEREO DEMODULATOR
Winfried Jansen, Hasloh, and Wolfgang Nolde, Hamburg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 23, 1984, Ser. No. 592,663
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1983, 3311072
Int. Cl.^{4} H04H *5/00*
U.S. Cl. 381—4 **15 Claims**



1. Method for generating an approximately sinusoidal signal having a predetermined period, comprising the steps of:
generating a first signal having a first signal period equal to one-half of said predetermined period, said first signal comprising a triangular wave shape extending over one-half of each of said first signal period and a constant value during the remainder of said first signal period;
superimposing a second triangular signal onto said first signal, thereby generating a combined signal; and
inverting alternate half waves of said combined signal, thereby creating said approximately sinusoidal signal.

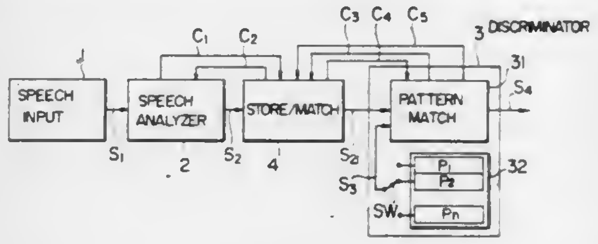
4,620,315
AUTOMATIC FREQUENCY CONTROL CIRCUIT IN A STEREO FM RADIO RECEIVER
Toshiyuki Imagawa, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan
Filed Feb. 5, 1985, Ser. No. 698,307
Claims priority, application Japan, Feb. 9, 1984, 59-23749
Int. Cl.^{4} H04H *5/00*
U.S. Cl. 381—10 **3 Claims**



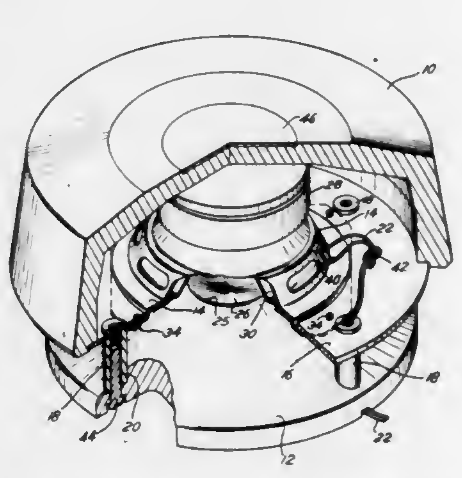
1. An automatic frequency control circuit in an FM stereophonic radio receiver which includes at least an FM tuner; an intermediate frequency amplifying and detecting circuit responsive to said FM tuner having an output terminal for supply of a voltage for driving a signal meter; a noise canceller responsive to said amplifying and detecting circuit; and a multiplexer responsive to said noise canceller having an input terminal for entering a voltage for high-cut control and another input terminal for entering a voltage for stereo noise control, said automatic frequency control circuit comprising:
first means extracting, rectifying and smoothing ac components in said signal meter driving voltage;
second means extracting, rectifying and smoothing noise components in an output from said noise canceller;
third means summing output voltages from said first and second means;
fourth means extracting dc components in said signal meter driving voltage and comparing them with the sum voltage from said third means;
fifth means responsive to an output from said forth means to generate an output voltage corresponding to the difference between said dc components and said sum voltage; and
sixth means applying an output from said fifth means to said input terminals of said multiplexer.

4,620,316
SPEECH RECOGNITION SYSTEM
Toshikazu Yasue, Akishima; Michihiro Mese, Tokyo, and Takeyuki Endo, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 384,601, Jun. 3, 1982, abandoned. This application Nov. 19, 1985, Ser. No. 799,482
Claims priority, application Japan, Jun. 5, 1981, 56-85717
Int. Cl.^{4} G10L *5/00*
U.S. Cl. 381—43 **11 Claims**

1. A speech recognition system comprising:
(a) first means for inputting speech signals;
(b) analyzer means connected to said first means for analyzing the inputted speech signals to produce analysis data;
(c) speech discriminator means connected to receive said analysis data for comparing said analysis data with standard patterns of speech so as to recognize the input speech signals; and
(d) second means for receiving and storing the analysis data from said analyzer means and for supplying the stored analysis data to said speech discriminator means, including write-addressing means for generating write address signals and read-addressing means for generating read address signals, and memory means for storing said analysis data from said analyzer means sequentially under control of said write-addressing means and for reading out said analysis data to said speech discriminator means in a predetermined sequence under control of said read-addressing means in parallel with the storing of said analysis data and independently of the operation of said write-addressing means.



4,620,317
TABLETOP SPEAKER ASSEMBLY
Carl R. Anderson, Wilmette, Ill., assignor to Shure Brothers, Inc., Evanston, Ill.
Filed Apr. 5, 1984, Ser. No. 597,249
Int. Cl.^{4} H04R *1/28, 1/02, 1/32*
U.S. Cl. 381—90 **2 Claims**



1. A tabletop speaker assembly for a teleconferencing system or the like, the speaker assembly being of the kind adapted to rest on a generally flat surface, comprising, in combination:
a base for supporting the assembly, the base having a generally conical configuration with a peak and a bottom, and having one or more acoustically reflective surfaces angled from the peak to the bottom of the base to form an approximate 20 degree angle relative to the generally flat surface on which the assembly rests;
a support plate affixed to the base;
a speaker having a speaker cone and a rear portion opposite the speaker cone, with the speaker supported by the plate above the base with the speaker further positioned to direct sound downward toward the base's acoustically reflective surfaces;
a cover having an interior height also supported by the plate and surrounding the speaker's rear, the assembly being configured with the rear of the speaker positioned very close to the inside of the cover, the height of the interior of the cover being approximately the same as the height of the speaker, the speaker cone being positioned approximately ⅛ inch or less from the base's peak, and the cover

extending near the base such that the sound exits from the assembly near the base, and further configured with the portion of the base closest to the speaker cone being concave away from the speaker, the concave portion of the base being configured as an inverted cone concentric with the conical base and extending into the base a distance approximately equal to one-third of the height of the base; and

a plurality of bushings received in openings in the base, the plate being supported by the bushings, and with at least one bushing being hollow to allow a cable to pass into the assembly.

4,620,318

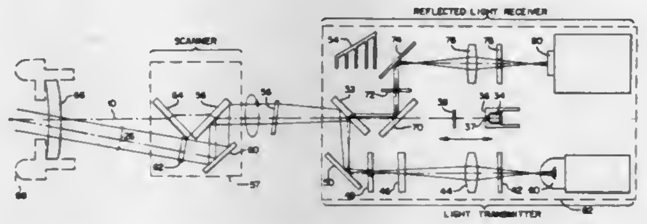
FOVEA-CENTERED EYE FUNDUS SCANNER

Robert B. Hill, Portland, Oreg., assignor to EYE-D Development II Ltd., Portland, Oreg.

Filed Apr. 18, 1983, Ser. No. 486,014

Int. Cl.⁴ G06K *9/00;* **A61B** *3/10*

U.S. Cl. 382—2 **7 Claims**



1. Apparatus for identifying individuals through the ocular light reflection pattern from the fundus of the eye, comprising:

(a) fixation means providing a fixation beam of visible light for positioning and focusing the eye of an individual along its visual axis, said axis being centered on the fovea,

(b) source means providing a source beam of infrared radiation,

(c) scanner means positioned for receiving the source beam and for directing it into the fixated eye from a plurality of sequential angularly divergent positions, in order to form a substantially circular locus of points substantially centered on the fovea, the source beam being directed along the visual axis into the scanner means, the scanner means comprising a housing rotatable about the visual axis, a first mirror mounted in the housing for reflecting the source beam of axis, and a second mirror mounted in the housing at a point spaced from the axis and oriented to direct the source beam into the eye as the housing rotates, and

(d) receiver means positioned for detecting the intensity of the light radiation reflected from the eye at each sequential location.

4,620,319

COLLAPSIBLE CONTAINER FRAME

Joseph C. M. Sheehan, Burr Ridge, and Bruce P. Dorr, Westmont, both of Ill., assignors to Kells Medical, Inc., Burr Ridge, Ill.

Filed Mar. 8, 1985, Ser. No. 709,544

Int. Cl.⁴ B65D *33/00;* **B65B** *67/04*

U.S. Cl. 383—33 **17 Claims**

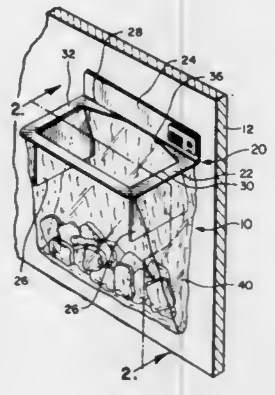
14. A collapsible container comprising:

a thin sheet of material comprising a frame portion, a mounting portion, and two tab portions, said mounting portion hinged to the frame portion at a first fold line and said tab portions hinged to the frame portion at third and fourth fold lines, respectively, said frame portion defining an opening, said second and third fold lines extending generally transverse to the first fold line, said tab portions at least partially blocking the opening when in a first position;

a flexible bag bonded to the frame portion such that the opening provides access to the bag; and

an adhesive secured to the mounting portion;

said adhesive adapted to mount the mounting portion to a vertical surface, said tab portions shaped to fold down, into the bag, to bear against the vertical surface, thereby simultaneously holding the frame portion away from the vertical surface and holding the bag open.



4,620,320

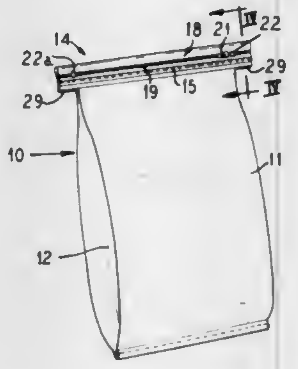
SUBSTANTIALLY LEAKPROOF ZIPPER CLOSURE FOR BAGS AND METHOD

Brian Sullivan, Shelbyville, Ind., assignor to KCL Corporation, Shelbyville, Ind.

Filed Dec. 20, 1984, Ser. No. 684,291

Int. Cl.⁴ B65D *33/16*

U.S. Cl. 383—79 **12 Claims**



1. A bag including a collapsed tubular body with a top providing an opening extending from side-to-side of the bag, and comprising:

a hood-like top closure secured to said bag body over said opening and having end portions extending to a substantial distance beyond opposite sides of the bag body;

means closing said end portions against leakage;

said top closure having a zipper separably connecting a pair of attachment flanges one of which extends along and is secured to one face of the bag top along said opening and the other of which flanges is secured to a second face of the bag top along said opening; and

said means closing said end portions against leakage comprising adhesive bonding said flanges in said end portions.

4,620,321

OPTICAL FIBRE RECEIVER

David P. M. Chown, Great Dunmow, England, assignor to STC plc, London, England

Filed May 15, 1984, Ser. No. 610,487

Claims priority, application United Kingdom, May 19, 1983, 8313855

Int. Cl.⁴ H04B *9/00*

U.S. Cl. 455—619 **6 Claims**

1. An optical receiver for the reception of a modulated light beam, said receiver comprising:

a p-i-n diode on to which the modulated light beam is directed to produce therein an electrical current appropriate to the modulation;

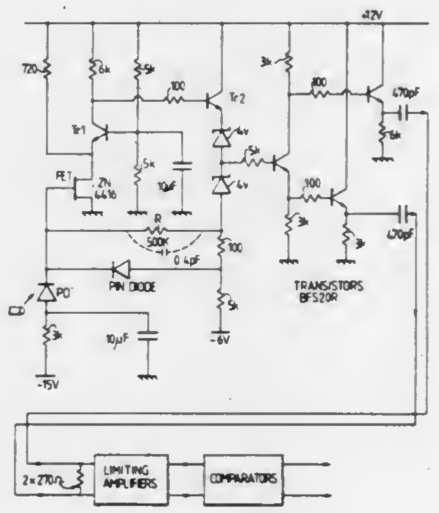
an amplifier which includes a field effect transistor having a gate to which the p-i-n diode is connected, a second transistor whose emitter-collector path is in series with the source-drain path of the field effect transistor, and a third transistor, the output of the second transistor being coupled to the base of the third transistor;

a feedback connection from the output of the third transistor to the gate of the field-effect transistor, said feedback connection including the parallel-connected combination of a resistive load impedance and a non-linear diode, which diode is so poled and has parameters such that it acts as a dynamic load to prevent saturation of the amplifier under high input signal conditions, the parameters of the resistor and the diode being such that the receiver including the said amplifier has a low pass response with a relatively long time constant, e.g. in the range of 160 to 180 ns;

the output of the third transistor being coupled to the output of the amplifier; and

circuit elements which couple the amplifier output to a utilisation circuit and which provide for said amplifier output an alternating current coupling response which has a relatively short time constant, e.g. in the range of 100–400 ns;

wherein the combination of the said low pass response with the said alternating current coupling response ensures that the receiver has an overall relatively narrow bandwidth response, such that the receiver's overall response is not reduced significantly after the reception of a high amplitude signal.



DESIGN PATENTS

GRANTED OCT. 28, 1986

ERRATA

For CLASS	See PATENT NO.
D25–001	286,431
D25–019	286,432
D25–050	286,433
D25–052	286,434

DESIGNS

OCTOBER 28, 1986

286,340

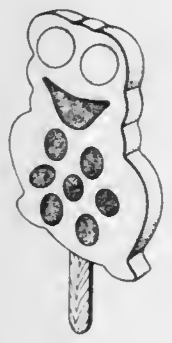
FROZEN CONFECTION

Anthony S. Torpy, Mosman, Australia, assignor to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

Filed Mar. 8, 1984, Ser. No. 587,408

Term of patent 14 years

U.S. Cl. D1—102



286,341

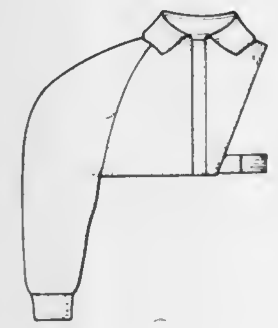
ARM WARMER GARMENT

Euseibio Manzano, Jr., 345 E. Kamala St., Oxnard, Calif. 93033

Filed Nov. 23, 1983, Ser. No. 554,528

Term of patent 14 years

U.S. Cl. D2—25



286,342

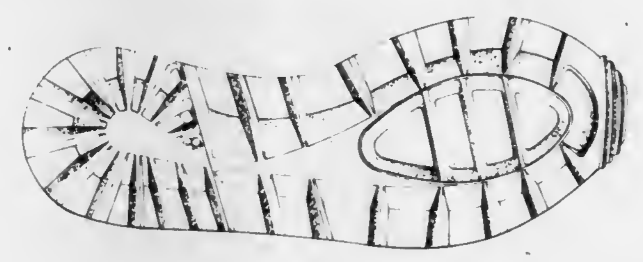
SHOE SOLE

Jerry D. Stubblefield, Portland, Oreg., assignor to Pensa, Inc., Portland, Oreg.

Filed Oct. 1, 1985, Ser. No. 782,420

Term of patent 14 years

U.S. Cl. D2—320



286,343

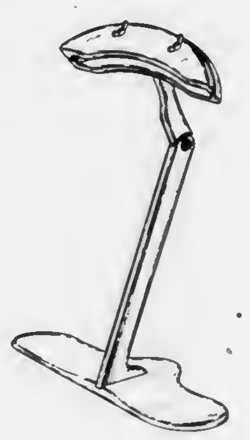
COMBINED SUPPORT AND STAND FOR A NEEDLEWORK FRAME

Bradley L. Geisler, Rte. 1, Osceola, Wis. 54020

Filed Jan. 13, 1984, Ser. No. 570,395

Term of patent 14 years

U.S. Cl. D3—26



286,344

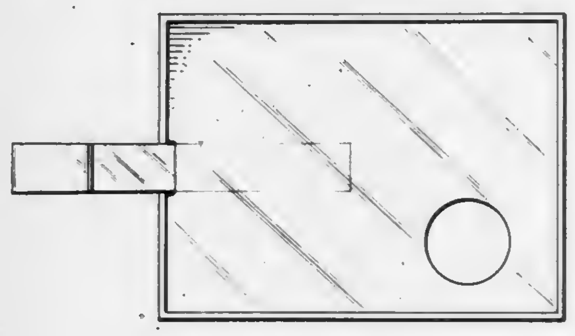
SERVING TRAY FOR AN AUTOMOBILE

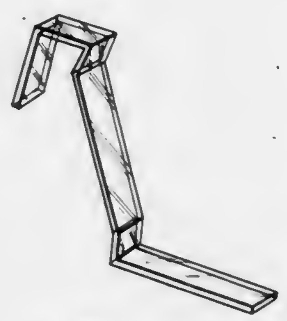
James E. Hughes, Jr., 10519 Broadleaf Dr., Largo, Md. 20772

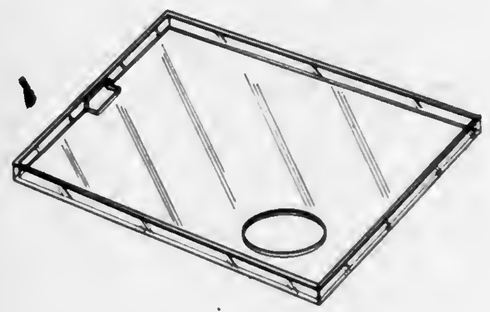
Filed Jun. 8, 1984, Ser. No. 618,910

Term of patent 14 years

U.S. Cl. D3—40



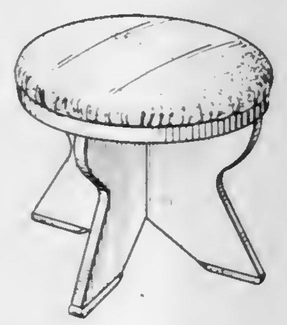




286,345

STOOL

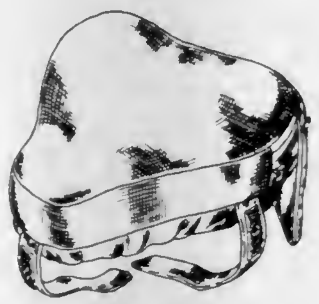
Louis Stanislawski, Jr., and Ruby Stanislawski, both of 2017 W. Ohio St., Chicago, Ill. 60612
Filed Mar. 5, 1984, Ser. No. 586,401
Term of patent 14 years
U.S. Cl. D6—349



286,346

BICYCLE SEAT CUSHION

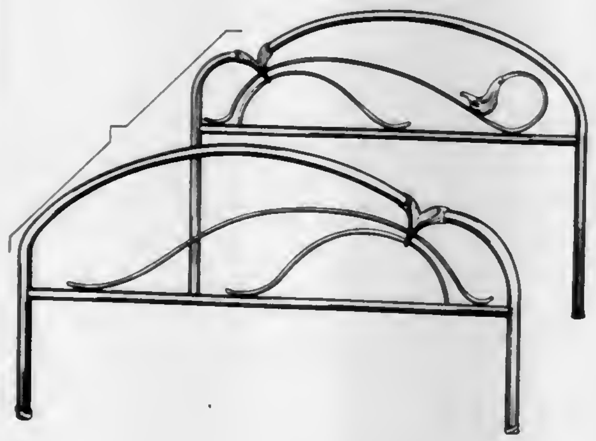
Cephia D. Woods, 2832 W. Amelia St., Orlando, Fla. 32805
Filed Aug. 13, 1984, Ser. No. 639,809
Term of patent 14 years
U.S. Cl. D6—502



286,347

BED FRAME

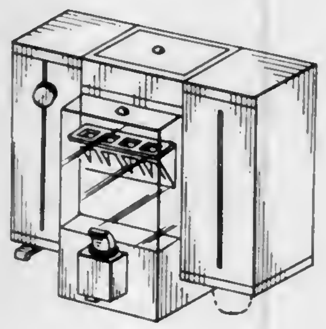
Paolo Porro, Como, Italy, assignor to Porro & Porro, S.r.l, Italy
Filed Feb. 4, 1985, Ser. No. 697,781
Claims priority, application Italy, Aug. 9, 1984, 22827[U]
Term of patent 14 years
U.S. Cl. D6—507



286,348

BATHROOM CABINET

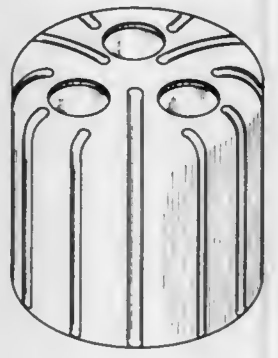
Herbert L. Gaudet, Sr., 6860 Holly Park Dr. South, #504, Seattle, Wash. 98118
Filed Aug. 3, 1984, Ser. No. 637,637
Term of patent 14 years
U.S. Cl. D6—516



286,349

TOOTHBRUSH HOLDER

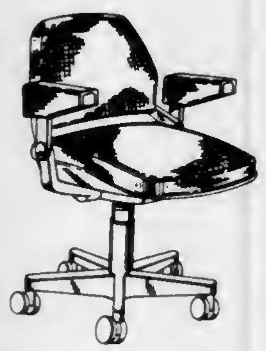
Vanda J. Bussell, 283 Nottingham Rd., Ramsey, N.J. 07446
Filed Jun. 28, 1984, Ser. No. 625,735
Term of patent 14 years
U.S. Cl. D6—534



286,350

CHAIR

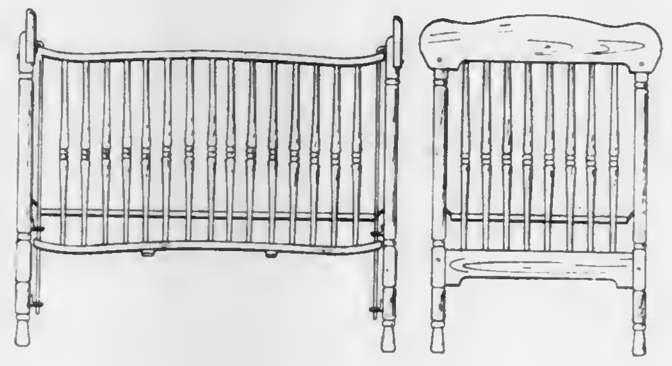
Niels Diffrient, 879 N. Salem Rd., Ridgefield, Conn. 06877
Filed Jun. 8, 1984, Ser. No. 618,514
Term of patent 14 years
U.S. Cl. D6—366



286,351

CRIB

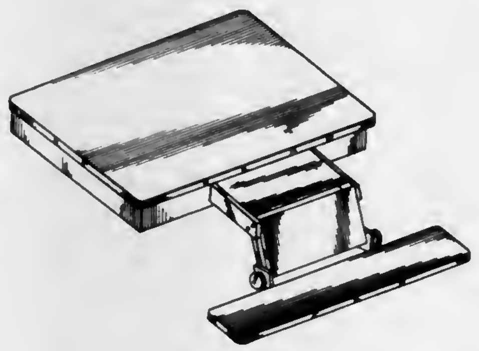
Roy E. Knoedler, Columbus, Ind., assignor to Cosco, Inc., Columbus, Ind.
Filed Nov. 10, 1983, Ser. No. 550,867
Term of patent 14 years
U.S. Cl. D6—390



286,352

ADJUSTABLE COMPUTER STAND

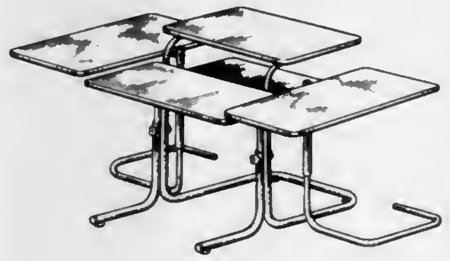
William Huculak, 1801 Pepper Rd., Petaluma, Calif. 94952
Filed Aug. 18, 1983, Ser. No. 524,430
Term of patent 14 years
U.S. Cl. D6—430



286,353

MULTI-TIERD DATA PROCESSING WORK TABLE OR SIMILAR ARTICLE

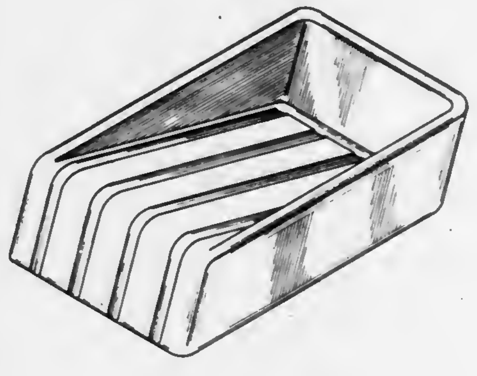
Claude J. Robolin, P.O. Box 592, Lavonia, Ga. 30553
Filed May 29, 1984, Ser. No. 614,539
Term of patent 14 years
U.S. Cl. D6—474



286,354

SOAP DISH

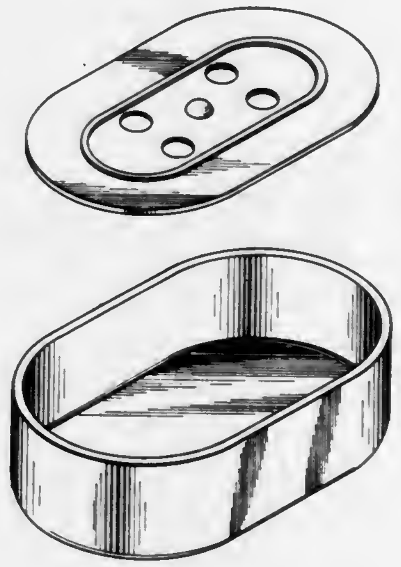
Vanda J. Bussell, 283 Nottingham Rd., Ramsey, N.J. 07446
Filed Jun. 28, 1984, Ser. No. 625,730
Term of patent 14 years
U.S. Cl. D6—536



286,355

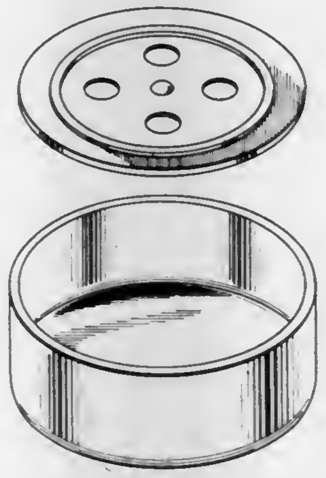
SOAP DISH

Vanda J. Bussell, 283 Nottingham Rd., Ramsey, N.J. 07446
Filed Jun. 28, 1984, Ser. No. 625,731
Term of patent 14 years
U.S. Cl. D6—536



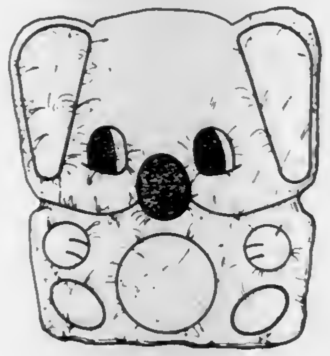
286,356
SOAP DISH

Vanda J. Bussell, 283 Nottingham Rd., Ramsey, N.J. 07446
Filed Jun. 28, 1984, Ser. No. 625,729
Term of patent 14 years
U.S. Cl. D6—536



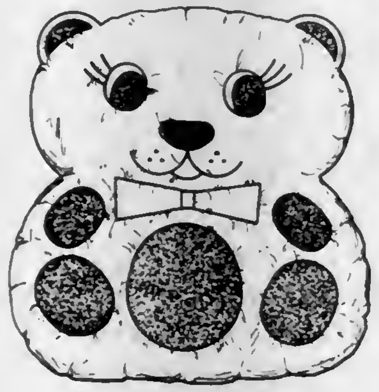
286,357
RUG OR SIMILAR ARTICLE

Michael W. Thomas, and Patricia J. Thomas, both of 23 Blaxland Avenue, Two Rocks, Western Australia, Australia
Filed Apr. 17, 1984, Ser. No. 601,367
Term of patent 14 years
U.S. Cl. D6—587



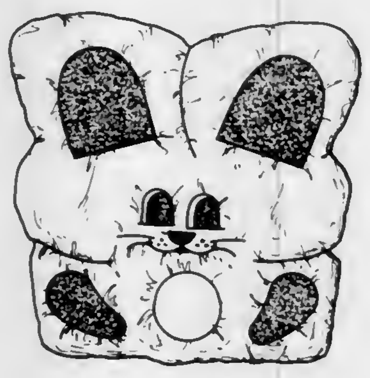
286,358
RUG OR SIMILAR ARTICLE

Michael W. Thomas, and Patricia J. Thomas, both of 23 Blaxland Avenue, Two Rocks, Western Australia, Australia
Filed Jul. 15, 1983, Ser. No. 514,254
Term of patent 14 years
U.S. Cl. D6—589



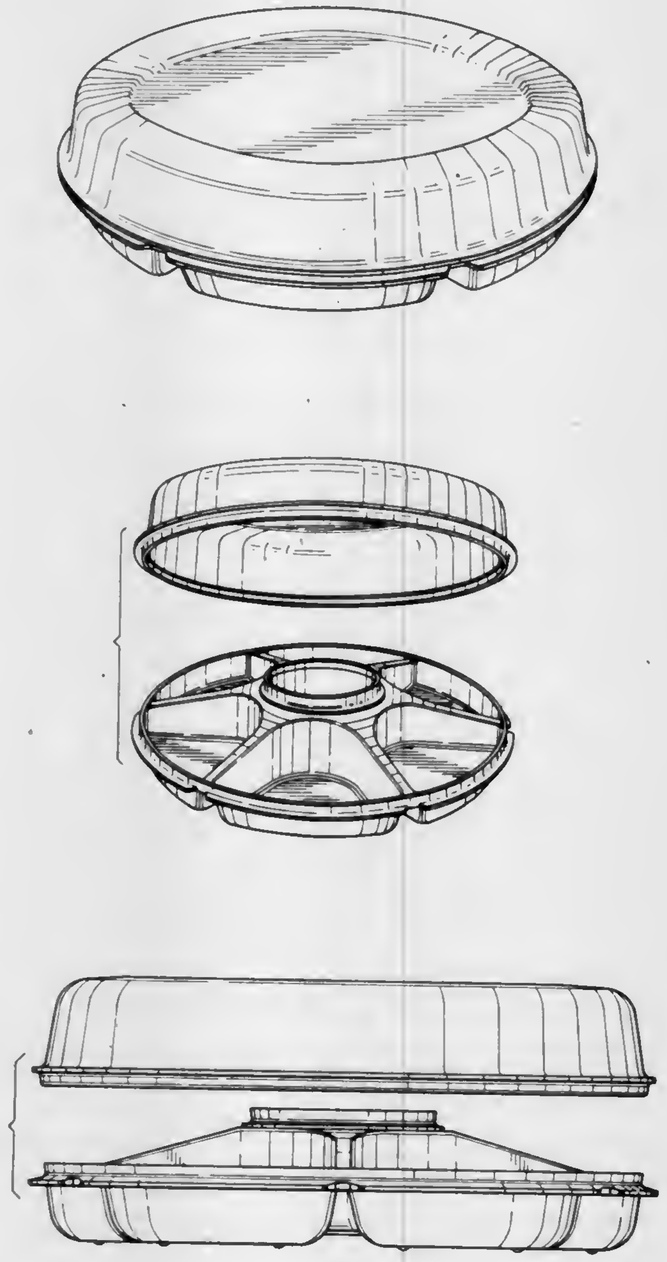
286,359
RUG OR SIMILAR ARTICLE

Michael W. Thomas, and Patricia J. Thomas, both of 23 Blaxland Avenue, Two Rocks, Western Australia, Australia
Filed Jul. 15, 1983, Ser. No. 514,331
Term of patent 14 years
U.S. Cl. D6—589



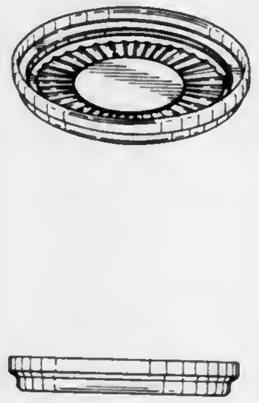
286,360
COVERED FOOD SERVING TRAY OR THE LIKE

Jody A. Trivison, Wooster, Ohio, assignor to Dart Industries, Inc., Northbrook, Ill.
Filed Sep. 29, 1983, Ser. No. 537,871
Term of patent 14 years
U.S. Cl. D7—17



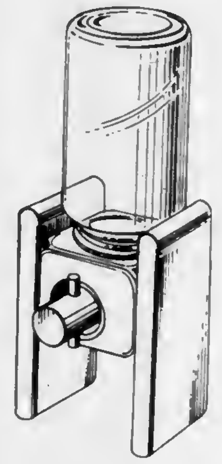
286,361
COASTER OR THE LIKE

Mark P. Zieff, Lexington, Mass., assignor to Dart Industries Inc, Northbrook, Ill.
Filed Sep. 29, 1983, Ser. No. 537,874
Term of patent 14 years
U.S. Cl. D7—45



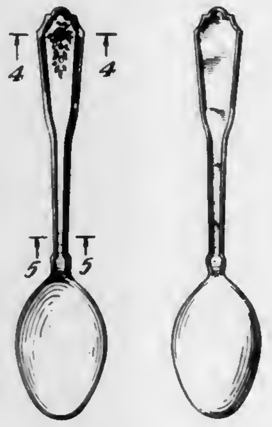
286,362
PELLET DISPENSER

Charles E. Lair, 11440 Surco Dr., San Diego, Calif. 92126
Filed Aug. 22, 1983, Ser. No. 525,000
Term of patent 14 years
U.S. Cl. D7—76



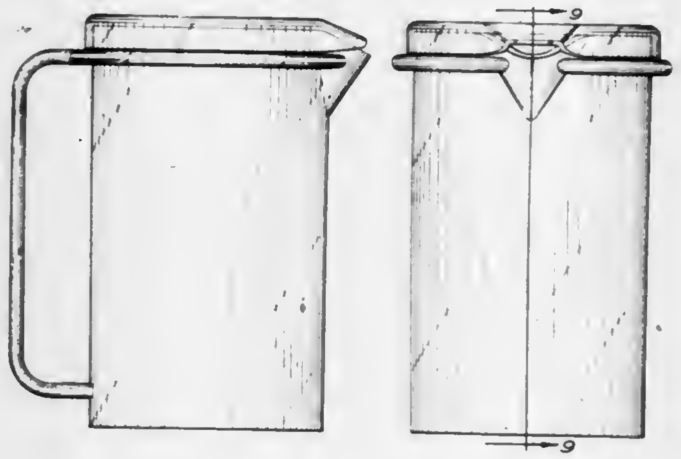
286,363
SPOON OR SIMILAR ARTICLE

Siro R. Toffolon, River Bend, Old-Lyme, Conn. 06371
Filed Jul. 11, 1984, Ser. No. 629,986
Term of patent 14 years
U.S. Cl. D7—150



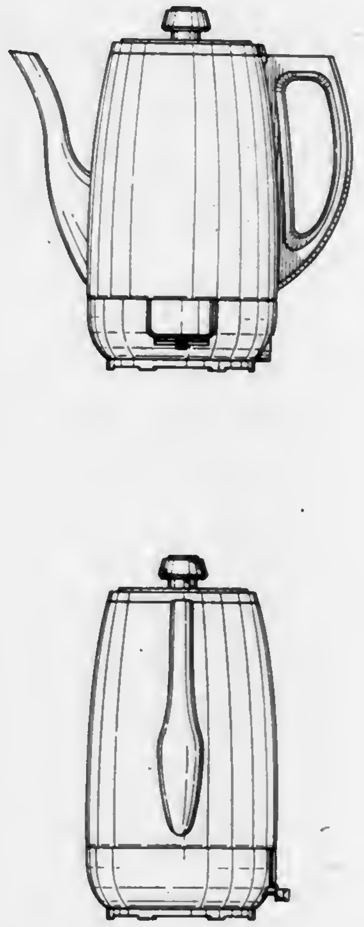
286,364
TRANSPARENT JUG

Bruno Gecchelin, Milan, Italy, assignor to Fratelli Guzzini S.p.A., Recanati, Italy
Filed Dec. 28, 1983, Ser. No. 566,415
Claims priority, application Italy, Jun. 28, 1983, 22237/83[U]
Term of patent 14 years
U.S. Cl. D7—317



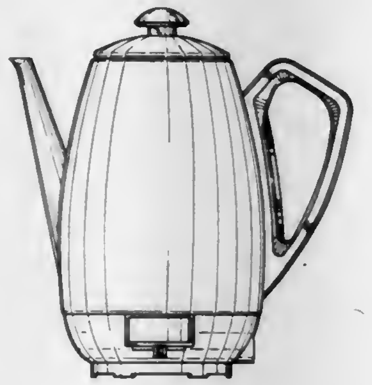
286,365
PERCOLATOR

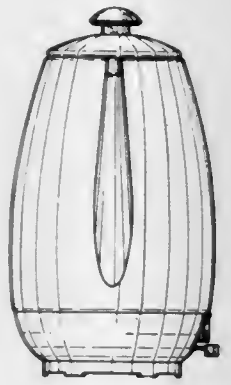
Dan E. Gremonprez, and William C. Cesaroni, both of Glenview, Ill., assignors to Dart Industries, Inc., Northbrook, Ill.
Filed Sep. 24, 1984, Ser. No. 653,628
Term of patent 14 years
U.S. Cl. D7—321



286,366
PERCOLATOR
Dan E. Gremonprez, West Bend, Wis., and William C. Cesaroni, Glenview, Ill., assignors to Dart Industries, Inc., Northbrook, Ill.

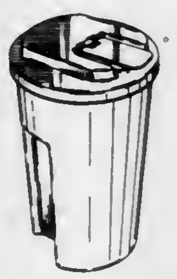
Filed Oct. 4, 1984, Ser. No. 657,634
Term of patent 14 years
U.S. Cl. D7—321

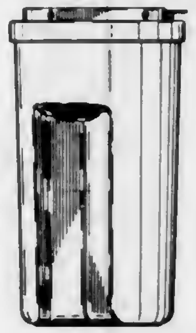


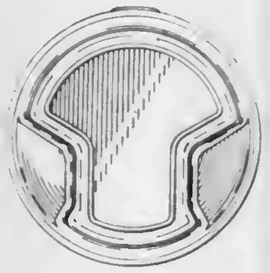


286,367
BEVERAGE DECANTER
Kent W. Murphy, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio

Filed Jul. 15, 1983, Ser. No. 513,829
Term of patent 14 years
U.S. Cl. D7—321

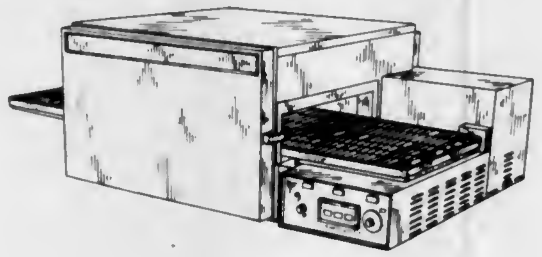






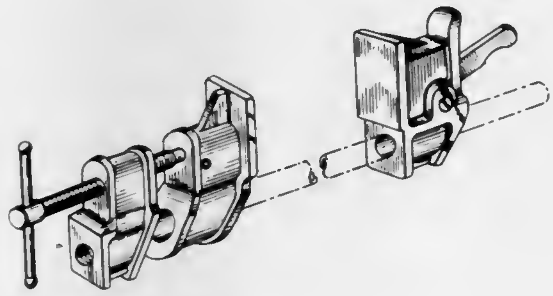
286,368
OVEN
Mitchell C. Henke, Fort Wayne, Ind., and Donald G. Wolfe, Lake Barrington, Ill., assignors to Lincoln Manufacturing Company, Inc., Fort Wayne, Ind.

Filed Dec. 14, 1984, Ser. No. 681,931
Term of patent 14 years
U.S. Cl. D7—338



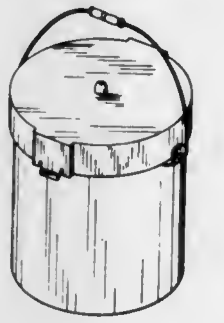
286,369
CLAMP
Ronald R. Hahn, Barrington, Ill., assignor to Hahn Manufacturing Co., Franklin Park, Ill.

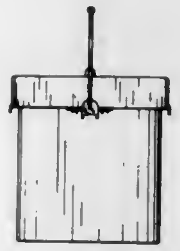
Filed Jun. 6, 1983, Ser. No. 501,522
Term of patent 14 years
U.S. Cl. D8—72



286,370
WIRE DE-REELING PAIL
Harold L. Wirts, Garrett, and Horace B. Corner, Fort Wayne, both of Ind., assignors to Mossberg Industries, Inc., Garrett, Ind.

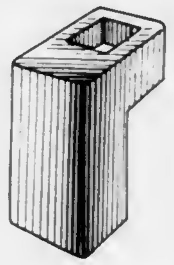
Filed May 17, 1984, Ser. No. 611,488
Term of patent 14 years
U.S. Cl. D8—356

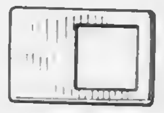




286,371
MAGNETIC SIGN HOLDER
Bernard E. Shuman, 3230 Clubhouse Rd., Merrick, N.Y. 11566

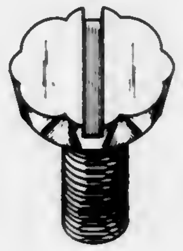
Filed Aug. 6, 1985, Ser. No. 762,969
Term of patent 14 years
U.S. Cl. D8—373





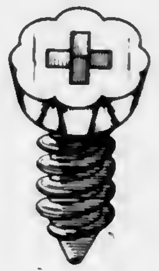
286,372
BOLT
Royce W. Hill, Flippin, Ark., assignor to Ark-Plas Products Inc., Flippin, Ark.

Filed Dec. 28, 1984, Ser. No. 687,028
Term of patent 14 years
U.S. Cl. D8—387



286,373
SCREW
Royce W. Hill, Flippin, Ark., assignor to Ark-Plas Products Inc., Flippin, Ark.

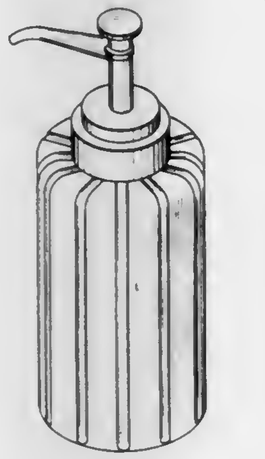
Filed Dec. 28, 1984, Ser. No. 687,029
Term of patent 14 years
U.S. Cl. D8—387



286,374

LOTION DISPENSING BOTTLE

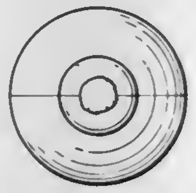
Vanda J. Bussell, 283 Nottingham Rd., Ramsey, N.J. 07446
Filed Jun. 28, 1984, Ser. No. 625,732
Term of patent 14 years
U.S. Cl. D9—300



286,375

COMBINED DRINK STIRRER AND CONTAINER FOR A LIQUID REFRIGERANT

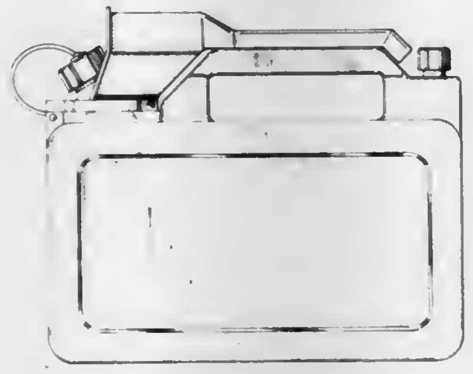
Hal Taub, 561 Acorn St., Deer Park, N.Y. 11729
Filed Oct. 26, 1983, Ser. No. 545,370
Term of patent 14 years
U.S. Cl. D9—337



286,376

COMBINED LIQUID CONTAINER AND ROTATABLE SPOUT

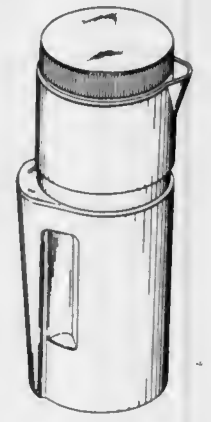
Andrew S. Bianco, Lima, Ohio, assignor to The Dyson-Kissner-Moran Corporation, New York, N.Y.
Filed Mar. 29, 1984, Ser. No. 594,654
Term of patent 14 years
U.S. Cl. D9—341



286,377

CONTAINER FOR THE PREPARATION OF READY TO BE USED LIQUID DETERGENTS

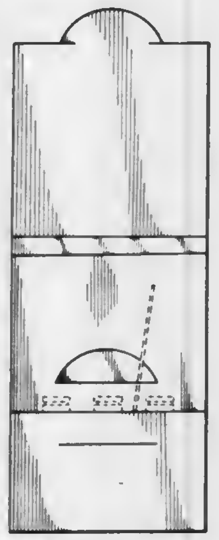
Nistri Ugo, Genoa, Italy, assignor to Mira Lanza S.p.A., Genoa, Italy
Filed Dec. 28, 1983, Ser. No. 567,523
Claims priority, application Italy, Jul. 8, 1983, 15213/83[U]
Term of patent 14 years
U.S. Cl. D9—341



286,378

PACKAGING CONTAINER

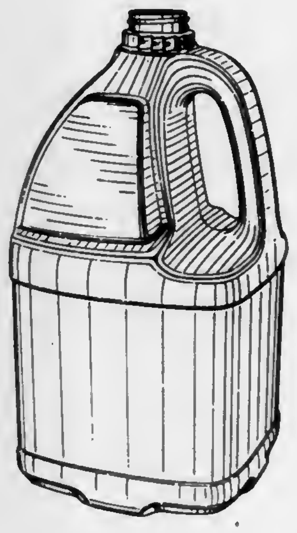
Michael G. Banfield, 10844 139A St., Surrey, British Columbia, Canada V3R 3E5
Filed Aug. 15, 1983, Ser. No. 522,984
Term of patent 14 years
U.S. Cl. D9—346



286,379

BOTTLE OR SIMILAR ARTICLE

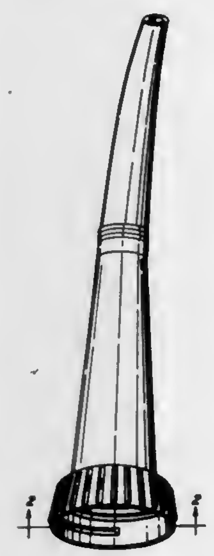
Gerard E. Lyons, Burlington, Canada, assignor to Polybottle, Weston, Canada
Filed Jul. 19, 1984, Ser. No. 632,355
Claims priority, application Canada, Apr. 2, 1984, 02-04-84-13
Term of patent 14 years
U.S. Cl. D9—370



286,380

POURING SPOUT

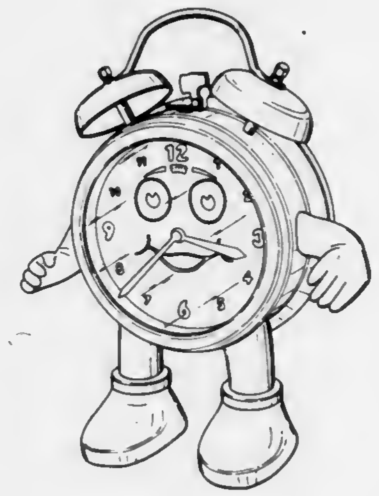
Walter D. Harman, 6990 Bucktrout Pl., Worthington, Ohio 43085
Filed Jan. 4, 1984, Ser. No. 568,042
Term of patent 14 years
U.S. Cl. D9—447



286,381

ALARM CLOCK

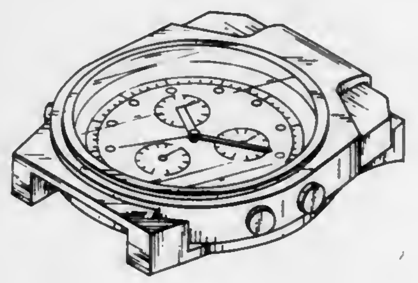
Hans K. Zeisel, Waiblinger Strasse 25, D-7054 Korb, Fed. Rep. of Germany
Filed Oct. 7, 1983, Ser. No. 540,604
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1983, 942
Term of patent 14 years
U.S. Cl. D10—8



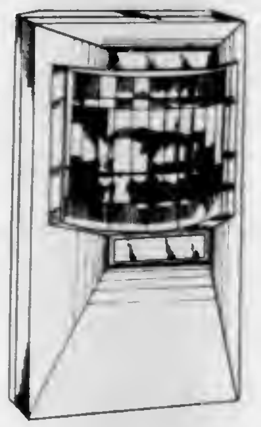
286,382

WATCH

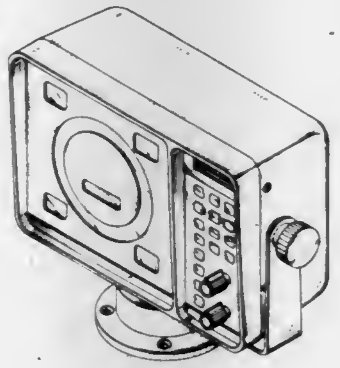
Jiro Matsuo, Chiba, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Oct. 10, 1984, Ser. No. 659,241
Claims priority, application Japan, Apr. 11, 1984, 59-14403
Term of patent 14 years
U.S. Cl. D10—39



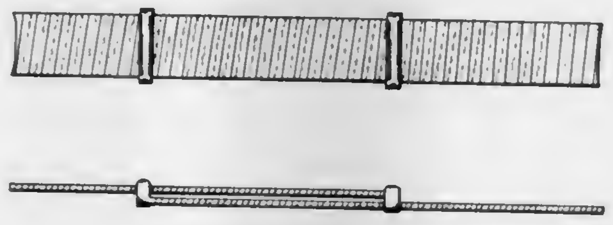
286,383
PASSIVE INFRA-RED SENSOR
Yaacov Kotlicki, 20 Yoav St., Ramat Gan, and Moshe Kotlicki, 24 Weisburg St., Tel Aviv, both of Israel
Filed Oct. 11, 1984, Ser. No. 659,944
Term of patent 14 years
U.S. Cl. D10—106



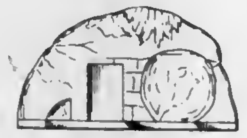
286,384
DEPTH SOUNDER
Henry G. Grilk, West Milford, N.J., assignor to Aqua Meter Instrument Corporation, Roseland, N.J.
Filed Aug. 15, 1984, Ser. No. 641,072
Term of patent 14 years
U.S. Cl. D10—46

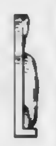


286,385
WRISTWATCH BAND
Gianni Bulgari, Rome, Italy, assignor to Sotiro Bulgari Di Costantino E Giorgio Bulgari S.a.S., Rome, Italy
Filed May 2, 1983, Ser. No. 490,559
Claims priority, application Italy, Jan. 24, 1983, 35548/83[U]
Term of patent 14 years
U.S. Cl. D11—19

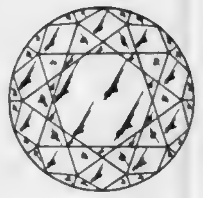


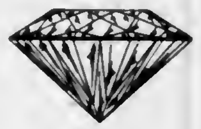
286,386
RELIGIOUS ORNAMENT FOR JEWELRY OR THE LIKE
Susanna M. Orr, 389 S. Edison St., Elgin, Ill. 60120
Filed May 29, 1984, Ser. No. 614,780
Term of patent 14 years
U.S. Cl. D11—86



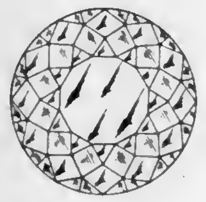


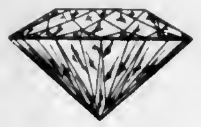
286,387
DIAMOND
Mitsugi Ishida, 72-81 113th St., Forest Hills, N.Y. 11375
Filed Mar. 21, 1984, Ser. No. 591,917
Term of patent 14 years
U.S. Cl. D11—90



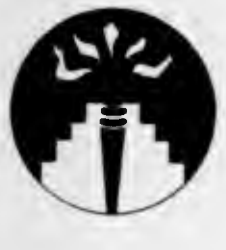


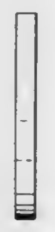
286,388
DIAMOND
Mitsugi Ishida, 72-81 113th St., Forest Hills, N.Y. 11375
Filed Mar. 21, 1984, Ser. No. 591,919
Term of patent 14 years
U.S. Cl. D11—90



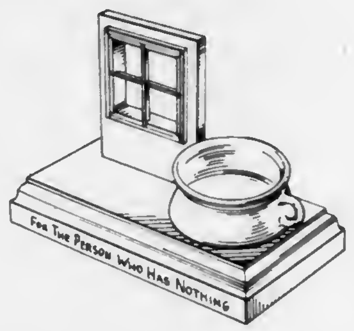


286,389
MEDALLION
Bette B. Davidson, 303 N. Lancaster Ave., Margate, N.J. 08402
Filed Oct. 4, 1984, Ser. No. 657,621
Term of patent 14 years
U.S. Cl. D11—114

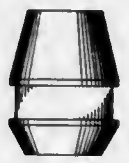


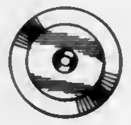


286,390
STATUETTE
Nathan W. Groce, 3008 W. Shangri La Rd., Phoenix, Ariz. 85029
Filed Nov. 29, 1984, Ser. No. 676,476
Term of patent 14 years
U.S. Cl. D11—157

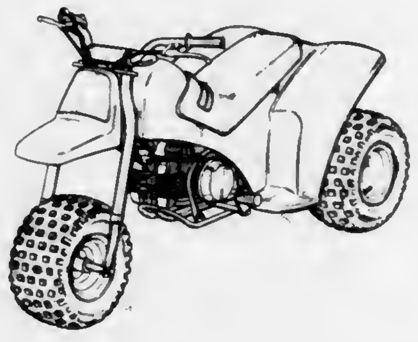


286,391
ROUND TROPHY BASE
Freddy T. Lee, 467 SE. Whitmore Dr., Port St. Lucie, Fla. 33452
Filed May 4, 1984, Ser. No. 607,317
Term of patent 14 years
U.S. Cl. D11—164





286,392
MOTORTRICYCLE
Yukihiko Matsue, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Apr. 11, 1983, Ser. No. 483,511
Claims priority, application Japan, Oct. 13, 1982, SHO 57-46.599
Term of patent 14 years
U.S. Cl. D12—110



286,393

AUTOMOBILE TIRE

Izumi Kuramochi; Hiroshi Tokizaki, both of Tokyo; Kazuyoshi Saneto, and Daisuke Higashide, both of Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

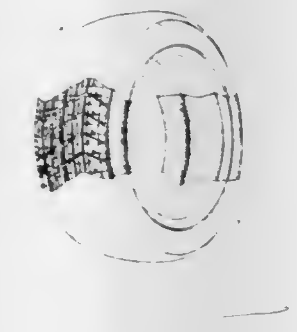
Filed Sep. 14, 1983, Ser. No. 532,230

Claims priority, application Japan, Mar. 16, 1983, 58-10728

The portion of the term of this patent subsequent to May 27, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D12—147



286,394

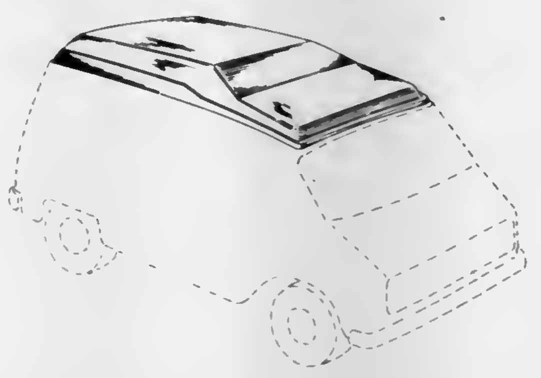
VAN TOP

William P. Johnson, Syracuse, and Charles B. Bonifield, Warsaw, both of Ind., assignors to Coachmen Industries, Inc., Elkhart, Ind.

Filed Apr. 2, 1984, Ser. No. 595,607

Term of patent 14 years

U.S. Cl. D12—156



286,395

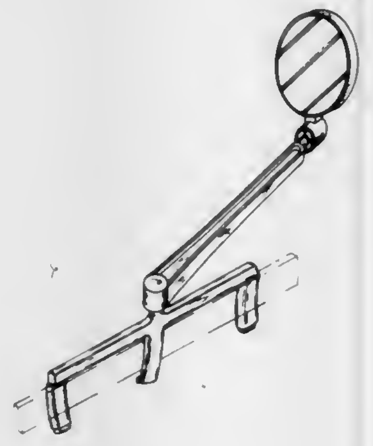
ARTICULATED REAR VIEW MIRROR FOR ATTACHMENT TO EYE GLASSES

John W. Greenlaw, 1908 Nero Ct., Walnut Creek, Calif. 94596; Karsten Kettlitz, 14633 Darius Way, San Leandro, Calif. 94578, and Gary R. Schlueter, 17472 Almond Rd., Castro Valley, Calif. 94546

Filed Aug. 27, 1984, Ser. No. 644,761

Term of patent 14 years

U.S. Cl. D12—189



286,396

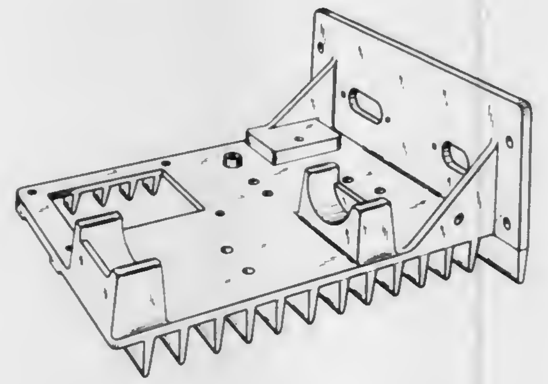
POWER SUPPLY HEAT SINK

Thomas J. Luciano, Rochester, N.Y., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 29, 1984, Ser. No. 584,665

Term of patent 14 years

U.S. Cl. D13—23



286,397

ELECTRICAL CONNECTOR SOCKET

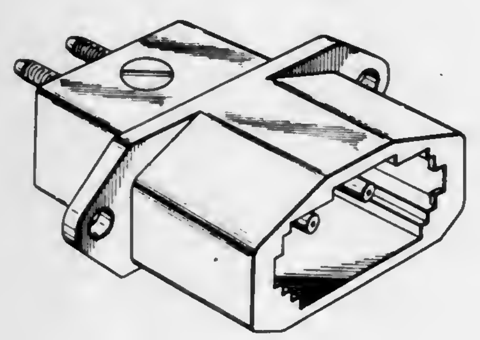
John C. Challans, Kislingbury, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Jan. 17, 1984, Ser. No. 571,444

Claims priority, application United Kingdom, Jul. 20, 1983, 1014238

Term of patent 14 years

U.S. Cl. D13—24



286,398

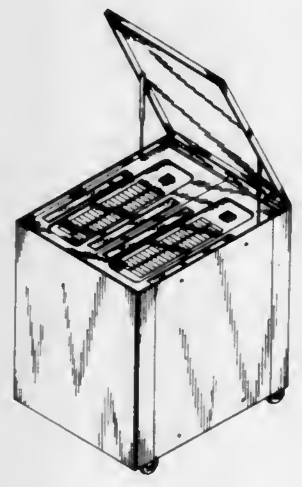
AUXILIARY CIRCUIT BREAKER SYSTEM

John E. Lines, 25952 Lines La., Kittredge, Colo. 80457

Filed Sep. 26, 1983, Ser. No. 535,631

Term of patent 14 years

U.S. Cl. D13—34



286,399

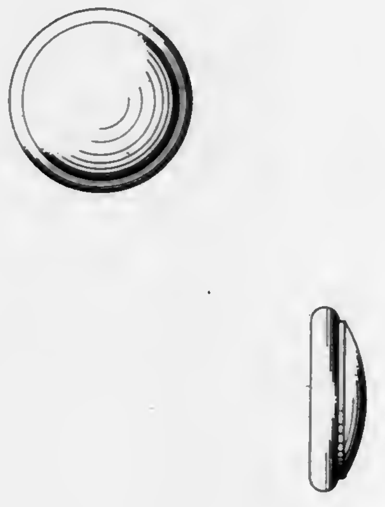
SPEAKER DIAPHRAGM

Erazm A. Willy, 128 Country Manor Way, Apt. #7, Webster, N.Y. 14580

Filed Jun. 2, 1983, Ser. No. 500,370

Term of patent 14 years

U.S. Cl. D14—30



286,400

TELEPHONE

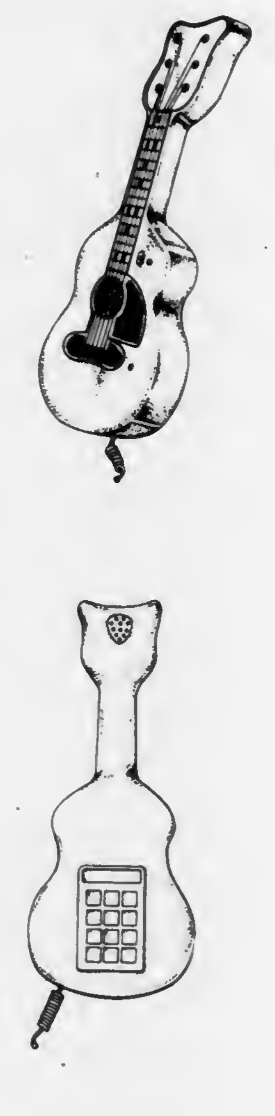
Theodore O. S. Moller, R.R. #3, Marsden Road, Courtenay, British Columbia, Canada V9N 5M8

Filed Oct. 16, 1984, Ser. No. 661,443

Claims priority, application Canada, Jun. 7, 1984, 07-06-84-5

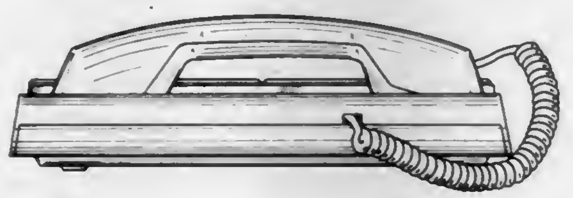
Term of patent 14 years

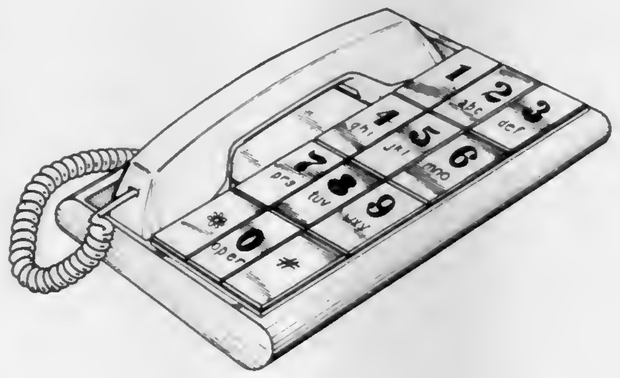
U.S. Cl. D14—53



286,401
TELEPHONE SET

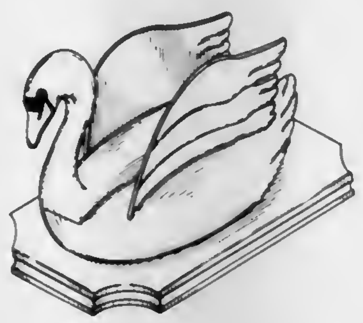
James T. Asaki, Raleigh, N.C., assignor to ITT Corporation, New York, N.Y.
Filed Sep. 28, 1984, Ser. No. 655,969
Term of patent 14 years
U.S. Cl. D14—53





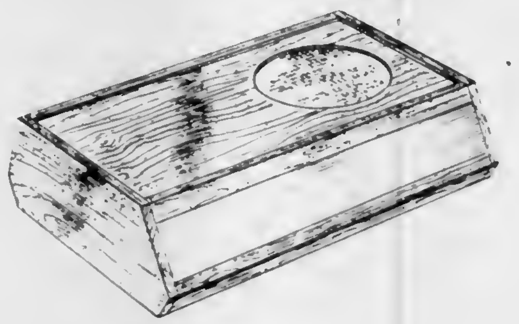
286,402
COMBINATION HANDSET TELEPHONE AND STAND SET

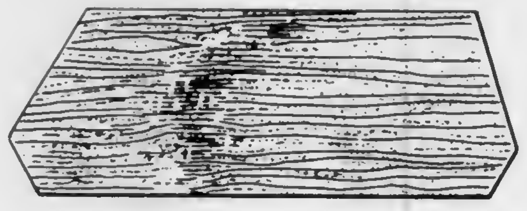
Connie K. Huber, 317 4th St., Oakmont, Pa. 15139
Filed Jun. 29, 1984, Ser. No. 625,956
Term of patent 14 years
U.S. Cl. D14—53



286,403
CONSOLE FOR TELECONFERENCE COMMUNICATION

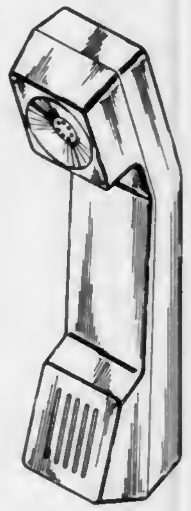
David Parshad, Ottawa, Canada; Waco Butram, Capron, Ill., and Radamis Botros, Nepean, Canada, assignors to Darome, Inc., Harvard, Ill.
Filed Dec. 8, 1983, Ser. No. 559,364
Term of patent 14 years
U.S. Cl. D14—59

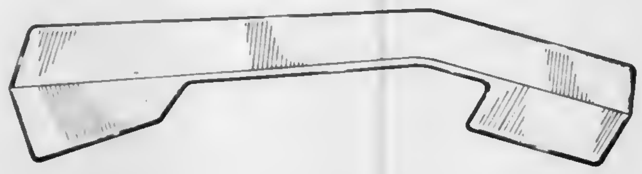




286,404
TELEPHONE HANDSET OR SIMILAR ARTICLE

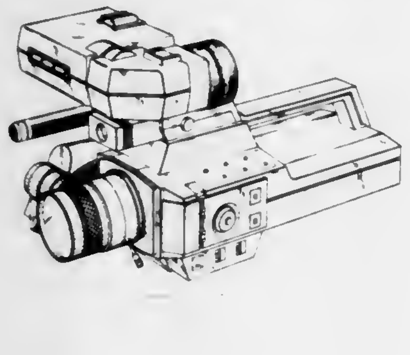
Jeffrey A. Skigen, Vienna; James C. P. Lum, Herndon, both of Va., and C. Thomas Taylor, Leawood, Kans., assignors to GTE Telenet Communications Corporation, Reston, Va.
Filed Nov. 30, 1984, Ser. No. 677,010
Term of patent 14 years
U.S. Cl. D14—63





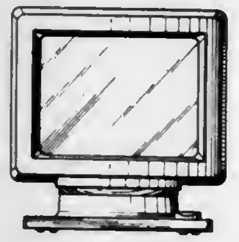
286,405
VIDEO CAMERA

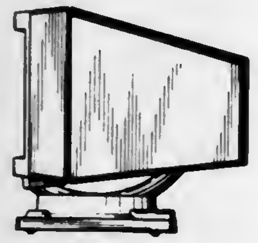
Masakatu Iwasaki, Koganei; Hideyo Hyuga, and Kazunori Hashimoto, both of Tokyo, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan
Filed Mar. 9, 1983, Ser. No. 473,851
Claims priority, application Japan, Sep. 20, 1982, 57-42468
Term of patent 14 years
U.S. Cl. D14—78



286,406
COMBINED STAND AND HOUSING FOR VIDEO DISPLAY UNIT

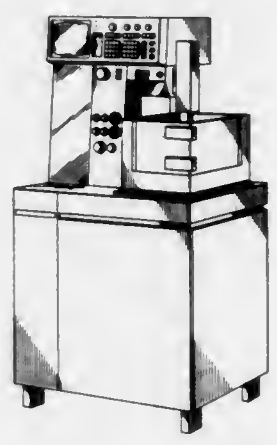
Geoffrey D. Gahan, Great Missenden, England, assignor to Mouldmaking Design Centre Limited, Amersham, England
Continuation-in-part of Ser. No. 475,673, Mar. 15, 1983, abandoned. This application Dec. 14, 1983, Ser. No. 561,367
Claims priority, application United Kingdom, Dec. 13, 1982, 1010256; Jun. 14, 1983, 1013539
Term of patent 14 years
U.S. Cl. D14—113





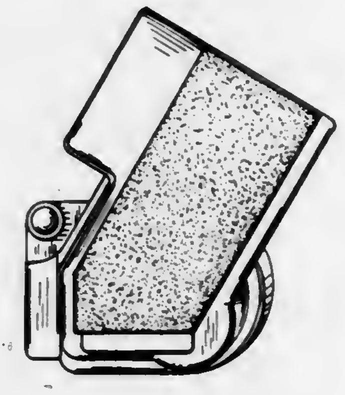
286,407
MACHINE FOR CUTTING WORKPIECES UTILIZING ELECTRIC DISCHARGE

Kazuo Itoh, Aichi; Makoto Goto, Toki, and Yasuyo Isaji, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Aug. 31, 1984, Ser. No. 646,206
Claims priority, application Japan, Mar. 14, 1984, 59-9891
Term of patent 14 years
U.S. Cl. D15—127



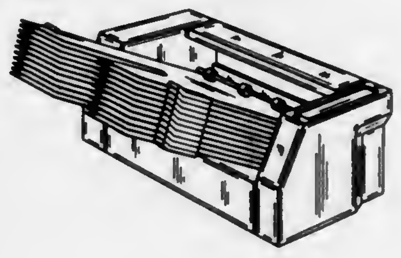
286,408
MOTOR DRIVE UNIT FOR A CAMERA

Lave Tenne, Kungsbacka, Sweden, assignor to Victor Hasselblad AB, Goteborg, Sweden
Filed Nov. 28, 1984, Ser. No. 675,740
Claims priority, application Sweden, May 28, 1984, 841649
Term of patent 14 years
U.S. Cl. D16—10



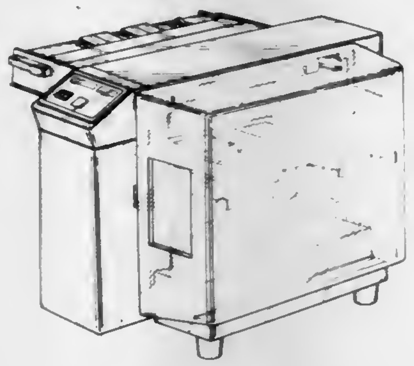
286,409
SORTER

Mikio Kosako, and Harumi Fukuda, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed May 16, 1984, Ser. No. 610,673
Claims priority, application Japan, Nov. 22, 1983, 58-50834
Term of patent 14 years
U.S. Cl. D16—32



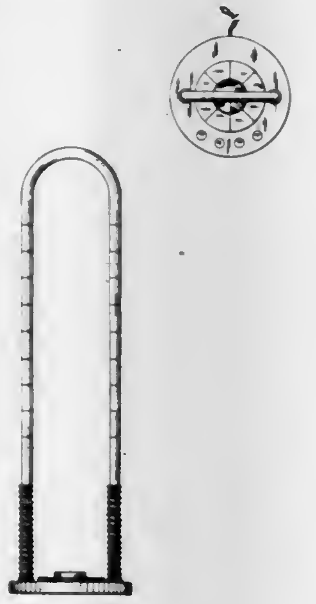
286,410
PAPER FEEDER FOR ELECTRONIC COPYING MACHINE

Kunio Hara, Chiba, Japan, assignor to Kabushiki Kaisha Toshiba, Japan
Filed Jun. 19, 1984, Ser. No. 622,150
Claims priority, application Japan, Dec. 20, 1983, 58-54569
Term of patent 14 years
U.S. Cl. D16—32



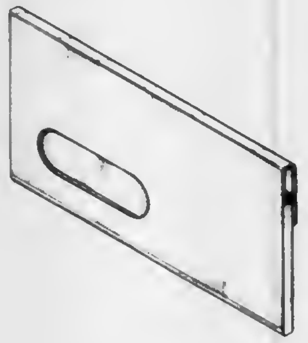
286,411
MUSICAL INSTRUMENT FOR PRE-SCHOOL CHILDREN

William M. Maryniak, 4 N. 186 Walter Dr., Addison, Ill. 60101
Filed Mar. 2, 1984, Ser. No. 585,920
Term of patent 14 years
U.S. Cl. D17—99



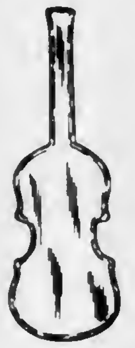
286,412
MAILING ENVELOPE

Bruce E. Bourgeois, 807 Arlington Cr., Richmond, Va. 23229
Filed Oct. 3, 1983, Ser. No. 538,176
Term of patent 14 years
U.S. Cl. D19—3



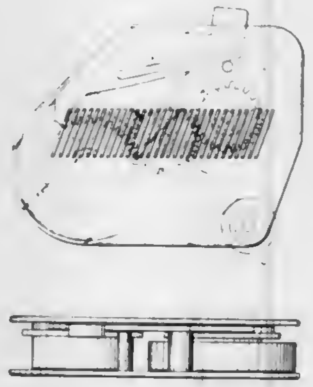
286,413
VIOLIN LEARNING BOARD

John C. DeFrancesco, 3162 Fowler, Omaha, Nebr. 68111
Filed Sep. 6, 1983, Ser. No. 529,476
Term of patent 14 years
U.S. Cl. D19—59



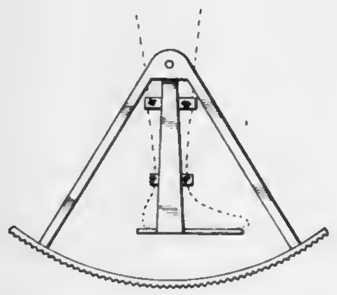
286,414
GLUE DISPENSER

Vittorio Pappalardo, Pessano Con Bornago, Italy, assignor to B.V.A.S. r.l., Milan, Italy
Filed Apr. 4, 1985, Ser. No. 719,997
Term of patent 14 years
U.S. Cl. D19—66



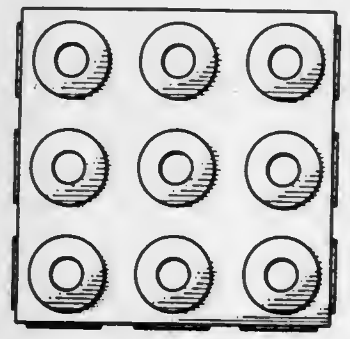
286,415
WALKING STILT

James W. Dillard, 118 N. Main St., Cedar Hill, Tex. 75104
Filed Apr. 23, 1984, Ser. No. 603,152
Term of patent 14 years
U.S. Cl. D21—72



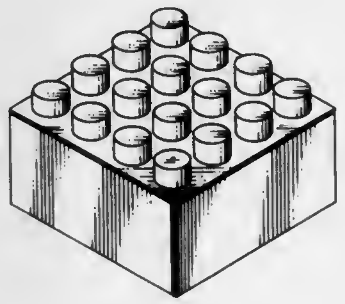
286,416
TOY CONSTRUCTION PIECE

Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushiki Kaisha, Osaka, Japan
Division of Ser. No. 508,514, Jun. 28, 1983. This application Sep. 30, 1985, Ser. No. 781,708
Claims priority, application Japan, Dec. 29, 1982, 57-58161
Term of patent 14 years
U.S. Cl. D21—108



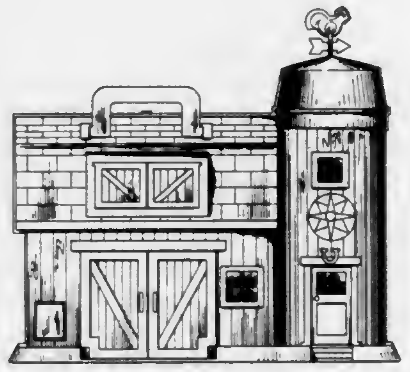
286,417
TOY CONSTRUCTION PIECE

Tokuo Takahashi, Tokyo, Japan, assignor to Kawada Co., Ltd., Tokyo, Japan
Filed Sep. 10, 1984, Ser. No. 648,526
Claims priority, application Japan, May 30, 1984, 59-21774
Term of patent 14 years
U.S. Cl. D21—108



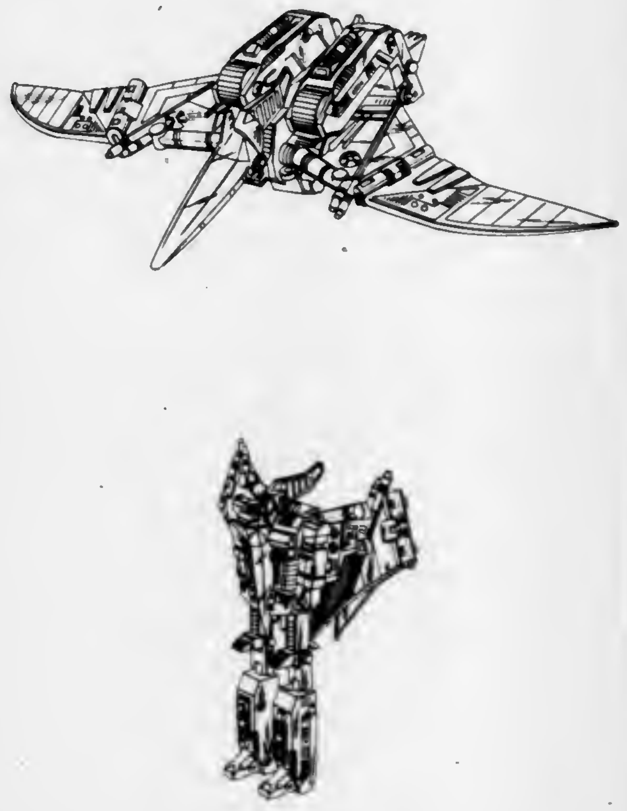
286,418
TOY BARN

Mel Appel, Livingston, and George Kress, Scotch Plains, both of N.J., assignors to The Mel Appel Company, Short Hills, N.J.
Filed Nov. 19, 1984, Ser. No. 673,038
Term of patent 14 years
U.S. Cl. D21—116



286,419
RECONFIGURABLE DINOSAURIAN TOY

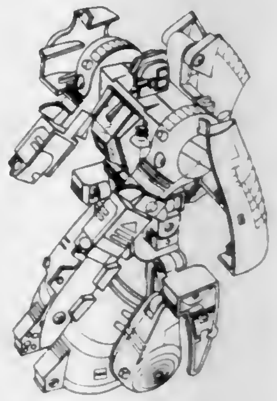
Kouzin Ohno, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Aug. 16, 1984, Ser. No. 641,372
Claims priority, application Japan, May 1, 1984, 59-17944
Term of patent 14 years
U.S. Cl. D21—148

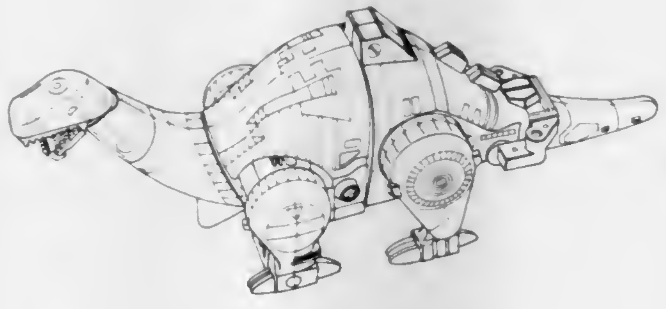


286,420

RECONFIGURABLE DINOSAURIN TOY

Kouzin Ohno, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed May 30, 1984, Ser. No. 616,423
Claims priority, application Japan, Apr. 10, 1984, 59-14286
Term of patent 14 years
U.S. Cl. D21—148

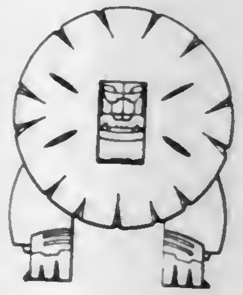




286,421

RECONFIGURABLE TOY LION

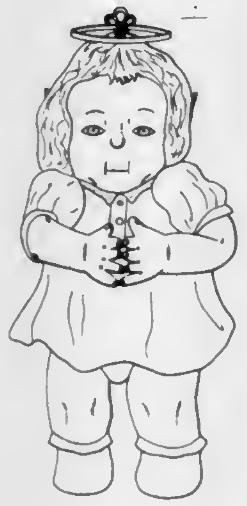
Masaki Maruyama, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed May 30, 1984, Ser. No. 616,422
Claims priority, application Japan, Jan. 31, 1984, 59-3049
Term of patent 14 years
U.S. Cl. D21—163



286,422

ANGEL-DOLL

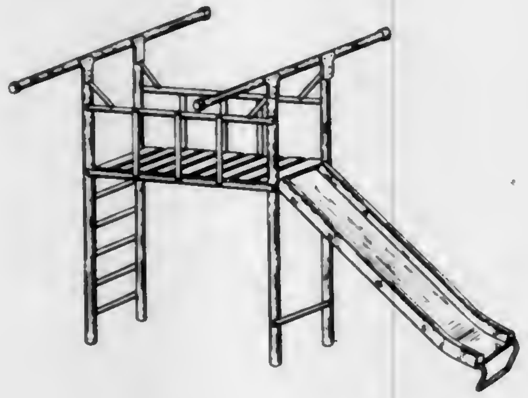
Dorothy M. Dickerson, P.O. Box 208, Noble, Ill. 62868
Filed Jul. 5, 1984, Ser. No. 627,817
Term of patent 14 years
U.S. Cl. D21—169



286,423

CHILDREN'S PLAY GYM

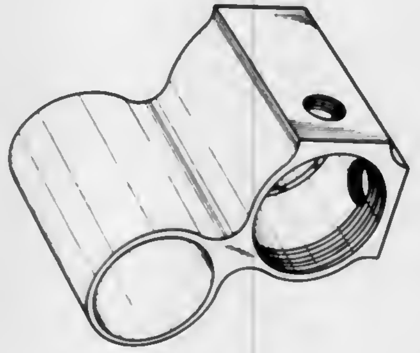
D. Scott Saxman, and William H. Ziegler, Jr., both of Bedford, Pa., assignors to Hedstrom Corporation, Bedford, Pa.
Filed Nov. 25, 1983, Ser. No. 555,281
Term of patent 14 years
U.S. Cl. D21—244



286,424

MOUNTING FOR A SIGHTING INSTRUMENT

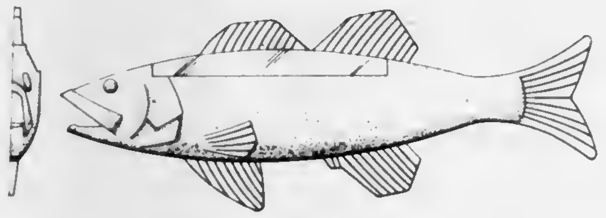
Johan A. I. Ekstrand, Utteröd 1, S-240 33 Löeröd, Sweden
Filed Feb. 22, 1984, Ser. No. 582,634
Claims priority, application Sweden, Sep. 8, 1983, 83-2297
Term of patent 14 years
U.S. Cl. D22—110



286,425

MAGNETIC FISH LURE HOLDER

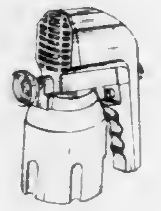
Gerald A. Haase, 1005 Country Club Rd., Lake Oswego, Oreg. 97034
Filed Mar. 28, 1984, Ser. No. 594,139
Term of patent 14 years
U.S. Cl. D22—22



286,426

ELECTRIC SPRAY GUN

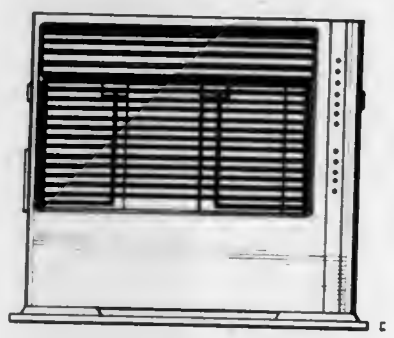
Bih-Ju Lin, No. 157-8, Hu Nei Sub-Ward, Chia-I City, Taiwan
Filed Mar. 15, 1984, Ser. No. 590,422
Term of patent 14 years
U.S. Cl. D23—18



286,427

OIL-FIRED SPACE HEATER

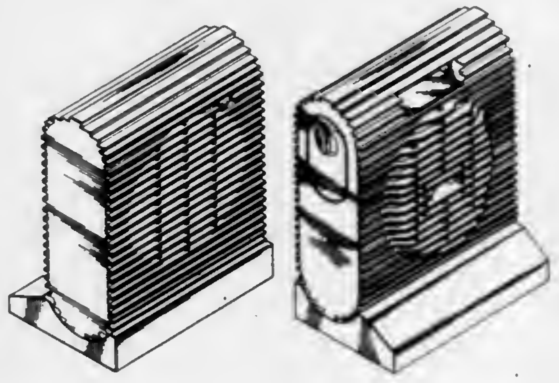
Kazuharu Nakamura, Nagoya, Japan, assignor to Toyotomi Kogyo Co., Ltd., Aichi, Japan
Filed Dec. 17, 1984, Ser. No. 682,135
Claims priority, application Japan, Jun. 19, 1984, 59-25279
Term of patent 14 years
U.S. Cl. D23—122



286,428

ENCLOSURE FOR AN ELECTRIC HEATER FAN

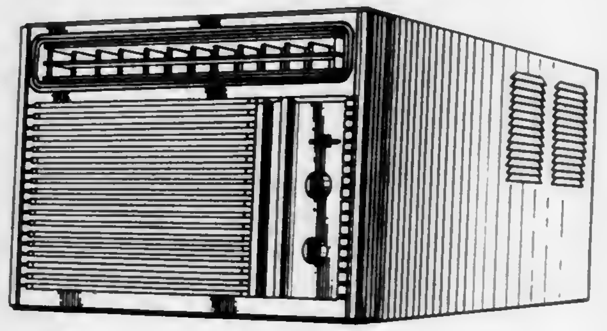
Chung C. Liu, Brea, Calif., assignor to Tatung Company of America, Inc., Long Beach, Calif.
Filed Jun. 6, 1984, Ser. No. 617,981
Term of patent 14 years
U.S. Cl. D23—122



286,429

AIR CONDITIONER

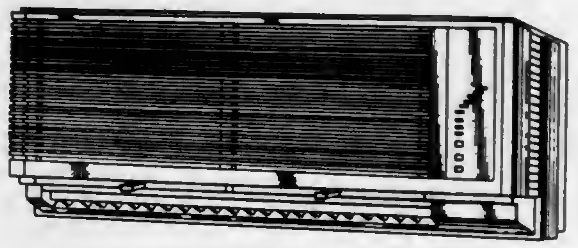
Masao Miyake; Shinichi Yokoyama, and Nobuo Takaishi, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed May 3, 1984, Ser. No. 607,012
Term of patent 14 years
U.S. Cl. D23—141



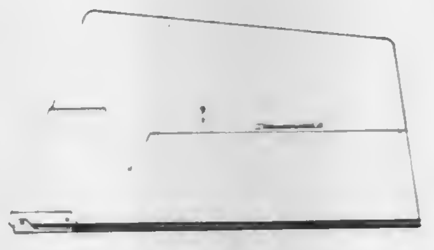
286,430

AIR CONDITIONER

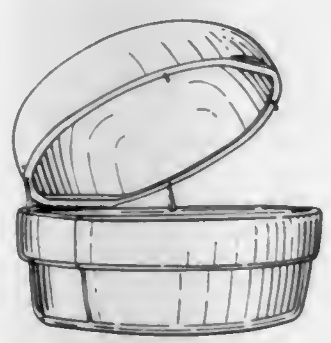
Masao Miyake; Shinichi Yokoyama, and Nobuo Takaishi, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jun. 26, 1984, Ser. No. 624,835
Term of patent 14 years
U.S. Cl. D23—141



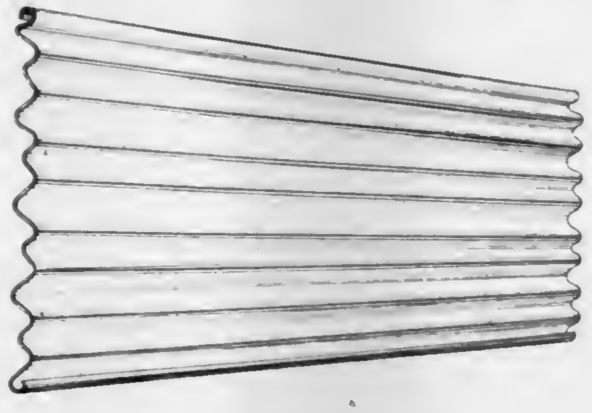
286,431
VEHICLE SHELTER
Terry O. McDaris, Rte. 2, Box 58-8D, Afton, Okla. 74331; John R. Loux, 10309 Osage Dr., Broken Arrow, Okla. 74014, and Barry L. Jeppesen, Rte. 1, Box 1373C, Broken Arrow, Okla. 74012
Filed Mar. 21, 1984, Ser. No. 591,958
Term of patent 14 years
U.S. Cl. D25—1



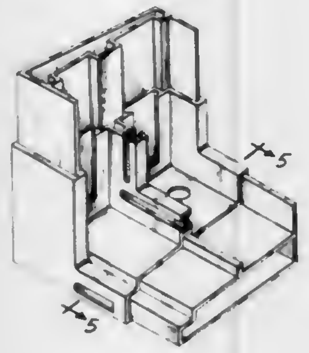
286,432
KIOSK
Paul Markham, The Hedges, Highmeadow, Newport, Shropshire, England (TF10 7TN)
Filed Apr. 11, 1984, Ser. No. 599,085
Claims priority, application United Kingdom, Oct. 14, 1983, 1015694
Term of patent 14 years
U.S. Cl. D25—19



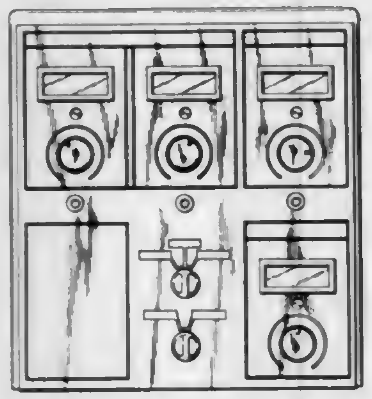
286,433
PANEL FOR ROLLING GATES
Vincent Greco, 195 Huntington Ave., Bronx, N.Y. 10465
Filed May 13, 1983, Ser. No. 494,523
Term of patent 14 years
U.S. Cl. D25—50



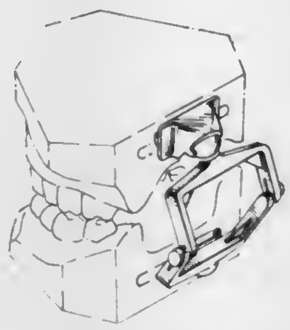
286,434
PLASTIC WINDOW FRAME CORNER OR THE LIKE
Dietrich F. Schmidt, Camp Hill, Pa., assignor to Capitol Products Corporation, Mechanicsburg, Pa.
Filed Aug. 1, 1983, Ser. No. 519,425
Term of patent 14 years
U.S. Cl. D25—52



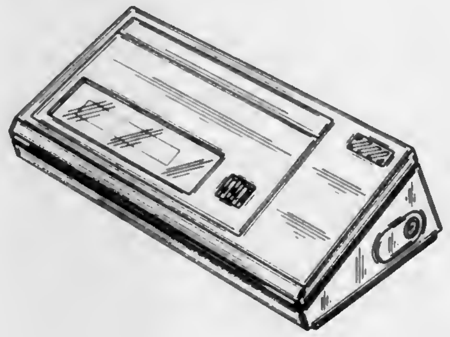
286,435
MEDICAL CONTROL PANEL FOR AN IRRIGATION, LAVAGE AND SUCTION APPARATUS OR THE LIKE
Robert W. Atkinson, Dover, Ohio, assignor to Snyder Laboratories, Inc., Dover, Ohio
Filed Dec. 1, 1982, Ser. No. 445,880
Term of patent 14 years
U.S. Cl. D24—8



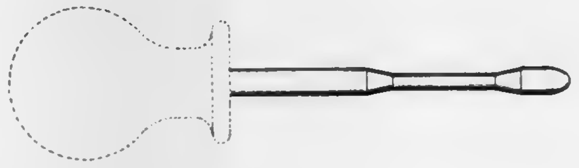
286,436
DENTAL ARTICULATOR WITH A TAB MOUNTING
Ronald E. Huffman, Tucson, Ariz., assignor to KV33 Corporation, Tucson, Ariz.
Filed Mar. 21, 1983, Ser. No. 477,076
Term of patent 14 years
U.S. Cl. D24—10



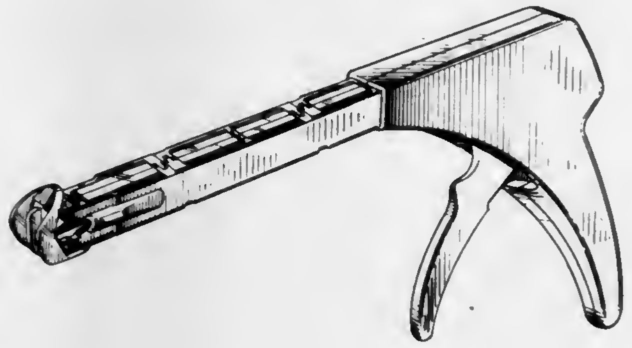
286,437
ELECTRONIC SPHYGMOMANOMETER
Hiroshi Nishibori, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Nov. 15, 1983, Ser. No. 552,167
Term of patent 14 years
U.S. Cl. D24—21



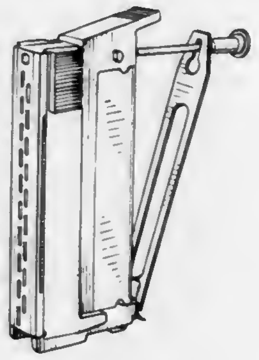
286,438
SURGICAL OBTURATOR
Philip R. Lichtman, Newton, and John C. Strahan, Arlington, both of Mass., assignors to Acufex Microsurgical Inc., Norwood, Mass.
Filed May 16, 1983, Ser. No. 494,890
Term of patent 14 years
U.S. Cl. D24—26



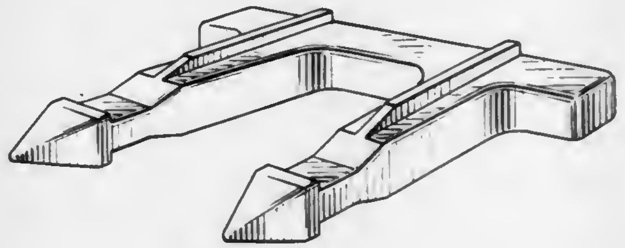
286,439
COMBINED SURGICAL OCCLUDING AND CUTTING INSTRUMENT
David T. Green, Norwalk; Paul O. Rawson, Easton, and Richard Yagami, Bridgewater, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Jan. 23, 1984, Ser. No. 573,048
Term of patent 14 years
U.S. Cl. D24—26



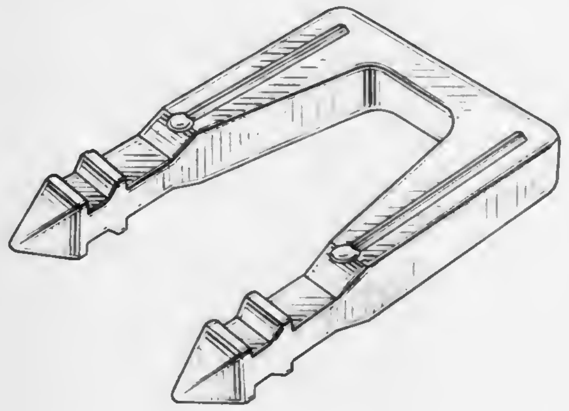
286,440
CARTRIDGE FOR SURGICAL FASTENER APPLYING APPARATUS
David T. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.
Filed Jan. 20, 1984, Ser. No. 572,673
Term of patent 14 years
U.S. Cl. D24—27



286,441
SURGICAL FASTENER
Herbert W. Korthoff, Wilton, and David T. Green, Norwalk, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Oct. 16, 1984, Ser. No. 663,070
Term of patent 14 years
U.S. Cl. D24—27



286,442
SURGICAL FASTENER
Herbert W. Korthoff, Wilton, and Ronald L. Crossley, Wallingford, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Dec. 31, 1985, Ser. No. 814,964
Term of patent 14 years
U.S. Cl. D24—27



286,443
TEETHER

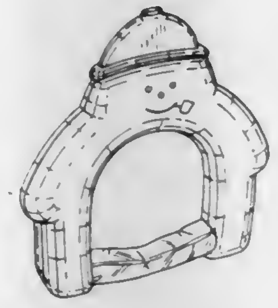
Harry S. Thomson, Richmond; David M. Raffo, and John A. Pape, both of Hitchin, all of England, assignors to Hestair Kiddicraft Limited, Surrey, England

Filed Feb. 1, 1984, Ser. No. 575,831

Claims priority, application United Kingdom, Nov. 9, 1983, 1016175

Term of patent 14 years

U.S. Cl. D24—45



286,444
LIGHTING FIXTURE

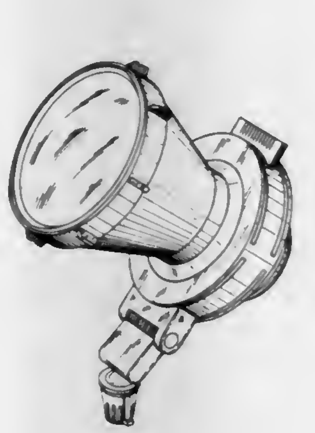
Michael T. Jankowski, Leek, and Hans T. Meelen, Geldrop, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 11, 1984, Ser. No. 609,246

Claims priority, application Benelux, Nov. 17, 1983, 58433-02

Term of patent 14 years

U.S. Cl. D26—65



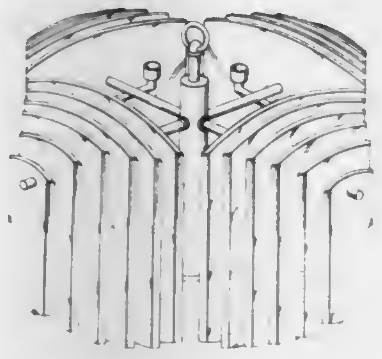
286,445
CHANDELIER

Mark Sink, Inglewood, Calif., assignor to Forecast Lighting Company, Inglewood, Calif.

Filed Jan. 17, 1985, Ser. No. 692,168

Term of patent 14 years

U.S. Cl. D26—86



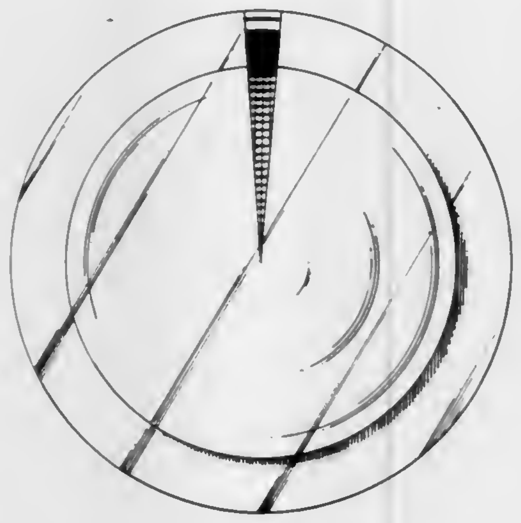
286,446
LENS FOR HAZARD WARNING LAMP OR SIMILAR ARTICLE

Italo Caroli, Montreal, Canada, and Alfred G. Tienken, Syracuse, N.Y., assignors to R. E. Dietz, Syracuse, N.Y.

Filed Jul. 9, 1984, Ser. No. 629,002

Term of patent 14 years

U.S. Cl. D26—123



286,447
ASHTRAY

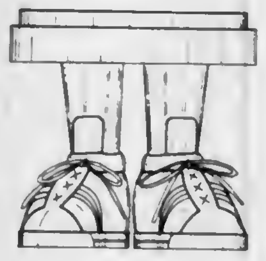
Roy E. Satterfield, 309 Oak Park Dr., Knoxville, Tenn. 37918

Filed Sep. 27, 1983, Ser. No. 536,180

The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D27—24



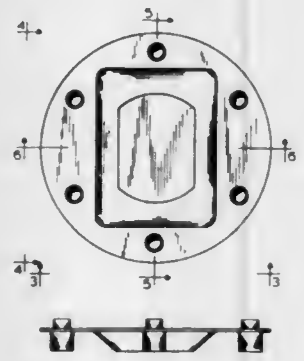
286,448
ASHTRAY

Donald L. Hartley, 17 Glendale Rd., Jacksonville, N.C. 28540

Filed Dec. 4, 1984, Ser. No. 678,108

Term of patent 14 years

U.S. Cl. D27—27



286,449
PHARMACEUTICAL TABLET

Geoffrey D. Tovey, Harpenden, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

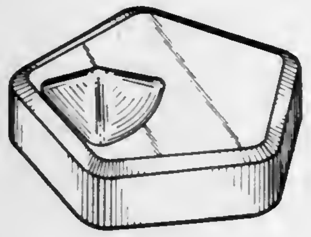
Filed Dec. 28, 1984, Ser. No. 687,333

Claims priority, application United Kingdom, Jul. 2, 1984, 1020680

The portion of the term of this patent subsequent to Oct. 28, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D28—2



286,450
PHARMACEUTICAL TABLET

Geoffrey D. Tovey, Harpenden, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

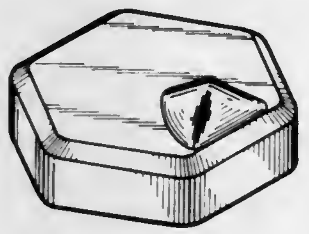
Filed Dec. 28, 1984, Ser. No. 687,334

Claims priority, application United Kingdom, Jul. 2, 1984, 1020681

The portion of the term of this patent subsequent to Oct. 28, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D28—2



286,451
COMBINED DRY SHAVER, COVER, AND BRUSH

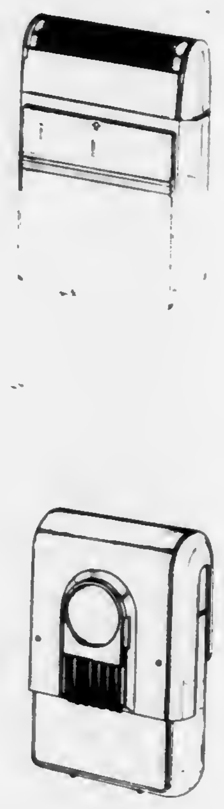
Roland Ullmann, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Jul. 27, 1984, Ser. No. 634,938

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1984, 73 MR 9247

Term of patent 14 years

U.S. Cl. D28—49



286,452
ELECTRIC DRY SHAVER

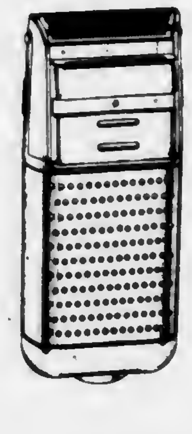
Roland Ullmann, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Sep. 21, 1984, Ser. No. 653,112

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1984, 73 MR 9270

Term of patent 14 years

U.S. Cl. D28—49



286,453

LADY SHAVER

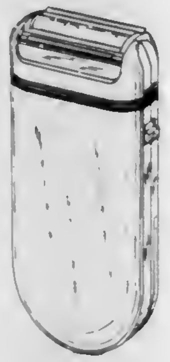
Murray I. C. Camens, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 15, 1984, Ser. No. 661,527

Claims priority, application Benelux, Apr. 26, 1984, 58949-00

Term of patent 14 years

U.S. Cl. D28—49



286,454

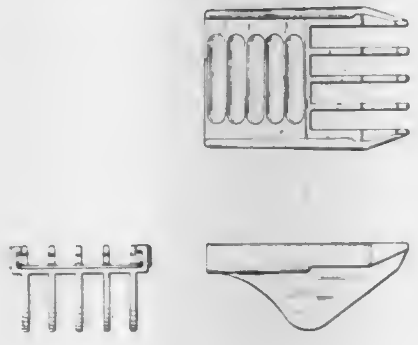
HAIR TRIMMER ATTACHMENT

Timothy D. Stephens, Sterling, Ill., assignor to Wahl Clipper Corporation, Sterling, Ill.

Filed Sep. 28, 1984, Ser. No. 656,031

Term of patent 14 years

U.S. Cl. D28—54



286,455

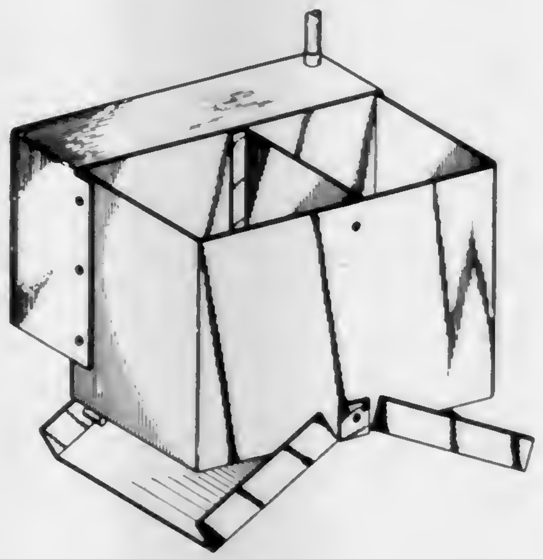
AUTOMATIC FEEDER FOR BARN ANIMALS

Daniel F. Pitzen, 1137 10th Ave. North, Clinton, Iowa 52732

Filed Aug. 20, 1984, Ser. No. 642,450

Term of patent 14 years

U.S. Cl. D30—15



286,456

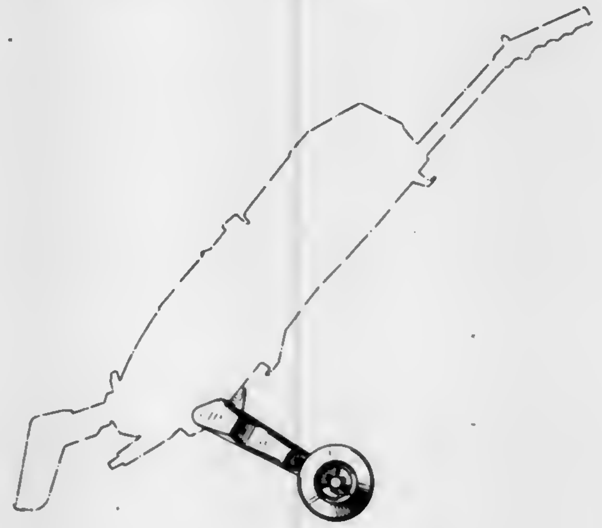
FOLD DOWN WHEELS FOR CARPET CLEANER

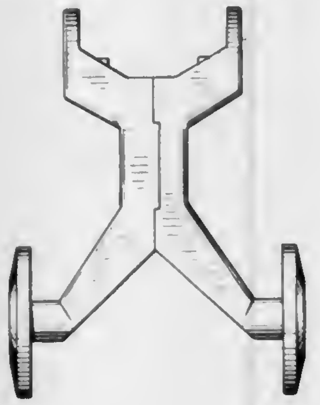
Hugh F. Groth, Richfield, Ohio, assignor to The Regina Co., Inc., Rahway, N.J.

Filed Mar. 2, 1984, Ser. No. 585,727

Term of patent 14 years

U.S. Cl. D32—31





286,457

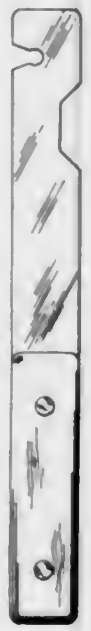
TOOL FOR CLEANING A GAS GRILL BURNER OR THE LIKE

Kenneth B. Thomas, 492 Branscomb Rd., Green Cove Springs, Fla. 32043

Filed May 14, 1984, Ser. No. 609,809

Term of patent 14 years

U.S. Cl. D32—49



286,458

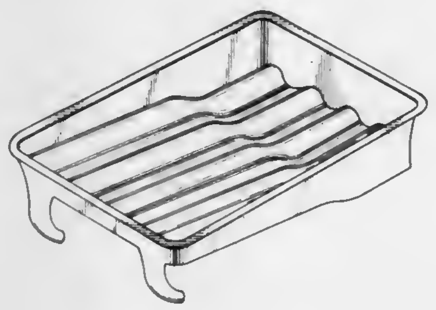
PAINT TRAY FOR CORRUGATED ROLLER TYPE APPLICATOR

Juan Pages, 21 Gran Via St., Ponce, P.R.

Filed Jan. 11, 1983, Ser. No. 457,222

Term of patent 14 years

U.S. Cl. D32—53.1



286,459

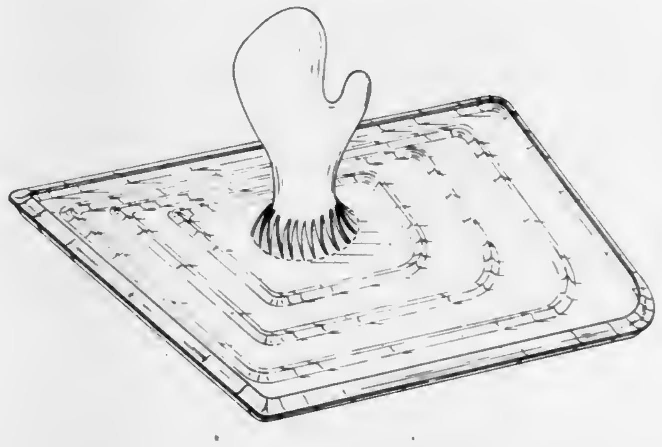
PAINT DRIP PAN

Ruth A. Nielsen, P.O. Box 507, Cibolo, Tex. 78108

Filed Sep. 17, 1984, Ser. No. 651,464

Term of patent 14 years

U.S. Cl. D32—53.1



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF OCTOBER, 1986

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. Ahlstrom Osakeyhtio: *See—*
  - Henricson, Kaj O.; and Peltola, Pekka O., 4,619,736, Cl. 162-261.000.
- A. Salvi & C. S.p.A.: *See—*
  - Perinetti, Alberto, 4,620,060, Cl. 174-42.000.
- AB Volvo Penta: *See—*
  - Brandt, Lennart, 4,619,584, Cl. 416-129.000.
- Abdulla, Riaz F.; and Samaritoni, Jack G., to Eli Lilly and Company. Pyridazinylurea compounds and methods of use as herbicides. 4,619,686, Cl. 71-92.000.
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- Abplanalp, George. Ointment applicator. 4,619,654, Cl. 604-897.000.
- Achorn, Frank P.: *See—*
  - Salladay, David G.; and Achorn, Frank P., 4,619,684, Cl. 71-34.000.
- Acker, Jesse L.: *See—*
  - Meserol, Peter M.; and Acker, Jesse L., 4,619,530, Cl. 356-440.000.
- Acme United Corporation: *See—*
  - Sharkany, Edward J.; and Mathews, Richard J., Sr., 4,619,391, Cl. 227-19.000.
- Adachi, Keiichi: *See—*
  - Takagi, Yoshihiro; and Adachi, Keiichi, 4,619,893, Cl. 430-519.000.
- Adachi, Yuuma: *See—*
  - Tanaka, Hiroshi; Adachi, Yuuma; and Nakajima, Nobuyoshi, 4,620,097, Cl. 250-327.200.
- Adair, James H.: *See—*
  - Stambaugh, Edgel P.; Adair, James H.; Sekercioglu, Ibrahim; and Wills, Roger R., 4,619,817, Cl. 423-266.000.
- Adeka Argus Chemical Co., Ltd.: *See—*
  - Haruna, Tohru; and Nishimura, Atsushi, 4,619,958, Cl. 524-102.000.
- Ades, Adrian R.; Pribis, Paul B.; and Proach, Donald J., to General Electric Company. Dual coated radiant electrical heating element. 4,620,086, Cl. 219-552.000.
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- Advanced Cardiovascular Systems, Inc.: *See—*
  - Frisbie, Jeffrey S.; and Samson, Wilfred J., 4,619,263, Cl. 128-344.000.
  - Morrison, David W., 4,619,274, Cl. 128-772.000.
- Advanced Glass Systems, Inc.: *See—*
  - Smith, W. Novis, Jr., 4,619,973, Cl. 525-329.900.
- Advanced Micro Devices, Inc.: *See—*
  - Brown, Andrew V., 4,619,837, Cl. 427-44.000.
  - Fang, Sheng, 4,620,117, Cl. 307-451.000.
  - Lee, Gil S.; and Subramaniam, A. Ram, 4,620,115, Cl. 307-443.000.
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  - Hato, Masakatsu; Shimura, Yukio; and Tsuda, Keishiro, 4,619,897, Cl. 435-182.000.
  - Hiroki, Eizo, 4,619,301, Cl. 152-210.000.
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- AGIP Nucleare S.p.A.: *See—*
  - Olivieri, Antonio; and Pochini, Giovanni, 4,620,106, Cl. 250-506.100.
- Ahern, Roy E.: *See—*
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- Ahn, Jae-Hwan: *See—*
  - Thomas, Gareth; Ahn, Jae-Hwan; and Kim, Nack-Joon, 4,619,714, Cl. 148-12.00B.
- Ahne, Hellmut; Kruger, Hans; and Rubner, Roland, to Siemens Aktiengesellschaft. Method for producing orientation layers for liquid crystal displays and liquid crystal displays having orientation layers. 4,619,500, Cl. 350-341.000.
- Aichi Machine Industry Co., Ltd.: *See—*
  - Motoyama, Kichizo; and Araki, Yoshiharu, 4,619,480, Cl. 296-217.000.
- Aid-Pack, Inc.: *See—*
  - Hussey, Richard P., 4,619,645, Cl. 604-111.000.
- Aiken, John A., Jr., to International Business Machines Corporation. Method for accessing a data set in a word processing system. 4,620,295, Cl. 364-900.000.
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  - Dyer, Paul N.; and Pierantozzi, Ronald, 4,619,910, Cl. 502-336.000.
- Aisin Seiki Kabushiki Kaisha: *See—*
  - Kazaoka, Kenichi; Ishikawa, Masanobu; and Nishikawa, Masumi, 4,619,548, Cl. 403-290.000.
- Aizaki, Yoshihiko, to Fujitsu Limited. Initialize control system in a cash processing system. 4,620,087, Cl. 235-379.000.
- Ajinomoto Company Incorporated: *See—*
  - Niki, Katsumi; Kobayashi, Katsuyoshi; Inoguchi, Hiroo; and Yagi, Tatsuhiko, 4,619,754, Cl. 204-290.00R.
- Akabane, Hitoshi; and Ishiyama, Gen, to Toyoda Koki Kabushiki Kaisha. Grinding method of rounded annular corner on workpiece. 4,619,083, Cl. 51-289.00R.
- Akazawa, Takashi: *See—*
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- Akiba, Nobuo: *See—*
  - Kameyama, Kazuhiro; and Akiba, Nobuo, 4,619,518, Cl. 355-4.000.
- Aktiebolaget Hassle: *See—*
  - Brandstrom, Arne E.; and Lamm, Bo R., 4,620,008, Cl. 546-271.000.
- Akzo NV: *See—*
  - Smits, Peter C. C., 4,620,034, Cl. 562-531.000.
- Albertson, Douglas E.; Dyson, James O.; Fischer, Eugene B.; Gaudlitz, Robert T.; Haws, Lewis A.; Keritsis, Gus D.; Long, Louis L.; McClung, Charles S.; Nepomuceno, Jose G.; and Wagoner, Steven R., to Philip Morris Incorporated. Tobacco processing. 4,619,276, Cl. 131-79.000.
- Alca Enterprises, Inc.: *See—*
  - Kelly, Dean A.; and Brann, Strother H., 4,619,365, Cl. 206-503.000.
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  - Muller, Klaus; and Oberacker, Sieghard, 4,619,589, Cl. 417-388.000.
- Allen, Henry E.: *See—*
  - Teodorescu, Tonel E.; and Banko, William, 4,619,146, Cl. 73-861.540.
- Allied Corporation: *See—*
  - Leung, Roger Y.; and Polak, Anthony J., 4,619,988, Cl. 528-421.000.
  - Schreiner, Peter J.; Bolenbaugh, Daniel L.; and Krebs, David R., 4,619,347, Cl. 188-72.600.
- Allmann, Gunther; and Wiessler, Hans, to USM Corporation. Stud welding device. 4,620,079, Cl. 219-98.000.
- Alltech Corporation: *See—*
  - Charlton, Thomas J., 4,619,850, Cl. 428-38.000.
- Alsop, Derek J., to Occidental Chemical Corporation. Process for the preparation of *α-α-α*-trifluoroanisoles. 4,620,040, Cl. 568-656.000.
- Alvin, Kjell; and Hakansson, Kurt, to Asea Aktiebolag. Condition indicator. 4,620,156, Cl. 324-424.000.
- ALZA Corporation: *See—*
  - Eckenhoff, James B.; Peery, John R.; and Landrau, Felix A., 4,619,652, Cl. 604-415.000.
- Amano, Keijiro; Hayase, Isao; Kishi, Atsuo; and Sato, Noriharu, to Hitachi, Ltd.; and Hitachi Automotive Engineering Co., Ltd. Capacity control device for compressor. 4,619,595, Cl. 418-83.000.
- Amano, Toshio; Fujioka, Yoshihisa; Nagai, Kunio; and Oda, Osamu, to Sony Corporation. Picture display device. 4,620,229, Cl. 358-194.100.
- Amazawa, Takao: *See—*
  - Oikawa, Hideo; Amazawa, Takao; Honma, Nakahachiro; Miyazaki, Hideo; Kyono, Iwao; Mori, Nobuyuki; Katoh, Yoshiharu; and Kuroki, Masami, 4,619,695, Cl. 75-65.0EB.
- Ambafz, Emilio: *See—*
  - Matheson, Charles L.; Lane, Preston D.; Dieringer, James V.; and Ambafz, Emilio, 4,619,677, Cl. 55-510.000.
- Ambrose, Wallace W.: *See—*
  - Hanker, Jacob S.; Terry, Bill C.; Ambrose, Wallace W.; and Lupton, Cecel R., 4,619,655, Cl. 623-1.000.
- Amdahl Corporation: *See—*
  - Lee, James C. K., 4,620,215, Cl. 357-81.000.
- American Cyanamid Company: *See—*
  - Parekh, Girish G., 4,619,999, Cl. 544-196.000.
  - Rickelton, William A., 4,619,816, Cl. 423-139.000.
  - Susi, Peter V., 4,619,956, Cl. 524-87.000.
  - Wright, William B., Jr.; and Press, Jeffery B., 4,619,941, Cl. 514-397.000.
- American Semiconductor Equipment Technologies: *See—*
  - Welmers, Thomas E., 4,620,288, Cl. 364-518.000.
- American Standard Inc.: *See—*
  - Nagel, Harry C., 4,619,425, Cl. 246-34.00R.
- AMF Incorporated: *See—*
  - Hinkens, Harold, 4,619,489, Cl. 339-28.000.

- AMF Tuboscope, Inc.: *See—*
  - Bains, James A., Jr., 4,620,152, Cl. 324-225.000.
- Amikan Fishing Net Mfg. Co., Ltd.: *See—*
  - Hotta, Keiji, 4,619,108, Cl. 57-236.000.
- Amoco Corporation: *See—*
  - Ely, Stephen R., 4,619,821, Cl. 423-579.000.
- Amorosi, Vincent G.; Shah, Gautam N.; Soffa, Mark B.; Leonhardt, David A.; and Gillman, Gary L., to Kulicke and Soffa Industries, Inc. Low inertia movable workstation. 4,619,395, Cl. 228-4.500.
- AMP Incorporated: *See—*
  - Forney, Edgar W., Jr.; and Michael, George W., III, 4,619,496, Cl. 339-177.00R.
- Amrotex AG: *See—*
  - Gmur, Peter, 4,619,857, Cl. 428-186.000.
- Analgesic Associates: *See—*
  - Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., 4,619,934, Cl. 514-277.000.
- Anchor Wire Corporation of Tennessee: *See—*
  - Hogg, James W., 4,619,430, Cl. 248-467.000.
- Anderson, Carl P.; and Mayer, Edward F., to Ricoh Systems, Inc.; and Ricoh Company, Ltd. Copying apparatus with automatic bottom feeder. 4,619,450, Cl. 271-35.000.
- Anderson, Carl R., to Shure Brothers, Inc. Tabletop speaker assembly. 4,620,317, Cl. 381-90.000.
- Anderson, Del M., to General Foods Inc. Process for producing a rapidly water-soluble, free-flowing, sugar-free dry beverage mix. 4,619,833, Cl. 426-548.000.
- Anderson, Iver E.: *See—*
  - Ayers, Jack D.; and Anderson, Iver E., 4,619,845, Cl. 427-422.000.
- Andersson, Ingmar A., to KMW Aktiebolag. Sanitary paper web having high bulk, bulk softness and surface softness and method of manufacturing said web. 4,619,734, Cl. 162-111.000.
- Ando, Toshihiko: *See—*
  - Matsubara, Tetsuyuki; Ito, Norifumi; Sugazaki, Kazuo; Ichikawa, Kouzo; Iwamoto, Mune; and Ando, Toshihiko, 4,619,959, Cl. 524-228.000.
- Andoh, Tsuyoshi; Kanamori, Toshio; Yamaguchi, Takashi; Tomono, Hiroshi; and Satake, Satoshi, to Sumitomo Heavy Industries, Ltd.; and Sumitomo Metal Industries, Ltd. Supporting and guiding apparatus continuous rounds casting. 4,619,310, Cl. 164-448.000.
- Andre, Wolfram K., to Kurt Wolf & Co. KG. Device for regulating the cooking process in a cooking vessel. 4,620,083, Cl. 219-491.000.
- Andreas Stihl: *See—*
  - Mayer, Gunter, 4,619,045, Cl. 30-216.000.
- Andrews, Ross E.: *See—*
  - Persson, John A.; Andrews, Ross E.; and Maola, Michael A., 4,620,308, Cl. 373-105.000.
- Andrews, Steven L.: *See—*
  - Stall, Joe C.; Andrews, Steven L.; and Curnutt, Donald D., 4,619,771, Cl. 210-788.000.
- Angrick, Michael; and Spath, Martin-Willi, to Kulzer & Co. GmbH. Isolating agent. 4,619,701, Cl. 106-38.230.
- Anhauser, Dieter; Kreitlow, Gerhard; Olbrich, Hubertus; Reinhold, Karl-Heinz; and Schmitt, Anita, to Lohmann GmbH & Co. KG. Foil- or film-like bandage and process for using the same. 4,619,253, Cl. 218-156.000.
- Anker Gram & Associates Ltd.: *See—*
  - Bedford, Timothy J.; and O'Sullivan, Paul J., 4,619,240, Cl. 123-575.000.
- Ankri, David: *See—*
  - Scavennec, Andre ; and Ankri, David, 4,620,210, Cl. 357-30.000.
- Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; and Topert, Michael, to Schering Aktiengesellschaft. 6α, 16α-dimethyl corticoids. 4,619,922, Cl. 514-180.000.
- Anner, Georg: *See—*
  - Kalvoda, Jaroslav; and Anner, Georg, 4,619,921, Cl. 514-180.000.
- Anthony, Dennis R. Methods and apparati for generating optical mattes. 4,619,507, Cl. 352-46.000.
- Antier, Patrick: *See—*
  - Delacour, Jacques; Levallois, Emile; Antier, Patrick; and Saint Martin, Francois-Xavier, 4,619,762, Cl. 210-170.000.
- Antonia Products, Inc.: *See—*
  - Broussard, Ronney L., 4,619,298, Cl. 141-384.000.
- Anzawa, Haruyoshi; Satoh, Kenji; Tanaka, Yoshinari; and Okaya, Takuji, to Kuraray Co., Ltd. Container superior in crack resistance. 4,619,849, Cl. 428-35.000.
- Aono, Toshiaki; Nakamura, Koichi; and Nakamura, Taku, to Fuji Photo Film Co., Ltd. Dye fixing material. 4,619,883, Cl. 430-203.000.
- Aoshima, Chikara; and Nagata, Toru, to Canon Kabushiki Kaisha. Film winding device for camera. 4,619,509, Cl. 354-173.100.
- Appels, Johannes A.: *See—*
  - Maas, Henricus G. R.; Slotboom, Jan W.; Appels, Johannes A.; and Osinski, Kazimierz, 4,619,039, Cl. 29-591.000.
- Appleton, Arthur I., to Appleton Electric Co. Fully grounded, corrosion resistant electrical enclosure. 4,620,061, Cl. 174-51.000.
- Appleton Electric Co.: *See—*
  - Appleton, Arthur I., 4,620,061, Cl. 174-51.000.
- Aprica Kassai Kabushikikaisha: *See—*
  - Kassai, Kenzou, 4,619,542, Cl. 403-62.000.
- APX Group, Inc.: *See—*
  - Harwood, Jon W., 4,619,292, Cl. 138-113.000.
- Arakawa, Isao: *See—*
  - Kozono, Haruo; and Arakawa, Isao, 4,619,472, Cl. 285-334.000.
- Araki, Yoshiharu: *See—*
  - Motoyama, Kichizo; and Araki, Yoshiharu, 4,619,480, Cl. 296-217.000.
- Arata, Yoshiaki; and Kobayashi, Akira, to Nippon Steel Corporation. Plasma jet generating apparatus with plasma confining vortex generator. 4,620,080, Cl. 219-121.0PP.
- Araya, Junji, to Canon Kabushiki Kaisha. Variable magnification electrophotographic copying apparatus. 4,619,520, Cl. 355-14.00R.
- Araya, Kotaro: *See—*
  - Kakuta, Atsushi; Oka, Hiroyuki; Suzuki, Shigeo; Araya, Kotaro; Mori, Yasuki; and Morishita, Hirosada, 4,619,879, Cl. 430-58.000.
- Araya, Takeshi; Matsunawa, Akira; Katayama, Seiji; Hioki, Susumu; Ibaraki, Yoshiro; and Endo, Yoshishige, to Hitachi, Ltd. Method of manufacturing ultra-fine particles. 4,619,691, Cl. 75-0.50B.
- Arikawa, Yoshijiro: *See—*
  - Tanimoto, Hirotoshi; Yamada, Mutsuo; Arikawa, Yoshijiro; Kamiguchi, Taiji; Nishimura, Yasuyuki; and Kaku, Hiroyuki, 4,620,038, Cl. 568-401.000.
- Armell, Richard A.; and Scott, Andrew, to Drexel Equipment (UK) Limited. Centralizing devices for use down-well. 4,619,322, Cl. 166-241.000.
- Armitage, David, to United States of America, Air Force. Charge isolation in a spatial light modulator. 4,619,501, Cl. 350-386.000.
- Armstrong World Industries, Inc.: *See—*
  - Brown, David S.; Forry, John S.; Mentzer, Nancy E.; and Misselhorn, Donald J., 4,619,860, Cl. 428-213.000.
- Arnould, Jacques; and Tonnel, Eugene, to Thomson-CSF. Deep-grid semiconductor device. 4,620,213, Cl. 357-55.000.
- Arrow Fastener Company, Inc.: *See—*
  - Knispel, Barry; and Wingert, Rudolf, 4,619,394, Cl. 227-156.000.
- Asahi Glass Company Limited: *See—*
  - Yamabe, Masaaki; Kojima, Gen; Wachi, Hiroshi; and Kodama, Shun-ichi, 4,619,983, Cl. 526-247.000.
- Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
  - Yoshimura, Isao; and Hata, Hideo, 4,619,859, Cl. 428-213.000.
- Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
  - Hara, Masato, 4,620,092, Cl. 250-231.0SE.
- Asahi Medical Co., Ltd.: *See—*
  - Nose , Yukihiko; and Malchesky, Paul S., 4,619,639, Cl. 604-6.000.
- Asai, Takeshi: *See—*
  - Sainen, Tsutomu; and Asai, Takeshi, 4,619,294, Cl. 139-99.000.
- Asbury, Robert L., to Bell Helmets Inc. Insulated helmet. 4,619,003, Cl. 2-5.000.
- Asea Aktiebolag: *See—*
  - Alvin, Kjell; and Hakansson, Kurt, 4,620,156, Cl. 324-424.000.
- Asea Stal AB: *See—*
  - Brannstrom, Roine, 4,619,562, Cl. 406-182.000.
- Astra Lakemedel Aktiebolag: *See—*
  - Ratti, Luigi, 4,619,785, Cl. 540-318.000.
- AT&T Bell Laboratories: *See—*
  - Barber, Frank E., 4,620,118, Cl. 307-518.000.
  - Bushnell, William J.; Hemmeter, Richard W.; and Raghavan, Palanichamy, 4,620,066, Cl. 179-27.00D.
  - Gordon, Eugene I.; and Levy, Uri, 4,620,132, Cl. 315-3.000.
- AT&T Technologies, Inc.: *See—*
  - Moss, Parry A.; and Rotoloni, Francis A., 4,619,842, Cl. 427-163.000.
- Atanassova, Yordanka R.: *See—*
  - Petkov, Georgi K.; Todorov, Todor S.; Atanassova, Yordanka R.; Netzov, Nikola M.; Deevski, Stefan K.; Radev, Nikola I.; Botev, Botyo P.; Metev, Georgi M.; Naydenov, Ivan H.; and Petrov, Yakim N., 4,619,129, Cl. 72-56.000.
- Atlantic Richfield Co.: *See—*
  - Kolecki, Ronald E., 4,619,126, Cl. 72-38.000.
  - Lowther, Frank E., 4,619,225, Cl. 123-3.000.
- Atlas Copco Aktiebolag: *See—*
  - Juan, Hans; Bjerngren, Jan Å.; and Stromdahl, Carl Å., 4,619,551, Cl. 404-90.000.
- ATOCHEM: *See—*
  - Cognion, Jean-Marie; and Durual, Pierre, 4,620,050, Cl. 585-640.000.
  - Tatin, Gerard, 4,619,663, Cl. 8-107.000.
- Auburn International, Inc.: *See—*
  - Girgenti, Russell S., 4,619,145, Cl. 73-861.040.
- Audi, Josef: *See—*
  - Halberschmidt, Friedrich; Reinmold, Heinz-Josef; Audi, Josef; Puetz, Cornelius; and Schubert, Gerd, 4,619,683, Cl. 65-351.000.
- August, Rudolf R.: *See—*
  - Barkhoudarian, Sarkis; August, Rudolf R.; and Maram, Jonathan M., 4,620,093, Cl. 250-231.00P.
- Auslander, David M.; Tomizuka, Masayoshi; Sagues, Paul; Ishida, Takashi; and Kamiyama, Shuichi. Engine cold starting. 4,619,237, Cl. 123-491.000.
- Autoflug GmbH: *See—*
  - Butenop, Klaus, 4,619,418, Cl. 242-107.40A.
- Autoliv GmbH: *See—*
  - Essler, Karl H., 4,619,419, Cl. 242-107.40A.
- Autry Industries, Inc.: *See—*
  - Lin, Mark Y.; and Autry, James C., 4,619,056, Cl. 36-43.000.
- Autry, James C.: *See—*
  - Lin, Mark Y.; and Autry, James C., 4,619,056, Cl. 36-43.000.
- Avco Everett Research Laboratory, Inc.: *See—*
  - Flusberg, Allen M., 4,620,305, Cl. 372-37.000.
- Avery International Corporation: *See—*
  - Sasaki, Yukihiko; Lin, Kenneth S.; and Patterson, Dianne L., 4,619,851, Cl. 428-40.000.
- Awata, Yasuhira; and Iwaki, Osamu, to Oji Paper Company, Ltd. Process for preparation of porous carbon plates. 4,619,796, Cl. 264-29.400.

- Axelson, Inc.: *See—*
  - Snyder, David E.; and Bruton, Billy R., 4,619,434, Cl. 251-14.000.
- Axelsson, Robert. Prosthesis foot. 4,619,661, Cl. 623-55.000.
- Ayers, Jack D.; and Anderson, Iver E., to United States of America, Navy. Method for generating fine sprays of molten metal for spray coating and powder making. 4,619,845, Cl. 427-422.000.
- Azzola, Roberto; and Carrera, Luciano, to S.A.I.A.G. S.p.A. Weather strip for motor vehicle bodies and an extrusion head for making the strip. 4,619,077, Cl. 49-497.000.
- B. F. Goodrich Company, The: *See—*
  - Dodge, James S., 4,619,960, Cl. 524-245.000.
- Baba, Tadashi; and Kaneko, Norimasa, to Nakanishi Dental Mfg. Co., Ltd. Rotational coupling device for a dental handpiece having a built-in battery. 4,619,614, Cl. 433-99.000.
- Baba, Takaaki; and O'Keefe, Gerald T., to Matsushita Electric Industrial Co., Ltd. Digital color TV camera. 4,620,222, Cl. 358-48.000.
- Baba, Toru, to Kioritz Corporation. Mowing apparatus. 4,619,105, Cl. 56-12.700.
- Babcock-Hitachi Kabushiki Kaisha: *See—*
  - Tanimoto, Hirotoshi; Yamada, Mutsuo; Arikawa, Yoshijiro; Kamiguchi, Taiji; Nishimura, Yasuyuki; and Kaku, Hiroyuki, 4,620,038, Cl. 568-401.000.
- Babcock & Wilcox Company, The: *See—*
  - Schluderberg, Donald C., 4,619,809, Cl. 376-402.000.
- Baber, Samuel C.: *See—*
  - Havemann, Robert H.; and Baber, Samuel C., 4,619,036, Cl. 29-577.00C.
- Bachmann, Herbert; and Hornung, Karl-Otto, to Stopinc Aktiengesellschaft. Arrangement for preventing air from reaching abutting sliding surfaces of rotary sliding closure unit. 4,619,444, Cl. 266-236.000.
- Backx, Leo J. J.: *See—*
  - Heeres, Jan; Stokbroekx, Raymond A.; and Backx, Leo J. J., 4,619,931, Cl. 514-252.000.
- Bacrania, Kanti: *See—*
  - Cooper, Frank R.; and Bacrania, Kanti, 4,620,179, Cl. 340-347.0AD.
- Badger Pharmacal, Inc.: *See—*
  - Kuenn, Cary K.; Young, Jean M.; and Wundrock, John A., 4,619,710, Cl. 134-22.170.
- Bagalini, Dante, to Westinghouse Electric Corp. Molded case circuit breaker with resettable combined undervoltage and manual trip mechanism. 4,620,171, Cl. 335-20.000.
- Bagby, John P., to Hughes Aircraft Company. Mirror focussing system with narrow viewing angle. 4,619,502, Cl. 350-505.000.
- Bai, Chao-Liang. Catheter. 4,619,643, Cl. 604-43.000.
- Bailey, James R. Support member for apertured supporting surfaces. 4,619,428, Cl. 248-221.200.
- Bailey, Marcus J.: *See—*
  - Walker, Landis C.; and Bailey, Marcus J., 4,619,554, Cl. 405-120.000.
- Bains, James A., Jr., to AMF Tuboscope, Inc. Lift-off compensation of eddy current probes by translating without rotation the X-Y coordinate plot of the complex locus of the probe output. 4,620,152, Cl. 324-225.000.
- Baird Corporation: *See—*
  - Davison, Arthur L.; Blackburn, Martin D.; and Sellek, Donald A., 4,620,148, Cl. 324-99.00D.
- Bakken, Kirby L.; Judson, Robert G.; Miller, William E.; and Peterson, Ronald A., to International Business Machines Corporation. Disk drive incremental rewrite. 4,620,243, Cl. 360-77.000.
- Balch, Richard A.: *See—*
  - Germer, Warren R.; and Balch, Richard A., 4,620,150, Cl. 324-103.00R.
- Baliga, Bantval J.; Temple, Victor A. K.; and Chow, Tat-Sing P., to General Electric Company. Method of reducing the current gain of an inherent bipolar transistor in an insulated-gate semiconductor device and resulting devices. 4,620,211, Cl. 357-38.000.
- Balkanyi, Ivan; Szebeni, Rudolf; Hadi, Ferenc; Marso , Miklos; Keri, Eva; and Koszegi, Bela. Pharmaceutical compositions having appetite reducing activity and a process for their preparation. 4,619,936, Cl. 514-282.000.
- Balken, Jochen; Beigang, Wolfgang; and Bihr, Bernhard, to Uni-Cardan Aktiengesellschaft. Fluidic shaft coupling assembly. 4,619,627, Cl. 464-24.000.
- Balzer, Norbert R.; and Soworowski, David R., to Park-Ohio Industries, Inc. Heating magnetic metal workpieces. 4,619,717, Cl. 148-112.000.
- Balzers Aktiengesellschaft: *See—*
  - Moll, Eberhard; Pulker, Hans K.; and Haag, Walter, 4,619,748, Cl. 204-192.310.
- Banko, William: *See—*
  - Teodorescu, Tonel E.; and Banko, William, 4,619,146, Cl. 73-861.540.
- Banno, Kazuo; Fujioka, Takafumi; Osaki, Masaaki; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Co., Ltd. Novel carbostyril derivatives, process for producing thereof and pharmaceutical composition containing the same. 4,619,932, Cl. 514-253.000.
- Barber, Frank E., to AT&T Bell Laboratories. Dual port access circuit with automatic asynchronous contention resolving capability. 4,620,118, Cl. 307-518.000.
- Barber, James C., to James C. Barber and Associates, Inc. Phosphoric acid composition. 4,619,819, Cl. 423-317.000.
- Barber, Ronald L.: *See—*
  - Kotnour, Thomas A.; Barber, Ronald L.; and Krueger, Walter L., 4,619,979, Cl. 526-88.000.
- Bard, William B.: *See—*
  - Webb, Don W.; and Bard, William B., 4,619,901, Cl. 436-55.000.
- Barkhoudarian, Sarkis; August, Rudolf R.; and Maram, Jonathan M., to Rockwell International Corporation. Optical pressure sensor. 4,620,093, Cl. 250-231.00P.
- Barkow, William H.: *See—*
  - Morrell, Albert M.; Hughes, Richard H.; and Barkow, William H., 4,620,133, Cl. 315-15.000.
- Barnes, James M.: *See—*
  - Hess, Heinrich; Grogler, Gerhard; Kopp, Richard; and Barnes, James M., 4,619,985, Cl. 528-49.000.
- Barnett, Ronald E.: *See—*
  - Zanno, Paul R.; Barnett, Ronald E.; and Roy, Glenn M., 4,619,782, Cl. 560-122.000.
  - Zanno, Paul R.; Barnett, Ronald E.; and Roy, Glenn M., 4,619,834, Cl. 426-548.000.
- Barr, Tery L.: *See—*
  - Lambert, Susan L.; Lawson, Randy J.; Johnson, Russell W.; and Barr, Tery L., 4,619,906, Cl. 502-66.000.
- Barry, Raymond A.: *See—*
  - Squires, David G.; Hundley, Lloyd; and Barry, Raymond A., 4,619,706, Cl. 134-2.000.
- Bartl, Herbert: *See—*
  - Starzewski, Karl-Heinz A. O.; Witte, Josef; and Bartl, Herbert, 4,620,021, Cl. 556-19.000.
- Bartos, Dezzo S.; and Fitzpatrick, Denis, to Harcourt House. Process for carrying out serological investigations according to the principle of the complement fixation test, and test packages for use in this process. 4,619,903, Cl. 436-517.000.
- Baruffa, Olindo; and Jimenez, Antonio, to Mefina, S.A. Sewing machine with cam-controlled needle bar and feed dog. 4,619,214, Cl. 112-459.000.
- BASF Aktiengesellschaft: *See—*
  - Bergmann, Udo; Dix, Johannes P.; Hansen, Guenter; and Schefczik, Ernst, 4,619,992, Cl. 534-733.000.
  - Krabetz, Richard; and Engelbach, Heinz, 4,620,035, Cl. 562-534.000.
  - Kummer, Rudolf; and Schwirten, Kurt, 4,619,790, Cl. 260-413.000.
  - Melzer, Milena; Jakusch, Helmut; Grau, Werner; Koster, Eberhard; Loser, Werner; Polke, Reinhard; Schadel, Gunter; Ohlinger, Manfred; and Vath, Gunter, 4,619,777, Cl. 252-62.540.
  - Schoettle, Klaus, 4,619,420, Cl. 242-198.000.
  - Thieme, Peter C.; Steiner, Gerd; Rohr, Wolfgang; Lenke, Dieter; Gries, Josef; Weifenbach, Harald; Teschendorf, Hans-Jurgen; Hofmann, Hans P.; and Kreiskott, Horst, 4,619,929, Cl. 514-252.000.
- Bass, Sidney: *See—*
  - Seki, Yoshizo; and Bass, Sidney, 4,619,625, Cl. 446-89.000.
- Battelle Memorial Institute: *See—*
  - Porta, Augusto; and Kulhanek, Antonin, 4,619,745, Cl. 204-151.000.
  - Stambaugh, Edgel P.; Adair, James H.; Sekercioglu, Ibrahim; and Wills, Roger R., 4,619,817, Cl. 423-266.000.
- Battiston, Joseph, to Tubular Fabricators Industry, Inc. Clamps for invalid walker to enhance structural integrity. 4,619,282, Cl. 135-67.000.
- Bauck, Randall C.; and Kleczkowski, Peter S., to Iomega Corporation. Symmetrical coil actuator for a magnetic disk drive. 4,620,252, Cl. 360-106.000.
- Baumann, Richard R.; and Eldridge, Richard I. Fiber-optic light system for movie projectors. 4,620,266, Cl. 362-32.000.
- Baumann, Werner, to Sandoz Ltd. Azo compounds having a 2,4-dinitro-5-thiocyanophenyl diazo component radical. 4,619,993, Cl. 534-735.000.
- Baumgartner, Ehrenfried: *See—*
  - Schroeder, Gunter; and Baumgartner, Ehrenfried, 4,620,029, Cl. 560-204.000.
- Bayer Aktiengesellschaft: *See—*
  - Elbe, Hans-Ludwig; Jautelat, Manfred; Buchel, Karl H.; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,619,940, Cl. 514-383.000.
  - Findeisen, Kurt; and Fauss, Rudolf, 4,620,022, Cl. 556-417.000.
  - Grohe, Klaus; Zeiler, Hans-Joachim; and Metzger, Karl G., 4,620,007, Cl. 546-156.000.
  - Hess, Heinrich; Grogler, Gerhard; Kopp, Richard; and Barnes, James M., 4,619,985, Cl. 528-49.000.
  - Marhold, Albrecht; and Klauke, Erich, 4,620,018, Cl. 549-362.000.
  - Maurer, Fritz; and Homeyer, Bernhard, 4,619,918, Cl. 514-93.000.
  - Schafer, Walter; Hajek, Manfred; Muller, Hanns P.; Dhein, Rolf; Kuchenmeister, Rolf; and Sickert, Armin, 4,619,966, Cl. 524-589.000.
  - Starzewski, Karl-Heinz A. O.; Witte, Josef; and Bartl, Herbert, 4,620,021, Cl. 556-19.000.
- BBC Brown, Boveri & Company Limited: *See—*
  - Christen, Hans-Jorg; Devantay, Hubert; Schellenberg, Claude; Scherer, Gunther; and Stucki, Samuel, 4,619,753, Cl. 204-290.00F.
- Beck, Lawrence J.: *See—*
  - Schmidt, Gregory E.; Leung, Linus K.; Beck, Lawrence J.; and Chang, David S., 4,620,049, Cl. 585-501.000.
- Becker, Reinhard: *See—*
  - Henning, Rainer; Urbach, Hansjorg; Teetz, Volker; and Becker, Reinhard, 4,620,012, Cl. 548-411.000.
- Bedford, Timothy J.; and O'Sullivan, Paul J., to Anker Gram & Associates Ltd. Fuel oil injection engine. 4,619,240, Cl. 123-575.000.

Beelaard, Wilhelmus A. J.; and de Volder, Johannes A. P., to U.S. Philips Corporation. Deflection unit for a color television display tube. 4,620,174, Cl. 335-212.000.

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Behun, Eugene, to Xerox Corporation. Multicolor ink jet printhead. 4,620,198, Cl. 346-75.000.

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Bel Moratalla, Joaquin. Tunable antenna with variable series L-C network. 4,620,194, Cl. 343-747.000.

Bell, Frank H., to Morton Thiokol, Inc. Impact ignition device for a plurality of stab type primers. 4,619,200, Cl. 102-275.000.

Bell Helmets Inc.: *See—*

  Asbury, Robert L., 4,619,003, Cl. 2-5.000.

Bellmer, Klaus: *See—*

  Herbert, Adolf; Bellmer, Klaus; and Trocha, Jobst, 4,619,599, Cl. 425-186.000.

Bellon, Jean-Louis: *See—*

  Mizzi, Francois; and Bellon, Jean-Louis, 4,620,062, Cl. 178-18.000.

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  Kirchner, Edward C.; and DeFoe, Ronald J., 4,619,414, Cl. 241-261.300.

Bender, Fredrick L. Pumping system having a main pump and a plurality of selectively operable subsidiary pumps. 4,619,592, Cl. 417-429.000.

Benelli Armi S.p.A.: *See—*

  Benelli, Paolo, 4,619,183, Cl. 89-129.020.

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Berdelle-Hilge, Peter: *See—*

  Heinzl, Joachim; Penningsfeld, Hans-Dieter; and Berdelle-Hilge, Peter, 4,620,201, Cl. 346-140.00R.

Berger, Fritz: *See—*

  Vogel, Ernst; Berger, Fritz; and Stampfli, Armin, 4,619,497, Cl. 339-244.00R.

Bergmann, Udo; Dix, Johannes P.; Hansen, Guenter; and Schefczik, Ernst, to BASF Aktiengesellschaft. 3-(β-aminoethyl)-4-cyano-isothiazolylazo dyes. 4,619,992, Cl. 534-733.000.

Bernard, Bernie B., to O.I. Corporation. Total organic carbon analyzer. 4,619,902, Cl. 436-145.000.

Bero, Vernon L.: *See—*

  Lutsey, Thomas H.; and Bero, Vernon L., 4,619,832, Cl. 426-302.000.

Bessard, Jean-Claude, deceased (by Bessard, Nadine, heir), to Swiss Aluminium Ltd. Cathode pot for an aluminum electrolytic cell. 4,619,750, Cl. 204-243.00R.

Bessard, Nadine, heir: *See—*

  Bessard, Jean-Claude, deceased, 4,619,750, Cl. 204-243.00R.

Beugin, Michel P., to U.S. Philips Corporation. Device for rapidly mounting a base plate on a chassis. 4,619,432, Cl. 248-635.000.

Bevilacqua, Bruce W.: *See—*

  Harman, Douglas G.; Green, Richard A.; and Bevilacqua, Bruce W., 4,619,128, Cl. 72-53.000.

Biehl, Roy J. Bulk food dispenser. 4,619,379, Cl. 222-153.000.

Biek, Paul A., to Dresser Industries, Inc. Control valve apparatus for pneumatic tools. 4,619,435, Cl. 251-25.000.

Bierwirth, Adolf P.: *See—*

  Pehker, Manfred; Zielinski, Erich; Metz, Josef; and Bierwirth, Adolf P., 4,619,181, Cl. 89-34.000.

Biggar, John W.: *See—*

  McIntyre, Brian W.; and Biggar, John W., 4,619,608, Cl. 423-220.000.

Bihr, Bernhard: *See—*

  Balken, Jochen; Beigang, Wolfgang; and Bihr, Bernhard, 4,619,627, Cl. 464-24.000.

Bijma, Jan: *See—*

  Peels, Antonius H. P. M.; van den Beld, Antonius J. M.; Bijma, Jan; and Gerritsen, Jan, 4,620,134, Cl. 315-15.000.

Billard, Jean: *See—*

  Zimmermann, Herbert; Poupko, Raphi; Luz, Zeev; and Billard, Jean, 4,619,788, Cl. 260-410.500.

Binoeder, Peter P.; Whitacre, James B.; and Kunker, Don, to Burroughs Corporation. Programmable digital signal testing system. 4,620,302, Cl. 371-1.000.

BioResearch Inc.: *See—*

  Kurtz, Leonard D.; and LiCausi, Joseph M., 4,619,647, Cl. 604-318.000.

Bjerngren, Jan Å.: *See—*

  Juan, Hans; Bjerngren, Jan Å.; and Stromdahl, Carl Å., 4,619,551, Cl. 404-90.000.

Black, James K.; and Black, Wesley F. Method and material for increasing viscosity and controlling of oil well drilling and work-over fluids. 4,619,772, Cl. 252-8.514.

Black, Wesley F.: *See—*

  Black, James K.; and Black, Wesley F., 4,619,772, Cl. 252-8.514.

Blackburn, Martin D.: *See—*

  Davison, Arthur L.; Blackburn, Martin D.; and Sellek, Donald A., 4,620,148, Cl. 324-99.00D.

Blake, John B. Clamping device. 4,619,447, Cl. 269-221.000.

Blake, William W.; and Coutant, Alan R., to Caterpillar Inc. Fluid control for two independent actuators. 4,619,187, Cl. 91-523.000.

Blakely, John P.: *See—*

  McPherson, Hugh; and Blakely, John P., 4,620,112, Cl. 307-239.000.

Bland, Robert J., to Hewlett-Packard Company. Means providing independently controlled superimposed AC and DC voltages. 4,620,108, Cl. 307-2.000.

Blaser, Anton J.: *See—*

  Potolsky, Abraham I.; and Blaser, Anton J., 4,619,640, Cl. 604-7.000.

Blickstein, Martin J., to Murata Erie N.A., Inc. Magnetically tunable dielectric resonator having a magnetically saturable shield. 4,620,169, Cl. 333-235.000.

Bloomer, Milton D., to General Electric Company. Circuit for self-commutated turn-off of latched devices, such as of the insulated-gate transistor/rectifier type. 4,620,258, Cl. 361-91.000.

Blyth, Randolph C.; Ucci, Pompelio A.; and McLellan, George R., to Monsanto Company. Easy-clean carpets which are stain resistant and water impervious. 4,619,853, Cl. 428-95.000.

BMD Badische Maschinenfabrik Durlach GmbH: *See—*

  Muller, Gunter; and Damm, Norbert, 4,619,307, Cl. 164-169.000.

Board of Regents, The University of Texas System: *See—*

  Linner, John G.; and Goosey, John D., 4,619,257, Cl. 128-303.100.

Boden, Richard M.: *See—*

  Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,619,780, Cl. 252-522.00R.

  Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,620,041, Cl. 568-665.000.

Boeing Company, The: *See—*

  Snyder, Howard E., 4,619,580, Cl. 415-12.000.

  Spiger, Robert J., 4,620,230, Cl. 358-201.000.

Bogren, Ingemar S. B. Method and apparatus for manufacturing container having bellows bottom and lid. 4,619,636, Cl. 493-109.000.

Bohm, Jurgen; and Schad, Charles A., to Bopp & Reuther GmbH. Testing device for flow meters. 4,619,134, Cl. 73-3.000.

Bolduc, Leonard, to Hydro-Quebec. Self-controlled variable inductor with air gaps. 4,620,144, Cl. 323-331.000.

Bolenbaugh, Daniel L.: *See—*

  Schreiner, Peter J.; Bolenbaugh, Daniel L.; and Krebs, David R., 4,619,347, Cl. 188-72.600.

Bolger, Thomas V., to RCA Corporation. Digital vertical beam landing correction circuit. 4,620,136, Cl. 315-371.000.

Bolliger, Martin: *See—*

  Huber, Ernst; Rieger, Wolfhart; and Bolliger, Martin, 4,619,309, Cl. 164-430.000.

Bonczar, Lawrence J.: *See—*

  Semon, Joseph R.; Semon, William J.; Bonczar, Lawrence J.; Ceresko, Helen; and MacKirdy, William T., 4,619,211, Cl. 112-132.000.

Bond, Larry O.: *See—*

  Ross, Danny E.; and Bond, Larry O., 4,619,275, Cl. 128-783.000.

Bonfert, Heinrich: *See—*

  Schmid, Karlheinz; and Bonfert, Heinrich, 4,619,565, Cl. 409-135.000.

Bonzer, William J.; and Scott, Gary L., to Fisher Controls International, Inc. Control regulator having a fabric reinforced diaphragm. 4,619,436, Cl. 251-61.100.

Boon, John R.: *See—*

  Simpson, Sharon M.; McQuade, John M.; and Boon, John R., 4,619,892, Cl. 430-505.000.

Boorman, Roy S.: *See—*

  Salter, Robert S.; Boorman, Roy S.; and Wilkomirsky, Igor A. E., 4,619,814, Cl. 423-27.000.

Boothroyd, Donald C.; and Norman, Robert W., Jr., to Honeywell Information Systems Inc. Data available indicator for an exhausted operand string. 4,620,274, Cl. 364-200.000.

Bopp & Reuther GmbH: *See—*

  Bohm, Jurgen; and Schad, Charles A., 4,619,134, Cl. 73-3.000.

Borsenberger, Paul M., to Eastman Kodak Company. Low field electrophotographic process. 4,619,877, Cl. 430-31.000.

Boshear, Jerry A.: *See—*

  Levin, Michael M.; and Boshear, Jerry A., 4,620,227, Cl. 358-147.000.

Boston, Ernest B., to Phillips Petroleum Company. Method and apparatus for recovering a fluid from a filter. 4,619,770, Cl. 210-772.000.

Botev, Botyo P.: *See—*

  Petkov, Georgi K.; Todorov, Todor S.; Atanassova, Yordanka R.; Netzov, Nikola M.; Deevski, Stefan K.; Radev, Nikola I.; Botev, Botyo P.; Metev, Georgi M.; Naydenov, Ivan H.; and Petrov, Yakim N., 4,619,129, Cl. 72-56.000.

Bothner, Carl R., to Eastman Kodak Company. Flexible sheet cleaning apparatus and method. 4,619,708, Cl. 134-6.000.

Botimer, Donald W. Tool support assembly. 4,619,566, Cl. 409-232.000.

Bott, Helmuth, to Dr. Ing. h.c.F. Porsche, Aktiengesellschaft. Arrangement of a pressure-measuring element. 4,619,137, Cl. 73-146.500.

Bowers, Kerry W.: *See—*

  Pratt, Roy E.; Sayles, Scott M.; Bowers, Kerry W.; and Scott, Richard P., deceased, 4,619,758, Cl. 208-85.000.

Bowmaker, Graham: *See—*

  Schmidbaur, Hubert; Dorzbach, Cornelia; and Bowmaker, Graham, 4,620,020, Cl. 556-18.000.

Boyce, N. Blake; and McSpadden, J. Neil, to Universal Plastics, Inc. Pallet made from sheet of rigid material. 4,619,207, Cl. 108-51.100.

Boyer, Richard; and Diquet, Joel, to Manufacture de Machines due Haut-Rhin. Method of and apparatus for weighing doses of powder. 4,619,336, Cl. 177-1.000.

Bozler, Carl O.; Ehrlich, Daniel J.; and Tsao, Jeffrey Y., to Massachusetts Institute of Technology. Solid-transformation thermal resist. 4,619,894, Cl. 430-942.000.

Braatvedt, Ian H., to Compagnie Internationale des Pieux Armes Frankignoul. Apparatus for producing in-situ concreted piles with enlarged bases. 4,619,558, Cl. 405-237.000.

Brandes, Wilhelm: *See—*

  Elbe, Hans-Ludwig; Jautelat, Manfred; Buchel, Karl H.; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,619,940, Cl. 514-383.000.

Brandstrom, Arne E.; and Lamm, Bo R., to Aktiebolaget Hassle. Processes for the preparation of omeprazole and intermediates therefore. 4,620,008, Cl. 546-271.000.

Brandt, Lennart, to AB Volvo Penta. Double propeller drive for boats. 4,619,584, Cl. 416-129.000.

Brann, Strother H.: *See—*

  Kelly, Dean A.; and Brann, Strother H., 4,619,365, Cl. 206-503.000.

Brannstrom, Roine, to Asea Stal AB. Pneumatic transportation system for powdered or granular material with a switching valve for selection of different transport paths. 4,619,562, Cl. 406-182.000.

Braun, Dieter, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Vibration isolator. 4,619,349, Cl. 188-380.000.

Braun, Robert L.: *See—*

  Lewis, Arthur E.; Braun, Robert L.; Mallon, Richard G.; and Walton, Otis R., 4,619,738, Cl. 202-85.000.

Bresee, Randall R.; and Reagan, Barbara M., to Kansas State University Research Foundation. Method of improving the abrasion resistance of recycled wool. 4,619,664, Cl. 8-128.00A.

Bresson, Clarence R.: *See—*

  Kimble, Kenneth B.; Bresson, Clarence R.; and Mark, Harold W., 4,619,760, Cl. 209-166.000.

Breuning, Richard W.: *See—*

  Thompson, Robert A.; and Breuning, Richard W., 4,620,281, Cl. 364-475.000.

Bridgestone Corporation: *See—*

  Tokunaga, Seiichiro; and Ikeda, Nobumasa, 4,619,300, Cl. 152-209.00R.

Brink, Fredericus J., to Ingenieursbureau Het Noorden B.V. Laminating apparatus. 4,619,728, Cl. 156-555.000.

Bristol-Myers Company: *See—*

  Hoshi, Hideaki; and Naito, Takayuki, 4,619,925, Cl. 514-200.000.

  New, James S.; Lobeck, Walter G., Jr.; and Yevich, Joseph P., 4,619,930, Cl. 514-252.000.

Brockhaus, Ernst, to ED. Scharwachter GmbH & Co. KG. Hinge attachment arrangement for an adjustable, detachable attachment of motor vehicle doors. 4,619,016, Cl. 16-383.000.

Broger, Emil A.; and Crameri, Yvo, to Hoffmann-La Roche Inc. Chiral phosphines. 4,620,013, Cl. 548-412.000.

Brooks, Robert B., to General Electric Company. Ice dispenser for a household refrigerator. 4,619,380, Cl. 222-240.000.

Brooks, Robert E.; and Penunuri, David, to TRW Inc. Surface acoustic wave systems and methods. 4,620,167, Cl. 333-195.000.

Brother Industries, Ltd.: *See—*

  Tani, Zempei; Ebina, Kiyoshi; Ichikawa, Osamu; and Imaizumi, Mamoru, 4,620,094, Cl. 250-231.0SE.

Broussard, Ronney L., to Antonia Products, Inc. Cable greasing adaptor. 4,619,298, Cl. 141-384.000.

Brown, Andrew V., to Advanced Micro Devices, Inc. Polymerizable planarization layer for integrated circuit structures. 4,619,837, Cl. 427-44.000.

Brown, David S.; Forry, John S.; Mentzer, Nancy E.; and Misselhorn, Donald J., to Armstrong World Industries, Inc. Foamed phosphate tile products. 4,619,860, Cl. 428-213.000.

Brown, Dennis M.: *See—*

  Luck, Edward E.; and Brown, Dennis M., 4,619,913, Cl. 514-2.000.

Brown, Irving J. Automatic mitering apparatus. 4,619,163, Cl. 83-82.000.

Brown, William R.: *See—*

  Dean, Arthur L.; Brown, William R.; Martin, James P.; Turcheck, Stanley P., Jr.; Scott, Junius D.; and Gotal, John D., 4,619,356, Cl. 198-395.000.

Browning, Shane C.: *See—*

  Smeed, Clement G.; and Browning, Shane C., 4,619,278, Cl. 131-284.000.

Brudi Equipment Co.: *See—*

  Frison, Emmett, 4,619,579, Cl. 414-607.000.

Bruedwill, Inc.: *See—*

  Markowitz, Harry, 4,619,120, Cl. 66-192.000.

Bruggema, Donald J.: *See—*

  Schnell, Robert P.; Sampson, Robert W.; Pacanowski, Ronald F.; and Bruggema, Donald J., 4,620,284, Cl. 364-498.000.

Brush, Robert W., Jr., to Thomas & Betts Corporation. Flat cable connector with grounding clip. 4,619,487, Cl. 339-14.00R.

Bruton, Billy R.: *See—*

  Snyder, David E.; and Bruton, Billy R., 4,619,434, Cl. 251-14.000.

Bryan, Lannie R.; and Schultz, Gary R., to Eaton Corporation. Vehicle air system including central tire inflation system. 4,619,303, Cl. 152-416.000.

BSR North America, Ltd.: *See—*

  Smith, Kobert R., II, 4,620,254, Cl. 360-132.000.

Buchel, Karl H.: *See—*

  Elbe, Hans-Ludwig; Jautelat, Manfred; Buchel, Karl H.; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,619,940, Cl. 514-383.000.

Buck, Marshall D., to Cerwin-Vega, Inc. Multiple sound transducer system utilizing an acoustic filter to reduce distortion. 4,619,342, Cl. 181-184.000.

Buechel, Frederick F.: *See—*

  Pappas, Michael J.; and Buechel, Frederick F., 4,619,658, Cl. 623-22.000.

Buhler, Niklaus: *See—*

  Meier, Kurt; Buhler, Niklaus; and Reber, Jean-Francois, 4,619,838, Cl. 427-53.100.

Buhr, Gerhard, to Hoechst Aktiengesellschaft. Light-sensitive triazines possessing trichloromethyl groups. 4,619,998, Cl. 544-193.100.

Builders Equipment and Tool Manufacturing Company: *See—*

  Gilbreth, William E., 4,619,549, Cl. 403-349.000.

Bull, Robert W.; Soltysiak, Robert M.; and Minnick, Paul D., to Neogen Corporation. Method for administering equine vaccines and compositions therefor. 4,619,827, Cl. 424-89.000.

Burch, Homer A.; and Ebetino, Frank F., to Norwich Eaton Pharmaceuticals, Inc. Compositions for treating tumors. 4,619,928, Cl. 514-236.000.

Burger, Laurie J.; Helfer, Joel N.; Protzmann, Donald E.; and Uhl, Robert F., to Chesebrough-Pond's, Inc. Electronic thermometer with probe isolation chamber. 4,619,271, Cl. 128-736.000.

Burgoon, Jack L., to Cooper Industries, Inc. Scrubber with mechanism for automatically raising and lowering a squeegee assembly. 4,619,010, Cl. 15-50.00R.

Burroughs Corporation: *See—*

  Binoeder, Peter P.; Whitacre, James B.; and Kunker, Don, 4,620,302, Cl. 371-1.000.

Burrowes, Sherwin D. D., to RCA Corporation. Apparatus for detecting a chrominance reference burst component to develop a burst gate pulse. 4,620,219, Cl. 358-20.000.

Burt, Harold S.: *See—*

  Summa, Gareth D.; Reed, George K.; and Burt, Harold S., 4,619,575, Cl. 414-280.000.

Bushnell, William J.; Hemmeter, Richard W.; and Raghavan, Palanichamy, to AT&T Bell Laboratories. Method and apparatus for sharing operators among assistance systems. 4,620,066, Cl. 179-27.00D.

Butenop, Klaus, to Autoflug GmbH. Self-locking belt reel-in mechanism for safety belts. 4,619,418, Cl. 242-107.40A.

Butler, Donald E.; and L'Italien, Yvon J., to Warner-Lambert Company. Saturated bicyclic lactam acids and derivatives as cognition activators. 4,619,937, Cl. 514-323.000.

Butt, James A.; Mondal, Kalyan; and Roberts, Preston L., to Lehigh University. Programmable load controller. 4,620,283, Cl. 364-493.000.

Buttry, Daniel A.; Krounbi, Mohamad T.; and Melroy, Owen R., to International Business Machines Corporation. Process for etching via holes in alumina. 4,619,731, Cl. 156-644.000.

Buzzi & Co. S.A.: *See—*

  Buzzi, Ugo, 4,619,130, Cl. 72-124.000.

Buzzi, Ugo, to Buzzi & Co. S.A. Apparatus for providing a rim on the tips of ballpoint. 4,619,130, Cl. 72-124.000.

C. van der Lely N.V.: *See—*

  van der Lely, Cornelis, 4,619,106, Cl. 56-341.000.

Caber Italia S.p.A.: *See—*

  Sartor, Leo; and Gobbo, Franco, 4,619,057, Cl. 36-50.000.

Caldwell, Roland B., to Ranco Incorporated. Elevation responsive automatic vehicle control system. 4,619,286, Cl. 137-81.100.

California Institute of Technology: *See—*

  Margalit, Shlomo; Chiu, Liew-Chuang; Smith, John S.; and Yariv, Amnon, 4,620,214, Cl. 357-63.000.

Calviello, Joseph A., to Eaton Corporation. Edge channel FET. 4,620,207, Cl. 357-22.000.

Camara, Michael A.: *See—*

  Steltenkamp, Robert J.; and Camara, Michael A., 4,619,775, Cl. 252-8.800.

Campbell, James H. Bit holder with impact release mechanism. 4,619,567, Cl. 409-234.000.

Can-Am Engineering Corporation: *See—*

  Fishgal, Semyon I., 4,619,406, Cl. 241-5.000.

Canada, Her Majesty the Queen in right of: *See—*

  Twardawa, Philip A.; and St-Onge, Michel C., 4,619,424, Cl. 244-151.00B.

Canon Kabushiki Kaisha: *See—*

  Aoshima, Chikara; and Nagata, Toru, 4,619,509, Cl. 354-173.100.

  Araya, Junji, 4,619,520, Cl. 355-14.00R.

  Kiyohara, Shuichi, 4,619,512, Cl. 354-458.000.

  Miyamoto, Kazuki, 4,619,521, Cl. 355-14.00R.

Capocci, Gerald A.: *See—*

  Reid, William J.; Zappia, Jean M.; Capocci, Gerald A.; and Spivack, John D., 4,619,957, Cl. 524-91.000.

Card, Joseph L.: *See—*

  Card, Roy T.; and Card, Joseph L., 4,619,212, Cl. 112-266.200.

Card, Roy T.; and Card, Joseph L. Tufting machine and method of tufting for producing multiple rows of tufts with single lengths of yarn. 4,619,212, Cl. 112-266.200.

Carl-Zeiss-Stiftung: *See—*

  Daniels, Erwin J.; Kratzer, Bernd; and Schurle, Hermann, 4,619,504, Cl. 351-163.000.

Carlson, Walter H., to Graphite Sales, Inc. Method and material for plugging an ingot mold. 4,619,950, Cl. 523-140.000.

Carlton, Stephen C., to Northern Telecom Limited. Serial-to-parallel converter for high-speed bit streams. 4,620,180, Cl. 340-347.0DD.

Carrera, Luciano: *See—*

  Azzola, Roberto; and Carrera, Luciano, 4,619,077, Cl. 49-497.000.

Carrier Corporation: *See—*

Chu, Tsuwei; and Pandeya, Prakash N., 4,619,118, Cl. 62-324.100.

McManus, John R.; and Ubowski, Lawrence W., 4,619,024, Cl. 29-157.30R.

McManus, John R.; and Wright, William E., 4,619,025, Cl. 29-157.30R.

Pickering, Mark A., 4,619,604, Cl. 431-353.000.

Carriere, Richard T.: *See—*

Jalbing, John I.; and Carriere, Richard T., 4,619,912, Cl. 502-439.000.

Carroll, Michael W.; and Harwood, Michael E., to North American Agricultural, Inc. Grain bin floor and method of making same. 4,619,085, Cl. 52-192.000.

Carstensen, Kenneth J. Heat recoverable locking device. 4,619,568, Cl. 411-222.000.

Carter-Wallace, Inc.: *See—*

Stiefel, Frank J., 4,620,015, Cl. 548-547.000.

Carter, William C., to Marley Cooling Tower Company, The. Externally controlled variable pitch fan hub assembly. 4,619,586, Cl. 416-157.00R.

Cartwright, Timothy B.: *See—*

Clay, David T.; and Cartwright, Timothy B., 4,619,732, Cl. 162-29.000.

Casio Computer Co., Ltd.: *See—*

Kameyama, Kazuhiro; and Akiba, Nobuo, 4,619,518, Cl. 355-4.000.

Matsuzaki, Akio, 4,619,175, Cl. 84-1.010.

Casio Electronics Mfg. Co., Ltd.: *See—*

Kameyama, Kazuhiro; and Akiba, Nobuo, 4,619,518, Cl. 355-4.000.

Casket Shells, Inc.: *See—*

Semon, Joseph R.; Semon, William J.; Bonczar, Lawrence J.; Ceresko, Helen; and MacKirdy, William T., 4,619,211, Cl. 112-132.000.

Castaldi, Graziano: *See—*

Uggeri, Fulvio; Castaldi, Graziano; and Giordano, Claudio, 4,620,031, Cl. 562-466.000.

Caterpillar Inc.: *See—*

Blake, William W.; and Coutant, Alan R., 4,619,187, Cl. 91-523.000.

Caulkins, Kenneth B. Musical instrument pneumatic actuator. 4,619,177, Cl. 84-50.000.

Cavagnis, Walter: *See—*

Magnoni, Pierangelo; Strada, Pier E.; Cavagnis, Walter; and Sanvito, Angelo, 4,619,006, Cl. 5-68.000.

CD High Technology, Inc.: *See—*

Jeppson, Morris R., 4,619,550, Cl. 404-80.000.

Celanese Corporation: *See—*

Doerr, Marvin L., 4,620,032, Cl. 562-483.000.

Celluloid S.A.: *See—*

Wachtel, Jean-Louis, 4,619,012, Cl. 15-187.000.

Central Glass Company, Limited: *See—*

Kawai, Toshikazu; Nishimura, Ysunobu; and Kanesaki, Katumi, 4,620,042, Cl. 568-775.000.

Central Sprinkler Corp.: *See—*

Pieczykolan, George S., 4,619,327, Cl. 169-38.000.

Ceresko, Helen: *See—*

Semon, Joseph R.; Semon, William J.; Bonczar, Lawrence J.; Ceresko, Helen; and MacKirdy, William T., 4,619,211, Cl. 112-132.000.

Cerwin-Vega, Inc.: *See—*

Buck, Marshall D., 4,619,342, Cl. 181-184.000.

Cescon, Lawrence A.; and Trebilcock, Robert W., to Du Pont de Nemours, E. I., and Company. Emulsion-containing explosive compositions. 4,619,721, Cl. 149-21.000.

CGR Ultrasonic: *See—*

Lannuzel, Olivier; and Pradal, Thierry, 4,619,267, Cl. 128-660.000.

Chalk, Christine D.; and Hayman, Cecil, to IC Gas International Limited. Heat storage materials. 4,619,778, Cl. 252-70.000.

Champion International Corporation: *See—*

Platt, Sterling B., 4,619,299, Cl. 144-357.000.

Chan, Wan-Kit: *See—*

Loev, Bernard; and Chan, Wan-Kit, 4,619,945, Cl. 514-729.000.

Chang, Clarence D.; and Hellring, Stuart D., to Mobil Oil Corporation. Hydrolysis of olefin oxides to glycols. 4,620,044, Cl. 568-833.000.

Chang, Clarence D.; and Miale, Joseph N., to Mobil Oil Corporation. Acid-catalyzed xylene isomerization. 4,620,054, Cl. 585-481.000.

Chang, David S.: *See—*

Schmidt, Gregory E.; Leung, Linus K.; Beck, Lawrence J.; and Chang, David S., 4,620,049, Cl. 585-501.000.

Chang, Wei K.: *See—*

Gold, Elijah H.; and Chang, Wei K., 4,619,919, Cl. 514-166.000.

Charbonneau, Robert R.; Heilmann, Steven M.; Rasmussen, Jerald K.; and Tumey, Michael L., to Minnesota Mining and Manufacturing Company. Azlactone-containing pressure-sensitive adhesives. 4,619,867, Cl. 428-355.000.

Charlton, Thomas J., to Alltech Corporation. Decorative window product and process. 4,619,850, Cl. 428-38.000.

Chastain, David M.: *See—*

Wallach, Steven J.; Jones, Thomas M.; Marshall, Frank J.; Nobles, David A.; Fuka, Kent A.; Rowan, Steven M.; Wallace, William H.; Dozier, Harold W.; Chastain, David M.; Clark, John W.; Kolstad, Robert B.; Mankovich, James E.; Harris, Michael C.; Gruger, Jeffrey H.; Gant, Alan D.; Shelton, Harold D.; Weatherford, James R.; Kimmel, Arthur T.; Gostin, Gary B.; Hansen, Gilbert J.; Golenbieski, John M.; Spry, Larry W.; Matulka, Gerald; Lockhart, Gaynel J.; and Sydow, Michael E., 4,620,275, Cl. 364-200.000.

Chatow, Yser. Method for producing fabric and garments. 4,619,724, Cl. 156-72.000.

Chauvel, Gerard, to Texas Instruments Incorporated. Video display system. 4,620,289, Cl. 364-521.000.

Check Mate Systems, Inc.: *See—*

Keifer, Terry A., 4,620,182, Cl. 340-568.000.

Chemische Werke Huls Aktiengesellschaft: *See—*

Gorke, Klaus; and Schoppen, Josef, 4,619,951, Cl. 523-173.000.

Chen, Sheng-Yi: *See—*

Pan, Yau-Jung; and Chen, Sheng-Yi, 4,619,124, Cl. 70-419.000.

Cheng, Chung-Ping; Iacobucci, Paul A.; and Walsh, Edward N., to Stauffer Chemical Company. Non-aged inorganic oxide-containing aerogels and their preparation. 4,619,908, Cl. 502-214.000.

Chesebrough-Pond's, Inc.: *See—*

Burger, Laurie J.; Helfer, Joel N.; Protzmann, Donald E.; and Uhl, Robert F., 4,619,271, Cl. 128-736.000.

Cheung, William S. H. Apparatus for producing audio and visual signals for modulating a television system carrier signal. 4,620,226, Cl. 358-143.000.

Chiu, Liew-Chuang: *See—*

Margalit, Shlomo; Chiu, Liew-Chuang; Smith, John S.; and Yariv, Amnon, 4,620,214, Cl. 357-63.000.

Chlystun, Walter K. Method for producing a dispensing container for pressurized fluids. 4,619,797, Cl. 264-40.100.

Choi, Won H. Key holder with changeable indicia display. 4,619,125, Cl. 70-460.000.

Chonan, Katsuhiko, to Mitsubishi Denki Kabushiki Kaisha. Control device for variable speed electric motor. 4,620,140, Cl. 318-332.000.

Chow, Tat-Sing P.: *See—*

Baliga, Bantval J.; Temple, Victor A. K.; and Chow, Tat-Sing P., 4,620,211, Cl. 357-38.000.

Chown, David P. M., to STC plc. Optical fibre receiver. 4,620,321, Cl. 455-619.000.

Christen, Hans-Jorg; Devantay, Hubert; Schellenberg, Claude; Scherer, Gunther; and Stucki, Samuel, to BBC Brown, Boveri & Company Limited. Bipolar plate for an apparatus with a stacked configuration, said apparatus comprised of a plurality of electrochemical cells with solid electrolyte; and method of manufacturing said plate. 4,619,753, Cl. 204-290.00F.

Christiansen, Jean E.; Fitzgerald, Maryanne; Moeller, Mitchell G.; Pascalides, Artemis; and Vayda, R. Thaddeus. Compressible rotational artificial joint. 4,619,660, Cl. 623-46.000.

Chu, Chia-Shih; and Wu, Chin-Lung. Printing or drawing mold for stockings. 4,619,384, Cl. 223-77.000.

Chu, Tsuwei; and Pandeya, Prakash N., to Carrier Corporation. Reversible compressor. 4,619,118, Cl. 62-324.100.

Chung, Kwong T.; and Triano, Alfred R., to RCA Corporation. Kinescope-yoke assembly. 4,620,127, Cl. 313-440.000.

Church, John F.; Stone, Walter H.; and Schaupp, Richard E., to Parker-Hannifin Corporation. Repelling-action filter unit and assembly. 4,619,764, Cl. 210-248.000.

Ciba-Geigy Corporation: *See—*

Eckert, Theodor, 4,619,926, Cl. 514-210.000.

Hauser, Helmut, 4,619,794, Cl. 264-4.100.

Kalvoda, Jaroslav; and Anner, Georg, 4,619,921, Cl. 514-180.000.

Lee, Ping I., 4,619,793, Cl. 264-2.600.

Meier, Kurt; Buhler, Niklaus; and Reber, Jean-Francois, 4,619,838, Cl. 427-53.100.

Mueller, Karl F., 4,619,974, Cl. 525-332.400.

Reid, William J.; Zappia, Jean M.; Capocci, Gerald A.; and Spivack, John D., 4,619,957, Cl. 524-91.000.

Reid, William J., 4,619,978, Cl. 526-84.000.

Cibie, Pierre, to Cibie Projecteurs. Corrector device for automatically correcting the beam direction of vehicle headlamps to compensate for variations in vehicle trim. 4,620,267, Cl. 362-71.000.

Cibie Projecteurs: *See—*

Cibie, Pierre, 4,620,267, Cl. 362-71.000.

Cichy, Mitchell J.: *See—*

Stolar, Mike; Robertson, David B.; and Cichy, Mitchell J., 4,619,231, Cl. 123-333.000.

Cieciuch, Ronald F.: *See—*

Locatell, Louis, Jr.; Zepp, Charles M.; and Cieciuch, Ronald F., 4,619,784, Cl. 540-593.000.

Clantex Limited: *See—*

Houlbrook, Kenneth; and Thornton, Paul A., 4,619,382, Cl. 222-327.000.

Clarion Co., Ltd.: *See—*

Imagawa, Toshiyuki, 4,620,315, Cl. 381-10.000.

Clark, John W.: *See—*

Wallach, Steven J.; Jones, Thomas M.; Marshall, Frank J.; Nobles, David A.; Fuka, Kent A.; Rowan, Steven M.; Wallace, William H.; Dozier, Harold W.; Chastain, David M.; Clark, John W.; Kolstad, Robert B.; Mankovich, James E.; Harris, Michael C.; Gruger, Jeffrey H.; Gant, Alan D.; Shelton, Harold D.; Weatherford, James R.; Kimmel, Arthur T.; Gostin, Gary B.; Hansen, Gilbert J.; Golenbieski, John M.; Spry, Larry W.; Matulka, Gerald; Lockhart, Gaynel J.; and Sydow, Michael E., 4,620,275, Cl. 364-200.000.

Clark, William J. Apparatus for the orthodontic treatment of teeth. 4,619,609, Cl. 433-6.000.

Clarke, John J., to Ferranti plc. Weapon aim-training apparatus. 4,619,616, Cl. 434-22.000.

Clay, David T.; and Cartwright, Timothy B., to Institute of Paper Chemistry, The. Method for drying pulping liquor to a burnable solid. 4,619,732, Cl. 162-29.000.

Cloeren, Peter. Die with combining adaptor insert and melt-lamination process. 4,619,802, Cl. 264-171.000.

Coffee, Ronald A., to Imperial Chemical Industries PLC. Valve. 4,619,438, Cl. 251-129.010.

Cogema, Compagnie Generale des Matieres Nucleaires: *See—*

Lorenzelli, Robert; Dabernard, Pierre; and Maire, Christian, 4,619,572, Cl. 414-217.000.

Cognion, Jean-Marie; and Durual, Pierre, to ATOCHEM. Process for the manufacture of ethylene from ethyl esters. 4,620,050, Cl. 585-640.000.

Cohen, Beri, to Technicon Instruments Corp. Method for preparing lipid vesicles. 4,619,795, Cl. 264-4.600.

Cole, Clayton K.: *See—*

Margolis, Frederick J.; and Cole, Clayton K., 4,619,270, Cl. 128-721.000.

Coleman, Harry E., IV. Surf riding air bag. 4,619,621, Cl. 441-66.000.

Colgate-Palmolive Company: *See—*

Eigen, Edward; and Simone, Alexander J., 4,619,825, Cl. 424-49.000.

Ramachandran, Pallassana N.; and Grand, Paul S., 4,619,774, Cl. 252-8.700.

Steltenkamp, Robert J.; and Camara, Michael A., 4,619,775, Cl. 252-8.800.

Colgate, Stirling A., to Colgate Thermodynamics Co. Stirling cycle machine. 4,619,112, Cl. 62-6.000.

Colgate Thermodynamics Co.: *See—*

Colgate, Stirling A., 4,619,112, Cl. 62-6.000.

Colic Machine & Tool Limited: *See—*

Valavaara, Viljo K., 4,619,166, Cl. 83-461.000.

Collins, John D., to Raytheon Company. Continuous wave radar with ranging capability. 4,620,192, Cl. 342-128.000.

Collonia, Harald, to VDO Adolf Schindling AG. Device for disconnecting the feed of fuel to an internal combustion engine. 4,619,230, Cl. 123-325.000.

Comabi S.A.: *See—*

Deguerry, Louis, 4,619,346, Cl. 187-9.00E.

Combustion Engineering, Inc.: *See—*

Formanek, Frank J., 4,619,808, Cl. 376-272.000.

Waryasz, Richard E.; 4,619,315, Cl. 165-104.160.

Comeau, Paul E., to Kenney Manufacturing Company. Semi-adjustable shade and roller combination. 4,619,305, Cl. 160-263.000.

Communications Satellite Corp.: *See—*

Lee, Lin-nan; and Redman, Mark D., 4,620,224, Cl. 358-119.000.

Compagnie Internationale des Pieux-Armes Frankignoul: *See—*

Braatvedt, Ian H., 4,619,558, Cl. 405-237.000.

Conklin, Barry C., to SI Handling Systems, Inc. Intelligent driverless vehicle. 4,620,280, Cl. 364-426.000.

Conlon, Edward J.: *See—*

Prabhu, Ashok N.; Conlon, Edward J.; and Sechi, Franco N., 4,619,836, Cl. 427-41.000.

Connaught Laboratories, Inc.: *See—*

Gordon, Lance K., 4,619,828, Cl. 424-92.000.

Conner, David E., to International Business Machines Corp. Transformer coupled, solid state communications line switch. 4,620,187, Cl. 340-825.050.

Conoco Inc.: *See—*

Salama, Mamdouh M.; Myers, Roderick J.; Thomason, William H.; and Joosten, Michael H., 4,619,557, Cl. 405-211.000.

Sylvest, Lawrence E., II, 4,619,475, Cl. 294-90.000.

Conradty GmbH & Co. Metallelektroden KG: *See—*

Koziol, Konrad; and Wenk, Erich, 4,619,752, Cl. 204-286.000.

Consortium fur Elektrochemische Industrie GmbH: *See—*

Kreuzer, Franz-Heinrich; and Gebauer, Helmut, 4,620,023, Cl. 556-460.000.

Constant, James. Transmission line dividers multipliers Fourier transformers and convolvers. 4,620,290, Cl. 364-578.000.

Contact Lens Supplies Limited: *See—*

Dent, Michael J.; and Handricks, Ian L., 4,619,082, Cl. 51-284.00R.

Contraves GmbH: *See—*

Eblen, Otto; Glockler, Gerhard; Kohler, Franz; and Meinusch, Norbert, 4,620,195, Cl. 346-1.100.

Cook, P. Dan; and McNamara, Dennis J., to Warner-Lambert Company. Process for preparing 2-β-D-ribofuranosylselenazole-4-carboxamide. 4,619,996, Cl. 536-55.300.

Cook, Randall W.; Rozporka, Richard E.; and Jones, Robert S., to Tandy Corporation. Tape cartridge static eliminator. 4,620,255, Cl. 360-132.000.

Cook, Ronald L., to Texaco Inc. Electrolytic method for reducing oxalic acid to a product. 4,619,743, Cl. 204-77.000.

Cook, Stephen F.; Fisher, Harland S.; and Kosciuczyk, Theodore E., to Westvaco Corporation. Label applicator. 4,619,726, Cl. 156-366.000.

Cooney, Robert W., to General Electric Company. Compact power supply module and cord. 4,620,110, Cl. 307-48.000.

Cooper, Brian F.: *See—*

Davis, Peter R.; Cooper, Brian F.; and Cottey, David H., 4,619,041, Cl. 29-600.000.

Cooper, Edward, to Power-Science, Inc. Method and system for recording and displaying input data signals. 4,620,149, Cl. 324-103.00P.

Cooper, Frank R.; and Bacrania, Kanti, to Harris Corporation. Method for successive approximation A/D conversion. 4,620,179, Cl. 340-347.0AD.

Cooper Industries, Inc.: *See—*

Burgoon, Jack L., 4,619,010, Cl. 15-50.00R.

Corblick, Robert F. Electrical connector with one-hand disconnect. 4,619,492, Cl. 339-45.00R.

Cornell, David D.: *See—*

Lentz, Carl M.; Overton, James R.; and Cornell, David D., 4,620,055, Cl. 585-438.000.

Cottey, David H.: *See—*

Davis, Peter R.; Cooper, Brian F.; and Cottey, David H., 4,619,041, Cl. 29-600.000.

Couch, Donald G., to Hughes Tool Company. Wellhead connector locking mechanism. 4,619,324, Cl. 166-344.000.

Coulston, El L.: *See—*

Trummer, Joseph A.; and Coulston, El L., 4,619,097, Cl. 52-730.000.

Courier Display Systems Limited: *See—*

Smith, Michael T., 4,619,304, Cl. 160-135.000.

Coutant, Alan R.: *See—*

Blake, William W.; and Coutant, Alan R., 4,619,187, Cl. 91-523.000.

Cox, Everett L.: *See—*

Read, Randol R.; Cox, Everett L.; and Selzler, Randall L., 4,620,279, Cl. 364-200.000.

Cox, John D.: *See—*

Keates, Richard H.; Schneider, Richard T.; Roxey, Timothy E.; and Cox, John D., 4,619,657, Cl. 623-6.000.

Crameri, Yvo: *See—*

Broger, Emil A.; and Crameri, Yvo, 4,620,013, Cl. 548-412.000.

Crear, William, III; and Ahern, Roy E. Sailboat luff system. 4,619,216, Cl. 114-105.000.

Creissels, Denis. Drive system for a twin suspension haulage cable gondola lift. 4,619,206, Cl. 104-178.000.

Crew, Gerald W. Standing tree baler. 4,619,193, Cl. 100-13.000.

Crinnion, Edward V.; and Crinnion, James S. Structural module for retaining walls and the like. 4,619,560, Cl. 405-284.000.

Crinnion, James S.: *See—*

Crinnion, Edward V.; and Crinnion, James S., 4,619,560, Cl. 405-284.000.

Cristante, Guido, to I.P.E. Nuova Bialetti S.p.A. Industria Prodotti Elettrodomestici. Apparatus for making ice cream. 4,619,116, Cl. 62-233.000.

Croiset, Pierre, to Societe Nationale Industrielle Aerospatiale. Suspension and drive method and corresponding device for oscillating mirror in space telescope. 4,619,498, Cl. 350-6.600.

Crowe, Stephen O.; and Harper, Jeffrey D., to International Paper Company. L-shaped shipping container. 4,619,362, Cl. 206-326.000.

CTS Corporation: *See—*

Leung, Tommy Y.; and Waldron, Mark A., 4,620,294, Cl. 364-900.000.

Zdanys, John, Jr.; Zaderej, Tony J.; and Robbins, Matthew A., 4,620,077, Cl. 200-331.000.

Cubicciotti, Roger S.; Karu, Alexander E.; and Krauss, Ronald M., to University of California, The Regents of The. Lipoprotein marker for hypertriglyceridemia. 4,619,895, Cl. 435-7.000.

Cue, Berkeley W., Jr.; and Moore, Bernard S., to Pfizer Inc. S-6-fluoro-4-aminochroman-4-carboxylic acid derivatives useful as intermediates for sorbinil. 4,620,019, Cl. 549-404.000.

Cullen, John S.; Incorvia, Samuel A.; and Vogt, James A., to Multiform Desiccants, Inc. Adsorbent device. 4,619,673, Cl. 55-387.000.

Cummins Engine Company, Inc.: *See—*

Matheson, Charles L.; Lane, Preston D.; Dieringer, James V.; and Ambafz, Emilio, 4,619,677, Cl. 55-510.000.

Cunningham, Charles R.; and Godden, Glenn S., to General Electric Company. Aircraft thermostat. 4,620,084, Cl. 219-497.000.

Curnutt, Donald D.: *See—*

Stall, Joe C.; Andrews, Steven L.; and Curnutt, Donald D., 4,619,771, Cl. 210-788.000.

Curt G. Joa, Inc.: *See—*

Radzins, Edmund; and Kenney, Timothy J., 4,619,357, Cl. 198-412.000.

Cutler, Christopher A.; and Wallace, William D., to Utah Medical Products, Inc. Apparatus and method for monitoring respiratory gas. 4,619,269, Cl. 128-719.000.

Cyanamid Agricultural de Puerto Rico, Inc.: *See—*

Raghu, Sivaraman; Hoffmann, Arthur K.; and Singh, Balwant, 4,620,009, Cl. 548-155.000.

Cybernetic Data Products: *See—*

Levin, Michael M.; and Boshear, Jerry A., 4,620,227, Cl. 358-147.000.

Cycyk, Michael A.; and Seitz, Robert R. Potato cutter. 4,619,192, Cl. 99-538.000.

Czopor, Edmund J., Jr., to Stanley Works, The. Display package for drill bits and the like. 4,619,364, Cl. 206-379.000.

Czupryna, Gary: *See—*

Natansohn, Samuel; and Czupryna, Gary, 4,619,905, Cl. 501-97.000.

D. Drukker & Zn. N.V.: *See—*

Doting, Jan, 4,619,563, Cl. 407-118.000.

D&K Custom Machine Design, Inc.: *See—*

King, Michael T., 4,619,169, Cl. 83-697.000.

Dabernard, Pierre: *See—*

Lorenzelli, Robert; Dabernard, Pierre; and Maire, Christian, 4,619,572, Cl. 414-217.000.

Dachniwskyj, Maryam L.: *See—*

Wells, Laura M.; Hawker, Fred D.; Dachniwskyj, Maryam L.; and Strobel, Charles W., 4,619,051, Cl. 34-9.000.

Dacomed Corporation: *See—*

Helms, Richard A.; Timm, Gerald W.; and Sandford, Donald L., 4,619,251, Cl. 128-79.000.

D'Agostino, Philip L. Telephone wall caddy. 4,620,067, Cl. 179-146.00R.

Daicel Chemical Industries, Ltd.: *See—*
  Okamoto, Yoshio; and Hatada, Koichi, 4,619,970, Cl. 525-100.000.
  Shiga, Makoto; Miyazawa, Akira; and Miyutani, Mitsuyosi, 4,619,279, Cl. 131-345.000.
  Yuki, Yoichi; and Ichida, Akito, 4,619,984, Cl. 528-38.000.
Daido Tokusyuko K.K.: *See—*
  Kawanobe, Yasutaka; Noguti, Hisao; Kanou, Singi; and Yamazaki, Katsuya, 4,619,694, Cl. 75-59.140.
Daimler-Benz Aktiengesellschaft: *See—*
  Kneib, Rudi; Emmer, Ludwig; and Robitschko, Peter, 4,619,477, Cl. 296-37.130.
Dainichi-Nippon Cables, Ltd.: *See—*
  Mio, Kotaro; and Ijiri, Yasuo, 4,619,852, Cl. 428-68.000.
Daly, Jeffery E.; and Kotch, Robert J., to Reed Tool Company. Roller cutter drill bit having a texturized seal member. 4,619,534, Cl. 384-94.000.
Dam, Erik; and Gronning, Erik. Adhesive paper material and a label made from such material. 4,619,858, Cl. 428-211.000.
D'Amato, Paolo; and Salvadorini, Rolando, to Rai-Radio Televisione Italiana. Method of transmitting and receiving color television signals on two channels for broadcasting from satellite and apparatus for carrying out said method. 4,620,218, Cl. 358-12.000.
Damm, Norbert: *See—*
  Muller, Gunter; and Damm, Norbert, 4,619,307, Cl. 164-169.000.
Dammann, Karl-Heinz, to Technika Beteiligungsgesellschaft mbH. Screw type compressor. 4,619,596, Cl. 418-201.000.
Dana Corporation: *See—*
  Siemon, Edward C., 4,620,296, Cl. 363-51.000.
Daniell, Thomas P.; Harding, Robert C., Jr.; Harvey, Roger W. R.; and Nauckhoff, Sven H. H., to International Business Machines Corporation. Method and apparatus for asynchronous processing of dynamic replication messages. 4,620,276, Cl. 364-200.000.
Daniels, Erwin J.; Kratzer, Bernd; and Schurle, Hermann, to Carl-Zeiss-Stiftung. Ophthalmic lens with a marking and method of producing the marking. 4,619,504, Cl. 351-163.000.
Daniels, John Y.: *See—*
  Hendrix, James E.; Daniels, John Y.; and Jackson, Bobby D., 4,619,864, Cl. 428-240.000.
Darby, Jack B. Control means for shifting gears on dual shift bicycles. 4,619,631, Cl. 474-80.000.
Dart Industries Inc.: *See—*
  Pool, L. Franklin, 4,619,258, Cl. 128-303.140.
Datakey, Inc.: *See—*
  Flies, William P., 4,620,088, Cl. 235-443.000.
Dauphinais, Paul Yvan. Ash-removal shovel. 4,619,474, Cl. 294-9.000.
Davidson, Murray R. Cushioning pad. 4,619,055, Cl. 36-28.000.
Davis, Harry C. Adjustable circular insulation saw system. 4,619,167, Cl. 83-607.000.
Davis, Peter R.; Cooper, Brian F.; and Cottey, David H., to English Electric Valve Company Limited. Method for manufacturing coupled cavity travelling wave tubes. 4,619,041, Cl. 29-600.000.
Davis, Robert I.; and Seador, Thomas G., to FMC Corporation. Process for producing and recovering tributyl phosphate esters. 4,620,024, Cl. 558-113.000.
Davis, Vern E. Throttle-grab bar apparatus for snowmobiles. 4,619,341, Cl. 180-335.000.
Davison, Arthur L.; Blackburn, Martin D.; and Sellek, Donald A., to Baird Corporation. Current meter. 4,620,148, Cl. 324-99.00D.
Davison, Ernest: *See—*
  Maczuszenko, Andrzej; Davison, Ernest; Otter, Brian; Whittaker, Brian F.; Novak, Christopher; and Landheer, Dolf, 4,619,515, Cl. 355-3.00R.
Day, Robert H.: *See—*
  Day, Robert L.; and Day, Robert H., 4,619,540, Cl. 403-24.000.
Day, Robert L.; and Day, Robert H., to S.D.S. Industries, Inc. Spring pivot joint for mannequin. 4,619,540, Cl. 403-24.000.
Dean, Arthur L.; Brown, William R.; Martin, James P.; Turcheck, Stanley P., Jr.; Scott, Junius D.; and Gotal, John D., to FMC Corporation. Programmable parts feeder. 4,619,356, Cl. 198-395.000.
Deevski, Stefan K.: *See—*
  Petkov, Georgi K.; Todorov, Todor S.; Atanassova, Yordanka R.; Netzov, Nikola M.; Deevski, Stefan K.; Radev, Nikola I.; Botev, Botyo P.; Metev, Georgi M.; Naydenov, Ivan H.; and Petrov, Yakim N., 4,619,129, Cl. 72-56.000.
De Faveri, Americo; Zanvettor, Sergio; and Savi, Antonio, to Zanussi Elettromeccanica S.p.A. Multiple wound capacitor noise filter with common layer. 4,620,166, Cl. 333-184.000.
DeFoe, Ronald J.: *See—*
  Kirchner, Edward C.; and DeFoe, Ronald J., 4,619,414, Cl. 241-261.300.
de Garcini Guedas, Vincente M.: *See—*
  Fernandez-Tresguerres Hernandez, Jesus A.; and de Garcini Guedas, Vincente M., 4,619,646, Cl. 604-154.000.
Deguerry, Louis, to Comabi S.A. Elevator-type work platform. 4,619,346, Cl. 187-9.00E.
Delacour, Jacques; Levallois, Emile; Antier, Patrick; and Saint Martin, Francois-Xavier, to Institut Francais du Petrole. Devices for recovering polymetal compounds discharged from a submarine hydrothermal source. 4,619,762, Cl. 210-170.000.
Delagneau, Hubert: *See—*
  Weiss, Richard; and Delagneau, Hubert, 4,619,824, Cl. 424-16.000.
Delaney, James M.; and Jozwiak, Edward L., to PPG Industries, Inc. Process for topcoating an electrocoated substrate with a high solids fluid coating. 4,619,746, Cl. 204-181.100.
Delarue, Jean-Jacques; and Ego, Claude, to Societe Nationale Industrielle Aerospatiale. Pyrotechnic valve. 4,619,284, Cl. 137-67.000.
Delestre, Xavier; and Sauvage, Marc, to Thomson CSF. Coaxial type tunable hyperfrequency elimination band filter comprising of dielectric resonators. 4,620,168, Cl. 333-202.000.
DeLong, Bradley W., to Phillips Petroleum Company. Gas processing. 4,619,679, Cl. 62-11.000.
Delphax Systems: *See—*
  Maczuszenko, Andrzej; Davison, Ernest; Otter, Brian; Whittaker, Brian F.; Novak, Christopher; and Landheer, Dolf, 4,619,515, Cl. 355-3.00R.
Delta International Machinery Corp.: *See—*
  Miller, David, 4,619,171, Cl. 83-782.000.
De Luca, Giovanna: *See—*
  Di Stazio, Giovanni; Politi, Vincenzo; Margonelli, Andrea; De Luca, Giovanna; and Materazzi, Mario, 4,619,916, Cl. 514-18.000.
DeLuca, Hector F.; Ikekawa, Nobuo; Kobayashi, Yoshiro; and Tanaka, Yoko, to Wisconsin Alumni Research Foundation. 26,26,26,27,27-pentafluoro-1α-hydroxy-27-methoxyvitamin D_3. 4,619,920, Cl. 514-167.000.
Delzer, Gary A.: *See—*
  Kolts, John H.; and Delzer, Gary A., 4,620,051, Cl. 585-663.000.
  Kolts, John H.; and Delzer, Gary A., 4,620,052, Cl. 585-663.000.
de Man, Heiko T. Beverage dispensing apparatus. 4,619,378, Cl. 222-144.500.
Denenberg, Jeffrey N.: *See—*
  Smith, Allen R.; Tan, Chuan-Chieh; Slack, Thomas B.; and Denenberg, Jeffrey N., 4,620,286, Cl. 364-513.000.
Denes, Lucian R., to Shell Oil Company. Method for preparing 4-hydroxycinnolines in a pH controlled system. 4,620,000, Cl. 544-235.000.
Dennis Meggs Enterprises Limited: *See—*
  Meggs, Dennis, 4,619,456, Cl. 273-127.00B.
Dennis, Robert A. Apparatus to aid in precision haircutting. 4,619,044, Cl. 30-133.000.
Denny, Lee: *See—*
  Hannah, Bruce R.; McClanahan, David D.; and Denny, Lee, 4,619,486, Cl. 312-195.000.
Dent, Michael J.; and Handricks, Ian L., to Contact Lens Supplies Limited. Method of manufacturing a contact lens. 4,619,082, Cl. 51-284.00R.
Derouane, Eric G.; and von Ballmoos, Roland, to Mobil Oil Corporation. Crystalline antimonophosphoaluminate. 4,619,818, Cl. 423-306.000.
DeSoto, Inc.: *See—*
  Wells, Laura M.; Hawker, Fred D.; Dachniwskyj, Maryam L.; and Strobel, Charles W., 4,619,051, Cl. 34-9.000.
Devantay, Hubert: *See—*
  Christen, Hans-Jorg; Devantay, Hubert; Schellenberg, Claude; Scherer, Gunther; and Stucki, Samuel, 4,619,753, Cl. 204-290.00F.
Development Finance Corporation of New Zealand: *See—*
  Sengchanh, Chanty, 4,620,188, Cl. 340-825.870.
de Volder, Johannes A. P.: *See—*
  Beelaard, Wilhelmus A. J.; and de Volder, Johannes A. P., 4,620,174, Cl. 335-212.000.
Dhein, Rolf: *See—*
  Schafer, Walter; Hajek, Manfred; Muller, Hanns P.; Dhein, Rolf; Kuchenmeister, Rolf; and Sickert, Armin, 4,619,966, Cl. 524-589.000.
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Diaz, Adolfo A.: *See—*
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  - Yavorsky, William M., 4,619,374, Cl. 220-414.000.
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  - Takagi, Yoshihiro; and Adachi, Keiichi, 4,619,893, Cl. 430-519.000.
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  - Stahura, Daniel W.; and Smith, Verl V., Jr., 4,619,875, Cl. 429-143.000.
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  - Holmes, Bruce J.; Martin, Glenn L.; Domack, Christopher S.; Obara, Clifford J.; and Hassan, Ahmed A., 4,619,423, Cl. 244-130.000.
- Hata, Hideo: *See—*
  - Yoshimura, Isao; and Hata, Hideo, 4,619,859, Cl. 428-213.000.
- Hata, Shigenao: *See—*
  - Hashimoto, Tadanori; Yoshitake, Hiroshi; Hata, Shigenao; and Nakazono, Akiko, 4,619,704, Cl. 106-286.400.
- Hatada, Koichi: *See—*
  - Okamoto, Yoshio; and Hatada, Koichi, 4,619,970, Cl. 525-100.000.
- Hatanaka, Kaoru; and Miyamaru, Yukio, to Honda Giken Kogyo Kabushiki Kaisha. Winker device. 4,620,177, Cl. 340-81.00R.
- Hato, Masakatsu; Shimura, Yukio; and Tsuda, Keishiro, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Enzyme immobilization in a fluorine resin membrane. 4,619,897, Cl. 435-182.000.
- Hattori, Eizou: *See—*
  - Fujii, Setsuro; Hattori, Eizou; Hirata, Mitsuteru; Kunieda, Hisashi; Watanabe, Koichiro; and Ishihama, Hiroshi, 4,620,005, Cl. 544-391.000.
- Hattori, Michinori; and Niiya, Kazunori, to Nippon Kokan Kabushiki Kaisha. Cooling box for steel making furnaces. 4,619,442, Cl. 266-193.000.
- Hattori, Motoichi; and Ishigo, Hideyasu, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic telephone answering and recording apparatus. 4,620,065, Cl. 179-6.070.
- Hattori, Torao, to Honda Giken Kogyo Kabushiki Kaisha. Belt type continuous reduction gear mechanism. 4,619,630, Cl. 474-72.000.
- Haugwitz, Werner, to SKF Gmbh, Schweinfurt. Bearing housing. 4,619,535, Cl. 384-472.000.
- Hauni-Werke Korber & Co. KG.: *See—*
  - Uhlig, Uwe, 4,619,078, Cl. 51-5.00D.
- Hauser, Helmut, to Ciba-Geigy Corporation. Spontaneous preparation of small unilamellar liposomes. 4,619,794, Cl. 264-4.100.
- Havemann, Robert H.; and Baber, Samuel C., to Texas Instruments Incorporated. Self-aligned low-temperature emitter drive-in. 4,619,036, Cl. 29-577.00C.
- Havey, Edward J., Jr.; Miller, Carl; and Westerman, Ted, to Pitney Bowes Inc. Sheet folding inserting machine. 4,619,101, Cl. 53-117.000.
- Hawker, Fred D.: *See—*
  - Wells, Laura M.; Hawker, Fred D.; Dachniwskyj, Maryam L.; and Strobel, Charles W., 4,619,051, Cl. 34-9.000.
- Hawkings, Robert M., to Raychem Corporation. Guidance and retention device and connector assembly. 4,619,490, Cl. 339-31.00M.
- Haws, Lewis A.: *See—*
  - Albertson, Douglas E.; Dyson, James O.; Fischer, Eugene B.; Gaudlitz, Robert T.; Haws, Lewis A.; Keritsis, Gus D.; Long, Louis L.; McClung, Charles S.; Nepomuceno, Jose G.; and Wagoner, Steven R., 4,619,276, Cl. 131-79.000.
- Hayase, Isao: *See—*
  - Amano, Keijiro; Hayase, Isao; Kishi, Atsuo; and Sato, Noriharu, 4,619,595, Cl. 418-83.000.
- Hayashi, Eiji, to Yokogawa Hokushin Electric Corporation. Reactive power to DC signal converter. 4,620,157, Cl. 328-160.000.
- Hayashi, Kenro: *See—*
  - Tanaka, Takashi; and Hayashi, Kenro, 4,619,798, Cl. 264-62.000.
- Hayes, Charles L. Control stick mechanism. 4,620,176, Cl. 338-128.000.
- Hayes, Ernest R., to Nova Chem Limited. N,O-carboxymethyl chitosan and preparative method therefor. 4,619,995, Cl. 536-20.000.
- Hayes, Thomas G.: *See—*
  - Skarstad, Paul M.; and Hayes, Thomas G., 4,619,874, Cl. 429-91.000.
- Hayman, Cecil: *See—*
  - Chalk, Christine D.; and Hayman, Cecil, 4,619,778, Cl. 252-70.000.
- HB Autonom: *See—*
  - Sundberg, Bo; and Jonason, Hans, 4,619,222, Cl. 119-15.50R.
- Healey, James A.; Duncan, Robert C.; and Roussel, Charles F., to Fraser Inc. Gas absorption system. 4,619,813, Cl. 422-171.000.
- Heath Company: *See—*
  - Perdue, Terry A., 4,620,285, Cl. 364-513.000.
- Heckman, Sandy D., to John Morrell & Company. Meat trimming knife with wrist strain relief device. 4,619,047, Cl. 30-276.000.
- Hedrick, Dennis R.: *See—*
  - Do, Phuc K.; Wyke, Carol E.; Kendrick, Barnes R., Jr.; Hedrick, Dennis R.; and Troupes, Demetrios, 4,619,537, Cl. 400-225.000.
- Heeks, John S., to International Standard Electric Corporation. Optical phase array radar. 4,620,193, Cl. 342-200.000.
- Heeres, Jan; Stokbroekx, Raymond A.; and Backx, Leo J. J., to Janssen Pharmaceutica, N.V. [[4-[4-(4-phenyl-1-piperazinyl)phenoxymethyl]-1,3-dioxolan-2-yl]methyl]-1H-imidazoles and 1H-1,2,4-triazoles. 4,619,931, Cl. 514-252.000.
- Heilmann, Steven M.: *See—*
  - Charbonneau, Robert R.; Heilmann, Steven M.; Rasmussen, Jerald K.; and Tumey, Michael L., 4,619,867, Cl. 428-355.000.

Heilweil, Israel J.; and Hoskin, Dennis H., to Mobil Oil Corporation. High temperature stable aqueous brine fluids viscosified by water-soluble copolymers of acrylamidomethylpropanesulfonic acid salts. 4,619,773, Cl. 252-8.514.
Heimnick, Paul; and Johnson, LeRoy B., to Schmelzer Corporation. Powered adjustable arm rest. 4,619,478, Cl. 296-153.000.
Heinrich Oelschlager Metallwarenfabrik: *See—*
  Leymann, Friedhelm, 4,619,427, Cl. 248-178.000.
Heinsohn, George E.; and Rao, Velliyur N. M., to Du Pont de Nemours, E. I., and Company. Preparation of methyl isocyanate in a quartz reactor. 4,620,030, Cl. 560-338.000.
Heinzl, Joachim; Penningsfeld, Hans-Dieter; and Berdelle-Hilge, Peter, to Siemens Aktiengesellschaft. Magnetic driver ink jet. 4,620,201, Cl. 346-140.00R.
Held, Herr K. Dual-belt press for a continuously advancing web of material. 4,619,195, Cl. 100-154.000.
Helfer, Joel N.: *See—*
  Burger, Laurie J.; Helfer, Joel N.; Protzmann, Donald E.; and Uhl, Robert F., 4,619,271, Cl. 128-736.000.
Hellring, Stuart D.: *See—*
  Chang, Clarence D.; and Hellring, Stuart D., 4,620,044, Cl. 568-833.000.
Hellstrom, Gunnar, to Saab-Scania Aktiebolag. Arrangement for deflecting powder gases from an aircraft weapon. 4,619,182, Cl. 89-37.160.
Helms, Richard A.; Timm, Gerald W.; and Sandford, Donald L., to Dacomed Corporation. Penile prosthesis having an actuator means interacting with a member and articulated column. 4,619,251, Cl. 128-79.000.
Hemmeter, Richard W.: *See—*
  Bushnell, William J.; Hemmeter, Richard W.; and Raghavan, Palanichamy, 4,620,066, Cl. 179-27.00D.
Hen-Jac, Inc.: *See—*
  Kenny, Patrick M., 4,619,218, Cl. 114-295.000.
Hendrix, James E.; Daniels, John Y.; and Jackson, Bobby D., to Springs Industries, Inc. Fabric with reduced permeability to down and fiber fill and method of producing same. 4,619,864, Cl. 428-240.000.
Hengstler GmbH Geschaftsbereich Haller-Relais: *See—*
  Rudolf, Reiner, 4,620,172, Cl. 335-78.000.
Henkel Kommanditgesellschaft auf Aktien: *See—*
  Olbrueck, Peter; Kluth, Hermann; Roederhoff, Bernhard; Dierichs, Wolfgang; and Wegner, Juergen, 4,619,711, Cl. 134-38.000.
  Rose, David; Lieske, Edgar; and Maak, Norbert, 4,619,666, Cl. 8-414.000.
Henniger, Peter W.; and van der Drift, Johannes K., to Gist-Brocades N.V. Preparation of 6-α-bromo- and/or 6,6-dibromo-penicillanic acid-1,1-dioxides. 4,619,786, Cl. 540-310.000.
Henning, Rainer; Urbach, Hansjorg; Teetz, Volker; and Becker, Reinhard, to Hoechst Aktiengesellschaft. Spirocyclic aminoacid derivatives, processes for their preparation, agents containing them and their use and new spirocyclic aminoacids as intermediates and processes for their preparation. 4,620,012, Cl. 548-411.000.
Henricson, Kaj O.; and Peltola, Pekka O., to A. Ahlstrom Osakeyhtio. Apparatus for defiberizing, screening and pumping cellulose pulp or recycled paper. 4,619,736, Cl. 162-261.000.
Henton, David E., to Dow Chemical Company, The. Flame resistant carbonate blends. 4,619,968, Cl. 525-67.000.
Herb, Eugen: *See—*
  Leibinger, Berthold; and Herb, Eugen, 4,619,448, Cl. 269-303.000.
Herbert, Adolf; Bellmer, Klaus; and Trocha, Jobst, to Hermann Berstorff Maschinenbau GmbH. Extrusion head. 4,619,599, Cl. 425-186.000.
Herchenbach, Horst; and Ramesohl, Hubert, to Klockner-Humboldt-Deutz AG. Method for the thermal treatment of calcareous mineral raw materials. 4,619,605, Cl. 432-14.000.
Herman Miller, Inc.: *See—*
  Kurrasch, Andrew J., 4,619,208, Cl. 108-144.000.
Herman, Paul F.: *See—*
  Kennedy, T. Scott; and Herman, Paul F., 4,619,948, Cl. 521-52.000.
Hermann Berstorff Maschinenbau GmbH: *See—*
  Herbert, Adolf; Bellmer, Klaus; and Trocha, Jobst, 4,619,599, Cl. 425-186.000.
Hermann Finckh Maschinenfabrik GmbH & Co.: *See—*
  Holz, Emil, 4,619,737, Cl. 162-357.000.
Herrington, F. John, to Mobil Oil Corporation. Splayed roll folder for adhesive application. 4,619,638, Cl. 493-439.000.
Herrington, Maurice G., to Payen International Limited. Cylinder head gaskets with aperture reinforcing means. 4,619,459, Cl. 277-235.00B.
Hertz, Carl H.; and Samuelsson, Bo Å., to Hertz, Carl H. Method and apparatus for high resolution ink jet printing. 4,620,196, Cl. 346-1.100.
Hess, Heinrich; Grogler, Gerhard; Kopp, Richard; and Barnes, James M., to Bayer Aktiengesellschaft. Process for the production of deactivated suspensions of finely-divided polyisocyanates in relatively high molecular weight compounds, deactivated suspensions and use thereof for the production of polyurethanes. 4,619,985, Cl. 528-49.000.
Hessberger, Gerhard; and Scherer, Michael, to Hans Zapfe. Sputtering system for cathode sputtering apparatus. 4,619,755, Cl. 204-298.000.
Hewlett-Packard Company: *See—*
  Bland, Robert J., 4,620,108, Cl. 307-2.000.
Hibino, Noburo: *See—*
  Kamada, Koh; Hashimoto, Hiroshi; Okita, Tsutomu; and Hibino, Noburo, 4,619,856, Cl. 428-143.000.
Higashi, Katsumi; and Takeshima, Sadao, to Jidosha Kiki Co., Ltd. Method and device for controlling power steering device. 4,619,338, Cl. 180-142.000.
High Resolution Television, Inc.: *See—*
  Songer, Jimmie D., 4,620,217, Cl. 358-12.000.
Hijikata, Kenichi; Sugihara, Tadashi; and Komabayashi, Masashi, to Mitsubishi Kinzoku Kabushiki Kaisha. Sputtering target material and process for producing the same. 4,619,697, Cl. 75-230.000.
Hill, Charles; and Spector, George. Revolving magazine for pistols. 4,619,063, Cl. 42-7.000.
Hill, Mark L. Guard plate and method for automobile door handle. 4,619,123, Cl. 70-417.000.
Hill, Robert B., to EYE-D Development II Ltd. Fovea-centered eye fundus scanner. 4,620,318, Cl. 382-2.000.
Hills, Robert G., to Eastman Kodak Company. Transducer-to-medium stabilizing device at negative attack angle with respect to medium. 4,620,250, Cl. 360-102.000.
Hinkens, Harold, to AMF Incorporated. Adaptor for an electric timer. 4,619,489, Cl. 339-28.000.
Hino, Masaaki, to Kabushiki Kaisha Toshiba. Magnetic resonance imaging system. 4,620,153, Cl. 324-309.000.
Hioki, Susumu: *See—*
  Araya, Takeshi; Matsunawa, Akira; Katayama, Seiji; Hioki, Susumu; Ibaraki, Yoshiro; and Endo, Yoshishige, 4,619,691, Cl. 75-0.50B.
Hira, Kazumi: *See—*
  Muraishi, Masakazu; and Hira, Kazumi, 4,619,725, Cl. 156-182.000.
Hirai, Hiroyuki: *See—*
  Kawata, Ken; Yabuki, Yoshiharu; Sato, Kouzou; and Hirai, Hiroyuki, 4,619,888, Cl. 430-353.000.
Hirai, Koichi: *See—*
  Kamuro, Yasuo; Hirai, Koichi; Suzuki, Fumio; Yamamoto, Susumu; and Shindo, Noboru, 4,619,685, Cl. 71-78.000.
Hirano, Norimitsu: *See—*
  Egami, Kazuhito; and Hirano, Norimitsu, 4,620,139, Cl. 318-254.000.
Hirasawa, Shigeki: *See—*
  Nakayama, Wataru; Nakajima, Tadakatsu; Hirasawa, Shigeki; Kohno, Akiomi; and Takenaka, Takaji, 4,619,316, Cl. 165-104.330.
Hirata, Mitsuteru: *See—*
  Fujii, Setsuro; Hattori, Eizou; Hirata, Mitsuteru; Kunieda, Hisashi; Watanabe, Koichiro; and Ishihama, Hiroshi, 4,620,005, Cl. 544-391.000.
Hiroki, Eizo, to Agency of Industrial Science and Technology. Spike tire. 4,619,301, Cl. 152-210.000.
Hirose Electric Co., Ltd.: *See—*
  Kikuta, Sigeru, 4,619,493, Cl. 339-91.00R.
Hirota, Tetsuro: *See—*
  Suzaki, Masayuki; Hirota, Tetsuro; Kanno, Tetsuo; and Koguchi, Takeziro, 4,620,249, Cl. 360-99.000.
Hirschmeier, Manfred; and Kreitl, Josef, to MTU Motoren-und Turbinen-Union Muenchen GmbH. Method for chemically removing aluminum diffusion layers. 4,619,707, Cl. 134-3.000.
Hitachi Automotive Engineering Co., Ltd.: *See—*
  Amano, Keijiro; Hayase, Isao; Kishi, Atsuo; and Sato, Noriharu, 4,619,595, Cl. 418-83.000.
Hitachi Denshi Kabusihiki Kaisha: *See—*
  Hagiwara, Yoshimune; Sugiyama, Shizuo; Maeda, Narimichi; Yumoto, Osamu; Akazawa, Takashi; Kobayashi, Masahito; Kita, Yasuhiro; and Kita, Yuzo, 4,620,292, Cl. 364-748.000.
Hitachi, Ltd.: *See—*
  Amano, Keijiro; Hayase, Isao; Kishi, Atsuo; and Sato, Noriharu, 4,619,595, Cl. 418-83.000.
  Araya, Takeshi; Matsunawa, Akira; Katayama, Seiji; Hioki, Susumu; Ibaraki, Yoshiro; and Endo, Yoshishige, 4,619,691, Cl. 75-0.50B.
  Fujii, Fumiaki, 4,620,239, Cl. 360-8.000.
  Hagiwara, Yoshimune; Sugiyama, Shizuo; Maeda, Narimichi; Yumoto, Osamu; Akazawa, Takashi; Kobayashi, Masahito; Kita, Yasuhiro; and Kita, Yuzo, 4,620,292, Cl. 364-748.000.
  Kakuta, Atsushi; Oka, Hiroyuki; Suzuki, Shigeo; Araya, Kotaro; Mori, Yasuki; and Morishita, Hirosada, 4,619,879, Cl. 430-58.000.
  Kambara, Hideki; and Seki, Setsuko, 4,620,103, Cl. 250-440.100.
  Mitani, Katsuya; Sano, Toshihiro; Nomura, Nobutaka; Numata, Kou; and Utino, Megumi, 4,620,273, Cl. 364-136.000.
  Nakayama, Wataru; Nakajima, Tadakatsu; Hirasawa, Shigeki; Kohno, Akiomi; and Takenaka, Takaji, 4,619,316, Cl. 165-104.330.
  Sano, Yoshihiro; Iwatani, Fumio; Kubo, Takao; and Miki, Yoshiteru, 4,620,257, Cl. 361-68.000.
  Takahashi, Sankichi; Matsuzaki, Harumi; Mukushi, Toshimi; Ebara, Katsuya; Takakusagi, Tsunehiko; Yoshida, Masahiro; Sato, Joshiro; Yamane, Yasumasa; Sakaguchi, Katsumi; and Watanabe, Akira, 4,619,768, Cl. 210-739.000.
  Takita, Atsushi; Sugano, Akira; and Honda, Naganobu, 4,619,224, Cl. 122-451.00R.
  Ushifusa, Nobuyuki; Ogihara, Satoru; and Nagayama, Kosei, 4,620,264, Cl. 361-414.000.
  Yasue, Toshikazu; Mese, Michihiro; and Endo, Takeyuki, 4,620,316, Cl. 381-43.000.
  Yoshinari, Takashi, 4,619,241, Cl. 123-620.000.
Hitachi Metals, Ltd.: *See—*
  Suenaga, Makoto; Yano, Mitsuru; Ishihara, Yasuoki; and Ohtsuka, Kohki, 4,619,713, Cl. 148-3.000.
Hitomi, Mitsuo: *See—*
  Ueda, Kazuhiko; Hitomi, Mitsuo; and Sasaki, Junzo, 4,619,226, Cl. 123-52.0MB.

Hoadley, Jonathan K.; and Freeman, Mark P., deceased (by Freeman, Helen M., executrix), to Dorr-Oliver. Electrofilter process using recirculating electrolyte. 4,619,747, Cl. 204-182.300.
Hodgson, John A. Electrode array for muscle stimulation and recording. 4,619,266, Cl. 128-639.000.
Hoechst Aktiengesellschaft: *See—*
  Buhr, Gerhard, 4,619,998, Cl. 544-193.100.
  Disselbeck, Dieter; and Vollrath, Hans-Peter, 4,619,317, Cl. 165-162.000.
  Henning, Rainer; Urbach, Hansjorg; Teetz, Volker; and Becker, Reinhard, 4,620,012, Cl. 548-411.000.
  Pliefke, Engelbert, 4,619,742, Cl. 204-34.000.
  Scholz, Eugen, 4,619,900, Cl. 436-42.000.
  Wingen, Rainer; Geissler, Ulrich; and Ruckert, Hans, 4,619,885, Cl. 430-260.000.
Hoecht Aktiengesellschaft: *See—*
  Schmidbaur, Hubert; Dorzbach, Cornelia; and Bowmaker, Graham, 4,620,020, Cl. 556-18.000.
Hoffman, Karl K.: *See—*
  Papciak, Walter A.; Hoffman, Karl K.; Engel, Roger; and Wieczorek, Adam, 4,620,247, Cl. 360-97.000.
Hoffmann, Arthur K.: *See—*
  Raghu, Sivaraman; Hoffmann, Arthur K.; and Singh, Balwant, 4,620,009, Cl. 548-155.000.
Hoffmann-La Roche Inc.: *See—*
  Broger, Emil A.; and Crameri, Yvo, 4,620,013, Cl. 548-412.000.
  Gotschi, Erwin; and Hubschwerlen, Christian, 4,619,787, Cl. 540-200.000.
Hofmann, Hans P.: *See—*
  Thieme, Peter C.; Steiner, Gerd; Rohr, Wolfgang; Lenke, Dieter; Gries, Josef; Weifenbach, Harald; Teschendorf, Hans-Jurgen; Hofmann, Hans P.; and Kreiskott, Horst, 4,619,929, Cl. 514-252.000.
Hofmeister, Helmut: *See—*
  Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; and Topert, Michael, 4,619,922, Cl. 514-180.000.
Hogg, James W., to Anchor Wire Corporation of Tennessee. Picture frame hanger. 4,619,430, Cl. 248-467.000.
Hojo, Yoshikata: *See—*
  Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, 4,619,689, Cl. 71-119.000.
Holmes, Bruce J.; Martin, Glenn L.; Domack, Christopher S.; Obara, Clifford J.; and Hassan, Ahmed A., to United States of America, National Aeronautics and Space Administration. Geometries for roughness shapes in laminar flow. 4,619,423, Cl. 244-130.000.
Holstein und Kappert GmbH: *See—*
  Kautz, Ralf-Dieter; and Stapelmann, Rolf, 4,619,133, Cl. 73-1.00R.
Holz, Emil, to Hermann Finckh Maschinenfabrik GmbH & Co. Roller for machines in the paper-making industry. 4,619,737, Cl. 162-357.000.
Holzhauer, Ralf: *See—*
  Adrian, Willy; and Holzhauer, Ralf, 4,619,355, Cl. 198-323.000.
Homeyer, Bernhard: *See—*
  Maurer, Fritz; and Homeyer, Bernhard, 4,619,918, Cl. 514-93.000.
Honda Giken Kogyo K.K.: *See—*
  Yamanaka, Isao, 4,619,154, Cl. 74-489.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
  Hatanaka, Kaoru; and Miyamaru, Yukio, 4,620,177, Cl. 340-81.00R.
  Hattori, Torao, 4,619,630, Cl. 474-72.000.
  Kawasaki, Katsuyoshi, 4,619,476, Cl. 296-37.100.
  Maezono, Masakazu; and Ishikawa, Keiichi, 4,619,350, Cl. 192-3.310.
  Uesugi, Naomoto; and Suzuki, Shoji, 4,619,344, Cl. 181-229.000.
Honda, Naganobu: *See—*
  Takita, Atsushi; Sugano, Akira; and Honda, Naganobu, 4,619,224, Cl. 122-451.00R.
Honeywell Information Systems Inc.: *See—*
  Boothroyd, Donald C.; and Norman, Robert W., Jr., 4,620,274, Cl. 364-200.000.
Honma, Nakahachiro: *See—*
  Oikawa, Hideo; Amazawa, Takao; Honma, Nakahachiro; Miyazaki, Hideo; Kyono, Iwao; Mori, Nobuyuki; Katoh, Yoshiharu; and Kuroki, Masami, 4,619,695, Cl. 75-65.0EB.
Hoogovens Groep B.V.: *See—*
  Felthuis, Jacob; Van Laar, Jacobus; and Rengersen, Jacob, 4,619,441, Cl. 266-193.000.
Hooper, Robert C.; Verret, Douglas P.; and Roane, Bobby A., to Texas Instruments Incorporated. Method of plating an interconnect metal onto a metal in VLSI devices. 4,619,887, Cl. 430-313.000.
Hoover, Charles C.: *See—*
  Wood, Forrest L.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., 4,619,215, Cl. 114-56.000.
Hopkins, Thomas R., to Phillips Petroleum Company. Alcohol oxidase from Pichia-type yeasts. 4,619,898, Cl. 435-190.000.
Horejda, Natalie: *See—*
  Dickey, Donna J.; Dobler, Sebastian; and Horejda, Natalie, 4,619,483, Cl. 297-397.000.
Horie, Seiji; Makino, Naonori; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Electrophotographic light sensitive material contains hydrazone compound. 4,619,880, Cl. 430-58.000.
Horie, Seiji: *See—*
  Makino, Naonori; Horie, Seiji; and Sato, Hideo, 4,619,881, Cl. 430-77.000.
Horie, Shigeru: *See—*
  Kiriyama, Tsutomu; Horie, Shigeru; Ichihashi, Tetsuo; and Oshida, Masahiro, 4,619,869, Cl. 428-480.000.
Horikawa, Toshihiro; and Kuwabara, Nobumori, to Matsushita Electric Industrial Co., Ltd. Floor coverings having built-in heater. 4,620,085, Cl. 219-528.000.
Horn, Gerald. Intraocular lens inserting assembly. 4,619,256, Cl. 128-303.00R.
Hornung, Karl-Otto: *See—*
  Bachmann, Herbert; and Hornung, Karl-Otto, 4,619,444, Cl. 266-236.000.
Horton, Robert L., to Phillips Petroleum Company. Recovery of heavy metals from aqueous solutions. 4,619,744, Cl. 204-105.00R.
Horvath, Joseph L., to International Business Machines Corporation. Unitary slotted heat sink for semiconductor packages. 4,620,216, Cl. 357-81.000.
Hoshi, Hideaki; and Naito, Takayuki, to Bristol-Myers Company. 3-Propenyl cephalosporin derivatives. 4,619,925, Cl. 514-200.000.
Hoshi, Kinji: *See—*
  Suzuki, Toshihiko; Isawa, Nobuyuki; Ohkubo, Yasunori; and Hoshi, Kinji, 4,619,730, Cl. 156-617.0SP.
Hoshino Butsusan Co., Ltd.: *See—*
  Kou, Nagai, 4,619,189, Cl. 99-334.000.
Hoshizaki Electric Company, Ltd.: *See—*
  Ito, Yoshinori, 4,619,117, Cl. 62-233.000.
Hoskin, Dennis H.: *See—*
  Heilweil, Israel J.; and Hoskin, Dennis H., 4,619,773, Cl. 252-8.514.
Hosono, Akira: *See—*
  Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, 4,619,689, Cl. 71-119.000.
Hotta, Keiji, to Amikan Fishing Net Mfg. Co., Ltd. Multiple strand twines comprising monofilaments and multiple filaments, and fishnets formed thereof. 4,619,108, Cl. 57-236.000.
Hotta, Tadahiko; and Sakakibara, Shingo, to Nippon Gakki Seizo Kabushiki Kaisha. Method of manufacturing a semiconductor device including Schottky barrier diodes. 4,619,035, Cl. 29-576.00C.
Hougaard, Finn, to Eskofot A/S. Suction film holder. 4,619,526, Cl. 355-73.000.
Hougen, Everett Douglas: *See—*
  Schmidt, John W., III, 4,619,532, Cl. 366-110.000.
Houlbrook, Kenneth; and Thornton, Paul A., to Clantex Limited. Dispensers for flowable compositions. 4,619,382, Cl. 222-327.000.
Houminer, Yoram: *See—*
  Sanders, Edward B.; and Houminer, Yoram, 4,620,004, Cl. 544-357.000.
Houston, Theodore W., to Texas Instruments Incorporated. Schmitt trigger based memory cell with assisted turn on. 4,620,297, Cl. 365-174.000.
Howell, Edward K., to General Electric Company. Piezoelectric contact driver for circuit interrupters. 4,620,122, Cl. 310-328.000.
Hozelock-ASL Limited: *See—*
  Goldney, Dennis G.; and Evans, Bryn, 4,619,403, Cl. 239-456.000.
Hrus, Miroslav; Svaty, Vladimir; Sidlof, Pavel; and Fisar, Oldrich, to Elitex, textilniho strojirenstvi. Weft inserting nozzle for jet looms. 4,619,296, Cl. 139-435.000.
Hsu, Chao-Yang, to Sun Refining and Marketing Company. Catalyst and process for production of cinnamates. 4,620,027, Cl. 560-104.000.
Huber, Ernst; Rieger, Wolfhart; and Bolliger, Martin, to Swiss Aluminium Ltd. Nozzle for strip casting. 4,619,309, Cl. 164-430.000.
Hubschwerlen, Christian: *See—*
  Gotschi, Erwin; and Hubschwerlen, Christian, 4,619,787, Cl. 540-200.000.
Hudgens, Stephen J.: *See—*
  Johncock, Annette G.; and Hudgens, Stephen J., 4,619,729, Cl. 156-606.000.
Huebner, John F.: *See—*
  Schultz, Stephen J.; Huebner, John F.; Wiedor, Duane E.; and Pribish, Dennis S., 4,620,309, Cl. 373-128.000.
Huemer, Franz X. Circular loom. 4,619,293, Cl. 139-13.00R.
Hughes Aircraft Company: *See—*
  Bagby, John P., 4,619,502, Cl. 350-505.000.
Hughes, Richard H.: *See—*
  Morrell, Albert M.; Hughes, Richard H.; and Barkow, William H., 4,620,133, Cl. 315-15.000.
Hughes Tool Company: *See—*
  Couch, Donald G., 4,619,324, Cl. 166-344.000.
Huizinga, Jan: *See—*
  Dijkstra, Kees; and Huizinga, Jan, 4,619,119, Cl. 62-324.200.
Hundley, Lloyd: *See—*
  Squires, David G.; Hundley, Lloyd; and Barry, Raymond A., 4,619,706, Cl. 134-2.000.
Hung, Yau Y.: *See—*
  Haskell, Richard E.; and Hung, Yau Y., 4,620,223, Cl. 358-107.000.
Hunt, V. Bruce: *See—*
  Lvovsky, Lazar; and Hunt, V. Bruce, 4,620,310, Cl. 375-17.000.
Hunziker, Christian: *See—*
  Leuenberger, Rolf; and Hunziker, Christian, 4,619,527, Cl. 356-238.000.
Huss, Clifford A. Bingo chip dispenser. 4,619,376, Cl. 221-243.000.
Hussain, Saadat: *See—*
  Sutker, Burton J.; Hussain, Saadat; and Mossaad, Amgad S., 4,619,961, Cl. 524-393.000.
Hussey, Richard P., to Aid-Pack, Inc. Disposable enema unit. 4,619,645, Cl. 604-111.000.

Hwang, Jennie S., to SCM Corporation. Fusible powdered metal paste. 4,619,715, Cl. 148-23.000.
Hwang, Philip. Portable type of foldable luggage cart. 4,619,464, Cl. 280-655.000.
Hydril Company: *See—*
  Whiteman, Jack, 4,619,111, Cl. 60-632.000.
Hydro-Quebec: *See—*
  Bolduc, Leonard, 4,620,144, Cl. 323-331.000.
I.P.E. Nuova Bialetti S.p.A. Industria Prodotti Elettrodomestici: *See—*
  Cristante, Guido, 4,619,116, Cl. 62-233.000.
Iacobucci, Paul A.: *See—*
  Cheng, Chung-Ping; Iacobucci, Paul A.; and Walsh, Edward N., 4,619,908, Cl. 502-214.000.
Ibaraki, Yoshiro: *See—*
  Araya, Takeshi; Matsunawa, Akira; Katayama, Seiji; Hioki, Susumu; Ibaraki, Yoshiro; and Endo, Yoshishige, 4,619,691, Cl. 75-0.50B.
Ibbott, Jack K. Therapeutic method and therapeutic means using a sheetlike battery. 4,619,252, Cl. 128-82.100.
IC Gas International Limited: *See—*
  Chalk, Christine D.; and Hayman, Cecil, 4,619,778, Cl. 252-70.000.
Ichida, Akito: *See—*
  Yuki, Yoichi; and Ichida, Akito, 4,619,984, Cl. 528-38.000.
Ichihara, Shoichi: *See—*
  Ono, Tetsuji; Ichihara, Shoichi; Ohta, Tomohisa; and Terui, Sadao, 4,619,909, Cl. 502-303.000.
Ichihashi, Tetsuo: *See—*
  Kiriyama, Tsutomu; Horie, Shigeru; Ichihashi, Tetsuo; and Oshida, Masahiro, 4,619,869, Cl. 428-480.000.
Ichikawa, Kouzo: *See—*
  Matsubara, Tetsuyuki; Ito, Norifumi; Sugazaki, Kazuo; Ichikawa, Kouzo; Iwamoto, Mune; and Ando, Toshihiko, 4,619,959, Cl. 524-228.000.
Ichikawa, Osamu: *See—*
  Tani, Zempei; Ebina, Kiyoshi; Ichikawa, Osamu; and Imaizumi, Mamoru, 4,620,094, Cl. 250-231.0SE.
Ichimura, Hiroshi: *See—*
  Takanashi, Itsuo; Nakagaki, Shintaro; Ichimura, Hiroshi; Kuriyama, Takashi; and Negishi, Ichiro, 4,620,221, Cl. 358-47.000.
Idaho Research Foundation, Inc.: *See—*
  Taylor, Patrick R.; and Omofoma, Matthew A., 4,619,690, Cl. 75-1.00R.
Ide, Fumito, to Kabushiki Kaisha Toshiba. Monochromatic photocopying apparatus and method including color selection. 4,619,514, Cl. 355-3.00R.
Iimura, Ikurou; Sakuma, Kuniharu; and Iwabuchi, Haruo, to Tokyo Juki Industrial Co., Ltd. Drive control mechanism of sewing machine. 4,619,213, Cl. 112-273.000.
Iiyama, Kiyotaka; and Inaba, Nirohiko, to Ricoh Company, Ltd. Two-color thermosensitive recording material. 4,620,205, Cl. 346-204.000.
Iiyama, Kiyotaka: *See—*
  Inaba, Norihiko; and Iiyama, Kiyotaka, 4,620,204, Cl. 346-204.000.
Ijiri, Yasuo: *See—*
  Mio, Kotaro; and Ijiri, Yasuo, 4,619,852, Cl. 428-68.000.
Ikeda, Nobumasa: *See—*
  Tokunaga, Seiichiro; and Ikeda, Nobumasa, 4,619,300, Cl. 152-209.00R.
Ikekawa, Nobuo: *See—*
  DeLuca, Hector F.; Ikekawa, Nobuo; Kobayashi, Yoshiro; and Tanaka, Yoko, 4,619,920, Cl. 514-167.000.
Illinois Tool Works Inc.: *See—*
  Ruehl, William E., 4,620,070, Cl. 179-175.30R.
Imagawa, Toshiyuki, to Clarion Co., Ltd. Automatic frequency control circuit in a stereo FM radio receiver. 4,620,315, Cl. 381-10.000.
Imai, Chikara, to Ricoh Company, Ltd. Dual mode image density controlling method. 4,619,522, Cl. 355-14.00D.
Imaizumi, Mamoru: *See—*
  Tani, Zempei; Ebina, Kiyoshi; Ichikawa, Osamu; and Imaizumi, Mamoru, 4,620,094, Cl. 250-231.0SE.
IMEC Corporation: *See—*
  Fulton, Donald E.; and Sassower, Stanley P., 4,620,272, Cl. 363-53.000.
Imoto, Koji; Tateishi, Mataji; Inenaga, Noriyasu; Omura, Tadao; Ishikawa, Hideyuki; Harada, Sumio; Kiyota, Yuhiko; Kobayashi, Hiroyuki; Nakanishi, Koichi; and Kume, Satoru, to Mitsubishi Jukogyo Kabushiki Kaisha; and Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Structure for combustion chamber of auxiliary chamber type internal combustion engine. 4,619,229, Cl. 123-286.000.
Imperial Chemical Industries PLC: *See—*
  Coffee, Ronald A., 4,619,438, Cl. 251-129.010.
  Jackson, Samuel D., 4,619,947, Cl. 518-716.000.
  Worthington, Paul A.; and Shephard, Margaret C., 4,620,011, Cl. 548-262.000.
Inaba, Nirohiko: *See—*
  Iiyama, Kiyotaka; and Inaba, Nirohiko, 4,620,205, Cl. 346-204.000.
Inaba, Norihiko; and Iiyama, Kiyotaka, to Ricoh Company, Ltd. Two-color thermosensitive recording material. 4,620,204, Cl. 346-204.000.
Incorvia, Samuel A.: *See—*
  Cullen, John S.; Incorvia, Samuel A.; and Vogt, James A., 4,619,673, Cl. 55-387.000.
Industrial Holographics, Inc.: *See—*
  Haskell, Richard E.; and Hung, Yau Y., 4,620,223, Cl. 358-107.000.
Industrial Innovations, Inc.: *See—*
  Urbani, William G., 4,619,015, Cl. 15-302.000.
Inenaga, Noriyasu: *See—*
  Imoto, Koji; Tateishi, Mataji; Inenaga, Noriyasu; Omura, Tadao; Ishikawa, Hideyuki; Harada, Sumio; Kiyota, Yuhiko; Kobayashi, Hiroyuki; Nakanishi, Koichi; and Kume, Satoru, 4,619,229, Cl. 123-286.000.
Ingenieursbureau Het Noorden B.V.: *See—*
  Brink, Fredericus J., 4,619,728, Cl. 156-555.000.
Inoguchi, Hiroo: *See—*
  Niki, Katsumi; Kobayashi, Katsuyoshi; Inoguchi, Hiroo; and Yagi, Tatsuhiko, 4,619,754, Cl. 204-290.00R.
Inoue, Hiroshi; Miyazaki, Makoto; Isoi, Masaaki; and Yoda, Makoto, to Toa Nenryo Kogyo Kabushiki Kaisha. Modified elastomer and laminate thereof. 4,619,972, Cl. 525-193.000.
Inoue, Kiyoshi; Kuwaki, Keiichi; and Tsuno, Koichi, to Sumitomo Electric Industries, Ltd. Catheter. 4,619,247, Cl. 128-6.000.
Inouye, Tamon, to Kabushiki Kaisha Toshiba. Imaging method and apparatus for obtaining spin-lattice relaxation time image utilizing nuclear magnetic resonance. 4,620,154, Cl. 324-309.000.
Institut Biokhimii I Fiziologii Mikroorganizmov Akademii Nauk SSR: *See—*
  Nikitin, Vladimir A.; Khokhlov, Anatoly M.; Larin, Vyacheslav T.; and Fikhte, Boris A., 4,619,899, Cl. 435-287.000.
Institut Francais du Petrole: *See—*
  Delacour, Jacques; Levallois, Emile; Antier, Patrick; and Saint Martin, Francois-Xavier, 4,619,762, Cl. 210-170.000.
Institute of Paper Chemistry, The: *See—*
  Clay, David T.; and Cartwright, Timothy B., 4,619,732, Cl. 162-29.000.
International Business Machines Corporation: *See—*
  Aiken, John A., Jr., 4,620,295, Cl. 364-900.000.
  Bakken, Kirby L.; Judson, Robert G.; Miller, William E.; and Peterson, Ronald A., 4,620,243, Cl. 360-77.000.
  Buttry, Daniel A.; Krounbi, Mohamad T.; and Melroy, Owen R., 4,619,731, Cl. 156-644.000.
  Conner, David E., 4,620,187, Cl. 340-825.050.
  Daniell, Thomas P.; Harding, Robert C., Jr.; Harvey, Roger W. R.; and Nauckhoff, Sven H. H., 4,620,276, Cl. 364-200.000.
  Do, Phuc K.; Wyke, Carol E.; Kendrick, Barnes R., Jr.; Hedrick, Dennis R.; and Troupes, Demetrios, 4,619,537, Cl. 400-225.000.
  Garwin, Richard L.; and Thompson, David A., 4,620,253, Cl. 360-107.000.
  Horvath, Joseph L., 4,620,216, Cl. 357-81.000.
International Computers Limited: *See—*
  Martin, Sidney H., 4,619,488, Cl. 339-14.00R.
International Flavors & Fragrances Inc.: *See—*
  Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,619,780, Cl. 252-522.00R.
  Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,620,041, Cl. 568-665.000.
  Wiegers, Wilhelmus J.; Sprecker, Mark A.; and Schreiber, William L., 4,619,781, Cl. 252-522.00R.
  Wiegers, Wilhelmus J., 4,620,039, Cl. 568-445.000.
International Paper Company: *See—*
  Crowe, Stephen O.; and Harper, Jeffrey D., 4,619,362, Cl. 206-326.000.
International Standard Electric Corporation: *See—*
  Heeks, John S., 4,620,193, Cl. 342-200.000.
  Zebisch, Manfred W., 4,620,091, Cl. 250-231.0SE.
Internationella Siporex AB: *See—*
  Goransson, Rolf E.; and Kalvenes, Oystein, 4,619,173, Cl. 8.3-870.000.
Iomega Corporation: *See—*
  Bauck, Randall C.; and Kleczkowski, Peter S., 4,620,252, Cl. 360-106.000.
Iosif, Baumberg. Device for diagnosing and monitoring urological diseases. 4,619,273, Cl. 128-771.000.
Isawa, Nobuyuki: *See—*
  Suzuki, Toshihiko; Isawa, Nobuyuki; Ohkubo, Yasunori; and Hoshi, Kinji, 4,619,730, Cl. 156-617.0SP.
ISCA Management Limited: *See—*
  McIntyre, Brian W.; and Biggar, John W., 4,619,608, Cl. 423-220.000.
Ishida, Takashi: *See—*
  Auslander, David M.; Tomizuka, Masayoshi; Sagues, Paul; Ishida, Takashi; and Kamiyama, Shuichi, 4,619,237, Cl. 123-491.000.
Ishigo, Hideyasu: *See—*
  Hattori, Motoichi; and Ishigo, Hideyasu, 4,620,065, Cl. 179-6.070.
Ishihama, Hiroshi: *See—*
  Fujii, Setsuro; Hattori, Eizou; Hirata, Mitsuteru; Kunieda, Hisashi; Watanabe, Koichiro; and Ishihama, Hiroshi, 4,620,005, Cl. 544-391.000.
Ishihara, Yasuoki: *See—*
  Suenaga, Makoto; Yano, Mitsuru; Ishihara, Yasuoki; and Ohtsuka, Kohki, 4,619,713, Cl. 148-3.000.
Ishii, Hiroshi: *See—*
  Koto, Haruhiko; Okada, Junichi; Ishii, Hiroshi; and Sawada, Kenji, 4,620,202, Cl. 346-140.00R.
Ishii, Keizou; Kurauchi, Takeo; Nozue, Jun; and Ishikura, Shinichi, to Nippon Paint Co., Ltd. Dispersion stabilizer and its use. 4,619,965, Cl. 524-547.000.
Ishikawa, Hideyuki: *See—*
  Imoto, Koji; Tateishi, Mataji; Inenaga, Noriyasu; Omura, Tadao; Ishikawa, Hideyuki; Harada, Sumio; Kiyota, Yuhiko; Kobayashi, Hiroyuki; Nakanishi, Koichi; and Kume, Satoru, 4,619,229, Cl. 123-286.000.

Ishikawa, Hirotoshi; and Kiyobe, Seiichiro, to Kogawa Hokushin Electric Corporation. Microwave moisture sensor. 4,620,146, Cl. 324-58.50A.
Ishikawa, Keiichi: *See—*
  Maezono, Masakazu; and Ishikawa, Keiichi, 4,619,350, Cl. 192-3.310.
Ishikawa, Masanobu: *See—*
  Kazaoka, Kenichi; Ishikawa, Masanobu; and Nishikawa, Masumi, 4,619,548, Cl. 403-290.000.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
  Shimoda, Hiromi, 4,619,314, Cl. 165-104.160.
Ishikura, Shinichi: *See—*
  Ishii, Keizou; Kurauchi, Takeo; Nozue, Jun; and Ishikura, Shinichi, 4,619,965, Cl. 524-547.000.
Ishikura, Tsukasa, to Nippon Kayaku Kabushiki Kaisha. Process for producing 2-quinoxalinols. 4,620,003, Cl. 544-354.000.
Ishikura, Yoshikazu; Watanabe, Akira; and Matsumoto, Takanao, to Sanyo Electric Co., Ltd. Preservation device for lead storage battery. 4,619,873, Cl. 429-48.000.
Ishimatsu, Toshiki: *See—*
  Ueda, Fumihiro; Kawada, Kaoru; Yamamoto, Kazuo; Miwa, Noriaki; and Ishimatsu, Toshiki, 4,619,698, Cl. 75-238.000.
Ishiyama, Gen: *See—*
  Akabane, Hitoshi; and Ishiyama, Gen, 4,619,083, Cl. 51-289.00R.
Isii, Sigeki, to Nippon Gakki Seizo Kabushiki Kaisha. Automatic accompaniment apparatus for electronic musical instrument. 4,619,176, Cl. 84-1.030.
Isobe, Minoru, to Oki Electric Industry Co., Ltd. Paper tractor. 4,619,389, Cl. 226-79.000.
Isoi, Masaaki: *See—*
  Inoue, Hiroshi; Miyazaki, Makoto; Isoi, Masaaki; and Yoda, Makoto, 4,619,972, Cl. 525-193.000.
Isshiki, Tomiya; Kijima, Yasuhiko; Miyauchi, Yuh; and Kondo, Takao, to Mitsubishi Gas Chemical Company, Inc. Process for producing carboxylic acids. 4,620,033, Cl. 562-519.000.
Itek Corporation: *See—*
  Dodge, Dennis W., 4,619,451, Cl. 271-274.000.
  McCarthy, Clifton J., 4,620,240, Cl. 360-48.000.
Ito, Eizi, to Mitsubishi Denki Kabushiki Kaisha. Container for accommodating a control device. 4,620,263, Cl. 361-383.000.
Ito, Norifumi: *See—*
  Matsubara, Tetsuyuki; Ito, Norifumi; Sugazaki, Kazuo; Ichikawa, Kouzo; Iwamoto, Mune; and Ando, Toshihiko, 4,619,959, Cl. 524-228.000.
Ito, Yoshinori, to Hoshizaki Electric Company, Ltd. Automatic ice making machine. 4,619,117, Cl. 62-233.000.
Itsuki, Noriyasu. Reclining device for a vehicle seat. 4,619,482, Cl. 297-355.000.
ITT Corporation: *See—*
  Godwin, William R.; and Quattrocchi, Salvatore, 4,620,069, Cl. 179-175.30R.
  Smith, Allen R.; Tan, Chuan-Chieh; Slack, Thomas B.; and Denenberg, Jeffrey N., 4,620,286, Cl. 364-513.000.
Iuchi, Tohru; and Tanaka, Fumio, to Nippon Steel Corporation. Interferometric contact-free measuring method for sensing motional surface deformation of workpiece subjected to ultrasonic wave vibration. 4,619,529, Cl. 356-358.000.
Ives, Jeffrey L., to Pfizer Inc. Peptide-substituted heterocyclic immunostimulants. 4,619,915, Cl. 514-17.000.
Iwabuchi, Haruo: *See—*
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Iwai, Shingo; Suzuki, Ryozo; Shiraga, Jun; and Okashiro, Tetsuo, to Mitsubishi Denki Kabushiki Kaisha. In-tank type fuel pump. 4,619,591, Cl. 417-422.000.
Iwai, Yasuyuki, to Konishiroku Photo Industry Co., Ltd. Reproducing apparatus. 4,619,516, Cl. 355-3.0DD.
Iwaki, Osamu: *See—*
  Awata, Yasuhira; and Iwaki, Osamu, 4,619,796, Cl. 264-29.400.
Iwamoto, Mune: *See—*
  Matsubara, Tetsuyuki; Ito, Norifumi; Sugazaki, Kazuo; Ichikawa, Kouzo; Iwamoto, Mune; and Ando, Toshihiko, 4,619,959, Cl. 524-228.000.
Iwasaki, Kiyoshi: *See—*
  Takai, Kiyoshi; and Iwasaki, Kiyoshi, 4,619,693, Cl. 266-88.000.
Iwasaki, Yoshiharu: *See—*
  Tajima, Yoshio; Iwasaki, Yoshiharu; Kawabe, Kiyoshi; Uchida, Wataru; Sugita, Shoji; Matsuura, Kazuo; and Miyoshi, Mituji, 4,619,981, Cl. 526-125.000.
Iwata, Toshio: *See—*
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Iwatani, Fumio: *See—*
  Sano, Yoshihiro; Iwatani, Fumio; Kubo, Takao; and Miki, Yoshiteru, 4,620,257, Cl. 361-68.000.
Izzard, Derek S. Recovery apparatus. 4,619,411, Cl. 241-101.400.
Jachowski, Johannes; and Pant, Paul, to Fried Krupp GmbH. Process for the production of metallic semi-finished products. 4,619,692, Cl. 75-10.250.
Jackson, Bobby D.: *See—*
  Hendrix, James E.; Daniels, John Y.; and Jackson, Bobby D., 4,619,864, Cl. 428-240.000.
Jackson, Norman C., to Standard Products Company, The. Trim strip having injection molded finishing portion and method of making. 4,619,847, Cl. 428-31.000.
Jackson, Samuel D., to Imperial Chemical Industries PLC. Chemical process. 4,619,947, Cl. 518-716.000.
Jackson, Winston J., Jr.: *See—*
  Morris, John C.; and Jackson, Winston J., Jr., 4,619,976, Cl. 525-439.000.
Jacobson, Mark E., to MLS, Inc. Boring bar. 4,619,564, Cl. 408-146.000.
Jaeggi, Christian: *See—*
  Lee, Mark L.; and Jaeggi, Christian, 4,619,917, Cl. 514-77.000.
Jakusch, Helmut: *See—*
  Melzer, Milena; Jakusch, Helmut; Grau, Werner; Koster, Eberhard; Loser, Werner; Polke, Reinhard; Schadel, Gunter; Ohlinger, Manfred; and Vath, Gunter, 4,619,777, Cl. 252-62.540.
Jalbing, John I.; and Carriere, Richard T., to General Motors Corporation. Catalytic converter substrate. 4,619,912, Cl. 502-439.000.
James C. Barber and Associates, Inc.: *See—*
  Barber, James C., 4,619,819, Cl. 423-317.000.
Jamison Door Company: *See—*
  Wiles, Vernon L., 4,619,075, Cl. 49-235.000.
Janning, John L., to NCR Corporation. Method of making laser recrystallized silicon-on-insulator nonvolatile memory device. 4,619,034, Cl. 29-571.000.
Jansen, Winfried; and Nolde, Wolfgang, to U.S. Philips Corporation. Method of generating an approximately sinusoidal signal and circuit arrangement for implementing this method, particularly in a stereo demodulator. 4,620,314, Cl. 381-4.000.
Janssen Pharmaceutica, N.V.: *See—*
  Heeres, Jan; Stokbroekx, Raymond A.; and Backx, Leo J. J., 4,619,931, Cl. 514-252.000.
Janthur, Ingo W.; Roth, Alfred; and Odry, Stefan, to General Motors Corporation. Adjustable shutter assembly and method of making the same. 4,619,073, Cl. 49-74.000.
Japan Tobacco & Salt Public Corporation, The: *See—*
  Okumoto, Yutaka; Ozaki, Toshiyuki; and Komori, Mikio, 4,619,277, Cl. 131-94.000.
Jastrzebski, Lubomir L., to RCA Corporation. Fabricating of a CMOS FET with reduced latchup susceptibility. 4,619,033, Cl. 29-571.000.
Jautelat, Manfred: *See—*
  Elbe, Hans-Ludwig; Jautelat, Manfred; Buchel, Karl H.; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,619,940, Cl. 514-383.000.
Jean Walterscheid GmbH: *See—*
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  Prasad, Arun, 4,619,810, Cl. 420-463.000.
Jeney, Tibor: *See—*
  Oborzil, Edit; and Jeney, Tibor, 4,619,846, Cl. 428-11.000.
Jenkins, Derek K., to Enoxy Chemical Limited. Polymerization of conjugated dienes. 4,619,982, Cl. 526-164.000.
Jennings, Thomas J.: *See—*
  Repperger, Daniel W.; Jennings, Thomas J.; and Ratino, David A., 4,619,506, Cl. 351-243.000.
Jenoptik Jena G.m.b.H.: *See—*
  Schlichting, Johannes; and Halwass, Kerstin, 4,620,089, Cl. 250-201.000.
Jensen Corporation: *See—*
  May, Wayne A.; and Peters, Donald J., 4,619,358, Cl. 198-457.000.
Jensen, Dale H.: *See—*
  Wood, Forrest L.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., 4,619,215, Cl. 114-56.000.
Jeppson, Morris R., to CD High Technology, Inc. Microwave method and apparatus for heating loose paving materials. 4,619,550, Cl. 404-80.000.
Jidosha Kiki Co., Ltd.: *See—*
  Higashi, Katsumi; and Takeshima, Sadao, 4,619,338, Cl. 180-142.000.
  Mori, Kohei; and Suzuki, Haruo, 4,619,185, Cl. 91-369.00R.
Jimenez, Antonio: *See—*
  Baruffa, Olindo; and Jimenez, Antonio, 4,619,214, Cl. 112-459.000.
John Morrell & Company: *See—*
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Johncock, Annette G.; and Hudgens, Stephen J., to Energy Conversion Devices, Inc. Microwave method of making semiconductor members. 4,619,729, Cl. 156-606.000.
Johns Hopkins University, The: *See—*
  Fischell, Robert E., 4,619,653, Cl. 604-891.000.
Johnson, David A. Safety device for firearms using removable magazines. 4,619,062, Cl. 42-70.110.
Johnson, Gerald T., Sr. Protective surround for packer wheels. 4,619,331, Cl. 172-518.000.
Johnson, James R. Closure strip to be applied to bags. 4,619,021, Cl. 24-30.50P.
Johnson, Kenneth A. Air diverter for supercharger. 4,619,590, Cl. 417-407.000.
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  Heimnick, Paul; and Johnson, LeRoy B., 4,619,478, Cl. 296-153.000.
Johnson, Marvin M.; and Nowack, Gerhard P., to Phillips Petroleum Company. Chromium phosphate catalyst. 4,619,907, Cl. 502-210.000.
Johnson, Marvin M.: *See—*
  Drake, Charles A.; and Johnson, Marvin M., 4,620,016, Cl. 549-325.000.
Johnson, Robert D. Shim for adjusting camber. 4,619,465, Cl. 280-661.000.

- Johnson, Robert R.: *See—*
  - Fritzsche, Hellmut; and Johnson, Robert R., 4,620,208, Cl. 357-23.100.
- Johnson, Russell L.: *See—*
  - Sokolowski, Robert C.; and Johnson, Russell L., 4,619,862, Cl. 428-221.000.
- Johnson, Russell W.: *See—*
  - Lambert, Susan L.; Lawson, Randy J.; Johnson, Russell W.; and Barr, Tery L., 4,619,906, Cl. 502-66.000.
- Johnston, Kenneth A., to Kenross Nominees Proprietary Limited. Reversible panel arrangement. 4,619,095, Cl. 52-595.000.
- Jonason, Hans: *See—*
  - Sundberg, Bo; and Jonason, Hans, 4,619,222, Cl. 119-15.50R.
- Jones, Brian W.: *See—*
  - Frick, John G., Jr.; Jones, Brian W.; Stone, Robbie L.; and Watson, Michael D., 4,619,668, Cl. 8-496.000.
- Jones, Elvis E.; Pearce, Terry A.; Laird, Dacon C., III; and Everitt, James H., to Dow Chemical Company, The. Method for increased mine recovery and upgrading of lignite. 4,619,669, Cl. 44-1.00G.
- Jones, Giffin D.; and Doorenbos, Harold E., to Dow Chemical Company, The. Eneynols from acetylenes and propargylic alcohols. 4,620,045, Cl. 568-873.000.
- Jones, Howard: *See—*
  - Youssefyeh, Raymond D.; and Jones, Howard, 4,619,944, Cl. 514-513.000.
- Jones, Kenneth W. Carton forming apparatus. 4,619,637, Cl. 493-175.000.
- Jones, Robert S.: *See—*
  - Cook, Randall W.; Rozporka, Richard E.; and Jones, Robert S., 4,620,255, Cl. 360-132.000.
- Jones, Stephen S. Combination fishnet and fishhook retriever. 4,619,065, Cl. 43-11.000.
- Jones, Thomas M.: *See—*
  - Wallach, Steven J.; Jones, Thomas M.; Marshall, Frank J.; Nobles, David A.; Fuka, Kent A.; Rowan, Steven M.; Wallace, William H.; Dozier, Harold W.; Chastain, David M.; Clark, John W.; Kolstad, Robert B.; Mankovich, James E.; Harris, Michael C.; Gruger, Jeffrey H.; Gant, Alan D.; Shelton, Harold D.; Weatherford, James R.; Kimmel, Arthur T.; Gostin, Gary B.; Hansen, Gilbert J.; Golenbieski, John M.; Spry, Larry W.; Matulka, Gerald; Lockhart, Gaynel J.; and Sydow, Michael E., 4,620,275, Cl. 364-200.000.
- Joosten, Michael H.: *See—*
  - Salama, Mamdouh M.; Myers, Roderick J.; Thomason, William H.; and Joosten, Michael H., 4,619,557, Cl. 405-211.000.
- Jozwiak, Edward L.: *See—*
  - Delaney, James M.; and Jozwiak, Edward L., 4,619,746, Cl. 204-181.100.
- Juan, Hans; Bjerngren, Jan Å.; and Stromdahl, Carl Å., to Atlas Copco Aktiebolag. Device for removing degraded concrete. 4,619,551, Cl. 404-90.000.
- Judson, Robert G.: *See—*
  - Bakken, Kirby L.; Judson, Robert G.; Miller, William E.; and Peterson, Ronald A., 4,620,243, Cl. 360-77.000.
- Juergens, Albert M., Jr. Intraocular lens. 4,619,662, Cl. 623-6.000.
- Jung, Fred C. Fishing planer line protector. 4,619,070, Cl. 43-43.130.
- Justrite Manufacturing Company: *See—*
  - Livingston, Jerry L., 4,619,076, Cl. 49-367.000.
- Kabele, William C.: *See—*
  - Faran, James J., Jr.; Fichtenbaum, Matthew L.; and Kabele, William C., 4,620,304, Cl. 371-20.000.
- Kabushiki Kaisha Daikin Seisakusho: *See—*
  - Maeda, Shigeho, 4,619,353, Cl. 192-70.180.
- Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
  - Naito, Kazufumi, 4,620,178, Cl. 340-347.0NT.
- Kabushiki Kaisha Johnan Seisakusho: *See—*
  - Motoyama, Kichizo; and Araki, Yoshiharu, 4,619,480, Cl. 296-217.000.
- Kabushiki Kaisha Naka Gijutsu Kenkyusho: *See—*
  - Naka, Hiromitsu, 4,619,086, Cl. 52-205.000.
- Kabushiki Kaisha Shicoh Giken: *See—*
  - Egami, Kazuhito; and Hirano, Norimitsu, 4,620,139, Cl. 318-254.000.
- Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See—*
  - Teraoka, Fuminori; Matsui, Takeo; and Mori, Shinji, 4,619,417, Cl. 242-107.40A.
- Kabushiki Kaisha Toshiba: *See—*
  - Fujiwara, Shigemi, 4,620,098, Cl. 250-327.200.
  - Hino, Masaaki, 4,620,153, Cl. 324-309.000.
  - Ide, Fumito, 4,619,514, Cl. 355-3.00R.
  - Inouye, Tamon, 4,620,154, Cl. 324-309.000.
  - Kanno, Ken-ichi; Gatayama, Tetsuya; Koyama, Masao; and Koezuka, Junji, 4,619,739, Cl. 204-1.00T.
  - Sumitani, Shigeto, 4,619,601, Cl. 431-1.000.
  - Taguchi, Shinji; Matsumura, Homare; and Maeguchi, Kenji, 4,619,037, Cl. 29-578.000.
  - Tanaka, Tatsuo; and Shigematsu, Nana, 4,620,161, Cl. 330-257.000.
  - Watanabe, Junji, 4,620,234, Cl. 358-285.000.
  - Yamamoto, Toshio, 4,619,396, Cl. 228-102.000.
- Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
  - Suzuki, Yoshihisa; Yasui, Yoshiharu; and Seiki, Kazuo, 4,619,109, Cl. 57-261.000.
- Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
  - Suzuki, Kenichi; and Miura, Fusayoshi, 4,619,716, Cl. 148-26.000.
- Kabuskiki Kaisha Toshiba: *See—*
  - Tatsumi, Hisao; Kayata, Haruhiko; and Watanabe, Fumio, 4,620,199, Cl. 346-76.0PH.
- Kageyama, Hidehei, to Kotobuki & Co, Ltd. Mechanical pencil equipped with lead-storing cartridge. 4,619,539, Cl. 401-85.000.
- Kaku, Hiroyuki: *See—*
  - Tanimoto, Hirotoshi; Yamada, Mutsuo; Arikawa, Yoshijiro; Kamiguchi, Taiji; Nishimura, Yasuyuki; and Kaku, Hiroyuki, 4,620,038, Cl. 568-401.000.
- Kakuta, Atsushi; Oka, Hiroyuki; Suzuki, Shigeo; Araya, Kotaro; Mori, Yasuki; and Morishita, Hirosada, to Hitachi, Ltd. Composite type photosensitive member having metal-free phthalocyanine in the charge generating layer and nonionic dye base in the charge transport layer. 4,619,879, Cl. 430-58.000.
- Kalvenes, Oystein: *See—*
  - Goransson, Rolf E.; and Kalvenes, Oystein, 4,619,173, Cl. 8.3-870.000.
- Kalvoda, Jaroslav; and Anner, Georg, to Ciba-Geigy Corporation. Polyhalogeno-steroids. 4,619,921, Cl. 514-180.000.
- Kamada, Koh; Hashimoto, Hiroshi; Okita, Tsutomu; and Hibino, Noburo, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,619,856, Cl. 428-143.000.
- Kambara, Hideki; and Seki, Setsuko, to Hitachi, Ltd. Sample holder for mass analysis. 4,620,103, Cl. 250-440.100.
- Kameya, Kazuo, to Elmec Corporation. Variable delay line having linking electrode with depressions therein for snug engagement of moveable contact. 4,620,164, Cl. 333-139.000.
- Kameyama, Kazuhiro; and Akiba, Nobuo, to Casio Electronics Mfg. Co., Ltd.; and Casio Computer Co., Ltd. Two-color image forming apparatus. 4,619,518, Cl. 355-4.000.
- Kamiguchi, Taiji: *See—*
  - Tanimoto, Hirotoshi; Yamada, Mutsuo; Arikawa, Yoshijiro; Kamiguchi, Taiji; Nishimura, Yasuyuki; and Kaku, Hiroyuki, 4,620,038, Cl. 568-401.000.
- Kaminaga, Hiromitsu, to Yoshida Kogyo K. K. Curtain wall panel supporting device. 4,619,092, Cl. 52-235.000.
- Kamiyama, Shuichi: *See—*
  - Auslander, David M.; Tomizuka, Masayoshi; Sagues, Paul; Ishida, Takashi; and Kamiyama, Shuichi, 4,619,237, Cl. 123-491.000.
- Kamiyama, Yoshiyasu; Yoshioka, Noriaki; and Nakagome, Keisuke, to Nitto Electric Industrial Co., Ltd. Composite semipermeable membrane. 4,619,767, Cl. 210-490.000.
- Kamochi, Atsumi: *See—*
  - Shiokawa, Kozo; Moriya, Koichi; Goto, Toshio; Kamochi, Atsumi; and Kohama, Shigeo, 4,619,688, Cl. 71-92.000.
- Kampel, Marian: *See—*
  - Dias, Francisco J.; Kampel, Marian; and Luhleich, Hartmut, 4,619,805, Cl. 264-29.500.
- Kamuro, Yasuo; Hirai, Koichi; Suzuki, Fumio; Yamamoto, Susumu; and Shindo, Noboru, to Nissan Chemical Industries, Ltd. Process for controlling the growth of suckers on a tobacco plant. 4,619,685, Cl. 71-78.000.
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  - Andoh, Tsuyoshi; Kanamori, Toshio; Yamaguchi, Takashi; Tomono, Hiroshi; and Satake, Satoshi, 4,619,310, Cl. 164-448.000.
- Kaneko, Norimasa: *See—*
  - Baba, Tadashi; and Kaneko, Norimasa, 4,619,614, Cl. 433-99.000.
- Kanesaki, Katumi: *See—*
  - Kawai, Toshikazu; Nishimura, Ysunobu; and Kanesaki, Katumi, 4,620,042, Cl. 568-775.000.
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- Kanno, Tetsuo: *See—*
  - Suzaki, Masayuki; Hirota, Tetsuro; Kanno, Tetsuo; and Koguchi, Takeziro, 4,620,249, Cl. 360-99.000.
- Kanou, Singi: *See—*
  - Kawanobe, Yasutaka; Noguti, Hisao; Kanou, Singi; and Yamazaki, Katsuya, 4,619,694, Cl. 75-59.140.
- Kansas State University Research Foundation: *See—*
  - Bresee, Randall R.; and Reagan, Barbara M., 4,619,664, Cl. 8-128.00A.
- Kanstad, Svein O.: *See—*
  - Nordal, Per-Erik; and Kanstad, Svein O., 4,620,104, Cl. 250-493.100.
- Kapfer, Jurgen; and Kirchdorffer, Gerhard, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Ignition distributor arrangement for integral-combustion engines. 4,619,227, Cl. 123-146.50A.
- Kaplan, Mark S.: *See—*
  - Molaire, Michel F.; and Kaplan, Mark S., 4,619,890, Cl. 430-495.000.
- Kappas, Attallah; and Drummond, George S.; to Rockefeller University, The. Metal protoporphyrins in the control of tryptophan metabolism. 4,619,923, Cl. 514-185.000.
- Kappeler, Franz, to Siemens Aktiengesellschaft. Semiconductor diode laser. 4,620,307, Cl. 372-50.000.
- Kappelt, Charles E., Jr., to Molded Fiber Glass Company. PC board rack. 4,619,368, Cl. 211-41.000.
- Karimoto, Hiroyasu: *See—*
  - Sakai, Ikuo; Karimoto, Hiroyasu; and Nakayama, Yasuhiko, 4,619,720, Cl. 148-403.000.
- Karl M. Reich Maschinenfabrik GmbH: *See—*
  - Maurer, Werner, 4,619,393, Cl. 227-136.000.
- Karl Mengele & Sohne GmbH & Co.: *See—*
  - Wistuba, Eberhard, 4,619,413, Cl. 241-222.000.

- Karl Mengele & Sohne GmbH & Co. KG.: *See—*
  - Lenzer, Xaver; Wistuba, Eberhard; and Modinger, Hermann, 4,619,410, Cl. 241-55.000.
- Karlotski, Robert J.: *See—*
  - Keeffe, William M.; Krasko, Zeya K.; and Karlotski, Robert J., 4,620,125, Cl. 313-25.000.
- Karr, Dennis K.; and Sprankle, David A., to North American Philips Corporation. Simple thermostat for dip mounting. 4,620,175, Cl. 337-343.000.
- Karu, Alexander E.: *See—*
  - Cubicciotti, Roger S.; Karu, Alexander E.; and Krauss, Ronald M., 4,619,895, Cl. 435-7.000.
- Kassai, Kenzou, to Aprica Kassai Kabushikikaisha. Baby carriage grip rod locking mechanism. 4,619,542, Cl. 403-62.000.
- Kataoka, Ryuji, to Fuji Jukogyo Kabushiki Kaisha. Air-fuel ratio control system. 4,619,235, Cl. 123-440.000.
- Katayama, Seiji: *See—*
  - Araya, Takeshi; Matsunawa, Akira; Katayama, Seiji; Hioki, Susumu; Ibaraki, Yoshiro; and Endo, Yoshishige, 4,619,691, Cl. 75-0.50B.
- Kathari, Franz. Sheet dispenser. 4,619,375, Cl. 221-186.000.
- Kato, Toshikazu, to Olympus Optical Co., Ltd. Cassette ejection mechanism of a cassette tape recorder. 4,620,246, Cl. 360-96.500.
- Kato, Yoshiaki: *See—*
  - Nakatani, Kaname; and Kato, Yoshiaki, 4,620,203, Cl. 346-153.100.
- Kato, Yoshio: *See—*
  - Numaho, Yoshio; Kato, Yoshio; Okada, Hiroshi; and Ogawa, Tetsuro, 4,620,137, Cl. 315-378.000.
- Katoh, Yoshiharu: *See—*
  - Oikawa, Hideo; Amazawa, Takao; Honma, Nakahachiro; Miyazaki, Hideo; Kyono, Iwao; Mori, Nobuyuki; Katoh, Yoshiharu; and Kuroki, Masami, 4,619,695, Cl. 75-65.0EB.
- Katsube, Junki: *See—*
  - Ono, Keiichi; Kawakami, Hajime; and Katsube, Junki, 4,620,036, Cl. 564-256.000.
- Katz, Ellis, to Rockwell International Corporation. Torqueless fluid connector. 4,619,290, Cl. 138-39.000.
- Kautz, Ralf-Dieter; and Stapelmann, Rolf, to Holstein und Kappert GmbH. System for checking inspection machines. 4,619,133, Cl. 73-1.00R.
- Kawabe, Kiyoshi: *See—*
  - Tajima, Yoshio; Iwasaki, Yoshiharu; Kawabe, Kiyoshi; Uchida, Wataru; Sugita, Shoji; Matsuura, Kazuo; and Miyoshi, Mituji, 4,619,981, Cl. 526-125.000.
- Kawada, Kaoru: *See—*
  - Ueda, Fumihiro; Kawada, Kaoru; Yamamoto, Kazuo; Miwa, Noriaki; and Ishimatsu, Toshiki, 4,619,698, Cl. 75-238.000.
- Kawaguchi, Katsuhiko: *See—*
  - Ono, Yoshiaki; and Kawaguchi, Katsuhiko, 4,619,388, Cl. 226-76.000.
- Kawai, Naoyuki: *See—*
  - Ohta, Kimihiro; Nakagawa, Tadashi; Kawai, Naoyuki; Kojima, Takeshi; and Kawashima, Mitsuo, 4,620,206, Cl. 357-4.000.
- Kawai, Toshikazu; Nishimura, Ysunobu; and Kanesaki, Katumi, to Central Glass Company, Limited. Preparation of 2-chloro-4-fluorophenol from 4-fluorophenol. 4,620,042, Cl. 568-775.000.
- Kawakami, Hajime: *See—*
  - Ono, Keiichi; Kawakami, Hajime; and Katsube, Junki, 4,620,036, Cl. 564-256.000.
- Kawanobe, Yasutaka; Noguti, Hisao; Kanou, Singi; and Yamazaki, Katsuya, to Daido Tokusyuko K.K.; and Yahagi Engineering K.K. Method of refining steel and apparatus. 4,619,694, Cl. 75-59.140.
- Kawasaki, Katsuyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Expandable storage systems for small vehicles. 4,619,476, Cl. 296-37.100.
- Kawashima, Mitsuo: *See—*
  - Ohta, Kimihiro; Nakagawa, Tadashi; Kawai, Naoyuki; Kojima, Takeshi; and Kawashima, Mitsuo, 4,620,206, Cl. 357-4.000.
- Kawata, Ken; Yabuki, Yoshiharu; Sato, Kouzou; and Hirai, Hiroyuki, to Fuji Photo Film Co., Ltd. Heat developable light-sensitive material. 4,619,888, Cl. 430-353.000.
- Kawawa, Takaho, to Nippon Kokan Kabushiki Kaisha. Mold for horizontally and continuously casting molten metal into cast metal strand. 4,619,308, Cl. 164-416.000.
- Kawneer Company, Inc.: *See—*
  - Trummer, Joseph A.; and Coulston, El L., 4,619,097, Cl. 52-730.000.
- Kayata, Haruhiko: *See—*
  - Tatsumi, Hisao; Kayata, Haruhiko; and Watanabe, Fumio, 4,620,199, Cl. 346-76.0PH.
- Kazaoka, Kenichi; Ishikawa, Masanobu; and Nishikawa, Masumi, to Aisin Seiki Kabushiki Kaisha. Telescopic shaft. 4,619,548, Cl. 403-290.000.
- KB Elverskog Ide & Konstruktion: *See—*
  - Elverskog, Bernt, 4,619,623, Cl. 441-126.000.
- KCL Corporation: *See—*
  - Sullivan, Brian, 4,620,320, Cl. 383-79.000.
- Keates, Richard H.; Schneider, Richard T.; Roxey, Timothy E.; and Cox, John D. Flexible intraocular lens holder. 4,619,657, Cl. 623-6.000.
- Keeffe, William M.; Krasko, Zeya K.; and Karlotski, Robert J., to GTE Products Corporation. Low wattage metal halide lamp with inverted domed sleeve. 4,620,125, Cl. 313-25.000.
- Keeffe, William M.; Gungle, W. Calvin; Rothwell, Harold L., Jr.; and Krasko, Zeya K., to GTE Products Corporation. Electrode alignment and capsule design for single-ended low wattage metal halide lamps. 4,620,130, Cl. 313-634.000.
- Keem, John E.; and Flasck, James D., to Energy Conversion Devices, Inc. Multilayer coating and method. 4,619,865, Cl. 428-333.000.
- Keene, Douglas L.: *See—*
  - Traino, James C.; and Keene, Douglas L., 4,620,237, Cl. 358-300.000.
- Keese, Charles R.: *See—*
  - Giaever, Ivar; and Keese, Charles R., 4,619,904, Cl. 436-518.000.
- Keifer, Terry A., to Check Mate Systems, Inc. Security apparatus for retail goods. 4,620,182, Cl. 340-568.000.
- Keiper Recaro, Inc.: *See—*
  - Loewe, Gerhard; Nithammer, Egon; and Zaveri, Vikram, 4,619,031, Cl. 29-434.000.
- Keller, Teddy M., to United States of America, Navy. Epoxy phthalonitrile polymers. 4,619,986, Cl. 528-99.000.
- Kelley Company, Inc.: *See—*
  - Kovach, Jonathan W.; and Hageman, Martin P., 4,619,008, Cl. 14-71.700.
- Kells Medical, Inc.: *See—*
  - Sheehan, Joseph C. M.; and Dorr, Bruce P., 4,620,319, Cl. 383-33.000.
- Kelly, Dean A.; and Brann, Strother H., to Alca Enterprises, Inc. Box and fastener for stacking. 4,619,365, Cl. 206-503.000.
- Kendall Company, The: *See—*
  - Rath, Lucien M.; and Dunn, William J., 4,619,648, Cl. 604-326.000.
- Kendrick, Barnes R., Jr.: *See—*
  - Do, Phuc K.; Wyke, Carol E.; Kendrick, Barnes R., Jr.; Hedrick, Dennis R.; and Troupes, Demetrios, 4,619,537, Cl. 400-225.000.
- Kennedy, Conrad P., Jr.; and Kennedy, Harry L., to Gibson, Patrick Howard. Materials handling and weighing apparatus. 4,619,359, Cl. 198-463.500.
- Kennedy, Harry L.: *See—*
  - Kennedy, Conrad P., Jr.; and Kennedy, Harry L., 4,619,359, Cl. 198-463.500.
- Kennedy, Leo D. Solid and liquid waste incinerator system. 4,619,210, Cl. 110-234.000.
- Kennedy, T. Scott; and Herman, Paul F., to Twin Rivers Engineering. Composite active filter material. 4,619,948, Cl. 521-52.000.
- Kenney Manufacturing Company: *See—*
  - Comeau, Paul E., 4,619,305, Cl. 160-263.000.
- Kenney, Timothy J.: *See—*
  - Radzins, Edmund; and Kenney, Timothy J., 4,619,357, Cl. 198-412.000.
- Kenny, Patrick M., to Hen-Jac, Inc. Embedment anchor. 4,619,218, Cl. 114-295.000.
- Kenrick, C. Robert. Assembly method and apparatus. 4,619,103, Cl. 53-432.000.
- Kenross Nominees Proprietary Limited: *See—*
  - Johnston, Kenneth A., 4,619,095, Cl. 52-595.000.
- Keri, Eva: *See—*
  - Balkanyi, Ivan; Szebeni, Rudolf; Hadi, Ferenc; Marso , Miklos; Keri, Eva; and Koszegi, Bela, 4,619,936, Cl. 514-282.000.
- Keritsis, Gus D.: *See—*
  - Albertson, Douglas E.; Dyson, James O.; Fischer, Eugene B.; Gaudlitz, Robert T.; Haws, Lewis A.; Keritsis, Gus D.; Long, Louis L.; McClung, Charles S.; Nepomuceno, Jose G.; and Wagoner, Steven R., 4,619,276, Cl. 131-79.000.
- Kernforschungsanlage Julich: *See—*
  - Fremery, Johan K.; Lindenau, Bernd; and Witthauer, Klaus, 4,619,144, Cl. 73-708.000.
- Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
  - Dias, Francisco J.; Kampel, Marian; and Luhleich, Hartmut, 4,619,805, Cl. 264-29.500.
- Kerr, Charles, III; and Forell, Mark. Method of making improved electroluminescent panels. 4,619,624, Cl. 445-22.000.
- Kessler, Bayard F.; and Nagy, Neil F., to Novation, Inc. Pocket sized telephone line data communication systems. 4,620,064, Cl. 179-2.00C.
- Khokhlov, Anatoly M.: *See—*
  - Nikitin, Vladimir A.; Khokhlov, Anatoly M.; Larin, Vyacheslav T.; and Fikhte, Boris A., 4,619,899, Cl. 435-287.000.
- Kidani, Morio. Grinding machine for ball end mills with helical cutter teeth. 4,619,079, Cl. 51-165.710.
- Kielbania, Andrew J.; and Kim, Samuel S., to Rohm and Haas Company. Stabilized aqueous copolymer dispersions. 4,619,964, Cl. 524-460.000.
- Kijima, Yasuhiko: *See—*
  - Isshiki, Tomiya; Kijima, Yasuhiko; Miyauchi, Yuh; and Kondo, Takao, 4,620,033, Cl. 562-519.000.
- Kikuta, Sigeru, to Hirose Electric Co., Ltd. Connecting and engaging fixture for electric connector. 4,619,493, Cl. 339-91.00R.
- Kim, Nack-Joon: *See—*
  - Thomas, Gareth; Ahn, Jae-Hwan; and Kim, Nack-Joon, 4,619,714, Cl. 148-12.00B.
- Kim, Samuel S.: *See—*
  - Kielbania, Andrew J.; and Kim, Samuel S., 4,619,964, Cl. 524-460.000.
- Kimberly-Clark Corporation: *See—*
  - Sokolowski, Robert C.; and Johnson, Russell L., 4,619,862, Cl. 428-221.000.
- Kimble, James B.; and Kolts, John H., to Phillips Petroleum Company. Methane conversion. 4,620,057, Cl. 585-500.000.
- Kimble, Kenneth B.; Bresson, Clarence R.; and Mark, Harold W., to Phillips Petroleum Company. Ore flotation agent from 2-mercap-

tobenzimidazole and flotation processes therewith. 4,619,760, Cl. 209-166.000.

Kimmel, Arthur T.: *See—*

Wallach, Steven J.; Jones, Thomas M.; Marshall, Frank J.; Nobles, David A.; Fuka, Kent A.; Rowan, Steven M.; Wallace, William H.; Dozier, Harold W.; Chastain, David M.; Clark, John W.; Kolstad, Robert B.; Mankovich, James E.; Harris, Michael C.; Gruger, Jeffrey H.; Gant, Alan D.; Shelton, Harold D.; Weatherford, James R.; Kimmel, Arthur T.; Gostin, Gary B.; Hansen, Gilbert J.; Golenbieski, John M.; Spry, Larry W.; Matulka, Gerald; Lockhart, Gaynel J.; and Sydow, Michael E., 4,620,275, Cl. 364-200.000.

Kimura, Hitoshi: *See—*

Yoshimura, Shigeo; Shimada, Yoshiaki; and Kimura, Hitoshi, 4,619,147, Cl. 73-862.380.

Kimura, Takashi, to Nippon Joucomatic Co., Ltd. Pneumatic cylinder device with locking mechanism. 4,619,188, Cl. 92-26.000.

King, Michael T., to D&K Custom Machine Design, Inc. Cutter mechanism for laminate slitting machine. 4,619,169, Cl. 83-697.000.

Kinoshita, Yoshio: *See—*

Shoji, Masao; Uchida, Mikio; and Kinoshita, Yoshio, 4,619,352, Cl. 192-41.00A.

Kinzler, Hans, to Siemens Aktiengesellschaft. Electrical suppressor filter. 4,620,165, Cl. 333-167.000.

Kioritz Corporation: *See—*

Baba, Toru, 4,619,105, Cl. 56-12.700.

Kirchdorffer, Gerhard: *See—*

Kapfer, Jurgen; and Kirchdorffer, Gerhard, 4,619,227, Cl. 123-146.50A.

Kirchner, Edward C.; and DeFoe, Ronald J., to Beloit Corporation. Multi-disk refiner. 4,619,414, Cl. 241-261.300.

Kiriyama, Tsutomu; Horie, Shigeru; Ichihashi, Tetsuo; and Oshida, Masahiro, to Teijin Limited. Biaxially oriented polyester film. 4,619,869, Cl. 428-480.000.

Kirkland, Donald R.; and Morcom, Paul J. Float release devices. 4,619,066, Cl. 43-25.000.

Kirouac, J. Paul: *See—*

Szmuk, Szilvia; Kirouac, J. Paul; and Feist, Betsy, 4,619,399, Cl. 229-72.000.

Kiryu, Yuichi, to Mitsubishi Denki Kabushiki Kaisha. Harmonic gear apparatus. 4,619,156, Cl. 74-640.000.

Kishi, Atsuo: *See—*

Amano, Keijiro; Hayase, Isao; Kishi, Atsuo; and Sato, Noriharu, 4,619,595, Cl. 418-83.000.

Kishi, Yuriko: *See—*

Miyamoto, Shigehiko; Watanabe, Yoshinobu; and Kishi, Yuriko, 4,620,197, Cl. 346-1.100.

Kistner, John F., to Minnesota Mining and Manufacturing Company. Abrasion resistant coatings. 4,619,949, Cl. 522-170.000.

Kita, Yasuhiro: *See—*

Hagiwara, Yoshimune; Sugiyama, Shizuo; Maeda, Narimichi; Yumoto, Osamu; Akazawa, Takashi; Kobayashi, Masahito; Kita, Yasuhiro; and Kita, Yuzo, 4,620,292, Cl. 364-748.000.

Kita, Yuzo: *See—*

Hagiwara, Yoshimune; Sugiyama, Shizuo; Maeda, Narimichi; Yumoto, Osamu; Akazawa, Takashi; Kobayashi, Masahito; Kita, Yasuhiro; and Kita, Yuzo, 4,620,292, Cl. 364-748.000.

Kitagawa Industries Co., Ltd.: *See—*

Matsui, Kazuhiro; and Sugiura, Haruyuki, 4,619,431, Cl. 248-500.000.

Kitzinger, Frank: *See—*

Lucas, John M.; Kitzinger, Frank; Labuc, Vladimir M.; Peacey, John G.; Pelletier, Albert; and Wint, Gregory A., 4,619,533, Cl. 374-141.000.

Kiyobe, Seiichiro: *See—*

Ishikawa, Hirotoshi; and Kiyobe, Seiichiro, 4,620,146, Cl. 324-58.50A.

Kiyohara, Shuichi, to Canon Kabushiki Kaisha. AD conversion device for camera. 4,619,512, Cl. 354-458.000.

Kiyota, Yuhiko: *See—*

Imoto, Koji; Tateishi, Mataji; Inenaga, Noriyasu; Omura, Tadao; Ishikawa, Hideyuki; Harada, Sumio; Kiyota, Yuhiko; Kobayashi, Hiroyuki; Nakanishi, Koichi; and Kume, Satoru, 4,619,229, Cl. 123-286.000.

Klauke, Erich: *See—*

Marhold, Albrecht; and Klauke, Erich, 4,620,018, Cl. 549-362.000.

Kleczkowski, Peter S.: *See—*

Bauck, Randall C.; and Kleczkowski, Peter S., 4,620,252, Cl. 360-106.000.

Klemm, Gerhard. Apparatus for drying sheet- or web-like materials with ultraviolet radiation. 4,619,050, Cl. 34-4.000.

Klisch, Leo M., to Minnesota Mining and Manufacturing Company. Cutting mechanism. 4,619,168, Cl. 83-694.000.

Klockner-Humboldt-Deutz AG: *See—*

Herchenbach, Horst; and Ramesohl, Hubert, 4,619,605, Cl. 432-14.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*

Wallenfang, Gerd; Rizk, Reda; and Michels, Hans-Gottfried, 4,619,239, Cl. 123-506.000.

Kluth, Hermann: *See—*

Olbrueck, Peter; Kluth, Hermann; Roederhoff, Bernhard; Dierichs, Wolfgang; and Wegner, Juergen, 4,619,711, Cl. 134-38.000.

KMW Aktiebolag: *See—*

Andersson, Ingmar A., 4,619,734, Cl. 162-111.000.

Kneib, Rudi; Emmer, Ludwig; and Robitschko, Peter, to Daimler-Benz Aktiengesellschaft. Motor vehicle door interior lining equipped with a storage pocket. 4,619,477, Cl. 296-37.130.

Knight, John R.; and Thwaites, Geoffrey R., to W. R. Grace & Co. Compositions and methods for sealing containers. 4,619,848, Cl. 428-35.000.

Knight, Raymond P.: *See—*

Donaldson, Timothy P.; Knight, Raymond P.; and Shepheard, John R., 4,620,135, Cl. 315-326.000.

Knipstein, Richard A.: *See—*

Lay, George E.; Knipstein, Richard A.; and Haigh, Daniel H., 4,619,826, Cl. 424-78.000.

Knispel, Barry; and Wingert, Rudolf, to Arrow Fastener Company, Inc. Riveting attachment for a staple gun. 4,619,394, Cl. 227-156.000.

Knoll, Frank: *See—*

Spinosa, Dominic J.; and Knoll, Frank, 4,619,255, Cl. 128-202.270.

Knoll International, Inc.: *See—*

Hannah, Bruce R.; McClanahan, David D.; and Denny, Lee, 4,619,486, Cl. 312-195.000.

Knothe, Erich: *See—*

Behrend, Lothar; Ober, Jurgen; Knothe, Erich; and Melcher, Franz-Josef, 4,619,337, Cl. 177-210.00R.

Knowlton, Leland P. Plow coupling. 4,619,060, Cl. 37-231.000.

Kobayashi, Akira: *See—*

Arata, Yoshiaki; and Kobayashi, Akira, 4,620,080, Cl. 219-121.0PP.

Kobayashi, Hiroyuki: *See—*

Imoto, Koji; Tateishi, Mataji; Inenaga, Noriyasu; Omura, Tadao; Ishikawa, Hideyuki; Harada, Sumio; Kiyota, Yuhiko; Kobayashi, Hiroyuki; Nakanishi, Koichi; and Kume, Satoru, 4,619,229, Cl. 123-286.000.

Kobayashi, Katsuyoshi: *See—*

Niki, Katsumi; Kobayashi, Katsuyoshi; Inoguchi, Hiroo; and Yagi, Tatsuhiko, 4,619,754, Cl. 204-290.00R.

Kobayashi, Masahito: *See—*

Hagiwara, Yoshimune; Sugiyama, Shizuo; Maeda, Narimichi; Yumoto, Osamu; Akazawa, Takashi; Kobayashi, Masahito; Kita, Yasuhiro; and Kita, Yuzo, 4,620,292, Cl. 364-748.000.

Kobayashi, Yoshiro: *See—*

DeLuca, Hector F.; Ikekawa, Nobuo; Kobayashi, Yoshiro; and Tanaka, Yoko, 4,619,920, Cl. 514-167.000.

Kocher, Kenneth E. Refillable pressure spray container. 4,619,297, Cl. 141-20.000.

Kodama, Shun-ichi: *See—*

Yamabe, Masaaki; Kojima, Gen; Wachi, Hiroshi; and Kodama, Shun-ichi, 4,619,983, Cl. 526-247.000.

Koehn, Dennis. Portable corral for cattle and the like. 4,619,223, Cl. 119-20.000.

Koezuka, Junji: *See—*

Kanno, Ken-ichi; Gatayama, Tetsuya; Koyama, Masao; and Koezuka, Junji, 4,619,739, Cl. 204-1.00T.

Kogawa Hokushin Electric Corporation: *See—*

Ishikawa, Hirotoshi; and Kiyobe, Seiichiro, 4,620,146, Cl. 324-58.50A.

Koguchi, Takeziro: *See—*

Suzaki, Masayuki; Hirota, Tetsuro; Kanno, Tetsuo; and Koguchi, Takeziro, 4,620,249, Cl. 360-99.000.

Kohama, Shigeo: *See—*

Shiokawa, Kozo; Moriya, Koichi; Goto, Toshio; Kamochi, Atsumi; and Kohama, Shigeo, 4,619,688, Cl. 71-92.000.

Kohler, Franz: *See—*

Eblen, Otto; Glockler, Gerhard; Kohler, Franz; and Meinusch, Norbert, 4,620,195, Cl. 346-1.100.

Kohno, Akiomi: *See—*

Nakayama, Wataru; Nakajima, Tadakatsu; Hirasawa, Shigeki; Kohno, Akiomi; and Takenaka, Takaji, 4,619,316, Cl. 165-104.330.

Koide, Hiroshi, to Ricoh Company, Ltd. Recording disk drive unit. 4,620,301, Cl. 369-266.000.

Kojima, Gen: *See—*

Yamabe, Masaaki; Kojima, Gen; Wachi, Hiroshi; and Kodama, Shun-ichi, 4,619,983, Cl. 526-247.000.

Kojima, Takeshi: *See—*

Ohta, Kimihiro; Nakagawa, Tadashi; Kawai, Naoyuki; Kojima, Takeshi; and Kawashima, Mitsuo, 4,620,206, Cl. 357-4.000.

Kolb, Dieter: *See—*

Rostin, Gunther; Scheer, Erich; Kolb, Dieter; and Werner, Karl H., 4,619,354, Cl. 192-89.00B.

Kolecki, Ronald E., to Atlantic Richfield Co. Lubricant removal system for cold rolling stand. 4,619,126, Cl. 72-38.000.

Kolstad, Robert B.: *See—*

Wallach, Steven J.; Jones, Thomas M.; Marshall, Frank J.; Nobles, David A.; Fuka, Kent A.; Rowan, Steven M.; Wallace, William H.; Dozier, Harold W.; Chastain, David M.; Clark, John W.; Kolstad, Robert B.; Mankovich, James E.; Harris, Michael C.; Gruger, Jeffrey H.; Gant, Alan D.; Shelton, Harold D.; Weatherford, James R.; Kimmel, Arthur T.; Gostin, Gary B.; Hansen, Gilbert J.; Golenbieski, John M.; Spry, Larry W.; Matulka, Gerald; Lockhart, Gaynel J.; and Sydow, Michael E., 4,620,275, Cl. 364-200.000.

Kolts, John H.; and Delzer, Gary A., to Philips Petroleum Company. Dehydrogenation and cracking of C_3 and C_4 hydrocarbons to less saturated hydrocarbons. 4,620,051, Cl. 585-663.000.

Kolts, John H.; and Delzer, Gary A., to Phillips Petroleum Company. Dehydrogenation and cracking of C_3 and C_4 hydrocarbons. 4,620,052, Cl. 585-663.000.

Kolts, John H.: *See—*

Kimble, James B.; and Kolts, John H., 4,620,057, Cl. 585-500.000.

Komabayashi, Masashi: *See—*

Hijikata, Kenichi; Sugihara, Tadashi; and Komabayashi, Masashi, 4,619,697, Cl. 75-230.000.

Komaki, Syojiro: *See—*

Watanabe, Fumio; Hara, Yoshiaki; Miyamoto, Masao; Kusumoto, Yasuo; and Komaki, Syojiro, 4,620,102, Cl. 250-427.000.

Komori, Mikio: *See—*

Okumoto, Yutaka; Ozaki, Toshiyuki; and Komori, Mikio, 4,619,277, Cl. 131-94.000.

Kondo, Mitsuru: *See—*

Ogawa, Mutsuo; Hashimoto, Takemi; Hara, Kazuyuki; and Kondo, Mitsuru, 4,620,233, Cl. 358-260.000.

Kondo, Takao: *See—*

Isshiki, Tomiya; Kijima, Yasuhiko; Miyauchi, Yuh; and Kondo, Takao, 4,620,033, Cl. 562-519.000.

Kondoh, Motoya, to Nippon Gakki Seizo Kabushiki Kaisha. Stop angle controller for a vibrato mechanism on a vibraphone. 4,619,178, Cl. 84-410.000.

Konicek, Tim R., to S. C. Johnson & Son, Inc. Automatic door-activated air freshener. 4,619,383, Cl. 222-556.000.

Koniger, Max: *See—*

Winterling, Gerhard; and Koniger, Max, 4,620,058, Cl. 136-258.000.

Konishi, Tadashi: *See—*

Saiki, Noritsugu; and Konishi, Tadashi, 4,619,987, Cl. 528-274.000.

Konishiroku Photo Industry Co., Ltd.: *See—*

Iwai, Yasuyuki, 4,619,516, Cl. 355-3.0DD.

Nakanishi, Kazuhiro, 4,619,510, Cl. 354-173.100.

Koniuk, Wayne A. Boot accessory. 4,619,059, Cl. 36-132.000.

Kooi, Boon-Lam. Pollution free pulping process using recycled wash effluent from multiple bleach stages to remove black liquor and recovering sodium hydroxide from the black liquor. 4,619,733, Cl. 162-30.100.

Kopfer, Rudolph J.; and Smith, Robert E. Anti-aerosoling drug reconstitution device. 4,619,651, Cl. 604-415.000.

Kopp, Richard: *See—*

Hess, Heinrich; Grogler, Gerhard; Kopp, Richard; and Barnes, James M., 4,619,985, Cl. 528-49.000.

Koppers Company, Inc.: *See—*

Franzen, Rune G., 4,619,761, Cl. 209-250.000.

Kosciuczyk, Theodore E.: *See—*

Cook, Stephen F.; Fisher, Harland S.; and Kosciuczyk, Theodore E., 4,619,726, Cl. 156-366.000.

Kosonocky, Walter F., to RCA Corporation. CCD imager with photodetector bias introduced via the CCD register. 4,620,231, Cl. 358-213.000.

Koster, Eberhard: *See—*

Melzer, Milena; Jakusch, Helmut; Grau, Werner; Koster, Eberhard; Loser, Werner; Polke, Reinhard; Schadel, Gunter; Ohlinger, Manfred; and Vath, Gunter, 4,619,777, Cl. 252-62.540.

Koszegi, Bela: *See—*

Balkanyi, Ivan; Szebeni, Rudolf; Hadi, Ferenc; Marso , Miklos; Keri, Eva; and Koszegi, Bela, 4,619,936, Cl. 514-282.000.

Kotch, Robert J.: *See—*

Daly, Jeffery E.; and Kotch, Robert J., 4,619,534, Cl. 384-94.000.

Kotnour, Thomas A.; Barber, Ronald L.; and Krueger, Walter L., to Minnesota Mining and Manufacturing Company. Continuous free radial polymerization in a wiped-surface reactor. 4,619,979, Cl. 526-88.000.

Koto, Haruhiko; Okada, Junichi; Ishii, Hiroshi; and Sawada, Kenji, to Seiko Epson Kabushiki Kaisha. Ink jet printer of the ink-on-demand type. 4,620,202, Cl. 346-140.00R.

Kotobuki & Co, Ltd.: *See—*

Kageyama, Hidehei, 4,619,539, Cl. 401-85.000.

Kottelman, Sanders. Alarm assembly for jewelery-type display case. 4,620,183, Cl. 340-568.000.

Kotzlowski, Heinz E., to Max-Planck-Gesellschaft Zur Foerderung der Wisenschaften E.V. Heat shield. 4,619,807, Cl. 376-136.000.

Kou, Nagai, to Hoshino Butsusan Co., Ltd. Apparatus for manufacturing boiled noodles. 4,619,189, Cl. 99-334.000.

Kovach, Jonathan W.; and Hageman, Martin P., to Kelley Company, Inc. Dockboard construction. 4,619,008, Cl. 14-71.700.

Kovacs, Sandor, to Vasipari Kutato es Fejleszto Vallalat. Electromechanical apparatus for conversion of force to electric signal. 4,619,148, Cl. 73-862.620.

Kovalan, Mark A.: *See—*

Fisher, Jimmie L.; Kovalan, Mark A.; and Wiscons, Bryon L., 4,620,277, Cl. 364-200.000.

Kowa Co., Ltd.: *See—*

Fujii, Setsuro; Hattori, Eizou; Hirata, Mitsuteru; Kunieda, Hisashi; Watanabe, Koichiro; and Ishihama, Hiroshi, 4,620,005, Cl. 544-391.000.

Koyama, Masao: *See—*

Kanno, Ken-ichi; Gatayama, Tetsuya; Koyama, Masao; and Koezuka, Junji, 4,619,739, Cl. 204-1.00T.

Koyo Jidoki Kabushiki Kaisha: *See—*

Futaba, Takeshi, 4,619,155, Cl. 74-498.000.

Futaba, Takeshi; and Noguchi, Masahiko, 4,619,339, Cl. 180-143.000.

Koyo Seiko Company Limited: *See—*

Mitumaru, Mititosi, 4,619,458, Cl. 277-24.000.

Koziol, Konrad; and Wenk, Erich, to Conradty GmbH & Co. Metallelektroden KG. Electrode for electrolytic extraction of metals or metal oxides. 4,619,752, Cl. 204-286.000.

Kozono, Haruo; and Arakawa, Isao, to Nippon Steel Corporation. Pipe coupling. 4,619,472, Cl. 285-334.000.

Krabetz, Richard; and Engelbach, Heinz, to BASF Aktiengesellschaft. Production of acrylic acid by oxidation of acrolein. 4,620,035, Cl. 562-534.000.

Krasko, Zeya K.: *See—*

Keeffe, William M.; Krasko, Zeya K.; and Karlotski, Robert J., 4,620,125, Cl. 313-25.000.

Keeffe, William M.; Gungle, W. Calvin; Rothwell, Harold L., Jr.; and Krasko, Zeya K., 4,620,130, Cl. 313-634.000.

Kratzenberg, Wolfgang, to Wegmann & Co. GmbH. Equipment for monitoring combat vehicles, especially tanks. 4,619,615, Cl. 434-22.000.

Kratzer, Bernd: *See—*

Daniels, Erwin J.; Kratzer, Bernd; and Schurle, Hermann, 4,619,504, Cl. 351-163.000.

Krause, Charles A.; and Rajaram, Babu, to Zenith Electronics Corporation. Multi-bit write feature for video RAM. 4,620,186, Cl. 340-703.000.

Krause, James N., to Seagate Technology. Compensation method to correct thermally induced off-track errors in disc drives. 4,620,244, Cl. 360-77.000.

Krauss, Ronald M.: *See—*

Cubicciotti, Roger S.; Karu, Alexander E.; and Krauss, Ronald M., 4,619,895, Cl. 435-7.000.

Krebs, David R.: *See—*

Schreiner, Peter J.; Bolenbaugh, Daniel L.; and Krebs, David R., 4,619,347, Cl. 188-72.600.

Kreeger, Elsmer W., to Pinckney Molded Plastics, Inc. Two-level stacking container. 4,619,366, Cl. 206-507.000.

Kreiskott, Horst: *See—*

Thieme, Peter C.; Steiner, Gerd; Rohr, Wolfgang; Lenke, Dieter; Gries, Josef; Weifenbach, Harald; Teschendorf, Hans-Jurgen; Hofmann, Hans P.; and Kreiskott, Horst, 4,619,929, Cl. 514-252.000.

Kreitl, Josef: *See—*

Hirschmeier, Manfred; and Kreitl, Josef, 4,619,707, Cl. 134-3.000.

Kreitlow, Gerhard: *See—*

Anhauser, Dieter; Kreitlow, Gerhard; Olbrich, Hubertus; Reinhold, Karl-Heinz; and Schmitt, Anita, 4,619,253, Cl. 218-156.000.

Kresge, Edward N.: *See—*

Ver Strate, Gary W.; Graessley, William W.; and Kresge, Edward N., 4,620,048, Cl. 585-10.000.

Kreuzer, Franz-Heinrich; and Gebauer, Helmut, to Consortium fur Elektrochemische Industrie GmbH. Method for preparing hexamethylcyclotrisiloxane and uses for the same. 4,620,023, Cl. 556-460.000.

Krounbi, Mohamad T.: *See—*

Buttry, Daniel A.; Krounbi, Mohamad T.; and Melroy, Owen R., 4,619,731, Cl. 156-644.000.

Krueger, Walter L.: *See—*

Kotnour, Thomas A.; Barber, Ronald L.; and Krueger, Walter L., 4,619,979, Cl. 526-88.000.

Kruger, Hans: *See—*

Ahne, Hellmut; Kruger, Hans; and Rubner, Roland, 4,619,500, Cl. 350-341.000.

Kubo, Takao: *See—*

Sano, Yoshihiro; Iwatani, Fumio; Kubo, Takao; and Miki, Yoshiteru, 4,620,257, Cl. 361-68.000.

Kubota Ltd.: *See—*

Yoshimura, Shigeo; Shimada, Yoshiaki; and Kimura, Hitoshi, 4,619,147, Cl. 73-862.380.

Kubota, Yuichi: *See—*

Nakayama, Masatoshi; Morita, Haruyuki; and Kubota, Yuichi, 4,619,861, Cl. 428-220.000.

Kuchenmeister, Rolf: *See—*

Schafer, Walter; Hajek, Manfred; Muller, Hanns P.; Dhein, Rolf; Kuchenmeister, Rolf; and Sickert, Armin, 4,619,966, Cl. 524-589.000.

Kuenn, Cary K.; Young, Jean M.; and Wundrock, John A., to Badger Pharmacal, Inc. Disposer cleaner. 4,619,710, Cl. 134-22.170.

Kuhnel, Frank, to VDO Adolf Schindling AG. Circuit arrangement for the electrothermal measurement of level. 4,619,140, Cl. 73-295.000.

Kulhanek, Antonin: *See—*

Porta, Augusto; and Kulhanek, Antonin, 4,619,745, Cl. 204-151.000.

Kulicke and Soffa Industries, Inc.: *See—*

Amorosi, Vincent G.; Shah, Gautam N.; Soffa, Mark B.; Leonhardt, David A.; and Gillman, Gary L., 4,619,395, Cl. 228-4.500.

Kulzer & Co. GmbH: *See—*

Angrick, Michael; and Spath, Martin-Willi, 4,619,701, Cl. 106-38.230.

Kume, Satoru: *See—*

Imoto, Koji; Tateishi, Mataji; Inenaga, Noriyasu; Omura, Tadao; Ishikawa, Hideyuki; Harada, Sumio; Kiyota, Yuhiko; Kobayashi, Hiroyuki; Nakanishi, Koichi; and Kume, Satoru, 4,619,229, Cl. 123-286.000.

Kummer, Robert F. Boat trailer light de-energization means. 4,620,109, Cl. 307-10.0LS.

Kummer, Rudolf; and Schwirten, Kurt, to BASF Aktiengesellschaft. Manufacture of higher alkylcarboxylic acids. 4,619,790, Cl. 260-413.000.

Kunieda, Hisashi: *See—*

Fujii, Setsuro; Hattori, Eizou; Hirata, Mitsuteru; Kunieda, Hisashi; Watanabe, Koichiro; and Ishihama, Hiroshi, 4,620,005, Cl. 544-391.000.

Kunker, Don: *See—*
  Binoeder, Peter P.; Whitacre, James B.; and Kunker, Don, 4,620,302, Cl. 371-1.000.

Kuraray Co., Ltd.: *See—*
  Anzawa, Haruyoshi; Satoh, Kenji; Tanaka, Yoshinari; and Okaya, Takuji, 4,619,849, Cl. 428-35.000.

Kurauchi, Takeo: *See—*
  Ishii, Keizou; Kurauchi, Takeo; Nozue, Jun; and Ishikura, Shinichi, 4,619,965, Cl. 524-547.000.

Kurek, Stanley. Wrenching unit for use in power threading of a sleeve portion to a pipe portion used in makeup of oil well casings or the like. 4,619,159, Cl. 81-57.340.

Kuriyama, Takashi: *See—*
  Takanashi, Itsuo; Nakagaki, Shintaro; Ichimura, Hiroshi; Kuriyama, Takashi; and Negishi, Ichiro, 4,620,221, Cl. 358-47.000.

Kuroki, Masami: *See—*
  Oikawa, Hideo; Amazawa, Takao; Honma, Nakahachiro; Miyazaki, Hideo; Kyono, Iwao; Mori, Nobuyuki; Katoh, Yoshiharu; and Kuroki, Masami, 4,619,695, Cl. 75-65.0EB.

Kurrasch, Andrew J., to Herman Miller, Inc. Work surface height adjustment mechanism. 4,619,208, Cl. 108-144.000.

Kurt Wolf & Co. KG: *See—*
  Andre, Wolfram K., 4,620,083, Cl. 219-491.000.

Kurtz, Leonard D.; and LiCausi, Joseph M., to BioResearch Inc. Surgical drainage apparatus. 4,619,647, Cl. 604-318.000.

Kushida, Takeo: *See—*
  Oshizawa, Hidekazu; and Kushida, Takeo, 4,620,260, Cl. 361-152.000.

Kusumoto, Yasuo: *See—*
  Watanabe, Fumio; Hara, Yoshiaki; Miyamoto, Masao; Kusumoto, Yasuo; and Komaki, Syojiro, 4,620,102, Cl. 250-427.000.

Kuttenbaum, Valentin. Frame assembly. 4,619,545, Cl. 403-169.000.

Kuwabara, Nobumori: *See—*
  Horikawa, Toshihiro; and Kuwabara, Nobumori, 4,620,085, Cl. 219-528.000.

Kuwaki, Keiichi: *See—*
  Inoue, Kiyoshi; Kuwaki, Keiichi; and Tsuno, Koichi, 4,619,247, Cl. 128-6.000.

Kyono, Iwao: *See—*
  Oikawa, Hideo; Amazawa, Takao; Honma, Nakahachiro; Miyazaki, Hideo; Kyono, Iwao; Mori, Nobuyuki; Katoh, Yoshiharu; and Kuroki, Masami, 4,619,695, Cl. 75-65.0EB.

L H Carbide Corporation: *See—*
  Neuenschwander, Thomas R., 4,619,028, Cl. 29-33.00L.

La Telemecanique Electrique: *See—*
  Lerude, Gerard; and Roux, Christine, 4,620,265, Cl. 361-424.000.

Laakso, John K. Decorative simulated tree lighting apparatus. 4,620,270, Cl. 362-123.000.

La Belle, John T.; Szemeredi, Robert S.; and Tarnay, Matthew G., to Price Pfister, Inc. Unitized control panel. 4,620,075, Cl. 200-159.00B.

Labuc, Vladimir M.: *See—*
  Lucas, John M.; Kitzinger, Frank; Labuc, Vladimir M.; Peacey, John G.; Pelletier, Albert; and Wint, Gregory A., 4,619,533, Cl. 374-141.000.

Lachenbruch, Roger B.: *See—*
  Rathmann, Thomas M.; Drake, Herbert G.; Mirkovich, Ninko T.; and Lachenbruch, Roger B., 4,619,573, Cl. 414-222.000.

Lafferty, James W. Variable rate air spring apparatus for vehicle suspension. 4,619,467, Cl. 280-708.000.

Lagadec, Roger: *See—*
  Gaskell, Philip S.; Lagadec, Roger; and McNally, Guy W. W., 4,620,238, Cl. 360-8.000.

Laidely, Peter. Bushings. 4,619,544, Cl. 403-162.000.

Laing, Karsten. Stator having tooth lamination strips lying between circular cylinders. 4,620,120, Cl. 310-166.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
  Dubrulle, Gerard; and Roullet, Alain, 4,619,113, Cl. 62-64.000.

Laird, Dacon C., III: *See—*
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  Eckenhoff, James B.; Peery, John R.; and Landrau, Felix A., 4,619,652, Cl. 604-415.000.

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Landry, Kim. Transcutaneous intravenous illuminator. 4,619,249, Cl. 128-23.000.

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  Won, In H., 4,619,004, Cl. 2-227.000.

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Lerude, Gerard; and Roux, Christine, to La Telemecanique Electrique. Modular cell for supporting and protecting electronic cards. 4,620,265, Cl. 361-424.000.

Lessard, Roy W. Pants rack. 4,619,385, Cl. 223-96.000.

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  Schmidt, Gregory E.; Leung, Linus K.; Beck, Lawrence J.; and Chang, David S., 4,620,049, Cl. 585-501.000.

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  Frame, Gary E., 4,620,107, Cl. 250-566.000.

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  Wallach, Steven J.; Jones, Thomas M.; Marshall, Frank J.; Nobles, David A.; Fuka, Kent A.; Rowan, Steven M.; Wallace, William H.; Dozier, Harold W.; Chastain, David M.; Clark, John W.; Kolstad, Robert B.; Mankovich, James E.; Harris, Michael C.; Gruger, Jeffrey H.; Gant, Alan D.; Shelton, Harold D.; Weatherford, James R.; Kimmel, Arthur T.; Gostin, Gary B.; Hansen, Gilbert J.; Golenbieski, John M.; Spry, Larry W.; Matulka, Gerald; Lockhart, Gaynel J.; and Sydow, Michael E., 4,620,275, Cl. 364-200.000.

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- Maezono, Masakazu; and Ishikawa, Keiichi, to Honda Giken Kogyo Kabushiki Kaisha. Clutch operation control system for fluid torque converter of vehicular transmission. 4,619,350, Cl. 192-3.310.
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  - Sandefur, Louise O.; Slusarek, Wojciech; Wilson, Burton D.; and Maggiulli, Cataldo A., 4,620,002, Cl. 544-318.000.
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  - Gitzendanner, Louis G., 4,620,248, Cl. 360-97.000.
  - Gitzendanner, Louis G., 4,620,251, Cl. 360-103.000.
- Magnoni, Pierangelo; Strada, Pier E.; Cavagnis, Walter; and Sanvito, Angelo, to O.F.M.E.C. Officine Meccaniche Mantovane S.p.A. Bed for passive, autopassive or against patient resistance motor re-education, supplied with mechanically controlled and by electronic operated, programmable and controllable components. 4,619,006, Cl. 5-68.000.
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  - Sapienza, Richard S.; Slegeir, William A.; O'Hare, Thomas E.; and Mahajan, Devinder, 4,619,946, Cl. 518-700.000.
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- Maier, Peter; and Hansel, Gernot. Guide for a hand power tool. 4,619,170, Cl. 83-745.000.
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  - Lorenzelli, Robert; Dabernard, Pierre; and Maire, Christian, 4,619,572, Cl. 414-217.000.
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- Mankovich, James E.: *See—*
  - Wallach, Steven J.; Jones, Thomas M.; Marshall, Frank J.; Nobles, David A.; Fuka, Kent A.; Rowan, Steven M.; Wallace, William H.; Dozier, Harold W.; Chastain, David M.; Clark, John W.; Kolstad, Robert B.; Mankovich, James E.; Harris, Michael C.; Gruger, Jeffrey H.; Gant, Alan D.; Shelton, Harold D.; Weatherford, James R.; Kimmel, Arthur T.; Gostin, Gary B.; Hansen, Gilbert J.; Golenbieski, John M.; Spry, Larry W.; Matulka, Gerald; Lockhart, Gaynel J.; and Sydow, Michael E., 4,620,275, Cl. 364-200.000.
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  - Gruner, Hans; Orsech, Helmuth; and Schrewe, Hans, 4,619,306, Cl. 164-150.000.
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- Manske, Hans E., to Zenith Electronics Corporation. High energy discharge sparkgap. 4,620,126, Cl. 313-325.000.
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- Maola, Michael A.: *See—*
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- Maram, Jonathan M.: *See—*
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- Marcoux, Jean A.: *See—*
  - Dumas, Gerard; and Marcous, Jean A., 4,619,191, Cl. 99-483.000.
- Maren, Thomas H., to University of Florida. Process for reducing intraocular pressure. 4,619,939, Cl. 514-363.000.
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- Marhold, Albrecht; and Klauke, Erich, to Bayer Aktiengesellschaft. Benzo-fused, tetrachlorinated heterocyclic compounds and a process for their preparation. 4,620,018, Cl. 549-362.000.
- Marion, Frank A., to Universal Propulsion Company, Inc. Propellant material with oxidizer reduction to lead oxide. 4,619,722, Cl. 149-41.000.
- Mark, Harold W.: *See—*
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- Marketing Displays, Inc.: *See—*
  - Seely, James R.; and McCabe, Jerry A., 4,619,220, Cl. 116-63.00P.
- Markowitz, Harry, to Bruedwill, Inc. Double layer fabric material and method for manufacturing same. 4,619,120, Cl. 66-192.000.
- Marks, Alvin M. Solar heater with cavity and phase-change material. 4,619,244, Cl. 126-451.000.
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  - Carter, William C., 4,619,586, Cl. 416-157.00R.
- Marshall, Frank J.: *See—*
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- Martin, Glenn L.: *See—*
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- Miller, Steven A., to General Electric Company. Apparatus for melt atomization with a concave melt nozzle for gas deflection. 4,619,597, Cl. 425-7.000.
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- Missout, Bernard M.; Michaux, Jean-Pierre; and Piova, Jean-Luc A., to Societe Anonyme de Telecommunications; and Societe Industrielle de Liaisons Electriques. Wheel for drawing helical groove ring for optical fibers. 4,619,107, Cl. 57-6.000.
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  - Shimizu, Isoo; Nomura, Hideki; Uchida, Kazumichi; and Mitsuyuki, Hitoshi, 4,620,056, Cl. 585-452.000.
- Mitumaru, Mititosi, to Koyo Seiko Company Limited. Fluid-tight shaft mounting with leakage drainage means. 4,619,458, Cl. 277-24.000.
- Miura, Fusayoshi: *See—*
  - Suzuki, Kenichi; and Miura, Fusayoshi, 4,619,716, Cl. 148-26.000.
- Miwa, Noriaki: *See—*
  - Ueda, Fumihiro; Kawada, Kaoru; Yamamoto, Kazuo; Miwa, Noriaki; and Ishimatsu, Toshiki, 4,619,698, Cl. 75-238.000.
- Miyamaru, Yukio: *See—*
  - Hatanaka, Kaoru; and Miyamaru, Yukio, 4,620,177, Cl. 340-81.00R.
- Miyamoto, Hitoshi; Momochi, Masanori; and Mishima, Ryoji, to Mitsubishi Light Metal Industries Limited. Superplastic aluminum alloy strips and process for producing the same. 4,619,712, Cl. 148-2.000.
- Miyamoto, Kazuki, to Canon Kabushiki Kaisha. Image processing apparatus. 4,619,521, Cl. 355-14.00R.
- Miyamoto, Masao: *See—*
  - Watanabe, Fumio; Hara, Yoshiaki; Miyamoto, Masao; Kusumoto, Yasuo; and Komaki, Syojiro, 4,620,102, Cl. 250-427.000.
- Miyamoto, Shigehiko; Watanabe, Yoshinobu; and Kishi, Yuriko, to Mitsubishi Paper Mills, Ltd. Ink jet recording method. 4,620,197, Cl. 346-1.100.
- Miyauchi, Yuh: *See—*
  - Isshiki, Tomiya; Kijima, Yasuhiko; Miyauchi, Yuh; and Kondo, Takao, 4,620,033, Cl. 562-519.000.
- Miyazaki, Hideo: *See—*
  - Oikawa, Hideo; Amazawa, Takao; Honma, Nakahachiro; Miyazaki, Hideo; Kyono, Iwao; Mori, Nobuyuki; Katoh, Yoshiharu; and Kuroki, Masami, 4,619,695, Cl. 75-65.0EB.

- Miyazaki, Makoto: *See—*
  - Inoue, Hiroshi; Miyazaki, Makoto; Isoi, Masaaki; and Yoda, Makoto, 4,619,972, Cl. 525-193.000.
- Miyazawa, Akira: *See—*
  - Shiga, Makoto; Miyazawa, Akira; and Miyutani, Mitsuyosi, 4,619,279, Cl. 131-345.000.
- Miyoshi, Mituji: *See—*
  - Tajima, Yoshio; Iwasaki, Yoshiharu; Kawabe, Kiyoshi; Uchida, Wataru; Sugita, Shoji; Matsuura, Kazuo; and Miyoshi, Mituji, 4,619,981, Cl. 526-125.000.
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- Miziolek, Andrzej W. Ion neutralization resonance emission elemental detector. 4,620,095, Cl. 250-281.000.
- Mizzi, Francois; and Bellon, Jean-Louis, to RDI Limited Partnership. Device for forming signals which are characteristic of the position of a point determined on a surface. 4,620,062, Cl. 178-18.000.
- MLS, Inc.: *See—*
  - Jacobson, Mark E., 4,619,564, Cl. 408-146.000.
- Mobil Oil Corporation: *See—*
  - Chang, Clarence D.; and Hellring, Stuart D., 4,620,044, Cl. 568-833.000.
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  - Derouane, Eric G.; and von Ballmoos, Roland, 4,619,818, Cl. 423-306.000.
  - Heilweil, Israel J.; and Hoskin, Dennis H., 4,619,773, Cl. 252-8.514.
  - Herrington, F. John, 4,619,638, Cl. 493-439.000.
  - Valyocsik, Ernest W., 4,619,820, Cl. 423-328.000.
- Modinger, Hermann: *See—*
  - Lenzer, Xaver; Wistuba, Eberhard; and Modinger, Hermann, 4,619,410, Cl. 241-55.000.
- Moeller, Mitchell G.: *See—*
  - Christiansen, Jean E.; Fitzgerald, Maryanne; Moeller, Mitchell G.; Pascalides, Artemis; and Vayda, R. Thaddeus, 4,619,660, Cl. 623-46.000.
- Moir, Virginia S., to Lear Siegler, Inc. Stackable rotary vane pump with improved volumetric efficiency. 4,619,594, Cl. 418-5.000.
- Molaire, Michel F.; and Kaplan, Mark S., to Eastman Kodak Company. Optical recording element having a polymerized crosslinked homopolymer smoothing layer. 4,619,890, Cl. 430-495.000.
- Molded Fiber Glass Company: *See—*
  - Kappelt, Charles E., Jr., 4,619,368, Cl. 211-41.000.
- Molgaard-Nielsen, Arne; and Gunther, Rolf, to William Cook, Europe A/S. Collapsible filter basket. 4,619,246, Cl. 128-1.00R.
- Molina, John M., to Molina, Jose F., a part interest. Method and apparatus for treating down hole equipment from corrosion in production well. 4,619,321, Cl. 166-90.000.
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  - Molina, John M., 4,619,321, Cl. 166-90.000.
- Moll, Eberhard; Pulker, Hans K.; and Haag, Walter, to Balzers Aktiengesellschaft. Method and apparatus for the reactive vapor deposition of layers of oxides, nitrides, oxynitrides and carbides on a substrate. 4,619,748, Cl. 204-192.310.
- Moll, Joseph P. Method and apparatus for keyless offset printing. 4,619,198, Cl. 101-148.000.
- Mollerus, Alexander; and Mollerus, Robert. Seal for tunnel washing machines. 4,619,121, Cl. 68-16.000.
- Mollerus, Robert: *See—*
  - Mollerus, Alexander; and Mollerus, Robert, 4,619,121, Cl. 68-16.000.
- Molly Maguire, Inc.: *See—*
  - Goodwin, John D.; and Mulkey, Forrest W., 4,619,911, Cl. 502-411.000.
- Molnar, Steven. Apparatus comprising a turbine and associated water extractor and method of translating the potential energy of deep sea water into useful work. 4,619,593, Cl. 417-498.000.
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  - Miyamoto, Hitoshi; Momochi, Masanori; and Mishima, Ryoji, 4,619,712, Cl. 148-2.000.
- Monarch Marking Systems, Inc.: *See—*
  - Hamisch, Paul H., Jr., 4,619,727, Cl. 156-541.000.
- Mondal, Kalyan: *See—*
  - Butt, James A.; Mondal, Kalyan; and Roberts, Preston L., 4,620,283, Cl. 364-493.000.
- Mondshine, Thomas C., to Texas United Chemical Corp. Crosslinked fracturing fluids. 4,619,776, Cl. 252-8.551.
- Mono Power Co.: *See—*
  - Gritters, Gregory A.; and Perez, Jose M., 4,619,769, Cl. 210-747.000.
- Monsanto Company: *See—*
  - Blyth, Randolph C.; Ucci, Pompelio A.; and McLellan, George R., 4,619,853, Cl. 428-95.000.
  - Yu, Jing-peir, 4,619,803, Cl. 264-176.200.
- Moon, Philip A. K., to Plessey Overseas Limited. Signal strength detector. 4,620,114, Cl. 307-350.000.
- Moore, Bernard S.: *See—*
  - Cue, Berkeley W., Jr.; and Moore, Bernard S., 4,620,019, Cl. 549-404.000.
- Moore, Harry W., III, to Facet Enterprises, Incorporated. Wet motor gerotor fuel pump with vapor vent valve and improved flow through the armature. 4,619,588, Cl. 417-366.000.
- Moore, M. Samuel. Helicopter engine warning or control system. 4,619,110, Cl. 60-39.091.
- Morcom, Paul J.: *See—*
  - Kirkland, Donald R.; and Morcom, Paul J., 4,619,066, Cl. 43-25.000.
- Moretti, Anthony L.; and Pellolio, Anselmo P., Jr., to E. D. Bullard Company. Protective respirator hood with inner and outer bibs. 4,619,254, Cl. 128-201.230.
- Morgan, Bridget M.: *See—*
  - Shattock, Alan G.; and Morgan, Bridget M., 4,619,896, Cl. 435-7.000.
- Morgan, Carlton B.; Yerkovich, Daniel; Lyster, Thomas D.; Hagen, Eric C.; and Roberts, Douglas H., to Physio-Control Corporation. Interactive portable defibrillator including ECG detection circuit. 4,619,265, Cl. 128-419.00D.
- Mori, Kohei; and Suzuki, Haruo, to Jidosha Kiki Co., Ltd. Brake booster. 4,619,185, Cl. 91-369.00R.
- Mori, Nobuyuki: *See—*
  - Oikawa, Hideo; Amazawa, Takao; Honma, Nakahachiro; Miyazaki, Hideo; Kyono, Iwao; Mori, Nobuyuki; Katoh, Yoshiharu; and Kuroki, Masami, 4,619,695, Cl. 75-65.0EB.
- Mori, Shinji: *See—*
  - Teraoka, Fuminori; Matsui, Takeo; and Mori, Shinji, 4,619,417, Cl. 242-107.40A.
- Mori, Yasuki: *See—*
  - Kakuta, Atsushi; Oka, Hiroyuki; Suzuki, Shigeo; Araya, Kotaro; Mori, Yasuki; and Morishita, Hirosada, 4,619,879, Cl. 430-58.000.
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  - Kakuta, Atsushi; Oka, Hiroyuki; Suzuki, Shigeo; Araya, Kotaro; Mori, Yasuki; and Morishita, Hirosada, 4,619,879, Cl. 430-58.000.
- Morita, Haruyuki: *See—*
  - Nakayama, Masatoshi; Morita, Haruyuki; and Kubota, Yuichi, 4,619,861, Cl. 428-220.000.
- Morita, Kiyoshi: *See—*
  - Okamoto, Yoshiyuki; Sato, Kazuhiko; Uryu, Shunji; and Morita, Kiyoshi, 4,619,080, Cl. 51-251.000.
- Morita, Kouichi: *See—*
  - Haga, Toru; Nagano, Eiki; Sato, Ryo; and Morita, Kouichi, 4,619,687, Cl. 71-92.000.
- Moriya, Koichi: *See—*
  - Shiokawa, Kozo; Moriya, Koichi; Goto, Toshio; Kamochi, Atsumi; and Kohama, Shigeo, 4,619,688, Cl. 71-92.000.
- Morrell, Albert M.; Hughes, Richard H.; and Barkow, William H., to RCA Corporation. Color image display systems. 4,620,133, Cl. 315-15.000.
- Morris, John C.; and Jackson, Winston J., Jr., to Eastman Kodak Company. Blends of copolyesters and polycarbonate. 4,619,976, Cl. 525-439.000.
- Morris, Robert L., to Ford Motor Company. Interactive idle speed control with a direct fuel control. 4,619,232, Cl. 123-339.000.
- Morris Rod-Weeder Co., Ltd.: *See—*
  - Machnee, Cecil, 4,619,330, Cl. 172-311.000.
- Morrison, David W., to Advanced Cardiovascular Systems, Inc. Torsional guide wire with attenuated diameter. 4,619,274, Cl. 128-772.000.
- Morton Thiokol, Inc.: *See—*
  - Bell, Frank H., 4,619,200, Cl. 102-275.000.
- Moss, Parry A.; and Rotoloni, Francis A., to AT&T Technologies, Inc. Methods of and apparatus for marking elongated strand material. 4,619,842, Cl. 427-163.000.
- Mossaad, Amgad S.: *See—*
  - Sutker, Burton J.; Hussain, Saadat; and Mossaad, Amgad S., 4,619,961, Cl. 524-393.000.
- Motorola, Inc.: *See—*
  - Pintchovski, Faivel S., 4,619,038, Cl. 29-590.000.
  - Remington, Scott; and Martino, William L., Jr., 4,620,299, Cl. 365-230.000.
  - Ross, Danny E.; and Bond, Larry O., 4,619,275, Cl. 128-783.000.
- Motoyama, Kichizo; and Araki, Yoshiharu, to Kabushiki Kaisha Johnan Seisakusho; and Aichi Machine Industry Co., Ltd. Sunroof panel opening/closing apparatus. 4,619,480, Cl. 296-217.000.
- Motschan, Georges. Utilization of a single vitamin or a combination of various vitamins. 4,619,829, Cl. 424-128.000.
- Mount Sinai School of Medicine of The City University of New York: *See—*
  - Schanzer, Harry, 4,619,641, Cl. 604-8.000.
- Moyer, James D., to Raychem Corporation. Braider carrier. 4,619,180, Cl. 87-57.000.
- Mrenna, Stephen A.; and Vosler, Gale C., to Westinghouse Electric Corp. Circuit breaker apparatus with line terminal shields. 4,620,076, Cl. 200-304.000.
- MTU Motoren-und Turbinen-Union Muenchen GmbH: *See—*
  - Hirschmeier, Manfred; and Kreitl, Josef, 4,619,707, Cl. 134-3.000.
- Mueller, Karl F., to Ciba-Geigy Corporation. Perfluoroalkyl substituted polymers. 4,619,974, Cl. 525-332.400.
- Mukushi, Toshimi: *See—*
  - Takahashi, Sankichi; Matsuzaki, Harumi; Mukushi, Toshimi; Ebara, Katsuya; Takakusagi, Tsunehiko; Yoshida, Masahiro; Sato, Joshiro; Yamane, Yasumasa; Sakaguchi, Katsumi; and Watanabe, Akira, 4,619,768, Cl. 210-739.000.
- Mulkey, Forrest W.: *See—*
  - Goodwin, John D.; and Mulkey, Forrest W., 4,619,911, Cl. 502-411.000.
- Muller, Gunter; and Damm, Norbert, to BMD Badische Maschinenfabrik Durlach GmbH. Apparatus for compressing foundry moulding material by pressure gas. 4,619,307, Cl. 164-169.000.

- Muller, Hanns P.: *See—*
  - Schafer, Walter; Hajek, Manfred; Muller, Hanns P.; Dhein, Rolf; Kuchenmeister, Rolf; and Sickert, Armin, 4,619,966, Cl. 524-589.000.
- Muller, Klaus; and Oberacker, Sieghard, to Alldos Eichler KG. Diaphragm pump, particularly for dosing liquids. 4,619,589, Cl. 417-388.000.
- Muller Manufacturing Ltd: *See—*
  - Geisinger, Wolfgang, 4,619,102, Cl. 53-399.000.
- Muller, Rolf, to Papst-Motoren GmbH & Co. KG. Drive arrangement with collectorless D.C. motor. 4,620,138, Cl. 318-254.000.
- Multiform Desiccants, Inc.: *See—*
  - Cullen, John S.; Incorvia, Samuel A.; and Vogt, James A., 4,619,673, Cl. 55-387.000.
- Muraishi, Masakazu; and Hira, Kazumi, to Nissan Motor Co., Ltd. Method of producing a headrest. 4,619,725, Cl. 156-182.000.
- Murakoshi, Yoichi: *See—*
  - Sano, Toshio; Takahashi, Masaharu; Murakoshi, Yoichi; and Matsuno, Kenichi, 4,619,127, Cl. 72-56.000.
- Murata Erie N.A., Inc.: *See—*
  - Blickstein, Martin J., 4,620,169, Cl. 333-235.000.
- Murata Kikai Kabushiki Kaisha: *See—*
  - Matsui, Isamu; Uchida, Hiroshi; Sekitani, Noboru; and Okumura, Hirokazu, 4,619,416, Cl. 242-35.50R.
- Murphy, Wesley W., III: *See—*
  - Naimpally, Saiprasad V.; and Murphy, Wesley W., III, 4,620,220, Cl. 358-40.000.
- Murray, Lawrence K., to Phillips Petroleum Company. Carbon black production apparatus. 4,619,812, Cl. 422-156.000.
- Muse, Lauchlin M., Jr. Combination surfboard-kneeboard. 4,619,619, Cl. 441-65.000.
- Musil, Gerhard, to Siemens Aktiengesellschaft. Circuit arrangement for feeding electrical users via a switch controller. 4,620,271, Cl. 363-21.000.
- Mutsers, Stanislaus M. P., to Unie van Kunstmestfabrieken B.V. Process for the preparation of granules. 4,619,843, Cl. 427-213.000.
- Myers, John W.; Parrott, Stephen L.; and Sughrue, Edward L., to Phillips Petroleum Company. Two-stage hydrotreating of a mixture of resid and light cycle oil. 4,619,759, Cl. 208-210.000.
- Myers, Roderick J.: *See—*
  - Salama, Mamdouh M.; Myers, Roderick J.; Thomason, William H.; and Joosten, Michael H., 4,619,557, Cl. 405-211.000.
- Nagai, Kunio: *See—*
  - Amano, Toshio; Fujioka, Yoshihisa; Nagai, Kunio; and Oda, Osamu, 4,620,229, Cl. 358-194.100.
- Nagano, Eiki: *See—*
  - Haga, Toru; Nagano, Eiki; Sato, Ryo; and Morita, Kouichi, 4,619,687, Cl. 71-92.000.
- Nagano, Fumikazu: *See—*
  - Tanaka, Seiichi; and Nagano, Fumikazu, 4,620,236, Cl. 358-293.000.
- Nagano, Masashi, to Shimano Industrial Company Limited. Rear derailleur for a bicycle. 4,619,632, Cl. 474-80.000.
- Nagano, Masashi, to Shimano Industrial Company Limited. Derailleur for a bicycle. 4,619,633, Cl. 474-82.000.
- Nagata, Toru: *See—*
  - Aoshima, Chikara; and Nagata, Toru, 4,619,509, Cl. 354-173.100.
- Nagayama, Kosei: *See—*
  - Ushifusa, Nobuyuki; Ogihara, Satoru; and Nagayama, Kosei, 4,620,264, Cl. 361-414.000.
- Nagel, Harry C., to American Standard Inc. Pulse code system for railroad track circuits. 4,619,425, Cl. 246-34.00R.
- Nagy, Neil F.: *See—*
  - Kessler, Bayard F.; and Nagy, Neil F., 4,620,064, Cl. 179-2.00C.
- Naimpally, Saiprasad V.; and Murphy, Wesley W., III, to RCA Corporation. Wideband chrominance signal filter. 4,620,220, Cl. 358-40.000.
- Naito, Kazufumi, to Kabushiki Kaisha Ishida Koki Seisakusho. Double integrating-type analog-to-digital converter. 4,620,178, Cl. 340-347.0NT.
- Naito, Takayuki: *See—*
  - Hoshi, Hideaki; and Naito, Takayuki, 4,619,925, Cl. 514-200.000.
- Naka, Hiromitsu, to Kabushiki Kaisha Naka Gijutsu Kenkyusho. Ceiling construction. 4,619,086, Cl. 52-205.000.
- Nakagaki, Shintaro: *See—*
  - Takanashi, Itsuo; Nakagaki, Shintaro; Ichimura, Hiroshi; Kuriyama, Takashi; and Negishi, Ichiro, 4,620,221, Cl. 358-47.000.
- Nakagawa, Kazuyuki: *See—*
  - Banno, Kazuo; Fujioka, Takafumi; Osaki, Masaaki; and Nakagawa, Kazuyuki, 4,619,932, Cl. 514-253.000.
- Nakagawa, Tadashi: *See—*
  - Ohta, Kimihiro; Nakagawa, Tadashi; Kawai, Naoyuki; Kojima, Takeshi; and Kawashima, Mitsuo, 4,620,206, Cl. 357-4.000.
- Nakagome, Keisuke: *See—*
  - Kamiyama, Yoshiyasu; Yoshioka, Noriaki; and Nakagome, Keisuke, 4,619,767, Cl. 210-490.000.
- Nakajima, Nobuyoshi: *See—*
  - Tanaka, Hiroshi; Adachi, Yuuma; and Nakajima, Nobuyoshi, 4,620,097, Cl. 250-327.200.
- Nakajima, Tadakatsu: *See—*
  - Nakayama, Wataru; Nakajima, Tadakatsu; Hirasawa, Shigeki; Kohno, Akiomi; and Takenaka, Takaji, 4,619,316, Cl. 165-104.330.
- Nakamura, Kazuharu; and Nakanishi, Yutaka, to Toyotomi Kogyo Co., Ltd. Combustion cylinder construction for oil burner. 4,619,603, Cl. 431-201.000.
- Nakamura, Koichi: *See—*
  - Aono, Toshiaki; Nakamura, Koichi; and Nakamura, Taku, 4,619,883, Cl. 430-203.000.
- Nakamura, Taku: *See—*
  - Aono, Toshiaki; Nakamura, Koichi; and Nakamura, Taku, 4,619,883, Cl. 430-203.000.
- Nakanishi Dental Mfg. Co., Ltd.: *See—*
  - Baba, Tadashi; and Kaneko, Norimasa, 4,619,614, Cl. 433-99.000.
- Nakanishi, Kazuhiro, to Konishiroku Photo Industry Co., Ltd. Camera. 4,619,510, Cl. 354-173.100.
- Nakanishi, Koichi: *See—*
  - Imoto, Koji; Tateishi, Mataji; Inenaga, Noriyasu; Omura, Tadao; Ishikawa, Hideyuki; Harada, Sumio; Kiyota, Yuhiko; Kobayashi, Hiroyuki; Nakanishi, Koichi; and Kume, Satoru, 4,619,229, Cl. 123-286.000.
- Nakanishi, Yutaka: *See—*
  - Nakamura, Kazuharu; and Nakanishi, Yutaka, 4,619,603, Cl. 431-201.000.
- Nakano, Yoshiyuki: *See—*
  - Goto, Tetsuro; and Nakano, Yoshiyuki, 4,619,511, Cl. 354-217.000.
- Nakaoka, Sadaaki: *See—*
  - Takahashi, Michihiko; Saito, Eiichi; Okano, Takeshi; and Nakaoka, Sadaaki, 4,619,519, Cl. 355-11.000.
- Nakatani, Kaname; and Kato, Yoshiaki, to Mita Industrial Co., Ltd. Electrostatic image forming apparatus using field effect transistors. 4,620,203, Cl. 346-153.100.
- Nakawaki, Yasunori, to Toyota Jidosha Kabushiki Kaisha. Torque transmitting belt. 4,619,634, Cl. 474-201.000.
- Nakayama, Masatoshi; Morita, Haruyuki; and Kubota, Yuichi, to TDK Corporation. Magnetic powders with improved dispersibility. 4,619,861, Cl. 428-220.000.
- Nakayama, Wataru; Nakajima, Tadakatsu; Hirasawa, Shigeki; Kohno, Akiomi; and Takenaka, Takaji, to Hitachi, Ltd. Heat transfer apparatus. 4,619,316, Cl. 165-104.330.
- Nakayama, Yasuhiko: *See—*
  - Sakai, Ikuo; Karimoto, Hiroyasu; and Nakayama, Yasuhiko, 4,619,720, Cl. 148-403.000.
- Nakazawa, Toru: *See—*
  - Maeda, Masahiko; Nakazawa, Toru; Utsunomiya, Yasuharu; and Wataki, Ryuji, 4,619,523, Cl. 355-15.000.
- Nakazono, Akiko: *See—*
  - Hashimoto, Tadanori; Yoshitake, Hiroshi; Hata, Shigenao; and Nakazono, Akiko, 4,619,704, Cl. 106-286.400.
- Napier, Edward D. Beverage filter unit and support. 4,619,830, Cl. 426-82.000.
- Naruo, Kyoichi: *See—*
  - Okita, Tsutomu; Naruo, Kyoichi; and Hashimoto, Hiroshi, 4,619,868, Cl. 428-425.100.
- Natansohn, Samuel; and Czupryna, Gary, to GTE Laboratories Incorporated. Process for the synthesis of silicon nitride. 4,619,905, Cl. 501-97.000.
- National Foundation for Cancer Research: *See—*
  - Szent-Gyorgyi, Albert; and Fodor, Gabor B., 4,620,014, Cl. 548-545.000.
- National Foundation for Cancer Research, Inc.: *See—*
  - Giaever, Ivar; and Keese, Charles R., 4,619,904, Cl. 436-518.000.
- Nauckhoff, Sven H. H.: *See—*
  - Daniell, Thomas P.; Harding, Robert C., Jr.; Harvey, Roger W. R.; and Nauckhoff, Sven H. H., 4,620,276, Cl. 364-200.000.
- Naydenov, Ivan H.: *See—*
  - Petkov, Georgi K.; Todorov, Todor S.; Atanassova, Yordanka R.; Netzov, Nikola M.; Deevski, Stefan K.; Radev, Nikola I.; Botev, Botyo P.; Metev, Georgi M.; Naydenov, Ivan H.; and Petrov, Yakim N., 4,619,129, Cl. 72-56.000.
- NB Jackets de Puerto Rico: *See—*
  - Dorman, Isidore, 4,619,367, Cl. 209-608.000.
- NCR Corporation: *See—*.
  - Janning, John L., 4,619,034, Cl. 29-571.000.
- NEC: *See—*
  - Ozawa, Takashi, 4,620,298, Cl. 365-189.000.
- NEC Corporation: *See—*
  - Ogasawara, Kazuo, 4,620,212, Cl. 357-51.000.
  - Ozawa, Takashi, 4,620,116, Cl. 307-449.000.
  - Yoshida, Yasuharu; and Yagi, Manabu, 4,620,159, Cl. 329-50.000.
- Nedstedt, Ulf, to Tetra Pak International AB. Sensing arrangement on a material roll. 4,620,184, Cl. 340-675.000.
- Negishi, Ichiro: *See—*
  - Takanashi, Itsuo; Nakagaki, Shintaro; Ichimura, Hiroshi; Kuriyama, Takashi; and Negishi, Ichiro, 4,620,221, Cl. 358-47.000.
- Nelson, Donald F. Balanced steerable transmission. 4,619,158, Cl. 74-695.000.
- Neogen Corporation: *See—*
  - Bull, Robert W.; Soltysiak, Robert M.; and Minnick, Paul D., 4,619,827, Cl. 424-89.000.
- Nepomuceno, Jose G.: *See—*
  - Albertson, Douglas E.; Dyson, James O.; Fischer, Eugene B.; Gaudlitz, Robert T.; Haws, Lewis A.; Keritsis, Gus D.; Long, Louis L.; McClung, Charles S.; Nepomuceno, Jose G.; and Wagoner, Steven R., 4,619,276, Cl. 131-79.000.
- Netzov, Nikola M.: *See—*
  - Petkov, Georgi K.; Todorov, Todor S.; Atanassova, Yordanka R.; Netzov, Nikola M.; Deevski, Stefan K.; Radev, Nikola I.; Botev, Botyo P.; Metev, Georgi M.; Naydenov, Ivan H.; and Petrov, Yakim N., 4,619,129, Cl. 72-56.000.

- Neuenschwander, Thomas R., to L H Carbide Corporation. Apparatus for manufacture of laminated parts. 4,619,028, Cl. 29-33.00L.
- New Holland Inc.: *See—*
  - Linde, Gilbert W., 4,619,405, Cl. 239-675.000.
- New, James S.; Lobeck, Walter G., Jr.; and Yevich, Joseph P., to Bristol-Myers Company. Antipsychotic cyclic imide derivatives of 2-(4-butylpiperazin-1-yl)pyridines, compositions and use. 4,619,930, Cl. 514-252.000.
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  - Yokoyama, Akira; and Ohmomo, Yoshiro, 4,619,823, Cl. 424-1.100.
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  - Hama, Tomio; and Yamazaki, Kiyoyasu, 4,619,287, Cl. 137-513.300.
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  - Shiokawa, Kozo; Moriya, Koichi; Goto, Toshio; Kamochi, Atsumi; and Kohama, Shigeo, 4,619,688, Cl. 71-92.000.
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  - Suzuki, Kazuhiro, 4,619,152, Cl. 74-473.00R.
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  - Isii, Sigeki, 4,619,176, Cl. 84-1.030.
  - Kondoh, Motoya, 4,619,178, Cl. 84-410.000.
  - Okumura, Takatoshi, 4,619,174, Cl. 84-1.010.
- Nippon Joucomatic Co., Ltd.: *See—*
  - Kimura, Takashi, 4,619,188, Cl. 92-26.000.
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  - Ishikura, Tsukasa, 4,620,003, Cl. 544-354.000.
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  - Goto, Tetsuro; and Nakano, Yoshiyuki, 4,619,511, Cl. 354-217.000.
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  - Tajima, Yoshio; Iwasaki, Yoshiharu; Kawabe, Kiyoshi; Uchida, Wataru; Sugita, Shoji; Matsuura, Kazuo; and Miyoshi, Mituji, 4,619,981, Cl. 526-125.000.
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  - Ishii, Keizou; Kurauchi, Takeo; Nozue, Jun; and Ishikura, Shinichi, 4,619,965, Cl. 524-547.000.
- Nippon Petrochemicals Co., Ltd.: *See—*
  - Shimizu, Isoo; Nomura, Hideki; Uchida, Kazumichi; and Mitsuyuki, Hitoshi, 4,620,056, Cl. 585-452.000.
- Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See—*
  - Ono, Tetsuji; Ichihara, Shoichi; Ohta, Tomohisa; and Terui, Sadao, 4,619,909, Cl. 502-303.000.
- Nippon Steel Corporation: *See—*
  - Arata, Yoshiaki; and Kobayashi, Akira, 4,620,080, Cl. 219-121.0PP.
  - Iuchi, Tohru; and Tanaka, Fumio, 4,619,529, Cl. 356-358.000.
  - Kozono, Haruo; and Arakawa, Isao, 4,619,472, Cl. 285-334.000.
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  - Oikawa, Hideo; Amazawa, Takao; Honma, Nakahachiro; Miyazaki, Hideo; Kyono, Iwao; Mori, Nobuyuki; Katoh, Yoshiharu; and Kuroki, Masami, 4,619,695, Cl. 75-65.0EB.
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  - Mikado, Tsuneo, 4,620,228, Cl. 358-160.000.
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  - Yamada, Yasutsugu, 4,619,700, Cl. 106-15.050.
- Nippondenso Co., LTD.: *See—*
  - Tsuru, Naohiko; and Nomura, Yoshihisa, 4,619,289, Cl. 137-627.500.
- Nishide, Toshiaki: *See—*
  - Ueno, Susumu; Nomura, Hirokazu; Hashizume, Shinobu; and Nishide, Toshiaki, 4,619,667, Cl. 8-444.000.
- Nishikawa, Masumi: *See—*
  - Kazaoka, Kenichi; Ishikawa, Masanobu; and Nishikawa, Masumi, 4,619,548, Cl. 403-290.000.
- Nishimura, Atsushi: *See—*
  - Haruna, Tohru; and Nishimura, Atsushi, 4,619,958, Cl. 524-102.000.
- Nishimura, Yasuyuki: *See—*
  - Tanimoto, Hirotoshi; Yamada, Mutsuo; Arikawa, Yoshijiro; Kamiguchi; Taiji; Nishimura, Yasuyuki; and Kaku, Hiroyuki, 4,620,038, Cl. 568-401.000.
- Nishimura, Ysunobu: *See—*
  - Kawai, Toshikazu; Nishimura, Ysunobu; and Kanesaki, Katumi, 4,620,042, Cl. 568-775.000.
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  - Kamuro, Yasuo; Hirai, Koichi; Suzuki, Fumio; Yamamoto, Susumu; and Shindo, Noboru, 4,619,685, Cl. 71-78.000.
- Nissan Motor Co., Ltd.: *See—*
  - Muraishi, Masakazu; and Hira, Kazumi, 4,619,725, Cl. 156-182.000.
- Nisshin-DCA Foods Inc.: *See—*
  - Abe, Kazuo; and Shimamura, Akira, 4,619,598, Cl. 425-131.100.
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  - Kamiyama, Yoshiyasu; Yoshioka, Noriaki; and Nakagome, Keisuke, 4,619,767, Cl. 210-490.000.
- Nobles, David A.: *See—*
  - Wallach, Steven J.; Jones, Thomas M.; Marshall, Frank J.; Nobles, David A.; Fuka, Kent A.; Rowan, Steven M.; Wallace, William H.; Dozier, Harold W.; Chastain, David M.; Clark, John W.; Kolstad, Robert B.; Mankovich, James E.; Harris, Michael C.; Gruger, Jeffrey H.; Gant, Alan D.; Shelton, Harold D.; Weatherford, James R.; Kimmel, Arthur T.; Gostin, Gary B.; Hansen, Gilbert J.; Golenbieski, John M.; Spry, Larry W.; Matulka, Gerald; Lockhart, Gaynel J.; and Sydow, Michael E., 4,620,275, Cl. 364-200.000.
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- Noguti, Hisao: *See—*
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  - Jansen, Winfried; and Nolde, Wolfgang, 4,620,314, Cl. 381-4.000.
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  - Mitani, Katsuya; Sano, Toshihiro; Nomura, Nobutaka; Numata, Kou; and Utino, Megumi, 4,620,273, Cl. 364-136.000.
- Nomura, Yoshihisa: *See—*
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  - Lucas, John M.; Kitzinger, Frank; Labuc, Vladimir M.; Peacey, John G.; Pelletier, Albert; and Wint, Gregory A., 4,619,533, Cl. 374-141.000.
- Nordal, Per-Erik; and Kanstad, Svein O. Infrared radiation source arrangement. 4,620,104, Cl. 250-493.100.
- Norman, Robert W., Jr.: *See—*
  - Boothroyd, Donald C.; and Norman, Robert W., Jr., 4,620,274, Cl. 364-200.000.
- Norris, Colin, to Titan Manufacturing Co. Pty. Ltd., The. Rock bolting. 4,619,559, Cl. 405-259.000.
- North American Agricultural, Inc.: *See—*
  - Carroll, Michael W.; and Harwood, Michael E., 4,619,085, Cl. 52-192.000.
- North American Philips Corporation: *See—*
  - Karr, Dennis K.; and Sprankle, David A., 4,620,175, Cl. 337-343.000.
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  - Carlton, Stephen C., 4,620,180, Cl. 340-347.0DD.
- Norton, Richard V., to Melamine Chemicals, Inc. Method of retarding paper degradation with time by treatment with melamine, and method of producing ageing-resistant paper coated with melamine. 4,619,735, Cl. 162-135.000.

- Norwich Eaton Pharmaceuticals, Inc.: *See—*
  - Burch, Homer A.; and Ebetino, Frank F., 4,619,928, Cl. 514-236.000.
- Nose , Yukihiko; and Malchesky, Paul S., to Asahi Medical Co., Ltd. Method and apparatus for low pressure filtration of plasma from blood. 4,619,639, Cl. 604-6.000.
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- Nova Chem Limited: *See—*
  - Hayes, Ernest R., 4,619,995, Cl. 536-20.000.
- Novak, Christopher: *See—*
  - Maczuszenko, Andrzej; Davison, Ernest; Otter, Brian; Whittaker, Brian F.; Novak, Christopher; and Landheer, Dolf, 4,619,515, Cl. 355-3.00R.
- Novation, Inc.: *See—*
  - Kessler, Bayard F.; and Nagy, Neil F., 4,620,064, Cl. 179-2.00C.
- Nowack, Gerhard P.: *See—*
  - Johnson, Marvin M.; and Nowack, Gerhard P., 4,619,907, Cl. 502-210.000.
- Nowak, Michael T.: *See—*
  - Sideman, Carl E.; Lewis, Thomas E.; and Nowak, Michael T., 4,619,665, Cl. 8-402.000.
- Nozue, Jun: *See—*
  - Ishii, Keizou; Kurauchi, Takeo; Nozue, Jun; and Ishikura, Shinichi, 4,619,965, Cl. 524-547.000.
- NPSP po Hydroplastichna Obrabotka na Metalite: *See—*
  - Petkov, Georgi K.; Todorov, Todor S.; Atanassova, Yordanka R.; Netzov, Nikola M.; Deevski, Stefan K.; Radev, Nikola I.; Botev, Botyo P.; Metev, Georgi M.; Naydenov, Ivan H.; and Petrov, Yakim N., 4,619,129, Cl. 72-56.000.
- NSK-Warner K. K.: *See—*
  - Shoji, Masao; Uchida, Mikio; and Kinoshita, Yoshio, 4,619,352, Cl. 192-41.00A.
- Nukem GmbH: *See—*
  - Quittkat, Jorg; Thiel, Gerhard; and Ursula, Ruth, 4,620,162, Cl. 331-45.000.
- Numaho, Yoshio; Kato, Yoshio; Okada, Hiroshi; and Ogawa, Tetsuro, to Tokyo Keiki Company, Ltd. Sweep termination signal generating apparatus for radar system. 4,620,137, Cl. 315-378.000.
- Numata, Kou: *See—*
  - Mitani, Katsuya; Sano, Toshihiro; Nomura, Nobutaka; Numata, Kou; and Utino, Megumi, 4,620,273, Cl. 364-136.000.
- Numberger, Christian K. Vertical maltdrying kiln. 4,619,606, Cl. 432-99.000.
- Nunn, Jack D. Apparatus and method for calibrating environment control systems. 4,619,135, Cl. 73-4.00R.
- Nusbaum, Ronald C. System for extracting silver from liquid solutions. 4,619,749, Cl. 204-228.000.
- Nynex Corporation: *See—*
  - Shirian, Said, 4,619,291, Cl. 138-109.000.
- O. Dorries GmbH: *See—*
  - Peiffer, Joseph, 4,619,571, Cl. 414-130.000.
- O.E.T. - Metalconsult S.r.l.: *See—*
  - Gorgerino, Mario D., 4,619,696, Cl. 75-130.00R.
- O.F.M.E.C. Officine Meccaniche Mantovane S.p.A.: *See—*
  - Magnoni, Pierangelo; Strada, Pier E.; Cavagnis, Walter; and Sanvito, Angelo, 4,619,006, Cl. 5-68.000.
- O.I. Corporation: *See—*
  - Bernard, Bernie B., 4,619,902, Cl. 436-145.000.
- Obara, Clifford J.: *See—*
  - Holmes, Bruce J.; Martin, Glenn L.; Domack, Christopher S.; Obara, Clifford J.; and Hassan, Ahmed A., 4,619,423, Cl. 244-130.000.
- Ober, Jurgen: *See—*
  - Behrend, Lothar; Ober, Jurgen; Knothe, Erich; and Melcher, Franz-Josef, 4,619,337, Cl. 177-210.00R.
- Oberacker, Sieghard: *See—*
  - Muller, Klaus; and Oberacker, Sieghard, 4,619,589, Cl. 417-388.000.
- Oborzil, Edit; and Jeney, Tibor. Bell. 4,619,846, Cl. 428-11.000.
- O'Brien, Edward J. Ozone H_2O treatment. 4,619,763, Cl. 210-177.000.
- O'Brien, Robert B., to O'Brien, Robert K. Latching magnetic actuator. 4,620,173, Cl. 335-205.000.
- O'Brien, Robert K.: *See—*
  - O'Brien, Robert B., 4,620,173, Cl. 335-205.000.
- Occidental Chemical Corporation: *See—*
  - Alsop, Derek J., 4,620,040, Cl. 568-656.000.
- Oda, Osamu: *See—*
  - Amano, Toshio; Fujioka, Yoshihisa; Nagai, Kunio; and Oda, Osamu, 4,620,229, Cl. 358-194.100.
- O'Donnell, William P.: *See—*
  - Skinner, Harry W.; Skinner, James W.; Skinner, William O.; and O'Donnell, William P., 4,619,555, Cl. 405-154.000.
- Odry, Stefan: *See—*
  - Janthur, Ingo W.; Roth, Alfred; and Odry, Stefan, 4,619,073, Cl. 49-74.000.
- Ogasawara, Kazuo, to NEC Corporation. Semiconductor device with a resistor of polycrystalline silicon. 4,620,212, Cl. 357-51.000.
- Ogawa, Hiroshi, to Sony Corporation. Digital signal detecting and compensating circuit with adjustable window signal. 4,620,300, Cl. 369-33.000.
- Ogawa, Mutsuo; Hashimoto, Takemi; Hara, Kazuyuki; and Kondo, Mitsuru, to Ricoh Company, Ltd. Facsimile transceiver utilizing orthogonal conversion. 4,620,233, Cl. 358-260.000.
- Ogawa, Tetsuro: *See—*
  - Numaho, Yoshio; Kato, Yoshio; Okada, Hiroshi; and Ogawa, Tetsuro, 4,620,137, Cl. 315-378.000.
- Ogihara, Satoru: *See—*
  - Ushifusa, Nobuyuki; Ogihara, Satoru; and Nagayama, Kosei, 4,620,264, Cl. 361-414.000.
- Ohannesian, Michael J. Tool for installing and aligning camshaft bushings in internal combustion engines. 4,619,027, Cl. 29-275.000.
- O'Hare, Thomas E.: *See—*
  - Sapienza, Richard S.; Slegeir, William A.; O'Hare, Thomas E.; and Mahajan, Devinder, 4,619,946, Cl. 518-700.000.
- Ohkubo, Yasunori: *See—*
  - Suzuki, Toshihiko; Isawa, Nobuyuki; Ohkubo, Yasunori; and Hoshi, Kinji, 4,619,730, Cl. 156-617.0SP.
- Ohlinger, Manfred: *See—*
  - Melzer, Milena; Jakusch, Helmut; Grau, Werner; Koster, Eberhard; Loser, Werner; Polke, Reinhard; Schadel, Gunter; Ohlinger, Manfred; and Vath, Gunter, 4,619,777, Cl. 252-62.540.
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  - Yokoyama, Akira; and Ohmomo, Yoshiro, 4,619,823, Cl. 424-1.100.
- Ohnhaus, Buford. Airflow measurement shroud. 4,619,138, Cl. 73-198.000.
- Ohnishi, Masahiro: *See—*
  - Takehara, Nobumitsu; Yanagihara, Kazuhiko; Ohnishi, Masahiro; and Harada, Shigeo, 4,620,096, Cl. 250-319.000.
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  - Ono, Tetsuji; Ichihara, Shoichi; Ohta, Tomohisa; and Terui, Sadao, 4,619,909, Cl. 502-303.000.
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  - Suenaga, Makoto; Yano, Mitsuru; Ishihara, Yasuoki; and Ohtsuka, Kohki, 4,619,713, Cl. 148-3.000.
- Ohtsuka, Shuichi: *See—*
  - Yamana, Keiichi; Tachibana, Hajime; and Ohtsuka, Shuichi, 4,619,513, Cl. 355-3.0CH.
- Ohtsuki, Takashi: *See—*
  - Taniguchi, Shin ichi; and Ohtsuki, Takashi, 4,619,360, Cl. 198-471.100.
- Oikawa, Hideo; Amazawa, Takao; Honma, Nakahachiro; Miyazaki, Hideo; Kyono, Iwao; Mori, Nobuyuki; Katoh, Yoshiharu; and Kuroki, Masami, to Nihon Kogyo Kabushiki Kaisha; and Nippon Telegraph & Telephone Public Corporation. Process for producing high-purity metal targets for LSI electrodes. 4,619,695, Cl. 75-65.0EB.
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  - Farque, Claude A., 4,620,189, Cl. 340-856.000.
- Oji Paper Company, Ltd.: *See—*
  - Awata, Yasuhira; and Iwaki, Osamu, 4,619,796, Cl. 264-29.400.
- Oka, Hiroyuki: *See—*
  - Kakuta, Atsushi; Oka, Hiroyuki; Suzuki, Shigeo; Araya, Kotaro; Mori, Yasuki; and Morishita, Hirosada, 4,619,879, Cl. 430-58.000.
- Okada, Hiroshi: *See—*
  - Numaho, Yoshio; Kato, Yoshio; Okada, Hiroshi; and Ogawa, Tetsuro, 4,620,137, Cl. 315-378.000.
- Okada, Junichi: *See—*
  - Koto, Haruhiko; Okada, Junichi; Ishii, Hiroshi; and Sawada, Kenji, 4,620,202, Cl. 346-140.00R.
- Okada, Tooru; Yokoyama, Takanao; Ueda, Atsushi; and Iwata, Toshio, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha; and Mitsubishi Denki Kabushiki Kaisha. Control apparatus of internal combustion engine. 4,619,236, Cl. 123-425.000.
- Okamoto, Kenji, to Diesel Kiki Co., Ltd. Electronically controlled fuel injection apparatus. 4,619,234, Cl. 123-357.000.
- Okamoto, Yoshio; and Hatada, Koichi, to Daicel Chemical Industries, Ltd. Separation agent. 4,619,970, Cl. 525-100.000.
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- Okano, Takeshi: *See—*
  - Takahashi, Michihiko; Saito, Eiichi; Okano, Takeshi; and Nakaoka, Sadaaki, 4,619,519, Cl. 355-11.000.
- Okashiro, Tetsuo: *See—*
  - Iwai, Shingo; Suzuki, Ryozo; Shiraga, Jun; and Okashiro, Tetsuo, 4,619,591, Cl. 417-422.000.
- Okaya, Takuji: *See—*
  - Anzawa, Haruyoshi; Satoh, Kenji; Tanaka, Yoshinari; and Okaya, Takuji, 4,619,849, Cl. 428-35.000.
- O'Keefe, Gerald T.: *See—*
  - Baba, Takaaki; and O'Keefe, Gerald T., 4,620,222, Cl. 358-48.000.
- Oki Electric Industry Co., Ltd.: *See—*
  - Isobe, Minoru, 4,619,389, Cl. 226-79.000.
- Okita, Tsutomu; Yamaguchi, Nobutaka; and Hashimoto, Hiroshi, to Fuji Photo Film Co., Ltd. Magnetic recording medium with electron beam cured magnetic layer. 4,619,855, Cl. 428-143.000.
- Okita, Tsutomu; Naruo, Kyoichi; and Hashimoto, Hiroshi, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,619,868, Cl. 428-425.100.
- Okita, Tsutomu: *See—*
  - Kamada, Koh; Hashimoto, Hiroshi; Okita, Tsutomu; and Hibino, Noburo, 4,619,856, Cl. 428-143.000.
- Okumoto, Yutaka; Ozaki, Toshiyuki; and Komori, Mikio, to Japan Tobacco & Salt Public Corporation, The. Tobacco filter tip attaching apparatus. 4,619,277, Cl. 131-94.000.

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  - Matsui, Isamu; Uchida, Hiroshi; Sekitani, Noboru; and Okumura, Hirokazu, 4,619,416, Cl. 242-35.50R.
- Okumura, Takatoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument. 4,619,174, Cl. 84-1.010.
- Okutsu, Eiichi, to Fuji Photo Film Co., Ltd. Process for forming high contrast negative image. 4,619,886, Cl. 430-265.000.
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  - Anhauser, Dieter; Kreitlow, Gerhard; Olbrich, Hubertus; Reinhold, Karl-Heinz; and Schmitt, Anita, 4,619,253, Cl. 218-156.000.
- Olbrueck, Peter; Kluth, Hermann; Roederhoff, Bernhard; Dierichs, Wolfgang; and Wegner, Juergen, to Henkel Kommanditgesellschaft auf Aktien. Paint stripping foam. 4,619,711, Cl. 134-38.000.
- Olin Corporation: *See—*
  - Habbe, Randall G., 4,619,203, Cl. 102-516.000.
- Olin Hunt Specialty Products Inc.: *See—*
  - Minten, Karl L.; and Pismennaya, Galina, 4,619,741, Cl. 204-15.000.
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- Olympus Optical Co., Ltd.: *See—*
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  - Fontana, Fernando, 4,619,022, Cl. 24-69.00J.
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  - Taylor, Patrick R.; and Omofoma, Matthew A., 4,619,690, Cl. 75-1.00R.
- Omura, Tadao: *See—*
  - Imoto, Koji; Tateishi, Mataji; Inenaga, Noriyasu; Omura, Tadao; Ishikawa, Hideyuki; Harada, Sumio; Kiyota, Yuhiko; Kobayashi, Hiroyuki; Nakanishi, Koichi; and Kume, Satoru, 4,619,229, Cl. 123-286.000.
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- Ono, Tsuyoshi, to Victor Company of Japan, Limited. Tape speed control system for magnetic tape recorder. 4,620,241, Cl. 360-73.000.
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- Orain, Michel A., to Glaenzer Spicer. Arrangement of two elements which undergo an alternating sliding motion and its application in a slidable tripod joint. 4,619,628, Cl. 464-111.000.
- Orsech, Helmuth: *See—*
  - Gruner, Hans; Orsech, Helmuth; and Schrewe, Hans, 4,619,306, Cl. 164-150.000.
- Ortiz, John P., to United States of America, Energy. Apparatus for measuring the decontamination factor of a multiple filter air-cleaning system. 4,619,136, Cl. 73-38.000.
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  - Banno, Kazuo; Fujioka, Takafumi; Osaki, Masaaki; and Nakagawa, Kazuyuki, 4,619,932, Cl. 514-253.000.
- Osburn, Larry E.; and Wells, Melvin W., to Dresser Industries, Inc. Process and apparatus for drying and classifying particulate granulate material. 4,619,052, Cl. 34-10.000.
- Oshida, Masahiro: *See—*
  - Kiriyama, Tsutomu; Horie, Shigeru; Ichihashi, Tetsuo; and Oshida, Masahiro, 4,619,869, Cl. 428-480.000.
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  - Maas, Henricus G. R.; Slotboom, Jan W.; Appels, Johannes A.; and Osinski, Kazimierz, 4,619,039, Cl. 29-591.000.
- O'Sullivan, Paul J.: *See—*
  - Bedford, Timothy J.; and O'Sullivan, Paul J., 4,619,240, Cl. 123-575.000.
- Otis Elevator Company: *See—*
  - Adrian, Willy; and Holzhauer, Ralf, 4,619,355, Cl. 198-323.000.
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  - Shoji, Hisataka; and Ouchi, Shigehiro, 4,619,963, Cl. 524-439.000.
- Overath, Friedhelm; and Saner, Remo, to Georg Fischer Aktiengesellschaft. Flange connection assembly for fiber-reinforced plastic pipe members. 4,619,470, Cl. 285-55.000.
- Overton, James R.: *See—*
  - Lentz, Carl M.; Overton, James R.; and Cornell, David D., 4,620,055, Cl. 585-438.000.
- Owens-Illinois, Inc.: *See—*
  - Thomas, Ian M.; and Tillman, James J., 4,619,719, Cl. 148-188.000.
- Oyama, Hiroo, to Stanley Electric Co., Ltd. Headlamp for vehicle. 4,620,269, Cl. 362-80.000.
- Ozaki, Toshiyuki: *See—*
  - Okumoto, Yutaka; Ozaki, Toshiyuki; and Komori, Mikio, 4,619,277, Cl. 131-94.000.
- Ozawa, Takashi, to NEC Corporation. Decoder circuit with setting function of an output level. 4,620,116, Cl. 307-449.000.
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  - Schnell, Robert P.; Sampson, Robert W.; Pacanowski, Ronald F.; and Bruggema, Donald J., 4,620,284, Cl. 364-498.000.
- Pacific States Cast Iron Pipe Co.: *See—*
  - Perkins, Jay, 4,619,561, Cl. 406-89.000.
- Paikert, Paul: *See—*
  - Ruff, Klemens; Suhr, Ludwig; and Paikert, Paul, 4,619,671, Cl. 55-222.000.
- Pailler, Alain L. N., to Electronique Serge Dassault. Apparatus for printing and inspecting card tickets. 4,619,197, Cl. 101-93.040.
- Pako Corporation: *See—*
  - Euteneuer, Charles L.; and Diesch, Robert E., 4,619,452, Cl. 271-305.000.
- Paljakka, Olavi O. Ventilating wall element. 4,619,312, Cl. 165-57.000.
- Pan, Yau-Jung; and Chen, Sheng-Yi. Cylinder lock with anti-picking device. 4,619,124, Cl. 70-419.000.
- Pandeya, Prakash N.: *See—*
  - Chu, Tsuwei; and Pandeya, Prakash N., 4,619,118, Cl. 62-324.100.
- Pant, Paul: *See—*
  - Jachowski, Johannes; and Pant, Paul, 4,619,692, Cl. 75-10.250.
- Papciak, Walter A.; Hoffman, Karl K.; Engel, Roger; and Wieczorek, Adam, to Plicon Corporation. Diskette spring and diskette. 4,620,247, Cl. 360-97.000.
- Pappas, Michael J.; and Buechel, Frederick F. Spherical kinematic joint. 4,619,658, Cl. 623-22.000.
- Papst-Motoren GmbH & Co. KG: *See—*
  - Muller, Rolf, 4,620,138, Cl. 318-254.000.
- Papuga, Donald M.: *See—*
  - Matzner, Markus; and Papuga, Donald M., 4,619,975, Cl. 525-437.000.
- Paramount Packaging Corporation: *See—*
  - Thomas, John S., Jr., 4,619,361, Cl. 206-204.000.
- Parekh, Girish G., to American Cyanamid Company. Aliphatic isocyanate compounds. 4,619,999, Cl. 544-196.000.
- Park-Ohio Industries, Inc.: *See—*
  - Balzer, Norbert R.; and Soworowski, David R., 4,619,717, Cl. 148-112.000.
- Parker-Hannifin Corporation: *See—*
  - Church, John F.; Stone, Walter H.; and Schaupp, Richard E., 4,619,764, Cl. 210-248.000.
- Parker, Sidney G.; and York, Rudy L., to Texas Instruments Incorporated. Mosaic pattern of infrared detectors of different cut off wave lengths. 4,620,209, Cl. 357-30.000.
- Parra, Ernest P. Method and apparatus for severing a tubular member. 4,619,556, Cl. 405-195.000.
- Parrott, Stephen L.: *See—*
  - Myers, John W.; Parrott, Stephen L.; and Sughrue, Edward L., 4,619,759, Cl. 208-210.000.
- Pascalides, Artemis: *See—*
  - Christiansen, Jean E.; Fitzgerald, Maryanne; Moeller, Mitchell G.; Pascalides, Artemis; and Vayda, R. Thaddeus, 4,619,660, Cl. 623-46.000.
- Patterson, Dianne L.: *See—*
  - Sasaki, Yukihiko; Lin, Kenneth S.; and Patterson, Dianne L., 4,619,851, Cl. 428-40.000.
- Patterson, Richard G., to Mannesmann Tally Corporation. Adjustable load, friction feed, quick tear bar mechanism. 4,619,538, Cl. 400-621.000.
- Patti, William. Fresh water flushing kit. 4,619,618, Cl. 440-88.000.
- Paul, Bernt-Joachim; and Renz, Roman, to Siemens Aktiengesellschaft. Contact arrangement for vacuum switches. 4,620,074, Cl. 200-144.00B.
- Payen International Limited: *See—*
  - Herrington, Maurice G., 4,619,459, Cl. 277-235.00B.
- Peacey, John G.: *See—*
  - Lucas, John M.; Kitzinger, Frank; Labuc, Vladimir M.; Peacey, John G.; Pelletier, Albert; and Wint, Gregory A., 4,619,533, Cl. 374-141.000.
- Pearce, Terry A.: *See—*
  - Jones, Elvis E.; Pearce, Terry A.; Laird, Dacon C., III; and Everitt, James H., 4,619,669, Cl. 44-1.00G.
- Peels, Antonius H. P. M.; van den Beld, Antonius J. M.; Bijma, Jan; and Gerritsen, Jan, to U.S. Philips Corporation. Cathode-ray tube. 4,620,134, Cl. 315-15.000.
- Peery, John R.: *See—*
  - Eckenhoff, James B.; Peery, John R.; and Landrau, Felix A., 4,619,652, Cl. 604-415.000.
- Pehker, Manfred; Zielinski, Erich; Metz, Josef; and Bierwirth, Adolf P., to Rheinmetall GmbH. Ammunition and magazine for an automatic loading arrangement. 4,619,181, Cl. 89-34.000.
- Peiffer, Joseph, to O. Dorries GmbH. Installation for the distribution of sheets. 4,619,571, Cl. 414-130.000.

Pelerin, Joseph J. Dental impression tray. 4,619,610, Cl. 433-41.000.

Pelletier, Albert: *See—*
- Lucas, John M.; Kitzinger, Frank; Labuc, Vladimir M.; Peacey, John G.; Pelletier, Albert; and Wint, Gregory A., 4,619,533, Cl. 374-141.000.

Pellolio, Anselmo P., Jr.: *See—*
- Moretti, Anthony L.; and Pellolio, Anselmo P., Jr., 4,619,254, Cl. 128-201.230.

Peltola, Pekka O.: *See—*
- Henricson, Kaj O.; and Peltola, Pekka O., 4,619,736, Cl. 162-261.000.

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- Heinzl, Joachim; Penningsfeld, Hans-Dieter; and Berdelle-Hilge, Peter, 4,620,201, Cl. 346-140.00R.

Penttinen, Kyosti, to Tikkurilan Varitehtaat Oy. Waterproof, weather-resistant and substantially non-stretching textile a method for producing it, and a component made from it. 4,619,854, Cl. 428-99.000.

Penunuri, David: *See—*
- Brooks, Robert E.; and Penunuri, David, 4,620,167, Cl. 333-195.000.

Perdue, Terry A., to Heath Company. Sonar ranging/light detection system for use in a robot. 4,620,285, Cl. 364-513.000.

Perez, Jose M.: *See—*
- Gritters, Gregory A.; and Perez, Jose M., 4,619,769, Cl. 210-747.000.

Perez, Rafael. Cutting saw for grinding solid materials. 4,619,172, Cl. 83-830.000.

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- Tabarelli, Werner; and Lobach, Ernst, 4,619,524, Cl. 355-53.000.

Perkins, Jay, to Pacific States Cast Iron Pipe Co. Method and apparatus for conveying particulate matter. 4,619,561, Cl. 406-89.000.

Perron, Robert: *See—*
- Gauthier-Lafaye, Jean; and Perron, Robert, 4,619,791, Cl. 260-549.000.

Perry, Bruce N.: *See—*
- Genack, Azriel Z.; and Perry, Bruce N., 4,619,528, Cl. 356-301.000.

Perry, Richard R.: *See—*
- Strop, Hans R.; and Perry, Richard R., 4,619,789, Cl. 260-412.600.

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- Meserol, Peter M.; and Acker, Jesse L., 4,619,530, Cl. 356-440.000.

Persson, John A.; Andrews, Ross E.; and Maola, Michael A., to Lectromelt Corporation. Arc furnace electrode control. 4,620,308, Cl. 373-105.000.

Peters, Donald J.: *See—*
- May, Wayne A.; and Peters, Donald J., 4,619,358, Cl. 198-457.000.

Peterson, Ronald A.: *See—*
- Bakken, Kirby L.; Judson, Robert G.; Miller, William E.; and Peterson, Ronald A., 4,620,243, Cl. 360-77.000.

Petkov, Georgi K.; Todorov, Todor S.; Atanassova, Yordanka R.; Netzov, Nikola M.; Deevski, Stefan K.; Radev, Nikola I.; Botev, Botyo P.; Metev, Georgi M.; Naydenov, Ivan H.; and Petrov, Yakim N., to NPSP po Hydroplastichna Obrabotka na Metalite. Method of and apparatus for forming blanks by hydroplastic deformation. 4,619,129, Cl. 72-56.000.

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- Sizer, Theodore, II; Duling, Irl N., III; Petras, Carl H.; and Letzring, Samuel A., 4,620,113, Cl. 307-270.000.

Petrehn, John R. Balloon carriage. 4,619,422, Cl. 244-127.000.

Petrov, Yakim N.: *See—*
- Petkov, Georgi K.; Todorov, Todor S.; Atanassova, Yordanka R.; Netzov, Nikola M.; Deevski, Stefan K.; Radev, Nikola I.; Botev, Botyo P.; Metev, Georgi M.; Naydenov, Ivan H.; and Petrov, Yakim N., 4,619,129, Cl. 72-56.000.

Pfizer Inc.: *See—*
- Cue, Berkeley W., Jr.; and Moore, Bernard S., 4,620,019, Cl. 549-404.000.
- Hamanaka, Ernest S., 4,619,783, Cl. 540-361.000.
- Hamanaka, Ernest S., 4,619,924, Cl. 514-195.000.
- Ives, Jeffrey L., 4,619,915, Cl. 514-17.000.

Pfohl, Robert L.: *See—*
- Uphold, James D.; and Pfohl, Robert L., 4,619,268, Cl. 128-671.000.

Philip Morris Incorporated: *See—*
- Albertson, Douglas E.; Dyson, James O.; Fischer, Eugene B.; Gaudlitz, Robert T.; Haws, Lewis A.; Keritsis, Gus D.; Long, Louis L.; McClung, Charles S.; Nepomuceno, Jose G.; and Wagoner, Steven R., 4,619,276, Cl. 131-79.000.
- Sanders, Edward B.; and Houminer, Yoram, 4,620,004, Cl. 544-357.000.

Philips Petroleum Company: *See—*
- Kolts, John H.; and Delzer, Gary A., 4,620,051, Cl. 585-663.000.

Phillips Petroleum Company: *See—*
- Boston, Ernest B., 4,619,770, Cl. 210-772.000.
- DeLong, Bradley W., 4,619,679, Cl. 62-11.000.
- Drake, Charles A.; and Johnson, Marvin M., 4,620,016, Cl. 549-325.000.
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- Hopkins, Thomas R., 4,619,898, Cl. 435-190.000.
- Horton, Robert L., 4,619,744, Cl. 204-105.00R.
- Johnson, Marvin M.; and Nowack, Gerhard P., 4,619,907, Cl. 502-210.000.
- Kimble, James B.; and Kolts, John H., 4,620,057, Cl. 585-500.000.
- Kimble, Kenneth B.; Bresson, Clarence R.; and Mark, Harold W., 4,619,760, Cl. 209-166.000.
- Kolts, John H.; and Delzer, Gary A., 4,620,052, Cl. 585-663.000.
- McDaniel, Max P.; and Smith, Paul D., 4,619,980, Cl. 526-96.000.
- Murray, Lawrence K., 4,619,812, Cl. 422-156.000.
- Myers, John W.; Parrott, Stephen L.; and Sughrue, Edward L., 4,619,759, Cl. 208-210.000.
- Webb, Don W.; and Bard, William B., 4,619,901, Cl. 436-55.000.
- Welch, M. Bruce, 4,620,053, Cl. 585-664.000.

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- Morgan, Carlton B.; Yerkovich, Daniel; Lyster, Thomas D.; Hagen, Eric C.; and Roberts, Douglas H., 4,619,265, Cl. 128-419.00D.

Pickering, Mark A., to Carrier Corporation. Flame radiator structure. 4,619,604, Cl. 431-353.000.

Pieczykolan, George S., to Central Sprinkler Corp. Sprinkler head. 4,619,327, Cl. 169-38.000.

Pierantozzi, Ronald: *See—*
- Dyer, Paul N.; and Pierantozzi, Ronald, 4,619,910, Cl. 502-336.000.

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Pierce, William G. Apparatus for dewatering fibrous materials. 4,619,194, Cl. 100-127.000.

Piet, Meyer, to Futurecraft Corporation. Fluid flow control device. 4,619,285, Cl. 137-68.200.

Piken, Stuart. Scalp cleaner. 4,619,014, Cl. 15-244.00R.

Pilkington P.E. Limited: *See—*
- Taylor, Hylton, 4,619,863, Cl. 428-221.000.

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- Kreeger, Elsmer W., 4,619,366, Cl. 206-507.000.

Pintchovski, Faivel S., to Motorola, Inc. Selective titanium silicide formation. 4,619,038, Cl. 29-590.000.

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- Yasukawa, Kenichiro, 4,620,158, Cl. 329-50.000.

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- Missout, Bernard M.; Michaux, Jean-Pierre; and Piova, Jean-Luc A., 4,619,107, Cl. 57-6.000.

Pismennaya, Galina: *See—*
- Minten, Karl L.; and Pismennaya, Galina, 4,619,741, Cl. 204-15.000.

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- Havey, Edward J., Jr.; Miller, Carl; and Westerman, Ted, 4,619,101, Cl. 53-117.000.

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- Seyler, Gerard; and Sloan, Donald R., 4,619,328, Cl. 169-75.000.

Plahmer, Thomas G., to Rexnord Inc. Wearing part diagnostic system employing tracer elements. 4,620,185, Cl. 340-682.000.

Platt, Sterling B., to Champion International Corporation. Log-peeling lathe. 4,619,299, Cl. 144-357.000.

Pledger, James R.: *See—*
- Leonard, Eric M.; Fister, Robert V.; and Pledger, James R., 4,619,804, Cl. 264-220.000.

Plessey Overseas Limited: *See—*
- Moon, Philip A. K., 4,620,114, Cl. 307-350.000.

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- Papciak, Walter A.; Hoffman, Karl K.; Engel, Roger; and Wieczorek, Adam, 4,620,247, Cl. 360-97.000.

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- McPherson, Robert R., 4,619,288, Cl. 137-554.000.

Pochini, Giovanni: *See—*
- Olivieri, Antonio; and Pochini, Giovanni, 4,620,106, Cl. 250-506.100.

Polak, Anthony J.: *See—*
- Leung, Roger Y.; and Polak, Anthony J., 4,619,988, Cl. 528-421.000.

Polaroid Corporation, Patent Dept.: *See—*
- Locatell, Louis, Jr.; Zepp, Charles M.; and Cieciuch, Ronald F., 4,619,784, Cl. 540-593.000.

Poley, Kenneth P.: *See—*
- Wood, Forrest L.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., 4,619,215, Cl. 114-56.000.

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- Di Stazio, Giovanni; Politi, Vincenzo; Margonelli, Andrea; De Luca, Giovanna; and Materazzi, Mario, 4,619,916, Cl. 514-18.000.

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- Di Stazio, Giovanni; Politi, Vincenzo; Margonelli, Andrea; De Luca, Giovanna; and Materazzi, Mario, 4,619,916, Cl. 514-18.000.

Polke, Reinhard: *See—*
- Melzer, Milena; Jakusch, Helmut; Grau, Werner; Koster, Eberhard; Loser, Werner; Polke, Reinhard; Schadel, Gunter; Ohlinger, Manfred; and Vath, Gunter, 4,619,777, Cl. 252-62.540.

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- Sato, Kyosaku, 4,619,962, Cl. 524-401.000.

Pool, L. Franklin, to Dart Industries Inc. Electrosurgical pencil providing blade isolation. 4,619,258, Cl. 128-303.140.

Popovich, Paul D.: *See—*
- Newell, Alton S.; Newell, A. Scott, Jr.; Popovich, Paul D.; and Ewing, John R., 4,619,029, Cl. 29-402.050.

Porta, Augusto; and Kulhanek, Antonin, to Battelle Memorial Institute. Process for the electrochemical decontamination of water polluted by pathogenic germs with peroxide formed in situ. 4,619,745, Cl. 204-151.000.

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- Zimmermann, Herbert; Poupko, Raphi; Luz, Zeev; and Billard, Jean, 4,619,788, Cl. 260-410.500.

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- Cooper, Edward, 4,620,149, Cl. 324-103.00P.

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- Delaney, James M.; and Jozwiak, Edward L., 4,619,746, Cl. 204-181.100.
- Hart, Terence J.; Dowbenko, Rostyslaw; Maska, Rudolf; Van Buskirk, Ellor J.; and Tetenbaum, Marvin T., 4,619,952, Cl. 523-409.000.
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Pratt, Donna K.: *See—*
- Terrell, Jamie B.; and Pratt, Donna K., 4,619,318, Cl. 166-55.000.

Pratt, Roy E.; Sayles, Scott M.; Bowers, Kerry W.; and Scott, Richard P., deceased (by Scott, Candice C., executrix), to Texaco, Inc. Fluid catalytic cracking method. 4,619,758, Cl. 208-85.000.

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- Sherman, Thomas E., 4,620,059, Cl. 174-42.000.

Press, Jeffery B.: *See—*
- Wright, William B., Jr.; and Press, Jeffery B., 4,619,941, Cl. 514-397.000.

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- Skinner, Harry W.; Skinner, James W.; Skinner, William O.; and O'Donnell, William P., 4,619,555, Cl. 405-154.000.

Pribis, Paul B.: *See—*
- Ades, Adrian R.; Pribis, Paul B.; and Proach, Donald J., 4,620,086, Cl. 219-552.000.

Pribish, Dennis S.: *See—*
- Schultz, Stephen J.; Huebner, John F.; Wiedor, Duane E.; and Pribish, Dennis S., 4,620,309, Cl. 373-128.000.

Price Pfister, Inc.: *See—*
- La Belle, John T.; Szemeredi, Robert S.; and Tarnay, Matthew G., 4,620,075, Cl. 200-159.00B.

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- Lam, Bing L.; and Pridgen, Lendon N., 4,620,001, Cl. 544-310.000.

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Proach, Donald J.: *See—*
- Ades, Adrian R.; Pribis, Paul B.; and Proach, Donald J., 4,620,086, Cl. 219-552.000.

Procter & Gamble Company, The: *See—*
- Gunn, Charles L., 4,619,806, Cl. 264-522.000.
- Hardy, Frederick E., 4,619,779, Cl. 252-91.000.

Proctor & Schwartz Inc.: *See—*
- George, Kurudamannil A.; and Zagorzycki, Peter E., 4,619,576, Cl. 414-300.000.

Protzmann, Donald E.: *See—*
- Burger, Laurie J.; Helfer, Joel N.; Protzmann, Donald E.; and Uhl, Robert F., 4,619,271, Cl. 128-736.000.

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- Salter, Robert S.; Boorman, Roy S.; and Wilkomirsky, Igor A. E., 4,619,814, Cl. 423-27.000.

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- Vironneau, Pierre; and Prunet, Jean, 4,619,243, Cl. 126-433.000.

Puetz, Cornelius: *See—*
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- Moll, Eberhard; Pulker, Hans K.; and Haag, Walter, 4,619,748, Cl. 204-192.310.

Purkey, Richard E.: *See—*
- Williams, William J.; and Purkey, Richard E., 4,619,437, Cl. 251-81.000.

Qaderi, S. Burhan A., to Ford Motor Company. Crosslinkable composition comprising aminoepoxy resin-IV. 4,619,977, Cl. 525-502.000.

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Quittkat, Jorg; Thiel, Gerhard; and Ursula, Ruth, to Nukem GmbH. Tunable triangle wave generator with two-phase sinusoidal outputs. 4,620,162, Cl. 331-45.000.

Quraishi, Azeez A. Game apparatus. 4,619,455, Cl. 273-118.00R.

Radev, Nikola I.: *See—*
- Petkov, Georgi K.; Todorov, Todor S.; Atanassova, Yordanka R.; Netzov, Nikola M.; Deevski, Stefan K.; Radev, Nikola I.; Botev, Botyo P.; Metev, Georgi M.; Naydenov, Ivan H.; and Petrov, Yakim N., 4,619,129, Cl. 72-56.000.

Radzins, Edmund; and Kenney, Timothy J., to Curt G. Joa, Inc. Pad turning apparatus. 4,619,357, Cl. 198-412.000.

Raghavan, Palanichamy: *See—*
- Bushnell, William J.; Hemmeter, Richard W.; and Raghavan, Palanichamy, 4,620,066, Cl. 179-27.00D.

Raghu, Sivaraman; Hoffmann, Arthur K.; and Singh, Balwant, to Cyanamid Agricultural de Puerto Rico, Inc. Synthesis of intermediates for tetramisole, levamisole and their derivatives. 4,620,009, Cl. 548-155.000.

Rai-Radio Televisione Italiana: *See—*
- D'Amato,. Paolo; and Salvadorini, Rolando, 4,620,218, Cl. 358-12.000.

Rajaram, Babu: *See—*
- Krause, Charles A.; and Rajaram, Babu, 4,620,186, Cl. 340-703.000.

Ramachandran, Pallassana N.; and Grand, Paul S., to Colgate Palmolive Co. Fabric softening heavy duty liquid detergent and process for manufacture thereof. 4,619,774, Cl. 252-8.700.

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Ranco Incorporated: *See—*
- Caldwell, Roland B., 4,619,286, Cl. 137-81.100.

Rand Steel Technology [Proprietary] Limited: *See—*
- Mitchell, George K., 4,619,443, Cl. 266-220.000.

Rands, Mary. Flexible lubricant applicator. 4,619,345, Cl: 184-109.000.

Ranpak Corp.: *See—*
- Ottaviano, Gary W., 4,619,635, Cl. 493-36.000.

Rao, Koppaka V. Neolignans of *Saururus cernuus* L and analogues thereof. 4,619,943, Cl. 514-464.000.

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- Heinsohn, George E.; and Rao, Velliyur N. M., 4,620,030, Cl. 560-338.000.

Rasmussen, Henning. Gas distribution arrangement for the admission of a processing gas to an atomizing chamber. 4,619,404, Cl. 239-461.000.

Rasmussen, Jerald K.: *See—*
- Charbonneau, Robert R.; Heilmann, Steven M.; Rasmussen, Jerald K.; and Tumey, Michael L., 4,619,867, Cl. 428-355.000.

Rath, Lucien M.; and Dunn, William J., to Kendall Company, The. Connection apparatus for side connection to fluid collection bag. 4,619,648, Cl. 604-326.000.

Rathmann, Thomas M.; Drake, Herbert G.; Mirkovich, Ninko T.; and Lachenbruch, Roger B., to Tegal Corporation. Article transport apparatus. 4,619,573, Cl. 414-222.000.

Ratino, David A.: *See—*
- Repperger, Daniel W.; Jennings, Thomas J.; and Ratino, David A., 4,619,506, Cl. 351-243.000.

Ratti, Luigi, to Astra Lakemedel Aktiebolag. Novel synthesis route for bacampicillin. 4,619,785, Cl. 540-318.000.

Raychem Corporation: *See—*
- Hawkings, Robert M., 4,619,490, Cl. 339-31.00M.
- Moyer, James D., 4,619,180, Cl. 87-57.000.

Raytheon Company: *See—*
- Collins, John D., 4,620,192, Cl. 342-128.000.
- Saunders, Kenneth J.; and Tustison, Randal W., 4,619,792, Cl. 264-1.200.

RCA Corporation: *See—*
- Bolger, Thomas V., 4,620,136, Cl. 315-371.000.
- Burrowes, Sherwin D. D., 4,620,219, Cl. 358-20.000.
- Chung, Kwong T.; and Triano, Alfred R., 4,620,127, Cl. 313-440.000.
- Jastrzebski, Lubomir L., 4,619,033, Cl. 29-571.000.
- Kosonocky, Walter F., 4,620,231, Cl. 358-213.000.
- Morrell, Albert M.; Hughes, Richard H.; and Barkow, William H., 4,620,133, Cl. 315-15.000.
- Naimpally, Saiprasad V.; and Murphy, Wesley W., III, 4,620,220, Cl. 358-40.000.
- Prabhu, Ashok N.; Conlon, Edward J.; and Sechi, Franco N., 4,619,836, Cl. 427-41.000.

RDI Limited Partnership: *See—*
- Mizzi, Francois; and Bellon, Jean-Louis, 4,620,062, Cl. 178-18.000.

Read, Randol R.; Cox, Everett L.; and Selzler, Randall L., to Standard Oil Company, now Amoco Corporation. Data transfer system. 4,620,279, Cl. 364-200.000.

Reagan, Barbara M.: *See—*
- Bresee, Randall R.; and Reagan, Barbara M., 4,619,664, Cl. 8-128.00A.

Reber, Jean-Francois: *See—*
- Meier, Kurt; Buhler, Niklaus; and Reber, Jean-Francois, 4,619,838, Cl. 427-53.100.

Recane, Marion L.: *See—*
- Tigwell, David C.; and Recane, Marion L., 4,620,190, Cl. 340-985.000.

Reckitt & Colman, S.A.: *See—*
- Weiss, Richard; and Delagneau, Hubert, 4,619,824, Cl. 424-16.000.

Redecker, Klaus: *See—*
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Redl, Richard S.; and Redl, Robert F. Umbrella with improved wind-up handle. 4,619,281, Cl. 135-20.00M.

Redl, Robert F.: *See—*
- Redl, Richard S.; and Redl, Robert F., 4,619,281, Cl. 135-20.00M.

Redman, Mark D.: *See—*
- Lee, Lin-nan; and Redman, Mark D., 4,620,224, Cl. 358-119.000.

Reed, George K.: *See—*
- Summa, Gareth D.; Reed, George K.; and Burt, Harold S., 4,619,575, Cl. 414-280.000.

Reed Tool Company: *See—*
- Daly, Jeffery E.; and Kotch, Robert J., 4,619,534, Cl. 384-94.000.

- Rehrig, James B. Three-sided, stackable material handling crate. 4,619,371, Cl. 220-71.000.
- Reid, William J.; Zappia, Jean M.; Capocci, Gerald A.; and Spivack, John D., to Ciba-Geigy Corporation. Benzoate-stabilized rigid polyvinyl chloride compositions. 4,619,957, Cl. 524-91.000.
- Reid, William J., to Ciba-Geigy Corporation. Substituted phenol chain terminator for polyvinyl chloride polymerization. 4,619,978, Cl. 526-84.000.
- Reinecke, Paul: *See—*
  - Elbe, Hans-Ludwig; Jautelat, Manfred; Buchel, Karl H.; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,619,940, Cl. 514-383.000.
- Reinheimer, Guenter; and Gaul, Norbert, to Ernst Leitz Wetzlar GmbH. Transmitted light and/or incident light inverse microscope. 4,619,503, Cl. 350-511.000.
- Reinhold, Karl-Heinz: *See—*
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- Reinmold, Heinz-Josef: *See—*
  - Halberschmidt, Friedrich; Reinmold, Heinz-Josef; Audi, Josef; Puetz, Cornelius; and Schubert, Gerd, 4,619,683, Cl. 65-351.000.
- Remic Corporation: *See—*
  - Wieder, Klaus, 4,620,068, Cl. 179-156.00A.
- Remington, Scott; and Martino, William L., Jr., to Motorola, Inc. Row decoder. 4,620,299, Cl. 365-230.000.
- Renaud-Goud, Louis A. Device for assembling construction elements, notably construction elements made of wood. 4,619,547, Cl. 403-231.000.
- Rengersen, Jacob: *See—*
  - Felthuis, Jacob; Van Laar, Jacobus; and Rengersen, Jacob, 4,619,441, Cl. 266-193.000.
- Renz, Peter. Apparatus for cutting off pieces from wire comb binding material. 4,619,165, Cl. 83-246.000.
- Renz, Roman: *See—*
  - Paul, Bernt-Joachim; and Renz, Roman, 4,620,074, Cl. 200-144.00B.
- Repperger, Daniel W.; Jennings, Thomas J.; and Ratino, David A., to United States of America, Air Force. Random pattern tracking acceleration tolerance tester. 4,619,506, Cl. 351-243.000.
- Rexnord Inc.: *See—*
  - Plahmer, Thomas G., 4,620,185, Cl. 340-682.000.
- Reynolds, Keith H. Support for wheel lug wrench. 4,619,161, Cl. 81-462.000.
- Rheinmetall GmbH: *See—*
  - Pehker, Manfred; Zielinski, Erich; Metz, Josef; and Bierwirth, Adolf P., 4,619,181, Cl. 89-34.000.
  - Romer, Rudolf; Schwenzer, Michael; and Synofzik, Reinhard, 4,619,201, Cl. 102-283.000.
  - Romer, Rudolf; Schwenzer, Michael; and Synofzik, Reinhard, 4,619,202, Cl. 102-443.000.
- Rhodes, Wayne A.; and Harrington, Kenneth D., to Touchstone Railway Supply & Mfg. Co., Inc. Radiator frame unit. 4,619,313, Cl. 165-67.000.
- Rhone-Poulenc Chimie De Base: *See—*
  - Gauthier-Lafaye, Jean; and Perron, Robert, 4,619,791, Cl. 260-549.000.
- Rice, Cecil L. Teaching aid for CPR. 4,619,617, Cl. 434-265.000.
- Richardson, Jennings R. Vehicle desk container. 4,619,386, Cl. 224-277.000.
- Richmond Screw Anchor Co., Inc.: *See—*
  - Lancelot, Harry B., III, 4,619,096, Cl. 52-726.000.
- Rickel, Edgar J.: *See—*
  - Elmer, Willard O.; and Rickel, Edgar J., 4,619,340, Cl. 180-209.000.
- Rickelton, William A., to American Cyanamid Company. Recovery of cobalt from ammoniacal solutions containing cobalt and nickel. 4,619,816, Cl. 423-139.000.
- Ricoh Company, Ltd.: *See—*
  - Anderson, Carl P.; and Mayer, Edward F., 4,619,450, Cl. 271-35.000.
  - Hashimoto, Mitsuru, 4,619,878, Cl. 430-56.000.
  - Iiyama, Kiyotaka; and Inaba, Nirohiko, 4,620,205, Cl. 346-204.000.
  - Imai, Chikara, 4,619,522, Cl. 355-14.00D.
  - Inaba, Norihiko; and Iiyama, Kiyotaka, 4,620,204, Cl. 346-204.000.
  - Koide, Hiroshi, 4,620,301, Cl. 369-266.000.
  - Ogawa, Mutsuo; Hashimoto, Takemi; Hara, Kazuyuki; and Kondo, Mitsuru, 4,620,233, Cl. 358-260.000.
  - Suzaki, Masayuki; Hirota, Tetsuro; Kanno, Tetsuo; and Koguchi, Takeziro, 4,620,249, Cl. 360-99.000.
  - Takemoto, Takeshi, 4,619,536, Cl. 400-157.200.
- Ricoh Systems, Inc.: *See—*
  - Anderson, Carl P.; and Mayer, Edward F., 4,619,450, Cl. 271-35.000.
- Riedl, Reinhold; and Lazarus, Conrad, to Haacon Hebetechnik GmbH. Lifting and depositing device for portable containers, compartments, containers, shelters or the like. 4,619,439, Cl. 254-45.000.
- Rieger, Wolfhart: *See—*
  - Huber, Ernst; Rieger, Wolfhart; and Bolliger, Martin, 4,619,309, Cl. 164-430.000.
- Rigaud, Philippe: *See—*
  - Hammou, Abdelkader; Rigaud, Philippe; and Rousseau, Catherine, 4,619,822, Cl. 423-592.000.
- Ringgenberg, Paul D., to Halliburton Company. Packer and actuation portion of tubing conveyed completion system. 4,619,319, Cl. 166-55.100.
- Ripoll Garcia-Mansilla, Javier, to Manufacturas De Acero Y Caucho S.A. Stressed reinforcing tendon and structure including such a tendon. 4,619,088, Cl. 52-223.00L.
- Rivier, Jean E. F.: *See—*
  - Vale, Wylie W., Jr.; and Rivier, Jean E. F., 4,619,914, Cl. 514-15.000.
- Rizk, Reda: *See—*
  - Wallenfang, Gerd; Rizk, Reda; and Michels, Hans-Gottfried, 4,619,239, Cl. 123-506.000.
- Roane, Bobby A.: *See—*
  - Hooper, Robert C.; Verret, Douglas P.; and Roane, Bobby A., 4,619,887, Cl. 430-313.000.
- Robbins, Matthew A.: *See—*
  - Zdanys, John, Jr.; Zaderej, Tony J.; and Robbins, Matthew A., 4,620,077, Cl. 200-331.000.
- Robert Bosch GmbH: *See—*
  - Hain, Josef; and Russeler, Karl-Friedrich, 4,619,238, Cl. 123-502.000.
  - Wendland, Broder; and Uhlenkamp, Dirk, 4,620,225, Cl. 358-141.000.
- Robert Linkletter Associates, Ltd.: *See—*
  - Agbay, Albert J.; and Thomas, Ralph H., Sr., 4,619,370, Cl. 215-225.000.
- Roberts, Douglas H.: *See—*
  - Morgan, Carlton B.; Yerkovich, Daniel; Lyster, Thomas D.; Hagen, Eric C.; and Roberts, Douglas H., 4,619,265, Cl. 128-419.00D.
- Roberts Filter Manufacturing Company: *See—*
  - Roberts, Robert L., 4,619,765, Cl. 210-289.000.
- Roberts, Joan. Disposable toddler training panty. 4,619,649, Cl. 604-396.000.
- Roberts, Preston L.: *See—*
  - Butt, James A.; Mondal, Kalyan; and Roberts, Preston L., 4,620,283, Cl. 364-493.000.
- Roberts, Robert L., to Roberts Filter Manufacturing Company. Filter bottom construction. 4,619,765, Cl. 210-289.000.
- Robertson, David B.: *See—*
  - Stolar, Mike; Robertson, David B.; and Cichy, Mitchell J., 4,619,231, Cl. 123-333.000.
- Robertson, Philip D., to Xanar, Inc. Filter for laser surgery smoke evacuation system. 4,619,672, Cl. 55-316.000.
- Robinson, Douglas J. Anode insulator for electrolytic cell. 4,619,751, Cl. 204-267.000.
- Robinson, Michael, to SCM Chemicals Limited. Chlorination of iron-containing metaliferous material. 4,619,815, Cl. 423-74.000.
- Robison, Robert L., to Eli Lilly and Company. Stable oncolytic formulations. 4,619,935, Cl. 514-281.000.
- Robitschko, Peter: *See—*
  - Kneib, Rudi; Emmer, Ludwig; and Robitschko, Peter, 4,619,477, Cl. 296-37.130.
- Rockefeller University, The: *See—*
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- Rockwell International Corporation: *See—*
  - Barkhoudarian, Sarkis; August, Rudolf R.; and Maram, Jonathan M., 4,620,093, Cl. 250-231.00P.
  - Fisher, Jimmie L.; Kovalan, Mark A.; and Wiscons, Bryon L., 4,620,277, Cl. 364-200.000.
  - Katz, Ellis, 4,619,290, Cl. 138-39.000.
  - Schoeneweis, E. Frederick; and Duffey, Donn W., 4,619,283, Cl. 137-15.000.
  - Trachman, Edward G.; and Roper, Daniel W., 4,619,151, Cl. 74-335.000.
- Roederhoff, Bernhard: *See—*
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  - Adnyana, Dewa N.; and Rogen, Neil E., 4,619,320, Cl. 166-65.100.
- Rohm GmbH: *See—*
  - Schroeder, Gunter; and Baumgartner, Ehrenfried, 4,620,029, Cl. 560-204.000.
- Rohm, Gunter H. Hammer-drill chuck. 4,619,460, Cl. 279-19.000.
- Rohm, Gunter H. Hammer drill apparatus. 4,619,461, Cl. 279-19.300.
- Rohm and Haas Company: *See—*
  - Kielbania, Andrew J.; and Kim, Samuel S., 4,619,964, Cl. 524-460.000.
- Rohr, Wolfgang: *See—*
  - Thieme, Peter C.; Steiner, Gerd; Rohr, Wolfgang; Lenke, Dieter; Gries, Josef; Weifenbach, Harald; Teschendorf, Hans-Jurgen; Hofmann, Hans P.; and Kreiskott, Horst, 4,619,929, Cl. 514-252.000.
- Rolff, Rolf: *See—*
  - Nitsche, Detlev; and Rolff, Rolf, 4,619,740, Cl. 204-15.000.
- Romer, Rudolf; Schwenzer, Michael; and Synofzik, Reinhard, to Rheinmetall GmbH. Graduated-density packed propellant charge. 4,619,201, Cl. 102-283.000.
- Romer, Rudolf; Schwenzer, Michael; and Synofzik, Reinhard, to Rheinmetall GmbH. Multiple purpose ammunition. 4,619,202, Cl. 102-443.000.
- Roos, Paul F. Tap. 4,619,377, Cl. 222-83.000.
- Roper, Daniel W.: *See—*
  - Trachman, Edward G.; and Roper, Daniel W., 4,619,151, Cl. 74-335.000.
- Rosaen, Lars O., to Universal Flow Monitors, Inc. Flow meter with displaceable flow rate indicator. 4,619,139, Cl. 73-198.000.
- Rose, David; Lieske, Edgar; and Maak, Norbert, to Henkel Kommanditgesellschaft auf Aktien. Hair dyes containing amino-nitrobenzoic acid or amino-nitrobenzene sulfonic acids as substantive dyes. 4,619,666, Cl. 8-414.000.

- Rosenstatter, Otto, to Durr-Dental GmbH & Co. KG. Tooth cleaning apparatus. 4,619,009, Cl. 15-29.000.
- Ross, Danny E.; and Bond, Larry O., to Motorola, Inc. Grounding ring. 4,619,275, Cl. 128-783.000.
- Rostin, Gunther; Scheer, Erich; Kolb, Dieter; and Werner, Karl H., to Fichtel & Sachs AG. Pressure plate for a motor vehicle friction clutch. 4,619,354, Cl. 192-89.00B.
- Roth, Alfred: *See—*
  - Janthur, Ingo W.; Roth, Alfred; and Odry, Stefan, 4,619,073, Cl. 49-74.000.
- Rothwell, Harold L., Jr.: *See—*
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- Rotoloni, Francis A.: *See—*
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- Roullet, Alain: *See—*
  - Dubrulle, Gerard; and Roullet, Alain, 4,619,113, Cl. 62-64.000.
- Rousseau, Catherine: *See—*
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- Roussel, Charles F.: *See—*
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- Routledge, James H. Retractable wheel suspension apparatus. 4,619,578, Cl. 414-498.000.
- Roux, Christine: *See—*
  - Lerude, Gerard; and Roux, Christine, 4,620,265, Cl. 361-424.000.
- Rowan, Steven M.: *See—*
  - Wallach, Steven J.; Jones, Thomas M.; Marshall, Frank J.; Nobles, David A.; Fuka, Kent A.; Rowan, Steven M.; Wallace, William H.; Dozier, Harold W.; Chastain, David M.; Clark, John W.; Kolstad, Robert B.; Mankovich, James E.; Harris, Michael C.; Gruger, Jeffrey H.; Gant, Alan D.; Shelton, Harold D.; Weatherford, James R.; Kimmel, Arthur T.; Gostin, Gary B.; Hansen, Gilbert J.; Golenbieski, John M.; Spry, Larry W.; Matulka, Gerald; Lockhart, Gaynel J.; and Sydow, Michael E., 4,620,275, Cl. 364-200.000.
- Roxey, Timothy E.: *See—*
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- Roy, Glenn M.: *See—*
  - Zanno, Paul R.; Barnett, Ronald E.; and Roy, Glenn M., 4,619,782, Cl. 560-122.000.
  - Zanno, Paul R.; Barnett, Ronald E.; and Roy, Glenn M., 4,619,834, Cl. 426-548.000.
- Rozporka, Richard E.: *See—*
  - Cook, Randall W.; Rozporka, Richard E.; and Jones, Robert S., 4,620,255, Cl. 360-132.000.
- Rubey, Ulyss R., to Media Recovery, Inc. Magnetic computer tape cleaner. 4,620,256, Cl. 360-137.000.
- Rubin, Howard. Apparatus and method for transporting and preserving perishable test samples. 4,619,678, Cl. 62-4.000.
- Rubner, Roland: *See—*
  - Ahne, Hellmut; Kruger, Hans; and Rubner, Roland, 4,619,500, Cl. 350-341.000.
- Ruckert, Hans: *See—*
  - Wingen, Rainer; Geissler, Ulrich; and Ruckert, Hans, 4,619,885, Cl. 430-260.000.
- Rudolf, Reiner, to Hengstler GmbH Geschaftsbereich Haller-Relais. Electromagnetic relay with switch spring. 4,620,172, Cl. 335-78.000.
- Ruehl, William E., to Illinois Tool Works Inc. Telephone line tester. 4,620,070, Cl. 179-175.30R.
- Ruff, Klemens; Suhr, Ludwig; and Paikert, Paul, to GEA Luftkuehlergesellschaft Happel GmbH & Co. Energy transfer device for desulfurizing installation. 4,619,671, Cl. 55-222.000.
- Ruhland, John G., to Xerox Corporation. Development apparatus. 4,619,517, Cl. 355-3.0DD.
- Ruppel, Peter: *See—*
  - Schaut, Josef; and Ruppel, Peter, 4,619,525, Cl. 355-64.000.
- Rushansky, Yuliy, to Slater Electric Inc. Three position electrical switch. 4,620,071, Cl. 200-6.0BA.
- Russeler, Karl-Friedrich: *See—*
  - Hain, Josef; and Russeler, Karl-Friedrich, 4,619,238, Cl. 123-502.000.
- Rutens, Imants R. Waterbed, sofa and table. 4,619,005, Cl. 5-2.00R.
- RWD-Datentechnik GmbH: *See—*
  - Fremery, Johan K.; Lindenau, Bernd; and Witthauer, Klaus, 4,619,144, Cl. 73-708.000.
- S.A.I.A.G. S.p.A.: *See—*
  - Azzola, Roberto; and Carrera, Luciano, 4,619,077, Cl. 49-497.000.
- S. C. Johnson & Son, Inc.: *See—*
  - Konicek, Tim R., 4,619,383, Cl. 222-556.000.
- S.D.S. Industries, Inc.: *See—*
  - Day, Robert L.; and Day, Robert H., 4,619,540, Cl. 403-24.000.
- Saab-Scania Aktiebolag: *See—*
  - Hellstrom, Gunnar, 4,619,182, Cl. 89-37.160.
- Saari, Walfred S.: *See—*
  - Engelhardt, Edward L.; and Saari, Walfred S., 4,619,927, Cl. 514-218.000.
- Sackett, Robert L. Pool alarm system. 4,620,181, Cl. 340-566.000.
- Sadahiro, Hisanori, to Sakai Heavy Industries Ltd. Vibration proof suspension type vibrating roller. 4,619,552, Cl. 404-117.000.
- Safe-T-Stop Inc.: *See—*
  - Stolar, Mike; Robertson, David B.; and Cichy, Mitchell J., 4,619,231, Cl. 123-333.000.
- Sagues, Paul: *See—*
  - Auslander, David M.; Tomizuka, Masayoshi; Sagues, Paul; Ishida, Takashi; and Kamiyama, Shuichi, 4,619,237, Cl. 123-491.000.
- Saiki, Noritsugu; and Konishi, Tadashi, to Teijin Limited. Process for preparation of high-molecular weight polyester. 4,619,987, Cl. 528-274.000.
- Sainen, Tsutomu; and Asai, Takeshi, to Tsudakoma Corp. Method of and apparatus for controlling motor-driven let-off and take-up system for looms. 4,619,294, Cl. 139-99.000.
- Saint-Gobain Cinematique et Controle: *See—*
  - Ducloux, Marcel L., 4,620,090, Cl. 250-223.00B.
- Saint-Gobain Recherche: *See—*
  - Tetaz, Roger; and Vizet, Philippe, 4,619,681, Cl. 65-29.000.
- Saint Martin, Francois-Xavier: *See—*
  - Delacour, Jacques; Levallois, Emile; Antier, Patrick; and Saint Martin, Francois-Xavier, 4,619,762, Cl. 210-170.000.
- St-Onge, Michel C.: *See—*
  - Twardawa, Philip A.; and St-Onge, Michel C., 4,619,424, Cl. 244-151.00B.
- Saito, Eiichi: *See—*
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  - Baumann, Werner, 4,619,993, Cl. 534-735.000.
  - Gerber, Hans; and Schleusener, Eckart, 4,619,703, Cl. 106-271.000.
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  - Lee, Mark L.; and Jaeggi, Christian, 4,619,917, Cl. 514-77.000.
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  - Ishikura, Yoshikazu; Watanabe, Akira; and Matsumoto, Takanao, 4,619,873, Cl. 429-48.000.
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- Schadel, Gunter: *See—*
  - Melzer, Milena; Jakusch, Helmut; Grau, Werner; Koster, Eberhard; Loser, Werner; Polke, Reinhard; Schadel, Gunter; Ohlinger, Manfred; and Vath, Gunter, 4,619,777, Cl. 252-62.540.
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- Schellenberg, Claude: *See—*
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  - Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; and Topert, Michael, 4,619,922, Cl. 514-180.000.
  - Nitsche, Detlev; and Rolff, Rolf, 4,619,740, Cl. 204-15.000.
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  - Gold, Elijah H.; and Chang, Wei K., 4,619,919, Cl. 514-166.000.
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  - Schoenig, Frederick C., Jr.; Glendinning, Sharon G.; Schick, Timothy; and Untermyer, Samuel, II, 4,620,100, Cl. 250-358.100.
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  - Keates, Richard H.; Schneider, Richard T.; Roxey, Timothy E.; and Cox, John D., 4,619,657, Cl. 623-6.000.
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  - Gunthner, Franz, 4,619,682, Cl. 65-64.000.
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  - Romer, Rudolf; Schwenzer, Michael; and Synofzik, Reinhard, 4,619,201, Cl. 102-283.000.
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  - Gorman, C. Rodney; Evans, James M.; and Traynor, Sean G., 4,620,028, Cl. 560-193.000.
  - Hwang, Jennie S., 4,619,715, Cl. 148-23.000.
- Scott, Andrew: *See—*
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- Scott, Candice C., executrix: *See—*
  - Pratt, Roy E.; Sayles, Scott M.; Bowers, Kerry W.; and Scott, Richard P., deceased, 4,619,758, Cl. 208-85.000.
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- Seagate Technology: *See—*
  - Krause, James N., 4,620,244, Cl. 360-77.000.
- Sebag, Henri: *See—*
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  - Prabhu, Ashok N.; Conlon, Edward J.; and Sechi, Franco N., 4,619,836, Cl. 427-41.000.
- Secoroc AB: *See—*
  - Gustafsson, Christer, 4,619,334, Cl. 175-321.000.
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  - Koto, Haruhiko; Okada, Junichi; Ishii, Hiroshi; and Sawada, Kenji, 4,620,202, Cl. 346-140.00R.
- Seiko Instruments & Electronics Ltd.: *See—*
  - Watanabe, Fumio; Hara, Yoshiaki; Miyamoto, Masao; Kusumoto, Yasuo; and Komaki, Syojiro, 4,620,102, Cl. 250-427.000.
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- Sekercioglu, Ibrahim: *See—*
  - Stambaugh, Edgel P.; Adair, James H.; Sekercioglu, Ibrahim; and Wills, Roger R., 4,619,817, Cl. 423-256.000.
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  - Read, Randol R.; Cox, Everett L.; and Selzler, Randall L., 4,620,279, Cl. 364-200.000.
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- Semon, William J.: *See—*
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- Sengchanh, Chanty, to Development Finance Corporation of New Zealand. Multi-level logic circuit. 4,620,188, Cl. 340-825.870.
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  - Warner, Sidney O., II, 4,619,954, Cl. 523-516.000.
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  - Kappeler, Franz, 4,620,307, Cl. 372-50.000.
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  - Tschoepe, Norbert, 4,620,303, Cl. 371-16.000.
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- Smith, Paul D.: *See—*
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- Smith, Peter H., to General Electric Company. Power control circuit for magnetron. 4,620,078, Cl. 219-10.55B.
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  - Gritters, Gregory A.; and Perez, Jose M., 4,619,769, Cl. 210-747.000.
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  - Hardman, Dale G., 4,619,401, Cl. 239-214.170.
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  - Hendrix, James E.; Daniels, John Y.; and Jackson, Bobby D., 4,619,864, Cl. 428-240.000.
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  - Read, Randol R.; Cox, Everett L.; and Selzler, Randall L., 4,620,279, Cl. 364-200.000.
- Standard Products Company, The: *See—*
  - Jackson, Norman C., 4,619,847, Cl. 428-31.000.
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  - Oyama, Hiroo, 4,620,269, Cl. 362-80.000.
- Stanley Works, The: *See—*
  - Czopor, Edmund J., Jr., 4,619,364, Cl. 206-379.000.
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  - Kautz, Ralf-Dieter; and Stapelmann, Rolf, 4,619,133, Cl. 73-1.00R.
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  - Shalev, Ilan, 4,619,184, Cl. 89-185.000.
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  - Cheng, Chung-Ping; Iacobucci, Paul A.; and Walsh, Edward N., 4,619,908, Cl. 502-214.000.
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  - Chown, David P. M., 4,620,321, Cl. 455-619.000.
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  - Heeres, Jan; Stokbroekx, Raymond A.; and Backx, Leo J. J., 4,619,931, Cl. 514-252.000.
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  - Frick, John G., Jr.; Jones, Brian W.; Stone, Robbie L.; and Watson, Michael D., 4,619,668, Cl. 8-496.000.

Stone, Robert L.: *See—*
Goor, Dan; Niles, Everett; and Stone, Robert L., 4,619,872, Cl. 428-632.000.

Stone, Walter H.: *See—*
Church, John F.; Stone, Walter H.; and Schaupp, Richard E., 4,619,764, Cl. 210-248.000.

Stopinc Aktiengesellschaft: *See—*
Bachmann, Herbert; and Hornung, Karl-Otto, 4,619,444, Cl. 266-236.000.

Storm, Joe. Wind turbine apparatus. 4,619,585, Cl. 416-132.00B.

Strada, Pier E.: *See—*
Magnoni, Pierangelo; Strada, Pier E.; Cavagnis, Walter; and Sanvito, Angelo, 4,619,006, Cl. 5-68.000.

Strickland, Richard C. Double tailed fish bait. 4,619,069, Cl. 43-42.260.

Stringfellow, Dale A.; and Fast, Patricia E., to Upjohn Company, The. 6-aryl pyrimidines for treating aplastic anemia. 4,619,933, Cl. 514-272.000.

Strobel, Charles W.: *See—*
Wells, Laura M.; Hawker, Fred D.; Dachniwskyj, Maryam L.; and Strobel, Charles W., 4,619,051, Cl. 34-9.000.

Stromdahl, Carl Å.: *See—*
Juan, Hans; Bjerngren, Jan Å.; and Stromdahl, Carl Å., 4,619,551, Cl. 404-90.000.

Strop, Hans R.; and Perry, Richard R. Pretreatment process for rendering. 4,619,789, Cl. 260-412.600.

Stucki, Samuel: *See—*
Christen, Hans-Jorg; Devantay, Hubert; Schellenberg, Claude; Scherer, Gunther; and Stucki, Samuel, 4,619,753, Cl. 204-290.00F.

Subramaniam, A. Ram: *See—*
Lee, Gil S.; and Subramaniam, A. Ram, 4,620,115, Cl. 307-443.000.

Sudrabin, David A., to Fibrestone Incorporated. Method of forming a composite wall for a building structure. 4,619,032, Cl. 29-460.000.

Suenaga, Makoto; Yano, Mitsuru; Ishihara, Yasuoki; and Ohtsuka, Kohki, to Hitachi Metals, Ltd. Method of producing nodular graphite cast iron. 4,619,713, Cl. 148-3.000.

Sugano, Akira: *See—*
Takita, Atsushi; Sugano, Akira; and Honda, Naganobu, 4,619,224, Cl. 122-451.00R.

Sugazaki, Kazuo: *See—*
Matsubara, Tetsuyuki; Ito, Norifumi; Sugazaki, Kazuo; Ichikawa, Kouzo; Iwamoto, Mune; and Ando, Toshihiko, 4,619,959, Cl. 524-228.000.

Sughrue, Edward L.: *See—*
Myers, John W.; Parrott, Stephen L.; and Sughrue, Edward L., 4,619,759, Cl. 208-210.000.

Sugihara, Tadashi: *See—*
Hijikata, Kenichi; Sugihara, Tadashi; and Komabayashi, Masashi, 4,619,697, Cl. 75-230.000.

Sugita, Shoji: *See—*
Tajima, Yoshio; Iwasaki, Yoshiharu; Kawabe, Kiyoshi; Uchida, Wataru; Sugita, Shoji; Matsuura, Kazuo; and Miyoshi, Mituji, 4,619,981, Cl. 526-125.000.

Sugiura, Haruyuki: *See—*
Matsui, Kazuhiro; and Sugiura, Haruyuki, 4,619,431, Cl. 248-500.000.

Sugiyama, Shizuo: *See—*
Hagiwara, Yoshimune; Sugiyama, Shizuo; Maeda, Narimichi; Yumoto, Osamu; Akazawa, Takashi; Kobayashi, Masahito; Kita, Yasuhiro; and Kita, Yuzo, 4 620,292, Cl. 364-748.000.

Suhr, Ludwig: *See—*
Ruff, Klemens; Suhr, Ludwig; and Paikert, Paul, 4,619,671, Cl. 55-222.000.

Sullivan, Brian, to KCL Corporation. Substantially leakproof zipper closure for bags and method. 4,620,320, Cl. 383-79.000.

Sumitani, Shigeto, to Kabushiki Kaisha Toshiba. Pulse combustor. 4,619,601, Cl. 431-1.000.

Sumitomo Chemical Company, Limited: *See—*
Doi, Toshiki; Shinonaga, Hideo; and Omae, Tadayuki, 4,619,969, Cl. 525-93.000.
Haga, Toru; Nagano, Eiki; Sato, Ryo; and Morita, Kouichi, 4,619,687, Cl. 71-92.000.
Hashimoto, Tadanori; Yoshitake, Hiroshi; Hata, Shigenao; and Nakazono, Akiko, 4,619,704, Cl. 106-286.400.

Sumitomo Electric Industries, Ltd.: *See—*
Inoue, Kiyoshi; Kuwaki, Keiichi; and Tsuno, Koichi, 4,619,247, Cl. 128-6.000.

Sumitomo Heavy Industries, Ltd.: *See—*
Andoh, Tsuyoshi; Kanamori, Toshio; Yamaguchi, Takashi; Tomono, Hiroshi; and Satake, Satoshi, 4,619,310, Cl. 164-448.000.

Sumitomo Metal Industries, Ltd.: *See—*
Andoh, Tsuyoshi; Kanamori, Toshio; Yamaguchi, Takashi; Tomono, Hiroshi; and Satake, Satoshi, 4,619,310, Cl. 164-448.000.

Summa, Gareth D.; Reed, George K.; and Burt, Harold S., to Mid-West Conveyor Company, Inc. Apparatus for storage and retrieval of thin trays and sheets. 4,619,575, Cl. 414-280.000.

Sun Refining and Marketing Company: *See—*
Hsu, Chao-Yang, 4,620,027, Cl. 560-104.000.

Sundberg, Bo; and Jonason, Hans, to HB Autonom. Animal training course, especially for race horses. 4,619,222, Cl. 119-15.50R.

Sundstrand Corporation: *See—*
Weber, Kent, 4,619,115, Cl. 62-217.000.

Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., to Analgesic Associates. Cough/cold mixtures comprising non-steroidal anti-inflammatory drugs. 4,619,934, Cl. 514-277.000.

Susi, Peter V., to American Cyanamid Co. Stabilization of high solids coatings with synergistic combinations. 4,619,956, Cl. 524-87.000.

Suther, Herbert: *See—*
Endter, Horst; and Suther, Herbert, 4,619,574, Cl. 414-226.000.

Sutker, Burton J.; Hussain, Saadat; and Mossaad, Amgad S., to Ethyl Corporation. Halogenated polyphenyl sulfide or sulfide/ether compounds. 4,619,961, Cl. 524-393.000.

Sutter, Leroy V., Jr. Elongated chambers for use in combination with a transversely excited gas laser. 4,620,306, Cl. 372-38.000.

Suwabe, Yasushi: *See—*
Takahashi, Keiko; Suwabe, Yasushi; and Wakabayashi, Toshio, 4,619,938, Cl. 514-356.000.

Suzaki, Masayuki; Hirota, Tetsuro; Kanno, Tetsuo; and Koguchi, Takeziro, to Ricoh Company, Ltd. Apparatus for driving a floppy disc. 4,620,249, Cl. 360-99.000.

Suzuki, Fumio: *See—*
Kamuro, Yasuo; Hirai, Koichi; Suzuki, Fumio; Yamamoto, Susumu; and Shindo, Noboru, 4,619,685, Cl. 71-78.000.

Suzuki, Haruo: *See—*
Mori, Kohei; and Suzuki, Haruo, 4,619,185, Cl. 91-369.00R.

Suzuki, Kazuhiro, to Nippon Cable System, Inc. Transmission operating device. 4,619,152, Cl. 74-473.00R.

Suzuki, Kenichi; and Miura, Fusayoshi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method of brazing an aluminum material. 4,619,716, Cl. 148-26.000.

Suzuki, Ryozo: *See—*
Iwai, Shingo; Suzuki, Ryozo; Shiraga, Jun; and Okashiro, Tetsuo, 4,619,591, Cl. 417-422.000.

Suzuki, Shigeo: *See—*
Kakuta, Atsushi; Oka, Hiroyuki; Suzuki, Shigeo; Araya, Kotaro; Mori, Yasuki; and Morishita, Hirosada, 4,619,879, Cl. 430-58.000.

Suzuki, Shoji: *See—*
Uesugi, Naomoto; and Suzuki, Shoji, 4,619,344, Cl. 181-229.000.

Suzuki, Toshihiko; Isawa, Nobuyuki; Ohkubo, Yasunori; and Hoshi, Kinji, to Sony Corporation. Process for solidification in a magnetic field with a D.C. heater. 4,619,730, Cl. 156-617.0SP.

Suzuki, Yoshiaki, to Toko Kogyo Kabushiki Kaisha. Apparatus for assembling cable drum. 4,619,026, Cl. 29-256.000.

Suzuki, Yoshihisa; Yasui, Yoshiharu; and Seiki, Kazuo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method and apparatus for yarn piecing in a fasciated yarn spinning unit. 4,619,109, Cl. 57-261.000.

Svaty, Vladimir: *See—*
Hrus, Miroslav; Svaty, Vladimir; Sidlof, Pavel; and Fisar, Oldrich, 4,619,296, Cl. 139-435.000.

Swanson, John L. Snowblower. 4,619,061, Cl. 37-248.000.

Swanson, Lynos. Sweep auger. 4,619,577, Cl. 414-312.000.

Swiss Aluminium Ltd.: *See—*
Bessard, Jean-Claude, deceased, 4,619,750, Cl. 204-243.00R.
Huber, Ernst; Rieger, Wolfhart; and Bolliger, Martin, 4,619,309, Cl. 164-430.000.

Sydow, Michael E.: *See—*
Wallach, Steven J.; Jones, Thomas M.; Marshall, Frank J.; Nobles, David A.; Fuka, Kent A.; Rowan, Steven M.; Wallace, William H.; Dozier, Harold W.; Chastain, David M.; Clark, John W.; Kolstad, Robert B.; Mankovich, James E.; Harris, Michael C.; Gruger, Jeffrey H.; Gant, Alan D.; Shelton, Harold D.; Weatherford, James R.; Kimmel, Arthur T.; Gostin, Gary B.; Hansen, Gilbert J.; Golenbieski, John M.; Spry, Larry W.; Matulka, Gerald; Lockhart, Gaynel J.; and Sydow, Michael E., 4,620,275, Cl. 364-200.000.

Sylvest, Lawrence E., II, to Conoco Inc. Drum lifting apparatus. 4,619,475, Cl. 294-90.000.

Syncare, Inc.: *See—*
Taylor, James, 4,619,262, Cl. 128-334.00R.

Synofzik, Reinhard: *See—*
Romer, Rudolf; Schwenzer, Michael; and Synofzik, Reinhard, 4,619,201, Cl. 102-283.000.
Romer, Rudolf; Schwenzer, Michael; and Synofzik, Reinhard, 4,619,202, Cl. 102-443.000.

Szebeni, Rudolf: *See—*
Balkanyi, Ivan; Szebeni, Rudolf; Hadi, Ferenc; Marso , Miklos; Keri, Eva; and Koszegi, Bela, 4,619,936, Cl. 514-282.000.

Szemeredi, Robert S.: *See—*
La Belle, John T.; Szemeredi, Robert S.; and Tarnay, Matthew G., 4,620,075, Cl. 200-159.00B.

Szent-Gyorgyi, Albert; and Fodor, Gabor B., to National Foundation for Cancer Research. 2-furylbutyrolactones and methods for using same. 4,620,014, Cl. 548-545.000.

Szmuk, Szilvia; Kirouac, J. Paul; and Feist, Betsy. Multi-pocket envelope for floppy discs. 4,619,399, Cl. 229-72.000.

Tabarelli, Werner; and Lobach, Ernst, to Perkin-Elmer Censor Anstalt. Device for the projection copying of masks. 4,619,524, Cl. 355-53.000.

Tachibana, Hajime: *See—*
Yamana, Keiichi; Tachibana, Hajime; and Ohtsuka, Shuichi, 4,619,513, Cl. 355-3.0CH.

Taga Electric Company, Limited: *See—*
Mishiro, Shoji, 4,620,121, Cl. 310-323.000.

Taguchi, Shinji; Matsumura, Homare; and Maeguchi, Kenji, to Kabushiki Kaisha Toshiba. Method of manufacturing a semiconductor device. 4,619,037, Cl. 29-578.000.

Taguchi, Yoshinobu: *See—*
Takahashi, Tetsuo; Taguchi, Yoshinobu; and Saito, Kenichi, 4,619,043, Cl. 29-840.000.

Tajima, Yoshio; Iwasaki, Yoshiharu; Kawabe, Kiyoshi; Uchida, Wataru; Sugita, Shoji; Matsuura, Kazuo; and Miyoshi, Mituji, to Nippon Oil Company, Limited. Process for preparing polyolefins. 4,619,981, Cl. 526-125.000.

Takagi, Sadaaki. Method for preformation of cushion and apparatus therefor. 4,619,723, Cl. 156-62.200.

Takagi, Yoshihiro; and Adachi, Keiichi, to Fuji Photo Film Co., Ltd. Light-sensitive material for silver salt diffusion transfer process with antihalation dye. 4,619,893, Cl. 430-519.000.

Takahashi, Keiko; Suwabe, Yasushi; and Wakabayashi, Toshio, to Terumo Kabushiki Kaisha. Fatty acid derivatives of aminoalkyl nicotinic acid esters and platelet aggregation inhibitors. 4,619,938, Cl. 514-356.000.

Takahashi, Kozoh, to Sony Corporation. Apparatus for controlling a reversible tape drive in a magnetic tape player. 4,620,242, Cl. 360-74.100.

Takahashi, Masaharu: *See—*
Sano, Toshio; Takahashi, Masaharu; Murakoshi, Yoichi; and Matsuno, Kenichi, 4,619,127, Cl. 72-56.000.

Takahashi, Michihiko; Saito, Eiichi; Okano, Takeshi; and Nakaoka, Sadaaki, to Fuji Photo Film Co., Ltd. Electrophotographic camera processor-reader. 4,619,519, Cl. 355-11.000.

Takahashi, Osamu, to Fuji Photo Film Co., Ltd. Photosensitive material with particles of hydroquinone and polymer. 4,619,891, Cl. 430-505.000.

Takahashi, Sankichi; Matsuzaki, Harumi; Mukushi, Toshimi; Ebara, Katsuya; Takakusagi, Tsunehiko; Yoshida, Masahiro; Sato, Joshiro; Yamane, Yasumasa; Sakaguchi, Katsumi; and Watanabe, Akira, to Hitachi, Ltd. Method of removing crude oil sludge. 4,619,768, Cl. 210-739.000.

Takahashi, Tetsuo; Taguchi, Yoshinobu; and Saito, Kenichi, to TDK Corporation. Apparatus and method for mounting chip type electronic parts. 4,619,043, Cl. 29-840.000.

Takai, Kiyoshi; and Iwasaki, Kiyoshi, to Godo Steel, Ltd. System using electric furnace exhaust gas to preheat scrap for steelmaking. 4,619,693, Cl. 266-88.000.

Takakusagi, Tsunehiko: *See—*
Takahashi, Sankichi; Matsuzaki, Harumi; Mukushi, Toshimi; Ebara, Katsuya; Takakusagi, Tsunehiko; Yoshida, Masahiro; Sato, Joshiro; Yamane, Yasumasa; Sakaguchi, Katsumi; and Watanabe, Akira, 4,619,768, Cl. 210-739.000.

Takami, Masato, to Fukuda Metal Foil & Powder Co., Ltd. Copper foil for printed circuit board. 4,619,871, Cl. 428-607.000.

Takanashi, Itsuo; Nakagaki, Shintaro; Ichimura, Hiroshi; Kuriyama, Takashi; and Negishi, Ichiro, to Victor Company of Japan, Limited. Color imaging apparatus with compensation for beam deflection nonlinearity. 4,620,221, Cl. 358-47.000.

Takatoshi, Koitabashi, to Sanden Corporation. Engagement device for an electromagnetic spring-wound clutch. 4,619,351, Cl. 192-35.000.

Takeda Chemical Industries, Ltd.: *See—*
Taniguchi, Shin ichi; and Ohtsuki, Takashi, 4,619,360, Cl. 198-471.100.

Takeda Riken Co., Ltd.: *See—*
Niki, Shoji, 4,620,147, Cl. 324-77.00A.

Takehara, Nobumitsu; Yanagihara, Kazuhiko; Ohnishi, Masahiro; and Harada, Shigeo, to Fuji Photo Film Co., Ltd. Thermal developing and transferring method. 4,620,096, Cl. 250-319.000.

Takemoto, Takeshi, to Ricoh Company, Ltd. Printing hammer assembly. 4,619,536, Cl. 400-157.200.

Takenaka, Takaji: *See—*
Nakayama, Wataru; Nakajima, Tadakatsu; Hirasawa, Shigeki; Kohno, Akiomi; and Takenaka, Takaji, 4,619,316, Cl. 165-104.330.

Takeshima, Sadao: *See—*
Higashi, Katsumi; and Takeshima, Sadao, 4,619,338, Cl. 180-142.000.

Takita, Atsushi; Sugano, Akira; and Honda, Naganobu, to Hitachi, Ltd. Apparatus for controlling drum water level of drum type boiler. 4,619,224, Cl. 122-451.00R.

Tan, Chuan-Chieh: *See—*
Smith, Allen R.; Tan, Chuan-Chieh; Slack, Thomas B.; and Denenberg, Jeffrey N., 4,620,286, Cl. 364-513.000.

Tanaka, Fumio: *See—*
Iuchi, Tohru; and Tanaka, Fumio, 4,619,529, Cl. 356-358.000.

Tanaka, Hiroshi; Adachi, Yuuma; and Nakajima, Nobuyoshi, to Fuji Photo Film Co., Ltd. Method of adjusting scale factor for radiation image. 4,620,097, Cl. 250-327.200.

Tanaka, Seiichi; and Nagano, Fumikazu, to Sharp Kabushiki Kaisha. Image picture reading device. 4,620,236, Cl. 358-293.000.

Tanaka, Takashi; and Hayashi, Kenro, to Toshiba Ceramics Co., Ltd. Method of manufacturing parts for use to the heat processing furnace. 4,619,798, Cl. 264-62.000.

Tanaka, Tatsuo; and Shigematsu, Nana, to Kabushiki Kaisha Toshiba; and Toshiba Audio Video Engineering Co., Inc. Composite transistor circuit. 4,620,161, Cl: 330-257.000.

Tanaka, Yoko: *See—*
DeLuca, Hector F.; Ikekawa, Nobuo; Kobayashi, Yoshiro; and Tanaka, Yoko, 4,619,920, Cl. 514-167.000.

Tanaka, Yoshinari: *See—*
Anzawa, Haruyoshi; Satoh, Kenji; Tanaka, Yoshinari; and Okaya, Takuji, 4,619,849, Cl. 428-35.000.

Tandy Corporation: *See—*
Cook, Randall W.; Rozporka, Richard E.; and Jones, Robert S., 4,620,255, Cl. 360-132.000.

Tani, Zempei; Ebina, Kiyoshi; Ichikawa, Osamu; and Imaizumi, Mamoru, to Sharp Kabushiki Kaisha; and Brother Industries, Ltd. Photoelectric encoder. 4,620,094, Cl. 250-231.0SE.

Taniguchi, Shin ichi; and Ohtsuki, Takashi, to Takeda Chemical Industries, Ltd. Product transporting apparatus. 4,619,360, Cl. 198-471.100.

Tanimoto, Hirotoshi; Yamada, Mutsuo; Arikawa, Yoshijiro; Kamiguchi, Taiji; Nishimura, Yasuyuki; and Kaku, Hiroyuki, to Babcock-Hitachi Kabushiki Kaisha. Process for producing methyl ethyl ketone. 4,620,038, Cl. 568-401.000.

Tarnay, Matthew G.: *See—*
La Belle, John T.; Szemeredi, Robert S.; and Tarnay, Matthew G., 4,620,075, Cl. 200-159.00B.

Tarulli, Gerald. Support and tethered amusement device. 4,619,626, Cl. 446-228.000.

Tateishi, Mataji: *See—*
Imoto, Koji; Tateishi, Mataji; Inenaga, Noriyasu; Omura, Tadao; Ishikawa, Hideyuki; Harada, Sumio; Kiyota, Yuhiko; Kobayashi, Hiroyuki; Nakanishi, Koichi; and Kume, Satoru, 4,619,229, Cl. 123-286.000.

Tatin, Gerard, to Atochem. Process for the bleaching of textiles and stabilizing composition therefor. 4,619,663, Cl. 8-107.000.

Tatsumi, Hisao; Kayata, Haruhiko; and Watanabe, Fumio, to Kabuskiki Kaisha Toshiba. Thermal transfer color printer. 4,620,199, Cl. 346-76.0PH.

Taylor, Hylton, to Pilkington P.E. Limited. Solar cell assembly. 4,619,863, Cl. 428-221.000.

Taylor, James, to Syncare, Inc. Surgical stapling device. 4,619,262, Cl. 128-334.00R.

Taylor, Lawrence H. Metallic structural member particularly for support of walls and floors of buildings. 4,619,098, Cl. 52-738.000.

Taylor, Patrick R.; and Omofoma, Matthew A., to Idaho Research Foundation, Inc. Chromite ore beneficiation. 4,619,690, Cl. 75-1.00R.

TDK Corporation: *See—*
Nakayama, Masatoshi; Morita, Haruyuki; and Kubota, Yuichi, 4,619,861, Cl. 428-220.000.
Takahashi, Tetsuo; Taguchi, Yoshinobu; and Saito, Kenichi, 4,619,043, Cl. 29-840.000.

Technicare Corporation: *See—*
Erker, Joseph W., 4,620,313, Cl. 378-19.000.

Technicon Instruments Corp.: *See—*
Cohen, Beri, 4,619,795, Cl. 264-4.600.

Technika Beteiligungsgesellschaft mbH: *See—*
Dammann, Karl-Heinz, 4,619,596, Cl. 418-201.000.

Technographics Printworld, Inc.: *See—*
Sideman, Carl E.; Lewis, Thomas E.; and Nowak, Michael T., 4,619,665, Cl. 8-402.000.

Teder, Rein S.: *See—*
McCumber, Roger D.; and Teder, Rein S., 4,620,141, Cl. 318-483.000.

Teerling, Wolfgang, to Windmoller & Holscher. Process of making sheet material comprising a substrate web of synthetic thermoplastic material and an adhesive layer consisting of a non-crosslinkable elastomer. 4,619,799, Cl. 264-101.000.

Teetz, Volker: *See—*
Henning, Rainer; Urbach, Hansjorg; Teetz, Volker; and Becker, Reinhard, 4,620,012, Cl. 548-411.000.

Tegal Corporation: *See—*
Rathmann, Thomas M.; Drake, Herbert G.; Mirkovich, Ninko T.; and Lachenbruch, Roger B., 4,619,573, Cl. 414-222.000.

Teijin Limited: *See—*
Kiriyama, Tsutomu; Horie, Shigeru; Ichihashi, Tetsuo; and Oshida, Masahiro, 4,619,869, Cl. 428-480.000.
Saiki, Noritsugu; and Konishi, Tadashi, 4,619,987, Cl. 528-274.000.

Temple, Victor A. K.: *See—*
Baliga, Bantval J.; Temple, Victor A. K.; and Chow, Tat-Sing P., 4,620,211, Cl. 357-38.000.

Tennessee Valley Authority: *See—*
Salladay, David G.; and Achorn, Frank P., 4,619,684, Cl. 71-34.000.

Teodorescu, Tonel E.; and Banko, William, to Banko, William; Allen, Henry E.; and Shamos, Morris H. Flow meter. 4,619,146, Cl. 73-861.540.

Teraoka, Fuminori; Matsui, Takeo; and Mori, Shinji, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Acceleration sensor. 4,619,417, Cl. 242-107.40A.

Terrell, Jamie B.; and Pratt, Donna K., to Gearhart Industries, Inc. Chemical cutting method and apparatus. 4,619,318, Cl. 166-55.000.

Terry, Bill C.: *See—*
Hanker, Jacob S.; Terry, Bill C.; Ambrose, Wallace W.; and Lupton, Cecel R., 4,619,655, Cl. 623-1.000.

Terui, Sadao: *See—*
Ono, Tetsuji; Ichihara, Shoichi; Ohta, Tomohisa; and Terui, Sadao, 4,619,909, Cl. 502-303.000.

Terumo Kabushiki Kaisha: *See—*
Takahashi, Keiko; Suwabe, Yasushi; and Wakabayashi, Toshio, 4,619,938, Cl. 514-356.000.

Teschendorf, Hans-Jurgen: *See—*
Thieme, Peter C.; Steiner, Gerd; Rohr, Wolfgang; Lenke, Dieter; Gries, Josef; Weifenbach, Harald; Teschendorf, Hans-Jurgen; Hofmann, Hans P.; and Kreiskott, Horst, 4,619,929, Cl. 514-252.000.

Tetaz, Roger; and Vizet, Philippe, to Saint-Gobain Recherche. Method and apparatus for measurement of stress in float glass. 4,619,681, Cl. 65-29.000.

- Tetenbaum, Marvin T.: *See—*
  - Hart, Terence J.; Dowbenko, Rostyslaw; Maska, Rudolf; Van Buskirk, Ellor J.; and Tetenbaum, Marvin T., 4,619,952, Cl. 523-409.000.
- Tetra Pak International AB: *See—*
  - Nedstedt, Ulf, 4,620,184, Cl. 340-675.000.
- Texaco Inc.: *See—*
  - Cook, Ronald L., 4,619,743, Cl. 204-77.000.
  - Pratt, Roy E.; Sayles, Scott M.; Bowers, Kerry W.; and Scott, Richard P., deceased, 4,619,758, Cl. 208-85.000.
- Texas Instruments Incorporated: *See—*
  - Chauvel, Gerard, 4,620,289, Cl. 364-521.000.
  - Havemann, Robert H.; and Baber, Samuel C., 4,619,036, Cl. 29-577.00C.
  - Hooper, Robert C.; Verret, Douglas P.; and Roane, Bobby A., 4,619,887, Cl. 430-313.000.
  - Houston, Theodore W., 4,620,297, Cl. 365-174.000.
  - Parker, Sidney G.; and York, Rudy L., 4,620,209, Cl. 357-30.000.
- Texas United Chemical Corp.: *See—*
  - Mondshine, Thomas C., 4,619,776, Cl. 252-8.551.
- Texo Corporation: *See—*
  - Squires, David G.; Hundley, Lloyd; and Barry, Raymond A., 4,619,706, Cl. 134-2.000.
- Textron Inc.: *See—*
  - Liu, Li-Hsiung, 4,619,228, Cl. 123-182.000.
- Thermco Systems, Inc.: *See—*
  - Goldman, Jon C.; Fisk, Michael A.; and Diem, Michael, 4,619,840, Cl. 427-91.000.
- Thevenin, Patrick D.; Gissinger, Bernard C.; and Thevenin, Stephane J. Fencing device, a stake, a fastener and an assembly part for such a device. 4,619,440, Cl. 256-47.000.
- Thevenin, Stephane J.: *See—*
  - Thevenin, Patrick D.; Gissinger, Bernard C.; and Thevenin, Stephane J., 4,619,440, Cl. 256-47.000.
- Thiel, Gerhard: *See—*
  - Quittkat, Jorg; Thiel, Gerhard; and Ursula, Ruth, 4,620,162, Cl. 331-45.000.
- Thieme, Peter C.; Steiner, Gerd; Rohr, Wolfgang; Lenke, Dieter; Gries, Josef; Weifenbach, Harald; Teschendorf, Hans-Jurgen; Hofmann, Hans P.; and Kreiskott, Horst, to BASF Aktiengesellschaft. Phenylpiperazine derivatives of hetarylphenols and hetarylanilines, their preparation, and therapeutic agents containing these compounds. 4,619,929, Cl. 514-252.000.
- Thomas & Betts Corporation: *See—*
  - Brush, Robert W., Jr., 4,619,487, Cl. 339-14.00R.
  - Noorily, Peter; and Slachetka, Joseph P., 4,619,494, Cl. 339-103.00M.
- Thomas, Gareth; Ahn, Jae-Hwan; and Kim, Nack-Joon, to University of California, The Regents of the. Controlled rolling process for dual phase steels and application to rod, wire, sheet and other shapes. 4,619,714, Cl. 148-12.00B.
- Thomas, Ian M.; and Tillman, James J., to Owens-Illinois, Inc. Process for forming a doped oxide film and composite article. 4,619,719, Cl. 148-188.000.
- Thomas, John S., Jr., to Paramount Packaging Corporation. Bag for displaying food. 4,619,361, Cl. 206-204.000.
- Thomas, Ralph H., Sr.: *See—*
  - Agbay, Albert J.; and Thomas, Ralph H., Sr., 4,619,370, Cl. 215-225.000.
- Thomason, William H.: *See—*
  - Salama, Mamdouh M.; Myers, Roderick J.; Thomason, William H.; and Joosten, Michael H., 4,619,557, Cl. 405-211.000.
- Thompson, David A.: *See—*
  - Garwin, Richard L.; and Thompson, David A., 4,620,253, Cl. 360-107.000.
- Thompson, Robert A.; and Breuning, Richard W., to General Electric Company. In-process cutting tool condition compensation and part inspection. 4,620,281, Cl. 364-475.000.
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  - Arnould, Jacques; and Tonnel, Eugene, 4,620,213, Cl. 357-55.000.
  - Delestre, Xavier; and Sauvage, Marc, 4,620,168, Cl. 333-202.000.
- Thornton, James P., to Fairchild Weston Systems, Inc. Apparatus and method for controlling electromagnetic clutches and the like. 4,620,261, Cl. 361-154.000.
- Thornton, Paul A.: *See—*
  - Houlbrook, Kenneth; and Thornton, Paul A., 4,619,382, Cl. 222-327.000.
- Thwaites, Geoffrey R.: *See—*
  - Knight, John R.; and Thwaites, Geoffrey R., 4,619,848, Cl. 428-35.000.
- Tideland Signal Corporation: *See—*
  - Tigwell, David C.; and Recane, Marion L., 4,620,190, Cl. 340-985.000.
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  - Penttinen, Kyosti, 4,619,854, Cl. 428-99.000.
- Tillman, James J.: *See—*
  - Thomas; Ian M.; and Tillman, James J., 4,619,719, Cl. 148-188.000.
- Timby, Ernest A.: *See—*
  - Lewis, Geoffrey A.; Timby, Ernest A.; and Walsh, Rodney H., 4,619,581, Cl. 415-143.000.
- Timm, Gerald W.: *See—*
  - Helms, Richard A.; Timm, Gerald W.; and Sandford, Donald L., 4,619,251, Cl. 128-79.000.
- Tisue, J. Gilbert, to Fuji Photo Film Co., Ltd. Reset circuit for MOS imager array. 4,620,232, Cl. 358-213.000.
- Titan Manufacturing Co. Pty. Ltd., The: *See—*
  - Norris, Colin, 4,619,559, Cl. 405-259.000.
- Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
  - Inoue, Hiroshi; Miyazaki, Makoto; Isoi, Masaaki; and Yoda, Makoto, 4,619,972, Cl. 525-193.000.
- Todd, Leonard M. Ring signal detector. 4,620,063, Cl. 179-2.00A.
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  - Petkov, Georgi K.; Todorov, Todor S.; Atanassova, Yordanka R.; Netzov, Nikola M.; Deevski, Stefan K.; Radev, Nikola I.; Botev, Botyo P.; Metev, Georgi M.; Naydenov, Ivan H.; and Petrov, Yakim N., 4,619,129, Cl. 72-56.000.
- Toko Kogyo Kabushiki Kaisha: *See—*
  - Suzuki, Yoshiaki, 4,619,026, Cl. 29-256.000.
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  - Shigematsu, Takashi; Tokoro, Setsuo; and Watanabe, Tomoyuki, 4,619,629, Cl. 474-28.000.
- Tokunaga, Seiichiro; and Ikeda, Nobumasa, to Bridgestone Corporation. Pneumatic tire tread. 4,619,300, Cl. 152-209.00R.
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  - Ono, Yoshiaki; and Kawaguchi, Katsuhiko, 4,619,388, Cl. 226-76.000.
- Tokyo Juki Industrial Co., Ltd: *See—*
  - Iimura, Ikurou; Sakuma, Kuniharu; and Iwabuchi, Haruo, 4,619,213, Cl. 112-273.000.
- Tokyo Keiki Company, Ltd.: *See—*
  - Numaho, Yoshio; Kato, Yoshio; Okada, Hiroshi; and Ogawa, Tetsuro, 4,620,137, Cl. 315-378.000.
- Tokyo Rika Kikai Co., Ltd.: *See—*
  - Someya, Noboru, 4,619,473, Cl. 285-353.000.
- Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
  - Hattori, Motoichi; and Ishigo, Hideyasu, 4,620,065, Cl. 179-6.070.
- Tomizuka, Masayoshi: *See—*
  - Auslander, David M.; Tomizuka, Masayoshi; Sagues, Paul; Ishida, Takashi; and Kamiyama, Shuichi, 4,619,237, Cl. 123-491.000.
- Tomono, Hiroshi: *See—*
  - Andoh, Tsuyoshi; Kanamori, Toshio; Yamaguchi, Takashi; Tomono, Hiroshi; and Satake, Satoshi, 4,619,310, Cl. 164-448.000.
- Tomy Kogyo Co. Inc.: *See—*
  - Seki, Yoshizo; and Bass, Sidney, 4,619,625, Cl. 446-89.000.
- Tonnel, Eugene: *See—*
  - Arnould, Jacques; and Tonnel, Eugene, 4,620,213, Cl. 357-55.000.
- Topert, Michael: *See—*
  - Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; and Topert, Michael, 4,619,922, Cl. 514-180.000.
- Toray Industries, Inc.: *See—*
  - Shoji, Hisataka; and Ouchi, Shigehiro, 4,619,963, Cl. 524-439.000.
- Toshiba Audio Video Engineering Co., Inc.: *See—*
  - Tanaka, Tatsuo; and Shigematsu, Nana, 4,620,161, Cl. 330-257.000.
- Toshiba Ceramics Co., Ltd.: *See—*
  - Tanaka, Takashi; and Hayashi, Kenro, 4,619,798, Cl. 264-62.000.
- Touchstone Railway Supply & Mfg. Co., Inc.: *See—*
  - Rhodes, Wayne A.; and Harrington, Kenneth D., 4,619,313, Cl. 165-67.000.
- Toyo Engineering Corporation: *See—*
  - Matsubara, Tetsuyuki; Ito, Norifumi; Sugazaki, Kazuo; Ichikawa, Kouzo; Iwamoto, Mune; and Ando, Toshihiko, 4,619,959, Cl. 524-228.000.
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  - Akabane, Hitoshi; and Ishiyama, Gen, 4,619,083, Cl. 51-289.00R.
- Toyota Jidosha Kabushiki Kaisha: *See—*
  - Nakawaki, Yasunori, 4,619,634, Cl. 474-201.000.
  - Shigematsu, Takashi; Tokoro, Setsuo; and Watanabe, Tomoyuki, 4,619,629, Cl. 474-28.000.
  - Tsuru, Naohiko; and Nomura, Yoshihisa, 4,619,289, Cl. 137-627.500.
- Toyotomi Kogyo Co., Ltd.: *See—*
  - Nakamura, Kazuharu; and Nakanishi, Yutaka, 4,619,603, Cl. 431-201.000.
- Trachman, Edward G.; and Roper, Daniel W., to Rockwell International Corporation. Two speed axle shift actuator. 4,619,151, Cl. 74-335.000.
- Traeger, Joseph P.; Traeger, Randolph J.; and Traeger, Mark A. Furnace construction. 4,619,209, Cl. 110-110.000.
- Traeger, Mark A.: *See—*
  - Traeger, Joseph P.; Traeger, Randolph J.; and Traeger, Mark A., 4,619,209, Cl. 110-110.000.
- Traeger, Randolph J.: *See—*
  - Traeger, Joseph P.; Traeger, Randolph J.; and Traeger, Mark A., 4,619,209, Cl. 110-110.000.
- Traino, James C.; and Keene, Douglas L., to Xerox Corporation. Fast scan jitter measuring system for raster scanners. 4,620,237, Cl. 358-300.000.
- Traynor, Sean G.: *See—*
  - Gorman, C. Rodney; Evans, James M.; and Traynor, Sean G., 4,620,028, Cl. 560-193.000.

- Trebilcock, Robert W.: *See—*
  - Cescon, Lawrence A.; and Trebilcock, Robert W., 4,619,721, Cl. 149-21.000.
- Triano, Alfred R.: *See—*
  - Chung, Kwong T.; and Triano, Alfred R., 4,620,127, Cl. 313-440.000.
- Trocha, Jobst: *See—*
  - Herbert, Adolf; Bellmer, Klaus; and Trocha, Jobst, 4,619,599, Cl. 425-186.000.
- Troupes, Demetrios: *See—*
  - Do, Phuc K.; Wyke, Carol E.; Kendrick, Barnes R., Jr.; Hedrick, Dennis R.; and Troupes, Demetrios, 4,619,537, Cl. 400-225.000.
- Troutman, Timmy D.: *See—*
  - Shank, Jeffrey B.; and Troutman, Timmy D., 4,619,387, Cl. 225-96.500.
- Trummer, Gunther, to Diehl GmbH & Co. Sensor arrangement in a search head. 4,619,421, Cl. 244-3.160.
- Trummer, Joseph A.; and Coulston, El L., to Kawneer Company, Inc. Thermally insulated composite frame member and method for manufacture. 4,619,097, Cl. 52-730.000.
- Trumpf GmbH & Co.: *See—*
  - Leibinger, Berthold; and Herb, Eugen, 4,619,448, Cl. 269-303.000.
- TRW Inc.: *See—*
  - Brooks, Robert E.; and Penunuri, David, 4,620,167, Cl. 333-195.000.
- Tsao, Jeffrey Y.: *See—*
  - Bozler, Carl O.; Ehrlich, Daniel J.; and Tsao, Jeffrey Y., 4,619,894, Cl. 430-942.000.
- Tschoepe, Norbert, to Siemens Aktiengesellschaft. Circuit arrangement for the recognition of static and dynamic faults in circuit assemblies. 4,620,303, Cl. 371-16.000.
- Tsubokawa, Yoshitoki, to Yoshida Kogyo K. K. Slide fastener. 4,619,023, Cl. 24-394.000.
- Tsubota, Motohiko: *See—*
  - Yuyama, Hideo; and Tsubota, Motohiko, 4,619,889, Cl. 430-406.000.
- Tsuda, Keishiro: *See—*
  - Hato, Masakatsu; Shimura, Yukio; and Tsuda, Keishiro, 4,619,897, Cl. 435-182.000.
- Tsudakoma Corp.: *See—*
  - Sainen, Tsutomu; and Asai, Takeshi, 4,619,294, Cl. 139-99.000.
- Tsuno, Koichi: *See—*
  - Inoue, Kiyoshi; Kuwaki, Keiichi; and Tsuno, Koichi, 4,619,247, Cl. 128-6.000.
- Tsuru, Naohiko; and Nomura, Yoshihisa, to Nippondenso Co., LTD.; and Toyota Jidosha Kabushiki Kaisha. Solenoid-controlled valve. 4,619,289, Cl. 137-627.500.
- Tubular Fabricators Industry, Inc.: *See—*
  - Battiston, Joseph, 4,619,282, Cl. 135-67.000.
- Tucel Industries, Inc.: *See—*
  - Lewis, John C., Jr., 4,619,485, Cl. 300-21.000.
- Tumey, Michael L.: *See—*
  - Charbonneau, Robert R.; Heilmann, Steven M.; Rasmussen, Jerald K.; and Tumey, Michael L., 4,619,867, Cl. 428-355.000.
- Tunnell, George W.: *See—*
  - Schoenig, Frederick C., Jr.; Glendinning, Sharon G.; Tunnell, George W.; and Zucker, Martin S., 4,620,099, Cl. 250-358.100.
- Turcheck, Stanley P., Jr.: *See—*
  - Dean, Arthur L.; Brown, William R.; Martin, James P.; Turcheck, Stanley P., Jr.; Scott, Junius D.; and Gotal, John D., 4,619,356, Cl. 198-395.000.
- Turck, Ernst. Filter cartridge for filtering apparatuses. 4,619,676, Cl. 55-500.000.
- Tustison, Randal W.: *See—*
  - Saunders, Kenneth J.; and Tustison, Randal W., 4,619,792, Cl. 264-1.200.
- Twardawa, Philip A.; and St-Onge, Michel C., to Canada, Her Majesty the Queen in right of. Tension link for parachute/payload separation. 4,619,424, Cl. 244-151.00B.
- Twin Rivers Engineering: *See—*
  - Kennedy, T. Scott; and Herman, Paul F., 4,619,948, Cl. 521-52.000.
- Ubowski, Lawrence W.: *See—*
  - McManus, John R.; and Ubowski, Lawrence W., 4,619,024, Cl. 29-157.30R.
- Ucci, Pompelio A.: *See—*
  - Blyth, Randolph C.; Ucci, Pompelio A.; and McLellan, George R., 4,619,853, Cl. 428-95.000.
- Uchida, Hiroshi: *See—*
  - Matsui, Isamu; Uchida, Hiroshi; Sekitani, Noboru; and Okumura, Hirokazu, 4,619,416, Cl. 242-35.50R.
- Uchida, Kazumichi: *See—*
  - Shimizu, Isoo; Nomura, Hideki; Uchida, Kazumichi; and Mitsuyuki, Hitoshi, 4,620,056, Cl. 585-452.000.
- Uchida, Mikio: *See—*
  - Shoji, Masao; Uchida, Mikio; and Kinoshita, Yoshio, 4,619,352, Cl. 192-41.00A.
- Uchida, Wataru: *See—*
  - Tajima, Yoshio; Iwasaki, Yoshiharu; Kawabe, Kiyoshi; Uchida, Wataru; Sugita, Shoji; Matsuura, Kazuo; and Miyoshi, Mituji, 4,619,981, Cl. 526-125.000.
- Ueda, Atsushi: *See—*
  - Okada, Tooru; Yokoyama, Takanao; Ueda, Atsushi; and Iwata, Toshio, 4,619,236, Cl. 123-425.000.
- Ueda, Fumihiro; Kawada, Kaoru; Yamamoto, Kazuo; Miwa, Noriaki; and Ishimatsu, Toshiki, to Mitsubishi Kinzoku Kabushiki Kaisha. Cubic boron nitride-based very high pressure-sintered material for cutting tools. 4,619,698, Cl. 75-238.000.
- Ueda, Kazuhiko; Hitomi, Mitsuo; and Sasaki, Junzo, to Mazda Motor Corporation. Intake device for internal combustion engine. 4,619,226, Cl. 123-52.0MB.
- Uehara, Makoto: *See—*
  - Shibuya, Masato; and Uehara, Makoto, 4,619,508, Cl. 353-122.000.
- Ueng, Shou-Nan; and Golec, Frederick A., Jr., to USV Pharmaceutical Corp. Process for preparing carboalkoxy substituted benzoxazole compounds. 4,620,010, Cl. 548-217.000.
- Ueno, Susumu; Nomura, Hirokazu; Hashizume, Shinobu; and Nishide, Toshiaki, to Shin-Etsu Chemical Co., Ltd; Emori & Co., Ltd; and Nikka Chemical Ind. Co., Ltd. Method for increasing color density and improving color fastness of dyed fabrics. 4,619,667, Cl. 8-444.000.
- Uesugi, Naomoto; and Suzuki, Shoji, to Honda Giken Kogyo Kabushiki Kaisha. Composite sound and heat insulating board. 4,619,344, Cl. 181-229.000.
- Uggeri, Fulvio; Castaldi, Graziano; and Giordano, Claudio, to Zambon S.p.A. Process for preparing alpha-aryl-alkanoic acids. 4,620,031, Cl. 562-466.000.
- Uhl, Robert F.: *See—*
  - Burger, Laurie J.; Helfer, Joel N.; Protzmann, Donald E.; and Uhl, Robert F., 4,619,271, Cl. 128-736.000.
- Uhlenkamp, Dirk: *See—*
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- Uhlig, Uwe, to Hauni-Werke Korber & Co. KG. Grinding machine with protective hood for the grinding wheel. 4,619,078, Cl. 51-5.00D.
- Ullman, Timothy J.: *See—*
  - Yates, John B., III; and Ullman, Timothy J., 4,619,971, Cl. 525-166.000.
- Uni-Cardan Aktiengesellschaft: *See—*
  - Balken, Jochen; Beigang, Wolfgang; and Bihr, Bernhard, 4,619,627, Cl. 464-24.000.
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- Union Carbide Corporation: *See—*
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- Union Oil Company of California: *See—*
  - Gartner, Ellis M., 4,619,702, Cl. 106-89.000.
  - Gritters, Gregory A.; and Perez, Jose M., 4,619,769, Cl. 210-747.000.
- United Kingdom Atomic Energy Authority: *See—*
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- United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
  - Lewis, Geoffrey A.; Timby, Ernest A.; and Walsh, Rodney H., 4,619,581, Cl. 415-143.000.
- United States of America
  - Agriculture: *See—*
    - Frick, John G., Jr.; Jones, Brian W.; Stone, Robbie L.; and Watson, Michael D., 4,619,668, Cl. 8-496.000.
  - Air Force: *See—*
    - Armitage, David, 4,619,501, Cl. 350-386.000.
    - Giladett, Leo V., 4,619,199, Cl. 102-254.000.
    - Repperger, Daniel W.; Jennings, Thomas J.; and Ratino, David A., 4,619,506, Cl. 351-243.000.
  - Energy: *See—*
    - Lewis, Arthur E.; Braun, Robert L.; Mallon, Richard G.; and Walton, Otis R., 4,619,738, Cl. 202-85.000.
    - Ortiz, John P., 4,619,136, Cl. 73-38.000.
    - Zeren, Joseph D., 4,620,081, Cl. 219-121.0EE.
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    - Dickey, Donna J.; Dobler, Sebastian; and Horejda, Natalie, 4,619,483, Cl. 297-397.000.
  - National Aeronautics and Space Administration: *See—*
    - Gisler, Gary L., 4,619,142, Cl. 73-462.000.
    - Holmes, Bruce J.; Martin, Glenn L.; Domack, Christopher S.; Obara, Clifford J.; and Hassan, Ahmed A., 4,619,423, Cl. 244-130.000.
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    - Keller, Teddy M., 4,619,986, Cl. 528-99.000.
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  - Beelaard, Wilhelmus A. J.; and de Volder, Johannes A. P., 4,620,174, Cl. 335-212.000.
  - Beugin, Michel P., 4,619,432, Cl. 248-635.000.
  - Dijkstra, Kees; and Huizinga, Jan, 4,619,119, Cl. 62-324.200.
  - Jansen, Winfried; and Nolde, Wolfgang, 4,620,314, Cl. 381-4.000.
  - Maas, Henricus G. R.; Slotboom, Jan W.; Appels, Johannes A.; and Osinski, Kazimierz, 4,619,039, Cl. 29-591.000.
  - Peels, Antonius H. P. M.; van den Beld, Antonius J. M.; Bijma, Jan; and Gerritsen, Jan, 4,620,134, Cl. 315-15.000.
  - Prud'homme van Reine, Peter R., 4,620,131, Cl. 313-636.000.
  - Schouhamer Immink, Kornelis A., 4,620,311, Cl. 375-19.000.
- Universal Flow Monitors, Inc.: *See—*
  - Rosaen, Lars O., 4,619,139, Cl. 73-198.000.
- Universal Plastics, Inc.: *See—*
  - Boyce, N. Blake; and McSpadden, J. Neil, 4,619,207, Cl. 108-51.100.
- Universal Propulsion Company, Inc.: *See—*
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  - Landre, Bernard, 4,620,151, Cl. 324-127.000.
- University of Cal., The Regents of the: *See—*
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- University of California, The Regents of The: *See—*
  - Cubicciotti, Roger S.; Karu, Alexander E.; and Krauss, Ronald M., 4,619,895, Cl. 435-7.000.
  - Thomas, Gareth; Ahn, Jae-Hwan; and Kim, Nack-Joon, 4,619,714, Cl. 148-12.00B.
- University of Florida: *See—*
  - Maren, Thomas H., 4,619,939, Cl. 514-363.000.
- University of North Carolina: *See—*
  - Hanker, Jacob S.; Terry, Bill C.; Ambrose, Wallace W.; and Lupton, Cecel R., 4,619,655, Cl. 623-1.000.
  - Tidwell, Richard R.; Dubovi, Edward J.; and Geratz, Joachim D., 4,619,942, Cl. 514-415.000.
- University of Rochester, The: *See—*
  - Sizer, Theodore, II; Duling, Irl N., III; Petras, Carl H.; and Letzring, Samuel A., 4,620,113, Cl. 307-270.000.
- Untermyer, Samuel, II: *See—*
  - Schoenig, Frederick C., Jr.; Glendinning, Sharon G.; Schick, Timothy; and Untermyer, Samuel, II, 4,620,100, Cl. 250-358.100.
- UOP Inc.: *See—*
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  - Schnell, Robert P.; Sampson, Robert W.; Pacanowski, Ronald F.; and Bruggema, Donald J., 4,620,284, Cl. 364-498.000.
  - Zinnen, Hermann A., 4,620,047, Cl. 568-939.000.
- Uphold, James D.; and Pfohl, Robert L., to Vitacomm, Ltd. Esophageal stethoscope and vital signs monitor system. 4,619,268, Cl. 128-671.000.
- Upjohn Company, The: *See—*
  - Sih, John C., 4,619,997, Cl. 544-124.000.
  - Stringfellow, Dale A.; and Fast, Patricia E., 4,619,933, Cl. 514-272.000.
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  - Henning, Rainer; Urbach, Hansjorg; Teetz, Volker; and Becker, Reinhard, 4,620,012, Cl. 548-411.000.
- Urban, Peter. Method of and apparatus for bonding an electrically conductive wire to bonding pads. 4,619,397, Cl. 228-111.000.
- Urbani, William G., to Industrial Innovations, Inc. Vacuum loading cleaning system. 4,619,015, Cl. 15-302.000.
- Urist, Marshall R., to University of Cal., The Regents of the. Bone morphogenetic protein composition. 4,619,989, Cl. 530-417.000.
- Ursula, Ruth: *See—*
  - Quittkat, Jorg: Thiel, Gerhard; and Ursula, Ruth, 4,620,162, Cl. 331-45.000.
- Uryu, Shunji: *See—*
  - Okamoto, Yoshiyuki; Sato, Kazuhiko; Uryu, Shunji; and Morita, Kiyoshi, 4,619,080, Cl. 51-251.000.
- Ushifusa, Nobuyuki; Ogihara, Satoru; and Nagayama, Kosei, to Hitachi, Ltd. Multi-layer ceramic wiring circuit board and process for producing the same. 4,620,264, Cl. 361-414.000.
- Usinor: *See—*
  - François, Bernard, 4,619,835, Cl. 427-8.000.
- USM Corporation: *See—*
  - Allmann, Gunther; and Wiessler, Hans, 4,620,079, Cl. 219-98.000.
- USV Pharmaceutical Corp: *See—*
  - Loev, Bernard; and Chan, Wan-Kit, 4,619,945, Cl. 514-729.000.
- USV Pharmaceutical Corp.: *See—*
  - Ueng, Shou-Nan; and Golec, Frederick A., Jr., 4,620,010, Cl. 548-217.000.
  - Youssefyeh, Raymond D.; and Jones, Howard, 4,619,944, Cl. 514-513.000.
- Utah Medical Products, Inc.: *See—*
  - Cutler, Christopher A.; and Wallace, William D., 4,619,269, Cl. 128-719.000.
- Utino, Megumi: *See—*
  - Mitani, Katsuya; Sano, Toshihiro; Nomura, Nobutaka; Numata, Kou; and Utino, Megumi, 4,620,273, Cl. 364-136.000.
- Utsunomiya, Yasuharu: *See—*
  - Maeda, Masahiko; Nakazawa, Toru; Utsunomiya, Yasuharu; and Wataki, Ryuji, 4,619,523, Cl. 355-15.000.
- Valavaara, Viljo K., to Colic Machine & Tool Limited. Double-bladed power hacksaw. 4,619,166, Cl. 83-461.000.
- Vale, Wylie W., Jr.; and Rivier, Jean E. F., to Salk Institute for Biological Studies, The. GNRH antagonists IIIB. 4,619,914, Cl. 514-15.000.
- Vallone, Joseph: *See—*
  - Petkovic-Luton, Ruzica; and Vallone, Joseph, 4,619,699, Cl. 75-252.000.
- Valyocsik, Ernest W., to Mobil Oil Corporation. Synthesis of ZSM-23 zeolite and the product produced. 4,619,820, Cl. 423-328.000.
- Van Buskirk, Ellor J.: *See—*
  - Hart, Terence J.; Dowbenko, Rostyslaw; Maska, Rudolf; Van Buskirk, Ellor J.; and Tetenbaum, Marvin T., 4,619,952, Cl. 523-409.000.
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  - Peels, Antonius H. P. M.; van den Beld, Antonius J. M.; Bijma, Jan; and Gerritsen, Jan, 4,620,134, Cl. 315-15.000.
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  - Halberschmidt, Friedrich; Reinmold, Heinz-Josef; Audi, Josef; Puetz, Cornelius; and Schubert, Gerd, 4,619,683, Cl. 65-351.000.
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- Walsh, David J. Light attachment for speculum. 4,619,248, Cl. 128-18.000.
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  - Cook, P. Dan; and McNamara, Dennis J., 4,619,996, Cl. 536-55.300.
  - Sharma, Shri C., 4,619,831, Cl. 426-93.000.
- Warner, Sidney O., II, to Sequentia, Incorporated. Fiberglass reinforced plastic sheet material with fire retardant filler. 4,619,954, Cl. 523-516.000.
- Waryasz, Richard E., to Combustion Engineering, Inc. Fluidized bed boiler in-bed tube support bracket. 4,619,315, Cl. 165-104.160.
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  - Maeda, Masahiko; Nakazawa, Toru; Utsunomiya, Yasuharu; and Wataki, Ryuji, 4,619,523, Cl. 355-15.000.
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- Weber, Walter; and Frank-Voeglein, Doris, to Siemens Aktiengesellschaft. Dental spray handpiece. 4,619,612, Cl. 433-80.000.
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- Weifenbach, Harald: *See—*
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- Wendland, Broder; and Uhlenkamp, Dirk, to Robert Bosch GmbH. System for TV transmission. 4,620,225, Cl. 358-141.000.
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- West, Robert A. Fishing lure assembly. 4,619,067, Cl. 43-42.090.
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  - Harman, Douglas G.; Green, Richard A.; and Bevilacqua, Bruce W., 4,619,128, Cl. 72-53.000.
  - Matty, Thomas C., 4,620,143, Cl. 318-811.000.
  - Mrenna, Stephen A.; and Vosler, Gale C., 4,620,076, Cl. 200-304.000.
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- Whelen Engineering Co., Inc.: *See—*
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- Whirlpool Corporation: *See—*
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Wikstrom, Bengt R. Wind turbine. 4,619,583, Cl. 416-122.000.

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Wright, Robert J., to Legato Pty. Ltd. (Musical) drums. 4,619,179, Cl. 84-413.000.

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Wurtz, William O., to Willow Technology, Inc. Method and apparatus for discharging materials from a storage bin. 4,619,381, Cl. 222-272.000.

Wyke, Carol E.: *See—*

Do, Phuc K.; Wyke, Carol E.; Kendrick, Barnes R., Jr.; Hedrick, Dennis R.; and Troupes, Demetrios, 4,619,537, Cl. 400-225.000.

Xanar, Inc.: *See—*

Robertson, Philip D., 4,619,672, Cl. 55-316.000.

Xerox Corporation: *See—*

Behun, Eugene, 4,620,198, Cl. 346-75.000.

Ruhland, John G., 4,619,517, Cl. 355-3.0DD.

Traino, James C.; and Keene, Douglas L., 4,620,237, Cl. 358-300.000.

Yabuki, Yoshiharu: *See—*

Kawata, Ken; Yabuki, Yoshiharu; Sato, Kouzou; and Hirai, Hiroyuki, 4,619,888, Cl. 430-353.000.

Yagi, Manabu: *See—*

Yoshida, Yasuharu; and Yagi, Manabu, 4,620,159, Cl. 329-50.000.

Yagi, Tatsuhiko: *See—*

Niki, Katsumi; Kobayashi, Katsuyoshi; Inoguchi, Hiroo; and Yagi, Tatsuhiko, 4,619,754, Cl. 204-290.00R.

Yahagi Engineering K.K.: *See—*

Kawanobe, Yasutaka; Noguti, Hisao; Kanou, Singi; and Yamazaki, Katsuya, 4,619,694, Cl. 75-59.140.

Yakima Wire Works, Inc.: *See—*

Germunson, Gary, 4,619,104, Cl. 53-459.000.

Yam, David S., to Dicomed Corporation. Method and apparatus for representation of a curve of uniform width. 4,620,287, Cl. 364-518.000.

Yamabe, Masaaki; Kojima, Gen; Wachi, Hiroshi; and Kodama, Shunichi, to Asahi Glass Company Limited. Copolymer for fluorine-containing elastomer having excellent low temperature resistance and alcohol resistance. 4,619,983, Cl. 526-247.000.

Yamada, Mutsuo: *See—*

Tanimoto, Hirotoshi; Yamada, Mutsuo; Arikawa, Yoshijiro; Kamiguchi, Taiji; Nishimura, Yasuyuki; and Kaku, Hiroyuki, 4,620,038, Cl. 568-401.000.

Yamada, Yasutsugu, to Nippon Tensaiseito Kabushiki Kaisha. Wood improver and a method of improving the quality of wood. 4,619,700, Cl. 106-15.050.

Yamaguchi, Nobutaka: *See—*

Okita, Tsutomu; Yamaguchi, Nobutaka; and Hashimoto, Hiroshi, 4,619,855, Cl. 428-143.000.

Yamaguchi, Susumu, to Diesel Kiki Co., Ltd. Fuel injection system for internal combustion engines. 4,619,233, Cl. 123-357.000.

Yamaguchi, Takashi: *See—*

Andoh, Tsuyoshi; Kanamori, Toshio; Yamaguchi, Takashi; Tomono, Hiroshi; and Satake, Satoshi, 4,619,310, Cl. 164-448.000.

Yamaho Kogyo Co., Ltd.: *See—*

Yamamoto, Kenzo, 4,619,402, Cl. 239-428.500.

Yamamoto, Kazuo: *See—*

Ueda, Fumihiro; Kawada, Kaoru; Yamamoto, Kazuo; Miwa, Noriaki; and Ishimatsu, Toshiki, 4,619,698, Cl. 75-238.000.

Yamamoto, Kenzo, to Yamaho Kogyo Co., Ltd. Nozzle for spraying agricultural chemicals. 4,619,402, Cl. 239-428.500.

Yamamoto, Susumu: *See—*

Kamuro, Yasuo; Hirai, Koichi; Suzuki, Fumio; Yamamoto, Susumu; and Shindo, Noboru, 4,619,685, Cl. 71-78.000.

Yamamoto, Toshio, to Kabushiki Kaisha Toshiba. Cold pressure-welding apparatus. 4,619,396, Cl. 228-102.000.

Yamana, Keiichi; Tachibana, Hajime; and Ohtsuka, Shuichi, to Fuji Photo Film Co., Ltd. Electrophotographic system. 4,619,513, Cl. 355-3.0CH.

Yamanaka, Isao, to Honda Giken Kogyo K.K. Choke lever device for a motor vehicle. 4,619,154, Cl. 74-489.000.

Yamane, Yasumasa: *See—*

Takahashi, Sankichi; Matsuzaki, Harumi; Mukushi, Toshimi; Ebara, Katsuya; Takakusagi, Tsunehiko; Yoshida, Masahiro; Sato, Joshiro; Yamane, Yasumasa; Sakaguchi, Katsumi; and Watanabe, Akira, 4,619,768, Cl. 210-739.000.

Yamashita, Noriyuki, to Sony Corporation. Pulse signal processing circuit. 4,620,312, Cl. 375-22.000.

Yamazaki, Etuo; and Matsuura, Hitoshi, to Fanuc Ltd. Sequence switching system in tracer control unit. 4,620,142, Cl. 318-578.000.

Yamazaki, Katsuya: *See—*

Kawanobe, Yasutaka; Noguti, Hisao; Kanou, Singi; and Yamazaki, Katsuya, 4,619,694, Cl. 75-59.140.

Yamazaki, Kiyoyasu: *See—*

Hama, Tomio; and Yamazaki, Kiyoyasu, 4,619,287, Cl. 137-513.300.

Yampolskaya, Ludmila. Cut and style—device for fashion haircutting-hairshaping and hairstyling. 4,619,280, Cl. 132-45.00R.

Yanagihara, Kazuhiko: *See—*

Takehara, Nobumitsu; Yanagihara, Kazuhiko; Ohnishi, Masahiro; and Harada, Shigeo, 4,620,096, Cl. 250-319.000.

Yang, James H. C., to Firestone Tire & Rubber Company, The. Nonpenetrating mechanical fastener for roofing membrane and method of applying same. 4,619,094, Cl. 52-410.000.

Yang, Tai-Her. Adjustable support arm-type three-dimensional work bench. 4,619,446, Cl. 269-88.000.

Yano, Mitsuru: *See—*

Suenaga, Makoto; Yano, Mitsuru; Ishihara, Yasuoki; and Ohtsuka, Kohki, 4,619,713, Cl. 148-3.000.

Yariv, Amnon: *See—*

Margalit, Shlomo; Chiu, Liew-Chuang; Smith, John S.; and Yariv, Amnon, 4,620,214, Cl. 357-63.000.

Yasue, Toshikazu; Mese, Michihiro; and Endo, Takeyuki, to Hitachi, Ltd. Speech recognition system. 4,620,316, Cl. 381-43.000.

Yasui, Yoshiharu: *See—*

Suzuki, Yoshihisa; Yasui, Yoshiharu; and Seiki, Kazuo, 4,619,109, Cl. 57-261.000.

Yasukawa, Kenichiro, to Pioneer Electronic Corp. PCM signal demodulating circuit. 4,620,158, Cl. 329-50.000.

Yates, John B., III; and Ullman, Timothy J., to General Electric Company. Linear polyester resin blends with high impact resistance. 4,619,971, Cl. 525-166.000.

Yavorsky, William M., to Ecodyne Corporation. Pressure vessel with an improved sidewall structure. 4,619,374, Cl. 220-414.000.

Yerkovich, Daniel: *See—*

Morgan, Carlton B.; Yerkovich, Daniel; Lyster, Thomas D.; Hagen, Eric C.; and Roberts, Douglas H., 4,619,265, Cl. 128-419.00D.

Yevich, Joseph P.: *See—*

New, James S.; Lobeck, Walter G., Jr.; and Yevich, Joseph P., 4,619,930, Cl. 514-252.000.

Yoda, Makoto: *See—*

Inoue, Hiroshi; Miyazaki, Makoto; Isoi, Masaaki; and Yoda, Makoto, 4,619,972, Cl. 525-193.000.

Yokogawa Hokushin Electric Corporation: *See—*

Hayashi, Eiji, 4,620,157, Cl. 328-160.000.

Yokota, Mitsuyoshi; and Matsumoto, Akio, to Mitsubishi Denki Kabushiki Kaisha. Pressure-responsive apparatus having hysteresis to prevent hunting. 4,620,073, Cl. 200-83.00P.

Yokoyama, Akira; and Ohmomo, Yoshiro, to Nihon Medi-Physics Co., Ltd. Radioactive iodine labeled metaraminol and diagnostic agent containing platelets labeled therewith. 4,619,823, Cl. 424-1.100.

Yokoyama, Takanao: *See—*

Okada, Tooru; Yokoyama, Takanao; Ueda, Atsushi; and Iwata, Toshio, 4,619,236, Cl. 123-425.000.

Yon, Gary. Wall corner finishing tool. 4,619,013, Cl. 15-235.800.

York, Rudy L.: *See—*

Parker, Sidney G.; and York, Rudy L., 4,620,209, Cl. 357-30.000.

Yoshida Kogyo K. K.: *See—*

Gartner, Karl, 4,619,091, Cl. 52-235.000.

Kaminaga, Hiromitsu, 4,619,092, Cl. 52-235.000.

Tsubokawa, Yoshitoki, 4,619,023, Cl. 24-394.000.

Yoshida Kogyo K.K.: *See—*

Yoshieda, Keiichi; and Sassa, Yuusei, 4,619,141, Cl. 73-865.900.

Yoshida, Masahiro: *See—*

Takahashi, Sankichi; Matsuzaki, Harumi; Mukushi, Toshimi; Ebara, Katsuya; Takakusagi, Tsunehiko; Yoshida, Masahiro; Sato, Joshiro; Yamane, Yasumasa; Sakaguchi, Katsumi; and Watanabe, Akira, 4,619,768, Cl. 210-739.000.

Yoshida, Yasuharu; and Yagi, Manabu, to NEC Corporation. Demodulator for multiphase PSK or multilevel QAM signals. 4,620,159, Cl. 329-50.000.

Yoshieda, Keiichi; and Sassa, Yuusei, to Yoshida Kogyo K.K. Inspection apparatus for slide fasteners. 4,619,141, Cl. 73-865.900.

Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, to Mitsui Toatsu Chemicals, Inc. Diphenyl ether derivatives and herbicides containing same. 4,619,689, Cl. 71-119.000.

Yoshimura, Isao; and Hata, Hideo, to Asahi Kasei Kogyo Kabushiki Kaisha. Highly-oriented stretchable multilayer film and process for producing the same. 4,619,859, Cl. 428-213.000.

Yoshimura, Shigeo; Shimada, Yoshiaki; and Kimura, Hitoshi, to Kubota Ltd. Load cell having flameproof function. 4,619,147, Cl. 73-862.380.

Yoshinari, Takashi, to Hitachi, Ltd. High-energy ignition device. 4,619,241, Cl. 123-620.000.

Yoshioka, Noriaki: *See—*

Kamiyama, Yoshiyasu; Yoshioka, Noriaki; and Nakagome, Keisuke, 4,619,767, Cl. 210-490.000.

Yoshitake, Hiroshi: *See—*

Hashimoto, Tadanori; Yoshitake, Hiroshi; Hata, Shigenao; and Nakazono, Akiko, 4,619,704, Cl. 106-286.400.

Young, Jean M.: *See—*

Kuenn, Cary K.; Young, Jean M.; and Wundrock, John A., 4,619,710, Cl. 134-22.170.

Young, Lock R., to Harris Corporation. TE_{10} rectangular to TE_{01} circular waveguide mode launcher. 4,620,163, Cl. 333-21.00R.

Youssefyeh, Raymond D.; and Jones, Howard, to USV Pharmaceutical Corporation. Antihypertensive compounds. 4,619,944, Cl. 514-513.000.

Yu, Jing-peir, to Monsanto Company. Self-texturing nylon yarn spinning process. 4,619,803, Cl. 264-176.200.

Yu, Kee C.: *See—*

Schols, John A.; and Yu, Kee C., 4,619,953, Cl. 523-465.000.

Yuki, Yoichi; and Ichida, Akito, to Daicel Chemical Industries, Ltd. Packing for use in resolution. 4,619,984, Cl. 528-38.000.

Yumoto, Osamu: *See—*

Hagiwara, Yoshimune; Sugiyama, Shizuo; Maeda, Narimichi; Yumoto, Osamu; Akazawa, Takashi; Kobayashi, Masahito; Kita, Yasuhiro; and Kita, Yuzo, 4,620,292, Cl. 364-748.000.

Yuyama, Hideo; and Tsubota, Motohiko, to Fuji Photo Film Co., Ltd. Image forming method. 4,619,889, Cl. 430-406.000.

Zaderej, Tony J.: *See—*

Zdanys, John, Jr.; Zaderej, Tony J.; and Robbins, Matthew A., 4,620,077, Cl. 200-331.000.

Zagorzycki, Peter E.: *See—*

George, Kurudamannil A.; and Zagorzycki, Peter E., 4,619,576, Cl. 414-300.000.

Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See—*

Wiggenhauser, Pedro, 4,619,150, Cl. 74-332.000.

Zaidan Hojin Handotai Kenkyu Shinkokai: *See—*

Nishizawa, Jun-ichi, 4,619,811, Cl. 422-109.000.

Zambelli, Roberto. Instrument for carrying out biopsies on tissues removed from organs to be examined. 4,619,272, Cl. 128-753.000.

Zambon S.p.A.: *See—*

Uggeri, Fulvio; Castaldi, Graziano; and Giordano, Claudio, 4,620,031, Cl. 562-466.000.

Zanno, Paul R.; Barnett, Ronald E.; and Roy, Glenn M., to General Foods Corporation. L-aminodicarboxylic acid gem-diamines. 4,619,782, Cl. 560-122.000.

Zanno, Paul R.; Barnett, Ronald E.; and Roy, Glenn M., to General Foods Corporation. Sweetening with L-aminodicarboxylic acid aminoalkenoic acid ester amides. 4,619,834, Cl. 426-548.000.

Zanussi Elettromeccanica S.p.A.: *See—*

De Faveri, Americo; Zanvettor, Sergio; and Savi, Antonio, 4,620,166, Cl. 333-184.000.

Zanvettor, Sergio: *See—*

De Faveri, Americo; Zanvettor, Sergio; and Savi, Antonio, 4,620,166, Cl. 333-184.000.

Zappia, Jean M.: *See—*

Reid, William J.; Zappia, Jean M.; Capocci, Gerald A.; and Spivack, John D., 4,619,957, Cl. 524-91.000.

Zaveri, Vikram: *See—*

Loewe, Gerhard; Nithammer, Egon; and Zaveri, Vikram, 4,619,031, Cl. 29-434.000.

Zdanys, John, Jr.; Zaderej, Tony J.; and Robbins, Matthew A., to CTS Corporation. Integral switch connector with remote actuator. 4,620,077, Cl. 200-331.000.

Zebisch, Manfred W., to International Standard Electric Corporation. Mounting support for several phototransmitters and photoreceivers. 4,620,091, Cl. 250-231.0SE.

Zeiler, Hans-Joachim: *See—*

Grohe, Klaus; Zeiler, Hans-Joachim; and Metzger, Karl G., 4,620,007, Cl. 546-156.000.

Zellweger Uster, Ltd.: *See—*

Leuenberger, Rolf; and Hunziker, Christian, 4,619,527, Cl. 356-238.000.

Zeman, Hans. Method for bending sheets. 4,619,131, Cl. 72-173.000.

Zenith Electronics Corporation: *See—*

Krause, Charles A.; and Rajaram, Babu, 4,620,186, Cl. 340-703.000.

Manske, Hans E., 4,620,126, Cl. 313-325.000.

Williams, Gregory A., 4,620,119, Cl. 307-595.000.

Zepp, Charles M.: *See—*

Locatell, Louis, Jr.; Zepp, Charles M.; and Ciecluch, Ronald F., 4,619,784, Cl. 540-593.000.

Zeren, Joseph D., to United States of America, Energy. Self-contained hot-hollow cathode gun source assembly. 4,620,081, Cl. 219-121.0EE.

Zielinski, Erich: *See—*
  Pehker, Manfred; Zielinski, Erich; Metz, Josef; and Bierwirth, Adolf P., 4,619,181, Cl. 89-34.000.
Zimmermann, Heinz, to Linde Aktiengesellschaft. Two stage hydrotreating pretreatment in production of olefins from heavy hydrocarbons. 4,619,757, Cl. 208-57.000.
Zimmermann, Herbert; Poupko, Raphi; Luz, Zeev; and Billard, Jean, to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften E.V. Pyramidal liquid crystals. 4,619,788, Cl. 260-410.500.
Zinnen, Hermann A., to UOP Inc. Process for the separation of orthonitrotoluene. 4,620,047, Cl. 568-939.000.
Zucker, Martin S.: *See—*
  Schoenig, Frederick C., Jr.; Glendinning, Sharon G.; Tunnell, George W.; and Zucker, Martin S., 4,620,099, Cl. 250-358.100.
Zunkel, Gary D., to Halliburton Company. Well surging method and system. 4,619,325, Cl. 166-374.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF OCTOBER, 1986

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bisk, Leonard; and Rogahn, Gunther, to Independent Products Company, Inc. Plastic clip. Re. 32,269, Cl. 223-91.000.
Fujioka, Akira: *See—*
  Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, Re. 32,272, Cl. 524-114.000.
Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, to Sumitomo Chemical Company, Limited; and Nippon Sheet Glass Co., Ltd. Non-fogging coating composition and a shaped article coated therewith. Re. 32,272, Cl. 524-114.000.
Gurewich, Victor: *See—*
  Husain, Syed S.; Lipinski, Boguslaw; and Gurewich, Victor, Re. 32,271, Cl. 435-215.000.
Husain, Syed S.; Lipinski, Boguslaw; and Gurewich, Victor: Isolation of plasminogen activators useful as therapeutic and diagnostic agents. Re. 32,271, Cl. 435-215.000.
Independent Products Company, Inc.: *See—*
  Bisk, Leonard; and Rogahn, Gunther, Re. 32,269, Cl. 223-91.000.
James River-Norwalk, Inc.: *See—*
  Murray, Lee J., Jr., Re. 32,270, Cl. 428-335.000.
Lipinski, Boguslaw: *See—*
  Husain, Syed S.; Lipinski, Boguslaw; and Gurewich, Victor, Re. 32,271, Cl. 435-215.000.
Murray, Lee J., Jr., to James River-Norwalk, Inc. Polyester coated paperboard for forming food containers and process for producing the same. Re. 32,270, Cl. 428-335.000.
Nippon Sheet Glass Co., Ltd.: *See—*
  Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, Re. 32,272, Cl. 524-114.000.
Ohtani, Noboru: *See—*
  Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, Re. 32,272, Cl. 524-114.000.
Rogahn, Gunther: *See—*
  Bisk, Leonard; and Rogahn, Gunther, Re. 32,269, Cl. 223-91.000.
Sakiyama, Kazuo: *See—*
  Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, Re. 32,272, Cl. 524-114.000.
Sumitomo Chemical Company, Limited: *See—*
  Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, Re. 32,272, Cl. 524-114.000.
Yoshida, Motoaki: *See—*
  Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, Re. 32,272, Cl. 524-114.000.

LIST OF DESIGN PATENTEES

Acufex Microsurgical Inc.: *See—*
  Lichtman, Philip R.; and Strahan, John C., 286,438, Cl. D24-26.000.
Appel, Mel; and Kress, George, to Mel Appel Company, The. Toy barn. 286,418, 10-28-86, Cl. D21-116.000.
Aqua Meter Instrument Corporation: *See—*
  Grilk, Henry G., 286,384, Cl. D10-46.000.
Ark-Plas Products Inc.: *See—*
  Hill, Royce W., 286,372, Cl. D8-387.000.
  Hill, Royce W., 286,373, Cl. D8-387.000.
Asaki, James T., to ITT Corporation. Telephone set. 286,401, 10-28-86, Cl. D14-53.000.
Atkinson, Robert W., to Snyder Laboratories, Inc. Medical control panel for an irrigation, lavage and suction apparatus or the like. 286,435, 10-28-86, Cl. D24-8.000.
B.V.A.S. r.l.: *See—*
  Pappalardo, Vittorio, 286,414, Cl. D19-66.000.
Banfield, Michael G. Packaging container. 286,378, 10-28-86, Cl. D9-346.000.
Bianco, Andrew S., to Dyson-Kissner-Moran Corporation, The. Combined liquid container and rotatable spout. 286,376, 10-28-86, Cl. D9-341.000.
Bonifield, Charles B.: *See—*
  Johnson, William P.; and Bonifield, Charles B., 286,394, Cl D12-156.000.
Botros, Radamis: *See—*
  Parshad, David; Butram, Waco; and Botros, Radamis, 286,403, Cl. D14-59.000.
Bourgeois, Bruce E. Mailing envelope. 286,412, 10-28-86, Cl. D19-3.000.
Braun Aktiengesellschaft: *See—*
  Ullmann, Roland, 286,451, Cl. D28-49.000.
  Ullmann, Roland, 286,452, Cl. D28-49.000.
Brother Kogyo Kabushiki Kaisha: *See—*
  Itoh, Kazuo; Goto, Makoto; and Isaji, Yasuyo, 286,407, Cl. D15-127.000.
Bulgari, Gianni, to Sotiro Bulgari Di Costantino E Giorgio Bulgari S.a.S. Wristwatch band. 286,385, 10-28-86, Cl. D11-19.000.
Bussell, Vanda J. Toothbrush holder. 286,349, 10-28-86, Cl. D6-534.000.
Bussell, Vanda J. Soap dish. 286,354, 10-28-86, Cl. D6-536.000.
Bussell, Vanda J. Soap dish. 286,355, 10-28-86, Cl. D6-536.000.
Bussell, Vanda J. Soap dish. 286,356, 10-28-86, Cl. D6-536.000.
Bussell, Vanda J. Lotion dispensing bottle. 286,374, 10-28-86, Cl. D9-300.000.
Butram, Waco: *See—*
  Parshad, David; Butram, Waco; and Botros, Radamis, 286,403, Cl. D14-59.000.
Camens, Murray I. C., to U.S. Philips Corporation. Lady shaver. 286,453, 10-28-86, Cl. D28-49.000.
Capitol Products Corporation: *See—*
  Schmidt, Dietrich F., 286,434, Cl. D25-52.000.
Caroli, Italo; and Tienken, Alfred G., to Dietz, R. E. Lens for hazard warning lamp or similar article. 286,446, 10-28-86, Cl. D26-123.000.
Cesaroni, William C.: *See—*
  Gremonprez, Dan E.; and Cesaroni, William C., 286,365, Cl. D7-321.000.
  Gremonprez, Dan E.; and Cesaroni, William C., 286,366, Cl. D7-321.000.
Challans, John C., to Plessey Overseas Limited. Electrical connector socket. 286,397, 10-28-86, Cl. D13-24.000.
Citizen Watch Co., Ltd.: *See—*
  Matsuo, Jiro, 286,382, Cl. D10-39.000.
Coachmen Industries, Inc.: *See—*
  Johnson, William P.; and Bonifield, Charles B., 286,394, Cl. D12-156.000.
Combustion Engineering, Inc.: *See—*
  Luciano, Thomas J., 286,396, Cl. D13-23.000.
Corner, Horace B.: *See—*
  Wirts, Harold L.; and Corner, Horace B., 286,370, Cl. D8-356.000.
Cosco, Inc.: *See—*
  Knoedler, Roy E., 286,351, Cl. D6-390.000.
Crossley, Ronald L.: *See—*
  Korthoff, Herbert W.; and Crossley, Ronald L., 286,442, Cl. D24-27.000.
Darome, Inc.: *See—*
  Parshad, David; Butram, Waco; and Botros, Radamis, 286,403, Cl. D14-59.000.
Dart Industries Inc: *See—*
  Zieff, Mark P., 286,361, Cl. D7-45.000.
Dart Industries, Inc.: *See—*
  Gremonprez, Dan E.; and Cesaroni, William C., 286,365, Cl. D7-321.000.
  Gremonprez, Dan E.; and Cesaroni, William C., 286,366, Cl. D7-321.000.
  Trivison, Jody A., 286,360, Cl. D7-17.000.
Davidson, Bette B. Medallion. 286,389, 10-28-86, Cl. D11-114.000.
DeFrancesco, John C. Violin learning board. 286,413, 10-28-86, Cl. D19-59.000.
Dickerson, Dorothy M. Angel-doll. 286,422, 10-28-86, Cl. D21-169.000.
Dietz, R. E.: *See—*
  Caroli, Italo; and Tienken, Alfred G., 286,446, Cl. D26-123.000.
Diffrient, Niels. Chair. 286,350, 10-28-86, Cl. D6-366.000.
Dillard, James W. Walking stilt. 286,415, 10-28-86, Cl. D21-72.000.
Dyson-Kissner-Moran Corporation, The: *See—*
  Bianco, Andrew S., 286,376, Cl. D9-341.000.
Ekstrand, Johan A. I. Mounting for a sighting instrument. 286,424, 10-28-86, Cl. D22-110.000.
Forecast Lighting Company: *See—*
  Sink, Mark, 286,445, Cl. D26-86.000.
Fratelli Guzzini S.p.A.: *See—*
  Gecchelin, Bruno, 286,364, Cl. D7-317.000.

Fukuda, Harumi: *See—*
Kosako, Mikio; and Fukuda, Harumi, 286,409, Cl. D16-32.000.

Gahan, Geoffrey D., to Mouldmaking Design Centre Limited. Combined stand and housing for video display unit. 286,406, 10-28-86, Cl. D14-113.000.

Gaudet, Herbert L., Sr. Bathroom cabinet. 286,348, 10-28-86, Cl. D6-516.000.

Gecchelin, Bruno, to Fratelli Guzzini S.p.A. Transparent jug. 286,364, 10-28-86, Cl. D7-317.000.

Geisler, Bradley L. Combined support and stand for a needlework frame. 286,343, 10-28-86, Cl. D3-26.000.

Goto, Makoto: *See—*
Itoh, Kazuo; Goto, Makoto; and Isaji, Yasuyo, 286,407, Cl. D15-127.000.

Greco, Vincent. Panel for rolling gates. 286,433, 10-28-86, Cl. D25-50.000.

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223 L	4,619,088
233	4,619,089
235	4,619,090
	4,619,091
	4,619,092
311	4,619,093
410	4,619,094
595	4,619,095
726	4,619,096
730	4,619,097
738	4,619,098
745	4,619,099
748	4,619,100
CLASS 53	
117	4,619,101
399	4,619,102
432	4,619,103
459	4,619,104
CLASS 55	
107	4,619,670
222	4,619,671
316	4,619,672
387	4,619,673
486	4,619,674
498	4,619,675
500	4,619,676
510	4,619,677
CLASS 56	
12.7	4,619,105
341	4,619,106
CLASS 57	
6	4,619,107
236	4,619,108
261	4,619,109
CLASS 60	
39.091	4,619,110
632	4,619,111
CLASS 62	
4	4,619,678
6	4,619,112
11	4,619,679
64	4,619,113
180	4,619,114
217	4,619,115
233	4,619,116
	4,619,117
324.1	4,619,118
324.2	4,619,119
CLASS 65	
3.12	4,619,680
29	4,619,681
64	4,619,682
351	4,619,683
CLASS 66	
192	4,619,120
CLASS 68	
16	4,619,121
CLASS 70	
34	4,619,122
417	4,619,123
419	4,619,124
460	4,619,125
CLASS 71	
34	4,619,684
78	4,619,685
92	4,619,686
	4,619,687
	4,619,688
119	4,619,689
CLASS 72	
38	4,619,126
53	4,619,128
56	4,619,127
	4,619,129
124	4,619,130
173	4,619,131
458	4,619,132
CLASS 73	
1 R	4,619,133
3	4,619,134
4 R	4,619,135
38	4,619,136
146.5	4,619,137
198	4,619,138
	4,619,139
295	4,619,140
462	4,619,142
598	4,619,143
708	4,619,144
861.04	4,619,145
861.54	4,619,146
862.38	4,619,147
862.62	4,619,148
863.91	4,619,149
865.9	4,619,141
CLASS 74	
332	4,619,150
335	4,619,151
473 R	4,619,152
477	4,619,153
489	4,619,154
498	4,619,155
640	4,619,156
689	4,619,157
695	4,619,158
CLASS 75	
0.5 B	4,619,691
1 R	4,619,690
10.25	4,619,692
59.14	4,619,694
65 EB	4,619,695
130 R	4,619,696
230	4,619,697
238	4,619,698
252	4,619,699
CLASS 81	
57.34	4,619,159
57.39	4,619,160
462	4,619,161
464	4,619,162
CLASS 83	
82	4,619,163
200	4,619,164
246	4,619,165
461	4,619,166
607	4,619,167
694	4,619,168
697	4,619,169
745	4,619,170
782	4,619,171
830	4,619,172
CLASS 84	
1.01	4,619,174
	4,619,175
1.03	4,619,176
50	4,619,177
410	4,619,178
413	4,619,179
CLASS 87	
57	4,619,180
CLASS 89	
34	4,619,181
37.16	4,619,182
129.02	4,619,183
185	4,619,184
CLASS 91	
369 R	4,619,185
433	4,619,186
523	4,619,187
CLASS 92	
26	4,619,188
CLASS 99	
334	4,619,189
393	4,619,190
483	4,619,191
538	4,619,192
CLASS 100	
13	4,619,193
127	4,619,194
154	4,619,195
CLASS 101	
35	4,619,196
93.04	4,619,197
148	4,619,198
CLASS 102	
254	4,619,199
275	4,619,200
283	4,619,201
443	4,619,202
516	4,619,203
CLASS 104	
166	4,619,204
168	4,619,205
178	4,619,206
CLASS 106	
15.05	4,619,700
38.23	4,619,701
89	4,619,702
271	4,619,703
286.4	4,619,704
288 B	4,619,705
CLASS 108	
51.1	4,619,207
144	4,619,208
CLASS 110	
110	4,619,209
234	4,619,210
CLASS 112	
132	4,619,211
266.2	4,619,212
273	4,619,213
459	4,619,214
CLASS 114	
56	4,619,215
105	4,619,216
222	4,619,217
295	4,619,218
CLASS 116	
28 R	4,619,219
63 P	4,619,220
307	4,619,221
CLASS 119	
15.5 R	4,619,222
20	4,619,223
CLASS 122	
451 R	4,619,224
CLASS 123	
3	4,619,225
52 MB	4,619,226
146.5 A	4,619,227
182	4,619,228
286	4,619,229
325	4,619,230
333	4,619,231
339	4,619,232
357	4,619,233
	4,619,234
425	4,619,236
440	4,619,235
491	4,619,237
502	4,619,238
506	4,619,239
575	4,619,240
620	4,619,241
CLASS 126	
110 R	4,619,242
433	4,619,243
451	4,619,244
CLASS 128	
1 R	4,619,245
	4,619,246
6	4,619,247
18	4,619,248
23	4,619,249
26	4,619,250
79	4,619,251
82.1	4,619,252
201.23	4,619,254
202.27	4,619,255
303 R	4,619,256
303.1	4,619,257
303.14	4,619,258
305	4,619,259
309	4,619,260
325	4,619,261
334 R	4,619,262
344	4,619,263
419 D	4,619,265
419 F	4,619,264
639	4,619,266
660	4,619,267
671	4,619,268
719	4,619,269
721	4,619,270
736	4,619,271
753	4,619,272
771	4,619,273
772	4,619,274
783	4,619,275
CLASS 131	
79	4,619,276
94	4,619,277
284	4,619,278
345	4,619,279
CLASS 132	
45 R	4,619,280
CLASS 134	
2	4,619,706
3	4,619,707
6	4,619,708
22.14	4,619,709
22.17	4,619,710
38	4,619,711
CLASS 135	
20 M	4,619,281
67	4,619,282
CLASS 136	
258	4,620,058
CLASS 137	
15	4,619,283
67	4,619,284
68.2	4,619,285
81.1	4,619,286
513.3	4,619,287
554	4,619,288
627.5	4,619,289
CLASS 138	
39	4,619,290
109	4,619,291
113	4,619,292
CLASS 139	
13 R	4,619,293
99	4,619,294
304	4,619,295
435	4,619,296
CLASS 141	
20	4,619,297
384	4,619,298
CLASS 144	
357	4,619,299
CLASS 148	
2	4,619,712
3	4,619,713
12 B	4,619,714
23	4,619,715
26	4,619,716
112	4,619,717
171	4,619,718
188	4,619,719
403	4,619,720
CLASS 149	
21	4,619,721
41	4,619,722
CLASS 152	
209 R	4,619,300
210	4,619,301
398	4,619,302
416	4,619,303
CLASS 156	
62.2	4,619,723
72	4,619,724
182	4,619,725
366	4,619,726
541	4,619,727
555	4,619,728
606	4,619,729
617 SP	4,619,730
644	4,619,731
CLASS 160	
135	4,619,304
263	4,619,305
CLASS 162	
29	4,619,732
30.1	4,619,733
111	4,619,734
135	4,619,735
261	4,619,736
357	4,619,737
CLASS 164	
150	4,619,306
169	4,619,307
416	4,619,308
430	4,619,309
448	4,619,310
CLASS 165	
47	4,619,311
57	4,619,312
67	4,619,313
104.16	4,619,314
	4,619,315
104.33	4,619,316
162	4,619,317
CLASS 166	
55	4,619,318
55.1	4,619,319
65.1	4,619,320
90	4,619,321
241	4,619,322
285	4,619,323
344	4,619,324
374	4,619,325
382	4,619,326
CLASS 169	
38	4,619,327
75	4,619,328
CLASS 172	
21	4,619,329
311	4,619,330
518	4,619,331
CLASS 174	
42	4,620,059
	4,620,060
51	4,620,061
65 R	4,619,332

CLASS 175
4 52 4,619,333
321 4,619,334
339 4,619,335

CLASS 177
1 4,619,336
210 R 4,619,337

CLASS 178
18 4,620,062

CLASS 179
2 A 4,620,063
2 C 4,620,064
6.07 4,620,065
27 D 4,620,066
146 R 4,620,067
156 A 4,620,068
175 3 R 4,620,069
4,620,070

CLASS 180
142 4,619,338
143 4,619,339
209 4,619,340
335 4,619,341

CLASS 181
184 4,619,342
208 4,619,343
229 4,619,344

CLASS 184
109 4,619,345

CLASS 187
9 E 4,619,346

CLASS 188
72.6 4,619,347
351 4,619,348
380 4,619,349

CLASS 192
3 31 4,619,350
35 4,619,351
41 A 4,619,352
70 18 4,619,353
89 B 4,619,354

CLASS 198
323 4,619,355
395 4,619,356
412 4,619,357
457 4,619,358
463.5 4,619,359
471 1 4,619,360

CLASS 200
6 BA 4,620,071
81 R 4,620,072
83 P 4,620,073
144 B 4,620,074
159 B 4,620,075
304 4,620,076
331 4,620,077

CLASS 202
85 4,619,738

CLASS 204
1 T 4,619,739
15 4,619,740
4,619,741
34 4,619,742
77 4,619,743
105 R 4,619,744
151 4,619,745
181 1 4,619,746
182.3 4,619,747
192.31 4,619,748
228 4,619,749
243 R 4,619,750
267 4,619,751
286 4,619,752
290 F 4,619,753
290 R 4,619,754
298 4,619,755

CLASS 206
204 4,619,361
326 4,619,362
373 4,619,363
379 4,619,364
503 4,619,365
507 4,619,366

CLASS 208
48 AA 4,619,756
57 4,619,757
85 4,619,758
210 4,619,759

CLASS 209
166 4,619,760
250 4,619,761

608 4,619,367

CLASS 210
170 4,619,762
177 4,619,763
248 4,619,764
289 4,619,765
482 4,619,766
490 4,619,767
739 4,619,768
747 4,619,769
772 4,619,770
788 4,619,771

CLASS 211
41 4,619,368

CLASS 212
189 4,619,369

CLASS 215
225 4,619,370

CLASS 218
156 4,619,253

CLASS 219
10 55 B 4,620,078
98 4,620,079
121 EE 4,620,081
121 PP 4,620,080
130 51 4,620,082
491 4,620,083
497 4,620,084
528 4,620,085
552 4,620,086

CLASS 220
71 4,619,371
90 4 4,619,372
354 4,619,373
414 4,619,374

CLASS 221
186 4,619,375
243 4,619,376

CLASS 222
83 4,619,377
144 5 4,619,378
153 4,619,379
240 4,619,380
272 4,619,381
327 4,619,382
556 4,619,383

CLASS 223
77 4,619,384
91 Re 32,269
96 4,619,385

CLASS 224
277 4,619,386

CLASS 225
96 5 4,619,387

CLASS 226
76 4,619,388
79 4,619,389
162 4,619,390

CLASS 227
19 4,619,391
120 4,619,392
136 4,619,393
156 4,619,394

CLASS 228
4 5 4,619,395
102 4,619,396
111 4,619,397

CLASS 229
17 G 4,619,398
72 4,619,399

CLASS 235
379 4,620,087
443 4,620,088

CLASS 239
102 1 4,619,400
214 17 4,619,401
428 5 4,619,402
456 4,619,403
461 4,619,404
675 4,619,405

CLASS 241
5 4,619,406
30 4,619,407
34 4,619,408
38 4,619,409
55 4,619,410
101 4 4,619,411
101 7 4,619,412
222 4,619,413
261 3 4,619,414

CLASS 242
18 G 4,619,415
35 5 R 4,619,416
107 4 A 4,619,417
4,619,418
4,619,419
198 4,619,420

CLASS 244
3 16 4,619,421
127 4,619,422
130 4,619,423
151 B 4,619,424

CLASS 246
34 R 4,619,425

CLASS 248
174 4,619,426
178 4,619,427
221 2 4,619,428
447 2 4,619,429
467 4,619,430
500 4,619,431
635 4,619,432

CLASS 249
18 4,619,433

CLASS 250
201 4,620,089
223 B 4,620,090
231 P 4,620,093
231 SE 4,620,091
4,620,092
4,620,094
281 4,620,095
319 4,620,096
327 2 4,620,097
4,620,098
358 1 4,620,099
4,620,100
376 4,620,101
427 4,620,102
440 1 4,620,103
493 1 4,620,104
505 1 4,620,105
506.1 4,620,106
566 4,620,107

CLASS 251
14 4,619,434
25 4,619,435
61 1 4,619,436
81 4,619,437
129 01 4,619,438

CLASS 252
8 514 4,619,772
4,619,773
8 551 4,619,776
8 7 4,619,774
8 8 4,619,775
62.54 4,619,777
70 4,619,778
91 4,619,779
522 R 4,619,780
4,619,781

CLASS 254
45 4,619,439

CLASS 256
47 4,619,440

CLASS 260
410.5 4,619,788
412.6 4,619,789
413 4,619,790
549 4,619,791

CLASS 264
1.2 4,619,792
2.6 4,619,793
4.1 4,619,794
4.6 4,619,795
29 4 4,619,796
29 5 4,619,805
40 1 4,619,797
62 4,619,798
101 4,619,799
139 4,619,800
146 4,619,801
171 4,619,802
176.2 4,619,803
220 4,619,804
522 4,619,806

CLASS 266
88 4,619,693
193 4,619,441
4,619,442
220 4,619,443
236 4,619,444

CLASS 267
100 4,619,445

CLASS 269
88 4,619,446
221 4,619,447
303 4,619,448

CLASS 270
5 4,619,449

CLASS 271
35 4,619,450
274 4,619,451
305 4,619,452

CLASS 272
117 4,619,453
141 4,619,454

CLASS 273
118 R 4,619,455
127 B 4,619,456
269 4,619,457

CLASS 277
24 4,619,458
235 B 4,619,459

CLASS 279
19 4,619,460
19 3 4,619,461

CLASS 280
242 R 4,619,462
475 4,619,463
655 4,619,464
661 4,619,465
669 4,619,466
708 4,619,467
801 4,619,468

CLASS 283
76 4,619,469

CLASS 285
55 4,619,470
158 4,619,471
334 4,619,472
353 4,619,473

CLASS 294
9 4,619,474
90 4,619,475

CLASS 296
37 1 4,619,476
37 13 4,619,477
153 4,619,478
190 4,619,479
217 4,619,480

CLASS 297
284 4,619,481
355 4,619,482
397 4,619,483

CLASS 298
18 4,619,484

CLASS 300
21 4,619,485

CLASS 307
2 4,620,108
10 LS 4,620,109
48 4,620,110
150 4,620,111
239 4,620,112
270 4,620,113
350 4,620,114
443 4,620,115
449 4,620,116
451 4,620,117
518 4,620,118
595 4,620,119

CLASS 310
166 4,620,120
323 4,620,121
328 4,620,122
331 4,620,123
332 4,620,124

CLASS 312
195 4,619,486

CLASS 313
25 4,620,125
325 4,620,126
440 4,620,127
630 4,620,128
4,620,129
634 4,620,130
636 4,620,131

CLASS 315
3 4,620,132
15 4,620,133
4,620,134
326 4,620,135
371 4,620,136

378 4,620,137

CLASS 318
254 4,620,138
4,620,139
332 4,620,140
483 4,620,141
578 4,620,142
811 4,620,143

CLASS 323
331 4,620,144

CLASS 324
54 4,620,145
58 5 A 4,620,146
77 A 4,620,147
99 D 4,620,148
103 P 4,620,149
103 R 4,620,150
127 4,620,151
225 4,620,152
309 4,620,153
4,620,154
322 4,620,155
424 4,620,156

CLASS 328
160 4,620,157

CLASS 329
50 4,620,158
4,620,159
104 4,620,160

CLASS 330
257 4,620,161

CLASS 331
45 4,620,162

CLASS 333
21 R 4,620,163
139 4,620,164
167 4,620,165
184 4,620,166
195 4,620,167
202 4,620,168
235 4,620,169
252 4,620,170

CLASS 335
20 4,620,171
78 4,620,172
205 4,620,173
212 4,620,174

CLASS 337
343 4,620,175

CLASS 338
128 4,620,176

CLASS 339
14 R 4,619,487
4,619,488
28 4,619,489
31 M 4,619,490
45 M 4,619,491
45 R 4,619,492
91 R 4,619,493
103 M 4,619,494
176 MP 4,619,495
177 R 4,619,496
244 R 4,619,497

CLASS 340
81 R 4,620,177
347 AD 4,620,179
347 DD 4,620,180
347 NT 4,620,178
566 4,620,181
568 4,620,182
4,620,183
675 4,620,184
682 4,620,185
703 4,620,186
825.05 4,620,187
825.87 4,620,188
856 4,620,189
985 4,620,190

CLASS 342
128 4,620,192
200 4,620,193

CLASS 343
6.8 R 4,620,191
747 4,620,194

CLASS 346
1.1 4,620,195
4,620,196
4,620,197
75 4,620,198
76 PH 4,620,199
108 4,620,200
140 R 4,620,201

4,620,202
153 1 4,620,203
204 4,620,204
4,620,205

CLASS 350
6 6 4,619,498
96 20 4,619,499
341 4,619,500
386 4,619,501
505 4,619,502
511 4,619,503

CLASS 351
163 4,619,504
211 4,619,505
243 4,619,506

CLASS 352
46 4,619,507

CLASS 353
122 4,619,508

CLASS 354
173 1 4,619,509
4,619,510
217 4,619,511
458 4,619,512

CLASS 355
3 CH 4,619,513
3 DD 4,619,516
4,619,517
3 R 4,619,514
4,619,515
4 4,619,518
11 4,619,519
14 D 4,619,522
14 R 4,619,520
4,619,521
15 4,619,523
53 4,619,524
64 4,619,525
73 4,619,526

CLASS 356
238 4,619,527
301 4,619,528
358 4,619,529
440 4,619,530

CLASS 357
4 4,620,206
22 4,620,207
23 1 4,620,208
30 4,620,209
4,620,210
38 4,620,211
51 4,620,212
55 4,620,213
63 4,620,214
81 4,620,215
4,620,216

CLASS 358
12 4,620,217
4,620,218
20 4,620,219
40 4,620,220
47 4,620,221
48 4,620,222
107 4,620,223
119 4,620,224
141 4,620,225
143 4,620,226
147 4,620,227
160 4,620,228
194.1 4,620,229
201 4,620,230
213 4,620,231
4,620,232
260 4,620,233
285 4,620,234
293 4,620,235
4,620,236
300 4,620,237

CLASS 360
8 4,620,238
4,620,239
48 4,620,240
73 4,620,241
74.1 4,620,242
77 4,620,243
4,620,244
85 4,620,245
96 5 4,620,246
97 4,620,247
4,620,248
99 4,620,249
102 4,620,250
103 4,620,251
106 4,620,252
107 4,620,253
132 4,620,254
4,620,255

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137 4,620,256

CLASS 361
68 4,620,257
91 4,620,258
152 4,620,259
4,620,260
154 4,620,261
323 4,620,262
383 4,620,263
414 4,620,264
424 4,620,265

CLASS 362
32 4,620,266
71 4,620,267
74 4,620,268
80 4,620,269
123 4,620,270

CLASS 363
21 4,620,271
51 4,620,296
53 4,620,272

CLASS 364
136 4,620,273
200 4,620,274
4,620,275
4,620,276
4,620,277
4,620,278
4,620,279
426 4,620,280
475 4,620,281
489 4,620,282
493 4,620,283
498 4,620,284
513 4,620,285
4,620,286
518 4,620,287
4,620,288
521 4,620,289
578 4,620,290
607 4,620,291
748 4,620,292
845 4,620,293
900 4,620,294
4,620,295

CLASS 365
174 4,620,297
189 4,620,298
230 4,620,299

CLASS 366
3 4,619,531
110 4,619,532

CLASS 369
33 4,620,300
266 4,620,301

CLASS 371
1 4,620,302
16 4,620,303
20 4,620,304

CLASS 372
37 4,620,305
38 4,620,306
50 4,620,307

CLASS 373
105 4,620,308
128 4,620,309

CLASS 374
141 4,619,533

CLASS 375
17 4,620,310
19 4,620,311
22 4,620,312

CLASS 376
136 4,619,807
272 4,619,808
402 4,619,809

CLASS 378
19 4,620,313

CLASS 381
4 4,620,314
10 4,620,315
43 4,620,316
90 4,620,317

CLASS 382
2 4,620,318

CLASS 383
33 4,620,319
79 4,620,320

CLASS 384
94 4,619,534
472 4,619,535

CLASS 400
157.2 4,619,536
225 4,619,537
621 4,619,538

CLASS 401
85 4,619,539

CLASS 403
24 4,619,540
49 4,619,541
62 4,619,542
114 4,619,543
162 4,619,544
169 4,619,545
171 4,619,546
231 4,619,547
290 4,619,548
349 4,619,549

CLASS 404
80 4,619,550
90 4,619,551
117 4,619,552

CLASS 405
63 4,619,553
120 4,619,554
154 4,619,555
195 4,619,556
211 4,619,557
237 4,619,558
259 4,619,559
284 4,619,560

CLASS 406
89 4,619,561
182 4,619,562

CLASS 407
118 4,619,563

CLASS 408
146 4,619,564

CLASS 409
135 4,619,565
232 4,619,566
234 4,619,567

CLASS 411
222 4,619,568
347 4,619,569

CLASS 414
39 4,619,570
130 4,619,571
217 4,619,572
222 4,619,573
226 4,619,574
280 4,619,575
300 4,619,576
312 4,619,577
498 4,619,578
607 4,619,579

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12 4,619,580
143 4,619,581

CLASS 416
8 4,619,582
122 4,619,583
129 4,619,584
132 B 4,619,585
157 R 4,619,586

CLASS 417
319 4,619,587
366 4,619,588
388 4,619,589
407 4,619,590
422 4,619,591
429 4,619,592
498 4,619,593

CLASS 418
5 4,619,594
83 4,619,595
201 4,619,596

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463 4,619,810

CLASS 422
109 4,619,811
156 4,619,812
171 4,619,813

CLASS 423
27 4,619,814

74 4,619,815
139 4,619,816
220 4,619,608
266 4,619,817
306 4,619,818
317 4,619,819
328 4,619,820
579 4,619,821
592 4,619,822

CLASS 424
1.1 4,619,823
16 4,619,824
49 4,619,825
78 4,619,826
89 4,619,827
92 4,619,828
128 4,619,829

CLASS 425
7 4,619,597
131.1 4,619,598
186 4,619,599
197 4,619,600

CLASS 426
82 4,619,830
93 4,619,831
302 4,619,832
548 4,619,833
4,619,834

CLASS 427
8 4,619,835
41 4,619,836
44 4,619,837
53.1 4,619,838
82 4,619,839
91 4,619,840
96 4,619,841
163 4,619,842
213 4,619,843
248.1 4,619,844
422 4,619,845

CLASS 428
11 4,619,846
31 4,619,847
35 4,619,848
4,619,849
38 4,619,850
40 4,619,851
68 4,619,852
95 4,619,853
99 4,619,854
143 4,619,855
4,619,856
186 4,619,857
211 4,619,858
213 4,619,859
4,619,860
220 4,619,861
221 4,619,862
4,619,863
240 4,619,864
333 4,619,865
335 Re.32,270
336 4,619,866
355 4,619,867
425.1 4,619,868
480 4,619,869
596 4,619,870
607 4,619,871
632 4,619,872

CLASS 429
48 4,619,873
91 4,619,874
143 4,619,875

CLASS 430
11 4,619,876
31 4,619,877
56 4,619,878
58 4,619,879
4,619,880
77 4,619,881
95 4,619,882
203 4,619,883
223 4,619,884
260 4,619,885
265 4,619,886
313 4,619,887
353 4,619,888
406 4,619,889
495 4,619,890
505 4,619,891
4,619,892
519 4,619,893
942 4,619,894

CLASS 431
1 4,619,601
20 4,619,602
201 4,619,603

353 4,619,604

CLASS 432
14 4,619,605
99 4,619,606
162 4,619,607

CLASS 433
6 4,619,609
41 4,619,610
55 4,619,611
80 4,619,612
90 4,619,613
99 4,619,614

CLASS 434
22 4,619,615
4,619,616
265 4,619,617

CLASS 435
7 4,619,895
4,619,896
182 4,619,897
190 4,619,898
215 Re.32,271
287 4,619,899

CLASS 436
42 4,619,900
55 4,619,901
145 4,619,902
517 4,619,903
518 4,619,904

CLASS 440
88 4,619,618

CLASS 441
65 4,619,619
66 4,619,620
4,619,621
111 4,619,622
126 4,619,623

CLASS 445
22 4,619,624

CLASS 446
89 4,619,625
228 4,619,626

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619 4,620,321

CLASS 464
24 4,619,627
111 4,619,628

CLASS 474
28 4,619,629
72 4,619,630
80 4,619,631
4,619,632
82 4,619,633
201 4,619,634

CLASS 493
36 4,619,635
109 4,619,636
175 4,619,637
439 4,619,638

CLASS 501
97 4,619,905

CLASS 502
66 4,619,906
210 4,619,907
214 4,619,908
303 4,619,909
336 4,619,910
411 4,619,911
439 4,619,912

CLASS 514
2 4,619,913
15 4,619,914
17 4,619,915
18 4,619,916
77 4,619,917
93 4,619,918
166 4,619,919
167 4,619,920
180 4,619,921
4,619,922
185 4,619,923
195 4,619,924
200 4,619,925
210 4,619,926
218 4,619,927
236 4,619,928
252 4,619,929
4,619,930
4,619,931
253 4,619,932

272 4,619,933
277 4,619,934
281 4,619,935
282 4,619,936
323 4,619,937
356 4,619,938
363 4,619,939
383 4,619,940
397 4,619,941
415 4,619,942
464 4,619,943
513 4,619,944
729 4,619,945

CLASS 518
700 4,619,946
716 4,619,947

CLASS 521
52 4,619,948

CLASS 522
170 4,619,949

CLASS 523
140 4,619,950
173 4,619,951
409 4,619,952
465 4,619,953
516 4,619,954

CLASS 524
29 4,619,955
87 4,619,956
91 4,619,957
102 4,619,958
114 Re.32,272
228 4,619,959
245 4,619,960
393 4,619,961
401 4,619,962
439 4,619,963
460 4,619,964
547 4,619,965
589 4,619,966
801 4,619,967

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93 4,619,969
100 4,619,970
166 4,619,971
193 4,619,972
329.9 4,619,973
332.4 4,619,974
437 4,619,975
439 4,619,976
502 4,619,977

CLASS 526
84 4,619,978
88 4,619,979
96 4,619,980
125 4,619,981
164 4,619,982
247 4,619,983

CLASS 528
38 4,619,984
49 4,619,985
99 4,619,986
274 4,619,987
421 4,619,988

CLASS 530
417 4,619,989

CLASS 534
573 4,619,990
588 4,619,991
733 4,619,992
735 4,619,993
738 4,619,994

CLASS 536
20 4,619,995
55.3 4,619,996

CLASS 540
200 4,619,787
310 4,619,786
318 4,619,785
361 4,619,783
593 4,619,784

CLASS 544
124 4,619,997
193.1 4,619,998
196 4,619,999
235 4,620,000
310 4,620,001
318 4,620,002
354 4,620,003
357 4,620,004
391 4,620,005

402 4,620,006

CLASS 546
156 4,620,007
271 4,620,008

CLASS 548
155 4,620,009
217 4,620,010
262 4,620,011
411 4,620,012
412 4,620,013
545 4,620,014
547 4,620,015

CLASS 549
325 4,620,016
4,620,017
362 4,620,018
404 4,620,019

CLASS 556
18 4,620,020
19 4,620,021
417 4,620,022
460 4,620,023

CLASS 558
113 4,620,024
401 4,620,025

CLASS 560
85 4,620,026
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122 4,619,782
193 4,620,028
204 4,620,029
338 4,620,030

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466 4,620,031
483 4,620,032
519 4,620,033
531 4,620,034
534 4,620,035

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256 4,620,036

CLASS 568
36 4,620,037
401 4,620,038
445 4,620,039
656 4,620,040
665 4,620,041
775 4,620,042
801 4,620,043
833 4,620,044
873 4,620,045
930 4,620,046
939 4,620,047

CLASS 585
10 4,620,048
438 4,620,055
452 4,620,056
481 4,620,054
500 4,620,057
501 4,620,049
640 4,620,050
663 4,620,051
4,620,052
664 4,620,053

CLASS 604
6 4,619,639
7 4,619,640
8 4,619,641
29 4,619,642
43 4,619,643
53 4,619,644
111 4,619,645
154 4,619,646
318 4,619,647
326 4,619,648
396 4,619,649
408 4,619,650
415 4,619,651
4,619,652
891 4,619,653
897 4,619,654

CLASS 623
1 4,619,655
6 4,619,656
4,619,657
4,619,662
22 4,619,658
23 4,619,659
46 4,619,660
55 4,619,661

CLASS 8.3
870 4,619,173

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D2—	25	286,341		45	286,361	D10—	8	286,381			286,401		163	286,421		19	286,432
	320	286,342		76	286,362		39	286,382			286,402		169	286,422		50	286,433
D3—	26	286,343		150	286,363		46	286,384		59	286,403		244	286,423		52	286,434
	40	286,344		317	286,364		106	286,383		63	286,404	D22—	22	286,425	D26—	65	286,444
D6—	349	286,345		321	286,365	D11—	19	286,385		78	286,405		110	286,424		86	286,445
	366	286,350			286,366		86	286,386		113	286,406	D23—	18	286,426		123	286,446
	390	286,351			286,367		90	286,387	D15—	127	286,407		122	286,427	D27—	24	286,447
	430	286,352		338	286,368			286,388	D16—	10	286,408			286,428		27	286,448
	474	286,353	D8—	72	286,369		114	286,389		32	286,409		141	286,429	D28—	2	286,449
	502	286,346		356	286,370		157	286,390			286,410			286,430			286,450
	507	286,347		373	286,371		164	286,391	D17—	99	286,411	D24—	8	286,435		49	286,451
	516	286,348		387	286,372	D12—	110	286,392	D19—	3	286,412		10	286,436			286,452
	534	286,349			286,373		147	286,393		59	286,413		21	286,437			286,453
	536	286,354	D9—	300	286,374		156	286,394		66	286,414		26	286,438		54	286,454
		286,355		337	286,375		189	286,395	D21—	72	286,415			286,439	D30—	15	286,455
		286,356		341	286,376	D13—	23	286,396		108	286,416		27	286,440	D32—	31	286,456
	587	286,357			286,377		24	286,397			286,417			286,441		49	286,457
	589	286,358		346	286,378		34	286,398		116	286,418			286,442		53.1	286,458
		286,359		370	286,379	D14—	30	286,399		148	286,419		45	286,443			286,459

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	4,619,684		4,619,495		4,620,310		4,619,021		4,619,826		4,620,125
	4,619,717		4,619,501	08 :	4,619,672		4,619,097		4,619,875		4,620,130
	4,619,819		4,619,502		4,619,749		4,619,373		4,619,930		4,620,192
04 :	4,619,100		4,619,507		4,619,872		4,619,554		4,619,935		4,620,240
	4,619,123		4,619,540		4,620,081		4,619,705		4,620,077		4,620,266
	4,619,142		4,619,550	09 :	4,619,101		4,619,842		4,620,109		4,620,272
	4,619,386		4,619,573		4,619,271		4,620,169		4,620,220		4,620,304
	4,619,465		4,619,640		4,619,299		4,620,270		4,620,320		4,620,305
	4,619,567		4,619,649		4,619,320	15 :	4,619,067	19 :	4,619,436	26 :	4,619,031
	4,619,568		4,619,651		4,619,364	16 :	4,619,011		4,619,620		4,619,103
	4,619,585		4,619,652		4,619,390		4,619,207	20 :	4,619,223		4,619,114
	4,619,722		4,619,714		4,619,391		4,619,341		4,619,422		4,619,139
	4,619,751		4,619,738		4,619,560		4,619,690		4,619,469		4,619,151
	4,620,274		4,619,764		4,619,613	17 :	4,619,051		4,619,586		4,619,208
	4,620,277		4,619,769		4,619,626		4,619,076		4,619,664		4,619,220
05 :	4,619,215		4,619,837		4,619,747		4,619,085	21 :	4,619,005		4,619,221
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	4,619,007		4,619,841		4,619,810		4,619,187		4,620,078		4,619,270
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	4,619,027		4,619,851		4,619,924		4,619,203		4,619,218		4,619,303
	4,619,046		4,619,895		4,619,978		4,619,256		4,619,298		4,619,366
	4,619,055		4,619,913		4,619,999		4,619,260		4,619,362		4,619,376
	4,619,059		4,619,914		4,620,009		4,619,261		4,619,475		4,619,478
	4,619,071		4,619,989		4,620,019		4,619,328		4,619,556		4,619,481
	4,619,081		4,620,000		4,620,122		4,619,426		4,619,668		4,619,564
	4,619,110		4,620,064		4,620,268		4,619,428		4,619,911		4,619,566
	4,619,158		4,620,075		4,620,286		4,619,702		4,620,026		4,619,590
	4,619,177		4,620,093	10 :	4,619,642		4,619,743	23 :	4,619,190		4,619,592
	4,619,199		4,620,107	12 :	4,619,032		4,619,821		4,619,948		4,619,610
	4,619,210		4,620,115		4,619,044		4,619,906	24 :	4,619,042		4,619,644
	4,619,219		4,620,120		4,619,069		4,619,955		4,619,075		4,619,719
	4,619,237		4,620,148		4,619,074		4,619,988		4,619,454		4,619,729
	4,619,245		4,620,149		4,619,087		4,620,047		4,619,653		4,619,827
	4,619,254		4,620,167		4,619,128		4,620,049		4,620,030		4,619,847
	4,619,259		4,620,170		4,619,249		4,620,066		4,620,095		4,619,865
	4,619,263		4,620,176		4,619,275		4,620,070		4,620,175		4,619,912
	4,619,268		4,620,181		4,619,358		4,620,105		4,620,224		4,619,933
	4,619,274		4,620,191		4,619,471		4,620,119	25 :	Re.32,271		4,619,937
	4,619,285		4,620,214		4,619,532		4,620,126		4,619,060		4,619,967
	4,619,290		4,620,215		4,619,618		4,620,208		4,619,145		4,619,968
	4,619,324		4,620,227		4,619,654		4,620,247		4,619,161		4,619,977
	4,619,326		4,620,232		4,619,803		4,620,284		4,619,244		4,619,996
	4,619,342		4,620,244		4,619,853		4,620,317		4,619,315		4,619,997
	4,619,345		4,620,254		4,619,939		4,620,319		4,619,370		4,620,045
	4,619,371		4,620,255		4,619,943	18 :	4,619,028		4,619,414		4,620,186
	4,619,378		4,620,262		4,620,028		4,619,040		4,619,645		4,620,223
	4,619,385		4,620,276		4,620,061		4,619,347		4,619,726		4,620,285
	4,619,398		4,620,288		4,620,160		4,619,365		4,619,784		4,620,294
	4,619,450		4,620,290		4,620,163		4,619,409		4,619,792	27 :	4,619,168
	4,619,467		4,620,293		4,620,179		4,619,555		4,619,894		4,619,216
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32 :	4,619,065
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DESIGN PATENTS

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05 :	286,372
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06 :	286,341
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08 :	286,398
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19 :	286,455
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42 :	286,402
	286,423
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43 :	286,458
47 :	286,447
48 :	286,415
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51 :	286,404
	286,412
53 :	286,348
55 :	286,343
	286,366

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37 :	5,794

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